

Keith Higgins

Traffic Engineer

**GARDEN ROAD REZONING
TRAFFIC IMPACT ANALYSIS**

DRAFT REPORT

MONTEREY, CALIFORNIA

Prepared for
EMC Planning Group
Monterey, CA 93940

Prepared by
Keith Higgins, Traffic Engineer
Gilroy, CA 95020

March 11, 2019

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Table of Contents

EXECUTIVE SUMMARY	1
1. INTRODUCTION	11
2. EXISTING CONDITIONS.....	14
3. CUMULATIVE CONDITIONS	18
4. VEHICLE-MILES TRAVELLED AND FUEL CONSUMPTION IMPACTS.....	21
5. GARDEN ROAD PAVEMENT IMPACTS	22
6. PEDESTRIAN AND BICYCLE IMPACTS	23
7. CONCLUSIONS AND RECOMMENDATIONS.....	23

List of Exhibits

1. Project Location Map
2. Limited Mixed Use and Multi-Family Residential Area in the Garden Road Corridor
3. Existing Conditions AM & PM Peak Hour Volumes
- 4A. Intersection Levels of Service
- 4B. Recommended Intersection Improvements
5. Project Trip Generation
6. Office and Residential Traffic Distribution
7. Office Building (A - Existing Zoning) Peak Hour Traffic Assignment
8. Existing Plus Office Buildout AM & PM Peak Hour Volumes
9. Maximum Residential Buildout AM & PM Peak Hour Traffic Assignment
10. Existing Plus Maximum Project Conditions AM & PM Peak Hour Volumes
11. Maximum Residential Buildout Plus Remaining Office Buildout AM & PM Peak Hour Traffic Assignment
12. Existing Plus Maximum Project Plus Remaining Office Buildout AM & PM Peak Hour Volumes
13. Cumulative Without Project AM & PM Peak Hour Volumes
14. Cumulative Plus Office Buildout AM & PM Peak Hour Volumes
15. Cumulative Plus Maximum Residential AM & PM Peak Hour Volumes
16. Cumulative Plus Maximum Residential Plus Remaining Office Buildout AM & PM Peak Hour Volumes
17. Vehicle-Miles Travelled
18. Garden Road Traffic Index

5. Traffic Impact Analysis

*Garden Road Traffic Impact Analysis
March 11, 2019*

List of Appendices

- A. Level of Service Descriptions
- B. Existing Turning Movement Counts
- C. Level of Service Calculations
- D. Garden Road 7-Day Vehicle Classification Counts

EXECUTIVE SUMMARY

Project Description

The project is an amendment of the current (IR) Industrial zoning of the Garden Road corridor to allow multi-family development through the creation of a Multifamily Residential Overlay District. The Multifamily Residential Overlay District area includes 54.35 gross acres with a current development footprint of 9 acres. The analysis scenarios include Existing Setting, Baseline (Existing Office Plus Office Buildout Under Existing Zoning), Proposed Rezoning (Office to Residential Conversion with New Residential Infill (Maximum Residential) and a Summary (Multifamily Impacts to Baseline) which considers the proposed zoning amendment's impacts to the existing zoning. Cumulative conditions with and without the three Garden Road development scenarios are also analyzed. They are described below.

Existing Setting

The existing industrial zoning allows for development of office/industrial type uses with up to 40% lot coverage for single story structures and 30% lot coverage for structures with two or more stories. Buildout would also allow development of buildings up to three stories. The Multifamily Overlay District area contains approximately 734,080 square feet of existing building area.

Baseline – Existing Office plus Office Buildout Under Existing Zoning

As a baseline, as allowed under the existing IR zoning code, the Multifamily Overlay District can accommodate up to approximately 1,586,600 square feet of additional office floor area in several ways. The first is by adding two stories to existing one story buildings. The second is by adding one story to two story buildings. The third is by expanding the building footprints to reach 30 percent building coverage on parcels where it currently is less than 30 percent. This office buildout condition plus the existing office building area is the baseline scenario for a total of 2,370,680 square feet of office.

Proposed Multifamily Residential Overlay - Office to Residential Conversion with New Residential Infill (Maximum Residential)

The proposed zoning amendment would allow limited residential development through the creation of a Multifamily Residential Overlay District. Existing office space within this district could be converted

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

at a rate of one unit per 900 square feet of existing square footage. Development of new residential dwelling units would be allowed at a rate of one unit per 2,000 square feet of parcel area where there is lower than allowable existing building coverage. The proposed zoning amendment would allow development of no more than 405 units within the Multifamily Residential Overlay District and no mixed use would be allowed on any single parcel or within any single building. For the purposes of this study, it was assumed that 223 units would result from conversion of existing building area which would allow for the replacement of about 200,700 square feet of office floor and 182 from new residential units constructed on parcels that are not built out to the maximum allowable building coverage which would displace 364,000 square feet of future office buildout. This is designated as the "Office to Residential Conversion with New Residential Infill (Maximum Residential)." This scenario solely analyzes the change associated with the creation of the overlay district (405 residential units) and does not consider buildout allowed under the existing zoning.

Summary-Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline)

This scenario analyzes maximum residential buildout under the overlay scenario, plus any remaining existing office and additional potential office space allowed under the existing zoning. With 734,080 square feet of existing office building area, conversion to 223 units would replace 200,700 square feet of office space leaving 583,380 square feet of existing office. With the potential future buildout of 1,586,600 square feet of additional office floor area, construction of 182 new units would displace 364,000 square feet of future office leaving 1,222,600 square feet of future office that could be built. Therefore, this scenario analyzes 223 converted units, 182 new units plus the 1,222,600 square feet of potential new office and 583,380 existing office space, for a total of 1,805,980 square feet of office and 405 residential units.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Traffic Analysis Summary

Traffic analysis was performed at the Highway 68 / Olmsted Road Garden Road / Olmsted Road and Garden Road / Fairground Road intersections for each development scenario. Vehicle-miles travelled was also estimated. Pavement impact analysis was also performed. The findings of the analysis are summarized below.

Existing Traffic Conditions

The Garden Road / Olmsted Road and Garden Road / Fairground Road intersections currently operate at acceptable LOS B and C, respectively. No improvements are required at these intersections.

The Highway 68 / Olmsted Road operates at an unacceptable LOS E in the AM peak hour and LOS F in the PM peak hour. Caltrans, TAMC and the City of Monterey are planning to construct a two-lane roundabout at this intersection by 2024. It will then operate at an acceptable LOS B in the morning peak hour and B in the evening peak hour.

Cumulative Without Project Conditions

Cumulative without Project conditions represent buildout of the Monterey General Plan (approximately 2035) and the buildout of the Monterey Regional Airport Master Plan, without intensification of uses along Garden Road.

The Highway 68 / Olmsted Road would operate at an unacceptable LOS F in the AM peak hour and LOS F in the PM peak hour. Caltrans, TAMC and the City of Monterey are planning to construct a two-lane roundabout at this intersection by 2024. It will then operate at an acceptable LOS C in the morning peak hour and B in the evening peak hour through 2035.

The Garden Road / Olmsted Road intersection will experience LOS F on some movements. This intersection is planned to be converted to a roundabout in the Monterey Regional Airport Master Plan, which will result in an overall LOS A during the morning and evening peak hours.

The Garden Road / Fairground Road intersection will operate at acceptable LOS D in the morning and LOS C in the evening. No improvements will be required.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Baseline – Existing Zoning Buildout (Office Buildout) Traffic Impacts

The baseline for comparing the proposed zoning amendment is the condition that would occur with the buildout of the Garden Road area under the existing zoning. The addition of 1,586,600 square feet of office would add 15,453 daily trips with 1,840 during the morning peak hour and 1,825 during the evening peak hour.

- Existing Plus Office Buildout

Existing Plus Office Buildout would result in the Highway 68 / Olmsted Road intersection declining into LOS F in the morning and evening peak hours. Delay would increase five-fold during the PM peak hour, which already operates at LOS F. The currently planned roundabout would need to be enlarged to provide 3 circulating lanes with 3 entry lanes on the eastbound Highway 68 approach. It would then operate at an acceptable LOS A in the AM peak hour and LOS B in the PM peak hour.

The Olmsted Road / Garden Road intersection would operate at an unacceptable LOS F and critical approaches in the AM and PM peak hours under Existing plus Office Buildout conditions. It would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movements.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would decline to LOS F in the morning and evening peak hours. It would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS D in the AM peak hour and LOS C in the PM peak hour.

- Cumulative Plus Office Buildout

The three study intersections would further decline in LOS with the buildout of the Monterey General Plan. However, the same mitigations recommended for Existing Plus Office Buildout would be adequate to achieve acceptable levels of service under this scenario.

Proposed Multifamily Residential Overlay - Office to Residential Conversion with New Residential Infill (Maximum Residential) Traffic Impacts

The maximum residential buildout allowed in the Multifamily Residential Overlay District would be capped at 405 units. There are numerous development scenarios that could occur in the overlay district with varying numbers of new or converted units. However, for the purposes of this study, it is assumed that a reasonable development scenario would be 223 units resulting from conversion of existing building area plus development of 182 new units within the excess holding capacity in the Multifamily Residential Overlay District to total 405 units. This amount of residential development would generate about 2,965 daily trips with 186 during the AM peak hour and 227 during the PM peak hour. While it is likely that there would be some internal reduction in trips due to the walkability of the

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

area and nearby employment opportunities, this analysis conservatively assumes all home-based work trips leave the Garden Road area for employment either in the Monterey Peninsula, north Monterey County or outside of Monterey County. No internal reduction is credited to the project (zoning code amendment) for the resulting mixed-use development area. The 200,700 square feet of replaced office floor area resulting from residential conversion to 223 units would no longer generate about 1,955 daily trips with 233 during the AM peak hour and 231 during the PM peak hour. Additionally, the 182 new units would displace 364,000 square feet of potential future office building area. This would reduce future trips by 3,545 trips. The project would thus result in a net decrease of about -2,536 daily trips and reduction of about -469 AM and 423 PM peak hour trips.

Under this scenario, which solely evaluates the change associated with the proposed zoning amendment there would be a reduction in overall trips and reduction in traffic volumes during the critical AM and PM peak periods, which is a beneficial traffic impact.

- Existing Plus Office to Residential Conversion with New Residential Infill

Office to Residential Conversion with New Residential Infill Buildout added to existing traffic conditions would result in the Highway 68 / Olmsted Road intersection declining further into LOS F during the AM peak hour. However, the evening peak hour would experience a reduction in delay from existing conditions, which would be a beneficial impact. The currently planned roundabout would operate at an acceptable LOS C with the resulting delay slightly better than under Office Buildout.

The Olmsted Road / Garden Road intersection would operate acceptably under Existing plus Residential Buildout conditions. No improvements would be required at this intersection.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would operate at an acceptable LOS C during the morning and evening peak hours.

The Maximum Residential Conversion allowed under the proposed zoning amendment would have a net lower impact on traffic operations than the baseline Maximum Office Buildout currently allowed under the existing zoning amendment for existing conditions.

- Cumulative Plus Office to Residential Conversion with New Residential Infill

Office to Residential Conversion with New Residential Infill Buildout added to cumulative the traffic would result in the Highway 68 / Olmsted Road intersection declining further into LOS F during both the AM and PM peak hours. However, when compared to the baseline (existing plus new office development allowed under the existing zoning code), both the morning and evening peak hours will operate better under buildout conditions allowed by the zoning amendment than under baseline conditions. The currently planned roundabout at the Highway 68 / Olmsted Road intersection would operate at an acceptable LOS C under the cumulative plus residential buildout scenario.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

The Olmsted Road / Garden Road intersection would decline to LOS F on certain movements under Cumulative plus Residential Buildout conditions. The roundabout proposed in the Monterey Regional Airport Master Plan would operate at an acceptable LOS A.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would operate at an acceptable LOS D in the morning peak hour and LOS C in the evening peak hour. No improvements would be required.

The Maximum Residential Development allowed by the proposed zoning amendment (Office to Residential Conversion with New Residential Buildout) would result in a reduced impact at two of the three intersections during the morning and evening peak hours when compared to the Maximum Office Buildout allowed under the existing zoning. Residential/conversion and buildout allowed under the zoning amendment would eliminate the need to implement mitigation at the Garden Road/Fairgrounds Road- Mark Thomas Drive intersection. It would also slightly reduce existing delays during either the morning or evening peak hour at each study intersection. The residential conversion would offset the increase in delay expected from General Plan Buildout at the Highway 68/Olmsted Road intersection in the evening peak hour and the Garden Road/Mark Thomas Drive-Fairgrounds Road intersection during the morning peak hour.

The Maximum Residential Conversion would have a lower impact on traffic operations than the baseline Maximum Office Buildout for cumulative conditions.

Summary-Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline)

This scenario assumes maximum residential buildout allowed under the zoning amendment (405 units) plus existing office and additional potential office space allowed under the existing zoning. With 734,080 square feet of existing office building area, conversion to 223 units would replace 200,700 square feet of office space leaving 583,380 square feet of existing office. With the potential future buildout of 1,586,600 square feet of additional office floor area, construction of 182 new units would displace 364,000 square feet of future office leaving 1,222,600 square feet of future office that could be built. Therefore, this scenario analyzes 223 converted units, 182 new units plus the 1,222,600 square feet of potential new office and 583,380 existing office space, for a total of 1,805,980 square feet of office and 405 residential units.

The 200,700 square feet of displaced office floor area would result in an estimated reduction of 1,955 daily trips with 233 fewer trips during the AM peak hour and 231 fewer trips during the PM peak hour. The 182 new units would displace 364,000 square feet of potential future office building area. This would reduce future trips by 3,545 trips. Converted and new residential development totaling 405 units would generate about 2,965 daily trips with 186 during the AM peak hour and 227 during the PM peak hour. The 1,222,600 square feet of potential new office would generate 11,908 trips with 1,418 trips during the AM peak hour and 1,406 trips during the PM peak hour. This would be a net total of

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

12,918 trips with 1,372 in the AM peak hour and 1,402 in the PM peak hour. When compared to the baseline, there would be a net reduction in trips of -2,536 with 469 fewer trips in the AM peak hour and 423 fewer trips in the PM peak hour.

The Multifamily Overlay with Remaining Baseline scenario would have a beneficial impact on traffic operations compared to the baseline Maximum Office Buildout for existing conditions.



Existing Plus Maximum Residential with Remaining Existing and Potential Office

Existing Plus Office Buildout would result in the Highway 68 / Olmsted Road intersection declining into LOS F in the morning and evening peak hours. Delay would increase a more modest four-fold during the PM peak hour, which already operates at LOS F. Similar to the recommendations for Existing Plus Office Buildout conditions, the currently planned roundabout would need to be enlarged to provide 3 circulating lanes with 3 entry lanes on the eastbound Highway 68 approach. It would then operate at an acceptable LOS A in the AM peak hour and LOS B in the PM peak hour.

The Olmsted Road / Garden Road intersection would operate at an unacceptable LOS F and critical approaches in the AM and PM peak hours under Existing plus Maximum Residential with Remaining Existing and Potential Office conditions. Similar to the recommendations for Existing Plus Office Buildout conditions, it would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movements.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would decline to LOS F in the AM and LOS E during the PM peak hours. Similar to the recommendations for Existing Plus Office Buildout conditions, it would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS C in the AM and PM peak hours.

Cumulative Plus Maximum Residential with Remaining Existing and Potential Office

The three study intersections would further decline in LOS with the buildout of the Monterey General Plan. However, the same mitigations recommended for Existing Plus Maximum Residential with Remaining Existing and Potential Office would be adequate to achieve acceptable levels of service under this scenario.

Vehicle-Miles Travelled (VMT)

Average trip lengths for office and residential uses in Monterey County are based on “California Emissions Estimator Model (CalEEMod), Appendix D - Default Data Tables”, page D-85, for Monterey County, October 2017. The average trip length for office uses (work-based trips) is 10.1 miles. Residential trips (home-based trips) have an average trip length of 8.9 miles.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

- VMT from Existing Development

The existing 784,080 square feet of office development currently generates about 50,019 daily VMT.

- VMT Under Existing Zoning/Office Buildout (Baseline)

The Office Buildout Scenario would include development of an additional 1,586,600 square feet of Office Space and would generate an additional approximately 156,255 VMT per day.

