APPENDIX 9.9

TRANSPORTATION TECHNICAL REPORTS

MURRIETA HILLS SPECIFIC PLAN
TRAFFIC IMPACT ANALYSIS

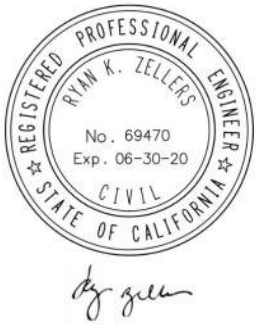
City of Murrieta

Prepared for

Pulte/BP Murrieta Hills, LLC

Prepared by

Michael Baker
INTERNATIONAL



5050 AVENIDA ENCINAS SUITE 260, CARLSBAD, CALIFORNIA 92008
CONTACT: ROBERT DAVIS 760.603.6244 robertdavis@mbakerintl.com

November 2018

JN 141981

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1

2. INTRODUCTION 4

3. STUDY AREA 4

4. INTERSECTION ANALYSIS METHODOLOGY 7
   - Intersection Peak Hour Performance Criteria 8
   - Intersection Thresholds of Significance 8

5. ROADWAY SEGMENT ANALYSIS METHODOLOGY 8
   - Roadway Segment Performance Criteria 9
   - Roadway Segment Thresholds of Significance 9

6. ROADWAY DESCRIPTION 9
   - Existing Conditions Traffic Volumes 11
   - Existing Conditions Peak Hour Study Intersection Level of Service 11

7. PROPOSED PROJECT 13
   - Project Forecast Trip Generation 13
   - Forecast Trip Distribution of Proposed Project 17
   - Forecast Trip Assignment of Proposed Project 17

8. FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS 18
   - Forecast Existing Plus Project Buildout Conditions Traffic Volumes 18
   - Forecast Existing Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service 18
   - Forecast Existing Plus Project Buildout Conditions Study Intersection Mitigation Measures 20
   - Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Peak Hour LOS 21

9. FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASE 1 CONDITIONS 22
   - Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Peak Hour Traffic Volumes 22
   - Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Peak Hour Study Intersection Level of Service 22
   - Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Mitigation Measures 24
   - Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Peak Hour LOS 24

10. FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS 25

Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Peak Hour Traffic Volumes....25
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Peak Hour Study Intersection Level of Service....26
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Mitigation Measures....27
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Peak Hour LOS....29

11. FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS....29
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Peak Hour Traffic Volumes....30
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Peak Hour Study Intersection Level of Service....30

12. FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS....31
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Peak Hour Traffic Volumes....31
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Peak Hour Study Intersection Level of Service....32
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Mitigation Measures....33
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Peak Hour LOS....34

13. FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS....34
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Traffic Volumes....35
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service....35
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Mitigation Measures....36
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Peak Hour LOS....37

14. FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS....37
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Traffic Volumes....38
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service....38

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Mitigation Measures 39
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Peak Hour LOS 40

15. FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS 41
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Traffic Volumes 42
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service 42
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Mitigation Measures 43
Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Peak Hour LOS 45

16. FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS 45
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Traffic Volumes 46
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service 46
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Mitigation Measures 47

17. TRAFFIC SIGNAL WARRANT ANALYSIS 48

18. ROADWAY SEGMENT ANALYSIS 50
Roadway Segment Study Area Forecast ADT Trip Assignment of Proposed Project 51
Roadway Segment Study Area Forecast ADT Trip Assignment of Cumulative Projects 52
Existing Conditions Study Roadway Segment Analysis 52
Forecast Existing Plus Project Buildout Conditions Study Roadway Segment Analysis 53
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Roadway Segment Analysis 55
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Roadway Segment Analysis 57
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Roadway Segment Analysis 59
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Roadway Segment Analysis 62
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Roadway Segment Analysis 63

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Roadway Segment Analysis 65
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Roadway Segment Analysis 67
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Roadway Segment Analysis 69

19. KELLER ROAD QUEUING ANALYSIS 71
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour HCM Queue Analysis 72

20. FREEWAY RAMP MERGE & DIVERGE ANALYSIS 73
State Highway Freeway Ramp Merge & Diverge Analysis Methodology 74
State Highway Freeway Ramp Merge & Diverge Facility Thresholds of Significance 74
Existing and Forecast Traffic Volumes 75
Existing Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 75
Forecast Existing Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 76
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 76
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 78
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 80
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 81
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 82
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 82
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service 83

21. MITIGATION MEASURES 83
Study Intersection LOS Mitigation Measures 83

22. ENVIRONMENTALLY PREFERRED ALTERNATIVE 91
Forecast Trip Generation 91
Forecast Trip Distribution & Assignment 94
Forecast Existing Plus Project Buildout Conditions 94
Forecast Year 2023 Plus Ambient Growth Plus Project Phase 1 Conditions 96

Forecast Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions 96
Forecast Year 2028 Plus Ambient Growth Plus Project Phases 1 & 2 Conditions 96
Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions 96
Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions 97
Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions 98
Forecast Year 2035 Plus Ambient Growth Plus Project Buildout Conditions 99
Forecast Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions 101

23. CONCLUSIONS 103

APPENDICES

APPENDIX A EXHIBITS

APPENDIX B EXISTING COUNT DATA & I-215 / SCOTT ROAD INTERCHANGE DESIGN CONCEPTUAL LAYOUTS & I-215 / KELLER ROAD INTERCHANGE CONCEPTUAL LAYOUT

APPENDIX C INTERSECTION LOS ANALYSIS SHEETS

APPENDIX D ITE INTERNAL TRIP GENERATION WORKSHEETS

APPENDIX E TRAFFIC SIGNAL WARRANT WORKSHEETS

APPENDIX F INTERSECTION QUEUE ANALYSIS SHEETS

APPENDIX G STATE HIGHWAY FREEWAY MERGE/DIVERGE LOS ANALYSIS SHEETS

APPENDIX H APPROVED SCOPE OF WORK

APPENDIX I CUMULATIVE PROJECTS LOCATION MAP

APPENDIX J ENVIRONMENALLY PREFERRED ALTERNATIVE INTERSECTION LOS ANALYSIS SHEETS & SIGNAL WARRANTS

APPENDIX K INTERNAL INTERSECTION AND ROADWAYS NEEDS ASSESSMENT

LIST OF TABLES

TABLE 1 INTERSECTION LOS & DELAY RANGES 7

TABLE 2 ROADWAY SEGMENT LOS & DELAY RANGES 8

TABLE 3 EXISTING CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS ... 12

TABLE 4 *ITE* TRIP GENERATION RATES FOR PROPOSED PROJECT LAND USES 14

TABLE 5 PROPOSED PROJECT PASS-BY TRIP REDUCTION PERCENTAGE 14

TABLE 6 *ITE* INTERNAL TRIP CAPTURE PERCENTAGES FOR PROPOSED PROJECT.... 15

TABLE 7 FORECAST TRIP GENERATION OF PROPOSED PROJECT PHASE 1 15

TABLE 8 FORECAST TRIP GENERATION OF PROPOSED PROJECT PHASES 1 & 2 16

TABLE 9 FORECAST TRIP GENERATION OF PROPOSED PROJECT PHASES 1, 2, AND 3 (PROJECT BUILDOUT) 16

TABLE 10 FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 19

TABLE 11 MITIGATED FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 21

TABLE 12 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASE 1 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 23

TABLE 13 MITIGATED FORECAST YEAR 2023 PLUS AMBIENT GROWTH PLUS PROJECT PHASE 1 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 24

TABLE 14 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 26

TABLE 15 MITIGATED FORECAST YEAR 2023 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 29

TABLE 16 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 30

TABLE 17 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 32

TABLE 18 MITIGATED FORECAST YEAR 2028 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 34

TABLE 19 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 35

TABLE 20 MITIGATED FORECAST YEAR 2031 PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 37

TABLE 21 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 38

TABLE 22 MITIGATED FORECAST YEAR 2031 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 41

TABLE 23 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 42

TABLE 24 MITIGATED FORECAST YEAR 2035 PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 45

TABLE 25 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS 46

TABLE 26 MUTCD PEAK HOUR SIGNAL WARRANT ANALYSIS SUMMARY 49

TABLE 27 CITY OF MURRIETA DAILY ROADWAY CAPACITY VALUES 50

TABLE 28 ROADWAY SEGMENT STUDY AREA FORECAST ADT TRIP ASSIGNMENT OF PROPOSED PROJECT 51

TABLE 29 ROADWAY SEGMENT STUDY AREA FORECAST ADT TRIP ASSIGNMENT OF CUMULATIVE PROJECTS 52

TABLE 30 EXISTING CONDITIONS STUDY ROADWAY SEGMENT LOS 53

TABLE 31 FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 54

TABLE 32 FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 55

TABLE 33 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASE 1 CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 56

TABLE 34 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PROJECT PHASE 1 CONDITIONS STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 57

TABLE 35 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 57

TABLE 36 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 59

TABLE 37 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 59

TABLE 38 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 61

TABLE 39 MITIGATED FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 61

TABLE 40 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 62

TABLE 41 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 63

TABLE 42 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 64

TABLE 43 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 65

TABLE 44 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 66

TABLE 45 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 67

TABLE 46 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 68

TABLE 47 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS STUDY ROADWAY SEGMENT LOS: DAILY TRAFFIC ANALYSIS 70

TABLE 48 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT STUDY ROADWAY SEGMENT LOS: PEAK HOUR ANALYSIS 71

TABLE 49 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS KELLER ROAD QUEUE 72

TABLE 50 FREEWAY RAMP MERGE & DIVERGE FACILITIES LOS & DENSITY RANGES 74

TABLE 51 EXISTING CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 75

TABLE 52 FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 76

TABLE 53 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASE 1 CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 77

TABLE 54 FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 78

TABLE 55 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 79

TABLE 56 FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 80

TABLE 57 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 81

TABLE 58 FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 82

TABLE 59 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 82

TABLE 60 FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY FREEWAY RAMP MERGE & DIVERGE LOS 83

TABLE 61 PROJECT LAND USE COMPARISON 91

TABLE 62 FORECAST TRIP GENERATION OF ENVIRONMENTALLY PREFERRED ALTERNATIVE PHASE 1 92

TABLE 63 FORECAST TRIP GENERATION OF ENVIRONMENTALLY PREFERRED ALTERNATIVE PHASES 1 & 2 93

TABLE 64 FORECAST TRIP GENERATION OF ENVIRONMENTALLY PREFERRED ALTERNATIVE PHASES 1, 2 & 3 (PROJECT BUILDOUT) 93

TABLE 65 FORECAST EXISTING PLUS PROJECT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS COMPARISON 95

TABLE 66 MITIGATED FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS ENVIRONMENTALLY PREFERRED ALTERNATIVE 95

TABLE 67 FORECAST YEAR 2028 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS COMPARISON 96

TABLE 68 MITIGATED FORECAST YEAR 2028 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS ENVIRONMENTALLY PREFERRED ALTERNATIVE 97

TABLE 69 FORECAST YEAR 2031 PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS COMPARISON 97

TABLE 70 MITIGATED FORECAST YEAR 2031 PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS ENVIRONMENTALLY PREFERRED ALTERNATIVE 98

TABLE 71 FORECAST YEAR 2031 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT AM & PM PEAK HOUR STUDY INTERSECTION LOS COMPARISON 98

TABLE 72 MITIGATED FORECAST YEAR 2031 PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS ENVIRONMENTALLY PREFERRED ALTERNATIVE 99

TABLE 73 FORECAST YEAR 2035 PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT AM & PM PEAK HOUR STUDY INTERSECTION LOS COMPARISON 100

TABLE 74 MITIGATED FORECAST YEAR 2035 PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS AM & PM PEAK HOUR STUDY INTERSECTION LOS ENVIRONMENTALLY PREFERRED ALTERNATIVE 100

TABLE 75 MUTCD PEAK HOUR SIGNAL WARRANT ANALYSIS SUMMARY ENVIRONMENTALLY PREFERRED ALTERNATIVE 102

LIST OF EXHIBITS (CONTAINED IN APPENDIX A)

Exhibit 1 Regional Project Location

Exhibit 2 Project Site Location

Exhibit 3 Study Intersection Locations

Exhibit 4 Forecast Year 2023 Study Area Circulation System & Study Intersection Locations

Exhibit 5 Forecast Year 2028 Study Area Circulation System & Study Intersection Locations

Exhibit 6 Forecast Year 2031 & 2035 Study Area Circulation System & Study Intersection Locations

Exhibit 7 Area 1 - Existing AM & PM Peak Hour Study Intersection Volumes

Exhibit 8 Area 2 - Existing AM & PM Peak Hour Study Intersection Volumes

Exhibit 9 Area 1 - Existing Study Intersection Geometry

Exhibit 10 Area 2 - Existing Study Intersection Geometry

Exhibit 11 Proposed Project Site Plan

Exhibit 12 Forecast Existing Plus Project Trip Percent Distribution of Proposed Project (Residential Component)

Exhibit 13 Forecast Existing Plus Project Trip Percent Distribution of Proposed Project (Retail Component)

Exhibit 14 Forecast Year 2023 Trip Percent Distribution of Proposed Project (Residential Component)

Exhibit 15 Forecast Year 2023 Trip Percent Distribution of Proposed Project (Retail Component)

Exhibit 16 Forecast Year 2028 Trip Percent Distribution of Proposed Project (Residential Component)

Exhibit 17 Forecast Year 2028 Trip Percent Distribution of Proposed Project (Retail Component)

Exhibit 18 Forecast Year 2031 & Forecast Year 2035 Trip Percent Distribution of Proposed Project (Residential Component)

Exhibit 19 Forecast Year 2031 & Forecast Year 2035 Trip Percent Distribution of Proposed Project (Retail Component)

Exhibit 20 Area 1 - Forecast Existing Plus Project Buildout Conditions AM & PM Trip Assignment of Proposed Project

Exhibit 21 Area 2 - Forecast Existing Plus Project Buildout Conditions AM & PM Trip Assignment of Proposed Project

Exhibit 22 Area 1 - Forecast Year 2023 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Exhibit 23 Area 2 - Forecast Year 2023 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Exhibit 24 **Area 1 - Forecast Year 2028 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project**

Exhibit 25 **Area 2 - Forecast Year 2028 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project**

Exhibit 26 **Area 1 - Forecast Year 2031 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project**

Exhibit 27 **Area 2 - Forecast Year 2031 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project**

Exhibit 28 **Area 1 - Forecast Year 2035 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project**

Exhibit 29 **Area 2 - Forecast Year 2035 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project**

Exhibit 30 **Area 1 - Forecast Existing Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 31 **Area 2 - Forecast Existing Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 32 **Area 1 – Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 33 **Area 2 – Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 34 **Area 1 - Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 35 **Area 2 - Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 36 **Area 1 – Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Geometry**

Exhibit 37 **Area 2 – Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Geometry**

Exhibit 38 **Area 1 - Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 39 **Area 2 - Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 40 **Area 1 – Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Geometry**

Exhibit 41 **Area 2 – Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Geometry**

Exhibit 42 **Area 1 - Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 43 **Area 2 - Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 44 **Area 1 – Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Intersection Geometry**

Exhibit 45 **Area 2 – Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Intersection Geometry**

Exhibit 46 **Area 1 - Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 47 **Area 2 - Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 48 **Area 1 – Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry**

Exhibit 49 **Area 2 – Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry**

Exhibit 50 **Area 1 - Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 51 **Area 2 - Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout p**

Exhibit 52 **Area 1 – Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 53 **Area 2 – Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 54 **Area 1 - Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 55 **Area 2 - Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 56 **Area 1 – Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 57 **Area 2 – Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 58 **Area 1 - Forecast Year 2035 Conditions Study Intersection Geometry**

Exhibit 59 **Area 2 - Forecast Year 2035 Conditions Study Intersection Geometry**

Exhibit 60 **Area 1 - Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 61 **Area 2 - Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 62 **Area 1 – Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 63 **Area 2 – Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 64 **Area 1 - Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 65 **Area 2 - Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes**

Exhibit 66 **Area 1 – Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 67 **Area 2 – Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry**

Exhibit 68 **Environmentally Preferred Alternative Project Site Plan**

Exhibit 69 **Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry for the Environmentally Preferred Alternative**

Exhibit 70 **Mitigated Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry for the Environmentally Preferred Alternative**

Exhibit 71 **Mitigated Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry for the Environmentally Preferred Alternative.**

Exhibit 72 **Mitigated Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry for the Environmentally Preferred Alternative**

Exhibit 73 **Mitigated Forecast Year 2035 Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry for the Environmentally Preferred Alternative**

1. EXECUTIVE SUMMARY

This study analyzes the forecast traffic conditions associated with the proposed Murrieta Hills project located immediately west of the I-215 Freeway and south of Keller Road in the unincorporated Riverside County. The project site is currently vacant and undeveloped. Access to the project site will be provided via Zeiders Road, Keller Road and McElwain Road. Phase 1 of the project is planned to open in year 2023. Phase 2 of the project is planned to open in year 2028, and Phase 3 of the project is planned to open in year 2031.

This study analyzes two land use alternatives for the project site, the proposed project and Environmentally Preferred Alternative. The main body of this report focuses on the proposed project to be consistent with the Environmental Impact Report (EIR) and provides a conservative analysis since the proposed project is expected to generate more traffic than the Environmentally Preferred Alternative. The Environmentally Preferred Alternative is analyzed in Section 22 of this report and evaluates the impacted locations in the proposed project analysis to determine if any impacts and mitigation measures identified in the proposed project can be reduced or eliminated. An on-site analysis has also been prepared and included in Appendix K of this report focusing on the Environmentally Preferred Alternative to be consistent with the Specific Plan. A brief description of each project land use alternative is provided below:

Proposed Project

The proposed project consists of 578 single-family detached dwelling units, 172 multi-family attached dwelling units, and a 346,302 square-foot (SF) retail component near the northeast area of the project site. The proposed project is planned to be constructed in three phases as follows:

2023 (Phase 1): 300 single-family dwelling units. Phase 1 of the proposed project assumes construction of a new freeway interchange at Keller Road & I-215 freeway, realignment of Antelope Road between Keller Road and Scott Road, construction of Phase 1 improvements at the Scott Road & I-215 freeway interchange, construction of McElwain Road from Keller Road to "D" Street for public access, and the construction of Clinton Keith Road between Whitewood Road and Trios Valley Road;

2028 (Phase 2): Additional 278 single-family dwelling units, 172 multi-family dwelling units, and 173,151 square feet of retail. Phase 2 of the proposed project assumes construction of Zeiders Road between Scott Road and just north of Keller Road;

2031 (Phase 3): Additional 173,151 square feet of retail. Phase 3 of the proposed project assumes the vacation of Antelope Road, construction of McElwain Road from "D" Street to Linnel Lane for public access as requested by the City, and construction of Warm Springs Parkway from Keller Road to Clinton Keith Road.

The proposed project Phase 1 is forecast to generate approximately 2,856 daily trips, which include approximately 225 a.m. peak hour trips and approximately 300 p.m. peak hour trips.

The proposed project Phases 1 & 2 is forecast to generate approximately 11,785 daily trips, which include approximately 634 a.m. peak hour trips and approximately 1,120 p.m. peak hour trips.

The proposed project Phases 1, 2, and 3 (project buildout) is forecast to generate approximately 17,109 daily trips, which include approximately 758 a.m. peak hour trips and approximately 1,579 p.m. peak hour trips.

Mitigation measures have been identified to achieve acceptable LOS and fully mitigate project forecast significant traffic impacts at the study intersections for all study scenarios evaluated in this report. Eight of the twenty-four study intersections require mitigation measures and have been identified and discussed in the following sections of this report.

Per the City of Murrieta General Plan Circulation Element, McElwain Road north of Linnel Lane is classified as a four-lane Secondary roadway with LOS E capacity of 25,900 ADT. As part of this analysis, reduction in classification of McElwain Road to a two-lane Collector (LOS E capacity of 13,000 ADT) is evaluated to determine if adequate capacity will be provided to serve the forecast year 2035 General Plan traffic volumes on McElwain Road from the project access to Linnel Lane. The results of the analysis indicate McElwain Road from the project access to Linnel Lane is forecast to operate at an acceptable LOS as a two-lane Collector roadway for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions and all other scenarios evaluated in this report. However, the project does not propose to change the City's classification of McElwain Road from a four-lane Secondary roadway to a two-lane Collector. At the request of the City, McElwain Road from "D" Street to the project's southern boundary would include three travel lanes (two southbound and one northbound) to accommodate a truck climbing lane which is referred to as a three-lane interim Modified Collector in the roadway segment analysis in this report.

The study freeway ramps are forecast to operate at an acceptable LOS (LOS D or better) for all analysis scenarios. Therefore, the project does not result in significant impacts at any of the study freeway ramps under all study conditions and mitigation is not required. At buildout of Phase 1 of the proposed project in year 2023, reconstruction of the I-215 / Scott Road interchange (Phase 1) improvements and construction of the I-215 / Keller Road interchange is anticipated to be completed and assumed in the forecast year 2023 plus ambient growth plus project Phase 1 conditions through forecast year 2035 with ambient growth plus cumulative projects plus project buildout conditions. With construction of the Keller Road interchange, a minimal number of project trips are expected to access the I-215 Freeway via the Scott Road and Clinton Keith Road interchanges.

Environmentally Preferred Alternative

As previously mentioned, this study evaluates a second land use alternative to the proposed project which is analyzed in Section 22 of this report. The land use alternative is referred to as the Environmentally Preferred Alternative. In this alternative, there are a few environmentally sensitive areas on the project site that have been avoided and this changed the layout of Planning Areas 8 & 9 and reduced the number of dwelling units in Planning Area 4. The Environmentally Preferred Alternative results in a reduction in land use densities specifically in Planning Area 9 where commercial retail is reduced which ultimately reduces trip generation. The Environmentally Preferred Alternative is planned to be constructed in three phases as follows:

2023 (Phase 1): 300 single-family dwelling units. Phase 1 of the proposed project assumes construction of a new freeway interchange at Keller Road & I-215 freeway, realignment of Antelope Road between Keller Road and Scott Road, construction of Phase 1 improvements at the Scott Road & I-215 freeway interchange, construction of McElwain Road from Keller Road to "D" Street for

public access, and the construction of Clinton Keith Road between Whitewood Road and Trios Valley Road;

2028 (Phase 2): Additional 257 single-family dwelling units, 193 multi-family dwelling units, and 111,078 square feet of retail. Phase 2 of the proposed project assumes construction of Zeiders Road between Scott Road and just north of Keller Road;

2031 (Phase 3): Additional 111,078 square feet of retail. Phase 3 of the proposed project assumes the vacation of Antelope Road, construction of McElwain Road from "D" Street to Linnel Lane, and construction of Warm Springs Parkway from Keller Road to Clinton Keith Road.

The total dwelling units remain the same (750 units) between the proposed project and the Environmentally Preferred Alternative, however the commercial retail is reduced in the Environmentally Preferred Alternative by approximately 124,146 square feet.

The Environmentally Preferred Alternative Phase 1 is forecast to generate approximately 2,856 daily trips, which include approximately 225 a.m. peak hour trips and approximately 300 p.m. peak hour trips. Phase 1 development is the same for both the proposed project and the Environmentally Preferred Alternative assuming 300 single-family dwelling units.

The Environmentally Preferred Alternative Phases 1 & 2 is forecast to generate approximately 9,794 daily trips, which include approximately 583 a.m. peak hour trips and approximately 945 p.m. peak hour trips. Phases 1 & 2 of the Environmentally Preferred Alternative generates 1,991 fewer daily trips with 51 fewer a.m. peak hour trips and 175 fewer p.m. peak hour trips compared to the proposed project.

The Environmentally Preferred Alternative Phases 1, 2, and 3 (project buildout) is forecast to generate approximately 13,209 daily trips, which include approximately 663 a.m. peak hour trips and approximately 1,239 p.m. peak hour trips. Buildout of the Environmentally Preferred Alternative is expected to generate 3,900 fewer daily trips with 95 fewer a.m. peak hour trips and 340 fewer p.m. peak hour trips compared to the proposed project.

The analysis results show the Environmentally Preferred Alternative maintains the significantly impacted study intersections identified in the proposed project. Although the delays and levels of service improve with the Environmentally Preferred Alternative compared to the proposed project, the same mitigation measures identified for the proposed project are also required for the Environmentally Preferred Alternative.

An on-site analysis was also completed for both land use alternatives to determine the lane configurations and traffic controls that would be needed for the primary intersections and street sections internal and adjacent to the Murrieta Hills Specific Plan site. The on-site analysis focuses on the Environmentally Preferred Alternative since this land use alternative appears to be the preferred alternative and to be consistent with the Specific Plan. However, an on-site analysis of the proposed project is also included focusing on the intersections along McElwain Road since the proposed project increases the commercial retail square footage compared to the Environmentally Preferred Alternative. The on-site analysis is contained in **Appendix K** of this report.

2. INTRODUCTION

This study analyzes the forecast traffic conditions associated with the proposed Murrieta Hills project located immediately west of the I-215 Freeway and south of Keller Road in the unincorporated Riverside County. The project site is currently vacant and undeveloped. Access to the project site will be provided via Zeiders Road, Keller Road and McElwain Road. Phase 1 of the project is planned to open in year 2023. Phase 2 of the project is planned to open in year 2028, and Phase 3 of the project is planned to open in year 2031.

As mentioned earlier, this study analyzes two land use alternatives for the project site, the Proposed Project and Environmentally Preferred Alternative. The main body of this report focuses on the proposed project to be consistent with the Environmental Impact Report (EIR) and provides a conservative analysis since the proposed project is expected to generate more traffic than the Environmentally Preferred Alternative. The Environmentally Preferred Alternative is analyzed in Section 22 of this report and evaluates the impacted locations in the proposed project analysis to determine if any impacts and mitigation measures identified in the proposed project can be reduced or eliminated. An on-site analysis has also been prepared and included in Appendix K of this report focusing on the Environmentally Preferred Alternative to be consistent with the Specific Plan.

The proposed project consists of 578 single-family detached dwelling units, 172 multi-family attached dwelling units, and a 346,302 square-foot (SF) retail component near the northeast area of the project site. The main body of this report focuses on the proposed project to be consistent with the Environmental Impact Report.

The Environmentally Preferred Alternative consists of 557 single-family detached dwelling units, 193 multi-family attached dwelling units, and a 222,156 square-foot (SF) retail component near the northeast area of the project site. Analysis of the Environmentally Preferred Alternative is provided in Section 22 of this report and is the primary focus of the on-site analysis to be consistent with the Specific Plan.

Exhibit 1 shows the regional location of the project site. **Exhibit 2** shows the project site location. This study has been prepared in conformance with the traffic scoping agreement contained in **Appendix H**. It should be noted that all exhibits for this report are located in **Appendix A**.

3. STUDY AREA

The study area consists of the following twenty-four (24) study intersections in the vicinity of the project site identified by City staff in the scoping agreement:

1. Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road (unsignalized);
2. Murrieta Road / Scott Road (unsignalized);
3. Haun Road – Zeiders Road / Scott Road (signalized);
4. I-215 Southbound Ramps / Scott Road (signalized);
5. I-215 Northbound Ramps / Scott Road (signalized);
6. Antelope Road / Scott Road (signalized);
7. Zeiders Road / Keller Road (unsignalized);
8. Antelope Road / Keller Road (signalized);

9. Mapleton Road / Keller Road (unsignalized);
10. Menifee Road / Keller Road (signalized);
11. Antelope Road / Baxter Road (signalized);
12. Warm Springs Parkway / Baxter Road (signalized);
13. Whitewood Road / Baxter Road (signalized);
14. McElwain Road / Linnel Lane (unsignalized);
15. Whitewood road / Linnel Lane (signalized);
16. Murrieta Oaks East Avenue / Clinton Keith Road (signalized);
17. McElwain Road / Clinton Keith Road (signalized);
18. I-215 Southbound Ramps / Clinton Keith Road (signalized);
19. I-215 Northbound Ramps / Clinton Keith Road (signalized);
20. Whitewood Road / Clinton Keith Road (signalized);
21. I-215 Southbound Ramps / Keller Road (future roundabout);
22. I-215 Northbound Ramps / Keller Road (future roundabout);
23. Warm Springs Road / Linnel Lane (future intersection); and
24. Warm Springs Road / Clinton Keith Road (future intersection).

Additionally, this analysis evaluates the following fourteen (14) roadway segments:

1. Keller Road from Howard Way to Zeiders Road;
2. Keller Road from Zeiders Road-McElwain Road to I-215 Freeway;
3. Keller Road from I-215 Freeway to Antelope Road or Mapleton Avenue;
4. Keller Road from Mapelton Avenue to Whitewood Road / Menifee Road;
5. Antelope Road from Keller Road to Mapleton Avenue;
6. Antelope Road from Mapleton Avenue to Scott Road;
7. Zeiders Road north of Keller Road;
8. McElwain Road from Keller Road to Project Access;
9. McElwain Road from Project Access to Linnel Lane;
10. McElwain Road from Linnel Lane to Clinton Keith Road;
11. Scott Road from Murrieta Road to Haun Road / Zeiders Road;
12. Scott Road from Haun Road / Zeiders Road to I-215 Southbound Ramps;
13. Scott Road from I-215 Northbound Ramps to Antelope Road; and
14. Clinton Keith Road from I-215 Northbound Ramps to Whitewood Road.

Exhibit 3 shows the location of the study intersections for the existing conditions. The following study scenarios were analyzed in this report:

- Existing Conditions;
- Forecast Existing Plus Project Buildout Conditions;
- Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions;
- Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions;
- Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions;
- Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions;
- Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions;
- Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions;
- Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions; and
- Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions.

Based on discussions with City of Murrieta staff and City of Menifee staff, the analysis assumes the following modifications to the circulation system for the analysis scenarios:

- ***Forecast Year 2023:*** The following modifications assumed in the circulation system as shown in **Exhibit 4** include:
  - Construction of a new freeway interchange at Keller Road & I-215 freeway;
  - Reconstruction of I-215 freeway interchange at Scott Road (Phase 1 improvements only);
  - Realignment of Antelope Road and Mapleton Avenue and elimination of the existing Antelope Road / Keller Road intersection (Int. #8);q
  - Construction of Clinton Keith Road from Whitewood Road to Trios Valley Road as a four-lane Major roadway; and
  - Construction of McElwain Road from Keller Road to "D" Street as a two-lane Collector.

- ***Forecast Year 2028:*** The following modifications assumed in the circulation system as shown in **Exhibit 5** include:
  - Construction of Zeiders Road from Scott Road to Keller Road*; and*
  - Construction of McElwain Road from Keller Road to "C" Street as a four-lane Secondary.

- ***Forecast Year 2031:*** The following modifications assumed in the circulation system as shown in **Exhibit 6** include:
  - Construction of McElwain Road between "D" Street and Linnel Lane as a two-lane Collector roadway as requested by the City;
  - Construction of Cottonwood Canyon Road north of Bundy Canyon Road as a two-lane Collector roadway;
  - Construction of Warm Springs Parkway from Keller Road to Clinton Keith Road as a four-lane Major roadway which causes the construction of the Warm Springs Parkway / Linnel intersection (Int. #23) and Warm Springs Parkway / Clinton Keith Road (Int. #24); and
  - Elimination of Antelope Road which would cause elimination of the Antelope Road/Baxter Road (Int. #11).

- ***Forecast Year 2035:*** Forecast year 2035 assumes the General Plan Circulation Element roadway system and intersection geometry including the following modifications to the study area circulation system as shown in **Exhibit 6**:
  - Full buildout of the I-215 Freeway interchange at Scott Road.

Appendix B includes the conceptual layouts of the proposed improvements at the I-215 / Scott Road interchange and I-215 / Keller Road interchange.

4. INTERSECTION ANALYSIS METHODOLOGY

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection. The Highway Capacity Manual (HCM) analysis methodology is utilized to determine the operating LOS of the study intersections.

The *2010 HCM* analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for signalized and unsignalized intersections shown in **Table 1**. HCM analysis methodology is utilized in this study for the study intersections.

Table 1
Intersection LOS & Delay Ranges

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	**Unsignalized Intersections**
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: *2010 Highway Capacity Manual*

Level of service is based on the average stopped delay per vehicle for all movements of signalized intersections and all-way stop-controlled intersections; for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

Intersection Peak Hour Performance Criteria

In accordance with the City of Murrieta General Plan and the City of Menifee General Plan, the acceptable peak hour level of service (LOS) for intersections is LOS E or better at freeway interchanges and intersections in close proximity to the I-215 Freeway such as Haun Road/Scott Road and the Antelope Road/Scott Road. The acceptable peak hour level of service at all other intersections is LOS D or better.

Intersection Thresholds of Significance

Consistent with the County of Riverside, City of Murrieta and City of Menifee utilize the following criteria to determine whether the addition of project-generated trips is forecast to result in a significant impact, and thus requires mitigation:

- The acceptable LOS shall be maintained with the addition of traffic from the proposed project. The analysis shall identify mitigation measures to achieve acceptable LOS.
- For General Plan and Specific Plans, the analysis shall determine whether the ultimate circulation system planned for the area will be adequate to provide an acceptable LOS. The analysis shall identify mitigation measures to achieve acceptable LOS.

5. ROADWAY SEGMENT ANALYSIS METHODOLOGY

Roadway segments are evaluated by comparing average daily traffic (ADT) volumes to roadway capacity. The capacity of roadway segments are affected by a number of factors, including street width, roadway segment design, number of travel lanes, number of intersections and driveways, presence of on-street parking, and traffic signal timings.

Roadway segment operation is described using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions) based on comparing average daily traffic (ADT) volumes to roadway capacity and utilizing the volume-to-capacity (V/C) ratios shown in **Table 2**.

Table 2
Roadway Segment LOS & Delay Ranges

LOS	Roadway Segment Volume-to-Capacity Ratio
A	0.00 – 0.60
B	> 0.60 – 0.70
C	> 0.70 – 0.80
D	> 0.80 – 0.90
E	> 0.90 – 1.00
F	> 1.00

Source: *City of Murrieta and City of Menifee General Plan*

Roadway Segment Performance Criteria

In accordance with the City of Murrieta General Plan and the City of Menifee General Plan, the acceptable LOS for roadway segment operation is LOS C or better.

Roadway Segment Thresholds of Significance

Consistent with the County of Riverside, City of Murrieta and City of Menifee utilize the following criteria to determine whether the addition of project-generated trips is forecast to result in a significant impact, and thus requires mitigation:

- The acceptable LOS shall be maintained with the addition of traffic from the proposed project. The analysis shall identify mitigation measures to achieve acceptable LOS.
- For General Plan and Specific Plans, the analysis shall determine whether the ultimate circulation system planned for the area will be adequate to provide an acceptable LOS. The analysis shall identify mitigation measures to achieve acceptable LOS.

6. ROADWAY DESCRIPTION

The characteristics of the roadway system in the vicinity of the project site are described below:

I-215 Freeway provides regional access for the project site as a freeway facility, traversing the Inland Empire in a north-south direction. I-215 begins at its southern terminus at the junction with I-15 in Murrieta and continues northbound through Perris. I-215 merges with SR-60 from Moreno Valley to Riverside, splits at SR-91, continues northbound through San Bernardino and terminates at the junction with I-15 just before the Cajon Pass. In the project vicinity, I-215 is generally a six-lane freeway providing access to the project site via the existing Scott Road and Clinton Keith Road interchanges and the future Keller Road interchange.

Sunset Avenue – Cottonwood Canyon Road is currently an unpaved dirt roadway trending a north-south direction. There is no posted speed limit on Sunset Avenue and Cottonwood Canyon Road.

Murrieta Road is a two-lane undivided roadway trending in a north-south direction. The posted speed limit is 50 miles per hour on Murrieta Road within the project vicinity; on-street parking is generally permitted in the northbound direction of travel.

Haun Road is a two-lane undivided roadway trending in a north-south direction. South of Scott Road, Haun Road continues as Zeiders Road. There is no posted speed limit on Haun Road within the project vicinity; on-street parking is prohibited.

Zeiders Road is a continuation of Haun Road from Scott Road to approximately 2,700 feet south of Scott Road is a two-lane undivided roadway trending in a north-south direction. Zeiders Road continues as an unpaved dirt roadway from approximately 2,700 feet south of Scott Road to Annie Circle located approximately 1,400 feet north of Keller Road. From Annie Circle to Keller Road, Zeiders Road is a two-lane undivided roadway trending in a north-south direction. There is no posted speed limit on Zeiders Road within the project vicinity; on-street parking is permitted.

McElwain Road is a four-lane divided roadway with a raised median from Clinton Keith Road to Sage Glen Street trending in a north-south direction. McElwain Road continues as a four-lane

undivided roadway with a painted median from Sage Glen Street to Delaney Circle and continues as a two-lane undivided roadway with a painted median from Delaney Circle to Linnel Lane. Per the City of Murrieta General Plan Circulation Element, McElwain Road is planned to extend from Linnel Lane to the intersection of Zeiders Road/Keller Road. The posted speed limit on McElwain Road is 35 miles per hour within the project vicinity; on-street parking is prohibited.

Antelope Road is generally a two-lane undivided roadway trending in a north-south direction. The posted speed limit on Antelope Road is 55 miles per hour north of Scott Road. South of Scott Road, the speed limit on Antelope Road is 50 miles per hour within the project vicinity; on-street parking is permitted in the northbound direction of travel, south of Keller Road only.

Mapleton Avenue is a four-lane roadway with a center left turn lane north of Mapleton Street continues as a four-lane divided roadway with a painted median south of Mapleton Street trending in a north-south direction. The posted speed limit on Mapleton Avenue is 40 miles per hour within the project vicinity; on-street parking is permitted.

Mitchell Road is a two-lane undivided roadway trending in a north-south direction. The is no posted speed limit within the project vicinity; on-street parking is permitted.

Murrieta Oaks East Avenue is a two-lane undivided roadway trending in a north-south direction. The posted speed limit on Murrieta Oaks East Avenue is 35 miles per hour and 25 miles per hour when children are present within the project vicinity; on-street parking is permitted.

Menifee Road is a four-lane divided roadway with a raised median trending in a north-south direction from Keller Road to Mapleton Street. Menifee Road continues as a four-lane undivided roadway from Mapleton Street to Scott Road. Menifee Road continues south of Keller Road as Whitewood Road. There is no posted speed limit on Menifee Road within the project vicinity; on-street parking is prohibited.

Whitewood Road from Keller Road to approximately 3,000 feet south of Keller Road is a four-lane divided roadway with a raised median trending in a north-south direction. Whitewood Road continues north of Keller Road as Menifee Road. Whitewood Road from Keller Road to Clearview Street is a divided four-lane roadway with a raised median. From Clearview Stret o Triple C Ranch Road, Whitewood Road is a four-lane undivided roadway with a painted median. From Triple C Ranch Road to Baxter Road, Whitewood Road is a four-lane divided roadway with a raised median trending in the north-south direction. Whitewood Road from Baxter Road to Clinton Keith Road is a four-lane undivided roadway and continues south of Clinton Keith Road as a three-lane divided roadway with a painted median. Class II bike lanes are provided along both sides of Whitewood Road from Keller Road to Clinton Keith Road. The posted speed limit is 45 miles per hour on Whitewood Road; on-street parking is prohibited.

Bundy Canyon Road is a two-lane undivided roadway trending in an east-west direction. Bundy Canyon Road continues as Scott Road east of Murrieta Road. On-street parking is prohibited; the posted speed limit is 45 miles per hour.

Scott Road from Murrieta Road to Zeiders Road is a two-lane undivided roadway trending in the east-west direction. Scott Road continues from Zeiders Road to I-215 Freeway as a two-lane divided roadway with a painted median. Scott Road continues east of the I-215 Freeway as a four-lane divided roadway with a painted median. The posted speed limit is 50 miles per hour; on-street parking is prohibited.

Keller Road west of the I-215 Freeway is a two-lane undivided roadway trending the east-west direction. From I-215 Freeway to Gladiolus Avenue, Keller Road is a three-lane undivided roadway with a painted median, two westbound lanes, and one eastbound lane trending the east-west direction. East of Gladiolus Avenue, Keller Road is a two-lane undivided roadway with a painted median trending the east-west direction. On-street parking is prohibited between I-215 freeway and Mapleton Avenue. The posted speed limit is 40 miles per hour.

Baxter Road is a four-lane undivided roadway with a painted center left lane trending in an east-west direction. The posted speed limit on Baxter Road is 40 miles per hour within the project vicinity; on-street parking is prohibited.

Linnel Lane from McElwain Road to the I-215 Freeway is a two-lane undivided roadway with a painted median trending in an east-west direction. From I-215 Freeway to Whitewood Road, Linnel Lane is a four-lane undivided roadway with a painted median trending in an east-west direction. West of McElwain Road and east of Whitewood Road is an unpaved dirt road trending in an east-west direction. There is no posted speed limit on Linnel Lane within the project vicinity; on-street parking is prohibited.

Clinton Keith Road west of Greer Road is a four-lane undivided roadway with a painted median trending in an east-west direction. From Greer Road to Murrieta Oaks Avenue, Clinton Keith Road is a five-lane undivided roadway with a painted median. Clinton Keith Road from Murrieta Oaks Avenue to McElwain Road is a four-lane divided roadway with a raised median. From McElwain Road to Whitewood Road, Clinton Keith Road is a six-lane divided roadway with raised medians trending in an east-west direction. Clinton Keith Road currently terminates approximately 100 feet east of Whitewood Road due to the future extension which is currently under construction. The posted speed limit on Clinton Keith Road is between 40 and 45 miles per hour within the project vicinity and 25 miles per hour when children are present east of Creighton Avenue; on-street parking is prohibited. Class II bike lanes are provided along both sides of the roadway within the project study area.

Existing Conditions Traffic Volumes

To determine the existing operation of the study intersections, a.m. peak hour and p.m. peak hour intersection movement counts were collected in August and October 2017; a.m. peak period intersection counts were collected from 7:00 a.m. to 9:00 a.m. and p.m. peak period intersection counts were collected from 4:00 p.m. to 6:00 p.m. The counts used in this analysis were taken from the highest hour within the peak period counted. Also, existing roadway segment average daily traffic (ADT) counts were collected in August and October 2017.

Construction of Whitewood Road between Keller Road and Baxter Road was completed and open to traffic on September 26th, therefore new counts at critical locations were collected in October to account for new travel patterns and used in this analysis.

Exhibit 7 and **Exhibit 8** show existing conditions a.m. peak hour and p.m. peak hour volumes at the study intersections; detailed August and October 2017 traffic count data is contained in **Appendix B**. **Exhibit 9** and **Exhibit 10** show existing conditions study intersection geometry.

Existing Conditions Peak Hour Study Intersection Level of Service

Table 3 summarizes existing conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 3
Existing Conditions AM & PM
Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour
		Delay – LOS	Delay – LOS
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	22.3 – C	24.8 – C
2. Murrieta Rd / Scott Rd	All-Way Stop	**40.3 – E**	**44.0 – E**
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	**>80.0 – F**	**77.7 – E**
4. I-215 SB Ramps / Scott Rd	Signal	25.7 – C	25.7 – C
5. I-215 NB Ramps / Scott Rd	Signal	34.8 – C	41.4 – D
6. Antelope Rd / Scott Rd	Signal	**60.6 – E**	**59.9 – E**
7. Zeiders Rd / Keller Rd	One-Way Stop	9.4 – A	9.0 – A
8. Antelope Rd / Keller Rd	Signal	29.4 – C	24.9 – C
9. Mapleton Ave / Keller Rd	One-Way Stop	11.8 – B	10.9 – B
10. Menifee Rd / Keller Rd	Signal	14.0 – B	14.2 – B
11. Antelope Rd / Baxter Rd	Signal	24.1 – C	28.8 – C
12. Warm Springs Pkwy / Baxter Rd	Signal	34.5 – C	31.0 – C
13. Whitewood Rd / Baxter Rd	Signal	14.8 – B	14.0 – B
14. McElwain Rd / Linnel Ln	All-Way Stop	11.7 – B	9.9 – A
15. Whitewood Rd / Linnel Ln	Signal	16.4 – B	13.2 – B
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	29.8 – C	16.7 – B
17. McElwain Rd / Clinton Keith Rd	Signal	25.7 – C	30.4 – C
18. I-215 SB Ramps / Clinton Keith Rd	Signal	16.9 – B	16.6 – B
19. I-215 NB Ramps / Clinton Keith Rd	Signal	40.1 – D	17.5 – B
20. Whitewood Rd / Clinton Keith Rd	Signal	52.1 – D	48.9 – D

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound;
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for un-signalized intersection; Level of Service F per HCM.

As shown in **Table 3**, the study intersections are currently operating at an acceptable LOS (LOS D or better) for existing conditions according to applicable performance criteria, with the exception of the following three (3) study intersections:

- Int 2 - Murrieta Road / Scott Road (a.m. and p.m. peak hour);
- Int 3 – Haun Road-Zeiders Road / Scott Road (a.m. and p.m. peak hour); and
- Int 6 - Antelope Road / Scott Road (a.m. and p.m. peak hour).

7. PROPOSED PROJECT

The proposed project consists of 578 single-family detached dwelling units, 172 multi-family attached dwelling units, and a 346,302 SF retail component near the northeast area of the project site. The project is planned to be constructed in three phases as follows:

2023 (Phase 1): 300 single-family dwelling units. Phase 1 of the proposed project assumes construction of a new freeway interchange at Keller Road & I-215 freeway, realignment of Antelope Road between Keller Road and Scott Road, construction of Phase 1 improvements at the Scott Road & I-215 freeway interchange, construction of McElwain Road from Keller Road to "D" Street for public access, and the construction of Clinton Keith Road between Whitewood Road and Trios Valley Road;

2028 (Phase 2): Additional 278 single-family dwelling units, 172 multi-family dwelling units, and 173,151 square feet of retail. Phase 2 of the proposed project assumes construction of Zeiders Road between Scott Road and just north of Keller Road;

2031 (Phase 3): Additional 173,151 square feet of retail. Phase 3 of the proposed project assumes the vacation of Antelope Road, construction of McElwain Road from "D" Street to Linnel Lane for public access as requested by the City, and construction of Warm Springs Parkway from Keller Road to Clinton Keith Road.

The project site located immediately west of the I-215 Freeway and south of Keller Road is currently vacant. Access for the project site is provided via Zeiders Road and Keller Road. As previously noted, Phase 1 of the proposed project is planned to open in year 2023. Phase 2 of the proposed project is planned to open in year 2028, and Phase 3 of the proposed project is planned to open in year 2031.

Exhibit 11 shows the proposed project site plan.

Project Forecast Trip Generation

Forecast trip generation for the proposed project is based on scoping discussions with the City of Murrieta and the approved scoping agreement for the proposed project as contained in **Appendix H**.

To calculate trips forecast to be generated by the proposed project, *Institute of Transportation Engineers (ITE)* trip generation rates were utilized. **Table 4** summarizes the *ITE* trip generation rates used to calculate the number of trips forecast to be generated by the proposed project.

Table 4
***ITE* Trip Generation Rates for Proposed Project Land Uses**

Land Use (*ITE* Code)	Units	AM Peak Hour Trip Generation Rate			PM Peak Hour Trip Generation Rate			Daily Trip Generation Rate
		In	Out	Total	In	Out	Total	
Single Family Detached Residential (210)	du	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Residential Condominium/Townhouse (230)	du	0.07	0.37	0.44	0.35	0.17	0.52	5.81
Retail (820)	tsf	0.60	0.36	0.96	1.78	1.93	3.71	42.70

Source: *2012 ITE Trip Generation Manual, 9th Edition*.
Note: tsf = thousand square feet; du = dwelling unit.

Pass-by Trip Adjustment

As documented in *ITE*'s *Trip Generation Manual (Institute of Transportation Engineers, 9th Edition, 2012),* a pass-by trip reduction is applicable to retail land uses located along busy arterial highways attracting vehicle trips already on the roadway; this is particularly the case when the roadway is experiencing peak operating conditions. For example, a motorist already traveling along Keller Road or Zeiders Road between work and home or other destinations may stop at the proposed project site. A pass-by discount under this example would reduce/eliminate both the inbound trip and outbound trip from the surrounding roadway circulation system since the vehicle was already traveling on the roadway. Without the pass-by trip discount, two trips would be generated: an inbound trip to the project site, and an outbound trip from the project site.

Table 5 summarizes the pass-by trip reductions applicable to the proposed project land uses based on discussions with City of Murrieta staff.

Table 5
Proposed Project Pass-by Trip Reduction Percentage

Proposed Project Land Use	AM Peak Hour	PM Peak Hour	Daily
Retail	25%	25%	25%
Single Family Detached Residential	0%	0%	0%
Residential Condominium/Townhouse	0%	0%	0%

ITE Internal Trip Capture Adjustments

As documented in *ITE*'s *Trip* Generation *Manual (Institute of Transportation Engineers, 9th Edition, 2012),* an internal trip capture reduction is applicable when a project site has more than one destination (such as the proposed project), in which a person visits more than one destination onsite during the same visit.

Consistent with industry standards, internal trip capture for each of the project phases have been calculated as directed in *Trip Generation Manual (Institute of Transportation Engineers, 9th Edition, 2012)*. This analysis conservatively only assumes internal trip capture discounts between the retail land use and the condominium/townhouse land use for the project and does not include the single family detached residential land use component in calculating the internal trip capture discounts for the proposed project. Detailed internal trip capture summary calculation sheets are contained in **Appendix D**. **Table 6** shows the internal capture rates utilized in the analysis for each Phase of the proposed project.

Table 6
***ITE* Internal Trip Capture Percentages for Proposed Project**

***ITE* Internal Trip Capture Percentage**			
Project Phase	**AM Peak Hour**	**PM Peak Hour**	**Daily**
Project Phase 1	0%	0%	0%
Project Phases 1 & 2	0%	5%	4%
Project Buildout	0%	5%	4%

The proposed project is planned to be constructed in three phases. **Table 7** summarizes the trip generation of proposed project Phase 1 utilizing the *ITE* trips rates contained in **Table 4**, the applicable pass-by trip adjustments contained in **Table 5**, and the applicable *ITE* internal trip capture adjustments contained in **Table 6**.

Table 7
Forecast Trip Generation of Proposed Project Phase 1

Land Use	**AM Peak Hour Trips**			**PM Peak Hour Trips**			**Daily Trips**
	In	**Out**	**Total**	**In**	**Out**	**Total**	
300-du Single Family Detached Residential	57	168	225	189	111	300	2,856
Project Phase 1 Total	**57**	**168**	**225**	**189**	**111**	**300**	**2,856**

Note: du = dwelling unit.

As shown in **Table 7**, the proposed project Phase 1 is forecast to generate approximately 2,856 daily trips, which include approximately 225 a.m. peak hour trips and approximately 300 p.m. peak hour trips.

Table 8 summarizes the trip generation of proposed project Phases 1 & 2 utilizing the *ITE* trips rates contained in **Table 4**, the applicable pass-by trip adjustments contained in **Table 5**, and the applicable *ITE* internal trip capture adjustments contained in **Table 6**.

Table 8
Forecast Trip Generation of Proposed Project Phases 1 & 2

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
173.151 tsf Retail	103	63	166	308	334	642	7,394
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-15	-17	-32	-296
Retail after Internal Trip Capture Adjustment	103	63	166	293	317	610	7,098
Pass-by Trip Reduction (25% AM & PM, 25% ADT)	-26	-16	-42	-73	-80	-153	-1,775
Subtotal Retail	*77*	*47*	*124*	*220*	*237*	*457*	*5,323*
172 du Residential Condominium/Townhouse	13	63	76	59	30	89	999
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-3	-1	-4	-40
Subtotal Residential Condominium/Townhouse	*13*	*63*	*76*	*56*	*29*	*85*	*959*
578 du Single Family Detached Residential	*109*	*325*	*434*	*364*	*214*	*578*	*5,503*
Proposed Project Phases 1 & 2 Trip Generation	**199**	**435**	**634**	**640**	**480**	**1,120**	**11,785**

Note: tsf = thousand square feet; du = dwelling unit.

As shown in **Table 8**, the proposed project Phases 1 & 2 is forecast to generate approximately 11,785 daily trips, which include approximately 634 a.m. peak hour trips and approximately 1,120 p.m. peak hour trips.

Table 9 summarizes the trip generation of proposed project Phases 1, 2, and 3 (project buildout) utilizing the *ITE* trips rates contained in Table 4, the applicable pass-by trip adjustments contained in Table 5, and the applicable *ITE* internal trip capture adjustments contained in Table 6.

Table 9
Forecast Trip Generation of Proposed Project Phases 1, 2, and 3 (Project Buildout)

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
346.302 tsf Retail	206	126	332	617	668	1,285	14,787
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-31	-33	-64	-591
Retail after Internal Trip Capture Adjustment	206	126	332	586	635	1,221	14,196
Pass-by Trip Reduction (25% AM, 25% PM, 25% ADT)	-52	-32	-84	-146	-159	-305	-3,549
Subtotal Retail	*154*	*94*	*248*	*440*	*476*	*916*	*10,647*
172 du Residential Condominium/Townhouse	13	63	76	59	30	89	999
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-3	-1	-4	-40
Subtotal Residential Condominium/Townhouse	*13*	*63*	*76*	*56*	*29*	*85*	*959*
578 du Single Family Detached Residential	*109*	*325*	*434*	*364*	*214*	*578*	*5,503*
Proposed Project Phases 1, 2, & 3 Trip Generation	**276**	**482**	**758**	**860**	**719**	**1,579**	**17,109**

Note: tsf = thousand square feet; du = dwelling unit.

As shown in **Table 9**, the proposed project Phases 1, 2, and 3 (project buildout) is forecast to generate approximately 17,109 daily trips, which include approximately 758 a.m. peak hour trips and approximately 1,579 p.m. peak hour trips.

Forecast Trip Distribution of Proposed Project

Trip distribution for the proposed project is based on the Riverside Traffic Analysis Model (RivTAM) select zone runs for the proposed project.

Exhibit 12 shows forecast trip percent distribution of project-generated trips for the residential component of the proposed project for forecast existing plus project conditions.

Exhibit 13 shows forecast trip percent distribution of project-generated trips for the retail component of the proposed project for forecast existing plus project conditions.

Exhibit 14 shows forecast trip percent distribution of project-generated trips for the residential component of the proposed project for forecast year 2023 conditions.

Exhibit 15 shows forecast trip percent distribution of project-generated trips for the retail component of the proposed project for and forecast year 2023 conditions.

Exhibit 16 shows forecast trip percent distribution of project-generated trips for the residential component of the proposed project for forecast year 2028 conditions.

Exhibit 17 shows forecast trip percent distribution of project-generated trips for the retail component of the proposed project for forecast year 2028 conditions.

Exhibit 18 shows forecast trip percent distribution of project-generated trips for the residential component of the proposed project for forecast year 2031 and forecast year 2035 conditions.

Exhibit 19 shows forecast trip percent distribution of project-generated trips for the retail component of the proposed project for forecast year 2031 and forecast year 2035 conditions.

Forecast Trip Assignment of Proposed Project

Exhibit 20 and **Exhibit 21** show the a.m. peak hour and p.m. peak hour forecast trip assignment of project-generated trips for forecast existing plus project buildout conditions assuming the trip percent distributions shown in **Exhibit 12** and **Exhibit 13**.

Exhibit 22 and **Exhibit 23** show the a.m. peak hour and p.m. peak hour forecast trip assignment of project-generated trips for forecast year 2023 with project Phase 1 conditions assuming the trip percent distributions shown in **Exhibit 14** and **Exhibit 15**.

Exhibit 24 and **Exhibit 25** show the a.m. peak hour and p.m. peak hour forecast trip assignment of project-generated trips for forecast year 2028 with project Phases 1 & 2 conditions assuming the trip percent distributions shown in **Exhibit 16** and **Exhibit 17**.

Exhibit 26 and **Exhibit 27** show the a.m. peak hour and p.m. peak hour forecast trip assignment of project-generated trips for forecast year 2031 with project buildout conditions assuming the trip percent distributions shown in **Exhibit 18** and **Exhibit 19**.

Exhibit 28 and **Exhibit 29** show the a.m. peak hour and p.m. peak hour forecast trip assignment of project-generated trips for forecast year 2035 with project buildout conditions assuming the trip percent distributions shown in **Exhibit 18** and **Exhibit 19**.

8. FORECAST EXISTING PLUS PROJECT BUILDOUT CONDITIONS

This section analyzes the potential traffic impact of the addition of trips forecast to be generated by the proposed project buildout to existing conditions traffic volumes at the study intersections. It is important to note that this analysis assumes the existing roadway network configuration which limits the routing options of project-related traffic as well as area background traffic. In reality, the study area roadway network will be changing significantly including:

- The planned extension of McElwain Road between Keller Road and Linnel Lane (by 2031);
- The programmed construction of the Keller Road/I-215 interchange (by 2023); and
- The planned re-alignment of Antelope Road in conjunction with the new interchange construction at Scott Road (by 2023).

These roadway network changes will have a very significant impact on the re-distribution of project trips during the phased construction period of the project.

Therefore, the analysis findings and identified intersection and roadway improvement needs for this scenario are for "information purposes" only.

The actual definition of project impacts and the identification and timing of required mitigation measures are presented in the Project Phasing Analysis that has been performed for years 2023, 2028, and 2031.

Forecast Existing Plus Project Buildout Conditions Traffic Volumes

Exhibit 28 and **Exhibit 29** show a.m. and p.m. peak hour volumes at the study intersections for forecast existing plus project buildout conditions.

Forecast Existing Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service

Table 10 summarizes forecast existing plus project buildout conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 10
Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	26.0 – D	**42.8 – E**	**Yes**
2. Murrieta Rd / Scott Rd	All-Way Stop	**>50.0 – F**	**>50.0 – F**	**Yes**
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	**>80.0 – F**	**>80.0 – F**	**Yes**
4. I-215 SB Ramps / Scott Rd	Signal	30.3 – C	38.8 – D	No
5. I-215 NB Ramps / Scott Rd	Signal	40.2 – D	48.9 – D	No
6. Antelope Rd / Scott Rd	Signal	**61.9 – E**	**71.3 – E**	**Yes**
7. Zeiders Rd / Keller Rd	Two-Way Stop	22.8 – C	**>50.0 – F**	**Yes**
8. Antelope Rd / Keller Rd	Signal	30.6 – C	29.9 – C	No
9. Mapleton Ave / Keller Rd	One-Way Stop	12.9 – B	13.9 – B	No
10. Menifee Rd / Keller Rd	Signal	15.5 – B	16.6 – B	No
11. Antelope Rd / Baxter Rd	Signal	24.1 – C	28.8 – C	No
12. Warm Springs Pkwy / Baxter Rd	Signal	34.4 – C	30.9– C	No
13. Whitewood Rd / Baxter Rd	Signal	14.8 – B	14.0 – B	No
14. McElwain Rd / Linnel Ln	All-Way Stop	13.6 – B	13.8 – B	No
15. Whitewood Rd / Linnel Ln	Signal	16.4 – B	13.4 – B	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	30.5 – C	17.4 – B	No
17. McElwain Rd / Clinton Keith Rd	Signal	29.4 – C	44.6 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	16.8 – B	18.0 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	39.0 – D	18.0 – B	No
20. Whitewood Rd / Clinton Keith Rd	Signal	41.0 – D	49.7 – D	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound;

As shown in **Table 10**, the following five (5) study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast existing plus project buildout conditions:

- Int 1 – Sunset Avenue-Cottonwood Canyon Road / Bundy Canyon Road (p.m. peak hour only);
- Int 2 - Murrieta Road / Scott Road (both a.m. peak hour and p.m. peak hour);
- Int 3 – Haun Road-Zeiders Road / Scott Road (both a.m. peak hour and p.m. peak hour);
- Int 6 - Antelope Road / Scott Road (both a.m. peak hour and p.m. peak hour);
- Int 7 - Zeiders Road / Keller Road (p.m. peak hour only);

As also shown in **Table 10**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to result in a significant traffic impact at the above listed five (5) study intersections for forecast existing plus project buildout conditions.

Forecast Existing Plus Project Buildout Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast existing plus project buildout conditions:

Intersection Mitigation Measure

Int 1 – Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn/through lane and one shared through/right-turn lane.

Intersection Mitigation Measure

Int 2 – Murrieta Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

Intersection Mitigation Measure

Int 3 – Haun Road-Zeiders Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one left-turn lane and one shared left-turn/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

b) Widen the eastbound approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane and one shared through/right-turn lane.

c) Implement right-turn overlap phase at the westbound approach.

Intersection Mitigation Measure

Int 6 – Antelope Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of two left-turn lane, two through lanes and one right-turn lane.

Intersection Mitigation Measure

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen the northbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn/through lane and one right-turn lanes with right-turn overlap phasing.

c) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

d) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

Exhibits 32 and **Exhibit 33** show mitigated forecast existing plus project buildout conditions study intersection geometry.

Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Peak Hour LOS

Table 11 summarizes forecast existing plus project buildout conditions LOS of the significantly impacted study intersections assuming implementation of the identified mitigation measures for forecast existing plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 11
Mitigated Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave-Cottonwood Canyon Rd / Bundy Canyon Rd	Two-Way Stop	20.3 – C	26.3 – D	No
2. Murrieta Rd / Scott Rd	Signal	21.1 – C	34.6 – C	No
3. Haun Rd-Zeiders Rd / Scott Rd	Signal	45.9 – D	39.2 – D	No
6. Antelope Rd / Scott Rd	Signal	45.9 – D	45.3 – D	No
7. Zeiders Rd / Keller Rd	Signal	18.0 – B	23.9 – C	No

Notes: Delay shown in seconds

As shown in **Table 11**, assuming implementation of the identified mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast existing plus project buildout conditions.

9. FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASE 1 CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions at the study intersections.

Forecast year 2023 existing plus ambient growth plus project Phase 1 conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 4**:

- Construction of a new freeway interchange at Keller Road & I-215 freeway;
- Reconstruction of I-215 freeway interchange at Scott Road (Phase 1 improvements only);
- Realignment of Antelope Road and Mapleton Avenue and elimination of the existing Antelope Road / Keller Road intersection (study int. #8 in this report);
- Construction of Clinton Keith Road from Whitewood Road to Trios Valley Road as a four-lane Major roadway; and
- Construction of McElwain Road from Keller Road to "D" Street as a two-lane Collector (refer to Appendix K in this report for on-site analysis).

Conceptual layouts of the proposed I-215/Scott Road and I-215/Keller Road interchange improvements are included in **Appendix B** for reference. Forecast year 2023 existing plus ambient growth plus project Phase 1 conditions does not assume the mitigation measures previously identified for forecast existing plus project buildout conditions.

Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Peak Hour Traffic Volumes

Forecast year 2023 existing plus ambient growth plus project Phase 1 conditions traffic volumes were derived by adding trips forecast to be generated by proposed project Phase 1 after applying an annual growth rate of 1.0 percent per year over a six-year period to existing traffic volumes to account for ambient growth. It should be noted this is a conservative assumption since the growth rate is applied to all movements at the study intersections.

Exhibit 34 and **Exhibit 35** show forecast year 2023 existing plus ambient growth plus project Phase 1 conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Peak Hour Study Intersection Level of Service

Table 12 summarizes forecast year 2023 existing plus ambient growth plus project Phase 1 conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 12
Forecast Year 2023 Existing Plus Ambient Growth
Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	25.8 – D	31.6 – D	No
2. Murrieta Rd / Scott Rd	All-Way Stop	**48.7 – E**	**>50.0 – F**	**Yes**
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	22.6 – C	39.8 – D	No
4. I-215 SB Ramps / Scott Rd	Signal	18.0 – B	18.8 – B	No
5. I-215 NB Ramps / Scott Rd	Signal	4.9 – A	3.7 – A	No
6. Antelope Rd / Scott Rd	Signal	39.8 – D	38.6 – D	No
7. Zeiders Rd / Keller Rd	Two-Way Stop	12.5 – B	16.5 – C	No
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	23.5 – C	24.6 – C	No
10. Menifee Rd / Keller Rd	Signal	15.1 – B	15.4– B	No
11. Antelope Rd / Baxter Rd	Signal	24.2– C	29.3 – C	No
12. Warm Springs Pkwy / Baxter Rd	Signal	35.8 – D	31.1 – C	No
13. Whitewood Rd / Baxter Rd	Signal	15.5 – B	14.2 – B	No
14. McElwain Rd / Linnel Ln	All-Way Stop	12.0 – B	9.9 – A	No
15. Whitewood Rd / Linnel Ln	Signal	16.5 – B	13.5 – B	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	36.8 – D	20.5 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	25.8 – C	33.4 – C	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	17.3 – B	16.8 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	38.9 – D	23.1 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	48.5 – D	33.0 – C	No
21. I-215 SB Ramps / Keller Rd	Roundabout	1.8 – A	1.7 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	2.9 – A	2.8 – A	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound; DNE = Does Not Exist (Int Eliminated)
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in **Table 12**, only one (1) study intersection is forecast to operate at a deficient LOS (LOS F) according to agency performance criteria for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions:

- Int 2 - Murrieta Road / Scott Road (both a.m. and p.m. peak hour);

As also shown in **Table 12**, based on the thresholds of significance, the addition of project Phase 1-generated trips is forecast to result in a significant traffic impact at the above listed one (1) study intersection for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions.

Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions:

Intersection Mitigation Measure #1

Int 2 – Murrieta Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen the eastbound approach from one shared left-turn/through lane to consist of one left-turn lane and one through lane.

Exhibits 36 and Exhibit **37** show mitigated forecast year 2023 existing plus ambient growth plus project Phase 1 conditions study intersection geometry.

Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Peak Hour LOS

Table 13 summarizes forecast year 2023 existing plus ambient growth plus project Phase 1 conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 13
Mitigated Forecast Year 2023 Plus Ambient Growth
Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
2. Murrieta Rd / Scott Rd	Signal	18.5 – B	22.7 – C	No

Notes: Delay shown in seconds

As shown in **Table 13**, assuming implementation of the recommended mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions.

10. FORECAST YEAR 2023 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASE 1 CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2023 existing plus ambient growth plus cumulative projects plus project phase 1 conditions at the study intersections.

Forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions assumes implementation of the mitigation measures previously identified for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions.

Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Peak Hour Traffic Volumes

In accordance with City staff direction, forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions traffic volumes were derived by adding trips forecast to be generated by the following twenty-four (24) cumulative projects within the City of Murrieta and adjacent jurisdictions to forecast year 2023 existing plus ambient growth plus project Phase 1 conditions:

1. Pinnacle Senior Living (City of Murrieta);
2. Mitchell Crossings Apartments (City of Murrieta);
3. Los Alamos Hills Specific Plan (City of Murrieta);
4. The Orchard at Stonecreek (City of Murrieta);
5. The Vineyard Shopping Center (City of Murrieta);
6. Kaiser Medical Center - planned to be constructed in five (5) phases (City of Murrieta);
7. Golden Cities (City of Murrieta);
8. Loma Linda University Medical Center (City of Murrieta);
9. Adobe Springs (City of Murrieta);
10. Murrieta Market Place (City of Murrieta);
11. Health South Rehab Hospital (City of Murrieta);
12. Skilled Nursing Facility (City of Murrieta);
13. Cantalena Specific Plan (City of Menifee);
14. Menifee Commercial Specific Plan (City of Menifee);
15. Commerce Pt. I & II (City of Menifee);
16. The Junction Shopping Center (City of Menifee);
17. Rancho Bonito (City of Menifee);
18. Mill Creek Promenade (City of Menifee);
19. Zeiders Road CUP (City of Menifee);
20. Granite – TR33511 (City of Menifee);
21. Golden Meadows – TR31194 (City of Menifee);
22. Hidden Hills – TR30142 (City of Menifee);
23. Terra Bella – TR28206 (City of Menifee); and
24. Christensen Ranch – TR32628 (City of Menifee).

A location map of the cumulative projects is contained in **Appendix I**.

It should be noted forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions assumes construction of phase 1 of the Kaiser cumulative project. For purposes of this analysis, the remaining cumulative projects listed above are assumed to be constructed by Year 2023.

Exhibit 38 and **Exhibit 39** show forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Peak Hour Study Intersection Level of Service

Table 14 summarizes forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 14
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	**43.4 – E**	**>50.0 – F**	**Yes**
2. Murrieta Rd / Scott Rd	Signal	**66.1 – E**	**>80.0 – F**	**Yes**
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	**>80.0 – F**	**>80.0 – F**	**Yes**
4. I-215 SB Ramps / Scott Rd	Signal	15.3 – B	18.4 – B	No
5. I-215 NB Ramps / Scott Rd	Signal	9.8 – A	17.8 – B	No
6. Antelope Rd / Scott Rd	Signal	40.5 – D	40.3 – D	No
7. Zeiders Rd / Keller Rd	Two-Way Stop	17.5 – C	**40.9 – E**	**Yes**
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	21.7 – C	22.0 – C	No
10. Menifee Rd / Keller Rd	Signal	18.2 – B	15.9 – B	No
11. Antelope Rd / Baxter Rd	Signal	29.4 – C	33.3 – C	No
12. Warm Springs Pkwy / Baxter Rd	Signal	37.6 – D	31.8 – C	No
13. Whitewood Rd / Baxter Rd	Signal	20.1 – C	17.1 – B	No
14. McElwain Rd / Linnel Ln	All-Way Stop	14.5 – B	12.5 – B	No
15. Whitewood Rd / Linnel Ln	Signal	16.6 – B	13.5 – B	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	46.0 – D	27.0 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	27.4 – C	36.5 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	18.0 – B	16.9 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	42.8 – D	27.0 – C	No

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
20. Whitewood Rd / Clinton Keith Rd	Signal	**74.6 – E**	54.1 – D	**Yes**
21. I-215 SB Ramps / Keller Rd	Roundabout	1.8 – A	1.9 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	2.8 – A	3.0 – A	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound; DNE = Does Not Exist (Int. Eliminated)
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in Table 14, the following five (5) study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions:

- Int 1 - Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road (both a.m. peak hour and p.m. peak hour);
- Int 2 - Murrieta Road / Scott Road (both a.m. peak hour and p.m. peak hour);
- Int 3 - Haun Road-Zeiders Road / Scott Road (both a.m. peak hour and p.m. peak hour);
- Int 7 – Zeiders Road / Keller Road (p.m. peak hour only); and
- Int 20 – Whitewood Road / Clinton Keith Road (a.m. peak hour only).

As also shown in Table 14, based on the thresholds of significance, the addition of project Phase 1-generated trips is forecast to result in a significant traffic impact at the above listed five (5) study intersections for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions.

Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions:

Intersection Mitigation Measure #2

Int 1 – Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn/through lane and one shared through/right-turn lane.

b) Widen the southbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

Intersection Mitigation Measure #3

Int 2 – Murrieta Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one shared left-turn/right-turn lane to consist of one left-turn lane and one right-turn lane.

b) Widen the westbound approach from one shared through/right-turn lane to consist of one through lane and one right-turn lane.

Intersection Mitigation Measure #4

Int 3 – Haun Road-Zeiders Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one left-turn lane and one shared through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

b) Widen the eastbound approach from one left-turn lane, one through lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes and one shared through/right-turn lane.

c) Widen the westbound approach from one left-turn lane, two through lane, and one right-turn lane to consist of two left-turn lanes, two through lanes, and two right-turn lanes.

Intersection Mitigation Measure #5

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following:

a) Convert from a two-way stop control to an all-way stop controlled intersection.

b) Widen the northbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn, one through lane and one right-turn lane.

c) Widen westbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

Intersection Mitigation Measure #6

Int 20 – Whitewood Road / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane with overlap phasing.

Exhibits 40 and **Exhibit 41** show mitigated forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions study intersection geometry.

Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Peak Hour LOS

Table 15 summarizes forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 15
Mitigated Forecast Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	25.5 – D	32.4 – D	No
2. Murrieta Rd / Scott Rd	Signal	15.9 – B	27.3 – C	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	32.7 – C	33.4 – C	No
7. Zeiders Rd / Keller Rd	All-Way Stop	10.7 – B	13.0 – B	No
20. Whitewood Rd / Clinton Keith Rd	Signal	48.2 – D	51.8 – D	No

Notes: Delay shown in seconds

As shown in **Table 15**, assuming implementation of the recommended mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions.

11. FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PHASES 1 & 2 CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions at the study intersections.

Forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions assumes the following modifications to the roadway circulation system in addition to the modifications assumed in year 2023 as previously shown in **Exhibit 5**:

- Construction of Zeiders Road between Scott Road and Keller Road as a two-lane Collector roadway.

- Construction of McElwain Road from Keller Road to "C" Street as a four-lane Secondary roadway (refer to Appendix K in this report for the on-site analysis).

Additionally, forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions assumes the mitigation measures previously identified for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions.

Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Peak Hour Traffic Volumes

Forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions traffic volumes were derived by adding trips forecast to be generated by proposed project Phases 1 & 2 after applying an annual growth rate of 1.0 percent per year over an eleven (11) year period to existing traffic volumes to account for ambient growth. It should be noted this is a conservative assumption since the growth rate is applied to all movements at the study intersections.

Exhibit 42 and **Exhibit 43** show forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Peak Hour Study Intersection Level of Service

Table 16 summarizes forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 16
Forecast Year 2028 Existing Plus Ambient Growth
Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	21.6 – C	28.3 – D	No
2. Murrieta Rd / Scott Rd	Signal	24.3 – C	26.4 – C	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	37.7 – D	34.5 – D	No
4. I-215 SB Ramps / Scott Rd	Signal	15.2 – B	13.2 – B	No
5. I-215 NB Ramps / Scott Rd	Signal	4.1 – A	3.3 – A	No
6. Antelope Rd / Scott Rd	Signal	42.1 – D	40.6 – D	No
7. Zeiders Rd / Keller Rd	All-Way Stop	13.0 – B	32.9 – D	No
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	21.2 – C	21.9 – C	No
10. Menifee Rd / Keller Rd	Signal	15.6 – B	16.5 – B	No
11. Antelope Rd / Baxter Rd	Signal	24.2 – C	30.3 – C	No
12. Warm Springs Pkwy / Baxter Rd	Signal	35.8 – D	30.7– C	No
13. Whitewood Rd / Baxter Rd	Signal	15.7 – B	14.4 – B	No
14. McElwain Rd / Linnel Ln	All-Way Stop	12.5 – B	10.1 – B	No

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
15. Whitewood Rd / Linnel Ln	Signal	16.5 – B	13.6 – B	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	43.8 – D	26.2 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	26.0 – C	35.6 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	17.6 – B	17.1 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	44.3 – D	21.2 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	40.1 – D	27.9 – C	No
21. I-215 SB Ramps / Keller Rd	Roundabout	2.0 – A	2.1 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	3.4 – A	4.0 – A	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound; DNE = Does Not Exist (Int. Eliminated)
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in **Table 16**, the following study all intersections are forecast to operate at an acceptable LOS (LOS D or better) according to agency performance criteria for forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions. Therefore, no mitigation is required.

12. FORECAST YEAR 2028 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT PHASES 1 & 2 CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions at the study intersections.

Forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions assumes the same modifications to the roadway circulation system as previously discussed in the Forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions. Forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions assumes implementation of the mitigation measures previously identified for forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions.

Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Peak Hour Traffic Volumes

In accordance with City staff direction, forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions traffic volumes were derived by adding trips forecast to be generated by the previously identified twenty-four (24) cumulative projects within the City of Murrieta and adjacent jurisdictions to forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions.

It should be noted forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions assumes construction of Phases 1 & 2 of the Kaiser cumulative project and buildout of all of the remaining cumulative projects identified in this report.

Exhibit 43 and **Exhibit 47** show forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Peak Hour Study Intersection Level of Service

Table 17 summarizes forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 17
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	32.3 – D	**>50.0 – F***	**Yes**
2. Murrieta Rd / Scott Rd	Signal	17.4 – B	33.9 – C	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	46.2 – D	39.0 – D	No
4. I-215 SB Ramps / Scott Rd	Signal	15.6 – B	18.5 – B	No
5. I-215 NB Ramps / Scott Rd	Signal	9.9 – A	18.8 – B	No
6. Antelope Rd / Scott Rd	Signal	42.4 – D	43.4 – D	No
7. Zeiders Rd / Keller Rd	All-Way Stop	25.4 – D	**>50.0 – F**	**Yes**
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	21.4 – C	21.9 – C	No
10. Menifee Rd / Keller Rd	Signal	19.4 – B	18.2 – B	No
11. Antelope Rd / Baxter Rd	Signal	30.5 – C	34.5 – C	No
12. Warm Springs Pkwy / Baxter Rd	Signal	37.1 – D	32.0 – C	No
13. Whitewood Rd / Baxter Rd	Signal	20.6 – C	18.0 – B	No
14. McElwain Rd / Linnel Ln	All-Way Stop	15.4 – C	12.1 – B	No
15. Whitewood Rd / Linnel Ln	Signal	16.4 – B	14.2 – B	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	45.0 – D	28.4 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	28.5 – C	37.0 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	20.4– C	17.1 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	46.9 – D	27.2 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	54.6 –D	43.0 – D	No
21. I-215 SB Ramps / Keller Rd	Roundabout	2.3 – A	2.7 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	3.4 – A	4.5 – A	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound; DNE = Does Not Exist (Int. Eliminated)
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in **Table 17**, the following two (2) study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions:

- Int 1 – Sunset Ave-Cottonwood Cyn Road / Scott Road (p.m. peak hour only); and
- Int 7 – Zeiders Road / Keller Road (p.m. peak hour only).

As also shown in **Table 17**, based on the thresholds of significance, the addition of project Phases 1 & 2-generated trips is forecast to result in a significant traffic impact at the above listed two (2) study intersections for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions.

Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions:

Intersection Mitigation Measure #7

Int 1 – Sunset Ave–Cottonwood Cyn Rd / Bundy Cyn Rd – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen the eastbound approach from one shared left-turn/through lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

c) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

Intersection Mitigation Measure #8

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen westbound approach from one left-turn lane and one share through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

c) Widen eastbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

d) Widen southbound approach from one shared left-turn/through/right-turn lane to consist of a left-turn lane and one shared through/right-turn lane.

Exhibits 48 and **Exhibit 49** show mitigated forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions study intersection geometry.

Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Peak Hour LOS

Table 18 summarizes forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 18
Mitigated Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Signal	20.6 – B	6.5 – A	No
7. Zeiders Rd / Keller Rd	Signal	23.2 – C	24.8 – C	No

Notes: Delay shown in seconds; SB = Southbound; NB = Northbound.

As shown in **Table 18**, assuming implementation of the recommended mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions.

13. FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2031 existing plus ambient growth plus project buildout conditions at the study intersections.

Forecast year 2031 existing plus ambient growth plus project buildout conditions assumes the following modifications to the roadway circulation system in addition to the roadway network modifications assumed in year 2028 as previously shown in **Exhibit 6**:

- Construction of Cottonwood Canyon Road north of Bundy Canyon Road as a two-lane Collector roadway;
- Elimination of Antelope Road which would cause elimination of the Antelope Road/Baxter Road study intersection (Int. #11); and
- Construction of Warm Springs Parkway from Keller Road to Clinton Keith Road as a four-lane Major roadway which causes the construction of the Warm Springs Parkway / Linnel Lane study intersection (Int. #23) and Warm Springs Parkway / Clinton Keith Road study intersection (Int. #24).

Additionally, forecast year 2031 existing plus ambient growth plus project buildout conditions assumes the mitigation measures previously identified for forecast year 2028 existing plus ambient growth plus cumulative projects plus project phase 1 conditions.

Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Traffic Volumes

Forecast year 2031 existing plus ambient growth plus project buildout conditions traffic volumes are based on the Riverside Transportation Analysis Model (RivTAM).

Exhibit 50 and **Exhibit 51** show forecast year 2031 existing plus ambient growth plus project buildout conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service

Table 19 summarizes forecast year 2031 existing plus ambient growth plus project buildout conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 19
Forecast Year 2031 Existing Plus Ambient Growth
Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Signal	15.9 – B	12.4 – B	No
2. Murrieta Rd / Scott Rd	Signal	53.2 – D	**>80.0 – F***	**Yes**
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	51.3 – D	47.9 – D	No
4. I-215 SB Ramps / Scott Rd	Signal	15.9 – B	19.6 – B	No
5. I-215 NB Ramps / Scott Rd	Signal	5.4 – A	8.9 – A	No
6. Antelope Rd / Scott Rd	Signal	47.8 – D	47.0 – D	No
7. Zeiders Rd / Keller Rd	Signal	19.7 – B	28.2 – C	No
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	22.2 – C	22.2 – C	No
10. Menifee Rd / Keller Rd	Signal	23.7 – C	23.5 – C	No
11. Antelope Rd / Baxter Rd **(DOES NOT EXIST)**	--	--	--	--
12. Warm Springs Pkwy / Baxter Rd	Signal	36.3 – D	35.1 – D	No
13. Whitewood Rd / Baxter Rd	Signal	23.7 – C	18.1 – B	No
14. McElwain Rd / Linnel Ln	All-Way Stop	34.9 –D	**>50.0 – F**	**Yes**
15. Whitewood Rd / Linnel Ln	Signal	21.2 – C	25.8 – C	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	44.4 – D	26.8 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	26.6 – C	36.6 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	20.6 – C	17.3 – B	No

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
19. I-215 NB Ramps / Clinton Keith Rd	Signal	46.9 – D	22.0 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	54.5 – D	40.1 – D	No
21. I-215 SB Ramps / Keller Rd	Roundabout	2.4 – A	2.7 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	3.7 – A	4.4 – A	No
23. Warm Springs Pkwy / Linnel Ln	Signal	25.6 – C	22.0 – C	No
24. Warm Springs Pkwy / Clinton Keith Rd	Signal	16.8 – B	17.4 – B	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound; DNE = Does Not Exist (Int. Eliminated)
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in **Table 19**, the following two (2) study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast year 2031 existing plus ambient growth plus project buildout conditions:

- Int 2 – Murrieta Rd / Scott Rd (p.m. peak hour only); and
- Int 14 – McElwain Road / Linnel Lane (p.m. peak hour only).

As also shown in **Table 19**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to result in a significant traffic impact at the above listed study intersections for forecast year 2031 existing plus ambient growth plus project buildout conditions.

Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast year 2031 existing plus ambient growth plus project buildout conditions:

Intersection Mitigation Measure #9

Int 2 – Scott Road / Murrieta Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the westbound approach from one through lane and one right-turn lane to consist of one through lane and one shared through/right-turn lane.

b) Widen the eastbound approach from one left-turn lane and one through lane to consist of two left-turn lanes and one through lane.

c) Implement right-turn overlap phasing in the southbound approach.

Intersection Mitigation Measure #10

Int 14 – McElwain Road / Linnel Lane – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

Exhibits 52 and **Exhibit 53** show mitigated forecast year 2031 existing plus ambient growth plus project buildout conditions study intersection geometry.

Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Peak Hour LOS

Table 20 summarizes forecast year 2031 existing plus ambient growth plus project buildout conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast year 2031 existing plus ambient growth plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 20
Mitigated Forecast Year 2031 Plus Ambient Growth
Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
2. Murrieta Rd / Scott Rd	Signal	16.3 – B	18.4 – B	No
14. McElwain Rd / Linnel Ln	Signal	10.3 – B	9.6 – A	No

Notes: Delay shown in seconds.

As shown in **Table 20**, assuming implementation of the recommended mitigation measures, the traffic impacts at the significantly impacted study intersection is forecast to be reduced to a level considered less than significant for forecast year 2031 existing plus ambient growth plus project buildout conditions.

14. FORECAST YEAR 2031 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions at the study intersections.

Forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 5**:

- Construction of Cottonwood Canyon Road north of Bundy Canyon Road as a two-lane Collector roadway;
- Elimination of Antelope Road which would cause elimination of the Antelope Road/Baxter Road study intersection (Int. #11);
- Construction of McElwain Road from "D" Street to Linnel Lane as a two-lane Collector for public access as requested by the City; and
- Construction of Warm Springs Parkway from Keller Road to Clinton Keith Road as a four-lane Major roadway which causes the construction of the Warm Springs Parkway /

Linnel Lane study intersection (Int. #23) and Warm Springs Parkway / Clinton Keith Road study intersection (Int. #24).

Forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes implementation of the mitigation measures previously identified for forecast year 2028 existing plus ambient growth plus cumulative projects plus project phase 1 and 2 conditions.

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Traffic Volumes

Forecast year 2031 existing plus ambient growth plus project buildout conditions traffic volumes are based on the Riverside Transportation Analysis Model (RivTAM) and include trips forecast to be generated by the previously identified twenty-four (24) cumulative projects within the City of Murrieta and adjacent jurisdictions to forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions.

It should be noted forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes construction of phases 1, 2, and 3 of the Kaiser cumulative project and buildout of all remaining cumulative projects identified in this study.

Exhibit 54 and **Exhibit 55** show forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service

Table 21 summarizes forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 21
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Signal	16.3 – B	20.2 – C	No
2. Murrieta Rd / Scott Rd	Signal	23.6 – C	34.6 – C	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	**64.6 – E**	**>80.0 – F***	**Yes**
4. I-215 SB Ramps / Scott Rd	Signal	18.9 – B	19.6 – B	No
5. I-215 NB Ramps / Scott Rd	Signal	11.6 – B	33.3 – C	No
6. Antelope Rd / Scott Rd	Signal	48.2 – D	47.9 – D	No
7. Zeiders Rd / Keller Rd	Signal	22.3 – C	32.4 – C	No
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	22.2 – C	22.3 – C	No

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
10. Menifee Rd / Keller Rd	Signal	35.9 – D	34.1 – C	No
11. Antelope Rd / Baxter Rd **(DOES NOT EXIST)**	--	--	--	--
12. Warm Springs Rd / Baxter Rd	Signal	36.6 – D	35.0 – D	No
13. Whitewood Rd / Baxter Rd	Signal	46.0 – D	29.9 – C	No
14. McElwain Rd / Linnel Ln	Signal	11.0 – B	17.5 – B	No
15. Whitewood Rd / Linnel Ln	Signal	21.6 – C	27.1 – C	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	**67.4 – E**	41.1 – D	**Yes**
17. McElwain Rd / Clinton Keith Rd	Signal	30.0 – C	45.8 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	21.8 – C	17.7 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	50.2 – D	38.5 – D	No
20. Whitewood Rd / Clinton Keith Rd	Signal	**>80.0 – F***	**72.4 – E**	**Yes**
21. I-215 SB Ramps / Keller Rd	Roundabout	2.9 – A	3.9 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	4.2 – A	5.4 – A	No
23. Warm Springs Pkwy / Linnel Ln	Signal	27.5 – C	23.9 – C	No
24. Warm Springs Pkwy / Clinton Keith Rd	Signal	17.1 – B	21.5 – C	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound; DNE = Does Not Exist (Int. Eliminated)
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in **Table 21**, the following three (3) study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions:

- Int 3 – Haun Road-Zeiders Road / Scott Road (both a.m. and p.m. peak hour);
- Int 16 – Murrieta Oaks East Avenue / Clinton Keith Road (a.m. peak hour only); and
- Int 20 – Whitewood Road / Clinton Keith Road (both a.m. and p.m. peak hour).

As also shown in **Table 21**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to result in a significant traffic impact at four (4) study intersections for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions.

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the project traffic impacts at the impacted study intersections to a level considered less than significant for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions:

Intersection Mitigation Measure #11 **Int 3 – Haun Road - Zeiders Road / Scott Road** – The project applicant shall make a fair share contribution to implement the following:

a) Widen the northbound approach from one left-turn lane, one through lane, and one right-turn lane to consist of two left-turn lanes, one through lane and one right-turn lane with overlap phasing.

b) Widen the southbound approach from two left-turn lanes and one shared through/right-turn lane to consist of two left-turn lanes, one through lane and one right-turn lane.

c) Widen the westbound approach from two left-turn lanes, two through lanes and two right-turn lanes to consist of two left-turn lanes, three through lanes and two right-turn lanes.

d) Widen the eastbound approach from one left-turn lane, two through lanes and one shared through/right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane.

Intersection Mitigation Measure #12

Int 16 – Murrieta Oaks East Avenue / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one left-turn lane, two through lanes and one right-turn lane to consist of one left-turn lane, two through lanes and one shared through/right-turn lane.

Intersection Mitigation Measure #13

Int 20 – Whitewood Road / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the northbound approach from one left-turn lane, one through lane and one shared through/right-turn lane to consist of two left-turn lanes, one through lane and one shared through/right-turn lane.

Exhibits 56 and **Exhibit 57** show mitigated forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions study intersection geometry.

Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Peak Hour LOS

Table 22 summarizes forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 22
Mitigated Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	54.1 – D	43.9 – D	No
16. Murrieta Oaks East Avenue / Clinton Keith Rd	Signal	45.7 – D	29.5 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	36.1 – D	51.9 – D	No

Notes: Delay shown in seconds.

As shown in **Table 22**, assuming implementation of the recommended mitigation measure, the traffic impact at the significantly impacted study intersection is forecast to be reduced to a level considered less than significant for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions.

15. FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT BUILDOUT CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2035 existing plus ambient growth plus project buildout conditions at the study intersections. Per the City of Murrieta *Traffic Impact Analysis* Preparation *Guide (October 2013),* this section evaluates whether the ultimate circulation system planned for the study area will be adequate to provide an acceptable LOS with the addition of project-generated trips.

Forecast year 2035 existing plus ambient growth plus project buildout conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 6**:

- Construction of I-215 Freeway interchange at Scott Road to its buildout configuration.

Forecast year 2035 existing plus ambient growth plus project buildout conditions does not assume the mitigation measures previously identified for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions.

Instead, in accordance City staff direction, forecast year 2035 existing plus ambient growth plus project buildout conditions assumes the buildout of the roadway circulation system and study intersections per the City of Murrieta General Plan and the City of Menifee General Plan.

It should be noted at minor study intersections not included in the General Plan Circulation Element for the City of Murrieta or the City of Menifee, the analysis assumes existing intersection geometry for forecast year 2035 existing plus ambient growth plus project buildout conditions.

Forecast year 2035 existing plus ambient growth plus project buildout conditions assumes the following three study intersections to be unsignalized:

- Int 1 – Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road;
- Int 7 – Zeiders Road / Keller Road; and
- Int 14 – McElwain Road / Linnel Lane.

Exhibit 58 and **Exhibit 59** show forecast year 2035 conditions study intersection geometry.

Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Traffic Volumes

Forecast year 2035 existing plus ambient growth plus project buildout conditions traffic volumes are based on the Riverside Transportation Analysis Model (RivTAM).

Exhibit 60 and **Exhibit 61** show forecast year 2035 existing plus ambient growth plus project buildout conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service

Table 23 summarizes forecast year 2035 existing plus ambient growth plus project buildout conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 23
Forecast Year 2035 Existing Plus Ambient Growth
Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	**>50.0 – F***	**>50.0 – F***	**Yes**
2. Murrieta Rd / Scott Rd	Signal	17.7 – B	19.3 – B	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	39.8 – D	**>80.0 – F***	**Yes**
4. I-215 SB Ramps / Scott Rd	Signal	13.8 – B	20.8 – C	No
5. I-215 NB Ramps / Scott Rd	Signal	6.1 – A	11.5 – B	No
6. Antelope Rd / Scott Rd	Signal	37.7 – D	37.3 – D	No
7. Zeiders Rd / Keller Rd	Two-Way Stop	**>50.0 – F***	**>50.0 – F***	**Yes**
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	24.4 – C	27.1 – C	No
10. Menifee Rd / Keller Rd	Signal	25.5 – C	25.9 – C	No
11. Antelope Rd / Baxter Rd **(DOES NOT EXIST)**	--	--	--	--
12. Warm Springs Pkwy / Baxter Rd	Signal	32.3 – C	37.9 – D	No
13. Whitewood Rd / Baxter Rd	Signal	37.8 – D	30.1 – C	No
14. McElwain Rd / Linnel Ln	All-Way Stop	**>50.0 – F***	**>50.0 – F***	**Yes**
15. Whitewood Rd / Linnel Ln	Signal	20.0 – B	43.2 – D	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	45.9 – D	32.1 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	34.5 – C	47.4 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	15.0 – B	18.9 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	47.4 – D	21.4 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	51.8 – D	**65.2 – E**	**Yes**
21. I-215 SB Ramps / Keller Rd	Roundabout	2.9 – A	3.6 – A	No

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
22. I-215 NB Ramps / Keller Rd	Roundabout	4.2 – A	3.6 – A	No
23. Warm Springs Pkwy / Linnel Ln	Signal	29.7 – C	24.8 – C	No
24. Warm Springs Pkwy / Clinton Keith Rd	Signal	22.1 – C	27.7 – C	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound;
* = Delay exceeds 80.0 seconds for signalized intersection or 50.0 seconds for unsignalized intersection; Level of Service F per HCM.

As shown in **Table 23**, the following five (5) study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast year 2035 existing plus ambient growth plus project buildout conditions:

- Int 1 – Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road (both a.m. and p.m. peak hour);
- Int 3 – Haun Road – Zeiders Road / Scott Road (p.m. peak hour only);
- Int 7 – Zeiders Road / Keller Road (both a.m. and p.m. peak hour);
- Int 14 – McElwain Road / Linnel Lane (both a.m. and p.m. peak hour);
- Int 20 – Whitewood Road / Clinton Keith Road (p.m. peak hour only).

As also shown in **Table 23**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to result in a significant traffic impact at the above listed five (5) study intersections for forecast year 2035 existing plus ambient growth plus project buildout conditions.

Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast year 2035 existing plus ambient growth plus project buildout conditions:

Intersection Mitigation Measure

Int 1 – Sunset Ave–Cottonwood Cyn Rd / Bundy Cyn Rd – The project applicant shall make a fair share contribution to implement the following (*Identical to Mitigation Measure #8)*:

a) Signalize the intersection.

b) Widen the southbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

c) Widen the eastbound approach from one shared left-turn/through lane and one shared through/right-turn lane to consist of one left-turn

lane, one through lane, and one shared through/right-turn lane.

d) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

Intersection Mitigation Measure

Int 3 – Haun Road - Zeiders Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Add a right-turn overlap phasing in the northbound direction.

b) Widen the westbound approach from two left-turn lanes, three through lanes and one right-turn lane to consist of two left-turn lanes, three through lanes and two right-turn lanes.

Intersection Mitigation Measure

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following (*Identical to mitigation measure #7*):

a) Signalize the intersection.

b) Widen the northbound approach from one shared left-turn/through/right-turn to consist of one left-turn lane, one through lane and one right-turn lane with right-turn overlap phasing.

c) Widen the southbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

d) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

e) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

Intersection Mitigation Measure

Int 14 – McElwain Road / Linnel Lane – The project applicant shall make a fair share contribution to implement the following *(Identical to Mitigation Measure #13)*:

a) Signalize the intersection.

Intersection Mitigation Measure

Int 20 – Whitewood Road / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from two left-turn lanes, one through lane and one shared through/right-turn lane to consist of two left-turn lanes, two through lanes and one right-turn lane with overlap phasing.

Exhibits 62 and **Exhibit 63** show mitigated forecast year 2035 existing plus ambient growth plus project buildout conditions study intersection geometry.

It is important to note that the mitigation measures identified in this scenario are not needed in addition to those identified in the Project Phasing Analysis.

Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Peak Hour LOS

Table 24 summarizes forecast year 2035 existing plus ambient growth plus project buildout conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast year 2035 existing plus ambient growth plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix C**.

Table 24
Mitigated Forecast Year 2035 Plus Ambient Growth
Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Signal	12.1 – B	12.1 – B	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	37.8 – D	50.5 – D	No
7. Zeiders Rd / Keller Rd	Signal	20.6 – C	38.2 – D	No
14. McElwain Rd / Linnel Ln	Signal	15.8 – B	14.7 – B	No
20. Whitewood Rd / Clinton Keith Rd	Signal	42.7 – D	51.2 – D	No

Notes: Delay shown in seconds.

As shown in **Table 24**, assuming implementation of the recommended mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2035 existing plus ambient growth plus project buildout conditions.

16. FORECAST YEAR 2035 EXISTING PLUS AMBIENT GROWTH PLUS CUMULATIVE PROJECTS PLUS PROJECT BUILDOUT CONDITIONS

This section analyzes the potential traffic impacts for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions at the study intersections. Per the City of Murrieta *Traffic Impact Analysis Preparation Guide (October 2013),* this section evaluates whether the ultimate circulation system planned for the study area will be adequate to provide an acceptable LOS with the addition of project-generated trips.

Forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 6**:

- Construction of I-215 Freeway interchange at Scott Road to its buildout configuration.

Forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the buildout of the roadway circulation system and study intersections per the City of Murrieta General Plan and the City of Menifee General Plan and also assumes the mitigation measures previously identified for forecast year 2035 existing plus ambient growth plus project buildout conditions.

Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Traffic Volumes

Forecast year 2035 existing plus ambient growth plus project buildout conditions traffic volumes are based on the Riverside Transportation Analysis Model (RivTAM) which include trips forecast to be generated by the previously identified twenty-four (24) cumulative projects within the City of Murrieta and adjacent jurisdictions to forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions.

It should be noted forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes full construction and buildout of the Kaiser cumulative project.

Exhibit 64 and **Exhibit 65** show forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions a.m. peak hour and p.m. peak hour volumes at the study intersections.

Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Intersection Level of Service

Table 25 summarizes forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions a.m. and p.m. peak hour LOS of the study intersections; detailed analysis sheets are contained in **Appendix C**.

Table 25
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Signal	12.1 – B	12.5 – B	No
2. Murrieta Rd / Scott Rd	Signal	24.3 – C	19.4 – B	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	39.6 – D	50.5 – D	No
4. I-215 SB Ramps / Scott Rd	Signal	13.9 – B	21.1 – C	No
5. I-215 NB Ramps / Scott Rd	Signal	6.1 – A	12.3 – B	No
6. Antelope Rd / Scott Rd	Signal	43.4 – D	37.4 – D	No
7. Zeiders Rd / Keller Rd	Signal	21.9 – C	38.5 – D	No

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
8. Antelope Rd / Keller Rd **(DOES NOT EXIST)**	--	--	--	--
9. Mapleton Ave / Keller Rd	Signal	25.1 – C	28.9 – C	No
10. Menifee Rd / Keller Rd	Signal	28.3 – C	26.3 – C	No
11. Antelope Rd / Baxter Rd **(DOES NOT EXIST)**	--	--	--	--
12. Warm Springs Rd / Baxter Rd	Signal	32.3 – C	38.9 – D	No
13. Whitewood Rd / Baxter Rd	Signal	39.9 – D	33.3 – C	No
14. McElwain Rd / Linnel Ln	Signal	15.9 – B	14.8 – B	No
15. Whitewood Rd / Linnel Ln	Signal	20.4 – C	44.1 – D	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	46.0 – D	32.7 – C	No
17. McElwain Rd / Clinton Keith Rd	Signal	34.7 – C	48.3 – D	No
18. I-215 SB Ramps / Clinton Keith Rd	Signal	15.0 – B	19.4 – B	No
19. I-215 NB Ramps / Clinton Keith Rd	Signal	49.7 – D	24.9 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	43.0 – D	51.2 – D	No
21. I-215 SB Ramps / Keller Rd	Roundabout	2.9 – A	3.8 – A	No
22. I-215 NB Ramps / Keller Rd	Roundabout	4.4 – A	5.5 – A	No
23. Warm Springs Rd / Linnel Ln	Signal	30.5 – C	26.1 – C	No
24. Warm Springs Rd / Clinton Keith Rd	Signal	22.6 – C	30.6 – C	No

Notes: Deficient operation shown in **bold**;
Delay shown in seconds; SB = Southbound; NB = Northbound;

As shown in **Table 25**, no study intersections are forecast to operate at a deficient LOS (LOS E or F) according to agency performance criteria for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions.

As also shown in **Table 25**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to result in no significant traffic impacts at any of the above listed study intersections for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions.

Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Mitigation Measures

There are no impacted intersections identified, no mitigation measures are required at any of the study intersections for the forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions.

Exhibits 66 and **Exhibit 67** show mitigated forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions study intersection geometry.

It is important to note that there are no mitigation measures identified in this scenario since mitigation needs were previously identified in the forecast year 2035 existing plus ambient growth plus project buildout conditions.

17. TRAFFIC SIGNAL WARRANT ANALYSIS

For each analysis scenario, existing unsignalized study intersections have been evaluated for signalization based on the peak hour volume warrant "Warrant #3" in the California Manual on Uniform Traffic Control Devices (CA MUTCD), 2014 Edition.

Table 26 Summarizes the results of the MUTCD signal warrant analysis at the unsignalized study intersections for all analysis scenarios evaluated as part of this report; detailed CA MUTCD signal warrant analysis sheets are contained in **Appendix E**.

Table 26
MUTCD Peak Hour Signal Warrant Analysis Summary
(Proposed Project)

Unsignalized Study Intersection	Analysis Scenario Signal Warrant Met?																			
	Existing Conditions		Forecast Existing Plus Project Buildout Conditions		Forecast Year 2023 Plus Ambient Growth Plus Project Phase 1 Conditions		Forecast Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions		Forecast Year 2028 Plus Ambient Growth Plus Project Phases 1 & 2 Conditions		Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions		Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions		Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions		Forecast Year 2035 Plus Ambient Growth Plus Project Buildout Conditions		Forecast Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1. Sunset Ave-Cottonwood Cyn Rd / Bundy Cyn Rd	No	No	No	No	No	No	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2. Murrieta Rd / Scott Rd	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
7. Zeiders Rd / Keller Rd	No	No	No	**Yes**	No	No	No	No	**Yes**	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**
9. Mapleton Ave / Keller Rd	No	No	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
14. McElwain Rd / Linnel Ln	No	No	No	No	No	No	**Yes**	No	No	No	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
23. Warm Springs Rd / Linnel Ln	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
24. Warm Springs Rd / Clinton Keith Rd	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes: N/A = Not Applicable.

18. ROADWAY SEGMENT ANALYSIS

This section evaluates the potential forecast traffic impact of project-generated trips at the following study roadway segments:

1. Keller Road from Howard Way to Zeiders Road-McElwain Road;
2. Keller Road from Zeiders Road-McElwain Road to I-215 SB Ramps;
3. Keller Road from I-215 NB Ramps to Antelope Road or Mapleton Avenue;
4. Keller Road from Mapleton Avenue to Whitewood Road-Menifee Road;
5. Zeiders Road from Keller Road to Scott Road;
6. McElwain Road from Keller Road to Project Access;
7. McElwain Road from Project Access to Linnel Lane;
8. McElwain Road from Linnel Lane to Clinton Keith Road;
9. Antelope Road from Keller Road to Mapleton Avenue;
10. Antelope Road from Mapleton Avenue to Scott Road;
11. Scott Road from Howard Way to Haun Road-Zeiders Road;
12. Scott Road from Haun Road-Zeiders Road to I-215 SB Ramps;
13. Scott Road from I-215 NB Ramps to Antelope Road; and
14. Clinton Keith Road from I-215 NB Ramps to Whitewood Road;

Per the City of Murrieta General Plan Circulation Element, McElwain Road north of Linnel Lane is classified as a four-lane Secondary roadway with LOS E capacity of 25,900 ADT. As part of this analysis, reduction in classification of McElwain Road to a two-lane Collector (LOS E capacity of 13,000 ADT) is evaluated to determine if adequate capacity will be provided to serve the forecast year 2035 General Plan traffic volumes on McElwain Road from the project access to Linnel Lane.

The roadway segment analysis presented in this report is based on the City of Murrieta roadway segment classifications and capacities shown in **Table 27**.

Table 27
City of Murrieta Daily Roadway Capacity Values

Facility	No. of Lanes	Maximum Two-Way Volume ADT (LOS E)
Freeway	4	76,500
Freeway	6	117,500
Freeway	8	160,500
Freeway	10	200,600
Expressway	4	40,900
Expressway	6	61,300
Multi-Modal Corridor	4	35,900
Multi-Modal Corridor	6	53,900
Augmented Urban Arterial	8	71,800

Facility	No. of Lanes	Maximum Two-Way Volume ADT (LOS E)
Urban Arterial	6	53,900
Arterial	4	35,900
Arterial	6	53,900
Major	4	34,100
Secondary	4	25,900
Collector	2	13,000

Source: City of Murrieta General Plan.

Roadway Segment Study Area Forecast ADT Trip Assignment of Proposed Project

Table 28 summarizes the roadway segment study area forecast ADT trip assignment of the proposed project for the analysis scenarios evaluated in this report.

Table 28
Roadway Segment Study Area Forecast ADT Trip Assignment of Proposed Project

Study Roadway Segment	Forecast Existing Plus Project Buildout Conditions	Forecast Year 2023 Conditions	Forecast Year 2028 Conditions	Forecast Year 2031 Conditions	Forecast Year 2035 Conditions
Keller Road					
1. Howard Way to Zeiders Road	0	0	0	0	0
2. Zeiders Road-McElwain Road to I-215 SB Ramps	6,669	2,856	9,976	8,128	8,128
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	6,669	428	2,034	3,186	3,186
4. Mapleton Avenue to Whitewood Road/Menifee Road	3,334	286	1,338	2,266	2,266
Zeiders Road					
5. Keller Road to Scott Road	4,555	0	1,810	4,874	4,874
McElwain Road					
6. Keller Road to "J-J" Street	11,223	2,856	5,324	13,345	13,345
7. "J-J" Street to "D" Street	11,223	2,142	10,170	13,345	13,345
8. "D" Street to Linnel Lane	5,885	Not Constructed	5,324	3,764	3,764
9. Linnel Lane to Clinton Keith Road	5,608	29	171	620	620
Antelope Road					
10. Keller Road to Mapleton Ave.	3,334	Street Vacated			
11. Mapleton Avenue to Scott Road	2,544	143	696	749	749
Scott Road					
12. Howard Way to Haun Road/Zeiders Road	1,604	286	1,125	2,566	2,566
13. Haun Road/Zeiders Road to I-215 SB Ramps	1,947	400	53	278	278
14. I-215 NB Ramps to Antelope Road	1,775	29	278	278	278
Clinton Keith Road					
15. I-215 NB Ramps to Whitewood Road	0	200	878	106	106

Roadway Segment Study Area Forecast ADT Trip Assignment of Cumulative Projects

Table 29 summarizes the roadway segment study area forecast ADT trip assignment of the cumulative projects for the analysis scenarios evaluated in this report.

Table 29
Roadway Segment Study Area Forecast ADT Trip Assignment of Cumulative Projects

Study Roadway Segment	Forecast Year 2023 Conditions	Forecast Year 2028 Conditions	Forecast Year 2031 Conditions	Forecast Year 2035 Conditions
Keller Road				
1. Howard Way to Zeiders Road	451	538	613	722
2. Zeiders Road-McElwain Road to I-215 SB Ramps	1,931	2,498	2,986	3,691
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	4,433	6,877	8,791	11,558
4. Mapleton Avenue to Whitewood Road/Menifee Road	3,091	4,008	4,421	5,018
Zeiders Road				
5. Keller Road to Scott Road	3,413	3,893	4,306	4,903
McElwain Road				
6. Keller Road to "J-J" Street	875	875	875	875
7. "J-J" Street to "D" Street	875	875	875	875
8. "D" Street to Linnel Lane	Not Constructed		875	875
9. Linnel Lane to Clinton Keith Road	2,271	2,271	2,271	2,271
Antelope Road				
10. Keller Road to Mapleton Ave.	1,054	Street Vacated		
11. Mapleton Avenue to Scott Road	2,716	3,240	3,615	4,158
Scott Road				
12. Howard Way to Haun Road/Zeiders Road	10,770	11,207	11,582	12,125
13. Haun Road/Zeiders Road to I-215 SB Ramps	25,244	25,681	25,756	25,865
14. I-215 NB Ramps to Antelope Road	12,669	13,106	13,181	13,290
Clinton Keith Road				
15. I-215 NB Ramps to Whitewood Road	14,763	15,200	15,575	16,118

Existing Conditions Study Roadway Segment Analysis

Table 30 summarizes existing conditions analysis of the study roadway segments.

Table 30
Existing Conditions
Study Roadway Segment LOS

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	290	0.02	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Collector	2	13,000	1,100	0.08	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Collector	2	13,000	3,160	0.24	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Collector	2	13,000	2,910	0.22	A
Zeiders Road						
5. Keller Road to Scott Road	Collector	2	13,000	920	0.07	A
McElwain Road						
6. Keller Road to "J-J" Street	N/A	N/A	N/A	N/A	N/A	N/A
7. "J-J" Street to "D" Street	N/A	N/A	N/A	N/A	N/A	N/A
8. "D" Street to Linnel Lane	N/A	N/A	N/A	N/A	N/A	N/A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	15,020	0.58	A
Antelope Road						
10. Scott Road to Mapleton Avenue	Collector	2	13,000	8,110	0.62	B
11. Mapleton Avenue to Keller Road	Collector	2	13,000	12,300	**0.95**	**E**
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Collector	2	13,000	14,920	**1.15**	**F**
13. Haun Road/Zeiders Road to I-215 SB Ramps	Collector	2D	18,000	25,700	**1.43**	**F**
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	40,030	**1.12**	**F**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	13,850	0.26	A

Notes: V/C = Volume-to-capacity ratio. Deficient operation shown in **bold**.
N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

As shown in **Table 30**, the study roadway segments are currently operating at an acceptable LOS (LOS C or better) for existing conditions according to applicable performance criteria except for the following four (4) study roadway segments that are forecast to operate at a deficient LOS (LOS D or worse):

- Antelope Road from Mapleton Avenue to Keller Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road;
- Scott Road from Haun Road/Zeiders Road to I-215 SB Ramps; and
- Scott Road from I-215 NB Ramps to Antelope Road.

Forecast Existing Plus Project Buildout Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impact of the addition of trips forecast to be generated by the proposed project buildout to existing conditions traffic volumes at the study roadway segments.

Table 31 summarizes forecast existing plus project buildout conditions analysis of the study roadway segments.

Table 31
Forecast Existing Plus Project Buildout Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	290	0.02	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Collector	2	13,000	7,770	0.60	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Collector	2	13,000	9,830	0.76	C
4. Mapleton Avenue to Whitewood Road/Menifee Road	Collector	2	13,000	6,240	0.48	A
Zeiders Road						
5. North of Keller Road	Collector	2	13,000	5,480	0.42	A
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	11,220	0.43	A
7. "J-J" Street to "D" Street	Collector	3	19,500	11,220	0.58	A
8. "D" Street to Linnel Lane	Collector	2	13,000	5,890	0.45	A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	20,630	0.80	C
Antelope Road						
10. Scott Road to Mapleton Avenue	Collector	2	13,000	11,440	**0.88**	**D**
11. Mapleton Avenue to Keller Road	Collector	2	13,000	14,840	**1.14**	**F**
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Collector	2	13,000	16,520	**1.27**	**F**
13. Haun Road/Zeiders Road to I-215 SB Ramps	Collector	2D	18,000	27,650	**2.13**	**F**
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	41,810	**1.16**	**F**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	13,850	0.26	A

Notes: V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.
N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

As shown in **Table 31**, the following five (5) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast existing plus project buildout conditions:

- Antelope Road from Scott Road to Mapleton Avenue;
- Antelope Road from Mapleton Avenue to Keller Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road;
- Scott Road from Haun Road/Zeiders Road to I-215 SB Ramps; and
- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the project buildout conditions result in a significant impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 32**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to not result in a significant traffic impact at any of the roadway segments. Therefore, no mitigation measures are required for forecast existing plus project buildout conditions.

Table 32
Forecast Existing Plus Project Buildout Conditions
Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Antelope Road										
10. Keller Road to Mapleton Avenue	Collector	NB: 1	1,600	288	575	0.18	0.36	A	A	No
		SB: 1	1,600	438	349	.027	0.22	A	A	
11. Mapleton Avenue to Keller Road	Collector	NB: 1	1,600	641	935	0.40	0.58	A	A	No
		SB: 1	1,600	499	655	0.31	0.41	A	A	
Scott Road										
12. Howard Way to Haun Road/Zeiders Road	Collector	EB: 1	1,600	541	600	0.34	0.38	A	A	No
		WB: 1	1,600	506	659	0.362	0.41	A	A	
13. Haun Road/Zeiders Road to I-215 SB Ramps	Collector	EB: 1	1,600	1,038	938	0.65	0.59	B	A	No
		WB: 1	1,600	1,021	1,124	0.64	0.70	B	C	
14. I-215 NB Ramps to Antelope Road	Collector	EB: 1	1,600	1,160	1,505	0.36	0.47	A	A	No
		WB: 1	1,600	1,449	255	0.45	0.39	A	A	

Notes: VPH = Vehicles per hour
V/C = Volume-to-capacity ratio;

Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions at the study roadway segments. Forecast year 2023 existing plus ambient growth plus project Phase 1 conditions assumes the same study area and roadway segment geometry as existing conditions with the exception of:

- Planned interchange improvements at I-215/Keller Road assumed to be completed; and
- Planned Phase 1 improvements at I-215/Scott Road assumed to be completed.

The planned Caltrans improvements at the I-215/Keller Road interchange provides:

- A single lane eastbound that widens into two travel lanes entering the planned roundabout at the southbound freeway ramps; one through lane and one right-turn lane; and
- Two lanes exiting the interchange composed of one bypass lane and one lane exiting the roundabout at the southbound freeway ramps.

For purposes of this analysis and to be consistent with Caltrans design, the Keller Road segment between Zeiders Road and the I-215 southbound ramps assumes two westbound lanes and one eastbound lane, effectively providing half the capacity of a four-lane Major in the westbound direction and half the capacity of a two-lane Collector in the eastbound direction.

Table 33 summarizes forecast year 2023 existing plus ambient growth plus project phase 1 conditions analysis of the study roadway segments.

Table 33
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	630	0.05	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	EB: Collector	1	6,500	2,170	0.33	A
	WB: Major	2	17,050	2,170	0.13	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	14,380	0.27	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	13,970	0.41	A
Zeiders Road						
5. Keller Road to Scott Road	Collector	2	13,000	980	0.08	A
McElwain Road						
6. Keller Road to "J-J" Street	Collector	2	13,000	2,860	0.22	A
7. "J-J" Street to "D" Street	Collector	2	13,000	1,000	0.08	A
8. "D" Street to Linnel Lane	N/A	N/A	N/A	N/A	N/A	N/A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	15,950	0.62	B
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Collector	2	13,000	13,180	**1.01**	**F**
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Collector	2	13,000	15,790	**1.21**	**F**
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	4	35,900	27,320	0.76	C
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	31,860	**0.89**	**D**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	14,880	0.28	A

Notes: V/C = Volume-to-capacity ratio. Deficient operation shown in **bold**.
N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

As shown in **Table 33**, the following three (3) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast existing plus project Phase 1 conditions:

- Antelope Road from Scott Road to Keller Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road; and

- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the 2023 existing plus ambient plus project Phase 1 conditions result in a significant impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 34**, based on the thresholds of significance, the addition of project Phase 1 does not significantly impact any of the roadway segments and no mitigation is required.

Table 34
Forecast Year 2023 Existing Plus Ambient Growth Project Phase 1 Conditions
Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Antelope Road										
11. Scott Road to Keller Road	Collector	NB: 1	1,600	570	798	0.36	0.50	A	A	No
		SB: 1	1,600	486	545	0.30	0.34	A	A	
Scott Road										
12. Howard Way to Haun Road/Zeiders Road	Collector	NB: 1	1,600	552	568	0.35	0.35	A	A	No
		SB: 1	1,600	498	620	0.31	0.39	A	A	
14. I-215 NB Ramps to Antelope Road	Arterial	NB: 2	3,200	1,137	1,314	0.36	0.41	A	A	No
		SB: 2	3,200	1,340	1,154	0.42	0.36	A	A	

Notes: VPH = Vehicles per hour

Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions at the study roadway segments.

Table 35 summarizes forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions analysis of the study roadway segments.

Table 35
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects
Plus Project Phase 1 Conditions Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	1,080	0.08	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	EB: Collector	1	6,500	6,270	0.48	A
	WB: Major	2	17,050	3,135	0.18	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	18,810	0.35	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	17,060	0.50	A

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Zeiders Road						
5. Keller Road to Scott Road	Collector	2	13,000	4,390	0.34	A
McElwain Road						
6. Keller Road to "J-J" Street	Collector	2	13,000	2,860	0.22	A
7. "J-J" Street to "D" Street	Collector	2	13,000	1,000	0.08	A
8. "D" Street to Linnel Lane	N/A	N/A	N/A	N/A	N/A	N/A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	18,220	0.70	C
Antelope Road						
9. Scott Road to Mapleton Avenue	Street Vacated					
10. Scott Road to Keller Road	Collector	2	13,000	15,900	**1.22**	**F**
Scott Road						
11. Howard Way to Haun Road/Zeiders Road	Collector	2	13,000	26,560	**2.04**	**F**
12. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	4	35,900	52,560	**1.46**	**F**
13. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	44,530	**1.24**	**F**
Clinton Keith Road						
14. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	29,640	0.55	A

Notes: V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.
N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

As shown in **Table 35**, the following four (4) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast 2023 existing plus ambient plus cumulative plus project Phase 1 conditions:

- Antelope Road from Scott Road to Keller Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road;
- Scott Road from Haun Road/Zeiders Road to I-215 SB Ramps; and
- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the 2023 cumulative plus project Phase 1 conditions result in a significant impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 36**, based on the thresholds of significance, the addition of project does not significantly impact any of the roadway segments and no mitigation is required.

Table 36
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions
Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Antelope Road										
11. Scott Road to Keller Road	Collector	NB: 1	1,600	651	966	0.41	0.41	A	B	No
		SB: 1	1,600	621	671	0.39	0.42	A	A	
Scott Road										
12. Howard Way to Haun Road/Zeiders Road	Collector	NB: 1	1,600	923	1,029	0.58	0.64	A	B	No
		SB: 1	1,600	826	1,008	0.52	0.63	A	B	
14. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	NB: 2	1,600	1,686	2,224	0.53	0.70	A	B	No
		SB: 2	1,600	1,894	2,233	0.59	0.70	A	B	
15. I-215 NB Ramps to Antelope Road	Arterial	NB: 2	1,600	1,391	1,981	0.44	0.64	A	B	No
		SB: 2	1,600	1,842	1,623	0.58	0.51	A	A	

Notes: VPH = Vehicles per hour
V/C = Volume-to-capacity ratio;

Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions on the study roadway segments.

Forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 4**:

- Construction of Zeiders Road between Scott Road and Keller Road as an "assumed" two-lane Collector roadway.

Table 37 summarizes forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions analysis of the study roadway segments.

Table 37
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	650	0.05	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	EB: Collector	1	6,500	5,765	**0.89**	**D**
	WB: Major	2	17,050	5,765	0.34	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	16,640	0.31	A

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	15,670	0.46	A
Zeiders Road						
5. Keller Road to Scott Road	Collector	2	13,000	2,830	0.22	A
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	11,790	0.46	A
7. "J-J" Street to "D" Street	Collector	2	13,000	10,170	0.78	C
8. "D" Street to Linnel Lane	N/A	N/A	N/A	N/A	N/A	N/A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	16,840	0.65	B
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Collector	2	13,000	14,350	**1.10**	**F**
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Collector	2	13,000	17,360	**1.34**	**F**
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	4	35,900	28,240	0.79	C
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	33,610	**0.94**	**E**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	16,250	0.30	A

Notes: V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.

N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

As shown in **Table 37**, the following four (4) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast 2028 existing plus ambient plus project Phases 1 & 2 conditions:

- Keller Road from Zeiders Road-McElwain Road to I-215 SB Ramps;
- Antelope Road from Scott Road to Keller Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road; and
- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the 2028 existing plus ambient plus project Phases 1 & 2 conditions result in a significant impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 38**, based on the thresholds of significance, the addition of project-generated trips is forecast to result in no significant traffic impacts at any of the study roadway segments.

Table 38
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions
Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Keller Road										
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Collector	EB: 1	1,600	374	407	0.23	0.25	A	A	No
		WB: 2	1,600	296	596	0.09	0.19	A	A	
Antelope Road / Mapleton Avenue										
11. Scott Road to Keller Road	Collector	NB: 1	1,600	630	868	0.39	0.54	A	A	No
		SB: 1	1,600	500	575	0.31	0.36	A	A	
Scott Road										
12. Howard Way to Haun Road/Zeiders Road	Collector	NB: 1	1,600	591	637	0.37	0.40	A	A	No
		SB: 1	1,600	542	676	0.34	0.42	A	A	
14. I-215 NB Ramps to Antelope Road	Arterial	NB: 1	1,600	1,202	1,454	0.38	0.45	A	A	No
		SB: 1	1,600	1,487	1,292	0.46	0.40	A	A	

Notes: VPH = Vehicles per hour

V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.

N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

Based on a request from the City and to satisfy the level of service policy on this segment, the eastbound direction of Keller Road from Zeiders Road to I-215 SB ramps should be improved from one lane to two lanes. The improvement from one to two lanes in the eastbound direction is included as project mitigation and should be built to the City's Major roadway classification standards. **Table 39** shows the Keller Road segment level of service with the assumed lane improvement in the eastbound direction. As shown in **Table 39**, assuming the lane improvement in the eastbound direction, the resulting level of service improves from a deficient LOS D to an acceptable level of service A.

Table 39
Mitigated Forecast Year 2028 Existing Plus Ambient Growth
Plus Project Phases 1 & 2 Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
2. Zeiders Road-McElwain Road to I-215 SB Ramps	EB: Major	2	17,050	5,765	0.34	A
	WB: Major	2	17,050	5,765	0.34	A

Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions at the study roadway segments.

Forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 4**:

- Construction of Zeiders Road between Scott Road and Keller Road as an assumed two-lane Collector roadway.

Table 40 summarizes forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions analysis of the study roadway segments.

Table 40
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	1,190	0.09	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Major	4	34,100	14,030	0.41	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	23,520	0.44	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	19,680	0.58	A
Zeiders Road						
5. Keller Road to Scott Road	Collector	2	13,000	6,720	0.52	A
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	12,670	0.49	A
7. "J-J" Street to "D" Street	Collector	2	13,000	10,170	0.78	C
8. "D" Street to Linnel Lane	N/A	N/A	N/A	N/A	N/A	N/A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	19,110	0.74	C
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Collector	2	13,000	17,590	**1.35**	**F**
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Collector	2	13,000	28,570	**2.20**	**F**
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	4	35,900	53,920	**1.50**	**F**
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	46,720	**1.30**	**F**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	31,450	0.58	A

Notes: V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.
N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

As shown in **Table 40**, the following four (4) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast 2028 existing plus ambient plus cumulative plus project Phases 1 & 2 conditions:

- Antelope Road from Scott Road to Keller Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road;
- Scott Road from Haun Road/Zeiders Road to I-215 SB Ramps; and
- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the forecast 2028 existing plus ambient plus cumulative plus project Phases 1 & 2 conditions result in a significant project impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 41**, based on the thresholds of significance, the addition of project does not significantly impact any of the roadway segments and no mitigation is required.

Table 41
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions
Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Antelope Road / Mapleton Avenue										
11. Scott Road to Keller Road	Collector	NB: 1	1,600	710	1,143	0.44	0.74	A	C	No
		SB: 1	1,600	877	710	0.42	0.44	A	A	
Scott Road										
12. Howard Way to Haun Road/Zeiders Road	Collector	EB: 1	1,600	988	1,112	0.62	0.70	B	B	No
		WB: 1	1,600	877	1,089	0.55	0.68	A	B	
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	EB: 1	1,600	1,732	2,246	0.54	0.70	A	C	No
		WB: 1	1,600	1,684	2,083	0.53	0.65	A	C	
14. I-215 NB Ramps to Antelope Road	Arterial	EB: 1	1,600	1,537	2,204	0.48	0.69	A	B	No
		WB: 1	1,600	1,973	1,687	0.62	0.53	B	A	

Notes: VPH = Vehicles per hour
V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.
N/A = Not applicable since roadway segment has not yet been constructed and does not exist for this scenario.

Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2031 existing plus ambient growth plus project buildout conditions at the study roadway segments.

Forecast year 2031 existing plus ambient growth plus project buildout conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 5**:

- Construction of Cottonwood Canyon Road north of Bundy Canyon Road as a two-lane Collector roadway;
- Elimination of Antelope Road south of Keller Road;

- Construction of McElwain Road from southern project boundary to Linnel Lane as a two-lane Collector; and
- Construction of Warm Springs Parkway from Keller Road to Clinton Keith Road as a four-lane Major roadway.

Table 42 summarizes forecast year 2031 existing plus ambient growth plus project buildout conditions analysis of the study roadway segments.

Table 42
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	3,710	0.29	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Major	4	34,100	13,860	0.41	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	15,380	0.29	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	17,200	0.22	A
Zeiders Road						
5. North of Keller Road	Collector	2	13,000	7,920	0.61	B
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	13,350	0.52	A
7. "J-J" Street to "D" Street	Secondary	4	25,900	13,350	0.51	A
8. "D" Street to Linnel Lane	Mod Collector	3*	19,500	3,760	0.19	A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	19,230	0.74	C
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Major	4	34,100	16,110	0.47	A
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Arterial	4	35,900	19,240	0.54	A
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	4	35,900	29,240	**0.81**	**D**
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	34,510	**0.96**	**E**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	16,130	0.30	A

Notes: VPH = Vehicles per hour

V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.

*McElwain Road, from "D" Street to Linnel Lane will be constructed with 1 northbound lane & 2 southbound lanes, or 2 northbound lanes and 1 southbound lane, depending on the grade of the road, to meet the Highway Design Manual climbing lane requirements.

As shown in **Table 42**, the following two (2) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast 2031 existing plus ambient plus project buildout conditions:

- Scott Road from Haun Road/Zeiders Road to I-215 SB Ramps; and
- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the forecast 2031 existing plus ambient plus project buildout conditions result in a significant project impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 43**, based on the thresholds of significance, the addition of project does not significantly impact any of the roadway segments and no mitigation is required.

Table 43
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Scott Road										
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	EB: 2	3,200	1,088	951	0.34	0.30	A	A	No
		WB: 2	3,200	1,123	1.152	0.35	0.36	A	A	
14. I-215 NB Ramps to Antelope Road	Arterial	EB: 2	3,200	1,202	1,454	0.38	0.45	A	A	No
		WB: 2	3,200	1,487	1,295	0.46	0.40	A	A	

Notes: VPH = Vehicles per hour
V/C = Volume-to-capacity ratio

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions at the study roadway segments.

Forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 5**:

- Construction of Cottonwood Canyon Road north of Bundy Canyon Road as a two-lane Collector roadway;
- Elimination of Antelope Road south of Keller Road;
- Construction of McElwain Road from "D" Street to Linnel Lane as a two-lane Collector for public access as requested by the City; and
- Construction of Warm Springs Parkway from Keller Road to Clinton Keith Road as a four-lane Major roadway.

Additionally, forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the mitigation measures previously identified for forecast year 2031 existing plus ambient growth plus project buildout conditions.

Table 44 summarizes forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions analysis of the study roadway segments.

Table 44
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	4,430	0.34	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Major	4	34,100	17,550	0.51	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	26,940	0.50	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	22,220	0.65	B
Zeiders Road						
5. Keller Road to Scott Road	Collector	2	13,000	12,820	**0.99**	**E**
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	14,230	0.55	A
7. "J-J" Street to "D" Street	Secondary	4	25,900	14,230	0.55	A
8. "D" Street to Linnel Lane	Mod Collector	3*	19,500	4,640	0.24	A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	21,500	**0.83**	**D**
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Major	4	34,100	20,270	0.59	A
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Arterial	4	35,900	31,370	**0.87**	**D**
13. Haun Road/Zeiders Road to I-215 SB Ramps	Arterial	4	35,900	55,100	**1.53**	**F**
14. I-215 NB Ramps to Antelope Road	Arterial	4	35,900	47,800	**1.33**	**F**
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	32,250	0.60	A

Notes: VPH = Vehicles per hour

V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.

*McElwain Road, from "D" Street to Linnel Lane will be constructed with 1 northbound lane & 2 southbound lanes, or 2 northbound lanes and 1 southbound lane, depending on the grade of the road, to meet the Highway Design Manual climbing lane requirements.

As shown in **Table 44**, the following five (5) study roadway segments are forecast to operate at a deficient LOS (LOS D or worse) according to agency performance criteria for forecast 2031 existing plus ambient plus cumulative plus project buildout conditions:

- Zeiders Road from Keller Road to Scott Road;
- McElwain Road from Linnel Lane to Clinton Keith Road;
- Scott Road from Howard Way to Haun Road/Zeiders Road;
- Scott Road from Haun Road/Zeiders Road to I-215 SB Ramps; and
- Scott Road from I-215 NB Ramps to Antelope Road.

To evaluate if the forecast 2031 existing plus ambient plus cumulative plus project buildout conditions result in a significant project impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 45**, based on the thresholds of significance, the addition of project does not significantly impact any of the roadway segments and no mitigation is required.

Table 45
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
Zeiders Road										
5. Keller Road to Scott Road*	Collector	EB: 1	1,600	555	1,414	0.35	0.88	A	D	No
		WB: 1	1,600	360	650	0.23	0.41	A	A	
McElwain Road										
9. Linnel Lane to Clinton Keith Road	Secondary	EB: 2	3,200	355	622	0.11	0.19	A	A	No
		WB: 2	3,200	197	274	0.06	0.09	A	A	
Scott Road										
10. Howard Way to Haun Road/Zeiders Road	Arterial	EB: 2	3,200	1,303	1,481	0.41	0.46	A	A	No
		WB: 2	3,200	1,162	1,419	0.36	0.44	A	A	
13. Haun Road/Zeiders Road to I-215 SB Ramps*	Arterial	EB: 2	3,200	1,939	2,648	0.61	0.83	B	D	No
		WB: 2	3,200	2,204	2,472	0.69	0.77	B	C	
14. I-215 NB Ramps to Antelope Road	Arterial	EB: 2	3,200	1,688	2,115	0.53	0.66	A	B	No
		WB: 2	3,200	2,160	1,943	0.68	0.61	B	B	

Notes: VPH = Vehicles per hour
V/C = Volume-to-capacity ratio;
*LOS D is considered acceptable within the City of Menifee.

Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2035 existing plus ambient growth plus project buildout conditions at the study roadway segments. Per the City of Murrieta *Traffic Impact Analysis Preparation Guide (October 2013),* this section evaluates whether the ultimate circulation system planned for the study area will be adequate to provide an acceptable LOS with the addition of project-generated trips.

Forecast year 2035 existing plus ambient growth plus project buildout conditions assumes the following modification to the roadway circulation system as previously shown in **Exhibit 6**:

- Construction of I-215 Freeway interchange at Scott Road to its buildout configuration;

In accordance City staff direction, forecast year 2035 existing plus ambient growth plus project buildout conditions assumes the buildout of the roadway circulation system and study intersections per the City of Murrieta General Plan and the City of Menifee General Plan.

As previously noted, per the City of Murrieta General Plan Circulation Element, McElwain Road north of Linnel Lane is classified as a four-lane Secondary roadway with LOS E capacity of 25,900 ADT. As part of this analysis, reduction in classification of McElwain Road to a two-lane Collector (LOS E capacity of 13,000 ADT) is evaluated to determine if adequate capacity will be provided to serve the forecast future traffic volumes on McElwain Road from the project access to Linnel Lane. The project does not propose to change the City's classification of McElwain Road from a four-lane Secondary roadway to a two-lane Collector.

Hence, McElwain Road from project site access to Linnel Lane has been evaluated as two-lane Collector roadway for forecast year 2035 existing plus ambient growth plus project buildout conditions.

Table 46 summarizes forecast year 2035 existing plus ambient growth plus project buildout conditions analysis of the study roadway segments.

Table 46
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions
Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	5,530	0.43	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Major	4	34,100	16,640	0.49	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	13,770	0.26	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	17,600	0.52	A
Zeiders Road						
5. Keller Road to Scott Road	Major	4	34,100	9,270	0.27	A
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	13,350	0.52	A
7. "J-J" Street to "D" Street	Secondary	4	25,900	13,350	0.52	A
8. "D" Street to Linnel Lane	Mod Collector	3*	19,500	3,760	0.19	A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	20,520	0.79	C
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Multi-Modal Corridor	4	35,900	17,250	0.48	A
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Urban Arterial	6	53,900	32,630	0.61	B
13. Haun Road/Zeiders Road to I-215 SB Ramps	Urban Arterial	6	53,900	33,930	0.63	B
14. I-215 NB Ramps to Antelope Road	Augmented Urban Arterial	8	71,800	42,230	0.59	A
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	16,560	0.31	A

Notes: VPH = Vehicles per hour

V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.

*McElwain Road, from "D" Street to Linnel Lane will be constructed with 1 northbound lane & 2 southbound lanes, or 2 northbound lanes and 1 southbound lane, depending on the grade of the road, to meet the Highway Design Manual climbing lane requirements.

As shown in **Table 46**, all of the study roadway segments are forecast to operate at an acceptable LOS (LOS C or better) according to agency performance criteria for forecast year 2035 existing plus ambient growth plus project buildout conditions.

Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Roadway Segment Analysis

This section analyzes the potential traffic impacts for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions at the study roadway segments. Per the City of Murrieta *Traffic Impact Analysis Preparation Guide (October 2013),* this section evaluates whether the ultimate circulation system planned for the study area will be adequate to provide an acceptable LOS with the addition of project-generated trips.

Forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the following modifications to the roadway circulation system as previously shown in **Exhibit 6**:

- Construction of I-215 Freeway interchange at Scott Road to its ultimate configuration;

Forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions does not assume the mitigation measures previously identified for previous analysis scenarios.

Instead, in accordance City staff direction, forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions assumes the buildout of the roadway circulation system and study intersections per the City of Murrieta General Plan and the City of Menifee General Plan.

Per the City of Murrieta General Plan Circulation Element, McElwain Road north of Linnel Lane is classified as a four-lane Secondary roadway with LOS E capacity of 25,900 ADT. As part of this analysis, reduction in classification of McElwain Road to a two-lane Collector (LOS E capacity of 13,000 ADT) is evaluated to determine if adequate capacity will be provided to serve the forecast year 2035 General Plan traffic volumes on McElwain Road from the project access to Linnel Lane. The results of the analysis indicate McElwain Road from the project access to Linnel Lane is forecast to operate at an acceptable LOS as a two-lane Collector roadway for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions and all other scenarios evaluated in this report. However, the project does not propose to change the City's classification of McElwain Road from a four-lane Secondary roadway to a two-lane Collector. At the request of the City, McElwain Road from "D" Street to the project's southern boundary would include three travel lanes (two southbound and one northbound) to accommodate a truck climbing lane which is referred to as a three-lane interim Modified Collector in the roadway segment analysis in this report.

Table 47 summarizes forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions analysis of the study roadway segments.

Table 47
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Roadway Segment LOS: Daily Traffic Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes	Roadway Segment Capacity	ADT	V/C	LOS
Keller Road						
1. Howard Way to Zeiders Road	Collector	2	13,000	6,250	0.48	A
2. Zeiders Road-McElwain Road to I-215 SB Ramps	Major	4	34,100	20,330	0.60	A
3. I-215 NB Ramps to Antelope Road or Mapleton Avenue	Urban Arterial	6	53,900	25,300	0.47	A
4. Mapleton Avenue to Whitewood Road/Menifee Road	Major	4	34,100	22,620	0.66	B
Zeiders Road						
5. North of Keller Road	Major	4	34,100	14,170	0.42	A
McElwain Road						
6. Keller Road to "J-J" Street	Secondary	4	25,900	14,230	0.55	A
7. "J-J" Street to "D" Street	Mod Collector	3*	19,500	14,230	0.73	C
8. "D" Street to Linnel Lane	Collector	2	13,000	4,640	0.36	A
9. Linnel Lane to Clinton Keith Road	Secondary	4	25,900	22,790	**0.88**	**D**
Antelope Road						
10. Scott Road to Mapleton Avenue	Street Vacated					
11. Scott Road to Keller Road	Multi-Modal Corridor	4	35,900	21,410	0.60	A
Scott Road						
12. Howard Way to Haun Road/Zeiders Road	Urban Arterial	6	53,900	33,000	0.61	B
13. Haun Road/Zeiders Road to I-215 SB Ramps	Urban Arterial	6	53,900	34,000	0.63	B
14. I-215 NB Ramps to Antelope Road	Augment Urban Arterial	8	71,800	42,300	0.59	A
Clinton Keith Road						
15. I-215 NB Ramps to Whitewood Road	Urban Arterial	6	53,900	32,680	0.61	B

Notes:

V/C = Volume-to-capacity ratio; Deficient operation shown in **bold**.

*McElwain Road, from "D" Street to Linnel Lane will be constructed with 1 northbound lane & 2 southbound lanes, or 2 northbound lanes and 1 southbound lane, depending on the grade of the road, to meet the Highway Design Manual climbing lane requirements.

As shown in **Table 47**, the study roadway segments are forecast to operate at an acceptable LOS (LOS C or better) according to agency performance criteria for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions except for:

- McElwain Road from Linnel Lane to Clinton Keith Road.

To evaluate if the forecast 2035 existing plus ambient plus cumulative projects plus project buildout conditions result in a significant project impact, these roadway segments were further analyzed under the peak hour conditions to determine if there is a capacity deficiency during the critical peak hours. As also shown in **Table 48**, based on the thresholds of significance, the addition of project does not significantly impact any of the roadway segments and no mitigation is required.

Table 48
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Study Roadway Segment LOS: Peak Hour Analysis

Study Roadway Segment	Roadway Segment Classification	No. of Lanes By Direction	Roadway Segment Capacity Per Direct (VPH)	Peak Hour Volume		V/C		LOS		Significant Impact?
				AM	PM	AM	PM	AM	PM	
McElwain Road										
9. Linnel Lane to Clinton Keith Road	Secondary	EB: 2	3,200	372	659	0.12	0.21	A	A	No
		WB: 2	3,200	258	351	0.08	0.11	A	A	

VPH = Vehicles per hour

19. KELLER ROAD QUEUING ANALYSIS

Utilizing the Synchro analysis software, a queue analysis has been prepared to evaluate the forecast queues along Keller Road between Zeiders Road and Mapleton Avenue after construction of the I-215 Freeway/Keller Road interchange assumed to be constructed prior to year 2023. The Synchro software accounts for traffic signal coordination and the distance between intersections.

This section evaluates the Highway Capacity Manual (HCM) 95th percentile forecast vehicular queues along eastbound and westbound Keller Road from Zeiders Road to Mapleton Avenue for the following analysis scenario which assumes construction of the Keller Road interchange:

- Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions.

The purpose of the queuing analysis is to determine whether any turn lane storage improvements will be required beyond what was previously identified in the preceding sections as intersection mitigation measures to achieve acceptable LOS along Keller Road between Zeiders Road and Mapleton Avenue.

Hence, for each scenario evaluated for vehicular queues, the queue analysis assumes any mitigated geometry and improvements previously identified to achieve acceptable LOS at the study intersection for that specific analysis scenario.

Additionally, the queue analysis assumes the following:

- Signal coordination and optimized signal timing between the range of 60 and 120 seconds for the corridor; and
- A typical baseline turn-lane storage length of 200 feet provided for turn lanes at all future intersections.

This analysis evaluates forecast queues based on forecast traffic volumes and anticipated intersection and roadway geometry. Vehicular queues should be monitored in the future to ensure adequate storage capacity is provided.

Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour HCM Queue Analysis

Forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions queue analysis assumes the buildout of the roadway circulation system and study intersections per the City of Murrieta General Plan and the City of Menifee General Plan and any mitigated study intersection geometry previously identified in this report to achieve acceptable LOS for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions intersection LOS analysis.

Table 49 summarizes the results of the Keller Road queue analysis for forecast year 2035 Existing Plus Ambient Growth Plus Cumulative Projects plus project buildout conditions mitigated forecast year 2035 with project conditions; detailed queue analysis sheets are contained in **Appendix F**.

Table 49
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Keller Road Queue

Intersection/Movement	Number of Lanes	Storage or Link Length Per Lane (feet)	95th Percentile Queue Per Lane (feet)		Adequate Queue Storage Provided?
			AM Peak Hour	PM Peak Hour	
7. Zeiders Rd / Keller Rd					
EB Keller Rd Left-Turn	1	*200*	44	95	Yes
*EB Keller Rd Through**	0.5	*700*	130	128	Yes
*EB Keller Rd Right-Turn**	0.5	*700*	130	128	Yes
WB Keller Rd Left-Turn	2	*200*	37	130	Yes
WB Keller Rd Through	0.5	*650*	124	477	Yes
WB Keller Rd Right-Turn	0.5	*650*	124	477	Yes
21. I-215 SB Ramps / Keller Rd					
EB Keller Rd Left-Turn	N/A	N/A	N/A	N/A	N/A
EB Keller Rd Through	0.5	*650*	72	236	Yes
EB Keller Rd Right-Turn	1.5	*650*	0	0	Yes
WB Keller Rd Left-Turn	0.5	*700*	15	49	Yes
WB Keller Rd Through	1.5	*700*	15	49	Yes
WB Keller Rd Right-Turn	N/A	N/A	N/A	N/A	N/A
22. I-215 NB Ramps / Keller Rd					
EB Keller Rd Left-Turn	0.5	300	0	0	Yes
EB Keller Rd Through	1.5	*300*	0	0	Yes
EB Keller Rd Right-Turn	N/A	N/A	N/A	N/A	N/A
WB Keller Rd Left-Turn	N/A	N/A	N/A	N/A	N/A
WB Keller Rd Through	2	*800*	18	68	Yes

Intersection/Movement	Number of Lanes	Storage or Link Length Per Lane (feet)	95th Percentile Queue Per Lane (feet)		Adequate Queue Storage Provided?
			AM Peak Hour	PM Peak Hour	
WB Keller Rd Right-Turn	1	*800*	0	0	Yes
9. Mapleton Ave / Keller Rd					
EB Keller Rd Left-Turn	2	*200*	102	98	Yes
EB Keller Rd Through	3	*800*	101	188	Yes
EB Keller Rd Right-Turn	1	*200*	48	49	Yes
WB Keller Rd Left-Turn	1	*200*	27	19	Yes
WB Keller Rd Through	3	*450*	135	165	Yes
WB Keller Rd Right-Turn	1	*200*	34	0	Yes

Notes: SB = southbound; NB = Northbound; EB = Eastbound; WB = Westbound;

* = Shared lane; N/A = Not applicable.

Storage length for through lane is measured as the link distance to the next adjacent study intersection.

As shown in **Table 49**, adequate queue storage is forecast to be provided at all evaluated movements of the study intersections for forecast year 2035 existing Plus Ambient Growth Plus Cumulative Projects plus project buildout conditions.

20. FREEWAY RAMP MERGE & DIVERGE ANALYSIS

Currently, without the future-planned Keller Road interchange, regional access for the proposed project is provided via the I-215 Freeway and its existing interchanges with Scott Road and Clinton Keith Road.

With construction of the Keller Road interchange in 2023, regional access for the proposed project will be provided via the I-215 Freeway and its interchange with Keller Road. Hence, with construction of the Keller Road interchange, a minimal number of project trips are expected to access the I-215 Freeway via the Scott Road and Clinton Keith Road interchanges.

This section evaluates the potential forecast traffic impact of project-generated trips at the following State Highway study freeway ramps for forecast existing and forecast existing plus project buildout conditions prior to construction of the Keller Road interchange with the I-215 Freeway:

1. I-215 Northbound Off-Ramp to Scott Road;
2. I-215 Northbound On-Ramp from Scott Road;
3. I-215 Southbound Off-Ramp to Scott Road;
4. I-215 SB On-Ramp from Scott Road;
5. I-215 NB Off-Ramp to Clinton Keith Road;
6. I-215 NB On-Ramp from Eastbound Clinton Keith Road;
7. I-215 NB On-Ramp from Westbound Clinton Keith Road;
8. I-215 SB Off-Ramp to Clinton Keith Road;
9. I-215 SB On-Ramp from Westbound Clinton Keith Road; and

10. I-215 SB On-Ramp from Eastbound Clinton Keith Road.

For forecast year 2023, 2028, 2031 and forecast year 2035 conditions, the analysis assumes construction of the Keller Road interchange and phase 1 improvements to the Scott Road interchange. The potential forecast traffic impact of project-generated trips at the following State Highway study freeway ramps for forecast year 2023 through year 2035 also include:

11. I-215 NB Off-Ramp to Keller Road;
12. I-215 NB On-Ramp from Keller Road;
13. I-215 SB Off-Ramp to Keller Road; and
14. I-215 SB On-Ramp from Keller Road.

Future additional widening of the I-215 Freeway is planned which would provide four lanes of travel in each direction. However, this analysis does not assume construction of the fourth lane for any of the scenarios evaluated in this report.

State Highway Freeway Ramp Merge & Diverge Analysis Methodology

Caltrans advocates the use of HCM analysis methodology to analyze the operation of freeway facilities. HCM analysis methodology describes the operation of freeway merge and diverge facilities using a range of LOS from LOS A to LOS F based on corresponding density (passenger cars/mile/lane) shown in **Table 50**.

Table 50
Freeway Ramp Merge & Diverge Facilities
LOS & Density Ranges

LOS	Density (pc/mi/ln)
A	$\leq$ 10
B	10.01 $\leq$ 20.00
C	20.01 $\leq$ 28.00
D	28.01 $\leq$ 35.00
E	> 35.00
F	Demand Exceeds Capacity

Notes: pc/mi/ln = passenger cars per mile per lane.

The *Caltrans Traffic Impact Study Guidelines* (December 2002) do not establish specific significant traffic impact criteria. This analysis assumes LOS D as the acceptable LOS for merge and diverge operation.

State Highway Freeway Ramp Merge & Diverge Facility Thresholds of Significance

Based on the City of Murrieta performance standards and significant impact criteria, the following threshold of significance at State Highway merge & diverge facilities is utilized for this analysis:

- The acceptable LOS shall be maintained with the addition of traffic from the proposed project. The analysis shall identify mitigation measures to achieve acceptable LOS.
- For General Plan and Specific Plans, the analysis shall determine whether the ultimate circulation system planned for the area will be adequate to provide an

acceptable LOS. The analysis shall identify mitigation measures to achieve acceptable LOS.

It should be noted that Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on state highway facilities, but acknowledges this is not always feasible.

Existing and Forecast Traffic Volumes

Existing freeway volumes were obtained from the Caltrans Traffic and Vehicle Data Systems Unit available online at *http://traffic-counts.dot.ca.gov/2016all/.*

Traffic volumes on the Caltrans website provide the annual average daily traffic (AADT) volumes at the freeways. The a.m. peak hour, p.m. directional peak hour freeway volumes for the I-215 were derived utilizing the Caltrans peak hour "K" and "D" factors for the nearest available data point in the project vicinity.

For each analysis scenario, forecast freeway mainline traffic volumes used in this analysis were derived using the same methodologies utilized in deriving the study intersection future peak hour traffic volumes previously noted in this report.

Peak Hour freeway ramp volumes utilized in this analysis for all analysis scenarios are based on the intersection peak hour volumes previously shown and utilized in the study intersection LOS analysis.

Existing Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 51 summarizes existing conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 51
Existing Conditions
AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour
				Density – LOS	Density – LOS
1. I-215 NB Off-Ramp to Scott Rd	Diverge	3	1	18.2 - B	28.0 - D
2. I-215 NB On-Ramp from Scott Rd	Merge	3	1	17.1 - B	23.7 - C
3. I-215 SB Off-Ramp to Scott Rd	Diverge	3	1	30.2 - D	21.4 - C
4. I-215 SB On-Ramp from Scott Rd	Merge	3	1	32.3 - D	20.7 - C
5. I-215 NB Off-Ramp to Clinton Keith Rd	Diverge	3	1	16.5 - B	27.7 - C
6. I-215 NB On-Ramp from EB Clinton Keith Rd	Merge	3	1	17.1 - B	26.4 - C
7. I-215 NB On-Ramp from WB Clinton Keith Rd	Merge	3	1	16.3 - B	24.9 - C
8. I-215 SB Off-Ramp to Clinton Keith Rd	Diverge	3	1	32.1 - D	22.2 - C
9. I-215 SB On-Ramp from WB Clinton Keith Rd	Merge	3	1	28.3 - D	15.5 - B
10. I-215 SB On-Ramp from EB Clinton Keith Rd	Merge	3	1	32.1 - D	18.3 - B

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 51**, the study freeway ramps are currently operating at an acceptable LOS (LOS D or better) for existing conditions.

Forecast Existing Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 52 summarizes forecast existing plus project buildout conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 52
Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
1. I-215 NB Off-Ramp to Scott Rd	Diverge	3	1	18.2 - B	28.1 - D	No
2. I-215 NB On-Ramp from Scott Rd	Merge	3	1	17.8 - B	27.2 - C	No
3. I-215 SB Off-Ramp to Scott Rd	Diverge	3	1	31.4 - D	24.1 - C	No
4. I-215 SB On-Ramp from Scott Rd	Merge	3	1	32.3 - D	20.7 - C	No
5. I-215 NB Off-Ramp to Clinton Keith Rd	Diverge	3	1	17..5 - B	30.4 - D	No
6. I-215 NB On-Ramp from EB Clinton Keith Rd	Merge	3	1	17.1 - B	26.4 - C	No
7. I-215 NB On-Ramp from WB Clinton Keith Rd	Merge	3	1	16.3 - B	24.9 - C	No
8. I-215 SB Off-Ramp to Clinton Keith Rd	Diverge	3	1	32.1 - D	22.2 - C	No
9. I-215 SB On-Ramp from WB Clinton Keith Rd	Merge	3	1	28.3 - D	15.5 - B	No
10. I-215 SB On-Ramp from EB Clinton Keith Rd	Merge	3	1	34.0 - D	21.0 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 52**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast existing plus project buildout conditions.

As also shown in **Table 52**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to not result in any significant traffic impacts at the above listed study freeway ramps for forecast existing plus project buildout conditions.

Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Forecast year 2023 existing plus ambient growth plus project Phase 1 conditions assumes completion of construction at the I-215 / Keller Road interchange and the phase 1 improvements at the I-215 / Scott Road interchange.

Table 53 summarizes forecast year 2023 existing plus ambient growth plus project Phase 1 conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 53
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions
AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Sign. Impact?
				Density – LOS	Density – LOS	
1. I-215 NB Off-Ramp to EB Scott Rd	Diverge	3	1	18.4 - B	28.2 - D	No
2. I-215 NB Off-Ramp to WB Scott Rd	Diverge	3	1	16.3 - B	26.3 - C	No
3. I-215 NB On-Ramp from Scott Rd	Merge	3	1	17.6 - B	25.4 - C	No
4. I-215 SB Off-Ramp to Scott Rd	Diverge	3	1	31.5 - D	22.4 - C	No
5. I-215 SB On-Ramp from WB Scott Rd	Merge	3	1	29.8 - D	19.3 - B	No
6. I-215 SB On-Ramp from EB Scott Rd	Merge	3	1	32.4 - D	20.9 - C	No
7. I-215 NB Off-Ramp to Clinton Keith Rd	Diverge	3	1	17.4 - B	29.0 - D	No
8. I-215 NB On-Ramp from EB Clinton Keith Rd	Merge	3	1	18.1 - B	28.1 - D	No
9. I-215 NB On-Ramp from WB Clinton Keith Rd	Merge	3	1	16.9 - B	26.6 - C	No
10. I-215 SB Off-Ramp to Clinton Keith Rd	Diverge	3	1	33.1 - D	25.9 - C	No
11. I-215 SB On-Ramp from WB Clinton Keith Rd	Merge	3	1	30.9 - D	17.4 - B	No
12. I-215 SB On-Ramp from EB Clinton Keith Rd	Merge	3	1	33.3 - D	20.4 - C	No
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	17.9 - B	28.0 - D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	16.0 - B	26.2 - C	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	32.2 - D	21.8 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	30.3 - D	20.3 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 53**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions.

As also shown in **Table 53**, based on the thresholds of significance, the addition of project phase 1-generated trips is forecast to not result in any significant traffic impacts at the study

freeway ramps for forecast year 2023 existing plus ambient growth plus project Phase 1 conditions.

Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 54 summarizes forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 54
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
1. I-215 NB Off-Ramp to EB Scott Rd	Diverge	3	1	20.4 - C	33.3 - D	No
2. I-215 NB Off-Ramp to WB Scott Rd	Diverge	3	1	18.6 - B	31.2 - D	No
3. I-215 NB On-Ramp from Scott Rd	Merge	3	1	19.3 - B	31.3 - D	No
4. I-215 SB Off-Ramp to Scott Rd	Diverge	3	1	32.0 - D	23.4 - C	No
5. I-215 SB On-Ramp from WB Scott Rd	Merge	3	1	29.9 - D	18.0 - B	No
6. I-215 SB On-Ramp from EB Scott Rd	Merge	3	1	34.4 - D	23.4 - C	No
7. I-215 NB Off-Ramp to Clinton Keith Rd	Diverge	3	1	19.5 - B	34.6 - D	No
8. I-215 NB On-Ramp from EB Clinton Keith Rd	Merge	3	1	19.1 - B	32.1 - D	No
9. I-215 NB On-Ramp from WB Clinton Keith Rd	Merge	3	1	18.4 - B	32.2 - D	No
10. I-215 SB Off-Ramp to Clinton Keith Rd	Diverge	3	1	33.9 - D	28.7 - D	No
11. I-215 SB On-Ramp from WB Clinton Keith Rd	Merge	3	1	32.1 - D	19.5 - B	No
12. I-215 SB On-Ramp from EB Clinton Keith Rd	Merge	3	1	34.1 - D	22.4 - C	No
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	19.3 - B	32.4 – D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	17.8 - B	32.1 – D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	33.2 - D	22.9 – C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	30.9 - D	21.2 – C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 54**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions.

As also shown in **Table 54**, based on the thresholds of significance, the addition of project phase 1-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions.

Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 55 summarizes forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 55
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions
AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
1. I-215 NB Off-Ramp to EB Scott Rd	Diverge	3	1	20.2 - C	33.3 - D	No
2. I-215 NB Off-Ramp to WB Scott Rd	Diverge	3	1	17.9 - B	31.4 - D	No
3. I-215 NB On-Ramp from Scott Rd	Merge	3	1	19.4 - B	31.2 - D	No
4. I-215 SB Off-Ramp to Scott Rd	Diverge	3	1	32.7 - D	23.5 - C	No
5. I-215 SB On-Ramp from WB Scott Rd	Merge	3	1	31.6 - D	20.5 - C	No
6. I-215 SB On-Ramp from EB Scott Rd	Merge	3	1	34.1 - D	21.7 - C	No
7. I-215 NB Off-Ramp to Clinton Keith Rd	Diverge	3	1	18.9 - B	34.0 - D	No
8. I-215 NB On-Ramp from EB Clinton Keith Rd	Merge	3	1	19.7 - B	34.7 - D	No
9. I-215 NB On-Ramp from WB Clinton Keith Rd	Merge	3	1	18.4 - B	33.1 - D	No
10. I-215 SB Off-Ramp to Clinton Keith Rd	Diverge	3	1	33.6 - D	26.8 - C	No
11. I-215 SB On-Ramp from WB Clinton Keith Rd	Merge	3	1	32.8 - D	18.9 - B	No
12. I-215 SB On-Ramp from EB Clinton Keith Rd	Merge	3	1	34.3 - D	22.0 - C	No
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	19.6 - B	33.8 - D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	17.6 - B	32.3 - D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	33.0 - D	22.9 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	32.7 - D	22.1 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 55**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions.

As also shown in **Table 55**, based on the thresholds of significance, the addition of project phases 1 & 2-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions.

Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 56 summarizes forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 56
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
1. I-215 NB Off-Ramp to EB Scott Rd	Diverge	3	1	21.1 - C	34.4 - D	No
2. I-215 NB Off-Ramp to WB Scott Rd	Diverge	3	1	19.1 - B	32.1 - D	No
3. I-215 NB On-Ramp from Scott Rd	Merge	3	1	20.1 - C	32.8 - D	No
4. I-215 SB Off-Ramp to Scott Rd	Diverge	3	1	33.2 - D	24.5 - C	No
5. I-215 SB On-Ramp from WB Scott Rd	Merge	3	1	31.7 - D	19.2 - B	No
6. I-215 SB On-Ramp from EB Scott Rd	Merge	3	1	34.3 - D	24.2 - C	No
7. I-215 NB Off-Ramp to Clinton Keith Rd	Diverge	3	1	20.4 - C	34.7 - D	No
8. I-215 NB On-Ramp from EB Clinton Keith Rd	Merge	3	1	20.2 - C	34.0 - D	No
9. I-215 NB On-Ramp from WB Clinton Keith Rd	Merge	3	1	19.5 - B	34.2 - D	No
10. I-215 SB Off-Ramp to Clinton Keith Rd	Diverge	3	1	34.2 - D	30.7 - D	No
11. I-215 SB On-Ramp from WB Clinton Keith Rd	Merge	3	1	33.2 - D	19.9 - B	No
12. I-215 SB On-Ramp from EB Clinton Keith Rd	Merge	3	1	34.6 - D	23.0 - C	No
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	20.6 - C	34.2 - D	No

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	18.6 - B	33.8 - D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	33.3 – D	24.0 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	33.3 - D	22.6 – C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 56** the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions.

As also shown in **Table 56**, based on the thresholds of significance, the addition of project phases 1 & 2-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions.

Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 57 summarizes forecast year 2031 existing plus ambient growth plus project buildout conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 57
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	21.5 - C	33.8 - D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	18.2 - B	32.4 - D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	33.6 - D	24.2 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	32.8 - D	23.1 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 57**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2031 existing plus ambient growth plus project buildout conditions.

As also shown in **Table 57**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2031 existing plus ambient growth plus project buildout conditions.

Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 58 summarizes forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 58
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	22.8 - C	34.0 - D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	19.2 - B	33.6 - D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	34.1 - D	25.4 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	33.3 - D	24.9 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 58**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions.

As also shown in **Table 8,** based on the thresholds of significance, the addition of project buildout-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions.

Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 59 summarizes forecast year 2035 existing plus ambient growth plus project buildout conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 59
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	23.9 - C	34.0 - D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	19.6 - B	34.1 - D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	34.2 - D	26.7 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	33.9 - D	25.8 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 59**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2035 existing plus ambient growth plus project buildout conditions. As also shown in **Table 59**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2035 existing plus ambient growth plus project buildout conditions.

Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Peak Hour Study Freeway Ramp Merge & Diverge Level of Service

Table 60 summarizes forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions a.m. peak hour and p.m. peak hour merge and diverge operation and LOS of the study freeway ramps; detailed HCM analysis sheets are contained in **Appendix G**.

Table 60
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Freeway Ramp Merge & Diverge LOS

Study Freeway Ramp	Analysis Type	Freeway Lanes	Ramp Lanes	AM Peak Hour	PM Peak Hour	Significant Impact?
				Density – LOS	Density – LOS	
13. I-215 NB Off-Ramp to Keller Rd	Diverge	3	1	24.3 - C	34.4 - D	No
14. I-215 NB On-Ramp from Keller Rd	Merge	3	1	19.7 - B	34.6 - D	No
15. I-215 SB Off-Ramp to Keller Rd	Diverge	3	1	34.4 - D	27.0 - C	No
16. I-215 SB On-Ramp from Keller Rd	Merge	3	1	34.2 - D	26.3 - C	No

Notes: NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
Density is shown in passenger cars per mile per lane (pc/mi/ln).

As shown in **Table 60**, the study freeway ramps are forecast to continue to operate at an acceptable LOS (LOS D or better) for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions.

As also shown in **Table 60**, based on the thresholds of significance, the addition of project buildout-generated trips is forecast to not result in any significant traffic impacts at the study freeway ramps for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions.

21. MITIGATION MEASURES

The following mitigation measures are identified to reduce the traffic impacts at the impacted study facilities to a level considered less than significant:

Study Intersection LOS Mitigation Measures

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for **forecast existing plus project buildout conditions**:

Intersection Mitigation Measure

Int 1 – Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road – The project

applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn/through lane and one shared through/right-turn lane.

Intersection Mitigation Measure

Int 2 – Murrieta Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

Intersection Mitigation Measure

Int 3 – Haun Road-Zeiders Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one left-turn lane and one shared left-turn/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

b) Widen the eastbound approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane and one shared through/right-turn lane.

c) Implement right-turn overlap phase at the westbound approach.

Intersection Mitigation Measure

Int 6 – Antelope Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of two left-turn lane, two through lanes and one right-turn lane.

Intersection Mitigation Measure

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen the northbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn/through lane and two right-turn lanes with right-turn overlap phasing.

c) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

d) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for **forecast year 2023 existing plus ambient growth plus project Phase 1 conditions**:

Intersection Mitigation Measure #1

Int 2 – Murrieta Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen the eastbound approach from one shared left-turn/through lane to consist of one left-turn lane and one through lane.

The following additional mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for **forecast year 2023 existing plus ambient growth plus cumulative projects plus project Phase 1 conditions**:

Intersection Mitigation Measure #2

Int 1 – Sunset Avenue - Cottonwood Canyon Road / Bundy Canyon Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn/through lane and one shared through/right-turn lane.

b) Widen the southbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

Intersection Mitigation Measure #3

Int 2 – Murrieta Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one shared left-turn/right-turn lane to consist of one left-turn lane and one right-turn lane.

b) Widen the westbound approach from one shared through/right-turn lane to consist of one through lane and one right-turn lane.

Intersection Mitigation Measure #4

Int 3 – Haun Road-Zeiders Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one left-turn lane and one shared through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

b) Widen the eastbound approach from one left-turn lane, one through lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes and one shared through/right-turn lane.

c) Widen the westbound approach from one left-turn lane, two through lane, and one right-turn lane to consist of two left-turn lanes, two through lanes, and two right-turn lanes.

Intersection Mitigation Measure #5

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following:

a) Convert from a two-way stop control to an all-way stop controlled intersection.

b) Widen the northbound approach from one shared left-turn/through/right-turn lane to consist of one shared left-turn, one through lane and one right-turn lane.

c) Widen westbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

Intersection Mitigation Measure #6

Int 20 – Whitewood Road / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane with overlap phasing.

Additional mitigation measures are not required at the study intersections for **forecast year 2028 existing plus ambient growth plus project Phases 1 & 2 conditions**.

The following additional mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for forecast **year 2028 existing plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions**:

Intersection Mitigation Measure #7

Int 1 – Sunset Ave–Cottonwood Cyn Rd / Bundy Cyn Rd – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Right-turn overlap in the northbound direction.

c) Widen the eastbound approach from one shared left-turn/through lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

d) Widen the westbound approach from one shared left-turn/through/right-turn lane to

Intersection Mitigation Measure #8

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

b) Widen westbound approach from one left-turn lane and one share through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

c) Widen eastbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

d) Widen southbound approach from one shared left-turn/through/right-turn lane to consist of a left-turn lane and one shared through/right-turn lane.

e) consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

The following mitigation measure is identified to reduce the traffic impact at the impacted study intersection to a level considered less than significant for **forecast year 2031 existing plus ambient growth plus project buildout conditions**:

Intersection Mitigation Measure #9

Int 2 – Scott Road / Murrieta Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the westbound approach from one through lane and one right-turn lane to consist of one through lane and one shared through/right-turn lane.

b) Widen the eastbound approach from one left-turn lane and one through lane to consist of two left-turn lanes and one through lane.

c) Implement right-turn overlap phasing in the southbound approach.

Intersection Mitigation Measure #10 **Int 14 – McElwain Road / Linnel Lane** – The project applicant shall make a fair share contribution to implement the following:

a) Signalize the intersection.

The following mitigation measure is identified to reduce the traffic impact at the impacted study intersection to a level considered less than significant for **forecast year 2031 existing plus ambient growth plus cumulative projects plus project buildout conditions**:

Intersection Mitigation Measure #11 **Int 3 – Haun Road - Zeiders Road / Scott Road** – The project applicant shall make a fair share contribution to implement the following:

a) Widen the northbound approach from one left-turn lane, one through lane, and one right-turn lane to consist of two left-turn lanes, one through lane and one right-turn lane with overlap phasing.

b) Widen the southbound approach from two left-turn lanes and one shared through/right-turn lane to consist of two left-turn lanes, one through lane and one right-turn lane.

c) Widen the westbound approach from two left-turn lanes, two through lanes and two right-turn lanes to consist of two left-turn lanes, three through lanes and two right-turn lanes.

d) Widen the eastbound approach from one left-turn lane, two through lanes and one shared through/right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane.

Intersection Mitigation Measure #12 **Int 16 – Murrieta Oaks East Avenue / Clinton Keith Road** – The project applicant shall make a fair share contribution to implement the following:

a) Widen the eastbound approach from one left-turn lane, two through lanes and one right-turn lane to consist of one left-turn lane, two through lanes and one shared through/right-turn lane.

Intersection Mitigation Measure #13

Int 20 – Whitewood Road / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the northbound approach from one left-turn lane, one through lane and one shared through/right-turn lane to consist of two left-turn lanes, one through lane and one shared through/right-turn lane.

The following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant for **forecast year 2035 existing plus ambient growth plus project buildout conditions**:

Intersection Mitigation Measure

Int 1 – Sunset Ave–Cottonwood Cyn Rd / Bundy Cyn Rd – The project applicant shall make a fair share contribution to implement the following (*Identical to Mitigation Measure #8)*:

a) Signalize the intersection.

b) Widen the southbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

c) Widen the eastbound approach from one shared left-turn/through lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

d) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane.

Intersection Mitigation Measure

Int 3 – Haun Road - Zeiders Road / Scott Road – The project applicant shall make a fair share contribution to implement the following:

a) Add a right-turn overlap phasing in the northbound direction.

b) Widen the westbound approach from two left-turn lanes, three through lanes and one right-turn lane to consist of two left-turn lanes, three through lanes and two right-turn lanes.

Intersection Mitigation Measure

Int 7 – Zeiders Road / Keller Road – The project applicant shall make a fair share contribution to implement the following (*Identical to mitigation measure #7*):

a) Signalize the intersection.

b) Widen the northbound approach from one shared left-turn/through/right-turn to consist of one left-turn lane, one through lane and one right-turn lane with right-turn overlap phasing.

c) Widen the southbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

d) Widen the eastbound approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

e) Widen the westbound approach from one shared left-turn/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

Intersection Mitigation Measure

Int 14 – McElwain Road / Linnel Lane – The project applicant shall make a fair share contribution to implement the following *(Identical to Mitigation Measure #13)*:

a) Signalize the intersection.

Intersection Mitigation Measure

Int 20 – Whitewood Road / Clinton Keith Road – The project applicant shall make a fair share contribution to implement the following:

a) Widen the southbound approach from two left-turn lanes, one through lane and one shared through/right-turn lane to consist of two left-turn lanes, two through lanes and one right-turn lane with overlap phasing.

It is important to note that the mitigation measures identified in this scenario are not needed in addition to those identified in the Project Phasing Analysis. All of the mitigation measures identified for this scenario have already been recommended by 2031 With Project Buildout.

Study Roadway Segment Mitigation Measures

Based on a request from the City and to satisfy the level of service policy on Keller Road from Zeiders Road to I-215 SB ramps, the eastbound direction of Keller Road from Zeiders Road to I-215 SB ramps should be improved from one lane to two lanes. The improvement from one to

two lanes in the eastbound direction is included as project mitigation and should be built to the City's Major roadway classification standards. Assuming the lane improvement in the eastbound direction, the resulting level of service improves from a deficient LOS D to an acceptable level of service A.

Study Intersection Queue Improvement Recommendations

For forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions, study intersections along Keller Road with the proposed I-215 interchange were evaluated to determine if adequate storage capacity would meet forecast vehicular queues. The analysis shows adequate storage capacity along Keller Road is provided and therefore, no further intersection improvements are necessary.

22. ENVIRONMENTALLY PREFERRED ALTERNATIVE

This section of the report evaluates a second land use alternative to the proposed project analyzed in the previous sections of this report. The land use alternative is referred to as the Environmentally Preferred Alternative. In this alternative, there are a few environmentally sensitive areas on the project site that have been avoided and this changed the layout of Planning Areas 8 & 9 and reduced the number of dwelling units in Planning Area 4. The Environmentally Preferred Alternative results in a reduction in land use densities specifically in Planning Area 9 where commercial retail is reduced which ultimately reduces trip generation. **Exhibit 68** shows the site plan for the Environmentally Preferred Alternative. **Table 61** provides a land use comparison of the Proposed Project to the Environmentally Preferred Alternative.

Table 61
Project Land Use Comparison

Land Use	Proposed Project	Environmentally Preferred Alternative	Difference
Single-Family Dwelling Units	578 DU	557 DU	-21 DU
Multi-Family Dwelling Units	172 DU	193 DU	+21 DU
Commercial Retail	346,302 SF	222,156 SF	-124,146 SF

DU = Dwelling Unit
SF = Square Feet

As shown, the dwelling units remain the same (750 units) between the Proposed Project and the Environmentally Preferred Alternative, however the commercial retail is reduced in the Environmentally Preferred Alternative by 124,146 square feet.

The purpose of the Environmentally Preferred Alternative traffic analysis is to determine if any significant impacts identified in the Proposed Project analysis would be reduced and result in an elimination or reduction in mitigation requirements.

Forecast Trip Generation

To calculate trips forecast to be generated by the project, *Institute of Transportation Engineers (ITE)* trip generation rates were utilized. It should also be noted the ITE internal trip capture adjustments and applicable pass-by trip adjustments assumed in the Proposed Project were also assumed for the Environmentally Sensitive Alternative.

The proposed project is planned to be constructed in three phases as previously assumed in the Proposed Project. Phase 1 of the Environmentally Preferred Alternative project is planned to open in year 2023. Phase 2 of the Environmentally Preferred Alternative project is planned to open in year 2028, and Phase 3 is planned to open in year 2031. **Table 62** summarizes the trip generation of the Environmentally Preferred Alternative Phase 1 utilizing the *ITE* trips rates contained in Table 4.

As shown in **Table 62**, Phase 1 for the Environmentally Preferred Alternative is forecast to generate approximately 2,856 daily trips, which include approximately 225 a.m. peak hour trips and approximately 300 p.m. peak hour trips which is identical to the Proposed Project's trip generation.

Table 62
Forecast Trip Generation of Environmentally Preferred Alternative
Phase 1

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
300-du Single Family Detached Residential	57	168	225	189	111	300	2,856
Environmentally Preferred Alternative Project Phase 1 Total	**57**	**168**	**225**	**189**	**111**	**300**	**2,856**
Proposed Project Phase 1 Total	***57***	***168***	***225***	***189***	***111***	***300***	***2,856***
Difference (+/-)	***0***	***0***	***0***	***0***	***0***	***0***	***0***

Note: du = dwelling unit.

Table 63 summarizes the trip generation of the Environmentally Preferred Alternative Phases 1 & 2 utilizing the *ITE* trips rates contained in Table 4, the applicable pass-by trip adjustments contained in Table 5, and the applicable *ITE* internal trip capture adjustments contained in Table 6.

As shown, the Environmentally Preferred Alternative Phases 1 & 2 is forecast to generate approximately 9,794 daily trips, which includes approximately 583 a.m. peak hour trips and approximately 945 p.m. peak hour trips. The Environmentally Preferred Alternative is expected to generate less trips than the Proposed Project by 1,991 daily trips, with 51 less AM peak hour trips and 175 less PM peak hour trips.

Table 64 summarizes the trip generation of the Environmentally Preferred Alternative Phases 1, 2, and 3 (project buildout) utilizing the *ITE* trips rates contained in Table 4, the applicable pass-by trip adjustments contained in Table 5, and the applicable *ITE* internal trip capture adjustments contained in Table 6.

As shown, the Environmentally Preferred Alternative Phases 1, 2, and 3 (project buildout) is forecast to generate approximately 13,209 daily trips, which include approximately 663 a.m. peak hour trips and approximately 1,239 p.m. peak hour trips. The Environmentally Preferred Alternative is expected to generate less trips than the Proposed Project by 3,900 daily trips, with 95 less AM peak hour trips and 340 less PM peak hour trips.

Table 63
Forecast Trip Generation of Environmentally Preferred Alternative
Phases 1 & 2

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
111.078 tsf Retail	66	41	107	198	214	412	4,743
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-10	-11	-21	-190
Retail after Internal Trip Capture Adjustment	66	41	107	188	203	391	4,553
Pass-by Trip Reduction (25% AM & PM, 25% ADT)	-17	-10	-27	-47	-51	-98	-1,138
Subtotal Retail	*50*	*30*	*80*	*141*	*152*	*293*	*3,415*
193 du Residential Condominium/Townhouse	14	70	84	67	33	100	1,121
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-3	-2	-5	-45
Subtotal Residential Condominium/Townhouse	*14*	*70*	*84*	*64*	*31*	*95*	*1,076*
557 du Single Family Detached Residential	*105*	*313*	*418*	*351*	*206*	*557*	*5,303*
Environmentally Preferred Alternative Project Phases 1 & 2 Total	**169**	**414**	**583**	**556**	**389**	**945**	**9,794**
Proposed Project Phases 1 & 2 Total	**199**	**435**	**634**	**640**	**480**	**1,120**	**11,785**
Difference (+/-)	**-30**	**-21**	**-51**	**-84**	**-91**	**-175**	**-1,991**

Note: tsf = thousand square feet; du = dwelling unit.

Table 64
Forecast Trip Generation of Environmentally Preferred Alternative
Phases 1, 2 & 3 (Project Buildout)

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
222.156 tsf Retail	132	81	213	396	428	824	9,486
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-20	-21	-41	-379
Retail after Internal Trip Capture Adjustment	132	81	213	376	407	783	9,107
Pass-by Trip Reduction (25% AM & PM, 25% ADT)	-33	-20	-53	-94	-102	-196	-2,277
Subtotal Retail	*99*	*61*	*160*	*282*	*305*	*587*	*6,830*
193 du Residential Condominium/Townhouse	14	71	85	67	33	100	1,121
ITE Internal Trip Capture (5% PM, 4% ADT)	0	0	0	-3	-2	-5	-45
Subtotal Residential Condominium/Townhouse	*14*	*71*	*85*	*64*	*31*	*95*	*1,076*
557 du Single Family Detached Residential	*105*	*313*	*418*	*351*	*206*	*557*	*5,303*
Environmentally Preferred Alternative Project Phases 1, 2, & 3 Trip Generation	**218**	**445**	**663**	**697**	**542**	**1,239**	**13,209**
Proposed Project Phases 1, 2, & 3 Total	**276**	**482**	**758**	**860**	**719**	**1,579**	**17,109**
Difference (+/-)	**-58**	**-37**	**-95**	**-163**	**-177**	**-340**	**-3,900**

Note: tsf = thousand square feet; du = dwelling unit.

Forecast Trip Distribution & Assignment

Trip distribution for the Environmentally Preferred Alternative assumes the same trip distribution used for the Proposed Project since the land uses between the two project alternatives are consistent. Refer to **Exhibits 12** through **19** for the trip distribution percentages assumed in each project phase.

Project-related trips were derived for the Environmentally Preferred Alternative at study intersections that were significantly impacted by the Proposed Project. Traffic volumes were derived for the Environmentally Preferred Alternative at significantly impacted study intersections for the following study conditions:

- Existing Plus Project Buildout;
- Forecast Year 2028 Plus Ambient Growth Plus Project Phase 1 & 2;
- Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 & 2;
- Forecast Year 2031 Plus Ambient Growth Plus Project Buildout;
- Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout; and
- Forecast Year 2035 Plus Ambient Growth Plus Project Buildout.

It is important to note the Environmentally Preferred Alternative analysis only evaluates significantly impacted study intersections since there are no study roadway segments or freeway merge/diverge segments that are significantly impacted by the Proposed Project. Therefore, the reduced trips anticipated by the Environmentally Preferred Alternative is expected to either maintain or reduce the impacts evaluated in the Proposed Project.

Forecast year 2023 plus ambient growth plus project Phase 1 conditions and forecast year 2023 plus ambient growth plus cumulative projects plus project Phase 1 conditions were not analyzed in the Environmentally Preferred Alternative since the trip generation is identical to the Proposed Project. Therefore, the significantly impacted study intersections and mitigation measures identified for the Proposed Project remain the same for the Environmentally Preferred Alternative. Forecast year 2035 plus ambient growth plus cumulative projects plus project buildout is also not analyzed in this section since no traffic impacts are identified in the Proposed Project.

Forecast Existing Plus Project Buildout Conditions

This section analyzes the potential traffic impact of the trips forecast to be generated by the Environmentally Preferred Alternative to existing plus project buildout conditions at the study intersections identified in **Table 65**. As shown in the table, significantly impacted intersections from the Proposed Project are compared to the Environmentally Preferred Alternative to determine if impacts are reduced to below a level of significance. The analysis shows all five significantly impacted study intersections for the Original Project remain significantly impacted in the Environmentally Preferred Alternative.

Table 65
Forecast Existing Plus Project Conditions
AM & PM Peak Hour Study Intersection LOS Comparison

Study Intersection	Traffic Control	Proposed Project			Environmentally Preferred Alternative		
		AM Peak Hour	PM Peak Hour	S?	AM Peak Hour	PM Peak Hour	S?
		Delay – LOS	Delay – LOS		Delay – LOS	Delay – LOS	
1. Sunset Ave / Bundy Canyon Rd	Two-Way Stop	26.0 – D	**42.8 – E**	**Yes**	26.3 – D	**39.8 – E**	**Yes**
2. Murrieta Rd / Scott Rd	All-Way Stop	**>50.0 – F**	**>50.0 – F**	**Yes**	**>50.0 – F**	**>50.0 – F**	**Yes**
3. Haun Rd-Zeiders Rd / Scott Rd	Signal	**>80.0 – F**	**>80.0 – F**	**Yes**	**>80.0 – F**	**62.0 – E**	**Yes**
6. Antelope Rd / Scott Rd	Signal	**61.9 – E**	**71.3 – E**	**Yes**	**60.5 – E**	50.4 – D	**Yes**
7. Zeiders Rd / Keller Rd	Two-Way Stop	22.8 – C	**>50.0 – F**	**Yes**	24.4 – C	**>50.0 – F**	**Yes**

Notes: Deficient operation shown in **bold**;
S? = Significant Impact? Delay shown in seconds

Exhibit 69 shows the mitigated forecast existing plus project buildout conditions study intersection geometry for the Environmentally Preferred Alternative. As shown, recommended mitigation measures for all five study intersections are identical to the mitigation measured identified for the Proposed Project.

Table 66 summarizes level of service of the significantly impacted study intersections assuming implementation of the recommended mitigation measures for forecast existing plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix J**. As shown, assuming implementation of the identified mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast existing plus project buildout conditions.

Table 66
Mitigated Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection LOS
Environmentally Preferred Alternative

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave - Cottonwood Cyn Rd / Bundy Cyn Rd	Two-Way Stop	20.0 – C	24.6 – D	No
2. Murrieta Rd / Scott Rd	Signal	20.5 – C	29.7 – D	No
3. Haun Rd - Zeiders Rd / Scott Rd	Signal	45.8 – D	39.0 – D	No
6. Antelope Rd / Scott Rd	Signal	45.7 – D	44.7 – D	No
7. Zeiders Rd / Keller Rd	Signal	17.7 – B	20.2 – B	No

Notes: Delay shown in seconds.

Forecast Year 2023 Plus Ambient Growth Plus Project Phase 1 Conditions

As previously mentioned, the analysis results and recommended mitigation measures for the forecast year 2023 plus ambient growth plus project Phase 1 condition under the Environmentally Preferred Alternative would not change from the Proposed Project since the trip generation in project Phase 1 does not change.

Forecast Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions

As previously mentioned, the analysis results and recommended mitigation measures for the forecast year 2023 plus ambient growth plus cumulative projects plus project Phase 1 condition under the Environmentally Preferred Alternative would not change from the Proposed Project since the trip generation in project Phase 1 does not change.

Forecast Year 2028 Plus Ambient Growth Plus Project Phases 1 & 2 Conditions

As previously mentioned, the analysis results and recommended mitigation measures for the forecast year 2028 plus ambient growth plus cumulative projects plus project Phase 1 & 2 conditions under the Environmentally Preferred Alternative would not change from the Proposed Project since the trip generation in project Phase 1 & 2 does not change.

Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions

This section analyzes the potential traffic impact of the trips forecast to be generated by the Environmentally Preferred Alternative to forecast year 2028 plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions at the study intersections identified in **Table 67**. As shown in the table, significantly impacted intersections from the Proposed Project are compared to the Environmentally Preferred Alternative to determine if impacts are reduced to below a level of significance. The analysis shows one significantly impacted study intersection for the Proposed Project remains significantly impacted in the Environmentally Preferred Alternative.

Table 67
Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection LOS Comparison

Study Intersection	Traffic Control	Proposed Project			Environmentally Preferred Alternative		
		AM Peak Hour	PM Peak Hour	S?	AM Peak Hour	PM Peak Hour	S?
		Delay – LOS	Delay – LOS		Delay – LOS	Delay – LOS	
1. Sunset Ave / Bundy Canyon Rd	Two-Way Stop	32.3 – D	**>50.0 – F**	**Yes**	31.8 – D	**>50.0 – F**	**Yes**
7. Zeiders Rd / Keller Rd	All-Way Stop	25.4 – D	**>50.0 – F**	**Yes**	10.6 – B	**>50.0 – F**	**Yes**

Notes: Deficient operation shown in **bold**;
S? = Significant Impact? Delay shown in seconds

Exhibit 70 shows the mitigated forecast year 2028 plus ambient growth plus cumulative projects plus project phases 1 & 2 conditions study intersection geometry for the Environmentally Preferred Alternative. As shown, recommended mitigation measures at the intersection of Sunset Avenue-Cotton Canyon Road / Bundy Canyon Road remain the same as the mitigation measures identified for the Proposed Project.

Table 68 summarizes level of service of the significantly impacted study intersection assuming implementation of the recommended mitigation measures for forecast year 2028 plus ambient growth plus cumulative projects plus project phases 1 & 2 conditions; detailed LOS analysis sheets are contained in **Appendix J**. As shown, assuming implementation of the identified mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2028 plus ambient growth plus cumulative projects plus project Phases 1 & 2 conditions.

Table 68
Mitigated Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection LOS Environmentally Preferred Alternative

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave – Cottonwood Cyn Rd / Bundy Cyn Rd	Signal	20.6 – C	6.5 – A	No
7. Zeiders Rd / Keller Rd	Signal	23.8 – C	26.3 – C	No

Notes: Delay shown in seconds.

Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions

This section analyzes the potential traffic impact of the trips forecast to be generated by the Environmentally Preferred Alternative to forecast year 2031 plus ambient growth plus project buildout conditions at the study intersections identified in **Table 69**. As shown in the table, significantly impacted intersections from the Proposed Project are compared to the Environmentally Preferred Alternative to determine if impacts are reduced to below a level of significance. The analysis shows one significantly impacted study intersection for the Proposed Project remains significantly impacted in the Environmentally Preferred Alternative.

Table 69
Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS Comparison

Study Intersection	Traffic Control	Proposed Project			Environmentally Preferred Alternative		
		AM Peak Hour	PM Peak Hour	S?	AM Peak Hour	PM Peak Hour	S?
		Delay – LOS	Delay – LOS		Delay – LOS	Delay – LOS	
2. Murrieta Rd / Scott Rd	Signal	53.2 – D	**>80.0 – F**	**Yes**	51.7 – D	**78.7 – E**	**Yes**
14. McElwain Rd / Linnel Ln	All-Way Stop	34.9 – D	**>50.0 – F**	**Yes**	34.9 – D	**>50.0 – F**	**Yes**

Notes: Deficient operation shown in **bold**;
S? = Significant Impact? Delay shown in seconds

Exhibit 71 shows the mitigated forecast year 2031 plus ambient growth plus project buildout conditions study intersection geometry for the Environmentally Preferred Alternative. As shown, recommended mitigation measures at the intersection of Murrieta Road / Scott Road remain the same as the mitigation measures identified for the Proposed Project.

Table 70 summarizes level of service of the significantly impacted study intersection assuming implementation of the recommended mitigation measures for forecast year 2031 plus ambient growth plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix J**. As shown, assuming implementation of the identified mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2031 plus ambient growth plus project buildout conditions.

Table 70
Mitigated Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection LOS
Environmentally Preferred Alternative

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
2. Murrieta Rd / Scott Rd	Signal	16.3 – B	18.1 – B	No
14. McElwain Rd / Linnel Ln	Signal	10.3 – B	9.5 – A	No

Notes: Delay shown in seconds.

Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

This section analyzes the potential traffic impact of the trips forecast to be generated by the Environmentally Preferred Alternative to forecast year 2031 plus ambient growth plus cumulative projects plus project buildout conditions at the study intersections identified in **Table 71**. As shown in the table, significantly impacted intersections from the Proposed Project are compared to the Environmentally Preferred Alternative to determine if impacts are reduced to below a level of significance. The analysis shows all four significantly impacted study intersections for the Proposed Project remains significantly impacted in the Environmentally Preferred Alternative.

Table 71
Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout
AM & PM Peak Hour Study Intersection LOS Comparison

Study Intersection	Traffic Control	Proposed Project			Environmentally Preferred Alternative		
		AM Peak Hour	PM Peak Hour	S?	AM Peak Hour	PM Peak Hour	S?
		Delay – LOS	Delay – LOS		Delay – LOS	Delay – LOS	
3. Haun Rd – Zeiders Rd / Scott Rd	Signal	64.6 – E	**>80.0 – F**	**Yes**	61.5 – E	**>80.0 – F**	**Yes**
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	**67.4 – E**	41.1 – D	**Yes**	**66.8 – E**	39.7 – D	**Yes**
20. Whitewood Rd / Clinton Keith Rd	Signal	**>80.0 – F**	**72.4 – E**	**Yes**	**>80.0 – F**	**72.2 – E**	**Yes**

Notes: Deficient operation shown in **bold**; S? = Significant Impact? Delay shown in seconds

Exhibit 72 shows the mitigated forecast year 2031 plus ambient growth plus cumulative projects plus project buildout conditions study intersection geometry for the Environmentally Preferred Alternative. As shown, recommended mitigation measures at all three intersections remain the same as the mitigation measures identified for the Proposed Project.

Table 72 summarizes level of service of the significantly impacted study intersection assuming implementation of the recommended mitigation measures for forecast year 2031 plus ambient growth plus cumulative projects plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix J**. As shown, assuming implementation of the identified mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2031 plus ambient growth plus cumulative projects plus project buildout conditions.

Table 72
Mitigated Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection LOS
Environmentally Preferred Alternative

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
3. Haun Rd – Zeiders Rd / Scott Rd	Signal	53.2 – D	43.8 – D	No
16. Murrieta Oaks East Ave / Clinton Keith Rd	Signal	45.4 – D	28.3 – C	No
20. Whitewood Rd / Clinton Keith Rd	Signal	35.1 – D	51.4 – D	No

Notes: Delay shown in seconds.

Forecast Year 2035 Plus Ambient Growth Plus Project Buildout Conditions

This section analyzes the potential traffic impact of the trips forecast to be generated by the Environmentally Preferred Alternative to forecast year 2035 plus ambient growth plus project buildout conditions at the study intersections identified in **Table 73**. As shown in the table, significantly impacted intersections from the Proposed Project are compared to the Environmentally Preferred Alternative to determine if impacts are reduced to below a level of significance. The analysis shows all five significantly impacted study intersections for the Proposed Project remains significantly impacted in the Environmentally Preferred Alternative.

Exhibit 73 shows the mitigated forecast year 2035 plus ambient growth plus project buildout conditions study intersection geometry for the Environmentally Preferred Alternative. As shown, recommended mitigation measures at all five intersections remain the same as the mitigation measures identified for the Proposed Project.

Table 74 summarizes level of service of the significantly impacted study intersection assuming implementation of the recommended mitigation measures for forecast year 2035 plus ambient growth plus project buildout conditions; detailed LOS analysis sheets are contained in **Appendix J**. As shown, assuming implementation of the identified mitigation measures, the traffic impacts at the significantly impacted study intersections are forecast to be reduced to a level considered less than significant for forecast year 2035 plus ambient growth plus project buildout conditions.

Table 73
Forecast Year 2035 Plus Ambient Growth Plus Project Buildout
AM & PM Peak Hour Study Intersection LOS Comparison

Study Intersection	Traffic Control	Proposed Project			Environmentally Preferred Alternative		
		AM Peak Hour	PM Peak Hour	S?	AM Peak Hour	PM Peak Hour	S?
		Delay – LOS	Delay – LOS		Delay – LOS	Delay – LOS	
1. Sunset Ave / Bundy Cayon Rd	Two-Way Stop	**>50.0 - F**	**>50.0 - F**	**Yes**	**>50.0 - F**	**>50.0 - F**	**Yes**
3. Haun Rd – Zeiders Rd / Scott Rd	Signal	39.8 - D	**>80.0 - F**	**Yes**	39.8 - D	**>80.0 - F**	**Yes**
7. Zeiders Rd / Keller Rd	Two-Way Stop	**>50.0 - F**	**>50.0 - F**	**Yes**	**>50.0 - F**	**>50.0 - F**	**Yes**
14. McElwain Rd / Linnel Ln	All-Way Stop	**>50.0 - F**	**>50.0 - F**	**Yes**	**>50.0 - F**	**>50.0 - F**	**Yes**
20. Whitewood Rd / Clinton Keith Rd	Signal	51.8 - D	**64.9 - E**	**Yes**	51.7 - D	**63.7 - E**	**Yes**

Notes: Deficient operation shown in **bold**;
S? = Significant Impact? Delay shown in seconds

Table 74
Mitigated Forecast Year 2035 Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection LOS
Environmentally Preferred Alternative

Study Intersection	Traffic Control	AM Peak Hour	PM Peak Hour	Significant Impact?
		Delay – LOS	Delay – LOS	
1. Sunset Ave / Bundy Cayon Rd	Signal	12.0 – B	12.0 – B	No
3. Haun Rd – Zeiders Rd / Scott Rd	Signal	37.7 – D	48.8 – D	No
7. Zeiders Rd / Keller Rd	Signal	20.0 – C	34.4 – C	No
14. McElwain Rd / Linnel Ln	Signal	15.5 – B	13.5 – B	No
20. Whitewood Rd / Clinton Keith Rd	Signal	42.7 – D	51.1 – D	No

Notes: Delay shown in seconds.

Forecast Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

As previously mentioned, the analysis results and recommended mitigation measures for the forecast year 2035 plus ambient growth plus cumulative projects plus project buildout conditions under the Environmentally Preferred Alternative would not change from the Proposed Project.

Table 75 includes the signal warrants for the significantly impacted intersections evaluated under the Environmentally Preferred Alternative.

An onsite analysis was conducted to evaluate the internal intersections and roadway segments within the Specific Plan area. The analysis also includes the intersections along Keller Road providing direct access to the project. **Appendix K** summarizes the findings of the onsite analysis that includes a queuing analysis along McElwain Road from Keller Road to "D" Street.

Table 75
MUTCD Peak Hour Signal Warrant Analysis Summary
Environmentally Preferred Alternative

Unsignalized Study Intersection	Analysis Scenario Signal Warrant Met?																			
	Existing Conditions		Forecast Existing Plus Project Buildout Conditions		Forecast Year 2023 Plus Ambient Growth Plus Project Phase 1 Conditions		Forecast Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions		Forecast Year 2028 Plus Ambient Growth Plus Project Phases 1 & 2 Conditions		Forecast Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions		Forecast Year 2031 Plus Ambient Growth Plus Project Buildout Conditions		Forecast Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions		Forecast Year 2035 Plus Ambient Growth Plus Project Buildout Conditions		Forecast Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1. Sunset Ave-Cottonwood Cyn Rd / Bundy Cyn Rd	No	No	No	No	No	No	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2. Murrieta Rd / Scott Rd	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
7. Zeiders Rd / Keller Rd	No	No	No	**Yes**	No	No	No	No	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
14. McElwain Rd / Linnel Ln	No	No	No	No	No	No	**Yes**	No	No	No	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

23. CONCLUSIONS

This study analyzes two land use alternatives for the project site, the Proposed Project and Environmentally Preferred Alternative. The main body of this report focuses on the proposed project to be consistent with the Environmental Impact Report (EIR) and provides a conservative analysis since the proposed project is expected to generate more traffic than the Environmentally Preferred Alternative. An on-site analysis has also been prepared and included in Appendix K of this report focusing on the Environmentally Preferred Alternative to be consistent with the Specific Plan.

The proposed project consists of 578 single-family detached dwelling units, 172 multi-family attached dwelling units, and a 346,302 square-foot (SF) retail component near the northeast area of the project site. The main body of this report focuses on the proposed project to be consistent with the Environmental Impact Report.

The Environmentally Preferred Alternative consists of 557 single-family detached dwelling units, 193 multi-family attached dwelling units, and a 222,156 square-foot (SF) retail component near the northeast area of the project site. Analysis of the Environmentally Preferred Alternative is provided in Section 22 of this report and is the primary focus of the on-site analysis to be consistent with the Specific Plan.

Mitigation measures have been identified to achieve acceptable LOS and fully mitigate project forecast significant traffic impacts at the study intersections for all study scenarios evaluated in this report. The analysis assumes the planned construction of the Keller Road interchange at I-215 freeway and Phase 1 improvements planned at the Scott Road / I-215 interchange is completed by Year 2023. The construction of the Keller Road / I-215 interchange by Year 2023 provides direct access to the project and therefore, a minimal number of project trips are expected to access the I-215 freeway via the Scott Road and Clinton Keith Road interchanges.

Furthermore, construction of the Keller Road interchange at the I-215 Freeway will provide additional access to the freeway and the study intersection of Antelope Road/Keller Road intersection will be eliminated and realigned per the City's future circulation improvement plans.

Based on a request from the City and to satisfy the level of service policy on Keller Road from Zeiders Road to I-215 SB ramps, the eastbound direction of Keller Road from Zeiders Road to I-215 SB ramps should be improved from one lane to two lanes. The improvement from one to two lanes in the eastbound direction is included as project mitigation and should be built to the City's Major roadway classification standards. Assuming the lane improvement in the eastbound direction, the resulting level of service improves from a deficient LOS D to an acceptable level of service A.

Per the City of Murrieta General Plan Circulation Element, McElwain Road north of Linnel Lane is classified as a four-lane Secondary roadway with LOS E capacity of 25,900 ADT. As part of this analysis, reduction in classification of McElwain Road to a two-lane Collector (LOS E capacity of 13,000 ADT) is evaluated to determine if adequate capacity will be provided to serve the forecast year 2035 General Plan traffic volumes on McElwain Road from the project access to Linnel Lane. The results of the analysis indicate McElwain Road from the project access to Linnel Lane is forecast to operate at an acceptable LOS as a two-lane Collector roadway for forecast year 2035 existing plus ambient growth plus cumulative projects plus project buildout conditions and all other scenarios evaluated in this report. However, the project does not propose to change the City's classification of McElwain Road from a four-lane Secondary roadway to a two-lane Collector. At the request of the City, McElwain Road from "D" Street to

the project's southern boundary would include three travel lanes (two southbound and one northbound) to accommodate a truck climbing lane which is referred to as a three-lane interim Modified Collector in the roadway segment analysis in this report.

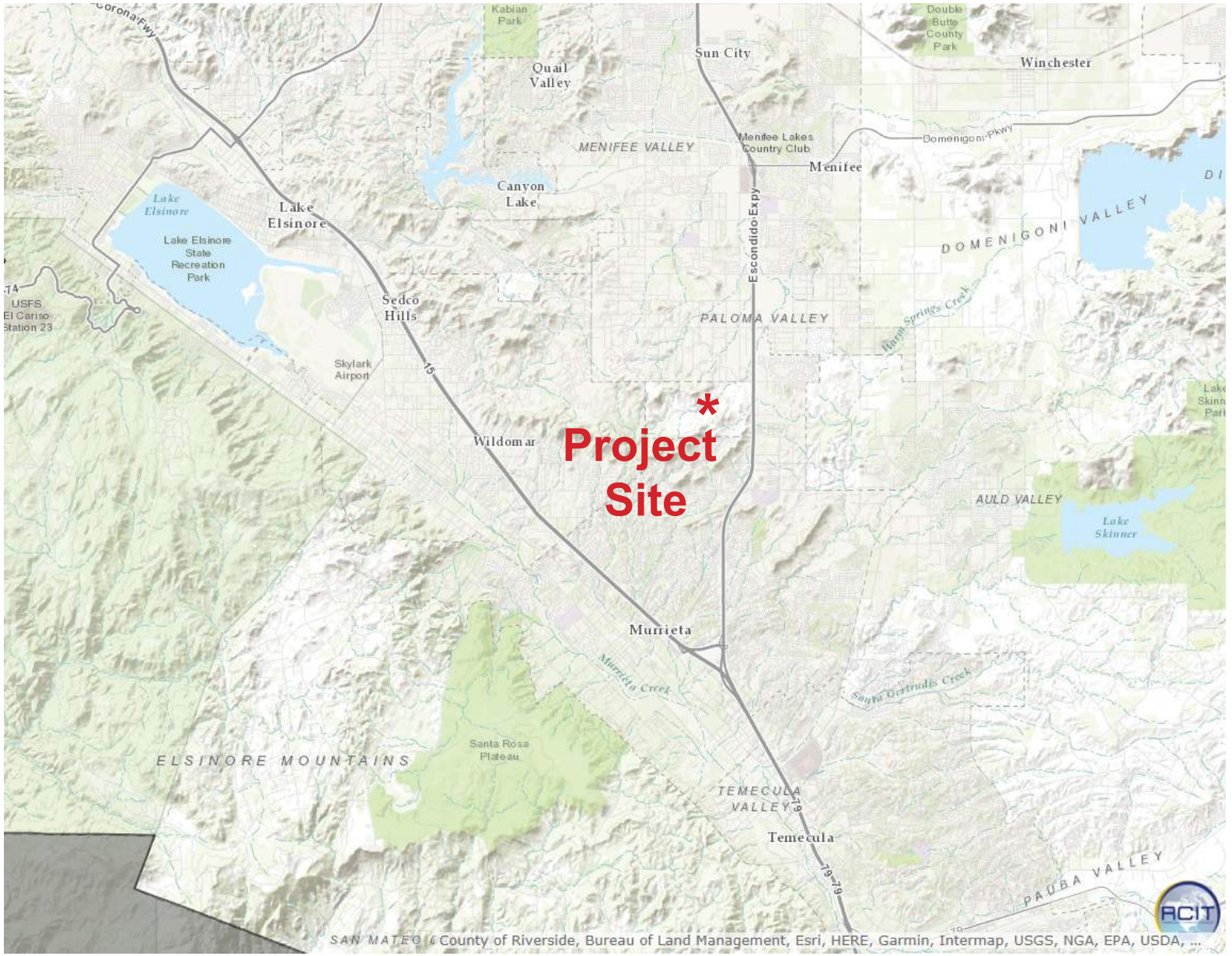
The study freeway ramps are forecast to operate at an acceptable LOS (LOS D or better) for all analysis scenarios. Therefore, the project does not result in significant impacts at any of the study freeway ramps under all study conditions and mitigation is not required. At buildout of Phase 1 of the proposed project in year 2023, reconstruction of the I-215 / Scott Road interchange (Phase 1) improvements and construction of the I-215 / Keller Road interchange is anticipated to be completed and assumed in the forecast year 2023 plus ambient growth plus project Phase 1 conditions through forecast year 2035 with ambient growth plus cumulative projects plus project buildout conditions. With construction of the Keller Road interchange, a minimal number of project trips are expected to access the I-215 Freeway via the Scott Road and Clinton Keith Road interchanges.

It should also be noted that no additional improvements are necessary to provide adequate progression and turn lane vehicular queue capacity along Keller Road between Zeiders Road and Mapleton Avenue after construction of the future Keller Road interchange with the I-215 Freeway.

The analysis results show the Environmentally Preferred Alternative maintains the significantly impacted study intersections identified in the proposed project. Although the delays and levels of service improve with the Environmentally Preferred Alternative compared to the proposed project, the same mitigation measures identified for the proposed project are also required for the Environmentally Preferred Alternative.

An on-site analysis was completed for both land use alternatives to determine the lane configurations and traffic controls that would be needed for the primary intersections and street sections internal and adjacent to the Murrieta Hills Specific Plan site. The on-site analysis focuses on the Environmentally Preferred Alternative since this land use alternative appears to be the preferred alternative and to be consistent with the Specific Plan. However, an on-site analysis of the proposed project is also included focusing on the intersections along McElwain Road since the proposed project increases the commercial retail square footage compared to the Environmentally Preferred Alternative. A queuing analysis was conducted along McElwain Road between Keller Road and "D" Street to determine if there is adequate turn lane vehicular capacity during the Forecast Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout conditions. The queuing analysis results shows intersection spacing and capacities at turn lanes at intersections along McElwain Road within the project site are adequate.

APPENDIX A
Exhibits



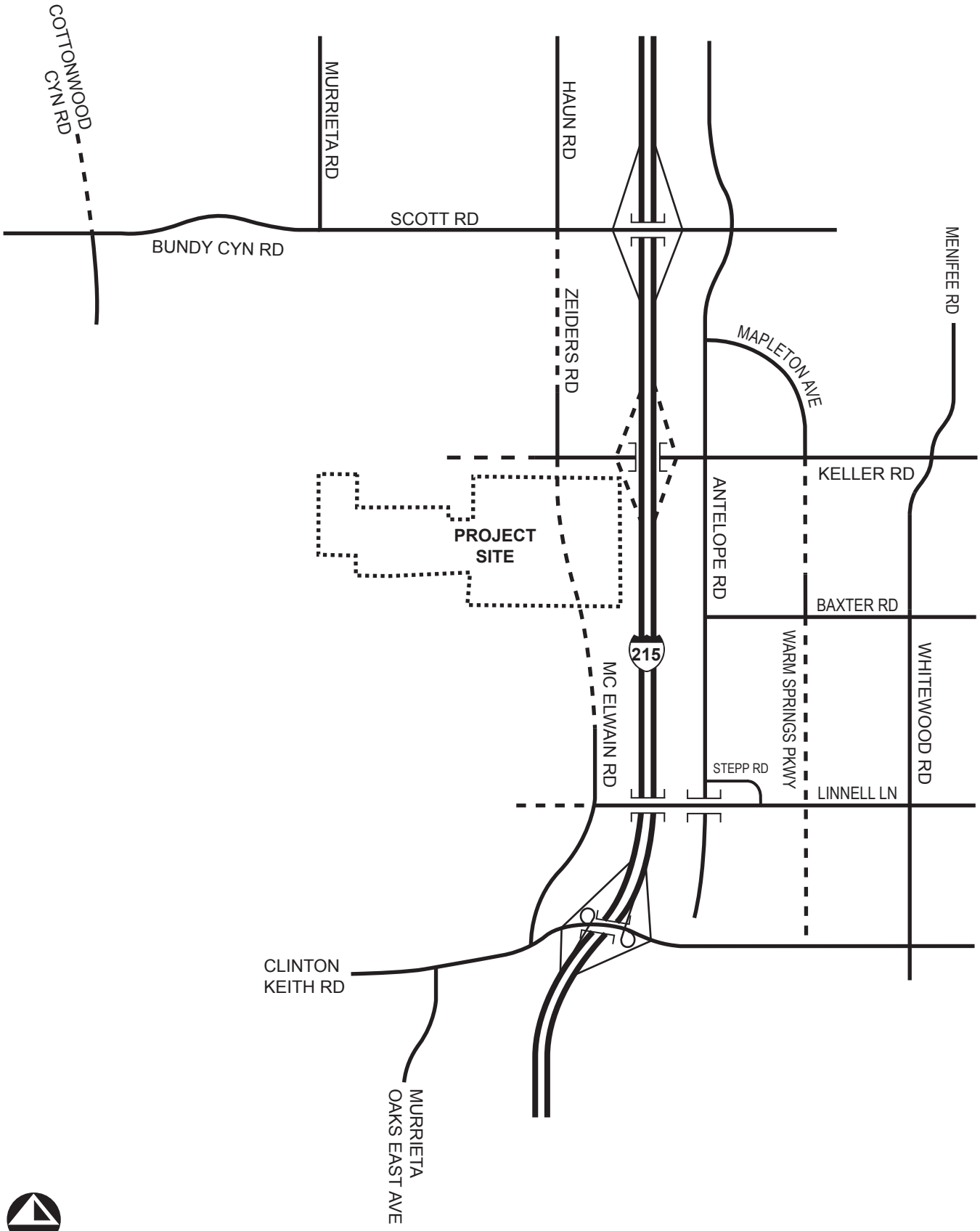
Not to Scale

Michael Baker INTERNATIONAL

Regional Project Location

Exhibit 1

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits Oct/2017



Not to Scale

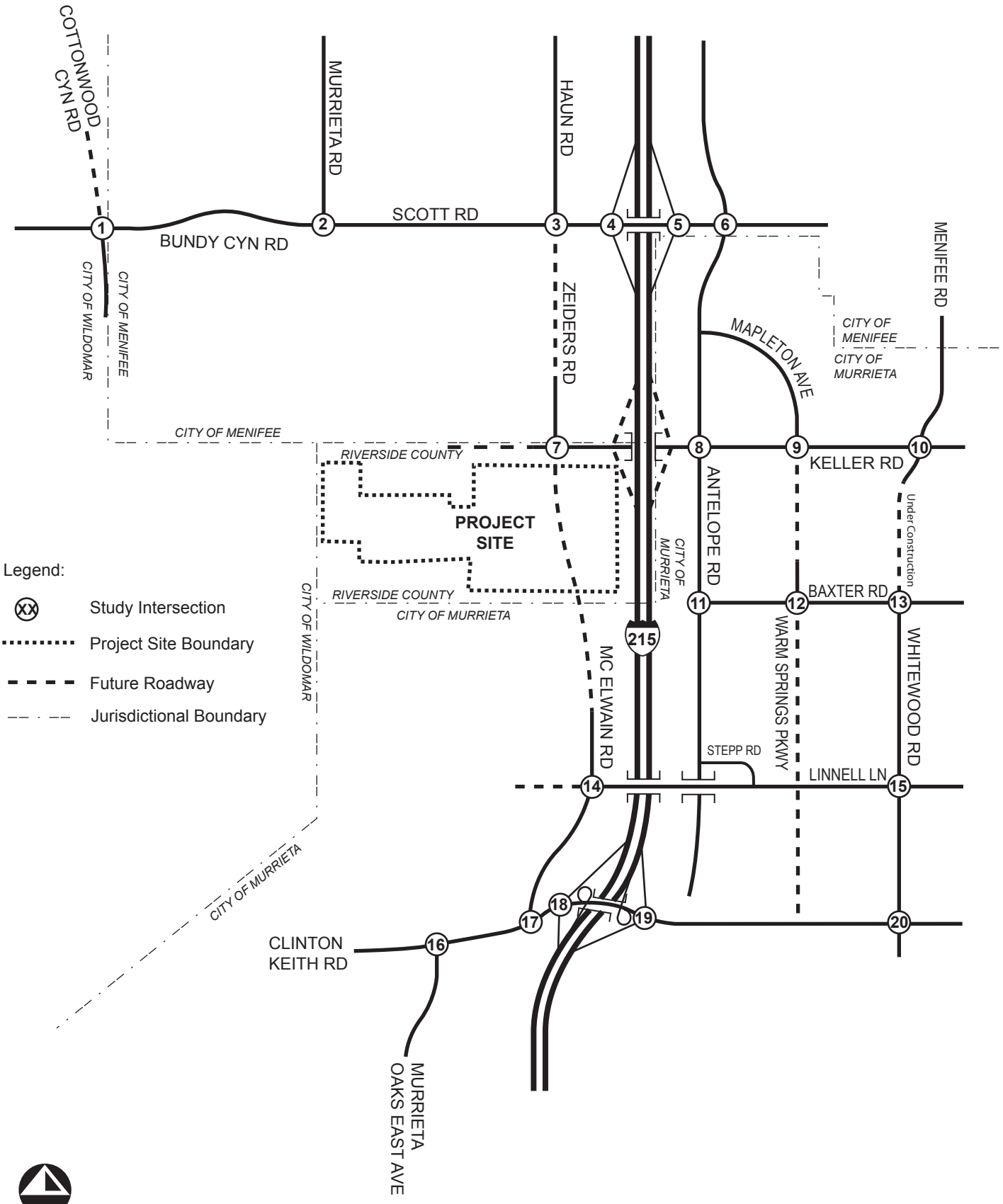
Michael Baker INTERNATIONAL

Project Site Location

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

Oct/2017

Exhibit 2



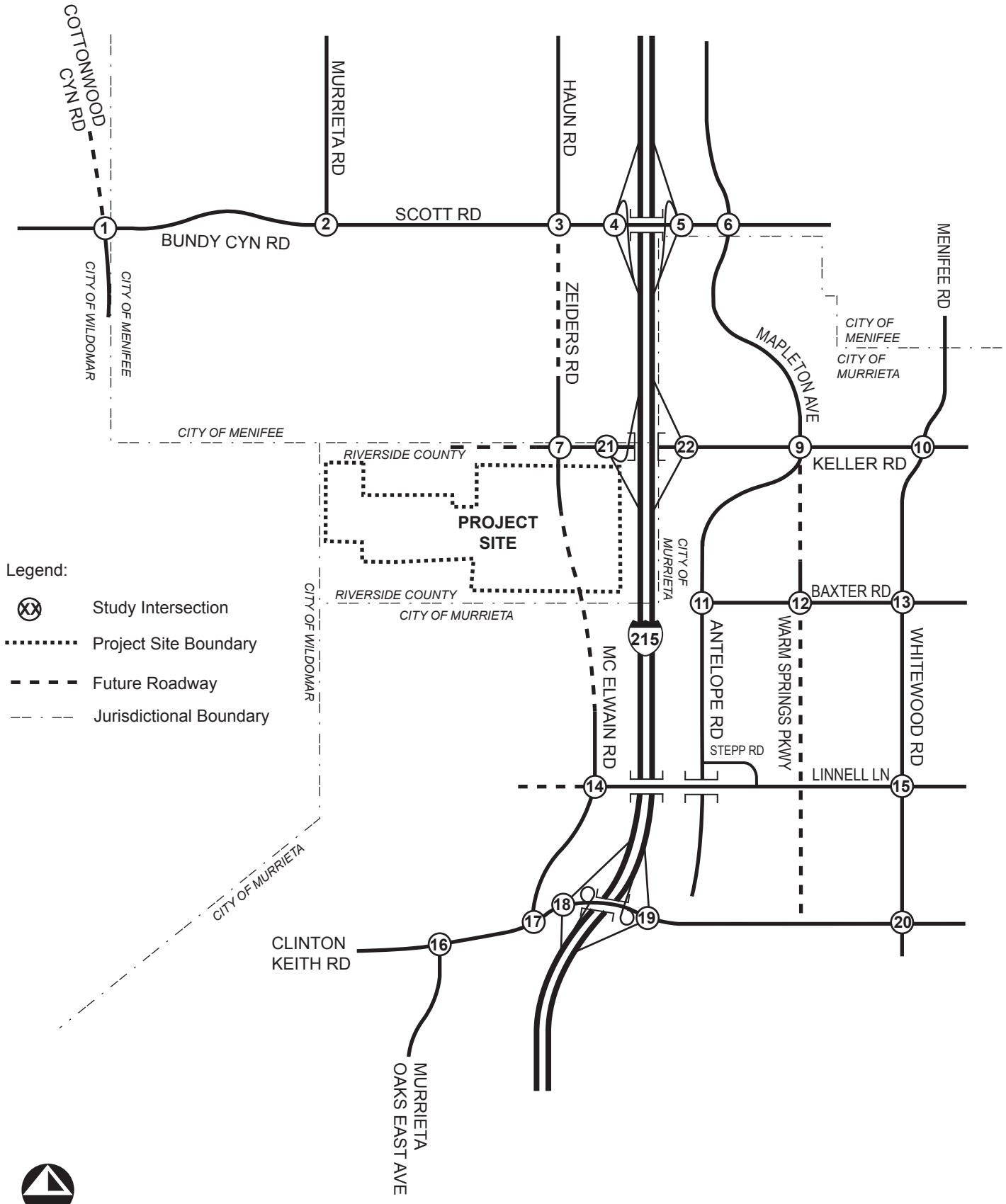
Existing Year 2017 Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

Oct/2017

Exhibit 3



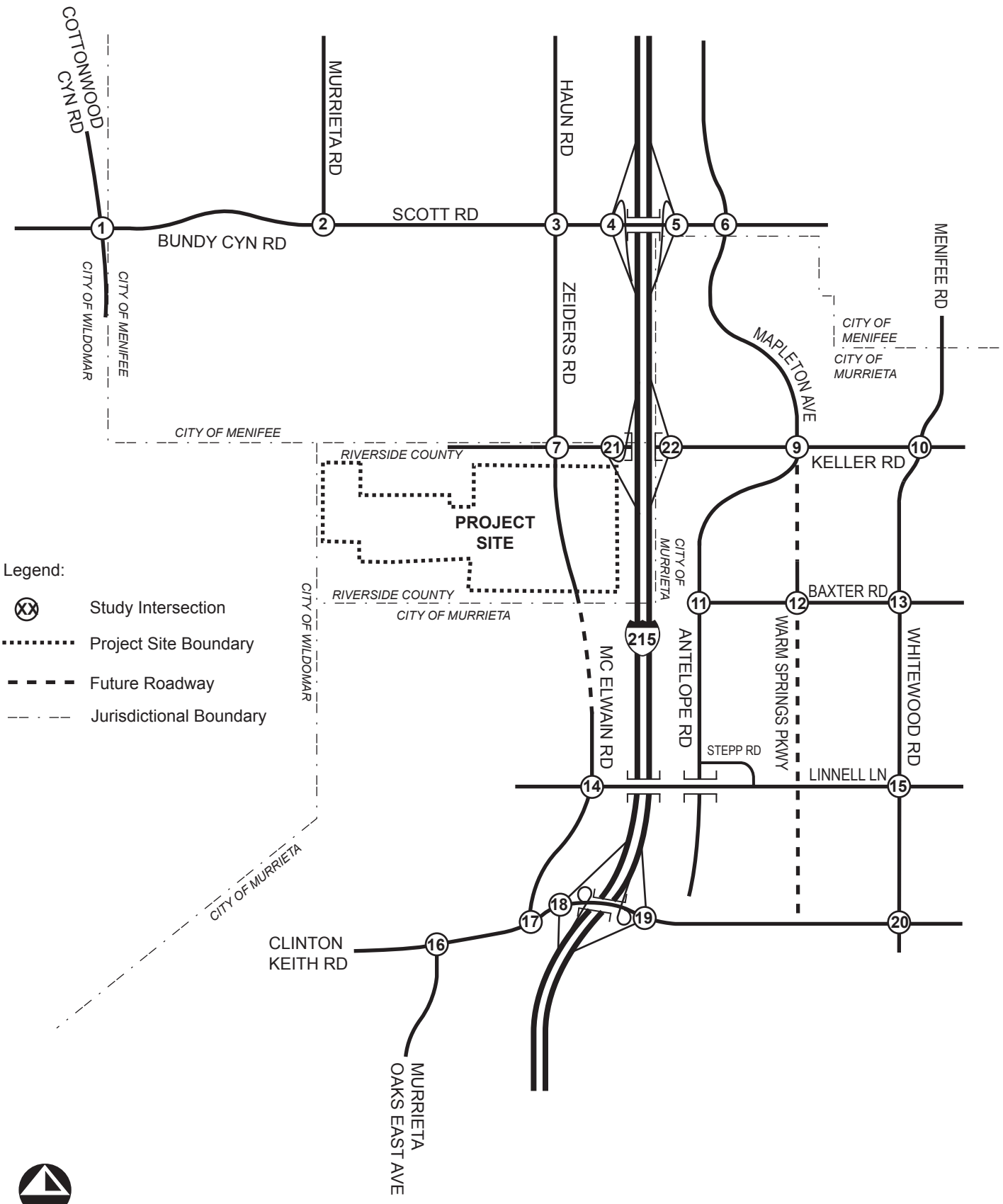
Not to Scale

Phase 1 - Year 2023 Study Area
Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2017

Exhibit 4



Not to Scale

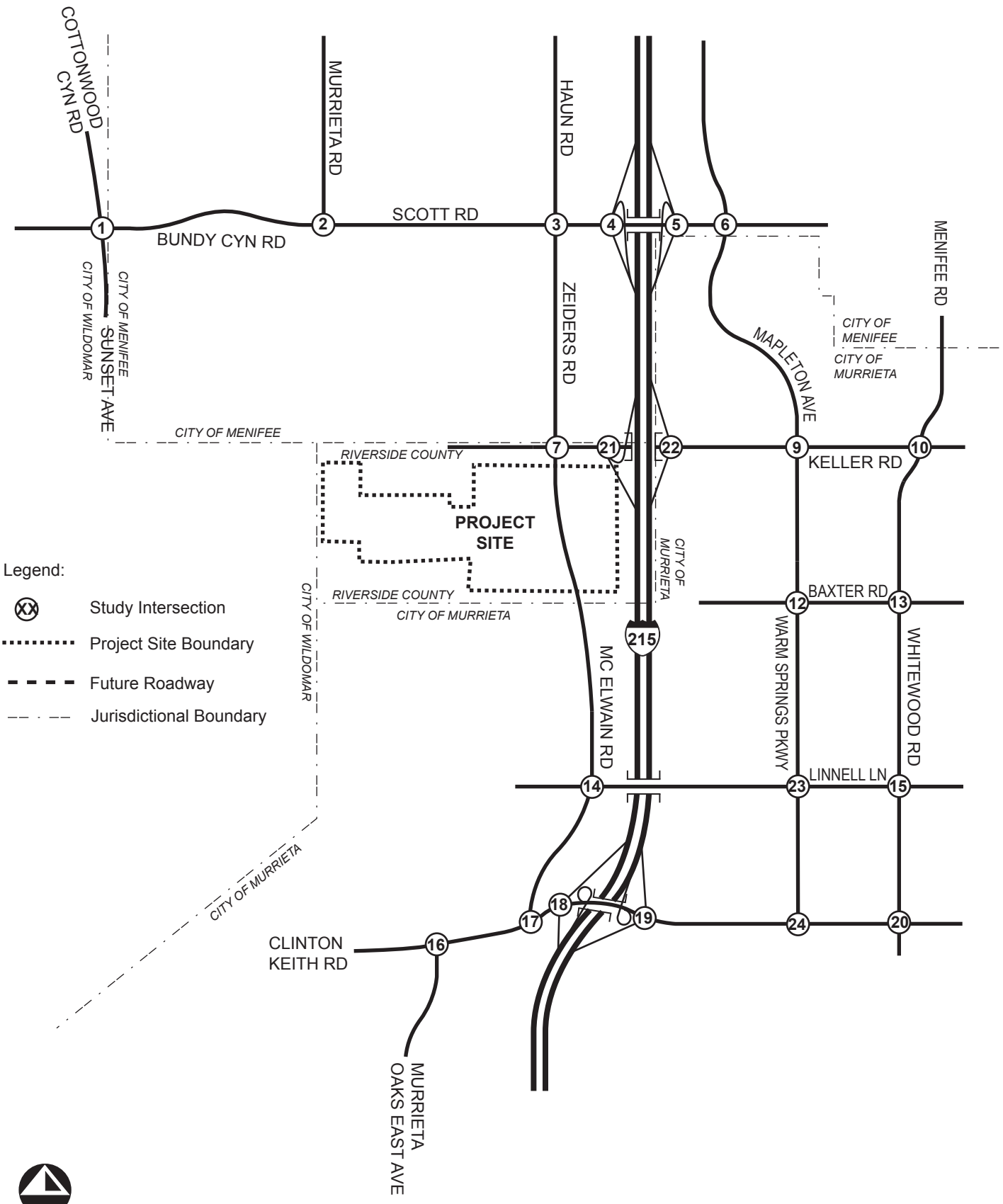
Phase 2 - Year 2028 Study Area
Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2017

Exhibit 5



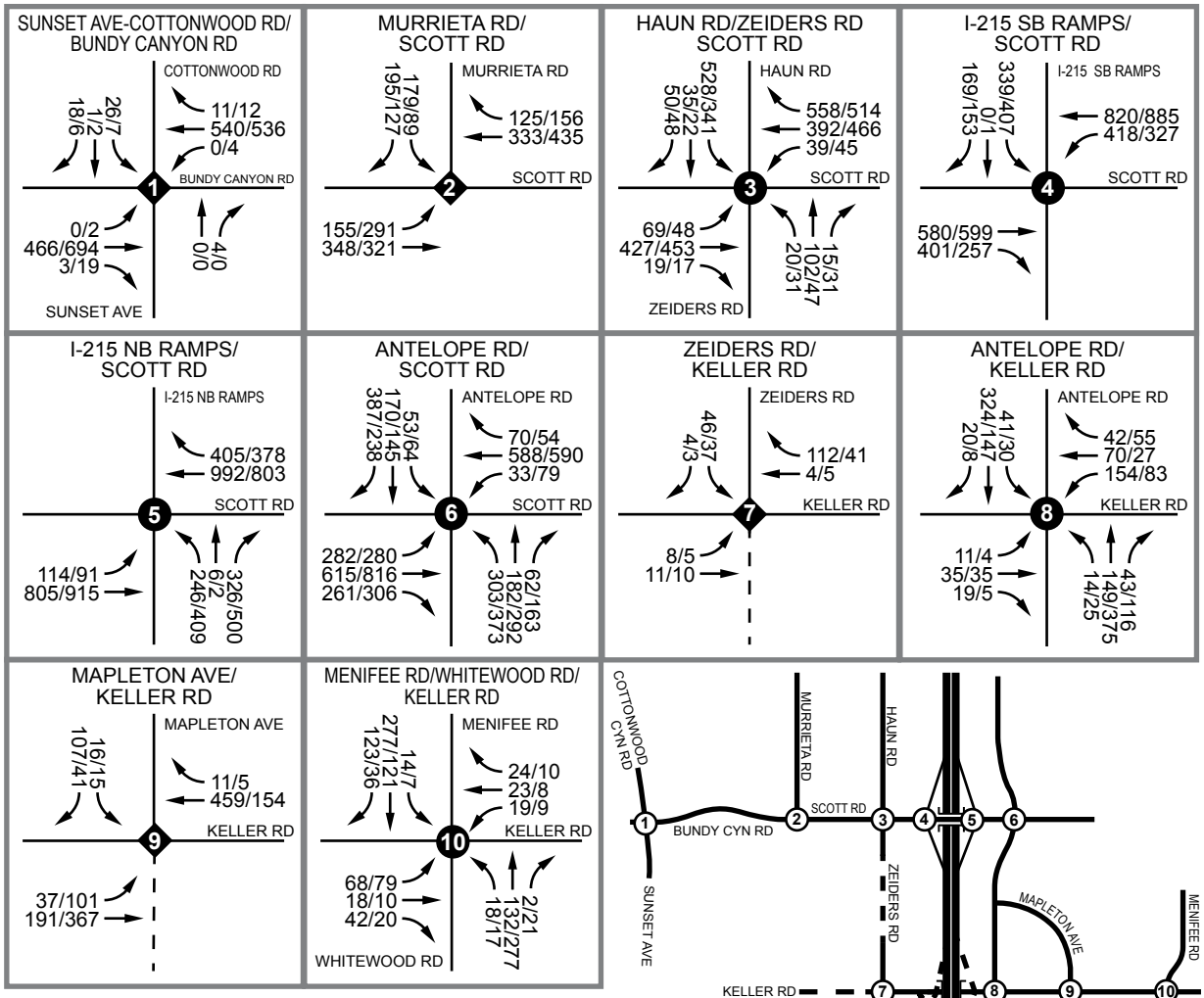
Not to Scale

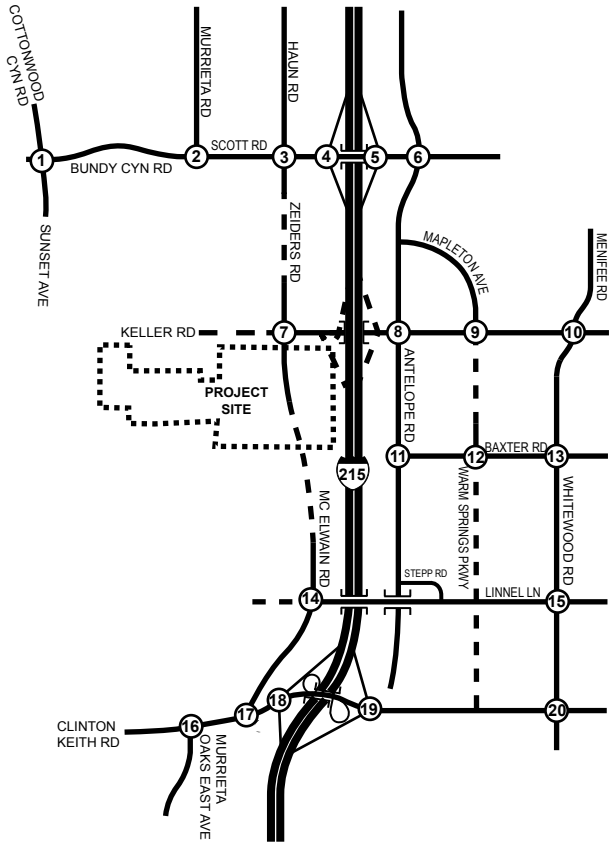
Phase 3 - Year 2031 & Forecast Year 2035 Study Area Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2017

Exhibit 6





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

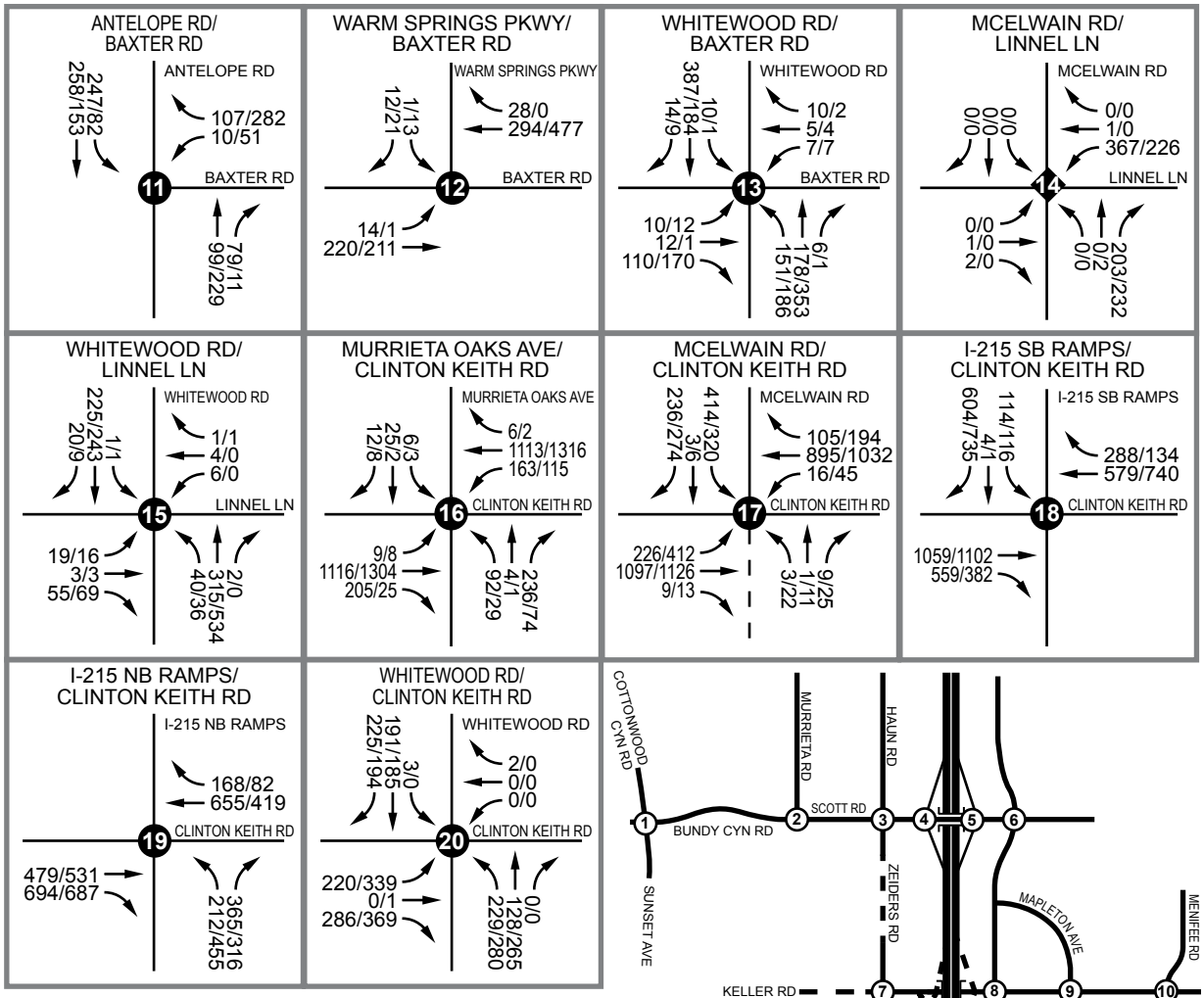
Area 1

Existing AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 7



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

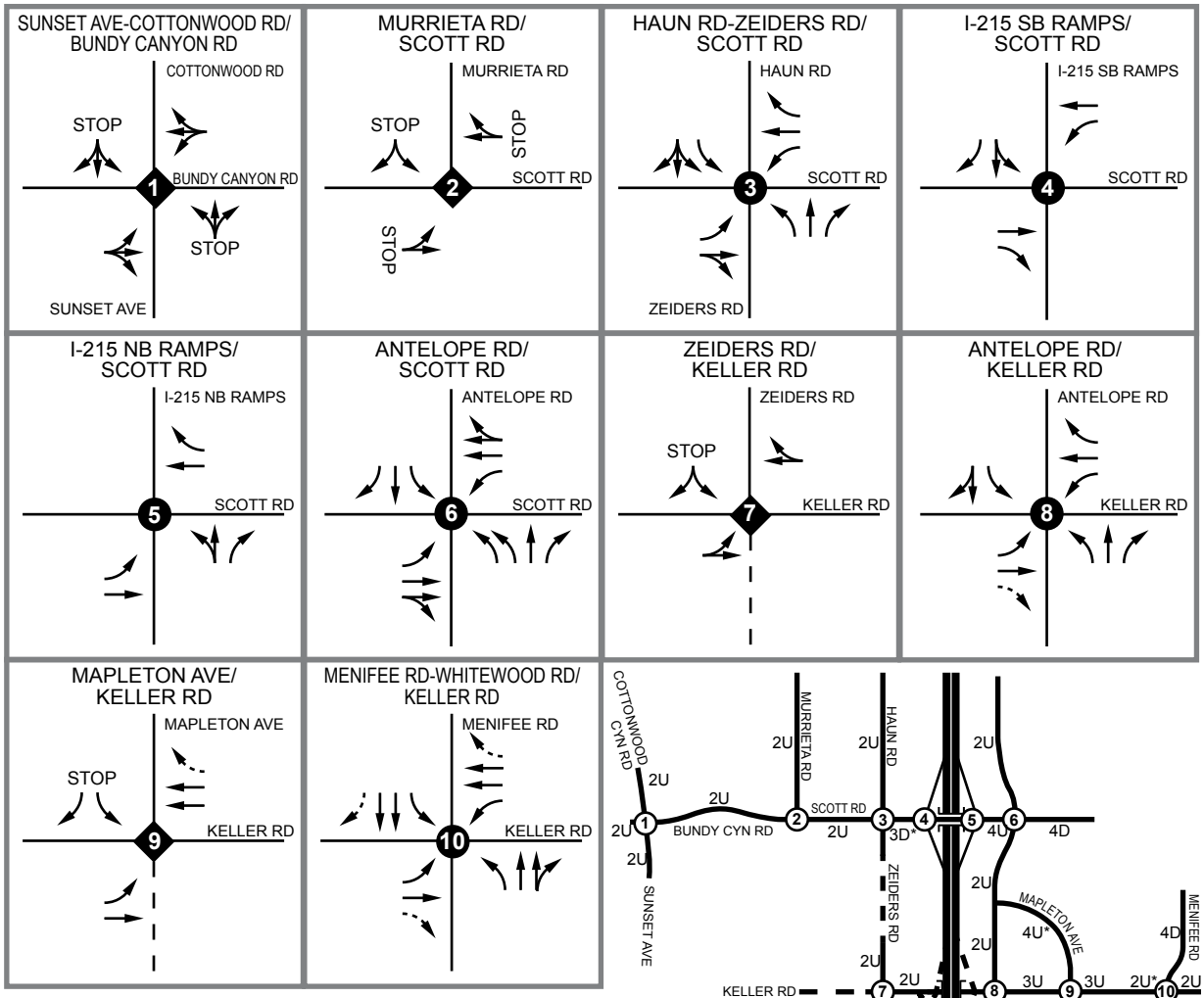
Area 2

Existing AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 8



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- 2D Two-lane Divided Roadway with Raised Median
- 2U Two-lane Undivided Roadway
- 2U* Two-lane Undivided Roadway with Painted Median
- 3D* Three-lane Divided Roadway with Raised Median (Two-eastbound lanes, One-westbound lane)
- 3D Three-lane Divided Roadway with Raised Median (Two-northtbound lanes, One-southbound lane)
- 3U Three-lane Undivided Roadway (Two-westbound lanes, One-eastbound lane)
- 4D Four-lane Divided Roadway with Raised Median
- 4U Four-lane Undivided Roadway
- 4U* Four-lane Undivided Roadway with Painted Median
- 6D Six-lane Divided Roadway with Raised Median

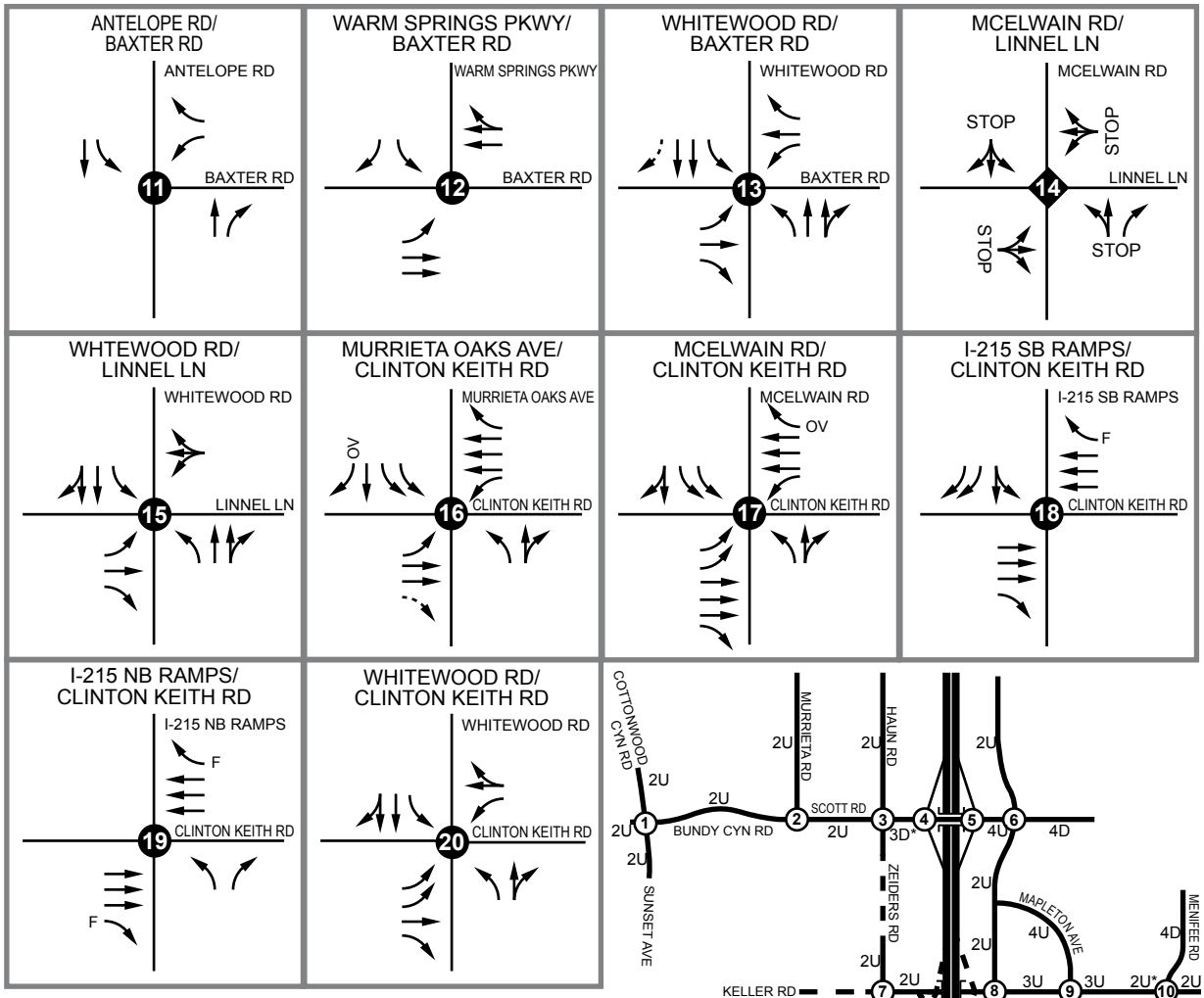
Not to Scale

Area 1
Existing Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 9



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- 2D Two-lane Divided Roadway with Raised Median
- 2U Two-lane Undivided Roadway
- 2U* Two-lane Undivided Roadway with Painted Median
- 3D* Three-lane Divided Roadway with Raised Median (Two-eastbound lanes, One-westbound lane)
- 3D Three-lane Divided Roadway with Raised Median (Two-northtbound lanes, One-southbound lane)
- 3U Three-lane Undivided Roadway (Two-westbound lanes, One-eastbound lane)
- 4D Four-lane Divided Roadway with Raised Median
- 4U Four-lane Undivided Roadway
- 4U* Four-lane Undivided Roadway with Painted Median
- 6D Six-lane Divided Roadway with Raised Median

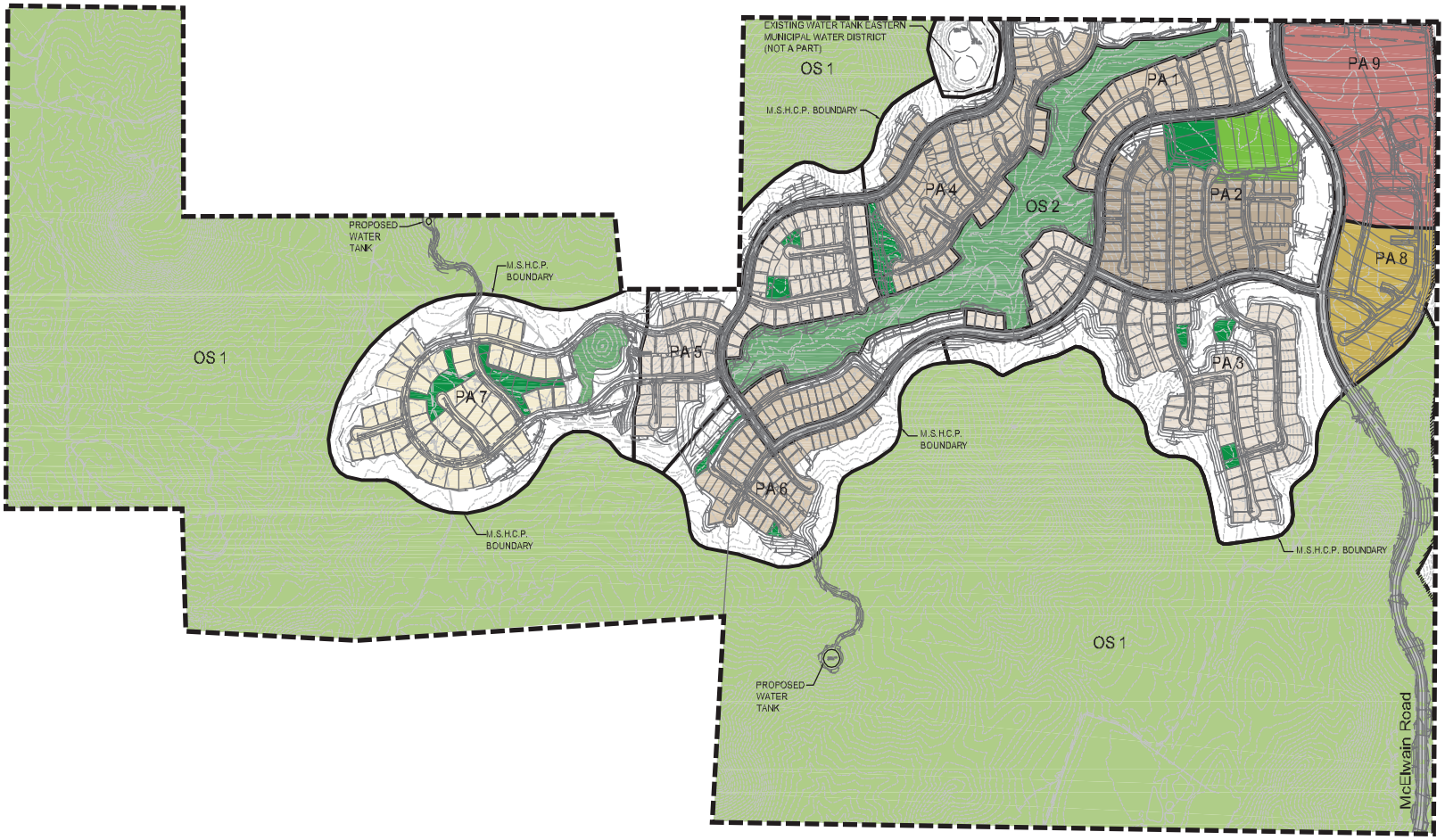
Not to Scale

Area 2
Existing Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 10



Legend:

Project Site Boundary

Not to Scale

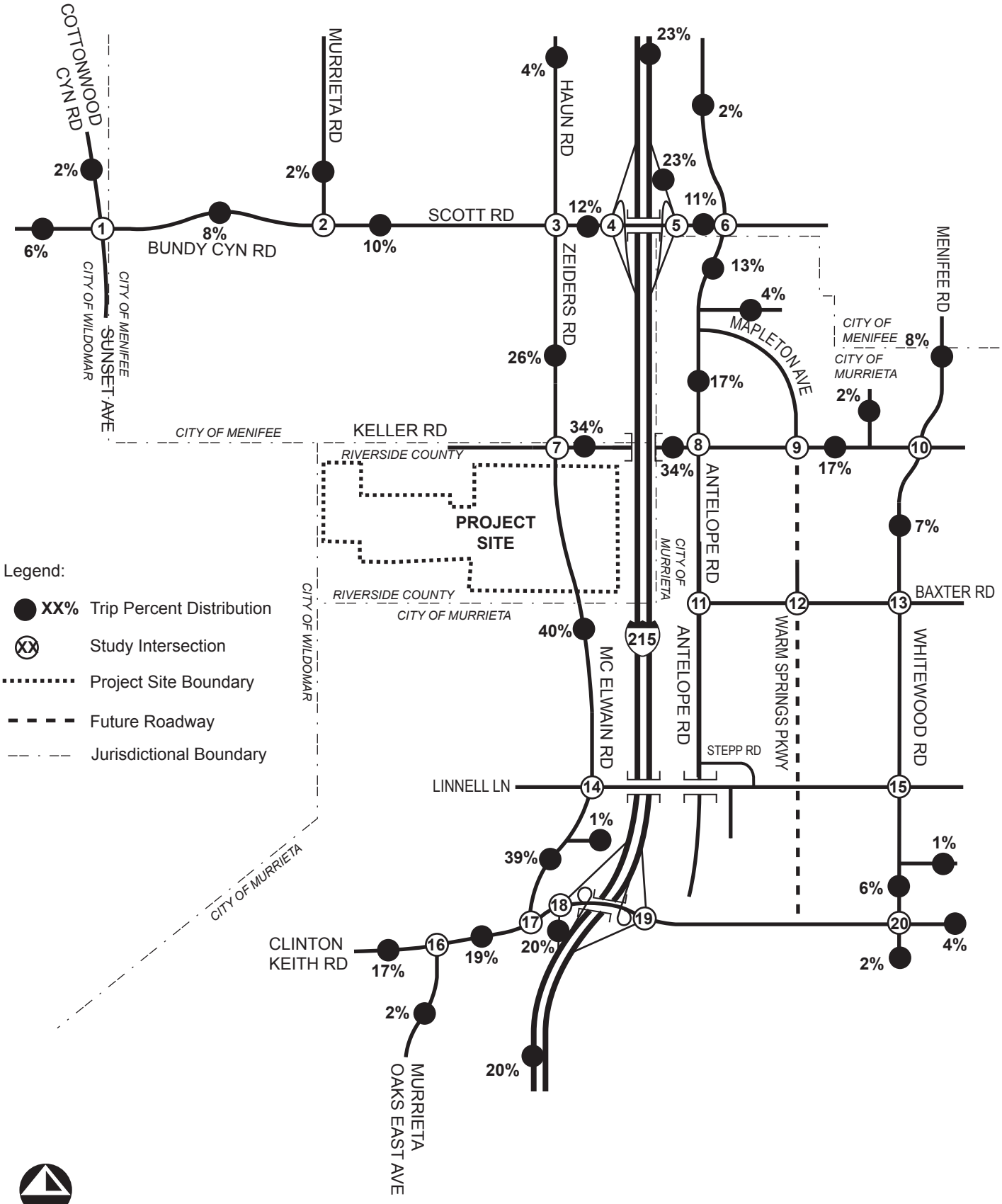
Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Site Plan

NOV/2017

Proposed Project Site Plan

Exhibit 11



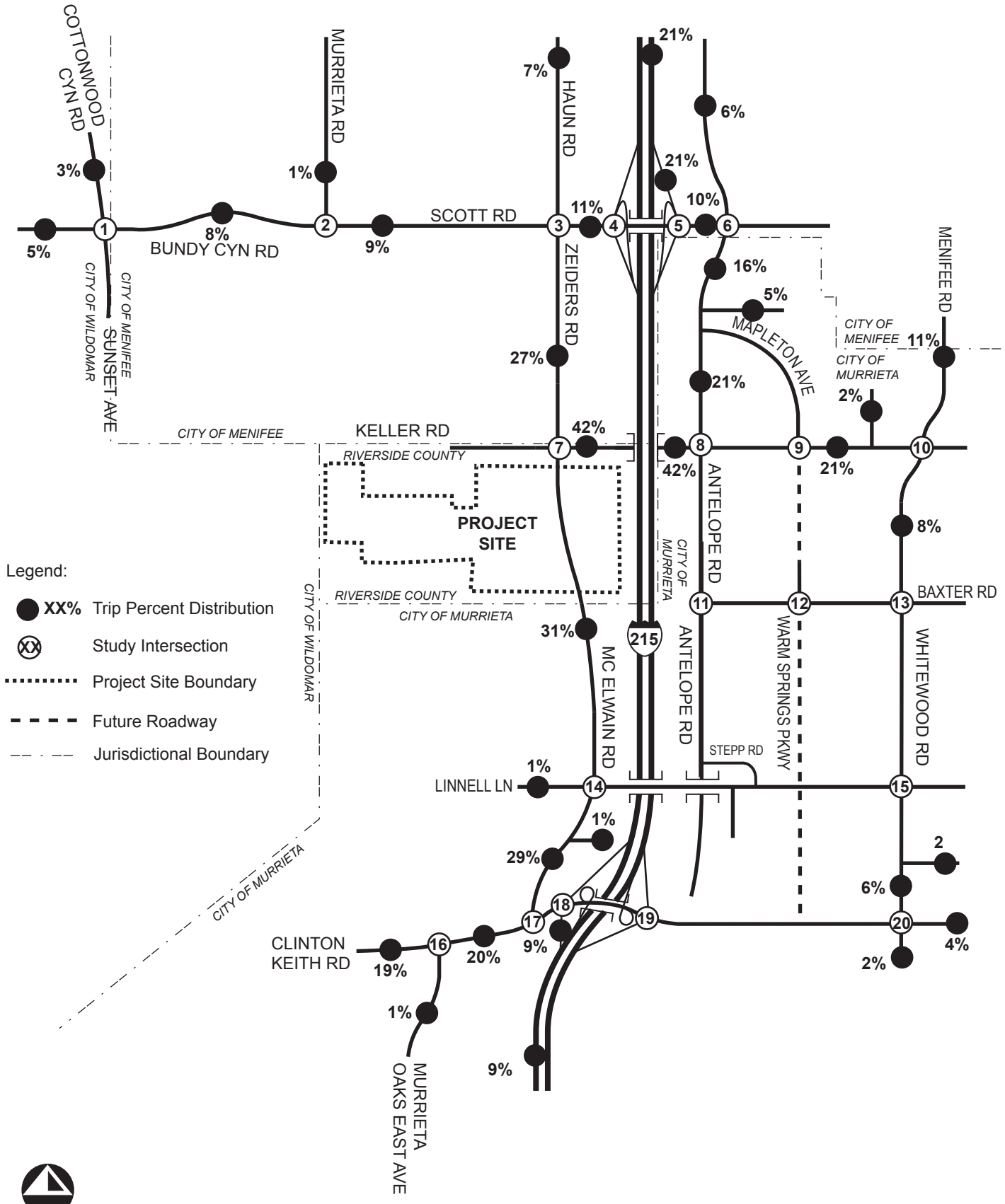
Forecast Existing Plus Project Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 12



Not to Scale

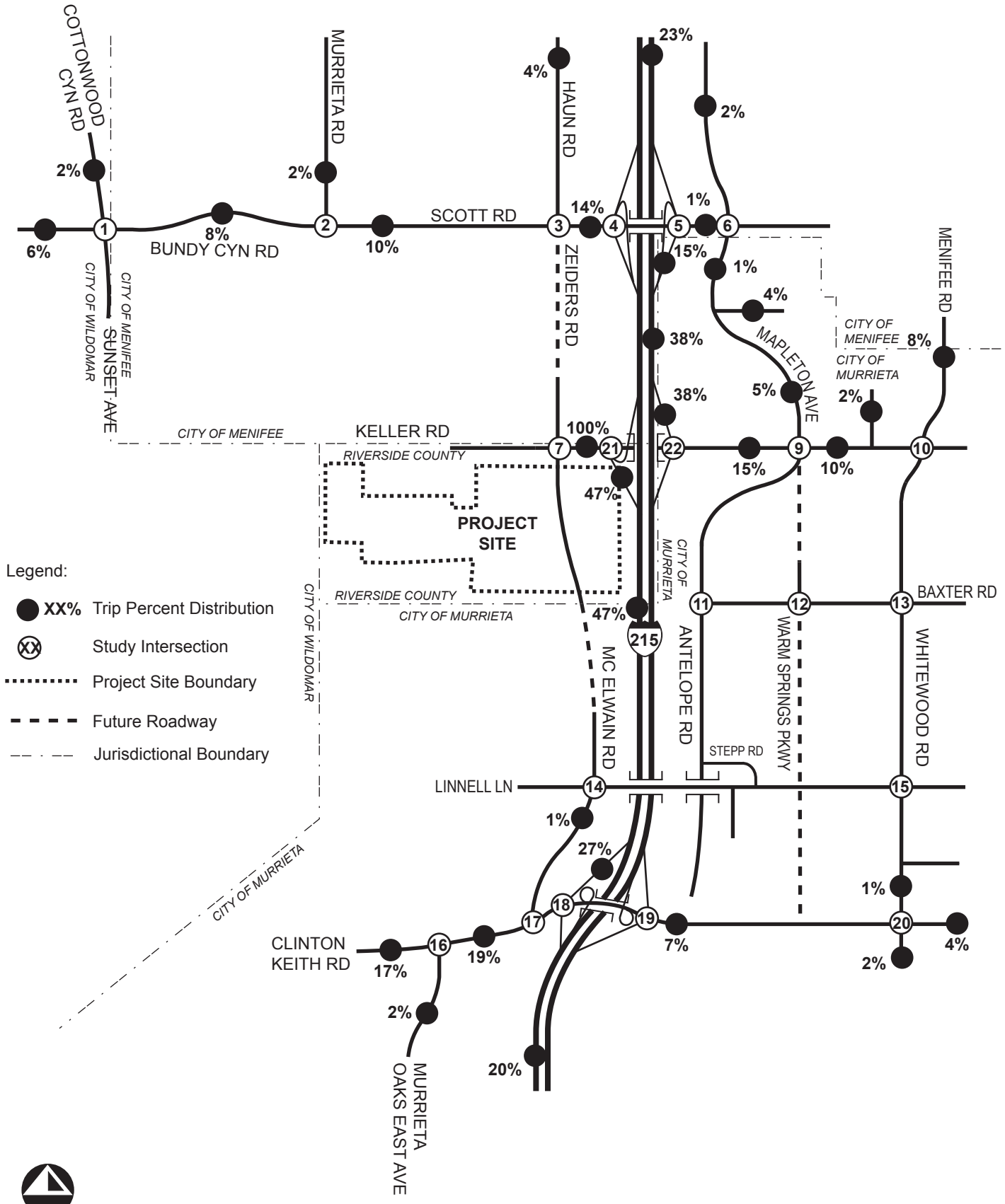
Forecast Existing Plus Project Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 13



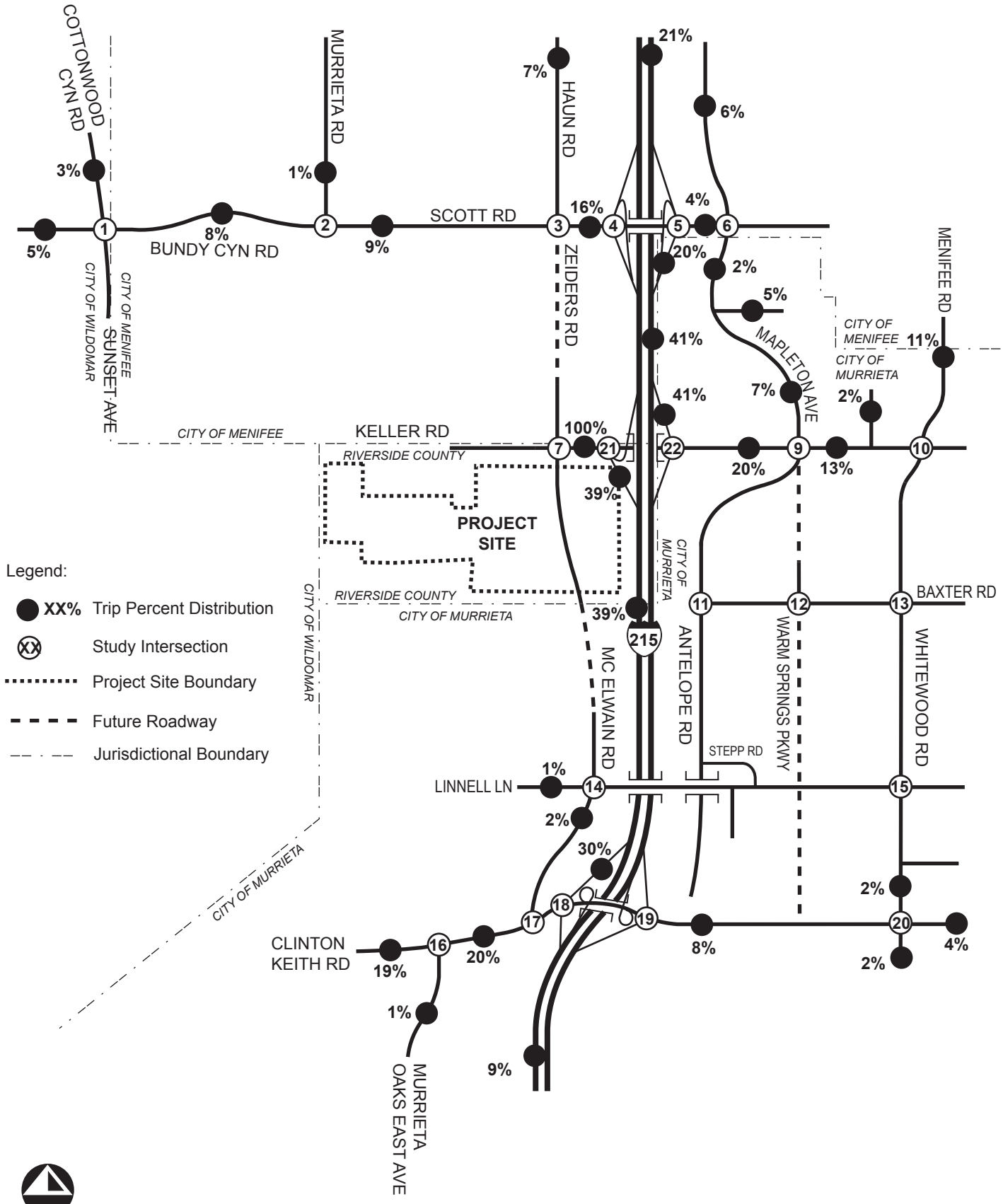
Phase 1 - Year 2023 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 14



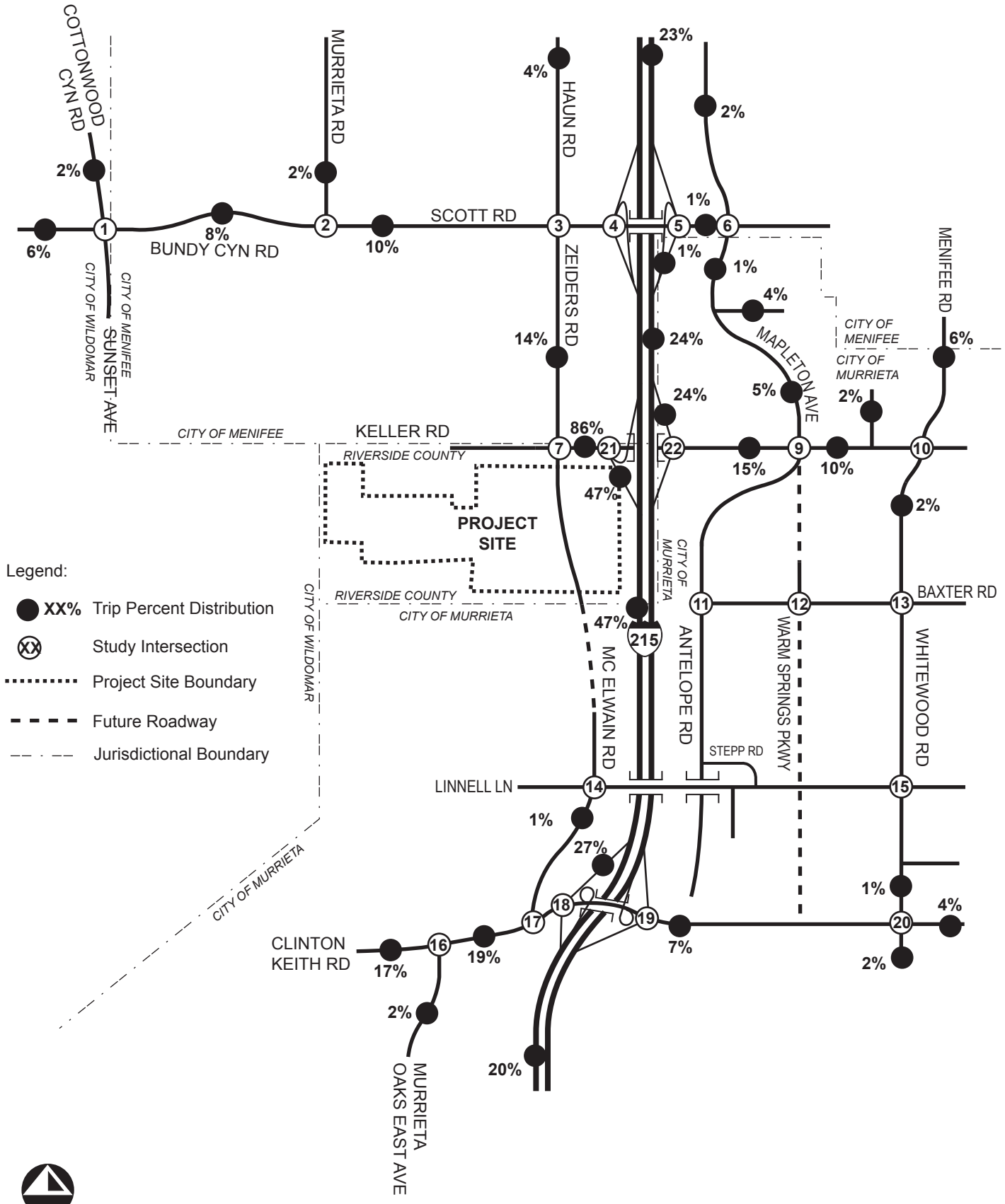
Phase 1 - Year 2023 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 15



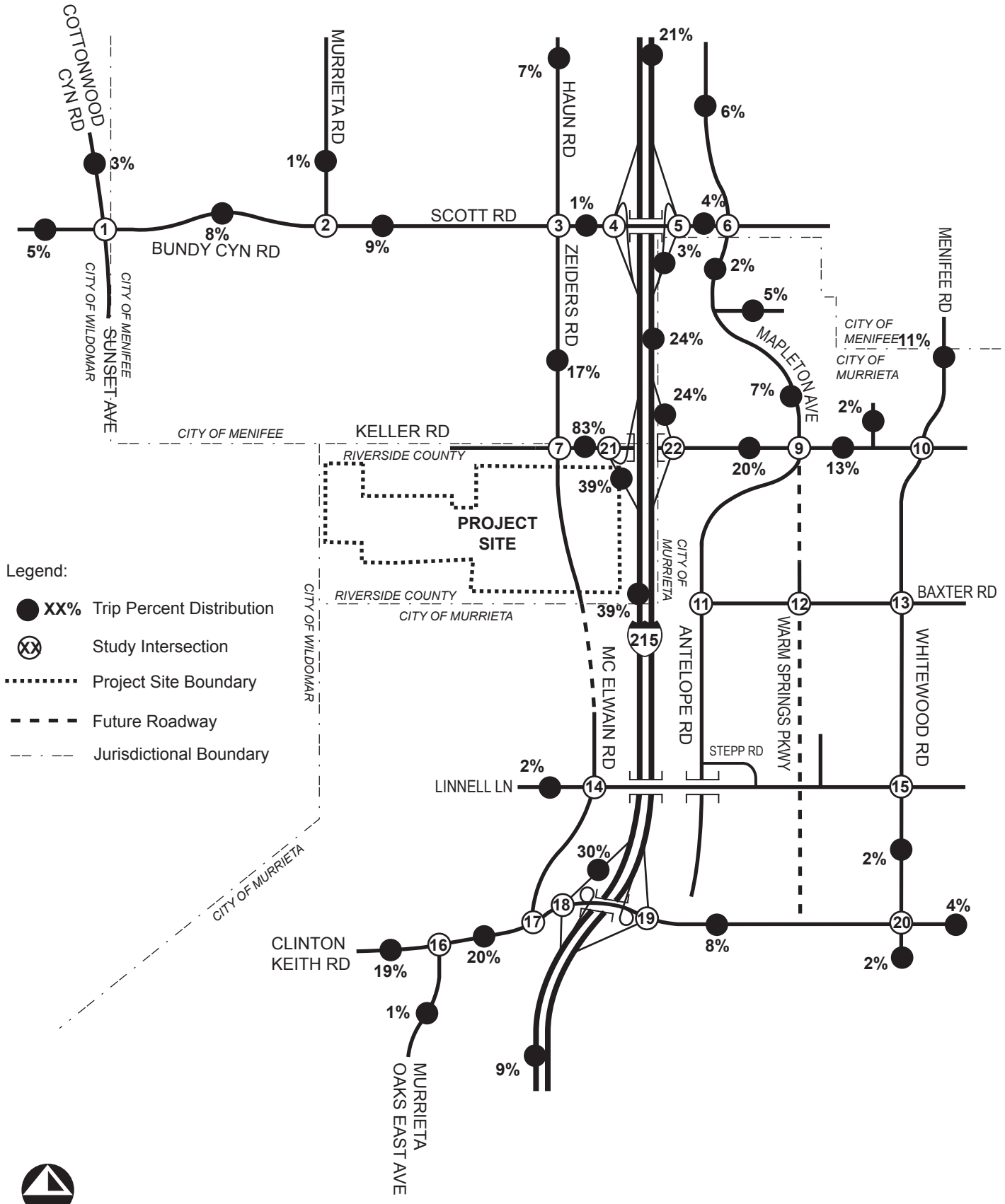
Forecast Phase 2 - Year 2028 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 16



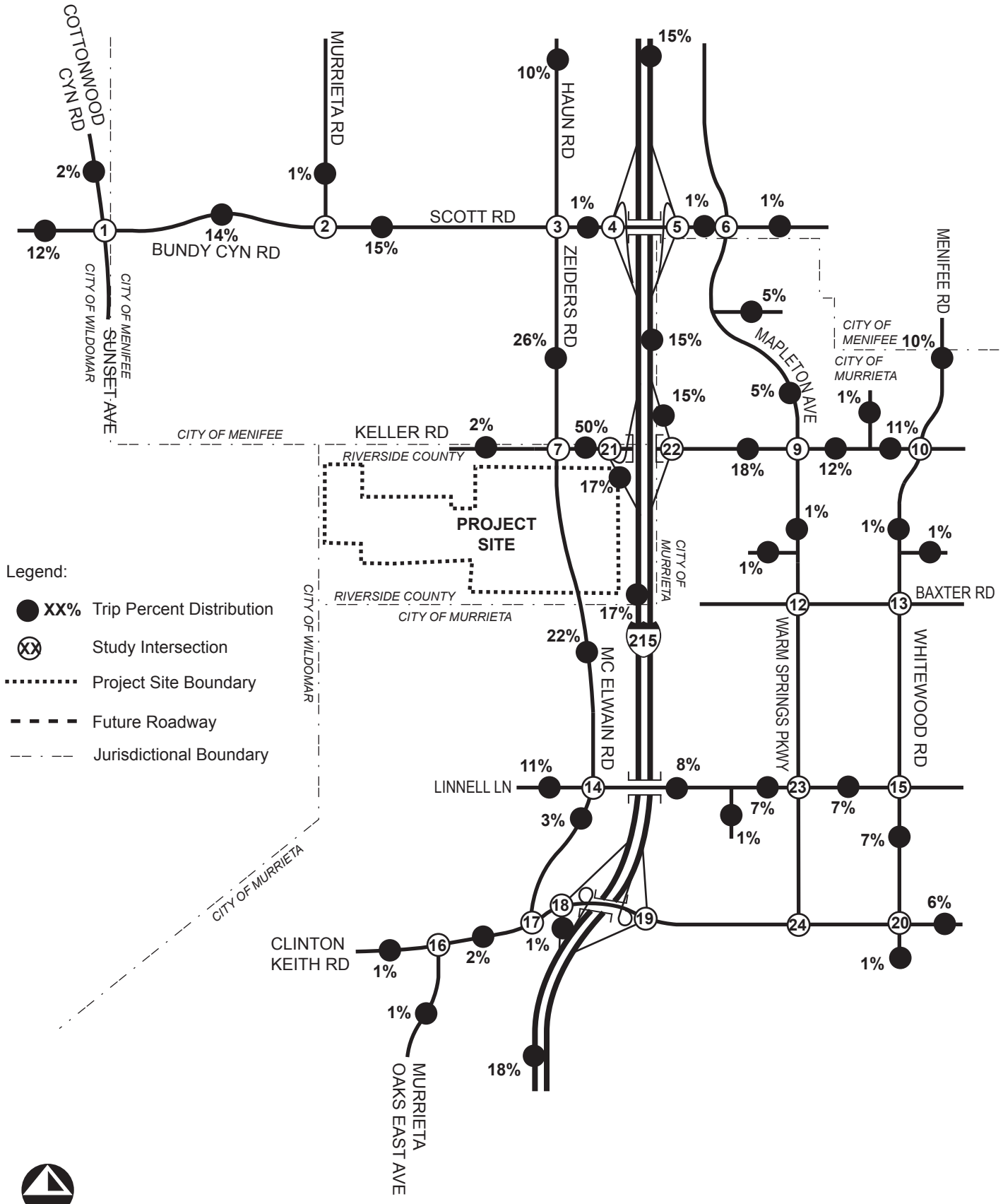
Forecast Phase 2 - Year 2028 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 17

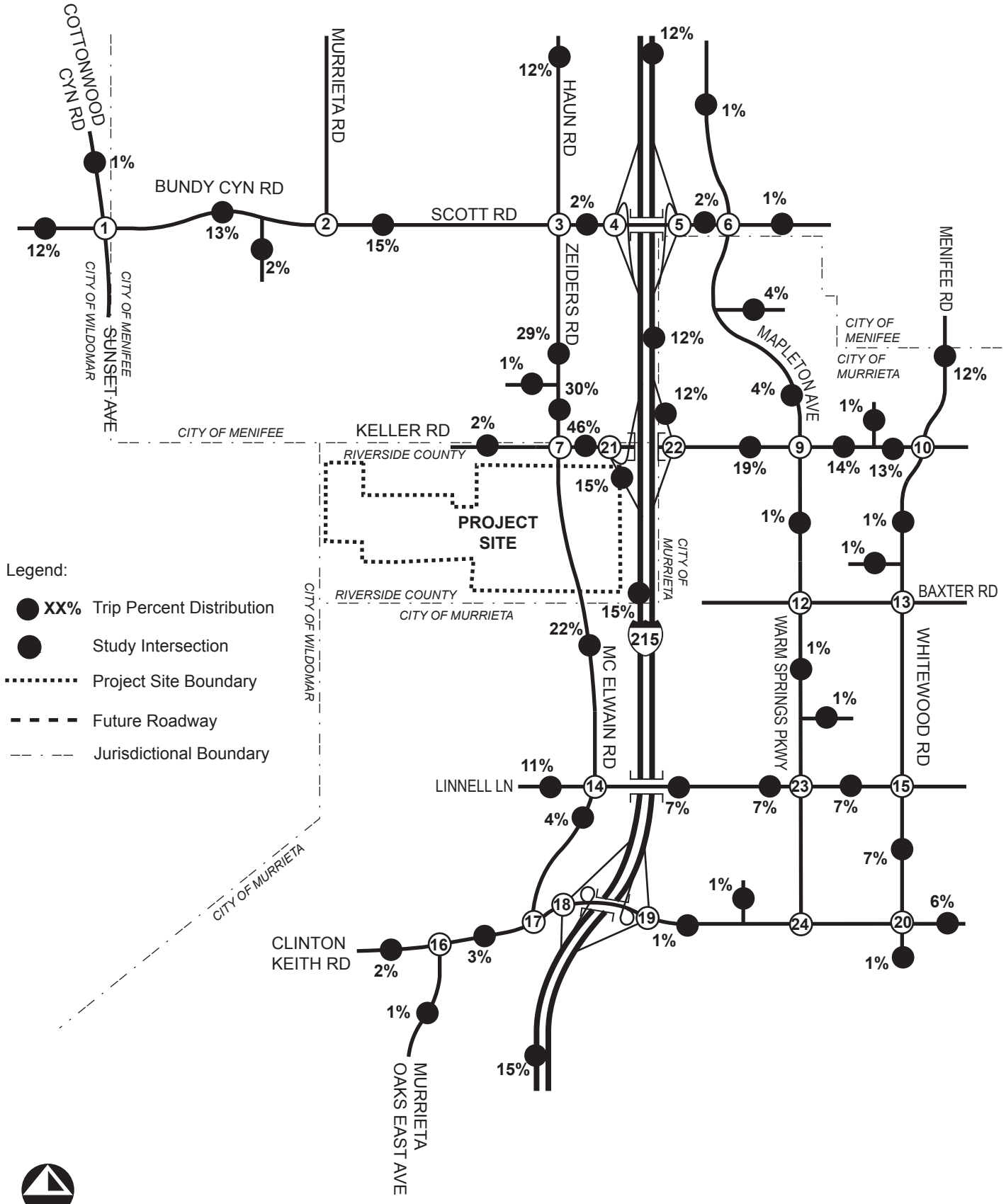


Forecast Phase 3 - Year 2031 & Buildout Year 2035 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2018

Exhibit 18

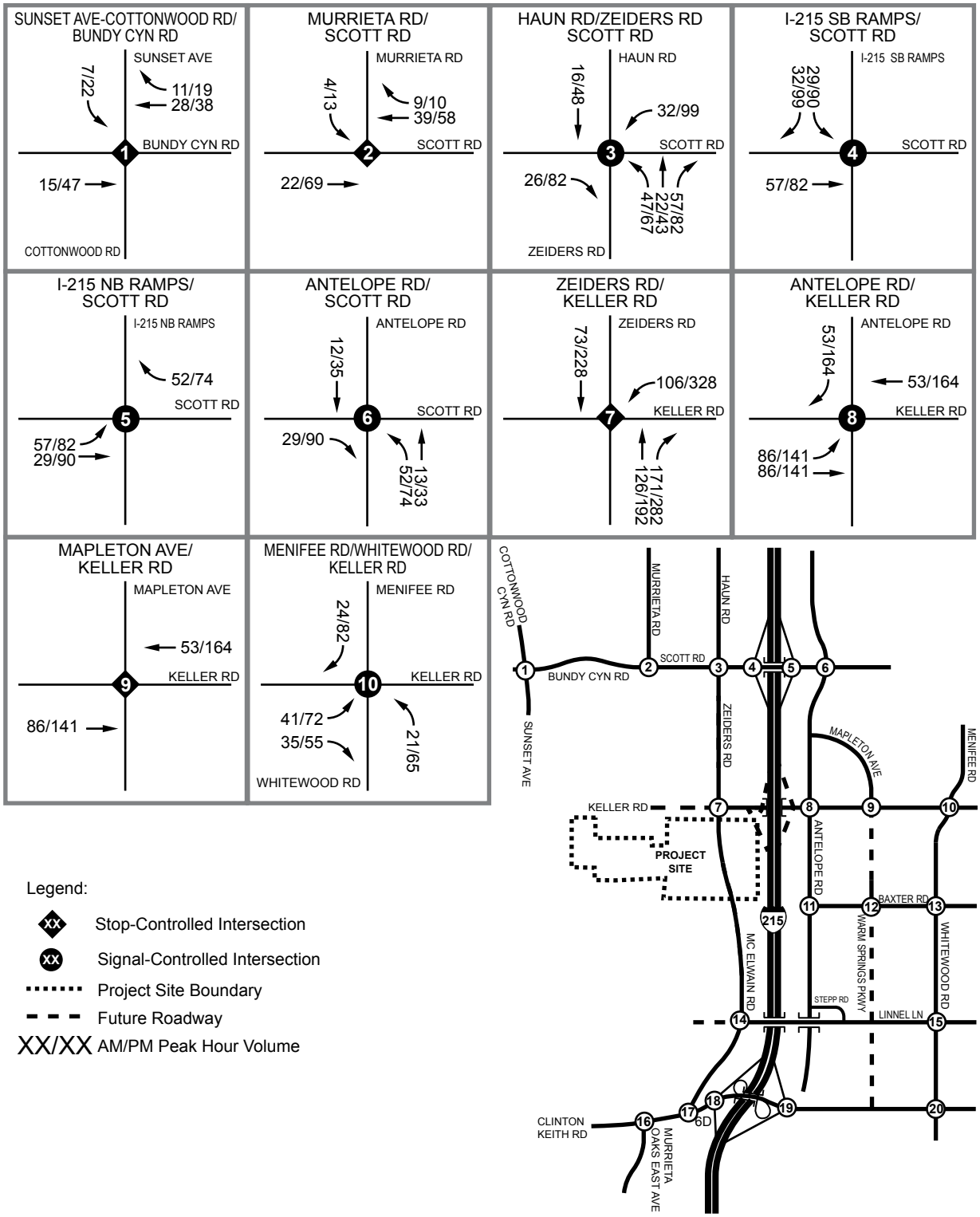


Forecast Phase 3 - Year 2031 & Buildout Year 2035 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2018

Exhibit 19



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

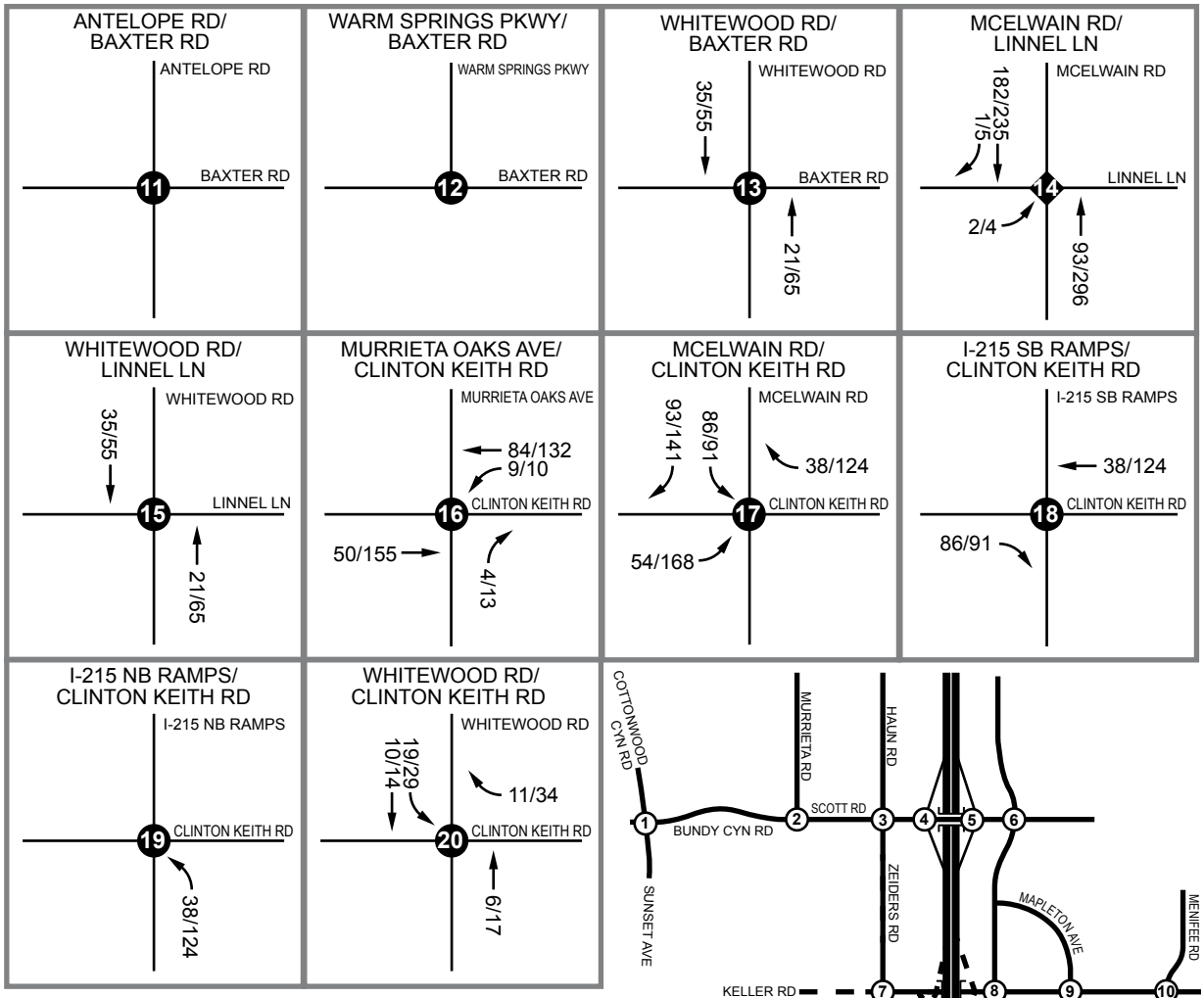
Not to Scale

Area 1
Forecast Existing Plus Project Buildout Conditions
AM & PM Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 20



Legend:

- Stop-Controlled Intersection
- Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

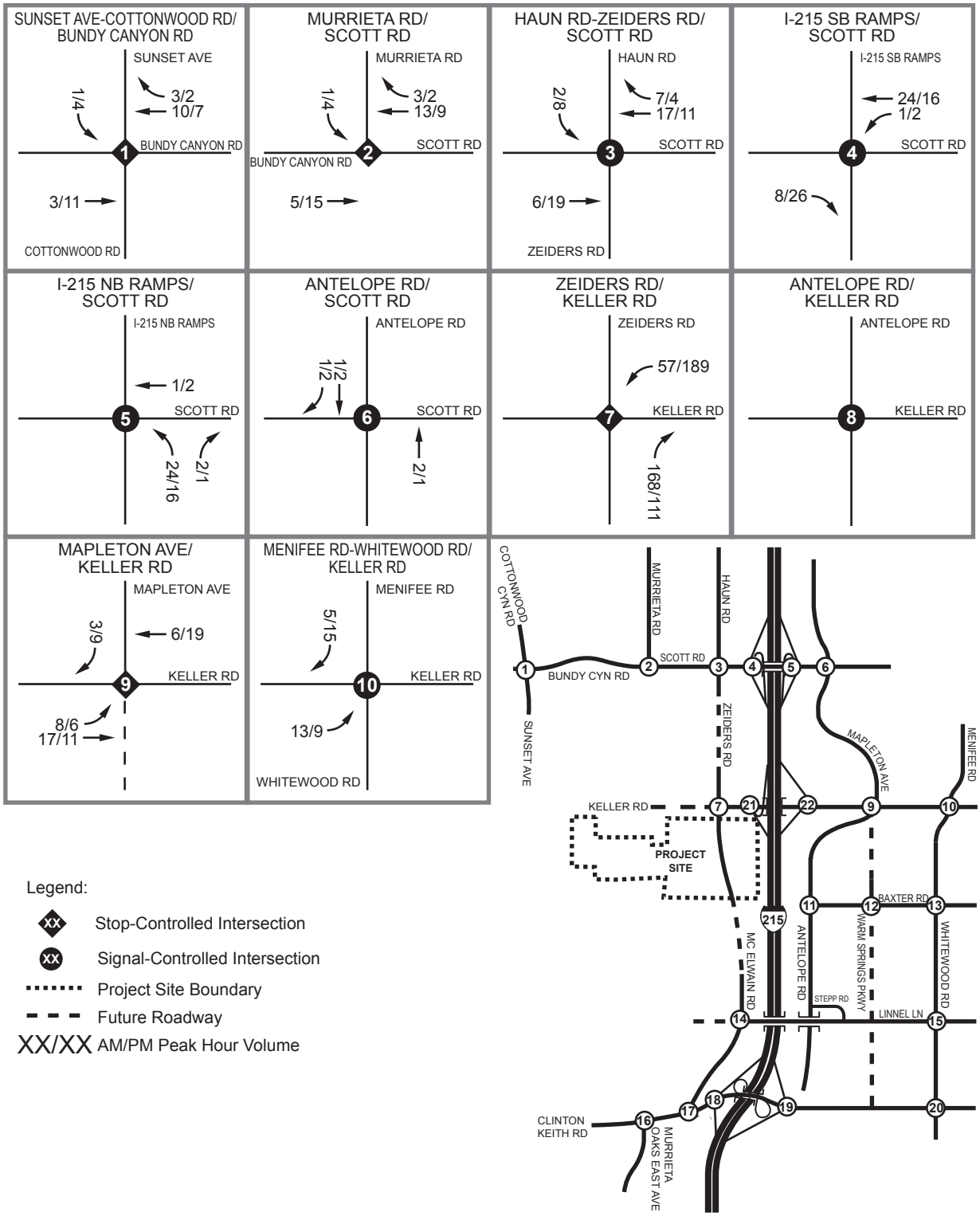
Not to Scale

Area 2
Forecast Existing Plus Project Buildout Conditions
AM & PM Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 21



Legend:

- Stop-Controlled Intersection
- Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

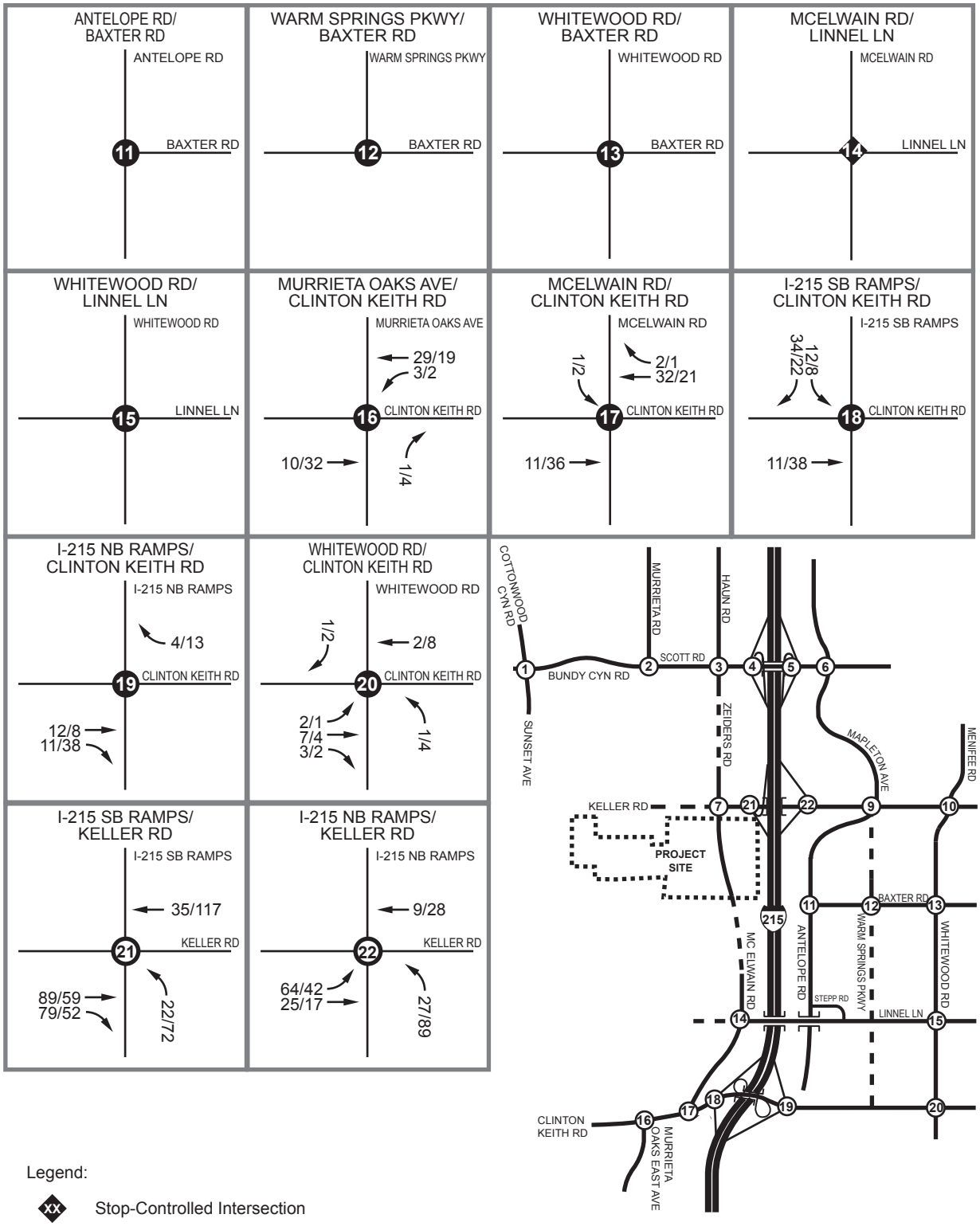
Not to Scale

Area 1
Forecast Year 2023 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 22



Legend:

- Stop-Controlled Intersection
- Signal-Controlled Intersection
- Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

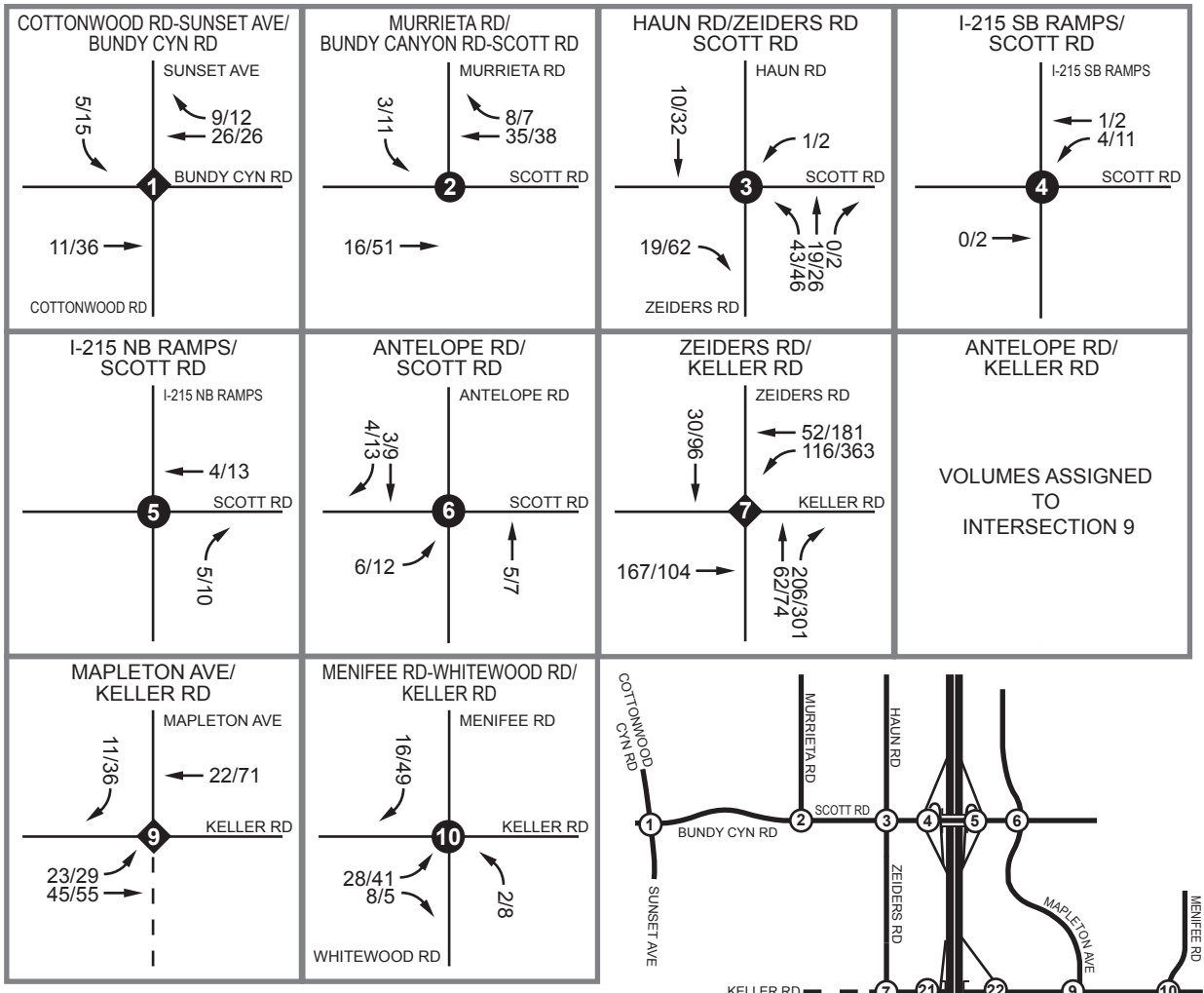
Not to Scale

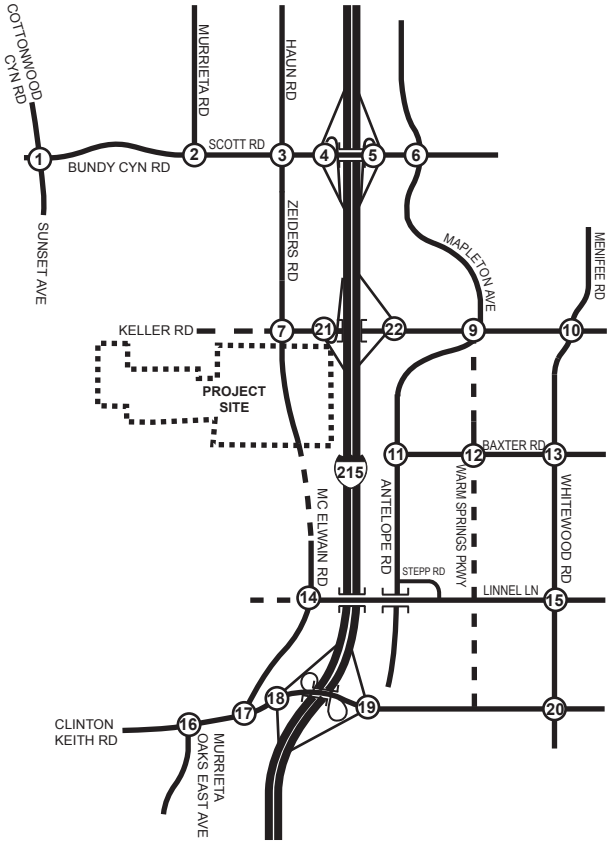
Area 2
Forecast Year 2023 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 23





Legend:

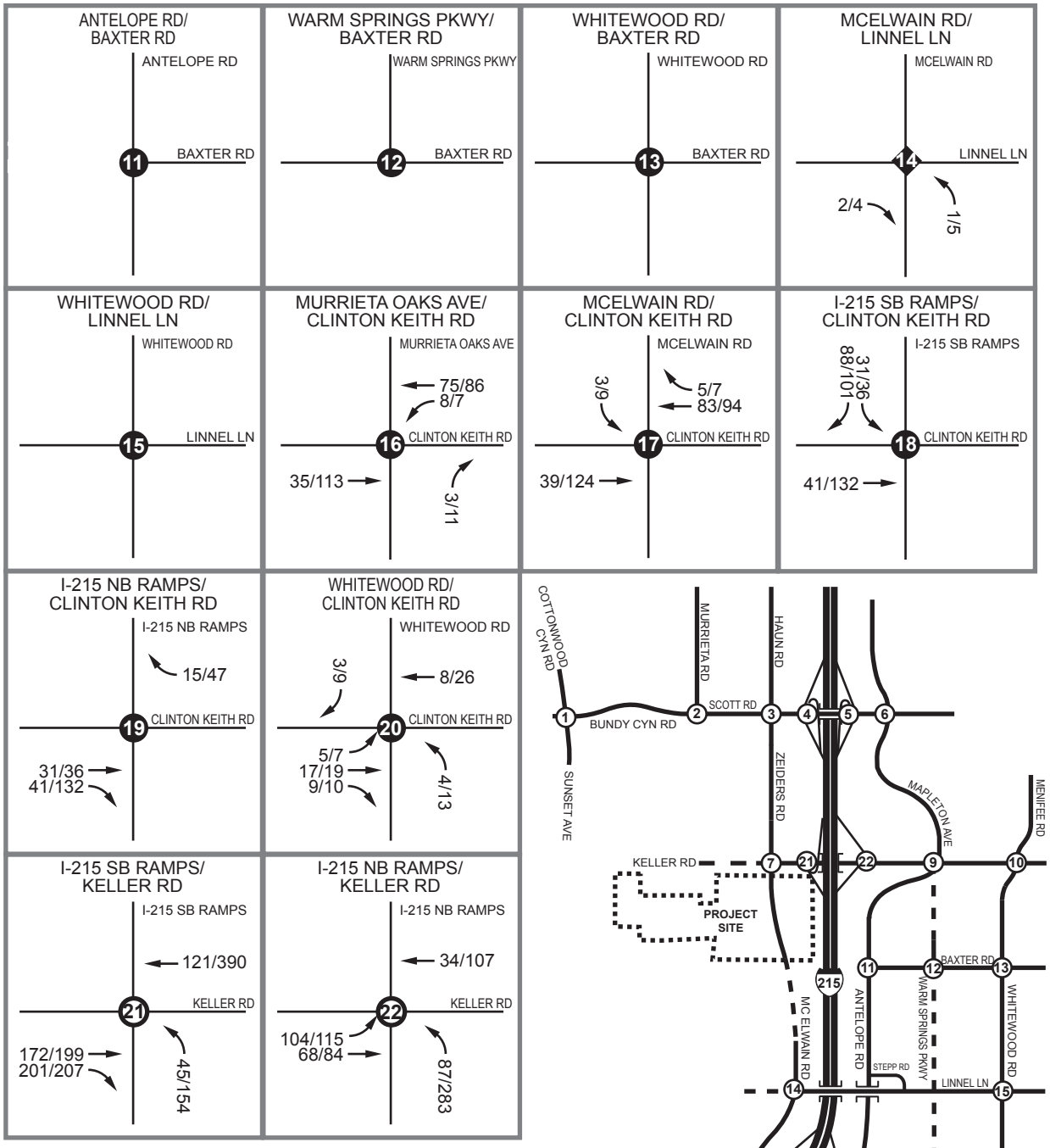
- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

Area 1
Forecast Year 2028 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018

Exhibit 24



Legend:

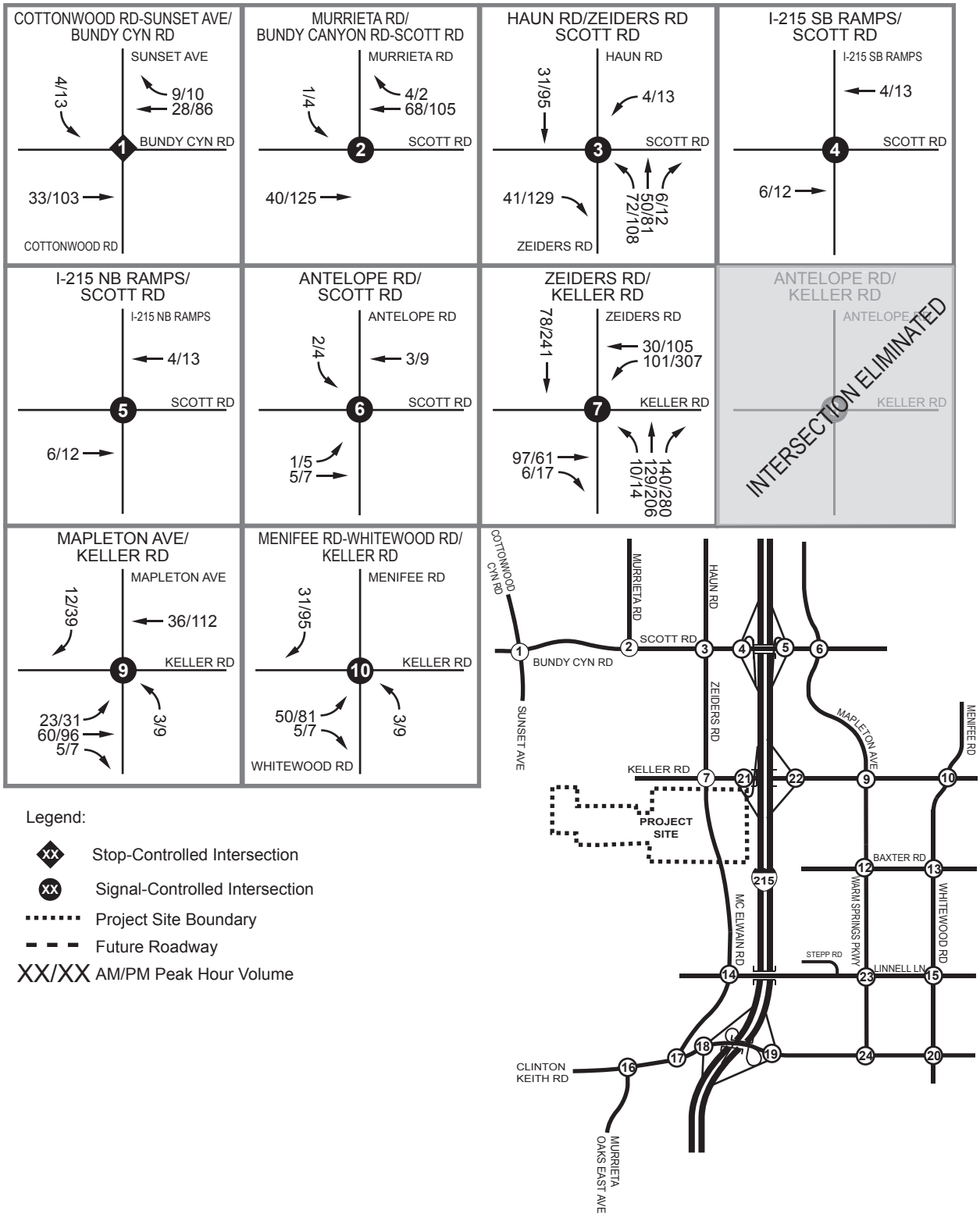
- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

Area 2
Forecast Year 2028 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Exhibit 25

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

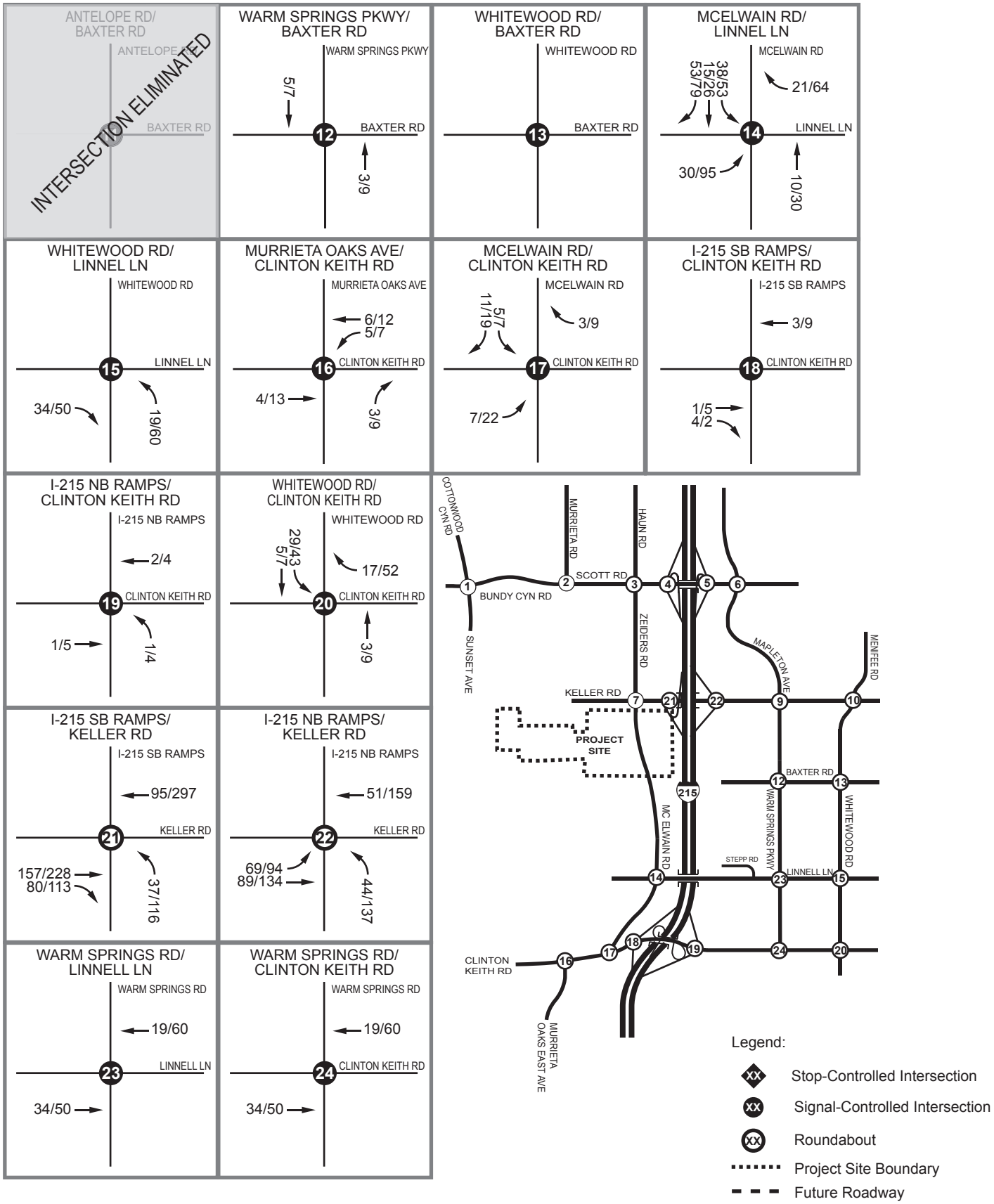
Not to Scale

Area 1
Forecast Year 2031 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 26



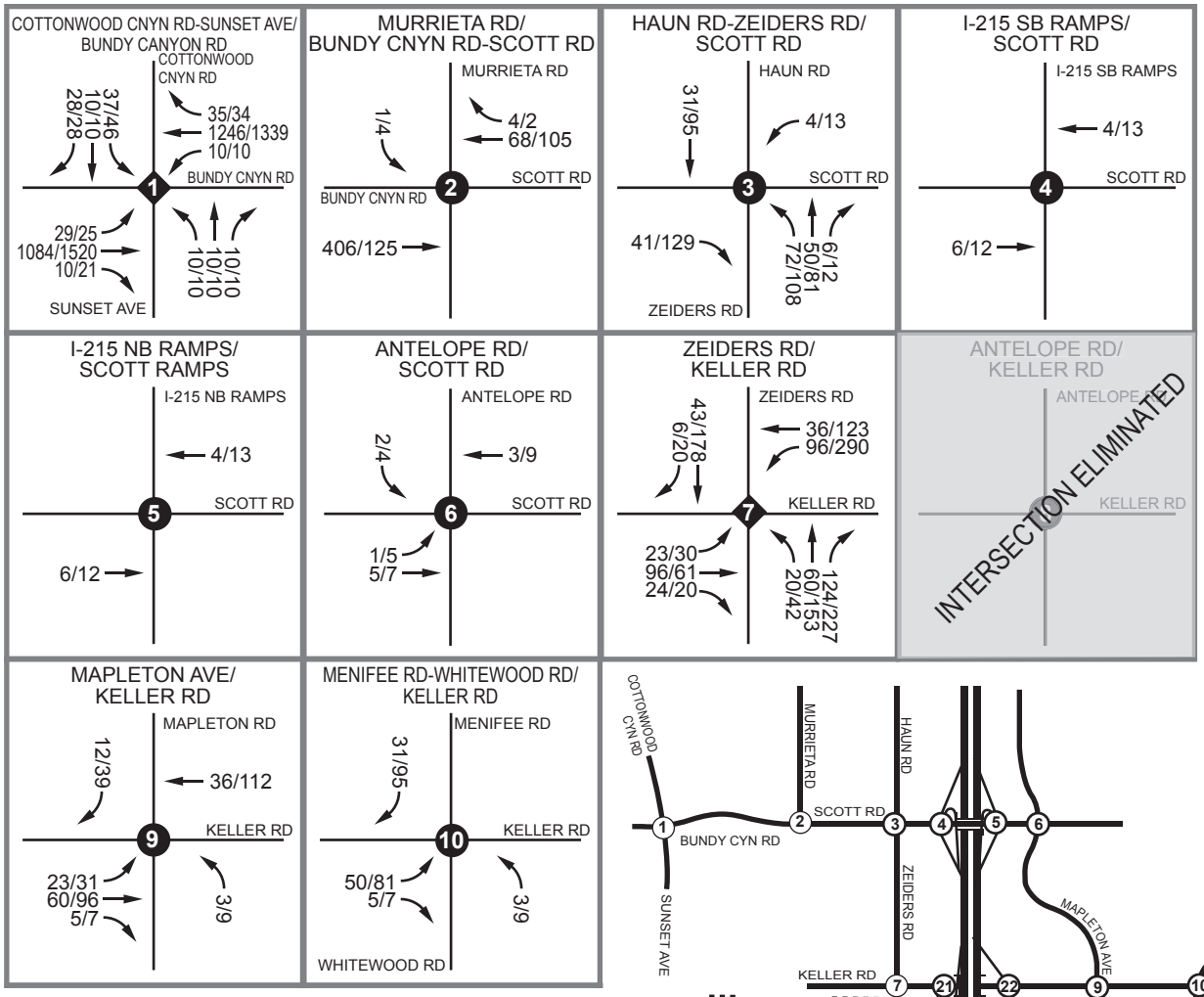
Not to Scale

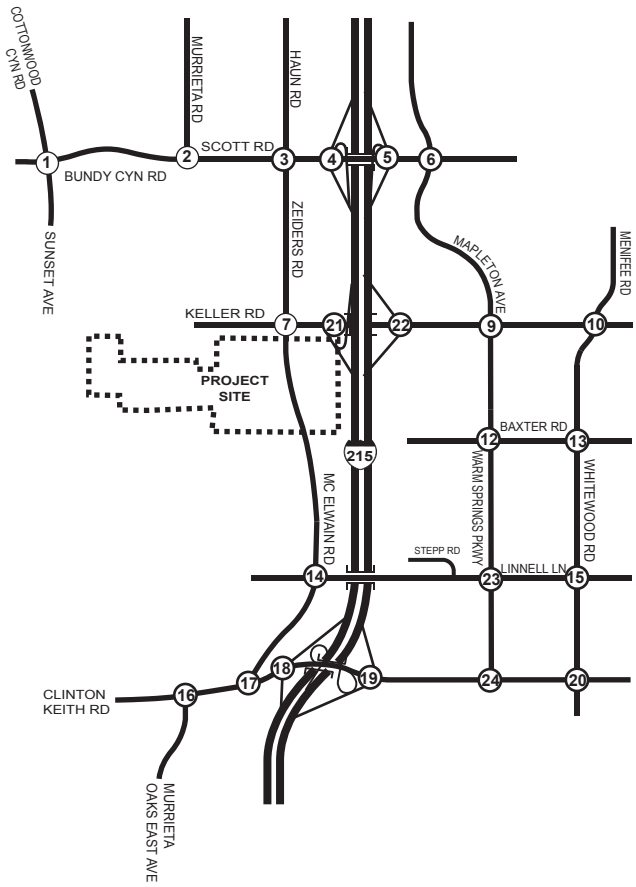
Area 2
Forecast Year 2031 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 27





Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

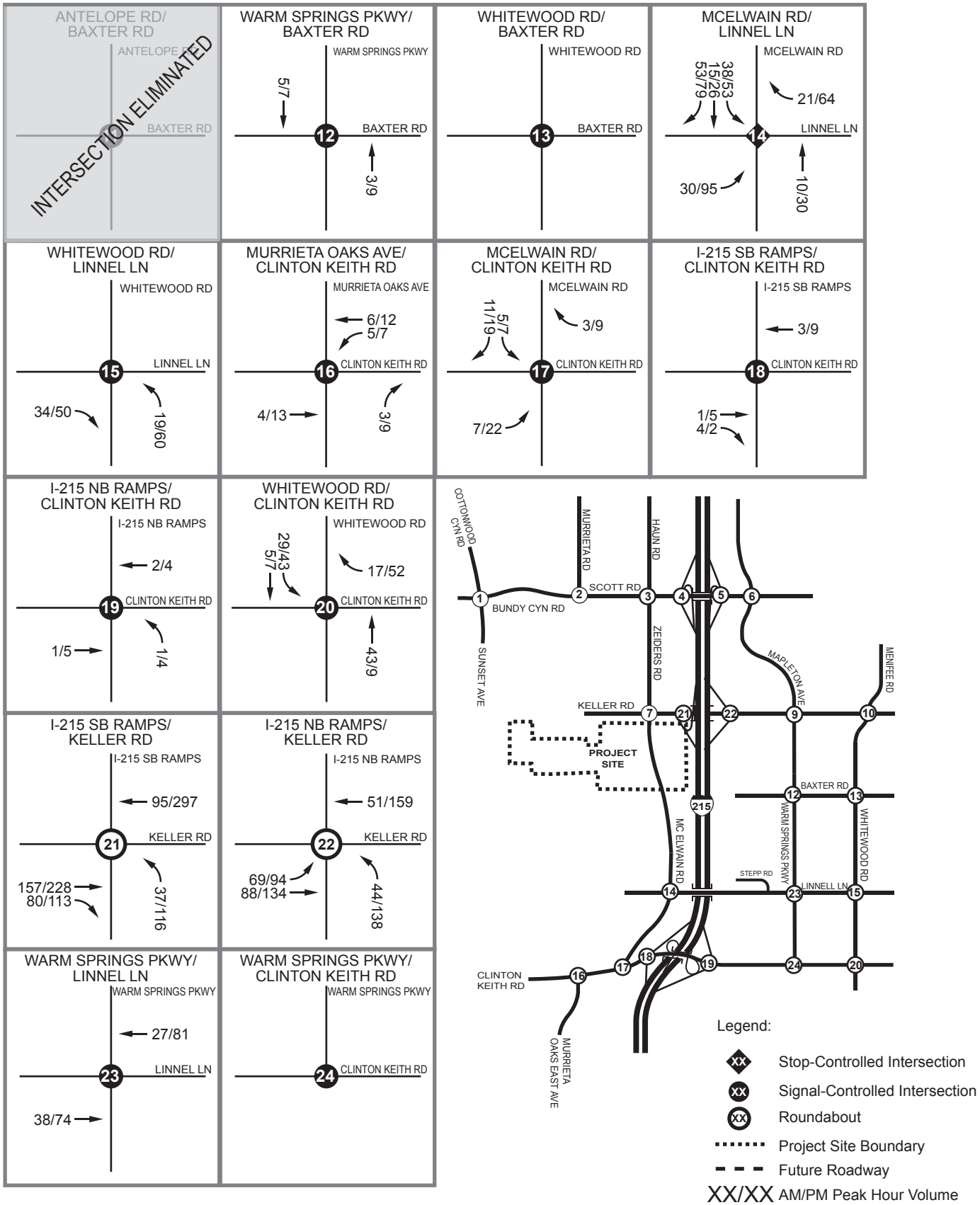
Not to Scale

Area 1
Forecast Year 2035 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 28



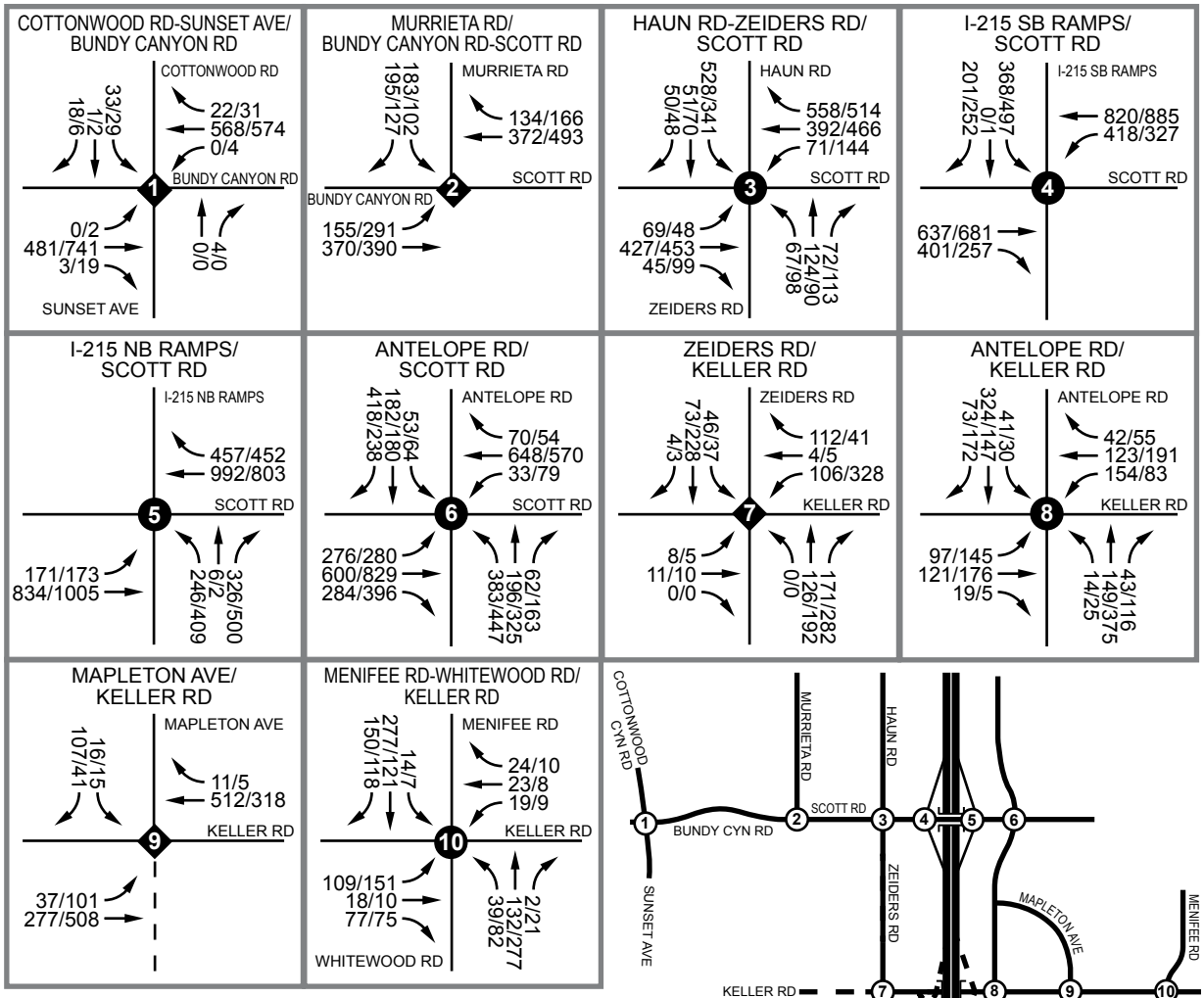
Not to Scale

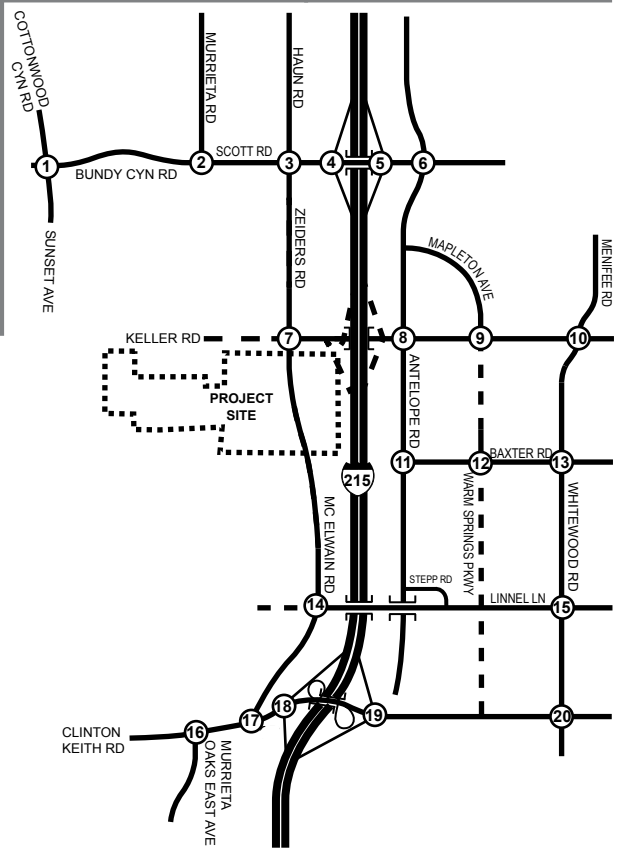
Area 2
Forecast Year 2035 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 29





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

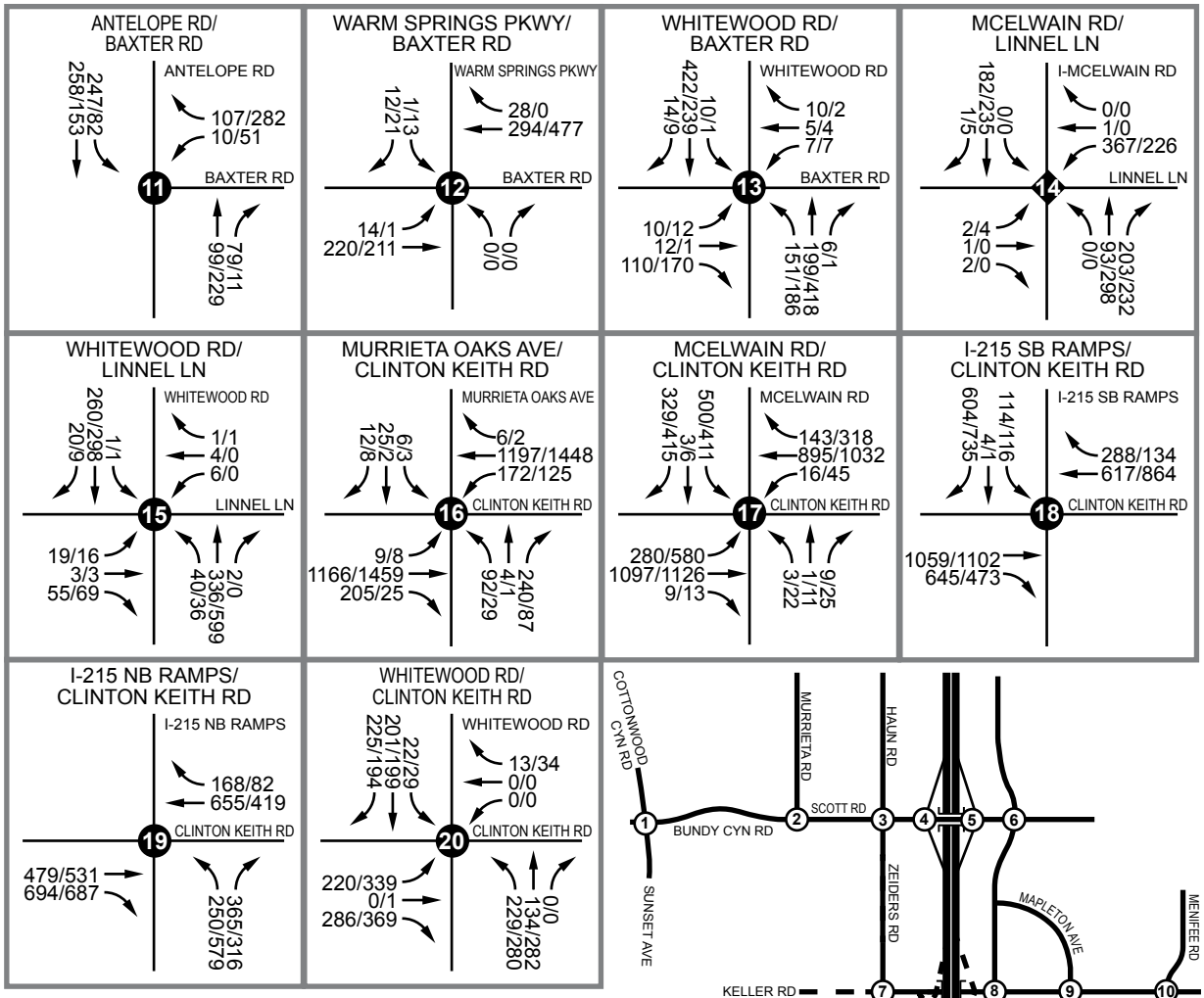
Not to Scale

Area 1
Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 30



Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

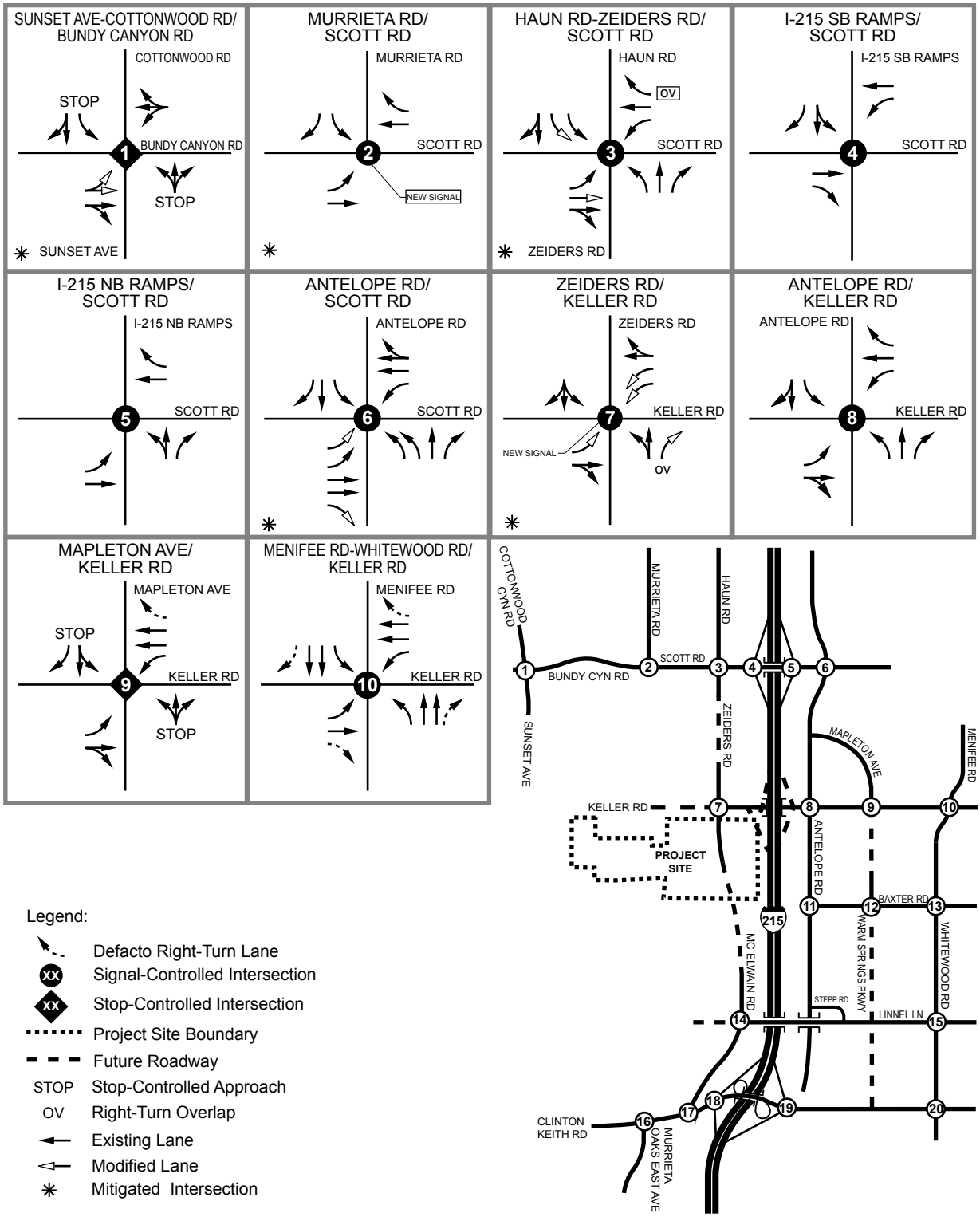
Not to Scale

Area 2
Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 31



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

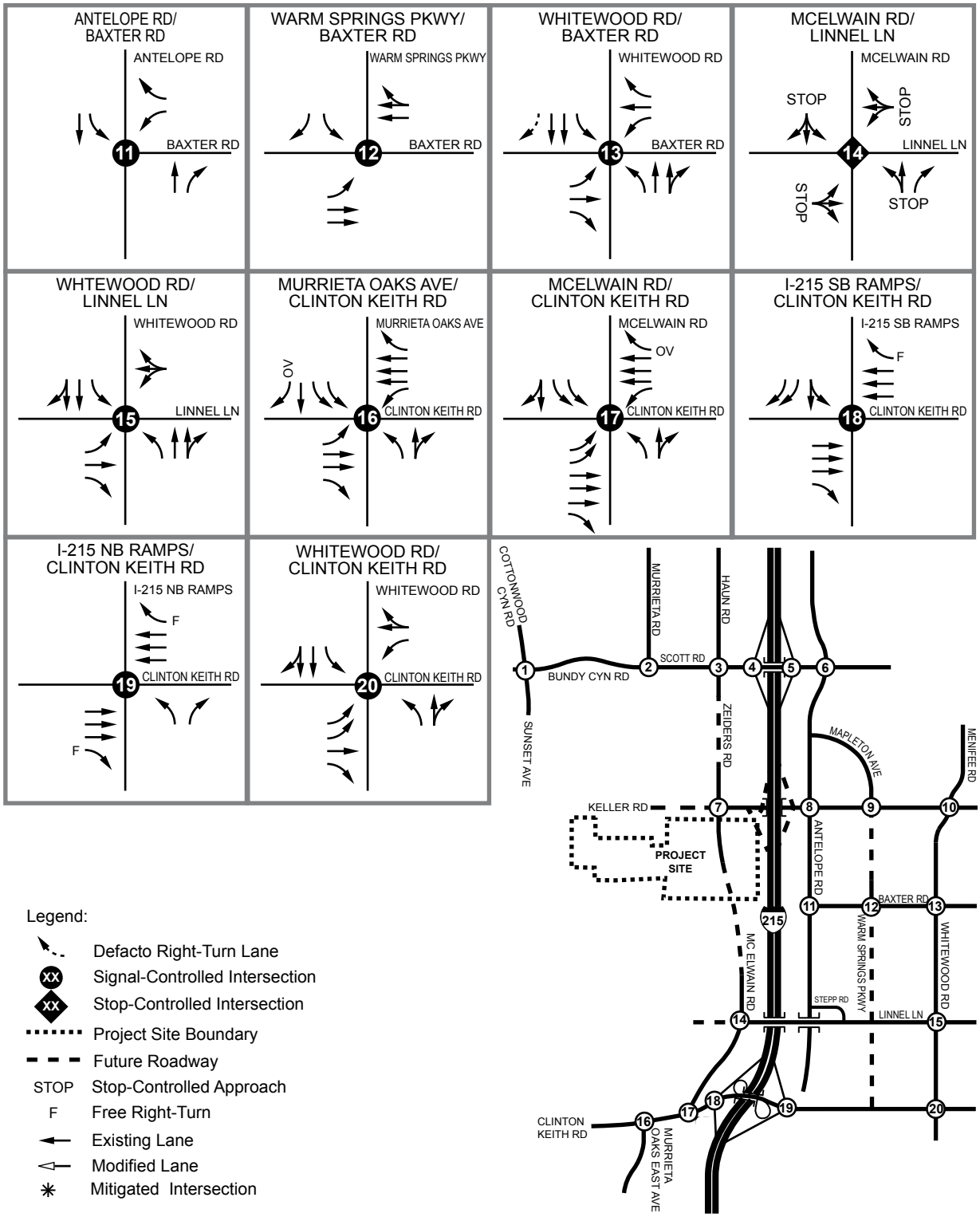
Not to Scale

Area 1
Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 32



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

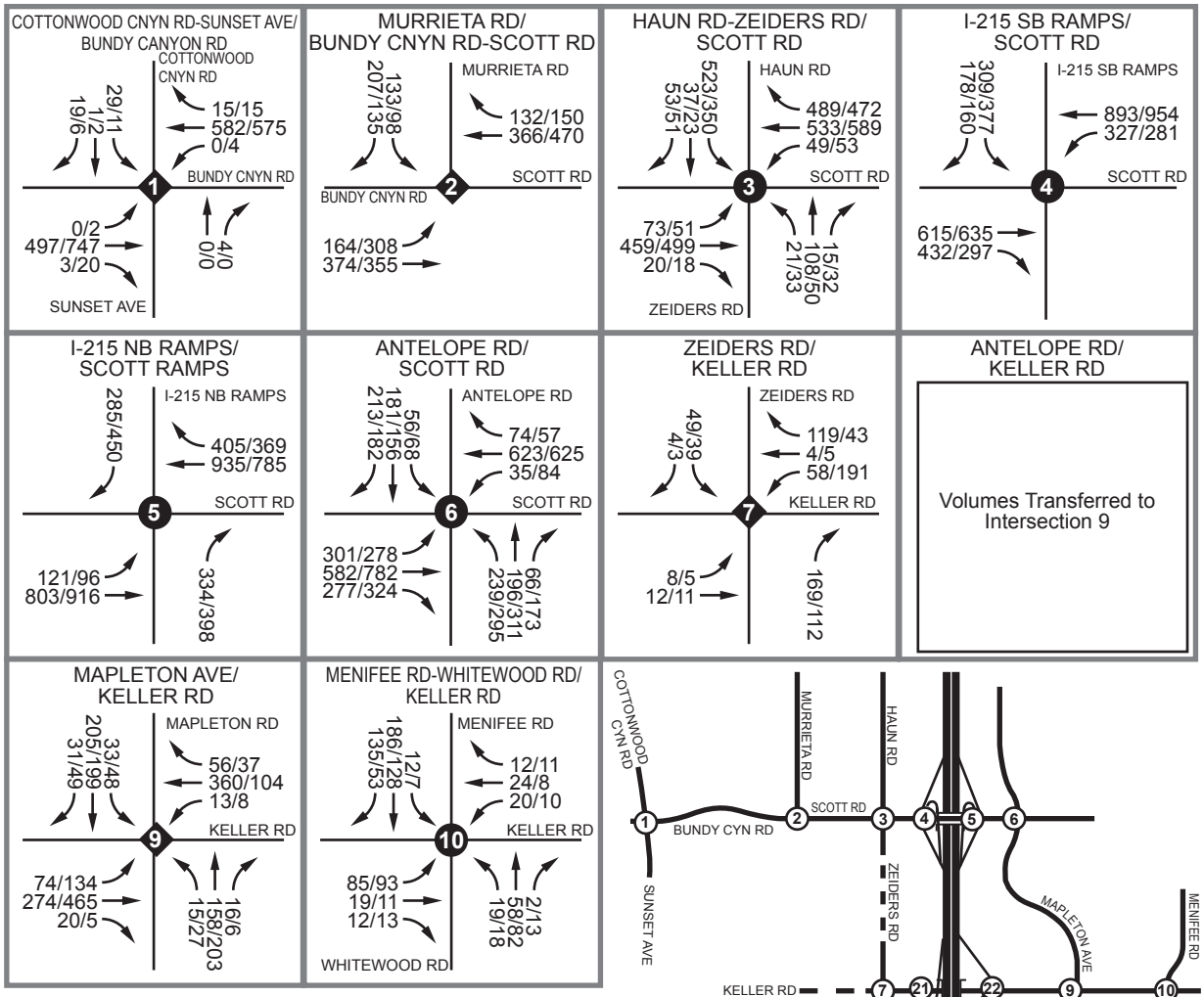
Not to Scale

Area 2
Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 33



Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

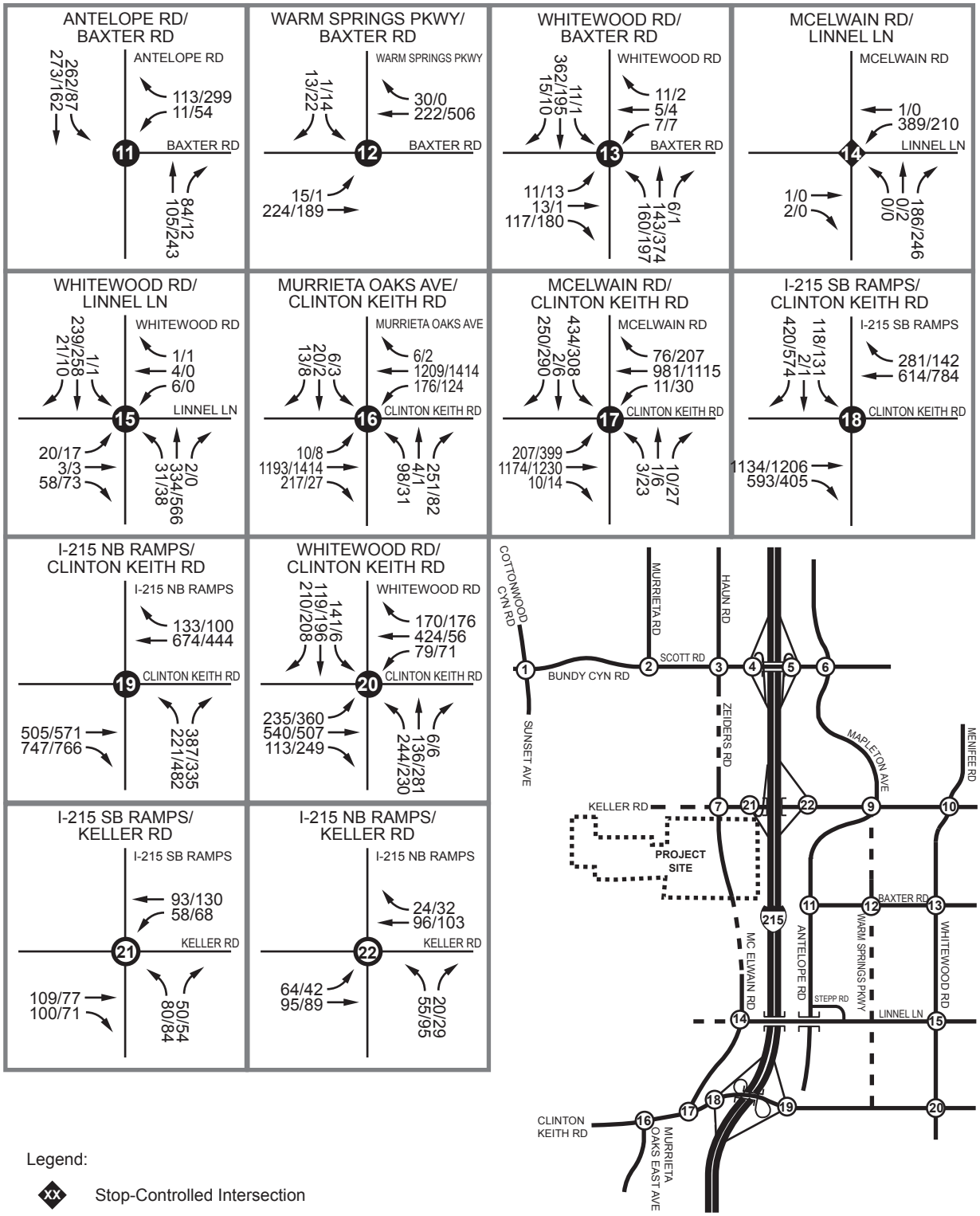
Not to Scale

Area 1
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 34



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

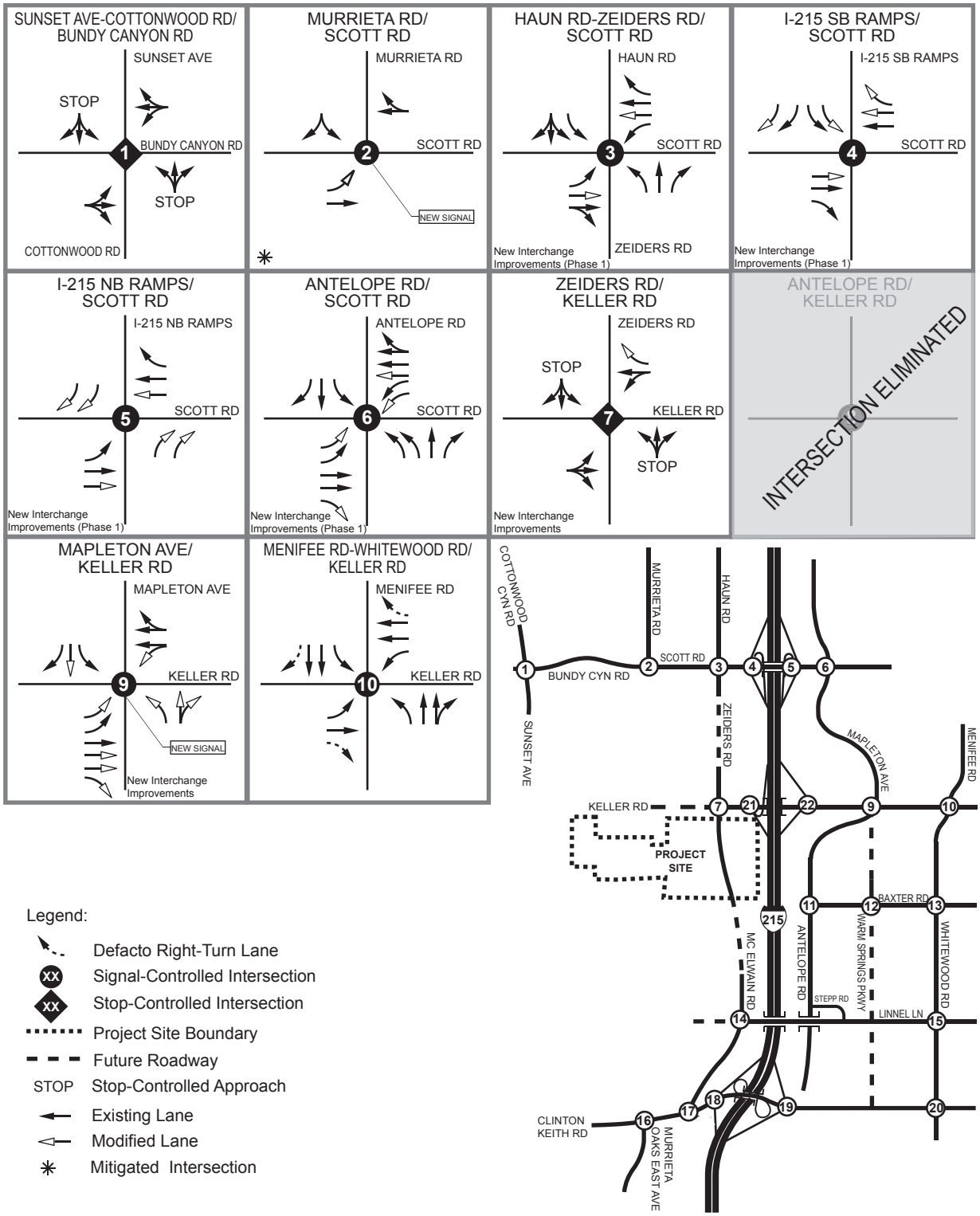
Not to Scale

Area 2
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 35



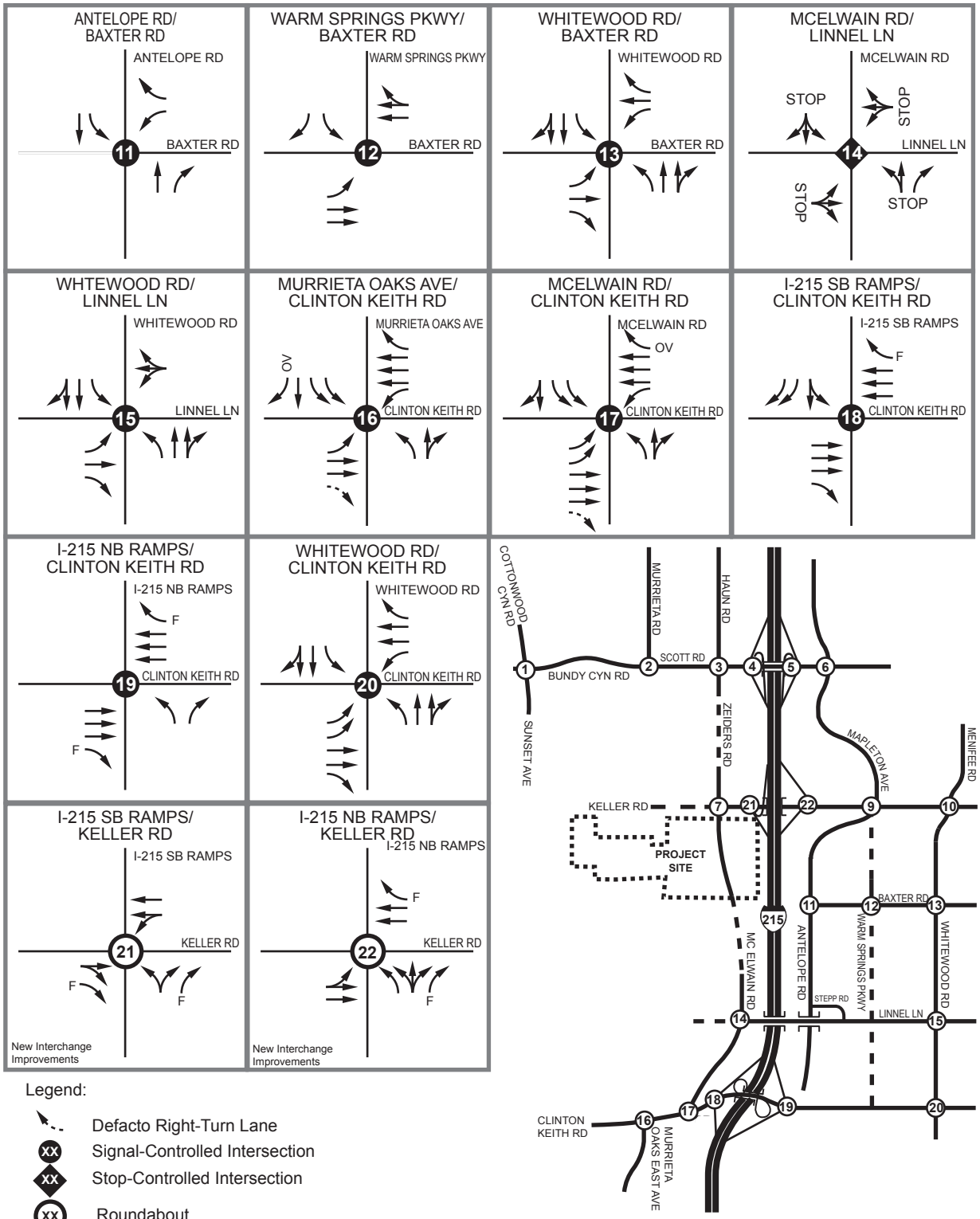
Not to Scale

Area 1
Mitigated Forecast Year 2023 Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 36



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

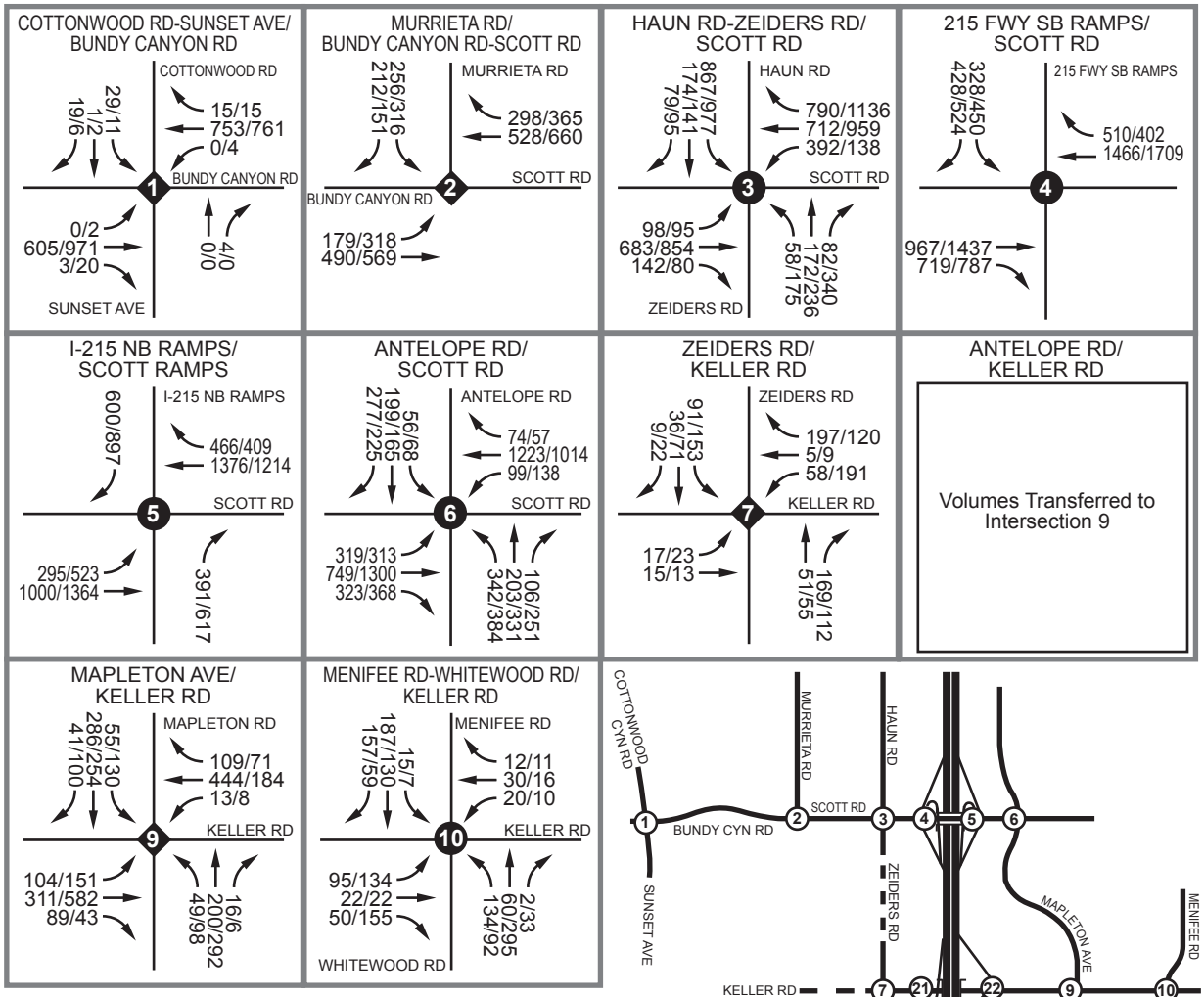
Not to Scale

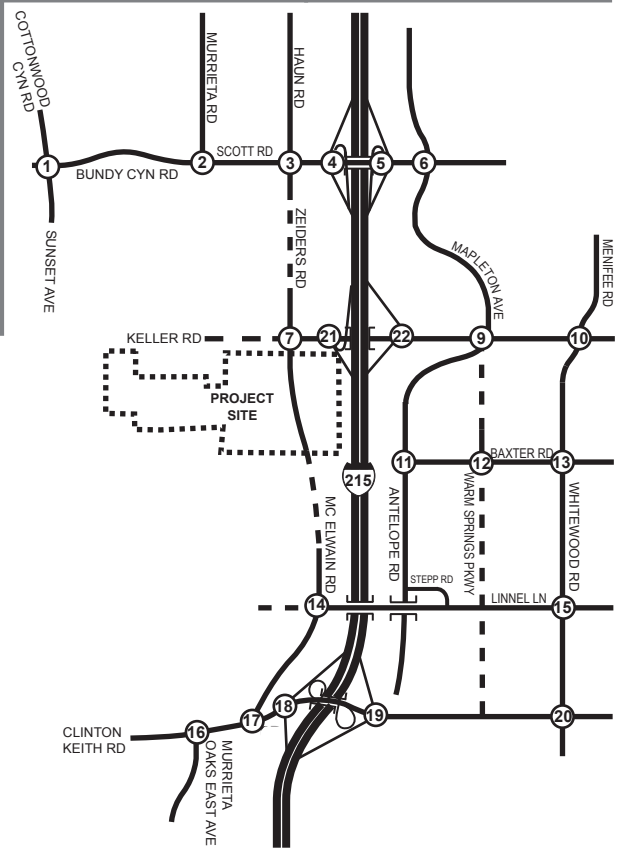
Area 2
Mitigated Forecast Year 2023
Existing Plus Ambient Growth Plus
Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 37





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

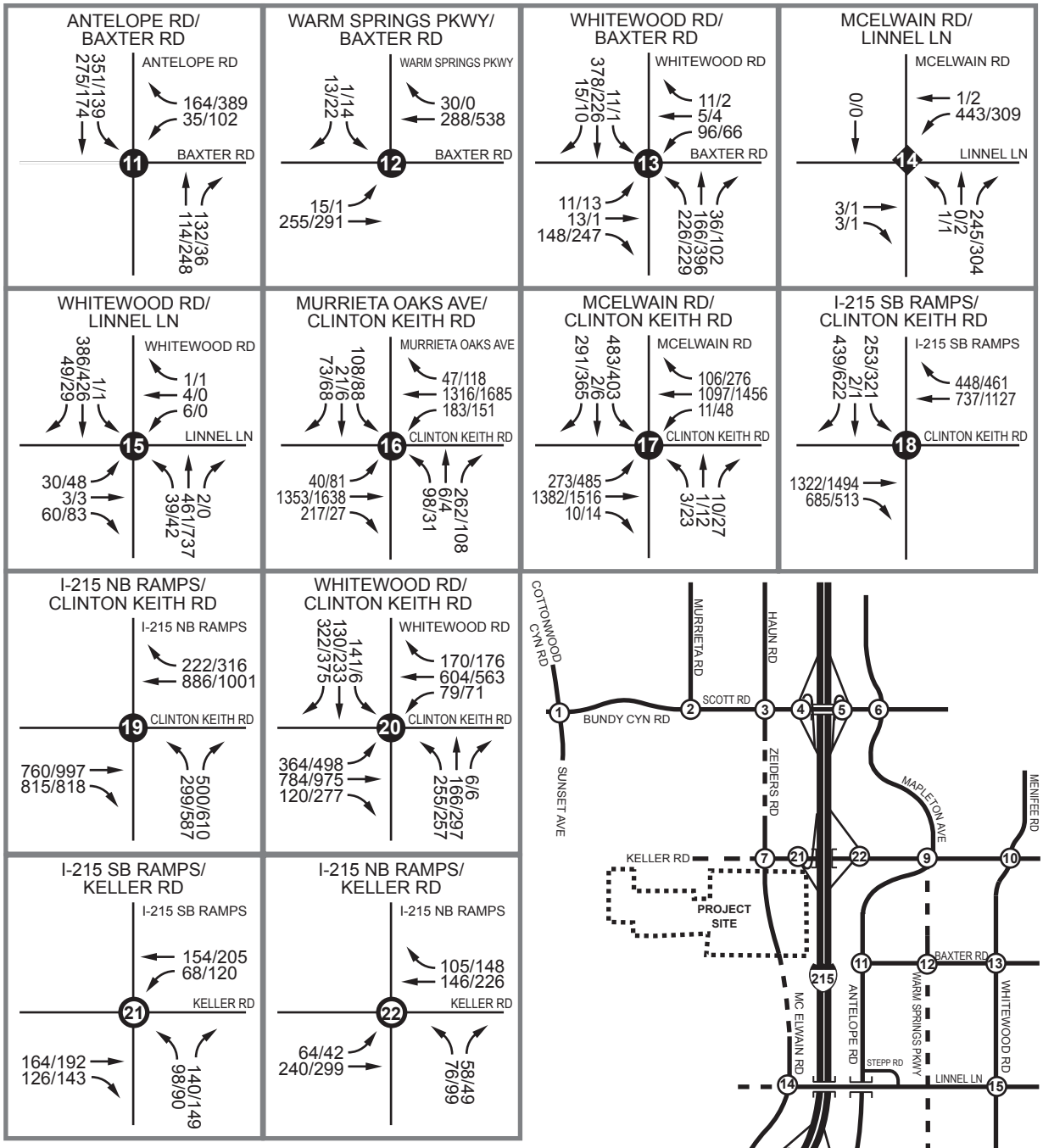
Not to Scale

Area 1
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 38



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

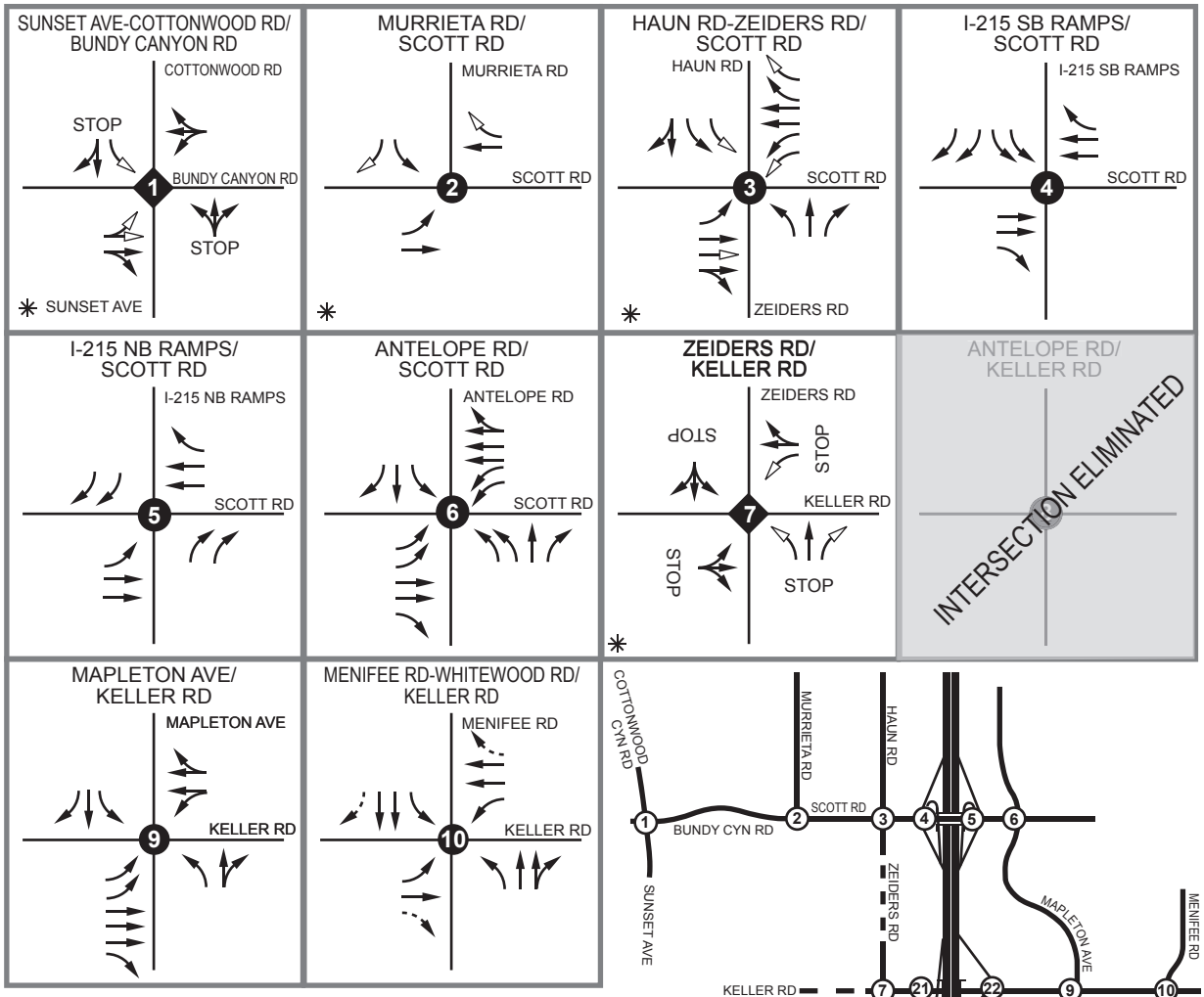
Not to Scale

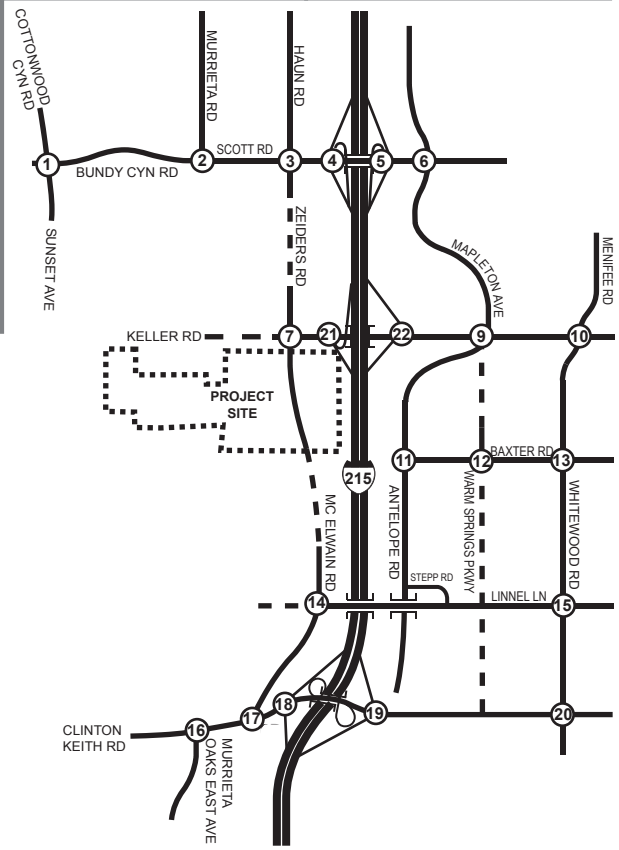
Area 2
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 39





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- OV Right-Turn Overlap
- ✳ Mitigated Intersection

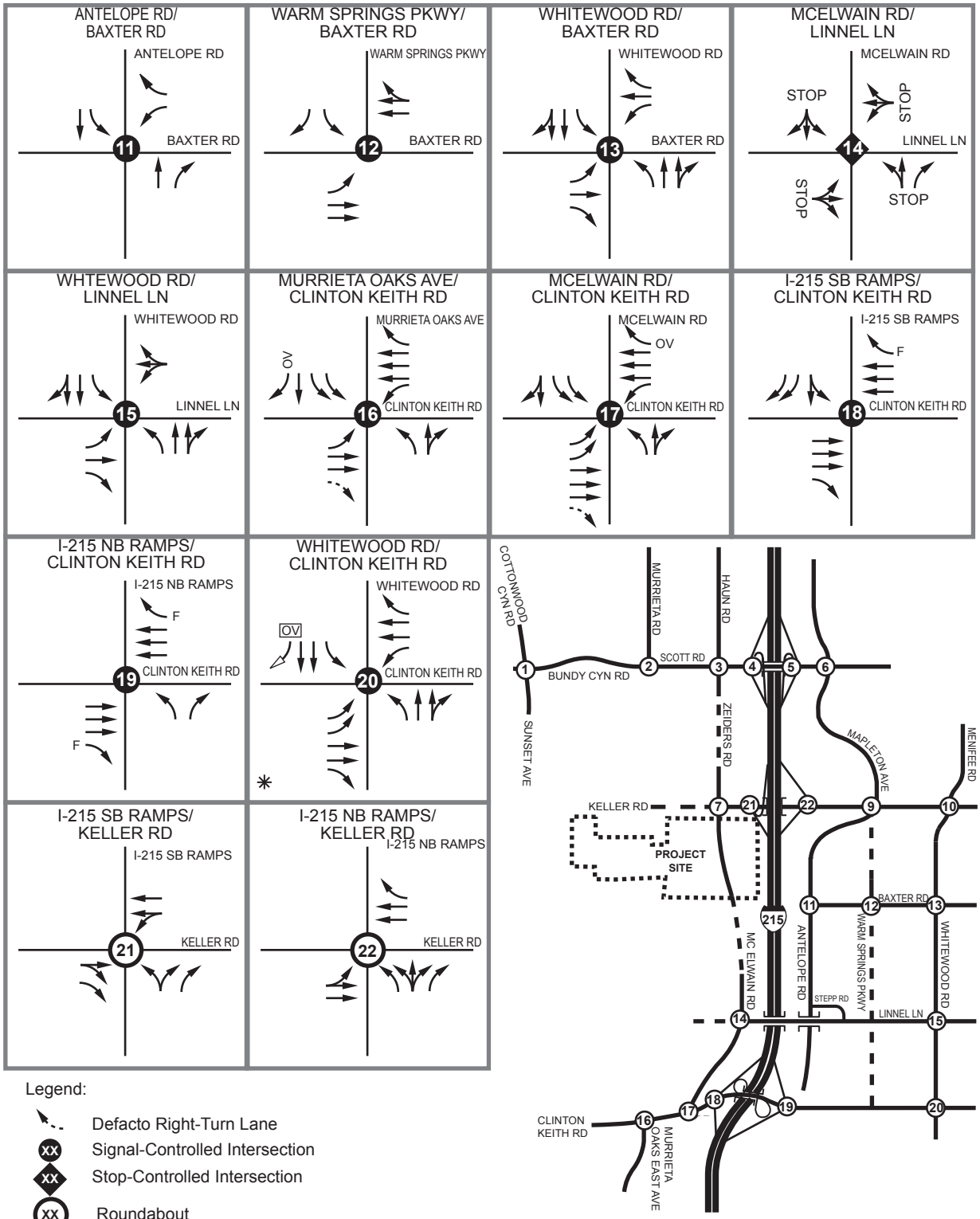
Not to Scale

Area 1
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 40



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

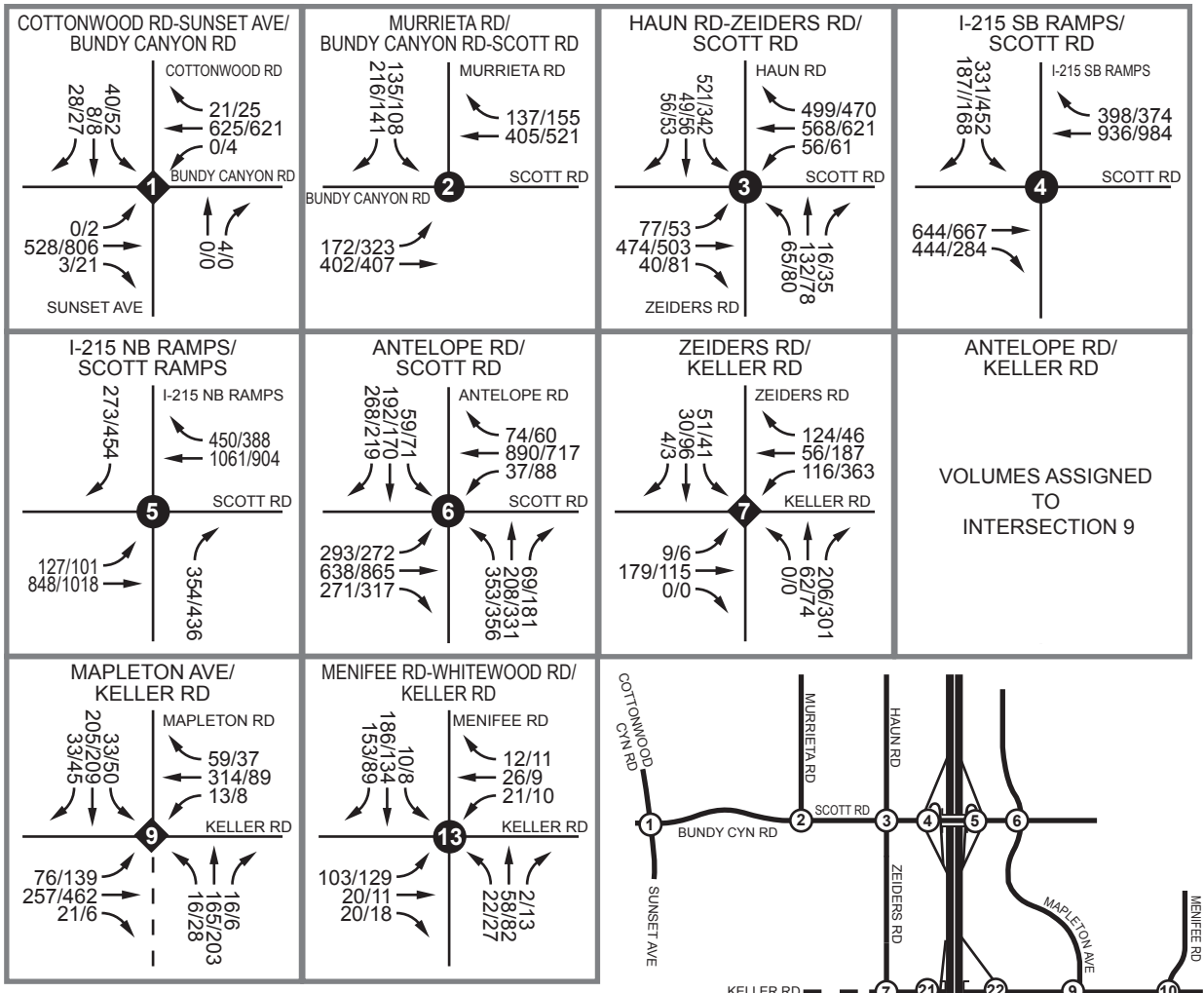
Not to Scale

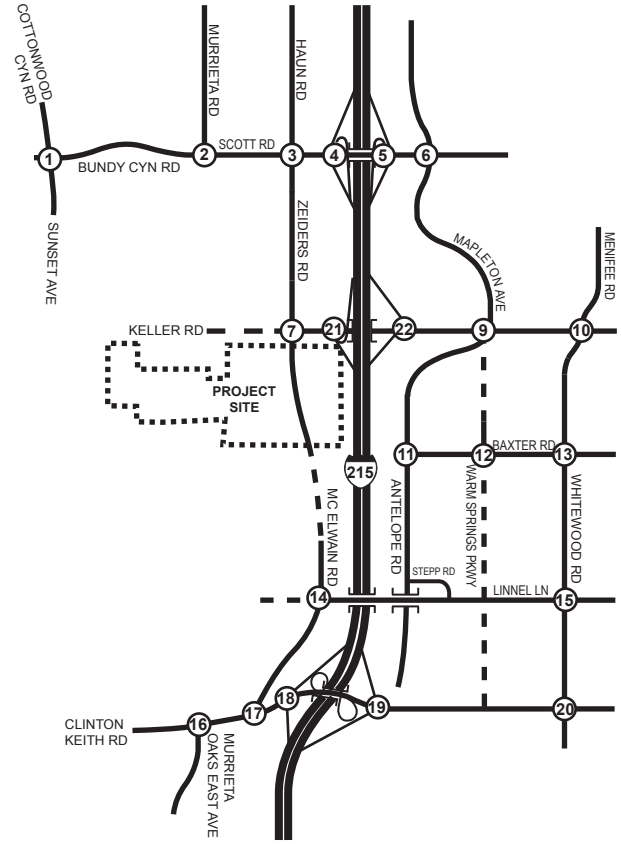
Area 2
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 41





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

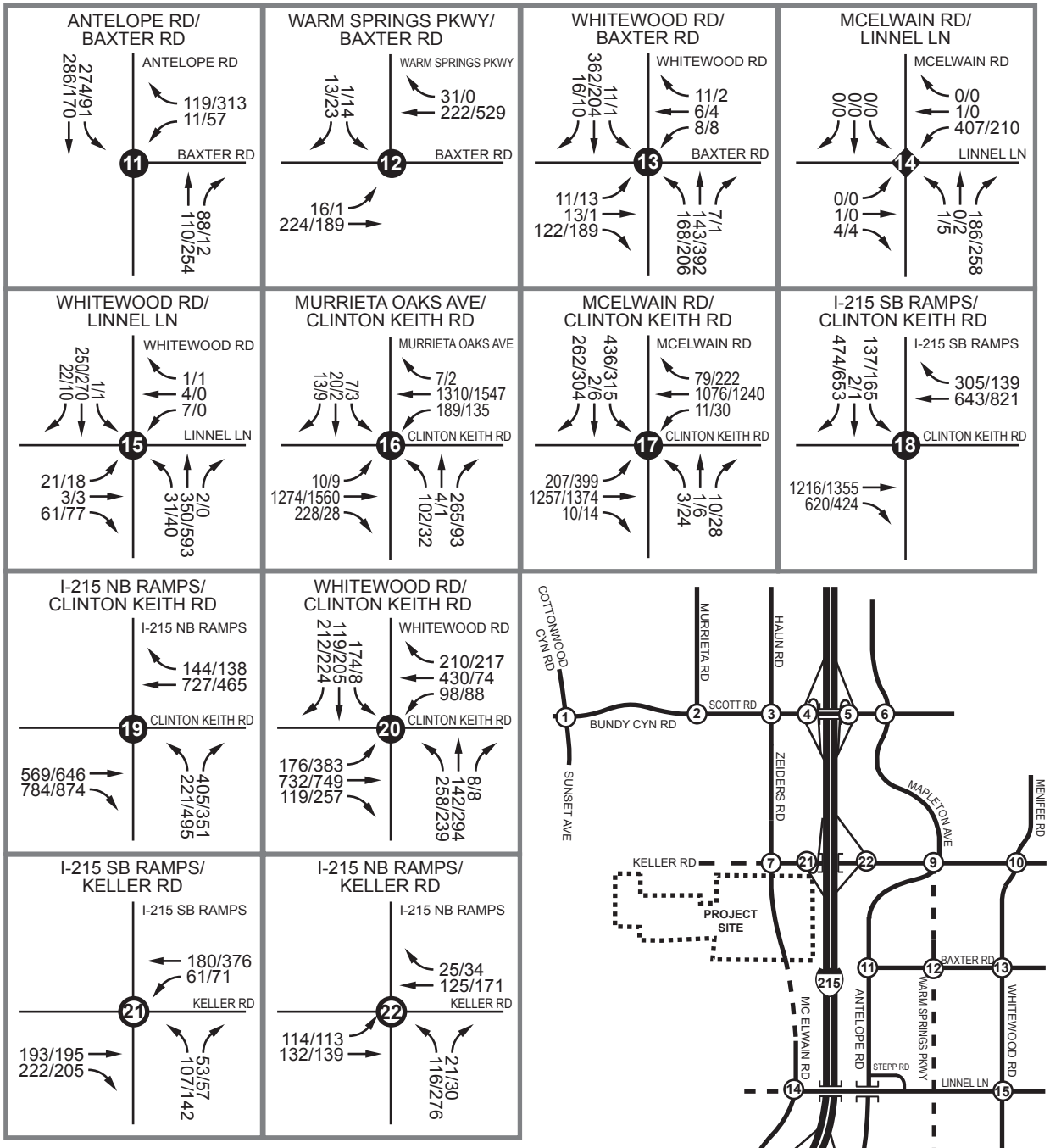
Not to Scale

Area 1
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases1 & 2 Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 42



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

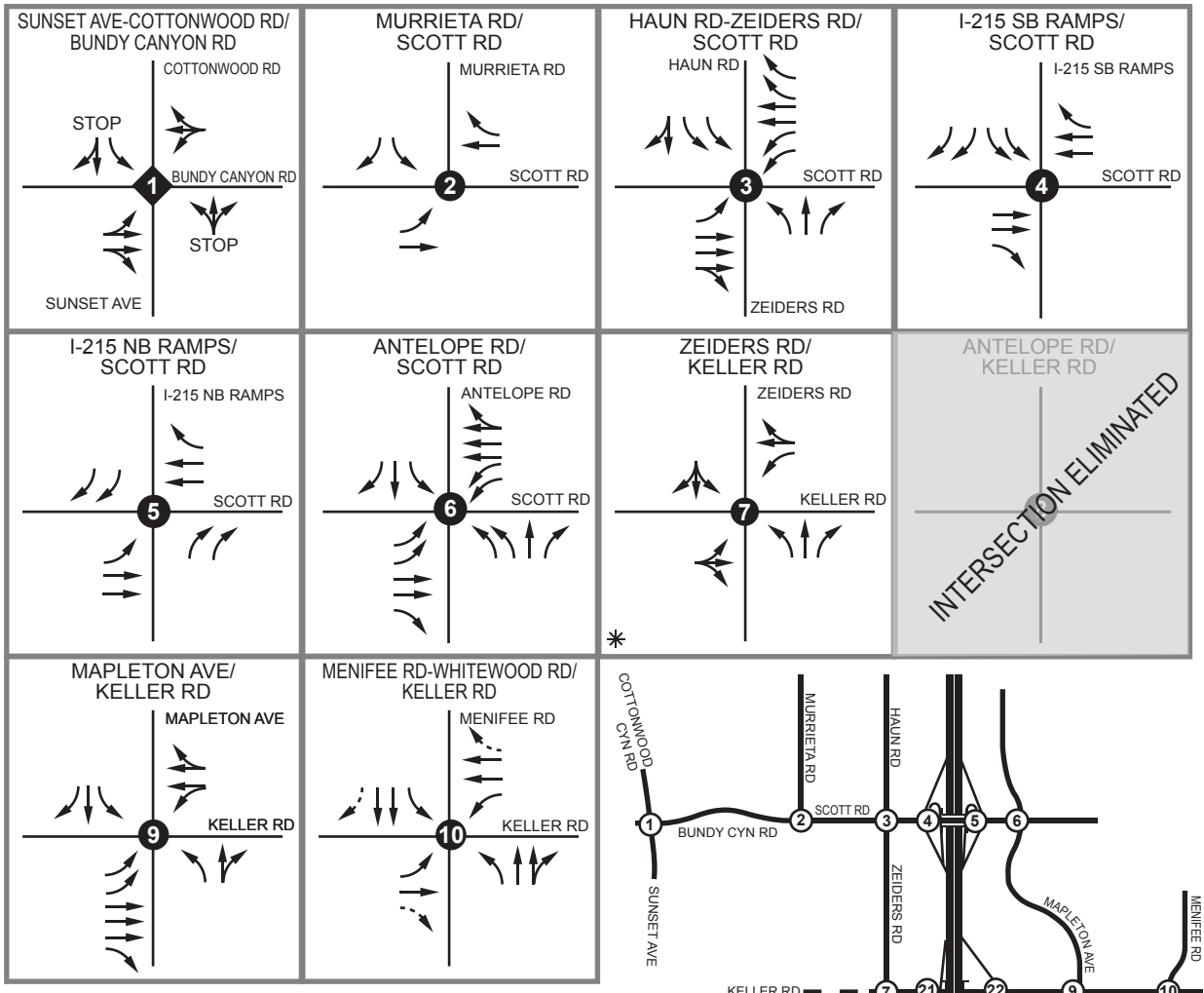
Area 2
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases1 & 2 Conditions
AM & PM Peak Hour Study Intersection Volumes

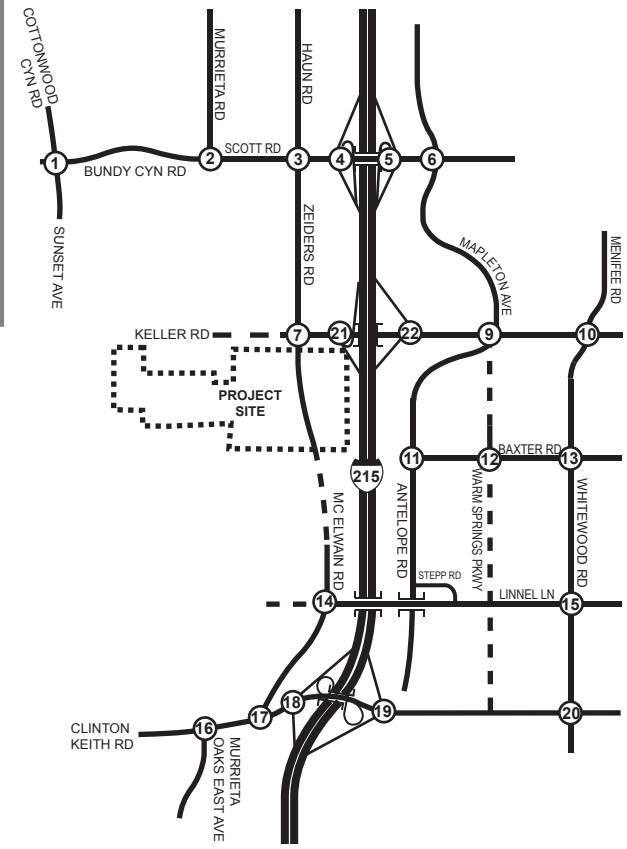
Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 43





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

Not to Scale

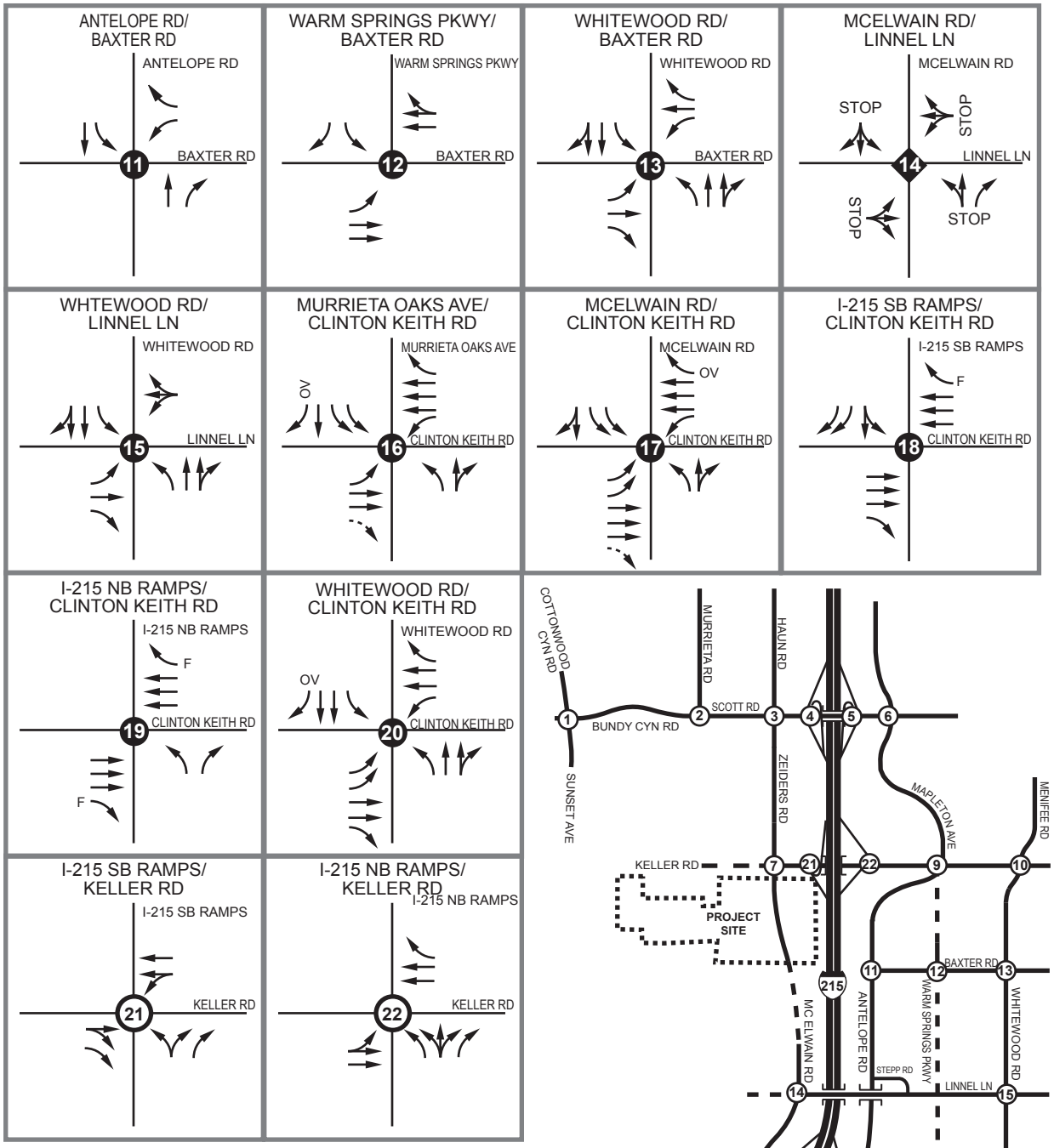
Area 1
Mitigated Forecast Year 2028
Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 44



Legend:

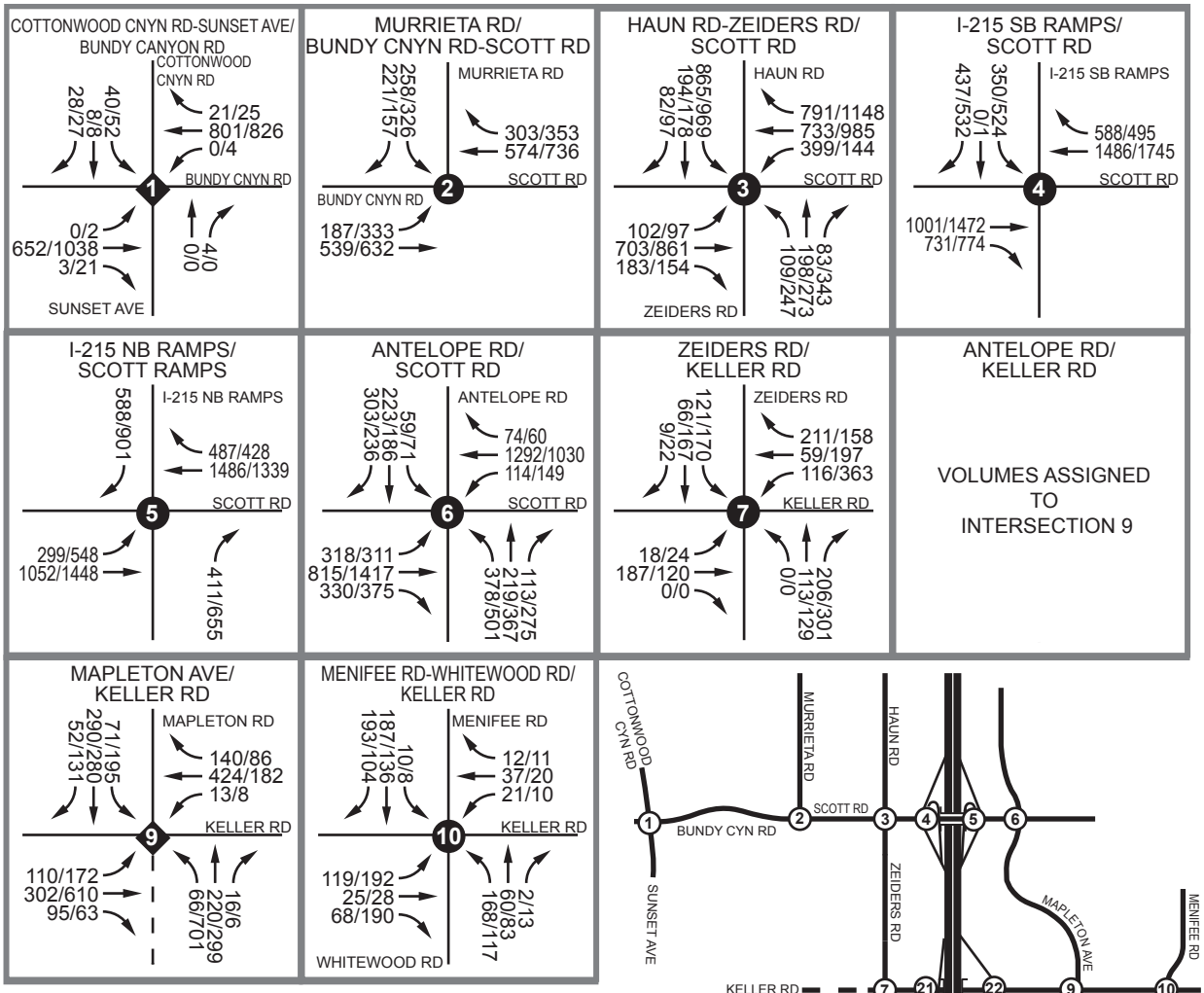
- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Mitigated Intersection

Not to Scale

Area 2
Mitigated Forecast Year 2028
Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018

Exhibit 45



Not to Scale

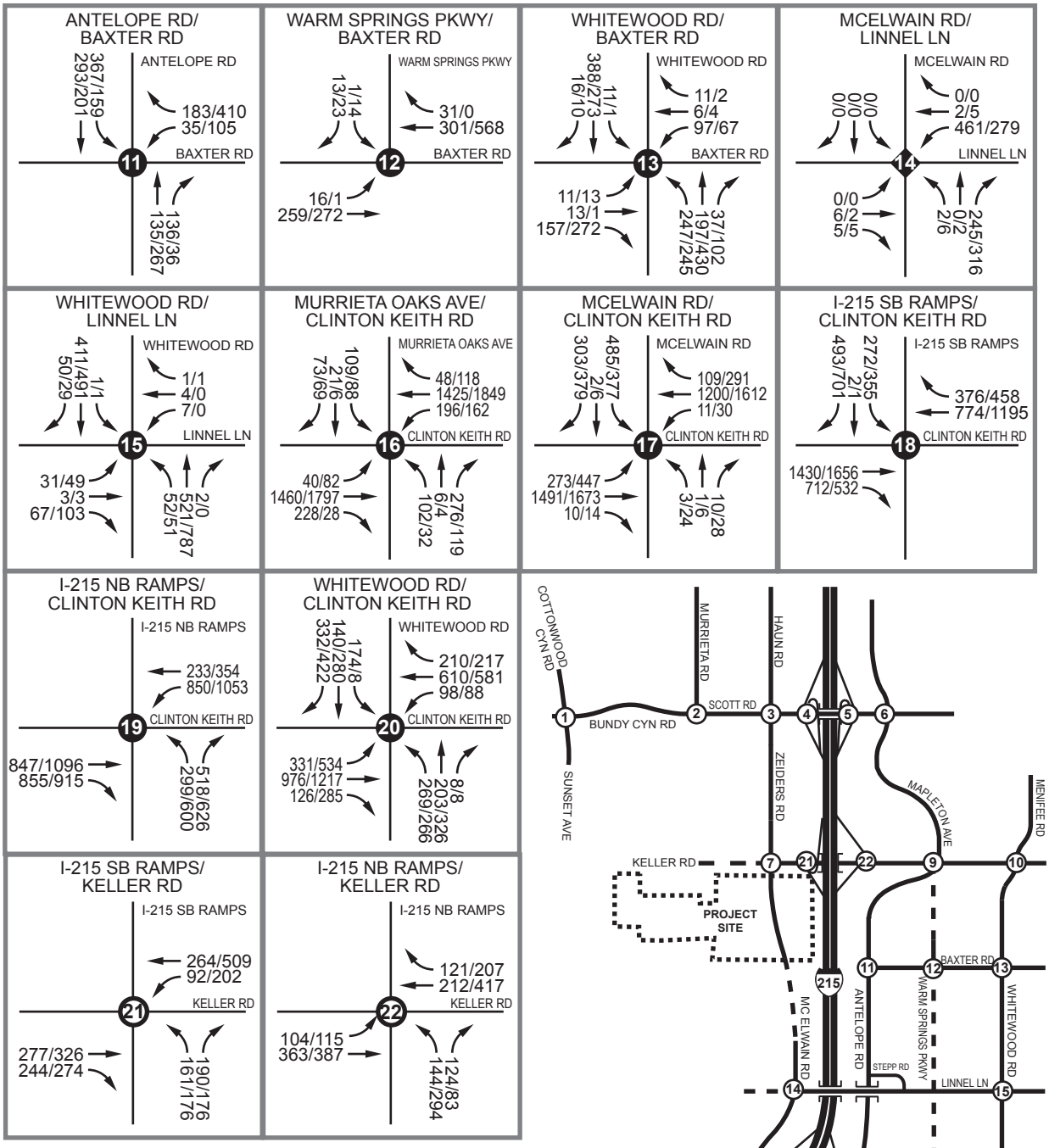
Area 1
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 46



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

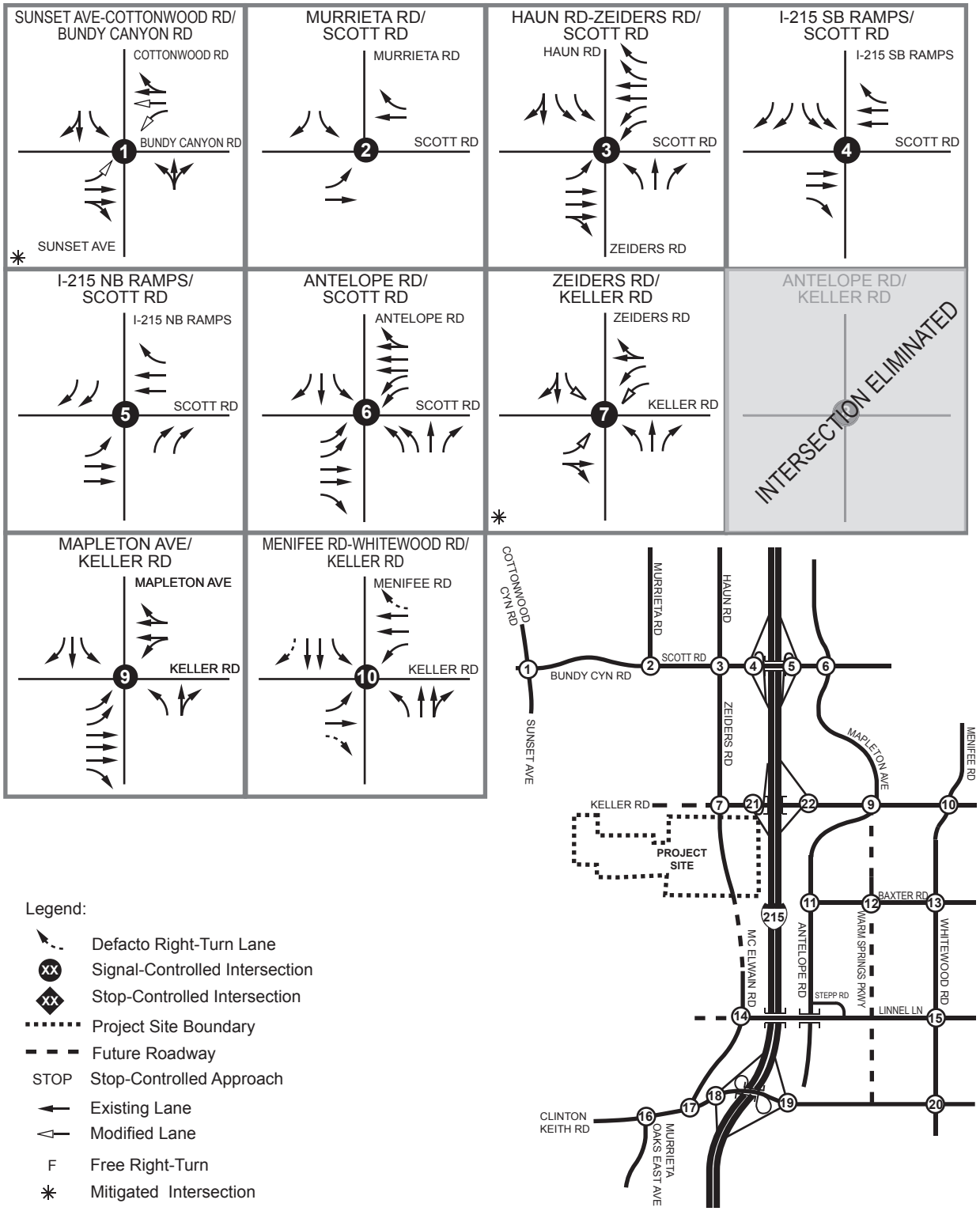
Area 2
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 47