- VMT Under Multifamily Residential Overlay - Office to Residential Conversion with New Residential Infill (Maximum Residential)

The Residential Buildout of 405 dwelling units (223 dwelling units replacing 200,700 square feet of office plus 182 dwelling units on underdeveloped parcels and 182 units replacing -364,000 sq. ft) would generate about 9,004 additional daily VMT above existing. This is a reduction of 147,251 daily vehicle-miles travelled compared to the baseline office buildout scenario.

-VMT Under Summary- Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay and Remaining Baseline)

The Residential Buildout of 405 dwelling units (223 dwelling units replacing 200,700 square feet of office plus 182 dwelling units on underdeveloped parcels and 182 units replacing -364,000 sq. ft), plus the remaining existing and potential office of 1,222,680 square feet would generate about 127,076 additional daily VMT above existing. This is a reduction of 29,179 daily vehicle-miles travelled compared to the baseline office buildout scenario.

Garden Road Pavement Impacts

The Traffic Index (TI), which is the measure of loading on the roadway pavement, was calculated using new vehicle classification counts. The TI will remain at 8.0 with the proposed conversion. No change in pavement loading is expected through Cumulative conditions with any development scenario.

Pedestrian and Bicycle Impacts

The project will generate pedestrian and bicycle traffic along Garden Road. The length of Garden Road with adjoining land development is well within a reasonable walking and biking distance. Sidewalks are already provided along this portion of Garden Road. Bike lanes are provided along the entire length of Garden Road. No mitigation is therefore required.

Traffic Impact Fee Recommendation

The units associated with in-fill that do not displace existing office uses will be required to pay Transportation Agency for Monterey County (TAMC) development impact fees. Garden Road is not in the Infill Development Area that is eligible for reduced impact fees. However, the residential conversion is an infill project and should be eligible for the reduced fee.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis

March 11, 2019

Any residential development that displaces office floor area should be exempt from the TAMC Development Fee because it will reduce traffic on a daily, AM peak hour and PM peak hour basis.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Project Description and Impact Summary

The following is a tabular summary of the characteristics of the development scenarios and their respective traffic impacts.

	Baseline Office Buildout Under Existing Zoning	Proposed Rezoning - Office to Residential Conversion with New Residential Infill (Maximum Residential)	Summary- Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline)
Office Floor Area			
Existing Office	784,080	-200,700	583,380
Potential Office Area	1,586,600	-364,000	1,222,600
Total	2,370,680	-564,700	1,805,980
Residential Units			
Existing	0	0	
Change	0	405	405
Total	0	405	405
Unmitigated Traffic Operations (Ave. Delay and LOS, Worst Condition in Bold)			
Olmsted Rd / Highway 68			
- Existing AM	196.8 / F	89.6 / F	169.2 / F
- Existing PM	993.9 / F	119.0 / F	671.5 / F
- Cumulative AM	224.0 / F	119.0 / F	199.0 / F
- Cumulative PM	1027.2 / F	155.0 / F	709.4 / F
Olmsted Rd / Garden Rd			
- Existing AM	C / F	B / B	F / F
- Existing PM	F / F	B / C	F / F
- Cumulative AM	F / F	B / D	F / F
- Cumulative PM	F / F	B / F	F / F
Garden Rd / Fairgrounds Rd			
- Existing AM	371.8 / F	21.4 C	228.7 / F
- Existing PM	134.9 / F	27.8 C	78.6 / E
- Cumulative AM	363.9 / F	23.8 / C	228.7 / F
- Cumulative PM	142.7 / F	36.5 / D	88.6 / F
Mitigated Traffic Operations			
Olmsted Rd / Highway 68	All Existing & Cumulative scenarios – LOS B or C w/ Roundabout		
Olmsted Rd / Garden Rd	All Existing and Cumulative scenarios – LOS A w/ Roundabout		

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Garden Rd / Fairgrounds Rd	LOS D or C w/Additional Lanes on NB, EB and WB Approaches	None Required	LOS C w/Additional Lanes on NB, EB and WB Approaches
Vehicle-Miles Travelled			
	156,255	9,004	127,076
Pavement Loading (Traffic Index)			
	8.0	8.0	8.0

1. INTRODUCTION

This report presents the findings of a traffic impact analysis for the proposed zoning amendment of portions of the existing office/industrial land uses along Garden Road to allow multi-family development through the creation of a Multifamily Residential Overlay District. The analysis is in response to a request for a traffic analysis from the City of Monterey Engineering and Environmental Regulations Office to Brad Slama dated October 6, 2017, regarding Garden Road Zoning Amendment TM-17-0462.

Exhibit 1 indicates the project location. **Exhibit 2** includes a map of the study area. The area of Garden Road under the existing Industrial zoning includes a total of 54.35 gross acres. Of this, a total of 9 acres are currently developed. The existing zoning allows 40% lot coverage for single story structures and 30% lot coverage for structures with two or more stories. The corridor contains 784,080square feet of existing office buildings.

Baseline – Existing Zoning Buildout (Office Buildout)

The Multifamily Residential Overlay District has a base zoning of IR (Industrial). The existing industrial zoning allows for development of office and/or industrial uses with up to 40% lot coverage for single story structures and 30% lot coverage for structures with two or more stories. As a baseline, under the existing zoning code, the overlay district contains 784,080square feet of existing office buildings and undeveloped land within the Multifamily Residential Overlay District can accommodate up to 1,586,600 square feet of additional office floor area.

Proposed Multifamily Residential Overlay - Office to Residential Conversion With New Residential (Maximum Residential)

The proposed zoning amendment would allow limited residential development in the Multifamily Residential Overlay District with a maximum of 405 units. Existing office space could be converted at a rate of one unit per 900 square feet of existing square footage. For purposes of this study, it was

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

assumed that 223 units would result from conversion of existing building area in the overlay district, which would replace approximately 200,700 square feet of office floor area. The zoning code amendment would also allow for development of new residential dwelling units at a rate of one unit per 2,000 square feet where there is lower than allowable existing building coverage. It was assumed that 182 of the 405 allowable units would be new residential units developed on parcels with excess capacity.

Summary- Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline)

This scenario assumes maximum residential buildout allowed under the zoning amendment (405 units) plus existing office and additional potential office space allowed under the existing zoning. With 734,080 square feet of existing office building area, conversion to 223 units would replace 200,700 square feet of office space leaving 583,380 square feet of existing office. With the potential future buildout of 1,586,600 square feet of additional office floor area, construction of 182 new units would displace 364,000 square feet of future office leaving 1,222,600 square feet of future office that could be built. Therefore, this scenario analyzes 223 converted units, 182 new units plus the 1,222,600 square feet of potential new office and 583,380 existing office space, for a total of 1,805,980 square feet of office space and 405 residential units.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Scope of Work

This study analyzes traffic operations at the Highway 68 / Olmsted Road, Garden Road / Olmsted Road and Garden Road / Fairground Road intersections. In addition, the study analyzes traffic operations on Garden Road. Existing and cumulative development scenarios were included in the original scope of work.

The City has expressed interest in determining the traffic impacts of developing 405 residential units in the Multifamily Residential Overlay area. The trip generation comparison on a per-unit basis is used to make a general determination of this impact using the above conversion ratio of office floor area per multi-family residential unit.

Vehicle-miles travelled are estimated based on daily trip generation estimates multiplied by the average trip lengths for office and residential uses in Monterey County provided in the “California Emissions Estimator Model” (CalEEMod).

Traffic Index (TI) calculations have also been prepared using new vehicle classification counts to assist the project civil engineer with a pavement impact evaluation, as requested in the October 6, 2017 letter from the City of Monterey.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

2. EXISTING CONDITIONS

A. Existing with No Additional Garden Road Development

Turning movement were counted in March 2018 at the Highway 68 / Olmsted Road, Garden Road / Olmsted Road and Garden Road / Fairground Road intersections during the weekday morning (7-9 am) and evening (4-6 pm) peak periods. The raw count data are included in **Appendix A. Exhibit 3** illustrates existing peak hour turning movements.

Existing level of service (LOS) analyses were conducted for the study intersections. Level of Service calculations are included in **Appendix B**. A description of levels of service is provided in **Appendix C. Exhibit 4A** summarizes existing intersection levels of service. **Exhibit 4B** summarizes corresponding recommended intersection improvements.

The Garden Road intersections with Olmsted Road and Fairgrounds Road currently operate at LOS B and C, respectively. These intersections operate well within the Level of Service D standard of the City of Monterey. Neither Garden Road intersection requires traffic operational improvements.

The Highway 68 / Olmsted Road intersection currently operates at LOS E during the morning peak hour and LOS F during the evening peak hour. According to the “Final SR 68 Scenic Highway Plan,” Kimley Horn, August 2017, Caltrans and the Transportation Agency for Monterey County (TAMC), in cooperation with Monterey County and the City of Monterey are planning on constructing a roundabout at this intersection by 2024. With this construction, the Highway 68 / Olmsted Road intersection is projected by Kimley Horn to operate at LOS A through the Year 2035. This improvement will primarily be funded by a combination of TAMC Regional Impact Fees, Measure X funds, Senate Bill 1 (SB 1) and the State Transportation Improvement Program (STIP).

Garden Road is classified as a two-lane collector street in the City of Monterey General Plan. Twenty-four-hour traffic counts were conducted for 7 days on Garden Road just east of Olmsted Road in March 2018, which are included as **Appendix D**. The average daily traffic on Garden Road is about 5,912 for weekdays, 2,552 on weekends and 4,982 for 7 days. The “City of Monterey General Plan Update Traffic Study,” Higgins Associates, April 2004 (General Plan Update Traffic Study) was a technical reference for the “City of Monterey General Plan Update Draft EIR,” EMC Planning Group, July 14, 2004. Page 19 of this report indicated that Garden Road operated at LOS A with a Year 2000 daily traffic volume of 5,340. The existing volume continues to be under the Level of Service A threshold of 6,000 vehicles per day that is tabulated on Appendix C of the General Plan Update Traffic Study. Street segment Level of Service thresholds based on daily traffic volumes are tabulated herein in **Appendix E**. No traffic operational improvements are required for Garden Road.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

B. Existing Plus Office Buildout

The baseline for comparing the proposed rezoning is the condition that would occur with the buildout of the Garden Road area allowed under the existing zoning. An inventory of existing parcels in the Garden Road area indicate that an additional 1,586,600 square feet of office can be developed. This would add 15,453 daily trips with 1,840 during the morning peak hour and 1,825 during the evening peak hour. Trip generation from this additional development is estimated in **Exhibit 5**.

Office buildout traffic distribution and assignment are assumed to approximate that indicated on **Exhibit 6 and Exhibit 7**, respectively. This is based on existing traffic distribution and assignment determined from existing morning and evening peak hour volumes.

Existing Plus Office Buildout turning volumes are illustrated on **Exhibit 8**. The corresponding levels of service are tabulated on **Exhibit 4A**. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

Existing Plus Office Buildout would result in the Highway 68 / Olmsted Road intersection declining into LOS F in the morning and evening peak hours. Delay would increase six-fold during the PM peak hour, which already operates at LOS F. The currently planned roundabout would need to be enlarged to provide 3 circulating lanes with 3 entry lanes on the eastbound Highway 68 approach. It would then operate at an acceptable LOS A in the AM peak hour and LOS B in the PM peak hour.

The Olmsted Road / Garden Road intersection would operate at an unacceptable LOS F and critical approaches in the AM and PM peak hours under Existing plus Office Buildout conditions. It would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movement.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would decline to LOS F in the morning and evening peak hours. It would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS D in the AM peak hour and LOS C in the PM peak hour.

C. Existing Plus Proposed Multifamily Residential Overlay - Office to Residential Conversion With New Residential Infill (Maximum Residential)

The proposed project includes the amendment of zoning to create a Multifamily Residential Overlay District on lands along Garden Road to allow for limited multi-family residential development. Under the proposed zoning amendment, no more than 405 residential units could be constructed in the overlay district. For the purposes of this study it is assumed that 223 units of the total would result from office conversion and the remaining 182 new units would be built on parcels that have excess development capacity. The office to residential conversion ratio is the conversion of 900 square feet

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

of office space to create one multi-family unit. Applying this ratio, the 223 converted dwelling units would displace 200,700 square feet of office space and the 182 new units would displace 364,000 square feet of potential office buildout on underdeveloped lands.

Exhibit 5 provides an estimate of the resulting trip generation from the above conversion using trip generation rates from the Trip Generation Manual, Institute of Transportation Engineers, 10th Edition, 2017. The proposed 405 multi-family dwelling units would generate about 2,965 daily trips with 186 during the AM peak hour and 227 during the PM peak hour. To be conservative, no reduction in gross trip generation is credited although the project would result in Garden Road being a mixed-use development area consisting of residential and employment uses. Some trips generated by the new residential development would be to and from jobs located within the Garden Road corridor. The 200,700 square feet of displaced office floor area are estimated to generate about 1,955 daily trips with 233 during the AM peak hour and 231 during the PM peak hour. The 182 new units would displace 364,000 square feet of potential future office building area. This would reduce future trips by 3,545 trips. The project would thus result in a net increase decrease of about -2,536 daily trips and reduction of about -469 AM and 423 PM peak hour trips.

Maximum Residential Buildout traffic assignment is illustrated on **Exhibit 9**. **Exhibit 10** illustrates the estimated Existing plus Maximum Residential Buildout morning and evening peak hour volumes. **Exhibit 4A** provides a tabular summary of intersection levels of service. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

The proposed land use conversion will reduce traffic volumes during the critical AM and PM peak periods. This is a conservative assumption because it gives no credit to trips produced by the proposed residential and attracted to employment in its immediate vicinity. All home-based work trips are assumed to leave the Garden Road area for employment either in the Monterey Peninsula, north Monterey County or outside of Monterey County, which is very conservative.

Existing Plus Residential Buildout would result in the Highway 68 / Olmsted Road intersection declining further into LOS F during both the AM peak hour. Delay would an increase to an average 89.7 seconds from the existing 61.5 seconds. However, the evening peak hour would experience a reduction in delay from the existing 152.7 seconds to 119.0 seconds. This is far less than the 993.9 seconds of average delay that would occur with Office Buildout. The currently planned roundabout would operate at an acceptable LOS C.

The Olmsted Road / Garden Road intersection would operate acceptably under Existing plus Residential Buildout conditions. No improvements would be required at this intersection.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would operate at an acceptable LOS C during the morning and evening peak hours. No improvements would be required at this intersection.

5. Traffic Impact Analysis

*Garden Road Traffic Impact Analysis
March 11, 2019*

The Maximum Residential Conversion would have a beneficial impact on traffic operations compared to the baseline Maximum Office Buildout for existing conditions.

D. Existing Plus Summary- Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline)

This scenario assumes maximum residential buildout allowed under the zoning amendment (405 units) plus existing office and additional potential office space allowed under the existing zoning. With 734,080 square feet of existing office building area, conversion to 223 units would replace 200,700 square feet of office space leaving 583,380 square feet of existing office. With the potential future buildout of 1,586,600 square feet of additional office floor area, construction of 182 new units would displace 364,000 square feet of future office leaving 1,222,600 square feet of future office that could be built. Therefore, this scenario analyzes 223 converted units, 182 new units plus the 1,222,600 square feet of potential new office and 583,380 existing office space, for a total of 1,805,980 square feet of office and 405 residential units.

The 200,700 square feet of displaced office floor area would result in an estimated reduction of 1,955 daily trips with 233 fewer trips during the AM peak hour and 231 fewer trips during the PM peak hour. The 182 new units would displace 364,000 square feet of potential future office building area. This would reduce future trips by 3,545 trips. Converted and new residential development totaling 405 units would generate about 2,965 daily trips with 186 during the AM peak hour and 227 during the PM peak hour. The 1,222,600 square feet of potential new office would generate 11,908 trips with 1,418 trips during the AM peak hour and 1,406 trips during the PM peak hour. This would be a net total of 12,918 trips with 1,372 in the AM peak hour and 1,402 in the PM peak hour. When compared to the baseline, there would be a net reduction in trips of -2,536 with 469 fewer trips in the AM peak hour and 423 fewer trips in the PM peak hour.