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

Not to Scale

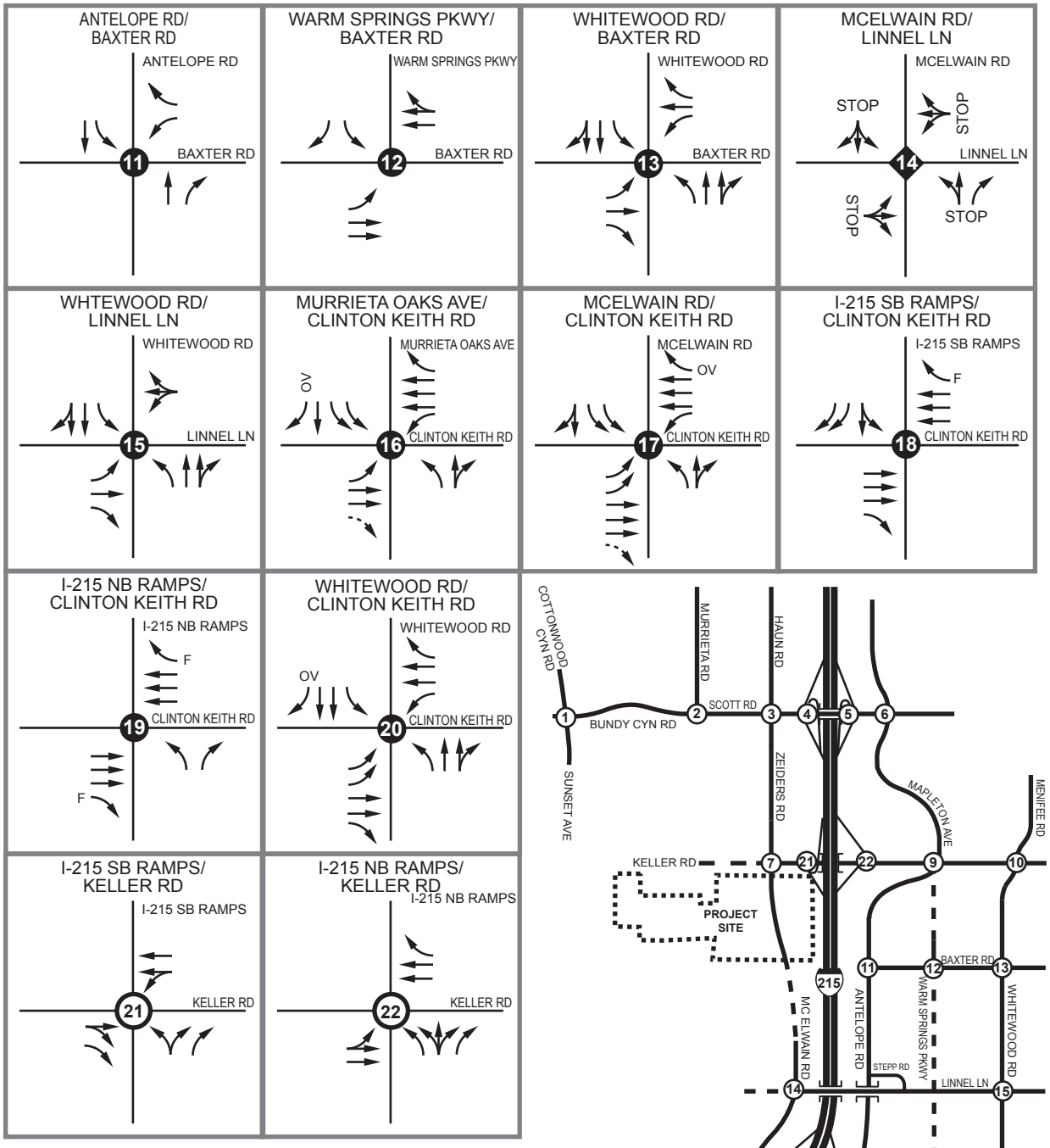
Area 1
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 48



Legend:

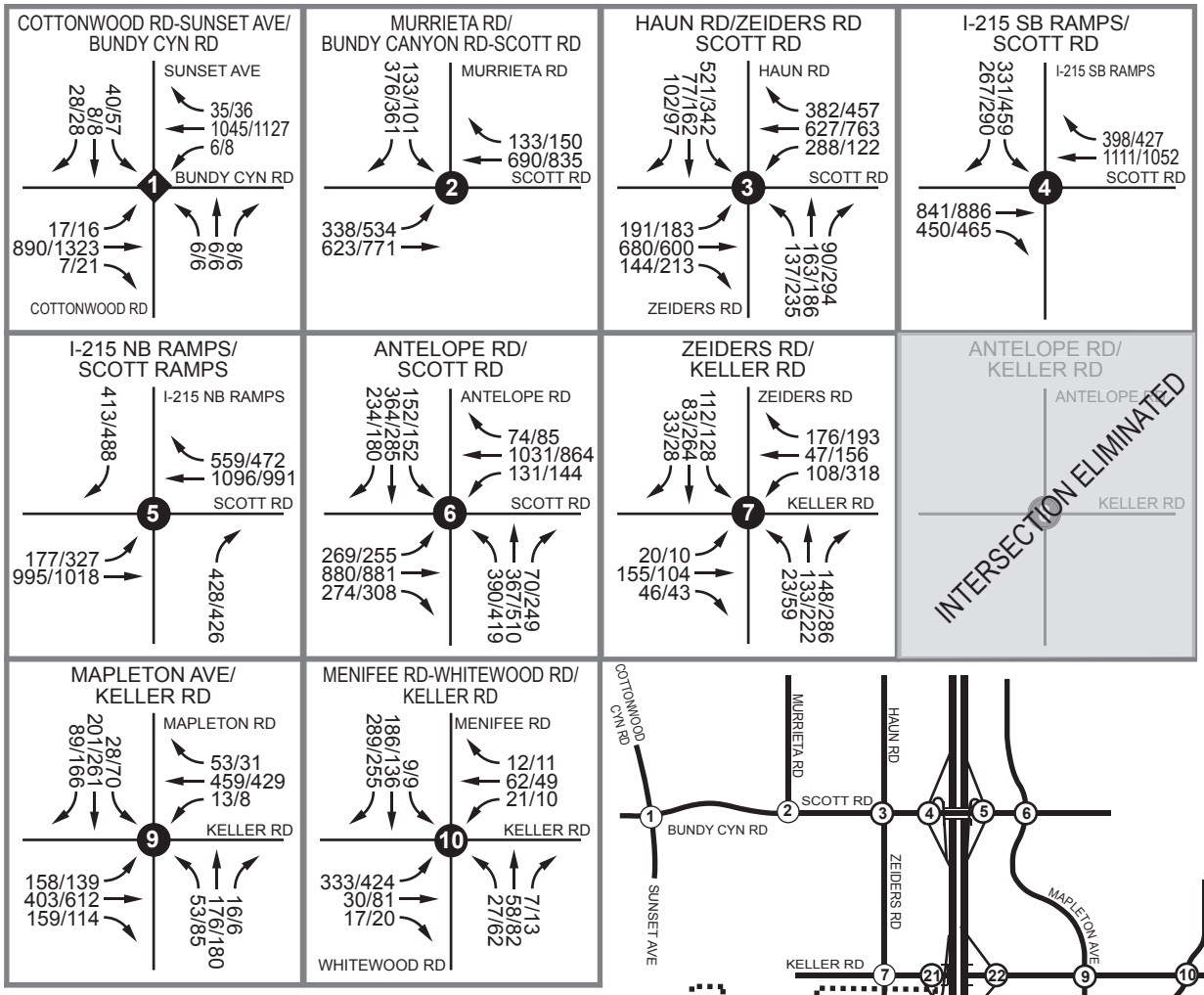
- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

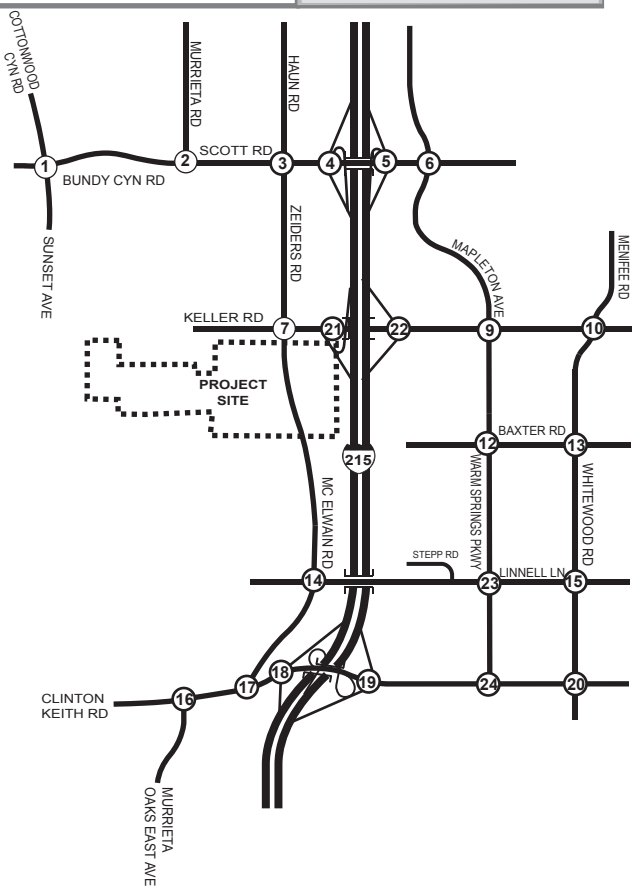
Not to Scale

Area 2
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018

Exhibit 49





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

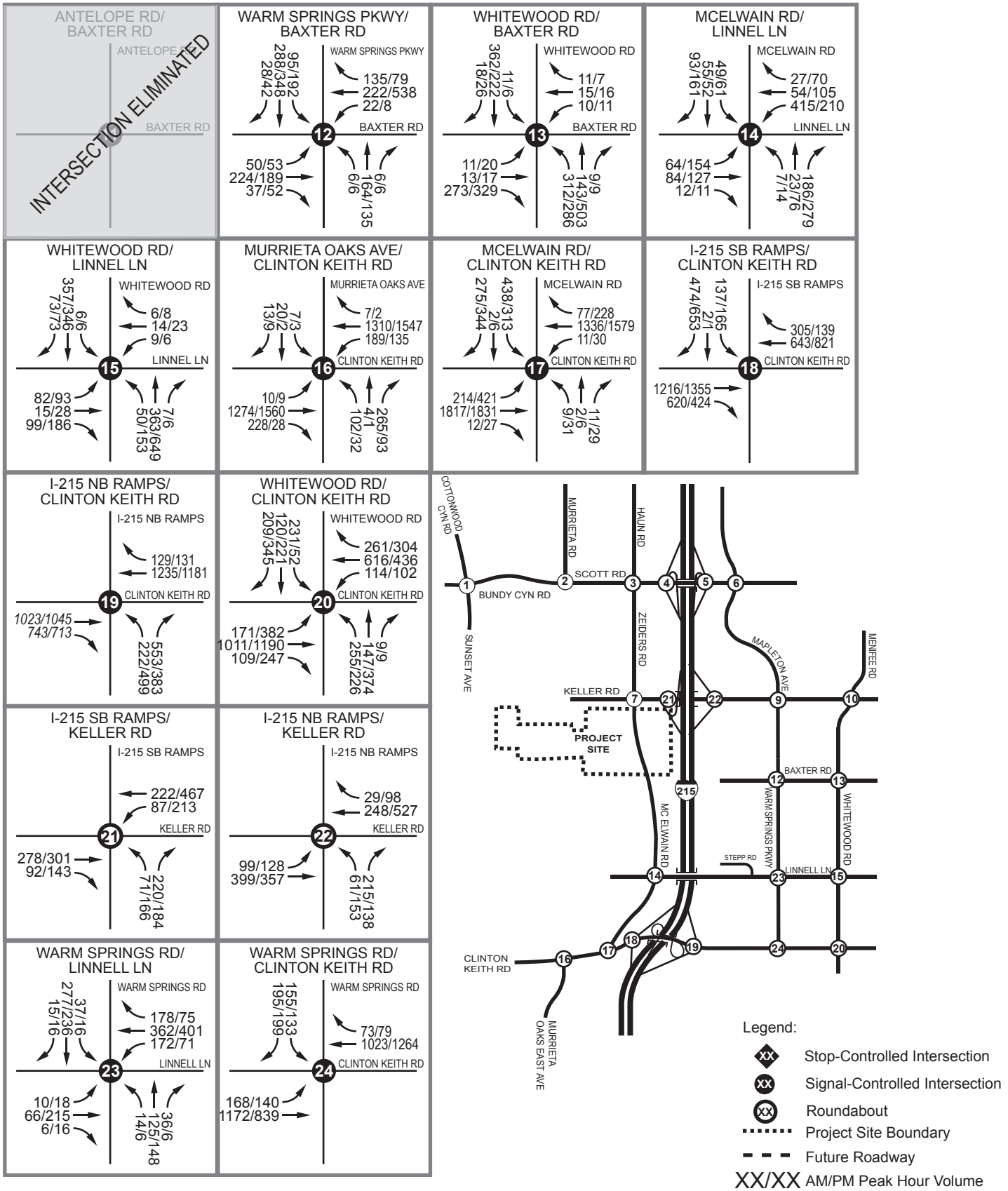
Not to Scale

Area 1
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 50



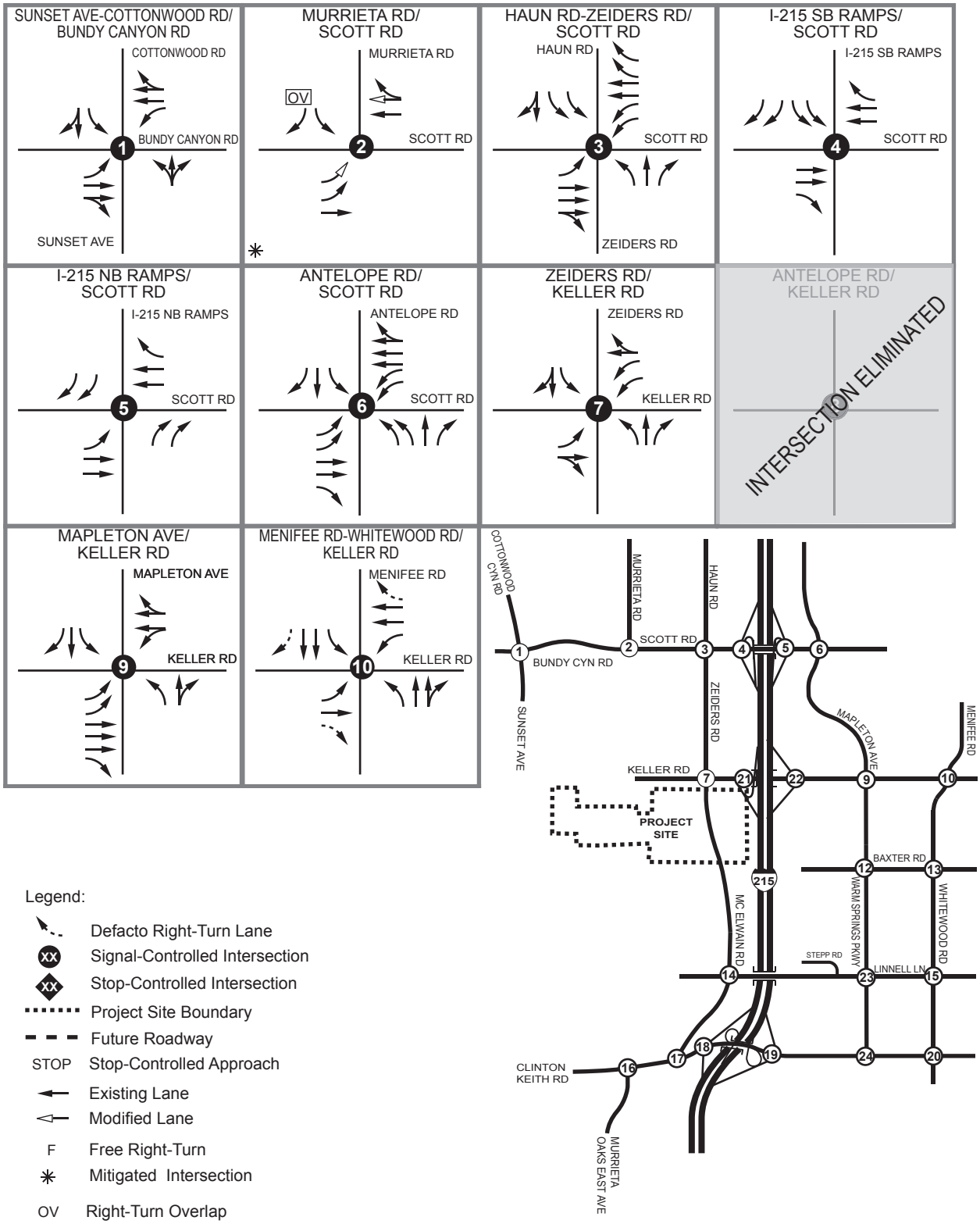
Not to Scale

Area 2
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 51



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

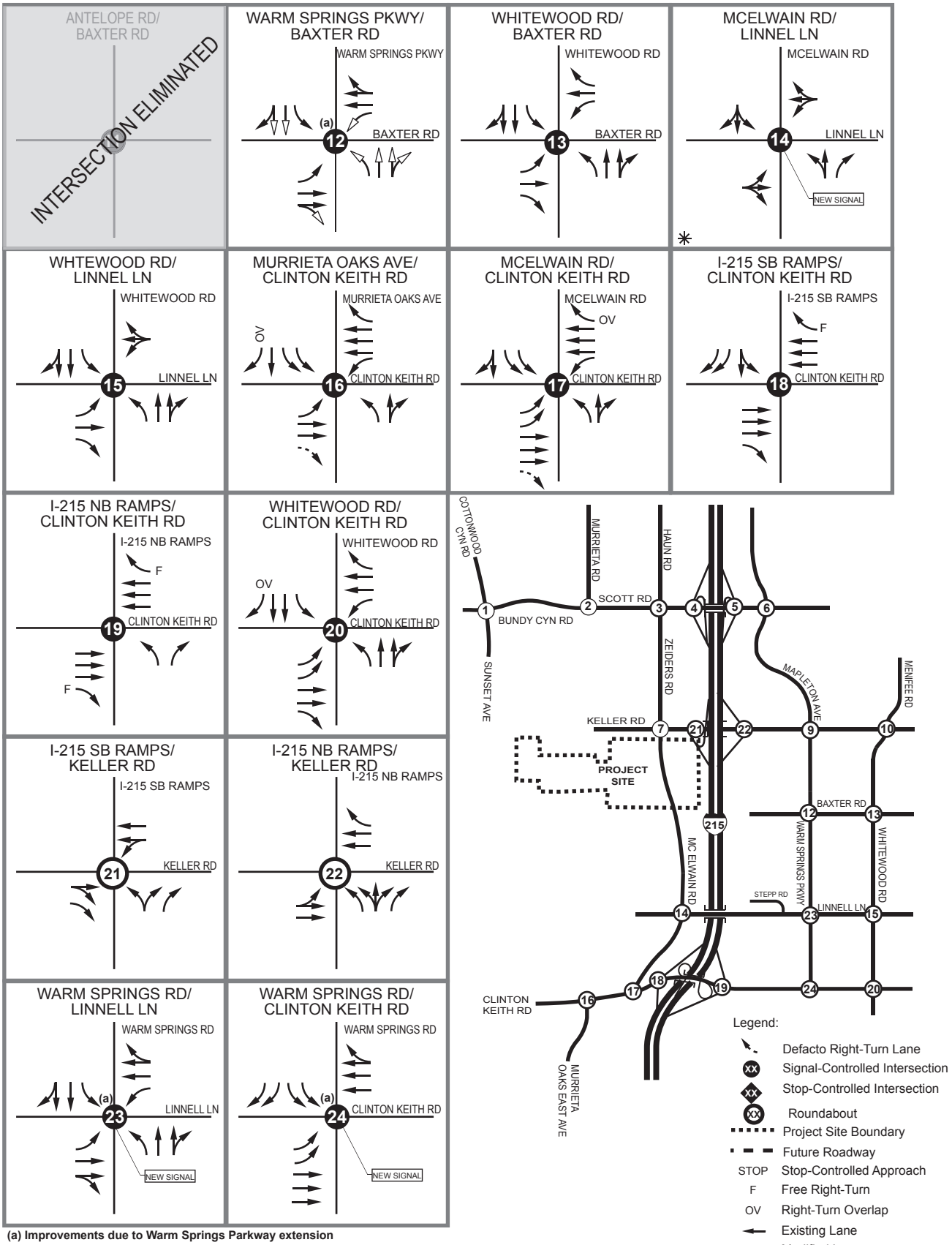
Not to Scale

Area 1
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 52



(a) Improvements due to Warm Springs Parkway extension

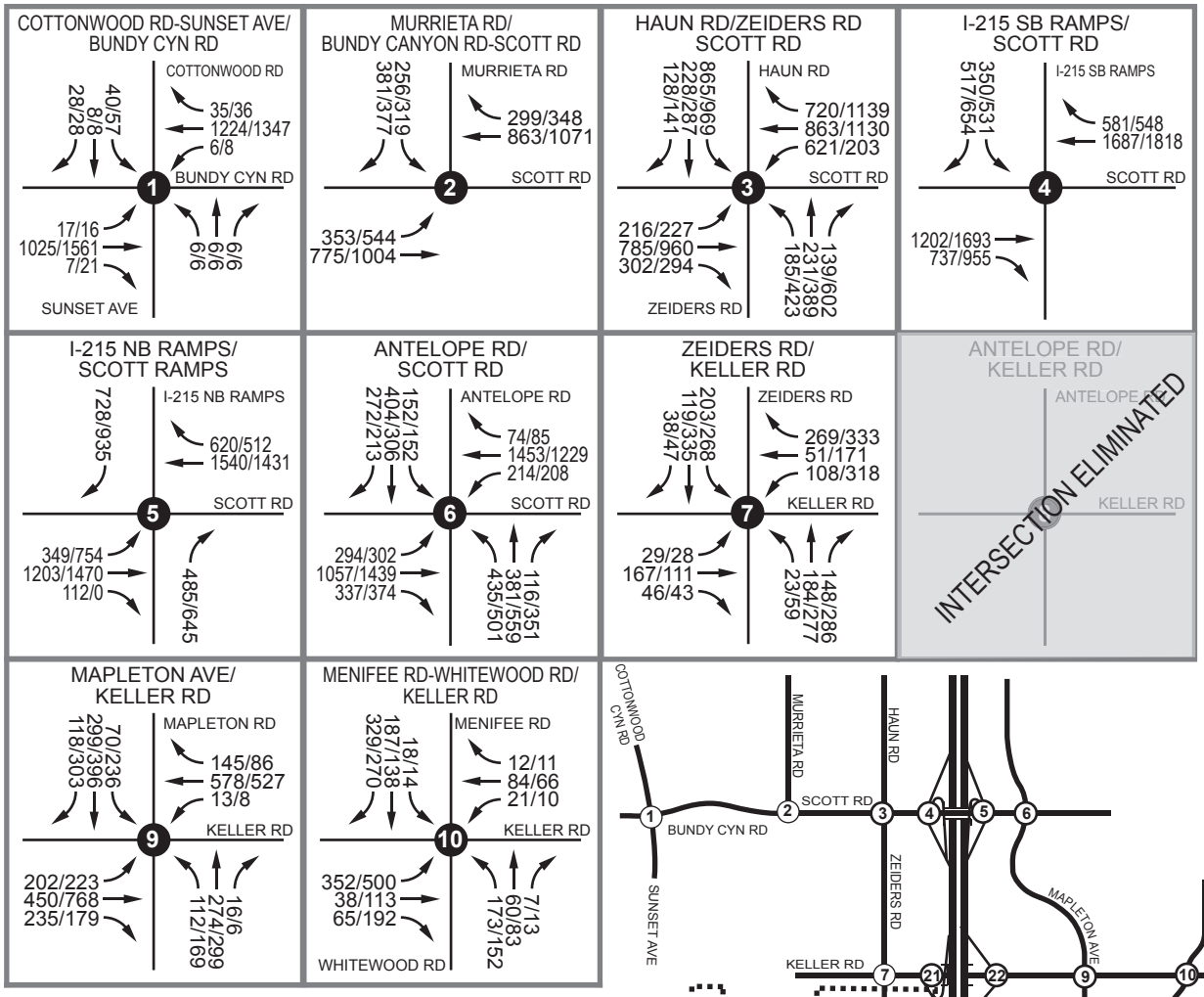
Not to Scale

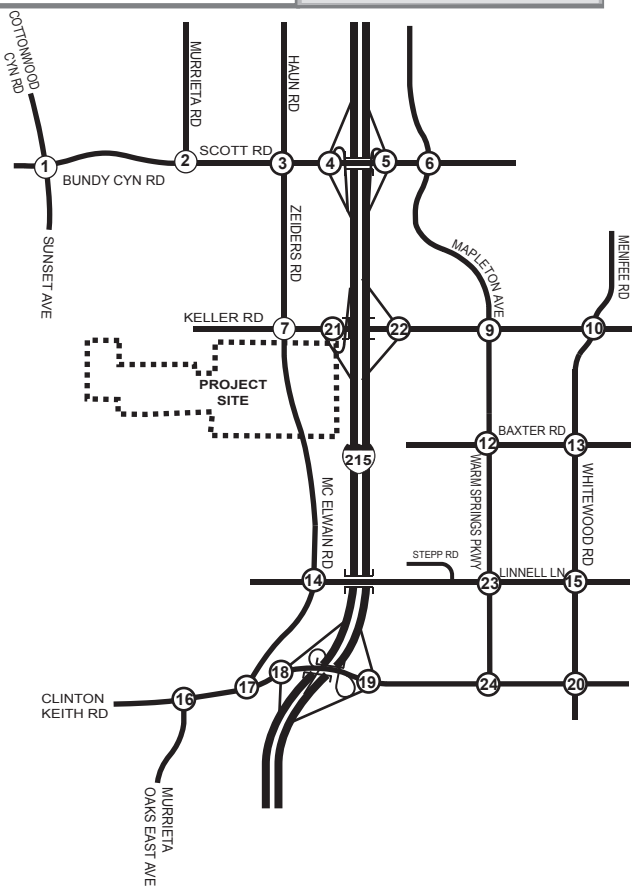
Area 2
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 53





Legend:

- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

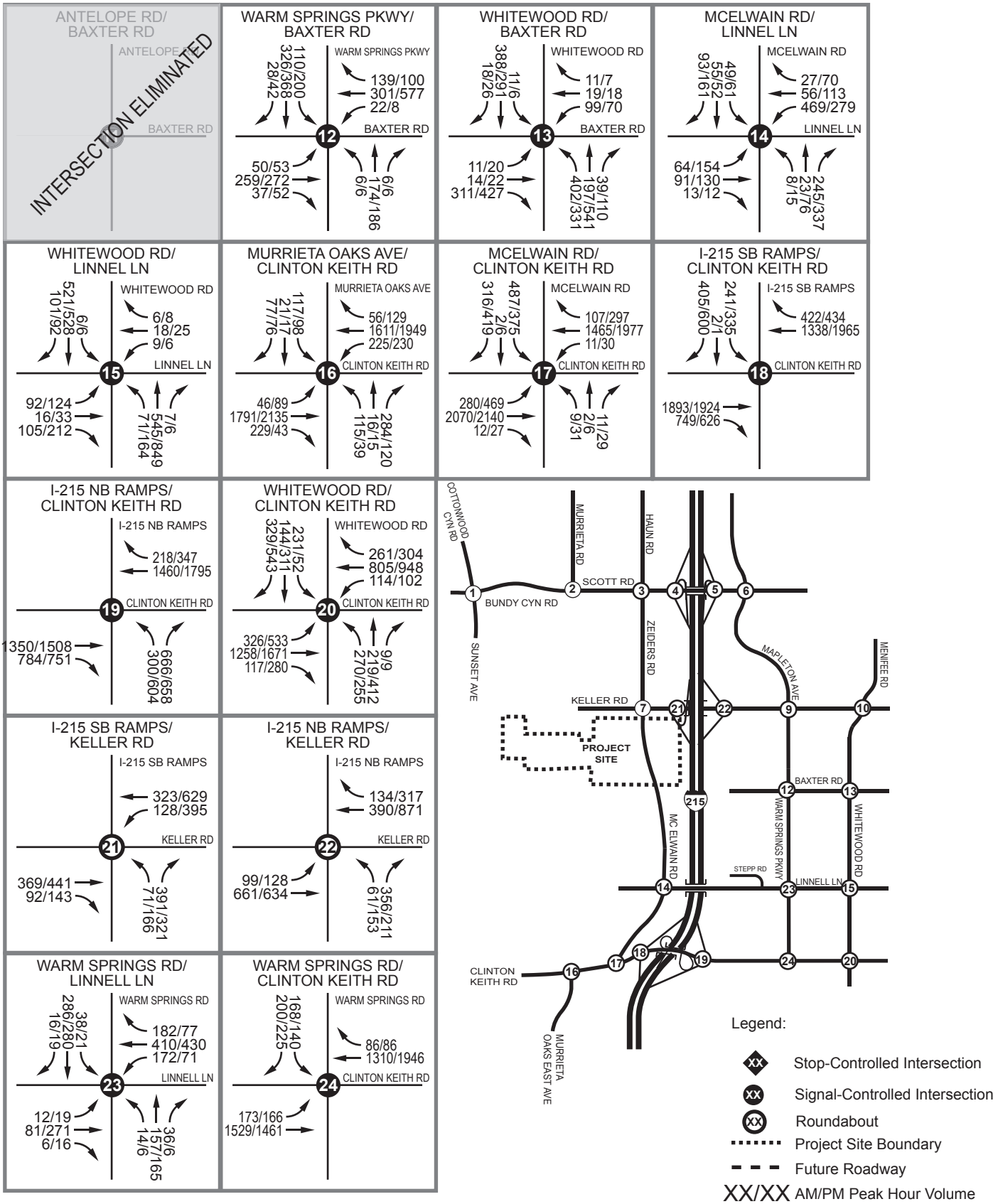
Not to Scale

Area 1
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 54



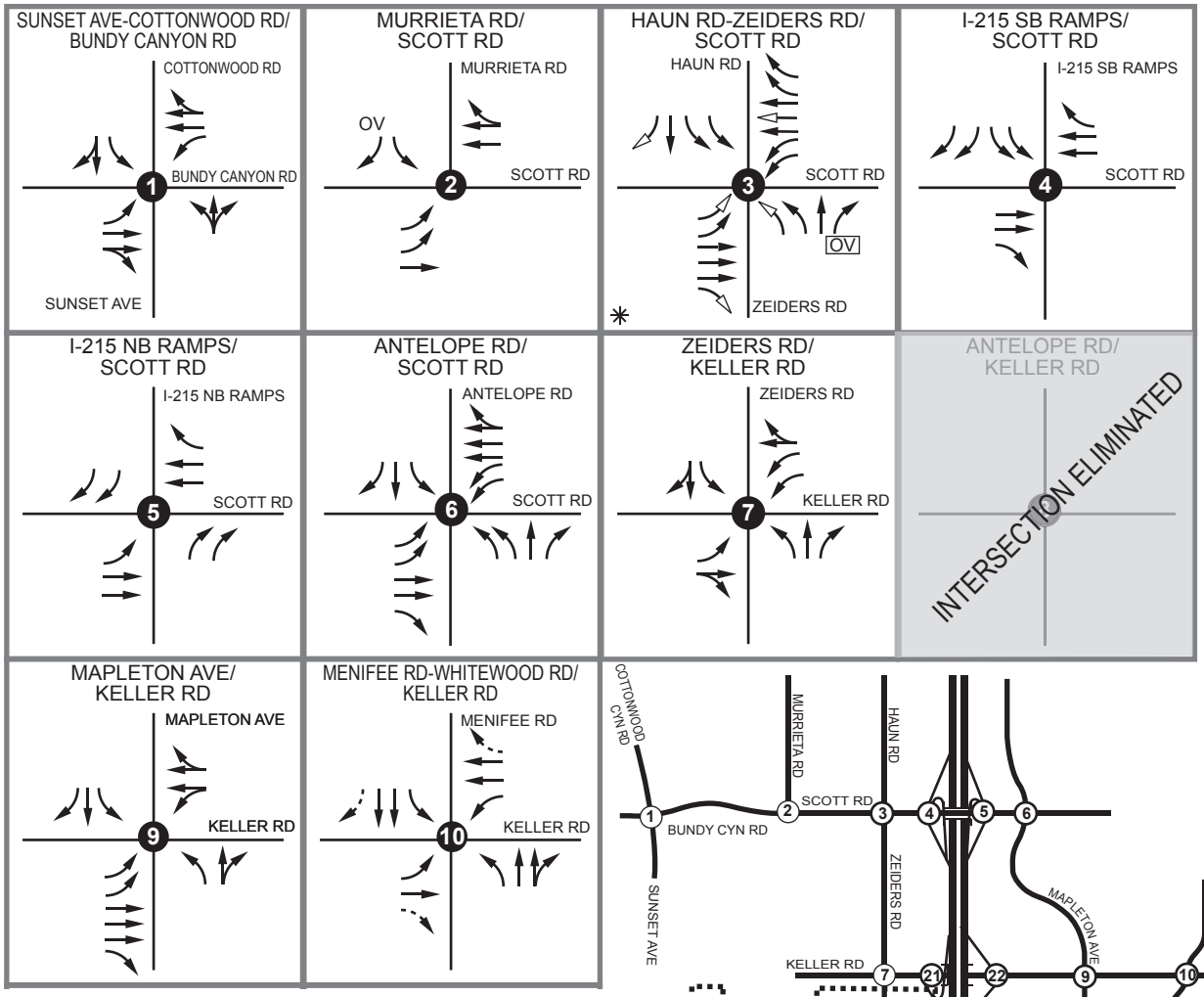
Not to Scale

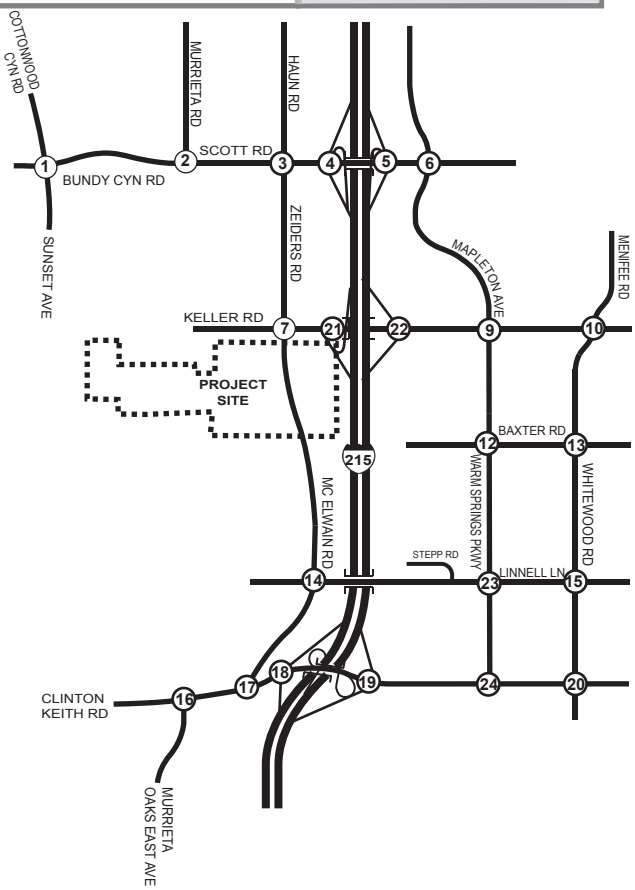
Area 2
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 55





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

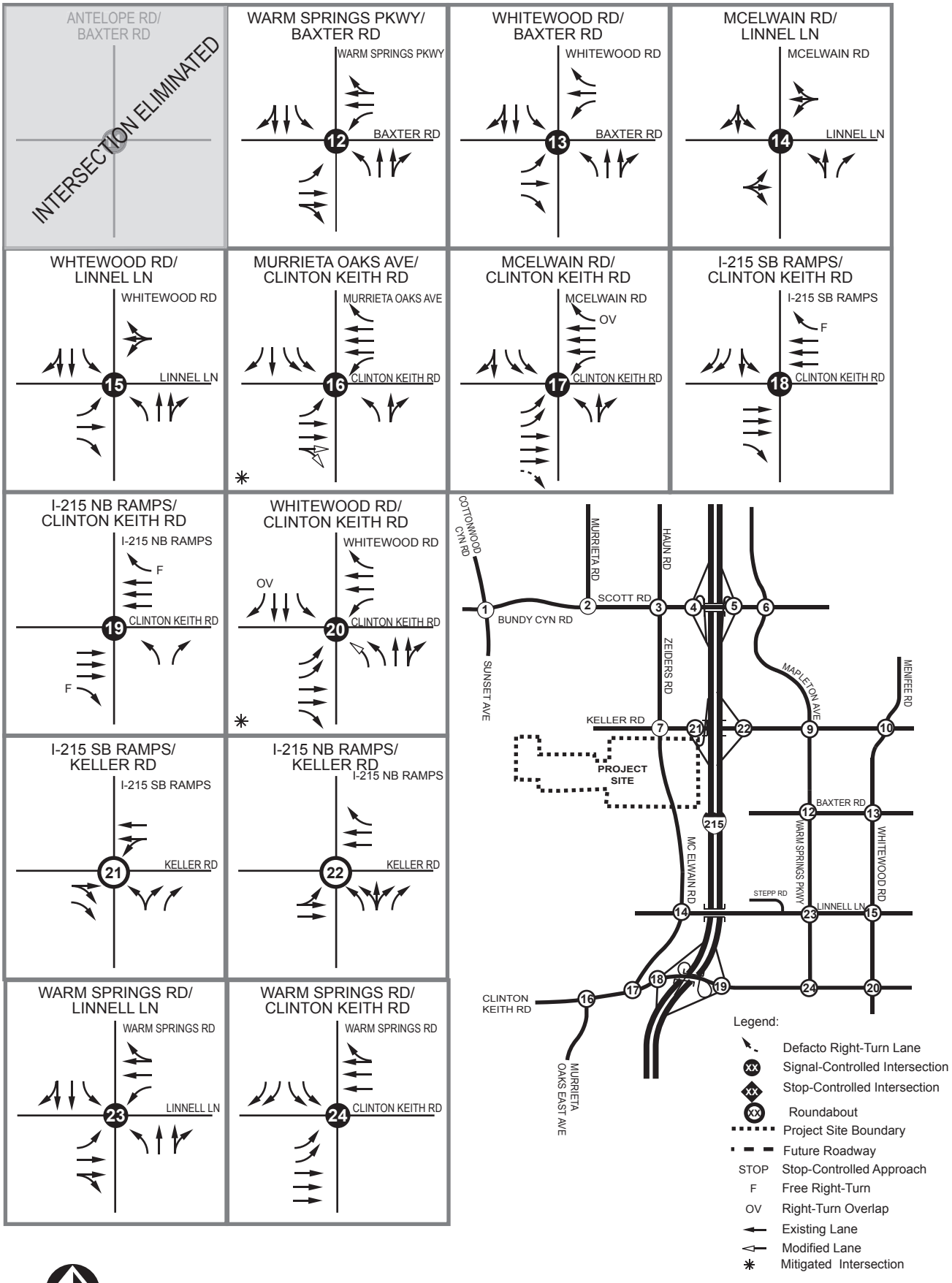
Not to Scale

Area 1
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 56



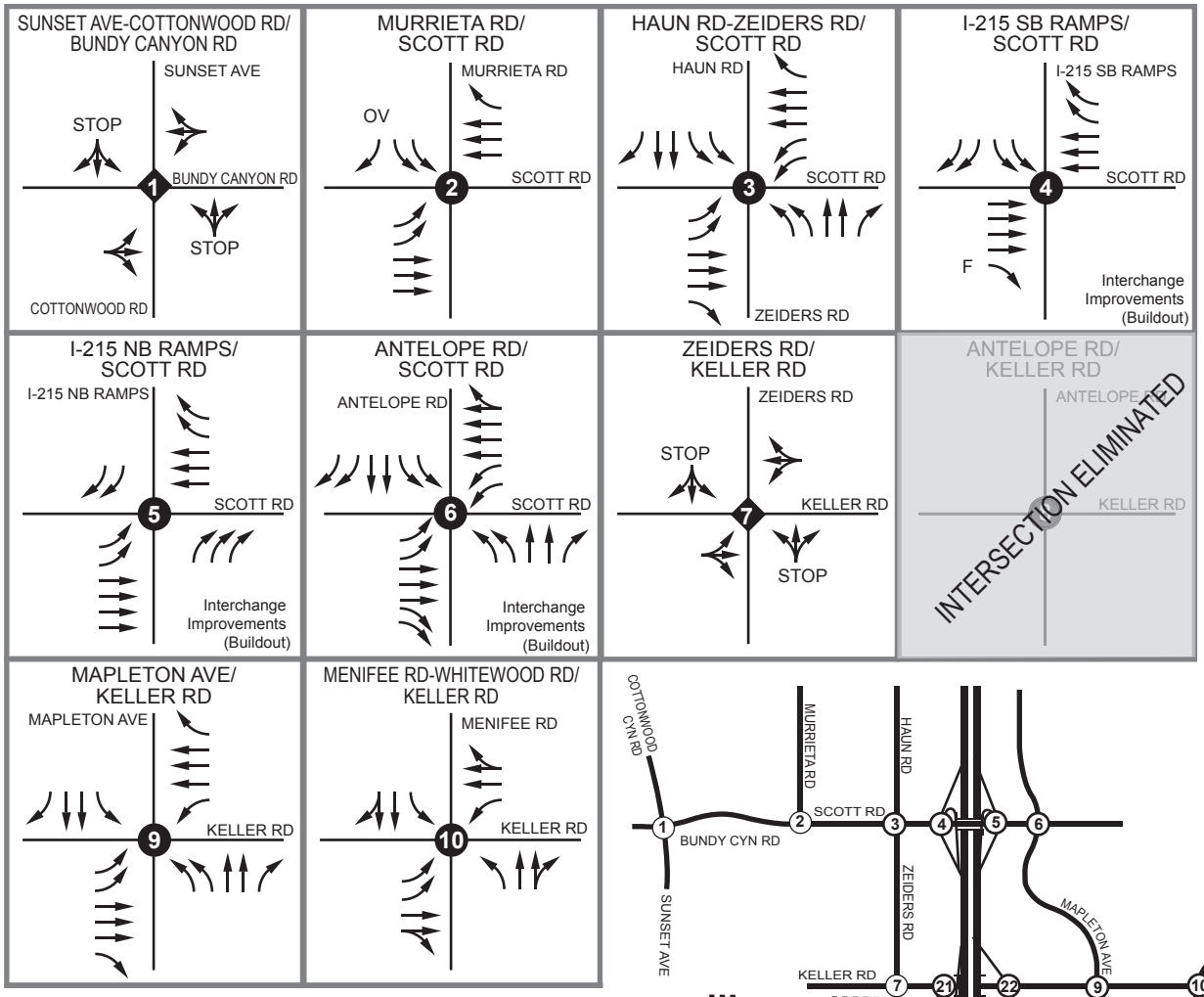
Not to Scale

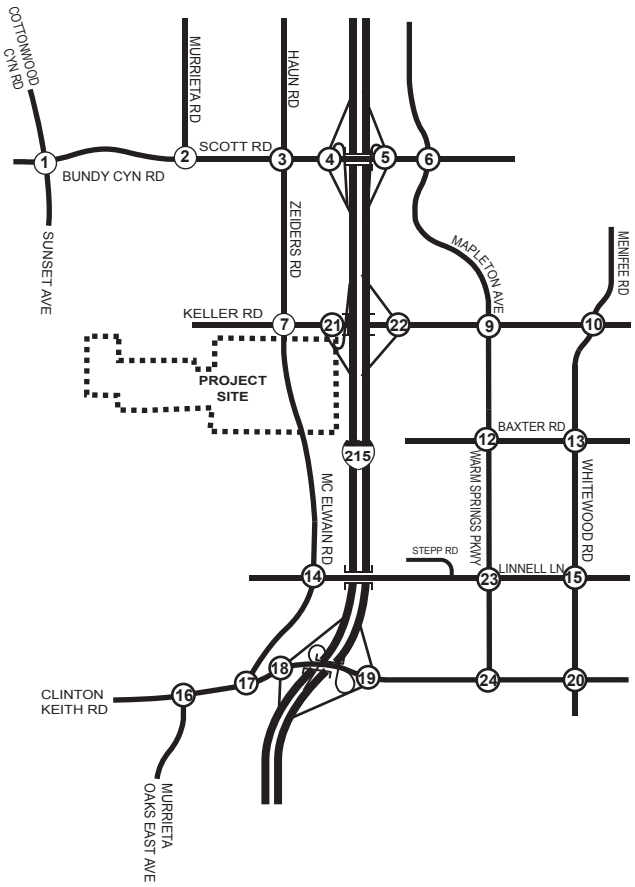
Area 2
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 57





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap Phase
- F Free Right-Turn
- Existing Lane
- Modified Lane

Not to Scale

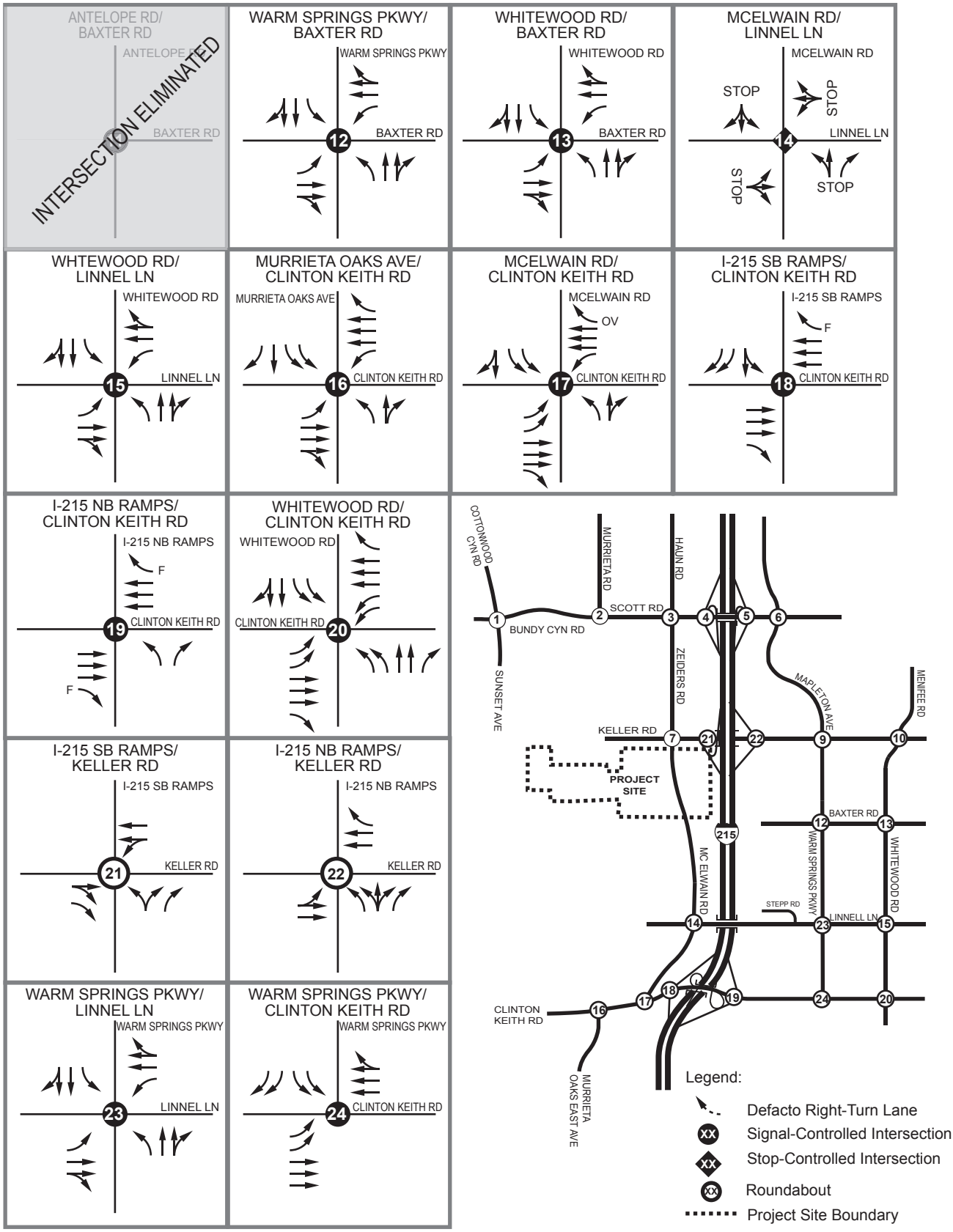
Area 1

Forecast Year 2035 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 58



Not to Scale

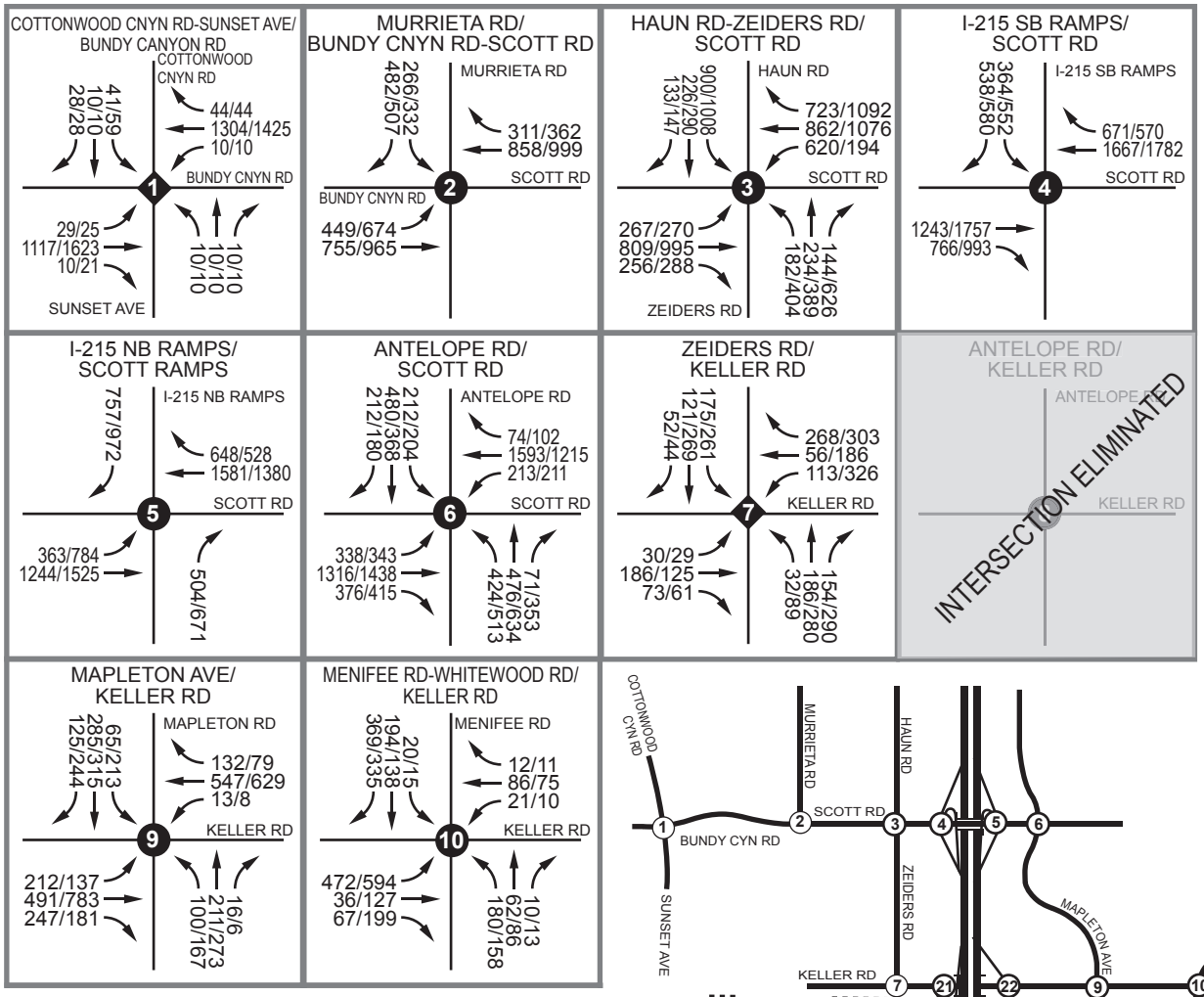
Area 2

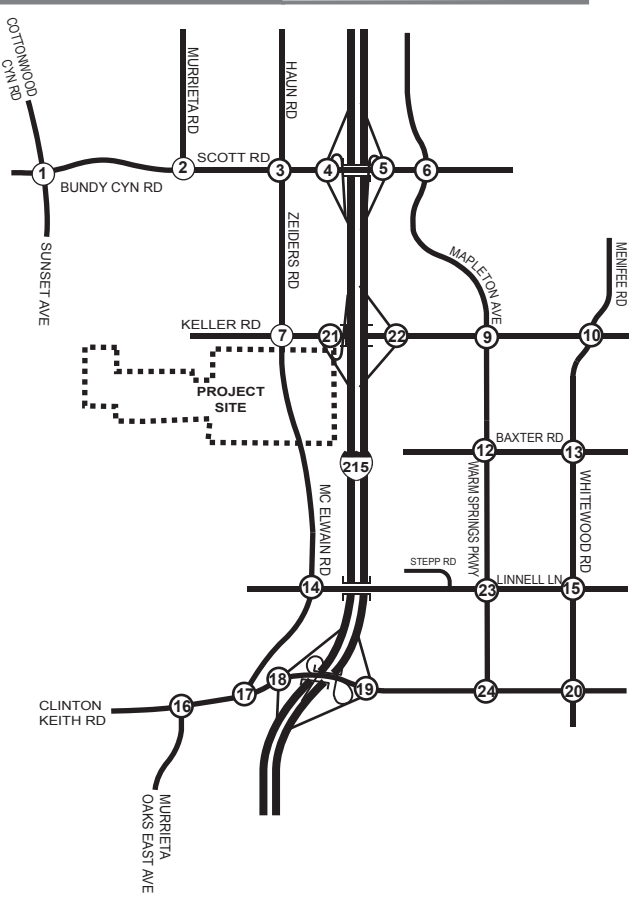
Forecast Year 2035 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 59





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume
- XX Stop-Controlled Intersection

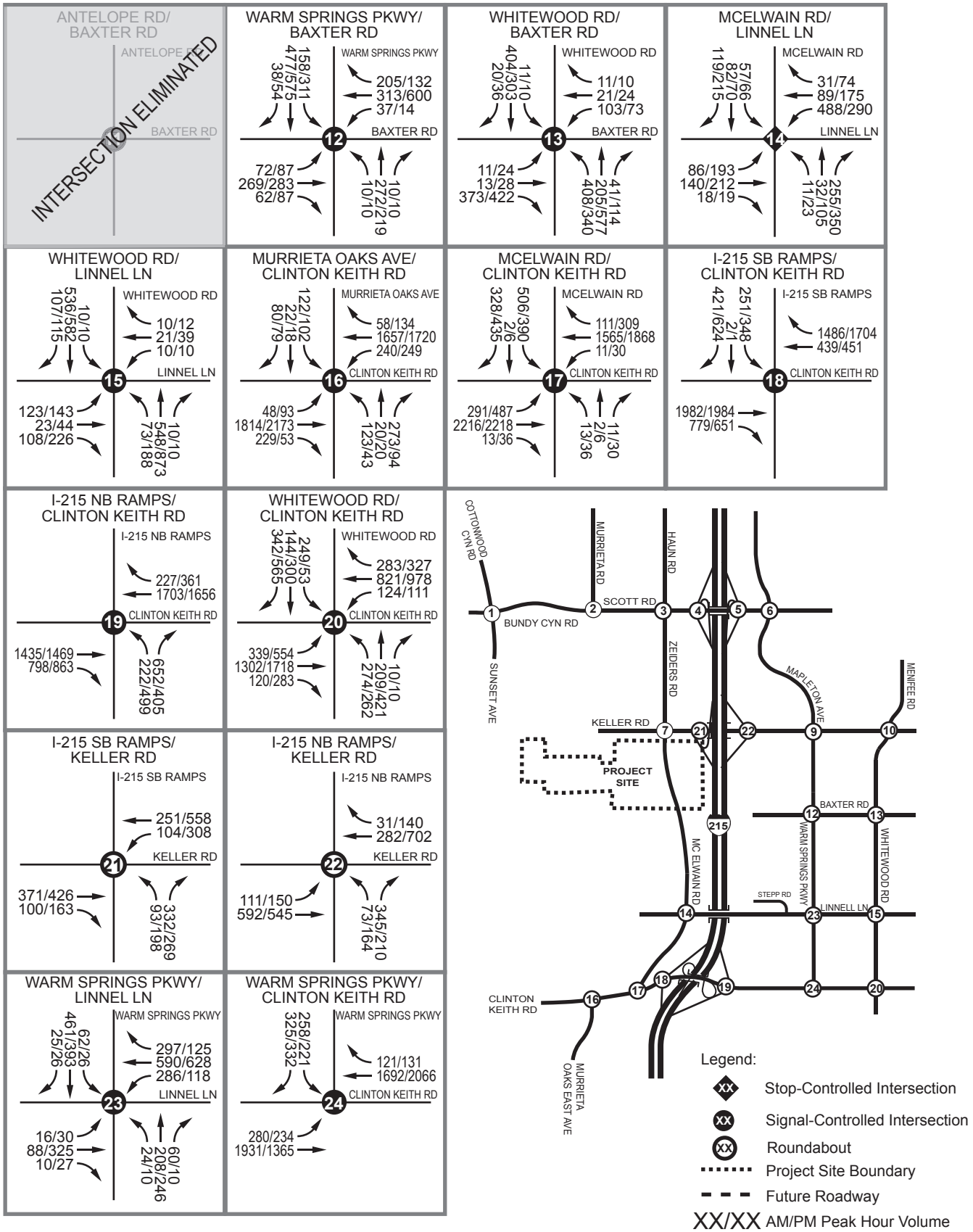
Not to Scale

Area 1
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 60



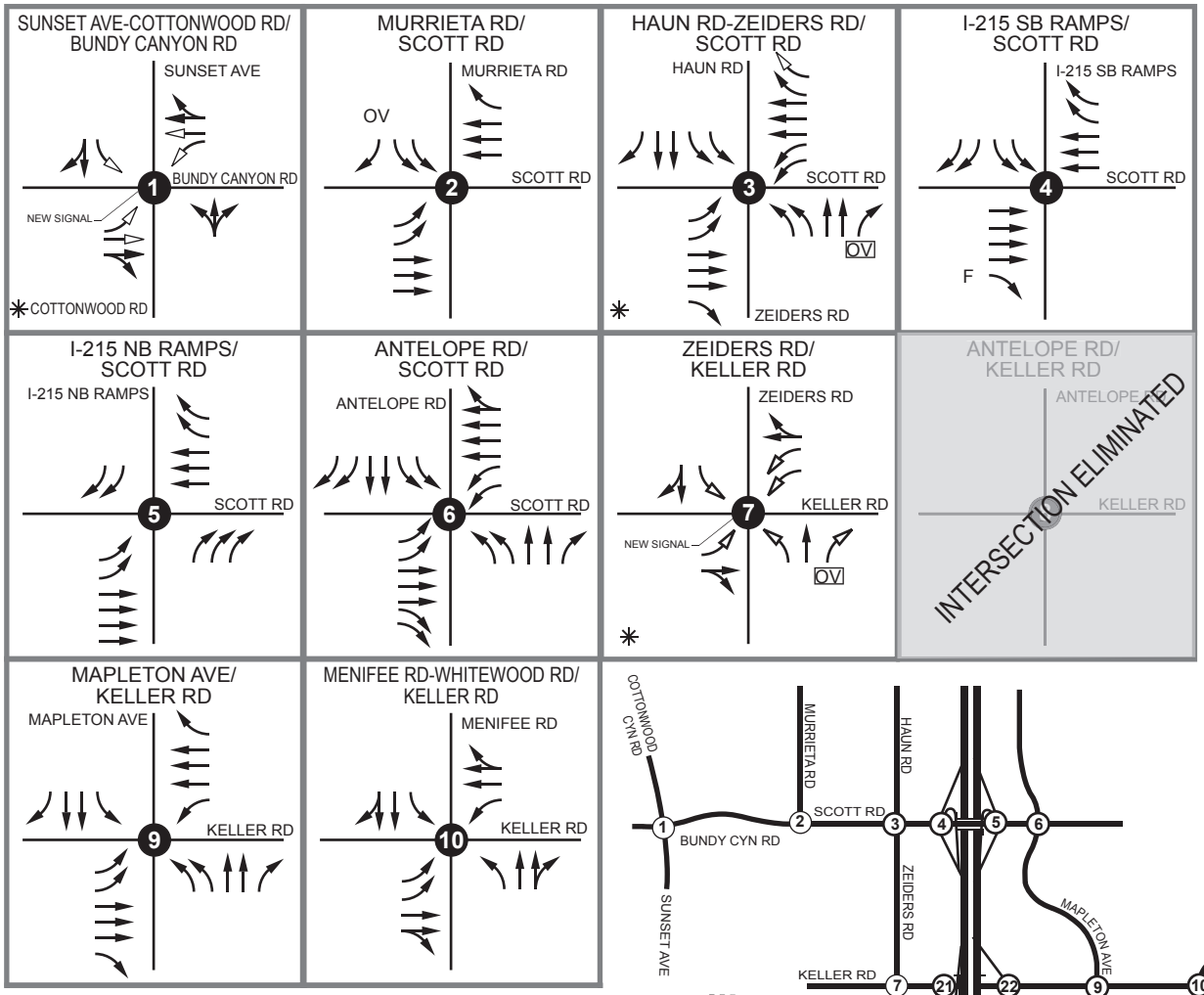
Not to Scale

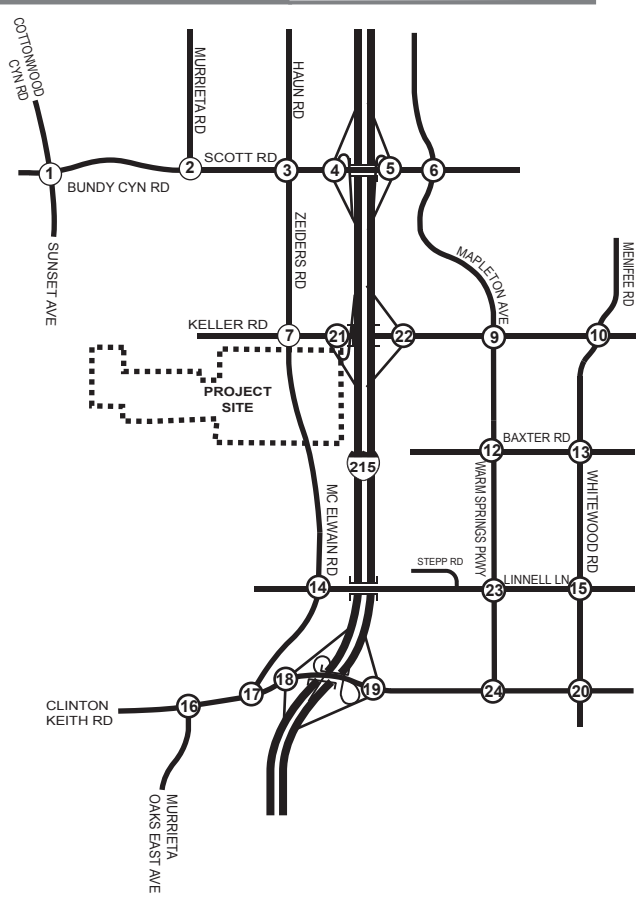
Area 2
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 61





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap Phase
- F Free Right-Turn
- Existing Lane
- Modified Lane
- Mitigated Intersection

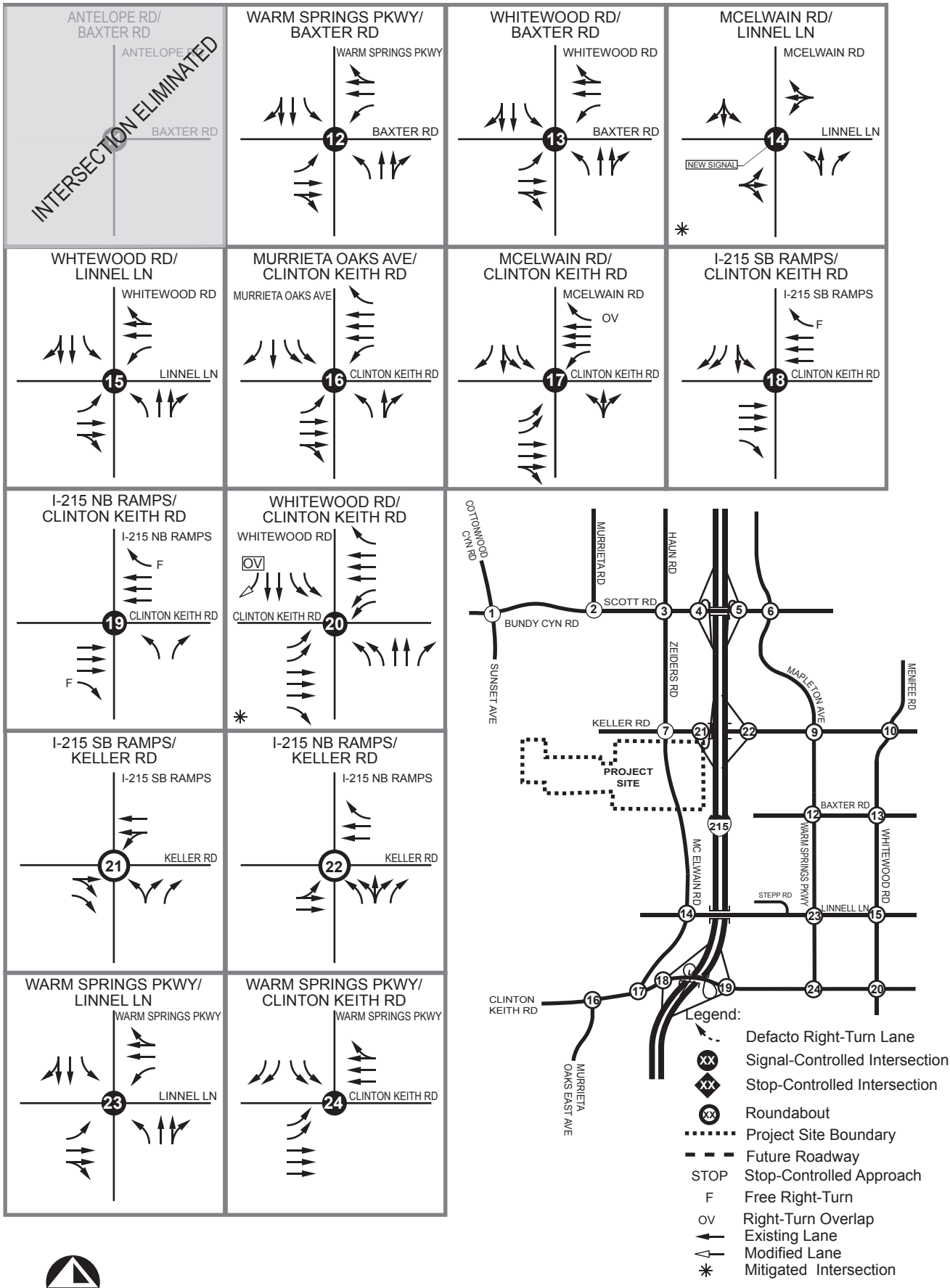
Not to Scale

Area 1
Mitigated Forecast Year 2035
Existing Plus Ambient Growth Plus Project Buildout
Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 62



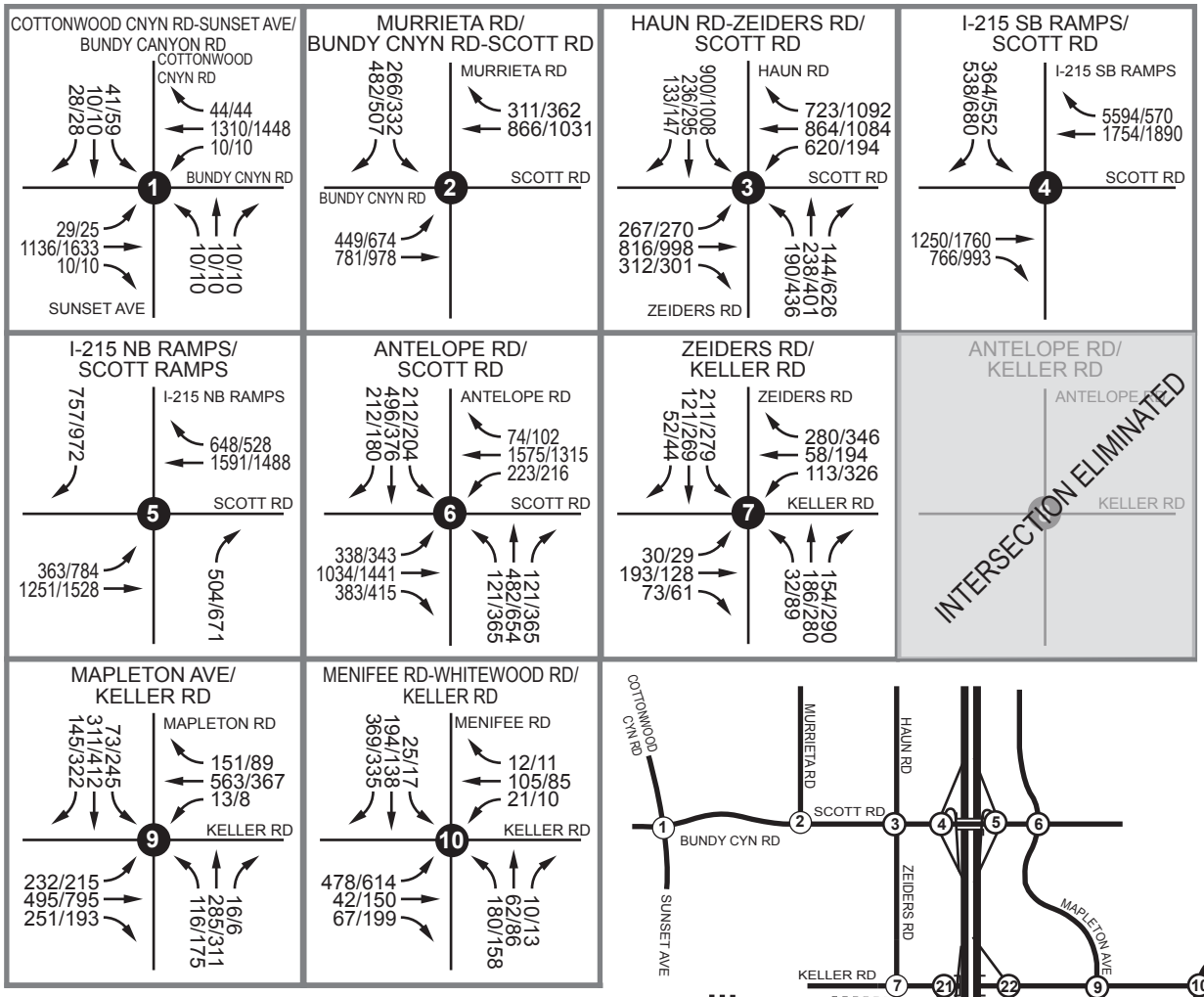
Not to Scale

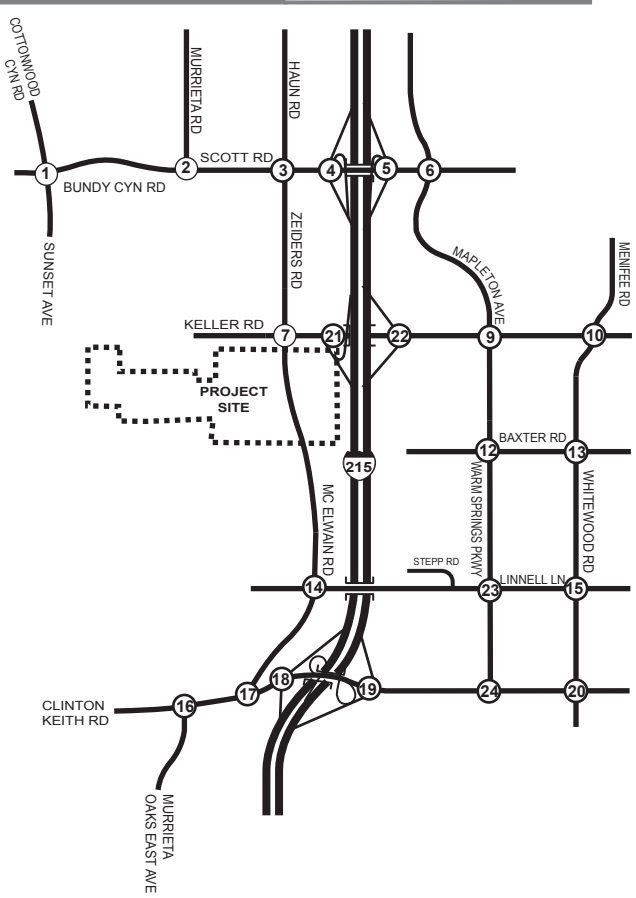
Area 2
Mitigated Forecast Year 2035
Existing Plus Ambient Growth Plus Project Buildout
Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 63





Legend:

- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

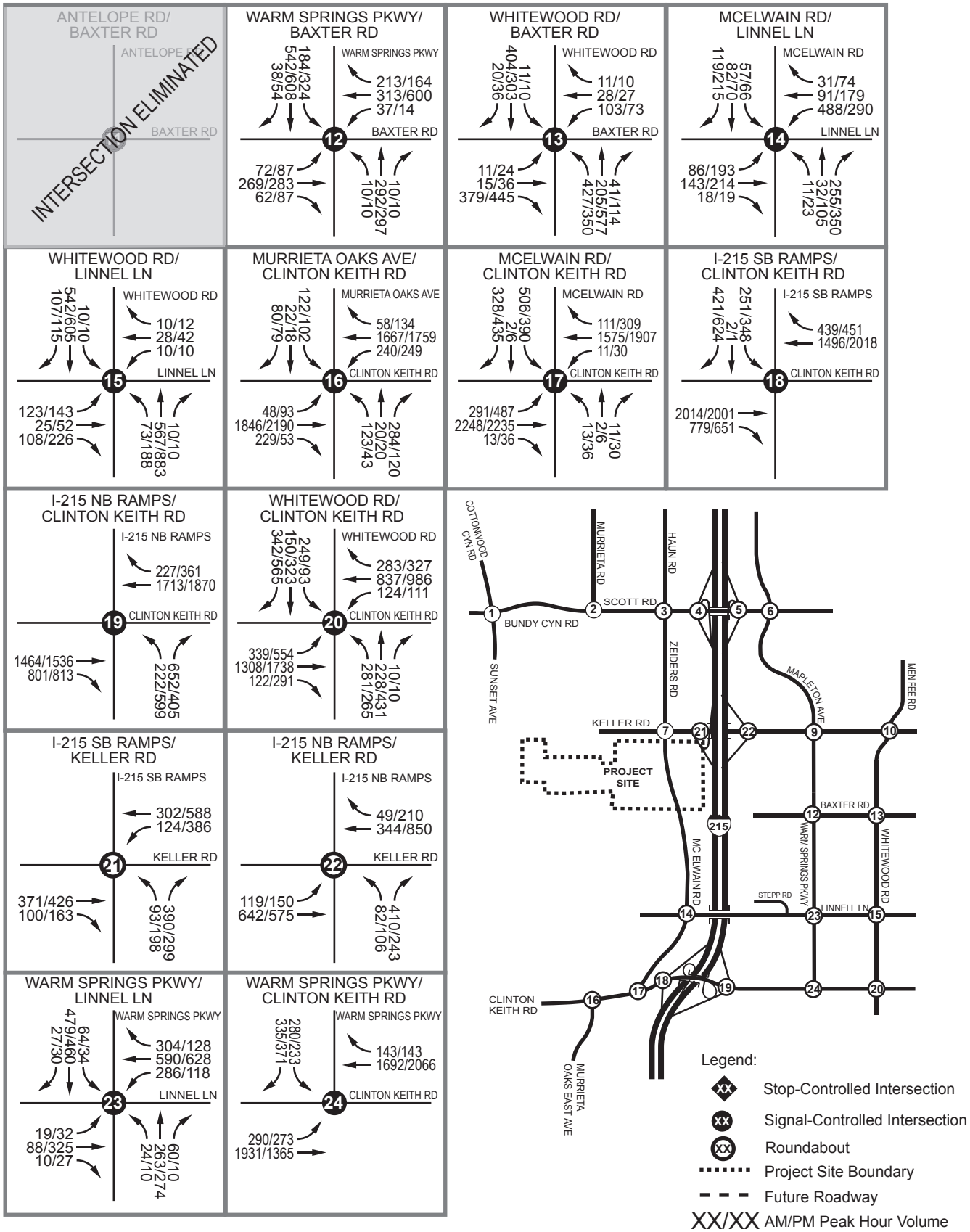
Not to Scale

Area 1
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 64



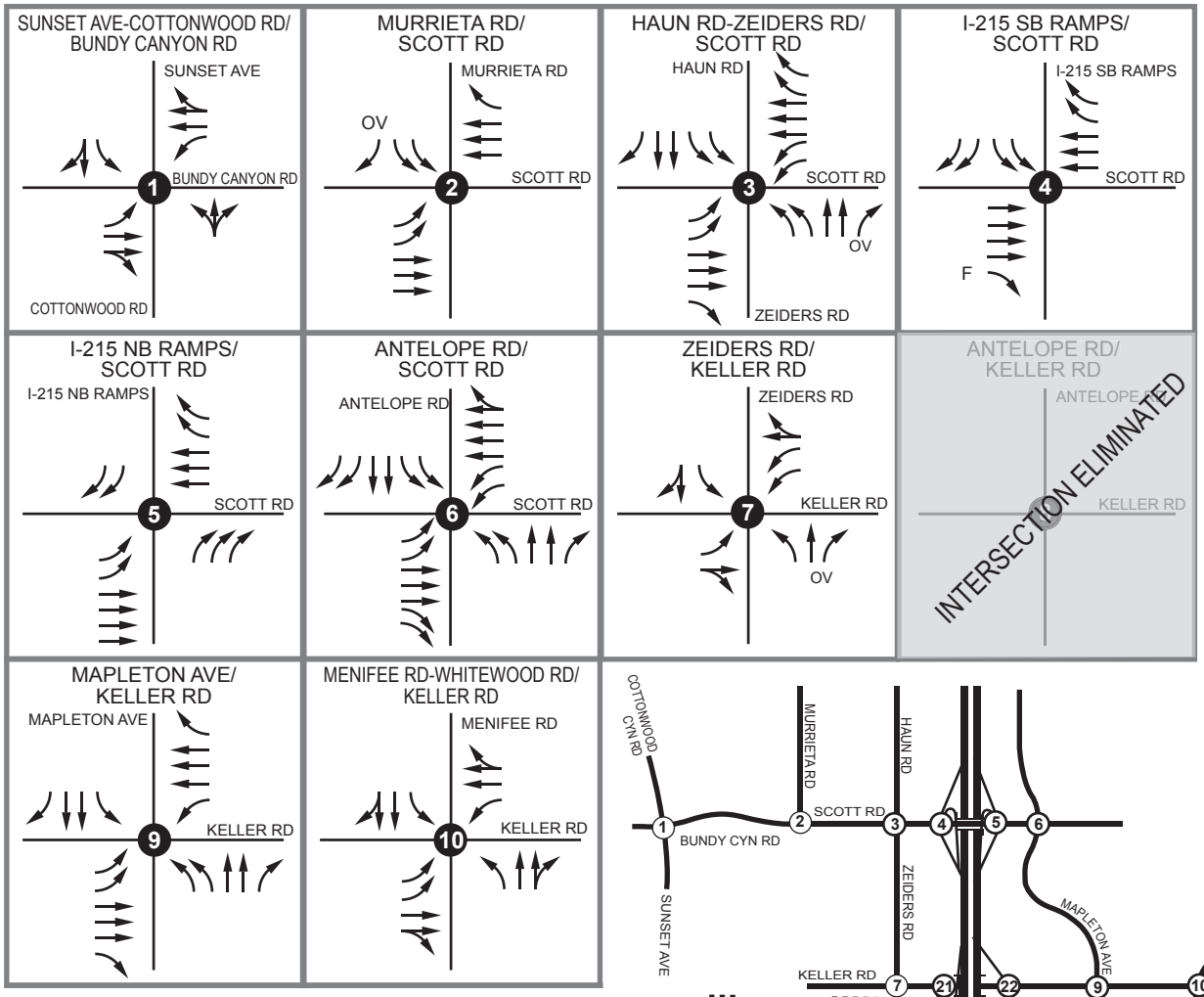
Not to Scale

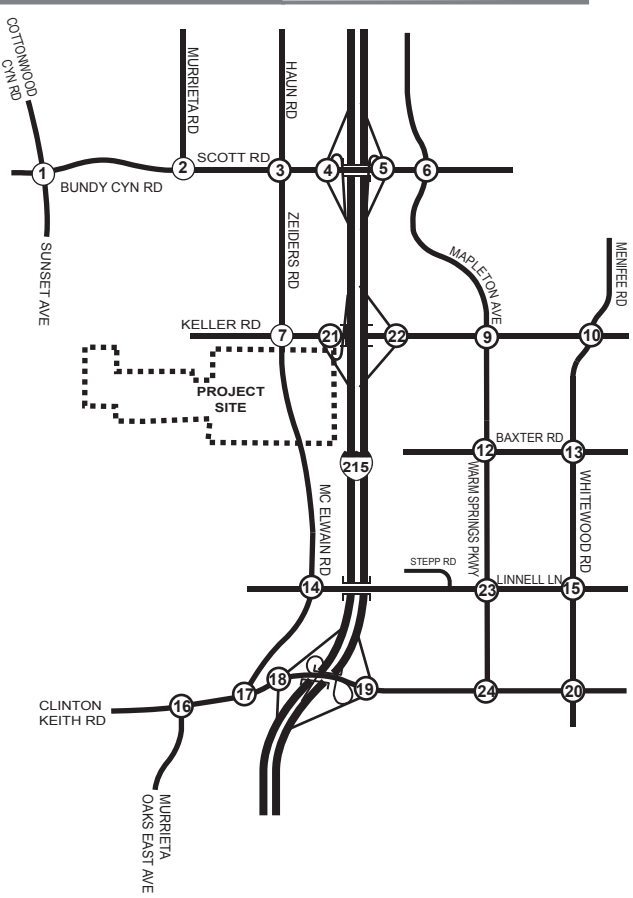
Area 2
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 65





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap Phase
- F Free Right-Turn
- Existing Lane
- Modified Lane

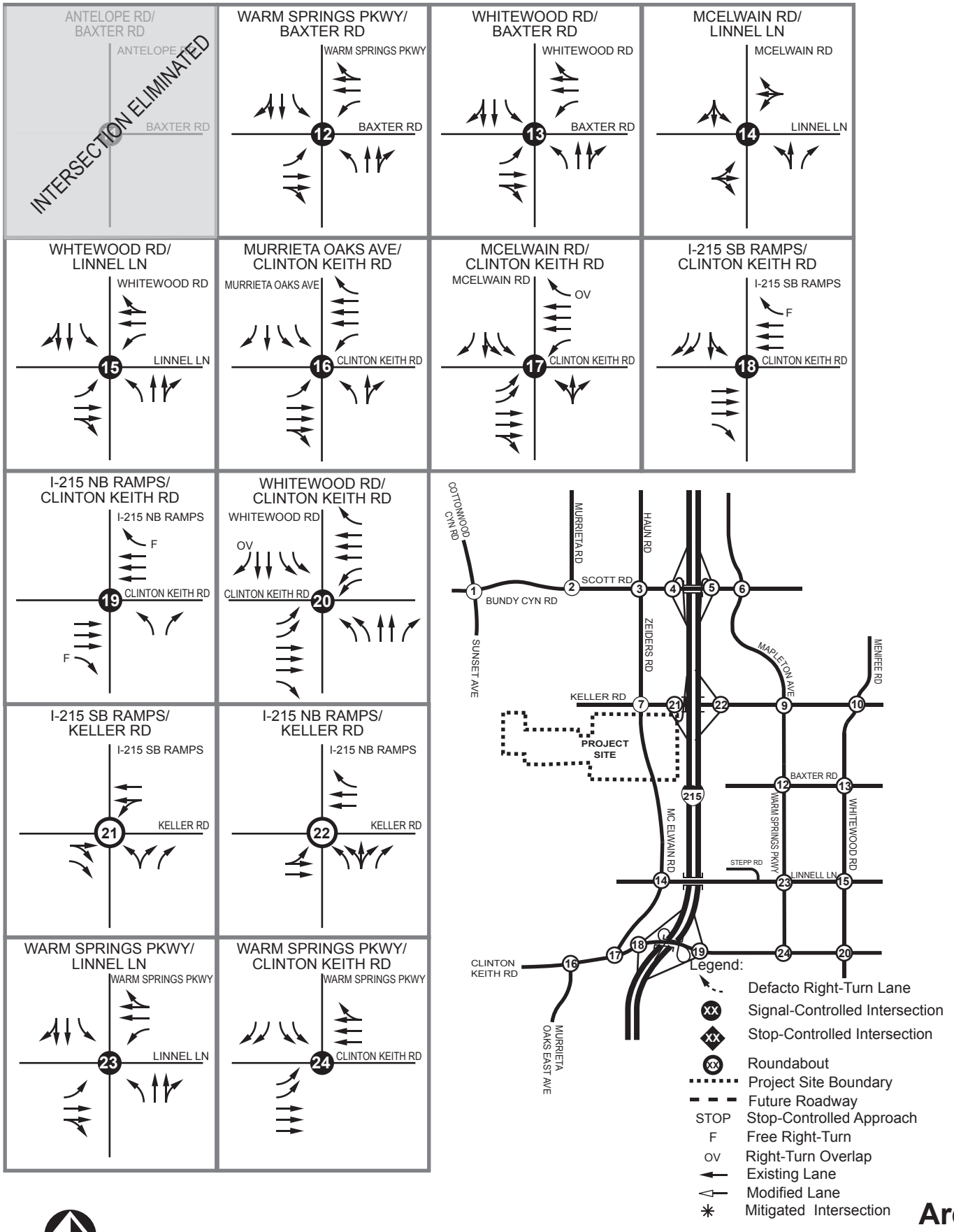
Not to Scale

Area 1
Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 66



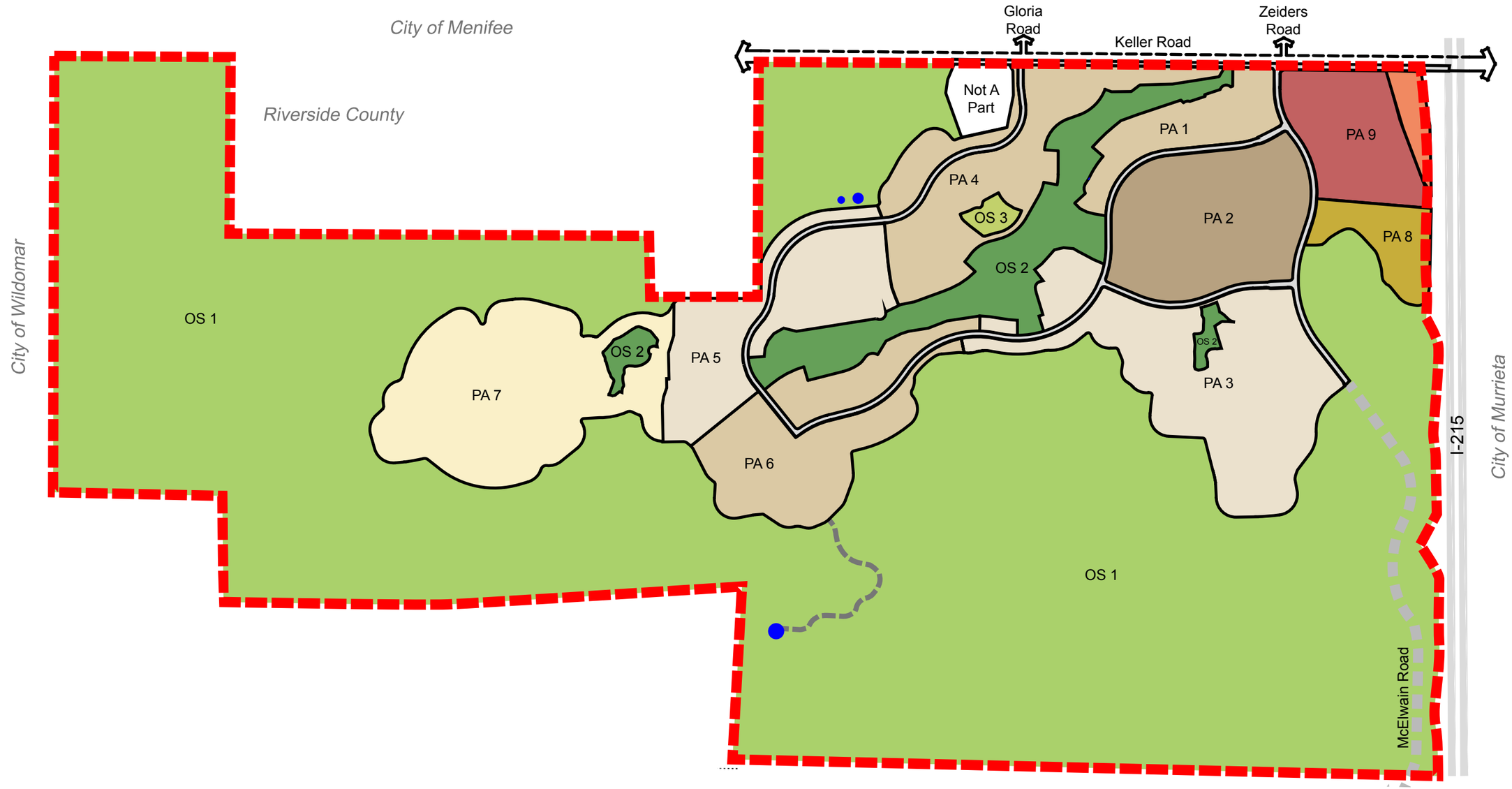
Not to Scale

Area 2
Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 67



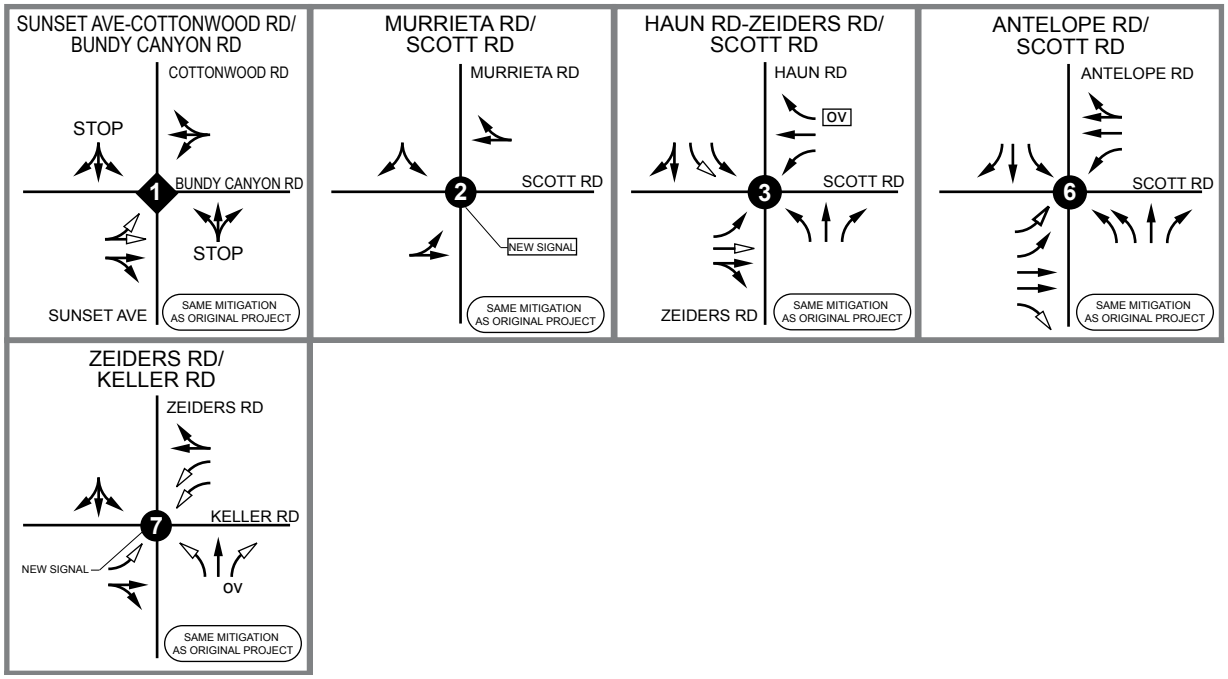
Not to Scale

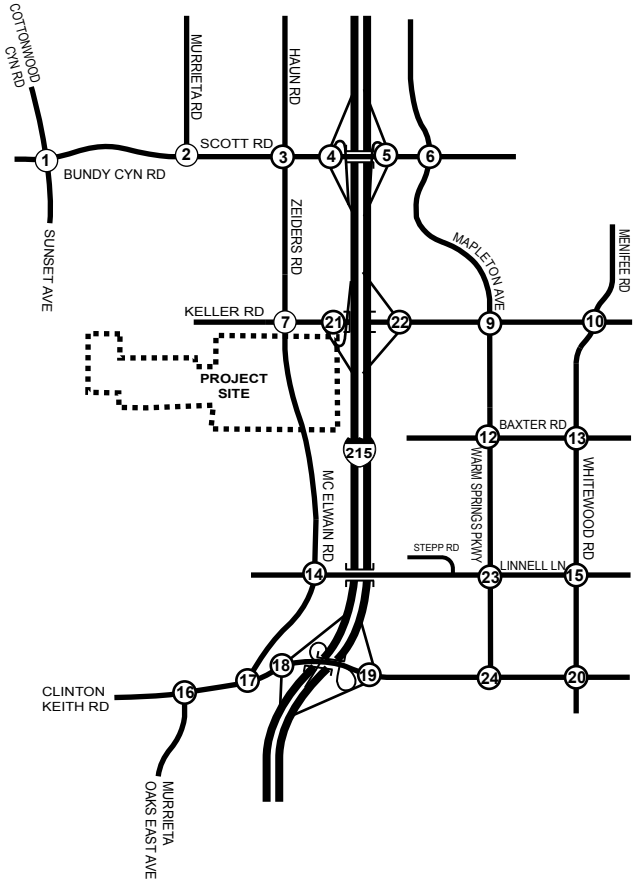
Michael Baker INTERNATIONAL

Environmentally Preferred Alternative Project Site Plan

DEC/2017

Exhibit 68





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Environmentally Preferred Mitigation Measures

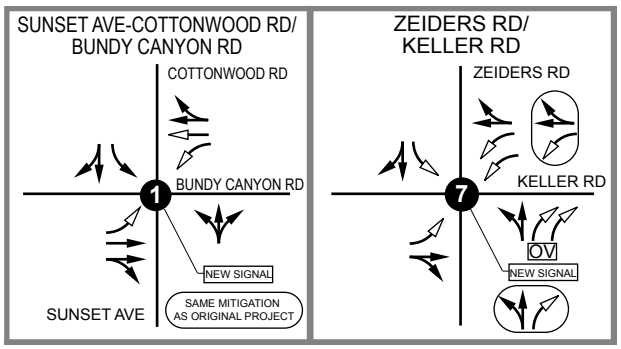
Not to Scale

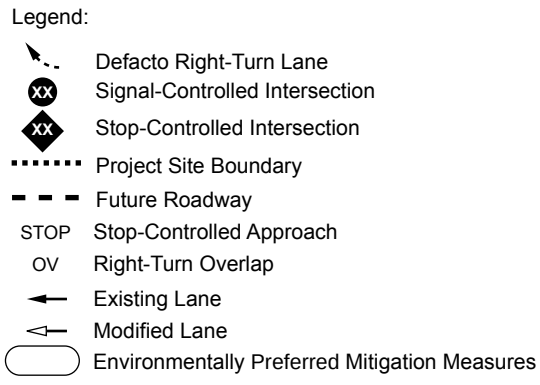
Environmentally Preferred Alternative Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry

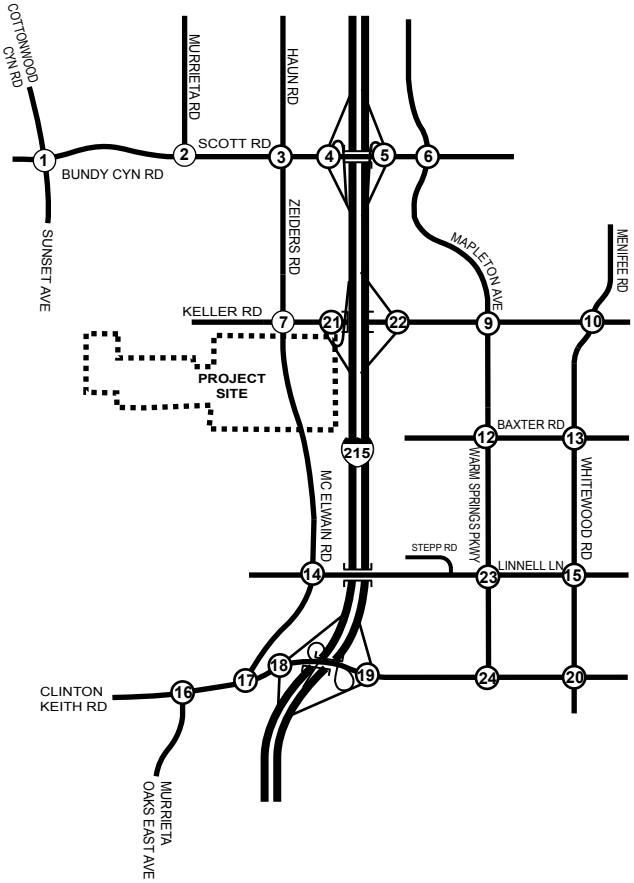
Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 69







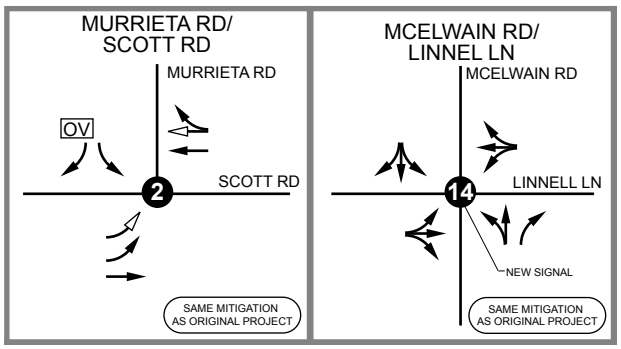
Not to Scale

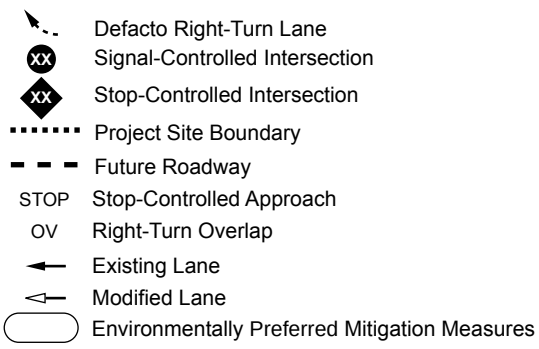
Environmentally Preferred Alternative Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

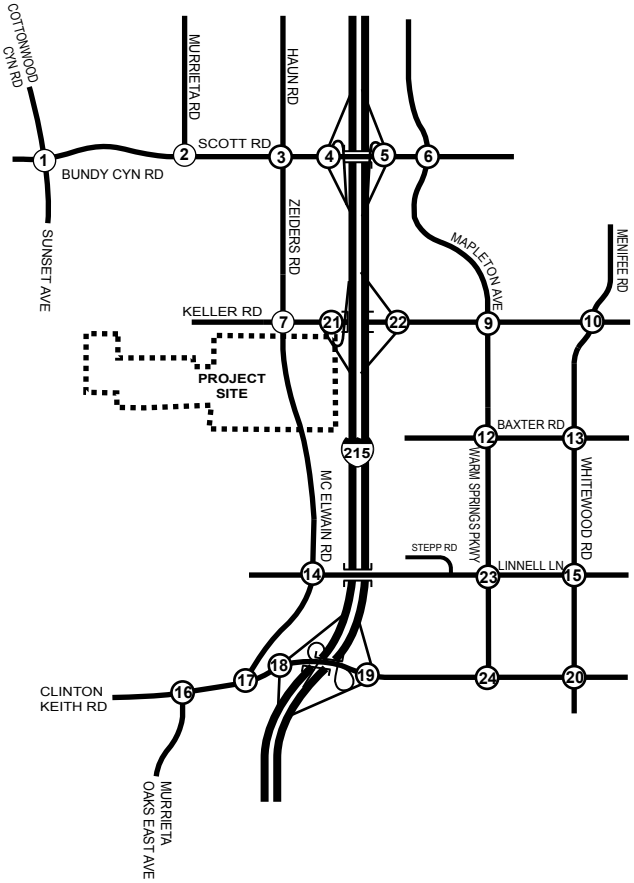
Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 70







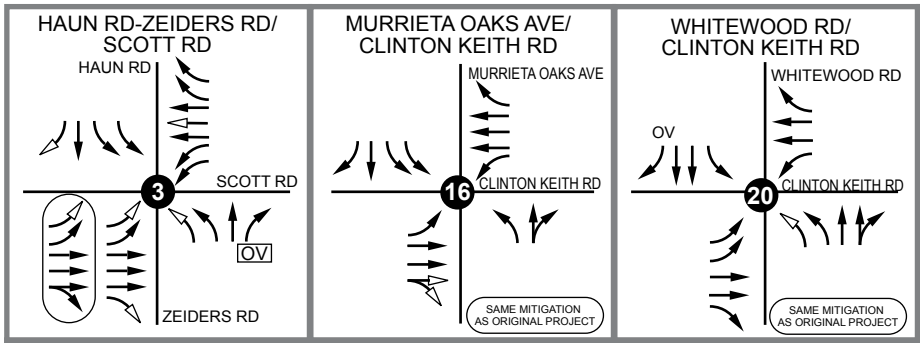
Not to Scale

Environmentally Preferred Alternative Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

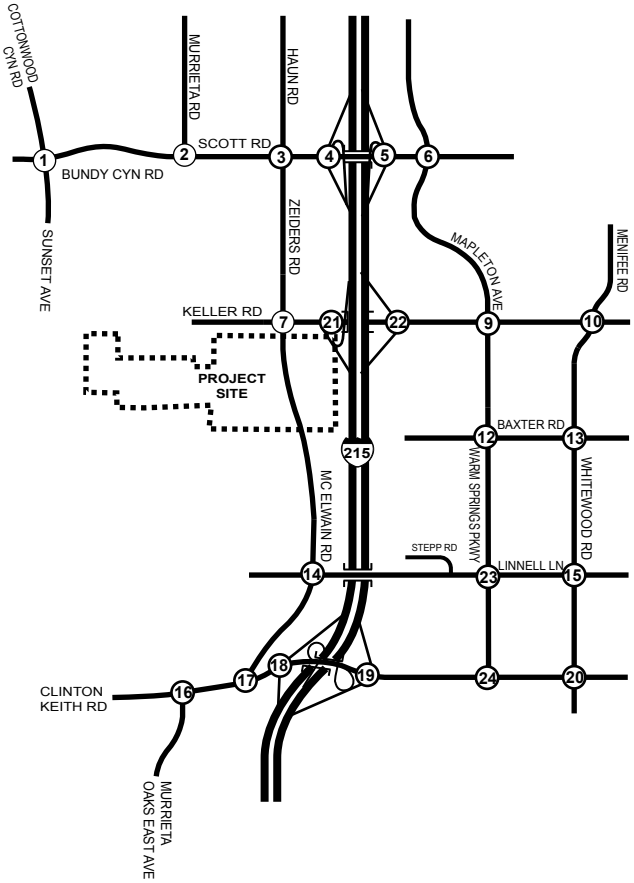
SEP/2018

Exhibit 71



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Environmentally Preferred Mitigation Measures



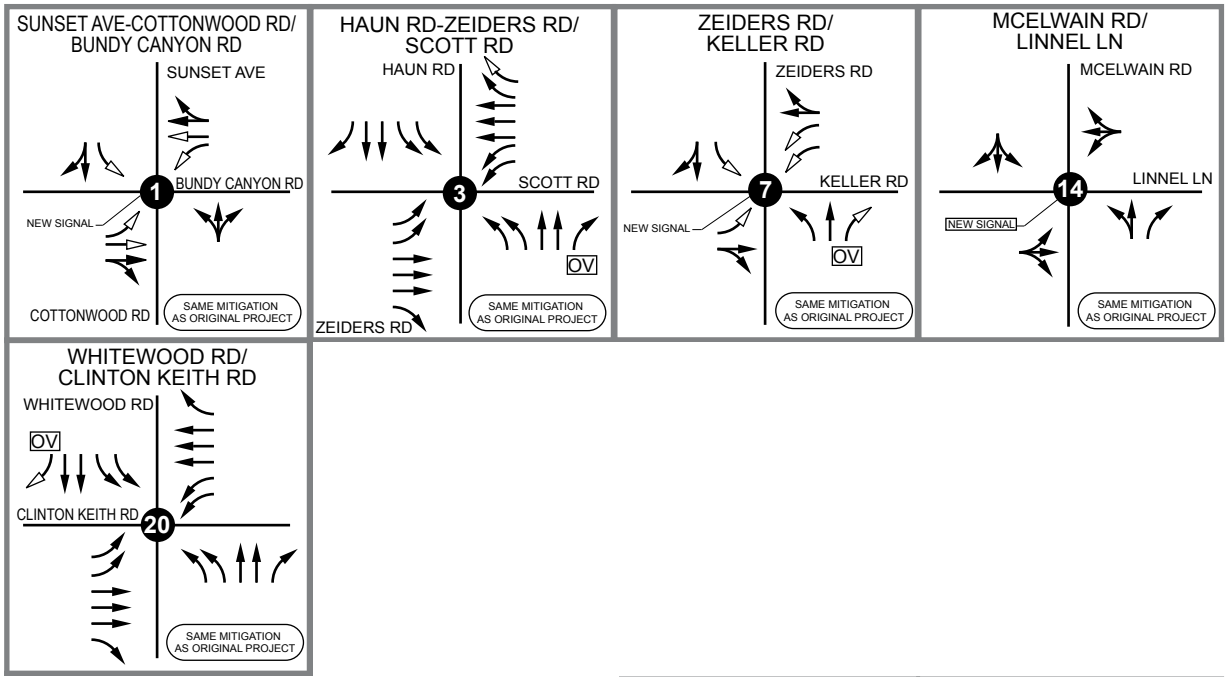
Not to Scale

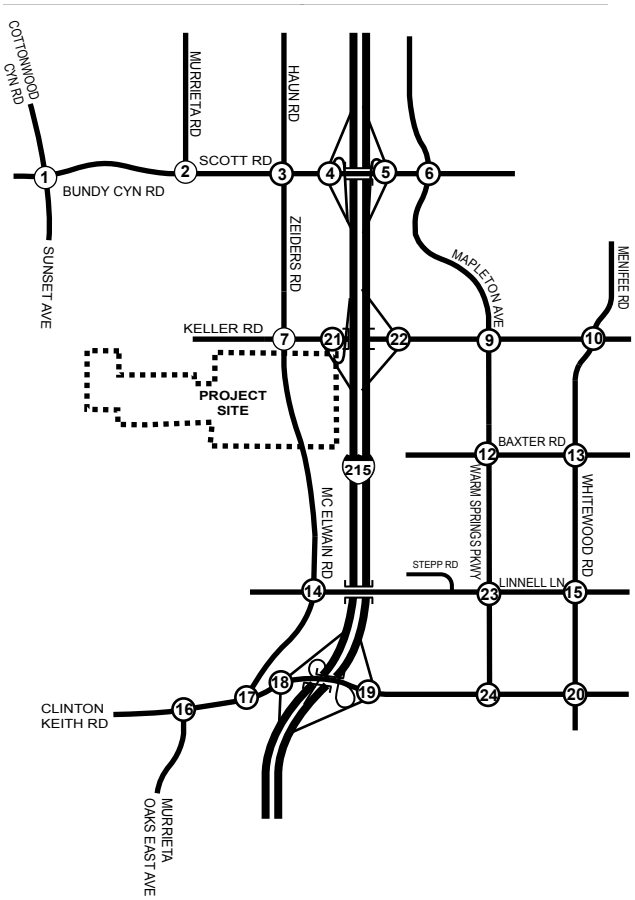
Environmentally Preferred Alternative Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 72





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Environmentally Preferred Mitigation Measures

Not to Scale

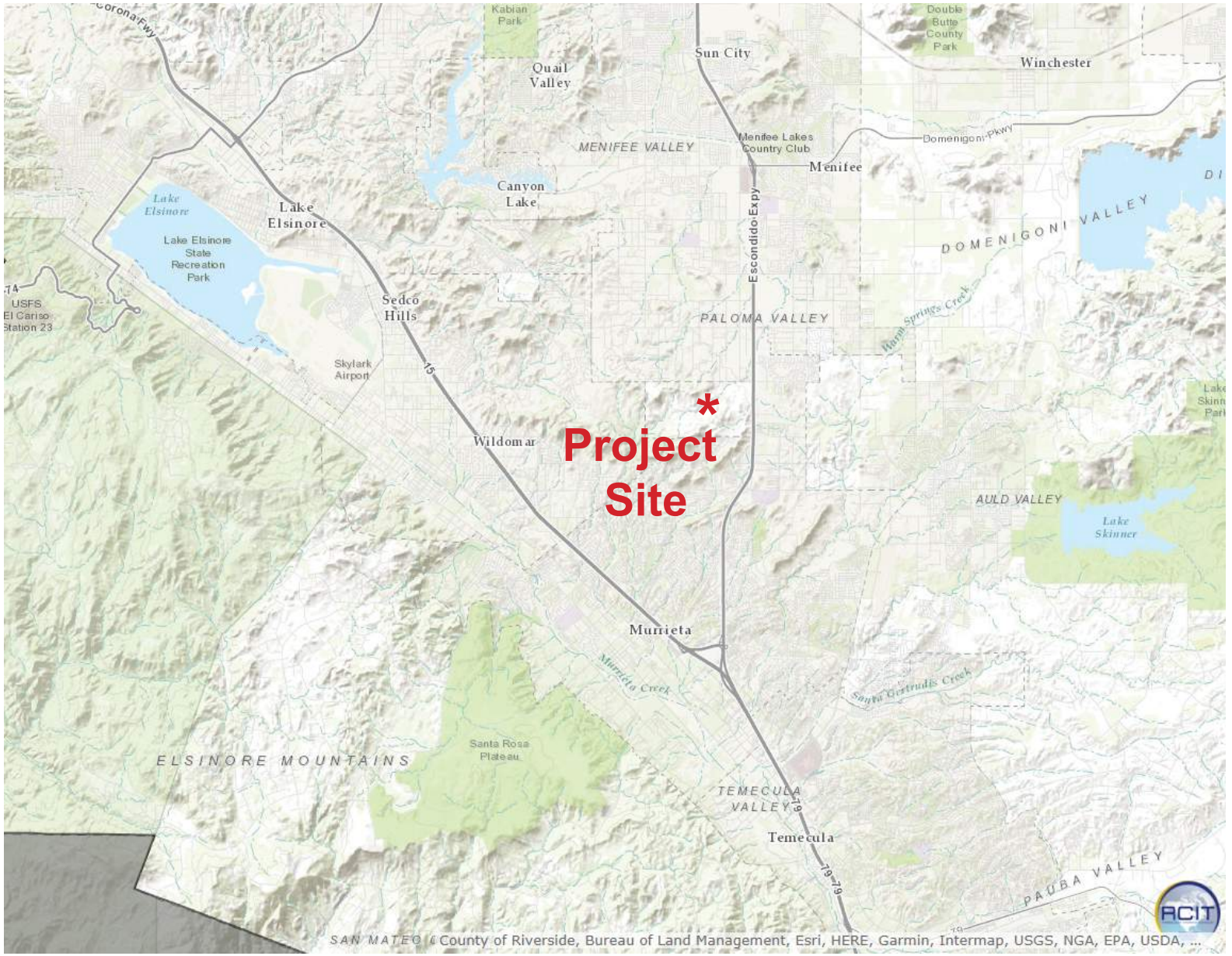
Environmentally Preferred Alternative
Mitigated Forecast Year 2035
Existing Plus Ambient Growth Plus Project Buildout
Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 73

APPENDIX A
Exhibits



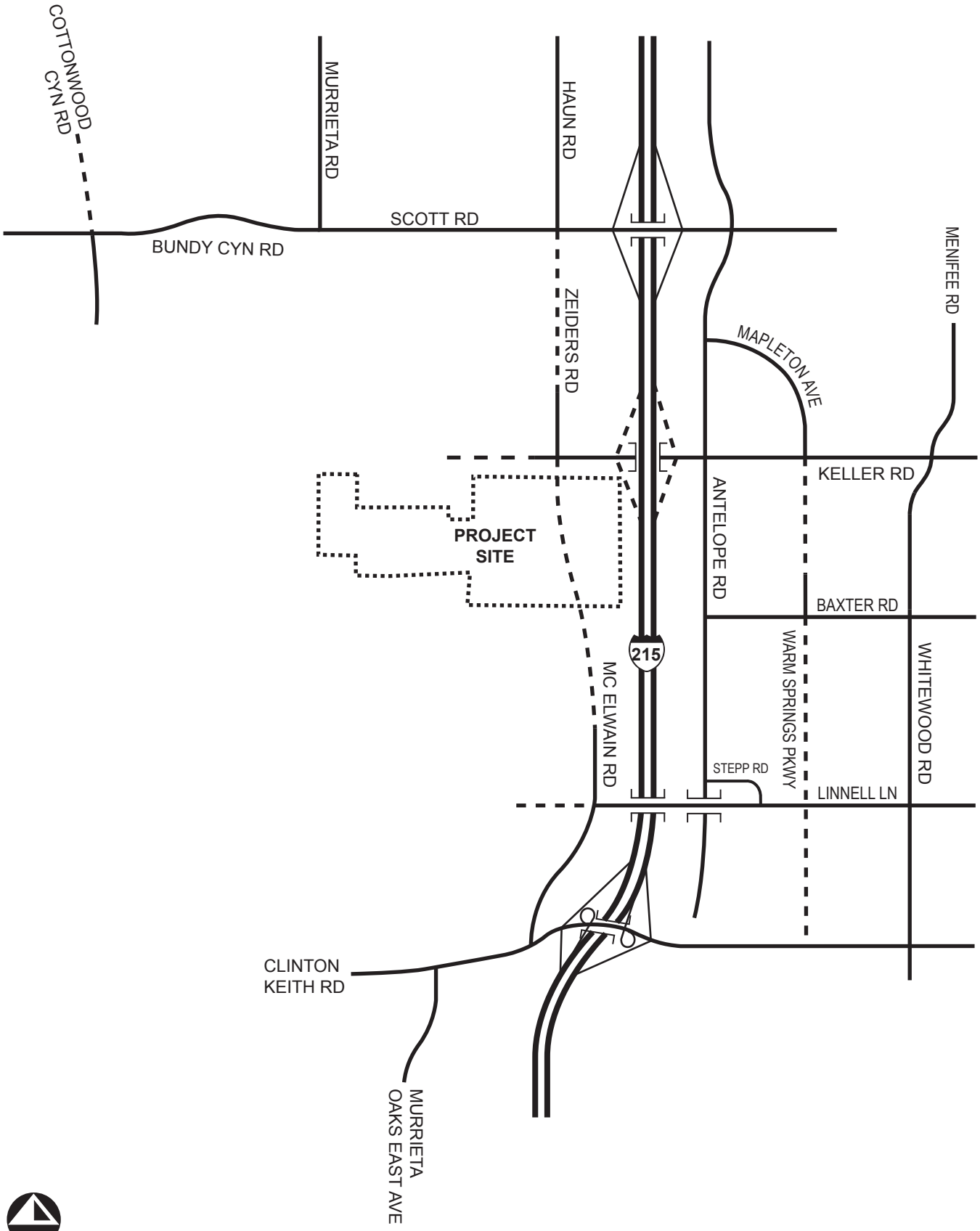
Not to Scale

Michael Baker INTERNATIONAL

Regional Project Location

Exhibit 1

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits Oct/2017



Not to Scale

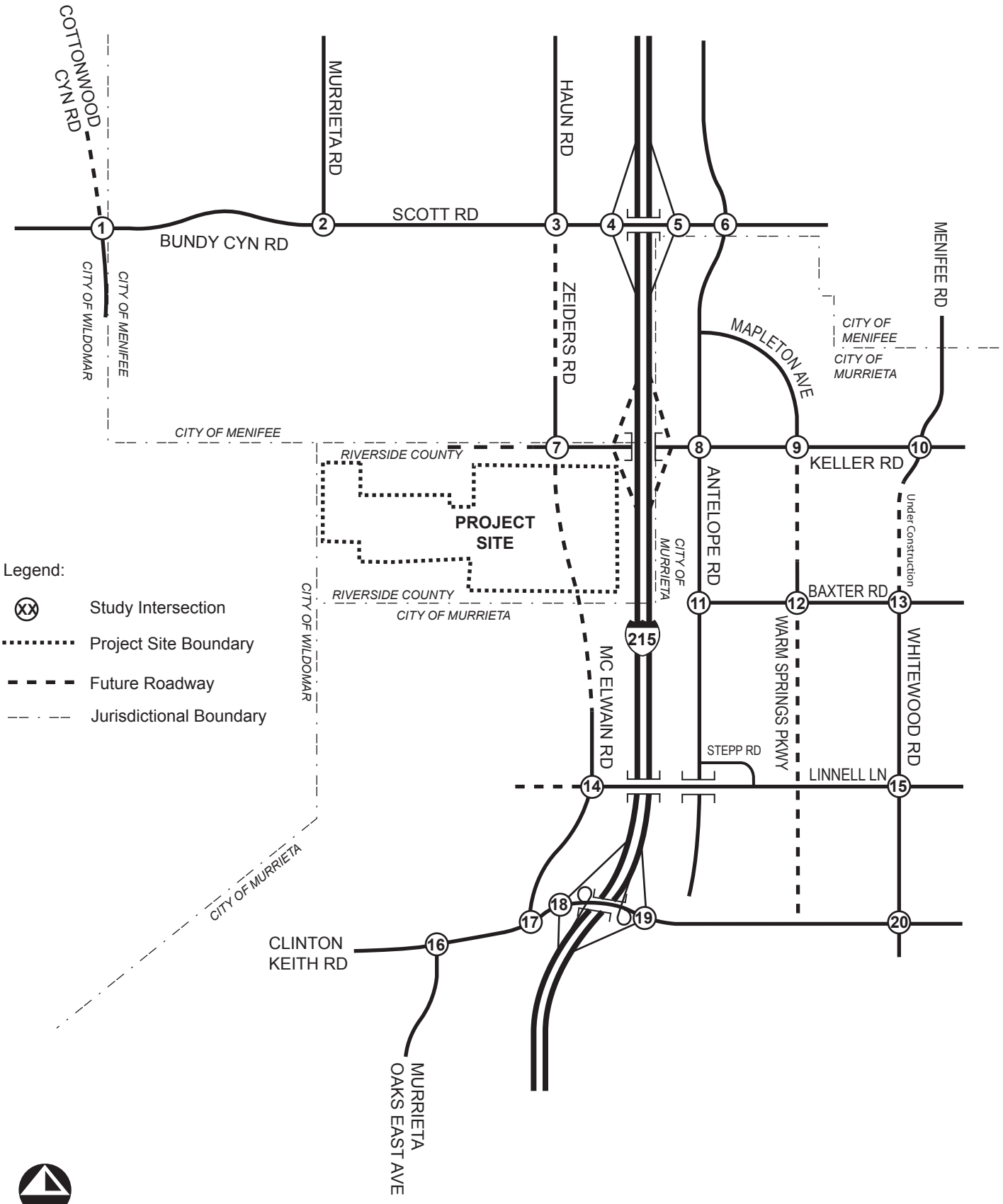
Michael Baker INTERNATIONAL

Project Site Location

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

Oct/2017

Exhibit 2



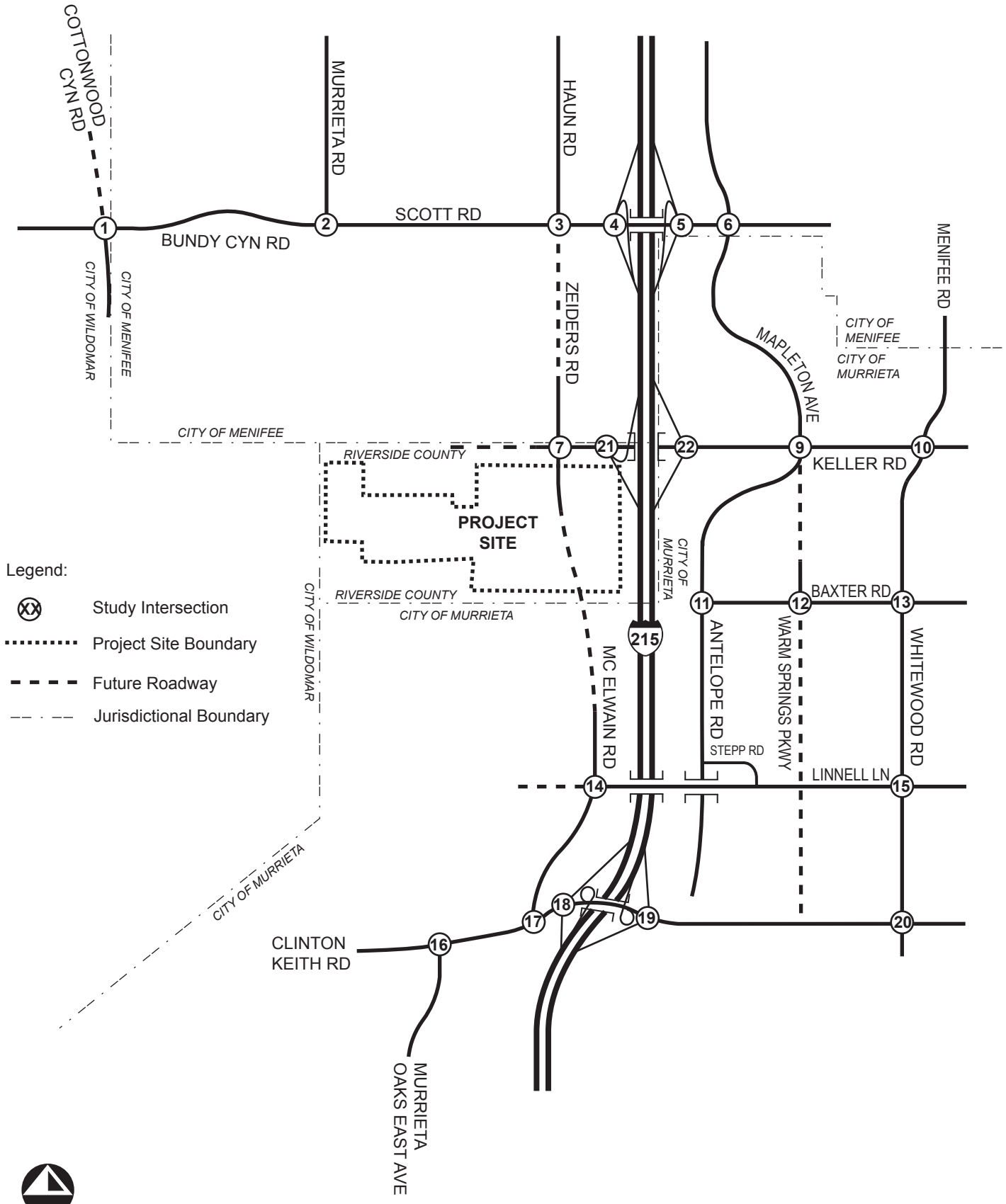
Existing Year 2017 Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

Oct/2017

Exhibit 3



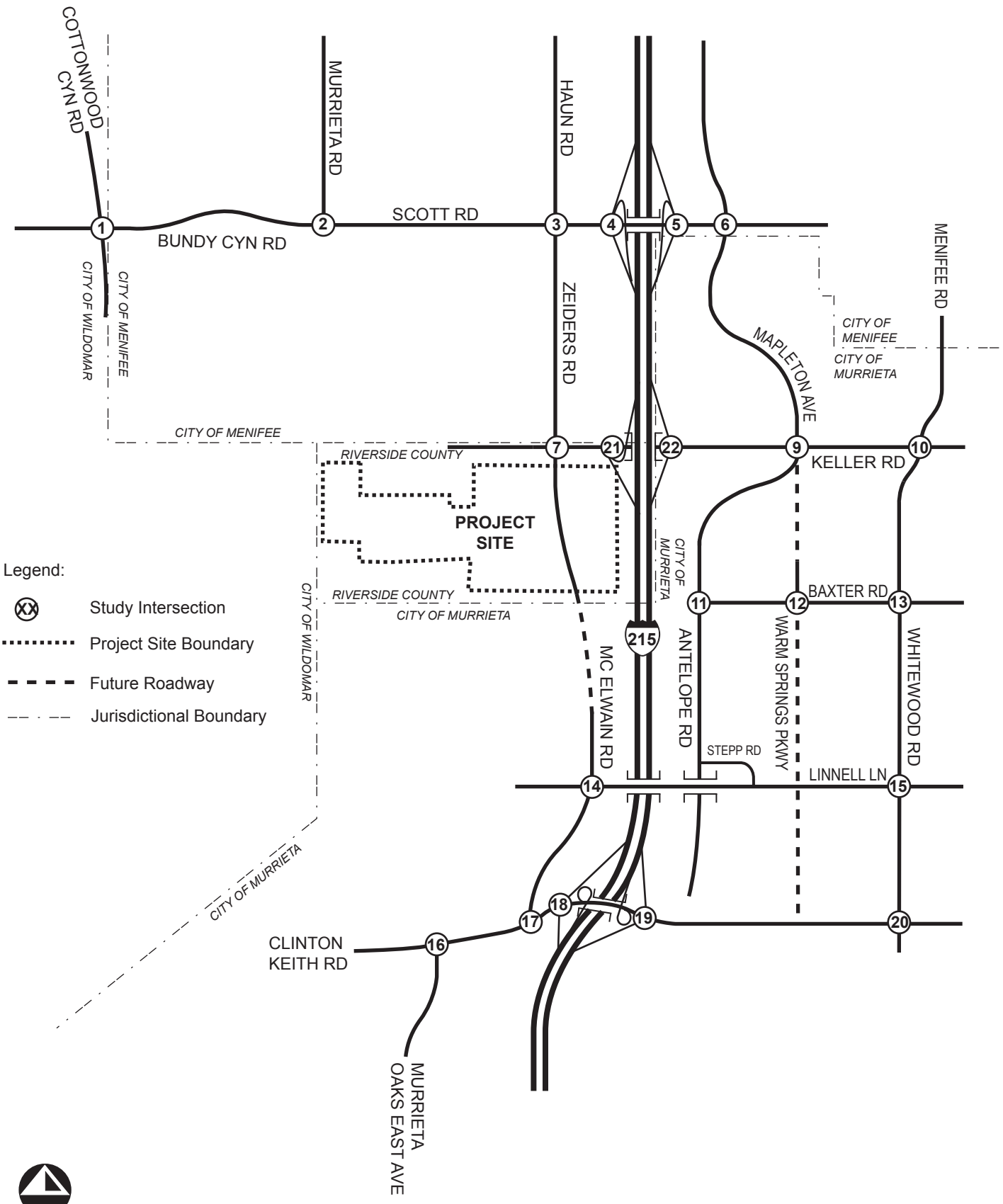
Not to Scale

Phase 1 - Year 2023 Study Area
Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2017

Exhibit 4



Not to Scale

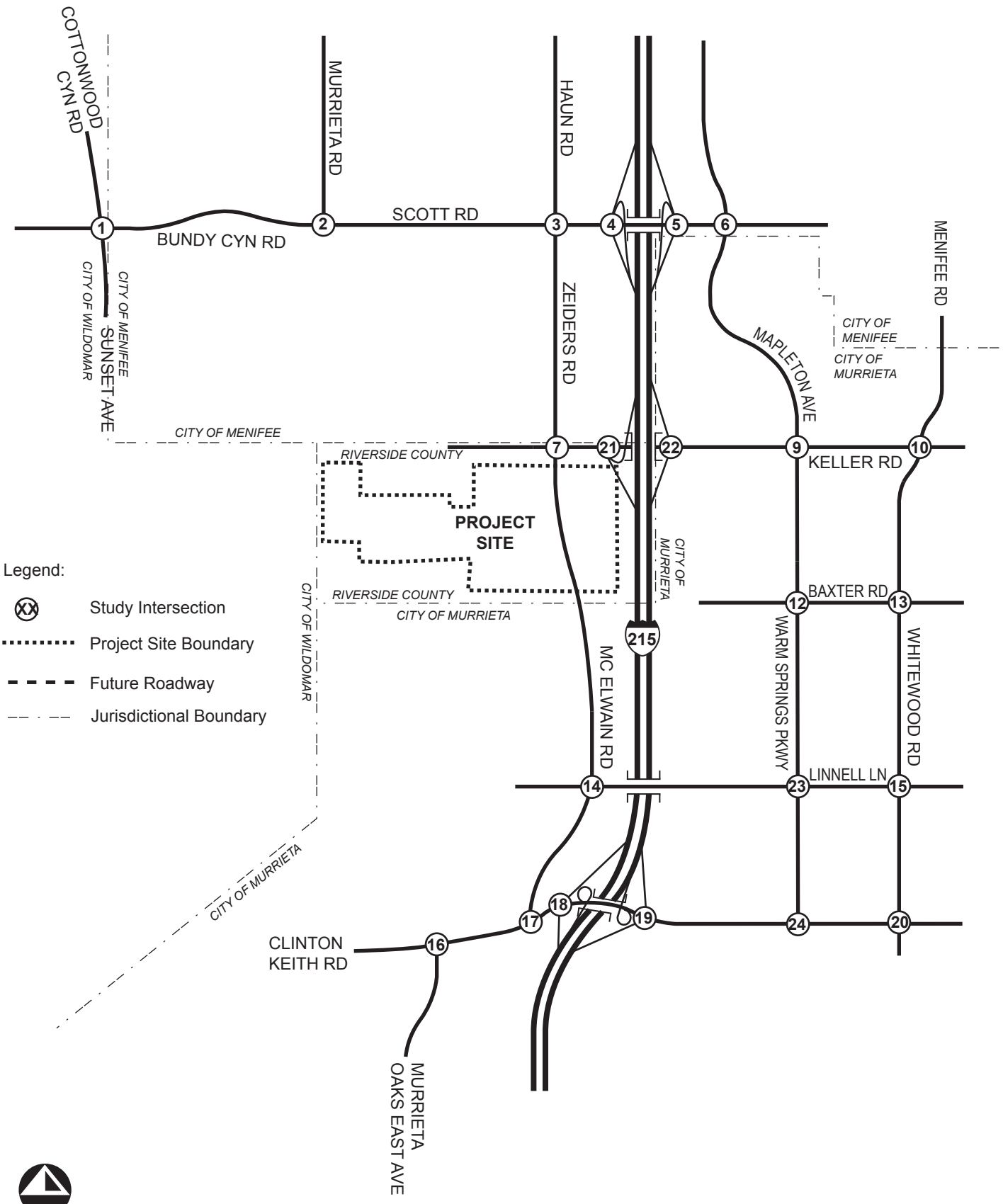
Phase 2 - Year 2028 Study Area
Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2017

Exhibit 5



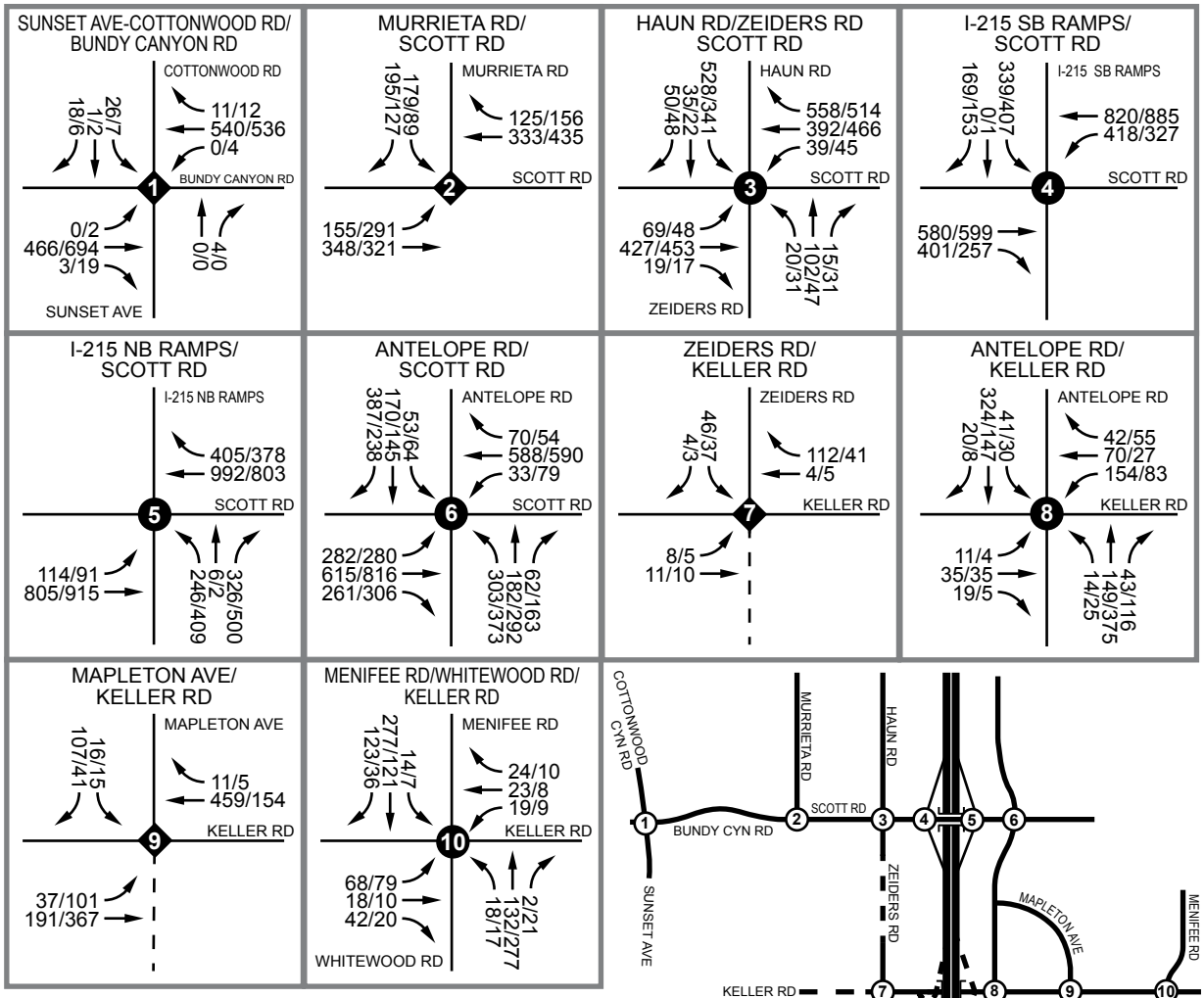
Not to Scale

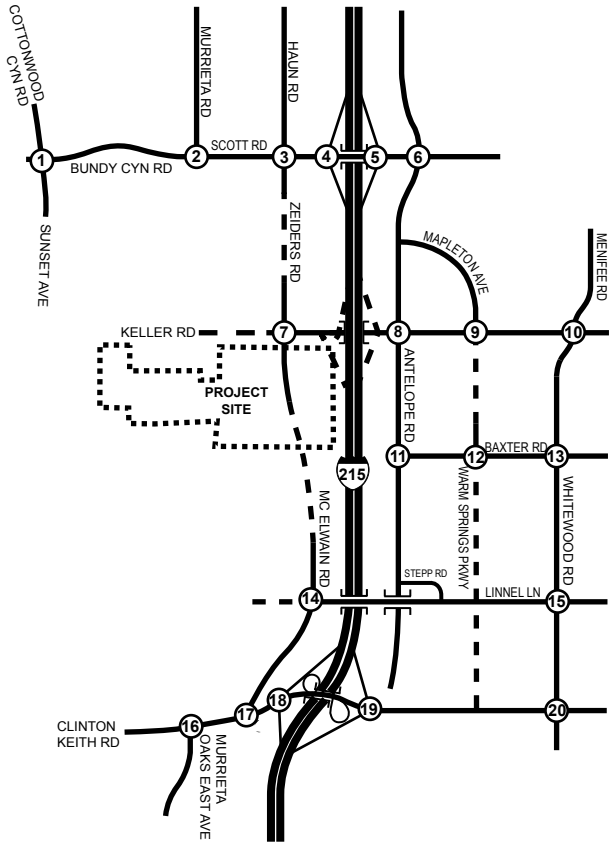
Phase 3 - Year 2031 & Forecast Year 2035 Study Area Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2017

Exhibit 6





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

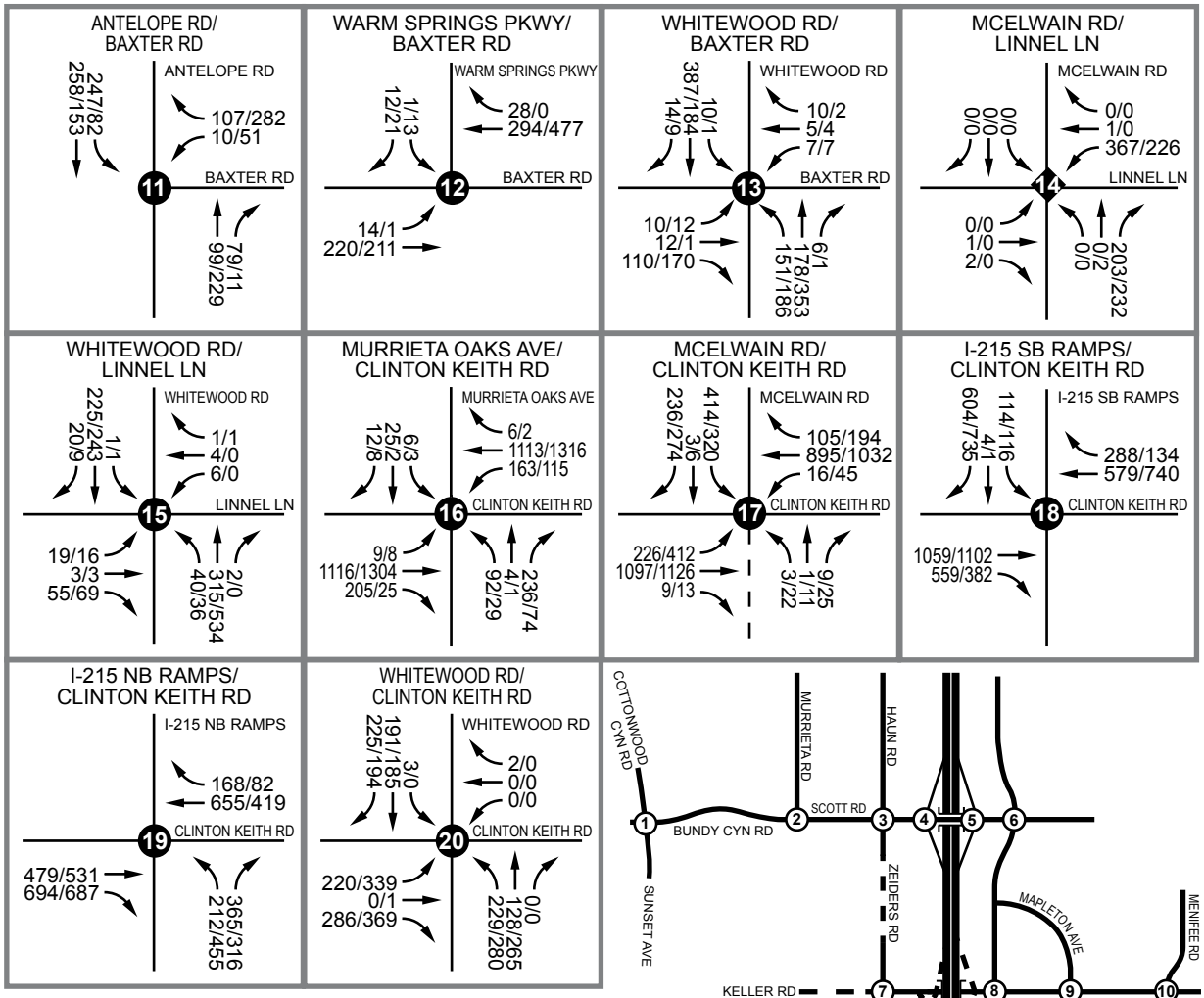
Area 1

Existing AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 7



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

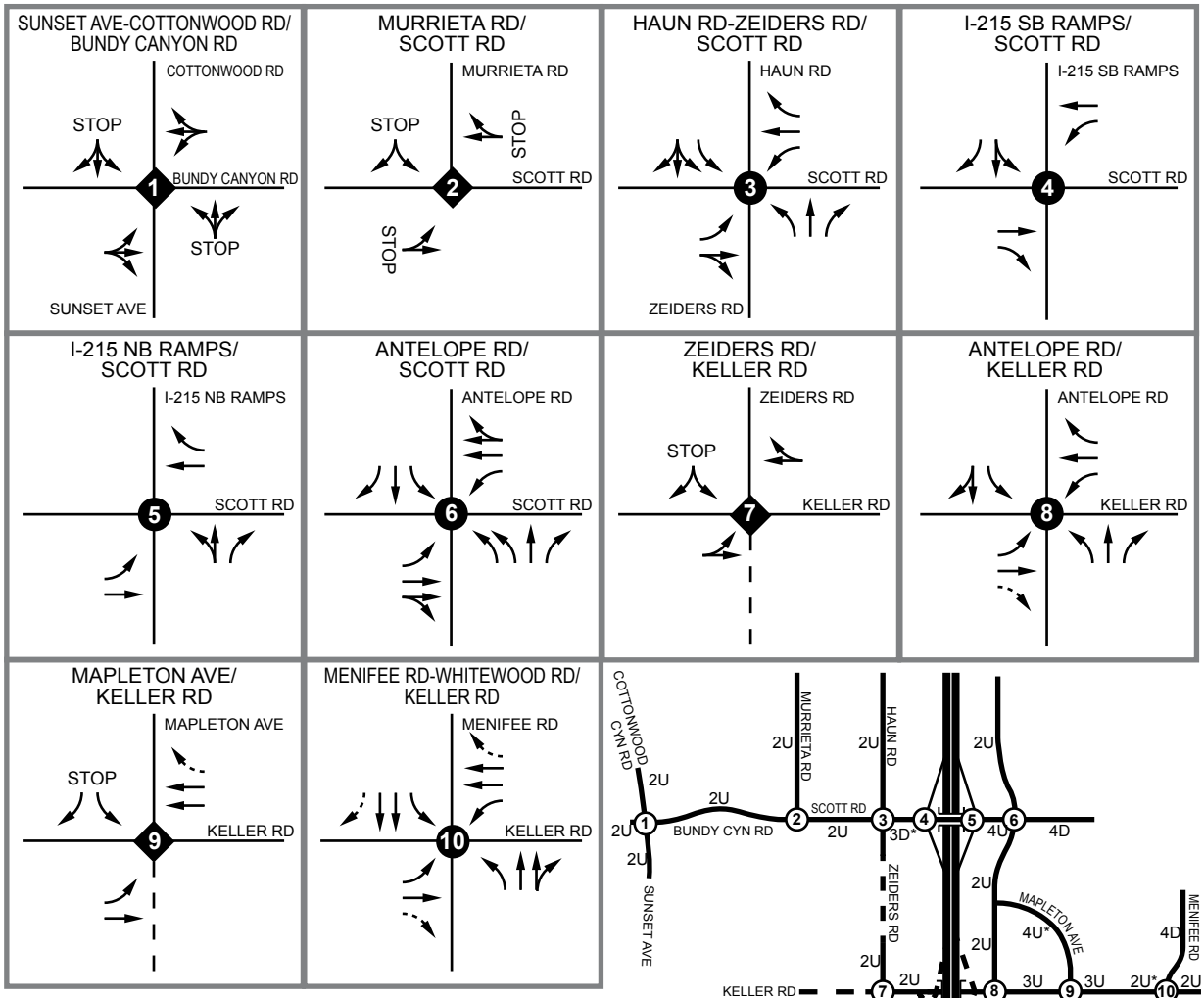
Area 2

Existing AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 8



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- 2D Two-lane Divided Roadway with Raised Median
- 2U Two-lane Undivided Roadway
- 2U* Two-lane Undivided Roadway with Painted Median
- 3D* Three-lane Divided Roadway with Raised Median (Two-eastbound lanes, One-westbound lane)
- 3D Three-lane Divided Roadway with Raised Median (Two-northtbound lanes, One-southbound lane)
- 3U Three-lane Undivided Roadway (Two-westbound lanes, One-eastbound lane)
- 4D Four-lane Divided Roadway with Raised Median
- 4U Four-lane Undivided Roadway
- 4U* Four-lane Undivided Roadway with Painted Median
- 6D Six-lane Divided Roadway with Raised Median

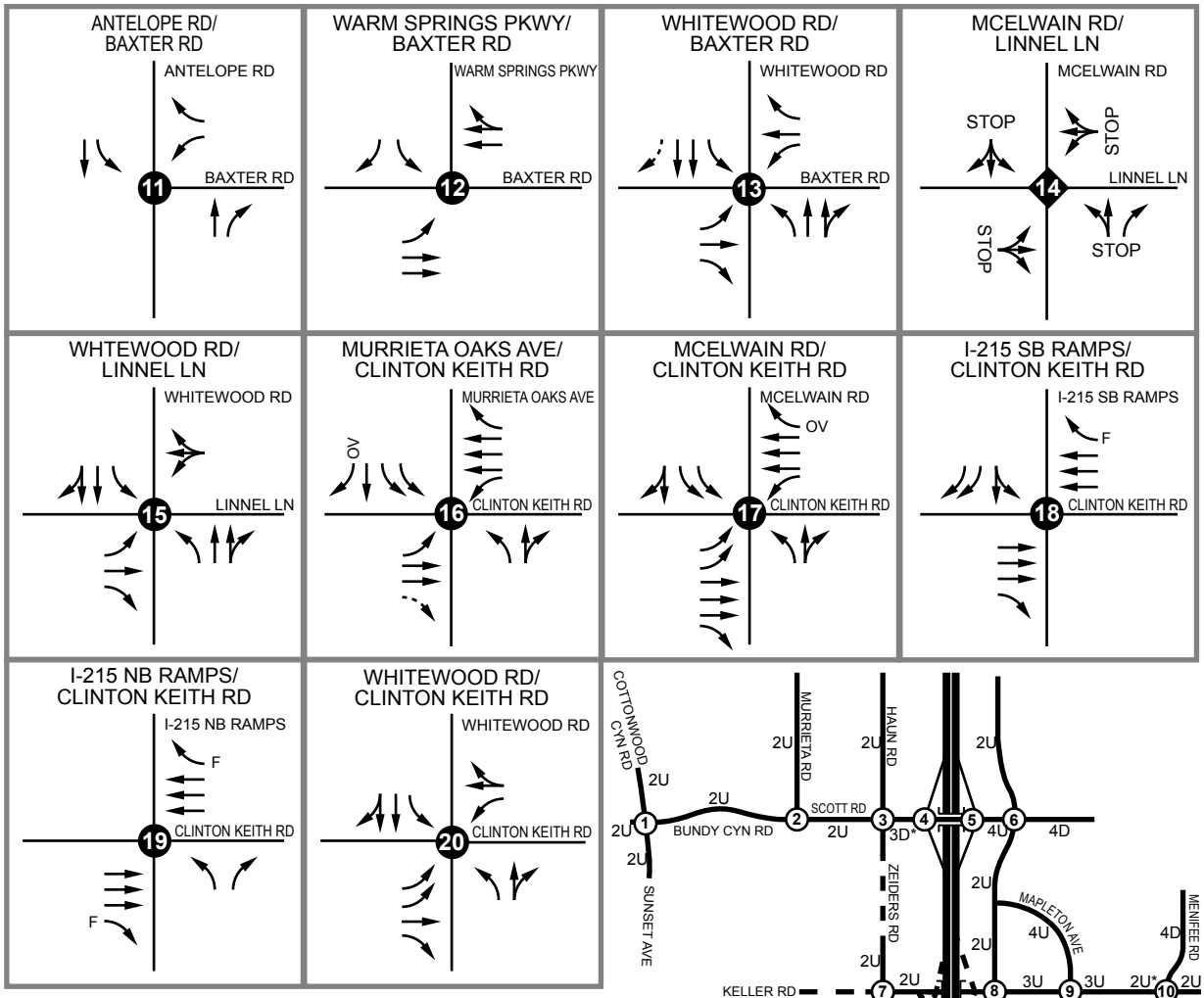
Not to Scale

Area 1
Existing Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 9



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- 2D Two-lane Divided Roadway with Raised Median
- 2U Two-lane Undivided Roadway
- 2U* Two-lane Undivided Roadway with Painted Median
- 3D* Three-lane Divided Roadway with Raised Median (Two-eastbound lanes, One-westbound lane)
- 3D Three-lane Divided Roadway with Raised Median (Two-northtbound lanes, One-southbound lane)
- 3U Three-lane Undivided Roadway (Two-westbound lanes, One-eastbound lane)
- 4D Four-lane Divided Roadway with Raised Median
- 4U Four-lane Undivided Roadway
- 4U* Four-lane Undivided Roadway with Painted Median
- 6D Six-lane Divided Roadway with Raised Median

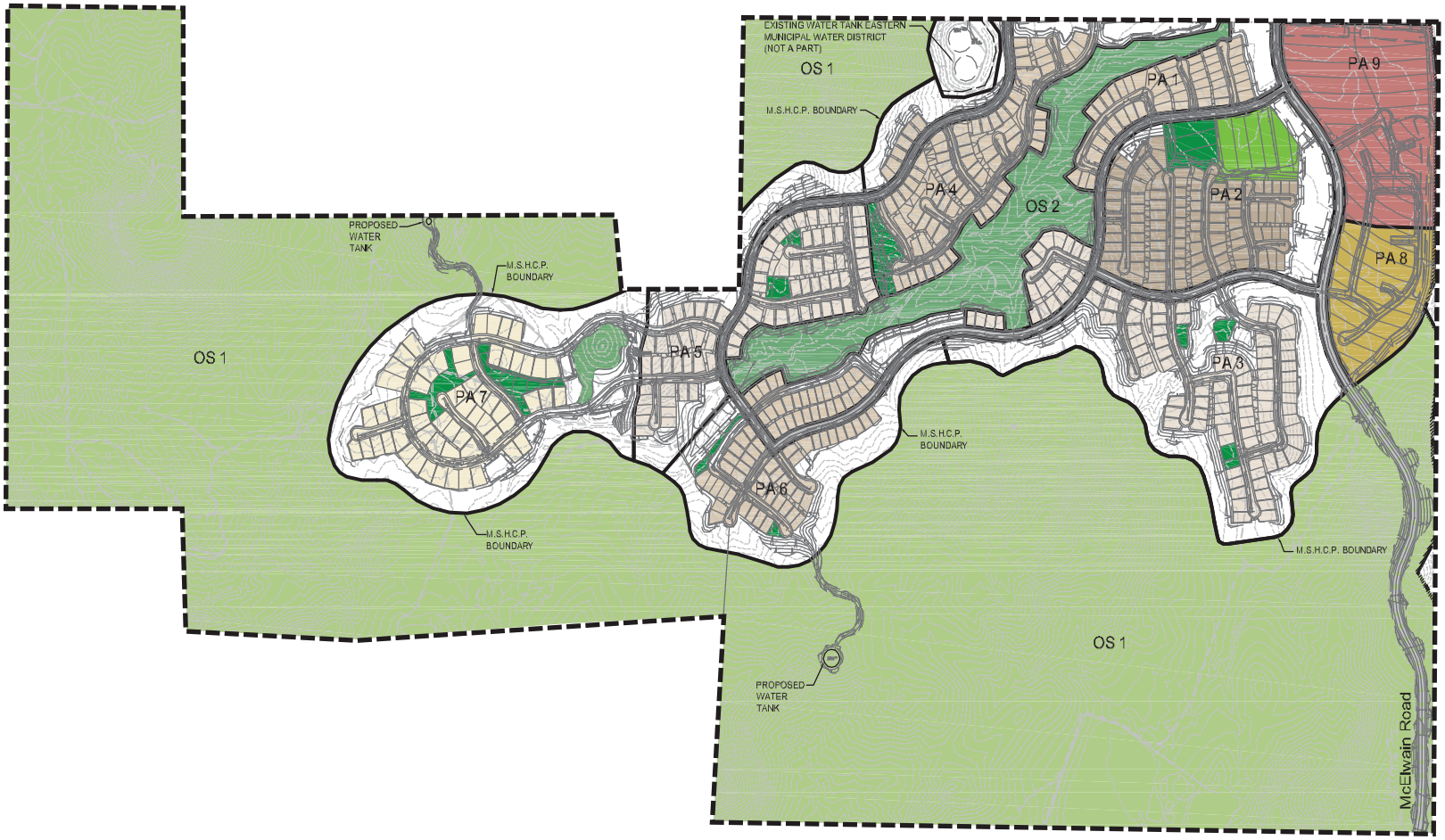
Not to Scale

Area 2
Existing Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 10



Legend:

Project Site Boundary

Not to Scale

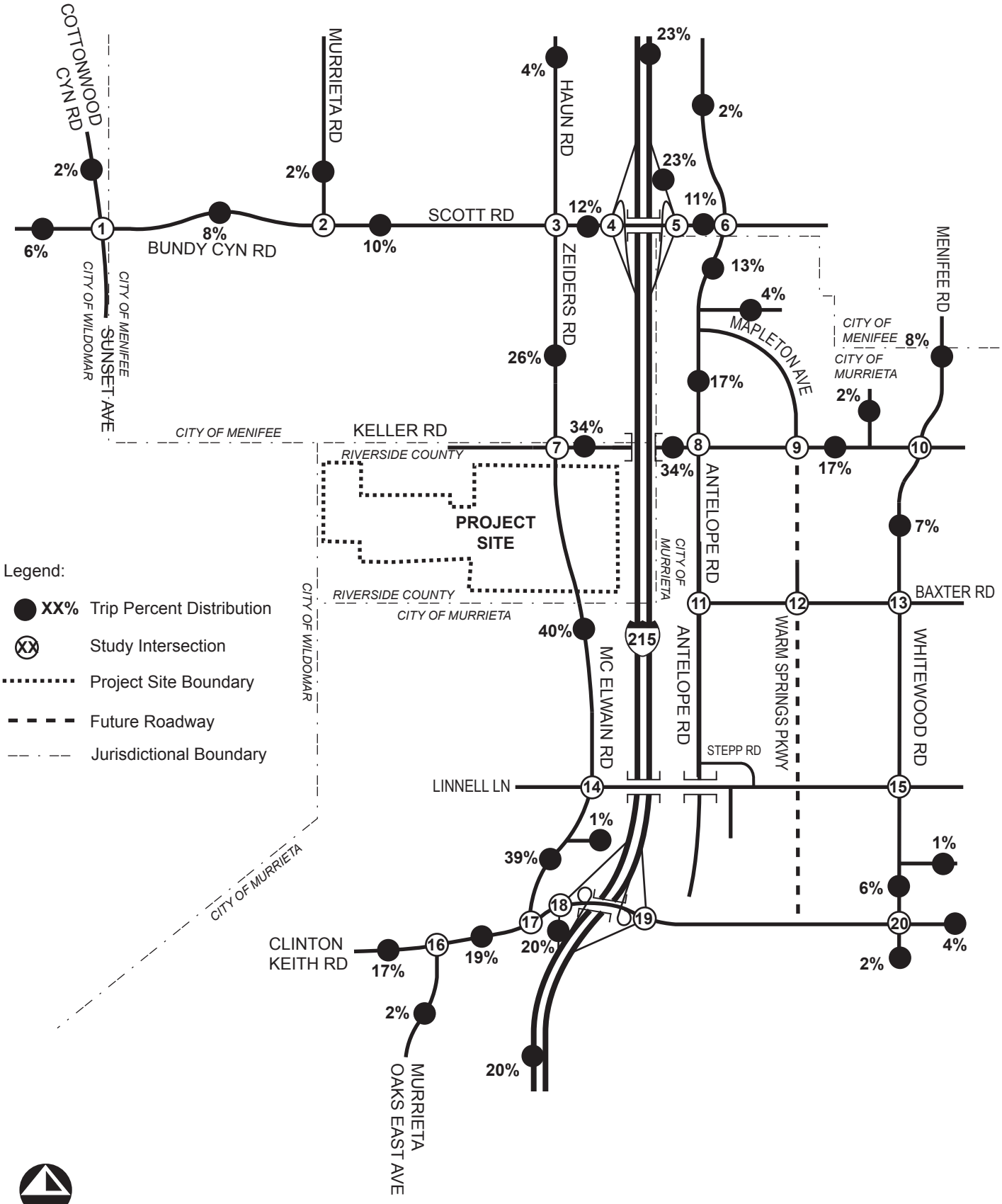
Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Site Plan

NOV/2017

Proposed Project Site Plan

Exhibit 11



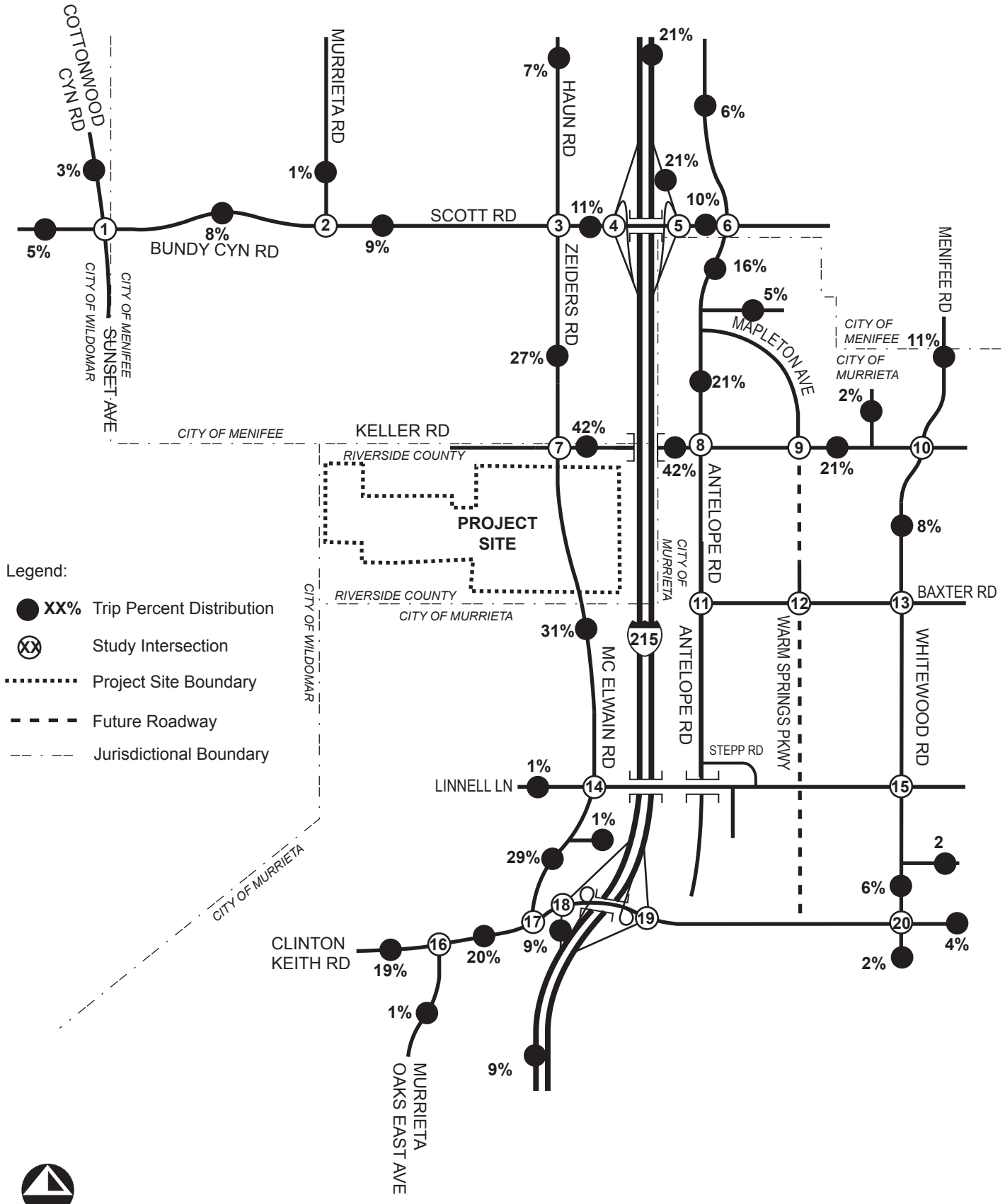
Forecast Existing Plus Project Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 12



Not to Scale

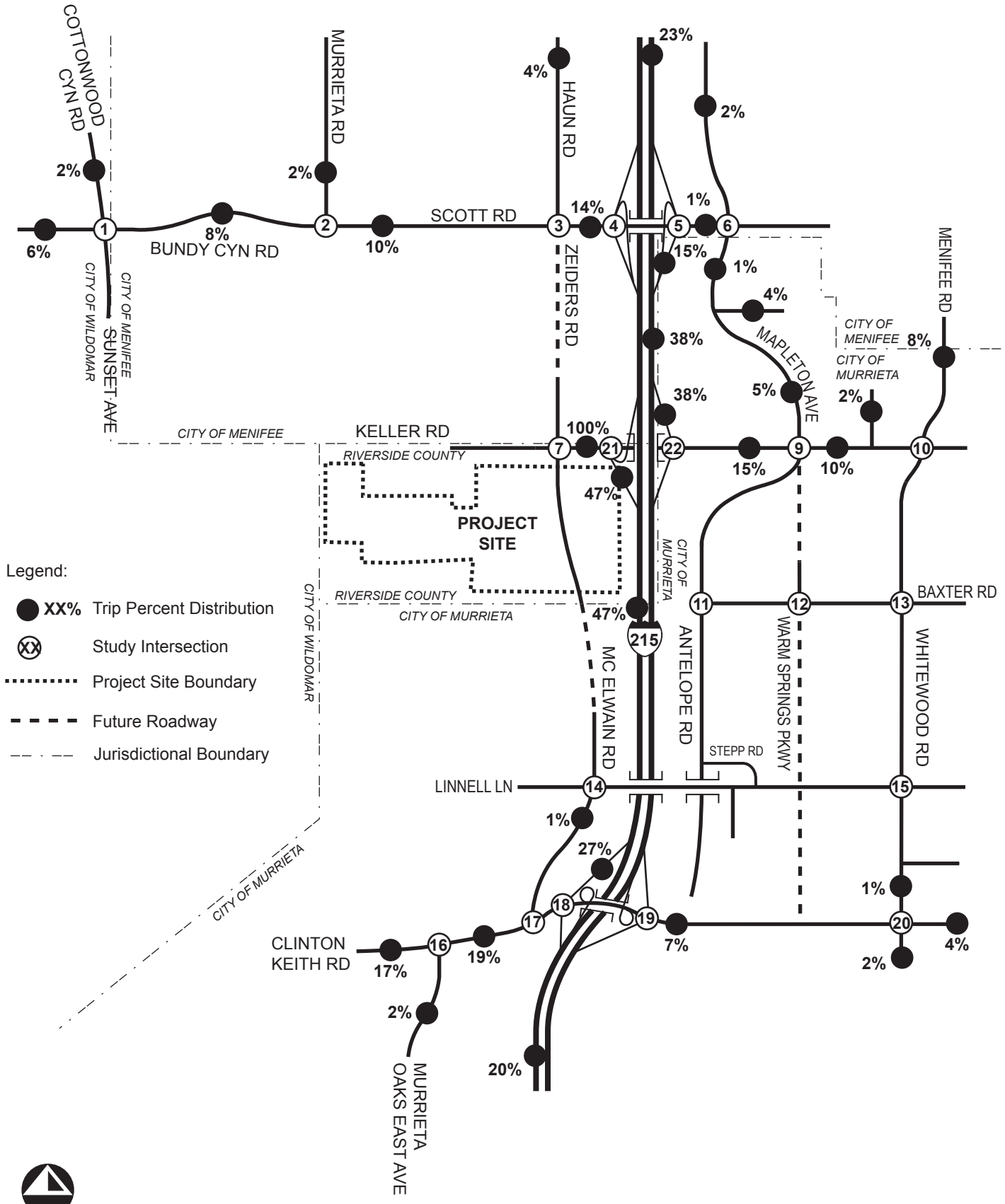
Forecast Existing Plus Project Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 13



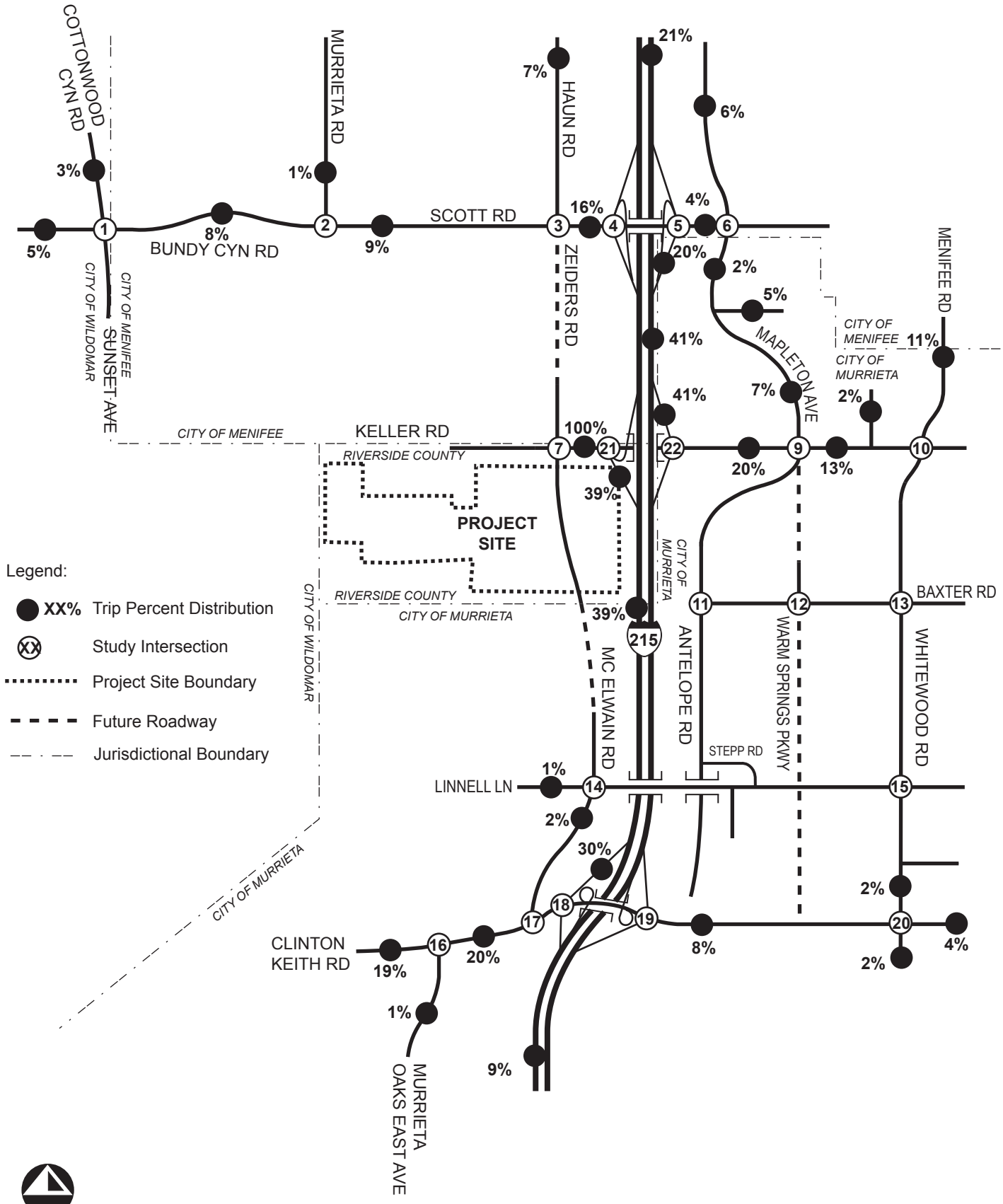
Phase 1 - Year 2023 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 14



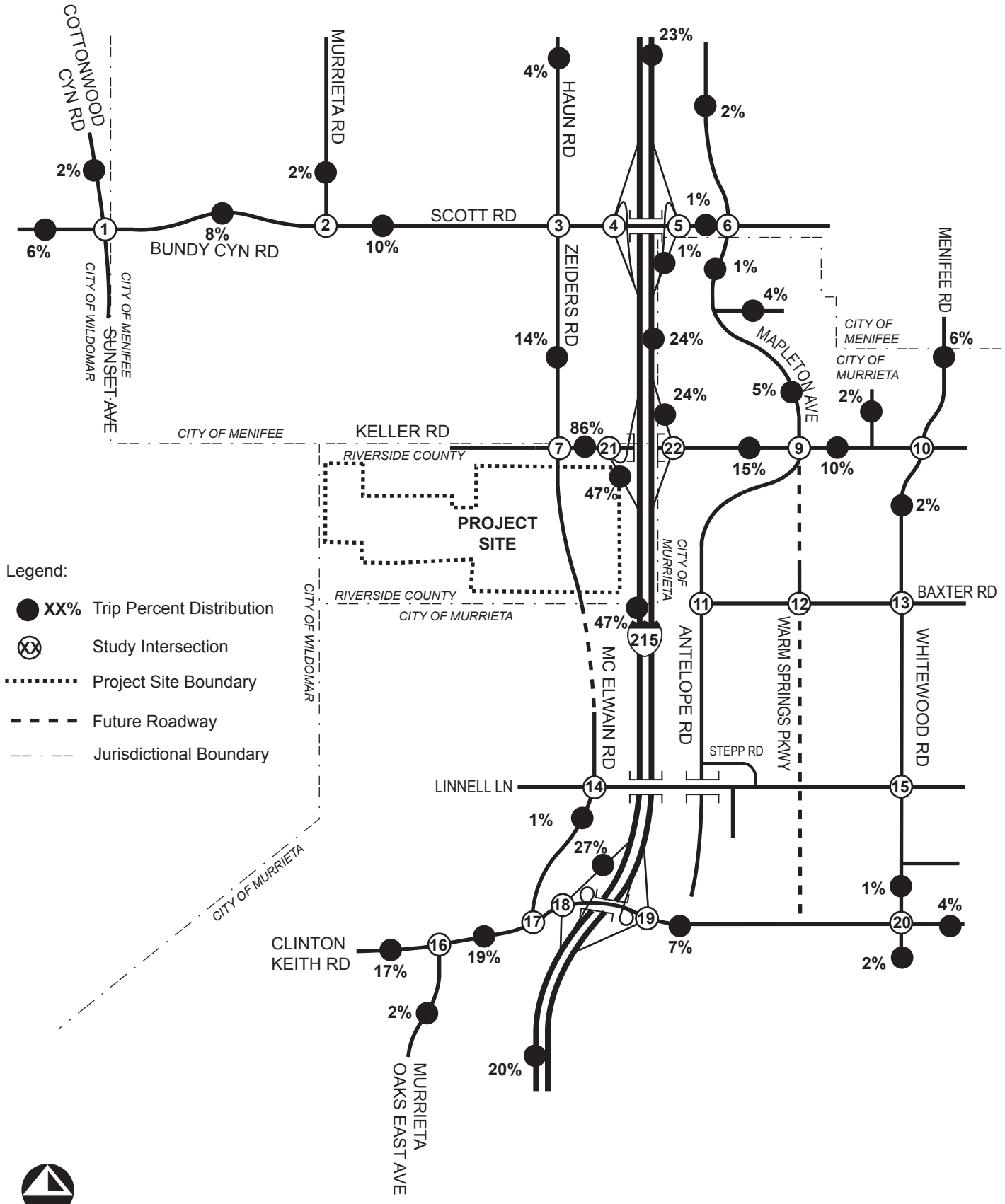
Phase 1 - Year 2023 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 15



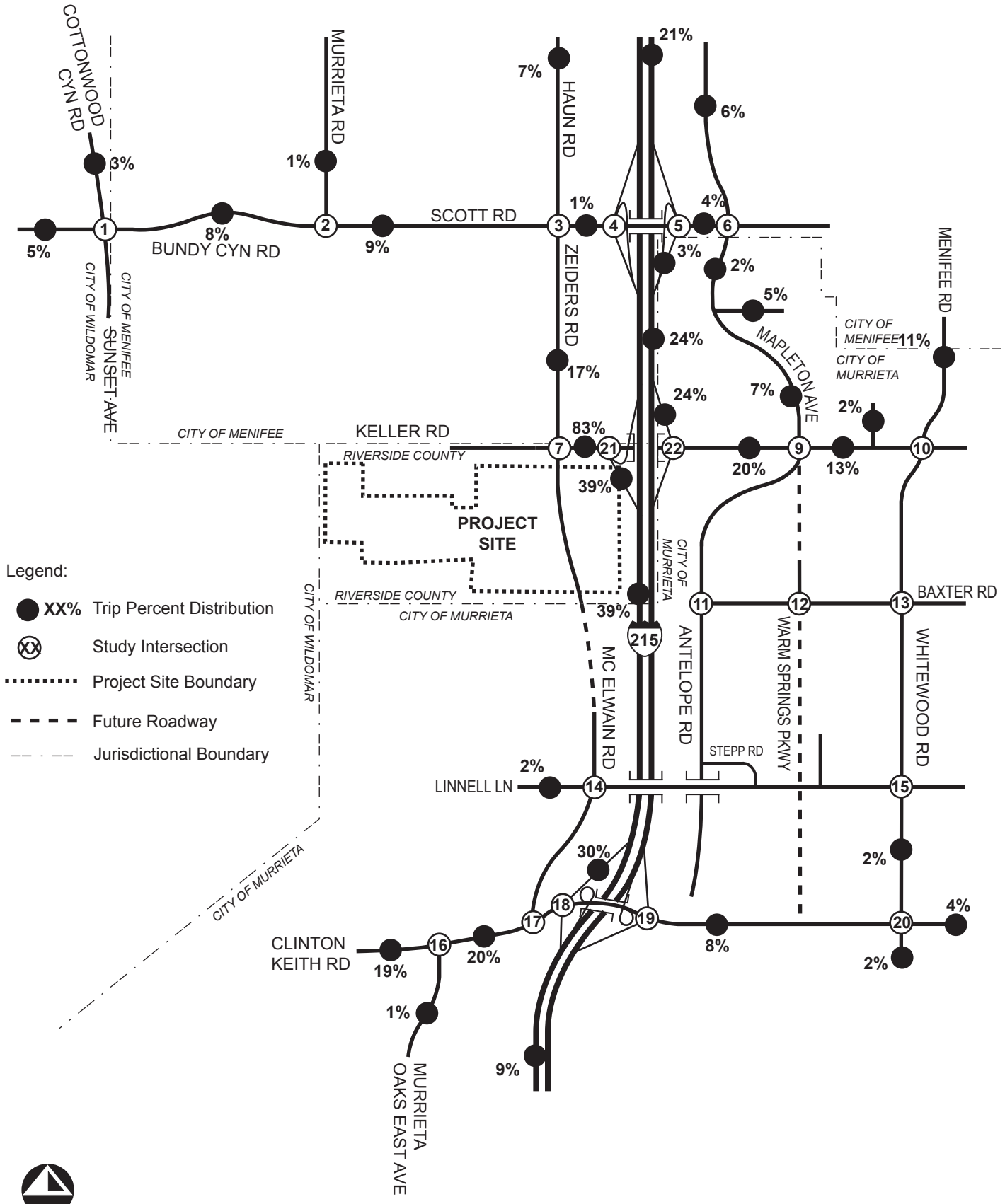
Forecast Phase 2 - Year 2028 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 16



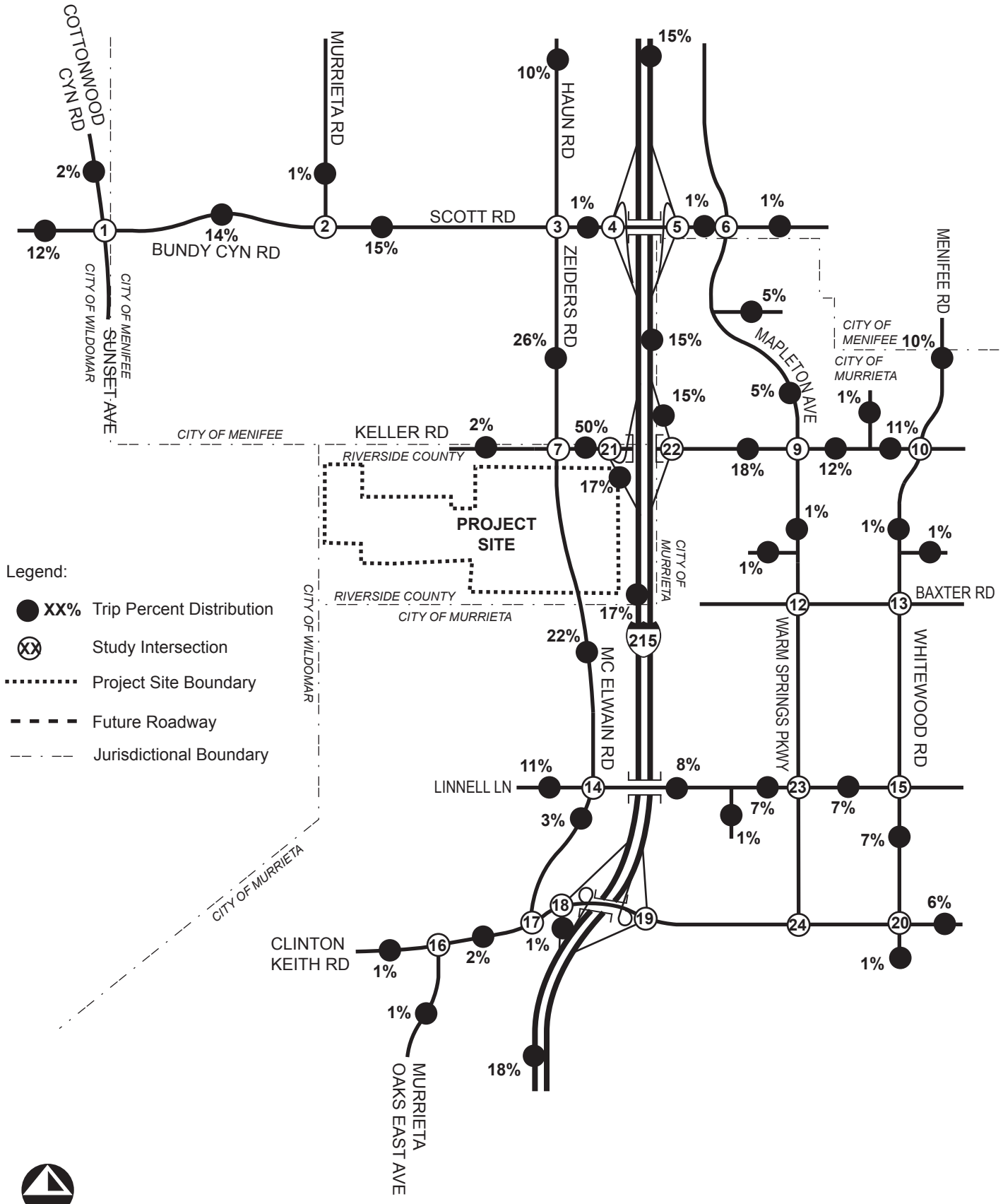
Forecast Phase 2 - Year 2028 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits

MAY/2018

Exhibit 17

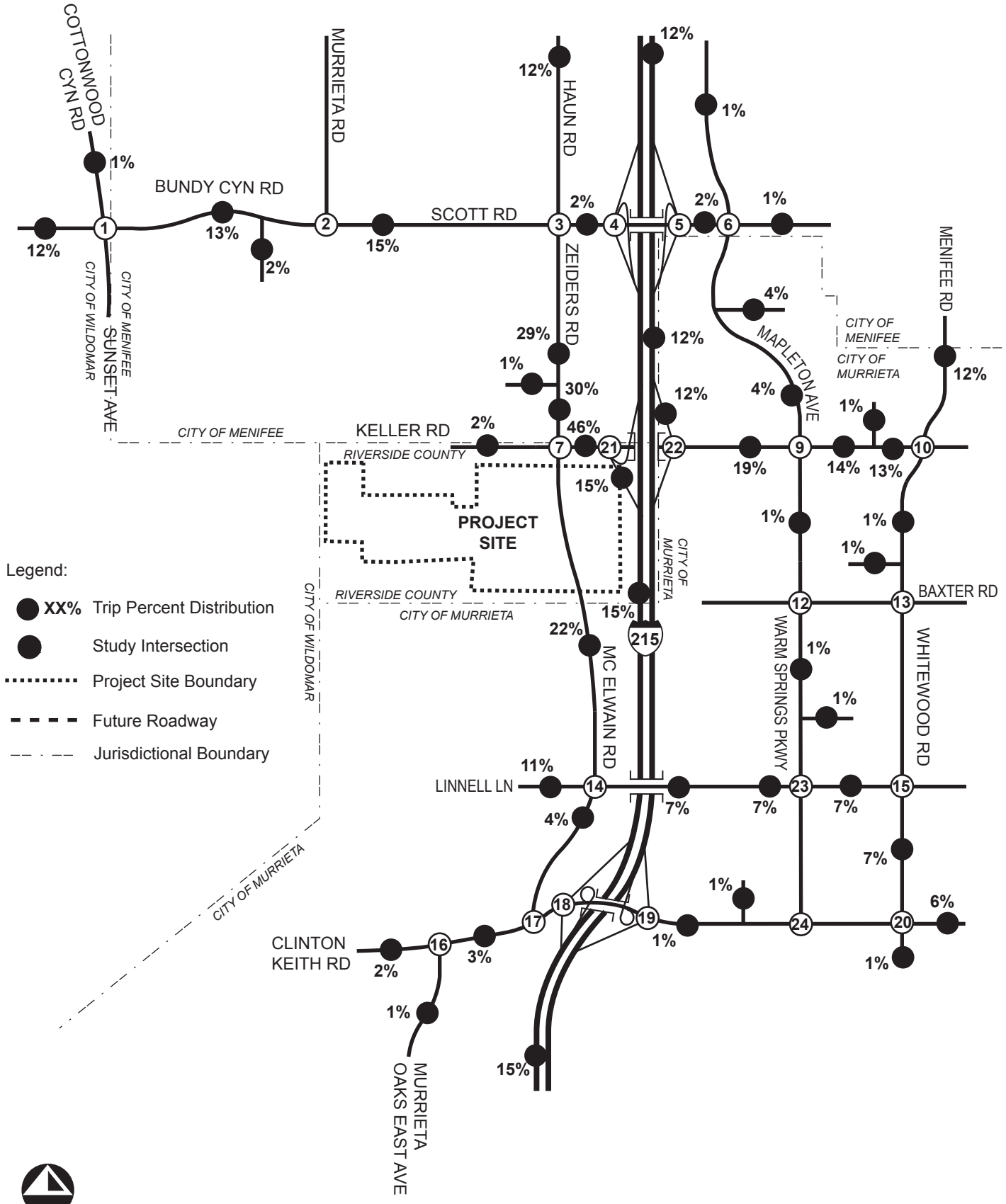


Forecast Phase 3 - Year 2031 & Buildout Year 2035 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2018

Exhibit 18

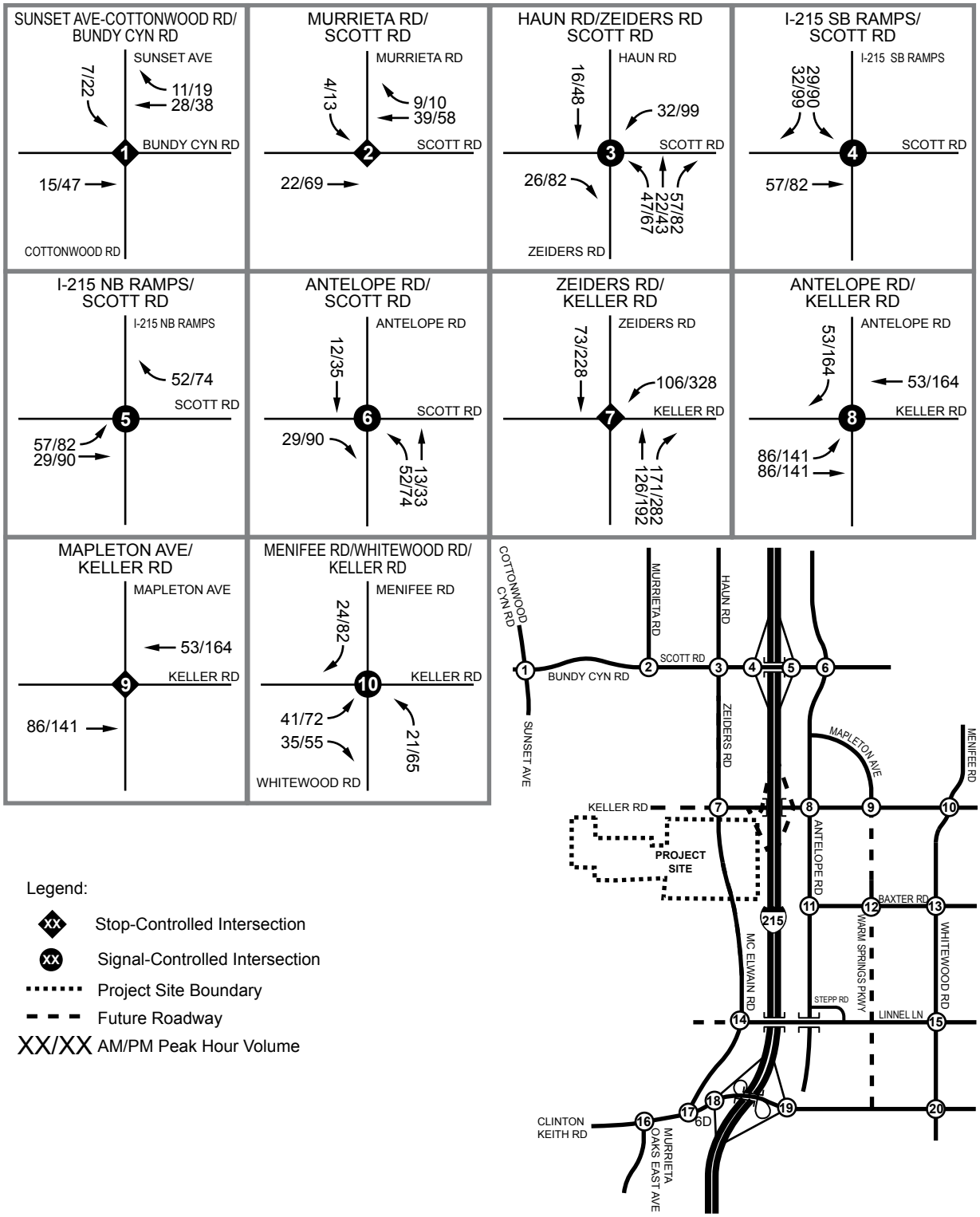


Forecast Phase 3 - Year 2031 & Buildout Year 2035 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits MAY/2018

Exhibit 19



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

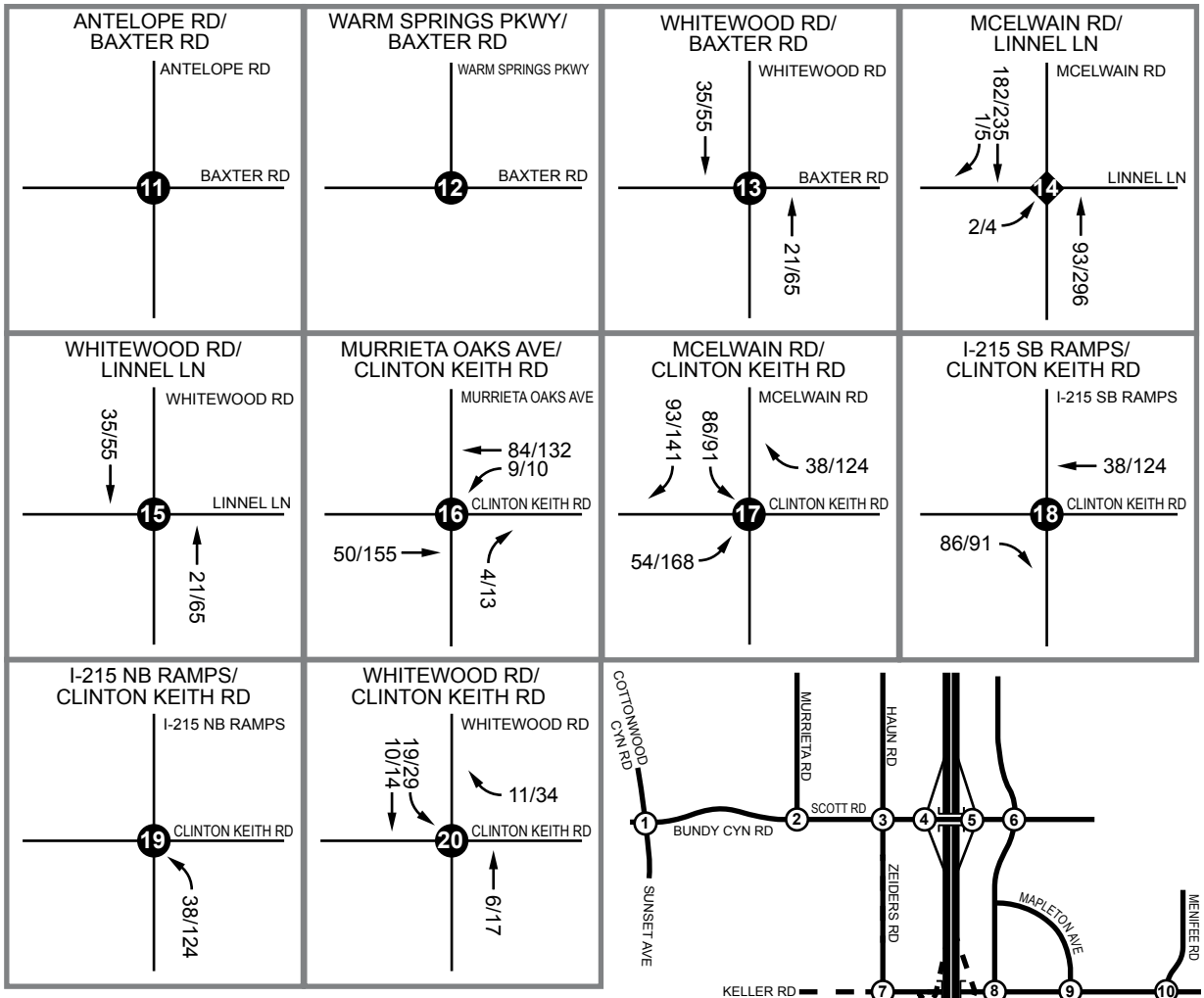
Not to Scale

Area 1
Forecast Existing Plus Project Buildout Conditions
AM & PM Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 20



Legend:

- Stop-Controlled Intersection
- Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

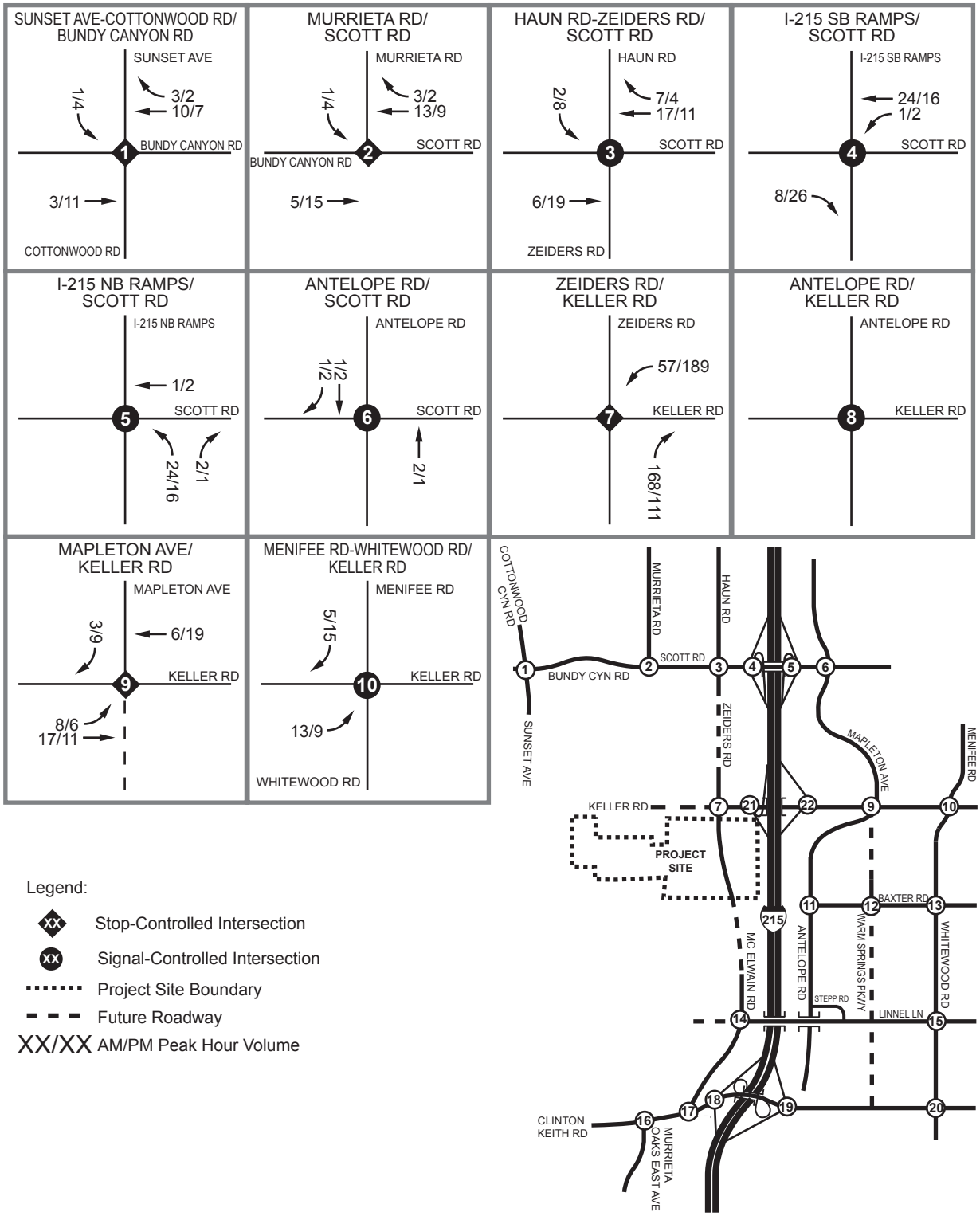
Not to Scale

Area 2
Forecast Existing Plus Project Buildout Conditions
AM & PM Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 21



Legend:

- Stop-Controlled Intersection
- Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

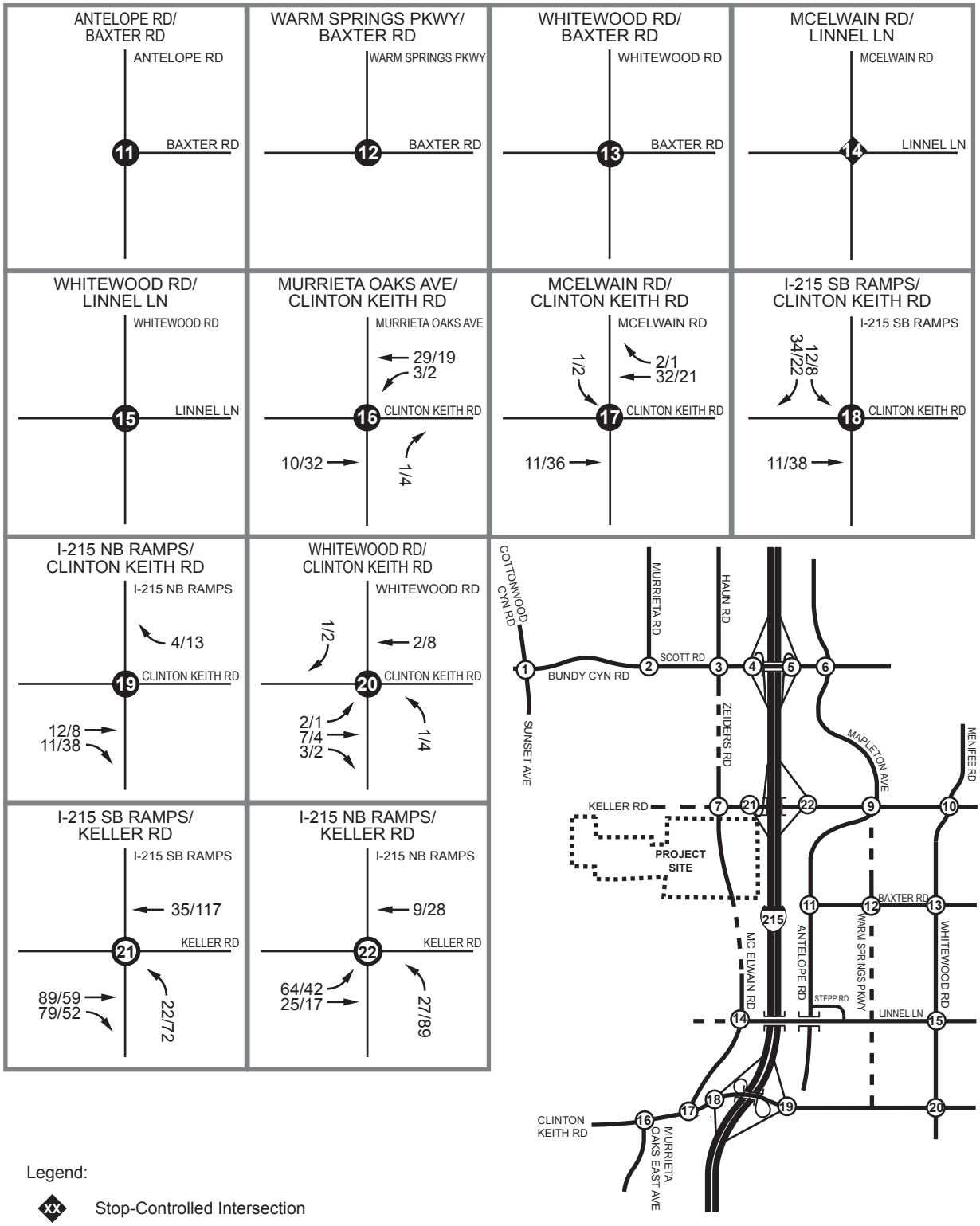
Not to Scale

Area 1
Forecast Year 2023 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 22



Legend:

- Stop-Controlled Intersection
- Signal-Controlled Intersection
- Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

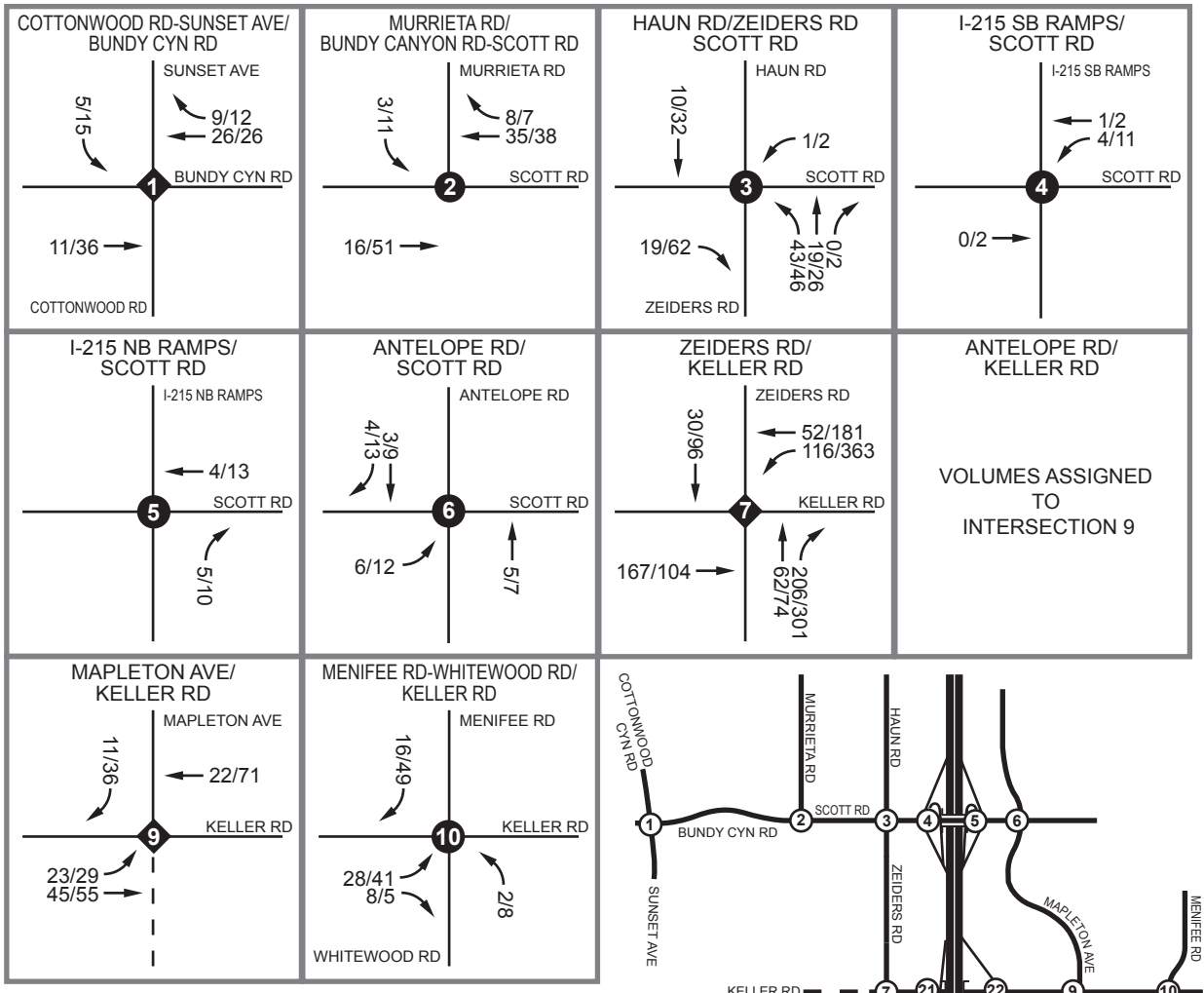
Not to Scale

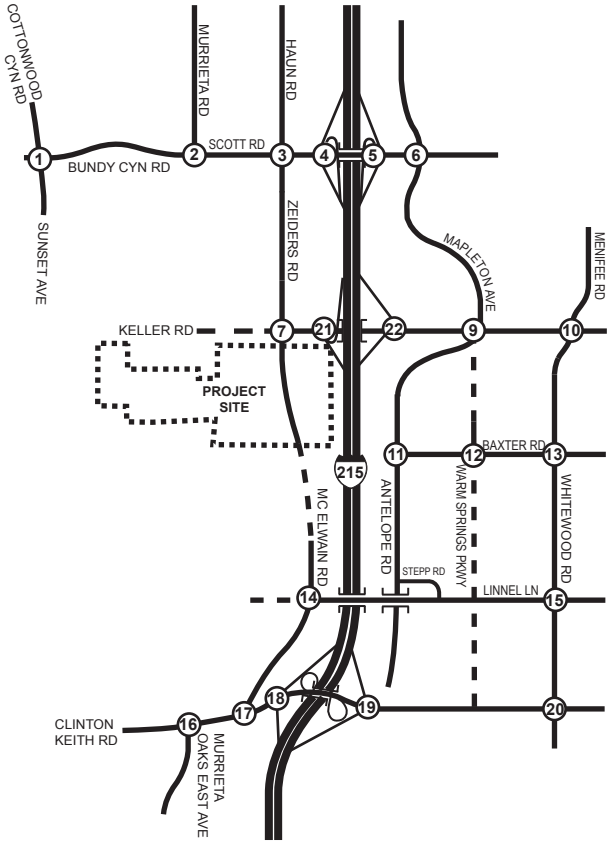
Area 2
Forecast Year 2023 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 23





Legend:

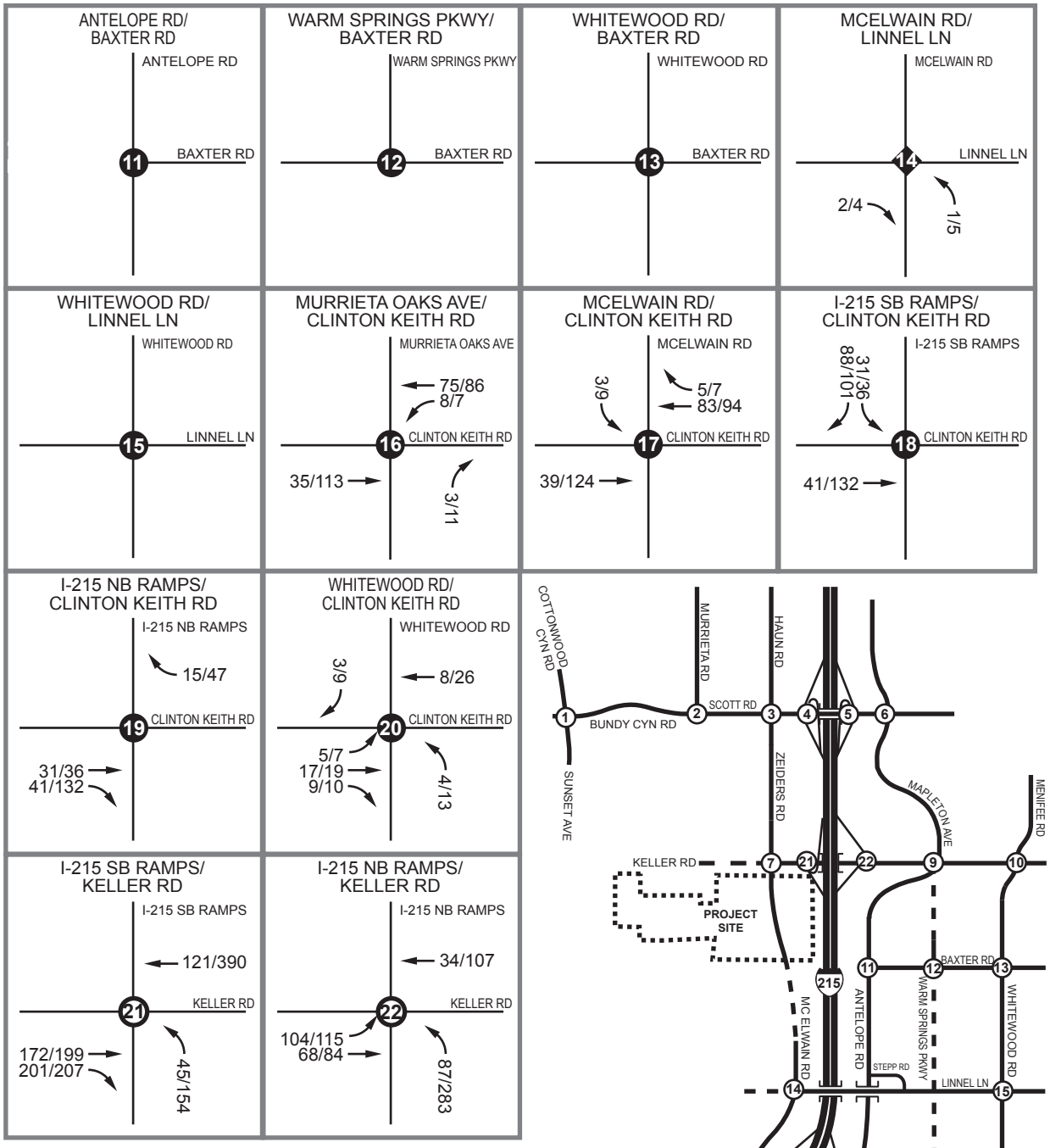
- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

Area 1
Forecast Year 2028 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018

Exhibit 24



Legend:

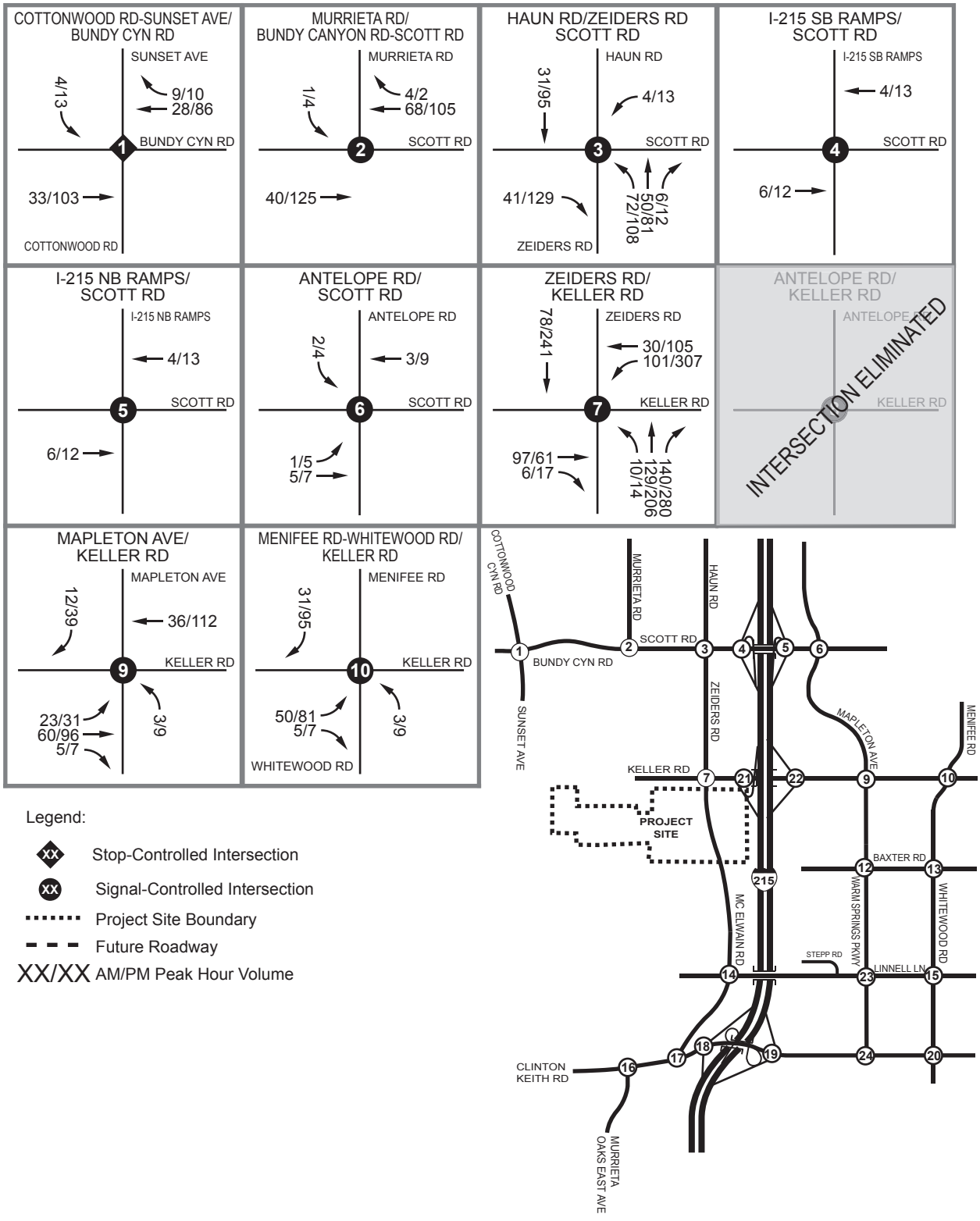
- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

Area 2
Forecast Year 2028 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Exhibit 25

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

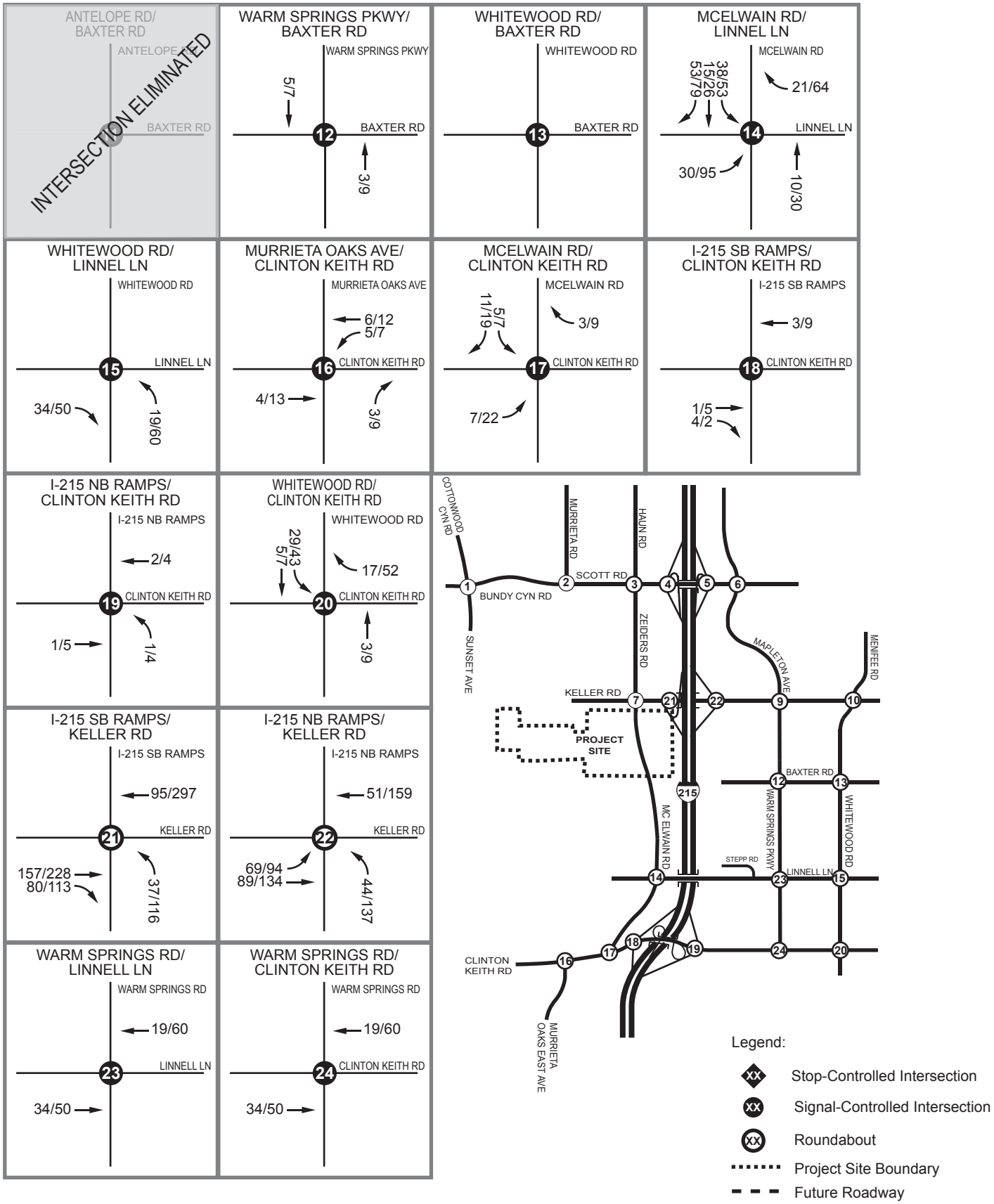
Not to Scale

Area 1
Forecast Year 2031 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 26



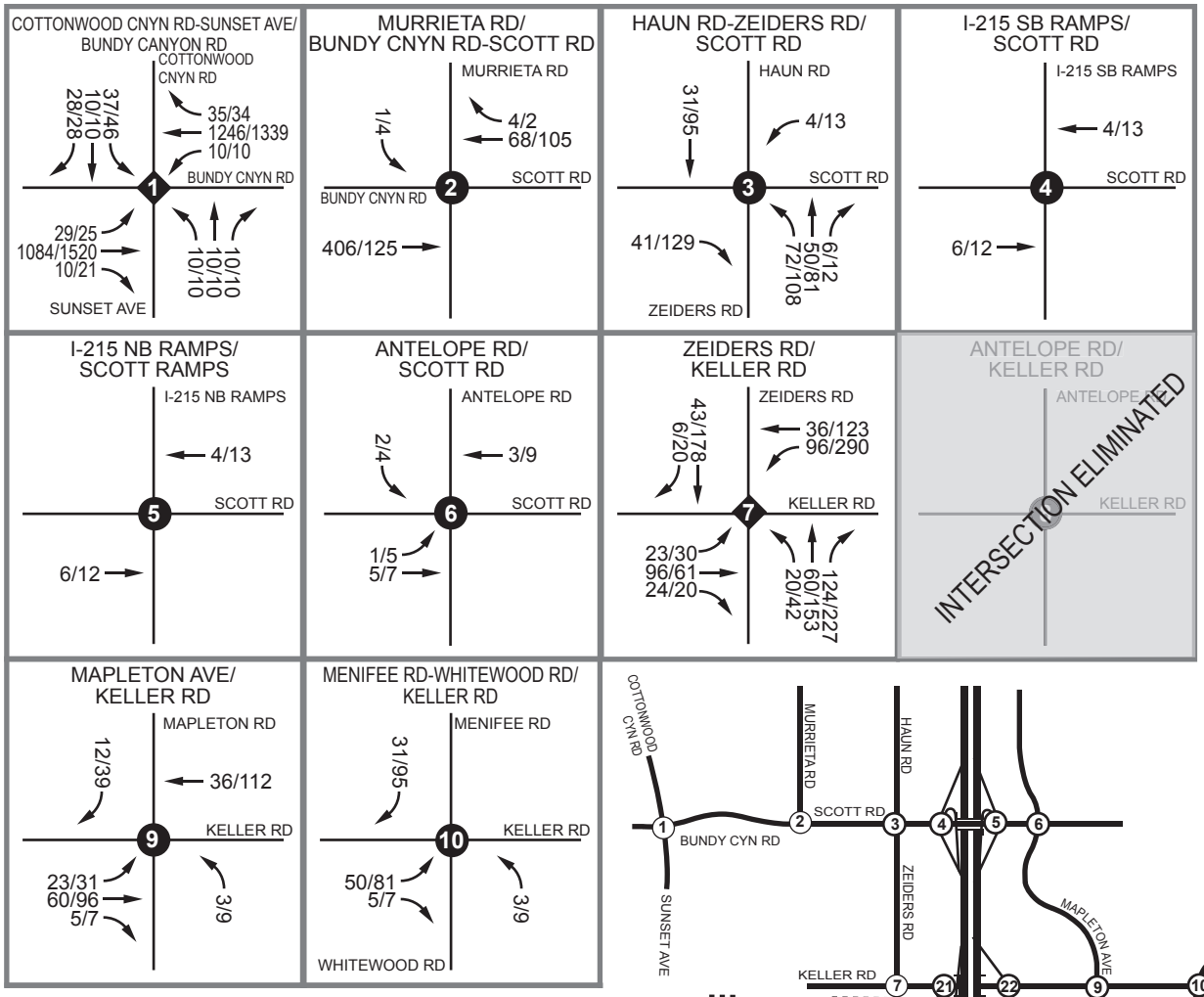
Not to Scale

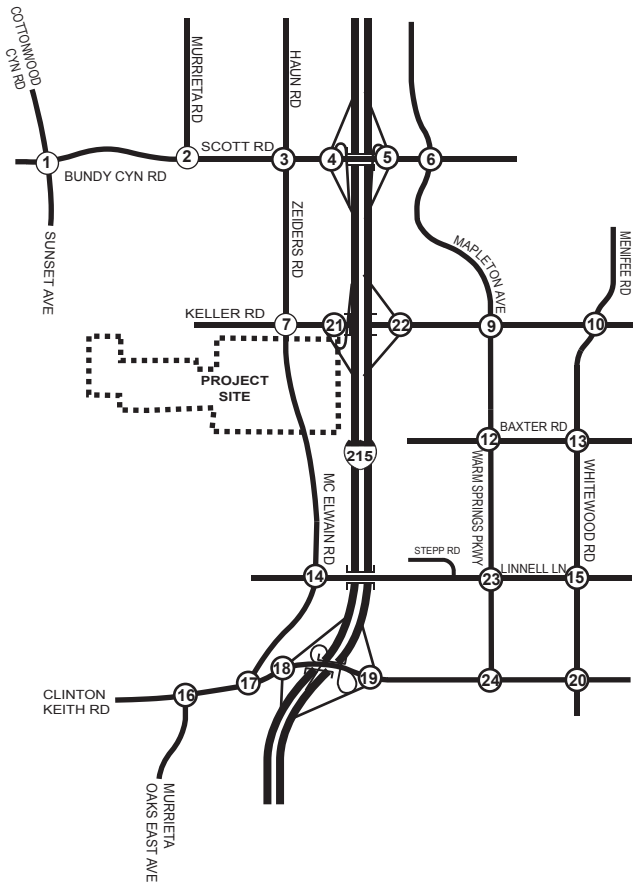
Area 2
Forecast Year 2031 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 27





Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

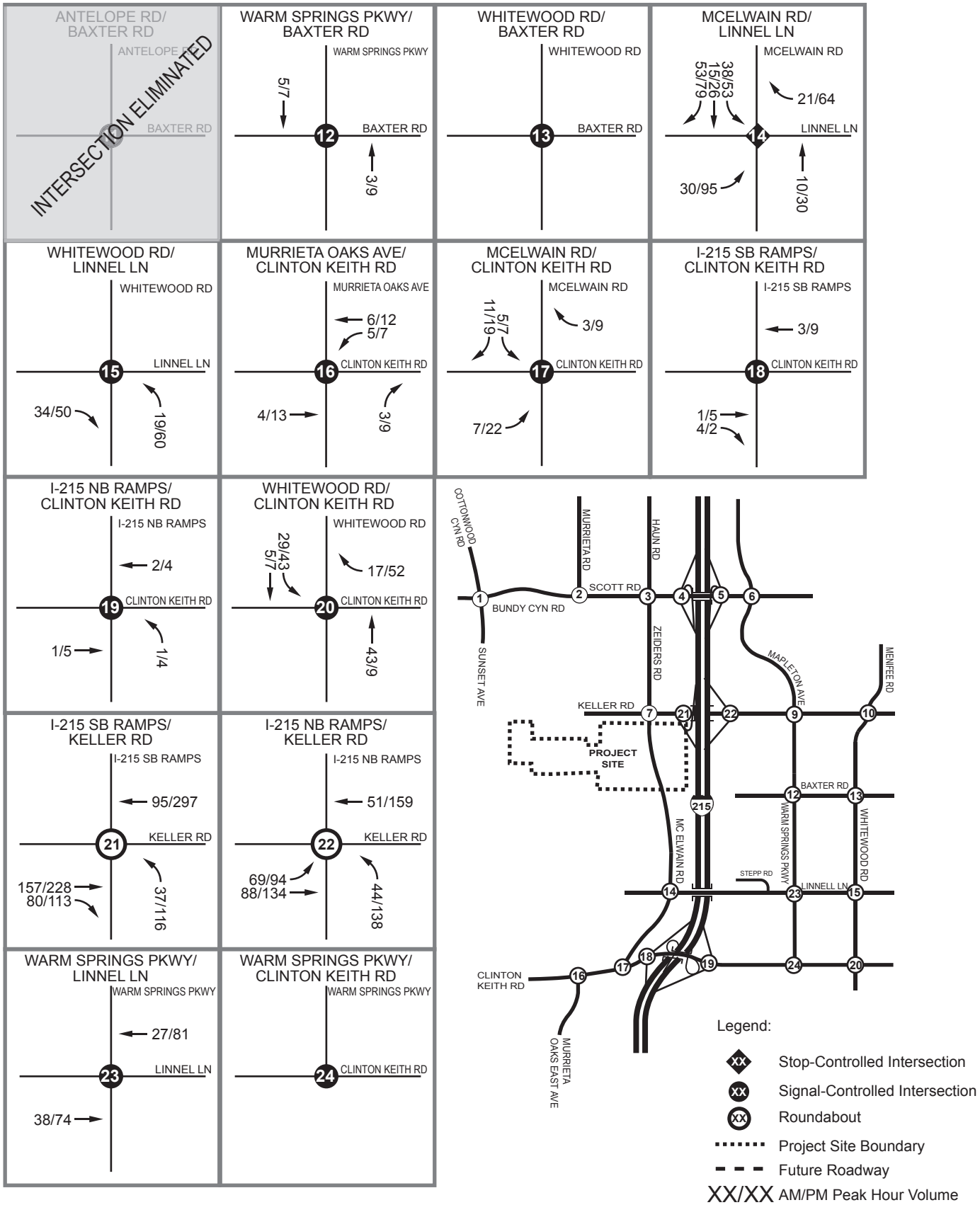
Not to Scale

Area 1
Forecast Year 2035 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 28



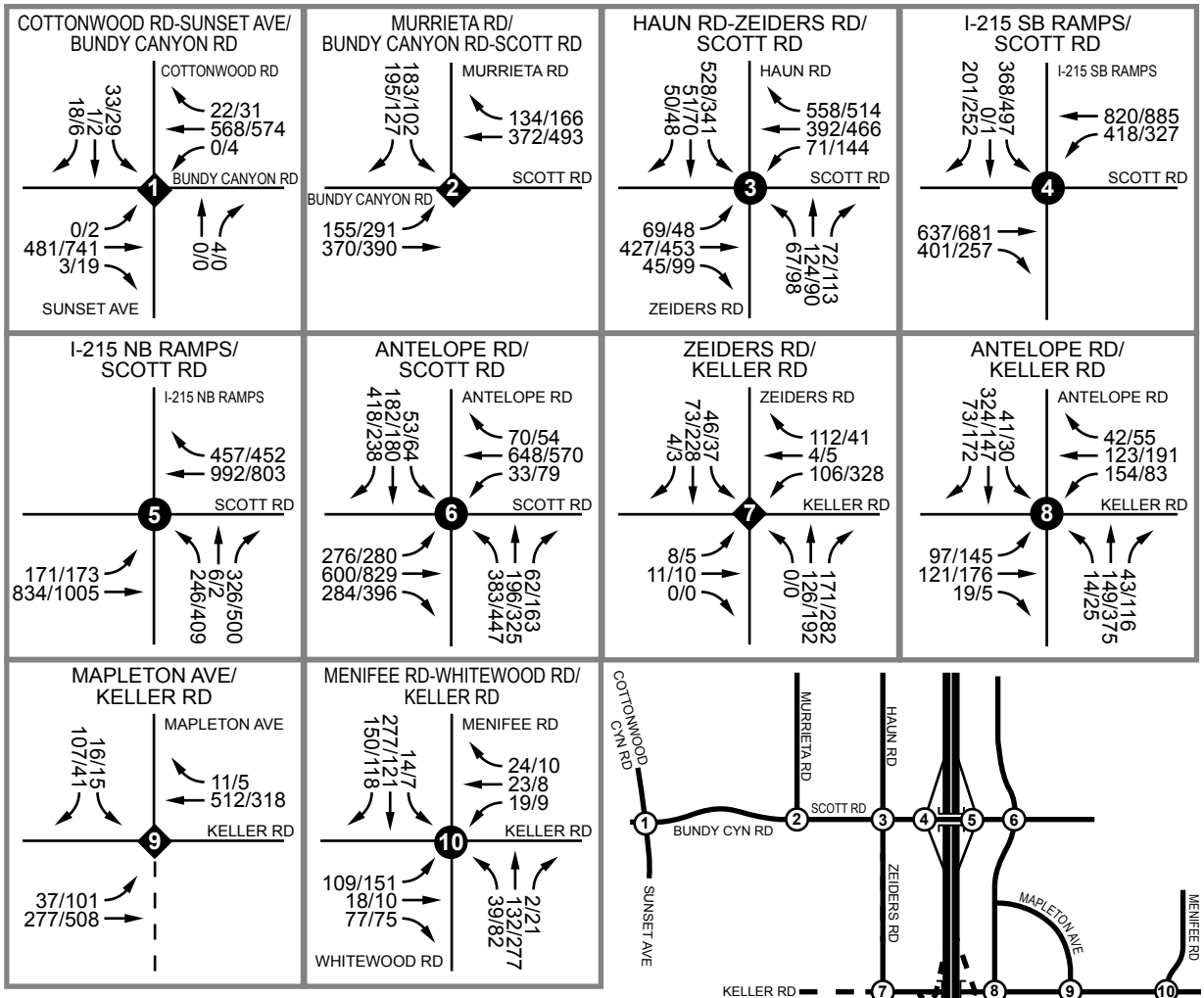
Not to Scale

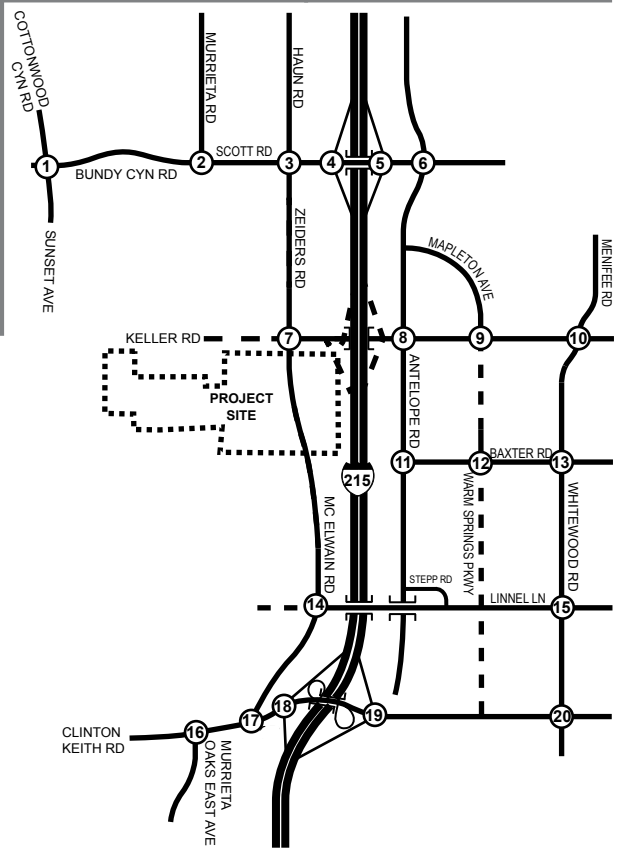
Area 2
Forecast Year 2035 Conditions AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 29





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

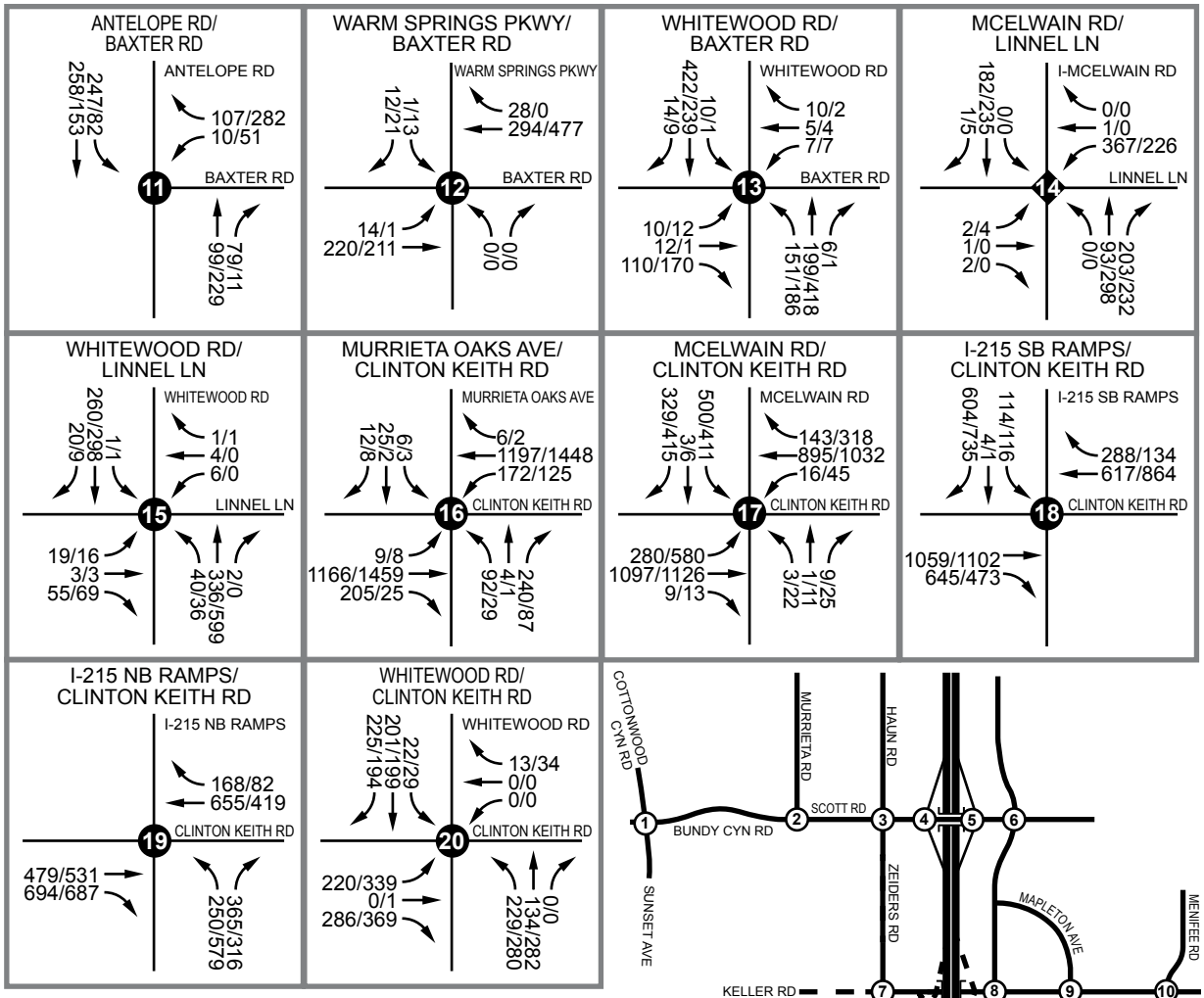
Not to Scale

Area 1
Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 30



Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

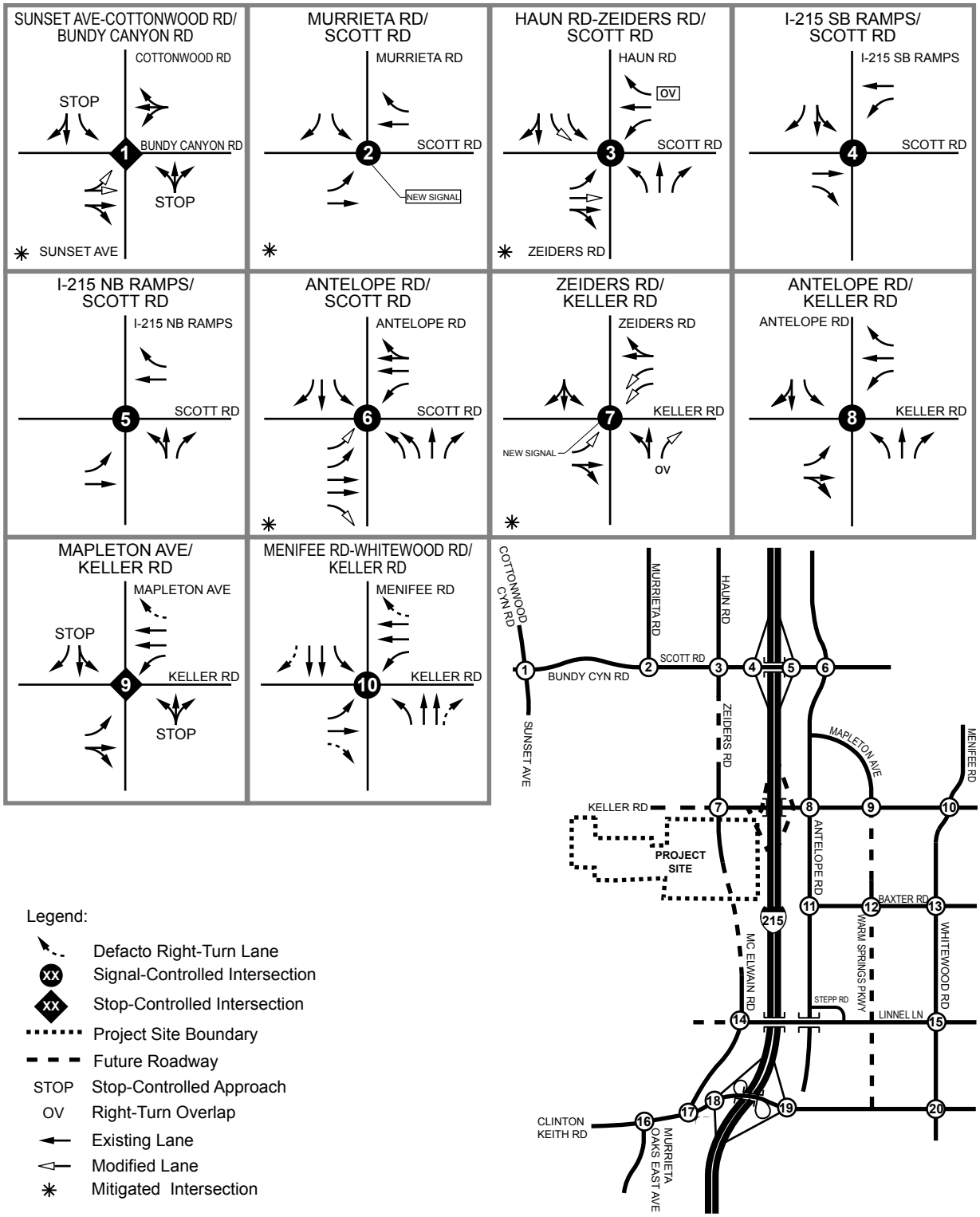
Not to Scale

Area 2
Forecast Existing Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 31



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

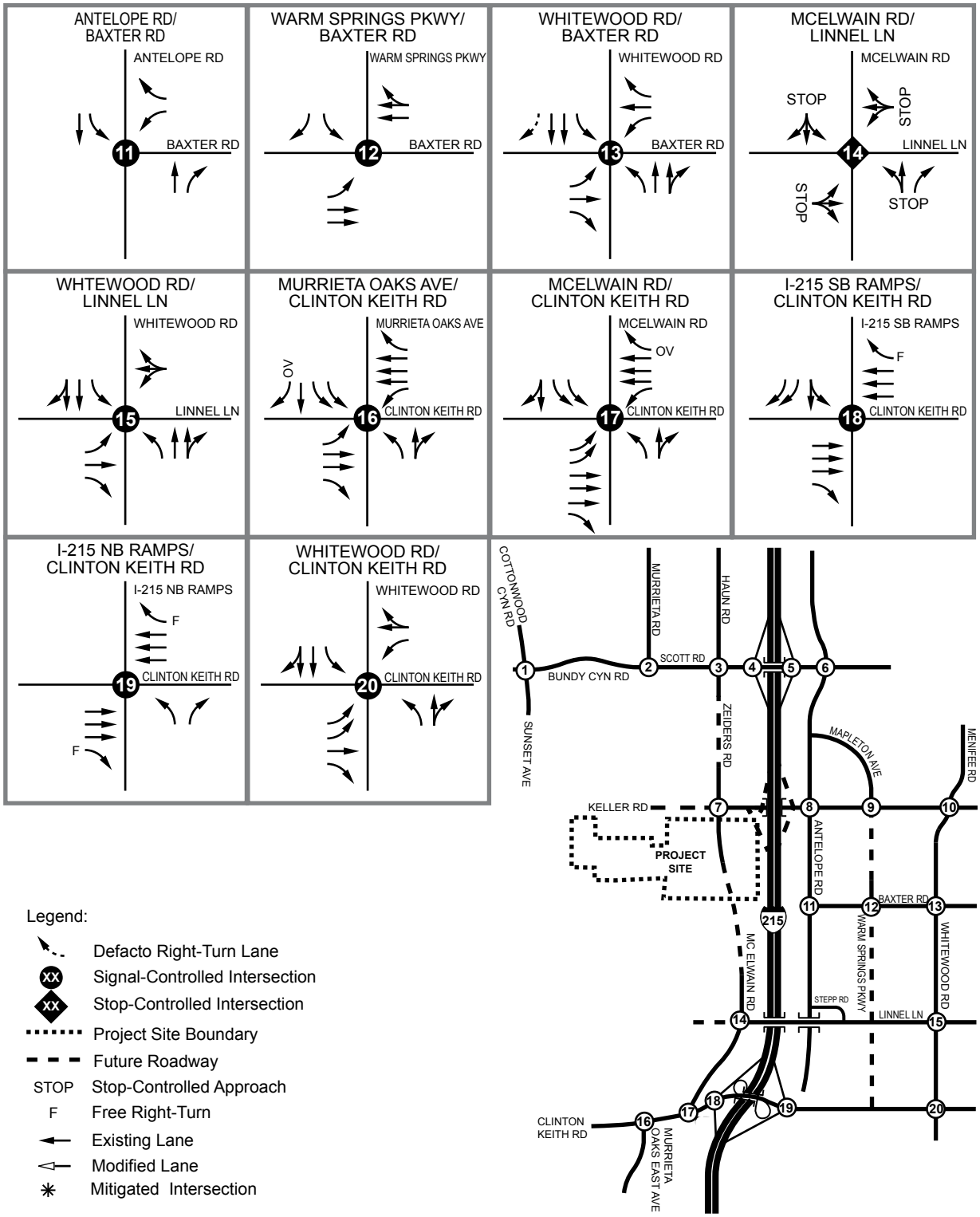
Not to Scale

Area 1
Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 32



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

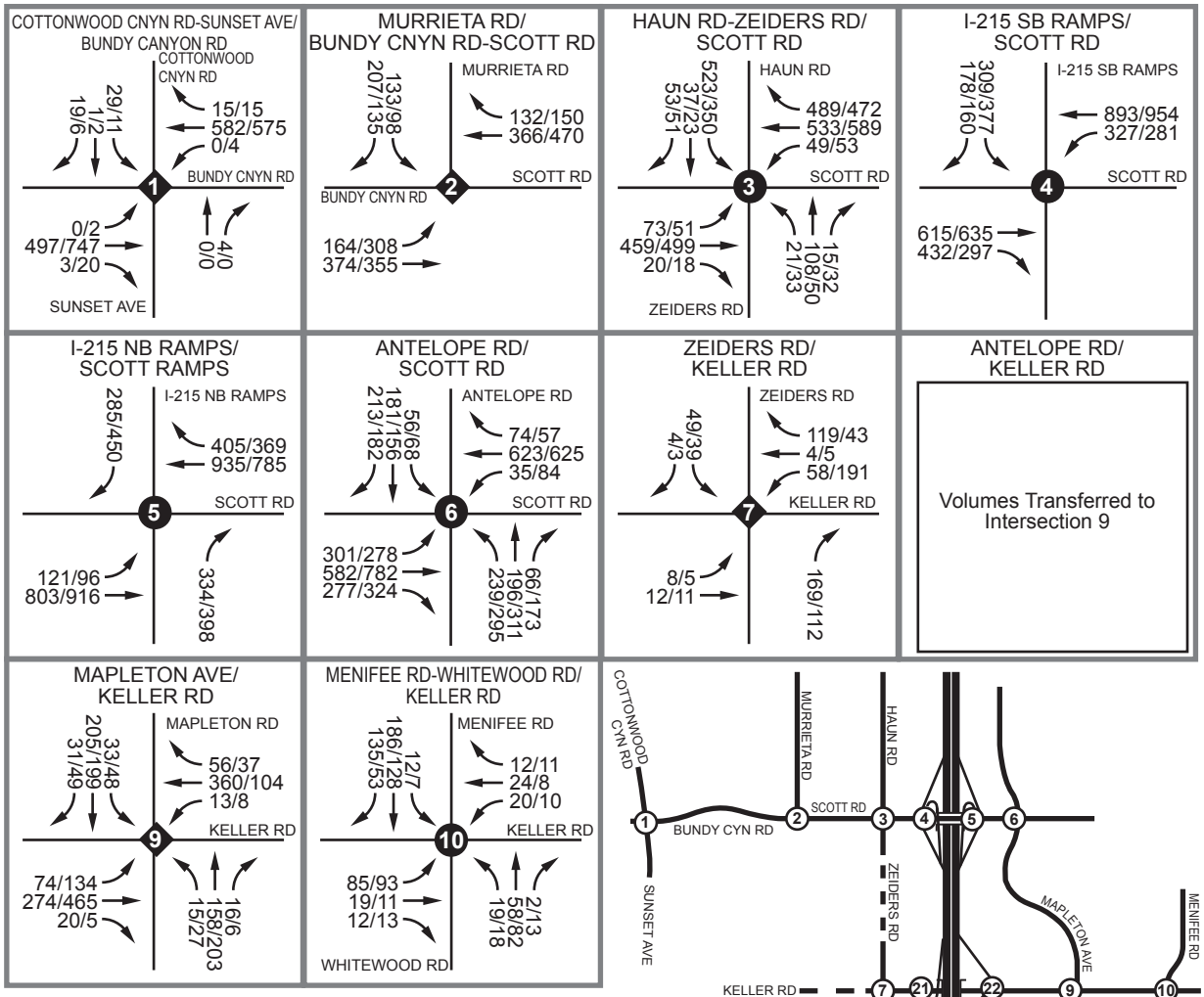
Not to Scale

Area 2
Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 33



Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

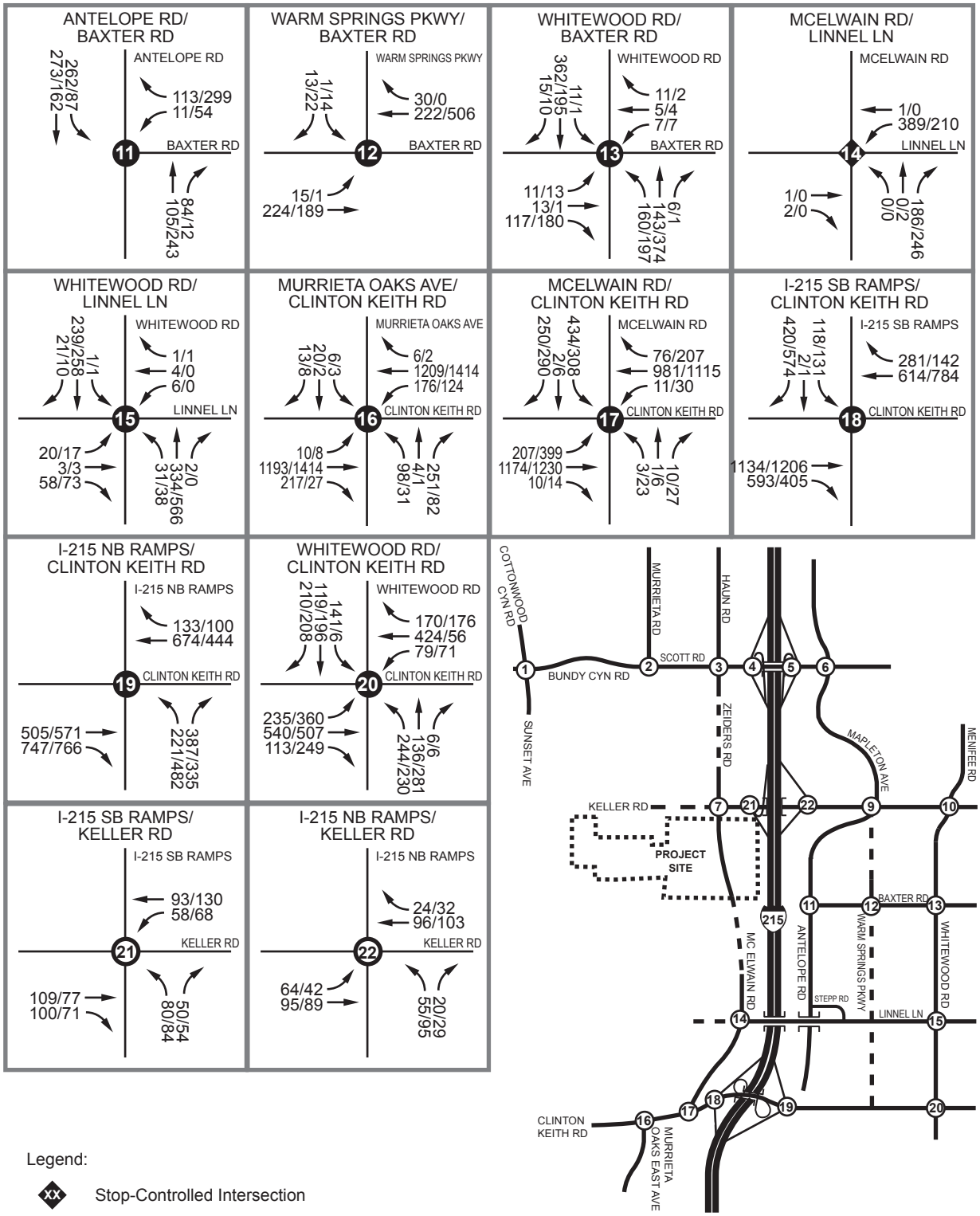
Not to Scale

Area 1
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 34



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

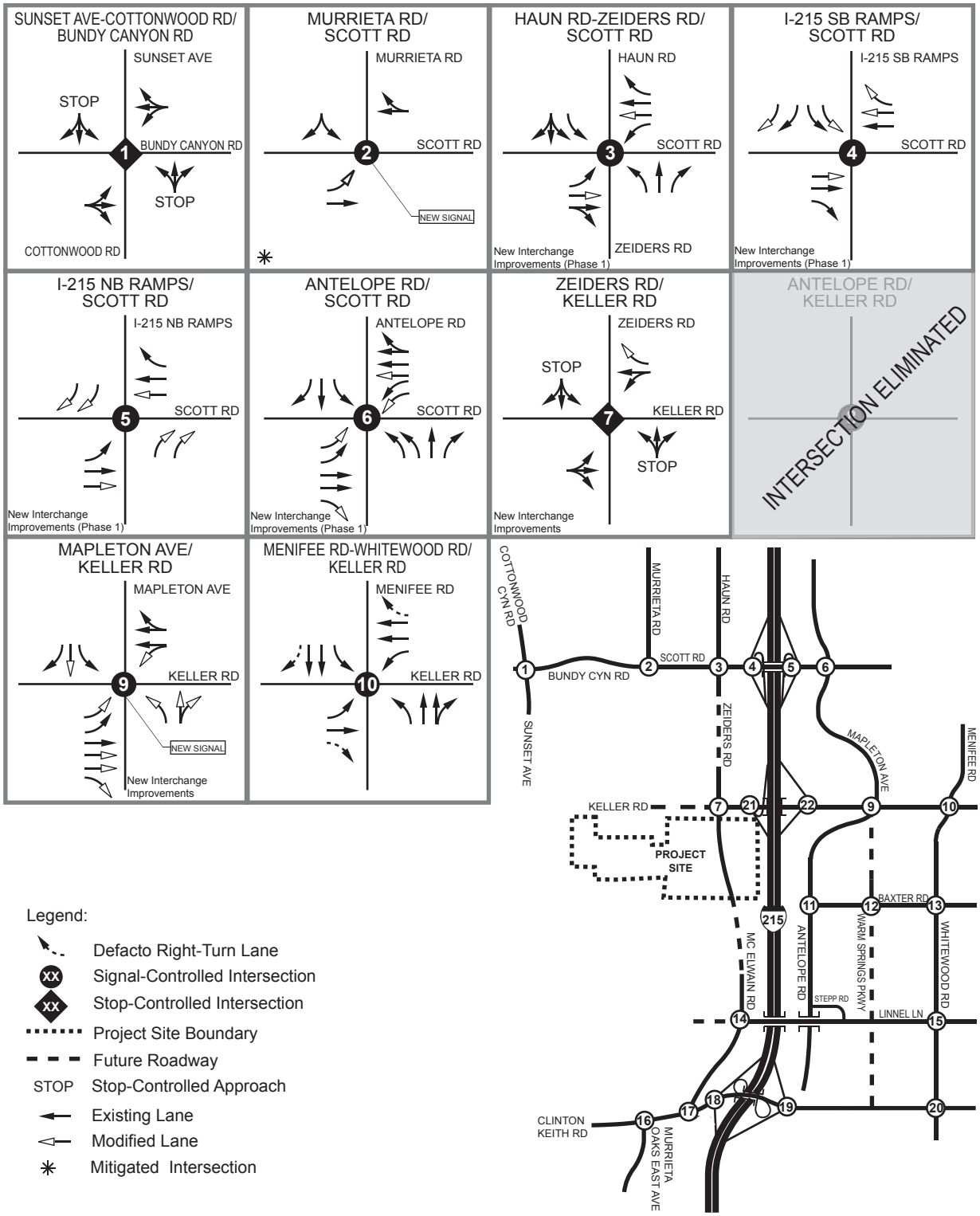
Not to Scale

Area 2
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 35



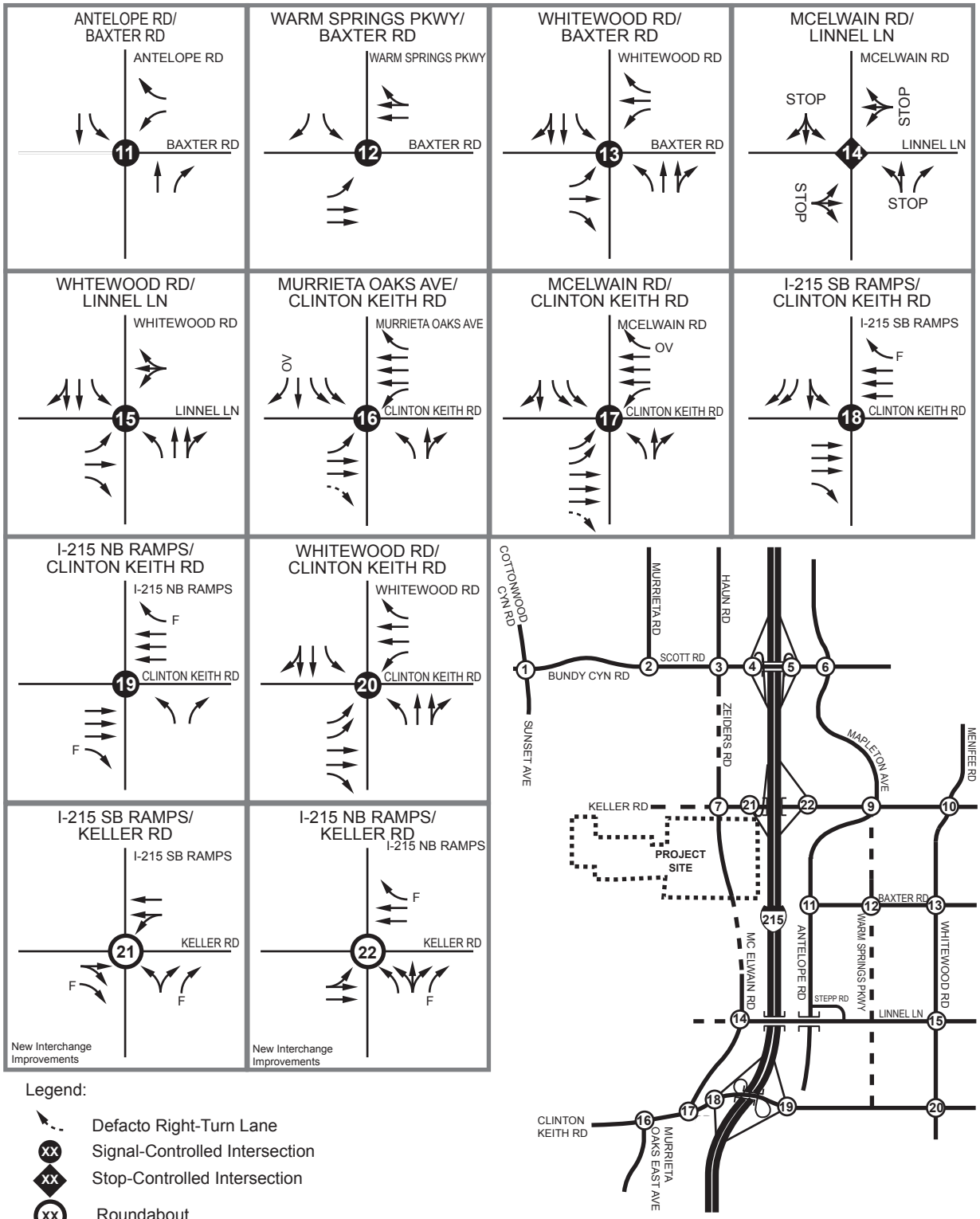
Not to Scale

Area 1
Mitigated Forecast Year 2023 Plus Ambient Growth Plus Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 36



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

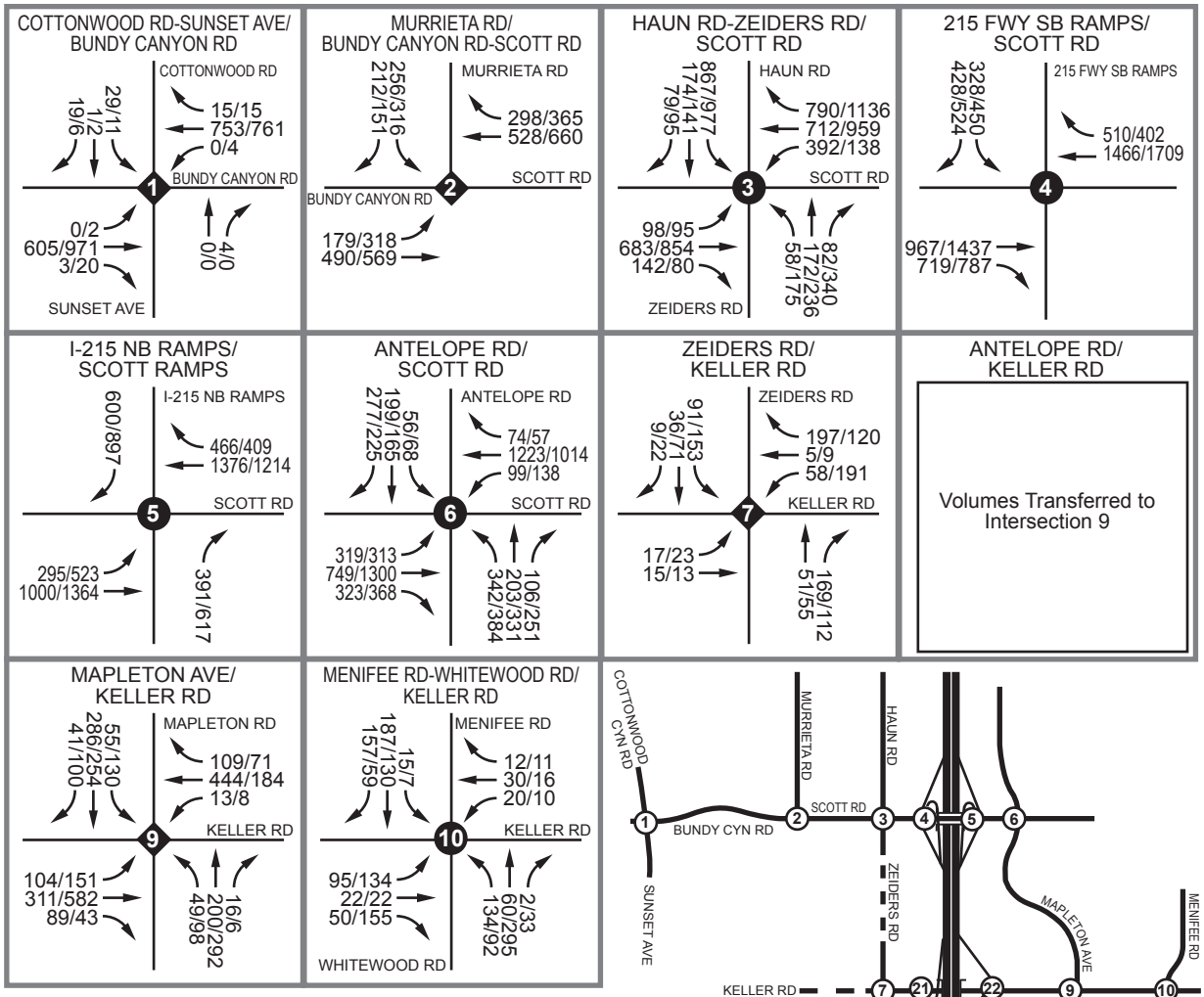
Not to Scale

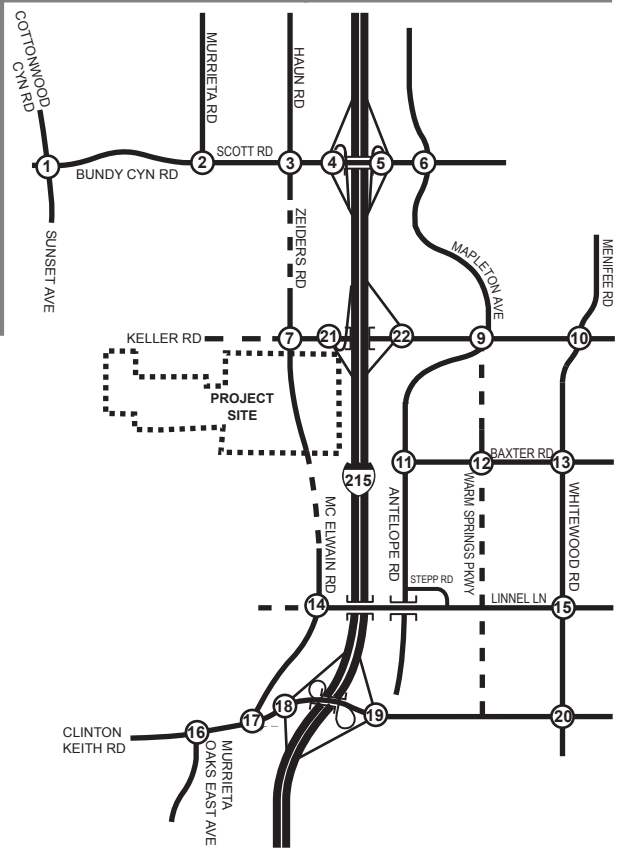
Area 2
Mitigated Forecast Year 2023
Existing Plus Ambient Growth Plus
Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 37





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

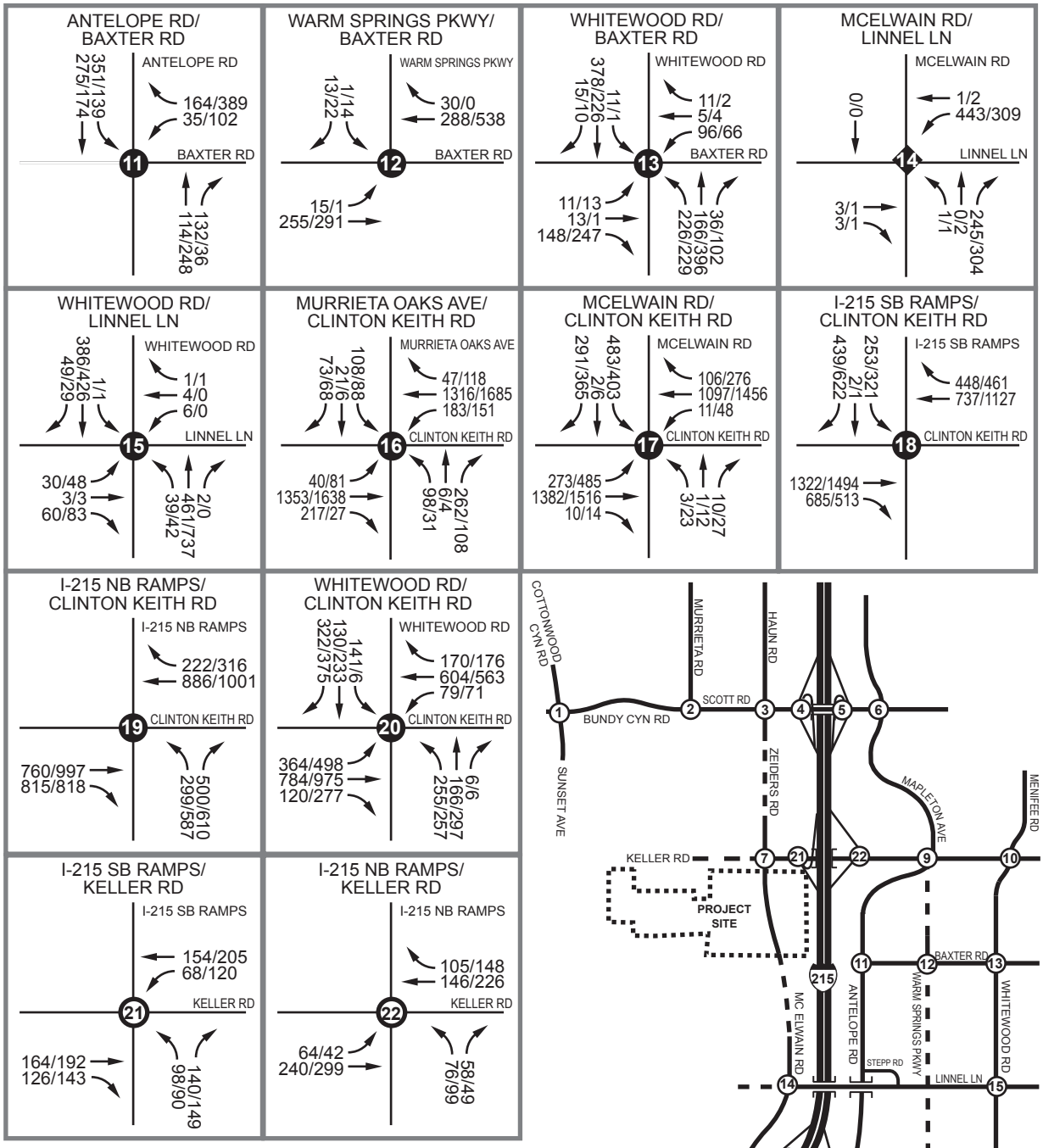
Not to Scale

Area 1
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 38



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

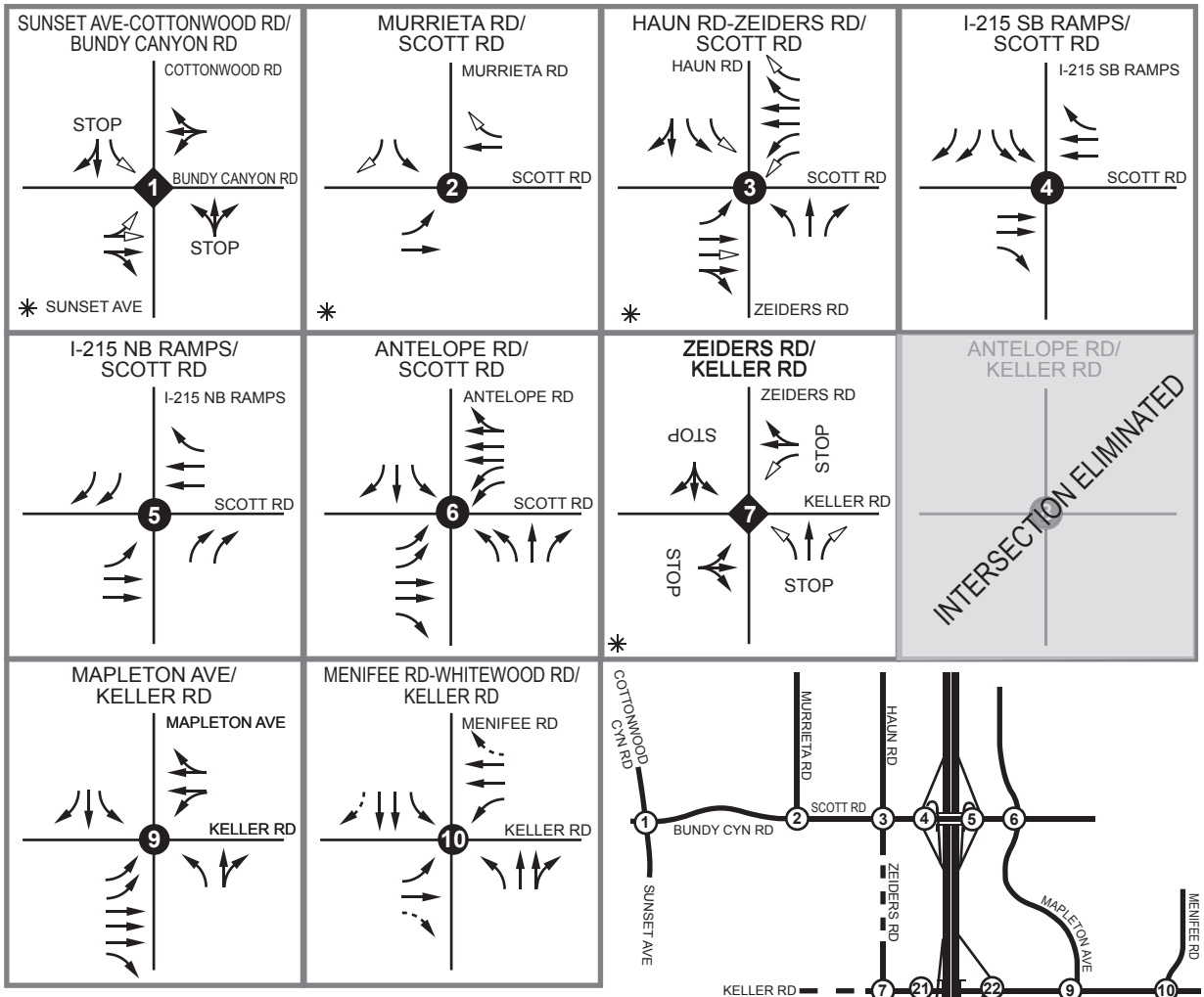
Not to Scale

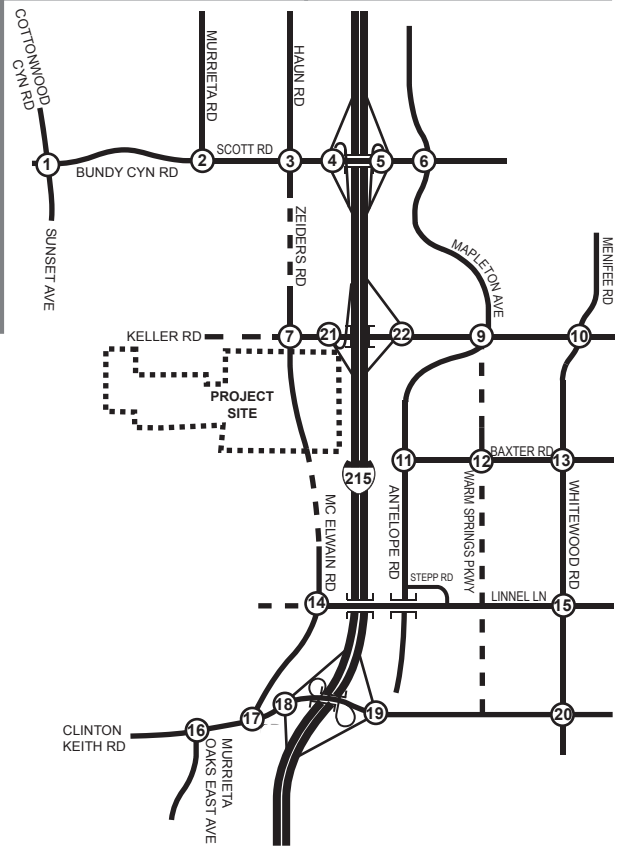
Area 2
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 39





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- OV Right-Turn Overlap
- ✳ Mitigated Intersection

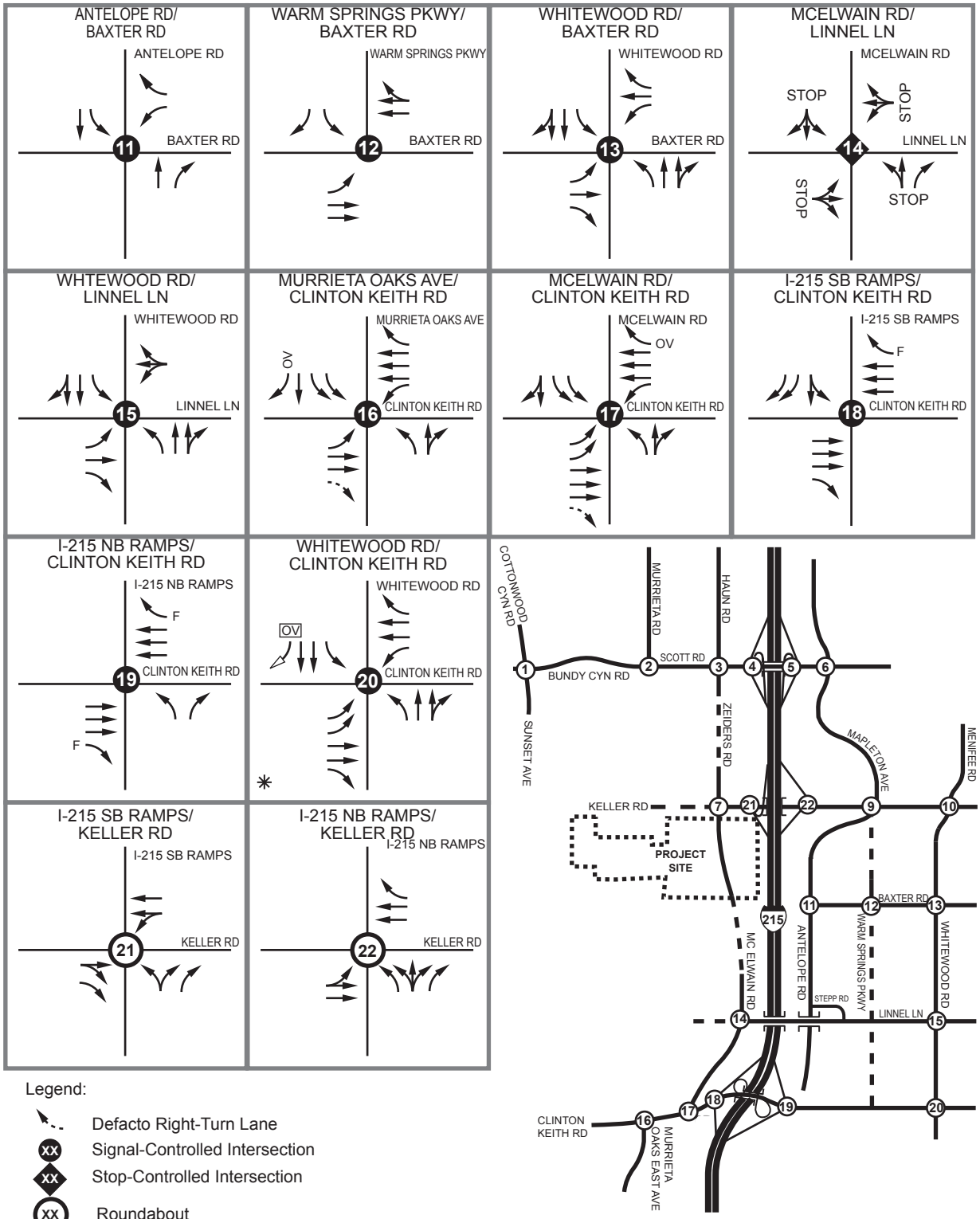
Not to Scale

Area 1
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 40



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

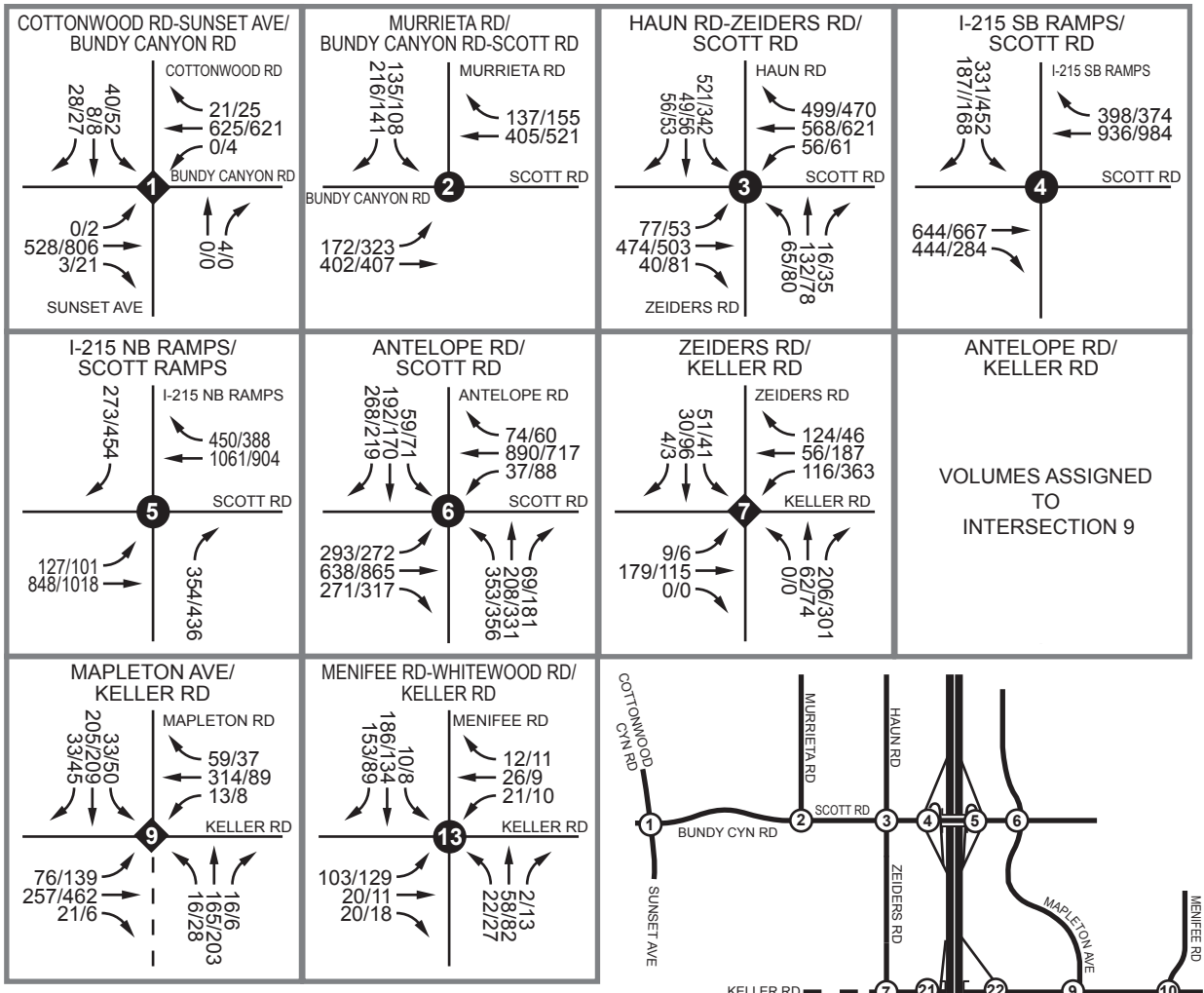
Not to Scale

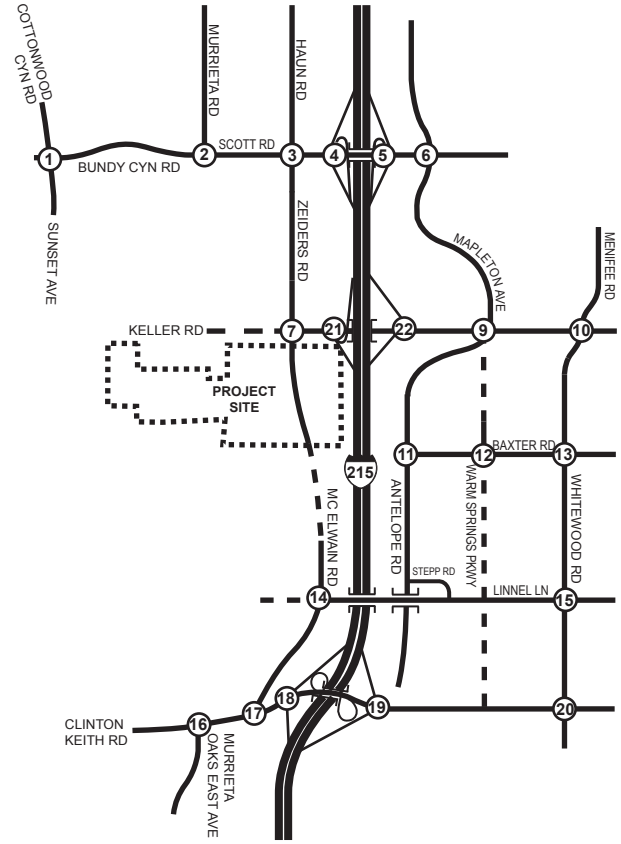
Area 2
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 41





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

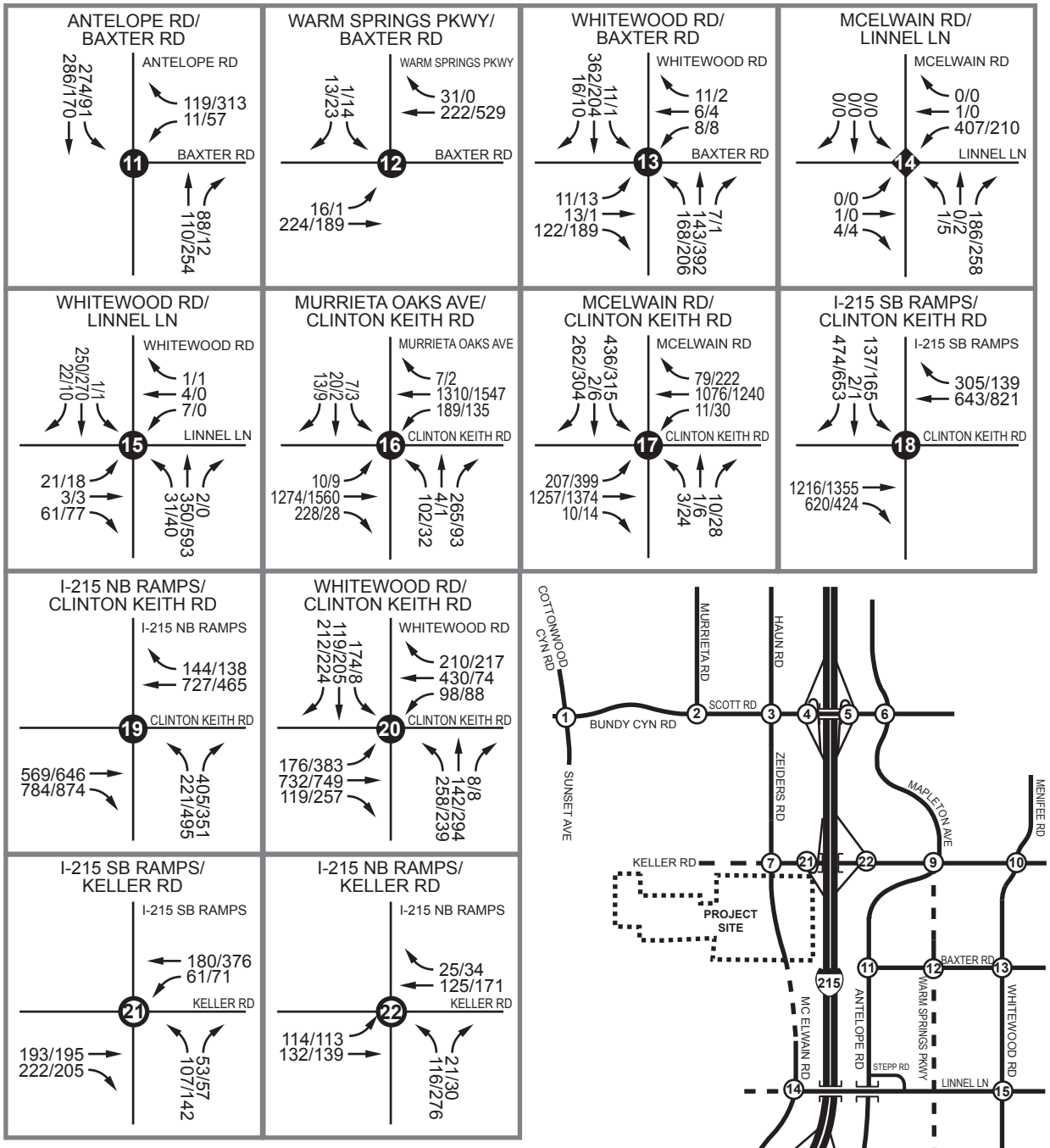
Not to Scale

Area 1
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases1 & 2 Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 42



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

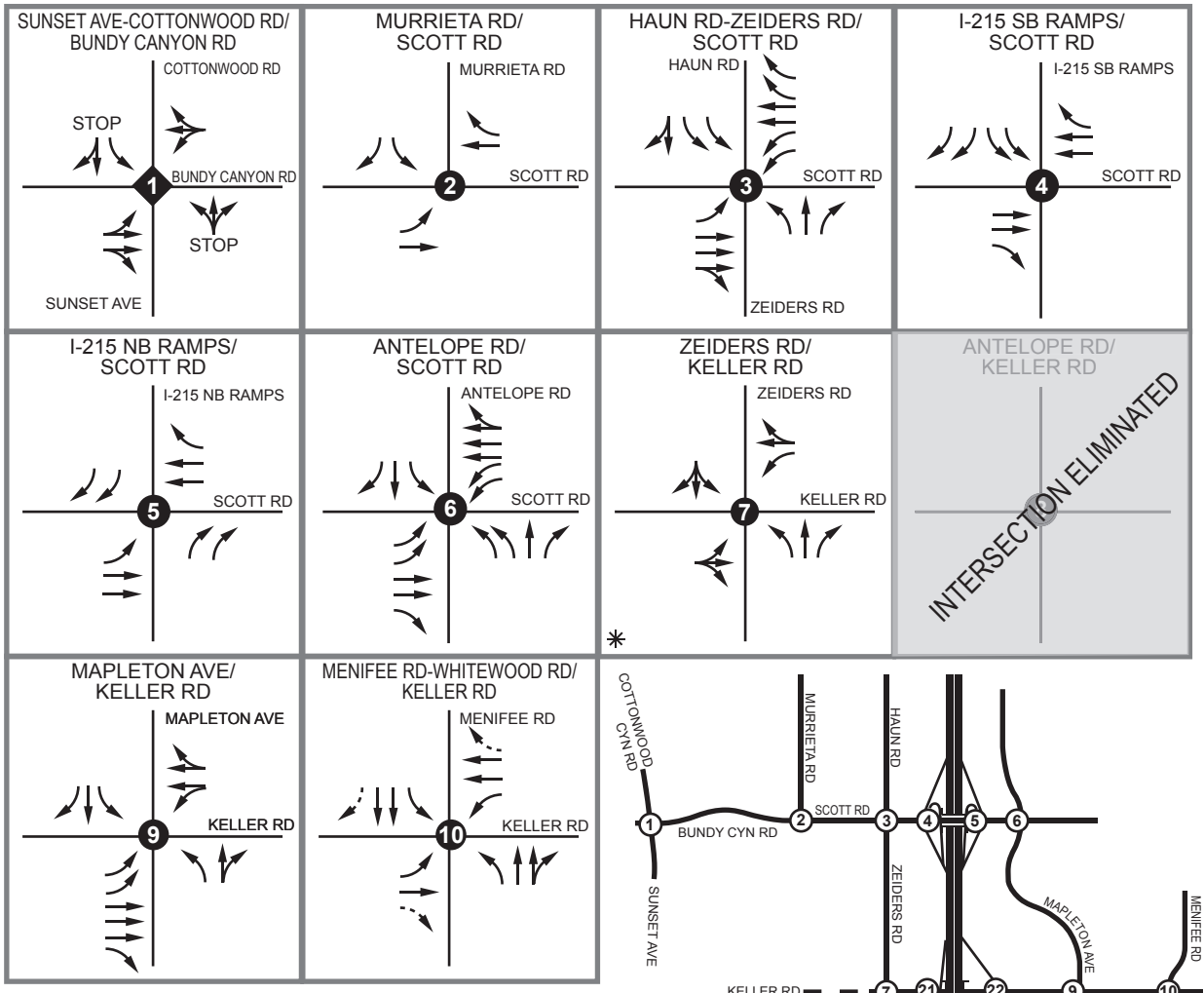
Area 2
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases1 & 2 Conditions
AM & PM Peak Hour Study Intersection Volumes

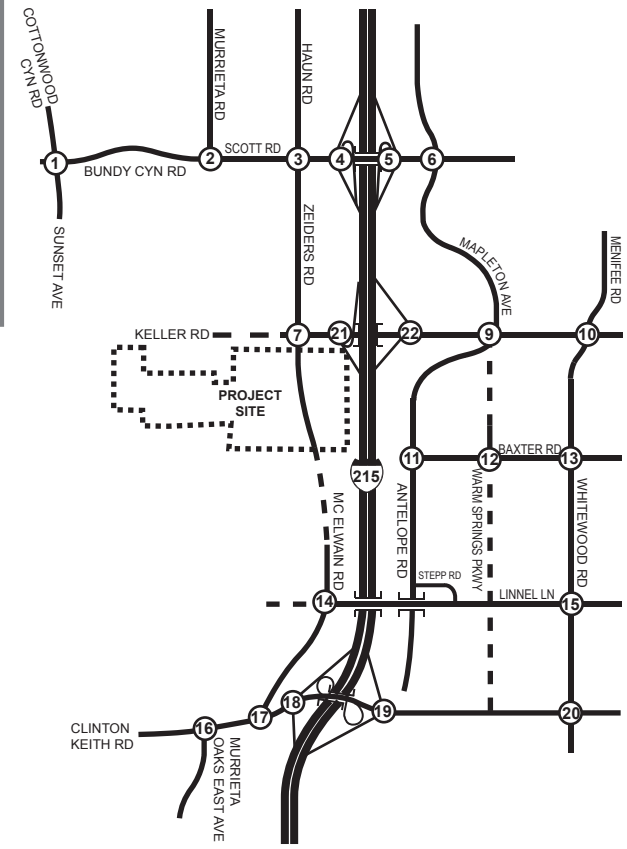
Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 43





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

Not to Scale

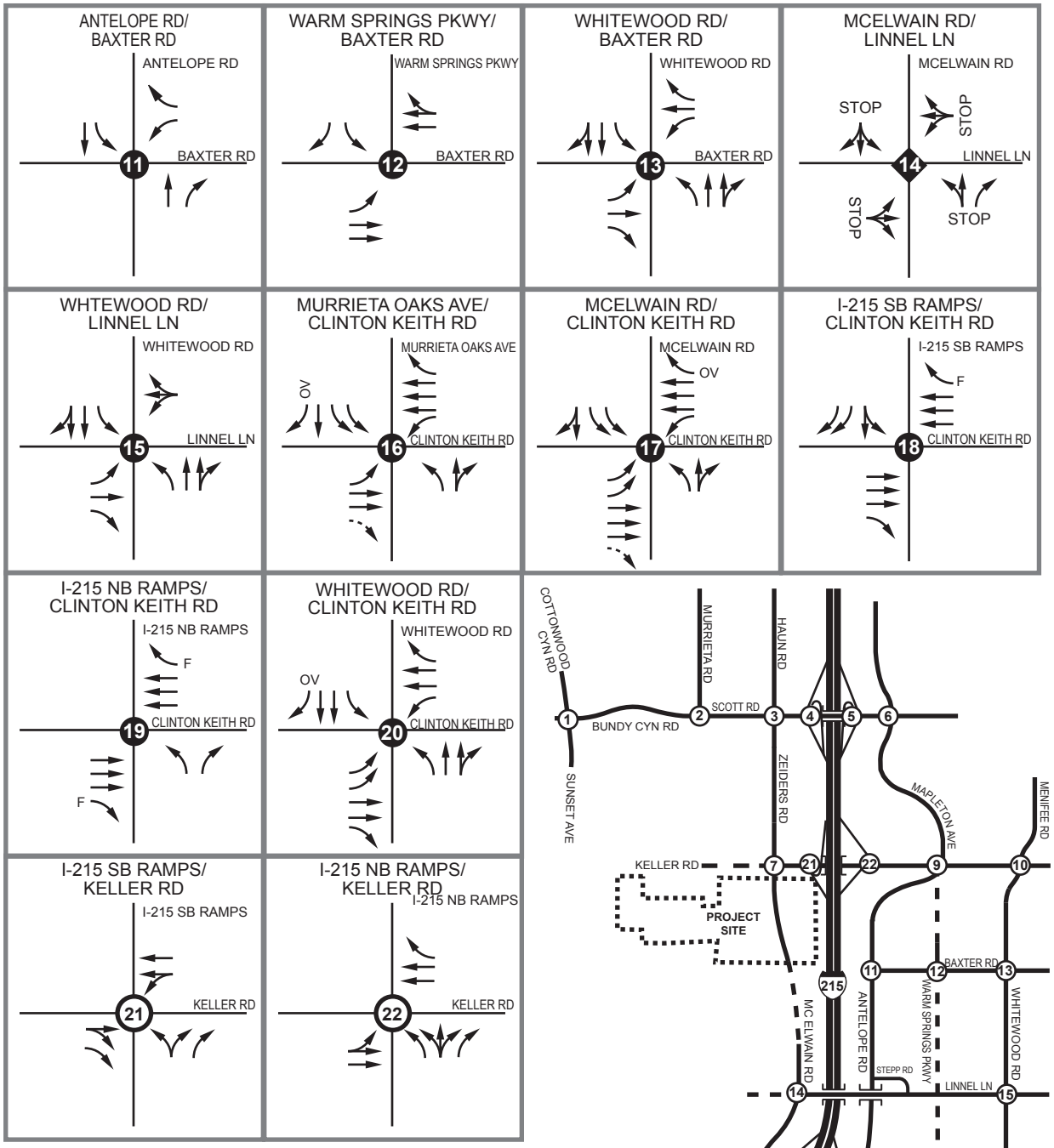
Area 1
Mitigated Forecast Year 2028
Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 44



Legend:

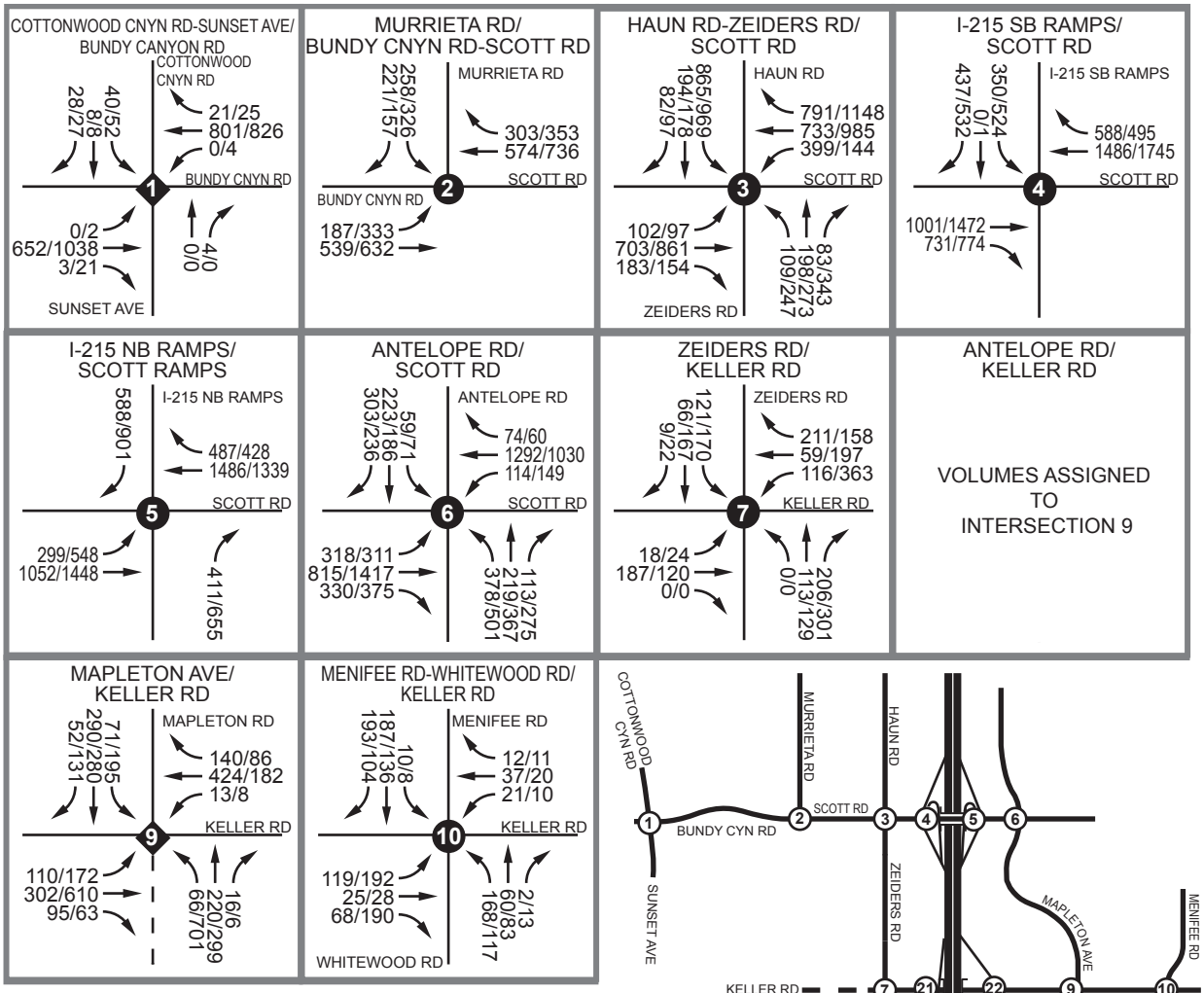
- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Mitigated Intersection

Not to Scale

Area 2
Mitigated Forecast Year 2028
Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018

Exhibit 45



Not to Scale

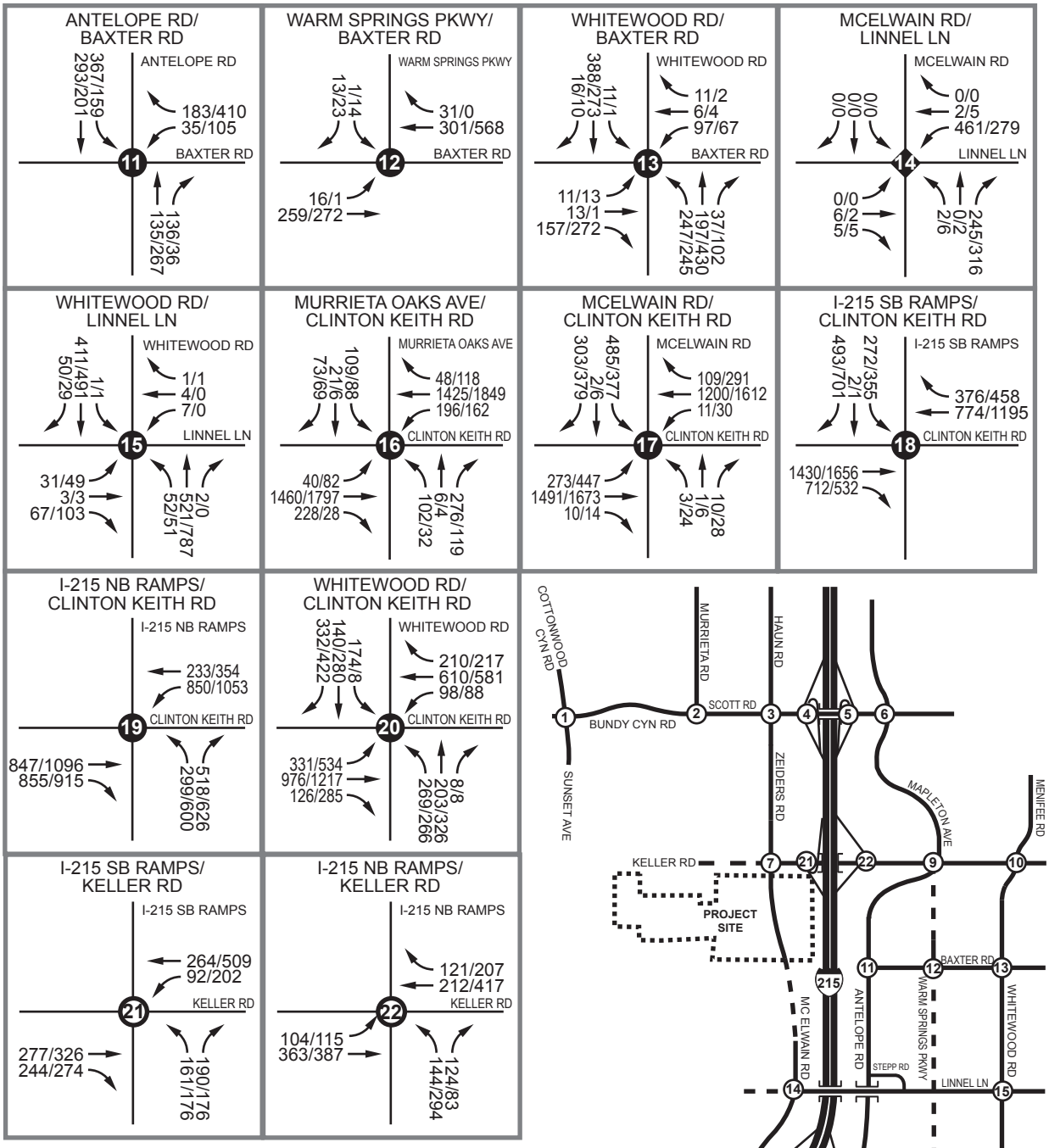
Area 1
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 46



Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

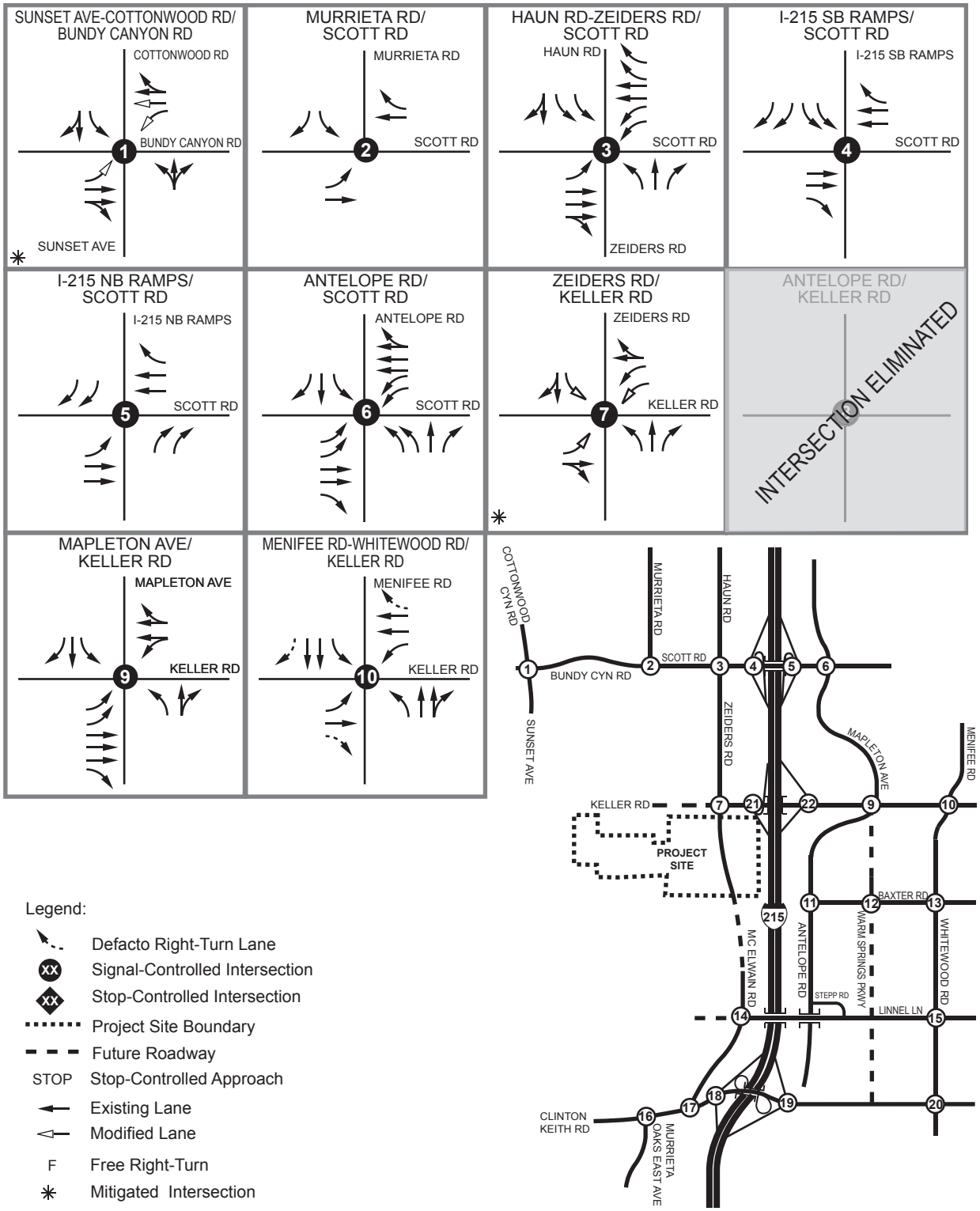
Area 2
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 47



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

Not to Scale

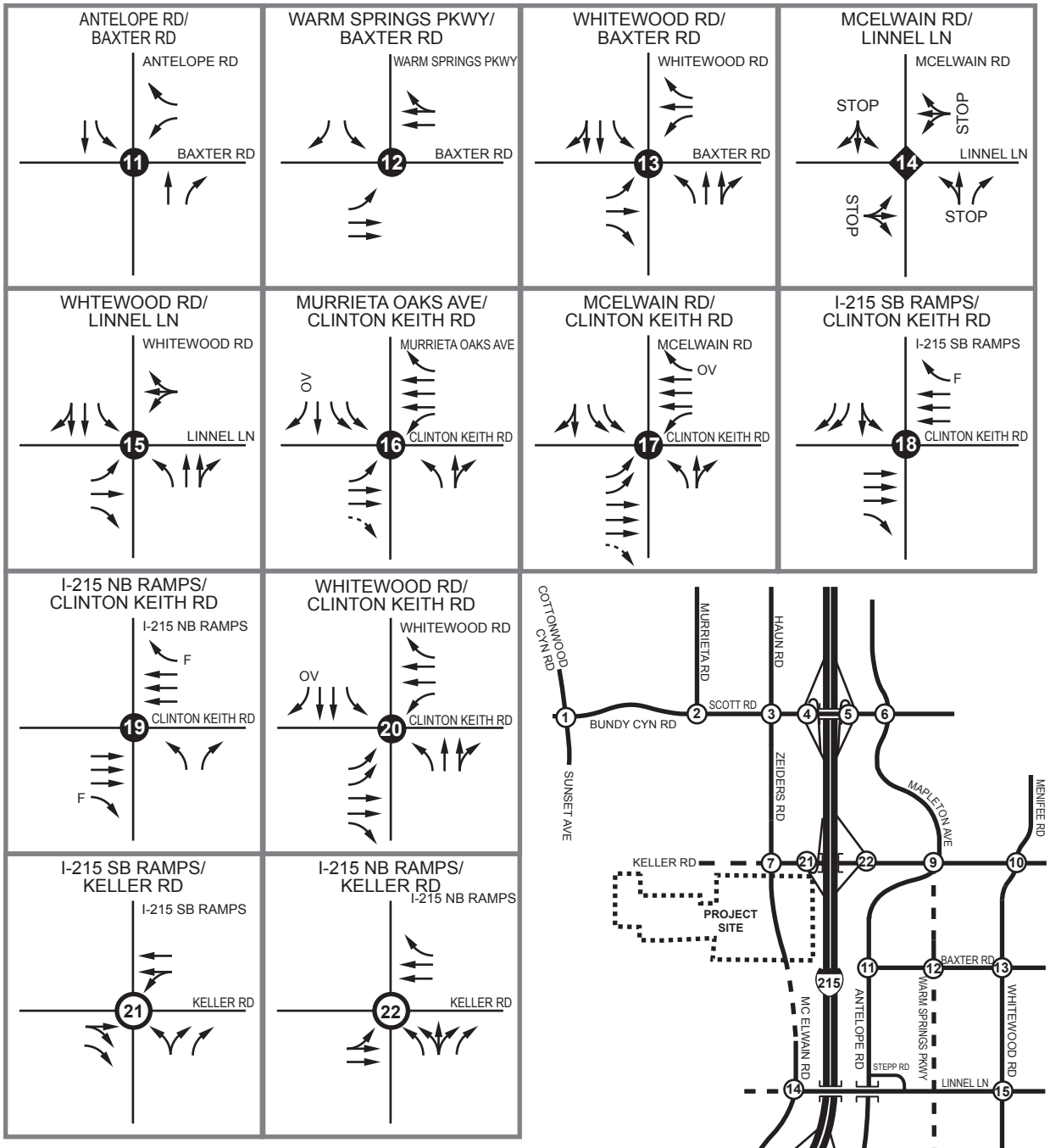
Area 1
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL

H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 48



Legend:

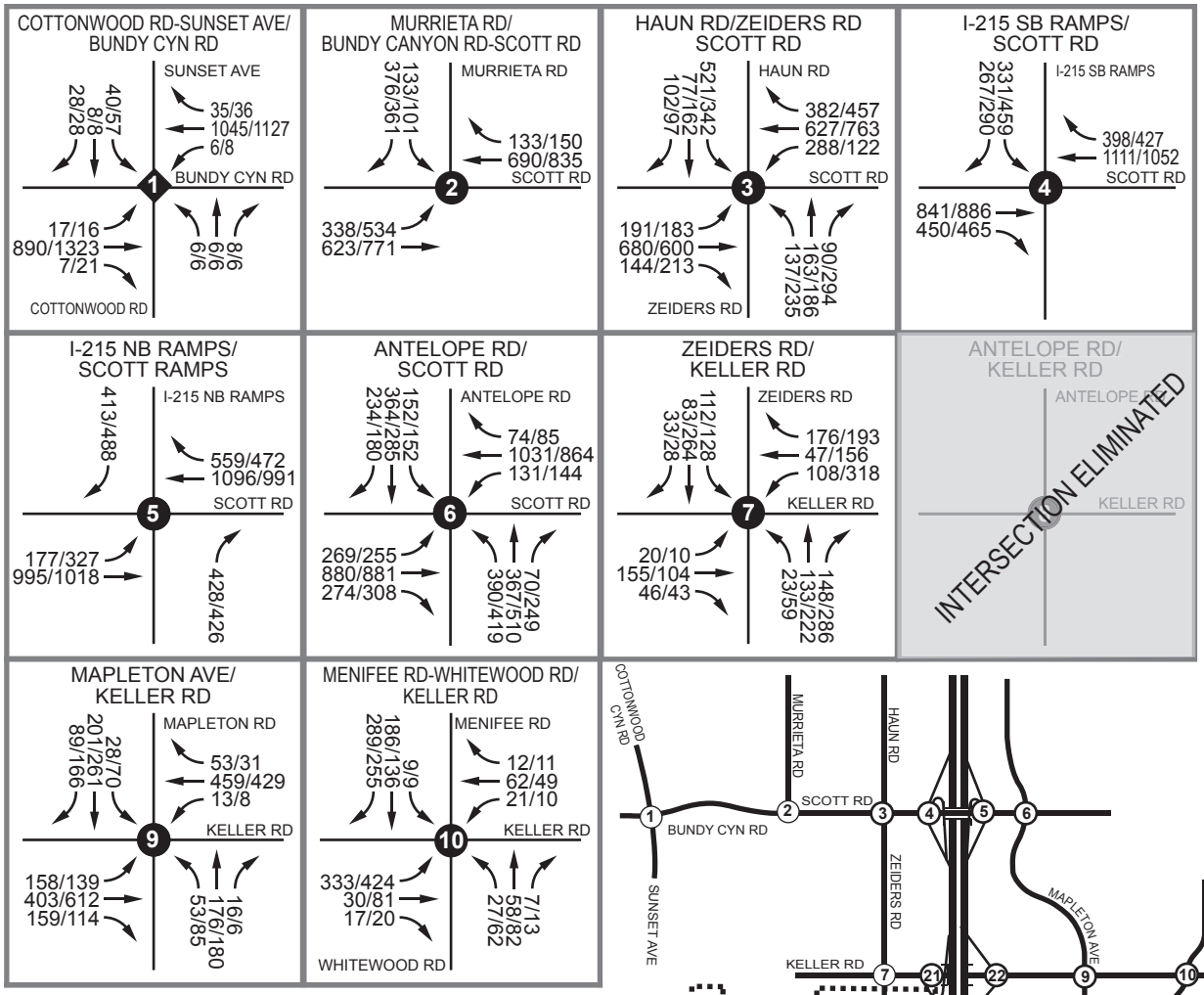
- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- XX Roundabout
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- F Free Right-Turn
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- ✳ Mitigated Intersection

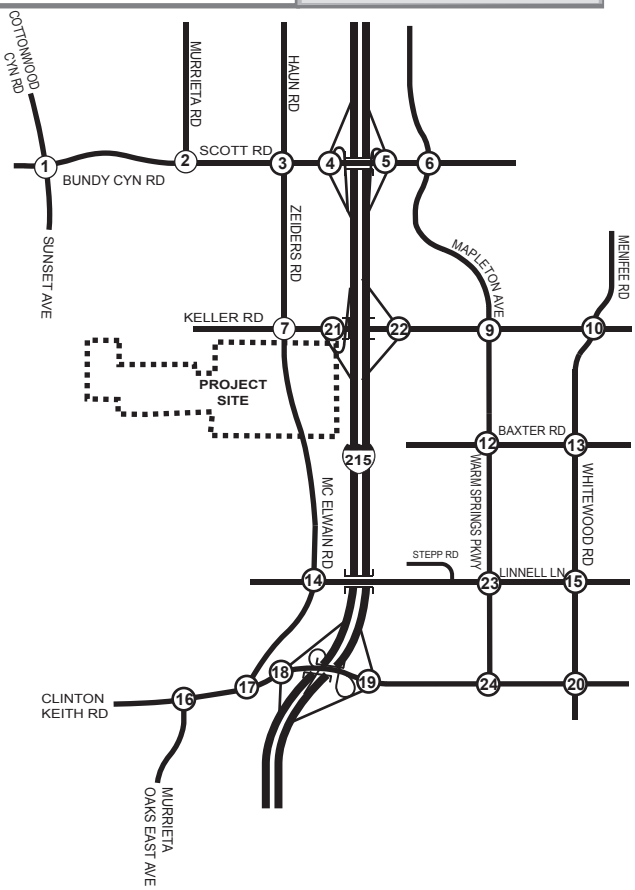
Not to Scale

Area 2
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits AUG/2018

Exhibit 49





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

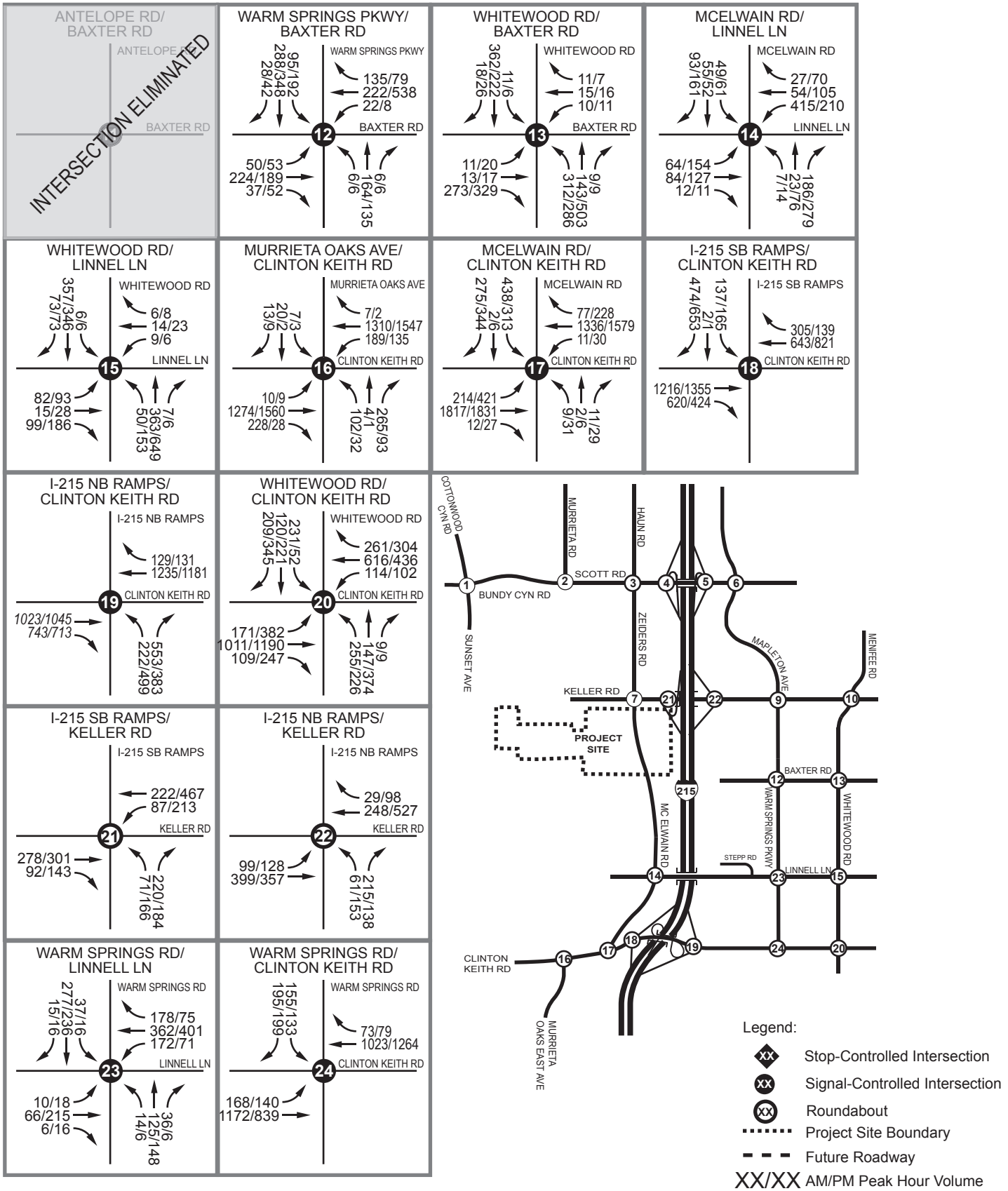
Not to Scale

Area 1
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 50



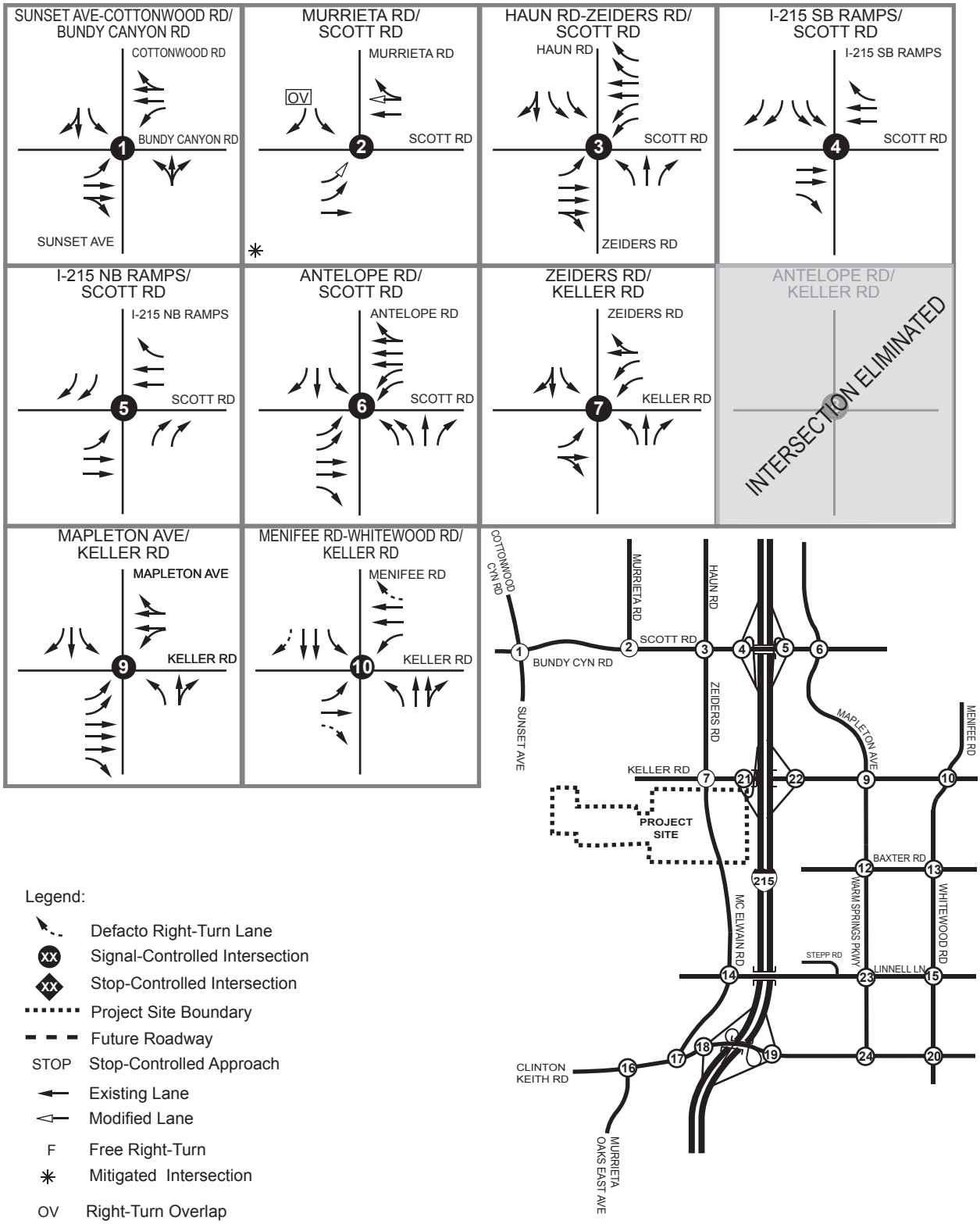
Not to Scale

Area 2
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 51



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

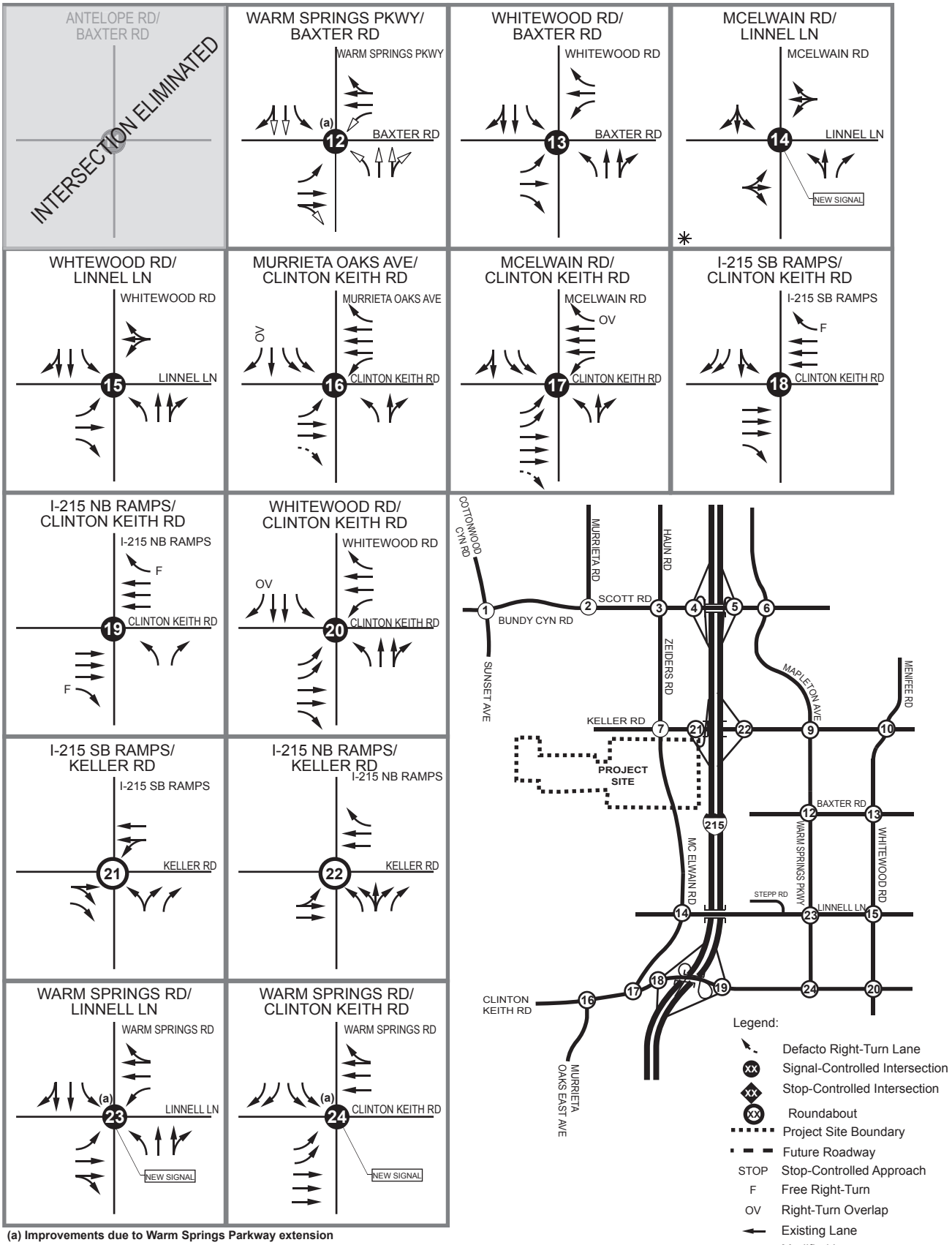
Not to Scale

Area 1
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 52



(a) Improvements due to Warm Springs Parkway extension

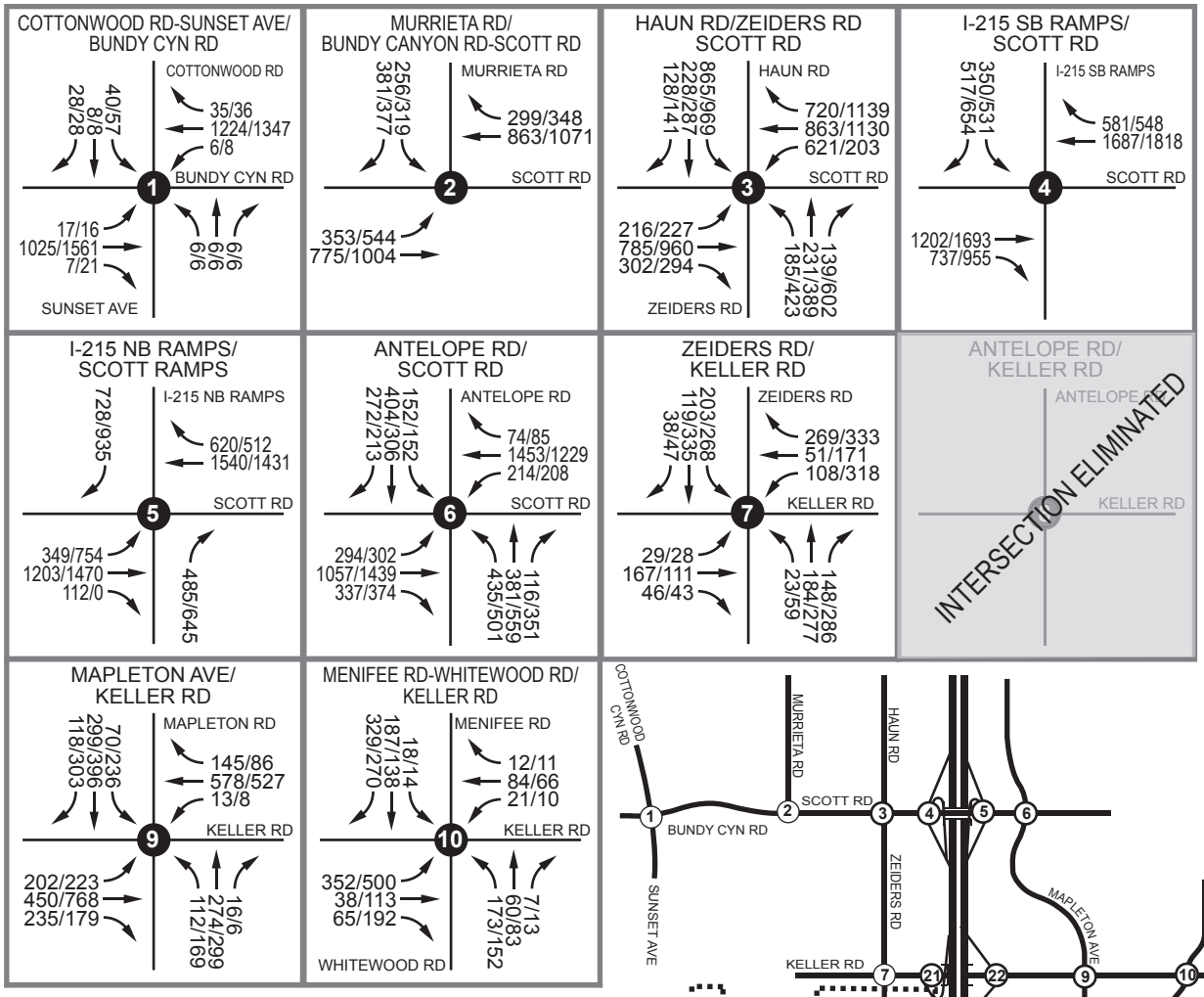
Not to Scale

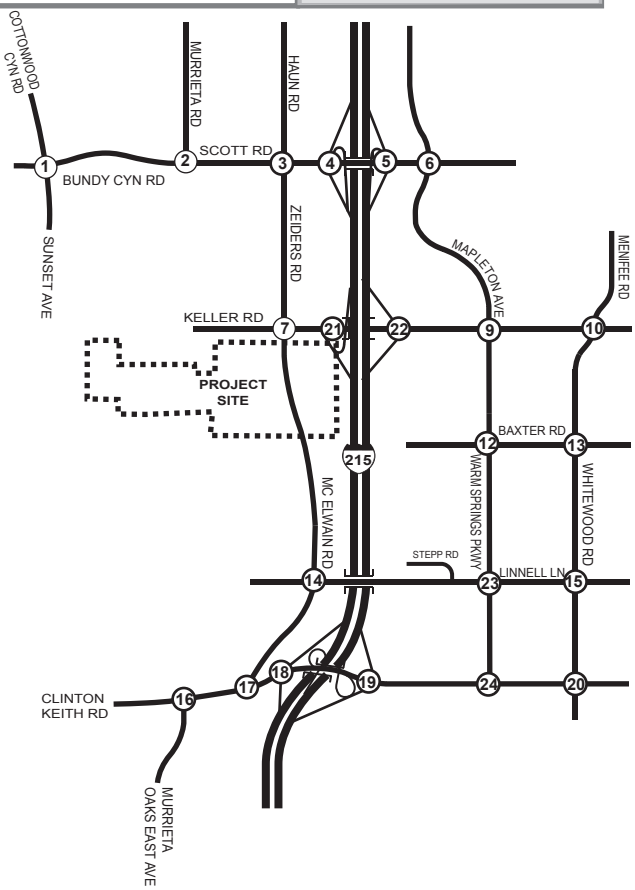
Area 2
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 53





Legend:

- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

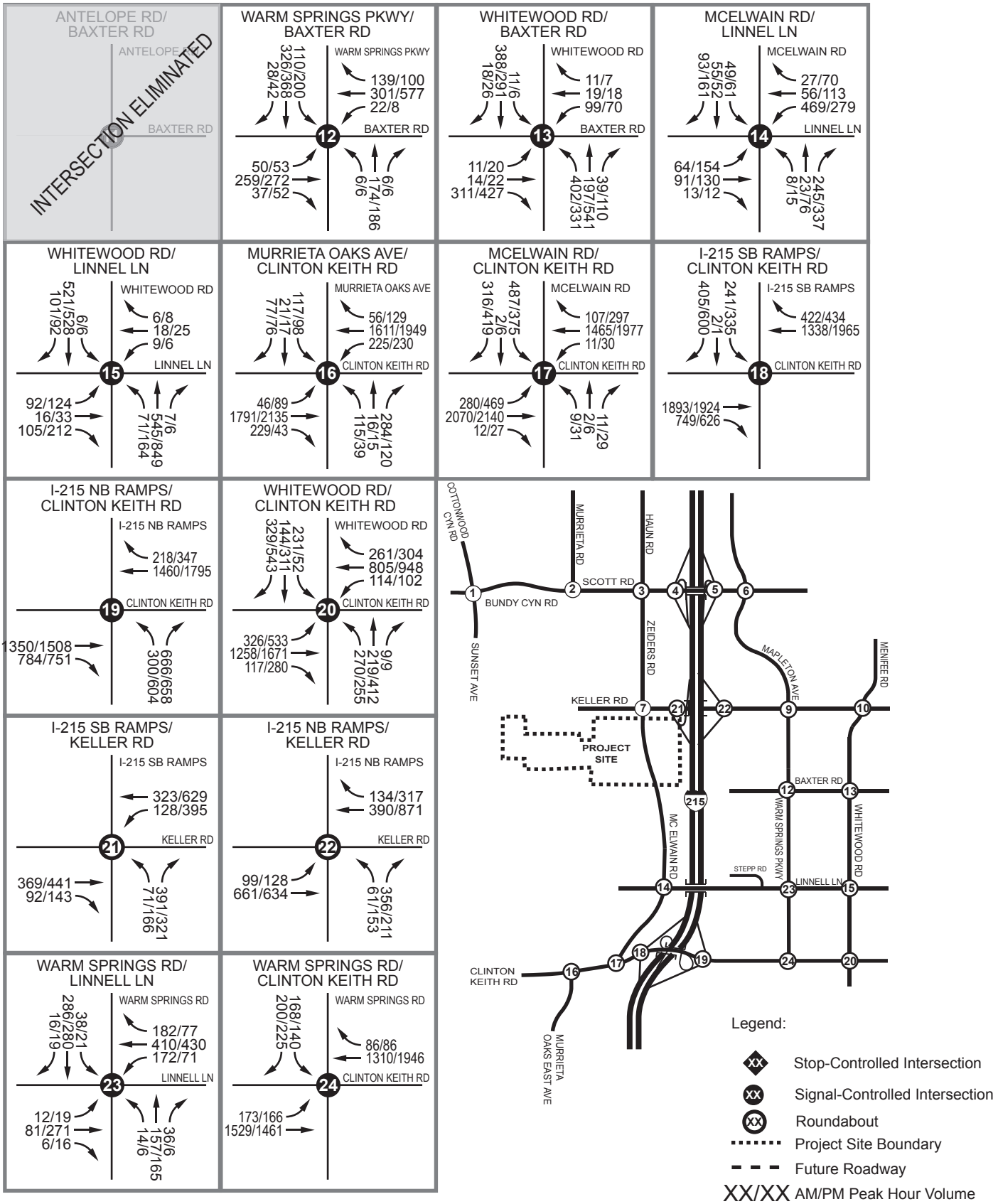
Not to Scale

Area 1
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 54



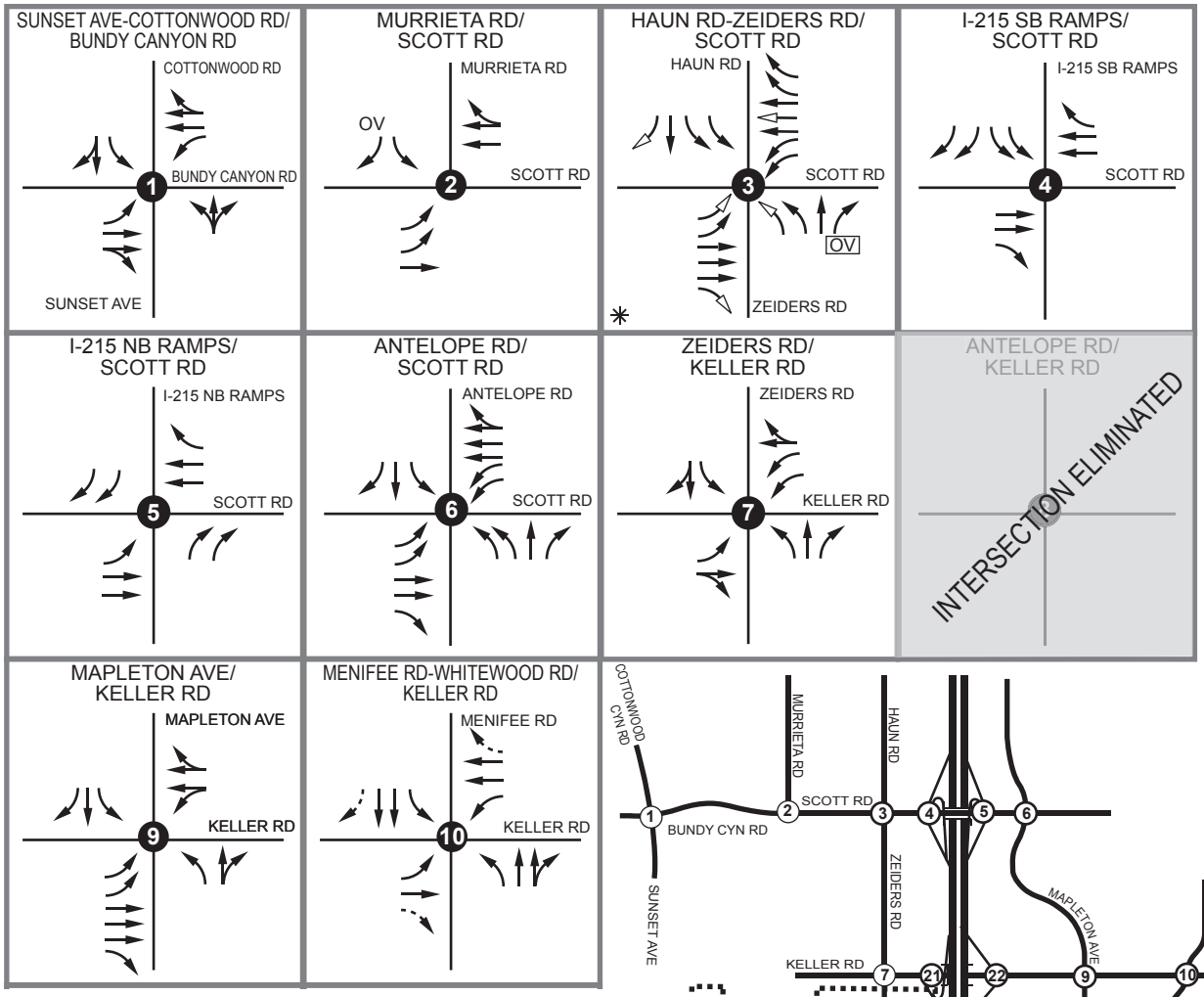
Not to Scale

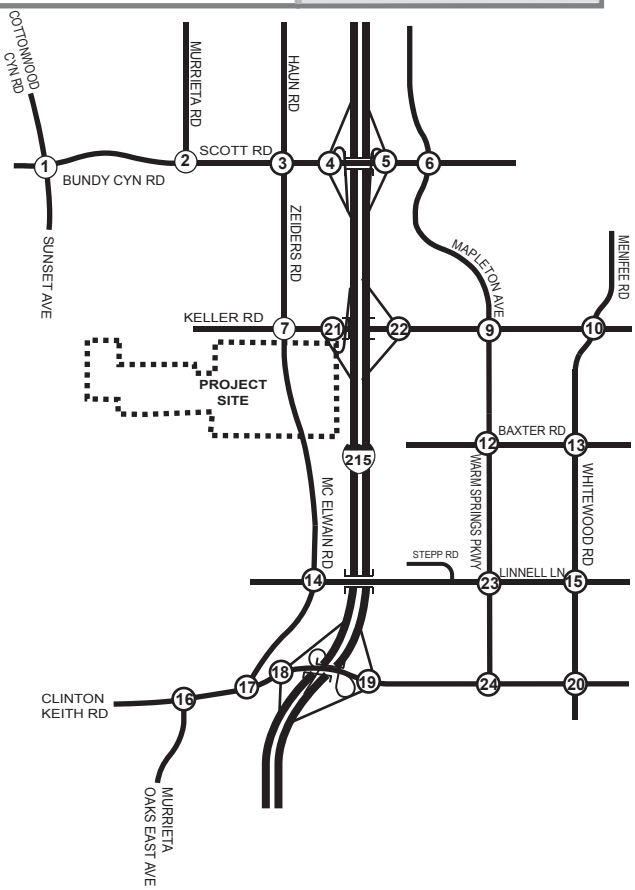
Area 2
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 55





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- ✳ Mitigated Intersection
- OV Right-Turn Overlap

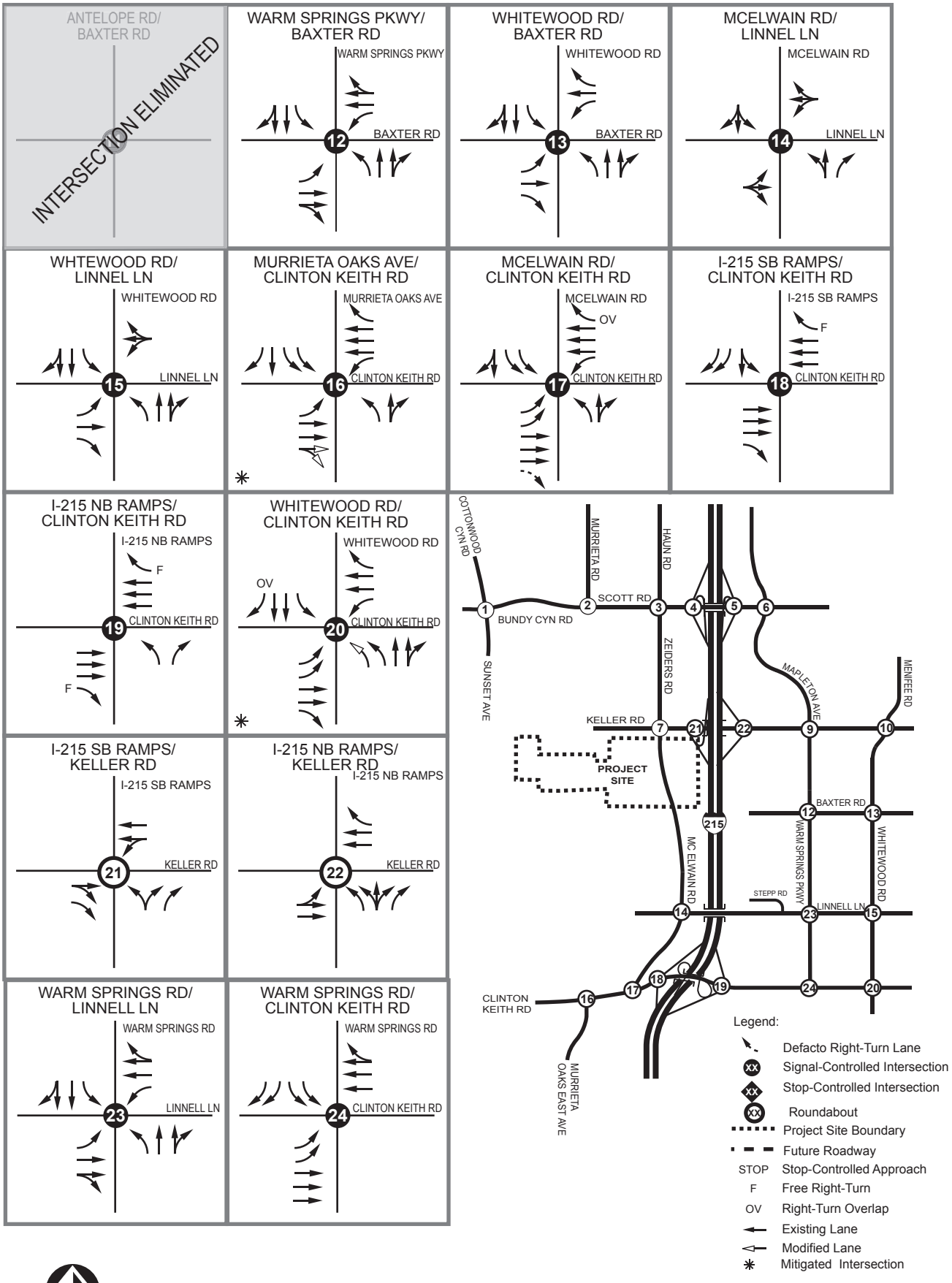
Not to Scale

Area 1
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 56



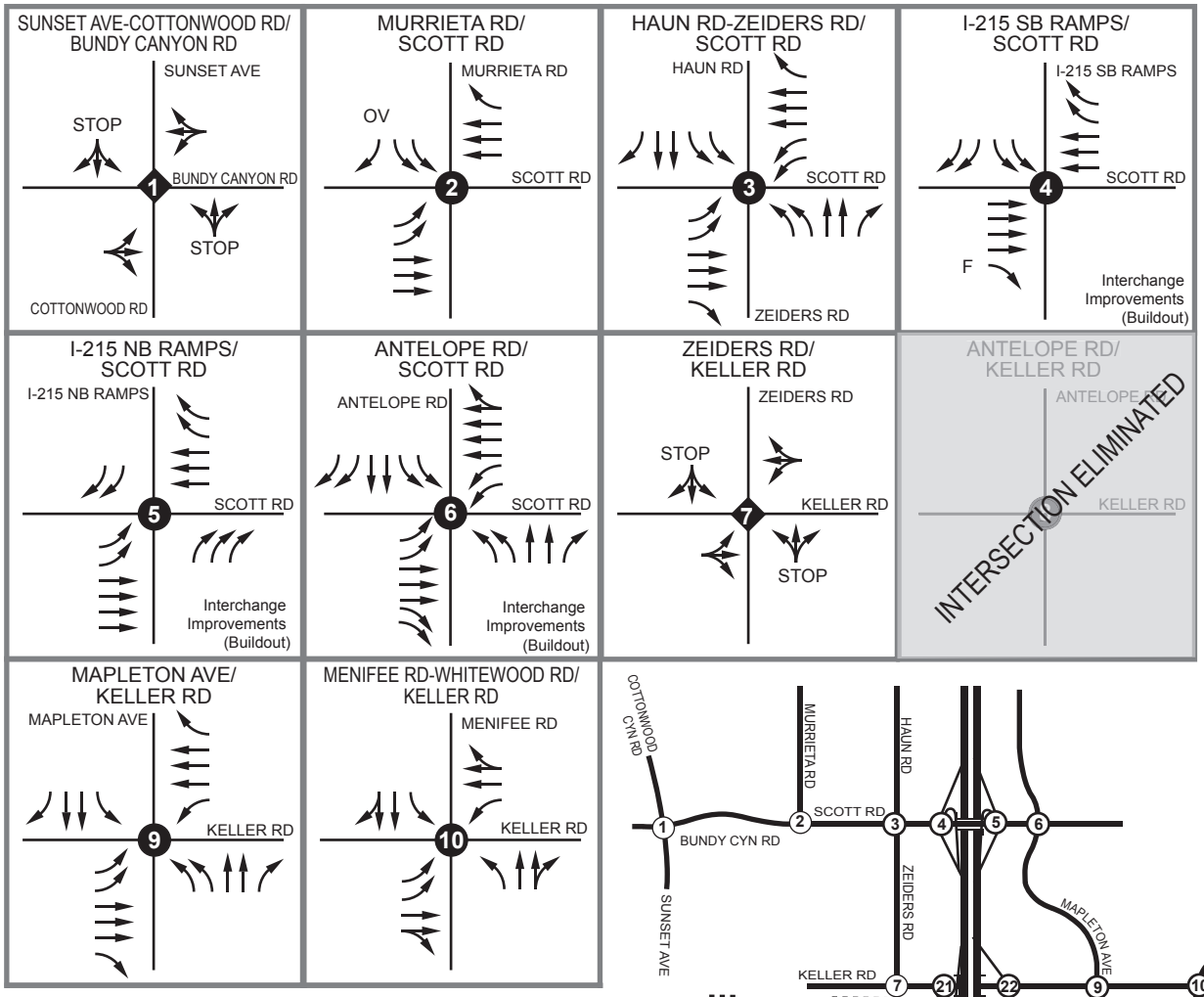
Not to Scale

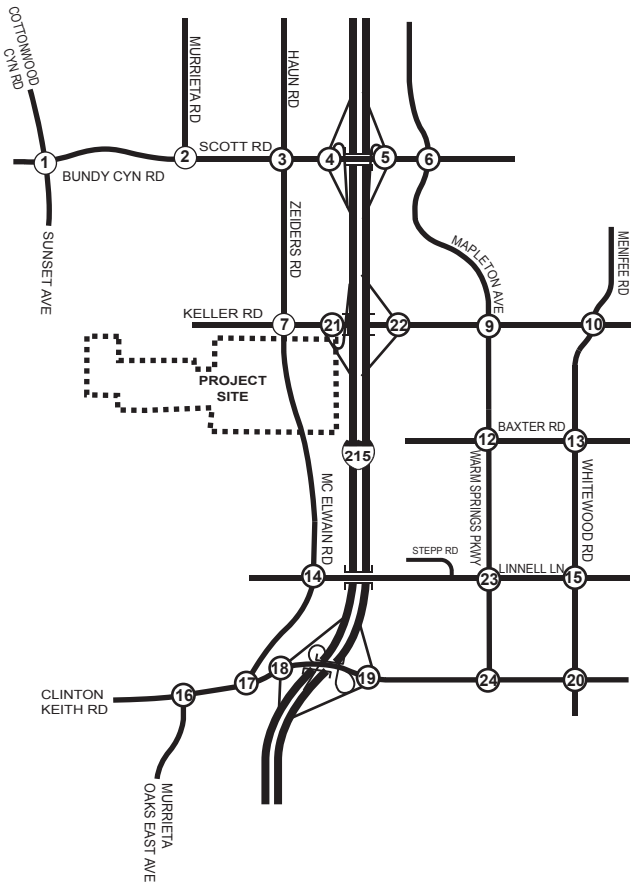
Area 2
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 57





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap Phase
- F Free Right-Turn
- Existing Lane
- Modified Lane

Not to Scale

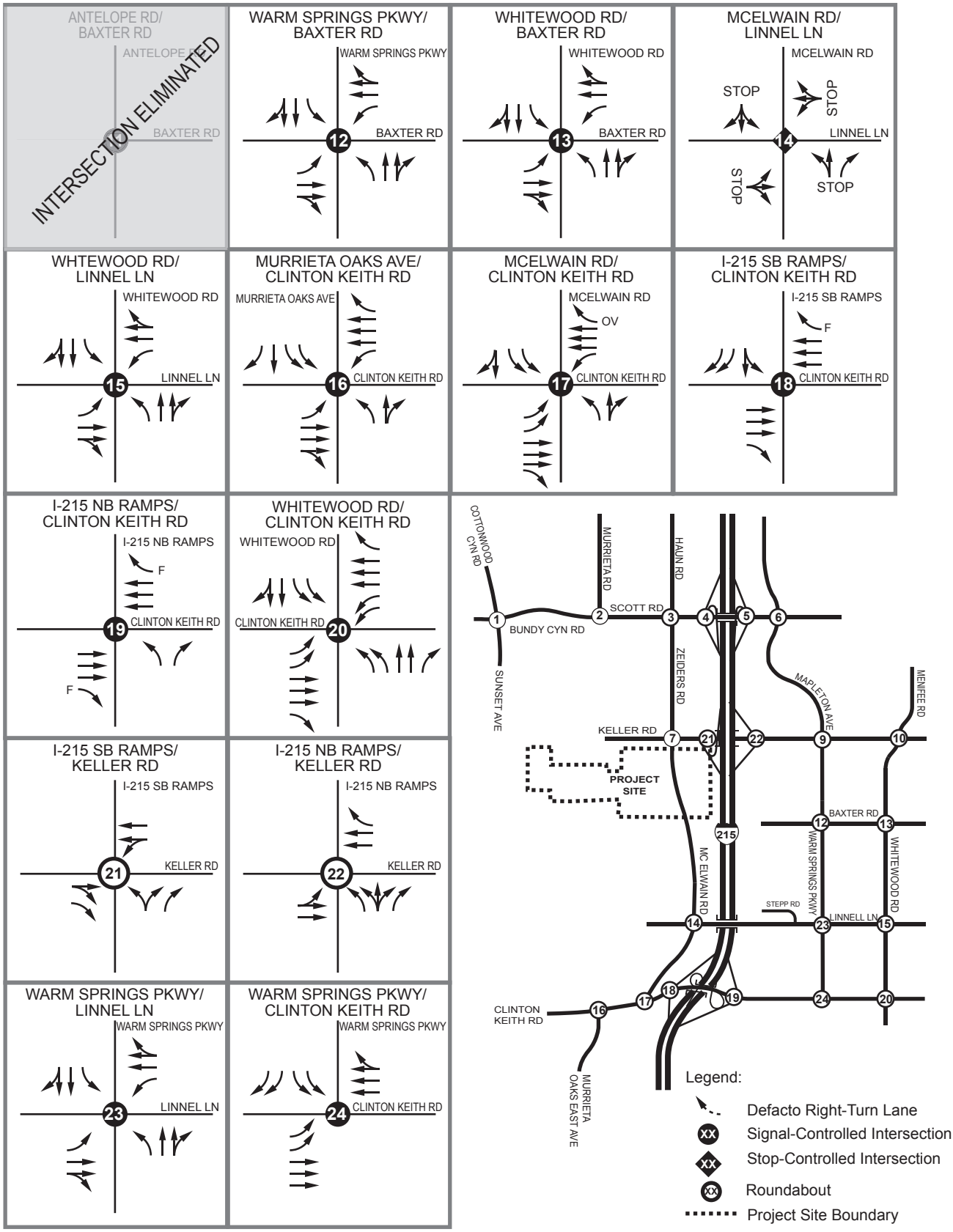
Area 1

Forecast Year 2035 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 58



Not to Scale

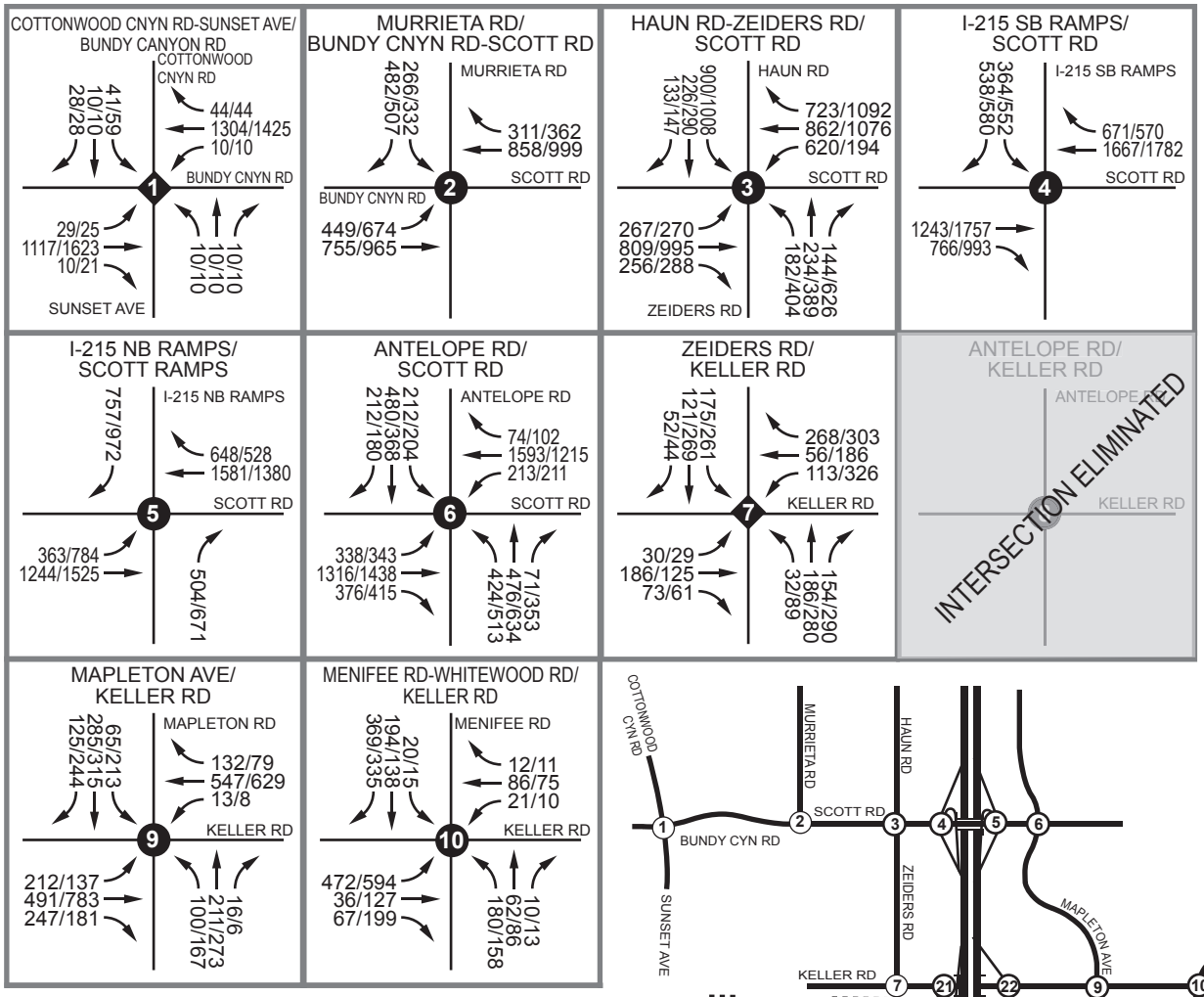
Area 2

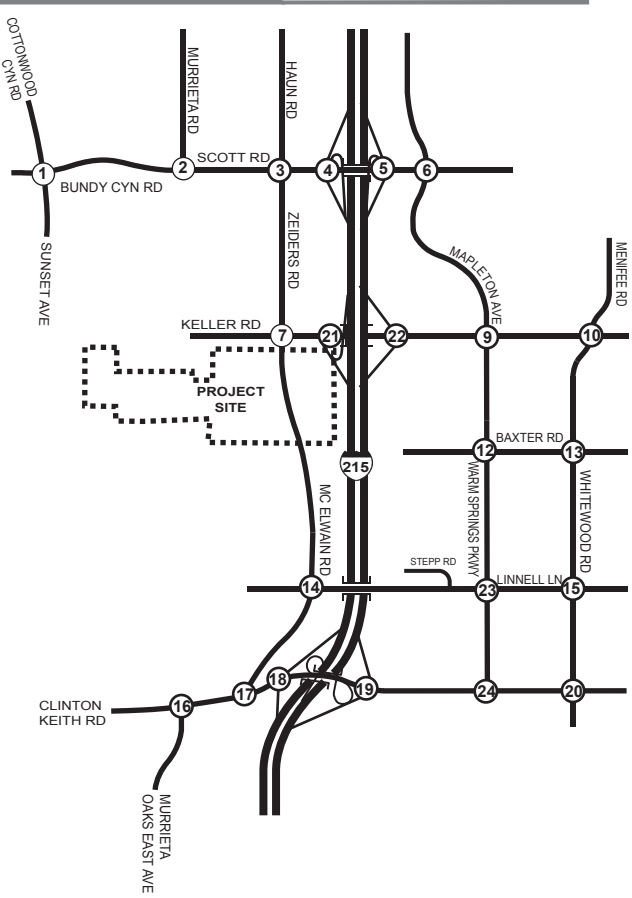
Forecast Year 2035 Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 59





Legend:

- XX Stop-Controlled Intersection
- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume
- XX Stop-Controlled Intersection

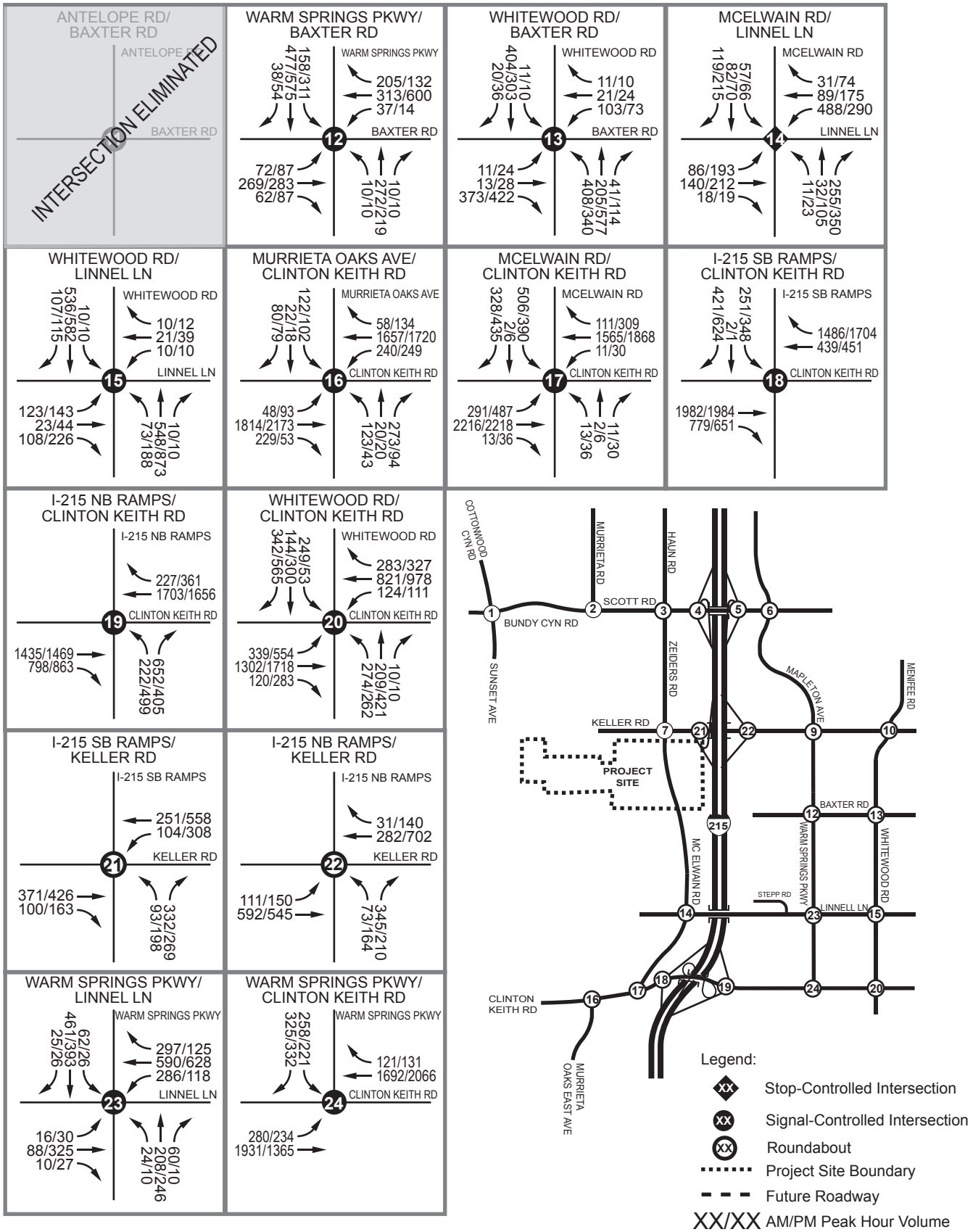
Not to Scale

Area 1
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 60



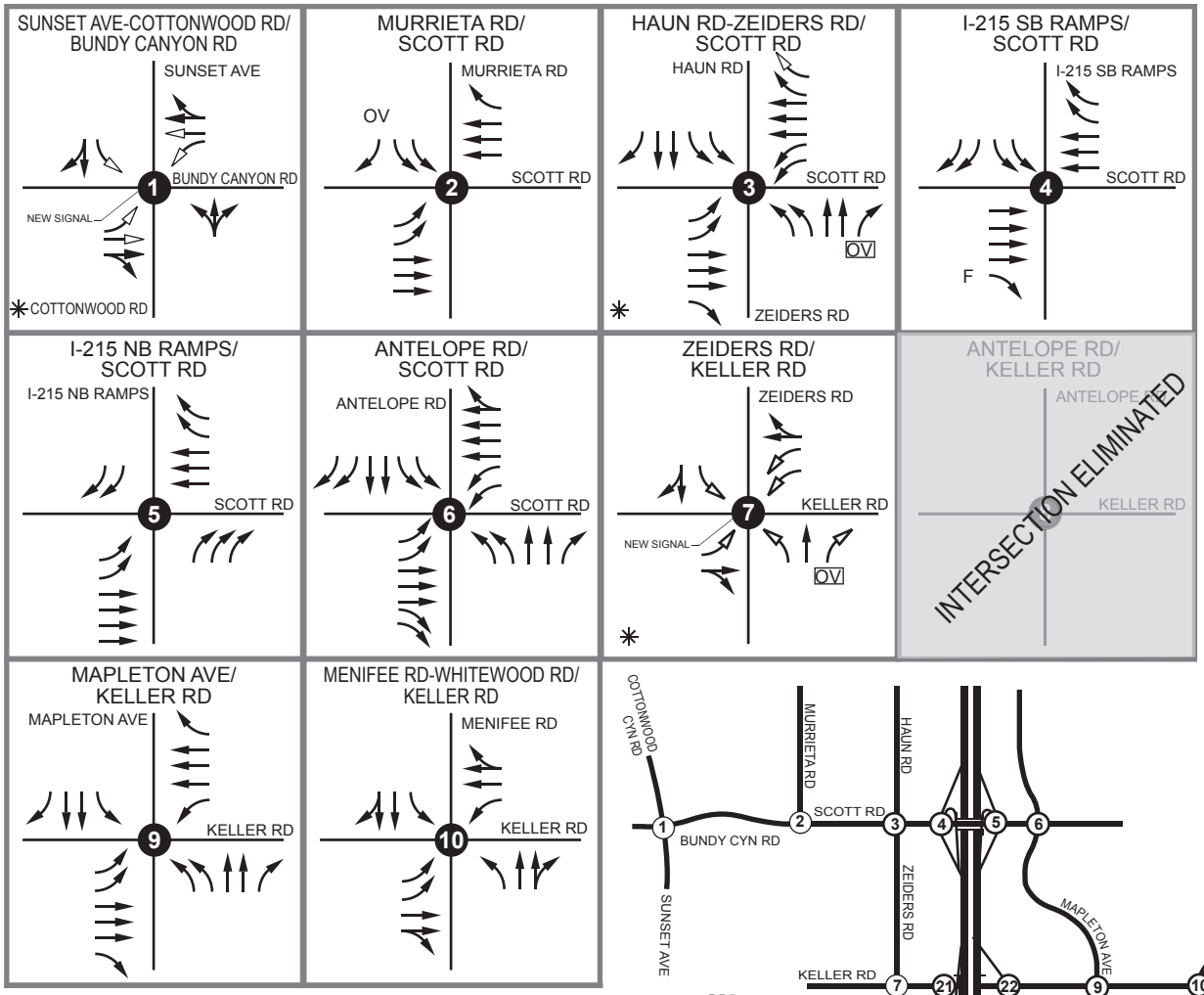
Not to Scale

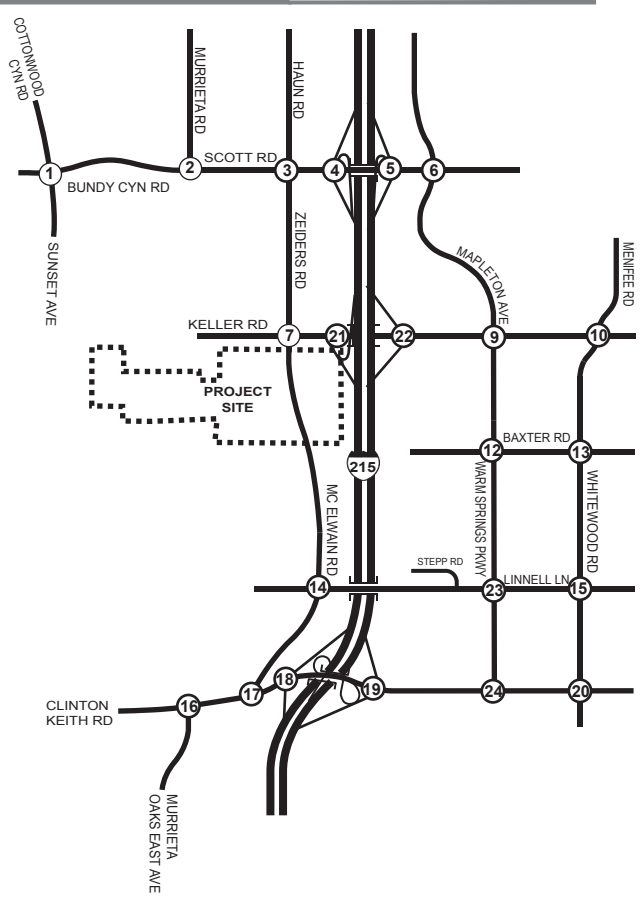
Area 2
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions
AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 61





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap Phase
- F Free Right-Turn
- Existing Lane
- Modified Lane
- Mitigated Intersection

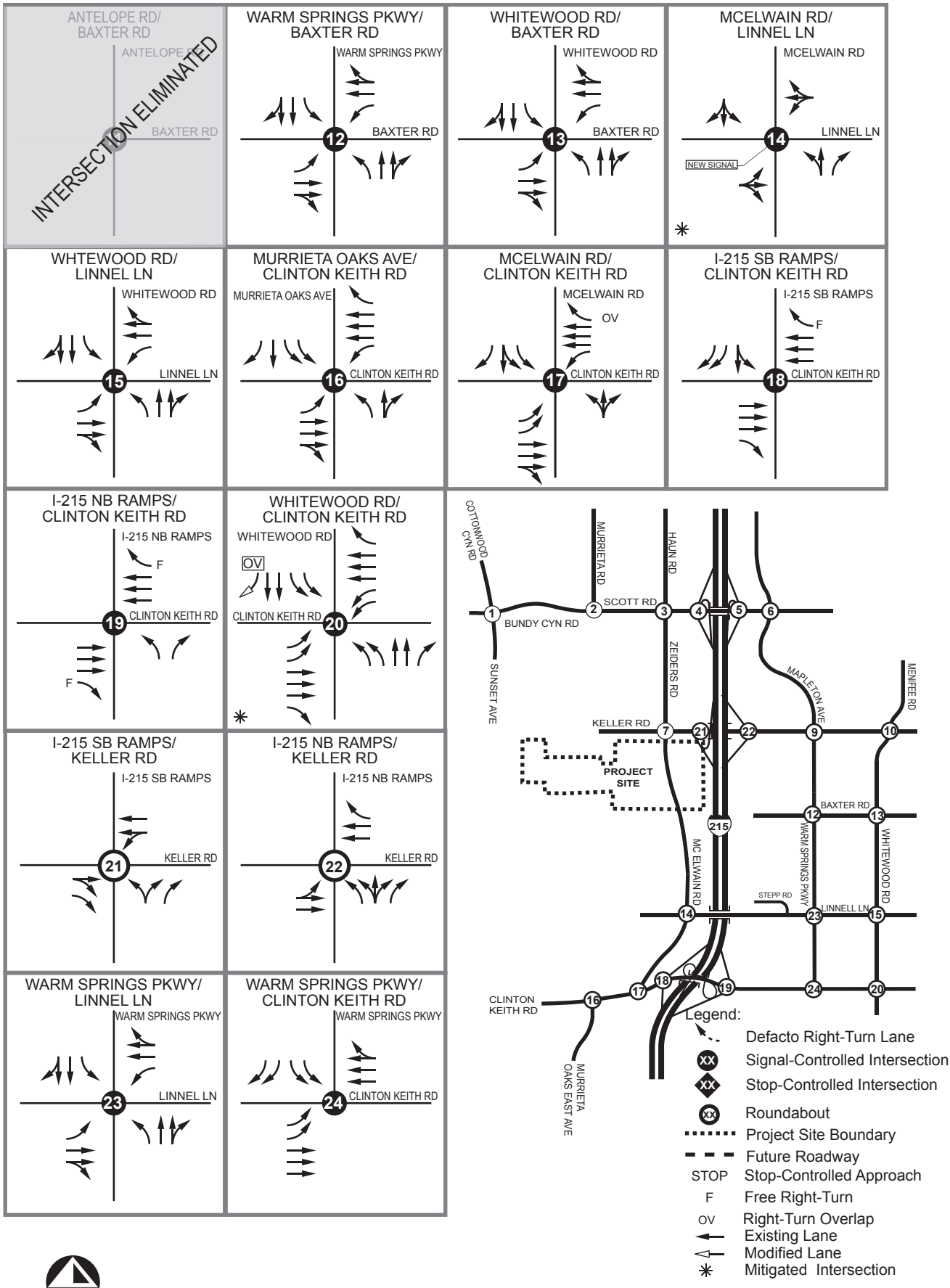
Not to Scale

Area 1
Mitigated Forecast Year 2035
Existing Plus Ambient Growth Plus Project Buildout
Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 62



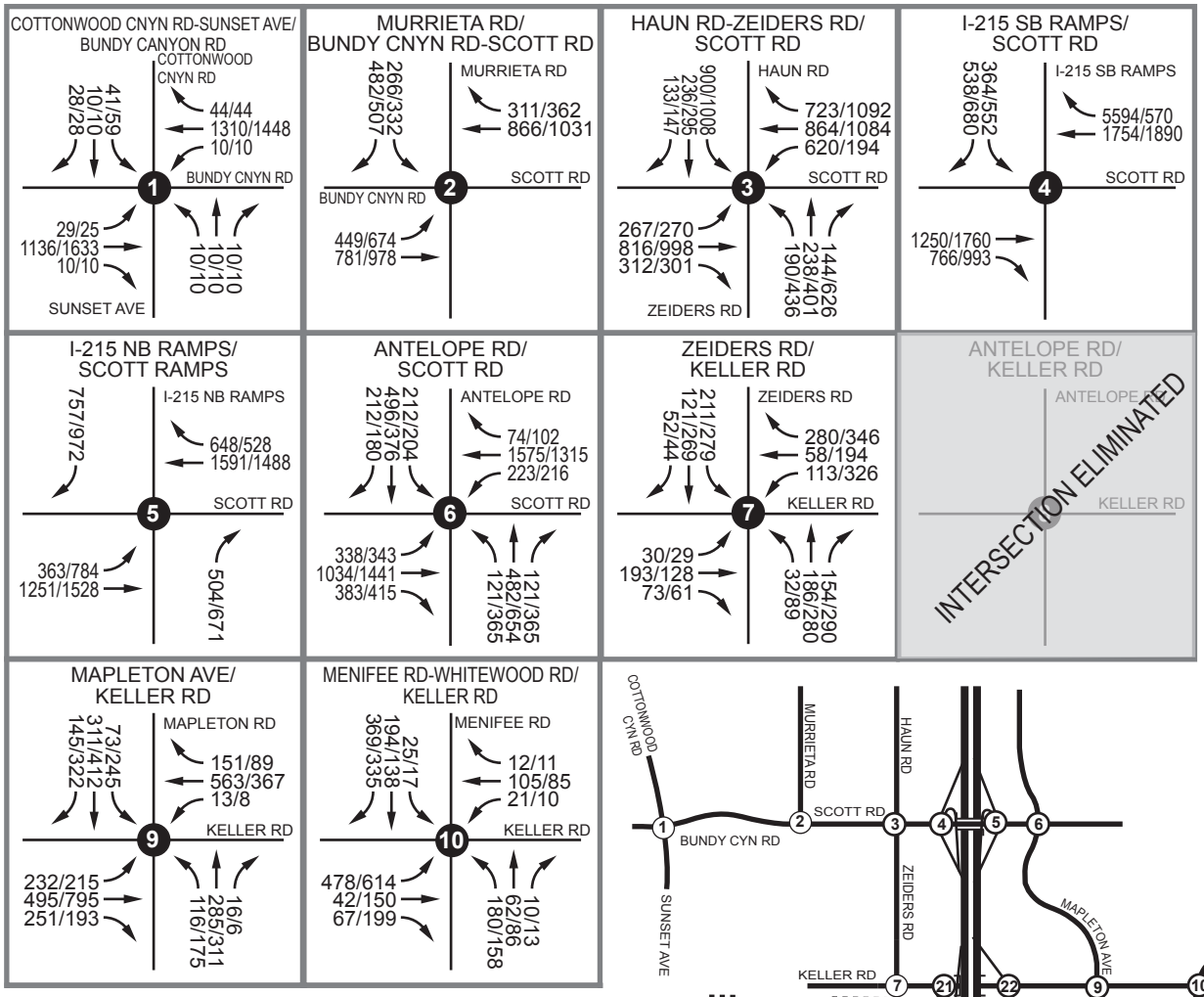
Not to Scale

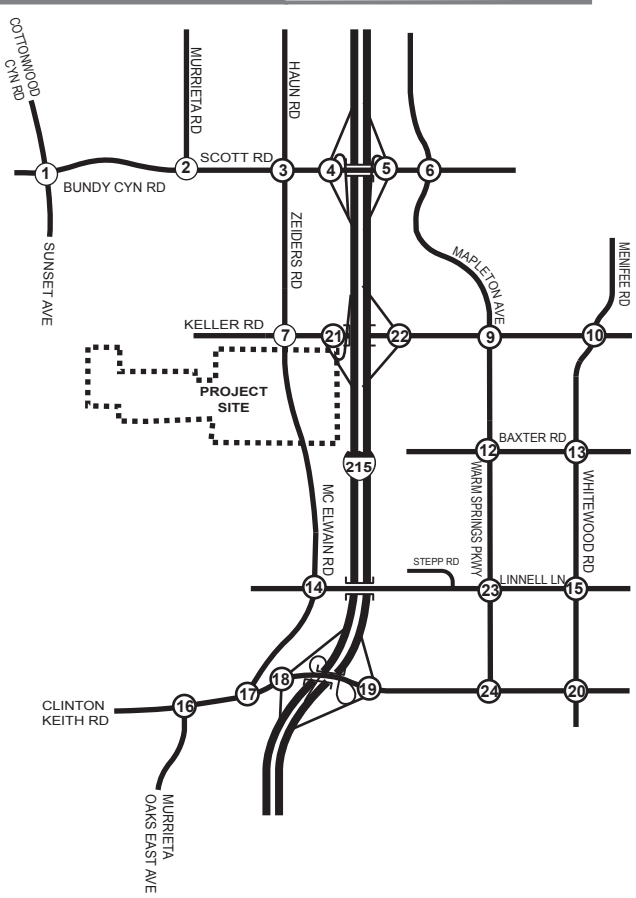
Area 2
Mitigated Forecast Year 2035
Existing Plus Ambient Growth Plus Project Buildout
Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 63





Legend:

- XX Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

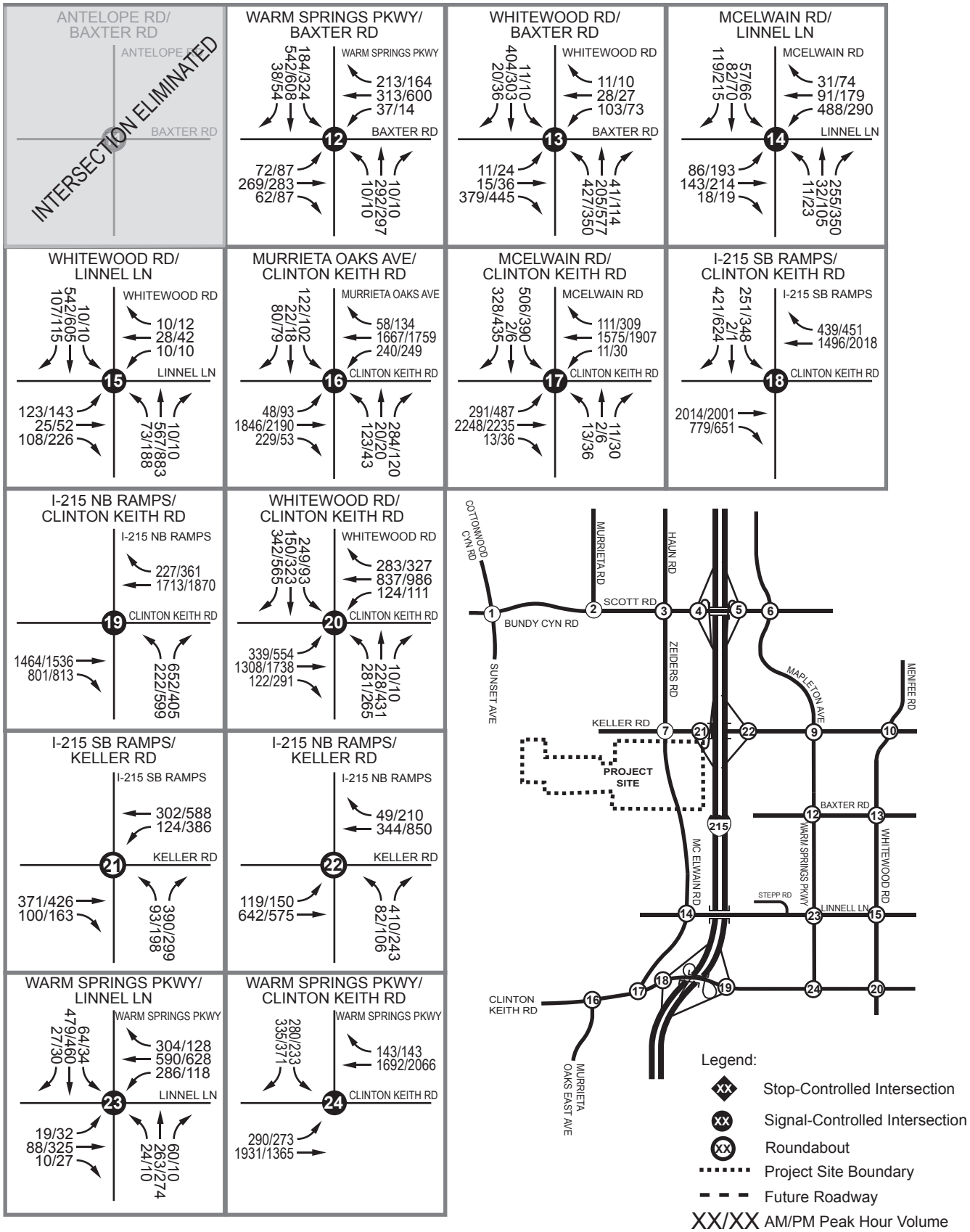
Not to Scale

Area 1
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

MAY/2018

Exhibit 64



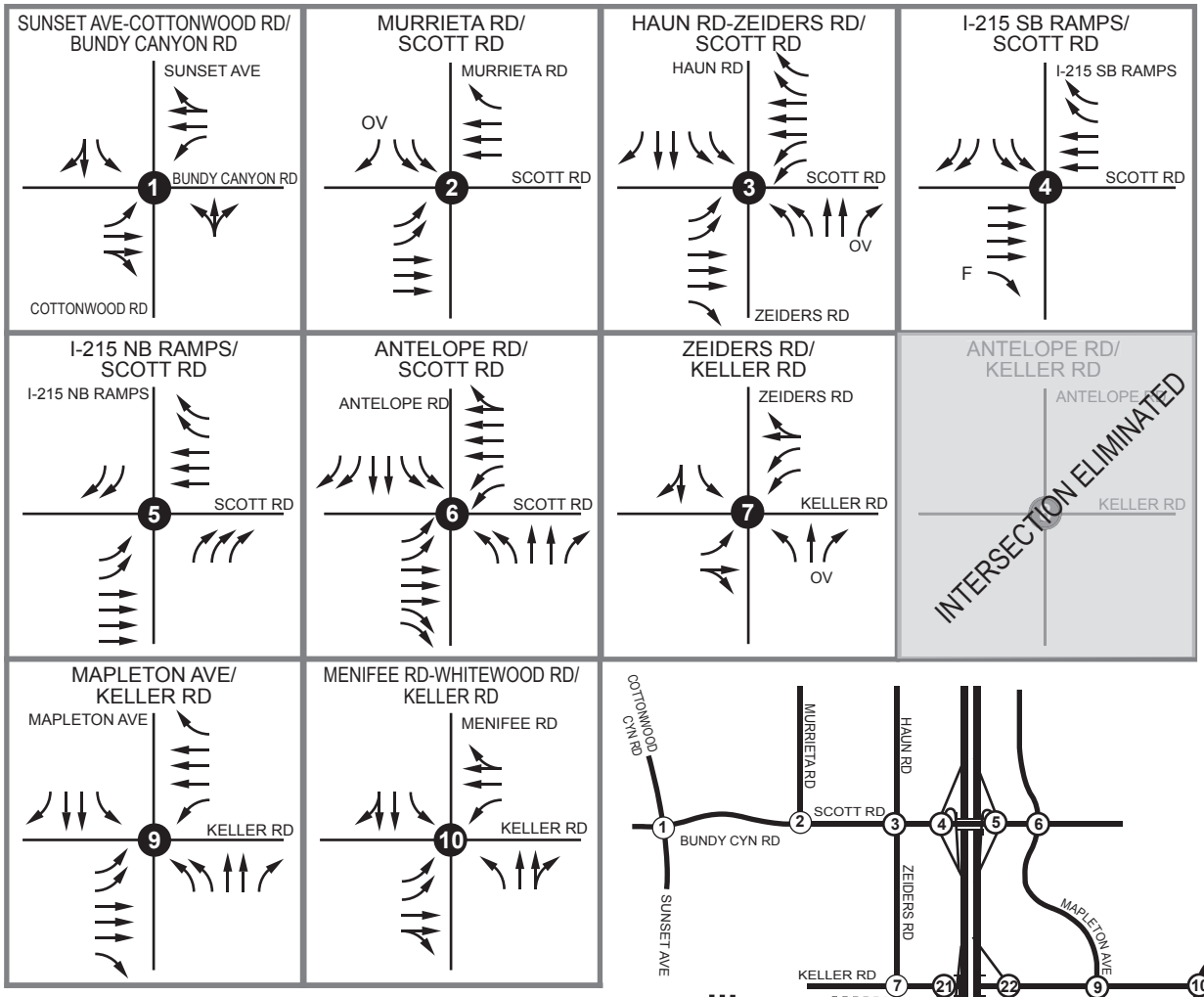
Not to Scale

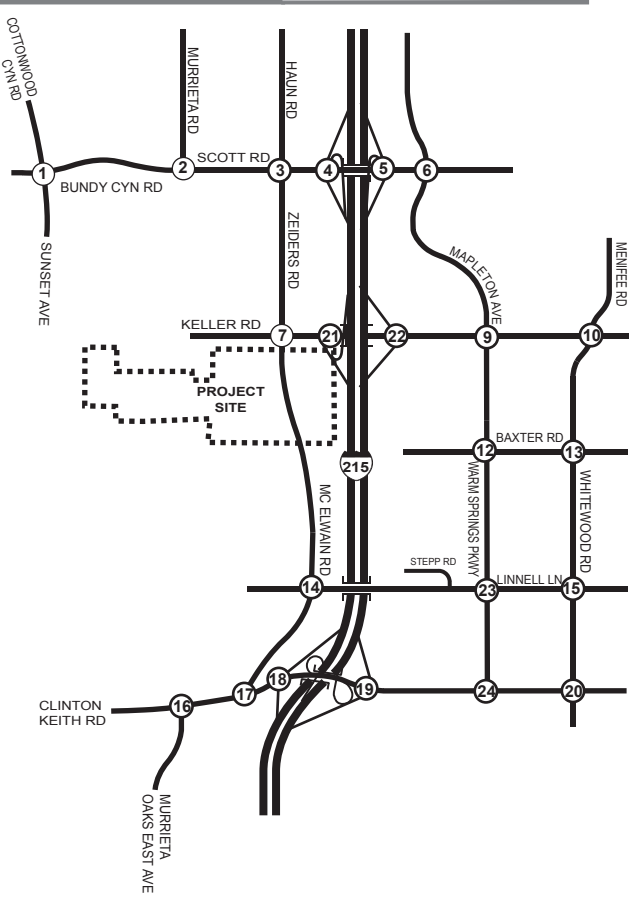
Area 2
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions AM & PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 65





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap Phase
- F Free Right-Turn
- Existing Lane
- Modified Lane

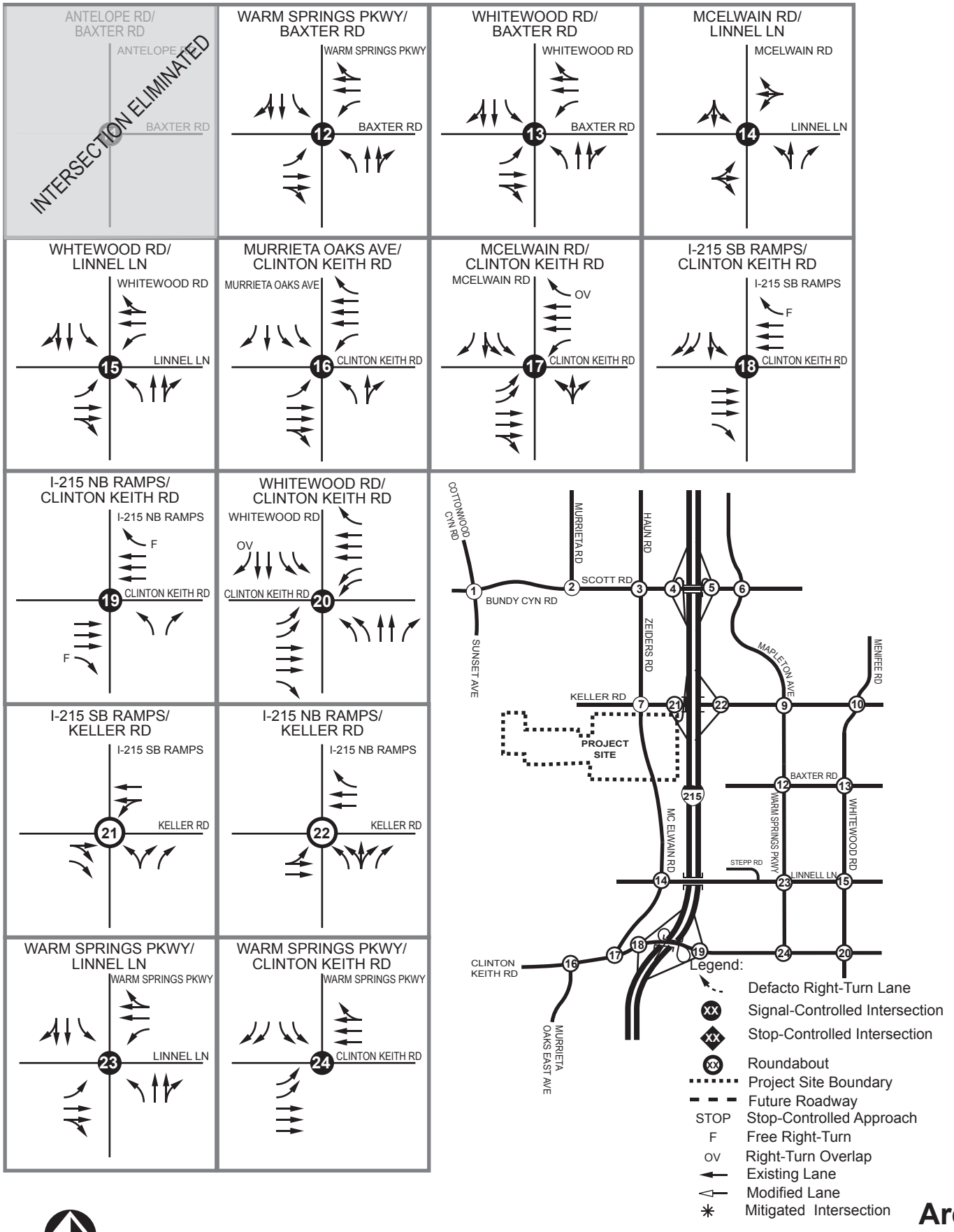
Not to Scale

Area 1
Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 66



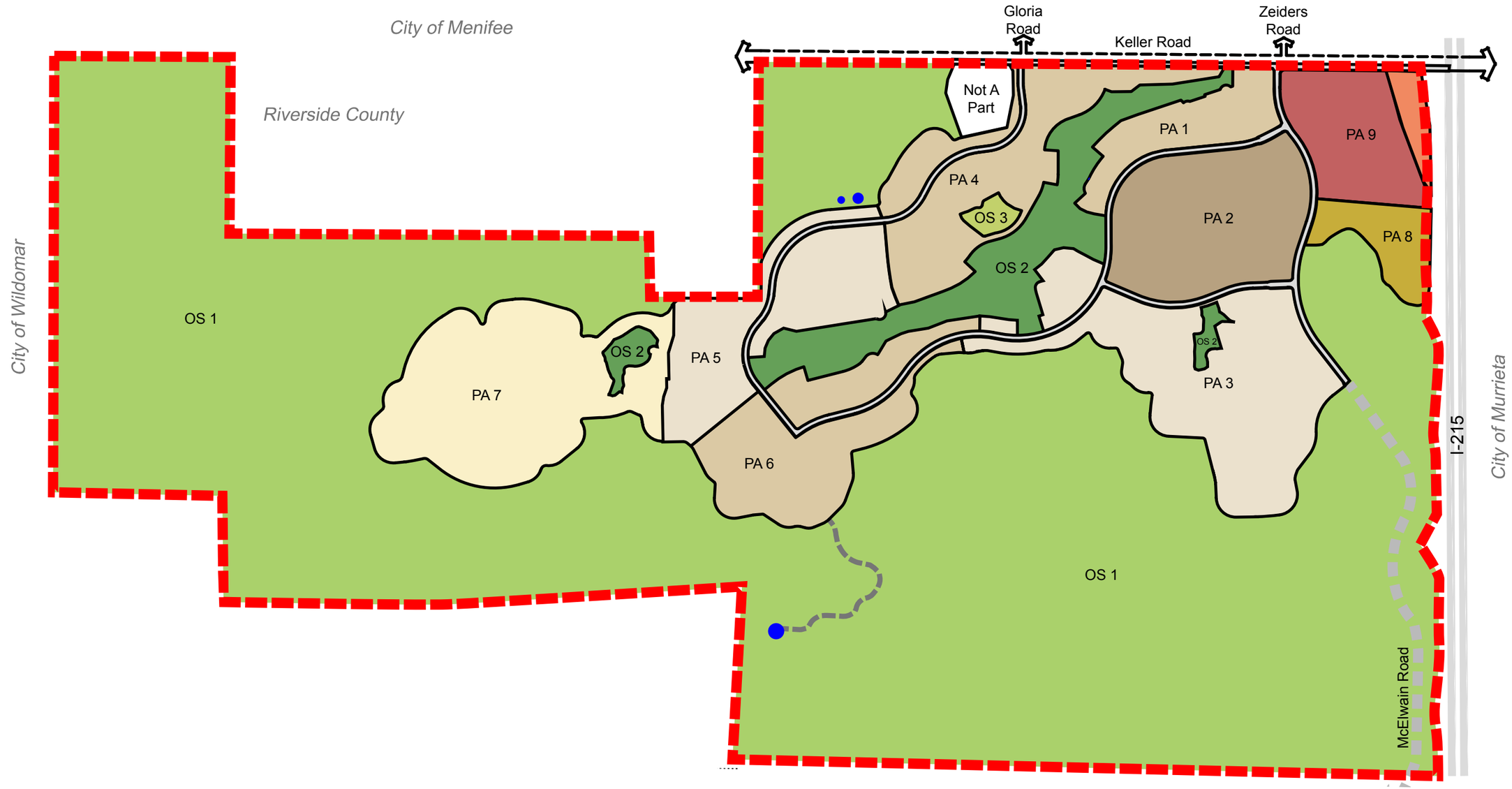
Not to Scale

Area 2
Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

AUG/2018

Exhibit 67



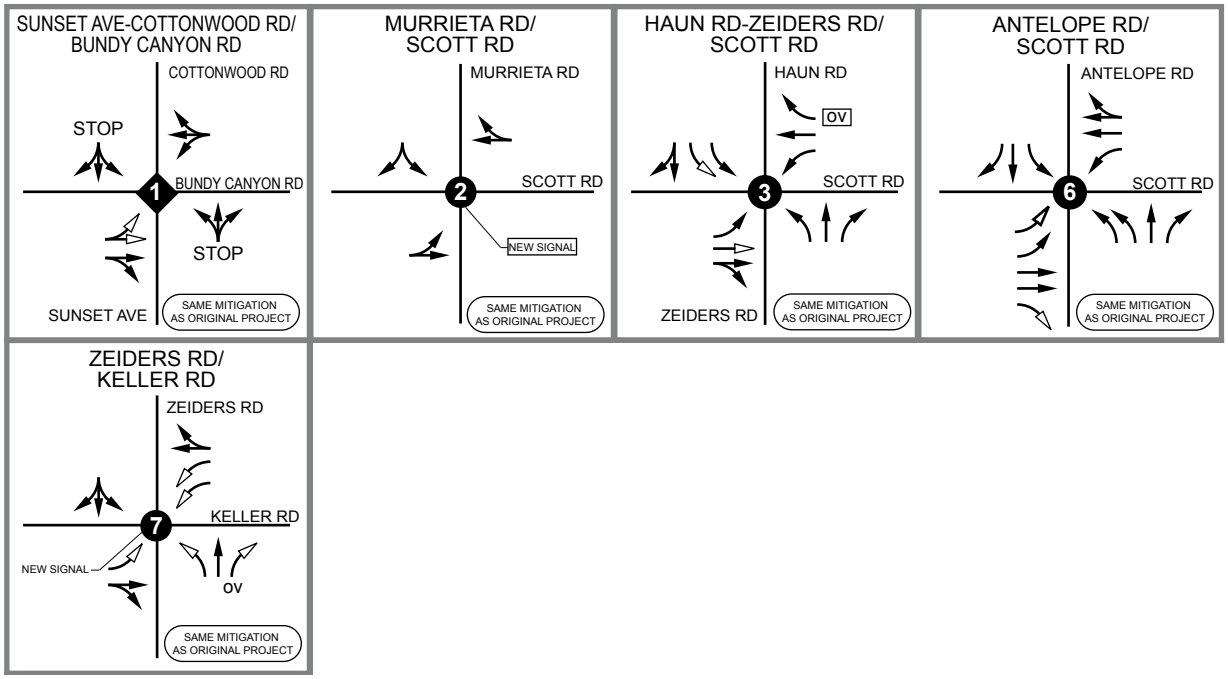
Not to Scale

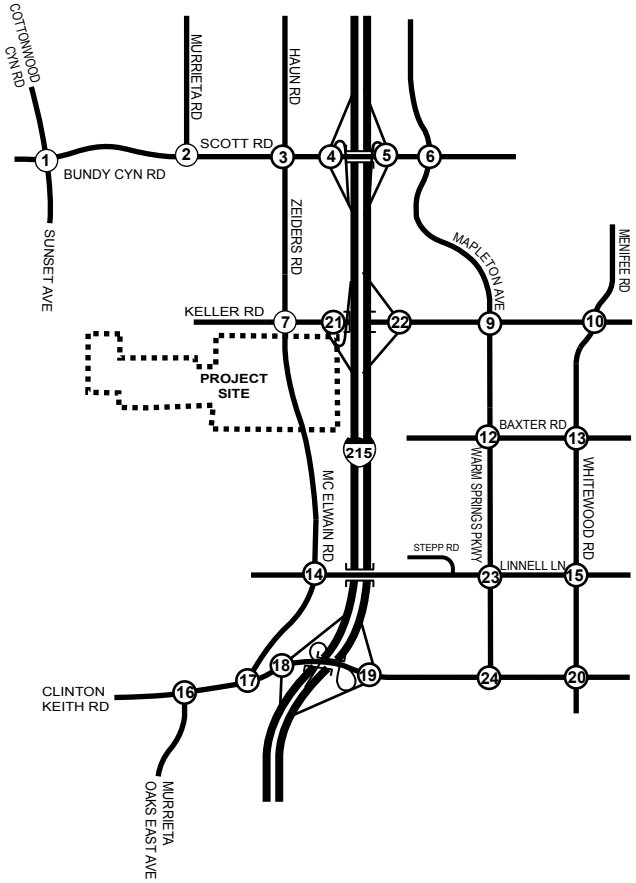
Michael Baker INTERNATIONAL

Environmentally Preferred Alternative Project Site Plan

DEC/2017

Exhibit 68





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Environmentally Preferred Mitigation Measures

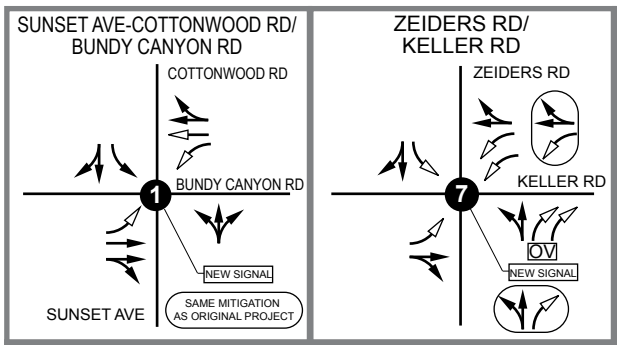
Not to Scale

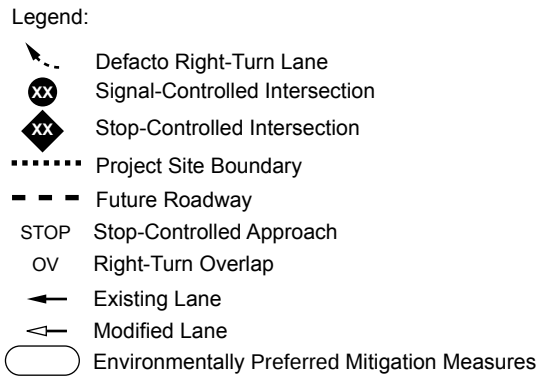
Environmentally Preferred Alternative Mitigated Forecast Existing Plus Project Buildout Conditions Study Intersection Geometry

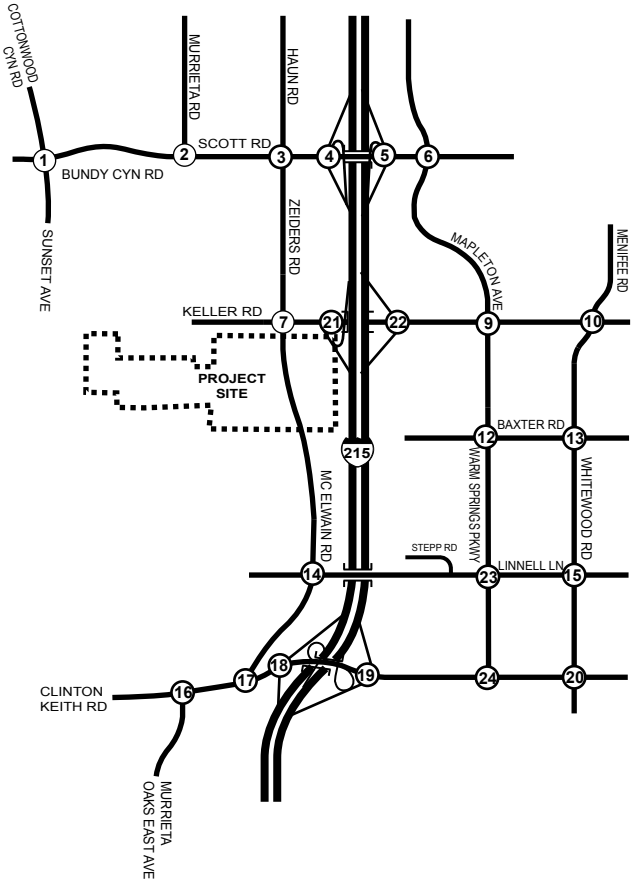
Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 69







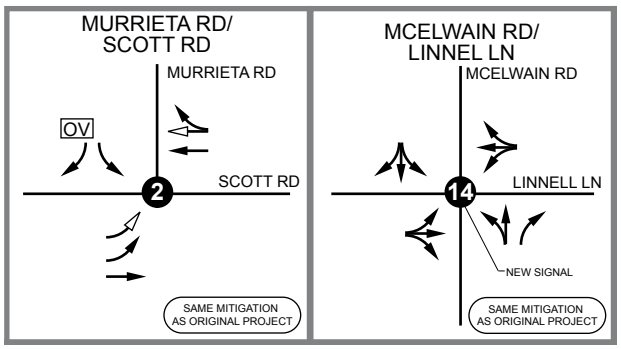
Not to Scale

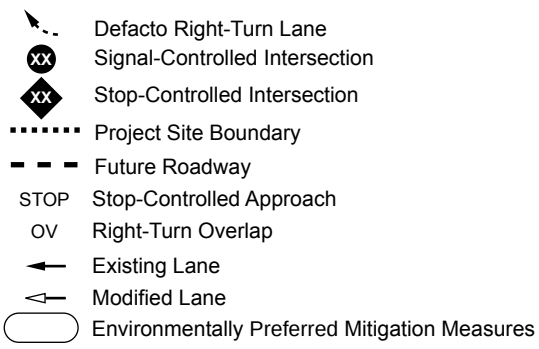
Environmentally Preferred Alternative Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions Study Intersection Geometry

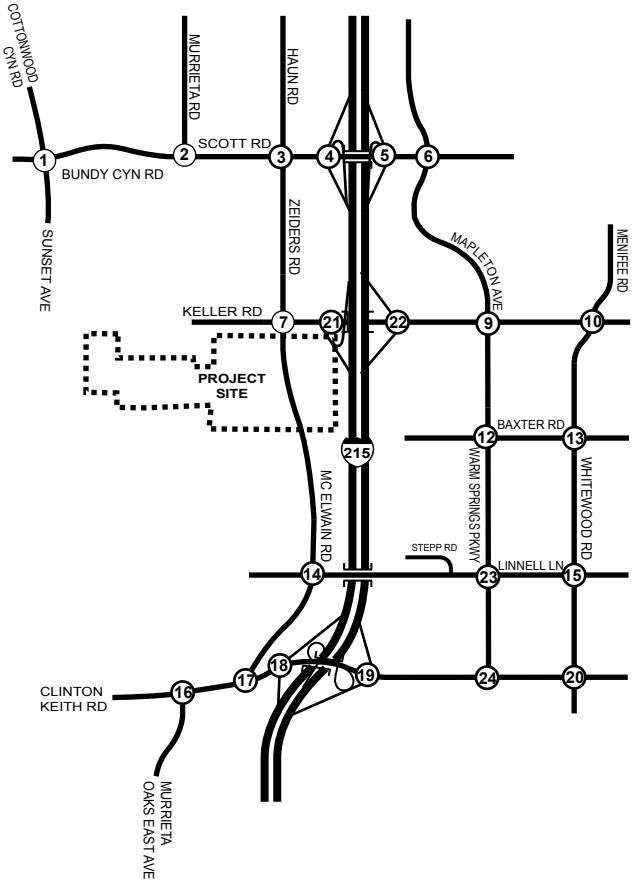
Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 70







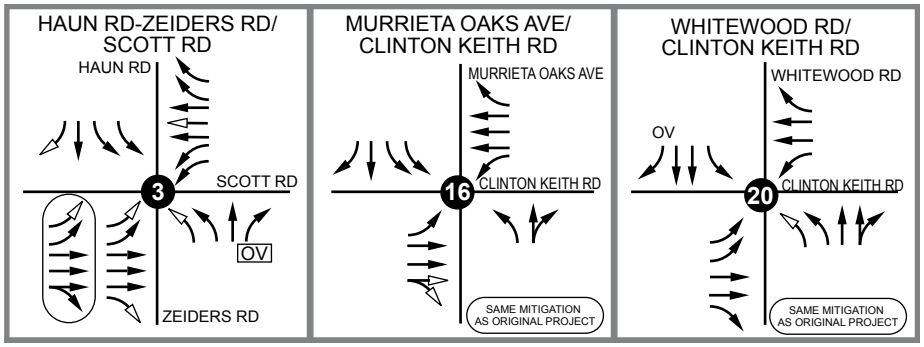
Not to Scale

Environmentally Preferred Alternative Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

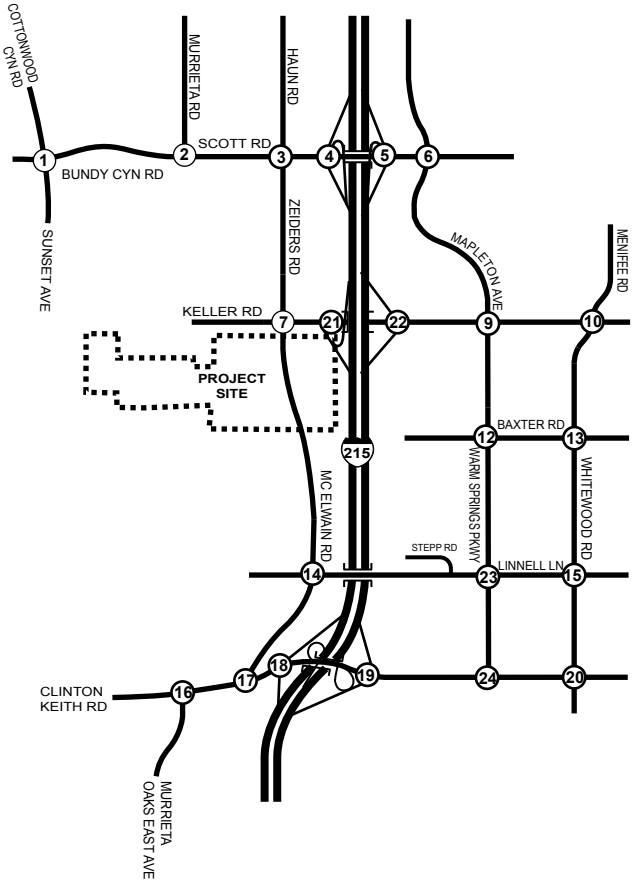
SEP/2018

Exhibit 71



Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Environmentally Preferred Mitigation Measures



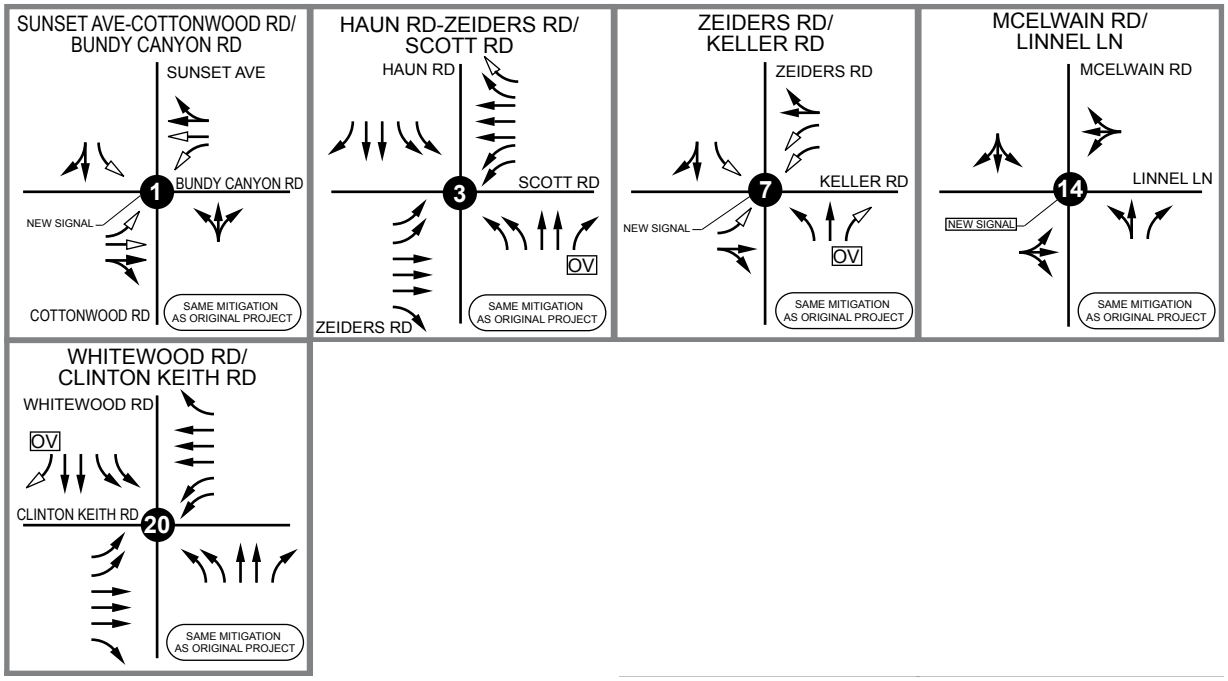
Not to Scale

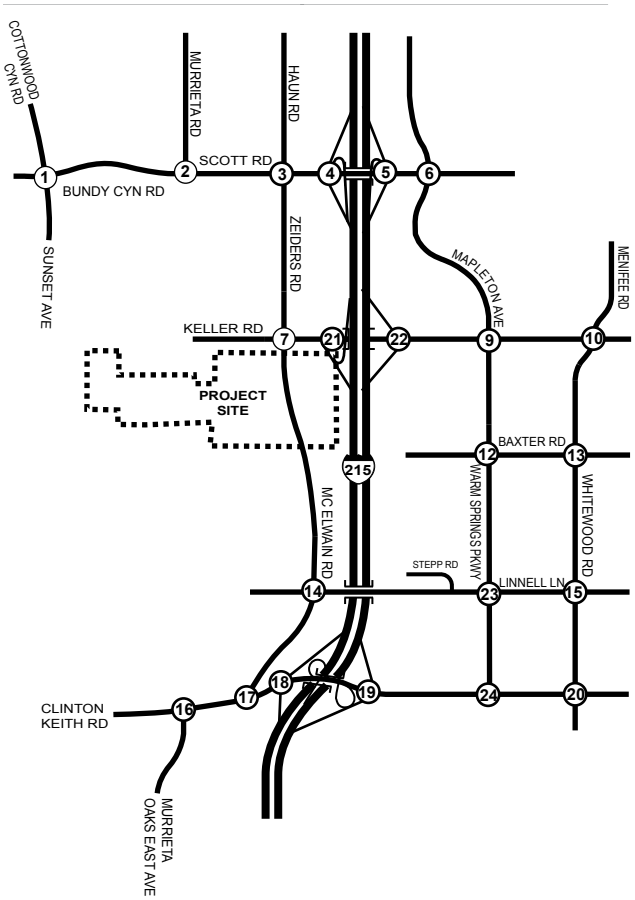
Environmentally Preferred Alternative Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 72





Legend:

- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- OV Right-Turn Overlap
- Existing Lane
- Modified Lane
- Environmentally Preferred Mitigation Measures

Not to Scale

Environmentally Preferred Alternative
Mitigated Forecast Year 2035
Existing Plus Ambient Growth Plus Project Buildout
Conditions Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981\Traffic\Exhibits

SEP/2018

Exhibit 73

APPENDIX B
Existing Count Data

&

I-215/Scott Road Interchange Conceptual Layouts

&

I-215/Keller Road Interchange Conceptual Layouts

Intersection Peak Hour Count Data

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S:Cottonwood Canyon Road/Sunset Avenue
E/W: Bundy Canyon Road
Weather: Clear

File Name : 01_WDM COBU AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

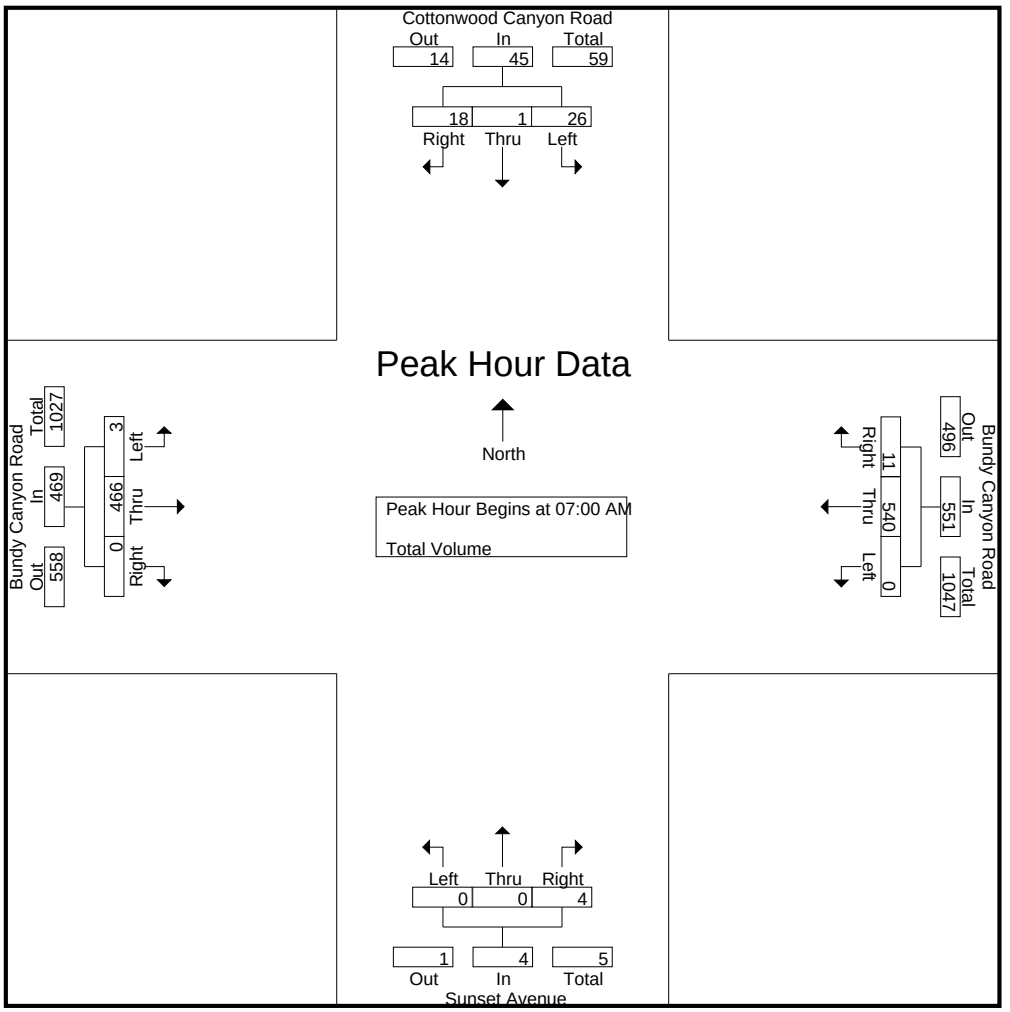
	Cottonwood Canyon Road Southbound				Bundy Canyon Road Westbound				Sunset Avenue Northbound				Bundy Canyon Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	0	3	10	0	119	1	120	0	0	1	1	1	124	0	125	256
07:15 AM	9	0	4	13	0	126	1	127	0	0	1	1	2	143	0	145	286
07:30 AM	6	0	4	10	0	141	9	150	0	0	0	0	0	99	0	99	259
07:45 AM	4	1	7	12	0	154	0	154	0	0	2	2	0	100	0	100	268
Total	26	1	18	45	0	540	11	551	0	0	4	4	3	466	0	469	1069
08:00 AM	2	0	3	5	0	107	6	113	0	0	0	0	1	101	0	102	220
08:15 AM	3	0	6	9	1	102	2	105	0	0	1	1	1	86	0	87	202
08:30 AM	3	0	5	8	0	110	3	113	0	0	0	0	1	82	0	83	204
08:45 AM	5	0	3	8	0	94	3	97	0	0	0	0	0	96	0	96	201
Total	13	0	17	30	1	413	14	428	0	0	1	1	3	365	0	368	827
Grand Total	39	1	35	75	1	953	25	979	0	0	5	5	6	831	0	837	1896
Apprch %	52	1.3	46.7		0.1	97.3	2.6		0	0	100		0.7	99.3	0		
Total %	2.1	0.1	1.8	4	0.1	50.3	1.3	51.6	0	0	0.3	0.3	0.3	43.8	0	44.1	

	Cottonwood Canyon Road Southbound				Bundy Canyon Road Westbound				Sunset Avenue Northbound				Bundy Canyon Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	7	0	3	10	0	119	1	120	0	0	1	1	1	124	0	125	256
07:15 AM	**9**	0	4	**13**	0	126	1	127	0	0	1	1	**2**	**143**	0	**145**	**286**
07:30 AM	6	0	4	10	0	141	**9**	150	0	0	0	0	0	99	0	99	259
07:45 AM	4	**1**	**7**	12	0	**154**	0	**154**	0	0	**2**	**2**	0	100	0	100	268
Total Volume	26	1	18	45	0	540	11	551	0	0	4	4	3	466	0	469	1069
% App. Total	57.8	2.2	40		0	98	2		0	0	100		0.6	99.4	0		
PHF	.722	.250	.643	.865	.000	.877	.306	.894	.000	.000	.500	.500	.375	.815	.000	.809	.934

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S:Cottonwood Canyon Road/Sunset Avenue
E/W: Bundy Canyon Road
Weather: Clear

File Name : 01_WDM COBU AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	7	0	3	10	0	119	1	120	0	0	1	1	1	124	0	125
+15 mins.	**9**	0	4	**13**	0	126	1	127	0	0	1	1	**2**	**143**	0	**145**
+30 mins.	6	0	4	10	0	141	**9**	150	0	0	0	0	0	99	0	99
+45 mins.	4	**1**	**7**	12	0	**154**	0	**154**	0	0	**2**	**2**	0	100	0	100
Total Volume	26	1	18	45	0	540	11	551	0	0	4	4	3	466	0	469
% App. Total	57.8	2.2	40		0	98	2		0	0	100		0.6	99.4	0	
PHF	.722	.250	.643	.865	.000	.877	.306	.894	.000	.000	.500	.500	.375	.815	.000	.809

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S:Cottonwood Canyon Road/Sunset Avenue
E/W: Bundy Canyon Road
Weather: Clear

File Name : 01_WDM COBU PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

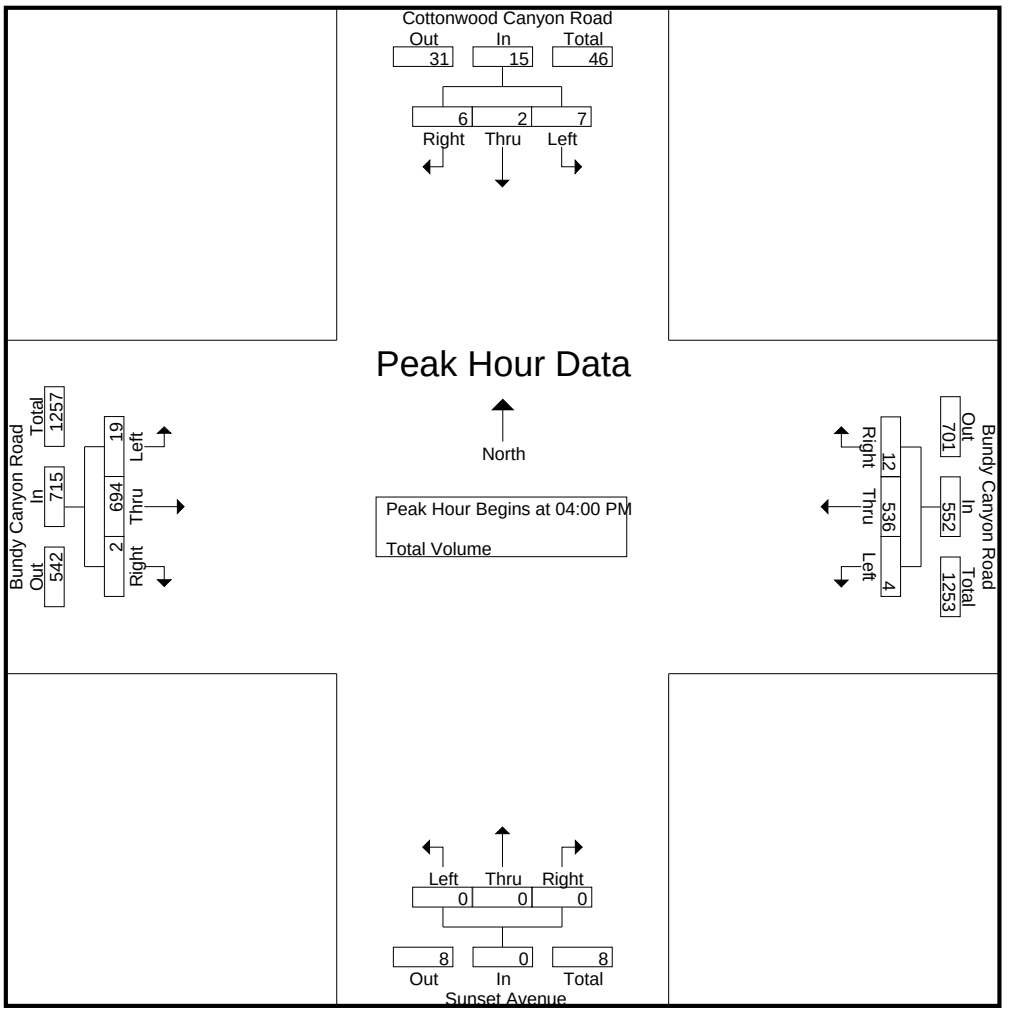
	Cottonwood Canyon Road Southbound				Bundy Canyon Road Westbound				Sunset Avenue Northbound				Bundy Canyon Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	1	0	4	2	137	7	146	0	0	0	0	4	180	0	184	334
04:15 PM	2	1	3	6	1	122	2	125	0	0	0	0	8	191	2	201	332
04:30 PM	0	0	3	3	0	143	0	143	0	0	0	0	3	165	0	168	314
04:45 PM	2	0	0	2	1	134	3	138	0	0	0	0	4	158	0	162	302
Total	7	2	6	15	4	536	12	552	0	0	0	0	19	694	2	715	1282
05:00 PM	4	0	6	10	0	124	3	127	0	0	3	3	7	173	0	180	320
05:15 PM	3	0	3	6	1	124	6	131	0	0	1	1	7	194	0	201	339
05:30 PM	3	1	3	7	0	104	8	112	1	0	0	1	3	159	0	162	282
05:45 PM	4	0	1	5	0	98	0	98	0	0	1	1	2	144	0	146	250
Total	14	1	13	28	1	450	17	468	1	0	5	6	19	670	0	689	1191
Grand Total	21	3	19	43	5	986	29	1020	1	0	5	6	38	1364	2	1404	2473
Apprch %	48.8	7	44.2		0.5	96.7	2.8		16.7	0	83.3		2.7	97.2	0.1		
Total %	0.8	0.1	0.8	1.7	0.2	39.9	1.2	41.2	0	0	0.2	0.2	1.5	55.2	0.1	56.8	

	Cottonwood Canyon Road Southbound				Bundy Canyon Road Westbound				Sunset Avenue Northbound				Bundy Canyon Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**3**	**1**	0	4	**2**	137	**7**	**146**	0	0	0	0	4	180	0	184	**334**
04:15 PM	2	1	**3**	**6**	1	122	2	125	0	0	0	0	**8**	**191**	**2**	**201**	332
04:30 PM	0	0	3	3	0	**143**	0	143	0	0	0	0	3	165	0	168	314
04:45 PM	2	0	0	2	1	134	3	138	0	0	0	0	4	158	0	162	302
Total Volume	7	2	6	15	4	536	12	552	0	0	0	0	19	694	2	715	1282
% App. Total	46.7	13.3	40		0.7	97.1	2.2		0	0	0		2.7	97.1	0.3		
PHF	.583	.500	.500	.625	.500	.937	.429	.945	.000	.000	.000	.000	.594	.908	.250	.889	.960

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S:Cottonwood Canyon Road/Sunset Avenue
E/W: Bundy Canyon Road
Weather: Clear

File Name : 01_WDM COBU PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	**4**	0	**6**	**10**	**2**	137	**7**	**146**	0	0	**3**	**3**	4	180	0	184
+15 mins.	3	0	3	6	1	122	2	125	0	0	1	1	**8**	**191**	**2**	**201**
+30 mins.	3	**1**	3	7	0	**143**	0	143	**1**	0	0	1	3	165	0	168
+45 mins.	4	0	1	5	1	134	3	138	0	0	1	1	4	158	0	162
Total Volume	14	1	13	28	4	536	12	552	1	0	5	6	19	694	2	715
% App. Total	50	3.6	46.4		0.7	97.1	2.2		16.7	0	83.3		2.7	97.1	0.3	
PHF	.875	.250	.542	.700	.500	.937	.429	.945	.250	.000	.417	.500	.594	.908	.250	.889

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Murrieta Road
E/W: Bundy Canyon Road/Scott Road
Weather: Clear

File Name : 02_CRV MUBU AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

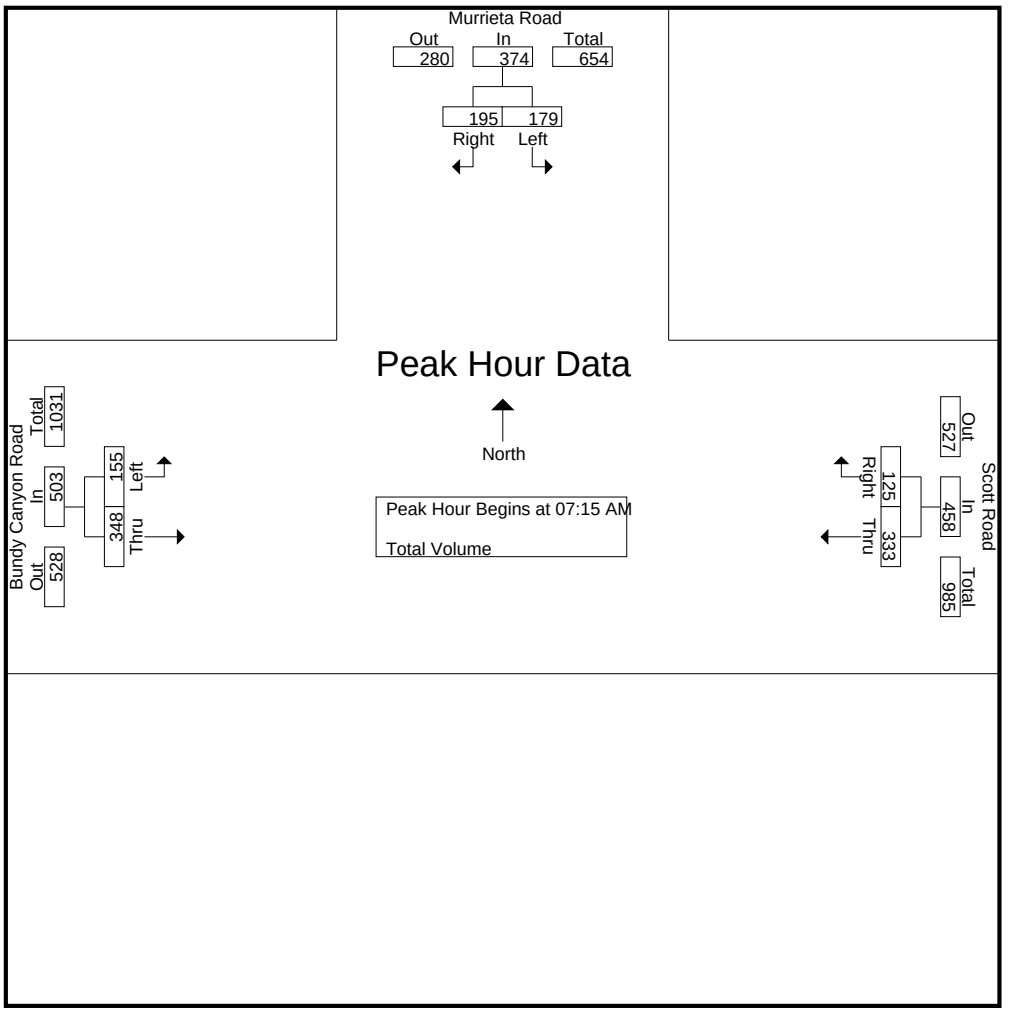
	Murrieta Road Southbound			Scott Road Westbound			Bundy Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	28	36	64	81	28	109	36	86	122	295
07:15 AM	36	37	73	77	38	115	58	94	152	340
07:30 AM	43	55	98	93	30	123	37	102	139	360
07:45 AM	50	65	115	87	29	116	22	82	104	335
Total	157	193	350	338	125	463	153	364	517	1330
08:00 AM	50	38	88	76	28	104	38	70	108	300
08:15 AM	49	44	93	65	33	98	31	66	97	288
08:30 AM	54	57	111	67	24	91	23	63	86	288
08:45 AM	37	34	71	69	33	102	31	68	99	272
Total	190	173	363	277	118	395	123	267	390	1148
Grand Total	347	366	713	615	243	858	276	631	907	2478
Apprch %	48.7	51.3		71.7	28.3		30.4	69.6		
Total %	14	14.8	28.8	24.8	9.8	34.6	11.1	25.5	36.6	

	Murrieta Road Southbound			Scott Road Westbound			Bundy Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	36	37	73	77	**38**	115	**58**	94	**152**	340
07:30 AM	43	55	98	**93**	30	**123**	37	**102**	139	**360**
07:45 AM	**50**	**65**	**115**	87	29	116	22	82	104	335
08:00 AM	50	38	88	76	28	104	38	70	108	300
Total Volume	179	195	374	333	125	458	155	348	503	1335
% App. Total	47.9	52.1		72.7	27.3		30.8	69.2		
PHF	.895	.750	.813	.895	.822	.931	.668	.853	.827	.927

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Murrieta Road
E/W: Bundy Canyon Road/Scott Road
Weather: Clear

File Name : 02_CRV MUBU AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:00 AM			07:00 AM		
+0 mins.	50	**65**	**115**	81	28	109	36	86	122
+15 mins.	50	38	88	77	**38**	115	**58**	94	**152**
+30 mins.	49	44	93	**93**	30	**123**	37	**102**	139
+45 mins.	**54**	57	111	87	29	116	22	82	104
Total Volume	203	204	407	338	125	463	153	364	517
% App. Total	49.9	50.1		73	27		29.6	70.4	
PHF	.940	.785	.885	.909	.822	.941	.659	.892	.850

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Murrieta Road
E/W: Bundy Canyon Road/Scott Road
Weather: Clear

File Name : 02_CRV MUBU PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

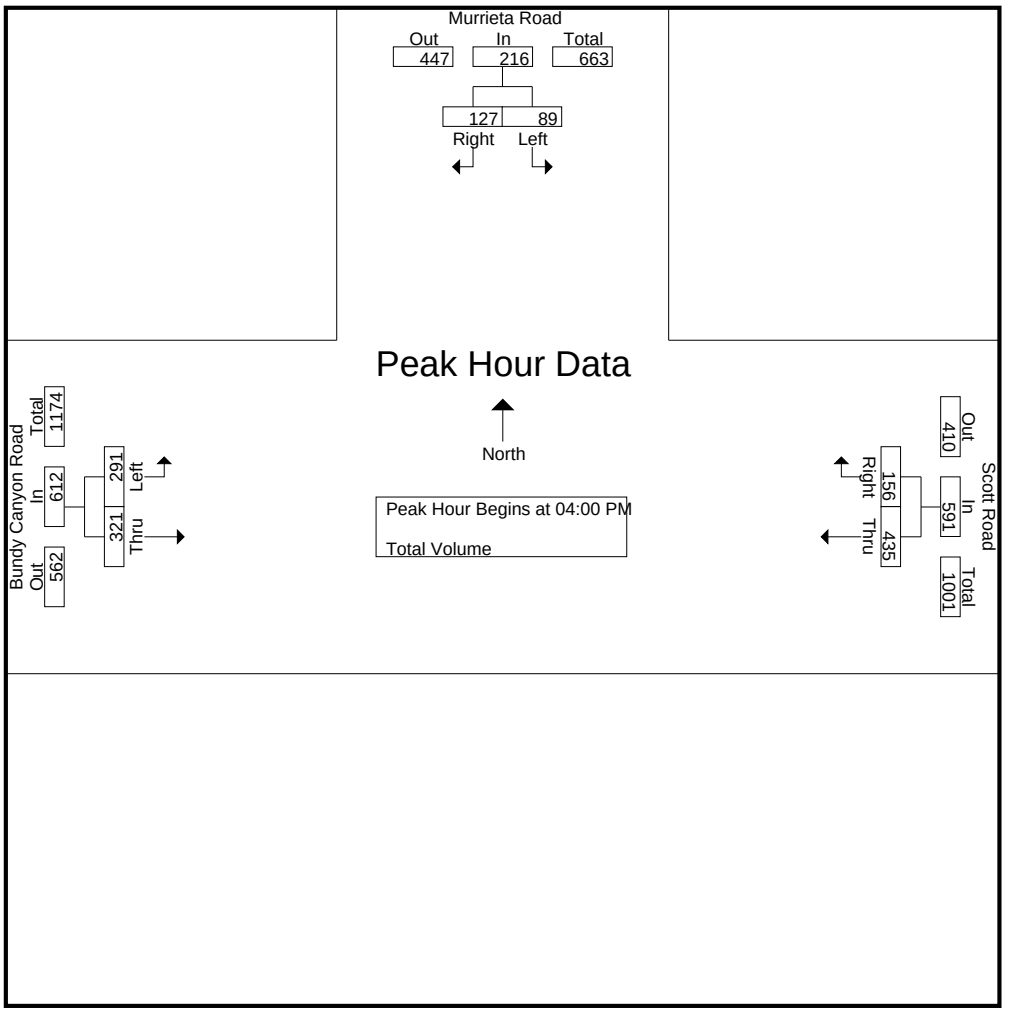
	Murrieta Road Southbound			Scott Road Westbound			Bundy Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	27	35	62	112	44	156	76	68	144	362
04:15 PM	17	25	42	97	37	134	79	81	160	336
04:30 PM	25	30	55	119	35	154	74	75	149	358
04:45 PM	20	37	57	107	40	147	62	97	159	363
Total	89	127	216	435	156	591	291	321	612	1419
05:00 PM	19	31	50	98	29	127	77	88	165	342
05:15 PM	24	33	57	95	41	136	74	87	161	354
05:30 PM	21	27	48	86	43	129	68	100	168	345
05:45 PM	37	25	62	71	31	102	55	109	164	328
Total	101	116	217	350	144	494	274	384	658	1369
Grand Total	190	243	433	785	300	1085	565	705	1270	2788
Apprch %	43.9	56.1		72.4	27.6		44.5	55.5		
Total %	6.8	8.7	15.5	28.2	10.8	38.9	20.3	25.3	45.6	

	Murrieta Road Southbound			Scott Road Westbound			Bundy Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**27**	35	**62**	112	**44**	**156**	76	68	144	362
04:15 PM	17	25	42	97	37	134	**79**	81	**160**	336
04:30 PM	25	30	55	**119**	35	154	74	75	149	358
04:45 PM	20	**37**	57	107	40	147	62	**97**	159	**363**
Total Volume	89	127	216	435	156	591	291	321	612	1419
% App. Total	41.2	58.8		73.6	26.4		47.5	52.5		
PHF	.824	.858	.871	.914	.886	.947	.921	.827	.956	.977

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Murrieta Road
E/W: Bundy Canyon Road/Scott Road
Weather: Clear

File Name : 02_CRV MUBU PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			05:00 PM		
+0 mins.	**25**	30	55	112	**44**	**156**	**77**	88	165
+15 mins.	20	**37**	**57**	97	37	134	74	87	161
+30 mins.	19	31	50	**119**	35	154	68	100	**168**
+45 mins.	24	33	57	107	40	147	55	**109**	164
Total Volume	88	131	219	435	156	591	274	384	658
% App. Total	40.2	59.8		73.6	26.4		41.6	58.4	
PHF	.880	.885	.961	.914	.886	.947	.890	.881	.979

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Haun Road/Zeiders Road
E/W: Scott Road
Weather: Clear

File Name : 03_CRV HUSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

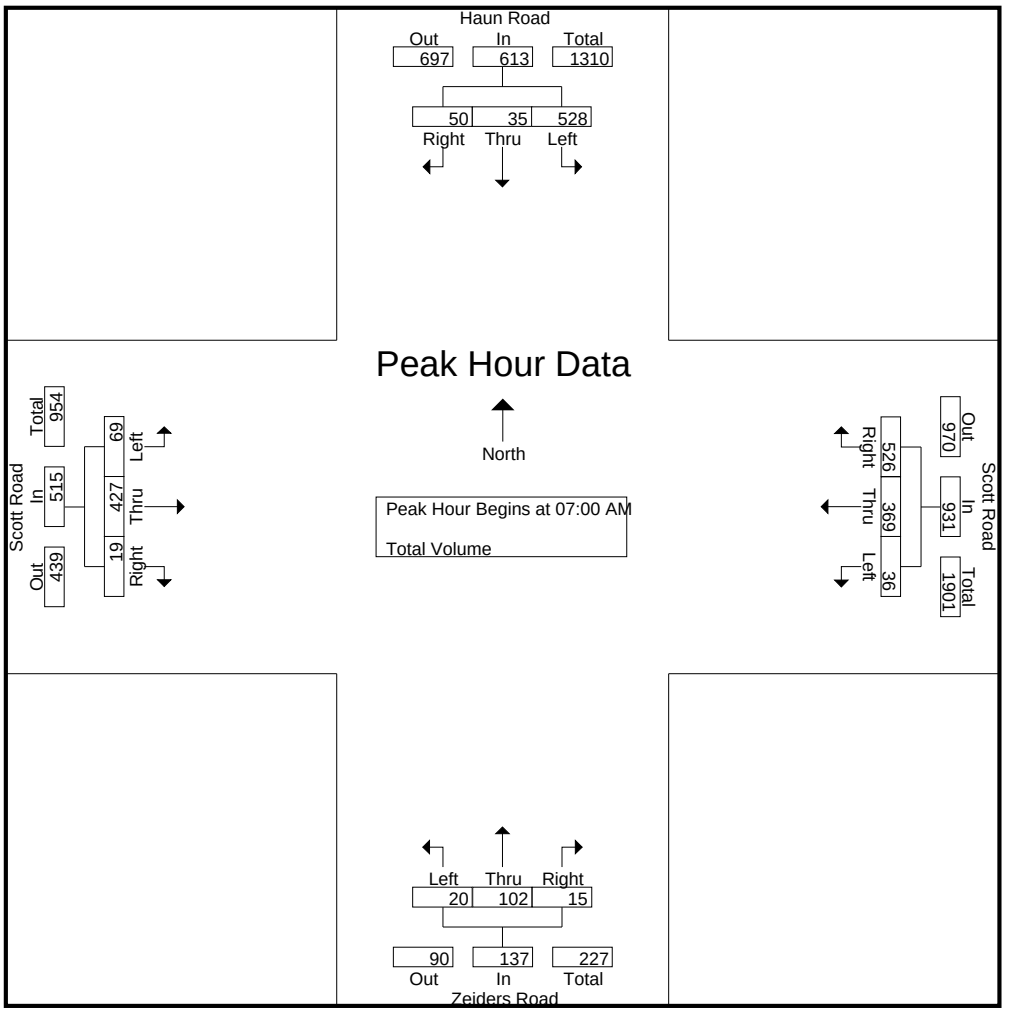
	Haun Road Southbound				Scott Road Westbound				Zeiders Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	88	3	6	97	7	103	152	262	2	19	1	22	15	110	4	129	510
07:15 AM	155	8	10	173	7	76	199	282	10	49	4	63	28	108	1	137	655
07:30 AM	173	12	20	205	5	96	110	211	3	24	4	31	17	109	5	131	578
07:45 AM	112	12	14	138	17	94	65	176	5	10	6	21	9	100	9	118	453
Total	528	35	50	613	36	369	526	931	20	102	15	137	69	427	19	515	2196
08:00 AM	134	11	10	155	10	85	43	138	5	5	9	19	8	102	2	112	424
08:15 AM	62	7	3	72	5	80	48	133	5	6	1	12	12	167	3	182	399
08:30 AM	61	4	12	77	12	70	40	122	6	3	3	12	5	113	3	121	332
08:45 AM	72	3	10	85	23	91	35	149	2	4	4	10	8	110	4	122	366
Total	329	25	35	389	50	326	166	542	18	18	17	53	33	492	12	537	1521
Grand Total	857	60	85	1002	86	695	692	1473	38	120	32	190	102	919	31	1052	3717
Apprch %	85.5	6	8.5		5.8	47.2	47		20	63.2	16.8		9.7	87.4	2.9		
Total %	23.1	1.6	2.3	27	2.3	18.7	18.6	39.6	1	3.2	0.9	5.1	2.7	24.7	0.8	28.3	

	Haun Road Southbound				Scott Road Westbound				Zeiders Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	88	3	6	97	7	**103**	152	262	2	19	1	22	15	**110**	4	129	510
07:15 AM	155	8	10	173	7	76	**199**	**282**	**10**	**49**	4	**63**	**28**	108	1	**137**	**655**
07:30 AM	**173**	**12**	**20**	**205**	5	96	110	211	3	24	4	31	17	109	5	131	578
07:45 AM	112	12	14	138	**17**	94	65	176	5	10	**6**	21	9	100	**9**	118	453
Total Volume	528	35	50	613	36	369	526	931	20	102	15	137	69	427	19	515	2196
% App. Total	86.1	5.7	8.2		3.9	39.6	56.5		14.6	74.5	10.9		13.4	82.9	3.7		
PHF	.763	.729	.625	.748	.529	.896	.661	.825	.500	.520	.625	.544	.616	.970	.528	.940	.838

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Haun Road/Zeiders Road
E/W: Scott Road
Weather: Clear

File Name : 03_CRV HUSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	155	8	10	173	7	**103**	152	262	2	19	1	22	**17**	109	5	131
+15 mins.	**173**	**12**	**20**	**205**	7	76	**199**	**282**	**10**	**49**	4	**63**	9	100	**9**	118
+30 mins.	112	12	14	138	5	96	110	211	3	24	4	31	8	102	2	112
+45 mins.	134	11	10	155	**17**	94	65	176	5	10	**6**	21	12	**167**	3	**182**
Total Volume	574	43	54	671	36	369	526	931	20	102	15	137	46	478	19	543
% App. Total	85.5	6.4	8		3.9	39.6	56.5		14.6	74.5	10.9		8.5	88	3.5	
PHF	.829	.896	.675	.818	.529	.896	.661	.825	.500	.520	.625	.544	.676	.716	.528	.746

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Haun Road/Zeiders Road
E/W: Scott Road
Weather: Clear

File Name : 03_CRV HUSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

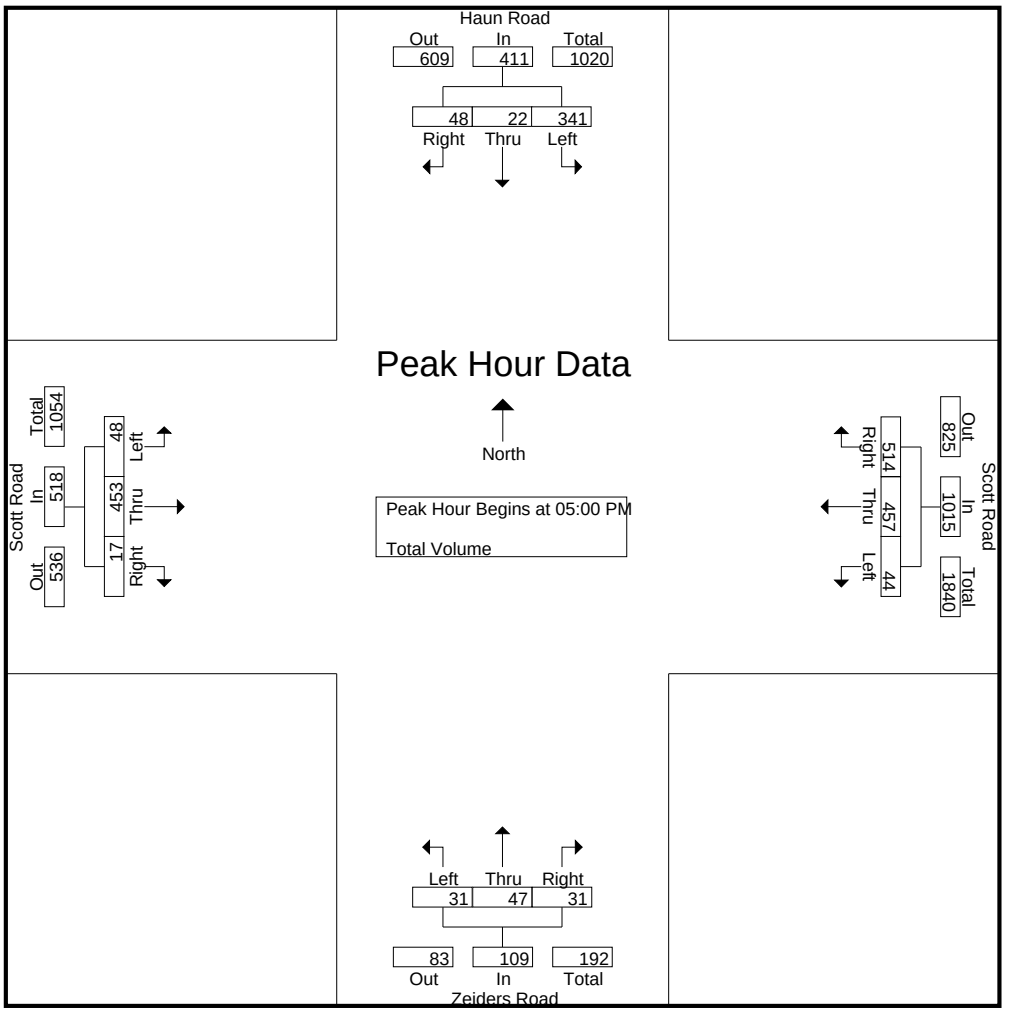
	Haun Road Southbound				Scott Road Westbound				Zeiders Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	86	7	15	108	19	130	108	257	9	13	16	38	9	114	6	129	532
04:15 PM	66	4	9	79	9	101	83	193	14	10	18	42	6	102	1	109	423
04:30 PM	82	8	16	106	7	148	116	271	10	11	7	28	10	102	5	117	522
04:45 PM	78	5	14	97	17	112	123	252	10	11	7	28	9	81	8	98	475
Total	312	24	54	390	52	491	430	973	43	45	48	136	34	399	20	453	1952
05:00 PM	80	4	14	98	8	130	120	258	8	15	8	31	12	128	7	147	534
05:15 PM	91	7	14	112	6	103	131	240	14	17	3	34	5	91	4	100	486
05:30 PM	72	2	7	81	17	119	136	272	3	7	13	23	8	120	1	129	505
05:45 PM	98	9	13	120	13	105	127	245	6	8	7	21	23	114	5	142	528
Total	341	22	48	411	44	457	514	1015	31	47	31	109	48	453	17	518	2053
Grand Total	653	46	102	801	96	948	944	1988	74	92	79	245	82	852	37	971	4005
Apprch %	81.5	5.7	12.7		4.8	47.7	47.5		30.2	37.6	32.2		8.4	87.7	3.8		
Total %	16.3	1.1	2.5	20	2.4	23.7	23.6	49.6	1.8	2.3	2	6.1	2	21.3	0.9	24.2	

	Haun Road Southbound				Scott Road Westbound				Zeiders Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	80	4	**14**	98	8	**130**	120	258	8	15	8	31	12	**128**	**7**	**147**	**534**
05:15 PM	91	7	14	112	6	103	131	240	**14**	**17**	3	**34**	5	91	4	100	486
05:30 PM	72	2	7	81	**17**	119	**136**	**272**	3	7	**13**	23	8	120	1	129	505
05:45 PM	**98**	**9**	13	**120**	13	105	127	245	6	8	7	21	**23**	114	5	142	528
Total Volume	341	22	48	411	44	457	514	1015	31	47	31	109	48	453	17	518	2053
% App. Total	83	5.4	11.7		4.3	45	50.6		28.4	43.1	28.4		9.3	87.5	3.3		
PHF	.870	.611	.857	.856	.647	.879	.945	.933	.554	.691	.596	.801	.522	.885	.607	.881	.961

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Haun Road/Zeiders Road
E/W: Scott Road
Weather: Clear

File Name : 03_CRV HUSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:45 PM				04:00 PM				05:00 PM			
+0 mins.	82	**8**	**16**	106	**17**	112	123	252	9	**13**	16	38	12	**128**	**7**	**147**
+15 mins.	78	5	14	97	8	**130**	120	258	**14**	10	**18**	**42**	5	91	4	100
+30 mins.	80	4	14	98	6	103	131	240	10	11	7	28	8	120	1	129
+45 mins.	**91**	7	14	**112**	17	119	**136**	**272**	10	11	7	28	**23**	114	5	142
Total Volume	331	24	58	413	48	464	510	1022	43	45	48	136	48	453	17	518
% App. Total	80.1	5.8	14		4.7	45.4	49.9		31.6	33.1	35.3		9.3	87.5	3.3	
PHF	.909	.750	.906	.922	.706	.892	.938	.939	.768	.865	.667	.810	.522	.885	.607	.881

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Southbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 04_CRV 215SSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

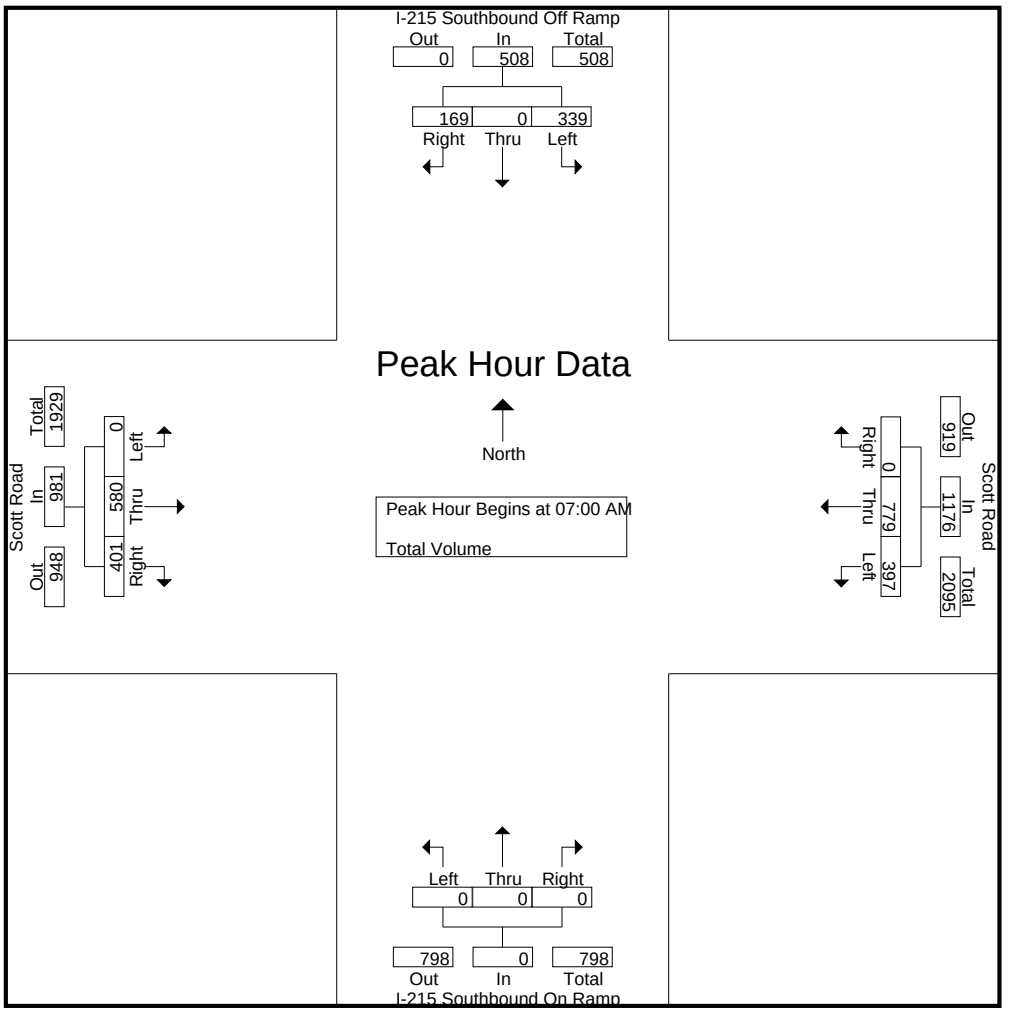
	I-215 Southbound Off Ramp Southbound				Scott Road Westbound				I-215 Southbound On Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	79	0	50	129	81	235	0	316	0	0	0	0	0	153	82	235	680
07:15 AM	85	0	38	123	65	264	0	329	0	0	0	0	0	166	105	271	723
07:30 AM	85	0	39	124	119	144	0	263	0	0	0	0	0	135	126	261	648
07:45 AM	90	0	42	132	132	136	0	268	0	0	0	0	0	126	88	214	614
Total	339	0	169	508	397	779	0	1176	0	0	0	0	0	580	401	981	2665
08:00 AM	87	0	27	114	135	100	0	235	0	0	0	0	0	127	123	250	599
08:15 AM	88	0	17	105	123	115	0	238	0	0	0	0	0	134	110	244	587
08:30 AM	51	0	25	76	119	97	0	216	0	0	0	0	0	108	78	186	478
08:45 AM	66	0	24	90	117	137	0	254	0	0	0	0	0	100	81	181	525
Total	292	0	93	385	494	449	0	943	0	0	0	0	0	469	392	861	2189
Grand Total	631	0	262	893	891	1228	0	2119	0	0	0	0	0	1049	793	1842	4854
Apprch %	70.7	0	29.3		42	58	0		0	0	0		0	56.9	43.1		
Total %	13	0	5.4	18.4	18.4	25.3	0	43.7	0	0	0	0	0	21.6	16.3	37.9	

	I-215 Southbound Off Ramp Southbound				Scott Road Westbound				I-215 Southbound On Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	79	0	**50**	129	81	235	0	316	0	0	0	0	0	153	82	235	680
07:15 AM	85	0	38	123	65	**264**	0	**329**	0	0	0	0	0	**166**	105	**271**	**723**
07:30 AM	85	0	39	124	119	144	0	263	0	0	0	0	0	135	**126**	261	648
07:45 AM	**90**	0	42	**132**	**132**	136	0	268	0	0	0	0	0	126	88	214	614
Total Volume	339	0	169	508	397	779	0	1176	0	0	0	0	0	580	401	981	2665
% App. Total	66.7	0	33.3		33.8	66.2	0		0	0	0		0	59.1	40.9		
PHF	.942	.000	.845	.962	.752	.738	.000	.894	.000	.000	.000	.000	.000	.873	.796	.905	.922

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Southbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 04_CRV 215SSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	79	0	**50**	129	81	235	0	316	0	0	0	0	0	**166**	105	**271**
+15 mins.	85	0	38	123	65	**264**	0	**329**	0	0	0	0	0	135	**126**	261
+30 mins.	85	0	39	124	119	144	0	263	0	0	0	0	0	126	88	214
+45 mins.	**90**	0	42	**132**	**132**	136	0	268	0	0	0	0	0	127	123	250
Total Volume	339	0	169	508	397	779	0	1176	0	0	0	0	0	554	442	996
% App. Total	66.7	0	33.3		33.8	66.2	0		0	0	0		0	55.6	44.4	
PHF	.942	.000	.845	.962	.752	.738	.000	.894	.000	.000	.000	.000	.000	.834	.877	.919

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Southbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 04_CRV 215SSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

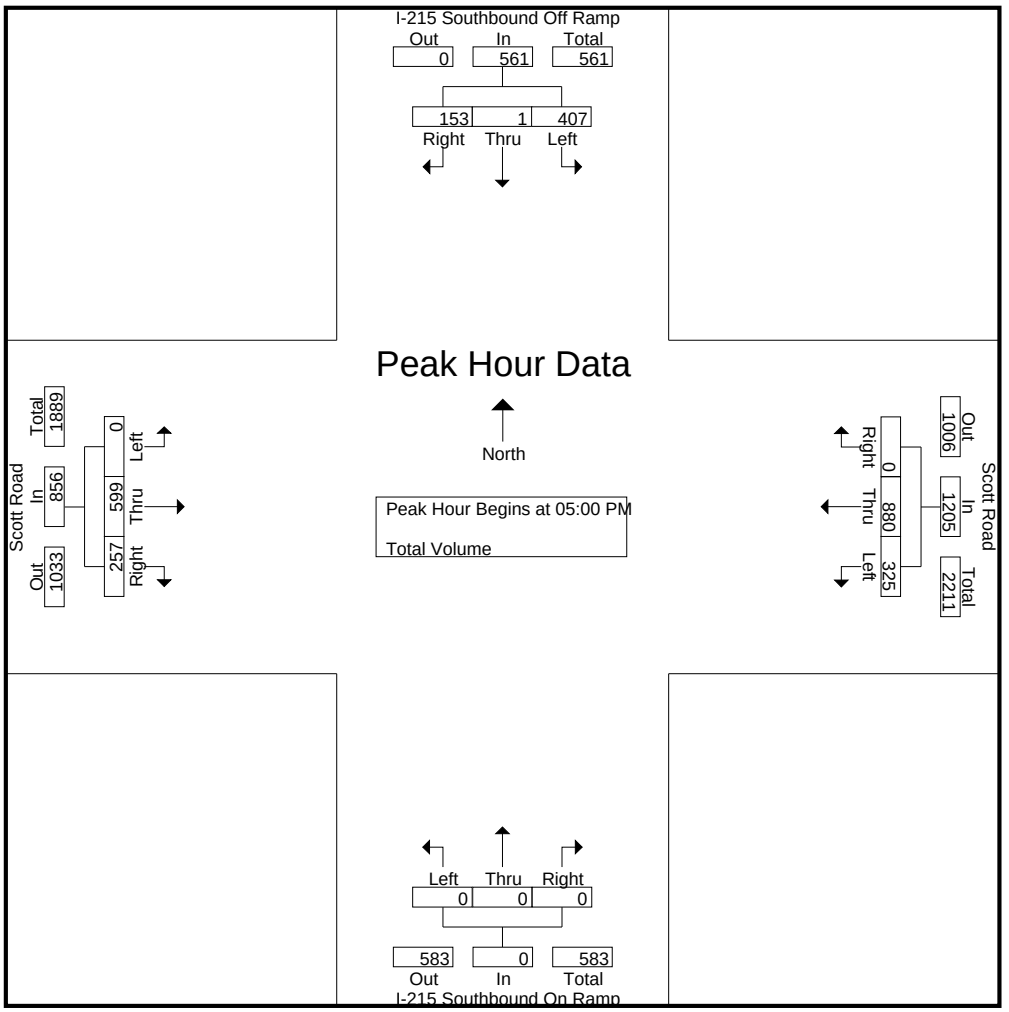
	I-215 Southbound Off Ramp Southbound				Scott Road Westbound				I-215 Southbound On Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	111	0	37	148	98	202	0	300	0	0	0	0	0	150	75	225	673
04:15 PM	99	0	42	141	102	188	0	290	0	0	0	0	0	134	62	196	627
04:30 PM	95	0	49	144	95	220	0	315	0	0	0	0	0	140	54	194	653
04:45 PM	108	0	42	150	95	214	0	309	0	0	0	0	0	136	46	182	641
Total	413	0	170	583	390	824	0	1214	0	0	0	0	0	560	237	797	2594
05:00 PM	97	0	36	133	73	216	0	289	0	0	0	0	0	161	70	231	653
05:15 PM	108	0	36	144	83	219	0	302	0	0	0	0	0	145	58	203	649
05:30 PM	111	0	39	150	90	229	0	319	0	0	0	0	0	144	54	198	667
05:45 PM	91	1	42	134	79	216	0	295	0	0	0	0	0	149	75	224	653
Total	407	1	153	561	325	880	0	1205	0	0	0	0	0	599	257	856	2622
Grand Total	820	1	323	1144	715	1704	0	2419	0	0	0	0	0	1159	494	1653	5216
Apprch %	71.7	0.1	28.2		29.6	70.4	0		0	0	0		0	70.1	29.9		
Total %	15.7	0	6.2	21.9	13.7	32.7	0	46.4	0	0	0	0	0	22.2	9.5	31.7	

	I-215 Southbound Off Ramp Southbound				Scott Road Westbound				I-215 Southbound On Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	97	0	36	133	73	216	0	289	0	0	0	0	0	**161**	70	**231**	653
05:15 PM	108	0	36	144	83	219	0	302	0	0	0	0	0	145	58	203	649
05:30 PM	**111**	0	39	**150**	**90**	**229**	0	**319**	0	0	0	0	0	144	54	198	**667**
05:45 PM	91	**1**	**42**	134	79	216	0	295	0	0	0	0	0	149	**75**	224	653
Total Volume	407	1	153	561	325	880	0	1205	0	0	0	0	0	599	257	856	2622
% App. Total	72.5	0.2	27.3		27	73	0		0	0	0		0	70	30		
PHF	.917	.250	.911	.935	.903	.961	.000	.944	.000	.000	.000	.000	.000	.930	.857	.926	.983

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Southbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 04_CRV 215SSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				05:00 PM			
+0 mins.	**111**	0	37	148	**95**	214	0	309	0	0	0	0	0	**161**	70	**231**
+15 mins.	99	0	42	141	73	216	0	289	0	0	0	0	0	145	58	203
+30 mins.	95	0	**49**	144	83	219	0	302	0	0	0	0	0	144	54	198
+45 mins.	108	0	42	**150**	90	**229**	0	**319**	0	0	0	0	0	149	**75**	224
Total Volume	413	0	170	583	341	878	0	1219	0	0	0	0	0	599	257	856
% App. Total	70.8	0	29.2		28	72	0		0	0	0		0	70	30	
PHF	.930	.000	.867	.972	.897	.959	.000	.955	.000	.000	.000	.000	.000	.930	.857	.926

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 05_CRV 215NSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

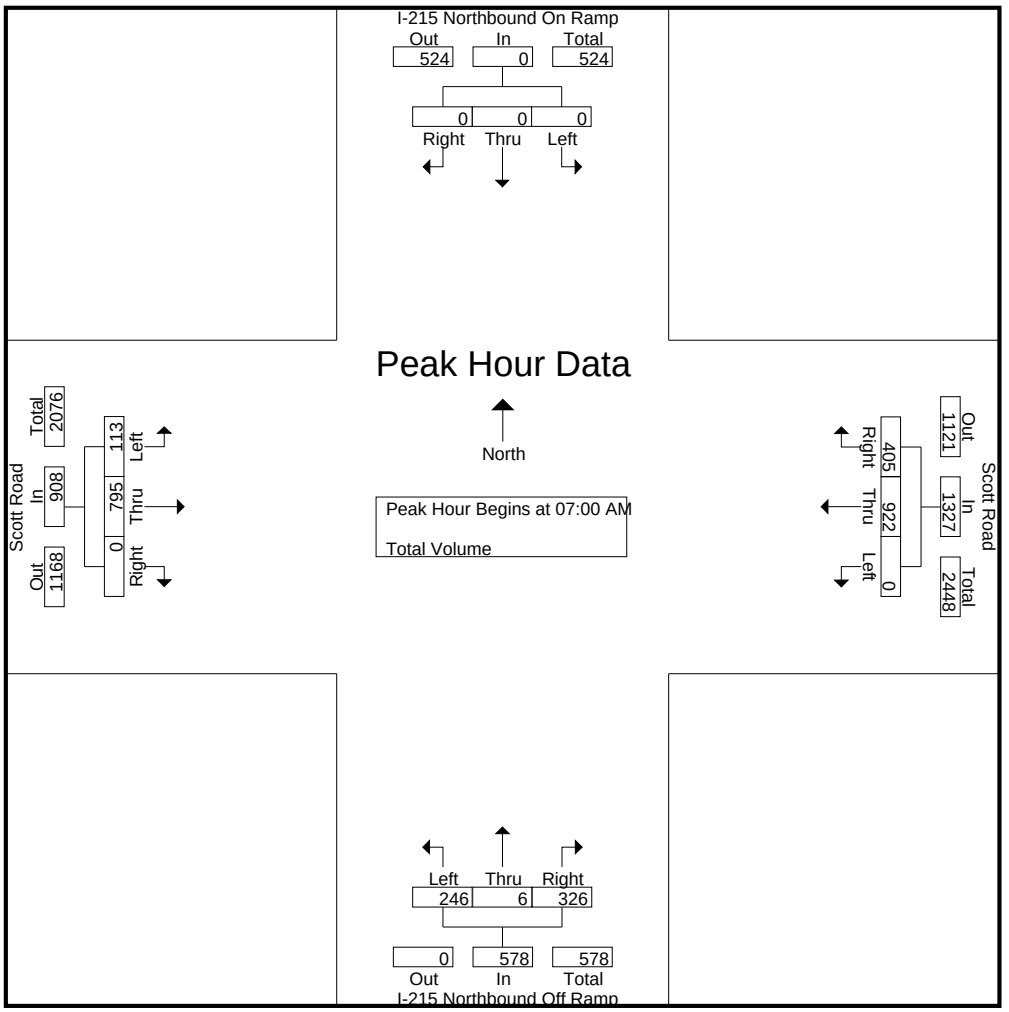
	I-215 Northbound On Ramp Southbound				Scott Road Westbound				I-215 Northbound Off Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	240	107	347	70	0	62	132	29	195	0	224	703
07:15 AM	0	0	0	0	0	226	91	317	98	0	82	180	34	210	0	244	741
07:30 AM	0	0	0	0	0	232	114	346	41	3	93	137	27	191	0	218	701
07:45 AM	0	0	0	0	0	224	93	317	37	3	89	129	23	199	0	222	668
Total	0	0	0	0	0	922	405	1327	246	6	326	578	113	795	0	908	2813
08:00 AM	0	0	0	0	0	206	76	282	26	0	92	118	19	196	0	215	615
08:15 AM	0	0	0	0	0	201	90	291	42	0	73	115	28	190	0	218	624
08:30 AM	0	0	0	0	0	181	95	276	34	0	85	119	19	133	0	152	547
08:45 AM	0	0	0	0	0	199	100	299	46	0	97	143	30	130	0	160	602
Total	0	0	0	0	0	787	361	1148	148	0	347	495	96	649	0	745	2388
Grand Total	0	0	0	0	0	1709	766	2475	394	6	673	1073	209	1444	0	1653	5201
Apprch %	0	0	0		0	69.1	30.9		36.7	0.6	62.7		12.6	87.4	0		
Total %	0	0	0	0	0	32.9	14.7	47.6	7.6	0.1	12.9	20.6	4	27.8	0	31.8	

	I-215 Northbound On Ramp Southbound				Scott Road Westbound				I-215 Northbound Off Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	**240**	107	**347**	70	0	62	132	29	195	0	224	703
07:15 AM	0	0	0	0	0	226	91	317	**98**	0	82	**180**	**34**	**210**	0	**244**	**741**
07:30 AM	0	0	0	0	0	232	**114**	346	41	**3**	**93**	137	27	191	0	218	701
07:45 AM	0	0	0	0	0	224	93	317	37	3	89	129	23	199	0	222	668
Total Volume	0	0	0	0	0	922	405	1327	246	6	326	578	113	795	0	908	2813
% App. Total	0	0	0		0	69.5	30.5		42.6	1	56.4		12.4	87.6	0		
PHF	.000	.000	.000	.000	.000	.960	.888	.956	.628	.500	.876	.803	.831	.946	.000	.930	.949

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 05_CRV 215NSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	**240**	107	**347**	70	0	62	132	29	195	0	224
+15 mins.	0	0	0	0	0	226	91	317	**98**	0	82	**180**	**34**	**210**	0	**244**
+30 mins.	0	0	0	0	0	232	**114**	346	41	**3**	**93**	137	27	191	0	218
+45 mins.	0	0	0	0	0	224	93	317	37	3	89	129	23	199	0	222
Total Volume	0	0	0	0	0	922	405	1327	246	6	326	578	113	795	0	908
% App. Total	0	0	0		0	69.5	30.5		42.6	1	56.4		12.4	87.6	0	
PHF	.000	.000	.000	.000	.000	.960	.888	.956	.628	.500	.876	.803	.831	.946	.000	.930

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 05_CRV 215NSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

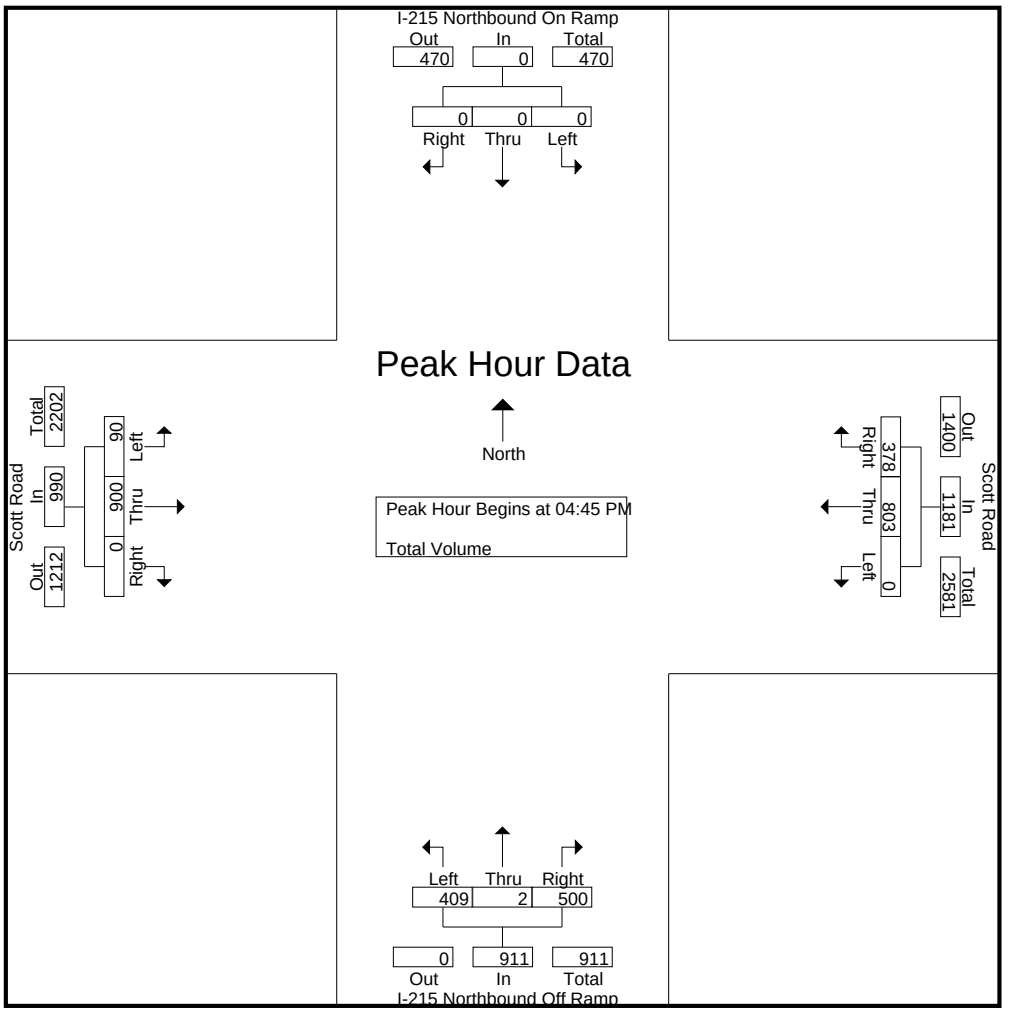
	I-215 Northbound On Ramp Southbound				Scott Road Westbound				I-215 Northbound Off Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	204	113	317	88	1	108	197	20	244	0	264	778
04:15 PM	0	0	0	0	0	209	107	316	75	0	110	185	24	212	0	236	737
04:30 PM	0	0	0	0	0	209	103	312	101	0	122	223	25	208	0	233	768
04:45 PM	0	0	0	0	0	210	91	301	102	0	118	220	23	215	0	238	759
Total	0	0	0	0	0	832	414	1246	366	1	458	825	92	879	0	971	3042
05:00 PM	0	0	0	0	0	188	89	277	104	1	124	229	22	227	0	249	755
05:15 PM	0	0	0	0	0	193	114	307	103	1	134	238	23	228	0	251	796
05:30 PM	0	0	0	0	0	212	84	296	100	0	124	224	22	230	0	252	772
05:45 PM	0	0	0	0	0	205	97	302	91	1	110	202	13	226	0	239	743
Total	0	0	0	0	0	798	384	1182	398	3	492	893	80	911	0	991	3066
Grand Total	0	0	0	0	0	1630	798	2428	764	4	950	1718	172	1790	0	1962	6108
Apprch %	0	0	0		0	67.1	32.9		44.5	0.2	55.3		8.8	91.2	0		
Total %	0	0	0	0	0	26.7	13.1	39.8	12.5	0.1	15.6	28.1	2.8	29.3	0	32.1	

	I-215 Northbound On Ramp Southbound				Scott Road Westbound				I-215 Northbound Off Ramp Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	210	91	301	102	0	118	220	**23**	215	0	238	759
05:00 PM	0	0	0	0	0	188	89	277	**104**	**1**	124	229	22	227	0	249	755
05:15 PM	0	0	0	0	0	193	**114**	**307**	103	1	**134**	**238**	23	228	0	251	**796**
05:30 PM	0	0	0	0	0	**212**	84	296	100	0	124	224	22	**230**	0	**252**	772
Total Volume	0	0	0	0	0	803	378	1181	409	2	500	911	90	900	0	990	3082
% App. Total	0	0	0		0	68	32		44.9	0.2	54.9		9.1	90.9	0		
PHF	.000	.000	.000	.000	.000	.947	.829	.962	.983	.500	.933	.957	.978	.978	.000	.982	.968

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Scott Road
Weather: Clear

File Name : 05_CRV 215NSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				05:00 PM			
+0 mins.	0	0	0	0	0	204	**113**	**317**	102	0	118	220	22	227	0	249
+15 mins.	0	0	0	0	0	209	107	316	**104**	**1**	124	229	**23**	228	0	251
+30 mins.	0	0	0	0	0	209	103	312	103	1	**134**	**238**	22	**230**	0	**252**
+45 mins.	0	0	0	0	0	**210**	91	301	100	0	124	224	13	226	0	239
Total Volume	0	0	0	0	0	832	414	1246	409	2	500	911	80	911	0	991
% App. Total	0	0	0		0	66.8	33.2		44.9	0.2	54.9		8.1	91.9	0	
PHF	.000	.000	.000	.000	.000	.990	.916	.983	.983	.500	.933	.957	.870	.990	.000	.983

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Antelope Road
E/W: Scott Road
Weather: Clear

File Name : 06_CRV ANSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

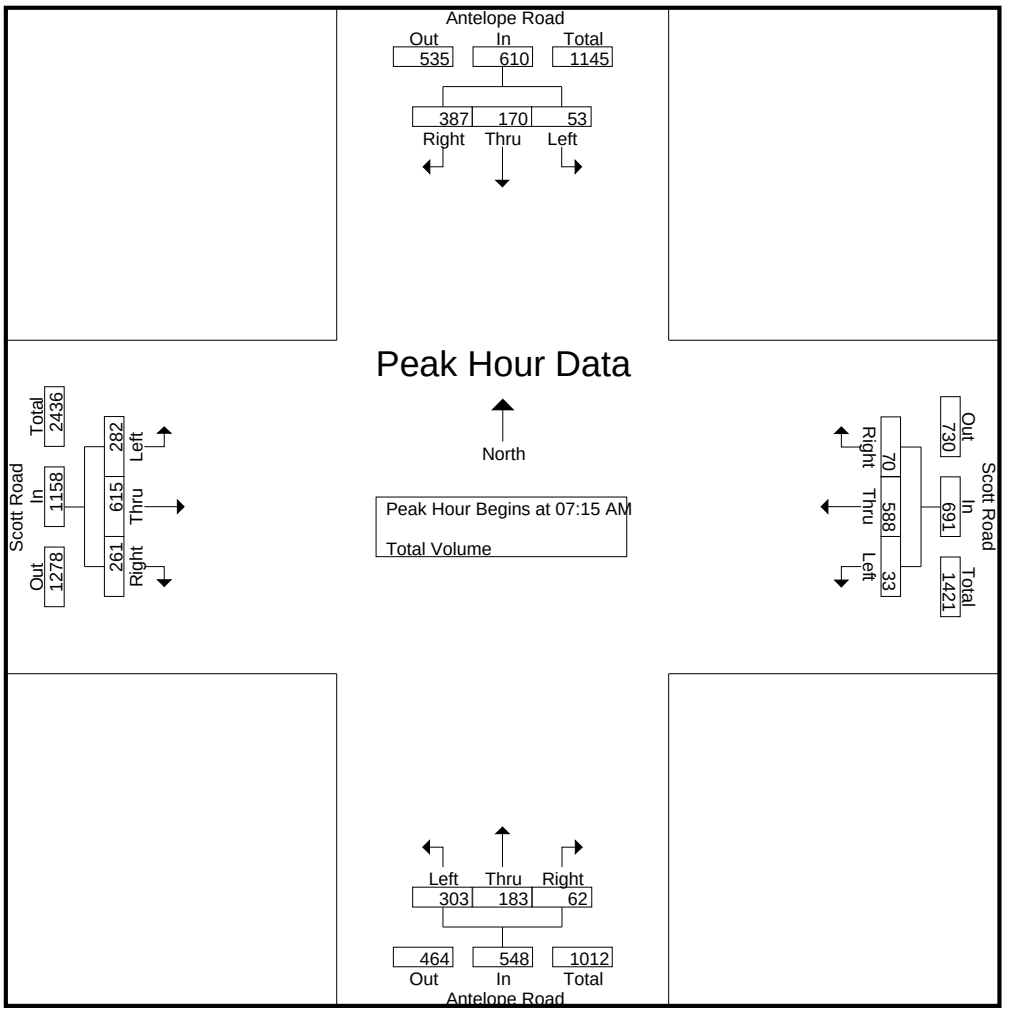
	Antelope Road Southbound				Scott Road Westbound				Antelope Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	43	85	135	5	186	4	195	79	13	9	101	36	143	64	243	674
07:15 AM	11	45	107	163	3	157	8	168	69	24	16	109	65	152	68	285	725
07:30 AM	15	49	99	163	6	153	18	177	99	62	12	173	67	146	65	278	791
07:45 AM	16	32	80	128	11	143	32	186	87	56	16	159	84	152	59	295	768
Total	49	169	371	589	25	639	62	726	334	155	53	542	252	593	256	1101	2958
08:00 AM	11	44	101	156	13	135	12	160	48	41	18	107	66	165	69	300	723
08:15 AM	4	36	77	117	16	148	18	182	61	53	21	135	45	175	56	276	710
08:30 AM	11	43	71	125	13	159	11	183	64	43	14	121	39	113	61	213	642
08:45 AM	14	39	71	124	14	183	13	210	62	26	20	108	51	108	58	217	659
Total	40	162	320	522	56	625	54	735	235	163	73	471	201	561	244	1006	2734
Grand Total	89	331	691	1111	81	1264	116	1461	569	318	126	1013	453	1154	500	2107	5692
Apprch %	8	29.8	62.2		5.5	86.5	7.9		56.2	31.4	12.4		21.5	54.8	23.7		
Total %	1.6	5.8	12.1	19.5	1.4	22.2	2	25.7	10	5.6	2.2	17.8	8	20.3	8.8	37	

	Antelope Road Southbound				Scott Road Westbound				Antelope Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	11	45	**107**	**163**	3	**157**	8	168	69	24	16	109	65	152	68	285	725
07:30 AM	15	**49**	99	163	6	153	18	177	**99**	**62**	12	**173**	67	146	65	278	**791**
07:45 AM	**16**	32	80	128	11	143	**32**	**186**	87	56	16	159	**84**	152	59	295	768
08:00 AM	11	44	101	156	**13**	135	12	160	48	41	**18**	107	66	**165**	**69**	**300**	723
Total Volume	53	170	387	610	33	588	70	691	303	183	62	548	282	615	261	1158	3007
% App. Total	8.7	27.9	63.4		4.8	85.1	10.1		55.3	33.4	11.3		24.4	53.1	22.5		
PHF	.828	.867	.904	.936	.635	.936	.547	.929	.765	.738	.861	.792	.839	.932	.946	.965	.950

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Antelope Road
E/W: Scott Road
Weather: Clear

File Name : 06_CRV ANSC AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				08:00 AM				07:30 AM				07:15 AM			
+0 mins.	11	45	**107**	**163**	13	135	12	160	**99**	**62**	12	**173**	65	152	68	285
+15 mins.	15	**49**	99	163	**16**	148	**18**	182	87	56	16	159	67	146	65	278
+30 mins.	**16**	32	80	128	13	159	11	183	48	41	18	107	**84**	152	59	295
+45 mins.	11	44	101	156	14	**183**	13	**210**	61	53	**21**	135	66	**165**	**69**	**300**
Total Volume	53	170	387	610	56	625	54	735	295	212	67	574	282	615	261	1158
% App. Total	8.7	27.9	63.4		7.6	85	7.3		51.4	36.9	11.7		24.4	53.1	22.5	
PHF	.828	.867	.904	.936	.875	.854	.750	.875	.745	.855	.798	.829	.839	.932	.946	.965

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Antelope Road
E/W: Scott Road
Weather: Clear

File Name : 06_CRV ANSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

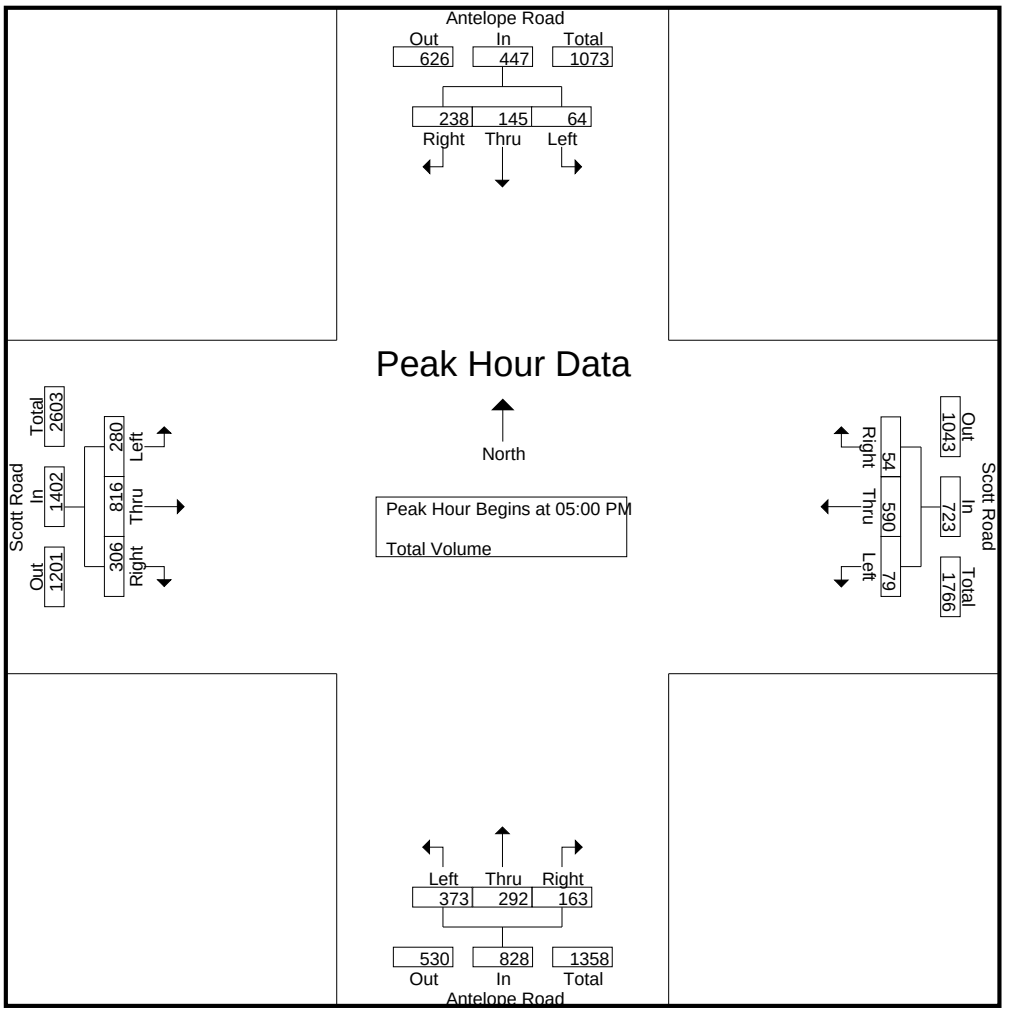
	Antelope Road Southbound				Scott Road Westbound				Antelope Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	17	42	82	141	11	169	6	186	76	55	31	162	73	217	77	367	856
04:15 PM	23	27	73	123	8	146	10	164	87	58	50	195	54	187	76	317	799
04:30 PM	17	44	66	127	12	145	15	172	99	70	38	207	65	183	73	321	827
04:45 PM	19	40	73	132	22	152	13	187	90	63	32	185	66	198	67	331	835
Total	76	153	294	523	53	612	44	709	352	246	151	749	258	785	293	1336	3317
05:00 PM	22	49	54	125	15	129	5	149	103	73	55	231	69	202	73	344	849
05:15 PM	13	34	58	105	21	150	14	185	96	66	28	190	83	224	66	373	853
05:30 PM	15	24	67	106	17	154	17	188	88	84	43	215	61	193	93	347	856
05:45 PM	14	38	59	111	26	157	18	201	86	69	37	192	67	197	74	338	842
Total	64	145	238	447	79	590	54	723	373	292	163	828	280	816	306	1402	3400
Grand Total	140	298	532	970	132	1202	98	1432	725	538	314	1577	538	1601	599	2738	6717
Apprch %	14.4	30.7	54.8		9.2	83.9	6.8		46	34.1	19.9		19.6	58.5	21.9		
Total %	2.1	4.4	7.9	14.4	2	17.9	1.5	21.3	10.8	8	4.7	23.5	8	23.8	8.9	40.8	

	Antelope Road Southbound				Scott Road Westbound				Antelope Road Northbound				Scott Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**22**	**49**	54	**125**	15	129	5	149	**103**	73	**55**	**231**	69	202	73	344	849
05:15 PM	13	34	58	105	21	150	14	185	96	66	28	190	**83**	**224**	66	**373**	853
05:30 PM	15	24	**67**	106	17	154	17	188	88	**84**	43	215	61	193	**93**	347	**856**
05:45 PM	14	38	59	111	**26**	**157**	**18**	**201**	86	69	37	192	67	197	74	338	842
Total Volume	64	145	238	447	79	590	54	723	373	292	163	828	280	816	306	1402	3400
% App. Total	14.3	32.4	53.2		10.9	81.6	7.5		45	35.3	19.7		20	58.2	21.8		
PHF	.727	.740	.888	.894	.760	.939	.750	.899	.905	.869	.741	.896	.843	.911	.823	.940	.993

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Antelope Road
E/W: Scott Road
Weather: Clear

File Name : 06_CRV ANSC PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	17	42	**82**	**141**	15	129	5	149	**103**	73	**55**	**231**	69	202	73	344
+15 mins.	**23**	27	73	123	21	150	14	185	96	66	28	190	**83**	**224**	66	**373**
+30 mins.	17	**44**	66	127	17	154	17	188	88	**84**	43	215	61	193	**93**	347
+45 mins.	19	40	73	132	**26**	**157**	**18**	**201**	86	69	37	192	67	197	74	338
Total Volume	76	153	294	523	79	590	54	723	373	292	163	828	280	816	306	1402
% App. Total	14.5	29.3	56.2		10.9	81.6	7.5		45	35.3	19.7		20	58.2	21.8	
PHF	.826	.869	.896	.927	.760	.939	.750	.899	.905	.869	.741	.896	.843	.911	.823	.940

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Zeiders Road
E/W: Keller Road
Weather: Clear

File Name : 07_CRV ZEKE AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

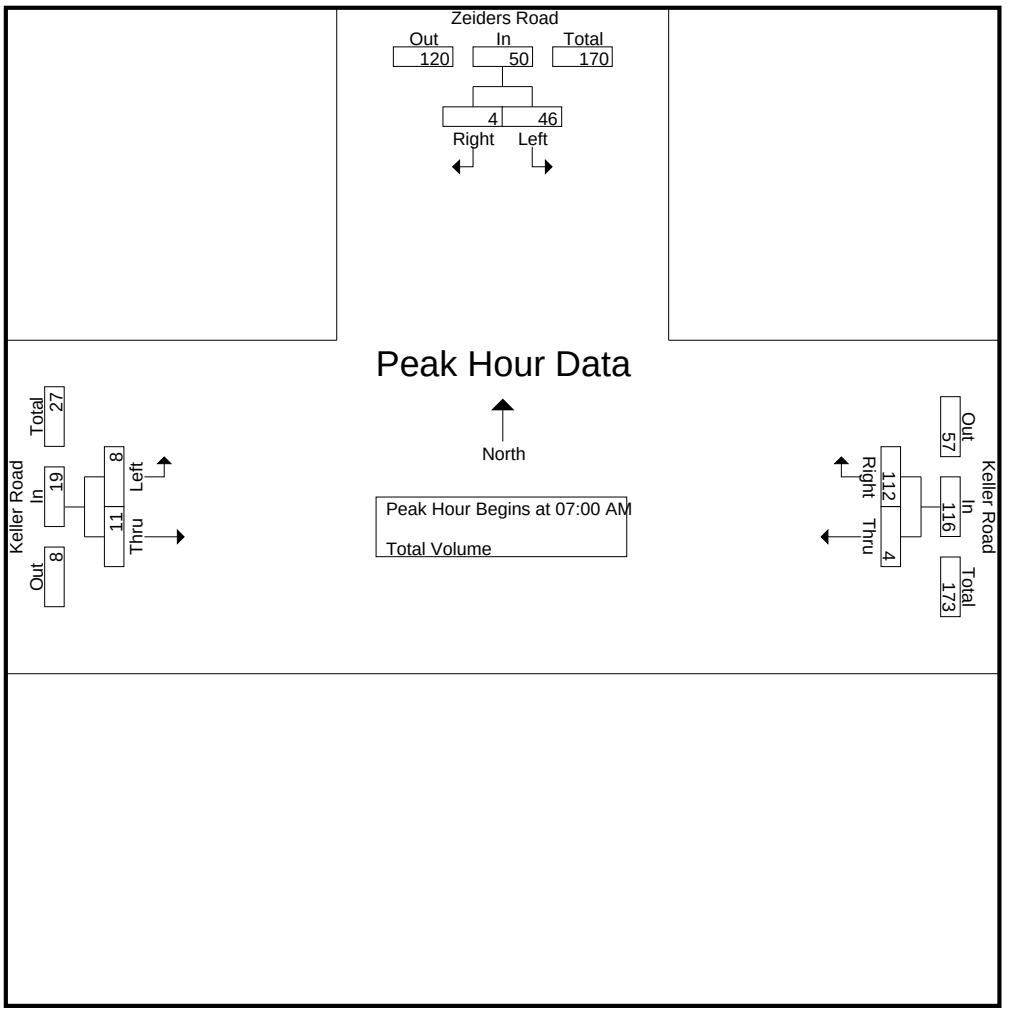
	Zeiders Road Southbound			Keller Road Westbound			Keller Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	6	1	7	0	31	31	3	3	6	44
07:15 AM	10	0	10	1	46	47	1	0	1	58
07:30 AM	13	1	14	3	22	25	2	3	5	44
07:45 AM	17	2	19	0	13	13	2	5	7	39
Total	46	4	50	4	112	116	8	11	19	185
08:00 AM	9	1	10	1	4	5	2	3	5	20
08:15 AM	4	1	5	1	3	4	0	2	2	11
08:30 AM	3	0	3	1	4	5	0	2	2	10
08:45 AM	0	1	1	3	3	6	0	0	0	7
Total	16	3	19	6	14	20	2	7	9	48
Grand Total	62	7	69	10	126	136	10	18	28	233
Apprch %	89.9	10.1		7.4	92.6		35.7	64.3		
Total %	26.6	3	29.6	4.3	54.1	58.4	4.3	7.7	12	

	Zeiders Road Southbound			Keller Road Westbound			Keller Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	6	1	7	0	31	31	**3**	3	6	44
07:15 AM	10	0	10	1	**46**	**47**	1	0	1	**58**
07:30 AM	13	1	14	**3**	22	25	2	3	5	44
07:45 AM	**17**	**2**	**19**	0	13	13	2	**5**	**7**	39
Total Volume	46	4	50	4	112	116	8	11	19	185
% App. Total	92	8		3.4	96.6		42.1	57.9		
PHF	.676	.500	.658	.333	.609	.617	.667	.550	.679	.797

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Zeiders Road
E/W: Keller Road
Weather: Clear

File Name : 07_CRV ZEKE AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:00 AM		
+0 mins.	10	0	10	0	31	31	**3**	3	6
+15 mins.	13	1	14	1	**46**	**47**	1	0	1
+30 mins.	**17**	**2**	**19**	**3**	22	25	2	3	5
+45 mins.	9	1	10	0	13	13	2	**5**	**7**
Total Volume	49	4	53	4	112	116	8	11	19
% App. Total	92.5	7.5		3.4	96.6		42.1	57.9	
PHF	.721	.500	.697	.333	.609	.617	.667	.550	.679

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Zeiders Road
E/W: Keller Road
Weather: Clear

File Name : 07_CRV ZEKE PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

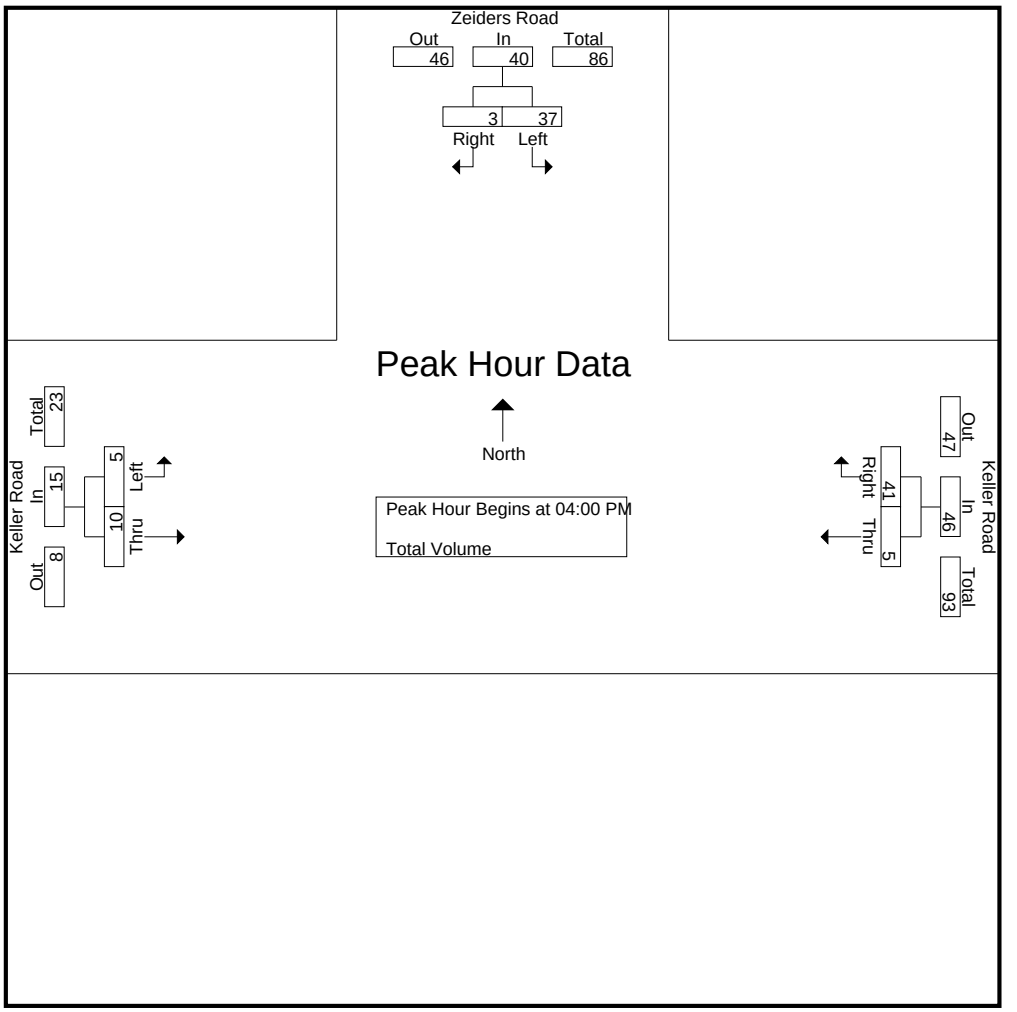
	Zeiders Road Southbound			Keller Road Westbound			Keller Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	12	1	13	2	5	7	0	6	6	26
04:15 PM	7	0	7	1	14	15	1	3	4	26
04:30 PM	10	0	10	2	6	8	1	0	1	19
04:45 PM	8	2	10	0	16	16	3	1	4	30
Total	37	3	40	5	41	46	5	10	15	101
05:00 PM	7	2	9	0	13	13	1	1	2	24
05:15 PM	5	1	6	2	12	14	3	0	3	23
05:30 PM	9	0	9	2	7	9	0	0	0	18
05:45 PM	12	1	13	1	9	10	1	1	2	25
Total	33	4	37	5	41	46	5	2	7	90
Grand Total	70	7	77	10	82	92	10	12	22	191
Apprch %	90.9	9.1		10.9	89.1		45.5	54.5		
Total %	36.6	3.7	40.3	5.2	42.9	48.2	5.2	6.3	11.5	

	Zeiders Road Southbound			Keller Road Westbound			Keller Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**12**	1	**13**	**2**	5	7	0	**6**	**6**	26
04:15 PM	7	0	7	1	14	15	1	3	4	26
04:30 PM	10	0	10	2	6	8	1	0	1	19
04:45 PM	8	**2**	10	0	**16**	**16**	**3**	1	4	**30**
Total Volume	37	3	40	5	41	46	5	10	15	101
% App. Total	92.5	7.5		10.9	89.1		33.3	66.7		
PHF	.771	.375	.769	.625	.641	.719	.417	.417	.625	.842

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Zeiders Road
E/W: Keller Road
Weather: Clear

File Name : 07_CRV ZEKE PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:00 PM		
+0 mins.	**12**	1	**13**	1	14	15	0	**6**	**6**
+15 mins.	7	0	7	**2**	6	8	1	3	4
+30 mins.	10	0	10	0	**16**	**16**	1	0	1
+45 mins.	8	**2**	10	0	13	13	**3**	1	4
Total Volume	37	3	40	3	49	52	5	10	15
% App. Total	92.5	7.5		5.8	94.2		33.3	66.7	
PHF	.771	.375	.769	.375	.766	.813	.417	.417	.625

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Keller Road
Weather: Clear

File Name : 01_MUR ANKE AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

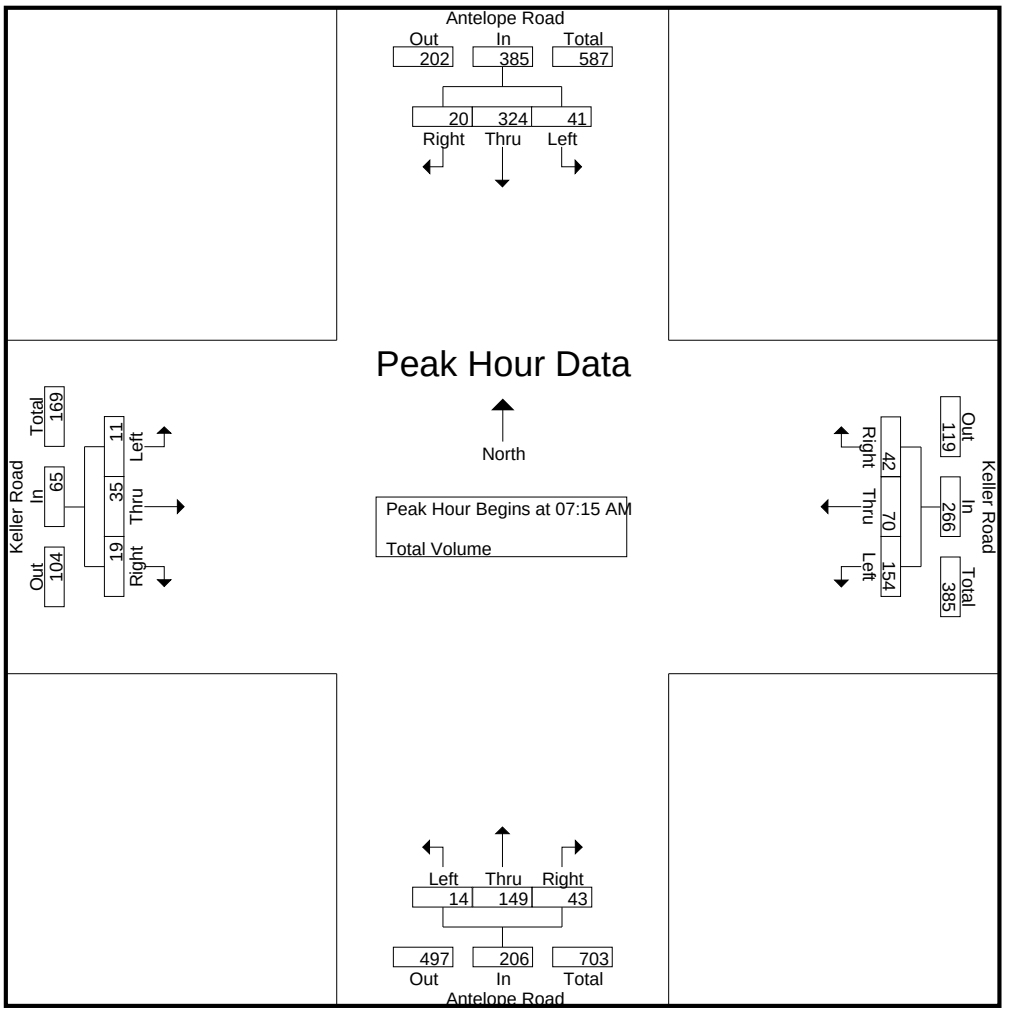
	Antelope Road Southbound				Keller Road Westbound				Antelope Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	53	1	58	37	29	11	77	3	14	18	35	0	3	6	9	179
07:15 AM	10	76	4	90	32	36	9	77	8	42	14	64	2	14	3	19	250
07:30 AM	6	87	3	96	52	21	12	85	4	45	8	57	3	4	6	13	251
07:45 AM	12	88	7	107	40	8	14	62	2	34	9	45	2	13	5	20	234
Total	32	304	15	351	161	94	46	301	17	135	49	201	7	34	20	61	914
08:00 AM	13	73	6	92	30	5	7	42	0	28	12	40	4	4	5	13	187
08:15 AM	12	68	3	83	26	1	9	36	1	28	12	41	3	4	5	12	172
08:30 AM	11	80	1	92	29	5	2	36	2	24	10	36	4	1	0	5	169
08:45 AM	13	72	2	87	23	3	5	31	1	31	12	44	2	2	1	5	167
Total	49	293	12	354	108	14	23	145	4	111	46	161	13	11	11	35	695
Grand Total	81	597	27	705	269	108	69	446	21	246	95	362	20	45	31	96	1609
Apprch %	11.5	84.7	3.8		60.3	24.2	15.5		5.8	68	26.2		20.8	46.9	32.3		
Total %	5	37.1	1.7	43.8	16.7	6.7	4.3	27.7	1.3	15.3	5.9	22.5	1.2	2.8	1.9	6	

	Antelope Road Southbound				Keller Road Westbound				Antelope Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	10	76	4	90	32	**36**	9	77	**8**	42	**14**	**64**	2	**14**	3	19	250
07:30 AM	6	87	3	96	**52**	21	12	**85**	4	**45**	8	57	3	4	**6**	13	**251**
07:45 AM	12	**88**	**7**	**107**	40	8	**14**	62	2	34	9	45	2	13	5	**20**	234
08:00 AM	**13**	73	6	92	30	5	7	42	0	28	12	40	**4**	4	5	13	187
Total Volume	41	324	20	385	154	70	42	266	14	149	43	206	11	35	19	65	922
% App. Total	10.6	84.2	5.2		57.9	26.3	15.8		6.8	72.3	20.9		16.9	53.8	29.2		
PHF	.788	.920	.714	.900	.740	.486	.750	.782	.438	.828	.768	.805	.688	.625	.792	.813	.918

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Keller Road
Weather: Clear

File Name : 01_MUR ANKE AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:15 AM				07:15 AM			
+0 mins.	10	76	4	90	37	29	11	77	**8**	42	**14**	**64**	2	**14**	3	19
+15 mins.	6	87	3	96	32	**36**	9	77	4	**45**	8	57	3	4	**6**	13
+30 mins.	12	**88**	**7**	**107**	**52**	21	12	**85**	2	34	9	45	2	13	5	**20**
+45 mins.	**13**	73	6	92	40	8	**14**	62	0	28	12	40	**4**	4	5	13
Total Volume	41	324	20	385	161	94	46	301	14	149	43	206	11	35	19	65
% App. Total	10.6	84.2	5.2		53.5	31.2	15.3		6.8	72.3	20.9		16.9	53.8	29.2	
PHF	.788	.920	.714	.900	.774	.653	.821	.885	.438	.828	.768	.805	.688	.625	.792	.813

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Keller Road
Weather: Clear

File Name : 01_MUR ANKE PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

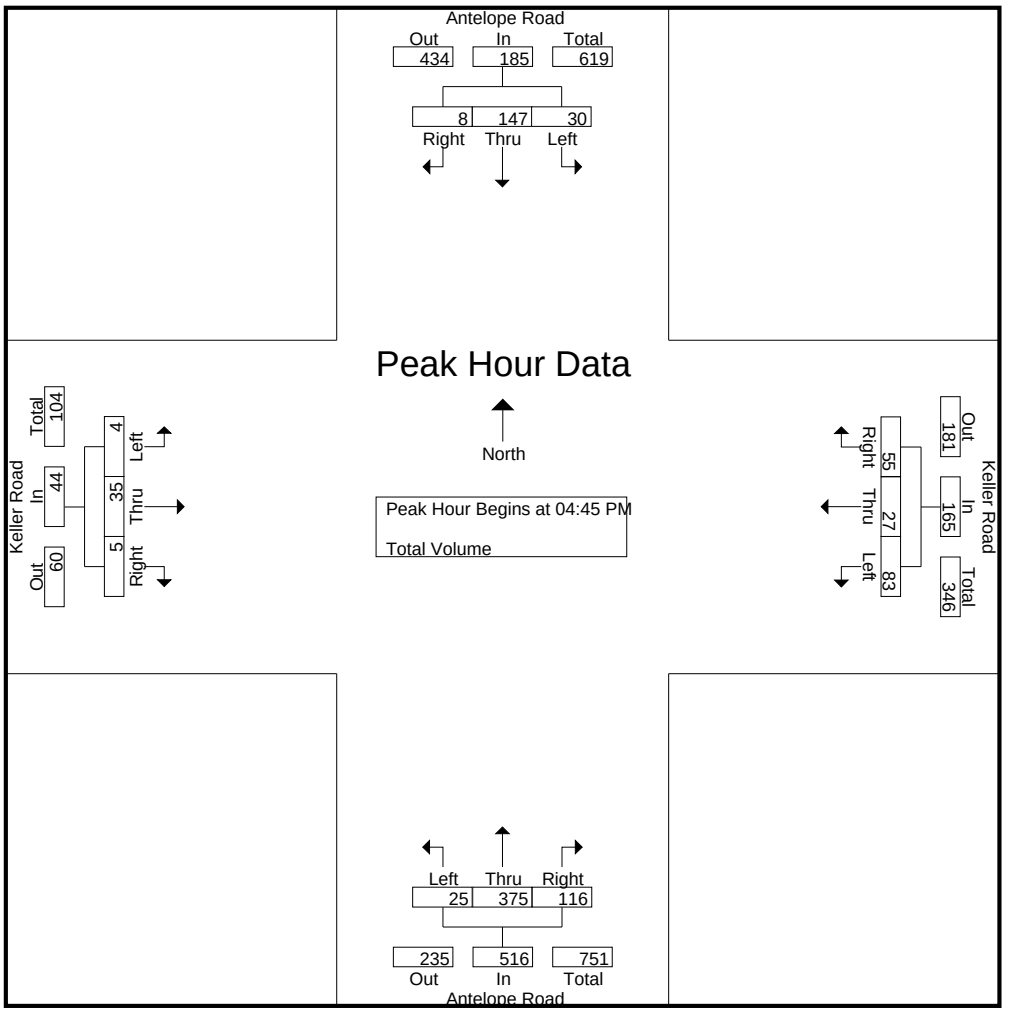
	Antelope Road Southbound				Keller Road Westbound				Antelope Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	44	2	52	21	12	11	44	9	77	28	114	2	5	5	12	222
04:15 PM	10	39	2	51	22	6	7	35	6	77	25	108	3	11	4	18	212
04:30 PM	6	39	3	48	25	4	9	38	7	85	30	122	2	7	4	13	221
04:45 PM	9	38	2	49	18	10	22	50	4	84	26	114	3	4	2	9	222
Total	31	160	9	200	86	32	49	167	26	323	109	458	10	27	15	52	877
05:00 PM	5	41	4	50	18	6	9	33	11	97	33	141	0	4	0	4	228
05:15 PM	9	27	1	37	17	6	9	32	3	100	22	125	1	20	0	21	215
05:30 PM	7	41	1	49	30	5	15	50	7	94	35	136	0	7	3	10	245
05:45 PM	5	42	1	48	19	7	8	34	11	60	30	101	0	7	4	11	194
Total	26	151	7	184	84	24	41	149	32	351	120	503	1	38	7	46	882
Grand Total	57	311	16	384	170	56	90	316	58	674	229	961	11	65	22	98	1759
Apprch %	14.8	81	4.2		53.8	17.7	28.5		6	70.1	23.8		11.2	66.3	22.4		
Total %	3.2	17.7	0.9	21.8	9.7	3.2	5.1	18	3.3	38.3	13	54.6	0.6	3.7	1.3	5.6	

	Antelope Road Southbound				Keller Road Westbound				Antelope Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**9**	38	2	49	18	**10**	**22**	**50**	4	84	26	114	**3**	4	2	9	222
05:00 PM	5	**41**	**4**	**50**	18	6	9	33	**11**	97	33	**141**	0	4	0	4	228
05:15 PM	9	27	1	37	17	6	9	32	3	**100**	22	125	1	**20**	0	**21**	215
05:30 PM	7	41	1	49	**30**	5	15	50	7	94	**35**	136	0	7	**3**	10	**245**
Total Volume	30	147	8	185	83	27	55	165	25	375	116	516	4	35	5	44	910
% App. Total	16.2	79.5	4.3		50.3	16.4	33.3		4.8	72.7	22.5		9.1	79.5	11.4		
PHF	.833	.896	.500	.925	.692	.675	.625	.825	.568	.938	.829	.915	.333	.438	.417	.524	.929

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Keller Road
Weather: Clear

File Name : 01_MUR ANKE PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	6	**44**	2	**52**	21	**12**	11	44	4	84	26	114	2	5	**5**	12
+15 mins.	**10**	39	2	51	22	6	7	35	**11**	97	33	**141**	**3**	**11**	4	**18**
+30 mins.	6	39	**3**	48	**25**	4	9	38	3	**100**	22	125	2	7	4	13
+45 mins.	9	38	2	49	18	10	**22**	**50**	7	94	**35**	136	3	4	2	9
Total Volume	31	160	9	200	86	32	49	167	25	375	116	516	10	27	15	52
% App. Total	15.5	80	4.5		51.5	19.2	29.3		4.8	72.7	22.5		19.2	51.9	28.8	
PHF	.775	.909	.750	.962	.860	.667	.557	.835	.568	.938	.829	.915	.833	.614	.750	.722

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Mapleton Avenue/Warner Place
E/W: Keller Road
Weather: Clear

File Name : 09_MUR MAKE AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

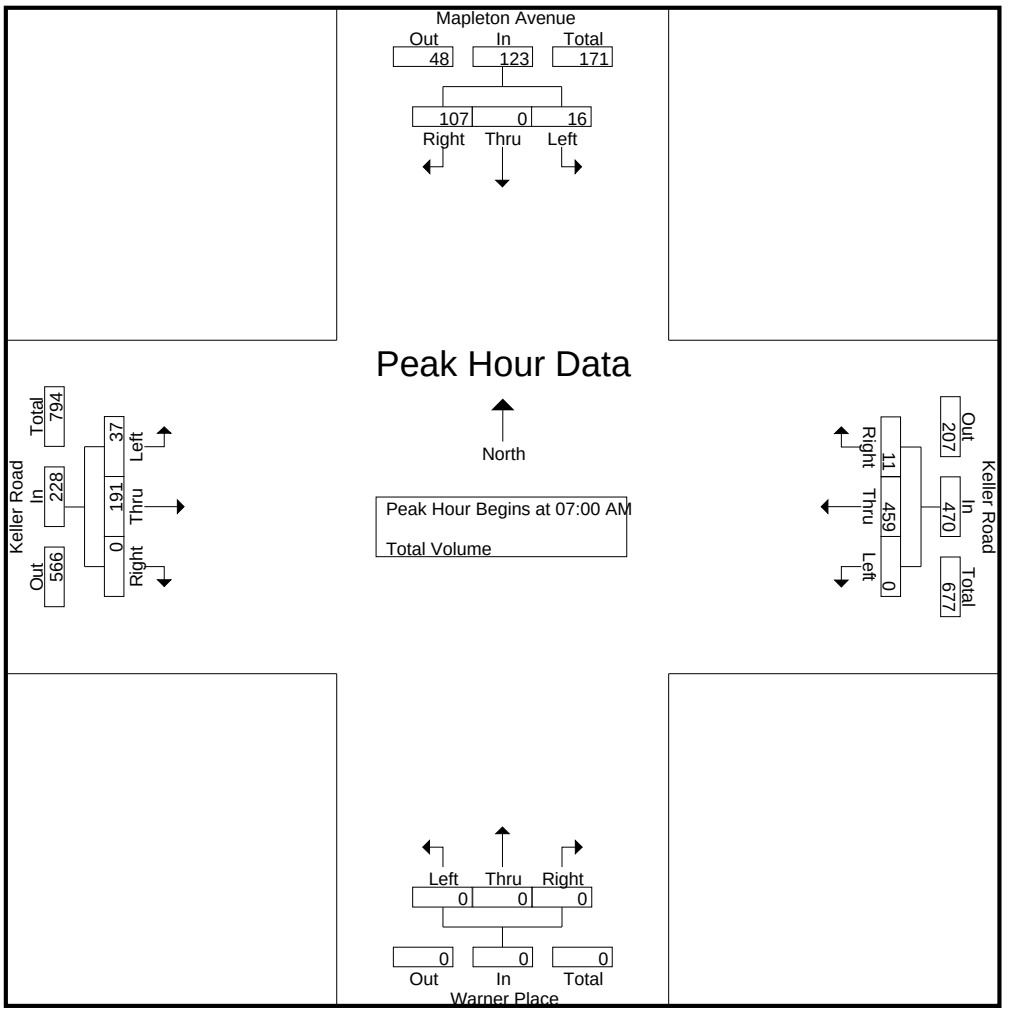
	Mapleton Avenue Southbound				Keller Road Westbound				Warner Place Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	29	31	0	110	1	111	0	0	0	0	3	31	0	34	176
07:15 AM	6	0	29	35	0	107	4	111	0	0	0	0	13	79	0	92	238
07:30 AM	4	0	29	33	0	125	2	127	0	0	0	0	14	52	0	66	226
07:45 AM	4	0	20	24	0	117	4	121	0	0	0	0	7	29	0	36	181
Total	16	0	107	123	0	459	11	470	0	0	0	0	37	191	0	228	821
08:00 AM	3	0	10	13	0	59	2	61	0	0	0	0	5	21	0	26	100
08:15 AM	4	0	17	21	0	53	2	55	0	0	0	0	4	23	0	27	103
08:30 AM	4	0	18	22	0	65	2	67	0	0	0	0	3	16	0	19	108
08:45 AM	0	0	11	11	0	40	1	41	0	0	0	0	7	13	0	20	72
Total	11	0	56	67	0	217	7	224	0	0	0	0	19	73	0	92	383
Grand Total	27	0	163	190	0	676	18	694	0	0	0	0	56	264	0	320	1204
Apprch %	14.2	0	85.8		0	97.4	2.6		0	0	0		17.5	82.5	0		
Total %	2.2	0	13.5	15.8	0	56.1	1.5	57.6	0	0	0	0	4.7	21.9	0	26.6	

	Mapleton Avenue Southbound				Keller Road Westbound				Warner Place Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	2	0	**29**	31	0	110	1	111	0	0	0	0	3	31	0	34	176
07:15 AM	**6**	0	29	**35**	0	107	**4**	111	0	0	0	0	13	**79**	0	**92**	**238**
07:30 AM	4	0	29	33	0	**125**	2	**127**	0	0	0	0	**14**	52	0	66	226
07:45 AM	4	0	20	24	0	117	4	121	0	0	0	0	7	29	0	36	181
Total Volume	16	0	107	123	0	459	11	470	0	0	0	0	37	191	0	228	821
% App. Total	13	0	87		0	97.7	2.3		0	0	0		16.2	83.8	0		
PHF	.667	.000	.922	.879	.000	.918	.688	.925	.000	.000	.000	.000	.661	.604	.000	.620	.862

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Mapleton Avenue/Warner Place
E/W: Keller Road
Weather: Clear

File Name : 09_MUR MAKE AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	2	0	**29**	31	0	110	1	111	0	0	0	0	3	31	0	34
+15 mins.	**6**	0	29	**35**	0	107	**4**	111	0	0	0	0	13	**79**	0	**92**
+30 mins.	4	0	29	33	0	**125**	2	**127**	0	0	0	0	**14**	52	0	66
+45 mins.	4	0	20	24	0	117	4	121	0	0	0	0	7	29	0	36
Total Volume	16	0	107	123	0	459	11	470	0	0	0	0	37	191	0	228
% App. Total	13	0	87		0	97.7	2.3		0	0	0		16.2	83.8	0	
PHF	.667	.000	.922	.879	.000	.918	.688	.925	.000	.000	.000	.000	.661	.604	.000	.620

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Mapleton Avenue/Warner Place
E/W: Keller Road
Weather: Clear

File Name : 09_MUR MAKE PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

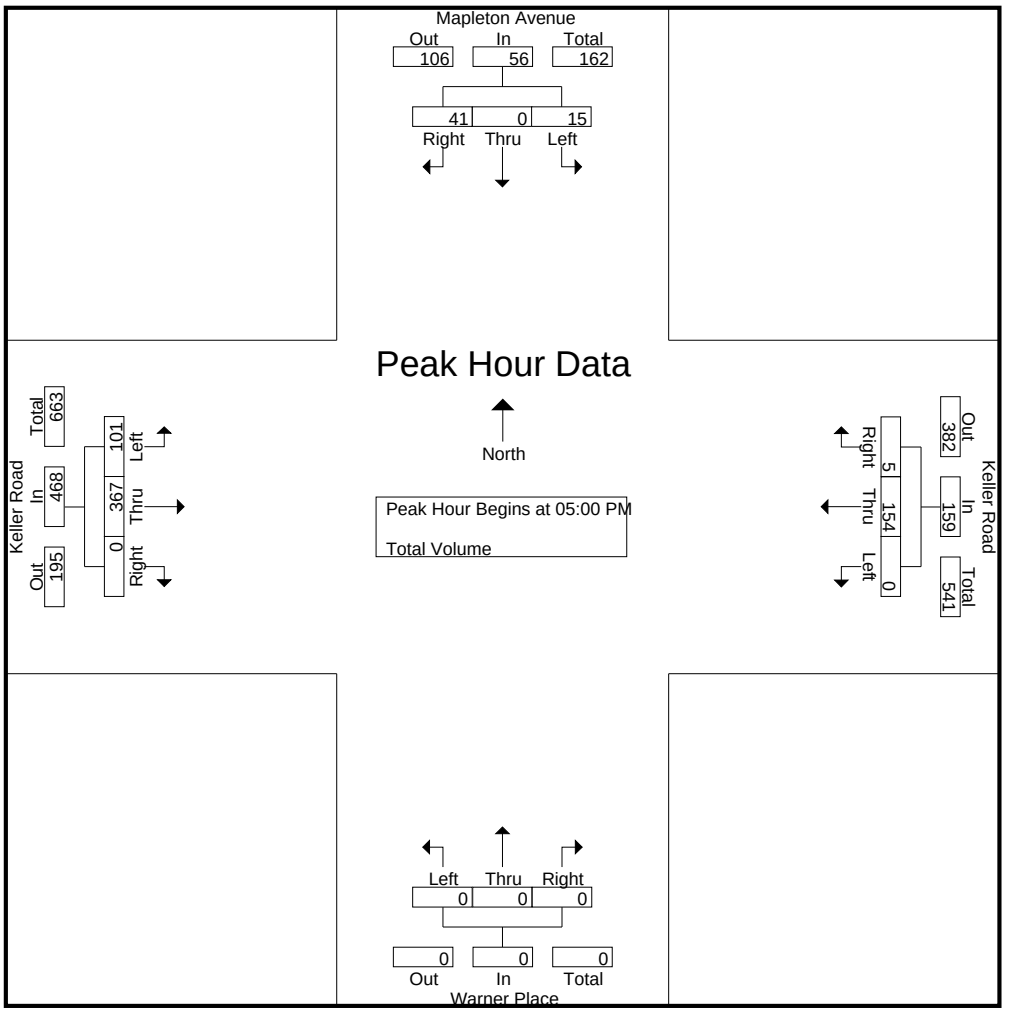
	Mapleton Avenue Southbound				Keller Road Westbound				Warner Place Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	0	6	9	0	40	3	43	0	0	0	0	18	65	0	83	135
04:15 PM	1	0	12	13	0	39	1	40	0	0	0	0	19	76	0	95	148
04:30 PM	5	0	9	14	0	43	2	45	0	0	0	0	18	57	0	75	134
04:45 PM	5	0	4	9	0	41	1	42	0	0	0	0	19	64	0	83	134
Total	14	0	31	45	0	163	7	170	0	0	0	0	74	262	0	336	551
05:00 PM	6	0	8	14	0	38	3	41	0	0	0	0	25	84	0	109	164
05:15 PM	2	0	11	13	0	45	0	45	0	0	0	0	19	101	0	120	178
05:30 PM	4	0	16	20	0	33	2	35	0	0	0	0	30	89	0	119	174
05:45 PM	3	0	6	9	0	38	0	38	0	0	0	0	27	93	0	120	167
Total	15	0	41	56	0	154	5	159	0	0	0	0	101	367	0	468	683
Grand Total	29	0	72	101	0	317	12	329	0	0	0	0	175	629	0	804	1234
Apprch %	28.7	0	71.3		0	96.4	3.6		0	0	0		21.8	78.2	0		
Total %	2.4	0	5.8	8.2	0	25.7	1	26.7	0	0	0	0	14.2	51	0	65.2	

	Mapleton Avenue Southbound				Keller Road Westbound				Warner Place Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**6**	0	8	14	0	38	**3**	41	0	0	0	0	25	84	0	109	164
05:15 PM	2	0	11	13	0	**45**	0	**45**	0	0	0	0	19	**101**	0	**120**	**178**
05:30 PM	4	0	**16**	**20**	0	33	2	35	0	0	0	0	**30**	89	0	119	174
05:45 PM	3	0	6	9	0	38	0	38	0	0	0	0	27	93	0	120	167
Total Volume	15	0	41	56	0	154	5	159	0	0	0	0	101	367	0	468	683
% App. Total	26.8	0	73.2		0	96.9	3.1		0	0	0		21.6	78.4	0		
PHF	.625	.000	.641	.700	.000	.856	.417	.883	.000	.000	.000	.000	.842	.908	.000	.975	.959

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Mapleton Avenue/Warner Place
E/W: Keller Road
Weather: Clear

File Name : 09_MUR MAKE PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:00 PM				05:00 PM			
+0 mins.	5	0	4	9	0	43	2	**45**	0	0	0	0	25	84	0	109
+15 mins.	**6**	0	8	14	0	41	1	42	0	0	0	0	19	**101**	0	**120**
+30 mins.	2	0	11	13	0	38	**3**	41	0	0	0	0	**30**	89	0	119
+45 mins.	4	0	**16**	**20**	0	**45**	0	45	0	0	0	0	27	93	0	120
Total Volume	17	0	39	56	0	167	6	173	0	0	0	0	101	367	0	468
% App. Total	30.4	0	69.6		0	96.5	3.5		0	0	0		21.6	78.4	0	
PHF	.708	.000	.609	.700	.000	.928	.500	.961	.000	.000	.000	.000	.842	.908	.000	.975

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Keller Road
Weather: Clear

File Name : 02_MUR WHKE AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

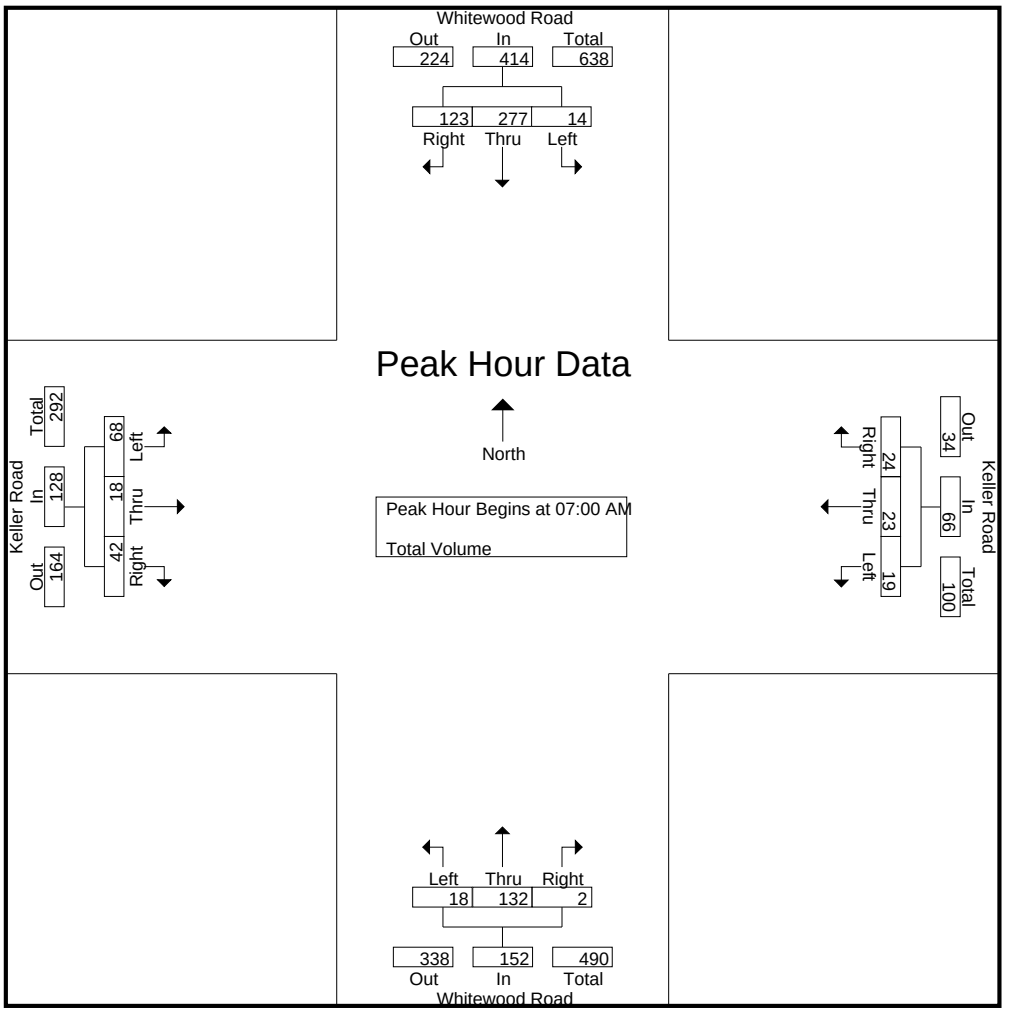
	Whitewood Road Southbound				Keller Road Westbound				Whitewood Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	101	25	128	7	8	5	20	4	26	0	30	7	4	6	17	195
07:15 AM	6	63	28	97	3	7	3	13	8	55	1	64	16	4	17	37	211
07:30 AM	4	51	33	88	5	4	10	19	4	30	0	34	32	7	13	52	193
07:45 AM	2	62	37	101	4	4	6	14	2	21	1	24	13	3	6	22	161
Total	14	277	123	414	19	23	24	66	18	132	2	152	68	18	42	128	760
08:00 AM	2	51	20	73	2	3	1	6	1	19	0	20	11	3	5	19	118
08:15 AM	0	32	23	55	6	0	6	12	3	19	0	22	8	2	3	13	102
08:30 AM	4	40	22	66	1	1	2	4	2	16	1	19	8	2	4	14	103
08:45 AM	3	22	10	35	6	2	2	10	5	18	4	27	6	4	2	12	84
Total	9	145	75	229	15	6	11	32	11	72	5	88	33	11	14	58	407
Grand Total	23	422	198	643	34	29	35	98	29	204	7	240	101	29	56	186	1167
Apprch %	3.6	65.6	30.8		34.7	29.6	35.7		12.1	85	2.9		54.3	15.6	30.1		
Total %	2	36.2	17	55.1	2.9	2.5	3	8.4	2.5	17.5	0.6	20.6	8.7	2.5	4.8	15.9	

	Whitewood Road Southbound				Keller Road Westbound				Whitewood Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	2	**101**	25	**128**	**7**	**8**	5	**20**	4	26	0	30	7	4	6	17	195
07:15 AM	**6**	63	28	97	3	7	3	13	**8**	**55**	**1**	**64**	16	4	**17**	37	**211**
07:30 AM	4	51	33	88	5	4	**10**	19	4	30	0	34	**32**	**7**	13	**52**	193
07:45 AM	2	62	**37**	101	4	4	6	14	2	21	1	24	13	3	6	22	161
Total Volume	14	277	123	414	19	23	24	66	18	132	2	152	68	18	42	128	760
% App. Total	3.4	66.9	29.7		28.8	34.8	36.4		11.8	86.8	1.3		53.1	14.1	32.8		
PHF	.583	.686	.831	.809	.679	.719	.600	.825	.563	.600	.500	.594	.531	.643	.618	.615	.900

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Keller Road
Weather: Clear

File Name : 02_MUR WHKE AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	2	**101**	25	**128**	**7**	**8**	5	**20**	4	26	0	30	16	4	**17**	37
+15 mins.	**6**	63	28	97	3	7	3	13	**8**	**55**	**1**	**64**	**32**	**7**	13	**52**
+30 mins.	4	51	33	88	5	4	**10**	19	4	30	0	34	13	3	6	22
+45 mins.	2	62	**37**	101	4	4	6	14	2	21	1	24	11	3	5	19
Total Volume	14	277	123	414	19	23	24	66	18	132	2	152	72	17	41	130
% App. Total	3.4	66.9	29.7		28.8	34.8	36.4		11.8	86.8	1.3		55.4	13.1	31.5	
PHF	.583	.686	.831	.809	.679	.719	.600	.825	.563	.600	.500	.594	.563	.607	.603	.625

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Keller Road
Weather: Clear

File Name : 02_MUR WHKE PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

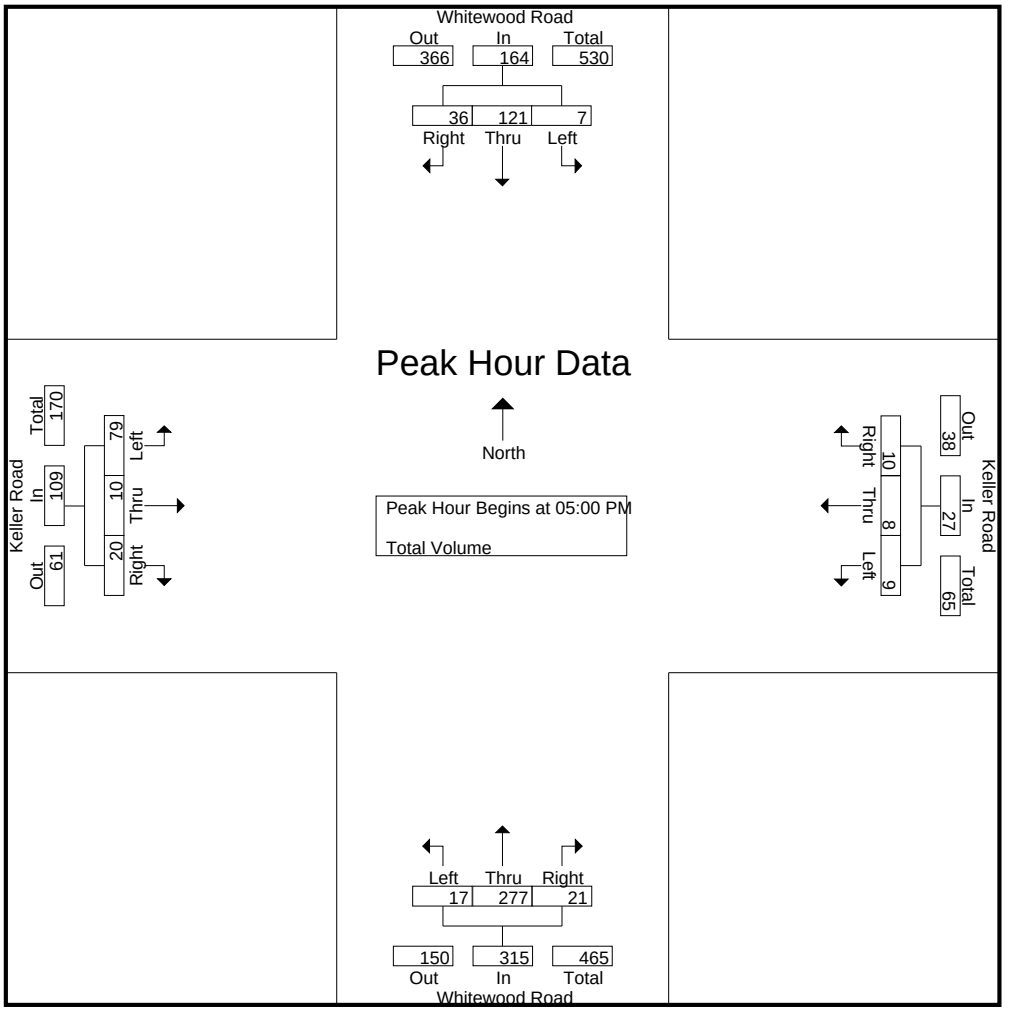
	Whitewood Road Southbound				Keller Road Westbound				Whitewood Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	32	20	53	2	3	3	8	4	61	3	68	16	5	4	25	154
04:15 PM	5	27	7	39	2	2	5	9	6	62	3	71	17	5	6	28	147
04:30 PM	5	21	7	33	3	0	3	6	6	50	5	61	15	3	2	20	120
04:45 PM	2	17	8	27	0	6	3	9	5	54	3	62	13	3	5	21	119
Total	13	97	42	152	7	11	14	32	21	227	14	262	61	16	17	94	540
05:00 PM	1	33	7	41	5	1	2	8	3	63	11	77	24	2	5	31	157
05:15 PM	1	30	6	37	1	2	3	6	6	76	5	87	17	4	4	25	155
05:30 PM	3	32	13	48	1	3	2	6	4	69	2	75	22	1	7	30	159
05:45 PM	2	26	10	38	2	2	3	7	4	69	3	76	16	3	4	23	144
Total	7	121	36	164	9	8	10	27	17	277	21	315	79	10	20	109	615
Grand Total	20	218	78	316	16	19	24	59	38	504	35	577	140	26	37	203	1155
Apprch %	6.3	69	24.7		27.1	32.2	40.7		6.6	87.3	6.1		69	12.8	18.2		
Total %	1.7	18.9	6.8	27.4	1.4	1.6	2.1	5.1	3.3	43.6	3	50	12.1	2.3	3.2	17.6	

	Whitewood Road Southbound				Keller Road Westbound				Whitewood Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	**33**	7	41	**5**	1	2	**8**	3	63	**11**	77	**24**	2	5	**31**	157
05:15 PM	1	30	6	37	1	2	**3**	6	**6**	**76**	5	**87**	17	**4**	4	25	155
05:30 PM	**3**	32	**13**	**48**	1	**3**	2	6	4	69	2	75	22	1	**7**	30	**159**
05:45 PM	2	26	10	38	2	2	3	7	4	69	3	76	16	3	4	23	144
Total Volume	7	121	36	164	9	8	10	27	17	277	21	315	79	10	20	109	615
% App. Total	4.3	73.8	22		33.3	29.6	37		5.4	87.9	6.7		72.5	9.2	18.3		
PHF	.583	.917	.692	.854	.450	.667	.833	.844	.708	.911	.477	.905	.823	.625	.714	.879	.967

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Keller Road
Weather: Clear

File Name : 02_MUR WHKE PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				05:00 PM			
+0 mins.	1	**33**	7	41	2	3	3	8	3	63	**11**	77	**24**	2	5	**31**
+15 mins.	1	30	6	37	2	2	**5**	**9**	**6**	**76**	5	**87**	17	**4**	4	25
+30 mins.	**3**	32	**13**	**48**	**3**	0	3	6	4	69	2	75	22	1	**7**	30
+45 mins.	2	26	10	38	0	**6**	3	9	4	69	3	76	16	3	4	23
Total Volume	7	121	36	164	7	11	14	32	17	277	21	315	79	10	20	109
% App. Total	4.3	73.8	22		21.9	34.4	43.8		5.4	87.9	6.7		72.5	9.2	18.3	
PHF	.583	.917	.692	.854	.583	.458	.700	.889	.708	.911	.477	.905	.823	.625	.714	.879

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Baxter Road
Weather: Clear

File Name : 03_MUR ANBA AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

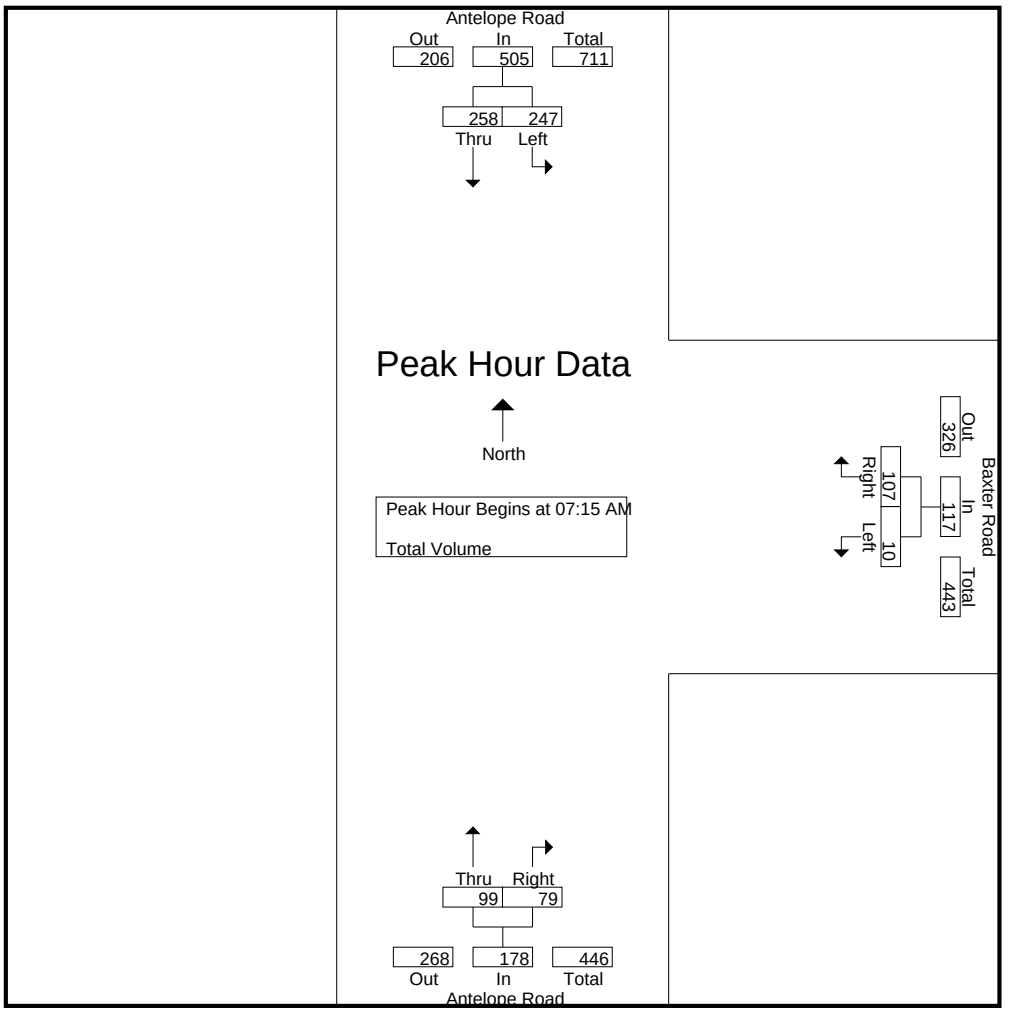
	Antelope Road Southbound			Baxter Road Westbound			Antelope Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	45	50	95	1	20	21	14	14	28	144
07:15 AM	59	56	115	3	34	37	29	15	44	196
07:30 AM	58	86	144	4	25	29	30	19	49	222
07:45 AM	69	63	132	2	28	30	26	29	55	217
Total	231	255	486	10	107	117	99	77	176	779
08:00 AM	61	53	114	1	20	21	14	16	30	165
08:15 AM	41	44	85	3	22	25	20	13	33	143
08:30 AM	64	54	118	4	17	21	19	13	32	171
08:45 AM	62	36	98	13	29	42	17	13	30	170
Total	228	187	415	21	88	109	70	55	125	649
Grand Total	459	442	901	31	195	226	169	132	301	1428
Apprch %	50.9	49.1		13.7	86.3		56.1	43.9		
Total %	32.1	31	63.1	2.2	13.7	15.8	11.8	9.2	21.1	

	Antelope Road Southbound			Baxter Road Westbound			Antelope Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	59	56	115	3	**34**	**37**	29	15	44	196
07:30 AM	58	**86**	**144**	**4**	25	29	**30**	19	49	**222**
07:45 AM	**69**	63	132	2	28	30	26	**29**	**55**	217
08:00 AM	61	53	114	1	20	21	14	16	30	165
Total Volume	247	258	505	10	107	117	99	79	178	800
% App. Total	48.9	51.1		8.5	91.5		55.6	44.4		
PHF	.895	.750	.877	.625	.787	.791	.825	.681	.809	.901

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Baxter Road
Weather: Clear

File Name : 03_MUR ANBA AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:15 AM		
+0 mins.	59	56	115	1	20	21	29	15	44
+15 mins.	58	**86**	**144**	3	**34**	**37**	**30**	19	49
+30 mins.	**69**	63	132	**4**	25	29	26	**29**	**55**
+45 mins.	61	53	114	2	28	30	14	16	30
Total Volume	247	258	505	10	107	117	99	79	178
% App. Total	48.9	51.1		8.5	91.5		55.6	44.4	
PHF	.895	.750	.877	.625	.787	.791	.825	.681	.809

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Baxter Road
Weather: Clear

File Name : 03_MUR ANBA PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

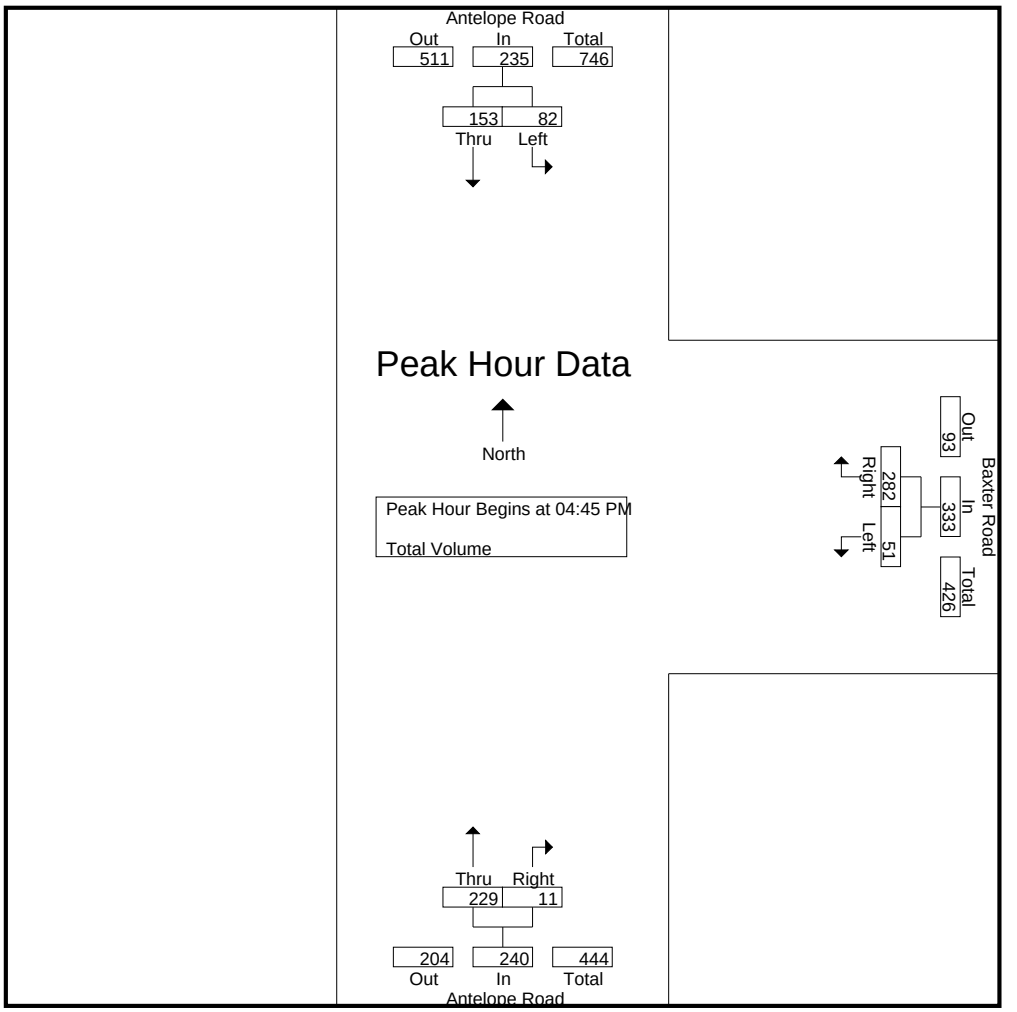
	Antelope Road Southbound			Baxter Road Westbound			Antelope Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	19	51	70	10	66	76	57	3	60	206
04:15 PM	31	35	66	6	54	60	55	6	61	187
04:30 PM	27	43	70	12	66	78	47	2	49	197
04:45 PM	23	36	59	13	58	71	56	6	62	192
Total	100	165	265	41	244	285	215	17	232	782
05:00 PM	19	38	57	15	92	107	45	2	47	211
05:15 PM	14	30	44	13	62	75	62	2	64	183
05:30 PM	26	49	75	10	70	80	66	1	67	222
05:45 PM	37	24	61	5	53	58	47	1	48	167
Total	96	141	237	43	277	320	220	6	226	783
Grand Total	196	306	502	84	521	605	435	23	458	1565
Apprch %	39	61		13.9	86.1		95	5		
Total %	12.5	19.6	32.1	5.4	33.3	38.7	27.8	1.5	29.3	

	Antelope Road Southbound			Baxter Road Westbound			Antelope Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	23	36	59	13	58	71	56	**6**	62	192
05:00 PM	19	38	57	**15**	**92**	**107**	45	2	47	211
05:15 PM	14	30	44	13	62	75	62	2	64	183
05:30 PM	**26**	**49**	**75**	10	70	80	**66**	1	**67**	**222**
Total Volume	82	153	235	51	282	333	229	11	240	808
% App. Total	34.9	65.1		15.3	84.7		95.4	4.6		
PHF	.788	.781	.783	.850	.766	.778	.867	.458	.896	.910

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Antelope Road
E/W: Baxter Road
Weather: Clear

File Name : 03_MUR ANBA PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:45 PM			04:45 PM		
+0 mins.	19	**51**	**70**	13	58	71	56	**6**	62
+15 mins.	**31**	35	66	**15**	**92**	**107**	45	2	47
+30 mins.	27	43	70	13	62	75	62	2	64
+45 mins.	23	36	59	10	70	80	**66**	1	**67**
Total Volume	100	165	265	51	282	333	229	11	240
% App. Total	37.7	62.3		15.3	84.7		95.4	4.6	
PHF	.806	.809	.946	.850	.766	.778	.867	.458	.896

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Walt Road
E/W: Baxter Road
Weather: Clear

File Name : 12_MUR WABA AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

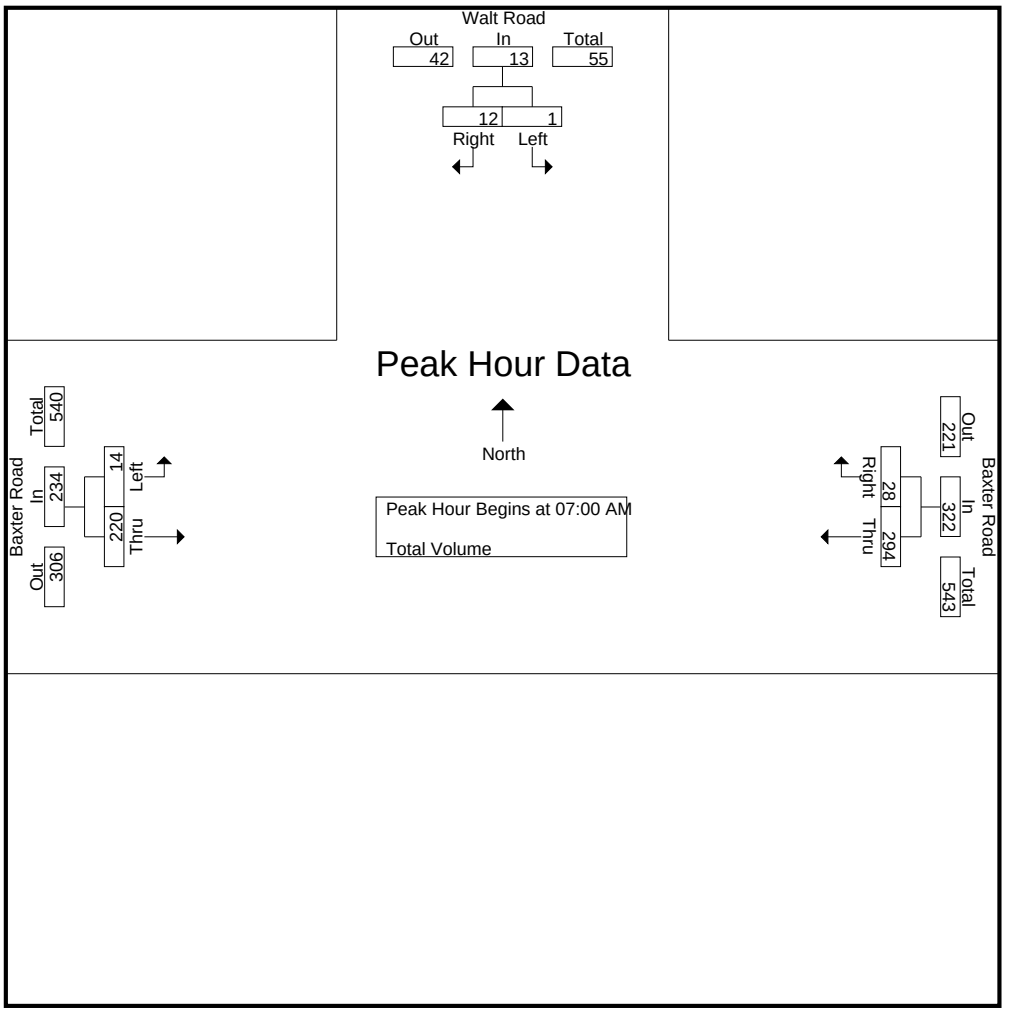
	Walt Road Southbound			Baxter Road Westbound			Baxter Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	40	4	44	4	76	80	124
07:15 AM	1	5	6	109	6	115	4	48	52	173
07:30 AM	0	5	5	74	9	83	1	47	48	136
07:45 AM	0	2	2	71	9	80	5	49	54	136
Total	1	12	13	294	28	322	14	220	234	569
08:00 AM	3	1	4	54	3	57	1	36	37	98
08:15 AM	3	1	4	50	7	57	4	30	34	95
08:30 AM	2	2	4	40	1	41	2	43	45	90
08:45 AM	4	2	6	57	4	61	0	31	31	98
Total	12	6	18	201	15	216	7	140	147	381
Grand Total	13	18	31	495	43	538	21	360	381	950
Apprch %	41.9	58.1		92	8		5.5	94.5		
Total %	1.4	1.9	3.3	52.1	4.5	56.6	2.2	37.9	40.1	

	Walt Road Southbound			Baxter Road Westbound			Baxter Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	40	4	44	4	**76**	**80**	124
07:15 AM	**1**	**5**	**6**	**109**	6	**115**	4	48	52	**173**
07:30 AM	0	5	5	74	**9**	83	1	47	48	136
07:45 AM	0	2	2	71	9	80	**5**	49	54	136
Total Volume	1	12	13	294	28	322	14	220	234	569
% App. Total	7.7	92.3		91.3	8.7		6	94		
PHF	.250	.600	.542	.674	.778	.700	.700	.724	.731	.822

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Walt Road
E/W: Baxter Road
Weather: Clear

File Name : 12_MUR WABA AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:15 AM			07:00 AM		
+0 mins.	3	1	4	**109**	6	**115**	4	**76**	**80**
+15 mins.	3	1	4	74	**9**	83	4	48	52
+30 mins.	2	**2**	4	71	9	80	1	47	48
+45 mins.	**4**	2	**6**	54	3	57	**5**	49	54
Total Volume	12	6	18	308	27	335	14	220	234
% App. Total	66.7	33.3		91.9	8.1		6	94	
PHF	.750	.750	.750	.706	.750	.728	.700	.724	.731

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Walt Road
E/W: Baxter Road
Weather: Clear

File Name : 12_MUR WABA PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

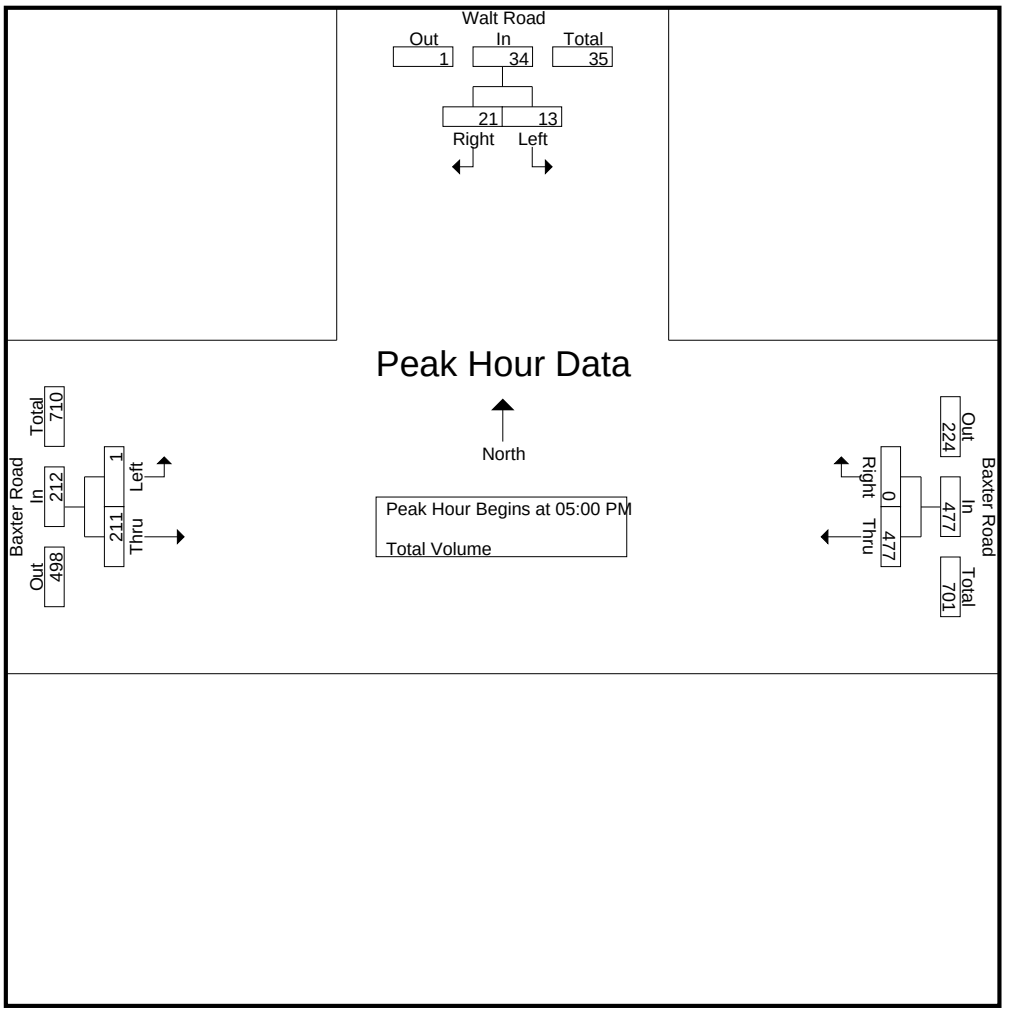
	Walt Road Southbound			Baxter Road Westbound			Baxter Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	6	9	15	90	0	90	1	47	48	153
04:15 PM	0	5	5	95	0	95	0	52	52	152
04:30 PM	3	2	5	99	0	99	0	46	46	150
04:45 PM	7	5	12	83	0	83	0	46	46	141
Total	16	21	37	367	0	367	1	191	192	596
05:00 PM	5	8	13	110	0	110	0	68	68	191
05:15 PM	4	4	8	132	0	132	1	57	58	198
05:30 PM	2	4	6	123	0	123	0	40	40	169
05:45 PM	2	5	7	112	0	112	0	46	46	165
Total	13	21	34	477	0	477	1	211	212	723
Grand Total	29	42	71	844	0	844	2	402	404	1319
Apprch %	40.8	59.2		100	0		0.5	99.5		
Total %	2.2	3.2	5.4	64	0	64	0.2	30.5	30.6	

	Walt Road Southbound			Baxter Road Westbound			Baxter Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**5**	**8**	**13**	110	0	110	0	**68**	**68**	191
05:15 PM	4	4	8	**132**	0	**132**	**1**	57	58	**198**
05:30 PM	2	4	6	123	0	123	0	40	40	169
05:45 PM	2	5	7	112	0	112	0	46	46	165
Total Volume	13	21	34	477	0	477	1	211	212	723
% App. Total	38.2	61.8		100	0		0.5	99.5		
PHF	.650	.656	.654	.903	.000	.903	.250	.776	.779	.913

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Walt Road
E/W: Baxter Road
Weather: Clear

File Name : 12_MUR WABA PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	**7**	5	12	110	0	110	0	46	46
+15 mins.	5	**8**	**13**	**132**	0	**132**	0	46	46
+30 mins.	4	4	8	123	0	123	0	**68**	**68**
+45 mins.	2	4	6	112	0	112	**1**	57	58
Total Volume	18	21	39	477	0	477	1	217	218
% App. Total	46.2	53.8		100	0		0.5	99.5	
PHF	.643	.656	.750	.903	.000	.903	.250	.798	.801

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Baxter Road
Weather: Clear

File Name : 04_MUR WHBA AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

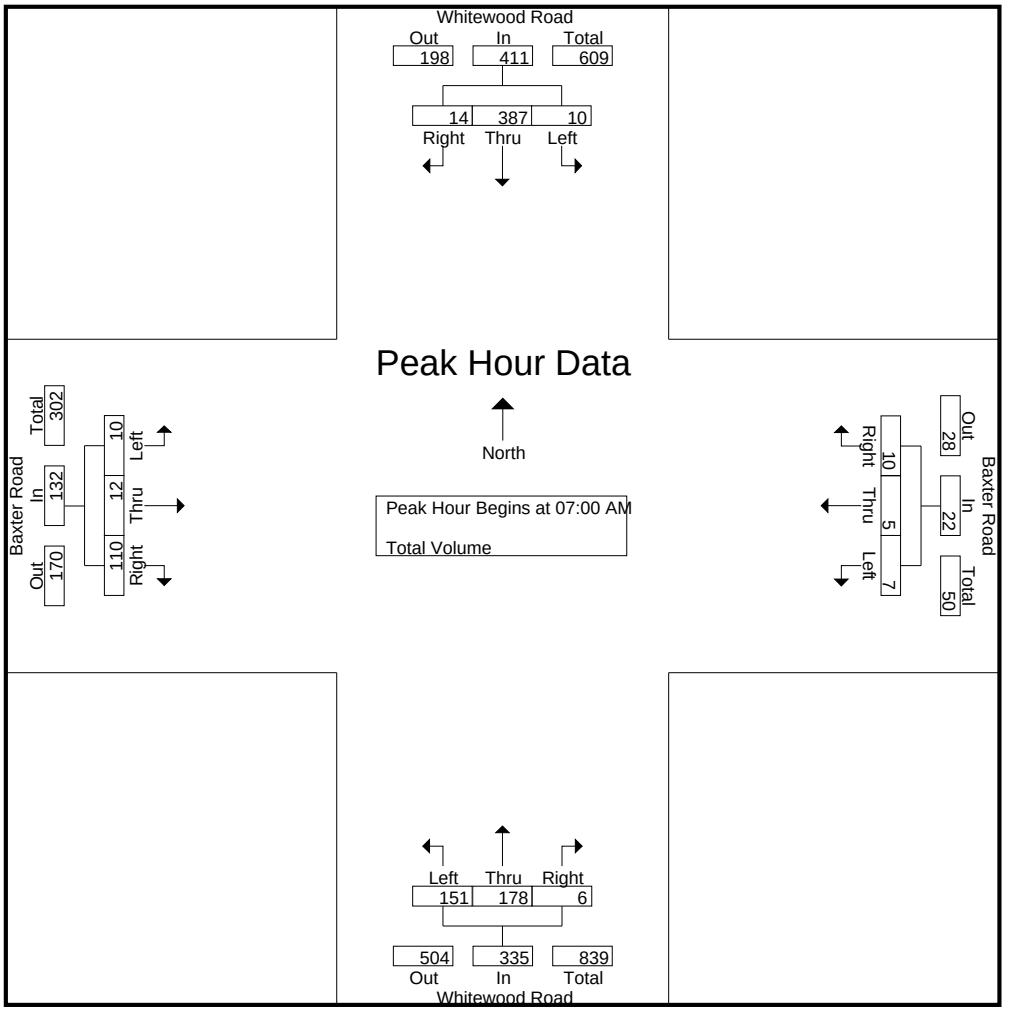
	Whitewood Road Southbound				Baxter Road Westbound				Whitewood Road Northbound				Baxter Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	122	0	127	3	0	5	8	14	39	3	56	5	2	32	39	230
07:15 AM	2	111	4	117	0	3	3	6	39	71	2	112	0	7	33	40	275
07:30 AM	2	83	4	89	2	1	1	4	42	43	0	85	3	0	26	29	207
07:45 AM	1	71	6	78	2	1	1	4	56	25	1	82	2	3	19	24	188
Total	10	387	14	411	7	5	10	22	151	178	6	335	10	12	110	132	900
08:00 AM	0	69	5	74	2	2	0	4	39	27	1	67	1	3	22	26	171
08:15 AM	0	51	4	55	1	1	0	2	37	23	1	61	2	1	13	16	134
08:30 AM	2	50	3	55	2	0	1	3	24	29	1	54	7	2	20	29	141
08:45 AM	3	38	3	44	4	1	0	5	34	32	1	67	1	0	23	24	140
Total	5	208	15	228	9	4	1	14	134	111	4	249	11	6	78	95	586
Grand Total	15	595	29	639	16	9	11	36	285	289	10	584	21	18	188	227	1486
Apprch %	2.3	93.1	4.5		44.4	25	30.6		48.8	49.5	1.7		9.3	7.9	82.8		
Total %	1	40	2	43	1.1	0.6	0.7	2.4	19.2	19.4	0.7	39.3	1.4	1.2	12.7	15.3	

	Whitewood Road Southbound				Baxter Road Westbound				Whitewood Road Northbound				Baxter Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**5**	**122**	0	**127**	**3**	0	**5**	**8**	14	39	**3**	56	**5**	2	32	39	230
07:15 AM	2	111	4	117	0	**3**	3	6	39	**71**	2	**112**	0	**7**	**33**	**40**	**275**
07:30 AM	2	83	4	89	2	1	1	4	42	43	0	85	3	0	26	29	207
07:45 AM	1	71	**6**	78	2	1	1	4	**56**	25	1	82	2	3	19	24	188
Total Volume	10	387	14	411	7	5	10	22	151	178	6	335	10	12	110	132	900
% App. Total	2.4	94.2	3.4		31.8	22.7	45.5		45.1	53.1	1.8		7.6	9.1	83.3		
PHF	.500	.793	.583	.809	.583	.417	.500	.688	.674	.627	.500	.748	.500	.429	.833	.825	.818

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Baxter Road
Weather: Clear

File Name : 04_MUR WHBA AM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:15 AM				07:00 AM			
+0 mins.	**5**	**122**	0	**127**	**3**	0	**5**	**8**	39	**71**	**2**	**112**	**5**	2	32	39
+15 mins.	2	111	4	117	0	**3**	3	6	42	43	0	85	0	**7**	**33**	**40**
+30 mins.	2	83	4	89	2	1	1	4	**56**	25	1	82	3	0	26	29
+45 mins.	1	71	**6**	78	2	1	1	4	39	27	1	67	2	3	19	24
Total Volume	10	387	14	411	7	5	10	22	176	166	4	346	10	12	110	132
% App. Total	2.4	94.2	3.4		31.8	22.7	45.5		50.9	48	1.2		7.6	9.1	83.3	
PHF	.500	.793	.583	.809	.583	.417	.500	.688	.786	.585	.500	.772	.500	.429	.833	.825

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Baxter Road
Weather: Clear

File Name : 04_MUR WHBA PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 1

Groups Printed- Total Volume

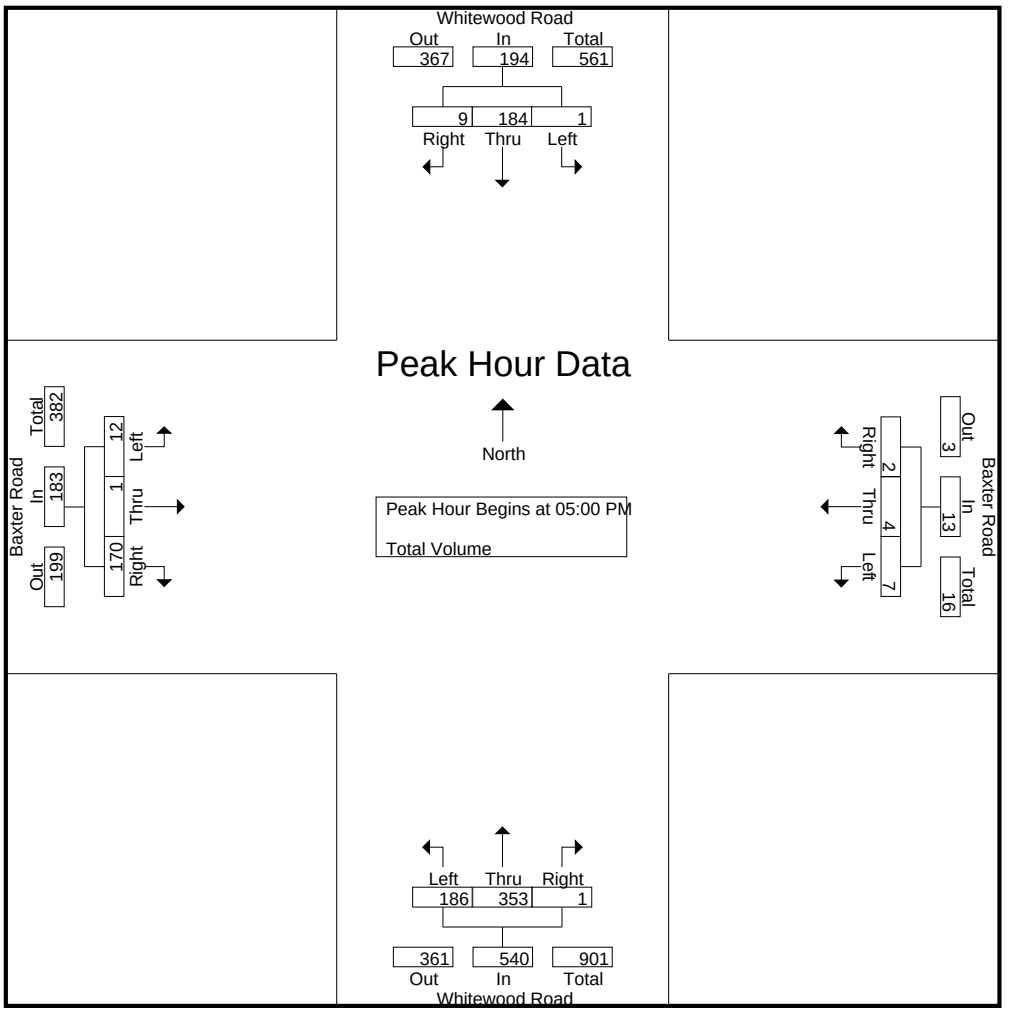
	Whitewood Road Southbound				Baxter Road Westbound				Whitewood Road Northbound				Baxter Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	48	2	50	4	2	0	6	52	76	1	129	1	0	32	33	218
04:15 PM	0	40	3	43	1	1	0	2	36	73	6	115	2	0	42	44	204
04:30 PM	0	39	7	46	0	0	1	1	39	68	1	108	4	3	42	49	204
04:45 PM	0	31	1	32	4	0	0	4	40	81	1	122	3	1	52	56	214
Total	0	158	13	171	9	3	1	13	167	298	9	474	10	4	168	182	840
05:00 PM	0	45	2	47	1	1	0	2	52	82	0	134	3	0	56	59	242
05:15 PM	0	43	2	45	3	1	0	4	38	91	0	129	5	0	32	37	215
05:30 PM	0	52	2	54	1	1	2	4	52	96	0	148	1	1	39	41	247
05:45 PM	1	44	3	48	2	1	0	3	44	84	1	129	3	0	43	46	226
Total	1	184	9	194	7	4	2	13	186	353	1	540	12	1	170	183	930
Grand Total	1	342	22	365	16	7	3	26	353	651	10	1014	22	5	338	365	1770
Apprch %	0.3	93.7	6		61.5	26.9	11.5		34.8	64.2	1		6	1.4	92.6		
Total %	0.1	19.3	1.2	20.6	0.9	0.4	0.2	1.5	19.9	36.8	0.6	57.3	1.2	0.3	19.1	20.6	

	Whitewood Road Southbound				Baxter Road Westbound				Whitewood Road Northbound				Baxter Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	45	2	47	1	**1**	0	2	**52**	82	0	134	3	0	**56**	**59**	242
05:15 PM	0	43	2	45	**3**	1	0	**4**	38	91	0	129	**5**	0	32	37	215
05:30 PM	0	**52**	2	**54**	1	1	**2**	4	52	**96**	0	**148**	1	**1**	39	41	**247**
05:45 PM	**1**	44	**3**	48	2	1	0	3	44	84	**1**	129	3	0	43	46	226
Total Volume	1	184	9	194	7	4	2	13	186	353	1	540	12	1	170	183	930
% App. Total	0.5	94.8	4.6		53.8	30.8	15.4		34.4	65.4	0.2		6.6	0.5	92.9		
PHF	.250	.885	.750	.898	.583	1.00	.250	.813	.894	.919	.250	.912	.600	.250	.759	.775	.941

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Baxter Road
Weather: Clear

File Name : 04_MUR WHBA PM
Site Code : 12217550
Start Date : 10/4/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				05:00 PM				04:15 PM			
+0 mins.	0	45	2	47	**4**	0	0	**4**	**52**	82	0	134	2	0	42	44
+15 mins.	0	43	2	45	1	**1**	0	2	38	91	0	129	**4**	**3**	42	49
+30 mins.	0	**52**	2	**54**	3	1	0	4	52	**96**	0	**148**	3	1	52	56
+45 mins.	**1**	44	**3**	48	1	1	**2**	4	44	84	**1**	129	3	0	**56**	**59**
Total Volume	1	184	9	194	9	3	2	14	186	353	1	540	12	4	192	208
% App. Total	0.5	94.8	4.6		64.3	21.4	14.3		34.4	65.4	0.2		5.8	1.9	92.3	
PHF	.250	.885	.750	.898	.563	.750	.250	.875	.894	.919	.250	.912	.750	.333	.857	.881

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Linnel Lane
Weather: Clear

File Name : 14_MUR MCLI AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

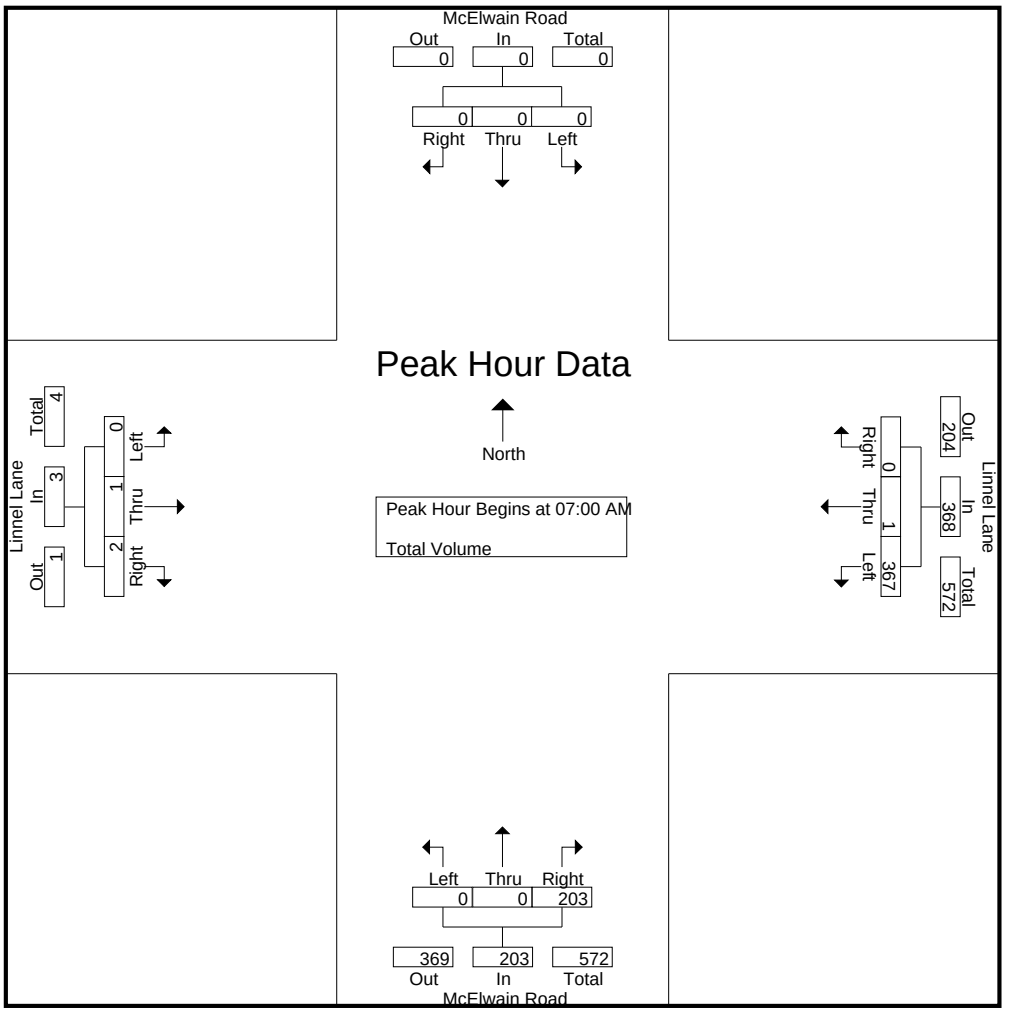
	McElwain Road Southbound				Linnel Lane Westbound				McElwain Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	83	1	0	84	0	0	29	29	0	0	2	2	115
07:15 AM	0	0	0	0	91	0	0	91	0	0	65	65	0	1	0	1	157
07:30 AM	0	0	0	0	97	0	0	97	0	0	56	56	0	0	0	0	153
07:45 AM	0	0	0	0	96	0	0	96	0	0	53	53	0	0	0	0	149
Total	0	0	0	0	367	1	0	368	0	0	203	203	0	1	2	3	574
08:00 AM	0	0	0	0	58	1	0	59	0	0	38	38	0	0	0	0	97
08:15 AM	0	0	0	0	62	0	0	62	0	0	32	32	0	0	1	1	95
08:30 AM	0	0	0	0	66	0	0	66	0	0	30	30	0	0	0	0	96
08:45 AM	0	0	0	0	50	0	0	50	0	0	26	26	0	0	0	0	76
Total	0	0	0	0	236	1	0	237	0	0	126	126	0	0	1	1	364
Grand Total	0	0	0	0	603	2	0	605	0	0	329	329	0	1	3	4	938
Apprch %	0	0	0		99.7	0.3	0		0	0	100		0	25	75		
Total %	0	0	0	0	64.3	0.2	0	64.5	0	0	35.1	35.1	0	0.1	0.3	0.4	

	McElwain Road Southbound				Linnel Lane Westbound				McElwain Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	83	**1**	0	84	0	0	29	29	0	0	**2**	**2**	115
07:15 AM	0	0	0	0	91	0	0	91	0	0	**65**	**65**	0	**1**	0	1	**157**
07:30 AM	0	0	0	0	**97**	0	0	**97**	0	0	56	56	0	0	0	0	153
07:45 AM	0	0	0	0	96	0	0	96	0	0	53	53	0	0	0	0	149
Total Volume	0	0	0	0	367	1	0	368	0	0	203	203	0	1	2	3	574
% App. Total	0	0	0		99.7	0.3	0		0	0	100		0	33.3	66.7		
PHF	.000	.000	.000	.000	.946	.250	.000	.948	.000	.000	.781	.781	.000	.250	.250	.375	.914

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Linnel Lane
Weather: Clear

File Name : 14_MUR MCLI AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:15 AM				07:00 AM			
+0 mins.	0	0	0	0	83	**1**	0	84	0	0	**65**	**65**	0	0	**2**	**2**
+15 mins.	0	0	0	0	91	0	0	91	0	0	56	56	0	**1**	0	1
+30 mins.	0	0	0	0	**97**	0	0	**97**	0	0	53	53	0	0	0	0
+45 mins.	0	0	0	0	96	0	0	96	0	0	38	38	0	0	0	0
Total Volume	0	0	0	0	367	1	0	368	0	0	212	212	0	1	2	3
% App. Total	0	0	0		99.7	0.3	0		0	0	100		0	33.3	66.7	
PHF	.000	.000	.000	.000	.946	.250	.000	.948	.000	.000	.815	.815	.000	.250	.250	.375

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Linnel Lane
Weather: Clear

File Name : 14_MUR MCLI PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

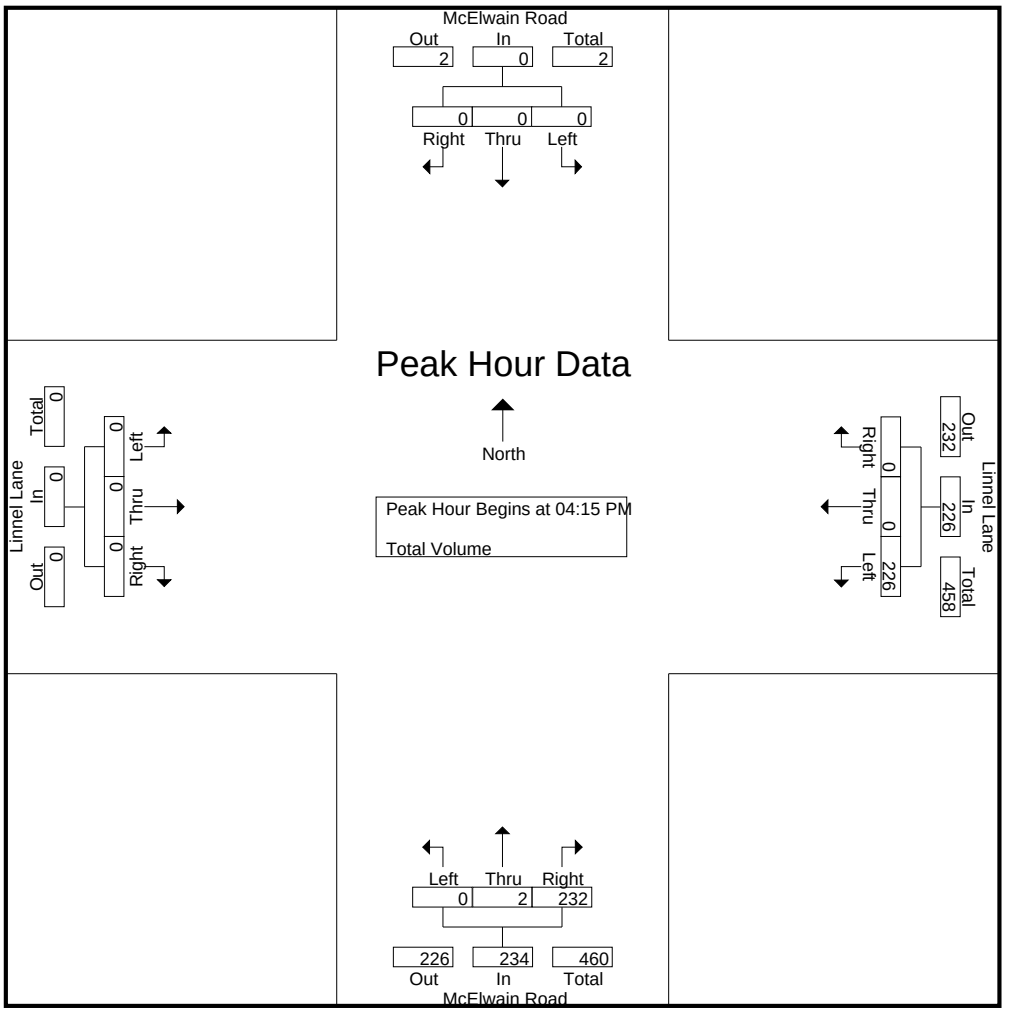
	McElwain Road Southbound				Linnel Lane Westbound				McElwain Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	53	0	0	53	0	1	46	47	0	0	0	0	101
04:15 PM	0	0	0	0	74	0	0	74	0	0	61	61	0	0	0	0	135
04:30 PM	0	0	0	0	59	0	0	59	0	0	49	49	0	0	0	0	108
04:45 PM	0	0	0	0	50	0	0	50	0	1	60	61	0	0	0	0	111
Total	0	1	0	1	236	0	0	236	0	2	216	218	0	0	0	0	455
05:00 PM	0	0	0	0	43	0	0	43	0	1	62	63	0	0	0	0	106
05:15 PM	0	1	0	1	54	0	0	54	0	3	66	69	0	0	0	0	124
05:30 PM	0	0	0	0	42	0	0	42	0	1	72	73	0	0	0	0	115
05:45 PM	0	1	1	2	35	0	1	36	1	2	70	73	0	0	0	0	111
Total	0	2	1	3	174	0	1	175	1	7	270	278	0	0	0	0	456
Grand Total	0	3	1	4	410	0	1	411	1	9	486	496	0	0	0	0	911
Apprch %	0	75	25		99.8	0	0.2		0.2	1.8	98		0	0	0		
Total %	0	0.3	0.1	0.4	45	0	0.1	45.1	0.1	1	53.3	54.4	0	0	0	0	

	McElwain Road Southbound				Linnel Lane Westbound				McElwain Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	**74**	0	0	**74**	0	0	61	61	0	0	0	0	**135**
04:30 PM	0	0	0	0	59	0	0	59	0	0	49	49	0	0	0	0	108
04:45 PM	0	0	0	0	50	0	0	50	0	**1**	60	61	0	0	0	0	111
05:00 PM	0	0	0	0	43	0	0	43	0	1	**62**	**63**	0	0	0	0	106
Total Volume	0	0	0	0	226	0	0	226	0	2	232	234	0	0	0	0	460
% App. Total	0	0	0		100	0	0		0	0.9	99.1		0	0	0		
PHF	.000	.000	.000	.000	.764	.000	.000	.764	.000	.500	.935	.929	.000	.000	.000	.000	.852

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Linnel Lane
Weather: Clear

File Name : 14_MUR MCLI PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	0	0	0	53	0	0	53	0	1	62	63	0	0	0	0
+15 mins.	0	**1**	0	1	**74**	0	0	**74**	0	**3**	66	69	0	0	0	0
+30 mins.	0	0	0	0	59	0	0	59	0	1	**72**	**73**	0	0	0	0
+45 mins.	0	1	**1**	**2**	50	0	0	50	**1**	2	70	73	0	0	0	0
Total Volume	0	2	1	3	236	0	0	236	1	7	270	278	0	0	0	0
% App. Total	0	66.7	33.3		100	0	0		0.4	2.5	97.1		0	0	0	
PHF	.000	.500	.250	.375	.797	.000	.000	.797	.250	.583	.938	.952	.000	.000	.000	.000

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Linnel Lane/Lee Lane
Weather: Clear

File Name : 15_MUR WHLI AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

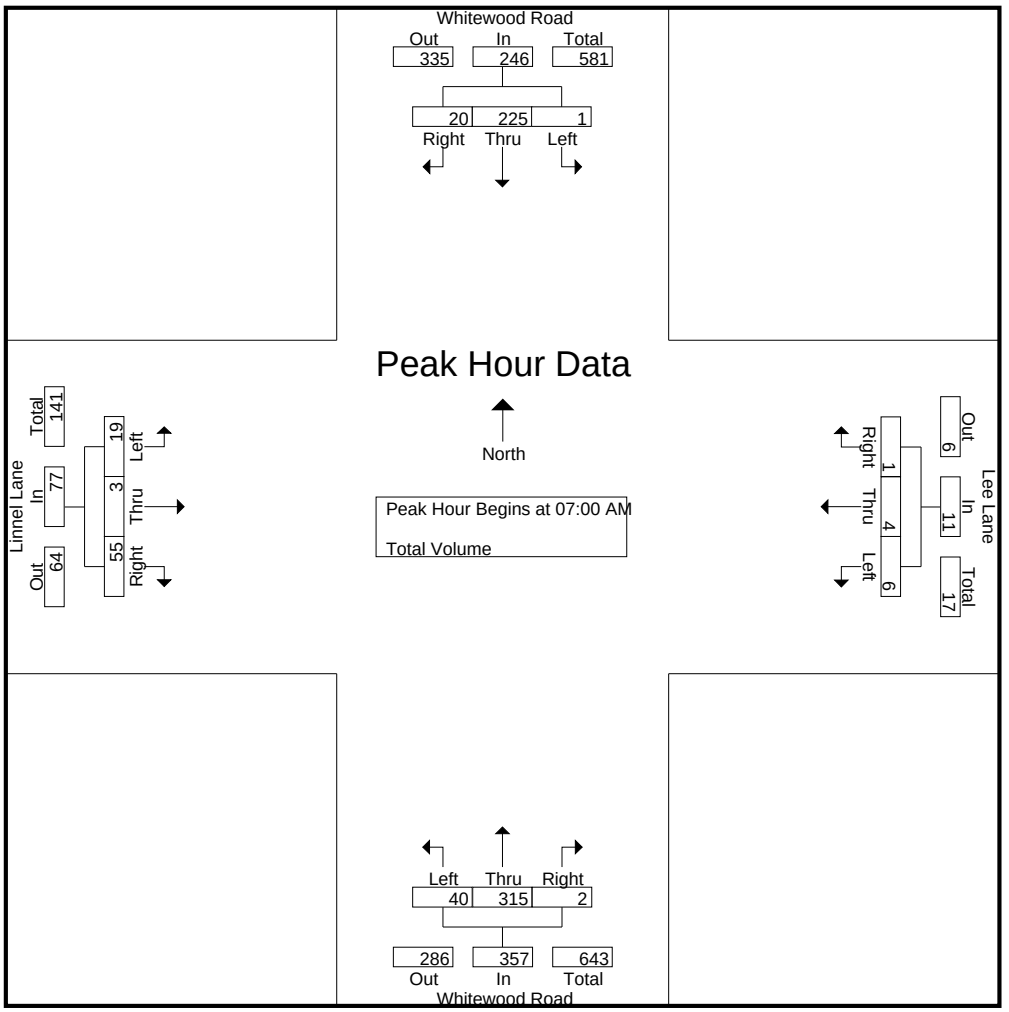
	Whitewood Road Southbound				Lee Lane Westbound				Whitewood Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	73	6	79	2	3	1	6	6	52	1	59	5	2	21	28	172
07:15 AM	0	52	7	59	0	0	0	0	10	105	1	116	7	1	16	24	199
07:30 AM	1	47	4	52	2	1	0	3	12	79	0	91	5	0	6	11	157
07:45 AM	0	53	3	56	2	0	0	2	12	79	0	91	2	0	12	14	163
Total	1	225	20	246	6	4	1	11	40	315	2	357	19	3	55	77	691
08:00 AM	0	48	4	52	0	1	0	1	3	47	1	51	4	0	7	11	115
08:15 AM	0	36	1	37	2	0	0	2	4	48	1	53	2	1	7	10	102
08:30 AM	0	40	2	42	0	1	0	1	4	36	0	40	5	0	8	13	96
08:45 AM	0	33	0	33	1	0	1	2	4	64	0	68	3	0	12	15	118
Total	0	157	7	164	3	2	1	6	15	195	2	212	14	1	34	49	431
Grand Total	1	382	27	410	9	6	2	17	55	510	4	569	33	4	89	126	1122
Apprch %	0.2	93.2	6.6		52.9	35.3	11.8		9.7	89.6	0.7		26.2	3.2	70.6		
Total %	0.1	34	2.4	36.5	0.8	0.5	0.2	1.5	4.9	45.5	0.4	50.7	2.9	0.4	7.9	11.2	

	Whitewood Road Southbound				Lee Lane Westbound				Whitewood Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**73**	6	**79**	**2**	**3**	**1**	**6**	6	52	**1**	59	5	**2**	**21**	**28**	172
07:15 AM	0	52	**7**	59	0	0	0	0	10	**105**	1	**116**	**7**	1	16	24	**199**
07:30 AM	**1**	47	4	52	2	1	0	3	**12**	79	0	91	5	0	6	11	157
07:45 AM	0	53	3	56	2	0	0	2	12	79	0	91	2	0	12	14	163
Total Volume	1	225	20	246	6	4	1	11	40	315	2	357	19	3	55	77	691
% App. Total	0.4	91.5	8.1		54.5	36.4	9.1		11.2	88.2	0.6		24.7	3.9	71.4		
PHF	.250	.771	.714	.778	.750	.333	.250	.458	.833	.750	.500	.769	.679	.375	.655	.688	.868

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Linnel Lane/Lee Lane
Weather: Clear

File Name : 15_MUR WHLI AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	**73**	6	**79**	**2**	**3**	**1**	**6**	6	52	**1**	59	5	**2**	**21**	**28**
+15 mins.	0	52	**7**	59	0	0	0	0	10	**105**	1	**116**	**7**	1	16	24
+30 mins.	**1**	47	4	52	2	1	0	3	**12**	79	0	91	5	0	6	11
+45 mins.	0	53	3	56	2	0	0	2	12	79	0	91	2	0	12	14
Total Volume	1	225	20	246	6	4	1	11	40	315	2	357	19	3	55	77
% App. Total	0.4	91.5	8.1		54.5	36.4	9.1		11.2	88.2	0.6		24.7	3.9	71.4	
PHF	.250	.771	.714	.778	.750	.333	.250	.458	.833	.750	.500	.769	.679	.375	.655	.688

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Linnel Lane/Lee Lane
Weather: Clear

File Name : 15_MUR WHLI PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

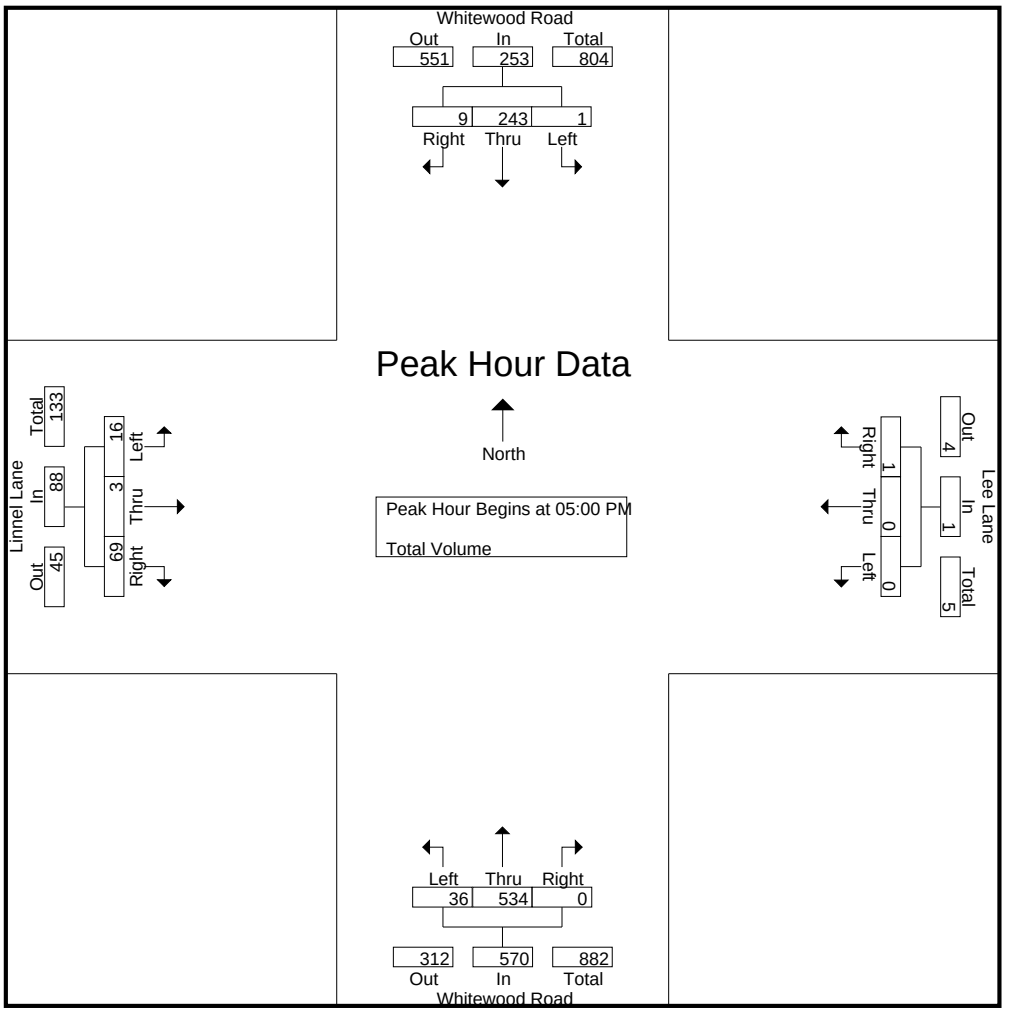
	Whitewood Road Southbound				Lee Lane Westbound				Whitewood Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	58	4	62	0	1	1	2	9	95	2	106	3	1	25	29	199
04:15 PM	2	60	4	66	0	0	0	0	9	112	1	122	4	0	6	10	198
04:30 PM	0	57	5	62	1	2	0	3	9	95	1	105	2	2	25	29	199
04:45 PM	1	58	1	60	2	0	1	3	9	106	2	117	4	0	15	19	199
Total	3	233	14	250	3	3	2	8	36	408	6	450	13	3	71	87	795
05:00 PM	0	74	2	76	0	0	0	0	5	123	0	128	3	2	24	29	233
05:15 PM	1	68	1	70	0	0	0	0	9	135	0	144	4	0	16	20	234
05:30 PM	0	47	5	52	0	0	0	0	14	151	0	165	4	0	14	18	235
05:45 PM	0	54	1	55	0	0	1	1	8	125	0	133	5	1	15	21	210
Total	1	243	9	253	0	0	1	1	36	534	0	570	16	3	69	88	912
Grand Total	4	476	23	503	3	3	3	9	72	942	6	1020	29	6	140	175	1707
Apprch %	0.8	94.6	4.6		33.3	33.3	33.3		7.1	92.4	0.6		16.6	3.4	80		
Total %	0.2	27.9	1.3	29.5	0.2	0.2	0.2	0.5	4.2	55.2	0.4	59.8	1.7	0.4	8.2	10.3	

	Whitewood Road Southbound				Lee Lane Westbound				Whitewood Road Northbound				Linnel Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**74**	2	**76**	0	0	0	0	5	123	0	128	3	**2**	**24**	**29**	233
05:15 PM	**1**	68	1	70	0	0	0	0	9	135	0	144	4	0	16	20	234
05:30 PM	0	47	**5**	52	0	0	0	0	**14**	**151**	0	**165**	4	0	14	18	**235**
05:45 PM	0	54	1	55	0	0	**1**	**1**	8	125	0	133	**5**	1	15	21	210
Total Volume	1	243	9	253	0	0	1	1	36	534	0	570	16	3	69	88	912
% App. Total	0.4	96	3.6		0	0	100		6.3	93.7	0		18.2	3.4	78.4		
PHF	.250	.821	.450	.832	.000	.000	.250	.250	.643	.884	.000	.864	.800	.375	.719	.759	.970

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Linnel Lane/Lee Lane
Weather: Clear

File Name : 15_MUR WHLI PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				05:00 PM				04:30 PM			
+0 mins.	0	57	**5**	62	0	1	**1**	2	5	123	0	128	2	**2**	**25**	**29**
+15 mins.	**1**	58	1	60	0	0	0	0	9	135	0	144	**4**	0	15	19
+30 mins.	0	**74**	2	**76**	1	**2**	0	**3**	**14**	**151**	0	**165**	3	2	24	29
+45 mins.	1	68	1	70	**2**	0	1	3	8	125	0	133	4	0	16	20
Total Volume	2	257	9	268	3	3	2	8	36	534	0	570	13	4	80	97
% App. Total	0.7	95.9	3.4		37.5	37.5	25		6.3	93.7	0		13.4	4.1	82.5	
PHF	.500	.868	.450	.882	.375	.375	.500	.667	.643	.884	.000	.864	.813	.500	.800	.836

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

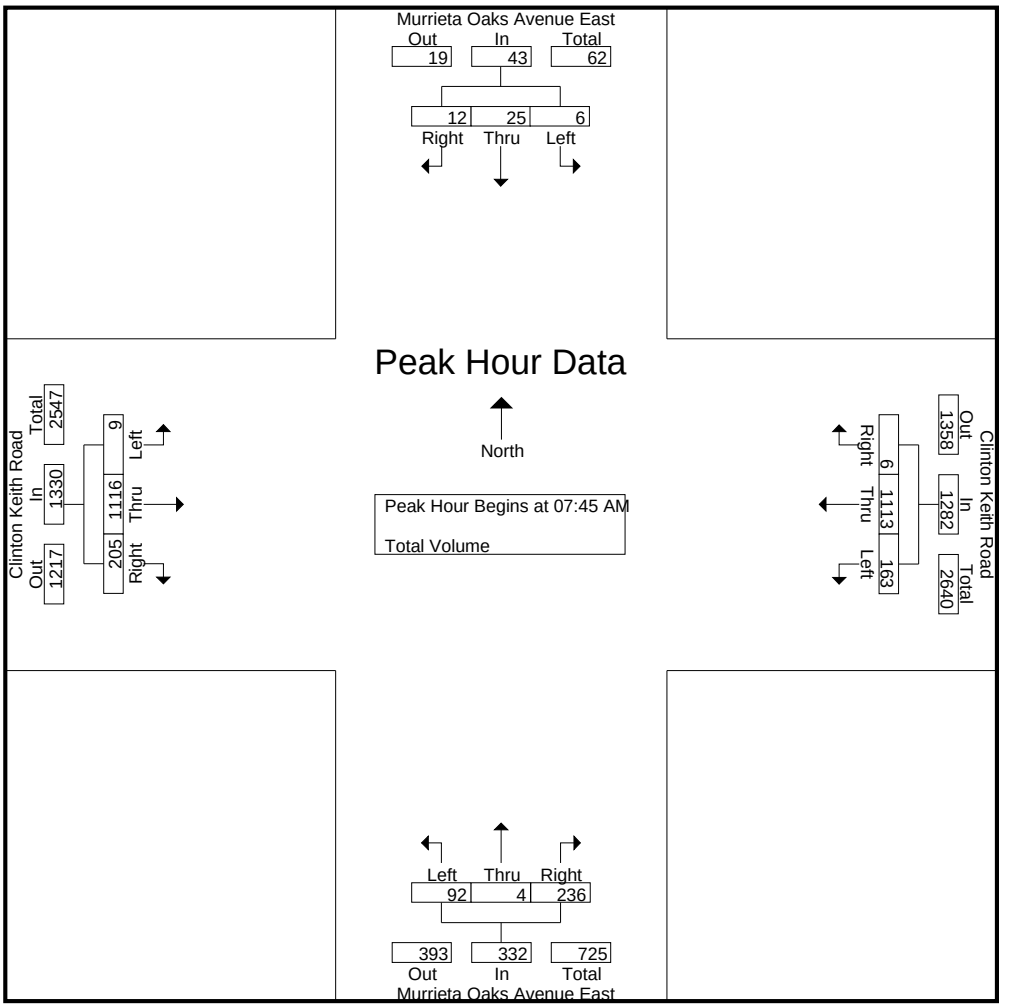
	Murrieta Oaks Avenue East Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	4	6	19	245	1	265	8	0	41	49	4	445	2	451	771
07:15 AM	2	1	9	12	27	305	5	337	17	0	42	59	1	344	13	358	766
07:30 AM	3	0	5	8	29	233	2	264	8	0	23	31	1	314	13	328	631
07:45 AM	0	2	2	4	28	329	1	358	6	0	18	24	1	308	32	341	727
Total	7	3	20	30	103	1112	9	1224	39	0	124	163	7	1411	60	1478	2895
08:00 AM	2	14	5	21	54	260	2	316	11	0	46	57	2	221	90	313	707
08:15 AM	2	9	1	12	64	260	0	324	38	3	92	133	3	274	67	344	813
08:30 AM	2	0	4	6	17	264	3	284	37	1	80	118	3	313	16	332	740
08:45 AM	1	0	5	6	18	221	1	240	12	1	21	34	4	267	10	281	561
Total	7	23	15	45	153	1005	6	1164	98	5	239	342	12	1075	183	1270	2821
Grand Total	14	26	35	75	256	2117	15	2388	137	5	363	505	19	2486	243	2748	5716
Apprch %	18.7	34.7	46.7		10.7	88.7	0.6		27.1	1	71.9		0.7	90.5	8.8		
Total %	0.2	0.5	0.6	1.3	4.5	37	0.3	41.8	2.4	0.1	6.4	8.8	0.3	43.5	4.3	48.1	

	Murrieta Oaks Avenue East Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	2	2	4	28	**329**	1	**358**	6	0	18	24	1	308	32	341	727
08:00 AM	**2**	**14**	**5**	**21**	54	260	2	316	11	0	46	57	2	221	**90**	313	707
08:15 AM	2	9	1	12	**64**	260	0	324	**38**	**3**	**92**	**133**	**3**	274	67	**344**	**813**
08:30 AM	2	0	4	6	17	264	**3**	284	37	1	80	118	3	**313**	16	332	740
Total Volume	6	25	12	43	163	1113	6	1282	92	4	236	332	9	1116	205	1330	2987
% App. Total	14	58.1	27.9		12.7	86.8	0.5		27.7	1.2	71.1		0.7	83.9	15.4		
PHF	.750	.446	.600	.512	.637	.846	.500	.895	.605	.333	.641	.624	.750	.891	.569	.967	.919

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:45 AM				08:00 AM				07:00 AM			
+0 mins.	2	1	**9**	12	28	**329**	1	**358**	11	0	46	57	**4**	**445**	2	**451**
+15 mins.	**3**	0	5	8	54	260	2	316	**38**	**3**	**92**	**133**	1	344	13	358
+30 mins.	0	2	2	4	**64**	260	0	324	37	1	80	118	1	314	13	328
+45 mins.	2	**14**	5	**21**	17	264	**3**	284	12	1	21	34	1	308	**32**	341
Total Volume	7	17	21	45	163	1113	6	1282	98	5	239	342	7	1411	60	1478
% App. Total	15.6	37.8	46.7		12.7	86.8	0.5		28.7	1.5	69.9		0.5	95.5	4.1	
PHF	.583	.304	.583	.536	.637	.846	.500	.895	.645	.417	.649	.643	.438	.793	.469	.819

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

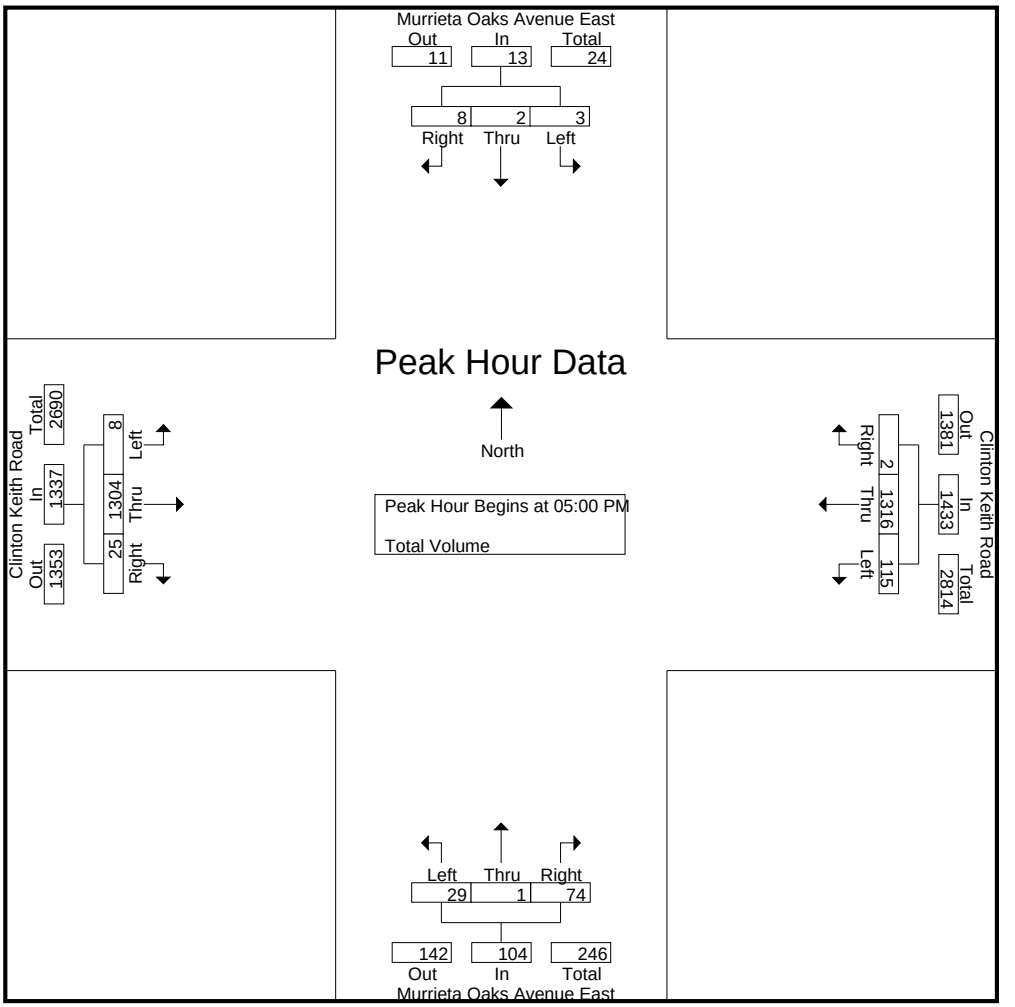
	Murrieta Oaks Avenue East Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	26	287	0	313	7	0	19	26	2	273	5	280	620
04:15 PM	1	0	3	4	34	316	0	350	4	0	15	19	1	296	5	302	675
04:30 PM	2	1	2	5	31	291	0	322	6	2	24	32	2	307	9	318	677
04:45 PM	2	0	3	5	27	316	0	343	10	1	15	26	1	327	4	332	706
Total	5	1	9	15	118	1210	0	1328	27	3	73	103	6	1203	23	1232	2678
05:00 PM	1	0	0	1	32	344	1	377	2	0	21	23	0	301	8	309	710
05:15 PM	0	1	4	5	23	317	0	340	7	0	14	21	4	368	6	378	744
05:30 PM	1	0	2	3	19	311	1	331	14	0	20	34	1	314	6	321	689
05:45 PM	1	1	2	4	41	344	0	385	6	1	19	26	3	321	5	329	744
Total	3	2	8	13	115	1316	2	1433	29	1	74	104	8	1304	25	1337	2887
Grand Total	8	3	17	28	233	2526	2	2761	56	4	147	207	14	2507	48	2569	5565
Apprch %	28.6	10.7	60.7		8.4	91.5	0.1		27.1	1.9	71		0.5	97.6	1.9		
Total %	0.1	0.1	0.3	0.5	4.2	45.4	0	49.6	1	0.1	2.6	3.7	0.3	45	0.9	46.2	

	Murrieta Oaks Avenue East Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	0	0	1	32	**344**	**1**	377	2	0	**21**	23	0	301	**8**	309	710
05:15 PM	0	**1**	**4**	**5**	23	317	0	340	7	0	14	21	**4**	**368**	6	**378**	**744**
05:30 PM	1	0	2	3	19	311	1	331	**14**	0	20	**34**	1	314	6	321	689
05:45 PM	1	1	2	4	**41**	344	0	**385**	6	**1**	19	26	3	321	5	329	744
Total Volume	3	2	8	13	115	1316	2	1433	29	1	74	104	8	1304	25	1337	2887
% App. Total	23.1	15.4	61.5		8	91.8	0.1		27.9	1	71.2		0.6	97.5	1.9		
PHF	.750	.500	.500	.650	.701	.956	.500	.931	.518	.250	.881	.765	.500	.886	.781	.884	.970

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:45 PM				04:45 PM			
+0 mins.	**2**	**1**	2	**5**	32	**344**	**1**	377	10	**1**	15	26	1	327	4	332
+15 mins.	2	0	3	5	23	317	0	340	2	0	**21**	23	0	301	**8**	309
+30 mins.	1	0	0	1	19	311	1	331	7	0	14	21	**4**	**368**	6	**378**
+45 mins.	0	1	**4**	5	**41**	344	0	**385**	**14**	0	20	**34**	1	314	6	321
Total Volume	5	2	9	16	115	1316	2	1433	33	1	70	104	6	1310	24	1340
% App. Total	31.2	12.5	56.2		8	91.8	0.1		31.7	1	67.3		0.4	97.8	1.8	
PHF	.625	.500	.563	.800	.701	.956	.500	.931	.589	.250	.833	.765	.375	.890	.750	.886

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 17_MUR MCCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

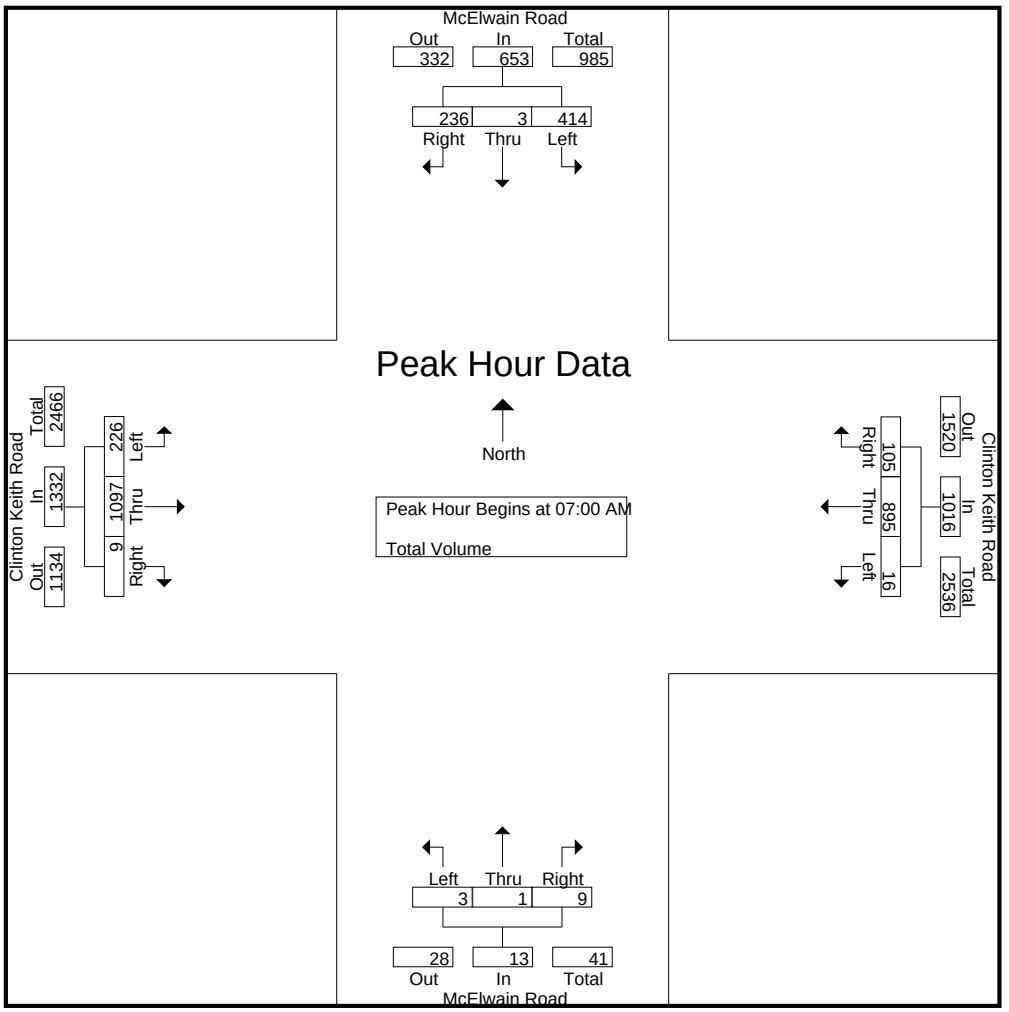
	McElwain Road Southbound				Clinton Keith Road Westbound				McElwain Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	100	2	47	149	6	190	25	221	1	0	3	4	29	344	3	376	750
07:15 AM	113	1	74	188	5	253	35	293	1	0	1	2	52	292	2	346	829
07:30 AM	104	0	53	157	1	231	20	252	0	1	2	3	73	248	3	324	736
07:45 AM	97	0	62	159	4	221	25	250	1	0	3	4	72	213	1	286	699
Total	414	3	236	653	16	895	105	1016	3	1	9	13	226	1097	9	1332	3014
08:00 AM	44	0	55	99	2	230	12	244	1	1	2	4	68	173	0	241	588
08:15 AM	72	0	33	105	2	189	8	199	0	0	4	4	52	198	1	251	559
08:30 AM	83	0	38	121	1	167	23	191	1	0	1	2	72	232	1	305	619
08:45 AM	82	0	56	138	1	174	19	194	0	1	2	3	112	297	0	409	744
Total	281	0	182	463	6	760	62	828	2	2	9	13	304	900	2	1206	2510
Grand Total	695	3	418	1116	22	1655	167	1844	5	3	18	26	530	1997	11	2538	5524
Apprch %	62.3	0.3	37.5		1.2	89.8	9.1		19.2	11.5	69.2		20.9	78.7	0.4		
Total %	12.6	0.1	7.6	20.2	0.4	30	3	33.4	0.1	0.1	0.3	0.5	9.6	36.2	0.2	45.9	

	McElwain Road Southbound				Clinton Keith Road Westbound				McElwain Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	100	**2**	47	149	**6**	190	25	221	**1**	0	**3**	**4**	29	**344**	**3**	**376**	750
07:15 AM	**113**	1	**74**	**188**	5	**253**	**35**	**293**	1	0	1	2	52	292	2	346	**829**
07:30 AM	104	0	53	157	1	231	20	252	0	**1**	2	3	**73**	248	3	324	736
07:45 AM	97	0	62	159	4	221	25	250	1	0	3	4	72	213	1	286	699
Total Volume	414	3	236	653	16	895	105	1016	3	1	9	13	226	1097	9	1332	3014
% App. Total	63.4	0.5	36.1		1.6	88.1	10.3		23.1	7.7	69.2		17	82.4	0.7		
PHF	.916	.375	.797	.868	.667	.884	.750	.867	.750	.250	.750	.813	.774	.797	.750	.886	.909

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 17_MUR MCCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:30 AM				07:00 AM			
+0 mins.	100	**2**	47	149	**5**	**253**	**35**	**293**	0	**1**	2	3	29	**344**	**3**	**376**
+15 mins.	**113**	1	**74**	**188**	1	231	20	252	**1**	0	3	**4**	52	292	2	346
+30 mins.	104	0	53	157	4	221	25	250	1	1	2	4	**73**	248	3	324
+45 mins.	97	0	62	159	2	230	12	244	0	0	**4**	4	72	213	1	286
Total Volume	414	3	236	653	12	935	92	1039	2	2	11	15	226	1097	9	1332
% App. Total	63.4	0.5	36.1		1.2	90	8.9		13.3	13.3	73.3		17	82.4	0.7	
PHF	.916	.375	.797	.868	.600	.924	.657	.887	.500	.500	.688	.938	.774	.797	.750	.886

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 17_MUR MCCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

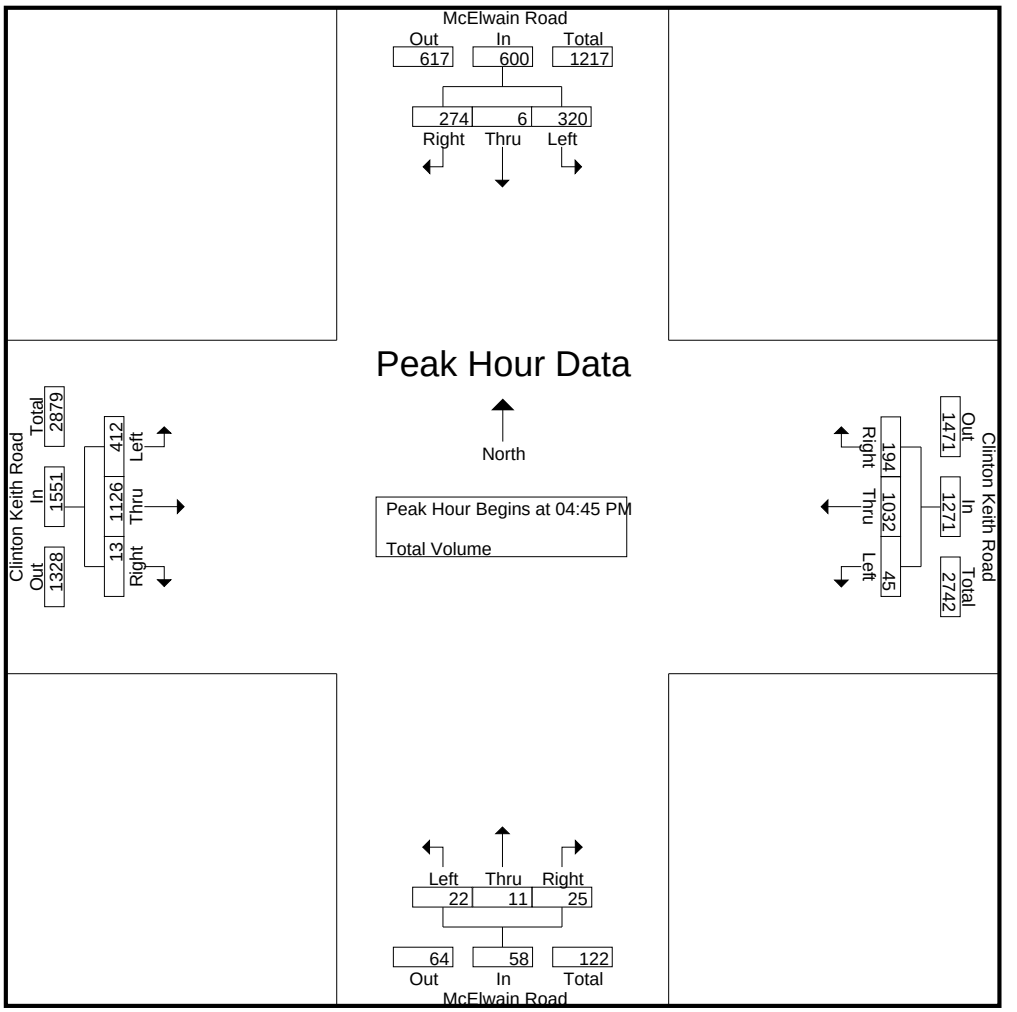
	McElwain Road Southbound				Clinton Keith Road Westbound				McElwain Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	77	1	69	147	5	271	44	320	5	1	5	11	82	222	7	311	789
04:15 PM	69	2	73	144	8	233	46	287	7	5	6	18	92	273	5	370	819
04:30 PM	90	1	69	160	9	237	48	294	3	3	13	19	100	244	3	347	820
04:45 PM	86	1	71	158	9	277	34	320	5	2	8	15	95	295	5	395	888
Total	322	5	282	609	31	1018	172	1221	20	11	32	63	369	1034	20	1423	3316
05:00 PM	82	2	68	152	13	232	58	303	6	3	4	13	110	281	2	393	861
05:15 PM	71	1	63	135	15	271	55	341	4	4	7	15	118	262	5	385	876
05:30 PM	81	2	72	155	8	252	47	307	7	2	6	15	89	288	1	378	855
05:45 PM	61	0	49	110	5	262	38	305	4	1	3	8	111	245	7	363	786
Total	295	5	252	552	41	1017	198	1256	21	10	20	51	428	1076	15	1519	3378
Grand Total	617	10	534	1161	72	2035	370	2477	41	21	52	114	797	2110	35	2942	6694
Apprch %	53.1	0.9	46		2.9	82.2	14.9		36	18.4	45.6		27.1	71.7	1.2		
Total %	9.2	0.1	8	17.3	1.1	30.4	5.5	37	0.6	0.3	0.8	1.7	11.9	31.5	0.5	43.9	

	McElwain Road Southbound				Clinton Keith Road Westbound				McElwain Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**86**	1	71	**158**	9	**277**	34	320	5	2	**8**	**15**	95	**295**	**5**	**395**	**888**
05:00 PM	82	**2**	68	152	13	232	**58**	303	6	3	4	13	110	281	2	393	861
05:15 PM	71	1	63	135	**15**	271	55	**341**	4	**4**	7	15	**118**	262	5	385	876
05:30 PM	81	2	**72**	155	8	252	47	307	**7**	2	6	15	89	288	1	378	855
Total Volume	320	6	274	600	45	1032	194	1271	22	11	25	58	412	1126	13	1551	3480
% App. Total	53.3	1	45.7		3.5	81.2	15.3		37.9	19	43.1		26.6	72.6	0.8		
PHF	.930	.750	.951	.949	.750	.931	.836	.932	.786	.688	.781	.967	.873	.954	.650	.982	.980

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: McElwain Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 17_MUR MCCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:45 PM				04:15 PM				04:45 PM			
+0 mins.	69	**2**	**73**	144	9	**277**	34	320	**7**	**5**	6	18	95	**295**	**5**	**395**
+15 mins.	**90**	1	69	**160**	13	232	**58**	303	3	3	**13**	**19**	110	281	2	393
+30 mins.	86	1	71	158	**15**	271	55	**341**	5	2	8	15	**118**	262	5	385
+45 mins.	82	2	68	152	8	252	47	307	6	3	4	13	89	288	1	378
Total Volume	327	6	281	614	45	1032	194	1271	21	13	31	65	412	1126	13	1551
% App. Total	53.3	1	45.8		3.5	81.2	15.3		32.3	20	47.7		26.6	72.6	0.8	
PHF	.908	.750	.962	.959	.750	.931	.836	.932	.750	.650	.596	.855	.873	.954	.650	.982

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Southbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 18_MUR 215SCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

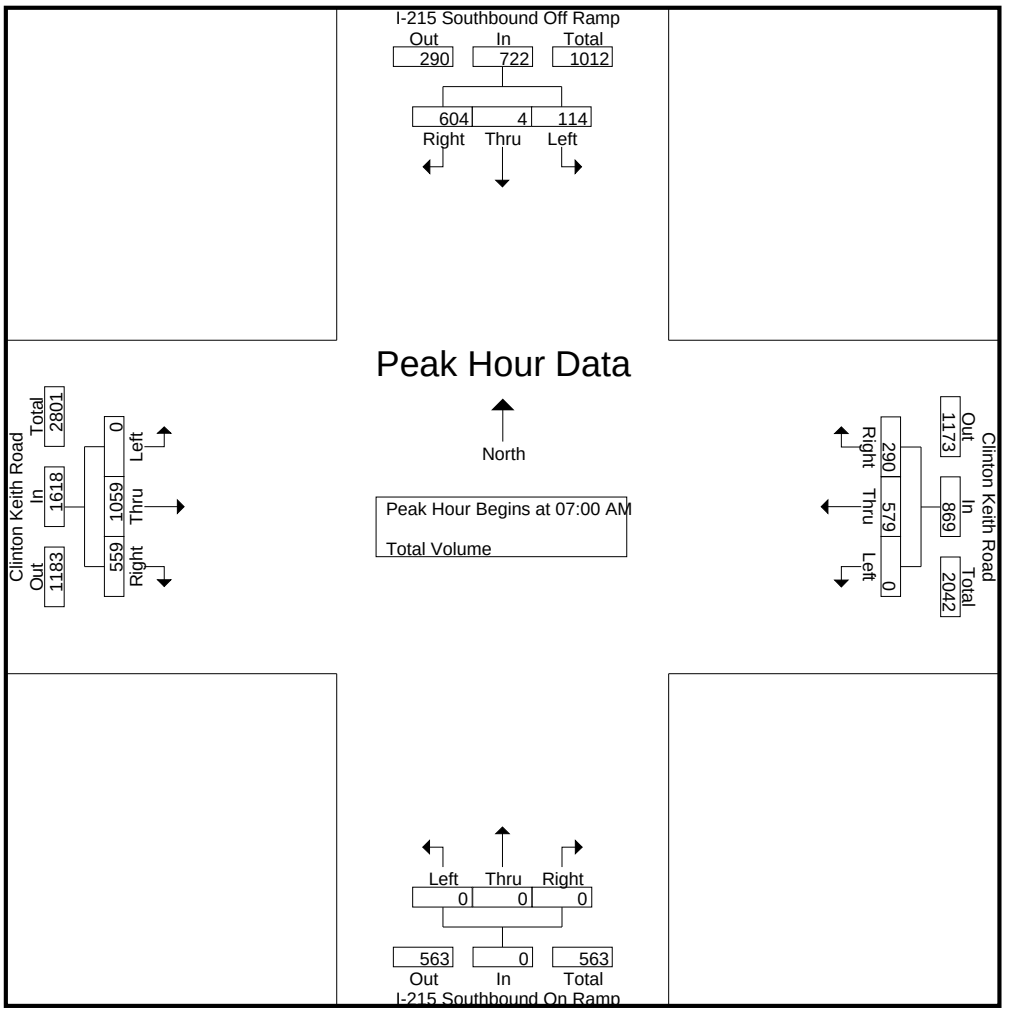
	I-215 Southbound Off Ramp Southbound				Clinton Keith Road Westbound				I-215 Southbound On Ramp Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	61	2	98	161	0	147	70	217	0	0	0	0	0	385	110	495	873
07:15 AM	22	0	129	151	0	204	129	333	0	0	0	0	0	266	162	428	912
07:30 AM	17	1	168	186	0	130	51	181	0	0	0	0	0	211	150	361	728
07:45 AM	14	1	209	224	0	98	40	138	0	0	0	0	0	197	137	334	696
Total	114	4	604	722	0	579	290	869	0	0	0	0	0	1059	559	1618	3209
08:00 AM	26	4	193	223	0	112	43	155	0	0	0	0	0	160	115	275	653
08:15 AM	15	0	157	172	0	99	36	135	0	0	0	0	0	195	118	313	620
08:30 AM	12	0	136	148	0	100	28	128	0	0	0	0	0	194	167	361	637
08:45 AM	14	3	130	147	0	103	37	140	0	0	0	0	0	246	155	401	688
Total	67	7	616	690	0	414	144	558	0	0	0	0	0	795	555	1350	2598
Grand Total	181	11	1220	1412	0	993	434	1427	0	0	0	0	0	1854	1114	2968	5807
Apprch %	12.8	0.8	86.4		0	69.6	30.4		0	0	0		0	62.5	37.5		
Total %	3.1	0.2	21	24.3	0	17.1	7.5	24.6	0	0	0	0	0	31.9	19.2	51.1	

	I-215 Southbound Off Ramp Southbound				Clinton Keith Road Westbound				I-215 Southbound On Ramp Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**61**	**2**	98	161	0	147	70	217	0	0	0	0	0	**385**	110	**495**	873
07:15 AM	22	0	129	151	0	**204**	**129**	**333**	0	0	0	0	0	266	**162**	428	**912**
07:30 AM	17	1	168	186	0	130	51	181	0	0	0	0	0	211	150	361	728
07:45 AM	14	1	**209**	**224**	0	98	40	138	0	0	0	0	0	197	137	334	696
Total Volume	114	4	604	722	0	579	290	869	0	0	0	0	0	1059	559	1618	3209
% App. Total	15.8	0.6	83.7		0	66.6	33.4		0	0	0		0	65.5	34.5		
PHF	.467	.500	.722	.806	.000	.710	.562	.652	.000	.000	.000	.000	.000	.688	.863	.817	.880

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Southbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 18_MUR 215SCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	17	1	168	186	0	147	70	217	0	0	0	0	0	**385**	110	**495**
+15 mins.	14	1	**209**	**224**	0	**204**	**129**	**333**	0	0	0	0	0	266	**162**	428
+30 mins.	**26**	**4**	193	223	0	130	51	181	0	0	0	0	0	211	150	361
+45 mins.	15	0	157	172	0	98	40	138	0	0	0	0	0	197	137	334
Total Volume	72	6	727	805	0	579	290	869	0	0	0	0	0	1059	559	1618
% App. Total	8.9	0.7	90.3		0	66.6	33.4		0	0	0		0	65.5	34.5	
PHF	.692	.375	.870	.898	.000	.710	.562	.652	.000	.000	.000	.000	.000	.688	.863	.817

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Southbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 18_MUR 215SCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

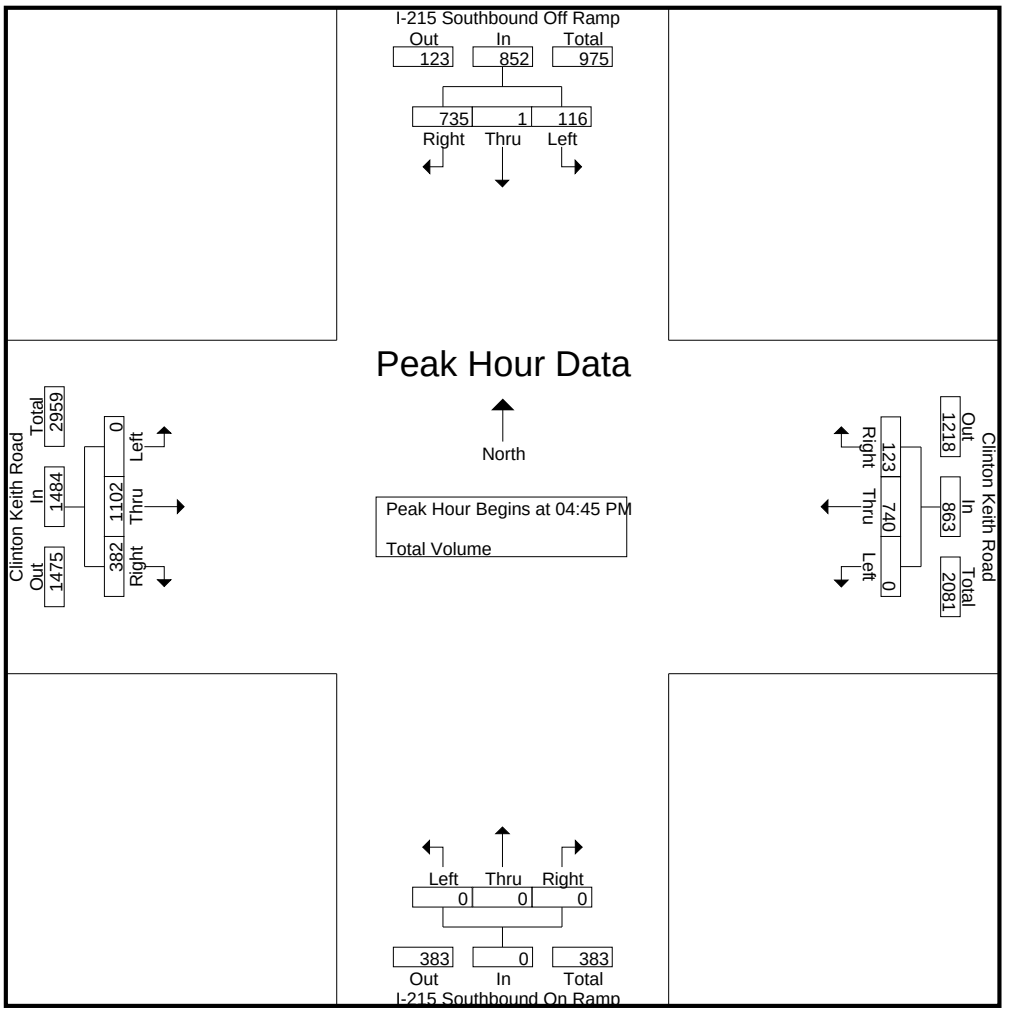
	I-215 Southbound Off Ramp Southbound				Clinton Keith Road Westbound				I-215 Southbound On Ramp Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	20	2	175	197	0	198	28	226	0	0	0	0	0	197	105	302	725
04:15 PM	29	2	178	209	0	156	16	172	0	0	0	0	0	255	119	374	755
04:30 PM	13	0	166	179	0	180	25	205	0	0	0	0	0	241	135	376	760
04:45 PM	32	0	186	218	0	182	31	213	0	0	0	0	0	283	112	395	826
Total	94	4	705	803	0	716	100	816	0	0	0	0	0	976	471	1447	3066
05:00 PM	16	0	178	194	0	175	28	203	0	0	0	0	0	275	83	358	755
05:15 PM	35	0	219	254	0	180	37	217	0	0	0	0	0	262	90	352	823
05:30 PM	33	1	152	186	0	203	27	230	0	0	0	0	0	282	97	379	795
05:45 PM	36	0	171	207	0	178	38	216	0	0	0	0	0	245	89	334	757
Total	120	1	720	841	0	736	130	866	0	0	0	0	0	1064	359	1423	3130
Grand Total	214	5	1425	1644	0	1452	230	1682	0	0	0	0	0	2040	830	2870	6196
Apprch %	13	0.3	86.7		0	86.3	13.7		0	0	0		0	71.1	28.9		
Total %	3.5	0.1	23	26.5	0	23.4	3.7	27.1	0	0	0	0	0	32.9	13.4	46.3	

	I-215 Southbound Off Ramp Southbound				Clinton Keith Road Westbound				I-215 Southbound On Ramp Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	32	0	186	218	0	182	31	213	0	0	0	0	0	**283**	**112**	**395**	**826**
05:00 PM	16	0	178	194	0	175	28	203	0	0	0	0	0	275	83	358	755
05:15 PM	**35**	0	**219**	**254**	0	180	**37**	217	0	0	0	0	0	262	90	352	823
05:30 PM	33	**1**	152	186	0	**203**	27	**230**	0	0	0	0	0	282	97	379	795
Total Volume	116	1	735	852	0	740	123	863	0	0	0	0	0	1102	382	1484	3199
% App. Total	13.6	0.1	86.3		0	85.7	14.3		0	0	0		0	74.3	25.7		
PHF	.829	.250	.839	.839	.000	.911	.831	.938	.000	.000	.000	.000	.000	.973	.853	.939	.968

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Southbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 18_MUR 215SCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:00 PM				04:15 PM			
+0 mins.	32	0	186	218	0	175	28	203	0	0	0	0	0	255	119	374
+15 mins.	16	0	178	194	0	180	37	217	0	0	0	0	0	241	**135**	376
+30 mins.	**35**	0	**219**	**254**	0	**203**	27	**230**	0	0	0	0	0	**283**	112	**395**
+45 mins.	33	**1**	152	186	0	178	**38**	216	0	0	0	0	0	275	83	358
Total Volume	116	1	735	852	0	736	130	866	0	0	0	0	0	1054	449	1503
% App. Total	13.6	0.1	86.3		0	85	15		0	0	0		0	70.1	29.9	
PHF	.829	.250	.839	.839	.000	.906	.855	.941	.000	.000	.000	.000	.000	.931	.831	.951

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Northbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 19_MUR 215NCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

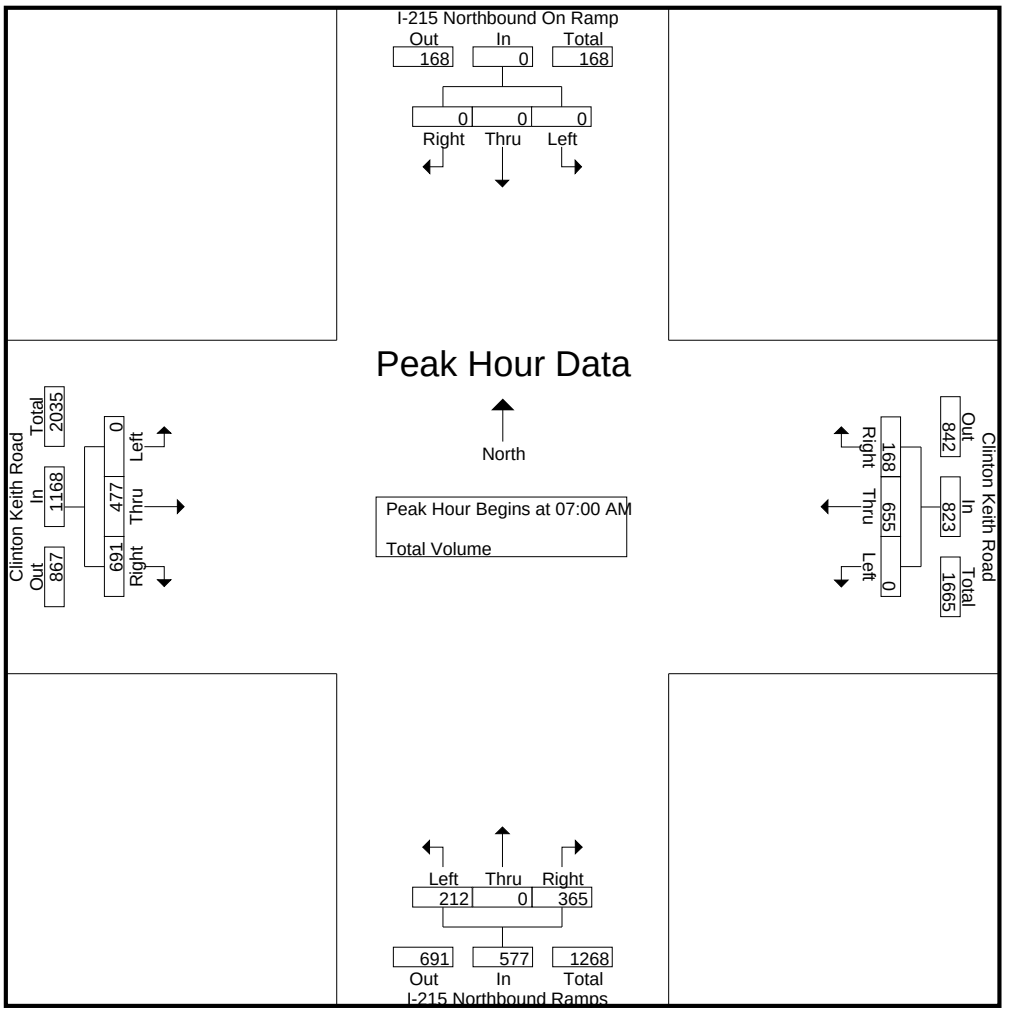
	I-215 Northbound On Ramp Southbound				Clinton Keith Road Westbound				I-215 Northbound Ramps Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	164	42	206	50	0	143	193	0	256	185	441	840
07:15 AM	0	0	0	0	0	277	64	341	60	0	139	199	0	117	173	290	830
07:30 AM	0	0	0	0	0	118	37	155	57	0	32	89	0	47	182	229	473
07:45 AM	0	0	0	0	0	96	25	121	45	0	51	96	0	57	151	208	425
Total	0	0	0	0	0	655	168	823	212	0	365	577	0	477	691	1168	2568
08:00 AM	0	0	0	0	0	102	17	119	57	0	24	81	0	54	133	187	387
08:15 AM	0	0	0	0	0	90	27	117	40	0	23	63	0	69	142	211	391
08:30 AM	0	0	0	0	0	77	25	102	52	0	27	79	0	54	148	202	383
08:45 AM	0	0	0	0	0	81	28	109	62	0	27	89	0	85	174	259	457
Total	0	0	0	0	0	350	97	447	211	0	101	312	0	262	597	859	1618
Grand Total	0	0	0	0	0	1005	265	1270	423	0	466	889	0	739	1288	2027	4186
Apprch %	0	0	0		0	79.1	20.9		47.6	0	52.4		0	36.5	63.5		
Total %	0	0	0	0	0	24	6.3	30.3	10.1	0	11.1	21.2	0	17.7	30.8	48.4	

	I-215 Northbound On Ramp Southbound				Clinton Keith Road Westbound				I-215 Northbound Ramps Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	164	42	206	50	0	**143**	193	0	**256**	**185**	**441**	**840**
07:15 AM	0	0	0	0	0	**277**	**64**	**341**	**60**	0	139	**199**	0	117	173	290	830
07:30 AM	0	0	0	0	0	118	37	155	57	0	32	89	0	47	182	229	473
07:45 AM	0	0	0	0	0	96	25	121	45	0	51	96	0	57	151	208	425
Total Volume	0	0	0	0	0	655	168	823	212	0	365	577	0	477	691	1168	2568
% App. Total	0	0	0		0	79.6	20.4		36.7	0	63.3		0	40.8	59.2		
PHF	.000	.000	.000	.000	.000	.591	.656	.603	.883	.000	.638	.725	.000	.466	.934	.662	.764

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Northbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 19_MUR 215NCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	164	42	206	50	0	**143**	193	0	**256**	**185**	**441**
+15 mins.	0	0	0	0	0	**277**	**64**	**341**	**60**	0	139	**199**	0	117	173	290
+30 mins.	0	0	0	0	0	118	37	155	57	0	32	89	0	47	182	229
+45 mins.	0	0	0	0	0	96	25	121	45	0	51	96	0	57	151	208
Total Volume	0	0	0	0	0	655	168	823	212	0	365	577	0	477	691	1168
% App. Total	0	0	0		0	79.6	20.4		36.7	0	63.3		0	40.8	59.2	
PHF	.000	.000	.000	.000	.000	.591	.656	.603	.883	.000	.638	.725	.000	.466	.934	.662

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Northbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 19_MUR 215NCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

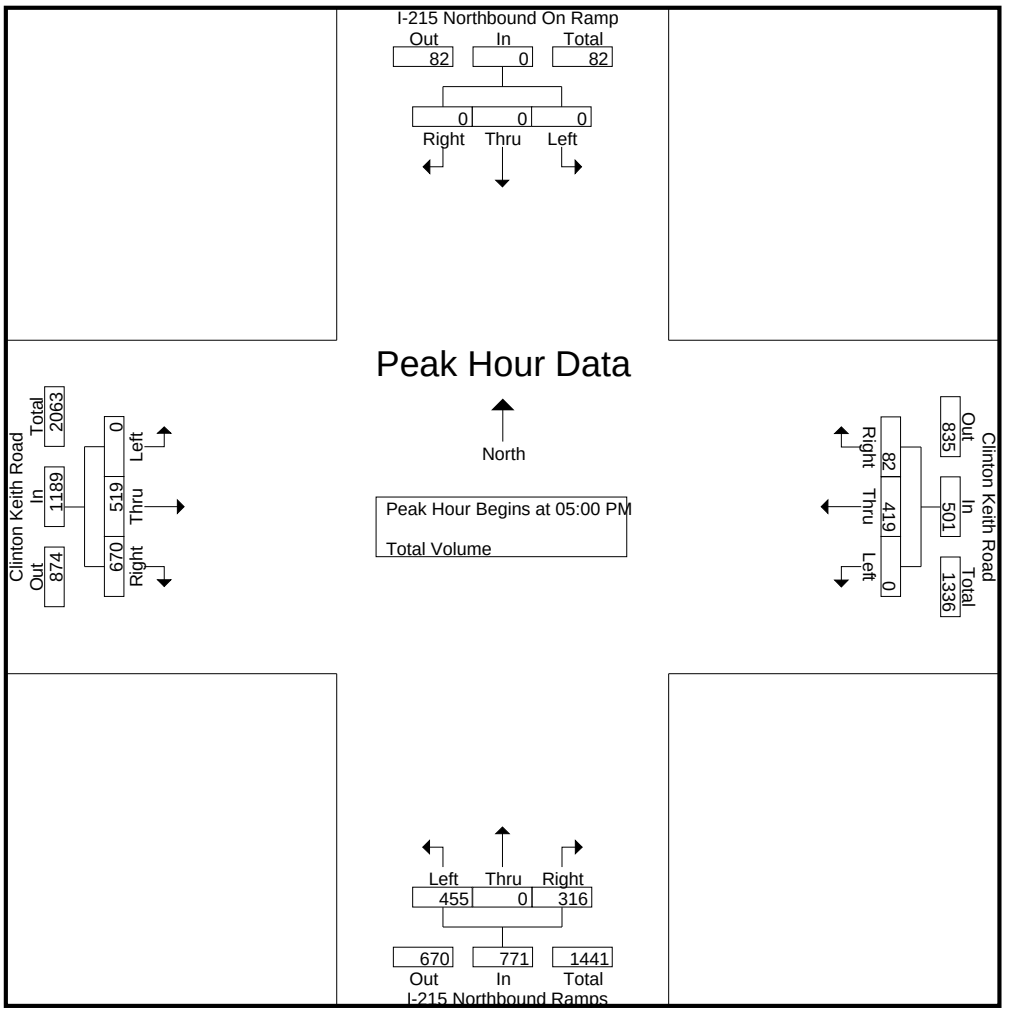
	I-215 Northbound On Ramp Southbound				Clinton Keith Road Westbound				I-215 Northbound Ramps Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	118	19	137	111	0	55	166	0	82	131	213	516
04:15 PM	0	0	0	0	0	75	8	83	107	0	57	164	0	100	181	281	528
04:30 PM	0	0	0	0	0	116	11	127	81	0	51	132	0	101	144	245	504
04:45 PM	0	0	0	0	0	98	13	111	116	0	69	185	0	146	160	306	602
Total	0	0	0	0	0	407	51	458	415	0	232	647	0	429	616	1045	2150
05:00 PM	0	0	0	0	0	100	22	122	110	0	76	186	0	119	165	284	592
05:15 PM	0	0	0	0	0	105	26	131	110	0	88	198	0	109	181	290	619
05:30 PM	0	0	0	0	0	108	18	126	128	0	72	200	0	142	166	308	634
05:45 PM	0	0	0	0	0	106	16	122	107	0	80	187	0	149	158	307	616
Total	0	0	0	0	0	419	82	501	455	0	316	771	0	519	670	1189	2461
Grand Total	0	0	0	0	0	826	133	959	870	0	548	1418	0	948	1286	2234	4611
Apprch %	0	0	0		0	86.1	13.9		61.4	0	38.6		0	42.4	57.6		
Total %	0	0	0	0	0	17.9	2.9	20.8	18.9	0	11.9	30.8	0	20.6	27.9	48.4	

	I-215 Northbound On Ramp Southbound				Clinton Keith Road Westbound				I-215 Northbound Ramps Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	100	22	122	110	0	76	186	0	119	165	284	592
05:15 PM	0	0	0	0	0	105	**26**	**131**	110	0	**88**	198	0	109	**181**	290	619
05:30 PM	0	0	0	0	0	**108**	18	126	**128**	0	72	**200**	0	142	166	**308**	**634**
05:45 PM	0	0	0	0	0	106	16	122	107	0	80	187	0	**149**	158	307	616
Total Volume	0	0	0	0	0	419	82	501	455	0	316	771	0	519	670	1189	2461
% App. Total	0	0	0		0	83.6	16.4		59	0	41		0	43.7	56.3		
PHF	.000	.000	.000	.000	.000	.970	.788	.956	.889	.000	.898	.964	.000	.871	.925	.965	.970

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: I-215 Northbound Ramps
E/W: Clinton Keith Road
Weather: Clear

File Name : 19_MUR 215NCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	100	22	122	110	0	76	186	0	119	165	284
+15 mins.	0	0	0	0	0	105	**26**	**131**	110	0	**88**	198	0	109	**181**	290
+30 mins.	0	0	0	0	0	**108**	18	126	**128**	0	72	**200**	0	142	166	**308**
+45 mins.	0	0	0	0	0	106	16	122	107	0	80	187	0	**149**	158	307
Total Volume	0	0	0	0	0	419	82	501	455	0	316	771	0	519	670	1189
% App. Total	0	0	0		0	83.6	16.4		59	0	41		0	43.7	56.3	
PHF	.000	.000	.000	.000	.000	.970	.788	.956	.889	.000	.898	.964	.000	.871	.925	.965

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 20_MUR WHCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

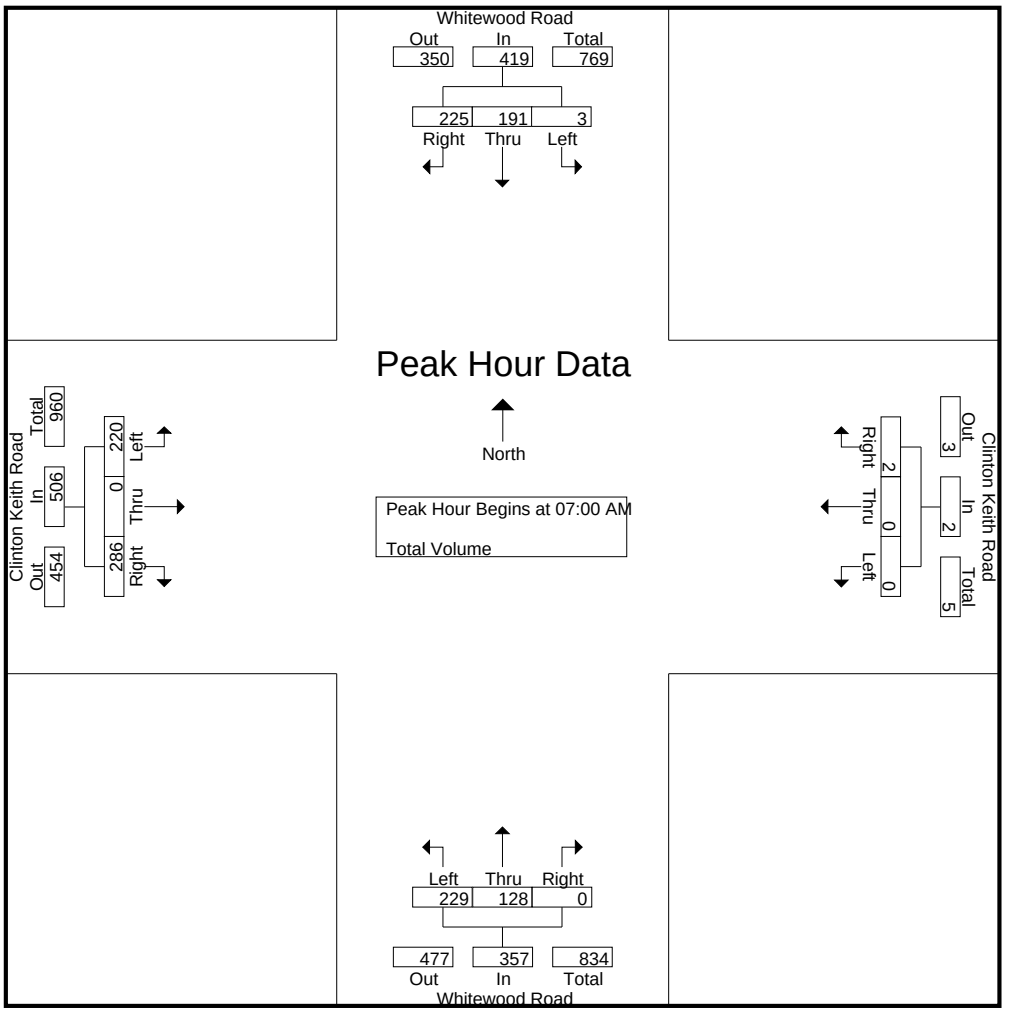
	Whitewood Road Southbound				Clinton Keith Road Westbound				Whitewood Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	62	70	134	0	0	1	1	77	17	0	94	46	0	98	144	373
07:15 AM	1	64	71	136	0	0	0	0	100	59	0	159	47	0	107	154	449
07:30 AM	0	22	35	57	0	0	1	1	23	24	0	47	66	0	57	123	228
07:45 AM	0	43	49	92	0	0	0	0	29	28	0	57	61	0	24	85	234
Total	3	191	225	419	0	0	2	2	229	128	0	357	220	0	286	506	1284
08:00 AM	0	33	48	81	0	0	0	0	33	16	0	49	44	0	41	85	215
08:15 AM	0	28	54	82	0	0	1	1	38	18	1	57	40	0	44	84	224
08:30 AM	0	18	39	57	0	0	0	0	28	13	0	41	32	0	29	61	159
08:45 AM	0	28	32	60	0	0	0	0	35	30	0	65	54	0	32	86	211
Total	0	107	173	280	0	0	1	1	134	77	1	212	170	0	146	316	809
Grand Total	3	298	398	699	0	0	3	3	363	205	1	569	390	0	432	822	2093
Apprch %	0.4	42.6	56.9		0	0	100		63.8	36	0.2		47.4	0	52.6		
Total %	0.1	14.2	19	33.4	0	0	0.1	0.1	17.3	9.8	0	27.2	18.6	0	20.6	39.3	

	Whitewood Road Southbound				Clinton Keith Road Westbound				Whitewood Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**2**	62	70	134	0	0	**1**	**1**	77	17	0	94	46	0	98	144	373
07:15 AM	1	**64**	**71**	**136**	0	0	0	0	**100**	**59**	0	**159**	47	0	**107**	**154**	**449**
07:30 AM	0	22	35	57	0	0	1	1	23	24	0	47	**66**	0	57	123	228
07:45 AM	0	43	49	92	0	0	0	0	29	28	0	57	61	0	24	85	234
Total Volume	3	191	225	419	0	0	2	2	229	128	0	357	220	0	286	506	1284
% App. Total	0.7	45.6	53.7		0	0	100		64.1	35.9	0		43.5	0	56.5		
PHF	.375	.746	.792	.770	.000	.000	.500	.500	.573	.542	.000	.561	.833	.000	.668	.821	.715

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 20_MUR WHCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**2**	62	70	134	0	0	**1**	**1**	77	17	0	94	46	0	98	144
+15 mins.	1	**64**	**71**	**136**	0	0	0	0	**100**	**59**	0	**159**	47	0	**107**	**154**
+30 mins.	0	22	35	57	0	0	1	1	23	24	0	47	**66**	0	57	123
+45 mins.	0	43	49	92	0	0	0	0	29	28	0	57	61	0	24	85
Total Volume	3	191	225	419	0	0	2	2	229	128	0	357	220	0	286	506
% App. Total	0.7	45.6	53.7		0	0	100		64.1	35.9	0		43.5	0	56.5	
PHF	.375	.746	.792	.770	.000	.000	.500	.500	.573	.542	.000	.561	.833	.000	.668	.821

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 20_MUR WHCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

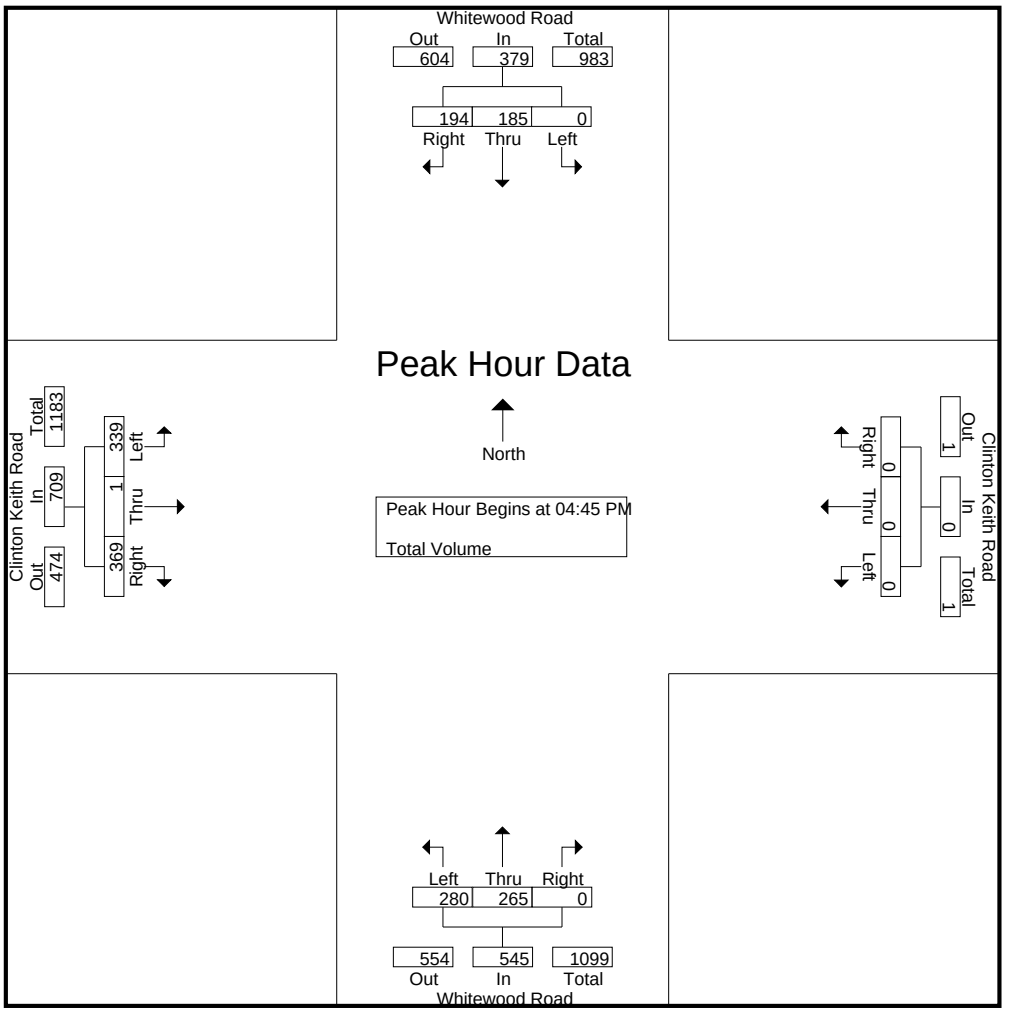
	Whitewood Road Southbound				Clinton Keith Road Westbound				Whitewood Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	51	56	107	0	1	0	1	51	47	0	98	83	0	43	126	332
04:15 PM	0	38	30	68	0	0	0	0	39	67	0	106	75	0	36	111	285
04:30 PM	0	41	43	84	0	1	0	1	57	70	0	127	76	0	67	143	355
04:45 PM	0	46	43	89	0	0	0	0	77	60	0	137	74	0	101	175	401
Total	0	176	172	348	0	2	0	2	224	244	0	468	308	0	247	555	1373
05:00 PM	0	48	65	113	0	0	0	0	60	56	0	116	76	0	85	161	390
05:15 PM	0	52	46	98	0	0	0	0	64	86	0	150	92	1	99	192	440
05:30 PM	0	39	40	79	0	0	0	0	79	63	0	142	97	0	84	181	402
05:45 PM	0	29	43	72	0	1	0	1	66	74	0	140	83	0	97	180	393
Total	0	168	194	362	0	1	0	1	269	279	0	548	348	1	365	714	1625
Grand Total	0	344	366	710	0	3	0	3	493	523	0	1016	656	1	612	1269	2998
Apprch %	0	48.5	51.5		0	100	0		48.5	51.5	0		51.7	0.1	48.2		
Total %	0	11.5	12.2	23.7	0	0.1	0	0.1	16.4	17.4	0	33.9	21.9	0	20.4	42.3	

	Whitewood Road Southbound				Clinton Keith Road Westbound				Whitewood Road Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	46	43	89	0	0	0	0	77	60	0	137	74	0	**101**	175	401
05:00 PM	0	48	**65**	**113**	0	0	0	0	60	56	0	116	76	0	85	161	390
05:15 PM	0	**52**	46	98	0	0	0	0	64	**86**	0	**150**	92	**1**	99	**192**	**440**
05:30 PM	0	39	40	79	0	0	0	0	**79**	63	0	142	**97**	0	84	181	402
Total Volume	0	185	194	379	0	0	0	0	280	265	0	545	339	1	369	709	1633
% App. Total	0	48.8	51.2		0	0	0		51.4	48.6	0		47.8	0.1	52		
PHF	.000	.889	.746	.838	.000	.000	.000	.000	.886	.770	.000	.908	.874	.250	.913	.923	.928

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Whitewood Road
E/W: Clinton Keith Road
Weather: Clear

File Name : 20_MUR WHCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	41	43	84	0	**1**	0	**1**	60	56	0	116	76	0	85	161
+15 mins.	0	46	43	89	0	0	0	0	64	**86**	0	**150**	92	**1**	**99**	**192**
+30 mins.	0	48	**65**	**113**	0	1	0	1	**79**	63	0	142	**97**	0	84	181
+45 mins.	0	**52**	46	98	0	0	0	0	66	74	0	140	83	0	97	180
Total Volume	0	187	197	384	0	2	0	2	269	279	0	548	348	1	365	714
% App. Total	0	48.7	51.3		0	100	0		49.1	50.9	0		48.7	0.1	51.1	
PHF	.000	.899	.758	.850	.000	.500	.000	.500	.851	.811	.000	.913	.897	.250	.922	.930

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL AM
Site Code : 12217517
Start Date : 8/16/2017

Groups Printed- Total Volume

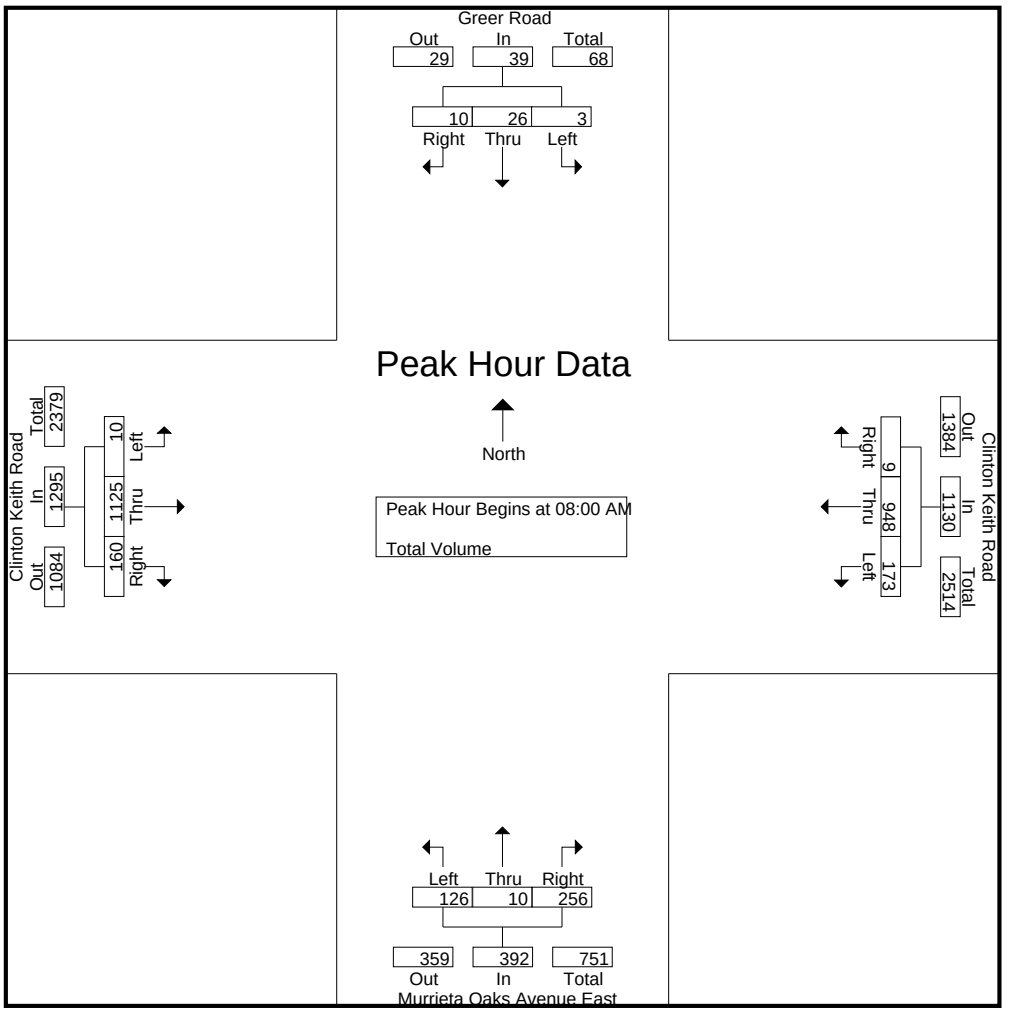
	Greer Road Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	7	7	21	223	3	247	11	0	35	46	2	366	7	375	675
07:15 AM	1	0	7	8	29	298	1	328	11	0	27	38	2	331	13	346	720
07:30 AM	2	0	3	5	27	243	0	270	8	0	19	27	2	322	20	344	646
07:45 AM	1	1	2	4	35	278	1	314	6	1	21	28	3	274	43	320	666
Total	4	1	19	24	112	1042	5	1159	36	1	102	139	9	1293	83	1385	2707
08:00 AM	3	15	2	20	80	262	5	347	7	0	28	35	1	231	87	319	721
08:15 AM	0	10	3	13	52	230	1	283	28	2	26	56	1	293	50	344	696
08:30 AM	0	0	2	2	19	214	2	235	58	4	97	159	3	272	14	289	685
08:45 AM	0	1	3	4	22	242	1	265	33	4	105	142	5	329	9	343	754
Total	3	26	10	39	173	948	9	1130	126	10	256	392	10	1125	160	1295	2856
Grand Total	7	27	29	63	285	1990	14	2289	162	11	358	531	19	2418	243	2680	5563
Apprch %	11.1	42.9	46		12.5	86.9	0.6		30.5	2.1	67.4		0.7	90.2	9.1		
Total %	0.1	0.5	0.5	1.1	5.1	35.8	0.3	41.1	2.9	0.2	6.4	9.5	0.3	43.5	4.4	48.2	

	Greer Road Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**3**	**15**	2	**20**	**80**	**262**	**5**	**347**	7	0	28	35	1	231	**87**	319	721
08:15 AM	0	10	**3**	13	52	230	1	283	28	2	26	56	1	293	50	**344**	696
08:30 AM	0	0	2	2	19	214	2	235	**58**	**4**	97	**159**	3	272	14	289	685
08:45 AM	0	1	3	4	22	242	1	265	33	4	**105**	142	**5**	**329**	9	343	**754**
Total Volume	3	26	10	39	173	948	9	1130	126	10	256	392	10	1125	160	1295	2856
% App. Total	7.7	66.7	25.6		15.3	83.9	0.8		32.1	2.6	65.3		0.8	86.9	12.4		
PHF	.250	.433	.833	.488	.541	.905	.450	.814	.543	.625	.610	.616	.500	.855	.460	.941	.947

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL AM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				08:00 AM				07:00 AM			
+0 mins.	2	0	**3**	5	29	**298**	1	328	7	0	28	35	2	**366**	7	**375**
+15 mins.	1	1	2	4	27	243	0	270	28	2	26	56	2	331	13	346
+30 mins.	**3**	**15**	2	**20**	35	278	1	314	**58**	**4**	97	**159**	2	322	20	344
+45 mins.	0	10	3	13	**80**	262	**5**	**347**	33	4	**105**	142	**3**	274	**43**	320
Total Volume	6	26	10	42	171	1081	7	1259	126	10	256	392	9	1293	83	1385
% App. Total	14.3	61.9	23.8		13.6	85.9	0.6		32.1	2.6	65.3		0.6	93.4	6	
PHF	.500	.433	.833	.525	.534	.907	.350	.907	.543	.625	.610	.616	.750	.883	.483	.923

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 1

Groups Printed- Total Volume

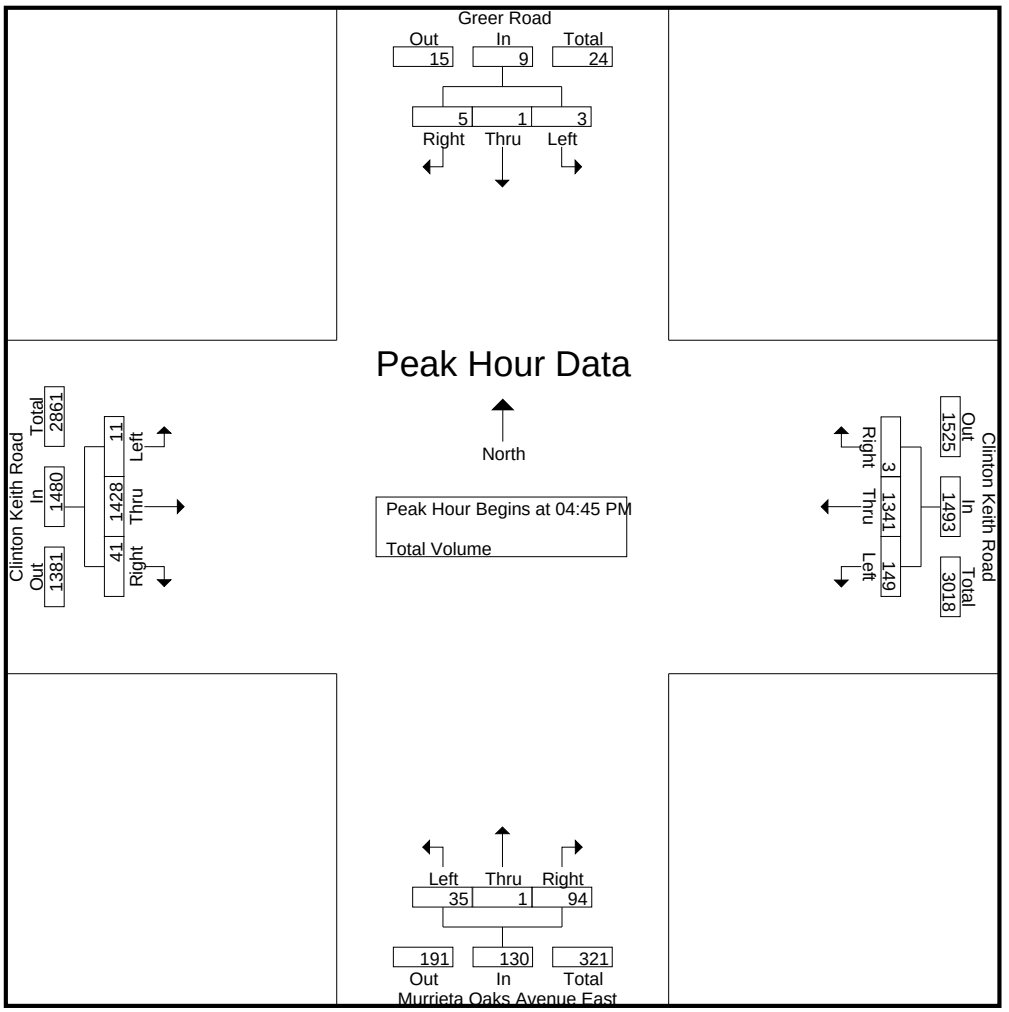
	Greer Road Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	1	2	4	52	331	1	384	8	0	32	40	2	287	13	302	730
04:15 PM	1	0	5	6	19	337	0	356	8	0	26	34	7	362	9	378	774
04:30 PM	0	0	3	3	36	288	0	324	7	0	26	33	4	333	8	345	705
04:45 PM	0	1	2	3	31	338	3	372	13	0	24	37	4	386	12	402	814
Total	2	2	12	16	138	1294	4	1436	36	0	108	144	17	1368	42	1427	3023
05:00 PM	0	0	2	2	38	307	0	345	7	0	19	26	2	331	8	341	714
05:15 PM	0	0	0	0	35	346	0	381	7	0	24	31	2	371	14	387	799
05:30 PM	3	0	1	4	45	350	0	395	8	1	27	36	3	340	7	350	785
05:45 PM	1	0	4	5	27	309	0	336	5	0	25	30	2	366	9	377	748
Total	4	0	7	11	145	1312	0	1457	27	1	95	123	9	1408	38	1455	3046
Grand Total	6	2	19	27	283	2606	4	2893	63	1	203	267	26	2776	80	2882	6069
Apprch %	22.2	7.4	70.4		9.8	90.1	0.1		23.6	0.4	76		0.9	96.3	2.8		
Total %	0.1	0	0.3	0.4	4.7	42.9	0.1	47.7	1	0	3.3	4.4	0.4	45.7	1.3	47.5	

	Greer Road Southbound				Clinton Keith Road Westbound				Murrieta Oaks Avenue East Northbound				Clinton Keith Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	**1**	**2**	3	31	338	**3**	372	**13**	0	24	**37**	**4**	**386**	12	**402**	**814**
05:00 PM	0	0	2	2	38	307	0	345	7	0	19	26	2	331	8	341	714
05:15 PM	0	0	0	0	35	346	0	381	7	0	24	31	2	371	**14**	387	799
05:30 PM	**3**	0	1	**4**	**45**	**350**	0	**395**	8	**1**	**27**	36	3	340	7	350	785
Total Volume	3	1	5	9	149	1341	3	1493	35	1	94	130	11	1428	41	1480	3112
% App. Total	33.3	11.1	55.6		10	89.8	0.2		26.9	0.8	72.3		0.7	96.5	2.8		
PHF	.250	.250	.625	.563	.828	.958	.250	.945	.673	.250	.870	.878	.688	.925	.732	.920	.956

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Murrieta
N/S: Greer Road/Murrieta Oaks Ave East
E/W: Clinton Keith Road
Weather: Clear

File Name : 16_MUR MUCL PM
Site Code : 12217517
Start Date : 8/16/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				04:45 PM			
+0 mins.	**1**	**1**	2	4	31	338	**3**	372	8	0	**32**	**40**	**4**	**386**	12	**402**
+15 mins.	1	0	**5**	**6**	38	307	0	345	8	0	26	34	2	331	8	341
+30 mins.	0	0	3	3	35	346	0	381	7	0	26	33	2	371	**14**	387
+45 mins.	0	1	2	3	**45**	**350**	0	**395**	**13**	0	24	37	3	340	7	350
Total Volume	2	2	12	16	149	1341	3	1493	36	0	108	144	11	1428	41	1480
% App. Total	12.5	12.5	75		10	89.8	0.2		25	0	75		0.7	96.5	2.8	
PHF	.500	.500	.600	.667	.828	.958	.250	.945	.692	.000	.844	.900	.688	.925	.732	.920

Roadway Segment ADT Count Data

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Antelope Road
B/ Keller Road - Baxter Road
24 Hour Directional Volume Count

MUR003
Site Code: 122-17550

Start	10/4/2017	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	68			2	46				
12:15		8	65			1	92				
12:30		8	61			2	80				
12:45		3	47	21	241	4	66	9	284	30	525
01:00		8	57			3	44				
01:15		3	59			2	71				
01:30		6	60			5	63				
01:45		3	62	20	238	0	**71**	10	249	30	487
02:00		4	59			3	**95**				
02:15		6	89			3	**85**				
02:30		2	96			8	**65**				
02:45		2	81	14	325	0	69	14	314	28	639
03:00		4	93			3	62				
03:15		1	109			4	65				
03:30		4	99			5	59				
03:45		4	118	13	419	3	64	15	250	28	669
04:00		2	105			5	65				
04:15		6	116			13	65				
04:30		4	**113**			18	62				
04:45		3	**136**	15	470	24	56	60	248	75	718
05:00		10	**126**			22	45				
05:15		12	**136**			28	76				
05:30		11	104			36	56				
05:45		16	87	49	453	37	55	123	232	172	685
06:00		24	92			50	43				
06:15		17	85			56	46				
06:30		21	70			76	41				
06:45		35	70	97	317	91	49	273	179	370	496
07:00		67	43			**112**	39				
07:15		58	58			**147**	29				
07:30		47	40			**123**	25				
07:45		39	31	211	172	**116**	33	498	126	709	298
08:00		43	31			89	25				
08:15		38	26			112	25				
08:30		44	34			101	24				
08:45		52	18	177	109	76	19	378	93	555	202
09:00		53	23			63	25				
09:15		45	25			66	21				
09:30		46	12			52	17				
09:45		38	15	182	75	61	11	242	74	424	149
10:00		59	19			57	6				
10:15		52	17			63	7				
10:30		63	11			59	8				
10:45		63	8	237	55	84	12	263	33	500	88
11:00		**56**	9			48	6				
11:15		**57**	10			52	4				
11:30		**65**	7			43	6				
11:45		**78**	8	256	34	52	6	195	22	451	56
Total		1292	2908	1292	2908	2080	2104	2080	2104	3372	5012
Combined Total		4200		4200		4184		4184		8384	
AM Peak	-	11:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	256	-	-	-	498	-	-	-	-	-
P.H.F.		0.821				0.847					
PM Peak	-	-	04:30	-	-	-	01:45	-	-	-	-
Vol.	-	-	511	-	-	-	316	-	-	-	-
P.H.F.			0.939				0.832				
Percentage		30.8%	69.2%			49.7%	50.3%				
ADT/AADT		ADT 8,384		AADT 8,384							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Antelope Road
B/ Keller Road - Mapleton Avenue
24 Hour Directional Volume Count

MUR005
Site Code: 122-17517

Start Time	8/16/2017 Wed	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		6	65			2	57				
12:15		5	89			5	64				
12:30		6	67			3	87				
12:45		6	57	23	278	1	69	11	277	34	555
01:00		8	61			4	**69**				
01:15		2	69			4	**77**				
01:30		4	54			1	**86**				
01:45		5	70	19	254	7	**83**	16	315	35	569
02:00		1	59			5	66				
02:15		5	92			4	66				
02:30		1	98			7	57				
02:45		4	107	11	356	9	64	25	253	36	609
03:00		1	111			6	59				
03:15		3	95			12	71				
03:30		7	86			9	71				
03:45		8	117	19	409	6	41	33	242	52	651
04:00		5	125			11	44				
04:15		12	127			19	54				
04:30		7	**105**			22	47				
04:45		10	**136**	34	493	9	43	61	188	95	681
05:00		9	**132**			16	38				
05:15		16	**132**			25	29				
05:30		15	94			32	49				
05:45		23	82	63	440	24	50	97	166	160	606
06:00		25	56			45	42				
06:15		29	88			65	43				
06:30		23	85			98	43				
06:45		35	55	112	284	**81**	56	289	184	401	468
07:00		57	53			**84**	24				
07:15		80	46			**107**	30				
07:30		52	29			**101**	22				
07:45		52	41	241	169	81	34	373	110	614	279
08:00		58	30			64	22				
08:15		44	20			71	18				
08:30		45	23			65	36				
08:45		50	21	197	94	60	25	260	101	457	195
09:00		48	11			58	19				
09:15		46	14			59	15				
09:30		54	16			66	20				
09:45		48	12	196	53	81	17	264	71	460	124
10:00		52	11			50	11				
10:15		64	7			56	4				
10:30		43	9			56	6				
10:45		51	9	210	36	53	7	215	28	425	64
11:00		**58**	5			40	9				
11:15		**63**	8			68	8				
11:30		**75**	9			51	6				
11:45		**74**	11	270	33	51	5	210	28	480	61
Total		1395	2899	1395	2899	1854	1963	1854	1963	3249	4862
Combined Total		4294		4294		3817		3817		8111	
AM Peak	-	11:00	-	-	-	06:45	-	-	-	-	-
Vol.	-	270	-	-	-	373	-	-	-	-	-
P.H.F.		0.900				0.871					
PM Peak	-	-	04:30	-	-	-	01:00	-	-	-	-
Vol.	-	-	505	-	-	-	315	-	-	-	-
P.H.F.			0.928				0.916				
Percentage		32.5%	67.5%			48.6%	51.4%				
ADT/AADT		ADT 8,111		AADT 8,111							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Antelope Road
B/ Mapleton Avenue - Scott Road
24 Hour Directional Volume Count

MUR006
Site Code: 122-17517

Start Time	8/16/2017 Wed	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		11	95			19	90				
12:15		8	88			6	97				
12:30		10	167			10	97				
12:45		7	116	36	466	5	121	40	405	76	871
01:00		8	90			6	97				
01:15		7	88			6	**90**				
01:30		3	107			7	**117**				
01:45		5	82	23	367	3	**113**	22	417	45	784
02:00		6	96			10	**122**				
02:15		5	88			8	89				
02:30		8	116			7	91				
02:45		2	128	21	428	8	86	33	388	54	816
03:00		14	128			8	94				
03:15		3	126			8	111				
03:30		10	121			15	92				
03:45		15	105	42	480	11	103	42	400	84	880
04:00		17	143			10	67				
04:15		17	143			12	69				
04:30		26	157			26	110				
04:45		33	**135**	93	578	21	95	69	341	162	919
05:00		39	**163**			10	84				
05:15		29	**148**			21	77				
05:30		37	**164**			24	70				
05:45		39	122	144	597	39	99	94	330	238	927
06:00		48	131			36	81				
06:15		59	93			50	71				
06:30		85	121			84	72				
06:45		70	121	262	466	104	108	274	332	536	798
07:00		86	85			**103**	108				
07:15		**105**	70			**124**	75				
07:30		**140**	87			**122**	75				
07:45		**86**	48	417	290	**121**	69	470	327	887	617
08:00		**98**	58			94	70				
08:15		87	48			81	62				
08:30		70	43			94	50				
08:45		64	35	319	184	74	64	343	246	662	430
09:00		86	30			80	54				
09:15		76	21			77	48				
09:30		71	22			73	40				
09:45		75	20	308	93	78	48	308	190	616	283
10:00		76	25			102	35				
10:15		76	21			73	31				
10:30		79	15			83	21				
10:45		82	13	313	74	85	21	343	108	656	182
11:00		72	14			75	27				
11:15		87	9			66	16				
11:30		84	11			92	17				
11:45		99	16	342	50	77	11	310	71	652	121
Total		2320	4073	2320	4073	2348	3555	2348	3555	4668	7628
Combined Total		6393		6393		5903		5903		12296	
AM Peak	-	07:15	-	-	-	07:00	-	-	-	-	-
Vol.	-	429	-	-	-	470	-	-	-	-	-
P.H.F.		0.766				0.948					
PM Peak	-	-	04:45	-	-	-	01:15	-	-	-	-
Vol.	-	-	610	-	-	-	442	-	-	-	-
P.H.F.			0.930				0.906				
Percentage		36.3%	63.7%			39.8%	60.2%				
ADT/AADT		ADT 12,296		AADT 12,296							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Clinton Keith Road
B/ I-215 Northbound Ramps - Whitewood Road
24 Hour Directional Volume Count

MUR012
Site Code: 122-17517

Start Time	8/16/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		9	74			5	85				
12:15		8	84			1	76				
12:30		11	103			3	65				
12:45		6	84	34	345	4	50	13	276	47	621
01:00		5	88			5	70				
01:15		10	97			2	83				
01:30		3	91			1	63				
01:45		8	127	26	403	4	81	12	297	38	700
02:00		6	133			5	91				
02:15		2	**159**			6	104				
02:30		3	**229**			4	**231**				
02:45		4	**246**	15	767	1	**259**	16	685	31	1452
03:00		1	**157**			8	**220**				
03:15		2	136			3	**140**				
03:30		1	129			10	122				
03:45		5	123	9	545	7	122	28	604	37	1149
04:00		1	103			9	105				
04:15		2	124			17	81				
04:30		7	150			26	110				
04:45		13	176	23	553	42	109	94	405	117	958
05:00		9	191			37	121				
05:15		29	181			30	126				
05:30		14	209			37	117				
05:45		31	198	83	779	51	117	155	481	238	1260
06:00		28	164			60	104				
06:15		45	159			64	106				
06:30		**126**	134			**101**	95				
06:45		**254**	125	453	582	**154**	71	379	376	832	958
07:00		**301**	99			**200**	82				
07:15		**220**	88			**277**	73				
07:30		79	91			94	64				
07:45		90	79	690	357	101	48	672	267	1362	624
08:00		81	72			98	134				
08:15		80	74			87	57				
08:30		98	77			79	38				
08:45		74	77	333	300	70	34	334	263	667	563
09:00		69	76			78	29				
09:15		54	49			82	28				
09:30		84	29			61	23				
09:45		62	50	269	204	50	19	271	99	540	303
10:00		53	38			70	19				
10:15		51	29			65	19				
10:30		70	30			64	5				
10:45		72	16	246	113	66	9	265	52	511	165
11:00		72	18			77	13				
11:15		69	21			63	5				
11:30		75	15			69	6				
11:45		74	10	290	64	83	9	292	33	582	97
Total		2471	5012	2471	5012	2531	3838	2531	3838	5002	8850
Combined Total		7483		7483		6369		6369		13852	
AM Peak	-	06:30	-	-	-	06:30	-	-	-	-	-
Vol.	-	901	-	-	-	732	-	-	-	-	-
P.H.F.		0.748				0.661					
PM Peak	-	-	02:15	-	-	-	02:30	-	-	-	-
Vol.	-	-	791	-	-	-	850	-	-	-	-
P.H.F.			0.804				0.820				
Percentage		33.0%	67.0%			39.7%	60.3%				
ADT/AADT		ADT 13,852		AADT 13,852							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Keller Road
B/ Antelope Road - Mapleton Road
24 Hour Directional Volume Count

MUR001
Site Code: 122-17550

Start	10/4/2017	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		3	29			2	24				
12:15		3	40			3	24				
12:30		1	31			1	71				
12:45		2	33	9	133	2	31	8	150	17	283
01:00		1	**49**			0	24				
01:15		2	**45**			1	22				
01:30		3	**35**			0	22				
01:45		0	**38**	6	167	0	28	1	96	7	263
02:00		0	27			1	31				
02:15		0	28			0	47				
02:30		3	25			2	39				
02:45		0	25	3	105	2	38	5	155	8	260
03:00		0	27			1	27				
03:15		1	21			4	26				
03:30		0	13			2	40				
03:45		0	19	1	80	1	28	8	121	9	201
04:00		4	14			8	**42**				
04:15		2	14			6	**36**				
04:30		1	11			7	**42**				
04:45		1	7	8	46	12	**43**	33	163	41	209
05:00		1	9			13	27				
05:15		3	6			9	36				
05:30		5	10			17	41				
05:45		9	7	18	32	23	34	62	138	80	170
06:00		4	6			18	21				
06:15		14	3			17	23				
06:30		12	4			34	34				
06:45		32	2	62	15	35	23	104	101	166	116
07:00		22	4			**74**	27				
07:15		**39**	3			**77**	14				
07:30		**21**	2			**85**	10				
07:45		**37**	2	119	11	**65**	10	301	61	420	72
08:00		**29**	2			43	11				
08:15		30	0			35	12				
08:30		23	1			36	7				
08:45		28	3	110	6	31	7	145	37	255	43
09:00		10	0			25	4				
09:15		11	1			28	6				
09:30		19	1			23	5				
09:45		26	0	66	2	28	5	104	20	170	22
10:00		11	2			20	0				
10:15		15	2			24	1				
10:30		23	0			26	2				
10:45		18	0	67	4	19	1	89	4	156	8
11:00		27	2			30	1				
11:15		18	0			24	2				
11:30		23	0			21	2				
11:45		22	0	90	2	13	3	88	8	178	10
Total		559	603	559	603	948	1054	948	1054	1507	1657
Combined Total		1162		1162		2002		2002		3164	
AM Peak	-	07:15	-	-	-	07:00	-	-	-	-	-
Vol.	-	126	-	-	-	301	-	-	-	-	-
P.H.F.		0.808				0.885					
PM Peak	-	-	01:00	-	-	-	04:00	-	-	-	-
Vol.	-	-	167	-	-	-	163	-	-	-	-
P.H.F.			0.852				0.867				
Percentage		48.1%	51.9%			47.4%	52.6%				
ADT/AADT		ADT 3,164		AADT 3,164							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Murrieta
Keller Road
B/ Howard Way - Zeiders Road
24 Hour Directional Volume Count

MUR001
Site Code: 122-17517

Start Time	8/16/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	1			0	1				
12:15		0	3			2	3				
12:30		0	4			0	3				
12:45		0	2	0	10	0	2	2	9	2	19
01:00		0	5			0	3				
01:15		0	0			0	2				
01:30		0	2			0	3				
01:45		0	1	0	8	0	0	0	8	0	16
02:00		0	1			0	1				
02:15		0	1			0	3				
02:30		0	0			0	2				
02:45		0	2	0	4	0	4	0	10	0	14
03:00		0	2			0	4				
03:15		0	**3**			0	2				
03:30		0	**4**			0	1				
03:45		0	**3**	0	12	0	5	0	12	0	24
04:00		1	**10**			0	2				
04:15		0	1			0	1				
04:30		0	2			0	4				
04:45		0	5	1	18	0	1	0	8	1	26
05:00		0	2			1	2				
05:15		2	3			0	3				
05:30		0	1			0	**2**				
05:45		1	1	3	7	1	**4**	2	11	5	18
06:00		1	5			3	**2**				
06:15		1	1			0	**8**				
06:30		2	1			3	2				
06:45		1	2	5	9	1	3	7	15	12	24
07:00		**5**	4			1	1				
07:15		**2**	2			1	0				
07:30		**3**	0			**6**	3				
07:45		**7**	2	17	8	**4**	4	12	8	29	16
08:00		4	2			**2**	1				
08:15		2	1			**2**	1				
08:30		2	0			1	1				
08:45		0	0	8	3	4	1	9	4	17	7
09:00		6	1			4	1				
09:15		2	1			2	0				
09:30		2	0			2	0				
09:45		0	0	10	2	0	0	8	1	18	3
10:00		4	0			2	2				
10:15		2	0			0	1				
10:30		1	0			4	0				
10:45		3	0	10	0	1	0	7	3	17	3
11:00		1	1			0	0				
11:15		1	1			4	1				
11:30		0	0			2	0				
11:45		3	1	5	3	1	0	7	1	12	4
Total		59	84	59	84	54	90	54	90	113	174
Combined Total		143		143		144		144		287	
AM Peak	-	07:00	-	-	-	07:30	-	-	-	-	-
Vol.	-	17	-	-	-	14	-	-	-	-	-
P.H.F.		0.607				0.583					
PM Peak	-	-	03:15	-	-	-	05:30	-	-	-	-
Vol.	-	-	20	-	-	-	16	-	-	-	-
P.H.F.			0.500				0.500				
Percentage		41.3%	58.7%			37.5%	62.5%				
ADT/AADT		ADT 287		AADT 287							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Keller Road
B/ Mapleton Road - Menifee Road
24 Hour Directional Volume Count

MUR002
Site Code: 122-17550

Start Time	10/4/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	30			2	20				
12:15		4	27			2	24				
12:30		1	22			1	**65**				
12:45		3	17	10	96	2	**32**	7	141	17	237
01:00		0	17			0	**19**				
01:15		1	16			1	**26**				
01:30		3	23			0	24				
01:45		0	28	4	84	0	16	1	85	5	169
02:00		0	14			1	29				
02:15		0	20			0	35				
02:30		3	22			1	35				
02:45		0	22	3	78	2	30	4	129	7	207
03:00		0	20			1	20				
03:15		2	26			3	24				
03:30		0	37			3	28				
03:45		0	31	2	114	2	23	9	95	11	209
04:00		4	29			6	33				
04:15		1	37			5	19				
04:30		1	25			5	21				
04:45		1	30	7	121	8	27	24	100	31	221
05:00		2	**37**			7	21				
05:15		2	**37**			6	20				
05:30		6	**38**			7	26				
05:45		4	**33**	14	145	13	26	33	93	47	238
06:00		5	29			13	12				
06:15		12	32			17	24				
06:30		11	18			19	25				
06:45		**19**	25	47	104	24	21	73	82	120	186
07:00		**22**	24			**57**	22				
07:15		**32**	22			**50**	15				
07:30		**17**	16			**70**	10				
07:45		19	25	90	87	**51**	7	228	54	318	141
08:00		20	8			29	8				
08:15		17	11			33	10				
08:30		15	12			32	4				
08:45		20	9	72	40	27	4	121	26	193	66
09:00		14	8			21	6				
09:15		7	4			15	7				
09:30		14	10			11	5				
09:45		16	5	51	27	24	7	71	25	122	52
10:00		6	6			15	0				
10:15		14	6			19	0				
10:30		20	4			23	4				
10:45		17	3	57	19	17	0	74	4	131	23
11:00		23	3			22	1				
11:15		18	3			23	2				
11:30		13	2			25	0				
11:45		17	1	71	9	7	2	77	5	148	14
Total		428	924	428	924	722	839	722	839	1150	1763
Combined Total		1352		1352		1561		1561		2913	
AM Peak	-	06:45	-	-	-	07:00	-	-	-	-	-
Vol.	-	90	-	-	-	228	-	-	-	-	-
P.H.F.		0.703				0.814					
PM Peak	-	-	05:00	-	-	-	00:30	-	-	-	-
Vol.	-	-	145	-	-	-	142	-	-	-	-
P.H.F.			0.954				0.546				
Percentage		31.7%	68.3%			46.3%	53.7%				
ADT/AADT		ADT 2,913		AADT 2,913							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Murrieta
Keller Road
B/ Mapleton Avenue - Whitewood Road
24 Hour Directional Volume Count

MUR004
Site Code: 122-17517

Start Time	8/16/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		3	38			2	40				
12:15		2	40			5	49				
12:30		2	27			1	119				
12:45		2	23	9	128	2	56	10	264	19	392
01:00		1	20			3	44				
01:15		1	25			3	40				
01:30		4	18			3	60				
01:45		0	32	6	95	2	47	11	191	17	286
02:00		4	35			0	68				
02:15		1	23			2	61				
02:30		2	24			3	**77**				
02:45		0	51	7	133	2	**63**	7	269	14	402
03:00		1	51			1	**66**				
03:15		0	41			1	**70**				
03:30		0	57			2	70				
03:45		0	56	1	205	7	53	11	259	12	464
04:00		0	45			10	68				
04:15		0	69			9	44				
04:30		1	53			12	63				
04:45		1	59	2	226	14	52	45	227	47	453
05:00		1	**92**			17	54				
05:15		3	**92**			18	50				
05:30		7	**71**			25	48				
05:45		4	**82**	15	337	30	41	90	193	105	530
06:00		7	54			32	82				
06:15		11	68			49	49				
06:30		18	67			68	55				
06:45		26	51	62	240	86	56	235	242	297	482
07:00		**27**	47			**126**	37				
07:15		**102**	44			**107**	44				
07:30		**35**	35			**151**	31				
07:45		**27**	30	191	156	**98**	28	482	140	673	296
08:00		21	28			60	20				
08:15		22	26			70	25				
08:30		11	21			68	33				
08:45		16	18	70	93	45	24	243	102	313	195
09:00		22	15			42	14				
09:15		21	10			43	17				
09:30		23	17			50	12				
09:45		20	13	86	55	45	11	180	54	266	109
10:00		15	13			30	6				
10:15		22	8			46	8				
10:30		23	6			38	7				
10:45		26	7	86	34	34	8	148	29	234	63
11:00		25	5			48	4				
11:15		15	3			55	5				
11:30		27	6			50	4				
11:45		32	2	99	16	44	3	197	16	296	32
Total		634	1718	634	1718	1659	1986	1659	1986	2293	3704
Combined Total		2352		2352		3645		3645		5997	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	191	-	-	-	482	-	-	-	-	-
P.H.F.		0.468				0.798					
PM Peak	-	-	05:00	-	-	-	02:30	-	-	-	-
Vol.	-	-	337	-	-	-	276	-	-	-	-
P.H.F.			0.916				0.896				
Percentage		27.0%	73.0%			45.5%	54.5%				
ADT/AADT		ADT 5,997		AADT 5,997							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Murrieta
Keller Road
B/ Zeiders Road - 215 Freeway
24 Hour Directional Volume Count

MUR002
Site Code: 122-17517

Start Time	8/16/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	4			0	6				
12:15		0	8			0	6				
12:30		0	5			0	8				
12:45		0	6	0	23	0	8	0	28	0	51
01:00		0	9			0	10				
01:15		1	5			1	10				
01:30		0	1			0	7				
01:45		0	7	1	22	0	6	1	33	2	55
02:00		0	8			0	10				
02:15		0	8			0	6				
02:30		0	4			0	18				
02:45		0	5	0	25	0	19	0	53	0	78
03:00		0	7			0	**19**				
03:15		0	**19**			1	**19**				
03:30		0	**14**			0	**17**				
03:45		0	**13**	0	53	0	**23**	1	78	1	131
04:00		0	**23**			1	5				
04:15		0	10			1	17				
04:30		1	12			1	11				
04:45		4	10	5	55	2	15	5	48	10	103
05:00		2	7			2	12				
05:15		3	10			1	17				
05:30		4	8			2	8				
05:45		4	17	13	42	2	10	7	47	20	89
06:00		3	16			2	11				
06:15		6	19			0	12				
06:30		9	13			9	9				
06:45		13	14	31	62	**13**	7	24	39	55	101
07:00		8	7			**33**	8				
07:15		**13**	1			**52**	1				
07:30		**17**	2			**19**	5				
07:45		**22**	3	60	13	12	4	116	18	176	31
08:00		**13**	2			6	1				
08:15		4	1			4	2				
08:30		5	0			7	2				
08:45		1	0	23	3	5	1	22	6	45	9
09:00		6	1			3	0				
09:15		5	1			5	0				
09:30		1	0			11	0				
09:45		3	1	15	3	2	2	21	2	36	5
10:00		7	0			6	3				
10:15		6	1			5	1				
10:30		2	0			7	1				
10:45		7	0	22	1	3	0	21	5	43	6
11:00		8	2			3	0				
11:15		4	0			7	1				
11:30		2	0			11	1				
11:45		5	3	19	5	7	1	28	3	47	8
Total		189	307	189	307	246	360	246	360	435	667
Combined Total		496		496		606		606		1102	
AM Peak	-	07:15	-	-	-	06:45	-	-	-	-	-
Vol.	-	65	-	-	-	117	-	-	-	-	-
P.H.F.		0.739				0.563					
PM Peak	-	-	03:15	-	-	-	03:00	-	-	-	-
Vol.	-	-	69	-	-	-	78	-	-	-	-
P.H.F.			0.750				0.848				
Percentage		38.1%	61.9%			40.6%	59.4%				
ADT/AADT		ADT 1,102		AADT 1,102							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
McElwain Road
N/ Clinton Keith Road
24 Hour Directional Volume Count

MUR008
Site Code: 122-17517

Start Time	8/16/2017 Wed	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		6	80			14	123				
12:15		4	87			10	127				
12:30		2	85			2	139				
12:45		5	88	17	340	2	166	28	555	45	895
01:00		4	81			3	152				
01:15		3	81			2	102				
01:30		5	80			9	131				
01:45		4	98	16	340	4	124	18	509	34	849
02:00		3	105			4	151				
02:15		8	73			3	175				
02:30		1	108			3	161				
02:45		3	131	15	417	3	154	13	641	28	1058
03:00		3	139			10	145				
03:15		5	142			3	**182**				
03:30		5	134			8	**169**				
03:45		15	136	28	551	12	**171**	33	667	61	1218
04:00		7	131			9	**164**				
04:15		9	119			19	154				
04:30		19	129			34	159				
04:45		27	130	62	509	38	187	100	664	162	1173
05:00		19	**148**			38	157				
05:15		25	**145**			47	153				
05:30		29	**148**			36	173				
05:45		51	**136**	124	577	50	129	171	612	295	1189
06:00		35	129			69	151				
06:15		34	113			75	123				
06:30		34	115			84	130				
06:45		70	118	173	475	120	133	348	537	521	1012
07:00		49	88			**169**	117				
07:15		80	91			**185**	112				
07:30		98	91			**162**	131				
07:45		80	79	307	349	**184**	100	700	460	1007	809
08:00		75	73			120	93				
08:15		69	61			128	85				
08:30		**90**	64			132	86				
08:45		**123**	61	357	259	146	63	526	327	883	586
09:00		**89**	43			135	60				
09:15		**91**	44			141	58				
09:30		69	37			132	46				
09:45		78	30	327	154	140	54	548	218	875	372
10:00		80	37			113	29				
10:15		74	24			120	23				
10:30		82	11			117	21				
10:45		89	11	325	83	97	32	447	105	772	188
11:00		84	11			116	22				
11:15		93	8			143	12				
11:30		95	6			129	16				
11:45		76	7	348	32	154	13	542	63	890	95
Total		2099	4086	2099	4086	3474	5358	3474	5358	5573	9444
Combined Total		6185		6185		8832		8832		15017	
AM Peak	-	08:30	-	-	-	07:00	-	-	-	-	-
Vol.	-	393	-	-	-	700	-	-	-	-	-
P.H.F.		0.799				0.946					
PM Peak	-	-	05:00	-	-	-	03:15	-	-	-	-
Vol.	-	-	577	-	-	-	686	-	-	-	-
P.H.F.			0.975				0.942				
Percentage		33.9%	66.1%			39.3%	60.7%				
ADT/AADT		ADT 15,017		AADT 15,017							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Scott Road
B/ Haun Road - I-215 Southbound Ramps
24 Hour Directional Volume Count

MUR010
Site Code: 122-17517

Start	8/16/2017	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		20	153			30	164				
12:15		14	171			18	181				
12:30		16	162			22	183				
12:45		13	173	63	659	13	220	83	748	146	1407
01:00		10	165			16	193				
01:15		8	180			16	178				
01:30		14	190			8	180				
01:45		12	206	44	741	13	207	53	758	97	1499
02:00		5	196			9	198				
02:15		12	215			13	232				
02:30		15	175			16	251				
02:45		5	**218**	37	804	15	251	53	932	90	1736
03:00		13	**224**			11	274				
03:15		17	**232**			19	255				
03:30		26	**193**			25	247				
03:45		29	216	85	865	32	271	87	1047	172	1912
04:00		33	216			31	238				
04:15		38	201			43	235				
04:30		79	195			42	254				
04:45		70	184	220	796	66	**266**	182	993	402	1789
05:00		82	229			54	**257**				
05:15		87	201			85	**254**				
05:30		108	205			81	**275**				
05:45		106	217	383	852	106	247	326	1033	709	1885
06:00		133	214			119	239				
06:15		134	196			159	246				
06:30		185	195			159	214				
06:45		236	217	688	822	**188**	213	625	912	1313	1734
07:00		210	161			**302**	201				
07:15		**265**	157			**297**	170				
07:30		**258**	149			**189**	149				
07:45		**218**	139	951	606	169	156	957	676	1908	1282
08:00		**259**	144			124	114				
08:15		216	141			149	116				
08:30		187	110			128	120				
08:45		179	99	841	494	157	108	558	458	1399	952
09:00		209	95			154	130				
09:15		163	90			158	104				
09:30		135	76			158	80				
09:45		150	61	657	322	176	78	646	392	1303	714
10:00		168	62			141	75				
10:15		145	35			160	44				
10:30		185	40			164	55				
10:45		133	38	631	175	175	43	640	217	1271	392
11:00		154	39			178	39				
11:15		157	27			180	41				
11:30		162	23			173	23				
11:45		161	14	634	103	199	20	730	123	1364	226
Total		5234	7239	5234	7239	4940	8289	4940	8289	10174	15528
Combined Total		12473		12473		13229		13229		25702	
AM Peak	-	07:15	-	-	-	06:45	-	-	-	-	-
Vol.	-	1000	-	-	-	976	-	-	-	-	-
P.H.F.		0.943				0.808					
PM Peak	-	-	02:45	-	-	-	04:45	-	-	-	-
Vol.	-	-	867	-	-	-	1052	-	-	-	-
P.H.F.			0.934				0.956				
Percentage		42.0%	58.0%			37.3%	62.7%				
ADT/AADT		ADT 25,702		AADT 25,702							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Scott Road
B/ I-215 Northbound Ramps - Antelope Road
24 Hour Directional Volume Count

MUR011
Site Code: 122-17517

Start Time	8/16/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		60	311			35	254				
12:15		57	312			25	258				
12:30		42	311			28	273				
12:45		32	287	191	1221	15	313	103	1098	294	2319
01:00		31	301			20	307				
01:15		32	293			17	266				
01:30		38	324			10	261				
01:45		28	342	129	1260	16	307	63	1141	192	2401
02:00		28	307			20	285				
02:15		21	339			16	321				
02:30		21	325			22	354				
02:45		29	332	99	1303	23	312	81	1272	180	2575
03:00		23	349			31	**326**				
03:15		22	350			40	**337**				
03:30		35	337			58	**334**				
03:45		31	355	111	1391	84	**341**	213	1338	324	2729
04:00		13	343			98	305				
04:15		32	341			130	309				
04:30		63	355			186	293				
04:45		61	358	169	1397	218	297	632	1204	801	2601
05:00		75	**371**			210	284				
05:15		104	**366**			215	301				
05:30		132	**359**			269	310				
05:45		144	**360**	455	1456	213	289	907	1184	1362	2640
06:00		170	358			261	255				
06:15		203	349			300	268				
06:30		252	367			**331**	215				
06:45		281	351	906	1425	**371**	235	1263	973	2169	2398
07:00		287	344			**345**	251				
07:15		**333**	344			**301**	212				
07:30		**312**	270			321	178				
07:45		**331**	258	1263	1216	306	176	1273	817	2536	2033
08:00		**288**	247			291	159				
08:15		270	272			273	179				
08:30		217	245			300	239				
08:45		244	208	1019	972	303	163	1167	740	2186	1712
09:00		280	199			276	144				
09:15		281	213			278	156				
09:30		208	161			302	137				
09:45		237	166	1006	739	284	120	1140	557	2146	1296
10:00		261	131			290	97				
10:15		85	120			287	55				
10:30		253	100			288	58				
10:45		251	100	850	451	286	40	1151	250	2001	701
11:00		226	83			266	40				
11:15		229	73			242	33				
11:30		261	63			268	25				
11:45		273	46	989	265	269	38	1045	136	2034	401
Total		7187	13096	7187	13096	9038	10710	9038	10710	16225	23806
Combined Total		20283		20283		19748		19748		40031	
AM Peak	-	07:15	-	-	-	06:30	-	-	-	-	-
Vol.	-	1264	-	-	-	1348	-	-	-	-	-
P.H.F.		0.949				0.908					
PM Peak	-	-	05:00	-	-	-	03:00	-	-	-	-
Vol.	-	-	1456	-	-	-	1338	-	-	-	-
P.H.F.			0.981				0.981				
Percentage		35.4%	64.6%			45.8%	54.2%				
ADT/AADT		ADT 40,031		AADT 40,031							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Scott Road
W/ Haun Road
24 Hour Directional Volume Count

MUR009
Site Code: 122-17517

Start Time	8/16/2017 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		15	103			13	99				
12:15		9	109			11	111				
12:30		12	88			14	103				
12:45		10	94	46	394	11	122	49	435	95	829
01:00		5	72			9	114				
01:15		4	98			5	93				
01:30		8	110			3	117				
01:45		6	121	23	401	3	99	20	423	43	824
02:00		3	125			2	129				
02:15		4	113			4	110				
02:30		3	110			5	124				
02:45		3	121	13	469	8	135	19	498	32	967
03:00		3	132			12	139				
03:15		4	129			18	130				
03:30		10	68			20	139				
03:45		21	90	38	419	29	**157**	79	565	117	984
04:00		16	118			31	**143**				
04:15		20	117			39	**154**				
04:30		38	115			43	**151**				
04:45		42	101	116	451	48	142	161	590	277	1041
05:00		48	135			48	157				
05:15		61	95			79	115				
05:30		85	**127**			57	139				
05:45		80	**137**	274	494	73	125	257	536	531	1030
06:00		95	**127**			80	109				
06:15		108	**131**			89	127				
06:30		**132**	119			101	116				
06:45		**146**	119	481	496	100	120	370	472	851	968
07:00		**131**	86			**112**	108				
07:15		**164**	92			**105**	104				
07:30		107	90			**117**	93				
07:45		124	71	526	339	**120**	95	454	400	980	739
08:00		128	76			90	71				
08:15		150	75			88	77				
08:30		136	67			99	70				
08:45		105	56	519	274	94	75	371	293	890	567
09:00		148	59			91	78				
09:15		95	62			89	66				
09:30		94	49			106	54				
09:45		90	42	427	212	102	55	388	253	815	465
10:00		91	32			103	33				
10:15		98	20			82	27				
10:30		121	22			95	39				
10:45		86	25	396	99	93	29	373	128	769	227
11:00		88	25			105	23				
11:15		87	14			86	28				
11:30		96	11			93	14				
11:45		85	7	356	57	107	10	391	75	747	132
Total		3215	4105	3215	4105	2932	4668	2932	4668	6147	8773
Combined Total		7320		7320		7600		7600		14920	
AM Peak	-	06:30	-	-	-	07:00	-	-	-	-	-
Vol.	-	573	-	-	-	454	-	-	-	-	-
P.H.F.		0.873				0.946					
PM Peak	-	-	05:30	-	-	-	03:45	-	-	-	-
Vol.	-	-	522	-	-	-	605	-	-	-	-
P.H.F.			0.953				0.963				
Percentage		43.9%	56.1%			38.6%	61.4%				
ADT/AADT		ADT 14,920		AADT 14,920							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Murrieta
Whitewood Road
B/ Keller Road - Baxter Road
24 Hour Directional Volume Count

MUR004
Site Code: 122-17550

Start	10/4/2017	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	40			1	26				
12:15		2	36			0	19				
12:30		2	30			0	54				
12:45		3	33	11	139	0	24	1	123	12	262
01:00		0	32			0	26				
01:15		4	32			0	19				
01:30		1	31			1	29				
01:45		1	36	6	131	0	**41**	1	115	7	246
02:00		1	34			0	**39**				
02:15		0	28			1	**40**				
02:30		0	52			0	**38**				
02:45		2	76	3	190	0	38	1	155	4	345
03:00		1	64			0	40				
03:15		0	73			1	39				
03:30		0	69			0	35				
03:45		1	66	2	272	3	40	4	154	6	426
04:00		1	64			2	40				
04:15		0	71			10	31				
04:30		1	65			14	36				
04:45		1	64	3	264	13	21	39	128	42	392
05:00		7	**78**			22	41				
05:15		0	**89**			9	34				
05:30		2	**74**			16	42				
05:45		4	**78**	13	319	17	32	64	149	77	468
06:00		5	61			20	30				
06:15		4	72			28	41				
06:30		9	67			31	28				
06:45		11	61	29	261	55	26	134	125	163	386
07:00		**34**	62			**119**	12				
07:15		**63**	42			**92**	14				
07:30		**38**	41			**74**	11				
07:45		**25**	32	160	177	**67**	15	352	52	512	229
08:00		19	35			64	12				
08:15		20	32			38	6				
08:30		18	25			50	4				
08:45		27	34	84	126	27	18	179	40	263	166
09:00		13	16			28	11				
09:15		12	22			27	8				
09:30		17	15			29	5				
09:45		16	13	58	66	21	3	105	27	163	93
10:00		21	10			27	2				
10:15		19	12			18	2				
10:30		20	5			31	1				
10:45		30	5	90	32	31	2	107	7	197	39
11:00		29	7			26	2				
11:15		29	3			29	3				
11:30		32	6			26	1				
11:45		36	5	126	21	25	3	106	9	232	30
Total		585	1998	585	1998	1093	1084	1093	1084	1678	3082
Combined Total		2583		2583		2177		2177		4760	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	160	-	-	-	352	-	-	-	-	-
P.H.F.		0.635				0.739					
PM Peak	-	-	05:00	-	-	-	01:45	-	-	-	-
Vol.	-	-	319	-	-	-	158	-	-	-	-
P.H.F.			0.896				0.963				
Percentage		22.6%	77.4%			50.2%	49.8%				
ADT/AADT		ADT 4,760		AADT 4,760							

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

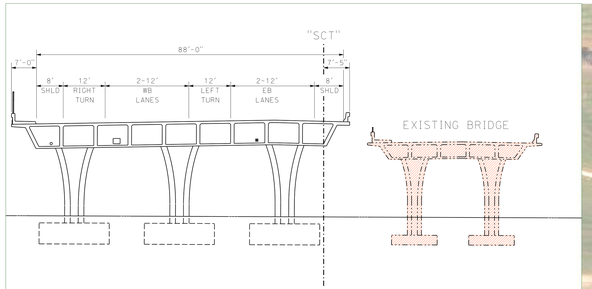
City of Murrieta
Zeiders Road
N/ Keller Road
24 Hour Directional Volume Count

MUR007
Site Code: 122-17517

Start	8/16/2017	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	8			0	3				
12:15		0	6			1	7				
12:30		0	8			0	3				
12:45		0	6	0	28	0	4	1	17	1	45
01:00		0	8			0	5				
01:15		0	6			0	5				
01:30		0	7			0	2				
01:45		0	6	0	27	0	3	0	15	0	42
02:00		0	9			1	7				
02:15		0	6			0	9				
02:30		0	15			0	3				
02:45		0	**16**	0	46	0	2	1	21	1	67
03:00		0	**16**			0	5				
03:15		1	**16**			0	18				
03:30		0	**18**			0	11				
03:45		0	14	1	64	0	13	0	47	1	111
04:00		2	4			0	8				
04:15		1	16			0	7				
04:30		0	10			1	11				
04:45		2	18	5	48	1	12	2	38	7	86
05:00		0	13			1	9				
05:15		1	13			1	10				
05:30		1	7			2	4				
05:45		3	7	5	40	5	**18**	9	41	14	81
06:00		3	9			2	**12**				
06:15		2	11			5	**17**				
06:30		10	4			6	**12**				
06:45		**13**	3	28	27	14	12	27	53	55	80
07:00		**37**	6			5	2				
07:15		**50**	2			**14**	0				
07:30		**19**	3			**12**	3				
07:45		13	1	119	12	**17**	3	48	8	167	20
08:00		6	0			**11**	0				
08:15		3	1			4	0				
08:30		5	0			2	0				
08:45		3	1	17	2	2	0	19	0	36	2
09:00		1	0			3	1				
09:15		4	0			1	0				
09:30		11	0			0	0				
09:45		2	1	18	1	3	0	7	1	25	2
10:00		4	1			3	0				
10:15		6	0			4	1				
10:30		2	1			0	0				
10:45		3	0	15	2	6	0	13	1	28	3
11:00		4	0			5	0				
11:15		4	0			3	0				
11:30		5	1			2	0				
11:45		12	0	25	1	6	1	16	1	41	2
Total		233	298	233	298	143	243	143	243	376	541
Combined Total		531		531		386		386		917	
AM Peak	-	06:45	-	-	-	07:15	-	-	-	-	-
Vol.	-	119	-	-	-	54	-	-	-	-	-
P.H.F.		0.595				0.794					
PM Peak	-	-	02:45	-	-	-	05:45	-	-	-	-
Vol.	-	-	66	-	-	-	59	-	-	-	-
P.H.F.			0.917				0.819				
Percentage		43.9%	56.1%			37.0%	63.0%				
ADT/AADT		ADT 917		AADT 917							

Dist	Route		County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
08	210		SBD	R	28.664	SAN BERNARDINO, JCT. RTE. 330	6300	72000	70000	5500	73000	71500
08	210		SBD	R	29.322	HIGHLAND, BASELINE STREET	5500	73000	71500	5900	79000	77500
08	210		SBD	R	30.232	HIGHLAND, FIFTH STREET	5900	79000	77500	7300	97000	95000
08	210		SBD	R	32.343	REDLANDS, SAN BERNARDINO AVE	7300	97000	95000	6000	80000	78500
08	210		SBD	R	33.18	JCT. RTE. 10, END OF ROUTE	6000	80000	78500			
08	210	U	SBD		15.767	SIERRA AVENUE	950	10000	9800	1150	12300	12000
08	210	U	SBD		19.521	RIALTO, RIVERSIDE AVENUE	1850	19400	19000	2650	28000	27500
08	210	U	SBD		20.02	ACACIA AVENUE	2650	28000	27500	2700	28500	28000
08	210	U	SBD		21.68	CAJON BOULEVARD	2700	28500	28000	2700	28500	28000
08	210	U	SBD		21.773	CALIFORNIA STREET	2700	28500	28000	3300	35000	34000
08	210	U	SBD		22	ROUTE 210 LEFT TURN AT HIGHLAND AVENUE	3300	35000	34000			
01	211		HUM		73.2	FERNDALE, OCEAN AVENUE				640	6600	6400
01	211		HUM	R	74.192	FERNDALE, VAN NESS AVENUE	640	6600	6400	630	6500	6300
01	211		HUM	R	75.782	SAGE ROAD	560	5800	5600	580	6000	5800
01	211		HUM	R	76.688	GOBLE LN-WADDINGTON RD	580	6000	5800	530	5600	5400
01	211		HUM		79.275	JCT. RTE. 101	590	5600	5400			
07	213		LA		0	LOS ANGELES, 25TH STREET				2650	29000	28500
07	213		LA		3.458	RANCHO PALOS VERDES, AVENDIA APPRENDA RD	3150	35000	34000	3500	39000	38500
07	213		LA		4.314	LOMITA, PALOS VERDES DRIVE NORTH	3500	39000	38500	2000	23300	23000
07	213		LA		5.085	LOS ANGELES, JCT. RTE. 1	2600	31000	30500	2050	21800	21300
07	213		LA		5.667	LOS ANGELES, LOMITA BOULEVARD	2250	23900	23400	2800	29500	29000
07	213		LA		6.996	LOS ANGELES, SEPULVEDA BOULEVARD	2800	29500	29000	3000	31500	31000
07	213		LA		7.983	CARSON STREET	3000	31500	31000	3000	31500	31000
07	213		LA		8.973	W 204TH STREET	3000	31500	31000			
08	215		RIV	R	8.998	MURRIETA, JCT. RTE. 15				6100	90000	85000
08	215		RIV	R	9.507	MURRIETA HOT SPRINGS ROAD	6100	87000	85000	6700	95000	93000
08	215		RIV	R	10.652	MURRIETA, LOS ALAMOS ROAD	6700	95000	93000	6500	94000	90000
08	215		RIV	R	12.51	MURRIETA, ANTELOPE ROAD	6500	94000	90000	7100	97000	93000
08	215		RIV	R	15.515	SCOTT ROAD	7100	97000	93000	6700	88000	85000
08	215		RIV	R	18.516	NEWPORT ROAD	6700	88000	85000	6300	83000	80000
08	215		RIV	R	20.842	SUN CITY, MC CALL BOULEVARD	6300	83000	80000	5800	77000	74000
08	215		RIV		22.76	PERRIS, ETHANAC ROAD	5800	77000	74000	5700	75000	72000
08	215		RIV		23.537	SOUTH JCT. RTE. 74	5700	75000	72000	7300	92000	88000
08	215		RIV		26.308	PERRIS, NORTH JCT. RTE. 74	7200	90000	88000	6700	84000	82000
08	215		RIV		27.23	PERRIS, D STREET	6700	84000	82000	8100	102000	99000
08	215		RIV	R	27.887	PERRIS, NUEVO ROAD	8100	102000	99000	8400	106000	103000
08	215		RIV	R	30.93	RAMONA EXPRESSWAY	8400	106000	103000	9600	120000	117000
08	215		RIV	R	32.33	OLEANDER AVENUE	9600	120000	117000	10200	127000	124000
08	215		RIV	R	34.17	VAN BUREN BOULEVARD	10200	127000	124000	9800	123000	120000

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
08	215	RIV	R	35.76	CACTUS AVENUE	9800	123000	120000	10300	129000	126000
08	215	RIV	R	36.419	ALLENSANDRO BOULEVARD	10300	129000	126000	10200	127000	124000
08	215	RIV	R	37.436	RIVERSIDE, EUCALYPTUS/EASTRIDGE AVE	10200	127000	124000	9800	122000	119000
08	215	RIV	R	38.339	JCT. RTE. 60 EAST	9800	122000	119000	11200	177000	170000
08	215	RIV	R	38.915	RIVERSIDE, FAIR ISLE DRIVE	11200	177000	170000	12100	191000	184000
08	215	RIV		39.484	RIVERSIDE, CENTRAL AVENUE	12100	191000	184000	11900	187000	180000
08	215	RIV		40.977	RIVERSIDE, PENNSYLVANIA AVENUE	11900	187000	180000	11900	187000	180000
08	215	RIV		41.488	UNIVERSITY AVENUE	11900	187000	180000	11900	187000	180000
08	215	RIV		42.163	RIVERSIDE, 3RD/ BLAINE STREETS	11900	187000	180000	11900	187000	180000
08	215	RIV		43.9	RIVERSIDE, COLUMBIA AVENUE	11500	159000	155000	11200	154000	150000
08	215	RIV		45.013	CENTER STREET	11200	154000	150000	11000	151000	147000
08	215	RIV		45.333	RIVERSIDE/SAN BERNARDINO COUNTY LINE	11000	151000	147000			
08	215	SBD		0	RIVERSIDE/SAN BERNARDINO COUNTY LINE				11000	151000	147000
08	215	SBD		.402	IOWA AVENUE	11000	151000	147000	11400	157000	153000
08	215	SBD		1.312	BARTON ROAD	11400	157000	153000	11700	161000	157000
08	215	SBD		2.686	COLTON, MOUNT VERNON/ WASHINGTON AVE	11700	161000	157000	12700	174000	170000
08	215	SBD		4.052	COLTON, JCT. RTE. 10	12700	174000	170000	12600	158000	155000
08	215	SBD		5.025	SAN BERNARDINO, ORANGE SHOW ROAD	12600	158000	155000	11300	143000	140000
08	215	SBD		5.581	SAN BERNARDINO, INLAND CENTER DRIVE	11300	143000	140000	10900	138000	135000
08	215	SBD		6.06	SAN BERNARDINO, MILL STREET	10900	138000	135000	10800	139000	136000
08	215	SBD		6.787	SAN BERNARDINO, SECOND STREET	10800	139000	136000	9900	128000	125000
08	215	SBD		7.183	SAN BERNARDINO, JCT. RTE. 66 WEST	9900	128000	125000	9800	128000	125000
08	215	SBD		8.083	SAN BERNARDINO, BASELINE STREET	9800	128000	125000	9000	118000	115000
08	215	SBD		8.603	SAN BERNARDINO, JCT. RTE. 259 NORTH	9000	118000	115000	5200	67000	65000
08	215	SBD		9.029	SAN BERNARDINO, MASSACHUSETTS AVENUE	5200	67000	65000	5200	65000	63000
08	215	SBD		9.364	SAN BERNARDINO, HIGHLAND AVENUE	5200	65000	63000	4950	60000	58000
08	215	SBD		9.722	SAN BERNARDINO, MOUNT VERNON AVE/27TH ST	4950	60000	58000	5000	59000	56000
08	215	SBD		10.051	JCT. RTE. 210U	5000	59000	56000	6500	76000	72000
08	215	SBD		11.634	UNIVERSITY PARKWAY	6500	76000	72000	4500	56000	53000
08	215	SBD		14.091	PALM AVENUE	4500	56000	53000	4500	56000	53000
08	215	SBD		17.323	DEVORE ROAD	4500	56000	53000	4050	50000	48000
08	215	SBD		17.753	JCT. RTE. 15	4050	50000	48000			
06	216	TUL	R	0	VISALIA, JCT. RTE. 198				1700	17500	15500
06	216	TUL	R	.349	MILL CREEK PARKWAY	1850	18500	16500	1400	14400	12400
06	216	TUL	R	.488	VISALIA, GOSHEN AVENUE	1400	14400	12400	1400	14200	12300
06	216	TUL	R	.824	ROOSEVELT AVENUE	1400	14200	12300	1250	13400	11000
06	216	TUL	R	.99	LOVERS LANE	1250	13400	11000	1450	15500	13400
06	216	TUL		2.46	MACAULIFF AVE,RD 144	1450	15500	13400	400	4050	3700
06	216	TUL		6.95	IVANHOE, AVENUE 328	580	5800	5300	460	4650	4200



SCOTT ROAD TYPICAL SECTION

ZEIDERS ROAD
HAUK ROAD
CITY OF MENIFEE
CITY OF MENIFEE
BAILEY PARK BLVD
SCOTT ROAD
WHITEWOOD ROAD
PROP R/W
R/W
I-215 SOUTHBOUND
I-215 NORTHBOUND
I-215 SOUTHBOUND
I-215 NORTHBOUND
ANTELOPE ROAD
ANTELOPE ROAD
MAPLETON AVE
CITY OF MURRIETA
CITY OF MENIFEE
SCOTT ROAD

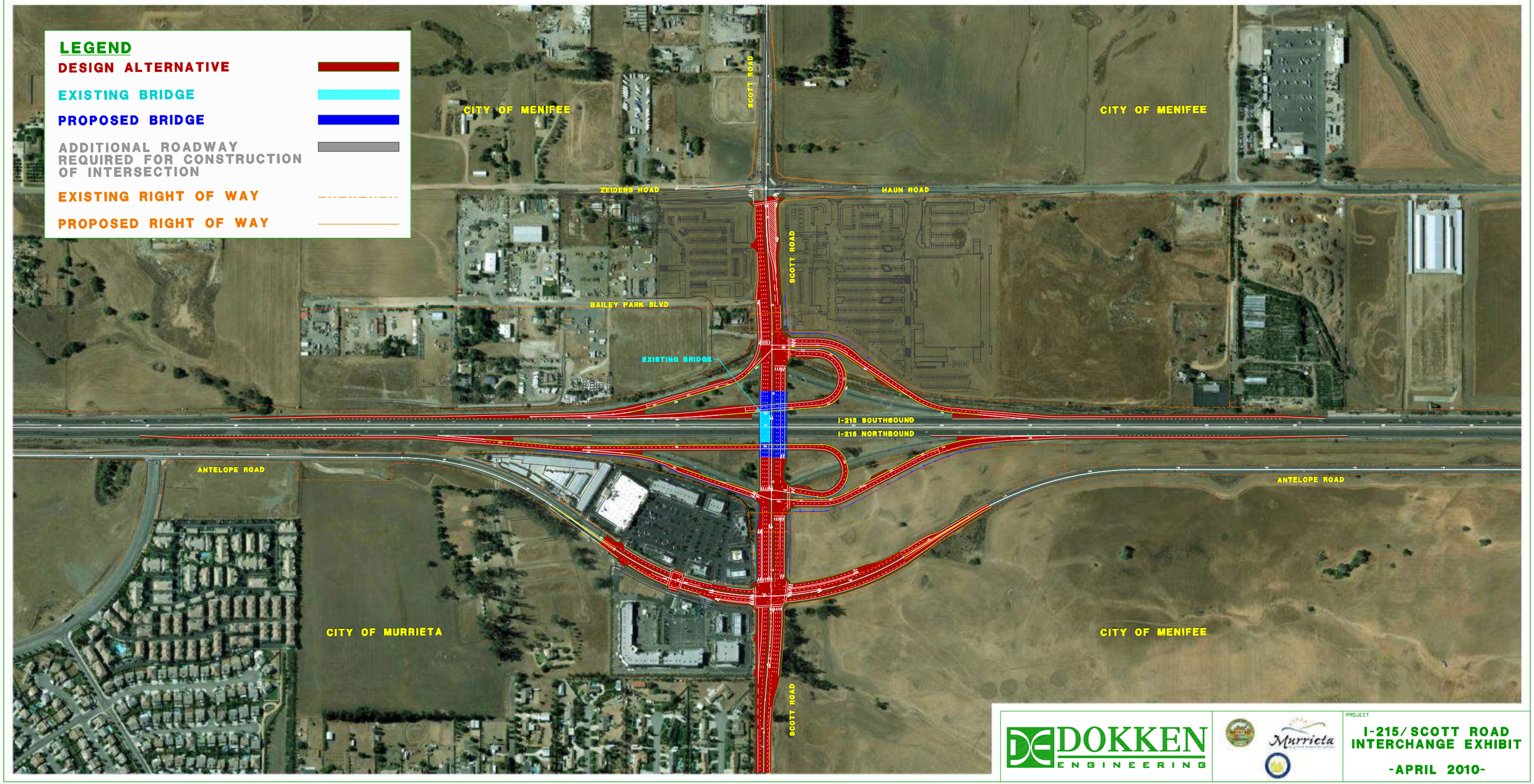
LEGEND

- PHASE 1 IMPROVEMENTS
- EXISTING ROADWAY
- PROPOSED RETAINING WALLS
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED TCE
- REMOVE EXISTING BRIDGE
- REMOVE EXISTING RAMPS

NO SCALE

DOKKEN ENGINEERING
Two Better World Circle
SUITE 120
TEMECULA, CA 92590
(951) 506-8895

PROJECT
I-215/SCOTT ROAD INTERCHANGE
PHAES 1 IMPROVEMENTS
- JUNE 2016 -



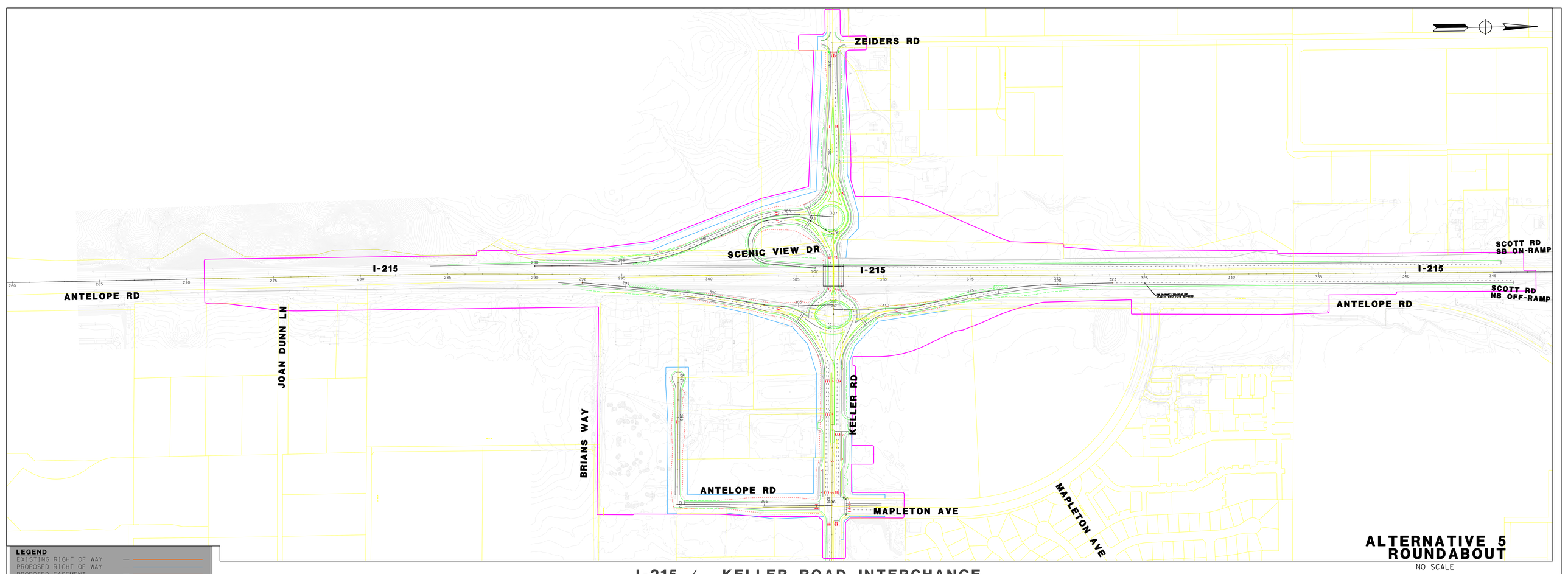
DOKKEN ENGINEERING

Murrieta

PROJECT

I-215/ SCOTT ROAD INTERCHANGE EXHIBIT

-APRIL 2010-



I-215 / KELLER ROAD INTERCHANGE
CITY OF MURRIETA

ALTERNATIVE 5
ROUNDABOUT

NO SCALE

FOR DISCUSSION PURPOSES ONLY THIS MAP IS A DRAFT DOCUMENT ONLY AND HAS YET TO BE VERIFIED BY THE CITY OR THEIR REPRESENTATIVE.