Existing Plus Maximum Residential with Remaining Existing and Potential Office turning volumes are illustrated on **Exhibit 12**. The corresponding levels of service are tabulated on **Exhibit 4A**. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

Existing Plus Maximum Residential with Remaining Existing and Potential Office would result in the Highway 68 / Olmsted Road intersection declining into LOS F in the morning and evening peak hours. Delay would increase four-fold during the PM peak hour, which already operates at LOS F. Similar to Existing Plus Office Buildout conditions, the currently planned roundabout would need to be enlarged to provide 3 circulating lanes with 3 entry lanes on the eastbound Highway 68 approach. It would then operate at an acceptable LOS A in the AM peak hour and LOS B in the PM peak hour.

The Olmsted Road / Garden Road intersection would operate at an unacceptable LOS F and critical approaches in the AM and PM peak hours under Existing Plus Maximum Residential with Remaining Existing and Potential Office conditions. Similar to Existing Plus Office Buildout conditions, it would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movement.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would decline to LOS F in the morning and evening peak hours. Similar to Existing Plus Office Buildout conditions, it would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS D in the AM peak hour and LOS C in the PM peak hour.

The Maximum Residential with Remaining Existing and Potential Office scenario would have an overall beneficial impact on traffic operations compared to the baseline Maximum Office Buildout for existing conditions, but would require the same intersection improvements as the Maximum Office Buildout.

3. CUMULATIVE CONDITIONS

A. Cumulative with No Garden Road Development

Cumulative without project conditions represent buildout of the Monterey General Plan (approximately 2035) and the buildout of the Monterey Regional Airport Master Plan, without intensification of uses along Garden Road. Morning and evening peak hour volumes are depicted on **Exhibit 13** for cumulative traffic conditions. **Exhibit 4A** provides a tabular summary of intersection levels of service. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

The Highway 68 / Olmsted Road will operate at an unacceptable LOS F in the AM peak hour and LOS F in the PM peak hour. Caltrans, TAMC, the City of Monterey are planning to construct a two-lane roundabout at this intersection by 2024. It will then operate at an acceptable LOS C in the morning peak hour and B in the evening peak hour through 2035.

The Garden Road / Olmsted Road intersection will experience LOS F on some movements. This intersection is planned to be converted to a roundabout, which will result in an overall LOS A during the morning and evening peak hours.

The Garden Road / Fairground Road intersection will operate at acceptable LOS D in the morning and LOS C in the evening. No improvements will be required.

5. Traffic Impact Analysis

*Garden Road Traffic Impact Analysis
March 11, 2019*

B. Cumulative Plus Office Buildout

Office Buildout traffic assignment under cumulative conditions is assumed to be the same as the assignment for existing conditions illustrated on **Exhibit 7**. **Exhibit 4A** provides a tabular summary of intersection levels of service. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

The buildout of the current Monterey General Plan Plus Office Buildout would result in the morning and evening peak hour volumes depicted on **Exhibit 14**.

The three study intersections would further decline in LOS with the buildout of the Monterey General Plan. However, the same mitigations recommended for Existing Plus Office Buildout would be adequate to achieve acceptable levels of service under this scenario. They are as follows.

The Highway 68 / Olmsted Road intersection would operate with severe congestion, well into LOS F, in the morning and evening peak hours. Delay would increase five-fold during the PM peak hour, which already operates at LOS F. The currently planned roundabout would need to be enlarged to provide 3 circulating lanes with 3 entry lanes on the eastbound Highway 68 approach. It would then operate at an acceptable LOS A in the AM peak hour and LOS B in the PM peak hour.

The Olmsted Road / Garden Road intersection would operate at an unacceptable LOS F and critical approaches in the AM and PM peak hours under Existing plus Office Buildout conditions. It would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movement.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would decline to LOS F in the morning and evening peak hours. It would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS D in the AM peak hour and LOS C in the PM peak hour.

C. Cumulative Plus Proposed Zoning Amendment - Office to Residential Conversion With New Residential (Maximum Residential)

Maximum Residential Buildout traffic assignment is depicted on **Exhibit 9**. The resulting Cumulative Plus Residential Buildout morning and evening peak hour volumes are shown on **Exhibit 15**. **Exhibit 4A** provides a tabular summary of intersection levels of service. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

Monterey General Plan Buildout Plus Residential Buildout would result in the Highway 68 / Olmsted Road intersection declining further into LOS F during both the AM and PM peak hours. Similar to the Existing Plus Residential Buildout, both the morning and evening peak hours will be better than would

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

be expected from the Office Buildout baseline condition. The currently planned roundabout at the Highway 68 / Olmsted Road intersection would operate at an acceptable LOS C.

The Olmsted Road / Garden Road intersection would decline to LOS F on certain movements under Cumulative plus Residential Buildout conditions. The roundabout proposed as a part of the Monterey Regional Airport Master Plan would operate at an acceptable LOS A.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would operate at an acceptable LOS D in the morning peak hour and LOS C in the evening peak hour. No improvements would be required.

The maximum residential development would have less impacts than office buildout under the existing zoning at all three study intersections during the morning and evening peak hours. It would eliminate the need to mitigate impacts from Garden Road area development at the Garden Road/ Fairgrounds Road- Mark Thomas Drive intersection. It would also slightly reduce existing delays during either the morning or evening peak hour at each study intersection. Finally, the residential conversion would offset the increase in delay expected from General Plan Buildout at the Highway 68/Olmsted Road intersection in the evening peak hour and the Garden Road/Mark Thomas Drive-Fairgrounds Road intersection during the morning peak hour.

The Maximum Residential Conversion would therefore have a beneficial impact on traffic operations compared to the baseline Maximum Office Buildout for cumulative conditions.

D. *Cumulative Plus Summary- Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline)*

Cumulative Plus Maximum Residential with Remaining Existing and Potential Office turning volumes are illustrated on **Exhibit 16**. The corresponding levels of service are tabulated on **Exhibit 4A**. **Exhibit 4B** provides a tabular summary of recommended intersection improvements.

Cumulative Plus Maximum Residential with Remaining Existing and Potential Office would result in the Highway 68 / Olmsted Road intersection declining into LOS F in the morning and evening peak hours. Delay would increase nearly four-fold during the PM peak hour, which already operates at LOS F. Similar to Cumulative Plus Office Buildout conditions, the currently planned roundabout would need to be enlarged to provide 3 circulating lanes with 3 entry lanes on the eastbound Highway 68 approach. It would then operate at an acceptable LOS A in the AM peak hour and LOS B in the PM peak hour.

The Olmsted Road / Garden Road intersection would operate at an unacceptable LOS F and critical approaches in the AM and PM peak hours under Cumulative Plus Maximum Residential with Remaining Existing and Potential Office conditions. Similar to Cumulative Plus Office Buildout

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

conditions, it would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movement.

The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection would decline to LOS F in the morning and evening peak hours. Similar to Cumulative Plus Office Buildout conditions, it would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS C in the AM and PM peak hours.

The Maximum Residential with Remaining Existing and Potential Office scenario would have an overall beneficial impact on traffic operations compared to the baseline Maximum Office Buildout for existing conditions, but would require the same intersection improvements as the Maximum Office Buildout.

4. VEHICLE-MILES TRAVELLED AND FUEL CONSUMPTION IMPACTS

Exhibit 17 provides an estimate of vehicle-miles travelled for each Garden Road development scenario. This is based on the trip generation estimate for each scenario tabulated on **Exhibit 5**. Average trip lengths for office and residential uses in Monterey County are based on “California Emissions Estimator Model (CalEEMod), Appendix D - Default Data Tables”, page D-85, for Monterey County, October 2017.

“Trip Generation Manual”, 10th Edition, Institute of Transportation Engineers 2017, Land Use Category 710 – General Office, indicates that about 47% of office trips are commute trips. These have an average length in urban areas of Monterey County of 10.8 miles. The other 53% of daily office trips are for a large variety of purposes throughout the day and are an average of about 9.5 miles in length. The weighted average trip length for office uses (work-based trips) is 10.1 miles.

Residential trips (home-based trips) have an average trip length of 8.9 miles. This includes home-to-work, home to shopping and home-to-other trip lengths and percentages of total trips provided in the CalEEMod default data. Residential trips are shorter on average than trips to and from employment centers because they include a variety of other purposes such as school, shopping and personal trips that are generally to and from locations much closer to home.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

Buildout of the Multifamily Residential Overlay District with an additional 1,586,600 square feet of Office Space would result in about 15,454 daily trips with an average length of 10.1 miles for a total of 156,255 daily vehicle-miles travelled.

The Residential Buildout of 405 dwelling units and the elimination of 200,700 square feet of office would add a net 1,010 daily trips. These will have an average trip length of about 8.9 miles. This will generate about 9,004 daily vehicle-miles of travel (VMT). This is a reduction of 147,251 daily vehicle-miles travelled compared to the baseline office buildout scenario.

Residential Plus Remaining Existing and Potential Office consists of 405 units and 1,805,980 square feet of office. This would generate a net 12,919 daily trips. These will have an average trip length of about 9.8 miles, calculated as a weighted average of the office and residential trip lengths weighted by the relative trip generation of each use.. This will generate about 127,076 daily vehicle-miles of travel (VMT). This is a reduction of 29,179 daily vehicle-miles travelled compared to the baseline office buildout scenario.

5. GARDEN ROAD PAVEMENT IMPACTS

As indicated in the Proposed Zoning Amendment Traffic Impacts section above, the residential conversion will not impact traffic operations in the study area, it will increase daily traffic. This could have an impact on the Garden Road pavement structural section. This section of the report estimates the Traffic Index (TI), which is a measure of pavement loading used to design pavement structural sections. The structural section includes the thickness of the various layers of pavement, which, in this case, includes hot mix asphalt on top of compacted aggregate base on a compacted and possibly treated native ground, which is called the subbase. In order to analyze this, 7-day vehicle classification counts were conducted. The classifications are based on the numbers of axles of each vehicle using Federal Highway Administration (FHWA) categories. This was also used as a basis to estimate the increase in pavement loading from the land use conversion.

Exhibit 18 provides the TI calculation that includes the existing truck traffic with associated Equivalent Single Axle Loads (ESAL) that are used to compute the existing TI of 8.0. ESAL's are the load measurement assigned to trucks based on the number of axles. Currently, trucks represent 5.2% of total vehicular traffic on Garden Road. Of the total number of trucks, 63% are 2-axle trucks. Heavy trucks (with 3 or more axles) represent 1.9% of total traffic. Very heavy trucks (4, 5 or more axles) represent only 0.1% of total traffic. The largest truck traffic generators along Garden Road include the PG&E corporation yard, Cal Fire Regional Headquarters, RV and boat storage on Michael J. Smith Lane and Caltrans Maintenance Station. Delivery trucks also serve the various offices and other businesses along Garden Road. Buses are also included as 2-axle trucks and are currently generated by MST Lines 7, 37, 56 and 93.

5. Traffic Impact Analysis

Garden Road Traffic Impact Analysis
March 11, 2019

There are no published heavy vehicle trip generation rates for either office or residential uses. It is therefore difficult to predict the change in truck traffic associated with the land use change. However, based on the truck generating uses generating existing truck traffic, it is conservative to assume that truck traffic will increase in direct proportion to the increase in total traffic. Based on this assumption, the ESAL will increase by 6.4%. The resulting ESAL computes to a TI of 8.0, which is the existing TI. No significant change is therefore expected in the pavement loading on Garden Road from this land use change. As mentioned earlier, the conversion of additional office space to residential will further reduce daily traffic and corresponding pavement loading on Garden Road. The pavement loading will continue to decline with increased office to residential conversions in the Garden Road area. No pavement impact will be created by additional conversions as well. The project will have a beneficial pavement impact.

6. PEDESTRIAN AND BICYCLE IMPACTS

Residential development in the Garden Road area will create a mix of land use that will have a beneficial effect on vehicular traffic. The project will, on the other hand, generate pedestrian and bicycle traffic along Garden Road. The length of Garden Road with adjoining land development is about 0.8 miles, which is well within a reasonable walking and biking distance. Sidewalks are already provided along this portion of Garden Road. Bike lanes are provided along the entire 1.4-mile length of Garden Road. No mitigation is therefore required.

7. CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of study conclusions. A recommendation is also provided regarding traffic impact fees.

1. The Highway 68 / Olmsted Road intersection currently operates at LOS E in the AM peak hour and LOS F in the PM peak hour. Caltrans, TAMC and the City of Monterey are planning to construct a two-lane roundabout at this intersection by 2024. It will then operate at an acceptable LOS B or C through General Plan Buildout with or without Maximum Residential development along Garden Road. However, with the Office Buildout or Maximum Residential with Remaining Existing and Potential Office scenarios, the roundabout would need to be increased to three circulating lanes to achieve acceptable operations.
2. The Olmsted Road / Garden Road intersection operates acceptably and would operate acceptably under existing plus either land use scenario implemented along Garden Road. However, it would decline to LOS F on certain movements under any Cumulative (General Plan plus Monterey Regional Airport Master Plan Buildout) scenario. The roundabout proposed in the Monterey Regional Airport Master Plan would operate at an acceptable LOS A with or without Maximum Residential development along Garden Road. However, under the Office Buildout and Maximum Residential with Remaining Existing and Potential Office

5. Traffic Impact Analysis

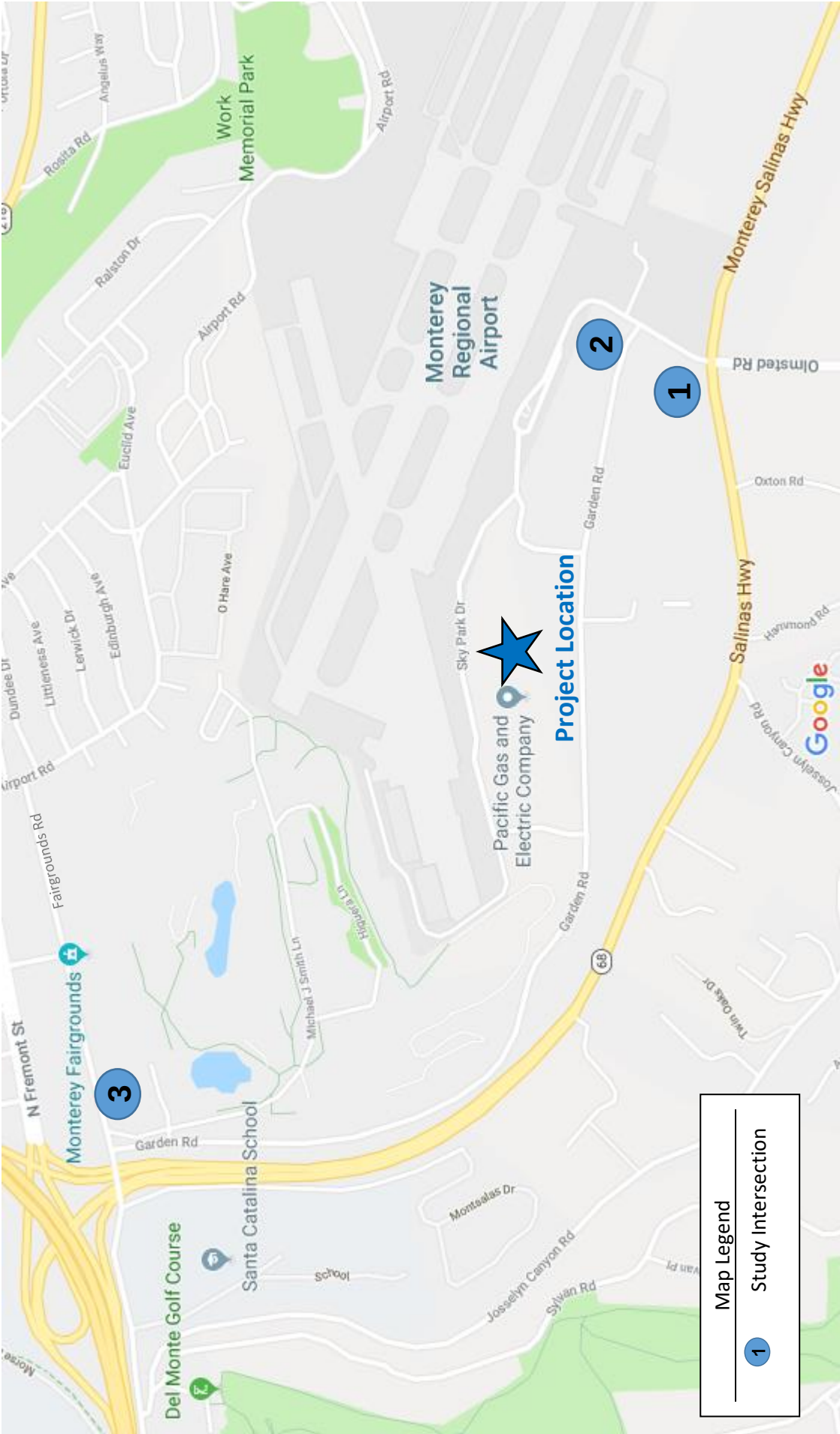
Garden Road Traffic Impact Analysis
March 11, 2019

scenarios (both “Existing and Cumulative), it would require a roundabout with 2 circulating lanes for the heavy northbound to westbound movement