3/15/2017

APPENDIX C
Intersection LOS Analysis Sheets

APPENDIX C-1
Intersection LOS Analysis
Existing Conditions

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	466	3	0	540	11	0	0	4	26	1	18
Future Vol, veh/h	0	466	3	0	540	11	0	0	4	26	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	501	3	0	581	12	0	0	4	28	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	592	0	0	504	0	0	1100	1095	503	1092	1091	587
Stage 1	-	-	-	-	-	-	503	503	-	587	587	-
Stage 2	-	-	-	-	-	-	597	592	-	505	504	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	984	-	-	1061	-	-	190	214	569	192	215	510
Stage 1	-	-	-	-	-	-	551	541	-	496	497	-
Stage 2	-	-	-	-	-	-	490	494	-	549	541	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	984	-	-	1061	-	-	182	214	569	191	215	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	182	214	-	191	215	-
Stage 1	-	-	-	-	-	-	551	541	-	496	497	-
Stage 2	-	-	-	-	-	-	470	494	-	545	541	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11.4	22.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	569	984	-	-	1061	-	-	256
HCM Lane V/C Ratio	0.008	-	-	-	-	-	-	0.189
HCM Control Delay (s)	11.4	0	-	-	0	-	-	22.3
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.7

Intersection	
Intersection Delay, s/veh	40.3
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	155	348	333	125	179	195
Future Vol, veh/h	155	348	333	125	179	195
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	167	374	358	134	192	210
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	54	36.4	26.6
HCM LOS	F	E	D

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	31%	0%	48%
Vol Thru, %	69%	73%	0%
Vol Right, %	0%	27%	52%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	503	458	374
LT Vol	155	0	179
Through Vol	348	333	0
RT Vol	0	125	195
Lane Flow Rate	541	492	402
Geometry Grp	1	1	1
Degree of Util (X)	0.96	0.859	0.743
Departure Headway (Hd)	6.393	6.277	6.647
Convergence, Y/N	Yes	Yes	Yes
Cap	568	576	543
Service Time	4.451	4.336	4.701
HCM Lane V/C Ratio	0.952	0.854	0.74
HCM Control Delay	54	36.4	26.6
HCM Lane LOS	F	E	D
HCM 95th-tile Q	12.8	9.4	6.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	427	19	39	392	558	20	102	15	528	35	50
Future Volume (veh/h)	69	427	19	39	392	558	20	102	15	528	35	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	82	508	23	46	467	664	24	121	18	715	0	0
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	487	22	59	488	415	490	514	437	743	390	0
Arrive On Green	0.05	0.28	0.28	0.03	0.26	0.26	0.28	0.28	0.28	0.21	0.00	0.00
Sat Flow, veh/h	1774	1769	80	1774	1863	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	82	0	531	46	467	664	24	121	18	715	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1849	1774	1863	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	4.9	0.0	28.9	2.7	25.9	27.5	1.0	5.3	0.9	20.9	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	28.9	2.7	25.9	27.5	1.0	5.3	0.9	20.9	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	83	0	509	59	488	415	490	514	437	743	390	0
V/C Ratio(X)	0.99	0.00	1.04	0.78	0.96	1.60	0.05	0.24	0.04	0.96	0.00	0.00
Avail Cap(c_a), veh/h	83	0	509	83	488	415	490	514	437	743	390	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.73	0.73	0.73	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	0.0	38.0	50.4	38.2	38.8	27.9	29.4	27.8	41.1	0.0	0.0
Incr Delay (d2), s/veh	95.5	0.0	51.4	13.0	25.7	278.7	0.2	1.1	0.2	24.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	22.0	1.5	16.8	44.1	0.5	2.9	0.4	12.8	0.0	0.0
LnGrp Delay(d),s/veh	145.5	0.0	89.5	63.4	63.8	317.4	28.1	30.5	28.0	66.0	0.0	0.0
LnGrp LOS	F		F	E	E	F	C	C	C	E		
Approach Vol, veh/h		613			1177			163			715	
Approach Delay, s/veh		97.0			206.9			29.9			66.0	
Approach LOS		F			F			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.1	35.1		28.2	9.5	33.7		33.6
Change Period (Y+Rc), s	4.6	6.2		6.2	4.6	6.2		4.6
Max Green Setting (Gmax), s	4.9	27.5		22.0	4.9	27.5		29.0
Max Q Clear Time (g_c+I1), s	2.7	30.9		22.9	6.9	29.5		7.3
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	133.1
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	580	401	418	820	0	0	0	0	339	0	169
Future Volume (veh/h)	0	580	401	418	820	0	0	0	0	339	0	169
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	630	436	454	891	0				368	0	184
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	695	591	482	1283	0				394	0	352
Arrive On Green	0.00	0.37	0.37	0.36	0.92	0.00				0.22	0.00	0.22
Sat Flow, veh/h	0	1863	1583	1774	1863	0				1774	0	1583
Grp Volume(v), veh/h	0	630	436	454	891	0				368	0	184
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	28.8	21.4	22.3	9.9	0.0				18.3	0.0	9.2
Cycle Q Clear(g_c), s	0.0	28.8	21.4	22.3	9.9	0.0				18.3	0.0	9.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	695	591	482	1283	0				394	0	352
V/C Ratio(X)	0.00	0.91	0.74	0.94	0.69	0.00				0.93	0.00	0.52
Avail Cap(c_a), veh/h	0	695	591	493	1283	0				394	0	352
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.10	0.10	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	26.7	24.4	28.1	1.6	0.0				34.3	0.0	30.8
Incr Delay (d2), s/veh	0.0	2.1	0.5	4.2	0.3	0.0				31.3	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.1	9.4	11.4	4.6	0.0				12.4	0.0	4.6
LnGrp Delay(d),s/veh	0.0	28.8	24.9	32.2	1.9	0.0				65.7	0.0	36.3
LnGrp LOS		C	C	C	A					E		D
Approach Vol, veh/h		1066			1345						552	
Approach Delay, s/veh		27.2			12.1						55.9	
Approach LOS		C			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	28.4	37.6		24.0		66.0		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	25.0	33.0		20.0		62.0		
Max Q Clear Time (g_c+I1), s	24.3	30.8		20.3		11.9		
Green Ext Time (p_c), s	0.1	1.8		0.0		18.2		

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	805	0	0	992	405	246	6	326	0	0	0
Future Volume (veh/h)	114	805	0	0	992	405	246	6	326	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	120	847	0	0	1044	426	259	6	343			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	148	1242	0	0	1004	853	424	10	387			
Arrive On Green	0.08	0.67	0.00	0.00	0.54	0.54	0.24	0.24	0.24			
Sat Flow, veh/h	1774	1863	0	0	1863	1583	1736	40	1583			
Grp Volume(v), veh/h	120	847	0	0	1044	426	265	0	343			
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1583	1776	0	1583			
Q Serve(g_s), s	6.0	25.0	0.0	0.0	48.5	15.3	11.9	0.0	18.8			
Cycle Q Clear(g_c), s	6.0	25.0	0.0	0.0	48.5	15.3	11.9	0.0	18.8			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	148	1242	0	0	1004	853	434	0	387			
V/C Ratio(X)	0.81	0.68	0.00	0.00	1.04	0.50	0.61	0.00	0.89			
Avail Cap(c_a), veh/h	148	1242	0	0	1004	853	434	0	387			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.29	0.29	0.00	0.00	0.59	0.59	1.00	0.00	1.00			
Uniform Delay (d), s/veh	40.6	9.2	0.0	0.0	20.7	13.1	30.2	0.0	32.8			
Incr Delay (d2), s/veh	9.7	0.9	0.0	0.0	33.0	1.2	6.3	0.0	24.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.3	13.0	0.0	0.0	33.7	6.9	6.6	0.0	10.8			
LnGrp Delay(d),s/veh	50.3	10.1	0.0	0.0	53.8	14.3	36.5	0.0	57.3			
LnGrp LOS	D	B			F	B	D		E			
Approach Vol, veh/h		967			1470			608				
Approach Delay, s/veh		15.1			42.3			48.2				
Approach LOS		B			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		64.0			11.5	52.5		26.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		60.0			7.5	48.5		22.0
Max Q Clear Time (g_c+I1), s		27.0			8.0	50.5		20.8
Green Ext Time (p_c), s		21.0			0.0	0.0		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		34.8
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	600	255	33	648	70	331	183	62	53	170	418
Future Volume (veh/h)	276	600	255	33	648	70	331	183	62	53	170	418
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	291	632	268	35	682	74	348	193	65	56	179	440
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	1094	464	45	967	105	395	604	514	72	466	396
Arrive On Green	0.18	0.45	0.45	0.03	0.30	0.30	0.11	0.32	0.32	0.04	0.25	0.25
Sat Flow, veh/h	1774	2424	1027	1774	3221	349	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	291	461	439	35	374	382	348	193	65	56	179	440
Grp Sat Flow(s),veh/h/ln	1774	1770	1681	1774	1770	1801	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	22.6	27.1	27.1	2.7	26.3	26.3	13.9	10.9	4.0	4.4	11.2	35.0
Cycle Q Clear(g_c), s	22.6	27.1	27.1	2.7	26.3	26.3	13.9	10.9	4.0	4.4	11.2	35.0
Prop In Lane	1.00		0.61	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	799	759	45	531	541	395	604	514	72	466	396
V/C Ratio(X)	0.93	0.58	0.58	0.78	0.70	0.71	0.88	0.32	0.13	0.78	0.38	1.11
Avail Cap(c_a), veh/h	360	799	759	89	531	541	438	604	514	127	466	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	28.5	28.5	67.9	43.5	43.5	61.0	35.6	33.3	66.6	43.6	52.5
Incr Delay (d2), s/veh	20.8	2.1	2.2	10.5	7.6	7.6	16.1	1.4	0.5	6.7	2.4	79.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	13.7	13.0	1.5	14.0	14.3	7.5	5.9	1.9	2.3	6.1	24.0
LnGrp Delay(d),s/veh	77.6	30.6	30.7	78.3	51.1	51.0	77.1	37.0	33.8	73.3	46.0	131.5
LnGrp LOS	E	C	C	E	D	D	E	D	C	E	D	F
Approach Vol, veh/h		1191			791			606			675	
Approach Delay, s/veh		42.1			52.3			59.7			104.0	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	69.7	20.7	41.5	29.3	48.5	10.3	51.9
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.6	* 59	17.8	* 35	28.4	36.9	10.0	42.5
Max Q Clear Time (g_c+I1), s	4.7	29.1	15.9	37.0	24.6	28.3	6.4	12.9
Green Ext Time (p_c), s	0.0	11.9	0.1	0.0	0.1	5.6	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	60.6
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	11	4	112	46	4
Future Vol, veh/h	8	11	4	112	46	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	14	5	142	58	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	147	0	-	0	110	76
Stage 1	-	-	-	-	76	-
Stage 2	-	-	-	-	34	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1435	-	-	-	887	985
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	988	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1435	-	-	-	881	985
Mov Cap-2 Maneuver	-	-	-	-	881	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	981	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1435	-	-	-	889
HCM Lane V/C Ratio	0.007	-	-	-	0.071
HCM Control Delay (s)	7.5	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	35	19	154	70	42	14	149	43	41	324	20
Future Volume (veh/h)	11	35	19	154	70	42	14	149	43	41	324	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	12	38	21	167	76	46	15	162	47	45	352	22
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	31	529	449	201	708	602	37	622	528	79	620	39
Arrive On Green	0.02	0.28	0.28	0.11	0.38	0.38	0.02	0.33	0.33	0.04	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1735	108
Grp Volume(v), veh/h	12	38	21	167	76	46	15	162	47	45	0	374
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1844
Q Serve(g_s), s	0.6	1.4	0.9	8.5	2.4	1.7	0.8	5.9	1.9	2.3	0.0	15.1
Cycle Q Clear(g_c), s	0.6	1.4	0.9	8.5	2.4	1.7	0.8	5.9	1.9	2.3	0.0	15.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	31	529	449	201	708	602	37	622	528	79	0	659
V/C Ratio(X)	0.39	0.07	0.05	0.83	0.11	0.08	0.41	0.26	0.09	0.57	0.00	0.57
Avail Cap(c_a), veh/h	117	529	449	352	708	602	117	622	528	134	0	659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.0	24.2	24.1	40.2	18.6	18.3	44.8	22.5	21.2	43.4	0.0	24.0
Incr Delay (d2), s/veh	3.0	0.3	0.2	3.3	0.3	0.2	2.7	1.0	0.3	2.4	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.4	4.4	1.3	0.8	0.4	3.2	0.9	1.2	0.0	8.3
LnGrp Delay(d),s/veh	48.1	24.5	24.3	43.5	18.9	18.6	47.5	23.5	21.5	45.8	0.0	27.5
LnGrp LOS	D	C	C	D	B	B	D	C	C	D		C
Approach Vol, veh/h		71			289			224			419	
Approach Delay, s/veh		28.4			33.1			24.7			29.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	32.5	6.5	38.5	6.2	41.4	8.7	36.3
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	18.4	22.9	6.1	31.8	6.1	35.2	7.0	30.9
Max Q Clear Time (g_c+I1), s	10.5	3.4	2.8	17.1	2.6	4.4	4.3	7.9
Green Ext Time (p_c), s	0.1	1.6	0.0	4.4	0.0	1.9	0.0	5.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	191	459	11	16	107
Future Vol, veh/h	37	191	459	11	16	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	222	534	13	19	124

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	534	0	-	0	842	267
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1032	-	-	-	318	732
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	744	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1032	-	-	-	305	732
Mov Cap-2 Maneuver	-	-	-	-	305	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1032	-	-	-	305	732
HCM Lane V/C Ratio	0.042	-	-	-	0.061	0.17
HCM Control Delay (s)	8.6	-	-	-	17.6	10.9
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	18	42	19	23	24	18	132	2	14	277	123
Future Volume (veh/h)	68	18	42	19	23	24	18	132	2	14	277	123
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	76	20	47	21	26	27	20	147	2	16	308	137
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	552	469	46	888	397	44	914	12	36	888	397
Arrive On Green	0.07	0.30	0.30	0.03	0.25	0.25	0.02	0.26	0.26	0.02	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3575	49	1774	3539	1583
Grp Volume(v), veh/h	76	20	47	21	26	27	20	73	76	16	308	137
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1854	1774	1770	1583
Q Serve(g_s), s	1.7	0.3	0.9	0.5	0.2	0.5	0.4	1.3	1.3	0.4	2.8	2.8
Cycle Q Clear(g_c), s	1.7	0.3	0.9	0.5	0.2	0.5	0.4	1.3	1.3	0.4	2.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	127	552	469	46	888	397	44	452	474	36	888	397
V/C Ratio(X)	0.60	0.04	0.10	0.45	0.03	0.07	0.45	0.16	0.16	0.44	0.35	0.34
Avail Cap(c_a), veh/h	623	1403	1192	356	2132	954	356	1244	1303	356	2488	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	10.0	10.2	19.1	11.3	11.4	19.2	11.5	11.5	19.3	12.2	12.2
Incr Delay (d2), s/veh	4.5	0.0	0.1	6.8	0.0	0.1	7.1	0.2	0.2	8.3	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.2	0.4	0.3	0.1	0.2	0.3	0.6	0.7	0.3	1.4	1.3
LnGrp Delay(d),s/veh	22.4	10.0	10.3	26.0	11.3	11.4	26.2	11.7	11.7	27.6	12.5	12.7
LnGrp LOS	C	A	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		143			74			169			461	
Approach Delay, s/veh		16.7			15.5			13.4			13.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	15.8	5.0	14.0	6.8	14.0	4.8	14.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	30.0	8.0	28.0	14.0	24.0	8.0	28.0
Max Q Clear Time (g_c+I1), s	2.5	2.9	2.4	4.8	3.7	2.5	2.4	3.3
Green Ext Time (p_c), s	0.0	0.4	0.0	3.0	0.1	0.4	0.0	3.0

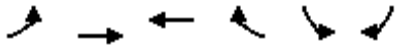
Intersection Summary		
HCM 2010 Ctrl Delay		14.0
HCM 2010 LOS		B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	107	99	79	247	258
Future Volume (veh/h)	10	107	99	79	247	258
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	11	119	110	88	274	287
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	170	152	1058	899	309	1468
Arrive On Green	0.10	0.10	0.57	0.57	0.17	0.79
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	11	119	110	88	274	287
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	0.6	7.3	2.7	2.5	15.1	3.9
Cycle Q Clear(g_c), s	0.6	7.3	2.7	2.5	15.1	3.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	170	152	1058	899	309	1468
V/C Ratio(X)	0.06	0.78	0.10	0.10	0.89	0.20
Avail Cap(c_a), veh/h	365	326	1058	899	593	1468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	44.2	9.9	9.9	40.3	2.7
Incr Delay (d2), s/veh	0.1	7.1	0.2	0.2	3.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.5	1.4	1.2	7.7	2.0
LnGrp Delay(d),s/veh	41.3	51.3	10.1	10.1	43.7	3.0
LnGrp LOS	D	D	B	B	D	A
Approach Vol, veh/h	130		198			561
Approach Delay, s/veh	50.4		10.1			22.9
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	22.0	63.0				85.0		15.0
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	33.4	29.8				67.8		20.6
Max Q Clear Time (g_c+I1), s	17.1	4.7				5.9		9.3
Green Ext Time (p_c), s	0.4	6.0				7.4		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	220	294	28	1	12
Future Volume (veh/h)	14	220	294	28	1	12
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	17	268	359	34	1	15
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	40	949	652	61	1100	982
Arrive On Green	0.02	0.27	0.20	0.20	0.62	0.62
Sat Flow, veh/h	1774	3632	3363	308	1774	1583
Grp Volume(v), veh/h	17	268	193	200	1	15
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1808	1774	1583
Q Serve(g_s), s	0.9	6.0	9.8	9.9	0.0	0.4
Cycle Q Clear(g_c), s	0.9	6.0	9.8	9.9	0.0	0.4
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	40	949	353	361	1100	982
V/C Ratio(X)	0.42	0.28	0.55	0.55	0.00	0.02
Avail Cap(c_a), veh/h	220	2180	789	807	1100	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.92	0.92	1.00	1.00
Uniform Delay (d), s/veh	48.2	29.0	36.0	36.0	7.2	7.3
Incr Delay (d2), s/veh	2.0	0.3	2.5	2.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.0	5.0	5.2	0.0	0.6
LnGrp Delay(d),s/veh	50.2	29.2	38.5	38.5	7.2	7.3
LnGrp LOS	D	C	D	D	A	A
Approach Vol, veh/h		285	393		16	
Approach Delay, s/veh		30.5	38.5		7.3	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.2		67.8	6.9	25.3
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				61.6		27.2	12.4	44.6
Max Q Clear Time (g_c+I1), s				8.0		2.4	2.9	11.9
Green Ext Time (p_c), s				8.8		0.0	0.0	8.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	12	110	7	5	10	151	178	6	10	387	14
Future Volume (veh/h)	10	12	110	7	5	10	151	178	6	10	387	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	12	15	134	9	6	12	184	217	7	12	472	17
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	28	395	336	21	388	330	245	1320	42	28	901	403
Arrive On Green	0.02	0.21	0.21	0.01	0.21	0.21	0.14	0.38	0.38	0.02	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3500	113	1774	3539	1583
Grp Volume(v), veh/h	12	15	134	9	6	12	184	109	115	12	472	17
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1843	1774	1770	1583
Q Serve(g_s), s	0.3	0.3	3.0	0.2	0.1	0.3	4.2	1.7	1.7	0.3	4.8	0.3
Cycle Q Clear(g_c), s	0.3	0.3	3.0	0.2	0.1	0.3	4.2	1.7	1.7	0.3	4.8	0.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	28	395	336	21	388	330	245	667	695	28	901	403
V/C Ratio(X)	0.43	0.04	0.40	0.43	0.02	0.04	0.75	0.16	0.16	0.43	0.52	0.04
Avail Cap(c_a), veh/h	255	937	797	255	937	797	850	1738	1810	255	2289	1024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	13.1	14.2	20.5	13.1	13.2	17.3	8.6	8.6	20.4	13.4	11.7
Incr Delay (d2), s/veh	10.4	0.0	0.8	13.1	0.0	0.0	4.6	0.1	0.1	10.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	1.4	0.2	0.1	0.1	2.4	0.8	0.9	0.2	2.4	0.2
LnGrp Delay(d),s/veh	30.8	13.1	14.9	33.6	13.1	13.2	21.9	8.7	8.7	30.8	13.9	11.8
LnGrp LOS	C	B	B	C	B	B	C	A	A	C	B	B
Approach Vol, veh/h		161			27			408			501	
Approach Delay, s/veh		15.9			20.0			14.7			14.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	19.7	4.5	12.9	9.8	14.6	4.6	12.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.6	41.0	6.0	21.0	20.0	27.0	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.3	3.7	2.2	5.0	6.2	6.8	2.3	2.3
Green Ext Time (p_c), s	0.0	4.3	0.0	0.4	0.4	3.8	0.0	0.5

Intersection Summary		
HCM 2010 Ctrl Delay		14.8
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	2	367	1	0	0	0	203	0	0	0
Future Vol, veh/h	0	1	2	367	1	0	0	0	203	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	2	403	1	0	0	0	223	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.6	12.9	9.6	0
HCM LOS	A	B	A	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	33%	0%	100%
Vol Right, %	0%	100%	67%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	203	3	368	0
LT Vol	0	0	0	367	0
Through Vol	0	0	1	1	0
RT Vol	0	203	2	0	0
Lane Flow Rate	0	223	3	404	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0	0.3	0.004	0.527	0
Departure Headway (Hd)	5.54	4.834	4.569	4.693	5.337
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	0	743	778	768	0
Service Time	3.275	2.569	2.628	2.73	3.395
HCM Lane V/C Ratio	0	0.3	0.004	0.526	0
HCM Control Delay	8.3	9.6	7.6	12.9	8.4
HCM Lane LOS	N	A	A	B	N
HCM 95th-tile Q	0	1.3	0	3.1	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	3	55	6	4	1	40	315	2	1	225	20
Future Volume (veh/h)	19	3	55	6	4	1	40	315	2	1	225	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	3	63	7	5	1	46	362	2	1	259	23
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	114	97	9	6	1	77	2599	14	3	2233	197
Arrive On Green	0.06	0.06	0.06	0.01	0.01	0.01	0.04	0.72	0.72	0.00	0.68	0.68
Sat Flow, veh/h	1774	1863	1583	964	689	138	1774	3609	20	1774	3291	290
Grp Volume(v), veh/h	22	3	63	13	0	0	46	177	187	1	138	144
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1790	0	0	1774	1770	1859	1774	1770	1812
Q Serve(g_s), s	1.2	0.2	3.9	0.7	0.0	0.0	2.5	3.1	3.1	0.1	2.7	2.8
Cycle Q Clear(g_c), s	1.2	0.2	3.9	0.7	0.0	0.0	2.5	3.1	3.1	0.1	2.7	2.8
Prop In Lane	1.00		1.00	0.54		0.08	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	109	114	97	16	0	0	77	1274	1339	3	1201	1229
V/C Ratio(X)	0.20	0.03	0.65	0.80	0.00	0.00	0.60	0.14	0.14	0.34	0.12	0.12
Avail Cap(c_a), veh/h	483	507	431	329	0	0	149	1274	1339	114	1201	1229
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	44.1	45.9	49.5	0.0	0.0	47.0	4.4	4.4	49.9	5.6	5.6
Incr Delay (d2), s/veh	4.2	0.4	29.1	57.8	0.0	0.0	2.8	0.2	0.2	23.9	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	2.5	0.6	0.0	0.0	1.3	1.6	1.7	0.0	1.4	1.4
LnGrp Delay(d),s/veh	48.8	44.6	75.0	107.3	0.0	0.0	49.8	4.6	4.6	73.8	5.8	5.8
LnGrp LOS	D	D	E	F			D	A	A	E	A	A
Approach Vol, veh/h		88			13			410			283	
Approach Delay, s/veh		67.4			107.3			9.6			6.0	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	77.8		11.9	8.9	73.6		5.5
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	27.2		27.2	8.4	25.2		18.4
Max Q Clear Time (g_c+I1), s	2.1	5.1		5.9	4.5	4.8		2.7
Green Ext Time (p_c), s	0.0	8.3		0.8	0.0	8.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay	16.4	
HCM 2010 LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1116	205	163	1113	6	92	4	236	6	25	12
Future Volume (veh/h)	9	1116	205	163	1113	6	92	4	236	6	25	12
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	10	1213	223	177	1210	7	100	4	257	7	27	13
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1911	855	173	3008	937	127	5	300	35	243	280
Arrive On Green	0.05	0.54	0.54	0.10	0.59	0.59	0.07	0.19	0.19	0.01	0.13	0.13
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	24	1563	3442	1863	1583
Grp Volume(v), veh/h	10	1213	223	177	1210	7	100	0	261	7	27	13
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1587	1721	1863	1583
Q Serve(g_s), s	0.7	31.2	9.8	12.7	16.6	0.2	7.2	0.0	20.7	0.3	1.7	0.9
Cycle Q Clear(g_c), s	0.7	31.2	9.8	12.7	16.6	0.2	7.2	0.0	20.7	0.3	1.7	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Lane Grp Cap(c), veh/h	82	1911	855	173	3008	937	127	0	305	35	243	280
V/C Ratio(X)	0.12	0.63	0.26	1.02	0.40	0.01	0.78	0.00	0.86	0.20	0.11	0.05
Avail Cap(c_a), veh/h	246	1911	855	173	3008	937	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.5	20.9	16.0	58.7	14.2	10.9	59.3	0.0	50.8	63.8	49.9	44.4
Incr Delay (d2), s/veh	0.2	1.6	0.7	69.9	0.4	0.0	10.1	0.0	7.4	1.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	15.6	4.4	9.6	7.8	0.1	3.9	0.0	9.7	0.1	0.9	0.4
LnGrp Delay(d),s/veh	59.7	22.5	16.8	128.7	14.6	10.9	69.4	0.0	58.2	64.8	50.3	44.6
LnGrp LOS	E	C	B	F	B	B	E		E	E	D	D
Approach Vol, veh/h		1446			1394			361			47	
Approach Delay, s/veh		21.9			29.1			61.3			50.9	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.3	76.0	13.9	22.8	10.6	82.7	5.9	30.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	12.7	42.5	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	14.7	33.2	9.2	3.7	2.7	18.6	2.3	22.7
Green Ext Time (p_c), s	0.0	9.1	0.1	2.4	0.0	17.9	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	29.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	1097	9	16	895	105	3	1	9	414	3	236
Future Volume (veh/h)	226	1097	9	16	895	105	3	1	9	414	3	236
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	248	1205	10	18	984	115	3	1	10	455	3	259
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	2731	850	41	2389	986	8	14	139	526	4	382
Arrive On Green	0.09	0.54	0.54	0.02	0.47	0.47	0.00	0.10	0.10	0.15	0.24	0.24
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	146	1459	3442	18	1568
Grp Volume(v), veh/h	248	1205	10	18	984	115	3	0	11	455	0	262
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1605	1721	0	1586
Q Serve(g_s), s	7.4	15.1	0.3	1.1	13.4	3.1	0.2	0.0	0.7	13.5	0.0	15.7
Cycle Q Clear(g_c), s	7.4	15.1	0.3	1.1	13.4	3.1	0.2	0.0	0.7	13.5	0.0	15.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.91	1.00		0.99
Lane Grp Cap(c), veh/h	312	2731	850	41	2389	986	8	0	153	526	0	386
V/C Ratio(X)	0.80	0.44	0.01	0.43	0.41	0.12	0.35	0.00	0.07	0.86	0.00	0.68
Avail Cap(c_a), veh/h	374	2731	850	101	2389	986	167	0	352	685	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	0.58	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	14.7	11.3	50.6	18.3	8.1	52.1	0.0	43.3	43.4	0.0	36.0
Incr Delay (d2), s/veh	4.8	0.3	0.0	2.2	0.2	0.1	9.0	0.0	0.2	7.4	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	7.1	0.1	0.5	6.2	1.4	0.1	0.0	0.3	7.0	0.0	7.2
LnGrp Delay(d),s/veh	51.6	15.0	11.3	52.8	18.5	8.2	61.1	0.0	43.5	50.8	0.0	38.8
LnGrp LOS	D	B	B	D	B	A	E		D	D		D
Approach Vol, veh/h		1463			1117			14			717	
Approach Delay, s/veh		21.2			18.0			47.2			46.4	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	62.2	5.1	30.7	14.1	55.1	20.7	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	35.0	9.9	34.0	11.4	29.6	20.9	23.0
Max Q Clear Time (g_c+I1), s	2.1	17.1	2.2	17.7	9.4	15.4	15.5	2.7
Green Ext Time (p_c), s	0.0	16.7	0.0	1.9	0.1	13.0	0.5	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1059	559	0	579	0	0	0	0	114	4	604
Future Volume (veh/h)	0	1059	559	0	579	0	0	0	0	114	4	604
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1203	635	0	658	0				130	5	686
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	3221	1003	0	3221	0				475	18	774
Arrive On Green	0.00	0.63	0.63	0.00	0.63	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	5253	1583	0	5421	0				1711	66	2787
Grp Volume(v), veh/h	0	1203	635	0	658	0				135	0	686
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1777	0	1393
Q Serve(g_s), s	0.0	10.2	22.1	0.0	4.9	0.0				5.3	0.0	21.2
Cycle Q Clear(g_c), s	0.0	10.2	22.1	0.0	4.9	0.0				5.3	0.0	21.2
Prop In Lane	0.00		1.00	0.00		0.00				0.96		1.00
Lane Grp Cap(c), veh/h	0	3221	1003	0	3221	0				494	0	774
V/C Ratio(X)	0.00	0.37	0.63	0.00	0.20	0.00				0.27	0.00	0.89
Avail Cap(c_a), veh/h	0	3221	1003	0	3221	0				494	0	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.82	0.82	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.9	10.1	0.0	6.9	0.0				25.4	0.0	31.1
Incr Delay (d2), s/veh	0.0	0.1	1.1	0.0	0.1	0.0				1.4	0.0	14.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.7	9.8	0.0	2.3	0.0				2.8	0.0	9.6
LnGrp Delay(d),s/veh	0.0	8.0	11.2	0.0	7.1	0.0				26.8	0.0	45.3
LnGrp LOS		A	B		A					C		D
Approach Vol, veh/h		1838			658						821	
Approach Delay, s/veh		9.1			7.1						42.3	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		61.0		29.0		61.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		32.0		25.0		21.0		
Max Q Clear Time (g_c+I1), s		24.1		23.2		6.9		
Green Ext Time (p_c), s		5.0		0.8		11.1		

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	479	694	0	655	168	212	0	365	0	0	0
Future Volume (veh/h)	0	479	694	0	655	168	212	0	365	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	630	0	0	862	0	279	0	480			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3288	1024	0	3288	1024	438	0	391			
Arrive On Green	0.00	0.65	0.00	0.00	0.65	0.00	0.25	0.00	0.25			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	630	0	0	862	0	279	0	480			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	3.7	0.0	0.0	5.4	0.0	10.5	0.0	18.5			
Cycle Q Clear(g_c), s	0.0	3.7	0.0	0.0	5.4	0.0	10.5	0.0	18.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3288	1024	0	3288	1024	438	0	391			
V/C Ratio(X)	0.00	0.19	0.00	0.00	0.26	0.00	0.64	0.00	1.23			
Avail Cap(c_a), veh/h	0	3288	1024	0	3288	1024	438	0	391			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.98	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	5.3	0.0	0.0	5.6	0.0	25.3	0.0	28.3			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.2	0.0	6.9	0.0	123.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.8	0.0	0.0	2.5	0.0	6.0	0.0	21.4			
LnGrp Delay(d),s/veh	0.0	5.5	0.0	0.0	5.8	0.0	32.2	0.0	151.9			
LnGrp LOS		A			A		C		F			
Approach Vol, veh/h		630			862			759				
Approach Delay, s/veh		5.5			5.8			107.9				
Approach LOS		A			A			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		52.5				52.5		22.5
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		25.0				19.5		18.5
Max Q Clear Time (g_c+I1), s		5.7				7.4		20.5
Green Ext Time (p_c), s		9.7				7.2		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		40.1
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	0	286	0	0	2	229	128	0	3	191	225
Future Volume (veh/h)	220	0	286	0	0	2	229	128	0	3	191	225
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	310	0	403	0	0	3	323	180	0	4	269	317
Adj No. of Lanes	2	1	1	1	1	0	1	1	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	792	429	364	7	0	6	451	473	0	517	515	461
Arrive On Green	0.23	0.00	0.23	0.00	0.00	0.00	0.25	0.25	0.00	0.29	0.29	0.29
Sat Flow, veh/h	3442	1863	1583	1774	0	1583	1774	1863	0	1774	1770	1583
Grp Volume(v), veh/h	310	0	403	0	0	3	323	180	0	4	269	317
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	0	1583	1774	1863	0	1774	1770	1583
Q Serve(g_s), s	7.1	0.0	21.5	0.0	0.0	0.2	15.5	7.5	0.0	0.1	11.9	16.6
Cycle Q Clear(g_c), s	7.1	0.0	21.5	0.0	0.0	0.2	15.5	7.5	0.0	0.1	11.9	16.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	792	429	364	7	0	6	451	473	0	517	515	461
V/C Ratio(X)	0.39	0.00	1.11	0.00	0.00	0.47	0.72	0.38	0.00	0.01	0.52	0.69
Avail Cap(c_a), veh/h	792	429	364	342	0	305	887	931	0	820	818	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	36.0	0.0	0.0	46.4	31.8	28.8	0.0	23.5	27.7	29.3
Incr Delay (d2), s/veh	0.3	0.0	78.8	0.0	0.0	46.0	7.9	1.9	0.0	0.0	3.1	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	17.3	0.0	0.0	0.2	8.5	4.1	0.0	0.1	6.3	8.1
LnGrp Delay(d),s/veh	30.7	0.0	114.7	0.0	0.0	92.4	39.7	30.7	0.0	23.5	30.8	36.2
LnGrp LOS	C		F			F	D	C		C	C	D
Approach Vol, veh/h		713			3			503			590	
Approach Delay, s/veh		78.2			92.4			36.5			33.6	
Approach LOS		E			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.5		26.0		33.0		4.9
Change Period (Y+Rc), s		5.8		4.5		5.8		4.5
Max Green Setting (Gmax), s		46.7		21.5		43.2		18.0
Max Q Clear Time (g_c+I1), s		17.5		23.5		18.6		2.2
Green Ext Time (p_c), s		6.2		0.0		8.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.1
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	694	19	4	536	12	0	0	0	7	2	6
Future Vol, veh/h	2	694	19	4	536	12	0	0	0	7	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	723	20	4	558	13	0	0	0	7	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	571	0	0	743	0	0	1314	1316	733	1310	1320	565
Stage 1	-	-	-	-	-	-	737	737	-	573	573	-
Stage 2	-	-	-	-	-	-	577	579	-	737	747	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1002	-	-	864	-	-	135	158	421	136	157	524
Stage 1	-	-	-	-	-	-	410	425	-	505	504	-
Stage 2	-	-	-	-	-	-	502	501	-	410	420	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1002	-	-	864	-	-	131	156	421	135	155	524
Mov Cap-2 Maneuver	-	-	-	-	-	-	131	156	-	135	155	-
Stage 1	-	-	-	-	-	-	409	424	-	503	500	-
Stage 2	-	-	-	-	-	-	490	497	-	409	419	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	24.8
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1002	-	-	864	-	-	197
HCM Lane V/C Ratio	-	0.002	-	-	0.005	-	-	0.079
HCM Control Delay (s)	0	8.6	0	-	9.2	0	-	24.8
HCM Lane LOS	A	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	44
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	291	321	435	156	89	127
Future Vol, veh/h	291	321	435	156	89	127
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	328	444	159	91	130
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	56.5	41.9	14.3
HCM LOS	F	E	B

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	0%	41%
Vol Thru, %	52%	74%	0%
Vol Right, %	0%	26%	59%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	612	591	216
LT Vol	291	0	89
Through Vol	321	435	0
RT Vol	0	156	127
Lane Flow Rate	624	603	220
Geometry Grp	1	1	1
Degree of Util (X)	0.987	0.92	0.408
Departure Headway (Hd)	5.687	5.493	6.665
Convergence, Y/N	Yes	Yes	Yes
Cap	637	657	536
Service Time	3.762	3.571	4.76
HCM Lane V/C Ratio	0.98	0.918	0.41
HCM Control Delay	56.5	41.9	14.3
HCM Lane LOS	F	E	B
HCM 95th-tile Q	14.7	12	2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	453	17	45	466	514	31	47	31	341	22	48
Future Volume (veh/h)	48	453	17	45	466	514	31	47	31	341	22	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	472	18	47	485	535	32	49	32	418	0	0
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	498	19	60	516	439	490	514	437	743	390	0
Arrive On Green	0.04	0.28	0.28	0.03	0.28	0.28	0.28	0.28	0.28	0.21	0.00	0.00
Sat Flow, veh/h	1774	1783	68	1774	1863	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	50	0	490	47	485	535	32	49	32	418	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1851	1774	1863	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	2.9	0.0	27.2	2.8	26.7	29.1	1.4	2.1	1.6	11.1	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	27.2	2.8	26.7	29.1	1.4	2.1	1.6	11.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	64	0	517	60	516	439	490	514	437	743	390	0
V/C Ratio(X)	0.78	0.00	0.95	0.78	0.94	1.22	0.07	0.10	0.07	0.56	0.00	0.00
Avail Cap(c_a), veh/h	91	0	517	93	516	439	490	514	437	743	390	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.2	0.0	37.1	50.3	37.1	37.9	28.0	28.2	28.1	37.2	0.0	0.0
Incr Delay (d2), s/veh	14.7	0.0	28.4	6.2	20.6	111.9	0.3	0.4	0.3	3.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	18.0	1.5	16.7	26.3	0.7	1.1	0.7	5.7	0.0	0.0
LnGrp Delay(d),s/veh	64.9	0.0	65.5	56.5	57.7	149.8	28.3	28.6	28.4	40.2	0.0	0.0
LnGrp LOS	E		E	E	E	F	C	C	C	D		
Approach Vol, veh/h		540			1067			113			418	
Approach Delay, s/veh		65.4			103.8			28.5			40.2	
Approach LOS		E			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.7	35.5		28.2	7.9	35.3		33.6
Change Period (Y+Rc), s	4.1	6.2		6.2	4.1	6.2		4.6
Max Green Setting (Gmax), s	5.5	27.4		22.0	5.4	27.5		29.0
Max Q Clear Time (g_c+I1), s	4.8	29.2		13.1	4.9	31.1		4.1
Green Ext Time (p_c), s	0.0	0.0		1.3	0.0	0.0		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		77.7
HCM 2010 LOS		E

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	599	257	327	885	0	0	0	0	407	1	153
Future Volume (veh/h)	0	599	257	327	885	0	0	0	0	407	1	153
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	611	262	334	903	0				415	1	156
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	733	623	366	1200	0				472	1	422
Arrive On Green	0.00	0.39	0.39	0.27	0.86	0.00				0.27	0.27	0.27
Sat Flow, veh/h	0	1863	1583	1774	1863	0				1770	4	1583
Grp Volume(v), veh/h	0	611	262	334	903	0				416	0	156
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	26.6	10.8	16.4	17.5	0.0				20.2	0.0	7.2
Cycle Q Clear(g_c), s	0.0	26.6	10.8	16.4	17.5	0.0				20.2	0.0	7.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	733	623	366	1200	0				473	0	422
V/C Ratio(X)	0.00	0.83	0.42	0.91	0.75	0.00				0.88	0.00	0.37
Avail Cap(c_a), veh/h	0	733	623	394	1200	0				473	0	422
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.48	0.48	0.43	0.43	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	24.6	19.8	31.9	3.5	0.0				31.6	0.0	26.8
Incr Delay (d2), s/veh	0.0	4.1	0.2	12.8	1.9	0.0				20.2	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.4	4.8	9.3	8.9	0.0				12.5	0.0	3.5
LnGrp Delay(d),s/veh	0.0	28.8	20.0	44.6	5.5	0.0				51.8	0.0	29.3
LnGrp LOS		C	C	D	A					D		C
Approach Vol, veh/h		873			1237						572	
Approach Delay, s/veh		26.1			16.1						45.7	
Approach LOS		C			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	22.6	39.4		28.0		62.0		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	20.6	34.0		24.0		58.0		
Max Q Clear Time (g_c+I1), s	19.4	28.6		22.2		19.5		
Green Ext Time (p_c), s	0.2	4.1		0.6		15.3		

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	915	0	0	803	378	409	2	500	0	0	0
Future Volume (veh/h)	91	915	0	0	803	378	409	2	500	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	94	943	0	0	828	390	422	2	515			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	125	1180	0	0	966	821	491	2	440			
Arrive On Green	0.07	0.63	0.00	0.00	0.52	0.52	0.28	0.28	0.28			
Sat Flow, veh/h	1774	1863	0	0	1863	1583	1766	8	1583			
Grp Volume(v), veh/h	94	943	0	0	828	390	424	0	515			
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1583	1774	0	1583			
Q Serve(g_s), s	4.7	33.8	0.0	0.0	34.7	14.2	20.4	0.0	25.0			
Cycle Q Clear(g_c), s	4.7	33.8	0.0	0.0	34.7	14.2	20.4	0.0	25.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	125	1180	0	0	966	821	493	0	440			
V/C Ratio(X)	0.75	0.80	0.00	0.00	0.86	0.48	0.86	0.00	1.17			
Avail Cap(c_a), veh/h	148	1180	0	0	966	821	493	0	440			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.41	0.41	0.00	0.00	0.52	0.52	1.00	0.00	1.00			
Uniform Delay (d), s/veh	41.1	12.3	0.0	0.0	18.8	13.8	30.8	0.0	32.5			
Incr Delay (d2), s/veh	7.3	2.4	0.0	0.0	5.4	1.0	17.6	0.0	98.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.6	17.8	0.0	0.0	19.2	6.4	12.4	0.0	22.9			
LnGrp Delay(d),s/veh	48.4	14.7	0.0	0.0	24.2	14.9	48.4	0.0	131.3			
LnGrp LOS	D	B			C	B	D		F			
Approach Vol, veh/h		1037			1218			939				
Approach Delay, s/veh		17.7			21.2			93.8				
Approach LOS		B			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		61.0			10.3	50.7		29.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		57.0			7.5	45.5		25.0
Max Q Clear Time (g_c+I1), s		35.8			6.7	36.7		27.0
Green Ext Time (p_c), s		14.2			0.0	7.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	41.4
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	829	306	79	570	54	373	292	163	64	145	238
Future Volume (veh/h)	280	829	306	79	570	54	373	292	163	64	145	238
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	283	837	309	80	576	55	377	295	165	65	146	240
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	1336	492	94	1497	143	294	664	565	83	593	504
Arrive On Green	0.12	0.53	0.53	0.05	0.46	0.46	0.09	0.36	0.36	0.05	0.32	0.32
Sat Flow, veh/h	1774	2534	934	1774	3266	311	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	283	584	562	80	312	319	377	295	165	65	146	240
Grp Sat Flow(s),veh/h/ln	1774	1770	1698	1774	1770	1808	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	13.4	25.6	25.7	4.9	12.7	12.8	9.4	13.3	8.2	4.0	6.4	13.4
Cycle Q Clear(g_c), s	13.4	25.6	25.7	4.9	12.7	12.8	9.4	13.3	8.2	4.0	6.4	13.4
Prop In Lane	1.00		0.55	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	216	933	895	94	811	828	294	664	565	83	593	504
V/C Ratio(X)	1.31	0.63	0.63	0.86	0.38	0.39	1.28	0.44	0.29	0.78	0.25	0.48
Avail Cap(c_a), veh/h	216	933	895	94	811	828	294	664	565	155	593	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	18.3	18.4	51.7	19.6	19.6	50.3	27.0	25.4	51.9	27.7	30.1
Incr Delay (d2), s/veh	152.6	1.3	1.4	48.0	1.4	1.4	150.3	2.1	1.3	5.8	1.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	12.8	12.4	3.7	6.5	6.7	10.6	7.2	3.8	2.1	3.4	6.3
LnGrp Delay(d),s/veh	200.9	19.7	19.8	99.7	21.0	21.0	200.6	29.2	26.7	57.6	28.7	33.3
LnGrp LOS	F	B	B	F	C	C	F	C	C	E	C	C
Approach Vol, veh/h		1429			711			837			451	
Approach Delay, s/veh		55.6			29.8			105.9			35.4	
Approach LOS		E			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	65.1	14.0	41.5	18.0	57.5	9.8	45.7
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	5.8	* 38	9.4	* 35	13.4	30.3	9.6	34.5
Max Q Clear Time (g_c+I1), s	10.9	27.7	11.4	15.4	15.4	14.8	6.0	15.3
Green Ext Time (p_c), s	0.0	7.0	0.0	1.9	0.0	9.3	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	59.9
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	10	5	41	37	3
Future Vol, veh/h	5	10	5	41	37	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	12	6	49	44	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	55	0	-	0	54	30
Stage 1	-	-	-	-	30	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1550	-	-	-	954	1044
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	999	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1550	-	-	-	950	1044
Mov Cap-2 Maneuver	-	-	-	-	950	-
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	995	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1550	-	-	-	956
HCM Lane V/C Ratio	0.004	-	-	-	0.05
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	35	5	83	27	55	25	375	116	30	147	8
Future Volume (veh/h)	4	35	5	83	27	55	25	375	116	30	147	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	4	38	5	89	29	59	27	403	125	32	158	9
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	11	483	411	114	591	503	58	765	650	65	723	41
Arrive On Green	0.01	0.26	0.26	0.06	0.32	0.32	0.03	0.41	0.41	0.04	0.41	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1746	99
Grp Volume(v), veh/h	4	38	5	89	29	59	27	403	125	32	0	167
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1845
Q Serve(g_s), s	0.2	1.4	0.2	4.5	1.0	2.4	1.4	14.8	4.6	1.6	0.0	5.3
Cycle Q Clear(g_c), s	0.2	1.4	0.2	4.5	1.0	2.4	1.4	14.8	4.6	1.6	0.0	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	11	483	411	114	591	503	58	765	650	65	0	765
V/C Ratio(X)	0.36	0.08	0.01	0.78	0.05	0.12	0.47	0.53	0.19	0.49	0.00	0.22
Avail Cap(c_a), veh/h	125	483	411	242	591	503	125	765	650	145	0	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.9	25.4	25.0	41.8	21.5	22.0	43.1	20.1	17.1	42.9	0.0	17.1
Incr Delay (d2), s/veh	6.9	0.3	0.1	4.3	0.2	0.5	2.2	2.6	0.7	2.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.8	0.1	2.3	0.5	1.1	0.7	8.1	2.1	0.8	0.0	2.8
LnGrp Delay(d),s/veh	51.8	25.7	25.0	46.1	21.6	22.4	45.3	22.7	17.8	45.0	0.0	17.8
LnGrp LOS	D	C	C	D	C	C	D	C	B	D		B
Approach Vol, veh/h		47			177			555			199	
Approach Delay, s/veh		27.9			34.2			22.7			22.1	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	29.7	7.6	43.0	5.2	35.0	7.9	42.6
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	12.4	22.8	6.4	37.6	6.4	28.8	7.4	36.6
Max Q Clear Time (g_c+I1), s	6.5	3.4	3.4	7.3	2.2	4.4	3.6	16.8
Green Ext Time (p_c), s	0.0	1.0	0.0	7.8	0.0	1.1	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	101	367	154	2	15	41
Future Vol, veh/h	101	367	154	2	15	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	382	160	2	16	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	160	0	-	0	753	80
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	593	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1418	-	-	-	361	965
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1418	-	-	-	334	965
Mov Cap-2 Maneuver	-	-	-	-	334	-
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1418	-	-	-	334	965
HCM Lane V/C Ratio	0.074	-	-	-	0.047	0.044
HCM Control Delay (s)	7.7	-	-	-	16.3	8.9
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	10	20	9	8	10	17	277	21	7	121	36
Future Volume (veh/h)	79	10	20	9	8	10	17	277	21	7	121	36
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	82	10	21	9	8	10	18	289	22	7	126	38
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	584	497	21	887	397	40	881	67	17	887	397
Arrive On Green	0.07	0.31	0.31	0.01	0.25	0.25	0.02	0.26	0.26	0.01	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3335	252	1774	3539	1583
Grp Volume(v), veh/h	82	10	21	9	8	10	18	153	158	7	126	38
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1818	1774	1770	1583
Q Serve(g_s), s	1.8	0.1	0.4	0.2	0.1	0.2	0.4	2.8	2.8	0.2	1.1	0.7
Cycle Q Clear(g_c), s	1.8	0.1	0.4	0.2	0.1	0.2	0.4	2.8	2.8	0.2	1.1	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	133	584	497	21	887	397	40	467	480	17	887	397
V/C Ratio(X)	0.62	0.02	0.04	0.43	0.01	0.03	0.45	0.33	0.33	0.42	0.14	0.10
Avail Cap(c_a), veh/h	712	1494	1270	356	2129	953	356	1153	1185	356	2307	1032
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	9.4	9.5	19.6	11.2	11.3	19.2	11.8	11.8	19.7	11.6	11.5
Incr Delay (d2), s/veh	4.6	0.0	0.0	13.0	0.0	0.0	7.6	0.4	0.4	16.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.1	0.2	0.2	0.0	0.1	0.3	1.4	1.5	0.1	0.5	0.3
LnGrp Delay(d),s/veh	22.5	9.5	9.6	32.6	11.2	11.3	26.9	12.2	12.2	35.7	11.7	11.6
LnGrp LOS	C	A	A	C	B	B	C	B	B	D	B	B
Approach Vol, veh/h		113			27			329			171	
Approach Delay, s/veh		18.9			18.4			13.0			12.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	16.5	4.9	14.0	7.0	14.0	4.4	14.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	32.0	8.0	26.0	16.0	24.0	8.0	26.0
Max Q Clear Time (g_c+I1), s	2.2	2.4	2.4	3.1	3.8	2.2	2.2	4.8
Green Ext Time (p_c), s	0.0	0.1	0.0	2.4	0.1	0.1	0.0	2.4

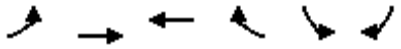
Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	51	282	229	11	82	153
Future Volume (veh/h)	51	282	229	11	82	153
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	56	310	252	12	90	168
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	389	347	1032	877	115	1238
Arrive On Green	0.22	0.22	0.55	0.55	0.06	0.66
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	56	310	252	12	90	168
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	2.5	19.0	7.0	0.3	5.0	3.3
Cycle Q Clear(g_c), s	2.5	19.0	7.0	0.3	5.0	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	389	347	1032	877	115	1238
V/C Ratio(X)	0.14	0.89	0.24	0.01	0.78	0.14
Avail Cap(c_a), veh/h	561	500	1032	877	291	1238
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	37.9	11.5	10.0	46.1	6.2
Incr Delay (d2), s/veh	0.1	10.7	0.6	0.0	4.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	9.3	3.7	0.2	2.6	1.8
LnGrp Delay(d),s/veh	31.6	48.6	12.1	10.0	50.4	6.4
LnGrp LOS	C	D	B	B	D	A
Approach Vol, veh/h	366		264			258
Approach Delay, s/veh	46.0		12.0			21.8
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.1	61.6				72.7		27.3
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	6.4	35.8				56.8		31.6
Max Q Clear Time (g_c+I1), s	7.0	9.0				5.3		21.0
Green Ext Time (p_c), s	0.1	5.7				6.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	211	477	0	13	21
Future Volume (veh/h)	1	211	477	0	13	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	232	524	0	14	23
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3	1047	879	0	1050	937
Arrive On Green	0.00	0.30	0.25	0.00	0.59	0.59
Sat Flow, veh/h	1774	3632	3725	0	1774	1583
Grp Volume(v), veh/h	1	232	524	0	14	23
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	0	1774	1583
Q Serve(g_s), s	0.1	4.9	13.1	0.0	0.3	0.6
Cycle Q Clear(g_c), s	0.1	4.9	13.1	0.0	0.3	0.6
Prop In Lane	1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	3	1047	879	0	1050	937
V/C Ratio(X)	0.34	0.22	0.60	0.00	0.01	0.02
Avail Cap(c_a), veh/h	167	2145	1649	0	1050	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.91	0.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	26.5	33.2	0.0	8.4	8.4
Incr Delay (d2), s/veh	21.2	0.2	1.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.4	6.6	0.0	0.2	0.9
LnGrp Delay(d),s/veh	71.1	26.7	34.4	0.0	8.4	8.5
LnGrp LOS	E	C	C		A	A
Approach Vol, veh/h		233	524		37	
Approach Delay, s/veh		26.9	34.4		8.5	
Approach LOS		C	C		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.0		65.0	4.8	30.2
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				60.6		28.2	9.4	46.6
Max Q Clear Time (g_c+I1), s				6.9		2.6	2.1	15.1
Green Ext Time (p_c), s				11.2		0.2	0.0	9.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1	170	7	4	2	186	353	1	1	184	9
Future Volume (veh/h)	12	1	170	7	4	2	186	353	1	1	184	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	13	1	181	7	4	2	198	376	1	1	196	10
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	30	413	351	17	399	339	263	1397	4	4	845	378
Arrive On Green	0.02	0.22	0.22	0.01	0.21	0.21	0.15	0.39	0.39	0.00	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3621	10	1774	3539	1583
Grp Volume(v), veh/h	13	1	181	7	4	2	198	184	193	1	196	10
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1861	1774	1770	1583
Q Serve(g_s), s	0.3	0.0	4.2	0.2	0.1	0.0	4.5	3.0	3.0	0.0	1.9	0.2
Cycle Q Clear(g_c), s	0.3	0.0	4.2	0.2	0.1	0.0	4.5	3.0	3.0	0.0	1.9	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	30	413	351	17	399	339	263	683	718	4	845	378
V/C Ratio(X)	0.44	0.00	0.52	0.42	0.01	0.01	0.75	0.27	0.27	0.24	0.23	0.03
Avail Cap(c_a), veh/h	254	1067	907	254	1067	907	890	1606	1689	254	1944	870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	12.7	14.3	20.6	13.0	13.0	17.1	8.8	8.8	20.9	12.8	12.2
Incr Delay (d2), s/veh	9.8	0.0	1.2	16.2	0.0	0.0	4.3	0.2	0.2	26.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.0	0.2	0.0	0.0	2.5	1.5	1.5	0.0	0.9	0.1
LnGrp Delay(d),s/veh	30.2	12.7	15.5	36.8	13.0	13.0	21.4	9.0	9.0	47.2	13.0	12.2
LnGrp LOS	C	B	B	D	B	B	C	A	A	D	B	B
Approach Vol, veh/h		195			13			575			207	
Approach Delay, s/veh		16.5			25.8			13.3			13.1	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	20.2	4.4	13.3	10.2	14.0	4.7	13.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	38.0	6.0	24.0	21.0	23.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	2.3	5.0	2.2	6.2	6.5	3.9	2.3	2.1
Green Ext Time (p_c), s	0.0	3.2	0.0	0.5	0.4	2.9	0.0	0.6

Intersection Summary		
HCM 2010 Ctrl Delay		14.0
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	226	0	0	0	2	232	0	0	0
Future Vol, veh/h	0	0	0	226	0	0	0	2	232	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	266	0	0	0	2	273	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	0	10.4	9.5	0
HCM LOS	-	B	A	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	100%	0%	100%
Vol Right, %	0%	100%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	232	0	226	0
LT Vol	0	0	0	226	0
Through Vol	2	0	0	0	0
RT Vol	0	232	0	0	0
Lane Flow Rate	2	273	0	266	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.003	0.341	0	0.352	0
Departure Headway (Hd)	5.206	4.502	4.907	4.772	5.029
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	688	800	0	755	0
Service Time	2.93	2.225	2.95	2.801	3.069
HCM Lane V/C Ratio	0.003	0.341	0	0.352	0
HCM Control Delay	7.9	9.5	8	10.4	8.1
HCM Lane LOS	A	A	N	B	N
HCM 95th-tile Q	0	1.5	0	1.6	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	3	69	0	0	1	36	534	0	1	243	9
Future Volume (veh/h)	16	3	69	0	0	1	36	534	0	1	243	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	3	71	0	0	1	37	551	0	1	251	9
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	123	105	0	0	2	68	2561	0	3	2393	86
Arrive On Green	0.07	0.07	0.07	0.00	0.00	0.00	0.04	0.72	0.00	0.00	0.69	0.69
Sat Flow, veh/h	1774	1863	1583	0	0	1583	1774	3632	0	1774	3486	125
Grp Volume(v), veh/h	16	3	71	0	0	1	37	551	0	1	127	133
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	0	0	1583	1774	1770	0	1774	1770	1841
Q Serve(g_s), s	0.9	0.2	4.4	0.0	0.0	0.1	2.0	5.1	0.0	0.1	2.4	2.4
Cycle Q Clear(g_c), s	0.9	0.2	4.4	0.0	0.0	0.1	2.0	5.1	0.0	0.1	2.4	2.4
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	117	123	105	0	0	2	68	2561	0	3	1215	1264
V/C Ratio(X)	0.14	0.02	0.68	0.00	0.00	0.63	0.54	0.22	0.00	0.34	0.10	0.11
Avail Cap(c_a), veh/h	465	488	415	0	0	285	131	2561	0	114	1215	1264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	43.7	45.7	0.0	0.0	49.9	47.2	4.5	0.0	49.9	5.3	5.3
Incr Delay (d2), s/veh	2.4	0.4	30.2	0.0	0.0	194.0	2.5	0.2	0.0	23.9	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	2.8	0.0	0.0	0.1	1.1	2.5	0.0	0.0	1.2	1.3
LnGrp Delay(d),s/veh	46.4	44.1	75.8	0.0	0.0	243.9	49.7	4.7	0.0	73.8	5.5	5.5
LnGrp LOS	D	D	E			F	D	A		E	A	A
Approach Vol, veh/h		90			1			588			261	
Approach Delay, s/veh		69.6			243.9			7.5			5.7	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	78.2		12.4	8.5	74.5		4.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	28.6		26.2	7.4	27.6		18.0
Max Q Clear Time (g_c+I1), s	2.1	7.1		6.4	4.0	4.4		2.1
Green Ext Time (p_c), s	0.0	10.8		0.8	0.0	11.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1304	25	115	1316	2	29	1	74	3	2	8
Future Volume (veh/h)	8	1304	25	115	1316	2	29	1	74	3	2	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	8	1344	26	119	1357	2	30	1	76	3	2	8
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	2489	1113	115	3670	1143	82	1	106	16	49	114
Arrive On Green	0.05	0.70	0.70	0.06	0.72	0.72	0.05	0.07	0.07	0.00	0.03	0.03
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	21	1566	3442	1863	1583
Grp Volume(v), veh/h	8	1344	26	119	1357	2	30	0	77	3	2	8
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1586	1721	1863	1583
Q Serve(g_s), s	0.6	23.6	0.6	8.4	13.2	0.0	2.1	0.0	6.2	0.1	0.1	0.6
Cycle Q Clear(g_c), s	0.6	23.6	0.6	8.4	13.2	0.0	2.1	0.0	6.2	0.1	0.1	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Lane Grp Cap(c), veh/h	82	2489	1113	115	3670	1143	82	0	107	16	49	114
V/C Ratio(X)	0.10	0.54	0.02	1.04	0.37	0.00	0.37	0.00	0.72	0.18	0.04	0.07
Avail Cap(c_a), veh/h	246	2489	1113	115	3670	1143	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.4	9.2	5.8	60.8	6.9	5.0	60.2	0.0	59.4	64.4	61.7	56.2
Incr Delay (d2), s/veh	0.2	0.8	0.0	89.3	0.3	0.0	2.7	0.0	9.4	2.0	0.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	11.7	0.3	6.9	6.2	0.0	1.1	0.0	3.0	0.1	0.1	0.3
LnGrp Delay(d),s/veh	59.6	10.1	5.9	150.6	7.1	5.0	62.9	0.0	68.8	66.4	62.5	56.8
LnGrp LOS	E	B	A	F	A	A	E		E	E	E	E
Approach Vol, veh/h		1378			1478			107			13	
Approach Delay, s/veh		10.3			18.7			67.1			59.9	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	97.2	10.6	9.2	10.6	99.6	5.2	14.6
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	8.4	46.8	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	10.4	25.6	4.1	2.6	2.6	15.2	2.1	8.2
Green Ext Time (p_c), s	0.0	20.5	0.0	0.6	0.0	21.3	0.0	0.6

Intersection Summary		
HCM 2010 Ctrl Delay		16.7
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	415	1126	13	45	1032	194	22	11	25	320	6	274
Future Volume (veh/h)	415	1126	13	45	1032	194	22	11	25	320	6	274
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	423	1149	13	46	1053	198	22	11	26	327	6	280
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	2963	840	75	2512	889	48	62	147	397	7	328
Arrive On Green	0.12	0.53	0.53	0.04	0.45	0.45	0.03	0.13	0.13	0.11	0.21	0.21
Sat Flow, veh/h	3548	5588	1583	1774	5588	1583	1774	493	1165	3548	33	1555
Grp Volume(v), veh/h	423	1149	13	46	1053	198	22	0	37	327	0	286
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1657	1774	0	1588
Q Serve(g_s), s	12.6	12.9	0.4	2.7	13.5	6.6	1.3	0.0	2.1	9.6	0.0	18.4
Cycle Q Clear(g_c), s	12.6	12.9	0.4	2.7	13.5	6.6	1.3	0.0	2.1	9.6	0.0	18.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.70	1.00		0.98
Lane Grp Cap(c), veh/h	435	2963	840	75	2512	889	48	0	209	397	0	335
V/C Ratio(X)	0.97	0.39	0.02	0.62	0.42	0.22	0.46	0.00	0.18	0.82	0.00	0.85
Avail Cap(c_a), veh/h	435	2963	840	117	2512	889	166	0	436	536	0	509
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	0.90	0.90	0.90	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.3	14.7	11.8	49.9	19.8	11.7	50.8	0.0	41.4	46.1	0.0	40.2
Incr Delay (d2), s/veh	26.3	0.2	0.0	2.8	0.5	0.5	2.5	0.0	0.4	5.6	0.0	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	6.7	0.2	1.4	7.0	3.0	0.7	0.0	1.0	5.0	0.0	8.9
LnGrp Delay(d),s/veh	72.6	15.0	11.8	52.7	20.2	12.2	53.3	0.0	41.8	51.7	0.0	50.0
LnGrp LOS	E	B	B	D	C	B	D		D	D		D
Approach Vol, veh/h		1585			1297			59			613	
Approach Delay, s/veh		30.3			20.2			46.1			50.9	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	62.0	7.5	27.5	17.6	53.5	16.4	18.5
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	7.6	35.0	9.9	34.0	13.0	29.0	16.0	27.9
Max Q Clear Time (g_c+I1), s	4.7	14.9	3.3	20.4	14.6	15.5	11.6	4.1
Green Ext Time (p_c), s	0.0	18.8	0.0	2.0	0.0	12.8	0.3	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1102	382	0	740	0	0	0	0	116	1	735
Future Volume (veh/h)	0	1102	382	0	740	0	0	0	0	116	1	735
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1136	394	0	763	0				120	1	758
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2656	827	0	2656	0				684	6	1084
Arrive On Green	0.00	0.52	0.52	0.00	0.52	0.00				0.39	0.39	0.39
Sat Flow, veh/h	0	5253	1583	0	5421	0				1760	15	2787
Grp Volume(v), veh/h	0	1136	394	0	763	0				121	0	758
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	12.4	14.2	0.0	7.6	0.0				4.0	0.0	20.6
Cycle Q Clear(g_c), s	0.0	12.4	14.2	0.0	7.6	0.0				4.0	0.0	20.6
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2656	827	0	2656	0				690	0	1084
V/C Ratio(X)	0.00	0.43	0.48	0.00	0.29	0.00				0.18	0.00	0.70
Avail Cap(c_a), veh/h	0	2656	827	0	2656	0				690	0	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.88	0.88	0.00	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.2	13.7	0.0	12.1	0.0				18.0	0.0	23.1
Incr Delay (d2), s/veh	0.0	0.1	0.4	0.0	0.3	0.0				0.6	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.8	6.2	0.0	3.6	0.0				2.1	0.0	8.5
LnGrp Delay(d),s/veh	0.0	13.3	14.1	0.0	12.4	0.0				18.6	0.0	26.8
LnGrp LOS		B	B		B					B		C
Approach Vol, veh/h		1530			763						879	
Approach Delay, s/veh		13.5			12.4						25.7	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		51.0		39.0		51.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		47.0		35.0		47.0		
Max Q Clear Time (g_c+I1), s		16.2		22.6		9.6		
Green Ext Time (p_c), s		18.6		3.4		20.9		

Intersection Summary		
HCM 2010 Ctrl Delay		16.6
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	531	687	0	419	82	455	0	316	0	0	0
Future Volume (veh/h)	0	531	687	0	419	82	455	0	316	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	547	0	0	432	0	469	0	326			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2430	756	0	2430	756	769	0	686			
Arrive On Green	0.00	0.48	0.00	0.00	0.48	0.00	0.43	0.00	0.43			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	547	0	0	432	0	469	0	326			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	5.7	0.0	0.0	4.4	0.0	18.3	0.0	13.2			
Cycle Q Clear(g_c), s	0.0	5.7	0.0	0.0	4.4	0.0	18.3	0.0	13.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2430	756	0	2430	756	769	0	686			
V/C Ratio(X)	0.00	0.23	0.00	0.00	0.18	0.00	0.61	0.00	0.48			
Avail Cap(c_a), veh/h	0	2430	756	0	2430	756	769	0	686			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.98	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	13.8	0.0	0.0	13.4	0.0	19.6	0.0	18.2			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	3.6	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.0	0.0	2.0	0.0	9.6	0.0	6.2			
LnGrp Delay(d),s/veh	0.0	14.0	0.0	0.0	13.4	0.0	23.2	0.0	20.5			
LnGrp LOS		B			B		C		C			
Approach Vol, veh/h		547			432			795				
Approach Delay, s/veh		14.0			13.4			22.1				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		47.0				47.0		43.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		43.0				43.0		39.0
Max Q Clear Time (g_c+I1), s		7.7				6.4		20.3
Green Ext Time (p_c), s		7.4				7.4		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1	369	0	0	0	280	265	0	0	185	194
Future Volume (veh/h)	339	1	369	0	0	0	280	265	0	0	185	194
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	365	1	397	0	0	0	301	285	0	0	199	209
Adj No. of Lanes	2	1	1	1	1	0	1	1	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1734	938	798	1	1	0	379	398	0	311	310	277
Arrive On Green	0.50	0.50	0.50	0.00	0.00	0.00	0.21	0.21	0.00	0.00	0.18	0.18
Sat Flow, veh/h	3442	1863	1583	1774	1863	0	1774	1863	0	1774	1770	1583
Grp Volume(v), veh/h	365	1	397	0	0	0	301	285	0	0	199	209
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	0	1774	1863	0	1774	1770	1583
Q Serve(g_s), s	8.8	0.0	24.9	0.0	0.0	0.0	24.1	21.3	0.0	0.0	15.7	18.8
Cycle Q Clear(g_c), s	8.8	0.0	24.9	0.0	0.0	0.0	24.1	21.3	0.0	0.0	15.7	18.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	1734	938	798	1	1	0	379	398	0	311	310	277
V/C Ratio(X)	0.21	0.00	0.50	0.00	0.00	0.00	0.79	0.72	0.00	0.00	0.64	0.75
Avail Cap(c_a), veh/h	1734	938	798	213	224	0	509	534	0	509	507	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	18.5	24.7	0.0	0.0	0.0	55.8	54.7	0.0	0.0	57.5	58.8
Incr Delay (d2), s/veh	0.3	0.0	2.2	0.0	0.0	0.0	13.7	9.0	0.0	0.0	8.2	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	11.4	0.0	0.0	0.0	13.2	12.0	0.0	0.0	8.4	9.4
LnGrp Delay(d),s/veh	20.9	18.5	26.9	0.0	0.0	0.0	69.6	63.7	0.0	0.0	65.7	73.4
LnGrp LOS	C	B	C				E	E			E	E
Approach Vol, veh/h		763			0			586			408	
Approach Delay, s/veh		24.0			0.0			66.7			69.6	
Approach LOS		C						E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.9		80.1		32.1		0.0
Change Period (Y+Rc), s		5.8		4.5		5.8		4.5
Max Green Setting (Gmax), s		43.0		25.4		43.0		18.0
Max Q Clear Time (g_c+I1), s		26.1		26.9		20.8		0.0
Green Ext Time (p_c), s		6.0		0.0		5.5		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		48.9
HCM 2010 LOS		D

APPENDIX C-2
Intersection LOS Analysis
Forecast Existing Plus Project Buildout Conditions

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	481	3	0	568	22	0	0	4	33	1	18
Future Vol, veh/h	0	481	3	0	568	22	0	0	4	33	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	517	3	0	611	24	0	0	4	35	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	634	0	0	520	0	0	1152	1153	519	1144	1143	623
Stage 1	-	-	-	-	-	-	519	519	-	623	623	-
Stage 2	-	-	-	-	-	-	633	634	-	521	520	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	949	-	-	1046	-	-	175	197	557	177	200	486
Stage 1	-	-	-	-	-	-	540	533	-	474	478	-
Stage 2	-	-	-	-	-	-	468	473	-	539	532	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	949	-	-	1046	-	-	167	197	557	176	200	486
Mov Cap-2 Maneuver	-	-	-	-	-	-	167	197	-	176	200	-
Stage 1	-	-	-	-	-	-	540	533	-	474	478	-
Stage 2	-	-	-	-	-	-	448	473	-	535	532	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11.5	26
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	557	949	-	-	1046	-	-	227
HCM Lane V/C Ratio	0.008	-	-	-	-	-	-	0.246
HCM Control Delay (s)	11.5	0	-	-	0	-	-	26
HCM Lane LOS	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.9

Intersection	
Intersection Delay, s/veh	53.2
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	155	370	372	134	183	195
Future Vol, veh/h	155	370	372	134	183	195
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	167	398	400	144	197	210
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	72.8	51.4	28.5
HCM LOS	F	F	D

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	0%	48%
Vol Thru, %	70%	74%	0%
Vol Right, %	0%	26%	52%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	525	506	378
LT Vol	155	0	183
Through Vol	370	372	0
RT Vol	0	134	195
Lane Flow Rate	565	544	406
Geometry Grp	1	1	1
Degree of Util (X)	1.033	0.947	0.759
Departure Headway (Hd)	6.588	6.463	6.914
Convergence, Y/N	Yes	Yes	Yes
Cap	553	566	528
Service Time	4.588	4.463	4.914
HCM Lane V/C Ratio	1.022	0.961	0.769
HCM Control Delay	72.8	51.4	28.5
HCM Lane LOS	F	F	D
HCM 95th-tile Q	15.7	12.3	6.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	427	45	71	392	558	67	124	72	528	51	50
Future Volume (veh/h)	69	427	45	71	392	558	67	124	72	528	51	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	82	508	54	85	467	664	80	148	86	729	0	0
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	434	46	83	488	415	490	514	437	743	390	0
Arrive On Green	0.05	0.26	0.26	0.05	0.26	0.26	0.28	0.28	0.28	0.21	0.00	0.00
Sat Flow, veh/h	1774	1656	176	1774	1863	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	82	0	562	85	467	664	80	148	86	729	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1832	1774	1863	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	4.9	0.0	27.5	4.9	25.9	27.5	3.6	6.6	4.4	21.5	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	27.5	4.9	25.9	27.5	3.6	6.6	4.4	21.5	0.0	0.0
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	83	0	480	83	488	415	490	514	437	743	390	0
V/C Ratio(X)	0.99	0.00	1.17	1.03	0.96	1.60	0.16	0.29	0.20	0.98	0.00	0.00
Avail Cap(c_a), veh/h	83	0	480	83	488	415	490	514	437	743	390	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	0.0	38.8	50.0	38.2	38.8	28.8	29.9	29.1	41.3	0.0	0.0
Incr Delay (d2), s/veh	95.5	0.0	97.5	91.2	25.5	278.6	0.7	1.4	1.0	28.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	26.8	4.5	16.8	44.1	1.9	3.6	2.0	13.5	0.0	0.0
LnGrp Delay(d),s/veh	145.5	0.0	136.2	141.7	63.7	317.4	29.5	31.3	30.1	69.9	0.0	0.0
LnGrp LOS	F		F	F	E	F	C	C	C	E		
Approach Vol, veh/h		644			1216			314			729	
Approach Delay, s/veh		137.4			207.7			30.5			69.9	
Approach LOS		F			F			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	33.7		28.2	9.5	33.7		33.6
Change Period (Y+Rc), s	4.6	6.2		6.2	4.6	6.2		4.6
Max Green Setting (Gmax), s	4.9	27.5		22.0	4.9	27.5		29.0
Max Q Clear Time (g_c+I1), s	6.9	29.5		23.5	6.9	29.5		8.6
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	138.3
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	637	401	418	820	0	0	0	0	368	0	201
Future Volume (veh/h)	0	637	401	418	820	0	0	0	0	368	0	201
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	692	436	454	891	0				400	0	218
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	718	610	453	1277	0				400	0	357
Arrive On Green	0.00	0.39	0.39	0.34	0.91	0.00				0.23	0.00	0.23
Sat Flow, veh/h	0	1863	1583	1774	1863	0				1774	0	1583
Grp Volume(v), veh/h	0	692	436	454	891	0				400	0	218
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	32.7	21.0	23.0	10.4	0.0				20.3	0.0	11.1
Cycle Q Clear(g_c), s	0.0	32.7	21.0	23.0	10.4	0.0				20.3	0.0	11.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	718	610	453	1277	0				400	0	357
V/C Ratio(X)	0.00	0.96	0.71	1.00	0.70	0.00				1.00	0.00	0.61
Avail Cap(c_a), veh/h	0	718	610	453	1277	0				400	0	357
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.0	23.4	29.7	1.7	0.0				34.8	0.0	31.3
Incr Delay (d2), s/veh	0.0	4.4	0.4	13.0	0.3	0.0				44.9	0.0	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.6	9.3	12.8	4.9	0.0				14.9	0.0	5.6
LnGrp Delay(d),s/veh	0.0	31.5	23.8	42.7	2.0	0.0				79.7	0.0	38.9
LnGrp LOS		C	C	F	A					E		D
Approach Vol, veh/h		1128			1345						618	
Approach Delay, s/veh		28.5			15.7						65.3	
Approach LOS		C			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	27.0	38.7		24.3		65.7		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	23.0	34.7		20.3		61.7		
Max Q Clear Time (g_c+I1), s	25.0	34.7		22.3		12.4		
Green Ext Time (p_c), s	0.0	0.0		0.0		19.3		

Intersection Summary		
HCM 2010 Ctrl Delay		30.3
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	834	0	0	992	457	246	6	326	0	0	0
Future Volume (veh/h)	171	834	0	0	992	457	246	6	326	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	180	878	0	0	1044	481	259	6	343			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	181	1242	0	0	969	823	424	10	387			
Arrive On Green	0.10	0.67	0.00	0.00	0.52	0.52	0.24	0.24	0.24			
Sat Flow, veh/h	1774	1863	0	0	1863	1583	1736	40	1583			
Grp Volume(v), veh/h	180	878	0	0	1044	481	265	0	343			
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1583	1776	0	1583			
Q Serve(g_s), s	9.1	26.7	0.0	0.0	46.8	18.9	11.9	0.0	18.8			
Cycle Q Clear(g_c), s	9.1	26.7	0.0	0.0	46.8	18.9	11.9	0.0	18.8			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	181	1242	0	0	969	823	434	0	387			
V/C Ratio(X)	0.99	0.71	0.00	0.00	1.08	0.58	0.61	0.00	0.89			
Avail Cap(c_a), veh/h	181	1242	0	0	969	823	434	0	387			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.18	0.18	0.00	0.00	0.54	0.54	1.00	0.00	1.00			
Uniform Delay (d), s/veh	40.4	9.5	0.0	0.0	21.6	14.9	30.2	0.0	32.8			
Incr Delay (d2), s/veh	26.1	0.6	0.0	0.0	45.7	1.6	6.3	0.0	24.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.8	13.6	0.0	0.0	36.0	8.5	6.6	0.0	10.8			
LnGrp Delay(d),s/veh	66.5	10.1	0.0	0.0	67.3	16.5	36.5	0.0	57.3			
LnGrp LOS	E	B			F	B	D		E			
Approach Vol, veh/h		1058			1525			608				
Approach Delay, s/veh		19.7			51.3			48.2				
Approach LOS		B			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		64.0			13.2	50.8		26.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		60.0			9.2	46.8		22.0
Max Q Clear Time (g_c+I1), s		28.7			11.1	48.8		20.8
Green Ext Time (p_c), s		20.9			0.0	0.0		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		40.2
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	600	284	33	648	70	383	196	62	53	182	418
Future Volume (veh/h)	276	600	284	33	648	70	383	196	62	53	182	418
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	291	632	299	35	682	74	403	206	65	56	192	440
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	1016	480	45	916	99	451	634	539	72	466	396
Arrive On Green	0.18	0.44	0.44	0.03	0.28	0.28	0.13	0.34	0.34	0.04	0.25	0.25
Sat Flow, veh/h	1774	2334	1104	1774	3221	349	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	291	479	452	35	374	382	403	206	65	56	192	440
Grp Sat Flow(s),veh/h/ln	1774	1770	1668	1774	1770	1801	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	22.6	29.4	29.4	2.7	26.9	26.9	16.1	11.5	4.0	4.4	12.1	35.0
Cycle Q Clear(g_c), s	22.6	29.4	29.4	2.7	26.9	26.9	16.1	11.5	4.0	4.4	12.1	35.0
Prop In Lane	1.00		0.66	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	770	726	45	503	512	451	634	539	72	466	396
V/C Ratio(X)	0.93	0.62	0.62	0.78	0.74	0.75	0.89	0.32	0.12	0.78	0.41	1.11
Avail Cap(c_a), veh/h	360	770	726	89	503	512	497	634	539	127	466	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.66	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	30.6	30.6	67.9	45.5	45.5	59.9	34.2	31.7	66.6	43.9	52.5
Incr Delay (d2), s/veh	20.2	2.5	2.7	10.5	9.6	9.5	16.4	1.4	0.5	6.7	2.7	79.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	14.9	14.1	1.5	14.4	14.7	8.7	6.1	1.8	2.3	6.5	24.0
LnGrp Delay(d),s/veh	77.0	33.1	33.3	78.3	55.1	55.0	76.3	35.6	32.2	73.3	46.6	131.5
LnGrp LOS	E	C	C	E	E	E	E	D	C	E	D	F
Approach Vol, veh/h		1222			791			674			688	
Approach Delay, s/veh		43.6			56.1			59.6			103.1	
Approach LOS		D			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	67.4	22.9	41.5	29.3	46.3	10.3	54.2
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.6	* 56	20.2	* 35	28.4	34.5	10.0	44.9
Max Q Clear Time (g_c+I1), s	4.7	31.4	18.1	37.0	24.6	28.9	6.4	13.5
Green Ext Time (p_c), s	0.0	11.4	0.2	0.0	0.1	4.0	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	61.9
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	13

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	8	11	0	106	4	112	0	126	171	46	73	4
Future Vol, veh/h	8	11	0	106	4	112	0	126	171	46	73	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	14	0	134	5	142	0	159	216	58	92	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	14	0	0	427	449	14	566	378	76
Stage 1	-	-	-	-	-	-	34	34	-	344	344	-
Stage 2	-	-	-	-	-	-	393	415	-	222	34	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1604	-	-	538	505	1066	435	554	985
Stage 1	-	-	-	-	-	-	982	867	-	671	637	-
Stage 2	-	-	-	-	-	-	632	592	-	780	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1604	-	-	425	455	1066	234	499	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	425	455	-	234	499	-
Stage 1	-	-	-	-	-	-	975	861	-	666	578	-
Stage 2	-	-	-	-	-	-	479	537	-	503	861	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	3.6	16.7	22.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	679	1435	-	-	1604	-	-	355
HCM Lane V/C Ratio	0.554	0.007	-	-	0.084	-	-	0.439
HCM Control Delay (s)	16.7	7.5	0	-	7.4	0	-	22.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.4	0	-	-	0.3	-	-	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	121	19	154	123	42	14	149	43	41	324	73
Future Volume (veh/h)	97	121	19	154	123	42	14	149	43	41	324	73
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	105	132	21	167	134	46	15	162	47	45	352	79
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	476	405	201	548	466	37	668	568	79	564	127
Arrive On Green	0.07	0.26	0.26	0.11	0.29	0.29	0.02	0.36	0.36	0.04	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1474	331
Grp Volume(v), veh/h	105	132	21	167	134	46	15	162	47	45	0	431
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1804
Q Serve(g_s), s	5.3	5.2	0.9	8.4	5.0	1.9	0.8	5.6	1.8	2.3	0.0	17.7
Cycle Q Clear(g_c), s	5.3	5.2	0.9	8.4	5.0	1.9	0.8	5.6	1.8	2.3	0.0	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	133	476	405	201	548	466	37	668	568	79	0	690
V/C Ratio(X)	0.79	0.28	0.05	0.83	0.24	0.10	0.41	0.24	0.08	0.57	0.00	0.62
Avail Cap(c_a), veh/h	244	476	405	318	548	466	118	668	568	134	0	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.6	27.3	25.7	39.7	24.5	23.5	44.2	20.6	19.4	42.8	0.0	22.9
Incr Delay (d2), s/veh	3.9	1.4	0.2	5.1	1.1	0.4	2.7	0.9	0.3	2.4	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.9	0.4	4.4	2.7	0.9	0.4	3.0	0.8	1.2	0.0	9.6
LnGrp Delay(d),s/veh	45.5	28.7	25.9	44.8	25.6	23.9	46.9	21.5	19.7	45.2	0.0	27.1
LnGrp LOS	D	C	C	D	C	C	D	C	B	D		C
Approach Vol, veh/h		258			347			224			476	
Approach Delay, s/veh		35.3			34.6			22.8			28.8	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	29.6	6.5	40.4	11.5	33.1	8.7	38.2
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	16.4	23.1	6.1	33.6	12.6	26.9	6.9	32.8
Max Q Clear Time (g_c+I1), s	10.4	7.2	2.8	19.7	7.3	7.0	4.3	7.6
Green Ext Time (p_c), s	0.1	3.0	0.0	4.7	0.0	3.3	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	273	0	0	506	11	0	0	0	16	0	107
Future Vol, veh/h	37	273	0	0	506	11	0	0	0	16	0	107
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	100	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	317	0	0	588	13	0	0	0	19	0	124

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	588	0	0	317	0	0	697	991	317	991	991	294
Stage 1	-	-	-	-	-	-	403	403	-	588	588	-
Stage 2	-	-	-	-	-	-	294	588	-	403	403	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	985	-	-	1241	-	-	341	245	723	212	245	703
Stage 1	-	-	-	-	-	-	623	599	-	463	495	-
Stage 2	-	-	-	-	-	-	691	495	-	623	599	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	985	-	-	1241	-	-	271	234	723	205	234	703
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	234	-	205	234	-
Stage 1	-	-	-	-	-	-	596	573	-	443	495	-
Stage 2	-	-	-	-	-	-	569	495	-	596	573	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	0	12.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	985	-	-	1241	-	-	205	703
HCM Lane V/C Ratio	-	0.044	-	-	-	-	-	0.091	0.177
HCM Control Delay (s)	0	8.8	-	-	0	-	-	24.3	11.2
HCM Lane LOS	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.3	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	18	77	19	23	24	39	132	2	14	277	150
Future Volume (veh/h)	109	18	77	19	23	24	39	132	2	14	277	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	121	20	86	21	26	27	43	147	2	16	308	167
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	566	481	46	848	379	83	952	13	36	848	379
Arrive On Green	0.09	0.30	0.30	0.03	0.24	0.24	0.05	0.27	0.27	0.02	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3575	49	1774	3539	1583
Grp Volume(v), veh/h	121	20	86	21	26	27	43	73	76	16	308	167
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1854	1774	1770	1583
Q Serve(g_s), s	2.8	0.3	1.7	0.5	0.2	0.6	1.0	1.3	1.3	0.4	3.0	3.7
Cycle Q Clear(g_c), s	2.8	0.3	1.7	0.5	0.2	0.6	1.0	1.3	1.3	0.4	3.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	160	566	481	46	848	379	83	471	494	36	848	379
V/C Ratio(X)	0.75	0.04	0.18	0.46	0.03	0.07	0.52	0.15	0.15	0.44	0.36	0.44
Avail Cap(c_a), veh/h	680	1518	1290	298	2120	948	383	1102	1155	298	2035	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	10.2	10.7	20.0	12.2	12.3	19.4	11.7	11.7	20.2	13.2	13.5
Incr Delay (d2), s/veh	7.0	0.0	0.2	6.9	0.0	0.1	4.8	0.2	0.1	8.4	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.2	0.7	0.3	0.1	0.2	0.6	0.6	0.7	0.3	1.5	1.7
LnGrp Delay(d),s/veh	25.6	10.2	10.9	27.0	12.2	12.4	24.3	11.9	11.9	28.6	13.5	14.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		227			74			192			491	
Approach Delay, s/veh		18.6			16.4			14.6			14.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	16.7	6.0	14.0	7.8	14.0	4.8	15.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	34.0	9.0	24.0	16.0	25.0	7.0	26.0
Max Q Clear Time (g_c+I1), s	2.5	3.7	3.0	5.7	4.8	2.6	2.4	3.3
Green Ext Time (p_c), s	0.0	0.6	0.0	2.9	0.2	0.5	0.0	3.1

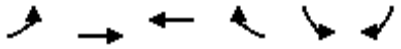
Intersection Summary	
HCM 2010 Ctrl Delay	15.5
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	107	99	79	247	258
Future Volume (veh/h)	10	107	99	79	247	258
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	11	119	110	88	274	287
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	170	152	1058	899	309	1468
Arrive On Green	0.10	0.10	0.57	0.57	0.17	0.79
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	11	119	110	88	274	287
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	0.6	7.3	2.7	2.5	15.1	3.9
Cycle Q Clear(g_c), s	0.6	7.3	2.7	2.5	15.1	3.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	170	152	1058	899	309	1468
V/C Ratio(X)	0.06	0.78	0.10	0.10	0.89	0.20
Avail Cap(c_a), veh/h	365	326	1058	899	593	1468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	44.2	9.9	9.9	40.3	2.7
Incr Delay (d2), s/veh	0.1	7.1	0.2	0.2	3.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.5	1.4	1.2	7.7	2.0
LnGrp Delay(d),s/veh	41.3	51.3	10.1	10.1	43.7	3.0
LnGrp LOS	D	D	B	B	D	A
Approach Vol, veh/h	130		198			561
Approach Delay, s/veh	50.4		10.1			22.9
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	22.0	63.0				85.0		15.0
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	33.4	29.8				67.8		20.6
Max Q Clear Time (g_c+I1), s	17.1	4.7				5.9		9.3
Green Ext Time (p_c), s	0.4	6.0				7.4		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	220	294	28	1	12
Future Volume (veh/h)	14	220	294	28	1	12
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	17	268	359	34	1	15
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	40	951	654	62	1099	981
Arrive On Green	0.02	0.27	0.20	0.20	0.62	0.62
Sat Flow, veh/h	1774	3632	3363	308	1774	1583
Grp Volume(v), veh/h	17	268	193	200	1	15
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1808	1774	1583
Q Serve(g_s), s	0.9	6.0	9.8	9.9	0.0	0.4
Cycle Q Clear(g_c), s	0.9	6.0	9.8	9.9	0.0	0.4
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	40	951	354	362	1099	981
V/C Ratio(X)	0.42	0.28	0.55	0.55	0.00	0.02
Avail Cap(c_a), veh/h	220	2216	807	825	1099	981
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.92	0.92	1.00	1.00
Uniform Delay (d), s/veh	48.2	28.9	35.9	36.0	7.2	7.3
Incr Delay (d2), s/veh	2.0	0.2	2.5	2.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.0	5.0	5.2	0.0	0.6
LnGrp Delay(d),s/veh	50.2	29.2	38.4	38.4	7.3	7.3
LnGrp LOS	D	C	D	D	A	A
Approach Vol, veh/h		285	393		16	
Approach Delay, s/veh		30.4	38.4		7.3	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.3		67.7	6.9	25.4
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				62.6		26.2	12.4	45.6
Max Q Clear Time (g_c+I1), s				8.0		2.4	2.9	11.9
Green Ext Time (p_c), s				8.9		0.0	0.0	8.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	12	110	7	5	10	151	199	6	10	422	14
Future Volume (veh/h)	10	12	110	7	5	10	151	199	6	10	422	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	12	15	134	9	6	12	184	243	7	12	515	17
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	28	389	331	21	382	325	245	1368	39	28	945	423
Arrive On Green	0.02	0.21	0.21	0.01	0.21	0.21	0.14	0.39	0.39	0.02	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3514	101	1774	3539	1583
Grp Volume(v), veh/h	12	15	134	9	6	12	184	122	128	12	515	17
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1845	1774	1770	1583
Q Serve(g_s), s	0.3	0.3	3.1	0.2	0.1	0.3	4.3	1.9	1.9	0.3	5.3	0.3
Cycle Q Clear(g_c), s	0.3	0.3	3.1	0.2	0.1	0.3	4.3	1.9	1.9	0.3	5.3	0.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	28	389	331	21	382	325	245	689	718	28	945	423
V/C Ratio(X)	0.44	0.04	0.41	0.43	0.02	0.04	0.75	0.18	0.18	0.44	0.54	0.04
Avail Cap(c_a), veh/h	249	1003	852	249	1003	852	831	1615	1684	249	2071	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	13.5	14.6	21.0	13.5	13.6	17.7	8.6	8.6	20.8	13.4	11.6
Incr Delay (d2), s/veh	10.5	0.0	0.8	13.2	0.0	0.0	4.6	0.1	0.1	10.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	1.4	0.2	0.1	0.1	2.4	0.9	1.0	0.2	2.6	0.2
LnGrp Delay(d),s/veh	31.3	13.5	15.4	34.1	13.6	13.6	22.4	8.7	8.7	31.3	13.9	11.6
LnGrp LOS	C	B	B	C	B	B	C	A	A	C	B	B
Approach Vol, veh/h		161			27			434			544	
Approach Delay, s/veh		16.4			20.5			14.5			14.2	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.7	20.6	4.5	12.9	9.9	15.4	4.7	12.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	39.0	6.0	23.0	20.0	25.0	6.0	23.0
Max Q Clear Time (g_c+I1), s	2.3	3.9	2.2	5.1	6.3	7.3	2.3	2.3
Green Ext Time (p_c), s	0.0	4.8	0.0	0.5	0.4	4.1	0.0	0.5

Intersection Summary		
HCM 2010 Ctrl Delay		14.8
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	2	367	1	0	0	93	203	0	182	1
Future Vol, veh/h	2	1	2	367	1	0	0	93	203	0	182	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	2	403	1	0	0	102	223	0	200	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	9	17.1	10.5	11.5
HCM LOS	A	C	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	40%	100%	0%
Vol Thru, %	100%	0%	20%	0%	99%
Vol Right, %	0%	100%	40%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	203	5	368	183
LT Vol	0	0	2	367	0
Through Vol	93	0	1	1	182
RT Vol	0	203	2	0	1
Lane Flow Rate	102	223	5	404	201
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.172	0.331	0.009	0.619	0.32
Departure Headway (Hd)	6.05	5.34	5.921	5.509	5.722
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	593	674	602	655	627
Service Time	3.789	3.079	3.977	3.538	3.763
HCM Lane V/C Ratio	0.172	0.331	0.008	0.617	0.321
HCM Control Delay	10	10.7	9	17.1	11.5
HCM Lane LOS	A	B	A	C	B
HCM 95th-tile Q	0.6	1.4	0	4.3	1.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	3	55	6	4	1	40	336	2	1	260	20
Future Volume (veh/h)	19	3	55	6	4	1	40	336	2	1	260	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	3	63	7	5	1	46	386	2	1	299	23
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	113	96	9	6	1	73	2671	14	3	2334	179
Arrive On Green	0.06	0.06	0.06	0.01	0.01	0.01	0.04	0.74	0.74	0.00	0.70	0.70
Sat Flow, veh/h	1774	1863	1583	964	689	138	1774	3610	19	1774	3332	255
Grp Volume(v), veh/h	22	3	63	13	0	0	46	189	199	1	158	164
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1790	0	0	1774	1770	1859	1774	1770	1818
Q Serve(g_s), s	1.3	0.2	4.3	0.8	0.0	0.0	2.8	3.4	3.4	0.1	3.2	3.3
Cycle Q Clear(g_c), s	1.3	0.2	4.3	0.8	0.0	0.0	2.8	3.4	3.4	0.1	3.2	3.3
Prop In Lane	1.00		1.00	0.54		0.08	1.00		0.01	1.00		0.14
Lane Grp Cap(c), veh/h	107	113	96	16	0	0	73	1309	1376	3	1239	1273
V/C Ratio(X)	0.21	0.03	0.66	0.81	0.00	0.00	0.63	0.14	0.14	0.34	0.13	0.13
Avail Cap(c_a), veh/h	471	494	420	299	0	0	168	1309	1376	119	1239	1273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	48.6	50.6	54.4	0.0	0.0	51.9	4.2	4.2	54.9	5.4	5.4
Incr Delay (d2), s/veh	4.3	0.4	30.3	61.0	0.0	0.0	3.3	0.2	0.2	24.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.1	2.7	0.7	0.0	0.0	1.4	1.8	1.9	0.0	1.7	1.7
LnGrp Delay(d),s/veh	53.4	49.1	80.9	115.4	0.0	0.0	55.2	4.4	4.4	78.8	5.6	5.6
LnGrp LOS	D	D	F	F			E	A	A	E	A	A
Approach Vol, veh/h		88			13			434			323	
Approach Delay, s/veh		72.9			115.4			9.8			5.9	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	87.2		12.4	9.1	82.8		5.6
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	7.4	34.2		29.2	10.4	31.2		18.4
Max Q Clear Time (g_c+I1), s	2.1	5.4		6.3	4.8	5.3		2.8
Green Ext Time (p_c), s	0.0	10.5		0.8	0.0	10.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1166	205	172	1197	6	92	4	240	6	25	12
Future Volume (veh/h)	9	1166	205	172	1197	6	92	4	240	6	25	12
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	10	1267	223	187	1301	7	100	4	261	7	27	13
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1891	846	179	2995	932	127	5	304	35	248	284
Arrive On Green	0.05	0.53	0.53	0.10	0.59	0.59	0.07	0.19	0.19	0.01	0.13	0.13
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	24	1563	3442	1863	1583
Grp Volume(v), veh/h	10	1267	223	187	1301	7	100	0	265	7	27	13
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1587	1721	1863	1583
Q Serve(g_s), s	0.7	33.8	9.9	13.1	18.4	0.2	7.2	0.0	21.0	0.3	1.7	0.9
Cycle Q Clear(g_c), s	0.7	33.8	9.9	13.1	18.4	0.2	7.2	0.0	21.0	0.3	1.7	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Lane Grp Cap(c), veh/h	82	1891	846	179	2995	932	127	0	309	35	248	284
V/C Ratio(X)	0.12	0.67	0.26	1.05	0.43	0.01	0.78	0.00	0.86	0.20	0.11	0.05
Avail Cap(c_a), veh/h	246	1891	846	179	2995	932	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.5	22.0	16.4	58.5	14.8	11.0	59.3	0.0	50.6	63.8	49.6	44.1
Incr Delay (d2), s/veh	0.2	1.9	0.8	74.6	0.4	0.0	10.1	0.0	7.4	1.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	16.9	4.5	10.1	8.7	0.1	3.9	0.0	9.8	0.1	0.9	0.4
LnGrp Delay(d),s/veh	59.7	23.9	17.2	133.0	15.2	11.0	69.4	0.0	58.0	64.8	50.0	44.3
LnGrp LOS	E	C	B	F	B	B	E		E	E	D	D
Approach Vol, veh/h		1500			1495			365			47	
Approach Delay, s/veh		23.1			29.9			61.1			50.6	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.7	75.3	13.9	23.1	10.6	82.4	5.9	31.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	13.1	42.1	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	15.1	35.8	9.2	3.7	2.7	20.4	2.3	23.0
Green Ext Time (p_c), s	0.0	6.3	0.1	2.5	0.0	16.4	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	1097	9	16	895	143	3	1	9	500	3	329
Future Volume (veh/h)	280	1097	9	16	895	143	3	1	9	500	3	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	308	1205	10	18	984	157	3	1	10	549	3	362
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	368	2588	806	41	2162	960	8	14	139	623	4	427
Arrive On Green	0.11	0.51	0.51	0.02	0.43	0.43	0.00	0.10	0.10	0.18	0.27	0.27
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	146	1459	3442	13	1572
Grp Volume(v), veh/h	308	1205	10	18	984	157	3	0	11	549	0	365
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1605	1721	0	1585
Q Serve(g_s), s	9.2	16.0	0.3	1.1	14.5	4.5	0.2	0.0	0.7	16.3	0.0	22.9
Cycle Q Clear(g_c), s	9.2	16.0	0.3	1.1	14.5	4.5	0.2	0.0	0.7	16.3	0.0	22.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.91	1.00		0.99
Lane Grp Cap(c), veh/h	368	2588	806	41	2162	960	8	0	153	623	0	431
V/C Ratio(X)	0.84	0.47	0.01	0.43	0.46	0.16	0.35	0.00	0.07	0.88	0.00	0.85
Avail Cap(c_a), veh/h	374	2588	806	101	2162	960	167	0	297	803	0	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.0	16.6	12.7	50.6	21.5	9.0	52.1	0.0	43.3	41.9	0.0	36.2
Incr Delay (d2), s/veh	7.8	0.3	0.0	2.4	0.3	0.2	9.0	0.0	0.2	7.8	0.0	11.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	7.5	0.1	0.5	6.8	2.0	0.1	0.0	0.3	8.5	0.0	11.4
LnGrp Delay(d),s/veh	53.8	16.9	12.8	53.0	21.8	9.2	61.1	0.0	43.5	49.7	0.0	47.7
LnGrp LOS	D	B	B	D	C	A	E		D	D		D
Approach Vol, veh/h		1523			1159			14			914	
Approach Delay, s/veh		24.3			20.6			47.2			48.9	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	59.2	5.1	33.6	15.8	50.4	23.6	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	35.0	9.9	34.0	11.4	29.6	24.5	19.4
Max Q Clear Time (g_c+I1), s	2.1	18.0	2.2	24.9	11.2	16.5	18.3	2.7
Green Ext Time (p_c), s	0.0	16.0	0.0	2.0	0.0	11.1	0.7	2.8

Intersection Summary		
HCM 2010 Ctrl Delay		29.4
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	479	694	0	655	168	250	0	365	0	0	0
Future Volume (veh/h)	0	479	694	0	655	168	250	0	365	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	630	0	0	862	0	329	0	480			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3334	1038	0	3334	1038	453	0	405			
Arrive On Green	0.00	0.66	0.00	0.00	0.66	0.00	0.26	0.00	0.26			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	630	0	0	862	0	329	0	480			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	4.4	0.0	0.0	6.3	0.0	15.3	0.0	23.0			
Cycle Q Clear(g_c), s	0.0	4.4	0.0	0.0	6.3	0.0	15.3	0.0	23.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3334	1038	0	3334	1038	453	0	405			
V/C Ratio(X)	0.00	0.19	0.00	0.00	0.26	0.00	0.73	0.00	1.19			
Avail Cap(c_a), veh/h	0	3334	1038	0	3334	1038	453	0	405			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.98	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.1	0.0	0.0	6.4	0.0	30.6	0.0	33.5			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.0	0.0	9.7	0.0	106.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.0	0.0	3.0	0.0	8.7	0.0	21.9			
LnGrp Delay(d),s/veh	0.0	6.2	0.0	0.0	6.5	0.0	40.4	0.0	139.7			
LnGrp LOS		A			A		D		F			
Approach Vol, veh/h		630			862			809				
Approach Delay, s/veh		6.2			6.5			99.3				
Approach LOS		A			A			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		63.0				63.0		27.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		36.0				19.0		23.0
Max Q Clear Time (g_c+I1), s		6.4				8.3		25.0
Green Ext Time (p_c), s		12.0				6.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		39.0
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	0	286	0	0	13	229	134	0	22	201	225
Future Volume (veh/h)	220	0	286	0	0	13	229	134	0	22	201	225
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	310	0	403	0	0	18	323	189	0	31	283	317
Adj No. of Lanes	2	1	1	1	1	0	1	1	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	370	506	430	2	0	170	345	950	0	55	611	547
Arrive On Green	0.11	0.00	0.27	0.00	0.00	0.11	0.19	0.51	0.00	0.03	0.35	0.35
Sat Flow, veh/h	3442	1863	1583	1774	0	1583	1774	1863	0	1774	1770	1583
Grp Volume(v), veh/h	310	0	403	0	0	18	323	189	0	31	283	317
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	0	1583	1774	1863	0	1774	1770	1583
Q Serve(g_s), s	7.0	0.0	19.7	0.0	0.0	0.8	14.2	4.4	0.0	1.4	9.9	13.0
Cycle Q Clear(g_c), s	7.0	0.0	19.7	0.0	0.0	0.8	14.2	4.4	0.0	1.4	9.9	13.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	370	506	430	2	0	170	345	950	0	55	611	547
V/C Ratio(X)	0.84	0.00	0.94	0.00	0.00	0.11	0.94	0.20	0.00	0.56	0.46	0.58
Avail Cap(c_a), veh/h	370	506	430	112	0	360	345	1250	0	137	978	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.6	0.0	28.1	0.0	0.0	31.9	31.4	10.6	0.0	37.8	20.2	21.2
Incr Delay (d2), s/veh	15.5	0.0	28.0	0.0	0.0	0.3	31.7	0.4	0.0	8.6	2.1	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	11.9	0.0	0.0	0.4	10.0	2.4	0.0	0.8	5.2	6.2
LnGrp Delay(d),s/veh	50.1	0.0	56.2	0.0	0.0	32.1	63.1	11.0	0.0	46.3	22.3	24.9
LnGrp LOS	D		E			C	E	B		D	C	C
Approach Vol, veh/h		713			18			512			631	
Approach Delay, s/veh		53.6			32.1			43.9			24.8	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	46.1	0.0	26.0	20.0	33.1	13.0	13.0
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	6.1	53.1	5.0	21.5	15.4	43.7	8.5	18.0
Max Q Clear Time (g_c+I1), s	3.4	6.4	0.0	21.7	16.2	15.0	9.0	2.8
Green Ext Time (p_c), s	0.0	15.1	0.0	0.0	0.0	12.3	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	41.0
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	741	19	4	574	31	0	0	0	29	2	6
Future Vol, veh/h	2	741	19	4	574	31	0	0	0	29	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	772	20	4	598	32	0	0	0	30	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	630	0	0	792	0	0	1413	1425	782	1408	1418	614
Stage 1	-	-	-	-	-	-	786	786	-	622	622	-
Stage 2	-	-	-	-	-	-	627	639	-	786	796	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	952	-	-	829	-	-	115	136	394	116	137	492
Stage 1	-	-	-	-	-	-	385	403	-	474	479	-
Stage 2	-	-	-	-	-	-	471	470	-	385	399	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	952	-	-	829	-	-	111	135	394	115	135	492
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	135	-	115	135	-
Stage 1	-	-	-	-	-	-	383	401	-	472	476	-
Stage 2	-	-	-	-	-	-	460	467	-	383	397	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	42.8
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	952	-	-	829	-	-	133
HCM Lane V/C Ratio	-	0.002	-	-	0.005	-	-	0.29
HCM Control Delay (s)	0	8.8	0	-	9.4	0	-	42.8
HCM Lane LOS	A	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1.1

Intersection	
Intersection Delay, s/veh	75
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	291	390	493	166	102	127
Future Vol, veh/h	291	390	493	166	102	127
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	398	503	169	104	130
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	98.4	71.5	15.5
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	45%
Vol Thru, %	57%	75%	0%
Vol Right, %	0%	25%	55%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	681	659	229
LT Vol	291	0	102
Through Vol	390	493	0
RT Vol	0	166	127
Lane Flow Rate	695	672	234
Geometry Grp	1	1	1
Degree of Util (X)	1.124	1.043	0.436
Departure Headway (Hd)	5.944	5.785	7.114
Convergence, Y/N	Yes	Yes	Yes
Cap	618	632	509
Service Time	3.944	3.785	5.114
HCM Lane V/C Ratio	1.125	1.063	0.46
HCM Control Delay	98.4	71.5	15.5
HCM Lane LOS	F	F	C
HCM 95th-tile Q	21.3	17.4	2.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	453	99	144	466	514	98	90	113	341	70	48
Future Volume (veh/h)	48	453	99	144	466	514	98	90	113	341	70	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	472	103	150	485	535	102	94	118	239	235	50
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	381	83	100	516	439	490	514	437	372	312	66
Arrive On Green	0.04	0.26	0.26	0.06	0.28	0.28	0.28	0.28	0.28	0.21	0.21	0.21
Sat Flow, veh/h	1774	1482	323	1774	1863	1583	1774	1863	1583	1774	1490	317
Grp Volume(v), veh/h	50	0	575	150	485	535	102	94	118	239	0	285
Grp Sat Flow(s),veh/h/ln	1774	0	1806	1774	1863	1583	1774	1863	1583	1774	0	1807
Q Serve(g_s), s	2.9	0.0	27.0	5.9	26.7	29.1	4.6	4.0	6.1	12.9	0.0	15.5
Cycle Q Clear(g_c), s	2.9	0.0	27.0	5.9	26.7	29.1	4.6	4.0	6.1	12.9	0.0	15.5
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	64	0	464	100	516	439	490	514	437	372	0	379
V/C Ratio(X)	0.78	0.00	1.24	1.50	0.94	1.22	0.21	0.18	0.27	0.64	0.00	0.75
Avail Cap(c_a), veh/h	91	0	464	100	516	439	490	514	437	372	0	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.64	0.64	0.64	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	0.0	39.0	49.6	37.1	37.9	29.2	29.0	29.7	37.9	0.0	38.9
Incr Delay (d2), s/veh	14.7	0.0	124.6	257.6	20.0	111.4	1.0	0.8	1.5	8.3	0.0	13.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	29.5	10.0	16.6	26.3	2.4	2.2	2.9	7.2	0.0	9.1
LnGrp Delay(d),s/veh	64.9	0.0	163.6	307.2	57.0	149.3	30.1	29.7	31.2	46.2	0.0	51.9
LnGrp LOS	E		F	F	E	F	C	C	C	D		D
Approach Vol, veh/h		625			1170			314			524	
Approach Delay, s/veh		155.7			131.3			30.4			49.3	
Approach LOS		F			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	33.2		28.2	7.9	35.3		33.6
Change Period (Y+Rc), s	4.1	6.2		6.2	4.1	6.2		4.6
Max Green Setting (Gmax), s	5.9	27.0		22.0	5.4	27.5		29.0
Max Q Clear Time (g_c+I1), s	7.9	29.0		17.5	4.9	31.1		8.1
Green Ext Time (p_c), s	0.0	0.0		1.2	0.0	0.0		1.4

Intersection Summary		
HCM 2010 Ctrl Delay		108.8
HCM 2010 LOS		F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	681	257	327	885	0	0	0	0	497	1	252
Future Volume (veh/h)	0	681	257	327	885	0	0	0	0	497	1	252
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	695	262	334	903	0				507	1	257
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	722	614	337	1159	0				512	1	457
Arrive On Green	0.00	0.39	0.39	0.13	0.42	0.00				0.29	0.29	0.29
Sat Flow, veh/h	0	1863	1583	1774	1863	0				1771	3	1583
Grp Volume(v), veh/h	0	695	262	334	903	0				508	0	257
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	32.8	10.9	16.9	37.7	0.0				25.7	0.0	12.4
Cycle Q Clear(g_c), s	0.0	32.8	10.9	16.9	37.7	0.0				25.7	0.0	12.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	722	614	337	1159	0				513	0	457
V/C Ratio(X)	0.00	0.96	0.43	0.99	0.78	0.00				0.99	0.00	0.56
Avail Cap(c_a), veh/h	0	722	614	337	1159	0				513	0	457
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.20	0.20	0.30	0.30	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	26.9	20.2	39.2	20.9	0.0				31.9	0.0	27.2
Incr Delay (d2), s/veh	0.0	8.1	0.1	24.6	1.6	0.0				37.6	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	18.4	4.7	10.6	19.9	0.0				17.9	0.0	6.1
LnGrp Delay(d),s/veh	0.0	35.0	20.3	63.7	22.5	0.0				69.5	0.0	32.1
LnGrp LOS		D	C	E	C					E		C
Approach Vol, veh/h		957			1237						765	
Approach Delay, s/veh		31.0			33.6						56.9	
Approach LOS		C			C						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	21.1	38.9		30.0		60.0		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	17.1	34.9		26.0		56.0		
Max Q Clear Time (g_c+I1), s	19.9	34.8		27.7		39.7		
Green Ext Time (p_c), s	0.0	0.1		0.0		10.3		

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	1005	0	0	803	452	409	2	500	0	0	0
Future Volume (veh/h)	173	1005	0	0	803	452	409	2	500	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	178	1036	0	0	828	466	422	2	515			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	211	1221	0	0	916	779	451	2	405			
Arrive On Green	0.12	0.66	0.00	0.00	0.49	0.49	0.26	0.26	0.26			
Sat Flow, veh/h	1774	1863	0	0	1863	1583	1766	8	1583			
Grp Volume(v), veh/h	178	1036	0	0	828	466	424	0	515			
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1583	1774	0	1583			
Q Serve(g_s), s	8.8	38.8	0.0	0.0	36.6	19.1	21.0	0.0	23.0			
Cycle Q Clear(g_c), s	8.8	38.8	0.0	0.0	36.6	19.1	21.0	0.0	23.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	211	1221	0	0	916	779	453	0	405			
V/C Ratio(X)	0.84	0.85	0.00	0.00	0.90	0.60	0.94	0.00	1.27			
Avail Cap(c_a), veh/h	217	1221	0	0	916	779	453	0	405			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.18	0.18	0.00	0.00	0.40	0.40	1.00	0.00	1.00			
Uniform Delay (d), s/veh	38.8	12.0	0.0	0.0	20.9	16.5	32.8	0.0	33.5			
Incr Delay (d2), s/veh	5.4	1.4	0.0	0.0	6.5	1.4	28.8	0.0	140.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.7	20.1	0.0	0.0	20.3	8.6	13.9	0.0	25.8			
LnGrp Delay(d),s/veh	44.2	13.5	0.0	0.0	27.4	17.8	61.6	0.0	174.3			
LnGrp LOS	D	B			C	B	E		F			
Approach Vol, veh/h		1214			1294			939				
Approach Delay, s/veh		18.0			23.9			123.4				
Approach LOS		B			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		63.0			14.7	48.3		27.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		59.0			11.0	44.0		23.0
Max Q Clear Time (g_c+I1), s		40.8			10.8	38.6		25.0
Green Ext Time (p_c), s		13.6			0.0	4.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	48.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	829	396	79	570	54	447	325	163	64	180	238
Future Volume (veh/h)	280	829	396	79	570	54	447	325	163	64	180	238
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	283	837	400	80	576	55	452	328	165	65	182	240
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	1226	583	79	1496	143	325	681	579	83	593	504
Arrive On Green	0.11	0.53	0.53	0.04	0.46	0.46	0.09	0.37	0.37	0.05	0.32	0.32
Sat Flow, veh/h	1774	2330	1107	1774	3266	311	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	283	634	603	80	312	319	452	328	165	65	182	240
Grp Sat Flow(s),veh/h/ln	1774	1770	1667	1774	1770	1808	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	12.4	29.1	29.5	4.9	12.7	12.8	10.4	14.9	8.1	4.0	8.1	13.4
Cycle Q Clear(g_c), s	12.4	29.1	29.5	4.9	12.7	12.8	10.4	14.9	8.1	4.0	8.1	13.4
Prop In Lane	1.00		0.66	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	931	878	79	811	828	325	681	579	83	593	504
V/C Ratio(X)	1.42	0.68	0.69	1.01	0.38	0.39	1.39	0.48	0.28	0.78	0.31	0.48
Avail Cap(c_a), veh/h	200	931	878	79	811	828	325	681	579	155	593	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.30	0.30	0.30	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	19.2	19.3	52.6	19.6	19.6	49.8	26.9	24.7	51.9	28.3	30.1
Incr Delay (d2), s/veh	195.7	1.2	1.3	104.7	1.4	1.4	193.0	2.4	1.2	5.8	1.3	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	14.4	13.9	4.7	6.5	6.7	13.6	8.1	3.8	2.1	4.4	6.3
LnGrp Delay(d),s/veh	244.5	20.5	20.7	157.3	21.0	21.0	242.8	29.3	25.9	57.6	29.7	33.3
LnGrp LOS	F	C	C	F	C	C	F	C	C	E	C	C
Approach Vol, veh/h		1520			711			945			487	
Approach Delay, s/veh		62.3			36.3			130.8			35.2	
Approach LOS		E			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	65.0	15.0	41.5	17.0	57.5	9.8	46.7
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	4.9	* 38	10.4	* 35	12.4	30.3	9.6	35.5
Max Q Clear Time (g_c+I1), s	6.9	31.5	12.4	15.4	14.4	14.8	6.0	16.9
Green Ext Time (p_c), s	0.0	5.0	0.0	2.2	0.0	9.8	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	71.3
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	10	0	328	5	41	0	192	282	37	228	3
Future Vol, veh/h	5	10	0	328	5	41	0	192	282	37	228	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	12	0	390	6	49	0	229	336	44	271	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	55	0	0	12	0	0	973	860	12	1117	835	30
Stage 1	-	-	-	-	-	-	24	24	-	811	811	-
Stage 2	-	-	-	-	-	-	949	836	-	306	24	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1550	-	-	1607	-	-	231	294	1069	185	304	1044
Stage 1	-	-	-	-	-	-	994	875	-	373	393	-
Stage 2	-	-	-	-	-	-	313	382	-	704	875	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1550	-	-	1607	-	-	-	~ 219	1069	-	~ 226	1044
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 219	-	-	~ 226	-
Stage 1	-	-	-	-	-	-	990	872	-	372	294	-
Stage 2	-	-	-	-	-	-	18	286	-	355	872	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	7		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1550	-	-	1607	-	-	-
HCM Lane V/C Ratio	-	0.004	-	-	0.243	-	-	-
HCM Control Delay (s)	-	7.3	0	-	8	0	-	-
HCM Lane LOS	-	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-	1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	176	5	83	191	55	25	375	116	30	147	172
Future Volume (veh/h)	145	176	5	83	191	55	25	375	116	30	147	172
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	156	189	5	89	205	59	27	403	125	32	158	185
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	190	557	474	114	478	406	58	698	594	65	297	348
Arrive On Green	0.11	0.30	0.30	0.06	0.26	0.26	0.03	0.37	0.37	0.04	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	783	917
Grp Volume(v), veh/h	156	189	5	89	205	59	27	403	125	32	0	343
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1701
Q Serve(g_s), s	7.9	7.3	0.2	4.6	8.5	2.7	1.4	15.9	4.9	1.6	0.0	14.5
Cycle Q Clear(g_c), s	7.9	7.3	0.2	4.6	8.5	2.7	1.4	15.9	4.9	1.6	0.0	14.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	190	557	474	114	478	406	58	698	594	65	0	644
V/C Ratio(X)	0.82	0.34	0.01	0.78	0.43	0.15	0.47	0.58	0.21	0.50	0.00	0.53
Avail Cap(c_a), veh/h	315	557	474	204	478	406	123	698	594	123	0	644
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.4	25.2	22.7	42.5	28.7	26.5	43.9	23.0	19.6	43.6	0.0	22.3
Incr Delay (d2), s/veh	3.4	1.6	0.0	4.4	2.8	0.8	2.2	3.5	0.8	2.2	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	4.0	0.1	2.4	4.8	1.2	0.7	8.8	2.3	0.8	0.0	7.3
LnGrp Delay(d),s/veh	43.7	26.9	22.8	46.9	31.5	27.3	46.0	26.5	20.4	45.8	0.0	25.4
LnGrp LOS	D	C	C	D	C	C	D	C	C	D		C
Approach Vol, veh/h		350			353			555			375	
Approach Delay, s/veh		34.3			34.7			26.0			27.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	33.8	7.6	40.4	14.5	29.9	8.0	40.0
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	10.6	27.6	6.4	34.6	16.4	21.8	6.4	34.6
Max Q Clear Time (g_c+I1), s	6.6	9.3	3.4	16.5	9.9	10.5	3.6	17.9
Green Ext Time (p_c), s	0.0	4.7	0.0	7.9	0.1	3.5	0.0	7.5

Intersection Summary	
HCM 2010 Ctrl Delay	29.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	489	0	0	300	5	0	0	0	15	0	41
Future Vol, veh/h	101	489	0	0	300	5	0	0	0	15	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	100	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	105	509	0	0	313	5	0	0	0	16	0	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	313	0	0	509	0	0	876	1033	509	1033	1033	156
Stage 1	-	-	-	-	-	-	720	720	-	313	313	-
Stage 2	-	-	-	-	-	-	156	313	-	720	720	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1246	-	-	1054	-	-	256	232	563	198	232	862
Stage 1	-	-	-	-	-	-	418	431	-	673	656	-
Stage 2	-	-	-	-	-	-	831	656	-	418	431	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1246	-	-	1054	-	-	228	212	563	185	212	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	228	212	-	185	212	-
Stage 1	-	-	-	-	-	-	383	395	-	616	656	-
Stage 2	-	-	-	-	-	-	790	656	-	383	395	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0	0	13.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1246	-	-	1054	-	-	185	862
HCM Lane V/C Ratio	-	0.084	-	-	-	-	-	0.084	0.05
HCM Control Delay (s)	0	8.2	-	-	0	-	-	26.2	9.4
HCM Lane LOS	A	A	-	-	A	-	-	D	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	0.3	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	10	75	9	8	10	82	277	21	7	121	118
Future Volume (veh/h)	151	10	75	9	8	10	82	277	21	7	121	118
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	157	10	78	9	8	10	85	289	22	7	126	123
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	616	523	21	796	356	130	963	73	17	796	356
Arrive On Green	0.12	0.33	0.33	0.01	0.22	0.22	0.07	0.29	0.29	0.01	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3335	252	1774	3539	1583
Grp Volume(v), veh/h	157	10	78	9	8	10	85	153	158	7	126	123
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1818	1774	1770	1583
Q Serve(g_s), s	3.8	0.2	1.5	0.2	0.1	0.2	2.1	3.0	3.0	0.2	1.3	2.9
Cycle Q Clear(g_c), s	3.8	0.2	1.5	0.2	0.1	0.2	2.1	3.0	3.0	0.2	1.3	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	209	616	523	21	796	356	130	511	525	17	796	356
V/C Ratio(X)	0.75	0.02	0.15	0.43	0.01	0.03	0.66	0.30	0.30	0.42	0.16	0.35
Avail Cap(c_a), veh/h	718	1466	1246	239	1830	819	479	1074	1104	239	1671	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	10.0	10.5	21.8	13.4	13.4	20.1	12.3	12.3	21.9	13.9	14.5
Incr Delay (d2), s/veh	5.4	0.0	0.1	13.2	0.0	0.0	5.5	0.3	0.3	16.3	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.1	0.7	0.2	0.0	0.1	1.2	1.5	1.5	0.2	0.6	1.3
LnGrp Delay(d),s/veh	24.4	10.0	10.6	35.1	13.4	13.5	25.6	12.6	12.7	38.2	13.9	15.1
LnGrp LOS	C	B	B	D	B	B	C	B	B	D	B	B
Approach Vol, veh/h		245			27			396			256	
Approach Delay, s/veh		19.4			20.6			15.4			15.1	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	18.7	7.3	14.0	9.2	14.0	4.4	16.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	35.0	12.0	21.0	18.0	23.0	6.0	27.0
Max Q Clear Time (g_c+I1), s	2.2	3.5	4.1	4.9	5.8	2.2	2.2	5.0
Green Ext Time (p_c), s	0.0	0.3	0.1	2.4	0.3	0.3	0.0	2.7

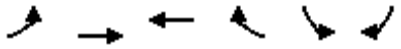
Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	51	282	229	11	82	153
Future Volume (veh/h)	51	282	229	11	82	153
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	56	310	252	12	90	168
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	389	347	1032	877	115	1238
Arrive On Green	0.22	0.22	0.55	0.55	0.06	0.66
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	56	310	252	12	90	168
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	2.5	19.0	7.0	0.3	5.0	3.3
Cycle Q Clear(g_c), s	2.5	19.0	7.0	0.3	5.0	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	389	347	1032	877	115	1238
V/C Ratio(X)	0.14	0.89	0.24	0.01	0.78	0.14
Avail Cap(c_a), veh/h	561	500	1032	877	291	1238
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	37.9	11.5	10.0	46.1	6.2
Incr Delay (d2), s/veh	0.1	10.7	0.6	0.0	4.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	9.3	3.7	0.2	2.6	1.8
LnGrp Delay(d),s/veh	31.6	48.6	12.1	10.0	50.4	6.4
LnGrp LOS	C	D	B	B	D	A
Approach Vol, veh/h	366		264			258
Approach Delay, s/veh	46.0		12.0			21.8
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.1	61.6				72.7		27.3
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	16.4	35.8				56.8		31.6
Max Q Clear Time (g_c+I1), s	7.0	9.0				5.3		21.0
Green Ext Time (p_c), s	0.1	5.7				6.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	211	477	0	13	21
Future Volume (veh/h)	1	211	477	0	13	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	232	524	0	14	23
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3	1047	879	0	1050	937
Arrive On Green	0.00	0.30	0.25	0.00	0.59	0.59
Sat Flow, veh/h	1774	3632	3725	0	1774	1583
Grp Volume(v), veh/h	1	232	524	0	14	23
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	0	1774	1583
Q Serve(g_s), s	0.1	4.9	13.1	0.0	0.3	0.6
Cycle Q Clear(g_c), s	0.1	4.9	13.1	0.0	0.3	0.6
Prop In Lane	1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	3	1047	879	0	1050	937
V/C Ratio(X)	0.34	0.22	0.60	0.00	0.01	0.02
Avail Cap(c_a), veh/h	167	2145	1649	0	1050	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	26.5	33.2	0.0	8.4	8.4
Incr Delay (d2), s/veh	21.2	0.2	1.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.4	6.5	0.0	0.2	0.9
LnGrp Delay(d),s/veh	71.1	26.7	34.3	0.0	8.4	8.5
LnGrp LOS	E	C	C		A	A
Approach Vol, veh/h		233	524		37	
Approach Delay, s/veh		26.9	34.3		8.5	
Approach LOS		C	C		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.0		65.0	4.8	30.2
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				60.6		28.2	9.4	46.6
Max Q Clear Time (g_c+I1), s				6.9		2.6	2.1	15.1
Green Ext Time (p_c), s				11.2		0.2	0.0	9.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1	170	7	4	2	186	418	1	1	239	9
Future Volume (veh/h)	12	1	170	7	4	2	186	418	1	1	239	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	13	1	181	7	4	2	198	445	1	1	254	10
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	30	415	352	17	401	341	253	1384	3	4	851	381
Arrive On Green	0.02	0.22	0.22	0.01	0.22	0.22	0.14	0.38	0.38	0.00	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3623	8	1774	3539	1583
Grp Volume(v), veh/h	13	1	181	7	4	2	198	217	229	1	254	10
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1861	1774	1770	1583
Q Serve(g_s), s	0.3	0.0	4.2	0.2	0.1	0.0	4.5	3.6	3.6	0.0	2.4	0.2
Cycle Q Clear(g_c), s	0.3	0.0	4.2	0.2	0.1	0.0	4.5	3.6	3.6	0.0	2.4	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	30	415	352	17	401	341	253	676	711	4	851	381
V/C Ratio(X)	0.44	0.00	0.51	0.42	0.01	0.01	0.78	0.32	0.32	0.23	0.30	0.03
Avail Cap(c_a), veh/h	235	985	838	235	985	838	392	1021	1074	235	1728	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	12.6	14.2	20.5	12.8	12.8	17.2	9.1	9.1	20.7	12.9	12.1
Incr Delay (d2), s/veh	9.8	0.0	1.2	16.2	0.0	0.0	5.4	0.3	0.3	26.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	1.9	0.2	0.0	0.0	2.6	1.8	1.9	0.0	1.2	0.1
LnGrp Delay(d),s/veh	30.0	12.6	15.3	36.7	12.8	12.8	22.6	9.3	9.3	46.7	13.1	12.1
LnGrp LOS	C	B	B	D	B	B	C	A	A	D	B	B
Approach Vol, veh/h		195			13			644			265	
Approach Delay, s/veh		16.3			25.7			13.4			13.2	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	19.9	4.4	13.3	9.9	14.0	4.7	12.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	24.0	5.5	22.0	9.2	20.3	5.5	22.0
Max Q Clear Time (g_c+I1), s	2.3	5.6	2.2	6.2	6.5	4.4	2.3	2.1
Green Ext Time (p_c), s	0.0	3.6	0.0	0.5	0.1	3.4	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	0	226	0	0	0	298	232	0	235	5
Future Vol, veh/h	4	0	0	226	0	0	0	298	232	0	235	5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	0	266	0	0	0	351	273	0	276	6
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	10	14.4	13.8	13.2
HCM LOS	A	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	100%	100%	0%
Vol Thru, %	100%	0%	0%	0%	98%
Vol Right, %	0%	100%	0%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	298	232	4	226	240
LT Vol	0	0	4	226	0
Through Vol	298	0	0	0	235
RT Vol	0	232	0	0	5
Lane Flow Rate	351	273	5	266	282
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.566	0.387	0.009	0.457	0.444
Departure Headway (Hd)	5.807	5.098	6.908	6.184	5.66
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	621	704	516	582	635
Service Time	3.542	2.833	4.975	4.223	3.699
HCM Lane V/C Ratio	0.565	0.388	0.01	0.457	0.444
HCM Control Delay	15.9	11	10	14.4	13.2
HCM Lane LOS	C	B	A	B	B
HCM 95th-tile Q	3.5	1.8	0	2.4	2.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	3	69	0	0	1	36	599	0	1	298	9
Future Volume (veh/h)	16	3	69	0	0	1	36	599	0	1	298	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	3	71	0	0	1	37	618	0	1	307	9
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	120	102	0	0	1	63	2690	0	3	2550	75
Arrive On Green	0.06	0.06	0.06	0.00	0.00	0.00	0.04	0.76	0.00	0.00	0.73	0.73
Sat Flow, veh/h	1774	1863	1583	0	0	1583	1774	3632	0	1774	3512	103
Grp Volume(v), veh/h	16	3	71	0	0	1	37	618	0	1	154	162
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	0	0	1583	1774	1770	0	1774	1770	1845
Q Serve(g_s), s	1.0	0.2	5.3	0.0	0.0	0.1	2.5	6.1	0.0	0.1	3.1	3.2
Cycle Q Clear(g_c), s	1.0	0.2	5.3	0.0	0.0	0.1	2.5	6.1	0.0	0.1	3.1	3.2
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.00	1.00		0.06
Lane Grp Cap(c), veh/h	114	120	102	0	0	1	63	2690	0	3	1285	1340
V/C Ratio(X)	0.14	0.03	0.70	0.00	0.00	0.76	0.59	0.23	0.00	0.34	0.12	0.12
Avail Cap(c_a), veh/h	417	438	372	0	0	243	154	2690	0	109	1285	1340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	52.6	55.0	0.0	0.0	59.9	57.0	4.2	0.0	59.8	4.9	4.9
Incr Delay (d2), s/veh	2.6	0.4	33.0	0.0	0.0	267.2	3.2	0.2	0.0	24.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	3.2	0.0	0.0	0.1	1.3	3.0	0.0	0.1	1.6	1.6
LnGrp Delay(d),s/veh	55.6	53.0	88.0	0.0	0.0	327.1	60.2	4.4	0.0	83.9	5.1	5.1
LnGrp LOS	E	D	F			F	E	A		F	A	A
Approach Vol, veh/h		90			1			655			317	
Approach Delay, s/veh		81.1			327.1			7.5			5.4	
Approach LOS		F			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	97.0		13.5	8.9	92.9		4.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	7.4	45.2		28.2	10.4	42.2		18.4
Max Q Clear Time (g_c+I1), s	2.1	8.1		7.3	4.5	5.2		2.1
Green Ext Time (p_c), s	0.0	16.8		0.8	0.0	16.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1459	25	125	1448	2	29	1	87	3	2	8
Future Volume (veh/h)	8	1459	25	125	1448	2	29	1	87	3	2	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	8	1504	26	129	1493	2	30	1	90	3	2	8
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	2472	1106	129	3704	1153	76	1	118	16	70	127
Arrive On Green	0.04	0.70	0.70	0.07	0.73	0.73	0.04	0.08	0.08	0.00	0.04	0.04
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	17	1569	3442	1863	1583
Grp Volume(v), veh/h	8	1504	26	129	1493	2	30	0	91	3	2	8
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1586	1721	1863	1583
Q Serve(g_s), s	0.6	31.2	0.7	10.2	15.8	0.0	2.3	0.0	7.9	0.1	0.1	0.7
Cycle Q Clear(g_c), s	0.6	31.2	0.7	10.2	15.8	0.0	2.3	0.0	7.9	0.1	0.1	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Lane Grp Cap(c), veh/h	76	2472	1106	129	3704	1153	76	0	120	16	70	127
V/C Ratio(X)	0.11	0.61	0.02	1.00	0.40	0.00	0.39	0.00	0.76	0.18	0.03	0.06
Avail Cap(c_a), veh/h	228	2472	1106	129	3704	1153	228	0	544	147	479	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.4	11.1	6.5	64.9	7.3	5.2	65.2	0.0	63.5	69.4	64.9	59.5
Incr Delay (d2), s/veh	0.2	1.1	0.0	69.5	0.3	0.0	3.3	0.0	10.2	2.0	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	15.4	0.3	7.5	7.4	0.0	1.2	0.0	3.8	0.1	0.1	0.3
LnGrp Delay(d),s/veh	64.6	12.2	6.5	134.4	7.6	5.2	68.5	0.0	73.7	71.4	65.3	60.0
LnGrp LOS	E	B	A	F	A	A	E		E	E	E	E
Approach Vol, veh/h		1538			1624			121			13	
Approach Delay, s/veh		12.4			17.6			72.4			63.5	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	103.6	10.6	11.0	10.6	107.8	5.3	16.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	10.2	55.0	18.0	36.0	18.0	47.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	12.2	33.2	4.3	2.7	2.6	17.8	2.1	9.9
Green Ext Time (p_c), s	0.0	21.4	0.0	0.7	0.0	28.7	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	1126	13	45	1032	318	22	11	25	411	6	415
Future Volume (veh/h)	580	1126	13	45	1032	318	22	11	25	411	6	415
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	592	1149	13	46	1053	324	22	11	26	419	6	423
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	529	2564	726	73	1961	774	47	88	209	489	6	455
Arrive On Green	0.15	0.46	0.46	0.04	0.35	0.35	0.03	0.18	0.18	0.14	0.29	0.29
Sat Flow, veh/h	3548	5588	1583	1774	5588	1583	1774	493	1165	3548	22	1564
Grp Volume(v), veh/h	592	1149	13	46	1053	324	22	0	37	419	0	429
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1657	1774	0	1587
Q Serve(g_s), s	16.4	15.4	0.5	2.8	16.6	14.5	1.3	0.0	2.1	12.7	0.0	28.9
Cycle Q Clear(g_c), s	16.4	15.4	0.5	2.8	16.6	14.5	1.3	0.0	2.1	12.7	0.0	28.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.70	1.00		0.99
Lane Grp Cap(c), veh/h	529	2564	726	73	1961	774	47	0	298	489	0	461
V/C Ratio(X)	1.12	0.45	0.02	0.63	0.54	0.42	0.46	0.00	0.12	0.86	0.00	0.93
Avail Cap(c_a), veh/h	529	2564	726	115	1961	774	160	0	360	645	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	20.3	16.2	51.9	28.6	18.1	52.8	0.0	37.9	46.4	0.0	37.9
Incr Delay (d2), s/veh	66.9	0.3	0.0	2.9	0.5	0.8	2.6	0.0	0.2	7.1	0.0	24.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	7.9	0.2	1.4	8.6	6.5	0.7	0.0	1.0	6.7	0.0	15.7
LnGrp Delay(d),s/veh	113.7	20.6	16.3	54.8	29.1	18.8	55.4	0.0	38.1	53.4	0.0	62.0
LnGrp LOS	F	C	B	D	C	B	E		D	D		E
Approach Vol, veh/h		1754			1423			59			848	
Approach Delay, s/veh		52.0			27.6			44.5			57.8	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	56.3	7.5	37.1	21.0	44.4	19.8	24.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	7.1	38.9	9.9	34.0	16.4	29.6	20.0	23.9
Max Q Clear Time (g_c+I1), s	4.8	17.4	3.3	30.9	18.4	18.6	14.7	4.1
Green Ext Time (p_c), s	0.0	20.3	0.0	1.1	0.0	9.6	0.5	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	44.6
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1102	473	0	864	0	0	0	0	116	1	735
Future Volume (veh/h)	0	1102	473	0	864	0	0	0	0	116	1	735
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1136	488	0	891	0				120	1	758
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2373	739	0	2373	0				782	7	1239
Arrive On Green	0.00	0.47	0.47	0.00	0.47	0.00				0.44	0.44	0.44
Sat Flow, veh/h	0	5253	1583	0	5421	0				1760	15	2787
Grp Volume(v), veh/h	0	1136	488	0	891	0				121	0	758
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	13.8	21.4	0.0	10.2	0.0				3.7	0.0	18.7
Cycle Q Clear(g_c), s	0.0	13.8	21.4	0.0	10.2	0.0				3.7	0.0	18.7
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2373	739	0	2373	0				789	0	1239
V/C Ratio(X)	0.00	0.48	0.66	0.00	0.38	0.00				0.15	0.00	0.61
Avail Cap(c_a), veh/h	0	2373	739	0	2373	0				789	0	1239
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.85	0.85	0.00	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.5	18.5	0.0	15.5	0.0				14.9	0.0	19.1
Incr Delay (d2), s/veh	0.0	0.1	1.9	0.0	0.5	0.0				0.4	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.4	9.6	0.0	4.8	0.0				1.9	0.0	7.5
LnGrp Delay(d),s/veh	0.0	16.6	20.4	0.0	16.0	0.0				15.3	0.0	21.3
LnGrp LOS		B	C		B					B		C
Approach Vol, veh/h		1624			891						879	
Approach Delay, s/veh		17.7			16.0						20.5	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		46.0		44.0		46.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		42.0		40.0		42.0		
Max Q Clear Time (g_c+I1), s		23.4		20.7		12.2		
Green Ext Time (p_c), s		14.1		4.0		20.0		

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	531	687	0	419	82	459	0	316	0	0	0
Future Volume (veh/h)	0	531	687	0	419	82	459	0	316	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	547	0	0	432	0	473	0	316			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2599	809	0	2599	809	710	0	633			
Arrive On Green	0.00	0.51	0.00	0.00	0.51	0.00	0.40	0.00	0.40			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	547	0	0	432	0	473	0	316			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	5.3	0.0	0.0	4.1	0.0	19.6	0.0	13.5			
Cycle Q Clear(g_c), s	0.0	5.3	0.0	0.0	4.1	0.0	19.6	0.0	13.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2599	809	0	2599	809	710	0	633			
V/C Ratio(X)	0.00	0.21	0.00	0.00	0.17	0.00	0.67	0.00	0.50			
Avail Cap(c_a), veh/h	0	2599	809	0	2599	809	710	0	633			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.98	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	12.1	0.0	0.0	11.8	0.0	22.1	0.0	20.2			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	4.9	0.0	2.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.5	0.0	0.0	1.9	0.0	10.6	0.0	6.4			
LnGrp Delay(d),s/veh	0.0	12.2	0.0	0.0	11.8	0.0	27.0	0.0	23.0			
LnGrp LOS		B			B		C		C			
Approach Vol, veh/h		547			432			789				
Approach Delay, s/veh		12.2			11.8			25.4				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.0				50.0		40.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		46.0				46.0		36.0
Max Q Clear Time (g_c+I1), s		7.3				6.1		21.6
Green Ext Time (p_c), s		7.5				7.5		2.4

Intersection Summary		
HCM 2010 Ctrl Delay		18.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1	369	0	0	34	280	282	0	29	199	194
Future Volume (veh/h)	339	1	369	0	0	34	280	282	0	29	199	194
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	365	1	397	0	0	37	301	303	0	31	214	209
Adj No. of Lanes	2	1	1	1	1	0	1	1	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	429	365	1	0	77	817	1173	0	46	328	294
Arrive On Green	0.14	0.23	0.23	0.00	0.00	0.05	0.46	0.63	0.00	0.03	0.19	0.19
Sat Flow, veh/h	3442	1863	1583	1774	0	1583	1774	1863	0	1774	1770	1583
Grp Volume(v), veh/h	365	1	397	0	0	37	301	303	0	31	214	209
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	0	1583	1774	1863	0	1774	1770	1583
Q Serve(g_s), s	13.3	0.1	9.0	0.0	0.0	3.0	14.3	9.3	0.0	2.3	14.6	16.1
Cycle Q Clear(g_c), s	13.3	0.1	9.0	0.0	0.0	3.0	14.3	9.3	0.0	2.3	14.6	16.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	429	365	1	0	77	817	1173	0	46	328	294
V/C Ratio(X)	0.76	0.00	1.09	0.00	0.00	0.48	0.37	0.26	0.00	0.67	0.65	0.71
Avail Cap(c_a), veh/h	688	572	486	68	0	219	817	1173	0	89	589	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	38.5	4.5	0.0	0.0	60.3	22.8	10.6	0.0	62.8	49.0	49.7
Incr Delay (d2), s/veh	10.5	0.0	66.0	0.0	0.0	4.7	0.1	0.5	0.0	15.8	9.7	13.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.0	10.5	0.0	0.0	1.4	7.0	5.0	0.0	1.3	8.0	8.1
LnGrp Delay(d),s/veh	64.2	38.5	70.5	0.0	0.0	64.9	22.9	11.2	0.0	78.6	58.7	63.3
LnGrp LOS	E	D	F			E	C	B		E	E	E
Approach Vol, veh/h		763			37			604			454	
Approach Delay, s/veh		67.5			64.9			17.0			62.2	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	87.7	0.0	34.4	65.6	29.9	23.7	10.8
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	5.8	* 5.8	5.4	4.5
Max Green Setting (Gmax), s	6.5	59.3	5.0	39.9	22.4	* 43	26.0	18.0
Max Q Clear Time (g_c+I1), s	4.3	11.3	0.0	11.0	16.3	18.1	15.3	5.0
Green Ext Time (p_c), s	0.0	4.4	0.0	1.6	1.9	6.0	3.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	49.7
HCM 2010 LOS	D

Notes

APPENDIX C-3
Intersection LOS Analysis
Mitigated Forecast Existing Plus Project Buildout Conditions

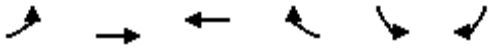
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	499	3	0	598	20	0	0	4	30	1	18
Future Vol, veh/h	0	499	3	0	598	20	0	0	4	30	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	537	3	0	643	22	0	0	4	32	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	665	0	0	540	0	0	1202	1203	270	922	1194	654
Stage 1	-	-	-	-	-	-	538	538	-	654	654	-
Stage 2	-	-	-	-	-	-	664	665	-	268	540	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	922	-	-	1027	-	-	150	184	729	238	186	466
Stage 1	-	-	-	-	-	-	496	521	-	455	462	-
Stage 2	-	-	-	-	-	-	449	457	-	715	520	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	922	-	-	1027	-	-	143	184	729	237	186	466
Mov Cap-2 Maneuver	-	-	-	-	-	-	143	184	-	237	186	-
Stage 1	-	-	-	-	-	-	496	521	-	455	462	-
Stage 2	-	-	-	-	-	-	429	457	-	711	520	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10	20.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	729	922	-	-	1027	-	-	287
HCM Lane V/C Ratio	0.006	-	-	-	-	-	-	0.184
HCM Control Delay (s)	10	0	-	-	0	-	-	20.3
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.7



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	155	388	401	129	180	195
Future Volume (veh/h)	155	388	401	129	180	195
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	167	417	431	139	194	210
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	218	502	779	251	232	251
Arrive On Green	0.58	0.58	0.58	0.58	0.29	0.29
Sat Flow, veh/h	259	871	1350	436	800	866
Grp Volume(v), veh/h	584	0	0	570	405	0
Grp Sat Flow(s),veh/h/ln	1130	0	0	1786	1670	0
Q Serve(g_s), s	19.8	0.0	0.0	13.4	15.3	0.0
Cycle Q Clear(g_c), s	33.1	0.0	0.0	13.4	15.3	0.0
Prop In Lane	0.29			0.24	0.48	0.52
Lane Grp Cap(c), veh/h	720	0	0	1030	484	0
V/C Ratio(X)	0.81	0.00	0.00	0.55	0.84	0.00
Avail Cap(c_a), veh/h	775	0	0	1101	484	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.5	0.0	0.0	8.9	22.4	0.0
Incr Delay (d2), s/veh	6.1	0.0	0.0	0.5	15.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	0.0	0.0	6.6	9.1	0.0
LnGrp Delay(d),s/veh	20.6	0.0	0.0	9.4	38.2	0.0
LnGrp LOS	C			A	D	
Approach Vol, veh/h		584	570		405	
Approach Delay, s/veh		20.6	9.4		38.2	
Approach LOS		C	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				43.3		24.0		43.3
Change Period (Y+Rc), s				4.5		4.5		4.5
Max Green Setting (Gmax), s				41.5		19.5		41.5
Max Q Clear Time (g_c+I1), s				35.1		17.3		15.4
Green Ext Time (p_c), s				3.7		0.3		8.7

Intersection Summary	
HCM 2010 Ctrl Delay	21.1
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	427	60	43	392	558	92	152	21	528	66	50
Future Volume (veh/h)	69	427	60	43	392	558	92	152	21	528	66	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	82	508	71	51	467	664	110	181	25	629	79	60
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	848	118	65	475	736	137	514	437	743	417	317
Arrive On Green	0.05	0.27	0.27	0.04	0.26	0.26	0.08	0.28	0.28	0.21	0.42	0.42
Sat Flow, veh/h	1774	3121	435	1774	1863	1583	1774	1863	1583	3548	984	747
Grp Volume(v), veh/h	82	287	292	51	467	664	110	181	25	629	0	139
Grp Sat Flow(s),veh/h/ln	1774	1770	1786	1774	1863	1583	1774	1863	1583	1774	0	1731
Q Serve(g_s), s	4.8	14.8	14.9	3.0	26.2	26.8	6.4	8.2	1.2	17.9	0.0	5.3
Cycle Q Clear(g_c), s	4.8	14.8	14.9	3.0	26.2	26.8	6.4	8.2	1.2	17.9	0.0	5.3
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	95	481	485	65	475	736	137	514	437	743	0	734
V/C Ratio(X)	0.87	0.60	0.60	0.78	0.98	0.90	0.80	0.35	0.06	0.85	0.00	0.19
Avail Cap(c_a), veh/h	95	481	485	120	475	736	213	514	437	743	0	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.39	0.39	0.39	0.69	0.69	0.69	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.3	33.2	33.3	50.1	38.9	25.9	47.7	30.5	27.9	39.9	0.0	18.9
Incr Delay (d2), s/veh	25.6	2.1	2.2	5.2	30.3	12.2	5.6	1.9	0.2	11.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	7.5	7.7	1.6	17.5	20.1	3.4	4.5	0.6	9.9	0.0	2.6
LnGrp Delay(d),s/veh	74.9	35.4	35.4	55.3	69.1	38.1	53.3	32.4	28.2	51.3	0.0	19.5
LnGrp LOS	E	D	D	E	E	D	D	C	C	D		B
Approach Vol, veh/h		661			1182			316			768	
Approach Delay, s/veh		40.3			51.1			39.3			45.5	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	34.7	12.7	50.7	10.2	33.0	28.2	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	7.1	25.3	12.6	38.4	5.6	26.8	22.0	* 29
Max Q Clear Time (g_c+I1), s	5.0	16.9	8.4	7.3	6.8	28.8	19.9	10.2
Green Ext Time (p_c), s	0.0	6.8	0.0	2.5	0.0	0.0	0.7	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	45.9
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	277	605	255	33	652	70	331	183	62	55	170	418
Future Volume (veh/h)	277	605	255	33	652	70	331	183	62	55	170	418
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	292	637	268	35	686	74	348	193	65	58	179	440
Adj No. of Lanes	2	2	1	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	1346	602	44	982	106	406	685	582	74	543	462
Arrive On Green	0.10	0.38	0.38	0.02	0.30	0.30	0.12	0.37	0.37	0.04	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	1774	3224	347	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	292	637	268	35	376	384	348	193	65	58	179	440
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1801	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.0	16.3	15.1	2.4	22.5	22.6	11.9	8.8	3.2	3.9	9.0	32.7
Cycle Q Clear(g_c), s	10.0	16.3	15.1	2.4	22.5	22.6	11.9	8.8	3.2	3.9	9.0	32.7
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	347	1346	602	44	539	549	406	685	582	74	543	462
V/C Ratio(X)	0.84	0.47	0.44	0.79	0.70	0.70	0.86	0.28	0.11	0.78	0.33	0.95
Avail Cap(c_a), veh/h	442	1346	602	72	539	549	499	685	582	140	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	28.1	27.7	58.2	36.8	36.9	51.9	26.8	25.0	56.9	33.3	41.7
Incr Delay (d2), s/veh	6.6	0.8	1.6	10.9	7.3	7.2	10.2	1.0	0.4	6.4	1.6	31.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	8.1	6.9	1.3	12.1	12.3	6.2	4.7	1.5	2.0	4.9	18.4
LnGrp Delay(d),s/veh	59.6	28.9	29.4	69.1	44.2	44.1	62.1	27.8	25.4	63.3	34.9	73.3
LnGrp LOS	E	C	C	E	D	D	E	C	C	E	C	E
Approach Vol, veh/h		1197			795			606			677	
Approach Delay, s/veh		36.5			45.2			47.3			62.3	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	52.2	18.7	41.5	16.7	43.1	9.6	50.6
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	4.3	* 41	17.4	* 35	15.4	30.3	9.5	42.6
Max Q Clear Time (g_c+I1), s	4.4	18.3	13.9	34.7	12.0	24.6	5.9	10.8
Green Ext Time (p_c), s	0.0	10.1	0.2	0.1	0.1	4.0	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	108	6	101	34	112	10	129	140	46	78	4
Future Volume (veh/h)	8	108	6	101	34	112	10	129	140	46	78	4
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	10	137	8	128	43	142	13	163	177	58	99	5
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	347	20	285	103	339	354	371	447	130	222	11
Arrive On Green	0.01	0.20	0.20	0.08	0.27	0.27	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	1743	102	3442	381	1259	1774	1863	1583	652	1112	56
Grp Volume(v), veh/h	10	0	145	128	0	185	13	163	177	162	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1845	1721	0	1641	1774	1863	1583	1820	0	0
Q Serve(g_s), s	0.3	0.0	3.4	1.8	0.0	4.7	0.3	3.9	4.5	3.9	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	3.4	1.8	0.0	4.7	0.3	3.9	4.5	3.9	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.77	1.00		1.00	0.36		0.03
Lane Grp Cap(c), veh/h	23	0	368	285	0	442	354	371	447	363	0	0
V/C Ratio(X)	0.43	0.00	0.39	0.45	0.00	0.42	0.04	0.44	0.40	0.45	0.00	0.00
Avail Cap(c_a), veh/h	212	0	846	480	0	785	778	817	826	798	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.6	0.0	17.4	21.9	0.0	15.1	16.2	17.6	14.5	17.6	0.0	0.0
Incr Delay (d2), s/veh	12.4	0.0	0.7	1.1	0.0	0.6	0.0	0.8	0.6	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	1.8	0.9	0.0	2.2	0.1	2.0	2.0	2.1	0.0	0.0
LnGrp Delay(d),s/veh	37.0	0.0	18.1	23.0	0.0	15.7	16.2	18.4	15.1	18.5	0.0	0.0
LnGrp LOS	D		B	C		B	B	B	B	B		
Approach Vol, veh/h		155			313			353			162	
Approach Delay, s/veh		19.4			18.7			16.7			18.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.2	14.0		14.0	4.7	17.5		14.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	23.0		22.0	6.0	24.0		22.0
Max Q Clear Time (g_c+I1), s	3.8	5.4		5.9	2.3	6.7		6.5
Green Ext Time (p_c), s	0.1	1.7		0.7	0.0	1.6		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

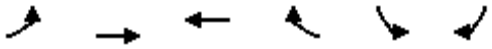
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	797	19	4	622	22	0	0	0	20	2	6
Future Vol, veh/h	2	797	19	4	622	22	0	0	0	20	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	830	20	4	648	23	0	0	0	21	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	671	0	0	850	0	0	1516	1523	425	1087	1522	659
Stage 1	-	-	-	-	-	-	844	844	-	668	668	-
Stage 2	-	-	-	-	-	-	672	679	-	419	854	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	917	-	-	786	-	-	90	118	578	182	118	463
Stage 1	-	-	-	-	-	-	325	378	-	447	455	-
Stage 2	-	-	-	-	-	-	444	450	-	583	374	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	917	-	-	786	-	-	87	117	578	180	117	463
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	117	-	180	117	-
Stage 1	-	-	-	-	-	-	324	376	-	445	451	-
Stage 2	-	-	-	-	-	-	432	446	-	581	373	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	26.3
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	917	-	-	786	-	-	198
HCM Lane V/C Ratio	-	0.002	-	-	0.005	-	-	0.147
HCM Control Delay (s)	0	8.9	0	-	9.6	0	-	26.3
HCM Lane LOS	A	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.5



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	291	446	540	158	93	127
Future Volume (veh/h)	291	446	540	158	93	127
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	297	455	551	161	95	130
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	336	459	1093	319	99	136
Arrive On Green	0.79	0.79	0.79	0.79	0.14	0.14
Sat Flow, veh/h	377	582	1386	405	698	955
Grp Volume(v), veh/h	752	0	0	712	226	0
Grp Sat Flow(s),veh/h/ln	959	0	0	1791	1659	0
Q Serve(g_s), s	83.1	0.0	0.0	18.1	17.6	0.0
Cycle Q Clear(g_c), s	101.2	0.0	0.0	18.1	17.6	0.0
Prop In Lane	0.39			0.23	0.42	0.58
Lane Grp Cap(c), veh/h	795	0	0	1412	236	0
V/C Ratio(X)	0.95	0.00	0.00	0.50	0.96	0.00
Avail Cap(c_a), veh/h	795	0	0	1412	236	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	4.8	55.4	0.0
Incr Delay (d2), s/veh	20.0	0.0	0.0	0.3	46.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	30.7	0.0	0.0	8.8	11.1	0.0
LnGrp Delay(d),s/veh	42.4	0.0	0.0	5.1	101.9	0.0
LnGrp LOS	D			A	F	
Approach Vol, veh/h		752	712		226	
Approach Delay, s/veh		42.4	5.1		101.9	
Approach LOS		D	A		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				107.0		23.0		107.0
Change Period (Y+Rc), s				4.5		4.5		4.5
Max Green Setting (Gmax), s				102.5		18.5		102.5
Max Q Clear Time (g_c+I1), s				103.2		19.6		20.1
Green Ext Time (p_c), s				0.0		0.0		18.7

Intersection Summary	
HCM 2010 Ctrl Delay	34.6
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	453	146	58	466	527	139	128	43	341	117	48
Future Volume (veh/h)	48	453	146	58	466	527	139	128	43	341	117	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	472	152	60	485	549	145	133	45	355	122	50
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	858	275	77	619	718	447	601	511	415	240	99
Arrive On Green	0.04	0.33	0.33	0.04	0.33	0.33	0.25	0.32	0.32	0.12	0.19	0.19
Sat Flow, veh/h	1774	2639	844	1774	1863	1583	1774	1863	1583	3442	1257	515
Grp Volume(v), veh/h	50	315	309	60	485	549	145	133	45	355	0	172
Grp Sat Flow(s),veh/h/ln	1774	1770	1714	1774	1863	1583	1774	1863	1583	1721	0	1772
Q Serve(g_s), s	3.2	16.8	17.0	3.9	27.0	33.4	7.7	6.0	2.3	11.6	0.0	10.0
Cycle Q Clear(g_c), s	3.2	16.8	17.0	3.9	27.0	33.4	7.7	6.0	2.3	11.6	0.0	10.0
Prop In Lane	1.00		0.49	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	64	576	557	77	619	718	447	601	511	415	0	339
V/C Ratio(X)	0.78	0.55	0.55	0.78	0.78	0.77	0.32	0.22	0.09	0.85	0.00	0.51
Avail Cap(c_a), veh/h	93	576	557	147	619	718	447	601	511	557	0	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.18	0.18	0.18	0.63	0.63	0.63	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.0	31.9	31.9	54.5	34.6	26.3	35.0	28.4	27.1	49.6	0.0	41.6
Incr Delay (d2), s/veh	2.6	0.7	0.7	4.0	6.2	4.9	1.9	0.8	0.3	7.6	0.0	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.3	8.2	2.0	14.9	15.4	4.0	3.2	1.0	6.0	0.0	5.4
LnGrp Delay(d),s/veh	57.6	32.5	32.6	58.4	40.8	31.2	36.9	29.2	27.5	57.2	0.0	47.0
LnGrp LOS	E	C	C	E	D	C	D	C	C	E		D
Approach Vol, veh/h		674			1094			323			527	
Approach Delay, s/veh		34.4			37.0			32.5			53.9	
Approach LOS		C			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	43.6	33.6	28.2	8.8	44.4	18.5	43.3
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	5.0	32.9	29.0	22.0	6.0	36.4	18.6	* 34
Max Q Clear Time (g_c+I1), s	5.9	19.0	9.7	12.0	5.2	35.4	13.6	8.0
Green Ext Time (p_c), s	0.0	10.2	0.5	1.6	0.0	0.9	0.2	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	836	306	79	583	54	373	292	163	68	145	238
Future Volume (veh/h)	285	836	306	79	583	54	373	292	163	68	145	238
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	288	844	309	80	589	55	377	295	165	69	146	240
Adj No. of Lanes	2	2	1	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	1441	645	94	1187	111	430	619	526	87	477	406
Arrive On Green	0.10	0.41	0.41	0.05	0.36	0.36	0.13	0.33	0.33	0.05	0.26	0.26
Sat Flow, veh/h	3442	3539	1583	1774	3273	305	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	288	844	309	80	318	326	377	295	165	69	146	240
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1809	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	11.5	26.0	20.1	6.3	19.5	19.6	15.1	17.6	10.9	5.4	8.9	18.6
Cycle Q Clear(g_c), s	11.5	26.0	20.1	6.3	19.5	19.6	15.1	17.6	10.9	5.4	8.9	18.6
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	336	1441	645	94	642	656	430	619	526	87	477	406
V/C Ratio(X)	0.86	0.59	0.48	0.85	0.50	0.50	0.88	0.48	0.31	0.79	0.31	0.59
Avail Cap(c_a), veh/h	477	1441	645	94	642	656	600	619	526	170	477	406
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	32.3	30.6	65.8	34.7	34.7	60.2	37.1	34.9	65.8	42.0	45.6
Incr Delay (d2), s/veh	3.0	0.6	0.9	47.4	2.7	2.7	8.2	2.6	1.6	5.9	1.7	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	12.8	8.9	4.3	10.0	10.3	7.7	9.5	5.0	2.8	4.8	8.8
LnGrp Delay(d),s/veh	65.2	32.9	31.5	113.2	37.4	37.4	68.3	39.7	36.4	71.7	43.7	51.8
LnGrp LOS	E	C	C	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1441			724			837			455	
Approach Delay, s/veh		39.1			45.8			52.0			52.2	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	63.5	22.1	42.4	18.3	57.3	11.5	53.0
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.4	* 51	24.4	* 36	19.4	38.5	13.4	46.5
Max Q Clear Time (g_c+I1), s	9.3	28.0	17.1	20.6	13.5	21.6	7.4	19.6
Green Ext Time (p_c), s	0.0	11.1	0.4	1.8	0.1	9.4	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.3
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	71	17	307	110	41	14	206	280	37	241	3
Future Volume (veh/h)	5	71	17	307	110	41	14	206	280	37	241	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	6	85	20	365	131	49	17	245	333	44	287	4
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	222	52	500	374	140	408	429	594	56	362	5
Arrive On Green	0.01	0.15	0.15	0.15	0.29	0.29	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	1459	343	3442	1294	484	1774	1863	1583	243	1582	22
Grp Volume(v), veh/h	6	0	105	365	0	180	17	245	333	335	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1802	1721	0	1777	1774	1863	1583	1847	0	0
Q Serve(g_s), s	0.2	0.0	3.4	6.7	0.0	5.3	0.5	7.7	10.9	11.2	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	3.4	6.7	0.0	5.3	0.5	7.7	10.9	11.2	0.0	0.0
Prop In Lane	1.00		0.19	1.00		0.27	1.00		1.00	0.13		0.01
Lane Grp Cap(c), veh/h	14	0	274	500	0	515	408	429	594	423	0	0
V/C Ratio(X)	0.43	0.00	0.38	0.73	0.00	0.35	0.04	0.57	0.56	0.79	0.00	0.00
Avail Cap(c_a), veh/h	149	0	576	943	0	907	675	709	832	843	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.4	0.0	25.1	26.8	0.0	18.4	19.7	22.4	16.2	23.9	0.0	0.0
Incr Delay (d2), s/veh	19.4	0.0	0.9	2.1	0.0	0.4	0.0	1.2	0.8	3.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	1.8	3.3	0.0	2.6	0.2	4.1	4.9	6.1	0.0	0.0
LnGrp Delay(d),s/veh	51.8	0.0	25.9	28.9	0.0	18.9	19.7	23.6	17.1	27.2	0.0	0.0
LnGrp LOS	D		C	C		B	B	C	B	C		
Approach Vol, veh/h		111			545			595			335	
Approach Delay, s/veh		27.3			25.6			19.8			27.2	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.5	14.0		19.0	4.5	23.0		19.1
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	21.0		30.0	5.5	33.5		25.0
Max Q Clear Time (g_c+I1), s	8.7	5.4		13.2	2.2	7.3		12.9
Green Ext Time (p_c), s	0.9	1.3		1.8	0.0	1.5		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

APPENDIX C-4
Intersection LOS Analysis
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	497	3	0	582	15	0	0	4	29	1	19
Future Vol, veh/h	0	497	3	0	582	15	0	0	4	29	1	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	534	3	0	626	16	0	0	4	31	1	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	642	0	0	538	0	0	1181	1178	536	1172	1172	634
Stage 1	-	-	-	-	-	-	536	536	-	634	634	-
Stage 2	-	-	-	-	-	-	645	642	-	538	538	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	943	-	-	1030	-	-	167	191	545	169	192	479
Stage 1	-	-	-	-	-	-	529	523	-	467	473	-
Stage 2	-	-	-	-	-	-	461	469	-	527	522	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	943	-	-	1030	-	-	159	191	545	168	192	479
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	191	-	168	192	-
Stage 1	-	-	-	-	-	-	529	523	-	467	473	-
Stage 2	-	-	-	-	-	-	440	469	-	523	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11.7	25.8
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	545	943	-	-	1030	-	-	225
HCM Lane V/C Ratio	0.008	-	-	-	-	-	-	0.234
HCM Control Delay (s)	11.7	0	-	-	0	-	-	25.8
HCM Lane LOS	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.9

Intersection	
Intersection Delay, s/veh	48.7
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	164	374	366	132	133	207
Future Vol, veh/h	164	374	366	132	133	207
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	176	402	394	142	143	223
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	67.4	45.8	23.2
HCM LOS	F	E	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	0%	39%
Vol Thru, %	70%	73%	0%
Vol Right, %	0%	27%	61%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	538	498	340
LT Vol	164	0	133
Through Vol	374	366	0
RT Vol	0	132	207
Lane Flow Rate	578	535	366
Geometry Grp	1	1	1
Degree of Util (X)	1.017	0.923	0.684
Departure Headway (Hd)	6.328	6.206	6.731
Convergence, Y/N	Yes	Yes	Yes
Cap	573	584	537
Service Time	4.384	4.264	4.786
HCM Lane V/C Ratio	1.009	0.916	0.682
HCM Control Delay	67.4	45.8	23.2
HCM Lane LOS	F	E	C
HCM 95th-tile Q	15.3	11.6	5.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	459	20	49	533	489	21	108	15	523	37	53
Future Volume (veh/h)	73	459	20	49	533	489	21	108	15	523	37	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	87	546	24	58	635	582	25	129	18	713	0	0
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	2631	116	74	2636	1523	490	514	437	770	433	0
Arrive On Green	0.06	0.76	0.76	0.04	0.74	0.74	0.28	0.28	0.28	0.22	0.00	0.00
Sat Flow, veh/h	1774	3454	152	1774	3539	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	87	279	291	58	635	582	25	129	18	713	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1836	1774	1770	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	5.1	4.7	4.7	3.4	5.9	2.3	1.1	5.7	0.9	20.7	0.0	0.0
Cycle Q Clear(g_c), s	5.1	4.7	4.7	3.4	5.9	2.3	1.1	5.7	0.9	20.7	0.0	0.0
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	105	1348	1399	74	2636	1523	490	514	437	770	433	0
V/C Ratio(X)	0.83	0.21	0.21	0.78	0.24	0.38	0.05	0.25	0.04	0.93	0.00	0.00
Avail Cap(c_a), veh/h	105	1348	1399	108	2636	1523	490	514	437	770	433	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.9	3.5	3.5	49.8	4.2	0.1	27.9	29.6	27.8	40.3	0.0	0.0
Incr Delay (d2), s/veh	38.5	0.3	0.3	10.4	0.2	0.7	0.2	1.2	0.2	18.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	2.4	2.5	1.9	2.9	1.1	0.6	3.1	0.4	12.1	0.0	0.0
LnGrp Delay(d),s/veh	87.4	3.9	3.9	60.2	4.4	0.8	28.1	30.7	28.0	58.9	0.0	0.0
LnGrp LOS	F	A	A	E	A	A	C	C	C	E		
Approach Vol, veh/h		657			1275			172			713	
Approach Delay, s/veh		14.9			5.3			30.1			58.9	
Approach LOS		B			A			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	87.8	33.6	30.6	10.8	86.0	29.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	6.4	25.2	29.0	22.8	6.2	25.4	22.8	* 29
Max Q Clear Time (g_c+I1), s	5.4	6.7	3.1	0.0	7.1	7.9	22.7	7.7
Green Ext Time (p_c), s	0.0	13.6	0.0	0.0	0.0	13.0	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	615	432	0	893	327	0	0	0	309	0	178
Future Volume (veh/h)	0	615	432	0	893	327	0	0	0	309	0	178
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	668	470	0	971	355				336	0	193
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2163	968	0	2163	968				1032	0	836
Arrive On Green	0.00	0.61	0.61	0.00	0.20	0.20				0.30	0.00	0.30
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	668	470	0	971	355				336	0	193
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	8.1	14.8	0.0	21.7	17.4				6.8	0.0	4.7
Cycle Q Clear(g_c), s	0.0	8.1	14.8	0.0	21.7	17.4				6.8	0.0	4.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2163	968	0	2163	968				1032	0	836
V/C Ratio(X)	0.00	0.31	0.49	0.00	0.45	0.37				0.33	0.00	0.23
Avail Cap(c_a), veh/h	0	2163	968	0	2163	968				1032	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.57	0.57	0.00	0.89	0.89				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.4	9.7	0.0	22.6	20.9				24.4	0.0	23.7
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.0	0.6	1.0				0.8	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	6.5	0.0	10.8	7.9				3.3	0.0	1.9
LnGrp Delay(d),s/veh	0.0	8.4	9.9	0.0	23.2	21.9				25.3	0.0	24.3
LnGrp LOS		A	A		C	C				C		C
Approach Vol, veh/h		1138			1326						529	
Approach Delay, s/veh		9.0			22.9						24.9	
Approach LOS		A			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		31.0		59.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		55.0		27.0		55.0		
Max Q Clear Time (g_c+I1), s		16.8		8.8		23.7		
Green Ext Time (p_c), s		20.4		1.9		18.3		

Intersection Summary		
HCM 2010 Ctrl Delay		18.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	803	0	0	935	405	0	0	334	0	0	315
Future Volume (veh/h)	121	803	0	0	935	405	0	0	334	0	0	315
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	127	845	0	0	984	426	0	0	352	0	0	332
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	157	3382	0	0	2911	1302	0	0	0	0	0	0
Arrive On Green	0.09	0.96	0.00	0.00	0.82	0.82	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	127	845	0	0	984	426		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	6.3	1.3	0.0	0.0	6.2	5.9						
Cycle Q Clear(g_c), s	6.3	1.3	0.0	0.0	6.2	5.9						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	157	3382	0	0	2911	1302						
V/C Ratio(X)	0.81	0.25	0.00	0.00	0.34	0.33						
Avail Cap(c_a), veh/h	158	3382	0	0	2911	1302						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.72	0.72						
Uniform Delay (d), s/veh	40.3	0.1	0.0	0.0	2.0	1.9						
Incr Delay (d2), s/veh	24.9	0.2	0.0	0.0	0.2	0.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	4.2	0.5	0.0	0.0	3.0	2.7						
LnGrp Delay(d),s/veh	65.1	0.3	0.0	0.0	2.2	2.4						
LnGrp LOS	E	A			A	A						
Approach Vol, veh/h		972			1410							
Approach Delay, s/veh		8.8			2.3							
Approach LOS		A			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			12.0	78.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		63.5			8.0	51.5		
Max Q Clear Time (g_c+I1), s		3.3			8.3	8.2		
Green Ext Time (p_c), s		23.9			0.0	21.1		

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	572	270	35	787	74	308	196	66	56	181	245
Future Volume (veh/h)	295	572	270	35	787	74	308	196	66	56	181	245
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	311	602	284	37	828	78	324	206	69	59	191	258
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	1375	615	81	1447	136	383	671	570	76	543	462
Arrive On Green	0.11	0.39	0.39	0.02	0.31	0.31	0.11	0.36	0.36	0.04	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4731	444	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	311	602	284	37	592	314	324	206	69	59	191	258
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1784	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.7	15.0	16.0	1.3	17.6	17.8	11.1	9.5	3.5	4.0	9.7	16.5
Cycle Q Clear(g_c), s	10.7	15.0	16.0	1.3	17.6	17.8	11.1	9.5	3.5	4.0	9.7	16.5
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	1375	615	81	1037	546	383	671	570	76	543	462
V/C Ratio(X)	0.85	0.44	0.46	0.46	0.57	0.57	0.85	0.31	0.12	0.78	0.35	0.56
Avail Cap(c_a), veh/h	470	1375	615	141	1037	546	499	671	570	140	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	27.0	27.3	57.8	35.0	35.1	52.3	27.6	25.7	56.9	33.5	36.0
Incr Delay (d2), s/veh	8.7	0.9	2.3	1.5	2.3	4.4	8.2	1.2	0.4	6.3	1.8	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	7.5	7.4	0.6	8.6	9.4	5.7	5.1	1.6	2.1	5.3	7.9
LnGrp Delay(d),s/veh	61.4	28.0	29.6	59.3	37.3	39.4	60.6	28.8	26.1	63.2	35.3	40.8
LnGrp LOS	E	C	C	E	D	D	E	C	C	E	D	D
Approach Vol, veh/h		1197			943			599			508	
Approach Delay, s/veh		37.1			38.9			45.7			41.3	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	53.1	17.9	41.5	17.3	43.2	9.7	49.7
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	4.8	* 41	17.4	* 35	16.4	29.3	9.5	42.6
Max Q Clear Time (g_c+I1), s	12.3	18.0	13.1	18.5	12.7	19.8	6.0	11.5
Green Ext Time (p_c), s	0.0	11.3	0.3	1.6	0.1	6.4	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	12	0	58	4	119	0	0	169	49	0	4
Future Vol, veh/h	8	12	0	58	4	119	0	0	169	49	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	0	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	15	0	73	5	151	0	0	214	62	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	156	0	0	15	0	0	265	338	15	262	262	80
Stage 1	-	-	-	-	-	-	35	35	-	227	227	-
Stage 2	-	-	-	-	-	-	230	303	-	35	35	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1424	-	-	1603	-	-	688	583	1065	691	643	980
Stage 1	-	-	-	-	-	-	981	866	-	776	716	-
Stage 2	-	-	-	-	-	-	773	664	-	981	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1424	-	-	1603	-	-	657	553	1065	530	609	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	657	553	-	530	609	-
Stage 1	-	-	-	-	-	-	974	860	-	771	683	-
Stage 2	-	-	-	-	-	-	734	634	-	778	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	2.4	9.2	12.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1065	1424	-	-	1603	-	-	549
HCM Lane V/C Ratio	-	-	0.201	0.007	-	-	0.046	-	-	0.122
HCM Control Delay (s)	0	0	9.2	7.5	0	-	7.4	-	-	12.5
HCM Lane LOS	A	A	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7	0	-	-	0.1	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	274	20	13	360	56	15	158	16	33	205	31
Future Volume (veh/h)	74	274	20	13	360	56	15	158	16	33	205	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	86	319	23	15	419	65	17	184	19	38	238	36
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	1277	398	50	740	112	742	1094	113	796	1227	1043
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	1761	5085	1583	46	2948	448	1101	1661	172	1174	1863	1583
Grp Volume(v), veh/h	86	319	23	264	0	235	17	0	203	38	238	36
Grp Sat Flow(s),veh/h/ln	880	1695	1583	1826	0	1616	1101	0	1832	1174	1863	1583
Q Serve(g_s), s	4.5	5.0	1.1	0.0	0.0	12.7	0.6	0.0	4.2	1.3	5.0	0.8
Cycle Q Clear(g_c), s	17.2	5.0	1.1	12.4	0.0	12.7	5.6	0.0	4.2	5.5	5.0	0.8
Prop In Lane	1.00		1.00	0.06		0.28	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	362	1277	398	497	0	406	742	0	1207	796	1227	1043
V/C Ratio(X)	0.24	0.25	0.06	0.53	0.00	0.58	0.02	0.00	0.17	0.05	0.19	0.03
Avail Cap(c_a), veh/h	704	2263	705	842	0	719	742	0	1207	796	1227	1043
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	29.9	28.5	32.7	0.0	32.8	7.8	0.0	6.5	7.6	6.7	6.0
Incr Delay (d2), s/veh	0.3	0.1	0.1	0.9	0.0	1.3	0.1	0.0	0.3	0.1	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.3	0.5	6.5	0.0	5.8	0.2	0.0	2.2	0.4	2.7	0.4
LnGrp Delay(d),s/veh	40.7	30.0	28.5	33.6	0.0	34.1	7.8	0.0	6.8	7.7	7.0	6.0
LnGrp LOS	D	C	C	C		C	A		A	A	A	A
Approach Vol, veh/h		428			499			220			312	
Approach Delay, s/veh		32.1			33.8			6.9			7.0	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		70.4		29.6		70.4		29.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		46.5		44.5		46.5		44.5
Max Q Clear Time (g_c+I1), s		7.6		19.2		7.5		14.7
Green Ext Time (p_c), s		3.0		5.9		3.0		6.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	19	12	20	24	12	19	58	2	15	186	135
Future Volume (veh/h)	85	19	12	20	24	12	19	58	2	15	186	135
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	94	21	13	22	27	13	21	64	2	17	207	150
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	562	478	48	878	393	46	885	28	38	878	393
Arrive On Green	0.08	0.30	0.30	0.03	0.25	0.25	0.03	0.25	0.25	0.02	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3504	109	1774	3539	1583
Grp Volume(v), veh/h	94	21	13	22	27	13	21	32	34	17	207	150
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1844	1774	1770	1583
Q Serve(g_s), s	2.1	0.3	0.2	0.5	0.2	0.3	0.5	0.6	0.6	0.4	1.9	3.2
Cycle Q Clear(g_c), s	2.1	0.3	0.2	0.5	0.2	0.3	0.5	0.6	0.6	0.4	1.9	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	143	562	478	48	878	393	46	447	466	38	878	393
V/C Ratio(X)	0.66	0.04	0.03	0.46	0.03	0.03	0.46	0.07	0.07	0.45	0.24	0.38
Avail Cap(c_a), veh/h	660	1479	1257	396	2283	1021	352	1098	1144	352	2195	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	9.9	9.9	19.3	11.5	11.5	19.3	11.5	11.5	19.5	12.1	12.6
Incr Delay (d2), s/veh	5.0	0.0	0.0	6.7	0.0	0.0	6.9	0.1	0.1	7.9	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	0.1	0.3	0.1	0.1	0.3	0.3	0.3	0.3	0.9	1.5
LnGrp Delay(d),s/veh	23.0	10.0	9.9	26.0	11.5	11.5	26.2	11.5	11.5	27.4	12.2	13.2
LnGrp LOS	C	A	A	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		128			62			87			374	
Approach Delay, s/veh		19.5			16.6			15.1			13.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	16.2	5.0	14.0	7.3	14.0	4.9	14.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.6	32.0	8.0	25.0	15.0	26.0	8.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	2.3	2.5	5.2	4.1	2.3	2.4	2.6
Green Ext Time (p_c), s	0.0	0.3	0.0	1.9	0.1	0.3	0.0	1.9

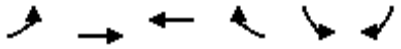
Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	113	105	84	262	273
Future Volume (veh/h)	11	113	105	84	262	273
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	12	126	117	93	291	303
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	178	159	1032	877	326	1460
Arrive On Green	0.10	0.10	0.55	0.55	0.18	0.78
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	12	126	117	93	291	303
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	0.6	7.8	3.0	2.8	16.0	4.2
Cycle Q Clear(g_c), s	0.6	7.8	3.0	2.8	16.0	4.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	178	159	1032	877	326	1460
V/C Ratio(X)	0.07	0.79	0.11	0.11	0.89	0.21
Avail Cap(c_a), veh/h	365	326	1032	877	593	1460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	44.0	10.6	10.6	39.8	2.8
Incr Delay (d2), s/veh	0.1	7.6	0.2	0.2	3.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.7	1.6	1.3	8.2	2.2
LnGrp Delay(d),s/veh	40.9	51.6	10.8	10.8	43.3	3.1
LnGrp LOS	D	D	B	B	D	A
Approach Vol, veh/h	138		210			594
Approach Delay, s/veh	50.7		10.8			22.8
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	23.0	61.6				84.6		15.4
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	33.4	29.8				67.8		20.6
Max Q Clear Time (g_c+I1), s	19.0	5.0				6.2		9.8
Green Ext Time (p_c), s	0.4	6.4				7.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.2
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	224	222	30	1	13
Future Volume (veh/h)	15	224	222	30	1	13
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	18	273	271	37	1	16
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	42	845	530	72	1152	1028
Arrive On Green	0.02	0.24	0.17	0.17	0.65	0.65
Sat Flow, veh/h	1774	3632	3227	423	1774	1583
Grp Volume(v), veh/h	18	273	152	156	1	16
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1788	1774	1583
Q Serve(g_s), s	1.0	6.4	7.8	8.0	0.0	0.4
Cycle Q Clear(g_c), s	1.0	6.4	7.8	8.0	0.0	0.4
Prop In Lane	1.00			0.24	1.00	1.00
Lane Grp Cap(c), veh/h	42	845	299	302	1152	1028
V/C Ratio(X)	0.43	0.32	0.51	0.52	0.00	0.02
Avail Cap(c_a), veh/h	255	2180	754	762	1152	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	48.2	31.4	37.8	37.8	6.2	6.2
Incr Delay (d2), s/veh	1.9	0.3	2.4	2.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.1	4.0	4.1	0.0	0.6
LnGrp Delay(d),s/veh	50.1	31.7	40.2	40.3	6.2	6.2
LnGrp LOS	D	C	D	D	A	A
Approach Vol, veh/h		291	308		17	
Approach Delay, s/veh		32.9	40.3		6.2	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.3		70.7	7.0	22.3
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				61.6		27.2	14.4	42.6
Max Q Clear Time (g_c+I1), s				8.4		2.4	3.0	10.0
Green Ext Time (p_c), s				7.6		0.0	0.0	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	35.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	117	7	5	11	160	143	6	11	362	15
Future Volume (veh/h)	11	13	117	7	5	11	160	143	6	11	362	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	16	143	9	6	13	195	174	7	13	441	18
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	30	405	344	21	396	337	260	1282	51	30	832	34
Arrive On Green	0.02	0.22	0.22	0.01	0.21	0.21	0.15	0.37	0.37	0.02	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3469	139	1774	3466	141
Grp Volume(v), veh/h	13	16	143	9	6	13	195	88	93	13	225	234
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1838	1774	1770	1838
Q Serve(g_s), s	0.3	0.3	3.2	0.2	0.1	0.3	4.4	1.4	1.4	0.3	4.6	4.6
Cycle Q Clear(g_c), s	0.3	0.3	3.2	0.2	0.1	0.3	4.4	1.4	1.4	0.3	4.6	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.08
Lane Grp Cap(c), veh/h	30	405	344	21	396	337	260	654	680	30	425	441
V/C Ratio(X)	0.44	0.04	0.42	0.43	0.02	0.04	0.75	0.14	0.14	0.44	0.53	0.53
Avail Cap(c_a), veh/h	256	1029	875	256	1029	875	895	1657	1722	256	1020	1059
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	12.9	14.0	20.4	13.0	13.0	17.0	8.7	8.7	20.3	13.8	13.8
Incr Delay (d2), s/veh	9.8	0.0	0.8	13.1	0.0	0.0	4.4	0.1	0.1	9.8	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	1.5	0.2	0.1	0.1	2.4	0.7	0.7	0.2	2.4	2.5
LnGrp Delay(d),s/veh	30.1	12.9	14.8	33.5	13.0	13.1	21.4	8.8	8.8	30.1	14.8	14.8
LnGrp LOS	C	B	B	C	B	B	C	A	A	C	B	B
Approach Vol, veh/h		172			28			376			472	
Approach Delay, s/veh		15.8			19.6			15.3			15.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.7	19.4	4.5	13.1	10.1	14.0	4.7	12.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	39.0	6.0	23.0	21.0	24.0	6.0	23.0
Max Q Clear Time (g_c+I1), s	2.3	3.4	2.2	5.2	6.4	6.6	2.3	2.3
Green Ext Time (p_c), s	0.0	3.5	0.0	0.5	0.4	3.0	0.0	0.5

Intersection Summary		
HCM 2010 Ctrl Delay		15.5
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	2	389	1	0	0	0	186	0	0	0
Future Vol, veh/h	0	1	2	389	1	0	0	0	186	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	2	427	1	0	0	0	204	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.6	13.3	9.5	0
HCM LOS	A	B	A	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	33%	0%	100%
Vol Right, %	0%	100%	67%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	186	3	390	0
LT Vol	0	0	0	389	0
Through Vol	0	0	1	1	0
RT Vol	0	186	2	0	0
Lane Flow Rate	0	204	3	429	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0	0.277	0.004	0.554	0
Departure Headway (Hd)	5.591	4.885	4.548	4.651	5.369
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	0	734	782	776	0
Service Time	3.328	2.622	2.603	2.685	3.427
HCM Lane V/C Ratio	0	0.278	0.004	0.553	0
HCM Control Delay	8.3	9.5	7.6	13.3	8.4
HCM Lane LOS	N	A	A	B	N
HCM 95th-tile Q	0	1.1	0	3.4	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	3	58	6	4	1	31	334	2	1	239	21
Future Volume (veh/h)	20	3	58	6	4	1	31	334	2	1	239	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	3	67	7	5	1	36	384	2	1	275	24
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	119	101	9	6	1	65	2659	14	3	2313	200
Arrive On Green	0.06	0.06	0.06	0.01	0.01	0.01	0.04	0.74	0.74	0.00	0.70	0.70
Sat Flow, veh/h	1774	1863	1583	964	689	138	1774	3610	19	1774	3296	286
Grp Volume(v), veh/h	23	3	67	13	0	0	36	188	198	1	147	152
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1790	0	0	1774	1770	1859	1774	1770	1812
Q Serve(g_s), s	1.4	0.2	4.6	0.8	0.0	0.0	2.2	3.4	3.5	0.1	3.0	3.0
Cycle Q Clear(g_c), s	1.4	0.2	4.6	0.8	0.0	0.0	2.2	3.4	3.5	0.1	3.0	3.0
Prop In Lane	1.00		1.00	0.54		0.08	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	113	119	101	16	0	0	65	1303	1369	3	1242	1272
V/C Ratio(X)	0.20	0.03	0.66	0.81	0.00	0.00	0.56	0.14	0.14	0.34	0.12	0.12
Avail Cap(c_a), veh/h	471	494	420	299	0	0	168	1303	1369	135	1242	1272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	48.3	50.3	54.4	0.0	0.0	52.1	4.3	4.3	54.9	5.3	5.3
Incr Delay (d2), s/veh	4.0	0.4	29.3	61.0	0.0	0.0	2.8	0.2	0.2	24.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.1	2.8	0.7	0.0	0.0	1.1	1.8	1.8	0.0	1.5	1.5
LnGrp Delay(d),s/veh	52.8	48.7	79.7	115.4	0.0	0.0	54.9	4.5	4.5	78.8	5.5	5.5
LnGrp LOS	D	D	E	F			D	A	A	E	A	A
Approach Vol, veh/h		93			13			422			300	
Approach Delay, s/veh		72.0			115.4			8.8			5.8	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	86.8		12.8	8.6	83.0		5.6
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	8.4	33.2		29.2	10.4	31.2		18.4
Max Q Clear Time (g_c+I1), s	2.1	5.5		6.6	4.2	5.0		2.8
Green Ext Time (p_c), s	0.0	9.9		0.9	0.0	9.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1193	217	176	1209	6	98	4	251	6	20	13
Future Volume (veh/h)	10	1193	217	176	1209	6	98	4	251	6	20	13
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	11	1297	236	191	1314	7	107	4	273	7	22	14
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1938	867	142	2957	921	134	5	316	35	255	289
Arrive On Green	0.05	0.55	0.55	0.08	0.58	0.58	0.08	0.20	0.20	0.01	0.14	0.14
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	23	1564	3442	1863	1583
Grp Volume(v), veh/h	11	1297	236	191	1314	7	107	0	277	7	22	14
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1587	1721	1863	1583
Q Serve(g_s), s	0.8	34.0	10.3	10.4	19.0	0.2	7.7	0.0	21.9	0.3	1.3	0.9
Cycle Q Clear(g_c), s	0.8	34.0	10.3	10.4	19.0	0.2	7.7	0.0	21.9	0.3	1.3	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Lane Grp Cap(c), veh/h	82	1938	867	142	2957	921	134	0	321	35	255	289
V/C Ratio(X)	0.13	0.67	0.27	1.35	0.44	0.01	0.80	0.00	0.86	0.20	0.09	0.05
Avail Cap(c_a), veh/h	246	1938	867	142	2957	921	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.5	21.0	15.6	59.8	15.4	11.4	59.1	0.0	50.1	63.8	49.0	43.8
Incr Delay (d2), s/veh	0.3	1.9	0.8	190.0	0.4	0.0	10.2	0.0	7.4	1.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	17.1	4.7	12.6	9.0	0.1	4.2	0.0	10.3	0.1	0.7	0.4
LnGrp Delay(d),s/veh	59.8	22.9	16.4	249.8	15.8	11.5	69.2	0.0	57.6	64.8	49.4	44.0
LnGrp LOS	E	C	B	F	B	B	E		E	E	D	D
Approach Vol, veh/h		1544			1512			384			43	
Approach Delay, s/veh		22.1			45.3			60.8			50.1	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	77.0	14.5	23.6	10.6	81.4	5.9	32.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	10.4	44.8	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	12.4	36.0	9.7	3.3	2.8	21.0	2.3	23.9
Green Ext Time (p_c), s	0.0	8.6	0.1	2.5	0.0	15.9	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	1174	10	11	981	76	3	1	10	434	2	250
Future Volume (veh/h)	207	1174	10	11	981	76	3	1	10	434	2	250
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	227	1290	11	12	1078	84	3	1	11	477	2	275
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	2734	851	30	2392	996	8	13	140	546	3	392
Arrive On Green	0.08	0.54	0.54	0.02	0.47	0.47	0.00	0.10	0.10	0.16	0.25	0.25
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	134	1470	3442	11	1574
Grp Volume(v), veh/h	227	1290	11	12	1078	84	3	0	12	477	0	277
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1603	1721	0	1585
Q Serve(g_s), s	6.8	16.5	0.3	0.7	15.0	2.2	0.2	0.0	0.7	14.2	0.0	16.7
Cycle Q Clear(g_c), s	6.8	16.5	0.3	0.7	15.0	2.2	0.2	0.0	0.7	14.2	0.0	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		0.99
Lane Grp Cap(c), veh/h	290	2734	851	30	2392	996	8	0	153	546	0	395
V/C Ratio(X)	0.78	0.47	0.01	0.40	0.45	0.08	0.35	0.00	0.08	0.87	0.00	0.70
Avail Cap(c_a), veh/h	341	2734	851	125	2392	996	167	0	359	669	0	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.40	0.40	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.1	15.0	11.3	51.1	18.7	7.6	52.1	0.0	43.3	43.1	0.0	35.9
Incr Delay (d2), s/veh	3.3	0.2	0.0	3.1	0.3	0.1	9.0	0.0	0.2	9.2	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	7.7	0.2	0.4	7.1	1.0	0.1	0.0	0.3	7.5	0.0	7.7
LnGrp Delay(d),s/veh	50.5	15.3	11.3	54.2	19.0	7.7	61.1	0.0	43.5	52.3	0.0	39.3
LnGrp LOS	D	B	B	D	B	A	E		D	D		D
Approach Vol, veh/h		1528			1174			15			754	
Approach Delay, s/veh		20.5			18.5			47.0			47.5	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	62.3	5.1	31.3	13.4	55.2	21.3	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	7.4	33.6	9.9	34.0	10.4	30.6	20.4	23.5
Max Q Clear Time (g_c+I1), s	2.7	18.5	2.2	18.7	8.8	17.0	16.2	2.7
Green Ext Time (p_c), s	0.0	14.4	0.0	1.9	0.1	11.2	0.5	2.2

Intersection Summary		
HCM 2010 Ctrl Delay	25.8	
HCM 2010 LOS	C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1134	593	0	614	0	0	0	0	118	2	420
Future Volume (veh/h)	0	1134	593	0	614	0	0	0	0	118	2	420
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1289	674	0	698	0				134	2	477
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2599	809	0	2599	0				700	10	1115
Arrive On Green	0.00	0.51	0.51	0.00	0.51	0.00				0.40	0.40	0.40
Sat Flow, veh/h	0	5253	1583	0	5421	0				1749	26	2787
Grp Volume(v), veh/h	0	1289	674	0	698	0				136	0	477
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	14.9	32.6	0.0	7.0	0.0				4.5	0.0	11.2
Cycle Q Clear(g_c), s	0.0	14.9	32.6	0.0	7.0	0.0				4.5	0.0	11.2
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2599	809	0	2599	0				710	0	1115
V/C Ratio(X)	0.00	0.50	0.83	0.00	0.27	0.00				0.19	0.00	0.43
Avail Cap(c_a), veh/h	0	2599	809	0	2599	0				710	0	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.81	0.81	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.4	18.7	0.0	12.5	0.0				17.5	0.0	19.5
Incr Delay (d2), s/veh	0.0	0.1	6.1	0.0	0.3	0.0				0.6	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.0	15.4	0.0	3.3	0.0				2.3	0.0	4.4
LnGrp Delay(d),s/veh	0.0	14.5	24.9	0.0	12.7	0.0				18.1	0.0	20.7
LnGrp LOS		B	C		B					B		C
Approach Vol, veh/h		1963			698						613	
Approach Delay, s/veh		18.1			12.7						20.2	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		40.0		50.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		46.0		36.0		46.0		
Max Q Clear Time (g_c+I1), s		34.6		13.2		9.0		
Green Ext Time (p_c), s		9.6		2.8		24.2		

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	505	747	0	674	133	221	0	387	0	0	0
Future Volume (veh/h)	0	505	747	0	674	133	221	0	387	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	664	983	0	887	0	291	0	509			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3277	1020	0	3277	1020	473	0	422			
Arrive On Green	0.00	0.64	0.64	0.00	0.64	0.00	0.27	0.00	0.27			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	664	983	0	887	0	291	0	509			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	4.8	52.4	0.0	6.8	0.0	13.0	0.0	24.0			
Cycle Q Clear(g_c), s	0.0	4.8	52.4	0.0	6.8	0.0	13.0	0.0	24.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3277	1020	0	3277	1020	473	0	422			
V/C Ratio(X)	0.00	0.20	0.96	0.00	0.27	0.00	0.62	0.00	1.21			
Avail Cap(c_a), veh/h	0	3277	1020	0	3277	1020	473	0	422			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.97	0.97	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.5	15.0	0.0	6.9	0.0	28.9	0.0	33.0			
Incr Delay (d2), s/veh	0.0	0.1	20.3	0.0	0.0	0.0	5.9	0.0	113.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.3	28.1	0.0	3.1	0.0	7.1	0.0	23.7			
LnGrp Delay(d),s/veh	0.0	6.7	35.3	0.0	6.9	0.0	34.8	0.0	146.0			
LnGrp LOS		A	D		A		C		F			
Approach Vol, veh/h		1647			887			800				
Approach Delay, s/veh		23.7			6.9			105.5				
Approach LOS		C			A			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		62.0				62.0		28.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		34.0				20.0		24.0
Max Q Clear Time (g_c+I1), s		54.4				8.8		26.0
Green Ext Time (p_c), s		0.0				9.2		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		38.9
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	540	113	79	424	170	244	136	6	141	119	210
Future Volume (veh/h)	235	540	113	79	424	170	244	136	6	141	119	210
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	331	761	159	111	597	239	344	192	8	199	168	296
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	846	378	134	708	317	373	1248	52	233	496	444
Arrive On Green	0.11	0.24	0.24	0.08	0.20	0.20	0.21	0.36	0.36	0.13	0.28	0.28
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3463	144	1774	1770	1583
Grp Volume(v), veh/h	331	761	159	111	597	239	344	98	102	199	168	296
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	9.4	20.7	8.5	6.1	16.2	14.2	18.9	3.7	3.8	10.9	7.5	16.5
Cycle Q Clear(g_c), s	9.4	20.7	8.5	6.1	16.2	14.2	18.9	3.7	3.8	10.9	7.5	16.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	394	846	378	134	708	317	373	638	662	233	496	444
V/C Ratio(X)	0.84	0.90	0.42	0.83	0.84	0.76	0.92	0.15	0.15	0.85	0.34	0.67
Avail Cap(c_a), veh/h	398	854	382	134	712	318	376	841	874	301	765	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	36.7	32.0	45.4	38.3	37.5	38.5	21.5	21.5	42.3	28.5	31.7
Incr Delay (d2), s/veh	14.7	12.4	0.7	33.5	9.1	9.8	27.2	0.4	0.4	16.9	1.5	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	11.6	3.8	4.3	8.8	7.0	12.1	1.9	2.0	6.5	3.9	8.0
LnGrp Delay(d),s/veh	57.8	49.1	32.8	78.9	47.4	47.3	65.7	22.0	22.0	59.2	30.0	38.2
LnGrp LOS	E	D	C	E	D	D	E	C	C	E	C	D
Approach Vol, veh/h		1251			947			544			663	
Approach Delay, s/veh		49.3			51.1			49.6			42.4	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	41.7	12.0	28.3	25.5	33.7	15.9	24.4
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	13.1	47.3	7.5	24.0	21.1	43.0	11.5	20.0
Max Q Clear Time (g_c+I1), s	12.9	5.8	8.1	22.7	20.9	18.5	11.4	18.2
Green Ext Time (p_c), s	0.2	11.7	0.0	1.0	0.0	9.4	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	48.5
HCM 2010 LOS	D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2023 Plus Ambient Growth Plus Project (Phase 1) (2023 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	87	5.0	0.076	3.8	LOS A	0.3	7.2	0.24	0.12	24.4
12	R2	54	5.0	0.034	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		141	5.0	0.076	2.3	LOS A	0.3	7.2	0.15	0.07	24.7
East: Keller Road											
3	L2	63	5.0	0.052	3.3	LOS A	0.2	5.1	0.20	0.08	24.3
8	T1	101	3.0	0.052	0.1	LOS A	0.2	5.1	0.00	0.00	24.9
Approach		164	3.8	0.052	1.3	LOS A	0.2	5.1	0.08	0.03	24.7
West: Keller Road											
4	T1	118	3.0	0.091	3.5	LOS A	0.4	9.5	0.17	0.07	23.5
14	R2	109	5.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		227	4.0	0.091	1.8	LOS A	0.4	9.5	0.09	0.04	24.6
All Vehicles		533	4.2	0.091	1.8	LOS A	0.4	9.5	0.10	0.04	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2023 Plus Ambient Growth Plus Project (Phase 1) (2023 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	60	5.0	0.029	3.6	LOS A	0.1	2.5	0.27	0.14	13.7
2	T1	1	5.0	0.029	3.5	LOS A	0.1	2.4	0.26	0.14	23.3
12	R2	22	5.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		83	5.0	0.029	2.7	LOS A	0.1	2.5	0.20	0.10	16.4
East: Keller Road											
8	T1	104	3.0	0.044	3.4	LOS A	0.2	4.1	0.24	0.12	23.6
18	R2	26	5.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		130	3.4	0.044	2.7	LOS A	0.2	4.1	0.19	0.09	24.0
West: Keller Road											
7	L2	70	5.0	0.063	3.2	LOS A	0.0	0.0	0.00	0.00	28.5
4	T1	103	3.0	0.063	3.1	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		173	3.8	0.063	3.1	LOS A	0.0	0.0	0.00	0.00	26.2
All Vehicles		386	3.9	0.063	2.9	LOS A	0.2	4.1	0.11	0.05	22.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	747	20	4	575	15	0	0	0	11	2	6
Future Vol, veh/h	2	747	20	4	575	15	0	0	0	11	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	778	21	4	599	16	0	0	0	11	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	615	0	0	799	0	0	1412	1416	789	1408	1418	607
Stage 1	-	-	-	-	-	-	793	793	-	615	615	-
Stage 2	-	-	-	-	-	-	619	623	-	793	803	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	965	-	-	824	-	-	116	137	391	116	137	496
Stage 1	-	-	-	-	-	-	382	400	-	479	482	-
Stage 2	-	-	-	-	-	-	476	478	-	382	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	965	-	-	824	-	-	112	135	391	115	135	496
Mov Cap-2 Maneuver	-	-	-	-	-	-	112	135	-	115	135	-
Stage 1	-	-	-	-	-	-	380	398	-	477	479	-
Stage 2	-	-	-	-	-	-	465	475	-	380	394	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	31.6
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	965	-	-	824	-	-	155
HCM Lane V/C Ratio	-	0.002	-	-	0.005	-	-	0.128
HCM Control Delay (s)	0	8.7	0	-	9.4	0	-	31.6
HCM Lane LOS	A	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	72.8
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	308	355	470	150	98	135
Future Vol, veh/h	308	355	470	150	98	135
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	321	370	490	156	102	141
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	102.7	62.2	15.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	0%	42%
Vol Thru, %	54%	76%	0%
Vol Right, %	0%	24%	58%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	663	620	233
LT Vol	308	0	98
Through Vol	355	470	0
RT Vol	0	150	135
Lane Flow Rate	691	646	243
Geometry Grp	1	1	1
Degree of Util (X)	1.136	1.008	0.455
Departure Headway (Hd)	5.923	5.85	7.067
Convergence, Y/N	Yes	Yes	Yes
Cap	615	626	512
Service Time	3.962	3.85	5.067
HCM Lane V/C Ratio	1.124	1.032	0.475
HCM Control Delay	102.7	62.2	15.8
HCM Lane LOS	F	F	C
HCM 95th-tile Q	22	15.6	2.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	499	18	53	589	472	33	50	32	350	23	51
Future Volume (veh/h)	51	499	18	53	589	472	33	50	32	350	23	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	53	520	19	55	614	492	34	52	33	432	0	0
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	930	34	71	951	650	43	535	455	503	754	0
Arrive On Green	0.04	0.27	0.27	0.04	0.27	0.27	0.02	0.29	0.29	0.14	0.00	0.00
Sat Flow, veh/h	1774	3483	127	1774	3539	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	53	264	275	55	614	492	34	52	33	432	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1770	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	3.1	13.5	13.5	3.2	16.1	27.9	2.0	2.1	1.6	12.5	0.0	0.0
Cycle Q Clear(g_c), s	3.1	13.5	13.5	3.2	16.1	27.9	2.0	2.1	1.6	12.5	0.0	0.0
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	68	473	492	71	951	650	43	535	455	503	754	0
V/C Ratio(X)	0.78	0.56	0.56	0.78	0.65	0.76	0.80	0.10	0.07	0.86	0.00	0.00
Avail Cap(c_a), veh/h	108	473	492	125	951	650	106	535	455	723	754	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	33.1	33.2	50.0	34.0	26.5	51.0	27.5	27.3	44.0	0.0	0.0
Incr Delay (d2), s/veh	7.0	4.7	4.6	6.2	3.1	7.4	11.9	0.4	0.3	5.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	7.2	7.5	1.7	8.3	13.5	1.1	1.2	0.7	6.5	0.0	0.0
LnGrp Delay(d),s/veh	57.1	37.8	37.7	56.1	37.1	33.9	62.9	27.8	27.6	49.3	0.0	0.0
LnGrp LOS	E	D	D	E	D	C	E	C	C	D		
Approach Vol, veh/h		592			1161			119			432	
Approach Delay, s/veh		39.5			36.6			37.8			49.3	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	34.2	7.1	48.7	8.6	34.4	19.5	36.3
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	7.4	27.2	6.3	42.5	6.4	28.2	21.4	* 29
Max Q Clear Time (g_c+I1), s	5.2	15.5	4.0	0.0	5.1	29.9	14.5	4.1
Green Ext Time (p_c), s	0.0	8.9	0.0	0.0	0.0	0.0	0.4	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	635	297	0	954	281	0	0	0	377	0	160
Future Volume (veh/h)	0	635	297	0	954	281	0	0	0	377	0	160
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	648	303	0	973	287				385	0	163
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2084	932	0	2084	932				1109	0	898
Arrive On Green	0.00	0.59	0.59	0.00	0.19	0.19				0.32	0.00	0.32
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	648	303	0	973	287				385	0	163
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	8.3	8.8	0.0	21.9	14.0				7.7	0.0	3.8
Cycle Q Clear(g_c), s	0.0	8.3	8.8	0.0	21.9	14.0				7.7	0.0	3.8
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2084	932	0	2084	932				1109	0	898
V/C Ratio(X)	0.00	0.31	0.32	0.00	0.47	0.31				0.35	0.00	0.18
Avail Cap(c_a), veh/h	0	2084	932	0	2084	932				1109	0	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.77	0.77	0.00	0.90	0.90				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.3	9.4	0.0	23.7	20.5				23.3	0.0	22.0
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.7	0.8				0.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	3.8	0.0	10.9	6.3				3.8	0.0	1.5
LnGrp Delay(d),s/veh	0.0	9.4	9.6	0.0	24.4	21.3				24.1	0.0	22.4
LnGrp LOS		A	A		C	C				C		C
Approach Vol, veh/h		951			1260						548	
Approach Delay, s/veh		9.4			23.7						23.6	
Approach LOS		A			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		57.0		33.0		57.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		53.0		29.0		53.0		
Max Q Clear Time (g_c+I1), s		10.8		9.7		23.9		
Green Ext Time (p_c), s		19.0		2.0		15.9		

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	916	0	0	785	369	0	0	398	0	0	447
Future Volume (veh/h)	96	916	0	0	785	369	0	0	398	0	0	447
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	99	944	0	0	809	380	0	0	410	0	0	461
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	126	3382	0	0	2973	1330	0	0	0	0	0	0
Arrive On Green	0.07	0.96	0.00	0.00	0.84	0.84	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	99	944	0	0	809	380		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	4.9	1.5	0.0	0.0	4.3	4.6						
Cycle Q Clear(g_c), s	4.9	1.5	0.0	0.0	4.3	4.6						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	126	3382	0	0	2973	1330						
V/C Ratio(X)	0.78	0.28	0.00	0.00	0.27	0.29						
Avail Cap(c_a), veh/h	158	3382	0	0	2973	1330						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.83	0.83						
Uniform Delay (d), s/veh	41.1	0.1	0.0	0.0	1.5	1.5						
Incr Delay (d2), s/veh	17.4	0.2	0.0	0.0	0.2	0.4						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	3.0	0.7	0.0	0.0	2.1	2.1						
LnGrp Delay(d),s/veh	58.5	0.3	0.0	0.0	1.7	2.0						
LnGrp LOS	E	A			A	A						
Approach Vol, veh/h		1043			1189							
Approach Delay, s/veh		5.8			1.8							
Approach LOS		A			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			10.4	79.6		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		59.7			8.0	47.7		
Max Q Clear Time (g_c+I1), s		3.5			6.9	6.6		
Green Ext Time (p_c), s		21.3			0.0	19.1		

Intersection Summary	
HCM 2010 Ctrl Delay	3.7
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	748	305	84	645	57	314	311	173	68	156	195
Future Volume (veh/h)	261	748	305	84	645	57	314	311	173	68	156	195
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	264	756	308	85	652	58	317	314	175	69	158	197
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	1329	594	133	1529	135	376	654	556	88	543	462
Arrive On Green	0.09	0.38	0.38	0.04	0.32	0.32	0.11	0.35	0.35	0.05	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4759	420	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	264	756	308	85	463	247	317	314	175	69	158	197
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1789	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	9.0	20.4	18.1	2.9	12.9	13.0	10.8	15.8	9.7	4.6	7.9	12.1
Cycle Q Clear(g_c), s	9.0	20.4	18.1	2.9	12.9	13.0	10.8	15.8	9.7	4.6	7.9	12.1
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	319	1329	594	133	1089	575	376	654	556	88	543	462
V/C Ratio(X)	0.83	0.57	0.52	0.64	0.43	0.43	0.84	0.48	0.31	0.78	0.29	0.43
Avail Cap(c_a), veh/h	442	1329	594	195	1089	575	505	654	556	154	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	29.8	29.1	56.9	32.0	32.1	52.4	30.4	28.4	56.4	32.9	34.4
Incr Delay (d2), s/veh	5.8	1.6	2.9	1.9	1.2	2.3	7.4	2.5	1.5	5.6	1.4	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	10.3	8.3	1.4	6.2	6.8	5.5	8.6	4.5	2.4	4.2	5.6
LnGrp Delay(d),s/veh	59.3	31.3	31.9	58.7	33.2	34.4	59.8	32.9	29.9	62.0	34.2	37.2
LnGrp LOS	E	C	C	E	C	C	E	C	C	E	C	D
Approach Vol, veh/h		1328			795			806			424	
Approach Delay, s/veh		37.0			36.3			42.8			40.2	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	51.6	17.7	41.5	15.7	45.1	10.6	48.7
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	6.8	* 39	17.6	* 35	15.4	30.1	10.4	41.9
Max Q Clear Time (g_c+I1), s	4.9	22.4	12.8	14.1	11.0	15.0	6.6	17.8
Green Ext Time (p_c), s	0.0	9.3	0.3	2.0	0.1	8.7	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.6
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	11	0	191	5	43	0	0	112	39	0	3
Future Vol, veh/h	5	11	0	191	5	43	0	0	112	39	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	13	0	227	6	51	0	0	133	46	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	6	0	0	13	0	0	488	486	13	553	486	6
Stage 1	-	-	-	-	-	-	25	25	-	461	461	-
Stage 2	-	-	-	-	-	-	463	461	-	92	25	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1615	-	-	1606	-	-	490	481	1067	444	481	1077
Stage 1	-	-	-	-	-	-	993	874	-	581	565	-
Stage 2	-	-	-	-	-	-	579	565	-	915	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1615	-	-	1606	-	-	432	409	1067	344	409	1077
Mov Cap-2 Maneuver	-	-	-	-	-	-	432	409	-	344	409	-
Stage 1	-	-	-	-	-	-	989	871	-	579	482	-
Stage 2	-	-	-	-	-	-	492	482	-	797	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	6.1	8.9	16.5
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1067	1615	-	-	1606	-	-	362
HCM Lane V/C Ratio	0.125	0.004	-	-	0.142	-	-	0.138
HCM Control Delay (s)	8.9	7.2	0	-	7.6	0	-	16.5
HCM Lane LOS	A	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.5	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	465	5	8	104	37	27	203	6	48	199	49
Future Volume (veh/h)	134	465	5	8	104	37	27	203	6	48	199	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	140	484	5	8	108	39	28	211	6	50	207	51
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	440	837	261	50	404	137	869	1344	38	897	1388	1180
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.75	0.75	0.75	0.75	0.75	0.75
Sat Flow, veh/h	2397	5085	1583	63	2452	830	1117	1802	51	1160	1863	1583
Grp Volume(v), veh/h	140	484	5	82	0	73	28	0	217	50	207	51
Grp Sat Flow(s),veh/h/ln	1199	1695	1583	1796	0	1549	1117	0	1854	1160	1863	1583
Q Serve(g_s), s	5.4	8.8	0.3	0.0	0.0	4.1	0.7	0.0	3.4	1.3	3.2	0.8
Cycle Q Clear(g_c), s	9.6	8.8	0.3	3.9	0.0	4.1	3.9	0.0	3.4	4.7	3.2	0.8
Prop In Lane	1.00		1.00	0.10		0.54	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	440	837	261	335	0	255	869	0	1382	897	1388	1180
V/C Ratio(X)	0.32	0.58	0.02	0.25	0.00	0.29	0.03	0.00	0.16	0.06	0.15	0.04
Avail Cap(c_a), veh/h	992	2009	625	724	0	612	869	0	1382	897	1388	1180
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	38.6	35.0	36.5	0.0	36.6	4.2	0.0	3.7	4.3	3.6	3.3
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.4	0.0	0.6	0.1	0.0	0.2	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.2	0.1	2.0	0.0	1.8	0.2	0.0	1.8	0.4	1.7	0.4
LnGrp Delay(d),s/veh	41.2	39.2	35.0	36.9	0.0	37.2	4.3	0.0	3.9	4.5	3.9	3.4
LnGrp LOS	D	D	D	D		D	A		A	A	A	A
Approach Vol, veh/h		629			155			245			308	
Approach Delay, s/veh		39.6			37.0			4.0			3.9	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		79.0		21.0		79.0		21.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		51.5		39.5		51.5		39.5
Max Q Clear Time (g_c+I1), s		5.9		11.6		6.7		6.1
Green Ext Time (p_c), s		3.1		4.9		3.1		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	11	13	10	8	11	18	82	13	7	128	53
Future Volume (veh/h)	93	11	13	10	8	11	18	82	13	7	128	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	97	11	14	10	8	11	19	85	14	7	133	55
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	591	503	23	879	393	42	802	129	17	879	393
Arrive On Green	0.08	0.32	0.32	0.01	0.25	0.25	0.02	0.26	0.26	0.01	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3054	492	1774	3539	1583
Grp Volume(v), veh/h	97	11	14	10	8	11	19	48	51	7	133	55
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1776	1774	1770	1583
Q Serve(g_s), s	2.1	0.2	0.2	0.2	0.1	0.2	0.4	0.8	0.9	0.2	1.2	1.1
Cycle Q Clear(g_c), s	2.1	0.2	0.2	0.2	0.1	0.2	0.4	0.8	0.9	0.2	1.2	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	146	591	503	23	879	393	42	465	467	17	879	393
V/C Ratio(X)	0.67	0.02	0.03	0.43	0.01	0.03	0.45	0.10	0.11	0.42	0.15	0.14
Avail Cap(c_a), veh/h	837	1527	1298	397	2022	904	397	1011	1014	397	2022	904
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	9.4	9.5	19.7	11.4	11.5	19.4	11.3	11.3	19.8	11.8	11.8
Incr Delay (d2), s/veh	5.1	0.0	0.0	12.0	0.0	0.0	7.3	0.1	0.1	16.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.1	0.1	0.2	0.0	0.1	0.3	0.4	0.4	0.2	0.6	0.5
LnGrp Delay(d),s/veh	23.1	9.4	9.5	31.7	11.4	11.5	26.7	11.3	11.4	36.0	11.9	11.9
LnGrp LOS	C	A	A	C	B	B	C	B	B	D	B	B
Approach Vol, veh/h		122			29			118			195	
Approach Delay, s/veh		20.3			18.4			13.8			12.8	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	16.8	5.0	14.0	7.3	14.0	4.4	14.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	33.0	9.0	23.0	19.0	23.0	9.0	23.0
Max Q Clear Time (g_c+I1), s	2.2	2.2	2.4	3.2	4.1	2.2	2.2	2.9
Green Ext Time (p_c), s	0.0	0.1	0.0	1.3	0.2	0.1	0.0	1.3

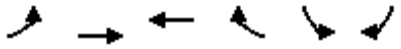
Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	54	299	243	12	87	162
Future Volume (veh/h)	54	299	243	12	87	162
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	59	329	267	13	96	178
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	410	366	1003	852	122	1217
Arrive On Green	0.23	0.23	0.54	0.54	0.07	0.65
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	59	329	267	13	96	178
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	2.6	20.2	7.7	0.4	5.3	3.7
Cycle Q Clear(g_c), s	2.6	20.2	7.7	0.4	5.3	3.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	410	366	1003	852	122	1217
V/C Ratio(X)	0.14	0.90	0.27	0.02	0.79	0.15
Avail Cap(c_a), veh/h	561	500	1003	852	291	1217
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.6	37.3	12.4	10.7	45.8	6.7
Incr Delay (d2), s/veh	0.1	11.7	0.7	0.0	4.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	10.0	4.1	0.2	2.8	2.0
LnGrp Delay(d),s/veh	30.7	49.0	13.1	10.8	50.0	6.9
LnGrp LOS	C	D	B	B	D	A
Approach Vol, veh/h	388		280			274
Approach Delay, s/veh	46.2		13.0			22.0
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.5	60.0				71.5		28.5
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	6.4	35.8				56.8		31.6
Max Q Clear Time (g_c+I1), s	7.3	9.7				5.7		22.2
Green Ext Time (p_c), s	0.1	6.0				7.2		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	29.3
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	189	506	0	14	22
Future Volume (veh/h)	1	189	506	0	14	22
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	208	556	0	15	24
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3	1061	892	0	1044	931
Arrive On Green	0.00	0.30	0.25	0.00	0.59	0.59
Sat Flow, veh/h	1774	3632	3725	0	1774	1583
Grp Volume(v), veh/h	1	208	556	0	15	24
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	0	1774	1583
Q Serve(g_s), s	0.1	4.4	13.9	0.0	0.4	0.6
Cycle Q Clear(g_c), s	0.1	4.4	13.9	0.0	0.4	0.6
Prop In Lane	1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	3	1061	892	0	1044	931
V/C Ratio(X)	0.34	0.20	0.62	0.00	0.01	0.03
Avail Cap(c_a), veh/h	255	2180	1508	0	1044	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.85	0.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	26.0	33.2	0.0	8.6	8.6
Incr Delay (d2), s/veh	20.9	0.2	1.2	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.2	6.9	0.0	0.2	0.9
LnGrp Delay(d),s/veh	70.8	26.2	34.4	0.0	8.6	8.7
LnGrp LOS	E	C	C		A	A
Approach Vol, veh/h		209	556		39	
Approach Delay, s/veh		26.4	34.4		8.6	
Approach LOS		C	C		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.4		64.6	4.8	30.6
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				61.6		27.2	14.4	42.6
Max Q Clear Time (g_c+I1), s				6.4		2.6	2.1	15.9
Green Ext Time (p_c), s				11.4		0.2	0.0	9.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	180	7	4	2	197	374	1	1	195	10
Future Volume (veh/h)	13	1	180	7	4	2	197	374	1	1	195	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	14	1	191	7	4	2	210	398	1	1	207	11
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	415	353	17	399	339	278	1414	4	4	804	42
Arrive On Green	0.02	0.22	0.22	0.01	0.21	0.21	0.16	0.39	0.39	0.00	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3622	9	1774	3420	181
Grp Volume(v), veh/h	14	1	191	7	4	2	210	194	205	1	107	111
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1861	1774	1770	1831
Q Serve(g_s), s	0.3	0.0	4.5	0.2	0.1	0.0	4.8	3.2	3.2	0.0	2.1	2.1
Cycle Q Clear(g_c), s	0.3	0.0	4.5	0.2	0.1	0.0	4.8	3.2	3.2	0.0	2.1	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.10
Lane Grp Cap(c), veh/h	32	415	353	17	399	339	278	691	727	4	416	430
V/C Ratio(X)	0.44	0.00	0.54	0.42	0.01	0.01	0.75	0.28	0.28	0.24	0.26	0.26
Avail Cap(c_a), veh/h	250	1007	856	250	1007	856	917	1622	1706	250	957	990
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	12.9	14.6	21.0	13.2	13.2	17.2	8.9	8.9	21.2	13.2	13.3
Incr Delay (d2), s/veh	9.3	0.0	1.3	16.2	0.0	0.0	4.2	0.2	0.2	27.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.1	0.2	0.0	0.0	2.7	1.6	1.7	0.0	1.0	1.1
LnGrp Delay(d),s/veh	30.0	12.9	15.9	37.2	13.2	13.2	21.3	9.1	9.1	48.5	13.6	13.6
LnGrp LOS	C	B	B	D	B	B	C	A	A	D	B	B
Approach Vol, veh/h		206			13			609			219	
Approach Delay, s/veh		16.8			26.1			13.3			13.7	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	20.6	4.4	13.5	10.7	14.0	4.8	13.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	39.0	6.0	23.0	22.0	23.0	6.0	23.0
Max Q Clear Time (g_c+I1), s	2.3	5.2	2.2	6.5	6.8	4.1	2.3	2.1
Green Ext Time (p_c), s	0.0	3.3	0.0	0.5	0.5	2.9	0.0	0.6

Intersection Summary		
HCM 2010 Ctrl Delay		14.2
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	210	0	0	0	2	246	0	0	0
Future Vol, veh/h	0	0	0	210	0	0	0	2	246	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	247	0	0	0	2	289	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	0	10.2	9.7	0
HCM LOS	-	B	A	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	100%	0%	100%
Vol Right, %	0%	100%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	246	0	210	0
LT Vol	0	0	0	210	0
Through Vol	2	0	0	0	0
RT Vol	0	246	0	0	0
Lane Flow Rate	2	289	0	247	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.003	0.358	0	0.33	0
Departure Headway (Hd)	5.163	4.459	4.921	4.805	4.998
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	694	807	0	749	0
Service Time	2.886	2.182	2.964	2.834	3.039
HCM Lane V/C Ratio	0.003	0.358	0	0.33	0
HCM Control Delay	7.9	9.7	8	10.2	8
HCM Lane LOS	A	A	N	B	N
HCM 95th-tile Q	0	1.6	0	1.4	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	3	73	0	0	1	38	566	0	1	258	10
Future Volume (veh/h)	17	3	73	0	0	1	38	566	0	1	258	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	18	3	75	0	0	1	39	584	0	1	266	10
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	129	110	0	0	2	69	2584	0	3	2411	90
Arrive On Green	0.07	0.07	0.07	0.00	0.00	0.00	0.04	0.73	0.00	0.00	0.69	0.69
Sat Flow, veh/h	1774	1863	1583	0	0	1583	1774	3632	0	1774	3479	130
Grp Volume(v), veh/h	18	3	75	0	0	1	39	584	0	1	135	141
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	0	0	1583	1774	1770	0	1774	1770	1840
Q Serve(g_s), s	1.0	0.2	4.9	0.0	0.0	0.1	2.3	5.6	0.0	0.1	2.7	2.7
Cycle Q Clear(g_c), s	1.0	0.2	4.9	0.0	0.0	0.1	2.3	5.6	0.0	0.1	2.7	2.7
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	123	129	110	0	0	2	69	2584	0	3	1226	1275
V/C Ratio(X)	0.15	0.02	0.68	0.00	0.00	0.66	0.57	0.23	0.00	0.34	0.11	0.11
Avail Cap(c_a), veh/h	460	483	410	0	0	277	142	2584	0	108	1226	1275
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	45.5	47.7	0.0	0.0	52.4	49.6	4.6	0.0	52.4	5.4	5.4
Incr Delay (d2), s/veh	2.5	0.3	29.3	0.0	0.0	211.8	2.7	0.2	0.0	24.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	3.0	0.0	0.0	0.1	1.2	2.7	0.0	0.0	1.3	1.4
LnGrp Delay(d),s/veh	48.4	45.9	77.1	0.0	0.0	264.2	52.3	4.8	0.0	76.3	5.5	5.5
LnGrp LOS	D	D	E			F	D	A		E	A	A
Approach Vol, veh/h		96			1			623			277	
Approach Delay, s/veh		70.7			264.2			7.8			5.8	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	82.5		13.1	8.7	78.6		4.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	32.2		27.2	8.4	30.2		18.4
Max Q Clear Time (g_c+I1), s	2.1	7.6		6.9	4.3	4.7		2.1
Green Ext Time (p_c), s	0.0	12.4		0.9	0.0	12.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1414	27	124	1414	2	31	1	82	3	2	8
Future Volume (veh/h)	8	1414	27	124	1414	2	31	1	82	3	2	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	8	1458	28	128	1458	2	32	1	85	3	2	8
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	2482	1111	101	3622	1128	82	1	121	16	66	129
Arrive On Green	0.05	0.70	0.70	0.06	0.71	0.71	0.05	0.08	0.08	0.00	0.04	0.04
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	18	1568	3442	1863	1583
Grp Volume(v), veh/h	8	1458	28	128	1458	2	32	0	86	3	2	8
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1586	1721	1863	1583
Q Serve(g_s), s	0.6	27.2	0.7	7.4	15.0	0.0	2.3	0.0	6.9	0.1	0.1	0.6
Cycle Q Clear(g_c), s	0.6	27.2	0.7	7.4	15.0	0.0	2.3	0.0	6.9	0.1	0.1	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Lane Grp Cap(c), veh/h	82	2482	1111	101	3622	1128	82	0	122	16	66	129
V/C Ratio(X)	0.10	0.59	0.03	1.27	0.40	0.00	0.39	0.00	0.70	0.18	0.03	0.06
Avail Cap(c_a), veh/h	246	2482	1111	101	3622	1128	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.4	9.9	5.9	61.3	7.5	5.4	60.2	0.0	58.6	64.4	60.5	55.1
Incr Delay (d2), s/veh	0.2	1.0	0.0	167.8	0.3	0.0	3.0	0.0	7.8	2.0	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	13.5	0.3	8.3	7.1	0.0	1.2	0.0	3.3	0.1	0.1	0.3
LnGrp Delay(d),s/veh	59.6	10.9	5.9	229.1	7.8	5.4	63.2	0.0	66.4	66.4	61.0	55.6
LnGrp LOS	E	B	A	F	A	A	E		E	E	E	E
Approach Vol, veh/h		1494			1588			118			13	
Approach Delay, s/veh		11.0			25.6			65.5			58.9	
Approach LOS		B			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	97.0	10.6	10.4	10.6	98.4	5.2	15.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	7.4	47.8	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	9.4	29.2	4.3	2.6	2.6	17.0	2.1	8.9
Green Ext Time (p_c), s	0.0	18.3	0.0	0.6	0.0	19.8	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	399	1230	14	30	1115	207	23	6	27	308	6	290
Future Volume (veh/h)	399	1230	14	30	1115	207	23	6	27	308	6	290
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	407	1255	14	31	1138	211	23	6	28	314	6	296
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	2671	831	60	2291	889	50	40	186	382	7	345
Arrive On Green	0.11	0.53	0.53	0.03	0.45	0.45	0.03	0.14	0.14	0.11	0.22	0.22
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	287	1339	3442	32	1557
Grp Volume(v), veh/h	407	1255	14	31	1138	211	23	0	34	314	0	302
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1626	1721	0	1588
Q Serve(g_s), s	11.4	16.3	0.4	1.8	16.6	7.1	1.3	0.0	1.9	9.4	0.0	19.2
Cycle Q Clear(g_c), s	11.4	16.3	0.4	1.8	16.6	7.1	1.3	0.0	1.9	9.4	0.0	19.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.82	1.00		0.98
Lane Grp Cap(c), veh/h	374	2671	831	60	2291	889	50	0	225	382	0	352
V/C Ratio(X)	1.09	0.47	0.02	0.51	0.50	0.24	0.46	0.00	0.15	0.82	0.00	0.86
Avail Cap(c_a), veh/h	374	2671	831	103	2291	889	167	0	437	515	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	15.7	11.9	49.9	20.4	11.6	50.3	0.0	39.8	45.7	0.0	39.3
Incr Delay (d2), s/veh	58.2	0.3	0.0	2.3	0.4	0.3	2.5	0.0	0.3	5.8	0.0	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	7.6	0.2	0.9	7.9	3.1	0.7	0.0	0.9	4.8	0.0	9.4
LnGrp Delay(d),s/veh	105.0	16.0	12.0	52.2	20.8	11.9	52.8	0.0	40.1	51.5	0.0	49.9
LnGrp LOS	F	B	B	D	C	B	D		D	D		D
Approach Vol, veh/h		1676			1380			57			616	
Approach Delay, s/veh		37.6			20.1			45.2			50.7	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	60.9	7.5	28.4	16.0	53.1	16.2	19.6
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.1	34.9	9.9	34.0	11.4	29.6	15.7	28.2
Max Q Clear Time (g_c+I1), s	13.8	18.3	3.3	21.2	13.4	18.6	11.4	3.9
Green Ext Time (p_c), s	0.0	15.9	0.0	2.1	0.0	9.6	0.3	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1206	405	0	784	0	0	0	0	131	1	574
Future Volume (veh/h)	0	1206	405	0	784	0	0	0	0	131	1	574
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1243	418	0	808	0				135	1	592
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2430	756	0	2430	0				763	6	1208
Arrive On Green	0.00	0.48	0.48	0.00	0.48	0.00				0.43	0.43	0.43
Sat Flow, veh/h	0	5253	1583	0	5421	0				1762	13	2787
Grp Volume(v), veh/h	0	1243	418	0	808	0				136	0	592
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	15.2	16.9	0.0	8.9	0.0				4.2	0.0	13.8
Cycle Q Clear(g_c), s	0.0	15.2	16.9	0.0	8.9	0.0				4.2	0.0	13.8
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2430	756	0	2430	0				769	0	1208
V/C Ratio(X)	0.00	0.51	0.55	0.00	0.33	0.00				0.18	0.00	0.49
Avail Cap(c_a), veh/h	0	2430	756	0	2430	0				769	0	1208
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.85	0.85	0.00	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.2	16.7	0.0	14.6	0.0				15.6	0.0	18.3
Incr Delay (d2), s/veh	0.0	0.2	0.7	0.0	0.4	0.0				0.5	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.1	7.5	0.0	4.2	0.0				2.2	0.0	5.5
LnGrp Delay(d),s/veh	0.0	16.4	17.4	0.0	15.0	0.0				16.2	0.0	19.8
LnGrp LOS		B	B		B					B		B
Approach Vol, veh/h		1661			808						728	
Approach Delay, s/veh		16.7			15.0						19.1	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		47.0		43.0		47.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		43.0		39.0		43.0		
Max Q Clear Time (g_c+I1), s		18.9		15.8		10.9		
Green Ext Time (p_c), s		17.1		3.4		20.8		

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	571	766	0	444	100	482	0	335	0	0	0
Future Volume (veh/h)	0	571	766	0	444	100	482	0	335	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	589	790	0	458	0	497	0	345			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2882	897	0	2882	897	611	0	545			
Arrive On Green	0.00	0.57	0.57	0.00	0.57	0.00	0.34	0.00	0.34			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	589	790	0	458	0	497	0	345			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	5.1	38.8	0.0	3.9	0.0	23.0	0.0	16.4			
Cycle Q Clear(g_c), s	0.0	5.1	38.8	0.0	3.9	0.0	23.0	0.0	16.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2882	897	0	2882	897	611	0	545			
V/C Ratio(X)	0.00	0.20	0.88	0.00	0.16	0.00	0.81	0.00	0.63			
Avail Cap(c_a), veh/h	0	2882	897	0	2882	897	611	0	545			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.97	0.97	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.6	16.9	0.0	9.3	0.0	26.9	0.0	24.7			
Incr Delay (d2), s/veh	0.0	0.2	11.7	0.0	0.0	0.0	11.3	0.0	5.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.4	19.6	0.0	1.8	0.0	13.1	0.0	8.0			
LnGrp Delay(d),s/veh	0.0	9.7	28.6	0.0	9.3	0.0	38.2	0.0	30.2			
LnGrp LOS		A	C		A		D		C			
Approach Vol, veh/h		1379			458			842				
Approach Delay, s/veh		20.5			9.3			34.9				
Approach LOS		C			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		55.0				55.0		35.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		28.5				18.5		31.0
Max Q Clear Time (g_c+I1), s		40.8				5.9		25.0
Green Ext Time (p_c), s		0.0				7.9		1.7

Intersection Summary		
HCM 2010 Ctrl Delay		23.1
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	507	249	71	56	176	230	281	6	6	196	208
Future Volume (veh/h)	360	507	249	71	56	176	230	281	6	6	196	208
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	387	545	268	76	60	189	247	302	6	6	211	224
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	897	401	98	628	281	285	1572	31	14	511	457
Arrive On Green	0.13	0.25	0.25	0.06	0.18	0.18	0.16	0.44	0.44	0.01	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3550	70	1774	1770	1583
Grp Volume(v), veh/h	387	545	268	76	60	189	247	150	158	6	211	224
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1850	1774	1770	1583
Q Serve(g_s), s	8.8	10.9	12.2	3.4	1.1	8.9	10.9	4.1	4.2	0.3	7.7	9.4
Cycle Q Clear(g_c), s	8.8	10.9	12.2	3.4	1.1	8.9	10.9	4.1	4.2	0.3	7.7	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	451	897	401	98	628	281	285	784	819	14	511	457
V/C Ratio(X)	0.86	0.61	0.67	0.78	0.10	0.67	0.87	0.19	0.19	0.43	0.41	0.49
Avail Cap(c_a), veh/h	451	972	435	159	826	370	297	1138	1190	111	950	850
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	26.4	26.9	37.4	27.6	30.8	32.8	13.6	13.6	39.6	23.0	23.6
Incr Delay (d2), s/veh	15.1	1.0	3.5	12.4	0.1	3.0	21.2	0.5	0.4	19.9	2.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	5.4	5.7	2.0	0.6	4.1	7.0	2.1	2.2	0.2	4.0	4.5
LnGrp Delay(d),s/veh	49.2	27.4	30.4	49.7	27.6	33.8	54.0	14.0	14.0	59.5	25.0	26.7
LnGrp LOS	D	C	C	D	C	C	D	B	B	E	C	C
Approach Vol, veh/h		1200			325			555			441	
Approach Delay, s/veh		35.1			36.4			31.8			26.3	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	41.3	8.9	24.8	17.4	28.9	15.0	18.7
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	5.6	51.5	7.2	22.0	13.4	43.0	10.5	18.7
Max Q Clear Time (g_c+I1), s	12.3	6.2	5.4	14.2	12.9	11.4	10.8	10.9
Green Ext Time (p_c), s	0.0	13.4	0.0	3.3	0.0	11.8	0.0	3.3

Intersection Summary		
HCM 2010 Ctrl Delay		33.0
HCM 2010 LOS		C

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2023 Plus Ambient Growth Plus Project (Phase 1) (2023 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	88	5.0	0.075	3.7	LOS A	0.3	7.1	0.19	0.08	24.5
12	R2	57	5.0	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		145	5.0	0.075	2.2	LOS A	0.3	7.1	0.12	0.05	24.8
East: Keller Road											
3	L2	72	5.0	0.066	3.4	LOS A	0.3	6.6	0.20	0.09	24.5
8	T1	137	3.0	0.066	0.3	LOS A	0.3	6.6	0.02	0.01	24.7
Approach		208	3.7	0.066	1.3	LOS A	0.3	6.6	0.08	0.03	24.6
West: Keller Road											
4	T1	81	3.0	0.063	3.3	LOS A	0.2	6.3	0.18	0.07	23.6
14	R2	75	5.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		156	4.0	0.063	1.7	LOS A	0.2	6.3	0.09	0.04	24.6
All Vehicles		509	4.1	0.075	1.7	LOS A	0.3	7.1	0.09	0.04	24.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2023 Plus Ambient Growth Plus Project (Phase 1) (2023 w/A + Proj)
PM Peak Hour
Roundabout

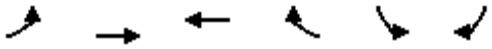
Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	100	5.0	0.046	3.7	LOS A	0.2	4.1	0.24	0.12	13.7
2	T1	1	5.0	0.046	3.6	LOS A	0.2	4.0	0.24	0.12	23.2
12	R2	31	5.0	0.019	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		132	5.0	0.046	2.8	LOS A	0.2	4.1	0.19	0.09	16.0
East: Keller Road											
8	T1	108	3.0	0.046	3.4	LOS A	0.2	4.4	0.25	0.13	23.6
18	R2	34	5.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		142	3.5	0.046	2.6	LOS A	0.2	4.4	0.19	0.10	24.0
West: Keller Road											
7	L2	44	5.0	0.050	3.1	LOS A	0.0	0.0	0.00	0.00	29.0
4	T1	94	3.0	0.050	3.0	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		138	3.6	0.050	3.0	LOS A	0.0	0.0	0.00	0.00	26.0
All Vehicles		412	4.0	0.050	2.8	LOS A	0.2	4.4	0.13	0.06	20.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

APPENDIX C-5
Intersection LOS Analysis
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions

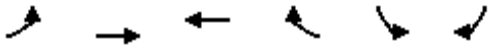


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	164	374	366	132	133	207
Future Volume (veh/h)	164	374	366	132	133	207
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	176	402	394	142	143	223
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	224	1095	504	182	168	262
Arrive On Green	0.13	0.59	0.39	0.39	0.26	0.26
Sat Flow, veh/h	1774	1863	1308	471	644	1005
Grp Volume(v), veh/h	176	402	0	536	367	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1780	1653	0
Q Serve(g_s), s	5.7	6.7	0.0	15.7	12.5	0.0
Cycle Q Clear(g_c), s	5.7	6.7	0.0	15.7	12.5	0.0
Prop In Lane	1.00			0.26	0.39	0.61
Lane Grp Cap(c), veh/h	224	1095	0	686	431	0
V/C Ratio(X)	0.78	0.37	0.00	0.78	0.85	0.00
Avail Cap(c_a), veh/h	433	1679	0	1035	766	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.1	6.4	0.0	16.0	20.8	0.0
Incr Delay (d2), s/veh	5.9	0.2	0.0	2.2	4.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.4	0.0	8.0	6.3	0.0
LnGrp Delay(d),s/veh	31.1	6.6	0.0	18.3	25.7	0.0
LnGrp LOS	C	A		B	C	
Approach Vol, veh/h		578	536		367	
Approach Delay, s/veh		14.1	18.3		25.7	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				39.4		20.0	12.0	27.4
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				53.5		27.5	14.5	34.5
Max Q Clear Time (g_c+I1), s				8.7		14.5	7.7	17.7
Green Ext Time (p_c), s				6.5		1.0	0.2	5.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	308	355	470	150	98	135
Future Volume (veh/h)	308	355	470	150	98	135
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	314	362	480	153	100	138
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	367	1291	569	181	121	167
Arrive On Green	0.21	0.69	0.42	0.42	0.17	0.17
Sat Flow, veh/h	1774	1863	1355	432	694	958
Grp Volume(v), veh/h	314	362	0	633	239	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1787	1659	0
Q Serve(g_s), s	11.6	5.0	0.0	21.7	9.4	0.0
Cycle Q Clear(g_c), s	11.6	5.0	0.0	21.7	9.4	0.0
Prop In Lane	1.00			0.24	0.42	0.58
Lane Grp Cap(c), veh/h	367	1291	0	750	290	0
V/C Ratio(X)	0.85	0.28	0.00	0.84	0.83	0.00
Avail Cap(c_a), veh/h	535	1684	0	959	476	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.0	4.0	0.0	17.7	27.1	0.0
Incr Delay (d2), s/veh	8.9	0.1	0.0	5.6	6.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	2.6	0.0	11.7	4.8	0.0
LnGrp Delay(d),s/veh	34.9	4.1	0.0	23.3	33.1	0.0
LnGrp LOS	C	A		C	C	
Approach Vol, veh/h		676	633		239	
Approach Delay, s/veh		18.4	23.3		33.1	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				51.6		16.4	18.6	33.1
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				61.5		19.5	20.5	36.5
Max Q Clear Time (g_c+I1), s				7.0		11.4	13.6	23.7
Green Ext Time (p_c), s				7.3		0.4	0.5	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

APPENDIX C-6
Intersection LOS Analysis
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions

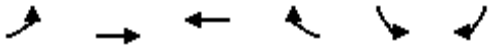
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	605	3	0	753	15	0	0	4	29	1	19
Future Vol, veh/h	0	605	3	0	753	15	0	0	4	29	1	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	651	3	0	810	16	0	0	4	31	1	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	826	0	0	654	0	0	1480	1478	652	1472	1472	818
Stage 1	-	-	-	-	-	-	652	652	-	818	818	-
Stage 2	-	-	-	-	-	-	828	826	-	654	654	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	805	-	-	933	-	-	104	126	468	105	127	376
Stage 1	-	-	-	-	-	-	457	464	-	370	390	-
Stage 2	-	-	-	-	-	-	365	387	-	456	463	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	805	-	-	933	-	-	98	126	468	104	127	376
Mov Cap-2 Maneuver	-	-	-	-	-	-	98	126	-	104	127	-
Stage 1	-	-	-	-	-	-	457	464	-	370	390	-
Stage 2	-	-	-	-	-	-	344	387	-	452	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.8	43.4
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	468	805	-	-	933	-	-	145
HCM Lane V/C Ratio	0.009	-	-	-	-	-	-	0.363
HCM Control Delay (s)	12.8	0	-	-	0	-	-	43.4
HCM Lane LOS	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.5



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	490	528	298	256	212
Future Volume (veh/h)	179	490	528	298	256	212
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	192	527	568	320	275	228
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	208	1212	555	313	252	209
Arrive On Green	0.12	0.65	0.50	0.50	0.27	0.27
Sat Flow, veh/h	1774	1863	1120	631	918	761
Grp Volume(v), veh/h	192	527	0	888	504	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1751	1683	0
Q Serve(g_s), s	12.9	16.5	0.0	59.5	32.9	0.0
Cycle Q Clear(g_c), s	12.9	16.5	0.0	59.5	32.9	0.0
Prop In Lane	1.00			0.36	0.55	0.45
Lane Grp Cap(c), veh/h	208	1212	0	868	461	0
V/C Ratio(X)	0.92	0.43	0.00	1.02	1.09	0.00
Avail Cap(c_a), veh/h	208	1212	0	868	461	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.4	10.2	0.0	30.3	43.6	0.0
Incr Delay (d2), s/veh	41.0	0.2	0.0	36.4	69.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	8.6	0.0	37.5	24.1	0.0
LnGrp Delay(d),s/veh	93.4	10.4	0.0	66.6	112.9	0.0
LnGrp LOS	F	B		F	F	
Approach Vol, veh/h		719	888		504	
Approach Delay, s/veh		32.6	66.6		112.9	
Approach LOS		C	E		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		82.6		37.4	18.6	64.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		78.1		32.9	14.1	59.5		
Max Q Clear Time (g_c+I1), s		18.5		34.9	14.9	61.5		
Green Ext Time (p_c), s		13.9		0.0	0.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	66.1
HCM 2010 LOS	E

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	683	142	392	712	790	58	172	82	867	174	79
Future Volume (veh/h)	98	683	142	392	712	790	58	172	82	867	174	79
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	117	813	169	467	848	940	69	205	98	666	719	94
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	1796	373	242	2448	1504	110	400	340	519	718	94
Arrive On Green	0.08	0.60	0.60	0.14	0.66	0.66	0.06	0.21	0.21	0.29	0.44	0.44
Sat Flow, veh/h	1774	2993	622	1774	3725	1583	1774	1863	1583	1774	1614	211
Grp Volume(v), veh/h	117	506	476	467	848	940	69	205	98	666	0	813
Grp Sat Flow(s),veh/h/ln	1774	1863	1753	1774	1863	1583	1774	1863	1583	1774	0	1825
Q Serve(g_s), s	8.8	20.1	20.1	18.4	13.6	9.9	5.1	13.1	7.0	39.5	0.0	60.0
Cycle Q Clear(g_c), s	8.8	20.1	20.1	18.4	13.6	9.9	5.1	13.1	7.0	39.5	0.0	60.0
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	140	1118	1052	242	2448	1504	110	400	340	519	0	811
V/C Ratio(X)	0.83	0.45	0.45	1.93	0.35	0.63	0.63	0.51	0.29	1.28	0.00	1.00
Avail Cap(c_a), veh/h	242	1118	1052	242	2448	1504	110	400	340	519	0	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.65	0.65	0.65	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.3	14.8	14.8	58.3	10.3	0.4	61.8	46.8	44.4	47.8	0.0	37.5
Incr Delay (d2), s/veh	3.0	0.8	0.9	429.0	0.3	1.3	23.8	4.6	2.1	141.5	0.0	32.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	10.5	9.9	37.8	7.0	4.4	3.2	7.2	3.2	39.7	0.0	37.4
LnGrp Delay(d),s/veh	64.3	15.6	15.7	487.3	10.5	1.7	85.6	51.4	46.5	189.3	0.0	69.6
LnGrp LOS	E	B	B	F	B	A	F	D	D	F		F
Approach Vol, veh/h		1099			2255			372			1479	
Approach Delay, s/veh		20.9			105.6			56.4			123.5	
Approach LOS		C			F			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	88.8	13.0	66.2	15.3	96.5	44.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	18.4	28.2	8.4	58.4	18.4	28.2	39.5	* 29
Max Q Clear Time (g_c+I1), s	20.1	22.1	7.1	62.0	10.8	15.6	41.5	15.1
Green Ext Time (p_c), s	0.0	5.9	0.0	0.0	0.0	12.0	0.0	7.4

Intersection Summary	
HCM 2010 Ctrl Delay	89.3
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	967	719	0	1466	510	0	0	0	328	0	428
Future Volume (veh/h)	0	967	719	0	1466	510	0	0	0	328	0	428
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1051	782	0	1593	554				357	0	465
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2124	950	0	2124	950				1071	0	867
Arrive On Green	0.00	0.60	0.60	0.00	0.60	0.60				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1051	782	0	1593	554				357	0	465
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	15.2	35.1	0.0	29.5	19.4				7.2	0.0	12.4
Cycle Q Clear(g_c), s	0.0	15.2	35.1	0.0	29.5	19.4				7.2	0.0	12.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2124	950	0	2124	950				1071	0	867
V/C Ratio(X)	0.00	0.49	0.82	0.00	0.75	0.58				0.33	0.00	0.54
Avail Cap(c_a), veh/h	0	2124	950	0	2124	950				1071	0	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.45	0.45				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.2	14.2	0.0	13.1	11.1				23.8	0.0	25.6
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	1.1	1.2				0.8	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.3	15.4	0.0	14.5	8.6				3.5	0.0	5.1
LnGrp Delay(d),s/veh	0.0	10.3	14.8	0.0	14.2	12.3				24.7	0.0	28.0
LnGrp LOS		B	B		B	B				C		C
Approach Vol, veh/h		1833			2147						822	
Approach Delay, s/veh		12.2			13.7						26.6	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		58.0		32.0		58.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		54.0		28.0		54.0		
Max Q Clear Time (g_c+I1), s		37.1		14.4		31.5		
Green Ext Time (p_c), s		15.9		2.9		20.9		

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	1000	0	0	1376	466	0	0	391	0	0	600
Future Volume (veh/h)	295	1000	0	0	1376	466	0	0	391	0	0	600
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	311	1053	0	0	1448	491	0	0	412	0	0	632
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	335	3382	0	0	2556	1144	0	0	0	0	0	0
Arrive On Green	0.19	0.96	0.00	0.00	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	311	1053	0	0	1448	491		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	15.5	1.7	0.0	0.0	17.3	11.2						
Cycle Q Clear(g_c), s	15.5	1.7	0.0	0.0	17.3	11.2						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	335	3382	0	0	2556	1144						
V/C Ratio(X)	0.93	0.31	0.00	0.00	0.57	0.43						
Avail Cap(c_a), veh/h	335	3382	0	0	2556	1144						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.89	0.89	0.00	0.00	0.42	0.42						
Uniform Delay (d), s/veh	35.9	0.1	0.0	0.0	5.9	5.0						
Incr Delay (d2), s/veh	28.9	0.2	0.0	0.0	0.4	0.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	10.3	0.8	0.0	0.0	8.4	4.9						
LnGrp Delay(d),s/veh	64.8	0.3	0.0	0.0	6.3	5.5						
LnGrp LOS	E	A			A	A						
Approach Vol, veh/h		1364			1939							
Approach Delay, s/veh		15.0			6.1							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			21.0	69.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		63.1			17.0	42.1		
Max Q Clear Time (g_c+I1), s		3.7			17.5	19.3		
Green Ext Time (p_c), s		39.0			0.0	19.0		

Intersection Summary		
HCM 2010 Ctrl Delay		9.8
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	319	749	323	99	1223	74	342	203	106	56	199	277
Future Volume (veh/h)	319	749	323	99	1223	74	342	203	106	56	199	277
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	336	788	340	104	1287	78	360	214	112	59	209	292
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	384	1518	679	155	1776	108	411	687	584	76	543	462
Arrive On Green	0.11	0.43	0.43	0.05	0.36	0.36	0.12	0.37	0.37	0.04	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4903	297	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	336	788	340	104	890	475	360	214	112	59	209	292
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1810	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	11.5	19.6	18.7	3.6	27.2	27.2	12.3	9.8	5.8	4.0	10.7	19.2
Cycle Q Clear(g_c), s	11.5	19.6	18.7	3.6	27.2	27.2	12.3	9.8	5.8	4.0	10.7	19.2
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	384	1518	679	155	1228	656	411	687	584	76	543	462
V/C Ratio(X)	0.87	0.52	0.50	0.67	0.72	0.72	0.87	0.31	0.19	0.78	0.38	0.63
Avail Cap(c_a), veh/h	384	1518	679	215	1228	656	413	687	584	140	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	25.2	24.9	56.4	33.1	33.1	51.9	27.0	25.7	56.9	33.9	36.9
Incr Delay (d2), s/veh	16.8	1.1	2.3	1.9	3.7	6.8	17.8	1.2	0.7	6.3	2.1	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	9.8	8.6	1.7	13.4	14.8	6.9	5.3	2.6	2.1	5.8	9.2
LnGrp Delay(d),s/veh	69.3	26.3	27.2	58.3	36.8	39.9	69.7	28.2	26.5	63.2	36.0	43.4
LnGrp LOS	E	C	C	E	D	D	E	C	C	E	D	D
Approach Vol, veh/h		1464			1469			686			560	
Approach Delay, s/veh		36.4			39.4			49.7			42.7	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	58.2	18.9	41.5	18.0	50.2	9.7	50.7
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.5	* 42	14.4	* 35	13.4	35.3	9.5	39.6
Max Q Clear Time (g_c+I1), s	5.6	21.6	14.3	21.2	13.5	29.2	6.0	11.8
Green Ext Time (p_c), s	0.0	14.5	0.0	1.7	0.0	5.3	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	40.5
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	15	0	58	5	248	0	0	169	127	0	9
Future Vol, veh/h	17	15	0	58	5	248	0	0	169	127	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	0	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	19	0	73	6	314	0	0	214	161	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	320	0	0	19	0	0	378	529	19	372	372	163
Stage 1	-	-	-	-	-	-	62	62	-	310	310	-
Stage 2	-	-	-	-	-	-	316	467	-	62	62	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1240	-	-	1597	-	-	580	455	1059	585	558	882
Stage 1	-	-	-	-	-	-	949	843	-	700	659	-
Stage 2	-	-	-	-	-	-	695	562	-	949	843	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1240	-	-	1597	-	-	545	426	1059	444	523	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	545	426	-	444	523	-
Stage 1	-	-	-	-	-	-	932	828	-	687	629	-
Stage 2	-	-	-	-	-	-	655	536	-	744	828	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.2	1.4	9.3	17.5
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1059	1240	-	-	1597	-	-	459
HCM Lane V/C Ratio	-	-	0.202	0.017	-	-	0.046	-	-	0.375
HCM Control Delay (s)	0	0	9.3	8	0	-	7.4	-	-	17.5
HCM Lane LOS	A	A	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	-	0.1	-	-	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	311	89	13	444	109	49	200	16	55	286	41
Future Volume (veh/h)	104	311	89	13	444	109	49	200	16	55	286	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	121	362	103	15	516	127	57	233	19	64	333	48
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1667	519	48	891	215	562	989	81	651	1084	922
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	1520	5085	1583	33	2718	657	998	1700	139	1123	1863	1583
Grp Volume(v), veh/h	121	362	103	353	0	305	57	0	252	64	333	48
Grp Sat Flow(s),veh/h/ln	760	1695	1583	1829	0	1579	998	0	1838	1123	1863	1583
Q Serve(g_s), s	7.2	5.2	4.7	0.0	0.0	16.1	3.1	0.0	6.6	2.9	9.1	1.3
Cycle Q Clear(g_c), s	23.3	5.2	4.7	15.7	0.0	16.1	12.2	0.0	6.6	9.6	9.1	1.3
Prop In Lane	1.00		1.00	0.04		0.42	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	397	1667	519	637	0	518	562	0	1070	651	1084	922
V/C Ratio(X)	0.30	0.22	0.20	0.55	0.00	0.59	0.10	0.00	0.24	0.10	0.31	0.05
Avail Cap(c_a), veh/h	576	2263	705	846	0	703	562	0	1070	651	1084	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	24.3	24.2	27.9	0.0	28.0	13.7	0.0	10.1	12.4	10.6	9.0
Incr Delay (d2), s/veh	0.4	0.1	0.2	0.8	0.0	1.1	0.4	0.0	0.5	0.3	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.4	2.1	8.2	0.0	7.2	0.9	0.0	3.5	1.0	4.8	0.6
LnGrp Delay(d),s/veh	38.1	24.4	24.3	28.6	0.0	29.1	14.1	0.0	10.6	12.7	11.4	9.1
LnGrp LOS	D	C	C	C		C	B		B	B	B	A
Approach Vol, veh/h		586			658			309			445	
Approach Delay, s/veh		27.2			28.8			11.3			11.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.7		37.3		62.7		37.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		46.5		44.5		46.5		44.5
Max Q Clear Time (g_c+I1), s		14.2		25.3		11.6		18.1
Green Ext Time (p_c), s		4.5		7.5		4.5		8.5

Intersection Summary	
HCM 2010 Ctrl Delay	21.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	22	50	20	30	12	134	60	2	15	187	157
Future Volume (veh/h)	95	22	50	20	30	12	134	60	2	15	187	157
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	106	24	56	22	33	13	149	67	2	17	208	174
Adj No. of Lanes	1	1	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	520	442	47	566	211	197	1112	497	38	793	355
Arrive On Green	0.08	0.28	0.28	0.03	0.22	0.22	0.11	0.31	0.31	0.02	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	2527	939	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	106	24	56	22	23	23	149	67	2	17	208	174
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1697	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.6	0.4	1.2	0.5	0.4	0.5	3.6	0.6	0.0	0.4	2.2	4.3
Cycle Q Clear(g_c), s	2.6	0.4	1.2	0.5	0.4	0.5	3.6	0.6	0.0	0.4	2.2	4.3
Prop In Lane	1.00		1.00	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	145	520	442	47	397	380	197	1112	497	38	793	355
V/C Ratio(X)	0.73	0.05	0.13	0.46	0.06	0.06	0.75	0.06	0.00	0.45	0.26	0.49
Avail Cap(c_a), veh/h	517	1252	1064	239	912	875	676	2538	1135	239	1666	745
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	11.7	12.0	21.4	13.6	13.6	19.2	10.7	10.5	21.6	14.3	15.1
Incr Delay (d2), s/veh	6.8	0.0	0.1	6.9	0.1	0.1	5.8	0.0	0.0	8.2	0.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.2	0.5	0.4	0.2	0.2	2.1	0.3	0.0	0.3	1.1	2.0
LnGrp Delay(d),s/veh	26.8	11.8	12.1	28.3	13.7	13.7	25.0	10.7	10.5	29.7	14.4	16.1
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		186			68			218			399	
Approach Delay, s/veh		20.5			18.4			20.5			15.8	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	16.5	9.0	14.0	7.7	14.0	4.9	18.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	30.0	17.0	21.0	13.0	23.0	6.0	32.0
Max Q Clear Time (g_c+I1), s	2.5	3.2	5.6	6.3	4.6	2.5	2.4	2.6
Green Ext Time (p_c), s	0.0	0.5	0.3	1.8	0.1	0.4	0.0	2.2

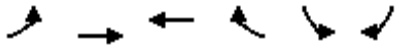
Intersection Summary		
HCM 2010 Ctrl Delay		18.2
HCM 2010 LOS		B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	164	114	132	351	275
Future Volume (veh/h)	35	164	114	132	351	275
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	39	182	127	147	390	306
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	241	215	862	733	425	1394
Arrive On Green	0.14	0.14	0.46	0.46	0.24	0.75
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	39	182	127	147	390	306
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	1.9	11.2	3.9	5.5	21.4	4.9
Cycle Q Clear(g_c), s	1.9	11.2	3.9	5.5	21.4	4.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	241	215	862	733	425	1394
V/C Ratio(X)	0.16	0.85	0.15	0.20	0.92	0.22
Avail Cap(c_a), veh/h	348	310	862	733	663	1394
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	42.2	15.5	15.9	37.1	3.8
Incr Delay (d2), s/veh	0.2	11.2	0.4	0.6	9.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.6	2.1	2.5	11.6	2.6
LnGrp Delay(d),s/veh	38.4	53.4	15.8	16.5	46.2	4.2
LnGrp LOS	D	D	B	B	D	A
Approach Vol, veh/h	221		274			696
Approach Delay, s/veh	50.8		16.2			27.7
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.6	52.5				81.0		19.0
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	37.4	26.8				68.8		19.6
Max Q Clear Time (g_c+I1), s	23.4	7.5				6.9		13.2
Green Ext Time (p_c), s	0.5	6.3				8.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	29.4
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	255	288	30	1	13
Future Volume (veh/h)	15	255	288	30	1	13
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	18	311	351	37	1	16
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	41	929	639	67	1128	1006
Arrive On Green	0.02	0.26	0.20	0.20	0.64	0.64
Sat Flow, veh/h	1774	3632	3327	339	1774	1583
Grp Volume(v), veh/h	18	311	191	197	1	16
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1803	1774	1583
Q Serve(g_s), s	1.1	7.8	10.7	10.8	0.0	0.4
Cycle Q Clear(g_c), s	1.1	7.8	10.7	10.8	0.0	0.4
Prop In Lane	1.00			0.19	1.00	1.00
Lane Grp Cap(c), veh/h	41	929	350	356	1128	1006
V/C Ratio(X)	0.44	0.33	0.55	0.55	0.00	0.02
Avail Cap(c_a), veh/h	264	2304	814	829	1128	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	0.72	1.00	1.00
Uniform Delay (d), s/veh	53.0	32.8	39.7	39.7	7.3	7.4
Incr Delay (d2), s/veh	2.0	0.3	1.9	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.8	5.4	5.6	0.0	0.7
LnGrp Delay(d),s/veh	55.0	33.1	41.6	41.7	7.3	7.4
LnGrp LOS	E	C	D	D	A	A
Approach Vol, veh/h		329	388		17	
Approach Delay, s/veh		34.3	41.7		7.4	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				34.3		75.7	7.1	27.1
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				71.6		27.2	16.4	50.6
Max Q Clear Time (g_c+I1), s				9.8		2.4	3.1	12.8
Green Ext Time (p_c), s				9.6		0.0	0.0	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	37.6
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	148	96	5	11	226	166	36	11	378	15
Future Volume (veh/h)	11	13	148	96	5	11	226	166	36	11	378	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	16	180	117	6	13	276	202	44	13	461	18
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	350	297	152	479	407	346	1153	246	29	761	30
Arrive On Green	0.02	0.19	0.19	0.09	0.26	0.26	0.19	0.40	0.40	0.02	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2903	620	1774	3473	135
Grp Volume(v), veh/h	13	16	180	117	6	13	276	122	124	13	235	244
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1753	1774	1770	1839
Q Serve(g_s), s	0.4	0.4	5.3	3.3	0.1	0.3	7.6	2.3	2.4	0.4	6.1	6.1
Cycle Q Clear(g_c), s	0.4	0.4	5.3	3.3	0.1	0.3	7.6	2.3	2.4	0.4	6.1	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.35	1.00		0.07
Lane Grp Cap(c), veh/h	29	350	297	152	479	407	346	703	697	29	387	403
V/C Ratio(X)	0.44	0.05	0.61	0.77	0.01	0.03	0.80	0.17	0.18	0.44	0.61	0.61
Avail Cap(c_a), veh/h	191	801	681	347	965	820	728	1263	1251	191	726	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	17.0	19.0	22.9	14.2	14.2	19.6	10.0	10.0	24.9	18.0	18.0
Incr Delay (d2), s/veh	10.2	0.1	2.0	8.0	0.0	0.0	4.3	0.1	0.1	10.2	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	2.5	2.0	0.1	0.1	4.1	1.1	1.2	0.3	3.1	3.2
LnGrp Delay(d),s/veh	35.1	17.1	21.0	30.9	14.2	14.3	23.9	10.1	10.1	35.1	19.5	19.5
LnGrp LOS	D	B	C	C	B	B	C	B	B	D	B	B
Approach Vol, veh/h		209			136			522			492	
Approach Delay, s/veh		21.6			28.5			17.4			19.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	24.3	8.4	13.6	14.0	15.2	4.8	17.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	36.5	10.0	22.0	21.0	21.0	5.5	26.5
Max Q Clear Time (g_c+I1), s	2.4	4.4	5.3	7.3	9.6	8.1	2.4	2.3
Green Ext Time (p_c), s	0.0	4.0	0.1	0.6	0.6	3.1	0.0	0.7

Intersection Summary		
HCM 2010 Ctrl Delay		20.1
HCM 2010 LOS		C

Intersection	
Intersection Delay, s/veh	14.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	3	443	1	0	1	0	245	0	0	0
Future Vol, veh/h	0	3	3	443	1	0	1	0	245	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	3	487	1	0	1	0	269	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.1	16.6	10.9	0
HCM LOS	A	C	B	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	50%	0%	100%
Vol Right, %	0%	100%	50%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	245	6	444	0
LT Vol	1	0	0	443	0
Through Vol	0	0	3	1	0
RT Vol	0	245	3	0	0
Lane Flow Rate	1	269	7	488	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.002	0.379	0.009	0.654	0
Departure Headway (Hd)	6.276	5.064	4.936	4.829	5.671
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	568	705	716	747	0
Service Time	4.037	2.824	3.028	2.884	3.768
HCM Lane V/C Ratio	0.002	0.382	0.01	0.653	0
HCM Control Delay	9	10.9	8.1	16.6	8.8
HCM Lane LOS	A	B	A	C	N
HCM 95th-tile Q	0	1.8	0	4.9	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	3	60	6	4	1	39	461	2	1	386	49
Future Volume (veh/h)	30	3	60	6	4	1	39	461	2	1	386	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	3	69	7	5	1	45	530	2	1	444	56
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	118	100	8	6	1	61	2832	11	3	2374	298
Arrive On Green	0.06	0.06	0.06	0.01	0.01	0.01	0.03	0.78	0.78	0.00	0.75	0.75
Sat Flow, veh/h	1774	1863	1583	964	689	138	1774	3616	14	1774	3165	397
Grp Volume(v), veh/h	34	3	69	13	0	0	45	259	273	1	247	253
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1790	0	0	1774	1770	1860	1774	1770	1793
Q Serve(g_s), s	2.7	0.2	6.2	1.1	0.0	0.0	3.6	5.4	5.4	0.1	5.9	5.9
Cycle Q Clear(g_c), s	2.7	0.2	6.2	1.1	0.0	0.0	3.6	5.4	5.4	0.1	5.9	5.9
Prop In Lane	1.00		1.00	0.54		0.08	1.00		0.01	1.00		0.22
Lane Grp Cap(c), veh/h	112	118	100	15	0	0	61	1386	1457	3	1327	1345
V/C Ratio(X)	0.30	0.03	0.69	0.84	0.00	0.00	0.73	0.19	0.19	0.35	0.19	0.19
Avail Cap(c_a), veh/h	394	414	352	240	0	0	213	1386	1457	115	1327	1345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.9	63.7	66.5	71.8	0.0	0.0	69.3	4.0	4.0	72.3	5.3	5.3
Incr Delay (d2), s/veh	6.8	0.4	32.5	68.3	0.0	0.0	6.1	0.3	0.3	24.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.1	3.6	0.8	0.0	0.0	1.9	2.7	2.8	0.1	3.0	3.1
LnGrp Delay(d),s/veh	71.7	64.1	99.0	140.1	0.0	0.0	75.5	4.3	4.3	96.6	5.6	5.6
LnGrp LOS	E	E	F	F			E	A	A	F	A	A
Approach Vol, veh/h		106			13			577			501	
Approach Delay, s/veh		89.3			140.1			9.8			5.8	
Approach LOS		F			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	119.4		15.0	9.6	114.6		5.9
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	9.4	63.2		32.2	17.4	55.2		19.4
Max Q Clear Time (g_c+I1), s	2.1	7.4		8.2	5.6	7.9		3.1
Green Ext Time (p_c), s	0.0	21.5		1.1	0.0	20.2		0.0

Intersection Summary			
HCM 2010 Ctrl Delay		16.6	
HCM 2010 LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1353	217	183	1316	47	98	6	262	108	21	73
Future Volume (veh/h)	40	1353	217	183	1316	47	98	6	262	108	21	73
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	43	1471	236	199	1430	51	107	7	285	117	23	79
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1786	799	128	2699	840	135	8	333	167	349	370
Arrive On Green	0.05	0.50	0.50	0.07	0.53	0.53	0.08	0.21	0.21	0.05	0.19	0.19
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	38	1551	3442	1863	1583
Grp Volume(v), veh/h	43	1471	236	199	1430	51	107	0	292	117	23	79
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1589	1721	1863	1583
Q Serve(g_s), s	3.1	45.8	11.3	9.4	23.9	2.0	7.7	0.0	23.0	4.4	1.3	5.2
Cycle Q Clear(g_c), s	3.1	45.8	11.3	9.4	23.9	2.0	7.7	0.0	23.0	4.4	1.3	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Lane Grp Cap(c), veh/h	82	1786	799	128	2699	840	135	0	341	167	349	370
V/C Ratio(X)	0.53	0.82	0.30	1.55	0.53	0.06	0.79	0.00	0.86	0.70	0.07	0.21
Avail Cap(c_a), veh/h	259	1786	799	128	2699	840	259	0	561	267	530	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	27.3	18.8	60.3	19.9	14.8	59.1	0.0	49.1	60.9	43.5	40.2
Incr Delay (d2), s/veh	1.9	4.5	0.9	274.8	0.6	0.1	10.1	0.0	7.5	2.0	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	23.4	5.2	14.4	11.3	0.9	4.2	0.0	10.8	2.1	0.7	2.4
LnGrp Delay(d),s/veh	62.5	31.8	19.7	335.1	20.5	14.9	69.2	0.0	56.6	62.9	43.7	40.9
LnGrp LOS	E	C	B	F	C	B	E		E	E	D	D
Approach Vol, veh/h		1750			1680			399			219	
Approach Delay, s/veh		30.9			57.6			60.0			52.9	
Approach LOS		C			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	71.4	14.5	30.2	10.6	74.8	10.9	33.7
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	9.4	43.8	19.0	37.0	19.0	34.2	10.1	45.9
Max Q Clear Time (g_c+I1), s	11.4	47.8	9.7	7.2	5.1	25.9	6.4	25.0
Green Ext Time (p_c), s	0.0	0.0	0.2	3.2	0.0	8.3	0.1	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	46.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	1382	10	11	1097	106	3	1	10	483	2	291
Future Volume (veh/h)	273	1382	10	11	1097	106	3	1	10	483	2	291
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	300	1519	11	12	1205	116	3	1	11	531	2	320
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	2648	824	30	2201	964	8	13	140	605	3	419
Arrive On Green	0.10	0.52	0.52	0.02	0.43	0.43	0.00	0.10	0.10	0.18	0.27	0.27
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	134	1470	3442	10	1575
Grp Volume(v), veh/h	300	1519	11	12	1205	116	3	0	12	531	0	322
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1603	1721	0	1585
Q Serve(g_s), s	9.0	21.4	0.4	0.7	18.5	3.2	0.2	0.0	0.7	15.8	0.0	19.6
Cycle Q Clear(g_c), s	9.0	21.4	0.4	0.7	18.5	3.2	0.2	0.0	0.7	15.8	0.0	19.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		0.99
Lane Grp Cap(c), veh/h	361	2648	824	30	2201	964	8	0	153	605	0	422
V/C Ratio(X)	0.83	0.57	0.01	0.40	0.55	0.12	0.35	0.00	0.08	0.88	0.00	0.76
Avail Cap(c_a), veh/h	374	2648	824	101	2201	964	167	0	307	780	0	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.11	0.11	0.11	0.95	0.95	0.95	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.1	17.2	12.1	51.1	22.1	8.7	52.1	0.0	43.3	42.2	0.0	35.5
Incr Delay (d2), s/veh	1.7	0.1	0.0	3.0	0.5	0.1	9.0	0.0	0.2	7.7	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	10.0	0.2	0.4	8.7	1.5	0.1	0.0	0.3	8.2	0.0	9.3
LnGrp Delay(d),s/veh	47.8	17.3	12.1	54.1	22.7	8.8	61.1	0.0	43.5	49.9	0.0	41.4
LnGrp LOS	D	B	B	D	C	A	E		D	D		D
Approach Vol, veh/h		1830			1333			15			853	
Approach Delay, s/veh		22.3			21.7			47.0			46.7	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	60.5	5.1	33.1	15.6	51.2	23.1	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	35.0	9.9	34.0	11.4	29.6	23.8	20.1
Max Q Clear Time (g_c+I1), s	2.7	23.4	2.2	21.6	11.0	20.5	17.8	2.7
Green Ext Time (p_c), s	0.0	11.4	0.0	2.1	0.0	7.0	0.7	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1322	685	0	737	0	0	0	0	253	2	439
Future Volume (veh/h)	0	1322	685	0	737	0	0	0	0	253	2	439
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1502	778	0	838	0				288	2	499
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2769	862	0	2769	0				646	4	1022
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.00				0.37	0.37	0.37
Sat Flow, veh/h	0	5253	1583	0	5421	0				1762	12	2787
Grp Volume(v), veh/h	0	1502	778	0	838	0				290	0	499
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	17.2	39.6	0.0	8.1	0.0				11.1	0.0	12.4
Cycle Q Clear(g_c), s	0.0	17.2	39.6	0.0	8.1	0.0				11.1	0.0	12.4
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2769	862	0	2769	0				651	0	1022
V/C Ratio(X)	0.00	0.54	0.90	0.00	0.30	0.00				0.45	0.00	0.49
Avail Cap(c_a), veh/h	0	2769	862	0	2769	0				651	0	1022
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.74	0.74	0.00	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.3	18.4	0.0	11.2	0.0				21.6	0.0	22.0
Incr Delay (d2), s/veh	0.0	0.2	9.9	0.0	0.3	0.0				2.2	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.0	19.4	0.0	3.8	0.0				5.8	0.0	5.0
LnGrp Delay(d),s/veh	0.0	13.4	28.3	0.0	11.5	0.0				23.8	0.0	23.7
LnGrp LOS		B	C		B					C		C
Approach Vol, veh/h		2280			838						789	
Approach Delay, s/veh		18.5			11.5						23.7	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		53.0		37.0		53.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		49.0		33.0		49.0		
Max Q Clear Time (g_c+I1), s		41.6		14.4		10.1		
Green Ext Time (p_c), s		6.9		3.8		29.8		

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	760	815	0	886	222	299	0	500	0	0	0
Future Volume (veh/h)	0	760	815	0	886	222	299	0	500	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1000	0	0	1166	0	393	0	658			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2938	915	0	2938	915	591	0	528			
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1000	0	0	1166	0	393	0	658			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	9.3	0.0	0.0	11.3	0.0	17.1	0.0	30.0			
Cycle Q Clear(g_c), s	0.0	9.3	0.0	0.0	11.3	0.0	17.1	0.0	30.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2938	915	0	2938	915	591	0	528			
V/C Ratio(X)	0.00	0.34	0.00	0.00	0.40	0.00	0.66	0.00	1.25			
Avail Cap(c_a), veh/h	0	2938	915	0	2938	915	591	0	528			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.95	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.0	0.0	0.0	10.4	0.0	25.7	0.0	30.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.1	0.0	5.8	0.0	126.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.4	0.0	0.0	5.3	0.0	9.3	0.0	31.5			
LnGrp Delay(d),s/veh	0.0	10.3	0.0	0.0	10.5	0.0	31.5	0.0	156.2			
LnGrp LOS		B			B		C		F			
Approach Vol, veh/h		1000			1166			1051				
Approach Delay, s/veh		10.3			10.5			109.6				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		56.0				56.0		34.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		29.0				19.0		30.0
Max Q Clear Time (g_c+I1), s		11.3				13.3		32.0
Green Ext Time (p_c), s		12.9				4.9		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		42.8
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	784	120	79	604	170	255	166	6	141	130	322
Future Volume (veh/h)	364	784	120	79	604	170	255	166	6	141	130	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	513	1104	169	111	851	239	359	234	8	199	183	454
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	515	1198	509	132	919	390	320	1251	43	223	533	453
Arrive On Green	0.15	0.32	0.32	0.07	0.25	0.25	0.18	0.35	0.35	0.13	0.29	0.29
Sat Flow, veh/h	3442	3725	1583	1774	3725	1583	1774	3582	122	1774	1863	1583
Grp Volume(v), veh/h	513	1104	169	111	851	239	359	121	121	199	183	454
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	1583	1774	1863	1841	1774	1863	1583
Q Serve(g_s), s	22.4	42.9	7.7	9.3	33.5	15.2	27.1	6.8	6.9	16.6	11.7	43.0
Cycle Q Clear(g_c), s	22.4	42.9	7.7	9.3	33.5	15.2	27.1	6.8	6.9	16.6	11.7	43.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	515	1198	509	132	919	390	320	651	643	223	533	453
V/C Ratio(X)	1.00	0.92	0.33	0.84	0.93	0.61	1.12	0.19	0.19	0.89	0.34	1.00
Avail Cap(c_a), veh/h	515	1198	509	162	942	400	320	651	643	319	533	453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.8	49.1	15.5	68.6	55.3	28.5	61.6	34.0	34.0	64.7	42.5	53.6
Incr Delay (d2), s/veh	38.4	11.6	0.4	26.2	14.5	2.6	87.4	0.5	0.5	19.4	1.5	42.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	24.0	4.7	5.5	19.1	7.7	21.0	3.6	3.6	9.3	6.2	24.1
LnGrp Delay(d),s/veh	102.2	60.7	15.9	94.8	69.8	31.1	149.0	34.5	34.6	84.1	43.9	96.4
LnGrp LOS	F	E	B	F	E	C	F	C	C	F	D	F
Approach Vol, veh/h		1786			1201			601			836	
Approach Delay, s/veh		68.4			64.4			102.9			82.0	
Approach LOS		E			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	58.3	15.7	52.8	32.9	48.8	27.0	41.6
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	5.8	* 5.8	4.5	4.5
Max Green Setting (Gmax), s	27.6	43.2	13.7	46.8	27.1	* 43	22.5	38.0
Max Q Clear Time (g_c+I1), s	19.6	8.9	11.3	44.9	29.1	45.0	24.4	35.5
Green Ext Time (p_c), s	0.3	3.2	0.1	1.5	0.0	0.0	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	74.6
HCM 2010 LOS	E

Notes

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1) (2023 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	107	5.0	0.098	4.2	LOS A	0.4	9.4	0.30	0.18	24.3
12	R2	152	5.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		259	5.0	0.098	1.7	LOS A	0.4	9.4	0.12	0.07	24.9
East: Keller Road											
3	L2	74	5.0	0.077	3.6	LOS A	0.3	7.8	0.23	0.11	24.6
8	T1	167	3.0	0.077	0.4	LOS A	0.3	7.8	0.03	0.01	24.6
Approach		241	3.6	0.077	1.4	LOS A	0.3	7.8	0.09	0.04	24.6
West: Keller Road											
4	T1	178	3.0	0.139	3.9	LOS A	0.6	15.1	0.20	0.09	23.3
14	R2	137	5.0	0.086	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		315	3.9	0.139	2.2	LOS A	0.6	15.1	0.11	0.05	24.4
All Vehicles		815	4.2	0.139	1.8	LOS A	0.6	15.1	0.11	0.05	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1) (2023 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	83	5.0	0.045	4.3	LOS A	0.2	3.9	0.38	0.26	13.7
2	T1	1	5.0	0.045	4.1	LOS A	0.1	3.8	0.38	0.26	23.1
12	R2	63	5.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		147	5.0	0.045	2.4	LOS A	0.2	3.9	0.22	0.15	18.0
East: Keller Road											
8	T1	159	3.0	0.069	3.7	LOS A	0.3	6.7	0.27	0.14	23.5
18	R2	114	5.0	0.069	0.1	LOS A	0.3	6.5	0.01	0.00	25.0
Approach		273	3.8	0.069	2.2	LOS A	0.3	6.7	0.16	0.09	24.3
West: Keller Road											
7	L2	70	5.0	0.120	3.6	LOS A	0.0	0.0	0.00	0.00	29.6
4	T1	261	3.0	0.120	3.6	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		330	3.4	0.120	3.6	LOS A	0.0	0.0	0.00	0.00	25.6
All Vehicles		750	3.9	0.120	2.8	LOS A	0.3	6.7	0.10	0.06	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

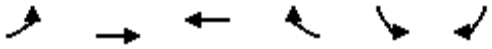
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	971	20	4	761	15	0	0	0	11	2	6
Future Vol, veh/h	2	971	20	4	761	15	0	0	0	11	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1022	21	4	801	16	0	0	0	12	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	817	0	0	1043	0	0	1859	1862	1033	1854	1864	809
Stage 1	-	-	-	-	-	-	1037	1037	-	817	817	-
Stage 2	-	-	-	-	-	-	822	825	-	1037	1047	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	811	-	-	667	-	-	56	73	282	57	73	380
Stage 1	-	-	-	-	-	-	279	308	-	370	390	-
Stage 2	-	-	-	-	-	-	368	387	-	279	305	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	811	-	-	667	-	-	53	72	282	56	72	380
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	72	-	56	72	-
Stage 1	-	-	-	-	-	-	277	306	-	368	386	-
Stage 2	-	-	-	-	-	-	356	383	-	277	303	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	65.4
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	811	-	-	667	-	-	79
HCM Lane V/C Ratio	-	0.003	-	-	0.006	-	-	0.253
HCM Control Delay (s)	0	9.5	0	-	10.4	0	-	65.4
HCM Lane LOS	A	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.9



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	318	569	660	365	316	151
Future Volume (veh/h)	318	569	660	365	316	151
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	324	581	673	372	322	154
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	273	1296	569	315	264	126
Arrive On Green	0.15	0.70	0.50	0.50	0.23	0.23
Sat Flow, veh/h	1774	1863	1129	624	1153	551
Grp Volume(v), veh/h	324	581	0	1045	477	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1753	1708	0
Q Serve(g_s), s	18.5	16.5	0.0	60.5	27.5	0.0
Cycle Q Clear(g_c), s	18.5	16.5	0.0	60.5	27.5	0.0
Prop In Lane	1.00			0.36	0.68	0.32
Lane Grp Cap(c), veh/h	273	1296	0	884	391	0
V/C Ratio(X)	1.18	0.45	0.00	1.18	1.22	0.00
Avail Cap(c_a), veh/h	273	1296	0	884	391	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.8	8.1	0.0	29.8	46.3	0.0
Incr Delay (d2), s/veh	113.9	0.2	0.0	93.7	119.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.7	8.5	0.0	52.0	25.9	0.0
LnGrp Delay(d),s/veh	164.6	8.3	0.0	123.5	165.8	0.0
LnGrp LOS	F	A		F	F	
Approach Vol, veh/h		905	1045		477	
Approach Delay, s/veh		64.3	123.5		165.8	
Approach LOS		E	F		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		88.0		32.0	23.0	65.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		83.5		27.5	18.5	60.5		
Max Q Clear Time (g_c+I1), s		18.5		29.5	20.5	62.5		
Green Ext Time (p_c), s		19.5		0.0	0.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	109.7
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	854	80	138	959	1136	175	236	340	977	141	95
Future Volume (veh/h)	95	854	80	138	959	1136	175	236	340	977	141	95
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	99	890	83	144	999	1183	182	246	354	1018	147	99
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	881	82	168	1065	402	360	963	819	0	291	196
Arrive On Green	0.06	0.26	0.26	0.09	0.29	0.29	0.20	0.52	0.52	0.00	0.28	0.28
Sat Flow, veh/h	1774	3357	313	1774	3614	1536	1774	1863	1583	0	1039	700
Grp Volume(v), veh/h	99	494	479	144	999	1183	182	246	354	0	0	246
Grp Sat Flow(s),veh/h/ln	1774	1863	1807	1774	1807	1536	1774	1863	1583	0	0	1739
Q Serve(g_s), s	7.5	35.4	35.4	10.8	36.4	39.8	12.3	9.9	18.8	0.0	0.0	16.0
Cycle Q Clear(g_c), s	7.5	35.4	35.4	10.8	36.4	39.8	12.3	9.9	18.8	0.0	0.0	16.0
Prop In Lane	1.00		0.17	1.00		1.00	1.00		1.00	0.00		0.40
Lane Grp Cap(c), veh/h	110	489	475	168	1065	402	360	963	819	0	0	487
V/C Ratio(X)	0.90	1.01	1.01	0.86	0.94	2.95	0.51	0.26	0.43	0.00	0.00	0.51
Avail Cap(c_a), veh/h	110	489	475	189	1065	402	360	963	819	0	0	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.55	0.58	0.58	0.58	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	62.9	49.8	49.8	60.2	46.4	62.8	47.8	18.1	20.3	0.0	0.0	40.8
Incr Delay (d2), s/veh	35.6	32.5	33.0	16.8	10.7	879.5	5.0	0.6	1.7	0.0	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	22.6	22.0	6.1	19.8	98.1	6.5	5.2	8.6	0.0	0.0	8.2
LnGrp Delay(d),s/veh	98.5	82.4	82.8	77.1	57.1	942.3	52.8	18.8	21.9	0.0	0.0	44.5
LnGrp LOS	F	F	F	E	E	F	D	B	C			D
Approach Vol, veh/h		1072			2326			782			246	
Approach Delay, s/veh		84.1			508.5			28.1			44.5	
Approach LOS		F			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	41.6	32.0	44.0	13.0	46.0	0.0	76.0
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	14.4	33.8	27.4	37.8	8.4	39.8	37.9	* 29
Max Q Clear Time (g_c+I1), s	12.8	37.4	14.3	18.0	9.5	41.8	0.0	20.8
Green Ext Time (p_c), s	0.0	0.0	0.5	5.2	0.0	0.0	0.0	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	295.1
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1437	787	0	1709	402	0	0	0	450	0	524
Future Volume (veh/h)	0	1437	787	0	1709	402	0	0	0	450	0	524
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1466	803	0	1744	410				459	0	535
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2261	1012	0	2261	1012				937	0	759
Arrive On Green	0.00	0.64	0.64	0.00	0.43	0.43				0.27	0.00	0.27
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1466	803	0	1744	410				459	0	535
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	23.0	33.4	0.0	37.9	16.1				10.1	0.0	15.6
Cycle Q Clear(g_c), s	0.0	23.0	33.4	0.0	37.9	16.1				10.1	0.0	15.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2261	1012	0	2261	1012				937	0	759
V/C Ratio(X)	0.00	0.65	0.79	0.00	0.77	0.41				0.49	0.00	0.71
Avail Cap(c_a), veh/h	0	2261	1012	0	2261	1012				937	0	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.67	0.67				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.22	0.22	0.00	0.25	0.25				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.0	11.9	0.0	20.1	13.9				27.5	0.0	29.5
Incr Delay (d2), s/veh	0.0	0.1	1.0	0.0	0.7	0.3				1.8	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.0	14.6	0.0	18.6	7.1				5.0	0.0	6.5
LnGrp Delay(d),s/veh	0.0	10.2	12.9	0.0	20.8	14.2				29.3	0.0	35.0
LnGrp LOS		B	B		C	B				C		C
Approach Vol, veh/h		2269			2154						994	
Approach Delay, s/veh		11.1			19.5						32.4	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		61.5		28.5		61.5		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		57.5		24.5		57.5		
Max Q Clear Time (g_c+I1), s		35.4		17.6		39.9		
Green Ext Time (p_c), s		21.3		2.5		17.1		

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	523	1364	0	0	1214	409	0	0	617	0	0	897
Future Volume (veh/h)	523	1364	0	0	1214	409	0	0	617	0	0	897
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	539	1406	0	0	1252	422	0	0	636	0	0	925
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	505	3382	0	0	2218	992	0	0	0	0	0	0
Arrive On Green	0.28	0.96	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	539	1406	0	0	1252	422		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	25.6	2.6	0.0	0.0	18.4	12.2						
Cycle Q Clear(g_c), s	25.6	2.6	0.0	0.0	18.4	12.2						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	505	3382	0	0	2218	992						
V/C Ratio(X)	1.07	0.42	0.00	0.00	0.56	0.43						
Avail Cap(c_a), veh/h	505	3382	0	0	2218	992						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.76	0.76	0.00	0.00	0.68	0.68						
Uniform Delay (d), s/veh	32.2	0.1	0.0	0.0	9.7	8.6						
Incr Delay (d2), s/veh	54.5	0.3	0.0	0.0	0.7	0.9						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	20.1	1.1	0.0	0.0	9.1	5.5						
LnGrp Delay(d),s/veh	86.7	0.4	0.0	0.0	10.4	9.5						
LnGrp LOS	F	A			B	A						
Approach Vol, veh/h		1945			1674							
Approach Delay, s/veh		24.3			10.2							
Approach LOS		C			B							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			29.6	60.4		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		60.8			25.6	31.2		
Max Q Clear Time (g_c+I1), s		4.6			27.6	20.4		
Green Ext Time (p_c), s		39.6			0.0	9.9		

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	1300	368	138	1014	57	384	331	251	68	165	225
Future Volume (veh/h)	313	1300	368	138	1014	57	384	331	251	68	165	225
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	316	1313	372	139	1024	58	388	334	254	69	167	227
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	1648	737	189	2040	115	429	642	545	88	502	426
Arrive On Green	0.11	0.47	0.47	0.05	0.41	0.41	0.12	0.34	0.34	0.05	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	4925	279	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	316	1313	372	139	704	378	388	334	254	69	167	227
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1814	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	11.7	41.0	21.3	5.2	20.0	20.0	14.5	18.6	16.3	5.0	9.4	15.9
Cycle Q Clear(g_c), s	11.7	41.0	21.3	5.2	20.0	20.0	14.5	18.6	16.3	5.0	9.4	15.9
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	1648	737	189	1404	751	429	642	545	88	502	426
V/C Ratio(X)	0.86	0.80	0.50	0.74	0.50	0.50	0.90	0.52	0.47	0.79	0.33	0.53
Avail Cap(c_a), veh/h	434	1648	737	196	1404	751	429	642	545	169	502	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.2	29.5	24.3	60.5	28.2	28.2	56.1	34.0	33.3	61.1	38.1	40.5
Incr Delay (d2), s/veh	8.3	2.5	1.5	11.3	1.3	2.4	21.8	3.0	2.8	5.7	1.8	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	20.5	9.7	2.8	9.5	10.5	8.2	10.1	7.6	2.6	5.1	7.5
LnGrp Delay(d),s/veh	65.4	32.0	25.7	71.9	29.4	30.6	77.9	37.0	36.1	66.8	39.9	45.2
LnGrp LOS	E	C	C	E	C	C	E	D	D	E	D	D
Approach Vol, veh/h		2001			1221			976			463	
Approach Delay, s/veh		36.1			34.6			53.1			46.5	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	67.4	20.8	41.5	18.4	60.7	11.0	51.3
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.4	* 50	16.2	* 35	16.4	40.5	12.4	38.5
Max Q Clear Time (g_c+I1), s	13.7	43.0	16.5	17.9	13.7	22.0	7.0	20.6
Green Ext Time (p_c), s	0.0	6.2	0.0	2.2	0.1	15.0	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	40.3
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	18.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	13	0	166	9	120	0	0	98	224	0	22
Future Vol, veh/h	23	13	0	166	9	120	0	0	98	224	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	0	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	15	0	198	11	143	0	0	117	267	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	154	0	0	15	0	0	560	619	15	547	547	82
Stage 1	-	-	-	-	-	-	70	70	-	477	477	-
Stage 2	-	-	-	-	-	-	490	549	-	70	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1426	-	-	1603	-	-	439	404	1065	448	445	978
Stage 1	-	-	-	-	-	-	940	837	-	569	556	-
Stage 2	-	-	-	-	-	-	560	516	-	940	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1426	-	-	1603	-	-	381	347	1065	356	383	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	381	347	-	356	383	-
Stage 1	-	-	-	-	-	-	922	821	-	558	487	-
Stage 2	-	-	-	-	-	-	478	452	-	821	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.8	4.3	8.8	40.9
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1065	1426	-	-	1603	-	-	377
HCM Lane V/C Ratio	-	-	0.11	0.019	-	-	0.123	-	-	0.777
HCM Control Delay (s)	0	0	8.8	7.6	0	-	7.6	-	-	40.9
HCM Lane LOS	A	A	A	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-	-	0.4	-	-	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	582	43	8	184	71	98	292	6	130	254	100
Future Volume (veh/h)	151	582	43	8	184	71	98	292	6	130	254	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	157	606	45	8	192	74	102	304	6	135	265	104
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	469	1126	351	45	538	197	715	1253	25	739	1282	1090
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	2151	5085	1583	33	2431	891	1009	1820	36	1065	1863	1583
Grp Volume(v), veh/h	157	606	45	146	0	128	102	0	310	135	265	104
Grp Sat Flow(s),veh/h/ln	1076	1695	1583	1817	0	1538	1009	0	1856	1065	1863	1583
Q Serve(g_s), s	6.7	10.5	2.3	0.0	0.0	7.1	4.1	0.0	6.2	5.4	5.2	2.2
Cycle Q Clear(g_c), s	13.7	10.5	2.3	6.6	0.0	7.1	9.3	0.0	6.2	11.7	5.2	2.2
Prop In Lane	1.00		1.00	0.05		0.58	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	469	1126	351	440	0	341	715	0	1278	739	1282	1090
V/C Ratio(X)	0.33	0.54	0.13	0.33	0.00	0.38	0.14	0.00	0.24	0.18	0.21	0.10
Avail Cap(c_a), veh/h	756	1805	562	671	0	546	715	0	1278	739	1282	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.9	34.4	31.2	32.9	0.0	33.0	7.3	0.0	5.8	8.0	5.7	5.2
Incr Delay (d2), s/veh	0.4	0.4	0.2	0.4	0.0	0.7	0.4	0.0	0.5	0.5	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	5.0	1.0	3.5	0.0	3.0	1.2	0.0	3.3	1.7	2.8	1.0
LnGrp Delay(d),s/veh	39.3	34.8	31.4	33.3	0.0	33.7	7.8	0.0	6.3	8.6	6.0	5.4
LnGrp LOS	D	C	C	C		C	A		A	A	A	A
Approach Vol, veh/h		808			274			412			504	
Approach Delay, s/veh		35.5			33.5			6.6			6.6	
Approach LOS		D			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.3		26.7		73.3		26.7
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		55.5		35.5
Max Q Clear Time (g_c+I1), s		11.3		15.7		13.7		9.1
Green Ext Time (p_c), s		5.5		6.4		5.5		7.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	22	155	10	16	11	92	295	22	7	130	59
Future Volume (veh/h)	134	22	155	10	16	11	92	295	22	7	130	59
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	140	23	161	10	17	11	96	307	23	7	135	61
Adj No. of Lanes	1	1	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	593	504	23	488	286	139	1048	469	17	803	359
Arrive On Green	0.10	0.32	0.32	0.01	0.23	0.23	0.08	0.30	0.30	0.01	0.23	0.23
Sat Flow, veh/h	1774	1863	1583	1774	2149	1261	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	140	23	161	10	14	14	96	307	23	7	135	61
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1640	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.4	0.4	3.4	0.2	0.3	0.3	2.3	2.9	0.5	0.2	1.4	1.4
Cycle Q Clear(g_c), s	3.4	0.4	3.4	0.2	0.3	0.3	2.3	2.9	0.5	0.2	1.4	1.4
Prop In Lane	1.00		1.00	1.00		0.77	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	186	593	504	23	402	372	139	1048	469	17	803	359
V/C Ratio(X)	0.75	0.04	0.32	0.43	0.03	0.04	0.69	0.29	0.05	0.42	0.17	0.17
Avail Cap(c_a), veh/h	684	1522	1293	242	1004	930	483	2088	934	242	1606	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	10.4	11.4	21.6	13.3	13.3	19.8	12.0	11.1	21.7	13.7	13.7
Incr Delay (d2), s/veh	6.1	0.0	0.4	12.1	0.0	0.0	6.0	0.2	0.0	16.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.2	1.5	0.2	0.1	0.1	1.4	1.4	0.2	0.2	0.7	0.6
LnGrp Delay(d),s/veh	25.3	10.4	11.8	33.7	13.3	13.3	25.8	12.1	11.1	38.0	13.8	13.9
LnGrp LOS	C	B	B	C	B	B	C	B	B	D	B	B
Approach Vol, veh/h		324			38			426			203	
Approach Delay, s/veh		17.5			18.7			15.1			14.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	18.0	7.5	14.0	8.6	14.0	4.4	17.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.6	36.0	12.0	20.0	17.0	25.0	6.0	26.0
Max Q Clear Time (g_c+I1), s	2.2	5.4	4.3	3.4	5.4	2.3	2.2	4.9
Green Ext Time (p_c), s	0.0	0.8	0.1	2.6	0.2	0.7	0.0	2.8

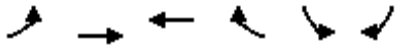
Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	102	389	248	36	139	174
Future Volume (veh/h)	102	389	248	36	139	174
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	112	427	273	40	153	191
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	515	460	826	702	185	1106
Arrive On Green	0.29	0.29	0.44	0.44	0.10	0.59
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	112	427	273	40	153	191
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	4.8	26.2	9.6	1.4	8.5	4.6
Cycle Q Clear(g_c), s	4.8	26.2	9.6	1.4	8.5	4.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	515	460	826	702	185	1106
V/C Ratio(X)	0.22	0.93	0.33	0.06	0.83	0.17
Avail Cap(c_a), veh/h	578	516	826	702	344	1106
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	34.5	18.2	15.9	43.9	9.2
Incr Delay (d2), s/veh	0.1	16.5	1.1	0.2	3.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	13.5	5.2	0.7	4.3	2.5
LnGrp Delay(d),s/veh	27.0	51.0	19.2	16.1	47.5	9.5
LnGrp LOS	C	D	B	B	D	A
Approach Vol, veh/h	539		313			344
Approach Delay, s/veh	46.0		18.8			26.4
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	50.5				65.6		34.4
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	10.4	31.8				55.8		32.6
Max Q Clear Time (g_c+I1), s	10.5	11.6				6.6		28.2
Green Ext Time (p_c), s	0.1	5.9				7.8		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	291	538	0	14	22
Future Volume (veh/h)	1	291	538	0	14	22
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	320	591	0	15	24
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3	1142	988	0	1021	911
Arrive On Green	0.00	0.32	0.28	0.00	0.58	0.58
Sat Flow, veh/h	1774	3632	3725	0	1774	1583
Grp Volume(v), veh/h	1	320	591	0	15	24
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	0	1774	1583
Q Serve(g_s), s	0.1	7.4	15.9	0.0	0.4	0.7
Cycle Q Clear(g_c), s	0.1	7.4	15.9	0.0	0.4	0.7
Prop In Lane	1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	3	1142	988	0	1021	911
V/C Ratio(X)	0.34	0.28	0.60	0.00	0.01	0.03
Avail Cap(c_a), veh/h	168	2239	1757	0	1021	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.79	0.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	27.7	34.3	0.0	10.0	10.1
Incr Delay (d2), s/veh	20.1	0.2	0.9	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	7.8	0.0	0.2	1.1
LnGrp Delay(d),s/veh	74.9	28.0	35.2	0.0	10.0	10.1
LnGrp LOS	E	C	D		B	B
Approach Vol, veh/h		321	591		39	
Approach Delay, s/veh		28.1	35.2		10.1	
Approach LOS		C	D		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				40.9		69.1	4.8	36.1
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				69.6		29.2	10.4	54.6
Max Q Clear Time (g_c+I1), s				9.4		2.7	2.1	17.9
Green Ext Time (p_c), s				14.6		0.2	0.0	12.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	247	66	4	2	229	396	102	1	226	10
Future Volume (veh/h)	13	1	247	66	4	2	229	396	102	1	226	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	14	1	263	70	4	2	244	421	109	1	240	11
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	390	332	113	475	404	314	1080	277	4	729	33
Arrive On Green	0.02	0.21	0.21	0.06	0.26	0.26	0.18	0.39	0.39	0.00	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2790	716	1774	3447	157
Grp Volume(v), veh/h	14	1	263	70	4	2	244	266	264	1	123	128
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1736	1774	1770	1835
Q Serve(g_s), s	0.4	0.0	7.4	1.8	0.1	0.0	6.2	5.1	5.2	0.0	2.8	2.8
Cycle Q Clear(g_c), s	0.4	0.0	7.4	1.8	0.1	0.0	6.2	5.1	5.2	0.0	2.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.09
Lane Grp Cap(c), veh/h	32	390	332	113	475	404	314	685	672	4	374	388
V/C Ratio(X)	0.44	0.00	0.79	0.62	0.01	0.00	0.78	0.39	0.39	0.27	0.33	0.33
Avail Cap(c_a), veh/h	206	867	737	341	1009	857	795	1400	1373	206	812	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	14.8	17.7	21.6	13.1	13.1	18.6	10.4	10.5	23.6	15.8	15.8
Incr Delay (d2), s/veh	9.5	0.0	4.3	5.5	0.0	0.0	4.1	0.4	0.4	34.1	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.6	1.1	0.0	0.0	3.4	2.5	2.6	0.0	1.4	1.5
LnGrp Delay(d),s/veh	32.5	14.8	22.0	27.0	13.1	13.1	22.7	10.8	10.8	57.7	16.3	16.3
LnGrp LOS	C	B	C	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h		278			76			774			252	
Approach Delay, s/veh		22.5			25.9			14.6			16.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	22.3	7.0	13.9	12.4	14.0	4.8	16.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	37.4	9.1	22.0	21.2	21.7	5.5	25.6
Max Q Clear Time (g_c+I1), s	2.0	7.2	3.8	9.4	8.2	4.8	2.4	2.1
Green Ext Time (p_c), s	0.0	4.4	0.1	0.7	0.5	3.8	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	1	309	2	0	1	2	304	0	0	0
Future Vol, veh/h	0	1	1	309	2	0	1	2	304	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	1	364	2	0	1	2	358	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.1	13.2	11.8	0
HCM LOS	A	B	B	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	0%	99%	0%
Vol Thru, %	67%	0%	50%	1%	100%
Vol Right, %	0%	100%	50%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	304	2	311	0
LT Vol	1	0	0	309	0
Through Vol	2	0	1	2	0
RT Vol	0	304	1	0	0
Lane Flow Rate	4	358	2	366	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.006	0.475	0.003	0.509	0
Departure Headway (Hd)	5.657	4.784	5.002	5.007	5.461
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	631	751	706	717	0
Service Time	3.406	2.532	3.096	3.069	3.549
HCM Lane V/C Ratio	0.006	0.477	0.003	0.51	0
HCM Control Delay	8.4	11.8	8.1	13.2	8.5
HCM Lane LOS	A	B	A	B	N
HCM 95th-tile Q	0	2.6	0	2.9	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	3	83	0	0	1	42	737	0	1	426	29
Future Volume (veh/h)	48	3	83	0	0	1	42	737	0	1	426	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	49	3	86	0	0	1	43	760	0	1	439	30
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	152	129	0	0	1	71	2572	0	3	2315	158
Arrive On Green	0.08	0.08	0.08	0.00	0.00	0.00	0.04	0.73	0.00	0.00	0.69	0.69
Sat Flow, veh/h	1774	1863	1583	0	0	1583	1774	3632	0	1774	3363	229
Grp Volume(v), veh/h	49	3	86	0	0	1	43	760	0	1	230	239
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	0	0	1583	1774	1770	0	1774	1770	1822
Q Serve(g_s), s	2.9	0.2	5.8	0.0	0.0	0.1	2.6	8.2	0.0	0.1	5.1	5.2
Cycle Q Clear(g_c), s	2.9	0.2	5.8	0.0	0.0	0.1	2.6	8.2	0.0	0.1	5.1	5.2
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.00	1.00		0.13
Lane Grp Cap(c), veh/h	145	152	129	0	0	1	71	2572	0	3	1218	1255
V/C Ratio(X)	0.34	0.02	0.67	0.00	0.00	0.69	0.61	0.30	0.00	0.34	0.19	0.19
Avail Cap(c_a), veh/h	423	444	377	0	0	259	119	2572	0	103	1218	1255
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	46.5	49.0	0.0	0.0	54.9	52.0	5.2	0.0	54.9	6.1	6.1
Incr Delay (d2), s/veh	6.2	0.2	23.9	0.0	0.0	229.9	3.1	0.3	0.0	24.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.1	3.4	0.0	0.0	0.1	1.4	4.1	0.0	0.0	2.6	2.7
LnGrp Delay(d),s/veh	53.9	46.7	72.9	0.0	0.0	284.9	55.1	5.5	0.0	78.8	6.5	6.5
LnGrp LOS	D	D	E			F	E	A		E	A	A
Approach Vol, veh/h		138			1			803			470	
Approach Delay, s/veh		65.6			284.8			8.2			6.6	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	85.7		14.8	9.0	81.5		4.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	38.6		26.2	7.4	37.6		18.0
Max Q Clear Time (g_c+I1), s	2.1	10.2		7.8	4.6	7.2		2.1
Green Ext Time (p_c), s	0.0	18.9		1.3	0.0	19.8		0.0

Intersection Summary			
HCM 2010 Ctrl Delay		13.5	
HCM 2010 LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	1638	27	151	1685	118	31	4	108	88	6	68
Future Volume (veh/h)	81	1638	27	151	1685	118	31	4	108	88	6	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	84	1689	28	156	1737	122	32	4	111	91	6	70
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	2310	1033	135	3398	1058	71	5	144	135	173	242
Arrive On Green	0.06	0.65	0.65	0.08	0.67	0.67	0.04	0.09	0.09	0.04	0.09	0.09
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	55	1536	3442	1863	1583
Grp Volume(v), veh/h	84	1689	28	156	1737	122	32	0	115	91	6	70
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1592	1721	1863	1583
Q Serve(g_s), s	7.0	47.6	0.9	11.4	25.8	4.2	2.6	0.0	10.6	3.9	0.4	5.9
Cycle Q Clear(g_c), s	7.0	47.6	0.9	11.4	25.8	4.2	2.6	0.0	10.6	3.9	0.4	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	107	2310	1033	135	3398	1058	71	0	149	135	173	242
V/C Ratio(X)	0.78	0.73	0.03	1.16	0.51	0.12	0.45	0.00	0.77	0.68	0.03	0.29
Avail Cap(c_a), veh/h	213	2310	1033	135	3398	1058	213	0	485	190	447	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.48	0.48	0.48	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.5	17.3	9.2	69.3	12.5	8.9	70.4	0.0	66.4	71.1	61.9	56.3
Incr Delay (d2), s/veh	4.7	2.1	0.0	102.8	0.3	0.1	4.4	0.0	8.8	2.2	0.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	23.7	0.4	9.4	12.1	1.9	1.4	0.0	5.0	1.9	0.2	2.7
LnGrp Delay(d),s/veh	74.2	19.4	9.3	172.1	12.8	9.0	74.8	0.0	75.2	73.3	62.1	57.8
LnGrp LOS	E	B	A	F	B	A	E		E	E	E	E
Approach Vol, veh/h		1801			2015			147			167	
Approach Delay, s/veh		21.8			24.9			75.1			66.4	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	103.7	10.6	19.7	13.7	106.0	10.5	19.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	11.4	63.8	18.0	36.0	18.0	57.2	8.3	45.7
Max Q Clear Time (g_c+I1), s	13.4	49.6	4.6	7.9	9.0	27.8	5.9	12.6
Green Ext Time (p_c), s	0.0	14.2	0.0	1.4	0.0	29.2	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	485	1516	14	48	1456	276	23	12	27	403	6	365
Future Volume (veh/h)	485	1516	14	48	1456	276	23	12	27	403	6	365
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	495	1547	14	49	1486	282	23	12	28	411	6	372
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	482	2458	765	75	1961	831	49	76	177	478	7	412
Arrive On Green	0.14	0.48	0.48	0.04	0.39	0.39	0.03	0.15	0.15	0.14	0.26	0.26
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	497	1161	3442	25	1562
Grp Volume(v), veh/h	495	1547	14	49	1486	282	23	0	40	411	0	378
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1658	1721	0	1587
Q Serve(g_s), s	15.4	24.8	0.5	3.0	27.9	11.3	1.4	0.0	2.3	12.8	0.0	25.3
Cycle Q Clear(g_c), s	15.4	24.8	0.5	3.0	27.9	11.3	1.4	0.0	2.3	12.8	0.0	25.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.70	1.00		0.98
Lane Grp Cap(c), veh/h	482	2458	765	75	1961	831	49	0	253	478	0	419
V/C Ratio(X)	1.03	0.63	0.02	0.65	0.76	0.34	0.47	0.00	0.16	0.86	0.00	0.90
Avail Cap(c_a), veh/h	482	2458	765	97	1961	831	160	0	357	632	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.34	0.34	0.34	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	21.1	14.8	51.9	29.3	15.1	52.7	0.0	40.5	46.3	0.0	39.1
Incr Delay (d2), s/veh	31.1	0.4	0.0	3.5	1.9	0.5	2.6	0.0	0.3	7.3	0.0	18.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	11.7	0.2	1.5	13.4	5.1	0.7	0.0	1.1	6.6	0.0	13.3
LnGrp Delay(d),s/veh	78.4	21.5	14.8	55.4	31.2	15.6	55.3	0.0	40.8	53.6	0.0	57.6
LnGrp LOS	F	C	B	E	C	B	E		D	D		E
Approach Vol, veh/h		2056			1817			63			789	
Approach Delay, s/veh		35.2			29.4			46.1			55.5	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	59.0	7.6	34.1	20.0	48.2	19.9	21.9
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	40.0	9.9	34.0	15.4	30.6	20.2	23.7
Max Q Clear Time (g_c+I1), s	5.0	26.8	3.4	27.3	17.4	29.9	14.8	4.3
Green Ext Time (p_c), s	0.0	13.0	0.0	1.7	0.0	0.4	0.4	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	36.5
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1494	513	0	1127	0	0	0	0	321	1	622
Future Volume (veh/h)	0	1494	513	0	1127	0	0	0	0	321	1	622
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1540	529	0	1162	0				331	1	641
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2656	827	0	2656	0				688	2	1084
Arrive On Green	0.00	0.52	0.52	0.00	0.52	0.00				0.39	0.39	0.39
Sat Flow, veh/h	0	5253	1583	0	5421	0				1769	5	2787
Grp Volume(v), veh/h	0	1540	529	0	1162	0				332	0	641
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1774	0	1393
Q Serve(g_s), s	0.0	18.7	21.6	0.0	12.7	0.0				12.7	0.0	16.4
Cycle Q Clear(g_c), s	0.0	18.7	21.6	0.0	12.7	0.0				12.7	0.0	16.4
Prop In Lane	0.00		1.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2656	827	0	2656	0				690	0	1084
V/C Ratio(X)	0.00	0.58	0.64	0.00	0.44	0.00				0.48	0.00	0.59
Avail Cap(c_a), veh/h	0	2656	827	0	2656	0				690	0	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.72	0.72	0.00	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.7	15.4	0.0	13.3	0.0				20.7	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.2	1.2	0.0	0.5	0.0				2.4	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.8	9.7	0.0	6.0	0.0				6.6	0.0	6.7
LnGrp Delay(d),s/veh	0.0	15.0	16.6	0.0	13.8	0.0				23.1	0.0	24.2
LnGrp LOS		B	B		B					C		C
Approach Vol, veh/h		2069			1162						973	
Approach Delay, s/veh		15.4			13.8						23.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		51.0		39.0		51.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		47.0		35.0		47.0		
Max Q Clear Time (g_c+I1), s		23.6		18.4		14.7		
Green Ext Time (p_c), s		20.3		4.6		26.8		

Intersection Summary		
HCM 2010 Ctrl Delay		16.9
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	997	818	0	1001	316	587	0	610	0	0	0
Future Volume (veh/h)	0	997	818	0	1001	316	587	0	610	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1028	0	0	1032	0	605	0	629			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2599	809	0	2599	809	710	0	633			
Arrive On Green	0.00	0.51	0.00	0.00	0.51	0.00	0.40	0.00	0.40			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1028	0	0	1032	0	605	0	629			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	11.1	0.0	0.0	11.2	0.0	27.9	0.0	35.6			
Cycle Q Clear(g_c), s	0.0	11.1	0.0	0.0	11.2	0.0	27.9	0.0	35.6			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2599	809	0	2599	809	710	0	633			
V/C Ratio(X)	0.00	0.40	0.00	0.00	0.40	0.00	0.85	0.00	0.99			
Avail Cap(c_a), veh/h	0	2599	809	0	2599	809	710	0	633			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.93	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	13.5	0.0	0.0	13.5	0.0	24.6	0.0	26.9			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.1	0.0	12.4	0.0	34.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	5.2	0.0	0.0	5.2	0.0	16.0	0.0	21.4			
LnGrp Delay(d),s/veh	0.0	13.9	0.0	0.0	13.6	0.0	36.9	0.0	61.0			
LnGrp LOS		B			B		D		E			
Approach Vol, veh/h		1028			1032			1234				
Approach Delay, s/veh		13.9			13.6			49.2				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.0				50.0		40.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		22.0				20.0		36.0
Max Q Clear Time (g_c+I1), s		13.1				13.2		37.6
Green Ext Time (p_c), s		7.1				5.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		27.0
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	498	975	277	71	563	176	257	297	6	6	233	375
Future Volume (veh/h)	498	975	277	71	563	176	257	297	6	6	233	375
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	535	1048	298	76	605	189	276	319	6	6	251	403
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	590	1112	473	97	676	287	290	1742	33	13	599	509
Arrive On Green	0.17	0.30	0.30	0.05	0.18	0.18	0.16	0.48	0.48	0.01	0.32	0.32
Sat Flow, veh/h	3442	3725	1583	1774	3725	1583	1774	3645	68	1774	1863	1583
Grp Volume(v), veh/h	535	1048	298	76	605	189	276	163	162	6	251	403
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	1583	1774	1863	1851	1774	1863	1583
Q Serve(g_s), s	18.2	32.8	19.4	5.1	19.0	13.3	18.4	6.0	6.0	0.4	12.6	27.7
Cycle Q Clear(g_c), s	18.2	32.8	19.4	5.1	19.0	13.3	18.4	6.0	6.0	0.4	12.6	27.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	590	1112	473	97	676	287	290	890	884	13	599	509
V/C Ratio(X)	0.91	0.94	0.63	0.79	0.90	0.66	0.95	0.18	0.18	0.45	0.42	0.79
Avail Cap(c_a), veh/h	616	1112	473	119	689	293	290	892	886	74	664	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	40.9	36.2	55.8	47.8	45.5	49.5	17.8	17.8	59.0	31.8	36.9
Incr Delay (d2), s/veh	16.7	15.1	2.7	24.0	14.1	5.2	39.9	0.4	0.4	21.6	1.8	10.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	19.2	8.9	3.1	11.1	6.2	12.3	3.2	3.2	0.3	6.8	13.6
LnGrp Delay(d),s/veh	65.2	56.0	38.9	79.8	61.9	50.6	89.5	18.2	18.2	80.7	33.6	47.8
LnGrp LOS	E	E	D	E	E	D	F	B	B	F	C	D
Approach Vol, veh/h		1881			870			601			660	
Approach Delay, s/veh		55.9			61.0			50.9			42.7	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	62.9	11.0	40.2	24.1	44.2	25.0	26.2
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	10.9	57.2	8.0	35.5	19.5	42.6	21.4	22.1
Max Q Clear Time (g_c+I1), s	12.4	8.0	7.1	34.8	20.4	29.7	20.2	21.0
Green Ext Time (p_c), s	0.0	20.1	0.0	0.6	0.0	8.7	0.3	0.7

Intersection Summary		
HCM 2010 Ctrl Delay		54.1
HCM 2010 LOS		D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1) (2023 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	95	5.0	0.095	4.2	LOS A	0.3	9.0	0.32	0.20	24.4
12	R2	157	5.0	0.095	0.2	LOS A	0.3	9.0	0.01	0.01	25.4
Approach		252	5.0	0.095	1.7	LOS A	0.3	9.0	0.13	0.08	24.9
East: Keller Road											
3	L2	126	5.0	0.108	3.8	LOS A	0.4	11.3	0.22	0.10	24.2
8	T1	216	3.0	0.108	0.1	LOS A	0.4	11.3	0.01	0.00	24.9
Approach		342	3.7	0.108	1.5	LOS A	0.4	11.3	0.09	0.04	24.6
West: Keller Road											
4	T1	202	3.0	0.165	4.4	LOS A	0.7	18.2	0.27	0.15	23.2
14	R2	151	5.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		353	3.9	0.165	2.5	LOS A	0.7	18.2	0.16	0.09	24.3
All Vehicles		946	4.1	0.165	1.9	LOS A	0.7	18.2	0.12	0.07	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2023 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1) (2023 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	104	5.0	0.058	4.5	LOS A	0.2	5.1	0.40	0.29	13.6
2	T1	1	5.0	0.058	4.3	LOS A	0.2	5.0	0.39	0.28	23.1
12	R2	52	5.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		157	5.0	0.058	3.0	LOS A	0.2	5.1	0.27	0.20	16.9
East: Keller Road											
8	T1	238	3.0	0.102	3.9	LOS A	0.4	10.1	0.27	0.15	23.4
18	R2	156	5.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		394	3.8	0.102	2.4	LOS A	0.4	10.1	0.16	0.09	24.2
West: Keller Road											
7	L2	44	5.0	0.130	3.7	LOS A	0.0	0.0	0.00	0.00	30.1
4	T1	315	3.0	0.130	3.7	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		359	3.2	0.130	3.7	LOS A	0.0	0.0	0.00	0.00	25.4
All Vehicles		909	3.8	0.130	3.0	LOS A	0.4	10.1	0.12	0.07	22.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

APPENDIX C-7
Intersection LOS Analysis
Mitigated Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions

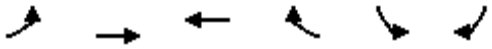
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	605	3	0	753	15	0	0	4	29	1	19
Future Vol, veh/h	0	605	3	0	753	15	0	0	4	29	1	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	651	3	0	810	16	0	0	4	31	1	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	826	0	0	654	0	0	1480	1478	327	1143	1472	818
Stage 1	-	-	-	-	-	-	652	652	-	818	818	-
Stage 2	-	-	-	-	-	-	828	826	-	325	654	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	803	-	-	931	-	-	95	125	669	166	126	375
Stage 1	-	-	-	-	-	-	424	463	-	369	389	-
Stage 2	-	-	-	-	-	-	364	386	-	662	462	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	803	-	-	931	-	-	89	125	669	165	126	375
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	125	-	165	126	-
Stage 1	-	-	-	-	-	-	424	463	-	369	389	-
Stage 2	-	-	-	-	-	-	343	386	-	658	462	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.4	25.5
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	669	803	-	-	931	-	-	165	341
HCM Lane V/C Ratio	0.006	-	-	-	-	-	-	0.189	0.063
HCM Control Delay (s)	10.4	0	-	-	0	-	-	31.8	16.3
HCM Lane LOS	B	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.7	0.2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	490	528	298	256	212
Future Volume (veh/h)	179	490	528	298	256	212
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	192	527	568	320	275	228
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	245	1196	794	675	358	320
Arrive On Green	0.14	0.64	0.43	0.43	0.20	0.20
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	192	527	568	320	275	228
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	6.0	8.2	14.5	8.4	8.5	7.8
Cycle Q Clear(g_c), s	6.0	8.2	14.5	8.4	8.5	7.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	245	1196	794	675	358	320
V/C Ratio(X)	0.78	0.44	0.71	0.47	0.77	0.71
Avail Cap(c_a), veh/h	507	1918	1241	1055	660	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	5.2	13.7	11.9	21.8	21.5
Incr Delay (d2), s/veh	5.5	0.3	1.2	0.5	3.5	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	4.2	7.7	3.7	4.5	3.6
LnGrp Delay(d),s/veh	29.6	5.4	14.9	12.4	25.2	24.4
LnGrp LOS	C	A	B	B	C	C
Approach Vol, veh/h		719	888		503	
Approach Delay, s/veh		11.9	14.0		24.9	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		41.6			12.5	29.1		16.2
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		59.5			16.5	38.5		21.5
Max Q Clear Time (g_c+I1), s		10.2			8.0	16.5		10.5
Green Ext Time (p_c), s		9.8			0.3	8.1		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	683	142	392	712	790	58	172	82	867	174	79
Future Volume (veh/h)	98	683	142	392	712	790	58	172	82	867	174	79
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	117	813	169	467	848	940	69	205	98	1032	207	94
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	2632	543	510	2422	3006	88	400	340	1062	564	256
Arrive On Green	0.08	0.59	0.59	0.14	0.65	0.65	0.05	0.21	0.21	0.30	0.46	0.46
Sat Flow, veh/h	1774	4497	928	3548	3725	3167	1774	1863	1583	3548	1214	551
Grp Volume(v), veh/h	117	672	310	467	848	940	69	205	98	1032	0	301
Grp Sat Flow(s),veh/h/ln	1774	1863	1699	1774	1863	1583	1774	1863	1583	1774	0	1765
Q Serve(g_s), s	8.8	12.3	12.5	17.5	13.9	2.9	5.2	13.1	7.0	38.8	0.0	14.9
Cycle Q Clear(g_c), s	8.8	12.3	12.5	17.5	13.9	2.9	5.2	13.1	7.0	38.8	0.0	14.9
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	140	2180	994	510	2422	3006	88	400	340	1062	0	820
V/C Ratio(X)	0.84	0.31	0.31	0.92	0.35	0.31	0.79	0.51	0.29	0.97	0.00	0.37
Avail Cap(c_a), veh/h	150	2180	994	510	2422	3006	134	400	340	1062	0	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.65	0.65	0.65	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.3	14.2	14.2	57.0	10.7	0.2	63.5	46.8	44.4	46.7	0.0	23.3
Incr Delay (d2), s/veh	28.3	0.4	0.8	15.2	0.3	0.2	7.6	4.6	2.1	20.9	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	6.5	6.1	9.6	7.2	1.2	2.7	7.2	3.2	22.0	0.0	7.5
LnGrp Delay(d),s/veh	89.6	14.5	15.0	72.2	11.0	0.4	71.1	51.4	46.5	67.7	0.0	24.6
LnGrp LOS	F	B	B	E	B	A	E	D	D	E		C
Approach Vol, veh/h		1099			2255			372			1333	
Approach Delay, s/veh		22.7			19.2			53.7			58.0	
Approach LOS		C			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	86.8	11.3	68.9	15.3	95.5	45.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	19.4	26.2	10.2	57.6	11.4	34.2	40.4	* 29
Max Q Clear Time (g_c+I1), s	19.5	14.5	7.2	16.9	10.8	15.9	40.8	15.1
Green Ext Time (p_c), s	0.0	11.1	0.0	4.7	0.0	17.0	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	15	0	50	5	197	0	0	148	127	0	9
Future Vol, veh/h	17	15	0	50	5	197	0	0	148	127	0	9
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	19	0	63	6	249	0	0	187	161	0	11
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	10	10.6	9.6	12.1
HCM LOS	A	B	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	53%	100%	0%	93%
Vol Thru, %	100%	100%	0%	47%	0%	2%	0%
Vol Right, %	0%	0%	100%	0%	0%	98%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	148	32	50	202	136
LT Vol	0	0	0	17	50	0	127
Through Vol	0	0	0	15	0	5	0
RT Vol	0	0	148	0	0	197	9
Lane Flow Rate	0	0	187	41	63	256	172
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0	0.265	0.075	0.111	0.367	0.309
Departure Headway (Hd)	5.794	5.794	5.086	6.695	6.331	5.161	6.455
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	706	535	567	701	558
Service Time	3.52	3.52	2.812	4.435	4.056	2.861	4.186
HCM Lane V/C Ratio	0	0	0.265	0.077	0.111	0.365	0.308
HCM Control Delay	8.5	8.5	9.6	10	9.8	10.8	12.1
HCM Lane LOS	N	N	A	A	A	B	B
HCM 95th-tile Q	0	0	1.1	0.2	0.4	1.7	1.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	784	120	79	604	170	255	166	6	141	130	322
Future Volume (veh/h)	364	784	120	79	604	170	255	166	6	141	130	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	513	1104	169	111	851	239	359	234	8	199	183	454
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	578	1308	556	135	967	411	391	1016	35	230	677	554
Arrive On Green	0.17	0.35	0.35	0.08	0.26	0.26	0.22	0.28	0.28	0.13	0.18	0.18
Sat Flow, veh/h	3442	3725	1583	1774	3725	1583	1774	3582	122	1774	3725	1583
Grp Volume(v), veh/h	513	1104	169	111	851	239	359	121	121	199	183	454
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	1583	1774	1863	1841	1774	1863	1583
Q Serve(g_s), s	17.7	33.1	5.0	7.5	26.6	11.6	24.0	6.0	6.1	13.3	5.1	11.3
Cycle Q Clear(g_c), s	17.7	33.1	5.0	7.5	26.6	11.6	24.0	6.0	6.1	13.3	5.1	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	578	1308	556	135	967	411	391	528	522	230	677	554
V/C Ratio(X)	0.89	0.84	0.30	0.82	0.88	0.58	0.92	0.23	0.23	0.87	0.27	0.82
Avail Cap(c_a), veh/h	582	1371	583	141	1036	440	416	693	685	387	1322	828
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	36.2	8.0	55.1	43.0	20.6	46.1	33.2	33.3	51.7	42.7	35.9
Incr Delay (d2), s/veh	15.3	4.8	0.3	29.7	8.5	1.7	23.4	0.8	0.9	10.4	0.8	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	17.9	3.7	4.8	14.9	6.0	14.3	3.2	3.2	7.2	2.7	13.9
LnGrp Delay(d),s/veh	64.6	41.1	8.3	84.8	51.5	22.3	69.5	34.1	34.1	62.1	43.5	47.0
LnGrp LOS	E	D	A	F	D	C	E	C	C	E	D	D
Approach Vol, veh/h		1786			1201			601			836	
Approach Delay, s/veh		44.7			48.8			55.3			49.8	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.2	40.2	13.7	47.1	32.5	27.8	24.9	36.0
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	5.8	* 5.8	4.5	4.5
Max Green Setting (Gmax), s	25.4	45.1	9.6	44.6	28.4	* 43	20.5	33.7
Max Q Clear Time (g_c+I1), s	15.3	8.1	9.5	35.1	26.0	13.3	19.7	28.6
Green Ext Time (p_c), s	0.4	3.2	0.0	6.2	0.8	8.7	0.7	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	48.2
HCM 2010 LOS	D

Notes

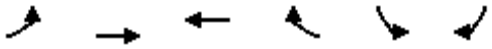
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	971	20	4	761	15	0	0	0	11	2	6
Future Vol, veh/h	2	971	20	4	761	15	0	0	0	11	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1011	21	4	793	16	0	0	0	11	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	808	0	0	1032	0	0	1839	1843	516	1319	1845	801
Stage 1	-	-	-	-	-	-	1026	1026	-	809	809	-
Stage 2	-	-	-	-	-	-	813	817	-	510	1036	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	815	-	-	671	-	-	52	75	505	124	74	384
Stage 1	-	-	-	-	-	-	252	311	-	373	393	-
Stage 2	-	-	-	-	-	-	371	389	-	515	308	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	815	-	-	671	-	-	49	74	505	122	73	384
Mov Cap-2 Maneuver	-	-	-	-	-	-	49	74	-	122	73	-
Stage 1	-	-	-	-	-	-	250	309	-	371	389	-
Stage 2	-	-	-	-	-	-	359	385	-	512	306	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	32.4
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	815	-	-	671	-	-	122	186
HCM Lane V/C Ratio	-	0.003	-	-	0.006	-	-	0.094	0.045
HCM Control Delay (s)	0	9.4	0	-	10.4	0	-	37.5	25.3
HCM Lane LOS	A	A	A	-	B	A	-	E	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3	0.1



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	318	569	660	365	316	151
Future Volume (veh/h)	318	569	660	365	316	151
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	324	581	673	372	322	154
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	365	1271	784	666	367	328
Arrive On Green	0.21	0.68	0.42	0.42	0.21	0.21
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	324	581	673	372	322	154
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	14.4	11.7	26.6	14.4	14.3	6.9
Cycle Q Clear(g_c), s	14.4	11.7	26.6	14.4	14.3	6.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	365	1271	784	666	367	328
V/C Ratio(X)	0.89	0.46	0.86	0.56	0.88	0.47
Avail Cap(c_a), veh/h	426	1412	861	732	426	381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	6.0	21.3	17.8	31.2	28.3
Incr Delay (d2), s/veh	17.9	0.3	8.1	0.8	16.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	6.1	15.4	6.4	8.7	3.1
LnGrp Delay(d),s/veh	49.2	6.2	29.4	18.6	47.8	29.3
LnGrp LOS	D	A	C	B	D	C
Approach Vol, veh/h		905	1045		476	
Approach Delay, s/veh		21.6	25.5		41.8	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		59.8			21.2	38.6		21.3
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		61.5			19.5	37.5		19.5
Max Q Clear Time (g_c+I1), s		13.7			16.4	28.6		16.3
Green Ext Time (p_c), s		12.4			0.3	5.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	854	80	138	959	1136	175	236	340	977	141	95
Future Volume (veh/h)	95	854	80	138	959	1136	175	236	340	977	141	95
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	99	890	83	144	999	1183	182	246	354	1018	147	99
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	3407	317	195	2492	2692	207	400	340	1054	411	277
Arrive On Green	0.06	0.68	0.68	0.05	0.67	0.67	0.12	0.21	0.21	0.30	0.40	0.40
Sat Flow, veh/h	1774	5038	468	3548	3725	2787	1774	1863	1583	3548	1039	700
Grp Volume(v), veh/h	99	657	316	144	999	1183	182	246	354	1018	0	246
Grp Sat Flow(s),veh/h/ln	1774	1863	1780	1774	1863	1393	1774	1863	1583	1774	0	1739
Q Serve(g_s), s	7.5	9.4	9.4	5.4	16.4	3.4	13.6	16.1	29.0	38.2	0.0	13.4
Cycle Q Clear(g_c), s	7.5	9.4	9.4	5.4	16.4	3.4	13.6	16.1	29.0	38.2	0.0	13.4
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.40
Lane Grp Cap(c), veh/h	110	2519	1204	195	2492	2692	207	400	340	1054	0	688
V/C Ratio(X)	0.90	0.26	0.26	0.74	0.40	0.44	0.88	0.61	1.04	0.97	0.00	0.36
Avail Cap(c_a), veh/h	110	2519	1204	265	2492	2692	318	400	340	1054	0	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	62.9	8.6	8.6	62.9	10.1	0.1	58.7	47.9	53.0	46.8	0.0	28.7
Incr Delay (d2), s/veh	53.4	0.3	0.5	2.1	0.2	0.3	11.3	6.9	59.8	19.8	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	4.8	4.8	2.7	8.4	1.2	7.3	9.0	18.3	21.6	0.0	6.7
LnGrp Delay(d),s/veh	116.3	8.8	9.1	64.9	10.4	0.4	70.1	54.9	112.8	66.6	0.0	30.2
LnGrp LOS	F	A	A	E	B	A	E	D	F	E		C
Approach Vol, veh/h		1072			2326			782			1264	
Approach Delay, s/veh		18.8			8.7			84.6			59.5	
Approach LOS		B			A			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	99.1	20.3	59.6	13.0	98.1	44.7	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	10.1	35.8	24.2	43.3	8.4	37.5	40.1	* 29
Max Q Clear Time (g_c+I1), s	7.4	11.4	15.6	15.4	9.5	18.4	40.2	31.0
Green Ext Time (p_c), s	0.0	23.1	0.1	5.8	0.0	18.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.4
HCM 2010 LOS	C

Notes

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	13	0	166	9	120	0	0	98	224	0	22
Future Vol, veh/h	23	13	0	166	9	120	0	0	98	224	0	22
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	15	0	198	11	143	0	0	117	267	0	26
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	10.6	11.7	9.4	16.3
HCM LOS	B	B	A	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	64%	100%	0%	91%
Vol Thru, %	100%	100%	0%	36%	0%	7%	0%
Vol Right, %	0%	0%	100%	0%	0%	93%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	98	36	166	129	246
LT Vol	0	0	0	23	166	0	224
Through Vol	0	0	0	13	0	9	0
RT Vol	0	0	98	0	0	120	22
Lane Flow Rate	0	0	117	43	198	154	293
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0	0.177	0.085	0.363	0.232	0.528
Departure Headway (Hd)	6.188	6.188	5.477	7.168	6.612	5.446	6.487
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	655	499	543	659	556
Service Time	3.929	3.929	3.218	4.925	4.352	3.186	4.223
HCM Lane V/C Ratio	0	0	0.179	0.086	0.365	0.234	0.527
HCM Control Delay	8.9	8.9	9.4	10.6	13.1	9.8	16.3
HCM Lane LOS	N	N	A	B	B	A	C
HCM 95th-tile Q	0	0	0.6	0.3	1.6	0.9	3.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	498	975	277	71	563	176	257	297	6	6	233	375
Future Volume (veh/h)	498	975	277	71	563	176	257	297	6	6	233	375
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	535	1048	298	76	605	189	276	319	6	6	251	403
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	562	1071	455	91	655	278	290	1710	32	14	1164	753
Arrive On Green	0.16	0.29	0.29	0.05	0.18	0.18	0.16	0.47	0.47	0.01	0.31	0.31
Sat Flow, veh/h	3442	3725	1583	1774	3725	1583	1774	3645	68	1774	3725	1583
Grp Volume(v), veh/h	535	1048	298	76	605	189	276	163	162	6	251	403
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	1583	1774	1863	1851	1774	1863	1583
Q Serve(g_s), s	16.1	29.2	17.3	4.4	16.7	11.7	16.1	5.3	5.3	0.4	5.2	18.7
Cycle Q Clear(g_c), s	16.1	29.2	17.3	4.4	16.7	11.7	16.1	5.3	5.3	0.4	5.2	18.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	562	1071	455	91	655	278	290	874	868	14	1164	753
V/C Ratio(X)	0.95	0.98	0.65	0.83	0.92	0.68	0.95	0.19	0.19	0.44	0.22	0.54
Avail Cap(c_a), veh/h	562	1071	455	91	655	278	290	982	976	85	1530	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	37.0	32.7	49.2	42.5	40.4	43.4	16.2	16.2	51.7	26.5	19.3
Incr Delay (d2), s/veh	26.4	22.4	3.4	44.7	19.0	6.5	39.8	0.4	0.4	21.0	0.4	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	18.3	8.0	3.3	10.3	5.6	11.1	2.8	2.8	0.3	2.7	8.6
LnGrp Delay(d),s/veh	69.8	59.4	36.1	93.9	61.5	46.9	83.2	16.6	16.6	72.7	26.9	21.6
LnGrp LOS	E	E	D	F	E	D	F	B	B	E	C	C
Approach Vol, veh/h		1881			870			601			660	
Approach Delay, s/veh		58.7			61.1			47.2			24.1	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	54.9	9.9	34.6	21.7	38.5	21.6	22.9
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	15.6	55.2	5.4	30.1	17.1	43.0	17.1	18.4
Max Q Clear Time (g_c+I1), s	12.4	7.3	6.4	31.2	18.1	20.7	18.1	18.7
Green Ext Time (p_c), s	0.0	17.4	0.0	0.0	0.0	12.0	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		51.8
HCM 2010 LOS		D

APPENDIX C-8
Intersection LOS Analysis
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions

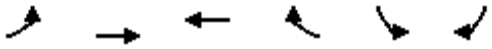
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	528	3	0	625	21	0	0	4	40	8	28
Future Vol, veh/h	0	528	3	0	625	21	0	0	4	40	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	568	3	0	672	23	0	0	4	43	9	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	571	0	0	1272	1264	285	967	1254	683
Stage 1	-	-	-	-	-	-	569	569	-	683	683	-
Stage 2	-	-	-	-	-	-	703	695	-	284	571	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	899	-	-	1000	-	-	134	169	713	221	171	448
Stage 1	-	-	-	-	-	-	475	505	-	438	448	-
Stage 2	-	-	-	-	-	-	427	443	-	700	504	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	899	-	-	1000	-	-	120	169	713	220	171	448
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	169	-	220	171	-
Stage 1	-	-	-	-	-	-	475	505	-	438	448	-
Stage 2	-	-	-	-	-	-	391	443	-	696	504	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.1	21.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	713	899	-	-	1000	-	-	220	329
HCM Lane V/C Ratio	0.006	-	-	-	-	-	-	0.196	0.118
HCM Control Delay (s)	10.1	0	-	-	0	-	-	25.3	17.4
HCM Lane LOS	B	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.7	0.4



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	172	402	405	137	135	216
Future Volume (veh/h)	172	402	405	137	135	216
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	185	432	435	147	145	232
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	220	1272	961	817	412	367
Arrive On Green	0.12	0.68	0.52	0.52	0.23	0.23
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	185	432	435	147	145	232
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	10.8	10.1	15.6	5.2	7.2	13.9
Cycle Q Clear(g_c), s	10.8	10.1	15.6	5.2	7.2	13.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	220	1272	961	817	412	367
V/C Ratio(X)	0.84	0.34	0.45	0.18	0.35	0.63
Avail Cap(c_a), veh/h	462	1526	961	817	412	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	6.9	16.1	13.6	33.9	36.5
Incr Delay (d2), s/veh	8.3	0.2	1.5	0.5	2.4	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	5.2	8.4	2.4	3.8	6.9
LnGrp Delay(d),s/veh	53.6	7.1	17.7	14.1	36.3	44.5
LnGrp LOS	D	A	B	B	D	D
Approach Vol, veh/h		617	582		377	
Approach Delay, s/veh		21.0	16.8		41.3	
Approach LOS		C	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		76.6			17.6	59.0		29.0
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		86.5			27.5	54.5		24.5
Max Q Clear Time (g_c+I1), s		12.1			12.8	17.6		15.9
Green Ext Time (p_c), s		6.3			0.4	6.2		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	474	40	56	568	499	65	132	16	521	49	56
Future Volume (veh/h)	77	474	40	56	568	499	65	132	16	521	49	56
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	92	564	48	67	676	594	77	157	19	620	58	67
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	1376	116	113	887	1417	98	514	437	743	352	406
Arrive On Green	0.07	0.27	0.27	0.03	0.24	0.24	0.06	0.28	0.28	0.21	0.45	0.45
Sat Flow, veh/h	1774	5084	428	3442	3725	3167	1774	1863	1583	3548	790	912
Grp Volume(v), veh/h	92	412	200	67	676	594	77	157	19	620	0	125
Grp Sat Flow(s),veh/h/ln	1774	1863	1787	1721	1863	1583	1774	1863	1583	1774	0	1702
Q Serve(g_s), s	5.4	9.5	9.7	2.0	17.7	13.4	4.5	7.0	0.9	17.6	0.0	4.6
Cycle Q Clear(g_c), s	5.4	9.5	9.7	2.0	17.7	13.4	4.5	7.0	0.9	17.6	0.0	4.6
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	116	1008	484	113	887	1417	98	514	437	743	0	758
V/C Ratio(X)	0.79	0.41	0.41	0.59	0.76	0.42	0.78	0.31	0.04	0.83	0.00	0.16
Avail Cap(c_a), veh/h	125	1008	484	170	887	1417	162	514	437	743	0	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.4	31.4	31.5	50.1	37.2	19.7	49.0	30.0	27.8	39.8	0.0	17.4
Incr Delay (d2), s/veh	24.3	1.2	2.6	1.6	5.4	0.8	5.0	1.5	0.2	10.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	5.0	5.1	1.0	9.8	6.0	2.3	3.8	0.4	9.7	0.0	2.3
LnGrp Delay(d),s/veh	72.6	32.6	34.1	51.7	42.6	20.5	54.0	31.6	28.0	50.4	0.0	17.9
LnGrp LOS	E	C	C	D	D	C	D	C	C	D		B
Approach Vol, veh/h		704			1337			253			745	
Approach Delay, s/veh		38.3			33.3			38.1			44.9	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	34.6	10.4	53.0	11.5	31.2	28.2	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	5.3	27.2	9.6	41.4	7.4	25.0	22.0	* 29
Max Q Clear Time (g_c+I1), s	4.0	11.7	6.5	6.6	7.4	19.7	19.6	9.0
Green Ext Time (p_c), s	0.0	12.3	0.0	2.2	0.0	4.7	0.8	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	37.7
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	644	444	0	936	398	0	0	0	331	0	187
Future Volume (veh/h)	0	644	444	0	936	398	0	0	0	331	0	187
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	700	483	0	1017	433				360	0	203
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	1888	844	0	1888	844				1300	0	1053
Arrive On Green	0.00	0.53	0.53	0.00	0.53	0.53				0.38	0.00	0.38
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	700	483	0	1017	433				360	0	203
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	10.4	18.4	0.0	16.9	15.8				6.5	0.0	4.4
Cycle Q Clear(g_c), s	0.0	10.4	18.4	0.0	16.9	15.8				6.5	0.0	4.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1888	844	0	1888	844				1300	0	1053
V/C Ratio(X)	0.00	0.37	0.57	0.00	0.54	0.51				0.28	0.00	0.19
Avail Cap(c_a), veh/h	0	1888	844	0	1888	844				1300	0	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.76	0.76	0.00	0.84	0.84				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.2	14.1	0.0	13.8	13.5				19.5	0.0	18.8
Incr Delay (d2), s/veh	0.0	0.1	0.7	0.0	0.9	1.9				0.5	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.1	8.1	0.0	8.4	7.3				3.2	0.0	1.8
LnGrp Delay(d),s/veh	0.0	12.3	14.8	0.0	14.7	15.3				20.0	0.0	19.2
LnGrp LOS		B	B		B	B				B		B
Approach Vol, veh/h		1183			1450						563	
Approach Delay, s/veh		13.3			14.9						19.7	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		38.0		52.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		48.0		34.0		48.0		
Max Q Clear Time (g_c+I1), s		20.4		8.5		18.9		
Green Ext Time (p_c), s		18.2		2.1		18.8		

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	848	0	0	1061	450	0	0	354	0	0	273
Future Volume (veh/h)	127	848	0	0	1061	450	0	0	354	0	0	273
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	134	893	0	0	1117	474	0	0	373	0	0	287
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	167	3382	0	0	2891	1293	0	0	0	0	0	0
Arrive On Green	0.09	0.96	0.00	0.00	0.82	0.82	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	134	893	0	0	1117	474		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	6.7	1.3	0.0	0.0	7.6	7.0						
Cycle Q Clear(g_c), s	6.7	1.3	0.0	0.0	7.6	7.0						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	167	3382	0	0	2891	1293						
V/C Ratio(X)	0.80	0.26	0.00	0.00	0.39	0.37						
Avail Cap(c_a), veh/h	276	3382	0	0	2891	1293						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.64	0.64						
Uniform Delay (d), s/veh	39.9	0.1	0.0	0.0	2.2	2.2						
Incr Delay (d2), s/veh	8.2	0.2	0.0	0.0	0.3	0.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	3.7	0.7	0.0	0.0	3.7	3.2						
LnGrp Delay(d),s/veh	48.1	0.3	0.0	0.0	2.5	2.7						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		1027			1591							
Approach Delay, s/veh		6.5			2.5							
Approach LOS		A			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			12.5	77.5		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		60.0			14.0	42.0		
Max Q Clear Time (g_c+I1), s		3.3			8.7	9.6		
Green Ext Time (p_c), s		27.7			0.1	20.6		

Intersection Summary	
HCM 2010 Ctrl Delay	4.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	638	271	37	890	74	353	208	69	59	192	268
Future Volume (veh/h)	293	638	271	37	890	74	353	208	69	59	192	268
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	308	672	285	39	937	78	372	219	73	62	202	282
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	1326	593	83	1406	117	429	692	588	79	543	462
Arrive On Green	0.11	0.37	0.37	0.02	0.29	0.29	0.12	0.37	0.37	0.04	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4785	397	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	308	672	285	39	663	352	372	219	73	62	202	282
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1793	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.6	17.6	16.5	1.3	20.6	20.7	12.7	10.0	3.6	4.2	10.3	18.4
Cycle Q Clear(g_c), s	10.6	17.6	16.5	1.3	20.6	20.7	12.7	10.0	3.6	4.2	10.3	18.4
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	362	1326	593	83	996	527	429	692	588	79	543	462
V/C Ratio(X)	0.85	0.51	0.48	0.47	0.67	0.67	0.87	0.32	0.12	0.78	0.37	0.61
Avail Cap(c_a), veh/h	413	1326	593	141	996	527	499	692	588	143	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	29.0	28.6	57.8	37.2	37.2	51.6	26.9	24.9	56.7	33.8	36.6
Incr Delay (d2), s/veh	11.9	1.3	2.5	1.5	3.5	6.6	12.2	1.2	0.4	6.1	1.9	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	8.8	7.6	0.7	10.2	11.2	6.8	5.4	1.7	2.2	5.6	8.8
LnGrp Delay(d),s/veh	64.6	30.2	31.2	59.3	40.7	43.8	63.7	28.1	25.3	62.8	35.7	42.5
LnGrp LOS	E	C	C	E	D	D	E	C	C	E	D	D
Approach Vol, veh/h		1265			1054			664			546	
Approach Delay, s/veh		38.8			42.5			47.7			42.3	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	51.4	19.5	41.5	17.2	41.7	10.0	51.1
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	4.9	* 41	17.4	* 35	14.4	31.3	9.7	42.4
Max Q Clear Time (g_c+I1), s	2.3	19.6	14.7	20.4	12.6	22.7	6.2	12.0
Green Ext Time (p_c), s	0.0	12.2	0.2	1.7	0.1	6.3	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	42.1
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	177	0	93	55	124	0	59	190	51	25	4
Future Vol, veh/h	9	177	0	93	55	124	0	59	190	51	25	4
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	224	0	118	70	157	0	75	241	65	32	5
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	15.2	12.6	11.8	12.5
HCM LOS	C	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	5%	100%	0%	64%
Vol Thru, %	100%	100%	0%	95%	0%	31%	31%
Vol Right, %	0%	0%	100%	0%	0%	69%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	59	190	186	93	179	80
LT Vol	0	0	0	9	93	0	51
Through Vol	0	59	0	177	0	55	25
RT Vol	0	0	190	0	0	124	4
Lane Flow Rate	0	75	241	235	118	227	101
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0.135	0.388	0.448	0.233	0.386	0.217
Departure Headway (Hd)	6.523	6.523	5.811	6.845	7.131	6.13	7.697
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	546	616	523	500	582	469
Service Time	4.305	4.305	3.593	4.64	4.921	3.92	5.397
HCM Lane V/C Ratio	0	0.137	0.391	0.449	0.236	0.39	0.215
HCM Control Delay	9.3	10.3	12.3	15.2	12.1	12.8	12.5
HCM Lane LOS	N	B	B	C	B	B	B
HCM 95th-tile Q	0	0.5	1.8	2.3	0.9	1.8	0.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	257	21	13	314	59	16	165	16	33	205	33
Future Volume (veh/h)	76	257	21	13	314	59	16	165	16	33	205	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	88	299	24	15	365	69	19	192	19	38	238	38
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	1188	370	54	666	123	759	1112	110	806	1241	1055
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1844	5085	1583	50	2851	525	1099	1668	165	1166	1863	1583
Grp Volume(v), veh/h	88	299	24	239	0	210	19	0	211	38	238	38
Grp Sat Flow(s),veh/h/ln	922	1695	1583	1824	0	1602	1099	0	1834	1166	1863	1583
Q Serve(g_s), s	4.0	4.3	1.1	0.0	0.0	10.4	0.6	0.0	3.9	1.1	4.4	0.7
Cycle Q Clear(g_c), s	14.4	4.3	1.1	10.1	0.0	10.4	5.0	0.0	3.9	5.0	4.4	0.7
Prop In Lane	1.00		1.00	0.06		0.33	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	377	1188	370	468	0	374	759	0	1222	806	1241	1055
V/C Ratio(X)	0.23	0.25	0.06	0.51	0.00	0.56	0.03	0.00	0.17	0.05	0.19	0.04
Avail Cap(c_a), veh/h	612	1836	572	695	0	579	759	0	1222	806	1241	1055
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	28.1	26.8	30.3	0.0	30.4	6.7	0.0	5.7	6.6	5.7	5.1
Incr Delay (d2), s/veh	0.3	0.1	0.1	0.9	0.0	1.3	0.1	0.0	0.3	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.0	0.5	5.3	0.0	4.8	0.2	0.0	2.0	0.4	2.4	0.3
LnGrp Delay(d),s/veh	37.1	28.2	26.9	31.2	0.0	31.8	6.8	0.0	6.0	6.7	6.1	5.2
LnGrp LOS	D	C	C	C		C	A		A	A	A	A
Approach Vol, veh/h		411			449			230			314	
Approach Delay, s/veh		30.0			31.5			6.0			6.1	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		64.5		25.5		64.5		25.5
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		48.5		32.5		48.5		32.5
Max Q Clear Time (g_c+I1), s		7.0		16.4		7.0		12.4
Green Ext Time (p_c), s		3.1		4.6		3.1		5.0

Intersection Summary		
HCM 2010 Ctrl Delay		21.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	20	20	21	26	12	22	58	2	10	186	153
Future Volume (veh/h)	103	20	20	21	26	12	22	58	2	10	186	153
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	114	22	22	23	29	13	24	64	2	11	207	170
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	569	484	50	867	388	52	910	28	25	867	388
Arrive On Green	0.09	0.31	0.31	0.03	0.24	0.24	0.03	0.26	0.26	0.01	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3504	109	1774	3539	1583
Grp Volume(v), veh/h	114	22	22	23	29	13	24	32	34	11	207	170
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1844	1774	1770	1583
Q Serve(g_s), s	2.6	0.3	0.4	0.5	0.3	0.3	0.5	0.6	0.6	0.3	1.9	3.7
Cycle Q Clear(g_c), s	2.6	0.3	0.4	0.5	0.3	0.3	0.5	0.6	0.6	0.3	1.9	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	158	569	484	50	867	388	52	460	479	25	867	388
V/C Ratio(X)	0.72	0.04	0.05	0.46	0.03	0.03	0.46	0.07	0.07	0.43	0.24	0.44
Avail Cap(c_a), veh/h	739	1552	1319	348	2168	970	348	1084	1129	304	2081	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	10.0	10.0	19.5	11.7	11.7	19.5	11.4	11.4	20.0	12.4	13.0
Incr Delay (d2), s/veh	6.1	0.0	0.0	6.5	0.0	0.0	6.3	0.1	0.1	11.1	0.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.2	0.2	0.3	0.1	0.1	0.4	0.3	0.3	0.2	0.9	1.7
LnGrp Delay(d),s/veh	24.2	10.0	10.0	26.0	11.7	11.8	25.8	11.5	11.5	31.1	12.5	13.8
LnGrp LOS	C	A	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		158			65			90			388	
Approach Delay, s/veh		20.3			16.8			15.3			13.6	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	16.5	5.2	14.0	7.6	14.0	4.6	14.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	34.0	8.0	24.0	17.0	25.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	2.4	2.5	5.7	4.6	2.3	2.3	2.6
Green Ext Time (p_c), s	0.0	0.3	0.0	1.9	0.2	0.3	0.0	2.0

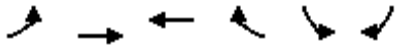
Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	119	110	88	274	286
Future Volume (veh/h)	11	119	110	88	274	286
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	12	132	122	98	304	318
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	185	165	1011	859	339	1453
Arrive On Green	0.10	0.10	0.54	0.54	0.19	0.78
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	12	132	122	98	304	318
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	0.6	8.1	3.2	3.0	16.7	4.5
Cycle Q Clear(g_c), s	0.6	8.1	3.2	3.0	16.7	4.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	185	165	1011	859	339	1453
V/C Ratio(X)	0.06	0.80	0.12	0.11	0.90	0.22
Avail Cap(c_a), veh/h	365	326	1011	859	610	1453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.4	43.8	11.2	11.1	39.5	2.9
Incr Delay (d2), s/veh	0.1	7.7	0.2	0.3	3.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.9	1.7	1.4	8.5	2.4
LnGrp Delay(d),s/veh	40.5	51.5	11.4	11.4	42.9	3.3
LnGrp LOS	D	D	B	B	D	A
Approach Vol, veh/h	144		220			622
Approach Delay, s/veh	50.5		11.4			22.6
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	23.7	60.5				84.2		15.8
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	24.4	28.8				67.8		20.6
Max Q Clear Time (g_c+I1), s	19.7	5.2				6.5		10.1
Green Ext Time (p_c), s	0.4	6.6				8.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.2
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	224	222	31	1	13
Future Volume (veh/h)	16	224	222	31	1	13
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	20	273	271	38	1	16
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	45	853	529	73	1148	1024
Arrive On Green	0.03	0.24	0.17	0.17	0.65	0.65
Sat Flow, veh/h	1774	3632	3216	433	1774	1583
Grp Volume(v), veh/h	20	273	152	157	1	16
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1786	1774	1583
Q Serve(g_s), s	1.1	6.3	7.8	8.0	0.0	0.4
Cycle Q Clear(g_c), s	1.1	6.3	7.8	8.0	0.0	0.4
Prop In Lane	1.00			0.24	1.00	1.00
Lane Grp Cap(c), veh/h	45	853	300	303	1148	1024
V/C Ratio(X)	0.44	0.32	0.51	0.52	0.00	0.02
Avail Cap(c_a), veh/h	238	2145	754	761	1148	1024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.89	0.89	1.00	1.00
Uniform Delay (d), s/veh	48.0	31.2	37.7	37.8	6.2	6.3
Incr Delay (d2), s/veh	1.9	0.3	2.4	2.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.1	4.0	4.1	0.0	0.6
LnGrp Delay(d),s/veh	49.9	31.5	40.1	40.3	6.2	6.3
LnGrp LOS	D	C	D	D	A	A
Approach Vol, veh/h		293	309		17	
Approach Delay, s/veh		32.8	40.2		6.3	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.5		70.5	7.2	22.3
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				60.6		28.2	13.4	42.6
Max Q Clear Time (g_c+I1), s				8.3		2.4	3.1	10.0
Green Ext Time (p_c), s				7.6		0.1	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	122	8	6	11	168	143	7	11	362	16
Future Volume (veh/h)	11	13	122	8	6	11	168	143	7	11	362	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	16	149	10	7	13	205	174	9	13	441	20
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	30	404	343	23	397	338	271	1279	66	30	819	37
Arrive On Green	0.02	0.22	0.22	0.01	0.21	0.21	0.15	0.37	0.37	0.02	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3425	176	1774	3449	156
Grp Volume(v), veh/h	13	16	149	10	7	13	205	89	94	13	226	235
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1832	1774	1770	1835
Q Serve(g_s), s	0.3	0.3	3.4	0.2	0.1	0.3	4.7	1.4	1.4	0.3	4.7	4.7
Cycle Q Clear(g_c), s	0.3	0.3	3.4	0.2	0.1	0.3	4.7	1.4	1.4	0.3	4.7	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.09
Lane Grp Cap(c), veh/h	30	404	343	23	397	338	271	661	684	30	420	436
V/C Ratio(X)	0.44	0.04	0.43	0.43	0.02	0.04	0.76	0.14	0.14	0.44	0.54	0.54
Avail Cap(c_a), veh/h	253	1062	902	253	1062	902	800	1597	1653	253	1051	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	13.0	14.3	20.6	13.1	13.1	17.1	8.7	8.7	20.5	14.0	14.0
Incr Delay (d2), s/veh	9.8	0.0	0.9	12.1	0.0	0.0	4.3	0.1	0.1	9.8	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	1.6	0.2	0.1	0.1	2.6	0.7	0.7	0.2	2.4	2.5
LnGrp Delay(d),s/veh	30.3	13.1	15.1	32.7	13.1	13.2	21.4	8.8	8.8	30.3	15.1	15.1
LnGrp LOS	C	B	B	C	B	B	C	A	A	C	B	B
Approach Vol, veh/h		178			30			388			474	
Approach Delay, s/veh		16.0			19.7			15.5			15.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.7	19.7	4.6	13.1	10.4	14.0	4.7	13.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	38.0	6.0	24.0	19.0	25.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	2.3	3.4	2.2	5.4	6.7	6.7	2.3	2.3
Green Ext Time (p_c), s	0.0	3.5	0.0	0.5	0.4	3.1	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	4	407	1	0	1	0	186	0	0	0
Future Vol, veh/h	0	1	4	407	1	0	1	0	186	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	4	447	1	0	1	0	204	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.6	13.9	9.6	0
HCM LOS	A	B	A	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	20%	0%	100%
Vol Right, %	0%	100%	80%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	186	5	408	0
LT Vol	1	0	0	407	0
Through Vol	0	0	1	1	0
RT Vol	0	186	4	0	0
Lane Flow Rate	1	204	5	448	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.002	0.28	0.007	0.579	0
Departure Headway (Hd)	6.147	4.937	4.496	4.653	5.435
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	582	728	791	776	0
Service Time	3.886	2.675	2.553	2.689	3.496
HCM Lane V/C Ratio	0.002	0.28	0.006	0.577	0
HCM Control Delay	8.9	9.6	7.6	13.9	8.5
HCM Lane LOS	A	A	A	B	N
HCM 95th-tile Q	0	1.1	0	3.8	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	3	61	7	4	1	31	350	2	1	250	22
Future Volume (veh/h)	21	3	61	7	4	1	31	350	2	1	250	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	3	70	8	5	1	36	402	2	1	287	25
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	124	105	10	6	1	65	2648	13	3	2303	199
Arrive On Green	0.07	0.07	0.07	0.01	0.01	0.01	0.04	0.73	0.73	0.00	0.70	0.70
Sat Flow, veh/h	1774	1863	1583	1022	639	128	1774	3611	18	1774	3297	285
Grp Volume(v), veh/h	24	3	70	14	0	0	36	197	207	1	153	159
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1789	0	0	1774	1770	1860	1774	1770	1812
Q Serve(g_s), s	1.4	0.2	4.8	0.9	0.0	0.0	2.2	3.7	3.7	0.1	3.1	3.2
Cycle Q Clear(g_c), s	1.4	0.2	4.8	0.9	0.0	0.0	2.2	3.7	3.7	0.1	3.1	3.2
Prop In Lane	1.00		1.00	0.57		0.07	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	118	124	105	17	0	0	65	1298	1364	3	1236	1266
V/C Ratio(X)	0.20	0.02	0.67	0.82	0.00	0.00	0.56	0.15	0.15	0.34	0.12	0.13
Avail Cap(c_a), veh/h	471	494	420	299	0	0	168	1298	1364	119	1236	1266
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	48.0	50.2	54.4	0.0	0.0	52.1	4.4	4.4	54.9	5.5	5.5
Incr Delay (d2), s/veh	3.9	0.4	28.6	60.8	0.0	0.0	2.8	0.2	0.2	24.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.1	2.9	0.7	0.0	0.0	1.1	1.8	1.9	0.0	1.6	1.7
LnGrp Delay(d),s/veh	52.5	48.4	78.8	115.2	0.0	0.0	54.9	4.6	4.6	78.8	5.7	5.7
LnGrp LOS	D	D	E	F			D	A	A	E	A	A
Approach Vol, veh/h		97			14			440			313	
Approach Delay, s/veh		71.3			115.2			8.8			5.9	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	86.5		13.1	8.6	82.6		5.6
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	7.4	34.2		29.2	10.4	31.2		18.4
Max Q Clear Time (g_c+I1), s	2.1	5.7		6.8	4.2	5.2		2.9
Green Ext Time (p_c), s	0.0	10.6		1.0	0.0	10.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1274	228	189	1310	7	102	4	265	7	20	13
Future Volume (veh/h)	10	1274	228	189	1310	7	102	4	265	7	20	13
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	11	1385	248	205	1424	8	111	4	288	8	22	14
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1926	862	128	2901	903	138	5	332	40	271	303
Arrive On Green	0.05	0.54	0.54	0.07	0.57	0.57	0.08	0.21	0.21	0.01	0.15	0.15
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	22	1565	3442	1863	1583
Grp Volume(v), veh/h	11	1385	248	205	1424	8	111	0	292	8	22	14
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1587	1721	1863	1583
Q Serve(g_s), s	0.8	38.1	11.0	9.4	21.7	0.3	8.0	0.0	23.1	0.3	1.3	0.9
Cycle Q Clear(g_c), s	0.8	38.1	11.0	9.4	21.7	0.3	8.0	0.0	23.1	0.3	1.3	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Lane Grp Cap(c), veh/h	82	1926	862	128	2901	903	138	0	336	40	271	303
V/C Ratio(X)	0.13	0.72	0.29	1.60	0.49	0.01	0.80	0.00	0.87	0.20	0.08	0.05
Avail Cap(c_a), veh/h	246	1926	862	128	2901	903	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.5	22.2	16.0	60.3	16.7	12.1	58.9	0.0	49.5	63.7	48.0	42.9
Incr Delay (d2), s/veh	0.3	2.3	0.8	297.3	0.5	0.0	10.2	0.0	7.4	0.9	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	19.1	5.0	15.2	10.3	0.1	4.3	0.0	10.8	0.1	0.7	0.4
LnGrp Delay(d),s/veh	59.8	24.5	16.8	357.6	17.2	12.1	69.1	0.0	56.9	64.6	48.3	43.0
LnGrp LOS	E	C	B	F	B	B	E		E	E	D	D
Approach Vol, veh/h		1644			1637			403			44	
Approach Delay, s/veh		23.6			59.8			60.3			49.6	
Approach LOS		C			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	76.6	14.7	24.7	10.6	80.0	6.1	33.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	9.4	45.8	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	11.4	40.1	10.0	3.3	2.8	23.7	2.3	25.1
Green Ext Time (p_c), s	0.0	5.7	0.1	2.7	0.0	13.3	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	43.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	1257	10	11	1076	79	3	1	10	436	2	262
Future Volume (veh/h)	207	1257	10	11	1076	79	3	1	10	436	2	262
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	227	1381	11	12	1182	87	3	1	11	479	2	288
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	2798	871	30	2456	1017	8	12	134	548	3	386
Arrive On Green	0.08	0.55	0.55	0.02	0.48	0.48	0.00	0.09	0.09	0.16	0.25	0.25
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	134	1470	3442	11	1574
Grp Volume(v), veh/h	227	1381	11	12	1182	87	3	0	12	479	0	290
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1603	1721	0	1585
Q Serve(g_s), s	7.1	18.4	0.3	0.7	17.2	2.3	0.2	0.0	0.8	15.0	0.0	18.6
Cycle Q Clear(g_c), s	7.1	18.4	0.3	0.7	17.2	2.3	0.2	0.0	0.8	15.0	0.0	18.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		0.99
Lane Grp Cap(c), veh/h	289	2798	871	30	2456	1017	8	0	146	548	0	389
V/C Ratio(X)	0.79	0.49	0.01	0.40	0.48	0.09	0.35	0.00	0.08	0.87	0.00	0.75
Avail Cap(c_a), veh/h	394	2798	871	97	2456	1017	160	0	306	716	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.18	0.18	0.18	0.95	0.95	0.95	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.4	15.3	11.2	53.5	19.2	7.4	54.6	0.0	45.8	45.2	0.0	38.3
Incr Delay (d2), s/veh	0.9	0.1	0.0	3.1	0.3	0.1	9.1	0.0	0.2	7.8	0.0	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	8.6	0.2	0.4	8.1	1.0	0.1	0.0	0.3	7.7	0.0	8.7
LnGrp Delay(d),s/veh	50.3	15.4	11.2	56.6	19.5	7.5	63.6	0.0	46.0	52.9	0.0	43.6
LnGrp LOS	D	B	B	E	B	A	E		D	D		D
Approach Vol, veh/h		1619			1281			15			769	
Approach Delay, s/veh		20.2			19.0			49.6			49.4	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	66.3	5.1	32.1	13.8	58.9	22.1	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	40.0	9.9	34.0	12.6	33.4	22.9	21.0
Max Q Clear Time (g_c+I1), s	2.7	20.4	2.2	20.6	9.1	19.2	17.0	2.8
Green Ext Time (p_c), s	0.0	18.8	0.0	1.9	0.1	13.6	0.6	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1216	620	0	643	0	0	0	0	137	2	474
Future Volume (veh/h)	0	1216	620	0	643	0	0	0	0	137	2	474
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1382	705	0	731	0				156	2	539
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2656	827	0	2656	0				682	9	1084
Arrive On Green	0.00	0.52	0.52	0.00	0.52	0.00				0.39	0.39	0.39
Sat Flow, veh/h	0	5253	1583	0	5421	0				1753	22	2787
Grp Volume(v), veh/h	0	1382	705	0	731	0				158	0	539
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	16.0	34.5	0.0	7.2	0.0				5.4	0.0	13.2
Cycle Q Clear(g_c), s	0.0	16.0	34.5	0.0	7.2	0.0				5.4	0.0	13.2
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2656	827	0	2656	0				690	0	1084
V/C Ratio(X)	0.00	0.52	0.85	0.00	0.28	0.00				0.23	0.00	0.50
Avail Cap(c_a), veh/h	0	2656	827	0	2656	0				690	0	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.80	0.80	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.1	18.5	0.0	12.0	0.0				18.4	0.0	20.8
Incr Delay (d2), s/veh	0.0	0.1	7.0	0.0	0.3	0.0				0.8	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.5	16.5	0.0	3.4	0.0				2.8	0.0	5.3
LnGrp Delay(d),s/veh	0.0	14.3	25.5	0.0	12.3	0.0				19.2	0.0	22.5
LnGrp LOS		B	C		B					B		C
Approach Vol, veh/h		2087			731						697	
Approach Delay, s/veh		18.1			12.3						21.7	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		51.0		39.0		51.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		47.0		35.0		47.0		
Max Q Clear Time (g_c+I1), s		36.5		15.2		9.2		
Green Ext Time (p_c), s		9.2		3.2		26.3		

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	569	784	0	727	144	221	0	405	0	0	0
Future Volume (veh/h)	0	569	784	0	727	144	221	0	405	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	749	0	0	957	0	291	0	533			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3277	1020	0	3277	1020	473	0	422			
Arrive On Green	0.00	0.64	0.00	0.00	0.64	0.00	0.27	0.00	0.27			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	749	0	0	957	0	291	0	533			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	5.5	0.0	0.0	7.4	0.0	13.0	0.0	24.0			
Cycle Q Clear(g_c), s	0.0	5.5	0.0	0.0	7.4	0.0	13.0	0.0	24.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3277	1020	0	3277	1020	473	0	422			
V/C Ratio(X)	0.00	0.23	0.00	0.00	0.29	0.00	0.62	0.00	1.26			
Avail Cap(c_a), veh/h	0	3277	1020	0	3277	1020	473	0	422			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.97	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.7	0.0	0.0	7.0	0.0	28.9	0.0	33.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	5.9	0.0	135.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.0	0.0	3.5	0.0	7.1	0.0	26.4			
LnGrp Delay(d),s/veh	0.0	6.8	0.0	0.0	7.1	0.0	34.8	0.0	168.9			
LnGrp LOS		A			A		C		F			
Approach Vol, veh/h		749			957			824				
Approach Delay, s/veh		6.8			7.1			121.5				
Approach LOS		A			A			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		62.0				62.0		28.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		34.0				20.0		24.0
Max Q Clear Time (g_c+I1), s		7.5				9.4		26.0
Green Ext Time (p_c), s		13.3				7.3		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		44.3
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	732	119	98	430	210	258	142	8	174	119	212
Future Volume (veh/h)	176	732	119	98	430	210	258	142	8	174	119	212
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	248	1031	168	138	606	296	363	200	11	245	168	299
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	704	1184	530	166	792	354	393	806	44	279	606	595
Arrive On Green	0.20	0.33	0.33	0.09	0.22	0.22	0.22	0.24	0.24	0.16	0.17	0.17
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3413	187	1774	3539	1583
Grp Volume(v), veh/h	248	1031	168	138	606	296	363	103	108	245	168	299
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1830	1774	1770	1583
Q Serve(g_s), s	6.7	29.6	8.6	8.3	17.4	13.3	21.7	5.1	5.2	14.6	4.5	6.7
Cycle Q Clear(g_c), s	6.7	29.6	8.6	8.3	17.4	13.3	21.7	5.1	5.2	14.6	4.5	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	704	1184	530	166	792	354	393	418	432	279	606	595
V/C Ratio(X)	0.35	0.87	0.32	0.83	0.77	0.84	0.92	0.25	0.25	0.88	0.28	0.50
Avail Cap(c_a), veh/h	704	1356	606	192	1186	530	481	776	802	409	1405	952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	33.9	26.8	48.2	39.4	19.1	41.3	33.6	33.6	44.6	39.1	9.4
Incr Delay (d2), s/veh	0.3	5.8	0.3	22.8	1.7	7.2	19.4	1.2	1.1	13.7	0.9	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	15.4	3.8	5.1	8.7	7.5	12.7	2.6	2.7	8.2	2.3	3.5
LnGrp Delay(d),s/veh	37.2	39.7	27.2	71.0	41.1	26.3	60.7	34.7	34.7	58.4	40.0	11.9
LnGrp LOS	D	D	C	E	D	C	E	C	C	E	D	B
Approach Vol, veh/h		1447			1040			574			712	
Approach Delay, s/veh		37.8			40.9			51.2			34.5	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	31.4	14.7	40.7	28.6	24.3	26.7	28.7
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	25.0	47.5	11.7	41.5	29.4	43.0	16.9	36.3
Max Q Clear Time (g_c+I1), s	10.6	7.2	10.3	31.6	23.7	8.7	8.7	19.4
Green Ext Time (p_c), s	0.4	10.4	0.0	4.6	0.3	9.9	4.8	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	40.1
HCM 2010 LOS	D

Notes

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2028 Plus Ambient Growth Plus Project (Phases 1 & 2) (2028 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	116	5.0	0.110	4.4	LOS A	0.4	10.6	0.33	0.21	24.3
12	R2	58	5.0	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		174	5.0	0.110	2.9	LOS A	0.4	10.6	0.22	0.14	24.6
East: Keller Road											
3	L2	66	5.0	0.084	3.7	LOS A	0.3	8.5	0.24	0.12	24.9
8	T1	196	3.0	0.084	0.7	LOS A	0.3	8.5	0.04	0.02	24.4
Approach		262	3.5	0.084	1.4	LOS A	0.3	8.5	0.09	0.05	24.6
West: Keller Road											
4	T1	210	3.0	0.162	4.1	LOS A	0.7	18.1	0.19	0.08	23.2
14	R2	241	5.0	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		451	4.1	0.162	1.9	LOS A	0.7	18.1	0.09	0.04	24.6
All Vehicles		887	4.1	0.162	2.0	LOS A	0.7	18.1	0.12	0.06	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2028 Plus Ambient Growth Plus Project (Phases 1 & 2) (2028 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	126	5.0	0.065	4.2	LOS A	0.2	5.8	0.35	0.23	13.7
2	T1	1	5.0	0.065	4.1	LOS A	0.2	5.6	0.34	0.23	23.1
12	R2	23	5.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		150	5.0	0.065	3.6	LOS A	0.2	5.8	0.30	0.20	15.1
East: Keller Road											
8	T1	136	3.0	0.064	3.9	LOS A	0.2	6.0	0.34	0.22	23.4
18	R2	27	5.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		163	3.3	0.064	3.3	LOS A	0.2	6.0	0.29	0.19	23.8
West: Keller Road											
7	L2	124	5.0	0.098	3.4	LOS A	0.0	0.0	0.00	0.00	28.2
4	T1	143	3.0	0.098	3.4	LOS A	0.0	0.0	0.00	0.00	24.9
Approach		267	3.9	0.098	3.4	LOS A	0.0	0.0	0.00	0.00	26.4
All Vehicles		580	4.0	0.098	3.4	LOS A	0.2	6.0	0.16	0.10	21.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

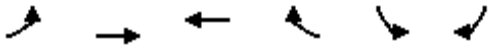
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	806	21	4	621	25	0	0	0	52	8	27
Future Vol, veh/h	2	806	21	4	621	25	0	0	0	52	8	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	840	22	4	647	26	0	0	0	54	8	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	673	0	0	861	0	0	1541	1536	431	1092	1534	660
Stage 1	-	-	-	-	-	-	855	855	-	668	668	-
Stage 2	-	-	-	-	-	-	686	681	-	424	866	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	916	-	-	779	-	-	86	115	573	180	116	462
Stage 1	-	-	-	-	-	-	320	374	-	447	455	-
Stage 2	-	-	-	-	-	-	437	449	-	579	369	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	916	-	-	779	-	-	76	114	573	178	115	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	114	-	178	115	-
Stage 1	-	-	-	-	-	-	319	373	-	445	451	-
Stage 2	-	-	-	-	-	-	400	445	-	577	368	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	28.3
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	916	-	-	779	-	-	178	273
HCM Lane V/C Ratio	-	0.002	-	-	0.005	-	-	0.304	0.134
HCM Control Delay (s)	0	8.9	0	-	9.6	0	-	33.8	20.2
HCM Lane LOS	A	A	A	-	A	A	-	D	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1.2	0.5



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	323	407	521	155	108	141
Future Volume (veh/h)	323	407	521	155	108	141
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	330	415	532	158	110	144
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	368	1382	917	780	308	275
Arrive On Green	0.21	0.74	0.49	0.49	0.17	0.17
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	330	415	532	158	110	144
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	19.3	7.9	21.6	6.0	5.8	8.8
Cycle Q Clear(g_c), s	19.3	7.9	21.6	6.0	5.8	8.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	368	1382	917	780	308	275
V/C Ratio(X)	0.90	0.30	0.58	0.20	0.36	0.52
Avail Cap(c_a), veh/h	591	1616	917	780	308	275
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	4.6	19.2	15.3	38.8	40.1
Incr Delay (d2), s/veh	10.6	0.1	2.7	0.6	3.2	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	4.1	11.8	2.8	3.1	4.4
LnGrp Delay(d),s/veh	51.8	4.7	21.9	15.8	42.0	47.0
LnGrp LOS	D	A	C	B	D	D
Approach Vol, veh/h		745	690		254	
Approach Delay, s/veh		25.5	20.5		44.9	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		83.6			26.6	57.0		23.0
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		92.5			35.5	52.5		18.5
Max Q Clear Time (g_c+I1), s		9.9			21.3	23.6		10.8
Green Ext Time (p_c), s		7.2			0.8	6.7		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	503	81	61	621	470	80	78	35	342	56	53
Future Volume (veh/h)	53	503	81	61	621	470	80	78	35	342	56	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	55	524	84	64	647	490	83	81	36	356	58	55
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	1144	180	109	885	1280	106	514	437	743	389	369
Arrive On Green	0.04	0.26	0.26	0.03	0.25	0.25	0.06	0.28	0.28	0.21	0.44	0.44
Sat Flow, veh/h	1774	4432	698	3442	3539	2787	1774	1863	1583	3548	880	835
Grp Volume(v), veh/h	55	399	209	64	647	490	83	81	36	356	0	113
Grp Sat Flow(s),veh/h/ln	1774	1695	1740	1721	1770	1393	1774	1863	1583	1774	0	1715
Q Serve(g_s), s	3.2	10.4	10.7	1.9	17.6	12.1	4.8	3.5	1.8	9.3	0.0	4.1
Cycle Q Clear(g_c), s	3.2	10.4	10.7	1.9	17.6	12.1	4.8	3.5	1.8	9.3	0.0	4.1
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	71	875	449	109	885	1280	106	514	437	743	0	757
V/C Ratio(X)	0.78	0.46	0.47	0.59	0.73	0.38	0.79	0.16	0.08	0.48	0.00	0.15
Avail Cap(c_a), veh/h	108	875	449	174	885	1280	179	514	437	743	0	757
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.0	32.7	32.8	50.2	36.1	18.6	48.7	28.8	28.1	36.5	0.0	17.5
Incr Delay (d2), s/veh	8.0	1.7	3.5	1.7	4.8	0.8	4.8	0.7	0.4	2.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	5.1	5.5	0.9	9.2	4.8	2.5	1.9	0.8	4.8	0.0	2.0
LnGrp Delay(d),s/veh	57.9	34.5	36.3	51.9	41.0	19.4	53.5	29.4	28.5	38.7	0.0	18.0
LnGrp LOS	E	C	D	D	D	B	D	C	C	D		B
Approach Vol, veh/h		663			1201			200			469	
Approach Delay, s/veh		37.0			32.7			39.2			33.7	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	33.3	10.9	52.5	8.8	32.4	28.2	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	5.3	27.1	10.6	40.4	6.4	26.0	22.0	* 29
Max Q Clear Time (g_c+I1), s	3.9	12.7	6.8	6.1	5.2	19.6	11.3	5.5
Green Ext Time (p_c), s	0.0	11.1	0.0	1.6	0.0	5.4	1.2	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	667	284	0	984	374	0	0	0	452	0	168
Future Volume (veh/h)	0	667	284	0	984	374	0	0	0	452	0	168
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	681	290	0	1004	382				461	0	171
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2124	950	0	2124	950				1071	0	867
Arrive On Green	0.00	0.60	0.60	0.00	0.60	0.60				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	681	290	0	1004	382				461	0	171
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	8.6	8.1	0.0	14.3	11.4				9.6	0.0	4.1
Cycle Q Clear(g_c), s	0.0	8.6	8.1	0.0	14.3	11.4				9.6	0.0	4.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2124	950	0	2124	950				1071	0	867
V/C Ratio(X)	0.00	0.32	0.31	0.00	0.47	0.40				0.43	0.00	0.20
Avail Cap(c_a), veh/h	0	2124	950	0	2124	950				1071	0	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.90	0.90	0.00	0.89	0.89				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.9	8.8	0.0	10.1	9.5				24.7	0.0	22.8
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.7	1.1				1.3	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	3.5	0.0	7.0	5.3				4.7	0.0	1.6
LnGrp Delay(d),s/veh	0.0	9.0	9.0	0.0	10.7	10.6				25.9	0.0	23.3
LnGrp LOS		A	A		B	B				C		C
Approach Vol, veh/h		971			1386						632	
Approach Delay, s/veh		9.0			10.7						25.2	
Approach LOS		A			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		58.0		32.0		58.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		54.0		28.0		54.0		
Max Q Clear Time (g_c+I1), s		10.6		11.6		16.3		
Green Ext Time (p_c), s		21.0		2.2		19.6		

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	1018	0	0	904	388	0	0	436	0	0	454
Future Volume (veh/h)	101	1018	0	0	904	388	0	0	436	0	0	454
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	104	1049	0	0	932	400	0	0	449	0	0	468
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	133	3382	0	0	2960	1324	0	0	0	0	0	0
Arrive On Green	0.07	0.96	0.00	0.00	0.84	0.84	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	104	1049	0	0	932	400		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	5.2	1.7	0.0	0.0	5.3	5.0						
Cycle Q Clear(g_c), s	5.2	1.7	0.0	0.0	5.3	5.0						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	133	3382	0	0	2960	1324						
V/C Ratio(X)	0.78	0.31	0.00	0.00	0.31	0.30						
Avail Cap(c_a), veh/h	237	3382	0	0	2960	1324						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.78	0.78						
Uniform Delay (d), s/veh	40.9	0.1	0.0	0.0	1.6	1.6						
Incr Delay (d2), s/veh	9.1	0.2	0.0	0.0	0.2	0.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	2.9	0.8	0.0	0.0	2.5	2.3						
LnGrp Delay(d),s/veh	50.1	0.4	0.0	0.0	1.9	2.1						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		1153			1332							
Approach Delay, s/veh		4.8			1.9							
Approach LOS		A			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			10.7	79.3		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		48.0			12.0	32.0		
Max Q Clear Time (g_c+I1), s		3.7			7.2	7.3		
Green Ext Time (p_c), s		23.4			0.1	16.6		

Intersection Summary	
HCM 2010 Ctrl Delay	3.3
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	272	865	317	88	717	60	356	331	181	71	170	219
Future Volume (veh/h)	272	865	317	88	717	60	356	331	181	71	170	219
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	275	874	320	89	724	61	360	334	183	72	172	221
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	1280	573	138	1463	123	419	674	573	92	543	462
Arrive On Green	0.10	0.36	0.36	0.04	0.31	0.31	0.12	0.36	0.36	0.05	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4782	401	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	275	874	320	89	512	273	360	334	183	72	172	221
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1792	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	9.4	25.1	19.4	3.1	14.8	15.0	12.3	16.7	10.0	4.8	8.6	13.8
Cycle Q Clear(g_c), s	9.4	25.1	19.4	3.1	14.8	15.0	12.3	16.7	10.0	4.8	8.6	13.8
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	329	1280	573	138	1037	548	419	674	573	92	543	462
V/C Ratio(X)	0.83	0.68	0.56	0.65	0.49	0.50	0.86	0.50	0.32	0.79	0.32	0.48
Avail Cap(c_a), veh/h	413	1280	573	155	1037	548	528	674	573	171	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	32.5	30.6	56.8	34.0	34.1	51.7	29.8	27.6	56.2	33.2	35.0
Incr Delay (d2), s/veh	8.4	2.6	3.4	5.0	1.7	3.2	9.5	2.6	1.5	5.4	1.5	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	12.7	9.0	1.6	7.1	7.9	6.4	9.1	4.6	2.5	4.7	6.5
LnGrp Delay(d),s/veh	61.7	35.1	34.1	61.8	35.7	37.3	61.2	32.4	29.1	61.7	34.7	38.5
LnGrp LOS	E	D	C	E	D	D	E	C	C	E	C	D
Approach Vol, veh/h		1469			874			877			465	
Approach Delay, s/veh		39.8			38.9			43.5			40.7	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	49.9	19.2	41.5	16.1	43.2	10.8	49.9
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	5.4	* 40	18.4	* 35	14.4	30.3	11.6	41.5
Max Q Clear Time (g_c+I1), s	11.1	27.1	14.3	15.8	11.4	17.0	6.8	18.7
Green Ext Time (p_c), s	0.0	8.5	0.3	2.1	0.1	8.9	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	40.6
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	32.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	115	0	363	187	46	0	74	301	41	96	3
Future Vol, veh/h	6	115	0	363	187	46	0	74	301	41	96	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	137	0	432	223	55	0	88	358	49	114	4
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	17	46.1	22.3	18.5
HCM LOS	C	E	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	5%	100%	0%	29%
Vol Thru, %	100%	100%	0%	95%	0%	80%	69%
Vol Right, %	0%	0%	100%	0%	0%	20%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	74	301	121	363	233	140
LT Vol	0	0	0	6	363	0	41
Through Vol	0	74	0	115	0	187	96
RT Vol	0	0	301	0	0	46	3
Lane Flow Rate	0	88	358	144	432	277	167
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0.19	0.701	0.362	0.966	0.57	0.422
Departure Headway (Hd)	7.76	7.76	7.041	9.057	8.047	7.394	9.125
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	462	512	395	449	485	393
Service Time	5.519	5.519	4.8	6.856	5.819	5.166	6.917
HCM Lane V/C Ratio	0	0.19	0.699	0.365	0.962	0.571	0.425
HCM Control Delay	10.5	12.3	24.8	17	63.1	19.6	18.5
HCM Lane LOS	N	B	C	C	F	C	C
HCM 95th-tile Q	0	0.7	5.5	1.6	11.8	3.5	2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	462	6	8	89	37	28	203	6	50	209	45
Future Volume (veh/h)	139	462	6	8	89	37	28	203	6	50	209	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	145	481	6	8	93	39	29	211	6	52	218	47
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	475	848	264	56	391	152	854	1321	38	889	1366	1161
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.73	0.73	0.73	0.73	0.73	0.73
Sat Flow, veh/h	2430	5085	1583	68	2346	912	1110	1802	51	1160	1863	1583
Grp Volume(v), veh/h	145	481	6	74	0	66	29	0	217	52	218	47
Grp Sat Flow(s),veh/h/ln	1215	1695	1583	1791	0	1534	1110	0	1854	1160	1863	1583
Q Serve(g_s), s	5.0	7.8	0.3	0.0	0.0	3.3	0.7	0.0	3.2	1.3	3.2	0.7
Cycle Q Clear(g_c), s	8.3	7.8	0.3	3.1	0.0	3.3	3.9	0.0	3.2	4.5	3.2	0.7
Prop In Lane	1.00		1.00	0.11		0.59	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	475	848	264	343	0	256	854	0	1359	889	1366	1161
V/C Ratio(X)	0.31	0.57	0.02	0.22	0.00	0.26	0.03	0.00	0.16	0.06	0.16	0.04
Avail Cap(c_a), veh/h	1028	2006	625	724	0	605	854	0	1359	889	1366	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	34.5	31.4	32.5	0.0	32.6	4.2	0.0	3.6	4.3	3.6	3.3
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.3	0.0	0.5	0.1	0.0	0.3	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.7	0.1	1.6	0.0	1.5	0.2	0.0	1.7	0.4	1.7	0.3
LnGrp Delay(d),s/veh	36.6	35.1	31.4	32.9	0.0	33.2	4.3	0.0	3.9	4.4	3.9	3.4
LnGrp LOS	D	D	C	C		C	A		A	A	A	A
Approach Vol, veh/h		632			140			246			317	
Approach Delay, s/veh		35.4			33.0			3.9			3.9	
Approach LOS		D			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		70.5		19.5		70.5		19.5
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		45.5		35.5		45.5		35.5
Max Q Clear Time (g_c+I1), s		5.9		10.3		6.5		5.3
Green Ext Time (p_c), s		3.2		4.7		3.2		4.9

Intersection Summary		
HCM 2010 Ctrl Delay		21.9
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	11	18	10	9	11	27	82	13	8	134	89
Future Volume (veh/h)	129	11	18	10	9	11	27	82	13	8	134	89
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	134	11	19	10	9	11	28	85	14	8	140	93
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	611	519	23	852	381	59	804	129	19	852	381
Arrive On Green	0.10	0.33	0.33	0.01	0.24	0.24	0.03	0.26	0.26	0.01	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3054	492	1774	3539	1583
Grp Volume(v), veh/h	134	11	19	10	9	11	28	48	51	8	140	93
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1776	1774	1770	1583
Q Serve(g_s), s	3.1	0.2	0.3	0.2	0.1	0.2	0.6	0.9	0.9	0.2	1.3	2.0
Cycle Q Clear(g_c), s	3.1	0.2	0.3	0.2	0.1	0.2	0.6	0.9	0.9	0.2	1.3	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	178	611	519	23	852	381	59	466	467	19	852	381
V/C Ratio(X)	0.75	0.02	0.04	0.43	0.01	0.03	0.47	0.10	0.11	0.42	0.16	0.24
Avail Cap(c_a), veh/h	811	1658	1410	299	2129	952	341	979	983	299	1873	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	9.4	9.5	20.4	12.0	12.1	19.7	11.6	11.6	20.4	12.5	12.7
Incr Delay (d2), s/veh	6.2	0.0	0.0	12.0	0.0	0.0	5.8	0.1	0.1	14.5	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.1	0.2	0.2	0.0	0.1	0.4	0.4	0.4	0.2	0.6	0.9
LnGrp Delay(d),s/veh	24.4	9.4	9.5	32.4	12.0	12.1	25.6	11.7	11.7	34.9	12.6	13.1
LnGrp LOS	C	A	A	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		164			30			127			241	
Approach Delay, s/veh		21.7			18.8			14.8			13.5	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	17.6	5.4	14.0	8.2	14.0	4.4	14.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	37.0	8.0	22.0	19.0	25.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	2.2	2.3	2.6	4.0	5.1	2.2	2.2	2.9
Green Ext Time (p_c), s	0.0	0.2	0.0	1.4	0.3	0.1	0.0	1.5

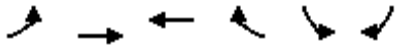
Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	313	254	12	91	170
Future Volume (veh/h)	57	313	254	12	91	170
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	63	344	279	13	100	187
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	424	378	983	835	127	1201
Arrive On Green	0.24	0.24	0.53	0.53	0.07	0.64
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	63	344	279	13	100	187
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	2.8	21.1	8.3	0.4	5.5	4.0
Cycle Q Clear(g_c), s	2.8	21.1	8.3	0.4	5.5	4.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	424	378	983	835	127	1201
V/C Ratio(X)	0.15	0.91	0.28	0.02	0.79	0.16
Avail Cap(c_a), veh/h	525	469	983	835	291	1201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	37.0	13.1	11.3	45.7	7.0
Incr Delay (d2), s/veh	0.1	14.4	0.7	0.0	4.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	10.7	4.5	0.2	2.9	2.1
LnGrp Delay(d),s/veh	30.1	51.4	13.9	11.3	49.8	7.3
LnGrp LOS	C	D	B	B	D	A
Approach Vol, veh/h	407		292			287
Approach Delay, s/veh	48.1		13.7			22.1
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.7	59.0				70.7		29.3
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	16.4	37.8				58.8		29.6
Max Q Clear Time (g_c+I1), s	7.5	10.3				6.0		23.1
Green Ext Time (p_c), s	0.1	6.5				7.6		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	189	529	0	14	23
Future Volume (veh/h)	1	189	529	0	14	23
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	208	581	0	15	25
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3	1091	922	0	1029	918
Arrive On Green	0.00	0.31	0.26	0.00	0.58	0.58
Sat Flow, veh/h	1774	3632	3725	0	1774	1583
Grp Volume(v), veh/h	1	208	581	0	15	25
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	0	1774	1583
Q Serve(g_s), s	0.1	4.3	14.5	0.0	0.4	0.7
Cycle Q Clear(g_c), s	0.1	4.3	14.5	0.0	0.4	0.7
Prop In Lane	1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	3	1091	922	0	1029	918
V/C Ratio(X)	0.34	0.19	0.63	0.00	0.01	0.03
Avail Cap(c_a), veh/h	326	2322	1508	0	1029	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.84	0.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	25.4	32.7	0.0	8.9	9.0
Incr Delay (d2), s/veh	20.7	0.1	1.2	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	7.3	0.0	0.2	1.0
LnGrp Delay(d),s/veh	70.6	25.6	33.9	0.0	8.9	9.0
LnGrp LOS	E	C	C		A	A
Approach Vol, veh/h		209	581		40	
Approach Delay, s/veh		25.8	33.9		9.0	
Approach LOS		C	C		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.2		63.8	4.8	31.4
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				65.6		23.2	18.4	42.6
Max Q Clear Time (g_c+I1), s				6.3		2.7	2.1	16.5
Green Ext Time (p_c), s				12.0		0.2	0.0	9.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	189	8	4	2	206	392	1	1	204	10
Future Volume (veh/h)	13	1	189	8	4	2	206	392	1	1	204	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	14	1	201	9	4	2	219	417	1	1	217	11
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	412	350	21	401	340	289	1427	3	4	797	40
Arrive On Green	0.02	0.22	0.22	0.01	0.22	0.22	0.16	0.39	0.39	0.00	0.23	0.23
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3622	9	1774	3429	173
Grp Volume(v), veh/h	14	1	201	9	4	2	219	204	214	1	111	117
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1861	1774	1770	1832
Q Serve(g_s), s	0.3	0.0	4.9	0.2	0.1	0.0	5.1	3.4	3.4	0.0	2.2	2.2
Cycle Q Clear(g_c), s	0.3	0.0	4.9	0.2	0.1	0.0	5.1	3.4	3.4	0.0	2.2	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.09
Lane Grp Cap(c), veh/h	32	412	350	21	401	340	289	697	733	4	411	426
V/C Ratio(X)	0.44	0.00	0.57	0.43	0.01	0.01	0.76	0.29	0.29	0.24	0.27	0.27
Avail Cap(c_a), veh/h	247	1039	883	247	1039	883	907	1563	1644	247	905	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	13.1	15.0	21.1	13.3	13.3	17.2	8.9	8.9	21.4	13.5	13.5
Incr Delay (d2), s/veh	9.3	0.0	1.5	13.2	0.0	0.0	4.1	0.2	0.2	27.9	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.2	0.2	0.0	0.0	2.8	1.7	1.8	0.0	1.1	1.2
LnGrp Delay(d),s/veh	30.2	13.1	16.4	34.3	13.3	13.3	21.3	9.2	9.2	49.4	13.9	13.9
LnGrp LOS	C	B	B	C	B	B	C	A	A	D	B	B
Approach Vol, veh/h		216			15			637			229	
Approach Delay, s/veh		17.3			25.9			13.3			14.0	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	20.9	4.5	13.5	11.0	14.0	4.8	13.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	38.0	6.0	24.0	22.0	22.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	2.0	5.4	2.2	6.9	7.1	4.2	2.3	2.1
Green Ext Time (p_c), s	0.0	3.4	0.0	0.6	0.5	3.0	0.0	0.6

Intersection Summary		
HCM 2010 Ctrl Delay		14.4
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	4	210	0	0	5	2	258	0	0	0
Future Vol, veh/h	0	0	4	210	0	0	5	2	258	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	247	0	0	6	2	304	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.4	10.3	9.9	0
HCM LOS	A	B	A	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	71%	0%	0%	100%	0%
Vol Thru, %	29%	0%	0%	0%	100%
Vol Right, %	0%	100%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	258	4	210	0
LT Vol	5	0	0	210	0
Through Vol	2	0	0	0	0
RT Vol	0	258	4	0	0
Lane Flow Rate	8	304	5	247	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.013	0.377	0.006	0.333	0
Departure Headway (Hd)	5.532	4.469	4.365	4.856	5.033
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	648	804	816	739	0
Service Time	3.257	2.194	2.414	2.891	3.078
HCM Lane V/C Ratio	0.012	0.378	0.006	0.334	0
HCM Control Delay	8.3	9.9	7.4	10.3	8.1
HCM Lane LOS	A	A	A	B	N
HCM 95th-tile Q	0	1.8	0	1.5	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	3	77	0	0	1	40	593	0	1	270	10
Future Volume (veh/h)	18	3	77	0	0	1	40	593	0	1	270	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	3	79	0	0	1	41	611	0	1	278	10
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	135	115	0	0	2	71	2573	0	3	2401	86
Arrive On Green	0.07	0.07	0.07	0.00	0.00	0.00	0.04	0.73	0.00	0.00	0.69	0.69
Sat Flow, veh/h	1774	1863	1583	0	0	1583	1774	3632	0	1774	3485	125
Grp Volume(v), veh/h	19	3	79	0	0	1	41	611	0	1	141	147
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	0	0	1583	1774	1770	0	1774	1770	1841
Q Serve(g_s), s	1.1	0.2	5.1	0.0	0.0	0.1	2.4	6.0	0.0	0.1	2.8	2.8
Cycle Q Clear(g_c), s	1.1	0.2	5.1	0.0	0.0	0.1	2.4	6.0	0.0	0.1	2.8	2.8
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	129	135	115	0	0	2	71	2573	0	3	1219	1268
V/C Ratio(X)	0.15	0.02	0.69	0.00	0.00	0.66	0.58	0.24	0.00	0.34	0.12	0.12
Avail Cap(c_a), veh/h	443	465	395	0	0	271	142	2573	0	108	1219	1268
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	45.2	47.5	0.0	0.0	52.4	49.5	4.7	0.0	52.4	5.5	5.5
Incr Delay (d2), s/veh	2.4	0.3	28.8	0.0	0.0	211.8	2.8	0.2	0.0	24.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	3.2	0.0	0.0	0.1	1.2	3.0	0.0	0.0	1.4	1.5
LnGrp Delay(d),s/veh	48.1	45.5	76.3	0.0	0.0	264.2	52.3	4.9	0.0	76.3	5.7	5.7
LnGrp LOS	D	D	E			F	D	A		E	A	A
Approach Vol, veh/h		101			1			652			289	
Approach Delay, s/veh		70.1			264.2			7.9			6.0	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	82.1		13.4	8.8	78.1		4.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	33.6		26.2	8.4	31.6		18.0
Max Q Clear Time (g_c+I1), s	2.1	8.0		7.1	4.4	4.8		2.1
Green Ext Time (p_c), s	0.0	13.2		0.9	0.0	13.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1560	28	135	1547	2	32	1	93	3	2	9
Future Volume (veh/h)	9	1560	28	135	1547	2	32	1	93	3	2	9
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	1608	29	139	1595	2	33	1	96	3	2	9
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	2495	1116	87	3601	1121	82	1	127	16	74	136
Arrive On Green	0.05	0.70	0.70	0.05	0.71	0.71	0.05	0.08	0.08	0.00	0.04	0.04
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	16	1569	3442	1863	1583
Grp Volume(v), veh/h	9	1608	29	139	1595	2	33	0	97	3	2	9
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1586	1721	1863	1583
Q Serve(g_s), s	0.6	31.9	0.7	6.4	17.3	0.0	2.4	0.0	7.8	0.1	0.1	0.7
Cycle Q Clear(g_c), s	0.6	31.9	0.7	6.4	17.3	0.0	2.4	0.0	7.8	0.1	0.1	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Lane Grp Cap(c), veh/h	82	2495	1116	87	3601	1121	82	0	129	16	74	136
V/C Ratio(X)	0.11	0.64	0.03	1.59	0.44	0.00	0.40	0.00	0.75	0.18	0.03	0.07
Avail Cap(c_a), veh/h	246	2495	1116	87	3601	1121	246	0	586	159	516	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.4	10.4	5.8	61.8	8.1	5.5	60.3	0.0	58.5	64.4	60.0	54.6
Incr Delay (d2), s/veh	0.2	1.3	0.0	299.8	0.3	0.0	3.2	0.0	9.3	2.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	15.9	0.3	10.4	8.1	0.0	1.2	0.0	3.8	0.1	0.1	0.3
LnGrp Delay(d),s/veh	59.7	11.7	5.8	361.6	8.3	5.5	63.4	0.0	67.8	66.4	60.4	55.1
LnGrp LOS	E	B	A	F	A	A	E		E	E	E	E
Approach Vol, veh/h		1646			1736			130			14	
Approach Delay, s/veh		11.8			36.6			66.7			58.3	
Approach LOS		B			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	97.4	10.6	11.0	10.6	97.8	5.2	16.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.4	48.8	18.0	36.0	18.0	37.2	6.0	48.0
Max Q Clear Time (g_c+I1), s	2.4	33.9	4.4	2.7	2.6	19.3	2.1	9.8
Green Ext Time (p_c), s	0.0	14.7	0.0	0.7	0.0	17.7	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	399	1374	14	30	1240	222	24	6	28	315	6	304
Future Volume (veh/h)	399	1374	14	30	1240	222	24	6	28	315	6	304
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	407	1402	14	31	1265	227	24	6	29	321	6	310
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	341	2607	812	60	2277	965	51	27	128	557	7	363
Arrive On Green	0.10	0.51	0.51	0.03	0.45	0.45	0.03	0.10	0.10	0.16	0.23	0.23
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	279	1347	3442	30	1558
Grp Volume(v), veh/h	407	1402	14	31	1265	227	24	0	35	321	0	316
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1625	1721	0	1588
Q Serve(g_s), s	10.4	19.5	0.5	1.8	19.2	2.5	1.4	0.0	2.1	9.1	0.0	20.0
Cycle Q Clear(g_c), s	10.4	19.5	0.5	1.8	19.2	2.5	1.4	0.0	2.1	9.1	0.0	20.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.98
Lane Grp Cap(c), veh/h	341	2607	812	60	2277	965	51	0	155	557	0	370
V/C Ratio(X)	1.19	0.54	0.02	0.51	0.56	0.24	0.47	0.00	0.23	0.58	0.00	0.85
Avail Cap(c_a), veh/h	341	2607	812	176	2277	965	174	0	370	669	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.20	0.20	0.20	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	17.2	12.6	49.9	21.3	2.5	50.2	0.0	43.9	40.7	0.0	38.6
Incr Delay (d2), s/veh	93.5	0.2	0.0	2.3	0.9	0.5	2.5	0.0	0.7	0.4	0.0	10.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	9.1	0.2	0.9	9.1	1.2	0.7	0.0	1.0	4.4	0.0	9.9
LnGrp Delay(d),s/veh	140.8	17.4	12.6	52.1	22.2	3.0	52.7	0.0	44.7	41.0	0.0	49.2
LnGrp LOS	F	B	B	D	C	A	D		D	D		D
Approach Vol, veh/h		1823			1523			59			637	
Approach Delay, s/veh		44.9			20.0			47.9			45.1	
Approach LOS		D			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	59.6	7.6	29.6	15.0	52.8	22.1	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	5.1	* 5.1
Max Green Setting (Gmax), s	10.4	30.2	10.3	34.0	10.4	30.2	20.4	* 24
Max Q Clear Time (g_c+I1), s	12.8	21.5	3.4	22.0	12.4	21.2	11.1	4.1
Green Ext Time (p_c), s	0.0	8.6	0.0	2.5	0.0	8.9	2.2	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	35.6
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1355	424	0	821	0	0	0	0	165	1	653
Future Volume (veh/h)	0	1355	424	0	821	0	0	0	0	165	1	653
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1397	437	0	846	0				170	1	673
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2486	774	0	2486	0				745	4	1177
Arrive On Green	0.00	0.49	0.49	0.00	0.49	0.00				0.42	0.42	0.42
Sat Flow, veh/h	0	5253	1583	0	5421	0				1764	10	2787
Grp Volume(v), veh/h	0	1397	437	0	846	0				171	0	673
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	17.4	17.5	0.0	9.2	0.0				5.5	0.0	16.6
Cycle Q Clear(g_c), s	0.0	17.4	17.5	0.0	9.2	0.0				5.5	0.0	16.6
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2486	774	0	2486	0				749	0	1177
V/C Ratio(X)	0.00	0.56	0.56	0.00	0.34	0.00				0.23	0.00	0.57
Avail Cap(c_a), veh/h	0	2486	774	0	2486	0				749	0	1177
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.83	0.83	0.00	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.2	16.2	0.0	14.1	0.0				16.6	0.0	19.8
Incr Delay (d2), s/veh	0.0	0.2	0.8	0.0	0.4	0.0				0.7	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.2	7.8	0.0	4.3	0.0				2.9	0.0	6.7
LnGrp Delay(d),s/veh	0.0	16.4	17.0	0.0	14.5	0.0				17.3	0.0	21.8
LnGrp LOS		B	B		B					B		C
Approach Vol, veh/h		1834			846						844	
Approach Delay, s/veh		16.6			14.5						20.9	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		48.0		42.0		48.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		44.0		38.0		44.0		
Max Q Clear Time (g_c+I1), s		19.5		18.6		11.2		
Green Ext Time (p_c), s		18.6		3.9		23.2		

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	646	874	0	465	138	495	0	351	0	0	0
Future Volume (veh/h)	0	646	874	0	465	138	495	0	351	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	666	0	0	479	0	510	0	362			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2882	897	0	2882	897	611	0	545			
Arrive On Green	0.00	0.57	0.00	0.00	0.57	0.00	0.34	0.00	0.34			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	666	0	0	479	0	510	0	362			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	5.9	0.0	0.0	4.1	0.0	23.8	0.0	17.5			
Cycle Q Clear(g_c), s	0.0	5.9	0.0	0.0	4.1	0.0	23.8	0.0	17.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2882	897	0	2882	897	611	0	545			
V/C Ratio(X)	0.00	0.23	0.00	0.00	0.17	0.00	0.83	0.00	0.66			
Avail Cap(c_a), veh/h	0	2882	897	0	2882	897	611	0	545			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.96	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.7	0.0	0.0	9.3	0.0	27.1	0.0	25.1			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	12.7	0.0	6.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.8	0.0	0.0	1.9	0.0	13.8	0.0	8.6			
LnGrp Delay(d),s/veh	0.0	9.9	0.0	0.0	9.4	0.0	39.8	0.0	31.3			
LnGrp LOS		A			A		D		C			
Approach Vol, veh/h		666			479			872				
Approach Delay, s/veh		9.9			9.4			36.3				
Approach LOS		A			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		55.0				55.0		35.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		28.5				18.5		31.0
Max Q Clear Time (g_c+I1), s		7.9				6.1		25.8
Green Ext Time (p_c), s		7.6				5.8		1.6

Intersection Summary		
HCM 2010 Ctrl Delay		21.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	383	749	257	88	74	217	239	294	8	8	205	224
Future Volume (veh/h)	383	749	257	88	74	217	239	294	8	8	205	224
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	412	805	276	95	80	233	257	316	9	9	220	241
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	687	1057	449	122	592	252	298	1370	39	20	863	673
Arrive On Green	0.19	0.28	0.28	0.07	0.16	0.16	0.17	0.39	0.39	0.01	0.23	0.23
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	1774	3515	100	1774	3725	1583
Grp Volume(v), veh/h	412	805	276	95	80	233	257	159	166	9	220	241
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1845	1774	1863	1583
Q Serve(g_s), s	8.3	15.5	11.8	4.1	1.4	9.7	11.0	4.7	4.7	0.4	3.8	3.2
Cycle Q Clear(g_c), s	8.3	15.5	11.8	4.1	1.4	9.7	11.0	4.7	4.7	0.4	3.8	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	687	1057	449	122	592	252	298	690	719	20	863	673
V/C Ratio(X)	0.60	0.76	0.61	0.78	0.14	0.93	0.86	0.23	0.23	0.45	0.25	0.36
Avail Cap(c_a), veh/h	687	1271	540	170	938	398	417	1277	1332	113	2046	1176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	25.6	24.3	35.9	28.3	23.4	31.7	16.0	16.0	38.5	24.6	4.5
Incr Delay (d2), s/veh	1.5	2.3	1.5	14.2	0.1	19.6	9.6	0.6	0.6	14.7	0.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	8.3	5.3	2.5	0.8	5.6	6.2	2.4	2.5	0.3	2.0	2.0
LnGrp Delay(d),s/veh	30.3	27.9	25.8	50.1	28.4	43.1	41.3	16.7	16.6	53.2	25.1	5.8
LnGrp LOS	C	C	C	D	C	D	D	B	B	D	C	A
Approach Vol, veh/h		1493			408			582			470	
Approach Delay, s/veh		28.1			41.8			27.5			15.8	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	36.3	9.9	26.7	17.8	23.9	19.6	16.9
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	5.0	56.5	7.5	26.7	18.4	43.0	14.5	19.7
Max Q Clear Time (g_c+I1), s	2.4	6.7	6.1	17.5	13.0	5.8	10.3	11.7
Green Ext Time (p_c), s	0.0	13.5	0.0	4.8	0.2	12.4	2.7	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2028 Plus Ambient Growth Plus Project (Phase 1 & 2) (2028 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	149	5.0	0.141	4.7	LOS A	0.5	14.0	0.34	0.22	24.2
12	R2	60	5.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		209	5.0	0.141	3.3	LOS A	0.5	14.0	0.24	0.15	24.5
East: Keller Road											
3	L2	75	5.0	0.152	4.4	LOS A	0.6	16.3	0.29	0.17	25.1
8	T1	396	3.0	0.152	1.1	LOS A	0.6	16.3	0.08	0.04	24.2
Approach		471	3.3	0.152	1.7	LOS A	0.6	16.3	0.11	0.06	24.4
West: Keller Road											
4	T1	205	3.0	0.160	4.1	LOS A	0.7	17.8	0.20	0.09	23.2
14	R2	216	5.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		421	4.0	0.160	2.0	LOS A	0.7	17.8	0.10	0.04	24.5
All Vehicles		1101	3.9	0.160	2.1	LOS A	0.7	17.8	0.13	0.07	24.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2028 Plus Ambient Growth Plus Project (Phase 1 & 2) (2028 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	291	5.0	0.148	5.0	LOS A	0.5	14.1	0.37	0.27	13.6
2	T1	1	5.0	0.148	4.9	LOS A	0.5	13.8	0.36	0.26	22.9
12	R2	32	5.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		323	5.0	0.148	4.5	LOS A	0.5	14.1	0.34	0.24	14.5
East: Keller Road											
8	T1	180	3.0	0.098	4.8	LOS A	0.4	9.2	0.45	0.36	23.1
18	R2	36	5.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		216	3.3	0.098	4.0	LOS A	0.4	9.2	0.37	0.30	23.5
West: Keller Road											
7	L2	119	5.0	0.097	3.4	LOS A	0.0	0.0	0.00	0.00	26.3
4	T1	146	3.0	0.097	3.4	LOS A	0.0	0.0	0.00	0.00	24.9
Approach		265	3.9	0.097	3.4	LOS A	0.0	0.0	0.00	0.00	26.3
All Vehicles		804	4.2	0.148	4.0	LOS A	0.5	14.1	0.24	0.18	19.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

APPENDIX C-9
Intersection LOS Analysis
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions

APPENDIX C-10
Intersection LOS Analysis
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions

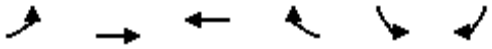
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	652	3	0	801	21	0	0	4	40	8	28
Future Vol, veh/h	0	652	3	0	801	21	0	0	4	40	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	701	3	0	861	23	0	0	4	43	9	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	884	0	0	704	0	0	1595	1587	352	1224	1577	873
Stage 1	-	-	-	-	-	-	703	703	-	873	873	-
Stage 2	-	-	-	-	-	-	892	884	-	351	704	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	763	-	-	892	-	-	79	107	645	145	109	349
Stage 1	-	-	-	-	-	-	395	439	-	344	367	-
Stage 2	-	-	-	-	-	-	336	362	-	639	439	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	763	-	-	892	-	-	68	107	645	144	109	349
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	107	-	144	109	-
Stage 1	-	-	-	-	-	-	395	439	-	344	367	-
Stage 2	-	-	-	-	-	-	300	362	-	635	439	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.6	32.3
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	645	763	-	-	892	-	-	144	234
HCM Lane V/C Ratio	0.007	-	-	-	-	-	-	0.299	0.165
HCM Control Delay (s)	10.6	0	-	-	0	-	-	40.3	23.4
HCM Lane LOS	B	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.2	0.6



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	187	539	574	303	258	221
Future Volume (veh/h)	187	539	574	303	258	221
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	201	580	617	326	277	238
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	253	1237	845	718	356	318
Arrive On Green	0.14	0.66	0.45	0.45	0.20	0.20
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	201	580	617	326	277	238
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	7.3	10.1	18.0	9.4	9.8	9.4
Cycle Q Clear(g_c), s	7.3	10.1	18.0	9.4	9.8	9.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	253	1237	845	718	356	318
V/C Ratio(X)	0.80	0.47	0.73	0.45	0.78	0.75
Avail Cap(c_a), veh/h	601	2173	1416	1203	894	798
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	5.5	14.8	12.5	25.2	25.0
Incr Delay (d2), s/veh	5.6	0.3	1.2	0.4	3.7	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	5.3	9.4	4.2	5.1	4.4
LnGrp Delay(d),s/veh	33.2	5.7	16.1	12.9	28.8	28.5
LnGrp LOS	C	A	B	B	C	C
Approach Vol, veh/h		781	943		515	
Approach Delay, s/veh		12.8	15.0		28.7	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		48.6			14.0	34.6		17.8
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		77.5			22.5	50.5		33.5
Max Q Clear Time (g_c+I1), s		12.1			9.3	20.0		11.8
Green Ext Time (p_c), s		11.5			0.4	10.2		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	703	183	399	733	791	109	198	83	865	194	82
Future Volume (veh/h)	102	703	183	399	733	791	109	198	83	865	194	82
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	121	837	218	475	873	942	130	236	99	1030	231	98
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	2626	680	431	2505	1972	157	470	399	907	521	221
Arrive On Green	0.07	0.65	0.65	0.13	0.71	0.71	0.09	0.25	0.25	0.26	0.42	0.42
Sat Flow, veh/h	1774	4027	1042	3442	3539	2787	1774	1863	1583	3548	1243	527
Grp Volume(v), veh/h	121	704	351	475	873	942	130	236	99	1030	0	329
Grp Sat Flow(s),veh/h/ln	1774	1695	1679	1721	1770	1393	1774	1863	1583	1774	0	1770
Q Serve(g_s), s	7.8	10.5	10.6	14.4	11.0	17.2	8.3	12.5	5.7	29.4	0.0	15.2
Cycle Q Clear(g_c), s	7.8	10.5	10.6	14.4	11.0	17.2	8.3	12.5	5.7	29.4	0.0	15.2
Prop In Lane	1.00		0.62	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	123	2211	1095	431	2505	1972	157	470	399	907	0	742
V/C Ratio(X)	0.98	0.32	0.32	1.10	0.35	0.48	0.83	0.50	0.25	1.14	0.00	0.44
Avail Cap(c_a), veh/h	123	2211	1095	431	2505	1972	231	470	399	907	0	742
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.64	0.64	0.64	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.4	8.8	8.8	50.3	6.5	7.4	51.6	36.8	34.3	42.8	0.0	23.8
Incr Delay (d2), s/veh	74.5	0.4	0.8	66.1	0.2	0.5	9.6	3.8	1.5	74.6	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	5.0	5.1	10.8	5.4	6.6	4.5	6.9	2.7	23.8	0.0	7.8
LnGrp Delay(d),s/veh	127.9	9.2	9.6	116.4	6.8	7.9	61.1	40.6	35.8	117.4	0.0	25.7
LnGrp LOS	F	A	A	F	A	A	E	D	D	F		C
Approach Vol, veh/h		1176			2290			465			1359	
Approach Delay, s/veh		21.5			30.0			45.3			95.2	
Approach LOS		C			C			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	82.8	14.8	54.4	12.6	89.2	34.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	14.4	22.2	15.0	41.8	8.0	28.6	29.4	* 29
Max Q Clear Time (g_c+I1), s	16.4	12.6	10.3	17.2	9.8	19.2	31.4	14.5
Green Ext Time (p_c), s	0.0	9.3	0.0	4.8	0.0	9.1	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	46.2
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1001	731	0	1486	588	0	0	0	350	0	437
Future Volume (veh/h)	0	1001	731	0	1486	588	0	0	0	350	0	437
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1088	795	0	1615	639				380	0	475
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2124	950	0	2124	950				1071	0	867
Arrive On Green	0.00	0.60	0.60	0.00	0.60	0.60				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1088	795	0	1615	639				380	0	475
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	16.0	36.3	0.0	30.2	24.4				7.7	0.0	12.7
Cycle Q Clear(g_c), s	0.0	16.0	36.3	0.0	30.2	24.4				7.7	0.0	12.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2124	950	0	2124	950				1071	0	867
V/C Ratio(X)	0.00	0.51	0.84	0.00	0.76	0.67				0.35	0.00	0.55
Avail Cap(c_a), veh/h	0	2124	950	0	2124	950				1071	0	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.36	0.36				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.4	14.5	0.0	13.2	12.1				24.0	0.0	25.7
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.9	1.4				0.9	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.7	15.8	0.0	14.9	10.8				3.8	0.0	5.2
LnGrp Delay(d),s/veh	0.0	10.4	15.1	0.0	14.2	13.4				24.9	0.0	28.2
LnGrp LOS		B	B		B	B				C		C
Approach Vol, veh/h		1883			2254						855	
Approach Delay, s/veh		12.4			14.0						26.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		58.0		32.0		58.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		54.0		28.0		54.0		
Max Q Clear Time (g_c+I1), s		38.3		14.7		32.2		
Green Ext Time (p_c), s		15.0		3.0		20.5		

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	299	1052	0	0	1486	487	0	0	411	0	0	588
Future Volume (veh/h)	299	1052	0	0	1486	487	0	0	411	0	0	588
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	315	1107	0	0	1564	513	0	0	433	0	0	619
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	335	3382	0	0	2556	1144	0	0	0	0	0	0
Arrive On Green	0.19	0.96	0.00	0.00	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	315	1107	0	0	1564	513		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	15.8	1.8	0.0	0.0	19.8	12.0						
Cycle Q Clear(g_c), s	15.8	1.8	0.0	0.0	19.8	12.0						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	335	3382	0	0	2556	1144						
V/C Ratio(X)	0.94	0.33	0.00	0.00	0.61	0.45						
Avail Cap(c_a), veh/h	335	3382	0	0	2556	1144						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.88	0.88	0.00	0.00	0.31	0.31						
Uniform Delay (d), s/veh	36.0	0.1	0.0	0.0	6.2	5.1						
Incr Delay (d2), s/veh	31.1	0.2	0.0	0.0	0.3	0.4						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	10.6	0.9	0.0	0.0	9.7	5.3						
LnGrp Delay(d),s/veh	67.1	0.4	0.0	0.0	6.6	5.5						
LnGrp LOS	E	A			A	A						
Approach Vol, veh/h		1422			2077							
Approach Delay, s/veh		15.1			6.3							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			21.0	69.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		63.1			17.0	42.1		
Max Q Clear Time (g_c+I1), s		3.8			17.8	21.8		
Green Ext Time (p_c), s		42.5			0.0	17.8		

Intersection Summary		
HCM 2010 Ctrl Delay		9.9
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	318	815	330	114	1292	74	378	219	113	59	223	303
Future Volume (veh/h)	318	815	330	114	1292	74	378	219	113	59	223	303
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	335	858	347	120	1360	78	398	231	119	62	235	319
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	1530	685	173	1849	106	413	694	590	79	554	471
Arrive On Green	0.11	0.43	0.43	0.05	0.38	0.38	0.12	0.37	0.37	0.04	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	4921	282	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	335	858	347	120	937	501	398	231	119	62	235	319
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1813	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	11.6	21.8	19.1	4.1	28.6	28.6	13.8	10.7	6.1	4.2	12.2	21.3
Cycle Q Clear(g_c), s	11.6	21.8	19.1	4.1	28.6	28.6	13.8	10.7	6.1	4.2	12.2	21.3
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	1530	685	173	1274	681	413	694	590	79	554	471
V/C Ratio(X)	0.91	0.56	0.51	0.69	0.74	0.74	0.96	0.33	0.20	0.78	0.42	0.68
Avail Cap(c_a), veh/h	367	1530	685	244	1274	681	413	694	590	142	554	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	25.5	24.8	56.1	32.3	32.3	52.5	27.0	25.5	56.7	33.9	37.1
Incr Delay (d2), s/veh	22.9	1.3	2.3	1.9	3.8	6.9	34.6	1.3	0.8	6.1	2.4	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	10.9	8.7	2.0	14.1	15.6	8.6	5.7	2.8	2.2	6.6	10.3
LnGrp Delay(d),s/veh	76.0	26.8	27.0	58.0	36.1	39.2	87.2	28.2	26.3	62.8	36.3	44.7
LnGrp LOS	E	C	C	E	D	D	F	C	C	E	D	D
Approach Vol, veh/h		1540			1558			748			616	
Approach Delay, s/veh		37.5			38.8			59.3			43.3	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	58.7	19.0	42.2	17.4	51.9	10.0	51.2
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	8.5	* 40	14.4	* 36	12.8	35.2	9.6	40.2
Max Q Clear Time (g_c+I1), s	6.1	23.8	15.8	23.3	13.6	30.6	6.2	12.7
Green Ext Time (p_c), s	0.0	12.8	0.0	1.9	0.0	4.2	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	42.4
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	25.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	113	13	109	54	262	4	41	251	157	19	15
Future Vol, veh/h	36	113	13	109	54	262	4	41	251	157	19	15
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	143	16	138	68	332	5	52	318	199	24	19
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	20.6	30.7	20.5	25.4
HCM LOS	C	D	C	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	22%	100%	0%	82%
Vol Thru, %	0%	100%	0%	70%	0%	17%	10%
Vol Right, %	0%	0%	100%	8%	0%	83%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	41	251	162	109	316	191
LT Vol	4	0	0	36	109	0	157
Through Vol	0	41	0	113	0	54	19
RT Vol	0	0	251	13	0	262	15
Lane Flow Rate	5	52	318	205	138	400	242
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0.012	0.115	0.64	0.508	0.326	0.821	0.613
Departure Headway (Hd)	8.491	7.976	7.254	8.921	8.499	7.39	9.128
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	422	449	499	404	424	488	397
Service Time	6.241	5.725	5.003	6.683	6.251	5.141	6.887
HCM Lane V/C Ratio	0.012	0.116	0.637	0.507	0.325	0.82	0.61
HCM Control Delay	11.3	11.8	22.1	20.6	15.3	36	25.4
HCM Lane LOS	B	B	C	C	C	E	D
HCM 95th-tile Q	0	0.4	4.4	2.8	1.4	7.9	3.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	302	95	13	424	140	66	220	16	71	290	52
Future Volume (veh/h)	110	302	95	13	424	140	66	220	16	71	290	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	128	351	110	15	493	163	77	256	19	83	337	60
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	402	1710	533	48	851	276	544	983	73	620	1069	908
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1502	5085	1583	32	2529	819	983	1713	127	1100	1863	1583
Grp Volume(v), veh/h	128	351	110	363	0	308	77	0	275	83	337	60
Grp Sat Flow(s),veh/h/ln	751	1695	1583	1830	0	1550	983	0	1840	1100	1863	1583
Q Serve(g_s), s	7.7	4.9	5.0	0.0	0.0	16.5	4.4	0.0	7.5	4.1	9.4	1.7
Cycle Q Clear(g_c), s	24.2	4.9	5.0	16.0	0.0	16.5	13.8	0.0	7.5	11.6	9.4	1.7
Prop In Lane	1.00		1.00	0.04		0.53	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	402	1710	533	653	0	521	544	0	1056	620	1069	908
V/C Ratio(X)	0.32	0.21	0.21	0.56	0.00	0.59	0.14	0.00	0.26	0.13	0.32	0.07
Avail Cap(c_a), veh/h	565	2263	705	847	0	690	544	0	1056	620	1069	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	23.7	23.7	27.3	0.0	27.5	14.7	0.0	10.7	13.6	11.1	9.4
Incr Delay (d2), s/veh	0.5	0.1	0.2	0.7	0.0	1.1	0.5	0.0	0.6	0.4	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.3	2.2	8.4	0.0	7.2	1.3	0.0	4.0	1.3	5.0	0.8
LnGrp Delay(d),s/veh	38.0	23.7	23.9	28.1	0.0	28.6	15.2	0.0	11.3	14.0	11.9	9.6
LnGrp LOS	D	C	C	C		C	B		B	B	B	A
Approach Vol, veh/h		589			671			352			480	
Approach Delay, s/veh		26.8			28.3			12.2			12.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		61.9		38.1		61.9		38.1
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		46.5		44.5		46.5		44.5
Max Q Clear Time (g_c+I1), s		15.8		26.2		13.6		18.5
Green Ext Time (p_c), s		4.9		7.4		5.0		8.6

Intersection Summary		
HCM 2010 Ctrl Delay		21.4
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	25	68	21	37	12	168	60	2	10	187	193
Future Volume (veh/h)	119	25	68	21	37	12	168	60	2	10	187	193
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	132	28	76	23	41	13	187	67	2	11	208	214
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	526	447	49	751	336	245	1180	35	25	751	336
Arrive On Green	0.10	0.28	0.28	0.03	0.21	0.21	0.14	0.34	0.34	0.01	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3510	104	1774	3539	1583
Grp Volume(v), veh/h	132	28	76	23	41	13	187	34	35	11	208	214
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1844	1774	1770	1583
Q Serve(g_s), s	3.4	0.5	1.7	0.6	0.4	0.3	4.8	0.6	0.6	0.3	2.3	5.8
Cycle Q Clear(g_c), s	3.4	0.5	1.7	0.6	0.4	0.3	4.8	0.6	0.6	0.3	2.3	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	173	526	447	49	751	336	245	595	620	25	751	336
V/C Ratio(X)	0.76	0.05	0.17	0.47	0.05	0.04	0.76	0.06	0.06	0.44	0.28	0.64
Avail Cap(c_a), veh/h	501	1206	1025	207	1705	763	678	1221	1272	207	1502	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	12.3	12.7	22.6	14.8	14.7	19.6	10.6	10.6	23.0	15.5	16.9
Incr Delay (d2), s/veh	6.8	0.0	0.2	6.9	0.0	0.0	4.9	0.0	0.0	11.4	0.2	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.3	0.8	0.4	0.2	0.1	2.7	0.3	0.3	0.2	1.1	2.7
LnGrp Delay(d),s/veh	27.5	12.4	12.9	29.4	14.8	14.8	24.4	10.6	10.6	34.4	15.7	18.9
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		236			77			256			433	
Approach Delay, s/veh		21.0			19.2			20.7			17.8	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	17.3	10.5	14.0	8.6	14.0	4.7	19.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	30.5	18.0	20.0	13.3	22.7	5.5	32.5
Max Q Clear Time (g_c+I1), s	2.6	3.7	6.8	7.8	5.4	2.4	2.3	2.6
Green Ext Time (p_c), s	0.0	0.6	0.4	1.8	0.2	0.5	0.0	2.3

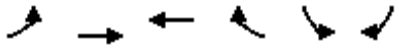
Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	183	135	136	367	293
Future Volume (veh/h)	35	183	135	136	367	293
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	39	203	150	151	408	326
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	263	235	819	697	443	1370
Arrive On Green	0.15	0.15	0.44	0.44	0.25	0.74
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	39	203	150	151	408	326
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	1.9	12.5	4.9	5.9	22.4	5.6
Cycle Q Clear(g_c), s	1.9	12.5	4.9	5.9	22.4	5.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	263	235	819	697	443	1370
V/C Ratio(X)	0.15	0.86	0.18	0.22	0.92	0.24
Avail Cap(c_a), veh/h	348	310	819	697	663	1370
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	41.6	17.1	17.3	36.6	4.2
Incr Delay (d2), s/veh	0.2	14.1	0.5	0.7	10.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	6.4	2.6	2.7	12.3	3.0
LnGrp Delay(d),s/veh	37.3	55.7	17.5	18.1	47.3	4.7
LnGrp LOS	D	E	B	B	D	A
Approach Vol, veh/h	242		301			734
Approach Delay, s/veh	52.8		17.8			28.3
Approach LOS	D		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.6	50.2				79.7		20.3
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	7.4	26.8				68.8		19.6
Max Q Clear Time (g_c+I1), s	4.4	7.9				7.6		14.5
Green Ext Time (p_c), s	0.5	6.8				9.8		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.5
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	259	301	31	1	13
Future Volume (veh/h)	16	259	301	31	1	13
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	20	316	367	38	1	16
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	44	958	660	68	1113	994
Arrive On Green	0.02	0.27	0.20	0.20	0.63	0.63
Sat Flow, veh/h	1774	3632	3333	334	1774	1583
Grp Volume(v), veh/h	20	316	199	206	1	16
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1804	1774	1583
Q Serve(g_s), s	1.2	7.9	11.1	11.3	0.0	0.4
Cycle Q Clear(g_c), s	1.2	7.9	11.1	11.3	0.0	0.4
Prop In Lane	1.00			0.18	1.00	1.00
Lane Grp Cap(c), veh/h	44	958	361	368	1113	994
V/C Ratio(X)	0.45	0.33	0.55	0.56	0.00	0.02
Avail Cap(c_a), veh/h	313	2368	798	813	1113	994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.69	0.69	1.00	1.00
Uniform Delay (d), s/veh	52.9	32.1	39.3	39.3	7.6	7.7
Incr Delay (d2), s/veh	1.9	0.3	1.9	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.9	5.6	5.8	0.0	0.7
LnGrp Delay(d),s/veh	54.8	32.4	41.2	41.2	7.6	7.7
LnGrp LOS	D	C	D	D	A	A
Approach Vol, veh/h		336	405		17	
Approach Delay, s/veh		33.7	41.2		7.7	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.2		74.8	7.3	27.8
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				73.6		25.2	19.4	49.6
Max Q Clear Time (g_c+I1), s				9.9		2.4	3.2	13.3
Green Ext Time (p_c), s				10.1		0.0	0.0	9.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.1
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	157	97	6	11	247	197	37	11	388	16
Future Volume (veh/h)	11	13	157	97	6	11	247	197	37	11	388	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	16	191	118	7	13	301	240	45	13	473	20
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	340	289	153	470	400	370	1236	228	29	769	32
Arrive On Green	0.02	0.18	0.18	0.09	0.25	0.25	0.21	0.41	0.41	0.02	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2984	551	1774	3461	146
Grp Volume(v), veh/h	13	16	191	118	7	13	301	141	144	13	241	252
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1766	1774	1770	1837
Q Serve(g_s), s	0.4	0.4	6.0	3.5	0.2	0.3	8.6	2.7	2.8	0.4	6.5	6.6
Cycle Q Clear(g_c), s	0.4	0.4	6.0	3.5	0.2	0.3	8.6	2.7	2.8	0.4	6.5	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		0.08
Lane Grp Cap(c), veh/h	29	340	289	153	470	400	370	733	731	29	393	408
V/C Ratio(X)	0.45	0.05	0.66	0.77	0.01	0.03	0.81	0.19	0.20	0.45	0.61	0.62
Avail Cap(c_a), veh/h	183	770	654	333	927	788	700	1213	1211	183	698	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	17.9	20.2	23.8	14.9	15.0	20.1	9.9	9.9	25.9	18.6	18.7
Incr Delay (d2), s/veh	10.3	0.1	2.6	7.9	0.0	0.0	4.4	0.1	0.1	10.3	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	2.8	2.0	0.1	0.1	4.6	1.3	1.3	0.3	3.3	3.5
LnGrp Delay(d),s/veh	36.3	18.0	22.8	31.7	14.9	15.0	24.5	10.0	10.1	36.3	20.2	20.2
LnGrp LOS	D	B	C	C	B	B	C	B	B	D	C	C
Approach Vol, veh/h		220			138			586			506	
Approach Delay, s/veh		23.3			29.3			17.5			20.6	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	26.1	8.6	13.7	15.1	15.8	4.9	17.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	36.5	10.0	22.0	21.0	21.0	5.5	26.5
Max Q Clear Time (g_c+I1), s	2.4	4.8	5.5	8.0	10.6	8.6	2.4	2.3
Green Ext Time (p_c), s	0.0	4.3	0.1	0.6	0.6	3.3	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	6	5	461	2	0	2	0	245	0	0	0
Future Vol, veh/h	0	6	5	461	2	0	2	0	245	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	7	5	507	2	0	2	0	269	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.2	17.9	11.1	0
HCM LOS	A	C	B	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	55%	0%	100%
Vol Right, %	0%	100%	45%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	245	11	463	0
LT Vol	2	0	0	461	0
Through Vol	0	0	6	2	0
RT Vol	0	245	5	0	0
Lane Flow Rate	2	269	12	509	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.004	0.384	0.017	0.685	0
Departure Headway (Hd)	6.342	5.129	5.001	4.844	5.857
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	562	697	706	743	0
Service Time	4.11	2.896	3.101	2.904	3.857
HCM Lane V/C Ratio	0.004	0.386	0.017	0.685	0
HCM Control Delay	9.1	11.1	8.2	17.9	8.9
HCM Lane LOS	A	B	A	C	N
HCM 95th-tile Q	0	1.8	0.1	5.5	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	3	67	7	4	1	52	521	2	1	411	50
Future Volume (veh/h)	31	3	67	7	4	1	52	521	2	1	411	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	3	77	8	5	1	60	599	2	1	472	57
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	132	112	9	6	1	77	2744	9	3	2280	274
Arrive On Green	0.07	0.07	0.07	0.01	0.01	0.01	0.04	0.76	0.76	0.00	0.72	0.72
Sat Flow, veh/h	1774	1863	1583	1022	639	128	1774	3618	12	1774	3182	383
Grp Volume(v), veh/h	36	3	77	14	0	0	60	293	308	1	262	267
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1789	0	0	1774	1770	1861	1774	1770	1795
Q Serve(g_s), s	2.5	0.2	6.2	1.0	0.0	0.0	4.4	6.2	6.2	0.1	6.4	6.4
Cycle Q Clear(g_c), s	2.5	0.2	6.2	1.0	0.0	0.0	4.4	6.2	6.2	0.1	6.4	6.4
Prop In Lane	1.00		1.00	0.57		0.07	1.00		0.01	1.00		0.21
Lane Grp Cap(c), veh/h	125	132	112	17	0	0	77	1342	1411	3	1268	1287
V/C Ratio(X)	0.29	0.02	0.69	0.84	0.00	0.00	0.78	0.22	0.22	0.34	0.21	0.21
Avail Cap(c_a), veh/h	398	418	356	267	0	0	210	1342	1411	115	1268	1287
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	56.2	59.0	64.3	0.0	0.0	61.6	4.5	4.5	64.8	6.1	6.1
Incr Delay (d2), s/veh	5.7	0.3	29.4	65.7	0.0	0.0	6.2	0.4	0.4	24.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.1	3.6	0.8	0.0	0.0	2.3	3.2	3.3	0.1	3.3	3.3
LnGrp Delay(d),s/veh	63.0	56.6	88.4	130.0	0.0	0.0	67.7	4.9	4.9	89.0	6.5	6.5
LnGrp LOS	E	E	F	F			E	A	A	F	A	A
Approach Vol, veh/h		116			14			661			530	
Approach Delay, s/veh		79.7			130.0			10.6			6.7	
Approach LOS		E			F			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	104.4		15.0	10.3	99.0		5.8
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	8.4	52.2		29.2	15.4	45.2		19.4
Max Q Clear Time (g_c+I1), s	2.1	8.2		8.2	6.4	8.4		3.0
Green Ext Time (p_c), s	0.0	21.9		1.1	0.0	19.9		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		16.4
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1460	228	196	1425	48	102	6	276	109	21	73
Future Volume (veh/h)	40	1460	228	196	1425	48	102	6	276	109	21	73
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	43	1587	248	213	1549	52	111	7	300	118	23	79
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	1748	782	182	2830	881	135	8	338	162	352	363
Arrive On Green	0.04	0.49	0.49	0.10	0.56	0.56	0.08	0.22	0.22	0.05	0.19	0.19
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	36	1553	3442	1863	1583
Grp Volume(v), veh/h	43	1587	248	213	1549	52	111	0	307	118	23	79
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1589	1721	1863	1583
Q Serve(g_s), s	3.6	61.7	14.1	15.4	29.1	2.3	9.3	0.0	28.1	5.1	1.5	6.1
Cycle Q Clear(g_c), s	3.6	61.7	14.1	15.4	29.1	2.3	9.3	0.0	28.1	5.1	1.5	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Lane Grp Cap(c), veh/h	71	1748	782	182	2830	881	135	0	346	162	352	363
V/C Ratio(X)	0.61	0.91	0.32	1.17	0.55	0.06	0.82	0.00	0.89	0.73	0.07	0.22
Avail Cap(c_a), veh/h	213	1748	782	182	2830	881	213	0	468	225	447	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.72	0.72	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.8	34.8	22.8	67.3	21.2	15.3	68.3	0.0	56.9	70.5	49.9	46.9
Incr Delay (d2), s/veh	3.1	8.4	1.1	110.1	0.6	0.1	13.4	0.0	15.0	3.6	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	32.0	6.4	13.1	13.8	1.0	5.0	0.0	13.8	2.5	0.8	2.7
LnGrp Delay(d),s/veh	73.9	43.3	23.9	177.4	21.8	15.3	81.8	0.0	71.9	74.1	50.1	47.6
LnGrp LOS	E	D	C	F	C	B	F		E	E	D	D
Approach Vol, veh/h		1878			1814			418			220	
Approach Delay, s/veh		41.4			39.9			74.5			62.1	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	79.9	16.0	34.1	10.6	89.3	11.7	38.5
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	59.8	18.0	36.0	18.0	57.2	9.8	44.2
Max Q Clear Time (g_c+I1), s	17.4	63.7	11.3	8.1	5.6	31.1	7.1	30.1
Green Ext Time (p_c), s	0.0	0.0	0.1	3.3	0.0	25.8	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	45.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	1491	10	11	1200	109	3	1	10	485	2	303
Future Volume (veh/h)	273	1491	10	11	1200	109	3	1	10	485	2	303
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	300	1638	11	12	1319	120	3	1	11	533	2	333
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	2716	846	30	2271	985	8	12	134	604	2	412
Arrive On Green	0.10	0.53	0.53	0.02	0.45	0.45	0.00	0.09	0.09	0.18	0.26	0.26
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	134	1470	3442	9	1575
Grp Volume(v), veh/h	300	1638	11	12	1319	120	3	0	12	533	0	335
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1603	1721	0	1585
Q Serve(g_s), s	9.4	24.3	0.4	0.7	21.3	3.4	0.2	0.0	0.8	16.6	0.0	21.8
Cycle Q Clear(g_c), s	9.4	24.3	0.4	0.7	21.3	3.4	0.2	0.0	0.8	16.6	0.0	21.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		0.99
Lane Grp Cap(c), veh/h	359	2716	846	30	2271	985	8	0	146	604	0	415
V/C Ratio(X)	0.84	0.60	0.01	0.40	0.58	0.12	0.35	0.00	0.08	0.88	0.00	0.81
Avail Cap(c_a), veh/h	391	2716	846	97	2271	985	160	0	278	776	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.27	0.27	0.27	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.3	17.6	12.0	53.5	22.7	8.5	54.6	0.0	45.8	44.2	0.0	38.0
Incr Delay (d2), s/veh	3.7	0.3	0.0	3.0	0.6	0.1	9.1	0.0	0.2	8.2	0.0	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	11.4	0.2	0.4	10.0	1.5	0.1	0.0	0.3	8.6	0.0	10.5
LnGrp Delay(d),s/veh	52.1	17.9	12.0	56.6	23.3	8.6	63.6	0.0	46.0	52.5	0.0	47.0
LnGrp LOS	D	B	B	E	C	A	E		D	D		D
Approach Vol, veh/h		1949			1451			15			868	
Approach Delay, s/veh		23.1			22.4			49.6			50.3	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	64.6	5.1	33.9	16.1	54.9	23.9	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.0	40.0	9.9	34.0	12.5	33.5	24.8	19.1
Max Q Clear Time (g_c+I1), s	2.7	26.3	2.2	23.8	11.4	23.3	18.6	2.8
Green Ext Time (p_c), s	0.0	13.5	0.0	1.9	0.1	8.4	0.7	2.5

Intersection Summary		
HCM 2010 Ctrl Delay		28.5
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1430	712	0	774	0	0	0	0	272	2	493
Future Volume (veh/h)	0	1430	712	0	774	0	0	0	0	272	2	493
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1625	809	0	880	0				309	2	560
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2712	844	0	2712	0				666	4	1053
Arrive On Green	0.00	0.53	0.53	0.00	0.53	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	5253	1583	0	5421	0				1763	11	2787
Grp Volume(v), veh/h	0	1625	809	0	880	0				311	0	560
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	19.7	43.9	0.0	8.8	0.0				11.9	0.0	14.1
Cycle Q Clear(g_c), s	0.0	19.7	43.9	0.0	8.8	0.0				11.9	0.0	14.1
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2712	844	0	2712	0				670	0	1053
V/C Ratio(X)	0.00	0.60	0.96	0.00	0.32	0.00				0.46	0.00	0.53
Avail Cap(c_a), veh/h	0	2712	844	0	2712	0				670	0	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.72	0.72	0.00	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.4	20.0	0.0	11.9	0.0				21.1	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.3	17.2	0.0	0.3	0.0				2.3	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.2	22.9	0.0	4.2	0.0				6.2	0.0	5.6
LnGrp Delay(d),s/veh	0.0	14.7	37.2	0.0	12.2	0.0				23.4	0.0	23.7
LnGrp LOS		B	D		B					C		C
Approach Vol, veh/h		2434			880						871	
Approach Delay, s/veh		22.2			12.2						23.6	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		38.0		52.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		48.0		34.0		48.0		
Max Q Clear Time (g_c+I1), s		45.9		16.1		10.8		
Green Ext Time (p_c), s		2.1		4.2		30.4		

Intersection Summary		
HCM 2010 Ctrl Delay		20.4
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	847	855	0	850	233	299	0	518	0	0	0
Future Volume (veh/h)	0	847	855	0	850	233	299	0	518	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1114	0	0	1118	0	393	0	682			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2938	915	0	2938	915	591	0	528			
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1114	0	0	1118	0	393	0	682			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	10.7	0.0	0.0	10.7	0.0	17.1	0.0	30.0			
Cycle Q Clear(g_c), s	0.0	10.7	0.0	0.0	10.7	0.0	17.1	0.0	30.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2938	915	0	2938	915	591	0	528			
V/C Ratio(X)	0.00	0.38	0.00	0.00	0.38	0.00	0.66	0.00	1.29			
Avail Cap(c_a), veh/h	0	2938	915	0	2938	915	591	0	528			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.3	0.0	0.0	10.3	0.0	25.7	0.0	30.0			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.1	0.0	5.8	0.0	145.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	5.0	0.0	0.0	5.0	0.0	9.3	0.0	34.3			
LnGrp Delay(d),s/veh	0.0	10.6	0.0	0.0	10.4	0.0	31.5	0.0	175.2			
LnGrp LOS		B			B		C		F			
Approach Vol, veh/h		1114			1118			1075				
Approach Delay, s/veh		10.6			10.4			122.6				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		56.0				56.0		34.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		26.0				22.0		30.0
Max Q Clear Time (g_c+I1), s		12.7				12.7		32.0
Green Ext Time (p_c), s		10.5				7.7		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		46.9
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	976	126	98	610	210	269	203	8	174	140	332
Future Volume (veh/h)	331	976	126	98	610	210	269	203	8	174	140	332
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	466	1375	177	138	859	296	379	286	11	245	197	468
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	667	1441	612	164	1063	452	331	787	30	271	694	602
Arrive On Green	0.19	0.39	0.39	0.09	0.29	0.29	0.19	0.22	0.22	0.15	0.19	0.19
Sat Flow, veh/h	3442	3725	1583	1774	3725	1583	1774	3565	137	1774	3725	1583
Grp Volume(v), veh/h	466	1375	177	138	859	296	379	149	148	245	197	468
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	1583	1774	1863	1839	1774	1863	1583
Q Serve(g_s), s	16.5	47.0	10.1	10.0	28.0	14.8	24.4	8.9	8.9	17.8	5.9	12.2
Cycle Q Clear(g_c), s	16.5	47.0	10.1	10.0	28.0	14.8	24.4	8.9	8.9	17.8	5.9	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	667	1441	612	164	1063	452	331	411	406	271	694	602
V/C Ratio(X)	0.70	0.95	0.29	0.84	0.81	0.66	1.15	0.36	0.36	0.90	0.28	0.78
Avail Cap(c_a), veh/h	667	1465	623	237	1437	611	331	472	466	318	916	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	39.0	27.7	58.5	43.4	19.6	53.3	43.2	43.2	54.5	45.8	14.1
Incr Delay (d2), s/veh	3.2	14.0	0.3	16.4	2.6	1.6	95.3	2.1	2.1	25.2	0.9	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	26.9	4.4	5.7	14.8	7.8	20.7	4.8	4.8	10.6	3.1	9.0
LnGrp Delay(d),s/veh	52.5	53.0	28.0	74.9	46.0	21.2	148.6	45.3	45.3	79.7	46.6	22.6
LnGrp LOS	D	D	C	E	D	C	F	D	D	E	D	C
Approach Vol, veh/h		2018			1293			676			910	
Approach Delay, s/veh		50.7			43.4			103.2			43.2	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.5	34.7	16.6	55.1	29.0	30.2	29.9	41.9
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	23.5	33.2	17.5	51.5	24.4	32.2	18.5	50.5
Max Q Clear Time (g_c+I1), s	19.8	10.9	12.0	49.0	26.4	14.2	18.5	30.0
Green Ext Time (p_c), s	0.2	11.7	0.1	1.7	0.0	10.2	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	54.6
HCM 2010 LOS	D

Notes

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1& 2) (2028 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	175	5.0	0.180	5.4	LOS A	0.7	18.0	0.42	0.32	24.0
12	R2	207	5.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		382	5.0	0.180	2.5	LOS A	0.7	18.0	0.19	0.15	24.6
East: Keller Road											
3	L2	100	5.0	0.126	4.2	LOS A	0.5	13.2	0.31	0.19	24.6
8	T1	287	3.0	0.126	0.7	LOS A	0.5	13.2	0.05	0.03	24.5
Approach		387	3.5	0.126	1.6	LOS A	0.5	13.2	0.12	0.07	24.5
West: Keller Road											
4	T1	301	3.0	0.240	5.0	LOS A	1.1	28.9	0.26	0.13	22.9
14	R2	265	5.0	0.166	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		566	3.9	0.240	2.7	LOS A	1.1	28.9	0.14	0.07	24.3
All Vehicles		1335	4.1	0.240	2.3	LOS A	1.1	28.9	0.15	0.09	24.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1& 2) (2028 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	157	5.0	0.098	5.5	LOS A	0.3	8.7	0.48	0.42	13.5
2	T1	1	5.0	0.098	5.3	LOS A	0.3	8.6	0.47	0.41	22.9
12	R2	135	5.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		292	5.0	0.098	3.0	LOS A	0.3	8.7	0.26	0.23	18.2
East: Keller Road											
8	T1	230	3.0	0.110	4.4	LOS A	0.4	10.7	0.37	0.26	23.2
18	R2	132	5.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		362	3.7	0.110	2.8	LOS A	0.4	10.7	0.24	0.17	24.0
West: Keller Road											
7	L2	113	5.0	0.185	4.2	LOS A	0.0	0.0	0.00	0.00	29.5
4	T1	395	3.0	0.185	4.1	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		508	3.4	0.185	4.1	LOS A	0.0	0.0	0.00	0.00	25.7
All Vehicles		1162	3.9	0.185	3.4	LOS A	0.4	10.7	0.14	0.11	22.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

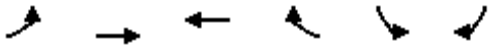
Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1038	21	4	826	25	0	0	0	52	8	27
Future Vol, veh/h	2	1038	21	4	826	25	0	0	0	52	8	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1081	22	4	860	26	0	0	0	54	8	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	886	0	0	1103	0	0	1996	1991	552	1427	1989	873
Stage 1	-	-	-	-	-	-	1096	1096	-	882	882	-
Stage 2	-	-	-	-	-	-	900	895	-	545	1107	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	762	-	-	631	-	-	40	60	478	104	60	349
Stage 1	-	-	-	-	-	-	228	288	-	340	363	-
Stage 2	-	-	-	-	-	-	332	358	-	491	285	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	762	-	-	631	-	-	32	59	478	102	59	349
Mov Cap-2 Maneuver	-	-	-	-	-	-	32	59	-	102	59	-
Stage 1	-	-	-	-	-	-	226	286	-	338	358	-
Stage 2	-	-	-	-	-	-	294	353	-	488	283	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	58
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	762	-	-	631	-	-	102	164
HCM Lane V/C Ratio	-	0.003	-	-	0.007	-	-	0.531	0.222
HCM Control Delay (s)	0	9.7	0	-	10.7	0	-	74.7	33.1
HCM Lane LOS	A	A	A	-	B	A	-	F	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	2.4	0.8