3. The Garden Road / Fairgrounds Road – Mark Thomas Drive intersection currently operates acceptably and would continue to operate acceptably with Maximum Residential development along Garden Road. It would decline to LOS E or LOS F in the morning and evening peak hours under the Office Buildout and Maximum Residential with Remaining Existing and Potential Office scenarios (both “Existing and Cumulative). The intersection would require the addition of an eastbound Fairgrounds Road right turn lane, which would require the widening of the existing bridge over Highway 68. In addition, it would require the addition of a northbound Garden Road right turn lane and a second westbound Fairgrounds Road left turn lane. The traffic signal would also require a modification to provide split phasing for the northbound Garden Road and southbound driveway approaches. With these improvements, the intersection would operate at an acceptable LOS C or LOS D in the study peak hours.
4. Office Buildout along Garden Road would generate 156,255 daily vehicle-miles travelled (VMT). The Office to Residential Conversion With New Residential (Maximum Residential) would generate about 9,004 daily VMT, which is 147,251 VMT less than the baseline condition. The Maximum Residential with Remaining Existing and Potential Office (Multifamily Overlay with Remaining Baseline) would generate about 127,076 daily VMT, which is 29,179 VMT less than the baseline condition.
5. The proposed rezoning will not change the existing 8.0 Traffic Index (TI).
6. The proposed rezoning will not create pedestrian or bicycle impacts.
7. The Transportation Agency for Monterey County (TAMC) assesses traffic impact fees based on daily trips. The units associated with in-fill that do not displace existing office uses will be required to pay TAMC development impact fees. Garden Road is not in the Infill Development Area that is eligible for reduced impact fees. However, the residential conversion clearly is an infill project and should be eligible for the reduced fee.

Any residential development that displaces office floor area should be exempt from the TAMC Development Fee because it will reduce traffic on a daily, AM peak hour and PM peak hour basis.

5. Traffic Impact Analysis



Basemap Source: Google Maps, 2018

Keith Higgins
Traffic Engineer

Exhibit 1
Project Location Map



5. Traffic Impact Analysis

Source: EMC Planing Group, 2018

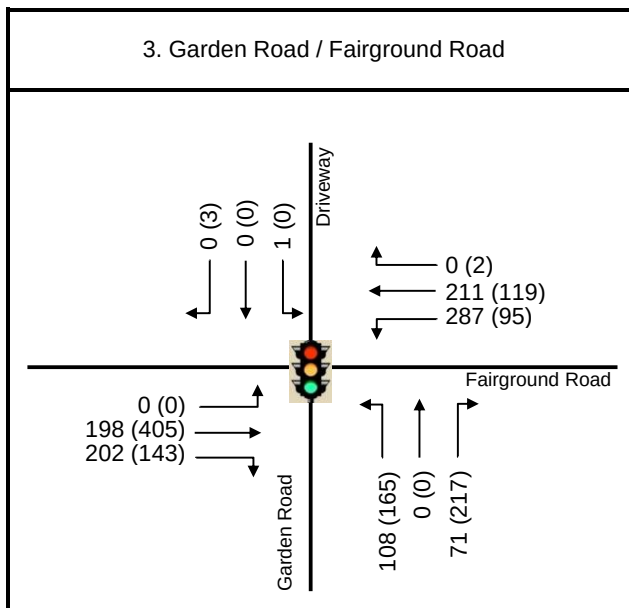
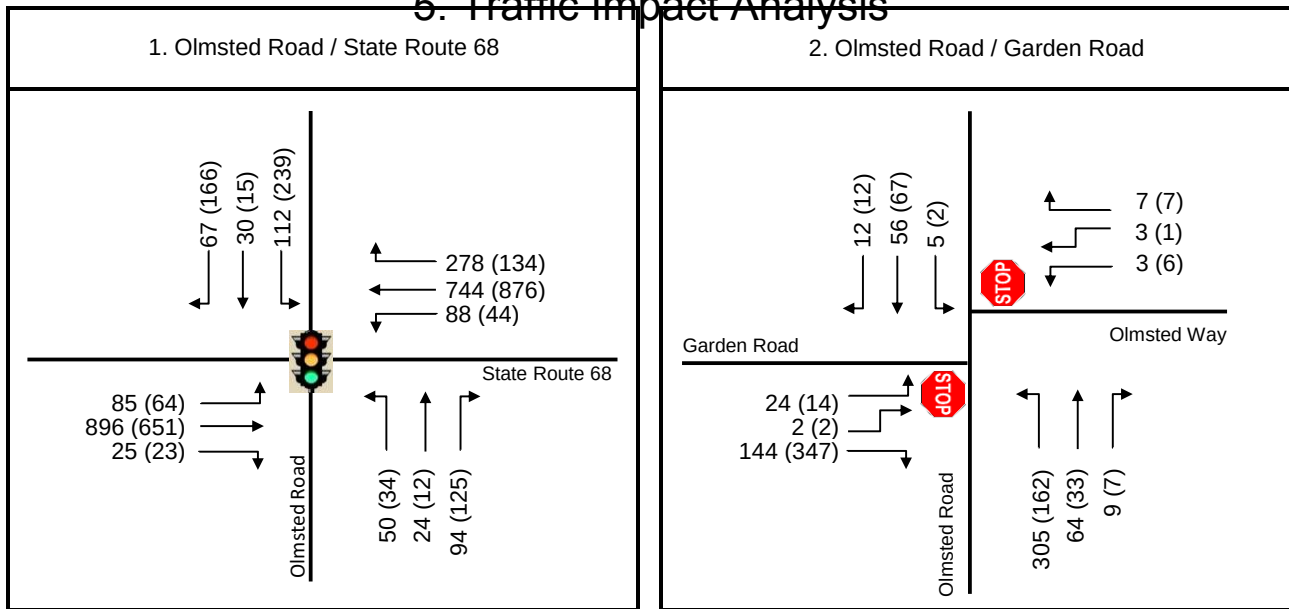
Keith Higgins
Traffic Engineer

Limited Mixed Use and Multi-family
Residential Boundary



Exhibit 2
Limited Mixed Use and Multi-family Residential Area in the Garden Road Corridor

5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



Traffic Signal

5. Traffic Impact Analysis

N-S Street	E-W Street	Existing Intersection Control	LOS Standard	Peak Hour	Existing Conditions		Existing Plus Office Buildout Conditions		Existing Plus Maximum Residential Conditions		Existing Plus Max. Res. + Rem. Office BO Conditions	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Olmsted Road	Signal	C/D	AM	61.5	E	196.8	F	89.6	F	169.2	F
				PM	152.7	F	993.9	F	119.0	F	671.5	F
				With Improvement	AM	12.8	8.9	A	12.6	B	9.2	A
				PM	14.7	B	13.8	B	13.2	B	10.8	B
2	Olmsted Road	Two-Way Stop	E/E	AM	11.3/15.6	B/C	16.3/98.6	C/F	10.5/13.8	B/B	52.1/153.9	F/F
				PM	11.7/18.1	B/C	133.9/185.2	F/F	11.2/19.0	B/C	N.A.*	F/F
				With Improvement	AM		4.4	A			4.6	A
				PM			1.5	A			1.9	A
3	Garden Road	Signal	D	AM	28.5	C	371.8	F	21.4	C	228.7	F
				PM	24.7	C	134.9	F	27.8	C	78.6	E
				With Improvement	AM		40.0	D			29.0	C
				PM			29.4	C			27.2	C

N-S Street	E-W Street	Existing Intersection Control	LOS Standard	Peak Hour	Cumulative Without Project Conditions		Cumulative Plus Office Buildout Conditions		Cumulative Plus Maximum Residential Conditions		Cumulative + Max. Res. + Rem. Office BO Conditions	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Olmsted Road	Signal	C/D	AM	92.8	F	224.0	F	119.0	F	199.0	F
				PM	194.2	F	1027.2	F	155.0	F	709.4	F
				With Improvement	AM	15.8	10.8	B	15.3	C	10.5	B
				PM	13.4	B	16.4	C	13.3	B	12.5	B
2	Olmsted Road	Two-Way Stop	E/E	AM	13.6/52.7	B/F	N.A.*	F/F	11.4/32.6	B/D	N.A.*	F/F
				PM	11.6/57.4	B/F	49.4/118.5	F/F	11.3/68.6	B/F	N.A.*	F/F
				With Improvement	AM	5.9	6.4	A	5.3	A	5.0	A
				PM	6.1	A	1.0	A	5.8	A	1.7	A
3	Garden Road	Signal	D	AM	37.3	D	363.9	F	23.8	C	228.7	F
				PM	30.4	C	142.7	F	36.5	D	88.6	F
				With Improvement	AM		38.4	D			28.9	C
				PM			32.9	C			30.3	C

Notes:

1. L, T, R = Left, Through, Right
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. Overall City of Monterey level of service (LOS) standard is LOS D. Overall Caltrans level of service standard is the transition between LOS C and LOS D, abbreviated as "LOS C/D".
4. For two-way stop-controlled intersections, side-street level of service standard assumed as LOS E.
5. For signalized intersection analysis, delay is average overall delay in seconds per vehicle (sec/veh).
6. For two-way stop controlled intersection analysis, delay is stop-controlled approach delay(s) in seconds per vehicle (sec/veh).
7. Analysis performed using 2010 Highway Capacity Manual methodologies.
8. Intersection 1 uses saturation flow rate of 1,600 veh/hour/lane for through traffic on Highway 68, per Caltrans request.
9. N.A.* = Delay exceeds ability of methodology to quantify. This signifies LOS F conditions.
10. LOS highlighted in **red** indicates intersection operating below level of service standard. Resulting levels of service with recommended improvements noted under "With Improvements".
A list of applied improvements can be found on **Exhibit 5B**.
11. LOS with a thick black border represents a significant impact.
12. Level of service calculations can be found in appendix.

Keith Higgins
Traffic Engineer

Garden Road LOS 5 - Int LOS

Exhibit 4A
Intersection
Levels of Service

5. Traffic Impact Analysis

N-S Street	E-W Street	Existing Intersection Control	Existing Conditions	Existing Plus Office Buildout Conditions	Existing Plus Maximum Residential Conditions	Existing Plus Max. Res. + Rem. Office BO Conditions
1 Olmsted Road	Highway 68	Signal	Convert to Roundabout: EB & WB: 2 Lanes NB & SB: 1 Lane	Convert to 2-3 Lane Roundabout: EB: 3 Lanes WB & SB: 2 Lanes NB: 1 Lane	Convert to Roundabout: EB & WB: 2 Lanes NB & SB: 1 Lane	Convert to 2-3 Lane Roundabout: EB: 3 Lanes WB & SB: 2 Lanes NB: 1 Lane
2 Olmsted Road	Garden Road - Olmsted Way	Two-Way Stop	None Required	Convert to 1-2 Lane Roundabout: EB, WB SB: 1 Lane NB: 2 Lanes	None Required	Convert to 1-2 Lane Roundabout: EB, WB SB: 1 Lane NB: 2 Lanes
3 Garden Road	Mark Thomas Drive - Fairgrounds Road	Signal	None Required	Add: 1. 1-RT Lane (widen bridge over Hwy 68); 2nd NB RT Lane w/ Overlap; 2nd WB LT; N-S Signal Split Phase; Prohibit EB LT	None Required	Add: 1. 1-RT Lane (widen bridge over Hwy 68); 2nd NB RT Lane w/ Overlap; 2nd WB LT; N-S Signal Split Phase; Prohibit EB LT
N-S Street	E-W Street	Existing Intersection Control	Cumulative Without Project Conditions	Cumulative Plus Office Buildout Conditions	Cumulative Plus Maximum Residential Conditions	Cumulative + Max. Res. + Rem. Office BO Conditions
1 Olmsted Road	Highway 68	Signal	Convert to 1-2 Lane Roundabout: EB & WB: 2 Lanes NB & SB: 1 Lane	Convert to 2-3 Lane Roundabout: EB: 3 Lanes WB & SB: 2 Lanes NB: 1 Lane	Convert to 1-2 Lane Roundabout: EB & WB: 2 Lanes NB & SB: 1 Lane	Convert to 2-3 Lane Roundabout: EB: 3 Lanes WB & SB: 2 Lanes NB: 1 Lane
2 Olmsted Road	Garden Road - Olmsted Way	Two-Way Stop	Convert to Roundabout: 1-Lane All Approaches	Convert to 1-2 Lane Roundabout: EB, WB SB: 1 Lane NB: 2 Lanes	Convert to Roundabout: 1-Lane All Approaches	Convert to 1-2 Lane Roundabout: EB, WB SB: 1 Lane NB: 2 Lanes
3 Garden Road	Mark Thomas Drive - Fairgrounds Road	Signal	None Required	Add: 1. 1-RT Lane (widen bridge over Hwy 68); 2nd NB RT Lane w/ Overlap; 2nd WB LT; N-S Signal Split Phase; Prohibit EB LT	None Required	Add: 1. 1-RT Lane (widen bridge over Hwy 68); 2nd NB RT Lane w/ Overlap; 2nd WB LT; N-S Signal Split Phase; Prohibit EB LT

Keith Higgins
Traffic Engineer

Exhibit 4B
Recommended
Intersection
Improvements

5. Traffic Impact Analysis

TRIP GENERATION RATES	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR				PM PEAK HOUR			
			PEAK HOUR RATE	% OF ADT	% IN	% OUT	PEAK HOUR RATE	% OF ADT	% IN	% OUT
Multifamily Housing (Low-Rise) (per unit)	220	7.32	0.46	6%	23%	77%	0.56	8%	63%	37%
General Office Building (per 1,000 sq. ft.)	710	9.74	1.16	12%	86%	14%	1.15	12%	16%	84%

PROPOSED USE	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR				PM PEAK HOUR			
			PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT
A. BASELINE - EXISTING ZONING OFFICE BUILDOUT) (Existing Office plus Potential Additional Office)										
A1. Existing Office Space (1) - no new trips	784,080 sq. ft.	0	0	0%	0	0	0	0%	0	0
A2. Potential Additional Office Space	1,586,680 sq. ft.	15,454	1,841	12%	1,583	258	1,825	12%	292	1,533
A3. Net Total Traffic Generation Increase (A1+A2):		15,454	1,841	12%	1,583	258	1,825	12%	292	1,533

B. PROPOSED MULTI-FAMILY RESIDENTIAL OVERLAY (Office to Residential Conversion With New Residential (Maximum Residential) Traffic Impacts)										
B1. Multifamily Housing (Low-Rise) (per unit)	405 units	2,965	186	6%	43	143	227	8%	143	84
B2. Conversion of Existing Replaced Office Space (223 units)	-200,700 sq. ft.	-1,955	-233	12%	-200	-33	-231	12%	-37	-194
B3. New Residential that Displaces Potential Future Office Space (182 units)	-364,000 sq. ft.	-3,545	-422	12%	-363	-59	-419	12%	-67	-352
B4. Net Total (B1+B2+B3):		-2,535	-469	18%	-520	51	-423	17%	39	-462