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	333	632	736	353	326	157
Future Volume (veh/h)	333	632	736	353	326	157
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	340	645	751	360	333	160
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	372	1321	853	725	368	328
Arrive On Green	0.21	0.71	0.46	0.46	0.21	0.21
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	340	645	751	360	333	160
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	20.2	16.6	39.6	17.2	19.8	9.6
Cycle Q Clear(g_c), s	20.2	16.6	39.6	17.2	19.8	9.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	372	1321	853	725	368	328
V/C Ratio(X)	0.91	0.49	0.88	0.50	0.91	0.49
Avail Cap(c_a), veh/h	435	1474	940	799	419	374
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	7.0	26.6	20.5	41.8	37.8
Incr Delay (d2), s/veh	21.6	0.3	9.1	0.5	21.3	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	8.5	22.4	7.6	11.9	4.3
LnGrp Delay(d),s/veh	63.4	7.3	35.7	21.1	63.0	38.9
LnGrp LOS	E	A	D	C	E	D
Approach Vol, veh/h		985	1111		493	
Approach Delay, s/veh		26.6	30.9		55.2	
Approach LOS		C	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		81.1			27.2	54.0		26.9
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		85.5			26.5	54.5		25.5
Max Q Clear Time (g_c+I1), s		18.6			22.2	41.6		21.8
Green Ext Time (p_c), s		15.5			0.4	7.9		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	861	154	144	985	1148	247	273	343	969	178	97
Future Volume (veh/h)	97	861	154	144	985	1148	247	273	343	969	178	97
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	101	897	160	150	1026	1196	257	284	357	1009	185	101
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	3170	563	199	2539	1899	386	414	352	983	319	174
Arrive On Green	0.06	0.69	0.69	0.06	0.68	0.68	0.22	0.22	0.22	0.28	0.28	0.28
Sat Flow, veh/h	1774	4623	821	3442	3725	2787	1774	1863	1583	3548	1134	619
Grp Volume(v), veh/h	101	722	335	150	1026	1196	257	284	357	1009	0	286
Grp Sat Flow(s),veh/h/ln	1774	1863	1718	1721	1863	1393	1774	1863	1583	1774	0	1753
Q Serve(g_s), s	7.6	10.2	10.3	5.8	16.3	32.3	17.9	18.9	30.0	37.4	0.0	18.9
Cycle Q Clear(g_c), s	7.6	10.2	10.3	5.8	16.3	32.3	17.9	18.9	30.0	37.4	0.0	18.9
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	110	2555	1178	199	2539	1899	386	414	352	983	0	494
V/C Ratio(X)	0.91	0.28	0.28	0.75	0.40	0.63	0.67	0.69	1.01	1.03	0.00	0.58
Avail Cap(c_a), veh/h	110	2555	1178	280	2539	1899	386	414	352	983	0	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	62.9	8.3	8.3	62.6	9.5	12.0	48.3	48.2	52.5	48.8	0.0	41.6
Incr Delay (d2), s/veh	58.5	0.3	0.6	1.9	0.2	0.8	8.7	8.9	51.7	35.7	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	5.3	5.0	2.8	8.3	12.5	9.7	10.7	18.2	23.2	0.0	9.8
LnGrp Delay(d),s/veh	121.5	8.5	8.9	64.6	9.7	12.8	57.0	57.1	104.3	84.5	0.0	46.5
LnGrp LOS	F	A	A	E	A	B	E	E	F	F		D
Approach Vol, veh/h		1158			2372			898			1295	
Approach Delay, s/veh		18.5			14.7			75.9			76.1	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	100.4	34.0	44.2	13.0	99.8	42.0	36.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	11.6	36.6	29.4	36.4	8.4	39.2	37.4	* 30
Max Q Clear Time (g_c+I1), s	7.8	12.3	19.9	20.9	9.6	34.3	39.4	32.0
Green Ext Time (p_c), s	0.0	23.3	0.7	5.3	0.0	4.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.0
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1472	774	0	1745	495	0	0	0	524	0	532
Future Volume (veh/h)	0	1472	774	0	1745	495	0	0	0	524	0	532
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1502	790	0	1781	505				535	0	543
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2045	915	0	2045	915				1147	0	929
Arrive On Green	0.00	0.58	0.58	0.00	0.58	0.58				0.33	0.00	0.33
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1502	790	0	1781	505				535	0	543
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	28.0	37.8	0.0	38.5	17.8				11.0	0.0	14.5
Cycle Q Clear(g_c), s	0.0	28.0	37.8	0.0	38.5	17.8				11.0	0.0	14.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2045	915	0	2045	915				1147	0	929
V/C Ratio(X)	0.00	0.73	0.86	0.00	0.87	0.55				0.47	0.00	0.58
Avail Cap(c_a), veh/h	0	2045	915	0	2045	915				1147	0	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.43	0.43	0.00	0.23	0.23				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.9	16.0	0.0	16.1	11.8				23.7	0.0	24.8
Incr Delay (d2), s/veh	0.0	1.0	5.0	0.0	1.4	0.6				1.4	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.9	17.5	0.0	18.9	7.9				5.4	0.0	5.9
LnGrp Delay(d),s/veh	0.0	15.0	21.0	0.0	17.5	12.3				25.0	0.0	27.5
LnGrp LOS		B	C		B	B				C		C
Approach Vol, veh/h		2292			2286						1078	
Approach Delay, s/veh		17.1			16.4						26.3	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		56.0		34.0		56.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		52.0		30.0		52.0		
Max Q Clear Time (g_c+I1), s		39.8		16.5		40.5		
Green Ext Time (p_c), s		11.9		3.8		11.3		

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	548	1448	0	0	1339	428	0	0	655	0	0	901
Future Volume (veh/h)	548	1448	0	0	1339	428	0	0	655	0	0	901
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	565	1493	0	0	1380	441	0	0	675	0	0	929
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	520	3445	0	0	2312	1034	0	0	0	0	0	0
Arrive On Green	0.29	0.97	0.00	0.00	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	565	1493	0	0	1380	441		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	44.0	2.9	0.0	0.0	15.9	8.7						
Cycle Q Clear(g_c), s	44.0	2.9	0.0	0.0	15.9	8.7						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	520	3445	0	0	2312	1034						
V/C Ratio(X)	1.09	0.43	0.00	0.00	0.60	0.43						
Avail Cap(c_a), veh/h	520	3445	0	0	2312	1034						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33						
Upstream Filter(I)	0.70	0.70	0.00	0.00	0.67	0.67						
Uniform Delay (d), s/veh	53.0	0.1	0.0	0.0	4.5	4.0						
Incr Delay (d2), s/veh	58.6	0.3	0.0	0.0	0.8	0.9						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	30.0	1.4	0.0	0.0	7.6	4.0						
LnGrp Delay(d),s/veh	111.6	0.4	0.0	0.0	5.2	4.8						
LnGrp LOS	F	A			A	A						
Approach Vol, veh/h		2058			1821							
Approach Delay, s/veh		30.9			5.1							
Approach LOS		C			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		150.0			48.0	102.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		106.9			44.0	58.9		
Max Q Clear Time (g_c+I1), s		4.9			46.0	17.9		
Green Ext Time (p_c), s		65.2			0.0	33.6		

Intersection Summary		
HCM 2010 Ctrl Delay		18.8
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	1417	375	149	1030	60	501	367	275	71	186	236
Future Volume (veh/h)	311	1417	375	149	1030	60	501	367	275	71	186	236
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	314	1431	379	151	1040	61	506	371	278	72	188	238
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	1954	874	172	2447	143	525	624	531	90	435	369
Arrive On Green	0.10	0.55	0.55	0.05	0.50	0.50	0.15	0.34	0.34	0.05	0.23	0.23
Sat Flow, veh/h	3442	3539	1583	3442	4914	288	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	314	1431	379	151	717	384	506	371	278	72	188	238
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1812	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	13.5	45.6	21.1	6.5	20.2	20.2	21.9	24.8	21.2	6.0	12.9	20.3
Cycle Q Clear(g_c), s	13.5	45.6	21.1	6.5	20.2	20.2	21.9	24.8	21.2	6.0	12.9	20.3
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	358	1954	874	172	1688	902	525	624	531	90	435	369
V/C Ratio(X)	0.88	0.73	0.43	0.88	0.42	0.43	0.96	0.59	0.52	0.80	0.43	0.64
Avail Cap(c_a), veh/h	493	1954	874	172	1688	902	525	624	531	153	435	369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.2	25.3	19.8	70.8	24.0	24.0	63.1	41.4	40.2	70.4	49.0	51.9
Incr Delay (d2), s/veh	6.3	1.5	0.9	35.4	0.8	1.5	29.8	4.1	3.7	5.9	3.1	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	22.7	9.4	3.9	9.6	10.5	12.6	13.5	9.9	3.1	7.0	9.8
LnGrp Delay(d),s/veh	72.6	26.8	20.7	106.1	24.8	25.5	92.9	45.5	43.9	76.3	52.2	60.3
LnGrp LOS	E	C	C	F	C	C	F	D	D	E	D	E
Approach Vol, veh/h		2124			1252			1155			498	
Approach Delay, s/veh		32.5			34.8			65.9			59.5	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	89.9	27.5	41.5	20.2	81.8	12.2	56.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.5	* 63	22.9	* 35	21.5	48.7	12.9	44.7
Max Q Clear Time (g_c+I1), s	8.5	47.6	23.9	22.3	15.5	22.2	8.0	26.8
Green Ext Time (p_c), s	0.0	13.2	0.0	2.3	0.1	20.9	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	43.4
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	68.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	83	8	343	129	213	14	50	276	241	70	42
Future Vol, veh/h	36	83	8	343	129	213	14	50	276	241	70	42
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	99	10	408	154	254	17	60	329	287	83	50
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	22.7	73.4	26.9	115.5
HCM LOS	C	F	D	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	28%	100%	0%	68%
Vol Thru, %	0%	100%	0%	65%	0%	38%	20%
Vol Right, %	0%	0%	100%	6%	0%	62%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	50	276	127	343	342	353
LT Vol	14	0	0	36	343	0	241
Through Vol	0	50	0	83	0	129	70
RT Vol	0	0	276	8	0	213	42
Lane Flow Rate	17	60	329	151	408	407	420
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0.042	0.143	0.727	0.445	1.039	0.931	1.12
Departure Headway (Hd)	9.546	9.025	8.295	11.261	9.631	8.659	9.966
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	377	400	440	322	380	423	366
Service Time	7.246	6.725	5.995	8.961	7.331	6.359	7.666
HCM Lane V/C Ratio	0.045	0.15	0.748	0.469	1.074	0.962	1.148
HCM Control Delay	12.7	13.2	30.1	22.7	88.8	58	115.5
HCM Lane LOS	B	B	D	C	F	F	F
HCM 95th-tile Q	0.1	0.5	5.8	2.2	13	10.4	15.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	610	63	8	182	86	107	299	6	195	280	131
Future Volume (veh/h)	172	610	63	8	182	86	107	299	6	195	280	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	179	635	66	8	190	90	111	311	6	203	292	136
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	456	1129	352	45	506	227	674	1253	24	732	1281	1089
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	2124	5085	1583	31	2279	1020	956	1821	35	1058	1863	1583
Grp Volume(v), veh/h	179	635	66	154	0	134	111	0	317	203	292	136
Grp Sat Flow(s),veh/h/ln	1062	1695	1583	1816	0	1515	956	0	1857	1058	1863	1583
Q Serve(g_s), s	7.9	11.1	3.4	0.0	0.0	7.5	4.9	0.0	6.4	8.9	5.8	2.9
Cycle Q Clear(g_c), s	15.4	11.1	3.4	7.0	0.0	7.5	10.7	0.0	6.4	15.4	5.8	2.9
Prop In Lane	1.00		1.00	0.05		0.67	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	456	1129	352	441	0	336	674	0	1277	732	1281	1089
V/C Ratio(X)	0.39	0.56	0.19	0.35	0.00	0.40	0.16	0.00	0.25	0.28	0.23	0.12
Avail Cap(c_a), veh/h	568	1398	435	532	0	417	674	0	1277	732	1281	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	34.6	31.6	33.0	0.0	33.2	7.7	0.0	5.9	8.8	5.8	5.3
Incr Delay (d2), s/veh	0.6	0.4	0.3	0.5	0.0	0.8	0.5	0.0	0.5	0.9	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.2	1.5	3.7	0.0	3.2	1.4	0.0	3.4	2.8	3.1	1.4
LnGrp Delay(d),s/veh	40.3	35.0	31.8	33.5	0.0	33.9	8.3	0.0	6.3	9.7	6.2	5.6
LnGrp LOS	D	D	C	C		C	A		A	A	A	A
Approach Vol, veh/h		880			288			428			631	
Approach Delay, s/veh		35.9			33.7			6.8			7.2	
Approach LOS		D			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.3		26.7		73.3		26.7
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		63.5		27.5		63.5		27.5
Max Q Clear Time (g_c+I1), s		12.7		17.4		17.4		9.5
Green Ext Time (p_c), s		6.5		4.8		6.5		6.7

Intersection Summary	
HCM 2010 Ctrl Delay	21.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	28	190	10	20	11	117	83	13	8	136	104
Future Volume (veh/h)	192	28	190	10	20	11	117	83	13	8	136	104
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	200	29	198	10	21	11	122	86	14	8	142	108
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	646	549	23	751	336	157	888	141	19	751	336
Arrive On Green	0.15	0.35	0.35	0.01	0.21	0.21	0.09	0.29	0.29	0.01	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3059	487	1774	3539	1583
Grp Volume(v), veh/h	200	29	198	10	21	11	122	49	51	8	142	108
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1777	1774	1770	1583
Q Serve(g_s), s	5.1	0.5	4.4	0.3	0.2	0.3	3.2	1.0	1.0	0.2	1.6	2.7
Cycle Q Clear(g_c), s	5.1	0.5	4.4	0.3	0.2	0.3	3.2	1.0	1.0	0.2	1.6	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	262	646	549	23	751	336	157	514	516	19	751	336
V/C Ratio(X)	0.76	0.04	0.36	0.43	0.03	0.03	0.78	0.10	0.10	0.43	0.19	0.32
Avail Cap(c_a), veh/h	715	1462	1243	263	1877	840	301	863	867	263	1652	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	10.2	11.5	23.1	14.7	14.7	21.0	12.2	12.2	23.2	15.2	15.7
Incr Delay (d2), s/veh	4.6	0.0	0.4	12.3	0.0	0.0	7.9	0.1	0.1	14.7	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.3	2.0	0.2	0.1	0.1	1.9	0.5	0.5	0.2	0.8	1.2
LnGrp Delay(d),s/veh	23.9	10.2	11.9	35.4	14.7	14.8	29.0	12.3	12.3	37.9	15.4	16.2
LnGrp LOS	C	B	B	D	B	B	C	B	B	D	B	B
Approach Vol, veh/h		427			42			222			258	
Approach Delay, s/veh		17.4			19.7			21.5			16.4	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	20.3	8.2	14.0	11.0	14.0	4.5	17.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.6	37.0	8.0	22.0	19.0	25.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	12.3	6.4	5.2	4.7	7.1	2.3	2.2	3.0
Green Ext Time (p_c), s	0.0	0.9	0.1	1.5	0.4	0.9	0.0	1.5

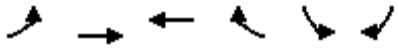
Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	410	267	36	159	201
Future Volume (veh/h)	105	410	267	36	159	201
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	115	451	293	40	175	221
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	536	479	780	663	208	1084
Arrive On Green	0.30	0.30	0.42	0.42	0.12	0.58
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	115	451	293	40	175	221
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	4.8	27.8	10.9	1.5	9.7	5.6
Cycle Q Clear(g_c), s	4.8	27.8	10.9	1.5	9.7	5.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	536	479	780	663	208	1084
V/C Ratio(X)	0.21	0.94	0.38	0.06	0.84	0.20
Avail Cap(c_a), veh/h	561	500	780	663	362	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	34.0	20.1	17.3	43.2	9.9
Incr Delay (d2), s/veh	0.1	19.7	1.4	0.2	3.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	14.7	5.8	0.7	4.9	3.0
LnGrp Delay(d),s/veh	26.2	53.7	21.4	17.5	46.7	10.3
LnGrp LOS	C	D	C	B	D	B
Approach Vol, veh/h	566		333			396
Approach Delay, s/veh	48.1		21.0			26.4
Approach LOS	D		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.3	48.1				64.4		35.6
Change Period (Y+Rc), s	4.6	6.2				6.2		5.4
Max Green Setting (Gmax), s	20.4	31.8				56.8		31.6
Max Q Clear Time (g_c+I1), s	11.7	12.9				7.6		29.8
Green Ext Time (p_c), s	0.2	6.3				8.8		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	272	568	0	14	23
Future Volume (veh/h)	1	272	568	0	14	23
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	299	624	0	15	25
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3	1059	890	0	1045	932
Arrive On Green	0.00	0.30	0.25	0.00	0.59	0.59
Sat Flow, veh/h	1774	3632	3725	0	1774	1583
Grp Volume(v), veh/h	1	299	624	0	15	25
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	0	1774	1583
Q Serve(g_s), s	0.1	6.5	16.0	0.0	0.4	0.7
Cycle Q Clear(g_c), s	0.1	6.5	16.0	0.0	0.4	0.7
Prop In Lane	1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	3	1059	890	0	1045	932
V/C Ratio(X)	0.34	0.28	0.70	0.00	0.01	0.03
Avail Cap(c_a), veh/h	539	2322	1083	0	1045	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.75	0.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	26.8	34.0	0.0	8.5	8.6
Incr Delay (d2), s/veh	19.2	0.2	1.9	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.2	8.0	0.0	0.2	1.0
LnGrp Delay(d),s/veh	69.1	27.1	35.9	0.0	8.6	8.6
LnGrp LOS	E	C	D		A	A
Approach Vol, veh/h		300	624		40	
Approach Delay, s/veh		27.2	35.9		8.6	
Approach LOS		C	D		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				35.3		64.7	4.8	30.6
Change Period (Y+Rc), s				5.4		5.8	4.6	5.4
Max Green Setting (Gmax), s				65.6		23.2	30.4	30.6
Max Q Clear Time (g_c+I1), s				8.5		2.7	2.1	18.0
Green Ext Time (p_c), s				14.8		0.2	0.0	7.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	272	67	4	2	245	430	102	1	273	10
Future Volume (veh/h)	13	1	272	67	4	2	245	430	102	1	273	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	14	1	289	71	4	2	261	457	109	1	290	11
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	31	421	358	112	506	430	331	1099	260	4	701	27
Arrive On Green	0.02	0.23	0.23	0.06	0.27	0.27	0.19	0.39	0.39	0.00	0.20	0.20
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2841	673	1774	3478	132
Grp Volume(v), veh/h	14	1	289	71	4	2	261	283	283	1	147	154
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1744	1774	1770	1840
Q Serve(g_s), s	0.4	0.0	8.6	1.9	0.1	0.0	7.0	5.8	5.9	0.0	3.6	3.6
Cycle Q Clear(g_c), s	0.4	0.0	8.6	1.9	0.1	0.0	7.0	5.8	5.9	0.0	3.6	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		0.07
Lane Grp Cap(c), veh/h	31	421	358	112	506	430	331	685	675	4	357	371
V/C Ratio(X)	0.45	0.00	0.81	0.64	0.01	0.00	0.79	0.41	0.42	0.28	0.41	0.41
Avail Cap(c_a), veh/h	215	901	766	215	901	766	787	1355	1336	215	785	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	14.9	18.2	22.7	13.2	13.2	19.2	11.1	11.1	24.7	17.2	17.3
Incr Delay (d2), s/veh	9.6	0.0	4.3	5.9	0.0	0.0	4.2	0.4	0.4	37.8	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	4.2	1.1	0.0	0.0	3.8	2.9	2.9	0.1	1.8	1.9
LnGrp Delay(d),s/veh	33.7	14.9	22.5	28.6	13.2	13.2	23.4	11.5	11.5	62.5	18.0	18.0
LnGrp LOS	C	B	C	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h		304			77			827			302	
Approach Delay, s/veh		23.0			27.4			15.3			18.2	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	23.2	7.1	15.2	13.3	14.0	4.9	17.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	38.0	6.0	24.0	22.0	22.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	2.0	7.9	3.9	10.6	9.0	5.6	2.4	2.1
Green Ext Time (p_c), s	0.0	4.9	0.0	0.8	0.6	4.2	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2	5	279	5	0	6	2	316	0	0	0
Future Vol, veh/h	0	2	5	279	5	0	6	2	316	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	6	328	6	0	7	2	372	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8	12.5	11.8	0
HCM LOS	A	B	B	-

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	75%	0%	0%	98%	0%
Vol Thru, %	25%	0%	29%	2%	100%
Vol Right, %	0%	100%	71%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	316	7	284	0
LT Vol	6	0	0	279	0
Through Vol	2	0	2	5	0
RT Vol	0	316	5	0	0
Lane Flow Rate	9	372	8	334	0
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.015	0.487	0.011	0.468	0
Departure Headway (Hd)	5.802	4.719	4.869	5.047	5.409
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	616	762	726	708	0
Service Time	3.549	2.466	2.958	3.107	3.493
HCM Lane V/C Ratio	0.015	0.488	0.011	0.472	0
HCM Control Delay	8.6	11.9	8	12.5	8.5
HCM Lane LOS	A	B	A	B	N
HCM 95th-tile Q	0	2.7	0	2.5	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	3	103	0	0	1	51	787	0	1	491	29
Future Volume (veh/h)	49	3	103	0	0	1	51	787	0	1	491	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	51	3	106	0	0	1	53	811	0	1	506	30
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	182	154	0	0	2	80	2484	0	3	2237	132
Arrive On Green	0.10	0.10	0.10	0.00	0.00	0.00	0.04	0.70	0.00	0.00	0.66	0.66
Sat Flow, veh/h	1774	1863	1583	0	0	1583	1774	3632	0	1774	3396	201
Grp Volume(v), veh/h	51	3	106	0	0	1	53	811	0	1	263	273
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	0	0	1583	1774	1770	0	1774	1770	1827
Q Serve(g_s), s	2.8	0.2	6.8	0.0	0.0	0.1	3.1	9.3	0.0	0.1	6.3	6.3
Cycle Q Clear(g_c), s	2.8	0.2	6.8	0.0	0.0	0.1	3.1	9.3	0.0	0.1	6.3	6.3
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.00	1.00		0.11
Lane Grp Cap(c), veh/h	173	182	154	0	0	2	80	2484	0	3	1166	1203
V/C Ratio(X)	0.29	0.02	0.69	0.00	0.00	0.66	0.66	0.33	0.00	0.34	0.23	0.23
Avail Cap(c_a), veh/h	443	465	395	0	0	271	142	2484	0	108	1166	1203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	42.8	45.8	0.0	0.0	52.4	49.4	6.1	0.0	52.4	7.2	7.2
Incr Delay (d2), s/veh	4.3	0.2	22.1	0.0	0.0	211.8	3.5	0.4	0.0	24.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.1	3.9	0.0	0.0	0.1	1.6	4.6	0.0	0.0	3.1	3.3
LnGrp Delay(d),s/veh	48.3	43.0	67.9	0.0	0.0	264.2	52.9	6.4	0.0	76.3	7.6	7.6
LnGrp LOS	D	D	E			F	D	A		E	A	A
Approach Vol, veh/h		160			1			864			537	
Approach Delay, s/veh		61.2			264.2			9.3			7.8	
Approach LOS		E			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	79.5		16.0	9.3	75.0		4.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	33.6		26.2	8.4	31.6		18.0
Max Q Clear Time (g_c+I1), s	2.1	11.3		8.8	5.1	8.3		2.1
Green Ext Time (p_c), s	0.0	16.9		1.5	0.0	17.5		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		14.2
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	1797	28	162	1849	118	32	4	119	88	6	69
Future Volume (veh/h)	82	1797	28	162	1849	118	32	4	119	88	6	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	85	1853	29	167	1906	122	33	4	123	91	6	71
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	2234	1000	158	3354	1044	71	5	157	135	188	256
Arrive On Green	0.06	0.63	0.63	0.09	0.66	0.66	0.04	0.10	0.10	0.04	0.10	0.10
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	1774	50	1541	3442	1863	1583
Grp Volume(v), veh/h	85	1853	29	167	1906	122	33	0	127	91	6	71
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1774	0	1591	1721	1863	1583
Q Serve(g_s), s	7.1	60.8	1.0	13.4	30.6	4.3	2.7	0.0	11.7	3.9	0.4	5.9
Cycle Q Clear(g_c), s	7.1	60.8	1.0	13.4	30.6	4.3	2.7	0.0	11.7	3.9	0.4	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	108	2234	1000	158	3354	1044	71	0	162	135	188	256
V/C Ratio(X)	0.79	0.83	0.03	1.05	0.57	0.12	0.47	0.00	0.79	0.68	0.03	0.28
Avail Cap(c_a), veh/h	241	2234	1000	158	3354	1044	241	0	488	289	474	500
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.59	0.59	0.59	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.5	21.4	10.4	68.3	13.9	9.4	70.4	0.0	65.8	71.1	60.8	55.2
Incr Delay (d2), s/veh	4.7	3.7	0.1	69.9	0.4	0.1	4.7	0.0	8.8	2.2	0.2	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	30.8	0.5	9.6	14.4	1.9	1.4	0.0	5.5	1.9	0.2	2.7
LnGrp Delay(d),s/veh	74.1	25.1	10.4	138.3	14.3	9.5	75.1	0.0	74.5	73.3	61.0	56.6
LnGrp LOS	E	C	B	F	B	A	E		E	E	E	E
Approach Vol, veh/h		1967			2195			160			168	
Approach Delay, s/veh		27.0			23.5			74.7			65.8	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	100.5	10.6	20.9	13.7	104.7	10.5	21.0
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	13.4	57.2	20.4	38.2	20.4	50.2	12.6	46.0
Max Q Clear Time (g_c+I1), s	15.4	62.8	4.7	7.9	9.1	32.6	5.9	13.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.5	0.1	17.5	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	447	1673	14	30	1612	291	24	6	28	377	6	379
Future Volume (veh/h)	447	1673	14	30	1612	291	24	6	28	377	6	379
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	456	1707	14	31	1645	297	24	6	29	385	6	387
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	496	2631	819	56	2060	846	48	45	216	445	6	411
Arrive On Green	0.14	0.52	0.52	0.03	0.41	0.41	0.03	0.16	0.16	0.13	0.26	0.26
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	279	1347	3442	24	1563
Grp Volume(v), veh/h	456	1707	14	31	1645	297	24	0	35	385	0	393
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1625	1721	0	1587
Q Serve(g_s), s	16.3	30.5	0.5	2.2	35.6	13.4	1.7	0.0	2.3	13.7	0.0	30.3
Cycle Q Clear(g_c), s	16.3	30.5	0.5	2.2	35.6	13.4	1.7	0.0	2.3	13.7	0.0	30.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.98
Lane Grp Cap(c), veh/h	496	2631	819	56	2060	846	48	0	261	445	0	417
V/C Ratio(X)	0.92	0.65	0.02	0.55	0.80	0.35	0.50	0.00	0.13	0.86	0.00	0.94
Avail Cap(c_a), veh/h	496	2631	819	85	2060	846	141	0	280	617	0	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.10	0.10	0.10	0.84	0.84	0.84	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.8	21.9	14.7	59.6	32.7	16.7	60.0	0.0	45.0	53.3	0.0	45.1
Incr Delay (d2), s/veh	3.4	0.1	0.0	2.6	2.8	1.0	2.9	0.0	0.2	7.1	0.0	28.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	14.3	0.2	1.1	17.1	6.1	0.9	0.0	1.1	7.0	0.0	16.7
LnGrp Delay(d),s/veh	56.2	22.0	14.7	62.3	35.5	17.6	62.9	0.0	45.2	60.5	0.0	74.0
LnGrp LOS	E	C	B	E	D	B	E		D	E		E
Approach Vol, veh/h		2177			1973			59			778	
Approach Delay, s/veh		29.1			33.2			52.4			67.3	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	70.5	8.0	38.0	22.6	56.4	20.8	25.2
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	4.0	55.0	9.9	34.0	18.0	43.0	22.4	21.5
Max Q Clear Time (g_c+I1), s	4.2	32.5	3.7	32.3	18.3	37.6	15.7	4.3
Green Ext Time (p_c), s	0.0	22.4	0.0	0.5	0.0	5.4	0.5	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1656	532	0	1195	0	0	0	0	355	1	701
Future Volume (veh/h)	0	1656	532	0	1195	0	0	0	0	355	1	701
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1707	548	0	1232	0				366	1	723
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2825	880	0	2825	0				629	2	991
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.00				0.36	0.36	0.36
Sat Flow, veh/h	0	5253	1583	0	5421	0				1769	5	2787
Grp Volume(v), veh/h	0	1707	548	0	1232	0				367	0	723
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1774	0	1393
Q Serve(g_s), s	0.0	20.2	21.2	0.0	12.8	0.0				15.1	0.0	20.3
Cycle Q Clear(g_c), s	0.0	20.2	21.2	0.0	12.8	0.0				15.1	0.0	20.3
Prop In Lane	0.00		1.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2825	880	0	2825	0				631	0	991
V/C Ratio(X)	0.00	0.60	0.62	0.00	0.44	0.00				0.58	0.00	0.73
Avail Cap(c_a), veh/h	0	2825	880	0	2825	0				631	0	991
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.75	0.75	0.00	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.4	13.6	0.0	11.7	0.0				23.6	0.0	25.2
Incr Delay (d2), s/veh	0.0	0.3	1.0	0.0	0.5	0.0				3.9	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.4	9.4	0.0	6.1	0.0				8.0	0.0	8.4
LnGrp Delay(d),s/veh	0.0	13.7	14.6	0.0	12.2	0.0				27.5	0.0	30.0
LnGrp LOS		B	B		B					C		C
Approach Vol, veh/h		2255			1232						1090	
Approach Delay, s/veh		13.9			12.2						29.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		54.0		36.0		54.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		50.0		32.0		50.0		
Max Q Clear Time (g_c+I1), s		23.2		22.3		14.8		
Green Ext Time (p_c), s		23.9		4.0		30.4		

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1096	915	0	1053	354	600	0	626	0	0	0
Future Volume (veh/h)	0	1096	915	0	1053	354	600	0	626	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1130	0	0	1086	0	619	0	645			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2560	797	0	2560	797	723	0	646			
Arrive On Green	0.00	0.50	0.00	0.00	0.50	0.00	0.41	0.00	0.41			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1130	0	0	1086	0	619	0	645			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	12.8	0.0	0.0	12.1	0.0	28.6	0.0	36.6			
Cycle Q Clear(g_c), s	0.0	12.8	0.0	0.0	12.1	0.0	28.6	0.0	36.6			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2560	797	0	2560	797	723	0	646			
V/C Ratio(X)	0.00	0.44	0.00	0.00	0.42	0.00	0.86	0.00	1.00			
Avail Cap(c_a), veh/h	0	2560	797	0	2560	797	723	0	646			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.91	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	14.3	0.0	0.0	14.1	0.0	24.2	0.0	26.6			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0	12.4	0.0	35.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	5.7	0.0	16.4	0.0	22.3			
LnGrp Delay(d),s/veh	0.0	14.8	0.0	0.0	14.2	0.0	36.6	0.0	61.8			
LnGrp LOS		B			B		D		E			
Approach Vol, veh/h		1130			1086			1264				
Approach Delay, s/veh		14.8			14.2			49.5				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		49.3				49.3		40.7
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		22.0				19.3		36.7
Max Q Clear Time (g_c+I1), s		14.8				14.1		38.6
Green Ext Time (p_c), s		6.1				4.5		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		27.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	534	1217	285	88	581	217	266	326	8	8	280	422
Future Volume (veh/h)	534	1217	285	88	581	217	266	326	8	8	280	422
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	574	1309	306	95	625	233	286	351	9	9	301	454
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	873	1457	619	117	773	328	311	1412	36	19	842	747
Arrive On Green	0.25	0.39	0.39	0.07	0.21	0.21	0.18	0.39	0.39	0.01	0.23	0.23
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	1774	3617	93	1774	3725	1583
Grp Volume(v), veh/h	574	1309	306	95	625	233	286	180	180	9	301	454
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1846	1774	1863	1583
Q Serve(g_s), s	18.8	42.6	18.8	6.8	20.6	15.9	20.5	8.4	8.5	0.7	8.8	10.7
Cycle Q Clear(g_c), s	18.8	42.6	18.8	6.8	20.6	15.9	20.5	8.4	8.5	0.7	8.8	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	873	1457	619	117	773	328	311	727	721	19	842	747
V/C Ratio(X)	0.66	0.90	0.49	0.81	0.81	0.71	0.92	0.25	0.25	0.47	0.36	0.61
Avail Cap(c_a), veh/h	873	1559	662	129	1016	432	348	906	898	76	1241	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	36.9	29.7	59.5	48.7	38.8	52.4	26.6	26.6	63.5	42.1	9.1
Incr Delay (d2), s/veh	1.8	7.1	0.6	28.6	3.8	3.6	26.2	0.7	0.7	17.3	1.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	23.3	8.3	4.3	11.0	7.3	12.3	4.5	4.5	0.4	4.6	5.9
LnGrp Delay(d),s/veh	45.6	44.0	30.3	88.1	52.5	42.4	78.6	27.2	27.3	80.8	43.1	12.2
LnGrp LOS	D	D	C	F	D	D	E	C	C	F	D	B
Approach Vol, veh/h		2189			953			646			764	
Approach Delay, s/veh		42.5			53.6			50.0			25.2	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	56.2	12.5	55.0	26.6	35.0	36.3	31.3
Change Period (Y+Rc), s	4.0	5.8	4.0	4.5	4.0	5.8	4.5	* 4.5
Max Green Setting (Gmax), s	5.5	62.8	9.4	54.0	25.3	43.0	28.2	* 35
Max Q Clear Time (g_c+I1), s	2.7	10.5	8.8	44.6	22.5	12.7	20.8	22.6
Green Ext Time (p_c), s	0.0	21.5	0.0	5.9	0.1	16.5	5.8	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	43.0
HCM 2010 LOS	D

Notes

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1 & 2) (2028 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	185	5.0	0.198	5.8	LOS A	0.8	19.9	0.45	0.36	23.9
12	R2	185	5.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		371	5.0	0.198	2.9	LOS A	0.8	19.9	0.23	0.18	24.5
East: Keller Road											
3	L2	213	5.0	0.245	5.4	LOS A	1.1	28.5	0.36	0.24	23.9
8	T1	536	3.0	0.245	0.7	LOS A	1.1	28.5	0.04	0.03	24.5
Approach		748	3.6	0.245	2.0	LOS A	1.1	28.5	0.13	0.09	24.3
West: Keller Road											
4	T1	343	3.0	0.305	6.1	LOS A	1.5	37.6	0.41	0.29	22.5
14	R2	288	5.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		632	3.9	0.305	3.3	LOS A	1.5	37.6	0.22	0.16	24.0
All Vehicles		1751	4.0	0.305	2.7	LOS A	1.5	37.6	0.18	0.13	24.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1 & 2) (2028 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	309	5.0	0.197	6.7	LOS A	0.7	18.6	0.52	0.49	13.4
2	T1	1	5.0	0.197	6.4	LOS A	0.7	18.3	0.51	0.48	22.6
12	R2	87	5.0	0.055	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		398	5.0	0.197	5.2	LOS A	0.7	18.6	0.41	0.38	15.5
East: Keller Road											
8	T1	439	3.0	0.244	6.5	LOS A	1.0	25.4	0.51	0.46	22.5
18	R2	218	5.0	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		657	3.7	0.244	4.3	LOS A	1.0	25.4	0.34	0.31	23.5
West: Keller Road											
7	L2	121	5.0	0.192	4.3	LOS A	0.0	0.0	0.00	0.00	29.5
4	T1	407	3.0	0.192	4.2	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		528	3.5	0.192	4.2	LOS A	0.0	0.0	0.00	0.00	25.7
All Vehicles		1583	3.9	0.244	4.5	LOS A	1.0	25.4	0.24	0.22	21.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2028 Plus Ambient Growth Plus Cumulative Projects Plus Project (Phase 1 & 2) (2028 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	299	5.0	0.180	6.2	LOS A	0.7	16.9	0.49	0.44	13.4
2	T1	1	5.0	0.180	5.9	LOS A	0.6	16.7	0.48	0.42	22.7
12	R2	87	5.0	0.055	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		387	5.0	0.180	4.8	LOS A	0.7	16.9	0.38	0.34	15.6
East: Keller Road											
8	T1	428	3.0	0.235	6.3	LOS A	1.0	24.4	0.50	0.44	22.5
18	R2	218	5.0	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		646	3.7	0.235	4.2	LOS A	1.0	24.4	0.33	0.29	23.5
West: Keller Road											
7	L2	121	5.0	0.168	4.0	LOS A	0.0	0.0	0.00	0.00	29.3
4	T1	339	3.0	0.168	4.0	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		460	3.5	0.168	4.0	LOS A	0.0	0.0	0.00	0.00	25.8
All Vehicles		1494	4.0	0.235	4.3	LOS A	1.0	24.4	0.24	0.21	21.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: MICHAEL BAKER INTERNATIONAL | Processed: Monday, October 30, 2017 10:33:13 AM
Project: H:\PDATA\162805\Traffic\Sidra\4_Murrieta_Hills_2028_w-A+C+Proj_PM.sip7

APPENDIX C-11
Intersection LOS Analysis
Mitigated Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	652	3	0	801	21	0	0	4	40	8	28
Future Volume (veh/h)	0	652	3	0	801	21	0	0	4	40	8	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	0	701	3	0	861	23	0	0	4	43	9	30
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	1613	7	2	1572	42	0	0	317	363	77	258
Arrive On Green	0.00	0.45	0.45	0.00	0.45	0.45	0.00	0.00	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	3614	15	1774	3522	94	0	0	1583	1774	378	1262
Grp Volume(v), veh/h	0	343	361	0	433	451	0	0	4	43	0	39
Grp Sat Flow(s),veh/h/ln	1774	1770	1860	1774	1770	1846	0	0	1583	1774	0	1640
Q Serve(g_s), s	0.0	12.1	12.1	0.0	16.2	16.2	0.0	0.0	0.2	1.8	0.0	1.8
Cycle Q Clear(g_c), s	0.0	12.1	12.1	0.0	16.2	16.2	0.0	0.0	0.2	1.8	0.0	1.8
Prop In Lane	1.00		0.01	1.00		0.05	0.00		1.00	1.00		0.77
Lane Grp Cap(c), veh/h	2	790	830	2	790	824	0	0	317	363	0	335
V/C Ratio(X)	0.00	0.43	0.43	0.00	0.55	0.55	0.00	0.00	0.01	0.12	0.00	0.12
Avail Cap(c_a), veh/h	98	790	830	98	790	824	0	0	317	363	0	335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.2	17.2	0.0	18.4	18.4	0.0	0.0	29.0	29.4	0.0	29.3
Incr Delay (d2), s/veh	0.0	1.7	1.7	0.0	2.7	2.6	0.0	0.0	0.1	0.7	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.2	6.5	0.0	8.4	8.7	0.0	0.0	0.1	0.9	0.0	0.9
LnGrp Delay(d),s/veh	0.0	18.9	18.9	0.0	21.1	21.0	0.0	0.0	29.1	30.0	0.0	30.0
LnGrp LOS		B	B		C	C			C	C		C
Approach Vol, veh/h		704			884			4			82	
Approach Delay, s/veh		18.9			21.0			29.1			30.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	44.9		23.0	0.0	44.9		22.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.0	40.4		18.5	5.0	40.4		18.1
Max Q Clear Time (g_c+I1), s	0.0	14.1		3.8	0.0	18.2		2.2
Green Ext Time (p_c), s	0.0	10.5		0.2	0.0	9.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	113	13	109	54	262	4	41	251	157	19	15
Future Volume (veh/h)	36	113	13	109	54	262	4	41	251	157	19	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	46	143	16	138	68	332	5	52	318	199	24	19
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	439	49	257	82	400	403	423	478	295	160	127
Arrive On Green	0.04	0.27	0.27	0.07	0.30	0.30	0.23	0.23	0.23	0.17	0.17	0.17
Sat Flow, veh/h	1774	1646	184	3442	276	1349	1774	1863	1583	1774	964	764
Grp Volume(v), veh/h	46	0	159	138	0	400	5	52	318	199	0	43
Grp Sat Flow(s),veh/h/ln	1774	0	1830	1721	0	1625	1774	1863	1583	1774	0	1728
Q Serve(g_s), s	1.5	0.0	4.2	2.3	0.0	13.8	0.1	1.3	10.6	6.3	0.0	1.3
Cycle Q Clear(g_c), s	1.5	0.0	4.2	2.3	0.0	13.8	0.1	1.3	10.6	6.3	0.0	1.3
Prop In Lane	1.00		0.10	1.00		0.83	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	79	0	488	257	0	482	403	423	478	295	0	287
V/C Ratio(X)	0.58	0.00	0.33	0.54	0.00	0.83	0.01	0.12	0.67	0.68	0.00	0.15
Avail Cap(c_a), veh/h	707	0	1033	1086	0	782	707	742	749	795	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	17.7	26.9	0.0	19.8	18.0	18.5	18.4	23.6	0.0	21.5
Incr Delay (d2), s/veh	6.6	0.0	0.4	1.7	0.0	4.0	0.0	0.1	1.6	2.7	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	2.2	1.2	0.0	6.7	0.1	0.7	4.8	3.3	0.0	0.6
LnGrp Delay(d),s/veh	34.8	0.0	18.1	28.6	0.0	23.8	18.1	18.6	20.0	26.3	0.0	21.7
LnGrp LOS	C		B	C		C	B	B	B	C		C
Approach Vol, veh/h		205			538			375			242	
Approach Delay, s/veh		21.9			25.0			19.8			25.5	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	20.0		14.0	6.7	21.9		17.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	19.0	34.0		27.0	24.0	29.0		24.0
Max Q Clear Time (g_c+I1), s	4.3	6.2		8.3	3.5	15.8		12.6
Green Ext Time (p_c), s	0.3	0.9		0.7	0.9	2.0		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1038	21	4	826	25	0	0	0	52	8	27
Future Volume (veh/h)	2	1038	21	4	826	25	0	0	0	52	8	27
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	2	1081	22	4	860	26	0	0	0	54	8	28
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	5	2041	42	10	2027	61	0	4	0	201	41	144
Arrive On Green	0.00	0.58	0.58	0.01	0.58	0.58	0.00	0.00	0.00	0.11	0.11	0.11
Sat Flow, veh/h	1774	3547	72	1774	3508	106	0	1863	0	1774	364	1274
Grp Volume(v), veh/h	2	539	564	4	434	452	0	0	0	54	0	36
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1844	0	1863	0	1774	0	1638
Q Serve(g_s), s	0.0	8.2	8.2	0.1	6.0	6.0	0.0	0.0	0.0	1.2	0.0	0.9
Cycle Q Clear(g_c), s	0.0	8.2	8.2	0.1	6.0	6.0	0.0	0.0	0.0	1.2	0.0	0.9
Prop In Lane	1.00		0.04	1.00		0.06	0.00		0.00	1.00		0.78
Lane Grp Cap(c), veh/h	5	1018	1064	10	1023	1066	0	4	0	201	0	186
V/C Ratio(X)	0.41	0.53	0.53	0.42	0.42	0.42	0.00	0.00	0.00	0.27	0.00	0.19
Avail Cap(c_a), veh/h	205	1628	1702	205	1628	1697	0	760	0	736	0	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.0	5.7	5.7	21.9	5.2	5.2	0.0	0.0	0.0	17.9	0.0	17.7
Incr Delay (d2), s/veh	47.3	0.4	0.4	26.2	0.3	0.3	0.0	0.0	0.0	0.7	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.0	4.2	0.1	3.0	3.1	0.0	0.0	0.0	0.6	0.0	0.4
LnGrp Delay(d),s/veh	69.2	6.2	6.1	48.1	5.5	5.5	0.0	0.0	0.0	18.6	0.0	18.2
LnGrp LOS	E	A	A	D	A	A				B		B
Approach Vol, veh/h		1105			890			0			90	
Approach Delay, s/veh		6.3			5.7			0.0			18.5	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.7	29.9		9.5	4.6	30.0		0.0
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	40.6		18.3	5.1	40.6		18.0
Max Q Clear Time (g_c+I1), s	2.1	10.2		3.2	2.0	8.0		0.0
Green Ext Time (p_c), s	0.0	15.2		0.2	0.0	15.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	6.5
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	83	8	343	129	213	14	50	276	241	70	42
Future Volume (veh/h)	36	83	8	343	129	213	14	50	276	241	70	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	43	99	10	408	154	254	17	60	329	287	83	50
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	297	30	562	190	314	381	400	599	358	220	132
Arrive On Green	0.04	0.18	0.18	0.16	0.30	0.30	0.21	0.21	0.21	0.20	0.20	0.20
Sat Flow, veh/h	1774	1665	168	3442	633	1045	1774	1863	1583	1774	1090	657
Grp Volume(v), veh/h	43	0	109	408	0	408	17	60	329	287	0	133
Grp Sat Flow(s),veh/h/ln	1774	0	1833	1721	0	1678	1774	1863	1583	1774	0	1747
Q Serve(g_s), s	1.6	0.0	3.4	7.4	0.0	14.9	0.5	1.7	10.8	10.2	0.0	4.3
Cycle Q Clear(g_c), s	1.6	0.0	3.4	7.4	0.0	14.9	0.5	1.7	10.8	10.2	0.0	4.3
Prop In Lane	1.00		0.09	1.00		0.62	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	73	0	327	562	0	504	381	400	599	358	0	352
V/C Ratio(X)	0.59	0.00	0.33	0.73	0.00	0.81	0.04	0.15	0.55	0.80	0.00	0.38
Avail Cap(c_a), veh/h	456	0	638	1563	0	914	800	840	973	569	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	23.7	26.2	0.0	21.4	20.6	21.1	16.1	25.1	0.0	22.8
Incr Delay (d2), s/veh	7.3	0.0	0.6	1.8	0.0	3.2	0.0	0.2	0.8	4.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.8	3.7	0.0	7.2	0.3	0.9	4.8	5.4	0.0	2.2
LnGrp Delay(d),s/veh	38.4	0.0	24.3	28.0	0.0	24.5	20.6	21.2	16.9	29.5	0.0	23.5
LnGrp LOS	D		C	C		C	C	C	B	C		C
Approach Vol, veh/h		152			816			406			420	
Approach Delay, s/veh		28.3			26.3			17.7			27.6	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.8	15.8		17.3	6.7	23.8		18.2
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	30.0	23.0		21.2	17.0	36.0		29.8
Max Q Clear Time (g_c+I1), s	9.4	5.4		12.2	3.6	16.9		12.8
Green Ext Time (p_c), s	1.4	2.9		1.1	0.0	3.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C

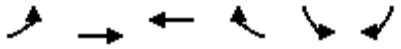
Notes

APPENDIX C-12
Intersection LOS Analysis
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	890	7	6	1045	26	6	6	8	40	8	28
Future Volume (veh/h)	17	890	7	6	1045	26	6	6	8	40	8	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	18	957	8	6	1124	28	6	6	9	43	9	30
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	1563	13	152	1534	38	42	42	63	152	32	108
Arrive On Green	0.09	0.43	0.43	0.09	0.43	0.43	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1774	3597	30	1774	3529	88	488	488	732	1774	378	1262
Grp Volume(v), veh/h	18	471	494	6	564	588	21	0	0	43	0	39
Grp Sat Flow(s),veh/h/ln	1774	1770	1857	1774	1770	1847	1709	0	0	1774	0	1640
Q Serve(g_s), s	0.5	12.0	12.0	0.2	15.4	15.4	0.7	0.0	0.0	1.3	0.0	1.3
Cycle Q Clear(g_c), s	0.5	12.0	12.0	0.2	15.4	15.4	0.7	0.0	0.0	1.3	0.0	1.3
Prop In Lane	1.00		0.02	1.00		0.05	0.29		0.43	1.00		0.77
Lane Grp Cap(c), veh/h	152	769	807	152	769	803	146	0	0	152	0	141
V/C Ratio(X)	0.12	0.61	0.61	0.04	0.73	0.73	0.14	0.00	0.00	0.28	0.00	0.28
Avail Cap(c_a), veh/h	547	849	891	547	849	886	527	0	0	547	0	506
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	12.7	12.7	24.5	13.7	13.7	24.7	0.0	0.0	25.0	0.0	25.0
Incr Delay (d2), s/veh	0.3	1.1	1.1	0.1	3.0	2.8	0.4	0.0	0.0	1.0	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.0	6.3	0.1	8.0	8.3	0.3	0.0	0.0	0.7	0.0	0.6
LnGrp Delay(d),s/veh	25.0	13.8	13.8	24.6	16.7	16.5	25.1	0.0	0.0	26.0	0.0	26.0
LnGrp LOS	C	B	B	C	B	B	C			C		C
Approach Vol, veh/h		983			1158			21			82	
Approach Delay, s/veh		14.0			16.6			25.1			26.0	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	29.9		9.5	9.5	29.9		9.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	18.0	28.0		18.0	18.0	28.0		18.0
Max Q Clear Time (g_c+I1), s	2.2	14.0		3.3	2.5	17.4		2.7
Green Ext Time (p_c), s	0.0	9.9		0.2	0.0	7.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	338	623	690	133	133	376
Future Volume (veh/h)	338	623	690	133	133	376
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	363	670	742	143	143	404
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	369	1163	681	579	487	435
Arrive On Green	0.21	0.62	0.37	0.37	0.27	0.27
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	363	670	742	143	143	404
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	18.1	18.8	32.5	5.6	5.7	22.1
Cycle Q Clear(g_c), s	18.1	18.8	32.5	5.6	5.7	22.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	369	1163	681	579	487	435
V/C Ratio(X)	0.98	0.58	1.09	0.25	0.29	0.93
Avail Cap(c_a), veh/h	369	1163	681	579	509	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	9.8	28.2	19.7	25.4	31.4
Incr Delay (d2), s/veh	42.3	0.7	61.5	0.2	0.3	25.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.2	9.7	28.3	2.5	2.8	12.7
LnGrp Delay(d),s/veh	77.3	10.5	89.7	19.9	25.8	56.5
LnGrp LOS	E	B	F	B	C	E
Approach Vol, veh/h		1033	885		547	
Approach Delay, s/veh		34.0	78.4		48.5	
Approach LOS		C	E		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		60.0			23.0	37.0		28.9
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		55.5			18.5	32.5		25.5
Max Q Clear Time (g_c+I1), s		20.8			20.1	34.5		24.1
Green Ext Time (p_c), s		12.2			0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	53.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	680	144	288	627	382	137	163	90	521	77	102
Future Volume (veh/h)	191	680	144	288	627	382	137	163	90	521	77	102
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	227	810	171	343	746	455	163	194	107	620	92	121
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	1224	256	399	916	685	190	450	383	676	237	312
Arrive On Green	0.14	0.27	0.27	0.12	0.25	0.25	0.11	0.24	0.24	0.19	0.32	0.32
Sat Flow, veh/h	1774	4484	939	3442	3725	2787	1774	1863	1583	3548	731	962
Grp Volume(v), veh/h	227	672	309	343	746	455	163	194	107	620	0	213
Grp Sat Flow(s),veh/h/ln	1774	1863	1697	1721	1863	1393	1774	1863	1583	1774	0	1693
Q Serve(g_s), s	15.1	19.2	19.4	11.7	22.7	17.7	10.8	10.6	6.6	20.6	0.0	11.7
Cycle Q Clear(g_c), s	15.1	19.2	19.4	11.7	22.7	17.7	10.8	10.6	6.6	20.6	0.0	11.7
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	253	1017	463	399	916	685	190	450	383	676	0	549
V/C Ratio(X)	0.90	0.66	0.67	0.86	0.81	0.66	0.86	0.43	0.28	0.92	0.00	0.39
Avail Cap(c_a), veh/h	287	1017	463	488	916	685	265	450	383	695	0	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.6	38.7	38.8	52.1	42.7	40.8	52.7	38.5	37.0	47.7	0.0	31.3
Incr Delay (d2), s/veh	24.7	3.4	7.4	8.9	6.4	4.0	13.8	3.0	1.8	16.9	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	10.4	10.1	6.1	12.4	7.2	6.0	5.8	3.1	11.7	0.0	5.8
LnGrp Delay(d),s/veh	75.3	42.1	46.2	61.0	49.1	44.8	66.5	41.5	38.8	64.6	0.0	33.4
LnGrp LOS	E	D	D	E	D	D	E	D	D	E		C
Approach Vol, veh/h		1208			1544			464			833	
Approach Delay, s/veh		49.4			50.4			49.7			56.6	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.5	38.9	17.4	45.1	21.7	35.7	27.3	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	13.9	30.6	17.9	32.9	19.4	28.2	23.5	* 29
Max Q Clear Time (g_c+I1), s	11.7	21.4	12.8	13.7	17.1	24.7	22.6	12.6
Green Ext Time (p_c), s	0.2	8.3	0.1	3.3	0.0	3.3	0.3	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	841	450	0	1111	398	0	0	0	331	0	267
Future Volume (veh/h)	0	841	450	0	1111	398	0	0	0	331	0	267
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	914	489	0	1208	433				360	0	290
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	1888	844	0	1888	844				1300	0	1053
Arrive On Green	0.00	0.53	0.53	0.00	0.53	0.53				0.38	0.00	0.38
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	914	489	0	1208	433				360	0	290
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	14.6	18.8	0.0	21.8	15.8				6.5	0.0	6.5
Cycle Q Clear(g_c), s	0.0	14.6	18.8	0.0	21.8	15.8				6.5	0.0	6.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1888	844	0	1888	844				1300	0	1053
V/C Ratio(X)	0.00	0.48	0.58	0.00	0.64	0.51				0.28	0.00	0.28
Avail Cap(c_a), veh/h	0	1888	844	0	1888	844				1300	0	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.63	0.00	0.77	0.77				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.2	14.2	0.0	14.9	13.5				19.5	0.0	19.4
Incr Delay (d2), s/veh	0.0	0.1	0.6	0.0	1.3	1.7				0.5	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.1	8.3	0.0	10.9	7.3				3.2	0.0	2.6
LnGrp Delay(d),s/veh	0.0	13.3	14.8	0.0	16.2	15.2				20.0	0.0	20.1
LnGrp LOS		B	B		B	B				B		C
Approach Vol, veh/h		1403			1641						650	
Approach Delay, s/veh		13.8			15.9						20.0	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		38.0		52.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		48.0		34.0		48.0		
Max Q Clear Time (g_c+I1), s		20.8		8.5		23.8		
Green Ext Time (p_c), s		21.1		2.5		19.2		

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	995	0	0	1096	559	0	0	428	0	0	413
Future Volume (veh/h)	177	995	0	0	1096	559	0	0	428	0	0	413
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	186	1047	0	0	1154	588	0	0	451	0	0	435
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	222	3382	0	0	2781	1244	0	0	0	0	0	0
Arrive On Green	0.13	0.96	0.00	0.00	0.79	0.79	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	186	1047	0	0	1154	588		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	9.2	1.7	0.0	0.0	9.3	11.4						
Cycle Q Clear(g_c), s	9.2	1.7	0.0	0.0	9.3	11.4						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	222	3382	0	0	2781	1244						
V/C Ratio(X)	0.84	0.31	0.00	0.00	0.41	0.47						
Avail Cap(c_a), veh/h	296	3382	0	0	2781	1244						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.91	0.91	0.00	0.00	0.53	0.53						
Uniform Delay (d), s/veh	38.5	0.1	0.0	0.0	3.1	3.3						
Incr Delay (d2), s/veh	13.4	0.2	0.0	0.0	0.2	0.7						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	5.3	0.8	0.0	0.0	4.6	5.1						
LnGrp Delay(d),s/veh	51.8	0.3	0.0	0.0	3.3	4.0						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		1233			1742							
Approach Delay, s/veh		8.1			3.5							
Approach LOS		A			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			15.3	74.7		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		59.0			15.0	40.0		
Max Q Clear Time (g_c+I1), s		3.7			11.2	13.4		
Green Ext Time (p_c), s		32.7			0.2	20.0		

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	269	880	274	131	1031	74	390	367	70	152	364	234
Future Volume (veh/h)	269	880	274	131	1031	74	390	367	70	152	364	234
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	283	926	288	138	1085	78	411	386	74	160	383	246
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	1176	526	191	1406	101	466	600	510	186	543	462
Arrive On Green	0.10	0.33	0.33	0.06	0.29	0.29	0.14	0.32	0.32	0.10	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4844	348	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	283	926	288	138	759	404	411	386	74	160	383	246
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1801	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	9.7	28.4	17.8	4.7	24.6	24.6	14.1	21.3	4.0	10.6	22.0	15.6
Cycle Q Clear(g_c), s	9.7	28.4	17.8	4.7	24.6	24.6	14.1	21.3	4.0	10.6	22.0	15.6
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	337	1176	526	191	984	523	466	600	510	186	543	462
V/C Ratio(X)	0.84	0.79	0.55	0.72	0.77	0.77	0.88	0.64	0.15	0.86	0.70	0.53
Avail Cap(c_a), veh/h	373	1176	526	212	984	523	511	600	510	216	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	36.2	32.7	55.7	39.0	39.0	50.9	34.8	28.9	52.8	37.9	35.6
Incr Delay (d2), s/veh	11.6	4.6	3.5	8.1	5.8	10.6	14.6	5.2	0.6	22.7	7.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	14.6	8.3	2.5	12.3	13.8	7.6	11.8	1.8	6.4	12.4	7.4
LnGrp Delay(d),s/veh	64.8	40.8	36.2	63.9	44.8	49.6	65.5	40.0	29.5	75.6	45.4	40.0
LnGrp LOS	E	D	D	E	D	D	E	D	C	E	D	D
Approach Vol, veh/h		1497			1301			871			789	
Approach Delay, s/veh		44.5			48.3			51.2			49.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	46.4	20.8	41.5	16.3	41.3	17.2	45.1
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.4	* 38	17.8	* 35	13.0	32.3	14.6	37.9
Max Q Clear Time (g_c+I1), s	6.7	30.4	16.1	24.0	11.7	26.6	12.6	23.3
Green Ext Time (p_c), s	0.0	6.5	0.2	2.5	0.0	4.9	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	47.8
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	155	46	108	47	176	23	133	148	112	83	33
Future Volume (veh/h)	20	155	46	108	47	176	23	133	148	112	83	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	25	196	58	137	59	223	29	168	187	142	105	42
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	275	81	292	78	295	353	371	449	353	252	101
Arrive On Green	0.06	0.20	0.20	0.08	0.23	0.23	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	1382	409	3442	342	1293	1774	1863	1583	1774	1267	507
Grp Volume(v), veh/h	25	0	254	137	0	282	29	168	187	142	0	147
Grp Sat Flow(s),veh/h/ln	1774	0	1791	1721	0	1635	1774	1863	1583	1774	0	1773
Q Serve(g_s), s	0.7	0.0	6.7	1.9	0.0	8.1	0.7	4.0	4.8	3.5	0.0	3.6
Cycle Q Clear(g_c), s	0.7	0.0	6.7	1.9	0.0	8.1	0.7	4.0	4.8	3.5	0.0	3.6
Prop In Lane	1.00		0.23	1.00		0.79	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	99	0	356	292	0	373	353	371	449	353	0	353
V/C Ratio(X)	0.25	0.00	0.71	0.47	0.00	0.76	0.08	0.45	0.42	0.40	0.00	0.42
Avail Cap(c_a), veh/h	194	0	794	527	0	797	777	815	827	777	0	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	18.8	21.9	0.0	18.1	16.4	17.7	14.6	17.5	0.0	17.6
Incr Delay (d2), s/veh	1.3	0.0	2.7	1.2	0.0	3.2	0.1	0.9	0.6	0.7	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	3.5	0.9	0.0	3.9	0.3	2.1	2.2	1.8	0.0	1.8
LnGrp Delay(d),s/veh	24.1	0.0	21.4	23.1	0.0	21.3	16.5	18.6	15.2	18.3	0.0	18.4
LnGrp LOS	C		C	C		C	B	B	B	B		B
Approach Vol, veh/h		279			419			384			289	
Approach Delay, s/veh		21.7			21.9			16.8			18.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	14.0		14.0	6.8	15.5		14.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.3	22.3		22.0	5.5	24.5		22.0
Max Q Clear Time (g_c+I1), s	2.9	8.7		5.6	2.7	10.1		6.8
Green Ext Time (p_c), s	0.1	1.2		1.1	0.4	1.4		1.4

Intersection Summary		
HCM 2010 Ctrl Delay		19.7
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	403	159	13	459	53	53	176	16	28	201	89
Future Volume (veh/h)	158	403	159	13	459	53	53	176	16	28	201	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	184	469	185	15	534	62	62	205	19	33	234	103
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	1489	463	52	896	103	652	1020	95	717	1131	962
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1588	5085	1583	35	3062	350	1039	1680	156	1152	1863	1583
Grp Volume(v), veh/h	184	469	185	322	0	289	62	0	224	33	234	103
Grp Sat Flow(s),veh/h/ln	794	1695	1583	1814	0	1633	1039	0	1835	1152	1863	1583
Q Serve(g_s), s	10.1	6.5	8.4	0.0	0.0	13.7	2.6	0.0	4.9	1.2	5.1	2.5
Cycle Q Clear(g_c), s	23.8	6.5	8.4	13.3	0.0	13.7	7.6	0.0	4.9	6.1	5.1	2.5
Prop In Lane	1.00		1.00	0.05		0.21	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	383	1489	463	573	0	478	652	0	1115	717	1131	962
V/C Ratio(X)	0.48	0.32	0.40	0.56	0.00	0.60	0.10	0.00	0.20	0.05	0.21	0.11
Avail Cap(c_a), veh/h	386	1497	466	576	0	481	652	0	1115	717	1131	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	24.8	25.5	27.2	0.0	27.4	9.7	0.0	7.9	9.3	7.9	7.4
Incr Delay (d2), s/veh	0.9	0.1	0.6	1.2	0.0	2.1	0.3	0.0	0.4	0.1	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.1	3.7	7.0	0.0	6.5	0.8	0.0	2.6	0.4	2.7	1.1
LnGrp Delay(d),s/veh	38.5	24.9	26.0	28.4	0.0	29.5	9.9	0.0	8.3	9.4	8.4	7.6
LnGrp LOS	D	C	C	C		C	A		A	A	A	A
Approach Vol, veh/h		838			611			286			370	
Approach Delay, s/veh		28.2			28.9			8.7			8.2	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		59.2		30.8		59.2		30.8
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		54.5		26.5		54.5		26.5
Max Q Clear Time (g_c+I1), s		9.6		25.8		8.1		15.7
Green Ext Time (p_c), s		3.7		0.5		3.7		6.1

Intersection Summary		
HCM 2010 Ctrl Delay		22.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	333	30	17	21	62	12	27	58	7	9	186	289
Future Volume (veh/h)	333	30	17	21	62	12	27	58	7	9	186	289
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	370	33	19	23	69	13	30	64	8	10	207	321
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	430	734	623	48	631	282	59	893	110	23	923	413
Arrive On Green	0.24	0.39	0.39	0.03	0.18	0.18	0.03	0.28	0.28	0.01	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3174	390	1774	3539	1583
Grp Volume(v), veh/h	370	33	19	23	69	13	30	35	37	10	207	321
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1794	1774	1770	1583
Q Serve(g_s), s	11.2	0.6	0.4	0.7	0.9	0.4	0.9	0.8	0.8	0.3	2.6	10.5
Cycle Q Clear(g_c), s	11.2	0.6	0.4	0.7	0.9	0.4	0.9	0.8	0.8	0.3	2.6	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	430	734	623	48	631	282	59	498	505	23	923	413
V/C Ratio(X)	0.86	0.04	0.03	0.48	0.11	0.05	0.51	0.07	0.07	0.44	0.22	0.78
Avail Cap(c_a), veh/h	538	1129	960	253	1577	706	253	789	800	221	1514	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	10.5	10.4	26.9	19.3	19.1	26.7	14.8	14.8	27.5	16.3	19.2
Incr Delay (d2), s/veh	11.2	0.0	0.0	7.4	0.1	0.1	6.6	0.1	0.1	12.7	0.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.3	0.2	0.4	0.4	0.2	0.6	0.4	0.4	0.2	1.3	5.0
LnGrp Delay(d),s/veh	31.5	10.5	10.5	34.3	19.4	19.2	33.3	14.8	14.9	40.1	16.4	22.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	D	B	C
Approach Vol, veh/h		422			105			102			538	
Approach Delay, s/veh		29.0			22.6			20.3			20.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	26.1	5.9	18.6	17.6	14.0	4.7	19.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	34.0	8.0	24.0	17.0	25.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	2.7	2.6	2.9	12.5	13.2	2.9	2.3	2.8
Green Ext Time (p_c), s	0.0	0.6	0.0	2.1	0.4	0.6	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	224	37	22	222	135	6	164	6	95	288	28
Future Volume (veh/h)	50	224	37	22	222	135	6	164	6	95	288	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	61	273	45	27	271	165	7	200	7	116	351	34
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	656	107	44	417	246	15	1729	60	151	1903	183
Arrive On Green	0.04	0.22	0.22	0.02	0.19	0.19	0.01	0.50	0.50	0.09	0.58	0.58
Sat Flow, veh/h	1774	3048	496	1774	2143	1266	1774	3489	122	1774	3263	314
Grp Volume(v), veh/h	61	157	161	27	222	214	7	101	106	116	189	196
Grp Sat Flow(s),veh/h/ln	1774	1770	1775	1774	1770	1639	1774	1770	1841	1774	1770	1807
Q Serve(g_s), s	4.1	9.2	9.4	1.8	13.9	14.5	0.5	3.7	3.7	7.7	6.0	6.1
Cycle Q Clear(g_c), s	4.1	9.2	9.4	1.8	13.9	14.5	0.5	3.7	3.7	7.7	6.0	6.1
Prop In Lane	1.00		0.28	1.00		0.77	1.00		0.07	1.00		0.17
Lane Grp Cap(c), veh/h	78	381	382	44	345	319	15	877	913	151	1032	1054
V/C Ratio(X)	0.78	0.41	0.42	0.62	0.65	0.67	0.46	0.12	0.12	0.77	0.18	0.19
Avail Cap(c_a), veh/h	183	569	571	111	495	459	81	877	913	387	1032	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	40.6	40.7	58.0	44.5	44.7	59.2	16.2	16.2	53.7	11.7	11.7
Incr Delay (d2), s/veh	5.4	1.3	1.3	10.1	3.1	3.7	19.6	0.3	0.3	15.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	4.6	4.7	1.0	7.1	6.9	0.3	1.9	1.9	4.4	2.9	3.1
LnGrp Delay(d),s/veh	62.1	41.9	42.0	68.1	47.6	48.4	78.7	16.5	16.5	69.3	11.9	11.9
LnGrp LOS	E	D	D	E	D	D	E	B	B	E	B	B
Approach Vol, veh/h		379			463			214			501	
Approach Delay, s/veh		45.2			49.2			18.5			25.2	
Approach LOS		D			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	65.3	7.5	31.2	5.5	75.8	9.9	28.8
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	26.3	* 28	7.5	38.6	5.5	48.2	12.4	33.6
Max Q Clear Time (g_c+I1), s	10.7	5.7	3.8	11.4	2.5	8.1	6.1	16.5
Green Ext Time (p_c), s	0.6	5.4	0.0	8.6	0.0	6.4	0.0	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.3
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	273	10	15	11	312	143	9	11	362	18
Future Volume (veh/h)	11	13	273	10	15	11	312	143	9	11	362	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	16	333	12	18	13	380	174	11	13	441	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	469	398	27	466	396	442	1479	93	29	702	35
Arrive On Green	0.02	0.25	0.25	0.02	0.25	0.25	0.25	0.44	0.44	0.02	0.20	0.20
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3383	212	1774	3431	171
Grp Volume(v), veh/h	13	16	333	12	18	13	380	90	95	13	227	236
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1825	1774	1770	1833
Q Serve(g_s), s	0.4	0.4	11.4	0.4	0.4	0.4	11.7	1.7	1.8	0.4	6.7	6.7
Cycle Q Clear(g_c), s	0.4	0.4	11.4	0.4	0.4	0.4	11.7	1.7	1.8	0.4	6.7	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.09
Lane Grp Cap(c), veh/h	29	469	398	27	466	396	442	774	798	29	362	375
V/C Ratio(X)	0.45	0.03	0.84	0.45	0.04	0.03	0.86	0.12	0.12	0.45	0.63	0.63
Avail Cap(c_a), veh/h	186	781	664	186	781	664	589	1175	1212	186	773	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	16.2	20.3	27.9	16.2	16.2	20.5	9.5	9.6	27.9	20.8	20.8
Incr Delay (d2), s/veh	10.5	0.0	4.7	11.1	0.0	0.0	9.7	0.1	0.1	10.5	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	5.5	0.3	0.2	0.2	6.9	0.8	0.9	0.3	3.5	3.6
LnGrp Delay(d),s/veh	38.4	16.2	25.0	39.1	16.3	16.2	30.2	9.6	9.6	38.4	22.5	22.5
LnGrp LOS	D	B	C	D	B	B	C	A	A	D	C	C
Approach Vol, veh/h		362			43			565			476	
Approach Delay, s/veh		25.1			22.6			23.5			23.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	29.0	4.9	18.4	18.2	15.7	4.9	18.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	38.0	6.0	24.0	19.0	25.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	2.4	3.8	2.4	13.4	13.7	8.7	2.4	2.4
Green Ext Time (p_c), s	0.0	3.5	0.0	1.0	0.6	3.0	0.0	1.3

Intersection Summary		
HCM 2010 Ctrl Delay		23.7
HCM 2010 LOS		C

Intersection	
Intersection Delay, s/veh	34.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	13	273	10	15	11	312	143	9	11	362	18
Future Vol, veh/h	11	13	273	10	15	11	312	143	9	11	362	18
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	14	300	11	16	12	343	157	10	12	398	20
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	17.9	11.7	54.6	26.7
HCM LOS	C	B	F	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	69%	0%	4%	28%	3%
Vol Thru, %	31%	0%	4%	42%	93%
Vol Right, %	0%	100%	92%	31%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	455	9	297	36	391
LT Vol	312	0	11	10	11
Through Vol	143	0	13	15	362
RT Vol	0	9	273	11	18
Lane Flow Rate	500	10	326	40	430
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.957	0.016	0.578	0.087	0.758
Departure Headway (Hd)	6.892	5.827	6.372	7.883	6.352
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	525	612	565	452	567
Service Time	4.647	3.582	4.428	5.981	4.411
HCM Lane V/C Ratio	0.952	0.016	0.577	0.088	0.758
HCM Control Delay	55.5	8.7	17.9	11.7	26.7
HCM Lane LOS	F	A	C	B	D
HCM 95th-tile Q	12.3	0	3.7	0.3	6.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	15	99	9	14	6	50	363	7	6	357	73
Future Volume (veh/h)	82	15	99	9	14	6	50	363	7	6	357	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	94	17	114	10	16	7	57	417	8	7	410	84
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	206	175	13	20	9	82	2335	45	19	1822	370
Arrive On Green	0.11	0.11	0.11	0.02	0.02	0.02	0.05	0.66	0.66	0.01	0.62	0.62
Sat Flow, veh/h	1774	1863	1583	536	858	375	1774	3552	68	1774	2932	596
Grp Volume(v), veh/h	94	17	114	33	0	0	57	208	217	7	246	248
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1770	0	0	1774	1770	1851	1774	1770	1758
Q Serve(g_s), s	5.2	0.9	7.2	1.9	0.0	0.0	3.3	4.8	4.8	0.4	6.4	6.5
Cycle Q Clear(g_c), s	5.2	0.9	7.2	1.9	0.0	0.0	3.3	4.8	4.8	0.4	6.4	6.5
Prop In Lane	1.00		1.00	0.30		0.21	1.00		0.04	1.00		0.34
Lane Grp Cap(c), veh/h	196	206	175	42	0	0	82	1163	1216	19	1100	1092
V/C Ratio(X)	0.48	0.08	0.65	0.79	0.00	0.00	0.69	0.18	0.18	0.37	0.22	0.23
Avail Cap(c_a), veh/h	460	483	410	310	0	0	176	1163	1216	108	1100	1092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.9	41.9	44.8	51.0	0.0	0.0	49.3	7.0	7.0	51.6	8.7	8.8
Incr Delay (d2), s/veh	8.2	0.8	17.4	27.0	0.0	0.0	3.9	0.3	0.3	4.5	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.5	4.0	1.3	0.0	0.0	1.7	2.4	2.5	0.2	3.3	3.3
LnGrp Delay(d),s/veh	52.1	42.7	62.1	78.0	0.0	0.0	53.2	7.3	7.3	56.1	9.2	9.2
LnGrp LOS	D	D	E	E			D	A	A	E	A	A
Approach Vol, veh/h		225			33			482			501	
Approach Delay, s/veh		56.4			78.0			12.7			9.9	
Approach LOS		E			E			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	74.8		17.4	9.5	71.1		7.1
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.4	32.2		27.2	10.4	28.2		18.4
Max Q Clear Time (g_c+I1), s	2.4	6.8		9.2	5.3	8.5		3.9
Green Ext Time (p_c), s	0.0	13.0		2.4	0.0	11.0		0.1

Intersection Summary		
HCM 2010 Ctrl Delay	21.2	
HCM 2010 LOS	C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1586	229	218	1491	15	115	14	273	15	20	17
Future Volume (veh/h)	16	1586	229	218	1491	15	115	14	273	15	20	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	17	1724	249	237	1621	16	125	15	297	16	22	18
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	1940	824	182	3260	924	149	17	332	67	287	307
Arrive On Green	0.04	0.52	0.52	0.10	0.58	0.58	0.08	0.22	0.22	0.02	0.15	0.15
Sat Flow, veh/h	1774	3725	1583	1774	5588	1583	1774	77	1518	3442	1863	1583
Grp Volume(v), veh/h	17	1724	249	237	1621	16	125	0	312	16	22	18
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1595	1721	1863	1583
Q Serve(g_s), s	1.4	61.9	13.4	15.4	25.5	0.6	10.4	0.0	28.5	0.7	1.5	1.4
Cycle Q Clear(g_c), s	1.4	61.9	13.4	15.4	25.5	0.6	10.4	0.0	28.5	0.7	1.5	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		1.00
Lane Grp Cap(c), veh/h	71	1940	824	182	3260	924	149	0	348	67	287	307
V/C Ratio(X)	0.24	0.89	0.30	1.30	0.50	0.02	0.84	0.00	0.90	0.24	0.08	0.06
Avail Cap(c_a), veh/h	253	1940	824	182	3260	924	241	0	491	285	474	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.8	32.1	20.4	67.3	18.3	13.2	67.7	0.0	56.9	72.4	54.3	49.3
Incr Delay (d2), s/veh	0.6	6.6	0.9	160.6	0.4	0.0	13.1	0.0	14.8	0.7	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	33.4	6.1	15.7	13.2	0.3	5.6	0.0	14.0	0.3	0.8	0.6
LnGrp Delay(d),s/veh	70.4	38.6	21.4	227.9	18.7	13.2	80.8	0.0	71.8	73.1	54.6	49.5
LnGrp LOS	E	D	C	F	B	B	F		E	E	D	D
Approach Vol, veh/h		1990			1874			437			56	
Approach Delay, s/veh		36.7			45.1			74.4			58.2	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	83.9	17.2	28.9	10.6	93.3	7.5	38.6
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	55.2	20.4	38.2	21.4	49.2	12.4	46.2
Max Q Clear Time (g_c+I1), s	17.4	63.9	12.4	3.5	3.4	27.5	2.7	30.5
Green Ext Time (p_c), s	0.0	0.0	0.2	2.9	0.0	21.5	0.0	2.3

Intersection Summary		
HCM 2010 Ctrl Delay		44.4
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	1817	12	11	1336	77	9	2	11	438	2	275
Future Volume (veh/h)	214	1817	12	11	1336	77	9	2	11	438	2	275
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	235	1997	13	12	1468	85	10	2	12	481	2	302
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	2795	870	30	2446	1015	25	21	126	550	2	372
Arrive On Green	0.09	0.55	0.55	0.02	0.48	0.48	0.01	0.09	0.09	0.16	0.24	0.24
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	231	1387	3442	10	1574
Grp Volume(v), veh/h	235	1997	13	12	1468	85	10	0	14	481	0	304
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1618	1721	0	1585
Q Serve(g_s), s	7.4	32.0	0.4	0.7	23.2	2.2	0.6	0.0	0.9	15.0	0.0	19.9
Cycle Q Clear(g_c), s	7.4	32.0	0.4	0.7	23.2	2.2	0.6	0.0	0.9	15.0	0.0	19.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.99
Lane Grp Cap(c), veh/h	294	2795	870	30	2446	1015	25	0	147	550	0	375
V/C Ratio(X)	0.80	0.71	0.01	0.40	0.60	0.08	0.39	0.00	0.10	0.87	0.00	0.81
Avail Cap(c_a), veh/h	319	2795	870	97	2446	1015	160	0	309	716	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.4	18.4	11.2	53.5	20.8	7.5	53.7	0.0	45.9	45.1	0.0	39.7
Incr Delay (d2), s/veh	1.1	0.1	0.0	2.8	0.6	0.1	3.6	0.0	0.3	7.9	0.0	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	15.0	0.2	0.4	10.9	1.0	0.3	0.0	0.4	7.7	0.0	9.6
LnGrp Delay(d),s/veh	50.5	18.5	11.2	56.4	21.4	7.6	57.3	0.0	46.1	53.0	0.0	48.0
LnGrp LOS	D	B	B	E	C	A	E		D	D		D
Approach Vol, veh/h		2245			1565			24			785	
Approach Delay, s/veh		21.8			20.9			50.8			51.1	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	66.3	6.2	31.1	14.0	58.7	22.2	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	40.0	9.9	34.0	10.2	35.8	22.9	21.0
Max Q Clear Time (g_c+I1), s	2.7	34.0	2.6	21.9	9.4	25.2	17.0	2.9
Green Ext Time (p_c), s	0.0	6.0	0.0	1.9	0.0	8.7	0.6	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1660	657	0	1150	0	0	0	0	106	2	386
Future Volume (veh/h)	0	1660	657	0	1150	0	0	0	0	106	2	386
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1886	747	0	1307	0				120	2	439
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2543	792	0	2543	0				718	12	1146
Arrive On Green	0.00	0.50	0.50	0.00	0.50	0.00				0.41	0.41	0.41
Sat Flow, veh/h	0	5253	1583	0	5421	0				1746	29	2787
Grp Volume(v), veh/h	0	1886	747	0	1307	0				122	0	439
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	26.5	40.2	0.0	15.6	0.0				3.9	0.0	9.9
Cycle Q Clear(g_c), s	0.0	26.5	40.2	0.0	15.6	0.0				3.9	0.0	9.9
Prop In Lane	0.00		1.00	0.00		0.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	2543	792	0	2543	0				730	0	1146
V/C Ratio(X)	0.00	0.74	0.94	0.00	0.51	0.00				0.17	0.00	0.38
Avail Cap(c_a), veh/h	0	2543	792	0	2543	0				730	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.62	0.00	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.9	21.3	0.0	15.1	0.0				16.8	0.0	18.5
Incr Delay (d2), s/veh	0.0	0.7	13.9	0.0	0.7	0.0				0.5	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.4	20.5	0.0	7.4	0.0				2.0	0.0	3.9
LnGrp Delay(d),s/veh	0.0	18.6	35.2	0.0	15.9	0.0				17.3	0.0	19.5
LnGrp LOS		B	D		B					B		B
Approach Vol, veh/h		2633			1307						561	
Approach Delay, s/veh		23.3			15.9						19.0	
Approach LOS		C			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		49.0		41.0		49.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		45.0		37.0		45.0		
Max Q Clear Time (g_c+I1), s		42.2		11.9		17.6		
Green Ext Time (p_c), s		2.8		2.6		25.6		

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1023	743	0	1235	129	222	0	553	0	0	0
Future Volume (veh/h)	0	1023	743	0	1235	129	222	0	553	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1346	0	0	1625	0	292	0	728			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2860	891	0	2860	891	599	0	534			
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.34	0.00	0.34			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1346	0	0	1625	0	292	0	728			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	12.6	0.0	0.0	16.4	0.0	10.4	0.0	27.0			
Cycle Q Clear(g_c), s	0.0	12.6	0.0	0.0	16.4	0.0	10.4	0.0	27.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2860	891	0	2860	891	599	0	534			
V/C Ratio(X)	0.00	0.47	0.00	0.00	0.57	0.00	0.49	0.00	1.36			
Avail Cap(c_a), veh/h	0	2860	891	0	2860	891	599	0	534			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.93	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.4	0.0	0.0	11.3	0.0	21.0	0.0	26.5			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.3	0.0	2.8	0.0	174.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	6.0	0.0	0.0	7.6	0.0	5.6	0.0	37.7			
LnGrp Delay(d),s/veh	0.0	10.9	0.0	0.0	11.5	0.0	23.8	0.0	201.4			
LnGrp LOS		B			B		C		F			
Approach Vol, veh/h		1346			1625			1020				
Approach Delay, s/veh		10.9			11.5			150.5				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		49.0				49.0		31.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		23.0				18.0		27.0
Max Q Clear Time (g_c+I1), s		14.6				18.4		29.0
Green Ext Time (p_c), s		7.9				0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	46.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	1011	109	114	616	261	255	147	9	231	120	209
Future Volume (veh/h)	171	1011	109	114	616	261	255	147	9	231	120	209
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	241	1424	154	161	868	368	359	207	13	325	169	294
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	677	1480	662	146	1075	481	346	531	33	334	527	547
Arrive On Green	0.20	0.42	0.42	0.08	0.30	0.30	0.20	0.16	0.16	0.19	0.15	0.15
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3384	211	1774	3539	1583
Grp Volume(v), veh/h	241	1424	154	161	868	368	359	108	112	325	169	294
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1825	1774	1770	1583
Q Serve(g_s), s	7.6	49.0	7.8	10.3	28.3	16.5	24.4	6.8	6.9	22.8	5.3	6.6
Cycle Q Clear(g_c), s	7.6	49.0	7.8	10.3	28.3	16.5	24.4	6.8	6.9	22.8	5.3	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	677	1480	662	146	1075	481	346	278	287	334	527	547
V/C Ratio(X)	0.36	0.96	0.23	1.10	0.81	0.76	1.04	0.39	0.39	0.97	0.32	0.54
Avail Cap(c_a), veh/h	677	1493	668	146	1430	640	346	626	646	334	1223	859
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	35.4	23.4	57.3	40.1	15.5	50.3	47.3	47.3	50.4	47.5	13.0
Incr Delay (d2), s/veh	0.3	15.2	0.2	104.1	2.6	3.9	58.1	3.4	3.3	42.2	1.3	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	27.1	3.4	9.3	14.1	7.7	17.5	3.6	3.8	15.1	2.7	4.6
LnGrp Delay(d),s/veh	43.7	50.6	23.6	161.4	42.7	19.4	108.4	50.6	50.6	92.6	48.8	16.1
LnGrp LOS	D	D	C	F	D	B	F	D	D	F	D	B
Approach Vol, veh/h		1819			1397			579			788	
Approach Delay, s/veh		47.4			50.3			86.4			54.7	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	25.4	14.8	56.7	29.0	24.4	29.1	42.5
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	23.5	44.2	10.3	52.7	24.4	43.2	12.5	50.5
Max Q Clear Time (g_c+I1), s	24.8	8.9	12.3	51.0	26.4	8.6	9.6	30.3
Green Ext Time (p_c), s	0.0	10.1	0.0	1.3	0.0	10.0	2.4	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	54.5
HCM 2010 LOS	D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2031 Plus Ambient Growth Plus Project Buildout (2031 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	77	5.0	0.123	4.8	LOS A	0.5	11.8	0.40	0.29	24.6
12	R2	239	5.0	0.123	0.9	LOS A	0.5	11.8	0.07	0.05	24.9
Approach		316	5.0	0.123	1.8	LOS A	0.5	11.8	0.15	0.11	24.8
East: Keller Road											
3	L2	95	5.0	0.106	3.7	LOS A	0.4	11.0	0.19	0.08	24.7
8	T1	241	3.0	0.106	0.6	LOS A	0.4	11.0	0.03	0.01	24.5
Approach		336	3.6	0.106	1.5	LOS A	0.4	11.0	0.08	0.03	24.5
West: Keller Road											
4	T1	302	3.0	0.240	5.0	LOS A	1.1	28.9	0.25	0.13	22.9
14	R2	100	5.0	0.063	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		402	3.5	0.240	3.7	LOS A	1.1	28.9	0.19	0.10	23.7
All Vehicles		1054	4.0	0.240	2.4	LOS A	1.1	28.9	0.14	0.08	24.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2031 Plus Ambient Growth Plus Project Buildout (2031 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	66	5.0	0.089	5.8	LOS A	0.3	7.9	0.51	0.45	21.8
2	T1	1	5.0	0.097	5.4	LOS A	0.3	8.5	0.49	0.43	23.6
12	R2	234	5.0	0.097	1.8	LOS A	0.3	8.5	0.16	0.14	24.5
Approach		301	5.0	0.097	2.7	LOS A	0.3	8.5	0.24	0.21	24.0
East: Keller Road											
8	T1	270	3.0	0.118	4.2	LOS A	0.5	11.8	0.30	0.18	23.3
18	R2	32	5.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		301	3.2	0.118	3.7	LOS A	0.5	11.8	0.27	0.16	23.6
West: Keller Road											
7	L2	108	5.0	0.197	4.3	LOS A	0.0	0.0	0.00	0.00	29.6
4	T1	434	3.0	0.197	4.2	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		541	3.4	0.197	4.2	LOS A	0.0	0.0	0.00	0.00	25.6
All Vehicles		1143	3.8	0.197	3.7	LOS A	0.5	11.8	0.13	0.10	24.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

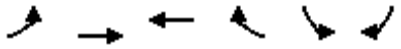
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	66	6	172	362	178	14	125	36	37	277	15
Future Volume (veh/h)	10	66	6	172	362	178	14	125	36	37	277	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	72	7	187	393	193	15	136	39	40	301	16
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	24	1357	130	227	1227	595	31	605	168	62	817	43
Arrive On Green	0.01	0.42	0.42	0.13	0.53	0.53	0.02	0.22	0.22	0.04	0.24	0.24
Sat Flow, veh/h	1774	3264	313	1774	2313	1121	1774	2738	760	1774	3419	181
Grp Volume(v), veh/h	11	39	40	187	299	287	15	86	89	40	155	162
Grp Sat Flow(s),veh/h/ln	1774	1770	1808	1774	1770	1665	1774	1770	1729	1774	1770	1831
Q Serve(g_s), s	0.6	1.2	1.2	9.2	8.6	8.8	0.8	3.6	3.8	2.0	6.6	6.6
Cycle Q Clear(g_c), s	0.6	1.2	1.2	9.2	8.6	8.8	0.8	3.6	3.8	2.0	6.6	6.6
Prop In Lane	1.00		0.17	1.00		0.67	1.00		0.44	1.00		0.10
Lane Grp Cap(c), veh/h	24	736	752	227	939	883	31	391	382	62	423	437
V/C Ratio(X)	0.46	0.05	0.05	0.82	0.32	0.32	0.49	0.22	0.23	0.64	0.37	0.37
Avail Cap(c_a), veh/h	108	736	752	444	939	883	128	391	382	168	423	437
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	15.7	15.7	38.3	11.9	12.0	43.8	28.7	28.8	42.9	28.6	28.6
Incr Delay (d2), s/veh	13.5	0.1	0.1	7.3	0.9	1.0	11.4	1.3	1.4	10.5	2.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	0.6	5.0	4.4	4.2	0.5	1.9	1.9	1.2	3.5	3.7
LnGrp Delay(d),s/veh	57.5	15.8	15.8	45.6	12.8	13.0	55.2	30.0	30.2	53.4	31.0	31.0
LnGrp LOS	E	B	B	D	B	B	E	C	C	D	C	C
Approach Vol, veh/h		90			773			190			357	
Approach Delay, s/veh		20.9			20.8			32.1			33.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	41.9	6.1	26.0	5.7	52.2	7.7	24.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	22.5	21.5	6.5	21.5	5.5	38.5	8.5	19.5
Max Q Clear Time (g_c+I1), s	11.2	3.2	2.8	8.6	2.6	10.8	4.0	5.8
Green Ext Time (p_c), s	0.4	4.0	0.0	2.3	0.0	4.5	0.0	2.4

Intersection Summary		
HCM 2010 Ctrl Delay		25.6
HCM 2010 LOS		C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	168	1172	1023	73	155	195
Future Volume (veh/h)	168	1172	1023	73	155	195
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	183	1274	1112	79	168	212
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	263	3023	2269	161	1052	851
Arrive On Green	0.08	0.59	0.47	0.47	0.31	0.31
Sat Flow, veh/h	3442	5253	5016	344	3442	2787
Grp Volume(v), veh/h	183	1274	777	414	168	212
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1802	1721	1393
Q Serve(g_s), s	4.7	12.2	14.2	14.3	3.2	5.1
Cycle Q Clear(g_c), s	4.7	12.2	14.2	14.3	3.2	5.1
Prop In Lane	1.00			0.19	1.00	1.00
Lane Grp Cap(c), veh/h	263	3023	1587	844	1052	851
V/C Ratio(X)	0.70	0.42	0.49	0.49	0.16	0.25
Avail Cap(c_a), veh/h	478	3023	1587	844	1052	851
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.52	0.52	1.00	1.00
Uniform Delay (d), s/veh	40.5	9.9	16.5	16.5	22.8	23.5
Incr Delay (d2), s/veh	3.3	0.4	0.6	1.1	0.3	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.8	6.7	7.3	1.6	4.5
LnGrp Delay(d),s/veh	43.9	10.3	17.1	17.6	23.1	24.2
LnGrp LOS	D	B	B	B	C	C
Approach Vol, veh/h		1457	1191		380	
Approach Delay, s/veh		14.5	17.3		23.7	
Approach LOS		B	B		C	

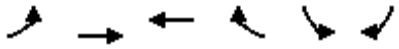
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		58.0		32.0	11.4	46.6		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		53.5		27.5	12.5	36.5		
Max Q Clear Time (g_c+I1), s		14.2		7.1	6.7	16.3		
Green Ext Time (p_c), s		25.7		1.4	0.3	15.8		

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1323	21	8	1127	36	6	6	6	57	8	28
Future Volume (veh/h)	16	1323	21	8	1127	36	6	6	6	57	8	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	17	1378	22	8	1174	38	6	6	6	59	8	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	36	1986	32	18	1914	62	45	45	45	137	27	99
Arrive On Green	0.02	0.56	0.56	0.01	0.55	0.55	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1774	3565	57	1774	3499	113	577	577	577	1774	354	1283
Grp Volume(v), veh/h	17	684	716	8	594	618	18	0	0	59	0	37
Grp Sat Flow(s),veh/h/ln	1774	1770	1853	1774	1770	1843	1732	0	0	1774	0	1636
Q Serve(g_s), s	0.6	18.0	18.1	0.3	14.8	14.8	0.6	0.0	0.0	2.1	0.0	1.4
Cycle Q Clear(g_c), s	0.6	18.0	18.1	0.3	14.8	14.8	0.6	0.0	0.0	2.1	0.0	1.4
Prop In Lane	1.00		0.03	1.00		0.06	0.33		0.33	1.00		0.78
Lane Grp Cap(c), veh/h	36	986	1032	18	968	1008	134	0	0	137	0	126
V/C Ratio(X)	0.47	0.69	0.69	0.44	0.61	0.61	0.13	0.00	0.00	0.43	0.00	0.29
Avail Cap(c_a), veh/h	140	1113	1165	140	1113	1159	484	0	0	496	0	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.4	10.3	10.4	31.8	10.0	10.0	27.8	0.0	0.0	28.5	0.0	28.2
Incr Delay (d2), s/veh	9.2	1.6	1.6	15.4	0.8	0.8	0.5	0.0	0.0	2.1	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	9.2	9.6	0.2	7.3	7.6	0.3	0.0	0.0	1.1	0.0	0.7
LnGrp Delay(d),s/veh	40.6	12.0	11.9	47.3	10.8	10.8	28.3	0.0	0.0	30.6	0.0	29.5
LnGrp LOS	D	B	B	D	B	B	C			C		C
Approach Vol, veh/h		1417			1220			18			96	
Approach Delay, s/veh		12.3			11.0			28.3			30.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	40.6		9.5	5.8	39.9		9.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	40.7		18.1	5.1	40.7		18.1
Max Q Clear Time (g_c+I1), s	2.3	20.1		4.1	2.6	16.8		2.6
Green Ext Time (p_c), s	0.0	16.0		0.2	0.0	17.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	534	771	835	150	101	361
Future Volume (veh/h)	534	771	835	150	101	361
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	545	787	852	153	103	368
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	525	1444	823	699	266	237
Arrive On Green	0.30	0.77	0.44	0.44	0.15	0.15
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	545	787	852	153	103	368
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	35.5	19.8	53.0	7.2	6.3	18.0
Cycle Q Clear(g_c), s	35.5	19.8	53.0	7.2	6.3	18.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	525	1444	823	699	266	237
V/C Ratio(X)	1.04	0.55	1.04	0.22	0.39	1.55
Avail Cap(c_a), veh/h	525	1444	823	699	266	237
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	5.3	33.5	20.7	46.0	51.0
Incr Delay (d2), s/veh	49.6	0.4	40.9	0.2	0.9	267.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.6	10.2	36.5	3.2	3.2	25.5
LnGrp Delay(d),s/veh	91.9	5.7	74.4	20.9	46.9	318.1
LnGrp LOS	F	A	F	C	D	F
Approach Vol, veh/h		1332	1005		471	
Approach Delay, s/veh		40.9	66.3		258.8	
Approach LOS		D	E		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		97.5			40.0	57.5		22.5
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		93.0			35.5	53.0		18.0
Max Q Clear Time (g_c+I1), s		21.8			37.5	55.0		20.0
Green Ext Time (p_c), s		19.1			0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	86.5
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	600	213	122	763	457	235	186	294	342	162	97
Future Volume (veh/h)	183	600	213	122	763	457	235	186	294	342	162	97
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	191	625	222	127	795	476	245	194	306	356	169	101
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	1306	454	180	965	722	271	450	383	650	312	187
Arrive On Green	0.12	0.33	0.33	0.05	0.26	0.26	0.15	0.24	0.24	0.18	0.29	0.29
Sat Flow, veh/h	1774	3967	1378	3442	3725	2787	1774	1863	1583	3548	1094	654
Grp Volume(v), veh/h	191	586	261	127	795	476	245	194	306	356	0	270
Grp Sat Flow(s),veh/h/ln	1774	1863	1619	1721	1863	1393	1774	1863	1583	1774	0	1747
Q Serve(g_s), s	12.7	15.0	15.5	4.4	24.1	18.3	16.3	10.6	21.8	10.9	0.0	15.7
Cycle Q Clear(g_c), s	12.7	15.0	15.5	4.4	24.1	18.3	16.3	10.6	21.8	10.9	0.0	15.7
Prop In Lane	1.00		0.85	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	218	1227	533	180	965	722	271	450	383	650	0	499
V/C Ratio(X)	0.88	0.48	0.49	0.70	0.82	0.66	0.90	0.43	0.80	0.55	0.00	0.54
Avail Cap(c_a), veh/h	251	1227	533	252	965	722	316	450	383	650	0	499
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.89	0.89	0.89	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.8	32.0	32.2	55.9	41.9	39.7	49.9	38.5	42.8	44.5	0.0	36.2
Incr Delay (d2), s/veh	23.3	1.3	3.2	1.8	7.1	4.2	23.4	3.0	16.0	3.3	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	8.0	7.4	2.1	13.3	7.5	9.7	5.8	11.2	5.6	0.0	8.2
LnGrp Delay(d),s/veh	75.1	33.4	35.4	57.7	49.0	43.9	73.4	41.5	58.7	47.8	0.0	40.4
LnGrp LOS	E	C	D	E	D	D	E	D	E	D		D
Approach Vol, veh/h		1038			1398			745			626	
Approach Delay, s/veh		41.6			48.0			59.1			44.6	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	45.7	23.0	40.4	19.3	37.3	28.2	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	8.3	38.6	21.4	29.6	17.0	30.4	22.0	* 29
Max Q Clear Time (g_c+I1), s	6.4	17.5	18.3	17.7	14.7	26.1	12.9	23.8
Green Ext Time (p_c), s	0.0	17.4	0.1	3.8	0.0	4.0	1.1	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	47.9
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	886	465	0	1052	427	0	0	0	459	0	290
Future Volume (veh/h)	0	886	465	0	1052	427	0	0	0	459	0	290
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	904	474	0	1073	436				468	0	296
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2124	950	0	2124	950				1071	0	867
Arrive On Green	0.00	0.60	0.60	0.00	0.20	0.20				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	904	474	0	1073	436				468	0	296
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	12.3	15.4	0.0	24.3	21.9				9.8	0.0	7.4
Cycle Q Clear(g_c), s	0.0	12.3	15.4	0.0	24.3	21.9				9.8	0.0	7.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2124	950	0	2124	950				1071	0	867
V/C Ratio(X)	0.00	0.43	0.50	0.00	0.51	0.46				0.44	0.00	0.34
Avail Cap(c_a), veh/h	0	2124	950	0	2124	950				1071	0	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.86	0.86	0.00	0.77	0.77				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.7	10.3	0.0	24.2	23.2				24.7	0.0	23.9
Incr Delay (d2), s/veh	0.0	0.5	1.6	0.0	0.7	1.2				1.3	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.2	7.0	0.0	12.1	9.9				4.8	0.0	3.0
LnGrp Delay(d),s/veh	0.0	10.2	11.9	0.0	24.8	24.4				26.0	0.0	25.0
LnGrp LOS		B	B		C	C				C		C
Approach Vol, veh/h		1378			1509						764	
Approach Delay, s/veh		10.8			24.7						25.6	
Approach LOS		B			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		58.0		32.0		58.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		54.0		28.0		54.0		
Max Q Clear Time (g_c+I1), s		17.4		11.8		26.3		
Green Ext Time (p_c), s		24.6		2.8		20.2		

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	1018	0	0	991	472	0	0	426	0	0	488
Future Volume (veh/h)	327	1018	0	0	991	472	0	0	426	0	0	488
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	337	1049	0	0	1022	487	0	0	439	0	0	503
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	374	3382	0	0	2479	1109	0	0	0	0	0	0
Arrive On Green	0.28	1.00	0.00	0.00	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	337	1049	0	0	1022	487		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	16.5	0.0	0.0	0.0	10.9	12.0						
Cycle Q Clear(g_c), s	16.5	0.0	0.0	0.0	10.9	12.0						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	374	3382	0	0	2479	1109						
V/C Ratio(X)	0.90	0.31	0.00	0.00	0.41	0.44						
Avail Cap(c_a), veh/h	473	3382	0	0	2479	1109						
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.91	0.91	0.00	0.00	0.67	0.67						
Uniform Delay (d), s/veh	31.5	0.0	0.0	0.0	5.7	5.8						
Incr Delay (d2), s/veh	16.1	0.2	0.0	0.0	0.3	0.9						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	9.7	0.1	0.0	0.0	5.4	5.4						
LnGrp Delay(d),s/veh	47.6	0.2	0.0	0.0	6.0	6.7						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		1386			1509							
Approach Delay, s/veh		11.7			6.2							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			23.0	67.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		61.9			24.0	33.9		
Max Q Clear Time (g_c+I1), s		2.0			18.5	14.0		
Green Ext Time (p_c), s		29.8			0.5	15.0		

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	881	308	144	864	85	419	510	249	152	285	180
Future Volume (veh/h)	255	881	308	144	864	85	419	510	249	152	285	180
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	258	890	311	145	873	86	423	515	252	154	288	182
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	1150	515	199	1375	135	478	616	524	180	547	465
Arrive On Green	0.09	0.32	0.32	0.06	0.29	0.29	0.14	0.33	0.33	0.10	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4709	462	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	258	890	311	145	628	331	423	515	252	154	288	182
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1781	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	8.8	27.2	19.8	5.0	19.3	19.4	14.5	30.7	15.2	10.2	15.5	11.0
Cycle Q Clear(g_c), s	8.8	27.2	19.8	5.0	19.3	19.4	14.5	30.7	15.2	10.2	15.5	11.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	1150	515	199	990	520	478	616	524	180	547	465
V/C Ratio(X)	0.83	0.77	0.60	0.73	0.63	0.64	0.88	0.84	0.48	0.85	0.53	0.39
Avail Cap(c_a), veh/h	353	1150	515	212	990	520	528	616	524	198	547	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	36.5	34.0	55.6	36.9	37.0	50.7	37.1	32.0	53.0	35.4	33.8
Incr Delay (d2), s/veh	10.6	4.4	4.5	9.5	3.1	5.9	14.3	12.7	3.1	25.1	3.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	14.1	9.3	2.6	9.5	10.4	7.8	17.9	7.1	6.3	8.5	5.1
LnGrp Delay(d),s/veh	64.2	40.9	38.5	65.1	40.0	42.8	65.1	49.8	35.1	78.2	39.0	36.3
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1459			1104			1190			624	
Approach Delay, s/veh		44.5			44.1			52.1			47.9	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	45.5	21.3	41.7	15.5	41.5	16.8	46.2
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.4	* 38	18.4	* 35	12.3	32.4	13.4	39.7
Max Q Clear Time (g_c+I1), s	17.0	29.2	16.5	17.5	10.8	21.4	12.2	32.7
Green Ext Time (p_c), s	0.0	6.6	0.2	3.3	0.0	8.2	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	47.0
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	104	43	318	156	193	59	222	286	128	264	28
Future Volume (veh/h)	10	104	43	318	156	193	59	222	286	128	264	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	12	124	51	379	186	230	70	264	340	152	314	33
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	206	85	480	219	271	409	430	586	411	384	40
Arrive On Green	0.01	0.16	0.16	0.14	0.29	0.29	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	1255	516	3442	759	938	1774	1863	1583	1774	1658	174
Grp Volume(v), veh/h	12	0	175	379	0	416	70	264	340	152	0	347
Grp Sat Flow(s),veh/h/ln	1774	0	1772	1721	0	1697	1774	1863	1583	1774	0	1832
Q Serve(g_s), s	0.5	0.0	6.3	7.3	0.0	15.8	2.2	8.7	11.8	4.9	0.0	12.3
Cycle Q Clear(g_c), s	0.5	0.0	6.3	7.3	0.0	15.8	2.2	8.7	11.8	4.9	0.0	12.3
Prop In Lane	1.00		0.29	1.00		0.55	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	26	0	291	480	0	490	409	430	586	411	0	425
V/C Ratio(X)	0.45	0.00	0.60	0.79	0.00	0.85	0.17	0.61	0.58	0.37	0.00	0.82
Avail Cap(c_a), veh/h	143	0	492	553	0	607	570	599	729	570	0	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.4	0.0	26.5	28.5	0.0	22.9	21.1	23.6	17.3	22.1	0.0	24.9
Incr Delay (d2), s/veh	11.7	0.0	2.0	6.7	0.0	9.2	0.2	1.4	0.9	0.6	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.2	3.9	0.0	8.6	1.1	4.6	5.3	2.5	0.0	6.9
LnGrp Delay(d),s/veh	45.1	0.0	28.5	35.2	0.0	32.1	21.3	25.0	18.2	22.6	0.0	31.2
LnGrp LOS	D		C	D		C	C	C	B	C		C
Approach Vol, veh/h		187			795			674			499	
Approach Delay, s/veh		29.6			33.6			21.2			28.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.5	15.2		19.9	5.0	23.8		19.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	11.6	19.0		22.0	5.5	24.5		22.0
Max Q Clear Time (g_c+I1), s	9.3	8.3		14.3	2.5	17.8		13.8
Green Ext Time (p_c), s	0.3	2.6		1.6	0.0	2.0		2.0

Intersection Summary			
HCM 2010 Ctrl Delay		28.2	
HCM 2010 LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	612	114	8	429	31	85	180	6	70	261	166
Future Volume (veh/h)	139	612	114	8	429	31	85	180	6	70	261	166
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	145	638	119	8	447	32	89	188	6	73	272	173
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	371	1233	384	46	785	56	644	1181	38	811	1225	1041
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	1769	5085	1583	19	3239	229	941	1795	57	1184	1863	1583
Grp Volume(v), veh/h	145	638	119	256	0	231	89	0	194	73	272	173
Grp Sat Flow(s),veh/h/ln	885	1695	1583	1832	0	1655	941	0	1853	1184	1863	1583
Q Serve(g_s), s	7.1	9.8	5.5	0.0	0.0	11.1	3.8	0.0	3.6	2.3	5.3	3.8
Cycle Q Clear(g_c), s	18.1	9.8	5.5	10.9	0.0	11.1	9.0	0.0	3.6	5.9	5.3	3.8
Prop In Lane	1.00		1.00	0.03		0.14	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	371	1233	384	485	0	401	644	0	1218	811	1225	1041
V/C Ratio(X)	0.39	0.52	0.31	0.53	0.00	0.58	0.14	0.00	0.16	0.09	0.22	0.17
Avail Cap(c_a), veh/h	385	1271	396	499	0	414	644	0	1218	811	1225	1041
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	29.5	27.9	29.9	0.0	30.0	8.0	0.0	5.9	7.0	6.2	5.9
Incr Delay (d2), s/veh	0.7	0.3	0.5	1.0	0.0	1.9	0.4	0.0	0.3	0.2	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.6	2.5	5.7	0.0	5.3	1.0	0.0	1.9	0.8	2.9	1.7
LnGrp Delay(d),s/veh	38.7	29.9	28.4	30.9	0.0	31.9	8.4	0.0	6.2	7.2	6.6	6.3
LnGrp LOS	D	C	C	C		C	A		A	A	A	A
Approach Vol, veh/h		902			487			283			518	
Approach Delay, s/veh		31.1			31.4			6.9			6.6	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		63.7		26.3		63.7		26.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		58.5		22.5		58.5		22.5
Max Q Clear Time (g_c+I1), s		11.0		20.1		7.9		13.1
Green Ext Time (p_c), s		4.4		1.7		4.4		5.4

Intersection Summary		
HCM 2010 Ctrl Delay		22.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	424	81	20	10	49	11	62	82	13	9	136	255
Future Volume (veh/h)	424	81	20	10	49	11	62	82	13	9	136	255
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	442	84	21	10	51	11	65	85	14	9	142	266
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	510	827	703	23	599	268	98	797	128	21	768	344
Arrive On Green	0.29	0.44	0.44	0.01	0.17	0.17	0.06	0.26	0.26	0.01	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3054	492	1774	3539	1583
Grp Volume(v), veh/h	442	84	21	10	51	11	65	48	51	9	142	266
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1776	1774	1770	1583
Q Serve(g_s), s	14.0	1.6	0.4	0.3	0.7	0.3	2.1	1.2	1.3	0.3	1.9	9.3
Cycle Q Clear(g_c), s	14.0	1.6	0.4	0.3	0.7	0.3	2.1	1.2	1.3	0.3	1.9	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	510	827	703	23	599	268	98	462	463	21	768	344
V/C Ratio(X)	0.87	0.10	0.03	0.44	0.09	0.04	0.66	0.10	0.11	0.44	0.18	0.77
Avail Cap(c_a), veh/h	781	1355	1152	165	1348	603	165	599	601	165	1198	536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	9.6	9.3	29.0	20.7	20.5	27.4	16.6	16.6	29.0	18.9	21.8
Incr Delay (d2), s/veh	6.6	0.1	0.0	12.8	0.1	0.1	7.3	0.1	0.1	13.9	0.1	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.8	0.2	0.2	0.4	0.2	1.2	0.6	0.6	0.2	1.0	4.4
LnGrp Delay(d),s/veh	26.6	9.6	9.3	41.8	20.8	20.6	34.7	16.7	16.7	42.9	19.0	25.5
LnGrp LOS	C	A	A	D	C	C	C	B	B	D	B	C
Approach Vol, veh/h		547			72			164			417	
Approach Delay, s/veh		23.3			23.6			23.8			23.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	30.2	7.3	16.8	21.0	14.0	4.7	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	43.0	5.5	20.0	26.0	22.5	5.5	20.0
Max Q Clear Time (g_c+I1), s	2.3	3.6	4.1	11.3	16.0	2.7	2.3	3.3
Green Ext Time (p_c), s	0.0	0.8	0.0	1.5	1.0	0.7	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	189	52	8	538	79	6	135	6	192	348	42
Future Volume (veh/h)	53	189	52	8	538	79	6	135	6	192	348	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	58	208	57	9	591	87	7	148	7	211	382	46
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	791	212	20	774	114	16	1224	58	252	1597	191
Arrive On Green	0.05	0.29	0.29	0.01	0.25	0.25	0.01	0.36	0.36	0.14	0.50	0.50
Sat Flow, veh/h	1774	2763	739	1774	3097	455	1774	3442	162	1774	3184	381
Grp Volume(v), veh/h	58	131	134	9	337	341	7	76	79	211	211	217
Grp Sat Flow(s),veh/h/ln	1774	1770	1732	1774	1770	1782	1774	1770	1834	1774	1770	1796
Q Serve(g_s), s	3.4	6.0	6.3	0.5	18.5	18.6	0.4	3.0	3.1	12.2	7.1	7.2
Cycle Q Clear(g_c), s	3.4	6.0	6.3	0.5	18.5	18.6	0.4	3.0	3.1	12.2	7.1	7.2
Prop In Lane	1.00		0.43	1.00		0.26	1.00		0.09	1.00		0.21
Lane Grp Cap(c), veh/h	83	507	496	20	442	445	16	629	652	252	887	900
V/C Ratio(X)	0.70	0.26	0.27	0.46	0.76	0.77	0.45	0.12	0.12	0.84	0.24	0.24
Avail Cap(c_a), veh/h	155	578	566	84	506	509	84	629	652	375	887	900
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	28.9	29.0	51.6	36.5	36.5	51.8	22.8	22.8	43.8	14.8	14.8
Incr Delay (d2), s/veh	4.0	0.5	0.6	12.7	6.1	6.2	18.9	0.4	0.4	15.8	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.0	3.1	0.3	9.8	9.9	0.3	1.5	1.6	7.1	3.5	3.6
LnGrp Delay(d),s/veh	53.3	29.4	29.6	64.3	42.6	42.7	70.6	23.2	23.2	59.7	15.1	15.1
LnGrp LOS	D	C	C	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h		323			687			162			639	
Approach Delay, s/veh		33.8			42.9			25.2			29.8	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.7	43.1	5.7	35.5	5.4	58.5	9.5	31.6
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	22.3	* 23	5.0	34.3	5.0	40.5	9.2	30.0
Max Q Clear Time (g_c+I1), s	14.2	5.1	2.5	8.3	2.4	9.2	5.4	20.6
Green Ext Time (p_c), s	0.8	5.2	0.0	10.9	0.0	6.3	0.0	5.6

Intersection Summary	
HCM 2010 Ctrl Delay	35.1
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	17	329	11	16	7	286	503	9	6	222	26
Future Volume (veh/h)	20	17	329	11	16	7	286	503	9	6	222	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	18	350	12	17	7	304	535	10	6	236	28
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	45	495	421	27	477	405	378	1421	27	14	621	73
Arrive On Green	0.03	0.27	0.27	0.02	0.26	0.26	0.21	0.40	0.40	0.01	0.19	0.19
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3554	66	1774	3192	375
Grp Volume(v), veh/h	21	18	350	12	17	7	304	266	279	6	130	134
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1851	1774	1770	1797
Q Serve(g_s), s	0.6	0.4	10.7	0.3	0.4	0.2	8.4	5.5	5.5	0.2	3.3	3.3
Cycle Q Clear(g_c), s	0.6	0.4	10.7	0.3	0.4	0.2	8.4	5.5	5.5	0.2	3.3	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	45	495	421	27	477	405	378	707	740	14	344	349
V/C Ratio(X)	0.47	0.04	0.83	0.44	0.04	0.02	0.80	0.38	0.38	0.42	0.38	0.38
Avail Cap(c_a), veh/h	190	797	677	190	797	677	907	1411	1476	190	695	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	14.0	17.8	25.1	14.4	14.3	19.2	10.9	10.9	25.4	18.0	18.0
Incr Delay (d2), s/veh	7.5	0.0	4.8	10.9	0.0	0.0	4.0	0.3	0.3	18.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	5.2	0.2	0.2	0.1	4.5	2.7	2.9	0.2	1.7	1.7
LnGrp Delay(d),s/veh	32.2	14.0	22.6	35.9	14.4	14.3	23.2	11.2	11.2	44.2	18.7	18.7
LnGrp LOS	C	B	C	D	B	B	C	B	B	D	B	B
Approach Vol, veh/h		389			36			849			270	
Approach Delay, s/veh		22.7			21.6			15.5			19.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.4	24.6	4.8	17.7	15.0	14.0	5.3	17.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	41.0	5.5	22.0	26.3	20.2	5.5	22.0
Max Q Clear Time (g_c+I1), s	2.2	7.5	2.3	12.7	10.4	5.3	2.6	2.4
Green Ext Time (p_c), s	0.0	4.5	0.0	1.0	0.7	3.7	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	50.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	154	127	11	210	105	70	14	76	279	61	52	161
Future Vol, veh/h	154	127	11	210	105	70	14	76	279	61	52	161
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	181	149	13	247	124	82	16	89	328	72	61	189
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	42.9	88.1	28.6	36
HCM LOS	E	F	D	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	0%	53%	55%	22%
Vol Thru, %	84%	0%	43%	27%	19%
Vol Right, %	0%	100%	4%	18%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	279	292	385	274
LT Vol	14	0	154	210	61
Through Vol	76	0	127	105	52
RT Vol	0	279	11	70	161
Lane Flow Rate	106	328	344	453	322
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.267	0.753	0.829	1.055	0.77
Departure Headway (Hd)	9.314	8.503	8.956	8.384	8.877
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	389	427	409	435	409
Service Time	7.014	6.203	6.956	6.384	6.877
HCM Lane V/C Ratio	0.272	0.768	0.841	1.041	0.787
HCM Control Delay	15.4	32.9	42.9	88.1	36
HCM Lane LOS	C	D	E	F	E
HCM 95th-tile Q	1.1	6.2	7.7	14.6	6.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	28	186	6	23	8	153	649	6	6	346	73
Future Volume (veh/h)	93	28	186	6	23	8	153	649	6	6	346	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	96	29	192	6	24	8	158	669	6	6	357	75
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	300	255	8	31	10	189	2172	19	16	1480	308
Arrive On Green	0.16	0.16	0.16	0.03	0.03	0.03	0.11	0.60	0.60	0.01	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	281	1126	375	1774	3594	32	1774	2919	607
Grp Volume(v), veh/h	96	29	192	38	0	0	158	329	346	6	215	217
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1782	0	0	1774	1770	1857	1774	1770	1756
Q Serve(g_s), s	5.0	1.4	12.2	2.2	0.0	0.0	9.2	9.5	9.5	0.4	7.2	7.3
Cycle Q Clear(g_c), s	5.0	1.4	12.2	2.2	0.0	0.0	9.2	9.5	9.5	0.4	7.2	7.3
Prop In Lane	1.00		1.00	0.16		0.21	1.00		0.02	1.00		0.35
Lane Grp Cap(c), veh/h	286	300	255	49	0	0	189	1069	1122	16	897	890
V/C Ratio(X)	0.34	0.10	0.75	0.78	0.00	0.00	0.84	0.31	0.31	0.37	0.24	0.24
Avail Cap(c_a), veh/h	439	461	392	306	0	0	301	1069	1122	101	897	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.1	37.5	42.0	50.7	0.0	0.0	46.0	10.1	10.1	51.7	14.5	14.6
Incr Delay (d2), s/veh	3.2	0.6	18.4	22.4	0.0	0.0	5.8	0.7	0.7	5.1	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.8	6.6	1.4	0.0	0.0	4.8	4.8	5.0	0.2	3.6	3.7
LnGrp Delay(d),s/veh	42.2	38.2	60.5	73.2	0.0	0.0	51.8	10.9	10.8	56.8	15.2	15.2
LnGrp LOS	D	D	E	E			D	B	B	E	B	B
Approach Vol, veh/h		317			38			833			438	
Approach Delay, s/veh		52.9			73.2			18.6			15.8	
Approach LOS		D			E			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	69.2		22.7	15.8	59.0		7.5
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.0	34.2		26.0	17.8	22.4		18.0
Max Q Clear Time (g_c+I1), s	2.4	11.5		14.2	11.2	9.3		4.2
Green Ext Time (p_c), s	0.0	14.4		2.8	0.1	9.4		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		25.8
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1888	43	203	1621	13	39	12	94	13	13	16
Future Volume (veh/h)	16	1888	43	203	1621	13	39	12	94	13	13	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	16	1946	44	209	1671	13	40	12	97	13	13	16
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	2467	1049	170	4014	1137	71	15	124	58	117	163
Arrive On Green	0.04	0.66	0.66	0.10	0.72	0.72	0.04	0.09	0.09	0.02	0.06	0.06
Sat Flow, veh/h	1774	3725	1583	1774	5588	1583	1774	177	1433	3442	1863	1583
Grp Volume(v), veh/h	16	1946	44	209	1671	13	40	0	109	13	13	16
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1610	1721	1863	1583
Q Serve(g_s), s	1.3	55.4	1.4	14.4	18.0	0.3	3.3	0.0	10.0	0.6	1.0	1.4
Cycle Q Clear(g_c), s	1.3	55.4	1.4	14.4	18.0	0.3	3.3	0.0	10.0	0.6	1.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	71	2467	1049	170	4014	1137	71	0	139	58	117	163
V/C Ratio(X)	0.23	0.79	0.04	1.23	0.42	0.01	0.56	0.00	0.78	0.23	0.11	0.10
Avail Cap(c_a), veh/h	253	2467	1049	170	4014	1137	265	0	485	376	487	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.38	0.38	0.38	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.7	17.9	8.8	67.8	8.5	6.0	70.7	0.0	67.2	72.8	66.3	61.0
Incr Delay (d2), s/veh	0.6	2.6	0.1	120.7	0.1	0.0	6.8	0.0	10.0	0.7	1.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	29.3	0.7	12.8	9.2	0.2	1.8	0.0	4.8	0.3	0.5	0.6
LnGrp Delay(d),s/veh	70.3	20.6	8.9	188.5	8.6	6.0	77.6	0.0	77.2	73.5	67.3	61.6
LnGrp LOS	E	C	A	F	A	A	E		E	E	E	E
Approach Vol, veh/h		2006			1893			149			42	
Approach Delay, s/veh		20.7			28.5			77.3			67.0	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	105.1	10.6	15.3	10.6	113.5	7.1	18.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	14.4	53.2	22.4	39.2	21.4	46.2	16.4	45.2
Max Q Clear Time (g_c+I1), s	16.4	57.4	5.3	3.4	3.3	20.0	2.6	12.0
Green Ext Time (p_c), s	0.0	0.0	0.1	1.0	0.0	26.0	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	421	1831	27	30	1579	228	31	6	29	313	6	344
Future Volume (veh/h)	421	1831	27	30	1579	228	31	6	29	313	6	344
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	430	1868	28	31	1611	233	32	6	30	319	6	351
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	2467	768	60	2088	829	62	48	238	390	7	398
Arrive On Green	0.11	0.49	0.49	0.03	0.41	0.41	0.03	0.18	0.18	0.11	0.25	0.25
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	271	1353	3442	27	1561
Grp Volume(v), veh/h	430	1868	28	31	1611	233	32	0	36	319	0	357
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1624	1721	0	1587
Q Serve(g_s), s	11.4	31.4	1.0	1.8	28.7	8.6	1.9	0.0	2.0	9.5	0.0	22.7
Cycle Q Clear(g_c), s	11.4	31.4	1.0	1.8	28.7	8.6	1.9	0.0	2.0	9.5	0.0	22.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.98
Lane Grp Cap(c), veh/h	374	2467	768	60	2088	829	62	0	286	390	0	404
V/C Ratio(X)	1.15	0.76	0.04	0.51	0.77	0.28	0.52	0.00	0.13	0.82	0.00	0.88
Avail Cap(c_a), veh/h	374	2467	768	210	2088	829	174	0	394	616	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.79	0.79	0.79	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	22.0	14.2	49.9	26.7	14.0	49.8	0.0	36.4	45.5	0.0	37.6
Incr Delay (d2), s/veh	71.0	0.2	0.0	2.0	2.3	0.7	2.5	0.0	0.2	2.3	0.0	14.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	14.6	0.4	0.9	13.9	3.9	1.0	0.0	0.9	4.6	0.0	11.6
LnGrp Delay(d),s/veh	117.8	22.2	14.2	51.8	29.0	14.6	52.3	0.0	36.6	47.8	0.0	52.2
LnGrp LOS	F	C	B	D	C	B	D		D	D		D
Approach Vol, veh/h		2326			1875			68			676	
Approach Delay, s/veh		39.8			27.6			44.0			50.1	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	56.7	8.2	31.9	16.0	48.9	16.5	23.6
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	12.4	28.2	10.3	34.0	11.4	29.2	18.8	25.5
Max Q Clear Time (g_c+I1), s	13.8	33.4	3.9	24.7	13.4	30.7	11.5	4.0
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	0.0	0.0	0.4	3.2

Intersection Summary		
HCM 2010 Ctrl Delay		36.6
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1613	518	0	1519	0	0	0	0	145	1	552
Future Volume (veh/h)	0	1613	518	0	1519	0	0	0	0	145	1	552
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1663	534	0	1566	0				149	1	569
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2599	809	0	2599	0				705	5	1115
Arrive On Green	0.00	0.51	0.51	0.00	0.51	0.00				0.40	0.40	0.40
Sat Flow, veh/h	0	5253	1583	0	5421	0				1763	12	2787
Grp Volume(v), veh/h	0	1663	534	0	1566	0				150	0	569
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	21.4	22.4	0.0	19.6	0.0				5.0	0.0	13.9
Cycle Q Clear(g_c), s	0.0	21.4	22.4	0.0	19.6	0.0				5.0	0.0	13.9
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2599	809	0	2599	0				710	0	1115
V/C Ratio(X)	0.00	0.64	0.66	0.00	0.60	0.00				0.21	0.00	0.51
Avail Cap(c_a), veh/h	0	2599	809	0	2599	0				710	0	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.65	0.65	0.00	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.0	16.2	0.0	15.5	0.0				17.7	0.0	20.4
Incr Delay (d2), s/veh	0.0	0.3	1.3	0.0	1.0	0.0				0.7	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.9	9.9	0.0	9.4	0.0				2.6	0.0	5.6
LnGrp Delay(d),s/veh	0.0	16.3	17.5	0.0	16.5	0.0				18.4	0.0	22.0
LnGrp LOS		B	B		B					B		C
Approach Vol, veh/h		2197			1566						719	
Approach Delay, s/veh		16.6			16.5						21.3	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		40.0		50.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		46.0		36.0		46.0		
Max Q Clear Time (g_c+I1), s		24.4		15.9		21.6		
Green Ext Time (p_c), s		20.2		3.3		22.7		

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1045	713	0	1181	131	499	0	383	0	0	0
Future Volume (veh/h)	0	1045	713	0	1181	131	499	0	383	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1077	0	0	1218	0	514	0	395			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3108	968	0	3108	968	532	0	475			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00	0.30	0.00	0.30			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1077	0	0	1218	0	514	0	395			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	9.4	0.0	0.0	11.0	0.0	25.7	0.0	20.9			
Cycle Q Clear(g_c), s	0.0	9.4	0.0	0.0	11.0	0.0	25.7	0.0	20.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3108	968	0	3108	968	532	0	475			
V/C Ratio(X)	0.00	0.35	0.00	0.00	0.39	0.00	0.97	0.00	0.83			
Avail Cap(c_a), veh/h	0	3108	968	0	3108	968	532	0	475			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.93	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.6	0.0	0.0	8.9	0.0	31.0	0.0	29.4			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.1	0.0	31.4	0.0	15.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.5	0.0	0.0	5.1	0.0	17.2	0.0	11.2			
LnGrp Delay(d),s/veh	0.0	8.9	0.0	0.0	9.0	0.0	62.4	0.0	44.9			
LnGrp LOS		A			A		E		D			
Approach Vol, veh/h		1077			1218			909				
Approach Delay, s/veh		8.9			9.0			54.8				
Approach LOS		A			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		59.0				59.0		31.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		22.0				29.0		27.0
Max Q Clear Time (g_c+I1), s		11.4				13.0		27.7
Green Ext Time (p_c), s		8.8				10.8		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		22.0
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	382	1190	247	102	436	304	226	374	9	52	221	345
Future Volume (veh/h)	382	1190	247	102	436	304	226	374	9	52	221	345
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	411	1280	266	110	469	327	243	402	10	56	238	371
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	845	1414	601	135	811	345	271	1172	29	72	817	724
Arrive On Green	0.24	0.38	0.38	0.08	0.22	0.22	0.15	0.33	0.33	0.04	0.22	0.22
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	1774	3529	88	1774	3725	1583
Grp Volume(v), veh/h	411	1280	266	110	469	327	243	201	211	56	238	371
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1847	1774	1863	1583
Q Serve(g_s), s	11.2	36.6	14.1	6.9	12.7	19.4	15.1	9.7	9.7	3.5	6.0	6.7
Cycle Q Clear(g_c), s	11.2	36.6	14.1	6.9	12.7	19.4	15.1	9.7	9.7	3.5	6.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	845	1414	601	135	811	345	271	588	614	72	817	724
V/C Ratio(X)	0.49	0.91	0.44	0.81	0.58	0.95	0.90	0.34	0.34	0.78	0.29	0.51
Avail Cap(c_a), veh/h	845	1502	638	139	1035	440	290	812	848	154	1423	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	33.0	26.1	51.2	39.4	31.1	46.8	28.3	28.3	53.5	36.7	7.6
Incr Delay (d2), s/veh	0.4	7.9	0.5	29.0	0.7	26.8	26.1	1.3	1.3	16.0	0.8	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	20.2	6.2	4.5	6.6	11.1	9.4	4.9	5.1	2.0	3.2	4.2
LnGrp Delay(d),s/veh	37.4	40.9	26.6	80.2	40.1	57.8	73.0	29.7	29.6	69.5	37.4	9.8
LnGrp LOS	D	D	C	F	D	E	E	C	C	E	D	A
Approach Vol, veh/h		1957			906			655			665	
Approach Delay, s/veh		38.2			51.4			45.7			24.7	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	43.2	13.1	47.2	21.8	30.5	31.3	29.0
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	9.8	51.7	8.8	45.4	18.4	43.0	22.9	31.3
Max Q Clear Time (g_c+I1), s	15.5	11.7	8.9	38.6	17.1	8.7	13.2	21.4
Green Ext Time (p_c), s	0.0	17.2	0.0	4.2	0.0	16.0	6.8	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	40.1
HCM 2010 LOS	D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2031 Plus Ambient Growth Plus Project Buildout (2031 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	175	5.0	0.182	5.5	LOS A	0.7	18.3	0.43	0.33	24.0
12	R2	194	5.0	0.121	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		368	5.0	0.182	2.6	LOS A	0.7	18.3	0.20	0.16	24.6
East: Keller Road											
3	L2	224	5.0	0.233	5.3	LOS A	1.0	26.9	0.34	0.22	23.8
8	T1	492	3.0	0.233	0.5	LOS A	1.0	26.9	0.03	0.02	24.6
Approach		716	3.6	0.233	2.0	LOS A	1.0	26.9	0.13	0.08	24.4
West: Keller Road											
4	T1	317	3.0	0.285	5.9	LOS A	1.3	34.2	0.41	0.29	22.5
14	R2	151	5.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		467	3.6	0.285	4.0	LOS A	1.3	34.2	0.28	0.20	23.7
All Vehicles		1552	4.0	0.285	2.7	LOS A	1.3	34.2	0.19	0.14	24.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2031 Plus Ambient Growth Plus Project Buildout (2031 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	161	5.0	0.101	5.5	LOS A	0.3	9.0	0.49	0.42	13.5
2	T1	1	5.0	0.101	5.3	LOS A	0.3	8.9	0.48	0.41	22.8
12	R2	145	5.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		307	5.0	0.101	2.9	LOS A	0.3	9.0	0.26	0.22	18.3
East: Keller Road											
8	T1	555	3.0	0.272	6.2	LOS A	1.2	30.2	0.44	0.35	22.6
18	R2	103	5.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		658	3.3	0.272	5.2	LOS A	1.2	30.2	0.38	0.30	23.1
West: Keller Road											
7	L2	135	5.0	0.186	4.2	LOS A	0.0	0.0	0.00	0.00	29.3
4	T1	376	3.0	0.186	4.1	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		511	3.5	0.186	4.2	LOS A	0.0	0.0	0.00	0.00	25.8
All Vehicles		1476	3.7	0.272	4.4	LOS A	1.2	30.2	0.22	0.18	22.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

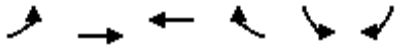
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	215	16	71	401	75	6	148	6	16	236	16
Future Volume (veh/h)	18	215	16	71	401	75	6	148	6	16	236	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	234	17	77	436	82	7	161	7	17	257	17
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	1588	115	100	1515	283	16	864	37	34	878	58
Arrive On Green	0.02	0.47	0.47	0.06	0.51	0.51	0.01	0.25	0.25	0.02	0.26	0.26
Sat Flow, veh/h	1774	3348	242	1774	2978	556	1774	3456	150	1774	3371	222
Grp Volume(v), veh/h	20	123	128	77	258	260	7	82	86	17	134	140
Grp Sat Flow(s),veh/h/ln	1774	1770	1820	1774	1770	1765	1774	1770	1836	1774	1770	1824
Q Serve(g_s), s	1.0	3.5	3.6	3.9	7.5	7.6	0.4	3.3	3.3	0.9	5.5	5.5
Cycle Q Clear(g_c), s	1.0	3.5	3.6	3.9	7.5	7.6	0.4	3.3	3.3	0.9	5.5	5.5
Prop In Lane	1.00		0.13	1.00		0.32	1.00		0.08	1.00		0.12
Lane Grp Cap(c), veh/h	39	839	863	100	901	898	16	442	459	34	461	475
V/C Ratio(X)	0.52	0.15	0.15	0.77	0.29	0.29	0.44	0.19	0.19	0.50	0.29	0.29
Avail Cap(c_a), veh/h	168	839	863	286	901	898	148	442	459	148	461	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	13.4	13.4	41.9	12.7	12.7	44.4	26.5	26.6	43.7	26.6	26.7
Incr Delay (d2), s/veh	10.2	0.4	0.4	11.7	0.8	0.8	18.2	0.9	0.9	10.8	1.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.8	1.9	2.2	3.9	3.9	0.3	1.7	1.8	0.5	2.9	3.0
LnGrp Delay(d),s/veh	53.7	13.7	13.7	53.6	13.5	13.5	62.6	27.5	27.5	54.5	28.2	28.2
LnGrp LOS	D	B	B	D	B	B	E	C	C	D	C	C
Approach Vol, veh/h		271			595			175			291	
Approach Delay, s/veh		16.7			18.7			28.9			29.8	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	47.2	5.3	27.9	6.5	50.3	6.2	27.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	14.5	27.5	7.5	22.5	8.5	33.5	7.5	22.5
Max Q Clear Time (g_c+I1), s	5.9	5.6	2.4	7.5	3.0	9.6	2.9	5.3
Green Ext Time (p_c), s	0.1	4.8	0.0	2.2	0.0	4.9	0.0	2.3

Intersection Summary		
HCM 2010 Ctrl Delay		22.0
HCM 2010 LOS		C

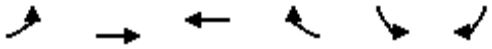


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	140	839	1264	79	133	199
Future Volume (veh/h)	140	839	1264	79	133	199
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	152	912	1374	86	145	216
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	225	3079	2398	150	1013	821
Arrive On Green	0.07	0.61	0.49	0.49	0.29	0.29
Sat Flow, veh/h	3442	5253	5060	306	3442	2787
Grp Volume(v), veh/h	152	912	952	508	145	216
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1809	1721	1393
Q Serve(g_s), s	3.9	7.8	17.9	17.9	2.8	5.3
Cycle Q Clear(g_c), s	3.9	7.8	17.9	17.9	2.8	5.3
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	225	3079	1661	886	1013	821
V/C Ratio(X)	0.67	0.30	0.57	0.57	0.14	0.26
Avail Cap(c_a), veh/h	363	3079	1661	886	1013	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	8.5	16.3	16.3	23.4	24.3
Incr Delay (d2), s/veh	3.5	0.2	1.4	2.7	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.7	8.7	9.6	1.4	4.7
LnGrp Delay(d),s/veh	44.6	8.8	17.7	19.0	23.7	25.1
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		1064	1460		361	
Approach Delay, s/veh		13.9	18.1		24.5	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		59.0		31.0	10.4	48.6		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		54.5		26.5	9.5	40.5		
Max Q Clear Time (g_c+I1), s		9.8		7.3	5.9	19.9		
Green Ext Time (p_c), s		28.0		1.3	0.1	16.0		

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

APPENDIX C-13
Intersection LOS Analysis
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	338	623	690	133	133	376
Future Volume (veh/h)	338	623	690	133	133	376
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	363	670	742	143	143	404
Adj No. of Lanes	2	1	2	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	506	1134	1158	223	444	629
Arrive On Green	0.15	0.61	0.39	0.39	0.25	0.25
Sat Flow, veh/h	3442	1863	3054	571	1774	1583
Grp Volume(v), veh/h	363	670	443	442	143	404
Grp Sat Flow(s),veh/h/ln	1721	1863	1770	1762	1774	1583
Q Serve(g_s), s	6.4	14.0	13.0	13.0	4.2	13.2
Cycle Q Clear(g_c), s	6.4	14.0	13.0	13.0	4.2	13.2
Prop In Lane	1.00			0.32	1.00	1.00
Lane Grp Cap(c), veh/h	506	1134	692	689	444	629
V/C Ratio(X)	0.72	0.59	0.64	0.64	0.32	0.64
Avail Cap(c_a), veh/h	1105	1794	1012	1007	542	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	7.6	15.8	15.8	19.5	15.6
Incr Delay (d2), s/veh	1.9	0.5	1.0	1.0	0.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	7.2	6.5	6.4	2.1	5.9
LnGrp Delay(d),s/veh	27.9	8.1	16.8	16.8	19.9	17.2
LnGrp LOS	C	A	B	B	B	B
Approach Vol, veh/h		1033	885		547	
Approach Delay, s/veh		15.1	16.8		17.9	
Approach LOS		B	B		B	

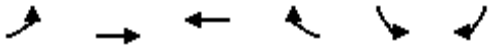
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		43.4			13.9	29.5		20.5
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		61.5			20.5	36.5		19.5
Max Q Clear Time (g_c+I1), s		16.0			8.4	15.0		15.2
Green Ext Time (p_c), s		12.9			1.0	10.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	273	10	15	11	312	143	9	11	362	18
Future Volume (veh/h)	11	13	273	10	15	11	312	143	9	11	362	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	12	14	300	11	16	12	343	157	10	12	398	20
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	88	27	383	178	229	136	565	197	857	90	940	46
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	23	104	1468	292	877	520	797	365	1583	16	1738	86
Grp Volume(v), veh/h	326	0	0	39	0	0	500	0	10	430	0	0
Grp Sat Flow(s),veh/h/ln	1595	0	0	1690	0	0	1163	0	1583	1839	0	0
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.6	0.0	0.0	0.8	0.0	0.0	15.4	0.0	0.1	6.3	0.0	0.0
Prop In Lane	0.04		0.92	0.28		0.31	0.69		1.00	0.03		0.05
Lane Grp Cap(c), veh/h	498	0	0	542	0	0	763	0	857	1076	0	0
V/C Ratio(X)	0.65	0.00	0.00	0.07	0.00	0.00	0.66	0.00	0.01	0.40	0.00	0.00
Avail Cap(c_a), veh/h	713	0	0	742	0	0	1099	0	1325	1615	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	0.0	0.0	12.7	0.0	0.0	8.2	0.0	4.8	6.2	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	0.4	0.0	0.0	5.1	0.0	0.1	3.2	0.0	0.0
LnGrp Delay(d),s/veh	17.0	0.0	0.0	12.7	0.0	0.0	9.1	0.0	4.8	6.5	0.0	0.0
LnGrp LOS	B			B			A		A	A		
Approach Vol, veh/h		326			39			510			430	
Approach Delay, s/veh		17.0			12.7			9.1			6.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.1		16.3		29.1		16.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		38.0		18.0		38.0		18.0
Max Q Clear Time (g_c+I1), s		17.4		10.6		8.3		2.8
Green Ext Time (p_c), s		7.2		1.4		8.2		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	534	771	835	150	101	361
Future Volume (veh/h)	534	771	835	150	101	361
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	545	787	852	153	103	368
Adj No. of Lanes	2	1	2	0	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	679	1236	1214	218	378	650
Arrive On Green	0.20	0.66	0.40	0.40	0.21	0.21
Sat Flow, veh/h	3442	1863	3092	539	1774	1583
Grp Volume(v), veh/h	545	787	503	502	103	368
Grp Sat Flow(s),veh/h/ln	1721	1863	1770	1768	1774	1583
Q Serve(g_s), s	11.0	18.0	17.3	17.3	3.5	13.0
Cycle Q Clear(g_c), s	11.0	18.0	17.3	17.3	3.5	13.0
Prop In Lane	1.00			0.30	1.00	1.00
Lane Grp Cap(c), veh/h	679	1236	716	715	378	650
V/C Ratio(X)	0.80	0.64	0.70	0.70	0.27	0.57
Avail Cap(c_a), veh/h	1041	1604	879	878	440	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	7.1	18.1	18.1	24.0	16.5
Incr Delay (d2), s/veh	2.6	0.5	1.9	1.9	0.4	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	9.2	8.8	8.8	1.8	5.8
LnGrp Delay(d),s/veh	30.6	7.7	20.0	20.0	24.4	17.4
LnGrp LOS	C	A	B	B	C	B
Approach Vol, veh/h		1332	1005		471	
Approach Delay, s/veh		17.1	20.0		19.0	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		53.0			18.9	34.1		20.1
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		62.9			22.1	36.3		18.1
Max Q Clear Time (g_c+I1), s		20.0			13.0	19.3		15.0
Green Ext Time (p_c), s		16.4			1.4	10.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	127	11	210	105	70	14	76	279	61	52	161
Future Volume (veh/h)	154	127	11	210	105	70	14	76	279	61	52	161
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	181	149	13	247	124	82	16	89	328	72	61	189
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	449	332	25	476	219	120	148	547	514	190	133	287
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	695	775	58	755	509	279	107	1686	1583	214	408	885
Grp Volume(v), veh/h	343	0	0	453	0	0	105	0	328	322	0	0
Grp Sat Flow(s),veh/h/ln	1528	0	0	1543	0	0	1793	0	1583	1507	0	0
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	6.5	2.4	0.0	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	7.7	0.0	0.0	1.5	0.0	6.5	6.3	0.0	0.0
Prop In Lane	0.53		0.04	0.55		0.18	0.15		1.00	0.22		0.59
Lane Grp Cap(c), veh/h	806	0	0	814	0	0	696	0	514	610	0	0
V/C Ratio(X)	0.43	0.00	0.00	0.56	0.00	0.00	0.15	0.00	0.64	0.53	0.00	0.00
Avail Cap(c_a), veh/h	1533	0	0	1541	0	0	1142	0	931	984	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.4	0.0	0.0	8.0	0.0	0.0	8.8	0.0	10.5	10.4	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.6	0.0	0.0	0.1	0.0	1.3	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	3.7	0.0	0.0	0.8	0.0	2.9	2.8	0.0	0.0
LnGrp Delay(d),s/veh	7.8	0.0	0.0	8.6	0.0	0.0	8.9	0.0	11.8	11.1	0.0	0.0
LnGrp LOS	A			A			A		B	B		
Approach Vol, veh/h		343			453			433			322	
Approach Delay, s/veh		7.8			8.6			11.1			11.1	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.4		20.2		16.4		20.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		21.5		34.5		21.5		34.5
Max Q Clear Time (g_c+I1), s		8.5		7.4		8.3		9.7
Green Ext Time (p_c), s		3.4		6.1		3.4		6.0

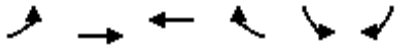
Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

APPENDIX C-14
Intersection LOS Analysis
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	1025	7	6	1224	35	6	6	8	40	6	28
Future Volume (veh/h)	17	1025	7	6	1224	35	6	6	8	40	6	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	18	1102	8	6	1316	38	6	6	9	43	6	30
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	1705	12	14	1614	47	45	45	68	164	25	125
Arrive On Green	0.02	0.47	0.47	0.01	0.46	0.46	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1774	3602	26	1774	3513	101	488	488	732	1774	271	1353
Grp Volume(v), veh/h	18	541	569	6	662	692	21	0	0	43	0	36
Grp Sat Flow(s),veh/h/ln	1774	1770	1858	1774	1770	1845	1709	0	0	1774	0	1624
Q Serve(g_s), s	0.5	12.5	12.5	0.2	17.5	17.5	0.6	0.0	0.0	1.2	0.0	1.1
Cycle Q Clear(g_c), s	0.5	12.5	12.5	0.2	17.5	17.5	0.6	0.0	0.0	1.2	0.0	1.1
Prop In Lane	1.00		0.01	1.00		0.05	0.29		0.43	1.00		0.83
Lane Grp Cap(c), veh/h	39	838	880	14	813	848	158	0	0	164	0	150
V/C Ratio(X)	0.46	0.65	0.65	0.42	0.81	0.82	0.13	0.00	0.00	0.26	0.00	0.24
Avail Cap(c_a), veh/h	164	838	880	168	839	875	570	0	0	769	0	704
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.1	10.8	10.8	26.7	12.6	12.6	22.5	0.0	0.0	22.8	0.0	22.7
Incr Delay (d2), s/veh	8.3	1.7	1.6	18.9	6.1	5.9	0.4	0.0	0.0	0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.4	6.7	0.2	9.8	10.2	0.3	0.0	0.0	0.6	0.0	0.5
LnGrp Delay(d),s/veh	34.4	12.5	12.4	45.6	18.7	18.5	22.9	0.0	0.0	23.6	0.0	23.5
LnGrp LOS	C	B	B	D	B	B	C			C		C
Approach Vol, veh/h		1128			1360			21			79	
Approach Delay, s/veh		12.8			18.7			22.9			23.6	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.9	30.1		9.5	5.7	29.3		9.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	25.5		23.4	5.0	25.6		18.0
Max Q Clear Time (g_c+I1), s	2.2	14.5		3.2	2.5	19.5		2.6
Green Ext Time (p_c), s	0.0	9.1		0.2	0.0	5.3		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		16.3
HCM 2010 LOS		B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	353	775	863	299	256	381
Future Volume (veh/h)	353	775	863	299	256	381
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	380	833	928	322	275	410
Adj No. of Lanes	2	1	2	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	476	1205	1185	409	449	620
Arrive On Green	0.14	0.65	0.46	0.46	0.25	0.25
Sat Flow, veh/h	3442	1863	2676	892	1774	1583
Grp Volume(v), veh/h	380	833	634	616	275	410
Grp Sat Flow(s),veh/h/ln	1721	1863	1770	1705	1774	1583
Q Serve(g_s), s	9.7	25.8	27.3	27.6	12.4	19.2
Cycle Q Clear(g_c), s	9.7	25.8	27.3	27.6	12.4	19.2
Prop In Lane	1.00			0.52	1.00	1.00
Lane Grp Cap(c), veh/h	476	1205	812	783	449	620
V/C Ratio(X)	0.80	0.69	0.78	0.79	0.61	0.66
Avail Cap(c_a), veh/h	751	1455	908	875	600	754
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	10.2	20.6	20.7	29.8	22.5
Incr Delay (d2), s/veh	3.2	1.1	4.0	4.3	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	13.3	14.1	13.8	6.2	8.6
LnGrp Delay(d),s/veh	40.9	11.3	24.6	25.0	31.1	24.1
LnGrp LOS	D	B	C	C	C	C
Approach Vol, veh/h		1213	1250		685	
Approach Delay, s/veh		20.5	24.8		27.0	
Approach LOS		C	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		62.9			17.0	45.9		27.3
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		70.5			19.7	46.3		30.5
Max Q Clear Time (g_c+I1), s		27.8			11.7	29.6		21.2
Green Ext Time (p_c), s		21.1			0.8	11.8		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	785	302	621	863	720	185	231	139	865	228	128
Future Volume (veh/h)	216	785	302	621	863	720	185	231	139	865	228	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	257	935	360	739	1027	857	220	275	165	1030	271	152
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	2229	857	627	2364	1768	242	373	317	900	368	207
Arrive On Green	0.13	0.58	0.58	0.18	0.63	0.63	0.14	0.20	0.20	0.25	0.33	0.33
Sat Flow, veh/h	1774	3848	1479	3442	3725	2787	1774	1863	1583	3548	1122	629
Grp Volume(v), veh/h	257	905	390	739	1027	857	220	275	165	1030	0	423
Grp Sat Flow(s),veh/h/ln	1774	1863	1602	1721	1863	1393	1774	1863	1583	1774	0	1752
Q Serve(g_s), s	18.4	19.6	19.6	26.4	20.2	23.5	17.7	20.1	13.5	36.8	0.0	31.0
Cycle Q Clear(g_c), s	18.4	19.6	19.6	26.4	20.2	23.5	17.7	20.1	13.5	36.8	0.0	31.0
Prop In Lane	1.00		0.92	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	225	2158	928	627	2364	1768	242	373	317	900	0	575
V/C Ratio(X)	1.14	0.42	0.42	1.18	0.43	0.48	0.91	0.74	0.52	1.14	0.00	0.74
Avail Cap(c_a), veh/h	225	2158	928	627	2364	1768	281	373	317	900	0	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.42	0.42	0.42	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.3	16.9	17.0	59.3	13.4	14.0	61.7	54.4	51.8	54.1	0.0	43.1
Incr Delay (d2), s/veh	103.4	0.6	1.4	88.0	0.2	0.4	26.8	12.3	6.0	77.9	0.0	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	10.2	9.0	20.2	10.4	9.1	10.5	11.6	6.4	27.8	0.0	16.3
LnGrp Delay(d),s/veh	166.7	17.5	18.4	147.3	13.6	14.4	88.5	66.8	57.8	132.0	0.0	51.3
LnGrp LOS	F	B	B	F	B	B	F	E	E	F		D
Approach Vol, veh/h		1552			2623			660			1453	
Approach Delay, s/veh		42.5			51.5			71.8			108.5	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.0	91.8	24.4	53.8	23.0	99.8	43.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	26.4	31.2	23.0	42.8	18.4	39.2	36.8	* 29
Max Q Clear Time (g_c+I2), s	28.4	21.6	19.7	33.0	20.4	25.5	38.8	22.1
Green Ext Time (p_c), s	0.0	9.4	0.1	4.1	0.0	13.3	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	64.6
HCM 2010 LOS	E

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1202	737	0	1687	581	0	0	0	350	0	517
Future Volume (veh/h)	0	1202	737	0	1687	581	0	0	0	350	0	517
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1307	801	0	1834	632				380	0	562
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	1966	880	0	1966	880				1224	0	991
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.56				0.36	0.00	0.36
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1307	801	0	1834	632				380	0	562
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	23.4	41.0	0.0	43.0	26.6				7.2	0.0	14.7
Cycle Q Clear(g_c), s	0.0	23.4	41.0	0.0	43.0	26.6				7.2	0.0	14.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1966	880	0	1966	880				1224	0	991
V/C Ratio(X)	0.00	0.66	0.91	0.00	0.93	0.72				0.31	0.00	0.57
Avail Cap(c_a), veh/h	0	1966	880	0	1966	880				1224	0	991
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.15	0.15				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.1	18.0	0.0	18.4	14.8				21.0	0.0	23.4
Incr Delay (d2), s/veh	0.0	0.2	1.8	0.0	1.8	0.8				0.7	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.3	18.0	0.0	21.1	11.6				3.5	0.0	5.9
LnGrp Delay(d),s/veh	0.0	14.3	19.8	0.0	20.2	15.6				21.7	0.0	25.8
LnGrp LOS		B	B		C	B				C		C
Approach Vol, veh/h		2108			2466						942	
Approach Delay, s/veh		16.4			19.0						24.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		54.0		36.0		54.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		50.0		32.0		50.0		
Max Q Clear Time (g_c+I1), s		43.0		16.7		45.0		
Green Ext Time (p_c), s		7.0		3.5		4.9		

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	349	1203	0	0	1540	620	0	0	485	0	0	728
Future Volume (veh/h)	349	1203	0	0	1540	620	0	0	485	0	0	728
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	367	1266	0	0	1621	653	0	0	511	0	0	766
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	363	3382	0	0	2501	1119	0	0	0	0	0	0
Arrive On Green	0.27	1.00	0.00	0.00	0.71	0.71	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	367	1266	0	0	1621	653		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	18.4	0.0	0.0	0.0	22.3	18.5						
Cycle Q Clear(g_c), s	18.4	0.0	0.0	0.0	22.3	18.5						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	363	3382	0	0	2501	1119						
V/C Ratio(X)	1.01	0.37	0.00	0.00	0.65	0.58						
Avail Cap(c_a), veh/h	363	3382	0	0	2501	1119						
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.78	0.78	0.00	0.00	0.13	0.13						
Uniform Delay (d), s/veh	32.8	0.0	0.0	0.0	7.1	6.6						
Incr Delay (d2), s/veh	44.8	0.2	0.0	0.0	0.2	0.3						
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	18.4	0.1	0.0	0.0	10.6	8.1						
LnGrp Delay(d),s/veh	77.7	0.2	0.0	0.0	7.3	6.9						
LnGrp LOS	F	A			A	A						
Approach Vol, veh/h		1633			2274							
Approach Delay, s/veh		17.6			7.2							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			22.4	67.6		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		61.9			18.4	39.5		
Max Q Clear Time (g_c+I1), s		2.0			20.4	24.3		
Green Ext Time (p_c), s		47.8			0.0	14.2		

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	294	1057	337	214	1453	74	435	381	116	152	404	272
Future Volume (veh/h)	294	1057	337	214	1453	74	435	381	116	152	404	272
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	309	1113	355	225	1529	78	458	401	122	160	425	286
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	1790	801	241	2383	122	384	570	484	183	554	471
Arrive On Green	0.09	0.51	0.51	0.07	0.48	0.48	0.11	0.31	0.31	0.10	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	4956	253	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	309	1113	355	225	1046	561	458	401	122	160	425	286
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1818	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.7	27.2	17.1	7.8	27.8	27.8	13.4	22.9	7.0	10.7	24.9	18.6
Cycle Q Clear(g_c), s	10.7	27.2	17.1	7.8	27.8	27.8	13.4	22.9	7.0	10.7	24.9	18.6
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	327	1790	801	241	1630	874	384	570	484	183	554	471
V/C Ratio(X)	0.95	0.62	0.44	0.93	0.64	0.64	1.19	0.70	0.25	0.87	0.77	0.61
Avail Cap(c_a), veh/h	327	1790	801	241	1630	874	384	570	484	183	554	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	21.4	18.9	55.5	23.4	23.4	53.3	36.8	31.3	53.0	38.4	36.1
Incr Delay (d2), s/veh	29.3	1.2	1.3	39.7	2.0	3.6	109.3	7.1	1.2	32.8	9.8	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	13.6	7.7	5.0	13.4	14.7	12.2	12.8	3.2	6.9	14.3	8.9
LnGrp Delay(d),s/veh	83.3	22.6	20.2	95.2	25.3	27.0	162.6	44.0	32.6	85.8	48.1	41.9
LnGrp LOS	F	C	C	F	C	C	F	D	C	F	D	D
Approach Vol, veh/h		1777			1832			981			871	
Approach Delay, s/veh		32.7			34.4			97.9			53.0	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	67.8	18.0	42.2	16.0	64.8	17.0	43.2
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	8.4	* 41	13.4	* 36	11.4	37.6	12.4	36.4
Max Q Clear Time (g_c+I1), s	9.8	29.2	15.4	26.9	12.7	29.8	12.7	24.9
Green Ext Time (p_c), s	0.0	10.5	0.0	2.6	0.0	7.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	48.2
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	134	24	70	55	269	20	98	124	203	70	33
Future Volume (veh/h)	32	134	24	70	55	269	20	98	124	203	70	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	170	30	89	70	341	25	124	157	257	89	42
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	274	48	570	84	407	316	331	544	344	232	110
Arrive On Green	0.04	0.18	0.18	0.17	0.30	0.30	0.18	0.18	0.18	0.19	0.19	0.19
Sat Flow, veh/h	1774	1543	272	3442	277	1348	1774	1863	1583	1774	1198	565
Grp Volume(v), veh/h	41	0	200	89	0	411	25	124	157	257	0	131
Grp Sat Flow(s),veh/h/ln	1774	0	1815	1721	0	1625	1774	1863	1583	1774	0	1763
Q Serve(g_s), s	1.3	0.0	5.7	1.2	0.0	13.3	0.7	3.3	0.0	7.7	0.0	3.6
Cycle Q Clear(g_c), s	1.3	0.0	5.7	1.2	0.0	13.3	0.7	3.3	0.0	7.7	0.0	3.6
Prop In Lane	1.00		0.15	1.00		0.83	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	73	0	323	570	0	491	316	331	544	344	0	342
V/C Ratio(X)	0.56	0.00	0.62	0.16	0.00	0.84	0.08	0.37	0.29	0.75	0.00	0.38
Avail Cap(c_a), veh/h	177	0	743	570	0	705	694	729	882	694	0	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.4	0.0	21.3	20.1	0.0	18.3	19.3	20.3	13.4	21.4	0.0	19.7
Incr Delay (d2), s/veh	6.6	0.0	1.9	0.1	0.0	6.0	0.1	0.7	0.3	3.2	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	3.0	0.6	0.0	6.8	0.3	1.8	1.8	4.0	0.0	1.8
LnGrp Delay(d),s/veh	33.0	0.0	23.3	20.2	0.0	24.3	19.4	21.0	13.7	24.6	0.0	20.4
LnGrp LOS	C		C	C		C	B	C	B	C		C
Approach Vol, veh/h		241			500			306			388	
Approach Delay, s/veh		24.9			23.6			17.2			23.2	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.3	14.0		14.9	6.3	21.0		14.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	23.0		22.0	5.6	24.4		22.0
Max Q Clear Time (g_c+I1), s	3.2	7.7		9.7	3.3	15.3		5.3
Green Ext Time (p_c), s	0.1	0.8		1.2	0.0	1.7		1.1

Intersection Summary		
HCM 2010 Ctrl Delay		22.3
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	450	235	13	578	145	112	274	16	70	299	118
Future Volume (veh/h)	202	450	235	13	578	145	112	274	16	70	299	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	235	523	273	15	672	169	130	319	19	81	348	137
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	345	1836	572	50	976	242	473	938	56	532	1004	853
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1264	5085	1583	24	2703	671	907	1741	104	1038	1863	1583
Grp Volume(v), veh/h	235	523	273	459	0	397	130	0	338	81	348	137
Grp Sat Flow(s),veh/h/ln	632	1695	1583	1821	0	1577	907	0	1844	1038	1863	1583
Q Serve(g_s), s	13.2	6.6	12.0	0.0	0.0	19.3	8.5	0.0	9.3	4.3	9.5	3.9
Cycle Q Clear(g_c), s	32.5	6.6	12.0	18.8	0.0	19.3	18.1	0.0	9.3	13.6	9.5	3.9
Prop In Lane	1.00		1.00	0.03		0.43	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	345	1836	572	699	0	569	473	0	994	532	1004	853
V/C Ratio(X)	0.68	0.28	0.48	0.66	0.00	0.70	0.28	0.00	0.34	0.15	0.35	0.16
Avail Cap(c_a), veh/h	345	1836	572	699	0	569	473	0	994	532	1004	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	20.5	22.2	24.4	0.0	24.5	16.9	0.0	11.7	15.6	11.8	10.5
Incr Delay (d2), s/veh	5.4	0.1	0.6	2.2	0.0	3.7	1.4	0.0	0.9	0.6	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	3.1	5.3	10.0	0.0	9.0	2.3	0.0	5.0	1.3	5.1	1.8
LnGrp Delay(d),s/veh	45.2	20.6	22.8	26.6	0.0	28.3	18.3	0.0	12.6	16.2	12.7	10.9
LnGrp LOS	D	C	C	C		C	B		B	B	B	B
Approach Vol, veh/h		1031			856			468			566	
Approach Delay, s/veh		26.8			27.4			14.2			12.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		53.0		37.0		53.0		37.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		48.5		32.5		48.5		32.5
Max Q Clear Time (g_c+I1), s		20.1		34.5		15.6		21.3
Green Ext Time (p_c), s		6.3		0.0		6.5		7.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	352	38	65	21	84	12	173	60	7	18	187	329
Future Volume (veh/h)	352	38	65	21	84	12	173	60	7	18	187	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	391	42	72	23	93	13	192	67	8	20	208	366
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	438	673	572	45	494	221	233	1172	138	41	916	410
Arrive On Green	0.25	0.36	0.36	0.03	0.14	0.14	0.13	0.37	0.37	0.02	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3192	375	1774	3539	1583
Grp Volume(v), veh/h	391	42	72	23	93	13	192	37	38	20	208	366
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1797	1774	1770	1583
Q Serve(g_s), s	15.3	1.1	2.2	0.9	1.7	0.5	7.6	1.0	1.0	0.8	3.3	16.0
Cycle Q Clear(g_c), s	15.3	1.1	2.2	0.9	1.7	0.5	7.6	1.0	1.0	0.8	3.3	16.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	438	673	572	45	494	221	233	650	660	41	916	410
V/C Ratio(X)	0.89	0.06	0.13	0.51	0.19	0.06	0.82	0.06	0.06	0.49	0.23	0.89
Avail Cap(c_a), veh/h	520	980	833	136	1096	490	267	650	660	136	988	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	15.0	15.3	34.5	27.3	26.8	30.3	14.7	14.7	34.6	20.9	25.6
Incr Delay (d2), s/veh	15.7	0.0	0.1	8.4	0.2	0.1	16.7	0.0	0.0	8.9	0.1	19.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	0.5	1.0	0.6	0.8	0.2	4.8	0.5	0.5	0.5	1.6	9.1
LnGrp Delay(d),s/veh	41.7	15.0	15.4	42.9	27.4	26.9	47.1	14.7	14.7	43.5	21.0	44.8
LnGrp LOS	D	B	B	D	C	C	D	B	B	D	C	D
Approach Vol, veh/h		505			129			267			594	
Approach Delay, s/veh		35.7			30.1			38.0			36.4	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	29.9	13.4	22.6	21.7	14.0	5.6	30.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	37.7	10.8	20.0	21.0	22.2	5.5	25.3
Max Q Clear Time (g_c+I1), s	2.9	4.2	9.6	18.0	17.3	3.7	2.8	3.0
Green Ext Time (p_c), s	0.0	1.0	0.1	0.6	0.5	0.9	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	259	37	22	301	139	6	174	6	110	326	28
Future Volume (veh/h)	50	259	37	22	301	139	6	174	6	110	326	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	61	316	45	27	367	170	7	212	7	134	398	34
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	731	103	44	506	231	15	1630	54	169	1862	158
Arrive On Green	0.04	0.23	0.23	0.02	0.21	0.21	0.01	0.47	0.47	0.10	0.56	0.56
Sat Flow, veh/h	1774	3115	439	1774	2364	1078	1774	3497	115	1774	3302	281
Grp Volume(v), veh/h	61	178	183	27	273	264	7	107	112	134	212	220
Grp Sat Flow(s),veh/h/ln	1774	1770	1785	1774	1770	1672	1774	1770	1842	1774	1770	1813
Q Serve(g_s), s	4.1	10.3	10.5	1.8	17.2	17.7	0.5	4.1	4.1	8.9	7.1	7.2
Cycle Q Clear(g_c), s	4.1	10.3	10.5	1.8	17.2	17.7	0.5	4.1	4.1	8.9	7.1	7.2
Prop In Lane	1.00		0.25	1.00		0.64	1.00		0.06	1.00		0.15
Lane Grp Cap(c), veh/h	79	415	419	44	379	358	15	825	859	169	998	1022
V/C Ratio(X)	0.78	0.43	0.44	0.62	0.72	0.74	0.46	0.13	0.13	0.79	0.21	0.21
Avail Cap(c_a), veh/h	287	584	589	155	451	426	140	825	859	343	998	1022
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.46	0.46	0.46	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.7	39.1	39.2	58.0	43.8	44.0	59.2	18.2	18.2	53.1	13.0	13.0
Incr Delay (d2), s/veh	6.0	1.4	1.5	6.3	3.1	3.6	19.6	0.3	0.3	16.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.2	5.3	1.0	8.8	8.5	0.3	2.1	2.2	5.1	3.5	3.7
LnGrp Delay(d),s/veh	62.7	40.5	40.6	64.3	46.9	47.6	78.7	18.5	18.5	69.1	13.2	13.2
LnGrp LOS	E	D	D	E	D	D	E	B	B	E	B	B
Approach Vol, veh/h		422			564			226			566	
Approach Delay, s/veh		43.8			48.1			20.4			26.4	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	61.7	7.5	33.5	5.5	73.5	9.9	31.1
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	23.3	* 27	10.5	39.6	9.5	40.2	19.4	30.6
Max Q Clear Time (g_c+I1), s	10.9	6.1	3.8	12.5	2.5	9.2	6.1	19.7
Green Ext Time (p_c), s	0.6	5.9	0.0	10.4	0.0	6.8	0.0	6.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.6
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	14	311	99	19	11	402	197	39	11	388	18
Future Volume (veh/h)	11	14	311	99	19	11	402	197	39	11	388	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	17	379	121	23	13	490	240	48	13	473	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	28	480	408	147	606	515	505	1338	263	28	635	29
Arrive On Green	0.02	0.26	0.26	0.08	0.33	0.33	0.28	0.45	0.45	0.02	0.18	0.18
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2950	580	1774	3444	160
Grp Volume(v), veh/h	13	17	379	121	23	13	490	142	146	13	243	252
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1760	1774	1770	1835
Q Serve(g_s), s	0.6	0.6	19.7	5.7	0.7	0.5	23.0	4.0	4.2	0.6	10.9	11.0
Cycle Q Clear(g_c), s	0.6	0.6	19.7	5.7	0.7	0.5	23.0	4.0	4.2	0.6	10.9	11.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.09
Lane Grp Cap(c), veh/h	28	480	408	147	606	515	505	803	798	28	326	338
V/C Ratio(X)	0.47	0.04	0.93	0.82	0.04	0.03	0.97	0.18	0.18	0.47	0.74	0.75
Avail Cap(c_a), veh/h	116	486	413	147	606	515	505	829	825	116	441	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	23.4	30.5	38.0	19.4	19.3	29.8	13.7	13.7	41.1	32.5	32.5
Incr Delay (d2), s/veh	11.9	0.0	27.0	29.5	0.0	0.0	32.3	0.1	0.1	11.9	4.5	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	11.6	4.0	0.4	0.2	15.7	2.0	2.0	0.4	5.7	6.0
LnGrp Delay(d),s/veh	53.1	23.4	57.5	67.6	19.4	19.4	62.1	13.8	13.8	53.1	37.0	37.0
LnGrp LOS	D	C	E	E	B	B	E	B	B	D	D	D
Approach Vol, veh/h		409			157			778			508	
Approach Delay, s/veh		55.9			56.5			44.2			37.4	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	42.2	11.0	25.7	28.0	19.5	5.3	31.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	39.5	7.0	22.0	24.0	21.0	5.5	23.5
Max Q Clear Time (g_c+I1), s	2.6	6.2	7.7	21.7	25.0	13.0	2.6	2.7
Green Ext Time (p_c), s	0.0	4.4	0.0	0.1	0.0	2.6	0.0	1.5

Intersection Summary		
HCM 2010 Ctrl Delay		46.0
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	91	13	469	56	27	8	23	245	49	55	93
Future Volume (veh/h)	64	91	13	469	56	27	8	23	245	49	55	93
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	70	100	14	515	62	30	9	25	269	54	60	102
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	558	71	790	77	37	166	365	389	163	141	181
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	551	1017	129	1163	140	68	255	1484	1583	246	574	734
Grp Volume(v), veh/h	184	0	0	607	0	0	34	0	269	216	0	0
Grp Sat Flow(s),veh/h/ln	1698	0	0	1371	0	0	1739	0	1583	1555	0	0
Q Serve(g_s), s	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	6.8	1.4	0.0	0.0
Cycle Q Clear(g_c), s	2.2	0.0	0.0	15.2	0.0	0.0	0.6	0.0	6.8	5.0	0.0	0.0
Prop In Lane	0.38		0.08	0.85		0.05	0.26		1.00	0.25		0.47
Lane Grp Cap(c), veh/h	1045	0	0	904	0	0	532	0	389	485	0	0
V/C Ratio(X)	0.18	0.00	0.00	0.67	0.00	0.00	0.06	0.00	0.69	0.45	0.00	0.00
Avail Cap(c_a), veh/h	2359	0	0	2009	0	0	894	0	740	812	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.0	0.0	0.0	7.7	0.0	0.0	12.7	0.0	15.0	14.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.9	0.0	0.0	0.0	0.0	2.2	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	6.0	0.0	0.0	0.3	0.0	3.2	2.3	0.0	0.0
LnGrp Delay(d),s/veh	5.0	0.0	0.0	8.5	0.0	0.0	12.7	0.0	17.2	14.9	0.0	0.0
LnGrp LOS	A			A			B		B	B		
Approach Vol, veh/h		184			607			303			216	
Approach Delay, s/veh		5.0			8.5			16.7			14.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.3		28.6		15.3		28.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		20.5		60.5		20.5		60.5
Max Q Clear Time (g_c+I1), s		8.8		4.2		7.0		17.2
Green Ext Time (p_c), s		2.0		7.0		2.2		6.8

Intersection Summary		
HCM 2010 Ctrl Delay		11.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	16	105	9	18	6	71	545	7	6	521	101
Future Volume (veh/h)	92	16	105	9	18	6	71	545	7	6	521	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	106	18	121	10	21	7	82	626	8	7	599	116
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	216	183	13	27	9	101	2318	30	19	1779	344
Arrive On Green	0.12	0.12	0.12	0.03	0.03	0.03	0.06	0.65	0.65	0.01	0.60	0.60
Sat Flow, veh/h	1774	1863	1583	469	984	328	1774	3579	46	1774	2960	572
Grp Volume(v), veh/h	106	18	121	38	0	0	82	309	325	7	358	357
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1781	0	0	1774	1770	1855	1774	1770	1762
Q Serve(g_s), s	5.9	0.9	7.7	2.2	0.0	0.0	4.8	7.8	7.8	0.4	10.6	10.7
Cycle Q Clear(g_c), s	5.9	0.9	7.7	2.2	0.0	0.0	4.8	7.8	7.8	0.4	10.6	10.7
Prop In Lane	1.00		1.00	0.26		0.18	1.00		0.02	1.00		0.32
Lane Grp Cap(c), veh/h	205	216	183	50	0	0	101	1146	1202	19	1064	1059
V/C Ratio(X)	0.52	0.08	0.66	0.77	0.00	0.00	0.81	0.27	0.27	0.37	0.34	0.34
Avail Cap(c_a), veh/h	439	461	392	509	0	0	101	1146	1202	149	1064	1059
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	41.5	44.5	50.7	0.0	0.0	48.9	7.9	7.9	51.6	10.5	10.5
Incr Delay (d2), s/veh	9.0	0.8	17.2	21.5	0.0	0.0	34.7	0.6	0.6	4.5	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.5	4.2	1.4	0.0	0.0	3.3	4.0	4.2	0.2	5.4	5.4
LnGrp Delay(d),s/veh	52.7	42.2	61.6	72.2	0.0	0.0	83.7	8.5	8.4	56.1	11.3	11.3
LnGrp LOS	D	D	E	E			F	A	A	E	B	B
Approach Vol, veh/h		245			38			716			722	
Approach Delay, s/veh		56.3			72.2			17.1			11.8	
Approach LOS		E			E			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	73.8		17.9	10.6	68.9		7.5
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	8.8	19.4		26.0	6.0	22.2		30.0
Max Q Clear Time (g_c+I1), s	12.4	9.8		9.7	6.8	12.7		4.2
Green Ext Time (p_c), s	0.0	8.0		2.5	0.0	8.0		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		21.6
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	1791	229	225	1611	56	115	16	284	117	21	77
Future Volume (veh/h)	46	1791	229	225	1611	56	115	16	284	117	21	77
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	50	1947	249	245	1751	61	125	17	309	127	23	84
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1763	749	194	3024	857	149	19	346	173	363	374
Arrive On Green	0.04	0.47	0.47	0.11	0.54	0.54	0.08	0.23	0.23	0.05	0.19	0.19
Sat Flow, veh/h	1774	3725	1583	1774	5588	1583	1774	83	1513	3442	1863	1583
Grp Volume(v), veh/h	50	1947	249	245	1751	61	125	0	326	127	23	84
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1596	1721	1863	1583
Q Serve(g_s), s	4.2	71.0	14.7	16.4	31.4	2.8	10.4	0.0	29.7	5.5	1.5	6.4
Cycle Q Clear(g_c), s	4.2	71.0	14.7	16.4	31.4	2.8	10.4	0.0	29.7	5.5	1.5	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		1.00
Lane Grp Cap(c), veh/h	73	1763	749	194	3024	857	149	0	365	173	363	374
V/C Ratio(X)	0.68	1.10	0.33	1.26	0.58	0.07	0.84	0.00	0.89	0.74	0.06	0.22
Avail Cap(c_a), veh/h	260	1763	749	194	3024	857	241	0	474	321	474	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.50	0.50	0.50	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.9	39.5	24.7	66.8	23.0	16.4	67.7	0.0	56.1	70.3	49.2	46.2
Incr Delay (d2), s/veh	4.1	56.1	1.2	137.5	0.4	0.1	13.1	0.0	16.1	2.3	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	50.2	6.7	15.4	16.2	1.2	5.6	0.0	14.8	2.6	0.8	2.9
LnGrp Delay(d),s/veh	75.0	95.6	25.9	204.3	23.4	16.5	80.8	0.0	72.2	72.5	49.4	46.9
LnGrp LOS	E	F	C	F	C	B	F		E	E	D	D
Approach Vol, veh/h		2246			2057			451			234	
Approach Delay, s/veh		87.4			44.7			74.6			61.1	
Approach LOS		F			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	76.8	17.2	35.0	10.8	87.0	12.1	40.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	16.4	54.2	20.4	38.2	22.0	48.6	14.0	44.6
Max Q Clear Time (g_c+I1), s	18.4	73.0	12.4	8.4	6.2	33.4	7.5	31.7
Green Ext Time (p_c), s	0.0	0.0	0.2	3.6	0.0	15.2	0.1	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	67.4
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	2070	12	11	1465	107	9	2	11	487	2	316
Future Volume (veh/h)	280	2070	12	11	1465	107	9	2	11	487	2	316
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	308	2275	13	12	1610	118	10	2	12	535	2	347
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	341	2720	847	30	2301	993	25	21	126	602	2	396
Arrive On Green	0.10	0.53	0.53	0.02	0.45	0.45	0.01	0.09	0.09	0.17	0.25	0.25
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	231	1387	3442	9	1576
Grp Volume(v), veh/h	308	2275	13	12	1610	118	10	0	14	535	0	349
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1618	1721	0	1585
Q Serve(g_s), s	9.7	41.4	0.4	0.7	27.9	3.3	0.6	0.0	0.9	16.7	0.0	23.3
Cycle Q Clear(g_c), s	9.7	41.4	0.4	0.7	27.9	3.3	0.6	0.0	0.9	16.7	0.0	23.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.99
Lane Grp Cap(c), veh/h	341	2720	847	30	2301	993	25	0	147	602	0	398
V/C Ratio(X)	0.90	0.84	0.02	0.40	0.70	0.12	0.39	0.00	0.10	0.89	0.00	0.88
Avail Cap(c_a), veh/h	341	2720	847	113	2301	993	176	0	340	713	0	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	21.5	12.0	53.5	24.1	8.3	53.7	0.0	45.9	44.3	0.0	39.5
Incr Delay (d2), s/veh	3.4	0.3	0.0	2.7	1.1	0.1	3.6	0.0	0.3	10.7	0.0	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	19.2	0.2	0.4	13.2	1.5	0.3	0.0	0.4	8.8	0.0	11.7
LnGrp Delay(d),s/veh	52.4	21.8	12.0	56.3	25.2	8.4	57.3	0.0	46.1	55.0	0.0	53.6
LnGrp LOS	D	C	B	E	C	A	E		D	E		D
Approach Vol, veh/h		2596			1740			24			884	
Approach Delay, s/veh		25.4			24.3			50.8			54.4	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	64.6	6.2	32.8	15.5	55.6	23.8	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	7.6	37.0	10.9	35.0	10.9	33.1	22.8	23.1
Max Q Clear Time (g_c+I1), s	11.7	43.4	2.6	25.3	11.7	29.9	18.7	2.9
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	0.0	1.3	0.5	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	30.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1893	749	0	1338	0	0	0	0	241	2	405
Future Volume (veh/h)	0	1893	749	0	1338	0	0	0	0	241	2	405
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	2151	851	0	1520	0				274	2	460
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2712	844	0	2712	0				666	5	1053
Arrive On Green	0.00	0.53	0.53	0.00	0.53	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	5253	1583	0	5421	0				1762	13	2787
Grp Volume(v), veh/h	0	2151	851	0	1520	0				276	0	460
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	30.8	48.0	0.0	17.9	0.0				10.3	0.0	11.1
Cycle Q Clear(g_c), s	0.0	30.8	48.0	0.0	17.9	0.0				10.3	0.0	11.1
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2712	844	0	2712	0				670	0	1053
V/C Ratio(X)	0.00	0.79	1.01	0.00	0.56	0.00				0.41	0.00	0.44
Avail Cap(c_a), veh/h	0	2712	844	0	2712	0				670	0	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.46	0.46	0.00	0.97	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.0	21.0	0.0	14.0	0.0				20.6	0.0	20.9
Incr Delay (d2), s/veh	0.0	0.8	23.0	0.0	0.8	0.0				1.9	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.5	26.0	0.0	8.5	0.0				5.4	0.0	4.4
LnGrp Delay(d),s/veh	0.0	17.8	44.0	0.0	14.8	0.0				22.5	0.0	22.2
LnGrp LOS		B	F		B					C		C
Approach Vol, veh/h		3002			1520						736	
Approach Delay, s/veh		25.2			14.8						22.3	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		38.0		52.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		48.0		34.0		48.0		
Max Q Clear Time (g_c+I1), s		50.0		13.1		19.9		
Green Ext Time (p_c), s		0.0		3.6		27.2		

Intersection Summary		
HCM 2010 Ctrl Delay		21.8
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1297	784	0	1460	218	300	0	666	0	0	0
Future Volume (veh/h)	0	1297	784	0	1460	218	300	0	666	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1707	0	0	1921	0	395	0	876			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2543	792	0	2543	792	729	0	651			
Arrive On Green	0.00	0.50	0.00	0.00	0.50	0.00	0.41	0.00	0.41			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1707	0	0	1921	0	395	0	876			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	22.7	0.0	0.0	27.3	0.0	15.2	0.0	37.0			
Cycle Q Clear(g_c), s	0.0	22.7	0.0	0.0	27.3	0.0	15.2	0.0	37.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2543	792	0	2543	792	729	0	651			
V/C Ratio(X)	0.00	0.67	0.00	0.00	0.76	0.00	0.54	0.00	1.35			
Avail Cap(c_a), veh/h	0	2543	792	0	2543	792	729	0	651			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.89	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	16.9	0.0	0.0	18.1	0.0	20.1	0.0	26.5			
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	1.3	0.0	2.9	0.0	165.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	10.9	0.0	0.0	12.9	0.0	7.9	0.0	46.1			
LnGrp Delay(d),s/veh	0.0	18.2	0.0	0.0	19.4	0.0	23.0	0.0	192.2			
LnGrp LOS		B			B		C		F			
Approach Vol, veh/h		1707			1921			1271				
Approach Delay, s/veh		18.2			19.4			139.6				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		49.0				49.0		41.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		22.0				19.0		37.0
Max Q Clear Time (g_c+I1), s		24.7				29.3		39.0
Green Ext Time (p_c), s		0.0				0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		50.2
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	326	1258	117	114	805	261	270	219	9	231	144	329
Future Volume (veh/h)	326	1258	117	114	805	261	270	219	9	231	144	329
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	459	1772	165	161	1134	368	380	308	13	325	203	463
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	522	1478	661	145	1231	551	236	715	30	255	767	583
Arrive On Green	0.15	0.42	0.42	0.08	0.35	0.35	0.13	0.21	0.21	0.14	0.22	0.22
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3461	146	1774	3539	1583
Grp Volume(v), veh/h	459	1772	165	161	1134	368	380	157	164	325	203	463
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	16.8	53.7	8.7	10.5	39.5	17.1	17.1	9.9	10.0	18.5	6.1	9.8
Cycle Q Clear(g_c), s	16.8	53.7	8.7	10.5	39.5	17.1	17.1	9.9	10.0	18.5	6.1	9.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	522	1478	661	145	1231	551	236	366	379	255	767	583
V/C Ratio(X)	0.88	1.20	0.25	1.11	0.92	0.67	1.61	0.43	0.43	1.27	0.26	0.79
Avail Cap(c_a), veh/h	522	1478	661	145	1264	565	236	592	614	255	1220	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	37.4	24.3	59.0	40.2	16.1	55.7	44.4	44.4	55.0	41.8	16.4
Incr Delay (d2), s/veh	15.9	96.2	0.2	107.7	11.0	2.9	293.5	3.0	3.0	149.8	0.7	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	45.8	3.8	9.4	21.1	8.9	27.6	5.2	5.4	19.6	3.1	14.4
LnGrp Delay(d),s/veh	69.2	133.6	24.5	166.7	51.2	19.0	349.2	47.5	47.4	204.8	42.5	25.7
LnGrp LOS	E	F	C	F	D	B	F	D	D	F	D	C
Approach Vol, veh/h		2396			1663			701			991	
Approach Delay, s/veh		113.8			55.3			211.0			87.9	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	32.4	15.0	58.2	21.7	33.7	24.0	49.2
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	18.5	43.0	10.5	53.7	17.1	44.3	18.3	45.9
Max Q Clear Time (g_c+I1), s	20.5	12.0	12.5	55.7	19.1	11.8	18.8	41.5
Green Ext Time (p_c), s	0.0	14.6	0.0	0.0	0.0	14.9	0.0	3.2

Intersection Summary		
HCM 2010 Ctrl Delay	104.2	
HCM 2010 LOS	F	

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2031 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	77	5.0	0.202	6.1	LOS A	0.8	20.2	0.48	0.41	24.5
12	R2	425	5.0	0.202	1.5	LOS A	0.8	20.2	0.12	0.10	24.7
Approach		502	5.0	0.202	2.2	LOS A	0.8	20.2	0.17	0.15	24.6
East: Keller Road											
3	L2	139	5.0	0.154	4.2	LOS A	0.7	16.9	0.20	0.09	24.5
8	T1	351	3.0	0.154	0.6	LOS A	0.7	16.9	0.03	0.01	24.4
Approach		490	3.6	0.154	1.6	LOS A	0.7	16.9	0.08	0.04	24.5
West: Keller Road											
4	T1	401	3.0	0.332	6.1	LOS A	1.7	43.7	0.34	0.21	22.5
14	R2	100	5.0	0.063	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		501	3.4	0.332	4.9	LOS A	1.7	43.7	0.27	0.17	23.2
All Vehicles		1493	4.0	0.332	2.9	LOS A	1.7	43.7	0.18	0.12	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2031 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	66	5.0	0.114	7.5	LOS A	0.4	9.9	0.60	0.60	21.2
2	T1	1	5.0	0.173	7.5	LOS A	0.6	15.4	0.59	0.59	23.1
12	R2	387	5.0	0.173	2.2	LOS A	0.6	15.4	0.17	0.17	24.4
Approach		454	5.0	0.173	3.0	LOS A	0.6	15.4	0.23	0.23	24.0
East: Keller Road											
8	T1	424	3.0	0.185	4.8	LOS A	0.8	19.8	0.32	0.20	23.1
18	R2	146	5.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		570	3.5	0.185	3.6	LOS A	0.8	19.8	0.24	0.15	23.7
West: Keller Road											
7	L2	108	5.0	0.300	5.3	LOS A	0.0	0.0	0.00	0.00	30.0
4	T1	718	3.0	0.300	5.2	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		826	3.3	0.300	5.2	LOS A	0.0	0.0	0.00	0.00	25.4
All Vehicles		1850	3.8	0.300	4.2	LOS A	0.8	19.8	0.13	0.10	24.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

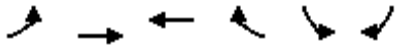
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	81	6	172	410	182	14	157	36	38	286	16
Future Volume (veh/h)	12	81	6	172	410	182	14	157	36	38	286	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	88	7	187	446	198	15	171	39	41	311	17
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	27	1435	113	224	1299	572	30	656	146	60	836	46
Arrive On Green	0.02	0.43	0.43	0.13	0.54	0.54	0.02	0.23	0.23	0.03	0.25	0.25
Sat Flow, veh/h	1774	3325	262	1774	2393	1053	1774	2878	641	1774	3414	186
Grp Volume(v), veh/h	13	46	49	187	329	315	15	104	106	41	161	167
Grp Sat Flow(s),veh/h/ln	1774	1770	1817	1774	1770	1677	1774	1770	1750	1774	1770	1830
Q Serve(g_s), s	0.7	1.5	1.6	10.3	10.4	10.6	0.8	4.8	5.0	2.3	7.5	7.6
Cycle Q Clear(g_c), s	0.7	1.5	1.6	10.3	10.4	10.6	0.8	4.8	5.0	2.3	7.5	7.6
Prop In Lane	1.00		0.14	1.00		0.63	1.00		0.37	1.00		0.10
Lane Grp Cap(c), veh/h	27	764	784	224	961	910	30	404	399	60	434	448
V/C Ratio(X)	0.48	0.06	0.06	0.83	0.34	0.35	0.50	0.26	0.27	0.68	0.37	0.37
Avail Cap(c_a), veh/h	151	764	784	470	961	910	151	404	399	186	434	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	16.6	16.6	42.7	12.8	12.9	48.7	31.6	31.7	47.8	31.3	31.4
Incr Delay (d2), s/veh	12.8	0.2	0.2	7.9	1.0	1.0	12.0	1.5	1.6	12.6	2.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.8	0.8	5.5	5.4	5.2	0.5	2.5	2.6	1.3	4.0	4.2
LnGrp Delay(d),s/veh	61.7	16.7	16.8	50.5	13.8	13.9	60.8	33.2	33.4	60.4	33.8	33.7
LnGrp LOS	E	B	B	D	B	B	E	C	C	E	C	C
Approach Vol, veh/h		108			831			225			369	
Approach Delay, s/veh		22.2			22.1			35.1			36.7	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.1	47.7	6.2	29.0	6.0	58.8	7.9	27.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	26.5	22.5	8.5	24.5	8.5	40.5	10.5	22.5
Max Q Clear Time (g_c+I1), s	12.3	3.6	2.8	9.6	2.7	12.6	4.3	7.0
Green Ext Time (p_c), s	0.4	4.5	0.0	2.8	0.0	5.1	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	27.5
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	173	1529	1310	86	168	200
Future Volume (veh/h)	173	1529	1310	86	168	200
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	188	1662	1424	93	183	217
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	260	3280	2558	167	912	738
Arrive On Green	0.08	0.64	0.52	0.52	0.26	0.26
Sat Flow, veh/h	3442	5253	5046	319	3442	2787
Grp Volume(v), veh/h	188	1662	990	527	183	217
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1807	1721	1393
Q Serve(g_s), s	5.3	17.2	19.6	19.6	4.1	6.2
Cycle Q Clear(g_c), s	5.3	17.2	19.6	19.6	4.1	6.2
Prop In Lane	1.00			0.18	1.00	1.00
Lane Grp Cap(c), veh/h	260	3280	1778	947	912	738
V/C Ratio(X)	0.72	0.51	0.56	0.56	0.20	0.29
Avail Cap(c_a), veh/h	430	3280	1778	947	912	738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	9.4	16.0	16.0	28.5	29.3
Incr Delay (d2), s/veh	3.8	0.6	1.3	2.4	0.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	8.2	9.4	10.3	2.0	5.3
LnGrp Delay(d),s/veh	49.0	9.9	17.2	18.3	29.0	30.3
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		1850	1517		400	
Approach Delay, s/veh		13.9	17.6		29.7	
Approach LOS		B	B		C	

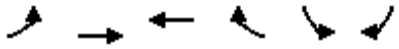
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		69.0		31.0	12.1	56.9		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		64.5		26.5	12.5	47.5		
Max Q Clear Time (g_c+I1), s		19.2		8.2	7.3	21.6		
Green Ext Time (p_c), s		38.0		1.4	0.3	23.3		

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1561	21	8	1347	36	6	6	6	57	8	28
Future Volume (veh/h)	16	1561	21	8	1347	36	6	6	6	57	8	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	17	1643	22	8	1418	38	6	6	6	60	8	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	37	1859	25	18	1795	48	48	48	48	149	30	108
Arrive On Green	0.02	0.52	0.52	0.01	0.51	0.51	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1774	3576	48	1774	3521	94	577	577	577	1774	354	1283
Grp Volume(v), veh/h	17	812	853	8	712	744	18	0	0	60	0	37
Grp Sat Flow(s),veh/h/ln	1774	1770	1854	1774	1770	1846	1732	0	0	1774	0	1636
Q Serve(g_s), s	0.6	24.3	24.4	0.3	19.7	19.7	0.6	0.0	0.0	1.9	0.0	1.3
Cycle Q Clear(g_c), s	0.6	24.3	24.4	0.3	19.7	19.7	0.6	0.0	0.0	1.9	0.0	1.3
Prop In Lane	1.00		0.03	1.00		0.05	0.33		0.33	1.00		0.78
Lane Grp Cap(c), veh/h	37	920	964	18	902	941	145	0	0	149	0	137
V/C Ratio(X)	0.47	0.88	0.88	0.43	0.79	0.79	0.12	0.00	0.00	0.40	0.00	0.27
Avail Cap(c_a), veh/h	149	920	964	149	920	960	523	0	0	536	0	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.9	12.7	12.7	29.3	12.0	12.0	25.3	0.0	0.0	25.9	0.0	25.6
Incr Delay (d2), s/veh	9.0	10.1	9.9	15.2	4.6	4.5	0.4	0.0	0.0	1.8	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	14.3	15.0	0.2	10.6	11.1	0.3	0.0	0.0	1.0	0.0	0.6
LnGrp Delay(d),s/veh	37.8	22.8	22.6	44.5	16.6	16.5	25.7	0.0	0.0	27.6	0.0	26.6
LnGrp LOS	D	C	C	D	B	B	C			C		C
Approach Vol, veh/h		1682			1464			18			97	
Approach Delay, s/veh		22.8			16.7			25.7			27.3	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	35.5		9.5	5.7	34.9		9.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.0	31.0		18.0	5.0	31.0		18.0
Max Q Clear Time (g_c+I1), s	2.3	26.4		3.9	2.6	21.7		2.6
Green Ext Time (p_c), s	0.0	4.4		0.2	0.0	8.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		20.2
HCM 2010 LOS		C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	544	1004	1071	348	319	377
Future Volume (veh/h)	544	1004	1071	348	319	377
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	555	1024	1093	355	326	385
Adj No. of Lanes	2	1	2	0	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	643	1251	1151	369	410	662
Arrive On Green	0.19	0.67	0.44	0.44	0.23	0.23
Sat Flow, veh/h	3442	1863	2731	846	1774	1583
Grp Volume(v), veh/h	555	1024	729	719	326	385
Grp Sat Flow(s),veh/h/ln	1721	1863	1770	1714	1774	1583
Q Serve(g_s), s	14.5	37.2	36.6	37.8	16.1	17.3
Cycle Q Clear(g_c), s	14.5	37.2	36.6	37.8	16.1	17.3
Prop In Lane	1.00			0.49	1.00	1.00
Lane Grp Cap(c), veh/h	643	1251	772	748	410	662
V/C Ratio(X)	0.86	0.82	0.94	0.96	0.79	0.58
Avail Cap(c_a), veh/h	761	1316	773	748	679	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	11.1	25.0	25.4	33.6	20.7
Incr Delay (d2), s/veh	8.9	4.0	19.9	23.9	3.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	20.2	22.1	22.7	8.3	7.7
LnGrp Delay(d),s/veh	45.4	15.1	45.0	49.3	37.1	21.6
LnGrp LOS	D	B	D	D	D	C
Approach Vol, veh/h		1579	1448		711	
Approach Delay, s/veh		25.8	47.1		28.7	
Approach LOS		C	D		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		66.8			21.8	45.0		25.9
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		65.5			20.5	40.5		35.5
Max Q Clear Time (g_c+I1), s		39.2			16.5	39.8		19.3
Green Ext Time (p_c), s		19.9			0.8	0.6		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	960	294	203	1130	1139	423	389	602	969	287	141
Future Volume (veh/h)	227	960	294	203	1130	1139	423	389	602	969	287	141
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	236	1000	306	211	1177	1186	441	405	627	1009	299	147
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	2735	836	258	2379	2022	418	468	397	803	298	146
Arrive On Green	0.10	0.67	0.67	0.07	0.64	0.64	0.24	0.25	0.25	0.23	0.25	0.25
Sat Flow, veh/h	1774	4110	1256	3548	3725	3167	1774	1863	1583	3548	1180	580
Grp Volume(v), veh/h	236	906	400	211	1177	1186	441	405	627	1009	0	446
Grp Sat Flow(s),veh/h/ln	1774	1863	1641	1774	1863	1583	1774	1863	1583	1774	0	1760
Q Serve(g_s), s	14.4	15.6	15.6	8.5	24.2	31.4	34.2	30.2	36.4	32.8	0.0	36.6
Cycle Q Clear(g_c), s	14.4	15.6	15.6	8.5	24.2	31.4	34.2	30.2	36.4	32.8	0.0	36.6
Prop In Lane	1.00		0.77	1.00		1.00	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	176	2479	1092	258	2379	2022	418	468	397	803	0	444
V/C Ratio(X)	1.34	0.37	0.37	0.82	0.49	0.59	1.05	0.87	1.58	1.26	0.00	1.00
Avail Cap(c_a), veh/h	176	2479	1092	284	2379	2022	418	468	397	803	0	444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.44	0.44	0.44	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.3	10.7	10.7	66.3	13.8	15.1	55.4	52.0	54.3	56.1	0.0	54.2
Incr Delay (d2), s/veh	185.9	0.4	0.9	6.7	0.3	0.5	58.9	18.9	271.7	125.8	0.0	43.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.1	8.1	7.3	4.4	12.5	13.7	23.6	18.0	46.0	30.1	0.0	23.2
LnGrp Delay(d),s/veh	251.2	11.2	11.7	73.0	14.2	15.7	114.3	70.9	326.0	181.9	0.0	97.8
LnGrp LOS	F	B	B	E	B	B	F	E	F	F		F
Approach Vol, veh/h		1542			2574			1473			1455	
Approach Delay, s/veh		48.0			19.7			192.5			156.1	
Approach LOS		D			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	104.3	38.8	42.8	19.0	100.4	39.0	42.6
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	11.6	42.6	34.2	35.0	14.4	39.8	32.8	* 36
Max Q Clear Time (g_c+I1), s	10.5	17.6	36.2	38.6	16.4	33.4	34.8	38.4
Green Ext Time (p_c), s	0.0	24.4	0.0	0.0	0.0	6.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	90.2
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1693	955	0	1818	548	0	0	0	531	0	654
Future Volume (veh/h)	0	1693	955	0	1818	548	0	0	0	531	0	654
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1728	974	0	1855	559				542	0	667
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2163	968	0	2163	968				1032	0	836
Arrive On Green	0.00	0.61	0.61	0.00	0.61	0.61				0.30	0.00	0.30
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1728	974	0	1855	559				542	0	667
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	33.4	55.0	0.0	38.5	19.1				11.8	0.0	19.8
Cycle Q Clear(g_c), s	0.0	33.4	55.0	0.0	38.5	19.1				11.8	0.0	19.8
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2163	968	0	2163	968				1032	0	836
V/C Ratio(X)	0.00	0.80	1.01	0.00	0.86	0.58				0.52	0.00	0.80
Avail Cap(c_a), veh/h	0	2163	968	0	2163	968				1032	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.3	17.5	0.0	14.3	10.5				26.2	0.0	29.0
Incr Delay (d2), s/veh	0.0	0.3	10.3	0.0	0.4	0.2				1.9	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.2	26.4	0.0	18.7	8.3				5.8	0.0	8.5
LnGrp Delay(d),s/veh	0.0	13.6	27.8	0.0	14.7	10.7				28.1	0.0	36.8
LnGrp LOS		B	F		B	B				C		D
Approach Vol, veh/h		2702			2414						1209	
Approach Delay, s/veh		18.7			13.8						32.9	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		31.0		59.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		55.0		27.0		55.0		
Max Q Clear Time (g_c+I1), s		57.0		21.8		40.5		
Green Ext Time (p_c), s		0.0		2.4		14.3		

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	754	1470	0	0	1431	512	0	0	645	0	0	935
Future Volume (veh/h)	754	1470	0	0	1431	512	0	0	645	0	0	935
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	777	1515	0	0	1475	528	0	0	665	0	0	964
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	639	3445	0	0	2076	929	0	0	0	0	0	0
Arrive On Green	0.36	0.97	0.00	0.00	0.78	0.78	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	777	1515	0	0	1475	528		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	54.0	3.0	0.0	0.0	30.8	19.8						
Cycle Q Clear(g_c), s	54.0	3.0	0.0	0.0	30.8	19.8						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	639	3445	0	0	2076	929						
V/C Ratio(X)	1.22	0.44	0.00	0.00	0.71	0.57						
Avail Cap(c_a), veh/h	639	3445	0	0	2076	929						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33						
Upstream Filter(I)	0.60	0.60	0.00	0.00	0.61	0.61						
Uniform Delay (d), s/veh	48.0	0.1	0.0	0.0	10.2	9.0						
Incr Delay (d2), s/veh	106.2	0.2	0.0	0.0	1.3	1.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	45.3	1.4	0.0	0.0	15.0	8.7						
LnGrp Delay(d),s/veh	154.2	0.3	0.0	0.0	11.5	10.5						
LnGrp LOS	F	A			B	B						
Approach Vol, veh/h		2292			2003							
Approach Delay, s/veh		52.5			11.2							
Approach LOS		D			B							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		150.0			58.0	92.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		114.0			54.0	56.0		
Max Q Clear Time (g_c+I1), s		5.0			56.0	32.8		
Green Ext Time (p_c), s		74.4			0.0	21.1		

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	302	1439	374	208	1229	85	501	559	351	152	306	213
Future Volume (veh/h)	302	1439	374	208	1229	85	501	559	351	152	306	213
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	305	1454	378	210	1241	86	506	565	355	154	309	215
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1995	874	193	2573	178	498	566	481	135	438	373
Arrive On Green	0.20	1.00	1.00	0.06	0.51	0.51	0.14	0.30	0.30	0.08	0.24	0.24
Sat Flow, veh/h	3442	3614	1583	3442	5064	351	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	305	1454	378	210	886	441	506	565	355	154	309	215
Grp Sat Flow(s),veh/h/ln	1721	1807	1583	1721	1807	1801	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	12.9	0.0	0.0	8.4	24.0	24.0	21.7	45.5	30.2	11.4	22.8	18.0
Cycle Q Clear(g_c), s	12.9	0.0	0.0	8.4	24.0	24.0	21.7	45.5	30.2	11.4	22.8	18.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1995	874	193	1836	915	498	566	481	135	438	373
V/C Ratio(X)	0.89	0.73	0.43	1.09	0.48	0.48	1.02	1.00	0.74	1.14	0.70	0.58
Avail Cap(c_a), veh/h	399	1995	874	193	1836	915	498	566	481	135	438	373
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	0.0	70.8	24.0	24.0	64.1	52.1	46.8	69.3	52.6	50.7
Incr Delay (d2), s/veh	10.2	1.3	0.8	90.8	0.9	1.8	44.5	37.3	9.7	120.8	9.2	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.4	0.2	6.4	12.2	12.4	13.4	29.2	14.5	10.1	12.9	8.5
LnGrp Delay(d),s/veh	69.4	1.3	0.8	161.6	25.0	25.9	108.6	89.4	56.5	190.1	61.7	57.1
LnGrp LOS	E	A	A	F	C	C	F	F	E	F	E	E
Approach Vol, veh/h		2137			1537			1426			678	
Approach Delay, s/veh		10.9			43.9			88.1			89.4	
Approach LOS		B			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	89.9	26.3	41.8	19.6	83.3	16.0	52.1
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	8.4	* 63	21.7	* 35	17.4	53.7	11.4	45.3
Max Q Clear Time (g_c+I1), s	10.4	2.0	23.7	24.8	14.9	26.0	13.4	47.5
Green Ext Time (p_c), s	0.0	42.2	0.0	3.2	0.1	23.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	47.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	89	29	284	162	333	42	176	227	268	235	40
Future Volume (veh/h)	48	89	29	284	162	333	42	176	227	268	235	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	57	106	35	338	193	396	50	210	270	319	280	48
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	161	53	1068	211	433	272	285	734	398	347	60
Arrive On Green	0.04	0.12	0.12	0.31	0.39	0.39	0.15	0.15	0.15	0.22	0.22	0.22
Sat Flow, veh/h	1774	1342	443	3442	546	1120	1774	1863	1583	1774	1550	266
Grp Volume(v), veh/h	57	0	141	338	0	589	50	210	270	319	0	328
Grp Sat Flow(s),veh/h/ln	1774	0	1785	1721	0	1665	1774	1863	1583	1774	0	1816
Q Serve(g_s), s	2.6	0.0	6.3	6.3	0.0	27.9	2.0	9.0	0.0	14.2	0.0	14.2
Cycle Q Clear(g_c), s	2.6	0.0	6.3	6.3	0.0	27.9	2.0	9.0	0.0	14.2	0.0	14.2
Prop In Lane	1.00		0.25	1.00		0.67	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	78	0	214	1068	0	643	272	285	734	398	0	407
V/C Ratio(X)	0.73	0.00	0.66	0.32	0.00	0.92	0.18	0.74	0.37	0.80	0.00	0.81
Avail Cap(c_a), veh/h	119	0	536	1068	0	768	469	492	910	597	0	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	35.0	22.0	0.0	24.2	30.7	33.6	14.4	30.5	0.0	30.6
Incr Delay (d2), s/veh	12.3	0.0	3.4	0.2	0.0	14.0	0.3	3.7	0.3	4.7	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	3.3	3.0	0.0	15.3	1.0	4.9	4.0	7.4	0.0	7.6
LnGrp Delay(d),s/veh	51.5	0.0	38.4	22.1	0.0	38.3	31.0	37.3	14.8	35.2	0.0	35.3
LnGrp LOS	D		D	C		D	C	D	B	D		D
Approach Vol, veh/h		198			927			530			647	
Approach Delay, s/veh		42.2			32.4			25.2			35.3	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	29.8	14.0		22.7	7.7	36.1		16.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	19.0	25.0		28.0	5.6	38.4		22.0
Max Q Clear Time (g_c+I1), s	8.3	8.3		16.2	4.6	29.9		11.0
Green Ext Time (p_c), s	3.9	0.6		2.4	0.0	2.2		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	223	768	179	8	527	86	169	299	6	236	396	303
Future Volume (veh/h)	223	768	179	8	527	86	169	299	6	236	396	303
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	232	800	186	8	549	90	176	311	6	246	412	316
Adj No. of Lanes	2	3	1	0	2	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	339	1441	449	45	836	136	448	1123	22	649	1149	976
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1526	5085	1583	13	2952	478	724	1821	35	1058	1863	1583
Grp Volume(v), veh/h	232	800	186	344	0	303	176	0	317	246	412	316
Grp Sat Flow(s),veh/h/ln	763	1695	1583	1833	0	1611	724	0	1857	1058	1863	1583
Q Serve(g_s), s	10.6	12.0	8.6	0.0	0.0	14.9	14.2	0.0	7.1	12.6	9.8	8.6
Cycle Q Clear(g_c), s	25.5	12.0	8.6	14.6	0.0	14.9	24.0	0.0	7.1	19.7	9.8	8.6
Prop In Lane	1.00		1.00	0.02		0.30	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	339	1441	449	560	0	456	448	0	1145	649	1149	976
V/C Ratio(X)	0.68	0.56	0.41	0.61	0.00	0.66	0.39	0.00	0.28	0.38	0.36	0.32
Avail Cap(c_a), veh/h	339	1441	449	560	0	456	448	0	1145	649	1149	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	27.4	26.2	28.3	0.0	28.5	14.4	0.0	8.0	12.5	8.5	8.3
Incr Delay (d2), s/veh	5.6	0.5	0.6	2.0	0.0	3.6	2.6	0.0	0.6	1.7	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	5.7	3.8	7.8	0.0	7.1	3.2	0.0	3.8	4.0	5.3	3.9
LnGrp Delay(d),s/veh	46.5	27.9	26.8	30.3	0.0	32.1	17.0	0.0	8.6	14.2	9.4	9.1
LnGrp LOS	D	C	C	C		C	B		A	B	A	A
Approach Vol, veh/h		1218			647			493			974	
Approach Delay, s/veh		31.3			31.2			11.6			10.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		60.0		30.0		60.0		30.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		25.5		55.5		25.5
Max Q Clear Time (g_c+I1), s		26.0		27.5		21.7		16.9
Green Ext Time (p_c), s		9.6		0.0		9.9		6.3

Intersection Summary		
HCM 2010 Ctrl Delay		22.3
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	113	192	10	66	11	152	83	13	14	138	270
Future Volume (veh/h)	500	113	192	10	66	11	152	83	13	14	138	270
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	521	118	200	10	69	11	158	86	14	15	144	281
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	558	821	698	22	492	220	195	936	149	32	757	339
Arrive On Green	0.31	0.44	0.44	0.01	0.14	0.14	0.11	0.31	0.31	0.02	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	1774	3059	487	1774	3539	1583
Grp Volume(v), veh/h	521	118	200	10	69	11	158	49	51	15	144	281
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	1774	1770	1777	1774	1770	1583
Q Serve(g_s), s	20.5	2.7	5.8	0.4	1.2	0.4	6.3	1.4	1.5	0.6	2.4	12.2
Cycle Q Clear(g_c), s	20.5	2.7	5.8	0.4	1.2	0.4	6.3	1.4	1.5	0.6	2.4	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	558	821	698	22	492	220	195	541	544	32	757	339
V/C Ratio(X)	0.93	0.14	0.29	0.45	0.14	0.05	0.81	0.09	0.09	0.47	0.19	0.83
Avail Cap(c_a), veh/h	568	1049	892	136	1132	507	197	554	556	136	985	440
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	12.0	12.9	35.2	27.2	26.8	31.3	17.8	17.8	35.0	23.2	27.0
Incr Delay (d2), s/veh	22.6	0.1	0.2	13.4	0.1	0.1	21.6	0.1	0.1	10.3	0.1	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.5	1.4	2.6	0.3	0.6	0.2	4.2	0.7	0.7	0.4	1.2	6.2
LnGrp Delay(d),s/veh	46.5	12.1	13.1	48.6	27.3	26.9	52.9	17.9	17.9	45.3	23.3	36.9
LnGrp LOS	D	B	B	D	C	C	D	B	B	D	C	D
Approach Vol, veh/h		839			90			258			440	
Approach Delay, s/veh		33.7			29.6			39.3			32.7	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	35.7	11.9	19.4	26.6	14.0	5.3	26.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	40.5	8.0	20.0	23.0	23.0	5.5	22.5
Max Q Clear Time (g_c+I1), s	2.4	7.8	8.3	14.2	22.5	3.2	2.6	3.5
Green Ext Time (p_c), s	0.0	1.7	0.0	1.2	0.1	1.6	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	272	52	8	577	100	6	186	6	200	368	42
Future Volume (veh/h)	53	272	52	8	577	100	6	186	6	200	368	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	58	299	57	9	634	110	7	204	7	220	404	46
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	895	168	20	798	138	16	1173	40	261	1561	177
Arrive On Green	0.05	0.30	0.30	0.01	0.26	0.26	0.01	0.34	0.34	0.15	0.49	0.49
Sat Flow, veh/h	1774	2974	560	1774	3017	523	1774	3492	119	1774	3205	363
Grp Volume(v), veh/h	58	176	180	9	371	373	7	103	108	220	222	228
Grp Sat Flow(s),veh/h/ln	1774	1770	1764	1774	1770	1771	1774	1770	1842	1774	1770	1799
Q Serve(g_s), s	3.4	8.1	8.3	0.5	20.5	20.6	0.4	4.3	4.3	12.7	7.7	7.8
Cycle Q Clear(g_c), s	3.4	8.1	8.3	0.5	20.5	20.6	0.4	4.3	4.3	12.7	7.7	7.8
Prop In Lane	1.00		0.32	1.00		0.30	1.00		0.06	1.00		0.20
Lane Grp Cap(c), veh/h	83	533	531	20	468	468	16	595	619	261	862	876
V/C Ratio(X)	0.70	0.33	0.34	0.46	0.79	0.80	0.45	0.17	0.17	0.84	0.26	0.26
Avail Cap(c_a), veh/h	155	578	576	84	506	506	84	595	619	375	862	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	28.5	28.6	51.6	36.0	36.0	51.8	24.6	24.6	43.6	15.8	15.8
Incr Delay (d2), s/veh	4.0	0.7	0.8	10.9	6.5	6.6	18.9	0.6	0.6	16.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.1	4.2	0.3	10.9	10.9	0.3	2.2	2.3	7.4	3.8	3.9
LnGrp Delay(d),s/veh	53.3	29.2	29.3	62.5	42.5	42.6	70.6	25.2	25.2	60.1	16.1	16.2
LnGrp LOS	D	C	C	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h		414			753			218			670	
Approach Delay, s/veh		32.6			42.8			26.7			30.6	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	41.1	5.7	37.0	5.4	56.9	9.5	33.2
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	22.3	* 23	5.0	34.3	5.0	40.5	9.2	30.0
Max Q Clear Time (g_c+I1), s	14.7	6.3	2.5	10.3	2.4	9.8	5.4	22.6
Green Ext Time (p_c), s	0.8	5.5	0.0	12.2	0.0	7.0	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.0
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	22	427	70	18	7	331	541	110	6	291	26
Future Volume (veh/h)	20	22	427	70	18	7	331	541	110	6	291	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	23	454	74	19	7	352	576	117	6	310	28
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	574	488	97	631	536	406	1176	238	14	591	53
Arrive On Green	0.02	0.31	0.31	0.05	0.34	0.34	0.23	0.40	0.40	0.01	0.18	0.18
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2933	594	1774	3285	295
Grp Volume(v), veh/h	21	23	454	74	19	7	352	347	346	6	166	172
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1758	1774	1770	1811
Q Serve(g_s), s	0.8	0.6	19.5	2.9	0.5	0.2	13.4	10.2	10.3	0.2	5.9	6.0
Cycle Q Clear(g_c), s	0.8	0.6	19.5	2.9	0.5	0.2	13.4	10.2	10.3	0.2	5.9	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.34	1.00		0.16
Lane Grp Cap(c), veh/h	42	574	488	97	631	536	406	710	705	14	318	326
V/C Ratio(X)	0.49	0.04	0.93	0.77	0.03	0.01	0.87	0.49	0.49	0.43	0.52	0.53
Avail Cap(c_a), veh/h	139	585	497	177	631	536	608	998	991	139	530	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	17.0	23.5	32.7	15.5	15.4	26.0	15.6	15.7	34.6	26.0	26.0
Incr Delay (d2), s/veh	8.6	0.0	24.0	11.8	0.0	0.0	8.6	0.5	0.5	19.5	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.3	11.8	1.7	0.2	0.1	7.5	5.0	5.1	0.2	3.0	3.1
LnGrp Delay(d),s/veh	42.4	17.0	47.5	44.5	15.5	15.4	34.5	16.2	16.2	54.1	27.3	27.4
LnGrp LOS	D	B	D	D	B	B	C	B	B	D	C	C
Approach Vol, veh/h		498			100			1045			344	
Approach Delay, s/veh		45.9			37.0			22.4			27.8	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	32.1	7.8	25.6	20.0	16.6	5.7	27.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	39.5	7.0	22.0	24.0	21.0	5.5	23.5
Max Q Clear Time (g_c+I1), s	2.2	12.3	4.9	21.5	15.4	8.0	2.8	2.5
Green Ext Time (p_c), s	0.0	6.0	0.0	0.1	0.7	4.6	0.0	1.8

Intersection Summary		
HCM 2010 Ctrl Delay		29.9
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	130	12	279	113	70	15	76	337	61	52	161
Future Volume (veh/h)	154	130	12	279	113	70	15	76	337	61	52	161
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	181	153	14	328	133	82	18	89	396	72	61	189
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	328	28	478	164	99	134	603	610	154	144	332
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	687	679	57	814	338	205	188	1564	1583	232	373	860
Grp Volume(v), veh/h	348	0	0	543	0	0	107	0	396	322	0	0
Grp Sat Flow(s),veh/h/ln	1423	0	0	1357	0	0	1752	0	1583	1466	0	0
Q Serve(g_s), s	0.0	0.0	0.0	12.9	0.0	0.0	0.0	0.0	14.1	4.2	0.0	0.0
Cycle Q Clear(g_c), s	11.0	0.0	0.0	23.9	0.0	0.0	2.6	0.0	14.1	10.9	0.0	0.0
Prop In Lane	0.52		0.04	0.60		0.15	0.17		1.00	0.22		0.59
Lane Grp Cap(c), veh/h	768	0	0	740	0	0	737	0	610	629	0	0
V/C Ratio(X)	0.45	0.00	0.00	0.73	0.00	0.00	0.15	0.00	0.65	0.51	0.00	0.00
Avail Cap(c_a), veh/h	1204	0	0	1167	0	0	737	0	610	629	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.9	0.0	0.0	15.5	0.0	0.0	13.8	0.0	17.3	16.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.4	0.0	0.0	0.4	0.0	5.3	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	9.0	0.0	0.0	1.4	0.0	7.1	5.2	0.0	0.0
LnGrp Delay(d),s/veh	12.3	0.0	0.0	16.9	0.0	0.0	14.2	0.0	22.6	19.1	0.0	0.0
LnGrp LOS	B			B			B		C	B		
Approach Vol, veh/h		348			543			503			322	
Approach Delay, s/veh		12.3			16.9			20.8			19.1	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.0		37.7		31.0		37.7
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		26.5		54.5		26.5		54.5
Max Q Clear Time (g_c+I1), s		16.1		13.0		12.9		25.9
Green Ext Time (p_c), s		3.3		7.9		3.8		7.3

Intersection Summary		
HCM 2010 Ctrl Delay		17.5
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	33	212	6	25	8	164	849	6	6	582	92
Future Volume (veh/h)	124	33	212	6	25	8	164	849	6	6	582	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	128	34	219	6	26	8	169	875	6	6	600	95
Adj No. of Lanes	1	1	1	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	335	284	8	34	10	199	2105	14	16	1474	233
Arrive On Green	0.18	0.18	0.18	0.03	0.03	0.03	0.11	0.58	0.58	0.01	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	268	1161	357	1774	3603	25	1774	3063	484
Grp Volume(v), veh/h	128	34	219	40	0	0	169	430	451	6	346	349
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1786	0	0	1774	1770	1858	1774	1770	1777
Q Serve(g_s), s	6.7	1.6	13.8	2.3	0.0	0.0	9.8	14.0	14.0	0.4	13.2	13.3
Cycle Q Clear(g_c), s	6.7	1.6	13.8	2.3	0.0	0.0	9.8	14.0	14.0	0.4	13.2	13.3
Prop In Lane	1.00		1.00	0.15		0.20	1.00		0.01	1.00		0.27
Lane Grp Cap(c), veh/h	319	335	284	52	0	0	199	1034	1085	16	852	855
V/C Ratio(X)	0.40	0.10	0.77	0.77	0.00	0.00	0.85	0.42	0.42	0.37	0.41	0.41
Avail Cap(c_a), veh/h	439	461	392	306	0	0	226	1034	1085	101	852	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	36.0	41.0	50.6	0.0	0.0	45.8	12.0	12.0	51.7	17.6	17.6
Incr Delay (d2), s/veh	3.7	0.6	18.0	21.0	0.0	0.0	20.9	1.2	1.2	5.1	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.9	7.5	1.5	0.0	0.0	6.0	7.2	7.5	0.2	6.8	6.8
LnGrp Delay(d),s/veh	41.8	36.6	59.1	71.7	0.0	0.0	66.7	13.2	13.2	56.8	19.0	19.0
LnGrp LOS	D	D	E	E			E	B	B	E	B	B
Approach Vol, veh/h		381			40			1050			701	
Approach Delay, s/veh		51.3			71.6			21.8			19.3	
Approach LOS		D			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	67.1		24.7	16.4	56.3		7.6
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.3	34.2		26.0	13.4	26.8		18.0
Max Q Clear Time (g_c+I1), s	2.4	16.0		15.8	11.8	15.3		4.3
Green Ext Time (p_c), s	0.0	15.4		3.0	0.0	10.2		0.1

Intersection Summary			
HCM 2010 Ctrl Delay		27.1	
HCM 2010 LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	2135	43	230	1949	129	39	15	120	98	17	76
Future Volume (veh/h)	89	2135	43	230	1949	129	39	15	120	98	17	76
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	92	2201	44	237	2009	133	40	15	124	101	18	78
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	2260	960	182	3601	1020	71	19	158	145	209	280
Arrive On Green	0.06	0.61	0.61	0.10	0.64	0.64	0.04	0.11	0.11	0.04	0.11	0.11
Sat Flow, veh/h	1774	3725	1583	1774	5588	1583	1774	174	1436	3442	1863	1583
Grp Volume(v), veh/h	92	2201	44	237	2009	133	40	0	139	101	18	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1609	1721	1863	1583
Q Serve(g_s), s	7.7	85.2	1.7	15.4	29.9	4.9	3.3	0.0	12.6	4.3	1.3	6.4
Cycle Q Clear(g_c), s	7.7	85.2	1.7	15.4	29.9	4.9	3.3	0.0	12.6	4.3	1.3	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	115	2260	960	182	3601	1020	71	0	177	145	209	280
V/C Ratio(X)	0.80	0.97	0.05	1.30	0.56	0.13	0.56	0.00	0.79	0.69	0.09	0.28
Avail Cap(c_a), veh/h	253	2260	960	182	3601	1020	253	0	501	342	499	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.42	0.42	0.42	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	28.4	11.9	67.3	14.8	10.4	70.7	0.0	65.1	70.9	59.7	53.4
Incr Delay (d2), s/veh	4.7	13.7	0.1	151.7	0.3	0.1	6.8	0.0	8.1	2.2	0.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	47.7	0.8	15.2	15.3	2.2	1.8	0.0	6.0	2.1	0.7	2.9
LnGrp Delay(d),s/veh	73.9	42.1	12.0	219.0	15.1	10.5	77.6	0.0	73.2	73.1	60.1	54.7
LnGrp LOS	E	D	B	F	B	B	E		E	E	E	D
Approach Vol, veh/h		2337			2379			179			197	
Approach Delay, s/veh		42.8			35.1			74.1			64.6	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	96.8	10.6	22.6	14.3	102.5	10.9	22.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	52.2	21.4	40.2	21.4	46.2	14.9	46.7
Max Q Clear Time (g_c+I1), s	17.4	87.2	5.3	8.4	9.7	31.9	6.3	14.6
Green Ext Time (p_c), s	0.0	0.0	0.1	1.8	0.1	14.2	0.1	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	41.1
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	469	2140	27	30	1977	297	31	6	29	375	6	419
Future Volume (veh/h)	469	2140	27	30	1977	297	31	6	29	375	6	419
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	479	2184	28	31	2017	303	32	6	30	383	6	428
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	508	2885	898	52	2285	912	53	37	187	436	5	367
Arrive On Green	0.15	0.57	0.57	0.03	0.45	0.45	0.03	0.14	0.14	0.13	0.23	0.23
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	271	1353	3442	22	1565
Grp Volume(v), veh/h	479	2184	28	31	2017	303	32	0	36	383	0	434
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1624	1721	0	1587
Q Serve(g_s), s	20.0	47.2	1.1	2.5	52.5	14.6	2.6	0.0	2.8	15.9	0.0	34.0
Cycle Q Clear(g_c), s	20.0	47.2	1.1	2.5	52.5	14.6	2.6	0.0	2.8	15.9	0.0	34.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.99
Lane Grp Cap(c), veh/h	508	2885	898	52	2285	912	53	0	224	436	0	372
V/C Ratio(X)	0.94	0.76	0.03	0.59	0.88	0.33	0.60	0.00	0.16	0.88	0.00	1.17
Avail Cap(c_a), veh/h	508	2885	898	73	2285	912	121	0	224	603	0	372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.66	0.66	0.66	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.2	23.8	13.8	69.5	36.4	16.1	69.5	0.0	55.1	62.2	0.0	55.5
Incr Delay (d2), s/veh	4.1	0.2	0.0	2.6	3.6	0.6	4.0	0.0	0.3	8.5	0.0	100.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	22.1	0.5	1.3	25.2	6.5	1.3	0.0	1.3	8.1	0.0	25.2
LnGrp Delay(d),s/veh	65.3	24.0	13.8	72.1	40.1	16.8	73.5	0.0	55.4	70.8	0.0	155.8
LnGrp LOS	E	C	B	E	D	B	E		E	E		F
Approach Vol, veh/h		2691			2351			68			817	
Approach Delay, s/veh		31.2			37.5			63.9			115.9	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	88.1	8.9	39.1	26.0	71.0	23.0	25.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.3	75.0	9.9	34.0	21.4	59.6	25.4	18.5
Max Q Clear Time (g_c+I1), s	4.5	49.2	4.6	36.0	22.0	54.5	17.9	4.8
Green Ext Time (p_c), s	0.0	25.7	0.0	0.0	0.0	5.1	0.5	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	45.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1924	626	0	1965	0	0	0	0	335	1	600
Future Volume (veh/h)	0	1924	626	0	1965	0	0	0	0	335	1	600
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1984	645	0	2026	0				345	1	619
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2825	880	0	2825	0				629	2	991
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.00				0.36	0.36	0.36
Sat Flow, veh/h	0	5253	1583	0	5421	0				1769	5	2787
Grp Volume(v), veh/h	0	1984	645	0	2026	0				346	0	619
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1774	0	1393
Q Serve(g_s), s	0.0	25.6	27.5	0.0	26.5	0.0				14.1	0.0	16.6
Cycle Q Clear(g_c), s	0.0	25.6	27.5	0.0	26.5	0.0				14.1	0.0	16.6
Prop In Lane	0.00		1.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2825	880	0	2825	0				631	0	991
V/C Ratio(X)	0.00	0.70	0.73	0.00	0.72	0.00				0.55	0.00	0.62
Avail Cap(c_a), veh/h	0	2825	880	0	2825	0				631	0	991
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.63	0.00	0.91	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.6	15.0	0.0	14.8	0.0				23.2	0.0	24.0
Incr Delay (d2), s/veh	0.0	0.5	2.0	0.0	1.5	0.0				3.4	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.9	12.3	0.0	12.6	0.0				7.4	0.0	6.8
LnGrp Delay(d),s/veh	0.0	15.1	17.0	0.0	16.2	0.0				26.6	0.0	27.0
LnGrp LOS		B	B		B					C		C
Approach Vol, veh/h		2629			2026						965	
Approach Delay, s/veh		15.6			16.2						26.9	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		54.0		36.0		54.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		50.0		32.0		50.0		
Max Q Clear Time (g_c+I1), s		29.5		18.6		28.5		
Green Ext Time (p_c), s		20.1		4.2		21.1		

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1508	751	0	1795	347	604	0	658	0	0	0
Future Volume (veh/h)	0	1508	751	0	1795	347	604	0	658	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1555	0	0	1851	0	623	0	678			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2848	887	0	2848	887	639	0	570			
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.36	0.00	0.36			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1555	0	0	1851	0	623	0	678			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	19.4	0.0	0.0	25.2	0.0	34.6	0.0	36.0			
Cycle Q Clear(g_c), s	0.0	19.4	0.0	0.0	25.2	0.0	34.6	0.0	36.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2848	887	0	2848	887	639	0	570			
V/C Ratio(X)	0.00	0.55	0.00	0.00	0.65	0.00	0.98	0.00	1.19			
Avail Cap(c_a), veh/h	0	2848	887	0	2848	887	639	0	570			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.87	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	13.9	0.0	0.0	15.2	0.0	31.6	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.5	0.0	30.1	0.0	101.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	9.1	0.0	0.0	11.8	0.0	22.3	0.0	31.8			
LnGrp Delay(d),s/veh	0.0	14.6	0.0	0.0	15.7	0.0	61.7	0.0	133.9			
LnGrp LOS		B			B		E		F			
Approach Vol, veh/h		1555			1851			1301				
Approach Delay, s/veh		14.6			15.7			99.3				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		60.0				60.0		40.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		27.0				25.0		36.0
Max Q Clear Time (g_c+I1), s		21.4				27.2		38.0
Green Ext Time (p_c), s		5.5				0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		38.5
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	533	1671	280	102	948	304	255	412	9	52	311	543
Future Volume (veh/h)	533	1671	280	102	948	304	255	412	9	52	311	543
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	573	1797	301	110	1019	327	274	443	10	56	334	584
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	778	1763	749	112	1182	502	137	1015	23	72	902	731
Arrive On Green	0.22	0.47	0.47	0.06	0.32	0.32	0.08	0.28	0.28	0.04	0.24	0.24
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	1774	3629	82	1774	3725	1583
Grp Volume(v), veh/h	573	1797	301	110	1019	327	274	227	226	56	334	584
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1848	1774	1863	1583
Q Serve(g_s), s	20.2	63.7	16.6	8.3	34.6	20.2	10.4	13.5	13.5	4.2	10.0	8.8
Cycle Q Clear(g_c), s	20.2	63.7	16.6	8.3	34.6	20.2	10.4	13.5	13.5	4.2	10.0	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	778	1763	749	112	1182	502	137	521	517	72	902	731
V/C Ratio(X)	0.74	1.02	0.40	0.98	0.86	0.65	2.00	0.44	0.44	0.78	0.37	0.80
Avail Cap(c_a), veh/h	778	1763	749	112	1315	559	137	599	595	134	1190	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	35.5	23.1	63.0	43.2	28.1	62.1	39.8	39.8	64.0	42.5	14.4
Incr Delay (d2), s/veh	3.7	26.4	0.3	79.1	5.7	2.3	474.4	2.2	2.2	16.2	1.0	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	39.0	7.3	6.5	18.8	9.1	23.1	7.3	7.2	2.4	5.3	13.5
LnGrp Delay(d),s/veh	52.6	61.8	23.4	142.0	48.9	30.4	536.5	42.0	42.0	80.2	43.4	22.5
LnGrp LOS	D	F	C	F	D	C	F	D	D	F	D	C
Approach Vol, veh/h		2671			1456			727			974	
Approach Delay, s/veh		55.5			51.8			228.4			33.0	
Approach LOS		E			D			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	43.4	13.0	68.2	15.0	38.4	34.0	47.2
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	10.3	43.3	8.5	63.7	10.4	43.0	24.7	47.5
Max Q Clear Time (g_c+I1), s	10.2	15.5	10.3	65.7	12.4	12.0	22.2	36.6
Green Ext Time (p_c), s	0.0	19.0	0.0	0.0	0.0	20.6	2.3	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	72.4
HCM 2010 LOS	E

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2031 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	175	5.0	0.210	6.5	LOS A	0.8	20.9	0.52	0.46	23.8
12	R2	338	5.0	0.210	0.1	LOS A	0.8	20.9	0.00	0.00	25.5
Approach		513	5.0	0.210	2.2	LOS A	0.8	20.9	0.18	0.16	24.7
East: Keller Road											
3	L2	416	5.0	0.363	6.7	LOS A	1.8	48.1	0.39	0.26	23.0
8	T1	662	3.0	0.345	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		1078	3.8	0.363	2.6	LOS A	1.8	48.1	0.15	0.10	24.1
West: Keller Road											
4	T1	464	3.0	0.501	10.2	LOS B	3.5	89.1	0.64	0.73	21.1
14	R2	151	5.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		615	3.5	0.501	7.7	LOS A	3.5	89.1	0.49	0.55	22.4
All Vehicles		2205	4.0	0.501	3.9	LOS A	3.5	89.1	0.25	0.24	23.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2031 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2031 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	161	5.0	0.135	7.3	LOS A	0.5	11.9	0.59	0.59	13.3
2	T1	1	5.0	0.135	7.0	LOS A	0.5	11.8	0.58	0.58	22.6
12	R2	222	5.0	0.135	0.2	LOS A	0.5	11.8	0.02	0.02	24.9
Approach		384	5.0	0.135	3.2	LOS A	0.5	11.9	0.26	0.26	19.3
East: Keller Road											
8	T1	917	3.0	0.449	8.6	LOS A	2.3	59.6	0.53	0.45	21.7
18	R2	334	5.0	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		1251	3.5	0.449	6.3	LOS A	2.3	59.6	0.39	0.33	22.8
West: Keller Road											
7	L2	135	5.0	0.292	5.2	LOS A	0.0	0.0	0.00	0.00	29.8
4	T1	667	3.0	0.292	5.1	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		802	3.3	0.292	5.2	LOS A	0.0	0.0	0.00	0.00	25.5
All Vehicles		2437	3.7	0.449	5.4	LOS A	2.3	59.6	0.24	0.21	22.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

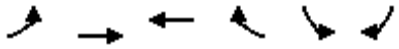
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	271	16	71	430	77	6	165	6	21	280	19
Future Volume (veh/h)	19	271	16	71	430	77	6	165	6	21	280	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	295	17	77	467	84	7	179	7	23	304	21
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	1701	98	100	1603	287	16	834	32	42	857	59
Arrive On Green	0.02	0.50	0.50	0.06	0.53	0.53	0.01	0.24	0.24	0.02	0.25	0.25
Sat Flow, veh/h	1774	3403	195	1774	3001	537	1774	3473	135	1774	3361	231
Grp Volume(v), veh/h	21	153	159	77	274	277	7	91	95	23	159	166
Grp Sat Flow(s),veh/h/ln	1774	1770	1828	1774	1770	1768	1774	1770	1839	1774	1770	1822
Q Serve(g_s), s	1.2	4.7	4.8	4.3	8.5	8.6	0.4	4.1	4.1	1.3	7.4	7.5
Cycle Q Clear(g_c), s	1.2	4.7	4.8	4.3	8.5	8.6	0.4	4.1	4.1	1.3	7.4	7.5
Prop In Lane	1.00		0.11	1.00		0.30	1.00		0.07	1.00		0.13
Lane Grp Cap(c), veh/h	39	885	914	100	945	944	16	425	442	42	451	465
V/C Ratio(X)	0.54	0.17	0.17	0.77	0.29	0.29	0.45	0.21	0.22	0.55	0.35	0.36
Avail Cap(c_a), veh/h	169	885	914	293	945	944	133	425	442	169	451	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	13.7	13.7	46.5	12.8	12.9	49.3	30.4	30.4	48.3	30.5	30.5
Incr Delay (d2), s/veh	10.9	0.4	0.4	11.8	0.8	0.8	18.6	1.1	1.1	10.7	2.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.4	2.5	2.4	4.3	4.4	0.3	2.2	2.3	0.8	3.9	4.0
LnGrp Delay(d),s/veh	59.3	14.1	14.1	58.3	13.6	13.7	67.9	31.6	31.6	59.0	32.7	32.7
LnGrp LOS	E	B	B	E	B	B	E	C	C	E	C	C
Approach Vol, veh/h		333			628			193			348	
Approach Delay, s/veh		17.0			19.1			32.9			34.4	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	54.5	5.4	30.0	6.7	57.9	6.9	28.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	16.5	32.5	7.5	25.5	9.5	39.5	9.5	23.5
Max Q Clear Time (g_c+I1), s	10.3	6.8	2.4	9.5	3.2	10.6	3.3	6.1
Green Ext Time (p_c), s	0.1	5.7	0.0	2.7	0.0	5.8	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	166	1461	1946	86	140	225
Future Volume (veh/h)	166	1461	1946	86	140	225
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	180	1588	2115	93	152	245
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	252	3159	2488	109	960	777
Arrive On Green	0.07	0.62	0.50	0.50	0.28	0.28
Sat Flow, veh/h	3442	5253	5163	219	3442	2787
Grp Volume(v), veh/h	180	1588	1433	775	152	245
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1824	1721	1393
Q Serve(g_s), s	4.6	15.5	33.1	33.4	3.0	6.3
Cycle Q Clear(g_c), s	4.6	15.5	33.1	33.4	3.0	6.3
Prop In Lane	1.00			0.12	1.00	1.00
Lane Grp Cap(c), veh/h	252	3159	1688	908	960	777
V/C Ratio(X)	0.72	0.50	0.85	0.85	0.16	0.32
Avail Cap(c_a), veh/h	287	3159	1688	908	960	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	9.4	19.6	19.7	24.5	25.7
Incr Delay (d2), s/veh	7.1	0.6	5.5	10.0	0.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.4	16.6	19.1	1.5	5.4
LnGrp Delay(d),s/veh	47.9	10.0	25.2	29.7	24.8	26.7
LnGrp LOS	D	A	C	C	C	C
Approach Vol, veh/h		1768	2208		397	
Approach Delay, s/veh		13.8	26.8		26.0	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.4		29.6	11.1	49.3		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		55.9		25.1	7.5	43.9		
Max Q Clear Time (g_c+I1), s		17.5		8.3	6.6	35.4		
Green Ext Time (p_c), s		36.1		1.4	0.1	8.4		

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

APPENDIX C-15
Intersection LOS Analysis
Mitigated Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	785	302	621	863	720	185	231	139	865	228	128
Future Volume (veh/h)	216	785	302	621	863	720	185	231	139	865	228	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	935	360	739	1027	857	220	275	165	1030	271	152
Adj No. of Lanes	2	3	1	2	3	2	2	1	1	2	1	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	3353	950	633	3855	2075	276	450	665	852	773	657
Arrive On Green	0.09	0.60	0.60	0.18	0.69	0.69	0.08	0.24	0.24	0.24	0.41	0.41
Sat Flow, veh/h	3548	5588	1583	3548	5588	3008	3442	1863	1583	3548	1863	1583
Grp Volume(v), veh/h	257	935	360	739	1027	857	220	275	165	1030	271	152
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1504	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	8.5	9.6	14.1	21.4	8.4	14.8	7.5	15.8	8.1	28.8	12.0	7.5
Cycle Q Clear(g_c), s	8.5	9.6	14.1	21.4	8.4	14.8	7.5	15.8	8.1	28.8	12.0	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	3353	950	633	3855	2075	276	450	665	852	773	657
V/C Ratio(X)	0.82	0.28	0.38	1.17	0.27	0.41	0.80	0.61	0.25	1.21	0.35	0.23
Avail Cap(c_a), veh/h	390	3353	950	633	3855	2075	350	450	665	852	773	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.42	0.42	0.42	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	11.5	12.4	49.3	7.1	8.1	54.2	40.5	22.5	45.6	24.0	22.7
Incr Delay (d2), s/veh	8.6	0.2	1.2	83.1	0.1	0.3	7.6	6.1	0.9	105.2	1.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	5.0	6.4	17.8	4.3	6.2	3.9	8.9	3.7	26.5	6.4	3.4
LnGrp Delay(d),s/veh	62.4	11.7	13.6	132.4	7.1	8.3	61.8	46.5	23.4	150.8	25.3	23.5
LnGrp LOS	E	B	B	F	A	A	E	D	C	F	C	C
Approach Vol, veh/h		1552			2623			660			1453	
Approach Delay, s/veh		20.5			42.8			45.9			114.1	
Approach LOS		C			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	79.8	14.2	56.0	15.2	90.6	35.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	21.4	19.2	12.2	45.6	13.2	27.4	28.8	* 29
Max Q Clear Time (g_c+I1), s	23.4	16.1	9.5	14.0	10.5	16.8	30.8	17.8
Green Ext Time (p_c), s	0.0	3.0	0.1	6.0	0.1	10.3	0.0	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	54.1
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	1791	229	225	1611	56	115	16	284	117	21	77
Future Volume (veh/h)	46	1791	229	225	1611	56	115	16	284	117	21	77
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	50	1947	249	245	1751	61	125	17	309	127	23	84
Adj No. of Lanes	1	3	0	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	2189	277	237	3028	858	148	19	345	171	363	308
Arrive On Green	0.04	0.45	0.45	0.13	0.54	0.54	0.08	0.23	0.23	0.05	0.19	0.19
Sat Flow, veh/h	1774	4865	615	1774	5588	1583	1774	83	1513	3442	1863	1583
Grp Volume(v), veh/h	50	1486	710	245	1751	61	125	0	326	127	23	84
Grp Sat Flow(s),veh/h/ln	1774	1863	1754	1774	1863	1583	1774	0	1596	1721	1863	1583
Q Serve(g_s), s	4.2	54.7	56.1	20.0	31.4	2.8	10.4	0.0	29.7	5.5	1.5	6.8
Cycle Q Clear(g_c), s	4.2	54.7	56.1	20.0	31.4	2.8	10.4	0.0	29.7	5.5	1.5	6.8
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.95	1.00		1.00
Lane Grp Cap(c), veh/h	73	1676	789	237	3028	858	148	0	364	171	363	308
V/C Ratio(X)	0.68	0.89	0.90	1.04	0.58	0.07	0.85	0.00	0.89	0.74	0.06	0.27
Avail Cap(c_a), veh/h	213	1676	789	237	3028	858	213	0	468	229	447	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.50	0.50	0.50	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.9	37.8	38.1	65.0	22.9	16.4	67.8	0.0	56.1	70.3	49.2	51.3
Incr Delay (d2), s/veh	4.1	7.3	15.3	50.8	0.4	0.1	13.5	0.0	16.6	5.1	0.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	29.8	30.6	13.1	16.2	1.2	5.7	0.0	14.8	2.7	0.8	3.1
LnGrp Delay(d),s/veh	75.0	45.1	53.4	115.9	23.3	16.4	81.3	0.0	72.8	75.5	49.4	52.5
LnGrp LOS	E	D	D	F	C	B	F		E	E	D	D
Approach Vol, veh/h		2246			2057			451			234	
Approach Delay, s/veh		48.4			34.1			75.1			64.6	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.6	73.3	17.1	35.0	10.8	87.1	12.1	40.0
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	20.0	55.2	18.0	36.0	18.0	57.2	10.0	44.0
Max Q Clear Time (g_c+I1), s	22.0	58.1	12.4	8.8	6.2	33.4	7.5	31.7
Green Ext Time (p_c), s	0.0	0.0	0.1	3.5	0.0	23.8	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	45.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	326	1258	117	114	805	261	270	219	9	231	144	329
Future Volume (veh/h)	326	1258	117	114	805	261	270	219	9	231	144	329
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	362	1398	130	127	894	290	300	243	10	257	160	366
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	864	1751	744	138	1133	737	508	409	17	287	453	578
Arrive On Green	0.24	0.47	0.47	0.08	0.30	0.30	0.14	0.11	0.11	0.16	0.12	0.12
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	3548	3554	146	1774	3725	1583
Grp Volume(v), veh/h	362	1398	130	127	894	290	300	127	126	257	160	366
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1837	1774	1863	1583
Q Serve(g_s), s	9.4	34.9	2.9	7.8	24.1	4.1	8.7	7.1	7.2	15.6	4.3	0.0
Cycle Q Clear(g_c), s	9.4	34.9	2.9	7.8	24.1	4.1	8.7	7.1	7.2	15.6	4.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	864	1751	744	138	1133	737	508	214	211	287	453	578
V/C Ratio(X)	0.42	0.80	0.17	0.92	0.79	0.39	0.59	0.59	0.60	0.90	0.35	0.63
Avail Cap(c_a), veh/h	1019	2294	975	138	1512	898	576	598	590	316	1250	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	24.7	5.1	50.2	34.9	7.3	44.0	46.1	46.1	45.1	44.2	28.8
Incr Delay (d2), s/veh	0.3	1.6	0.1	54.0	2.1	0.3	0.6	9.7	10.0	25.1	1.8	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	18.2	2.1	5.9	12.7	3.1	4.3	4.2	4.2	9.6	2.3	9.7
LnGrp Delay(d),s/veh	35.3	26.2	5.2	104.3	37.0	7.7	44.6	55.8	56.1	70.2	46.0	33.1
LnGrp LOS	D	C	A	F	D	A	D	E	E	E	D	C
Approach Vol, veh/h		1890			1311			553			783	
Approach Delay, s/veh		26.5			37.0			49.8			47.9	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.2	18.4	13.0	56.0	21.5	19.1	31.2	37.8
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	5.8	* 5.8	4.5	4.5
Max Green Setting (Gmax), s	19.5	35.2	8.5	67.5	17.8	* 37	31.5	44.5
Max Q Clear Time (g_c+I1), s	17.6	9.2	9.8	36.9	10.7	6.3	11.4	26.1
Green Ext Time (p_c), s	0.1	3.5	0.0	14.6	1.9	7.0	11.6	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	36.1
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	960	294	203	1130	1139	423	389	602	969	287	141
Future Volume (veh/h)	227	960	294	203	1130	1139	423	389	602	969	287	141
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	236	1000	306	211	1177	1186	441	405	627	1009	299	147
Adj No. of Lanes	2	3	1	2	3	2	2	1	1	2	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	3772	1069	271	3800	2153	503	470	520	950	723	614
Arrive On Green	0.07	0.67	0.67	0.08	0.68	0.68	0.15	0.25	0.25	0.27	0.39	0.39
Sat Flow, veh/h	3442	5588	1583	3548	5588	3167	3442	1863	1583	3548	1863	1583
Grp Volume(v), veh/h	236	1000	306	211	1177	1186	441	405	627	1009	299	147
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1863	1583	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	7.9	8.1	9.0	6.7	9.8	22.0	14.4	23.9	29.0	30.8	13.5	7.2
Cycle Q Clear(g_c), s	7.9	8.1	9.0	6.7	9.8	22.0	14.4	23.9	29.0	30.8	13.5	7.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	3772	1069	271	3800	2153	503	470	520	950	723	614
V/C Ratio(X)	0.96	0.27	0.29	0.78	0.31	0.55	0.88	0.86	1.21	1.06	0.41	0.24
Avail Cap(c_a), veh/h	245	3772	1069	364	3800	2153	664	470	520	950	723	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	7.4	7.5	52.2	7.5	9.4	48.1	41.1	38.6	42.1	25.7	23.7
Incr Delay (d2), s/veh	46.4	0.2	0.7	1.7	0.1	0.3	8.5	18.5	109.5	47.0	1.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	4.2	4.1	3.3	5.0	9.6	7.5	14.7	32.3	21.3	7.2	3.3
LnGrp Delay(d),s/veh	99.6	7.6	8.2	53.9	7.5	9.8	56.6	59.6	148.2	89.1	27.4	24.7
LnGrp LOS	F	A	A	D	A	A	E	E	F	F	C	C
Approach Vol, veh/h		1542			2574			1473			1455	
Approach Delay, s/veh		21.8			12.4			96.4			69.9	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.4	85.4	21.4	50.8	12.8	86.0	37.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	11.8	21.8	22.2	37.6	8.2	25.4	30.8	* 29
Max Q Clear Time (g_c+I1), s	8.7	11.0	16.4	15.5	9.9	24.0	32.8	31.0
Green Ext Time (p_c), s	0.1	10.7	0.4	9.9	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	2135	43	230	1949	129	39	15	120	98	17	76
Future Volume (veh/h)	89	2135	43	230	1949	129	39	15	120	98	17	76
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	92	2201	44	237	2009	133	40	15	124	101	18	78
Adj No. of Lanes	1	3	0	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	3242	65	206	3604	1021	71	19	157	144	208	279
Arrive On Green	0.06	0.59	0.59	0.12	0.64	0.64	0.04	0.11	0.11	0.04	0.11	0.11
Sat Flow, veh/h	1774	5460	109	1774	5588	1583	1774	174	1436	3442	1863	1583
Grp Volume(v), veh/h	92	1500	745	237	2009	133	40	0	139	101	18	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1844	1774	1863	1583	1774	0	1609	1721	1863	1583
Q Serve(g_s), s	7.7	41.1	41.3	17.4	29.9	4.9	3.3	0.0	12.6	4.3	1.3	6.4
Cycle Q Clear(g_c), s	7.7	41.1	41.3	17.4	29.9	4.9	3.3	0.0	12.6	4.3	1.3	6.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	115	2212	1095	206	3604	1021	71	0	176	144	208	279
V/C Ratio(X)	0.80	0.68	0.68	1.15	0.56	0.13	0.56	0.00	0.79	0.70	0.09	0.28
Avail Cap(c_a), veh/h	213	2212	1095	206	3604	1021	213	0	483	206	447	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.18	0.18	0.18	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	20.7	20.8	66.3	14.8	10.3	70.7	0.0	65.1	70.9	59.8	53.5
Incr Delay (d2), s/veh	4.8	1.7	3.4	78.7	0.1	0.0	6.8	0.0	8.2	2.3	0.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	21.6	21.9	13.0	15.3	2.1	1.8	0.0	6.0	2.1	0.7	2.9
LnGrp Delay(d),s/veh	73.9	22.4	24.2	145.0	14.9	10.4	77.6	0.0	73.2	73.2	60.2	54.8
LnGrp LOS	E	C	C	F	B	B	E		E	E	E	D
Approach Vol, veh/h		2337			2379			179			197	
Approach Delay, s/veh		25.0			27.6			74.2			64.7	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	94.9	10.6	22.5	14.3	102.5	10.9	22.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	17.4	57.8	18.0	36.0	18.0	57.2	9.0	45.0
Max Q Clear Time (g_c+I1), s	19.4	43.3	5.3	8.4	9.7	31.9	6.3	14.6
Green Ext Time (p_c), s	0.0	14.5	0.0	1.8	0.1	25.3	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	533	1671	280	102	948	304	255	412	9	52	311	543
Future Volume (veh/h)	533	1671	280	102	948	304	255	412	9	52	311	543
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	573	1797	301	110	1019	327	274	443	10	56	334	584
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	883	1901	808	109	1202	511	264	948	21	69	829	746
Arrive On Green	0.25	0.51	0.51	0.06	0.32	0.32	0.08	0.26	0.26	0.04	0.22	0.22
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	3442	3629	82	1774	3725	1583
Grp Volume(v), veh/h	573	1797	301	110	1019	327	274	227	226	56	334	584
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1848	1774	1863	1583
Q Serve(g_s), s	21.7	68.5	17.2	9.2	38.3	22.6	11.5	15.4	15.4	4.7	11.5	9.4
Cycle Q Clear(g_c), s	21.7	68.5	17.2	9.2	38.3	22.6	11.5	15.4	15.4	4.7	11.5	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	883	1901	808	109	1202	511	264	486	483	69	829	746
V/C Ratio(X)	0.65	0.95	0.37	1.01	0.85	0.64	1.04	0.47	0.47	0.82	0.40	0.78
Avail Cap(c_a), veh/h	883	1901	808	109	1202	511	264	606	601	69	1068	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	34.8	22.2	70.4	47.4	31.7	69.3	46.6	46.6	71.6	49.8	16.1
Incr Delay (d2), s/veh	1.7	11.2	1.3	89.3	7.5	6.0	65.8	2.7	2.7	51.3	1.2	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	38.2	7.9	7.2	20.9	10.7	7.9	8.3	8.3	3.3	6.1	14.8
LnGrp Delay(d),s/veh	52.1	46.0	23.5	159.7	54.9	37.7	135.0	49.3	49.3	122.8	51.0	23.4
LnGrp LOS	D	D	C	F	D	D	F	D	D	F	D	C
Approach Vol, veh/h		2671			1456			727			974	
Approach Delay, s/veh		44.8			58.9			81.6			38.6	
Approach LOS		D			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	45.0	13.7	81.0	16.1	39.2	41.8	52.9
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	5.8	48.8	9.2	66.9	11.5	43.0	27.7	48.4
Max Q Clear Time (g_c+I1), s	6.7	17.4	11.2	70.5	13.5	13.5	23.7	40.3
Green Ext Time (p_c), s	0.0	20.7	0.0	0.0	0.0	19.9	3.7	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	51.9
HCM 2010 LOS	D

APPENDIX C-16
Intersection LOS Analysis
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions

Intersection	
Int Delay, s/veh	138.9

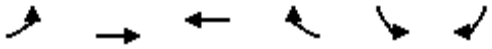
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	29	1117	10	10	1304	44	10	10	10	41	10	28
Future Vol, veh/h	29	1117	10	10	1304	44	10	10	10	41	10	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	1176	11	11	1373	46	11	11	11	43	11	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1419	0	0	1186	0	0	2679	2682	1181	2670	2664	1396
Stage 1	-	-	-	-	-	-	1242	1242	-	1417	1417	-
Stage 2	-	-	-	-	-	-	1437	1440	-	1253	1247	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	480	-	-	589	-	-	14	22	231	~ 15	23	173
Stage 1	-	-	-	-	-	-	214	247	-	170	203	-
Stage 2	-	-	-	-	-	-	166	198	-	211	245	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	480	-	-	589	-	-	~ 5	16	231	~ 6	17	173
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 5	16	-	~ 6	17	-
Stage 1	-	-	-	-	-	-	173	200	-	138	185	-
Stage 2	-	-	-	-	-	-	118	180	-	155	198	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	$ 1527.8	$ 4025.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	11	480	-	-	589	-	-	10
HCM Lane V/C Ratio	2.871	0.064	-	-	0.018	-	-	8.316
HCM Control Delay (s)	$ 1527.8	13	0	-	11.2	0	-	$ 4025.2
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	5	0.2	-	-	0.1	-	-	11.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	449	755	858	311	266	482
Future Volume (veh/h)	449	755	858	311	266	482
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	473	795	903	327	280	507
Adj No. of Lanes	2	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	608	2885	1660	517	1047	761
Arrive On Green	0.18	0.57	0.33	0.33	0.30	0.30
Sat Flow, veh/h	3442	5253	5253	1583	3442	1583
Grp Volume(v), veh/h	473	795	903	327	280	507
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1721	1583
Q Serve(g_s), s	9.2	5.6	10.2	12.3	4.3	17.1
Cycle Q Clear(g_c), s	9.2	5.6	10.2	12.3	4.3	17.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	608	2885	1660	517	1047	761
V/C Ratio(X)	0.78	0.28	0.54	0.63	0.27	0.67
Avail Cap(c_a), veh/h	1007	3737	1923	599	1449	946
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	7.8	19.3	20.0	18.5	13.9
Incr Delay (d2), s/veh	2.2	0.1	0.3	1.7	0.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	2.6	4.8	5.6	2.1	15.3
LnGrp Delay(d),s/veh	29.7	7.8	19.6	21.7	18.6	15.2
LnGrp LOS	C	A	B	C	B	B
Approach Vol, veh/h		1268	1230		787	
Approach Delay, s/veh		16.0	20.2		16.4	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		44.3		25.8	16.9	27.4		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		51.5		29.5	20.5	26.5		
Max Q Clear Time (g_c+I1), s		7.6		19.1	11.2	14.3		
Green Ext Time (p_c), s		18.2		2.2	1.2	8.6		

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	809	286	620	862	723	182	234	144	900	226	133
Future Volume (veh/h)	267	809	286	620	862	723	182	234	144	900	226	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	852	301	653	907	761	192	246	152	947	238	140
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	3237	917	650	3791	1074	246	821	367	931	1576	670
Arrive On Green	0.09	0.58	0.58	0.19	0.68	0.68	0.07	0.23	0.23	0.26	0.42	0.42
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3539	1583	3548	3725	1583
Grp Volume(v), veh/h	281	852	301	653	907	761	192	246	152	947	238	140
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1774	1863	1583
Q Serve(g_s), s	10.1	9.5	12.3	23.6	7.8	37.2	6.9	7.2	10.2	32.8	4.9	7.0
Cycle Q Clear(g_c), s	10.1	9.5	12.3	23.6	7.8	37.2	6.9	7.2	10.2	32.8	4.9	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	3237	917	650	3791	1074	246	821	367	931	1576	670
V/C Ratio(X)	0.91	0.26	0.33	1.00	0.24	0.71	0.78	0.30	0.41	1.02	0.15	0.21
Avail Cap(c_a), veh/h	308	3237	917	650	3791	1074	341	821	367	931	1576	670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	13.1	13.7	50.7	7.7	12.4	57.1	39.6	40.8	46.1	22.2	22.8
Incr Delay (d2), s/veh	29.0	0.2	1.0	32.4	0.1	3.1	4.9	0.9	3.4	33.9	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	4.9	5.6	14.1	4.0	17.0	3.4	3.6	4.8	20.4	2.6	3.2
LnGrp Delay(d),s/veh	85.4	13.3	14.6	83.1	7.8	15.6	61.9	40.6	44.2	80.0	22.4	23.5
LnGrp LOS	F	B	B	F	A	B	E	D	D	F	C	C
Approach Vol, veh/h		1434			2321			590			1325	
Approach Delay, s/veh		27.7			31.6			48.4			63.7	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.2	80.2	13.5	59.1	15.8	92.6	37.4	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	23.6	19.6	12.4	47.8	11.2	32.0	32.8	* 29
Max Q Clear Time (g_c+I1), s	25.6	14.3	8.9	9.0	12.1	39.2	34.8	12.2
Green Ext Time (p_c), s	0.0	5.1	0.1	5.7	0.0	0.0	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1243	766	0	1667	671	0	0	0	364	0	538
Future Volume (veh/h)	0	1243	766	0	1667	671	0	0	0	364	0	538
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1308	0	0	1755	706				383	0	566
Adj No. of Lanes	0	4	1	0	3	2				2	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	3916	968	0	3108	1703				1032	0	836
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.61				0.30	0.00	0.30
Sat Flow, veh/h	0	6669	1583	0	5253	2787				3442	0	2787
Grp Volume(v), veh/h	0	1308	0	0	1755	706				383	0	566
Grp Sat Flow(s),veh/h/ln	0	1602	1583	0	1695	1393				1721	0	1393
Q Serve(g_s), s	0.0	9.0	0.0	0.0	18.4	11.9				7.9	0.0	16.1
Cycle Q Clear(g_c), s	0.0	9.0	0.0	0.0	18.4	11.9				7.9	0.0	16.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3916	968	0	3108	1703				1032	0	836
V/C Ratio(X)	0.00	0.33	0.00	0.00	0.56	0.41				0.37	0.00	0.68
Avail Cap(c_a), veh/h	0	3916	968	0	3108	1703				1032	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.22	0.00	0.00	0.59	0.59				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.6	0.0	0.0	10.4	9.1				24.8	0.0	27.7
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.4	0.4				1.0	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	0.0	0.0	8.6	4.6				3.9	0.0	6.6
LnGrp Delay(d),s/veh	0.0	8.6	0.0	0.0	10.8	9.6				25.8	0.0	32.1
LnGrp LOS		A			B	A				C		C
Approach Vol, veh/h		1308			2461						949	
Approach Delay, s/veh		8.6			10.5						29.5	
Approach LOS		A			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		31.0		59.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		55.0		27.0		55.0		
Max Q Clear Time (g_c+I1), s		11.0		18.1		20.4		
Green Ext Time (p_c), s		38.2		2.8		30.8		

Intersection Summary		
HCM 2010 Ctrl Delay		13.8
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	363	1244	0	0	1581	648	0	0	504	0	0	757
Future Volume (veh/h)	363	1244	0	0	1581	648	0	0	504	0	0	757
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	382	1309	0	0	1664	682	0	0	531	0	0	797
Adj No. of Lanes	2	4	0	0	3	2	0	0	3	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	448	6123	0	0	3971	2176	0	0	0	0	0	0
Arrive On Green	0.26	1.00	0.00	0.00	0.78	0.78	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	3442	6669	0	0	5253	2787		0			0	
Grp Volume(v), veh/h	382	1309	0	0	1664	682		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1721	1602	0	0	1695	1393						
Q Serve(g_s), s	9.5	0.0	0.0	0.0	9.6	6.4						
Cycle Q Clear(g_c), s	9.5	0.0	0.0	0.0	9.6	6.4						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	448	6123	0	0	3971	2176						
V/C Ratio(X)	0.85	0.21	0.00	0.00	0.42	0.31						
Avail Cap(c_a), veh/h	497	6123	0	0	3971	2176						
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.31	0.31						
Uniform Delay (d), s/veh	32.5	0.0	0.0	0.0	3.2	2.9						
Incr Delay (d2), s/veh	11.9	0.1	0.0	0.0	0.1	0.1						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	0.0	4.4	2.4						
LnGrp Delay(d),s/veh	44.3	0.1	0.0	0.0	3.3	3.0						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		1691			2346							
Approach Delay, s/veh		10.1			3.2							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			15.7	74.3		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		54.0			13.0	37.0		
Max Q Clear Time (g_c+I1), s		2.0			11.5	11.6		
Green Ext Time (p_c), s		42.9			0.2	23.0		

Intersection Summary	
HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	338	1316	376	213	1593	74	424	476	71	212	480	212
Future Volume (veh/h)	338	1316	376	213	1593	74	424	476	71	212	480	212
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	356	1385	396	224	1677	78	446	501	75	223	505	223
Adj No. of Lanes	2	3	2	2	4	0	2	2	1	2	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	2475	1356	252	2851	133	459	1218	545	278	1032	813
Arrive On Green	0.11	0.49	0.49	0.07	0.45	0.45	0.13	0.34	0.34	0.08	0.29	0.29
Sat Flow, veh/h	3442	5085	2787	3442	6323	294	3442	3539	1583	3442	3539	2787
Grp Volume(v), veh/h	356	1385	396	224	1275	480	446	501	75	223	505	223
Grp Sat Flow(s),veh/h/ln	1721	1695	1393	1721	1602	1811	1721	1770	1583	1721	1770	1393
Q Serve(g_s), s	12.3	23.1	10.2	7.7	23.8	23.8	15.5	13.0	3.9	7.6	14.1	7.4
Cycle Q Clear(g_c), s	12.3	23.1	10.2	7.7	23.8	23.8	15.5	13.0	3.9	7.6	14.1	7.4
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	2475	1356	252	2167	816	459	1218	545	278	1032	813
V/C Ratio(X)	0.95	0.56	0.29	0.89	0.59	0.59	0.97	0.41	0.14	0.80	0.49	0.27
Avail Cap(c_a), veh/h	376	2475	1356	252	2167	816	459	1218	545	379	1032	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	21.7	18.4	55.1	24.6	24.6	51.8	30.1	27.1	54.2	35.1	32.7
Incr Delay (d2), s/veh	31.3	0.9	0.5	28.5	1.2	3.1	34.5	1.0	0.5	6.0	1.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	11.0	4.0	4.7	10.7	12.6	9.6	6.5	1.8	3.9	7.1	2.9
LnGrp Delay(d),s/veh	84.4	22.6	18.9	83.6	25.8	27.7	86.3	31.1	27.6	60.2	36.8	33.6
LnGrp LOS	F	C	B	F	C	C	F	C	C	E	D	C
Approach Vol, veh/h		2137			1979			1022			951	
Approach Delay, s/veh		32.2			32.8			54.9			41.5	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.4	65.5	20.6	41.5	17.7	61.2	14.3	47.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	8.8	* 39	16.0	* 35	13.1	34.0	13.2	37.5
Max Q Clear Time (g_c+I1), s	9.7	25.1	17.5	16.1	14.3	25.8	9.6	15.0
Green Ext Time (p_c), s	0.0	12.7	0.0	4.4	0.0	7.8	0.1	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	37.7
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	330.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	30	186	73	113	56	268	32	186	154	175	121	52
Future Vol, veh/h	30	186	73	113	56	268	32	186	154	175	121	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	196	77	119	59	282	34	196	162	184	127	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	341	0	0	273	0	0	826	876	234	914	774	200
Stage 1	-	-	-	-	-	-	297	297	-	438	438	-
Stage 2	-	-	-	-	-	-	529	579	-	476	336	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1218	-	-	1290	-	-	291	287	805	254	329	841
Stage 1	-	-	-	-	-	-	712	668	-	597	579	-
Stage 2	-	-	-	-	-	-	533	501	-	570	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1218	-	-	1290	-	-	158	245	805	~ 62	281	841
Mov Cap-2 Maneuver	-	-	-	-	-	-	158	245	-	~ 62	281	-
Stage 1	-	-	-	-	-	-	690	647	-	578	511	-
Stage 2	-	-	-	-	-	-	330	442	-	308	622	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	2.1	155.4	$ 1205.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	1218	-	-	1290	-	-	105
HCM Lane V/C Ratio	1.212	0.026	-	-	0.092	-	-	3.489
HCM Control Delay (s)	155.4	8	0	-	8.1	0	-	$ 1205.4
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	17.1	0.1	-	-	0.3	-	-	36.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	491	247	13	547	132	100	211	16	65	285	125
Future Volume (veh/h)	212	491	247	13	547	132	100	211	16	65	285	125
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	223	517	260	14	576	139	105	222	17	68	300	132
Adj No. of Lanes	2	3	1	1	3	1	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	2338	728	29	1968	613	177	970	434	88	963	431
Arrive On Green	0.09	0.46	0.46	0.02	0.39	0.39	0.05	0.27	0.27	0.05	0.27	0.27
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	223	517	260	14	576	139	105	222	17	68	300	132
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	5.5	9.6	0.7	7.0	5.3	2.7	4.4	0.7	3.4	6.1	6.0
Cycle Q Clear(g_c), s	5.7	5.5	9.6	0.7	7.0	5.3	2.7	4.4	0.7	3.4	6.1	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	2338	728	29	1968	613	177	970	434	88	963	431
V/C Ratio(X)	0.73	0.22	0.36	0.48	0.29	0.23	0.59	0.23	0.04	0.77	0.31	0.31
Avail Cap(c_a), veh/h	554	2338	728	128	1968	613	325	970	434	246	963	431
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	14.6	15.7	43.9	19.1	18.5	41.8	25.3	24.0	42.3	26.0	26.0
Incr Delay (d2), s/veh	3.3	0.2	1.4	11.8	0.4	0.9	3.1	0.5	0.2	13.2	0.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.6	4.4	0.4	3.4	2.5	1.4	2.2	0.3	2.0	3.1	2.8
LnGrp Delay(d),s/veh	43.2	14.8	17.1	55.7	19.4	19.4	44.9	25.8	24.1	55.5	26.9	27.8
LnGrp LOS	D	B	B	E	B	B	D	C	C	E	C	C
Approach Vol, veh/h		1000			729			344			500	
Approach Delay, s/veh		21.7			20.1			31.6			31.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	45.9	9.1	29.0	12.5	39.3	9.0	29.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	32.5	8.5	24.5	14.5	24.5	12.5	20.5
Max Q Clear Time (g_c+I1), s	2.7	11.6	4.7	8.1	7.7	9.0	5.4	6.4
Green Ext Time (p_c), s	0.0	8.8	0.1	3.4	0.4	7.5	0.1	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	422	36	62	21	86	12	180	62	10	20	194	338
Future Volume (veh/h)	422	36	62	21	86	12	180	62	10	20	194	338
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	444	38	65	22	91	13	189	65	11	21	204	356
Adj No. of Lanes	2	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	586	545	488	45	509	71	238	1158	191	44	480	429
Arrive On Green	0.17	0.31	0.31	0.03	0.16	0.16	0.13	0.38	0.38	0.02	0.27	0.27
Sat Flow, veh/h	3442	1770	1583	1774	3118	437	1774	3041	503	1774	1770	1583
Grp Volume(v), veh/h	444	38	65	22	51	53	189	37	39	21	204	356
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1786	1774	1770	1774	1774	1770	1583
Q Serve(g_s), s	7.5	0.9	1.8	0.7	1.5	1.6	6.3	0.8	0.8	0.7	5.8	13.0
Cycle Q Clear(g_c), s	7.5	0.9	1.8	0.7	1.5	1.6	6.3	0.8	0.8	0.7	5.8	13.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	586	545	488	45	289	291	238	674	676	44	480	429
V/C Ratio(X)	0.76	0.07	0.13	0.49	0.18	0.18	0.79	0.06	0.06	0.48	0.43	0.83
Avail Cap(c_a), veh/h	899	968	866	159	664	670	434	852	854	159	578	517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	15.0	15.3	29.5	22.1	22.1	25.7	12.0	12.0	29.5	18.4	21.0
Incr Delay (d2), s/veh	2.0	0.1	0.1	7.9	0.3	0.3	5.9	0.0	0.0	8.1	0.6	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.5	0.8	0.5	0.8	0.8	3.5	0.4	0.4	0.4	2.9	6.7
LnGrp Delay(d),s/veh	26.3	15.0	15.4	37.3	22.4	22.4	31.6	12.0	12.0	37.6	19.0	30.3
LnGrp LOS	C	B	B	D	C	C	C	B	B	D	B	C
Approach Vol, veh/h		547			126			265			581	
Approach Delay, s/veh		24.2			25.0			26.0			26.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	22.9	12.2	20.6	14.4	14.0	5.5	27.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	33.5	15.0	20.0	16.0	23.0	5.5	29.5
Max Q Clear Time (g_c+I1), s	2.7	3.8	8.3	15.0	9.5	3.6	2.7	2.8
Green Ext Time (p_c), s	0.0	1.1	0.3	1.6	0.9	1.0	0.0	3.8

Intersection Summary		
HCM 2010 Ctrl Delay		25.5
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	269	62	37	313	205	10	272	10	158	477	38
Future Volume (veh/h)	72	269	62	37	313	205	10	272	10	158	477	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	76	283	65	39	329	216	11	286	11	166	502	40
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	730	165	57	477	307	23	1362	52	207	1687	134
Arrive On Green	0.05	0.25	0.25	0.03	0.23	0.23	0.01	0.39	0.39	0.12	0.51	0.51
Sat Flow, veh/h	1774	2869	649	1774	2068	1330	1774	3476	133	1774	3322	264
Grp Volume(v), veh/h	76	173	175	39	280	265	11	145	152	166	267	275
Grp Sat Flow(s),veh/h/ln	1774	1770	1748	1774	1770	1628	1774	1770	1839	1774	1770	1816
Q Serve(g_s), s	4.4	8.5	8.7	2.3	15.2	15.7	0.6	5.7	5.7	9.6	9.2	9.2
Cycle Q Clear(g_c), s	4.4	8.5	8.7	2.3	15.2	15.7	0.6	5.7	5.7	9.6	9.2	9.2
Prop In Lane	1.00		0.37	1.00		0.82	1.00		0.07	1.00		0.15
Lane Grp Cap(c), veh/h	97	450	445	57	409	376	23	693	721	207	899	922
V/C Ratio(X)	0.78	0.38	0.39	0.68	0.69	0.70	0.47	0.21	0.21	0.80	0.30	0.30
Avail Cap(c_a), veh/h	174	570	563	112	506	465	84	693	721	372	899	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	32.4	32.4	50.3	36.9	37.1	51.5	21.2	21.2	45.2	15.0	15.0
Incr Delay (d2), s/veh	5.0	1.1	1.2	8.2	2.9	3.5	14.3	0.7	0.7	14.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.3	4.3	1.2	7.7	7.4	0.4	2.9	3.0	5.5	4.5	4.7
LnGrp Delay(d),s/veh	54.0	33.4	33.6	58.5	39.8	40.5	65.7	21.8	21.8	59.2	15.4	15.4
LnGrp LOS	D	C	C	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h		424			584			308			708	
Approach Delay, s/veh		37.2			41.4			23.4			25.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.1	46.9	7.9	32.1	5.9	59.1	10.4	29.6
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	22.3	* 22	6.6	33.8	5.0	39.4	10.3	30.0
Max Q Clear Time (g_c+I1), s	11.6	7.7	4.3	10.7	2.6	11.2	6.4	17.7
Green Ext Time (p_c), s	0.7	6.4	0.0	9.7	0.0	8.8	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.3
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	13	373	103	21	11	408	205	41	11	404	20
Future Volume (veh/h)	11	13	373	103	21	11	408	205	41	11	404	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	14	393	108	22	12	429	216	43	12	425	21
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	480	430	137	763	383	473	1266	248	26	606	30
Arrive On Green	0.01	0.27	0.27	0.08	0.33	0.33	0.27	0.43	0.43	0.01	0.18	0.18
Sat Flow, veh/h	1774	1770	1583	1774	2283	1147	1774	2953	577	1774	3433	169
Grp Volume(v), veh/h	12	14	393	108	17	17	429	128	131	12	219	227
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1660	1774	1770	1761	1774	1770	1833
Q Serve(g_s), s	0.5	0.4	18.5	4.6	0.5	0.5	18.0	3.4	3.5	0.5	8.9	9.0
Cycle Q Clear(g_c), s	0.5	0.4	18.5	4.6	0.5	0.5	18.0	3.4	3.5	0.5	8.9	9.0
Prop In Lane	1.00		1.00	1.00		0.69	1.00		0.33	1.00		0.09
Lane Grp Cap(c), veh/h	26	480	430	137	591	555	473	759	755	26	313	324
V/C Ratio(X)	0.46	0.03	0.91	0.79	0.03	0.03	0.91	0.17	0.17	0.46	0.70	0.70
Avail Cap(c_a), veh/h	127	505	452	161	591	555	553	907	903	127	482	500
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	20.6	27.2	34.9	17.2	17.3	27.3	13.5	13.6	37.6	29.8	29.8
Incr Delay (d2), s/veh	12.1	0.0	22.4	19.4	0.0	0.0	17.0	0.1	0.1	12.1	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	10.8	3.0	0.2	0.2	11.1	1.7	1.7	0.3	4.6	4.8
LnGrp Delay(d),s/veh	49.8	20.6	49.6	54.3	17.3	17.3	44.3	13.7	13.7	49.8	32.6	32.6
LnGrp LOS	D	C	D	D	B	B	D	B	B	D	C	C
Approach Vol, veh/h		419			142			688			458	
Approach Delay, s/veh		48.7			45.5			32.8			33.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	37.0	10.0	24.9	24.6	17.6	5.1	29.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	39.5	7.0	22.0	24.0	21.0	5.5	23.5
Max Q Clear Time (g_c+I1), s	2.5	5.5	6.6	20.5	20.0	11.0	2.5	2.5
Green Ext Time (p_c), s	0.0	3.9	0.0	0.4	0.5	2.6	0.0	2.7

Intersection Summary		
HCM 2010 Ctrl Delay		37.8
HCM 2010 LOS		D

Intersection	
Intersection Delay, s/veh	73
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	86	140	18	488	89	31	11	32	255	57	82	119
Future Vol, veh/h	86	140	18	488	89	31	11	32	255	57	82	119
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	91	147	19	514	94	33	12	34	268	60	86	125
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	19.8	143	18.6	21.1
HCM LOS	C	F	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	26%	0%	35%	80%	22%
Vol Thru, %	74%	0%	57%	15%	32%
Vol Right, %	0%	100%	7%	5%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	255	244	608	258
LT Vol	11	0	86	488	57
Through Vol	32	0	140	89	82
RT Vol	0	255	18	31	119
Lane Flow Rate	45	268	257	640	272
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.102	0.543	0.533	1.231	0.562
Departure Headway (Hd)	8.782	7.922	8.032	6.927	8.142
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	411	459	452	525	445
Service Time	6.482	5.622	6.032	4.973	6.142
HCM Lane V/C Ratio	0.109	0.584	0.569	1.219	0.611
HCM Control Delay	12.5	19.6	19.8	143	21.1
HCM Lane LOS	B	C	C	F	C
HCM 95th-tile Q	0.3	3.2	3.1	24.6	3.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	23	108	10	21	10	73	548	10	10	536	107
Future Volume (veh/h)	123	23	108	10	21	10	73	548	10	10	536	107
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	129	24	114	11	22	11	77	577	11	11	564	113
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	219	196	39	52	24	99	2200	42	28	1705	341
Arrive On Green	0.12	0.12	0.12	0.02	0.02	0.02	0.06	0.62	0.62	0.02	0.58	0.58
Sat Flow, veh/h	1774	1770	1583	1774	2350	1090	1774	3553	68	1774	2941	587
Grp Volume(v), veh/h	129	24	114	11	16	17	77	287	301	11	339	338
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1670	1774	1770	1851	1774	1770	1759
Q Serve(g_s), s	6.5	1.1	6.5	0.6	0.9	0.9	4.1	7.0	7.0	0.6	9.5	9.5
Cycle Q Clear(g_c), s	6.5	1.1	6.5	0.6	0.9	0.9	4.1	7.0	7.0	0.6	9.5	9.5
Prop In Lane	1.00		1.00	1.00		0.65	1.00		0.04	1.00		0.33
Lane Grp Cap(c), veh/h	220	219	196	39	39	37	99	1096	1146	28	1026	1020
V/C Ratio(X)	0.59	0.11	0.58	0.28	0.41	0.46	0.78	0.26	0.26	0.39	0.33	0.33
Avail Cap(c_a), veh/h	486	484	433	336	335	317	134	1096	1146	112	1026	1020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	37.0	39.3	45.7	45.8	45.9	44.3	8.2	8.2	46.3	10.4	10.4
Incr Delay (d2), s/veh	11.0	1.0	12.0	3.9	6.9	8.6	12.4	0.6	0.6	3.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.6	3.5	0.3	0.5	0.5	2.3	3.6	3.8	0.3	4.9	4.9
LnGrp Delay(d),s/veh	50.3	38.0	51.3	49.6	52.7	54.5	56.6	8.8	8.8	49.5	11.2	11.3
LnGrp LOS	D	D	D	D	D	D	E	A	A	D	B	B
Approach Vol, veh/h		267			44			665			688	
Approach Delay, s/veh		49.6			52.6			14.3			11.9	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	64.6		17.6	9.9	60.9		6.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.3	24.2		26.0	7.2	23.0		18.0
Max Q Clear Time (g_c+I1), s	2.6	9.0		8.5	6.1	11.5		2.9
Green Ext Time (p_c), s	0.0	11.6		3.2	0.0	9.2		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		20.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	1814	229	240	1657	58	123	20	273	122	22	80
Future Volume (veh/h)	48	1814	229	240	1657	58	123	20	273	122	22	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	51	1909	241	253	1744	61	129	21	287	128	23	84
Adj No. of Lanes	1	3	0	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	2330	291	206	3086	874	152	24	324	173	338	353
Arrive On Green	0.04	0.48	0.48	0.12	0.55	0.55	0.09	0.22	0.22	0.05	0.18	0.18
Sat Flow, veh/h	1774	4872	609	1774	5588	1583	1774	109	1491	3442	1863	1583
Grp Volume(v), veh/h	51	1455	695	253	1744	61	129	0	308	128	23	84
Grp Sat Flow(s),veh/h/ln	1774	1863	1755	1774	1863	1583	1774	0	1600	1721	1863	1583
Q Serve(g_s), s	4.3	50.2	51.3	17.4	30.5	2.7	10.8	0.0	28.0	5.5	1.5	6.5
Cycle Q Clear(g_c), s	4.3	50.2	51.3	17.4	30.5	2.7	10.8	0.0	28.0	5.5	1.5	6.5
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.93	1.00		1.00
Lane Grp Cap(c), veh/h	74	1781	839	206	3086	874	152	0	347	173	338	353
V/C Ratio(X)	0.69	0.82	0.83	1.23	0.57	0.07	0.85	0.00	0.89	0.74	0.07	0.24
Avail Cap(c_a), veh/h	213	1781	839	206	3086	874	213	0	466	236	447	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.9	33.5	33.8	66.3	21.9	15.6	67.6	0.0	56.9	70.3	50.9	47.8
Incr Delay (d2), s/veh	4.1	4.3	9.2	128.7	0.5	0.1	19.5	0.0	15.1	4.5	0.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	26.7	26.8	15.9	15.8	1.2	6.1	0.0	13.9	2.7	0.8	2.9
LnGrp Delay(d),s/veh	75.0	37.8	43.0	195.0	22.4	15.7	87.0	0.0	72.0	74.8	51.1	48.6
LnGrp LOS	E	D	D	F	C	B	F		E	E	D	D
Approach Vol, veh/h		2201			2058			437			235	
Approach Delay, s/veh		40.3			43.4			76.5			63.1	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	77.5	17.5	33.0	10.9	88.6	12.1	38.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	17.4	57.8	18.0	36.0	18.0	57.2	10.3	43.7
Max Q Clear Time (g_c+I1), s	19.4	53.3	12.8	8.5	6.3	32.5	7.5	30.0
Green Ext Time (p_c), s	0.0	4.5	0.1	3.3	0.0	24.6	0.1	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	45.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	2216	13	11	1565	111	13	2	11	506	2	328
Future Volume (veh/h)	291	2216	13	11	1565	111	13	2	11	506	2	328
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	306	2333	14	12	1647	117	14	2	12	533	2	345
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	2959	921	29	2515	1053	32	19	115	586	2	370
Arrive On Green	0.10	0.58	0.58	0.02	0.49	0.49	0.02	0.08	0.08	0.17	0.24	0.24
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	231	1387	3442	9	1576
Grp Volume(v), veh/h	306	2333	14	12	1647	117	14	0	14	533	0	347
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1618	1721	0	1585
Q Serve(g_s), s	11.8	47.9	0.5	0.9	32.7	3.6	1.1	0.0	1.1	20.5	0.0	29.0
Cycle Q Clear(g_c), s	11.8	47.9	0.5	0.9	32.7	3.6	1.1	0.0	1.1	20.5	0.0	29.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.99
Lane Grp Cap(c), veh/h	355	2959	921	29	2515	1053	32	0	134	586	0	372
V/C Ratio(X)	0.86	0.79	0.02	0.42	0.65	0.11	0.43	0.00	0.10	0.91	0.00	0.93
Avail Cap(c_a), veh/h	403	2959	921	79	2515	1053	130	0	217	658	0	399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.37	0.37	0.86	0.86	0.86	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.6	21.8	11.9	65.8	25.5	8.2	65.6	0.0	57.3	55.0	0.0	50.6
Incr Delay (d2), s/veh	5.9	0.8	0.0	3.1	0.8	0.1	3.4	0.0	0.3	14.8	0.0	27.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	22.5	0.2	0.5	15.4	1.6	0.5	0.0	0.5	11.0	0.0	15.5
LnGrp Delay(d),s/veh	65.5	22.6	11.9	68.9	26.3	8.3	69.0	0.0	57.6	69.8	0.0	78.5
LnGrp LOS	E	C	B	E	C	A	E		E	E		E
Approach Vol, veh/h		2653			1776			28			880	
Approach Delay, s/veh		27.5			25.4			63.3			73.2	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	84.3	7.1	36.8	18.5	72.6	27.6	16.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.0	65.0	9.9	34.0	15.8	55.2	25.8	18.1
Max Q Clear Time (g_c+I1), s	2.9	49.9	3.1	31.0	13.8	34.7	22.5	3.1
Green Ext Time (p_c), s	0.0	15.1	0.0	0.8	0.1	19.4	0.4	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1982	779	0	1486	0	0	0	0	251	2	421
Future Volume (veh/h)	0	1982	779	0	1486	0	0	0	0	251	2	421
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	2086	820	0	1564	0				264	2	443
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	3255	1013	0	3255	0				493	4	780
Arrive On Green	0.00	0.64	0.64	0.00	0.64	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	5253	1583	0	5421	0				1761	13	2787
Grp Volume(v), veh/h	0	2086	820	0	1564	0				266	0	443
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	25.0	38.7	0.0	16.0	0.0				12.7	0.0	13.6
Cycle Q Clear(g_c), s	0.0	25.0	38.7	0.0	16.0	0.0				12.7	0.0	13.6
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	3255	1013	0	3255	0				497	0	780
V/C Ratio(X)	0.00	0.64	0.81	0.00	0.48	0.00				0.54	0.00	0.57
Avail Cap(c_a), veh/h	0	3255	1013	0	3255	0				497	0	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.51	0.51	0.00	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.0	13.4	0.0	9.4	0.0				30.5	0.0	30.8
Incr Delay (d2), s/veh	0.0	0.5	3.7	0.0	0.5	0.0				4.1	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.7	17.7	0.0	7.5	0.0				6.8	0.0	5.6
LnGrp Delay(d),s/veh	0.0	11.5	17.1	0.0	9.8	0.0				34.6	0.0	33.8
LnGrp LOS		B	B		A					C		C
Approach Vol, veh/h		2906			1564						709	
Approach Delay, s/veh		13.1			9.8						34.1	
Approach LOS		B			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		68.0		32.0		68.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		64.0		28.0		64.0		
Max Q Clear Time (g_c+I1), s		40.7		15.6		18.0		
Green Ext Time (p_c), s		22.7		2.9		43.6		

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1435	798	0	1703	227	222	0	652	0	0	0
Future Volume (veh/h)	0	1435	798	0	1703	227	222	0	652	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1511	0	0	1793	0	234	0	686			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3102	966	0	3102	966	550	0	491			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00	0.31	0.00	0.31			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1511	0	0	1793	0	234	0	686			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	16.5	0.0	0.0	21.2	0.0	10.5	0.0	31.0			
Cycle Q Clear(g_c), s	0.0	16.5	0.0	0.0	21.2	0.0	10.5	0.0	31.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3102	966	0	3102	966	550	0	491			
V/C Ratio(X)	0.00	0.49	0.00	0.00	0.58	0.00	0.43	0.00	1.40			
Avail Cap(c_a), veh/h	0	3102	966	0	3102	966	550	0	491			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.87	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.8	0.0	0.0	11.7	0.0	27.4	0.0	34.5			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.3	0.0	2.4	0.0	191.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	9.9	0.0	5.5	0.0	39.5			
LnGrp Delay(d),s/veh	0.0	11.3	0.0	0.0	12.0	0.0	29.8	0.0	225.5			
LnGrp LOS		B			B		C		F			
Approach Vol, veh/h		1511			1793			920				
Approach Delay, s/veh		11.3			12.0			175.7				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		65.0				65.0		35.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		32.0				25.0		31.0
Max Q Clear Time (g_c+I1), s		18.5				23.2		33.0
Green Ext Time (p_c), s		12.7				1.7		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		47.4
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1302	120	124	821	283	274	209	10	249	144	342
Future Volume (veh/h)	339	1302	120	124	821	283	274	209	10	249	144	342
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	357	1371	126	131	864	298	288	220	11	262	152	360
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	2372	672	183	2132	604	275	1058	450	275	527	448
Arrive On Green	0.10	0.42	0.42	0.05	0.38	0.38	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3725	1583	3442	1863	1583
Grp Volume(v), veh/h	357	1371	126	131	864	298	288	220	11	262	152	360
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	12.4	24.3	6.5	4.9	14.7	18.6	10.4	5.8	0.7	9.9	8.3	27.4
Cycle Q Clear(g_c), s	12.4	24.3	6.5	4.9	14.7	18.6	10.4	5.8	0.7	9.9	8.3	27.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	2372	672	183	2132	604	275	1058	450	275	527	448
V/C Ratio(X)	1.09	0.58	0.19	0.72	0.41	0.49	1.05	0.21	0.02	0.95	0.29	0.80
Avail Cap(c_a), veh/h	328	2372	672	254	2132	604	275	1235	525	275	616	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	28.5	23.4	60.6	29.4	30.6	59.8	35.4	33.6	59.5	36.4	43.2
Incr Delay (d2), s/veh	68.6	0.8	0.5	5.8	0.6	2.9	66.8	0.4	0.1	41.1	1.1	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	12.6	2.9	2.5	7.7	8.6	7.5	3.0	0.3	6.3	4.4	13.6
LnGrp Delay(d),s/veh	127.4	29.3	23.8	66.3	30.0	33.5	126.6	35.8	33.6	100.7	37.5	56.0
LnGrp LOS	F	C	C	E	C	C	F	D	C	F	D	E
Approach Vol, veh/h		1854			1293			519			774	
Approach Delay, s/veh		47.8			34.5			86.1			67.5	
Approach LOS		D			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	61.0	15.0	42.6	17.0	55.4	14.9	42.7
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	9.6	46.3	10.4	43.0	12.4	43.4	10.4	43.1
Max Q Clear Time (g_c+I1), s	10.9	26.3	12.4	29.4	14.4	20.6	11.9	7.8
Green Ext Time (p_c), s	0.1	19.6	0.0	7.4	0.0	22.2	0.0	12.9

Intersection Summary	
HCM 2010 Ctrl Delay	51.8
HCM 2010 LOS	D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Project Buildout (2035 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	101	5.0	0.186	5.9	LOS A	0.7	18.4	0.48	0.40	24.4
12	R2	361	5.0	0.186	1.1	LOS A	0.7	18.4	0.09	0.07	24.8
Approach		462	5.0	0.186	2.1	LOS A	0.7	18.4	0.17	0.14	24.7
East: Keller Road											
3	L2	113	5.0	0.122	4.0	LOS A	0.5	12.9	0.23	0.11	24.6
8	T1	273	3.0	0.122	0.5	LOS A	0.5	12.9	0.03	0.02	24.5
Approach		386	3.6	0.122	1.5	LOS A	0.5	12.9	0.09	0.04	24.5
West: Keller Road											
4	T1	403	3.0	0.326	5.9	LOS A	1.7	43.0	0.31	0.17	22.6
14	R2	109	5.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		512	3.4	0.326	4.7	LOS A	1.7	43.0	0.24	0.14	23.3
All Vehicles		1360	4.0	0.326	2.9	LOS A	1.7	43.0	0.17	0.11	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2035 Plus Ambient Growth Plus Project Buildout (2035 w/A + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	79	5.0	0.129	7.4	LOS A	0.4	11.4	0.59	0.59	21.3
2	T1	1	5.0	0.165	7.1	LOS A	0.6	14.7	0.58	0.58	23.2
12	R2	375	5.0	0.165	2.1	LOS A	0.6	14.7	0.17	0.17	24.4
Approach		455	5.0	0.165	3.1	LOS A	0.6	14.7	0.25	0.25	24.0
East: Keller Road											
8	T1	307	3.0	0.137	4.4	LOS A	0.5	13.9	0.33	0.21	23.2
18	R2	34	5.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		340	3.2	0.137	4.0	LOS A	0.5	13.9	0.29	0.19	23.5
West: Keller Road											
7	L2	121	5.0	0.278	5.1	LOS A	0.0	0.0	0.00	0.00	29.9
4	T1	643	3.0	0.278	5.0	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		764	3.3	0.278	5.0	LOS A	0.0	0.0	0.00	0.00	25.5
All Vehicles		1560	3.8	0.278	4.2	LOS A	0.6	14.7	0.14	0.11	24.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

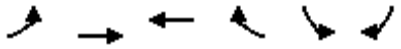
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	88	10	286	590	297	24	208	60	62	461	25
Future Volume (veh/h)	16	88	10	286	590	297	24	208	60	62	461	25
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	17	96	11	311	641	323	26	226	65	67	501	27
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	34	1079	122	354	1178	593	47	589	165	86	812	44
Arrive On Green	0.02	0.34	0.34	0.20	0.52	0.52	0.03	0.22	0.22	0.05	0.24	0.24
Sat Flow, veh/h	1774	3207	362	1774	2280	1149	1774	2730	767	1774	3416	184
Grp Volume(v), veh/h	17	52	55	311	497	467	26	145	146	67	259	269
Grp Sat Flow(s),veh/h/ln	1774	1770	1799	1774	1770	1660	1774	1770	1727	1774	1770	1830
Q Serve(g_s), s	0.9	1.8	1.9	15.3	17.0	17.0	1.3	6.3	6.5	3.4	11.8	11.8
Cycle Q Clear(g_c), s	0.9	1.8	1.9	15.3	17.0	17.0	1.3	6.3	6.5	3.4	11.8	11.8
Prop In Lane	1.00		0.20	1.00		0.69	1.00		0.44	1.00		0.10
Lane Grp Cap(c), veh/h	34	595	605	354	914	857	47	382	372	86	421	435
V/C Ratio(X)	0.50	0.09	0.09	0.88	0.54	0.54	0.55	0.38	0.39	0.78	0.62	0.62
Avail Cap(c_a), veh/h	99	595	605	511	914	857	110	382	372	177	421	435
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	20.4	20.4	35.0	14.6	14.6	43.3	30.2	30.2	42.3	30.6	30.6
Incr Delay (d2), s/veh	10.8	0.3	0.3	11.8	2.3	2.5	9.7	2.9	3.1	13.7	6.6	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.9	1.0	8.7	8.9	8.4	0.8	3.4	3.5	2.0	6.5	6.8
LnGrp Delay(d),s/veh	54.5	20.7	20.7	46.8	17.0	17.1	53.0	33.0	33.3	56.0	37.2	37.1
LnGrp LOS	D	C	C	D	B	B	D	C	C	E	D	D
Approach Vol, veh/h		124			1275			317			595	
Approach Delay, s/veh		25.4			24.3			34.8			39.3	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	34.8	6.9	25.9	6.2	51.0	8.9	23.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.9	19.1	5.6	21.4	5.0	40.0	9.0	18.0
Max Q Clear Time (g_c+I1), s	11.3	3.9	3.3	13.8	2.9	19.0	5.4	8.5
Green Ext Time (p_c), s	0.6	6.3	0.0	3.0	0.0	7.4	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.7
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	280	1931	1692	121	258	325
Future Volume (veh/h)	280	1931	1692	121	258	325
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	304	2099	1839	132	280	353
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	379	3159	2233	160	960	777
Arrive On Green	0.11	0.62	0.46	0.46	0.28	0.28
Sat Flow, veh/h	3442	5253	5013	347	3442	2787
Grp Volume(v), veh/h	304	2099	1285	686	280	353
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1802	1721	1393
Q Serve(g_s), s	7.8	24.0	29.6	29.8	5.7	9.4
Cycle Q Clear(g_c), s	7.8	24.0	29.6	29.8	5.7	9.4
Prop In Lane	1.00			0.19	1.00	1.00
Lane Grp Cap(c), veh/h	379	3159	1563	830	960	777
V/C Ratio(X)	0.80	0.66	0.82	0.83	0.29	0.45
Avail Cap(c_a), veh/h	424	3159	1563	830	960	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	1.00	1.00
Uniform Delay (d), s/veh	39.1	11.0	21.1	21.1	25.5	26.8
Incr Delay (d2), s/veh	9.6	1.1	4.4	8.1	0.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	11.4	14.7	16.5	2.8	7.8
LnGrp Delay(d),s/veh	48.7	12.1	25.5	29.2	26.2	28.7
LnGrp LOS	D	B	C	C	C	C
Approach Vol, veh/h		2403	1971		633	
Approach Delay, s/veh		16.8	26.8		27.6	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.4		29.6	14.4	46.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		55.9		25.1	11.1	40.3		
Max Q Clear Time (g_c+I1), s		26.0		11.4	9.8	31.8		
Green Ext Time (p_c), s		28.7		2.1	0.2	8.4		

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.1

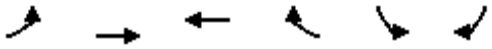
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	25	1623	21	10	1304	44	10	10	10	59	10	28
Future Vol, veh/h	25	1623	21	10	1304	44	10	10	10	59	10	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	1691	22	10	1358	46	10	10	10	61	10	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1404	0	0	1713	0	0	3176	3179	1702	3166	3167	1381
Stage 1	-	-	-	-	-	-	1754	1754	-	1402	1402	-
Stage 2	-	-	-	-	-	-	1422	1425	-	1764	1765	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	486	-	-	370	-	-	~ 6	~ 10	114	~ 6	11	176
Stage 1	-	-	-	-	-	-	108	139	-	173	207	-
Stage 2	-	-	-	-	-	-	169	201	-	107	137	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	486	-	-	370	-	-	-	0	114	-	0	176
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	108	0	-	173	181	-
Stage 2	-	-	-	-	-	-	116	176	-	-	0	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	486	-	-	370	-	-	-
HCM Lane V/C Ratio	-	0.054	-	-	0.028	-	-	-
HCM Control Delay (s)	-	12.8	0	-	15	0	-	-
HCM Lane LOS	-	B	A	-	C	A	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	674	965	999	362	332	507
Future Volume (veh/h)	674	965	999	362	332	507
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	688	985	1019	369	339	517
Adj No. of Lanes	2	3	3	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	832	3286	1762	549	819	760
Arrive On Green	0.24	0.65	0.35	0.35	0.24	0.24
Sat Flow, veh/h	3442	5253	5253	1583	3442	1583
Grp Volume(v), veh/h	688	985	1019	369	339	517
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1721	1583
Q Serve(g_s), s	14.7	6.6	12.7	15.4	6.5	18.5
Cycle Q Clear(g_c), s	14.7	6.6	12.7	15.4	6.5	18.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	832	3286	1762	549	819	760
V/C Ratio(X)	0.83	0.30	0.58	0.67	0.41	0.68
Avail Cap(c_a), veh/h	1262	4089	1930	601	819	760
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	6.0	20.8	21.6	25.0	15.6
Incr Delay (d2), s/veh	2.9	0.1	0.4	2.6	0.3	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	3.0	6.0	7.1	3.1	17.4
LnGrp Delay(d),s/veh	30.8	6.1	21.1	24.3	25.4	18.1
LnGrp LOS	C	A	C	C	C	B
Approach Vol, veh/h		1673	1388		856	
Approach Delay, s/veh		16.2	21.9		21.0	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		54.7		23.0	23.3	31.4		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		62.5		18.5	28.5	29.5		
Max Q Clear Time (g_c+I1), s		8.6		20.5	16.7	17.4		
Green Ext Time (p_c), s		25.3		0.0	2.1	9.5		

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	995	288	194	1076	1092	404	389	626	1008	290	147
Future Volume (veh/h)	270	995	288	194	1076	1092	404	389	626	1008	290	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	1036	300	202	1121	1138	421	405	652	1050	302	153
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	3951	1120	249	4031	1142	470	913	408	670	1156	491
Arrive On Green	0.06	0.71	0.71	0.07	0.72	0.72	0.14	0.26	0.26	0.19	0.31	0.31
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3539	1583	3548	3725	1583
Grp Volume(v), veh/h	281	1036	300	202	1121	1138	421	405	652	1050	302	153
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1774	1863	1583
Q Serve(g_s), s	8.4	9.7	9.9	8.4	10.1	103.2	17.4	13.9	37.4	27.4	8.8	10.7
Cycle Q Clear(g_c), s	8.4	9.7	9.9	8.4	10.1	103.2	17.4	13.9	37.4	27.4	8.8	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	199	3951	1120	249	4031	1142	470	913	408	670	1156	491
V/C Ratio(X)	1.41	0.26	0.27	0.81	0.28	1.00	0.90	0.44	1.60	1.57	0.26	0.31
Avail Cap(c_a), veh/h	199	3951	1120	339	4031	1142	612	913	408	670	1156	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.3	7.6	7.7	66.3	7.0	20.0	61.6	45.1	53.8	58.8	37.5	38.2
Incr Delay (d2), s/veh	211.3	0.2	0.6	5.7	0.1	22.4	11.3	1.6	279.7	262.0	0.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	5.0	4.5	4.2	5.2	51.5	9.0	7.0	48.1	37.8	4.6	4.9
LnGrp Delay(d),s/veh	279.6	7.8	8.3	72.0	7.2	42.4	72.8	46.6	333.5	320.8	38.1	39.8
LnGrp LOS	F	A	A	E	A	D	E	D	F	F	D	D
Approach Vol, veh/h		1617			2461			1478			1505	
Approach Delay, s/veh		55.1			28.8			180.7			235.5	
Approach LOS		E			C			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	110.3	24.4	51.2	13.0	112.4	32.0	43.6
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	14.3	45.9	25.8	37.4	8.4	51.8	27.4	* 37
Max Q Clear Time (g_c+I1), s	10.4	11.9	19.4	12.7	10.4	105.2	29.4	39.4
Green Ext Time (p_c), s	0.1	33.0	0.4	11.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	110.7
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1757	993	0	1782	570	0	0	0	552	0	580
Future Volume (veh/h)	0	1757	993	0	1782	570	0	0	0	552	0	580
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1793	0	0	1818	582				563	0	592
Adj No. of Lanes	0	4	1	0	3	2				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	3987	985	0	3164	1734				994	0	805
Arrive On Green	0.00	0.62	0.00	0.00	0.21	0.21				0.29	0.00	0.29
Sat Flow, veh/h	0	6669	1583	0	5253	2787				3442	0	2787
Grp Volume(v), veh/h	0	1793	0	0	1818	582				563	0	592
Grp Sat Flow(s),veh/h/ln	0	1602	1583	0	1695	1393				1721	0	1393
Q Serve(g_s), s	0.0	13.2	0.0	0.0	29.0	16.0				12.5	0.0	17.3
Cycle Q Clear(g_c), s	0.0	13.2	0.0	0.0	29.0	16.0				12.5	0.0	17.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3987	985	0	3164	1734				994	0	805
V/C Ratio(X)	0.00	0.45	0.00	0.00	0.57	0.34				0.57	0.00	0.74
Avail Cap(c_a), veh/h	0	3987	985	0	3164	1734				994	0	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.00	0.48	0.48				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.9	0.0	0.0	25.0	19.9				27.2	0.0	28.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.4	0.3				2.3	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.7	0.0	0.0	13.7	6.2				6.3	0.0	7.2
LnGrp Delay(d),s/veh	0.0	9.0	0.0	0.0	25.4	20.1				29.5	0.0	34.8
LnGrp LOS		A			C	C				C		C
Approach Vol, veh/h		1793			2400						1155	
Approach Delay, s/veh		9.0			24.1						32.2	
Approach LOS		A			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		60.0		30.0		60.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		56.0		26.0		56.0		
Max Q Clear Time (g_c+I1), s		15.2		19.3		31.0		
Green Ext Time (p_c), s		37.9		2.8		23.9		

Intersection Summary		
HCM 2010 Ctrl Delay		20.8
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	784	1525	0	0	1380	528	0	0	671	0	0	972
Future Volume (veh/h)	784	1525	0	0	1380	528	0	0	671	0	0	972
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	808	1572	0	0	1423	544	0	0	692	0	0	1002
Adj No. of Lanes	2	4	0	0	3	2	0	0	3	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	867	6123	0	0	3353	1837	0	0	0	0	0	0
Arrive On Green	0.33	1.00	0.00	0.00	0.66	0.66	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	3442	6669	0	0	5253	2787		0			0	
Grp Volume(v), veh/h	808	1572	0	0	1423	544		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1721	1602	0	0	1695	1393						
Q Serve(g_s), s	20.4	0.0	0.0	0.0	11.9	7.4						
Cycle Q Clear(g_c), s	20.4	0.0	0.0	0.0	11.9	7.4						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	867	6123	0	0	3353	1837						
V/C Ratio(X)	0.93	0.26	0.00	0.00	0.42	0.30						
Avail Cap(c_a), veh/h	880	6123	0	0	3353	1837						
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.87	0.87	0.00	0.00	0.51	0.51						
Uniform Delay (d), s/veh	29.2	0.0	0.0	0.0	7.3	6.5						
Incr Delay (d2), s/veh	14.7	0.1	0.0	0.0	0.2	0.2						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	11.4	0.0	0.0	0.0	5.6	2.8						
LnGrp Delay(d),s/veh	43.9	0.1	0.0	0.0	7.5	6.7						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		2380			1967							
Approach Delay, s/veh		15.0			7.2							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			26.7	63.3		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		56.8			23.0	29.8		
Max Q Clear Time (g_c+I1), s		2.0			22.4	13.9		
Green Ext Time (p_c), s		44.0			0.2	14.8		

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	343	1438	415	211	1215	102	513	634	353	204	368	180
Future Volume (veh/h)	343	1438	415	211	1215	102	513	634	353	204	368	180
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	346	1453	419	213	1227	103	518	640	357	206	372	182
Adj No. of Lanes	2	3	2	2	4	0	2	2	1	2	2	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	2369	1298	241	2565	215	542	1321	591	261	1032	813
Arrive On Green	0.11	0.47	0.47	0.07	0.42	0.42	0.16	0.37	0.37	0.08	0.29	0.29
Sat Flow, veh/h	3442	5085	2787	3442	6071	508	3442	3539	1583	3442	3539	2787
Grp Volume(v), veh/h	346	1453	419	213	970	360	518	640	357	206	372	182
Grp Sat Flow(s),veh/h/ln	1721	1695	1393	1721	1602	1773	1721	1770	1583	1721	1770	1393
Q Serve(g_s), s	11.9	25.6	11.3	7.4	17.5	17.6	17.9	16.6	21.9	7.1	10.0	5.9
Cycle Q Clear(g_c), s	11.9	25.6	11.3	7.4	17.5	17.6	17.9	16.6	21.9	7.1	10.0	5.9
Prop In Lane	1.00		1.00	1.00		0.29	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	390	2369	1298	241	2030	749	542	1321	591	261	1032	813
V/C Ratio(X)	0.89	0.61	0.32	0.88	0.48	0.48	0.96	0.48	0.60	0.79	0.36	0.22
Avail Cap(c_a), veh/h	390	2369	1298	241	2030	749	542	1321	591	370	1032	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	24.0	20.1	55.3	25.1	25.1	50.1	28.8	30.4	54.5	33.6	32.2
Incr Delay (d2), s/veh	18.0	1.0	0.6	28.9	0.8	2.2	27.6	1.3	4.5	4.5	1.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	12.2	4.5	4.5	7.9	9.1	10.6	8.3	10.3	3.5	5.0	2.3
LnGrp Delay(d),s/veh	70.4	25.0	20.7	84.2	25.9	27.3	77.7	30.0	35.0	59.1	34.6	32.8
LnGrp LOS	E	C	C	F	C	C	E	C	C	E	C	C
Approach Vol, veh/h		2218			1543			1515			760	
Approach Delay, s/veh		31.3			34.3			47.5			40.8	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	63.0	23.5	41.5	18.2	57.8	13.7	51.3
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	8.4	* 36	18.9	* 35	13.6	30.6	12.9	40.7
Max Q Clear Time (g_c+I1), s	19.4	27.6	19.9	12.0	13.9	19.6	9.1	23.9
Green Ext Time (p_c), s	0.0	7.9	0.0	5.1	0.0	10.1	0.1	4.8

Intersection Summary	
HCM 2010 Ctrl Delay	37.3
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	29	125	61	326	186	303	89	280	290	261	269	44
Future Vol, veh/h	29	125	61	326	186	303	89	280	290	261	269	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	132	64	343	196	319	94	295	305	275	283	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	515	0	0	196	0	0	1431	1426	164	1567	1299	355
Stage 1	-	-	-	-	-	-	225	225	-	1042	1042	-
Stage 2	-	-	-	-	-	-	1206	1201	-	525	257	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1051	-	-	1377	-	-	112	~ 135	881	~ 90	~ 161	689
Stage 1	-	-	-	-	-	-	778	718	-	277	307	-
Stage 2	-	-	-	-	-	-	224	~ 258	-	536	695	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1051	-	-	1377	-	-	-	~ 83	881	-	~ 99	689
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 83	-	-	~ 99	-
Stage 1	-	-	-	-	-	-	752	694	-	~ 268	~ 194	-
Stage 2	-	-	-	-	-	-	-	~ 163	-	~ 195	672	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	3.4		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1051	-	-	1377	-	-	-
HCM Lane V/C Ratio	-	0.029	-	-	0.249	-	-	-
HCM Control Delay (s)	-	8.5	0	-	8.5	0	-	-
HCM Lane LOS	-	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	783	181	8	629	79	167	273	6	213	315	244
Future Volume (veh/h)	137	783	181	8	629	79	167	273	6	213	315	244
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	143	816	189	8	655	82	174	284	6	222	328	254
Adj No. of Lanes	2	3	1	1	3	1	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	1924	599	18	1659	516	250	933	417	263	1199	537
Arrive On Green	0.06	0.38	0.38	0.01	0.33	0.33	0.07	0.26	0.26	0.15	0.34	0.34
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	143	816	189	8	655	82	174	284	6	222	328	254
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	10.7	7.6	0.4	9.0	3.3	4.4	5.8	0.3	11.0	6.1	11.4
Cycle Q Clear(g_c), s	3.7	10.7	7.6	0.4	9.0	3.3	4.4	5.8	0.3	11.0	6.1	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	1924	599	18	1659	516	250	933	417	263	1199	537
V/C Ratio(X)	0.67	0.42	0.32	0.45	0.39	0.16	0.69	0.30	0.01	0.85	0.27	0.47
Avail Cap(c_a), veh/h	325	1924	599	108	1659	516	402	933	417	444	1199	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	20.7	19.8	44.3	23.5	21.5	40.8	26.5	24.5	37.3	21.7	23.4
Incr Delay (d2), s/veh	3.6	0.7	1.4	16.5	0.7	0.7	3.5	0.8	0.1	7.3	0.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	5.1	3.5	0.3	4.3	1.5	2.2	2.9	0.1	5.9	3.1	5.4
LnGrp Delay(d),s/veh	44.9	21.4	21.1	60.8	24.2	22.2	44.2	27.4	24.6	44.7	22.2	26.4
LnGrp LOS	D	C	C	E	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1148			745			464			804	
Approach Delay, s/veh		24.3			24.3			33.6			29.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	38.5	11.0	35.0	10.1	33.9	17.8	28.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	25.5	10.5	30.5	8.5	22.5	22.5	18.5
Max Q Clear Time (g_c+I1), s	2.4	12.7	6.4	13.4	5.7	11.0	13.0	7.8
Green Ext Time (p_c), s	0.0	8.1	0.2	4.5	0.1	7.5	0.4	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	594	127	199	10	75	11	158	86	13	15	138	335
Future Volume (veh/h)	594	127	199	10	75	11	158	86	13	15	138	335
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	619	132	207	10	78	11	165	90	14	16	144	349
Adj No. of Lanes	2	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	767	644	576	23	480	66	207	1104	168	34	462	413
Arrive On Green	0.22	0.36	0.36	0.01	0.15	0.15	0.12	0.36	0.36	0.02	0.26	0.26
Sat Flow, veh/h	3442	1770	1583	1774	3124	432	1774	3080	469	1774	1770	1583
Grp Volume(v), veh/h	619	132	207	10	44	45	165	51	53	16	144	349
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1786	1774	1770	1780	1774	1770	1583
Q Serve(g_s), s	11.1	3.3	6.2	0.4	1.4	1.4	5.9	1.2	1.3	0.6	4.3	13.6
Cycle Q Clear(g_c), s	11.1	3.3	6.2	0.4	1.4	1.4	5.9	1.2	1.3	0.6	4.3	13.6
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	767	644	576	23	272	274	207	634	638	34	462	413
V/C Ratio(X)	0.81	0.21	0.36	0.44	0.16	0.17	0.80	0.08	0.08	0.47	0.31	0.84
Avail Cap(c_a), veh/h	1058	1020	912	150	625	631	300	693	697	150	544	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	14.2	15.2	31.9	23.9	23.9	28.0	13.8	13.8	31.6	19.3	22.8
Incr Delay (d2), s/veh	3.3	0.2	0.4	13.1	0.3	0.3	9.1	0.1	0.1	9.6	0.4	11.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	1.6	2.8	0.3	0.7	0.7	3.4	0.6	0.6	0.4	2.1	7.2
LnGrp Delay(d),s/veh	27.3	14.4	15.5	45.0	24.2	24.2	37.1	13.8	13.9	41.2	19.7	34.1
LnGrp LOS	C	B	B	D	C	C	D	B	B	D	B	C
Approach Vol, veh/h		958			99			269			509	
Approach Delay, s/veh		23.0			26.3			28.1			30.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	27.7	11.6	21.0	18.5	14.0	5.3	27.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	37.5	11.0	20.0	20.0	23.0	5.5	25.5
Max Q Clear Time (g_c+I1), s	12.4	8.2	7.9	15.6	13.1	3.4	2.6	3.3
Green Ext Time (p_c), s	0.0	2.5	0.1	1.4	1.4	2.3	0.0	3.4

Intersection Summary		
HCM 2010 Ctrl Delay		25.9
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	283	87	14	600	132	10	219	10	311	575	54
Future Volume (veh/h)	87	283	87	14	600	132	10	219	10	311	575	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	92	298	92	15	632	139	11	231	11	327	605	57
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	846	257	30	770	169	23	884	42	364	1510	142
Arrive On Green	0.07	0.32	0.32	0.02	0.27	0.27	0.01	0.26	0.26	0.21	0.46	0.46
Sat Flow, veh/h	1774	2678	812	1774	2887	634	1774	3440	163	1774	3270	308
Grp Volume(v), veh/h	92	195	195	15	387	384	11	118	124	327	327	335
Grp Sat Flow(s),veh/h/ln	1774	1770	1720	1774	1770	1751	1774	1770	1834	1774	1770	1808
Q Serve(g_s), s	5.4	8.9	9.2	0.9	21.6	21.6	0.6	5.6	5.6	18.9	12.8	12.9
Cycle Q Clear(g_c), s	5.4	8.9	9.2	0.9	21.6	21.6	0.6	5.6	5.6	18.9	12.8	12.9
Prop In Lane	1.00		0.47	1.00		0.36	1.00		0.09	1.00		0.17
Lane Grp Cap(c), veh/h	116	559	544	30	472	467	23	455	471	364	817	835
V/C Ratio(X)	0.79	0.35	0.36	0.50	0.82	0.82	0.47	0.26	0.26	0.90	0.40	0.40
Avail Cap(c_a), veh/h	125	559	544	84	506	500	84	455	471	409	817	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	27.6	27.7	51.2	36.1	36.2	51.5	31.1	31.1	40.7	18.7	18.7
Incr Delay (d2), s/veh	24.3	0.8	0.8	8.7	8.1	8.3	14.3	1.4	1.4	22.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	4.5	4.5	0.5	11.6	11.5	0.4	2.9	3.0	11.6	6.4	6.6
LnGrp Delay(d),s/veh	72.6	28.4	28.5	59.9	44.3	44.5	65.7	32.4	32.4	63.5	19.3	19.3
LnGrp LOS	E	C	C	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h		482			786			253			989	
Approach Delay, s/veh		36.9			44.7			33.9			33.9	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	32.8	6.3	38.6	5.9	54.3	11.5	33.4
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	24.3	* 23	5.0	32.5	5.0	42.3	7.4	30.0
Max Q Clear Time (g_c+I1), s	10.9	7.6	2.9	11.2	2.6	14.9	7.4	23.6
Green Ext Time (p_c), s	0.7	7.4	0.0	12.1	0.0	10.1	0.0	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	37.9
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	28	422	73	24	10	340	577	114	10	303	36
Future Volume (veh/h)	24	28	422	73	24	10	340	577	114	10	303	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	25	29	444	77	25	11	358	607	120	11	319	38
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	49	535	479	99	810	333	411	1190	235	24	592	70
Arrive On Green	0.03	0.30	0.30	0.06	0.33	0.33	0.23	0.40	0.40	0.01	0.19	0.19
Sat Flow, veh/h	1774	1770	1583	1774	2447	1008	1774	2948	582	1774	3189	377
Grp Volume(v), veh/h	25	29	444	77	18	18	358	364	363	11	176	181
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1685	1774	1770	1760	1774	1770	1796
Q Serve(g_s), s	1.0	0.8	19.4	3.1	0.5	0.5	13.9	11.0	11.1	0.4	6.4	6.5
Cycle Q Clear(g_c), s	1.0	0.8	19.4	3.1	0.5	0.5	13.9	11.0	11.1	0.4	6.4	6.5
Prop In Lane	1.00		1.00	1.00		0.60	1.00		0.33	1.00		0.21
Lane Grp Cap(c), veh/h	49	535	479	99	586	558	411	714	710	24	329	334
V/C Ratio(X)	0.51	0.05	0.93	0.78	0.03	0.03	0.87	0.51	0.51	0.45	0.54	0.54
Avail Cap(c_a), veh/h	139	546	488	174	586	558	597	980	975	137	521	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	17.6	24.1	33.2	16.1	16.1	26.4	16.0	16.0	34.9	26.3	26.3
Incr Delay (d2), s/veh	8.2	0.0	23.7	12.3	0.0	0.0	9.5	0.6	0.6	12.5	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.4	11.5	1.8	0.2	0.2	7.8	5.5	5.5	0.3	3.3	3.3
LnGrp Delay(d),s/veh	42.4	17.7	47.8	45.6	16.1	16.2	35.9	16.5	16.6	47.4	27.6	27.7
LnGrp LOS	D	B	D	D	B	B	D	B	B	D	C	C
Approach Vol, veh/h		498			113			1085			368	
Approach Delay, s/veh		45.8			36.2			22.9			28.2	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	32.8	8.0	25.6	20.5	17.2	6.0	27.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	39.5	7.0	22.0	24.0	21.0	5.6	23.4
Max Q Clear Time (g_c+I1), s	2.4	13.1	5.1	21.4	15.9	8.5	3.0	2.5
Green Ext Time (p_c), s	0.0	6.3	0.0	0.2	0.7	4.7	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.1
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	133
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	193	212	19	290	175	74	23	105	350	66	70	215
Future Vol, veh/h	193	212	19	290	175	74	23	105	350	66	70	215
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	203	223	20	305	184	78	24	111	368	69	74	226
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	131.2	248.6	49.8	71.2
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	0%	46%	54%	19%
Vol Thru, %	82%	0%	50%	32%	20%
Vol Right, %	0%	100%	4%	14%	61%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	350	424	539	351
LT Vol	23	0	193	290	66
Through Vol	105	0	212	175	70
RT Vol	0	350	19	74	215
Lane Flow Rate	135	368	446	567	369
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.362	0.908	1.155	1.462	0.944
Departure Headway (Hd)	11.196	10.363	10.767	9.951	11.08
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	323	354	339	369	329
Service Time	8.896	8.063	8.767	7.951	9.08
HCM Lane V/C Ratio	0.418	1.04	1.316	1.537	1.122
HCM Control Delay	20.1	60.6	131.2	248.6	71.2
HCM Lane LOS	C	F	F	F	F
HCM 95th-tile Q	1.6	9.1	15.7	28	9.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	44	226	10	39	12	188	873	10	10	582	115
Future Volume (veh/h)	143	44	226	10	39	12	188	873	10	10	582	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	147	45	233	10	40	12	194	900	10	10	600	119
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	358	320	54	83	24	138	1914	21	26	1386	274
Arrive On Green	0.20	0.20	0.20	0.03	0.03	0.03	0.08	0.53	0.53	0.01	0.47	0.47
Sat Flow, veh/h	1774	1770	1583	1774	2715	779	1774	3585	40	1774	2946	583
Grp Volume(v), veh/h	147	45	233	10	25	27	194	444	466	10	360	359
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1725	1774	1770	1856	1774	1770	1760
Q Serve(g_s), s	6.8	2.0	13.1	0.5	1.3	1.4	7.4	14.8	14.8	0.5	12.8	12.9
Cycle Q Clear(g_c), s	6.8	2.0	13.1	0.5	1.3	1.4	7.4	14.8	14.8	0.5	12.8	12.9
Prop In Lane	1.00		1.00	1.00		0.45	1.00		0.02	1.00		0.33
Lane Grp Cap(c), veh/h	358	358	320	54	54	53	138	945	991	26	833	828
V/C Ratio(X)	0.41	0.13	0.73	0.18	0.47	0.50	1.40	0.47	0.47	0.38	0.43	0.43
Avail Cap(c_a), veh/h	486	484	433	336	335	327	138	945	991	112	833	828
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	31.0	35.5	44.9	45.3	45.3	43.8	13.8	13.8	46.4	16.7	16.7
Incr Delay (d2), s/veh	3.4	0.7	13.6	1.6	6.2	7.2	219.3	1.7	1.6	3.4	1.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	1.0	6.9	0.3	0.8	0.8	12.0	7.6	7.9	0.3	6.7	6.7
LnGrp Delay(d),s/veh	36.4	31.8	49.0	46.5	51.5	52.6	263.1	15.5	15.4	49.8	18.4	18.4
LnGrp LOS	D	C	D	D	D	D	F	B	B	D	B	B
Approach Vol, veh/h		425			62			1104			729	
Approach Delay, s/veh		42.8			51.2			58.9			18.8	
Approach LOS		D			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	56.5		25.0	12.0	50.5		7.5
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.0	24.2		26.0	7.4	22.8		18.0
Max Q Clear Time (g_c+I1), s	2.5	16.8		15.1	9.4	14.9		3.4
Green Ext Time (p_c), s	0.0	6.8		4.1	0.0	7.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	43.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	2173	53	249	1720	134	43	20	94	102	18	79
Future Volume (veh/h)	93	2173	53	249	1720	134	43	20	94	102	18	79
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	96	2240	55	257	1773	138	44	21	97	105	19	81
Adj No. of Lanes	1	3	0	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	3063	75	218	3333	1038	71	28	128	149	184	263
Arrive On Green	0.07	0.60	0.60	0.12	0.66	0.66	0.04	0.10	0.10	0.04	0.10	0.10
Sat Flow, veh/h	1774	5106	125	1774	5085	1583	1774	290	1337	3442	1863	1583
Grp Volume(v), veh/h	96	1485	810	257	1773	138	44	0	118	105	19	81
Grp Sat Flow(s),veh/h/ln	1774	1695	1841	1774	1695	1583	1774	0	1627	1721	1863	1583
Q Serve(g_s), s	8.0	46.8	47.1	18.4	27.7	4.9	3.7	0.0	10.6	4.5	1.4	6.7
Cycle Q Clear(g_c), s	8.0	46.8	47.1	18.4	27.7	4.9	3.7	0.0	10.6	4.5	1.4	6.7
Prop In Lane	1.00		0.07	1.00		1.00	1.00		0.82	1.00		1.00
Lane Grp Cap(c), veh/h	119	2034	1104	218	3333	1038	71	0	155	149	184	263
V/C Ratio(X)	0.81	0.73	0.73	1.18	0.53	0.13	0.62	0.00	0.76	0.71	0.10	0.31
Avail Cap(c_a), veh/h	229	2034	1104	218	3333	1038	229	0	496	250	462	499
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.49	0.49	0.49	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.0	21.4	21.4	65.8	13.7	9.8	70.9	0.0	66.1	70.8	61.5	55.0
Incr Delay (d2), s/veh	4.8	2.4	4.3	102.4	0.3	0.1	8.5	0.0	8.0	2.3	0.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	22.5	25.2	15.2	12.9	2.2	2.0	0.0	5.1	2.2	0.7	3.1
LnGrp Delay(d),s/veh	73.8	23.7	25.8	168.2	14.0	9.9	79.4	0.0	74.1	73.1	62.1	56.5
LnGrp LOS	E	C	C	F	B	A	E		E	E	E	E
Approach Vol, veh/h		2391			2168			162			205	
Approach Delay, s/veh		26.4			32.0			75.6			65.5	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	95.8	10.6	20.6	14.7	104.1	11.1	20.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	18.4	54.2	19.4	37.2	19.4	53.2	10.9	45.7
Max Q Clear Time (g_c+I1), s	10.0	49.1	5.7	8.7	10.0	29.7	6.5	12.6
Green Ext Time (p_c), s	0.0	5.1	0.1	1.7	0.1	23.5	0.1	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	487	2218	36	30	1868	309	36	6	30	390	6	435
Future Volume (veh/h)	487	2218	36	30	1868	309	36	6	30	390	6	435
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	497	2263	37	31	1906	315	37	6	31	398	6	444
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	538	2875	895	52	2230	902	57	36	184	450	5	367
Arrive On Green	0.16	0.57	0.57	0.03	0.44	0.44	0.03	0.14	0.14	0.13	0.23	0.23
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	263	1360	3442	21	1565
Grp Volume(v), veh/h	497	2263	37	31	1906	315	37	0	37	398	0	450
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1623	1721	0	1587
Q Serve(g_s), s	20.6	50.5	1.5	2.5	48.8	15.5	3.0	0.0	2.9	16.5	0.0	34.0
Cycle Q Clear(g_c), s	20.6	50.5	1.5	2.5	48.8	15.5	3.0	0.0	2.9	16.5	0.0	34.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		0.99
Lane Grp Cap(c), veh/h	538	2875	895	52	2230	902	57	0	220	450	0	372
V/C Ratio(X)	0.92	0.79	0.04	0.59	0.85	0.35	0.65	0.00	0.17	0.88	0.00	1.21
Avail Cap(c_a), veh/h	539	2875	895	73	2230	902	121	0	220	598	0	372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.13	0.13	0.13	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	60.3	24.7	14.0	69.5	36.6	16.8	69.4	0.0	55.4	61.9	0.0	55.5
Incr Delay (d2), s/veh	4.1	0.3	0.0	3.0	2.9	0.4	4.6	0.0	0.4	9.8	0.0	116.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	23.5	0.7	1.3	23.4	6.9	1.5	0.0	1.3	8.5	0.0	27.0
LnGrp Delay(d),s/veh	64.4	25.0	14.0	72.5	39.5	17.2	74.0	0.0	55.8	71.8	0.0	172.4
LnGrp LOS	E	C	B	E	D	B	E		E	E		F
Approach Vol, veh/h		2797			2252			74			848	
Approach Delay, s/veh		31.9			36.8			64.9			125.2	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	87.8	9.2	39.1	27.3	69.4	23.6	24.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.3	75.0	9.9	34.0	22.7	58.3	25.2	18.7
Max Q Clear Time (g_c+I1), s	4.5	52.5	5.0	36.0	22.6	50.8	18.5	4.9
Green Ext Time (p_c), s	0.0	22.4	0.0	0.0	0.0	6.6	0.5	3.4

Intersection Summary		
HCM 2010 Ctrl Delay		47.4
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1984	651	0	1704	0	0	0	0	348	1	624
Future Volume (veh/h)	0	1984	651	0	1704	0	0	0	0	348	1	624
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	2045	671	0	1757	0				359	1	643
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2899	902	0	2899	0				619	2	975
Arrive On Green	0.00	0.57	0.57	0.00	0.57	0.00				0.35	0.35	0.35
Sat Flow, veh/h	0	5253	1583	0	5421	0				1769	5	2787
Grp Volume(v), veh/h	0	2045	671	0	1757	0				360	0	643
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1774	0	1393
Q Serve(g_s), s	0.0	28.9	31.6	0.0	22.7	0.0				16.5	0.0	19.5
Cycle Q Clear(g_c), s	0.0	28.9	31.6	0.0	22.7	0.0				16.5	0.0	19.5
Prop In Lane	0.00		1.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2899	902	0	2899	0				621	0	975
V/C Ratio(X)	0.00	0.71	0.74	0.00	0.61	0.00				0.58	0.00	0.66
Avail Cap(c_a), veh/h	0	2899	902	0	2899	0				621	0	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.59	0.59	0.00	0.94	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.5	16.0	0.0	14.1	0.0				26.5	0.0	27.5
Incr Delay (d2), s/veh	0.0	0.9	3.3	0.0	0.9	0.0				3.9	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.7	14.4	0.0	10.8	0.0				8.8	0.0	8.0
LnGrp Delay(d),s/veh	0.0	16.3	19.4	0.0	15.0	0.0				30.4	0.0	31.0
LnGrp LOS		B	B		B					C		C
Approach Vol, veh/h		2716			1757						1003	
Approach Delay, s/veh		17.1			15.0						30.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		61.0		39.0		61.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		57.0		35.0		57.0		
Max Q Clear Time (g_c+I1), s		33.6		21.5		24.7		
Green Ext Time (p_c), s		22.7		4.4		31.1		

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1469	863	0	1656	361	499	0	405	0	0	0
Future Volume (veh/h)	0	1469	863	0	1656	361	499	0	405	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1514	0	0	1707	0	514	0	418			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3117	971	0	3117	971	545	0	486			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00	0.31	0.00	0.31			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1514	0	0	1707	0	514	0	418			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	16.4	0.0	0.0	19.6	0.0	28.3	0.0	24.9			
Cycle Q Clear(g_c), s	0.0	16.4	0.0	0.0	19.6	0.0	28.3	0.0	24.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3117	971	0	3117	971	545	0	486			
V/C Ratio(X)	0.00	0.49	0.00	0.00	0.55	0.00	0.94	0.00	0.86			
Avail Cap(c_a), veh/h	0	3117	971	0	3117	971	545	0	486			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.86	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.7	0.0	0.0	11.3	0.0	33.8	0.0	32.6			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.2	0.0	26.9	0.0	17.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	7.7	0.0	0.0	9.1	0.0	17.9	0.0	13.2			
LnGrp Delay(d),s/veh	0.0	11.1	0.0	0.0	11.5	0.0	60.7	0.0	50.4			
LnGrp LOS		B			B		E		D			
Approach Vol, veh/h		1514			1707			932				
Approach Delay, s/veh		11.1			11.5			56.1				
Approach LOS		B			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		65.3				65.3		34.7
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		28.3				29.0		30.7
Max Q Clear Time (g_c+I1), s		18.4				21.6		30.3
Green Ext Time (p_c), s		9.4				6.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	554	1718	283	111	978	327	262	421	10	53	300	565
Future Volume (veh/h)	554	1718	283	111	978	327	262	421	10	53	300	565
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	583	1808	298	117	1029	344	276	443	11	56	316	595
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	625	2435	690	162	1678	475	319	1304	554	104	534	454
Arrive On Green	0.18	0.44	0.44	0.05	0.30	0.30	0.09	0.35	0.35	0.03	0.29	0.29
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3725	1583	3442	1863	1583
Grp Volume(v), veh/h	583	1808	298	117	1029	344	276	443	11	56	316	595
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	25.0	40.5	19.6	5.0	23.7	29.1	11.9	13.2	0.7	2.4	21.9	43.0
Cycle Q Clear(g_c), s	25.0	40.5	19.6	5.0	23.7	29.1	11.9	13.2	0.7	2.4	21.9	43.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	625	2435	690	162	1678	475	319	1304	554	104	534	454
V/C Ratio(X)	0.93	0.74	0.43	0.72	0.61	0.72	0.87	0.34	0.02	0.54	0.59	1.31
Avail Cap(c_a), veh/h	652	2435	690	225	1678	475	330	1304	554	133	534	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.5	35.3	29.4	70.5	45.0	46.9	67.1	36.0	31.9	71.7	46.0	53.5
Incr Delay (d2), s/veh	18.0	1.9	1.8	6.8	1.7	9.2	19.2	0.6	0.1	4.3	4.1	155.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.5	21.2	8.9	2.5	12.5	13.9	6.5	6.9	0.3	1.2	11.8	38.3
LnGrp Delay(d),s/veh	78.5	37.2	31.2	77.3	46.7	56.1	86.3	36.6	32.0	76.0	50.1	208.5
LnGrp LOS	E	D	C	E	D	E	F	D	C	E	D	F
Approach Vol, veh/h		2689			1490			730			967	
Approach Delay, s/veh		45.5			51.3			55.3			149.1	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	71.1	18.5	48.8	31.9	50.8	9.0	58.3
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	9.8	62.1	14.4	43.0	28.4	43.4	5.8	51.7
Max Q Clear Time (g_c+I1), s	7.0	42.5	13.9	45.0	27.0	31.1	4.4	15.2
Green Ext Time (p_c), s	0.1	19.5	0.0	0.0	0.2	12.2	0.0	25.5

Intersection Summary	
HCM 2010 Ctrl Delay	65.2
HCM 2010 LOS	E

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Project Buildout (2035 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	208	5.0	0.244	6.8	LOS A	1.0	24.9	0.52	0.47	23.7
12	R2	283	5.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		492	5.0	0.244	2.9	LOS A	1.0	24.9	0.22	0.20	24.5
East: Keller Road											
3	L2	324	5.0	0.301	6.1	LOS A	1.4	36.7	0.40	0.28	23.2
8	T1	587	3.0	0.301	0.1	LOS A	1.4	36.7	0.01	0.00	24.9
Approach		912	3.7	0.301	2.3	LOS A	1.4	36.7	0.15	0.10	24.3
West: Keller Road											
4	T1	448	3.0	0.443	8.6	LOS A	2.3	59.8	0.56	0.48	21.6
14	R2	172	5.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		620	3.6	0.443	6.2	LOS A	2.3	59.8	0.41	0.35	22.9
All Vehicles		2023	4.0	0.443	3.6	LOS A	2.3	59.8	0.24	0.20	23.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Project Buildout (2035 w/A + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	208	5.0	0.244	6.8	LOS A	1.0	24.9	0.52	0.47	23.7
12	R2	283	5.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	25.6
Approach		492	5.0	0.244	2.9	LOS A	1.0	24.9	0.22	0.20	24.5
East: Keller Road											
3	L2	324	5.0	0.301	6.1	LOS A	1.4	36.7	0.40	0.28	23.2
8	T1	587	3.0	0.301	0.1	LOS A	1.4	36.7	0.01	0.00	24.9
Approach		912	3.7	0.301	2.3	LOS A	1.4	36.7	0.15	0.10	24.3
West: Keller Road											
4	T1	448	3.0	0.443	8.6	LOS A	2.3	59.8	0.56	0.48	21.6
14	R2	172	5.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		620	3.6	0.443	6.2	LOS A	2.3	59.8	0.41	0.35	22.9
All Vehicles		2023	4.0	0.443	3.6	LOS A	2.3	59.8	0.24	0.20	23.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

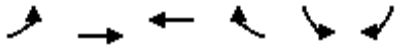
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: MICHAEL BAKER INTERNATIONAL | Processed: Wednesday, August 15, 2018 9:01:05 AM
Project: H:\PDATA\141981_Murrieta Hills Sp TIA\SIDRA Analysis\Files\7_Murrieta_Hills_2035_w-A+Proj_PM.sip7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	325	27	118	628	125	10	246	10	26	393	26
Future Volume (veh/h)	30	325	27	118	628	125	10	246	10	26	393	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	33	353	29	128	683	136	11	267	11	28	427	28
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	1502	123	161	1510	300	24	789	32	50	818	53
Arrive On Green	0.03	0.45	0.45	0.09	0.51	0.51	0.01	0.23	0.23	0.03	0.24	0.24
Sat Flow, veh/h	1774	3314	271	1774	2943	586	1774	3465	142	1774	3373	220
Grp Volume(v), veh/h	33	188	194	128	410	409	11	136	142	28	223	232
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1759	1774	1770	1838	1774	1770	1824
Q Serve(g_s), s	1.7	5.8	5.9	6.4	13.2	13.3	0.6	5.8	5.8	1.4	9.9	9.9
Cycle Q Clear(g_c), s	1.7	5.8	5.9	6.4	13.2	13.3	0.6	5.8	5.8	1.4	9.9	9.9
Prop In Lane	1.00		0.15	1.00		0.33	1.00		0.08	1.00		0.12
Lane Grp Cap(c), veh/h	55	802	823	161	908	903	24	403	419	50	429	442
V/C Ratio(X)	0.60	0.23	0.24	0.79	0.45	0.45	0.46	0.34	0.34	0.56	0.52	0.52
Avail Cap(c_a), veh/h	148	802	823	306	908	903	108	403	419	128	429	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	15.0	15.1	40.1	13.9	13.9	44.1	29.1	29.1	43.2	29.6	29.6
Incr Delay (d2), s/veh	9.8	0.7	0.7	8.5	1.6	1.6	13.5	2.3	2.2	9.7	4.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.0	3.1	3.5	6.8	6.8	0.4	3.1	3.2	0.8	5.3	5.5
LnGrp Delay(d),s/veh	52.9	15.7	15.7	48.6	15.5	15.5	57.5	31.3	31.3	52.9	34.0	34.0
LnGrp LOS	D	B	B	D	B	B	E	C	C	D	C	C
Approach Vol, veh/h		415			947			289			483	
Approach Delay, s/veh		18.7			20.0			32.3			35.1	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	45.3	5.7	26.3	7.3	50.7	7.0	25.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	29.5	5.5	21.5	7.5	37.5	6.5	20.5
Max Q Clear Time (g_c+I1), s	8.4	7.9	2.6	11.9	3.7	15.3	3.4	7.8
Green Ext Time (p_c), s	0.2	8.0	0.0	3.1	0.0	8.1	0.0	3.6

Intersection Summary		
HCM 2010 Ctrl Delay		24.8
HCM 2010 LOS		C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	234	1365	2066	131	221	332
Future Volume (veh/h)	234	1365	2066	131	221	332
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	254	1484	2246	142	240	361
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	310	3159	2354	148	960	777
Arrive On Green	0.09	0.62	0.48	0.48	0.28	0.28
Sat Flow, veh/h	3442	5253	5060	307	3442	2787
Grp Volume(v), veh/h	254	1484	1551	837	240	361
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1809	1721	1393
Q Serve(g_s), s	6.5	14.1	39.4	40.2	4.9	9.7
Cycle Q Clear(g_c), s	6.5	14.1	39.4	40.2	4.9	9.7
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	310	3159	1631	870	960	777
V/C Ratio(X)	0.82	0.47	0.95	0.96	0.25	0.46
Avail Cap(c_a), veh/h	310	3159	1631	870	960	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.75	0.75	1.00	1.00
Uniform Delay (d), s/veh	40.2	9.1	22.3	22.6	25.2	26.9
Incr Delay (d2), s/veh	15.9	0.5	10.7	18.7	0.6	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	6.6	20.7	24.5	2.4	7.9
LnGrp Delay(d),s/veh	56.1	9.6	33.1	41.3	25.8	28.9
LnGrp LOS	E	A	C	D	C	C
Approach Vol, veh/h		1738	2388		601	
Approach Delay, s/veh		16.4	35.9		27.6	
Approach LOS		B	D		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.4		29.6	12.6	47.8		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		55.9		25.1	8.1	43.3		
Max Q Clear Time (g_c+I1), s		16.1		11.7	8.5	42.2		
Green Ext Time (p_c), s		37.0		2.0	0.0	1.0		

Intersection Summary		
HCM 2010 Ctrl Delay		27.7
HCM 2010 LOS		C

APPENDIX C-17
Intersection LOS Analysis
Mitigated Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1117	10	10	1304	44	10	10	10	41	10	28
Future Volume (veh/h)	29	1117	10	10	1304	44	10	10	10	41	10	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	31	1176	11	11	1373	46	11	11	11	43	11	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	2073	19	25	1950	65	28	28	28	148	38	100
Arrive On Green	0.03	0.58	0.58	0.01	0.56	0.56	0.05	0.05	0.05	0.08	0.08	0.08
Sat Flow, veh/h	1774	3593	34	1774	3495	117	577	577	577	1774	454	1197
Grp Volume(v), veh/h	31	579	608	11	694	725	33	0	0	43	0	40
Grp Sat Flow(s),veh/h/ln	1774	1770	1857	1774	1770	1842	1732	0	0	1774	0	1651
Q Serve(g_s), s	1.1	13.4	13.4	0.4	18.5	18.6	1.2	0.0	0.0	1.5	0.0	1.5
Cycle Q Clear(g_c), s	1.1	13.4	13.4	0.4	18.5	18.6	1.2	0.0	0.0	1.5	0.0	1.5
Prop In Lane	1.00		0.02	1.00		0.06	0.33		0.33	1.00		0.73
Lane Grp Cap(c), veh/h	59	1021	1071	25	987	1028	84	0	0	148	0	138
V/C Ratio(X)	0.53	0.57	0.57	0.45	0.70	0.71	0.39	0.00	0.00	0.29	0.00	0.29
Avail Cap(c_a), veh/h	139	1109	1163	139	1109	1154	483	0	0	494	0	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.9	8.6	8.6	31.8	10.4	10.5	30.0	0.0	0.0	27.9	0.0	27.9
Incr Delay (d2), s/veh	7.2	0.6	0.6	12.2	1.8	1.7	3.0	0.0	0.0	1.1	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.6	6.9	0.3	9.4	9.7	0.6	0.0	0.0	0.8	0.0	0.7
LnGrp Delay(d),s/veh	38.2	9.2	9.2	44.0	12.2	12.2	33.0	0.0	0.0	29.0	0.0	29.1
LnGrp LOS	D	A	A	D	B	B	C			C		C
Approach Vol, veh/h		1218			1430			33			83	
Approach Delay, s/veh		9.9			12.4			33.0			29.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.4	42.0		9.9	6.6	40.7		7.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	40.7		18.1	5.1	40.7		18.1
Max Q Clear Time (g_c+I1), s	2.4	15.4		3.5	3.1	20.6		3.2
Green Ext Time (p_c), s	0.0	18.7		0.2	0.0	15.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	809	286	620	862	723	182	234	144	900	226	133
Future Volume (veh/h)	267	809	286	620	862	723	182	234	144	900	226	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	852	301	653	907	761	192	246	152	947	238	140
Adj No. of Lanes	2	3	1	2	3	2	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	333	3237	917	650	3751	1871	246	821	666	931	1576	670
Arrive On Green	0.10	0.58	0.58	0.19	0.67	0.67	0.07	0.23	0.23	0.26	0.42	0.42
Sat Flow, veh/h	3442	5588	1583	3442	5588	2787	3442	3539	1583	3548	3725	1583
Grp Volume(v), veh/h	281	852	301	653	907	761	192	246	152	947	238	140
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1393	1721	1770	1583	1774	1863	1583
Q Serve(g_s), s	10.0	9.5	12.3	23.6	8.0	15.4	6.9	7.2	7.7	32.8	4.9	7.0
Cycle Q Clear(g_c), s	10.0	9.5	12.3	23.6	8.0	15.4	6.9	7.2	7.7	32.8	4.9	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	333	3237	917	650	3751	1871	246	821	666	931	1576	670
V/C Ratio(X)	0.84	0.26	0.33	1.00	0.24	0.41	0.78	0.30	0.23	1.02	0.15	0.21
Avail Cap(c_a), veh/h	363	3237	917	650	3751	1871	341	821	666	931	1576	670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.5	13.1	13.7	50.7	8.1	9.3	57.1	39.6	23.2	46.1	22.2	22.8
Incr Delay (d2), s/veh	14.2	0.2	1.0	32.0	0.1	0.5	4.9	0.9	0.8	33.9	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	4.9	5.6	14.1	4.1	6.1	3.4	3.6	3.5	20.4	2.6	3.2
LnGrp Delay(d),s/veh	69.7	13.3	14.6	82.7	8.2	9.8	61.9	40.6	24.0	80.0	22.4	23.5
LnGrp LOS	E	B	B	F	A	A	E	D	C	F	C	C
Approach Vol, veh/h		1434			2321			590			1325	
Approach Delay, s/veh		24.6			29.7			43.2			63.7	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.2	80.2	13.5	59.1	16.7	91.7	37.4	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	23.6	19.6	12.4	47.8	13.2	30.0	32.8	* 29
Max Q Clear Time (g_c+I1), s	25.6	14.3	8.9	9.0	12.0	17.4	34.8	9.7
Green Ext Time (p_c), s	0.0	5.1	0.1	5.7	0.0	11.9	0.0	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	186	73	113	56	268	32	186	154	175	121	52
Future Volume (veh/h)	30	186	73	113	56	268	32	186	154	175	121	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	196	77	119	59	282	34	196	162	184	127	55
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	315	124	273	82	391	292	307	387	282	196	85
Arrive On Green	0.04	0.25	0.25	0.08	0.29	0.29	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	1274	500	3442	281	1344	1774	1863	1583	1774	1234	534
Grp Volume(v), veh/h	32	0	273	119	0	341	34	196	162	184	0	182
Grp Sat Flow(s),veh/h/ln	1774	0	1774	1721	0	1626	1774	1863	1583	1774	0	1768
Q Serve(g_s), s	0.9	0.0	7.0	1.7	0.0	9.7	0.8	5.1	4.4	5.0	0.0	5.0
Cycle Q Clear(g_c), s	0.9	0.0	7.0	1.7	0.0	9.7	0.8	5.1	4.4	5.0	0.0	5.0
Prop In Lane	1.00		0.28	1.00		0.83	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	63	0	439	273	0	473	292	307	387	282	0	281
V/C Ratio(X)	0.51	0.00	0.62	0.44	0.00	0.72	0.12	0.64	0.42	0.65	0.00	0.65
Avail Cap(c_a), veh/h	203	0	879	501	0	855	706	741	756	637	0	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	17.2	22.6	0.0	16.4	18.3	20.1	16.4	20.3	0.0	20.3
Incr Delay (d2), s/veh	6.1	0.0	1.4	1.1	0.0	2.1	0.2	2.2	0.7	2.5	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	3.6	0.9	0.0	4.6	0.4	2.8	2.0	2.7	0.0	2.6
LnGrp Delay(d),s/veh	30.5	0.0	18.7	23.7	0.0	18.5	18.5	22.3	17.1	22.9	0.0	22.8
LnGrp LOS	C		B	C		B	B	C	B	C		C
Approach Vol, veh/h		305			460			392			366	
Approach Delay, s/veh		19.9			19.8			19.8			22.8	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	17.2		12.7	6.3	19.5		13.0
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.5	25.5		18.5	5.9	27.1		20.5
Max Q Clear Time (g_c+I1), s	3.7	9.0		7.0	2.9	11.7		7.1
Green Ext Time (p_c), s	0.1	3.4		1.2	0.0	3.3		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		20.6
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	140	18	488	89	31	11	32	255	57	82	119
Future Volume (veh/h)	86	140	18	488	89	31	11	32	255	57	82	119
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	91	147	19	514	94	33	12	34	268	60	86	125
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	570	69	692	108	38	168	431	486	140	189	222
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	531	1034	125	1069	196	69	315	1404	1583	230	614	722
Grp Volume(v), veh/h	257	0	0	641	0	0	46	0	268	271	0	0
Grp Sat Flow(s),veh/h/ln	1690	0	0	1333	0	0	1719	0	1583	1566	0	0
Q Serve(g_s), s	0.0	0.0	0.0	21.2	0.0	0.0	0.0	0.0	9.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	0.0	25.9	0.0	0.0	1.1	0.0	9.0	8.6	0.0	0.0
Prop In Lane	0.35		0.07	0.80		0.05	0.26		1.00	0.22		0.46
Lane Grp Cap(c), veh/h	1008	0	0	837	0	0	599	0	486	550	0	0
V/C Ratio(X)	0.25	0.00	0.00	0.77	0.00	0.00	0.08	0.00	0.55	0.49	0.00	0.00
Avail Cap(c_a), veh/h	1417	0	0	1174	0	0	599	0	486	550	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.4	0.0	0.0	11.9	0.0	0.0	15.6	0.0	18.4	18.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	2.0	0.0	0.0	0.2	0.0	4.5	3.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	9.9	0.0	0.0	0.6	0.0	4.5	4.4	0.0	0.0
LnGrp Delay(d),s/veh	7.6	0.0	0.0	13.9	0.0	0.0	15.9	0.0	22.8	21.3	0.0	0.0
LnGrp LOS	A			B			B		C	C		
Approach Vol, veh/h		257			641			314			271	
Approach Delay, s/veh		7.6			13.9			21.8			21.3	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		39.5		24.0		39.5
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		19.5		51.5		19.5		51.5
Max Q Clear Time (g_c+I1), s		11.0		6.7		10.6		27.9
Green Ext Time (p_c), s		2.0		8.3		2.1		7.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1302	120	124	821	283	274	209	10	249	144	342
Future Volume (veh/h)	339	1302	120	124	821	283	274	209	10	249	144	342
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	357	1371	126	131	864	298	288	220	11	262	152	360
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	404	2522	715	179	2153	610	335	966	411	310	937	584
Arrive On Green	0.12	0.45	0.45	0.05	0.39	0.39	0.10	0.26	0.26	0.09	0.25	0.25
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	357	1371	126	131	864	298	288	220	11	262	152	360
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	14.3	25.0	6.6	5.3	15.7	20.0	11.5	6.5	0.7	10.5	4.5	26.0
Cycle Q Clear(g_c), s	14.3	25.0	6.6	5.3	15.7	20.0	11.5	6.5	0.7	10.5	4.5	26.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	2522	715	179	2153	610	335	966	411	310	937	584
V/C Ratio(X)	0.88	0.54	0.18	0.73	0.40	0.49	0.86	0.23	0.03	0.85	0.16	0.62
Avail Cap(c_a), veh/h	442	2522	715	248	2153	610	361	1174	499	337	1144	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	27.9	22.9	65.4	31.3	32.6	62.3	40.8	38.7	62.7	40.9	36.1
Incr Delay (d2), s/veh	13.0	0.6	0.4	6.7	0.6	2.8	16.5	0.5	0.1	16.7	0.3	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	13.0	3.0	2.7	8.2	9.2	6.2	3.4	0.3	5.7	2.3	12.0
LnGrp Delay(d),s/veh	73.8	28.6	23.3	72.1	31.9	35.4	78.7	41.3	38.8	79.4	41.2	40.2
LnGrp LOS	E	C	C	E	C	D	E	D	D	E	D	D
Approach Vol, veh/h		1854			1293			519			774	
Approach Delay, s/veh		36.9			36.7			62.0			53.7	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	69.0	18.2	41.0	21.0	59.7	17.1	42.1
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	10.1	51.5	14.7	43.0	18.0	43.5	13.7	44.1
Max Q Clear Time (g_c+I1), s	7.3	27.0	13.5	28.0	16.3	22.0	12.5	8.5
Green Ext Time (p_c), s	0.1	23.9	0.1	7.2	0.1	21.1	0.1	11.3

Intersection Summary	
HCM 2010 Ctrl Delay	42.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1623	21	10	1304	44	10	10	10	59	10	28
Future Volume (veh/h)	25	1623	21	10	1304	44	10	10	10	59	10	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	26	1691	22	10	1358	46	10	10	10	61	10	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	2372	31	98	2317	78	17	17	17	95	23	66
Arrive On Green	0.06	0.66	0.66	0.06	0.66	0.66	0.03	0.03	0.03	0.05	0.05	0.05
Sat Flow, veh/h	1774	3578	46	1774	3493	118	577	577	577	1774	422	1224
Grp Volume(v), veh/h	26	835	878	10	687	717	30	0	0	61	0	39
Grp Sat Flow(s),veh/h/ln	1774	1770	1855	1774	1770	1842	1732	0	0	1774	0	1647
Q Serve(g_s), s	1.3	27.3	27.4	0.5	19.4	19.4	1.6	0.0	0.0	3.1	0.0	2.1
Cycle Q Clear(g_c), s	1.3	27.3	27.4	0.5	19.4	19.4	1.6	0.0	0.0	3.1	0.0	2.1
Prop In Lane	1.00		0.03	1.00		0.06	0.33		0.33	1.00		0.74
Lane Grp Cap(c), veh/h	98	1173	1230	98	1173	1221	51	0	0	95	0	89
V/C Ratio(X)	0.27	0.71	0.71	0.10	0.59	0.59	0.59	0.00	0.00	0.64	0.00	0.44
Avail Cap(c_a), veh/h	354	1318	1382	354	1318	1372	346	0	0	358	0	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.0	9.7	9.8	40.7	8.4	8.4	43.4	0.0	0.0	42.0	0.0	41.5
Incr Delay (d2), s/veh	1.4	1.6	1.5	0.5	0.5	0.5	10.5	0.0	0.0	6.9	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	13.7	14.4	0.3	9.5	9.9	0.9	0.0	0.0	1.7	0.0	1.0
LnGrp Delay(d),s/veh	42.5	11.3	11.3	41.1	8.9	8.9	54.0	0.0	0.0	48.9	0.0	45.0
LnGrp LOS	D	B	B	D	A	A	D			D		D
Approach Vol, veh/h		1739			1414			30			100	
Approach Delay, s/veh		11.8			9.2			54.0			47.4	
Approach LOS		B			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	64.6		9.4	9.5	64.6		7.2
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	18.1	67.5		18.3	18.1	67.5		18.1
Max Q Clear Time (g_c+I1), s	2.5	29.4		5.1	3.3	21.4		3.6
Green Ext Time (p_c), s	0.0	30.7		0.2	0.0	35.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	995	288	194	1076	1092	404	389	626	1008	290	147
Future Volume (veh/h)	270	995	288	194	1076	1092	404	389	626	1008	290	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	1036	300	202	1121	1138	421	405	652	1050	302	153
Adj No. of Lanes	2	3	1	2	3	2	2	2	1	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	3763	1066	259	3679	1835	480	864	483	1008	1419	603
Arrive On Green	0.09	0.67	0.67	0.07	0.66	0.66	0.14	0.23	0.23	0.28	0.38	0.38
Sat Flow, veh/h	3548	5588	1583	3548	5588	2787	3548	3725	1583	3548	3725	1583
Grp Volume(v), veh/h	281	1036	300	202	1121	1138	421	405	652	1050	302	153
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1393	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	9.8	9.3	9.5	7.0	10.7	29.5	14.6	11.7	29.0	35.5	6.8	8.3
Cycle Q Clear(g_c), s	9.8	9.3	9.5	7.0	10.7	29.5	14.6	11.7	29.0	35.5	6.8	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	3763	1066	259	3679	1835	480	864	483	1008	1419	603
V/C Ratio(X)	0.90	0.28	0.28	0.78	0.30	0.62	0.88	0.47	1.35	1.04	0.21	0.25
Avail Cap(c_a), veh/h	312	3763	1066	477	3679	1835	636	864	483	1008	1419	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	8.2	8.2	57.0	9.1	12.3	53.0	41.4	43.4	44.8	26.1	26.5
Incr Delay (d2), s/veh	26.6	0.2	0.7	1.4	0.2	1.1	8.8	1.8	170.8	39.9	0.3	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	4.8	4.3	3.5	5.6	11.5	7.7	6.2	39.5	22.9	3.6	3.8
LnGrp Delay(d),s/veh	83.1	8.4	8.9	58.3	9.3	13.5	61.8	43.2	214.3	84.7	26.4	27.5
LnGrp LOS	F	A	A	E	A	B	E	D	F	F	C	C
Approach Vol, veh/h		1617			2461			1478			1505	
Approach Delay, s/veh		21.4			15.2			124.0			67.2	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	92.0	21.5	53.8	15.6	90.1	40.1	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	16.8	23.7	22.4	40.5	11.0	29.5	35.5	* 29
Max Q Clear Time (g_c+I1), s	9.0	11.5	16.6	10.3	11.8	31.5	37.5	31.0
Green Ext Time (p_c), s	0.1	12.0	0.3	12.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.5
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	125	61	326	186	303	89	280	290	261	269	44
Future Volume (veh/h)	29	125	61	326	186	303	89	280	290	261	269	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	31	132	64	343	196	319	94	295	305	275	283	46
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	274	133	431	208	338	364	382	523	380	335	54
Arrive On Green	0.03	0.23	0.23	0.13	0.32	0.32	0.20	0.20	0.20	0.21	0.21	0.21
Sat Flow, veh/h	1774	1186	575	3442	639	1040	1774	1863	1583	1774	1564	254
Grp Volume(v), veh/h	31	0	196	343	0	515	94	295	305	275	0	329
Grp Sat Flow(s),veh/h/ln	1774	0	1761	1721	0	1679	1774	1863	1583	1774	0	1818
Q Serve(g_s), s	1.4	0.0	7.7	7.8	0.0	23.9	3.6	12.0	12.8	11.5	0.0	13.9
Cycle Q Clear(g_c), s	1.4	0.0	7.7	7.8	0.0	23.9	3.6	12.0	12.8	11.5	0.0	13.9
Prop In Lane	1.00		0.33	1.00		0.62	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	55	0	406	431	0	545	364	382	523	380	0	390
V/C Ratio(X)	0.56	0.00	0.48	0.80	0.00	0.94	0.26	0.77	0.58	0.72	0.00	0.84
Avail Cap(c_a), veh/h	113	0	425	511	0	547	450	472	600	454	0	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.3	0.0	26.7	34.0	0.0	26.3	26.7	30.1	22.3	29.2	0.0	30.2
Incr Delay (d2), s/veh	8.7	0.0	0.9	7.3	0.0	25.3	0.4	6.2	1.1	4.5	0.0	11.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	3.9	4.1	0.0	14.8	1.8	6.8	5.7	6.1	0.0	8.2
LnGrp Delay(d),s/veh	46.9	0.0	27.5	41.3	0.0	51.6	27.1	36.3	23.4	33.8	0.0	41.8
LnGrp LOS	D		C	D		D	C	D	C	C		D
Approach Vol, veh/h		227			858			694			604	
Approach Delay, s/veh		30.2			47.5			29.4			38.1	
Approach LOS		C			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	23.0		21.7	7.0	30.5		20.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	11.9	19.3		20.5	5.1	26.1		20.3
Max Q Clear Time (g_c+I1), s	9.8	9.7		15.9	3.4	25.9		14.8
Green Ext Time (p_c), s	0.3	3.1		1.3	0.0	0.1		1.6

Intersection Summary			
HCM 2010 Ctrl Delay		38.2	
HCM 2010 LOS		D	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	212	19	290	175	74	23	105	350	66	70	215
Future Volume (veh/h)	193	212	19	290	175	74	23	105	350	66	70	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	203	223	20	305	184	78	24	111	368	69	74	226
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	399	411	34	464	249	98	129	499	493	134	122	287
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	579	776	64	692	469	185	173	1601	1583	190	393	920
Grp Volume(v), veh/h	446	0	0	567	0	0	135	0	368	369	0	0
Grp Sat Flow(s),veh/h/ln	1419	0	0	1347	0	0	1774	0	1583	1503	0	0
Q Serve(g_s), s	0.0	0.0	0.0	7.8	0.0	0.0	0.0	0.0	11.8	7.2	0.0	0.0
Cycle Q Clear(g_c), s	11.7	0.0	0.0	19.6	0.0	0.0	3.1	0.0	11.8	12.4	0.0	0.0
Prop In Lane	0.46		0.04	0.54		0.14	0.18		1.00	0.19		0.61
Lane Grp Cap(c), veh/h	844	0	0	811	0	0	628	0	493	544	0	0
V/C Ratio(X)	0.53	0.00	0.00	0.70	0.00	0.00	0.22	0.00	0.75	0.68	0.00	0.00
Avail Cap(c_a), veh/h	1279	0	0	1228	0	0	797	0	656	690	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	10.8	0.0	0.0	14.5	0.0	17.5	17.5	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.1	0.0	0.0	0.2	0.0	3.2	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.0	7.3	0.0	0.0	1.6	0.0	5.6	5.5	0.0	0.0
LnGrp Delay(d),s/veh	9.3	0.0	0.0	11.9	0.0	0.0	14.7	0.0	20.8	19.3	0.0	0.0
LnGrp LOS	A			B			B		C	B		
Approach Vol, veh/h		446			567			503			369	
Approach Delay, s/veh		9.3			11.9			19.1			19.3	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.2		34.6		22.2		34.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		23.5		47.5		23.5		47.5
Max Q Clear Time (g_c+I1), s		13.8		13.7		14.4		21.6
Green Ext Time (p_c), s		3.4		9.2		3.3		8.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	554	1718	283	111	978	327	262	421	10	53	300	565
Future Volume (veh/h)	554	1718	283	111	978	327	262	421	10	53	300	565
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	583	1808	298	117	1029	344	276	443	11	56	316	595
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	552	2339	663	165	1732	491	270	1322	562	109	1144	733
Arrive On Green	0.16	0.42	0.42	0.05	0.31	0.31	0.08	0.35	0.35	0.03	0.31	0.31
Sat Flow, veh/h	3548	5588	1583	3442	5588	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	583	1808	298	117	1029	344	276	443	11	56	316	595
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	21.8	38.9	18.9	4.7	21.8	26.8	11.0	12.2	0.6	2.2	9.0	43.0
Cycle Q Clear(g_c), s	21.8	38.9	18.9	4.7	21.8	26.8	11.0	12.2	0.6	2.2	9.0	43.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	552	2339	663	165	1732	491	270	1322	562	109	1144	733
V/C Ratio(X)	1.06	0.77	0.45	0.71	0.59	0.70	1.02	0.34	0.02	0.51	0.28	0.81
Avail Cap(c_a), veh/h	552	2339	663	234	1732	491	270	1322	562	138	1144	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	35.0	29.1	65.7	40.8	42.6	64.5	33.1	29.3	66.7	36.7	32.4
Incr Delay (d2), s/veh	51.7	2.3	2.0	5.6	1.5	8.1	60.1	0.6	0.1	3.7	0.5	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.6	20.4	8.6	2.4	11.5	12.8	7.5	6.4	0.3	1.1	4.7	21.5
LnGrp Delay(d),s/veh	110.8	37.3	31.1	71.3	42.4	50.7	124.7	33.6	29.4	70.4	37.2	41.3
LnGrp LOS	F	D	C	E	D	D	F	C	C	E	D	D
Approach Vol, veh/h		2689			1490			730			967	
Approach Delay, s/veh		52.5			46.6			68.0			41.7	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	64.4	15.6	48.8	26.4	49.2	8.9	55.5
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	9.5	55.8	11.0	43.0	21.8	43.4	5.6	48.5
Max Q Clear Time (g_c+I1), s	6.7	40.9	13.0	45.0	23.8	28.8	4.2	14.2
Green Ext Time (p_c), s	0.1	14.8	0.0	0.0	0.0	14.5	0.0	22.3

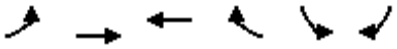
Intersection Summary	
HCM 2010 Ctrl Delay	51.2
HCM 2010 LOS	D

APPENDIX C-18
Intersection LOS Analysis
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1136	10	10	1310	44	10	10	10	41	10	28
Future Volume (veh/h)	29	1136	10	10	1310	44	10	10	10	41	10	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	31	1196	11	11	1379	46	11	11	11	43	11	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	2077	19	25	1954	65	28	28	28	148	38	100
Arrive On Green	0.03	0.58	0.58	0.01	0.56	0.56	0.05	0.05	0.05	0.08	0.08	0.08
Sat Flow, veh/h	1774	3593	33	1774	3495	116	577	577	577	1774	454	1197
Grp Volume(v), veh/h	31	589	618	11	697	728	33	0	0	43	0	40
Grp Sat Flow(s),veh/h/ln	1774	1770	1857	1774	1770	1842	1732	0	0	1774	0	1651
Q Serve(g_s), s	1.1	13.7	13.7	0.4	18.7	18.8	1.2	0.0	0.0	1.5	0.0	1.5
Cycle Q Clear(g_c), s	1.1	13.7	13.7	0.4	18.7	18.8	1.2	0.0	0.0	1.5	0.0	1.5
Prop In Lane	1.00		0.02	1.00		0.06	0.33		0.33	1.00		0.73
Lane Grp Cap(c), veh/h	58	1023	1073	25	989	1030	84	0	0	148	0	138
V/C Ratio(X)	0.53	0.58	0.58	0.45	0.71	0.71	0.39	0.00	0.00	0.29	0.00	0.29
Avail Cap(c_a), veh/h	139	1105	1160	139	1105	1151	481	0	0	493	0	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	8.7	8.7	31.9	10.5	10.5	30.1	0.0	0.0	28.0	0.0	28.0
Incr Delay (d2), s/veh	7.3	0.6	0.6	12.2	1.8	1.8	3.0	0.0	0.0	1.1	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.7	7.0	0.3	9.4	9.8	0.6	0.0	0.0	0.8	0.0	0.7
LnGrp Delay(d),s/veh	38.3	9.3	9.3	44.1	12.3	12.2	33.1	0.0	0.0	29.1	0.0	29.2
LnGrp LOS	D	A	A	D	B	B	C			C		C
Approach Vol, veh/h		1238			1436			33			83	
Approach Delay, s/veh		10.0			12.5			33.1			29.1	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.4	42.2		9.9	6.6	40.9		7.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	40.7		18.1	5.1	40.7		18.1
Max Q Clear Time (g_c+I1), s	2.4	15.7		3.5	3.1	20.8		3.2
Green Ext Time (p_c), s	0.0	18.7		0.2	0.0	15.7		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		12.1
HCM 2010 LOS		B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	449	781	866	311	266	482
Future Volume (veh/h)	449	781	866	311	266	482
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	473	822	912	327	280	507
Adj No. of Lanes	2	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	592	2727	1557	485	1197	551
Arrive On Green	0.17	0.54	0.31	0.31	0.35	0.35
Sat Flow, veh/h	3442	5253	5253	1583	3442	1583
Grp Volume(v), veh/h	473	822	912	327	280	507
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1721	1583
Q Serve(g_s), s	10.2	6.9	11.8	14.0	4.5	23.8
Cycle Q Clear(g_c), s	10.2	6.9	11.8	14.0	4.5	23.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	592	2727	1557	485	1197	551
V/C Ratio(X)	0.80	0.30	0.59	0.67	0.23	0.92
Avail Cap(c_a), veh/h	910	3378	1738	541	1309	602
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	9.9	22.7	23.5	18.0	24.3
Incr Delay (d2), s/veh	2.9	0.1	0.4	2.9	0.1	18.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	3.2	5.5	6.5	2.1	20.8
LnGrp Delay(d),s/veh	33.7	10.0	23.2	26.4	18.1	43.0
LnGrp LOS	C	B	C	C	B	D
Approach Vol, veh/h		1295	1239		787	
Approach Delay, s/veh		18.7	24.0		34.1	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		46.1		31.5	17.8	28.2		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		51.5		29.5	20.5	26.5		
Max Q Clear Time (g_c+I1), s		8.9		25.8	12.2	16.0		
Green Ext Time (p_c), s		18.5		1.1	1.1	7.7		

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	816	312	620	864	723	190	238	144	900	236	133
Future Volume (veh/h)	267	816	312	620	864	723	190	238	144	900	236	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	859	328	653	909	761	200	251	152	947	248	140
Adj No. of Lanes	2	3	1	2	3	2	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	333	3290	932	650	3805	1897	253	821	666	897	1532	651
Arrive On Green	0.10	0.59	0.59	0.19	0.68	0.68	0.07	0.23	0.23	0.25	0.41	0.41
Sat Flow, veh/h	3442	5588	1583	3442	5588	2787	3442	3539	1583	3548	3725	1583
Grp Volume(v), veh/h	281	859	328	653	909	761	200	251	152	947	248	140
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1393	1721	1770	1583	1774	1863	1583
Q Serve(g_s), s	10.0	9.3	13.4	23.6	7.7	15.0	7.1	7.3	7.7	31.6	5.2	7.1
Cycle Q Clear(g_c), s	10.0	9.3	13.4	23.6	7.7	15.0	7.1	7.3	7.7	31.6	5.2	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	333	3290	932	650	3805	1897	253	821	666	897	1532	651
V/C Ratio(X)	0.84	0.26	0.35	1.00	0.24	0.40	0.79	0.31	0.23	1.06	0.16	0.22
Avail Cap(c_a), veh/h	363	3290	932	650	3805	1897	317	821	666	897	1532	651
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.5	12.5	13.3	50.7	7.6	8.8	57.0	39.7	23.2	46.7	23.2	23.8
Incr Delay (d2), s/veh	14.2	0.2	1.0	32.0	0.1	0.5	7.9	1.0	0.8	45.9	0.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	4.8	6.1	14.1	4.0	5.8	3.7	3.7	3.5	21.2	2.7	3.3
LnGrp Delay(d),s/veh	69.7	12.7	14.4	82.7	7.7	9.2	64.9	40.6	24.0	92.6	23.4	24.5
LnGrp LOS	E	B	B	F	A	A	E	D	C	F	C	C
Approach Vol, veh/h		1468			2323			603			1335	
Approach Delay, s/veh		24.0			29.3			44.5			72.6	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.2	81.4	13.8	57.6	16.7	92.9	36.2	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	23.6	20.8	11.5	47.5	13.2	31.2	31.6	* 29
Max Q Clear Time (g_c+I1), s	25.6	15.4	9.1	9.1	12.0	17.0	33.6	9.7
Green Ext Time (p_c), s	0.0	5.2	0.1	5.9	0.0	13.4	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.6
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1250	766	0	1754	594	0	0	0	364	0	538
Future Volume (veh/h)	0	1250	766	0	1754	594	0	0	0	364	0	538
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1316	0	0	1846	625				383	0	566
Adj No. of Lanes	0	4	1	0	3	2				2	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	3916	968	0	3108	1703				1032	0	836
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.61				0.30	0.00	0.30
Sat Flow, veh/h	0	6669	1583	0	5253	2787				3442	0	2787
Grp Volume(v), veh/h	0	1316	0	0	1846	625				383	0	566
Grp Sat Flow(s),veh/h/ln	0	1602	1583	0	1695	1393				1721	0	1393
Q Serve(g_s), s	0.0	9.0	0.0	0.0	19.9	10.1				7.9	0.0	16.1
Cycle Q Clear(g_c), s	0.0	9.0	0.0	0.0	19.9	10.1				7.9	0.0	16.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3916	968	0	3108	1703				1032	0	836
V/C Ratio(X)	0.00	0.34	0.00	0.00	0.59	0.37				0.37	0.00	0.68
Avail Cap(c_a), veh/h	0	3916	968	0	3108	1703				1032	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.24	0.00	0.00	0.58	0.58				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.6	0.0	0.0	10.7	8.8				24.8	0.0	27.7
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.5	0.4				1.0	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	0.0	0.0	9.4	3.9				3.9	0.0	6.6
LnGrp Delay(d),s/veh	0.0	8.6	0.0	0.0	11.2	9.1				25.8	0.0	32.1
LnGrp LOS		A			B	A				C		C
Approach Vol, veh/h		1316			2471						949	
Approach Delay, s/veh		8.6			10.7						29.5	
Approach LOS		A			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		31.0		59.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		55.0		27.0		55.0		
Max Q Clear Time (g_c+I1), s		11.0		18.1		21.9		
Green Ext Time (p_c), s		38.4		2.8		29.8		

Intersection Summary		
HCM 2010 Ctrl Delay		13.9
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	363	1251	0	0	1591	648	0	0	504	0	0	757
Future Volume (veh/h)	363	1251	0	0	1591	648	0	0	504	0	0	757
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	382	1317	0	0	1675	682	0	0	531	0	0	797
Adj No. of Lanes	2	4	0	0	3	2	0	0	3	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	448	6123	0	0	3971	2176	0	0	0	0	0	0
Arrive On Green	0.26	1.00	0.00	0.00	0.78	0.78	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	3442	6669	0	0	5253	2787		0			0	
Grp Volume(v), veh/h	382	1317	0	0	1675	682		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1721	1602	0	0	1695	1393						
Q Serve(g_s), s	9.5	0.0	0.0	0.0	9.7	6.4						
Cycle Q Clear(g_c), s	9.5	0.0	0.0	0.0	9.7	6.4						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	448	6123	0	0	3971	2176						
V/C Ratio(X)	0.85	0.22	0.00	0.00	0.42	0.31						
Avail Cap(c_a), veh/h	497	6123	0	0	3971	2176						
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.29	0.29						
Uniform Delay (d), s/veh	32.5	0.0	0.0	0.0	3.2	2.9						
Incr Delay (d2), s/veh	11.9	0.1	0.0	0.0	0.1	0.1						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	0.0	4.5	2.4						
LnGrp Delay(d),s/veh	44.3	0.1	0.0	0.0	3.3	3.0						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		1699			2357							
Approach Delay, s/veh		10.0			3.2							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			15.7	74.3		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		54.0			13.0	37.0		
Max Q Clear Time (g_c+I1), s		2.0			11.5	11.7		
Green Ext Time (p_c), s		43.1			0.2	23.0		

Intersection Summary	
HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	338	1034	383	223	1575	74	452	482	121	212	496	212
Future Volume (veh/h)	338	1034	383	223	1575	74	452	482	121	212	496	212
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	356	1088	403	235	1658	78	476	507	127	223	522	223
Adj No. of Lanes	2	3	2	2	4	0	2	2	1	2	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	370	1946	1067	289	2270	107	488	1248	558	278	1032	813
Arrive On Green	0.11	0.38	0.38	0.08	0.36	0.36	0.14	0.35	0.35	0.08	0.29	0.29
Sat Flow, veh/h	3442	5085	2787	3442	6319	297	3442	3539	1583	3442	3539	2787
Grp Volume(v), veh/h	356	1088	403	235	1261	475	476	507	127	223	522	223
Grp Sat Flow(s),veh/h/ln	1721	1695	1393	1721	1602	1810	1721	1770	1583	1721	1770	1393
Q Serve(g_s), s	12.4	20.2	12.5	8.1	27.4	27.4	16.5	13.0	6.8	7.6	14.7	7.4
Cycle Q Clear(g_c), s	12.4	20.2	12.5	8.1	27.4	27.4	16.5	13.0	6.8	7.6	14.7	7.4
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	370	1946	1067	289	1726	650	488	1248	558	278	1032	813
V/C Ratio(X)	0.96	0.56	0.38	0.81	0.73	0.73	0.98	0.41	0.23	0.80	0.51	0.27
Avail Cap(c_a), veh/h	370	1946	1067	315	1726	650	488	1248	558	379	1032	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	29.1	26.7	54.0	33.4	33.4	51.3	29.4	27.3	54.2	35.3	32.7
Incr Delay (d2), s/veh	35.0	1.1	0.9	12.6	2.8	7.1	34.4	1.0	0.9	6.0	1.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	9.6	5.0	4.3	12.5	14.9	10.2	6.5	3.1	3.9	7.4	2.9
LnGrp Delay(d),s/veh	88.3	30.2	27.7	66.6	36.2	40.5	85.7	30.3	28.3	60.2	37.1	33.6
LnGrp LOS	F	C	C	E	D	D	F	C	C	E	D	C
Approach Vol, veh/h		1847			1971			1110			968	
Approach Delay, s/veh		40.8			40.8			53.8			41.6	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.7	52.7	21.6	41.5	17.5	49.9	14.3	48.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	10.1	* 35	17.0	* 35	12.9	33.2	13.2	38.5
Max Q Clear Time (g_c+I1), s	10.1	22.2	18.5	16.7	14.4	29.4	9.6	15.0
Green Ext Time (p_c), s	0.0	12.0	0.0	4.6	0.0	3.7	0.1	4.8

Intersection Summary	
HCM 2010 Ctrl Delay	43.4
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	193	73	113	58	280	32	186	154	211	121	52
Future Volume (veh/h)	30	193	73	113	58	280	32	186	154	211	121	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	203	77	119	61	295	34	196	162	222	127	55
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	336	128	259	84	406	288	302	376	320	223	96
Arrive On Green	0.03	0.26	0.26	0.08	0.30	0.30	0.16	0.16	0.16	0.18	0.18	0.18
Sat Flow, veh/h	1774	1288	489	3442	278	1347	1774	1863	1583	1774	1234	534
Grp Volume(v), veh/h	32	0	280	119	0	356	34	196	162	222	0	182
Grp Sat Flow(s),veh/h/ln	1774	0	1777	1721	0	1625	1774	1863	1583	1774	0	1768
Q Serve(g_s), s	1.0	0.0	7.8	1.9	0.0	11.0	0.9	5.5	4.9	6.6	0.0	5.3
Cycle Q Clear(g_c), s	1.0	0.0	7.8	1.9	0.0	11.0	0.9	5.5	4.9	6.6	0.0	5.3
Prop In Lane	1.00		0.28	1.00		0.83	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	62	0	464	259	0	490	288	302	376	320	0	319
V/C Ratio(X)	0.52	0.00	0.60	0.46	0.00	0.73	0.12	0.65	0.43	0.69	0.00	0.57
Avail Cap(c_a), veh/h	206	0	1061	521	0	1028	775	813	810	806	0	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	18.2	24.9	0.0	17.5	20.1	22.0	18.2	21.5	0.0	21.0
Incr Delay (d2), s/veh	6.5	0.0	1.3	1.3	0.0	2.1	0.2	2.3	0.8	2.7	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.0	0.9	0.0	5.1	0.5	3.0	2.2	3.4	0.0	2.7
LnGrp Delay(d),s/veh	33.1	0.0	19.4	26.1	0.0	19.6	20.3	24.3	19.0	24.2	0.0	22.6
LnGrp LOS	C		B	C		B	C	C	B	C		C
Approach Vol, veh/h		312			475			392			404	
Approach Delay, s/veh		20.8			21.2			21.8			23.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	19.2		14.6	6.5	21.4		13.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	8.5	33.5		25.5	6.5	35.5		24.5
Max Q Clear Time (g_c+I1), s	3.9	9.8		8.6	3.0	13.0		7.5
Green Ext Time (p_c), s	0.1	4.0		1.6	0.0	3.9		1.6

Intersection Summary		
HCM 2010 Ctrl Delay		21.9
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	495	251	13	563	151	116	285	16	73	311	145
Future Volume (veh/h)	232	495	251	13	563	151	116	285	16	73	311	145
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	244	521	264	14	593	159	122	300	17	77	327	153
Adj No. of Lanes	2	3	1	1	3	1	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	2375	739	29	1972	614	191	922	412	100	924	413
Arrive On Green	0.10	0.47	0.47	0.02	0.39	0.39	0.06	0.26	0.26	0.06	0.26	0.26
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	244	521	264	14	593	159	122	300	17	77	327	153
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.2	5.5	9.6	0.7	7.3	6.2	3.1	6.2	0.7	3.9	6.8	7.1
Cycle Q Clear(g_c), s	6.2	5.5	9.6	0.7	7.3	6.2	3.1	6.2	0.7	3.9	6.8	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	329	2375	739	29	1972	614	191	922	412	100	924	413
V/C Ratio(X)	0.74	0.22	0.36	0.48	0.30	0.26	0.64	0.33	0.04	0.77	0.35	0.37
Avail Cap(c_a), veh/h	554	2375	739	108	1972	614	363	922	412	246	924	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	14.2	15.3	43.9	19.1	18.7	41.6	26.9	24.9	41.9	27.1	27.2
Incr Delay (d2), s/veh	3.3	0.2	1.3	11.8	0.4	1.0	3.5	0.9	0.2	11.8	1.1	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.6	4.5	0.4	3.5	2.9	1.6	3.1	0.3	2.2	3.5	3.4
LnGrp Delay(d),s/veh	42.9	14.5	16.7	55.7	19.5	19.8	45.1	27.8	25.1	53.8	28.1	29.7
LnGrp LOS	D	B	B	E	B	B	D	C	C	D	C	C
Approach Vol, veh/h		1029			766			439			557	
Approach Delay, s/veh		21.8			20.2			32.5			32.1	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	46.5	9.5	28.0	13.1	39.4	9.6	27.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	33.5	9.5	23.5	14.5	24.5	12.5	20.5
Max Q Clear Time (g_c+I1), s	2.7	11.6	5.1	9.1	8.2	9.3	5.9	8.2
Green Ext Time (p_c), s	0.0	9.2	0.1	3.9	0.4	7.7	0.1	3.7

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	478	42	67	21	105	12	180	62	10	25	194	369
Future Volume (veh/h)	478	42	67	21	105	12	180	62	10	25	194	369
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	503	44	71	22	111	13	189	65	11	26	204	388
Adj No. of Lanes	2	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	640	557	498	45	492	57	236	1171	194	51	497	445
Arrive On Green	0.19	0.31	0.31	0.03	0.15	0.15	0.13	0.39	0.39	0.03	0.28	0.28
Sat Flow, veh/h	3442	1770	1583	1774	3198	369	1774	3041	503	1774	1770	1583
Grp Volume(v), veh/h	503	44	71	22	61	63	189	37	39	26	204	388
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1798	1774	1770	1774	1774	1770	1583
Q Serve(g_s), s	9.1	1.1	2.1	0.8	2.0	2.0	6.7	0.9	0.9	0.9	6.1	15.2
Cycle Q Clear(g_c), s	9.1	1.1	2.1	0.8	2.0	2.0	6.7	0.9	0.9	0.9	6.1	15.2
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	640	557	498	45	272	277	236	681	683	51	497	445
V/C Ratio(X)	0.79	0.08	0.14	0.49	0.22	0.23	0.80	0.05	0.06	0.51	0.41	0.87
Avail Cap(c_a), veh/h	911	940	841	150	621	631	382	771	773	156	545	488
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	15.6	16.0	31.2	24.1	24.1	27.3	12.5	12.6	31.1	19.0	22.2
Incr Delay (d2), s/veh	3.0	0.1	0.1	8.1	0.4	0.4	6.2	0.0	0.0	7.6	0.5	14.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.6	0.9	0.5	1.0	1.0	3.7	0.4	0.4	0.6	3.0	8.4
LnGrp Delay(d),s/veh	28.2	15.7	16.1	39.4	24.5	24.5	33.5	12.6	12.6	38.7	19.5	37.2
LnGrp LOS	C	B	B	D	C	C	C	B	B	D	B	D
Approach Vol, veh/h		618			146			265			618	
Approach Delay, s/veh		25.9			26.7			27.5			31.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	24.4	12.6	22.3	16.1	14.0	5.9	29.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	34.5	14.0	20.0	17.2	22.8	5.7	28.3
Max Q Clear Time (g_c+I1), s	2.8	4.1	8.7	17.2	11.1	4.0	2.9	2.9
Green Ext Time (p_c), s	0.0	1.3	0.2	1.1	1.0	1.1	0.0	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	28.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	269	62	37	313	213	10	292	10	184	542	38
Future Volume (veh/h)	72	269	62	37	313	213	10	292	10	184	542	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	76	283	65	39	329	224	11	307	11	194	571	40
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	736	166	57	474	316	23	1303	47	235	1698	119
Arrive On Green	0.05	0.26	0.26	0.03	0.23	0.23	0.01	0.37	0.37	0.13	0.51	0.51
Sat Flow, veh/h	1774	2869	649	1774	2036	1357	1774	3486	125	1774	3356	235
Grp Volume(v), veh/h	76	173	175	39	285	268	11	155	163	194	301	310
Grp Sat Flow(s),veh/h/ln	1774	1770	1748	1774	1770	1623	1774	1770	1841	1774	1770	1821
Q Serve(g_s), s	4.4	8.5	8.7	2.3	15.5	15.9	0.6	6.3	6.4	11.2	10.6	10.7
Cycle Q Clear(g_c), s	4.4	8.5	8.7	2.3	15.5	15.9	0.6	6.3	6.4	11.2	10.6	10.7
Prop In Lane	1.00		0.37	1.00		0.84	1.00		0.07	1.00		0.13
Lane Grp Cap(c), veh/h	97	454	448	57	412	378	23	662	688	235	895	921
V/C Ratio(X)	0.78	0.38	0.39	0.68	0.69	0.71	0.47	0.23	0.24	0.82	0.34	0.34
Avail Cap(c_a), veh/h	174	570	563	112	506	464	84	662	688	372	895	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	32.2	32.3	50.3	36.8	37.0	51.5	22.6	22.6	44.3	15.4	15.5
Incr Delay (d2), s/veh	5.0	1.1	1.1	8.1	2.9	3.6	14.3	0.8	0.8	14.7	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.3	4.3	1.2	7.9	7.5	0.4	3.3	3.4	6.5	5.3	5.5
LnGrp Delay(d),s/veh	54.0	33.2	33.4	58.4	39.8	40.6	65.7	23.4	23.4	59.0	15.9	15.9
LnGrp LOS	D	C	C	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h		424			592			329			805	
Approach Delay, s/veh		37.0			41.4			24.8			26.3	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	45.1	7.9	32.3	5.9	58.9	10.4	29.9
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	22.6	* 22	6.6	33.8	5.0	39.4	10.3	30.0
Max Q Clear Time (g_c+I1), s	11.2	8.4	4.3	10.7	2.6	12.7	6.4	17.9
Green Ext Time (p_c), s	0.8	6.9	0.0	9.8	0.0	9.8	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	32.3
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	15	379	103	28	11	427	205	41	11	404	20
Future Volume (veh/h)	11	15	379	103	28	11	427	205	41	11	404	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	16	399	108	29	12	449	216	43	12	425	21
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	481	431	137	834	324	491	1285	251	26	593	29
Arrive On Green	0.01	0.27	0.27	0.08	0.33	0.33	0.28	0.44	0.44	0.01	0.17	0.17
Sat Flow, veh/h	1774	1770	1583	1774	2492	969	1774	2953	577	1774	3433	169
Grp Volume(v), veh/h	12	16	399	108	20	21	449	128	131	12	219	227
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1692	1774	1770	1761	1774	1770	1833
Q Serve(g_s), s	0.5	0.5	19.5	4.8	0.6	0.7	19.5	3.5	3.6	0.5	9.3	9.3
Cycle Q Clear(g_c), s	0.5	0.5	19.5	4.8	0.6	0.7	19.5	3.5	3.6	0.5	9.3	9.3
Prop In Lane	1.00		1.00	1.00		0.57	1.00		0.33	1.00		0.09
Lane Grp Cap(c), veh/h	26	481	431	137	592	566	491	770	766	26	306	317
V/C Ratio(X)	0.46	0.03	0.93	0.79	0.03	0.04	0.91	0.17	0.17	0.46	0.71	0.72
Avail Cap(c_a), veh/h	123	489	438	152	592	566	560	883	879	123	447	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.9	21.3	28.2	36.1	17.8	17.8	27.9	13.7	13.7	38.9	31.1	31.1
Incr Delay (d2), s/veh	12.2	0.0	25.5	21.9	0.0	0.0	18.3	0.1	0.1	12.2	3.1	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	11.6	3.2	0.3	0.3	12.0	1.7	1.8	0.3	4.8	5.0
LnGrp Delay(d),s/veh	51.1	21.3	53.7	58.0	17.8	17.9	46.2	13.8	13.8	51.1	34.2	34.1
LnGrp LOS	D	C	D	E	B	B	D	B	B	D	C	C
Approach Vol, veh/h		427			149			708			458	
Approach Delay, s/veh		52.4			47.0			34.3			34.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	38.6	10.1	25.7	26.0	17.8	5.2	30.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	39.7	6.8	22.0	25.1	20.1	5.5	23.3
Max Q Clear Time (g_c+I1), s	2.5	5.6	6.8	21.5	21.5	11.3	2.5	2.7
Green Ext Time (p_c), s	0.0	3.9	0.0	0.1	0.5	2.4	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	143	18	488	91	31	11	32	255	57	82	119
Future Volume (veh/h)	86	143	18	488	91	31	11	32	255	57	82	119
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	91	151	19	514	96	33	12	34	268	60	86	125
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	579	68	690	110	38	167	429	483	139	187	220
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	522	1046	123	1062	198	68	315	1405	1583	230	614	722
Grp Volume(v), veh/h	261	0	0	643	0	0	46	0	268	271	0	0
Grp Sat Flow(s),veh/h/ln	1691	0	0	1329	0	0	1720	0	1583	1566	0	0
Q Serve(g_s), s	0.0	0.0	0.0	21.5	0.0	0.0	0.0	0.0	9.0	2.7	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	0.0	26.2	0.0	0.0	1.1	0.0	9.0	8.7	0.0	0.0
Prop In Lane	0.35		0.07	0.80		0.05	0.26		1.00	0.22		0.46
Lane Grp Cap(c), veh/h	1013	0	0	838	0	0	596	0	483	547	0	0
V/C Ratio(X)	0.26	0.00	0.00	0.77	0.00	0.00	0.08	0.00	0.55	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1410	0	0	1163	0	0	596	0	483	547	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.4	0.0	0.0	11.9	0.0	0.0	15.8	0.0	18.6	18.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	2.1	0.0	0.0	0.3	0.0	4.5	3.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	10.0	0.0	0.0	0.6	0.0	4.6	4.5	0.0	0.0
LnGrp Delay(d),s/veh	7.5	0.0	0.0	14.0	0.0	0.0	16.1	0.0	23.1	21.5	0.0	0.0
LnGrp LOS	A			B			B		C	C		
Approach Vol, veh/h		261			643			314			271	
Approach Delay, s/veh		7.5			14.0			22.1			21.5	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		39.9		24.0		39.9
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		19.5		51.5		19.5		51.5
Max Q Clear Time (g_c+I1), s		11.0		6.8		10.7		28.2
Green Ext Time (p_c), s		2.0		8.4		2.0		7.2

Intersection Summary		
HCM 2010 Ctrl Delay		15.9
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	25	108	10	28	10	73	567	10	10	542	107
Future Volume (veh/h)	123	25	108	10	28	10	73	567	10	10	542	107
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	129	26	114	11	29	11	77	597	11	11	571	113
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	220	196	45	65	23	99	2189	40	28	1698	335
Arrive On Green	0.12	0.12	0.12	0.03	0.03	0.03	0.06	0.62	0.62	0.02	0.58	0.58
Sat Flow, veh/h	1774	1770	1583	1774	2555	916	1774	3555	65	1774	2948	582
Grp Volume(v), veh/h	129	26	114	11	20	20	77	297	311	11	342	342
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1701	1774	1770	1851	1774	1770	1760
Q Serve(g_s), s	6.5	1.2	6.5	0.6	1.0	1.1	4.1	7.4	7.4	0.6	9.7	9.7
Cycle Q Clear(g_c), s	6.5	1.2	6.5	0.6	1.0	1.1	4.1	7.4	7.4	0.6	9.7	9.7
Prop In Lane	1.00		1.00	1.00		0.54	1.00		0.04	1.00		0.33
Lane Grp Cap(c), veh/h	220	220	196	45	45	43	99	1090	1140	28	1019	1014
V/C Ratio(X)	0.59	0.12	0.58	0.25	0.44	0.47	0.78	0.27	0.27	0.39	0.34	0.34
Avail Cap(c_a), veh/h	486	484	433	336	335	322	120	1090	1140	112	1019	1014
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	37.0	39.3	45.4	45.6	45.7	44.3	8.4	8.4	46.3	10.6	10.6
Incr Delay (d2), s/veh	10.9	1.1	11.9	2.8	6.6	7.9	18.9	0.6	0.6	3.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.7	3.5	0.3	0.6	0.6	2.5	3.7	3.9	0.3	4.9	4.9
LnGrp Delay(d),s/veh	50.2	38.1	51.2	48.2	52.2	53.6	63.2	9.0	9.0	49.5	11.5	11.5
LnGrp LOS	D	D	D	D	D	D	E	A	A	D	B	B
Approach Vol, veh/h		269			51			685			695	
Approach Delay, s/veh		49.5			51.9			15.1			12.1	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	64.3		17.6	9.9	60.5		7.0
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		4.6
Max Green Setting (Gmax), s	6.3	24.2		26.0	6.4	23.8		18.0
Max Q Clear Time (g_c+I1), s	2.6	9.4		8.5	6.1	11.7		3.1
Green Ext Time (p_c), s	0.0	11.5		3.3	0.0	9.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	1846	229	240	1667	58	123	20	284	122	22	80
Future Volume (veh/h)	48	1846	229	240	1667	58	123	20	284	122	22	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	51	1943	241	253	1755	61	129	21	299	128	23	84
Adj No. of Lanes	1	3	0	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	2176	267	251	3046	863	152	24	335	173	351	365
Arrive On Green	0.04	0.45	0.45	0.14	0.55	0.55	0.09	0.22	0.22	0.05	0.19	0.19
Sat Flow, veh/h	1774	4883	599	1774	5588	1583	1774	105	1494	3442	1863	1583
Grp Volume(v), veh/h	51	1477	707	253	1755	61	129	0	320	128	23	84
Grp Sat Flow(s),veh/h/ln	1774	1863	1757	1774	1863	1583	1774	0	1599	1721	1863	1583
Q Serve(g_s), s	4.3	54.6	55.9	21.2	31.2	2.7	10.8	0.0	29.1	5.5	1.5	6.5
Cycle Q Clear(g_c), s	4.3	54.6	55.9	21.2	31.2	2.7	10.8	0.0	29.1	5.5	1.5	6.5
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.93	1.00		1.00
Lane Grp Cap(c), veh/h	74	1660	783	251	3046	863	152	0	359	173	351	365
V/C Ratio(X)	0.69	0.89	0.90	1.01	0.58	0.07	0.85	0.00	0.89	0.74	0.07	0.23
Avail Cap(c_a), veh/h	213	1660	783	251	3046	863	213	0	466	236	447	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.67	0.67	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.9	38.2	38.6	64.4	22.6	16.1	67.6	0.0	56.4	70.3	50.0	46.9
Incr Delay (d2), s/veh	4.1	7.6	15.7	48.8	0.5	0.1	19.5	0.0	16.2	4.5	0.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	29.9	30.5	13.8	16.2	1.2	6.1	0.0	14.5	2.7	0.8	2.9
LnGrp Delay(d),s/veh	75.0	45.8	54.2	113.3	23.2	16.2	87.0	0.0	72.7	74.8	50.2	47.7
LnGrp LOS	E	D	D	F	C	B	F		E	E	D	D
Approach Vol, veh/h		2235			2069			449			235	
Approach Delay, s/veh		49.1			34.0			76.8			62.7	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	72.6	17.5	34.1	10.9	87.6	12.1	39.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	21.3	54.0	18.0	36.0	18.0	57.2	10.3	43.7
Max Q Clear Time (g_c+I1), s	23.2	57.9	12.8	8.5	6.3	33.2	7.5	31.1
Green Ext Time (p_c), s	0.0	0.0	0.1	3.5	0.0	23.9	0.1	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	46.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	2248	13	11	1575	111	13	2	11	506	2	328
Future Volume (veh/h)	291	2248	13	11	1575	111	13	2	11	506	2	328
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	306	2366	14	12	1658	117	14	2	12	533	2	345
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	2959	921	29	2515	1053	32	19	115	586	2	370
Arrive On Green	0.10	0.58	0.58	0.02	0.49	0.49	0.02	0.08	0.08	0.17	0.24	0.24
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	231	1387	3442	9	1576
Grp Volume(v), veh/h	306	2366	14	12	1658	117	14	0	14	533	0	347
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1618	1721	0	1585
Q Serve(g_s), s	11.8	49.1	0.5	0.9	33.0	3.6	1.1	0.0	1.1	20.5	0.0	29.0
Cycle Q Clear(g_c), s	11.8	49.1	0.5	0.9	33.0	3.6	1.1	0.0	1.1	20.5	0.0	29.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.99
Lane Grp Cap(c), veh/h	355	2959	921	29	2515	1053	32	0	134	586	0	372
V/C Ratio(X)	0.86	0.80	0.02	0.42	0.66	0.11	0.43	0.00	0.10	0.91	0.00	0.93
Avail Cap(c_a), veh/h	403	2959	921	79	2515	1053	130	0	217	658	0	399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.42	0.42	0.42	0.86	0.86	0.86	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.6	22.1	11.9	65.8	25.6	8.2	65.6	0.0	57.3	55.0	0.0	50.6
Incr Delay (d2), s/veh	6.6	1.0	0.0	3.1	0.8	0.1	3.4	0.0	0.3	14.8	0.0	27.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	23.1	0.2	0.5	15.5	1.6	0.5	0.0	0.5	11.0	0.0	15.5
LnGrp Delay(d),s/veh	66.2	23.1	11.9	68.9	26.4	8.3	69.0	0.0	57.6	69.8	0.0	78.5
LnGrp LOS	E	C	B	E	C	A	E		E	E		E
Approach Vol, veh/h		2686			1787			28			880	
Approach Delay, s/veh		27.9			25.5			63.3			73.2	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	84.3	7.1	36.8	18.5	72.6	27.6	16.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.3	65.0	9.9	34.0	15.8	55.2	25.8	18.1
Max Q Clear Time (g_c+I1), s	2.9	51.1	3.1	31.0	13.8	35.0	22.5	3.1
Green Ext Time (p_c), s	0.0	13.9	0.0	0.8	0.1	19.0	0.4	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	34.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2014	779	0	1496	0	0	0	0	251	2	421
Future Volume (veh/h)	0	2014	779	0	1496	0	0	0	0	251	2	421
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	2120	820	0	1575	0				264	2	443
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	3255	1013	0	3255	0				493	4	780
Arrive On Green	0.00	0.64	0.64	0.00	0.64	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	5253	1583	0	5421	0				1761	13	2787
Grp Volume(v), veh/h	0	2120	820	0	1575	0				266	0	443
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1775	0	1393
Q Serve(g_s), s	0.0	25.7	38.7	0.0	16.2	0.0				12.7	0.0	13.6
Cycle Q Clear(g_c), s	0.0	25.7	38.7	0.0	16.2	0.0				12.7	0.0	13.6
Prop In Lane	0.00		1.00	0.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	3255	1013	0	3255	0				497	0	780
V/C Ratio(X)	0.00	0.65	0.81	0.00	0.48	0.00				0.54	0.00	0.57
Avail Cap(c_a), veh/h	0	3255	1013	0	3255	0				497	0	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.50	0.50	0.00	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.1	13.4	0.0	9.4	0.0				30.5	0.0	30.8
Incr Delay (d2), s/veh	0.0	0.5	3.6	0.0	0.5	0.0				4.1	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.1	17.6	0.0	7.6	0.0				6.8	0.0	5.6
LnGrp Delay(d),s/veh	0.0	11.6	17.0	0.0	9.9	0.0				34.6	0.0	33.8
LnGrp LOS		B	B		A					C		C
Approach Vol, veh/h		2940			1575						709	
Approach Delay, s/veh		13.1			9.9						34.1	
Approach LOS		B			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		68.0		32.0		68.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		64.0		28.0		64.0		
Max Q Clear Time (g_c+I1), s		40.7		15.6		18.2		
Green Ext Time (p_c), s		22.7		2.9		43.6		

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1464	801	0	1713	227	222	0	652	0	0	0
Future Volume (veh/h)	0	1464	801	0	1713	227	222	0	652	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1541	0	0	1803	0	234	0	686			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3395	982	0	3395	982	532	0	475			
Arrive On Green	0.00	0.62	0.00	0.00	0.62	0.00	0.30	0.00	0.30			
Sat Flow, veh/h	0	5514	1583	0	5514	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1541	0	0	1803	0	234	0	686			
Grp Sat Flow(s),veh/h/ln	0	1825	1583	0	1825	1583	1774	0	1583			
Q Serve(g_s), s	0.0	14.9	0.0	0.0	18.7	0.0	10.6	0.0	30.0			
Cycle Q Clear(g_c), s	0.0	14.9	0.0	0.0	18.7	0.0	10.6	0.0	30.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3395	982	0	3395	982	532	0	475			
V/C Ratio(X)	0.00	0.45	0.00	0.00	0.53	0.00	0.44	0.00	1.44			
Avail Cap(c_a), veh/h	0	3395	982	0	3395	982	532	0	475			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.87	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.0	0.0	0.0	10.8	0.0	28.2	0.0	35.0			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.2	0.0	2.6	0.0	211.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	7.5	0.0	0.0	9.4	0.0	5.6	0.0	41.0			
LnGrp Delay(d),s/veh	0.0	10.4	0.0	0.0	10.9	0.0	30.8	0.0	246.5			
LnGrp LOS		B			B		C		F			
Approach Vol, veh/h		1541			1803			920				
Approach Delay, s/veh		10.4			10.9			191.7				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		66.0				66.0		34.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		31.0				27.0		30.0
Max Q Clear Time (g_c+I1), s		16.9				20.7		32.0
Green Ext Time (p_c), s		13.3				6.1		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		49.7
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1308	122	124	837	283	281	228	10	249	150	342
Future Volume (veh/h)	339	1308	122	124	837	283	281	228	10	249	150	342
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	357	1377	128	131	881	298	296	240	11	262	158	360
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	404	2501	709	179	2132	604	343	981	417	310	943	586
Arrive On Green	0.12	0.45	0.45	0.05	0.38	0.38	0.10	0.26	0.26	0.09	0.25	0.25
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	357	1377	128	131	881	298	296	240	11	262	158	360
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	14.3	25.3	6.8	5.3	16.2	20.1	11.9	7.1	0.7	10.5	4.6	25.9
Cycle Q Clear(g_c), s	14.3	25.3	6.8	5.3	16.2	20.1	11.9	7.1	0.7	10.5	4.6	25.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	2501	709	179	2132	604	343	981	417	310	943	586
V/C Ratio(X)	0.88	0.55	0.18	0.73	0.41	0.49	0.86	0.24	0.03	0.85	0.17	0.61
Avail Cap(c_a), veh/h	438	2501	709	248	2132	604	369	1187	504	332	1144	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	28.4	23.2	65.4	31.8	33.0	62.1	40.6	38.3	62.8	40.8	35.9
Incr Delay (d2), s/veh	13.4	0.7	0.4	6.7	0.6	2.9	16.7	0.5	0.1	17.2	0.3	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	13.2	3.0	2.7	8.4	9.2	6.4	3.7	0.3	5.7	2.4	12.0
LnGrp Delay(d),s/veh	74.2	29.0	23.7	72.1	32.4	35.8	78.8	41.1	38.4	80.0	41.1	39.9
LnGrp LOS	E	C	C	E	C	D	E	D	D	E	D	D
Approach Vol, veh/h		1862			1310			547			780	
Approach Delay, s/veh		37.3			37.1			61.4			53.6	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	68.4	18.5	41.2	21.0	59.2	17.1	42.7
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	10.1	51.2	15.0	43.0	17.8	43.4	13.5	44.6
Max Q Clear Time (g_c+I1), s	7.3	27.3	13.9	27.9	16.3	22.1	12.5	9.1
Green Ext Time (p_c), s	0.1	23.3	0.1	7.5	0.1	20.9	0.1	11.8