C. SUMMARY - MAXIMUM RESIDENTIAL WITH REMAINING EXISTING AND POTENTIAL OFFICE (Multi-family Overlay with Remaining Baseline)										
C1. Existing Office Space - no new trips	784,080 sq. ft.	0	0	0%	0	0	0	0%	0	0
C2. Replaced Existing Office Space Due to Residential Conversion	-200,700 sq. ft.	-1,955	-233	12%	-200	-33	-231	12%	-37	-194
C3. Remaining Existing Office after Residential Conversion (C1+C2)	583,380 sq. ft.	0	0	0%	0	0	0	0%	0	0
C4. Potential Additional Office Space	1,586,680 sq. ft.	15,454	1,841	12%	1,583	258	1,825	12%	292	1,533
C5. Displaced Potential Future Office Space due to New Residential	-364,000 sq. ft.	-3,545	-422	12%	-363	-59	-419	12%	-67	-352
C6. Remaining Potential Future Office Space after Construction of New Residential Units (C4+C5)	1,222,680 sq. ft.	11,909	1,418	12%	1,220	198	1,406	12%	225	1,181
C7. Maximum Residential	405 units	2,965	186	6%	43	143	227	8%	143	84
C8. Net Total (C2+C6+C7):		12,919	1,372		1,063	309	1,402		331	1,071
C9. Net Change from Baseline (C8-C4)		-2,535	-469		-520	51	-423		39	-462

COMPARISON OF MULTI-FAMILY RESIDENTIAL TRIP RATES TO 900 SQ. FT. OF OFFICE										
Trips per Unit compared to 900 sq. ft.:		-1.45	-0.58		-0.79	0.21	-0.48		0.19	-0.67
Trips per Unit compared to 2,000 sq. ft.:		-12.16	-1.86		-1.89	0.03	-1.74		-0.02	-1.72

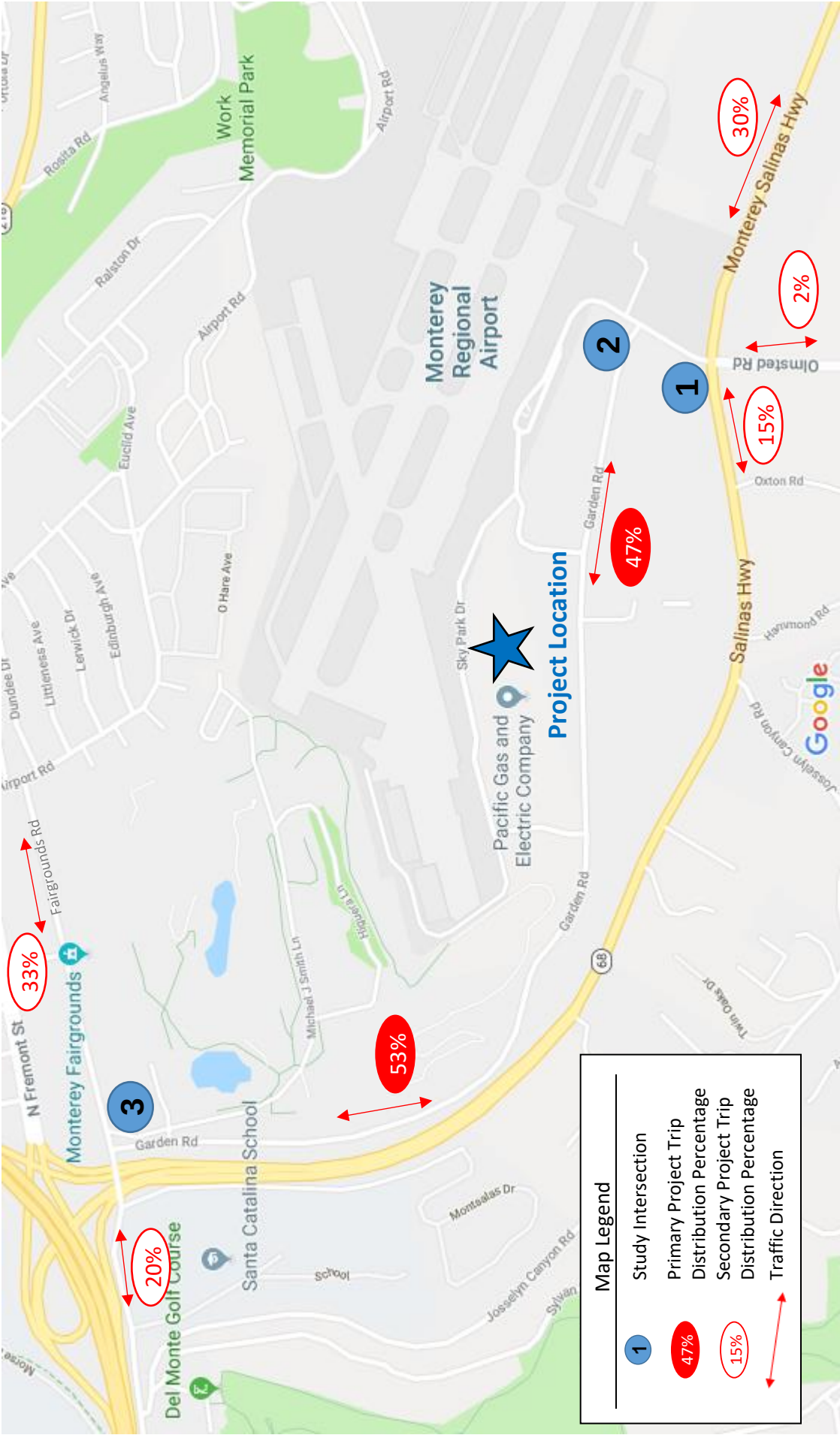
Project Description Notes:

1. A total of 784,080 square feet of office space currently exists along Garden Road. Trips generated by existing office space is accounted for in the existing traffic counts.
2. Potential office buildout under existing zoning could result in up to 1,586,680 square feet of additional office space for a total of 2,370,680 square feet of office space with no residential development.
3. Each residential unit would either displace 900 square feet of existing office space or preclude the ability to develop 2,000 square feet of new office space.
4. Buildout of 405 residential units would result in

Trip Generation Rate Notes:

1. Trip generation rates and mode splits published by Institute of Transportation Engineers (ITE) "Trip Generation Manual," 10th Edition, 2017.
2. Trip generation uses average trip rates.
3. Sq. Ft. = square feet.
4. No credit is given for internal trip reduction accounting for residents who would also work inside the study area and thus would not need to drive outside of study area.

5. Traffic Impact Analysis

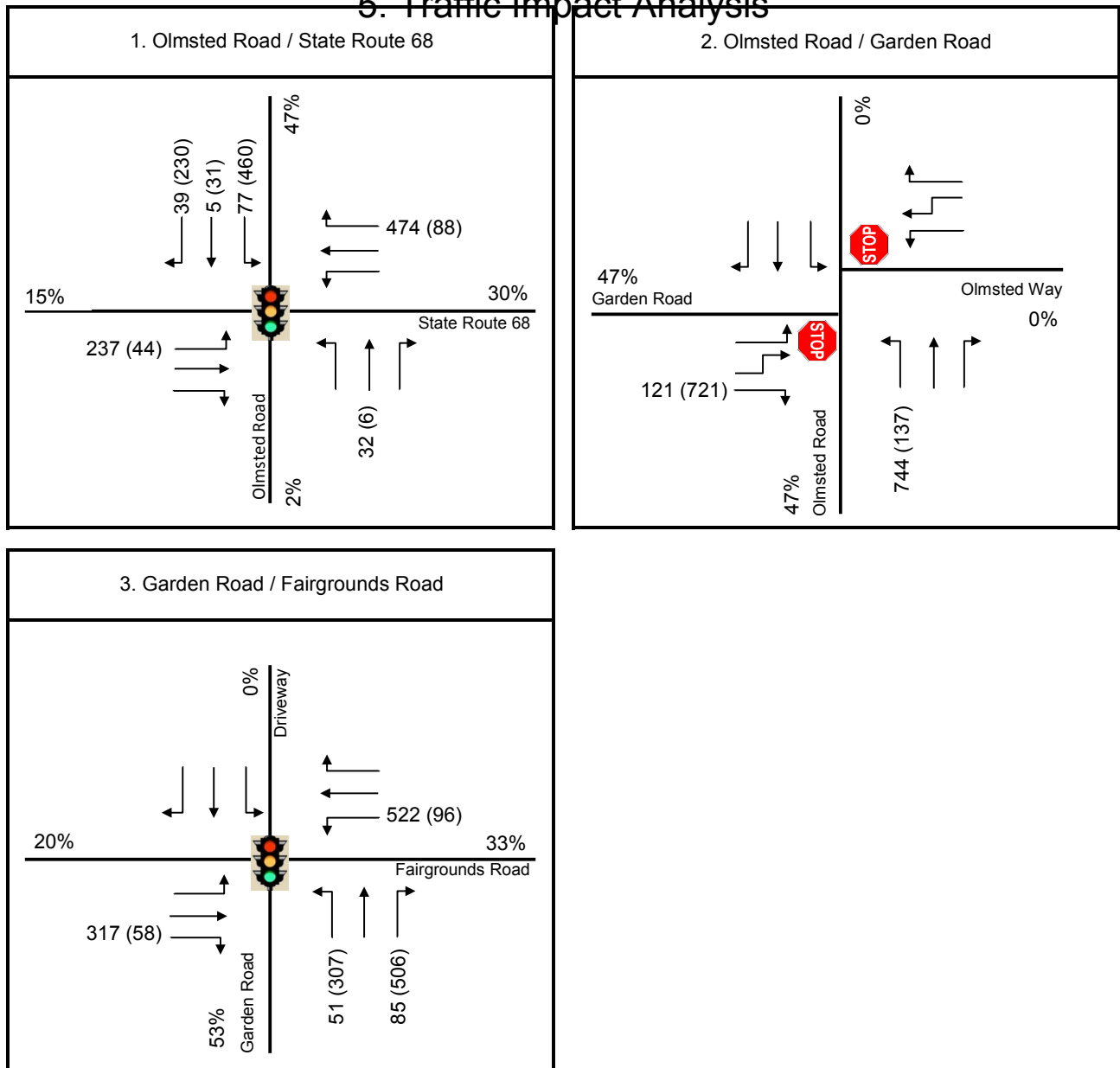


Basemap Source: Google Maps, 2018

Keith Higgins
Traffic Engineer

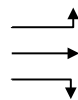
Exhibit 6
Office and Residential Traffic Distribution

5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



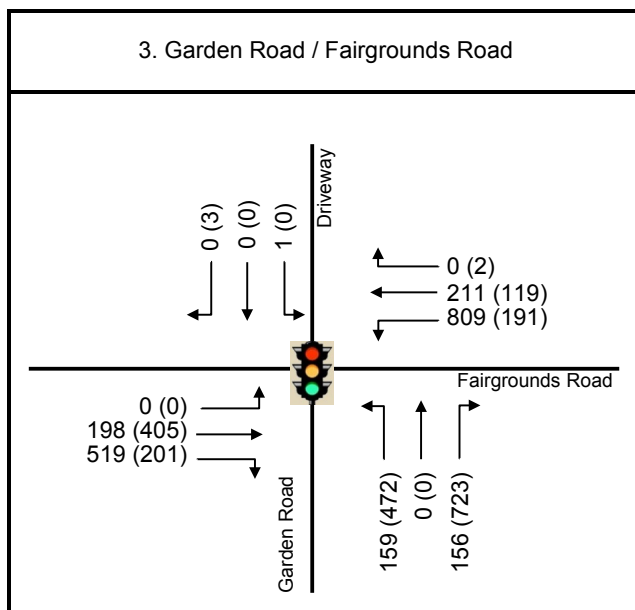
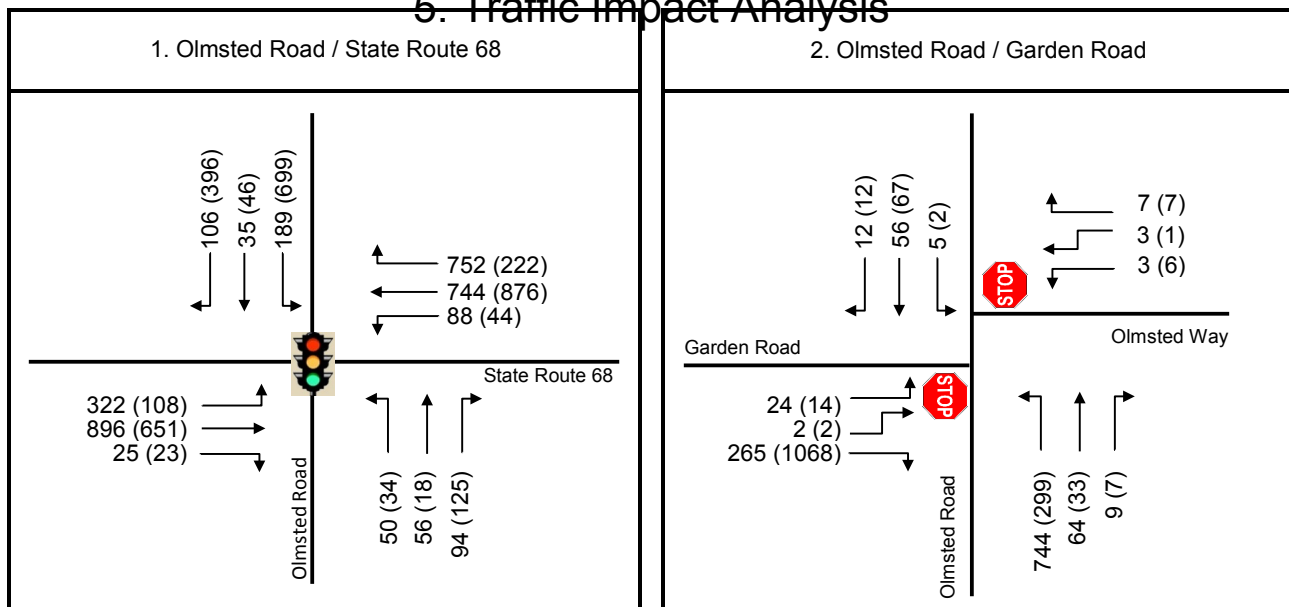
Traffic Signal

Exhibit 7

Keith Higgins
Traffic Engineer

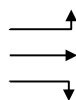
Office Buildout (A - Existing Zoning)
Peak Hour Traffic Assignment

5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



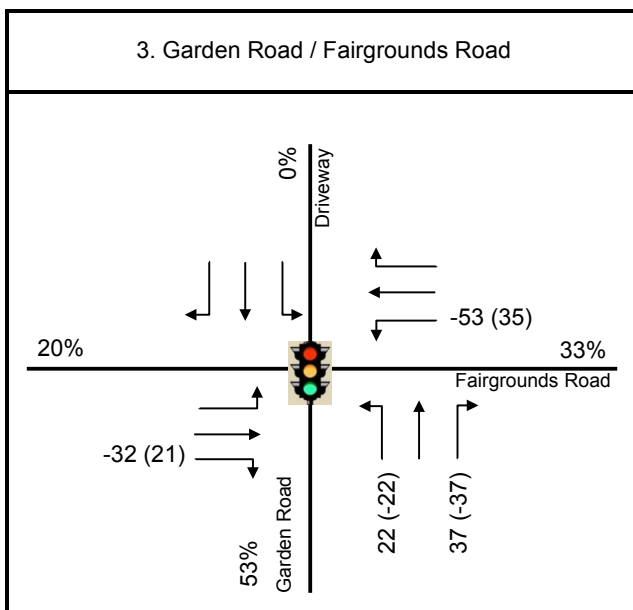
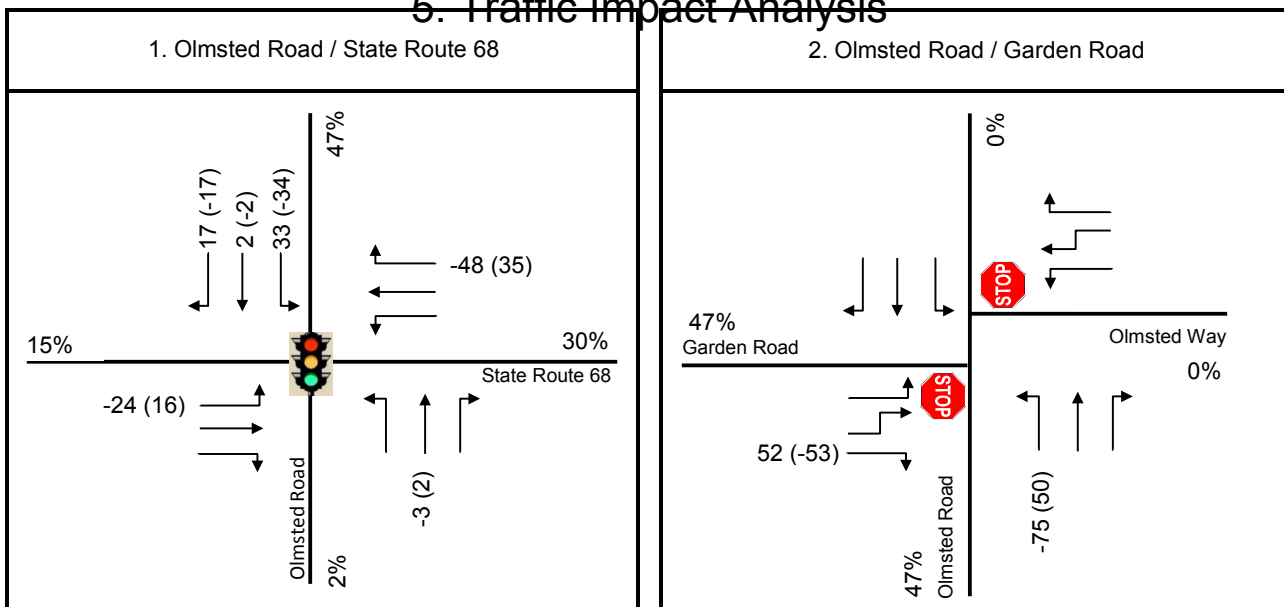
Traffic Signal

Exhibit 8

Keith Higgins
Traffic Engineer

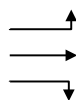
**Existing Plus Office Buildout
AM & PM Peak Hour Volumes**

5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



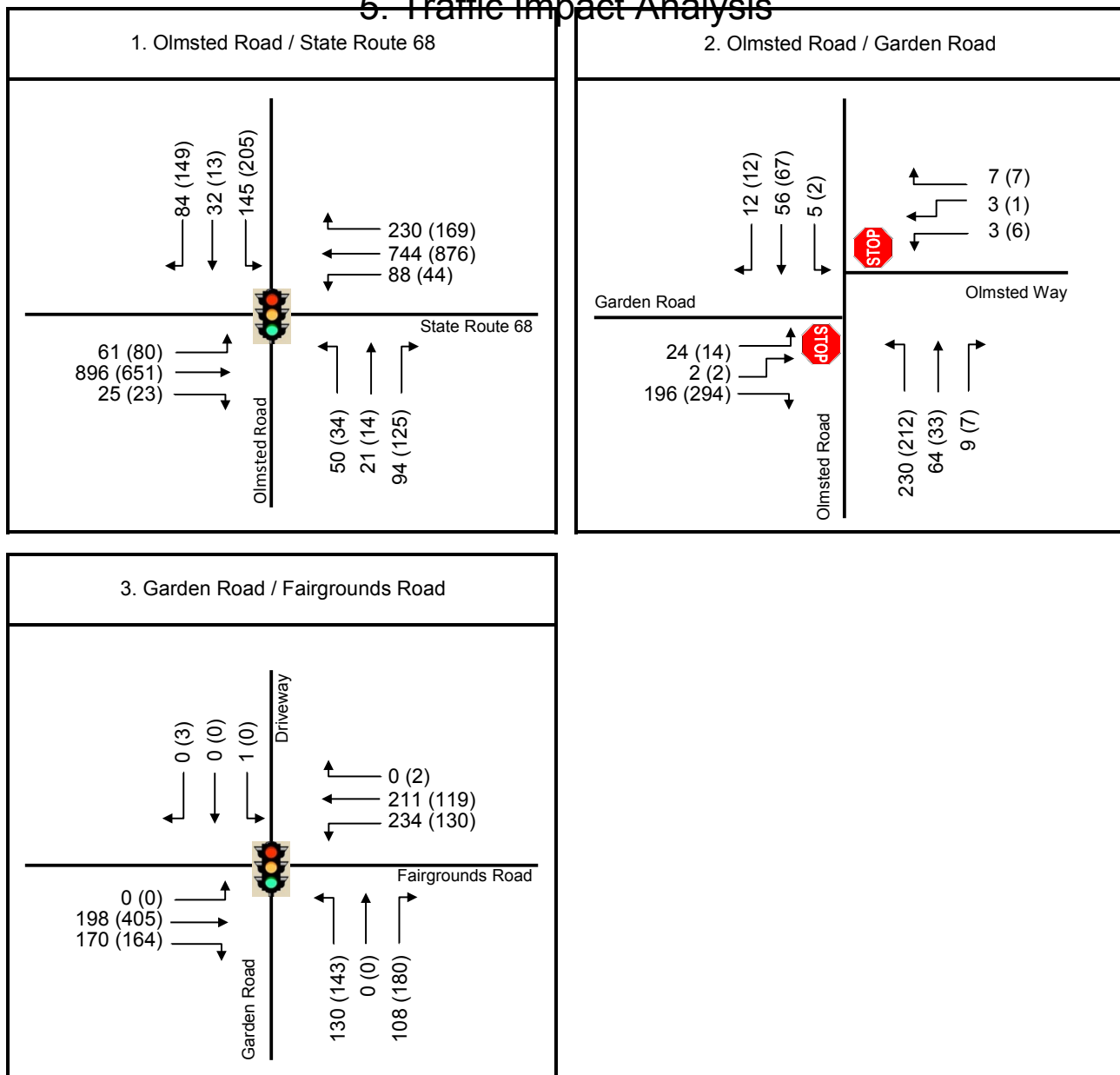
Traffic Signal

Exhibit 9

Keith Higgins
Traffic Engineer

**Maximum Residential
AM & PM Peak Hour Traffic Assignment**

5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



Traffic Signal

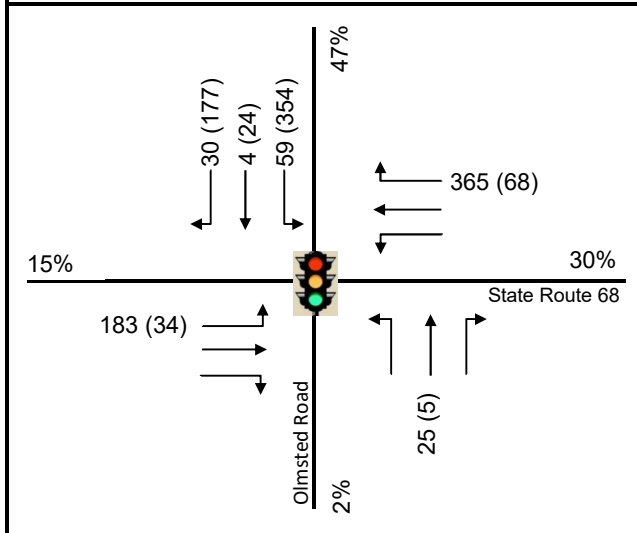
Exhibit 10

Keith Higgins
Traffic Engineer

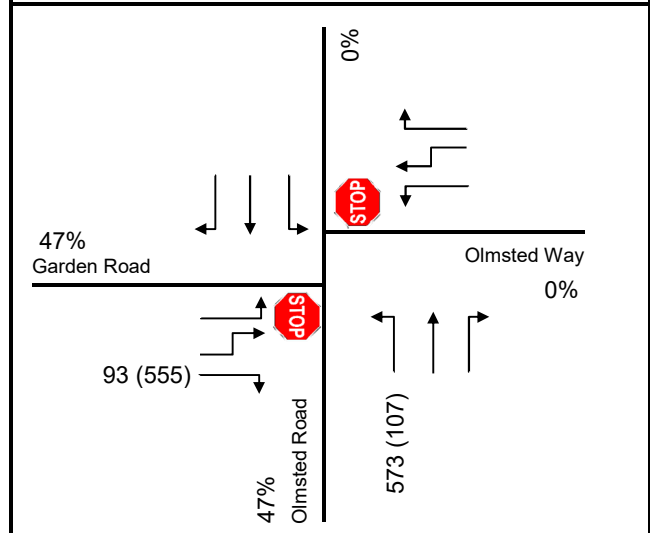
Existing Plus Maximum Residential Conditions
AM & PM Peak Hour Volumes

5. Traffic Impact Analysis

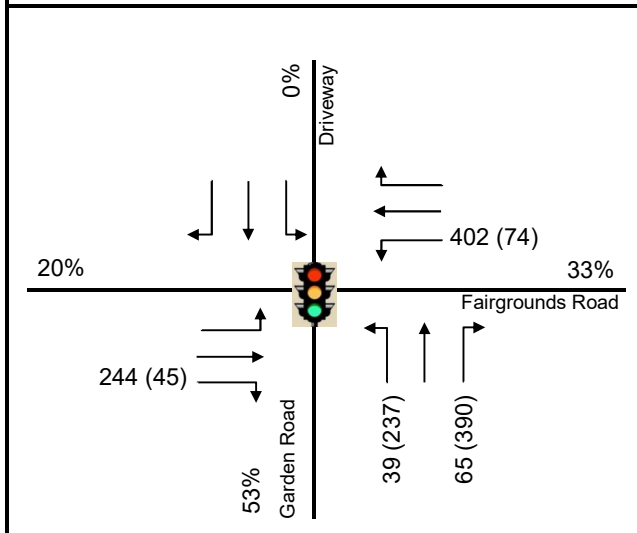
1. Olmsted Road / State Route 68



2. Olmsted Road / Garden Road

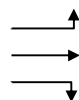


3. Garden Road / Fairgrounds Road



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



Traffic Signal

Exhibit 11

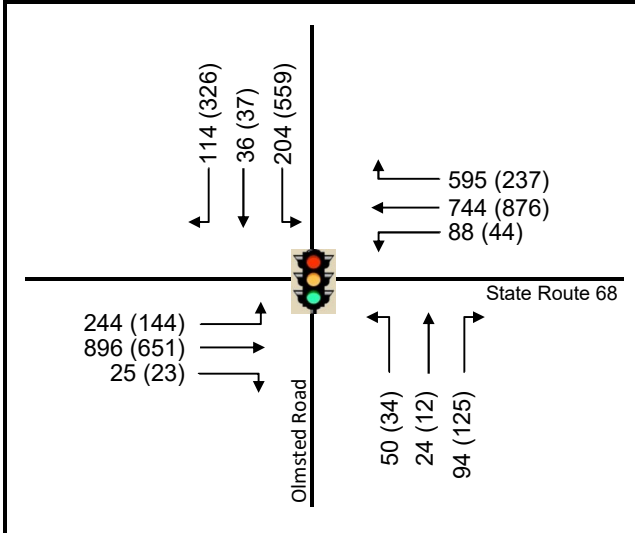
**Maximum Residential Plus
Remaining Office Buildout**