Intersection Summary	
HCM 2010 Ctrl Delay	43.0
HCM 2010 LOS	D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	101	5.0	0.211	6.2	LOS A	0.8	21.3	0.49	0.42	24.4
12	R2	424	5.0	0.211	1.3	LOS A	0.8	21.3	0.10	0.09	24.7
Approach		525	5.0	0.211	2.2	LOS A	0.8	21.3	0.17	0.15	24.6
East: Keller Road											
3	L2	135	5.0	0.147	4.2	LOS A	0.6	15.9	0.24	0.12	24.5
8	T1	328	3.0	0.147	0.6	LOS A	0.6	15.9	0.03	0.02	24.5
Approach		463	3.6	0.147	1.6	LOS A	0.6	15.9	0.09	0.05	24.5
West: Keller Road											
4	T1	403	3.0	0.333	6.1	LOS A	1.7	43.8	0.34	0.20	22.5
14	R2	109	5.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		512	3.4	0.333	4.8	LOS A	1.7	43.8	0.27	0.16	23.3
All Vehicles		1500	4.0	0.333	2.9	LOS A	1.7	43.8	0.18	0.12	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	89	5.0	0.153	8.1	LOS A	0.5	13.6	0.61	0.61	21.1
2	T1	1	5.0	0.199	7.9	LOS A	0.7	17.9	0.60	0.60	23.0
12	R2	446	5.0	0.199	2.3	LOS A	0.7	17.9	0.17	0.17	24.4
Approach		536	5.0	0.199	3.3	LOS A	0.7	17.9	0.25	0.25	23.9
East: Keller Road											
8	T1	374	3.0	0.170	4.8	LOS A	0.7	17.7	0.35	0.24	23.1
18	R2	53	5.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		427	3.2	0.170	4.2	LOS A	0.7	17.7	0.31	0.21	23.4
West: Keller Road											
7	L2	129	5.0	0.301	5.3	LOS A	0.0	0.0	0.00	0.00	29.9
4	T1	698	3.0	0.301	5.2	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		827	3.3	0.301	5.2	LOS A	0.0	0.0	0.00	0.00	25.5
All Vehicles		1790	3.8	0.301	4.4	LOS A	0.7	17.9	0.15	0.12	24.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

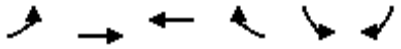
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	88	10	286	590	304	24	263	60	64	479	27
Future Volume (veh/h)	19	88	10	286	590	304	24	263	60	64	479	27
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	96	11	311	641	330	26	286	65	70	521	29
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	40	1079	122	354	1160	597	47	614	137	90	811	45
Arrive On Green	0.02	0.34	0.34	0.20	0.51	0.51	0.03	0.21	0.21	0.05	0.24	0.24
Sat Flow, veh/h	1774	3207	362	1774	2262	1165	1774	2875	643	1774	3409	189
Grp Volume(v), veh/h	21	52	55	311	501	470	26	174	177	70	270	280
Grp Sat Flow(s),veh/h/ln	1774	1770	1799	1774	1770	1657	1774	1770	1749	1774	1770	1829
Q Serve(g_s), s	1.1	1.8	1.9	15.3	17.3	17.3	1.3	7.7	8.0	3.5	12.3	12.4
Cycle Q Clear(g_c), s	1.1	1.8	1.9	15.3	17.3	17.3	1.3	7.7	8.0	3.5	12.3	12.4
Prop In Lane	1.00		0.20	1.00		0.70	1.00		0.37	1.00		0.10
Lane Grp Cap(c), veh/h	40	595	605	354	908	850	47	378	373	90	421	435
V/C Ratio(X)	0.52	0.09	0.09	0.88	0.55	0.55	0.55	0.46	0.47	0.78	0.64	0.64
Avail Cap(c_a), veh/h	99	595	605	511	908	850	110	378	373	177	421	435
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	20.4	20.4	35.0	14.9	14.9	43.3	30.9	31.0	42.2	30.9	30.9
Incr Delay (d2), s/veh	10.1	0.3	0.3	11.8	2.4	2.6	9.7	4.0	4.3	13.1	7.3	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.9	1.0	8.7	9.0	8.4	0.8	4.2	4.3	2.0	6.9	7.1
LnGrp Delay(d),s/veh	53.6	20.7	20.7	46.8	17.3	17.5	53.0	34.9	35.2	55.3	38.2	38.0
LnGrp LOS	D	C	C	D	B	B	D	C	D	E	D	D
Approach Vol, veh/h		128			1282			377			620	
Approach Delay, s/veh		26.1			24.5			36.3			40.0	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	34.8	6.9	25.9	6.5	50.7	9.1	23.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.9	19.1	5.6	21.4	5.0	40.0	9.0	18.0
Max Q Clear Time (g_c+I1), s	11.3	3.9	3.3	14.4	3.1	19.3	5.5	10.0
Green Ext Time (p_c), s	0.6	6.4	0.0	3.1	0.0	7.4	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.5
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	290	1931	1692	143	280	335
Future Volume (veh/h)	290	1931	1692	143	280	335
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	315	2099	1839	155	304	364
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	389	3159	2190	184	960	777
Arrive On Green	0.11	0.62	0.46	0.46	0.28	0.28
Sat Flow, veh/h	3442	5253	4948	401	3442	2787
Grp Volume(v), veh/h	315	2099	1302	692	304	364
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1792	1721	1393
Q Serve(g_s), s	8.0	24.0	30.4	30.7	6.3	9.8
Cycle Q Clear(g_c), s	8.0	24.0	30.4	30.7	6.3	9.8
Prop In Lane	1.00			0.22	1.00	1.00
Lane Grp Cap(c), veh/h	389	3159	1553	821	960	777
V/C Ratio(X)	0.81	0.66	0.84	0.84	0.32	0.47
Avail Cap(c_a), veh/h	424	3159	1553	821	960	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.86	0.86	1.00	1.00
Uniform Delay (d), s/veh	39.0	11.0	21.5	21.5	25.7	26.9
Incr Delay (d2), s/veh	10.5	1.1	4.8	8.9	0.9	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	11.4	15.2	17.0	3.1	8.0
LnGrp Delay(d),s/veh	49.4	12.1	26.3	30.5	26.5	28.9
LnGrp LOS	D	B	C	C	C	C
Approach Vol, veh/h		2414	1994		668	
Approach Delay, s/veh		17.0	27.7		27.8	
Approach LOS		B	C		C	

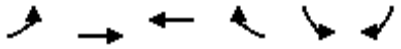
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.4		29.6	14.7	45.7		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		55.9		25.1	11.1	40.3		
Max Q Clear Time (g_c+I1), s		26.0		11.8	10.0	32.7		
Green Ext Time (p_c), s		28.8		2.3	0.1	7.5		

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1633	21	10	1448	44	10	10	10	59	10	28
Future Volume (veh/h)	25	1633	21	10	1448	44	10	10	10	59	10	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	26	1701	22	10	1508	46	10	10	10	61	10	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	2389	31	96	2342	71	17	17	17	95	23	66
Arrive On Green	0.05	0.67	0.67	0.05	0.67	0.67	0.03	0.03	0.03	0.05	0.05	0.05
Sat Flow, veh/h	1774	3578	46	1774	3507	107	577	577	577	1774	422	1224
Grp Volume(v), veh/h	26	840	883	10	760	794	30	0	0	61	0	39
Grp Sat Flow(s),veh/h/ln	1774	1770	1855	1774	1770	1844	1732	0	0	1774	0	1647
Q Serve(g_s), s	1.3	27.7	27.8	0.5	23.0	23.2	1.6	0.0	0.0	3.1	0.0	2.1
Cycle Q Clear(g_c), s	1.3	27.7	27.8	0.5	23.0	23.2	1.6	0.0	0.0	3.1	0.0	2.1
Prop In Lane	1.00		0.02	1.00		0.06	0.33		0.33	1.00		0.74
Lane Grp Cap(c), veh/h	96	1182	1238	96	1182	1231	50	0	0	95	0	88
V/C Ratio(X)	0.27	0.71	0.71	0.10	0.64	0.65	0.60	0.00	0.00	0.64	0.00	0.44
Avail Cap(c_a), veh/h	348	1296	1358	348	1296	1351	340	0	0	352	0	327
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.8	9.7	9.7	41.4	8.9	8.9	44.2	0.0	0.0	42.7	0.0	42.3
Incr Delay (d2), s/veh	1.5	1.7	1.6	0.5	1.0	0.9	10.7	0.0	0.0	7.0	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	13.8	14.5	0.3	11.5	12.0	0.9	0.0	0.0	1.7	0.0	1.0
LnGrp Delay(d),s/veh	43.3	11.3	11.3	41.9	9.9	9.9	54.9	0.0	0.0	49.8	0.0	45.7
LnGrp LOS	D	B	B	D	A	A	D			D		D
Approach Vol, veh/h		1749			1564			30			100	
Approach Delay, s/veh		11.8			10.1			54.9			48.2	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	66.0		9.4	9.5	66.0		7.2
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	18.1	67.5		18.3	18.1	67.5		18.1
Max Q Clear Time (g_c+I1), s	2.5	29.8		5.1	3.3	25.2		3.6
Green Ext Time (p_c), s	0.0	31.7		0.2	0.0	35.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	674	978	1031	362	332	507
Future Volume (veh/h)	674	978	1031	362	332	507
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	688	998	1052	369	339	517
Adj No. of Lanes	2	3	3	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	832	3289	1767	550	818	759
Arrive On Green	0.24	0.65	0.35	0.35	0.24	0.24
Sat Flow, veh/h	3442	5253	5253	1583	3442	1583
Grp Volume(v), veh/h	688	998	1052	369	339	517
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1583	1721	1583
Q Serve(g_s), s	14.8	6.7	13.3	15.4	6.5	18.5
Cycle Q Clear(g_c), s	14.8	6.7	13.3	15.4	6.5	18.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	832	3289	1767	550	818	759
V/C Ratio(X)	0.83	0.30	0.60	0.67	0.41	0.68
Avail Cap(c_a), veh/h	1260	4082	1927	600	818	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	6.0	20.9	21.6	25.1	15.7
Incr Delay (d2), s/veh	2.9	0.1	0.4	2.6	0.3	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	3.1	6.2	7.2	3.1	17.4
LnGrp Delay(d),s/veh	30.9	6.1	21.3	24.2	25.4	18.2
LnGrp LOS	C	A	C	C	C	B
Approach Vol, veh/h		1686	1421		856	
Approach Delay, s/veh		16.2	22.1		21.1	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		54.9		23.0	23.3	31.6		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		62.5		18.5	28.5	29.5		
Max Q Clear Time (g_c+I1), s		8.7		20.5	16.8	17.4		
Green Ext Time (p_c), s		26.1		0.0	2.1	9.6		

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	998	301	194	1084	1092	436	401	626	1008	295	147
Future Volume (veh/h)	270	998	301	194	1084	1092	436	401	626	1008	295	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	1040	314	202	1129	1138	454	418	652	1050	307	153
Adj No. of Lanes	2	3	1	2	3	2	2	2	1	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	3768	1068	259	3684	1837	513	864	483	1005	1381	587
Arrive On Green	0.09	0.67	0.67	0.07	0.66	0.66	0.14	0.23	0.23	0.28	0.37	0.37
Sat Flow, veh/h	3548	5588	1583	3548	5588	2787	3548	3725	1583	3548	3725	1583
Grp Volume(v), veh/h	281	1040	314	202	1129	1138	454	418	652	1050	307	153
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1393	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	9.8	9.3	10.1	7.0	10.8	29.4	15.7	12.1	29.0	35.4	7.1	8.4
Cycle Q Clear(g_c), s	9.8	9.3	10.1	7.0	10.8	29.4	15.7	12.1	29.0	35.4	7.1	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	3768	1068	259	3684	1837	513	864	483	1005	1381	587
V/C Ratio(X)	0.90	0.28	0.29	0.78	0.31	0.62	0.89	0.48	1.35	1.04	0.22	0.26
Avail Cap(c_a), veh/h	312	3768	1068	466	3684	1837	673	864	483	1005	1381	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.63	0.63	0.63	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	8.1	8.3	57.0	9.1	12.3	52.4	41.5	43.4	44.8	27.0	27.4
Incr Delay (d2), s/veh	26.6	0.2	0.7	1.2	0.1	1.0	9.2	1.9	170.9	40.9	0.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	4.8	4.5	3.5	5.6	11.4	8.3	6.5	39.5	23.0	3.7	3.9
LnGrp Delay(d),s/veh	83.1	8.3	9.0	58.2	9.2	13.3	61.7	43.5	214.3	85.7	27.4	28.5
LnGrp LOS	F	A	A	E	A	B	E	D	F	F	C	C
Approach Vol, veh/h		1635			2469			1524			1510	
Approach Delay, s/veh		21.3			15.1			122.0			68.0	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	92.1	22.7	52.5	15.6	90.2	40.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	16.4	24.2	23.7	39.1	11.0	29.6	35.4	* 29
Max Q Clear Time (g_c+I1), s	12.0	12.1	17.7	10.4	11.8	31.4	37.4	31.0
Green Ext Time (p_c), s	0.1	11.9	0.4	11.9	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.5
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1760	993	0	1890	570	0	0	0	552	0	680
Future Volume (veh/h)	0	1760	993	0	1890	570	0	0	0	552	0	680
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1796	0	0	1929	582				563	0	694
Adj No. of Lanes	0	4	1	0	3	2				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	3204	792	0	2543	1393				1415	0	1146
Arrive On Green	0.00	0.50	0.00	0.00	0.34	0.34				0.41	0.00	0.41
Sat Flow, veh/h	0	6669	1583	0	5253	2787				3442	0	2787
Grp Volume(v), veh/h	0	1796	0	0	1929	582				563	0	694
Grp Sat Flow(s),veh/h/ln	0	1602	1583	0	1695	1393				1721	0	1393
Q Serve(g_s), s	0.0	17.5	0.0	0.0	30.4	14.5				10.4	0.0	17.6
Cycle Q Clear(g_c), s	0.0	17.5	0.0	0.0	30.4	14.5				10.4	0.0	17.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3204	792	0	2543	1393				1415	0	1146
V/C Ratio(X)	0.00	0.56	0.00	0.00	0.76	0.42				0.40	0.00	0.61
Avail Cap(c_a), veh/h	0	3204	792	0	2543	1393				1415	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.67	0.67				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.14	0.00	0.00	0.41	0.41				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.6	0.0	0.0	25.1	19.8				18.7	0.0	20.8
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.9	0.4				0.8	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	14.5	5.7				5.1	0.0	7.1
LnGrp Delay(d),s/veh	0.0	15.7	0.0	0.0	26.0	20.2				19.5	0.0	23.2
LnGrp LOS		B			C	C				B		C
Approach Vol, veh/h		1796			2511						1257	
Approach Delay, s/veh		15.7			24.6						21.5	
Approach LOS		B			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		49.0		41.0		49.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		45.0		37.0		45.0		
Max Q Clear Time (g_c+I1), s		19.5		19.6		32.4		
Green Ext Time (p_c), s		24.5		5.1		12.3		

Intersection Summary		
HCM 2010 Ctrl Delay		21.1
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	784	1528	0	0	1488	528	0	0	671	0	0	972
Future Volume (veh/h)	784	1528	0	0	1488	528	0	0	671	0	0	972
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	808	1575	0	0	1534	544	0	0	692	0	0	1002
Adj No. of Lanes	2	4	0	0	3	2	0	0	3	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	841	6123	0	0	3390	1858	0	0	0	0	0	0
Arrive On Green	0.33	1.00	0.00	0.00	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	3442	6669	0	0	5253	2787		0			0	
Grp Volume(v), veh/h	808	1575	0	0	1534	544		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1721	1602	0	0	1695	1393						
Q Serve(g_s), s	20.7	0.0	0.0	0.0	13.0	7.3						
Cycle Q Clear(g_c), s	20.7	0.0	0.0	0.0	13.0	7.3						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	841	6123	0	0	3390	1858						
V/C Ratio(X)	0.96	0.26	0.00	0.00	0.45	0.29						
Avail Cap(c_a), veh/h	841	6123	0	0	3390	1858						
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.84	0.84	0.00	0.00	0.43	0.43						
Uniform Delay (d), s/veh	29.9	0.0	0.0	0.0	7.2	6.2						
Incr Delay (d2), s/veh	19.5	0.1	0.0	0.0	0.2	0.2						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	12.1	0.0	0.0	0.0	6.0	2.8						
LnGrp Delay(d),s/veh	49.5	0.1	0.0	0.0	7.3	6.4						
LnGrp LOS	D	A			A	A						
Approach Vol, veh/h		2383			2078							
Approach Delay, s/veh		16.8			7.1							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			26.0	64.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		57.0			22.0	31.0		
Max Q Clear Time (g_c+I1), s		2.0			22.7	15.0		
Green Ext Time (p_c), s		45.4			0.0	15.0		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	343	1441	415	216	1315	102	521	654	365	204	376	180
Future Volume (veh/h)	343	1441	415	216	1315	102	521	654	365	204	376	180
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	346	1456	419	218	1328	103	526	661	369	206	380	182
Adj No. of Lanes	2	3	2	2	4	0	2	2	1	2	2	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	2343	1284	244	2557	198	556	1336	598	261	1032	813
Arrive On Green	0.11	0.46	0.46	0.07	0.42	0.42	0.16	0.38	0.38	0.08	0.29	0.29
Sat Flow, veh/h	3442	5085	2787	3442	6112	473	3442	3539	1583	3442	3539	2787
Grp Volume(v), veh/h	346	1456	419	218	1043	388	526	661	369	206	380	182
Grp Sat Flow(s),veh/h/ln	1721	1695	1393	1721	1602	1779	1721	1770	1583	1721	1770	1393
Q Serve(g_s), s	11.9	26.0	11.4	7.5	19.4	19.4	18.1	17.2	22.7	7.1	10.2	5.9
Cycle Q Clear(g_c), s	11.9	26.0	11.4	7.5	19.4	19.4	18.1	17.2	22.7	7.1	10.2	5.9
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	390	2343	1284	244	2010	744	556	1336	598	261	1032	813
V/C Ratio(X)	0.89	0.62	0.33	0.89	0.52	0.52	0.95	0.49	0.62	0.79	0.37	0.22
Avail Cap(c_a), veh/h	390	2343	1284	244	2010	744	556	1336	598	370	1032	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	24.4	20.5	55.3	25.9	26.0	49.8	28.6	30.3	54.5	33.7	32.2
Incr Delay (d2), s/veh	17.9	1.1	0.6	30.6	1.0	2.6	25.0	1.3	4.7	4.5	1.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	12.4	4.5	4.6	8.7	10.0	10.6	8.6	10.7	3.5	5.2	2.3
LnGrp Delay(d),s/veh	70.4	25.5	21.1	85.9	26.9	28.5	74.8	29.9	35.0	59.1	34.7	32.8
LnGrp LOS	E	C	C	F	C	C	E	C	D	E	C	C
Approach Vol, veh/h		2221			1649			1556			768	
Approach Delay, s/veh		31.7			35.1			46.3			40.8	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	62.4	24.0	41.5	18.2	57.3	13.7	51.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	8.5	* 36	19.4	* 35	13.6	30.1	12.9	41.2
Max Q Clear Time (g_c+I1), s	9.5	28.0	20.1	12.2	13.9	21.4	9.1	24.7
Green Ext Time (p_c), s	0.0	7.1	0.0	5.3	0.0	8.1	0.1	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	37.4
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	128	61	326	194	346	89	280	290	279	269	44
Future Volume (veh/h)	29	128	61	326	194	346	89	280	290	279	269	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	31	135	64	343	204	364	94	295	305	294	283	46
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	53	167	79	898	218	389	349	367	712	382	336	55
Arrive On Green	0.03	0.14	0.14	0.25	0.36	0.36	0.20	0.20	0.20	0.22	0.22	0.22
Sat Flow, veh/h	1774	1196	567	3548	601	1072	1774	1863	1583	1774	1564	254
Grp Volume(v), veh/h	31	0	199	343	0	568	94	295	305	294	0	329
Grp Sat Flow(s),veh/h/ln	1774	0	1763	1774	0	1673	1774	1863	1583	1774	0	1818
Q Serve(g_s), s	1.6	0.0	10.1	7.4	0.0	30.1	4.1	13.9	0.0	14.4	0.0	16.0
Cycle Q Clear(g_c), s	1.6	0.0	10.1	7.4	0.0	30.1	4.1	13.9	0.0	14.4	0.0	16.0
Prop In Lane	1.00		0.32	1.00		0.64	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	53	0	246	898	0	607	349	367	712	382	0	391
V/C Ratio(X)	0.59	0.00	0.81	0.38	0.00	0.93	0.27	0.80	0.43	0.77	0.00	0.84
Avail Cap(c_a), veh/h	98	0	476	898	0	663	480	504	829	491	0	503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.1	0.0	38.4	28.4	0.0	28.3	31.4	35.3	17.3	34.0	0.0	34.6
Incr Delay (d2), s/veh	10.0	0.0	6.2	0.3	0.0	19.7	0.4	6.6	0.4	5.6	0.0	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	5.3	3.7	0.0	17.2	2.1	7.8	5.2	7.6	0.0	9.1
LnGrp Delay(d),s/veh	54.1	0.0	44.6	28.7	0.0	48.0	31.8	41.9	17.7	39.6	0.0	44.5
LnGrp LOS	D		D	C		D	C	D	B	D		D
Approach Vol, veh/h		230			911			694			623	
Approach Delay, s/veh		45.9			40.7			29.9			42.2	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	27.8	17.4		24.3	7.2	37.9		22.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	16.7	24.9		25.5	5.1	36.5		24.9
Max Q Clear Time (g_c+I1), s	9.4	12.1		18.0	3.6	32.1		15.9
Green Ext Time (p_c), s	2.9	0.8		1.8	0.0	1.3		2.2

Intersection Summary		
HCM 2010 Ctrl Delay		38.5
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	795	193	8	637	89	175	311	6	245	412	322
Future Volume (veh/h)	215	795	193	8	637	89	175	311	6	245	412	322
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	224	828	201	8	664	93	182	324	6	255	429	335
Adj No. of Lanes	2	3	1	1	3	1	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	1840	573	18	1443	449	258	924	413	296	1251	559
Arrive On Green	0.09	0.36	0.36	0.01	0.28	0.28	0.07	0.26	0.26	0.17	0.35	0.35
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	224	828	201	8	664	93	182	324	6	255	429	335
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	11.2	8.4	0.4	9.7	4.0	4.6	6.7	0.3	12.6	8.0	15.6
Cycle Q Clear(g_c), s	5.7	11.2	8.4	0.4	9.7	4.0	4.6	6.7	0.3	12.6	8.0	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	1840	573	18	1443	449	258	924	413	296	1251	559
V/C Ratio(X)	0.74	0.45	0.35	0.45	0.46	0.21	0.71	0.35	0.01	0.86	0.34	0.60
Avail Cap(c_a), veh/h	432	1840	573	99	1443	449	371	924	413	463	1251	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	21.9	21.0	44.3	26.5	24.5	40.7	27.0	24.7	36.5	21.4	23.9
Incr Delay (d2), s/veh	4.0	0.8	1.7	16.5	1.1	1.0	3.5	1.0	0.1	9.6	0.7	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	5.3	3.9	0.3	4.7	1.9	2.3	3.4	0.1	7.0	4.1	7.5
LnGrp Delay(d),s/veh	44.0	22.7	22.7	60.8	27.6	25.6	44.2	28.1	24.7	46.1	22.2	28.5
LnGrp LOS	D	C	C	E	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1253			765			512			1019	
Approach Delay, s/veh		26.5			27.7			33.8			30.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	37.1	11.2	36.3	12.4	30.0	19.5	28.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	25.5	9.7	31.8	11.3	19.2	23.5	18.0
Max Q Clear Time (g_c+I1), s	2.4	13.2	6.6	17.6	7.7	11.7	14.6	8.7
Green Ext Time (p_c), s	0.0	8.0	0.2	5.2	0.2	5.4	0.5	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	28.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	614	150	199	10	85	11	158	86	13	17	138	335
Future Volume (veh/h)	614	150	199	10	85	11	158	86	13	17	138	335
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	640	156	207	10	89	11	165	90	14	18	144	349
Adj No. of Lanes	2	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	784	650	582	23	483	59	207	1095	167	38	460	412
Arrive On Green	0.23	0.37	0.37	0.01	0.15	0.15	0.12	0.36	0.36	0.02	0.26	0.26
Sat Flow, veh/h	3442	1770	1583	1774	3178	386	1774	3080	469	1774	1770	1583
Grp Volume(v), veh/h	640	156	207	10	49	51	165	51	53	18	144	349
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1795	1774	1770	1780	1774	1770	1583
Q Serve(g_s), s	11.6	4.0	6.3	0.4	1.6	1.6	6.0	1.3	1.3	0.7	4.3	13.8
Cycle Q Clear(g_c), s	11.6	4.0	6.3	0.4	1.6	1.6	6.0	1.3	1.3	0.7	4.3	13.8
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	784	650	582	23	269	273	207	629	633	38	460	412
V/C Ratio(X)	0.82	0.24	0.36	0.44	0.18	0.19	0.80	0.08	0.08	0.48	0.31	0.85
Avail Cap(c_a), veh/h	1047	1009	903	148	619	628	297	686	690	148	538	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	14.4	15.1	32.2	24.3	24.3	28.3	14.1	14.1	31.8	19.6	23.1
Incr Delay (d2), s/veh	3.8	0.2	0.4	13.1	0.3	0.3	9.4	0.1	0.1	9.0	0.4	11.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	2.0	2.8	0.3	0.8	0.8	3.4	0.6	0.6	0.4	2.1	7.4
LnGrp Delay(d),s/veh	27.9	14.6	15.5	45.3	24.6	24.7	37.7	14.1	14.1	40.8	20.0	34.9
LnGrp LOS	C	B	B	D	C	C	D	B	B	D	B	C
Approach Vol, veh/h		1003			110			269			511	
Approach Delay, s/veh		23.3			26.5			28.6			30.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	28.2	11.7	21.1	19.0	14.0	5.4	27.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	37.5	11.0	20.0	20.0	23.0	5.5	25.5
Max Q Clear Time (g_c+I1), s	12.4	8.3	8.0	15.8	13.6	3.6	2.7	3.3
Green Ext Time (p_c), s	0.0	2.7	0.1	1.3	1.4	2.5	0.0	3.4

Intersection Summary		
HCM 2010 Ctrl Delay		26.3
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	283	87	14	600	164	10	297	10	324	608	54
Future Volume (veh/h)	87	283	87	14	600	164	10	297	10	324	608	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	92	298	92	15	632	173	11	313	11	341	640	57
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	855	259	30	742	203	23	861	30	376	1507	134
Arrive On Green	0.07	0.32	0.32	0.02	0.27	0.27	0.01	0.25	0.25	0.21	0.46	0.46
Sat Flow, veh/h	1774	2678	812	1774	2748	751	1774	3488	122	1774	3288	293
Grp Volume(v), veh/h	92	195	195	15	407	398	11	158	166	341	344	353
Grp Sat Flow(s),veh/h/ln	1774	1770	1720	1774	1770	1730	1774	1770	1841	1774	1770	1811
Q Serve(g_s), s	5.4	8.9	9.1	0.9	22.9	22.9	0.6	7.8	7.8	19.7	13.7	13.8
Cycle Q Clear(g_c), s	5.4	8.9	9.1	0.9	22.9	22.9	0.6	7.8	7.8	19.7	13.7	13.8
Prop In Lane	1.00		0.47	1.00		0.43	1.00		0.07	1.00		0.16
Lane Grp Cap(c), veh/h	116	565	549	30	478	467	23	437	455	376	811	830
V/C Ratio(X)	0.79	0.35	0.35	0.50	0.85	0.85	0.47	0.36	0.36	0.91	0.42	0.43
Avail Cap(c_a), veh/h	125	565	549	84	506	494	84	437	455	409	811	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	27.3	27.4	51.2	36.3	36.3	51.5	32.7	32.7	40.4	19.1	19.1
Incr Delay (d2), s/veh	24.3	0.7	0.8	8.7	10.1	10.5	14.3	2.3	2.3	24.3	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	4.5	4.5	0.5	12.5	12.3	0.4	4.1	4.2	12.2	6.9	7.0
LnGrp Delay(d),s/veh	72.6	28.1	28.2	59.9	46.4	46.8	65.7	35.0	35.0	64.6	19.9	19.9
LnGrp LOS	E	C	C	E	D	D	E	D	C	E	B	B
Approach Vol, veh/h		482			820			335			1038	
Approach Delay, s/veh		36.6			46.9			36.0			34.6	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	31.7	6.3	38.9	5.9	53.9	11.5	33.8
Change Period (Y+Rc), s	5.8	* 5.8	4.5	5.4	4.5	5.8	4.6	5.4
Max Green Setting (Gmax), s	24.3	* 23	5.0	32.5	5.0	42.3	7.4	30.0
Max Q Clear Time (g_c+I1), s	11.7	9.8	2.9	11.1	2.6	15.8	7.4	24.9
Green Ext Time (p_c), s	0.6	7.3	0.0	12.5	0.0	11.0	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	38.9
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	36	445	73	27	10	350	577	114	10	303	36
Future Volume (veh/h)	24	36	445	73	27	10	350	577	114	10	303	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	25	38	468	77	28	11	368	607	120	11	319	38
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	537	480	99	839	311	420	1199	237	24	587	69
Arrive On Green	0.03	0.30	0.30	0.06	0.33	0.33	0.24	0.41	0.41	0.01	0.18	0.18
Sat Flow, veh/h	1774	1770	1583	1774	2530	937	1774	2948	582	1774	3189	377
Grp Volume(v), veh/h	25	38	468	77	19	20	368	364	363	11	176	181
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1697	1774	1770	1760	1774	1770	1796
Q Serve(g_s), s	1.0	1.1	21.2	3.1	0.5	0.6	14.5	11.1	11.2	0.4	6.5	6.6
Cycle Q Clear(g_c), s	1.0	1.1	21.2	3.1	0.5	0.6	14.5	11.1	11.2	0.4	6.5	6.6
Prop In Lane	1.00		1.00	1.00		0.55	1.00		0.33	1.00		0.21
Lane Grp Cap(c), veh/h	48	537	480	99	587	563	420	720	716	24	326	330
V/C Ratio(X)	0.52	0.07	0.97	0.78	0.03	0.04	0.88	0.51	0.51	0.45	0.54	0.55
Avail Cap(c_a), veh/h	137	537	480	171	587	563	587	963	958	134	512	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	18.0	25.0	33.8	16.4	16.4	26.7	16.1	16.1	35.5	26.8	26.9
Incr Delay (d2), s/veh	8.3	0.1	34.5	12.3	0.0	0.0	10.7	0.6	0.6	12.6	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.5	13.8	1.9	0.3	0.3	8.3	5.5	5.6	0.3	3.3	3.4
LnGrp Delay(d),s/veh	43.1	18.1	59.5	46.1	16.4	16.4	37.3	16.6	16.6	48.1	28.2	28.3
LnGrp LOS	D	B	E	D	B	B	D	B	B	D	C	C
Approach Vol, veh/h		531			116			1095			368	
Approach Delay, s/veh		55.7			36.1			23.6			28.8	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	33.5	8.0	26.0	21.2	17.3	6.0	28.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	39.5	7.0	22.0	24.0	21.0	5.6	23.4
Max Q Clear Time (g_c+I1), s	2.4	13.2	5.1	23.2	16.5	8.6	3.0	2.6
Green Ext Time (p_c), s	0.0	6.3	0.0	0.0	0.7	4.7	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	214	19	290	179	74	23	105	350	66	70	215
Future Volume (veh/h)	193	214	19	290	179	74	23	105	350	66	70	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	203	225	20	305	188	78	24	111	368	69	74	226
Adj No. of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	413	34	462	252	98	128	497	492	134	122	286
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	575	777	63	687	475	184	173	1599	1583	190	392	920
Grp Volume(v), veh/h	448	0	0	571	0	0	135	0	368	369	0	0
Grp Sat Flow(s),veh/h/ln	1415	0	0	1346	0	0	1772	0	1583	1502	0	0
Q Serve(g_s), s	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	12.0	7.4	0.0	0.0
Cycle Q Clear(g_c), s	11.9	0.0	0.0	19.9	0.0	0.0	3.1	0.0	12.0	12.5	0.0	0.0
Prop In Lane	0.45		0.04	0.53		0.14	0.18		1.00	0.19		0.61
Lane Grp Cap(c), veh/h	844	0	0	812	0	0	625	0	492	541	0	0
V/C Ratio(X)	0.53	0.00	0.00	0.70	0.00	0.00	0.22	0.00	0.75	0.68	0.00	0.00
Avail Cap(c_a), veh/h	1265	0	0	1217	0	0	789	0	650	684	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	10.9	0.0	0.0	14.7	0.0	17.7	17.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.1	0.0	0.0	0.2	0.0	3.4	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	0.0	7.5	0.0	0.0	1.6	0.0	5.7	5.5	0.0	0.0
LnGrp Delay(d),s/veh	9.4	0.0	0.0	12.0	0.0	0.0	14.8	0.0	21.1	19.6	0.0	0.0
LnGrp LOS	A			B			B		C	B		
Approach Vol, veh/h		448			571			503			369	
Approach Delay, s/veh		9.4			12.0			19.4			19.6	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.3		35.0		22.3		35.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		23.5		47.5		23.5		47.5
Max Q Clear Time (g_c+I1), s		14.0		13.9		14.5		21.9
Green Ext Time (p_c), s		3.4		9.3		3.3		8.5

Intersection Summary		
HCM 2010 Ctrl Delay		14.8
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	52	226	10	42	12	188	883	10	10	605	115
Future Volume (veh/h)	143	52	226	10	42	12	188	883	10	10	605	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	147	54	233	10	43	12	194	910	10	10	624	119
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	344	308	56	272	73	138	1939	21	26	1417	270
Arrive On Green	0.11	0.19	0.19	0.03	0.10	0.10	0.08	0.54	0.54	0.01	0.48	0.48
Sat Flow, veh/h	1774	1770	1583	1774	2762	740	1774	3586	39	1774	2968	565
Grp Volume(v), veh/h	147	54	233	10	27	28	194	449	471	10	372	371
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1732	1774	1770	1856	1774	1770	1763
Q Serve(g_s), s	7.6	2.4	13.2	0.5	1.3	1.4	7.4	14.8	14.8	0.5	13.2	13.2
Cycle Q Clear(g_c), s	7.6	2.4	13.2	0.5	1.3	1.4	7.4	14.8	14.8	0.5	13.2	13.2
Prop In Lane	1.00		1.00	1.00		0.43	1.00		0.02	1.00		0.32
Lane Grp Cap(c), veh/h	204	344	308	56	174	170	138	957	1003	26	845	842
V/C Ratio(X)	0.72	0.16	0.76	0.18	0.15	0.16	1.40	0.47	0.47	0.38	0.44	0.44
Avail Cap(c_a), veh/h	486	484	433	336	335	328	138	957	1003	112	845	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	31.8	36.2	44.8	39.2	39.3	43.8	13.4	13.4	46.4	16.4	16.4
Incr Delay (d2), s/veh	19.8	1.0	16.0	1.5	0.4	0.5	219.3	1.7	1.6	3.4	1.7	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	1.3	7.1	0.3	0.7	0.7	12.0	7.7	8.0	0.3	6.8	6.8
LnGrp Delay(d),s/veh	60.4	32.8	52.1	46.3	39.6	39.7	263.1	15.1	15.0	49.8	18.1	18.1
LnGrp LOS	E	C	D	D	D	D	F	B	B	D	B	B
Approach Vol, veh/h		434			65			1114			753	
Approach Delay, s/veh		52.5			40.7			58.2			18.5	
Approach LOS		D			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	57.2	7.6	24.3	12.0	51.2	16.7	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	5.8	* 5.8
Max Green Setting (Gmax), s	6.0	24.2	18.0	26.0	7.4	22.8	26.0	* 18
Max Q Clear Time (g_c+I1), s	2.5	16.8	2.5	15.2	9.4	15.2	9.6	3.4
Green Ext Time (p_c), s	0.0	6.8	0.0	3.2	0.0	7.0	1.3	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.1
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	2190	53	249	1759	134	43	20	120	102	18	79
Future Volume (veh/h)	93	2190	53	249	1759	134	43	20	120	102	18	79
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	96	2258	55	257	1813	138	44	21	124	105	19	81
Adj No. of Lanes	1	3	0	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	3164	77	218	3565	1010	71	27	157	148	217	290
Arrive On Green	0.07	0.58	0.58	0.12	0.64	0.64	0.04	0.11	0.11	0.04	0.12	0.12
Sat Flow, veh/h	1774	5433	132	1774	5588	1583	1774	234	1384	3442	1863	1583
Grp Volume(v), veh/h	96	1546	767	257	1813	138	44	0	145	105	19	81
Grp Sat Flow(s),veh/h/ln	1774	1863	1839	1774	1863	1583	1774	0	1618	1721	1863	1583
Q Serve(g_s), s	8.0	44.5	44.8	18.4	26.1	5.2	3.7	0.0	13.1	4.5	1.4	6.6
Cycle Q Clear(g_c), s	8.0	44.5	44.8	18.4	26.1	5.2	3.7	0.0	13.1	4.5	1.4	6.6
Prop In Lane	1.00		0.07	1.00		1.00	1.00		0.86	1.00		1.00
Lane Grp Cap(c), veh/h	119	2169	1071	218	3565	1010	71	0	183	148	217	290
V/C Ratio(X)	0.81	0.71	0.72	1.18	0.51	0.14	0.62	0.00	0.79	0.71	0.09	0.28
Avail Cap(c_a), veh/h	213	2169	1071	218	3565	1010	213	0	486	206	447	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.46	0.46	0.46	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.0	22.4	22.4	65.8	14.6	10.8	70.9	0.0	64.8	70.8	59.2	52.7
Incr Delay (d2), s/veh	4.8	2.0	4.1	101.3	0.2	0.1	8.5	0.0	8.0	2.8	0.4	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	23.4	23.8	15.1	13.5	2.3	2.0	0.0	6.3	2.2	0.7	3.0
LnGrp Delay(d),s/veh	73.8	24.4	26.5	167.1	14.8	10.9	79.4	0.0	72.8	73.6	59.6	53.9
LnGrp LOS	E	C	C	F	B	B	E		E	E	E	D
Approach Vol, veh/h		2409			2208			189			205	
Approach Delay, s/veh		27.1			32.3			74.3			64.5	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	93.1	10.6	23.3	14.7	101.5	11.1	22.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	18.4	56.8	18.0	36.0	18.0	57.2	9.0	45.0
Max Q Clear Time (g_c+I1), s	20.4	46.8	5.7	8.6	10.0	28.1	6.5	15.1
Green Ext Time (p_c), s	0.0	10.0	0.0	1.9	0.1	29.0	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	487	2235	36	30	1907	309	36	6	30	390	6	435
Future Volume (veh/h)	487	2235	36	30	1907	309	36	6	30	390	6	435
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	497	2281	37	31	1946	315	37	6	31	398	6	444
Adj No. of Lanes	2	3	0	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	538	2914	47	52	2230	902	57	36	184	450	5	367
Arrive On Green	0.16	0.57	0.57	0.03	0.44	0.44	0.03	0.14	0.14	0.13	0.23	0.23
Sat Flow, veh/h	3442	5155	83	1774	5085	1583	1774	263	1360	3442	21	1565
Grp Volume(v), veh/h	497	1499	819	31	1946	315	37	0	37	398	0	450
Grp Sat Flow(s),veh/h/ln	1721	1695	1848	1774	1695	1583	1774	0	1623	1721	0	1587
Q Serve(g_s), s	20.6	49.9	50.2	2.5	50.5	15.5	3.0	0.0	2.9	16.5	0.0	34.0
Cycle Q Clear(g_c), s	20.6	49.9	50.2	2.5	50.5	15.5	3.0	0.0	2.9	16.5	0.0	34.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.84	1.00		0.99
Lane Grp Cap(c), veh/h	538	1917	1045	52	2230	902	57	0	220	450	0	372
V/C Ratio(X)	0.92	0.78	0.78	0.59	0.87	0.35	0.65	0.00	0.17	0.88	0.00	1.21
Avail Cap(c_a), veh/h	539	1917	1045	73	2230	902	121	0	220	598	0	372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	0.65	0.65	0.65	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	60.3	24.6	24.6	69.5	37.0	16.8	69.4	0.0	55.4	61.9	0.0	55.5
Incr Delay (d2), s/veh	9.1	1.1	2.0	2.6	3.0	0.4	4.6	0.0	0.4	9.8	0.0	116.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	23.6	26.1	1.3	24.2	6.9	1.5	0.0	1.3	8.5	0.0	27.0
LnGrp Delay(d),s/veh	69.4	25.7	26.6	72.1	40.0	17.1	74.0	0.0	55.8	71.8	0.0	172.4
LnGrp LOS	E	C	C	E	D	B	E		E	E		F
Approach Vol, veh/h		2815			2292			74			848	
Approach Delay, s/veh		33.7			37.3			64.9			125.2	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	87.8	9.2	39.1	27.3	69.4	23.6	24.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.3	75.0	9.9	34.0	22.7	58.3	25.2	18.7
Max Q Clear Time (g_c+I1), s	4.5	52.2	5.0	36.0	22.6	52.5	18.5	4.9
Green Ext Time (p_c), s	0.0	22.8	0.0	0.0	0.0	5.0	0.5	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	48.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2001	651	0	2018	0	0	0	0	348	1	624
Future Volume (veh/h)	0	2001	651	0	2018	0	0	0	0	348	1	624
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	2063	671	0	2080	0				359	1	643
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	0				2	2	2
Cap, veh/h	0	2899	902	0	2899	0				619	2	975
Arrive On Green	0.00	0.57	0.57	0.00	0.57	0.00				0.35	0.35	0.35
Sat Flow, veh/h	0	5253	1583	0	5421	0				1769	5	2787
Grp Volume(v), veh/h	0	2063	671	0	2080	0				360	0	643
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	0				1774	0	1393
Q Serve(g_s), s	0.0	29.4	31.6	0.0	29.8	0.0				16.5	0.0	19.5
Cycle Q Clear(g_c), s	0.0	29.4	31.6	0.0	29.8	0.0				16.5	0.0	19.5
Prop In Lane	0.00		1.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2899	902	0	2899	0				621	0	975
V/C Ratio(X)	0.00	0.71	0.74	0.00	0.72	0.00				0.58	0.00	0.66
Avail Cap(c_a), veh/h	0	2899	902	0	2899	0				621	0	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.57	0.57	0.00	0.90	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.6	16.0	0.0	15.6	0.0				26.5	0.0	27.5
Incr Delay (d2), s/veh	0.0	0.9	3.2	0.0	1.4	0.0				3.9	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.8	14.4	0.0	14.2	0.0				8.8	0.0	8.0
LnGrp Delay(d),s/veh	0.0	16.4	19.2	0.0	17.1	0.0				30.4	0.0	31.0
LnGrp LOS		B	B		B					C		C
Approach Vol, veh/h		2734			2080						1003	
Approach Delay, s/veh		17.1			17.1						30.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		61.0		39.0		61.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		57.0		35.0		57.0		
Max Q Clear Time (g_c+I1), s		33.6		21.5		31.8		
Green Ext Time (p_c), s		23.0		4.4		24.8		

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1536	813	0	1870	361	599	0	405	0	0	0
Future Volume (veh/h)	0	1536	813	0	1870	361	599	0	405	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1584	0	0	1928	0	618	0	418			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2949	918	0	2949	918	603	0	538			
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00	0.34	0.00	0.34			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1584	0	0	1928	0	618	0	418			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	19.0	0.0	0.0	25.6	0.0	34.0	0.0	23.7			
Cycle Q Clear(g_c), s	0.0	19.0	0.0	0.0	25.6	0.0	34.0	0.0	23.7			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2949	918	0	2949	918	603	0	538			
V/C Ratio(X)	0.00	0.54	0.00	0.00	0.65	0.00	1.02	0.00	0.78			
Avail Cap(c_a), veh/h	0	2949	918	0	2949	918	603	0	538			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.86	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	12.8	0.0	0.0	14.2	0.0	33.0	0.0	29.6			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.5	0.0	43.0	0.0	10.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	9.0	0.0	0.0	12.1	0.0	23.8	0.0	11.9			
LnGrp Delay(d),s/veh	0.0	13.4	0.0	0.0	14.7	0.0	76.0	0.0	40.1			
LnGrp LOS		B			B		F		D			
Approach Vol, veh/h		1584			1928			1036				
Approach Delay, s/veh		13.4			14.7			61.5				
Approach LOS		B			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		62.0				62.0		38.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		26.0				28.0		34.0
Max Q Clear Time (g_c+I1), s		21.0				27.6		36.0
Green Ext Time (p_c), s		4.9				0.2		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		24.9
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	554	1738	291	111	986	327	265	431	10	53	323	565
Future Volume (veh/h)	554	1738	291	111	986	327	265	431	10	53	323	565
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	583	1829	306	117	1038	344	279	454	11	56	340	595
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	552	2333	661	164	1724	489	275	1327	564	109	1144	733
Arrive On Green	0.16	0.42	0.42	0.05	0.31	0.31	0.08	0.36	0.36	0.03	0.31	0.31
Sat Flow, veh/h	3548	5588	1583	3442	5588	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	583	1829	306	117	1038	344	279	454	11	56	340	595
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	21.8	39.7	19.5	4.7	22.1	26.9	11.2	12.5	0.6	2.2	9.7	43.0
Cycle Q Clear(g_c), s	21.8	39.7	19.5	4.7	22.1	26.9	11.2	12.5	0.6	2.2	9.7	43.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	552	2333	661	164	1724	489	275	1327	564	109	1144	733
V/C Ratio(X)	1.06	0.78	0.46	0.72	0.60	0.70	1.01	0.34	0.02	0.51	0.30	0.81
Avail Cap(c_a), veh/h	552	2333	661	189	1724	489	275	1327	564	138	1144	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	35.3	29.4	65.7	41.1	42.8	64.4	33.0	29.2	66.7	37.0	32.4
Incr Delay (d2), s/veh	51.7	2.5	2.1	10.3	1.6	8.3	57.7	0.6	0.1	3.7	0.6	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.6	20.9	8.9	2.5	11.6	12.9	7.5	6.5	0.3	1.1	5.1	21.5
LnGrp Delay(d),s/veh	110.8	37.8	31.5	76.0	42.7	51.0	122.2	33.6	29.3	70.4	37.5	41.3
LnGrp LOS	F	D	C	E	D	D	F	C	C	E	D	D
Approach Vol, veh/h		2718			1499			744			991	
Approach Delay, s/veh		52.7			47.2			66.8			41.7	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	64.2	15.8	48.8	26.4	49.0	8.9	55.7
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	7.7	57.4	11.2	43.0	21.8	43.2	5.6	48.7
Max Q Clear Time (g_c+I1), s	6.7	41.7	13.2	45.0	23.8	28.9	4.2	14.5
Green Ext Time (p_c), s	0.0	15.7	0.0	0.0	0.0	14.3	0.0	22.8

Intersection Summary	
HCM 2010 Ctrl Delay	51.2
HCM 2010 LOS	D

MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	208	5.0	0.253	6.9	LOS A	1.0	26.0	0.53	0.47	23.7
12	R2	411	5.0	0.253	0.1	LOS A	1.0	26.0	0.01	0.01	25.5
Approach		619	5.0	0.253	2.4	LOS A	1.0	26.0	0.18	0.17	24.6
East: Keller Road											
3	L2	406	5.0	0.367	7.0	LOS A	1.8	47.9	0.43	0.31	22.9
8	T1	619	3.0	0.323	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		1025	3.8	0.367	2.8	LOS A	1.8	47.9	0.17	0.12	24.1
West: Keller Road											
4	T1	448	3.0	0.480	9.7	LOS A	3.1	79.4	0.63	0.68	21.2
14	R2	172	5.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		620	3.6	0.480	7.1	LOS A	3.1	79.4	0.45	0.49	22.6
All Vehicles		2264	4.1	0.480	3.8	LOS A	3.1	79.4	0.25	0.23	23.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: MICHAEL BAKER INTERNATIONAL | Processed: Wednesday, August 15, 2018 9:39:16 AM
Project: H:\PDATA\141981_Murrieta Hills Sp TIA\SIDRA Analysis\Files\6_Murrieta_Hills_2035_w-A+C+Proj_PM.sip7

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	112	5.0	0.127	7.1	LOS A	0.4	11.3	0.58	0.58	13.2
2	T1	1	5.0	0.127	6.7	LOS A	0.4	11.1	0.57	0.57	23.0
12	R2	256	5.0	0.127	1.4	LOS A	0.4	11.1	0.12	0.12	24.5
Approach		368	5.0	0.127	3.1	LOS A	0.4	11.3	0.26	0.26	20.6
East: Keller Road											
8	T1	895	3.0	0.428	8.1	LOS A	2.2	56.3	0.50	0.40	21.9
18	R2	221	5.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		1116	3.4	0.428	6.5	LOS A	2.2	56.3	0.40	0.32	22.7
West: Keller Road											
7	L2	158	5.0	0.278	5.1	LOS A	0.0	0.0	0.00	0.00	29.6
4	T1	605	3.0	0.278	5.0	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		763	3.4	0.278	5.0	LOS A	0.0	0.0	0.00	0.00	25.6
All Vehicles		2247	3.7	0.428	5.5	LOS A	2.2	56.3	0.24	0.20	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

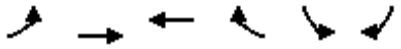
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: MICHAEL BAKER INTERNATIONAL | Processed: Wednesday, August 15, 2018 9:39:15 AM
Project: H:\PDATA\141981_Murrieta Hills Sp TIA\SIDRA Analysis\Files\6_Murrieta_Hills_2035_w-A+C+Proj_PM.sip7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	325	27	118	628	128	10	274	10	34	460	30
Future Volume (veh/h)	32	325	27	118	628	128	10	274	10	34	460	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	35	353	29	128	683	139	11	298	11	37	500	33
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	1484	121	161	1484	302	24	793	29	59	836	55
Arrive On Green	0.03	0.45	0.45	0.09	0.51	0.51	0.01	0.23	0.23	0.03	0.25	0.25
Sat Flow, veh/h	1774	3314	271	1774	2931	596	1774	3482	128	1774	3371	222
Grp Volume(v), veh/h	35	188	194	128	412	410	11	151	158	37	262	271
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1758	1774	1770	1840	1774	1770	1824
Q Serve(g_s), s	1.8	5.9	6.0	6.4	13.5	13.5	0.6	6.5	6.5	1.9	11.8	11.8
Cycle Q Clear(g_c), s	1.8	5.9	6.0	6.4	13.5	13.5	0.6	6.5	6.5	1.9	11.8	11.8
Prop In Lane	1.00		0.15	1.00		0.34	1.00		0.07	1.00		0.12
Lane Grp Cap(c), veh/h	57	792	813	161	896	890	24	403	419	59	439	452
V/C Ratio(X)	0.61	0.24	0.24	0.79	0.46	0.46	0.46	0.37	0.38	0.62	0.60	0.60
Avail Cap(c_a), veh/h	148	792	813	306	896	890	108	403	419	128	439	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	15.3	15.4	40.1	14.3	14.3	44.1	29.3	29.4	42.9	29.9	29.9
Incr Delay (d2), s/veh	10.0	0.7	0.7	8.5	1.7	1.7	13.5	2.7	2.6	10.2	5.9	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.0	3.1	3.5	6.9	6.9	0.4	3.4	3.6	1.1	6.5	6.7
LnGrp Delay(d),s/veh	53.0	16.1	16.1	48.6	16.0	16.0	57.5	32.0	31.9	53.1	35.8	35.7
LnGrp LOS	D	B	B	D	B	B	E	C	C	D	D	D
Approach Vol, veh/h		417			950			320			570	
Approach Delay, s/veh		19.2			20.4			32.8			36.8	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	44.8	5.7	26.8	7.4	50.1	7.5	25.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	29.5	5.5	21.5	7.5	37.5	6.5	20.5
Max Q Clear Time (g_c+I1), s	8.4	8.0	2.6	13.8	3.8	15.5	3.9	8.5
Green Ext Time (p_c), s	0.2	8.0	0.0	3.0	0.0	8.1	0.0	4.0

Intersection Summary		
HCM 2010 Ctrl Delay		26.1
HCM 2010 LOS		C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	273	1365	2066	143	233	371
Future Volume (veh/h)	273	1365	2066	143	233	371
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	297	1484	2246	155	253	403
Adj No. of Lanes	2	3	3	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	340	3159	2296	157	960	777
Arrive On Green	0.10	0.62	0.47	0.47	0.28	0.28
Sat Flow, veh/h	3442	5253	5029	332	3442	2787
Grp Volume(v), veh/h	297	1484	1560	841	253	403
Grp Sat Flow(s),veh/h/ln	1721	1695	1695	1804	1721	1393
Q Serve(g_s), s	7.7	14.1	40.5	41.5	5.1	11.0
Cycle Q Clear(g_c), s	7.7	14.1	40.5	41.5	5.1	11.0
Prop In Lane	1.00			0.18	1.00	1.00
Lane Grp Cap(c), veh/h	340	3159	1601	852	960	777
V/C Ratio(X)	0.87	0.47	0.97	0.99	0.26	0.52
Avail Cap(c_a), veh/h	340	3159	1601	852	960	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	1.00	1.00
Uniform Delay (d), s/veh	40.0	9.1	23.2	23.5	25.3	27.4
Incr Delay (d2), s/veh	21.2	0.5	13.8	23.1	0.7	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	6.6	21.9	26.0	2.5	8.9
LnGrp Delay(d),s/veh	61.2	9.6	37.0	46.6	25.9	29.8
LnGrp LOS	E	A	D	D	C	C
Approach Vol, veh/h		1781	2401		656	
Approach Delay, s/veh		18.2	40.4		28.3	
Approach LOS		B	D		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.4		29.6	13.4	47.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		55.9		25.1	8.9	42.5		
Max Q Clear Time (g_c+I1), s		16.1		13.0	9.7	43.5		
Green Ext Time (p_c), s		37.1		2.1	0.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

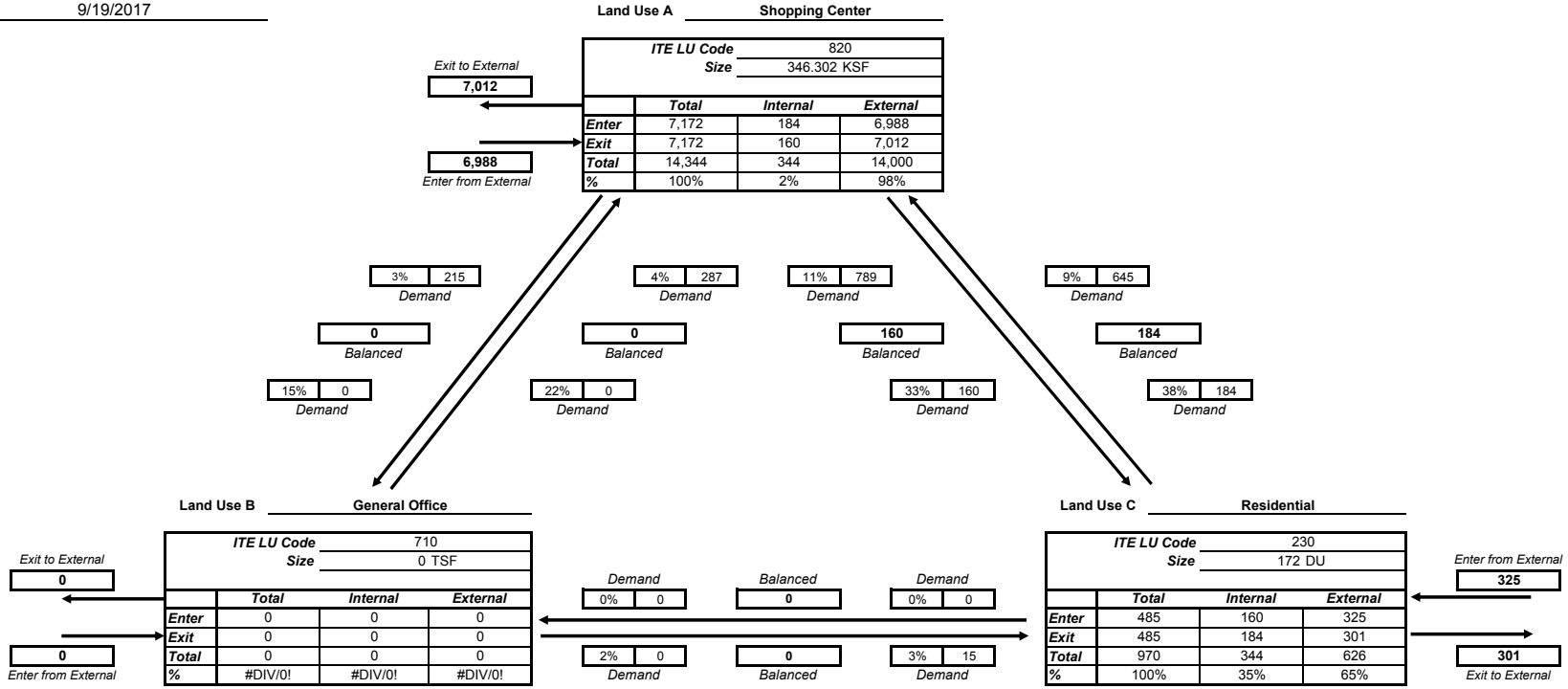
APPENDIX D
ITE Internal Trip Generation Worksheets

APPENDIX D-1
ITE Internal Trip Generation
Project Phases 1 & 2

Murrieta Hills Traffic Study

Multi-Use Development Trip Generation and Internal Capture Summary

Analyst: JG
Date: 9/19/2017
Time Period: Daily

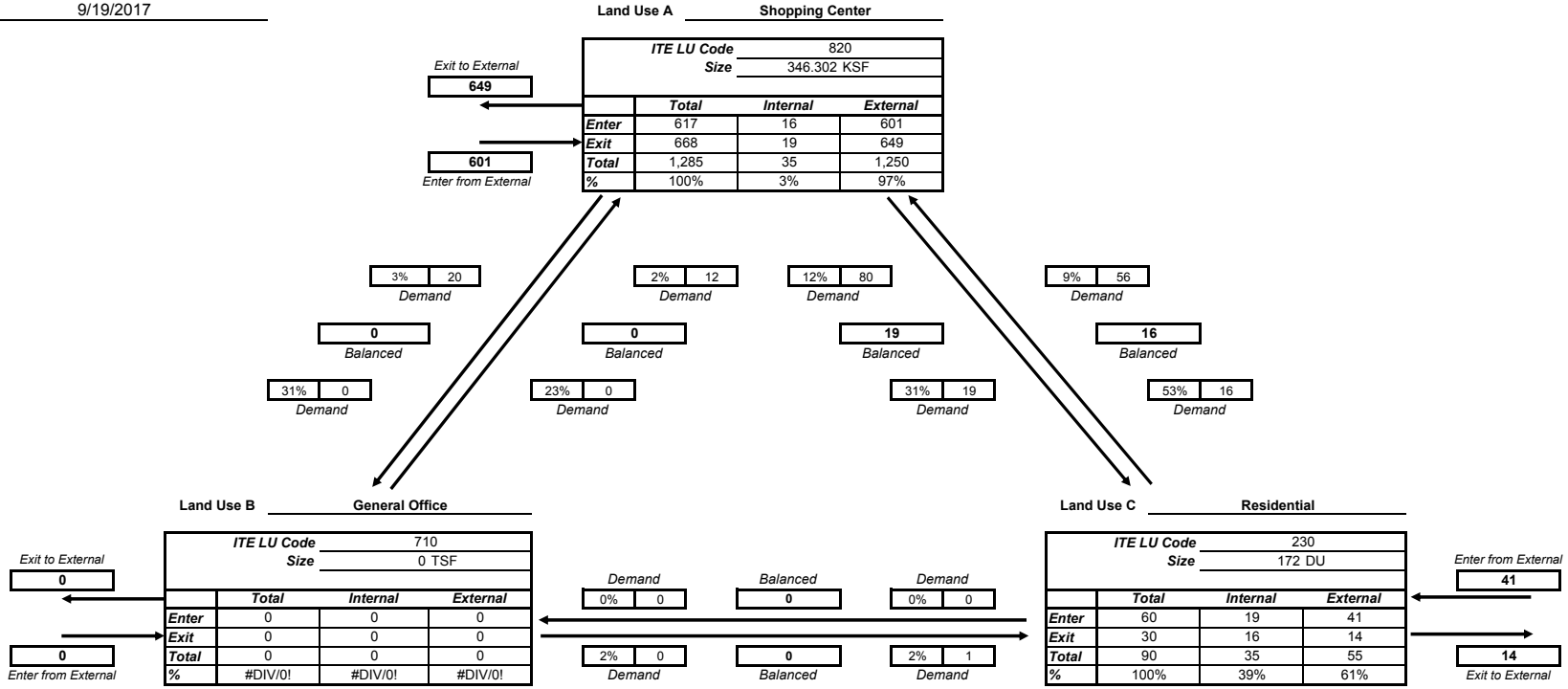


Net External Trips for Multi-Use Development					
	Land Use A	Land Use B	Land Use C	Total	Internal Capture
Enter	6,988	0	325	*7,313*	*4%*
Exit	7,012	0	301	*7,313*	
Total	14,000	0	626	*14,626*	
Single-Use Trip Gen. Est.	14,344	0	970	*15,314*	

Murrieta Hills Traffic Study

Multi-Use Development Trip Generation and Internal Capture Summary

Analyst: JG
Date: 9/19/2017
Time Period: PM Peak Hour



Net External Trips for Multi-Use Development					
	Land Use A	Land Use B	Land Use C	Total	Internal Capture
Enter	601	0	41	*642*	*5%*
Exit	649	0	14	*663*	
Total	1,250	0	55	*1,305*	
Single-Use Trip Gen. Est.	1,285	0	90	*1,375*	

APPENDIX D-2
ITE Internal Trip Generation
Project Buildout

ATTACHMENT C-1
Murrieta Hills Specific Plan
Trip Generation Rates

Land Use	ITE Code	Trip Rate	AM Peak Hour Trips			PM Peak Hour Trips		
			Rate	In	Out	Rate	In	Out
Single Family Detached Residential	210	9.52 /DU	0.75 /DU	25% :	75%	1 /DU	63% :	37%
Residential Condominium	230	5.81 /DU	0.44 /DU	17% :	83%	0.52 /DU	67% :	33%
Commercial Retail	820	42.7 /KSF	0.96 /KSF	62% :	38%	3.71 /KSF	48% :	52%

Source: 2012 ITE Trip Generation Manural, 9th Edition

ATTACHMENT C-2
Murrieta Hills Specific Plan
Phase 1 (Year 2023)

Land Use	Intensity	ADT	AM Peak Hour Trips			PM Peak Hour Trips		
			Volume	Inbound	Outbound	Volume	Inbound	Outbound
Single Family Detached Residential	300 DU	2,856	225	57	168	300	189	111
Project Phase 1 Total		**2,856**	**225**	**57**	**168**	**300**	**189**	**111**

ATTACHMENT C-3
Murrieta Hills Specific Plan
Phase 1&2 (Year 2028)

Land Use	Intensity	ADT	AM Peak Hour Trips			PM Peak Hour Trips		
			Volume	Inbound	Outbound	Volume	Inbound	Outbound
Single Family Detached Residential	*578 DU*	*5,503*	*434*	*109*	*325*	*578*	*364*	*214*
Residential Condominium	172 DU	999	76	13	63	89	59	30
ITE Internal Capture (5% PM, 4% ADT) [a]		-40	0	0	0	-4	-3	-1
Residential Condominium Subtotal		*959*	*76*	*13*	*63*	*85*	*56*	*29*
Commercial Retail	173.151 KSF	7,394	166	103	63	642	*308*	*334*
ITE Internal Capture (5% PM, 4% ADT) [a]		-296	0	0	0	-32	-15	-17
Subtotal after Internal Capture		7,098	166	103	63	610	293	317
Pass-By Trip Reduction (25% AM, 25% PM, 25% ADT) [b]		-1,775	-42	-26	-16	-153	-73	-80
Commercial Retail Subtotal		*5,324*	*124*	*77*	*47*	*457*	*220*	*237*
Proposed Project Phase 1 & 2 Total		**11,785**	**634**	**199**	**435**	**1,120**	**640**	**480**

[a] The ITE Internal Capture is assumed between the Residential Condominiums and Commercial Retail only for the daily and PM peak hour.

[b] The Pass-By Trip Reduction of 25% applies only to the Commercial Retail trips only.

ATTACHMENT C-4

Murrieta Hills Specific Plan

Phase 1, 2, & 3 (Project Buildout - Year 2031)

Land Use	Intensity	ADT	AM Peak Hour Trips			PM Peak Hour Trips		
			Volume	Inbound	Outbound	Volume	Inbound	Outbound
Single Family Detached Residential	*578 DU*	*5,503*	*434*	*109*	*325*	*578*	*364*	*214*
Residential Condominium	172 DU	999	76	13	63	89	59	30
ITE Internal Capture (5% PM, 4% ADT) [a]		-40	0	0	0	-4	-3	-1
Residential Condominium Subtotal		*959*	*76*	*13*	*63*	*85*	*56*	*29*
Commercial Retail	346.302 KSF	14,787	332	206	126	1,285	617	668
ITE Internal Capture (5% PM, 4% ADT) [a]		-591	0	0	0	-64	-31	-33
Subtotal after Internal Capture		14,196	332	206	126	1,221	586	635
Pass-By Trip Reduction (25% AM, 25% PM, 25% ADT) [b]		-3,549	-84	-52	-32	-305	-146	-159
Commercial Retail Subtotal		*10,647*	*248*	*154*	*94*	*916*	*440*	*476*
Proposed Project Phase 1, 2, & 3 Total		**17,109**	**758**	**276**	**482**	**1,579**	**860**	**719**

[a] The ITE Internal Capture is assumed between the Residential Condominiums and Commercial Retail only for the daily and PM peak hour.

[b] The Pass-By Trip Reduction of 25% applies only to the Commercial Retail trips only.

APPENDIX E
Traffic Signal Warrant Worksheets

APPENDIX E-1
Signal Warrant Analysis
Existing Conditions

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

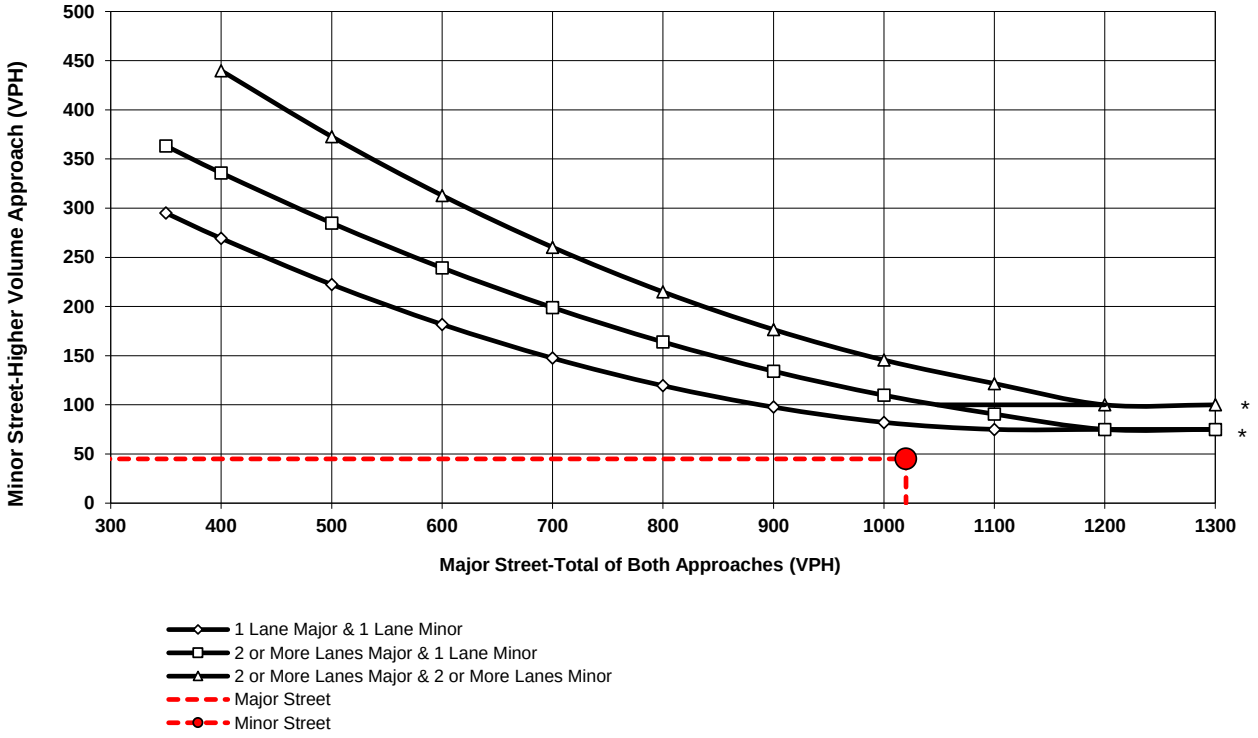
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1020	Higher Volume Approach (VPH):	45
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

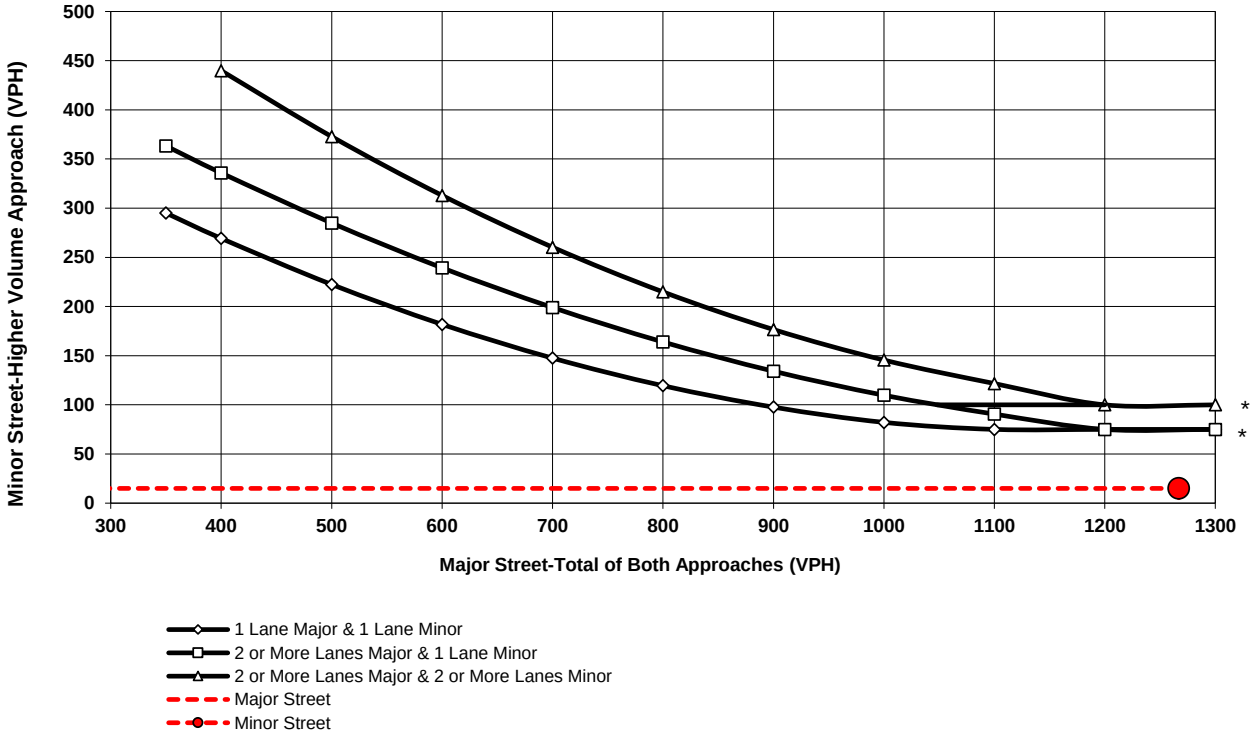
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1267	Higher Volume Approach (VPH):	15
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

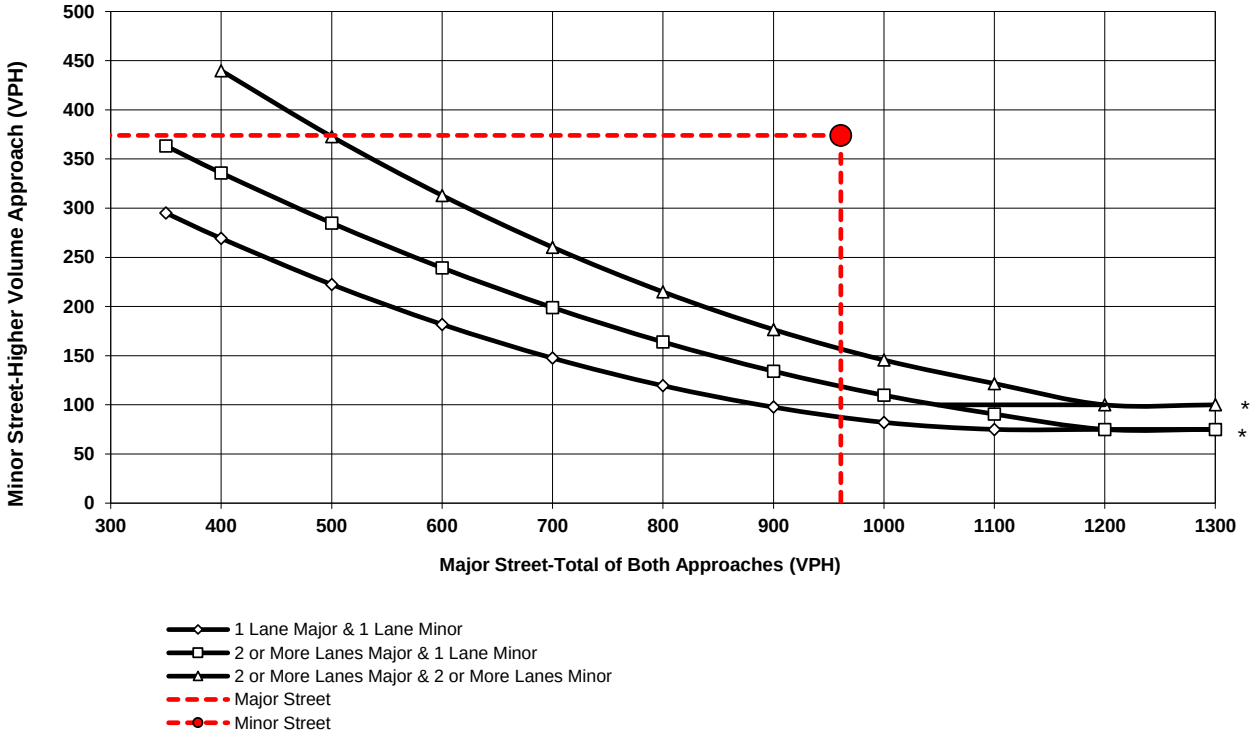
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	961	Higher Volume Approach (VPH):	374
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

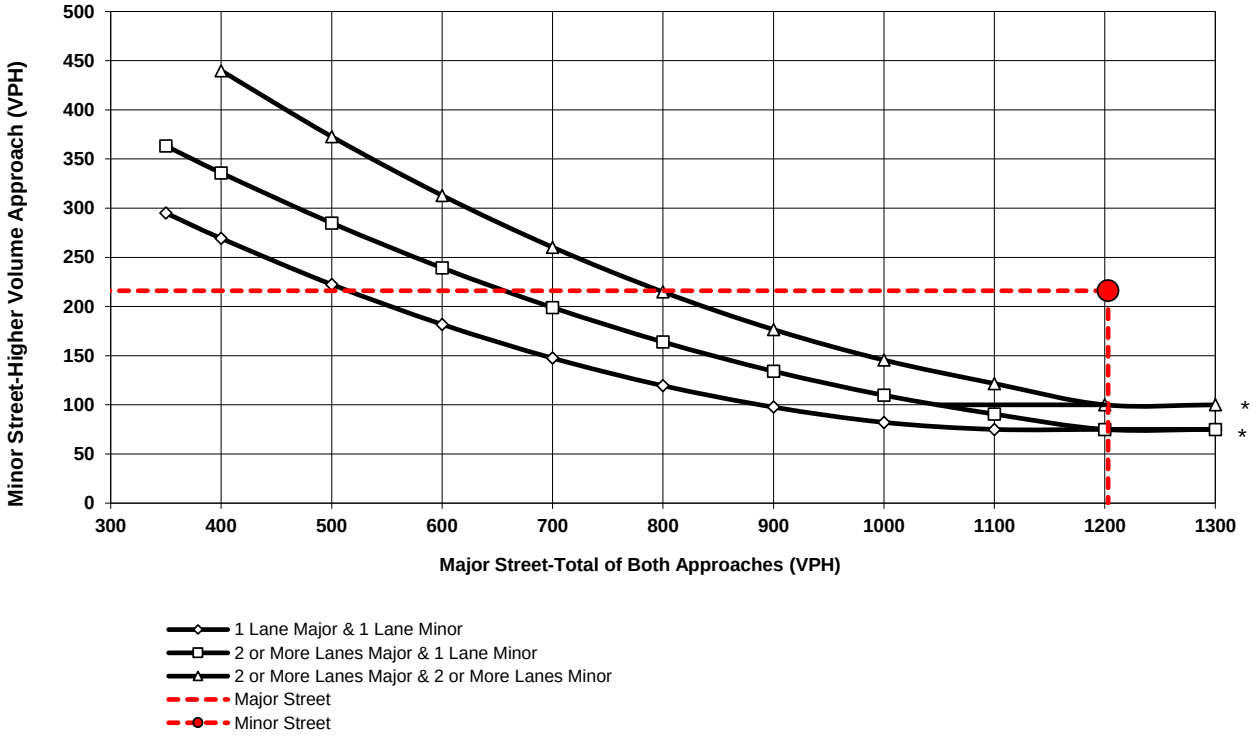
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1203	Higher Volume Approach (VPH):	216
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

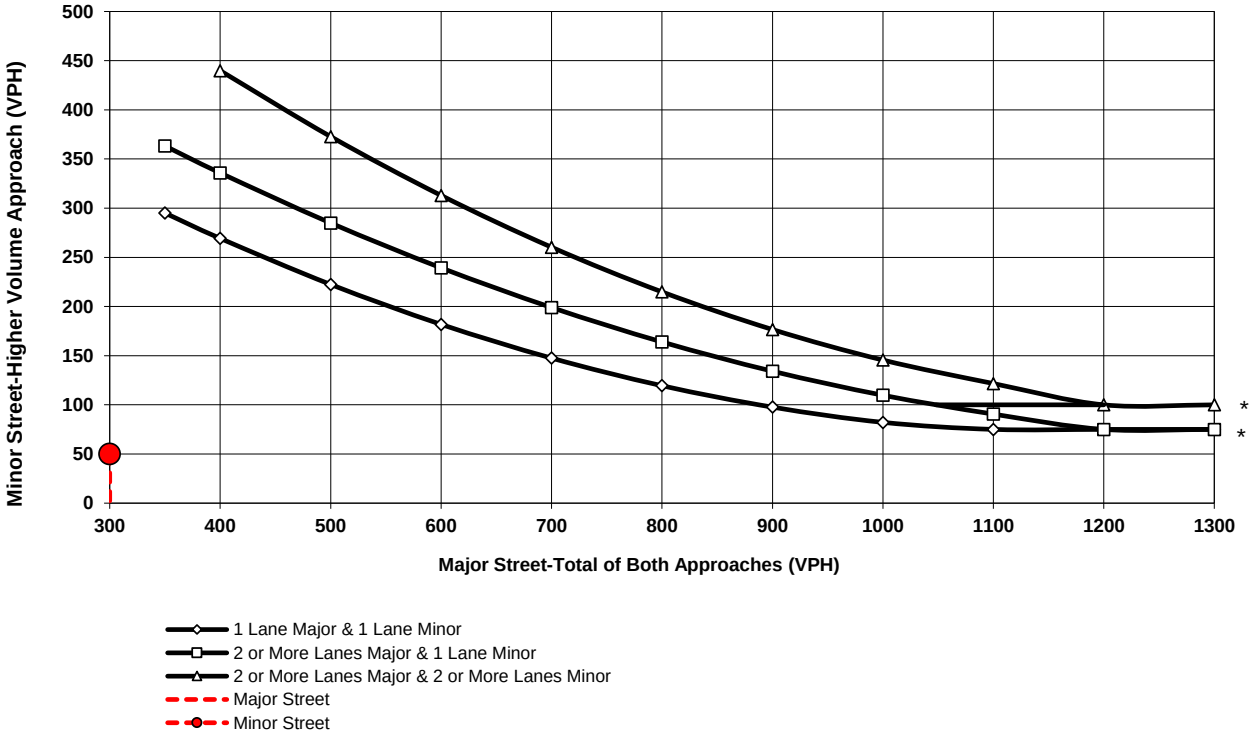
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	135	Higher Volume Approach (VPH):	50
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

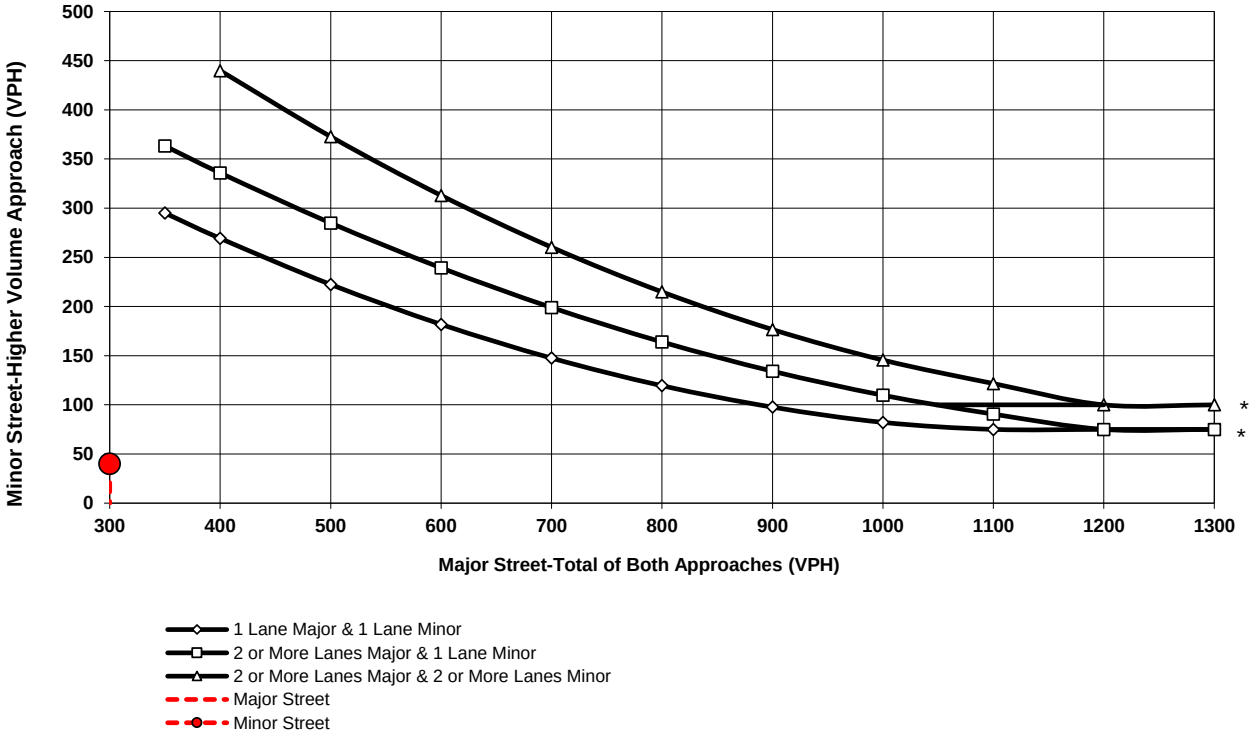
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	61	Higher Volume Approach (VPH):	40
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

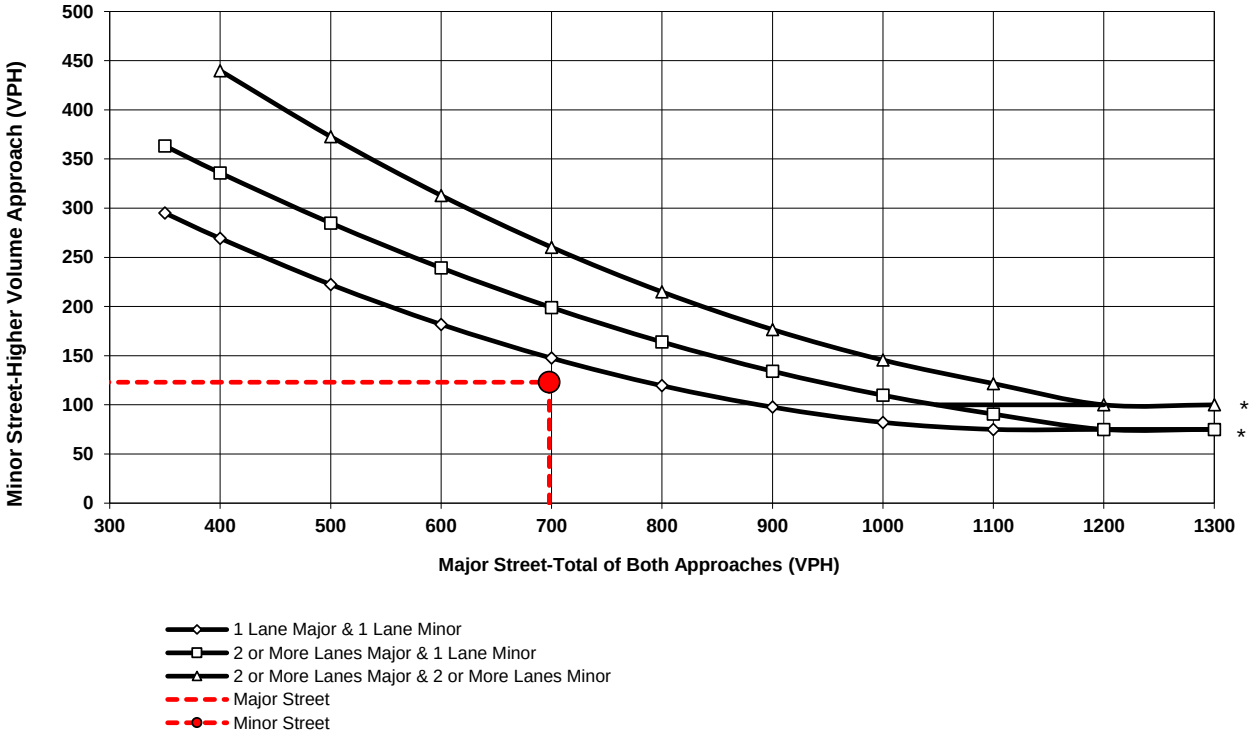
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	698	Higher Volume Approach (VPH):	123
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

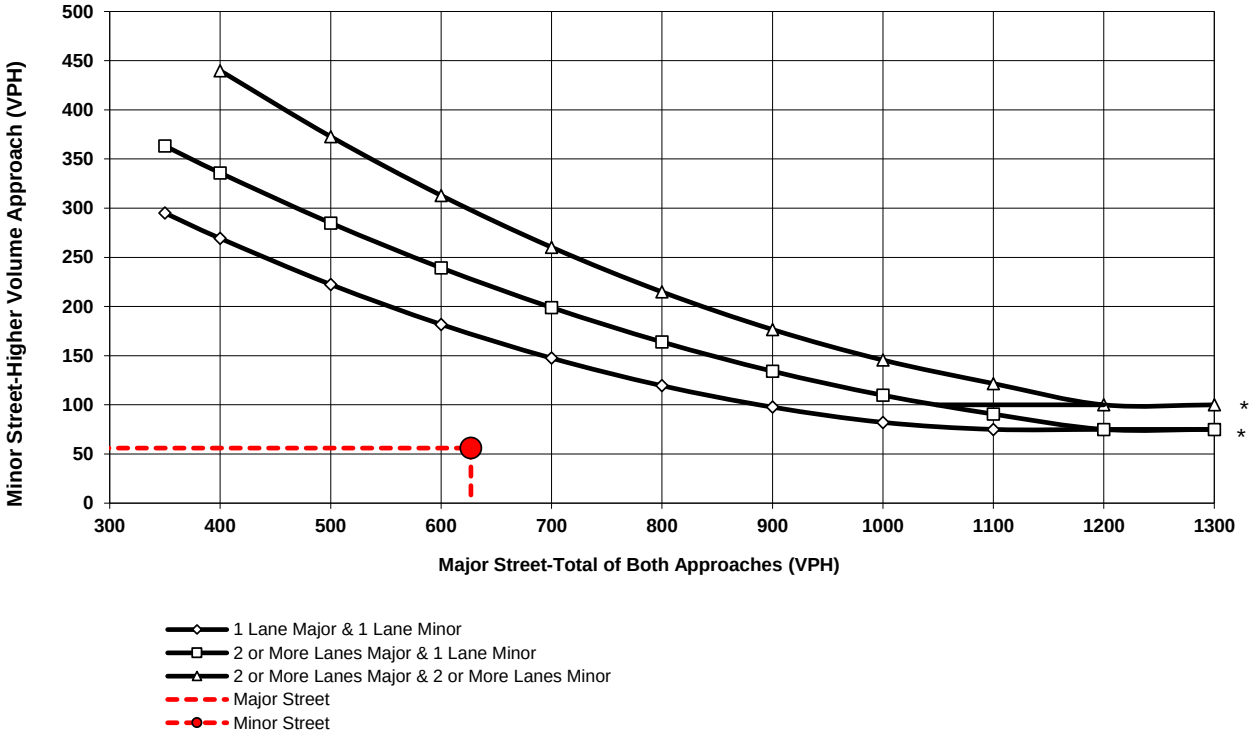
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	627	Higher Volume Approach (VPH):	56
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

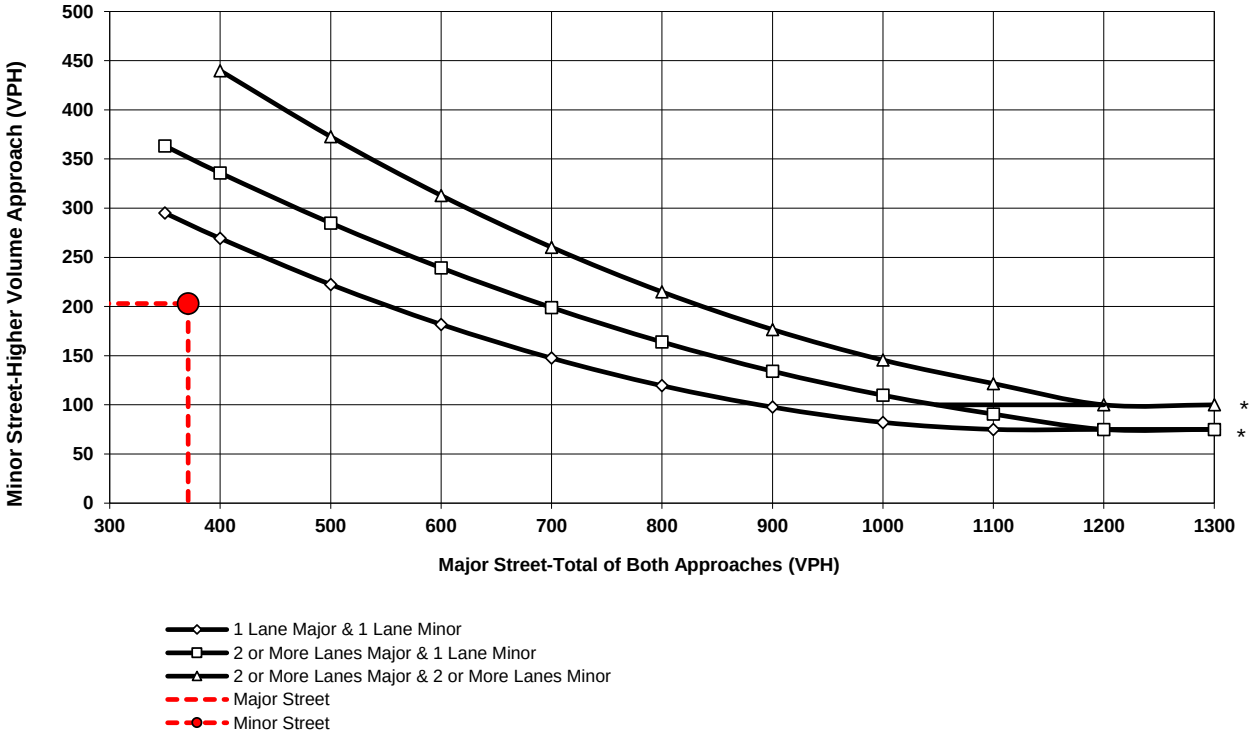
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	371	Higher Volume Approach (VPH):	203
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

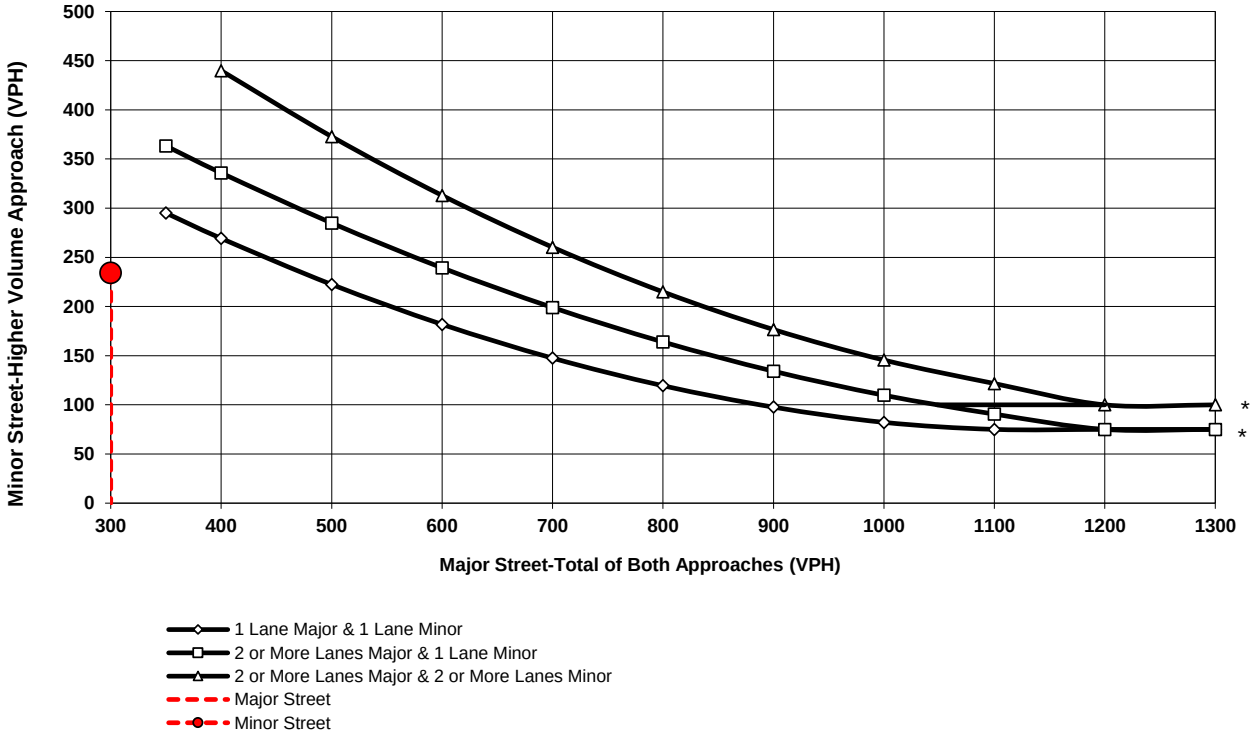
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	226	Higher Volume Approach (VPH):	234
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-2
Signal Warrant Analysis
Forecast Existing Plus Project Buildout Conditions

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

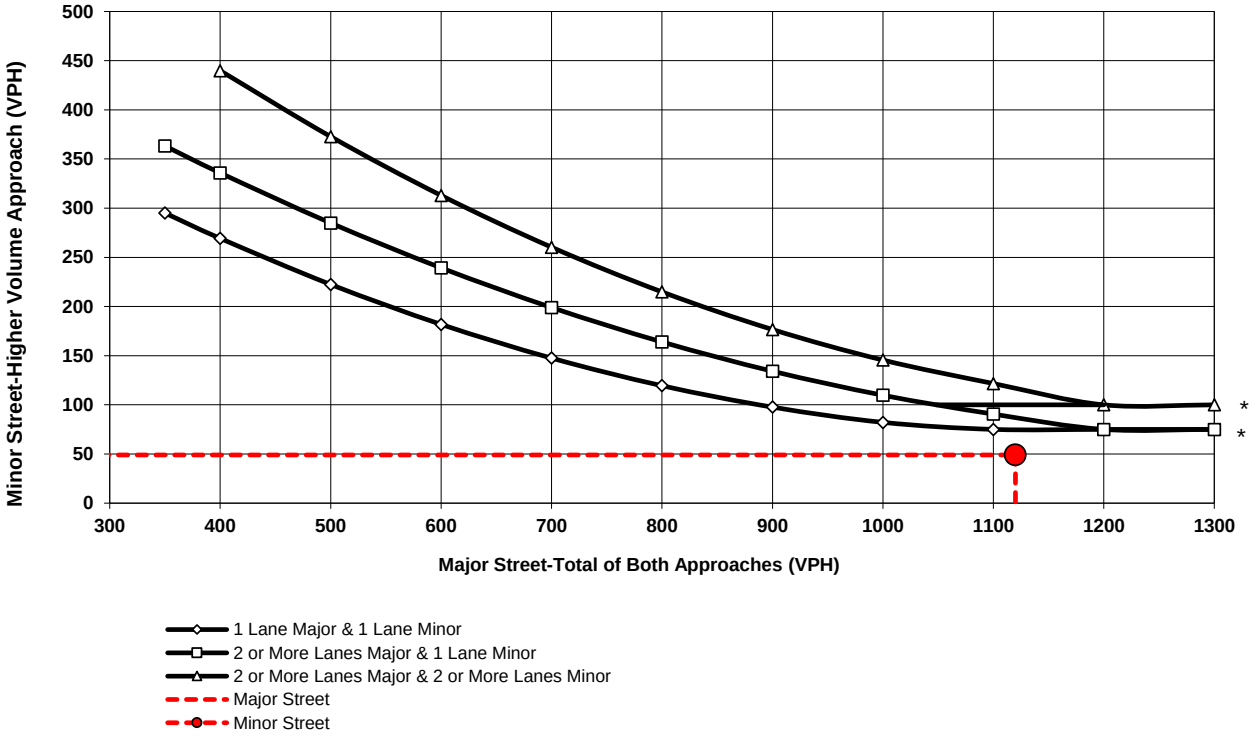
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1120	Higher Volume Approach (VPH):	49
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

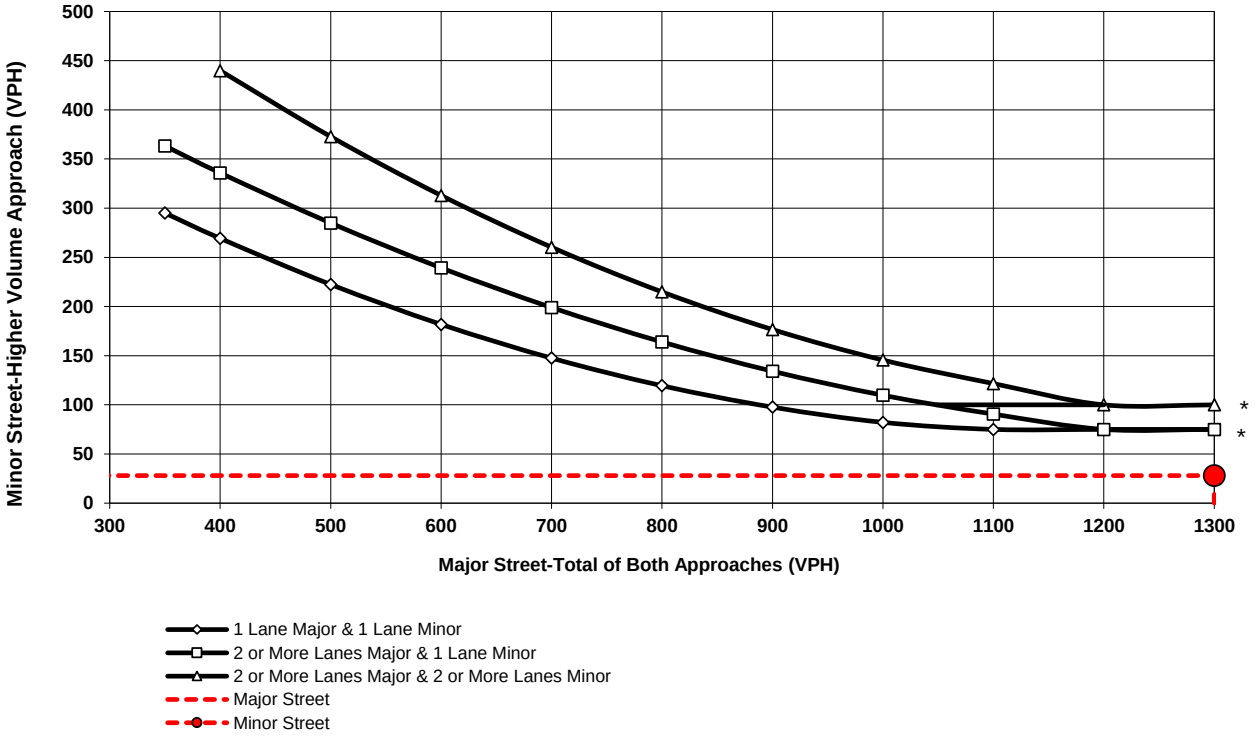
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1466	Higher Volume Approach (VPH):	28
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

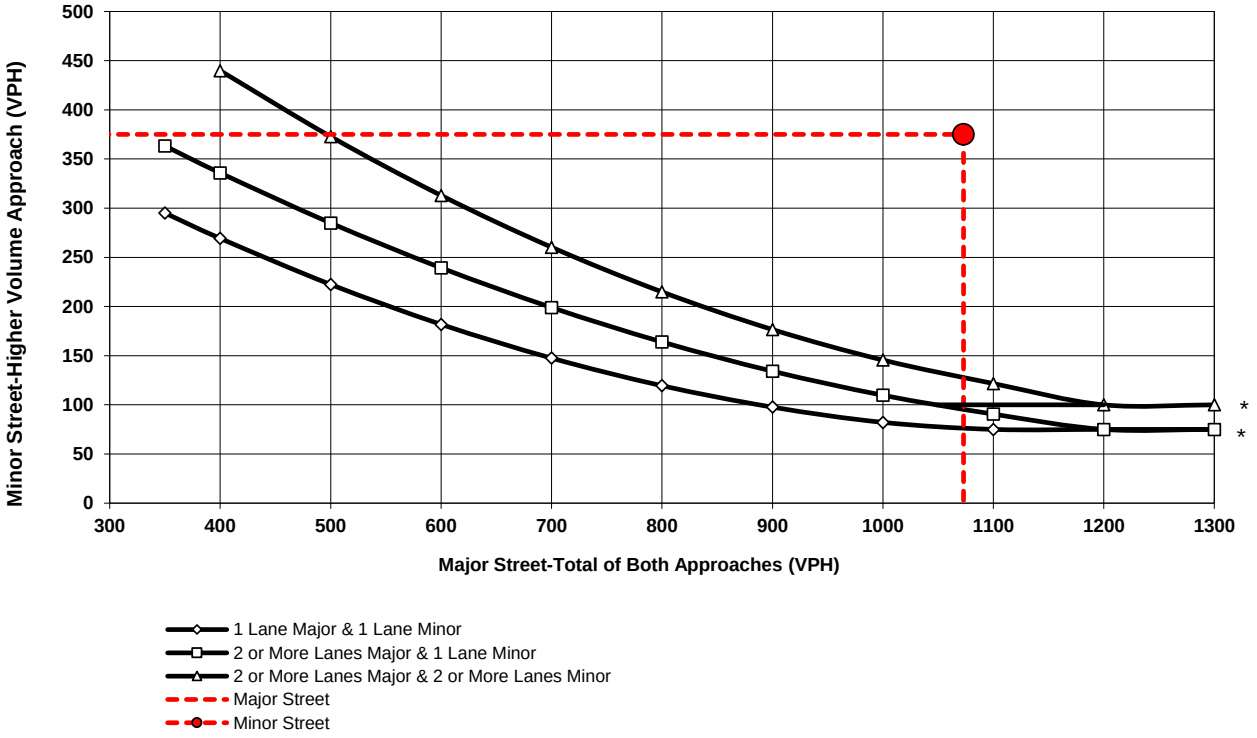
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1073	Higher Volume Approach (VPH):	375
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

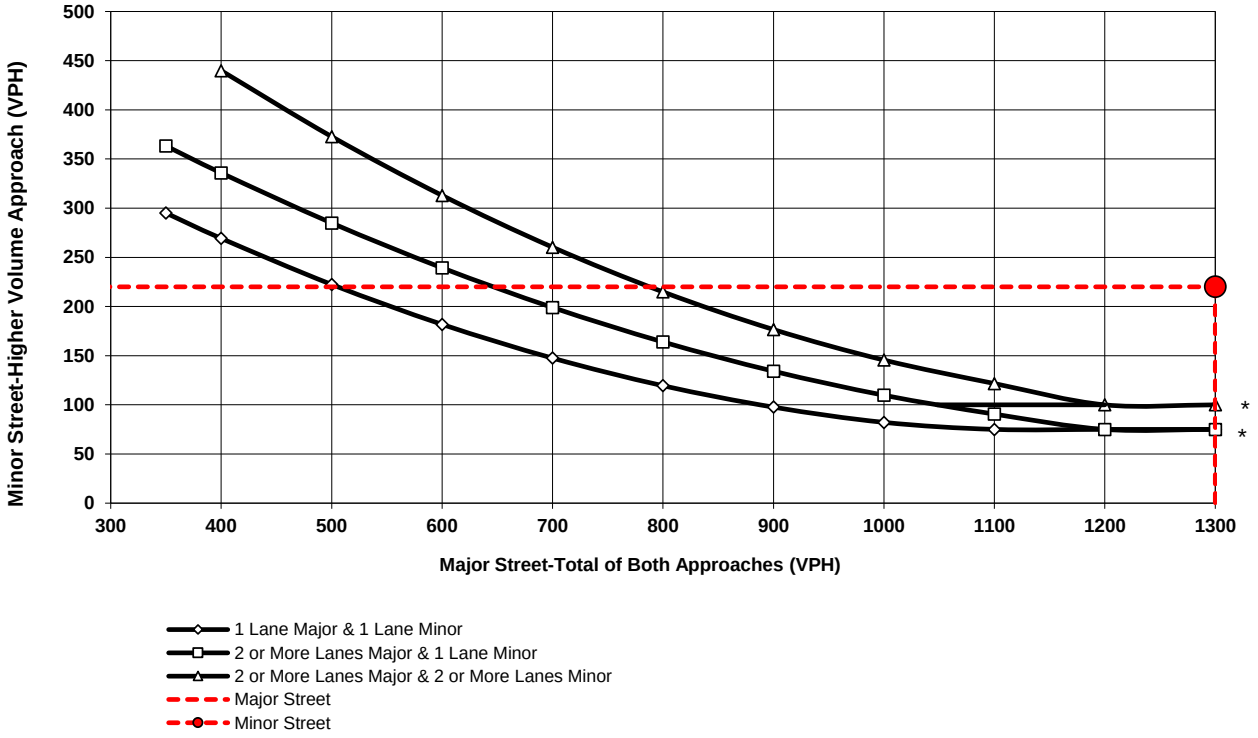
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1435	Higher Volume Approach (VPH):	220
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

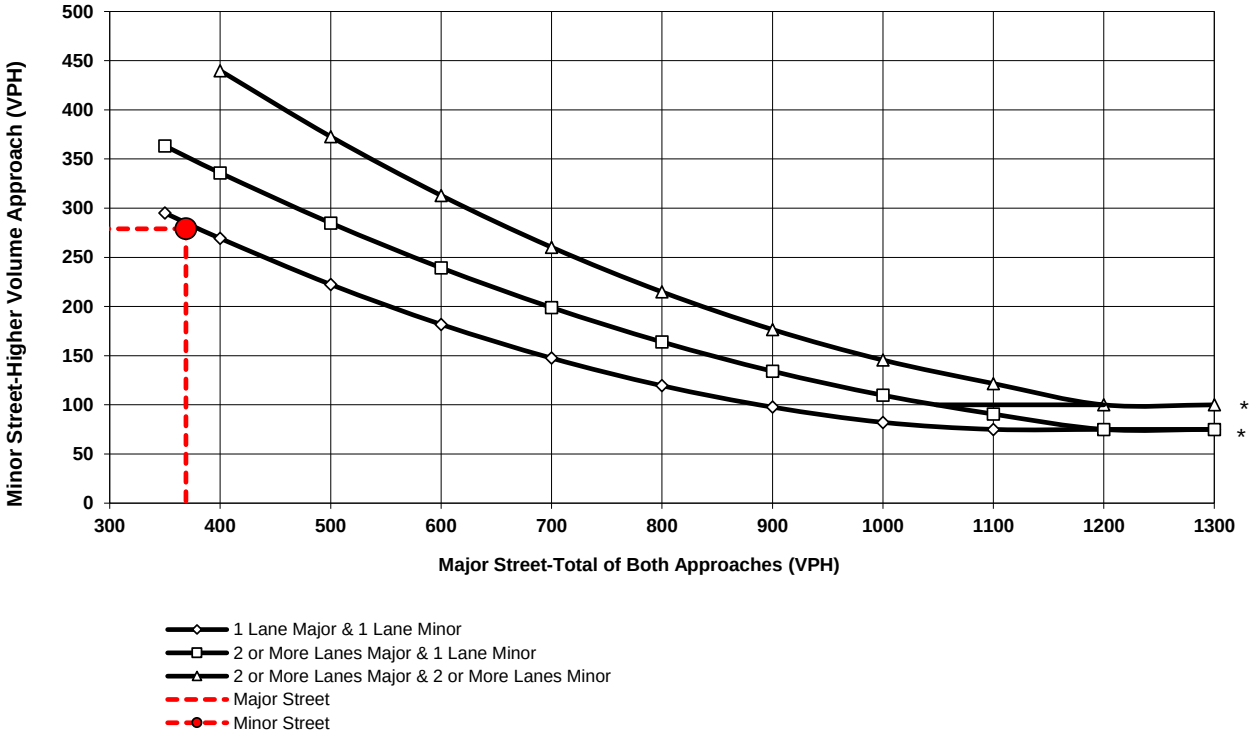
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	369	Higher Volume Approach (VPH):	279
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

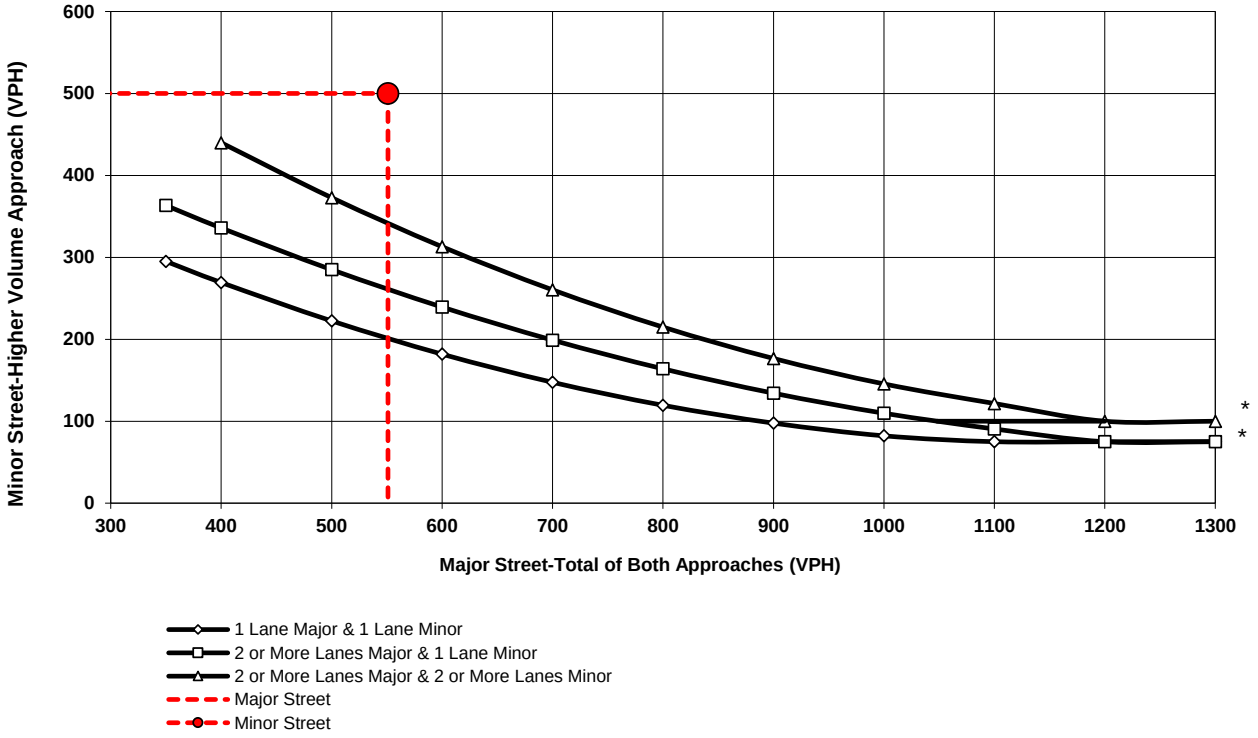
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	551	Higher Volume Approach (VPH):	500
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

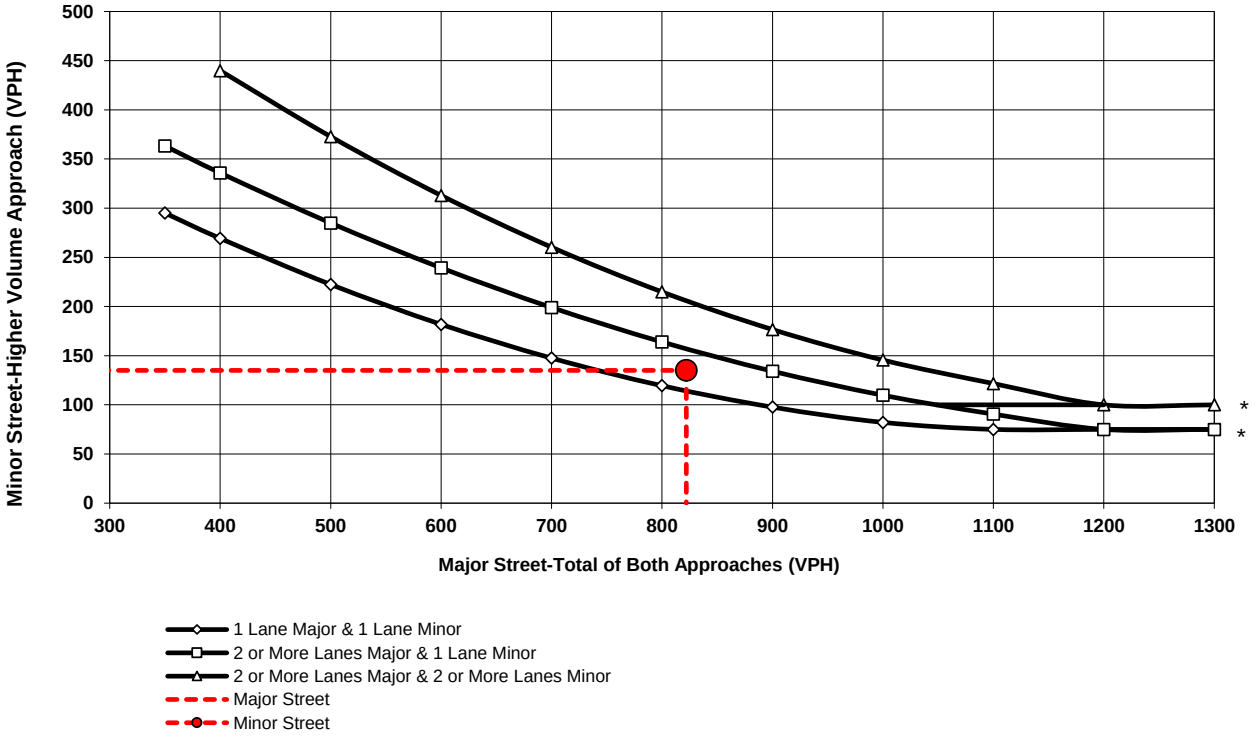
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	822	Higher Volume Approach (VPH):	135
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

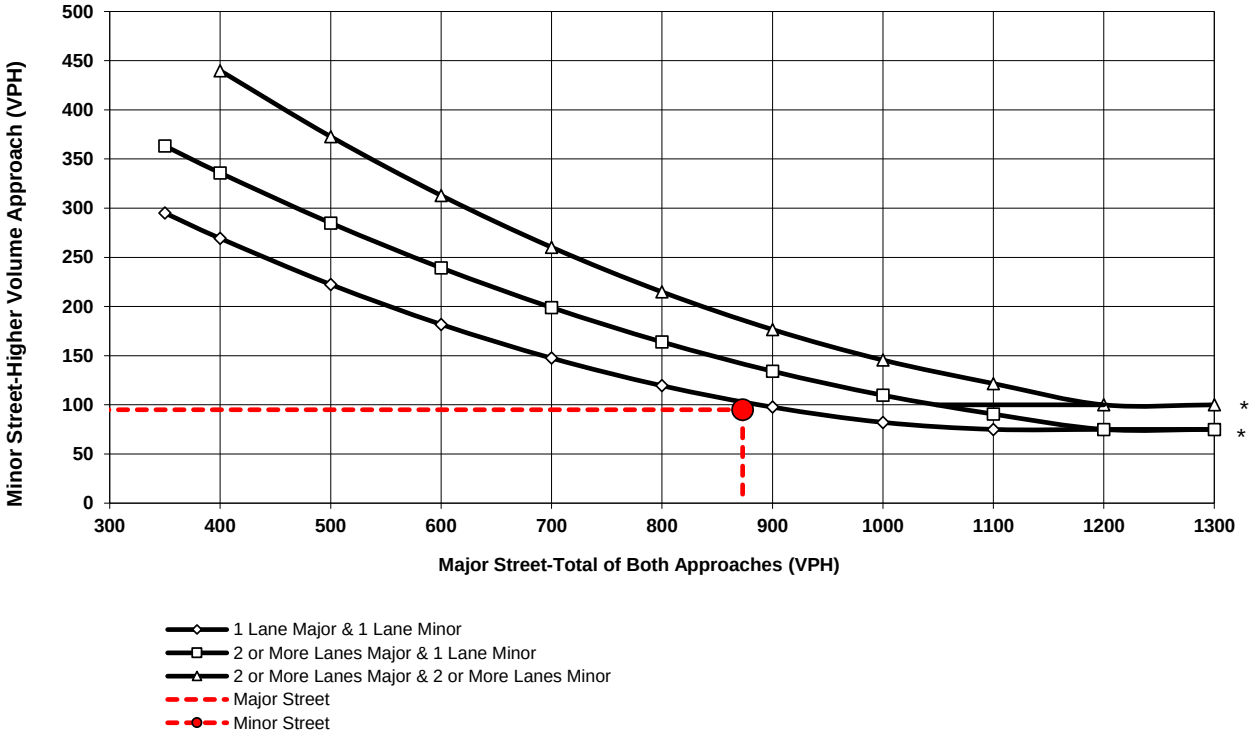
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	873	Higher Volume Approach (VPH):	95
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

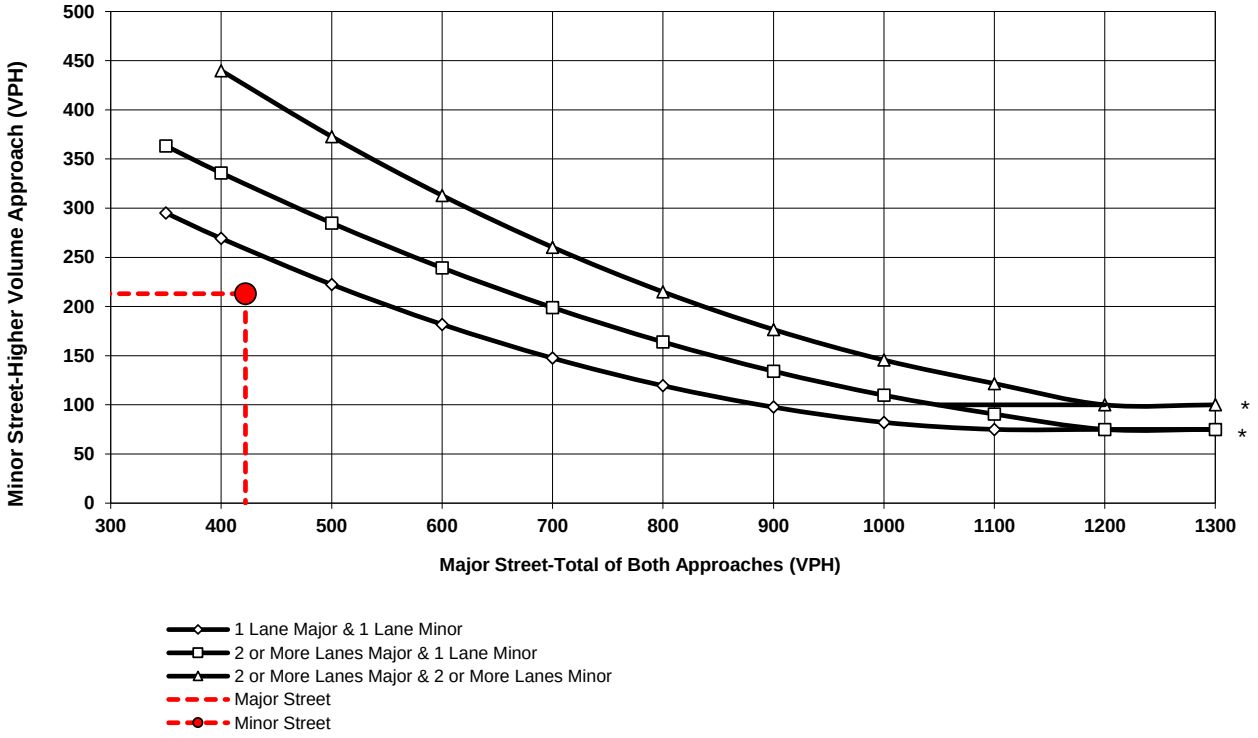
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	422	Higher Volume Approach (VPH):	213
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

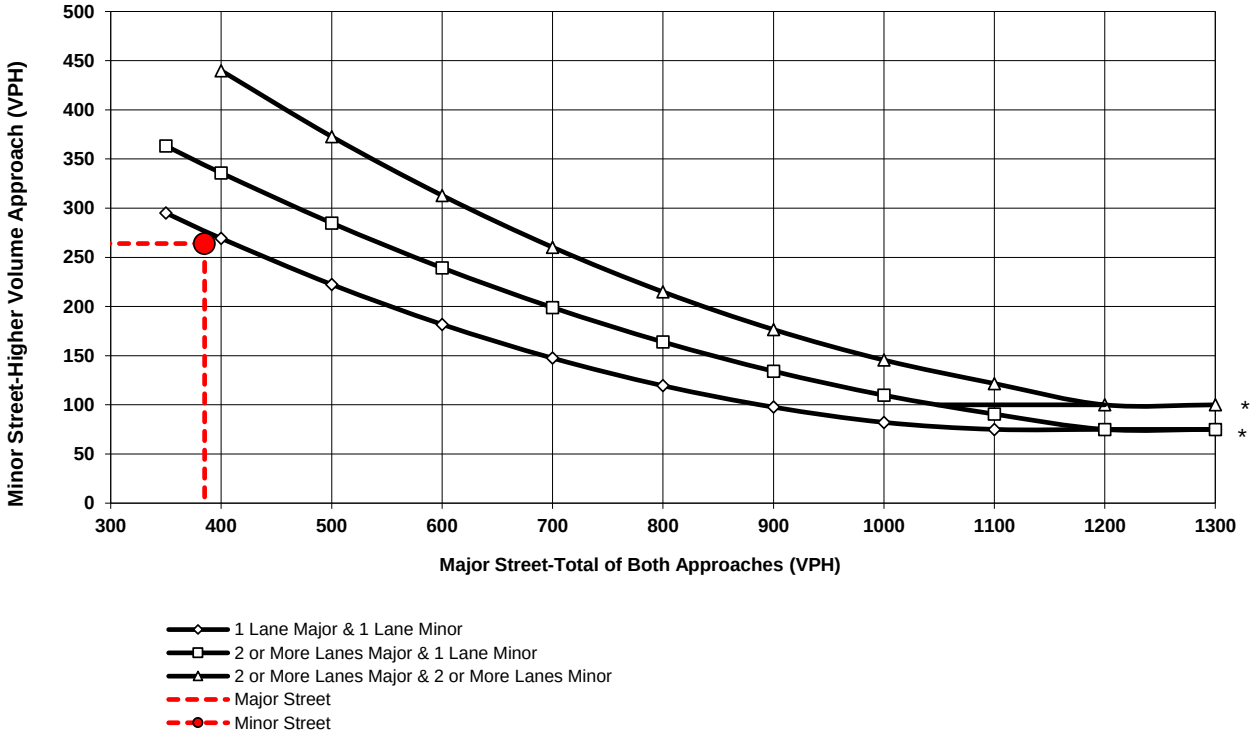
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	385	Higher Volume Approach (VPH):	264
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-3
Signal Warrant Analysis
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

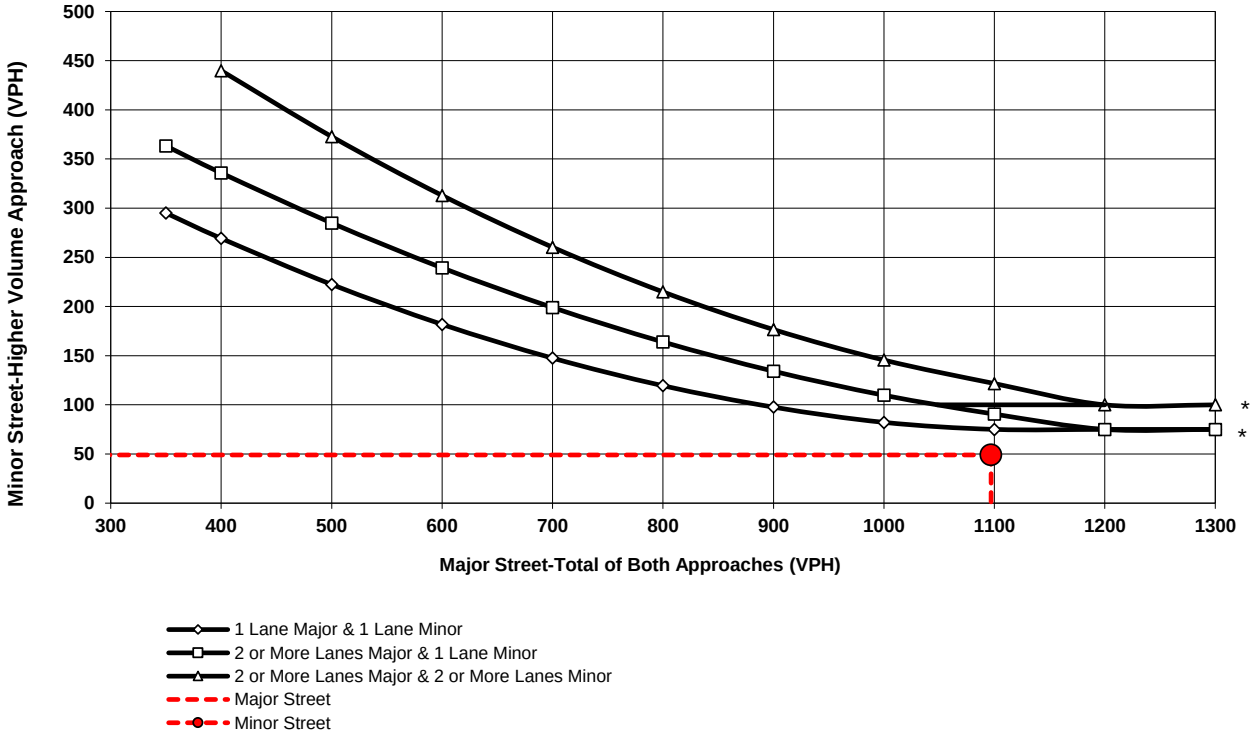
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1097	Higher Volume Approach (VPH):	49
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

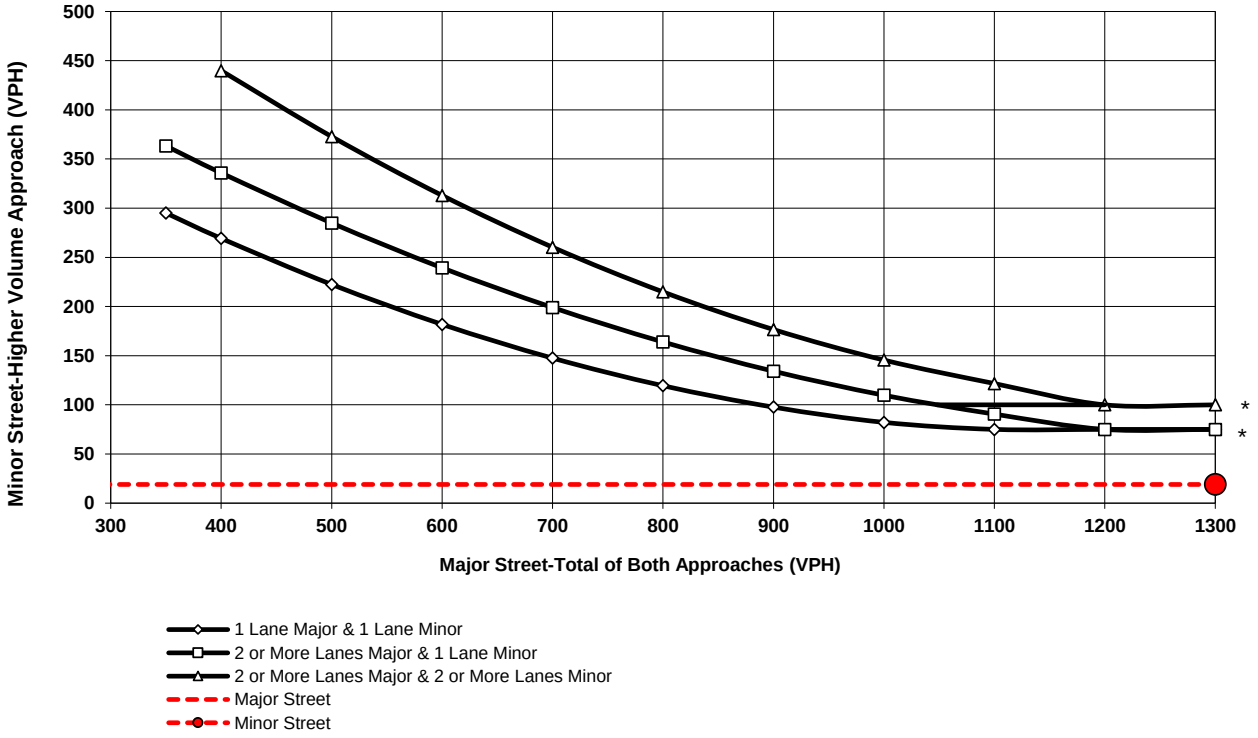
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1363	Higher Volume Approach (VPH):	19
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

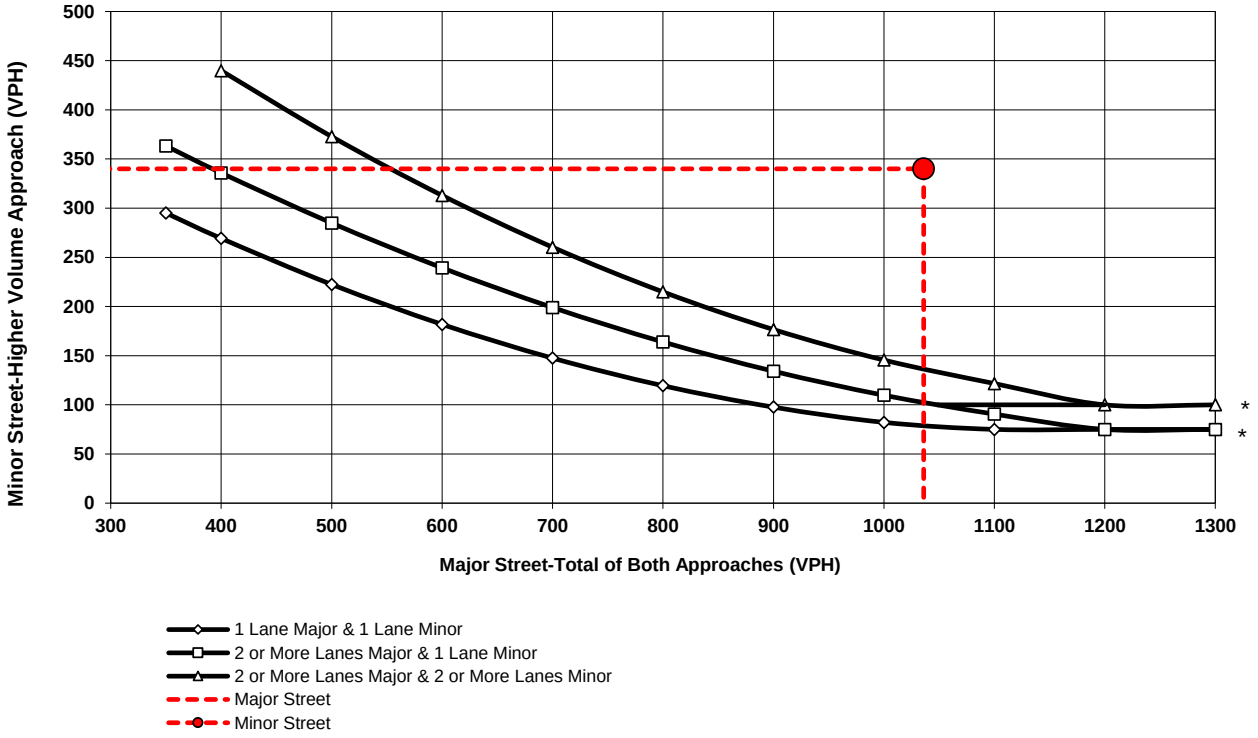
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1036	Higher Volume Approach (VPH):	340
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

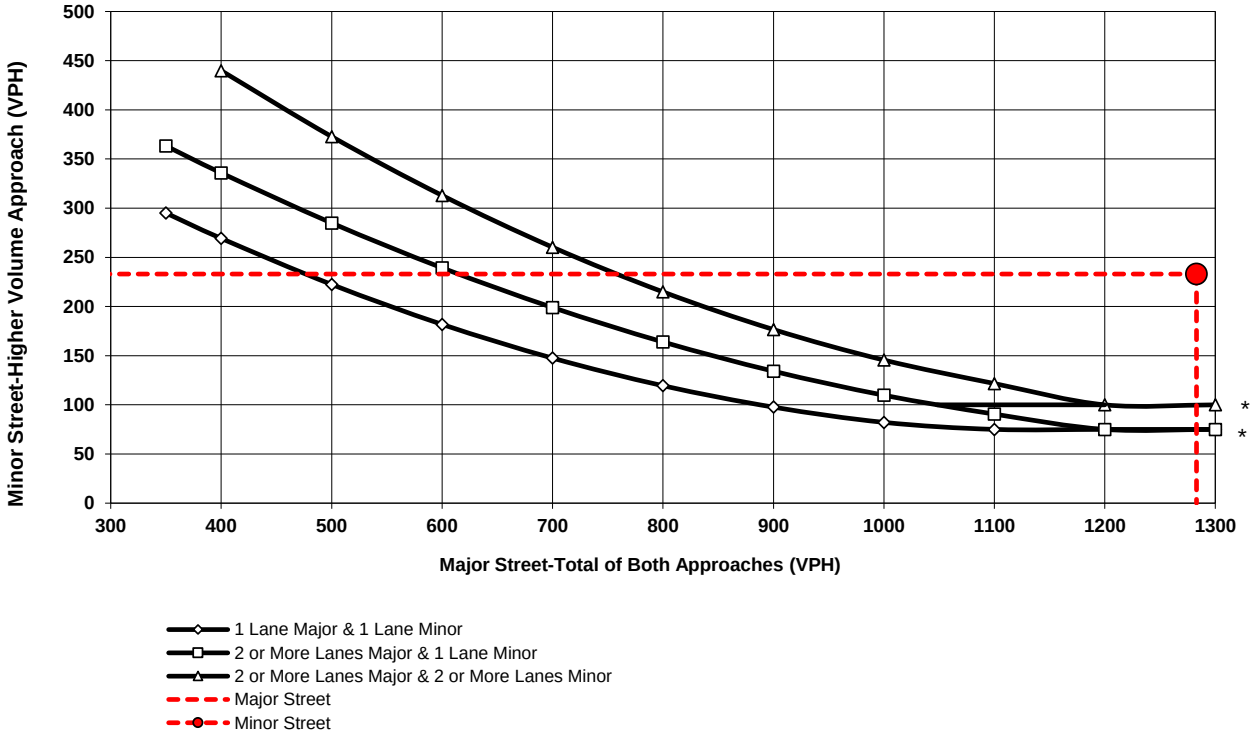
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1283	Higher Volume Approach (VPH):	233
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

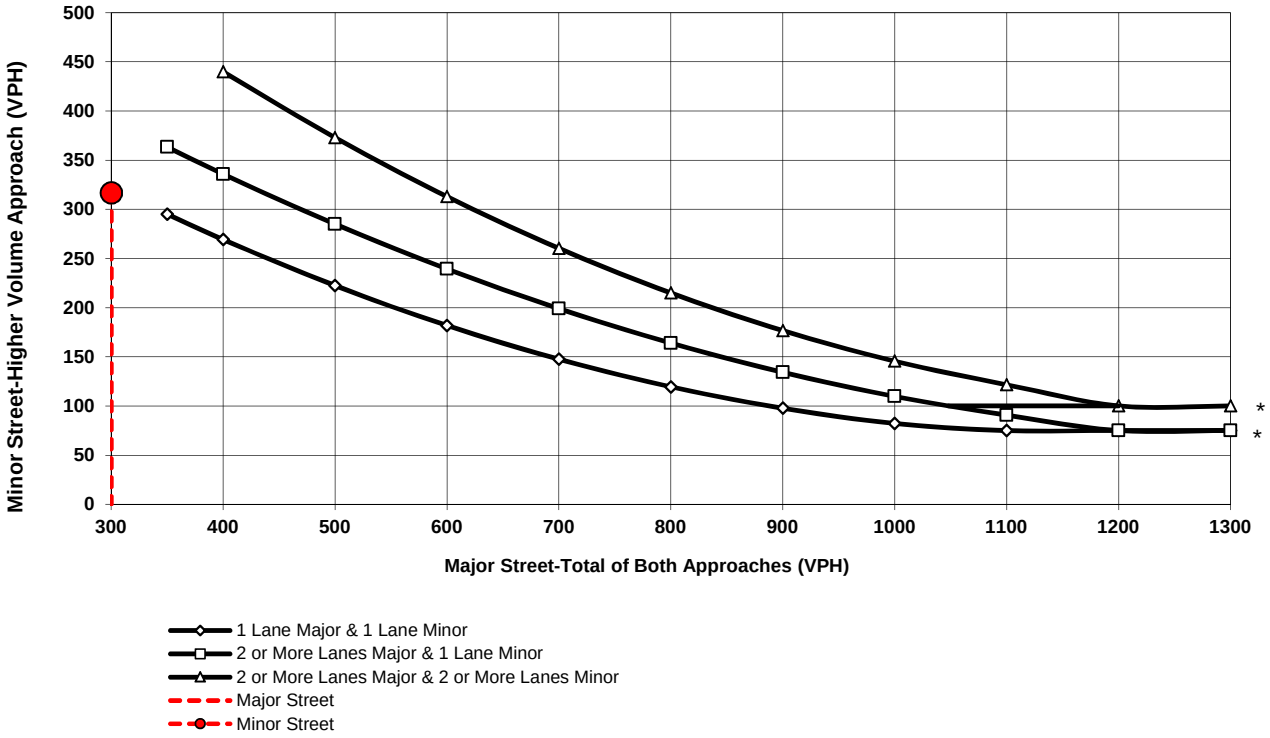
Peak Hour: **AM**

Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**193**	Higher Volume Approach (VPH):	**317**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

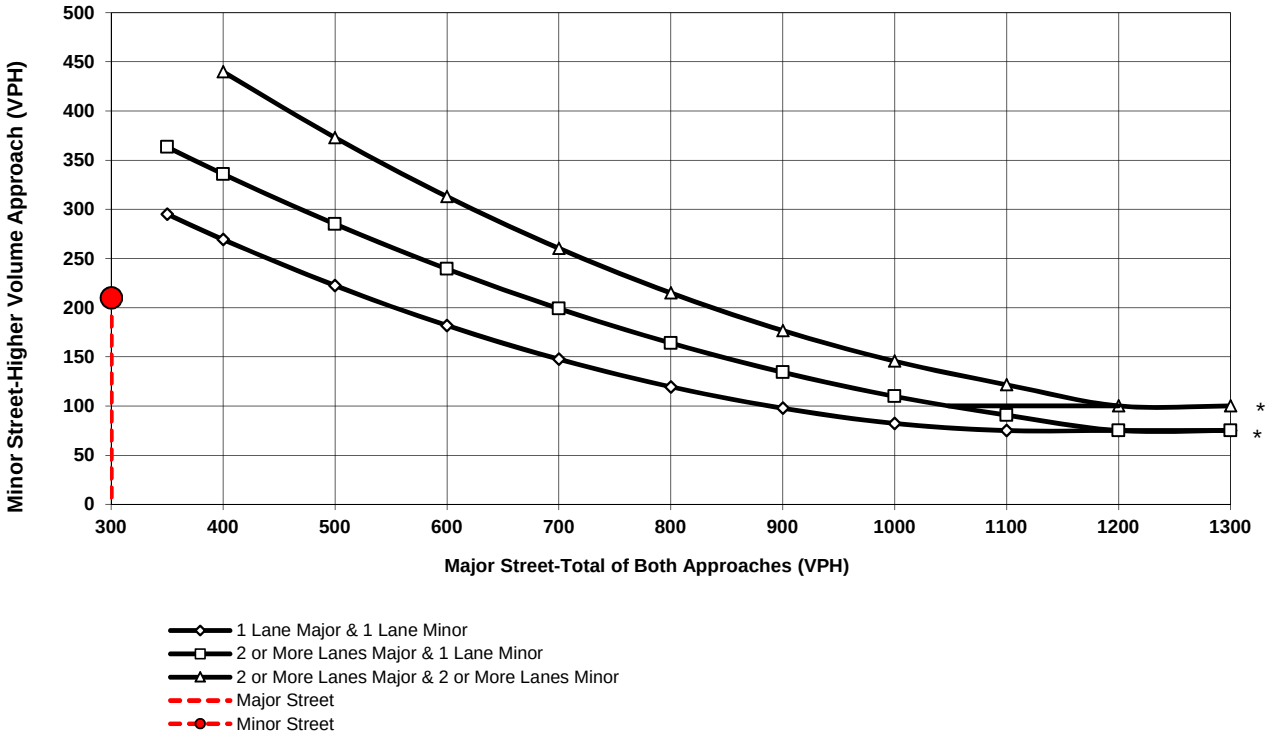
Major Street: **Keller Road**

Minor Street: **Zeiders Road**

Total of Both Approaches (VPH):	**230**	Higher Volume Approach (VPH):	**210**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

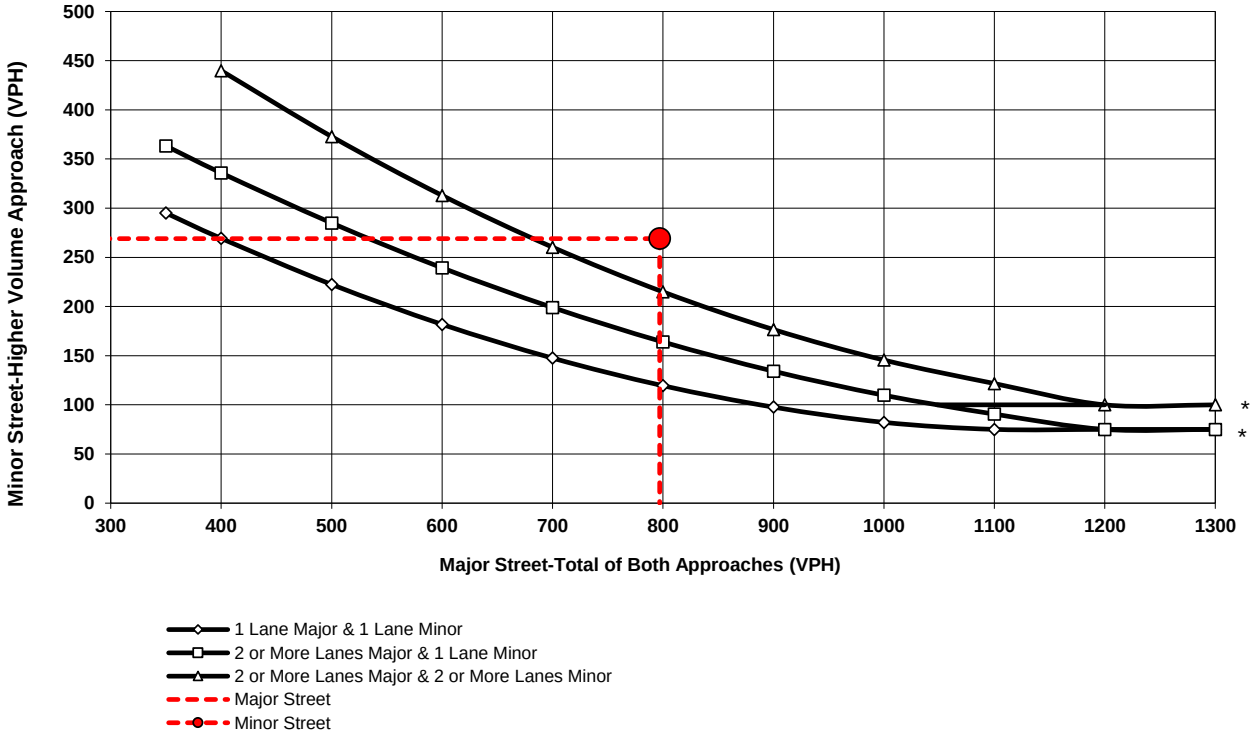
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	797	Higher Volume Approach (VPH):	269
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

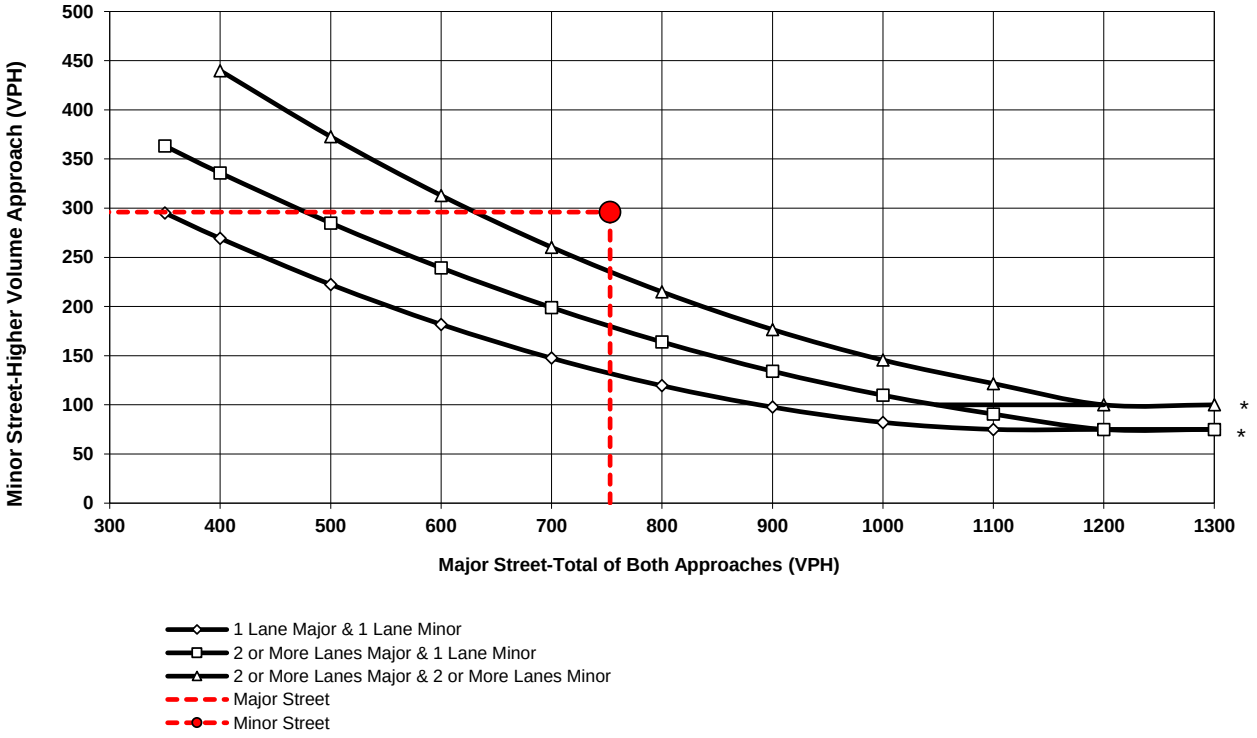
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	753	Higher Volume Approach (VPH):	296
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

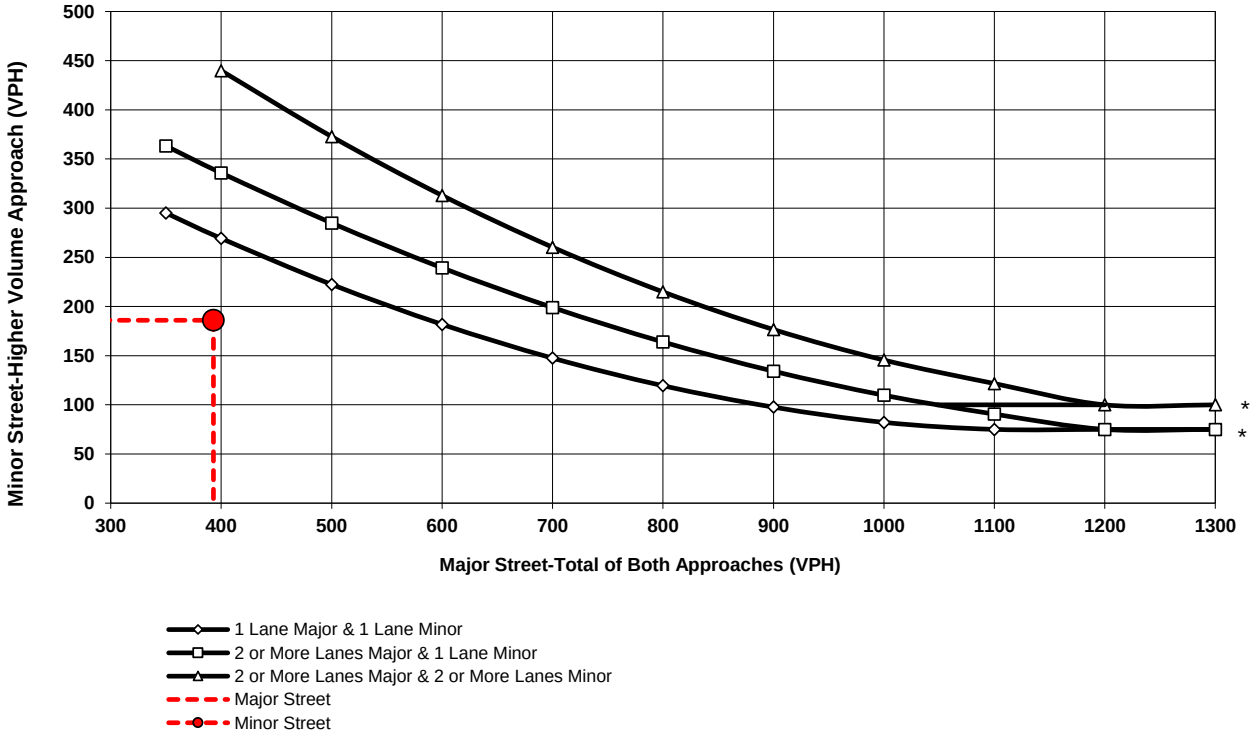
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	393	Higher Volume Approach (VPH):	186
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

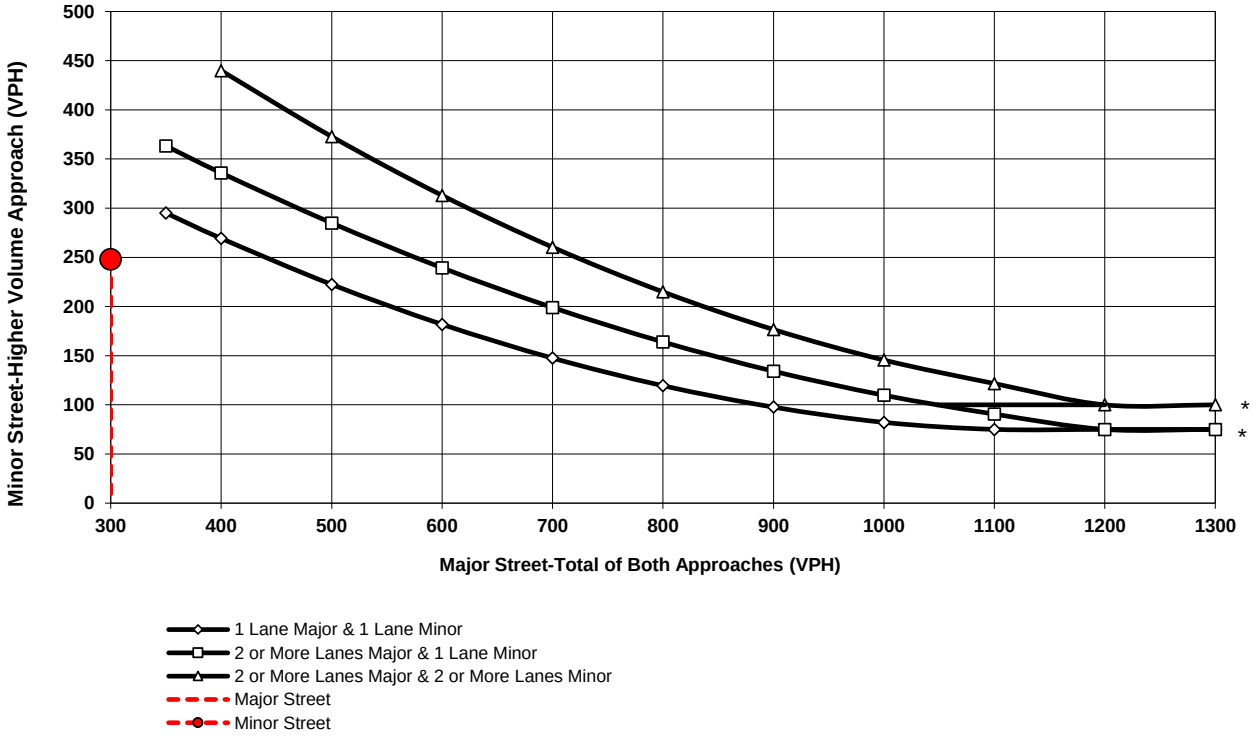
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	210	Higher Volume Approach (VPH):	248
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-4
Signal Warrant Analysis
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

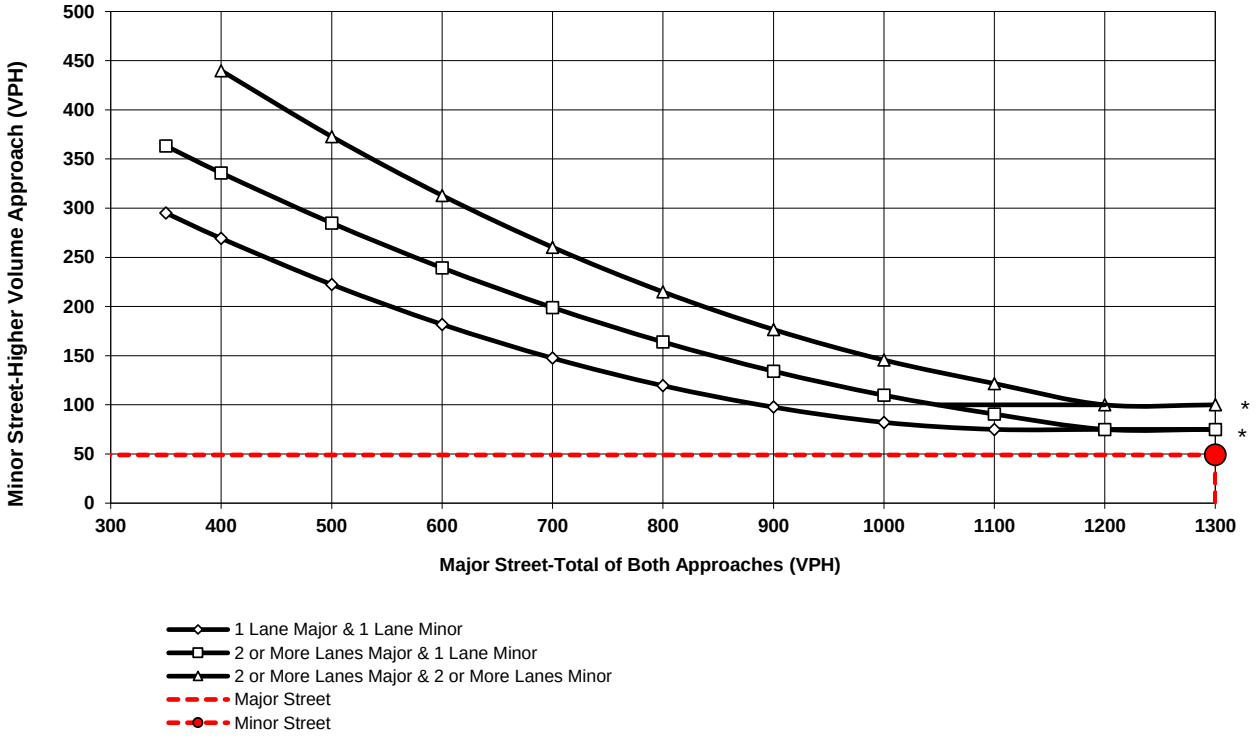
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1376	Higher Volume Approach (VPH):	49
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

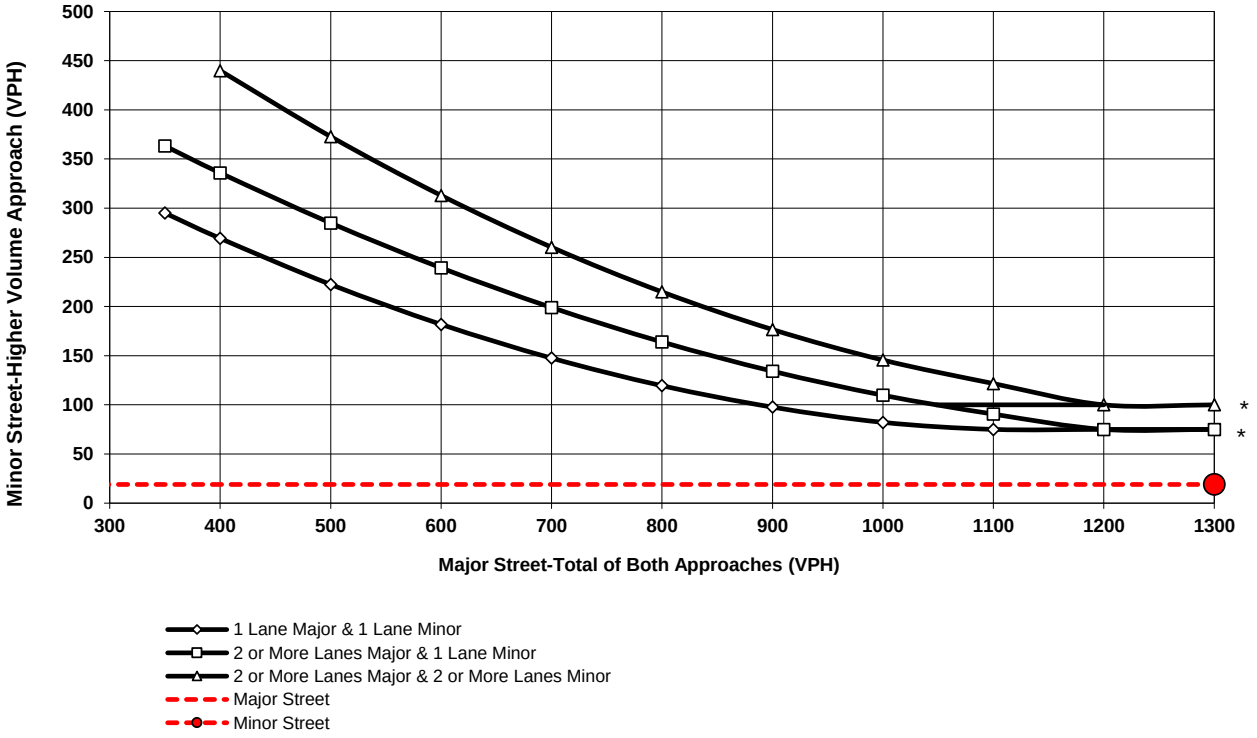
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1773	Higher Volume Approach (VPH):	19
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

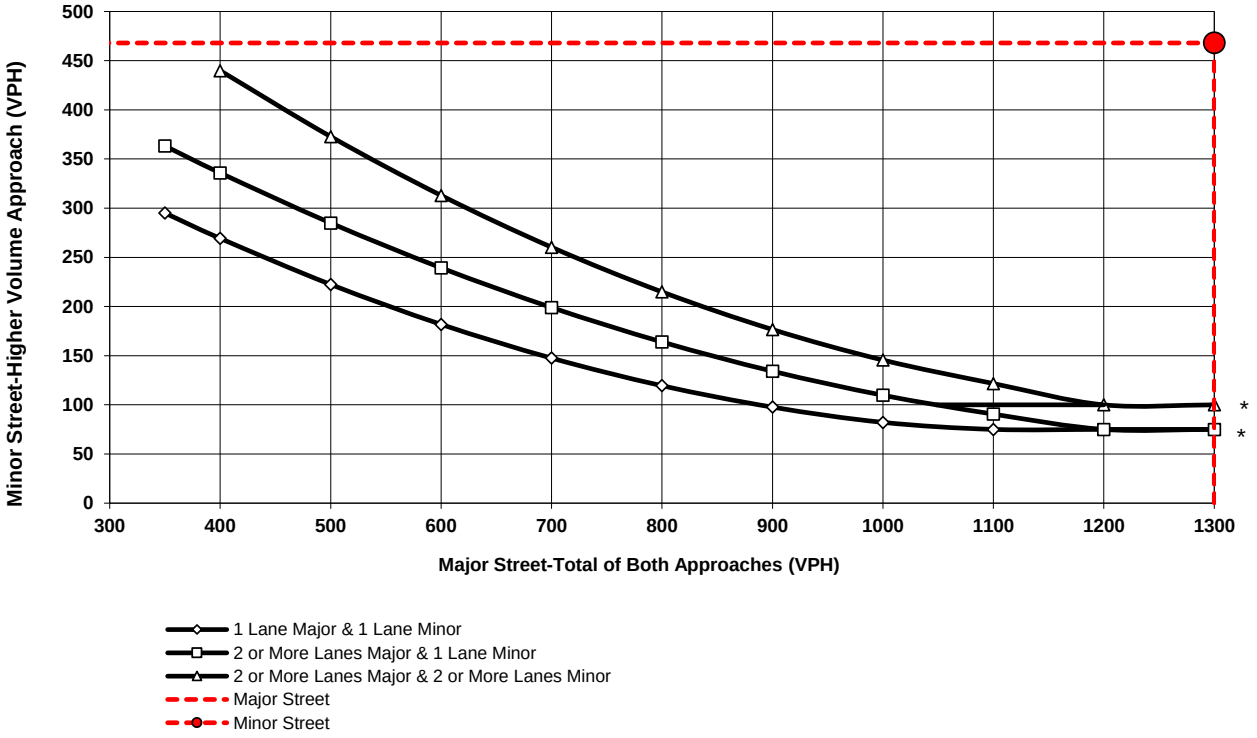
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1495	Higher Volume Approach (VPH):	468
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

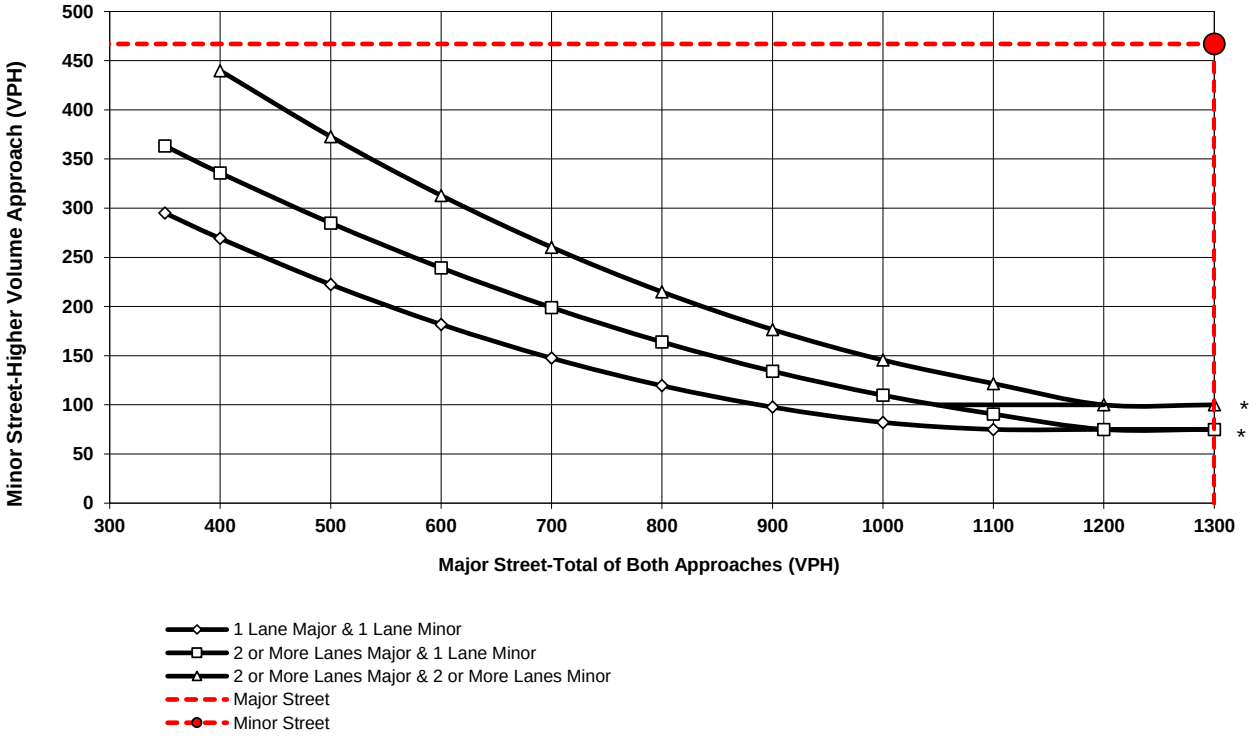
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1895	Higher Volume Approach (VPH):	467
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

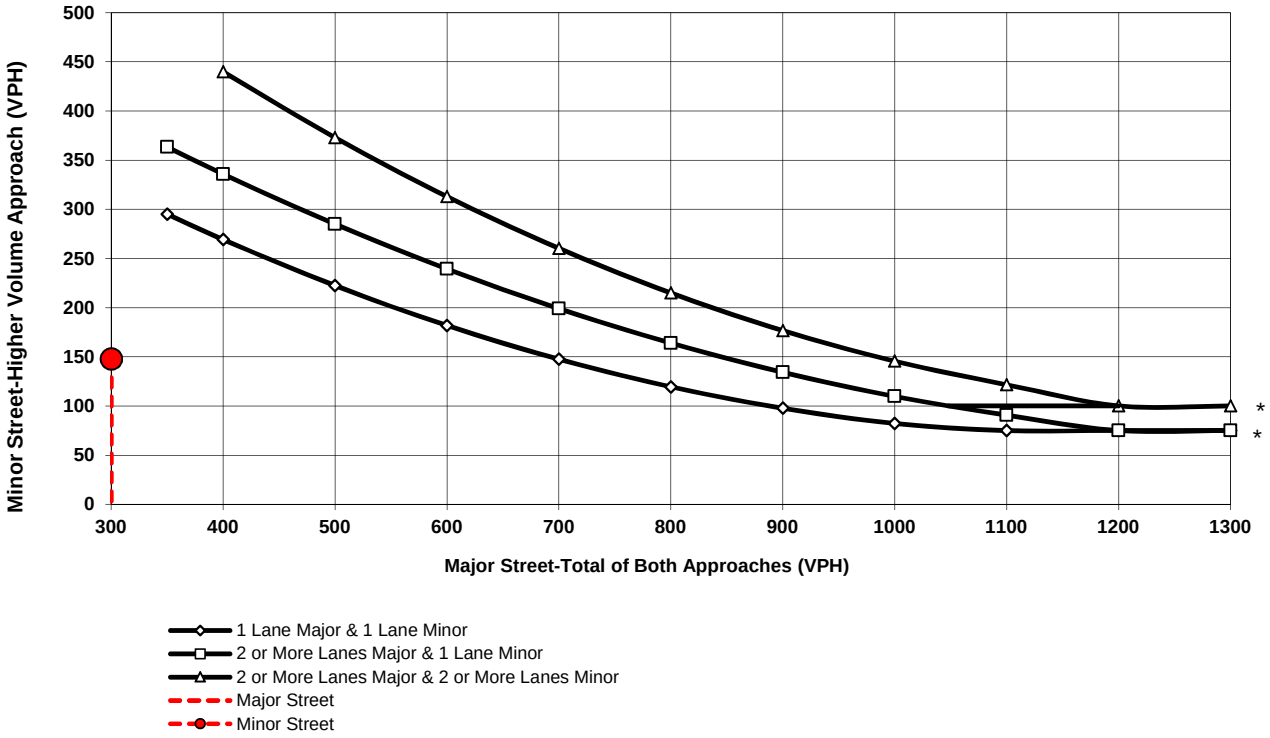
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	284	Higher Volume Approach (VPH):	148
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

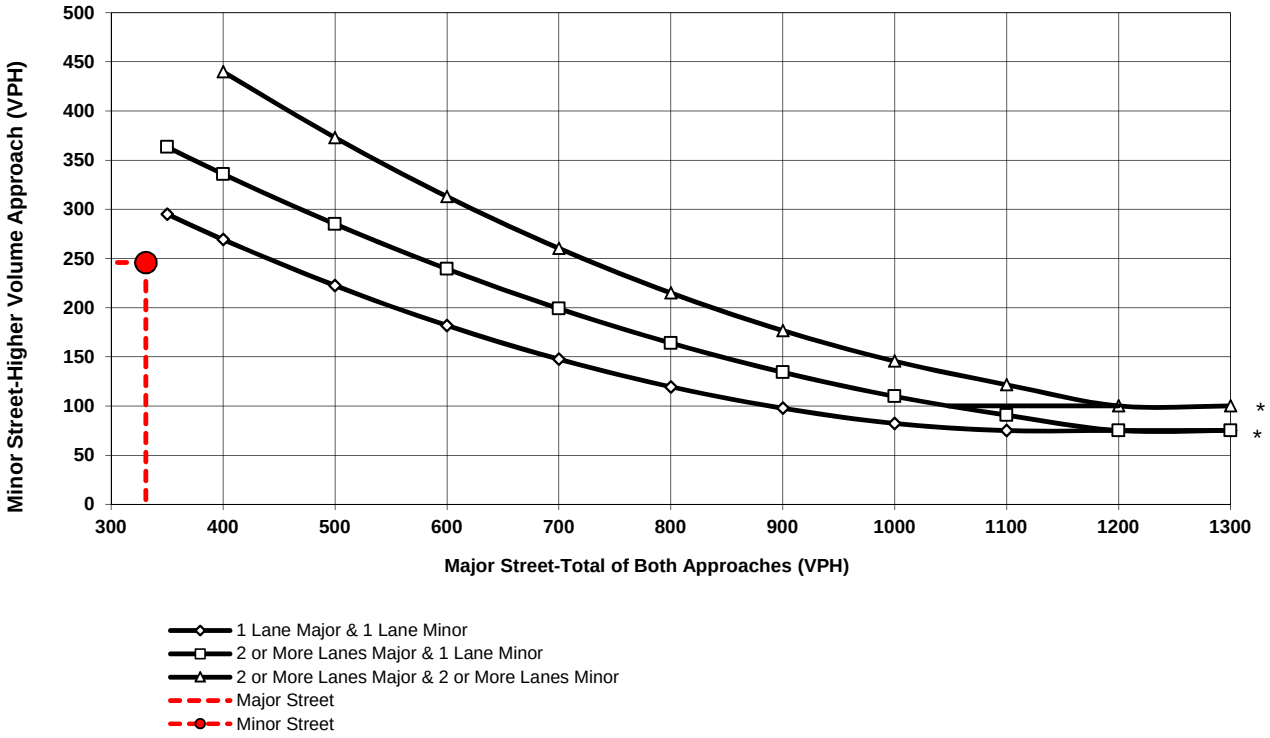
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	331	Higher Volume Approach (VPH):	246
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

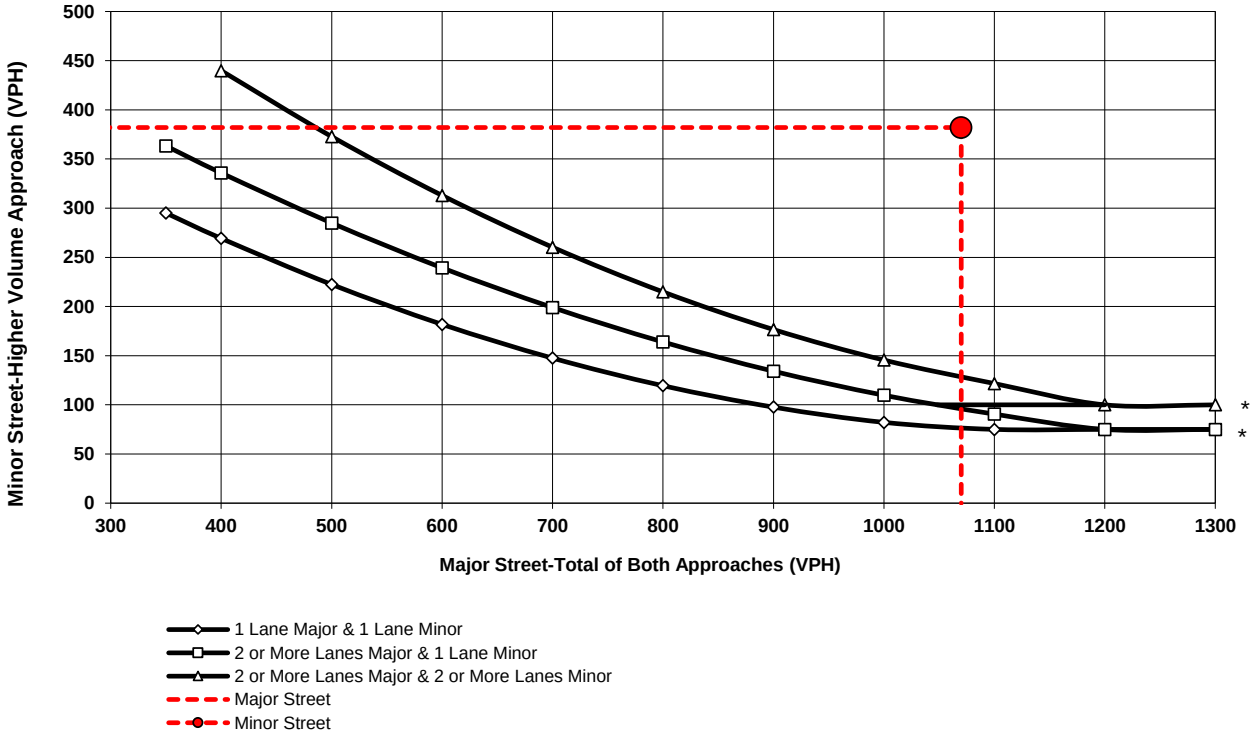
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1070	Higher Volume Approach (VPH):	382
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

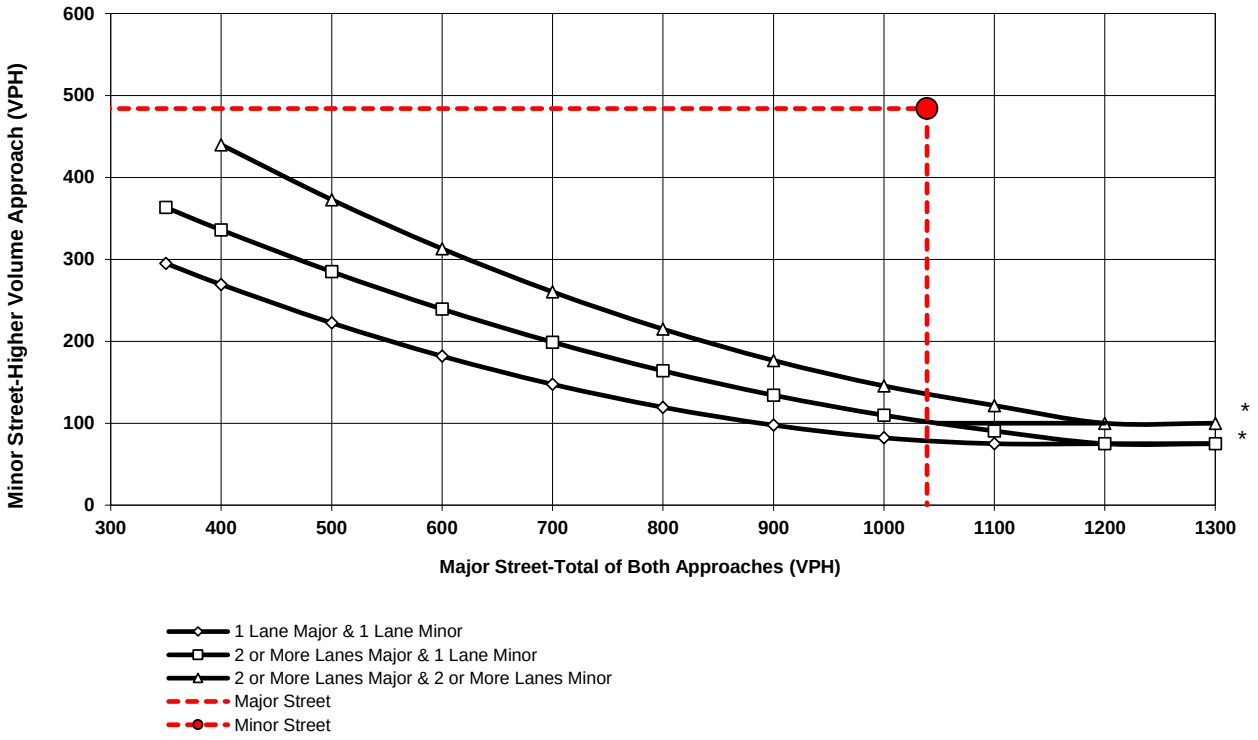
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1039	Higher Volume Approach (VPH):	484
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

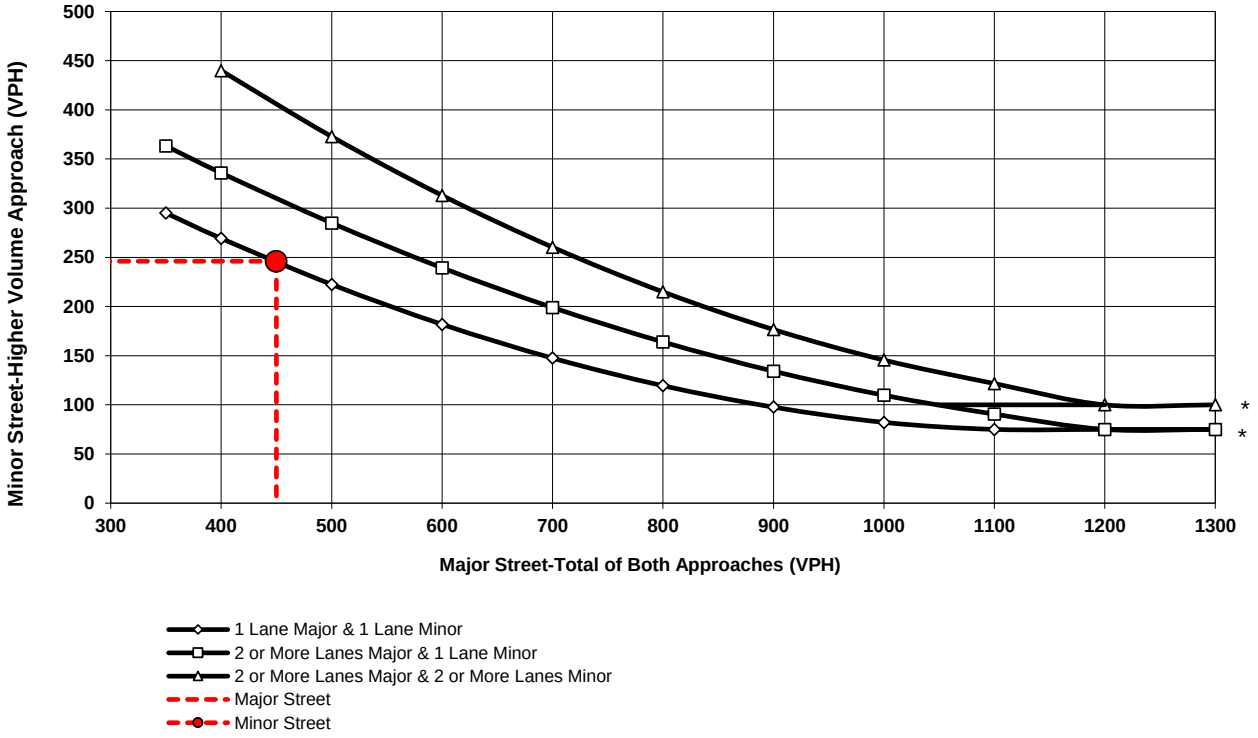
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	450	Higher Volume Approach (VPH):	246
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

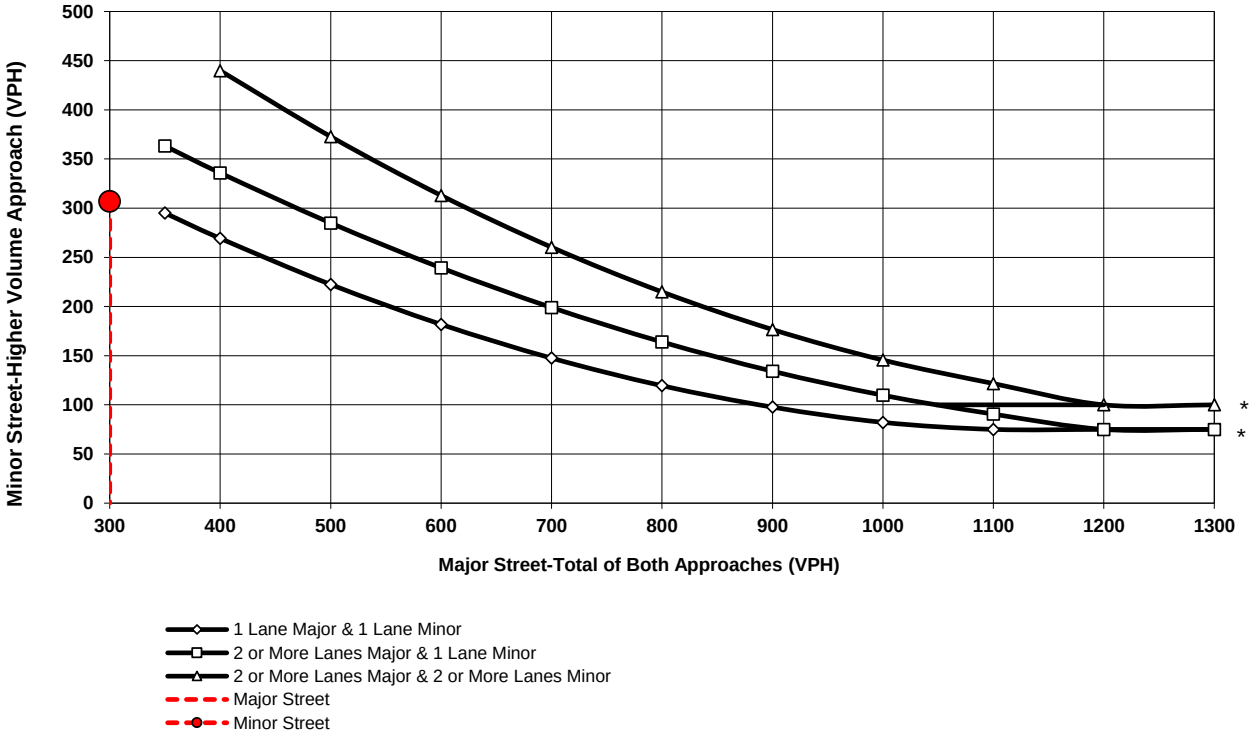
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	283	Higher Volume Approach (VPH):	307
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-5
Signal Warrant Analysis
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

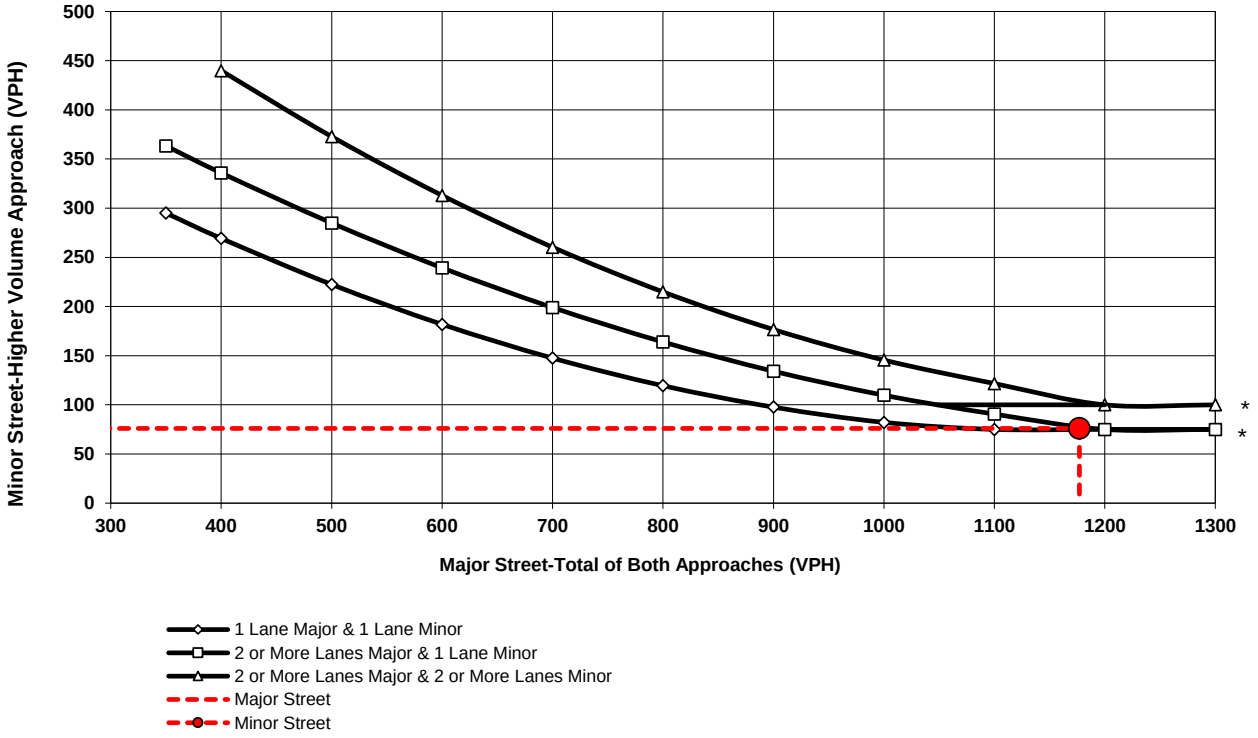
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1177	Higher Volume Approach (VPH):	76
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

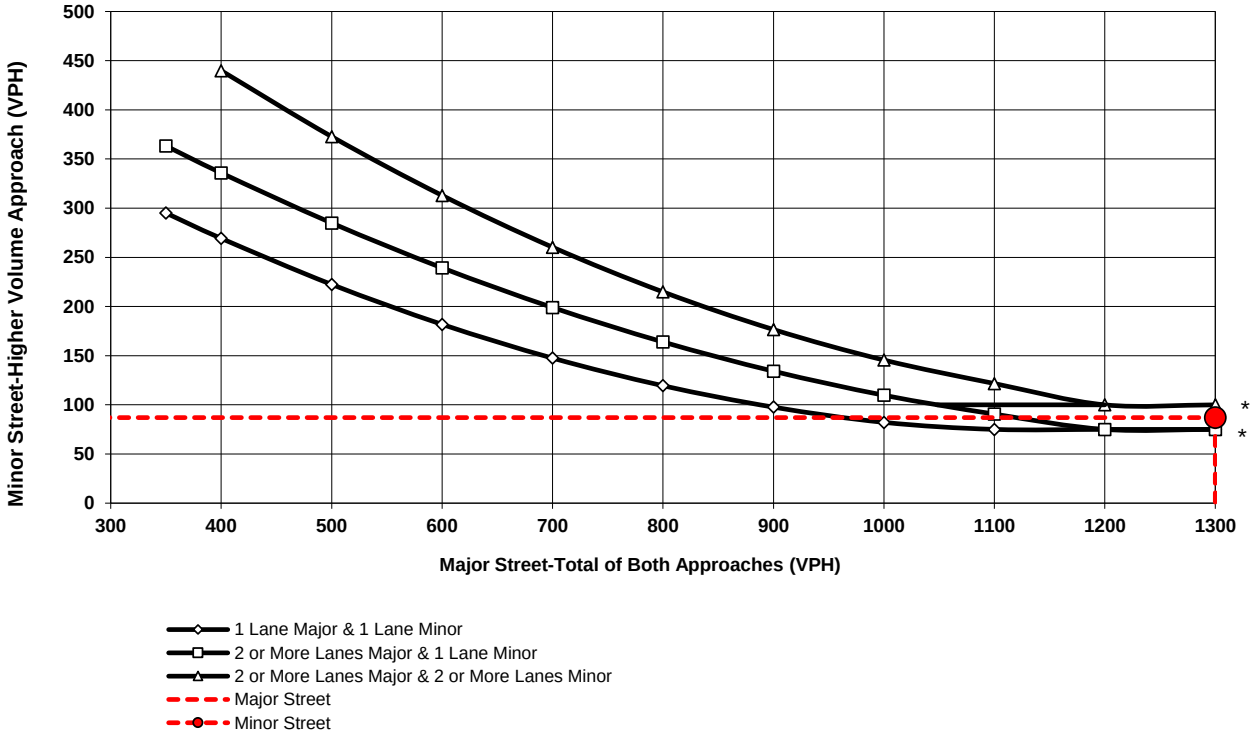
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1479	Higher Volume Approach (VPH):	87
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

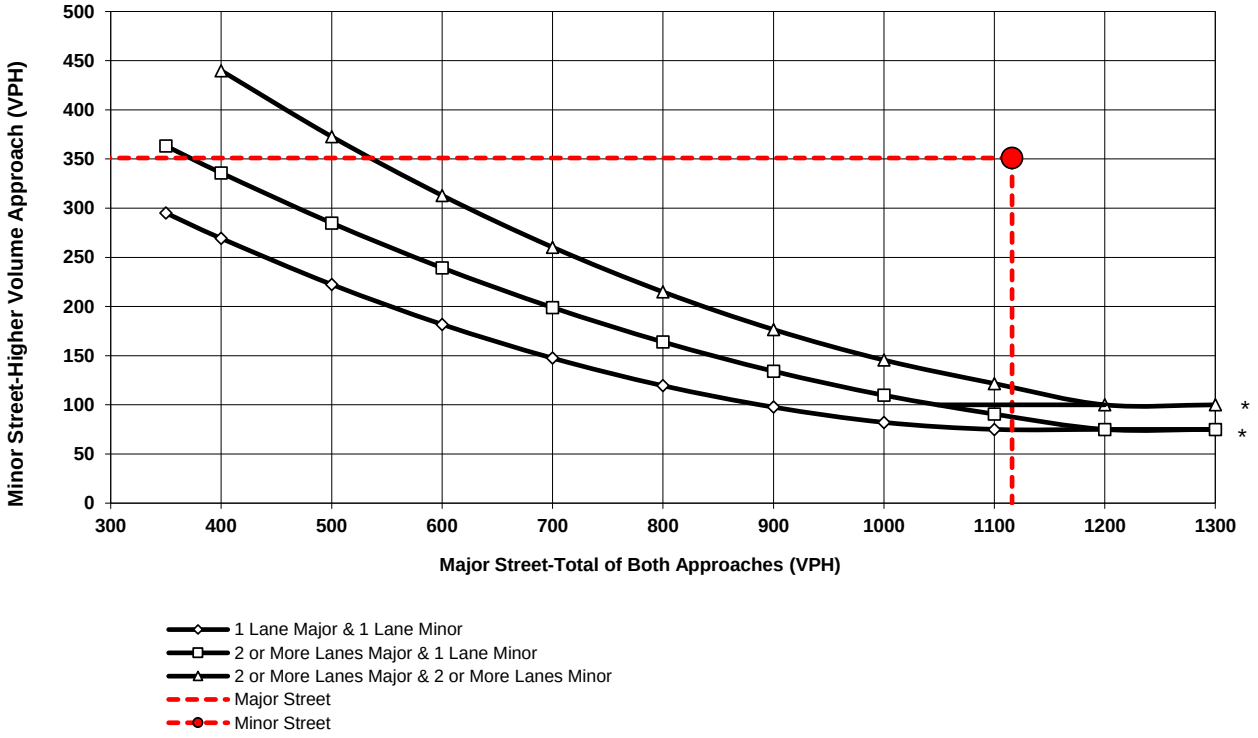
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1116	Higher Volume Approach (VPH):	351
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

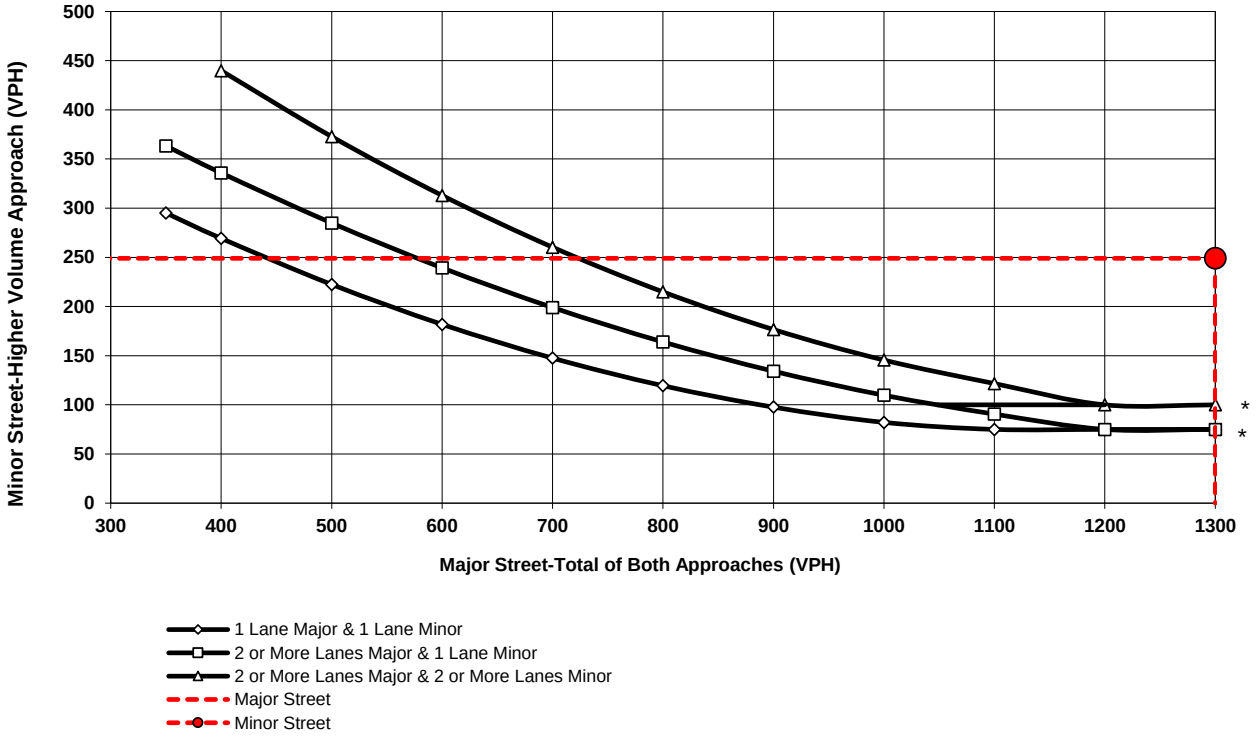
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1406	Higher Volume Approach (VPH):	249
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

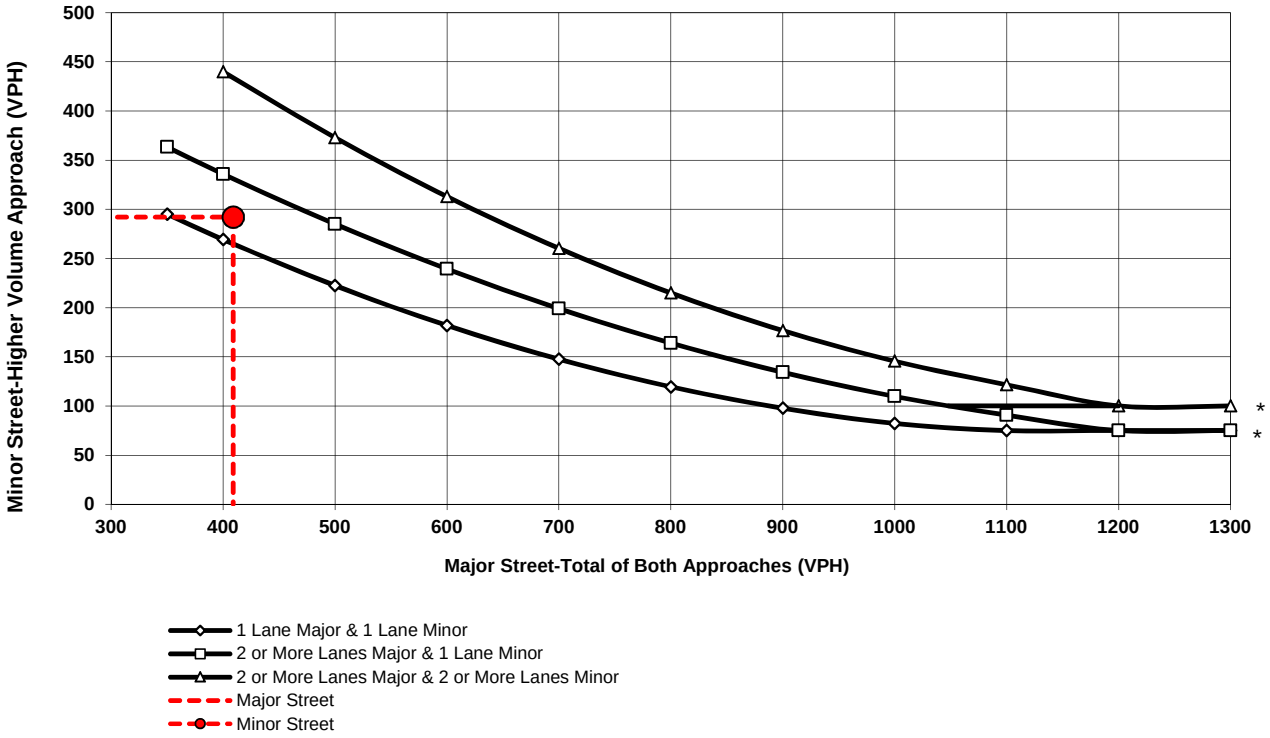
Peak Hour: **AM**

Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**409**	Higher Volume Approach (VPH):	**292**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

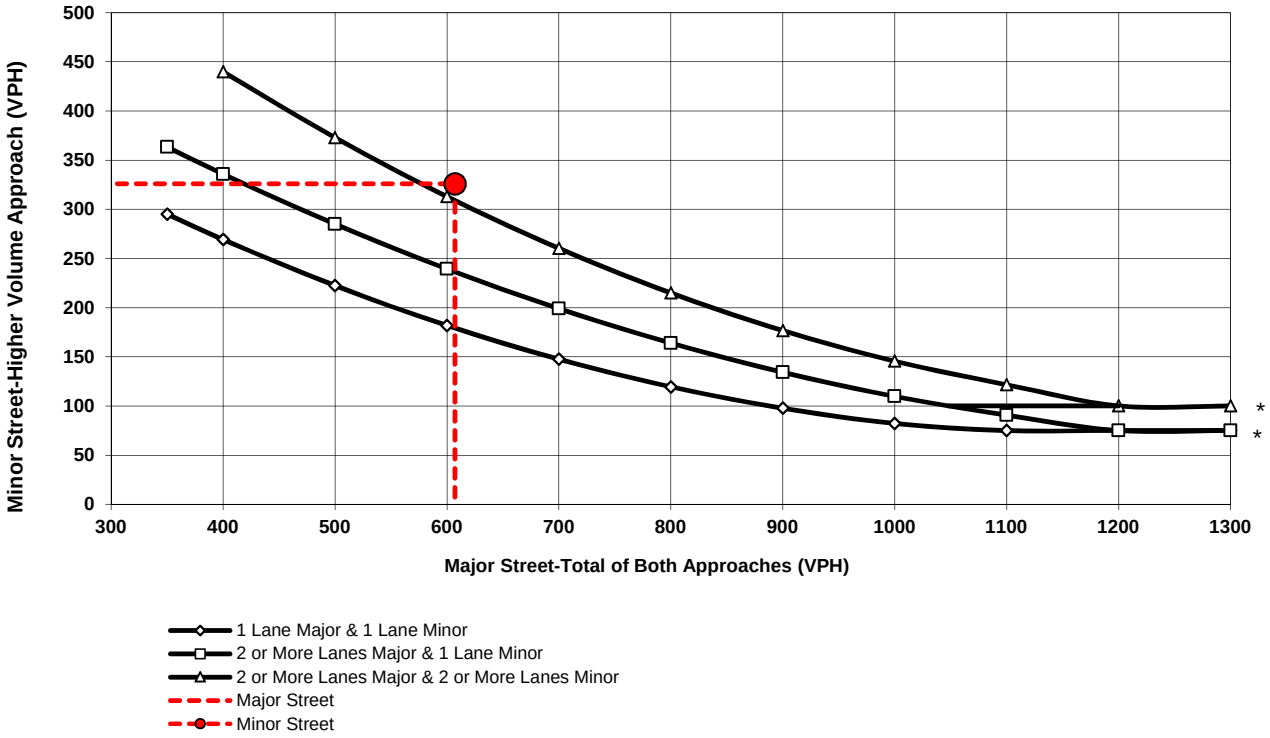
Peak Hour: **PM**

Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**607**	Higher Volume Approach (VPH):	**326**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

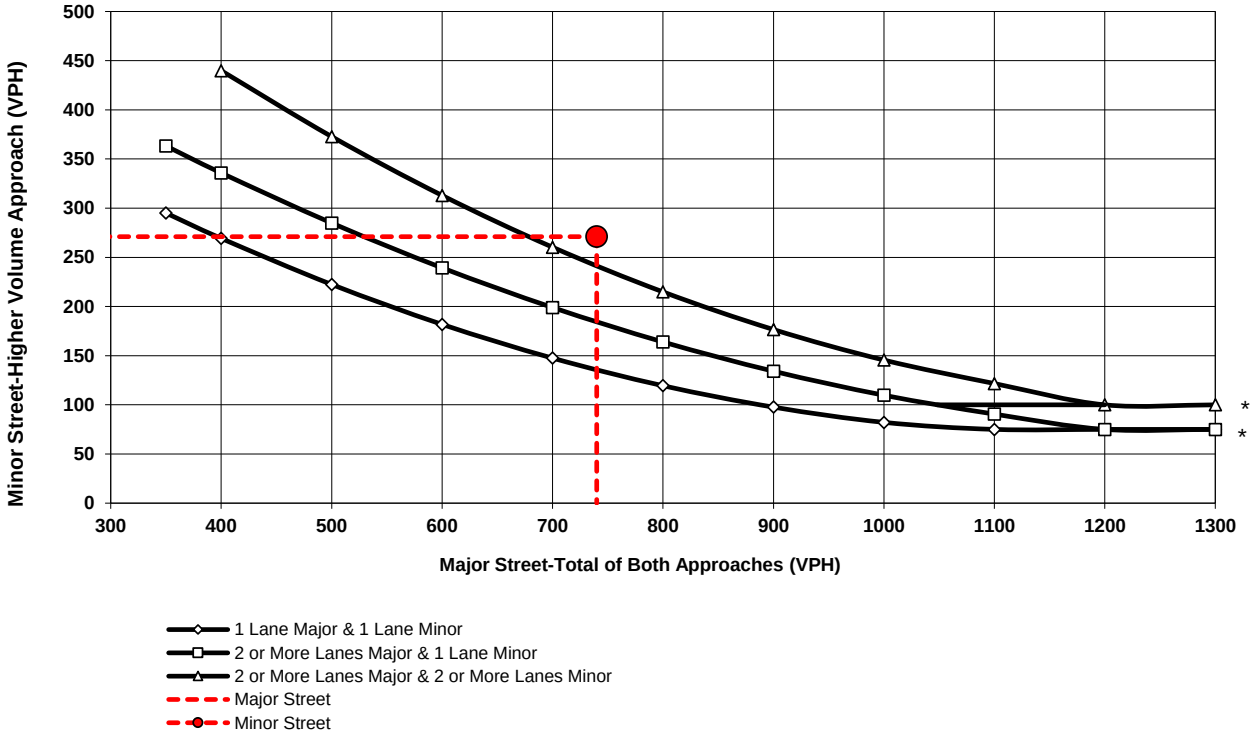
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	740	Higher Volume Approach (VPH):	271
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

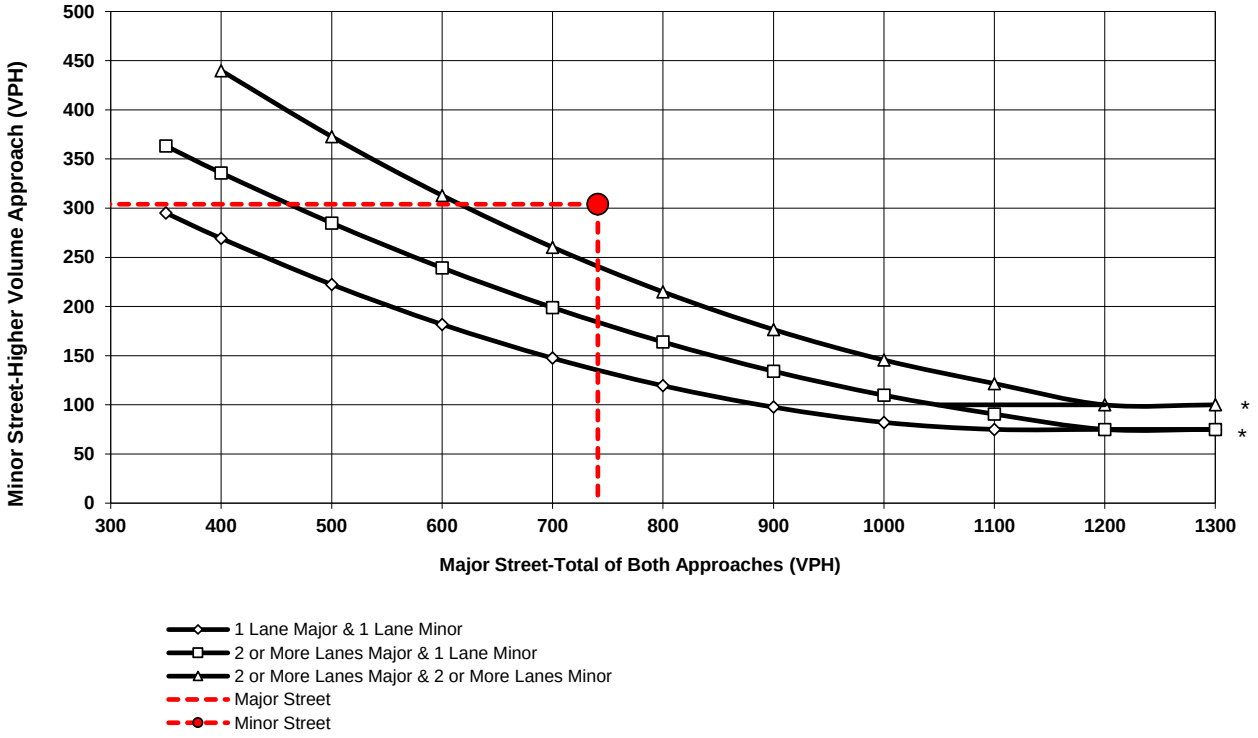
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	741	Higher Volume Approach (VPH):	304
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

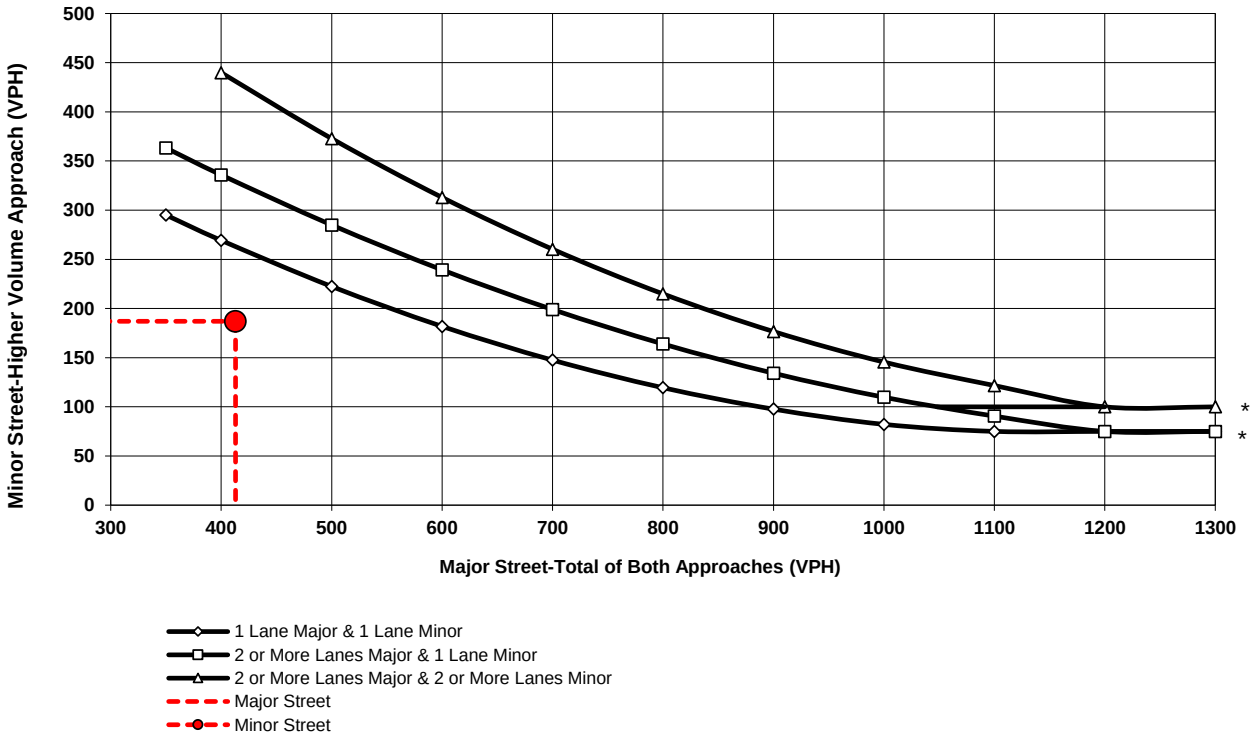
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	413	Higher Volume Approach (VPH):	187
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

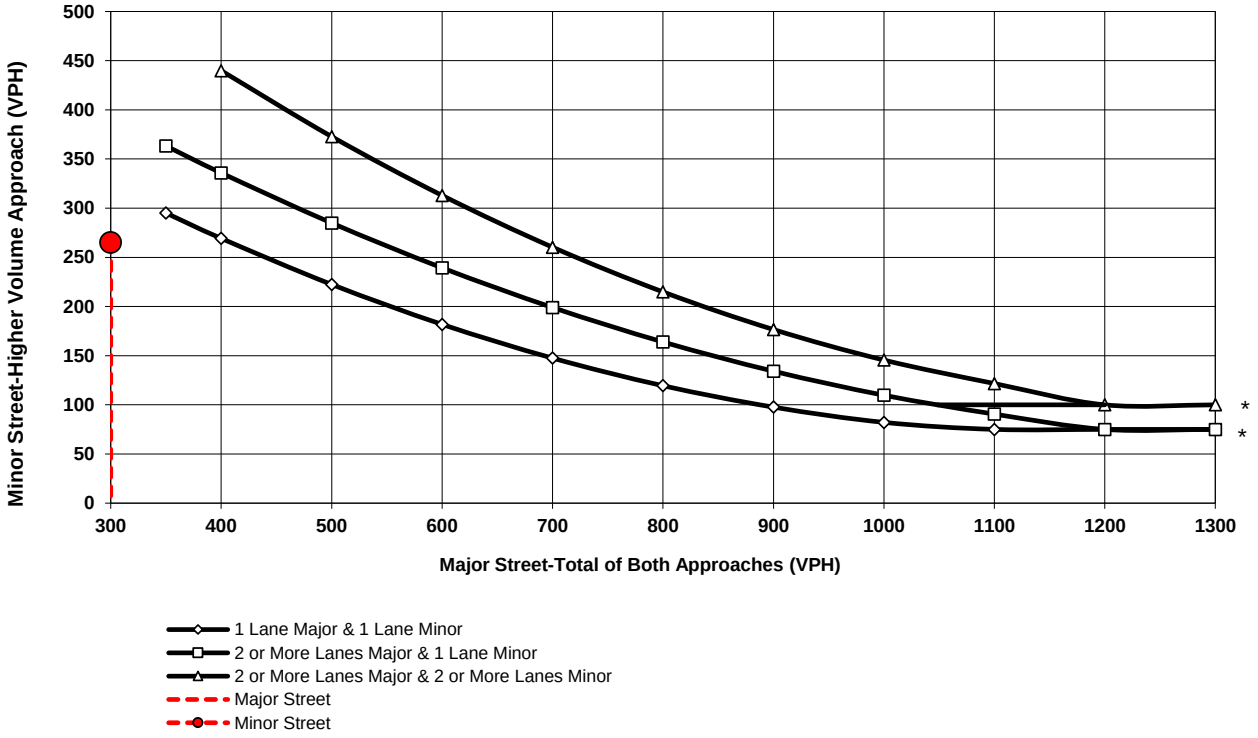
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	214	Higher Volume Approach (VPH):	265
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-6
Signal Warrant Analysis
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

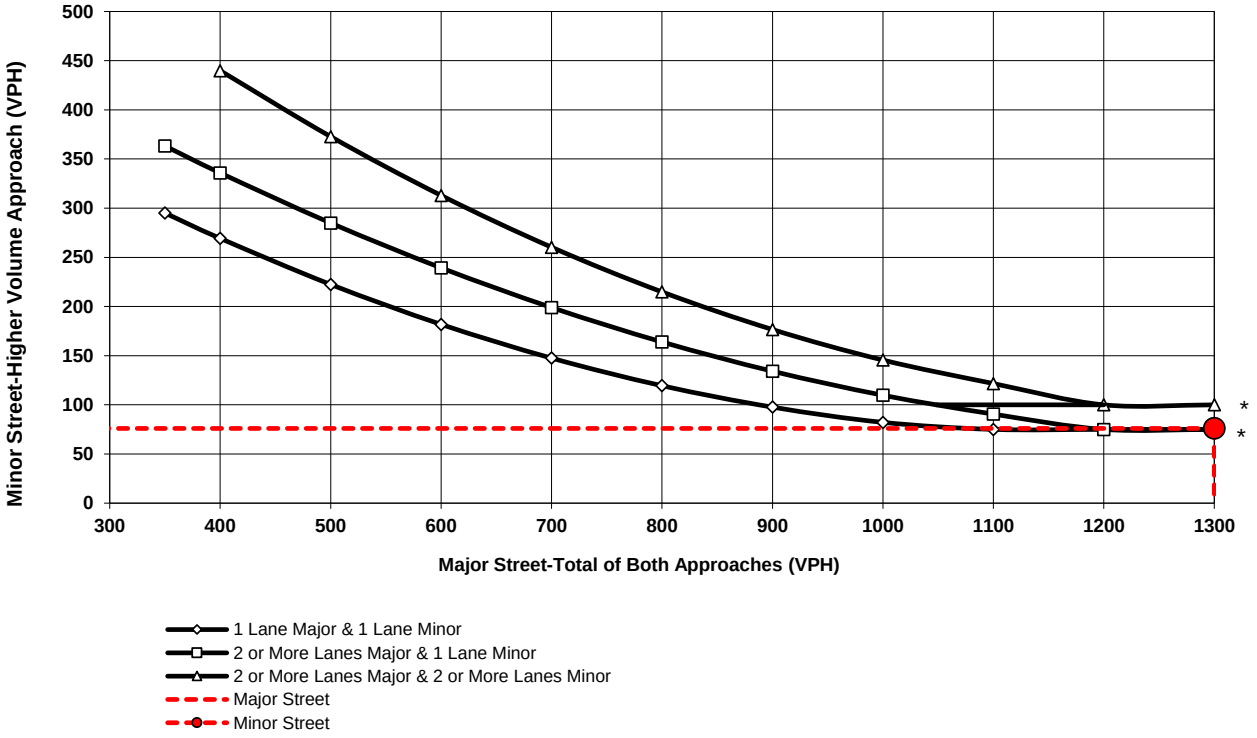
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1477	Higher Volume Approach (VPH):	76
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

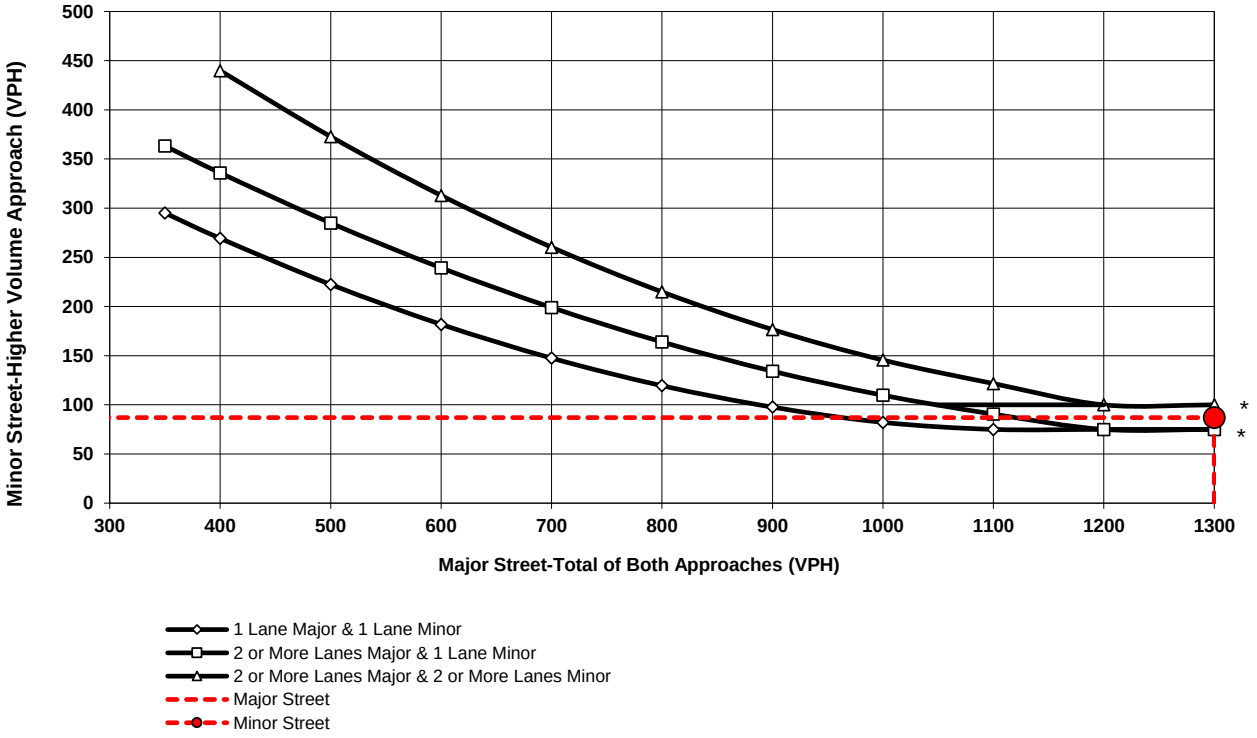
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1916	Higher Volume Approach (VPH):	87
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

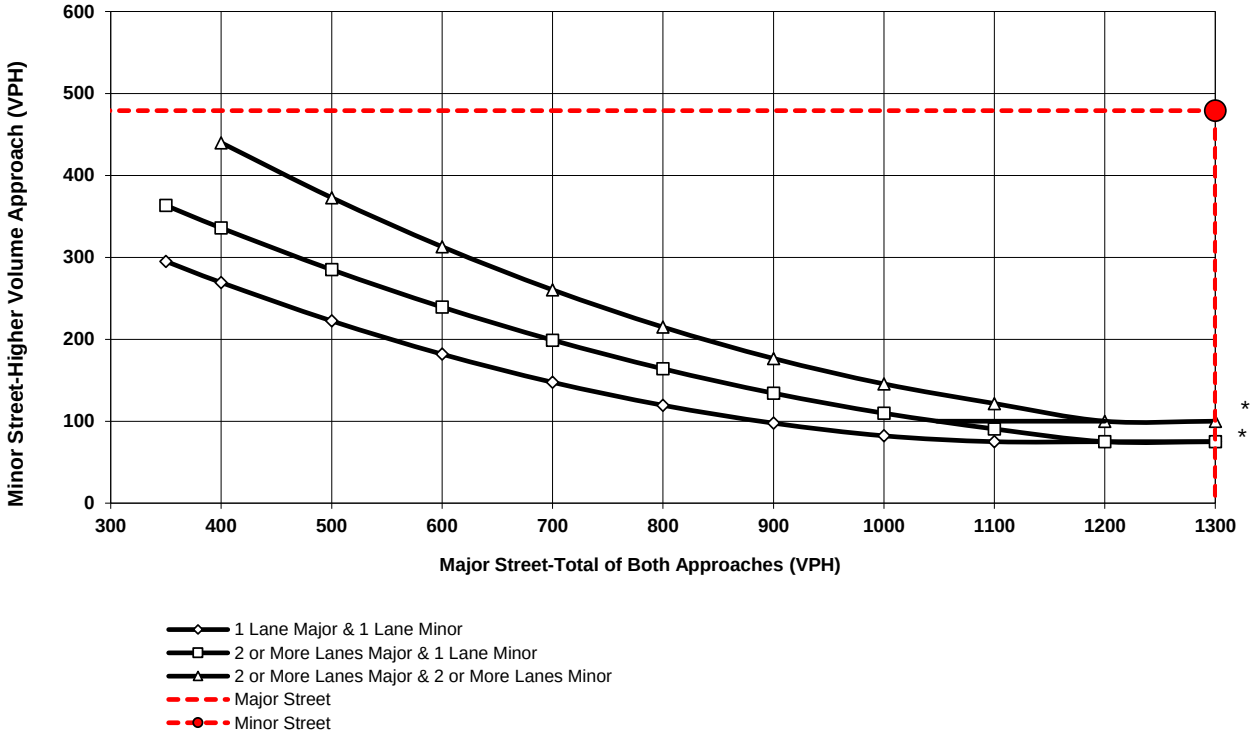
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1603	Higher Volume Approach (VPH):	479
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

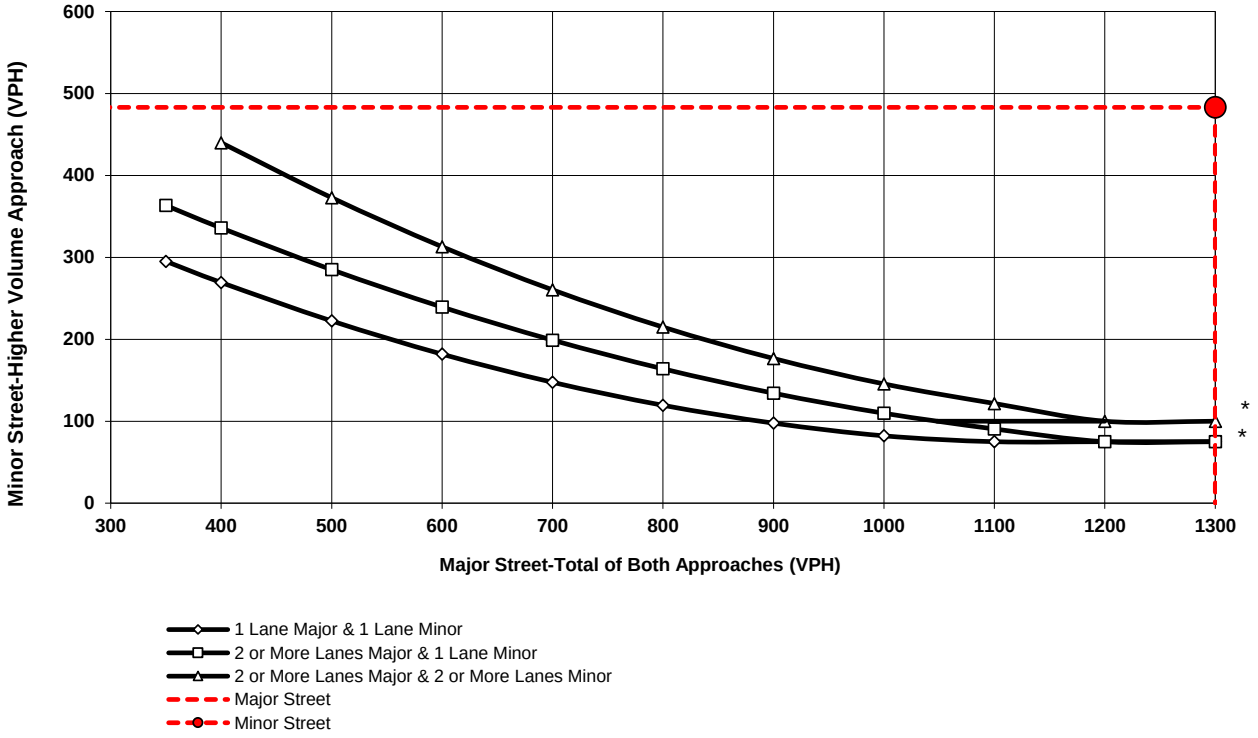
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2054	Higher Volume Approach (VPH):	483
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

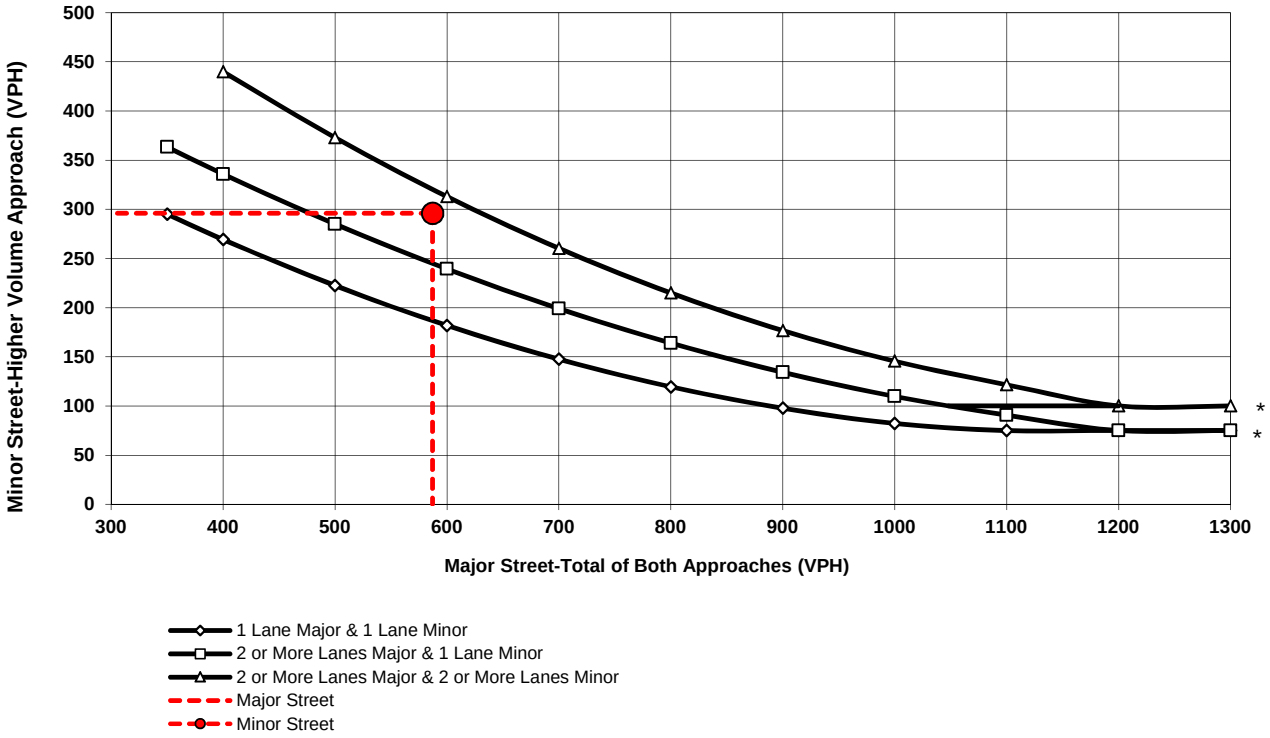
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	587	Higher Volume Approach (VPH):	296
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

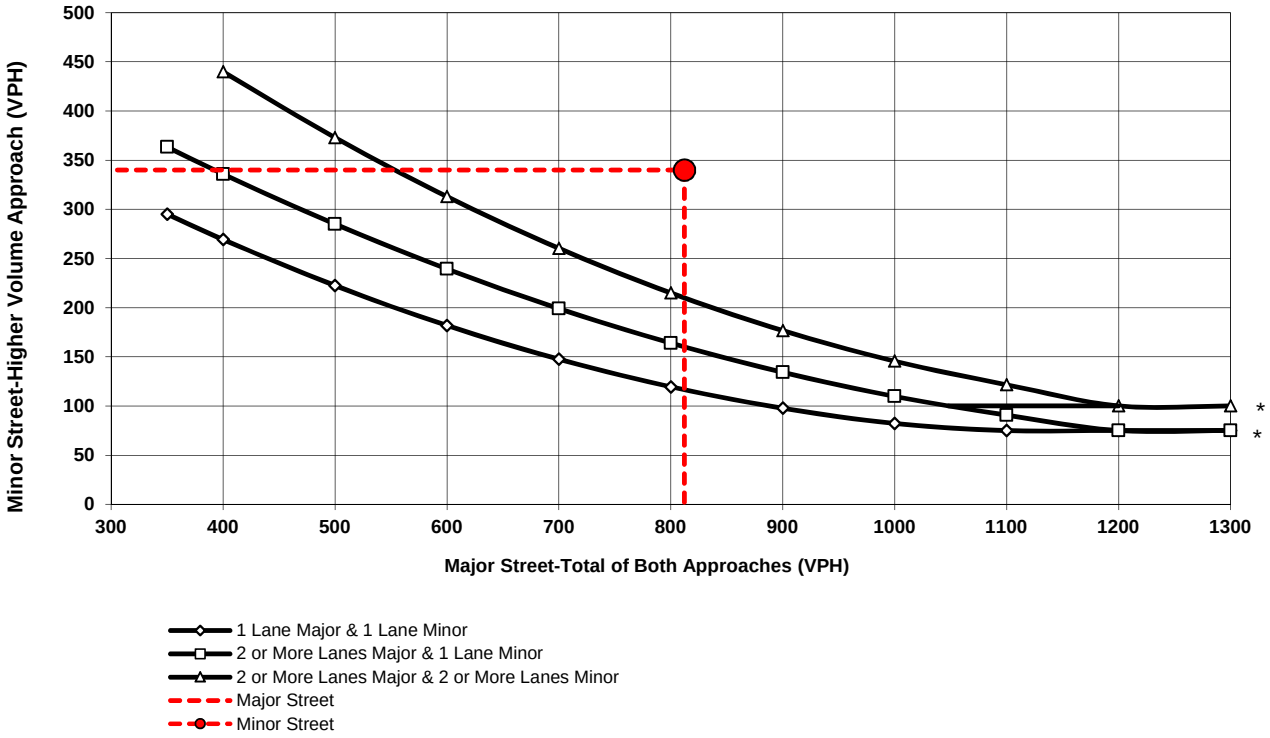
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	812	Higher Volume Approach (VPH):	340
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

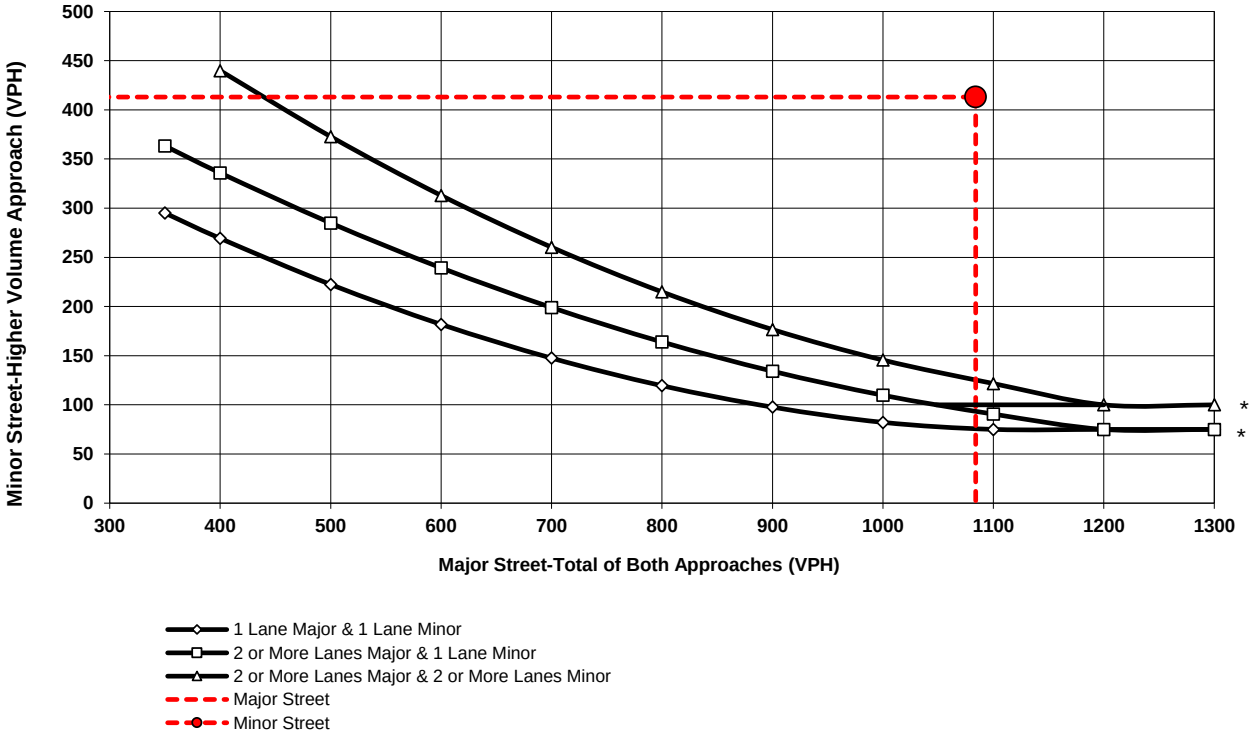
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1084	Higher Volume Approach (VPH):	413
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

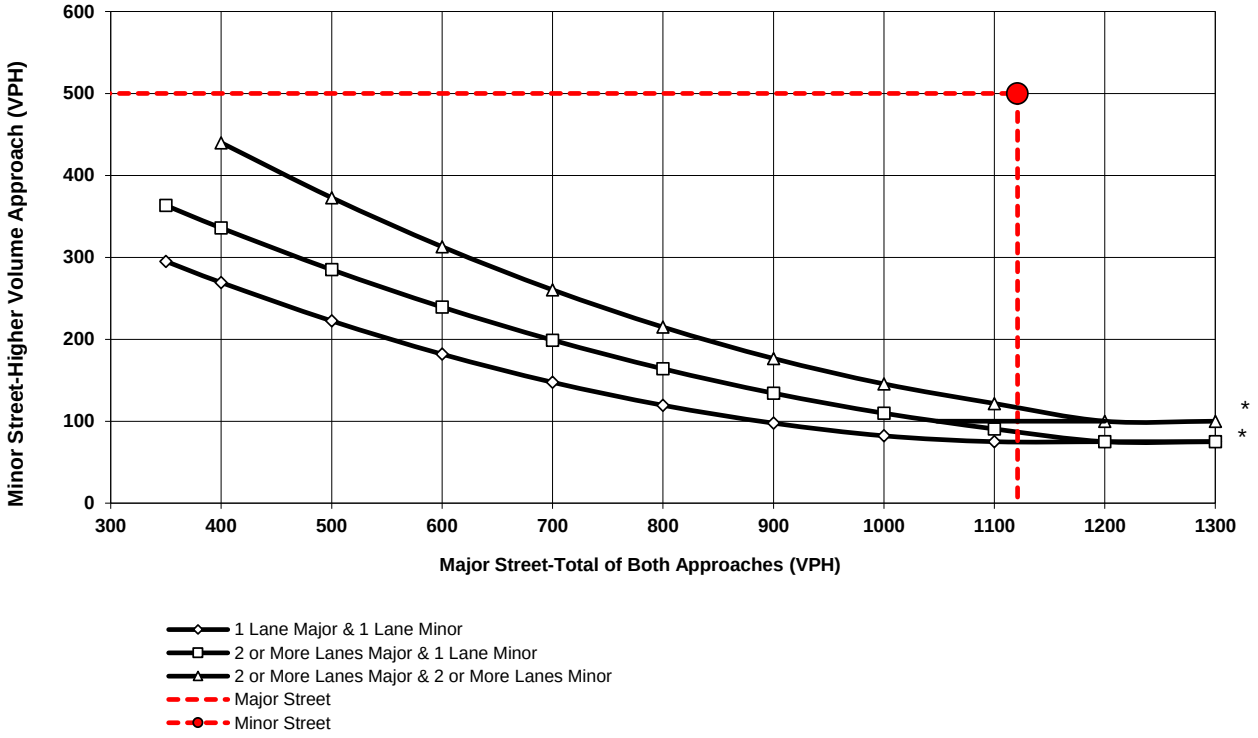
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1121	Higher Volume Approach (VPH):	606
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

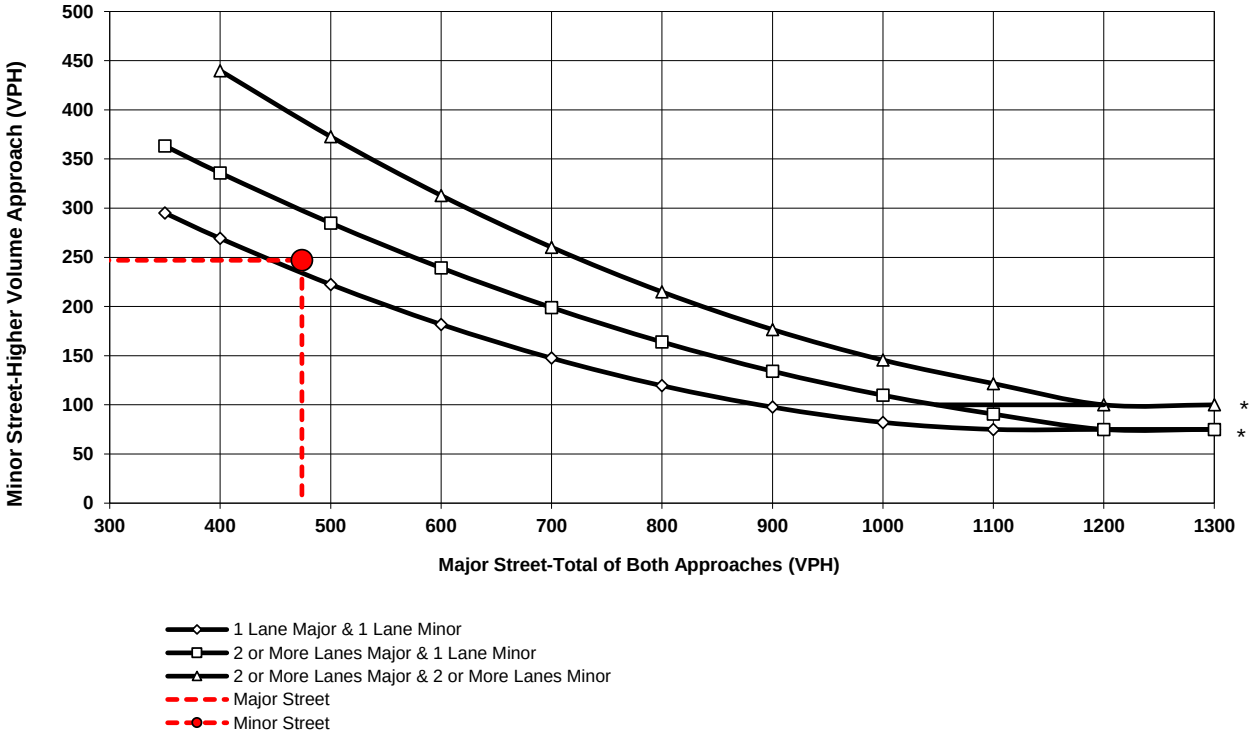
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	474	Higher Volume Approach (VPH):	247
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

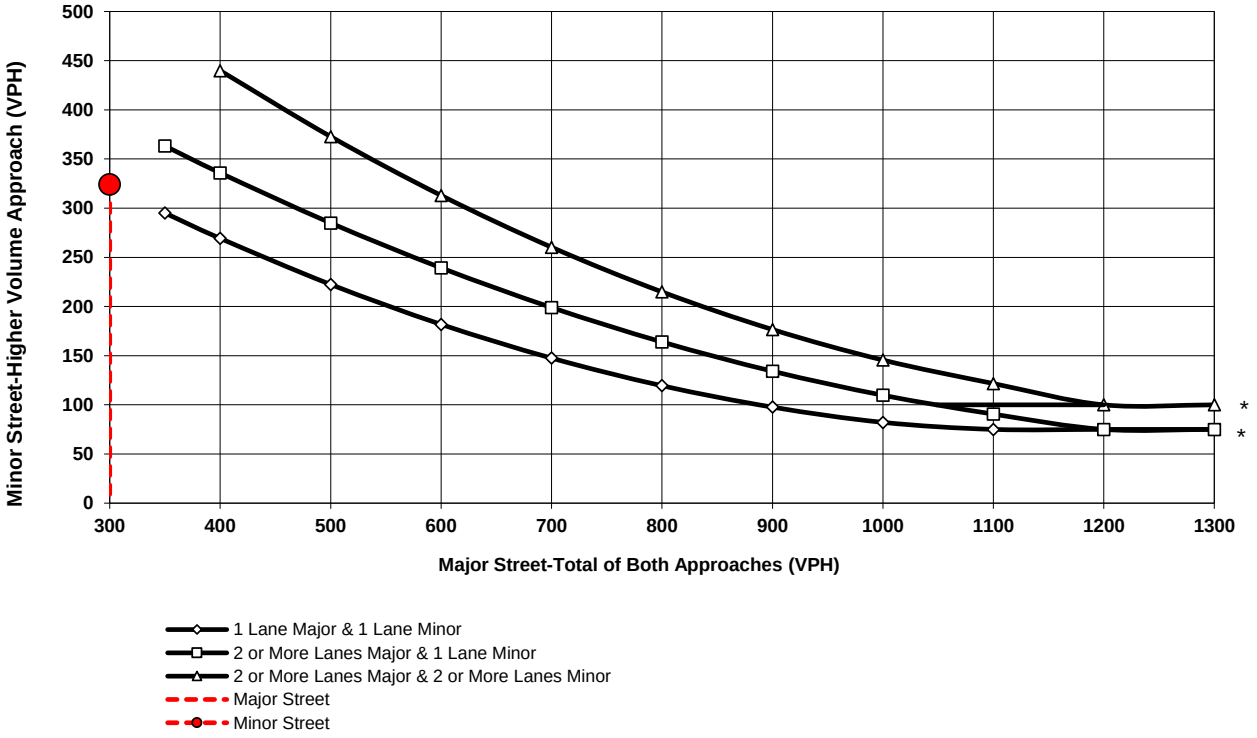
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	291	Higher Volume Approach (VPH):	324
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-7
Signal Warrant Analysis
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

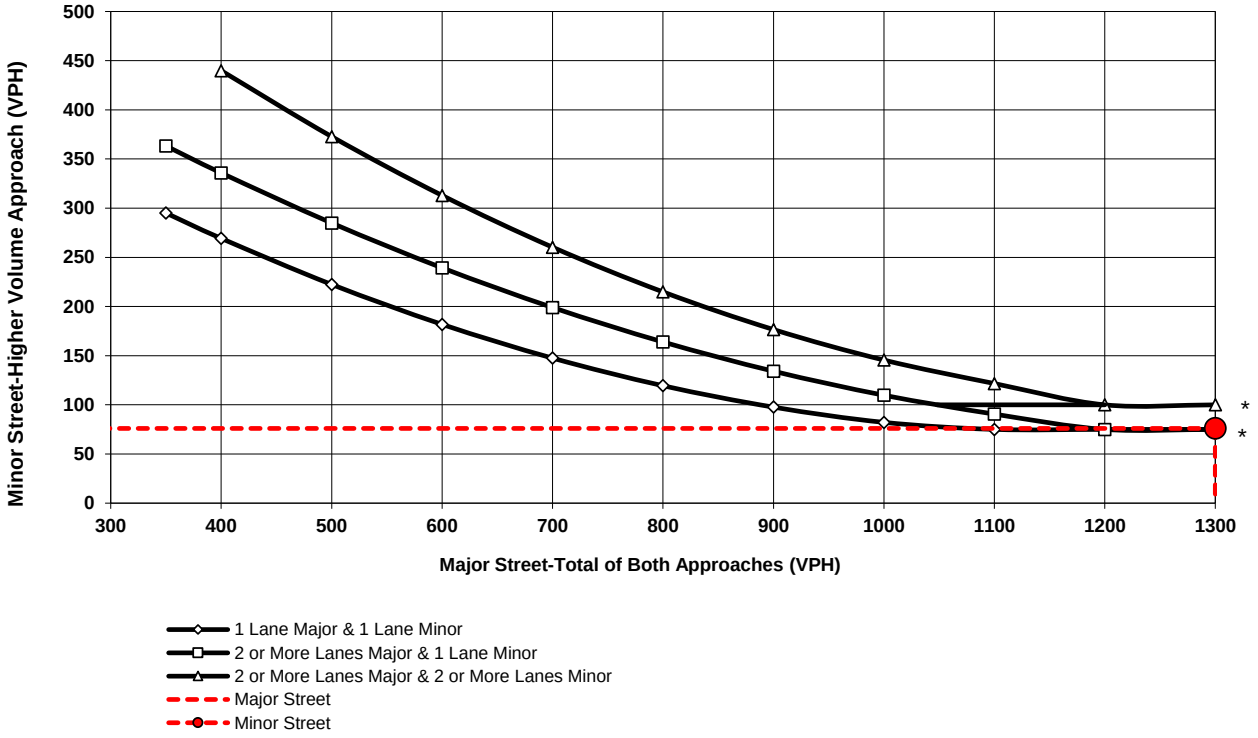
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2000	Higher Volume Approach (VPH):	76
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

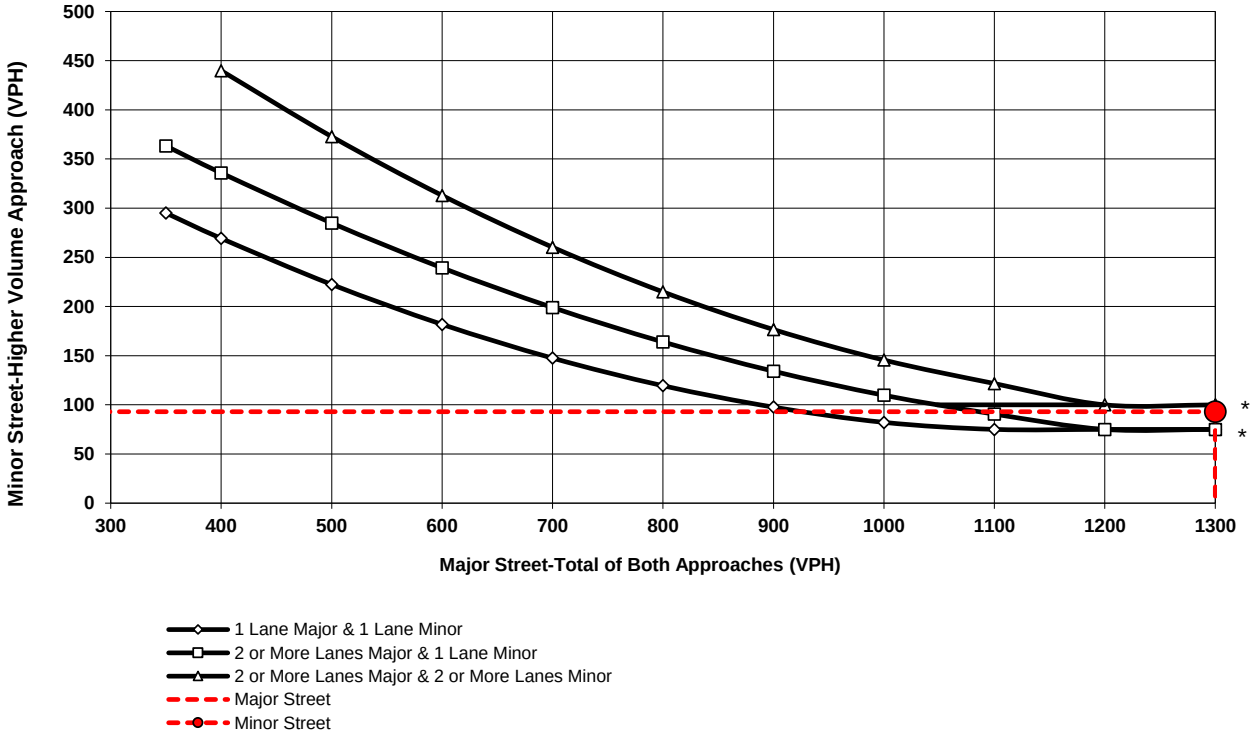
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2531	Higher Volume Approach (VPH):	93
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

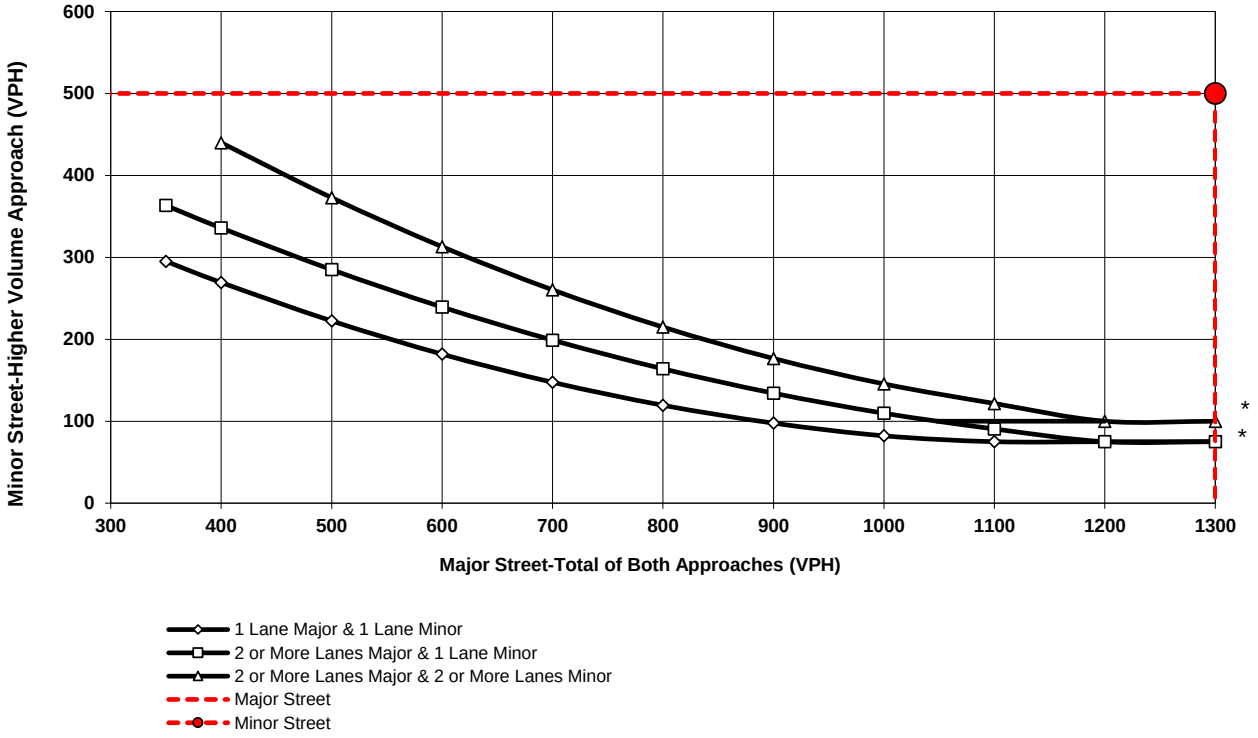
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1784	Higher Volume Approach (VPH):	509
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

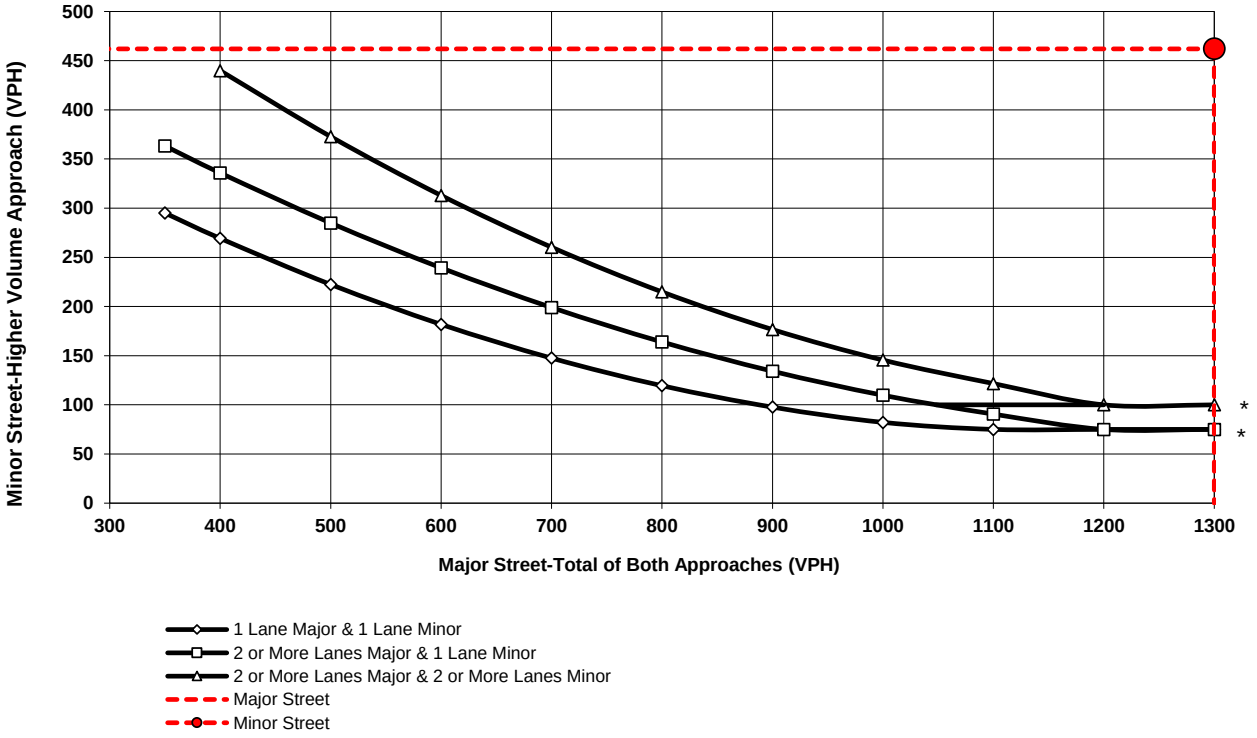
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2290	Higher Volume Approach (VPH):	462
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

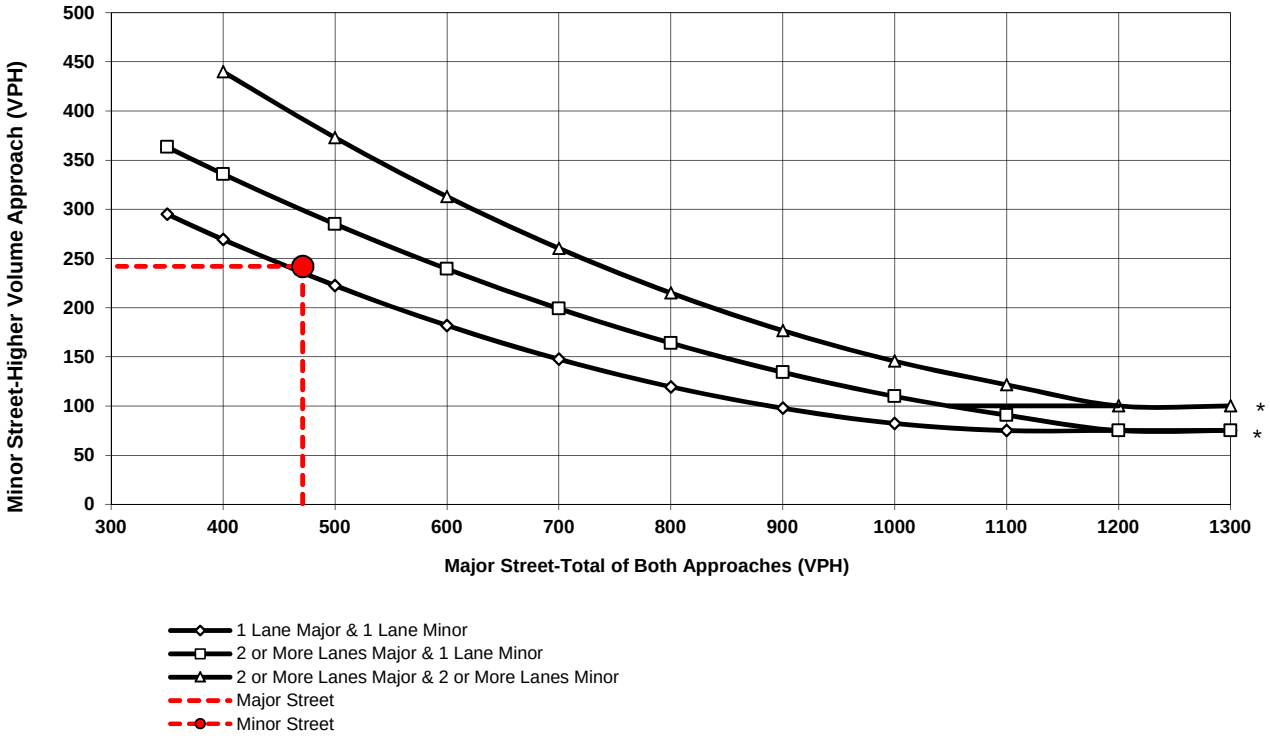
Peak Hour: **AM**

Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**471**	Higher Volume Approach (VPH):	**242**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

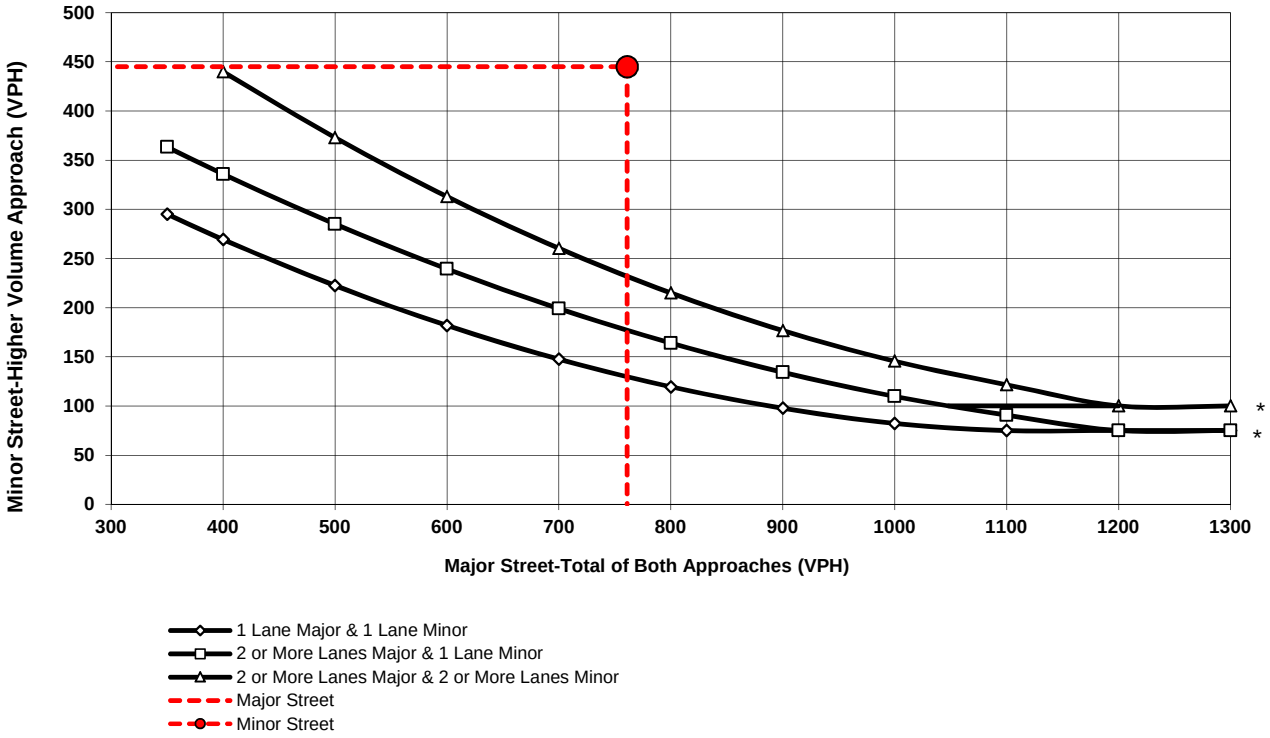
Peak Hour: **PM**

Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**761**	Higher Volume Approach (VPH):	**445**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

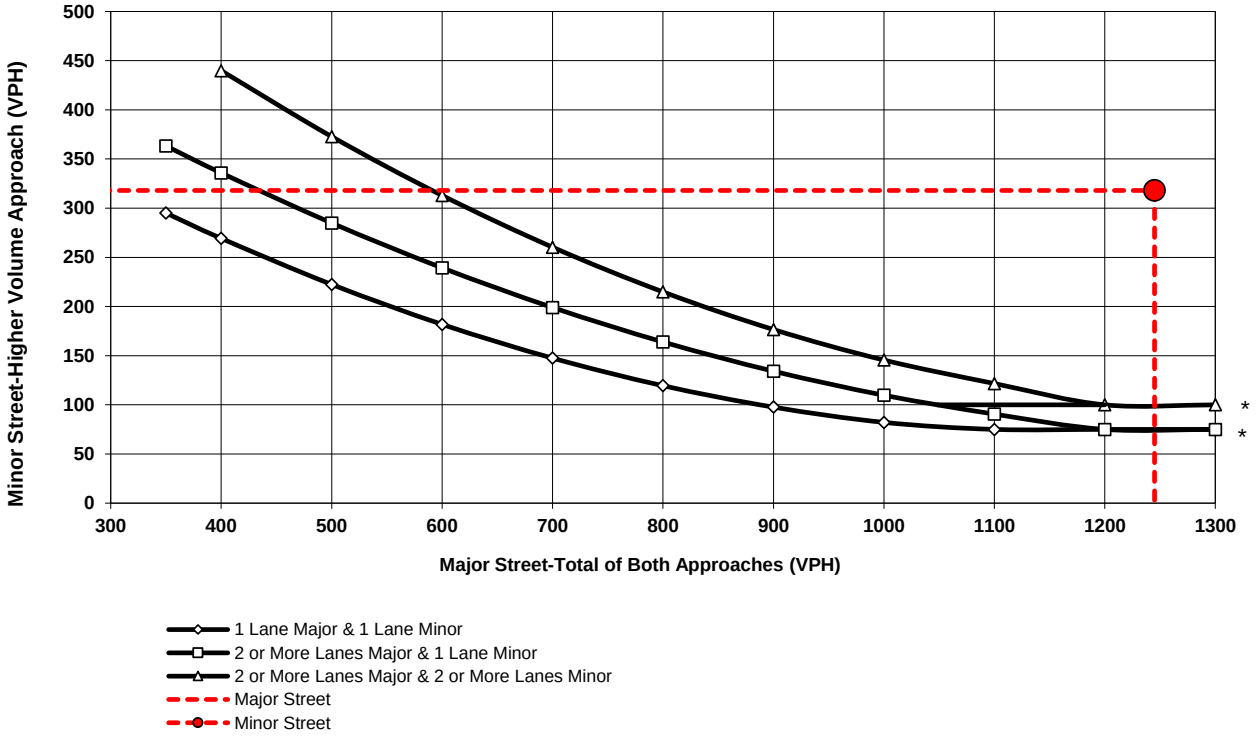
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1245	Higher Volume Approach (VPH):	318
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

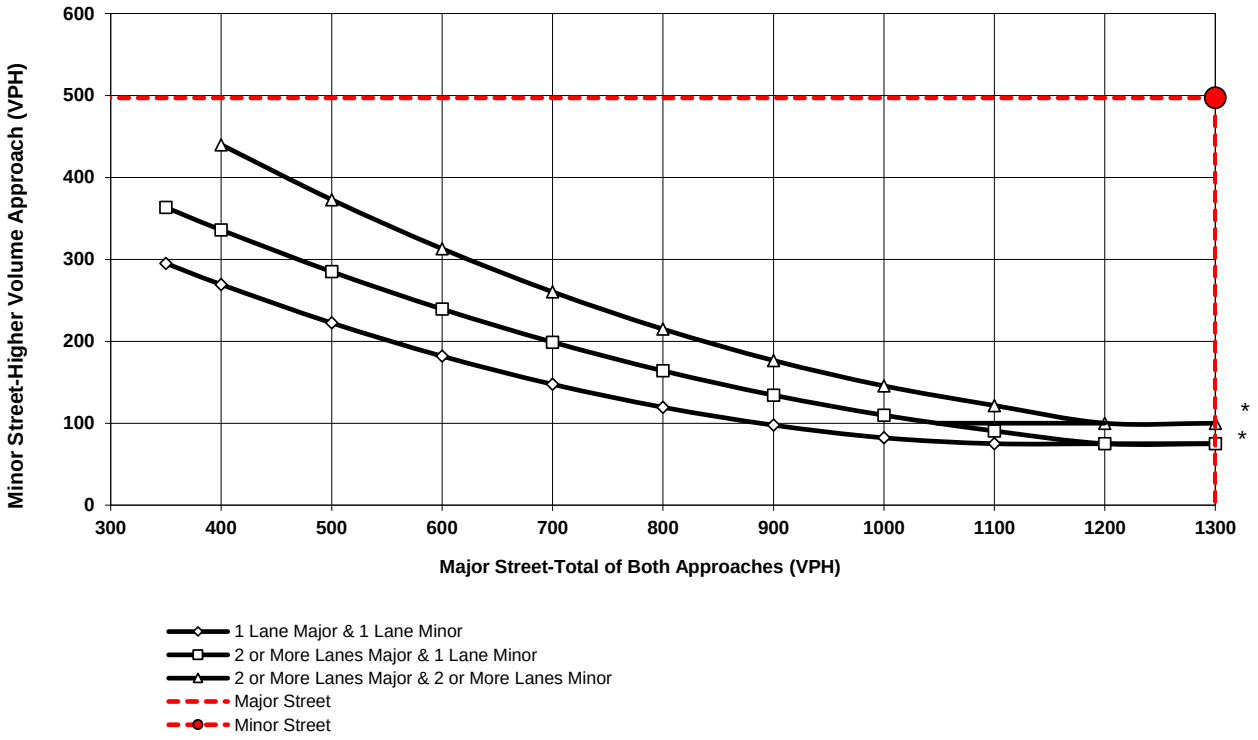
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1333	Higher Volume Approach (VPH):	497
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

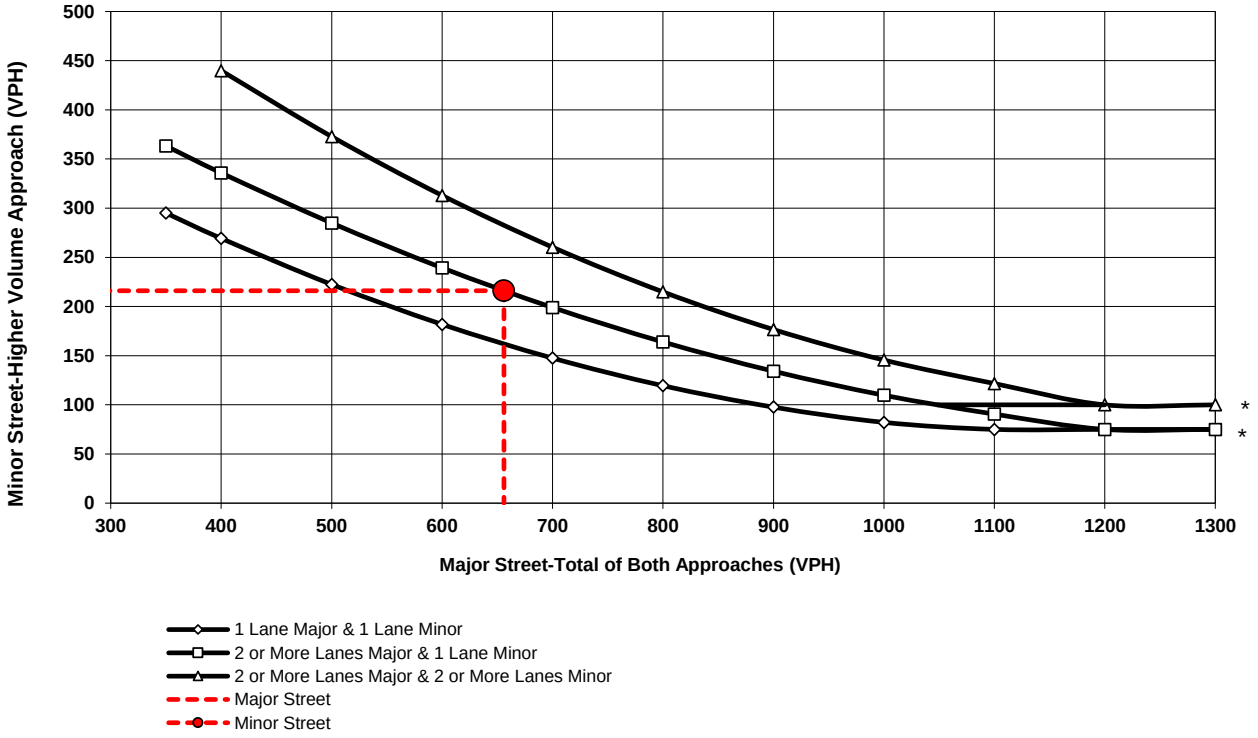
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	656	Higher Volume Approach (VPH):	216
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

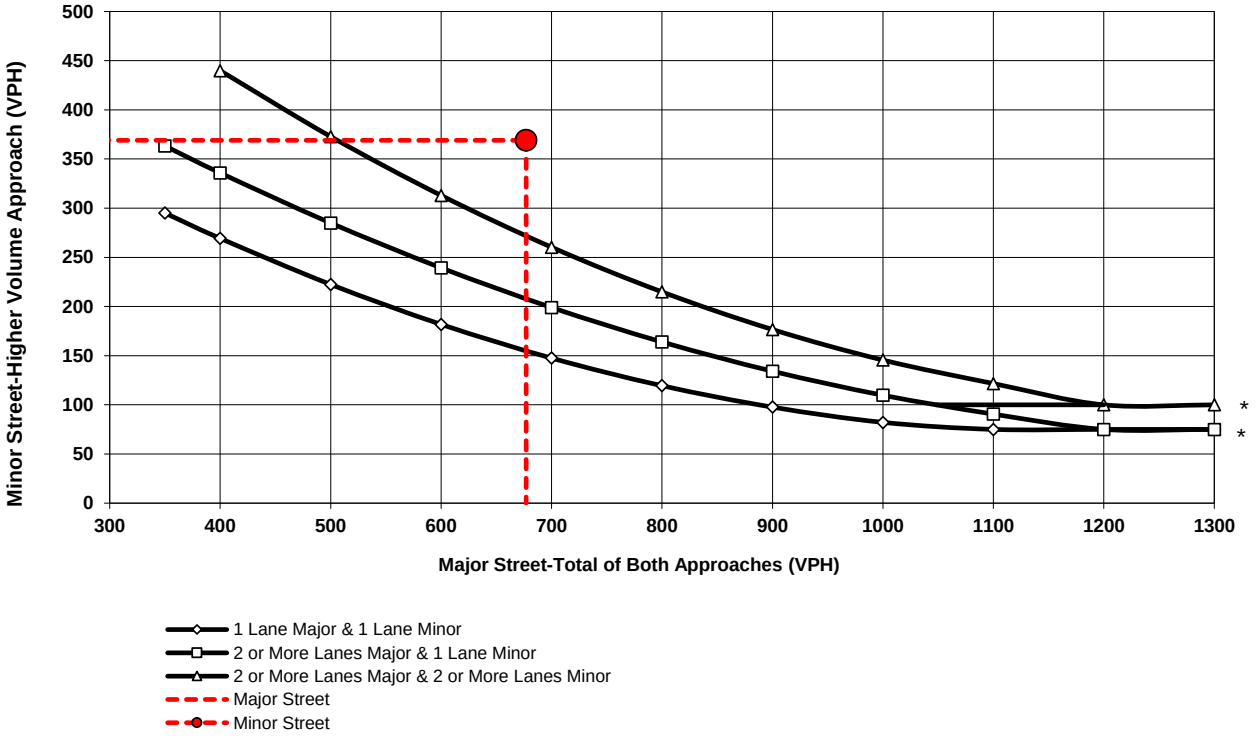
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	677	Higher Volume Approach (VPH):	369
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

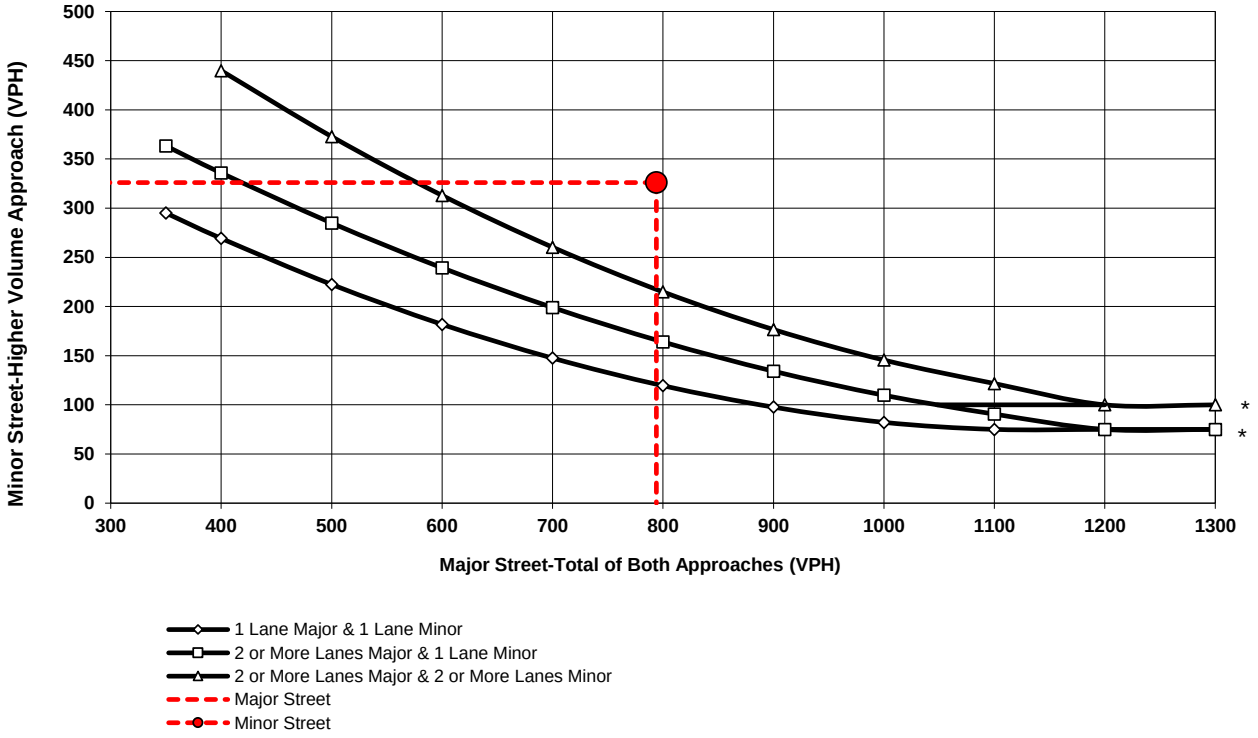
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	794	Higher Volume Approach (VPH):	326
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

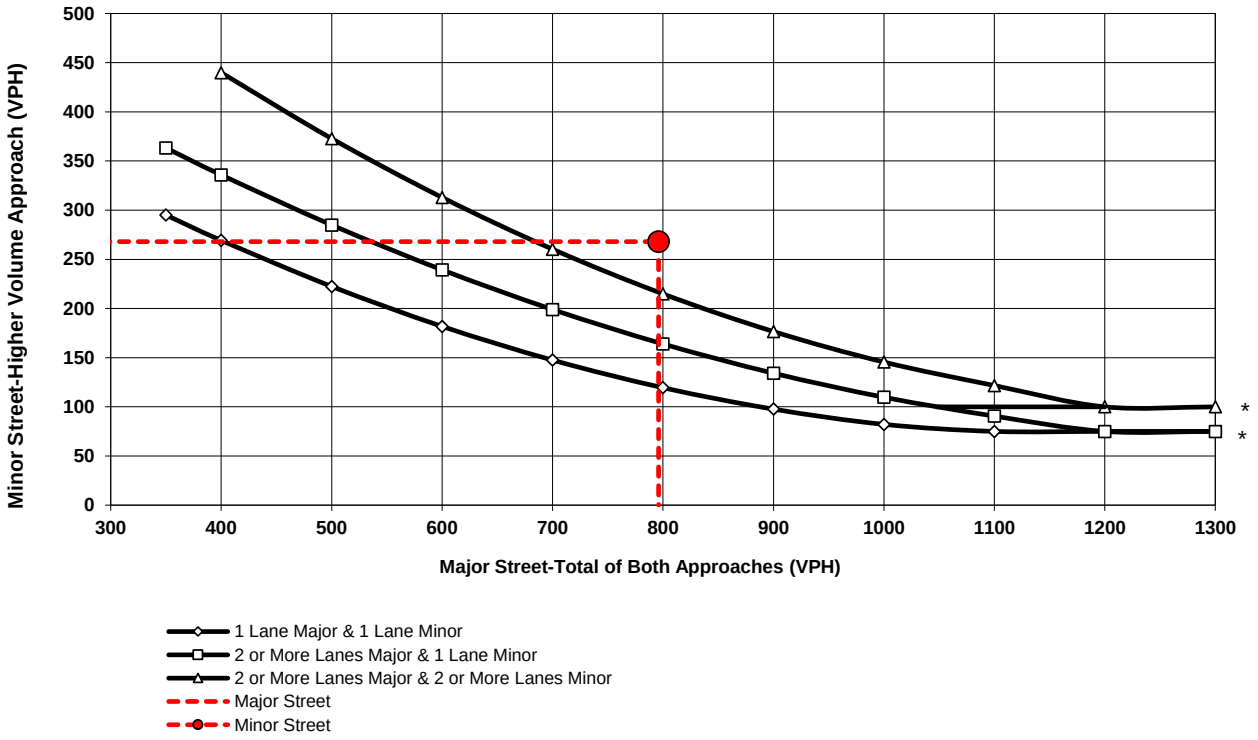
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	796	Higher Volume Approach (VPH):	268
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

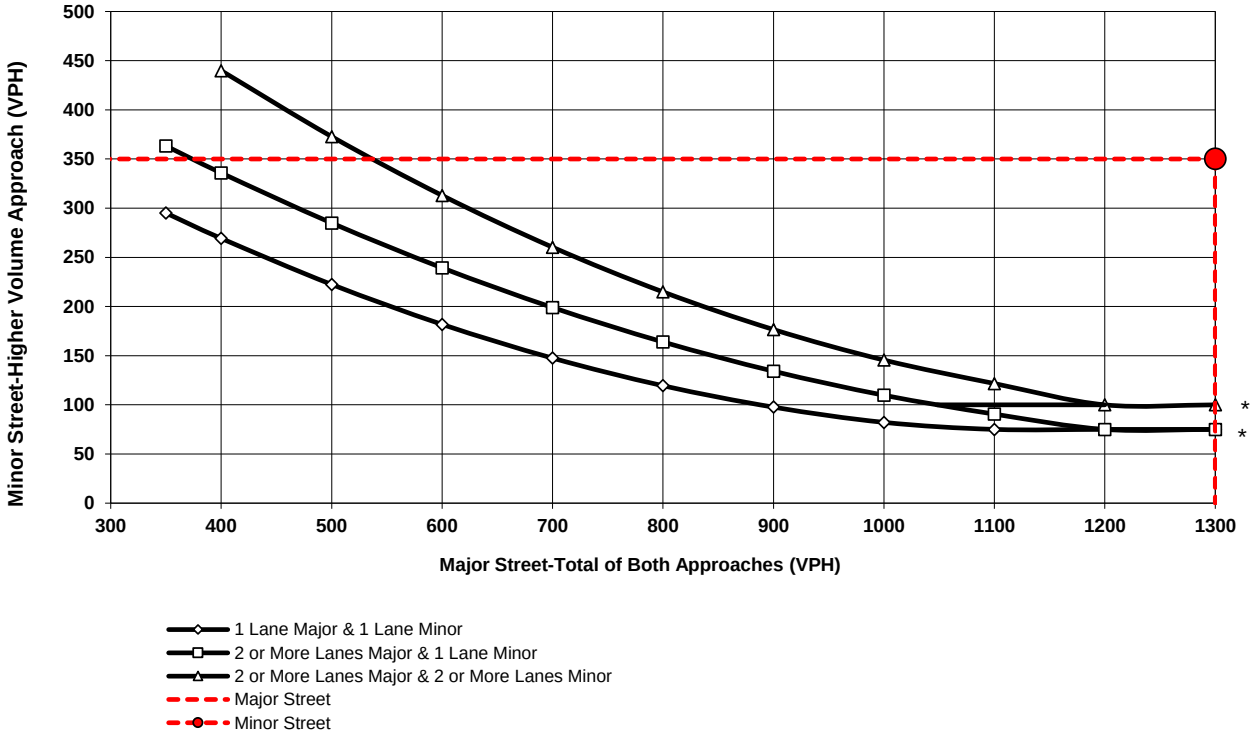
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	2436	Higher Volume Approach (VPH):	350
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

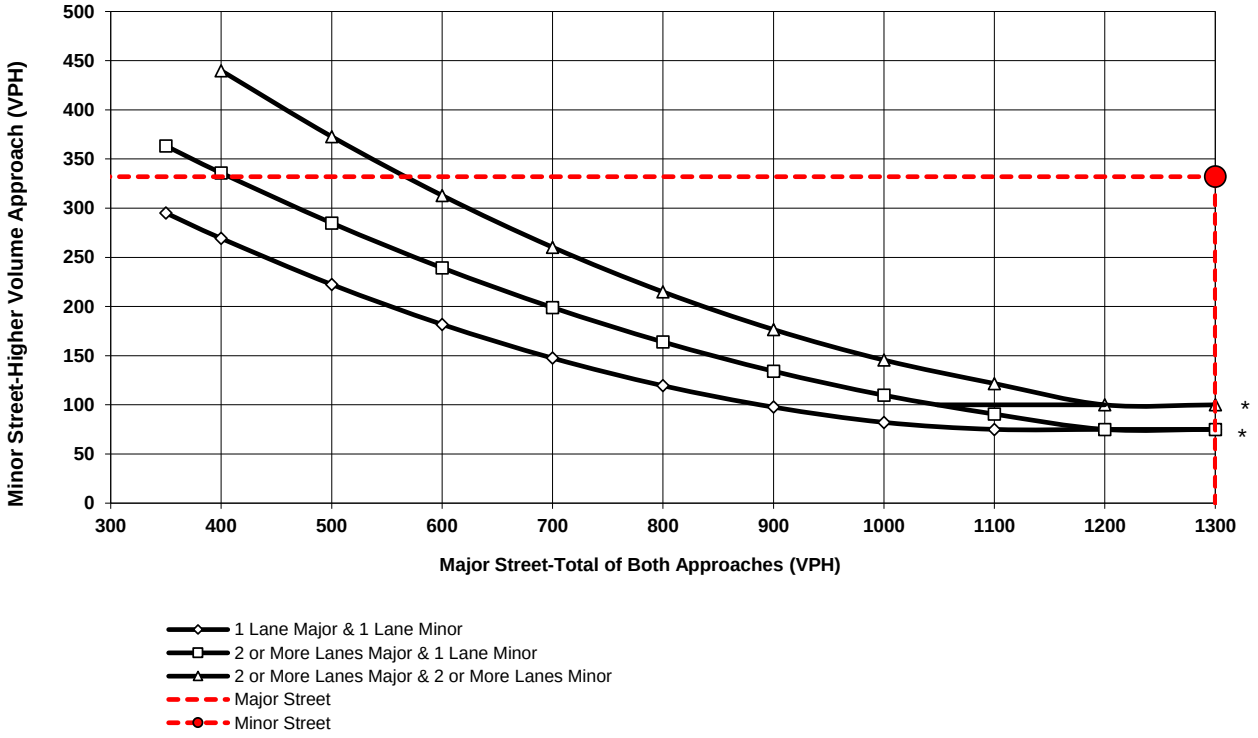
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	2322	Higher Volume Approach (VPH):	332
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-8
Signal Warrant Analysis
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

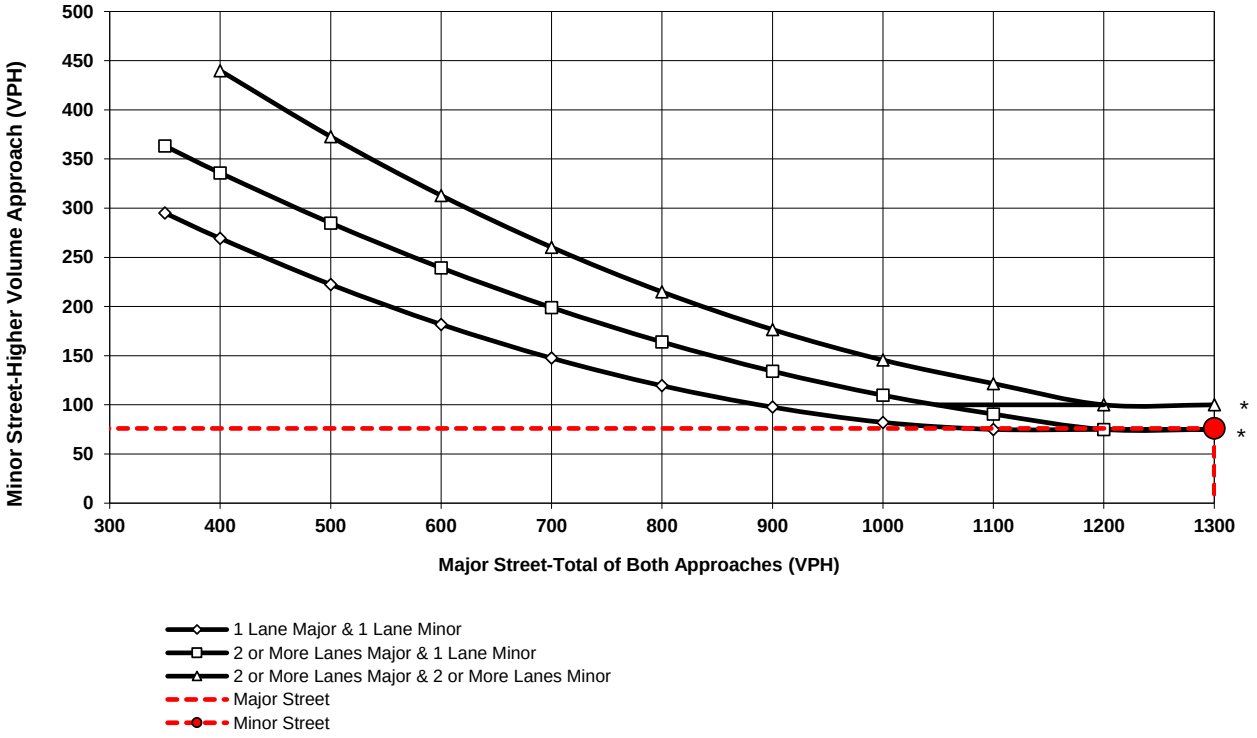
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2314	Higher Volume Approach (VPH):	76
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

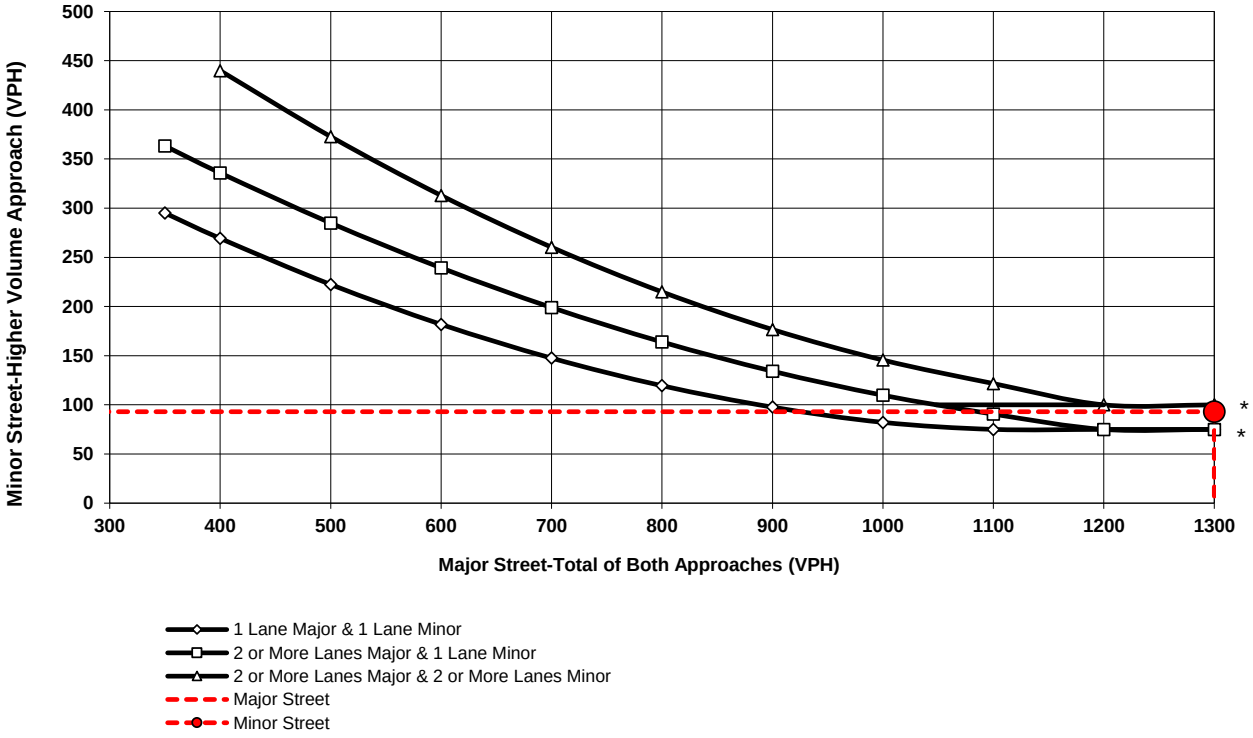
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2989	Higher Volume Approach (VPH):	93
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

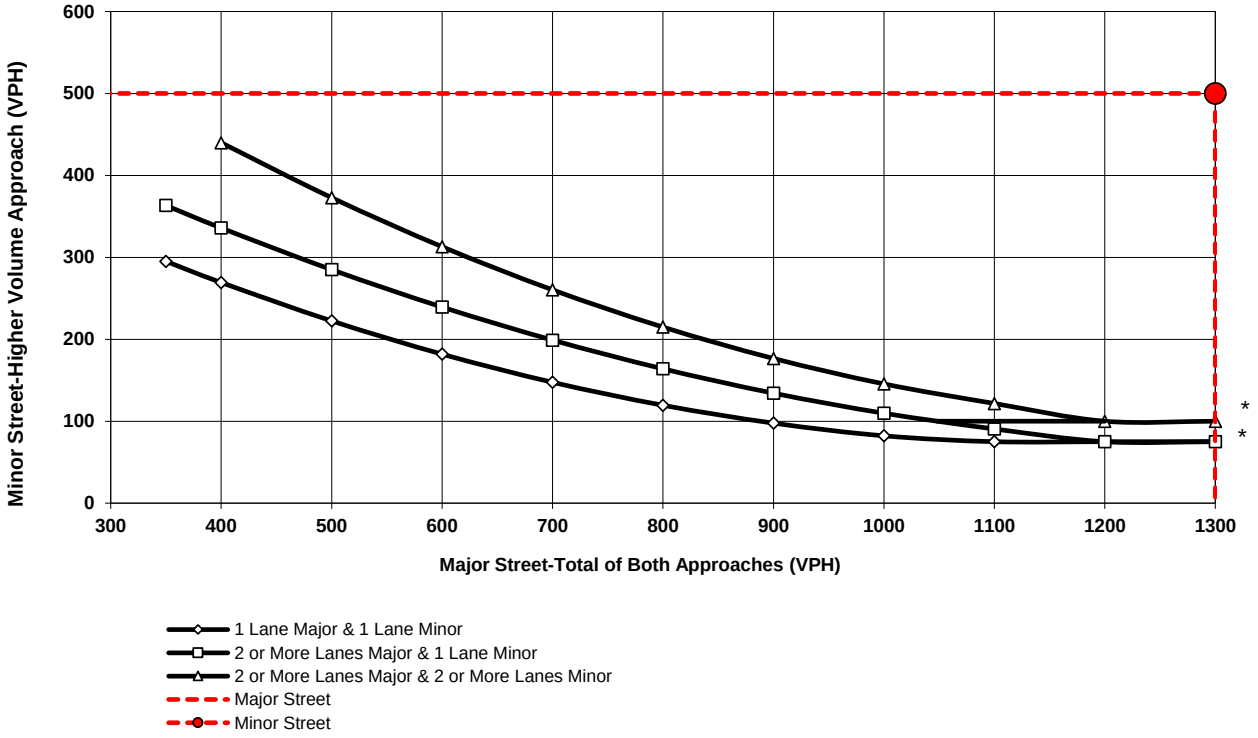
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2290	Higher Volume Approach (VPH):	637
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

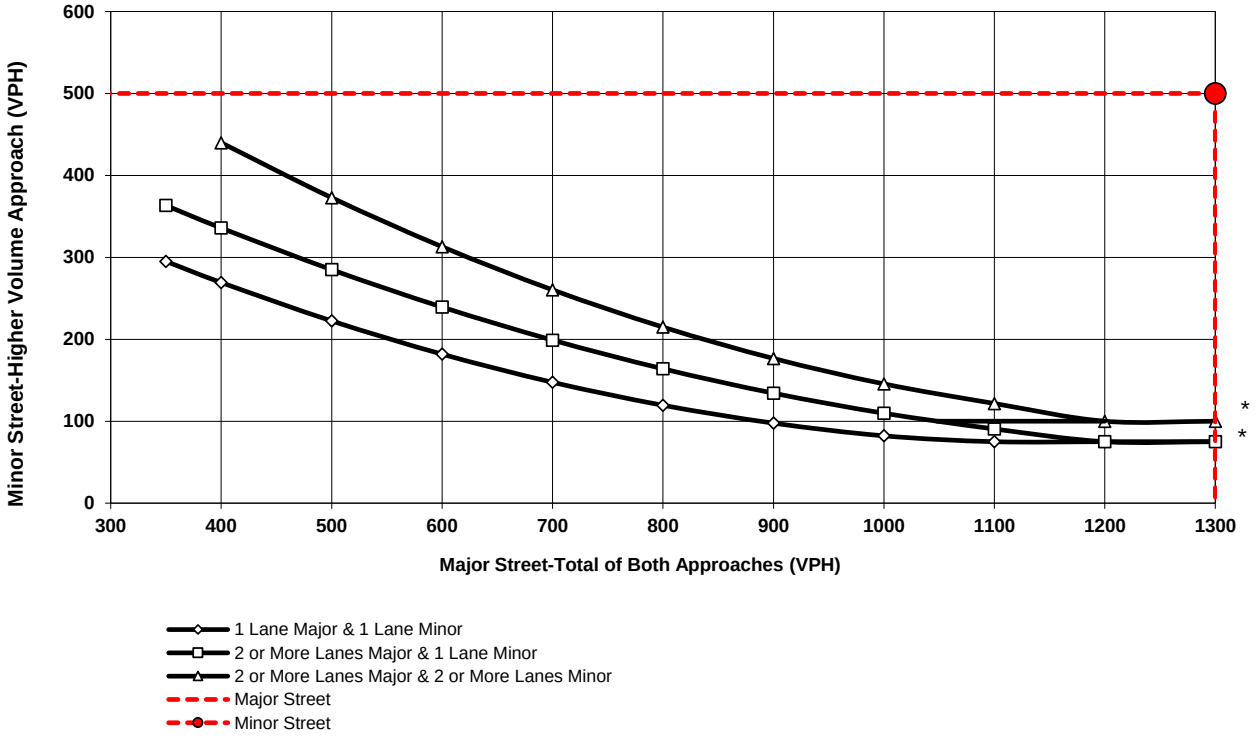
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2967	Higher Volume Approach (VPH):	696
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

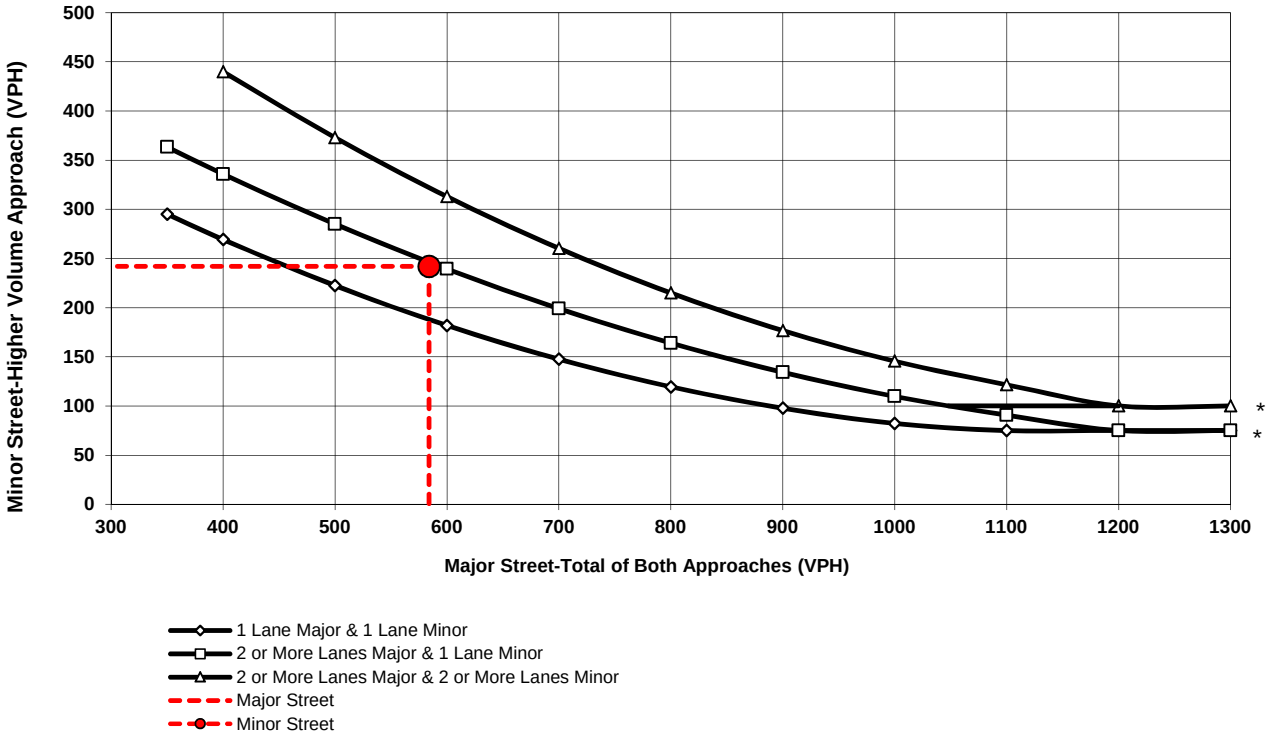
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	584	Higher Volume Approach (VPH):	242
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

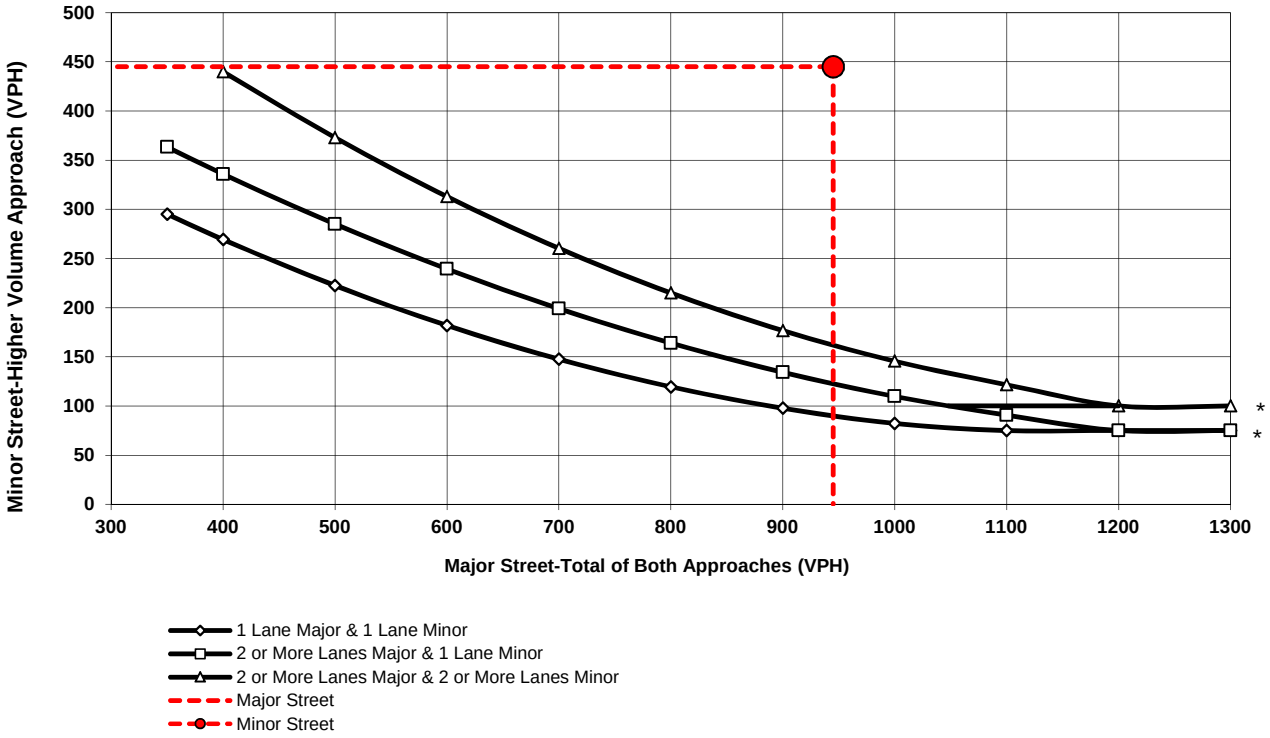
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	945	Higher Volume Approach (VPH):	445
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

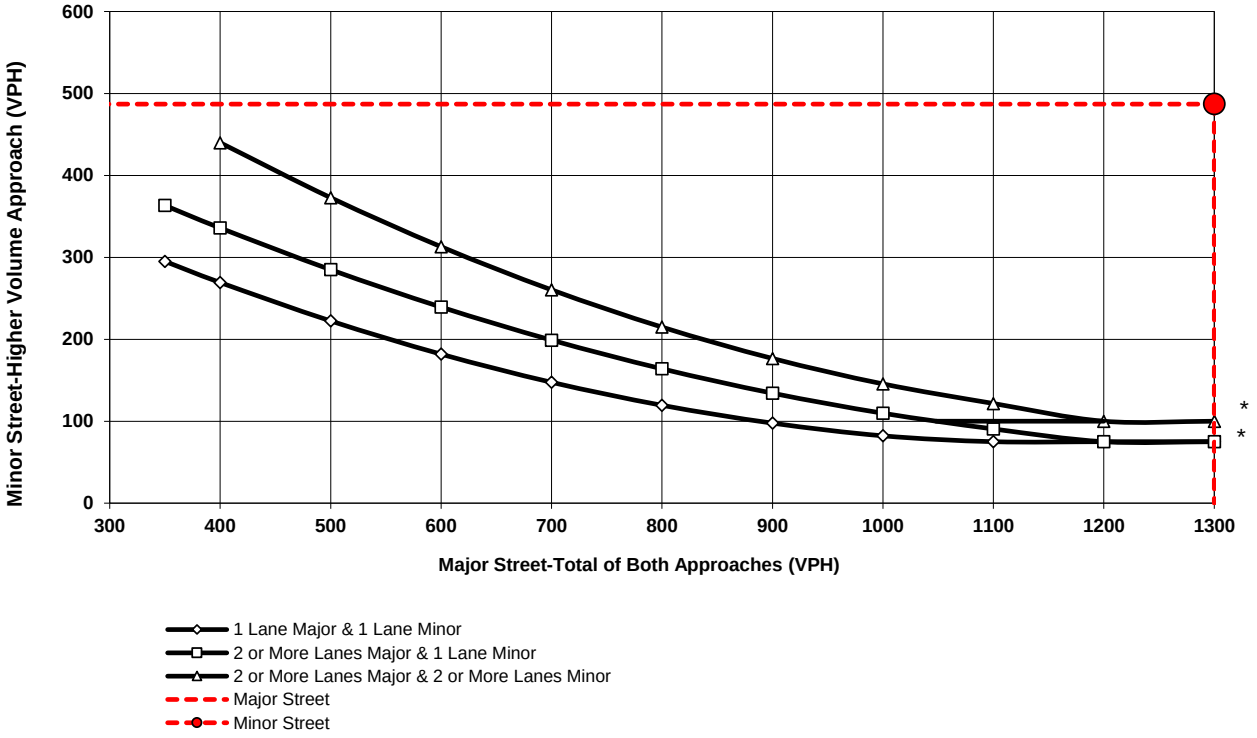
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1623	Higher Volume Approach (VPH):	487
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

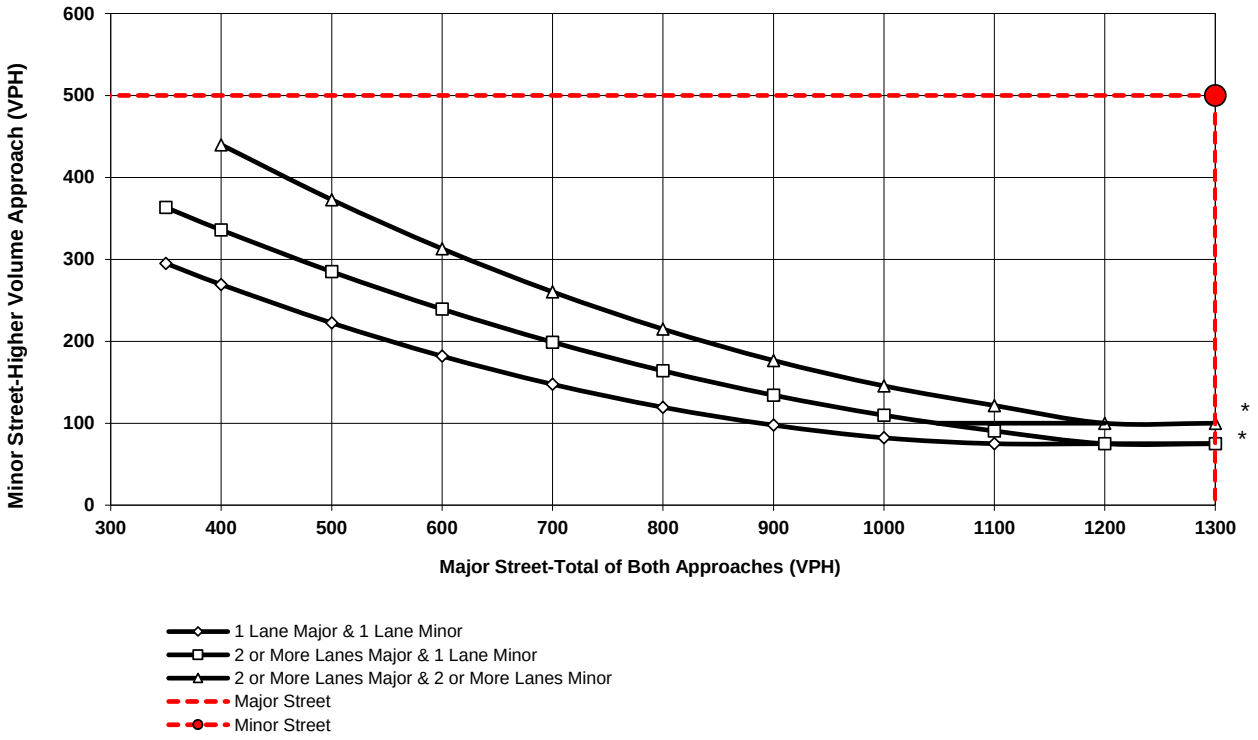
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1791	Higher Volume Approach (VPH):	935
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

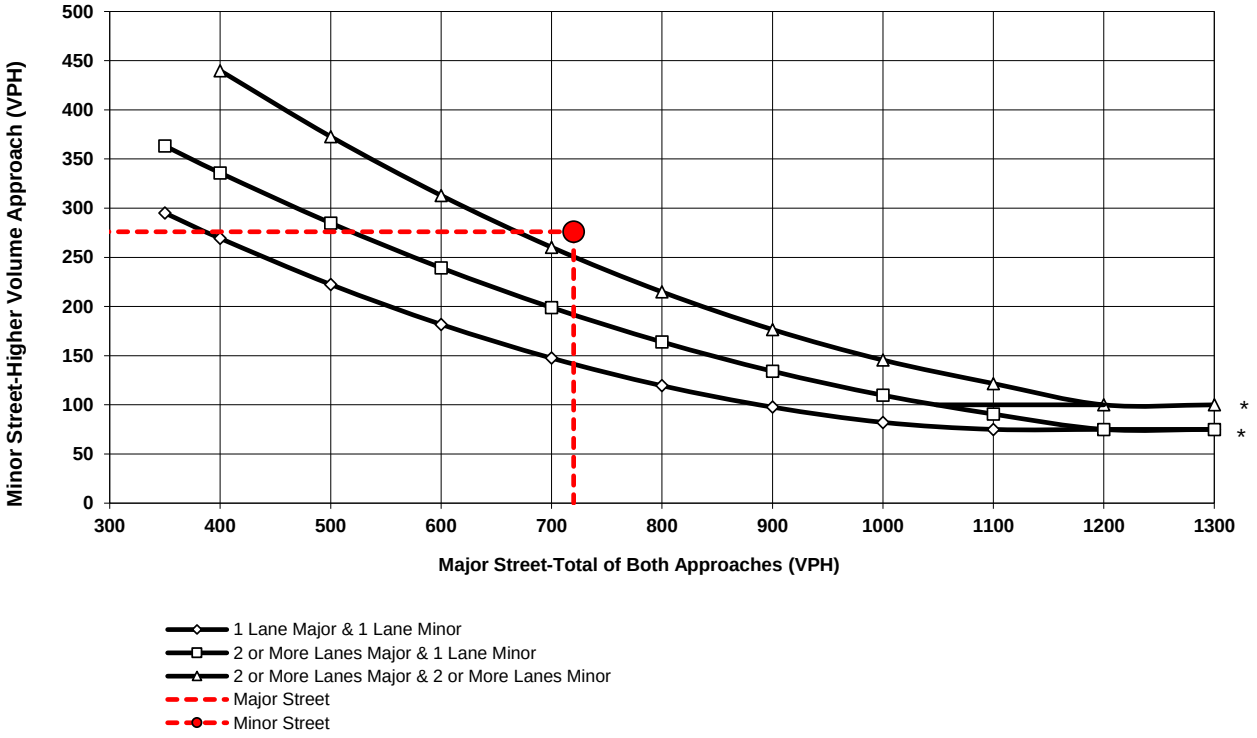
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	720	Higher Volume Approach (VPH):	276
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

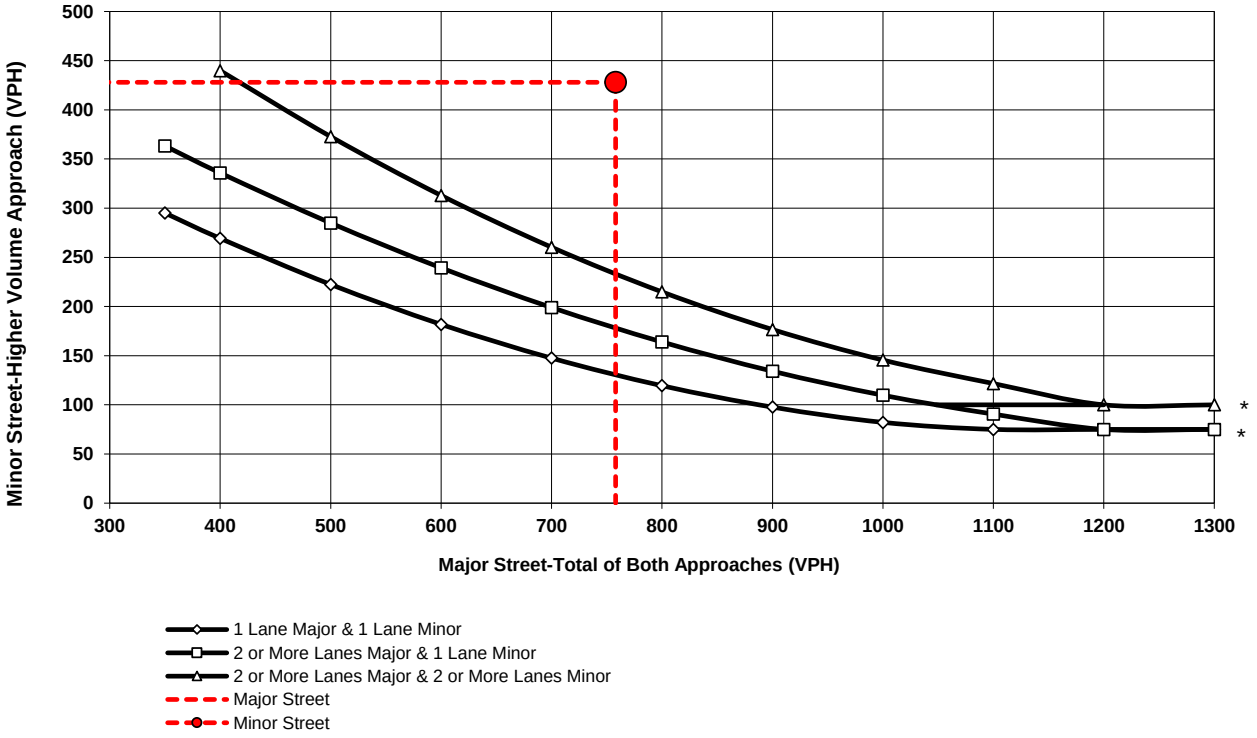
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	758	Higher Volume Approach (VPH):	428
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

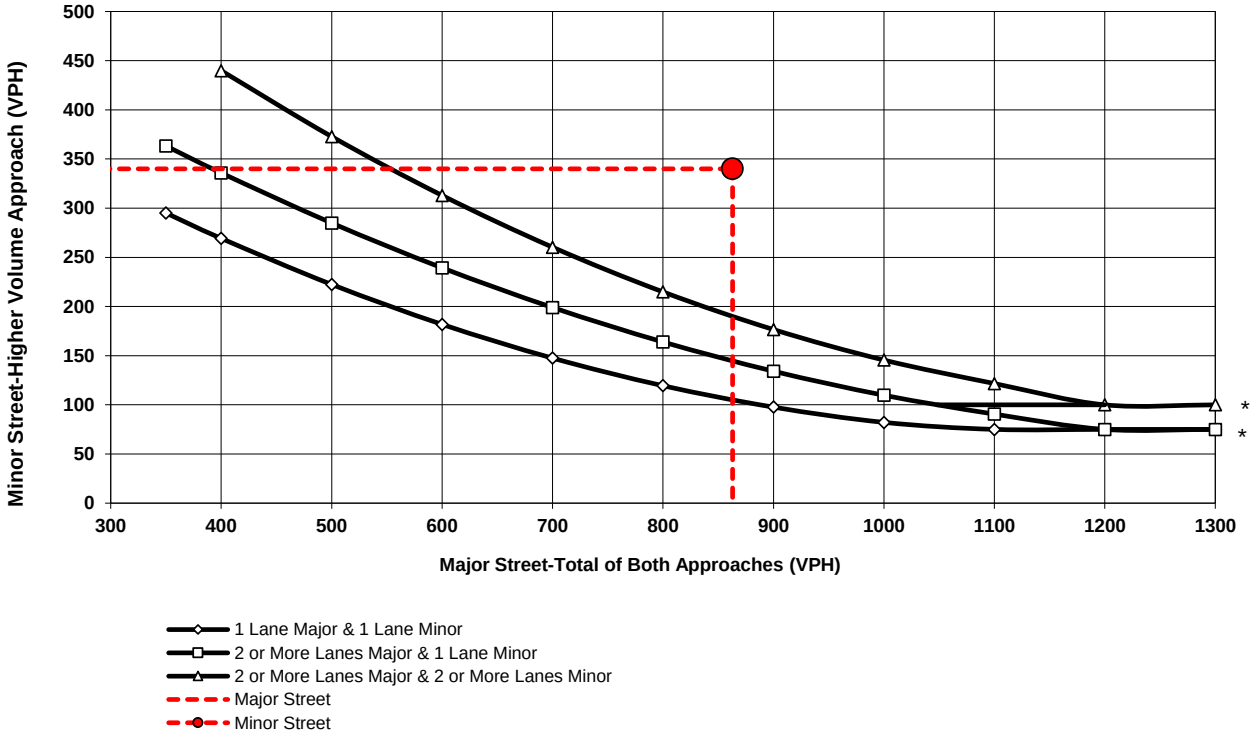
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	863	Higher Volume Approach (VPH):	340
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

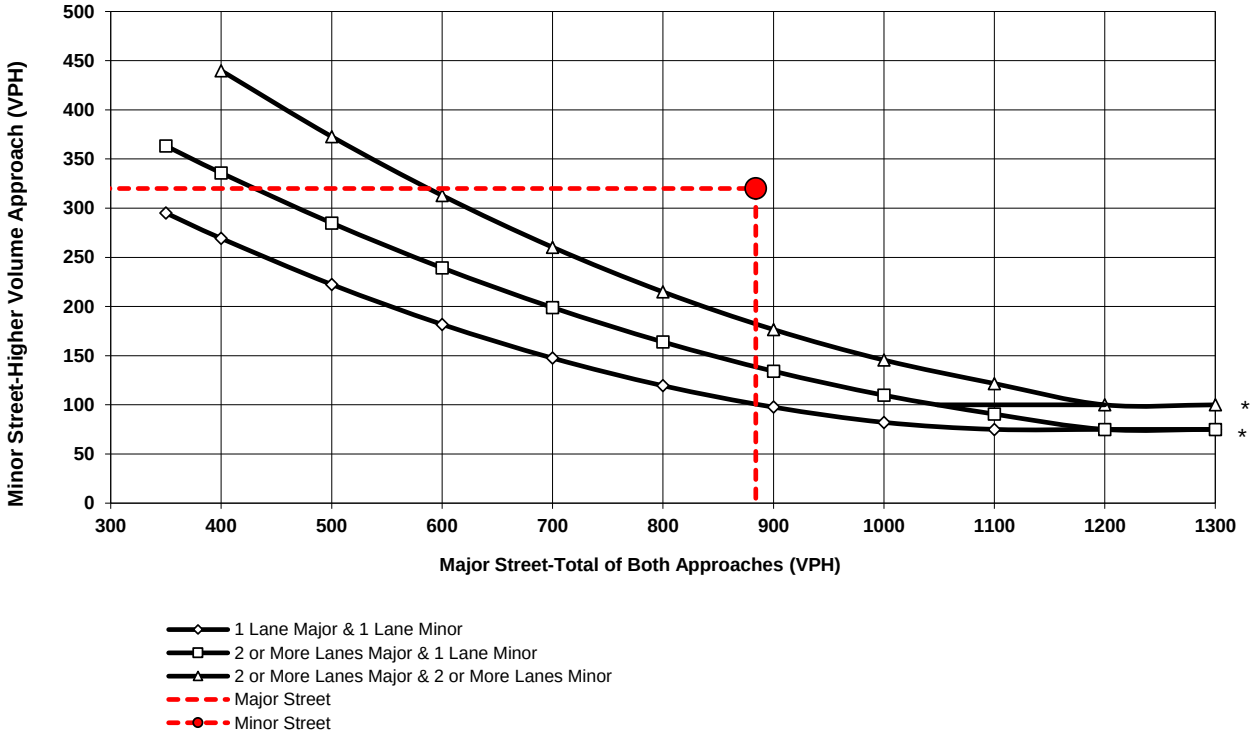
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	884	Higher Volume Approach (VPH):	320
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

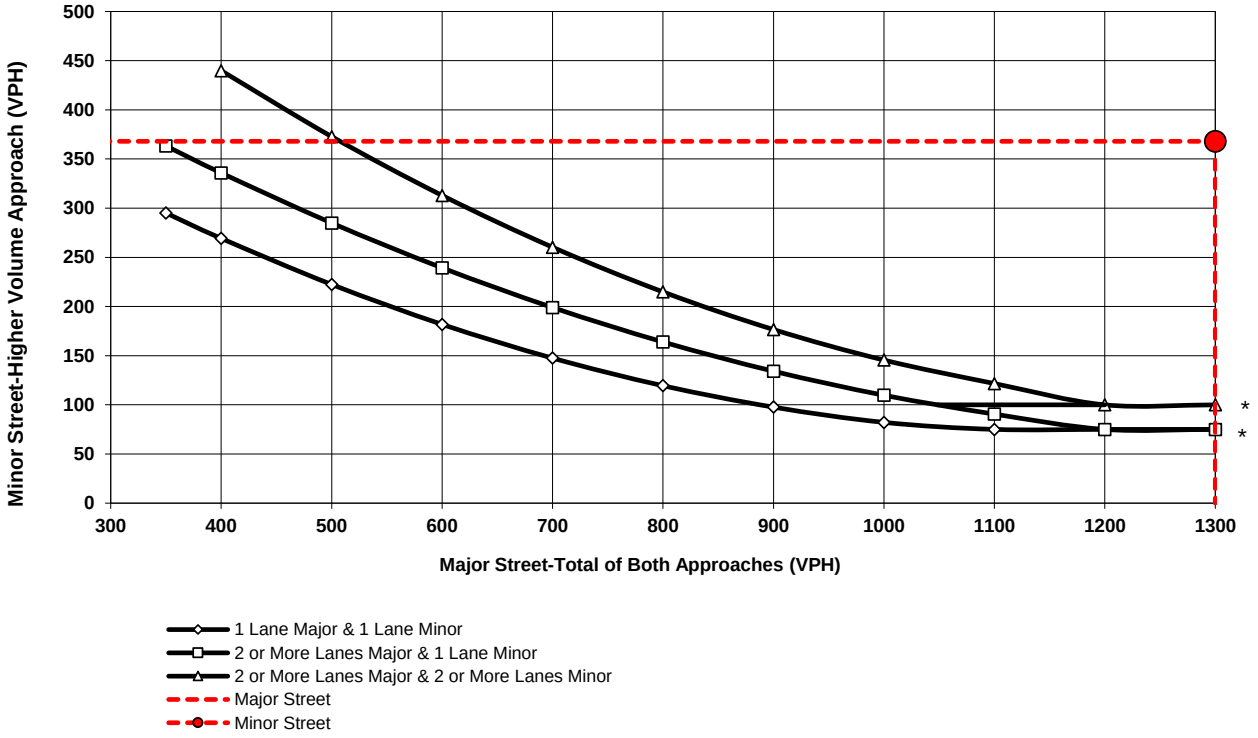
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	3098	Higher Volume Approach (VPH):	368
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

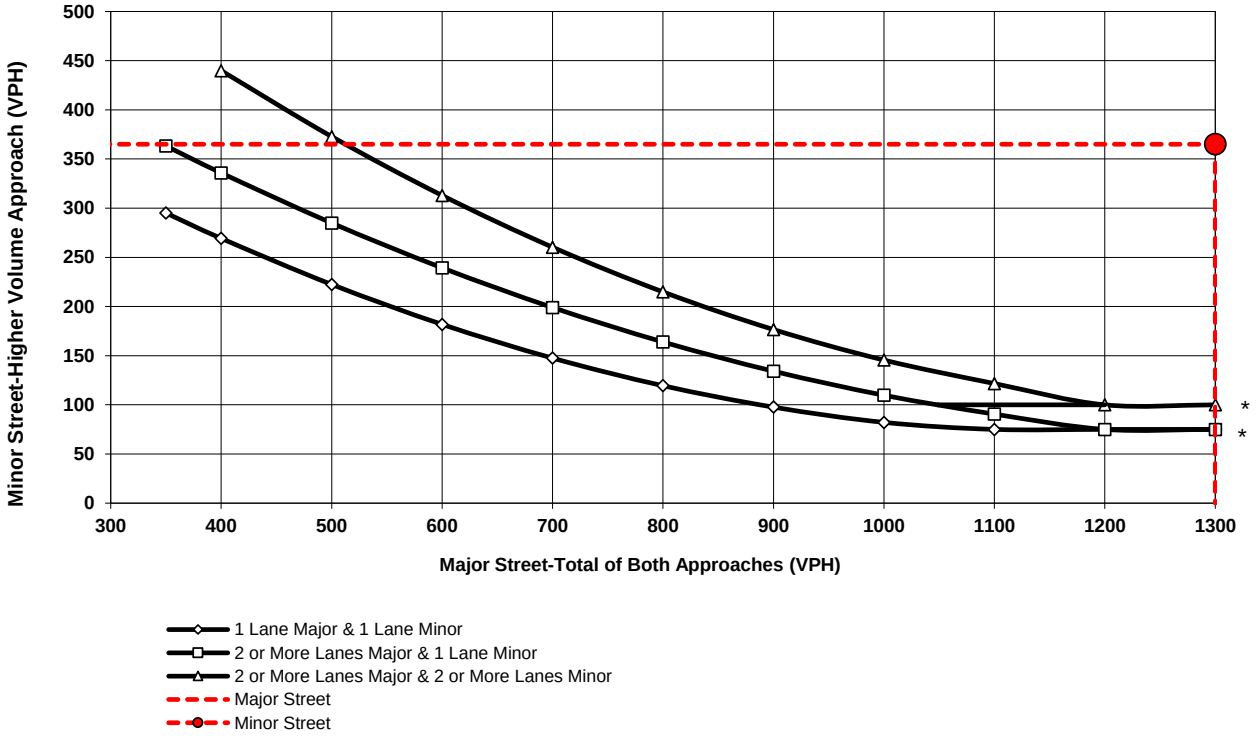
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	3659	Higher Volume Approach (VPH):	365
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-9
Signal Warrant Analysis
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

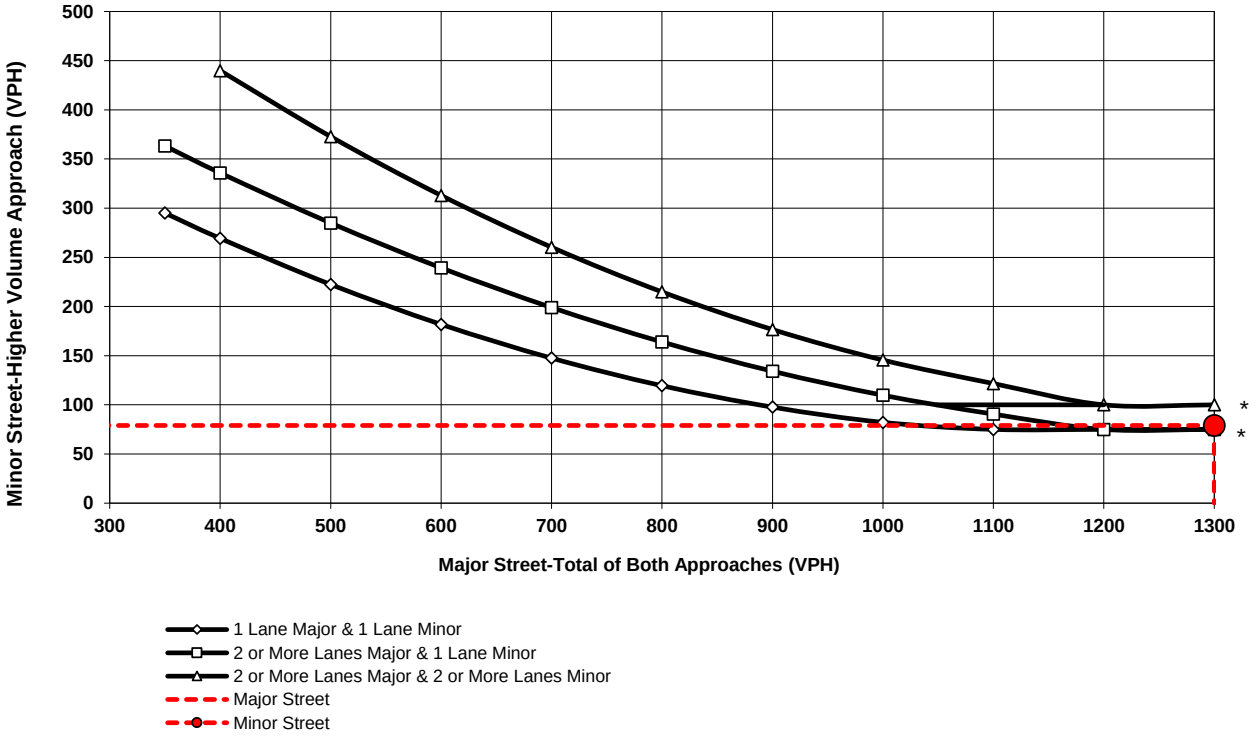
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2514	Higher Volume Approach (VPH):	79
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

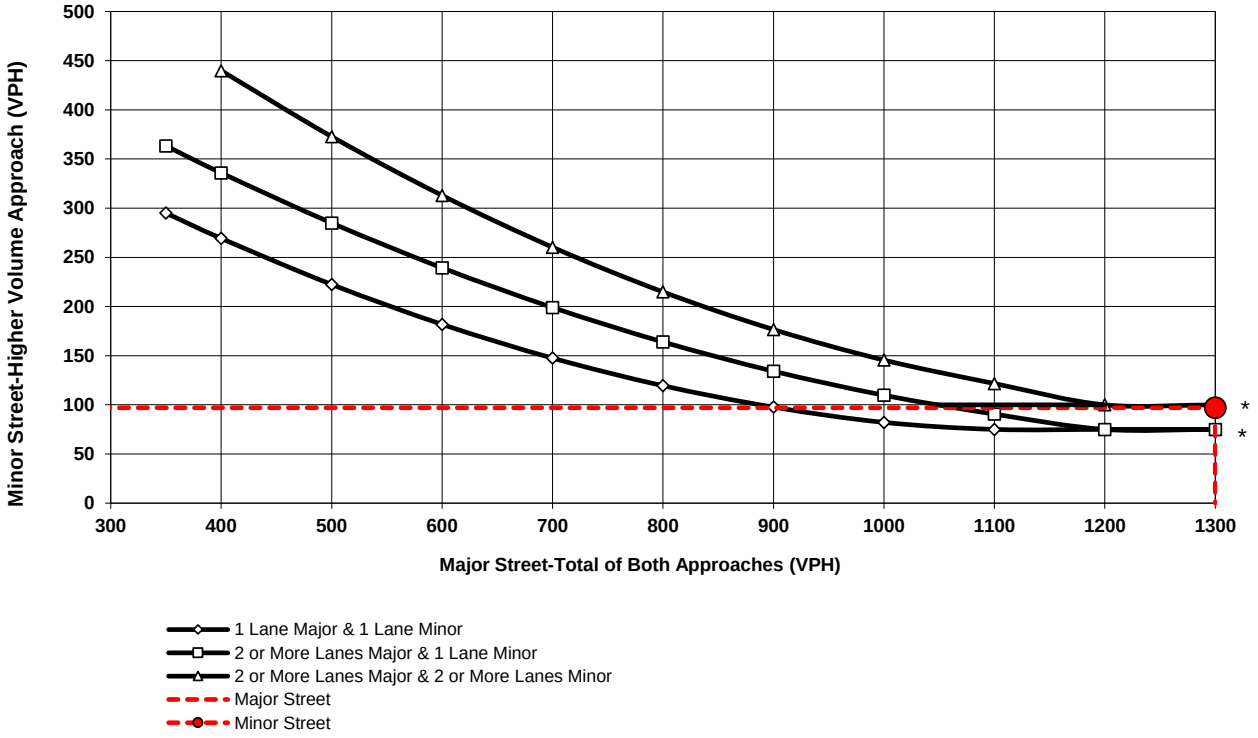
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	3148	Higher Volume Approach (VPH):	97
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

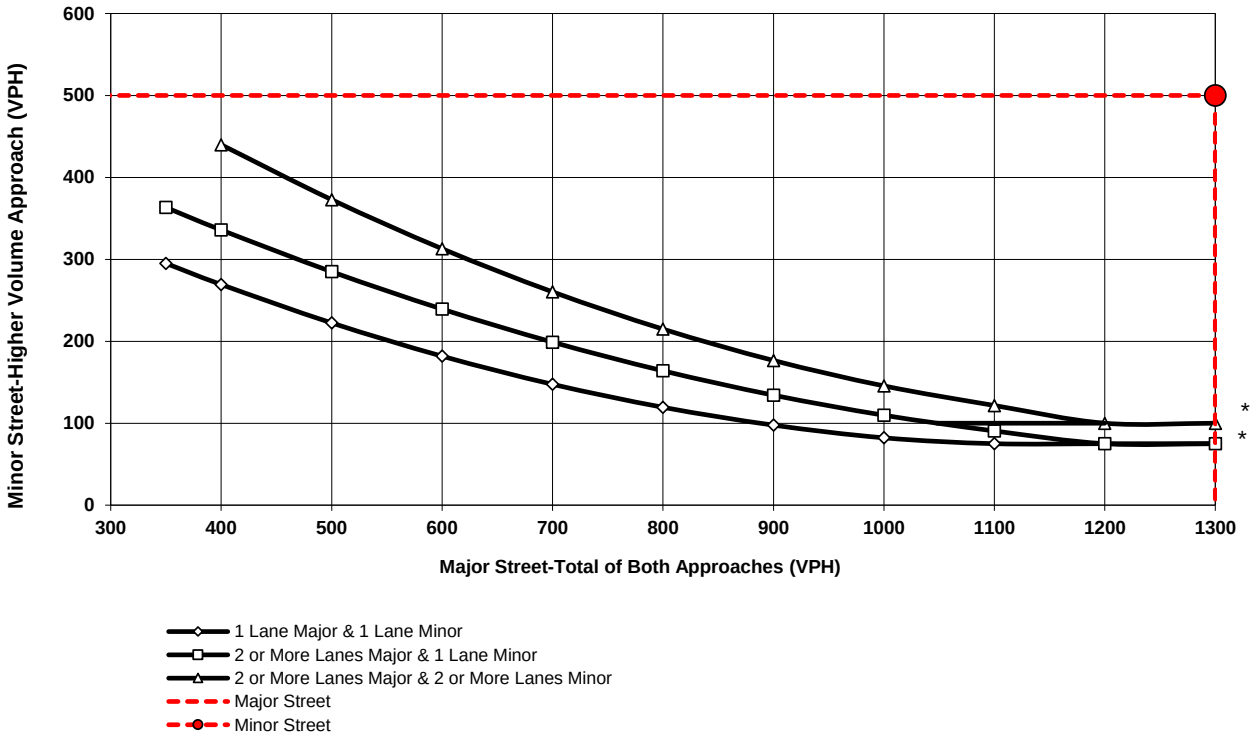
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2373	Higher Volume Approach (VPH):	748
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

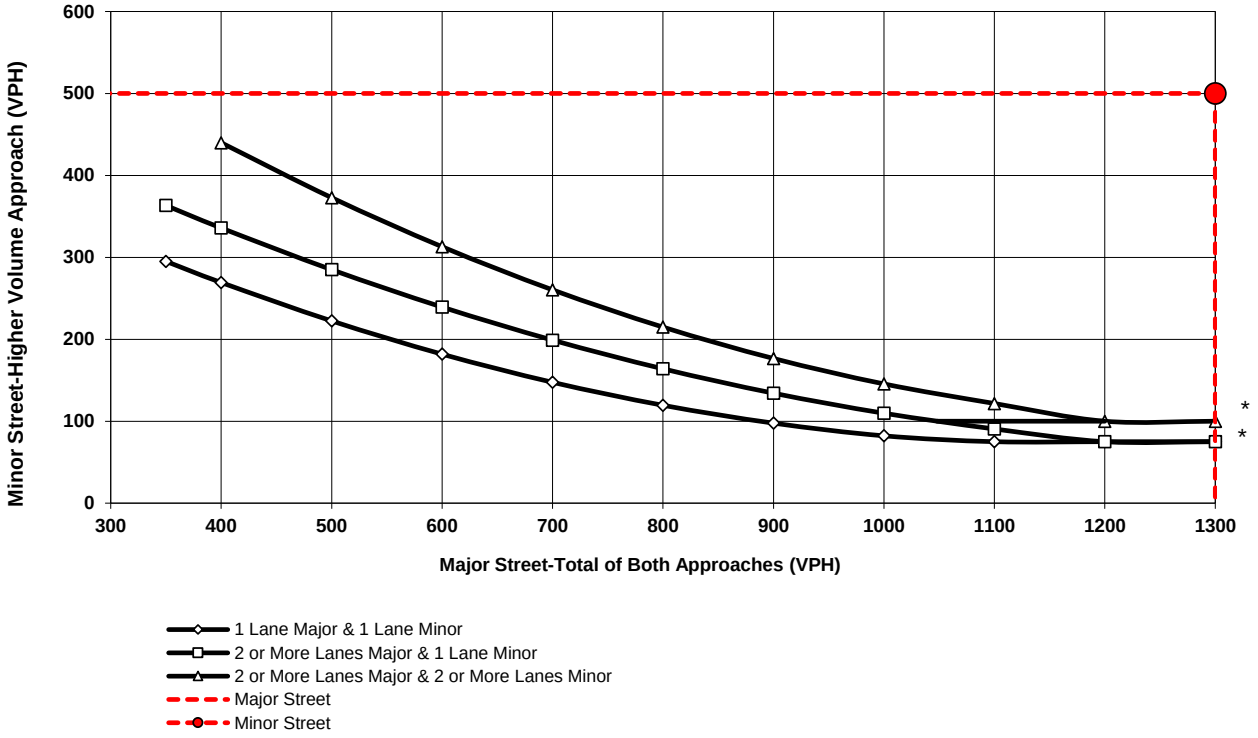
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	3000	Higher Volume Approach (VPH):	839
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

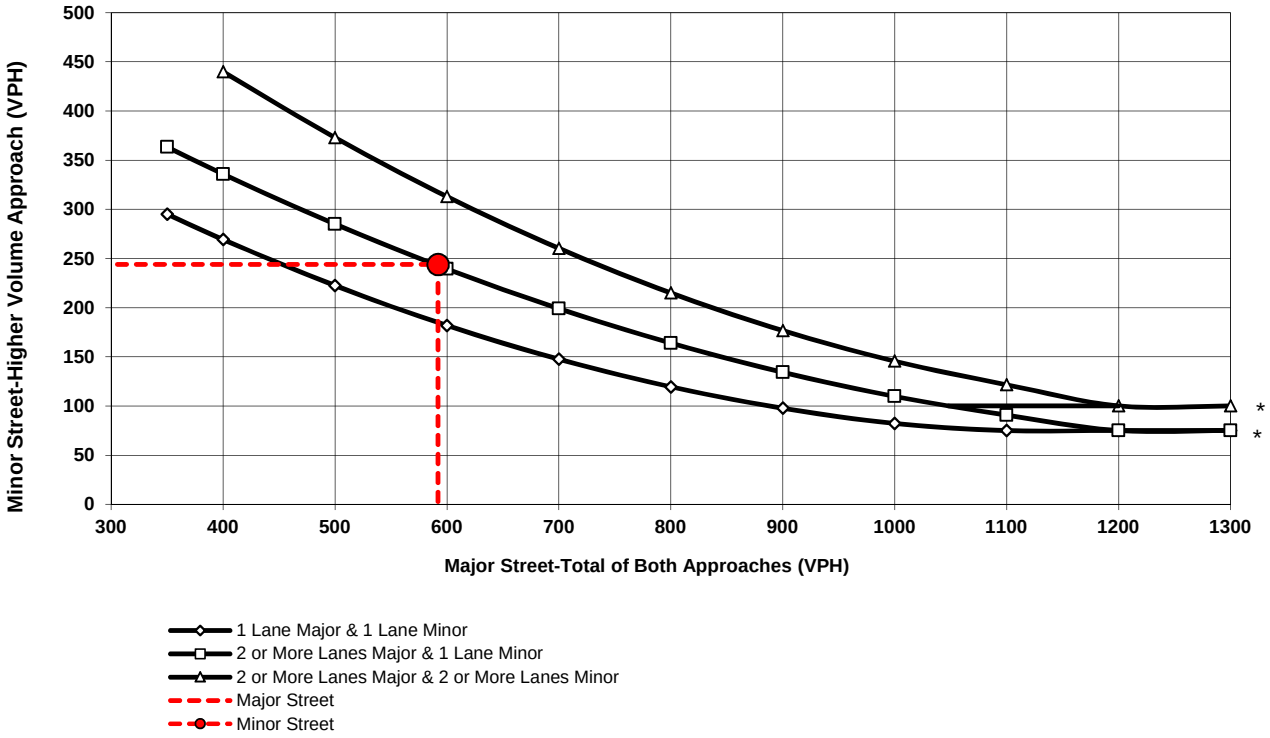
Major Street: **Keller Road**

Minor Street: **Zeiders Road**

Total of Both Approaches (VPH):	**592**	Higher Volume Approach (VPH):	**244**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

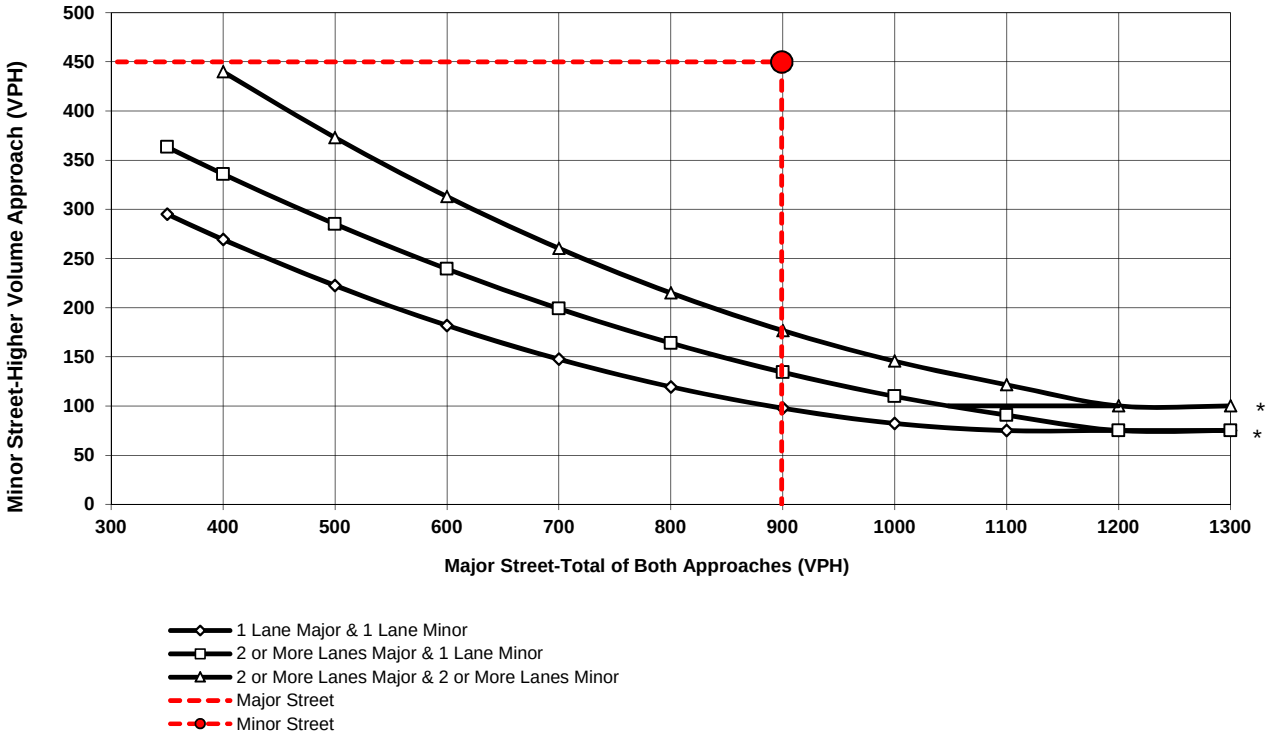
Peak Hour: **PM**

Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**899**	Higher Volume Approach (VPH):	**450**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

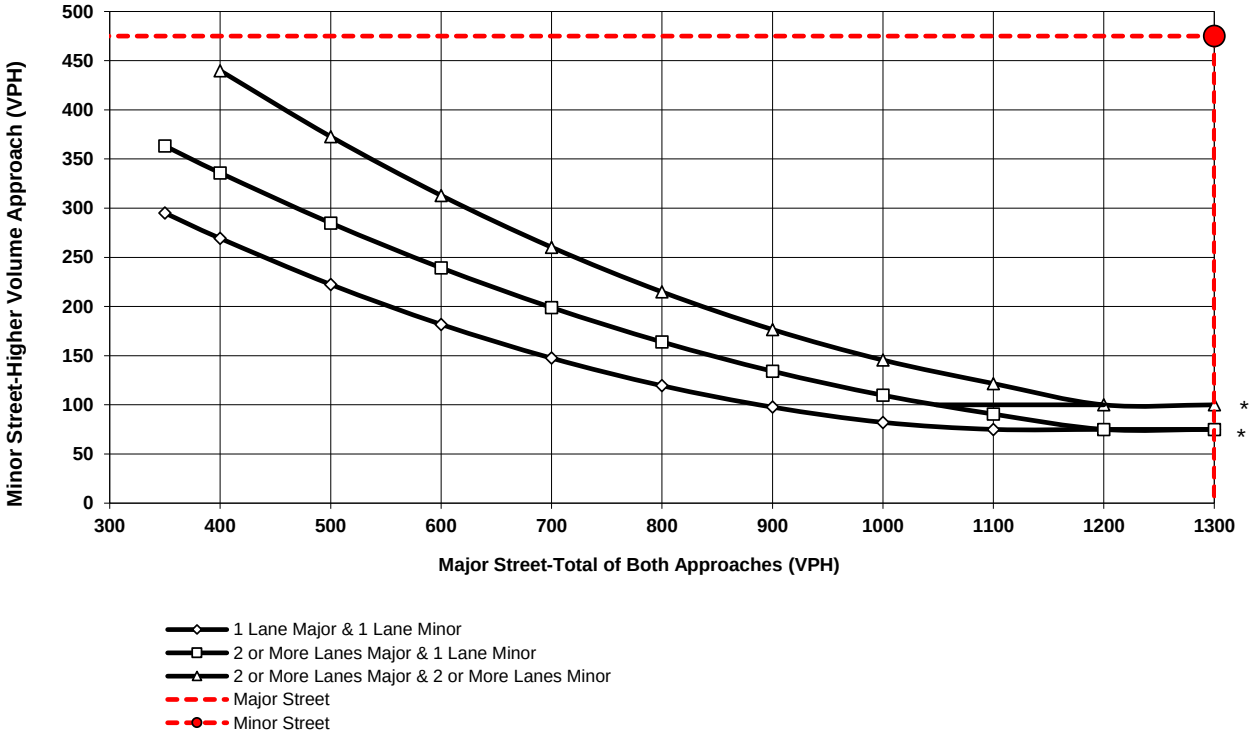
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1642	Higher Volume Approach (VPH):	475
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

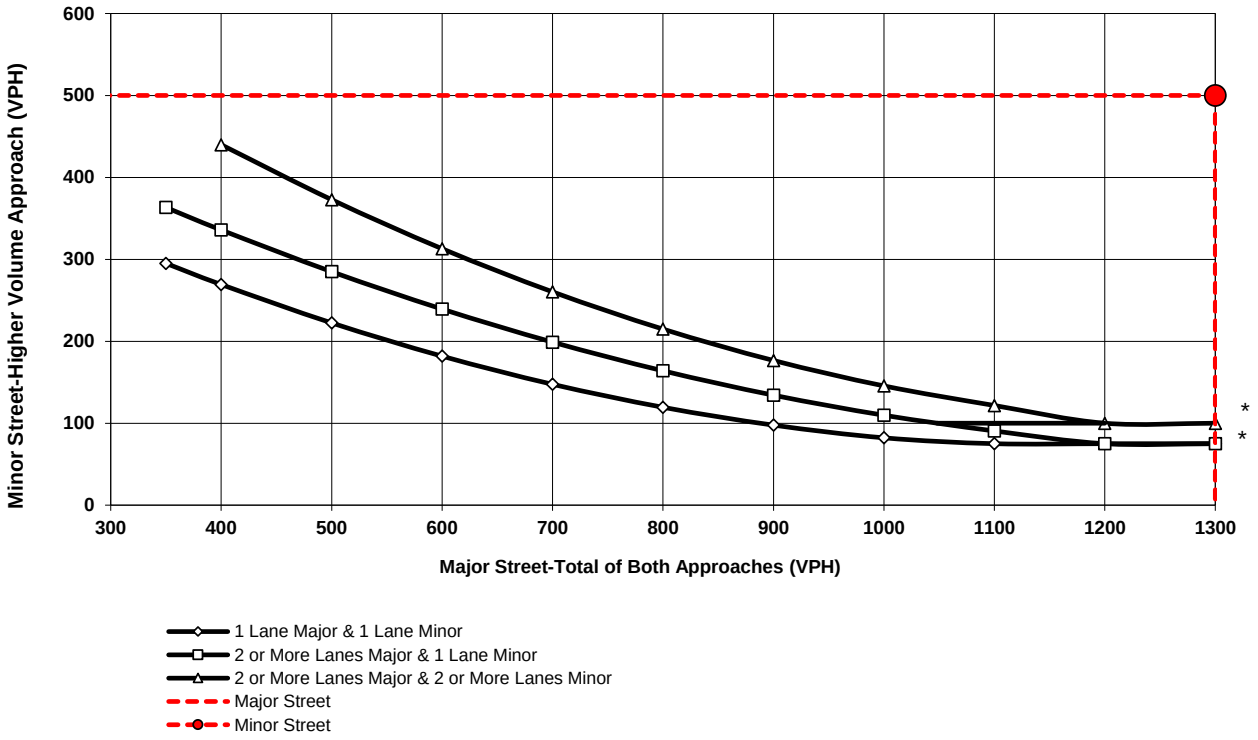
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1817	Higher Volume Approach (VPH):	772
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

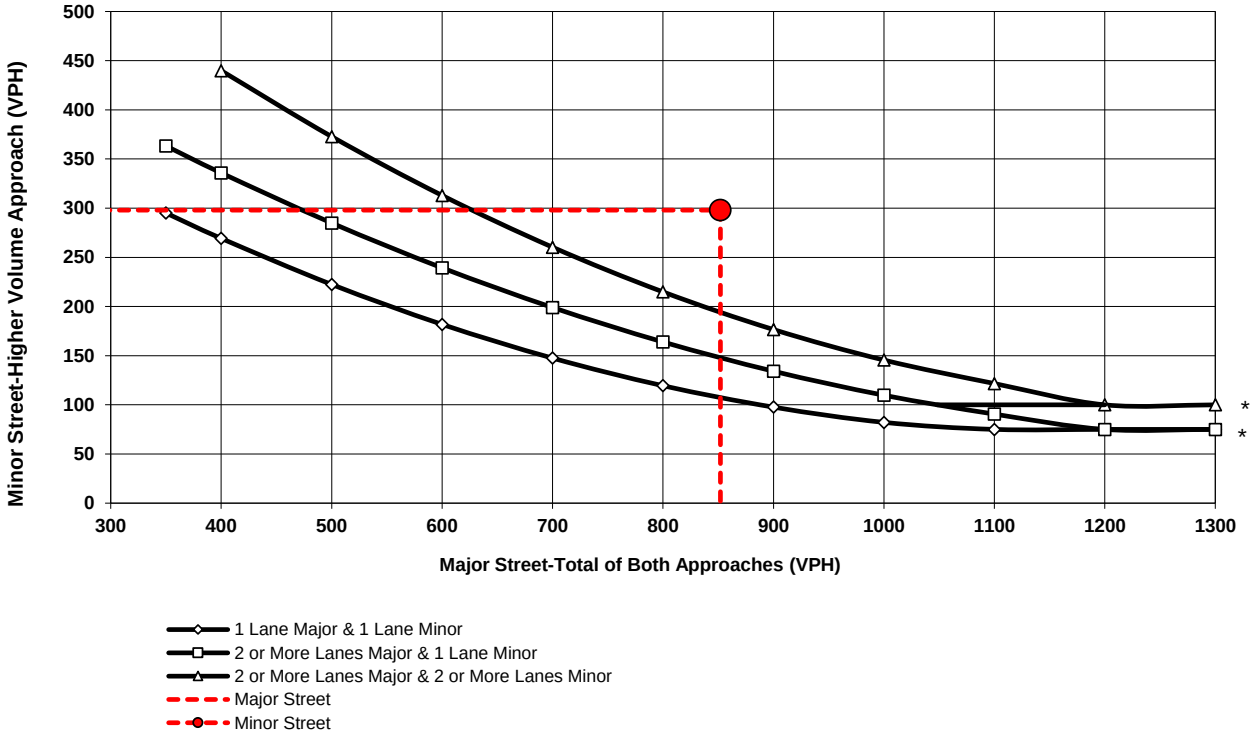
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	852	Higher Volume Approach (VPH):	298
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

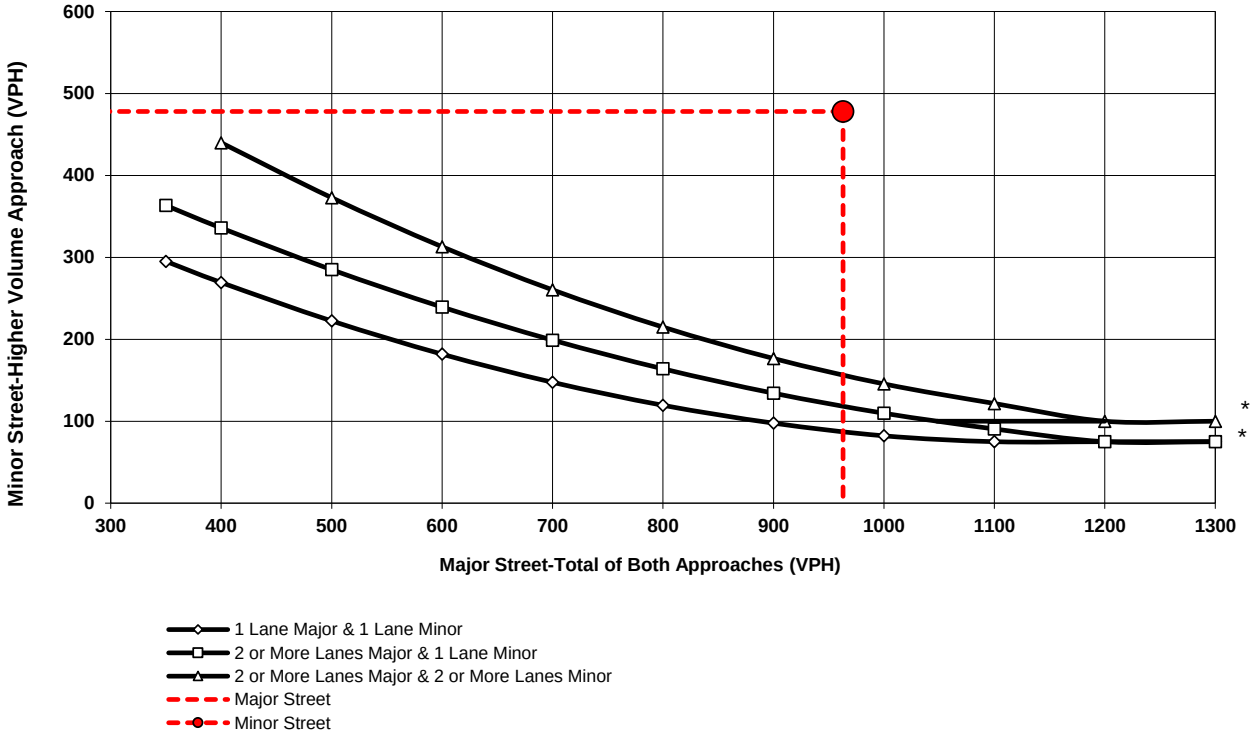
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	963	Higher Volume Approach (VPH):	478
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

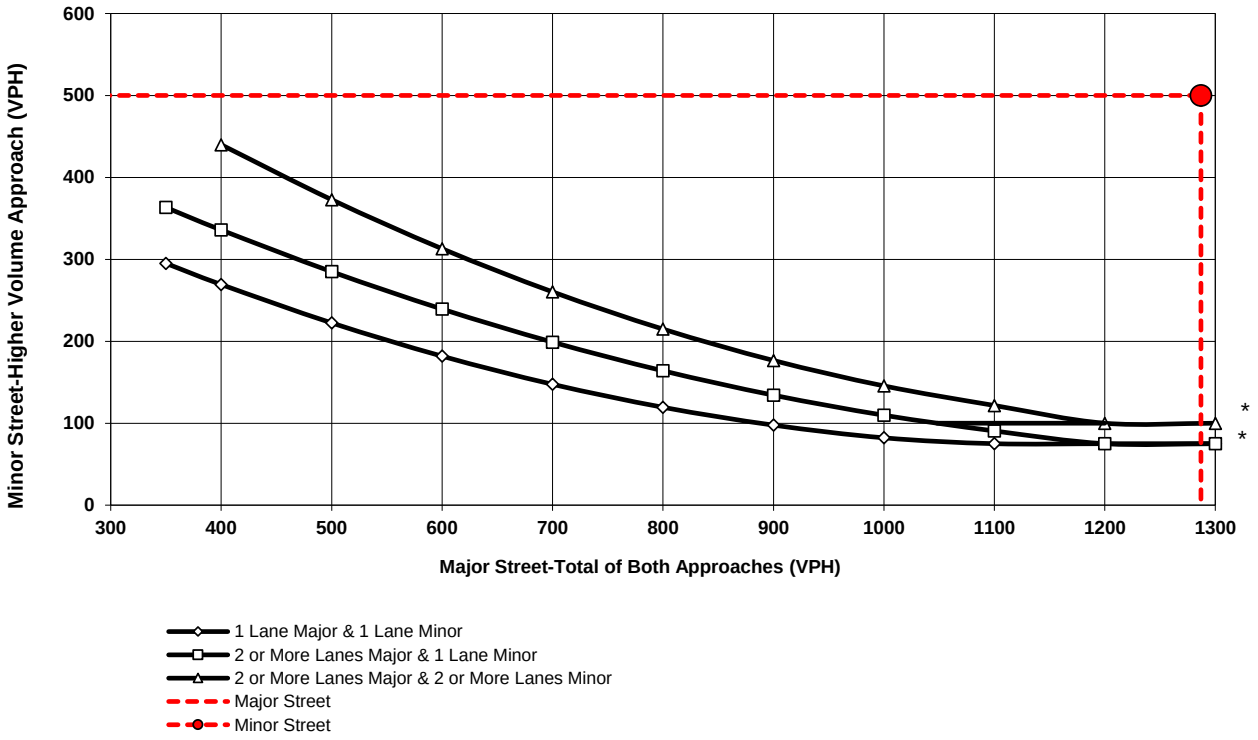
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	1287	Higher Volume Approach (VPH):	548
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

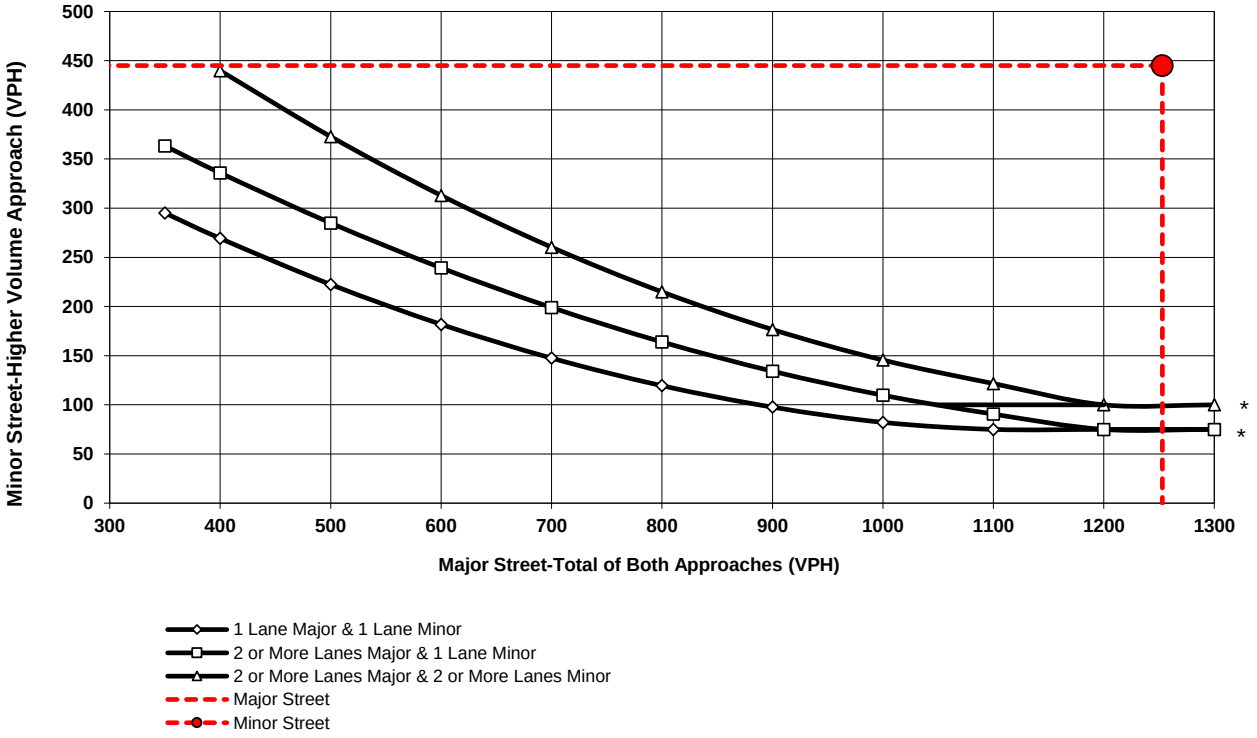
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	1253	Higher Volume Approach (VPH):	445
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

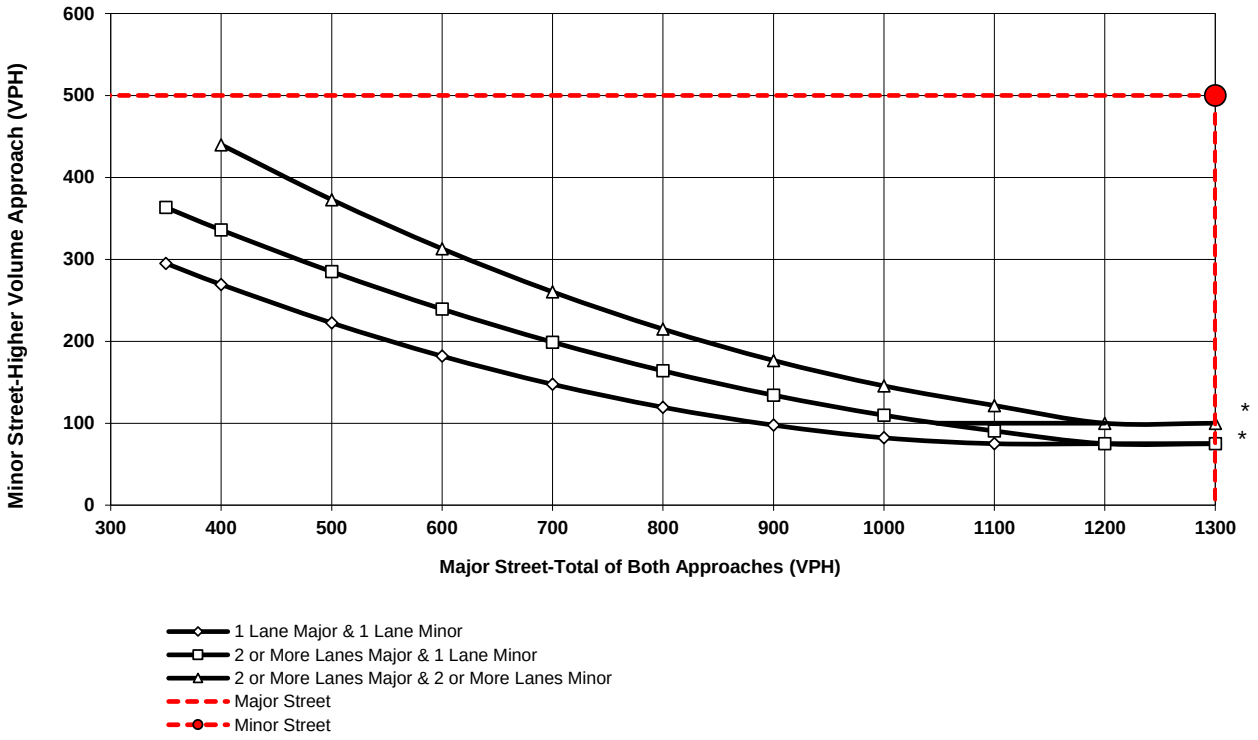
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	4024	Higher Volume Approach (VPH):	583
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

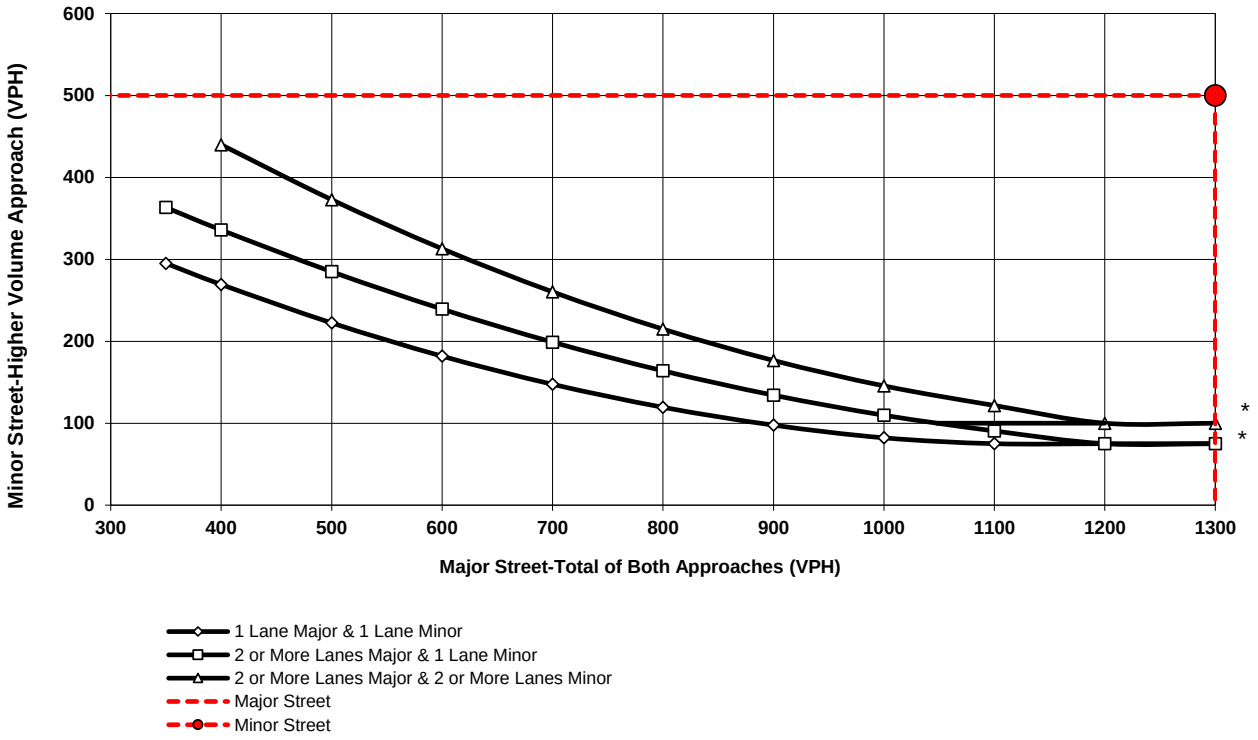
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	3796	Higher Volume Approach (VPH):	553
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX E-10
Signal Warrant Analysis
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

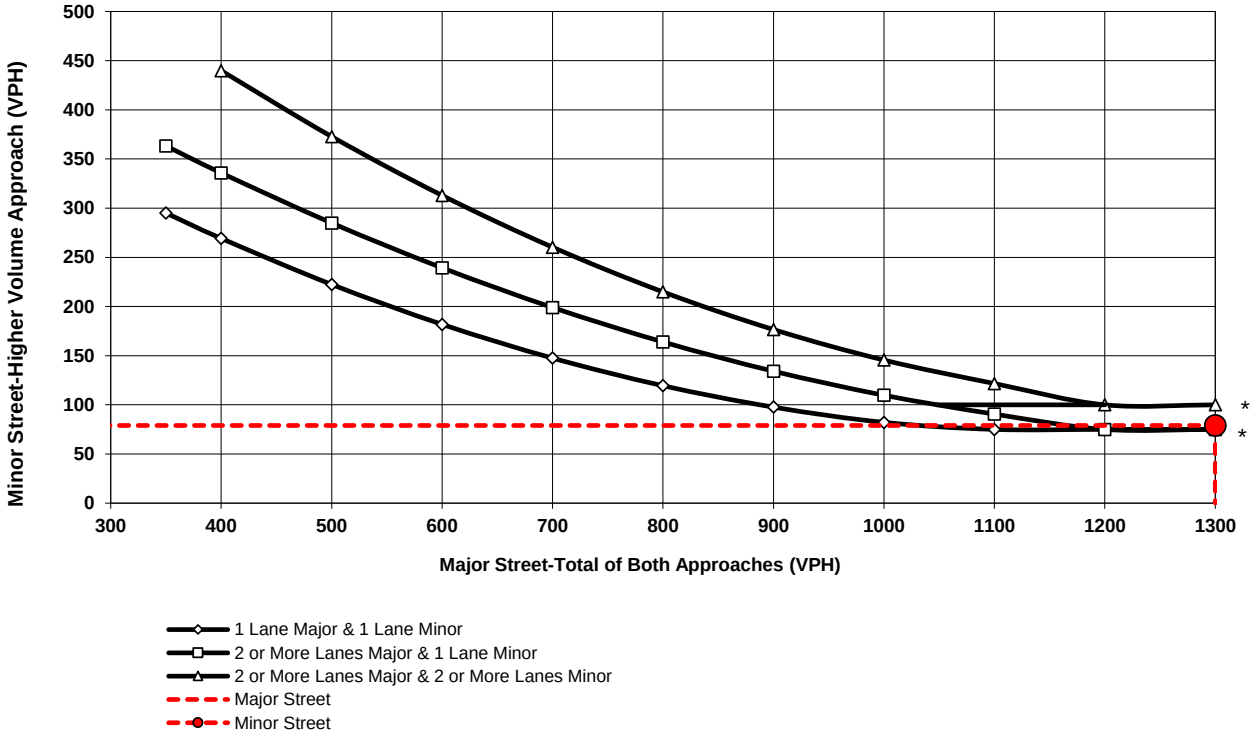
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2539	Higher Volume Approach (VPH):	79
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

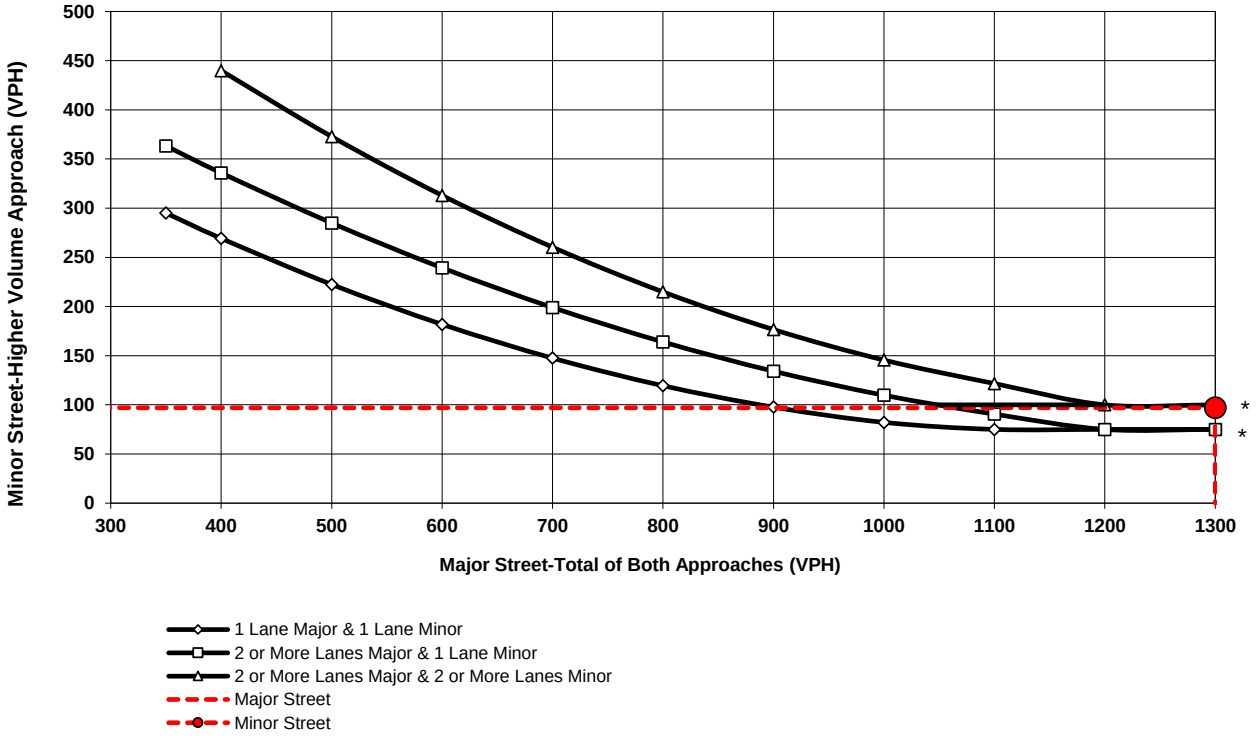
Major Street: Bundy Canyon Road

Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	3181	Higher Volume Approach (VPH):	97
Number of Approach Lanes:	2	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

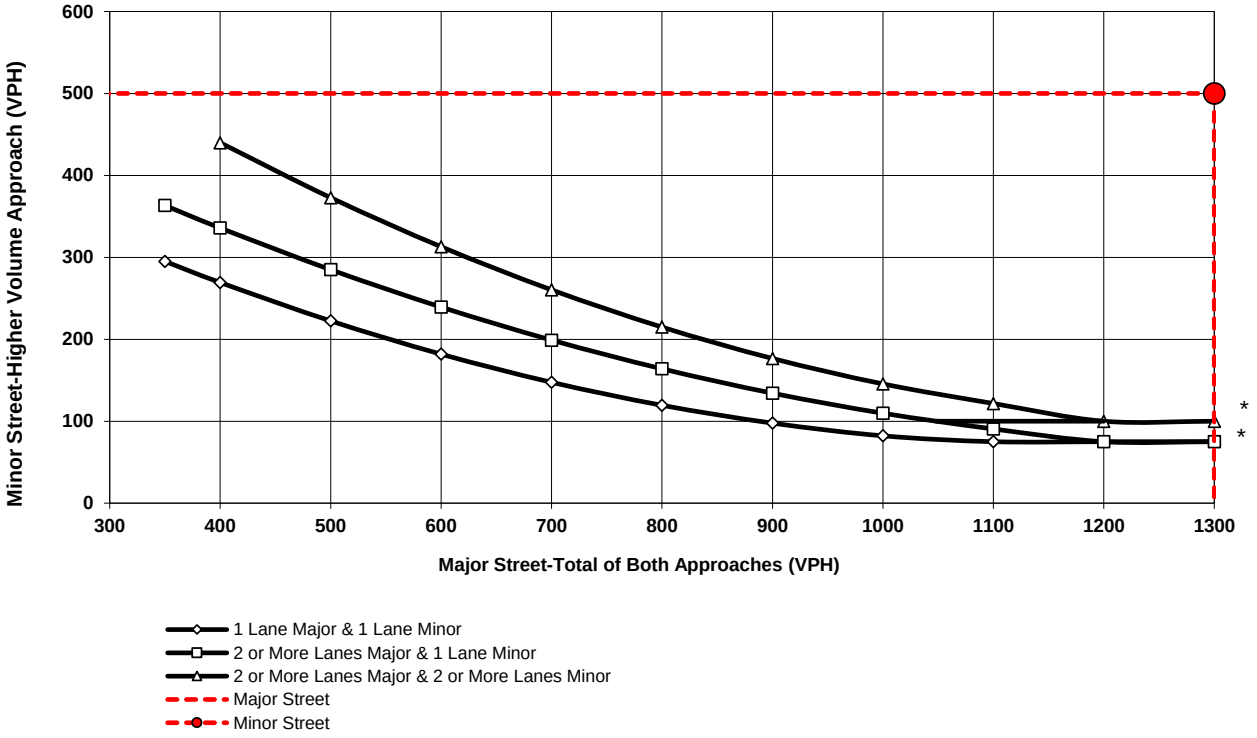
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2407	Higher Volume Approach (VPH):	748
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

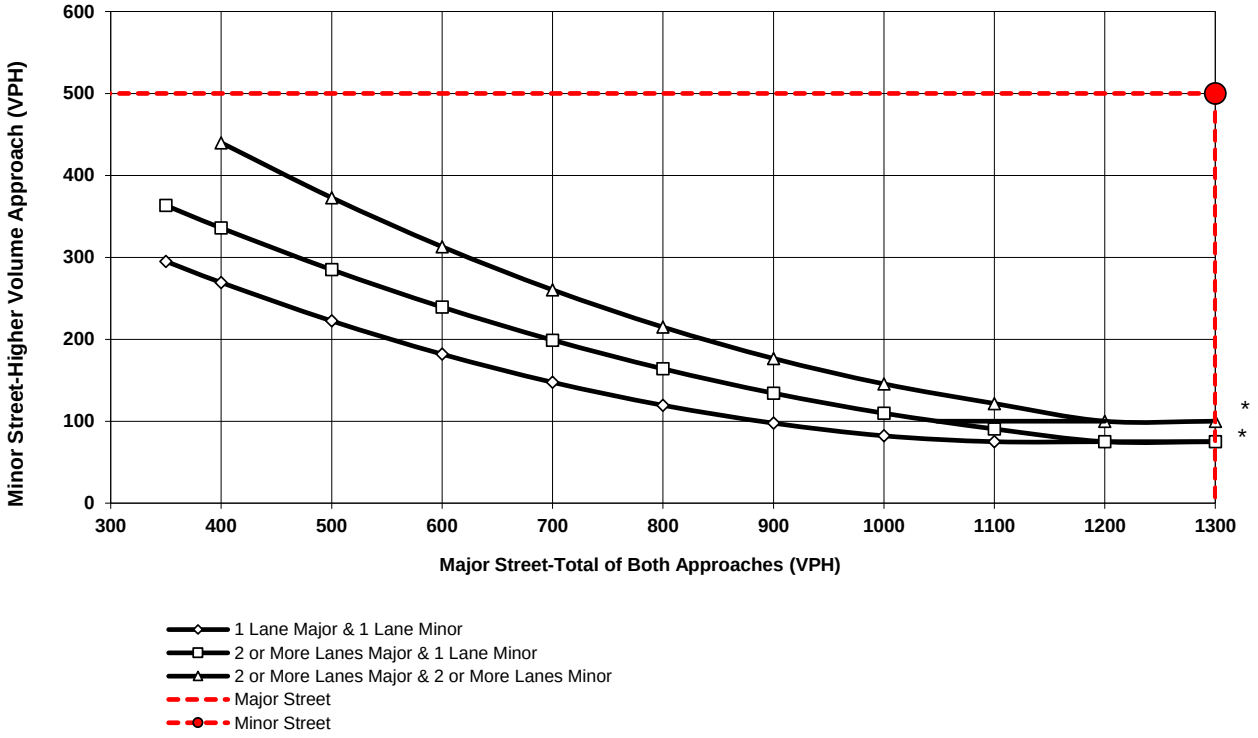
Major Street: Scott Road

Minor Street: Murrieta Road

Total of Both Approaches (VPH):	3045	Higher Volume Approach (VPH):	839
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

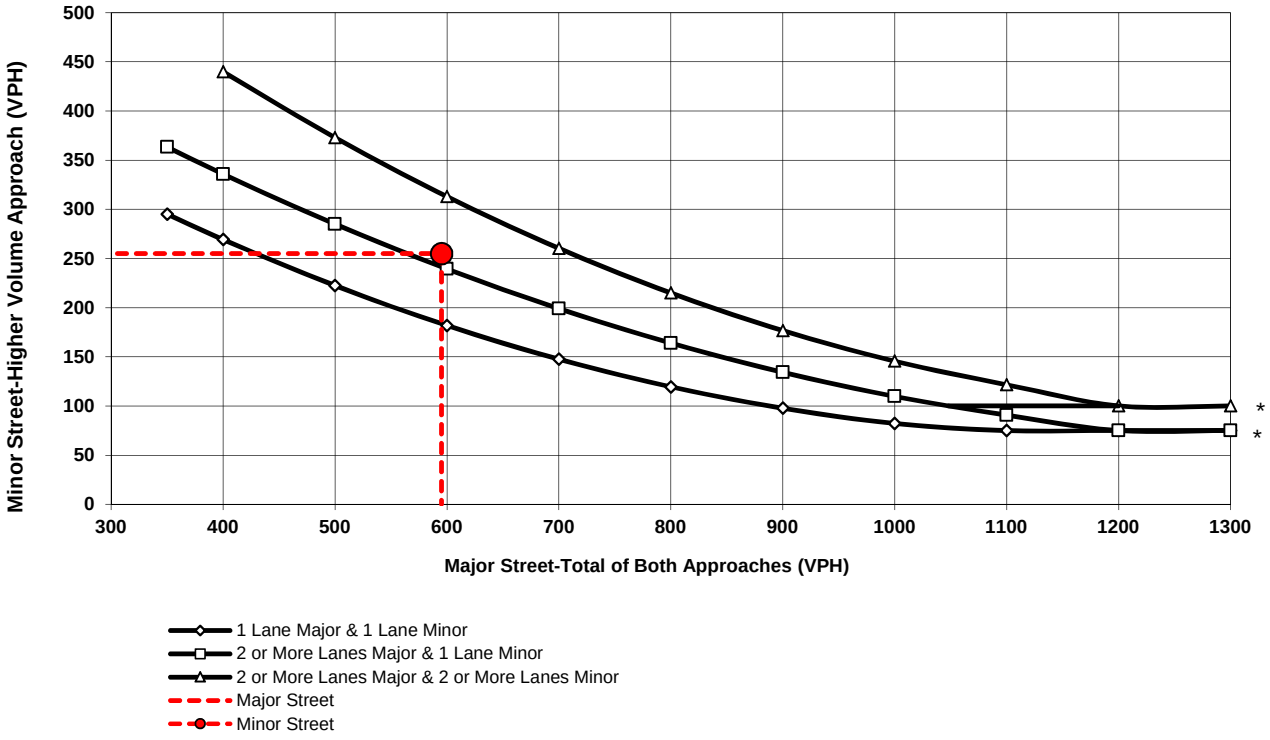
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	595	Higher Volume Approach (VPH):	255
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

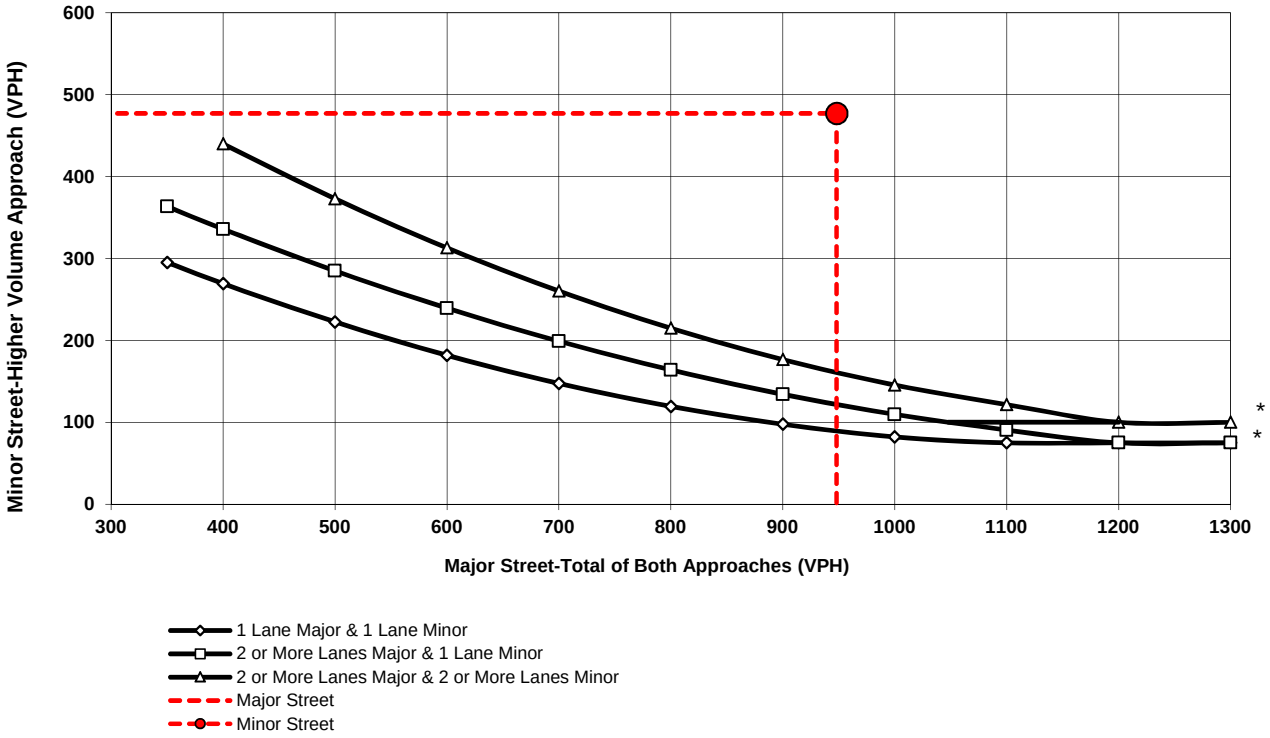
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	948	Higher Volume Approach (VPH):	477
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

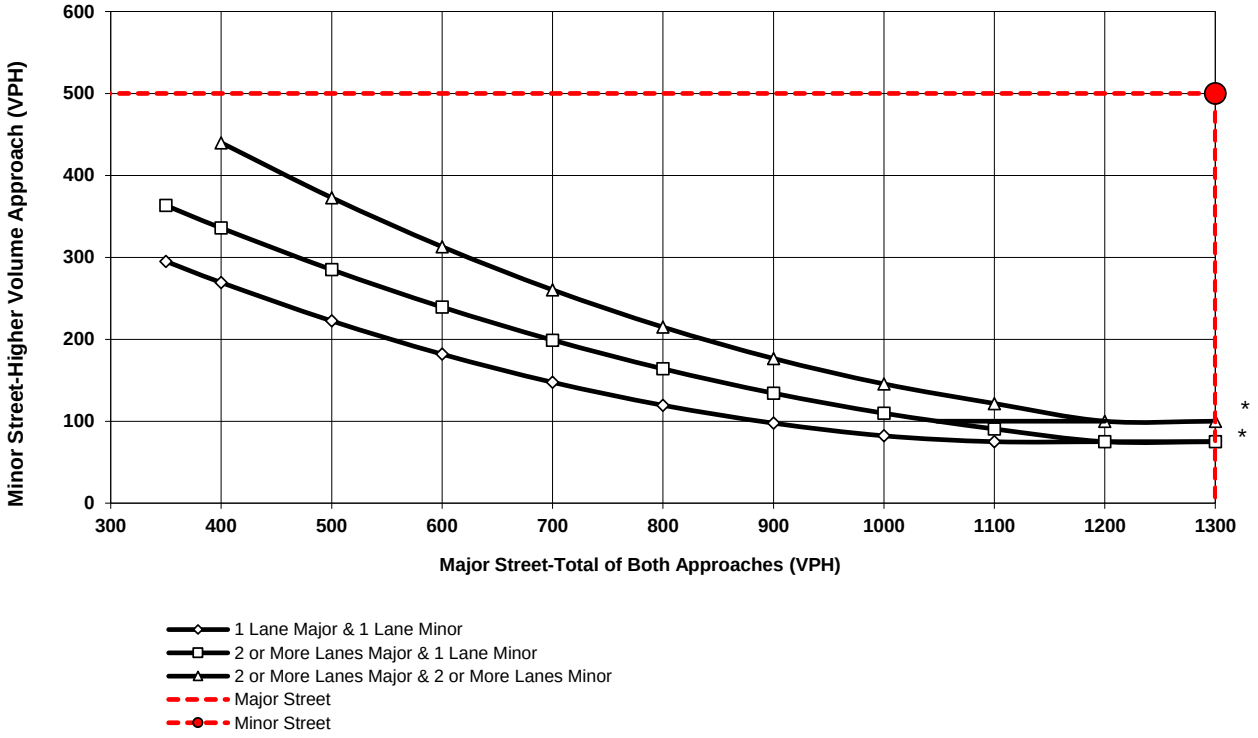
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1705	Higher Volume Approach (VPH):	529
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

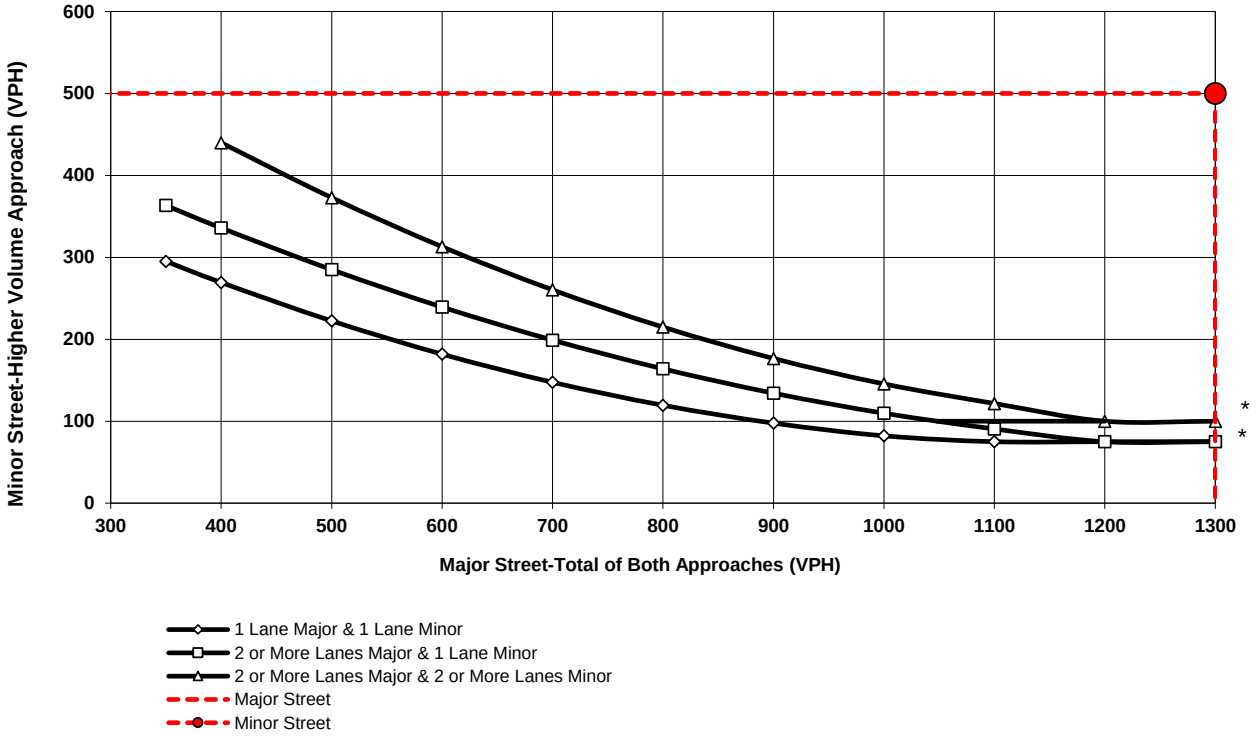
Major Street: Keller Road

Minor Street: Mapleton Avenue

Total of Both Approaches (VPH):	1937	Higher Volume Approach (VPH):	979
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

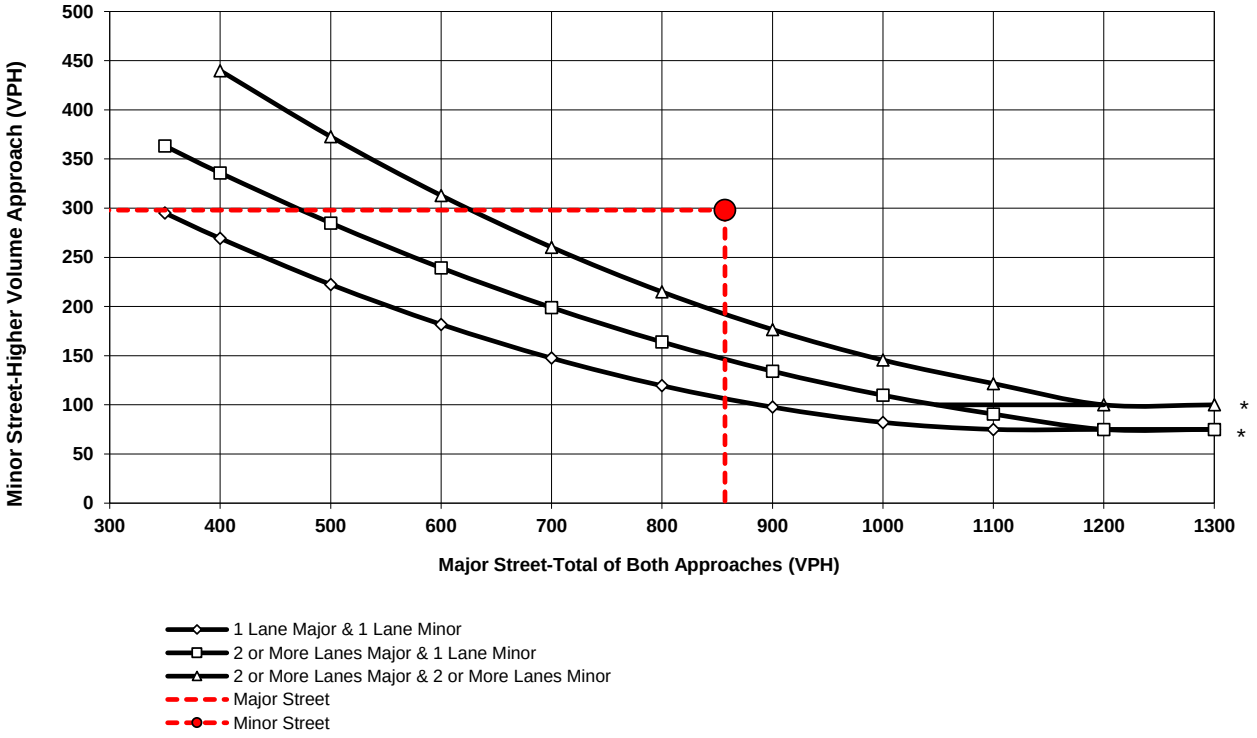
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	857	Higher Volume Approach (VPH):	298
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

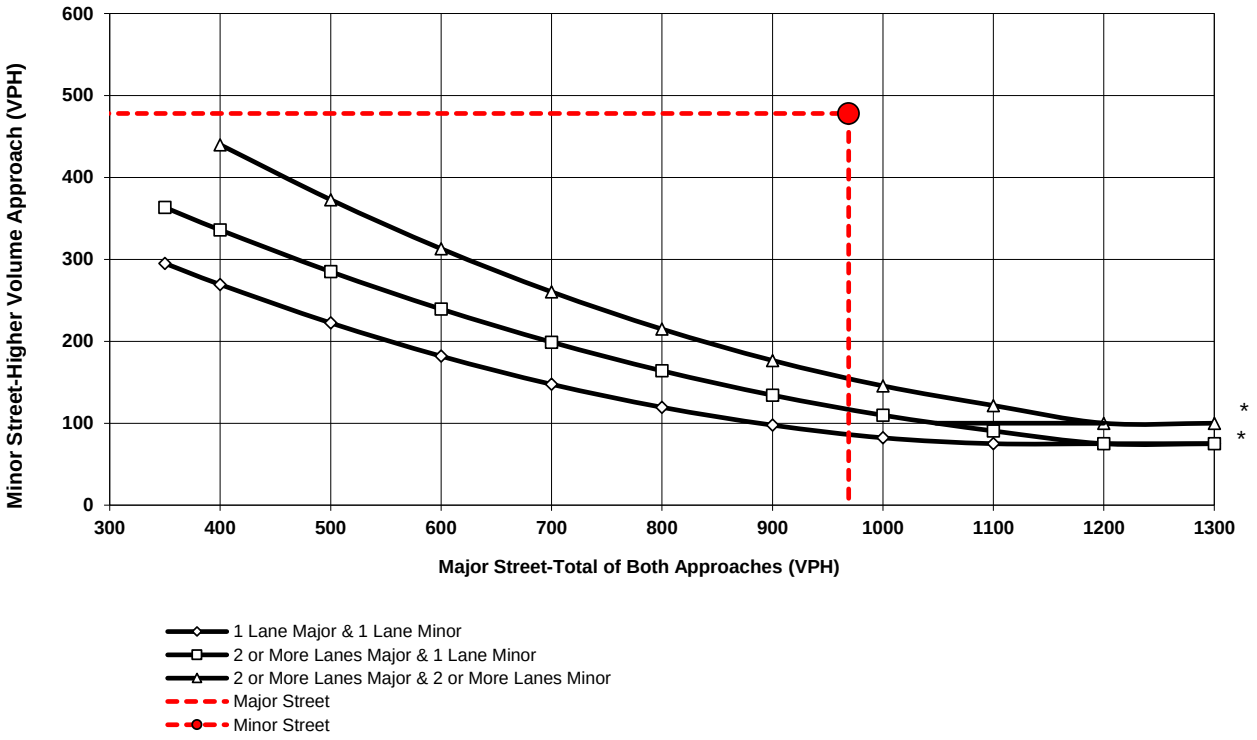
Major Street: Linnell Lane

Minor Street: McElwain Road

Total of Both Approaches (VPH):	969	Higher Volume Approach (VPH):	478
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

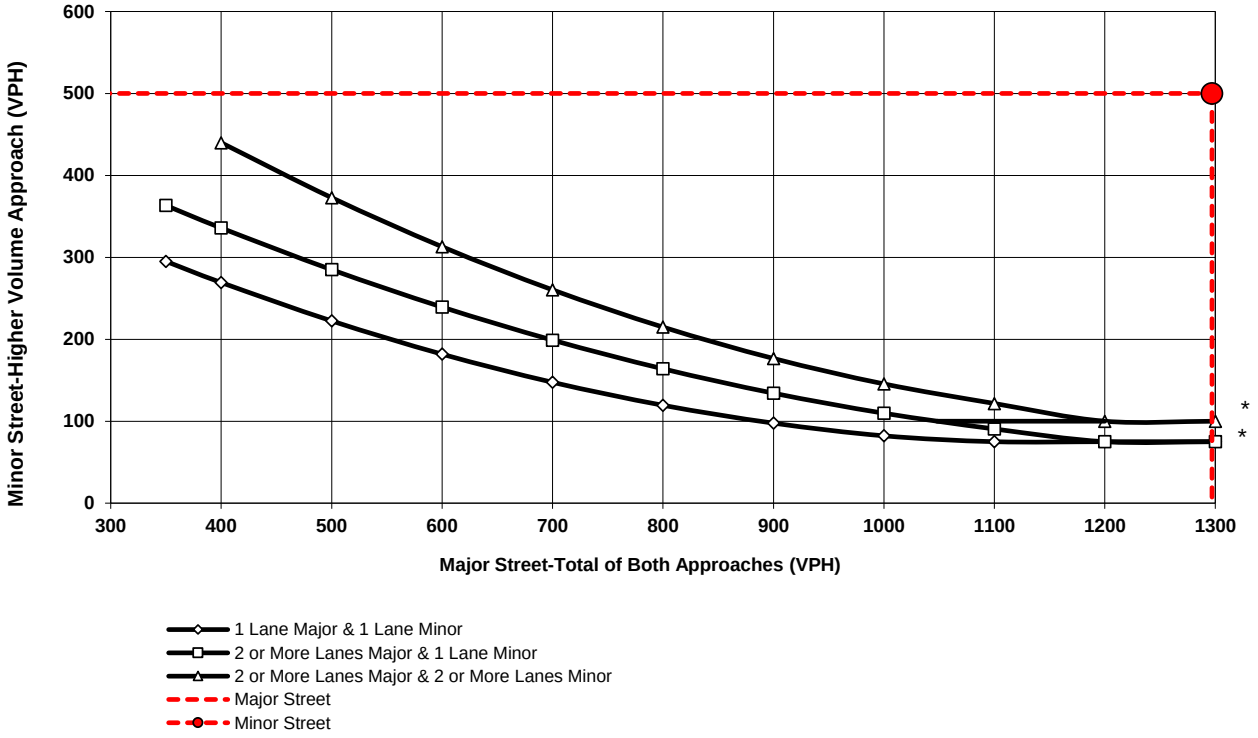
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	1297	Higher Volume Approach (VPH):	570
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

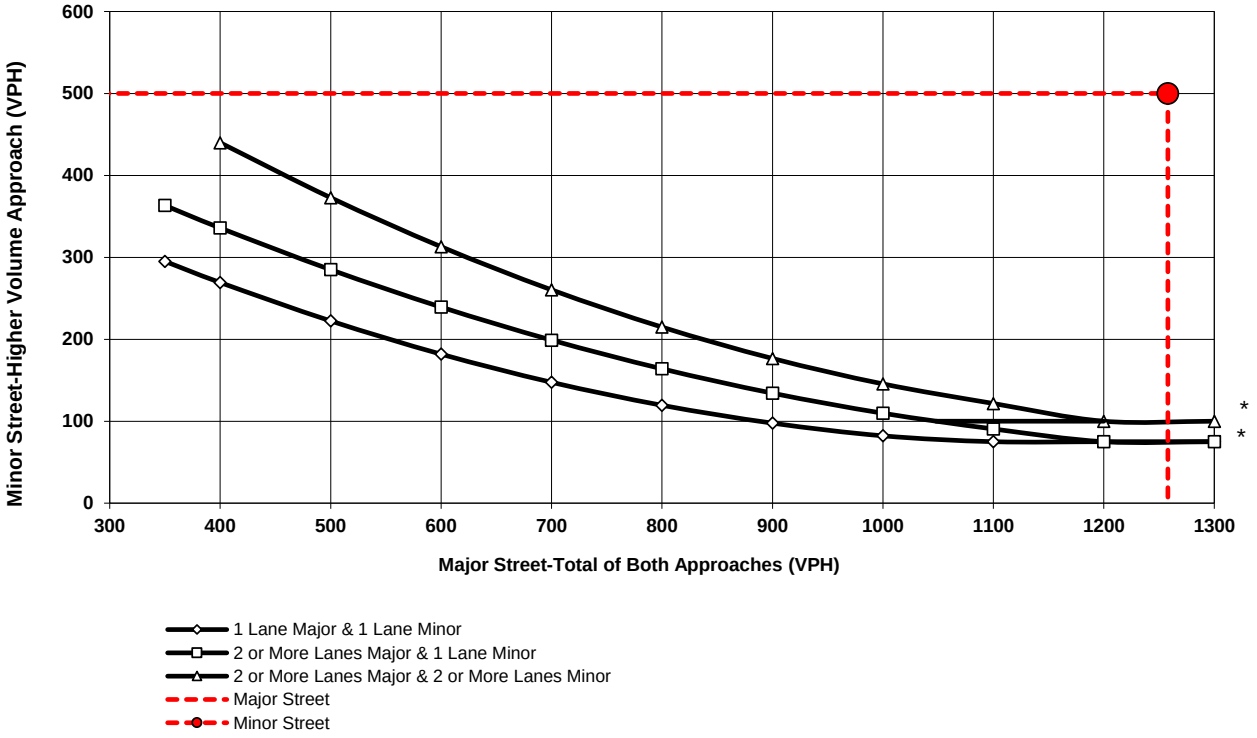
Major Street: Linnell Lane

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	1258	Higher Volume Approach (VPH):	524
Number of Approach Lanes:	2	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

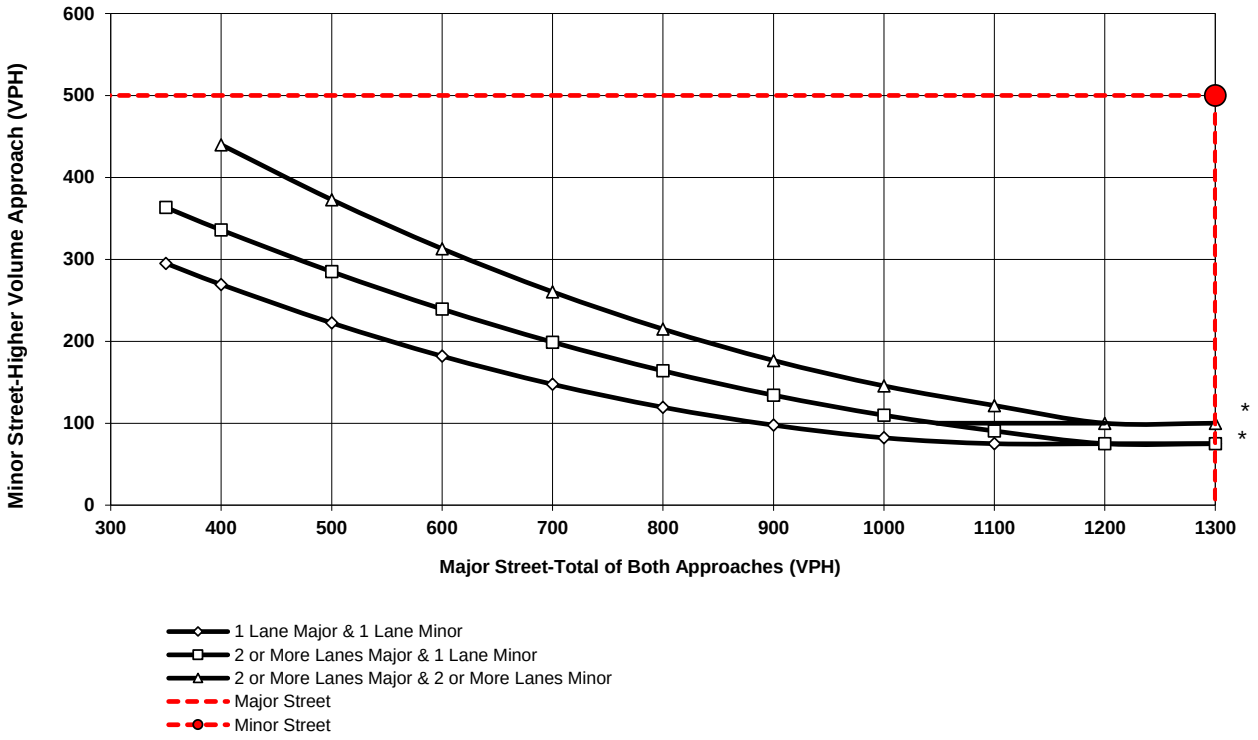
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	4056	Higher Volume Approach (VPH):	615
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

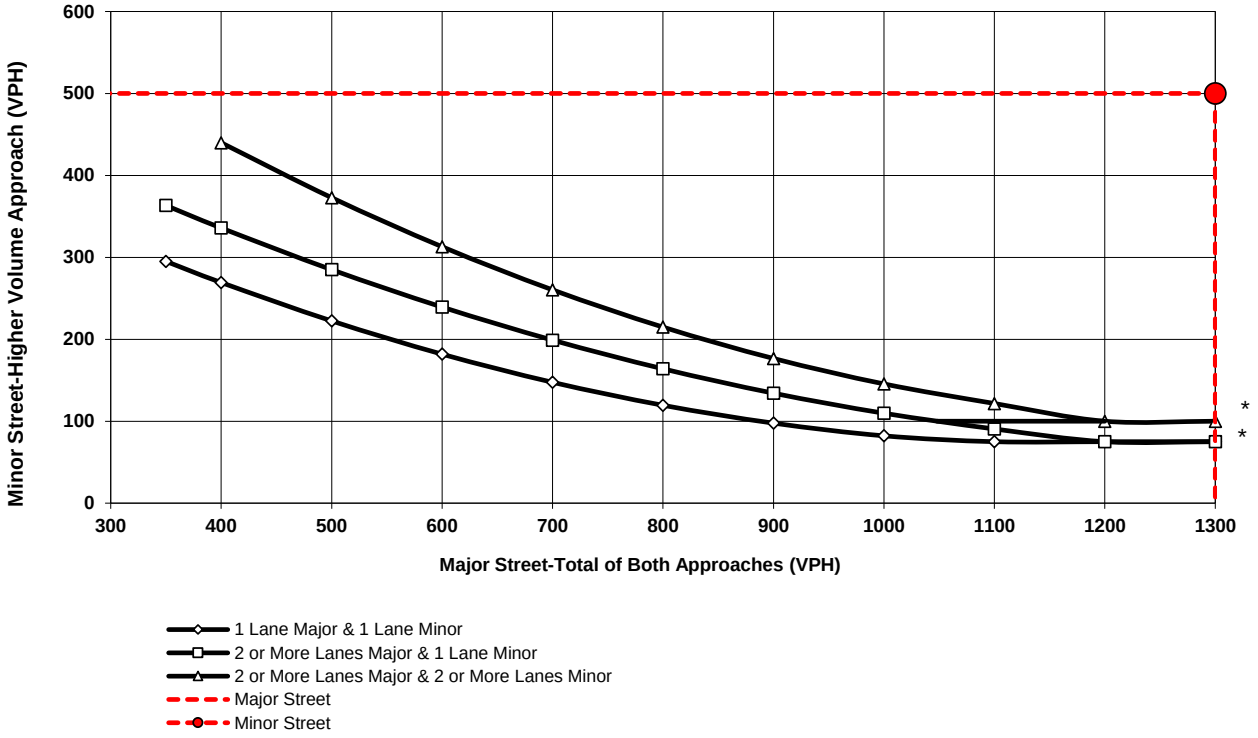
Major Street: Clinton Keith Road

Minor Street: Warm Springs Road

Total of Both Approaches (VPH):	3847	Higher Volume Approach (VPH):	614
Number of Approach Lanes:	3	Number of Approach Lanes:	2

SIGNAL WARRANT SATISFIED

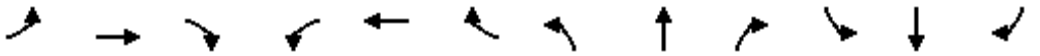
Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX F
Intersection Queue Analysis Sheets

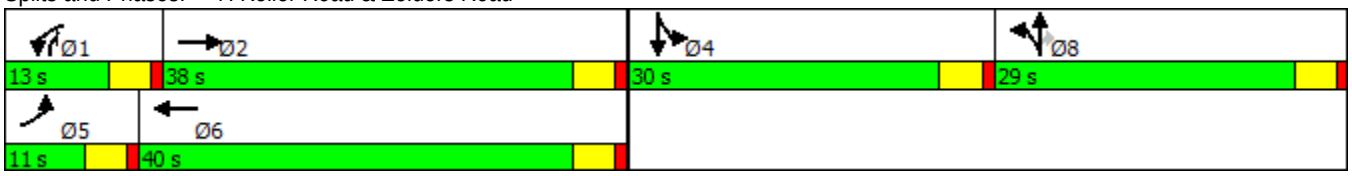


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	144	24	70	56	269	20	111	124	203	79	36
Future Volume (vph)	32	144	24	70	56	269	20	111	124	203	79	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	200		0	0		150	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	1824	0	3433	1632	0	1770	1863	1583	1770	1775	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1824	0	3433	1632	0	1770	1863	1583	1770	1775	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			232				131		20	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		810			1022			493			1301	
Travel Time (s)		13.8			17.4			11.2			29.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	177	0	74	342	0	21	117	131	214	121	0
Turn Type	Prot	NA		Prot	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases									8			
Total Split (s)	11.0	38.0		13.0	40.0		29.0	29.0	13.0	30.0	30.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Act Effct Green (s)	6.6	11.8		7.2	20.3		9.8	9.8	18.2	13.4	13.4	
Actuated g/C Ratio	0.11	0.20		0.12	0.35		0.17	0.17	0.31	0.23	0.23	
v/c Ratio	0.17	0.47		0.17	0.47		0.07	0.37	0.22	0.52	0.28	
Control Delay	31.7	26.8		28.8	10.3		25.4	28.8	4.9	27.2	20.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	31.7	26.8		28.8	10.3		25.4	28.8	4.9	27.2	20.1	
LOS	C	C		C	B		C	C	A	C	C	
Approach Delay		27.6			13.6			16.9			24.6	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)	11	53		12	24		6	37	0	67	29	
Queue Length 95th (ft)	44	130		37	124		28	99	35	153	82	
Internal Link Dist (ft)		730			942			413			1221	
Turn Bay Length (ft)	200			200					150	100		
Base Capacity (vph)	214	1140		543	1149		807	849	636	840	852	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.16	0.16		0.14	0.30		0.03	0.14	0.21	0.25	0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 58			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 19.7		Intersection LOS: B	

Intersection Capacity Utilization 52.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Keller Road & Zeiders Road



MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	101	5.0	0.211	6.2	LOS A	0.8	21.3	0.49	0.42	24.4
12	R2	424	5.0	0.211	1.3	LOS A	0.8	21.3	0.10	0.09	24.7
Approach		525	5.0	0.211	2.2	LOS A	0.8	21.3	0.17	0.15	24.6
East: Keller Road											
3	L2	135	5.0	0.147	4.2	LOS A	0.6	15.9	0.24	0.12	24.5
8	T1	328	3.0	0.147	0.6	LOS A	0.6	15.9	0.03	0.02	24.5
Approach		463	3.6	0.147	1.6	LOS A	0.6	15.9	0.09	0.05	24.5
West: Keller Road											
4	T1	403	3.0	0.333	6.1	LOS A	1.7	43.8	0.34	0.20	22.5
14	R2	109	5.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		512	3.4	0.333	4.8	LOS A	1.7	43.8	0.27	0.16	23.3
All Vehicles		1500	4.0	0.333	2.9	LOS A	1.7	43.8	0.18	0.12	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

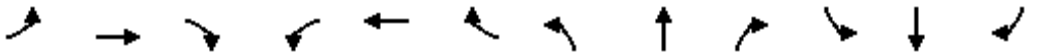
Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
AM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	89	5.0	0.153	8.1	LOS A	0.5	13.6	0.61	0.61	21.1
2	T1	1	5.0	0.199	7.9	LOS A	0.7	17.9	0.60	0.60	23.0
12	R2	446	5.0	0.199	2.3	LOS A	0.7	17.9	0.17	0.17	24.4
Approach		536	5.0	0.199	3.3	LOS A	0.7	17.9	0.25	0.25	23.9
East: Keller Road											
8	T1	374	3.0	0.170	4.8	LOS A	0.7	17.7	0.35	0.24	23.1
18	R2	53	5.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		427	3.2	0.170	4.2	LOS A	0.7	17.7	0.31	0.21	23.4
West: Keller Road											
7	L2	129	5.0	0.301	5.3	LOS A	0.0	0.0	0.00	0.00	29.9
4	T1	698	3.0	0.301	5.2	LOS A	0.0	0.0	0.00	0.00	24.8
Approach		827	3.3	0.301	5.2	LOS A	0.0	0.0	0.00	0.00	25.5
All Vehicles		1790	3.8	0.301	4.4	LOS A	0.7	17.9	0.15	0.12	24.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com



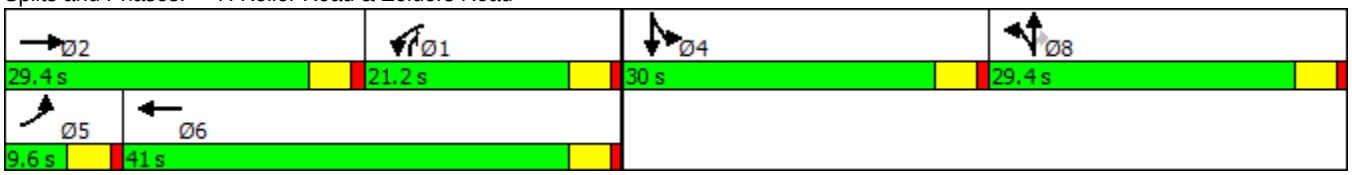
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	94	20	284	169	333	42	208	227	268	249	44
Future Volume (vph)	48	94	20	284	169	333	42	208	227	268	249	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	0		150	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	1814	0	3539	1676	0	1770	1863	1583	1770	1822	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1814	0	3539	1676	0	1770	1863	1583	1770	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			97				239		7	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		810			1022			493			1301	
Travel Time (s)		13.8			17.4			11.2			29.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	120	0	299	529	0	44	219	239	282	308	0
Turn Type	Prot	NA		Prot	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases									8			
Total Split (s)	9.6	29.4		21.2	41.0		29.4	29.4	21.2	30.0	30.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Act Effct Green (s)	5.5	11.7		21.0	30.4		16.3	16.3	37.3	20.1	20.1	
Actuated g/C Ratio	0.06	0.13		0.24	0.34		0.18	0.18	0.42	0.23	0.23	
v/c Ratio	0.47	0.49		0.36	0.83		0.13	0.64	0.30	0.70	0.73	
Control Delay	62.4	44.5		31.2	36.1		35.0	45.5	2.3	44.4	44.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	62.4	44.5		31.2	36.1		35.0	45.5	2.3	44.4	44.9	
LOS	E	D		C	D		D	D	A	D	D	
Approach Delay		49.8			34.3			24.0			44.6	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)	31	64		71	242		23	126	0	157	169	
Queue Length 95th (ft)	#95	128		130	#477		56	215	23	277	296	
Internal Link Dist (ft)		730			942			413			1221	
Turn Bay Length (ft)	200			200					150	100		
Base Capacity (vph)	109	554		955	796		534	562	849	547	568	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.47	0.22		0.31	0.66		0.08	0.39	0.28	0.52	0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 88.4			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 36.0		Intersection LOS: D	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Keller Road & Zeiders Road



MOVEMENT SUMMARY

Site: 2 [Keller Road / I-215 SB Ramps]

Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 SB Ramps											
5	L2	208	5.0	0.253	6.9	LOS A	1.0	26.0	0.53	0.47	23.7
12	R2	411	5.0	0.253	0.1	LOS A	1.0	26.0	0.01	0.01	25.5
Approach		619	5.0	0.253	2.4	LOS A	1.0	26.0	0.18	0.17	24.6
East: Keller Road											
3	L2	406	5.0	0.367	7.0	LOS A	1.8	47.9	0.43	0.31	22.9
8	T1	619	3.0	0.323	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		1025	3.8	0.367	2.8	LOS A	1.8	47.9	0.17	0.12	24.1
West: Keller Road											
4	T1	448	3.0	0.480	9.7	LOS A	3.1	79.4	0.63	0.68	21.2
14	R2	172	5.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	25.3
Approach		620	3.6	0.480	7.1	LOS A	3.1	79.4	0.45	0.49	22.6
All Vehicles		2264	4.1	0.480	3.8	LOS A	3.1	79.4	0.25	0.23	23.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: MICHAEL BAKER INTERNATIONAL | Processed: Wednesday, August 15, 2018 9:39:16 AM
Project: H:\PDATA\141981_Murrieta Hills Sp TIA\SIDRA Analysis\Files\6_Murrieta_Hills_2035_w-A+C+Proj_PM.sip7

MOVEMENT SUMMARY

Site: 1 [Keller Road / I-215 NB Ramps]

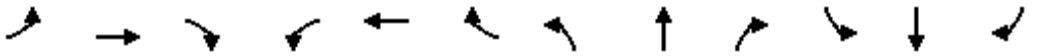
Year 2035 Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout (2035 w/A + C + Proj)
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-215 NB Off Ramp											
5	L2	112	5.0	0.127	7.1	LOS A	0.4	11.3	0.58	0.58	13.2
2	T1	1	5.0	0.127	6.7	LOS A	0.4	11.1	0.57	0.57	23.0
12	R2	256	5.0	0.127	1.4	LOS A	0.4	11.1	0.12	0.12	24.5
Approach		368	5.0	0.127	3.1	LOS A	0.4	11.3	0.26	0.26	20.6
East: Keller Road											
8	T1	895	3.0	0.428	8.1	LOS A	2.2	56.3	0.50	0.40	21.9
18	R2	221	5.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	25.0
Approach		1116	3.4	0.428	6.5	LOS A	2.2	56.3	0.40	0.32	22.7
West: Keller Road											
7	L2	158	5.0	0.278	5.1	LOS A	0.0	0.0	0.00	0.00	29.6
4	T1	605	3.0	0.278	5.0	LOS A	0.0	0.0	0.00	0.00	24.7
Approach		763	3.4	0.278	5.0	LOS A	0.0	0.0	0.00	0.00	25.6
All Vehicles		2247	3.7	0.428	5.5	LOS A	2.2	56.3	0.24	0.20	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: MICHAEL BAKER INTERNATIONAL | Processed: Wednesday, August 15, 2018 9:39:15 AM
Project: H:\PDATA\141981_Murrieta Hills Sp TIA\SIDRA Analysis\Files\6_Murrieta_Hills_2035_w-A+C+Proj_PM.sip7



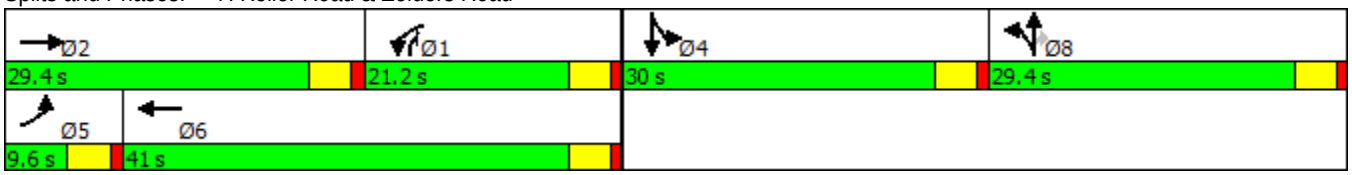
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	128	61	326	194	346	89	280	290	279	269	44
Future Volume (vph)	29	128	61	326	194	346	89	280	290	279	269	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	0		150	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	1773	0	3539	1684	0	1770	1863	1583	1770	1824	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1773	0	3539	1684	0	1770	1863	1583	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			87				305		7	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		810			1022			493			1301	
Travel Time (s)		13.8			17.4			11.2			29.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	199	0	343	568	0	94	295	305	294	329	0
Turn Type	Prot	NA		Prot	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases									8			
Total Split (s)	9.6	29.4		21.2	41.0		29.4	29.4	21.2	30.0	30.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Act Effct Green (s)	5.4	15.4		17.3	32.6		19.7	19.7	37.1	21.6	21.6	
Actuated g/C Ratio	0.06	0.17		0.19	0.35		0.21	0.21	0.40	0.23	0.23	
v/c Ratio	0.30	0.64		0.52	0.88		0.25	0.75	0.38	0.72	0.77	
Control Delay	57.6	45.2		39.3	43.0		36.0	49.6	2.6	46.6	48.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	57.6	45.2		39.3	43.0		36.0	49.6	2.6	46.6	48.5	
LOS	E	D		D	D		D	D	A	D	D	
Approach Delay		46.9			41.6			27.1			47.6	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	21	117		99	318		54	192	0	185	206	
Queue Length 95th (ft)	54	188		158	#554		101	290	25	291	#344	
Internal Link Dist (ft)		730			942			413			1221	
Turn Bay Length (ft)	200			200					150	100		
Base Capacity (vph)	102	516		781	750		501	527	857	513	534	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	

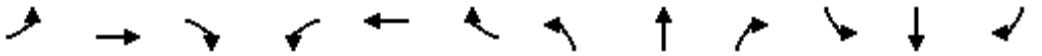
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.30	0.39		0.44	0.76		0.19	0.56	0.36	0.57	0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 93.1			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 39.5		Intersection LOS: D	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Keller Road & Zeiders Road



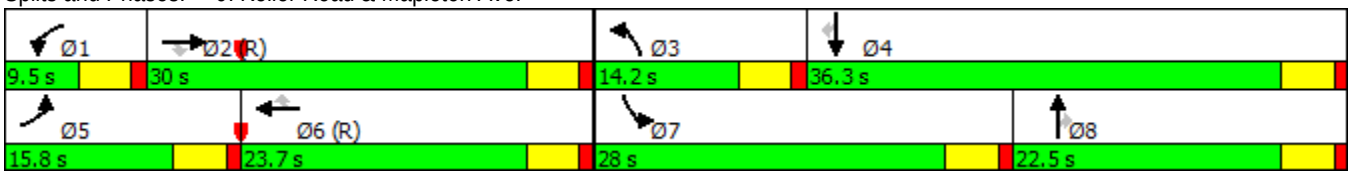


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	795	193	8	637	89	175	311	6	245	412	322
Future Volume (vph)	215	795	193	8	637	89	175	311	6	245	412	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		200	200		200	150		0	150		0
Storage Lanes	2		1	1		1	2		1	1		1
Taper Length (ft)	120			25			25			25		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			201			236			236			248
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1100			803			325			827	
Travel Time (s)		18.8			13.7			7.4			14.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	828	201	8	664	93	182	324	6	255	429	335
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Total Split (s)	15.8	30.0	30.0	9.5	23.7	23.7	14.2	22.5	22.5	28.0	36.3	36.3
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Act Effct Green (s)	10.3	33.1	33.1	5.0	20.2	20.2	9.1	23.6	23.6	17.9	32.4	32.4
Actuated g/C Ratio	0.11	0.37	0.37	0.06	0.22	0.22	0.10	0.26	0.26	0.20	0.36	0.36
v/c Ratio	0.57	0.44	0.28	0.08	0.58	0.17	0.53	0.35	0.01	0.72	0.34	0.46
Control Delay	43.5	23.0	4.7	42.2	33.8	0.7	44.1	29.5	0.0	45.4	22.1	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	23.0	4.7	42.2	33.8	0.7	44.1	29.5	0.0	45.4	22.1	8.5
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		23.8			29.9			34.3			23.4	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	62	123	0	4	125	0	51	78	0	136	93	33
Queue Length 95th (ft)	98	188	49	19	165	0	84	127	0	203	132	102
Internal Link Dist (ft)		1020			723			245			747	
Turn Bay Length (ft)	200		200	200		200	150			150		
Base Capacity (vph)	431	1870	709	98	1138	537	370	927	589	462	1275	729
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.52	0.44	0.28	0.08	0.58	0.17	0.49	0.35	0.01	0.55	0.34	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Keller Road & Mapleton Ave.



APPENDIX G
State Highway Freeway Merge/Diverge LOS Analysis Sheets

APPENDIX G-1
Freeway Merge/Diverge Analysis
Existing Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2513	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	578	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2513	578	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	698	161	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2918	671	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.656 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2145 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2918	6750	No
$v_{FO} = v_F - v_R$	2247	6750	No
v_R	671	2000	No
$v_{3 \text{ or } av34}$	773 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2145		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2145	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 18.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.488

Space mean speed in ramp influence area, S_R = 48.7 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4161	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	911	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4161	911	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1156	253	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4831	1058	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.591 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3286 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4831	6750	No
$v_{FO} = v_F - v_R$	3773	6750	No
v_R	1058	2000	No
$v_{3 \text{ or } av34}$	1545 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3286		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3286	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D$ = 28.0+ pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.523

Space mean speed in ramp influence area, S_R = 48.2 mph

Space mean speed in outer lanes, S_0 = 58.2 mph

Space mean speed for all vehicles, S = 51.0 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1935	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	519	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1935	519	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	538	144	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2247	603	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1329 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2850	6750	No
$v_{3 \text{ or } av34}$	918 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1329		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1329	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 17.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.313	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 53.5	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3250	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	469	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3250	469	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	903	130	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3774	545	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2232 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4319	6750	No
v_3 or v_{av34}	1542 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2232		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2232	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 23.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.349	
Space mean speed in ramp influence area,	S_R = 50.5	mph
Space mean speed in outer lanes,	S_0 = 51.2	mph
Space mean speed for all vehicles,	S = 50.7	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4796	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	508	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4796	508	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1332	141	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5569	590	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.594 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3546 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5569	6750	No
$v_{FO} = v_F - v_R$	4979	6750	No
v_R	590	2000	No
v_3 or v_{av34}	2023 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3546 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3546	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 30.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.481

Space mean speed in ramp influence area, S_R = 48.7 mph

Space mean speed in outer lanes, S_0 = 56.3 mph

Space mean speed for all vehicles, S = 51.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3067	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	561	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3067	561	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	852	156	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3561	651	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.641 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2516 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3561	6750	No
$v_{FO} = v_F - v_R$	2910	6750	No
v_R	651	2000	No
v_3 or v_{av34}	1045 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 2516	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2516	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 21.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.487

Space mean speed in ramp influence area, S_R = 48.7 mph

Space mean speed in outer lanes, S_0 = 60.2 mph

Space mean speed for all vehicles, S = 51.6 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4288	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	819	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4288	819	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1191	228	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4979	951	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2945 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5930	6750	No
v_3 or v_{av34}	2034 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2945		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2945	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.478	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 49.5	mph
Space mean speed for all vehicles,	S = 49.0	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2506	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	584	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2506	584	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	696	162	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2910	678	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1721 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3588	6750	No
$v_{3 \text{ or } av34}$	1189 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1721		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1721	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 20.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.329	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 52.5	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2228	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	577	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2228	577		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	619	160		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2587	670	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.665 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 1944 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2587	6750	No
$v_{FO} = v_F - v_R$	1917	6750	No
v_R	670	2000	No
v_3 or v_{av34}	643 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 1944	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	1944	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 16.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	D_S = 0.488	
Space mean speed in ramp influence area,	S_R = 48.7	mph
Space mean speed in outer lanes,	S_0 = 60.3	mph
Space mean speed for all vehicles,	S = 51.1	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4163	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	771	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4163	771	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1156	214	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4834	895	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.598 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3250 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4834	6750	No
$v_{FO} = v_F - v_R$	3939	6750	No
v_R	895	2000	No
v_3 or v_{av34}	1584 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3250	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3250	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 27.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.509

Space mean speed in ramp influence area, S_R = 48.4 mph

Space mean speed in outer lanes, S_0 = 58.1 mph

Space mean speed for all vehicles, S = 51.2 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1651	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	694	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1651	694	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	459	193	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1917	806	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1134 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2723	6750	No
$v_{3 \text{ or } av34}$	783 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	

If yes, v_{12A} = 1134 (Equation 25-8)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1134	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 17.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.313	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 54.0	mph
Space mean speed for all vehicles,	S = 51.8	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3392	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	687	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3392	687	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	942	191	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3938	798	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2329 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4736	6750	No
v_3 or v_{av34}	1609 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2329		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2329	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 26.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.375	
Space mean speed in ramp influence area,	S_R = 50.1	mph
Space mean speed in outer lanes,	S_0 = 51.0	mph
Space mean speed for all vehicles,	S = 50.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2345	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	168	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2345	168		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	651	47		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2723	195	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1611 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2918	6750	No
v_3 or v_{av34}	1112 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1611		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1611	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 16.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.310	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 52.8	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4079	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	82	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4079	82		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1133	23		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4736	95	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2801 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4831	6750	No
v_3 or v_{av34}	1935 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2801		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2801	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 24.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.357	
Space mean speed in ramp influence area,	S_R = 50.4	mph
Space mean speed in outer lanes,	S_0 = 49.8	mph
Space mean speed for all vehicles,	S = 50.2	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5107	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	722	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5107	722	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1419	201	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5930	838	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.573 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3757 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5930	6750	No
$v_{FO} = v_F - v_R$	5092	6750	No
v_R	838	2000	No
v_3 or v_{av34}	2173 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3757	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3757	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.503

Space mean speed in ramp influence area, S_R = 48.5 mph

Space mean speed in outer lanes, S_0 = 55.8 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3090	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	852	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3090	852	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	858	237	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3588	989	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.625 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2613 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3588	6750	No
$v_{FO} = v_F - v_R$	2599	6750	No
v_R	989	2000	No
$v_{3 \text{ or } av34}$	975 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2613 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2613	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 22.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.517	
Space mean speed in ramp influence area,	S_R = 48.3	mph
Space mean speed in outer lanes,	S_0 = 60.3	mph
Space mean speed for all vehicles,	S = 51.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4385	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	288	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4385	288	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1218	80	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5091	334	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3011 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5425	6750	No
v_3 or v_{av34}	2080 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3011		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3011	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 28.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.397	
Space mean speed in ramp influence area,	S_R = 49.8	mph
Space mean speed in outer lanes,	S_0 = 49.3	mph
Space mean speed for all vehicles,	S = 49.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2238	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	134	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2238	134	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	622	37	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2599	156	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1537 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2755	6750	No
$v_{3 \text{ or } av34}$	1062 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1537		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1537	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 15.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.307	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 53.0	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4673	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	559	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4673	559	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1298	155	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5426	649	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3209 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6075	6750	No
v_3 or v_{av34}	2217 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3209		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3209	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.471	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 48.8	mph
Space mean speed for all vehicles,	S = 48.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2372	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	382	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2372	382	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	659	106	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2754	444	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1629 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3198	6750	No
$v_{3 \text{ or } av34}$	1125 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1629		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1629	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.317	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.8	mph
Space mean speed for all vehicles,	S = 51.5	mph

APPENDIX G-2
Freeway Merge/Diverge Analysis
Forecast Existing Plus Project Buildout Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2513	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	585	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2513	585	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	698	163	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2918	679	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.656 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2147 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2918	6750	No
$v_{FO} = v_F - v_R$	2239	6750	No
v_R	679	2000	No
$v_{3 \text{ or } av34}$	771 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2147 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2147	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 18.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.489

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4161	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	928	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4161	928	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1156	258	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4831	1078	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.590 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3291 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4831	6750	No
$v_{FO} = v_F - v_R$	3753	6750	No
v_R	1078	2000	No
v_3 or v_{av34}	1540 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3291 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3291	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 28.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.525

Space mean speed in ramp influence area, S_R = 48.2 mph

Space mean speed in outer lanes, S_0 = 58.2 mph

Space mean speed for all vehicles, S = 51.0 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1928	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	598	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1928	598	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	536	166	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2239	694	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1324 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2933	6750	No
$v_{3 \text{ or } av34}$	915 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1324		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1324	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 17.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.315	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 53.5	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3233	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	888	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3233	888	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	898	247	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3754	1031	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2220 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4785	6750	No
v_3 or v_{av34}	1534 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2220		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2220	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 27.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.387	
Space mean speed in ramp influence area,	S_R = 50.0	mph
Space mean speed in outer lanes,	S_0 = 51.3	mph
Space mean speed for all vehicles,	S = 50.4	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4981	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	693	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4981	693	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1384	193	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5783	805	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.578 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3684 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5783	6750	No
$v_{FO} = v_F - v_R$	4978	6750	No
v_R	805	2000	No
$v_{3 \text{ or } av34}$	2099 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3684 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3684	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 31.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.500

Space mean speed in ramp influence area, S_R = 48.5 mph

Space mean speed in outer lanes, S_0 = 56.0 mph

Space mean speed for all vehicles, S = 51.0 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3410	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	904	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3410	904	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	947	251	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3959	1050	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.613 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2832 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3959	6750	No
$v_{FO} = v_F - v_R$	2909	6750	No
v_R	1050	2000	No
$v_{3 \text{ or } av34}$	1127 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2832 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2832	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D$ = 24.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.522

Space mean speed in ramp influence area, S_R = 48.2 mph

Space mean speed in outer lanes, S_0 = 59.8 mph

Space mean speed for all vehicles, S = 51.0 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4288	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	819	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4288	819	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1191	228	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4979	951	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2945 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5930	6750	No
v_3 or v_{av34}	2034 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2945		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2945	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.478	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 49.5	mph
Space mean speed for all vehicles,	S = 49.0	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2506	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	584	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2506	584	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	696	162	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2910	678	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1721 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3588	6750	No
$v_{3 \text{ or } av34}$	1189 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1721		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1721	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 20.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.329	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 52.5	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2345	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	694	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2345	694	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	651	193	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2723	806	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.655 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2061 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2723	6750	No
$v_{FO} = v_F - v_R$	1917	6750	No
v_R	806	2000	No
v_3 or v_{av34}	662 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2061		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2061	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 17.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.501

Space mean speed in ramp influence area, S_R = 48.5 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing (2017)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4532	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1140	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp		
Volume, V (vph)	4532		1140		0		vph
Peak-hour factor, PHF	0.90		0.90		0.90		
Peak 15-min volume, v15	1259		317		0		v
Trucks and buses	9		9		0		%
Recreational vehicles	0		0		0		%
Terrain type:	Level		Level				
Grade	0.00	%	0.00	%	0.00	%	
Length	0.00	mi	0.00	mi	0.00	mi	
Trucks and buses PCE, ET	1.5		1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5262	1324	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.568 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3559 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5262	6750	No
$v_{FO} = v_F - v_R$	3938	6750	No
v_R	1324	2000	No
$v_{3 \text{ or } av34}$	1703 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3559		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3559	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 30.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.547

Space mean speed in ramp influence area, S_R = 47.9 mph

Space mean speed in outer lanes, S_0 = 57.6 mph

Space mean speed for all vehicles, S = 50.6 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1651	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	694	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1651	694	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	459	193	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1917	806	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1134 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2723	6750	No
$v_{3 \text{ or } av34}$	783 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	

If yes, v_{12A} = 1134 (Equation 25-8)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1134	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 17.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.313	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 54.0	mph
Space mean speed for all vehicles,	S = 51.8	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3392	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	687	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3392	687	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	942	191	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3938	798	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2329 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4736	6750	No
v_3 or v_{av34}	1609 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2329		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2329	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 26.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.375	
Space mean speed in ramp influence area,	S_R = 50.1	mph
Space mean speed in outer lanes,	S_0 = 51.0	mph
Space mean speed for all vehicles,	S = 50.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2345	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	168	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2345	168		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	651	47		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2723	195	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1611 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2918	6750	No
v_3 or v_{av34}	1112 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1611		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1611	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 16.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.310	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 52.8	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4079	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	82	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4079	82		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1133	23		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4736	95	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2801 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4831	6750	No
v_3 or v_{av34}	1935 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2801		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2801	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 24.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.357	
Space mean speed in ramp influence area,	S_R = 50.4	mph
Space mean speed in outer lanes,	S_0 = 49.8	mph
Space mean speed for all vehicles,	S = 50.2	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5107	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	722	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5107	722	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1419	201	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5930	838	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.573 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3757 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5930	6750	No
$v_{FO} = v_F - v_R$	5092	6750	No
v_R	838	2000	No
v_3 or v_{av34}	2173 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3757	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3757	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.503

Space mean speed in ramp influence area, S_R = 48.5 mph

Space mean speed in outer lanes, S_0 = 55.8 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3090	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	852	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3090	852	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	858	237	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3588	989	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.625 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2613 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3588	6750	No
$v_{FO} = v_F - v_R$	2599	6750	No
v_R	989	2000	No
$v_{3 \text{ or } av34}$	975 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2613 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2613	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 22.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.517	
Space mean speed in ramp influence area,	S_R = 48.3	mph
Space mean speed in outer lanes,	S_0 = 60.3	mph
Space mean speed for all vehicles,	S = 51.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4385	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	288	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4385	288	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1218	80	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5091	334	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3011 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5425	6750	No
v_3 or v_{av34}	2080 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3011		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3011	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 28.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.397	
Space mean speed in ramp influence area,	S_R = 49.8	mph
Space mean speed in outer lanes,	S_0 = 49.3	mph
Space mean speed for all vehicles,	S = 49.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2238	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	134	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2238	134	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	622	37	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2599	156	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1537 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2755	6750	No
$v_{3 \text{ or } av34}$	1062 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1537		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1537	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 15.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.307	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 53.0	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4673	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	784	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4673	784	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1298	218	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5426	910	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3209 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6336	6750	No
v_3 or v_{av34}	2217 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3209		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3209	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.526	
Space mean speed in ramp influence area,	S_R = 48.2	mph
Space mean speed in outer lanes,	S_0 = 48.8	mph
Space mean speed for all vehicles,	S = 48.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CKR
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Existing Plus Project BO
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2372	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	699	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2372	699	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	659	194	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2754	812	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1629 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3566	6750	No
$v_{3 \text{ or } av34}$	1125 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1629		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1629	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 21.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.331	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 52.8	mph
Space mean speed for all vehicles,	S = 51.3	mph

APPENDIX G-3
Freeway Merge/Diverge Analysis
Forecast Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2637	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	334	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp		
Volume, V (vph)	2637		334		0		vph
Peak-hour factor, PHF	0.90		0.90		0.90		
Peak 15-min volume, v15	733		93		0		v
Trucks and buses	9		9		0		%
Recreational vehicles	0		0		0		%
Terrain type:	Level		Level				
Grade	0.00	%	0.00	%	0.00	%	
Length	0.00	mi	0.00	mi	0.00	mi	
Trucks and buses PCE, ET	1.5		1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3062	388	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.666 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2168 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3062	6750	No
$v_{FO} = v_F - v_R$	2674	6750	No
v_R	388	2000	No
$v_{3 \text{ or } av34}$	894 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2168 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2168	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 18.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.463

Space mean speed in ramp influence area, S_R = 49.0 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4418	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	398	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp		
Volume, V (vph)	4418		398		0		vph
Peak-hour factor, PHF	0.90		0.90		0.90		
Peak 15-min volume, v15	1227		111		0		v
Trucks and buses	9		9		0		%
Recreational vehicles	0		0		0		%
Terrain type:	Level		Level				
Grade	0.00	%	0.00	%	0.00	%	
Length	0.00	mi	0.00	mi	0.00	mi	
Trucks and buses PCE, ET	1.5		1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5130	462	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.610 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3312 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5130	6750	No
$v_{FO} = v_F - v_R$	4668	6750	No
v_R	462	2000	No
$v_{3 \text{ or } av34}$	1818 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3312 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3312	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 28.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.470

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 57.1 mph

Space mean speed for all vehicles, S = 51.5 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2303	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	285	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2303	285	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	640	79	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2674	331	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.678 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 1919 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2674	6750	No
$v_{FO} = v_F - v_R$	2343	6750	No
v_R	331	2000	No
v_3 or v_{av34}	755 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1919		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	1919	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 16.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.458

Space mean speed in ramp influence area, S_R = 49.0 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4020	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	450	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4020	450	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1117	125	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4668	523	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.619 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3090 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4668	6750	No
$v_{FO} = v_F - v_R$	4145	6750	No
v_R	523	2000	No
$v_{3 \text{ or } av34}$	1578 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3090 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3090	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 26.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.475	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 58.1	mph
Space mean speed for all vehicles,	S = 51.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	10/16/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2018	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	526	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2018	526	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	561	146	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2343	611	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1386 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2954	6750	No
$v_{3 \text{ or } av34}$	957 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1386		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1386	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 17.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.315	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 53.4	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3570	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	465	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3570	465	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	992	129	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4145	540	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2452 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4685	6750	No
$v_{3 \text{ or } av34}$	1693 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 2452		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2452	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 25.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M_S = 0.364

Space mean speed in ramp influence area, S_R = 50.3 mph

Space mean speed in outer lanes, S_0 = 50.7 mph

Space mean speed for all vehicles, S = 50.4 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5084	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	487	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5084	487		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1412	135		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5903	565	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.586 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3695 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5903	6750	No
$v_{FO} = v_F - v_R$	5338	6750	No
v_R	565	2000	No
v_3 or v_{av34}	2208 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3695		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3695	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 31.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.479

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 55.6 mph

Space mean speed for all vehicles, S = 51.1 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4597	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	327	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4597	327	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1277	91	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5338	380	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3157 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5718	6750	No
v_3 or v_{av34}	2181 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3157		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3157	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 29.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.420	
Space mean speed in ramp influence area,	S_R = 49.5	mph
Space mean speed in outer lanes,	S_0 = 48.9	mph
Space mean speed for all vehicles,	S = 49.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2713	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	281	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2713	281	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	754	78	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3150	326	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1863 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3476	6750	No
$v_{3 \text{ or } av34}$	1287 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1863		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1863	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 19.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.321	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.2	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4924	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	432	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4924	432		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1368	120		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5717	502	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3382 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6219	6750	No
v_3 or v_{av34}	2335 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3382		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3382	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.476	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 48.3	mph
Space mean speed for all vehicles,	S = 48.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2994	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	297	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2994	297	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	832	83	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3476	345	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2056 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3821	6750	No
$v_{3 \text{ or } av34}$	1420 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2056		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2056	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 20.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.329	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 51.7	mph
Space mean speed for all vehicles,	S = 51.1	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2362	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	608	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2362	608		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	656	169		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2743	706	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.659 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2048 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2743	6750	No
$v_{FO} = v_F - v_R$	2037	6750	No
v_R	706	2000	No
v_3 or v_{av34}	695 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 2048	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2048	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 17.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.492

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.1 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4413	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	817	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4413	817	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1226	227	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5124	949	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.588 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3405 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5124	6750	No
$v_{FO} = v_F - v_R$	4175	6750	No
v_R	949	2000	No
v_3 or v_{av34}	1719 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3405	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3405	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 29.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.513

Space mean speed in ramp influence area, S_R = 48.3 mph

Space mean speed in outer lanes, S_0 = 57.5 mph

Space mean speed for all vehicles, S = 51.1 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1754	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	747	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1754	747		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	487	208		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2037	867	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1205 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2904	6750	No
$v_{3 \text{ or } av34}$	832 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1205		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1205	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.317	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 53.8	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3596	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	766	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3596	766	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	999	213	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4175	889	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2470 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5064	6750	No
v_3 or v_{av34}	1705 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2470		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2470	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 28.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.398	
Space mean speed in ramp influence area,	S_R = 49.8	mph
Space mean speed in outer lanes,	S_0 = 50.7	mph
Space mean speed for all vehicles,	S = 50.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2501	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	133	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2501	133		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	695	37		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2904	154	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1718 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3058	6750	No
v_3 or v_{av34}	1186 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1718		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1718	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 16.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.311	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 52.5	mph
Space mean speed for all vehicles,	S = 51.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4362	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	100	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4362	100		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1212	28		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5065	116	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2996 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5181	6750	No
v_3 or v_{av34}	2069 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2996		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2996	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 26.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.374	
Space mean speed in ramp influence area,	S_R = 50.1	mph
Space mean speed in outer lanes,	S_0 = 49.4	mph
Space mean speed for all vehicles,	S = 49.8	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5421	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	540	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5421	540		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1506	150		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6294	627	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.574 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3879 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6294	6750	No
$v_{FO} = v_F - v_R$	5667	6750	No
v_R	627	2000	No
v_3 or v_{av34}	2415 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3879		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3879	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 33.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.484

Space mean speed in ramp influence area, S_R = 48.7 mph

Space mean speed in outer lanes, S_0 = 54.8 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3284	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	706	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3284	706	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	912	196	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3813	820	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2255 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4633	6750	No
$v_{3 \text{ or } av34}$	1558 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 2255		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2255	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 25.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.370	
Space mean speed in ramp influence area,	S_R = 50.2	mph
Space mean speed in outer lanes,	S_0 = 51.2	mph
Space mean speed for all vehicles,	S = 50.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4881	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	281	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4881	281	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1356	78	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5667	326	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3352 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5993	6750	No
v_3 or v_{av34}	2315 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3352		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3352	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 30.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.440	
Space mean speed in ramp influence area,	S_R = 49.3	mph
Space mean speed in outer lanes,	S_0 = 48.4	mph
Space mean speed for all vehicles,	S = 48.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2578	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	142	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2578	142	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	716	39	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2993	165	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1770 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3158	6750	No
$v_{3 \text{ or } av34}$	1223 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1770		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1770	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 17.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.313	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.4	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5162	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	593	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5162	593	0	vph
Peak-hour factor, PHF	0.95	0.95	0.90	
Peak 15-min volume, v15	1358	156	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5678	652	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3359 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6330	6750	No
v_3 or v_{av34}	2319 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3359		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3359	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.501	
Space mean speed in ramp influence area,	S_R = 48.5	mph
Space mean speed in outer lanes,	S_0 = 48.4	mph
Space mean speed for all vehicles,	S = 48.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2720	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	405	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2720	405	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	756	113	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3158	470	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1868 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3628	6750	No
$v_{3 \text{ or } av34}$	1290 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1868		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1868	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 20.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.326	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.2	mph
Space mean speed for all vehicles,	S = 51.2	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2634	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	85	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2634	85	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	732	24	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3058	99	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.679 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2108 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3058	6750	No
$v_{FO} = v_F - v_R$	2959	6750	No
v_R	99	2000	No
$v_{3 \text{ or } av34}$	950 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2108 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2108	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 17.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.437

Space mean speed in ramp influence area, S_R = 49.3 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 52.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4462	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	118	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp		
Volume, V (vph)	4462		118		0		vph
Peak-hour factor, PHF	0.90		0.90		0.90		
Peak 15-min volume, v15	1239		33		0		v
Trucks and buses	9		9		0		%
Recreational vehicles	0		0		0		%
Terrain type:	Level		Level				
Grade	0.00	%	0.00	%	0.00	%	
Length	0.00	mi	0.00	mi	0.00	mi	
Trucks and buses PCE, ET	1.5		1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5181	137	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.624 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3285 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5181	6750	No
$v_{FO} = v_F - v_R$	5044	6750	No
v_R	137	2000	No
v_3 or v_{av34}	1896 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3285		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3285	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 28.0+ pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.440

Space mean speed in ramp influence area, S_R = 49.3 mph

Space mean speed in outer lanes, S_0 = 56.8 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2549	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	88	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2549	88	0	vph
Peak-hour factor, PHF	0.95	0.95	0.90	
Peak 15-min volume, v15	671	23	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2804	97	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1659 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2901	6750	No
v_3 or v_{av34}	1145 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1659		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1659	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 16.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.309	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 52.7	mph
Space mean speed for all vehicles,	S = 51.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4344	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	74	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4344	74	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1207	21	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5044	86	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2984 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5130	6750	No
$v_{3 \text{ or } av34}$	2060 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2984		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2984	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 26.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M_S = 0.370

Space mean speed in ramp influence area, S_R = 50.2 mph

Space mean speed in outer lanes, S_0 = 49.4 mph

Space mean speed for all vehicles, S = 49.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5356	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	73	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5356	73	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1488	20	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6219	85	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.601 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3769 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6219	6750	No
$v_{FO} = v_F - v_R$	6134	6750	No
v_R	85	2000	No
v_3 or v_{av34}	2450 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3769 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3769	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 32.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.436	
Space mean speed in ramp influence area,	S_R = 49.3	mph
Space mean speed in outer lanes,	S_0 = 54.7	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3291	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	128	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3291	128	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	914	36	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3821	149	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.658 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2564 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3821	6750	No
$v_{FO} = v_F - v_R$	3672	6750	No
v_R	149	2000	No
$v_{3 \text{ or } av34}$	1257 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2564 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2564	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 21.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.441

Space mean speed in ramp influence area, S_R = 49.3 mph

Space mean speed in outer lanes, S_0 = 59.3 mph

Space mean speed for all vehicles, S = 52.2 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5283	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	138	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5283	138	0	vph
Peak-hour factor, PHF	0.95	0.95	0.90	
Peak 15-min volume, v15	1390	36	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5811	152	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3437 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5963	6750	No
v_3 or v_{av34}	2374 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3437		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3437	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 30.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.427	
Space mean speed in ramp influence area,	S_R = 49.4	mph
Space mean speed in outer lanes,	S_0 = 48.0	mph
Space mean speed for all vehicles,	S = 48.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3163	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	121	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3163	121	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	879	34	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3673	140	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2173 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3813	6750	No
v_{3} or v_{av34}	1500 pc/h	(Equation 25-4 or 25-5)	
Is v_{3} or v_{av34}	> 2700 pc/h?		No
Is v_{3} or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2173		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2173	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 20.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.325	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 51.4	mph
Space mean speed for all vehicles,	S = 51.0	mph

APPENDIX G-4
Freeway Merge/Diverge Analysis
Forecast Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2954	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	391	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2954	391	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	821	109	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3430	454	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.653 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2398 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3430	6750	No
$v_{FO} = v_F - v_R$	2976	6750	No
v_R	454	2000	No
v_3 or v_{av34}	1032 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 2398	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2398	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D$ = 20.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.469

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 60.2 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5444	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	617	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5444	617	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1512	171	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6321	716	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.569 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3905 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6321	6750	No
$v_{FO} = v_F - v_R$	5605	6750	No
v_R	716	2000	No
v_3 or v_{av34}	2416 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3905	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3905	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.492

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 54.8 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + Proj (Ph 1)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2563	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	600	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2563	600	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	712	167	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2976	697	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.654 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2186 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2976	6750	No
$v_{FO} = v_F - v_R$	2279	6750	No
v_R	697	2000	No
$v_{3 \text{ or } av34}$	790 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2186 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2186	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 18.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.491

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4827	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	897	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4827	897		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1341	249		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5605	1042	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.572 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3652 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5605	6750	No
$v_{FO} = v_F - v_R$	4563	6750	No
v_R	1042	2000	No
v_3 or v_{av34}	1953 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3652		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3652	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 31.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.522

Space mean speed in ramp influence area, S_R = 48.2 mph

Space mean speed in outer lanes, S_0 = 56.6 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	10/16/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1963	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	761	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1963	761		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	545	211		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2279	884	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1348 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3163	6750	No
v_3 or v_{av34}	931 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A}	= 1348	(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1348	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.322	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 53.4	mph
Space mean speed for all vehicles,	S = 51.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3930	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	932	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3930	932		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1092	259		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4563	1082	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2699 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5645	6750	No
v_3 or v_{av34}	1864 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2699		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2699	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 31.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.457	
Space mean speed in ramp influence area,	S_R = 49.1	mph
Space mean speed in outer lanes,	S_0 = 50.1	mph
Space mean speed for all vehicles,	S = 49.4	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5084	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	756	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5084	756		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1412	210		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5903	878	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.572 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3752 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5903	6750	No
$v_{FO} = v_F - v_R$	5025	6750	No
v_R	878	2000	No
v_3 or v_{av34}	2151 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3752	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3752	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 32.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.507

Space mean speed in ramp influence area, S_R = 48.4 mph

Space mean speed in outer lanes, S_0 = 55.8 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3251	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	975	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3251	975		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	903	271		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3775	1132	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.614 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2754 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3775	6750	No
$v_{FO} = v_F - v_R$	2643	6750	No
v_R	1132	2000	No
$v_{3 \text{ or } av34}$	1021 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2754 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2754	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 23.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.530	
Space mean speed in ramp influence area,	S_R = 48.1	mph
Space mean speed in outer lanes,	S_0 = 60.3	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4328	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	510	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4328	510		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1202	142		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5025	592	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2972 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5617	6750	No
v_3 or v_{av34}	2053 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2972		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2972	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 29.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.424	
Space mean speed in ramp influence area,	S_R = 49.5	mph
Space mean speed in outer lanes,	S_0 = 49.4	mph
Space mean speed for all vehicles,	S = 49.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2276	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	402	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2276	402		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	632	112		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2643	467	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1563 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3110	6750	No
$v_{3 \text{ or } av34}$	1080 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1563		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1563	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.316	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.9	mph
Space mean speed for all vehicles,	S = 51.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4838	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	719	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4838	719		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1344	200		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5617	835	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3322 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6452	6750	No
v_3 or v_{av34}	2295 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3322		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3322	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.535	
Space mean speed in ramp influence area,	S_R = 48.0	mph
Space mean speed in outer lanes,	S_0 = 48.5	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2678	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	787	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2678	787		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	744	219		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3109	914	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1839 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4023	6750	No
v_3 or v_{av34}	1270 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1839		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1839	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 23.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.347	
Space mean speed in ramp influence area,	S_R = 50.5	mph
Space mean speed in outer lanes,	S_0 = 52.2	mph
Space mean speed for all vehicles,	S = 51.0	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2632	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	799	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2632	799		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	731	222		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3056	928	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.641 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2292 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3056	6750	No
$v_{FO} = v_F - v_R$	2128	6750	No
v_R	928	2000	No
$v_{3 \text{ or } av34}$	764 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2292 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2292	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 19.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	D_S = 0.512	
Space mean speed in ramp influence area,	S_R = 48.4	mph
Space mean speed in outer lanes,	S_0 = 60.3	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5455	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1197	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5455	1197		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1515	333		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6334	1390	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.538 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4048 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6334	6750	No
$v_{FO} = v_F - v_R$	4944	6750	No
v_R	1390	2000	No
v_3 or v_{av34}	2286 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 4048 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4048	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.553

Space mean speed in ramp influence area, S_R = 47.8 mph

Space mean speed in outer lanes, S_0 = 55.3 mph

Space mean speed for all vehicles, S = 50.3 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1833	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	815	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1833	815		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	509	226		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2128	946	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1259 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3074	6750	No
v_3 or v_{av34}	869 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34} > 2700 pc/h?		No	
Is v_3 or v_{av34} > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1259		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1259	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.321	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 53.7	mph
Space mean speed for all vehicles,	S = 51.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4258	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	818	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4258	818		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1183	227		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4944	950	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2924 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5894	6750	No
v_3 or v_{av34}	2020 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2924		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2924	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.474	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 49.5	mph
Space mean speed for all vehicles,	S = 49.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2648	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	222	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2648	222		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	736	62		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3075	258	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1819 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3333	6750	No
$v_{3 \text{ or } av34}$	1256 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1819		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1819	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.317	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.3	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5076	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	316	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5076	316		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1410	88		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5894	367	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3486 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6261	6750	No
v_3 or v_{av34}	2408 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3486		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3486	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.470	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 47.8	mph
Space mean speed for all vehicles,	S = 48.5	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5542	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	694	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5542	694		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1539	193		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6435	806	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.562 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3970 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6435	6750	No
$v_{FO} = v_F - v_R$	5629	6750	No
v_R	806	2000	No
v_3 or v_{av34}	2465 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3970		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3970	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.501

Space mean speed in ramp influence area, S_R = 48.5 mph

Space mean speed in outer lanes, S_0 = 54.6 mph

Space mean speed for all vehicles, S = 50.7 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3415	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	944	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3415	944		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	949	262		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3965	1096	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2345 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5061	6750	No
v_3 or v_{av34}	1620 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2345		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2345	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 28.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.408	
Space mean speed in ramp influence area,	S_R = 49.7	mph
Space mean speed in outer lanes,	S_0 = 51.0	mph
Space mean speed for all vehicles,	S = 50.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4848	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	448	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4848	448		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1347	124		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5629	520	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3330 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6149	6750	No
v_3 or v_{av34}	2299 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3330		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3330	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.469	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 48.5	mph
Space mean speed for all vehicles,	S = 48.8	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2471	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	461	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2471	461		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	686	128		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2869	535	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1697 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3404	6750	No
v_3 or v_{av34}	1172 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1697		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1697	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.322	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.6	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5166	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	685	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5166	685		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1359	180		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5683	754	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3361 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6437	6750	No
v_3 or v_{av34}	2322 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3361		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3361	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.525	
Space mean speed in ramp influence area,	S_R = 48.2	mph
Space mean speed in outer lanes,	S_0 = 48.3	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2932	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	513	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2932	513		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	814	143		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3404	596	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2013 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4000	6750	No
v_3 or v_{av34}	1391 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2013		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2013	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 22.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.339	
Space mean speed in ramp influence area,	S_R = 50.6	mph
Space mean speed in outer lanes,	S_0 = 51.8	mph
Space mean speed for all vehicles,	S = 51.0	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2870	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	85	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2870	85		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	797	24		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3332	99	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.672 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2272 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3332	6750	No
$v_{FO} = v_F - v_R$	3233	6750	No
v_R	99	2000	No
v_3 or v_{av34}	1060 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 2272	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2272	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 19.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.437

Space mean speed in ramp influence area, S_R = 49.3 mph

Space mean speed in outer lanes, S_0 = 60.1 mph

Space mean speed for all vehicles, S = 52.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5392	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	138	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5392	138		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1498	38		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6261	160	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.596 Using Equation 5

$v_{12} = v_R + (v - v_F) P_{FD}$ = 3797 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6261	6750	No
$v_{FO} = v - v_{FR}$	6101	6750	No
v_R	160	2000	No
$v_{3 \text{ or } av34}$	2464 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3797 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3797	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 32.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.442	
Space mean speed in ramp influence area,	S_R = 49.2	mph
Space mean speed in outer lanes,	S_0 = 54.6	mph
Space mean speed for all vehicles,	S = 51.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2785	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	169	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2785	169		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	733	44		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3064	186	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1812 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3250	6750	No
v_3 or v_{av34}	1252 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1812		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1812	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 17.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.315	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.3	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5254	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	190	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5254	190		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1459	53		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6100	221	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3608 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6321	6750	No
v_3 or v_{av34}	2492 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3608		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3608	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.465	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 47.3	mph
Space mean speed for all vehicles,	S = 48.3	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5557	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	163	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5557	163		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1544	45		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6452	189	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.590 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3884 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6452	6750	No
$v_{FO} = v_F - v_R$	6263	6750	No
v_R	189	2000	No
v_3 or v_{av34}	2568 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3884 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3884	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 33.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.445	
Space mean speed in ramp influence area,	S_R = 49.2	mph
Space mean speed in outer lanes,	S_0 = 54.2	mph
Space mean speed for all vehicles,	S = 51.1	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3465	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	223	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3465	223		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	963	62		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4023	259	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.648 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2696 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4023	6750	No
$v_{FO} = v_F - v_R$	3764	6750	No
v_R	259	2000	No
v_3 or v_{av34}	1327 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 2696	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2696	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 22.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.451

Space mean speed in ramp influence area, S_R = 49.1 mph

Space mean speed in outer lanes, S_0 = 59.1 mph

Space mean speed for all vehicles, S = 52.0 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5394	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	148	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5394	148		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1419	39		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5933	163	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3509 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6096	6750	No
v_3 or v_{av34}	2424 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3509		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3509	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 30.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.439	
Space mean speed in ramp influence area,	S_R = 49.3	mph
Space mean speed in outer lanes,	S_0 = 47.7	mph
Space mean speed for all vehicles,	S = 48.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2023 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3242	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	173	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3242	173		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	901	48		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3764	201	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2226 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3965	6750	No
v_3 or v_{av34}	1538 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2226		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2226	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 21.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.330	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 51.3	mph
Space mean speed for all vehicles,	S = 50.9	mph

APPENDIX G-5
Freeway Merge/Diverge Analysis
Forecast Year 2028 Existing Plus Ambient Growth Plus Project Phases 1 & 2 Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2936	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	354	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2936	354		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	816	98		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3409	411	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.656 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2377 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3409	6750	No
$v_{FO} = v_F - v_R$	2998	6750	No
v_R	411	2000	No
v_3 or v_{av34}	1032 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2377		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2377	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 20.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.465

Space mean speed in ramp influence area, S_R = 49.0 mph

Space mean speed in outer lanes, S_0 = 60.2 mph

Space mean speed for all vehicles, S = 51.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028+ AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5506	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	436	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5506	436		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1529	121		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6393	506	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.577 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3902 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6393	6750	No
$v_{FO} = v_F - v_R$	5887	6750	No
v_R	506	2000	No
v_3 or v_{av34}	2491 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3902		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3902	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 33.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.474

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 54.5 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2582	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	273	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp	0	vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp		
Volume, V (vph)	2582		273		0		vph
Peak-hour factor, PHF	0.90		0.90		0.90		
Peak 15-min volume, v15	717		76		0		v
Trucks and buses	9		9		0		%
Recreational vehicles	0		0		0		%
Terrain type:	Level		Level				
Grade	0.00	%	0.00	%	0.00	%	
Length	0.00	mi	0.00	mi	0.00	mi	
Trucks and buses PCE, ET	1.5		1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2998	317	0	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.670 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2115 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2998	6750	No
$v_{FO} = v_F - v_R$	2681	6750	No
v_R	317	2000	No
$v_{3 \text{ or } av34}$	883 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2115 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2115	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 17.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.457

Space mean speed in ramp influence area, S_R = 49.1 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5070	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	454	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5070	454		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1408	126		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5887	527	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.589 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3682 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5887	6750	No
$v_{FO} = v_F - v_R$	5360	6750	No
v_R	527	2000	No
v_3 or v_{av34}	2205 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3682		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3682	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 31.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.475

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 55.6 mph

Space mean speed for all vehicles, S = 51.2 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2309	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	553	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2309	553		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	641	154		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2681	642	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1586 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3323	6750	No
v_3 or v_{av34}	1095 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A}	= 1586	(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1586	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.322	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.9	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4616	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	489	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4616	489		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1282	136		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5360	568	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3170 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5928	6750	No
v_3 or v_{av34}	2190 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3170		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3170	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 31.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.450	
Space mean speed in ramp influence area,	S_R = 49.2	mph
Space mean speed in outer lanes,	S_0 = 48.9	mph
Space mean speed for all vehicles,	S = 49.1	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5338	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	518	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5338	518		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1483	144		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6198	601	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.577 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3833 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6198	6750	No
$v_{FO} = v_F - v_R$	5597	6750	No
v_R	601	2000	No
v_3 or v_{av34}	2365 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3833		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3833	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 32.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.482

Space mean speed in ramp influence area, S_R = 48.7 mph

Space mean speed in outer lanes, S_0 = 55.0 mph

Space mean speed for all vehicles, S = 51.0 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3414	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	621	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3414	621		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	948	173		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3964	721	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.628 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2757 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3964	6750	No
$v_{FO} = v_F - v_R$	3243	6750	No
v_R	721	2000	No
$v_{3 \text{ or } av34}$	1207 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2757 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2757	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 23.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.493

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 59.5 mph

Space mean speed for all vehicles, S = 51.5 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4820	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	398	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4820	398		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1339	111		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5597	462	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3311 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6059	6750	No
v_3 or v_{av34}	2286 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3311		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3311	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 31.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.456	
Space mean speed in ramp influence area,	S_R = 49.1	mph
Space mean speed in outer lanes,	S_0 = 48.6	mph
Space mean speed for all vehicles,	S = 48.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2793	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	374	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2793	374		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	776	104		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3243	434	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1918 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3677	6750	No
v_3 or v_{av34}	1325 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1918		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1918	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 20.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.327	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 52.0	mph
Space mean speed for all vehicles,	S = 51.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5218	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	444	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5218	444		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1449	123		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6059	516	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3584 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6575	6750	No
v_3 or v_{av34}	2475 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3584		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3584	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.521	
Space mean speed in ramp influence area,	S_R = 48.2	mph
Space mean speed in outer lanes,	S_0 = 47.4	mph
Space mean speed for all vehicles,	S = 47.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3167	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	284	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3167	284		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	880	79		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3677	330	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2175 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4007	6750	No
v_3 or v_{av34}	1502 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2175		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2175	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 21.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.334	
Space mean speed in ramp influence area,	S_R = 50.7	mph
Space mean speed in outer lanes,	S_0 = 51.4	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2613	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	626	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2613	626		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	726	174		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3034	727	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.651 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2228 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3034	6750	No
$v_{FO} = v_F - v_R$	2307	6750	No
v_R	727	2000	No
v_3 or v_{av34}	806 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2228		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2228	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 18.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.493

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.2 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5498	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	846	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5498	846		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1527	235		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6384	982	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.555 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3981 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6384	6750	No
$v_{FO} = v_F - v_R$	5402	6750	No
v_R	982	2000	No
v_3 or v_{av34}	2403 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3981		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3981	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.516

Space mean speed in ramp influence area, S_R = 48.3 mph

Space mean speed in outer lanes, S_0 = 54.9 mph

Space mean speed for all vehicles, S = 50.6 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1987	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	784	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1987	784		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	552	218		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2307	910	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1365 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3217	6750	No
$v_{3 \text{ or } av34}$	942 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1365		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1365	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.324	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 53.4	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4652	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	874	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4652	874		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1292	243		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5401	1015	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3195 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6416	6750	No
v_3 or v_{av34}	2206 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3195		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3195	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.549	
Space mean speed in ramp influence area,	S_R = 47.9	mph
Space mean speed in outer lanes,	S_0 = 48.9	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2771	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	144	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2771	144		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	770	40		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3217	167	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1903 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3384	6750	No
v_3 or v_{av34}	1314 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1903		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1903	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.317	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.1	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5526	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	138	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5526	138		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1535	38		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6416	160	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3795 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6576	6750	No
v_3 or v_{av34}	2621 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3795		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3795	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.490	
Space mean speed in ramp influence area,	S_R = 48.6	mph
Space mean speed in outer lanes,	S_0 = 46.5	mph
Space mean speed for all vehicles,	S = 47.8	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5823	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	613	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5823	613		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1532	161		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6405	674	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.569 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3934 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6405	6750	No
$v_{FO} = v_F - v_R$	5731	6750	No
v_R	674	2000	No
v_3 or v_{av34}	2471 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3934 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3934	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 33.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.489

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 54.6 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3517	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	654	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3517	654		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	977	182		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4084	759	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2416 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4843	6750	No
$v_{3 \text{ or } av34}$	1668 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 2416		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2416	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 26.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.379	
Space mean speed in ramp influence area,	S_R = 50.1	mph
Space mean speed in outer lanes,	S_0 = 50.8	mph
Space mean speed for all vehicles,	S = 50.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5210	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	305	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5210	305		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1447	85		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6049	354	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3578 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6403	6750	No
v_3 or v_{av34}	2471 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3578		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3578	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.485	
Space mean speed in ramp influence area,	S_R = 48.7	mph
Space mean speed in outer lanes,	S_0 = 47.4	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2863	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	139	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2863	139		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	795	39		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3324	161	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1966 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3485	6750	No
v_3 or v_{av34}	1358 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1966		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1966	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.319	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 51.9	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5315	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	620	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5315	620		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1399	163		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5847	682	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3459 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6529	6750	No
v_3 or v_{av34}	2388 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3459		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3459	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.531	
Space mean speed in ramp influence area,	S_R = 48.1	mph
Space mean speed in outer lanes,	S_0 = 47.9	mph
Space mean speed for all vehicles,	S = 48.0	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3002	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	424	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3002	424	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	834	118	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3486	492	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2062 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3978	6750	No
$v_{3 \text{ or } av34}$	1424 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2062		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2062	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 22.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.336	
Space mean speed in ramp influence area,	S_R = 50.6	mph
Space mean speed in outer lanes,	S_0 = 51.7	mph
Space mean speed for all vehicles,	S = 51.0	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2915	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	108	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2915	108		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	810	30		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3385	125	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.670 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2308 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3385	6750	No
$v_{FO} = v_F - v_R$	3260	6750	No
v_R	125	2000	No
v_3 or v_{av34}	1077 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2308 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2308	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 19.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	D_S = 0.439	
Space mean speed in ramp influence area,	S_R = 49.3	mph
Space mean speed in outer lanes,	S_0 = 60.0	mph
Space mean speed for all vehicles,	S = 52.3	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5670	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	313	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5670	313		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1575	87		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6584	363	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.579 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3963 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6584	6750	No
$v_{FO} = v_F - v_R$	6221	6750	No
v_R	363	2000	No
v_3 or v_{av34}	2621 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3963		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3963	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 33.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.461	
Space mean speed in ramp influence area,	S_R = 49.0	mph
Space mean speed in outer lanes,	S_0 = 54.0	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2807	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	129	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2807	129		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	739	34		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3088	142	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1827 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3230	6750	No
v_3 or v_{av34}	1261 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1827		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1827	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 17.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.314	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.3	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5357	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	149	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5357	149		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1488	41		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6220	173	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3679 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6393	6750	No
$v_{3 \text{ or } av34}$	2541 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 3679		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3679	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.470	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 47.0	mph
Space mean speed for all vehicles,	S = 48.1	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5662	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	102	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5662	102		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	1539	28		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6431	116	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.594 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3866 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6431	6750	No
$v_{FO} = v_F - v_R$	6315	6750	No
v_R	116	2000	No
v_3 or v_{av34}	2565 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3866		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3866	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.438

Space mean speed in ramp influence area, S_R = 49.3 mph

Space mean speed in outer lanes, S_0 = 54.2 mph

Space mean speed for all vehicles, S = 51.2 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3451	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	213	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3451	213		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	959	59		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4007	247	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.648 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2685 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4007	6750	No
$v_{FO} = v_F - v_R$	3760	6750	No
v_R	247	2000	No
$v_{3 \text{ or } av34}$	1322 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2685 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2685	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 22.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.450

Space mean speed in ramp influence area, S_R = 49.1 mph

Space mean speed in outer lanes, S_0 = 59.1 mph

Space mean speed for all vehicles, S = 52.0 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5560	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	263	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5560	263		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1463	69		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6116	289	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3618 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6405	6750	No
v_3 or v_{av34}	2498 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3618		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3618	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.480	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 47.3	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + Proj (Ph 1+2)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3238	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	279	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3238	279		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	899	78		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3760	324	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2224 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4084	6750	No
v_3 or v_{av34}	1536 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2224		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2224	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 22.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.336	
Space mean speed in ramp influence area,	S_R = 50.6	mph
Space mean speed in outer lanes,	S_0 = 51.3	mph
Space mean speed for all vehicles,	S = 50.9	mph

APPENDIX G-6
Freeway Merge/Diverge Analysis
Forecast Year 2028 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phases 1 & 2 Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3073	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	411	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3073	411		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	854	114		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3568	477	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.649 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2483 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3568	6750	No
$v_{FO} = v_F - v_R$	3091	6750	No
v_R	477	2000	No
$v_{3 \text{ or } av34}$	1085 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2483 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2483	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 21.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.471

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 60.0 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5685	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	655	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5685	655		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1579	182		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6601	761	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.560 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4031 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6601	6750	No
$v_{FO} = v_F - v_R$	5840	6750	No
v_R	761	2000	No
v_3 or v_{av34}	2570 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 4031 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4031	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 34.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.496

Space mean speed in ramp influence area, S_R = 48.5 mph

Space mean speed in outer lanes, S_0 = 54.2 mph

Space mean speed for all vehicles, S = 50.6 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2662	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	588	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2662	588		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	739	163		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3091	683	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.651 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2251 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3091	6750	No
$v_{FO} = v_F - v_R$	2408	6750	No
v_R	683	2000	No
v_3 or v_{av34}	840 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 2251	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2251	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 19.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.489

Space mean speed in ramp influence area, S_R = 48.6 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 51.3 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5030	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	901	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5030	901		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1397	250		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5840	1046	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.566 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3759 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5840	6750	No
$v_{FO} = v_F - v_R$	4794	6750	No
v_R	1046	2000	No
$v_{3 \text{ or } av34}$	2081 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3759 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3759	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 32.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.522

Space mean speed in ramp influence area, S_R = 48.2 mph

Space mean speed in outer lanes, S_0 = 56.1 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2074	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	786	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2074	786		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	576	218		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2408	913	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1424 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3321	6750	No
$v_{3 \text{ or } av34}$	984 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1424		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1424	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 20.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.326	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 53.3	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4129	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	976	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4129	976		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1147	271		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4794	1133	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2836 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5927	6750	No
v_3 or v_{av34}	1958 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2836		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2836	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.492	
Space mean speed in ramp influence area,	S_R = 48.6	mph
Space mean speed in outer lanes,	S_0 = 49.8	mph
Space mean speed for all vehicles,	S = 49.0	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5338	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	787	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5338	787		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1483	219		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6198	914	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.563 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3889 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6198	6750	No
$v_{FO} = v_F - v_R$	5284	6750	No
v_R	914	2000	No
v_3 or v_{av34}	2309 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3889 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3889	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 33.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.510

Space mean speed in ramp influence area, S_R = 48.4 mph

Space mean speed in outer lanes, S_0 = 55.2 mph

Space mean speed for all vehicles, S = 50.7 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3414	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1057	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3414	1057		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	948	294		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3964	1227	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.604 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2881 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3964	6750	No
$v_{FO} = v_F - v_R$	2737	6750	No
v_R	1227	2000	No
v_3 or v_{av34}	1083 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2881 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2881	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 24.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.538

Space mean speed in ramp influence area, S_R = 48.0 mph

Space mean speed in outer lanes, S_0 = 60.0 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4551	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	588	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4551	588		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1264	163		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5284	683	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3125 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5967	6750	No
v_3 or v_{av34}	2159 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3125		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3125	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 31.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.462	
Space mean speed in ramp influence area,	S_R = 49.0	mph
Space mean speed in outer lanes,	S_0 = 49.0	mph
Space mean speed for all vehicles,	S = 49.0	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2357	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	495	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2357	495		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	655	138		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2737	575	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1619 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3312	6750	No
v_3 or v_{av34}	1118 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1619		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1619	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.321	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.8	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5139	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	731	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5139	731		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1352	192		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5653	804	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3344 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6457	6750	No
v_3 or v_{av34}	2309 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3344		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3344	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.533	
Space mean speed in ramp influence area,	S_R = 48.1	mph
Space mean speed in outer lanes,	S_0 = 48.4	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB Scott Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2852	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	774	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2852	774		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	792	215		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3311	899	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1958 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4210	6750	No
v_3 or v_{av34}	1353 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1958		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1958	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 24.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.354	
Space mean speed in ramp influence area,	S_R = 50.4	mph
Space mean speed in outer lanes,	S_0 = 51.9	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2788	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	817	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2788	817		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	774	227		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3237	949	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.635 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2403 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3237	6750	No
$v_{FO} = v_F - v_R$	2288	6750	No
v_R	949	2000	No
$v_{3 \text{ or } av34}$	834 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2403 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2403	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 20.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.513

Space mean speed in ramp influence area, S_R = 48.3 mph

Space mean speed in outer lanes, S_0 = 60.3 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to CK Road
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5686	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1226	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5686	1226		vph
Peak-hour factor, PHF	0.93	0.93		
Peak 15-min volume, v15	1528	330		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6389	1378	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.537 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4068 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6389	6750	No
$v_{FO} = v_F - v_R$	5011	6750	No
v_R	1378	2000	No
v_3 or v_{av34}	2321 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 4068 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4068	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.552	
Space mean speed in ramp influence area,	S_R = 47.8	mph
Space mean speed in outer lanes,	S_0 = 55.2	mph
Space mean speed for all vehicles,	S = 50.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1971	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	855	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1971	855		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	548	238		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2289	993	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1354 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3282	6750	No
$v_{3 \text{ or } av34}$	935 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 1354		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1354	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 20.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.327	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 53.4	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4460	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	915	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4460	915		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1239	254		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5179	1062	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3063 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6241	6750	No
v_3 or v_{av34}	2116 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3063		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3063	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 34.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.527	
Space mean speed in ramp influence area,	S_R = 48.1	mph
Space mean speed in outer lanes,	S_0 = 49.2	mph
Space mean speed for all vehicles,	S = 48.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2826	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	233	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2826	233		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	785	65		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3281	271	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1941 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3552	6750	No
v_3 or v_{av34}	1340 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1941		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1941	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.322	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.0	mph
Space mean speed for all vehicles,	S = 51.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5375	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	354	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5375	354		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1493	98		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6241	411	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3692 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6652	6750	No
v_3 or v_{av34}	2549 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3692		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3692	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.522	
Space mean speed in ramp influence area,	S_R = 48.2	mph
Space mean speed in outer lanes,	S_0 = 47.0	mph
Space mean speed for all vehicles,	S = 47.7	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5925	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	767	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5925	767		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1559	202		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6518	844	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.558 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4011 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6518	6750	No
$v_{FO} = v_F - v_R$	5674	6750	No
v_R	844	2000	No
v_3 or v_{av34}	2507 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 4011 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4011	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_{12}$ = 34.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.504	
Space mean speed in ramp influence area,	S_R = 48.4	mph
Space mean speed in outer lanes,	S_0 = 54.5	mph
Space mean speed for all vehicles,	S = 50.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3604	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1057	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3604	1057		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1001	294		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4185	1227	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2475 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5412	6750	No

$v_{3 \text{ or } av34}$ = 1710 pc/h (Equation 25-4 or 25-5)

Is $v_{3 \text{ or } av34}$ > 2700 pc/h? No

Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2 No

If yes, v_{12A} = 2475 (Equation 25-8)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2475	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 30.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.444	
Space mean speed in ramp influence area,	S_R = 49.2	mph
Space mean speed in outer lanes,	S_0 = 50.6	mph
Space mean speed for all vehicles,	S = 49.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5158	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	376	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5158	376		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1433	104		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5989	437	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3542 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6426	6750	No
v_3 or v_{av34}	2447 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3542		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3542	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.495	
Space mean speed in ramp influence area,	S_R = 48.6	mph
Space mean speed in outer lanes,	S_0 = 47.6	mph
Space mean speed for all vehicles,	S = 48.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from WB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2547	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	458	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2547	458		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	708	127		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2957	532	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1749 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3489	6750	No
v_3 or v_{av34}	1208 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1749		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1749	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.324	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.5	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5215	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	712	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5215	712		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1372	187		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5737	783	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3393 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6520	6750	No
v_3 or v_{av34}	2344 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3393		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3393	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.540	
Space mean speed in ramp influence area,	S_R = 48.0	mph
Space mean speed in outer lanes,	S_0 = 48.2	mph
Space mean speed for all vehicles,	S = 48.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from EB CK Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3005	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	532	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp	0	vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3005	532	0	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	835	148	0	v
Trucks and buses	9	9	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3489	618	0	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2064 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4107	6750	No
v_3 or v_{av34}	1425 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2064		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2064	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 23.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.343	
Space mean speed in ramp influence area,	S_R = 50.5	mph
Space mean speed in outer lanes,	S_0 = 51.7	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3059	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	211	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3059	211		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	850	59		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3552	245	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.660 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2427 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3552	6750	No
$v_{FO} = v_F - v_R$	3307	6750	No
v_R	245	2000	No
v_3 or v_{av34}	1125 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 $v_{12}/2$	No	
If yes, v_{12A}	= 2427	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2427	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 20.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.450

Space mean speed in ramp influence area, S_R = 49.1 mph

Space mean speed in outer lanes, S_0 = 59.8 mph

Space mean speed for all vehicles, S = 52.1 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5729	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	366	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5729	366		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1591	102		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6652	425	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.574 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4000 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6652	6750	No
$v_{FO} = v_F - v_R$	6227	6750	No
v_R	425	2000	No
v_3 or v_{av34}	2652 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 4000	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4000	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 34.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.466

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 53.9 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2848	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	225	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2848	225		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	749	59		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3133	248	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1853 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3381	6750	No
v_3 or v_{av34}	1280 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1853		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1853	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.318	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.2	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5363	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	322	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5363	322		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1490	89		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6227	374	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3683 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6601	6750	No
v_3 or v_{av34}	2544 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3683		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3683	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.511	
Space mean speed in ramp influence area,	S_R = 48.4	mph
Space mean speed in outer lanes,	S_0 = 47.0	mph
Space mean speed for all vehicles,	S = 47.8	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5870	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	239	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5870	239		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1545	63		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6457	263	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.586 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3896 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6457	6750	No
$v_{FO} = v_F - v_R$	6194	6750	No
v_R	263	2000	No
v_3 or v_{av34}	2561 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3896		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3896	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 33.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.452

Space mean speed in ramp influence area, S_R = 49.1 mph

Space mean speed in outer lanes, S_0 = 54.2 mph

Space mean speed for all vehicles, S = 51.0 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3626	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	332	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3626	332		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1007	92		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4210	385	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.637 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2822 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4210	6750	No
$v_{FO} = v_F - v_R$	3825	6750	No
v_R	385	2000	No
$v_{3 \text{ or } av34}$	1388 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2822 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2822	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 24.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.463

Space mean speed in ramp influence area, S_R = 49.0 mph

Space mean speed in outer lanes, S_0 = 58.8 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5631	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	294	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5631	294		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1482	77		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6194	323	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3664 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6517	6750	No
v_3 or v_{av34}	2530 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3664		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3664	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.496	
Space mean speed in ramp influence area,	S_R = 48.5	mph
Space mean speed in outer lanes,	S_0 = 47.1	mph
Space mean speed for all vehicles,	S = 48.0	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2028 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3294	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	310	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3294	310		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	915	86		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3825	360	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2262 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4185	6750	No
$v_{3 \text{ or } av34}$	1563 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34}$ > 2700 pc/h?		No	
Is $v_{3 \text{ or } av34}$ > 1.5 v_{12} /2		No	
If yes, v_{12A} = 2262		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2262	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 22.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.340	
Space mean speed in ramp influence area,	S_R = 50.6	mph
Space mean speed in outer lanes,	S_0 = 51.2	mph
Space mean speed for all vehicles,	S = 50.8	mph

APPENDIX G-7
Freeway Merge/Diverge Analysis
Forecast Year 2031 Existing Plus Ambient Growth Plus Project Buildout Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3199	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	276	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3199	276		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	889	77		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3714	320	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.652 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2534 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3714	6750	No
$v_{FO} = v_F - v_R$	3394	6750	No
v_R	320	2000	No
$v_{3 \text{ or } av34}$	1180 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2534 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2534	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 21.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.457

Space mean speed in ramp influence area, S_R = 49.1 mph

Space mean speed in outer lanes, S_0 = 59.6 mph

Space mean speed for all vehicles, S = 52.0 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5658	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	291	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5658	291		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1572	81		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6570	338	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.580 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3954 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6570	6750	No
$v_{FO} = v_F - v_R$	6232	6750	No
v_R	338	2000	No
v_3 or v_{av34}	2616 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3954		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3954	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.458

Space mean speed in ramp influence area, S_R = 49.0 mph

Space mean speed in outer lanes, S_0 = 54.0 mph

Space mean speed for all vehicles, S = 50.9 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2923	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	128	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2923	128		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	769	34		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3215	141	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1902 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3356	6750	No
v_3 or v_{av34}	1313 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 1902		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1902	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 18.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.316	
Space mean speed in ramp influence area,	S_R = 50.9	mph
Space mean speed in outer lanes,	S_0 = 52.1	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5247	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	226	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5247	226		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1458	63		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6092	262	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3603 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6354	6750	No
v_3 or v_{av34}	2489 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3603		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3603	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.472	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 47.3	mph
Space mean speed for all vehicles,	S = 48.3	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5748	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	291	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5748	291		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	1562	79		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6529	331	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.582 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3935 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6529	6750	No
$v_{FO} = v_F - v_R$	6198	6750	No
v_R	331	2000	No
v_3 or v_{av34}	2594 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3935		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3935	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.458	
Space mean speed in ramp influence area,	S_R = 49.0	mph
Space mean speed in outer lanes,	S_0 = 54.1	mph
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3650	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	350	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3650	350		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1014	97		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4238	406	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.635 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2841 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4238	6750	No
$v_{FO} = v_F - v_R$	3832	6750	No
v_R	406	2000	No
v_3 or v_{av34}	1397 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2841 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2841	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 24.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.465	
Space mean speed in ramp influence area,	S_R = 49.0	mph
Space mean speed in outer lanes,	S_0 = 58.8	mph
Space mean speed for all vehicles,	S = 51.8	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5457	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	179	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5457	179		vph
Peak-hour factor, PHF	0.91	0.91		
Peak 15-min volume, v15	1499	49		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6267	206	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3707 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6473	6750	No
v_3 or v_{av34}	2560 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3707		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3707	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 32.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.481	
Space mean speed in ramp influence area,	S_R = 48.7	mph
Space mean speed in outer lanes,	S_0 = 46.9	mph
Space mean speed for all vehicles,	S = 48.0	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3309	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	356	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3309	356		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	919	99		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3842	413	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2273 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4255	6750	No
v_3 or v_{av34}	1569 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2273		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2273	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 23.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.343	
Space mean speed in ramp influence area,	S_R = 50.5	mph
Space mean speed in outer lanes,	S_0 = 51.2	mph
Space mean speed for all vehicles,	S = 50.8	mph

APPENDIX G-8
Freeway Merge/Diverge Analysis
Forecast Year 2031 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3374	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	417	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3374	417		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	937	116		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	%	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3918	484	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.640 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2681 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3918	6750	No
$v_{FO} = v_F - v_R$	3434	6750	No
v_R	484	2000	No
v_3 or v_{av34}	1237 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2681		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2681	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 22.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.472

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 59.4 mph

Space mean speed for all vehicles, S = 51.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5691	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	364	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5691	364		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1581	101		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6608	423	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.575 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3981 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6608	6750	No
$v_{FO} = v_F - v_R$	6185	6750	No
v_R	423	2000	No
$v_{3 \text{ or } av34}$	2627 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3981		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3981	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.466

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 54.0 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2957	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	233	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2957	233		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	778	61		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3253	256	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 1924 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3509	6750	No
v_3 or v_{av34}	1329 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 1924		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1924	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 19.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.321	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 52.0	mph
Space mean speed for all vehicles,	S = 51.3	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5127	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	445	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5127	445		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1424	124		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5953	517	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3521 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6470	6750	No
v_3 or v_{av34}	2432 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3521		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3521	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.507	
Space mean speed in ramp influence area,	S_R = 48.4	mph
Space mean speed in outer lanes,	S_0 = 47.7	mph
Space mean speed for all vehicles,	S = 48.1	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5949	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	462	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5949	462		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1582	123		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6614	514	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.571 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3997 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6614	6750	No
$v_{FO} = v_F - v_R$	6100	6750	No
v_R	514	2000	No
v_3 or v_{av34}	2617 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3997 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3997	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.474

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 54.0 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3834	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	487	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3834	487		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1065	135		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4452	565	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.623 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2985 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4452	6750	No
$v_{FO} = v_F - v_R$	3887	6750	No
v_R	565	2000	No
$v_{3 \text{ or } av34}$	1467 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2985		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2985	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 25.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.479

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 58.5 mph

Space mean speed for all vehicles, S = 51.6 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5487	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	220	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5487	220		vph
Peak-hour factor, PHF	0.91	0.91		
Peak 15-min volume, v15	1507	60		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6301	253	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3727 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6554	6750	No
v_3 or v_{av34}	2574 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3727		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3727	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.495	
Space mean speed in ramp influence area,	S_R = 48.6	mph
Space mean speed in outer lanes,	S_0 = 46.8	mph
Space mean speed for all vehicles,	S = 47.9	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2031 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3347	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	541	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3347	541		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	930	150		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3886	628	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2299 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4514	6750	No
v_3 or v_{av34}	1587 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2299		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2299	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 24.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.359	
Space mean speed in ramp influence area,	S_R = 50.3	mph
Space mean speed in outer lanes,	S_0 = 51.1	mph
Space mean speed for all vehicles,	S = 50.6	mph

APPENDIX G-9
Freeway Merge/Diverge Analysis
Forecast Year 2035 Existing Plus Ambient Growth Plus Project Buildout Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3582	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	418	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3582	418		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	995	116		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4159	485	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.634 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2813 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4159	6750	No
$v_{FO} = v_F - v_R$	3674	6750	No
v_R	485	2000	No
v_3 or v_{av34}	1346 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2813 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2813	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 23.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.472	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 59.0	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5883	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	374	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5883	374		vph
Peak-hour factor, PHF	0.93	0.93		
Peak 15-min volume, v15	1581	101		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6610	420	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.575 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3982 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6610	6750	No
$v_{FO} = v_F - v_R$	6190	6750	No
v_R	420	2000	No
v_3 or v_{av34}	2628 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3982		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3982	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 34.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.466

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 54.0 mph

Space mean speed for all vehicles, S = 50.8 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3164	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	150	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3164	150		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	833	39		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3480	165	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2058 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3645	6750	No
v_3 or v_{av34}	1422 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2058		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2058	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.322	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 51.7	mph
Space mean speed for all vehicles,	S = 51.1	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5658	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	290	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5658	290		vph
Peak-hour factor, PHF	0.93	0.93		
Peak 15-min volume, v15	1521	78		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6358	326	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3761 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6684	6750	No
v_3 or v_{av34}	2597 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 3761		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3761	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.518	
Space mean speed in ramp influence area,	S_R = 48.3	mph
Space mean speed in outer lanes,	S_0 = 46.7	mph
Space mean speed for all vehicles,	S = 47.6	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6053	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	425	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6053	425		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1593	112		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6658	468	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.572 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4009 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6658	6750	No
$v_{FO} = v_F - v_R$	6190	6750	No
v_R	468	2000	No
v_3 or v_{av34}	2649 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 4009		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4009	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.470	
Space mean speed in ramp influence area,	S_R = 48.9	mph
Space mean speed in outer lanes,	S_0 = 53.9	mph
Space mean speed for all vehicles,	S = 50.8	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4088	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	467	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4088	467		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1136	130		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4747	542	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.616 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3134 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4747	6750	No
$v_{FO} = v_F - v_R$	4205	6750	No
v_R	542	2000	No
v_3 or v_{av34}	1613 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A}	= 3134	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3134	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 26.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.477

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 57.9 mph

Space mean speed for all vehicles, S = 51.6 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5628	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	204	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5628	204		vph
Peak-hour factor, PHF	0.91	0.91		
Peak 15-min volume, v15	1546	56		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6463	234	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3823 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6697	6750	No
v_3 or v_{av34}	2640 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3823		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3823	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 33.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.511	
Space mean speed in ramp influence area,	S_R = 48.4	mph
Space mean speed in outer lanes,	S_0 = 46.4	mph
Space mean speed for all vehicles,	S = 47.6	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + Proj (BO)
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3621	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	471	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3621	471		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1006	131		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4204	547	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2487 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4751	6750	No
v_3 or v_{av34}	1717 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2487		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2487	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 25.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.367	
Space mean speed in ramp influence area,	S_R = 50.2	mph
Space mean speed in outer lanes,	S_0 = 50.6	mph
Space mean speed for all vehicles,	S = 50.4	mph

APPENDIX G-10
Freeway Merge/Diverge Analysis
Forecast Year 2035 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Buildout Conditions

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3629	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	483	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3629	483		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1008	134		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4214	561	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.629 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2858 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4214	6750	No
$v_{FO} = v_F - v_R$	3653	6750	No
v_R	561	2000	No
v_3 or v_{av34}	1356 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 2858		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2858	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 24.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.478

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 58.9 mph

Space mean speed for all vehicles, S = 51.6 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5849	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	407	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5849	407		vph
Peak-hour factor, PHF	0.91	0.91		
Peak 15-min volume, v15	1607	112		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6717	467	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.571 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4033 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6717	6750	No
$v_{FO} = v_F - v_R$	6250	6750	No
v_R	467	2000	No
v_3 or v_{av34}	2684 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 4033		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4033	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 34.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.470

Space mean speed in ramp influence area, S_R = 48.9 mph

Space mean speed in outer lanes, S_0 = 53.8 mph

Space mean speed for all vehicles, S = 50.7 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3146	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	168	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3146	168		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	828	44		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3461	185	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2047 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3646	6750	No
v_3 or v_{av34}	1414 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2047		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2047	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 19.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.322	
Space mean speed in ramp influence area,	S_R = 50.8	mph
Space mean speed in outer lanes,	S_0 = 51.7	mph
Space mean speed for all vehicles,	S = 51.2	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 NB
Junction:	NB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5442	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	360	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5442	360		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1512	100		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6319	418	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3738 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6737	6750	No
v_3 or v_{av34}	2581 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 3738		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3738	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.535	
Space mean speed in ramp influence area,	S_R = 48.0	mph
Space mean speed in outer lanes,	S_0 = 46.8	mph
Space mean speed for all vehicles,	S = 47.6	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6076	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	483	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6076	483		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1599	127		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6684	531	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.568 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 4029 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6684	6750	No
$v_{FO} = v_F - v_R$	6153	6750	No
v_R	531	2000	No
v_3 or v_{av34}	2655 pc/h	(Equation 25-15 or 25-16)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	
If yes, v_{12A} = 4029		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	4029	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 34.4 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.476

Space mean speed in ramp influence area, S_R = 48.8 mph

Space mean speed in outer lanes, S_0 = 53.9 mph

Space mean speed for all vehicles, S = 50.7 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB Off Ramp to Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4138	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	497	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4138	497		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	1149	138		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4805	577	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.613 Using Equation 5

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3170 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4805	6750	No
$v_{FO} = v_F - v_R$	4228	6750	No
v_R	577	2000	No
$v_{3 \text{ or } av34}$	1635 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34}$	> 2700 pc/h?	No	
Is $v_{3 \text{ or } av34}$	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3170 (Equation 25-18)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3170	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 27.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	D_S = 0.480	
Space mean speed in ramp influence area,	S_R = 48.8	mph
Space mean speed in outer lanes,	S_0 = 57.9	mph
Space mean speed for all vehicles,	S = 51.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	AM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5653	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	224	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5653	224		vph
Peak-hour factor, PHF	0.91	0.91		
Peak 15-min volume, v15	1553	62		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6492	257	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 3840 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	6749	6750	No
v_3 or v_{av34}	2652 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34} > 2700 pc/h?		No	
Is v_3 or v_{av34} > 1.5 v_{12} /2		No	
If yes, v_{12A} = 3840		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3840	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 34.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.521	
Space mean speed in ramp influence area,	S_R = 48.2	mph
Space mean speed in outer lanes,	S_0 = 46.4	mph
Space mean speed for all vehicles,	S = 47.5	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JDS
Agency/Co.:	MBI
Date performed:	11/12/2017
Analysis time period:	PM Peak Hour
Freeway/Dir of Travel:	I-215 SB
Junction:	SB On Ramp from Keller Rd
Jurisdiction:	Caltrans Dist 8
Analysis Year:	Year 2035 + AG + CP + P
Description:	Murrieta Hills SP TIA

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3591	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	549	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3591	549		vph
Peak-hour factor, PHF	0.90	0.90		
Peak 15-min volume, v15	998	153		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4170	637	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.591 Using Equation 1

$v_{12} = v_F (P_{FM})$ = 2467 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	4807	6750	No
v_3 or v_{av34}	1703 pc/h	(Equation 25-4 or 25-5)	
Is v_3 or v_{av34}	> 2700 pc/h?		No
Is v_3 or v_{av34}	> 1.5 v_{12} /2		No
If yes, v_{12A} = 2467		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2467	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 26.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.373	
Space mean speed in ramp influence area,	S_R = 50.2	mph
Space mean speed in outer lanes,	S_0 = 50.7	mph
Space mean speed for all vehicles,	S = 50.3	mph

APPENDIX H
Approved Scope of Work

SCOPING AGREEMENT FOR TRAFFIC IMPACT ANALYSIS

This letter acknowledges the City of Murrieta Engineering Department requirements for traffic impact analysis of the following project. The analysis must follow the City of Murrieta Public Works Department Traffic Study Guidelines dated October 2013.

Case No. (Required for submittal) _____

Related Cases - _____

SP No. _____

EIR No. _____

GPA No. _____

CZ No. _____

Project Name: Murrieta Hills Specific Plan

Project Address: Southwest corner of the I-215 Freeway/Keller Road undercrossing [see **Attachment A**]

Project Description: 578 single-family detached residential dwelling units, 172 multi-family dwelling units, and 26.5 acres of commercial use (up to 346,302 square feet of shopping center) [see **Attachment B**]

	Consultant	Developer
Name:	Bob Davis – Michael Baker International	Pulte/BP Murrieta, LLC - Richard Robotta
Address:	14725 Alton Parkway, Irvine, CA 92618	550 Laguna Drive, Ste. B, Carlsbad, CA 92008
Telephone:	(949) 855-5763	(760) 450-0444

A. Trip Generation Source: (ITE 9th Edition or other)

Current GP Land Use	LDR-RC, RM	Proposed Land Use	Mixed
Current Zoning	R-R	Proposed Zoning	Mixed

Current Trip Generation				Proposed Trip Generation [see **Attachments C1-C4**]		
Phase 1	In	Out	Total	In	Out	Total
AM Trips	0	0	0	57	168	225
PM Trips	0	0	0	189	111	300
Phases 1&2	In	Out	Total	In	Out	Total
AM Trips	0	0	0	199	435	634
PM Trips	0	0	0	640	480	1,120
Phases 1-3	In	Out	Total	In	Out	Total
AM Trips	0	0	0	276	482	758
PM Trips	0	0	0	860	719	1,579

Internal Trip Allowance ☒ Yes ☐ No (4% ADT & 5% PM % Trip Discount – PA 8 and PA 9 Only)

Pass-By Trip Allowance ☒ Yes ☐ No (25 % Trip Discount – Shopping Center Only)

A pass-by trip discount of up to 25% is allowed for appropriate land uses. The pass-by trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. **Trip Geographic Distribution:** N ____% S ____% E ____% W ____%
(Attach exhibit for detailed assignment) – [See **Attachments D1-D4**]

C. Background Traffic

Project Build-out Year: 2031 Annual Ambient Growth Rate: 1% per year based on previous TIA

Phase Year(s)

2023 (Phase 1): 300 single-family dwelling units

2028 (Phase 2): Additional 278 single-family dwelling units, 172 multi-family dwelling units, 173,151 square feet shopping center

2031 (Phase 3): Additional 173,151 square feet shopping center

Other area projects to be analyzed:

City of Murrieta

- Vineyard Shopping Center – 30,149 square feet of shopping center (West Side); 91-room hotel (West Side); 48,340 square feet of shopping center (East Side)
- The Orchard – Approximately 215,850 square feet of shopping center remaining (to be verified by City staff)
- Kaiser Medical Center – Assume Kaiser Phase 1 (2017) is built by Murrieta Hills Phase 1(2023); assume Kaiser Phase 2 (2023) is built by Murrieta Hills Phase 2 (2028); assume Kaiser Phase 3 (2026) is built prior to Murrieta Hills Phase 3 (2031); assume Kaiser Phases 4 (2030) and 5 (2035) are built in the General Plan buildout (2035) analysis.
- Mitchell Crossings Apartments – 331 multi-family dwelling units; 50,000 square feet of specialty retail
- Pinnacle Senior Living (DP-2016-992)– 87 beds for assisted living and 22 beds for memory care
- Los Alamos Hills Specific Plan – 542 multi-family dwelling units (apartments)
- Golden Cities – 314 single family dwelling units
- Loma Linda University Medical Center – 114 beds for hospital
- Adobe Springs (DP-2015-616) – 287 single family dwelling units in Phase 1 (2018); 208,500 square feet of business park in phase 2 (2020)
- Murreita Market Place (DP-2017-1370) – 523,102 square feet of shopping center (North Side); 61,270 square feet of shopping center (South Side)
- Health South Rehab Hospital (DP-2015-571) – 54,884 square foot facility with 50 beds
- Skilled Nursing Facility (DP-2015-708) – 37,000 square foot facility with 59 beds

City of Wildomar

- No projects identified within 1-mile radius of project site or study area.

City of Menifee

- Cantalena Specific Plan 334/TR33732 (#47) – 1,079 dwelling units
- Menifee Commercial Specific Plan (#56) – 241,000 square feet of shopping center
- The Junction Shopping Center (#55) – 526,800 square feet of shopping center
- Commerce Pt. I & II (#53) – 828,000 square feet of industrial park
- Mill Creek Promenade (combined Rancho Bonito/Mill Creek) – 194 attached townhomes; 204 detached single-family dwelling units; 33,288 square feet of business park/industrial; and 90,299 square feet of commercial/retail

- Zeiders Road CUP (2016-078) – 14,000 square feet of warehouse
- TR33511 (#48) – Granite - 98 single-family dwelling units
- TR31194 (#42) – Golden Meadows - 474 single-family dwelling units
- TR30142 (#40) – Hidden Hills - 397 single-family dwelling units remaining
- TR28206 (#46) – Terra Bella - 127 single-family dwelling units remaining
- TR32628 (#45) – Christensen Ranch - 327 condominium dwelling units

County of Riverside

- None identified within 1-mile radius of project site.

Model/Forecast methodology: Previous Year 2035 model forecast prepared by LSA

D. Study intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.) – See **Attachments E1-E5**.

1. Bundy Canyon Rd/Cottonwood Canyon Rd
2. Murrieta Rd/Scott Rd
3. Haun Rd/Scott Rd
4. I-215 Southbound Ramps/Scott Rd
5. I-215 Northbound Ramps/Scott Rd
6. Antelope Rd/Scott Rd
7. Zeiders Rd/Keller Rd
8. Antelope Rd//Keller Rd (Existing Conditions only)
9. Mapleton Ave/Keller Rd
10. Menifee Rd/Keller Rd
11. Antelope Rd/Baxter Rd (Existing through Year 2028 conditions only)
12. Warm Springs Rd/Baxter Rd
13. Whitewood Rd/Baxter Rd
14. Mc Elwain Rd/Linnell Ln
15. Whitewood Rd/Linnell Ln
16. Murrieta Oaks East Ave/Clinton Keith Rd
17. Mc Elwain Rd/Clinton Keith Rd
18. I-215 Southbound Ramps/Clinton Keith Rd
19. I-215 Northbound Ramps/Clinton Keith Rd
20. Whitewood Rd/Clinton Keith Rd
21. I-215 Southbound Ramps/Keller Rd (Year 2031 and General Plan buildout conditions only)
22. I-215 Northbound Ramps/Keller Rd (Year 2031 and General Plan buildout conditions only)
23. Warm Springs Rd/Linnell Ln (Year 2031 and General Plan buildout conditions only)
24. Warm Springs Rd/Clinton Keith Rd (Year 2031 and General Plan buildout conditions only)

E. Study Roadway Segments: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

1. Keller Rd, west of Zeiders Rd-McElwain Rd
2. Keller Rd, between Zeiders Rd-McElwain Rd and I-215 Freeway
3. Keller Rd, between Antelope Rd and Mapleton Ave
4. Keller Rd, between Mapleton Ave and Whitewood Rd-Menifee Rd
5. Antilope Rd, between Keller Rd and Mapleton Ave
6. Antilope Rd, between Mapleton Ave and Scott Rd
7. Zeiders Rd, north of Keller Rd
8. McElwain Rd, between Keller Rd and Linnell Rd
9. McElwain Rd, North of Clinton Keith Rd
10. Scott Rd, West of Haun Rd-Zeiders Rd

11. Scott Rd, between Haun Rd-Zeiders Rd and I-215 Freeway
12. Scott Rd, between I-215 Freeway and Antelope Rd
13. Clinton Keith Rd between I-215 Freeway and Whitewood Rd

F. Site Plan (please see attached reduced copy) [see **Attachment B**]

G. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Engineering Department)

1. Queuing analysis along Keller Rd for all scenarios
2. Merge/Diverge Analysis at all study interchanges

H. Existing Conditions
Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.

Date of counts: ____ *New Counts will be collected at all existing study intersections and roadway segments when school is in session.*

Additional Notes & Assumptions:

1.) The analysis will assume phase 1 of the I-215 / Scott Road interchange project is assumed to be constructed prior to Phase 1 (Year 2023) of the Murrieta Hills Specific Plan project since the first phase of the interchange is scheduled to begin construction by the end of Year 2017. With an 18 month construction period, opening day of the interchange (phase 1) would be approximately summer of 2019 based on information provided by the City of Menifee. The buildout phase of the I-215 / Scott Road interchange project is not yet fully funded, therefore, the analysis will assume the buildout phase of the interchange improvements are not completed until after Year 2030.

2.) The analysis will assume the Whitewood Road connection between Keller Road and Baxter Road is constructed prior to Phase 1 (Year 2023) of the Murrieta Hills Specific Plan project since construction is anticipated to be completed by September 2017 based on information provided by the City.

3.) The analysis will assume the Clinton Keith Road extension project between Whitewood Road and Trios Valley Road as a 4-lane roadway (by the County) is constructed prior to Phase 1 (Year 2023) of the Murrieta Hills Specific Plan project since the extension project is currently under construction and anticipated to be opened by spring of 2018 based on information provided by the City.

4.) The analysis will assume the I-215 / Keller Road interchange project is constructed prior to Phase 1 (Year 2023) of the Murrieta Hills Specific Plan project since the interchange project is partially funded and anticipated to be constructed by Year 2021 based on information provided by the City.

5.) Since the I-215 / Keller Road interchange is expected to be constructed prior to Phase 1 of the Murrieta Hills Specific Plan, the need for the Mc Elwain Road extension is reduced from that assumed in the prior TIA. For the purposes of this updated study, Michael Baker will analyze the need for the Mc Elwain Road extension in Phase 3 of the project.

6.) The traffic analysis will be updated to reflect HCM 2010 analysis methodology.

7.) The traffic analysis assumptions and scope will be reviewed with the City of Menifee once the City of Murrieta has reviewed and approved the traffic scope of work.

8.) The following nine analysis scenarios will be evaluated in the traffic study:

- Existing Conditions
- Forecast Existing Plus Project Buildout Conditions
- Forecast Year 2023 (Phase 1) With Ambient Growth With Project (Phase 1) Conditions
- Forecast Year 2023 (Phase 1) With Ambient Growth With Cumulative Projects With Project (Phase 1) Conditions
- Forecast Year 2028 (Phase 2) With Ambient Growth With Project (Phases 1&2) Conditions
- Forecast Year 2028 (Phase 2) With Ambient Growth With Cumulative Projects With Project (Phases 1&2) Conditions
- Forecast Year 2031 (Phase 3) With Ambient Growth With Project (Phases 1,2&3) Conditions
- Forecast Year 2031 (Phase 3) With Ambient Growth With Cumulative Projects With Project (Phases 1,2&3) Conditions
- Forecast Year 2035 With Project Buildout (Phases 1,2&3) Conditions
-

Recommended by:

Bob Davis – Michael Baker International — 9/20/17
Consultant's Representative — Date

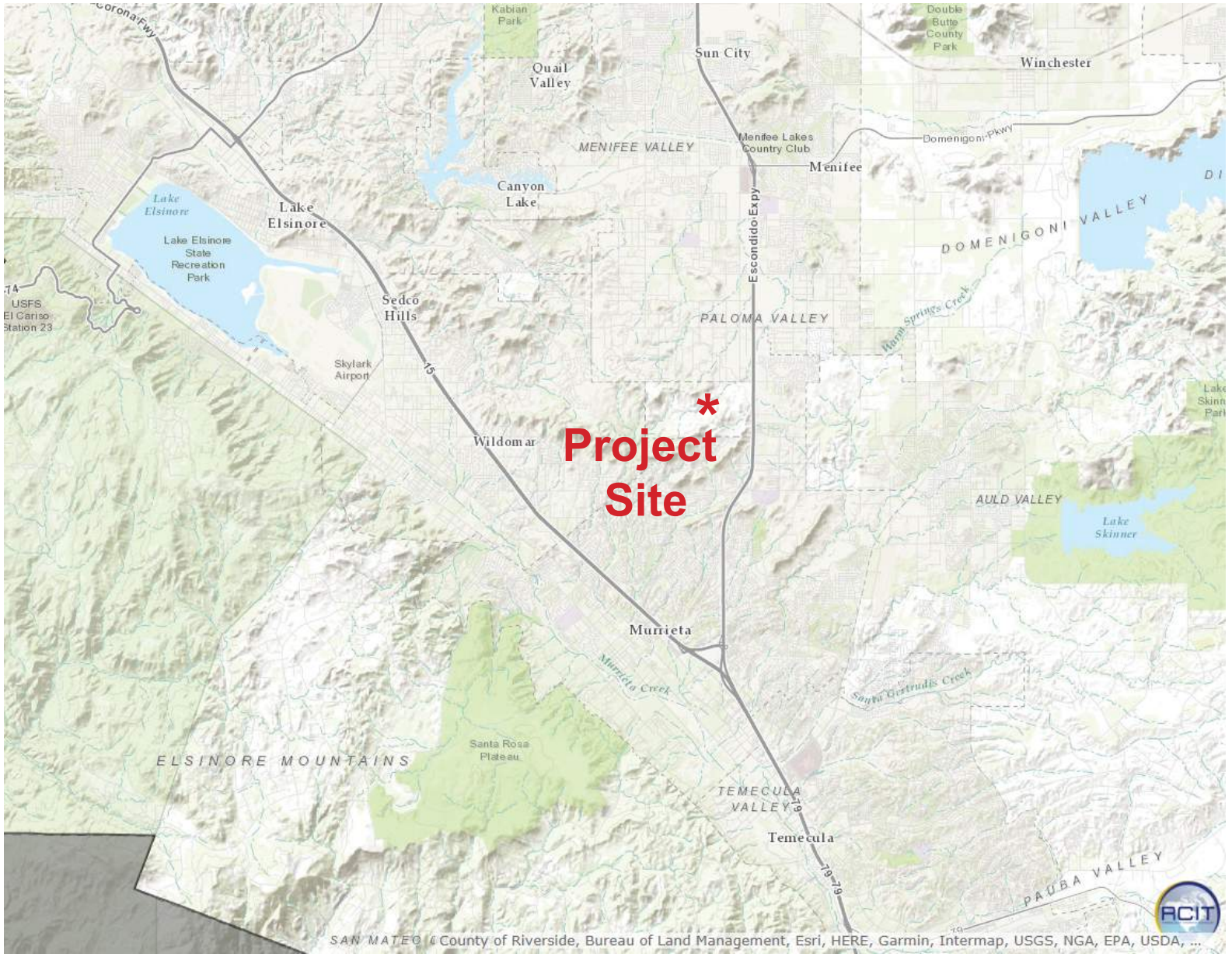
Scoping Agreement:
Submitted on 8/21/17 — Revised on 9/20/17

Approved Scoping Agreement:

Arda Edgington — 9/27/17
City of Murrieta Engineering Department — Date

Attachments:

Attachment A – Regional Project Location
Attachment B – Conceptual Site Plan of Proposed Project
Attachment C – Project Trip Generation
Attachment D – Project Distribution
Attachment E – Study Intersections



Not to Scale

Michael Baker INTERNATIONAL

H:\pdata\

Aug2017

Regional Project Location

Attachment A



Proposed Murrieta Hills Specific Plan
578 Single Family Dwelling Units
172 Multi-Family Dwelling Units
346,302 SF Commercial Retail

Revised Site Plan Under Development

400 800 1600

This illustrative demonstrates a conceptual design incorporating all required Specific Plan elements, including land use, circulation, infrastructure, open space, and recreation. Other designs may be acceptable provided they are consistent with this Specific Plan.

CONCEPTUAL DEVELOPMENT PLAN

Murrieta Hills

Attachment B

ATTACHMENT C
Project Trip Generation

ATTACHMENT C-1
Murrieta Hills Specific Plan
Trip Generation Rates

Land Use	ITE Code	Trip Rate	AM Peak Hour Trips			PM Peak Hour Trips		
			Rate	In	Out	Rate	In	Out
Single Family Detached Residential	210	9.52 /DU	0.75 /DU	25% :	75%	1 /DU	63% :	37%
Residential Condominium	230	5.81 /DU	0.44 /DU	17% :	83%	0.52 /DU	67% :	33%
Commercial Retail	820	42.7 /KSF	0.96 /KSF	62% :	38%	3.71 /KSF	48% :	52%

Source: 2012 ITE Trip Generation Manural, 9th Edition

ATTACHMENT C-2
Murrieta Hills Specific Plan
Phase 1 (Year 2023)

Land Use	Intensity	ADT	AM Peak Hour Trips			PM Peak Hour Trips		
			Volume	Inbound	Outbound	Volume	Inbound	Outbound
Single Family Detached Residential	300 DU	2,856	225	57	168	300	189	111
Project Phase 1 Total		**2,856**	**225**	**57**	**168**	**300**	**189**	**111**

ATTACHMENT C-3
Murrieta Hills Specific Plan
Phase 1&2 (Year 2028)

Land Use	Intensity	ADT	AM Peak Hour Trips			PM Peak Hour Trips		
			Volume	Inbound	Outbound	Volume	Inbound	Outbound
Single Family Detached Residential	*578 DU*	*5,503*	*434*	*109*	*325*	*578*	*364*	*214*
Residential Condominium	172 DU	999	76	13	63	89	59	30
ITE Internal Capture (5% PM, 4% ADT) [a]		-40	0	0	0	-4	-3	-1
Residential Condominium Subtotal		*959*	*76*	*13*	*63*	*85*	*56*	*29*
Commercial Retail	173.151 KSF	7,394	166	103	63	642	*308*	*334*
ITE Internal Capture (5% PM, 4% ADT) [a]		-296	0	0	0	-32	-15	-17
Subtotal after Internal Capture		7,098	166	103	63	610	293	317
Pass-By Trip Reduction (25% AM, 25% PM, 25% ADT) [b]		-1,775	-42	-26	-16	-153	-73	-80
Commercial Retail Subtotal		*5,324*	*124*	*77*	*47*	*457*	*220*	*237*
Proposed Project Phase 1 & 2 Total		**11,785**	**634**	**199**	**435**	**1,120**	**640**	**480**

[a] The ITE Internal Capture is assumed between the Residential Condominiums and Commercial Retail only for the daily and PM peak hour.

[b] The Pass-By Trip Reduction of 25% applies only to the Commercial Retail trips only.

ATTACHMENT C-4

Murrieta Hills Specific Plan

Phase 1, 2, & 3 (Project Buildout - Year 2031)

Land Use	Intensity	ADT	AM Peak Hour Trips			PM Peak Hour Trips		
			Volume	Inbound	Outbound	Volume	Inbound	Outbound
Single Family Detached Residential	*578 DU*	*5,503*	*434*	*109*	*325*	*578*	*364*	*214*
Residential Condominium	172 DU	999	76	13	63	89	59	30
ITE Internal Capture (5% PM, 4% ADT) [a]		-40	0	0	0	-4	-3	-1
Residential Condominium Subtotal		*959*	*76*	*13*	*63*	*85*	*56*	*29*
Commercial Retail	346.302 KSF	14,787	332	206	126	1,285	617	668
ITE Internal Capture (5% PM, 4% ADT) [a]		-591	0	0	0	-64	-31	-33
Subtotal after Internal Capture		14,196	332	206	126	1,221	586	635
Pass-By Trip Reduction (25% AM, 25% PM, 25% ADT) [b]		-3,549	-84	-52	-32	-305	-146	-159
Commercial Retail Subtotal		*10,647*	*248*	*154*	*94*	*916*	*440*	*476*
Proposed Project Phase 1, 2, & 3 Total		**17,109**	**758**	**276**	**482**	**1,579**	**860**	**719**

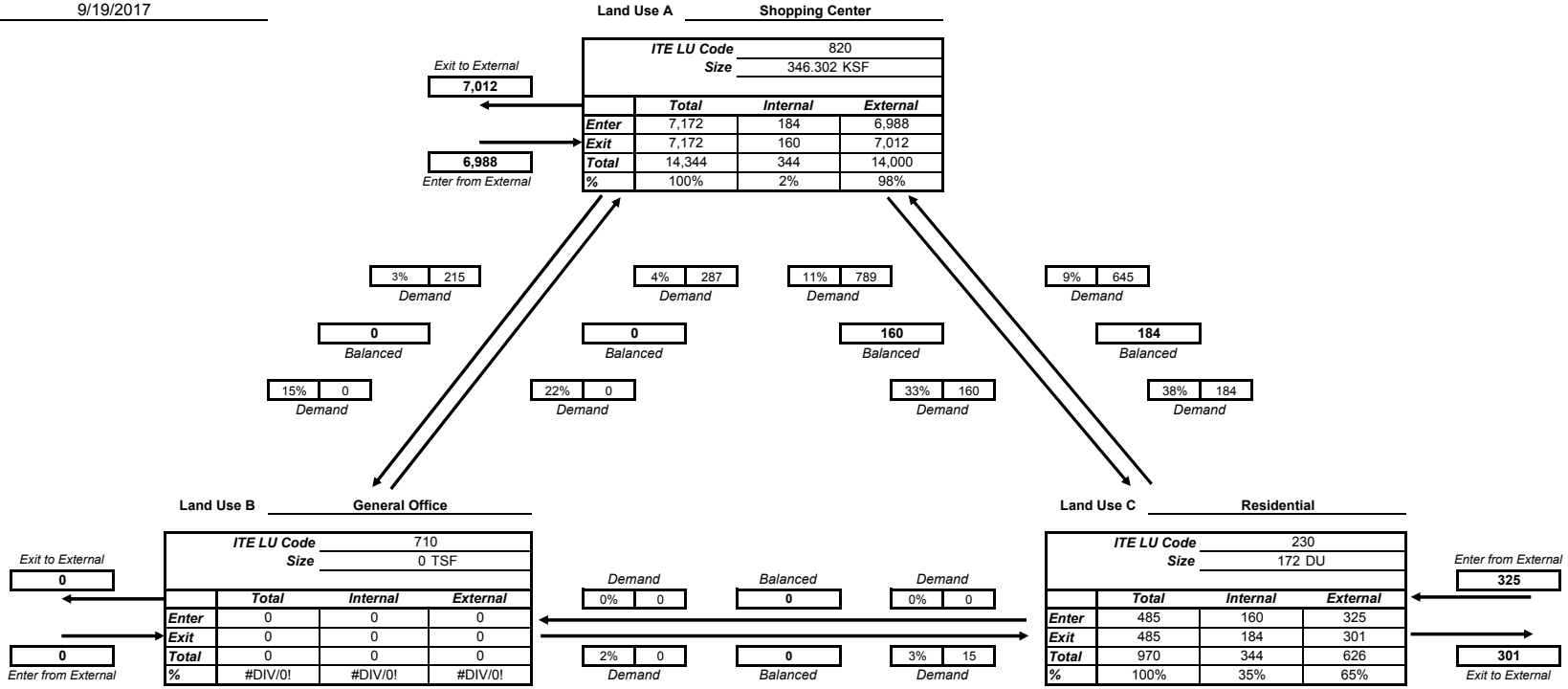
[a] The ITE Internal Capture is assumed between the Residential Condominiums and Commercial Retail only for the daily and PM peak hour.

[b] The Pass-By Trip Reduction of 25% applies only to the Commercial Retail trips only.

Murrieta Hills Traffic Study

Multi-Use Development Trip Generation and Internal Capture Summary

Analyst: JG
Date: 9/19/2017
Time Period: Daily

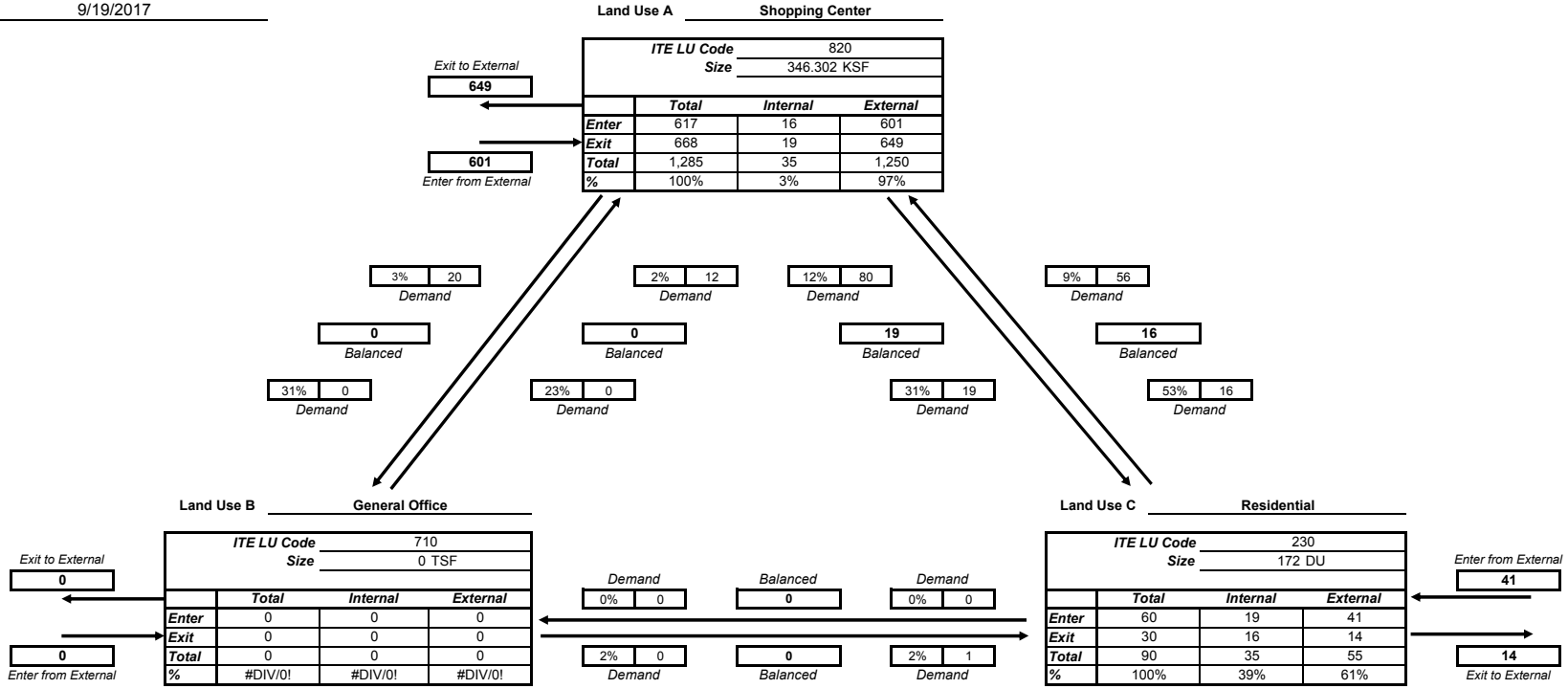


Net External Trips for Multi-Use Development					
	Land Use A	Land Use B	Land Use C	Total	Internal Capture
Enter	6,988	0	325	*7,313*	*4%*
Exit	7,012	0	301	*7,313*	
Total	14,000	0	626	*14,626*	
Single-Use Trip Gen. Est.	14,344	0	970	*15,314*	

Murrieta Hills Traffic Study

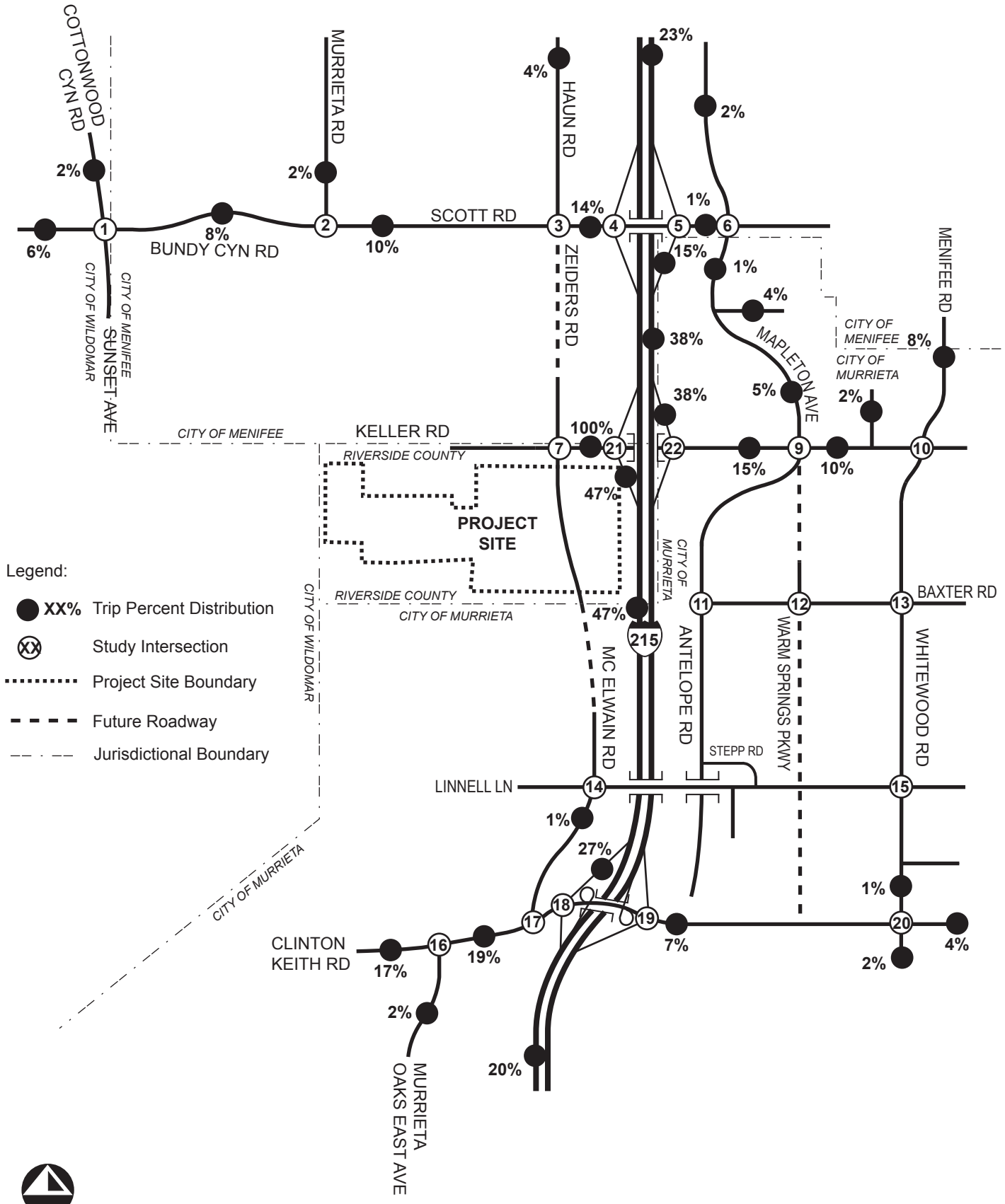
Multi-Use Development Trip Generation and Internal Capture Summary

Analyst: JG
Date: 9/19/2017
Time Period: PM Peak Hour



Net External Trips for Multi-Use Development					
	Land Use A	Land Use B	Land Use C	Total	Internal Capture
Enter	601	0	41	*642*	*5%*
Exit	649	0	14	*663*	
Total	1,250	0	55	*1,305*	
Single-Use Trip Gen. Est.	1,285	0	90	*1,375*	

ATTACHMENT D
Project Distribution



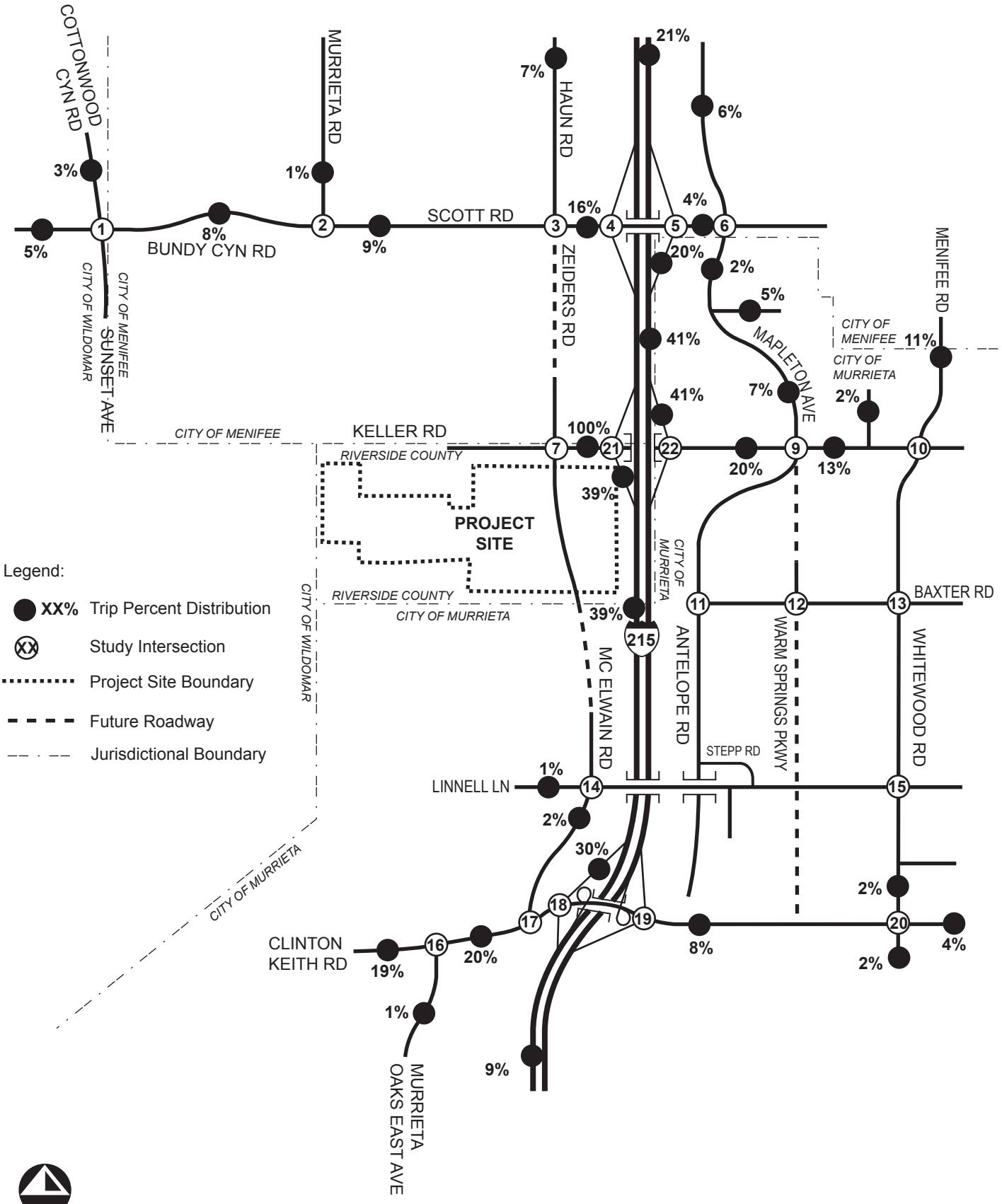
Forecast Phase 1 - Year 2023 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment D-1



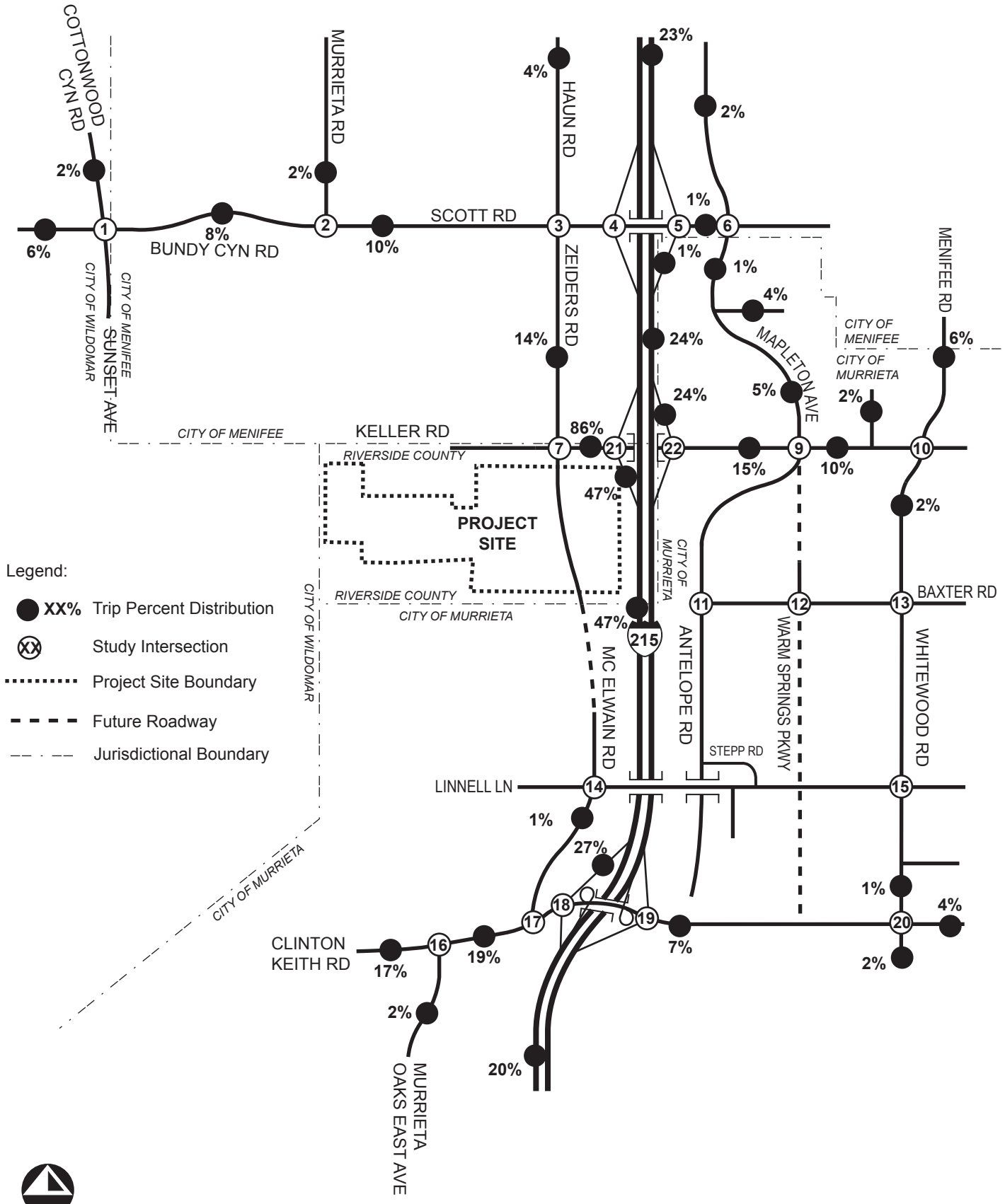
Forecast Phase 1 - Year 2023 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment D-2



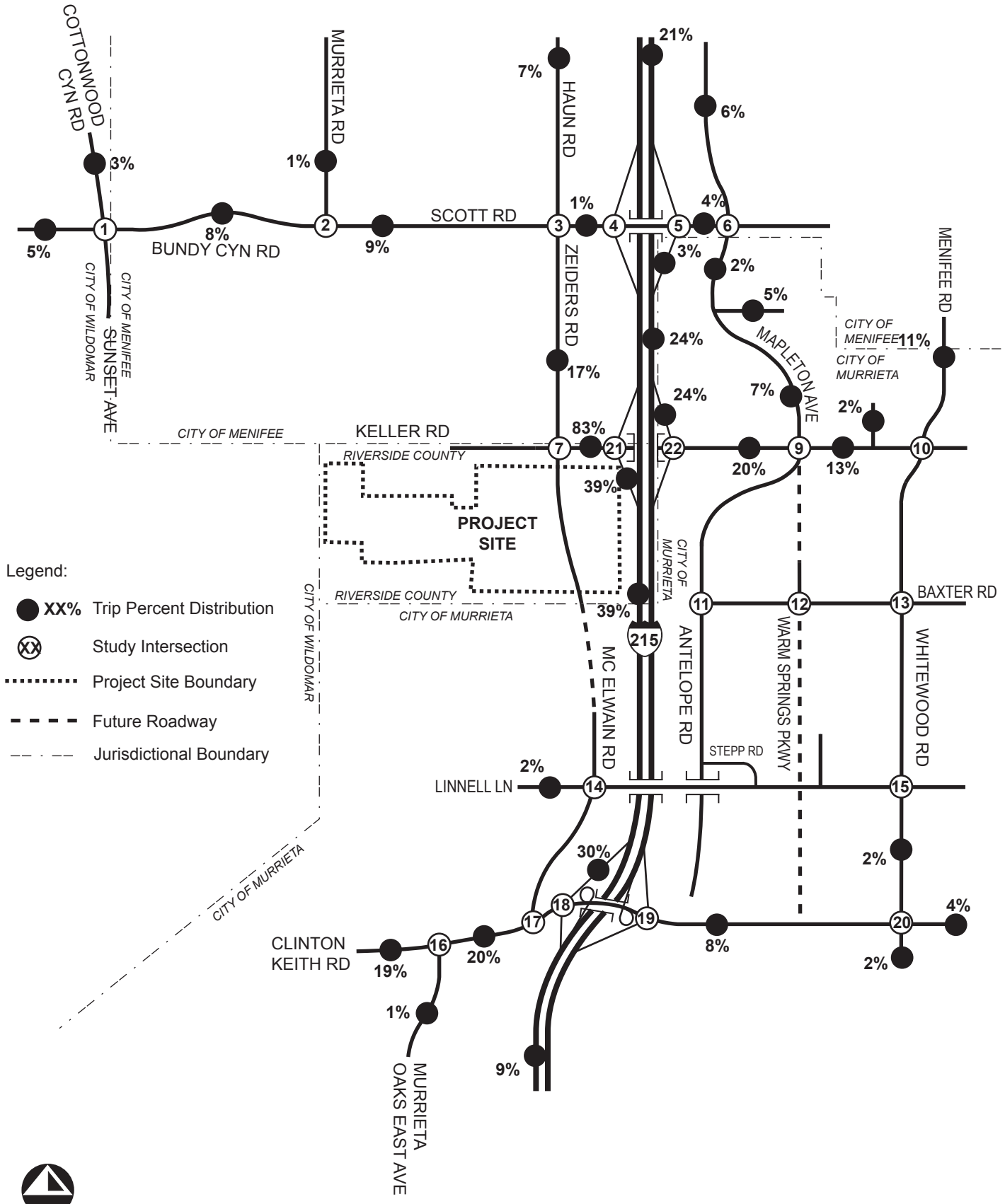
Forecast Phase 2 - Year 2028 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment D-3



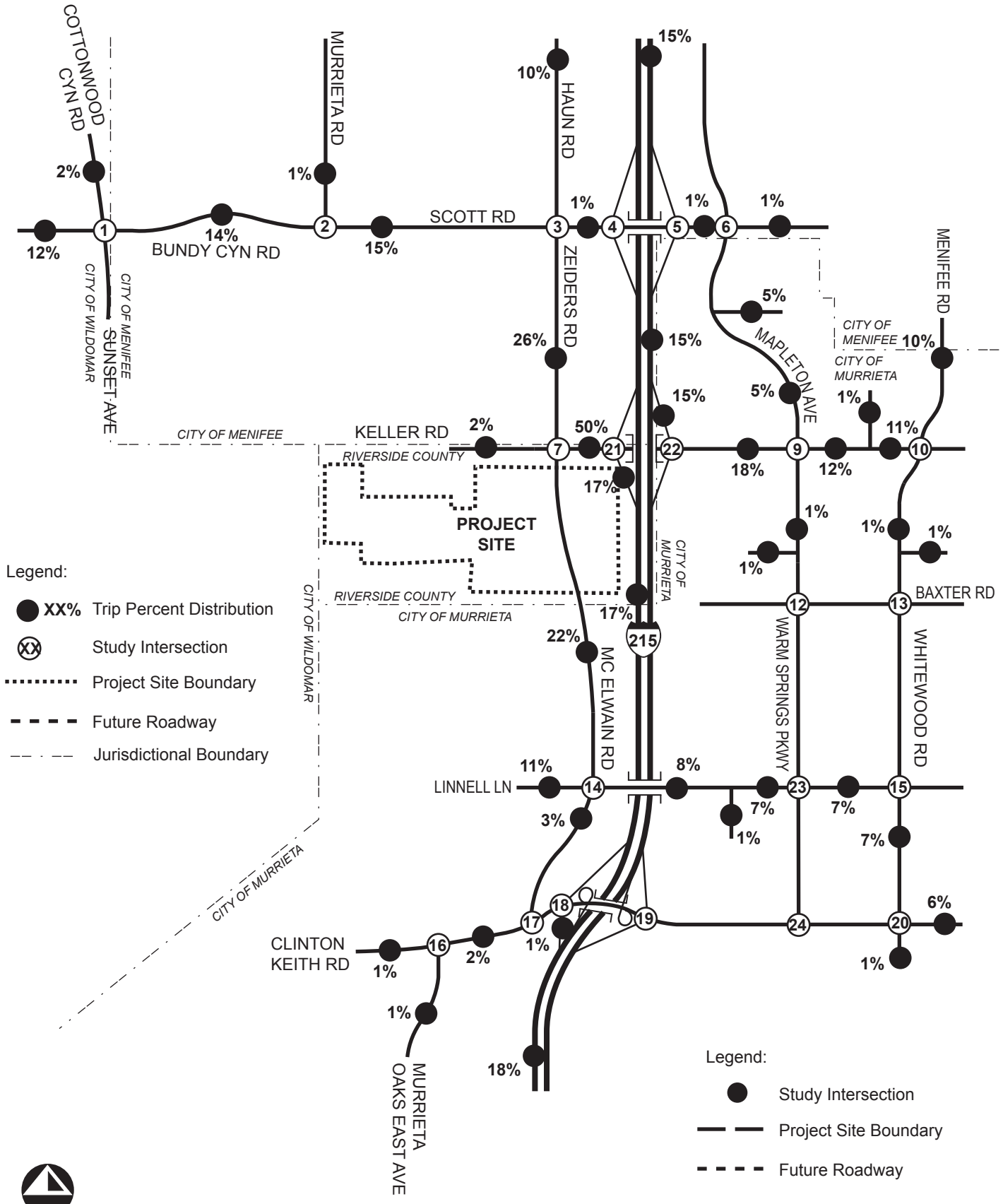
Forecast Phase 2 - Year 2028 Trip Percent Distribution of Proposed Project (Retail Component)

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment D-4



Not to Scale

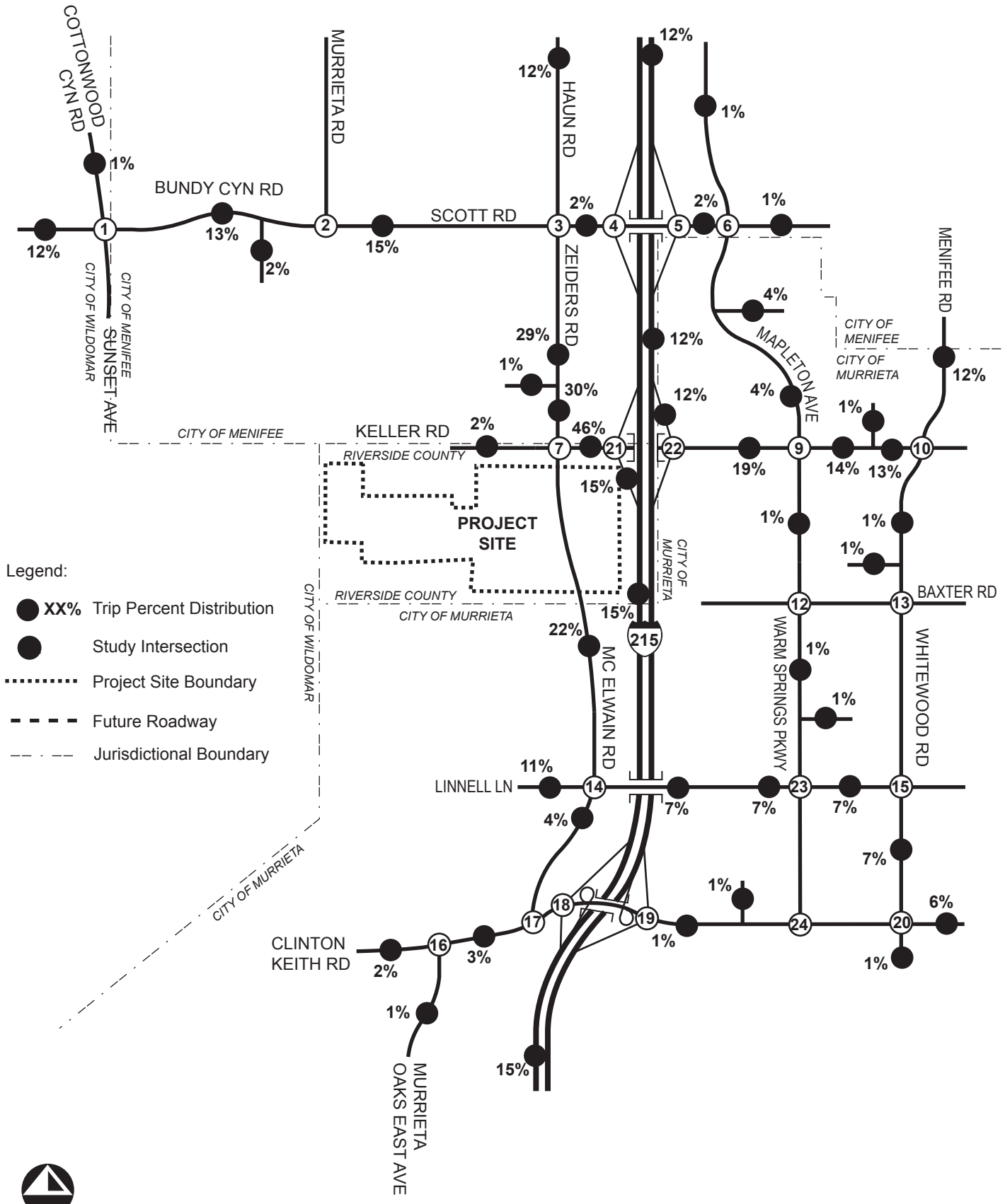
Forecast Phase 3 - Year 2031 & Buildout Year 2035 Trip Percent Distribution of Proposed Project (Residential Component)

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment D-5



Not to Scale

Forecast Phase 3 - Year 2031 & Buildout Year 2035 Trip Percent Distribution of Proposed Project (Retail Component)

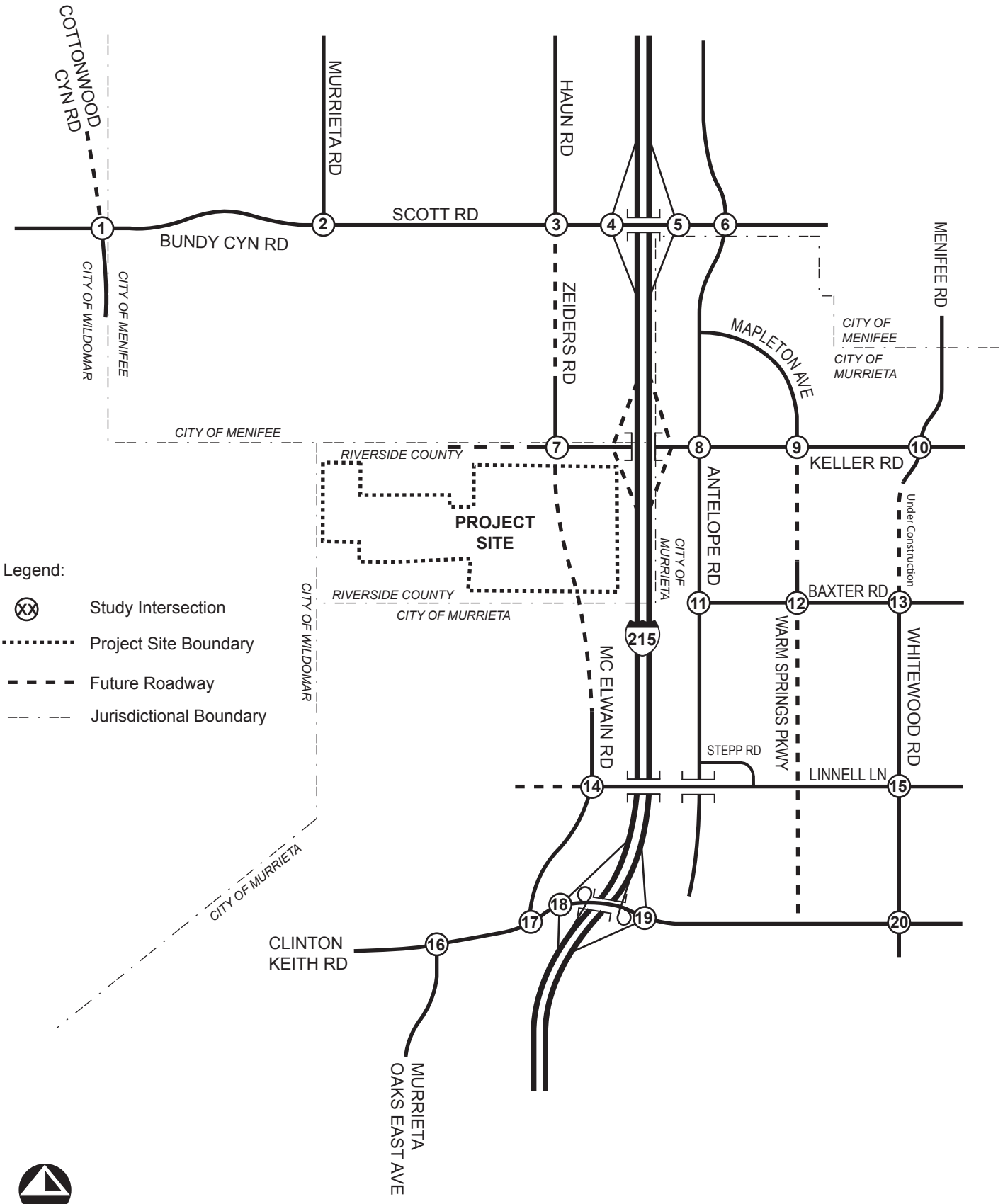
Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment D-6

ATTACHMENT E
Study Intersections



Not to Scale

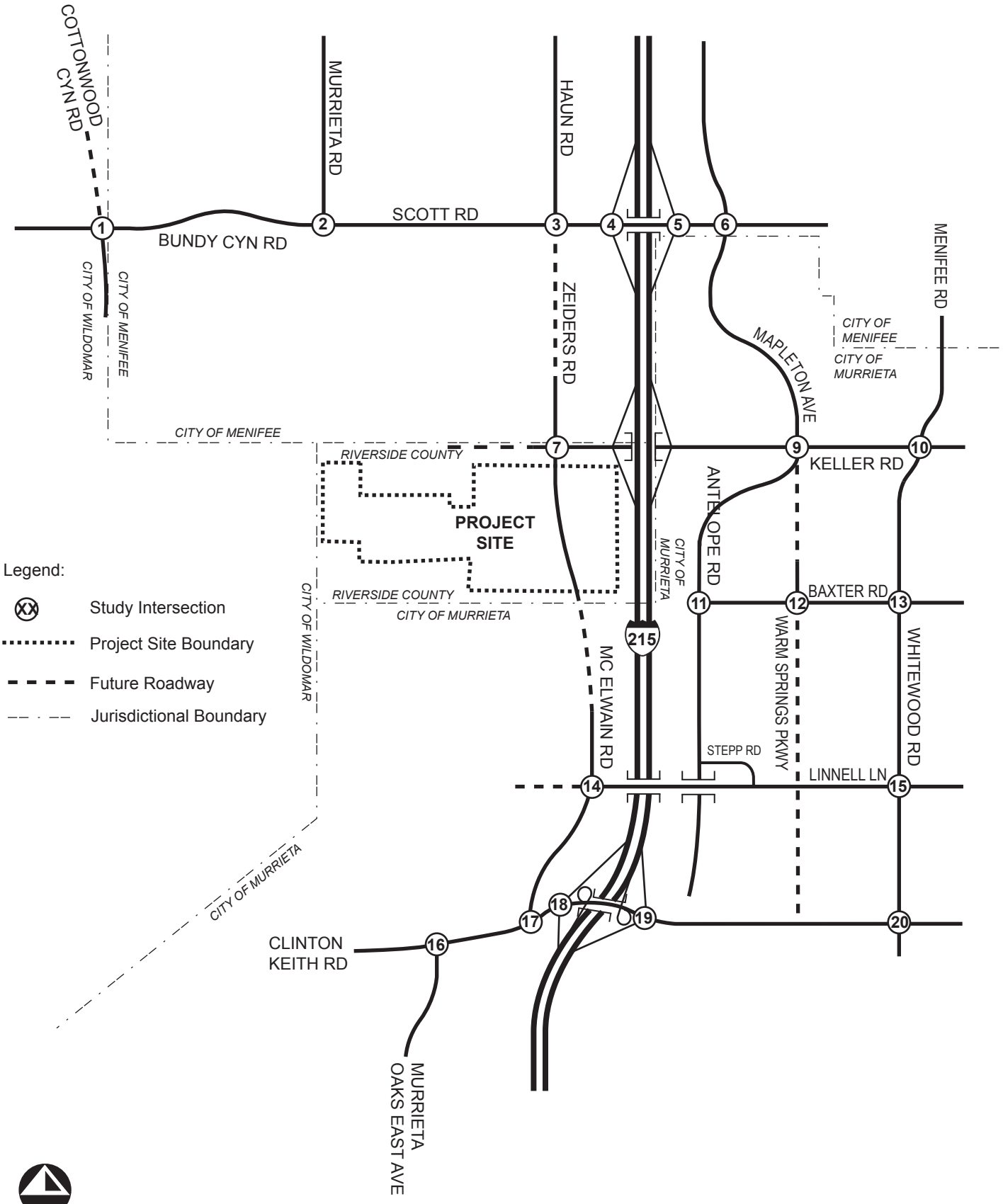
Michael Baker INTERNATIONAL

Existing Year 2017 Study Intersection Locations

H:\pdata\

Aug/2017

Attachment E-1



Not to Scale

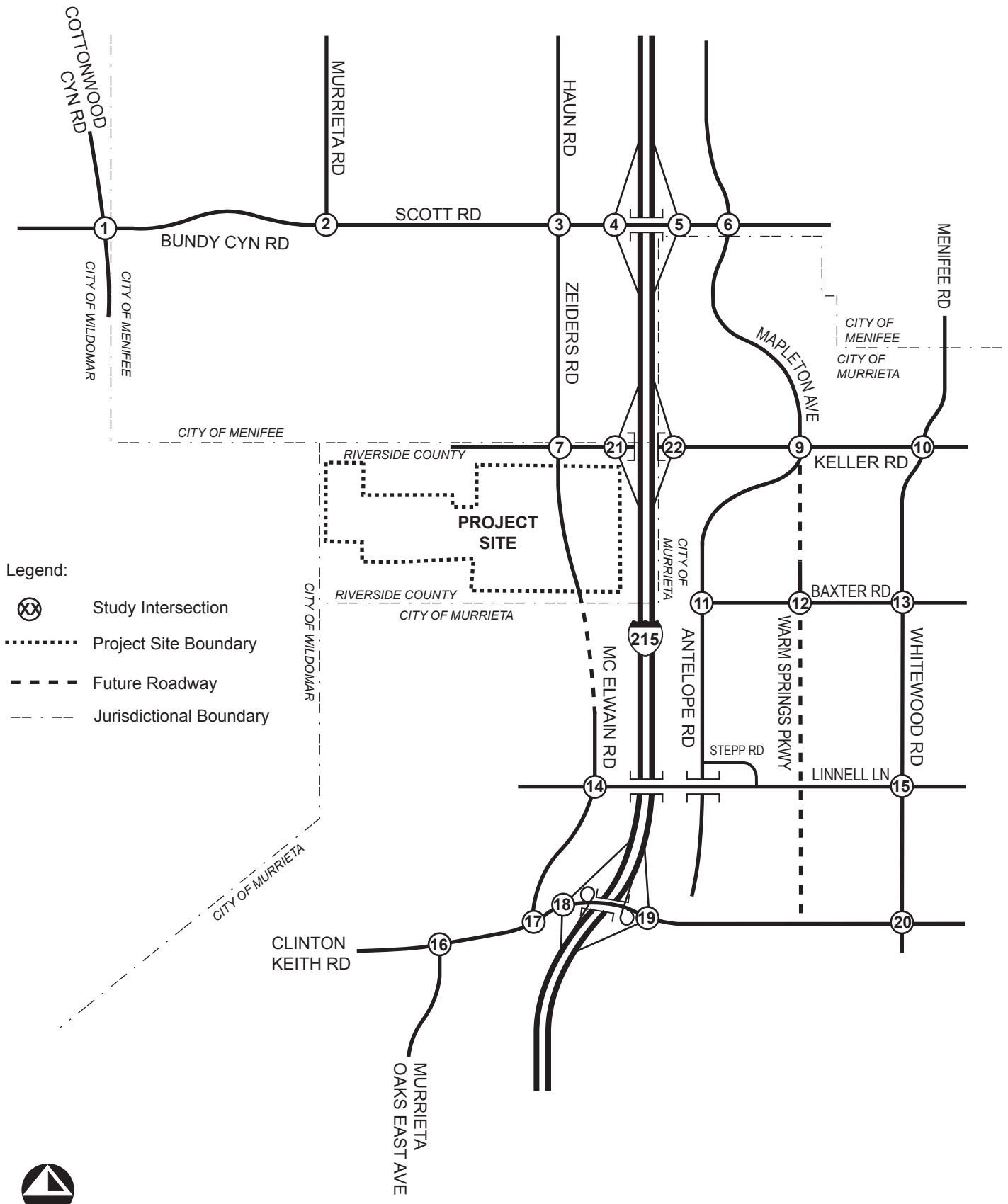
Phase 1 - Year 2023 Study Area
Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Exhibit E-2



Not to Scale

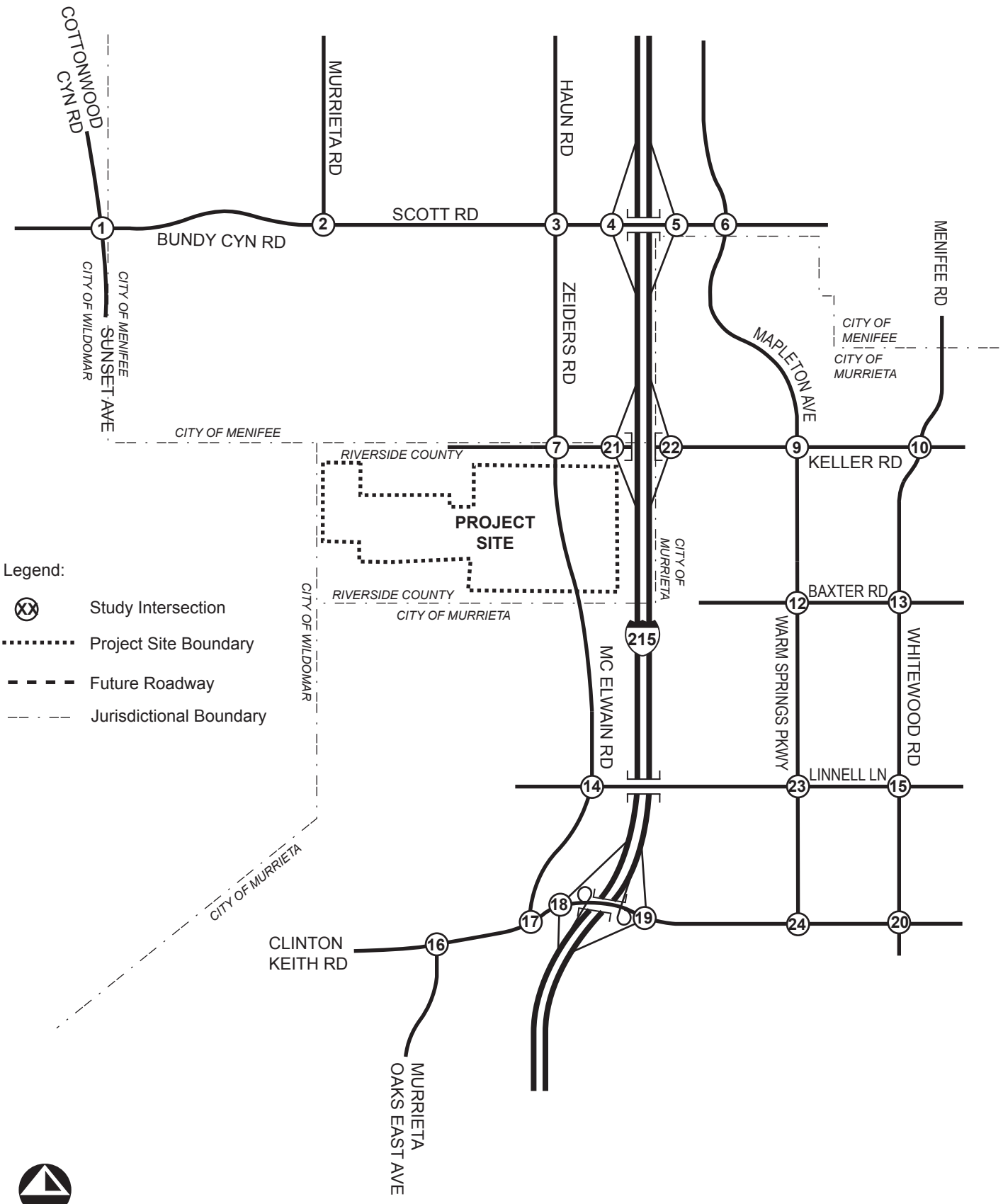
Phase 2 - Year 2028 Study Area
Circulation System & Study Intersection Locations

Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment E-3



Not to Scale

Phase 3 - Year 2031 Study Area
Circulation System & Study Intersection Locations

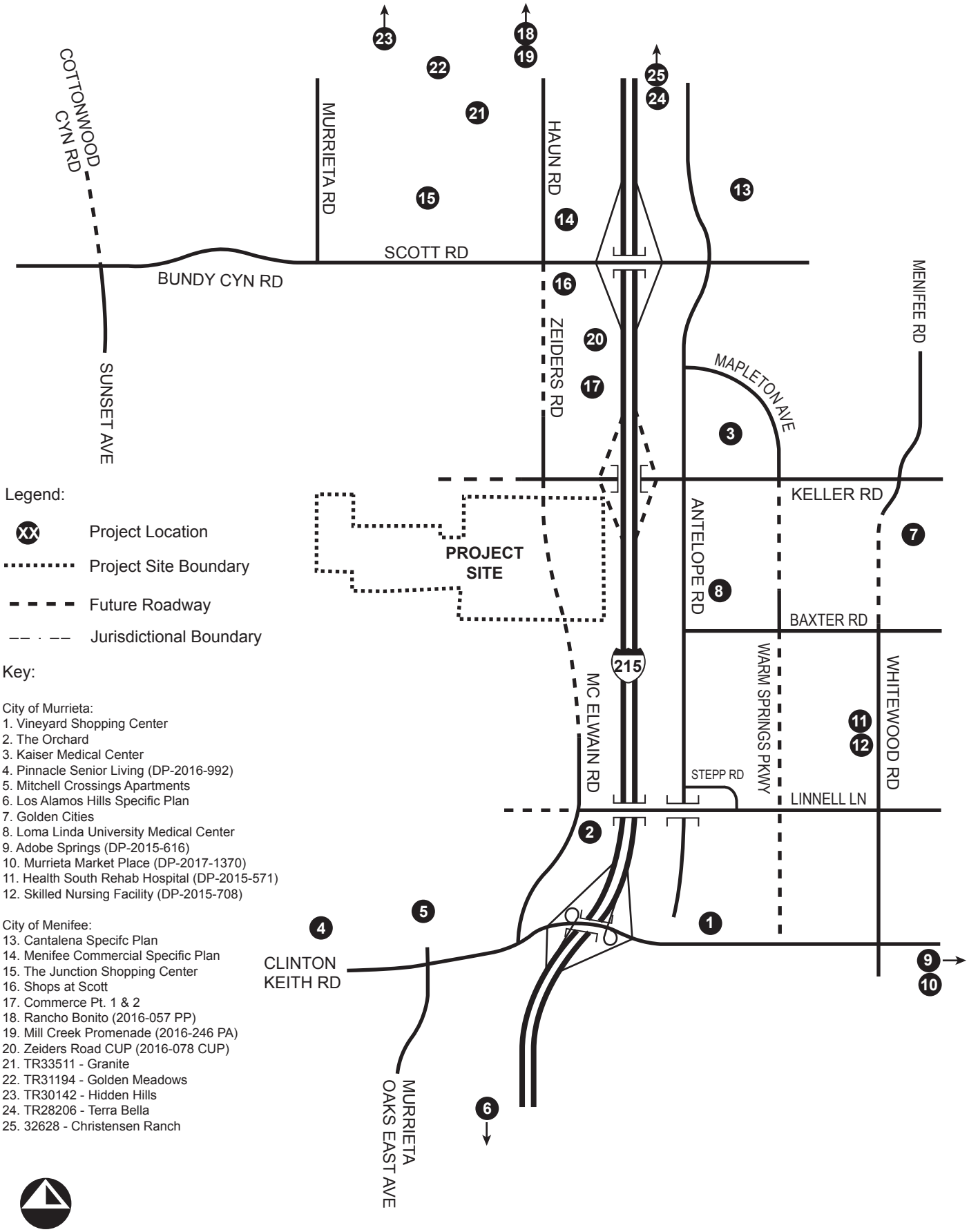
Michael Baker INTERNATIONAL

H:\pdata\

Aug/2017

Attachment E-4

APPENDIX I
Cumulative Projects Location Map



Key:

City of Murrieta:
1. Vineyard Shopping Center
2. The Orchard
3. Kaiser Medical Center
4. Pinnacle Senior Living (DP-2016-992)
5. Mitchell Crossings Apartments
6. Los Alamos Hills Specific Plan
7. Golden Cities
8. Loma Linda University Medical Center
9. Adobe Springs (DP-2015-616)
10. Murrieta Market Place (DP-2017-1370)
11. Health South Rehab Hospital (DP-2015-571)
12. Skilled Nursing Facility (DP-2015-708)

City of Menifee:
13. Cantalena Specifc Plan
14. Menifee Commercial Specific Plan
15. The Junction Shopping Center
16. Shops at Scott
17. Commerce Pt. 1 & 2
18. Rancho Bonito (2016-057 PP)
19. Mill Creek Promenade (2016-246 PA)
20. Zeiders Road CUP (2016-078 CUP)
21. TR33511 - Granite
22. TR31194 - Golden Meadows
23. TR30142 - Hidden Hills
24. TR28206 - Terra Bella
25. 32628 - Christensen Ranch

Not to Scale

Michael Baker INTERNATIONAL

H:\pdata\141981\Exhibits

Cumulative Projects Location Map

Oct/2017

APPENDIX J
Environmentally Preferred Alternative Intersection Analysis Sheets & Signal Warrants

APPENDIX J-1
Environmentally Preferred Alternative Intersection Analysis Sheets

NOTE: ESA = EPA = Environmentally Preferred Alternative

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	492	3	0	593	19	0	0	4	29	1	18
Future Vol, veh/h	0	492	3	0	593	19	0	0	4	29	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	529	3	0	638	20	0	0	4	31	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	658	0	0	532	0	0	1189	1189	531	1181	1180	648
Stage 1	-	-	-	-	-	-	531	531	-	648	648	-
Stage 2	-	-	-	-	-	-	658	658	-	533	532	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	930	-	-	1036	-	-	165	188	548	167	190	470
Stage 1	-	-	-	-	-	-	532	526	-	459	466	-
Stage 2	-	-	-	-	-	-	453	461	-	531	526	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	930	-	-	1036	-	-	158	188	548	166	190	470
Mov Cap-2 Maneuver	-	-	-	-	-	-	158	188	-	166	190	-
Stage 1	-	-	-	-	-	-	532	526	-	459	466	-
Stage 2	-	-	-	-	-	-	433	461	-	527	526	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11.6	26.3
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	548	930	-	-	1036	-	-	220
HCM Lane V/C Ratio	0.008	-	-	-	-	-	-	0.235
HCM Control Delay (s)	11.6	0	-	-	0	-	-	26.3
HCM Lane LOS	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.9

Intersection	
Intersection Delay, s/veh	60.2
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	155	380	396	129	180	195
Future Vol, veh/h	155	380	396	129	180	195
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	167	409	426	139	194	210
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	81.3	60.9	29
HCM LOS	F	F	D

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	48%
Vol Thru, %	71%	75%	0%
Vol Right, %	0%	25%	52%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	535	525	375
LT Vol	155	0	180
Through Vol	380	396	0
RT Vol	0	129	195
Lane Flow Rate	575	565	403
Geometry Grp	1	1	1
Degree of Util (X)	1.061	0.989	0.762
Departure Headway (Hd)	6.642	6.515	6.999
Convergence, Y/N	Yes	Yes	Yes
Cap	552	559	520
Service Time	4.642	4.515	4.999
HCM Lane V/C Ratio	1.042	1.011	0.775
HCM Control Delay	81.3	60.9	29
HCM Lane LOS	F	F	D
HCM 95th-tile Q	16.9	13.9	6.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	427	52	42	392	558	87	148	20	528	59	50
Future Volume (veh/h)	69	427	52	42	392	558	87	148	20	528	59	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	82	508	62	50	467	664	104	176	24	735	0	0
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	508	62	64	551	468	447	470	399	753	395	0
Arrive On Green	0.05	0.31	0.31	0.04	0.30	0.30	0.25	0.25	0.25	0.21	0.00	0.00
Sat Flow, veh/h	1774	1629	199	1774	1863	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	82	0	570	50	467	664	104	176	24	735	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1828	1774	1863	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	5.3	0.0	35.8	3.2	27.1	34.0	5.4	9.0	1.3	23.7	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	35.8	3.2	27.1	34.0	5.4	9.0	1.3	23.7	0.0	0.0
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	93	0	570	64	551	468	447	470	399	753	395	0
V/C Ratio(X)	0.89	0.00	1.00	0.78	0.85	1.42	0.23	0.37	0.06	0.98	0.00	0.00
Avail Cap(c_a), veh/h	93	0	570	80	551	468	447	470	399	753	395	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.69	0.69	0.69	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	54.2	0.0	39.6	55.0	38.1	40.5	34.2	35.5	32.7	45.0	0.0	0.0
Incr Delay (d2), s/veh	56.7	0.0	37.9	17.9	10.9	196.9	1.2	2.3	0.3	27.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	24.0	1.9	15.5	40.4	2.8	4.9	0.6	14.5	0.0	0.0
LnGrp Delay(d),s/veh	110.9	0.0	77.5	72.8	49.0	237.4	35.4	37.8	32.9	72.5	0.0	0.0
LnGrp LOS	F		F	E	D	F	D	D	C	E		
Approach Vol, veh/h		652			1181			304			735	
Approach Delay, s/veh		81.7			155.9			36.6			72.5	
Approach LOS		F			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	42.0		30.6	10.6	40.2		33.6
Change Period (Y+Rc), s	4.6	6.2		6.2	4.6	6.2		4.6
Max Green Setting (Gmax), s	5.3	34.8		24.4	6.0	34.0		29.0
Max Q Clear Time (g_c+I1), s	15.2	37.8		25.7	7.3	36.0		11.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		1.5

Intersection Summary		
HCM 2010 Ctrl Delay	105.1	
HCM 2010 LOS	F	

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	277	604	255	33	651	70	331	183	62	54	170	418
Future Volume (veh/h)	277	604	255	33	651	70	331	183	62	54	170	418
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	292	636	268	35	685	74	348	193	65	57	179	440
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	1095	461	45	965	104	397	604	513	73	466	396
Arrive On Green	0.18	0.45	0.45	0.03	0.30	0.30	0.12	0.32	0.32	0.04	0.25	0.25
Sat Flow, veh/h	1774	2429	1023	1774	3223	348	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	292	463	441	35	376	383	348	193	65	57	179	440
Grp Sat Flow(s),veh/h/ln	1774	1770	1682	1774	1770	1801	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	22.7	27.3	27.3	2.7	26.4	26.5	13.9	10.9	4.1	4.5	11.2	35.0
Cycle Q Clear(g_c), s	22.7	27.3	27.3	2.7	26.4	26.5	13.9	10.9	4.1	4.5	11.2	35.0
Prop In Lane	1.00		0.61	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	798	759	45	530	539	397	604	513	73	466	396
V/C Ratio(X)	0.93	0.58	0.58	0.78	0.71	0.71	0.88	0.32	0.13	0.78	0.38	1.11
Avail Cap(c_a), veh/h	360	798	759	89	530	539	457	604	513	139	466	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	28.6	28.6	67.9	43.6	43.6	61.0	35.7	33.3	66.5	43.6	52.5
Incr Delay (d2), s/veh	20.7	2.1	2.2	10.5	7.8	7.7	14.5	1.4	0.5	6.6	2.4	79.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	13.7	13.1	1.5	14.1	14.4	7.4	5.9	1.9	2.3	6.1	24.0
LnGrp Delay(d),s/veh	77.5	30.7	30.8	78.3	51.5	51.4	75.4	37.1	33.9	73.1	46.0	131.5
LnGrp LOS	E	C	C	E	D	D	E	D	C	E	D	F
Approach Vol, veh/h		1196			794			606			676	
Approach Delay, s/veh		42.2			52.6			58.7			103.9	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	69.6	20.7	41.5	29.4	48.4	10.4	51.9
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.6	* 58	18.6	* 35	28.4	36.1	11.0	42.3
Max Q Clear Time (g_c+I1), s	4.7	29.3	15.9	37.0	24.7	28.5	6.5	12.9
Green Ext Time (p_c), s	0.0	11.8	0.2	0.0	0.1	5.1	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	60.5
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	107	4	75	34	112	9	118	124	46	61	4
Future Vol, veh/h	8	107	4	75	34	112	9	118	124	46	61	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	135	5	95	43	142	11	149	157	58	77	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	185	0	0	141	0	0	503	533	138	615	465	114
Stage 1	-	-	-	-	-	-	158	158	-	304	304	-
Stage 2	-	-	-	-	-	-	345	375	-	311	161	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1390	-	-	1442	-	-	479	453	910	403	495	939
Stage 1	-	-	-	-	-	-	844	767	-	705	663	-
Stage 2	-	-	-	-	-	-	671	617	-	699	765	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1390	-	-	1442	-	-	389	416	910	226	454	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	389	416	-	226	454	-
Stage 1	-	-	-	-	-	-	837	761	-	699	613	-
Stage 2	-	-	-	-	-	-	540	571	-	461	759	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	2.6	19.1	24.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	567	1390	-	-	1442	-	-	324
HCM Lane V/C Ratio	0.56	0.007	-	-	0.066	-	-	0.434
HCM Control Delay (s)	19.1	7.6	0	-	7.7	0	-	24.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.4	0	-	-	0.2	-	-	2.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	778	19	4	601	20	0	0	0	18	2	6
Future Vol, veh/h	2	778	19	4	601	20	0	0	0	18	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	810	20	4	626	21	0	0	0	19	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	647	0	0	830	0	0	1473	1479	820	1469	1479	636
Stage 1	-	-	-	-	-	-	824	824	-	645	645	-
Stage 2	-	-	-	-	-	-	649	655	-	824	834	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	939	-	-	802	-	-	105	126	375	106	126	478
Stage 1	-	-	-	-	-	-	367	387	-	461	467	-
Stage 2	-	-	-	-	-	-	458	463	-	367	383	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	939	-	-	802	-	-	101	124	375	105	124	478
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	124	-	105	124	-
Stage 1	-	-	-	-	-	-	366	385	-	459	463	-
Stage 2	-	-	-	-	-	-	446	459	-	366	381	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	39.8
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	939	-	-	802	-	-	130
HCM Lane V/C Ratio	-	0.002	-	-	0.005	-	-	0.208
HCM Control Delay (s)	0	8.8	0	-	9.5	0	-	39.8
HCM Lane LOS	A	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.7

Intersection	
Intersection Delay, s/veh	84
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	291	421	514	158	93	127
Future Vol, veh/h	291	421	514	158	93	127
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	430	524	161	95	130
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	113	75.7	15.3
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	0%	42%
Vol Thru, %	59%	76%	0%
Vol Right, %	0%	24%	58%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	712	672	220
LT Vol	291	0	93
Through Vol	421	514	0
RT Vol	0	158	127
Lane Flow Rate	727	686	224
Geometry Grp	1	1	1
Degree of Util (X)	1.165	1.057	0.422
Departure Headway (Hd)	5.921	5.803	7.162
Convergence, Y/N	Yes	Yes	Yes
Cap	618	631	505
Service Time	3.921	3.803	5.162
HCM Lane V/C Ratio	1.176	1.087	0.444
HCM Control Delay	113	75.7	15.3
HCM Lane LOS	F	F	C
HCM 95th-tile Q	23.7	18	2.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	453	121	55	466	527	112	107	39	341	97	48
Future Volume (veh/h)	48	453	121	55	466	527	112	107	39	341	97	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	472	126	57	485	549	117	111	41	253	244	50
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	470	126	73	628	533	447	470	399	339	287	59
Arrive On Green	0.04	0.33	0.33	0.04	0.34	0.34	0.25	0.25	0.25	0.19	0.19	0.19
Sat Flow, veh/h	1774	1418	378	1774	1863	1583	1774	1863	1583	1774	1501	308
Grp Volume(v), veh/h	50	0	598	57	485	549	117	111	41	253	0	294
Grp Sat Flow(s),veh/h/ln	1774	0	1796	1774	1863	1583	1774	1863	1583	1774	0	1808
Q Serve(g_s), s	3.2	0.0	38.2	3.7	26.8	38.7	6.1	5.4	2.3	15.5	0.0	18.1
Cycle Q Clear(g_c), s	3.2	0.0	38.2	3.7	26.8	38.7	6.1	5.4	2.3	15.5	0.0	18.1
Prop In Lane	1.00		0.21	1.00		1.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	64	0	596	73	628	533	447	470	399	339	0	346
V/C Ratio(X)	0.78	0.00	1.00	0.78	0.77	1.03	0.26	0.24	0.10	0.75	0.00	0.85
Avail Cap(c_a), veh/h	93	0	596	88	628	533	447	470	399	339	0	346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.63	0.63	0.63	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.0	0.0	38.4	54.6	34.2	38.1	34.4	34.2	33.0	43.9	0.0	44.9
Incr Delay (d2), s/veh	13.4	0.0	37.7	16.5	5.8	38.6	1.4	1.2	0.5	13.9	0.0	22.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	25.1	2.1	14.8	22.6	3.2	3.0	1.1	8.9	0.0	11.1
LnGrp Delay(d),s/veh	68.4	0.0	76.2	71.1	40.0	76.7	35.8	35.4	33.5	57.7	0.0	67.1
LnGrp LOS	E		F	E	D	F	D	D	C	E		E
Approach Vol, veh/h		648			1091			269			547	
Approach Delay, s/veh		75.6			60.1			35.3			62.7	
Approach LOS		E			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	44.4		28.2	8.3	44.9		33.6
Change Period (Y+Rc), s	4.1	6.2		6.2	4.1	6.2		4.6
Max Green Setting (Gmax), s	5.7	37.2		22.0	6.0	36.9		29.0
Max Q Clear Time (g_c+I1), s	5.7	40.2		20.1	5.2	40.7		8.1
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	62.0
HCM 2010 LOS	E

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	834	306	79	581	54	373	292	163	67	145	238
Future Volume (veh/h)	283	834	306	79	581	54	373	292	163	67	145	238
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	286	842	309	80	587	55	377	295	165	68	146	240
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	1045	383	100	963	90	425	605	515	86	466	396
Arrive On Green	0.17	0.41	0.41	0.06	0.29	0.29	0.12	0.33	0.33	0.05	0.25	0.25
Sat Flow, veh/h	1774	2539	930	1774	3272	306	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	286	586	565	80	317	325	377	295	165	68	146	240
Grp Sat Flow(s),veh/h/ln	1774	1770	1699	1774	1770	1809	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	22.2	40.8	41.0	6.2	21.6	21.6	15.1	17.8	11.0	5.3	8.9	18.8
Cycle Q Clear(g_c), s	22.2	40.8	41.0	6.2	21.6	21.6	15.1	17.8	11.0	5.3	8.9	18.8
Prop In Lane	1.00		0.55	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	728	699	100	521	532	425	605	515	86	466	396
V/C Ratio(X)	0.93	0.81	0.81	0.80	0.61	0.61	0.89	0.49	0.32	0.79	0.31	0.61
Avail Cap(c_a), veh/h	370	728	699	124	521	532	482	605	515	155	466	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	36.2	36.3	65.3	42.5	42.5	60.4	37.9	35.6	65.9	42.7	46.4
Incr Delay (d2), s/veh	11.7	3.5	3.7	20.5	5.2	5.2	15.2	2.8	1.6	5.9	1.8	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	20.6	19.9	3.6	11.3	11.6	8.1	9.6	5.0	2.7	4.8	8.9
LnGrp Delay(d),s/veh	68.7	39.8	40.0	85.8	47.7	47.7	75.6	40.7	37.2	71.8	44.5	53.2
LnGrp LOS	E	D	D	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1437			722			837			454	
Approach Delay, s/veh		45.6			51.9			55.7			53.2	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	64.1	21.9	41.5	28.9	47.7	11.4	52.0
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.8	* 54	19.6	* 35	29.2	34.3	12.2	42.1
Max Q Clear Time (g_c+I1), s	8.2	43.0	17.1	20.8	24.2	23.6	7.3	19.8
Green Ext Time (p_c), s	0.0	7.3	0.2	1.8	0.1	7.2	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.4
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	164.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	69	14	233	109	41	11	153	200	37	192	3
Future Vol, veh/h	5	69	14	233	109	41	11	153	200	37	192	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	82	17	277	130	49	13	182	238	44	229	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	99	0	0	927	835	90	1022	820	154
Stage 1	-	-	-	-	-	-	102	102	-	709	709	-
Stage 2	-	-	-	-	-	-	825	733	-	313	111	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1397	-	-	1494	-	-	249	304	968	214	310	892
Stage 1	-	-	-	-	-	-	904	811	-	425	437	-
Stage 2	-	-	-	-	-	-	367	426	-	698	804	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1397	-	-	1494	-	-	38	240	968	53	245	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	38	240	-	53	245	-
Stage 1	-	-	-	-	-	-	899	807	-	423	347	-
Stage 2	-	-	-	-	-	-	99	338	-	405	800	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	4.8	209	$ 421.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	321	1397	-	-	1494	-	-	156
HCM Lane V/C Ratio	1.35	0.004	-	-	0.186	-	-	1.77
HCM Control Delay (s)	209	7.6	0	-	8	0	-	$ 421.5
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	21.6	0	-	-	0.7	-	-	20.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↰	↱		↕			↕	
Traffic Vol, veh/h	9	177	0	93	55	124	0	59	190	51	25	4
Future Vol, veh/h	9	177	0	93	55	124	0	59	190	51	25	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	197	0	103	61	138	0	66	211	57	28	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	197	0	0	501	485	197	623	485	61
Stage 1	-	-	-	-	-	-	217	217	-	268	268	-
Stage 2	-	-	-	-	-	-	284	268	-	355	217	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1542	-	-	1376	-	-	480	482	844	398	482	1004
Stage 1	-	-	-	-	-	-	785	723	-	738	687	-
Stage 2	-	-	-	-	-	-	723	687	-	662	723	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1542	-	-	1376	-	-	423	437	844	246	437	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	423	437	-	246	437	-
Stage 1	-	-	-	-	-	-	780	718	-	733	628	-
Stage 2	-	-	-	-	-	-	629	628	-	448	718	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	2.7	13.6	22.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	691	1542	-	-	1376	-	-	298
HCM Lane V/C Ratio	0.4	0.006	-	-	0.075	-	-	0.298
HCM Control Delay (s)	13.6	7.3	0	-	7.8	0	-	22.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.9	0	-	-	0.2	-	-	1.2

Intersection	
Int Delay, s/veh	29

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↰	↱		↕			↕	
Traffic Vol, veh/h	6	113	0	295	184	46	0	59	228	41	82	3
Future Vol, veh/h	6	113	0	295	184	46	0	59	228	41	82	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	92	92	90	92	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	126	0	321	204	51	0	64	248	46	89	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	204	0	0	126	0	0	1031	985	126	1141	985	204
Stage 1	-	-	-	-	-	-	139	139	-	846	846	-
Stage 2	-	-	-	-	-	-	892	846	-	295	139	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1368	-	-	1460	-	-	211	248	924	178	248	837
Stage 1	-	-	-	-	-	-	864	782	-	357	378	-
Stage 2	-	-	-	-	-	-	337	378	-	713	782	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1368	-	-	1460	-	-	106	183	924	77	183	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	106	183	-	77	183	-
Stage 1	-	-	-	-	-	-	859	777	-	355	280	-
Stage 2	-	-	-	-	-	-	170	280	-	476	777	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	4.5	23.1	172.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	504	1368	-	-	1460	-	-	127
HCM Lane V/C Ratio	0.619	0.005	-	-	0.22	-	-	1.087
HCM Control Delay (s)	23.1	7.6	0	-	8.2	0	-	172.2
HCM Lane LOS	C	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	4.2	0	-	-	0.8	-	-	7.9

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	651	3	0	800	21	0	0	4	39	8	28
Future Vol, veh/h	0	651	3	0	800	21	0	0	4	39	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	700	3	0	860	23	0	0	4	42	9	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	883	0	0	703	0	0	1593	1585	352	1222	1575	872
Stage 1	-	-	-	-	-	-	702	702	-	872	872	-
Stage 2	-	-	-	-	-	-	891	883	-	350	703	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	764	-	-	892	-	-	79	108	645	146	109	349
Stage 1	-	-	-	-	-	-	396	440	-	344	367	-
Stage 2	-	-	-	-	-	-	336	363	-	640	439	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	764	-	-	892	-	-	68	108	645	145	109	349
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	108	-	145	109	-
Stage 1	-	-	-	-	-	-	396	440	-	344	367	-
Stage 2	-	-	-	-	-	-	300	363	-	636	439	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.6	31.8
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	645	764	-	-	892	-	-	145	234
HCM Lane V/C Ratio	0.007	-	-	-	-	-	-	0.289	0.165
HCM Control Delay (s)	10.6	0	-	-	0	-	-	39.6	23.4
HCM Lane LOS	B	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.1	0.6

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	15	0	50	5	197	0	0	148	127	0	22
Future Vol, veh/h	17	15	0	50	5	197	0	0	148	127	0	22
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.97	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	19	0	63	6	249	0	0	153	161	0	28
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	9.9	10.5	9.2	12
HCM LOS	A	B	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	53%	100%	0%	85%
Vol Thru, %	100%	100%	0%	47%	0%	2%	0%
Vol Right, %	0%	0%	100%	0%	0%	98%	15%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	148	32	50	202	149
LT Vol	0	0	0	17	50	0	127
Through Vol	0	0	0	15	0	5	0
RT Vol	0	0	148	0	0	197	22
Lane Flow Rate	0	0	153	41	63	256	189
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0	0.216	0.075	0.111	0.362	0.328
Departure Headway (Hd)	5.799	5.799	5.092	6.628	6.297	5.103	6.268
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	705	541	573	708	575
Service Time	3.528	3.528	2.82	4.366	3.997	2.803	3.999
HCM Lane V/C Ratio	0	0	0.217	0.076	0.11	0.362	0.329
HCM Control Delay	8.5	8.5	9.2	9.9	9.8	10.7	12
HCM Lane LOS	N	N	A	A	A	B	B
HCM 95th-tile Q	0	0	0.8	0.2	0.4	1.7	1.4

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1034	21	4	822	22	0	0	0	50	8	27
Future Vol, veh/h	2	1034	21	4	822	22	0	0	0	50	8	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1077	22	4	856	23	0	0	0	52	8	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	879	0	0	1099	0	0	1986	1980	549	1419	1979	868
Stage 1	-	-	-	-	-	-	1092	1092	-	876	876	-
Stage 2	-	-	-	-	-	-	894	888	-	543	1103	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	767	-	-	633	-	-	41	61	480	105	61	351
Stage 1	-	-	-	-	-	-	230	290	-	343	366	-
Stage 2	-	-	-	-	-	-	335	361	-	492	286	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	767	-	-	633	-	-	33	60	480	103	60	351
Mov Cap-2 Maneuver	-	-	-	-	-	-	33	60	-	103	60	-
Stage 1	-	-	-	-	-	-	228	288	-	341	362	-
Stage 2	-	-	-	-	-	-	297	357	-	489	284	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	0	55.4
HCM LOS			A	F

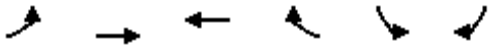
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	767	-	-	633	-	-	103	166
HCM Lane V/C Ratio	-	0.003	-	-	0.007	-	-	0.506	0.22
HCM Control Delay (s)	0	9.7	0	-	10.7	0	-	71.3	32.7
HCM Lane LOS	A	A	A	-	B	A	-	F	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	2.3	0.8

Intersection	
Intersection Delay, s/veh	68.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	83	8	343	129	213	14	50	276	241	70	42
Future Vol, veh/h	36	83	8	343	129	213	14	50	276	241	70	42
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	99	10	408	154	254	17	60	329	287	83	50
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	22.7	73.4	26.9	115.5
HCM LOS	C	F	D	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	28%	100%	0%	68%
Vol Thru, %	0%	100%	0%	65%	0%	38%	20%
Vol Right, %	0%	0%	100%	6%	0%	62%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	50	276	127	343	342	353
LT Vol	14	0	0	36	343	0	241
Through Vol	0	50	0	83	0	129	70
RT Vol	0	0	276	8	0	213	42
Lane Flow Rate	17	60	329	151	408	407	420
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0.042	0.143	0.727	0.445	1.039	0.931	1.12
Departure Headway (Hd)	9.546	9.025	8.295	11.261	9.631	8.659	9.966
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	377	400	440	322	380	423	366
Service Time	7.246	6.725	5.995	8.961	7.331	6.359	7.666
HCM Lane V/C Ratio	0.045	0.15	0.748	0.469	1.074	0.962	1.148
HCM Control Delay	12.7	13.2	30.1	22.7	88.8	58	115.5
HCM Lane LOS	B	B	D	C	F	F	F
HCM 95th-tile Q	0.1	0.5	5.8	2.2	13	10.4	15.3



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	338	615	685	133	133	376
Future Volume (veh/h)	338	615	685	133	133	376
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	363	661	737	143	143	404
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	396	1269	760	646	387	345
Arrive On Green	0.22	0.68	0.41	0.41	0.22	0.22
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	363	661	737	143	143	404
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	17.9	15.7	34.7	5.3	6.1	19.5
Cycle Q Clear(g_c), s	17.9	15.7	34.7	5.3	6.1	19.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	396	1269	760	646	387	345
V/C Ratio(X)	0.92	0.52	0.97	0.22	0.37	1.17
Avail Cap(c_a), veh/h	407	1281	760	646	387	345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.9	7.0	25.9	17.2	29.8	35.0
Incr Delay (d2), s/veh	25.0	0.4	25.3	0.2	0.6	103.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	8.0	23.2	2.3	3.1	18.3
LnGrp Delay(d),s/veh	59.0	7.4	51.2	17.4	30.3	138.3
LnGrp LOS	E	A	D	B	C	F
Approach Vol, veh/h		1024	880		547	
Approach Delay, s/veh		25.7	45.7		110.1	
Approach LOS		C	D		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		65.5			24.5	41.0		24.0
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		61.5			20.5	36.5		19.5
Max Q Clear Time (g_c+I1), s		17.7			19.9	36.7		21.5
Green Ext Time (p_c), s		12.8			0.1	0.0		0.0

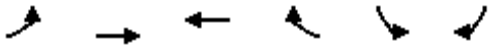
Intersection Summary	
HCM 2010 Ctrl Delay	51.7
HCM 2010 LOS	D

Intersection	
Intersection Delay, s/veh	34.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	13	273	10	15	11	312	143	9	11	362	18
Future Vol, veh/h	11	13	273	10	15	11	312	143	9	11	362	18
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	14	300	11	16	12	343	157	10	12	398	20
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	17.9	11.7	54.6	26.7
HCM LOS	C	B	F	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	69%	0%	4%	28%	3%
Vol Thru, %	31%	0%	4%	42%	93%
Vol Right, %	0%	100%	92%	31%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	455	9	297	36	391
LT Vol	312	0	11	10	11
Through Vol	143	0	13	15	362
RT Vol	0	9	273	11	18
Lane Flow Rate	500	10	326	40	430
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.957	0.016	0.578	0.087	0.758
Departure Headway (Hd)	6.892	5.827	6.372	7.883	6.352
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	525	612	565	452	567
Service Time	4.647	3.582	4.428	5.981	4.411
HCM Lane V/C Ratio	0.952	0.016	0.577	0.088	0.758
HCM Control Delay	55.5	8.7	17.9	11.7	26.7
HCM Lane LOS	F	A	C	B	D
HCM 95th-tile Q	12.3	0	3.7	0.3	6.7



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	534	746	809	150	101	361
Future Volume (veh/h)	534	746	809	150	101	361
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	545	761	826	153	103	368
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	488	1360	764	649	319	285
Arrive On Green	0.28	0.73	0.41	0.41	0.18	0.18
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	545	761	826	153	103	368
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	27.5	18.6	41.0	6.3	5.1	18.0
Cycle Q Clear(g_c), s	27.5	18.6	41.0	6.3	5.1	18.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	488	1360	764	649	319	285
V/C Ratio(X)	1.12	0.56	1.08	0.24	0.32	1.29
Avail Cap(c_a), veh/h	488	1360	764	649	319	285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	6.2	29.5	19.3	35.7	41.0
Incr Delay (d2), s/veh	76.8	0.5	56.9	0.2	0.6	154.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.8	9.5	33.1	2.8	2.5	20.1
LnGrp Delay(d),s/veh	113.1	6.7	86.4	19.5	36.3	195.8
LnGrp LOS	F	A	F	B	D	F
Approach Vol, veh/h		1306	979		471	
Approach Delay, s/veh		51.1	75.9		160.9	
Approach LOS		D	E		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		77.5			32.0	45.5		22.5
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		73.0			27.5	41.0		18.0
Max Q Clear Time (g_c+I1), s		20.6			29.5	43.0		20.0
Green Ext Time (p_c), s		16.8			0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	78.7
HCM 2010 LOS	E

Intersection	
Intersection Delay, s/veh	50.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	154	127	11	210	105	70	14	76	279	61	52	161
Future Vol, veh/h	154	127	11	210	105	70	14	76	279	61	52	161
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	181	149	13	247	124	82	16	89	328	72	61	189
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	42.9	88.1	28.6	36
HCM LOS	E	F	D	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	0%	53%	55%	22%
Vol Thru, %	84%	0%	43%	27%	19%
Vol Right, %	0%	100%	4%	18%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	279	292	385	274
LT Vol	14	0	154	210	61
Through Vol	76	0	127	105	52
RT Vol	0	279	11	70	161
Lane Flow Rate	106	328	344	453	322
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.267	0.753	0.829	1.055	0.77
Departure Headway (Hd)	9.314	8.503	8.956	8.384	8.877
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	389	427	409	435	409
Service Time	7.014	6.203	6.956	6.384	6.877
HCM Lane V/C Ratio	0.272	0.768	0.841	1.041	0.787
HCM Control Delay	15.4	32.9	42.9	88.1	36
HCM Lane LOS	C	D	E	F	E
HCM 95th-tile Q	1.1	6.2	7.7	14.6	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	785	294	620	863	720	180	227	138	865	221	128
Future Volume (veh/h)	216	785	294	620	863	720	180	227	138	865	221	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	257	935	350	738	1027	857	214	270	164	1030	263	152
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	2219	829	653	2333	1745	236	373	317	900	368	213
Arrive On Green	0.14	0.57	0.57	0.19	0.63	0.63	0.13	0.20	0.20	0.25	0.33	0.33
Sat Flow, veh/h	1774	3882	1450	3442	3725	2787	1774	1863	1583	3548	1109	641
Grp Volume(v), veh/h	257	897	388	738	1027	857	214	270	164	1030	0	415
Grp Sat Flow(s),veh/h/ln	1774	1863	1607	1721	1863	1393	1774	1863	1583	1774	0	1750
Q Serve(g_s), s	19.6	19.7	19.8	27.5	20.6	24.1	17.2	19.7	13.4	36.8	0.0	30.1
Cycle Q Clear(g_c), s	19.6	19.7	19.8	27.5	20.6	24.1	17.2	19.7	13.4	36.8	0.0	30.1
Prop In Lane	1.00		0.90	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	240	2130	919	653	2333	1745	236	373	317	900	0	581
V/C Ratio(X)	1.07	0.42	0.42	1.13	0.44	0.49	0.91	0.72	0.52	1.14	0.00	0.71
Avail Cap(c_a), veh/h	240	2130	919	653	2333	1745	247	373	317	900	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.42	0.42	0.42	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	62.7	17.5	17.5	58.8	14.0	14.6	62.0	54.3	51.8	54.1	0.0	42.4
Incr Delay (d2), s/veh	78.4	0.6	1.4	67.5	0.3	0.4	32.0	11.6	5.9	77.9	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	10.3	9.1	19.2	10.6	9.3	10.5	11.3	6.4	27.8	0.0	15.7
LnGrp Delay(d),s/veh	141.1	18.1	19.0	126.3	14.2	15.0	94.0	65.9	57.7	132.0	0.0	49.8
LnGrp LOS	F	B	B	F	B	B	F	E	E	F		D
Approach Vol, veh/h		1542			2622			648			1445	
Approach Delay, s/veh		38.8			46.0			73.1			108.4	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.1	90.7	23.9	54.3	24.2	98.6	43.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	27.5	30.1	20.2	45.6	19.6	38.0	36.8	* 29
Max Q Clear Time (g_c+I1), s	29.5	21.8	19.2	32.1	21.6	26.1	38.8	21.7
Green Ext Time (p_c), s	0.0	8.2	0.0	4.9	0.0	11.6	0.0	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	61.5
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	1790	229	224	1610	56	115	16	283	117	21	77
Future Volume (veh/h)	46	1790	229	224	1610	56	115	16	283	117	21	77
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	50	1946	249	243	1750	61	125	17	308	127	23	84
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1765	750	194	3027	858	149	19	345	173	362	373
Arrive On Green	0.04	0.47	0.47	0.11	0.54	0.54	0.08	0.23	0.23	0.05	0.19	0.19
Sat Flow, veh/h	1774	3725	1583	1774	5588	1583	1774	83	1512	3442	1863	1583
Grp Volume(v), veh/h	50	1946	249	243	1750	61	125	0	325	127	23	84
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1596	1721	1863	1583
Q Serve(g_s), s	4.2	71.1	14.7	16.4	31.3	2.8	10.4	0.0	29.6	5.5	1.5	6.4
Cycle Q Clear(g_c), s	4.2	71.1	14.7	16.4	31.3	2.8	10.4	0.0	29.6	5.5	1.5	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		1.00
Lane Grp Cap(c), veh/h	73	1765	750	194	3027	858	149	0	364	173	362	373
V/C Ratio(X)	0.68	1.10	0.33	1.25	0.58	0.07	0.84	0.00	0.89	0.74	0.06	0.23
Avail Cap(c_a), veh/h	259	1765	750	194	3027	858	241	0	476	319	474	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.50	0.50	0.50	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.9	39.5	24.6	66.8	22.9	16.4	67.7	0.0	56.1	70.3	49.3	46.3
Incr Delay (d2), s/veh	4.1	55.3	1.2	133.3	0.4	0.1	13.1	0.0	15.9	2.3	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	50.1	6.7	15.2	16.2	1.2	5.6	0.0	14.7	2.6	0.8	2.9
LnGrp Delay(d),s/veh	75.0	94.8	25.8	200.1	23.3	16.5	80.8	0.0	72.0	72.5	49.5	47.0
LnGrp LOS	E	F	C	F	C	B	F		E	E	D	D
Approach Vol, veh/h		2245			2054			450			234	
Approach Delay, s/veh		86.7			44.0			74.5			61.1	
Approach LOS		F			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	76.9	17.2	35.0	10.8	87.1	12.1	40.0
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	16.4	54.2	20.4	38.2	21.9	48.7	13.9	44.7
Max Q Clear Time (g_c+I1), s	18.4	73.1	12.4	8.4	6.2	33.3	7.5	31.6
Green Ext Time (p_c), s	0.0	0.0	0.2	3.6	0.0	15.3	0.1	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	66.8
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	326	1258	117	114	805	257	270	218	9	229	143	329
Future Volume (veh/h)	326	1258	117	114	805	257	270	218	9	229	143	329
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	459	1772	165	161	1134	362	380	307	13	323	201	463
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1264	565	118	1091	488	265	1023	43	259	1032	644
Arrive On Green	0.12	0.36	0.36	0.07	0.31	0.31	0.15	0.30	0.30	0.15	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3461	146	1774	3539	1583
Grp Volume(v), veh/h	459	1772	165	161	1134	362	380	157	163	323	201	463
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	16.5	51.1	10.7	9.5	44.1	29.4	21.4	9.8	9.8	20.9	6.1	35.1
Cycle Q Clear(g_c), s	16.5	51.1	10.7	9.5	44.1	29.4	21.4	9.8	9.8	20.9	6.1	35.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	397	1264	565	118	1091	488	265	523	543	259	1032	644
V/C Ratio(X)	1.16	1.40	0.29	1.37	1.04	0.74	1.43	0.30	0.30	1.25	0.19	0.72
Avail Cap(c_a), veh/h	397	1264	565	118	1091	488	265	546	567	259	1078	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	46.0	33.0	66.8	49.5	44.4	60.9	38.9	39.0	61.1	38.1	35.6
Incr Delay (d2), s/veh	95.4	185.9	0.3	210.0	38.2	6.0	215.0	1.2	1.2	139.1	0.4	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	57.5	4.7	11.5	27.3	13.7	26.3	5.0	5.2	20.2	3.0	16.4
LnGrp Delay(d),s/veh	158.7	231.9	33.3	276.9	87.7	50.4	275.9	40.2	40.1	200.2	38.4	41.7
LnGrp LOS	F	F	C	F	F	D	F	D	D	F	D	D
Approach Vol, veh/h		2396			1657			700			987	
Approach Delay, s/veh		204.2			97.9			168.1			92.9	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.4	48.1	14.0	55.6	26.0	47.5	21.0	48.6
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	20.9	44.2	9.5	51.1	21.4	43.6	16.5	44.1
Max Q Clear Time (g_c+I1), s	22.9	11.8	11.5	53.1	23.4	37.1	18.5	46.1
Green Ext Time (p_c), s	0.0	14.8	0.0	0.0	0.0	4.6	0.0	0.0

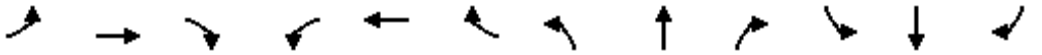
Intersection Summary	
HCM 2010 Ctrl Delay	150.0
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	960	269	200	1130	1139	396	368	598	969	267	141
Future Volume (veh/h)	227	960	269	200	1130	1139	396	368	598	969	267	141
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	236	1000	280	208	1177	1186	412	383	623	1009	278	147
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	2801	783	255	2379	2022	416	468	397	803	291	154
Arrive On Green	0.10	0.67	0.67	0.07	0.64	0.64	0.23	0.25	0.25	0.23	0.25	0.25
Sat Flow, veh/h	1774	4205	1176	3548	3725	3167	1774	1863	1583	3548	1148	607
Grp Volume(v), veh/h	236	886	394	208	1177	1186	412	383	623	1009	0	425
Grp Sat Flow(s),veh/h/ln	1774	1863	1655	1774	1863	1583	1774	1863	1583	1774	0	1756
Q Serve(g_s), s	14.4	15.1	15.1	8.4	24.2	31.4	33.6	28.1	36.4	32.8	0.0	34.6
Cycle Q Clear(g_c), s	14.4	15.1	15.1	8.4	24.2	31.4	33.6	28.1	36.4	32.8	0.0	34.6
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	176	2482	1103	255	2379	2022	416	468	397	803	0	446
V/C Ratio(X)	1.34	0.36	0.36	0.82	0.49	0.59	0.99	0.82	1.57	1.26	0.00	0.95
Avail Cap(c_a), veh/h	176	2482	1103	289	2379	2022	416	468	397	803	0	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.3	10.6	10.6	66.3	13.8	15.1	55.3	51.2	54.3	56.1	0.0	53.3
Incr Delay (d2), s/veh	185.9	0.4	0.9	4.8	0.2	0.4	41.4	14.8	267.3	125.8	0.0	32.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.1	7.9	7.2	4.3	12.5	13.7	21.3	16.4	45.5	30.1	0.0	20.8
LnGrp Delay(d),s/veh	251.2	11.0	11.5	71.2	14.1	15.6	96.8	65.9	321.6	181.9	0.0	85.8
LnGrp LOS	F	B	B	E	B	B	F	E	F	F		F
Approach Vol, veh/h		1516			2571			1418			1434	
Approach Delay, s/veh		48.5			19.4			187.2			153.4	
Approach LOS		D			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	104.4	38.6	43.0	19.0	100.4	39.0	42.6
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	11.8	42.4	34.0	35.2	14.4	39.8	32.8	* 36
Max Q Clear Time (g_c+I1), s	10.4	17.1	35.6	36.6	16.4	33.4	34.8	38.4
Green Ext Time (p_c), s	0.0	24.7	0.0	0.0	0.0	6.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	87.8
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	2132	43	228	1945	129	39	15	118	98	17	76
Future Volume (veh/h)	89	2132	43	228	1945	129	39	15	118	98	17	76
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	92	2198	44	235	2005	133	40	15	122	101	18	78
Adj No. of Lanes	1	2	1	1	3	1	1	1	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	2240	952	194	3608	1022	71	19	156	145	206	278
Arrive On Green	0.06	0.60	0.60	0.11	0.65	0.65	0.04	0.11	0.11	0.04	0.11	0.11
Sat Flow, veh/h	1774	3725	1583	1774	5588	1583	1774	176	1434	3442	1863	1583
Grp Volume(v), veh/h	92	2198	44	235	2005	133	40	0	137	101	18	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1610	1721	1863	1583
Q Serve(g_s), s	7.7	86.1	1.7	16.4	29.7	4.9	3.3	0.0	12.4	4.3	1.3	6.4
Cycle Q Clear(g_c), s	7.7	86.1	1.7	16.4	29.7	4.9	3.3	0.0	12.4	4.3	1.3	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	115	2240	952	194	3608	1022	71	0	175	145	206	278
V/C Ratio(X)	0.80	0.98	0.05	1.21	0.56	0.13	0.56	0.00	0.78	0.69	0.09	0.28
Avail Cap(c_a), veh/h	253	2240	952	194	3608	1022	241	0	501	342	512	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.18	0.18	0.18	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	29.1	12.3	66.8	14.7	10.3	70.7	0.0	65.2	70.9	59.9	53.6
Incr Delay (d2), s/veh	4.7	15.1	0.1	104.1	0.1	0.0	6.8	0.0	8.1	2.2	0.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	48.7	0.8	13.6	15.3	2.1	1.8	0.0	5.9	2.1	0.7	2.9
LnGrp Delay(d),s/veh	73.9	44.2	12.4	170.9	14.8	10.3	77.6	0.0	73.3	73.1	60.3	54.9
LnGrp LOS	E	D	B	F	B	B	E		E	E	E	D
Approach Vol, veh/h		2334			2373			177			197	
Approach Delay, s/veh		44.7			30.0			74.2			64.7	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	96.0	10.6	22.4	14.3	102.7	10.9	22.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	16.4	51.2	20.4	41.2	21.4	46.2	14.9	46.7
Max Q Clear Time (g_c+I1), s	18.4	88.1	5.3	8.4	9.7	31.7	6.3	14.4
Green Ext Time (p_c), s	0.0	0.0	0.0	1.8	0.1	14.4	0.1	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	533	1671	280	102	948	294	255	410	9	42	309	543
Future Volume (veh/h)	533	1671	280	102	948	294	255	410	9	42	309	543
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	573	1797	301	110	1019	316	274	441	10	45	332	584
Adj No. of Lanes	2	2	1	1	2	1	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	675	1592	677	108	1110	472	246	1236	28	58	871	672
Arrive On Green	0.19	0.43	0.43	0.06	0.30	0.30	0.14	0.34	0.34	0.03	0.23	0.23
Sat Flow, veh/h	3548	3725	1583	1774	3725	1583	1774	3629	82	1774	3725	1583
Grp Volume(v), veh/h	573	1797	301	110	1019	316	274	226	225	45	332	584
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1848	1774	1863	1583
Q Serve(g_s), s	21.8	59.7	18.8	8.5	36.9	21.1	19.4	12.7	12.8	3.5	10.5	14.4
Cycle Q Clear(g_c), s	21.8	59.7	18.8	8.5	36.9	21.1	19.4	12.7	12.8	3.5	10.5	14.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	675	1592	677	108	1110	472	246	634	629	58	871	672
V/C Ratio(X)	0.85	1.13	0.44	1.02	0.92	0.67	1.11	0.36	0.36	0.77	0.38	0.87
Avail Cap(c_a), veh/h	675	1592	677	108	1144	486	246	634	629	248	1147	789
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.6	40.0	28.3	65.6	47.4	31.9	60.1	34.6	34.6	67.0	45.0	15.5
Incr Delay (d2), s/veh	10.0	66.4	0.5	91.8	11.4	3.4	90.7	1.3	1.3	18.9	1.1	13.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	45.2	8.3	6.9	20.7	9.6	15.7	6.8	6.7	2.0	5.5	19.7
LnGrp Delay(d),s/veh	64.6	106.4	28.7	157.5	58.8	35.3	150.8	35.9	35.9	85.9	46.1	28.8
LnGrp LOS	E	F	C	F	E	D	F	D	D	F	D	C
Approach Vol, veh/h		2671			1445			725			961	
Approach Delay, s/veh		88.7			61.2			79.3			37.4	
Approach LOS		F			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	53.4	13.0	64.2	24.0	38.5	31.1	46.1
Change Period (Y+Rc), s	4.5	5.8	4.5	4.5	4.6	5.8	4.5	4.5
Max Green Setting (Gmax), s	19.5	43.0	8.5	59.7	19.4	43.0	25.3	42.9
Max Q Clear Time (g_c+I1), s	5.5	14.8	10.5	61.7	21.4	16.4	23.8	38.9
Green Ext Time (p_c), s	0.1	19.2	0.0	0.0	0.0	16.3	1.4	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	72.2
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	124.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	29	1110	10	10	1299	43	10	10	10	40	10	28
Future Vol, veh/h	29	1110	10	10	1299	43	10	10	10	40	10	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	1168	11	11	1367	45	11	11	11	42	11	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1413	0	0	1179	0	0	2666	2669	1174	2656	2651	1390
Stage 1	-	-	-	-	-	-	1235	1235	-	1411	1411	-
Stage 2	-	-	-	-	-	-	1431	1434	-	1245	1240	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	482	-	-	592	-	-	15	22	234	~ 15	23	174
Stage 1	-	-	-	-	-	-	216	249	-	171	204	-
Stage 2	-	-	-	-	-	-	167	199	-	213	247	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	482	-	-	592	-	-	~ 5	16	234	~ 6	17	174
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 5	16	-	~ 6	17	-
Stage 1	-	-	-	-	-	-	176	202	-	139	186	-
Stage 2	-	-	-	-	-	-	119	181	-	157	201	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	$ 1527.8	$ 3579.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	11	482	-	-	592	-	-	11
HCM Lane V/C Ratio	2.871	0.063	-	-	0.018	-	-	7.464
HCM Control Delay (s)	$ 1527.8	13	0	-	11.2	0	-	$ 3579.6
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	5	0.2	-	-	0.1	-	-	11.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	809	278	619	862	723	177	230	143	900	219	133
Future Volume (veh/h)	267	809	278	619	862	723	177	230	143	900	219	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	281	852	293	652	907	761	186	242	151	947	231	140
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	3237	917	650	3791	1074	240	821	367	931	1583	673
Arrive On Green	0.09	0.58	0.58	0.19	0.68	0.68	0.07	0.23	0.23	0.26	0.42	0.42
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3539	1583	3548	3725	1583
Grp Volume(v), veh/h	281	852	293	652	907	761	186	242	151	947	231	140
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1774	1863	1583
Q Serve(g_s), s	10.1	9.5	11.9	23.6	7.8	37.2	6.6	7.0	10.1	32.8	4.8	7.0
Cycle Q Clear(g_c), s	10.1	9.5	11.9	23.6	7.8	37.2	6.6	7.0	10.1	32.8	4.8	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	3237	917	650	3791	1074	240	821	367	931	1583	673
V/C Ratio(X)	0.91	0.26	0.32	1.00	0.24	0.71	0.78	0.29	0.41	1.02	0.15	0.21
Avail Cap(c_a), veh/h	308	3237	917	650	3791	1074	325	821	367	931	1583	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	13.1	13.6	50.7	7.7	12.4	57.2	39.6	40.8	46.1	22.0	22.7
Incr Delay (d2), s/veh	29.0	0.2	0.9	31.6	0.1	3.0	5.3	0.9	3.4	33.9	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	4.9	5.4	14.0	4.0	17.0	3.3	3.5	4.8	20.4	2.5	3.2
LnGrp Delay(d),s/veh	85.4	13.3	14.5	82.3	7.8	15.5	62.5	40.5	44.1	80.0	22.2	23.4
LnGrp LOS	F	B	B	F	A	B	E	D	D	F	C	C
Approach Vol, veh/h		1426			2320			579			1318	
Approach Delay, s/veh		27.7			31.3			48.5			63.8	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.2	80.2	13.3	59.3	15.8	92.6	37.4	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	23.6	19.6	11.8	48.4	11.2	32.0	32.8	* 29
Max Q Clear Time (g_c+I1), s	25.6	13.9	8.6	9.0	12.1	39.2	34.8	12.1
Green Ext Time (p_c), s	0.0	5.5	0.1	5.6	0.0	0.0	0.0	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	474.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	30	193	73	113	58	280	32	186	154	211	121	52
Future Vol, veh/h	30	193	73	113	58	280	32	186	154	211	121	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	203	77	119	61	295	34	196	162	222	127	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	356	0	0	280	0	0	842	899	242	930	789	208
Stage 1	-	-	-	-	-	-	305	305	-	446	446	-
Stage 2	-	-	-	-	-	-	537	594	-	484	343	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1203	-	-	1283	-	-	284	279	797	248	323	832
Stage 1	-	-	-	-	-	-	705	662	-	591	574	-
Stage 2	-	-	-	-	-	-	528	493	-	564	637	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1203	-	-	1283	-	-	151	237	797	~ 55	275	832
Mov Cap-2 Maneuver	-	-	-	-	-	-	151	237	-	~ 55	275	-
Stage 1	-	-	-	-	-	-	682	641	-	572	505	-
Stage 2	-	-	-	-	-	-	324	433	-	302	617	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	2	171.3	$ 1689.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	313	1203	-	-	1283	-	-	89
HCM Lane V/C Ratio	1.251	0.026	-	-	0.093	-	-	4.542
HCM Control Delay (s)	171.3	8.1	0	-	8.1	0	-	$ 1689.5
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	18	0.1	-	-	0.3	-	-	42.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	68.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	140	18	488	89	26	11	30	255	54	81	115
Future Vol, veh/h	80	140	18	488	89	26	11	30	255	54	81	115
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	147	19	514	94	26	12	32	268	57	85	121
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	19	132.2	18.3	20.1
HCM LOS	C	F	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	0%	34%	81%	22%
Vol Thru, %	73%	0%	59%	15%	32%
Vol Right, %	0%	100%	8%	4%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	41	255	238	603	250
LT Vol	11	0	80	488	54
Through Vol	30	0	140	89	81
RT Vol	0	255	18	26	115
Lane Flow Rate	43	268	251	633	263
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.097	0.541	0.515	1.204	0.541
Departure Headway (Hd)	8.663	7.798	7.913	6.845	8.037
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	416	464	458	532	453
Service Time	6.363	5.498	5.913	4.897	6.037
HCM Lane V/C Ratio	0.103	0.578	0.548	1.19	0.581
HCM Control Delay	12.3	19.3	19	132.2	20.1
HCM Lane LOS	B	C	C	F	C
HCM 95th-tile Q	0.3	3.2	2.9	23.4	3.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1302	120	124	821	279	274	208	10	247	143	342
Future Volume (veh/h)	339	1302	120	124	821	279	274	208	10	247	143	342
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	357	1371	126	131	864	294	288	219	11	260	151	360
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	2373	672	183	2132	604	275	1057	449	275	527	448
Arrive On Green	0.10	0.42	0.42	0.05	0.38	0.38	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3725	1583	3442	1863	1583
Grp Volume(v), veh/h	357	1371	126	131	864	294	288	219	11	260	151	360
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	12.4	24.3	6.5	4.9	14.7	18.3	10.4	5.8	0.7	9.8	8.2	27.4
Cycle Q Clear(g_c), s	12.4	24.3	6.5	4.9	14.7	18.3	10.4	5.8	0.7	9.8	8.2	27.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	2373	672	183	2132	604	275	1057	449	275	527	448
V/C Ratio(X)	1.09	0.58	0.19	0.72	0.41	0.49	1.05	0.21	0.02	0.94	0.29	0.80
Avail Cap(c_a), veh/h	328	2373	672	254	2132	604	275	1235	525	275	616	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	28.5	23.4	60.6	29.4	30.5	59.8	35.4	33.6	59.5	36.4	43.2
Incr Delay (d2), s/veh	68.6	0.8	0.5	5.8	0.6	2.8	66.8	0.4	0.1	39.4	1.1	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	12.6	2.9	2.5	7.6	8.5	7.5	3.0	0.3	6.2	4.4	13.6
LnGrp Delay(d),s/veh	127.4	29.3	23.8	66.3	30.0	33.3	126.6	35.8	33.7	98.9	37.5	56.1
LnGrp LOS	F	C	C	E	C	C	F	D	C	F	D	E
Approach Vol, veh/h		1854			1289			518			771	
Approach Delay, s/veh		47.8			34.4			86.2			66.9	
Approach LOS		D			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	61.0	15.0	42.6	17.0	55.4	14.9	42.7
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	9.6	46.3	10.4	43.0	12.4	43.4	10.4	43.1
Max Q Clear Time (g_c+I1), s	10.9	26.3	12.4	29.4	14.4	20.3	11.8	7.8
Green Ext Time (p_c), s	0.1	19.6	0.0	7.4	0.0	22.5	0.0	12.9

Intersection Summary	
HCM 2010 Ctrl Delay	51.7
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	25	1604	21	10	1404	42	10	10	10	57	10	28
Future Vol, veh/h	25	1604	21	10	1404	42	10	10	10	57	10	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	1688	22	11	1478	44	11	11	11	60	11	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1522	0	0	1711	0	0	3293	3295	1699	3284	3284	1500
Stage 1	-	-	-	-	-	-	1752	1752	-	1521	1521	-
Stage 2	-	-	-	-	-	-	1541	1543	-	1763	1763	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	438	-	-	371	-	-	~ 5	~ 9	114	~ 5	~ 9	150
Stage 1	-	-	-	-	-	-	109	139	-	148	181	-
Stage 2	-	-	-	-	-	-	144	176	-	107	137	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	438	-	-	371	-	-	-	0	114	-	0	150
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	109	0	-	148	145	-
Stage 2	-	-	-	-	-	-	86	141	-	-	0	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	438	-	-	371	-	-	-
HCM Lane V/C Ratio	-	0.06	-	-	0.028	-	-	-
HCM Control Delay (s)	-	13.7	0	-	15	0	-	-
HCM Lane LOS	-	B	A	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	995	263	191	1076	1092	377	368	622	1008	270	147
Future Volume (veh/h)	270	995	263	191	1076	1092	377	368	622	1008	270	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	284	1047	277	201	1133	1149	397	387	655	1061	284	155
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	3953	1120	248	4031	1142	446	913	408	670	1182	502
Arrive On Green	0.06	0.71	0.71	0.07	0.72	0.72	0.13	0.26	0.26	0.19	0.32	0.32
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3539	1583	3548	3725	1583
Grp Volume(v), veh/h	284	1047	277	201	1133	1149	397	387	655	1061	284	155
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1774	1863	1583
Q Serve(g_s), s	8.4	9.8	9.0	8.3	10.3	104.6	16.5	13.2	37.4	27.4	8.2	10.7
Cycle Q Clear(g_c), s	8.4	9.8	9.0	8.3	10.3	104.6	16.5	13.2	37.4	27.4	8.2	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	199	3953	1120	248	4031	1142	446	913	408	670	1182	502
V/C Ratio(X)	1.42	0.26	0.25	0.81	0.28	1.01	0.89	0.42	1.60	1.58	0.24	0.31
Avail Cap(c_a), veh/h	199	3953	1120	339	4031	1142	612	913	408	670	1182	502
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.3	7.6	7.5	66.3	7.1	20.2	62.1	44.8	53.8	58.8	36.6	37.5
Incr Delay (d2), s/veh	217.6	0.2	0.5	5.3	0.1	23.9	9.6	1.4	283.0	269.2	0.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	5.1	4.0	4.1	5.3	52.8	8.4	6.6	48.5	38.5	4.3	4.9
LnGrp Delay(d),s/veh	285.9	7.8	8.1	71.6	7.2	44.1	71.6	46.3	336.8	328.0	37.1	39.1
LnGrp LOS	F	A	A	E	A	F	E	D	F	F	D	D
Approach Vol, veh/h		1608			2483			1439			1500	
Approach Delay, s/veh		57.0			29.5			185.5			243.1	
Approach LOS		E			C			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	110.4	23.4	52.2	13.0	112.4	32.0	43.6
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	14.3	45.9	25.8	37.4	8.4	51.8	27.4	* 37
Max Q Clear Time (g_c+I1), s	10.3	11.8	18.5	12.7	10.4	106.6	29.4	39.4
Green Ext Time (p_c), s	0.1	33.1	0.4	10.6	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	113.3
HCM 2010 LOS	F

Notes

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	29	128	61	326	194	346	89	280	290	279	269	44
Future Vol, veh/h	29	128	61	326	194	346	89	280	290	279	269	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	135	64	343	204	364	94	295	305	294	283	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	568	0	0	199	0	0	1465	1483	167	1601	1333	386
Stage 1	-	-	-	-	-	-	228	228	-	1073	1073	-
Stage 2	-	-	-	-	-	-	1237	1255	-	528	260	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1004	-	-	1373	-	-	106	~ 125	877	~ 85	~ 154	662
Stage 1	-	-	-	-	-	-	775	715	-	~ 267	297	-
Stage 2	-	-	-	-	-	-	215	~ 243	-	534	693	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1004	-	-	1373	-	-	-	~ 74	877	-	~ 91	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 74	-	-	~ 91	-
Stage 1	-	-	-	-	-	-	748	690	-	~ 258	~ 182	-
Stage 2	-	-	-	-	-	-	-	~ 149	-	~ 192	669	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	3.2		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1004	-	-	1373	-	-	-
HCM Lane V/C Ratio	-	0.03	-	-	0.25	-	-	-
HCM Control Delay (s)	-	8.7	0	-	8.5	0	-	-
HCM Lane LOS	-	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	112.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	212	19	290	175	63	23	99	350	53	63	196
Future Vol, veh/h	175	212	19	290	175	63	23	99	350	53	63	196
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	184	223	20	305	184	66	24	104	368	56	66	206
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	102.5	219.2	44.5	49.2
HCM LOS	F	F	E	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	0%	43%	55%	17%
Vol Thru, %	81%	0%	52%	33%	20%
Vol Right, %	0%	100%	5%	12%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	350	406	528	312
LT Vol	23	0	175	290	53
Through Vol	99	0	212	175	63
RT Vol	0	350	19	63	196
Lane Flow Rate	128	368	427	556	328
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.335	0.881	1.076	1.396	0.831
Departure Headway (Hd)	10.623	9.788	10.17	9.398	10.613
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	340	372	359	389	345
Service Time	8.323	7.488	8.17	7.398	8.613
HCM Lane V/C Ratio	0.376	0.989	1.189	1.429	0.951
HCM Control Delay	18.6	53.5	102.5	219.2	49.2
HCM Lane LOS	C	F	F	F	E
HCM 95th-tile Q	1.4	8.6	13.8	26.5	7.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	554	1718	283	111	978	317	262	419	10	43	298	565
Future Volume (veh/h)	554	1718	283	111	978	317	262	419	10	43	298	565
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	583	1808	298	117	1029	334	276	441	11	45	314	595
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	603	2390	677	163	1673	474	294	1318	560	99	552	470
Arrive On Green	0.18	0.43	0.43	0.05	0.30	0.30	0.09	0.35	0.35	0.03	0.30	0.30
Sat Flow, veh/h	3442	5588	1583	3442	5588	1583	3442	3725	1583	3442	1863	1583
Grp Volume(v), veh/h	583	1808	298	117	1029	334	276	441	11	45	314	595
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	24.4	39.7	19.2	4.9	22.9	27.2	11.6	12.6	0.7	1.9	20.7	43.0
Cycle Q Clear(g_c), s	24.4	39.7	19.2	4.9	22.9	27.2	11.6	12.6	0.7	1.9	20.7	43.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	603	2390	677	163	1673	474	294	1318	560	99	552	470
V/C Ratio(X)	0.97	0.76	0.44	0.72	0.62	0.70	0.94	0.33	0.02	0.45	0.57	1.27
Avail Cap(c_a), veh/h	603	2390	677	228	1673	474	294	1318	560	126	552	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.4	35.1	29.2	68.1	43.6	45.1	65.9	34.3	30.5	69.3	43.1	51.0
Incr Delay (d2), s/veh	26.5	2.1	1.9	6.3	1.7	8.5	35.8	0.6	0.1	3.2	3.6	136.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	20.9	8.8	2.5	12.1	13.0	7.0	6.6	0.3	0.9	11.2	36.6
LnGrp Delay(d),s/veh	85.9	37.2	31.1	74.4	45.3	53.6	101.7	34.9	30.5	72.5	46.8	187.3
LnGrp LOS	F	D	C	E	D	D	F	C	C	E	D	F
Approach Vol, veh/h		2689			1480			728			954	
Approach Delay, s/veh		47.1			49.5			60.2			135.6	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	67.8	17.0	48.8	30.0	49.2	8.7	57.1
Change Period (Y+Rc), s	4.5	5.8	4.6	5.8	4.6	5.8	4.5	5.8
Max Green Setting (Gmax), s	9.6	59.3	12.4	43.0	25.4	43.4	5.3	50.2
Max Q Clear Time (g_c+I1), s	10.9	41.7	13.6	45.0	26.4	29.2	3.9	14.6
Green Ext Time (p_c), s	0.1	17.6	0.0	0.0	0.0	14.2	0.0	25.0

Intersection Summary		
HCM 2010 Ctrl Delay		63.7
HCM 2010 LOS		E

APPENDIX J-2
Environmentally Preferred Alternative Signal Warrants

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

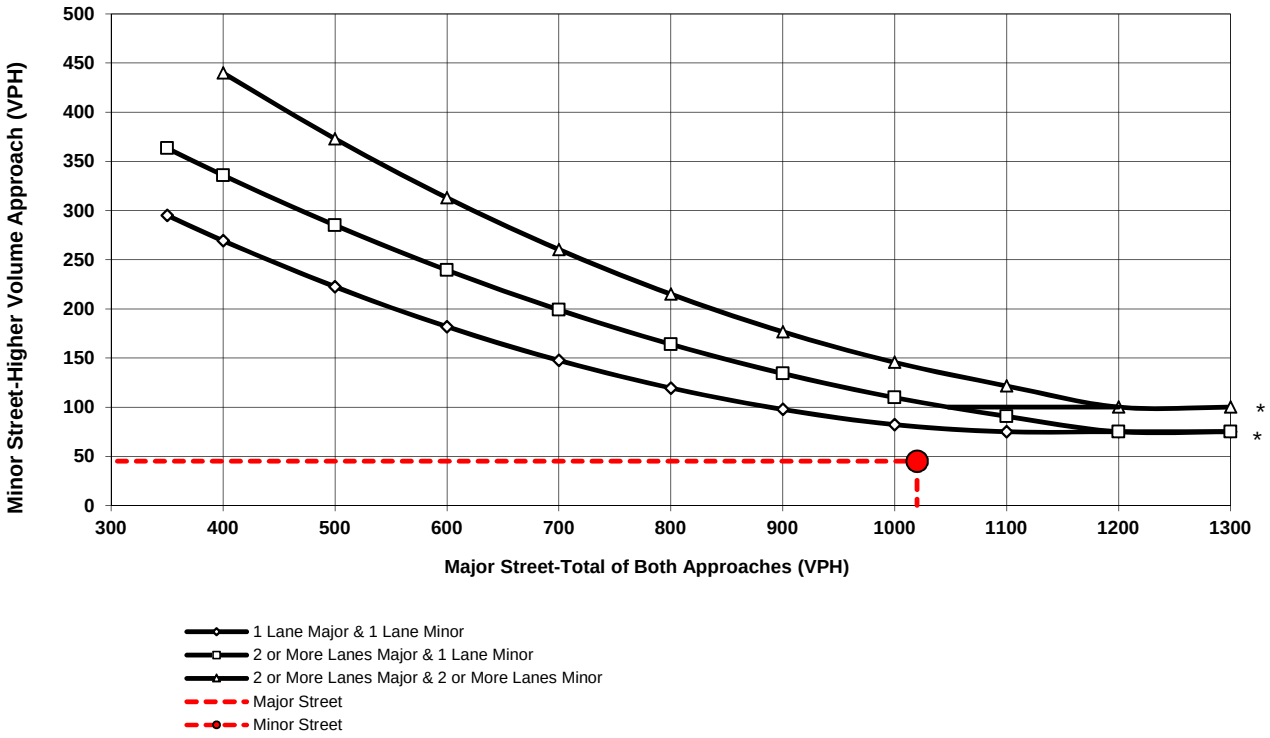
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1020**	Higher Volume Approach (VPH):	**45**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

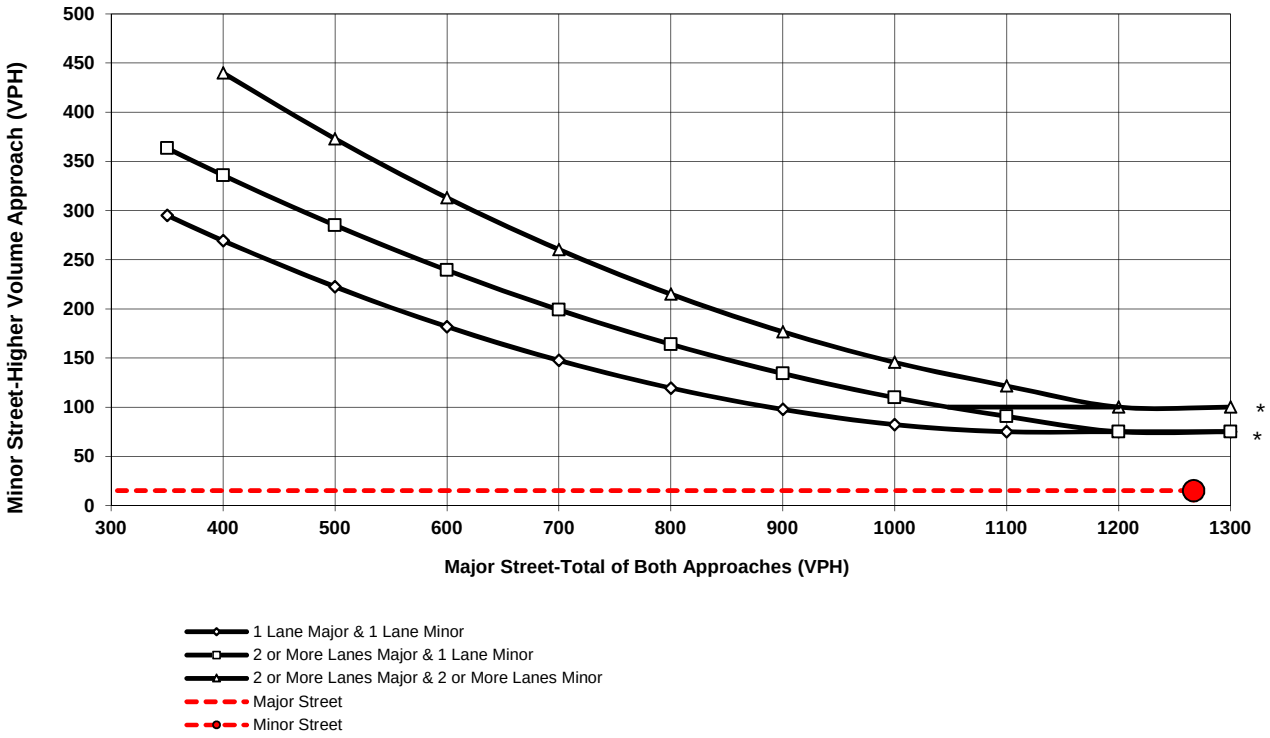
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1267**	Higher Volume Approach (VPH):	**15**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

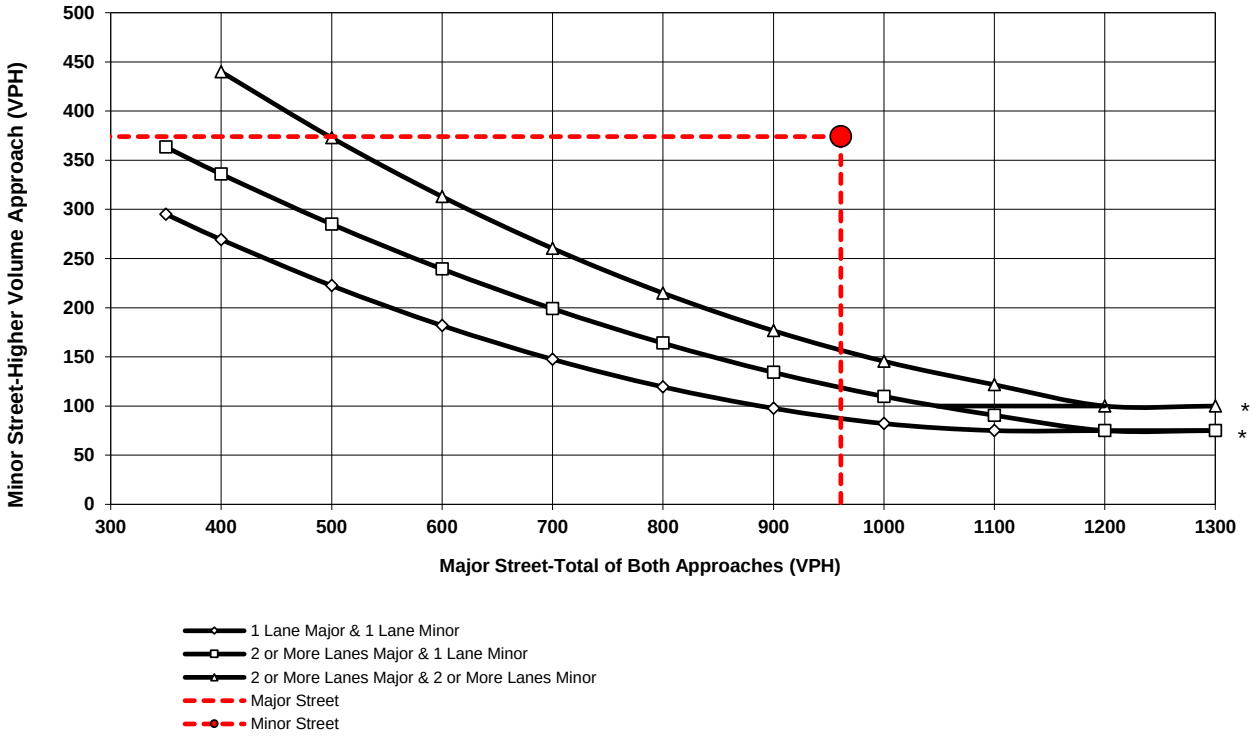
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	961	Higher Volume Approach (VPH):	374
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Scott Road

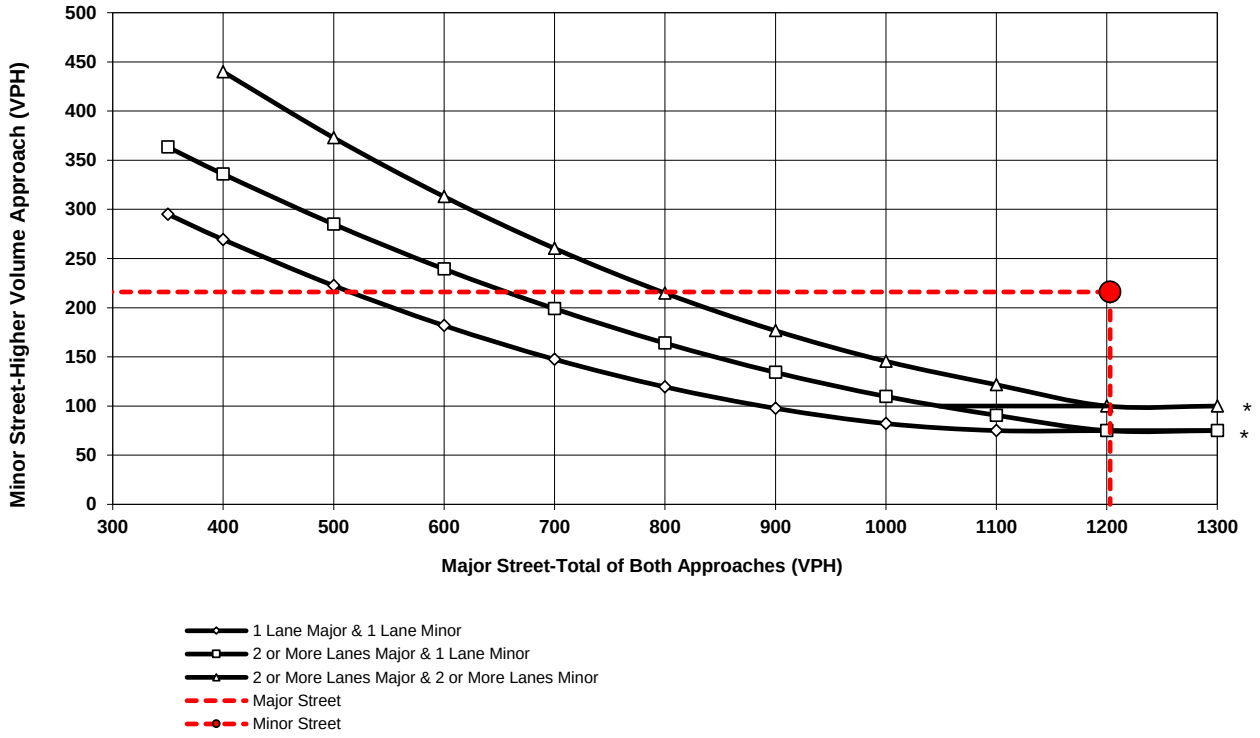
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1203	Higher Volume Approach (VPH):	216
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Keller Road

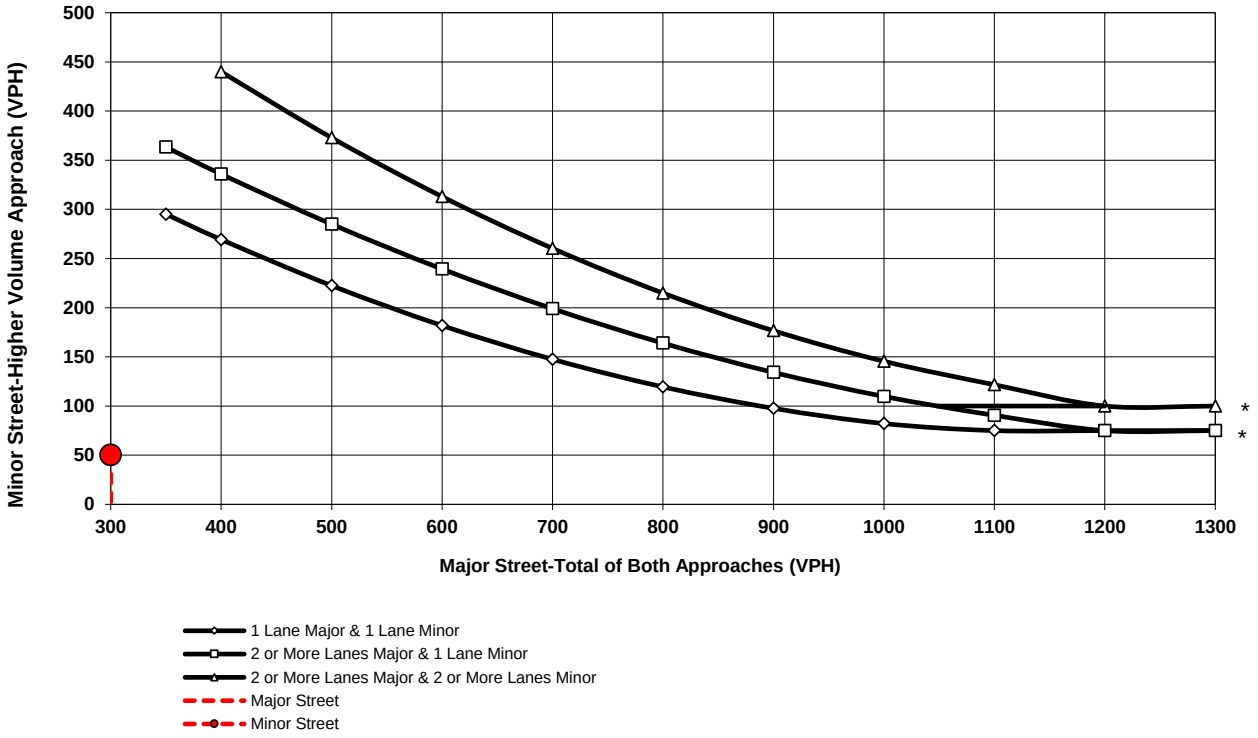
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	135	Higher Volume Approach (VPH):	50
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Keller Road

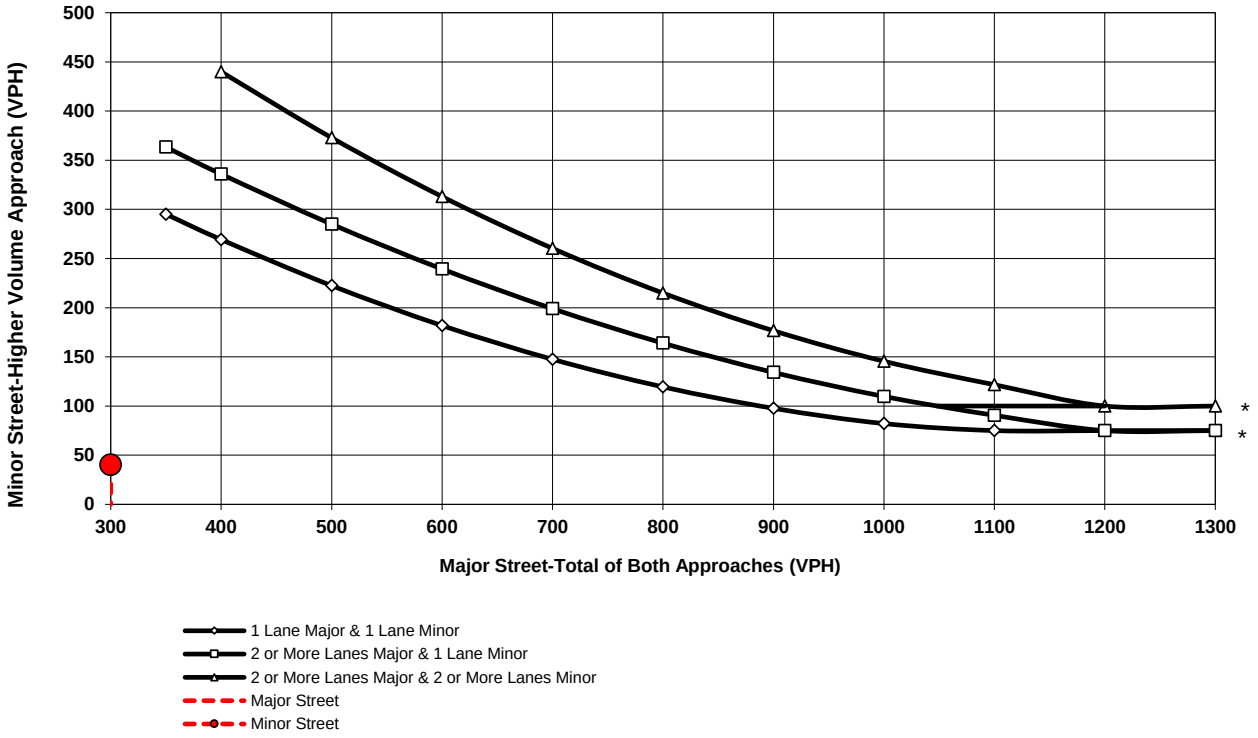
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	61	Higher Volume Approach (VPH):	40
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

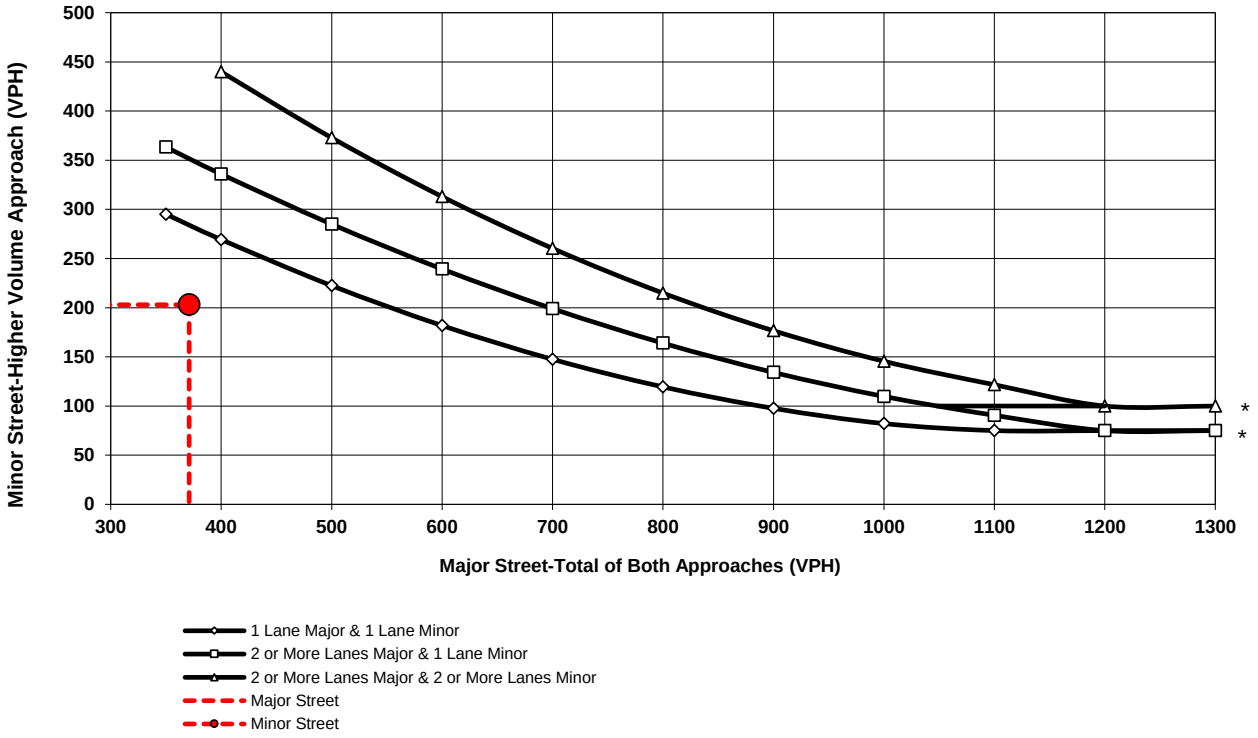
Minor Street: McElwain Road

Total of Both Approaches (VPH):	371	Higher Volume Approach (VPH):	203
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing Conditions
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Linnell Lane

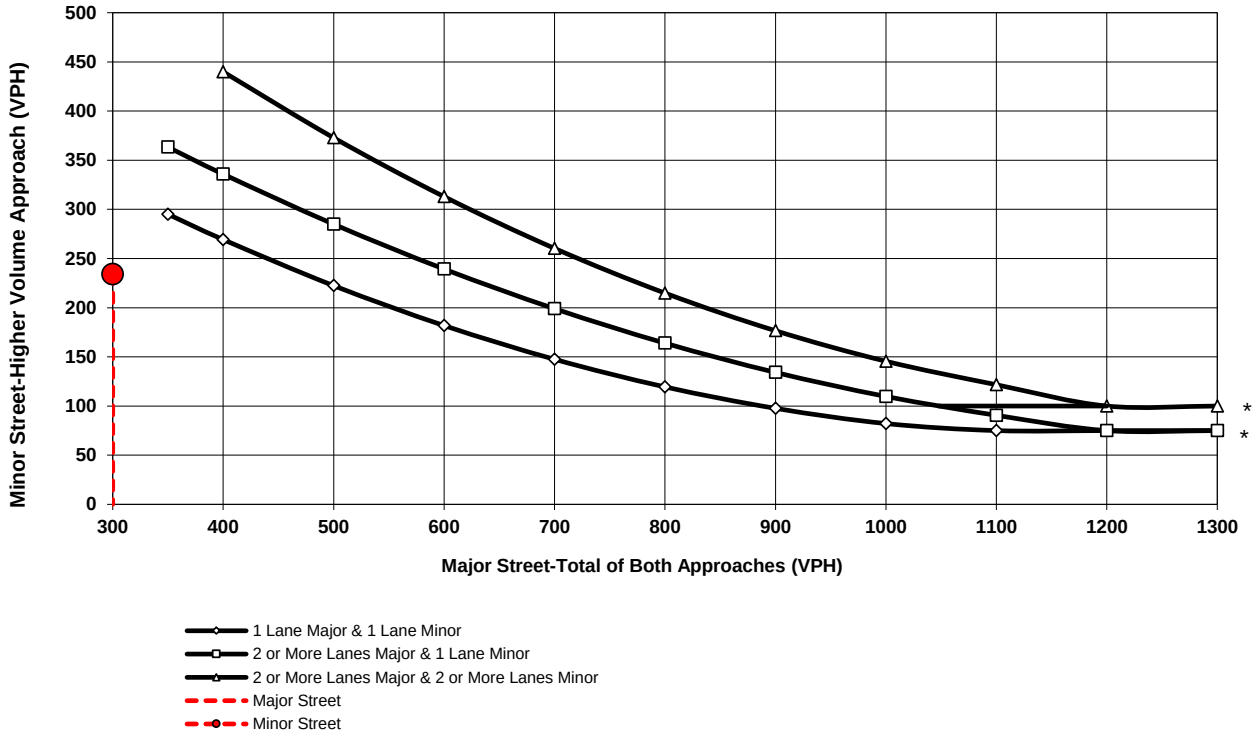
Minor Street: McElwain Road

Total of Both Approaches (VPH):	226	Higher Volume Approach (VPH):	234
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

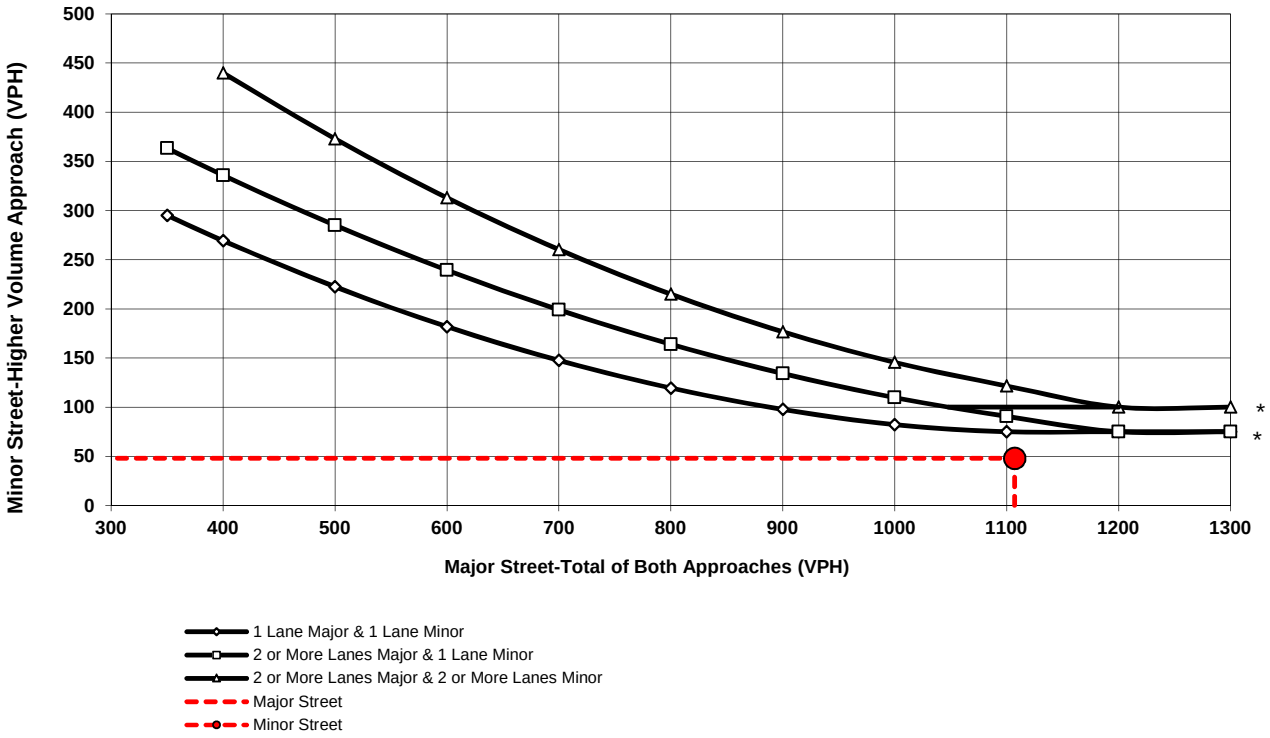
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1107**	Higher Volume Approach (VPH):	**48**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

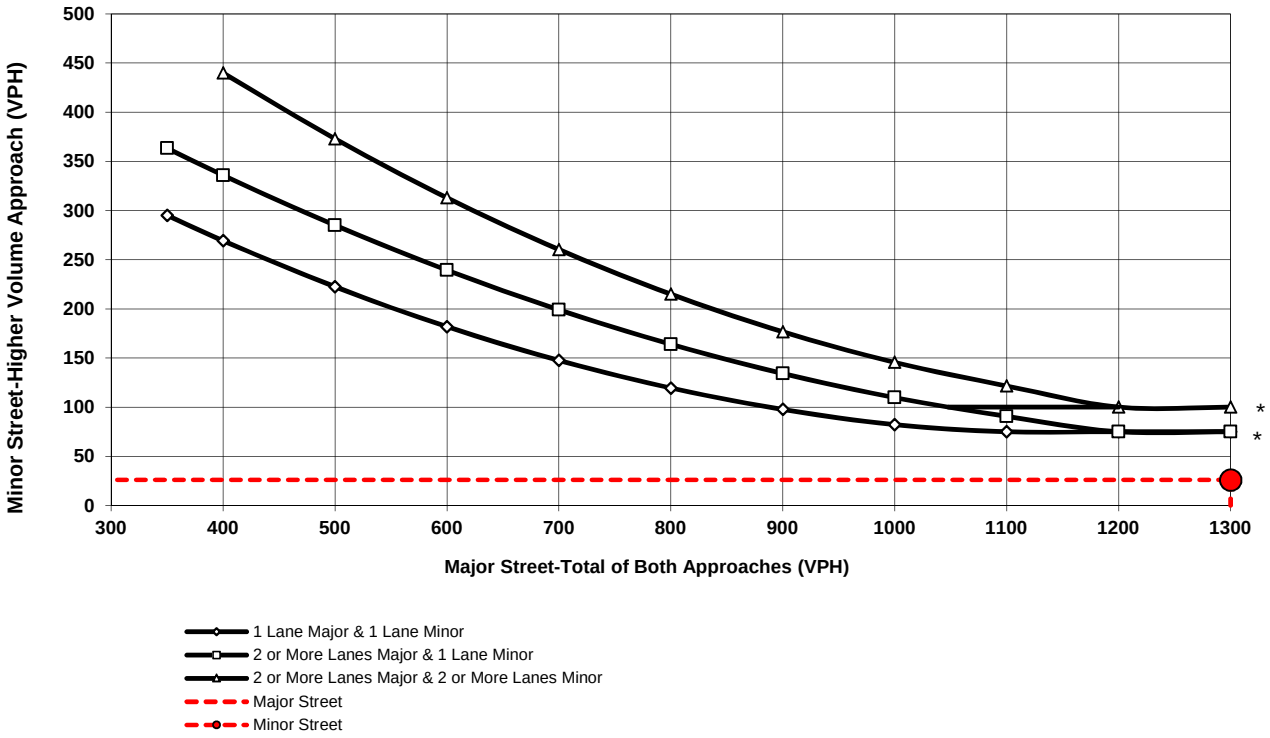
Major Street: Bundy Canyon Road **Minor Street:** Sunset Avenue

Total of Both Approaches (VPH):	1424	Higher Volume Approach (VPH):	26
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

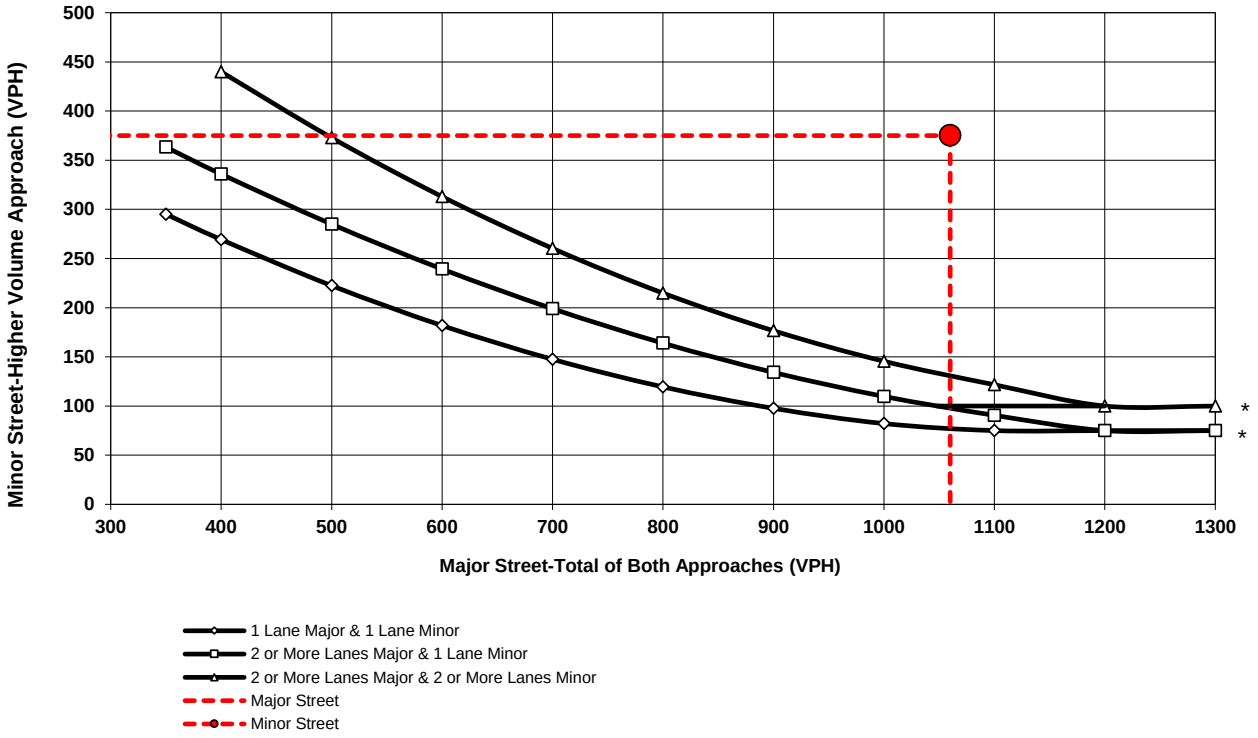
Major Street: Scott Road **Minor Street:** Murrieta Road

Total of Both Approaches (VPH):	1060	Higher Volume Approach (VPH):	375
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

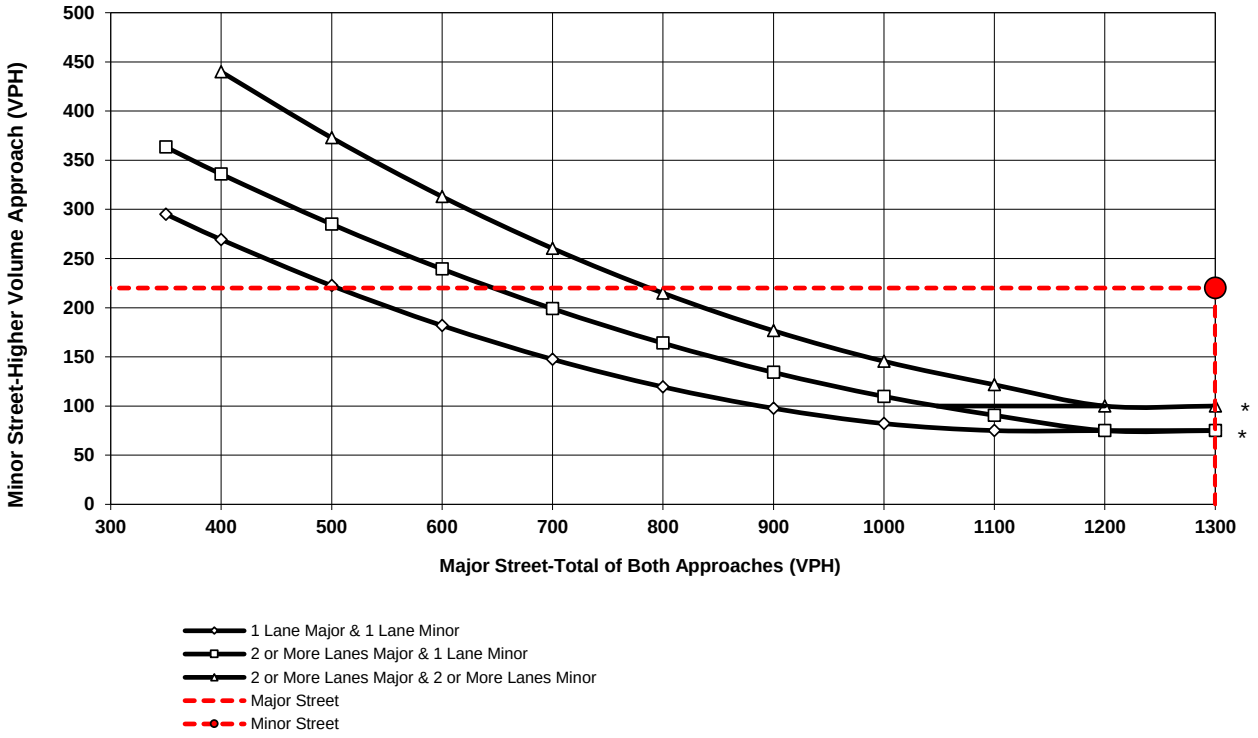
Major Street: Scott Road **Minor Street:** Murrieta Road

Total of Both Approaches (VPH):	1384	Higher Volume Approach (VPH):	220
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

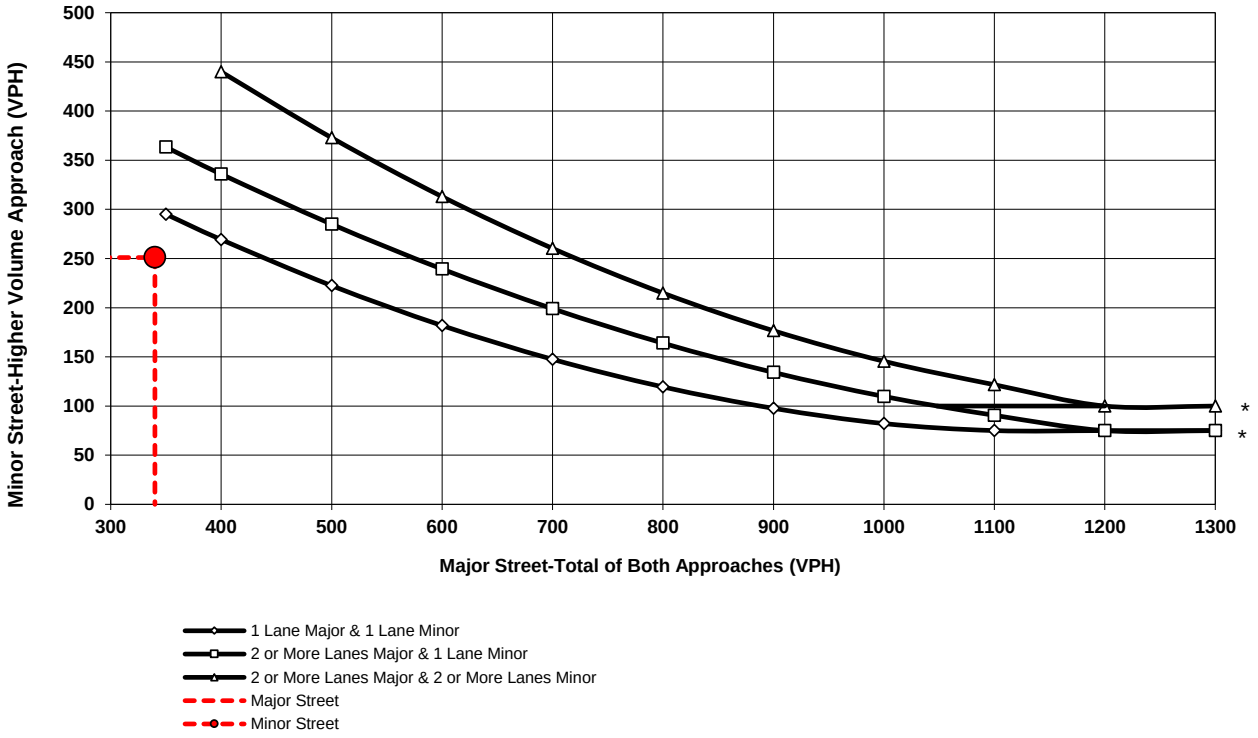
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**340**	Higher Volume Approach (VPH):	**251**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

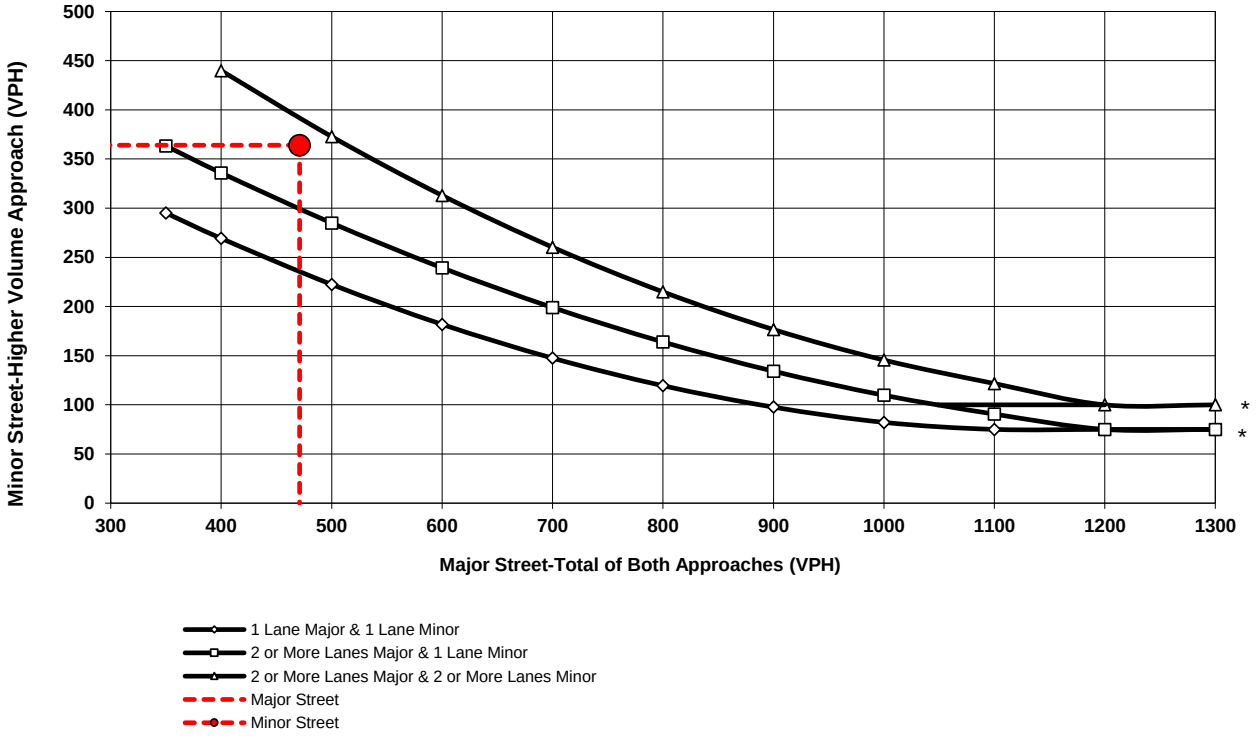
Major Street: Keller Road

Minor Street: Zeiders Road

Total of Both Approaches (VPH):	471	Higher Volume Approach (VPH):	364
Number of Approach Lanes:	1	Number of Approach Lanes:	1

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

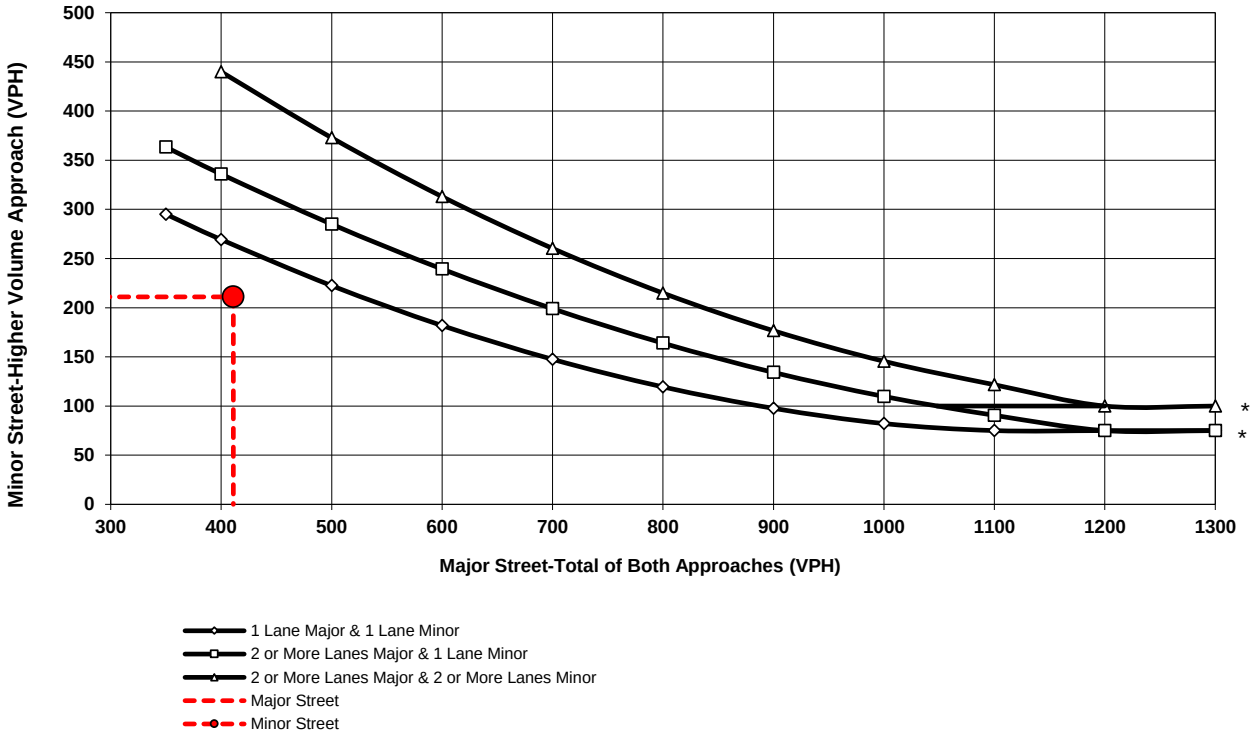
Minor Street: McElwain Road

Total of Both Approaches (VPH):	411	Higher Volume Approach (VPH):	211
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Existing + Project Buildout
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

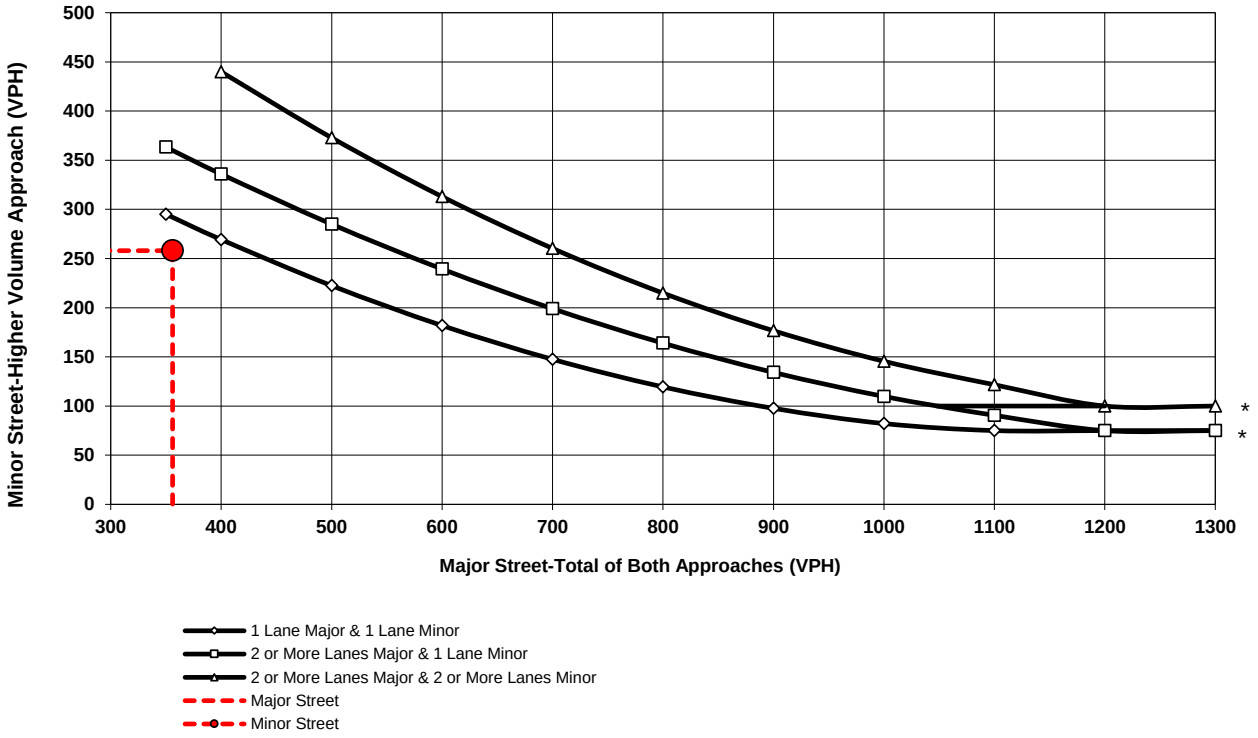
Major Street: **Linnell Lane** **Minor Street:** **McElwain Road**

Total of Both Approaches (VPH):	**356**	Higher Volume Approach (VPH):	**258**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

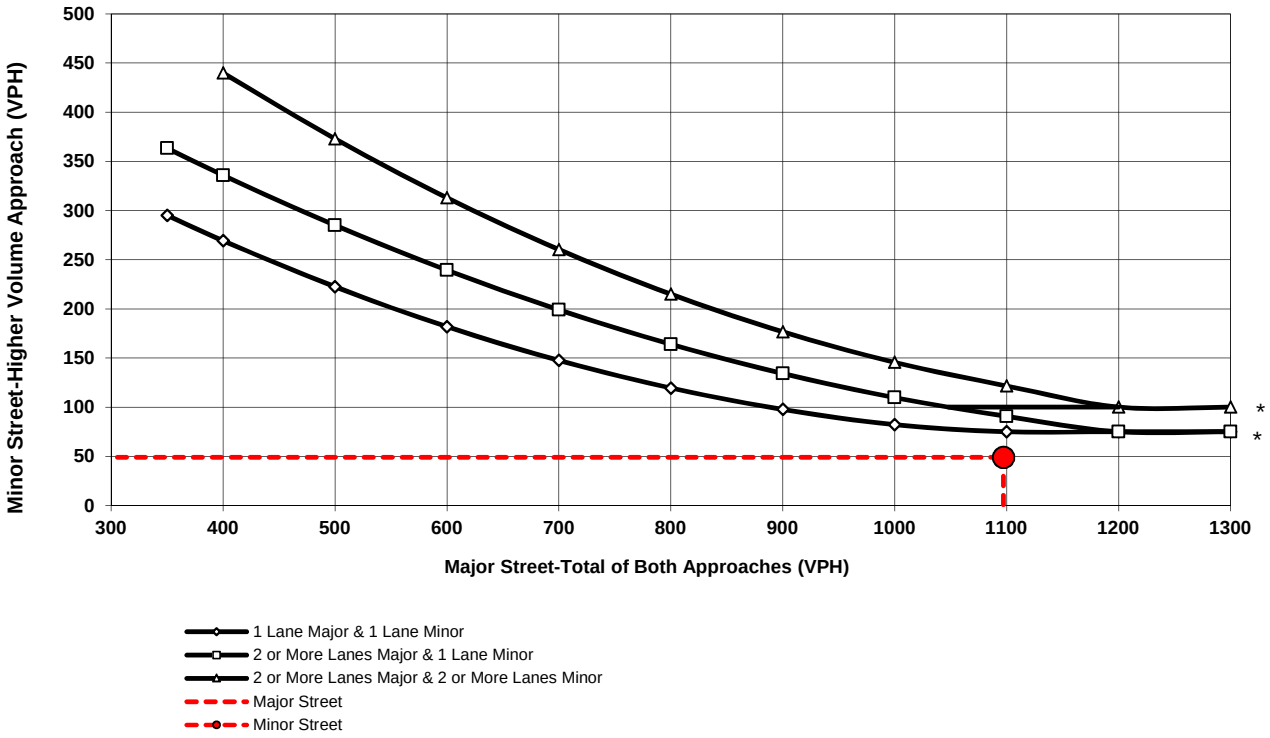
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1097**	Higher Volume Approach (VPH):	**49**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

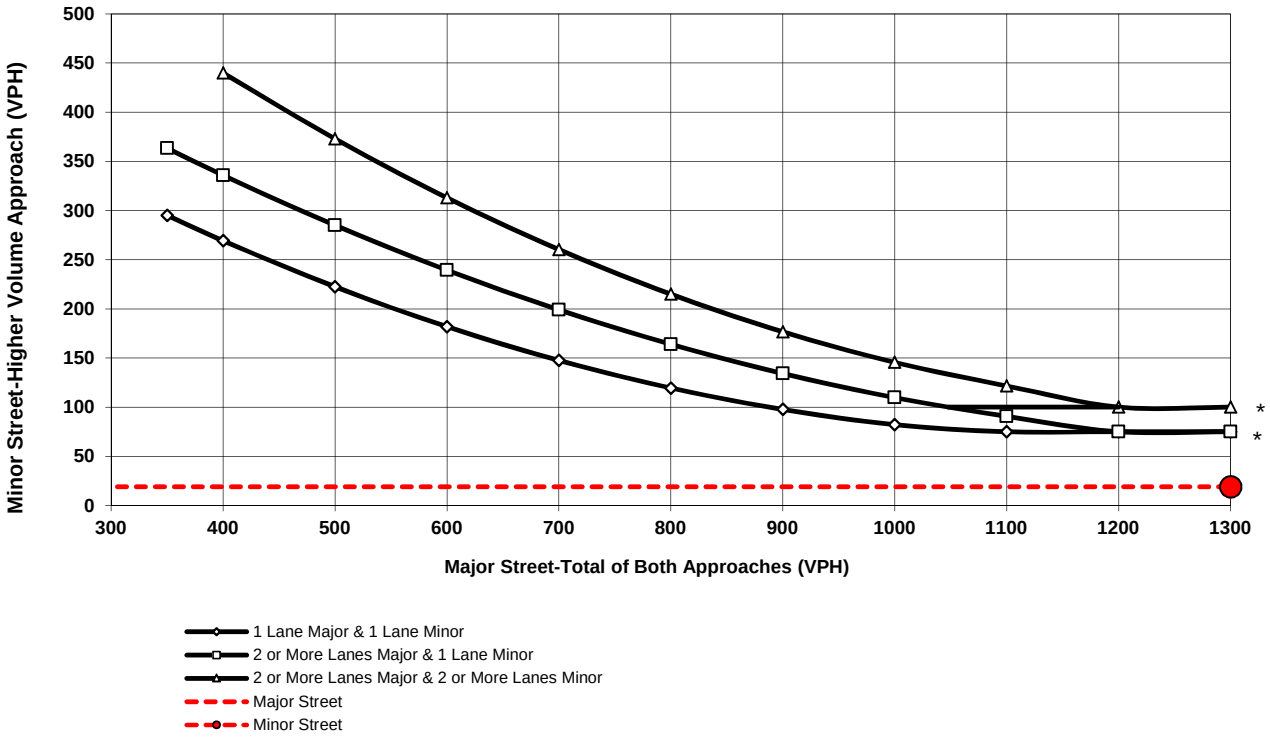
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1363**	Higher Volume Approach (VPH):	**19**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

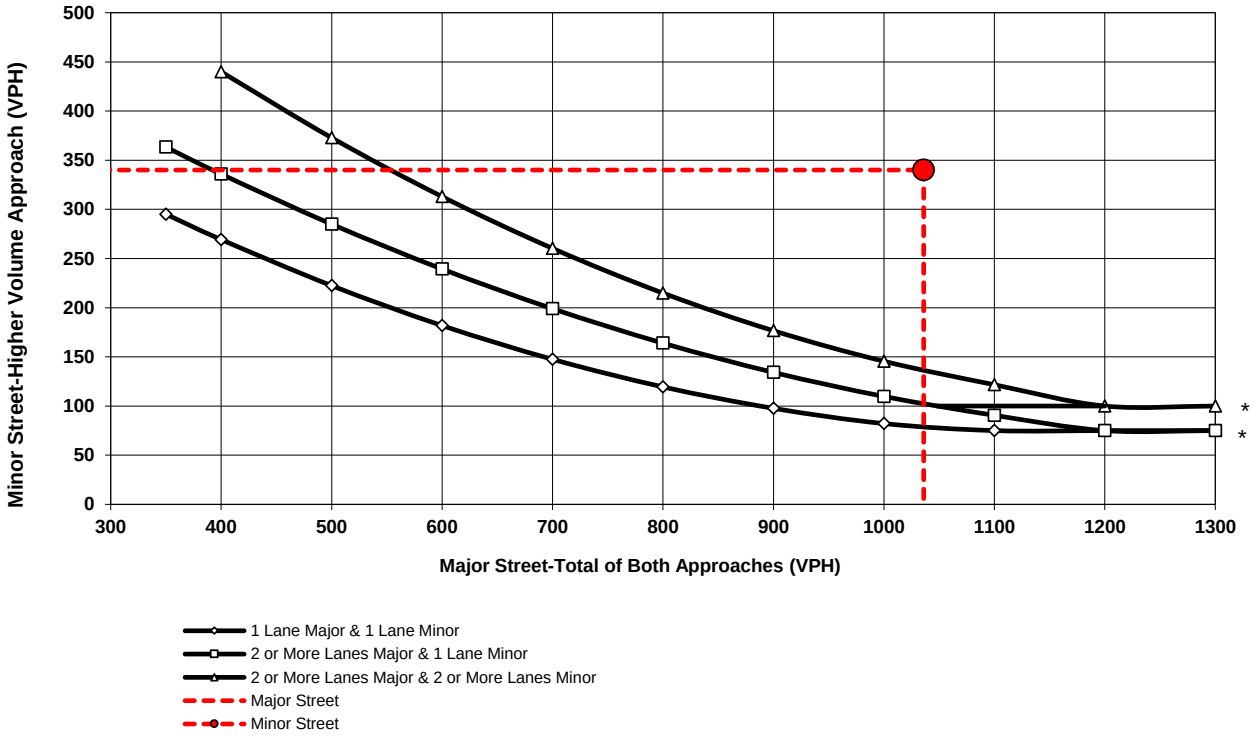
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1036	Higher Volume Approach (VPH):	340
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Scott Road

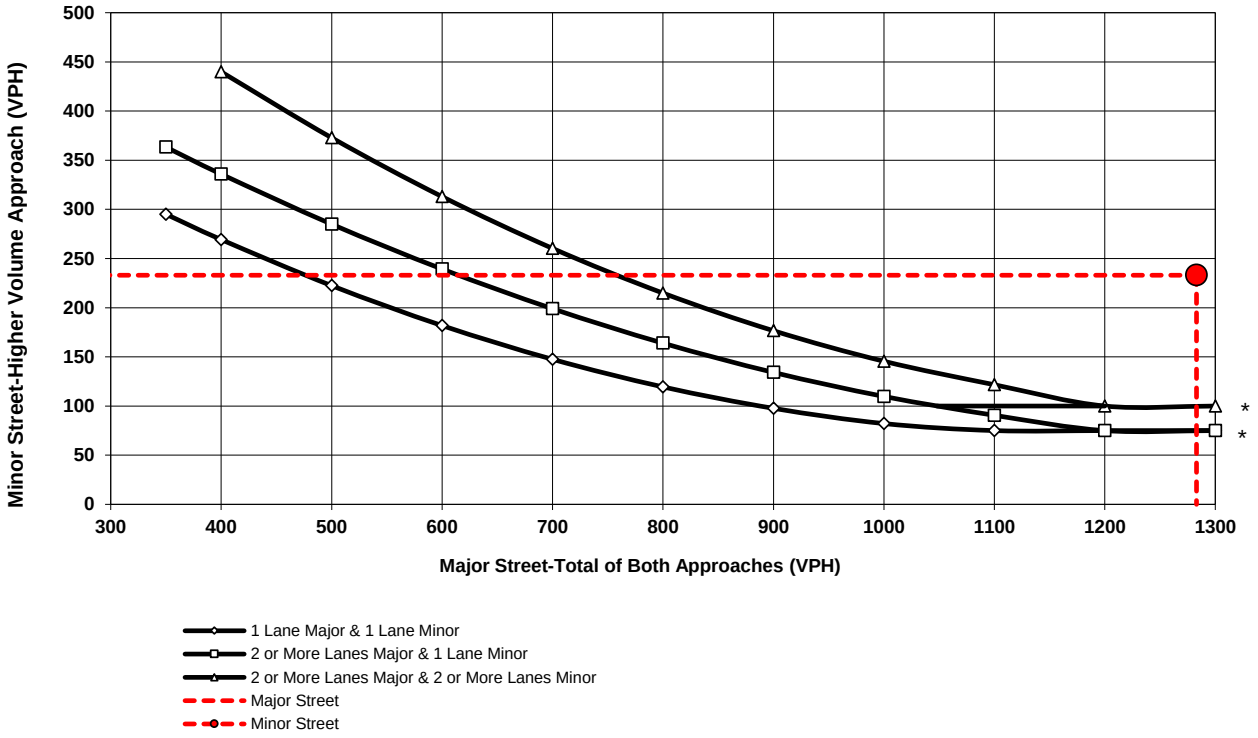
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1283	Higher Volume Approach (VPH):	233
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Keller Road

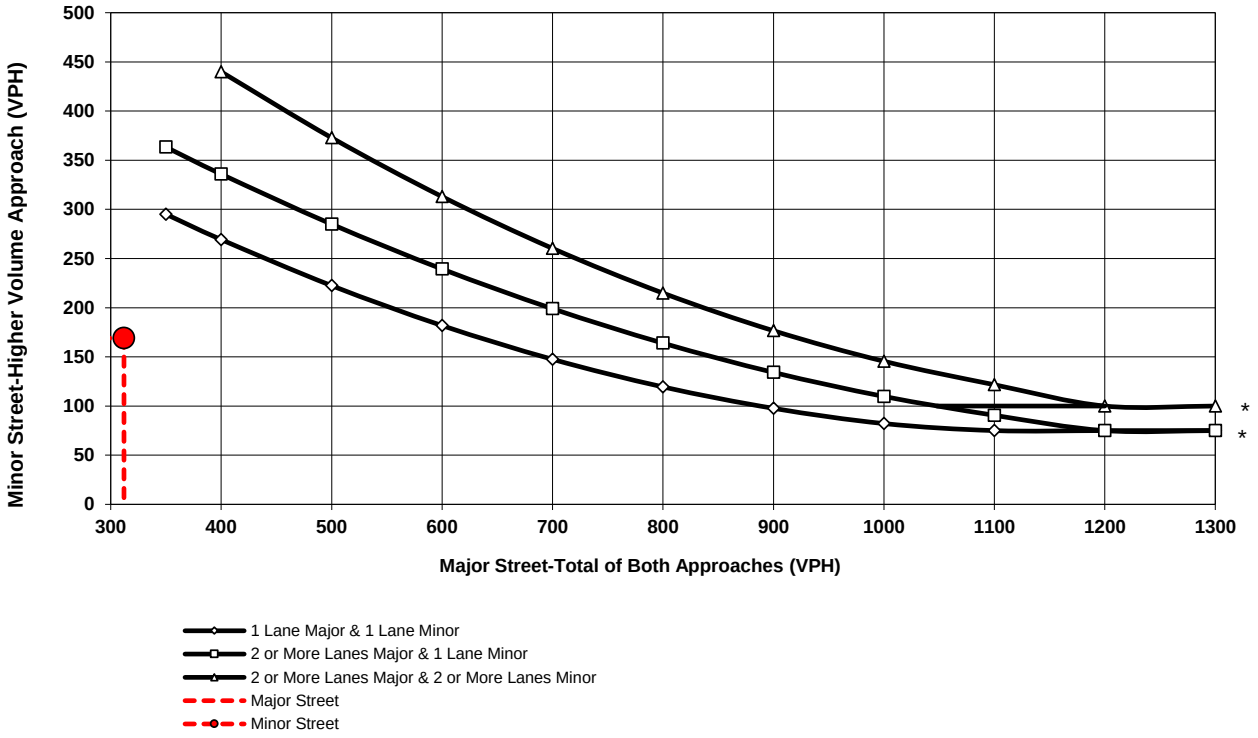
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	312	Higher Volume Approach (VPH):	169
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

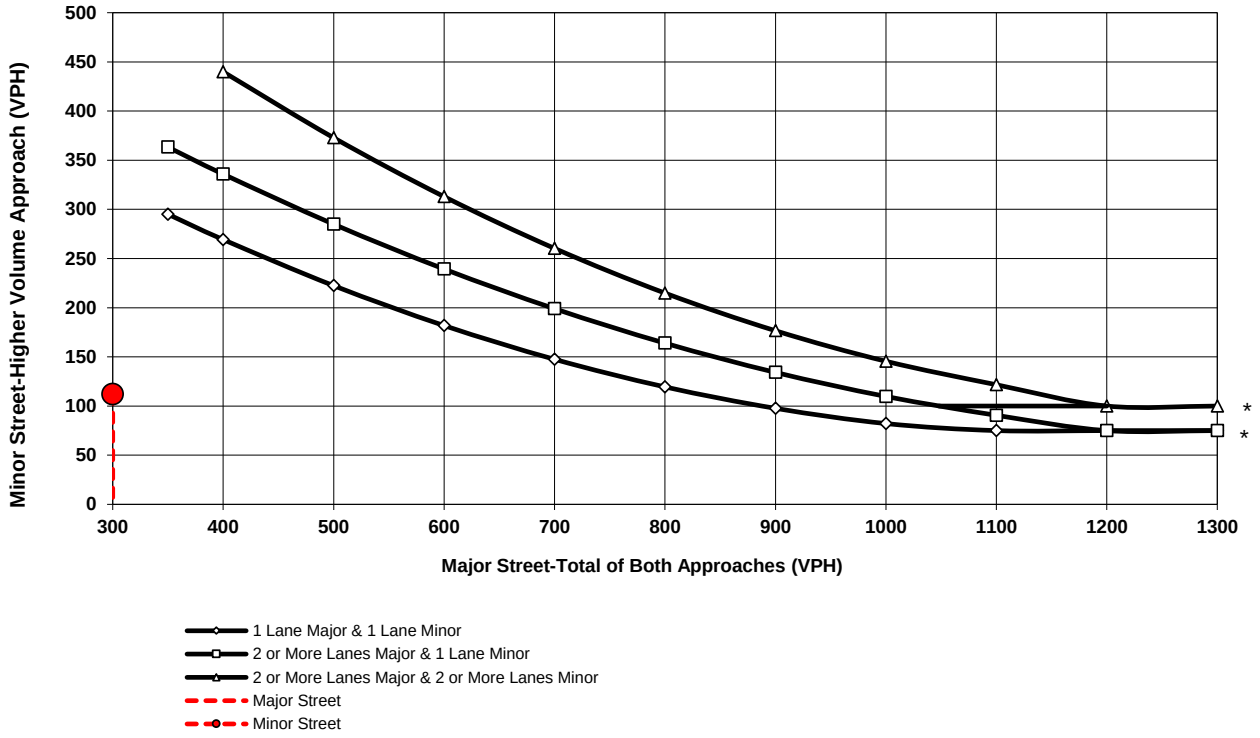
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**177**	Higher Volume Approach (VPH):	**112**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

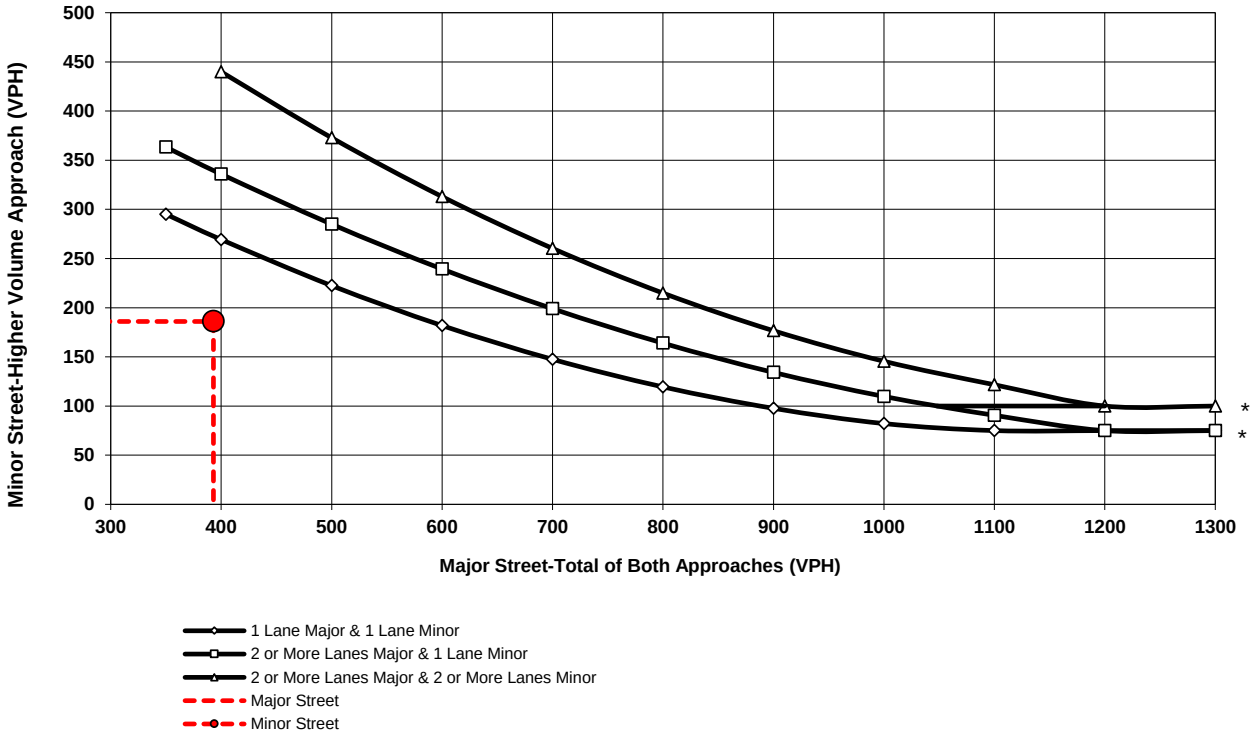
Major Street: **Linnell Lane** **Minor Street:** **McElwain Road**

Total of Both Approaches (VPH):	**393**	Higher Volume Approach (VPH):	**186**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

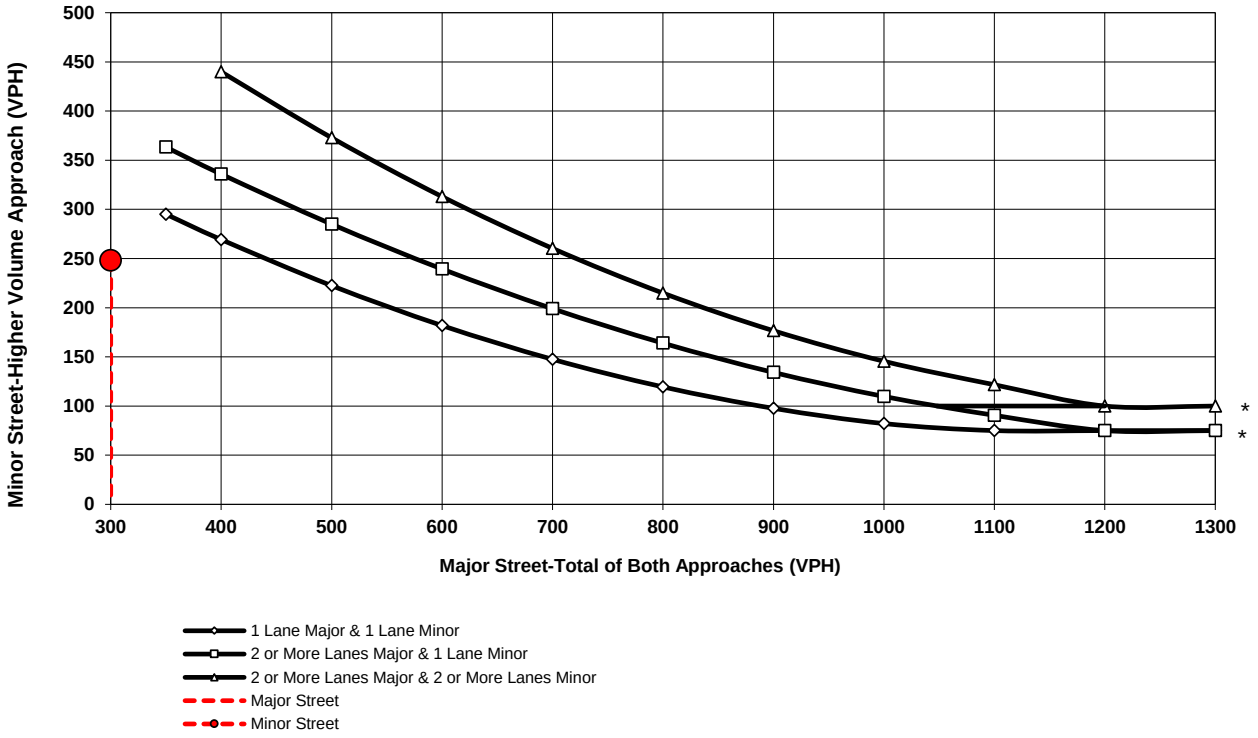
Major Street: **Linnell Lane** **Minor Street:** **McElwain Road**

Total of Both Approaches (VPH):	**210**	Higher Volume Approach (VPH):	**248**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

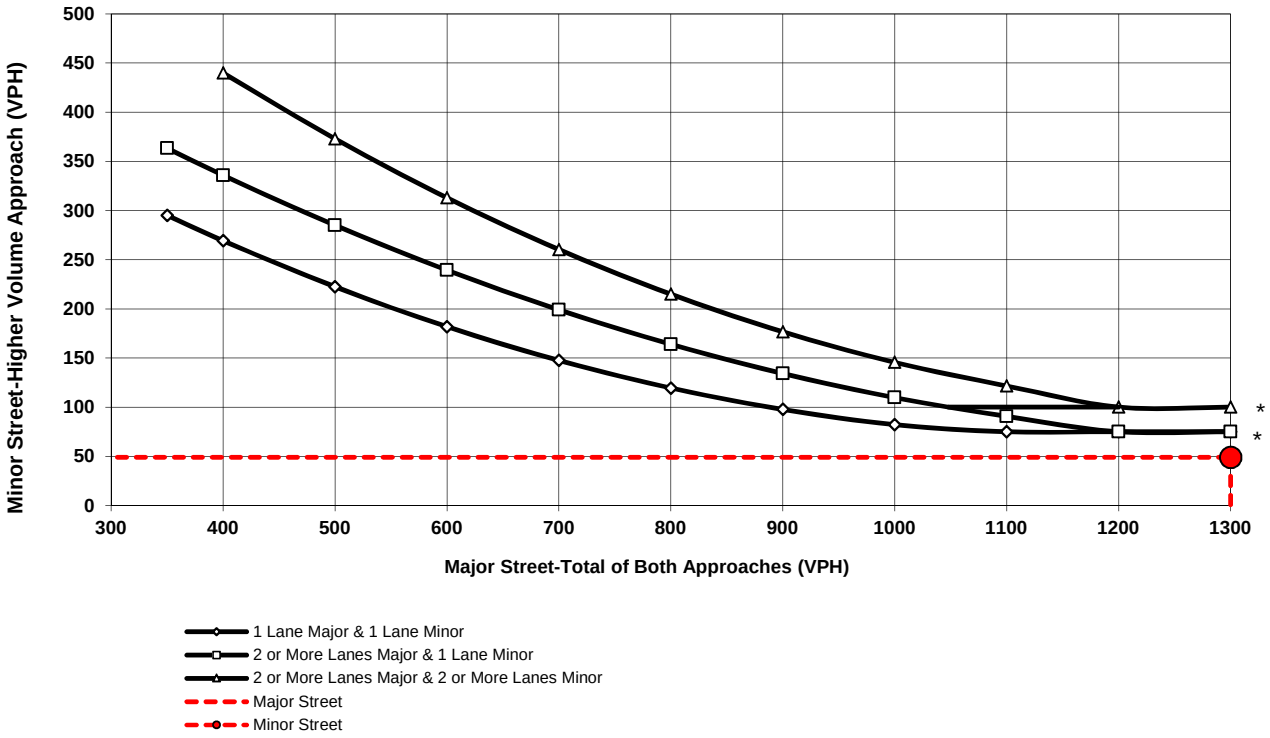
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1376**	Higher Volume Approach (VPH):	**49**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

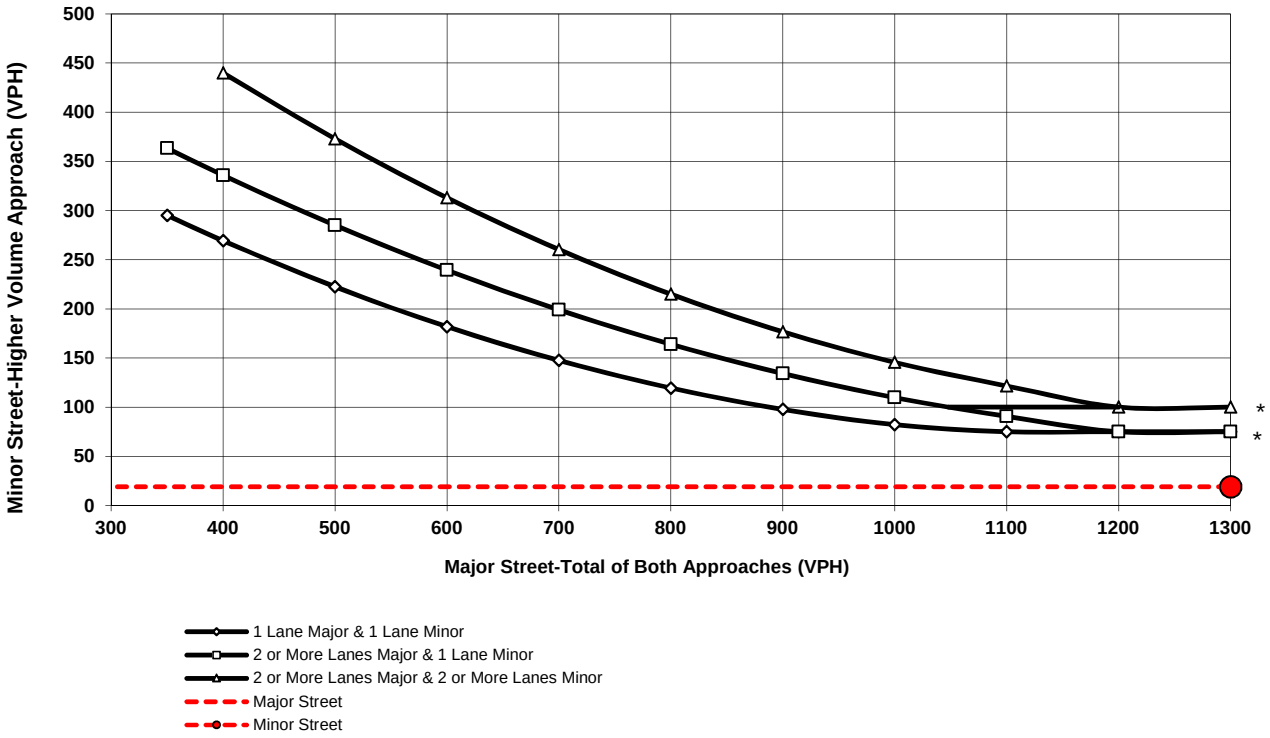
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1773**	Higher Volume Approach (VPH):	**19**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

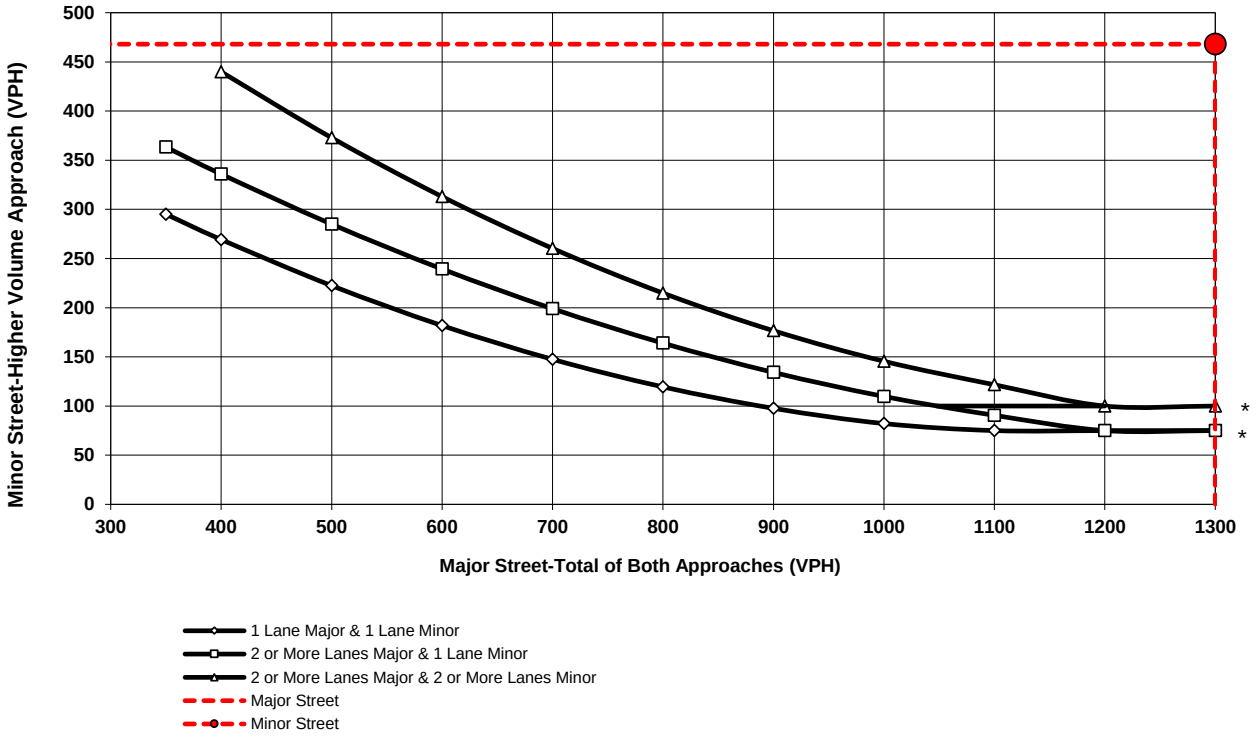
Major Street: Scott Road **Minor Street:** Murrieta Road

Total of Both Approaches (VPH):	1495	Higher Volume Approach (VPH):	468
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Scott Road

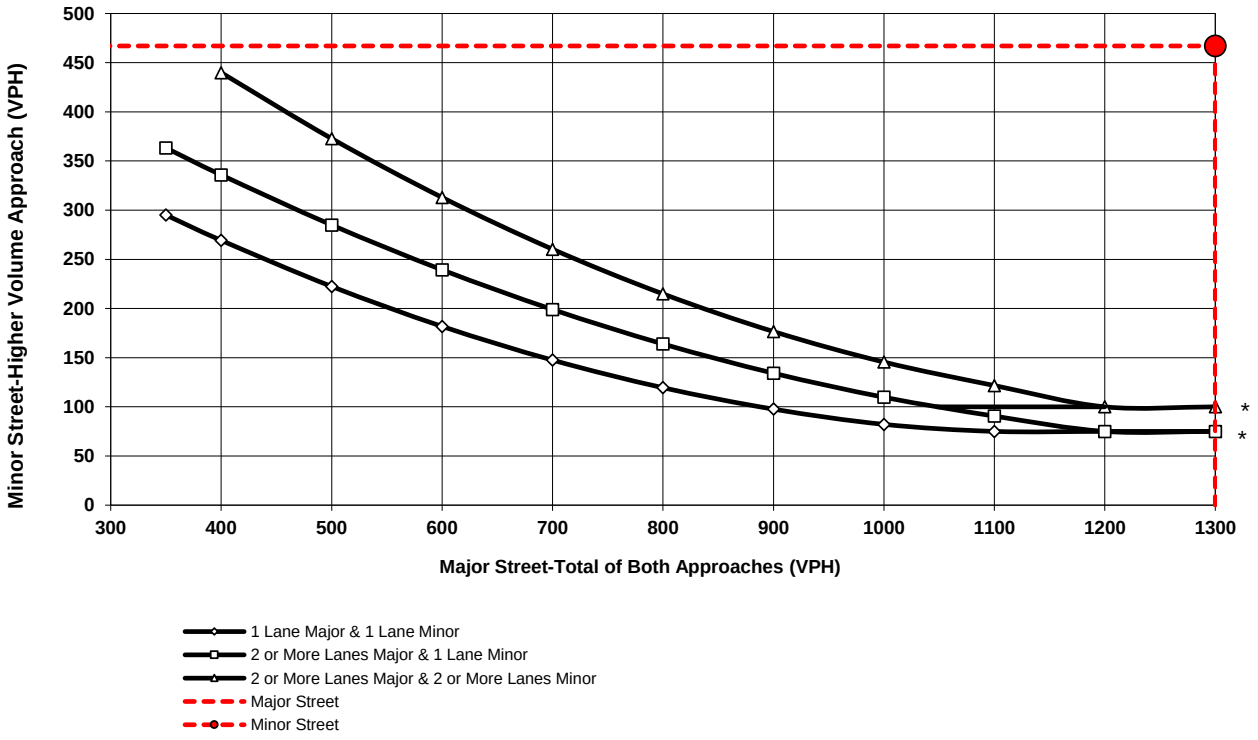
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1895	Higher Volume Approach (VPH):	467
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Keller Road

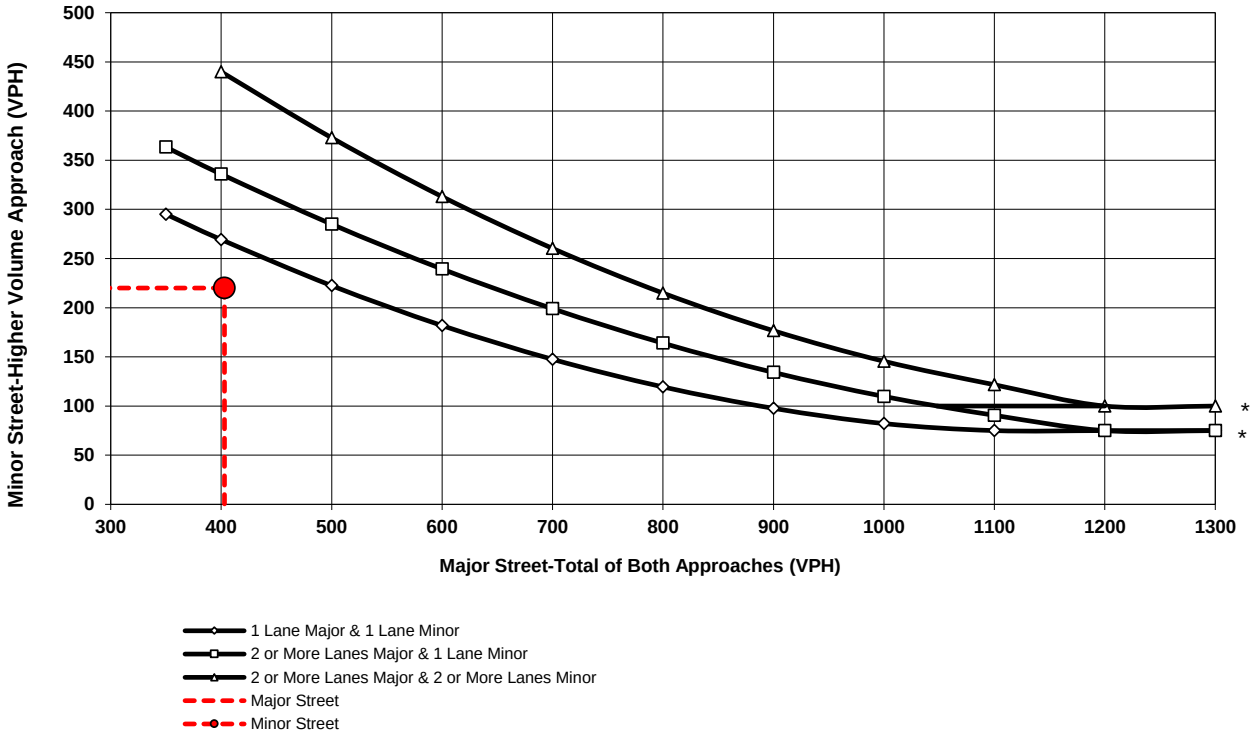
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	403	Higher Volume Approach (VPH):	220
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Keller Road

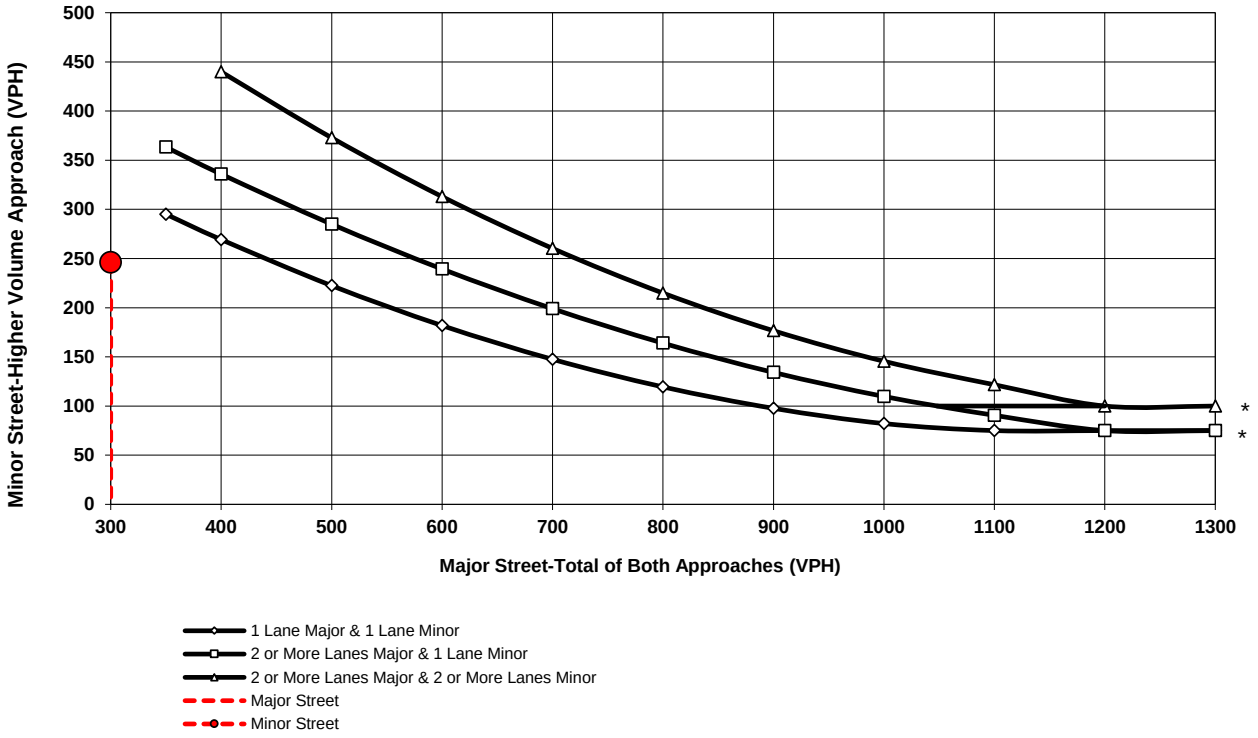
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	278	Higher Volume Approach (VPH):	246
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

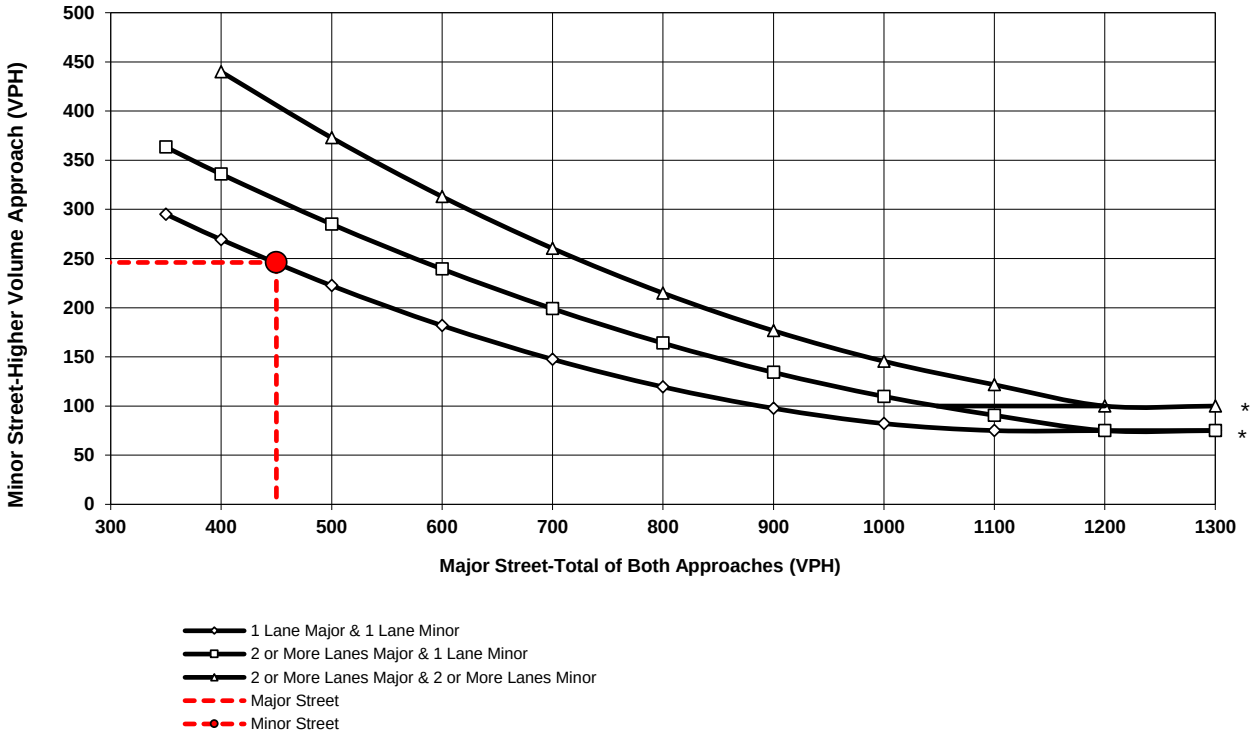
Minor Street: McElwain Road

Total of Both Approaches (VPH):	450	Higher Volume Approach (VPH):	246
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2023 + Ambient Growth + Cumulative Projects + Project (Phase 1)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

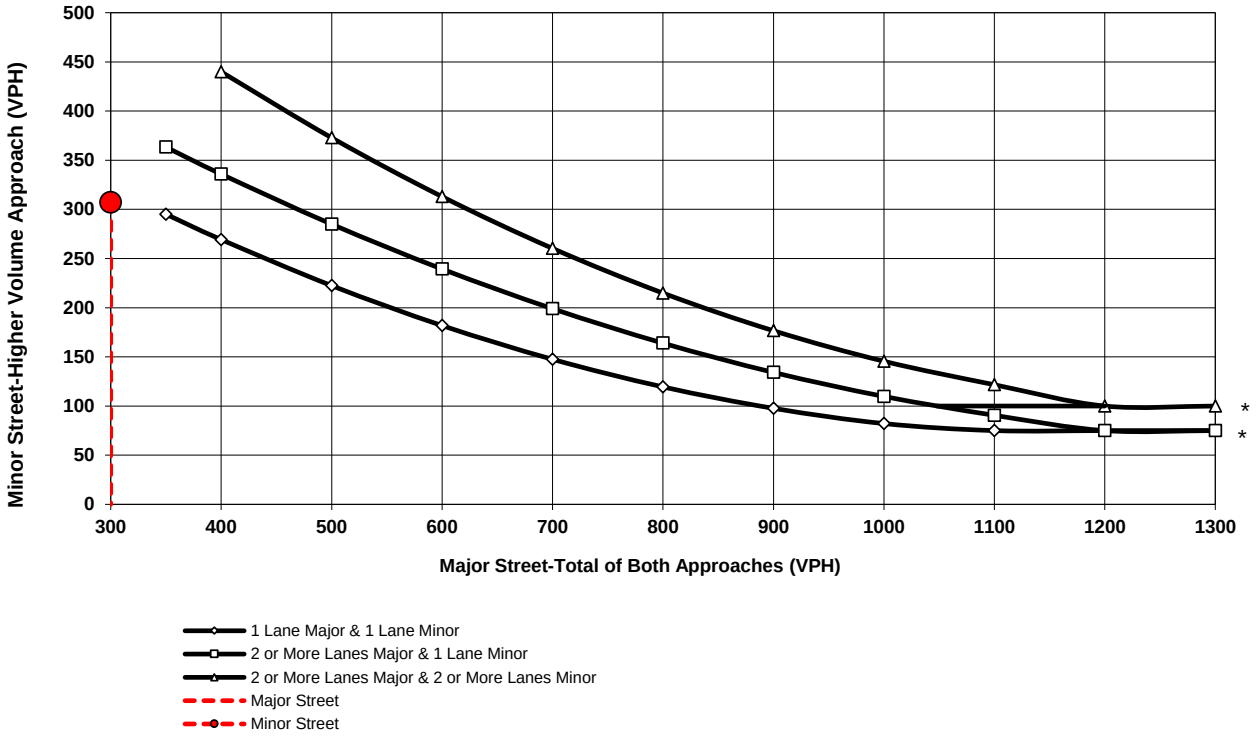
Major Street: **Linnell Lane** **Minor Street:** **McElwain Road**

Total of Both Approaches (VPH):	**283**	Higher Volume Approach (VPH):	**307**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

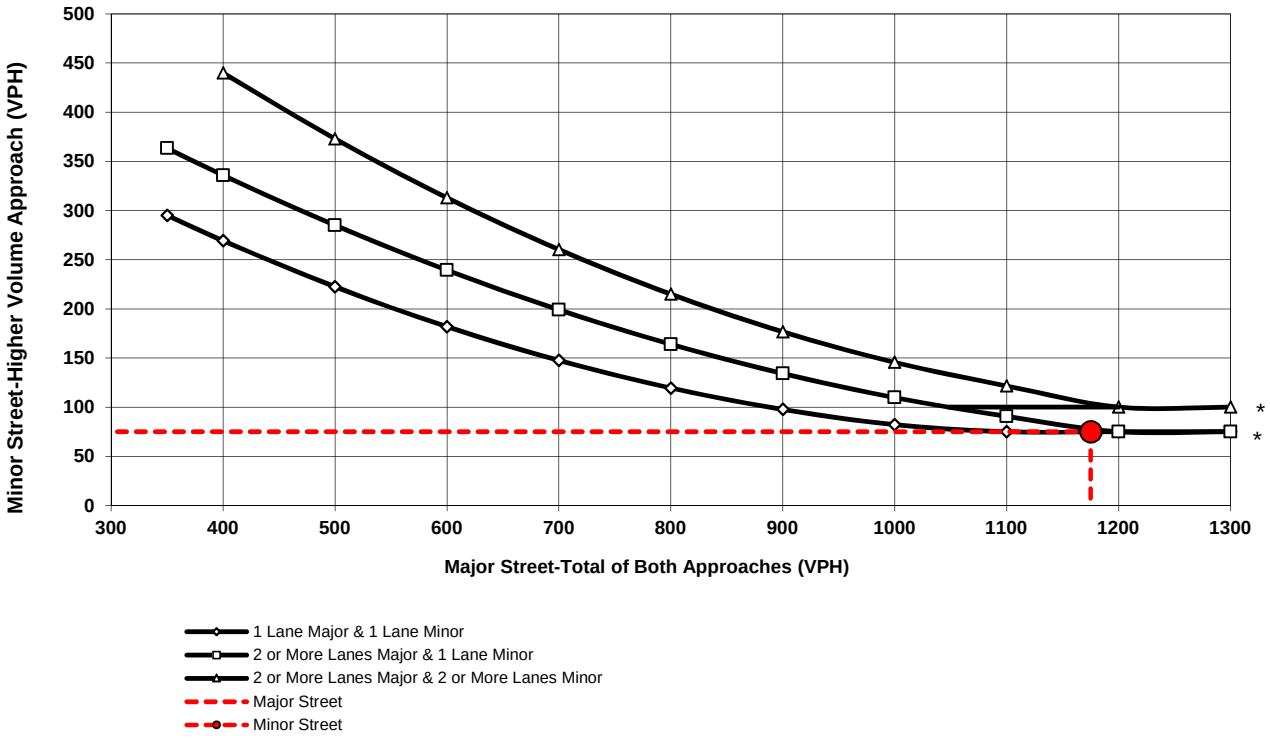
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1175**	Higher Volume Approach (VPH):	**75**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

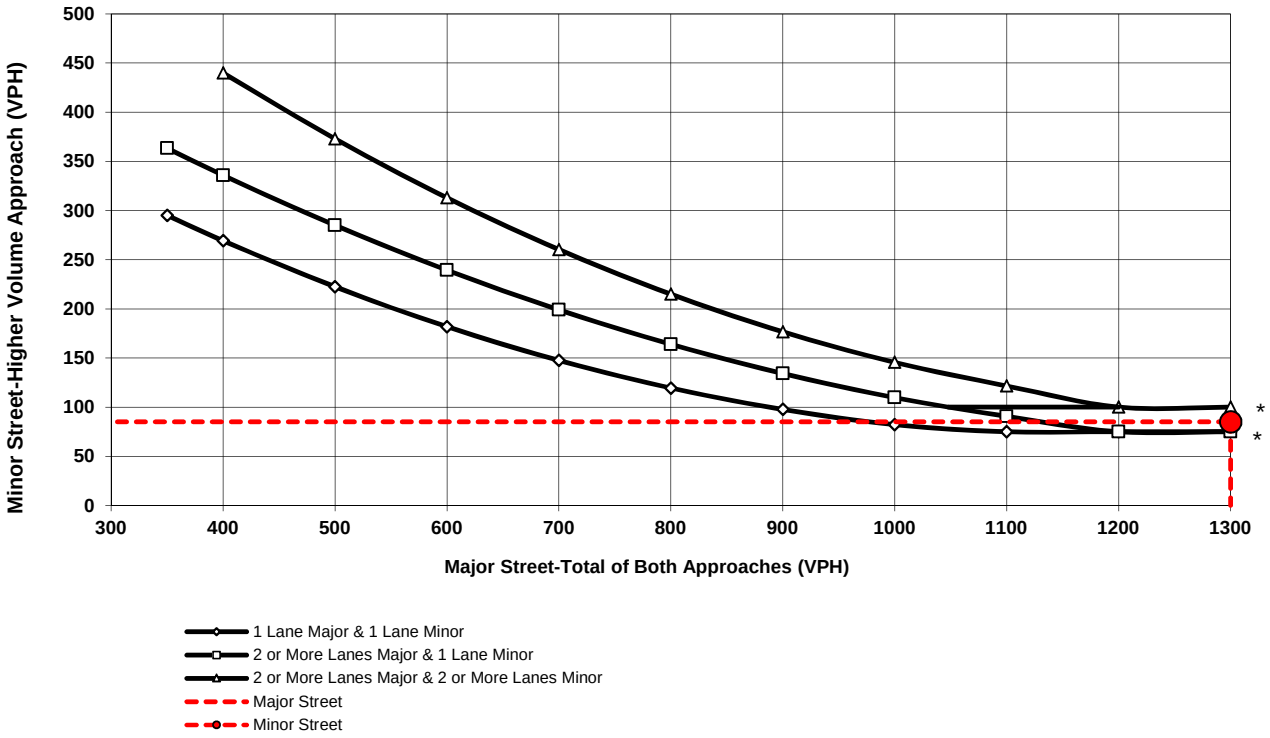
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1468**	Higher Volume Approach (VPH):	**85**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

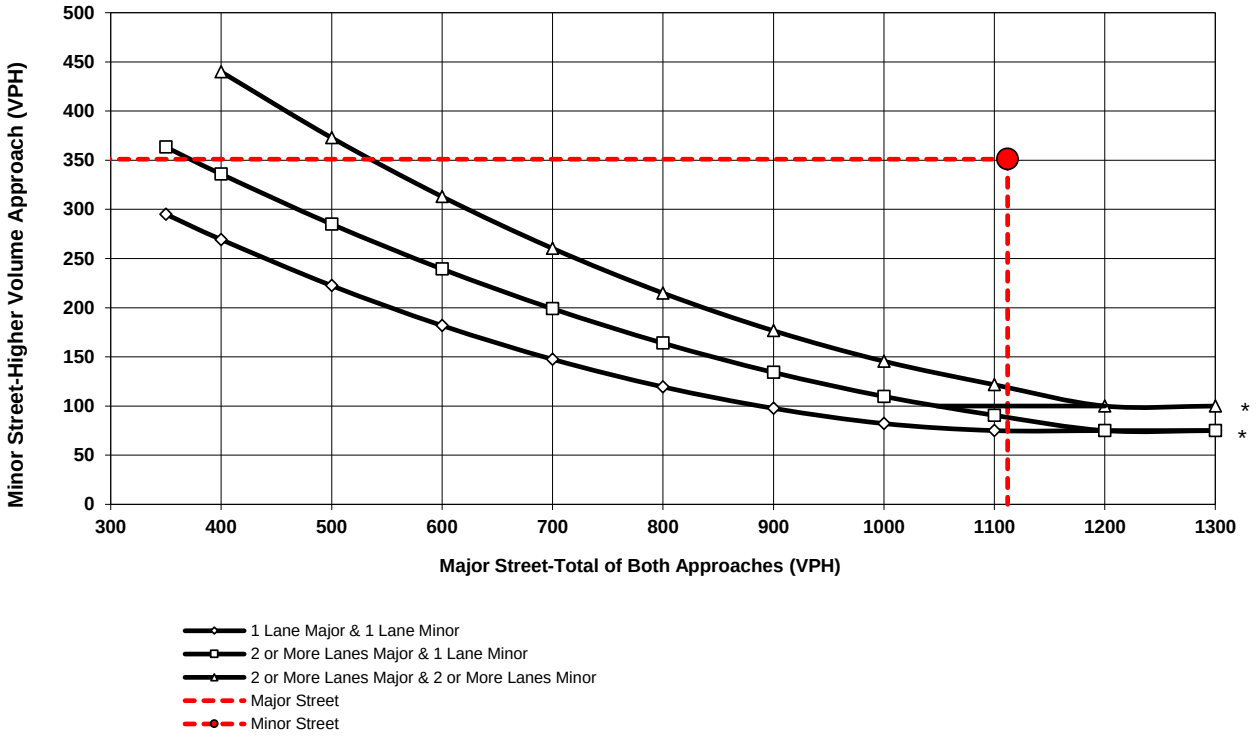
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1112	Higher Volume Approach (VPH):	351
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

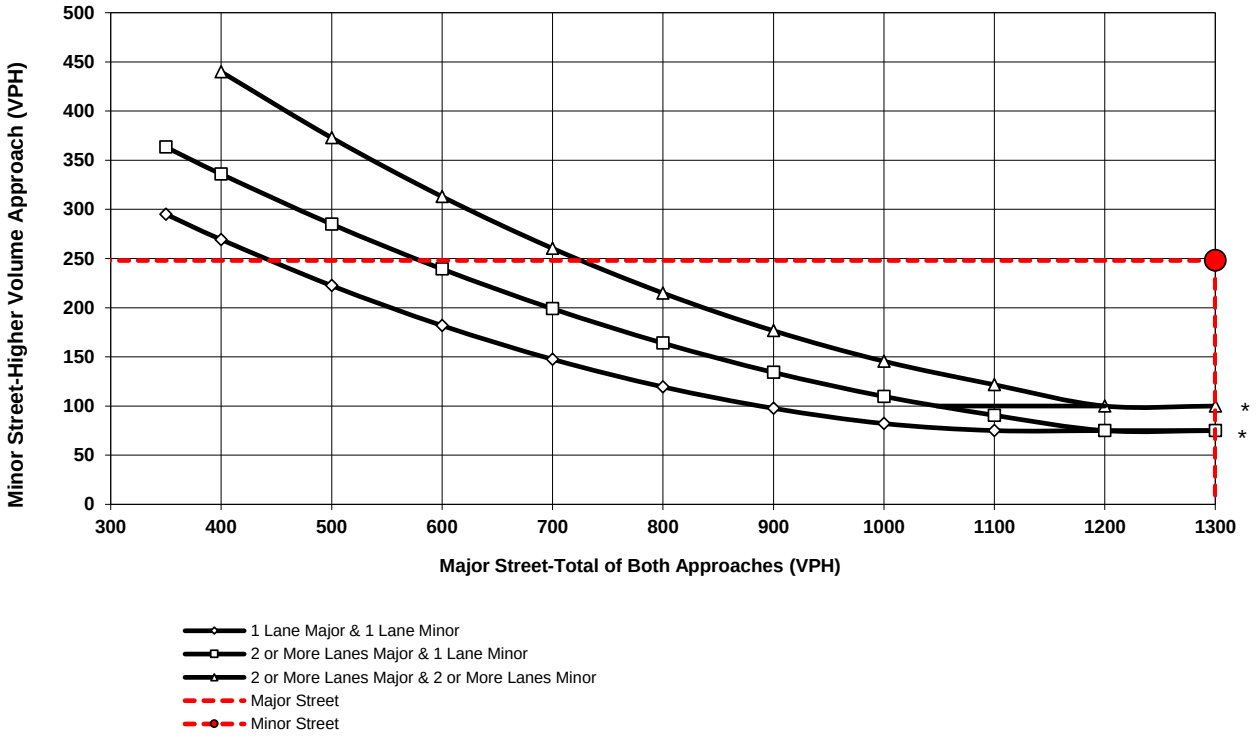
Major Street: Scott Road **Minor Street:** Murrieta Road

Total of Both Approaches (VPH):	1391	Higher Volume Approach (VPH):	248
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Keller Road

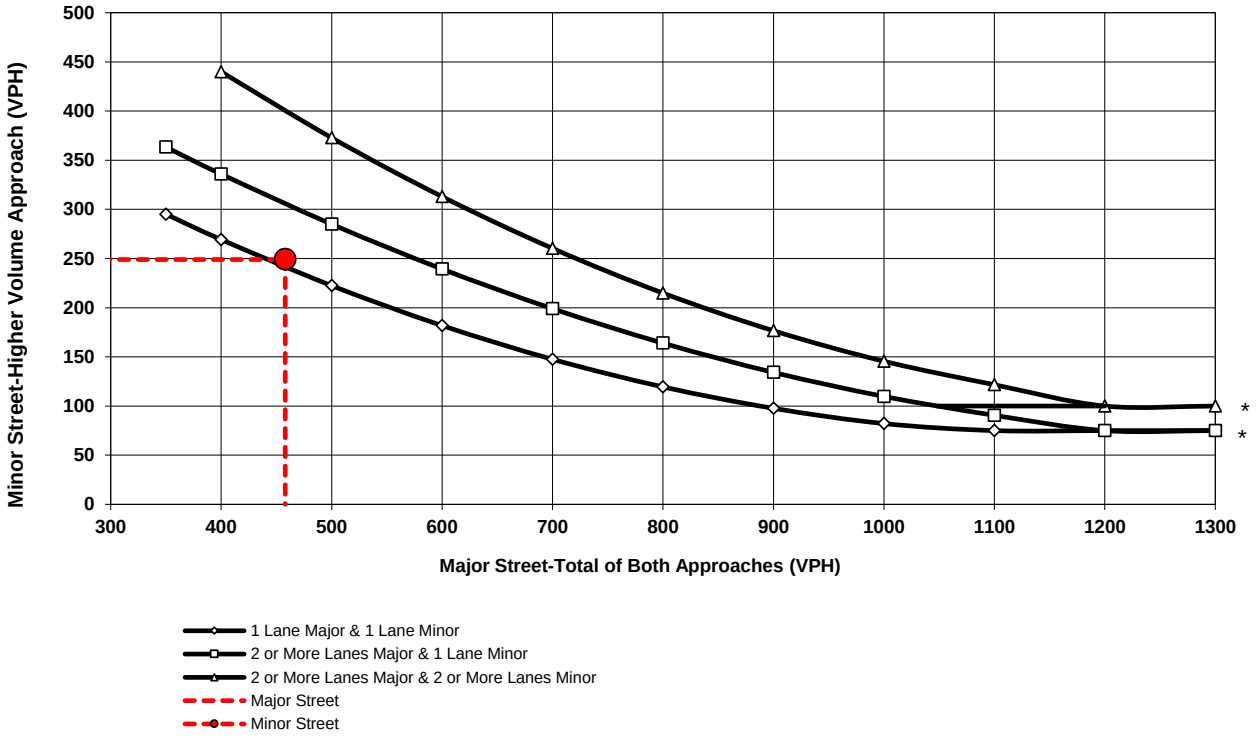
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	458	Higher Volume Approach (VPH):	249
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Keller Road

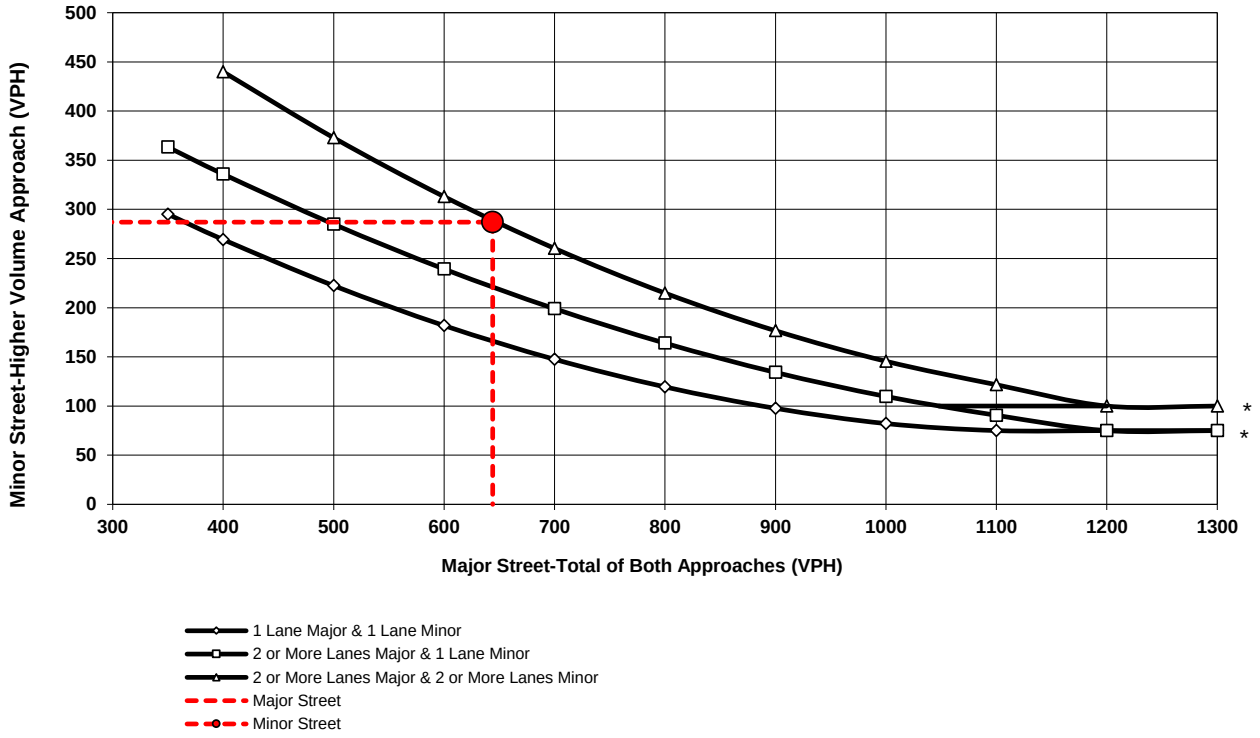
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	644	Higher Volume Approach (VPH):	287
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

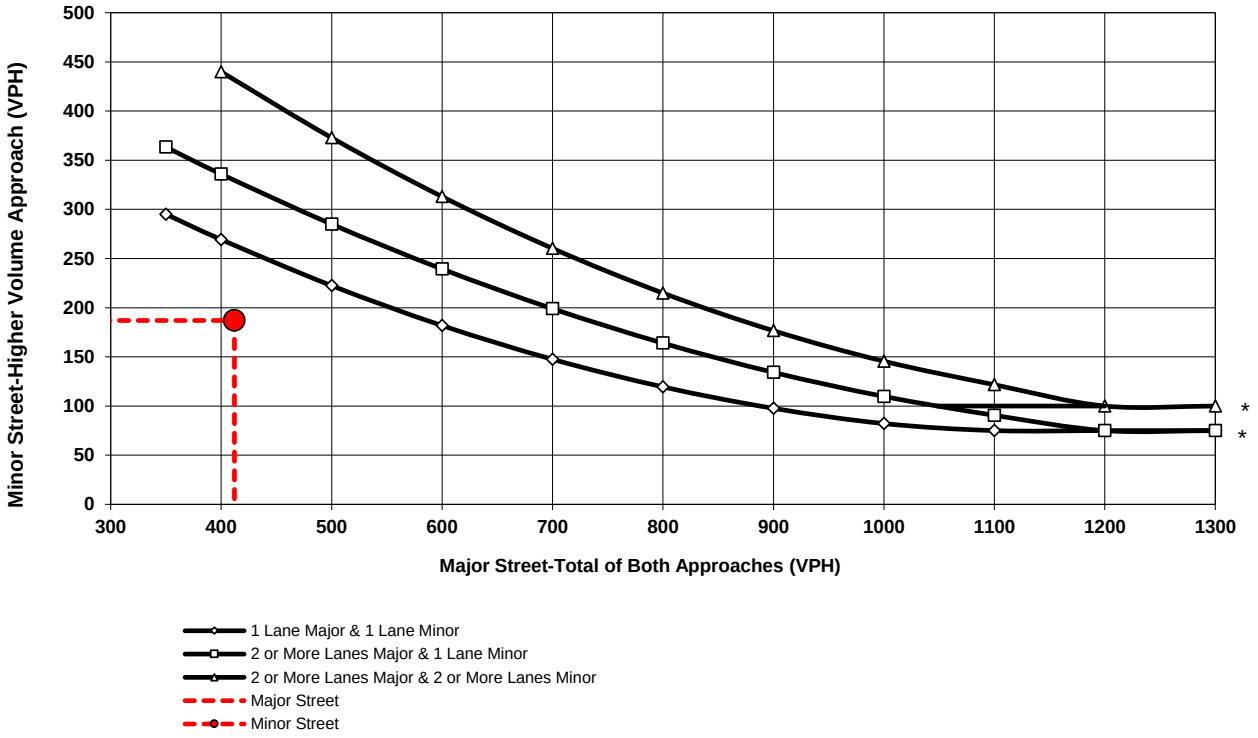
Minor Street: McElwain Road

Total of Both Approaches (VPH):	412	Higher Volume Approach (VPH):	187
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

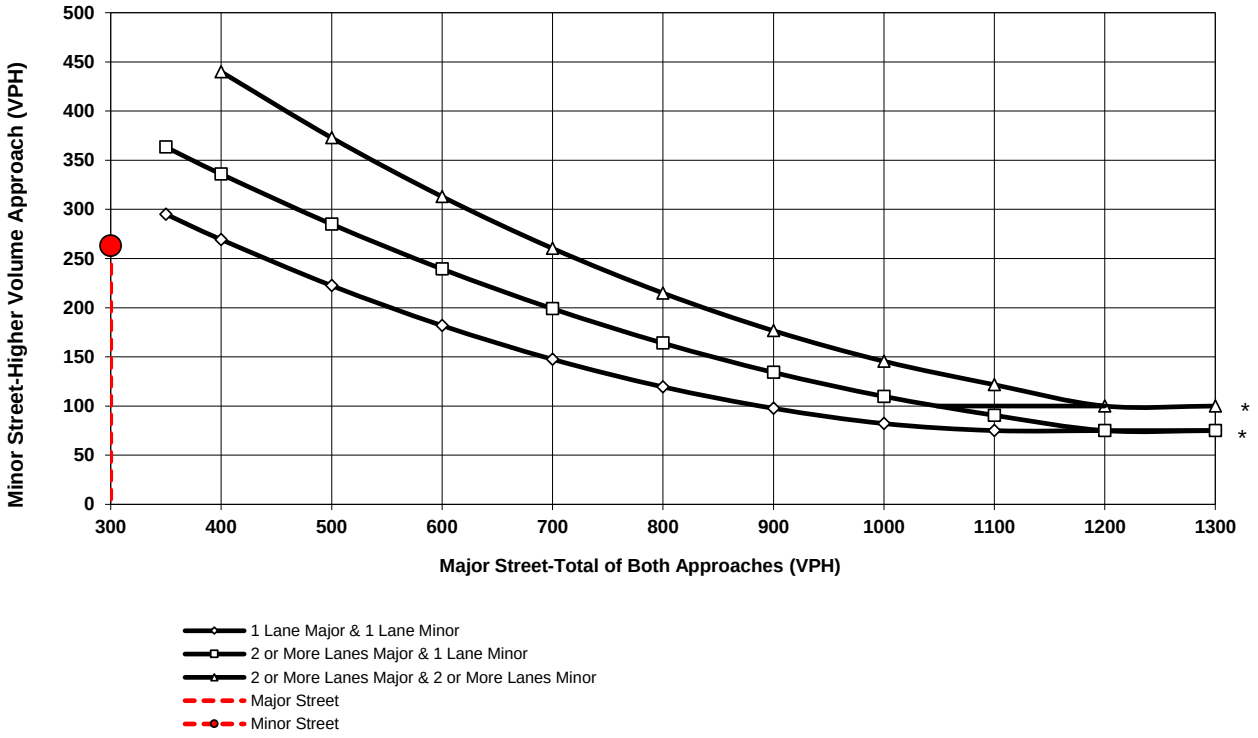
Major Street: **Linnell Lane** **Minor Street:** **McElwain Road**

Total of Both Approaches (VPH):	**213**	Higher Volume Approach (VPH):	**263**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Bundy Canyon Road

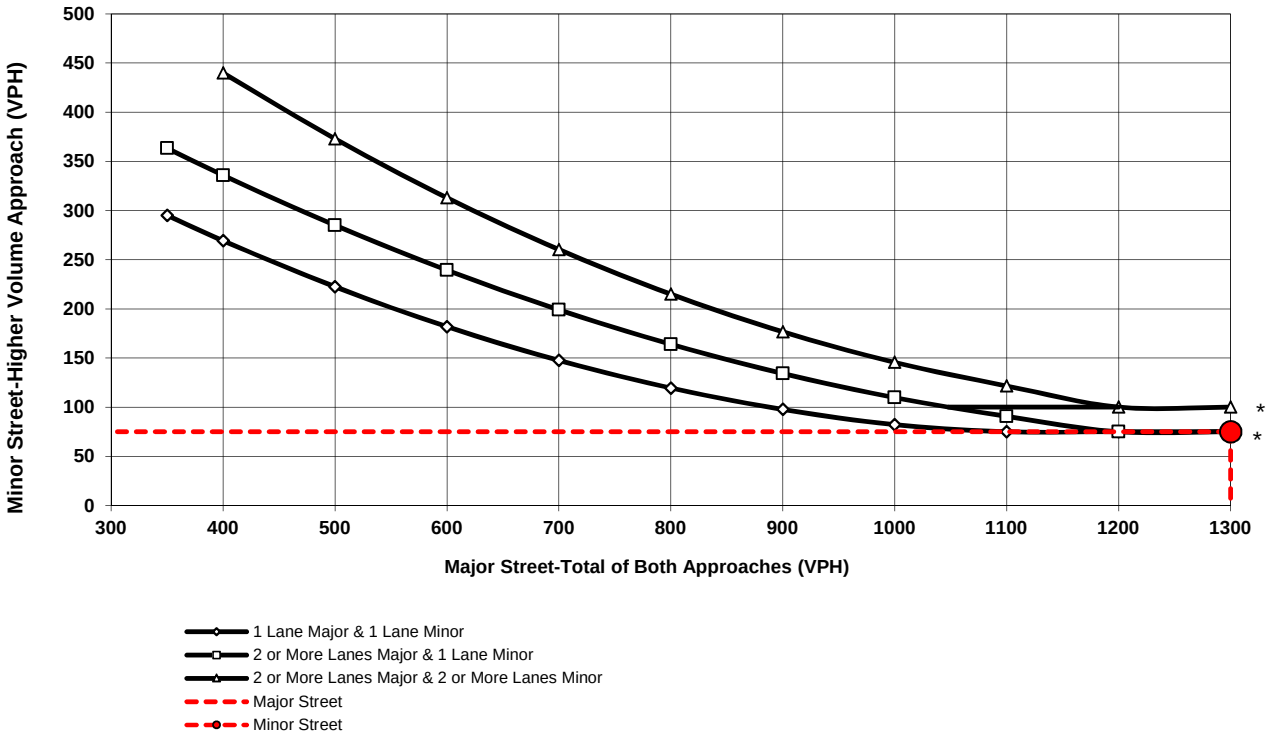
Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	1475	Higher Volume Approach (VPH):	75
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

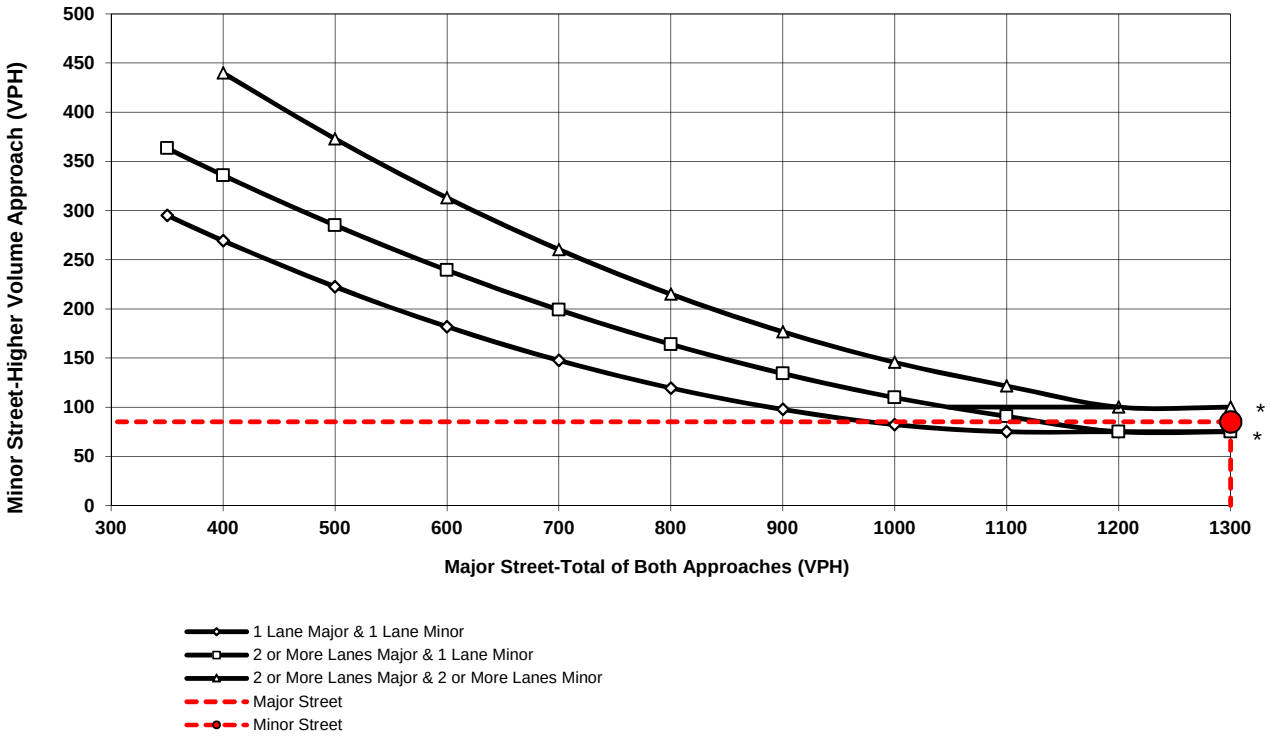
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**1905**	Higher Volume Approach (VPH):	**85**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

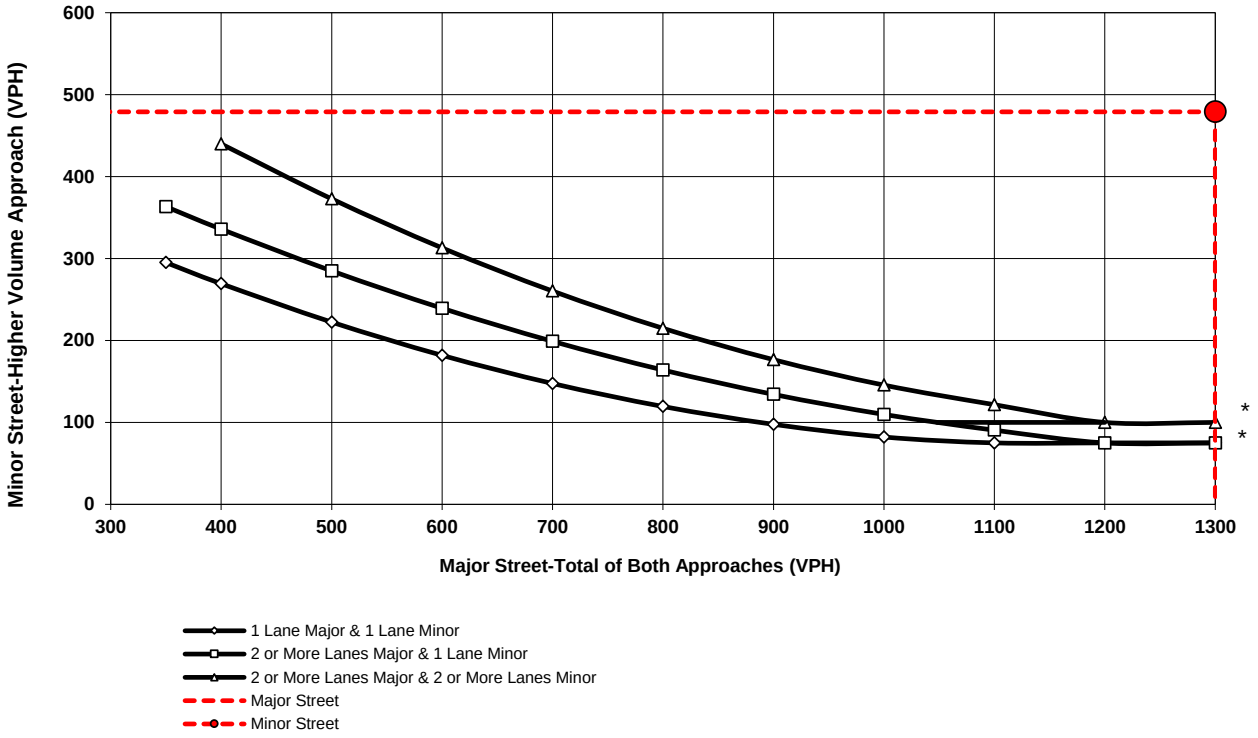
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1599	Higher Volume Approach (VPH):	479
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Scott Road

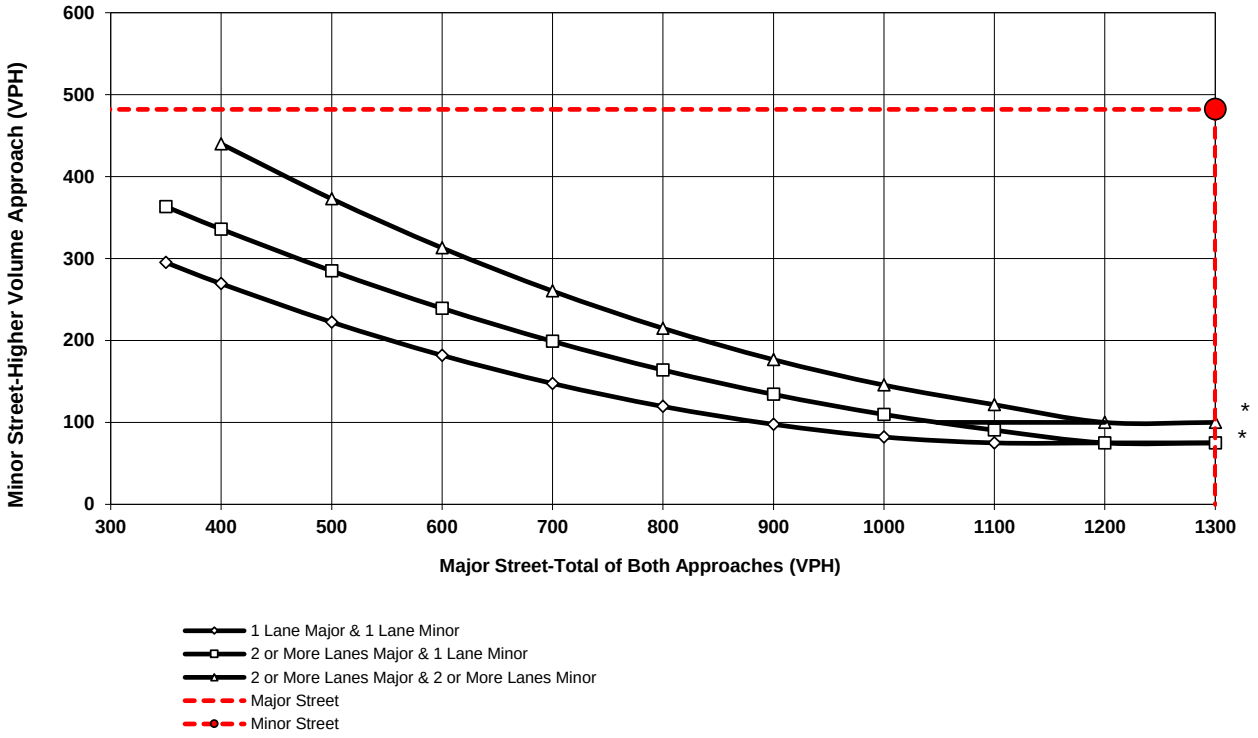
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2039	Higher Volume Approach (VPH):	482
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

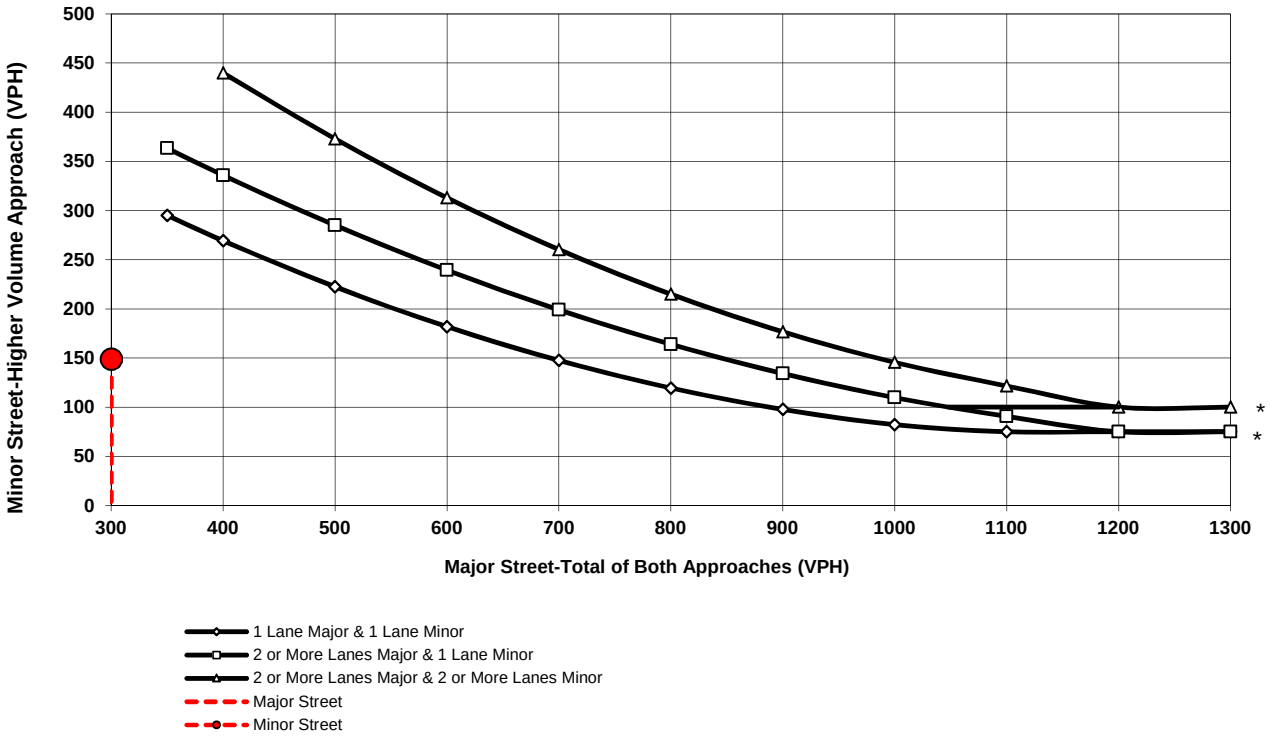
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**284**	Higher Volume Approach (VPH):	**149**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

Major Street: **Keller Road**

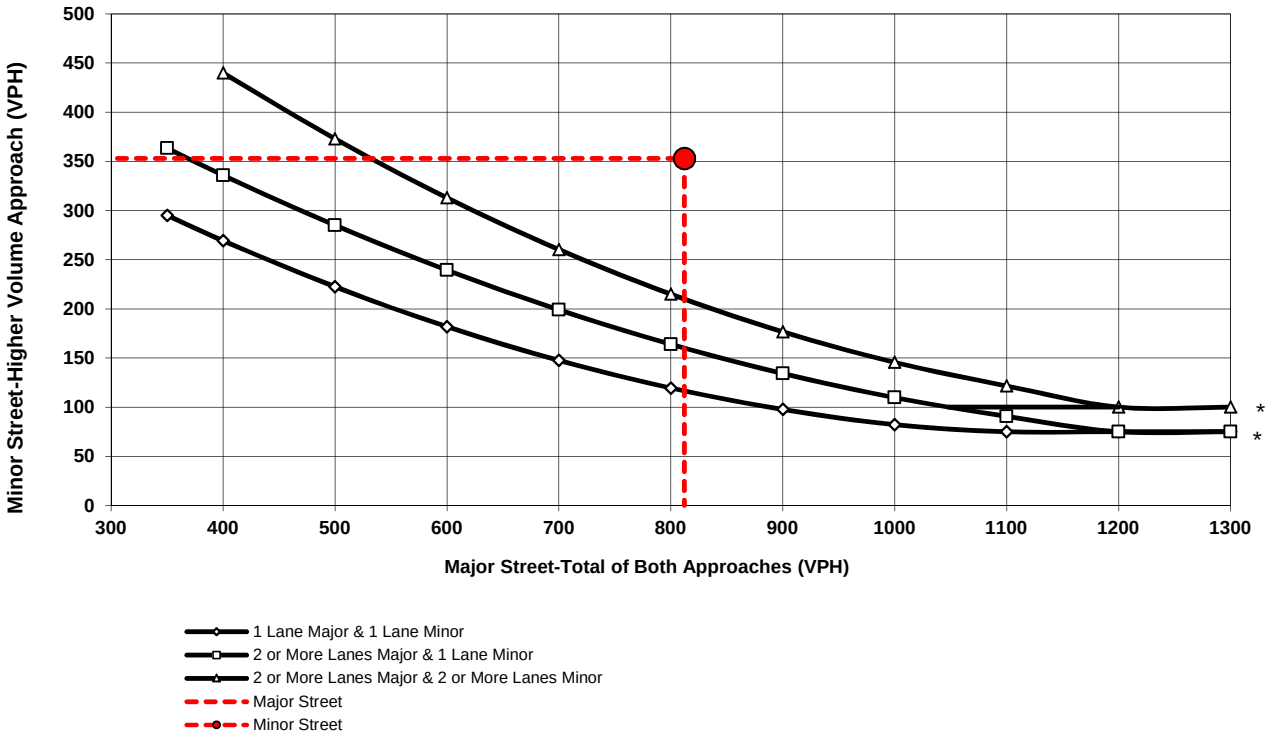
Minor Street: **Zeiders Road**

Total of Both Approaches (VPH):	**812**	Higher Volume Approach (VPH):	**353**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

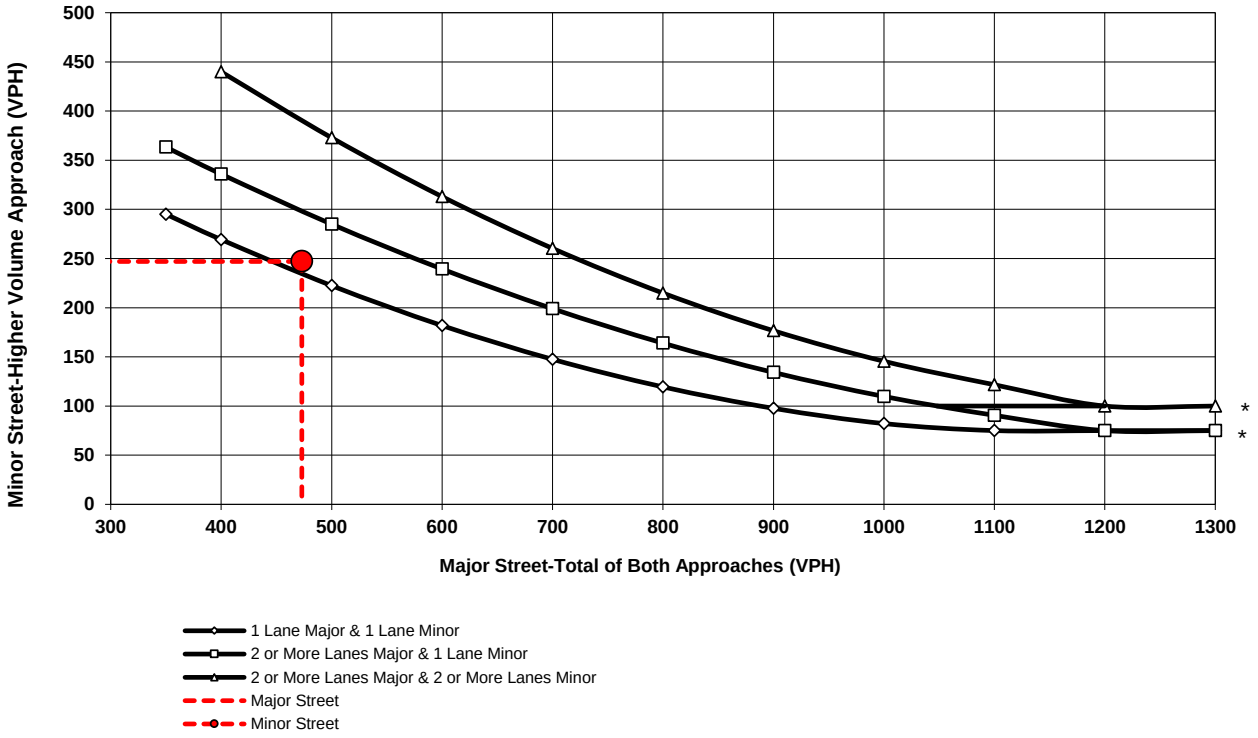
Minor Street: McElwain Road

Total of Both Approaches (VPH):	473	Higher Volume Approach (VPH):	247
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2028 + Ambient Growth + Cumulative Projects + Project (Phase 1 & 2)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Linnell Lane

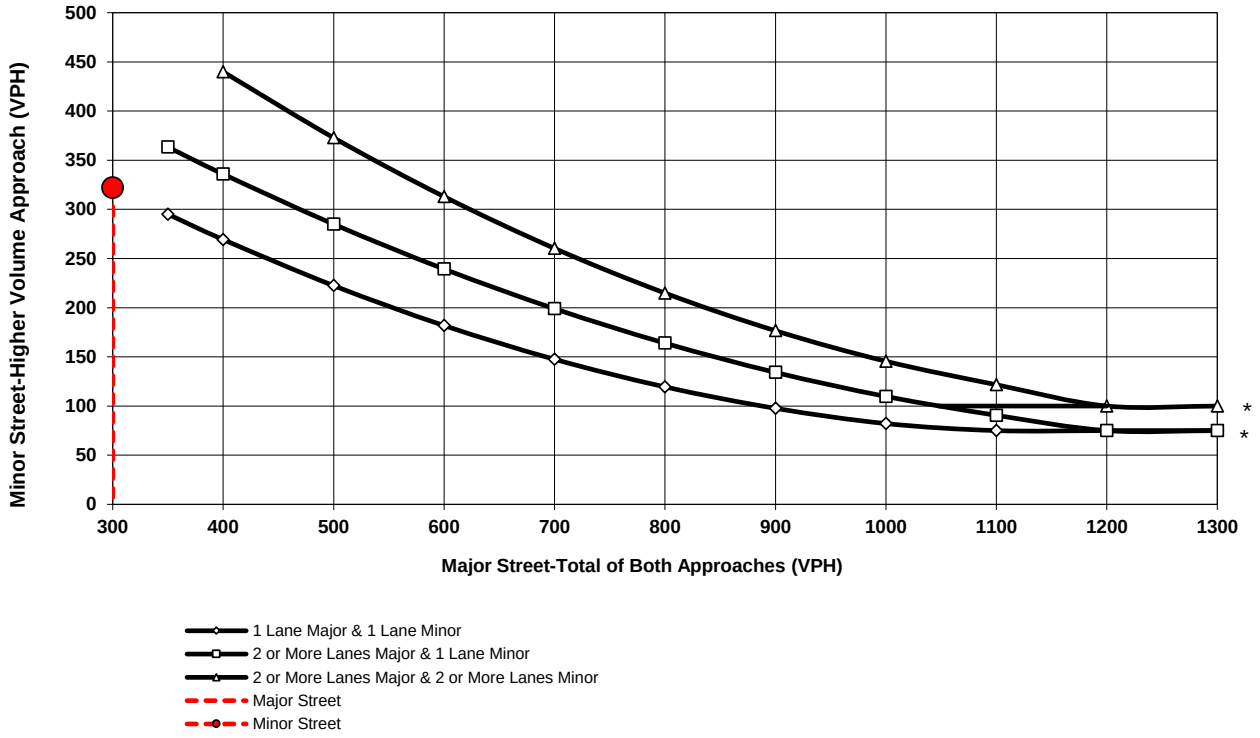
Minor Street: McElwain Road

Total of Both Approaches (VPH):	290	Higher Volume Approach (VPH):	322
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

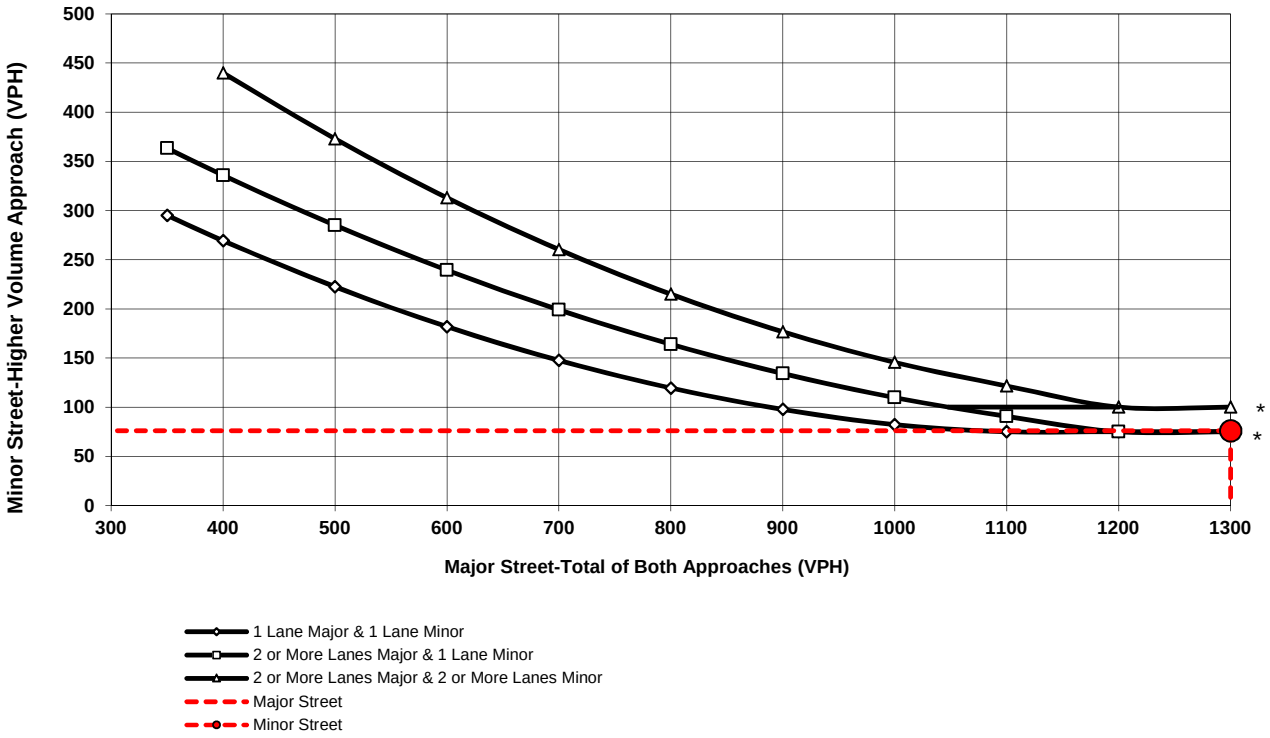
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**2000**	Higher Volume Approach (VPH):	**76**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

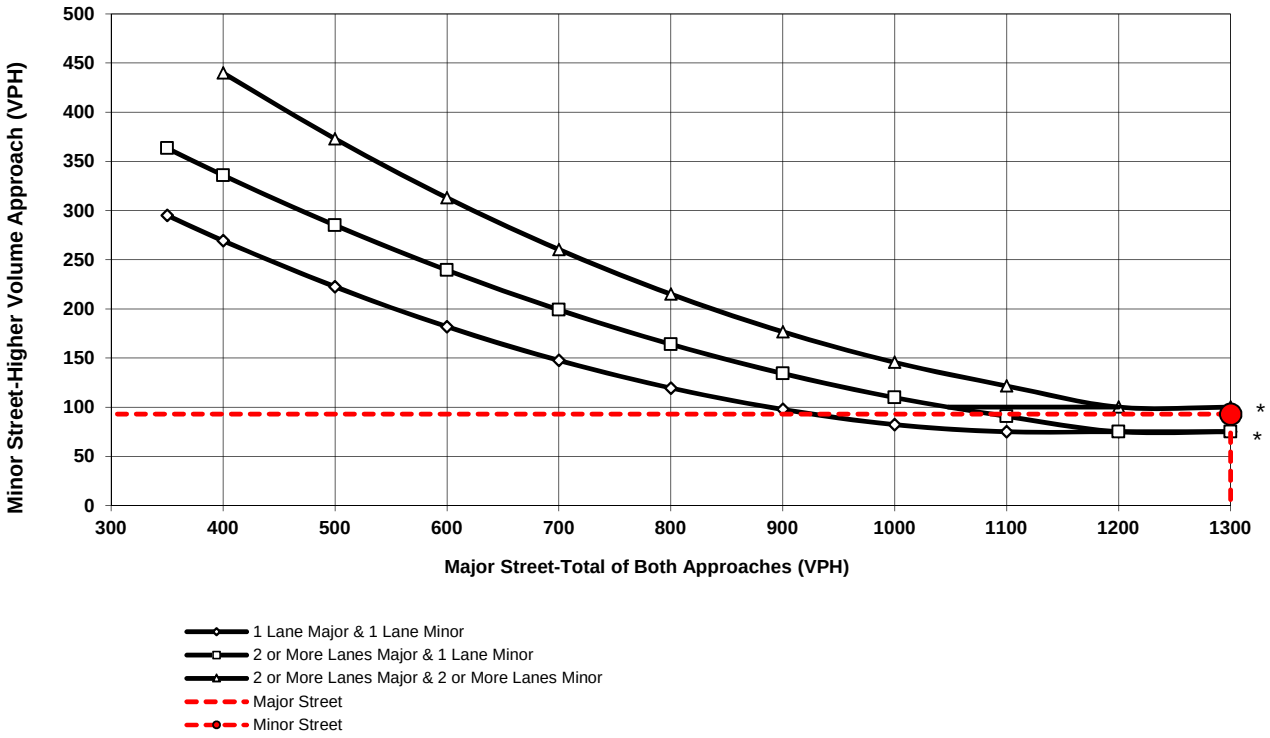
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**2531**	Higher Volume Approach (VPH):	**93**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