AM & PM Peak Hour Traffic Assignment

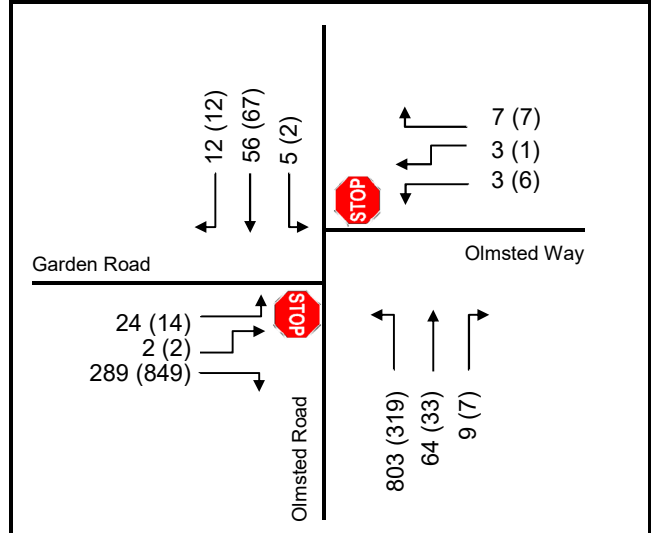
Keith Higgins
Traffic Engineer

5. Traffic Impact Analysis

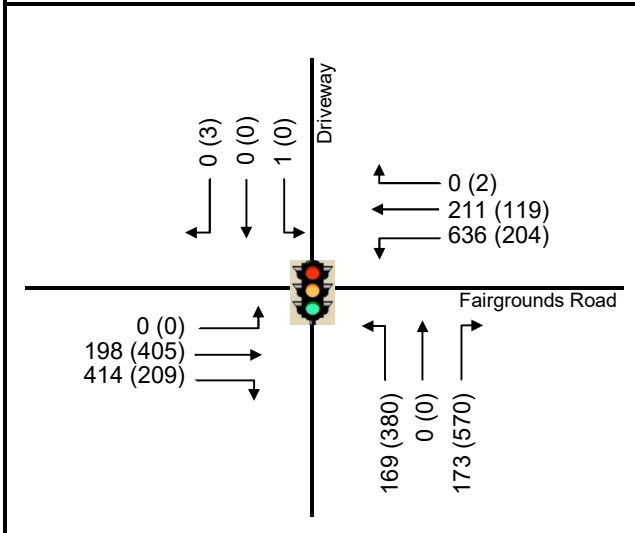
1. Olmsted Road / State Route 68



2. Olmsted Road / Garden Road

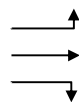


3. Garden Road / Fairgrounds Road



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



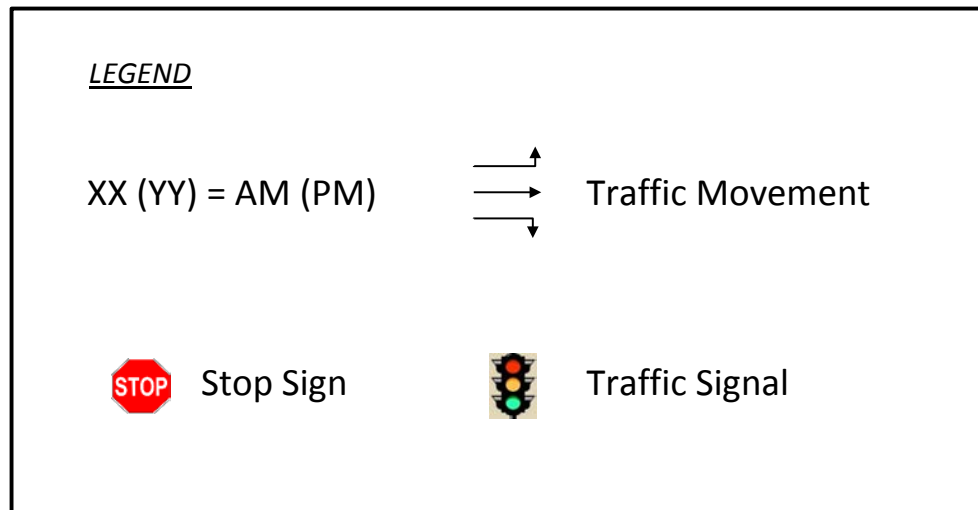
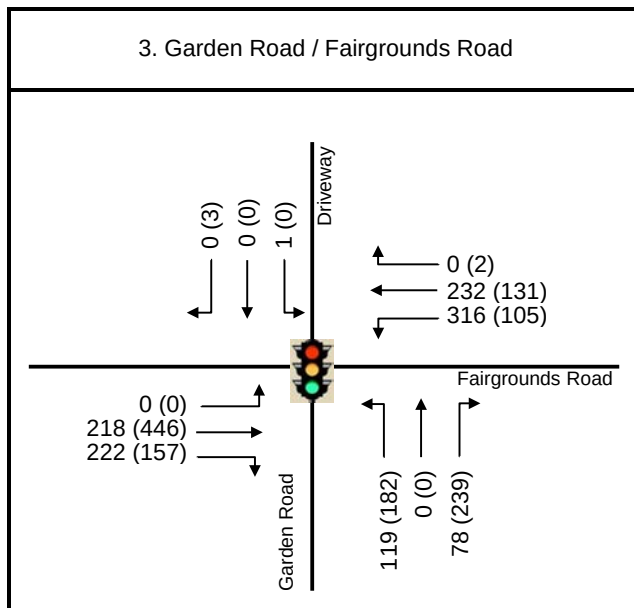
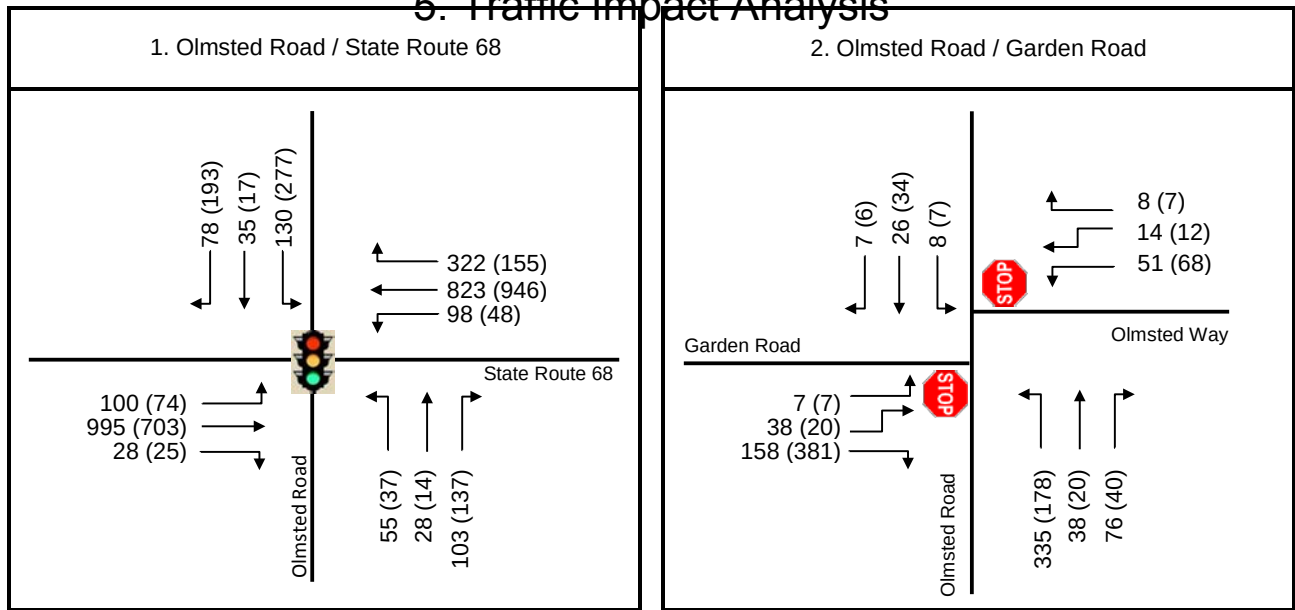
Traffic Signal

Exhibit 12

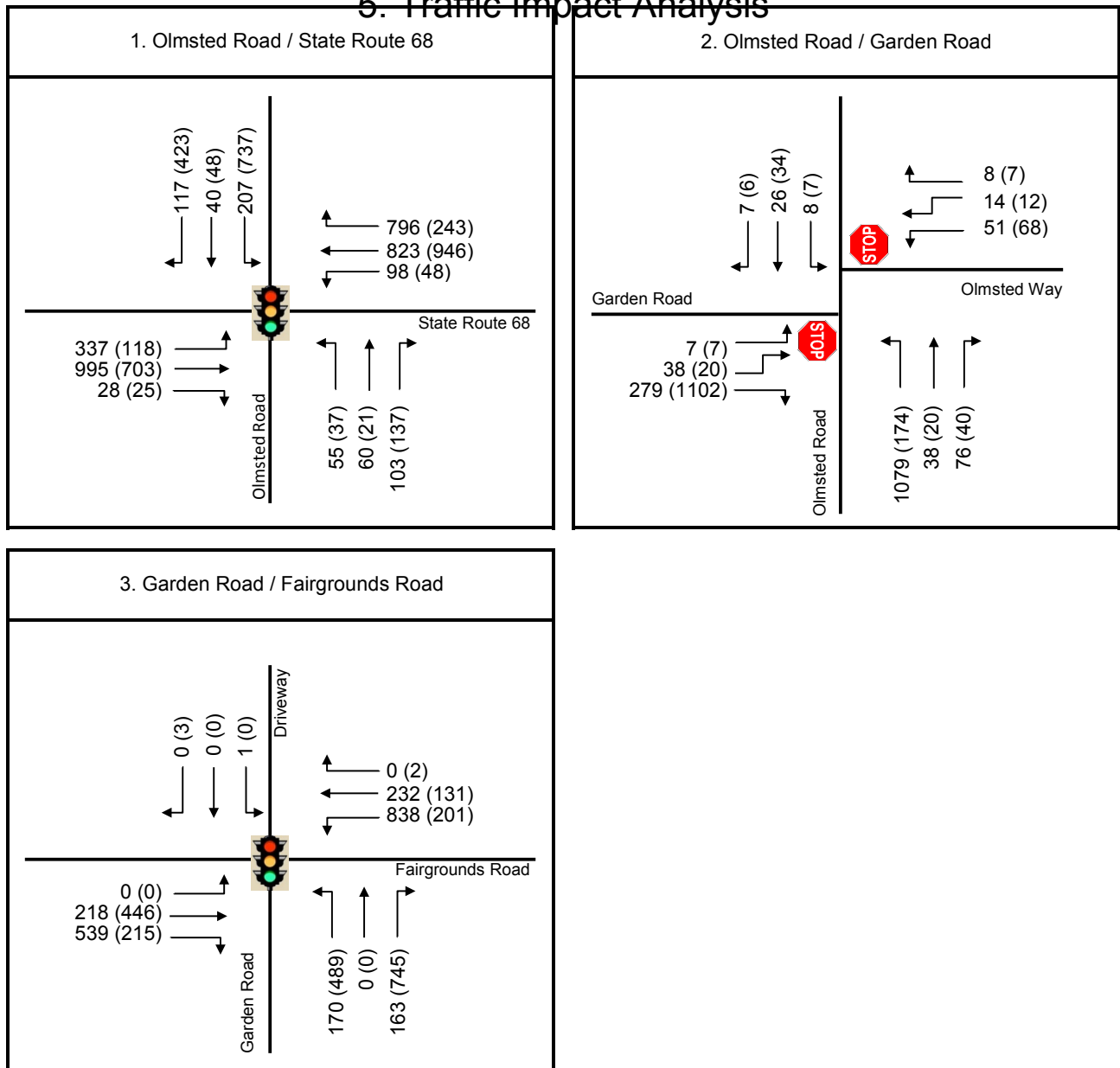
**Existing Plus Maximum Residential
Plus Remaining Office Buildout
AM & PM Peak Hour Volumes**

Keith Higgins
Traffic Engineer

5. Traffic Impact Analysis

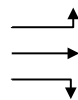


5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



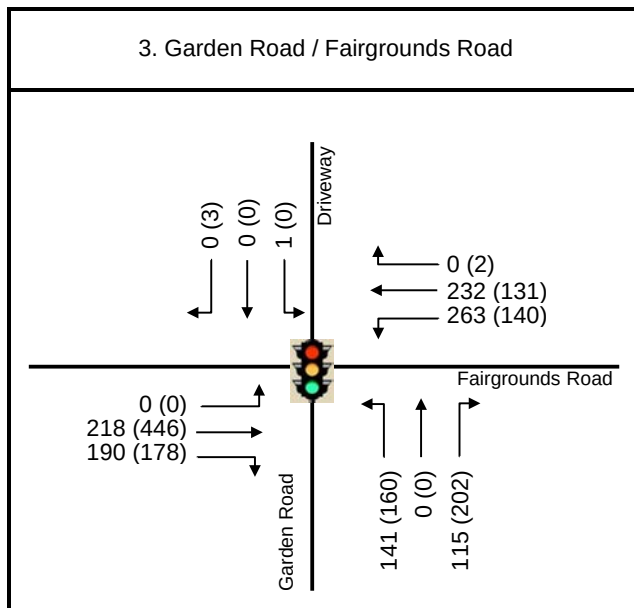
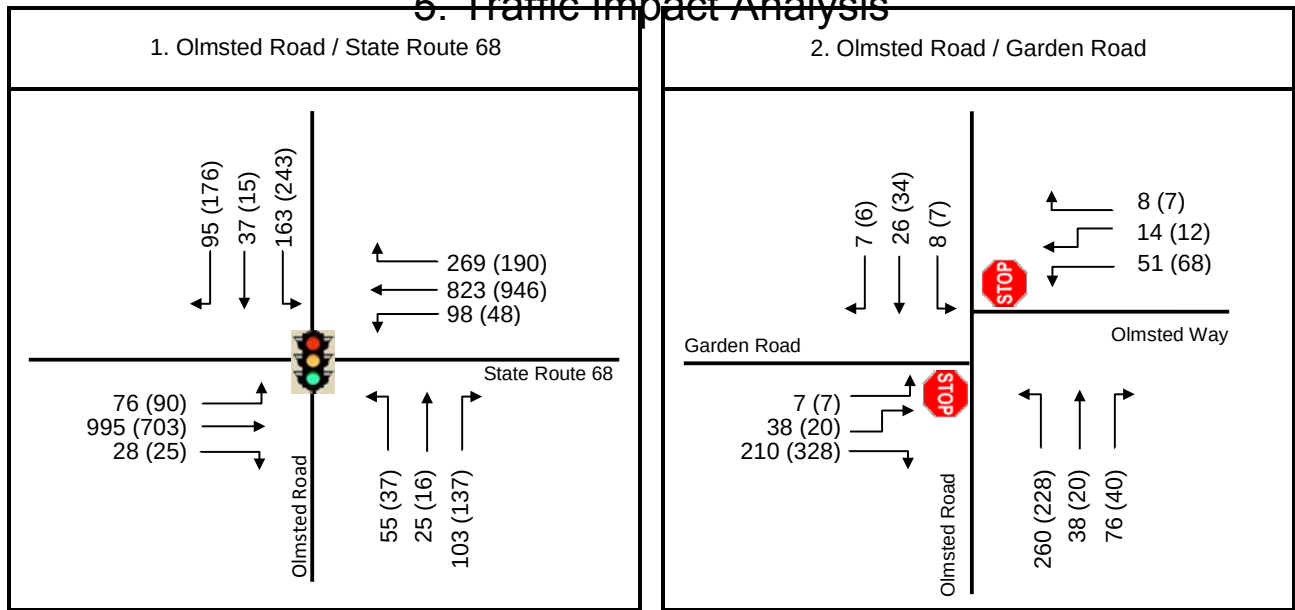
Traffic Signal

Exhibit 14

Keith Higgins
Traffic Engineer

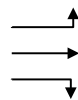
**Cumulative Plus Office Buildout
AM & PM Peak Hour Volumes**

5. Traffic Impact Analysis



LEGEND

XX (YY) = AM (PM)



Traffic Movement



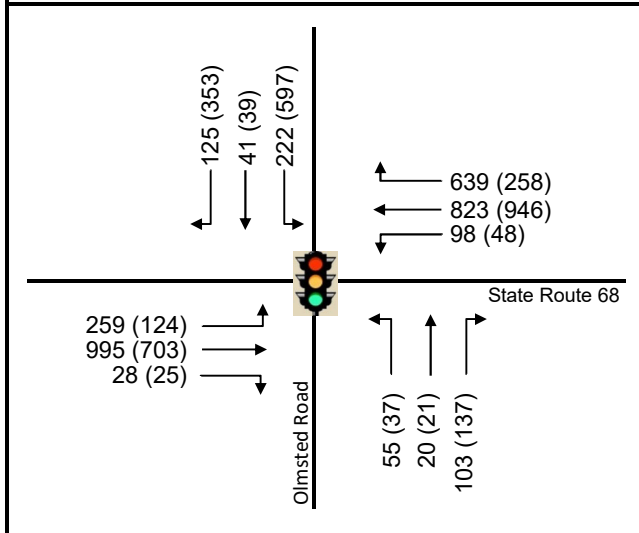
Stop Sign



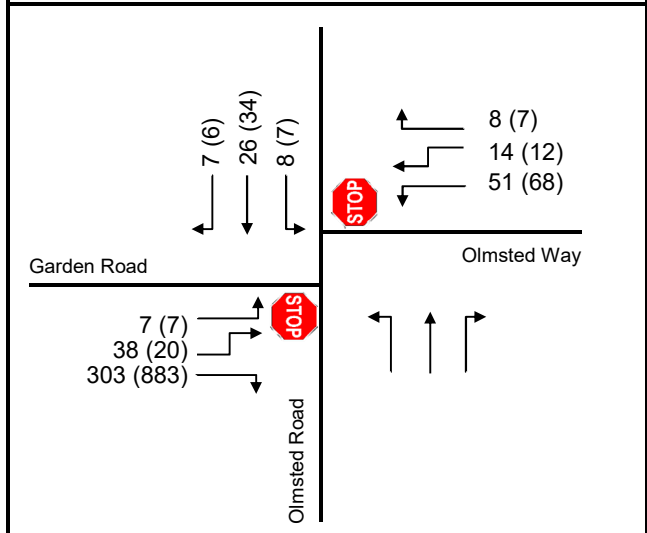
Traffic Signal

5. Traffic Impact Analysis

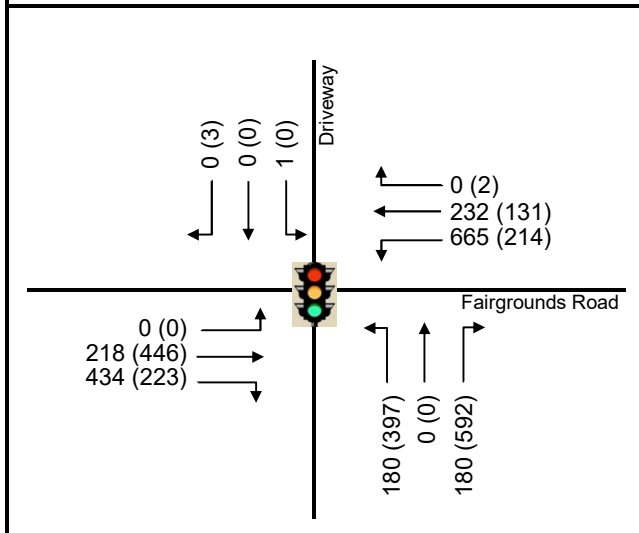
1. Olmsted Road / State Route 68



2. Olmsted Road / Garden Road

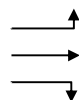


3. Garden Road / Fairgrounds Road



LEGEND

XX (YY) = AM (PM)



Traffic Movement



Stop Sign



Traffic Signal

Exhibit 16

**Cumulative Plus Maximum Residential
Plus Remaining Office Buildout
AM & PM Peak Hour Volumes**

Keith Higgins
Traffic Engineer

5. Traffic Impact Analysis

Garden Road Average Trip Lengths				
RESIDENTIAL: HOME-BASED TRIPS				
	Home to Work	Home to Shopping	Home to Other	Weighted Average
Trip Length (miles)	10.8	7.3	7.5	
Percent of Total Trips	44.0%	18.8%	37.2%	100.0%
Total	4.8	1.4	2.8	8.9
OFFICE: WORK-BASED TRIPS				
	Work to Home	Commercial to Work	Weighted Average	
Trip Length (miles)	10.8	9.5		
Percent of Total Trips	47.0%	53.0%	100.0%	
Total	5.1	5.0		10.1
Source: California Emissions Estimator Model (CalEEMod), Appendix D - Default Data Tables, pg D-85, for Monterey County, October 2017				

Garden Road Daily Vehicle-Miles Traveled			
Land Use Alternative	ADT	Average VMT	Daily Vehicle-Miles Traveled
Existing Office	4,947	10.1	50,019
Office Buildout	15,454	10.1	156,255
Office to Residential Conversion w/ New Residential (Max. Residential) - Difference from Baseline	1,010	8.9	9,004 -147,251
Office to Residential Conversion With Remaining Existing and Potential Future Office - Difference from Baseline	12,919	9.8	127,076 -29,179

Note: Average VMT for Residential Conversion with Remaining Existing and Potential Future Office is weighted average of office and residential VMTs based on relative amount office and residential ADTs for this scenario.