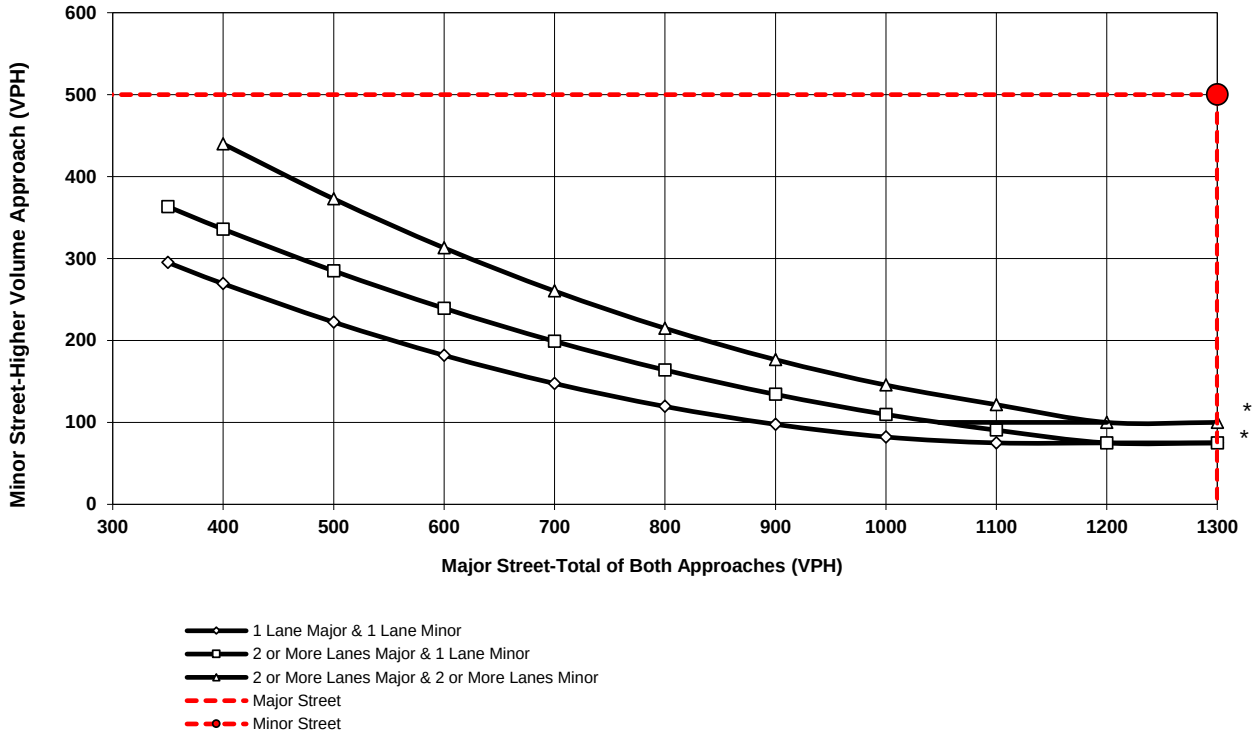
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	1771	Higher Volume Approach (VPH):	509
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

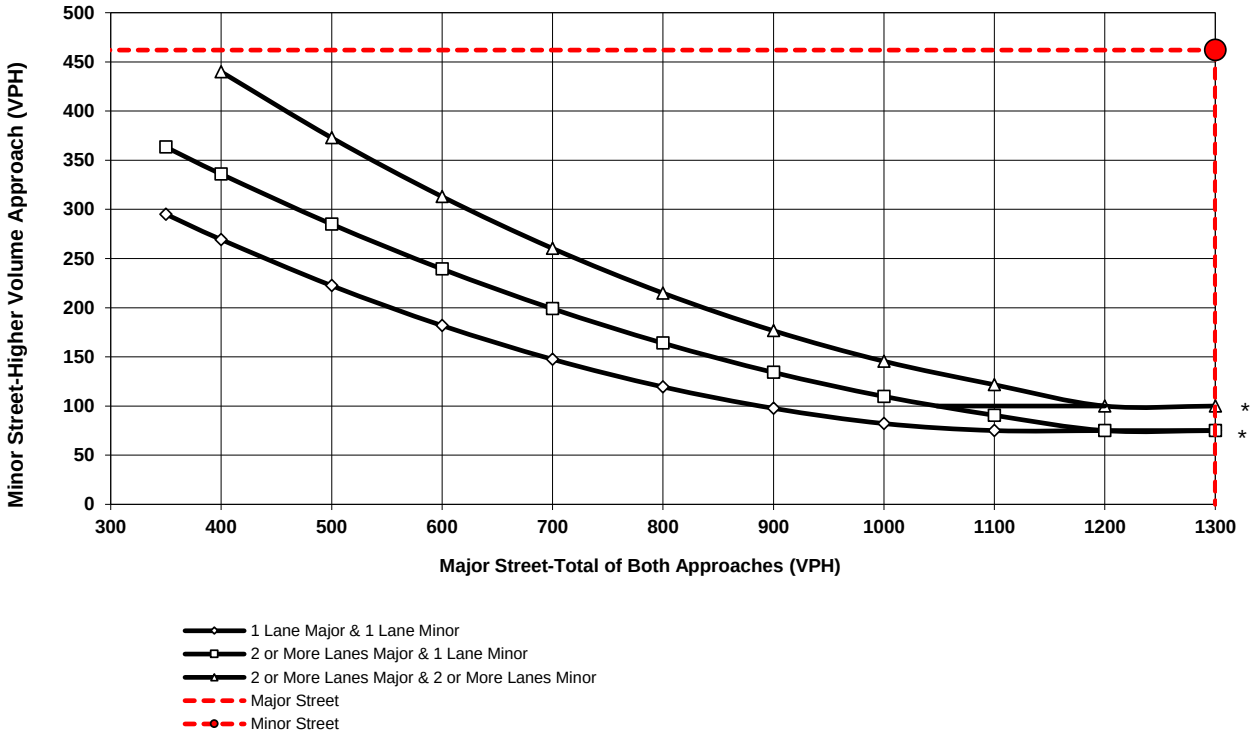
Major Street: Scott Road **Minor Street:** Murrieta Road

Total of Both Approaches (VPH):	2239	Higher Volume Approach (VPH):	462
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Keller Road

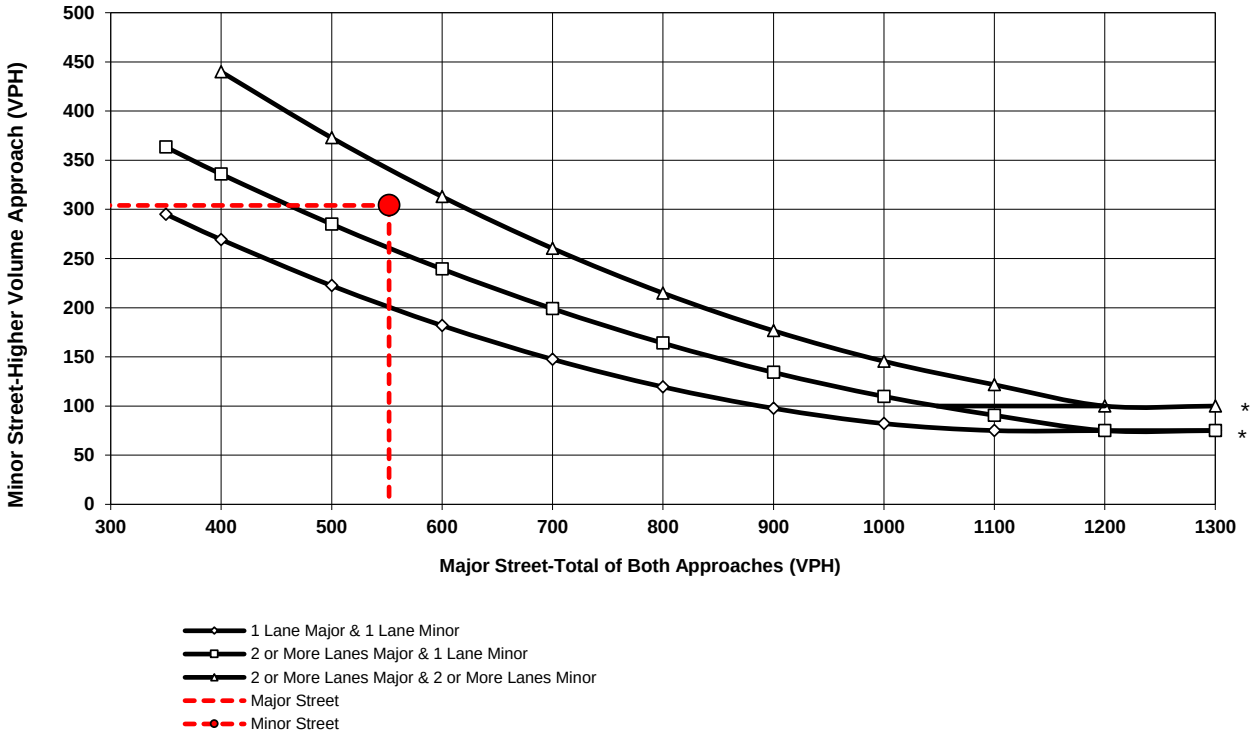
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	552	Higher Volume Approach (VPH):	304
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Keller Road

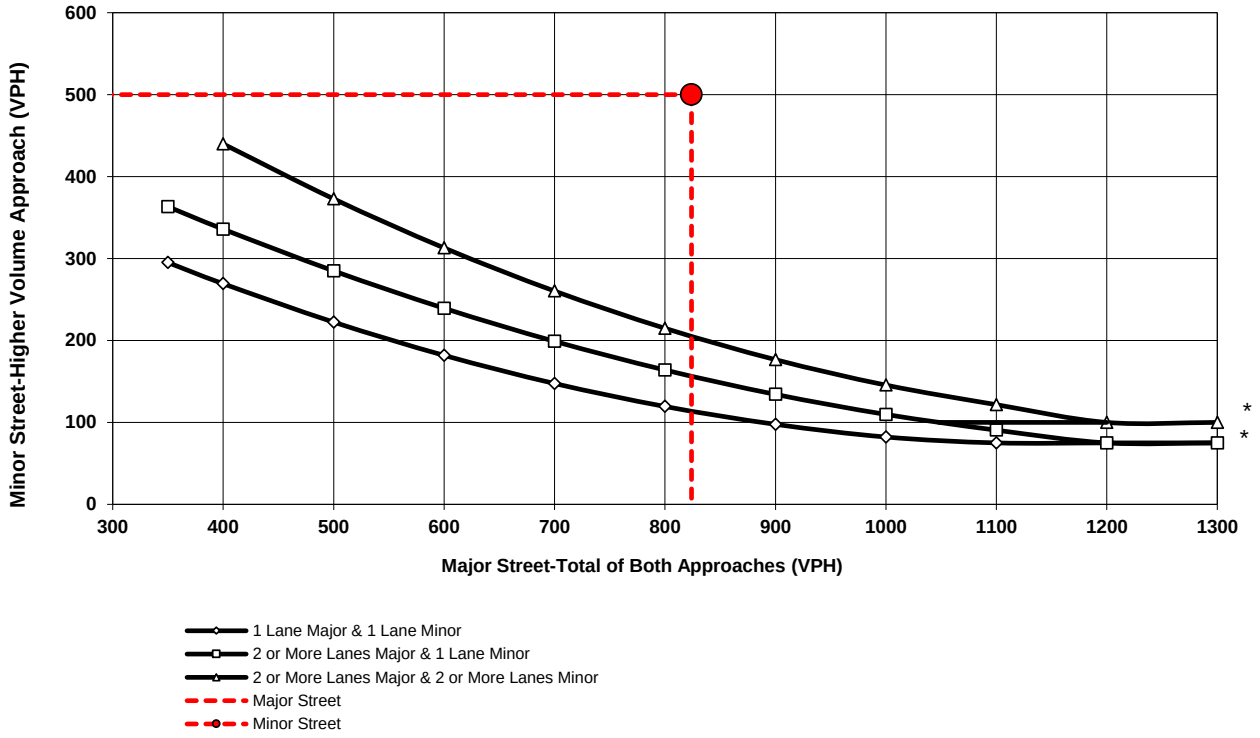
Minor Street: Zeiders Road

Total of Both Approaches (VPH):	824	Higher Volume Approach (VPH):	567
Number of Approach Lanes:	2	Number of Approach Lanes:	2

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

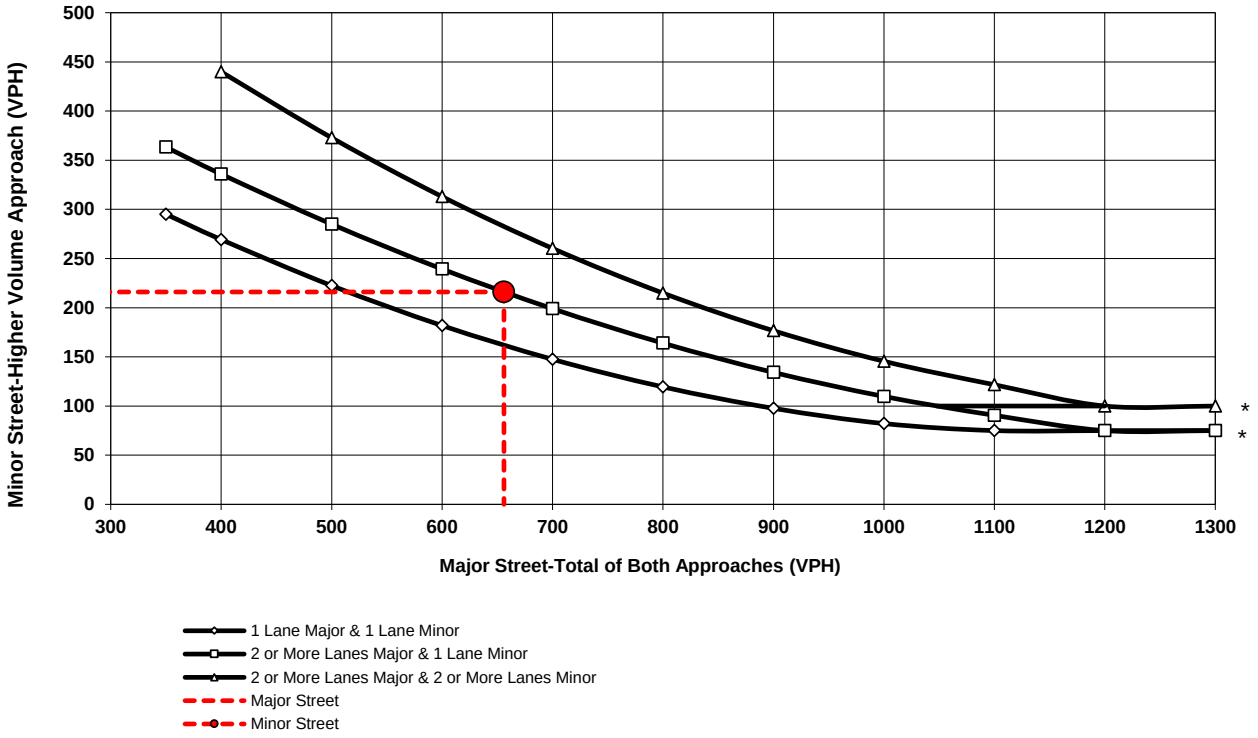
Minor Street: McElwain Road

Total of Both Approaches (VPH):	656	Higher Volume Approach (VPH):	216
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Linnell Lane

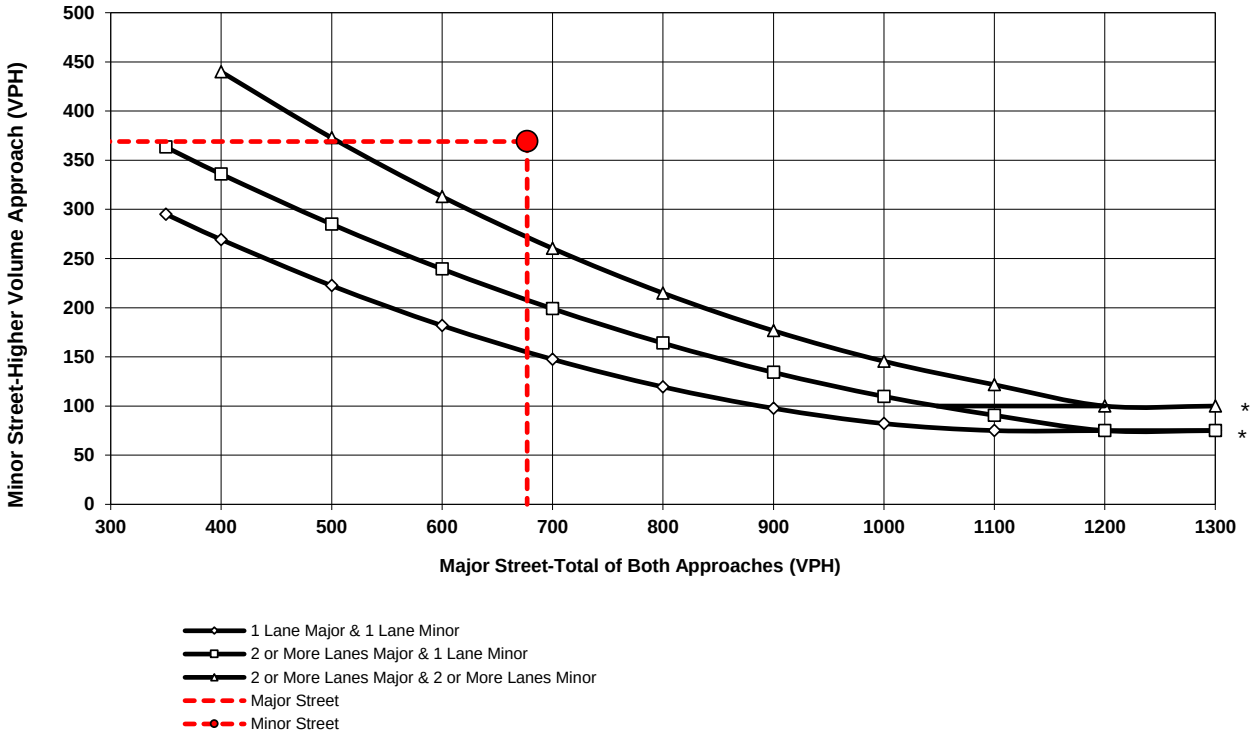
Minor Street: McElwain Road

Total of Both Approaches (VPH):	677	Higher Volume Approach (VPH):	369
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

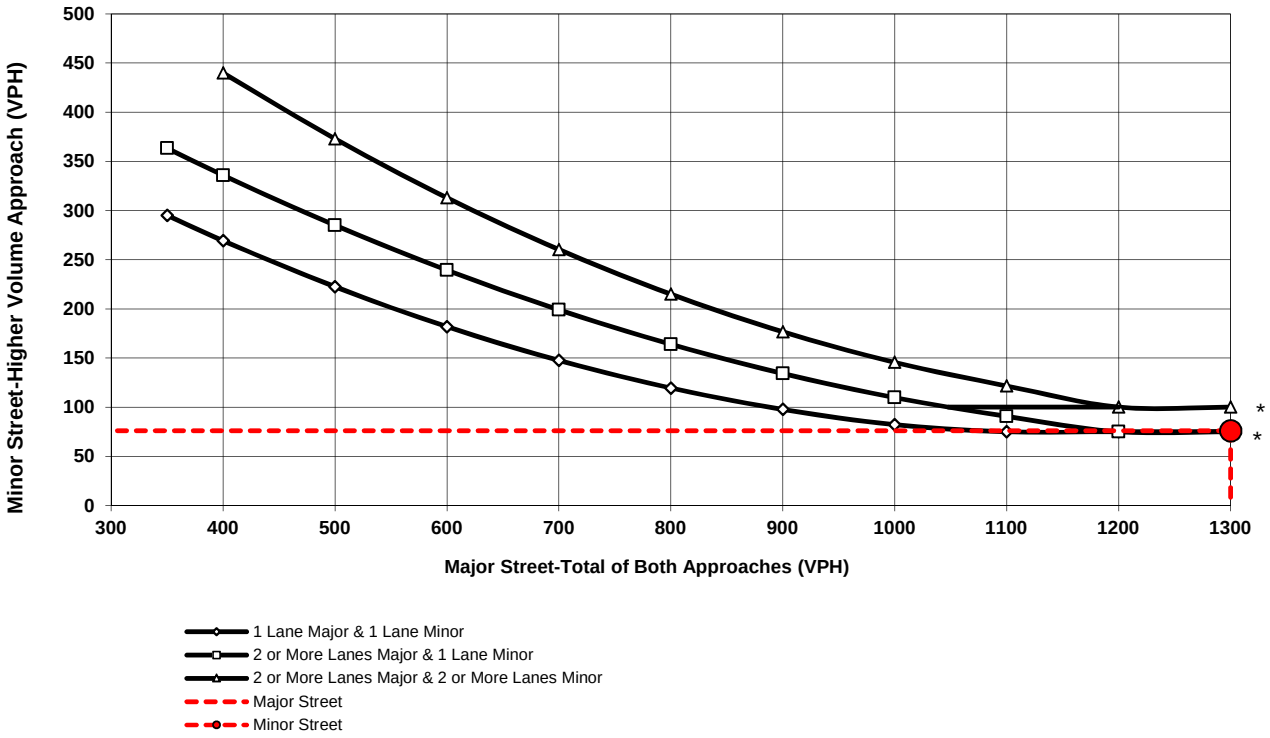
Major Street: Bundy Canyon Road **Minor Street:** Sunset Avenue

Total of Both Approaches (VPH):	2314	Higher Volume Approach (VPH):	76
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

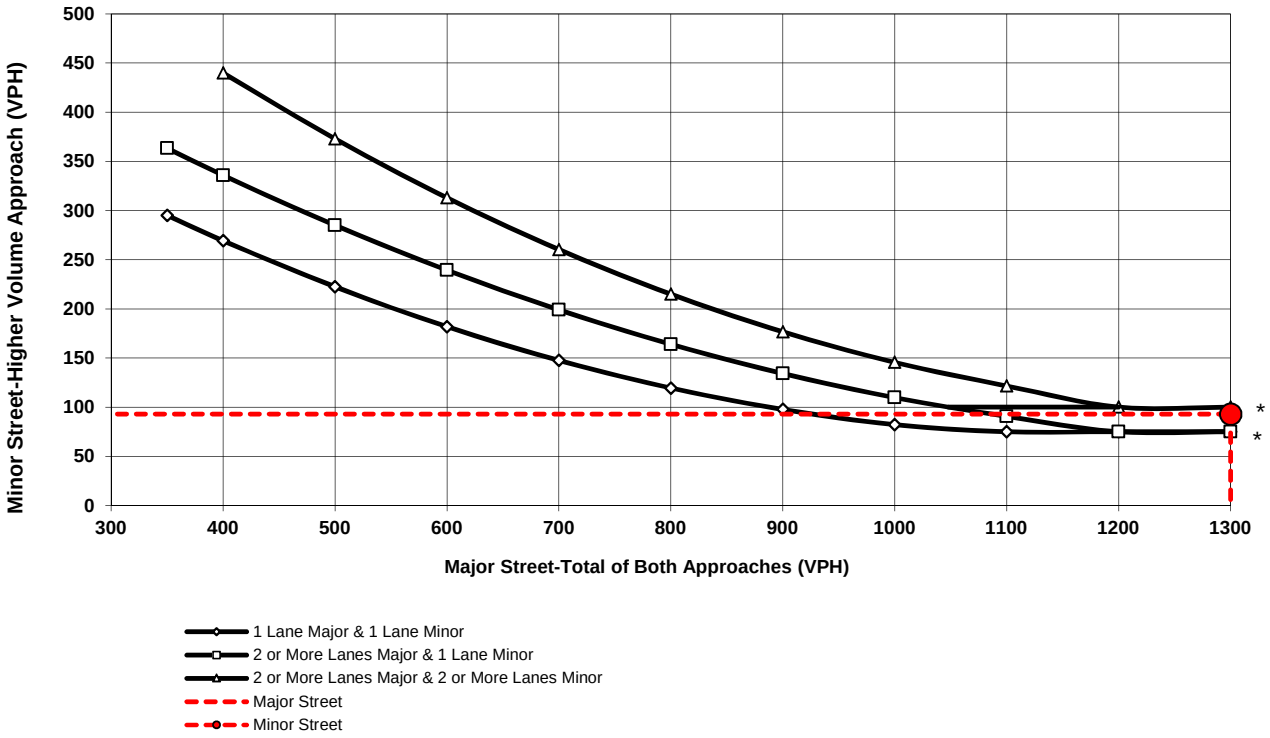
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**2989**	Higher Volume Approach (VPH):	**93**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

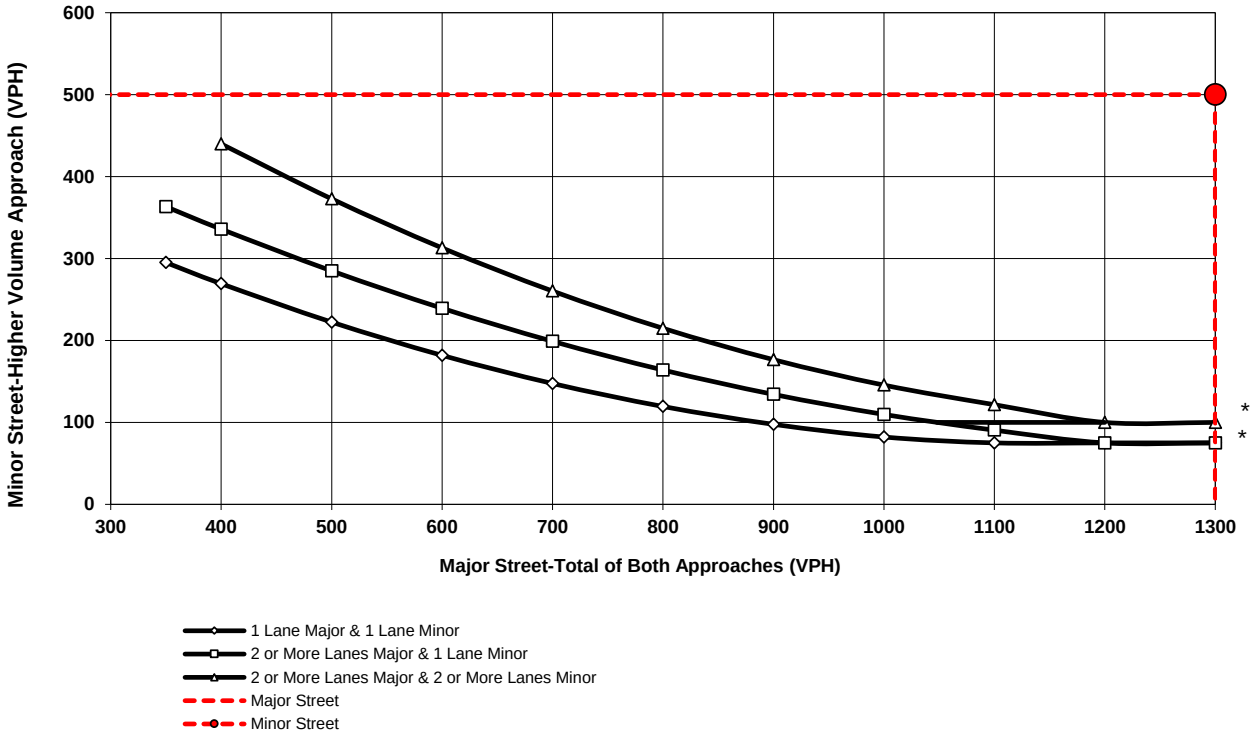
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2277	Higher Volume Approach (VPH):	637
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

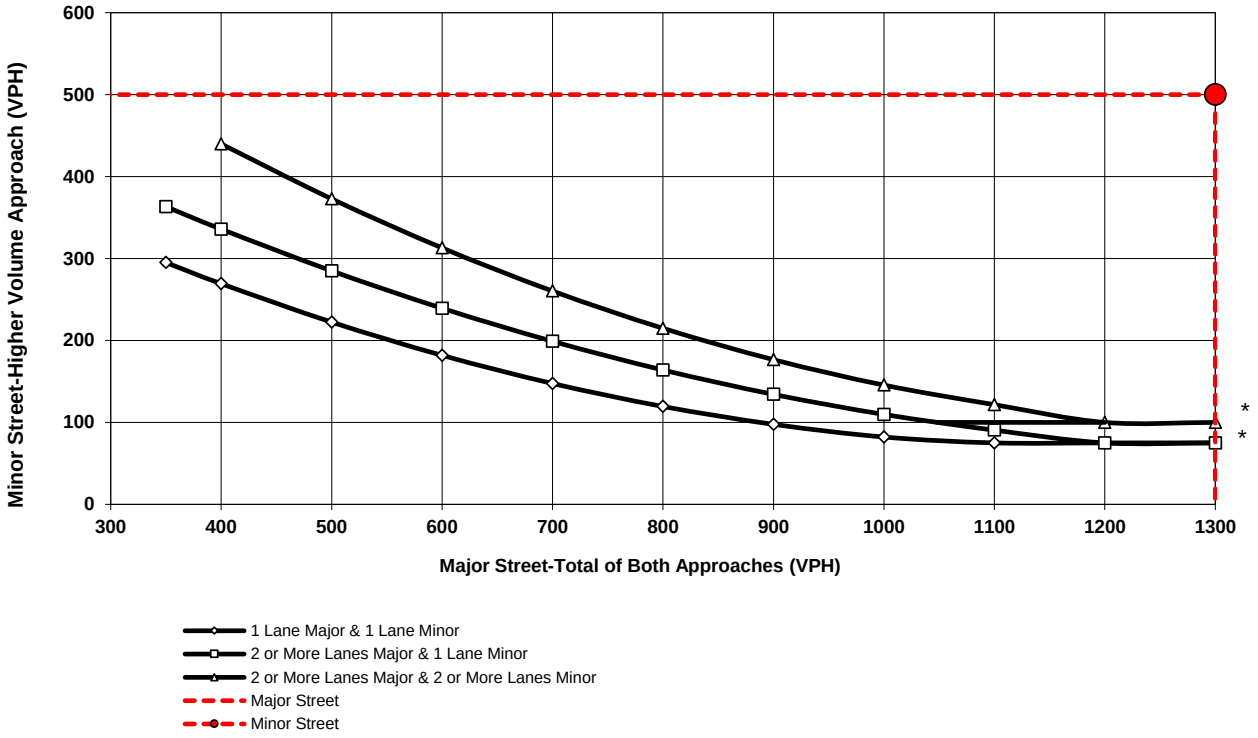
Major Street: Scott Road **Minor Street:** Murrieta Road

Total of Both Approaches (VPH):	2916	Higher Volume Approach (VPH):	696
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

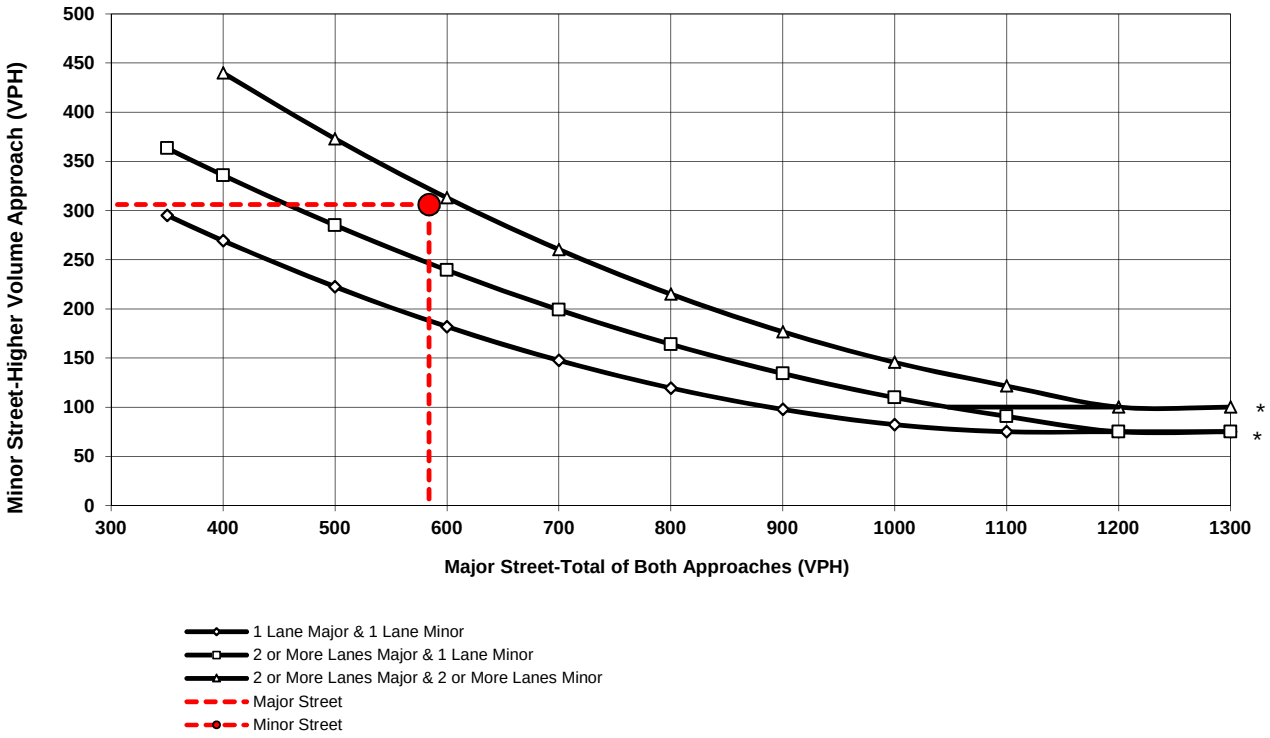
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**584**	Higher Volume Approach (VPH):	**306**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

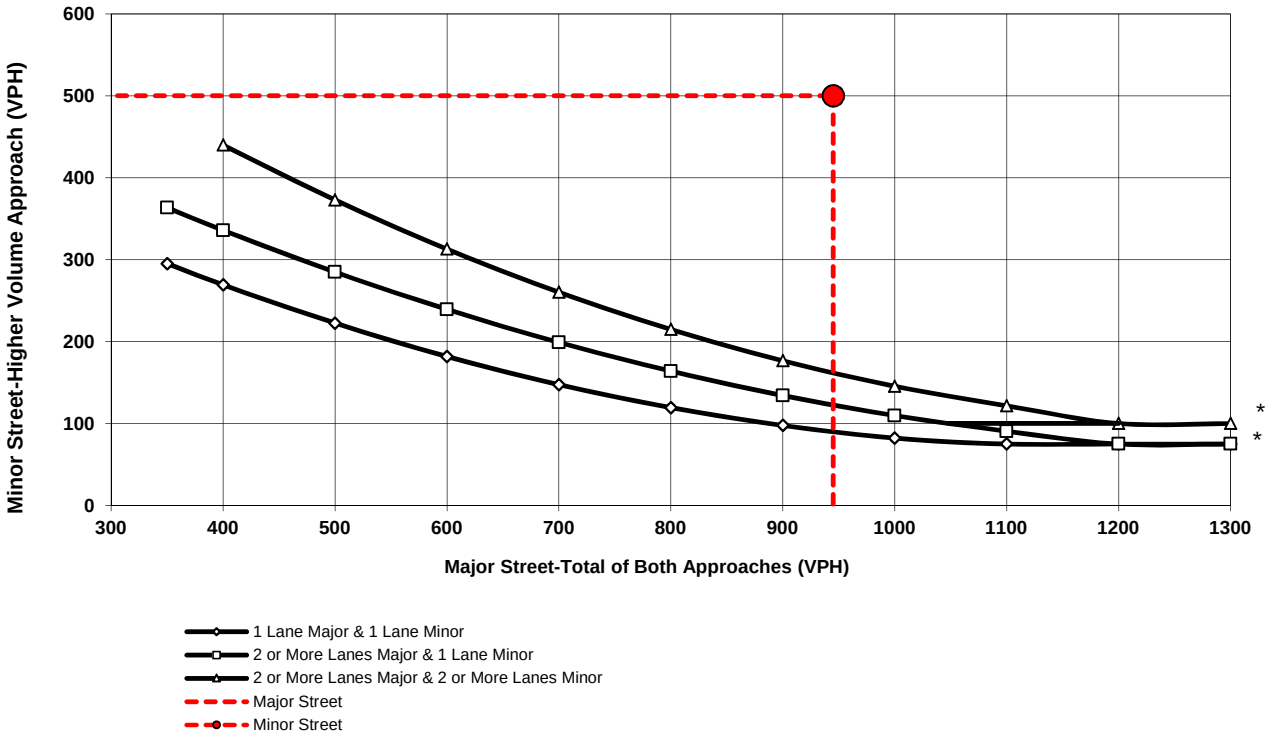
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**945**	Higher Volume Approach (VPH):	**543**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

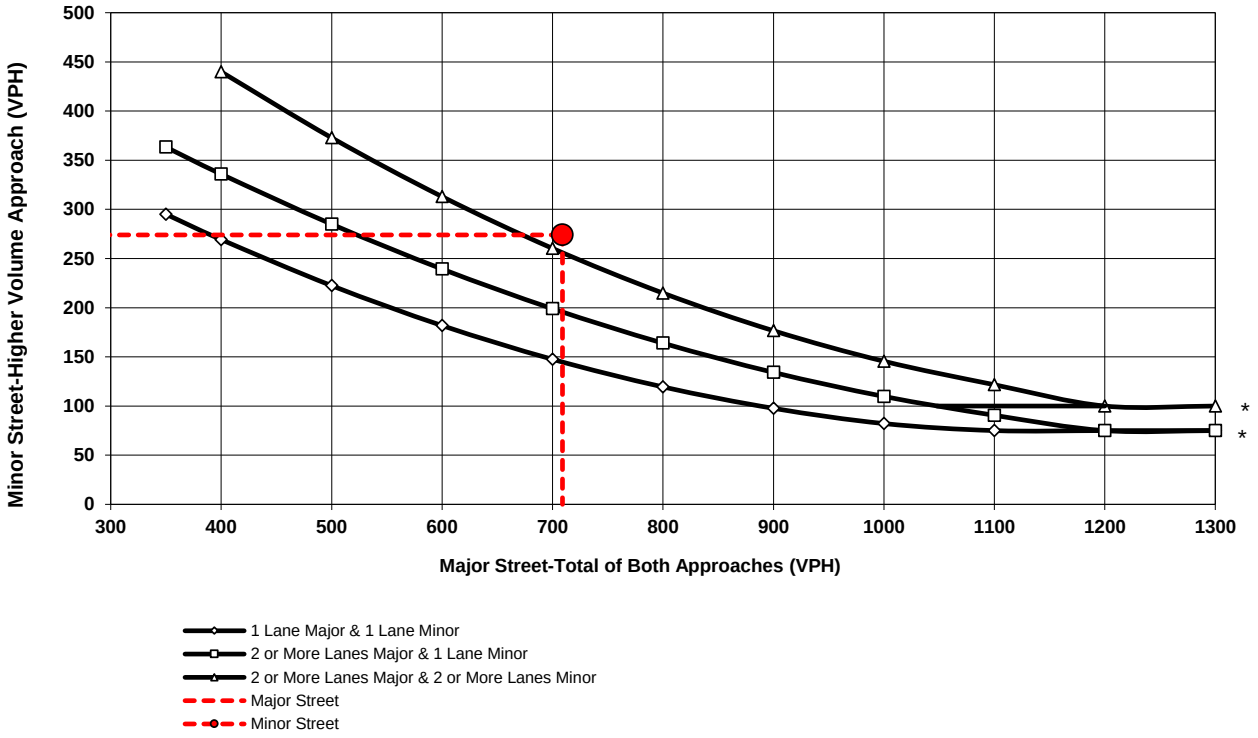
Minor Street: McElwain Road

Total of Both Approaches (VPH):	709	Higher Volume Approach (VPH):	274
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2031 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Linnell Lane

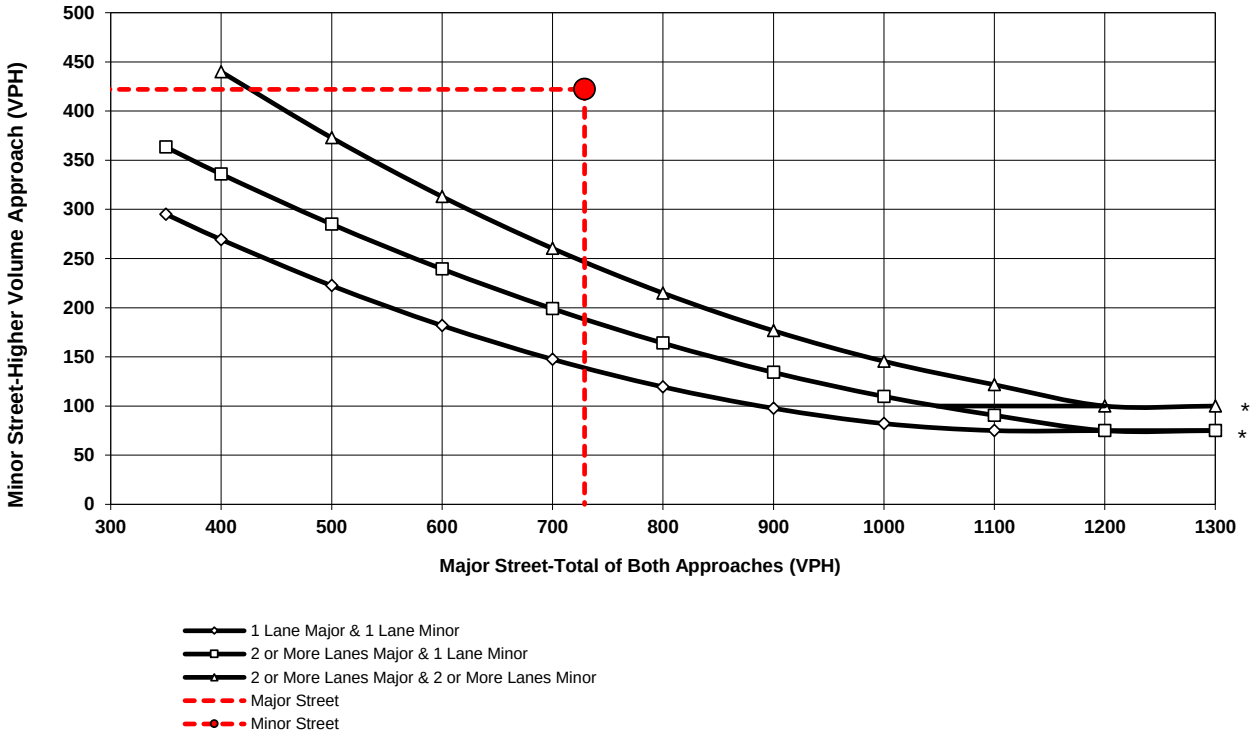
Minor Street: McElwain Road

Total of Both Approaches (VPH):	729	Higher Volume Approach (VPH):	422
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

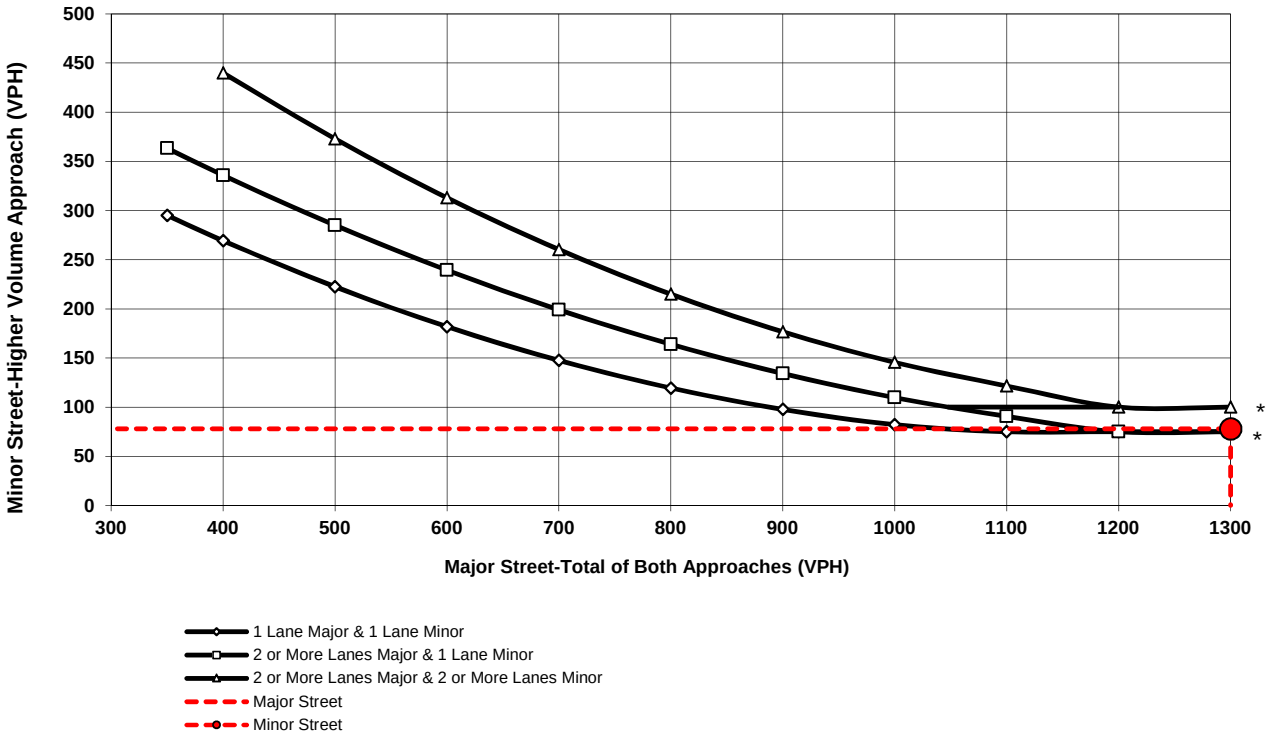
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**2501**	Higher Volume Approach (VPH):	**78**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

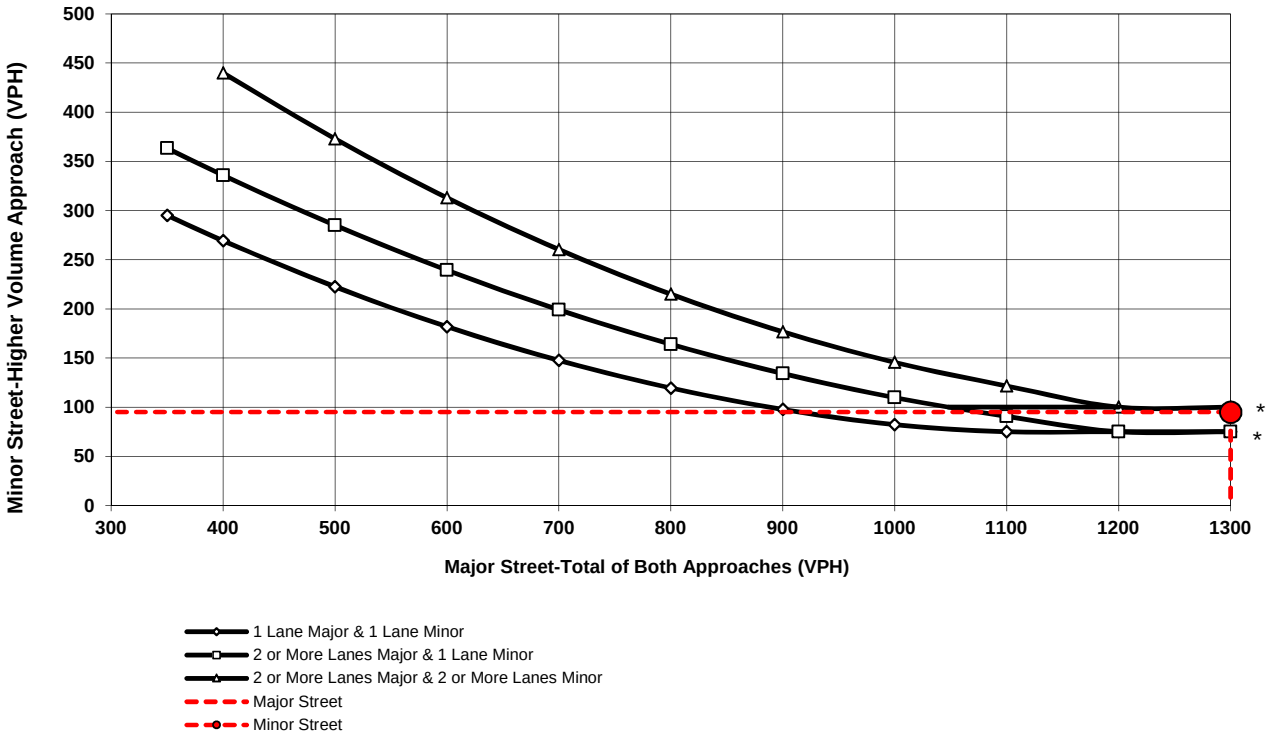
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**3106**	Higher Volume Approach (VPH):	**95**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

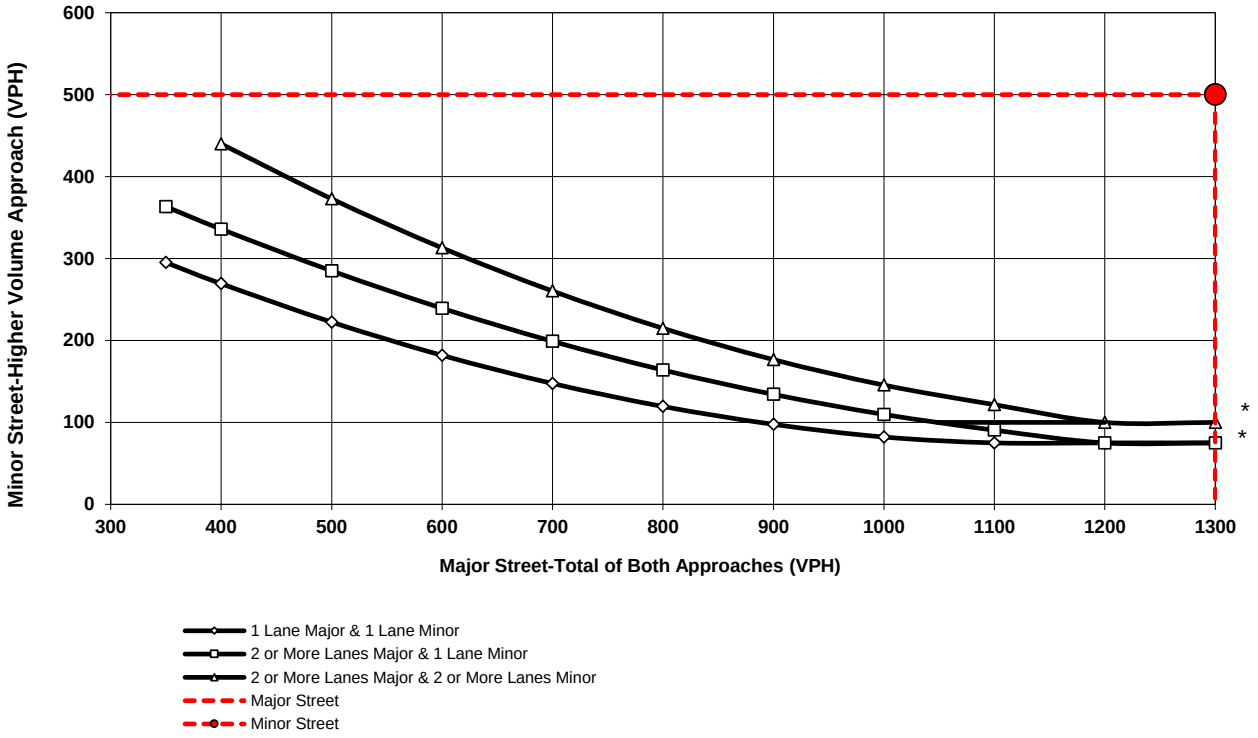
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2360	Higher Volume Approach (VPH):	748
Number of Approach Lanes:	3	Number of Approach Lanes:	2

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Scott Road

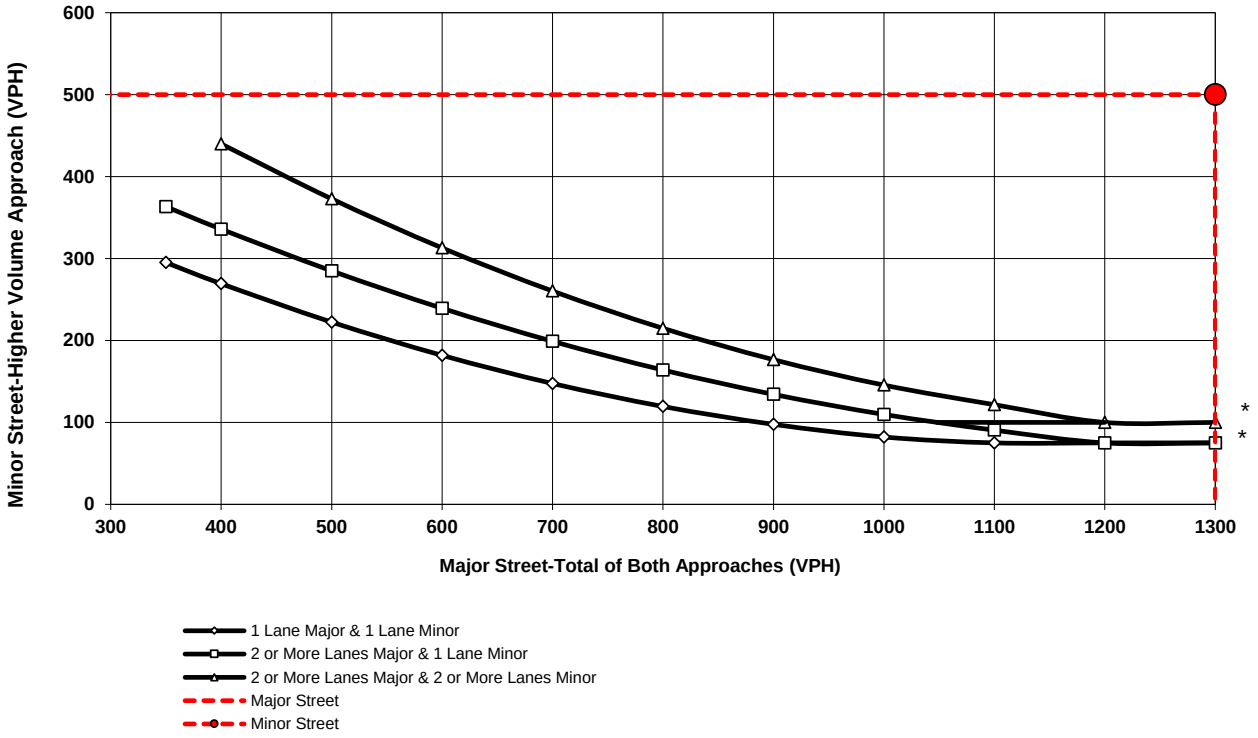
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2949	Higher Volume Approach (VPH):	839
Number of Approach Lanes:	3	Number of Approach Lanes:	2

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

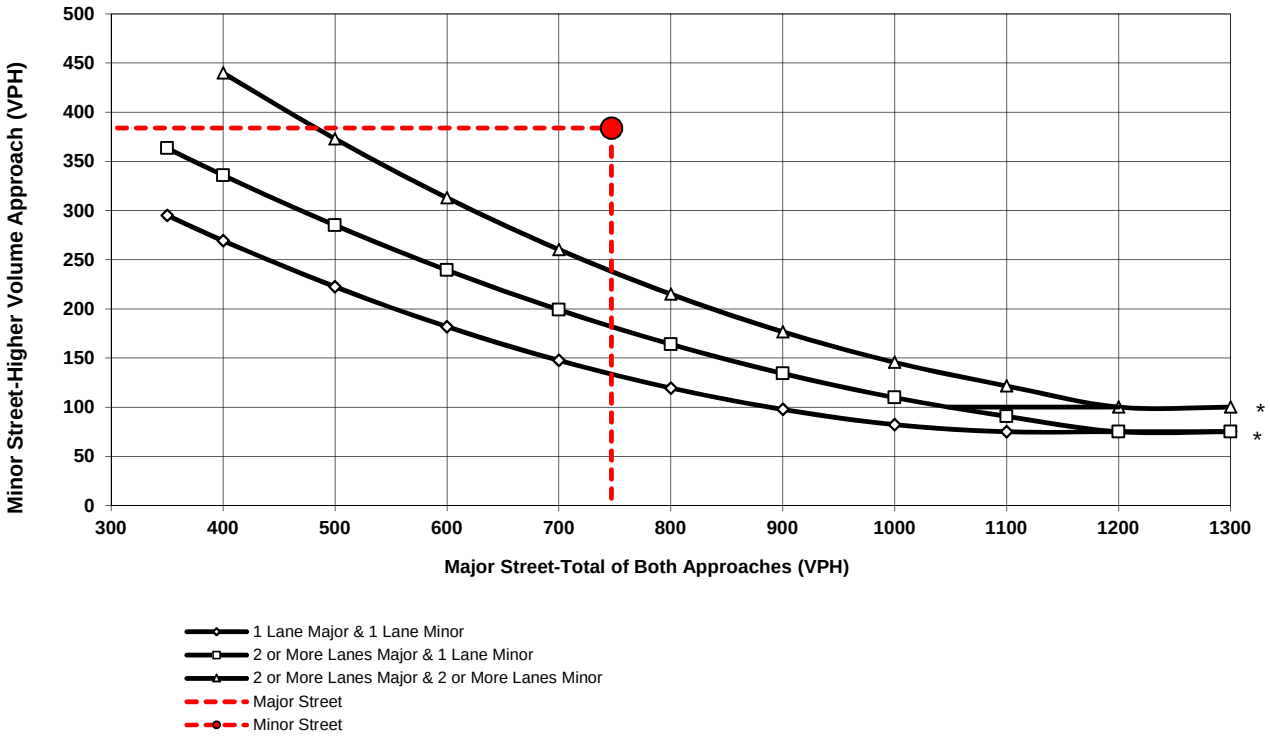
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**747**	Higher Volume Approach (VPH):	**384**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

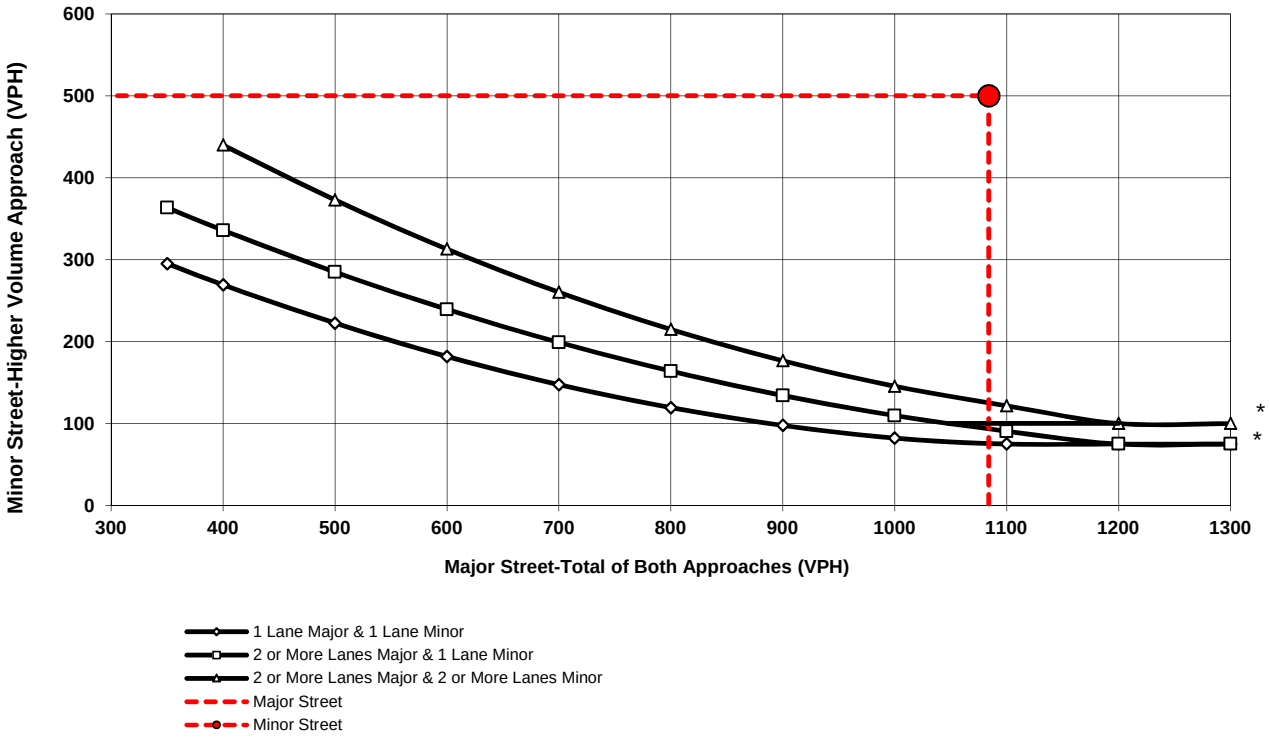
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**1084**	Higher Volume Approach (VPH):	**659**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

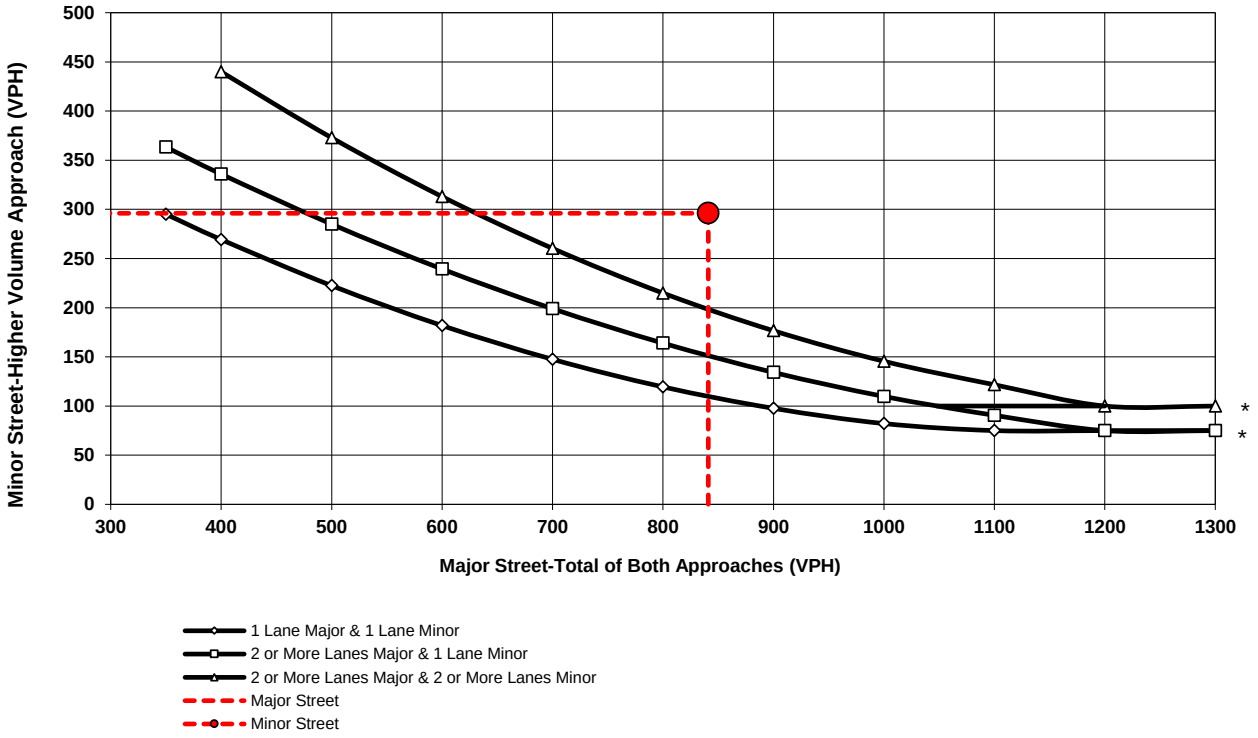
Major Street: **Linnell Lane** **Minor Street:** **McElwain Road**

Total of Both Approaches (VPH):	**841**	Higher Volume Approach (VPH):	**296**
Number of Approach Lanes:	**1**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Linnell Lane

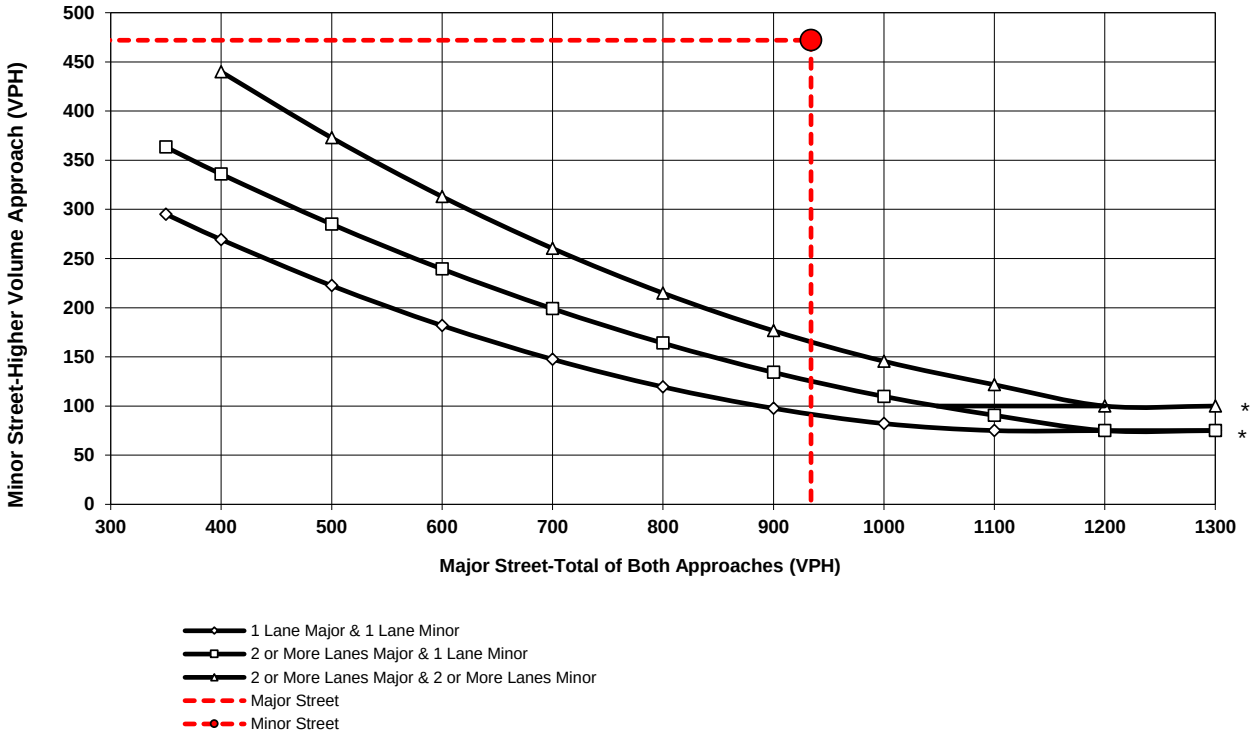
Minor Street: McElwain Road

Total of Both Approaches (VPH):	934	Higher Volume Approach (VPH):	472
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Bundy Canyon Road

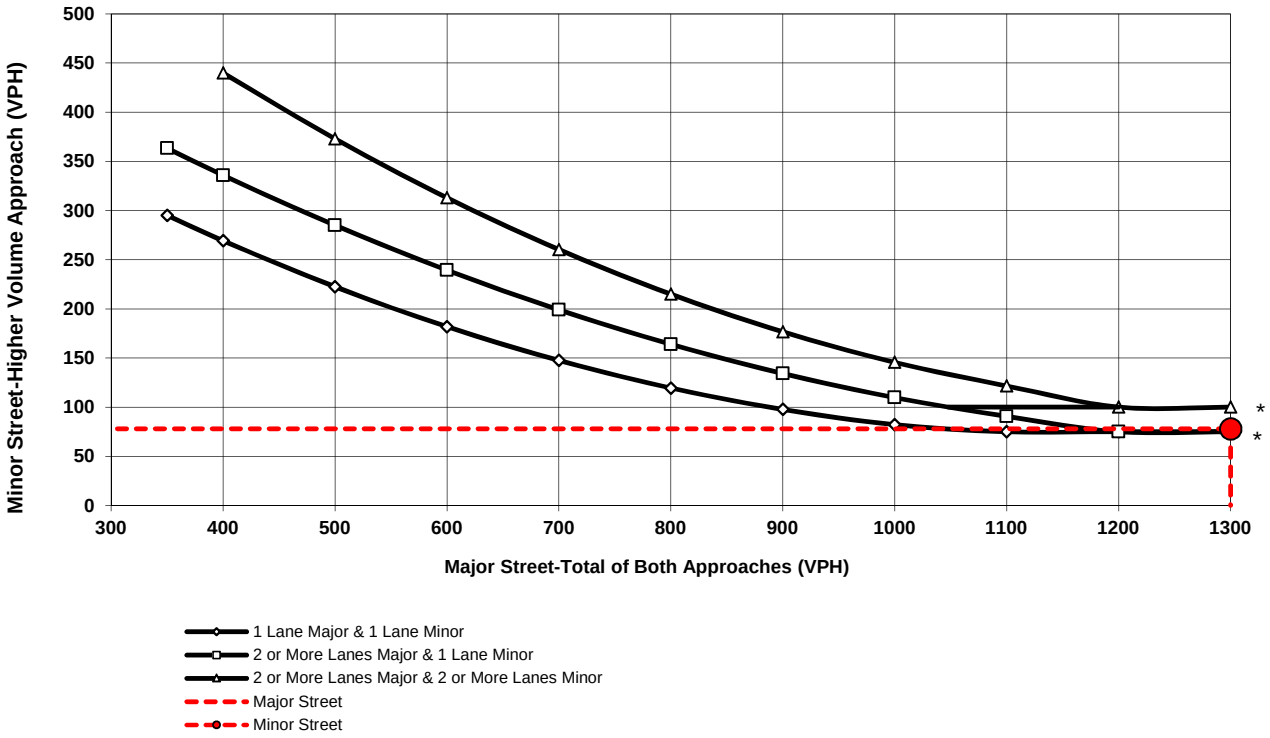
Minor Street: Sunset Avenue

Total of Both Approaches (VPH):	2526	Higher Volume Approach (VPH):	78
Number of Approach Lanes:	2	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

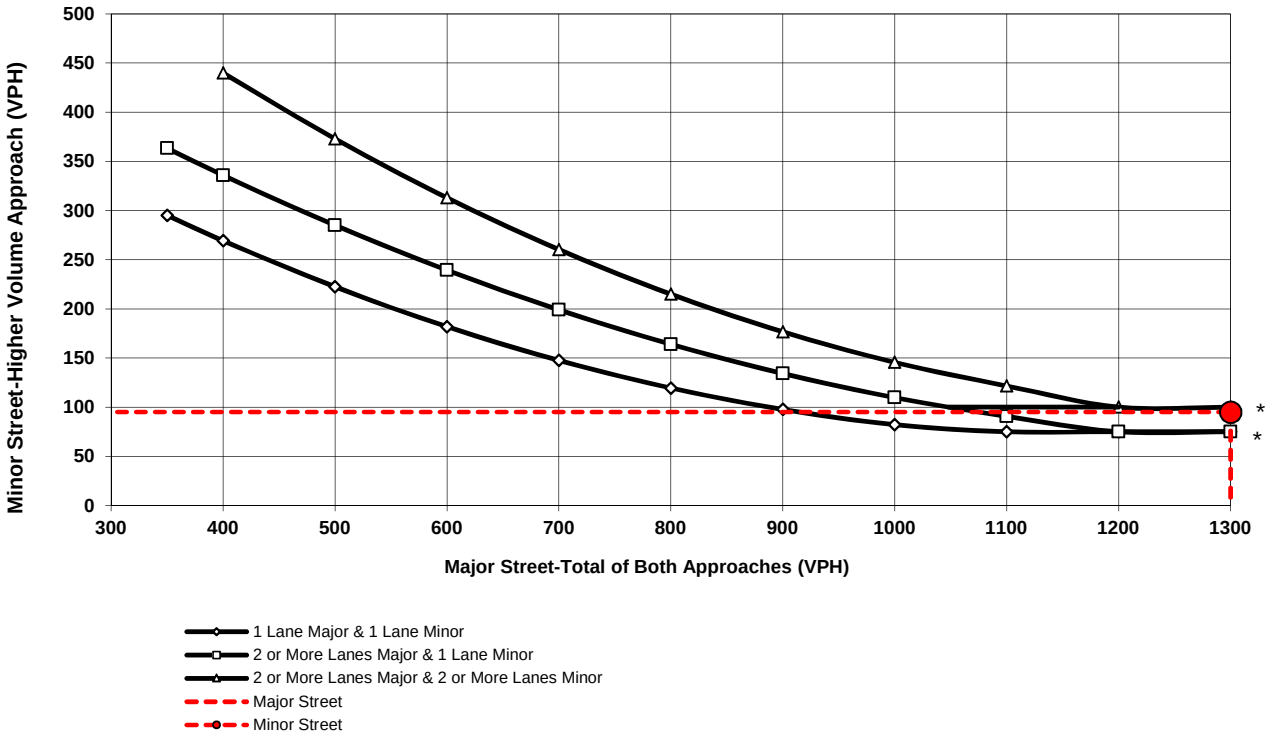
Major Street: **Bundy Canyon Road** **Minor Street:** **Sunset Avenue**

Total of Both Approaches (VPH):	**3139**	Higher Volume Approach (VPH):	**95**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**1**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Scott Road

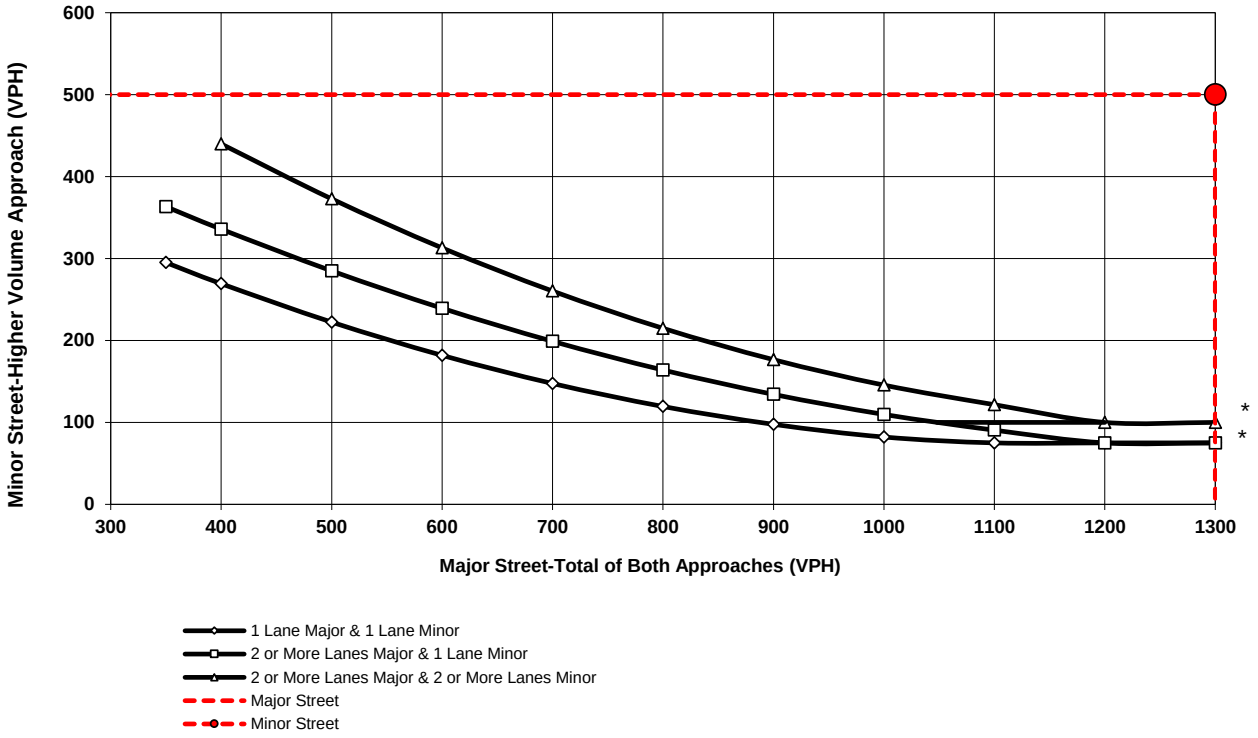
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2394	Higher Volume Approach (VPH):	748
Number of Approach Lanes:	3	Number of Approach Lanes:	2

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Scott Road

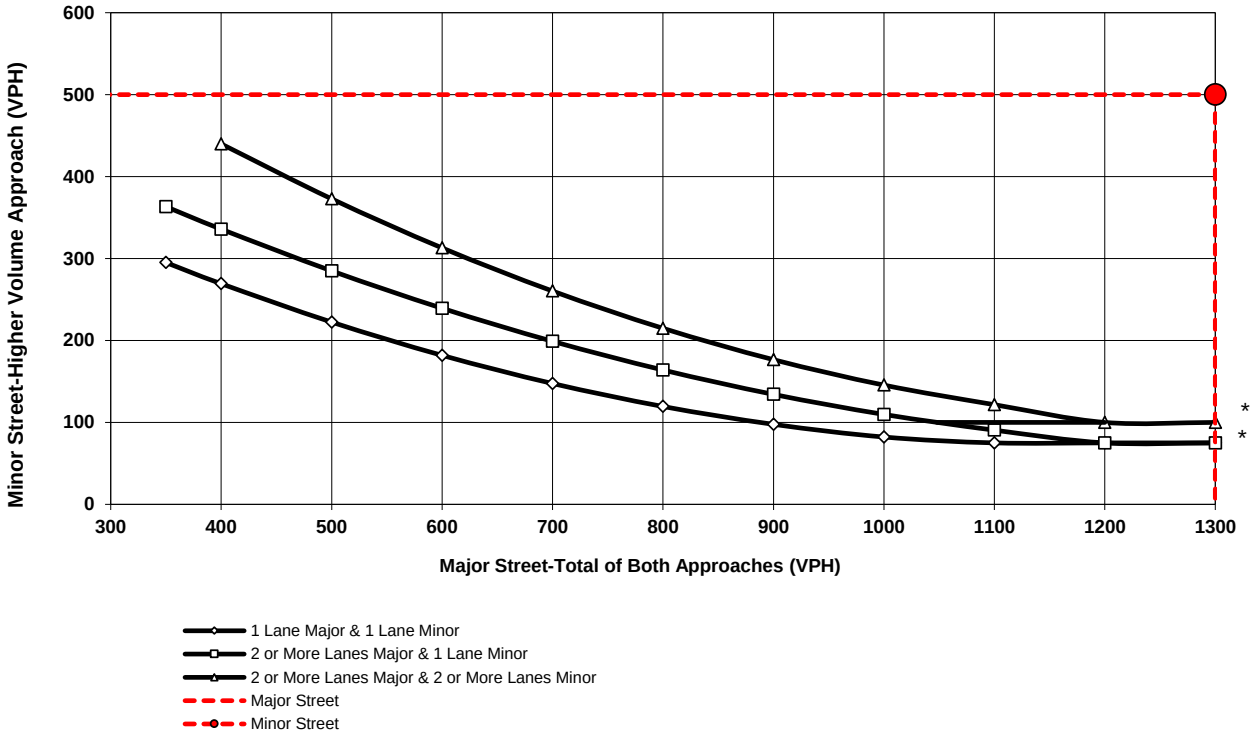
Minor Street: Murrieta Road

Total of Both Approaches (VPH):	2994	Higher Volume Approach (VPH):	839
Number of Approach Lanes:	3	Number of Approach Lanes:	2

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

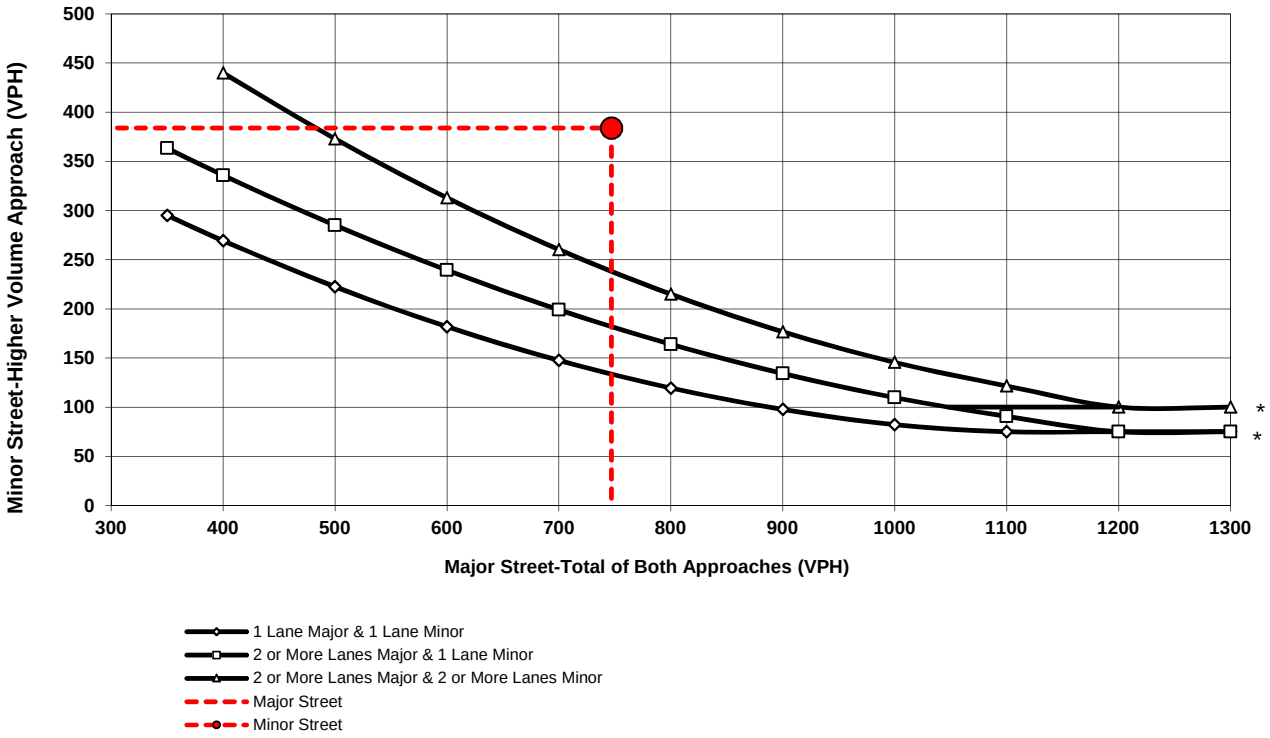
Major Street: **Keller Road** **Minor Street:** **Zeiders Road**

Total of Both Approaches (VPH):	**747**	Higher Volume Approach (VPH):	**384**
Number of Approach Lanes:	**2**	Number of Approach Lanes:	**2**

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

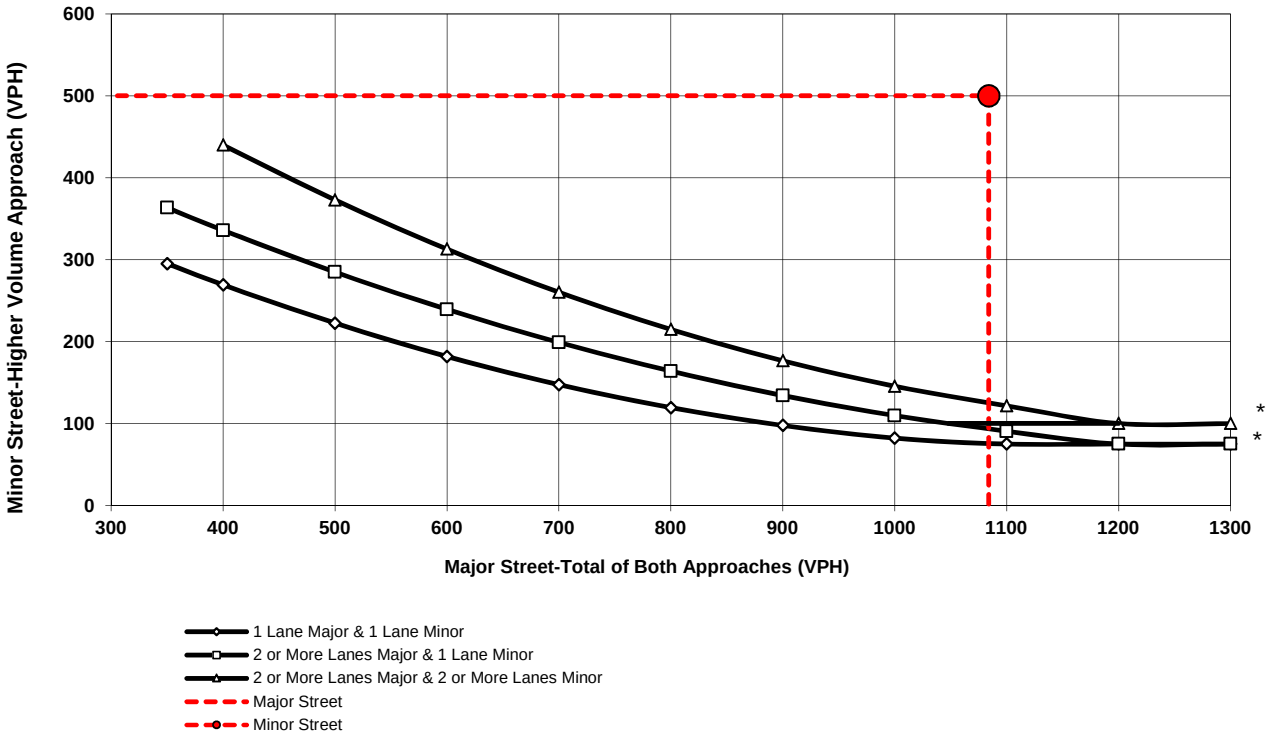
Major Street: Keller Road **Minor Street:** Zeiders Road

Total of Both Approaches (VPH):	1084	Higher Volume Approach (VPH):	659
Number of Approach Lanes:	2	Number of Approach Lanes:	2

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: AM

Major Street: Linnell Lane

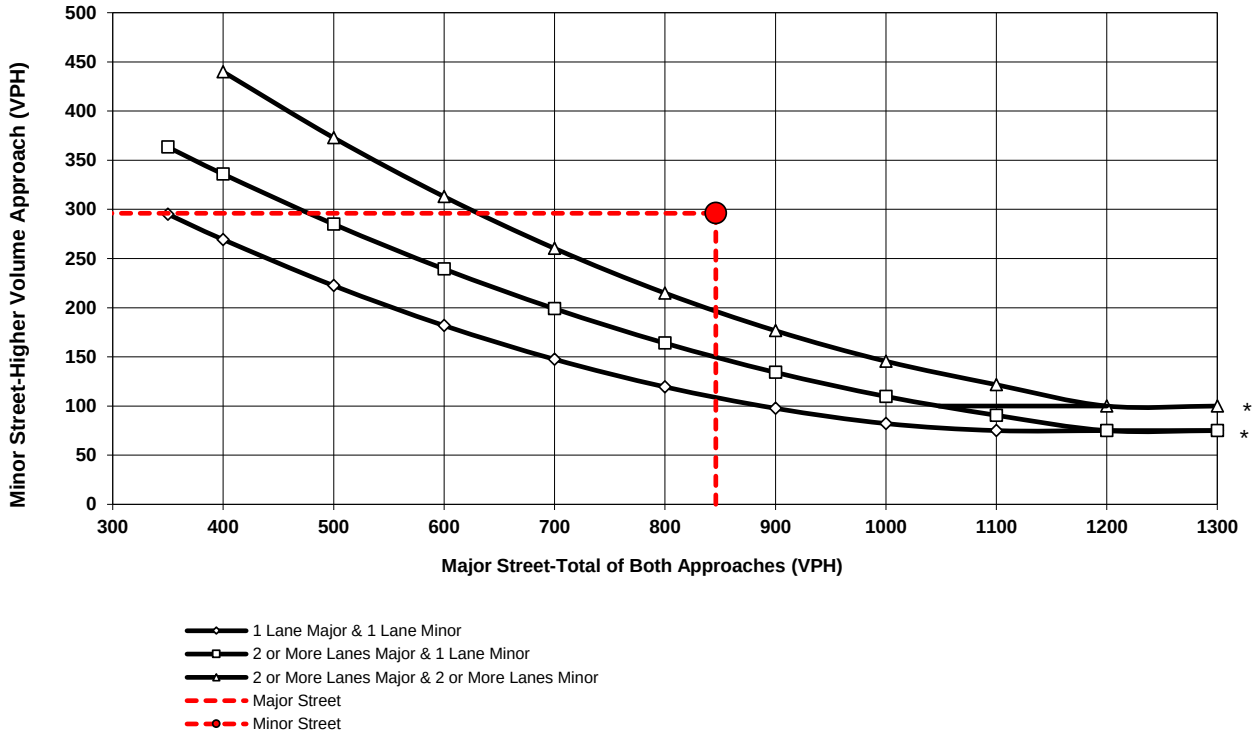
Minor Street: McElwain Road

Total of Both Approaches (VPH):	846	Higher Volume Approach (VPH):	296
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Year 2035 + Ambient Growth + Cumulative Projects + Project (Buildout)
PEAK HOUR VOLUME WARRANT
RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: PM

Major Street: Linnell Lane

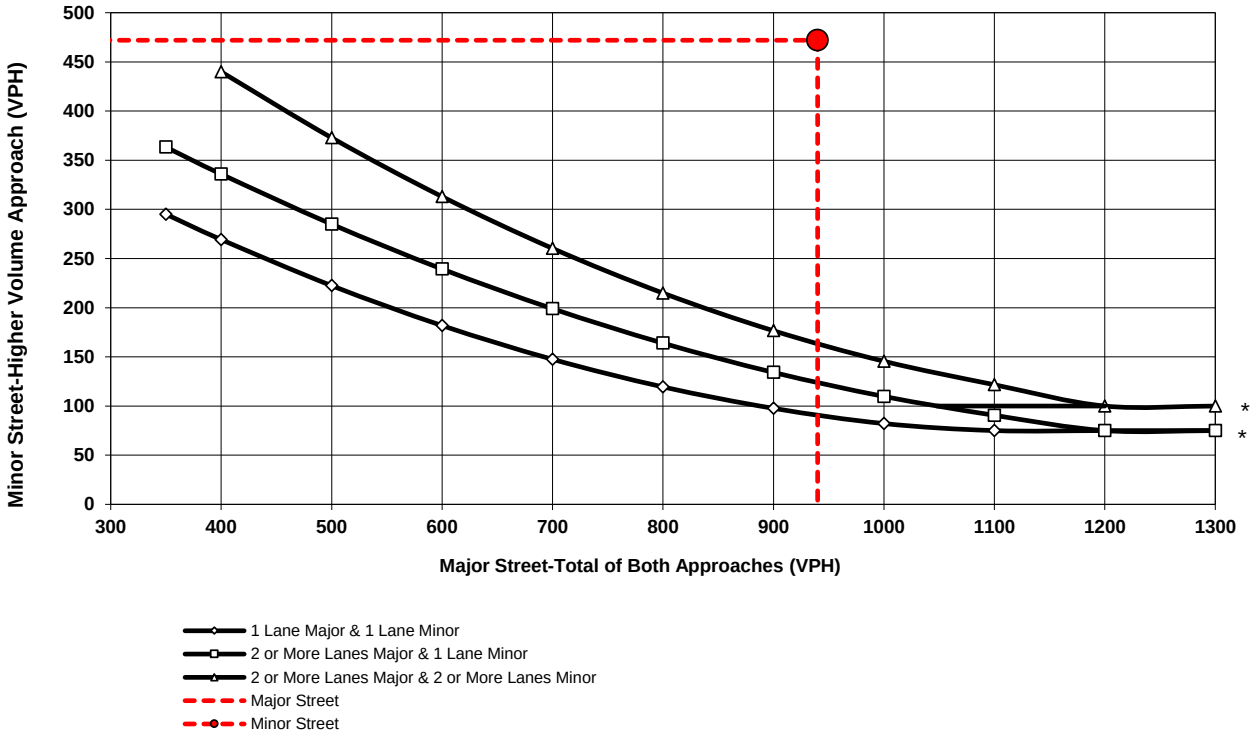
Minor Street: McElwain Road

Total of Both Approaches (VPH):	940	Higher Volume Approach (VPH):	472
Number of Approach Lanes:	1	Number of Approach Lanes:	1

Environmentally Superior Alternative

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:
100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

APPENDIX K
Internal Intersection and Roadways Needs Assessment

Michael Baker INTERNATIONAL

We Make a Difference

September 6, 2018

Richard Robotta
Benchmark Pacific
550 Laguna Drive, Suite B
Carlsbad, CA 92008

Re: Murrieta Hills Specific Plan Internal Intersections Needs Assessment

This technical memo has been prepared by Michael Baker International to determine the lane configurations and traffic controls that would be needed for the primary intersections and street sections internal and adjacent to the Murrieta Hills Specific Plan site. Intersection operations were evaluated under the following development phases during the AM and PM peak hours:

- Phase One (Year 2023 – Existing + Growth + Cumulative Projects + Project)
- Phase Two (Year 2028 – Existing + Growth + Cumulative Projects + Project)
- Phase Three (Year 2031 – Existing + Growth + Cumulative Projects + Project)
- Buildout Year 2035 With Project

Environmentally Preferred Alternative Assessment

The above-listed development phases are consistent with the scenarios evaluated in the *Murrieta Hills Specific Plan Traffic Impact Analysis* (Michael Baker International, September 2018). The forecast background traffic volumes (existing plus ambient growth plus cumulative projects) and project trip generation are based on the Environmentally Preferred Alternative for each development phase and used to develop the forecast traffic volumes for the internal study intersections that were evaluated in this needs assessment. This analysis focuses on the Environmentally Preferred Alternative to be consistent with the Specific Plan and suggested to be the preferred alternative. However, an analysis of the Proposed Project is also included in this technical memo which focuses on the intersections along McElwain Road since the Proposed Project increases the commercial retail square footage compared to the Environmentally Preferred Alternative.

Based on our review of the proposed Circulation Plan for the *Murrieta Hills Specific Plan* (Chapter 5, Figure 5-1), it was determined that the needs assessment would include the following internal intersections based on development phases identified in the Specific Plan:

1. McElwain Road / Keller Road (all development phases)
2. McElwain Road / “C” Street (all development phases)
3. McElwain Road / “J-J” Street (Phase Two through Buildout Year 2035)
4. McElwain Road / “D” Street (all development phases)

5. “C” Street / “D” Street (all development phases)
6. Keller Road / “A” Street – Gloria Road (all development phases)
7. Keller Road / “E” Street – Howard Way (Phase Two through Buildout Year 2035)

Exhibit 1 following this memo illustrates the proposed roadway network and Planning Areas (PA) by development phase within the Specific Plan site and the locations of the above-listed internal intersections.

Forecast traffic volumes during the AM and PM peak hour based on the Environmentally Preferred Alternative were developed for the internal study intersection.

- **Exhibit 2:** Phase 1 (Year 2023) AM and PM Peak Hour Traffic Volumes
- **Exhibit 3:** Phase 1 & 2 (Year 2028) AM and PM Peak Hour Traffic Volumes
- **Exhibit 4:** Phase 1-3 (Year 2031) AM and PM Peak Hour Traffic Volumes
- **Exhibit 5:** Buildout (Year 2035) AM and PM Peak Hour Traffic Volumes

The needed lane configurations and traffic controls for the seven internal intersections were evaluated under each development phase. In addition, the number of travel lanes needed for the primary internal streets within the Specific Plan site was assessed for each development phase. Based on the findings of the operational needs assessment, the following exhibits attached to this memo illustrate the recommended lane configurations and traffic controls of the internal study intersections and street segments:

- **Exhibit 6:** Phase 1 Recommended Internal Intersection and Street Segment Lane Configuration and Traffic Control
- **Exhibit 7:** Phase 1 & 2 Recommended Internal Intersection and Street Segment Lane Configuration and Traffic Control
- **Exhibit 8:** Phase 1-3 Recommended Internal Intersection and Street Segment Lane Configuration and Traffic Control

Exhibit 6 shows that the Phase One roadways would consist of McElwain Road from Keller Road to Linnel Lane, “C” Street, “A” Street, “D” Street and Keller Road. “A” Street and “C” Street through PA-6 will be constructed as a two-lane roadway to provide secondary access to residents and emergency vehicles in the case of an emergency evacuation. For analysis purposes, all vehicle trips in Phase One are assumed to use McElwain Road as the primary access in and out of the project site rather than “A” Street. As shown, only two travel lanes are needed on McElwain Road and on “C” Street and “D” Street for Phase One. The three primary internal intersections for Phase One only need one-way or two-way stop-sign control for acceptable operations. A new traffic signal is needed at the intersection of McElwain Road / Keller Road to accommodate the traffic in Phase One and Two. McElwain Road / “D” Street would function more as a bend in the road than as an intersection in Phase One since McElwain Road south of “D” Street will be used for emergency access only.

The Phase Two development would construct the remaining roadway network within the Specific Plan. As shown in **Exhibit 7**, four travel lanes would be needed on McElwain Road between Keller Road and "C" Street for Phase Two. Exhibit 6 also shows that a traffic signal will be needed at the intersection of McElwain Road / "C" Street in Phase Two, where access to the north half of the PA-9 commercial site will be provided.

From "C" Street to the Planning Area 8/Open Space 1 boundary, only two travel lanes are needed on McElwain Road under Phase Two. From the Planning Area 8 (Street "J-J") to Street "D", two travel lanes are needed on McElwain Road. Two travel lanes would be sufficient for all other internal streets in the Phase Two development of the Specific Plan.

Exhibit 8 shows that for the Phase Three development, the intersection of McElwain Road / "J-J" Street would need to be signalized. As shown, four travel lanes would be needed on McElwain Road from Keller Road to "J-J" Street. McElwain Road from "J-J" Street to "D" Street would transition from four lanes to three lanes (two lanes southbound and one lane northbound). South of "D" Street, three travel lanes are needed on McElwain Road to the Specific Plan southern boundary and beyond to accommodate a truck climbing lane in the southbound direction. Two travel lanes are also sufficient for all other internal streets within the Specific Plan site for the Phase Three development. All intersection and street section lane configurations that are recommended for the Phase Three development would also provide acceptable operations under Buildout Year 2035 conditions.

All other internal intersections within the Specific Plan Area that were not included in this needs assessment would function adequately with one-way or two-way minor-street stop-sign control.

Table 1 below summarizes the findings of operational analysis for the seven internal study intersections based on the recommended lane configurations and traffic controls as shown in Exhibits 2 through 5. Highway Capacity Manual (HCM) analysis worksheets for the study intersections under each development phase are provided in the technical appendix following this memo.

Table 1
AM/PM Peak Hour Internal Intersection Operations
With Needed Lane Configurations and Traffic Controls
(Environmentally Preferred Alternative)

#	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay [1]	LOS	Delay [1]	LOS
Phase 1 (Year 2023)						
1	McElwain Road / Keller Road	All-Way Stop	9.7	A	12.0	B
2	McElwain Road / "C" Street	Minor-Street Stop	9.5	A	9.6	A
3	McElwain Road / "J-J" Street	Not Constructed in Phase 1				
4	McElwain Road / "D" Street	Minor-Street Stop	7.4	A	7.5	A

Table 1
AM/PM Peak Hour Internal Intersection Operations
With Needed Lane Configurations and Traffic Controls
(Environmentally Preferred Alternative)

#	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay [1]	LOS	Delay [1]	LOS
5	"C" Street / "D" Street	Minor-Street Stop	8.7	A	8.6	A
Phase 1 & 2 (Year 2028)						
1	McElwain Road / Keller Road	Signal	17.2	B	18.4	B
2	McElwain Road / "C" Street	Signal	12.0	B	13.3	B
3	McElwain Road / "J-J" Street	Minor-Street Stop	2.3	A	2.9	A
4	McElwain Road / "D" Street	Minor-Street Stop	7.4	A	7.5	A
5	"C" Street / "D" Street	Minor-Street Stop	9.1	A	9.0	A
6	Keller Road / "A" Street – Gloria Road	Minor-Street Stop	10.5	B	12.2	B
7	Keller Road / "E" Street – Howard Way	Minor-Street Stop	10.3	B	11.3	B
Phase 1 – 3 (Year 2031)						
1	McElwain Road / Keller Road	Signal	18.5	B	30.0	C
2	McElwain Road / "C" Street	Signal	12.2	B	16.6	B
3	McElwain Road / "J-J" Street	Signal	7.0	A	8.3	A
4	McElwain Road / "D" Street	Minor-Street Stop	10.0	B	11.0	B
5	"C" Street / "D" Street	Minor-Street Stop	9.0	A	9.1	A
6	Keller Road / "A" Street – Gloria Road	Minor-Street Stop	10.7	B	13.3	B
7	Keller Road / "E" Street – Howard Way	Minor-Street Stop	10.5	B	11.3	B
Buildout Year 2035 With Project						
1	McElwain Road / Keller Road	Signal	18.9	B	30.9	C
2	McElwain Road / "C" Street	Signal	12.5	B	18.8	B
3	McElwain Road / "J-J" Street	Signal	7.3	A	8.8	A
4	McElwain Road / "D" Street	Minor-Street Stop	10.1	B	11.3	B
5	"C" Street / "D" Street	Minor-Street Stop	9.0	A	9.1	A
6	Keller Road / "A" Street – Gloria Road	Minor-Street Stop	10.9	B	13.0	B
7	Keller Road / "E" Street – Howard Way	Minor-Street Stop	10.7	B	12.8	B

[1] Delay indicated in seconds. Minor-Street Stop reports the worst approach delay & LOS.

As shown in **Table 1**, with the recommended lane configuration and traffic controls shown in Exhibits 2 through 5, the internal study intersections are forecast to operate at LOS C or better during the peak hours under each development phase.

Utilizing the Synchro analysis software, a queue analysis was conducted along McElwain Road from Keller Road to "D" Street to determine if adequate storage will be provided at turn lanes and between intersections. The Synchro software accounts for traffic signal coordination and the distance between intersections. This analysis evaluates forecast queues based on forecast traffic volumes and anticipated intersection and roadway geometry shown in Exhibits 2 through 8. The 2010 Highway Capacity Manual (HCM) 95th percentile queues are evaluated for the onsite

intersections along McElwain Road. Vehicular queues should be monitored in the future to ensure adequate storage capacity is provided for each development phase.

Table 2 shows the 95th percentile queues for each phase of the development using the forecast peak hour volumes and intersection lane geometry found in Exhibits 2 through 8. As shown, adequate storage is provided for each development phase along McElwain Road internal to the project.

Table 2
McElwain Road Queue Analysis
(Environmentally Preferred Alternative)

Intersection/Movement	Number of Lanes	Provided Storage or Link Length Per Lane (feet)	95th Percentile Queue Per Lane (feet)		Adequate Queue Storage Provided?
			AM Peak Hour	PM Peak Hour	
1. McElwain Rd / Keller Rd (PHASE 1) – All-Way Stop Control					
NB McElwain Rd Left-Turn	1	*150*	0	0	Yes
NB McElwain Rd Through	1	*480*	0	0	Yes
NB McElwain Rd Right	1	*150*	20	15	Yes
*SB Zeiders Rd Left/Through/Right**	1	*>500*	25	63	Yes
1. McElwain Rd / Keller Rd (PHASE 1 & 2) - Signalized					
NB McElwain Rd Left-Turn	1	*150*	8	22	Yes
NB McElwain Rd Through	1	*480*	39	53	Yes
NB McElwain Rd Right	1	*150*	21	20	Yes
*SB Zeiders Rd Through/Right-Turn**	1	>500	28	84	Yes
SB Zeiders Rd Left-Turn	1	250	115	232	Yes
2. McElwain Rd / "C" Street (PHASE 1 & 2) - Signalized					
NB McElwain Rd Left-Turn	1	100	0	0	Yes
NB McElwain Rd Through	1	*500*	85	52	Yes
NB McElwain Rd Right-Turn	1	100	0	0	Yes
SB McElwain Rd Left-Turn	1	500	42	116	Yes
SB McElwain Rd Through	1	*500*	20	56	Yes
SB McElwain Rd Right-Turn	1	*150*	0	16	Yes
1. McElwain Rd / Keller Rd (Project Buildout) - Signalized					
NB McElwain Rd Left-Turn	1	*100*	23	42	Yes
NB McElwain Rd Through	1	*480*	83	158	Yes

Table 2
McElwain Road Queue Analysis
(Environmentally Preferred Alternative)

Intersection/Movement	Number of Lanes	Provided Storage or Link Length Per Lane (feet)	95th Percentile Queue Per Lane (feet)		Adequate Queue Storage Provided?
			AM Peak Hour	PM Peak Hour	
NB McElwain Rd Right-Turn	1	*150*	14	18	Yes
*SB Zeiders Rd Through/Right-Turn**	1	*>500*	68	252	Yes
SB Zeiders Rd Left-Turn	1	*280*	134	234	Yes
2. McElwain Rd / "C" Street (Project Buildout) - Signalized					
NB McElwain Rd Left-Turn	1	*100*	11	11	Yes
NB McElwain Rd Through	1	*>500*	70	122	Yes
*NB McElwain Rd Through/Right-Turn**	1.5	*600*	70	122	Yes
SB McElwain Rd Left-Turn	1	*200*	51	183	Yes
SB McElwain Rd Through	1	*500*	54	88	Yes
*SB McElwain Rd Through/Right-Turn**	1.5	*500*	54	88	Yes
3. McElwain Rd / "J-J" Street (Project Buildout) - Signalized					
NB McElwain Rd Through	1	*680*	26	43	Yes
*NB McElwain Rd Through/Right-Turn**	1.5	*680*	26	43	Yes
SB McElwain Rd Left-Turn	1	*150*	18	61	Yes
SB McElwain Rd Through	1	*600*	10	17	Yes
*SB McElwain Rd Through/Right-Turn**	1.5	*600*	10	17	Yes

Notes: SB = southbound; NB = Northbound; EB = Eastbound; WB = Westbound;
* = Shared lane;
Storage length for a through lane is measured as the link distance to the next adjacent study intersection.

Proposed Project Assessment

The Proposed Project has been evaluated in the Environmental Impact Report (EIR) and reflected in the Traffic Impact Analysis. The Proposed Project land use includes an additional 124,146 square feet of commercial retail, 21 additional single-family dwelling units and 21 less multi-family dwelling units compared to the Environmentally Preferred Alternative. Phase 1 development is the same for both the Proposed Project and the Environmentally Preferred Alternative assuming 300 single-family dwelling units. Phase 2 of the Proposed Project generates 1,991 additional daily trips

with 51 additional AM peak hour trips and 175 additional PM peak hour trips compared to the Environmentally Preferred Alternative. Buildout of the Proposed Project is expected to generate 3,900 additional daily trips with 95 additional AM peak hour trips and 340 additional PM peak hour trips compared to the Environmentally Preferred Alternative. Tables 63 through 65 in the Traffic Impact Analysis provides a trip generation table by project phase comparing the Proposed Project to the Environmentally Preferred Alternative. The only difference in the onsite roadway configuration is at the intersection of McElwain Road / "D" Street which would function as a four-leg intersection in the Proposed Project versus a three-leg intersection due to the reconfiguration of Planning Area 8 (Multi-Family Housing).

Additional analysis was conducted to determine if the "Proposed Project" volumes under the Buildout Year 2035 With Project condition would require additional turn lanes and adequate storage capacity at the internal study intersections compared to the Environmentally Preferred Alternative. AM and PM peak hour traffic volumes for the Buildout Year 2035 With Project condition are illustrated in **Exhibit 9** for the Proposed Project. Peak hour trips generated by the Proposed Project are slightly higher than the Environmentally Preferred Alternative peak hour trips based on the increase in commercial square footage assumed in the Proposed Project. If the Proposed Project is selected by the developer rather than the Environmentally Preferred Alternative, a needs assessment for the internal roads and intersections would be necessary, specifically along McElwain Road. Therefore, this analysis focuses on evaluating study intersections 1 through 4 along McElwain Road to determine if additional storage at turn lanes and between intersections are needed beyond what is proposed for the Environmentally Preferred Alternative. All other internal intersections within the Specific Plan Area that were not included in this needs assessment for the Proposed Project would function adequately as one-way or two-way stop controlled intersections since the single-family residential units decrease by 21 units compared to the Environmentally Preferred Alternative.

Table 3 summarizes Buildout Year 2035 With Project conditions AM and PM peak hour level of service at the intersections along McElwain Road internal to the project site. As shown, all study intersections are forecast to operate at acceptable levels of service.

Table 3
AM/PM Peak Hour Internal Intersection Operations
With Needed Lane Configurations and Traffic Controls
(Proposed Project)

#	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay [1]	LOS	Delay [1]	LOS
Buildout Year 2035 With Project						
1	McElwain Road / Keller Road	Signal	20.2	C	37.0	D
2	McElwain Road / "C" Street	Signal	11.3	B	16.0	B
3	McElwain Road / "J-J" Street	Signal	5.7	A	7.3	A
4	McElwain Road / "D" Street	Minor-Street Stop	13.4	B	14.9	B

[1] Delay indicated in seconds.

A queue analysis was also conducted at each of the signalized intersections along McElwain Road to determine if the Proposed Project would require additional storage beyond what is currently proposed in the Environmentally Preferred Alternative.

Table 4 provides the HCM 95th percentile queue lengths at the signalized intersections for the Proposed Project under the Buildout Year 2035 With Project conditions. As shown, adequate storage is provided at turn lanes and between intersections in the northbound and southbound directions along McElwain Road.

Table 4
McElwain Road Queue Analysis
(Proposed Project)

Intersection/Movement	Number of Lanes	Provided Storage or Link Length Per Lane (feet)	95th Percentile Queue Per Lane (feet)		Adequate Queue Storage Provided?
			AM Peak Hour	PM Peak Hour	
1. McElwain Rd / Keller Rd (Project Buildout) - Signalized					
NB McElwain Rd Left-Turn	1	*100*	32	81	Yes
NB McElwain Rd Through	1	*480*	129	265	Yes
NB McElwain Rd Right-Turn	1	*150*	16	22	Yes
*SB Zeiders Rd Through/Right-Turn**	1	*>500*	109	305	Yes
SB Zeiders Rd Left-Turn	1	*280*	147	273	Yes
2. McElwain Rd / "C" Street (Project Buildout) - Signalized					
NB McElwain Rd Left-Turn	1	*100*	9	11	Yes
NB McElwain Rd Through	1	*>500*	65	123	Yes
*NB McElwain Rd Through/Right-Turn**	1.5	*600*	65	123	Yes
SB McElwain Rd Left-Turn	1	*300*	40	161	Yes
SB McElwain Rd Through	1	*500*	54	84	Yes
*SB McElwain Rd Through/Right-Turn**	1.5	*500*	54	84	Yes
3. McElwain Rd / "J-J" Street (Project Buildout) - Signalized					
NB McElwain Rd Through	1	*680*	41	47	Yes
*NB McElwain Rd Through/Right-Turn**	1.5	*680*	41	47	Yes
SB McElwain Rd Left-Turn	1	*150*	23	93	Yes
SB McElwain Rd Through	1	*600*	16	20	Yes
*SB McElwain Rd Through/Right-Turn**	1.5	*600*	16	20	Yes

Notes: SB = southbound; NB = Northbound; EB = Eastbound; WB = Westbound;
* = Shared lane;
Storage length for a through lane is measured as the link distance to the next adjacent study intersection.

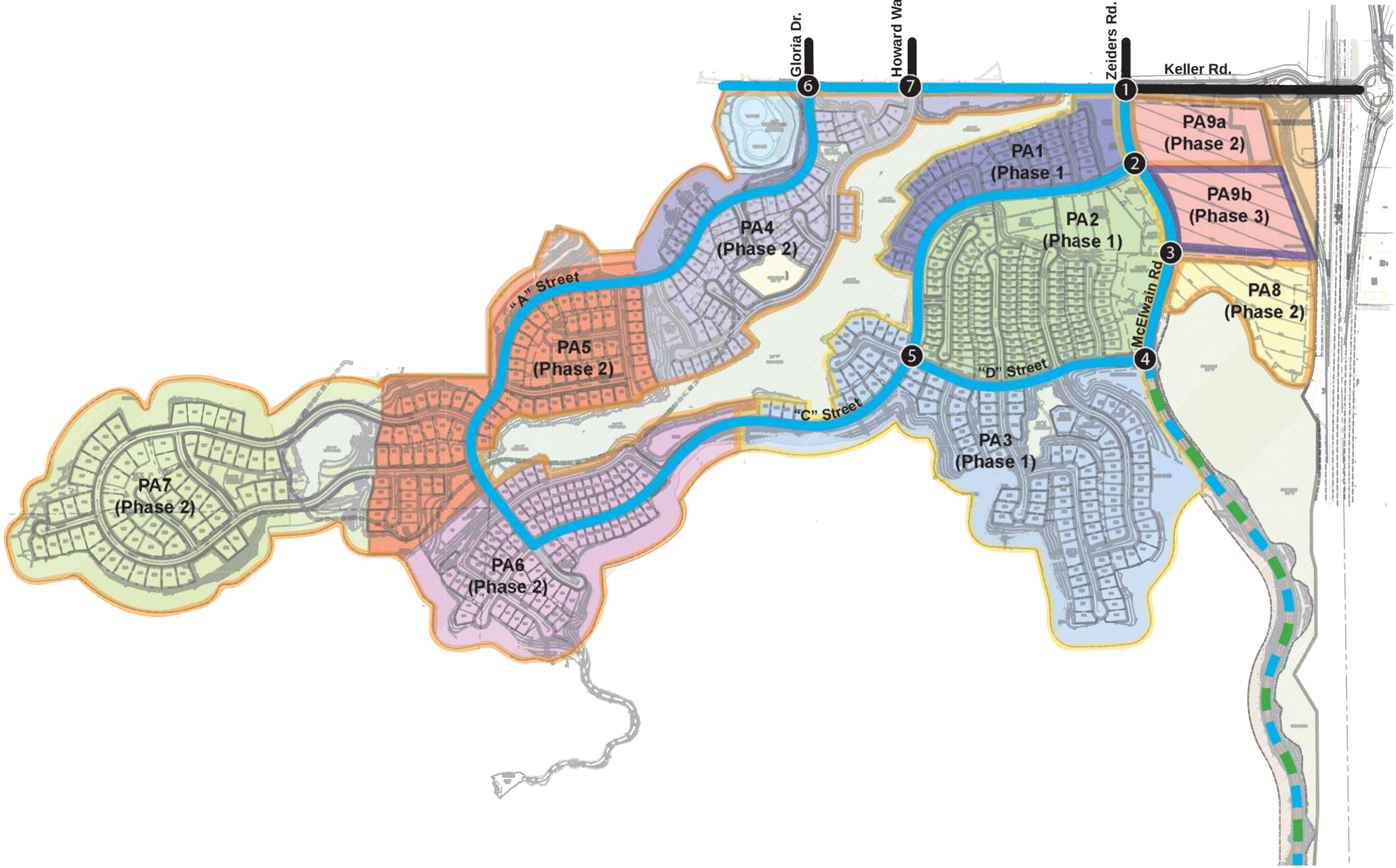
Please call me at (760) 603-6244 if you have any questions about the findings of this analysis.

Sincerely,



Robert A. Davis
Senior Transportation Planner
Transportation Planning Services

Appendix K-1 – Environmentally Preferred Alternative Synchro Worksheets
Appendix K-2 – Proposed Project Synchro Worksheets



Not to Scale

Legend:

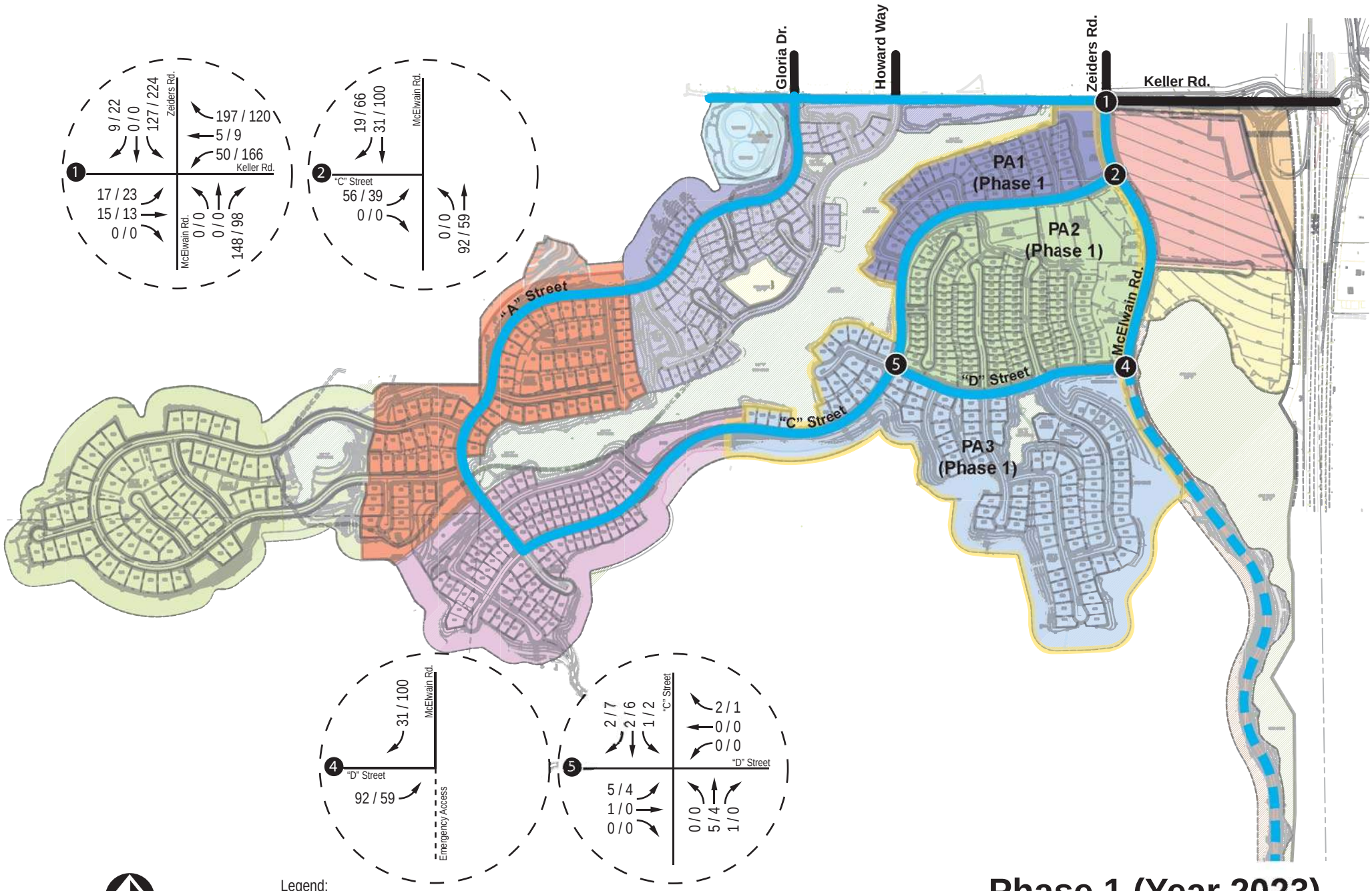
- # = Study Intersection
- = P1 Roadway
- = P2 Roadway
- = P3 Roadway
- = Existing Roadway
- = P1 Dev. Bndry.
- = P2 Dev. Bndry.
- = P3 Dev. Bndry.

Michael Baker INTERNATIONAL

Internal Study Intersections and Roadway Development by Phase - Environmentally Preferred Alternative

Exhibit 1

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Not to Scale

Legend:

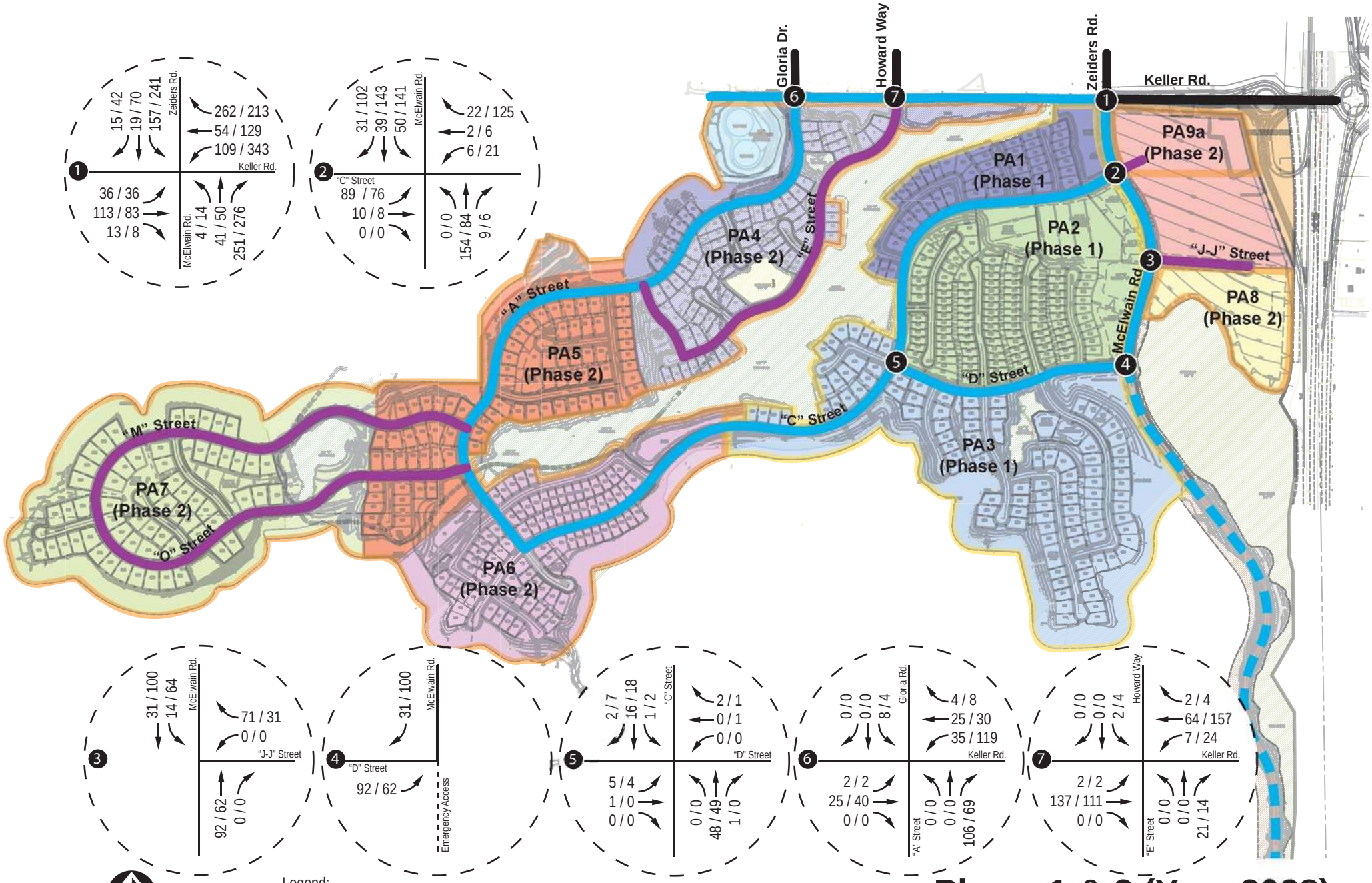
- # = Study Intersection
- ## / ## = AM / PM Peak Hour Volumes
- = Existing Roadway
- = P1 Roadway
- = P1 Dev. Bndry.
- = Emergency Access Only

Phase 1 (Year 2023)
On-Site AM/PM Peak Hour Traffic Volumes - Environmentally Preferred Alternative

Exhibit 2

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Not to Scale

Legend:

- # = Study Intersection
- = Existing Roadway
- = P1 Roadway
- = P2 Roadway
- = Emergency Access Only
- = P1 Dev. Bndry.
- = P2 Dev. Bndry.

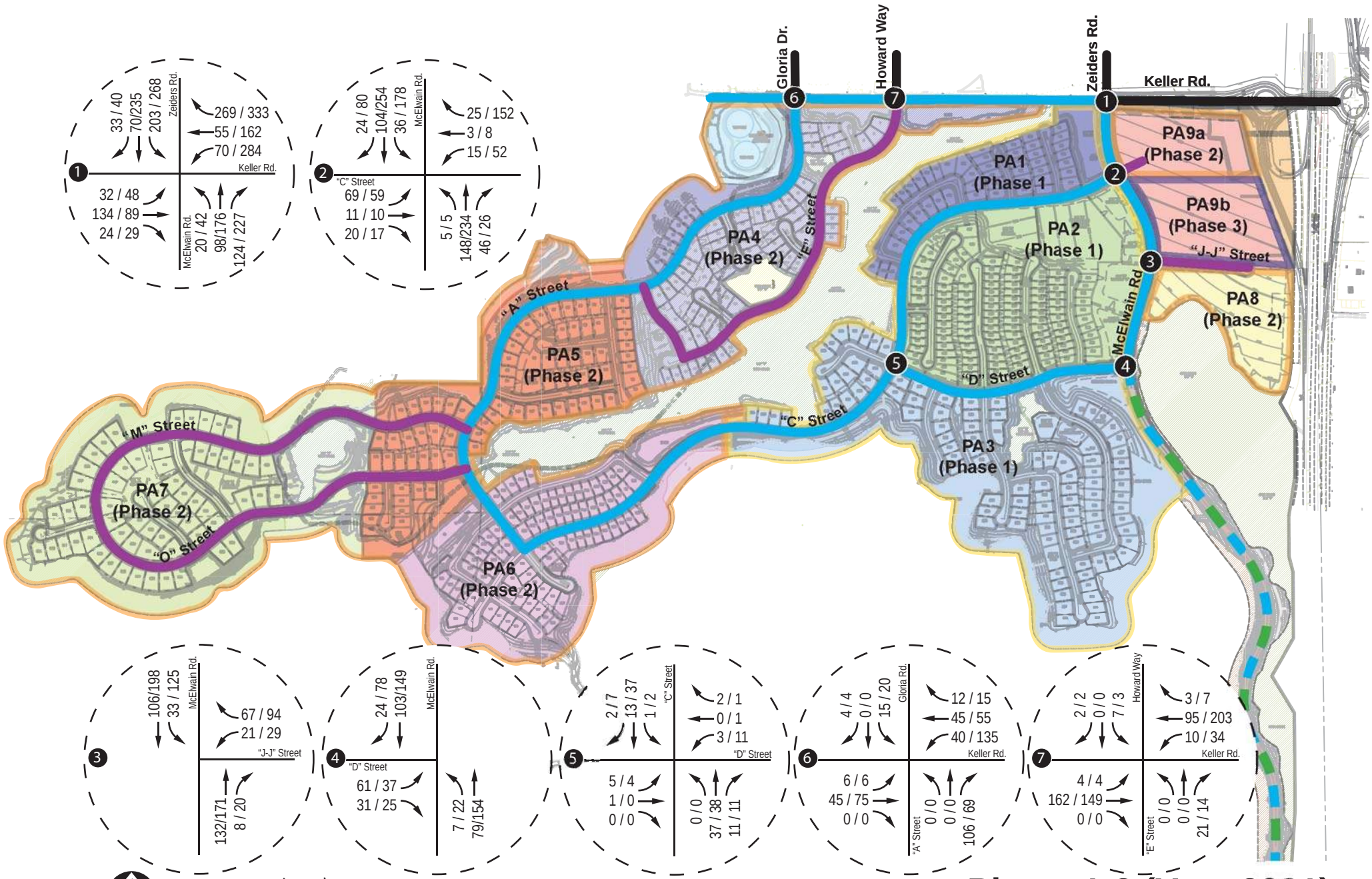
/ ## = AM / PM Peak Hour Volumes

Phase 1 & 2 (Year 2028)
On-Site AM/PM Peak Hour Traffic Volume - Environmentally Preferred Alternative

Exhibit 3

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Not to Scale

Legend:

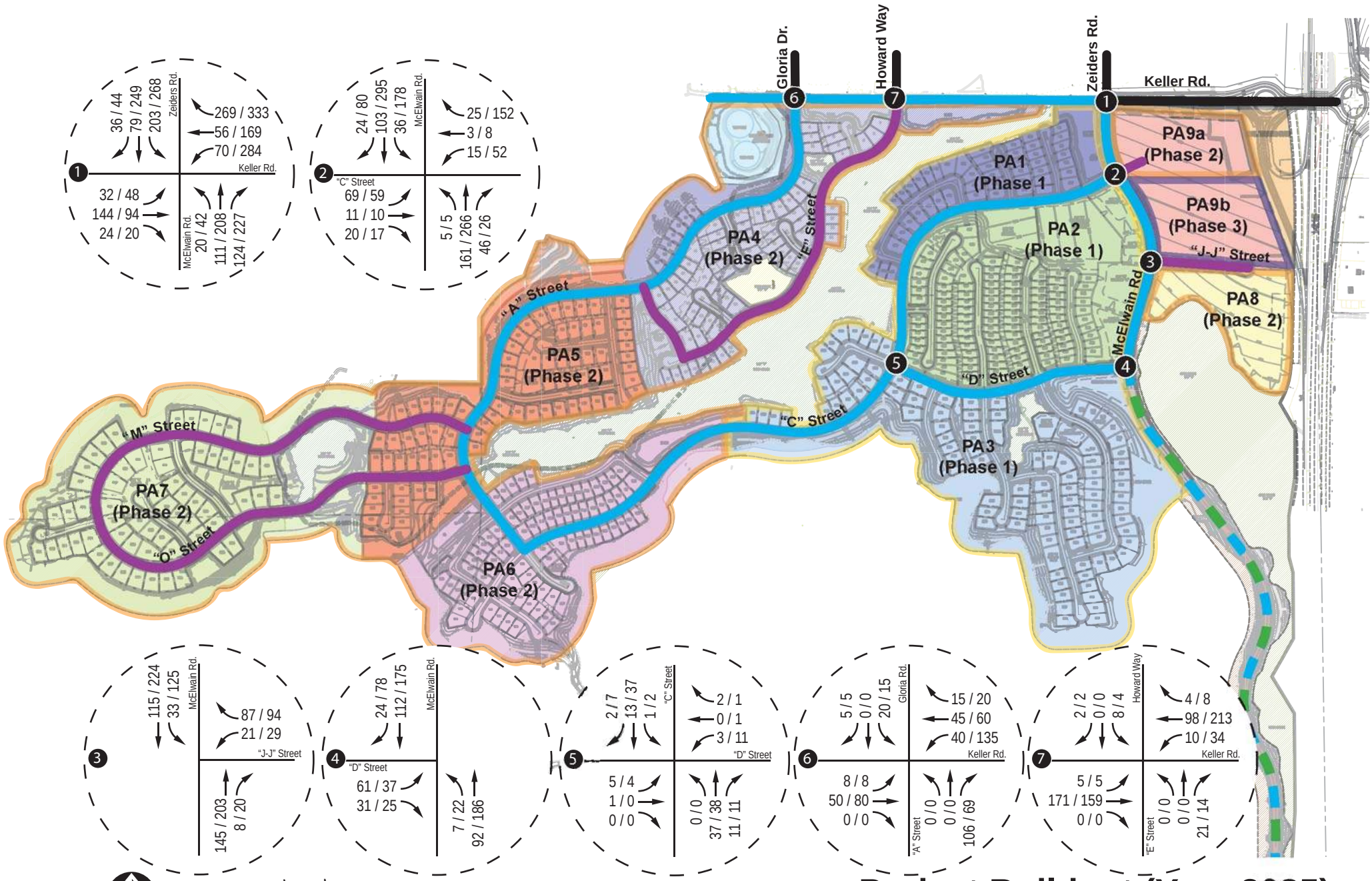
- # = Study Intersection
- = Existing Roadway
- = P1 Roadway
- = P2 Roadway
- = P3 Roadway
- = P1 Dev. Bndry.
- = P2 Dev. Bndry.
- = P3 Dev. Bndry.
- ## / ## = AM / PM Peak Hour Volumes

Phase 1-3 (Year 2031) On-Site Traffic Volumes - Environmentally Preferred Alternative

Exhibit 4

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Not to Scale

Legend:

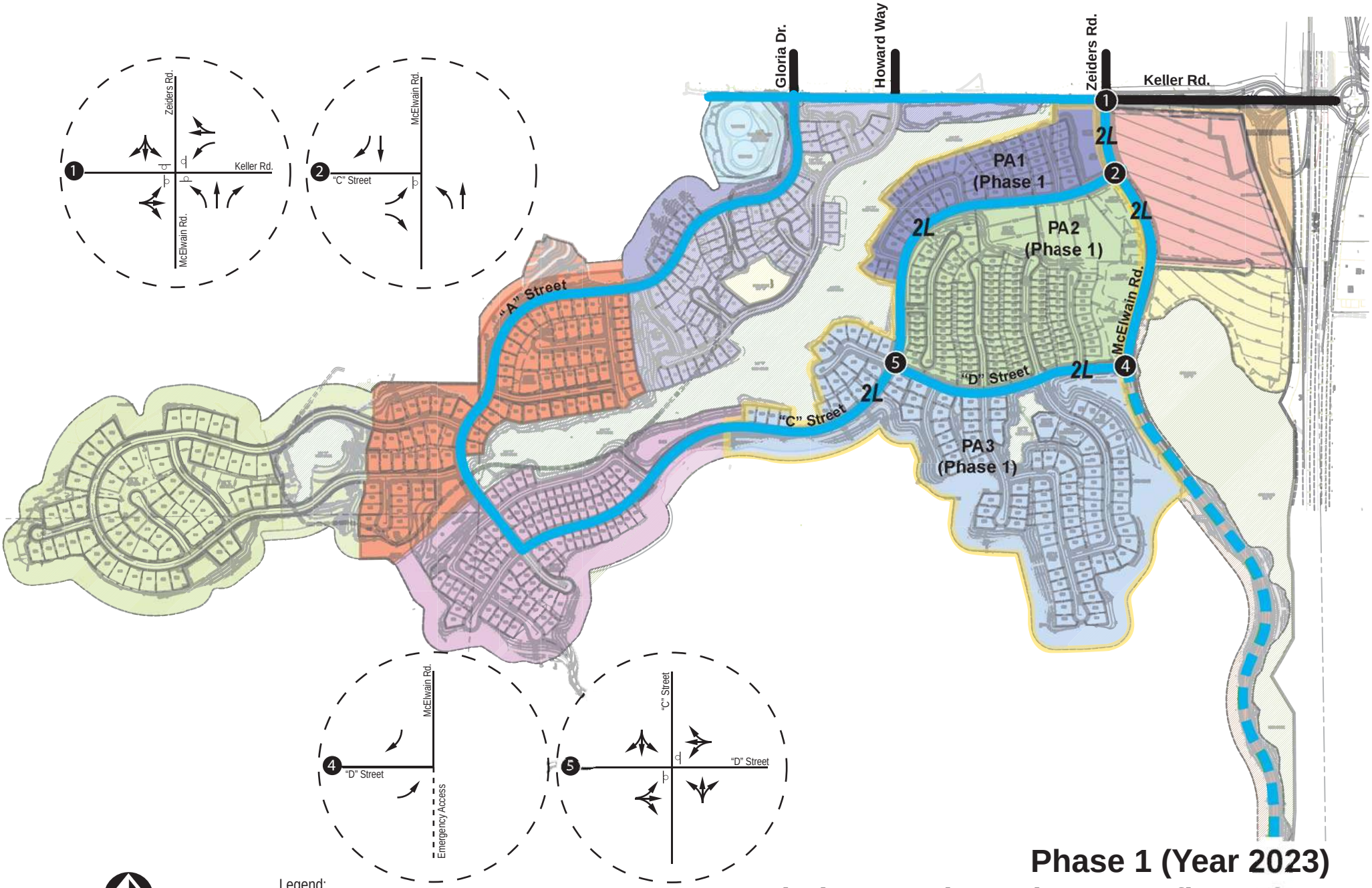
- # = Study Intersection
- = Existing Roadway
- = P1 Roadway
- = P2 Roadway
- = P3 Roadway
- = P1 Dev. Bndry.
- = P2 Dev. Bndry.
- = P3 Dev. Bndry.
- ## / ## = AM / PM Peak Hour Volumes

Project Buildout (Year 2035)
On-Site AM/PM Peak Hour Traffic Volumes - Environmentally Preferred Alternative

Exhibit 5

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Legend:

- # = Study Intersection
- = Existing Roadway
- = P1 Roadway
- #L = No. Travel Lanes
- = P1 Dev Bndry
- = Stop Control
- = Signal Control

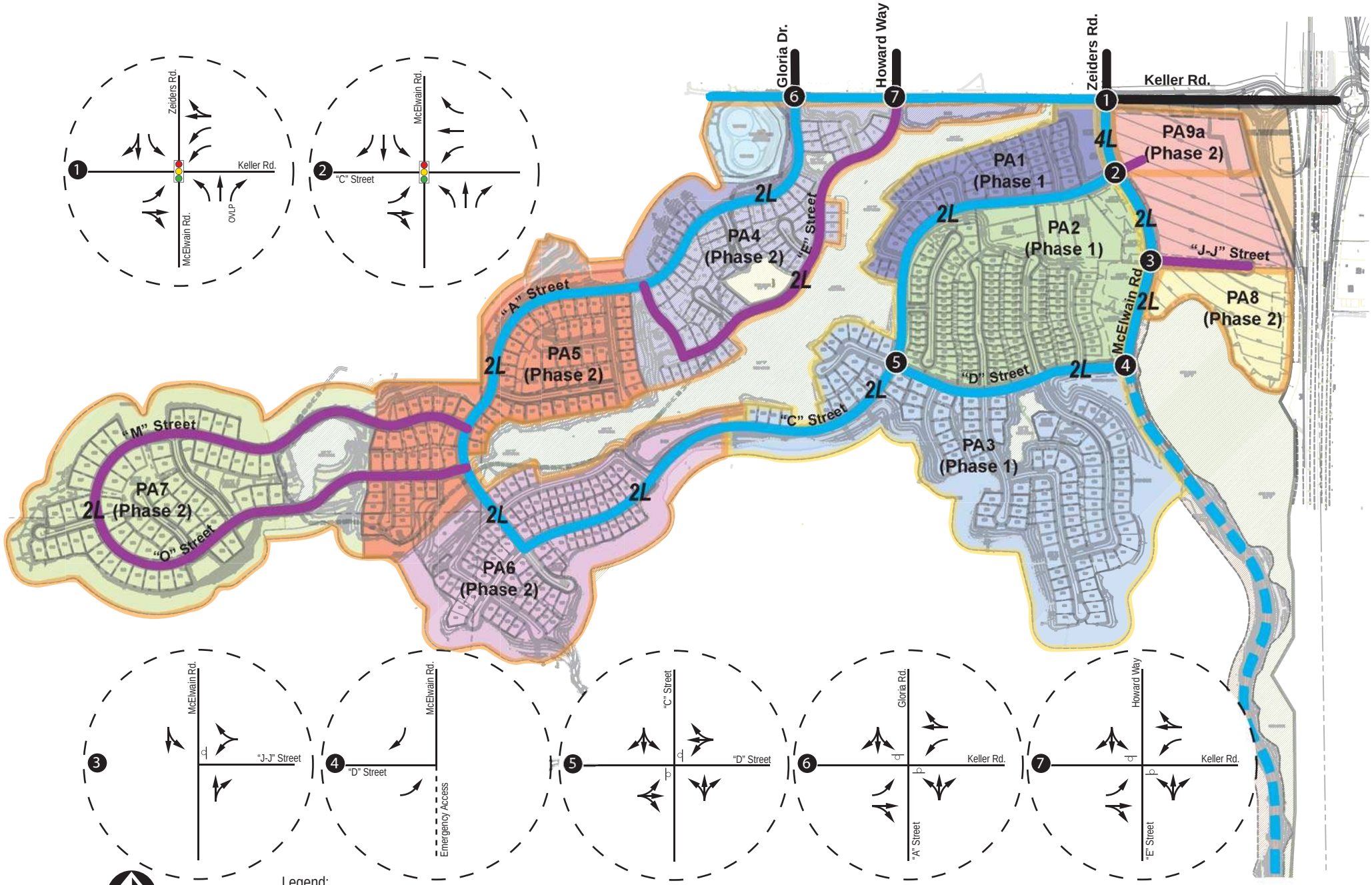
Not to Scale

Michael Baker INTERNATIONAL

Phase 1 (Year 2023)
Recommended Internal Roadway Configuration & Intersection Geometry - Environmentally Preferred Alternative

Exhibit 6

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018

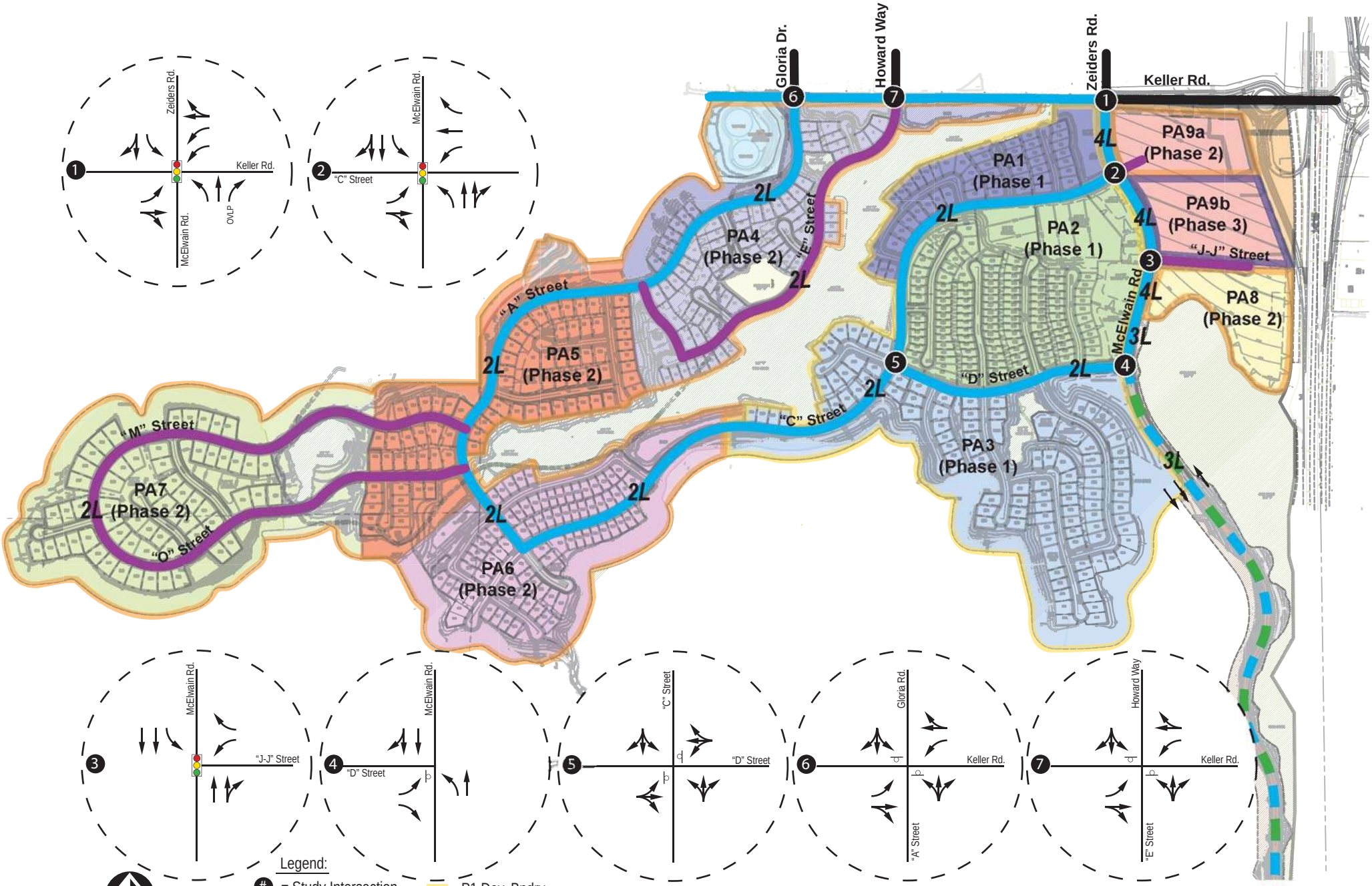


Phase 1 & 2 (Year 2028) Recommended Internal Roadway & Intersection Configuration - Environmentally Preferred Alternative

Exhibit 7

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Legend:

- # = Study Intersection
- = Existing Roadway
- = P1 Roadway
- = P2 Roadway
- = P3 Roadway
- #L = No. Travel Lanes
- = P1 Dev. Bndry.
- = P2 Dev. Bndry.
- = P3 Dev. Bndry.
- = Stop Control
- = Signal Control
- OVLP = Right-Turn Overlap

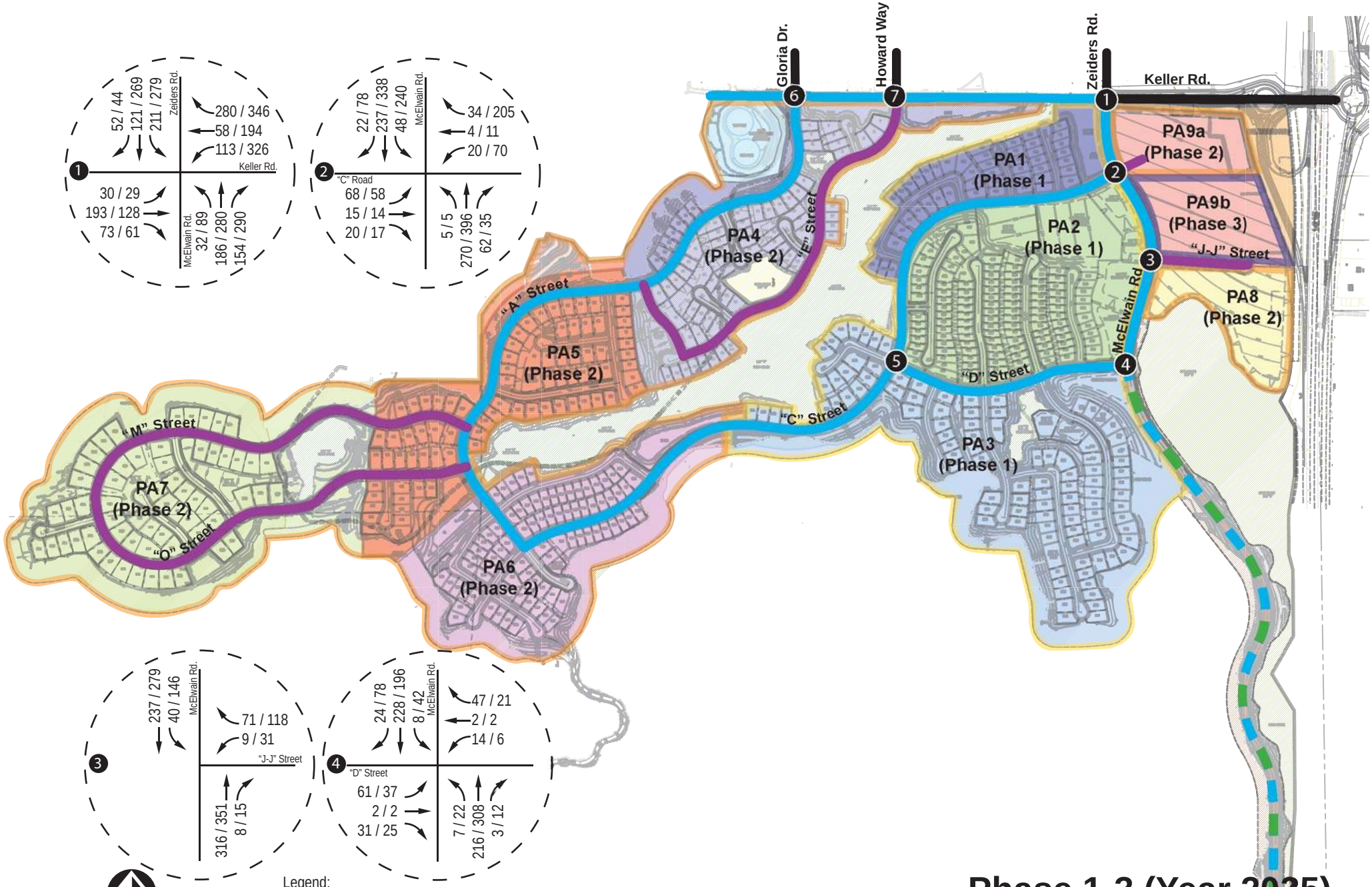
Not to Scale

Phase 1-3 (Year 2031 & 2035) Recommended Internal Roadway & Intersection Configuration - Environmentally Preferred Alternative

Exhibit 8

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018



Not to Scale

Legend:

= Study Intersection ## / ## = AM / PM Peak Hour Volumes

= Existing Roadway

= Phase 1 Roadway

= Phase 2 Roadway

= Phase 3 Roadway

Phase 1-3 (Year 2035)
On-Site AM/PM Peak Hour Traffic Volumes - Proposed Project

Exhibit 9

Michael Baker INTERNATIONAL

August 2018
H:\PDATA\141981_Murrieta Hills Sp TIA\Exhibits\Onsite Circulation_Aug 2018

APPENDIX K-1
Environmentally Preferred Alternative Synchro Worksheets

NOTE: ESA = EPA = Environmentally Preferred Alternative

APPENDIX K-1.1
Intersection LOS Analysis
Phase 1

NOTE: ESA = EPA = Environmentally Preferred Alternative

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	15	0	50	5	197	0	0	148	127	0	9
Future Vol, veh/h	17	15	0	50	5	197	0	0	148	127	0	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	16	0	54	5	214	0	0	161	138	0	10
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	9.5	9.6	8.9	11
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	53%	100%	0%	93%
Vol Thru, %	100%	100%	0%	47%	0%	2%	0%
Vol Right, %	0%	0%	100%	0%	0%	98%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	148	32	50	202	136
LT Vol	0	0	0	17	50	0	127
Through Vol	0	0	0	15	0	5	0
RT Vol	0	0	148	0	0	197	9
Lane Flow Rate	0	0	161	35	54	220	148
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0	0.214	0.062	0.091	0.296	0.251
Departure Headway (Hd)	5.495	5.495	4.79	6.374	6.043	4.851	6.115
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	742	565	590	736	582
Service Time	3.273	3.273	2.567	4.074	3.814	2.621	3.905
HCM Lane V/C Ratio	0	0	0.217	0.062	0.092	0.299	0.254
HCM Control Delay	8.3	8.3	8.9	9.5	9.4	9.7	11
HCM Lane LOS	N	N	A	A	A	A	B
HCM 95th-tile Q	0	0	0.8	0.2	0.3	1.2	1

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	0	0	92	31	19
Future Vol, veh/h	56	0	0	92	31	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	0	0	100	34	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	134	34	34	0	-	0
Stage 1	34	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	860	1039	1578	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	860	1039	1578	-	-	-
Mov Cap-2 Maneuver	860	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1578	-	860	-	-	-
HCM Lane V/C Ratio	-	-	0.071	-	-	-
HCM Control Delay (s)	0	-	9.5	0	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	0	0	0	0	31
Future Vol, veh/h	92	0	0	0	0	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	100	0	0	0	0	34

Major/Minor	Major1		Minor1		Major2	
Conflicting Flow All	34	0	17	234	-	0
Stage 1	-	-	0	200	-	-
Stage 2	-	-	17	34	-	-
Critical Hdwy	4.12	-	6.42	6.52	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	2.218	-	3.518	4.018	-	-
Pot Cap-1 Maneuver	1578	-	1001	666	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	1006	867	-	-
Platoon blocked, %		-			-	-
Mov Cap-1 Maneuver	1578	-	938	0	-	-
Mov Cap-2 Maneuver	-	-	938	0	-	-
Stage 1	-	-	-	0	-	-
Stage 2	-	-	1006	0	-	-

Approach	EB	NB	SB
HCM Control Delay, s	7.4	0	0
HCM LOS		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBR	SBT	SBR
Capacity (veh/h)	-	1578	-	-	-
HCM Lane V/C Ratio	-	0.063	-	-	-
HCM Control Delay (s)	0	7.4	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	0	0	0	2	0	5	1	1	2	2
Future Vol, veh/h	5	1	0	0	0	2	0	5	1	1	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	0	0	0	2	0	5	1	1	2	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	12	12	3	12	13	6	4	0	0	7	0	0
Stage 1	5	5	-	6	6	-	-	-	-	-	-	-
Stage 2	7	7	-	6	7	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1005	883	1081	1005	881	1077	1618	-	-	1614	-	-
Stage 1	1017	892	-	1016	891	-	-	-	-	-	-	-
Stage 2	1015	890	-	1016	890	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	1002	882	1081	1003	880	1077	1618	-	-	1614	-	-
Mov Cap-2 Maneuver	1002	882	-	1003	880	-	-	-	-	-	-	-
Stage 1	1017	891	-	1016	891	-	-	-	-	-	-	-
Stage 2	1013	890	-	1014	889	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	8.3	0	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1618	-	-	980	1077	1614	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.002	0.001	-	-
HCM Control Delay (s)	0	-	-	8.7	8.3	7.2	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	13	0	166	9	120	0	0	98	224	0	22
Future Vol, veh/h	23	13	0	166	9	120	0	0	98	224	0	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	14	0	180	10	130	0	0	107	243	0	24
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	10.2	11	9	14.6
HCM LOS	B	B	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	64%	100%	0%	91%
Vol Thru, %	100%	100%	0%	36%	0%	7%	0%
Vol Right, %	0%	0%	100%	0%	0%	93%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	0	98	36	166	129	246
LT Vol	0	0	0	23	166	0	224
Through Vol	0	0	0	13	0	9	0
RT Vol	0	0	98	0	0	120	22
Lane Flow Rate	0	0	107	39	180	140	267
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0	0.157	0.075	0.323	0.206	0.47
Departure Headway (Hd)	6.004	6.004	5.295	6.927	6.447	5.283	6.328
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	0	677	517	559	680	570
Service Time	3.736	3.736	3.027	4.669	4.177	3.012	4.057
HCM Lane V/C Ratio	0	0	0.158	0.075	0.322	0.206	0.468
HCM Control Delay	8.7	8.7	9	10.2	12.2	9.4	14.6
HCM Lane LOS	N	N	A	B	B	A	B
HCM 95th-tile Q	0	0	0.6	0.2	1.4	0.8	2.5

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	0	0	59	100	66
Future Vol, veh/h	39	0	0	59	100	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	0	0	64	109	72

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	173	109	109	0	-	0
Stage 1	109	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	817	945	1481	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	817	945	1481	-	-	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	959	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1481	-	817	-	-	-
HCM Lane V/C Ratio	-	-	0.052	-	-	-
HCM Control Delay (s)	0	-	9.6	0	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	0	0	0	0	100
Future Vol, veh/h	59	0	0	0	0	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	0	0	0	0	109

Major/Minor	Major1		Minor1		Major2	
Conflicting Flow All	109	0	54	237	-	0
Stage 1	-	-	0	128	-	-
Stage 2	-	-	54	109	-	-
Critical Hdwy	4.12	-	6.42	6.52	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	2.218	-	3.518	4.018	-	-
Pot Cap-1 Maneuver	1481	-	954	664	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	969	805	-	-
Platoon blocked, %		-			-	-
Mov Cap-1 Maneuver	1481	-	913	0	-	-
Mov Cap-2 Maneuver	-	-	913	0	-	-
Stage 1	-	-	-	0	-	-
Stage 2	-	-	969	0	-	-

Approach	EB	NB	SB
HCM Control Delay, s	7.5	0	0
HCM LOS		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBR	SBT	SBR
Capacity (veh/h)	-	1481	-	-	-
HCM Lane V/C Ratio	-	0.043	-	-	-
HCM Control Delay (s)	0	7.5	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	0	0	0	1	0	4	0	2	6	7
Future Vol, veh/h	4	0	0	0	0	1	0	4	0	2	6	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	0	0	1	0	4	0	2	7	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	20	19	10	19	22	4	14	0	0	4	0	0
Stage 1	15	15	-	4	4	-	-	-	-	-	-	-
Stage 2	5	4	-	15	18	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	993	875	1071	995	872	1080	1604	-	-	1618	-	-
Stage 1	1005	883	-	1018	892	-	-	-	-	-	-	-
Stage 2	1017	892	-	1005	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	991	874	1071	994	871	1080	1604	-	-	1618	-	-
Mov Cap-2 Maneuver	991	874	-	994	871	-	-	-	-	-	-	-
Stage 1	1005	882	-	1018	892	-	-	-	-	-	-	-
Stage 2	1016	892	-	1004	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	8.3	0	1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	991	1080	1618	-	-
HCM Lane V/C Ratio	-	-	-	0.004	0.001	0.001	-	-
HCM Control Delay (s)	0	-	-	8.6	8.3	7.2	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

APPENDIX K-1.2
Intersection LOS Analysis
Phase 1 & 2

NOTE: ESA = EPA = Environmentally Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	113	13	109	54	262	4	41	251	157	19	15
Future Volume (veh/h)	36	113	13	109	54	262	4	41	251	157	19	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	39	123	14	118	59	285	4	45	273	171	21	16
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	271	31	501	74	360	286	300	486	268	148	113
Arrive On Green	0.04	0.17	0.17	0.15	0.27	0.27	0.16	0.16	0.16	0.15	0.15	0.15
Sat Flow, veh/h	1774	1643	187	3442	279	1346	1774	1863	1583	1774	982	748
Grp Volume(v), veh/h	39	0	137	118	0	344	4	45	273	171	0	37
Grp Sat Flow(s),veh/h/ln	1774	0	1830	1721	0	1625	1774	1863	1583	1774	0	1731
Q Serve(g_s), s	0.9	0.0	2.9	1.3	0.0	8.3	0.1	0.9	0.0	3.8	0.0	0.8
Cycle Q Clear(g_c), s	0.9	0.0	2.9	1.3	0.0	8.3	0.1	0.9	0.0	3.8	0.0	0.8
Prop In Lane	1.00		0.10	1.00		0.83	1.00		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	77	0	302	501	0	434	286	300	486	268	0	261
V/C Ratio(X)	0.51	0.00	0.45	0.24	0.00	0.79	0.01	0.15	0.56	0.64	0.00	0.14
Avail Cap(c_a), veh/h	209	0	690	501	0	613	669	703	828	669	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	16.0	16.0	0.0	14.4	15.0	15.3	12.3	16.9	0.0	15.6
Incr Delay (d2), s/veh	5.1	0.0	1.1	0.2	0.0	4.7	0.0	0.2	1.0	2.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.5	0.6	0.0	4.3	0.0	0.5	2.7	2.0	0.0	0.4
LnGrp Delay(d),s/veh	24.9	0.0	17.0	16.3	0.0	19.1	15.0	15.5	13.3	19.5	0.0	15.9
LnGrp LOS	C		B	B		B	B	B	B	B		B
Approach Vol, veh/h		176			462			322			208	
Approach Delay, s/veh		18.8			18.4			13.7			18.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	11.0		10.4	5.8	15.3		10.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.0	16.0		16.0	5.0	16.0		16.0
Max Q Clear Time (g_c+I1), s	3.3	4.9		5.8	2.9	10.3		2.9
Green Ext Time (p_c), s	0.5	0.5		0.5	0.0	1.0		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	10	0	6	2	22	0	154	9	50	39	31
Future Volume (veh/h)	89	10	0	6	2	22	0	154	9	50	39	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	97	11	0	7	2	24	0	167	10	54	42	34
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	227	0	13	78	66	7	363	309	88	748	636
Arrive On Green	0.09	0.12	0.00	0.01	0.04	0.04	0.00	0.20	0.20	0.05	0.40	0.40
Sat Flow, veh/h	1774	1863	0	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	97	11	0	7	2	24	0	167	10	54	42	34
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.3	0.1	0.0	0.1	0.0	0.4	0.0	2.0	0.1	0.8	0.4	0.3
Cycle Q Clear(g_c), s	1.3	0.1	0.0	0.1	0.0	0.4	0.0	2.0	0.1	0.8	0.4	0.3
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	227	0	13	78	66	7	363	309	88	748	636
V/C Ratio(X)	0.63	0.05	0.00	0.52	0.03	0.36	0.00	0.46	0.03	0.61	0.06	0.05
Avail Cap(c_a), veh/h	1110	2040	0	278	1166	991	278	1166	991	416	1311	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	9.9	0.0	12.6	11.7	11.9	0.0	9.1	8.3	11.9	4.7	4.7
Incr Delay (d2), s/veh	4.1	0.1	0.0	27.7	0.1	3.3	0.0	0.9	0.0	6.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.1	0.0	0.2	0.0	0.2	0.0	1.1	0.1	0.5	0.2	0.1
LnGrp Delay(d),s/veh	15.4	10.0	0.0	40.4	11.9	15.2	0.0	10.0	8.4	18.6	4.7	4.7
LnGrp LOS	B	B		D	B	B		B	A	B	A	A
Approach Vol, veh/h		108			33			177			130	
Approach Delay, s/veh		14.8			20.3			9.9			10.5	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	9.0	4.2	7.1	0.0	14.3	6.2	5.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	16.0	4.0	28.0	4.0	18.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	2.8	4.0	2.1	2.1	0.0	2.4	3.3	2.4
Green Ext Time (p_c), s	0.0	1.0	0.0	0.1	0.0	1.1	0.2	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	71	92	0	14	31
Future Vol, veh/h	0	71	92	0	14	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	77	100	0	15	34

Major/Minor	Major2		Minor1		Major1	
Conflicting Flow All	34	-	141	34	77	0
Stage 1	-	-	64	-	-	-
Stage 2	-	-	77	-	-	-
Critical Hdwy	4.12	-	6.52	6.22	4.12	-
Critical Hdwy Stg 1	-	-	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	1578	-	750	1039	1522	-
Stage 1	-	-	842	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-				-
Mov Cap-1 Maneuver	1578	-	0	1039	1522	-
Mov Cap-2 Maneuver	-	-	0	-	-	-
Stage 1	-	-	0	-	-	-
Stage 2	-	-	0	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0		2.3
HCM LOS		-	

Minor Lane/Major Mvmt	NBLn1	WBL	WBR	SBL	SBT
Capacity (veh/h)	-	1578	-	1522	-
HCM Lane V/C Ratio	-	-	-	0.01	-
HCM Control Delay (s)	-	0	-	7.4	0
HCM Lane LOS	-	A	-	A	A
HCM 95th %tile Q(veh)	-	0	-	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	0	0	0	0	31
Future Vol, veh/h	92	0	0	0	0	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	100	0	0	0	0	34

Major/Minor	Major1		Minor1		Major2	
Conflicting Flow All	34	0	17	-	-	0
Stage 1	-	-	0	-	-	-
Stage 2	-	-	17	-	-	-
Critical Hdwy	4.12	-	6.42	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	-	-	-
Follow-up Hdwy	2.218	-	3.518	-	-	-
Pot Cap-1 Maneuver	1578	-	1001	0	-	-
Stage 1	-	-	-	0	-	-
Stage 2	-	-	1006	0	-	-
Platoon blocked, %		-			-	-
Mov Cap-1 Maneuver	1578	-	938	0	-	-
Mov Cap-2 Maneuver	-	-	938	0	-	-
Stage 1	-	-	-	0	-	-
Stage 2	-	-	1006	0	-	-

Approach	EB	NB	SB
HCM Control Delay, s	7.4	0	0
HCM LOS		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBR	SBT	SBR
Capacity (veh/h)	-	1578	-	-	-
HCM Lane V/C Ratio	-	0.063	-	-	-
HCM Control Delay (s)	0	7.4	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	0	0	0	2	0	48	1	1	16	2
Future Vol, veh/h	5	1	0	0	0	2	0	48	1	1	16	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	0	0	0	2	0	52	1	1	17	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	75	74	18	74	75	53	20	0	0	53	0	0
Stage 1	21	21	-	53	53	-	-	-	-	-	-	-
Stage 2	54	53	-	21	22	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	915	816	1061	916	815	1014	1596	-	-	1553	-	-
Stage 1	998	878	-	960	851	-	-	-	-	-	-	-
Stage 2	958	851	-	998	877	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	912	815	1061	914	814	1014	1596	-	-	1553	-	-
Mov Cap-2 Maneuver	912	815	-	914	814	-	-	-	-	-	-	-
Stage 1	998	877	-	960	851	-	-	-	-	-	-	-
Stage 2	956	851	-	996	876	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	8.6	0	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	894	1014	1553	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.002	0.001	-	-
HCM Control Delay (s)	0	-	-	9.1	8.6	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	25	0	35	25	4	0	0	106	8	0	0
Future Vol, veh/h	2	25	0	35	25	4	0	0	106	8	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	27	0	38	27	4	0	0	115	9	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	32	0	0	27	0	0	137	140	27	194	137	29
Stage 1	-	-	-	-	-	-	32	32	-	105	105	-
Stage 2	-	-	-	-	-	-	105	108	-	89	32	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1580	-	-	1587	-	-	834	751	1048	765	754	1046
Stage 1	-	-	-	-	-	-	984	868	-	901	808	-
Stage 2	-	-	-	-	-	-	901	806	-	918	868	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1580	-	-	1587	-	-	818	732	1048	668	735	1046
Mov Cap-2 Maneuver	-	-	-	-	-	-	818	732	-	668	735	-
Stage 1	-	-	-	-	-	-	983	867	-	900	789	-
Stage 2	-	-	-	-	-	-	879	787	-	816	867	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	4	8.9	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1048	1580	-	-	1587	-	-	668
HCM Lane V/C Ratio	0.11	0.001	-	-	0.024	-	-	0.013
HCM Control Delay (s)	8.9	7.3	-	-	7.3	-	-	10.5
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	137	0	7	64	2	0	0	21	2	0	0
Future Vol, veh/h	2	137	0	7	64	2	0	0	21	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	149	0	8	70	2	0	0	23	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	72	0	0	149	0	0	239	240	149	251	239	71
Stage 1	-	-	-	-	-	-	153	153	-	86	86	-
Stage 2	-	-	-	-	-	-	86	87	-	165	153	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1528	-	-	1432	-	-	715	661	898	702	662	991
Stage 1	-	-	-	-	-	-	849	771	-	922	824	-
Stage 2	-	-	-	-	-	-	922	823	-	837	771	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	1432	-	-	711	656	898	681	657	991
Mov Cap-2 Maneuver	-	-	-	-	-	-	711	656	-	681	657	-
Stage 1	-	-	-	-	-	-	848	770	-	921	819	-
Stage 2	-	-	-	-	-	-	917	818	-	815	770	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	9.1	10.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	898	1528	-	-	1432	-	-	681
HCM Lane V/C Ratio	0.025	0.001	-	-	0.005	-	-	0.003
HCM Control Delay (s)	9.1	7.4	-	-	7.5	-	-	10.3
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	83	8	343	129	213	14	50	276	241	70	42
Future Volume (veh/h)	36	83	8	343	129	213	14	50	276	241	70	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	39	90	9	373	140	232	15	54	300	262	76	46
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	233	23	711	192	319	246	259	547	347	213	129
Arrive On Green	0.04	0.14	0.14	0.21	0.30	0.30	0.14	0.14	0.14	0.20	0.20	0.20
Sat Flow, veh/h	1774	1667	167	3442	632	1047	1774	1863	1583	1774	1088	659
Grp Volume(v), veh/h	39	0	99	373	0	372	15	54	300	262	0	122
Grp Sat Flow(s),veh/h/ln	1774	0	1833	1721	0	1678	1774	1863	1583	1774	0	1747
Q Serve(g_s), s	1.1	0.0	2.5	4.8	0.0	9.9	0.4	1.3	0.0	7.0	0.0	3.0
Cycle Q Clear(g_c), s	1.1	0.0	2.5	4.8	0.0	9.9	0.4	1.3	0.0	7.0	0.0	3.0
Prop In Lane	1.00		0.09	1.00		0.62	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	74	0	256	711	0	511	246	259	547	347	0	342
V/C Ratio(X)	0.53	0.00	0.39	0.52	0.00	0.73	0.06	0.21	0.55	0.75	0.00	0.36
Avail Cap(c_a), veh/h	212	0	585	1098	0	870	566	594	832	566	0	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	0.0	19.6	17.7	0.0	15.6	18.8	19.2	13.3	19.0	0.0	17.4
Incr Delay (d2), s/veh	5.7	0.0	1.0	0.6	0.0	2.0	0.1	0.4	0.9	3.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.3	2.3	0.0	4.8	0.2	0.7	3.5	3.7	0.0	1.5
LnGrp Delay(d),s/veh	29.2	0.0	20.6	18.3	0.0	17.6	18.9	19.5	14.1	22.4	0.0	18.1
LnGrp LOS	C		C	B		B	B	B	B	C		B
Approach Vol, veh/h		138			745			369			384	
Approach Delay, s/veh		23.0			17.9			15.1			21.0	
Approach LOS		C			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	11.0		13.8	6.1	19.3		11.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	16.0		16.0	6.0	26.0		16.0
Max Q Clear Time (g_c+I1), s	6.8	4.5		9.0	3.1	11.9		3.3
Green Ext Time (p_c), s	2.7	0.3		0.9	0.0	3.3		1.1

Intersection Summary		
HCM 2010 Ctrl Delay		18.4
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	8	0	21	6	125	0	84	6	141	143	102
Future Volume (veh/h)	76	8	0	21	6	125	0	84	6	141	143	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	83	9	0	23	7	136	0	91	7	153	155	111
Adj No. of Lanes	1	1	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	339	0	41	229	195	238	291	247	195	742	631
Arrive On Green	0.08	0.18	0.00	0.02	0.12	0.12	0.00	0.16	0.16	0.11	0.40	0.40
Sat Flow, veh/h	1774	1863	0	1774	1863	1583	1109	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	83	9	0	23	7	136	0	91	7	153	155	111
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	1863	1583	1109	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.4	0.1	0.0	0.4	0.1	2.5	0.0	1.3	0.1	2.5	1.7	1.4
Cycle Q Clear(g_c), s	1.4	0.1	0.0	0.4	0.1	2.5	0.0	1.3	0.1	2.5	1.7	1.4
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	145	339	0	41	229	195	238	291	247	195	742	631
V/C Ratio(X)	0.57	0.03	0.00	0.56	0.03	0.70	0.00	0.31	0.03	0.78	0.21	0.18
Avail Cap(c_a), veh/h	938	1724	0	235	985	837	651	985	837	352	1601	1361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.4	10.2	0.0	14.6	11.7	12.7	0.0	11.3	10.8	13.1	6.0	5.9
Incr Delay (d2), s/veh	3.5	0.0	0.0	11.3	0.1	4.5	0.0	0.6	0.0	6.8	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.1	0.0	0.3	0.1	1.3	0.0	0.7	0.1	1.6	0.8	0.6
LnGrp Delay(d),s/veh	16.9	10.2	0.0	25.9	11.7	17.2	0.0	11.9	10.9	19.9	6.1	6.0
LnGrp LOS	B	B		C	B	B		B	B	B	A	A
Approach Vol, veh/h		92			166			98			419	
Approach Delay, s/veh		16.2			18.2			11.9			11.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	7.3	8.7	4.7	9.5		16.1	6.5	7.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	6.3	16.0	4.0	28.0		26.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	4.5	3.3	2.4	2.1		3.7	3.4	4.5
Green Ext Time (p_c), s	0.1	1.4	0.0	0.5		1.7	0.1	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	31	62	0	64	100
Future Vol, veh/h	0	31	62	0	64	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	34	67	0	70	109

Major/Minor	Major2		Minor1		Major1	
Conflicting Flow All	109	-	282	109	34	0
Stage 1	-	-	248	-	-	-
Stage 2	-	-	34	-	-	-
Critical Hdwy	4.12	-	6.52	6.22	4.12	-
Critical Hdwy Stg 1	-	-	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	1481	-	627	945	1578	-
Stage 1	-	-	701	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-				-
Mov Cap-1 Maneuver	1481	-	0	945	1578	-
Mov Cap-2 Maneuver	-	-	0	-	-	-
Stage 1	-	-	0	-	-	-
Stage 2	-	-	0	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0		2.9
HCM LOS		-	

Minor Lane/Major Mvmt	NBLn1	WBL	WBR	SBL	SBT
Capacity (veh/h)	-	1481	-	1578	-
HCM Lane V/C Ratio	-	-	-	0.044	-
HCM Control Delay (s)	-	0	-	7.4	0
HCM Lane LOS	-	A	-	A	A
HCM 95th %tile Q(veh)	-	0	-	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	62	0	0	0	0	100
Future Vol, veh/h	62	0	0	0	0	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	0	0	0	0	109

Major/Minor	Major1		Minor1		Major2	
Conflicting Flow All	109	0	54	-	-	0
Stage 1	-	-	0	-	-	-
Stage 2	-	-	54	-	-	-
Critical Hdwy	4.12	-	6.42	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	-	-	-
Follow-up Hdwy	2.218	-	3.518	-	-	-
Pot Cap-1 Maneuver	1481	-	954	0	-	-
Stage 1	-	-	-	0	-	-
Stage 2	-	-	969	0	-	-
Platoon blocked, %		-			-	-
Mov Cap-1 Maneuver	1481	-	911	0	-	-
Mov Cap-2 Maneuver	-	-	911	0	-	-
Stage 1	-	-	-	0	-	-
Stage 2	-	-	969	0	-	-

Approach	EB	NB	SB
HCM Control Delay, s	7.5	0	0
HCM LOS		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBR	SBT	SBR
Capacity (veh/h)	-	1481	-	-	-
HCM Lane V/C Ratio	-	0.046	-	-	-
HCM Control Delay (s)	0	7.5	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	0	0	1	1	0	49	0	2	18	7
Future Vol, veh/h	4	0	0	0	1	1	0	49	0	2	18	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	0	1	1	0	53	0	2	20	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	82	81	23	81	85	53	27	0	0	53	0	0
Stage 1	28	28	-	53	53	-	-	-	-	-	-	-
Stage 2	54	53	-	28	32	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	905	809	1054	907	805	1014	1587	-	-	1553	-	-
Stage 1	989	872	-	960	851	-	-	-	-	-	-	-
Stage 2	958	851	-	989	868	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	902	808	1054	906	804	1014	1587	-	-	1553	-	-
Mov Cap-2 Maneuver	902	808	-	906	804	-	-	-	-	-	-	-
Stage 1	989	871	-	960	851	-	-	-	-	-	-	-
Stage 2	956	851	-	988	867	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9	0	0.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1587	-	-	902	897	1553	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.002	0.001	-	-
HCM Control Delay (s)	0	-	-	9	9	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	40	0	119	30	8	0	0	69	4	0	0
Future Vol, veh/h	2	40	0	119	30	8	0	0	69	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	43	0	129	33	9	0	0	75	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	41	0	0	43	0	0	344	348	43	381	344	37
Stage 1	-	-	-	-	-	-	48	48	-	296	296	-
Stage 2	-	-	-	-	-	-	296	300	-	85	48	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1568	-	-	1566	-	-	610	576	1027	577	579	1035
Stage 1	-	-	-	-	-	-	965	855	-	712	668	-
Stage 2	-	-	-	-	-	-	712	666	-	923	855	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1568	-	-	1566	-	-	571	528	1027	501	531	1035
Mov Cap-2 Maneuver	-	-	-	-	-	-	571	528	-	501	531	-
Stage 1	-	-	-	-	-	-	964	854	-	711	613	-
Stage 2	-	-	-	-	-	-	653	611	-	855	854	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	5.7	8.8	12.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1027	1568	-	-	1566	-	-	501
HCM Lane V/C Ratio	0.073	0.001	-	-	0.083	-	-	0.009
HCM Control Delay (s)	8.8	7.3	-	-	7.5	-	-	12.2
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.3	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	111	0	24	157	4	0	0	14	4	0	0
Future Vol, veh/h	2	111	0	24	157	4	0	0	14	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	121	0	26	171	4	0	0	15	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	121	0	0	350	352	121	358	350	173
Stage 1	-	-	-	-	-	-	125	125	-	225	225	-
Stage 2	-	-	-	-	-	-	225	227	-	133	125	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1401	-	-	1467	-	-	605	573	930	597	574	871
Stage 1	-	-	-	-	-	-	879	792	-	778	718	-
Stage 2	-	-	-	-	-	-	778	716	-	870	792	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1401	-	-	1467	-	-	596	562	930	579	563	871
Mov Cap-2 Maneuver	-	-	-	-	-	-	596	562	-	579	563	-
Stage 1	-	-	-	-	-	-	878	791	-	777	705	-
Stage 2	-	-	-	-	-	-	764	703	-	855	791	-

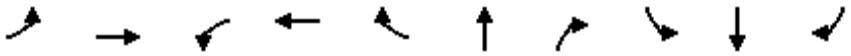
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1	8.9	11.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	930	1401	-	-	1467	-	-	579
HCM Lane V/C Ratio	0.016	0.002	-	-	0.018	-	-	0.008
HCM Control Delay (s)	8.9	7.6	-	-	7.5	-	-	11.3
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	137	118	344	4	45	273	171	37
v/c Ratio	0.17	0.29	0.26	0.38	0.01	0.11	0.47	0.40	0.09
Control Delay	26.6	19.3	25.1	6.5	19.5	19.9	4.2	21.1	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	19.3	25.1	6.5	19.5	19.9	4.2	21.1	13.7
Queue Length 50th (ft)	10	31	15	10	1	11	0	40	5
Queue Length 95th (ft)	44	90	49	89	8	39	21	115	28
Internal Link Dist (ft)		1256		1388		402			224
Turn Bay Length (ft)	200		200				150	100	
Base Capacity (vph)	233	778	453	942	746	785	584	746	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.18	0.26	0.37	0.01	0.06	0.47	0.23	0.05

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	11	7	2	24	167	10	54	42	34
v/c Ratio	0.23	0.03	0.03	0.01	0.05	0.15	0.01	0.16	0.03	0.03
Control Delay	14.7	13.0	19.2	17.5	0.2	10.8	0.0	17.4	6.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	13.0	19.2	17.5	0.2	10.8	0.0	17.4	6.0	0.0
Queue Length 50th (ft)	11	1	1	0	0	12	0	7	3	0
Queue Length 95th (ft)	58	12	12	5	0	85	0	42	20	0
Internal Link Dist (ft)		2111		98		540			402	
Turn Bay Length (ft)							100			100
Base Capacity (vph)	905	1582	226	952	908	1223	1109	339	1347	1201
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.03	0.00	0.03	0.14	0.01	0.16	0.03	0.03

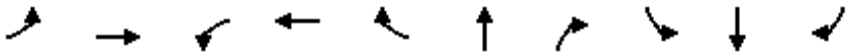
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	99	373	372	15	54	300	262	122
v/c Ratio	0.19	0.30	0.51	0.49	0.05	0.17	0.43	0.61	0.27
Control Delay	32.2	25.7	24.4	14.5	25.6	26.2	3.2	30.0	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	25.7	24.4	14.5	25.6	26.2	3.2	30.0	18.4
Queue Length 50th (ft)	13	30	60	60	5	17	0	80	24
Queue Length 95th (ft)	49	81	129	195	22	53	20	#232	84
Internal Link Dist (ft)		1256		1388		402			224
Turn Bay Length (ft)	200		200				150	100	
Base Capacity (vph)	212	591	1097	929	565	595	826	565	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.17	0.34	0.40	0.03	0.09	0.36	0.46	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	83	9	23	7	136	91	7	153	155	111
v/c Ratio	0.25	0.02	0.13	0.03	0.33	0.18	0.01	0.56	0.15	0.12
Control Delay	17.6	11.1	21.5	17.8	3.9	16.4	0.0	30.2	8.7	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	11.1	21.5	17.8	3.9	16.4	0.0	30.2	8.7	2.0
Queue Length 50th (ft)	18	1	5	2	0	19	0	35	22	0
Queue Length 95th (ft)	49	10	23	10	18	52	0	#116	56	16
Internal Link Dist (ft)		2111		98		540			402	
Turn Bay Length (ft)							100			100
Base Capacity (vph)	729	1343	182	767	771	816	807	273	1339	1177
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.13	0.01	0.18	0.11	0.01	0.56	0.12	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX K-1.3
Intersection LOS Analysis
Phase 1-3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	134	24	70	55	269	20	98	124	203	70	33
Future Volume (veh/h)	32	134	24	70	55	269	20	98	124	203	70	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	35	146	26	76	60	292	22	107	135	221	76	36
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	242	43	530	75	366	268	282	483	316	213	101
Arrive On Green	0.04	0.16	0.16	0.15	0.27	0.27	0.15	0.15	0.15	0.18	0.18	0.18
Sat Flow, veh/h	1774	1540	274	3442	277	1348	1774	1863	1583	1774	1196	567
Grp Volume(v), veh/h	35	0	172	76	0	352	22	107	135	221	0	112
Grp Sat Flow(s),veh/h/ln	1774	0	1814	1721	0	1625	1774	1863	1583	1774	0	1763
Q Serve(g_s), s	0.9	0.0	3.9	0.9	0.0	9.0	0.5	2.3	0.0	5.2	0.0	2.5
Cycle Q Clear(g_c), s	0.9	0.0	3.9	0.9	0.0	9.0	0.5	2.3	0.0	5.2	0.0	2.5
Prop In Lane	1.00		0.15	1.00		0.83	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	70	0	285	530	0	442	268	282	483	316	0	314
V/C Ratio(X)	0.50	0.00	0.60	0.14	0.00	0.80	0.08	0.38	0.28	0.70	0.00	0.36
Avail Cap(c_a), veh/h	199	0	652	530	0	620	638	669	813	638	0	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	17.5	16.3	0.0	15.1	16.2	17.0	11.7	17.2	0.0	16.1
Incr Delay (d2), s/veh	5.4	0.0	2.0	0.1	0.0	4.9	0.1	0.8	0.3	2.8	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.1	0.4	0.0	4.6	0.2	1.3	1.3	2.8	0.0	1.3
LnGrp Delay(d),s/veh	26.4	0.0	19.5	16.4	0.0	20.0	16.4	17.9	12.1	20.0	0.0	16.7
LnGrp LOS	C		B	B		B	B	B	B	B		B
Approach Vol, veh/h		207			428			264			333	
Approach Delay, s/veh		20.7			19.3			14.8			18.9	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	11.0		11.9	5.8	16.1		10.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.0	16.0		16.0	5.0	17.0		16.0
Max Q Clear Time (g_c+I1), s	2.9	5.9		7.2	2.9	11.0		4.3
Green Ext Time (p_c), s	0.8	0.6		0.9	0.0	1.1		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		18.5
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	11	20	15	3	25	5	148	46	36	104	24
Future Volume (veh/h)	69	11	20	15	3	25	5	148	46	36	104	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	75	12	22	16	3	27	5	161	50	39	113	26
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	68	125	27	127	108	9	529	159	67	660	148
Arrive On Green	0.06	0.12	0.12	0.02	0.07	0.07	0.01	0.20	0.20	0.04	0.23	0.23
Sat Flow, veh/h	1774	590	1082	1597	1863	1583	1597	2683	807	1774	2875	643
Grp Volume(v), veh/h	75	0	34	16	3	27	5	104	107	39	68	71
Grp Sat Flow(s),veh/h/ln	1774	0	1672	1597	1863	1583	1597	1770	1720	1774	1770	1749
Q Serve(g_s), s	1.0	0.0	0.5	0.3	0.0	0.4	0.1	1.3	1.3	0.5	0.8	0.8
Cycle Q Clear(g_c), s	1.0	0.0	0.5	0.3	0.0	0.4	0.1	1.3	1.3	0.5	0.8	0.8
Prop In Lane	1.00		0.65	1.00		1.00	1.00		0.47	1.00		0.37
Lane Grp Cap(c), veh/h	115	0	194	27	127	108	9	349	339	67	406	402
V/C Ratio(X)	0.65	0.00	0.18	0.60	0.02	0.25	0.57	0.30	0.31	0.58	0.17	0.18
Avail Cap(c_a), veh/h	1121	0	1849	252	1177	1001	252	1189	1155	350	1258	1244
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	10.1	12.4	11.0	11.2	12.6	8.7	8.7	12.0	7.8	7.8
Incr Delay (d2), s/veh	6.1	0.0	0.4	19.3	0.1	1.2	48.0	0.5	0.5	7.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.2	0.3	0.0	0.2	0.1	0.7	0.7	0.4	0.4	0.4
LnGrp Delay(d),s/veh	17.7	0.0	10.5	31.7	11.1	12.4	60.6	9.1	9.2	19.7	8.0	8.0
LnGrp LOS	B		B	C	B	B	E	A	A	B	A	A
Approach Vol, veh/h		109			46			216			178	
Approach Delay, s/veh		15.4			19.0			10.4			10.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	9.0	4.4	6.9	4.1	9.8	5.6	5.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	17.0	4.0	28.0	4.0	18.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	2.5	3.3	2.3	2.5	2.1	2.8	3.0	2.4
Green Ext Time (p_c), s	0.0	1.7	0.0	0.2	0.0	1.7	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	67	132	8	33	106
Future Volume (veh/h)	21	67	132	8	33	106
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	23	73	143	9	36	115
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	150	134	750	47	65	1690
Arrive On Green	0.08	0.08	0.22	0.22	0.04	0.48
Sat Flow, veh/h	1774	1583	3477	211	1774	3632
Grp Volume(v), veh/h	23	73	74	78	36	115
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1825	1774	1770
Q Serve(g_s), s	0.2	0.8	0.6	0.6	0.4	0.3
Cycle Q Clear(g_c), s	0.2	0.8	0.6	0.6	0.4	0.3
Prop In Lane	1.00	1.00		0.12	1.00	
Lane Grp Cap(c), veh/h	150	134	392	405	65	1690
V/C Ratio(X)	0.15	0.55	0.19	0.19	0.56	0.07
Avail Cap(c_a), veh/h	1943	1734	2035	2100	1069	6978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.8	8.0	5.8	5.8	8.6	2.6
Incr Delay (d2), s/veh	0.5	3.4	0.2	0.2	7.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.3	0.3	0.3	0.1
LnGrp Delay(d),s/veh	8.2	11.5	6.0	6.0	15.9	2.6
LnGrp LOS	A	B	A	A	B	A
Approach Vol, veh/h	96		152			151
Approach Delay, s/veh	10.7		6.0			5.8
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	4.7	8.0				12.7		5.5
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	11.0	21.0				36.0		20.0
Max Q Clear Time (g_c+I1), s	2.4	2.6				2.3		2.8
Green Ext Time (p_c), s	0.0	1.4				1.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	31	7	79	103	24
Future Vol, veh/h	61	31	7	79	103	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	34	8	86	112	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	226	69	138	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	752	980	1445	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	748	980	1445	-	-	-
Mov Cap-2 Maneuver	748	-	-	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	918	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1445	-	813	-	-
HCM Lane V/C Ratio	0.005	-	0.123	-	-
HCM Control Delay (s)	7.5	-	10	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	0	3	0	2	0	37	11	1	13	2
Future Vol, veh/h	5	1	0	3	0	2	0	37	11	1	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	0	3	0	2	0	40	12	1	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	64	69	15	64	64	46	16	0	0	52	0	0
Stage 1	17	17	-	46	46	-	-	-	-	-	-	-
Stage 2	47	52	-	18	18	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	930	822	1065	930	827	1023	1602	-	-	1554	-	-
Stage 1	1002	881	-	968	857	-	-	-	-	-	-	-
Stage 2	967	852	-	1001	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	927	821	1065	928	826	1023	1602	-	-	1554	-	-
Mov Cap-2 Maneuver	927	821	-	928	826	-	-	-	-	-	-	-
Stage 1	1002	880	-	968	857	-	-	-	-	-	-	-
Stage 2	965	852	-	999	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	8.8	0	0.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	907	964	1554	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.006	0.001	-	-
HCM Control Delay (s)	0	-	-	9	8.8	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	45	0	40	45	12	0	0	106	15	0	4
Future Vol, veh/h	6	45	0	40	45	12	0	0	106	15	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	49	0	43	49	13	0	0	115	16	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	62	0	0	49	0	0	207	211	49	262	204	55
Stage 1	-	-	-	-	-	-	62	62	-	142	142	-
Stage 2	-	-	-	-	-	-	145	149	-	120	62	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1541	-	-	1558	-	-	751	686	1020	691	692	1012
Stage 1	-	-	-	-	-	-	949	843	-	861	779	-
Stage 2	-	-	-	-	-	-	858	774	-	884	843	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1541	-	-	1558	-	-	729	664	1020	598	670	1012
Mov Cap-2 Maneuver	-	-	-	-	-	-	729	664	-	598	670	-
Stage 1	-	-	-	-	-	-	945	839	-	857	758	-
Stage 2	-	-	-	-	-	-	831	753	-	781	839	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	3	9	10.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1020	1541	-	-	1558	-	-	654
HCM Lane V/C Ratio	0.113	0.004	-	-	0.028	-	-	0.032
HCM Control Delay (s)	9	7.3	-	-	7.4	-	-	10.7
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	162	0	10	95	3	0	0	21	7	0	2
Future Vol, veh/h	4	162	0	10	95	3	0	0	21	7	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	176	0	11	103	3	0	0	23	8	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	107	0	0	176	0	0	313	313	176	323	312	105
Stage 1	-	-	-	-	-	-	185	185	-	127	127	-
Stage 2	-	-	-	-	-	-	128	128	-	196	185	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1484	-	-	1400	-	-	640	602	867	630	603	949
Stage 1	-	-	-	-	-	-	817	747	-	877	791	-
Stage 2	-	-	-	-	-	-	876	790	-	806	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1484	-	-	1400	-	-	633	596	867	608	597	949
Mov Cap-2 Maneuver	-	-	-	-	-	-	633	596	-	608	597	-
Stage 1	-	-	-	-	-	-	815	745	-	875	785	-
Stage 2	-	-	-	-	-	-	867	784	-	783	745	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	9.3	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	867	1484	-	-	1400	-	-	661
HCM Lane V/C Ratio	0.026	0.003	-	-	0.008	-	-	0.015
HCM Control Delay (s)	9.3	7.4	-	-	7.6	-	-	10.5
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	89	29	284	162	333	42	176	227	268	235	40
Future Volume (veh/h)	48	89	29	284	162	333	42	176	227	268	235	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	52	97	32	309	176	362	46	191	247	291	255	43
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	148	49	971	188	387	266	279	684	364	319	54
Arrive On Green	0.05	0.11	0.11	0.28	0.35	0.35	0.15	0.15	0.15	0.21	0.21	0.21
Sat Flow, veh/h	1774	1342	443	3442	545	1120	1774	1863	1583	1774	1554	262
Grp Volume(v), veh/h	52	0	129	309	0	538	46	191	247	291	0	298
Grp Sat Flow(s),veh/h/ln	1774	0	1785	1721	0	1665	1774	1863	1583	1774	0	1816
Q Serve(g_s), s	1.8	0.0	4.4	4.5	0.0	19.8	1.4	6.2	0.0	9.9	0.0	9.9
Cycle Q Clear(g_c), s	1.8	0.0	4.4	4.5	0.0	19.8	1.4	6.2	0.0	9.9	0.0	9.9
Prop In Lane	1.00		0.25	1.00		0.67	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	84	0	197	971	0	575	266	279	684	364	0	372
V/C Ratio(X)	0.62	0.00	0.65	0.32	0.00	0.94	0.17	0.68	0.36	0.80	0.00	0.80
Avail Cap(c_a), veh/h	140	0	479	971	0	578	448	471	847	448	0	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.6	0.0	27.0	17.9	0.0	20.1	23.5	25.5	12.1	23.9	0.0	23.9
Incr Delay (d2), s/veh	7.2	0.0	3.6	0.2	0.0	22.8	0.3	3.0	0.3	8.2	0.0	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.3	2.1	0.0	12.6	0.7	3.4	2.9	5.7	0.0	5.8
LnGrp Delay(d),s/veh	36.8	0.0	30.7	18.1	0.0	42.8	23.8	28.5	12.4	32.1	0.0	31.9
LnGrp LOS	D		C	B		D	C	C	B	C		C
Approach Vol, veh/h		181			847			484			589	
Approach Delay, s/veh		32.4			33.8			19.8			32.0	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.9	11.0		17.0	7.0	25.9		13.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	10.0	17.0		16.0	5.0	22.0		16.0
Max Q Clear Time (g_c+I1), s	6.5	6.4		11.9	3.8	21.8		8.2
Green Ext Time (p_c), s	1.6	0.4		1.1	0.0	0.1		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	10	17	52	8	152	5	234	26	178	254	80
Future Volume (veh/h)	59	10	17	52	8	152	5	234	26	178	254	80
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	64	11	18	57	9	165	5	254	28	193	276	87
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	121	198	85	286	243	10	647	71	244	887	274
Arrive On Green	0.08	0.19	0.19	0.05	0.15	0.15	0.01	0.20	0.20	0.14	0.33	0.33
Sat Flow, veh/h	1774	637	1042	1774	1863	1583	1774	3219	352	1774	2664	823
Grp Volume(v), veh/h	64	0	29	57	9	165	5	139	143	193	181	182
Grp Sat Flow(s),veh/h/ln	1774	0	1679	1774	1863	1583	1774	1770	1801	1774	1770	1718
Q Serve(g_s), s	1.3	0.0	0.5	1.2	0.2	3.7	0.1	2.6	2.6	4.0	2.9	3.0
Cycle Q Clear(g_c), s	1.3	0.0	0.5	1.2	0.2	3.7	0.1	2.6	2.6	4.0	2.9	3.0
Prop In Lane	1.00		0.62	1.00		1.00	1.00		0.20	1.00		0.48
Lane Grp Cap(c), veh/h	149	0	319	85	286	243	10	356	362	244	589	572
V/C Ratio(X)	0.43	0.00	0.09	0.67	0.03	0.68	0.52	0.39	0.40	0.79	0.31	0.32
Avail Cap(c_a), veh/h	752	0	1156	282	790	671	188	750	763	282	844	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	12.6	17.7	13.6	15.1	18.7	13.1	13.1	15.8	9.4	9.4
Incr Delay (d2), s/veh	2.0	0.0	0.1	9.0	0.0	3.3	37.5	0.7	0.7	12.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.3	0.8	0.1	1.8	0.1	1.3	1.3	2.8	1.4	1.5
LnGrp Delay(d),s/veh	18.4	0.0	12.7	26.6	13.6	18.4	56.2	13.8	13.8	28.3	9.7	9.7
LnGrp LOS	B		B	C	B	B	E	B	B	C	A	A
Approach Vol, veh/h		93			231			287			556	
Approach Delay, s/veh		16.6			20.2			14.5			16.1	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	11.6	5.8	11.2	4.2	16.6	7.2	9.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	16.0	6.0	26.0	4.0	18.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	3.0	4.6	3.2	2.5	2.1	5.0	3.3	5.7
Green Ext Time (p_c), s	0.0	3.0	0.0	0.7	0.0	3.2	0.1	0.5

Intersection Summary		
HCM 2010 Ctrl Delay		16.6
HCM 2010 LOS		B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	94	171	20	125	198
Future Volume (veh/h)	29	94	171	20	125	198
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	32	102	186	22	136	215
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	181	161	786	92	182	1883
Arrive On Green	0.10	0.10	0.25	0.25	0.10	0.53
Sat Flow, veh/h	1774	1583	3287	373	1774	3632
Grp Volume(v), veh/h	32	102	102	106	136	215
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1797	1774	1770
Q Serve(g_s), s	0.4	1.4	1.0	1.0	1.6	0.7
Cycle Q Clear(g_c), s	0.4	1.4	1.0	1.0	1.6	0.7
Prop In Lane	1.00	1.00		0.21	1.00	
Lane Grp Cap(c), veh/h	181	161	436	442	182	1883
V/C Ratio(X)	0.18	0.63	0.23	0.24	0.75	0.11
Avail Cap(c_a), veh/h	1461	1304	1619	1644	1136	6154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	9.4	6.6	6.6	9.5	2.5
Incr Delay (d2), s/veh	0.5	4.0	0.3	0.3	5.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.8	0.5	0.5	1.1	0.3
LnGrp Delay(d),s/veh	9.4	13.5	6.9	6.9	15.5	2.6
LnGrp LOS	A	B	A	A	B	A
Approach Vol, veh/h	134		208			351
Approach Delay, s/veh	12.5		6.9			7.6
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.2	9.4				15.6		6.2
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	14.0	20.0				38.0		18.0
Max Q Clear Time (g_c+I1), s	3.6	3.0				2.7		3.4
Green Ext Time (p_c), s	0.2	2.3				2.8		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	25	22	154	149	78
Future Vol, veh/h	37	25	22	154	149	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	27	24	167	162	85

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	419	123	247	0	-	0
Stage 1	204	-	-	-	-	-
Stage 2	215	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	576	905	1317	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	566	905	1317	-	-	-
Mov Cap-2 Maneuver	566	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1317	-	667	-	-
HCM Lane V/C Ratio	0.018	-	0.101	-	-
HCM Control Delay (s)	7.8	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	0	11	1	1	0	38	11	2	37	7
Future Vol, veh/h	4	0	0	11	1	1	0	38	11	2	37	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	12	1	1	0	41	12	2	40	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	101	44	95	99	47	48	0	0	53	0	0
Stage 1	48	48	-	47	47	-	-	-	-	-	-	-
Stage 2	48	53	-	48	52	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	887	789	1026	888	791	1022	1559	-	-	1553	-	-
Stage 1	965	855	-	967	856	-	-	-	-	-	-	-
Stage 2	965	851	-	965	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	884	788	1026	887	790	1022	1559	-	-	1553	-	-
Mov Cap-2 Maneuver	884	788	-	887	790	-	-	-	-	-	-	-
Stage 1	965	854	-	967	856	-	-	-	-	-	-	-
Stage 2	963	851	-	964	851	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.1	0	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1559	-	-	884	888	1553	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.016	0.001	-	-
HCM Control Delay (s)	0	-	-	9.1	9.1	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	75	0	135	55	15	0	0	69	20	0	4
Future Vol, veh/h	6	75	0	135	55	15	0	0	69	20	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	82	0	147	60	16	0	0	75	22	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	76	0	0	82	0	0	459	465	82	493	456	68
Stage 1	-	-	-	-	-	-	95	95	-	361	361	-
Stage 2	-	-	-	-	-	-	364	370	-	132	95	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1523	-	-	1515	-	-	512	495	978	486	501	995
Stage 1	-	-	-	-	-	-	912	816	-	657	626	-
Stage 2	-	-	-	-	-	-	655	620	-	871	816	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1523	-	-	1515	-	-	470	445	978	414	450	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	470	445	-	414	450	-
Stage 1	-	-	-	-	-	-	908	812	-	654	565	-
Stage 2	-	-	-	-	-	-	589	560	-	801	812	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	5	9	13.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	978	1523	-	-	1515	-	-	459
HCM Lane V/C Ratio	0.077	0.004	-	-	0.097	-	-	0.057
HCM Control Delay (s)	9	7.4	-	-	7.6	-	-	13.3
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	149	0	34	203	7	0	0	14	3	0	2
Future Vol, veh/h	4	149	0	34	203	7	0	0	14	3	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	162	0	37	221	8	0	0	15	3	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	228	0	0	162	0	0	470	473	162	476	469	224
Stage 1	-	-	-	-	-	-	171	171	-	298	298	-
Stage 2	-	-	-	-	-	-	299	302	-	178	171	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1340	-	-	1417	-	-	504	490	883	499	492	815
Stage 1	-	-	-	-	-	-	831	757	-	711	667	-
Stage 2	-	-	-	-	-	-	710	664	-	824	757	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1340	-	-	1417	-	-	492	476	883	480	478	815
Mov Cap-2 Maneuver	-	-	-	-	-	-	492	476	-	480	478	-
Stage 1	-	-	-	-	-	-	829	755	-	709	650	-
Stage 2	-	-	-	-	-	-	690	647	-	807	755	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	9.1	11.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	883	1340	-	-	1417	-	-	574
HCM Lane V/C Ratio	0.017	0.003	-	-	0.026	-	-	0.009
HCM Control Delay (s)	9.1	7.7	-	-	7.6	-	-	11.3
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0

APPENDIX K-1.4
Intersection LOS Analysis
Forecast Year 2035

NOTE: ESA = EPA = Environmentally Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	144	24	70	56	269	20	111	124	203	79	36
Future Volume (veh/h)	32	144	24	70	56	269	20	111	124	203	79	36
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	34	152	25	74	59	283	21	117	131	214	83	38
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	69	253	42	469	73	349	276	290	462	313	214	98
Arrive On Green	0.04	0.16	0.16	0.14	0.26	0.26	0.16	0.16	0.16	0.18	0.18	0.18
Sat Flow, veh/h	1774	1561	257	3442	280	1345	1774	1863	1583	1774	1211	554
Grp Volume(v), veh/h	34	0	177	74	0	342	21	117	131	214	0	121
Grp Sat Flow(s),veh/h/ln	1774	0	1817	1721	0	1625	1774	1863	1583	1774	0	1765
Q Serve(g_s), s	0.8	0.0	3.9	0.8	0.0	8.5	0.4	2.4	0.0	4.9	0.0	2.6
Cycle Q Clear(g_c), s	0.8	0.0	3.9	0.8	0.0	8.5	0.4	2.4	0.0	4.9	0.0	2.6
Prop In Lane	1.00		0.14	1.00		0.83	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	69	0	294	469	0	421	276	290	462	313	0	312
V/C Ratio(X)	0.49	0.00	0.60	0.16	0.00	0.81	0.08	0.40	0.28	0.68	0.00	0.39
Avail Cap(c_a), veh/h	287	0	672	469	0	526	697	732	838	656	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	16.8	16.5	0.0	15.0	15.6	16.5	11.8	16.7	0.0	15.7
Incr Delay (d2), s/veh	5.4	0.0	2.0	0.2	0.0	7.6	0.1	0.9	0.3	2.6	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.1	0.4	0.0	4.7	0.2	1.3	1.2	2.6	0.0	1.3
LnGrp Delay(d),s/veh	25.8	0.0	18.8	16.6	0.0	22.6	15.7	17.4	12.2	19.3	0.0	16.5
LnGrp LOS	C		B	B		C	B	B	B	B		B
Approach Vol, veh/h		211			416			269			335	
Approach Delay, s/veh		19.9			21.6			14.7			18.3	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	11.0		11.6	5.7	15.2		10.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.0	16.0		16.0	7.0	14.0		17.0
Max Q Clear Time (g_c+I1), s	2.8	5.9		6.9	2.8	10.5		4.4
Green Ext Time (p_c), s	0.5	0.6		0.9	0.0	0.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	15	20	20	4	34	5	270	62	48	237	22
Future Volume (veh/h)	68	15	20	20	4	34	5	270	62	48	237	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	72	16	21	21	4	36	5	284	65	51	249	23
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	104	137	30	132	113	8	713	161	66	949	87
Arrive On Green	0.09	0.14	0.14	0.02	0.07	0.07	0.01	0.25	0.25	0.05	0.29	0.29
Sat Flow, veh/h	1774	732	961	1419	1770	1504	1419	2871	647	1419	3279	300
Grp Volume(v), veh/h	72	0	37	21	4	36	5	173	176	51	133	139
Grp Sat Flow(s),veh/h/ln	1774	0	1693	1419	1770	1504	1419	1770	1749	1419	1770	1810
Q Serve(g_s), s	1.1	0.0	0.6	0.4	0.1	0.7	0.1	2.4	2.5	1.1	1.7	1.7
Cycle Q Clear(g_c), s	1.1	0.0	0.6	0.4	0.1	0.7	0.1	2.4	2.5	1.1	1.7	1.7
Prop In Lane	1.00		0.57	1.00		1.00	1.00		0.37	1.00		0.17
Lane Grp Cap(c), veh/h	158	0	241	30	132	113	8	440	434	66	512	524
V/C Ratio(X)	0.46	0.00	0.15	0.69	0.03	0.32	0.65	0.39	0.40	0.78	0.26	0.26
Avail Cap(c_a), veh/h	961	0	1547	240	958	815	192	958	947	288	1078	1103
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	11.1	14.4	12.7	13.0	14.7	9.2	9.3	13.9	8.1	8.1
Incr Delay (d2), s/veh	2.1	0.0	0.3	24.3	0.1	1.6	65.4	0.6	0.6	17.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.3	0.4	0.0	0.3	0.2	1.2	1.2	0.7	0.9	0.9
LnGrp Delay(d),s/veh	14.8	0.0	11.4	38.6	12.8	14.6	80.1	9.8	9.9	31.4	8.3	8.3
LnGrp LOS	B		B	D	B	B	F	A	A	C	A	A
Approach Vol, veh/h		109			61			354			323	
Approach Delay, s/veh		13.7			22.7			10.8			12.0	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	11.3	4.6	8.2	4.2	12.5	6.6	6.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	16.0	5.0	27.0	4.0	18.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	3.1	4.5	2.4	2.6	2.1	3.7	3.1	2.7
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	3.2	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Notes



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	87	145	8	33	115
Future Volume (veh/h)	21	87	145	8	33	115
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	22	92	153	8	35	121
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	170	151	773	40	63	1684
Arrive On Green	0.10	0.10	0.23	0.23	0.04	0.48
Sat Flow, veh/h	1774	1583	3516	178	1774	3632
Grp Volume(v), veh/h	22	92	79	82	35	121
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1831	1774	1770
Q Serve(g_s), s	0.2	1.0	0.7	0.7	0.4	0.3
Cycle Q Clear(g_c), s	0.2	1.0	0.7	0.7	0.4	0.3
Prop In Lane	1.00	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h	170	151	400	414	63	1684
V/C Ratio(X)	0.13	0.61	0.20	0.20	0.55	0.07
Avail Cap(c_a), veh/h	1901	1696	2086	2158	950	6826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.7	8.1	5.9	5.9	8.9	2.7
Incr Delay (d2), s/veh	0.3	3.9	0.2	0.2	7.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.6	0.4	0.4	0.3	0.2
LnGrp Delay(d),s/veh	8.1	12.0	6.1	6.1	16.3	2.7
LnGrp LOS	A	B	A	A	B	A
Approach Vol, veh/h	114		161			156
Approach Delay, s/veh	11.2		6.1			5.7
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	4.7	8.2				12.9		5.8
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	10.0	22.0				36.0		20.0
Max Q Clear Time (g_c+I1), s	2.4	2.7				2.3		3.0
Green Ext Time (p_c), s	0.0	1.5				1.8		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	31	7	92	112	24
Future Vol, veh/h	61	31	7	92	112	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	33	7	97	118	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	243	72	143	0	-	0
Stage 1	131	-	-	-	-	-
Stage 2	112	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	735	976	1438	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	731	976	1438	-	-	-
Mov Cap-2 Maneuver	731	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	908	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1438	-	799	-	-
HCM Lane V/C Ratio	0.005	-	0.121	-	-
HCM Control Delay (s)	7.5	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	0	3	0	2	0	37	11	1	13	2
Future Vol, veh/h	5	1	0	3	0	2	0	37	11	1	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	0	3	0	2	0	40	12	1	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	64	69	15	64	64	46	16	0	0	52	0	0
Stage 1	17	17	-	46	46	-	-	-	-	-	-	-
Stage 2	47	52	-	18	18	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	930	822	1065	930	827	1023	1602	-	-	1554	-	-
Stage 1	1002	881	-	968	857	-	-	-	-	-	-	-
Stage 2	967	852	-	1001	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	927	821	1065	928	826	1023	1602	-	-	1554	-	-
Mov Cap-2 Maneuver	927	821	-	928	826	-	-	-	-	-	-	-
Stage 1	1002	880	-	968	857	-	-	-	-	-	-	-
Stage 2	965	852	-	999	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	8.8	0	0.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	907	964	1554	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.006	0.001	-	-
HCM Control Delay (s)	0	-	-	9	8.8	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	50	0	40	45	15	0	0	106	20	0	5
Future Vol, veh/h	8	50	0	40	45	15	0	0	106	20	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	54	0	43	49	16	0	0	115	22	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	65	0	0	54	0	0	219	224	54	273	216	57
Stage 1	-	-	-	-	-	-	72	72	-	144	144	-
Stage 2	-	-	-	-	-	-	147	152	-	129	72	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1537	-	-	1551	-	-	737	675	1013	679	682	1009
Stage 1	-	-	-	-	-	-	938	835	-	859	778	-
Stage 2	-	-	-	-	-	-	856	772	-	875	835	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1537	-	-	1551	-	-	714	652	1013	586	659	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	714	652	-	586	659	-
Stage 1	-	-	-	-	-	-	933	830	-	854	756	-
Stage 2	-	-	-	-	-	-	828	751	-	771	830	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	3	9	10.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1013	1537	-	-	1551	-	-	640
HCM Lane V/C Ratio	0.114	0.006	-	-	0.028	-	-	0.042
HCM Control Delay (s)	9	7.4	-	-	7.4	-	-	10.9
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	171	0	10	98	4	0	0	21	8	0	2
Future Vol, veh/h	5	171	0	10	98	4	0	0	21	8	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	186	0	11	107	4	0	0	23	9	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	186	0	0	329	330	186	338	327	109
Stage 1	-	-	-	-	-	-	197	197	-	130	130	-
Stage 2	-	-	-	-	-	-	132	133	-	208	197	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1388	-	-	624	589	856	616	591	945
Stage 1	-	-	-	-	-	-	805	738	-	874	789	-
Stage 2	-	-	-	-	-	-	871	786	-	794	738	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1388	-	-	617	582	856	594	584	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	617	582	-	594	584	-
Stage 1	-	-	-	-	-	-	802	736	-	871	783	-
Stage 2	-	-	-	-	-	-	862	780	-	770	736	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	9.3	10.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	856	1479	-	-	1388	-	-	642
HCM Lane V/C Ratio	0.027	0.004	-	-	0.008	-	-	0.017
HCM Control Delay (s)	9.3	7.4	-	-	7.6	-	-	10.7
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	94	20	284	169	333	42	208	227	268	249	44
Future Volume (veh/h)	48	94	20	284	169	333	42	208	227	268	249	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	51	99	21	299	178	351	44	219	239	282	262	46
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	160	34	952	190	374	288	302	695	368	321	56
Arrive On Green	0.05	0.11	0.11	0.28	0.34	0.34	0.16	0.16	0.16	0.21	0.21	0.21
Sat Flow, veh/h	1774	1491	316	3442	561	1106	1774	1863	1583	1774	1544	271
Grp Volume(v), veh/h	51	0	120	299	0	529	44	219	239	282	0	308
Grp Sat Flow(s),veh/h/ln	1774	0	1807	1721	0	1667	1774	1863	1583	1774	0	1815
Q Serve(g_s), s	1.8	0.0	4.1	4.5	0.0	20.0	1.4	7.3	0.0	9.7	0.0	10.5
Cycle Q Clear(g_c), s	1.8	0.0	4.1	4.5	0.0	20.0	1.4	7.3	0.0	9.7	0.0	10.5
Prop In Lane	1.00		0.17	1.00		0.66	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	82	0	194	952	0	564	288	302	695	368	0	377
V/C Ratio(X)	0.62	0.00	0.62	0.31	0.00	0.94	0.15	0.72	0.34	0.77	0.00	0.82
Avail Cap(c_a), veh/h	136	0	472	952	0	564	436	458	827	436	0	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	27.8	18.6	0.0	20.9	23.4	25.9	12.1	24.3	0.0	24.6
Incr Delay (d2), s/veh	7.4	0.0	3.2	0.2	0.0	23.7	0.2	3.3	0.3	6.7	0.0	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.2	2.1	0.0	12.8	0.7	4.0	2.8	5.5	0.0	6.2
LnGrp Delay(d),s/veh	37.9	0.0	30.9	18.8	0.0	44.6	23.7	29.2	12.4	31.0	0.0	34.4
LnGrp LOS	D		C	B		D	C	C	B	C		C
Approach Vol, veh/h		171			828			502			590	
Approach Delay, s/veh		33.0			35.3			20.7			32.8	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.0	11.0		17.5	7.0	26.0		14.6
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	10.0	17.0		16.0	5.0	22.0		16.0
Max Q Clear Time (g_c+I1), s	6.5	6.1		12.5	3.8	22.0		9.3
Green Ext Time (p_c), s	1.6	0.4		1.0	0.0	0.0		1.3

Intersection Summary		
HCM 2010 Ctrl Delay		30.9
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	14	17	70	11	205	5	396	35	240	338	78
Future Volume (veh/h)	58	14	17	70	11	205	5	396	35	240	338	78
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	61	15	18	74	12	216	5	417	37	253	356	82
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	158	189	93	338	287	10	753	67	313	1146	261
Arrive On Green	0.08	0.20	0.20	0.05	0.18	0.18	0.01	0.23	0.23	0.18	0.40	0.40
Sat Flow, veh/h	1774	772	927	1774	1863	1583	1774	3290	291	1774	2865	652
Grp Volume(v), veh/h	61	0	33	74	12	216	5	223	231	253	218	220
Grp Sat Flow(s),veh/h/ln	1774	0	1699	1774	1863	1583	1774	1770	1811	1774	1770	1748
Q Serve(g_s), s	1.6	0.0	0.7	2.0	0.3	6.1	0.1	5.3	5.3	6.5	4.0	4.1
Cycle Q Clear(g_c), s	1.6	0.0	0.7	2.0	0.3	6.1	0.1	5.3	5.3	6.5	4.0	4.1
Prop In Lane	1.00		0.55	1.00		1.00	1.00		0.16	1.00		0.37
Lane Grp Cap(c), veh/h	133	0	347	93	338	287	10	405	415	313	708	699
V/C Ratio(X)	0.46	0.00	0.10	0.79	0.04	0.75	0.52	0.55	0.56	0.81	0.31	0.31
Avail Cap(c_a), veh/h	599	0	861	300	629	535	150	598	612	412	859	849
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	15.3	22.2	16.0	18.4	23.5	16.1	16.1	18.7	9.7	9.7
Incr Delay (d2), s/veh	2.4	0.0	0.1	14.0	0.0	4.0	38.1	1.2	1.2	8.7	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.4	1.3	0.1	2.9	0.2	2.7	2.8	3.9	2.0	2.0
LnGrp Delay(d),s/veh	23.4	0.0	15.4	36.1	16.0	22.3	61.6	17.3	17.3	27.4	10.0	10.0
LnGrp LOS	C		B	D	B	C	E	B	B	C	A	B
Approach Vol, veh/h		94			302			459			691	
Approach Delay, s/veh		20.6			25.5			17.8			16.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	14.8	6.5	13.7	4.3	23.0	7.6	12.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	16.0	8.0	24.0	4.0	23.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	8.5	7.3	4.0	2.7	2.1	6.1	3.6	8.1
Green Ext Time (p_c), s	0.2	3.5	0.0	0.9	0.0	5.1	0.1	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	94	203	20	125	224
Future Volume (veh/h)	29	94	203	20	125	224
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	31	99	214	21	132	236
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	158	157	856	83	160	1919
Arrive On Green	0.10	0.10	0.26	0.26	0.10	0.54
Sat Flow, veh/h	1597	1583	3353	317	1597	3632
Grp Volume(v), veh/h	31	99	115	120	132	236
Grp Sat Flow(s),veh/h/ln	1597	1583	1770	1807	1597	1770
Q Serve(g_s), s	0.4	1.3	1.1	1.2	1.8	0.7
Cycle Q Clear(g_c), s	0.4	1.3	1.1	1.2	1.8	0.7
Prop In Lane	1.00	1.00		0.18	1.00	
Lane Grp Cap(c), veh/h	158	157	465	475	160	1919
V/C Ratio(X)	0.20	0.63	0.25	0.25	0.82	0.12
Avail Cap(c_a), veh/h	1288	1277	1665	1700	930	6026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	9.7	6.5	6.5	9.8	2.5
Incr Delay (d2), s/veh	0.6	4.1	0.3	0.3	10.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.8	0.6	0.6	1.2	0.3
LnGrp Delay(d),s/veh	9.8	13.8	6.8	6.8	19.8	2.5
LnGrp LOS	A	B	A	A	B	A
Approach Vol, veh/h	130		235			368
Approach Delay, s/veh	12.8		6.8			8.7
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.2	9.9				16.1		6.2
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	13.0	21.0				38.0		18.0
Max Q Clear Time (g_c+I1), s	2.8	3.2				2.7		3.3
Green Ext Time (p_c), s	0.2	2.7				3.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	25	22	186	175	78
Future Vol, veh/h	37	25	22	186	175	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	26	23	196	184	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	467	133	266	0	-	0
Stage 1	225	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	539	892	1296	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	529	892	1296	-	-	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1296	-	633	-	-
HCM Lane V/C Ratio	0.018	-	0.103	-	-
HCM Control Delay (s)	7.8	-	11.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	0	11	1	1	0	38	11	2	37	7
Future Vol, veh/h	4	0	0	11	1	1	0	38	11	2	37	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	12	1	1	0	41	12	2	40	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	101	44	95	99	47	48	0	0	53	0	0
Stage 1	48	48	-	47	47	-	-	-	-	-	-	-
Stage 2	48	53	-	48	52	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	887	789	1026	888	791	1022	1559	-	-	1553	-	-
Stage 1	965	855	-	967	856	-	-	-	-	-	-	-
Stage 2	965	851	-	965	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	884	788	1026	887	790	1022	1559	-	-	1553	-	-
Mov Cap-2 Maneuver	884	788	-	887	790	-	-	-	-	-	-	-
Stage 1	965	854	-	967	856	-	-	-	-	-	-	-
Stage 2	963	851	-	964	851	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.1	0	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1559	-	-	884	888	1553	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.016	0.001	-	-
HCM Control Delay (s)	0	-	-	9.1	9.1	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	80	0	135	60	20	0	0	69	15	0	5
Future Vol, veh/h	8	80	0	135	60	20	0	0	69	15	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	87	0	147	65	22	0	0	75	16	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	87	0	0	87	0	0	476	484	87	512	474	76
Stage 1	-	-	-	-	-	-	104	104	-	370	370	-
Stage 2	-	-	-	-	-	-	372	380	-	142	104	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1509	-	-	1509	-	-	499	483	971	472	489	985
Stage 1	-	-	-	-	-	-	902	809	-	650	620	-
Stage 2	-	-	-	-	-	-	648	614	-	861	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1509	-	-	1509	-	-	457	433	971	401	439	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	433	-	401	439	-
Stage 1	-	-	-	-	-	-	897	804	-	646	560	-
Stage 2	-	-	-	-	-	-	582	554	-	790	804	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	4.8	9	13
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	971	1509	-	-	1509	-	-	471
HCM Lane V/C Ratio	0.077	0.006	-	-	0.097	-	-	0.046
HCM Control Delay (s)	9	7.4	-	-	7.6	-	-	13
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.3	-	-	0.1

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	159	0	34	213	8	0	0	14	2	0	0
Future Vol, veh/h	5	159	0	34	213	8	0	0	14	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	173	0	37	232	9	0	0	15	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	173	0	0	494	498	173	501	494	236
Stage 1	-	-	-	-	-	-	184	184	-	310	310	-
Stage 2	-	-	-	-	-	-	310	314	-	191	184	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1327	-	-	1404	-	-	486	474	871	480	476	803
Stage 1	-	-	-	-	-	-	818	747	-	700	659	-
Stage 2	-	-	-	-	-	-	700	656	-	811	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1327	-	-	1404	-	-	475	460	871	461	462	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	475	460	-	461	462	-
Stage 1	-	-	-	-	-	-	815	744	-	697	642	-
Stage 2	-	-	-	-	-	-	682	639	-	794	744	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	9.2	12.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	871	1327	-	-	1404	-	-	461
HCM Lane V/C Ratio	0.017	0.004	-	-	0.026	-	-	0.005
HCM Control Delay (s)	9.2	7.7	-	-	7.6	-	-	12.8
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	34	177	74	342	21	117	131	214	121
v/c Ratio	0.13	0.26	0.17	0.40	0.06	0.30	0.25	0.48	0.26
Control Delay	25.5	20.0	25.9	7.0	21.1	23.5	3.1	23.1	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	20.0	25.9	7.0	21.1	23.5	3.1	23.1	16.1
Queue Length 50th (ft)	9	45	10	11	5	32	0	57	22
Queue Length 95th (ft)	37	108	32	88	23	83	14	134	68
Internal Link Dist (ft)		1256		1388		402			224
Turn Bay Length (ft)	200		100				150	100	
Base Capacity (vph)	304	800	438	877	740	779	525	697	717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.22	0.17	0.39	0.03	0.15	0.25	0.31	0.17

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	37	21	4	36	5	349	51	272
v/c Ratio	0.17	0.08	0.08	0.01	0.08	0.03	0.14	0.18	0.10
Control Delay	15.1	8.9	19.0	18.0	0.3	20.0	8.8	18.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	8.9	19.0	18.0	0.3	20.0	8.8	18.2	6.8
Queue Length 50th (ft)	3	1	1	0	0	0	0	2	0
Queue Length 95th (ft)	46	22	27	8	0	11	70	51	54
Internal Link Dist (ft)		2111		98			540		402
Turn Bay Length (ft)						100			
Base Capacity (vph)	995	1404	248	995	934	199	2437	298	2637
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.03	0.08	0.00	0.04	0.03	0.14	0.17	0.10

Intersection Summary



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	22	92	161	35	121
v/c Ratio	0.06	0.22	0.07	0.09	0.05
Control Delay	9.9	4.7	6.2	10.2	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.9	4.7	6.2	10.2	3.5
Queue Length 50th (ft)	3	0	4	4	3
Queue Length 95th (ft)	13	20	26	18	10
Internal Link Dist (ft)	519		600		540
Turn Bay Length (ft)				150	
Base Capacity (vph)	1304	1191	2851	652	3539
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.06	0.05	0.03

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	51	120	299	529	44	219	239	282	308
v/c Ratio	0.37	0.41	0.48	0.83	0.13	0.61	0.32	0.73	0.76
Control Delay	40.6	28.9	28.3	30.7	24.9	33.8	2.5	39.1	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	28.9	28.3	30.7	24.9	33.8	2.5	39.1	39.3
Queue Length 50th (ft)	22	45	57	171	17	91	0	118	125
Queue Length 95th (ft)	#57	87	106	#367	42	158	18	#234	#252
Internal Link Dist (ft)		1256		1388		402			224
Turn Bay Length (ft)	200		100				150	100	
Base Capacity (vph)	139	496	672	669	446	470	759	446	468
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.24	0.44	0.79	0.10	0.47	0.31	0.63	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	33	74	12	216	5	454	253	438
v/c Ratio	0.23	0.13	0.23	0.05	0.50	0.03	0.55	0.58	0.23
Control Delay	24.2	16.1	23.2	23.1	7.5	27.0	20.7	26.6	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	16.1	23.2	23.1	7.5	27.0	20.7	26.6	8.1
Queue Length 50th (ft)	18	4	17	4	0	2	66	72	31
Queue Length 95th (ft)	50	25	61	17	39	11	122	#183	88
Internal Link Dist (ft)		2111		98			540		402
Turn Bay Length (ft)						100			
Base Capacity (vph)	606	887	362	638	704	151	1056	492	1913
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.20	0.02	0.31	0.03	0.43	0.51	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	31	99	235	132	236
v/c Ratio	0.09	0.24	0.12	0.31	0.09
Control Delay	13.7	6.0	9.8	13.1	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	6.0	9.8	13.1	2.8
Queue Length 50th (ft)	5	0	17	22	7
Queue Length 95th (ft)	23	26	43	61	17
Internal Link Dist (ft)	519		600		540
Turn Bay Length (ft)				150	
Base Capacity (vph)	957	991	2455	691	3481
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.10	0.19	0.07

Intersection Summary

APPENDIX K-2
Proposed Project Synchro Worksheets

NOTE: ESA = EPA = Environmentally Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	193	73	113	58	280	32	186	154	211	121	52
Future Volume (veh/h)	30	193	73	113	58	280	32	186	154	211	121	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	203	77	119	61	295	34	196	162	222	127	55
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	270	103	337	76	366	295	309	418	325	226	98
Arrive On Green	0.04	0.21	0.21	0.10	0.27	0.27	0.17	0.17	0.17	0.18	0.18	0.18
Sat Flow, veh/h	1774	1288	489	3442	278	1347	1774	1863	1583	1774	1234	534
Grp Volume(v), veh/h	32	0	280	119	0	356	34	196	162	222	0	182
Grp Sat Flow(s),veh/h/ln	1774	0	1777	1721	0	1625	1774	1863	1583	1774	0	1768
Q Serve(g_s), s	0.8	0.0	6.9	1.5	0.0	9.5	0.8	4.6	0.0	5.5	0.0	4.4
Cycle Q Clear(g_c), s	0.8	0.0	6.9	1.5	0.0	9.5	0.8	4.6	0.0	5.5	0.0	4.4
Prop In Lane	1.00		0.28	1.00		0.83	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	65	0	373	337	0	441	295	309	418	325	0	324
V/C Ratio(X)	0.50	0.00	0.75	0.35	0.00	0.81	0.12	0.63	0.39	0.68	0.00	0.56
Avail Cap(c_a), veh/h	190	0	609	369	0	557	608	639	698	608	0	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	17.3	19.7	0.0	15.9	16.5	18.1	14.1	17.8	0.0	17.4
Incr Delay (d2), s/veh	5.8	0.0	3.1	0.6	0.0	6.9	0.2	2.1	0.6	2.5	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	3.7	0.7	0.0	5.1	0.4	2.5	1.7	2.9	0.0	2.3
LnGrp Delay(d),s/veh	27.8	0.0	20.3	20.3	0.0	22.7	16.7	20.3	14.7	20.3	0.0	18.9
LnGrp LOS	C		C	C		C	B	C	B	C		B
Approach Vol, veh/h		312			475			392			404	
Approach Delay, s/veh		21.1			22.1			17.7			19.7	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	13.8		12.5	5.7	16.7		11.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.0	16.0		16.0	5.0	16.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	8.9		7.5	2.8	11.5		6.6
Green Ext Time (p_c), s	0.4	0.9		1.1	0.0	1.1		1.2

Intersection Summary		
HCM 2010 Ctrl Delay		20.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	15	20	20	4	34	5	270	62	48	237	22
Future Volume (veh/h)	68	15	20	20	4	34	5	270	62	48	237	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	72	16	21	21	4	36	5	284	65	51	249	23
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	104	137	38	139	192	10	713	161	82	949	87
Arrive On Green	0.09	0.14	0.14	0.02	0.07	0.07	0.01	0.25	0.25	0.05	0.29	0.29
Sat Flow, veh/h	1774	732	961	1774	1863	1583	1774	2871	647	1774	3279	300
Grp Volume(v), veh/h	72	0	37	21	4	36	5	173	176	51	133	139
Grp Sat Flow(s),veh/h/ln	1774	0	1693	1774	1863	1583	1774	1770	1749	1774	1770	1810
Q Serve(g_s), s	1.1	0.0	0.6	0.3	0.1	0.6	0.1	2.4	2.5	0.8	1.7	1.7
Cycle Q Clear(g_c), s	1.1	0.0	0.6	0.3	0.1	0.6	0.1	2.4	2.5	0.8	1.7	1.7
Prop In Lane	1.00		0.57	1.00		1.00	1.00		0.37	1.00		0.17
Lane Grp Cap(c), veh/h	158	0	241	38	139	192	10	440	434	82	512	524
V/C Ratio(X)	0.46	0.00	0.15	0.55	0.03	0.19	0.52	0.39	0.40	0.62	0.26	0.26
Avail Cap(c_a), veh/h	961	0	917	240	1009	931	240	958	947	240	958	980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	11.1	14.3	12.7	11.7	14.7	9.2	9.3	13.8	8.1	8.1
Incr Delay (d2), s/veh	2.1	0.0	0.3	11.9	0.1	0.5	37.0	0.6	0.6	7.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.3	0.3	0.0	0.3	0.1	1.2	1.2	0.6	0.9	0.9
LnGrp Delay(d),s/veh	14.8	0.0	11.4	26.2	12.8	12.1	51.6	9.8	9.9	21.3	8.3	8.3
LnGrp LOS	B		B	C	B	B	D	A	A	C	A	A
Approach Vol, veh/h		109			61			354			323	
Approach Delay, s/veh		13.7			17.0			10.4			10.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	11.3	4.6	8.2	4.2	12.5	6.6	6.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.6	16.0	4.0	16.0	4.0	16.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	2.8	4.5	2.3	2.6	2.1	3.7	3.1	2.6
Green Ext Time (p_c), s	0.0	2.9	0.0	0.2	0.0	3.0	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	71	316	8	40	237
Future Volume (veh/h)	9	71	316	8	40	237
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	9	75	333	8	42	249
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	131	183	1089	26	73	1918
Arrive On Green	0.07	0.07	0.31	0.31	0.04	0.54
Sat Flow, veh/h	1774	1583	3626	85	1774	3632
Grp Volume(v), veh/h	9	75	167	174	42	249
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1848	1774	1770
Q Serve(g_s), s	0.1	0.9	1.5	1.5	0.5	0.7
Cycle Q Clear(g_c), s	0.1	0.9	1.5	1.5	0.5	0.7
Prop In Lane	1.00	1.00		0.05	1.00	
Lane Grp Cap(c), veh/h	131	183	546	570	73	1918
V/C Ratio(X)	0.07	0.41	0.31	0.31	0.57	0.13
Avail Cap(c_a), veh/h	1363	1282	1360	1420	341	2719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	8.6	5.5	5.5	9.8	2.4
Incr Delay (d2), s/veh	0.2	1.5	0.3	0.3	6.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.7	0.8	0.4	0.4
LnGrp Delay(d),s/veh	9.2	10.0	5.8	5.8	16.6	2.4
LnGrp LOS	A	B	A	A	B	A
Approach Vol, veh/h	84		341			291
Approach Delay, s/veh	9.9		5.8			4.4
Approach LOS	A		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	4.9	10.4				15.3		5.5
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	4.0	16.0				16.0		16.0
Max Q Clear Time (g_c+I1), s	2.5	3.5				2.7		2.9
Green Ext Time (p_c), s	0.0	2.9				3.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	2	31	14	2	47	7	216	3	8	228	24
Future Vol, veh/h	61	2	31	14	2	47	7	216	3	8	228	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	0	-	-	0	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	2	33	15	2	49	7	227	3	8	240	25

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	538	514	133	382	526	229	265	0	0	231	0	0
Stage 1	269	269	-	244	244	-	-	-	-	-	-	-
Stage 2	269	245	-	138	282	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	440	463	892	563	456	810	1297	-	-	1335	-	-
Stage 1	714	686	-	759	703	-	-	-	-	-	-	-
Stage 2	736	703	-	851	677	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	408	458	892	536	451	810	1297	-	-	1335	-	-
Mov Cap-2 Maneuver	408	458	-	536	451	-	-	-	-	-	-	-
Stage 1	710	682	-	755	699	-	-	-	-	-	-	-
Stage 2	685	699	-	812	673	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	10.3	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1297	-	-	408	844	536	785	1335	-	-
HCM Lane V/C Ratio	0.006	-	-	0.157	0.041	0.027	0.066	0.006	-	-
HCM Control Delay (s)	7.8	-	-	15.5	9.4	11.9	9.9	7.7	-	-
HCM Lane LOS	A	-	-	C	A	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	0	3	0	2	0	37	11	1	13	2
Future Vol, veh/h	5	1	0	3	0	2	0	37	11	1	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	0	3	0	2	0	40	12	1	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	64	69	15	64	64	46	16	0	0	52	0	0
Stage 1	17	17	-	46	46	-	-	-	-	-	-	-
Stage 2	47	52	-	18	18	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	930	822	1065	930	827	1023	1602	-	-	1554	-	-
Stage 1	1002	881	-	968	857	-	-	-	-	-	-	-
Stage 2	967	852	-	1001	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	927	821	1065	928	826	1023	1602	-	-	1554	-	-
Mov Cap-2 Maneuver	927	821	-	928	826	-	-	-	-	-	-	-
Stage 1	1002	880	-	968	857	-	-	-	-	-	-	-
Stage 2	965	852	-	999	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	8.8	0	0.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	907	964	1554	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.006	0.001	-	-
HCM Control Delay (s)	0	-	-	9	8.8	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	32	0	40	21	1	0	0	106	1	0	0
Future Vol, veh/h	0	32	0	40	21	1	0	0	106	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	35	0	43	23	1	0	0	115	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	24	0	0	35	0	0	145	146	35	202	145	23
Stage 1	-	-	-	-	-	-	35	35	-	110	110	-
Stage 2	-	-	-	-	-	-	110	111	-	92	35	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1591	-	-	1576	-	-	824	745	1038	756	746	1054
Stage 1	-	-	-	-	-	-	981	866	-	895	804	-
Stage 2	-	-	-	-	-	-	895	804	-	915	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1591	-	-	1576	-	-	807	725	1038	658	726	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	807	725	-	658	726	-
Stage 1	-	-	-	-	-	-	981	866	-	895	782	-
Stage 2	-	-	-	-	-	-	871	782	-	813	866	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.7	8.9	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1038	1591	-	-	1576	-	-	658
HCM Lane V/C Ratio	0.111	-	-	-	0.028	-	-	0.002
HCM Control Delay (s)	8.9	0	-	-	7.3	-	-	10.5
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	139	0	10	62	1	0	0	21	1	0	0
Future Vol, veh/h	0	139	0	10	62	1	0	0	21	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	151	0	11	67	1	0	0	23	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	151	0	0	241	241	151	253	241	68
Stage 1	-	-	-	-	-	-	151	151	-	90	90	-
Stage 2	-	-	-	-	-	-	90	90	-	163	151	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1533	-	-	1430	-	-	713	660	895	700	660	995
Stage 1	-	-	-	-	-	-	851	772	-	917	820	-
Stage 2	-	-	-	-	-	-	917	820	-	839	772	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1533	-	-	1430	-	-	709	655	895	678	655	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	709	655	-	678	655	-
Stage 1	-	-	-	-	-	-	851	772	-	917	814	-
Stage 2	-	-	-	-	-	-	910	814	-	818	772	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	9.1	10.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	895	1533	-	-	1430	-	-	678
HCM Lane V/C Ratio	0.026	-	-	-	0.008	-	-	0.002
HCM Control Delay (s)	9.1	0	-	-	7.5	-	-	10.3
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	128	61	326	194	346	89	280	290	279	269	44
Future Volume (veh/h)	29	128	61	326	194	346	89	280	290	279	269	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	31	135	64	343	204	364	94	295	305	294	283	46
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	174	82	842	215	384	338	355	689	366	322	52
Arrive On Green	0.03	0.15	0.15	0.24	0.36	0.36	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1774	1196	567	3442	601	1072	1774	1863	1583	1774	1564	254
Grp Volume(v), veh/h	31	0	199	343	0	568	94	295	305	294	0	329
Grp Sat Flow(s),veh/h/ln	1774	0	1763	1721	0	1673	1774	1863	1583	1774	0	1818
Q Serve(g_s), s	1.3	0.0	8.2	6.3	0.0	24.7	3.4	11.4	0.0	11.8	0.0	13.1
Cycle Q Clear(g_c), s	1.3	0.0	8.2	6.3	0.0	24.7	3.4	11.4	0.0	11.8	0.0	13.1
Prop In Lane	1.00		0.32	1.00		0.64	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	56	0	256	842	0	599	338	355	689	366	0	375
V/C Ratio(X)	0.55	0.00	0.78	0.41	0.00	0.95	0.28	0.83	0.44	0.80	0.00	0.88
Avail Cap(c_a), veh/h	118	0	470	842	0	603	379	398	725	379	0	388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	30.9	23.8	0.0	23.4	25.9	29.2	14.8	28.3	0.0	28.8
Incr Delay (d2), s/veh	8.1	0.0	5.1	0.3	0.0	24.4	0.4	12.6	0.4	11.6	0.0	19.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	4.3	3.0	0.0	15.4	1.7	7.1	4.4	7.0	0.0	8.6
LnGrp Delay(d),s/veh	43.9	0.0	35.9	24.1	0.0	47.8	26.4	41.8	15.2	39.9	0.0	48.3
LnGrp LOS	D		D	C		D	C	D	B	D		D
Approach Vol, veh/h		230			911			694			623	
Approach Delay, s/veh		37.0			38.9			28.0			44.4	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.3	14.9		19.4	6.4	30.8		18.3
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	20.0		16.0	5.0	27.0		16.0
Max Q Clear Time (g_c+I1), s	8.3	10.2		15.1	3.3	26.7		13.4
Green Ext Time (p_c), s	1.8	0.7		0.3	0.0	0.1		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		37.0
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	14	17	70	11	205	5	396	35	240	338	78
Future Volume (veh/h)	58	14	17	70	11	205	5	396	35	240	338	78
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	61	15	18	74	12	216	5	417	37	253	356	82
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	142	170	95	298	540	10	767	68	321	1172	267
Arrive On Green	0.08	0.18	0.18	0.05	0.16	0.16	0.01	0.23	0.23	0.18	0.41	0.41
Sat Flow, veh/h	1774	772	927	1774	1863	1583	1774	3290	291	1774	2865	652
Grp Volume(v), veh/h	61	0	33	74	12	216	5	223	231	253	218	220
Grp Sat Flow(s),veh/h/ln	1774	0	1699	1774	1863	1583	1774	1770	1811	1774	1770	1748
Q Serve(g_s), s	1.5	0.0	0.7	1.9	0.2	4.8	0.1	5.1	5.1	6.3	3.8	3.9
Cycle Q Clear(g_c), s	1.5	0.0	0.7	1.9	0.2	4.8	0.1	5.1	5.1	6.3	3.8	3.9
Prop In Lane	1.00		0.55	1.00		1.00	1.00		0.16	1.00		0.37
Lane Grp Cap(c), veh/h	136	0	312	95	298	540	10	413	422	321	724	715
V/C Ratio(X)	0.45	0.00	0.11	0.78	0.04	0.40	0.52	0.54	0.55	0.79	0.30	0.31
Avail Cap(c_a), veh/h	618	0	592	657	690	873	155	617	631	580	1041	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	15.6	21.5	16.3	11.5	22.8	15.4	15.5	17.9	9.1	9.2
Incr Delay (d2), s/veh	2.3	0.0	0.1	13.1	0.1	0.5	38.0	1.1	1.1	4.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.4	1.2	0.1	2.1	0.2	2.6	2.7	3.4	1.9	1.9
LnGrp Delay(d),s/veh	22.5	0.0	15.7	34.6	16.3	12.0	60.8	16.6	16.6	22.2	9.4	9.4
LnGrp LOS	C		B	C	B	B	E	B	B	C	A	A
Approach Vol, veh/h		94			302			459			691	
Approach Delay, s/veh		20.1			17.7			17.0			14.1	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	14.7	6.4	12.4	4.2	22.8	7.5	11.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	16.0	17.0	16.0	4.0	27.0	16.0	17.0
Max Q Clear Time (g_c+I1), s	8.3	7.1	3.9	2.7	2.1	5.9	3.5	6.8
Green Ext Time (p_c), s	0.4	3.6	0.1	0.8	0.0	5.5	0.1	0.7

Intersection Summary		
HCM 2010 Ctrl Delay		16.0
HCM 2010 LOS		B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	37	31	351	15	146	279
Future Volume (veh/h)	37	31	351	15	146	279
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	39	33	369	16	154	294
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	113	273	1079	47	192	2096
Arrive On Green	0.06	0.06	0.31	0.31	0.11	0.59
Sat Flow, veh/h	1774	1583	3550	149	1774	3632
Grp Volume(v), veh/h	39	33	188	197	154	294
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1836	1774	1770
Q Serve(g_s), s	0.5	0.4	1.9	1.9	2.0	0.9
Cycle Q Clear(g_c), s	0.5	0.4	1.9	1.9	2.0	0.9
Prop In Lane	1.00	1.00		0.08	1.00	
Lane Grp Cap(c), veh/h	113	273	552	573	192	2096
V/C Ratio(X)	0.34	0.12	0.34	0.34	0.80	0.14
Avail Cap(c_a), veh/h	1220	1260	1216	1262	305	2433
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.4	8.1	6.2	6.2	10.1	2.1
Incr Delay (d2), s/veh	1.8	0.2	0.4	0.4	7.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	0.9	1.0	1.4	0.4
LnGrp Delay(d),s/veh	12.2	8.3	6.5	6.5	17.9	2.1
LnGrp LOS	B	A	A	A	B	A
Approach Vol, veh/h	72		385			448
Approach Delay, s/veh	10.4		6.5			7.6
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.5	11.3				17.8		5.5
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	4.0	16.0				16.0		16.0
Max Q Clear Time (g_c+I1), s	4.0	3.9				2.9		2.5
Green Ext Time (p_c), s	0.0	3.3				3.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	2	25	6	2	21	22	308	12	42	196	78
Future Vol, veh/h	37	2	25	6	2	21	22	308	12	42	196	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	0	-	-	0	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	2	26	6	2	22	23	324	13	44	206	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	725	719	144	570	754	331	288	0	0	337	0	0
Stage 1	336	336	-	377	377	-	-	-	-	-	-	-
Stage 2	389	383	-	193	377	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	326	354	878	418	337	710	1272	-	-	1221	-	-
Stage 1	652	641	-	644	615	-	-	-	-	-	-	-
Stage 2	634	611	-	791	615	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	301	335	878	387	319	710	1272	-	-	1221	-	-
Mov Cap-2 Maneuver	301	335	-	387	319	-	-	-	-	-	-	-
Stage 1	640	618	-	632	604	-	-	-	-	-	-	-
Stage 2	601	600	-	737	593	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	11.6	0.5	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	301	784	387	642	1221	-	-
HCM Lane V/C Ratio	0.018	-	-	0.129	0.036	0.016	0.038	0.036	-	-
HCM Control Delay (s)	7.9	-	-	18.7	9.8	14.5	10.8	8.1	-	-
HCM Lane LOS	A	-	-	C	A	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	0	11	1	1	0	38	11	2	37	7
Future Vol, veh/h	4	0	0	11	1	1	0	38	11	2	37	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	0	12	1	1	0	41	12	2	40	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	101	44	95	99	47	48	0	0	53	0	0
Stage 1	48	48	-	47	47	-	-	-	-	-	-	-
Stage 2	48	53	-	48	52	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	887	789	1026	888	791	1022	1559	-	-	1553	-	-
Stage 1	965	855	-	967	856	-	-	-	-	-	-	-
Stage 2	965	851	-	965	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	884	788	1026	887	790	1022	1559	-	-	1553	-	-
Mov Cap-2 Maneuver	884	788	-	887	790	-	-	-	-	-	-	-
Stage 1	965	854	-	967	856	-	-	-	-	-	-	-
Stage 2	963	851	-	964	851	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.1	0	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1559	-	-	884	888	1553	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.016	0.001	-	-
HCM Control Delay (s)	0	-	-	9.1	9.1	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	42	0	135	55	2	0	0	69	2	0	0
Future Vol, veh/h	0	42	0	135	55	2	0	0	69	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	46	0	147	60	2	0	0	75	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	62	0	0	46	0	0	400	401	46	437	400	61
Stage 1	-	-	-	-	-	-	46	46	-	354	354	-
Stage 2	-	-	-	-	-	-	354	355	-	83	46	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1541	-	-	1562	-	-	560	538	1023	530	538	1004
Stage 1	-	-	-	-	-	-	968	857	-	663	630	-
Stage 2	-	-	-	-	-	-	663	630	-	925	857	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1541	-	-	1562	-	-	520	487	1023	456	487	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	520	487	-	456	487	-
Stage 1	-	-	-	-	-	-	968	857	-	663	571	-
Stage 2	-	-	-	-	-	-	601	571	-	857	857	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	5.3	8.8	12.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1023	1541	-	-	1562	-	-	456
HCM Lane V/C Ratio	0.073	-	-	-	0.094	-	-	0.005
HCM Control Delay (s)	8.8	0	-	-	7.5	-	-	12.9
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.3	-	-	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	113	0	34	192	2	0	0	14	2	0	0
Future Vol, veh/h	0	113	0	34	192	2	0	0	14	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	123	0	37	209	2	0	0	15	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	211	0	0	123	0	0	407	408	123	414	407	210
Stage 1	-	-	-	-	-	-	123	123	-	284	284	-
Stage 2	-	-	-	-	-	-	284	285	-	130	123	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1360	-	-	1464	-	-	555	533	928	549	533	830
Stage 1	-	-	-	-	-	-	881	794	-	723	676	-
Stage 2	-	-	-	-	-	-	723	676	-	874	794	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1360	-	-	1464	-	-	544	520	928	530	520	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	544	520	-	530	520	-
Stage 1	-	-	-	-	-	-	881	794	-	723	659	-
Stage 2	-	-	-	-	-	-	705	659	-	860	794	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	8.9	11.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	928	1360	-	-	1464	-	-	530
HCM Lane V/C Ratio	0.016	-	-	-	0.025	-	-	0.004
HCM Control Delay (s)	8.9	0	-	-	7.5	-	-	11.8
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	32	280	119	356	34	196	162	222	182
v/c Ratio	0.20	0.68	0.39	0.49	0.10	0.54	0.29	0.60	0.46
Control Delay	32.1	29.2	32.4	7.8	21.5	28.2	3.2	29.1	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	29.2	32.4	7.8	21.5	28.2	3.2	29.1	22.0
Queue Length 50th (ft)	11	81	21	13	10	63	0	71	47
Queue Length 95th (ft)	38	173	50	91	32	129	16	147	109
Internal Link Dist (ft)		1256		1388		402			224
Turn Bay Length (ft)	200		100				150	100	
Base Capacity (vph)	157	527	305	731	503	530	566	503	527
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.53	0.39	0.49	0.07	0.37	0.29	0.44	0.35

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	37	21	4	36	5	349	51	272
v/c Ratio	0.17	0.09	0.08	0.01	0.09	0.02	0.17	0.20	0.10
Control Delay	13.0	8.7	17.1	15.2	0.4	17.0	7.7	17.7	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	8.7	17.1	15.2	0.4	17.0	7.7	17.7	6.0
Queue Length 50th (ft)	4	1	2	0	0	1	7	4	0
Queue Length 95th (ft)	44	20	22	8	0	9	65	40	54
Internal Link Dist (ft)		2111		98			540		402
Turn Bay Length (ft)						100			
Base Capacity (vph)	1019	1510	254	1072	410	254	2494	254	2701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.02	0.08	0.00	0.09	0.02	0.14	0.20	0.10

Intersection Summary



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	9	75	341	42	249
v/c Ratio	0.03	0.13	0.16	0.17	0.09
Control Delay	11.1	2.4	6.8	14.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	2.4	6.8	14.8	2.8
Queue Length 50th (ft)	2	0	21	8	7
Queue Length 95th (ft)	8	11	41	23	16
Internal Link Dist (ft)	519		600		540
Turn Bay Length (ft)				150	
Base Capacity (vph)	967	899	2431	242	2902
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.08	0.14	0.17	0.09

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	31	199	343	568	94	295	305	294	329
v/c Ratio	0.24	0.60	0.58	0.83	0.26	0.77	0.39	0.77	0.82
Control Delay	39.8	31.9	32.4	30.4	27.9	43.5	2.6	43.4	46.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	31.9	32.4	30.4	27.9	43.5	2.6	43.4	46.3
Queue Length 50th (ft)	13	71	74	171	35	122	0	123	136
Queue Length 95th (ft)	42	136	124	#406	81	#265	22	#273	#305
Internal Link Dist (ft)		1256		1388		402			224
Turn Bay Length (ft)	200		100				150	100	
Base Capacity (vph)	127	531	648	735	408	429	809	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.37	0.53	0.77	0.23	0.69	0.38	0.72	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	33	74	12	216	5	454	253	438
v/c Ratio	0.16	0.12	0.23	0.04	0.33	0.03	0.43	0.50	0.18
Control Delay	20.1	17.7	23.1	24.4	4.1	27.6	17.3	21.4	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	17.7	23.1	24.4	4.1	27.6	17.3	21.4	6.3
Queue Length 50th (ft)	13	3	16	3	0	1	48	50	15
Queue Length 95th (ft)	52	28	60	18	34	11	123	161	84
Internal Link Dist (ft)		2111		98			540		402
Turn Bay Length (ft)						100			
Base Capacity (vph)	743	708	768	808	791	180	1433	677	2460
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.05	0.10	0.01	0.27	0.03	0.32	0.37	0.18

Intersection Summary



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	39	33	385	154	294
v/c Ratio	0.11	0.07	0.24	0.64	0.10
Control Delay	10.9	3.0	6.8	31.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	3.0	6.8	31.6	2.4
Queue Length 50th (ft)	2	0	9	12	0
Queue Length 95th (ft)	20	8	47	#93	20
Internal Link Dist (ft)	519		600		540
Turn Bay Length (ft)				150	
Base Capacity (vph)	964	877	2096	241	3121
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.04	0.18	0.64	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Michael Baker
INTERNATIONAL

May 8, 2019

Mr. Richard Robotta
Pulte/BP Murrieta, LLC
550 Laguna Drive, Suite B
Carlsbad, CA 92008

Subject: Vehicle Miles Traveled Analysis for the Murrieta Hills Specific Plan Project

Michael Baker International (Michael Baker) has conducted a Vehicle Miles Traveled (VMT) analysis for the Murrieta Hills Specific Plan project. The project consists of 578 single-family detached dwelling units, 172 multi-family attached dwelling units, and 346,302 square-feet of retail. To avoid a few environmentally sensitive areas on the site, an Environmentally Preferred Alternative was also considered for the project site, which consists of 557 single-family detached dwelling units, 193 multi-family attached dwelling units, and 222,156 square-feet of retail. As discussed in the Traffic Impact Analysis and Specific Plan, the Environmentally Preferred Alternative is the preferred alternative. At the time this report was prepared, the City was in the process of evaluating VMT analysis methodologies and thresholds. However, no process or threshold for evaluating VMT has been adopted or approved by the City when this report was prepared. Therefore, the VMT data and analysis provided in this technical memorandum is for informational purposes only and not for determining significant VMT impacts or mitigation. The following summarizes the VMT analysis methodology applied for this project and findings.

Documentation and Approach Overview

In December 2018 new California Environmental Quality Act (CEQA) guidelines were approved that shift traffic analysis from delay and operations to VMT when evaluating Transportation Impacts under CEQA. This change in methodology is a result of Senate Bill 743 (SB743), which was signed into law in September 2013. SB743 "creates a process to change the way that transportation impacts are analyzed under CEQA. Specifically, SB 743 requires OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. Particularly within areas served by transit, those alternative criteria must 'promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.'[1] "[2]

Measurements of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated." [3] According to SB743, projects should aim to reduce VMT and mitigate potential VMT impacts through the implementation of TDM strategies. Agencies must fully implement the new CEQA guidelines for Transportation by June 2020.

As part of the development of the new CEQA guidelines, the Governor's Office of Planning and Research (OPR) prepare a ***Technical Advisory on Evaluating Transportation Impacts in CEQA*** (Technical Advisory). The final version of the Technical Advisory is dated December 2018 and provides guidance for local jurisdictions

[1] Public Resources Code Section 21099(b)(1)
[2] Office of Planning and Research, http://www.opr.ca.gov/ceqa/updates/sb-743/
[3] Public Resources Code Section 21099(b)(1)

in developing methodologies and thresholds for evaluating VMT. The Technical Advisory provides VMT thresholds for residential, retail and employment. At the time this memorandum was prepared, the City of Murrieta had not yet adopted VMT thresholds or guidelines.

The Western Riverside Council of Governments (WRCOG) in coordination with Fehr & Peers prepared a ***WRCOG SB 743 Implementation Pathway Document Package*** (WRCOG Document Package) dated March 2019. The WRCOG Document Package provides guidance for local jurisdictions in Western Riverside County to develop methodologies and thresholds for evaluating VMT. A VMT impact screening tool was also created for WRCOG to aide with SB743 implementation. WRCOG reports VMT as total VMT per service population, residential home-based VMT per capita and home-based VMT per capita.

The City of Murrieta does not have their own guidelines and has not adopted VMT thresholds.

Determination of Project VMT

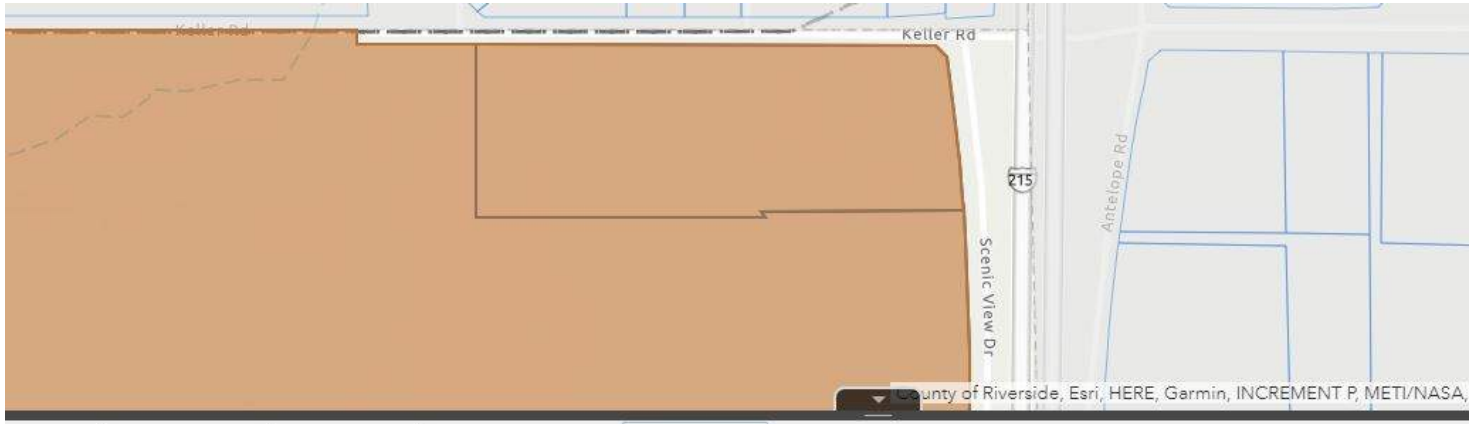
Figures 1 through 3 display data from the WRCOG WMT Impact Screening Web-based maps for the project site. To capture the entire project site, data was selected in three sections as shown in Figures 1 through 3. VMT data gathered from the maps for the two Traffic Analysis Zones (TAZ) that include the project are summarized in **Table 1** below.

TABLE 1: VMT Summary Table for Murrieta Hills Specific Plan (TAZ 3843 & 3865)

TAZ	Riverside County Traffic Analysis Model (RIVTAM)					
	Daily Total VMT per Service Population		Daily Residential Home-Based VMT per Capita		Daily Home-Based Work VMT per Worker	
	Jurisdictional Average	Project TAZ Average	Jurisdictional Average	Project TAZ Average	Jurisdictional Average	Project TAZ Average
3843	30.99	39.44	19.11	21.22	9.46	9.14
3865	37.87	68.59	19.04	31.5	14.83	0

Source: WRCOG Web-based Screening Tool (http://www.fehrandpeers.com/wrcog-sb743/)
RIVTAM: Riverside County Traffic Analysis Model (2012)
VMT: Vehicle Miles Traveled
TAZ: Traffic Analysis Zone

As shown in Table 1, the Murrieta Hills Specific Plan is included in TAZ 3843 and 3865. The Daily Total VMT per Service Population (population and employment), Daily Residential Home-Based VMT per Capita, and Daily Home-Based Work VMT per Worker are presented for each TAZ in Table 1. The Jurisdictional Average VMT represents the Riverside County VMT and the Project TAZ represents the VMT for the TAZs where the Murrieta Hills Specific Plan is proposed. Currently, the project site is within the City of Murrieta's Sphere of Influence and will be annexed into the City as part of this project. However, the VMT is reported for the underlying jurisdiction which is currently Riverside County. According to the Web-based maps, the average Project VMT is higher than the average Jurisdictional VMT for both the Daily Total VMT per service population and Daily Residential Home-Based VMT per Capita. For the Daily Home-Based Work VMT per Worker, the average Project VMT is lower than the average Jurisdictional VMT. This information indicates the Murrieta Hills Specific Plan may be presumed to have a significant VMT impact since the average Project VMTs are higher than the average Jurisdictional VMTs.

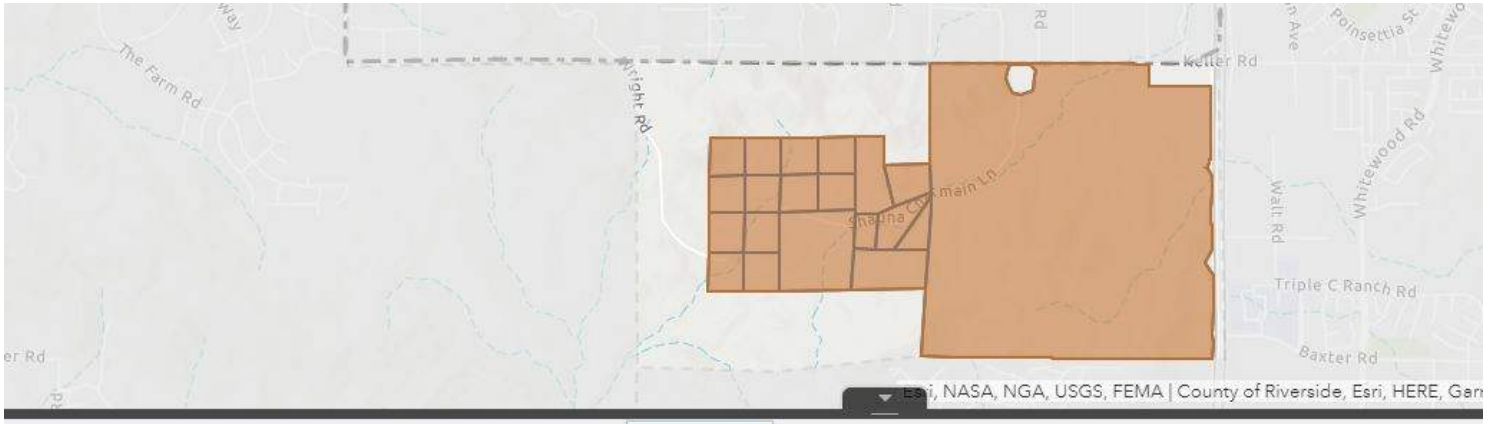


in to view) | Transit Priority Area | City Boundaries | TUMF Zone Boundaries | Output Layer

Zoom to | Clear selection | Refresh

Within a Transit Priority Area (TPA)?	Within a low VMT generating TAZ based on Total VMT?	Within a low VMT generating TAZ based on Residential Home-Based VMT?	Within a low VMT generating TAZ based on Home-Based Work VMT?	Addtional Details
No (Fail)	No (Fail)	Yes (Pass)	Yes (Pass)	• TPA designation is based on October 2018 conditions. • Screening results are based on location of parcel centroids. If results are desired considering the full parcel, please refer to the associated map layers to visually review parcel and TAZ boundary relationship. • If VMT screening is desired for current baseline conditions, contact WRCOG for 2012 and 2040 VMT data. Interpolated VMT results can be obtained using the complete data set. • VMT results do not account for full length of trips that occur beyond the SCAG region.

Figure 1: VMT Screening Map Project Area 1

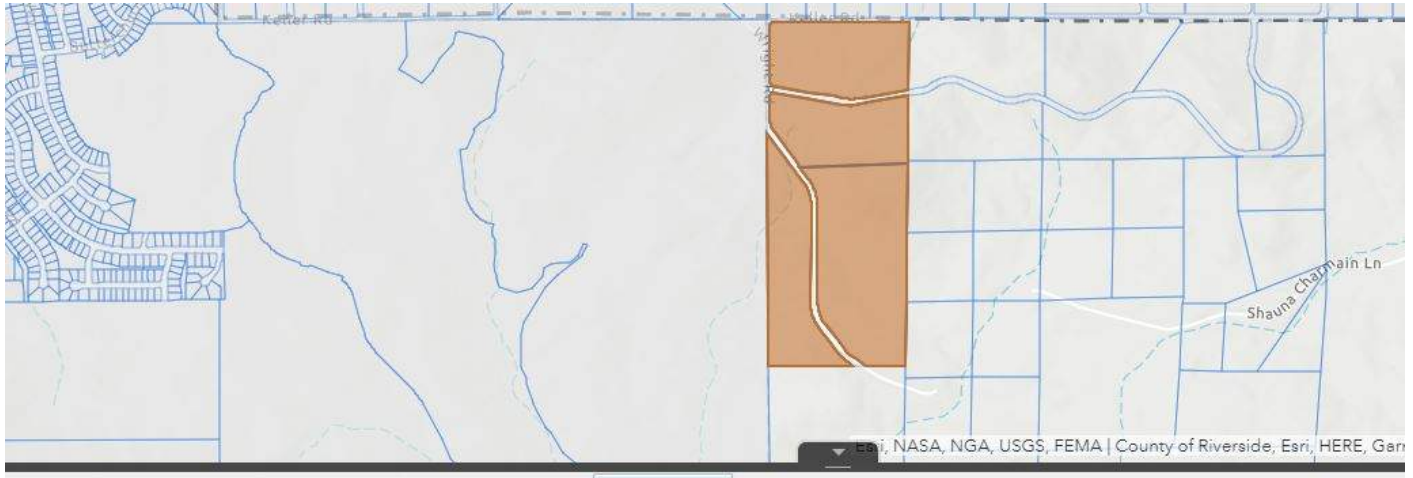


in to view) | Transit Priority Area | City Boundaries | TUMF Zone Boundaries | Output Layer

Zoom to | Clear selection | Refresh

Within a Transit Priority Area (TPA)?	Within a low VMT generating TAZ based on Total VMT?	Within a low VMT generating TAZ based on Residential Home-Based VMT?	Within a low VMT generating TAZ based on Home-Based Work VMT?	Addtional Details
No (Fail)	No (Fail)	Yes (Pass)	Yes (Pass)	• TPA designation is based on October 2018 conditions. • Screening results are based on location of parcel centroids. If results are desired considering the full parcel, please refer to the associated map layers to visually review parcel and TAZ boundary relationship. • If VMT screening is desired for current baseline conditions, contact WRCOG for 2012 and 2040 VMT data. Interpolated VMT results can be obtained using the complete data set. • VMT results do not account for full length of trips that occur beyond the SCAG region.

Figure 2: VMT Screening Map Project Area 2



in to view) | Transit Priority Area | City Boundaries | TUMF Zone Boundaries | Output Layer

Zoom to | Clear selection | Refresh

Within a Transit Priority Area (TPA)?	Within a low VMT generating TAZ based on Total VMT?	Within a low VMT generating TAZ based on Residential Home-Based VMT?	Within a low VMT generating TAZ based on Home-Based Work VMT?	Addtional Details
No (Fail)	No (Fail)	Yes (Pass)	Yes (Pass)	• TPA designation is based on October 2018 conditions. • Screening results are based on location of parcel centroids. If results are desired considering the full parcel, please refer to the associated map layers to visually review parcel and TAZ boundary relationship. • If VMT screening is desired for current baseline conditions, contact WRCOG for 2012 and 2040 VMT data. Interpolated VMT results can be obtained using the complete data set. • VMT results do not account for full length of trips that occur beyond the SCAG region.

Figure 3: VMT Screening Map Project Area 3

Evaluation of Project VMT

In this analysis, the WRCOG SB743 VMT Impact Screening Tool was utilized for the Murrieta Hills Specific Plan project. WRCOG's evaluation of VMT is based on the following screening criteria:

1.) Evaluate for Transit Priority Area,
2.) Low VMT Area Screening,
3.) Project Type Screening, and
4.) VMT Analysis using RIVTAM.

The VMT screening process outlined in the SB 743 VMT Impact Screening Tool developed for WRCOG (http://www.fehrandpeers.com/wrcog-sb743/) is demonstrated in the following sections.

1. *Evaluate for Transit Priority Area*

Criteria:

Projects located within a Transit Priority Area (TPA) are assumed to have a less than significant impact. However, if the project has any of the following elements, the project may require a VMT analysis:

a.) Has a Floor Area Ratio (FAR) of less than 0.75;
b.) Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
c.) Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
d.) Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

Findings:

According to the VMT screening maps, the Murrieta Hills Specific Plan project is not located within a Transit Priority Area (TPA) as illustrated in **Figure 1 through 3**. These three figures show the parcels associated with the Murrieta Hills Specific Plan project area and the VMT screening evaluation.

2. *Low VMT Area Screening*

Criteria:

Residential and office projects located within a low VMT generating area may be presumed to have a less than significant impact. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT that is similar to the existing land uses in the low VMT area. The screening tool provides the VMT for the TAZ for the Murrieta Hills Specific Plan site. The land use in the TAZ is based on the most current version of the RIVTAM. Those TAZ's that perform at or below the jurisdictional average of total VMT per service population under base year (2012) conditions are considered low VMT areas.

Findings
As shown in **Figures 1 through 3**, the Murrieta Hills Specific Plan project is not located within a low VMT generating TAZ based on total VMT per service population.

3. *Project Type Screening*

Criteria:
Local serving retail projects less than 50,000 square feet may be presumed to have less than significant impact because such projects are likely to reduce the trip distance for existing retail trips.

Findings:
The Murrieta Hills Specific Plan Environmentally Preferred Alternative includes approximately 222,156 square feet of retail which surpasses the limit of local serving retail projects (less than 50,000 square feet).

4. *VMT Analysis using RIVTAM*

Criteria:
According to the VMT screening process, projects not screened through the steps above should complete VMT analysis and forecasting through the RIVTAM model to determine if they have a significant VMT impact. Projects falling within this category would be required to run project related total VMT to determine the project's change in VMT.

Findings:
A RIVTAM model to determine the project's change in VMT is not being conducted for this project. The City of Murrieta has not officially adopted or established VMT thresholds or guideline, therefore running the model may not be consistent with their requirements. Since the project did not pass the screening criteria, it is possible the project may result in a potentially significant impact. As previously mentioned, the VMT data contained in this technical memorandum is for informational purposes only. Transportation Demand Management measures discussed in the following section may address potentially significant impacts.

Identification of Transportation Demand Management (TDM)

The Traffic Impact Analysis (TIA) dated November 2018 prepared for the Murrieta Hills Specific Plan identifies feasible mitigation measures that reduce traffic impacts to a level below significance in accordance with the City's currently adopted TIA guidelines.

Transportation Demand Management (TDM) measures were not specifically identified in the TIA. TDM strategies focus on identifying alternatives to single occupant vehicle use and can be used to offset VMT impacts. WRCOG has identified the following potential VMT reduction strategies:

- Increase diversity of land uses
- Provide pedestrian network improvements
- Provide traffic calming measures and low-stress bicycle network improvements
- Implement car-sharing program
- Increase transit service frequency and speed

- Encourage telecommuting and alternative work schedules
- Provide ride-sharing programs

A review of the TDM measures identified by WRCOG determined that the Murrieta Hills Specific Plan has incorporated features that may be considered TDM measures including an increase in diversity of urban and suburban developments, providing pedestrian network improvements, providing traffic calming measures, and providing low-stress bicycle network improvements.

To determine the potential VMT benefits associated with each of these TDM measures, the California Air Pollution Control Officers Association (CAPCOA) report ***Quantifying Greenhouse Gas Mitigation Measures*** (August 2010) was used. VMT reductions applicable to the Murrieta Hills Specific Plan are as follows:

- **LUT-3 (3.1.3) Increase Diversity of Urban and Suburban Developments (Mixed-Use)**
  - The project consists of approximately 90% residential dwelling units and 10% commercial retail.
  - The percent reduction in VMT is calculated as Land Use (percentage increase in land use index versus single use development) multiplied by B (elasticity of VMT).
  - Land Use = (land use index -0.15) / 0.15. Land Use Index = -a/ln(6) where a is building floor area of land use /total square feet of area considered.
  - Land use index = -[0.9*ln(0.9)+0.1*ln(0.1)+4*0.01*ln(0.01)]/ln(6) = 0.3
  - Low Range % VMT Reduction = (0.3 – 0.15) / 0.15*0.9 = 9%
  - For this TDM strategy, a **VMT reduction of 9.0%** may be assumed.

- **LUT-8 (3.1.8) Locate Project near Bike Path/Bike Lane.**
  - The Keller Road and I-215 Interchange Project proposes Class II bike lanes along Keller Road, Mapleton Avenue, and Antelope Road.
  - The project is located within ½ mile of the planned Class II bike lanes connecting the project to existing offsite facilities.
  - For this TDM strategy, a **VMT reduction of 0.625%** is assumed.

- **SDT-1 (3.2.1) Provide Pedestrian Network Improvements**
  - Pedestrian access provided within the Proposed Project and planned external streets due to Keller Road and I-215 Interchange Project results in a VMT reduction.
  - For this TDM strategy, CAPCOA provides a **VMT reduction of 1.0%.**

- **SDT-2 (3.2.2) Provide Traffic Calming Measures**
  - Traffic calming measures within the project site would most likely include marked crosswalks, count-down signal timers and on-street parking.
  - Based on the TDM mitigation method of percent streets with improvements and percent of intersection with improvements, the project is assumed to have 75% of streets with improvements and 50% of intersections with improvements.
  - For this TDM strategy, CAPCOA provides a **VMT reduction of 0.50%.**

The total VMT reduction of **11.125%** (9.0% + 0.625% + 1.0% + 0.50%) could be applied to the Murrieta Hills Specific Plan.

Conclusion

The SB 743 VMT Impact Screening Tool indicated the Murrieta Hills Specific Plan project is not located within a Transit Priority Area or a Low VMT Area. The project also exceeds the 50,000 square foot limit for local serving retail projects. The VMT data indicates the Murrieta Hills Specific Plan may be presumed to have a significant VMT impact since the average Project VMTs are higher than the average Jurisdictional VMTs according to the WRCOG screening tool.

Based on the future Keller Road / I-215 Interchange project and TDM measures, a VMT reduction of 11.125% could be applied to the project. The majority of the VMT reduction (9.0%) is attributed to the diversity of land uses proposed on the project site.

At this time, the City does not have a threshold of significance approved for VMT analysis. Therefore, we do not have a threshold by which to determine if there is a significant impact. Based on the WRCOG recommended guidance, the project VMT exceeds the VMT for the local jurisdiction using the WRCOG Screening Tool. As stated above, the project features would reduce project VMT by as much as 11% when the CAPCOA Guidelines are used. This 11% reduction would not bring the project VMT below the average VMT for the local jurisdiction. Since the maximum VMT reduction that is considered reasonable is 15% according to CAPCOA, no additional mitigation measures were considered. A 15% reduction would not bring the project VMT below the average VMT for the local jurisdiction.

Since there are no adopted thresholds of significance and this analysis is conducted for informational purposes only, Michael Baker has not identified any additional measures to further reduce the VMT. Michael Baker would need to run the RIVTAM model to test land use scenarios in order to identify a lower VMT solution.

If you have any questions pertaining to the information summarized in this letter, please call me at (760) 603-6266.

Sincerely,



Dawn Wilson, PE, TE
Transportation Planning Manager
Transportation Services

Michael Baker
INTERNATIONAL

We Make a Difference

August 29, 2019

Richard Robotta
Benchmark Pacific
550 Laguna Drive, Suite B
Carlsbad, CA 92008

Re: Murrieta Hills Specific Plan – Project Phase 1 Without Keller Road / I-215 Interchange

Michael Baker International (Michael Baker) has evaluated the potential traffic-related impacts that would occur if the I-215 / Keller Road interchange is not constructed prior to occupancy of all or part of Project Phase 1 (Year 2023) of the proposed Murrieta Hills Specific Plan. The approved Traffic Impact Analysis (TIA) dated November 2018 assumed the I-215 / Keller Road interchange is fully constructed and open to traffic prior to Year 2023 or Project Phase 1 based on information provided by Caltrans and City staff. However, construction of the new interchange is outside of the City's control and could take longer than anticipated. Therefore, the purpose of this analysis is to determine potential project impacts associated with re-assigning Project Phase 1 traffic to nearby interchanges at Scott Road and Clinton Keith Road to access the freeway in the absence of the Keller Road interchange. The following ten (10) study intersections were re-analyzed in this study:

Study Int. 3 – Haun Road-Zeiders Road / Scott Road (signalized)
Study Int. 4 – I-215 Southbound Ramps / Scott Road (signalized)
Study Int. 5 – I-215 Northbound Ramps / Scott Road (signalized)
Study Int. 6 – Antelope Road / Scott Road (signalized)
Study Int. 7 – Zeiders Road / Keller Road (unsignalized)
Study Int. 8 – Antelope Road / Keller Road (signalized)
Study Int. 14 – McElwain Road / Linnel Lane (unsignalized)
Study Int. 17 – McElwain Road / Clinton Keith Road (signalized)
Study Int. 18 – I-215 Southbound Ramps / Clinton Keith Road (signalized)
Study Int. 19 – I-215 Northbound Ramps / Clinton Keith Road (signalized)

Intersection operations were evaluated under the following Project Phase 1 scenarios during the AM and PM peak hours:

- Year 2023 Existing + Ambient Growth + Project Phase 1
- Year 2023 Existing + Ambient Growth + Cumulative Projects + Project Phase 1

The November 2018 Traffic Impact Analysis was used as a resource to obtain traffic volumes, growth factors, distribution percentages, and other information necessary to complete this analysis. In addition, this memorandum includes a separate analysis of impacted intersections to determine

the maximum number of Project Phase 1 residential dwelling units that could be built without triggering a significant project impact at the intersection.

Re-Assigned Project Phase 1 (Year 2023) Traffic Volumes

This analysis assumes the I-215 Interchange at Keller Road is not constructed under Project Phase 1 Year 2023 conditions. Therefore, project traffic destined to and from I-215 is assumed to primarily use Zeiders Road and Antelope Road to access the Scott Road Interchange and McElwain Road to access the Clinton Keith Road Interchange.

Exhibit 1 shows the re-distribution of Project Phase 1 traffic onto the surrounding road network assuming the Keller Road Interchange is not built. As shown, 26% of project traffic is assumed to travel north on Zeiders Road, 40% is assumed to travel south on McElwain Road and 34% is assumed to travel east on Keller Road. This distribution of project traffic is consistent with the Existing Plus Project trip distribution for the residential component evaluated in the November 2018 TIA since the Existing Plus Project scenario does not include the Keller Road Interchange.

Project Phase 1 of the Murrieta Hills Specific Plan consists of 300 single-family detached dwelling units which is expected to generate approximately 2,856 daily trips, which includes approximately 225 AM (57 inbound and 168 outbound) peak hour trips and approximately 300 PM (189 inbound and 111 outbound) peak hour trips. It is important to note, the number of dwelling units and trip generation for Project Phase 1 remain the same for both the proposed project and Environmentally Preferred Alternative evaluated in the November 2018 TIA.

Using the trip generation from Project Phase 1 and the revised project trip distribution, AM and PM peak hour trips were assigned to the ten (10) selected intersections and presented on **Exhibit 2**.

Lane configurations assumed at the study intersections for this analysis is provided on **Exhibit 3**. These lane geometries assume the currently underway Phase 1 improvements at the I-215 freeway interchange at Scott Road. The intersection of Antelope Road / Keller Road is assumed to remain in its current configuration.

Exhibit 4 shows the Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 AM and PM peak hour traffic volumes at all 10 study intersections.

Cumulative traffic volumes were added to the Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 peak hour volumes. **Exhibit 5** shows the Year 2023 Existing Plus Ambient Growth Plus Cumulative Plus Project Phase 1 AM and PM peak hour traffic volumes at the 10 study intersections.

Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Traffic Analysis

Utilizing the Synchro analysis software, an intersection operations analysis was conducted for the Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 AM and PM peak hour traffic volumes at the study intersections. **Table 1** summarizes the Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 conditions AM and PM peak hour LOS for the study intersections. Highway Capacity Manual (HCM) analysis worksheets for the study intersections are provided in **Appendix A** following this memorandum.

Table 1
Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Conditions
Without I-215 / Keller Road Interchange
Intersection Level of Service

#	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay [1]	LOS	Delay [1]	LOS
3	Haun Road-Zeiders Road / Scott Road	Signal	24.9	C	45.3	D
4	I-215 Southbound Ramps / Scott Road	Signal	18.7	B	19.3	B
5	I-215 Northbound Ramps / Scott Road	Signal	6.8	A	4.1	A
6	Antelope Road / Scott Road	Signal	47.3	D	42.3	D
7	Zeiders Road / Keller Road	Two-Way Stop	11.5	B	15.8	C
8	Antelope Road / Keller Road	Signal	29.7	C	31.5	C
14	McElwain Road / Linnel Lane	All-Way Stop	12.8	B	10.4	B
17	McElwain Road / Clinton Keith Road	Signal	28.0	C	46.6	D
18	I-215 Southbound Ramps / Clinton Keith Road	Signal	19.1	B	18.0	B
19	I-215 Northbound Ramps / Clinton Keith Road	Signal	38.0	D	23.5	C

[1] Delay indicated in seconds. **Bold** indicates deficient intersection operations.

As shown in **Table 1**, all of the study intersections are forecast to operate at an acceptable level of service (D or better) assuming the I-215/Keller Road interchange is not constructed prior to Project Phase 1. No new impacts occur as a result of the re-assigned Project Phase 1 traffic at the ten study intersections. Therefore, no mitigation is required which is consistent with the analysis results in the November 2018 TIA.

Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Traffic Analysis

This section analyzes the potential traffic impacts associated with the Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 conditions. Utilizing the Synchro analysis software, an intersection operations analysis was conducted for the AM and PM peak hour traffic volumes at the study intersections to determine if new significant traffic impacts occur assuming the I-215 / Keller Road interchange is not constructed under Year 2023 Existing Plus

Ambient Growth Plus Project Phase 1 conditions. **Table 2** summarizes the Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 conditions AM and PM peak hour LOS of the study intersections. Detailed HCM analysis worksheets are provided in **Appendix B** of this memorandum.

Table 2
Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Without I-215 / Keller Road Interchange
Intersection Level of Service

#	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay [1]	LOS	Delay [1]	LOS
3	Haun Road-Zeiders Road / Scott Road	Signal	**>80.0**	**F**	**>80.0**	**F**
4	I-215 Southbound Ramps / Scott Road	Signal	18.9	B	19.5	B
5	I-215 Northbound Ramps / Scott Road	Signal	10.9	B	18.1	B
6	Antelope Road / Scott Road [2]	Signal	61.9	E	63.6	E
7	Zeiders Road / Keller Road	Two-Way Stop	16.5	C	**>50.0**	**F**
8	Antelope Road / Keller Road	Signal	38.1	D	42.8	D
14	McElwain Road / Linnel Lane	All-Way Stop	19.8	C	16.1	C
17	McElwain Road / Clinton Keith Road	Signal	29.9	C	47.3	D
18	I-215 Southbound Ramps / Clinton Keith Road	Signal	20.7	C	19.4	B
19	I-215 Northbound Ramps / Clinton Keith Road	Signal	46.5	D	29.6	C

[1] Delay indicated in seconds. **Bold** indicates deficient intersection operations.

[2] LOS E or better is considered acceptable at freeway interchanges and intersections in close proximity to the I-215 freeway.

As shown in **Table 2**, the following two (2) study intersections that are found to operate at deficient levels of service (LOS F) assuming the I-215 / Keller Road interchange is not built by Project Phase 1 include:

- Int. #3 – Haun Road-Zeiders Road / Scott Road LOS F in the AM & PM Peak Hour
- Int. #7 – Zeiders Road / Keller Road LOS F in the PM Peak Hour

Based on the thresholds of significance, the addition of Project Phase 1 generated trips is forecast to result in a significant impact at the above listed two (2) study intersections for Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 conditions.

Consistent with the November 2018 TIA, the following mitigation measures are identified to reduce the traffic impacts at the impacted study intersections to a level considered less than significant:

Intersection Mitigation Measure at Int. 3 – Haun Road-Zeiders Road / Scott Road
The project applicant shall make a fair share contribution to implement the following:

a.) Widen the southbound approach from one left-turn lane and one shared left/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane.

b.) Widen the eastbound approach from one left-turn lane, one through lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes and one shared through/right-turn lane.
c.) Widen the westbound approach from one left-turn lane, two through lanes, and one right-turn lanes to consist of two left-turn lanes, two through lanes and two right-turn lanes.

Intersection Mitigation Measure at Int. 7 – Zeiders Road / Keller Road
The project applicant shall make a fair share contribution to implement the following:

a.) Convert from a two-way stop control to an all-way stop controlled intersection.
b.) Widen the northbound approach from one shared left/through/right-turn lane to consist of one left-turn lane, one through lane and one right-turn lane.
c.) Widen westbound approach from one shared left/through lane and one dedicated right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

Table 3 summarizes Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 conditions LOS of the significantly impacted study intersections assuming implementation of the recommended mitigation measures. Detailed HCM analysis worksheets are provided in **Appendix C**.

Table 3
Mitigated Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Conditions Without I-215 / Keller Road Interchange
Intersection Level of Service

#	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay [1]	LOS	Delay [1]	LOS
3	Haun Road-Zeiders Road / Scott Road	Signal	53.5	D	45.0	D
7	Zeiders Road / Keller Road	All-Way Stop	11.4	B	15.5	C

[1] Delay indicated in seconds.

As shown in **Table 3**, assuming implementation of the recommended mitigation measures, the traffic impacts at the significantly impacted study intersections are reduced to a level considered less than significant for Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 conditions without the I-215 / Keller Road interchange constructed. It may be noted the mitigation measures assumed in the without Keller Road Interchange analysis is consistent with the mitigation measures assumed in the November 2018 TIA that includes the Keller Road Interchange. Therefore, no new mitigation measures are recommended in this analysis that were not previously identified in the November 2018 TIA.

Project Phase 1 (Year 2023) Development Thresholds at Impacted Intersections

Michael Baker performed an analysis on the two (2) impacted intersections to determine the number of Project Phase 1 residential dwelling units that could be built without triggering a significant impact at the intersection. Based on the analysis above, the following two intersections are significantly impacted during the Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 condition:

- Int. #3 – Haun Road-Zeiders Road / Scott Road
- Int. #7 – Zeiders Road / Keller Road

In order to determine when the significant impact occurs, Year 2023 Murrieta Hills Specific Plan project traffic and cumulative project traffic was removed on a proportional basis from the intersections until the intersection operated acceptably. This process allowed Michael Baker to determine the approximate number of single-family dwelling units in Project Phase 1 that could be built prior to triggering a significant impact at each location. The results of the analysis are summarized in **Table 4**. Approximately 180 dwelling units could be built before a significant impact is triggered at Haun Road-Zeiders Road / Scott Road. At Zeiders Road / Keller Road, approximately 240 dwelling units could be built before a significant impact is triggered.

Table 4
Project Phase 1 Development Thresholds
Without I-215 / Keller Road Interchange

#	Intersection	Recommended Mitigation Measure	Project Phase 1 Development Threshold Before Impact is Triggered
3	Haun Road-Zeiders Road / Scott Road	a.) Widen the southbound approach from one left-turn lane and one shared left/through/right-turn lane to consist of two left-turn lanes and one shared through/right-turn lane. b.) Widen the eastbound approach from one left-turn lane, one through lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes and one shared through/right-turn lane. c.) Widen the westbound approach from one left-turn lane, two through lanes, and one right-turn lanes to consist of two left-turn lanes, two through lanes and two right-turn lanes.	180 Dwelling Units
7	Zeiders Road / Keller Road	a.) Convert from a two-way stop control to an all-way stop controlled intersection. b.) Widen the northbound approach from one shared left/through/right-turn lane to consist of one left-turn lane, one through lane and one right-turn lane. c.) Widen westbound approach from one shared left/through lane and one dedicated right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.	240 Dwelling Units

Conclusion

The purpose of this analysis was to evaluate potential traffic impacts assuming the Keller Road interchange is not constructed prior to Year 2023 Project Phase 1 of the proposed Murrieta Hills Specific Plan. Project traffic was re-assigned at a total of ten study intersections and then analyzed under two scenarios including Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 conditions and Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 conditions. The results of the analysis showed two (2) intersections were significantly impacted by Project Phase 1 traffic assuming the Keller Road Interchange is not constructed. The two impacted intersections include Haun Road-Zeiders Road / Scott Road and Zeiders Road / Keller Road. However, it is important to note that no new intersections were significantly impacted by the re-assigned traffic that were not previously identified in the November 2018 TIA. The recommended mitigation measures identified in the "Without Keller Road Interchange" analysis at the two impacted intersections is consistent with the mitigation measures recommended in the November 2018 TIA. Therefore, no new or alternative mitigation measures are required if the Keller Road Interchange is not constructed by Project Phase 1 in Year 2023.

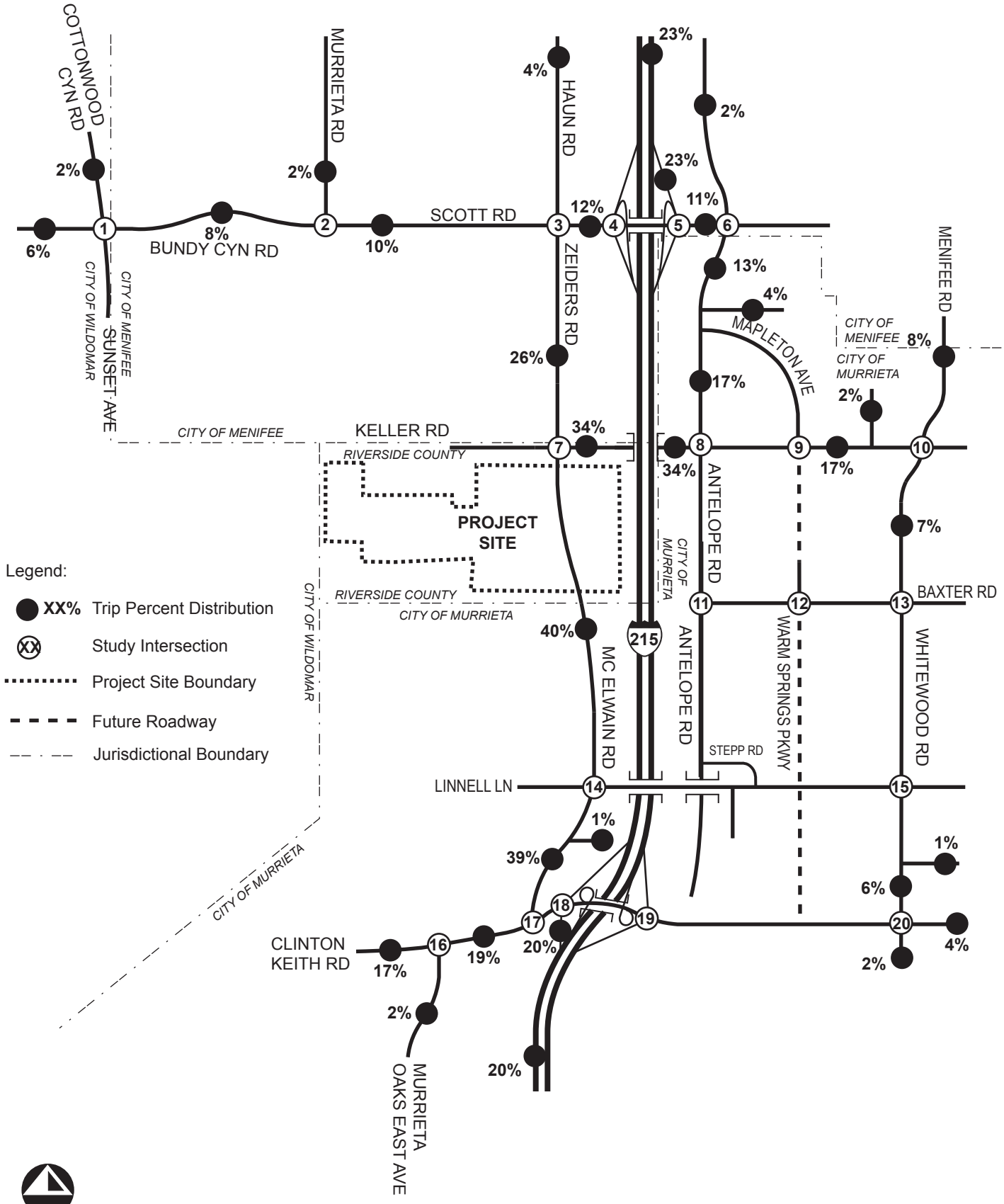
Michael Baker also determined the maximum number of single-family dwelling units in Project Phase 1 that could be built without triggering a significant impact at the two impacted locations. Based on the analysis performed, 180 single-family dwelling units could be built before a significant impact is triggered at Haun Road-Zeiders Road / Scott Road. At Zeiders Road / Keller Road, 240 single-family dwelling units could be built before a significant impact is triggered. However, the applicant may want to consider constructing the improvements at Zeiders Road / Keller Road prior to the 80% of development (240 dwelling unit threshold) since these improvements would provide enhanced access to and from the project.

Please call me at (760) 603-6244 if you have any questions about the findings of this analysis.

Sincerely,

Robert A Davis

Robert A. Davis
Senior Transportation Planner
Transportation Planning Services

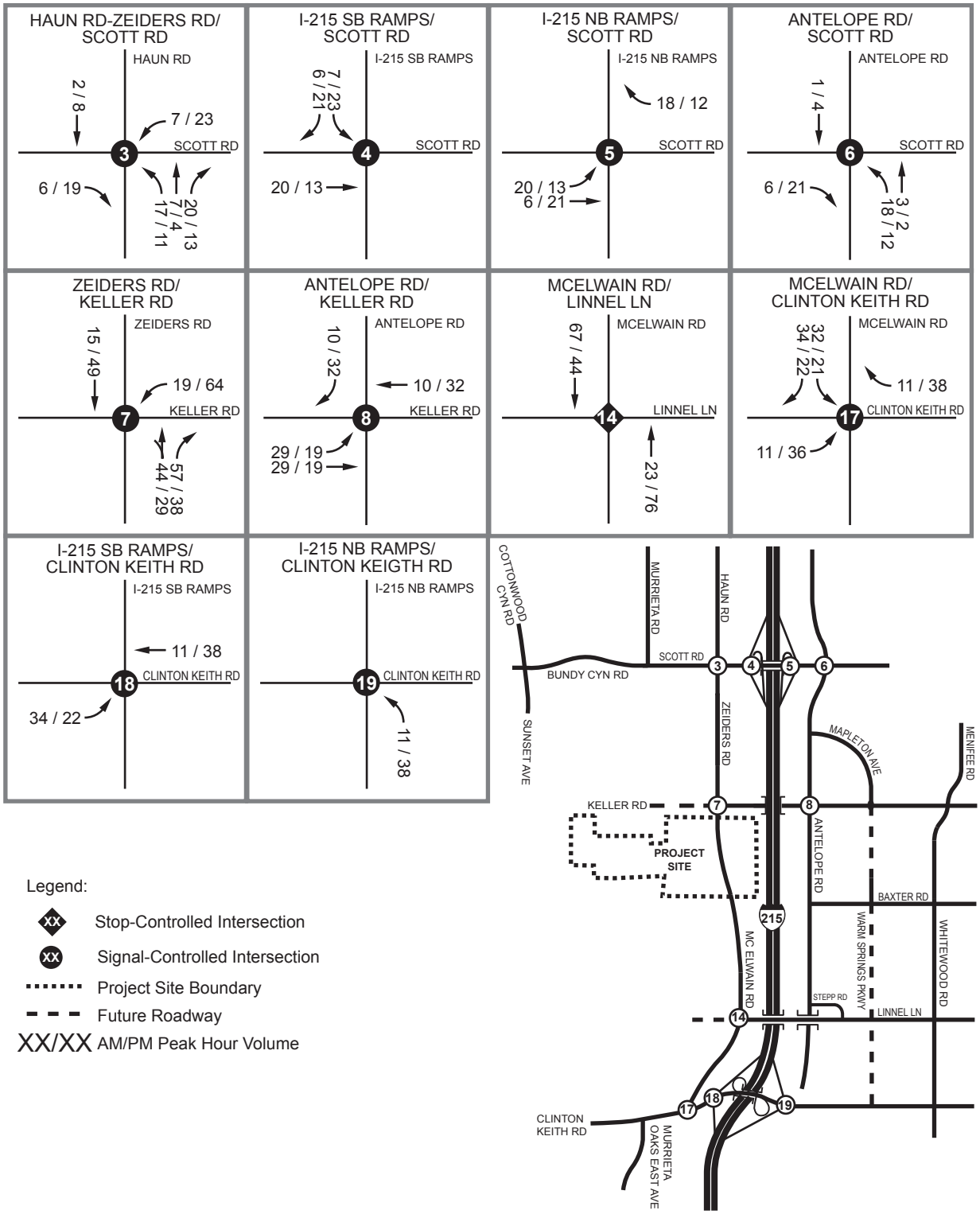


Phase 1 - Year 2023 Without Keller Road Interchange
Trip Percent Distribution of Proposed Project

Michael Baker INTERNATIONAL

H:\PDATA\141981
August 2019

Exhibit 1



Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

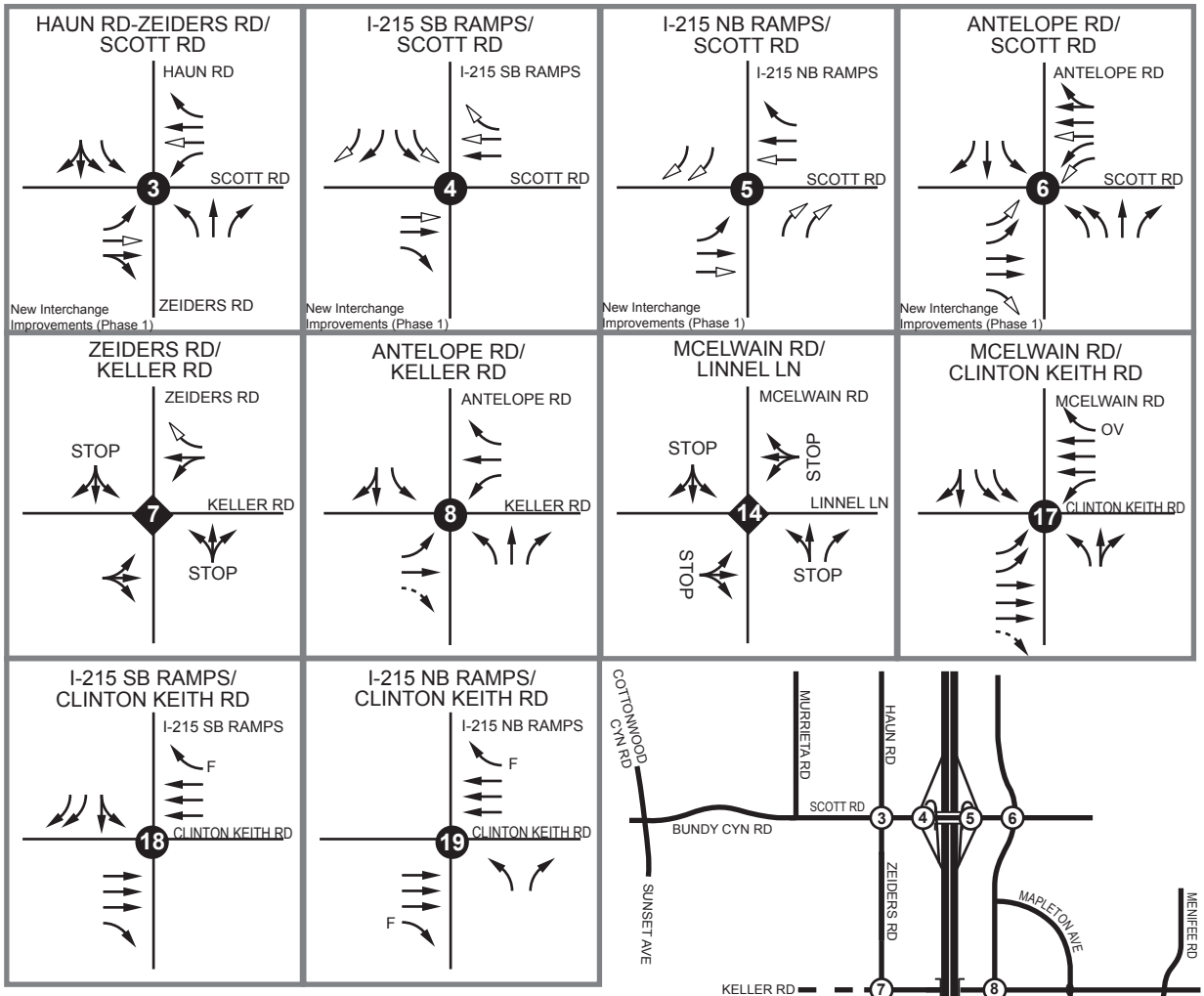
Not to Scale

Forecast Year 2023 - Phase 1
Without Keller Road Interchange
AM & PM Peak Hour Trip Assignment of Proposed Project

Michael Baker INTERNATIONAL

H:\pdata\141981
August 2019

Exhibit 2



Legend:

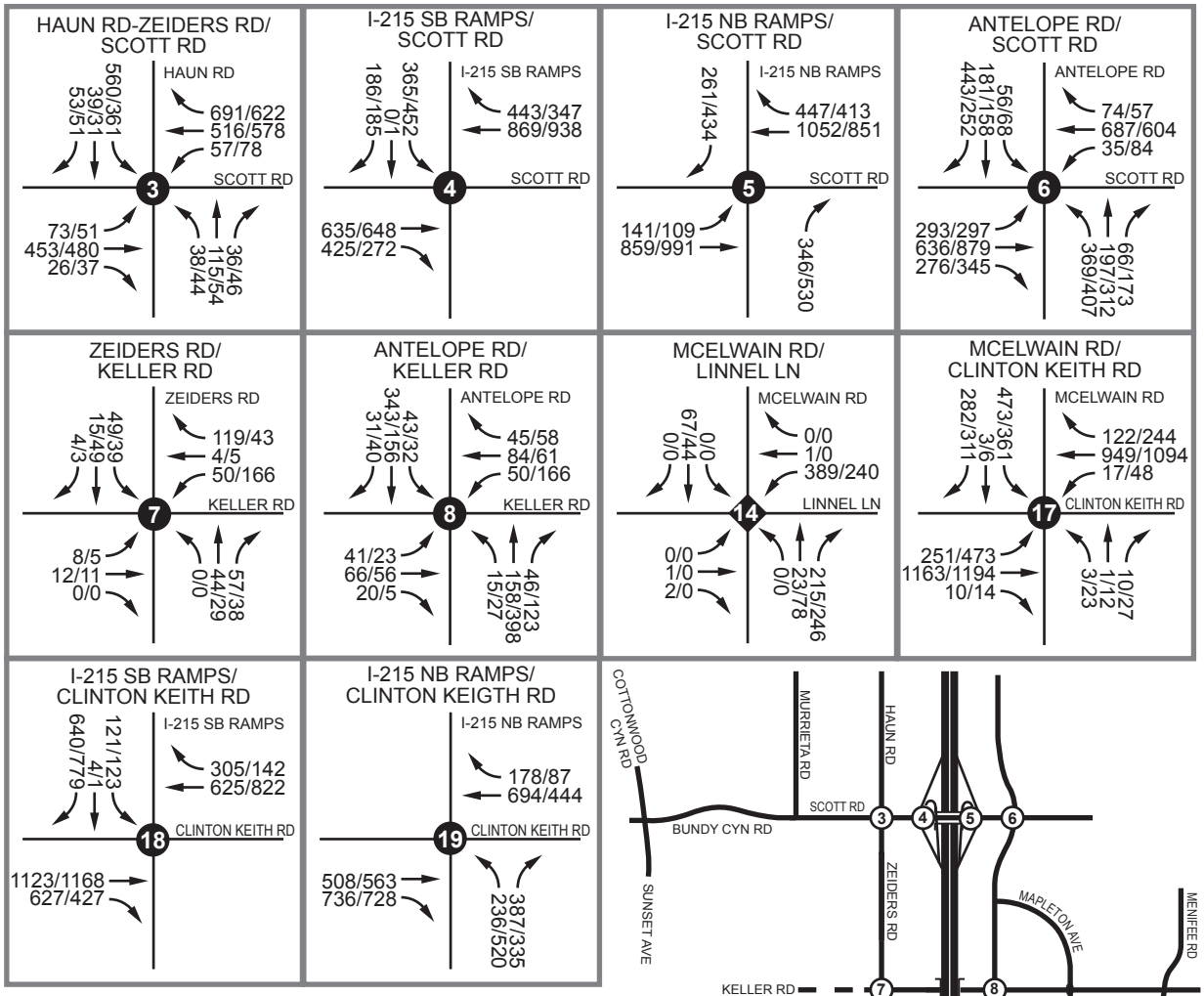
- Defacto Right-Turn Lane
- XX Signal-Controlled Intersection
- XX Stop-Controlled Intersection
- Project Site Boundary
- Future Roadway
- STOP Stop-Controlled Approach
- Existing Lane
- Modified Lane
- F Free Right-Turn
- OV Right-Turn Overlap
- ✳ Mitigated Intersection

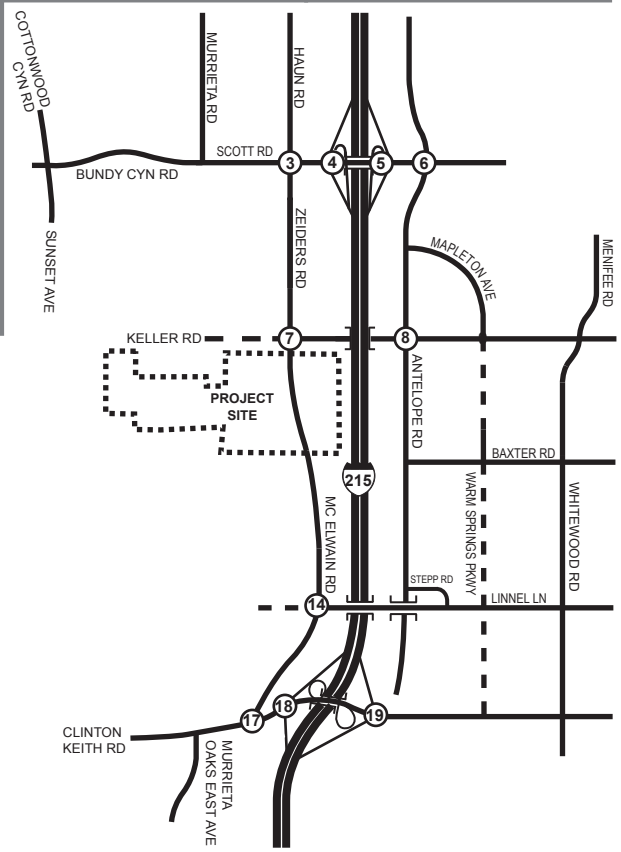
Not to Scale

Forecast Year 2023 - Phase 1 Without Keller Road Interchange Study Intersection Geometry

Michael Baker INTERNATIONAL H:\pdata\141981

Exhibit 3





Legend:

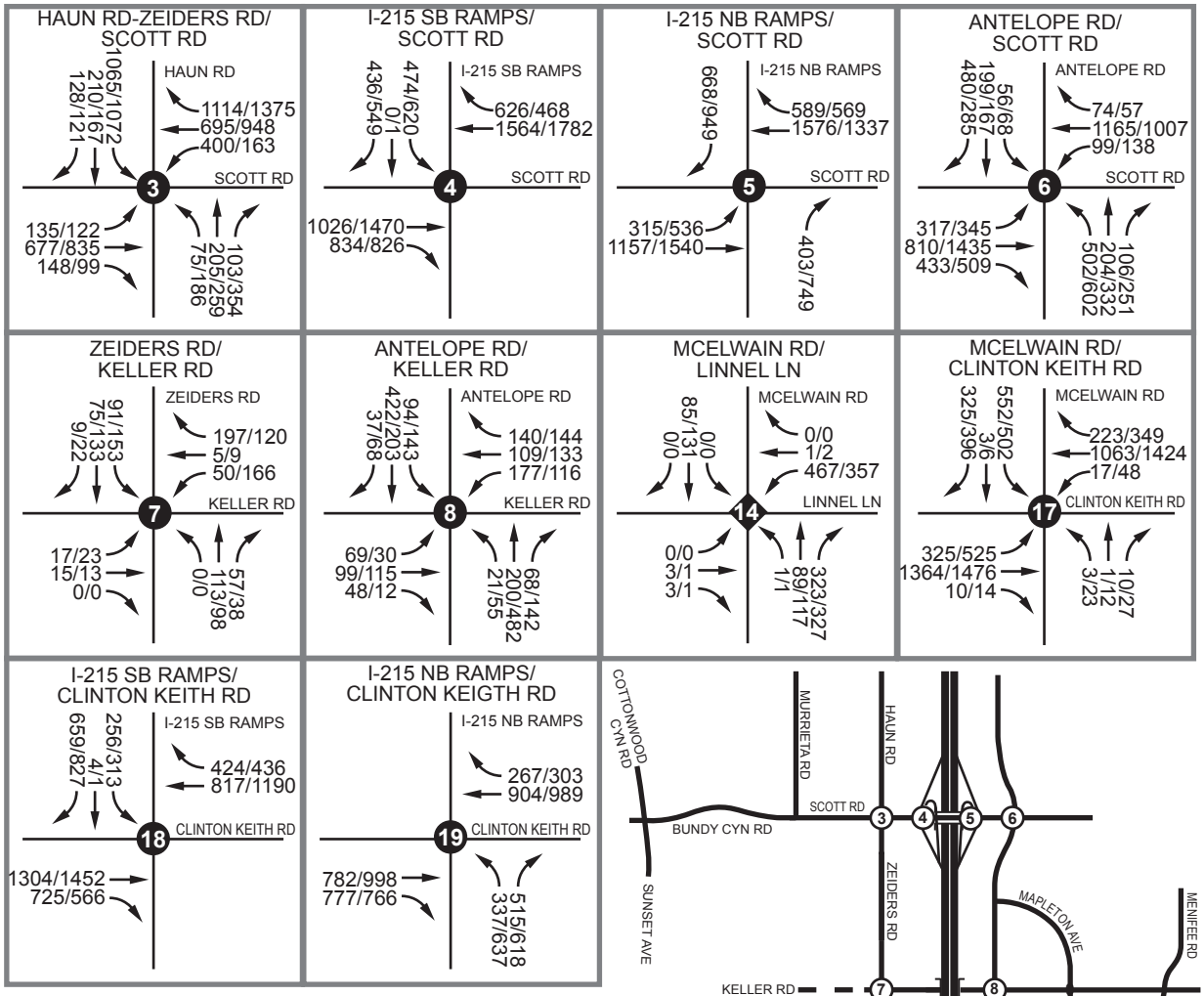
- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

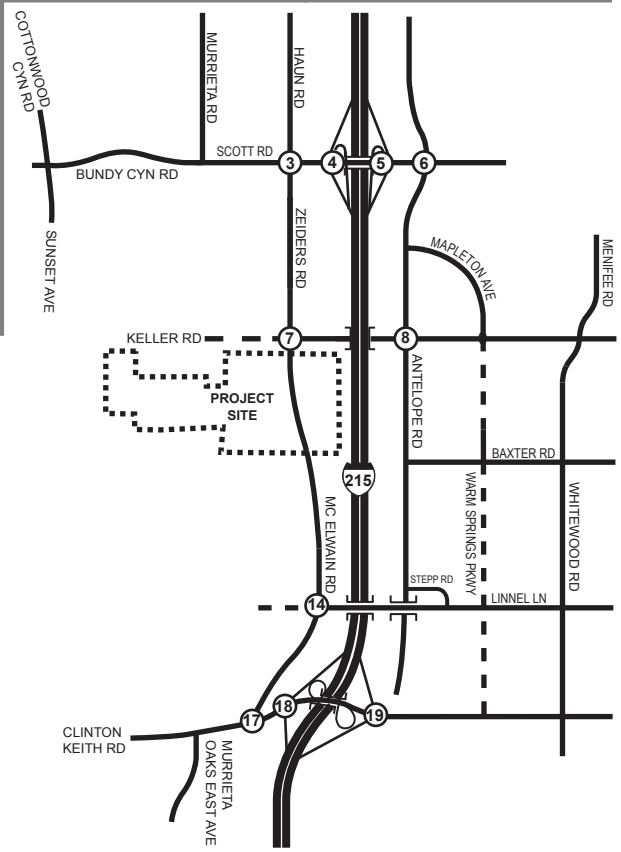
Not to Scale

Forecast Year 2023 - Phase 1
Without Keller Road Interchange
Existing Plus Ambient Growth Plus Project
AM/PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981

Exhibit 4





Legend:

- XX — Stop-Controlled Intersection
- XX — Signal-Controlled Intersection
- Project Site Boundary
- Future Roadway
- XX/XX AM/PM Peak Hour Volume

Not to Scale

Forecast Year 2023 - Phase 1
Without Keller Road Interchange
Existing Plus Ambient Growth Plus Cumulative Plus Project
AM/PM Peak Hour Study Intersection Volumes

Michael Baker INTERNATIONAL H:\pdata\141981

Exhibit 5

Michael Baker
INTERNATIONAL

Appendix A: Year 2023 Existing Plus Ambient Growth Plus Project Phase 1 Synchro Worksheets

This page intentionally left blank

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	453	26	57	516	691	38	115	36	560	39	53
Future Volume (veh/h)	73	453	26	57	516	691	38	115	36	560	39	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	87	539	31	68	614	823	45	137	43	759	0	0
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	2568	147	87	2636	1523	490	514	437	770	433	0
Arrive On Green	0.06	0.75	0.75	0.05	0.74	0.74	0.28	0.28	0.28	0.22	0.00	0.00
Sat Flow, veh/h	1774	3403	195	1774	3539	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	87	280	290	68	614	823	45	137	43	759	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1828	1774	1770	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	5.1	4.8	4.9	4.0	5.6	4.3	2.0	6.0	2.1	22.4	0.0	0.0
Cycle Q Clear(g_c), s	5.1	4.8	4.9	4.0	5.6	4.3	2.0	6.0	2.1	22.4	0.0	0.0
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	105	1335	1380	87	2636	1523	490	514	437	770	433	0
V/C Ratio(X)	0.83	0.21	0.21	0.78	0.23	0.54	0.09	0.27	0.10	0.99	0.00	0.00
Avail Cap(c_a), veh/h	105	1335	1380	108	2636	1523	490	514	437	770	433	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.9	3.8	3.8	49.4	4.1	0.2	28.2	29.7	28.3	40.9	0.0	0.0
Incr Delay (d2), s/veh	38.5	0.4	0.3	18.2	0.2	1.3	0.4	1.3	0.4	29.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	2.5	2.6	2.4	2.8	2.1	1.0	3.3	1.0	14.1	0.0	0.0
LnGrp Delay(d),s/veh	87.4	4.1	4.1	67.5	4.3	1.4	28.6	31.0	28.7	69.9	0.0	0.0
LnGrp LOS	F	A	A	E	A	A	C	C	C	E		
Approach Vol, veh/h		657			1505			225			759	
Approach Delay, s/veh		15.1			5.6			30.1			69.9	
Approach LOS		B			A			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	87.0	33.6	30.6	10.8	86.0	29.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	6.2	* 6.2
Max Green Setting (Gmax), s	6.4	25.2	29.0	22.8	6.2	25.4	22.8	* 29
Max Q Clear Time (g_c+I1), s	6.0	6.9	4.0	0.0	7.1	7.6	24.4	8.0
Green Ext Time (p_c), s	0.0	4.8	0.1	0.0	0.0	11.3	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	635	425	0	869	443	0	0	0	365	0	186
Future Volume (veh/h)	0	635	425	0	869	443	0	0	0	365	0	186
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	690	462	0	945	482				397	0	202
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2163	968	0	2163	968				1032	0	836
Arrive On Green	0.00	0.61	0.61	0.00	0.20	0.20				0.30	0.00	0.30
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	690	462	0	945	482				397	0	202
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	8.5	14.4	0.0	21.0	24.3				8.2	0.0	4.9
Cycle Q Clear(g_c), s	0.0	8.5	14.4	0.0	21.0	24.3				8.2	0.0	4.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2163	968	0	2163	968				1032	0	836
V/C Ratio(X)	0.00	0.32	0.48	0.00	0.44	0.50				0.38	0.00	0.24
Avail Cap(c_a), veh/h	0	2163	968	0	2163	968				1032	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.54	0.54	0.00	0.86	0.86				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.5	9.6	0.0	22.4	23.7				24.9	0.0	23.8
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.0	0.6	1.6				1.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	6.3	0.0	10.5	11.1				4.1	0.0	2.0
LnGrp Delay(d),s/veh	0.0	8.5	9.8	0.0	22.9	25.3				26.0	0.0	24.5
LnGrp LOS		A	A		C	C				C		C
Approach Vol, veh/h		1152			1427						599	
Approach Delay, s/veh		9.0			23.7						25.5	
Approach LOS		A			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		31.0		59.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		55.0		27.0		55.0		
Max Q Clear Time (g_c+I1), s		16.4		10.2		26.3		
Green Ext Time (p_c), s		7.0		2.1		9.2		

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	859	0	0	1052	447	0	0	346	0	0	261
Future Volume (veh/h)	141	859	0	0	1052	447	0	0	346	0	0	261
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	148	904	0	0	1107	471	0	0	364	0	0	275
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	158	3382	0	0	2910	1302	0	0	0	0	0	0
Arrive On Green	0.09	0.96	0.00	0.00	0.82	0.82	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	148	904	0	0	1107	471		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	7.5	1.4	0.0	0.0	7.3	6.8						
Cycle Q Clear(g_c), s	7.5	1.4	0.0	0.0	7.3	6.8						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	158	3382	0	0	2910	1302						
V/C Ratio(X)	0.94	0.27	0.00	0.00	0.38	0.36						
Avail Cap(c_a), veh/h	158	3382	0	0	2910	1302						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.67	0.67						
Uniform Delay (d), s/veh	40.8	0.1	0.0	0.0	2.1	2.0						
Incr Delay (d2), s/veh	51.9	0.2	0.0	0.0	0.3	0.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	5.9	0.7	0.0	0.0	3.5	3.1						
LnGrp Delay(d),s/veh	92.7	0.3	0.0	0.0	2.3	2.5						
LnGrp LOS	F	A			A	A						
Approach Vol, veh/h		1052			1578							
Approach Delay, s/veh		13.3			2.4							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			12.0	78.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		63.5			8.0	51.5		
Max Q Clear Time (g_c+I1), s		3.4			9.5	9.3		
Green Ext Time (p_c), s		7.0			0.0	12.1		

Intersection Summary		
HCM 2010 Ctrl Delay		6.8
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	636	276	35	687	74	369	197	66	56	181	443
Future Volume (veh/h)	293	636	276	35	687	74	369	197	66	56	181	443
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	308	669	291	37	723	78	388	207	69	59	191	466
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	363	1312	587	81	1348	144	444	704	598	76	543	462
Arrive On Green	0.11	0.37	0.37	0.02	0.29	0.29	0.13	0.38	0.38	0.04	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4665	500	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	308	669	291	37	524	277	388	207	69	59	191	466
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1775	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.6	17.6	17.0	1.3	15.6	15.8	13.3	9.3	3.4	4.0	9.7	35.0
Cycle Q Clear(g_c), s	10.6	17.6	17.0	1.3	15.6	15.8	13.3	9.3	3.4	4.0	9.7	35.0
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	363	1312	587	81	980	513	444	704	598	76	543	462
V/C Ratio(X)	0.85	0.51	0.50	0.46	0.53	0.54	0.87	0.29	0.12	0.78	0.35	1.01
Avail Cap(c_a), veh/h	470	1312	587	141	980	513	499	704	598	140	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	29.3	29.1	57.8	35.9	35.9	51.3	26.1	24.3	56.9	33.5	42.5
Incr Delay (d2), s/veh	8.3	1.3	2.7	1.5	2.1	4.0	13.5	1.1	0.4	6.3	1.8	44.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	8.8	7.8	0.6	7.6	8.3	7.1	5.0	1.6	2.1	5.3	20.9
LnGrp Delay(d),s/veh	61.1	30.6	31.8	59.3	38.0	40.0	64.8	27.2	24.7	63.2	35.3	86.7
LnGrp LOS	E	C	C	E	D	D	E	C	C	E	D	F
Approach Vol, veh/h		1268			838			664			716	
Approach Delay, s/veh		38.3			39.6			48.9			71.1	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	51.0	20.1	41.5	17.2	41.2	9.7	51.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	4.8	* 41	17.4	* 35	16.4	29.3	9.5	42.6
Max Q Clear Time (g_c+I1), s	3.3	19.6	15.3	37.0	12.6	17.8	6.0	11.3
Green Ext Time (p_c), s	0.0	5.2	0.2	0.0	0.1	3.7	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	47.3
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↰	↗		↕			↕	
Traffic Vol, veh/h	8	12	0	50	4	119	0	44	57	49	15	4
Future Vol, veh/h	8	12	0	50	4	119	0	44	57	49	15	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	15	0	63	5	151	0	56	72	62	19	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	156	0	0	15	0	0	254	317	15	230	166	5
Stage 1	-	-	-	-	-	-	35	35	-	131	131	-
Stage 2	-	-	-	-	-	-	219	282	-	99	35	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1424	-	-	1603	-	-	699	599	1065	725	727	1078
Stage 1	-	-	-	-	-	-	981	866	-	873	788	-
Stage 2	-	-	-	-	-	-	783	678	-	907	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1424	-	-	1603	-	-	655	568	1065	601	690	1078
Mov Cap-2 Maneuver	-	-	-	-	-	-	655	568	-	601	690	-
Stage 1	-	-	-	-	-	-	974	860	-	867	753	-
Stage 2	-	-	-	-	-	-	726	648	-	785	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	2.1	10.6	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	771	1424	-	-	1603	-	-	636
HCM Lane V/C Ratio	0.166	0.007	-	-	0.039	-	-	0.135
HCM Control Delay (s)	10.6	7.5	0	-	7.3	0	-	11.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	66	20	50	84	45	15	158	46	43	343	31
Future Volume (veh/h)	41	66	20	50	84	45	15	158	46	43	343	31
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	45	72	22	54	91	49	16	172	50	47	373	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	680	578	85	688	585	39	604	513	79	584	53
Arrive On Green	0.04	0.37	0.37	0.05	0.37	0.37	0.02	0.32	0.32	0.04	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1682	153
Grp Volume(v), veh/h	45	72	22	54	91	49	16	172	50	47	0	407
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1836
Q Serve(g_s), s	2.4	2.4	0.9	2.9	3.1	1.9	0.8	6.6	2.1	2.5	0.0	17.7
Cycle Q Clear(g_c), s	2.4	2.4	0.9	2.9	3.1	1.9	0.8	6.6	2.1	2.5	0.0	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	78	680	578	85	688	585	39	604	513	79	0	637
V/C Ratio(X)	0.58	0.11	0.04	0.64	0.13	0.08	0.41	0.28	0.10	0.59	0.00	0.64
Avail Cap(c_a), veh/h	113	680	578	342	688	585	113	604	513	130	0	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.7	20.0	19.5	44.6	19.9	19.6	46.0	24.0	22.5	44.7	0.0	26.1
Incr Delay (d2), s/veh	2.5	0.3	0.1	2.9	0.4	0.3	2.6	1.2	0.4	2.6	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.3	0.4	1.5	1.7	0.9	0.4	3.5	1.0	1.3	0.0	9.8
LnGrp Delay(d),s/veh	47.2	20.3	19.6	47.5	20.3	19.9	48.7	25.2	22.9	47.3	0.0	31.0
LnGrp LOS	D	C	B	D	C	B	D	C	C	D		C
Approach Vol, veh/h		139			194			238			454	
Approach Delay, s/veh		28.9			27.8			26.3			32.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	41.0	6.7	38.5	8.8	41.4	8.9	36.3
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	18.4	22.9	6.1	31.8	6.1	35.2	7.0	30.9
Max Q Clear Time (g_c+I1), s	4.9	4.4	2.8	19.7	4.4	5.1	4.5	8.6
Green Ext Time (p_c), s	0.0	0.7	0.0	2.6	0.0	1.4	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.7
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	2	389	1	0	0	23	215	0	67	0
Future Vol, veh/h	0	1	2	389	1	0	0	23	215	0	67	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	2	427	1	0	0	25	236	0	74	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.1	15	10.2	9.3
HCM LOS	A	B	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	33%	0%	100%
Vol Right, %	0%	100%	67%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	215	3	390	67
LT Vol	0	0	0	389	0
Through Vol	23	0	1	1	67
RT Vol	0	215	2	0	0
Lane Flow Rate	25	236	3	429	74
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.04	0.33	0.005	0.59	0.113
Departure Headway (Hd)	5.74	5.033	5.052	4.956	5.501
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	619	709	713	724	644
Service Time	3.515	2.807	3.052	3.024	3.598
HCM Lane V/C Ratio	0.04	0.333	0.004	0.593	0.115
HCM Control Delay	8.8	10.3	8.1	15	9.3
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.1	1.4	0	3.9	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	1163	10	17	949	122	3	1	10	473	3	282
Future Volume (veh/h)	251	1163	10	17	949	122	3	1	10	473	3	282
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	276	1278	11	19	1043	134	3	1	11	520	3	310
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	2637	821	43	2264	975	8	13	140	587	4	410
Arrive On Green	0.10	0.52	0.52	0.02	0.45	0.45	0.00	0.10	0.10	0.17	0.26	0.26
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	134	1470	3442	15	1570
Grp Volume(v), veh/h	276	1278	11	19	1043	134	3	0	12	520	0	313
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1603	1721	0	1586
Q Serve(g_s), s	8.3	17.0	0.4	1.1	15.0	3.7	0.2	0.0	0.7	15.5	0.0	19.1
Cycle Q Clear(g_c), s	8.3	17.0	0.4	1.1	15.0	3.7	0.2	0.0	0.7	15.5	0.0	19.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		0.99
Lane Grp Cap(c), veh/h	336	2637	821	43	2264	975	8	0	153	587	0	414
V/C Ratio(X)	0.82	0.48	0.01	0.44	0.46	0.14	0.35	0.00	0.08	0.89	0.00	0.76
Avail Cap(c_a), veh/h	341	2637	821	125	2264	975	167	0	359	669	0	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.40	0.40	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.5	16.3	12.3	50.5	20.3	8.5	52.1	0.0	43.3	42.6	0.0	35.7
Incr Delay (d2), s/veh	5.9	0.3	0.0	2.3	0.3	0.1	9.0	0.0	0.2	11.6	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	8.0	0.2	0.6	7.1	1.6	0.1	0.0	0.3	8.3	0.0	9.0
LnGrp Delay(d),s/veh	52.4	16.5	12.3	52.8	20.6	8.6	61.1	0.0	43.5	54.1	0.0	41.3
LnGrp LOS	D	B	B	D	C	A	E		D	D		D
Approach Vol, veh/h		1565			1196			15			833	
Approach Delay, s/veh		22.8			19.8			47.0			49.3	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	60.3	5.1	32.5	14.9	52.5	22.5	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	7.4	33.6	9.9	34.0	10.4	30.6	20.4	23.5
Max Q Clear Time (g_c+I1), s	3.1	19.0	2.2	21.1	10.3	17.0	17.5	2.7
Green Ext Time (p_c), s	0.0	10.8	0.0	2.0	0.0	9.4	0.4	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1123	627	0	625	305	0	0	0	121	4	640
Future Volume (veh/h)	0	1123	627	0	625	305	0	0	0	121	4	640
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900				1900	1863	1863
Adj Flow Rate, veh/h	0	1276	712	0	710	347				138	5	727
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2599	809	0	1733	809				686	25	1115
Arrive On Green	0.00	0.51	0.51	0.00	0.51	0.51				0.40	0.40	0.40
Sat Flow, veh/h	0	5253	1583	0	3558	1583				1715	62	2787
Grp Volume(v), veh/h	0	1276	712	0	710	347				143	0	727
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583				1777	0	1393
Q Serve(g_s), s	0.0	14.7	36.0	0.0	11.7	12.3				4.7	0.0	19.1
Cycle Q Clear(g_c), s	0.0	14.7	36.0	0.0	11.7	12.3				4.7	0.0	19.1
Prop In Lane	0.00		1.00	0.00		1.00				0.97		1.00
Lane Grp Cap(c), veh/h	0	2599	809	0	1733	809				711	0	1115
V/C Ratio(X)	0.00	0.49	0.88	0.00	0.41	0.43				0.20	0.00	0.65
Avail Cap(c_a), veh/h	0	2599	809	0	1733	809				711	0	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.78	0.78	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.4	19.5	0.0	13.6	13.8				17.6	0.0	21.9
Incr Delay (d2), s/veh	0.0	0.1	8.8	0.0	0.7	1.7				0.6	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.9	17.6	0.0	5.6	5.8				2.4	0.0	7.7
LnGrp Delay(d),s/veh	0.0	14.5	28.4	0.0	14.3	15.4				18.3	0.0	24.9
LnGrp LOS		B	C		B	B				B		C
Approach Vol, veh/h		1988			1057						870	
Approach Delay, s/veh		19.5			14.7						23.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		40.0		50.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		46.0		36.0		46.0		
Max Q Clear Time (g_c+I1), s		38.0		21.1		14.3		
Green Ext Time (p_c), s		6.0		3.6		8.0		

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	508	736	0	694	178	236	0	387	0	0	0
Future Volume (veh/h)	0	508	736	0	694	178	236	0	387	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	668	968	0	913	0	311	0	509			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	3277	1020	0	3277	1020	473	0	422			
Arrive On Green	0.00	0.64	0.64	0.00	0.64	0.00	0.27	0.00	0.27			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	668	968	0	913	0	311	0	509			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	4.8	50.3	0.0	7.0	0.0	14.0	0.0	24.0			
Cycle Q Clear(g_c), s	0.0	4.8	50.3	0.0	7.0	0.0	14.0	0.0	24.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3277	1020	0	3277	1020	473	0	422			
V/C Ratio(X)	0.00	0.20	0.95	0.00	0.28	0.00	0.66	0.00	1.21			
Avail Cap(c_a), veh/h	0	3277	1020	0	3277	1020	473	0	422			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.97	0.97	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.5	14.6	0.0	6.9	0.0	29.3	0.0	33.0			
Incr Delay (d2), s/veh	0.0	0.1	17.9	0.0	0.0	0.0	7.0	0.0	113.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.3	26.6	0.0	3.2	0.0	7.7	0.0	23.7			
LnGrp Delay(d),s/veh	0.0	6.7	32.5	0.0	7.0	0.0	36.3	0.0	146.0			
LnGrp LOS		A	C		A		D		F			
Approach Vol, veh/h		1636			913			820				
Approach Delay, s/veh		22.0			7.0			104.4				
Approach LOS		C			A			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		62.0				62.0		28.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		34.0				20.0		24.0
Max Q Clear Time (g_c+I1), s		52.3				9.0		26.0
Green Ext Time (p_c), s		0.0				4.4		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		38.0
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	480	37	78	578	622	44	54	46	361	31	51
Future Volume (veh/h)	51	480	37	78	578	622	44	54	46	361	31	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	53	500	39	81	602	648	46	56	48	448	0	0
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	862	67	103	987	673	59	514	437	519	725	0
Arrive On Green	0.04	0.26	0.26	0.06	0.28	0.28	0.03	0.28	0.28	0.15	0.00	0.00
Sat Flow, veh/h	1774	3328	259	1774	3539	1583	1774	1863	1583	3548	1863	0
Grp Volume(v), veh/h	53	265	274	81	602	648	46	56	48	448	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1817	1774	1770	1583	1774	1863	1583	1774	1863	0
Q Serve(g_s), s	3.1	13.7	13.8	4.7	15.5	29.3	2.7	2.4	2.4	13.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	13.7	13.8	4.7	15.5	29.3	2.7	2.4	2.4	13.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	68	458	471	103	987	673	59	514	437	519	725	0
V/C Ratio(X)	0.78	0.58	0.58	0.79	0.61	0.96	0.78	0.11	0.11	0.86	0.00	0.00
Avail Cap(c_a), veh/h	108	458	471	125	987	673	106	514	437	723	754	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	33.9	33.9	48.8	32.9	29.4	50.4	28.4	28.4	43.8	0.0	0.0
Incr Delay (d2), s/veh	7.0	5.2	5.2	17.5	2.6	25.3	8.2	0.4	0.5	6.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	7.4	7.6	2.8	8.0	23.0	1.5	1.3	1.1	6.8	0.0	0.0
LnGrp Delay(d),s/veh	57.1	39.2	39.1	66.3	35.5	54.7	58.6	28.8	28.9	49.8	0.0	0.0
LnGrp LOS	E	D	D	E	D	D	E	C	C	D		
Approach Vol, veh/h		592			1331			150			448	
Approach Delay, s/veh		40.7			46.7			37.9			49.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	33.4	8.1	47.1	8.6	35.5	19.9	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.6	* 6.2
Max Green Setting (Gmax), s	7.4	27.2	6.3	42.5	6.4	28.2	21.4	* 29
Max Q Clear Time (g_c+I1), s	6.7	15.8	4.7	0.0	5.1	31.3	15.0	4.4
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	0.0	0.4	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	45.3
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	648	272	0	938	347	0	0	0	452	1	185
Future Volume (veh/h)	0	648	272	0	938	347	0	0	0	452	1	185
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	1900	1863
Adj Flow Rate, veh/h	0	661	278	0	957	354				461	1	189
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2084	932	0	2084	932				1109	0	898
Arrive On Green	0.00	0.59	0.59	0.00	0.19	0.19				0.32	0.32	0.32
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	661	278	0	957	354				461	0	189
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	8.5	7.9	0.0	21.5	17.5				9.4	0.0	4.4
Cycle Q Clear(g_c), s	0.0	8.5	7.9	0.0	21.5	17.5				9.4	0.0	4.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2084	932	0	2084	932				1109	0	898
V/C Ratio(X)	0.00	0.32	0.30	0.00	0.46	0.38				0.42	0.00	0.21
Avail Cap(c_a), veh/h	0	2084	932	0	2084	932				1109	0	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.77	0.77	0.00	0.89	0.89				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.4	9.2	0.0	23.6	22.0				23.9	0.0	22.2
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.6	1.0				1.1	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	3.4	0.0	10.7	8.0				4.7	0.0	1.8
LnGrp Delay(d),s/veh	0.0	9.4	9.4	0.0	24.2	23.0				25.0	0.0	22.7
LnGrp LOS		A	A		C	C				C		C
Approach Vol, veh/h		939			1311						650	
Approach Delay, s/veh		9.4			23.9						24.3	
Approach LOS		A			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		57.0		33.0		57.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		53.0		29.0		53.0		
Max Q Clear Time (g_c+I1), s		10.5		11.4		23.5		
Green Ext Time (p_c), s		5.7		2.3		8.6		

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	991	0	0	851	413	0	0	530	0	0	434
Future Volume (veh/h)	109	991	0	0	851	413	0	0	530	0	0	434
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	112	1022	0	0	877	426	0	0	546	0	0	447
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	141	3382	0	0	2944	1317	0	0	0	0	0	0
Arrive On Green	0.08	0.96	0.00	0.00	0.83	0.83	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	112	1022	0	0	877	426		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	5.6	1.6	0.0	0.0	5.0	5.6						
Cycle Q Clear(g_c), s	5.6	1.6	0.0	0.0	5.0	5.6						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	141	3382	0	0	2944	1317						
V/C Ratio(X)	0.80	0.30	0.00	0.00	0.30	0.32						
Avail Cap(c_a), veh/h	158	3382	0	0	2944	1317						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.78	0.78						
Uniform Delay (d), s/veh	40.7	0.1	0.0	0.0	1.7	1.7						
Incr Delay (d2), s/veh	21.0	0.2	0.0	0.0	0.2	0.5						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	3.6	0.8	0.0	0.0	2.4	2.6						
LnGrp Delay(d),s/veh	61.7	0.3	0.0	0.0	1.9	2.3						
LnGrp LOS	E	A			A	A						
Approach Vol, veh/h		1134			1303							
Approach Delay, s/veh		6.4			2.0							
Approach LOS		A			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			11.1	78.9		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		59.7			8.0	47.7		
Max Q Clear Time (g_c+I1), s		3.6			7.6	7.6		
Green Ext Time (p_c), s		8.4			0.0	8.8		

Intersection Summary	
HCM 2010 Ctrl Delay	4.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	879	345	84	604	57	407	312	173	68	158	252
Future Volume (veh/h)	297	879	345	84	604	57	407	312	173	68	158	252
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	300	888	348	85	610	58	411	315	175	69	160	255
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	354	1237	553	133	1348	127	465	703	597	88	543	462
Arrive On Green	0.10	0.35	0.35	0.04	0.29	0.29	0.14	0.38	0.38	0.05	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4729	446	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	300	888	348	85	436	232	411	315	175	69	160	255
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1784	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.3	26.1	22.0	2.9	12.7	12.8	14.1	15.2	9.3	4.6	8.0	16.3
Cycle Q Clear(g_c), s	10.3	26.1	22.0	2.9	12.7	12.8	14.1	15.2	9.3	4.6	8.0	16.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	354	1237	553	133	967	509	465	703	597	88	543	462
V/C Ratio(X)	0.85	0.72	0.63	0.64	0.45	0.46	0.88	0.45	0.29	0.78	0.29	0.55
Avail Cap(c_a), veh/h	442	1237	553	195	967	509	505	703	597	154	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	33.9	32.5	56.9	35.2	35.2	51.0	28.0	26.2	56.4	32.9	35.9
Incr Delay (d2), s/veh	8.5	3.0	4.5	1.9	1.5	2.9	15.0	2.1	1.2	5.6	1.4	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	13.2	10.3	1.4	6.1	6.7	7.6	8.2	4.3	2.4	4.3	7.8
LnGrp Delay(d),s/veh	61.4	36.9	37.0	58.7	36.7	38.2	65.9	30.1	27.4	62.0	34.3	40.6
LnGrp LOS	E	D	D	E	D	D	E	C	C	E	C	D
Approach Vol, veh/h		1536			753			901			484	
Approach Delay, s/veh		41.7			39.6			45.9			41.6	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	48.4	20.8	41.5	17.0	40.7	10.6	51.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	6.8	* 39	17.6	* 35	15.4	30.1	10.4	41.9
Max Q Clear Time (g_c+I1), s	4.9	28.1	16.1	18.3	12.3	14.8	6.6	17.2
Green Ext Time (p_c), s	0.0	5.1	0.2	0.8	0.1	3.4	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	42.3
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↰	↗		↕			↕	
Traffic Vol, veh/h	5	11	0	166	5	43	0	29	38	39	49	3
Future Vol, veh/h	5	11	0	166	5	43	0	29	38	39	49	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	13	0	198	6	51	0	35	45	46	58	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	57	0	0	13	0	0	484	478	13	467	427	6
Stage 1	-	-	-	-	-	-	25	25	-	402	402	-
Stage 2	-	-	-	-	-	-	459	453	-	65	25	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1547	-	-	1606	-	-	493	486	1067	506	520	1077
Stage 1	-	-	-	-	-	-	993	874	-	625	600	-
Stage 2	-	-	-	-	-	-	582	570	-	946	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1547	-	-	1606	-	-	399	422	1067	409	452	1077
Mov Cap-2 Maneuver	-	-	-	-	-	-	399	422	-	409	452	-
Stage 1	-	-	-	-	-	-	989	871	-	623	523	-
Stage 2	-	-	-	-	-	-	449	497	-	867	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	5.9	11.4	15.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	642	1547	-	-	1606	-	-	441
HCM Lane V/C Ratio	0.124	0.004	-	-	0.123	-	-	0.246
HCM Control Delay (s)	11.4	7.3	0	-	7.6	0	-	15.8
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.4	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	56	5	166	61	58	27	398	123	32	156	40
Future Volume (veh/h)	23	56	5	166	61	58	27	398	123	32	156	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	25	60	5	178	66	62	29	428	132	34	168	43
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	443	377	210	607	516	60	725	616	66	562	144
Arrive On Green	0.03	0.24	0.24	0.12	0.33	0.33	0.03	0.39	0.39	0.04	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1432	366
Grp Volume(v), veh/h	25	60	5	178	66	62	29	428	132	34	0	211
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1798
Q Serve(g_s), s	1.3	2.4	0.2	9.4	2.4	2.6	1.5	17.5	5.3	1.8	0.0	7.7
Cycle Q Clear(g_c), s	1.3	2.4	0.2	9.4	2.4	2.6	1.5	17.5	5.3	1.8	0.0	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	54	443	377	210	607	516	60	725	616	66	0	706
V/C Ratio(X)	0.46	0.14	0.01	0.85	0.11	0.12	0.49	0.59	0.21	0.51	0.00	0.30
Avail Cap(c_a), veh/h	119	443	377	230	607	516	119	725	616	137	0	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.7	28.7	27.9	41.4	22.5	22.6	45.5	23.2	19.5	45.2	0.0	20.0
Incr Delay (d2), s/veh	2.3	0.6	0.1	21.3	0.4	0.5	2.3	3.5	0.8	2.3	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.3	0.1	5.8	1.3	1.2	0.8	9.6	2.5	0.9	0.0	4.0
LnGrp Delay(d),s/veh	47.9	29.4	27.9	62.6	22.9	23.1	47.7	26.7	20.3	47.5	0.0	21.1
LnGrp LOS	D	C	C	E	C	C	D	C	C	D		C
Approach Vol, veh/h		90			306			589			245	
Approach Delay, s/veh		34.4			46.1			26.3			24.8	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.0	7.8	43.0	7.5	37.4	8.2	42.7
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	12.4	22.8	6.4	37.6	6.4	28.8	7.4	36.6
Max Q Clear Time (g_c+I1), s	11.4	4.4	3.5	9.7	3.3	4.6	3.8	19.5
Green Ext Time (p_c), s	0.0	0.4	0.0	1.7	0.0	1.1	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	240	0	0	0	78	246	0	44	0
Future Vol, veh/h	0	0	0	240	0	0	0	78	246	0	44	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	282	0	0	0	92	289	0	52	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	0	11.5	9.8	8.7
HCM LOS	-	B	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	100%	0%	100%
Vol Right, %	0%	100%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	246	0	240	44
LT Vol	0	0	0	240	0
Through Vol	78	0	0	0	44
RT Vol	0	246	0	0	0
Lane Flow Rate	92	289	0	282	52
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.136	0.373	0	0.399	0.075
Departure Headway (Hd)	5.342	4.637	5.304	5.088	5.218
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	670	773	0	703	682
Service Time	3.088	2.382	3.387	3.142	3.285
HCM Lane V/C Ratio	0.137	0.374	0	0.401	0.076
HCM Control Delay	8.9	10.1	8.4	11.5	8.7
HCM Lane LOS	A	B	N	B	A
HCM 95th-tile Q	0.5	1.7	0	1.9	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	473	1194	14	48	1094	244	23	12	27	361	6	311
Future Volume (veh/h)	473	1194	14	48	1094	244	23	12	27	361	6	311
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	483	1218	14	49	1116	249	23	12	28	368	6	317
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	2564	798	77	2233	895	50	67	157	433	7	363
Arrive On Green	0.11	0.50	0.50	0.04	0.44	0.44	0.03	0.14	0.14	0.13	0.23	0.23
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	497	1161	3442	29	1558
Grp Volume(v), veh/h	483	1218	14	49	1116	249	23	0	40	368	0	323
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1658	1721	0	1588
Q Serve(g_s), s	11.4	16.4	0.5	2.9	16.6	8.5	1.3	0.0	2.2	11.0	0.0	20.6
Cycle Q Clear(g_c), s	11.4	16.4	0.5	2.9	16.6	8.5	1.3	0.0	2.2	11.0	0.0	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.70	1.00		0.98
Lane Grp Cap(c), veh/h	374	2564	798	77	2233	895	50	0	224	433	0	370
V/C Ratio(X)	1.29	0.48	0.02	0.64	0.50	0.28	0.46	0.00	0.18	0.85	0.00	0.87
Avail Cap(c_a), veh/h	374	2564	798	103	2233	895	167	0	445	515	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	0.86	0.86	0.86	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	17.0	13.0	49.4	21.2	11.8	50.3	0.0	40.3	44.9	0.0	38.8
Incr Delay (d2), s/veh	140.6	0.3	0.0	2.8	0.4	0.3	2.5	0.0	0.4	9.7	0.0	12.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	7.7	0.2	1.5	7.8	3.8	0.7	0.0	1.1	5.8	0.0	10.3
LnGrp Delay(d),s/veh	187.4	17.3	13.0	52.2	21.5	12.1	52.8	0.0	40.6	54.6	0.0	51.3
LnGrp LOS	F	B	B	D	C	B	D		D	D		D
Approach Vol, veh/h		1715			1414			63			691	
Approach Delay, s/veh		65.1			20.9			45.1			53.1	
Approach LOS		E			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	58.7	7.5	29.6	16.0	51.9	17.8	19.3
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.1	34.9	9.9	34.0	11.4	29.6	15.7	28.2
Max Q Clear Time (g_c+I1), s	4.9	18.4	3.3	22.6	13.4	18.6	13.0	4.2
Green Ext Time (p_c), s	0.0	11.5	0.0	1.9	0.0	8.6	0.2	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	46.6
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1168	427	0	822	142	0	0	0	123	1	779
Future Volume (veh/h)	0	1168	427	0	822	142	0	0	0	123	1	779
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900				1900	1863	1863
Adj Flow Rate, veh/h	0	1204	440	0	847	146				127	1	803
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2430	756	0	2089	358				763	6	1208
Arrive On Green	0.00	0.48	0.48	0.00	0.48	0.48				0.43	0.43	0.43
Sat Flow, veh/h	0	5253	1583	0	4539	749				1761	14	2787
Grp Volume(v), veh/h	0	1204	440	0	656	337				128	0	803
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1731				1775	0	1393
Q Serve(g_s), s	0.0	14.6	18.1	0.0	11.3	11.4				4.0	0.0	20.6
Cycle Q Clear(g_c), s	0.0	14.6	18.1	0.0	11.3	11.4				4.0	0.0	20.6
Prop In Lane	0.00		1.00	0.00		0.43				0.99		1.00
Lane Grp Cap(c), veh/h	0	2430	756	0	1620	827				769	0	1208
V/C Ratio(X)	0.00	0.50	0.58	0.00	0.40	0.41				0.17	0.00	0.66
Avail Cap(c_a), veh/h	0	2430	756	0	1620	827				769	0	1208
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.81	0.81	0.00	0.99	0.99				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.1	17.0	0.0	15.2	15.2				15.6	0.0	20.3
Incr Delay (d2), s/veh	0.0	0.1	0.9	0.0	0.7	1.5				0.5	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.8	8.0	0.0	5.5	5.8				2.0	0.0	8.4
LnGrp Delay(d),s/veh	0.0	16.2	17.9	0.0	16.0	16.7				16.0	0.0	23.2
LnGrp LOS		B	B		B	B				B		C
Approach Vol, veh/h		1644			993						931	
Approach Delay, s/veh		16.7			16.2						22.2	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		47.0		43.0		47.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		43.0		39.0		43.0		
Max Q Clear Time (g_c+I1), s		20.1		22.6		13.4		
Green Ext Time (p_c), s		10.7		4.0		7.1		

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	563	728	0	444	87	520	0	335	0	0	0
Future Volume (veh/h)	0	563	728	0	444	87	520	0	335	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	580	751	0	458	0	536	0	345			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2882	897	0	2882	897	611	0	545			
Arrive On Green	0.00	0.57	0.57	0.00	0.57	0.00	0.34	0.00	0.34			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	580	751	0	458	0	536	0	345			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	5.0	35.2	0.0	3.9	0.0	25.5	0.0	16.4			
Cycle Q Clear(g_c), s	0.0	5.0	35.2	0.0	3.9	0.0	25.5	0.0	16.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2882	897	0	2882	897	611	0	545			
V/C Ratio(X)	0.00	0.20	0.84	0.00	0.16	0.00	0.88	0.00	0.63			
Avail Cap(c_a), veh/h	0	2882	897	0	2882	897	611	0	545			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.97	0.97	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.5	16.1	0.0	9.3	0.0	27.7	0.0	24.7			
Incr Delay (d2), s/veh	0.0	0.2	8.9	0.0	0.0	0.0	16.3	0.0	5.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.3	17.4	0.0	1.8	0.0	15.3	0.0	8.0			
LnGrp Delay(d),s/veh	0.0	9.7	25.0	0.0	9.3	0.0	44.0	0.0	30.2			
LnGrp LOS		A	C		A		D		C			
Approach Vol, veh/h		1331			458			881				
Approach Delay, s/veh		18.3			9.3			38.6				
Approach LOS		B			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		55.0				55.0		35.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		28.5				18.5		31.0
Max Q Clear Time (g_c+I1), s		37.2				5.9		27.5
Green Ext Time (p_c), s		0.0				2.3		1.2

Intersection Summary		
HCM 2010 Ctrl Delay		23.5
HCM 2010 LOS		C

Michael Baker
INTERNATIONAL

Appendix B: Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Synchro Worksheets

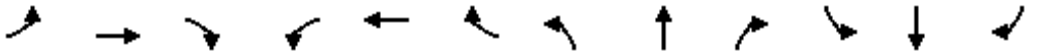
This page intentionally left blank

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	677	148	400	695	1114	75	205	103	1065	210	128
Future Volume (veh/h)	135	677	148	400	695	1114	75	205	103	1065	210	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	161	806	176	476	827	1326	89	244	123	835	856	152
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	1778	388	242	2354	1464	110	400	340	519	685	122
Arrive On Green	0.10	0.60	0.60	0.14	0.63	0.63	0.06	0.21	0.21	0.29	0.44	0.44
Sat Flow, veh/h	1774	2964	647	1774	3725	1583	1774	1863	1583	1774	1541	274
Grp Volume(v), veh/h	161	507	475	476	827	1326	89	244	123	835	0	1008
Grp Sat Flow(s),veh/h/ln	1774	1863	1749	1774	1863	1583	1774	1863	1583	1774	0	1814
Q Serve(g_s), s	12.1	20.2	20.2	18.4	14.2	52.5	6.7	16.0	8.9	39.5	0.0	60.0
Cycle Q Clear(g_c), s	12.1	20.2	20.2	18.4	14.2	52.5	6.7	16.0	8.9	39.5	0.0	60.0
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	185	1118	1049	242	2354	1464	110	400	340	519	0	806
V/C Ratio(X)	0.87	0.45	0.45	1.97	0.35	0.91	0.81	0.61	0.36	1.61	0.00	1.25
Avail Cap(c_a), veh/h	242	1118	1049	242	2354	1464	110	400	340	519	0	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.59	0.59	0.59	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.6	14.8	14.8	58.3	11.8	2.4	62.5	47.9	45.1	47.8	0.0	37.5
Incr Delay (d2), s/veh	12.7	0.8	0.9	444.6	0.2	6.1	44.8	6.8	3.0	282.8	0.0	122.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	10.5	9.9	38.9	7.3	23.5	4.7	9.0	4.2	60.1	0.0	57.5
LnGrp Delay(d),s/veh	72.3	15.7	15.7	502.9	12.0	8.5	107.3	54.7	48.1	330.5	0.0	160.2
LnGrp LOS	E	B	B	F	B	A	F	D	D	F		F
Approach Vol, veh/h		1143			2629			456			1843	
Approach Delay, s/veh		23.7			99.1			63.2			237.4	
Approach LOS		C			F			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	88.8	13.0	66.2	18.7	93.1	44.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	18.4	28.2	8.4	58.4	18.4	28.2	39.5	* 29
Max Q Clear Time (g_c+I1), s	20.4	22.2	8.7	62.0	14.1	54.5	41.5	18.0
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	0.0	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	124.2
HCM 2010 LOS	F

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1026	834	0	1564	626	0	0	0	474	0	436
Future Volume (veh/h)	0	1026	834	0	1564	626	0	0	0	474	0	436
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1115	907	0	1700	680				515	0	474
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2124	897	0	2124	932				1071	0	867
Arrive On Green	0.00	0.60	0.57	0.00	0.60	0.59				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1115	907	0	1700	680				515	0	474
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	16.6	51.0	0.0	33.3	27.9				10.9	0.0	12.7
Cycle Q Clear(g_c), s	0.0	16.6	51.0	0.0	33.3	27.9				10.9	0.0	12.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2124	897	0	2124	932				1071	0	867
V/C Ratio(X)	0.00	0.53	1.01	0.00	0.80	0.73				0.48	0.00	0.55
Avail Cap(c_a), veh/h	0	2124	897	0	2124	932				1071	0	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.21	0.21				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.5	19.5	0.0	13.9	13.3				25.1	0.0	25.7
Incr Delay (d2), s/veh	0.0	0.0	11.8	0.0	0.7	1.1				1.5	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.1	24.9	0.0	16.3	12.4				5.4	0.0	5.2
LnGrp Delay(d),s/veh	0.0	10.5	31.3	0.0	14.6	14.4				26.7	0.0	28.2
LnGrp LOS		B	F		B	B				C		C
Approach Vol, veh/h		2022			2380						989	
Approach Delay, s/veh		19.9			14.5						27.4	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		58.0		32.0		58.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		54.0		28.0		54.0		
Max Q Clear Time (g_c+I1), s		54.0		14.7		35.3		
Green Ext Time (p_c), s		0.0		3.5		13.9		

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	1157	0	0	1576	589	0	0	403	0	0	668
Future Volume (veh/h)	315	1157	0	0	1576	589	0	0	403	0	0	668
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	332	1218	0	0	1659	620	0	0	424	0	0	703
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	335	3382	0	0	2556	1144	0	0	0	0	0	0
Arrive On Green	0.19	0.96	0.00	0.00	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	332	1218	0	0	1659	620		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	16.8	2.1	0.0	0.0	22.1	16.1						
Cycle Q Clear(g_c), s	16.8	2.1	0.0	0.0	22.1	16.1						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	335	3382	0	0	2556	1144						
V/C Ratio(X)	0.99	0.36	0.00	0.00	0.65	0.54						
Avail Cap(c_a), veh/h	335	3382	0	0	2556	1144						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.85	0.85	0.00	0.00	0.19	0.19						
Uniform Delay (d), s/veh	36.4	0.1	0.0	0.0	6.5	5.7						
Incr Delay (d2), s/veh	42.7	0.3	0.0	0.0	0.3	0.4						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	12.2	1.0	0.0	0.0	10.7	7.0						
LnGrp Delay(d),s/veh	79.2	0.4	0.0	0.0	6.8	6.1						
LnGrp LOS	E	A			A	A						
Approach Vol, veh/h		1550			2279							
Approach Delay, s/veh		17.3			6.6							
Approach LOS		B			A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			21.0	69.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		63.1			17.0	42.1		
Max Q Clear Time (g_c+I1), s		4.1			18.8	24.1		
Green Ext Time (p_c), s		11.1			0.0	13.1		

Intersection Summary		
HCM 2010 Ctrl Delay		10.9
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	810	433	99	1165	74	502	204	106	56	199	480
Future Volume (veh/h)	317	810	433	99	1165	74	502	204	106	56	199	480
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	334	853	456	104	1226	78	528	215	112	59	209	505
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	384	1569	702	155	1841	117	413	687	584	76	543	462
Arrive On Green	0.11	0.44	0.44	0.05	0.38	0.38	0.12	0.37	0.37	0.04	0.29	0.29
Sat Flow, veh/h	3442	3539	1583	3442	4887	311	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	334	853	456	104	850	454	528	215	112	59	209	505
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1808	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	11.5	21.2	27.0	3.6	25.0	25.1	14.4	9.9	5.8	4.0	10.7	35.0
Cycle Q Clear(g_c), s	11.5	21.2	27.0	3.6	25.0	25.1	14.4	9.9	5.8	4.0	10.7	35.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	384	1569	702	155	1277	681	413	687	584	76	543	462
V/C Ratio(X)	0.87	0.54	0.65	0.67	0.67	0.67	1.28	0.31	0.19	0.78	0.38	1.09
Avail Cap(c_a), veh/h	384	1569	702	215	1277	681	413	687	584	140	543	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	24.5	26.1	56.4	31.1	31.1	52.8	27.0	25.7	56.9	33.9	42.5
Incr Delay (d2), s/veh	15.3	1.1	3.8	1.9	2.8	5.1	142.9	1.2	0.7	6.3	2.1	69.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	10.5	12.5	1.7	12.2	13.4	15.0	5.3	2.6	2.1	5.8	24.2
LnGrp Delay(d),s/veh	67.7	25.6	29.9	58.3	33.9	36.2	195.7	28.2	26.4	63.2	36.0	112.1
LnGrp LOS	E	C	C	E	C	D	F	C	C	E	D	F
Approach Vol, veh/h		1643			1408			855			773	
Approach Delay, s/veh		35.4			36.4			131.4			87.8	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	60.0	19.0	41.5	18.0	52.0	9.7	50.8
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.5	* 42	14.4	* 35	13.4	35.3	9.5	39.6
Max Q Clear Time (g_c+I1), s	5.6	29.0	16.4	37.0	13.5	27.1	6.0	11.9
Green Ext Time (p_c), s	0.0	5.7	0.0	0.0	0.0	4.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	61.9
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇃	↱		⇕			⇕	
Traffic Vol, veh/h	17	15	0	50	5	197	0	113	57	91	75	9
Future Vol, veh/h	17	15	0	50	5	197	0	113	57	91	75	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	19	0	63	6	249	0	143	72	115	95	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	255	0	0	19	0	0	373	444	19	303	195	6
Stage 1	-	-	-	-	-	-	63	63	-	132	132	-
Stage 2	-	-	-	-	-	-	310	381	-	171	63	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1310	-	-	1597	-	-	584	508	1059	649	700	1077
Stage 1	-	-	-	-	-	-	948	842	-	871	787	-
Stage 2	-	-	-	-	-	-	700	613	-	831	842	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	1597	-	-	489	475	1059	443	655	1077
Mov Cap-2 Maneuver	-	-	-	-	-	-	489	475	-	443	655	-
Stage 1	-	-	-	-	-	-	932	828	-	856	749	-
Stage 2	-	-	-	-	-	-	576	584	-	630	828	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.1	1.5	14.7	16.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	583	1310	-	-	1597	-	-	533
HCM Lane V/C Ratio	0.369	0.016	-	-	0.04	-	-	0.416
HCM Control Delay (s)	14.7	7.8	0	-	7.3	0	-	16.5
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.7	0.1	-	-	0.1	-	-	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	99	48	177	109	140	21	200	68	94	422	37
Future Volume (veh/h)	69	99	48	177	109	140	21	200	68	94	422	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	75	108	52	192	118	152	23	217	74	102	459	40
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	525	446	225	661	561	50	580	493	125	597	52
Arrive On Green	0.05	0.28	0.28	0.13	0.35	0.35	0.03	0.31	0.31	0.07	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1690	147
Grp Volume(v), veh/h	75	108	52	192	118	152	23	217	74	102	0	499
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1837
Q Serve(g_s), s	4.1	4.4	2.4	10.5	4.3	6.8	1.3	9.0	3.4	5.6	0.0	23.9
Cycle Q Clear(g_c), s	4.1	4.4	2.4	10.5	4.3	6.8	1.3	9.0	3.4	5.6	0.0	23.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	96	525	446	225	661	561	50	580	493	125	0	649
V/C Ratio(X)	0.78	0.21	0.12	0.85	0.18	0.27	0.46	0.37	0.15	0.82	0.00	0.77
Avail Cap(c_a), veh/h	109	525	446	329	661	561	109	580	493	125	0	649
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.4	27.2	26.5	42.4	22.1	22.9	47.5	26.6	24.7	45.5	0.0	28.5
Incr Delay (d2), s/veh	23.2	0.9	0.5	9.6	0.6	1.2	2.4	1.8	0.6	30.7	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.4	1.1	5.8	2.3	3.1	0.7	4.9	1.6	3.8	0.0	13.6
LnGrp Delay(d),s/veh	69.5	28.1	27.0	52.0	22.7	24.1	49.9	28.5	25.3	76.1	0.0	37.0
LnGrp LOS	E	C	C	D	C	C	D	C	C	E		D
Approach Vol, veh/h		235			462			314			601	
Approach Delay, s/veh		41.1			35.3			29.3			43.7	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	34.2	7.4	40.5	10.0	41.4	11.6	36.3
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	18.4	22.9	6.1	31.8	6.1	35.2	7.0	30.9
Max Q Clear Time (g_c+I1), s	12.5	6.4	3.3	25.9	6.1	8.8	7.6	11.0
Green Ext Time (p_c), s	0.1	1.3	0.0	2.0	0.0	2.7	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	38.1
HCM 2010 LOS	D

Intersection	
Intersection Delay, s/veh	19.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	3	467	1	0	1	89	323	0	85	0
Future Vol, veh/h	0	3	3	467	1	0	1	89	323	0	85	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	3	513	1	0	1	98	355	0	93	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	9.2	26.9	13.8	10.6
HCM LOS	A	D	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	99%	0%	50%	0%	100%
Vol Right, %	0%	100%	50%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	323	6	468	85
LT Vol	1	0	0	467	0
Through Vol	89	0	3	1	85
RT Vol	0	323	3	0	0
Lane Flow Rate	99	355	7	514	93
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.172	0.547	0.011	0.796	0.164
Departure Headway (Hd)	6.264	5.547	6.044	5.575	6.309
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	572	650	589	648	567
Service Time	4.01	3.293	4.115	3.611	4.369
HCM Lane V/C Ratio	0.173	0.546	0.012	0.793	0.164
HCM Control Delay	10.3	14.8	9.2	26.9	10.6
HCM Lane LOS	B	B	A	D	B
HCM 95th-tile Q	0.6	3.3	0	7.9	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	1364	10	17	1063	223	3	1	10	552	3	325
Future Volume (veh/h)	325	1364	10	17	1063	223	3	1	10	552	3	325
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	357	1499	11	19	1168	245	3	1	11	607	3	357
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	2504	780	43	2076	958	8	13	140	677	4	451
Arrive On Green	0.11	0.49	0.49	0.02	0.41	0.41	0.00	0.10	0.10	0.20	0.29	0.29
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	134	1470	3442	13	1572
Grp Volume(v), veh/h	357	1499	11	19	1168	245	3	0	12	607	0	360
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1603	1721	0	1585
Q Serve(g_s), s	10.8	22.3	0.4	1.1	18.5	7.6	0.2	0.0	0.7	18.1	0.0	22.0
Cycle Q Clear(g_c), s	10.8	22.3	0.4	1.1	18.5	7.6	0.2	0.0	0.7	18.1	0.0	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		0.99
Lane Grp Cap(c), veh/h	374	2504	780	43	2076	958	8	0	153	677	0	455
V/C Ratio(X)	0.96	0.60	0.01	0.44	0.56	0.26	0.35	0.00	0.08	0.90	0.00	0.79
Avail Cap(c_a), veh/h	374	2504	780	101	2076	958	167	0	307	780	0	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.11	0.11	0.11	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.5	19.2	13.6	50.5	23.9	9.7	52.1	0.0	43.3	41.1	0.0	34.5
Incr Delay (d2), s/veh	7.7	0.1	0.0	2.1	0.5	0.3	9.0	0.0	0.2	11.1	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	10.4	0.2	0.6	8.8	3.4	0.1	0.0	0.3	9.6	0.0	10.6
LnGrp Delay(d),s/veh	54.3	19.3	13.6	52.6	24.4	10.0	61.1	0.0	43.5	52.2	0.0	42.3
LnGrp LOS	D	B	B	D	C	A	E		D	D		D
Approach Vol, veh/h		1867			1432			15			967	
Approach Delay, s/veh		26.0			22.3			47.0			48.5	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	57.5	5.1	35.2	16.0	48.7	25.2	15.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.6	35.0	9.9	34.0	11.4	29.6	23.8	20.1
Max Q Clear Time (g_c+I1), s	13.1	24.3	2.2	24.0	12.8	20.5	20.1	2.7
Green Ext Time (p_c), s	0.0	9.1	0.0	2.0	0.0	7.4	0.6	0.0

Intersection Summary		
HCM 2010 Ctrl Delay	29.9	
HCM 2010 LOS	C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1304	725	0	817	424	0	0	0	256	4	659
Future Volume (veh/h)	0	1304	725	0	817	424	0	0	0	256	4	659
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900				1900	1863	1863
Adj Flow Rate, veh/h	0	1482	824	0	928	482				291	5	749
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2769	862	0	1846	862				640	11	1022
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.54				0.37	0.37	0.37
Sat Flow, veh/h	0	5253	1583	0	3558	1583				1745	30	2787
Grp Volume(v), veh/h	0	1482	824	0	928	482				296	0	749
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583				1775	0	1393
Q Serve(g_s), s	0.0	16.9	44.5	0.0	15.5	17.9				11.4	0.0	21.0
Cycle Q Clear(g_c), s	0.0	16.9	44.5	0.0	15.5	17.9				11.4	0.0	21.0
Prop In Lane	0.00		1.00	0.00		1.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	2769	862	0	1846	862				651	0	1022
V/C Ratio(X)	0.00	0.54	0.96	0.00	0.50	0.56				0.45	0.00	0.73
Avail Cap(c_a), veh/h	0	2769	862	0	1846	862				651	0	1022
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.69	0.69	0.00	0.99	0.99				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.2	19.5	0.0	12.9	13.4				21.7	0.0	24.7
Incr Delay (d2), s/veh	0.0	0.1	16.0	0.0	1.0	2.6				2.3	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.9	23.1	0.0	7.5	8.4				6.0	0.0	8.7
LnGrp Delay(d),s/veh	0.0	13.3	35.5	0.0	13.8	16.0				23.9	0.0	29.3
LnGrp LOS		B	D		B	B				C		C
Approach Vol, veh/h		2306			1410						1045	
Approach Delay, s/veh		21.2			14.6						27.8	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		53.0		37.0		53.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		49.0		33.0		49.0		
Max Q Clear Time (g_c+I1), s		46.5		23.0		19.9		
Green Ext Time (p_c), s		2.2		3.8		11.5		

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱	↰		↱			
Traffic Volume (veh/h)	0	782	777	0	904	267	337	0	515	0	0	0
Future Volume (veh/h)	0	782	777	0	904	267	337	0	515	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1029	0	0	1189	0	443	0	678			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2938	915	0	2938	915	591	0	528			
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1029	0	0	1189	0	443	0	678			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	9.6	0.0	0.0	11.6	0.0	20.0	0.0	30.0			
Cycle Q Clear(g_c), s	0.0	9.6	0.0	0.0	11.6	0.0	20.0	0.0	30.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2938	915	0	2938	915	591	0	528			
V/C Ratio(X)	0.00	0.35	0.00	0.00	0.40	0.00	0.75	0.00	1.28			
Avail Cap(c_a), veh/h	0	2938	915	0	2938	915	591	0	528			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.95	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	10.1	0.0	0.0	10.5	0.0	26.7	0.0	30.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.1	0.0	8.5	0.0	142.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.6	0.0	0.0	5.4	0.0	11.1	0.0	33.9			
LnGrp Delay(d),s/veh	0.0	10.4	0.0	0.0	10.6	0.0	35.1	0.0	172.0			
LnGrp LOS		B			B		D		F			
Approach Vol, veh/h		1029			1189			1121				
Approach Delay, s/veh		10.4			10.6			117.9				
Approach LOS		B			B			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		56.0				56.0		34.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		29.0				19.0		30.0
Max Q Clear Time (g_c+I1), s		11.6				13.6		32.0
Green Ext Time (p_c), s		6.4				3.3		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		46.5
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	835	99	163	948	1375	186	259	354	1072	167	121
Future Volume (veh/h)	122	835	99	163	948	1375	186	259	354	1072	167	121
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	127	870	103	170	988	1432	194	270	369	708	746	126
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	2098	248	189	2479	1485	360	400	340	498	454	77
Arrive On Green	0.06	0.64	0.64	0.11	0.69	0.69	0.20	0.21	0.21	0.28	0.29	0.29
Sat Flow, veh/h	1774	3270	387	1774	3614	1536	1774	1863	1583	1774	1554	262
Grp Volume(v), veh/h	127	496	477	170	988	1432	194	270	369	708	0	872
Grp Sat Flow(s),veh/h/ln	1774	1863	1794	1774	1807	1536	1774	1863	1583	1774	0	1816
Q Serve(g_s), s	8.4	17.5	17.5	12.8	16.0	62.1	13.2	18.0	29.0	37.9	0.0	39.4
Cycle Q Clear(g_c), s	8.4	17.5	17.5	12.8	16.0	62.1	13.2	18.0	29.0	37.9	0.0	39.4
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	110	1195	1151	189	2479	1485	360	400	340	498	0	530
V/C Ratio(X)	1.15	0.41	0.41	0.90	0.40	0.96	0.54	0.67	1.08	1.42	0.00	1.64
Avail Cap(c_a), veh/h	110	1195	1151	189	2479	1485	360	400	340	498	0	530
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.55	0.53	0.53	0.53	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.3	11.8	11.8	59.6	9.2	1.1	48.1	48.7	53.0	48.5	0.0	47.8
Incr Delay (d2), s/veh	109.8	0.6	0.6	23.8	0.3	10.5	5.7	8.8	73.4	201.2	0.0	298.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	9.1	8.8	7.5	7.9	25.2	7.0	10.2	19.6	46.4	0.0	63.7
LnGrp Delay(d),s/veh	173.1	12.4	12.4	83.4	9.4	11.6	53.8	57.5	126.4	249.7	0.0	346.4
LnGrp LOS	F	B	B	F	A	B	D	E	F	F		F
Approach Vol, veh/h		1100			2590			833			1580	
Approach Delay, s/veh		31.0			15.5			87.2			303.1	
Approach LOS		C			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	94.4	32.0	45.6	13.0	100.4	42.4	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	14.4	33.8	27.4	37.8	8.4	39.8	37.9	* 29
Max Q Clear Time (g_c+I1), s	14.8	19.5	15.2	41.4	10.4	64.1	39.9	31.0
Green Ext Time (p_c), s	0.0	7.4	0.5	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	102.5
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1470	826	0	1782	468	0	0	0	620	1	549
Future Volume (veh/h)	0	1470	826	0	1782	468	0	0	0	620	1	549
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	1900	1863
Adj Flow Rate, veh/h	0	1500	843	0	1818	478				633	1	560
Adj No. of Lanes	0	2	1	0	2	1				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2261	1012	0	2261	1012				937	0	759
Arrive On Green	0.00	0.64	0.64	0.00	0.43	0.43				0.27	0.27	0.27
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	2787
Grp Volume(v), veh/h	0	1500	843	0	1818	478				633	0	560
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1393
Q Serve(g_s), s	0.0	23.9	37.0	0.0	40.3	19.5				14.8	0.0	16.5
Cycle Q Clear(g_c), s	0.0	23.9	37.0	0.0	40.3	19.5				14.8	0.0	16.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2261	1012	0	2261	1012				937	0	759
V/C Ratio(X)	0.00	0.66	0.83	0.00	0.80	0.47				0.68	0.00	0.74
Avail Cap(c_a), veh/h	0	2261	1012	0	2261	1012				937	0	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.67	0.67				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.16	0.16	0.00	0.09	0.09				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.2	12.5	0.0	20.8	14.9				29.2	0.0	29.8
Incr Delay (d2), s/veh	0.0	0.1	1.1	0.0	0.3	0.1				3.9	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.5	16.2	0.0	19.8	8.5				7.5	0.0	7.0
LnGrp Delay(d),s/veh	0.0	10.3	13.6	0.0	21.1	15.0				33.1	0.0	36.2
LnGrp LOS		B	B		C	B				C		D
Approach Vol, veh/h		2343			2296						1193	
Approach Delay, s/veh		11.5			19.8						34.5	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		61.5		28.5		61.5		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		57.5		24.5		57.5		
Max Q Clear Time (g_c+I1), s		39.0		18.5		42.3		
Green Ext Time (p_c), s		13.3		2.7		11.8		

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	536	1540	0	0	1337	569	0	0	749	0	0	949
Future Volume (veh/h)	536	1540	0	0	1337	569	0	0	749	0	0	949
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	0	0	1863	0	0	1863
Adj Flow Rate, veh/h	553	1588	0	0	1378	587	0	0	772	0	0	978
Adj No. of Lanes	1	2	0	0	2	1	0	0	2	0	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	2	0	0	2
Cap, veh/h	505	3382	0	0	2218	992	0	0	0	0	0	0
Arrive On Green	0.28	0.96	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1774	3632	0	0	3632	1583		0			0	
Grp Volume(v), veh/h	553	1588	0	0	1378	587		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583						
Q Serve(g_s), s	25.6	3.3	0.0	0.0	21.4	19.8						
Cycle Q Clear(g_c), s	25.6	3.3	0.0	0.0	21.4	19.8						
Prop In Lane	1.00		0.00	0.00		1.00						
Lane Grp Cap(c), veh/h	505	3382	0	0	2218	992						
V/C Ratio(X)	1.10	0.47	0.00	0.00	0.62	0.59						
Avail Cap(c_a), veh/h	505	3382	0	0	2218	992						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.69	0.69	0.00	0.00	0.37	0.37						
Uniform Delay (d), s/veh	32.2	0.2	0.0	0.0	10.3	10.0						
Incr Delay (d2), s/veh	62.6	0.3	0.0	0.0	0.5	1.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	21.2	1.5	0.0	0.0	10.5	8.7						
LnGrp Delay(d),s/veh	94.8	0.5	0.0	0.0	10.8	10.9						
LnGrp LOS	F	A			B	B						
Approach Vol, veh/h		2141			1965							
Approach Delay, s/veh		24.8			10.8							
Approach LOS		C			B							

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		90.0			29.6	60.4		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		60.8			25.6	31.2		
Max Q Clear Time (g_c+I1), s		5.3			27.6	23.4		
Green Ext Time (p_c), s		17.6			0.0	5.9		

Intersection Summary		
HCM 2010 Ctrl Delay		18.1
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	1435	509	138	1007	57	602	332	251	68	167	285
Future Volume (veh/h)	345	1435	509	138	1007	57	602	332	251	68	167	285
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	348	1449	514	139	1017	58	608	335	254	69	169	288
Adj No. of Lanes	2	2	1	2	3	0	2	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1648	737	189	1995	114	429	642	545	88	502	426
Arrive On Green	0.12	0.47	0.47	0.05	0.41	0.41	0.12	0.34	0.34	0.05	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	4923	280	3442	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	348	1449	514	139	700	375	608	335	254	69	169	288
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1813	1721	1863	1583	1774	1863	1583
Q Serve(g_s), s	12.9	48.2	33.4	5.2	20.1	20.2	16.2	18.7	16.3	5.0	9.5	21.1
Cycle Q Clear(g_c), s	12.9	48.2	33.4	5.2	20.1	20.2	16.2	18.7	16.3	5.0	9.5	21.1
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	1648	737	189	1374	735	429	642	545	88	502	426
V/C Ratio(X)	0.88	0.88	0.70	0.74	0.51	0.51	1.42	0.52	0.47	0.79	0.34	0.68
Avail Cap(c_a), veh/h	434	1648	737	196	1374	735	429	642	545	169	502	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	31.4	27.5	60.5	29.0	29.0	56.9	34.1	33.3	61.1	38.2	42.4
Incr Delay (d2), s/veh	6.1	2.5	1.8	11.3	1.4	2.5	201.2	3.0	2.8	5.7	1.8	8.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	23.9	14.9	2.8	9.7	10.6	19.7	10.1	7.6	2.6	5.1	10.2
LnGrp Delay(d),s/veh	62.7	33.9	29.3	71.9	30.3	31.5	258.1	37.1	36.1	66.8	40.0	50.7
LnGrp LOS	E	C	C	E	C	C	F	D	D	E	D	D
Approach Vol, veh/h		2311			1214			1197			526	
Approach Delay, s/veh		37.2			35.5			149.2			49.4	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	67.4	20.8	41.5	19.6	59.5	11.0	51.3
Change Period (Y+Rc), s	4.6	* 6.5	4.6	* 6.5	4.6	6.5	4.6	6.5
Max Green Setting (Gmax), s	7.4	* 50	16.2	* 35	16.4	40.5	12.4	38.5
Max Q Clear Time (g_c+I1), s	7.2	50.2	18.2	23.1	14.9	22.2	7.0	20.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.1	6.3	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	63.6
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	46.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↰	↗		↕			↕	
Traffic Vol, veh/h	23	13	0	166	9	120	0	98	38	153	133	22
Future Vol, veh/h	23	13	0	166	9	120	0	98	38	153	133	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	15	0	198	11	143	0	117	45	182	158	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	154	0	0	15	0	0	640	619	15	557	476	11
Stage 1	-	-	-	-	-	-	69	69	-	407	407	-
Stage 2	-	-	-	-	-	-	571	550	-	150	69	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1426	-	-	1603	-	-	388	404	1065	441	488	1070
Stage 1	-	-	-	-	-	-	941	837	-	621	597	-
Stage 2	-	-	-	-	-	-	506	516	-	853	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1426	-	-	1603	-	-	236	342	1065	276	413	1070
Mov Cap-2 Maneuver	-	-	-	-	-	-	236	342	-	276	413	-
Stage 1	-	-	-	-	-	-	923	821	-	609	515	-
Stage 2	-	-	-	-	-	-	295	445	-	687	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.8	4.3	18.7	103.8
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	422	1426	-	-	1603	-	-	343
HCM Lane V/C Ratio	0.384	0.019	-	-	0.123	-	-	1.069
HCM Control Delay (s)	18.7	7.6	0	-	7.6	0	-	103.8
HCM Lane LOS	C	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.4	-	-	13.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	115	12	116	133	144	55	482	142	143	203	68
Future Volume (veh/h)	30	115	12	116	133	144	55	482	142	143	203	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	124	13	125	143	155	59	518	153	154	218	73
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	457	388	155	553	470	87	702	597	135	540	181
Arrive On Green	0.04	0.25	0.25	0.09	0.30	0.30	0.05	0.38	0.38	0.08	0.40	0.40
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1336	447
Grp Volume(v), veh/h	32	124	13	125	143	155	59	518	153	154	0	291
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1784
Q Serve(g_s), s	1.7	5.2	0.6	6.7	5.7	7.4	3.2	23.3	6.5	7.4	0.0	11.3
Cycle Q Clear(g_c), s	1.7	5.2	0.6	6.7	5.7	7.4	3.2	23.3	6.5	7.4	0.0	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	63	457	388	155	553	470	87	702	597	135	0	721
V/C Ratio(X)	0.50	0.27	0.03	0.81	0.26	0.33	0.68	0.74	0.26	1.14	0.00	0.40
Avail Cap(c_a), veh/h	117	457	388	227	553	470	117	702	597	135	0	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.0	29.6	27.9	43.5	26.0	26.6	45.4	26.1	20.8	44.8	0.0	20.6
Incr Delay (d2), s/veh	2.3	1.5	0.2	7.9	1.1	1.9	3.7	6.8	1.0	119.5	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.9	0.3	3.6	3.1	3.5	1.6	13.3	3.0	8.1	0.0	5.8
LnGrp Delay(d),s/veh	48.3	31.1	28.0	51.4	27.1	28.5	49.1	32.9	21.9	164.3	0.0	22.3
LnGrp LOS	D	C	C	D	C	C	D	C	C	F		C
Approach Vol, veh/h		169			423			730			445	
Approach Delay, s/veh		34.1			34.8			31.9			71.4	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	30.0	9.4	44.6	8.1	35.0	12.0	42.0
Change Period (Y+Rc), s	4.6	6.2	4.6	5.4	4.6	6.2	4.6	5.4
Max Green Setting (Gmax), s	12.4	22.8	6.4	37.6	6.4	28.8	7.4	36.6
Max Q Clear Time (g_c+I1), s	8.7	7.2	5.2	13.3	3.7	9.4	9.4	25.3
Green Ext Time (p_c), s	0.0	1.1	0.0	2.4	0.0	2.7	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	42.8
HCM 2010 LOS	D

Intersection	
Intersection Delay, s/veh	16.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	1	357	2	0	1	117	327	0	131	0
Future Vol, veh/h	0	1	1	357	2	0	1	117	327	0	131	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	1	420	2	0	1	138	385	0	154	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	9.3	20.4	14.1	11.3
HCM LOS	A	C	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	99%	0%
Vol Thru, %	99%	0%	50%	1%	100%
Vol Right, %	0%	100%	50%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	327	2	359	131
LT Vol	1	0	0	357	0
Through Vol	117	0	1	2	131
RT Vol	0	327	1	0	0
Lane Flow Rate	139	385	2	422	154
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.236	0.577	0.004	0.681	0.261
Departure Headway (Hd)	6.112	5.397	6.224	5.804	6.095
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	587	666	571	621	587
Service Time	3.859	3.144	4.3	3.843	4.153
HCM Lane V/C Ratio	0.237	0.578	0.004	0.68	0.262
HCM Control Delay	10.8	15.3	9.3	20.4	11.3
HCM Lane LOS	B	C	A	C	B
HCM 95th-tile Q	0.9	3.7	0	5.3	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	525	1476	14	48	1424	349	23	12	27	502	6	396
Future Volume (veh/h)	525	1476	14	48	1424	349	23	12	27	502	6	396
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	536	1506	14	49	1453	356	23	12	28	512	6	404
Adj No. of Lanes	2	3	1	1	3	1	1	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	2375	739	75	1832	851	49	69	162	533	7	438
Arrive On Green	0.13	0.47	0.47	0.04	0.36	0.37	0.03	0.14	0.14	0.15	0.28	0.28
Sat Flow, veh/h	3442	5085	1583	1774	5085	1583	1774	497	1161	3442	23	1564
Grp Volume(v), veh/h	536	1506	14	49	1453	356	23	0	40	512	0	410
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1774	1695	1583	1774	0	1658	1721	0	1587
Q Serve(g_s), s	14.4	24.7	0.5	3.0	28.2	14.7	1.4	0.0	2.3	16.2	0.0	27.6
Cycle Q Clear(g_c), s	14.4	24.7	0.5	3.0	28.2	14.7	1.4	0.0	2.3	16.2	0.0	27.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.70	1.00		0.99
Lane Grp Cap(c), veh/h	451	2375	739	75	1832	851	49	0	231	533	0	445
V/C Ratio(X)	1.19	0.63	0.02	0.65	0.79	0.42	0.47	0.00	0.17	0.96	0.00	0.92
Avail Cap(c_a), veh/h	451	2375	739	97	1832	851	160	0	357	585	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.34	0.34	0.34	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.8	22.2	15.8	51.9	31.5	15.2	52.7	0.0	41.7	46.2	0.0	38.4
Incr Delay (d2), s/veh	93.1	0.4	0.0	2.8	2.0	0.5	2.6	0.0	0.4	25.9	0.0	22.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.6	11.5	0.2	1.5	13.5	6.5	0.7	0.0	1.1	9.7	0.0	14.8
LnGrp Delay(d),s/veh	140.9	22.6	15.8	54.6	33.5	15.7	55.3	0.0	42.1	72.1	0.0	60.6
LnGrp LOS	F	C	B	D	C	B	E		D	E		E
Approach Vol, veh/h		2056			1858			63			922	
Approach Delay, s/veh		53.4			30.7			46.9			67.0	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	57.2	7.6	35.9	20.0	46.4	23.1	20.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.1	4.6	5.8	4.6	5.1
Max Green Setting (Gmax), s	6.0	40.0	9.9	34.0	15.4	30.6	20.2	23.7
Max Q Clear Time (g_c+I1), s	5.0	26.7	3.4	29.6	16.4	30.2	18.2	4.3
Green Ext Time (p_c), s	0.0	11.0	0.0	1.3	0.0	0.4	0.3	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	47.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1452	566	0	1190	436	0	0	0	313	1	827
Future Volume (veh/h)	0	1452	566	0	1190	436	0	0	0	313	1	827
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900				1900	1863	1863
Adj Flow Rate, veh/h	0	1497	584	0	1227	449				323	1	853
Adj No. of Lanes	0	3	1	0	3	0				0	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2656	827	0	1919	700				688	2	1084
Arrive On Green	0.00	0.52	0.52	0.00	0.52	0.52				0.39	0.39	0.39
Sat Flow, veh/h	0	5253	1583	0	3843	1341				1769	5	2787
Grp Volume(v), veh/h	0	1497	584	0	1132	544				324	0	853
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1626				1774	0	1393
Q Serve(g_s), s	0.0	17.9	25.1	0.0	21.5	21.6				12.3	0.0	24.3
Cycle Q Clear(g_c), s	0.0	17.9	25.1	0.0	21.5	21.6				12.3	0.0	24.3
Prop In Lane	0.00		1.00	0.00		0.82				1.00		1.00
Lane Grp Cap(c), veh/h	0	2656	827	0	1770	849				690	0	1084
V/C Ratio(X)	0.00	0.56	0.71	0.00	0.64	0.64				0.47	0.00	0.79
Avail Cap(c_a), veh/h	0	2656	827	0	1770	849				690	0	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.68	0.68	0.00	0.98	0.98				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.6	16.3	0.0	15.4	15.4				20.6	0.0	24.2
Incr Delay (d2), s/veh	0.0	0.2	1.9	0.0	1.7	3.6				2.3	0.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.4	11.3	0.0	10.5	10.5				6.5	0.0	10.1
LnGrp Delay(d),s/veh	0.0	14.7	18.2	0.0	17.2	19.1				22.8	0.0	30.0
LnGrp LOS		B	B		B	B				C		C
Approach Vol, veh/h		2081			1676						1177	
Approach Delay, s/veh		15.7			17.8						28.0	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		51.0		39.0		51.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		47.0		35.0		47.0		
Max Q Clear Time (g_c+I1), s		27.1		26.3		23.6		
Green Ext Time (p_c), s		12.7		3.9		12.7		

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱	↰		↱			
Traffic Volume (veh/h)	0	998	766	0	989	303	637	0	618	0	0	0
Future Volume (veh/h)	0	998	766	0	989	303	637	0	618	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	0	1029	0	0	1020	0	657	0	637			
Adj No. of Lanes	0	3	1	0	3	1	1	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2599	809	0	2599	809	710	0	633			
Arrive On Green	0.00	0.51	0.00	0.00	0.51	0.00	0.40	0.00	0.40			
Sat Flow, veh/h	0	5253	1583	0	5253	1583	1774	0	1583			
Grp Volume(v), veh/h	0	1029	0	0	1020	0	657	0	637			
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1774	0	1583			
Q Serve(g_s), s	0.0	11.2	0.0	0.0	11.0	0.0	31.8	0.0	36.0			
Cycle Q Clear(g_c), s	0.0	11.2	0.0	0.0	11.0	0.0	31.8	0.0	36.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2599	809	0	2599	809	710	0	633			
V/C Ratio(X)	0.00	0.40	0.00	0.00	0.39	0.00	0.93	0.00	1.01			
Avail Cap(c_a), veh/h	0	2599	809	0	2599	809	710	0	633			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.93	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	13.5	0.0	0.0	13.5	0.0	25.7	0.0	27.0			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.1	0.0	19.9	0.0	37.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	5.2	0.0	0.0	5.1	0.0	19.4	0.0	22.2			
LnGrp Delay(d),s/veh	0.0	13.9	0.0	0.0	13.6	0.0	45.6	0.0	64.2			
LnGrp LOS		B			B		D		F			
Approach Vol, veh/h		1029			1020			1294				
Approach Delay, s/veh		13.9			13.6			54.8				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.0				50.0		40.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		22.0				20.0		36.0
Max Q Clear Time (g_c+I1), s		13.2				13.0		38.0
Green Ext Time (p_c), s		4.3				3.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		29.6
HCM 2010 LOS		C

Michael Baker
INTERNATIONAL

Appendix C: Mitigated Year 2023 Existing Plus Ambient Growth Plus Cumulative Projects Plus Project Phase 1 Synchro Worksheets

This page intentionally left blank

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	677	148	400	695	1114	75	205	103	1065	210	128
Future Volume (veh/h)	135	677	148	400	695	1114	75	205	103	1065	210	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	161	806	176	476	827	1326	89	244	123	1268	250	152
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2672	579	484	2354	2928	110	400	340	1038	483	293
Arrive On Green	0.10	0.60	0.60	0.14	0.63	0.63	0.06	0.21	0.21	0.29	0.44	0.44
Sat Flow, veh/h	1774	4454	965	3548	3725	3167	1774	1863	1583	3548	1086	660
Grp Volume(v), veh/h	161	673	309	476	827	1326	89	244	123	1268	0	402
Grp Sat Flow(s),veh/h/ln	1774	1863	1693	1774	1863	1583	1774	1863	1583	1774	0	1746
Q Serve(g_s), s	12.1	11.9	12.1	18.1	14.2	7.3	6.7	16.0	8.9	39.5	0.0	22.4
Cycle Q Clear(g_c), s	12.1	11.9	12.1	18.1	14.2	7.3	6.7	16.0	8.9	39.5	0.0	22.4
Prop In Lane	1.00		0.57	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	185	2235	1016	484	2354	2928	110	400	340	1038	0	776
V/C Ratio(X)	0.87	0.30	0.30	0.98	0.35	0.45	0.81	0.61	0.36	1.22	0.00	0.52
Avail Cap(c_a), veh/h	242	2235	1016	484	2354	2928	110	400	340	1038	0	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.59	0.59	0.59	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.6	13.2	13.2	58.2	11.8	0.7	62.5	47.9	45.1	47.8	0.0	27.1
Incr Delay (d2), s/veh	12.7	0.2	0.5	27.4	0.2	0.3	44.8	6.8	3.0	108.4	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	6.1	5.7	10.7	7.3	3.1	4.7	9.0	4.2	35.0	0.0	11.4
LnGrp Delay(d),s/veh	72.3	13.4	13.7	85.6	12.0	1.0	107.3	54.7	48.1	156.2	0.0	29.5
LnGrp LOS	E	B	B	F	B	A	F	D	D	F		C
Approach Vol, veh/h		1143			2629			456			1670	
Approach Delay, s/veh		21.8			19.8			63.2			125.7	
Approach LOS		C			B			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	88.8	13.0	66.2	18.7	93.1	44.0	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	18.4	28.2	8.4	58.4	18.4	28.2	39.5	* 29
Max Q Clear Time (g_c+I1), s	20.1	14.1	8.7	24.4	14.1	16.2	41.5	18.0
Green Ext Time (p_c), s	0.0	7.5	0.0	3.5	0.0	10.5	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	53.5
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	15	0	50	5	197	0	113	57	91	75	9
Future Vol, veh/h	17	15	0	50	5	197	0	113	57	91	75	9
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	19	0	63	6	249	0	143	72	115	95	11
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	10.4	11.2	9.8	13.3
HCM LOS	B	B	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	53%	100%	0%	52%
Vol Thru, %	100%	100%	0%	47%	0%	2%	43%
Vol Right, %	0%	0%	100%	0%	0%	98%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	113	57	32	50	202	175
LT Vol	0	0	0	17	50	0	91
Through Vol	0	113	0	15	0	5	75
RT Vol	0	0	57	0	0	197	9
Lane Flow Rate	0	143	72	41	63	256	222
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0.235	0.104	0.079	0.116	0.384	0.394
Departure Headway (Hd)	5.913	5.913	5.205	6.999	6.596	5.401	6.399
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	608	688	511	544	665	563
Service Time	3.648	3.648	2.939	4.752	4.335	3.14	4.138
HCM Lane V/C Ratio	0	0.235	0.105	0.08	0.116	0.385	0.394
HCM Control Delay	8.6	10.5	8.5	10.4	10.2	11.5	13.3
HCM Lane LOS	N	B	A	B	B	B	B
HCM 95th-tile Q	0	0.9	0.3	0.3	0.4	1.8	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	835	99	163	948	1375	186	259	354	1072	167	121
Future Volume (veh/h)	122	835	99	163	948	1375	186	259	354	1072	167	121
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	127	870	103	170	988	1432	194	270	369	1117	174	126
Adj No. of Lanes	1	3	0	2	2	2	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	3358	396	220	2479	2969	360	400	340	996	294	213
Arrive On Green	0.06	0.68	0.68	0.06	0.69	0.69	0.20	0.21	0.21	0.28	0.29	0.29
Sat Flow, veh/h	1774	4908	578	3442	3614	3072	1774	1863	1583	3548	1006	728
Grp Volume(v), veh/h	127	659	314	170	988	1432	194	270	369	1117	0	300
Grp Sat Flow(s),veh/h/ln	1774	1863	1761	1721	1807	1536	1774	1863	1583	1774	0	1734
Q Serve(g_s), s	8.4	9.2	9.2	6.6	16.0	3.9	13.2	18.0	29.0	37.9	0.0	20.0
Cycle Q Clear(g_c), s	8.4	9.2	9.2	6.6	16.0	3.9	13.2	18.0	29.0	37.9	0.0	20.0
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		0.42
Lane Grp Cap(c), veh/h	110	2549	1205	220	2479	2969	360	400	340	996	0	506
V/C Ratio(X)	1.15	0.26	0.26	0.77	0.40	0.48	0.54	0.67	1.08	1.12	0.00	0.59
Avail Cap(c_a), veh/h	110	2549	1205	367	2479	2969	360	400	340	996	0	506
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.55	0.53	0.53	0.53	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.3	8.2	8.2	62.2	9.2	0.1	48.1	48.7	53.0	48.5	0.0	40.9
Incr Delay (d2), s/veh	109.8	0.1	0.3	1.2	0.3	0.3	5.7	8.8	73.4	68.0	0.0	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	4.7	4.5	3.2	7.9	1.6	7.0	10.2	19.6	27.9	0.0	10.3
LnGrp Delay(d),s/veh	173.1	8.3	8.5	63.4	9.4	0.4	53.8	57.5	126.4	116.6	0.0	46.0
LnGrp LOS	F	A	A	E	A	A	D	E	F	F		D
Approach Vol, veh/h		1100			2590			833			1417	
Approach Delay, s/veh		27.4			8.0			87.2			101.6	
Approach LOS		C			A			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	100.2	32.0	45.6	13.0	100.4	42.4	35.2
Change Period (Y+Rc), s	4.6	6.2	4.6	6.2	4.6	6.2	4.5	* 6.2
Max Green Setting (Gmax), s	14.4	33.8	27.4	37.8	8.4	39.8	37.9	* 29
Max Q Clear Time (g_c+I1), s	8.6	11.2	15.2	22.0	10.4	18.0	39.9	31.0
Green Ext Time (p_c), s	0.1	9.8	0.5	1.9	0.0	19.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.0
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	13	0	166	9	120	0	98	38	153	133	22
Future Vol, veh/h	23	13	0	166	9	120	0	98	38	153	133	22
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	15	0	198	11	143	0	117	45	182	158	26
Number of Lanes	0	1	0	1	1	0	1	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	1	2	1
HCM Control Delay	11.2	12.6	10.3	21.2
HCM LOS	B	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	64%	100%	0%	50%
Vol Thru, %	100%	100%	0%	36%	0%	7%	43%
Vol Right, %	0%	0%	100%	0%	0%	93%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	98	38	36	166	129	308
LT Vol	0	0	0	23	166	0	153
Through Vol	0	98	0	13	0	9	133
RT Vol	0	0	38	0	0	120	22
Lane Flow Rate	0	117	45	43	198	154	367
Geometry Grp	7	7	7	8	8	8	8
Degree of Util (X)	0	0.207	0.071	0.091	0.386	0.25	0.662
Departure Headway (Hd)	6.378	6.378	5.666	7.645	7.026	5.858	6.504
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	560	629	466	510	610	554
Service Time	4.143	4.143	3.43	5.435	4.79	3.622	4.263
HCM Lane V/C Ratio	0	0.209	0.072	0.092	0.388	0.252	0.662
HCM Control Delay	9.1	10.8	8.9	11.2	14.2	10.6	21.2
HCM Lane LOS	N	B	A	B	B	B	C
HCM 95th-tile Q	0	0.8	0.2	0.3	1.8	1	4.9