5. Traffic Impact Analysis

ESAL to TI Conversion	
Total ESAL	TI
4,710	5.0
10,900	5.5
23,500	6.0
47,300	6.5
89,800	7.0
164,000	7.5
288,000	8.0
487,000	8.5
798,000	9.0
1,270,000	9.5
1,980,000	10.0
3,020,000	10.5
4,500,000	11.0
6,600,000	11.5
9,490,000	12.0
13,500,000	12.5
19,800,000	13.0
26,100,000	13.5
35,600,000	14.0
48,100,000	14.5
64,300,000	15.0
84,700,000	15.5
112,000,000	16.0
144,000,000	16.5
186,000,000	17.0
238,000,000	17.5
303,000,000	18.0

Traffic Index Calculation

Street: Garden Road Year: 2018

Segment: Olmsted Road to Fairgrounds Road

Scenario: Existing

20-Year Pavement Loading Forecast

ADT: Existing 4,982 vehicles/day No. of Lanes: 2 lanes
Existing + Project 5,303 vehicles/day Percent Increase: 6.4%

Vehicle Type	Existing				Future			
	Volume (Daily)	%Trucks	ESAL Loading		Volume (Daily)	ESAL Loading		
			Unit (20-Year)	Total		Unit (20-Year)	Total	
2-Axle	164	3.3%	1,380	226,320	174.6	1,380	240,880	
3-Axle	91	1.8%	3,680	334,880	96.9	3,680	356,423	
4-Axle	1	0.0%	5,880	5,880	1.1	5,880	6,258	
5 or more Axles	3	0.1%	13,780	41,340	3.2	13,780	43,999	
Total:	259	5.2%		608,420	275.7		647,561	
			Per Lane:	304,210		Per Lane:	323,780	

TI Value: 8.0

- Notes:
- 1. ESAL unit values from Table 613.3A of *Highway Design Manual*, 6th Edition, California Department of Transportation, November 20, 2017.
 - 2. ESAL-to-TI conversions from Table 613.3C of *Highway Design Manual*, 6th Edition, California Department of Transportation, November 20, 2017.

Appendix A

Level of Service Descriptions

5. Traffic Impact Analysis

APPENDIX A1

LEVEL OF SERVICE (LOS) DESCRIPTION SIGNALIZED INTERSECTIONS

The capacity of an urban street is related primarily to the signal timing and the geometric characteristics of the facility as well as to the composition of traffic on the facility. Geometrics are a fixed characteristic of a facility. Thus, while traffic composition may vary somewhat over time, the capacity of a facility is generally a stable value that can be significantly improved only by initiating geometric improvements. A traffic signal essentially allocates time among conflicting traffic movements that seek to use the same space. The way in which time is allocated significantly affects the operation and the capacity of the intersection and its approaches.

The methodology for signalized intersection is designed to consider individual intersection approaches and individual lane groups within approaches. A lane group consists of one or more lanes on an intersection approach. The outputs from application of the method described in the HCM 2010 are reported on the basis of each lane. For a given lane group at a signalized intersection, three indications are displayed: green, yellow and red. The red indication may include a short period during which all indications are red, referred to as an all-red interval and the yellow indication forms the change and clearance interval between two green phases.

The methodology for analyzing the capacity and level of service must consider a wide variety of prevailing conditions, including the amount and distribution of traffic movements, traffic composition, geometric characteristics, and details of intersection signalization. The methodology addresses the capacity, LOS, and other performance measures for lane groups and the intersection approaches and the LOS for the intersection as a whole.

Capacity is evaluated in terms of the ratio of demand flow rate to capacity (v/c ratio), whereas LOS is evaluated on the basis of control delay per vehicle (in seconds per vehicle). The methodology does not take into account the potential impact of downstream congestion on intersection operation, nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation.

LEVEL OF SERVICE (LOS) CRITERIA FOR SIGNALIZED INTERSECTIONS

(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	<10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 - 80
F	>80

5. Traffic Impact Analysis

APPENDIX A2

LEVEL OF SERVICE (LOS) DESCRIPTION UNSIGNALIZED INTERSECTIONS WITH TWO-WAY STOP CONTROL (TWSC)

TWSC intersections are widely used and stop signs are used to control vehicle movements at such intersections. At TWSC intersections, the stop-controlled approaches are referred to as the minor street approaches; they can be either public streets or private driveways. The intersection approaches that are not controlled by stop signs are referred to as the major street approaches. A three-leg intersection is considered to be a standard type of TWSC intersection if the single minor street approach (i.e. the stem of the T configuration) is controlled by a stop sign. Three-leg intersections where two of the three approaches are controlled by stop signs are a special form of unsignalized intersection control.

At TWSC intersections, drivers on the controlled approaches are required to select gaps in the major street flow through which to execute crossing or turning maneuvers on the basis of judgment. In the presence of a queue, each driver on the controlled approach must use some time to move into the front-of-queue position and prepare to evaluate gaps in the major street flow. Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the major street. Both gap acceptance and empirical models have been developed to describe this interaction.

Thus, the capacity of the controlled legs is based on three factors:

- the distribution of gaps in the major street traffic stream;
- driver judgment in selecting gaps through which to execute the desired maneuvers; and
- the follow-up time required by each driver in a queue.

The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incident, control, traffic or geometric delay. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation and referred to as level of service.

LEVEL OF SERVICE (LOS) CRITERIA FOR TWSC INTERSECTIONS

(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

5. Traffic Impact Analysis

APPENDIX A3

LEVEL OF SERVICE THRESHOLD VOLUMES FOR VARIOUS ROADWAY TYPES TOTAL DAILY VOLUMES IN BOTH DIRECTIONS (ADT)

ROADWAY TYPE	CODE	LOS A	LOS B	LOS C	LOS D	LOS E
10-Lane Freeway	10F	71,000	110,000	154,000	178,000	202,000
8-Lane Freeway	8F	56,000	88,000	124,000	151,000	162,000
6-Lane Freeway	6F	43,000	66,000	94,000	113,000	122,000
8-Lane Expressway	8E	35,000	54,000	75,000	90,000	98,000
6-Lane Expressway	6E	28,000	42,000	56,000	67,000	74,000
4-Lane Freeway	4F	29,000	44,000	63,000	77,000	82,000
8-Lane Divided Arterial (w/ left-turn lane)	9	40,000	47,000	54,000	61,000	68,000
6-Lane Divided Arterial (w/ left-turn lane)	7	32,000	38,000	43,000	49,000	54,000
4-Lane Expressway	4E	18,000	27,000	36,000	45,000	50,000
4-Lane Divided Arterial (w/ left-turn lane)	5	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial (no left-turn lane)	4	16,000	19,000	22,000	24,000	27,000
2-Lane Rural Highway	2R	4,000	8,000	12,000	17,000	25,000
2-Lane Arterial (w/ left-turn lane)	3	11,000	12,500	14,500	16,000	18,000
2-Lane Collector	2	6,000	7,500	9,000	10,500	12,000
2-Lane Local	1	1,200	1,400	1,600	1,800	2,000
1-Lane Freeway Diamond Ramp	1D	11,000	12,800	14,700	16,500	18,300
2-Lane Freeway Diamond Ramp	2D	22,000	25,600	29,400	33,000	36,600
1-Lane Freeway Loop Ramp	1L	9,000	10,500	12,000	13,500	15,000
2-Lane Freeway Loop Ramp	2L	16,000	18,700	21,300	24,000	26,700

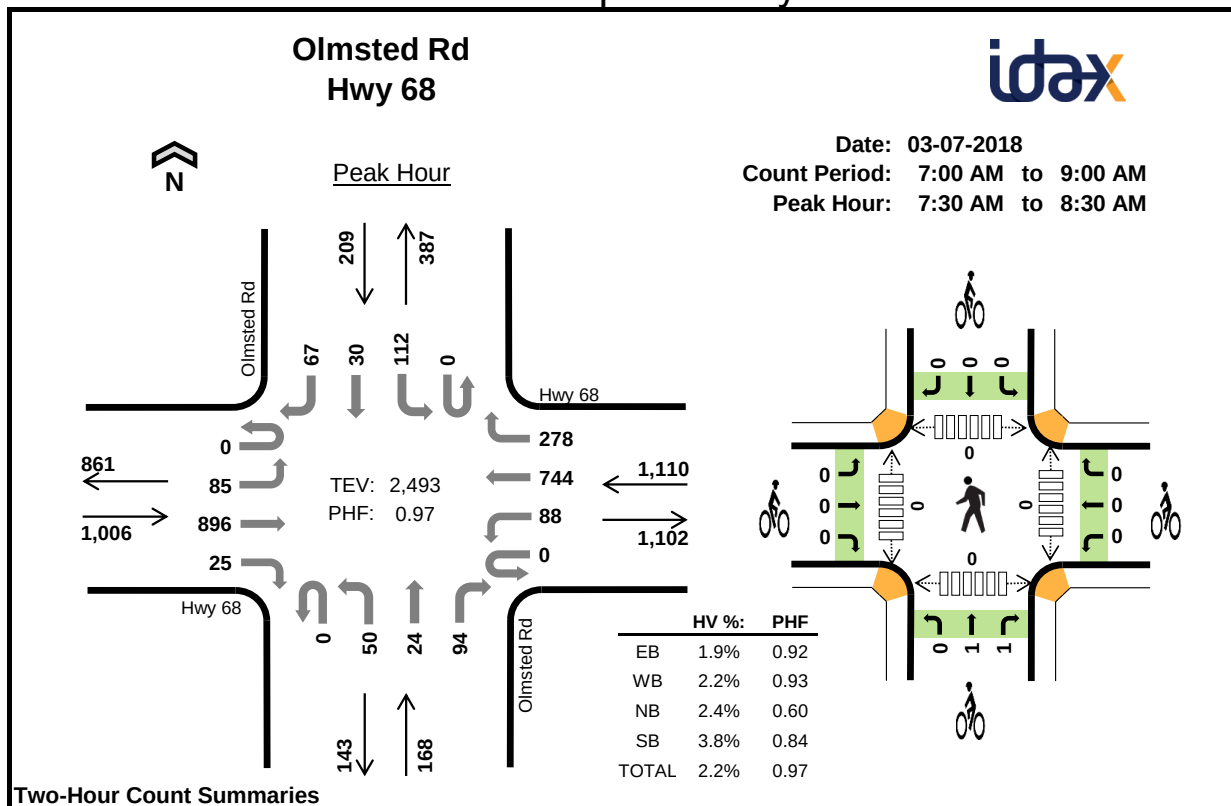
Notes:

1. The above threshold volumes for preliminary planning purposes only. If available, the results of detailed level of service analyses will typically have priority over the levels of service derived from this table. In that case this table can be used by the analyst for providing additional considerations for recommending the appropriate general roadway type for the specific condition being analyzed.
2. All above facilities assume a 60%/40% peak hour directional split. All above facilities assume peak hour representing approximately 10% of the Average Daily Traffic (ADT), except for mainline freeway facilities, which assume peak hour representing 9% of the Average Daily Traffic (ADT).
3. Based on *Highway Capacity Manual*, Transportation Research Board, 2010.
4. Freeway thresholds are consistent with conditions utilizing a .95 peak hour factor, with 2% trucks and slightly over a one-mile average interchange spacing.
5. Expressways are consistent with the average of a multi-lane highway (with no signals) and Class 1 arterial (with an average signal spacing of 0.8 signals per mile and a .45 G/C ratio).
6. Arterial thresholds are consistent with the average of Class 1 and Class 2 arterials with an assumed signal density of two signals per mile. This assumes a divided arterial with left-turn lanes. Thresholds for four-lane undivided arterials assume approximately three-fourths the capacity of a four-lane divided arterial due to the impedance in traffic flow resulting from left-turning vehicles waiting in the inside through lane, thus significantly reducing the capacity of the roadway.
7. Rural highways are generally consistent with the *2010 Highway Capacity Manual* rural highway, assuming 8% trucks, 4% RV's, 20% no-passing, and level terrain. The greatest difference is that it assumes a maximum capacity (upper end of LOS E) of 25,000 rather than the 28,000 calculated using the new *Highway Capacity Manual*.
8. Two-lane collectors assume approximately three-fourths of the capacity of a two-lane arterial with left-turn lanes. This is based on the assumption that left-turn channelization is not provided on a two-lane collector.
9. Local street level of service thresholds are based upon "Neighborhood Traffic Related Quality-of-Life Considerations" which assumes a standard suburban neighborhood, 40-foot roadway width, and 25 mile per hour speed limit with normal speed violation rates.
10. Capacities for Diamond Ramps and Loop Ramps may be slightly higher or lower than the planning level capacities indicated above. The *2010 Highway Capacity Manual* (2010 HCM) states that the capacity of a one-lane diamond to be 2,200 vehicles per hour (vph), and 1,800 vph for a small radius loop ramp. Two-lane freeway ramp capacities are estimated in the 2010 HCM to be 4,400vph for a two-lane diamond, and 3,200vph for a two-lane small radius loop. Varying intermediate capacities are provided for incremental conditions between these extremes. Capacities given for each service level assume the same level of service for the adjoining merging roadway as well as level of service being determined by volume-to-capacity and not attainable speed. Level of service will be controlled by freeway level of service if worse than ramp. Mitigations of level of service deficiencies may include the addition of a lane on the freeway ramp, the addition of an auxiliary lane on the freeway mainline, the addition of approach lanes at the ramp junction with the local intersecting street, and/or geometric modifications to improve the efficiency of the ramp itself or its termini. The appropriate mitigation should be determined on a case-by-case basis, considering freeway main line volumes and weaving, the extent that the freeway ramp volume exceeds the above planning thresholds, and the level of service of the ramp intersection with the local street.
11. All volumes are approximate and assume ideal roadway characteristics.

Appendix B

Existing Turning Movement Counts

5. Traffic Impact Analysis



Two-Hour Count Summaries

Interval Start		Hwy 68				Hwy 68				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	7:00 AM	0	17	165	4	0	4	174	34	0	2	3	6	0	8	3	15	435	0
	7:15 AM	0	13	208	3	0	15	174	44	0	10	2	10	0	31	1	10	521	0
	7:30 AM	0	14	221	9	0	26	199	72	0	15	4	20	0	20	6	12	618	0
	7:45 AM	0	15	194	8	0	37	188	71	0	21	9	40	0	30	19	12	644	2,218
	8:00 AM	0	32	238	2	0	11	184	70	0	10	8	22	0	30	4	14	625	2,408
	8:15 AM	0	24	243	6	0	14	173	65	0	4	3	12	0	32	1	29	606	2,493
	8:30 AM	0	28	188	5	0	6	188	40	0	8	2	7	0	23	2	27	524	2,399
	8:45 AM	0	39	183	7	0	8	190	63	0	3	3	6	0	15	0	25	542	2,297
Count Total		0	182	1,640	44	0	121	1,470	459	0	73	34	123	0	189	36	144	4,515	0
Peak Hour	All	0	85	896	25	0	88	744	278	0	50	24	94	0	112	30	67	2,493	0
	HV	0	1	17	1	0	0	16	8	0	1	0	3	0	4	2	2	55	0
	HV%	-	1%	2%	4%	-	0%	2%	3%	-	2%	0%	3%	-	4%	7%	3%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	6	0	0	8	0	0	0	0	0	0	2	0	0	2
7:15 AM	5	2	0	1	8	0	0	0	0	0	0	0	0	0	0
7:30 AM	5	5	0	0	10	0	0	0	0	0	0	0	0	0	0
7:45 AM	6	5	3	3	17	0	0	1	0	1	0	0	0	0	0
8:00 AM	5	5	1	1	12	0	0	0	0	0	0	0	0	0	0
8:15 AM	3	9	0	4	16	0	0	1	0	1	0	0	0	0	0
8:30 AM	6	4	1	1	12	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	8	0	2	12	0	0	0	0	0	0	0	0	0	0
Count Total	34	44	5	12	95	0	0	2	0	2	0	2	0	0	2
Peak Hour	19	24	4	8	55	0	0	2	0	2	0	0	0	0	0

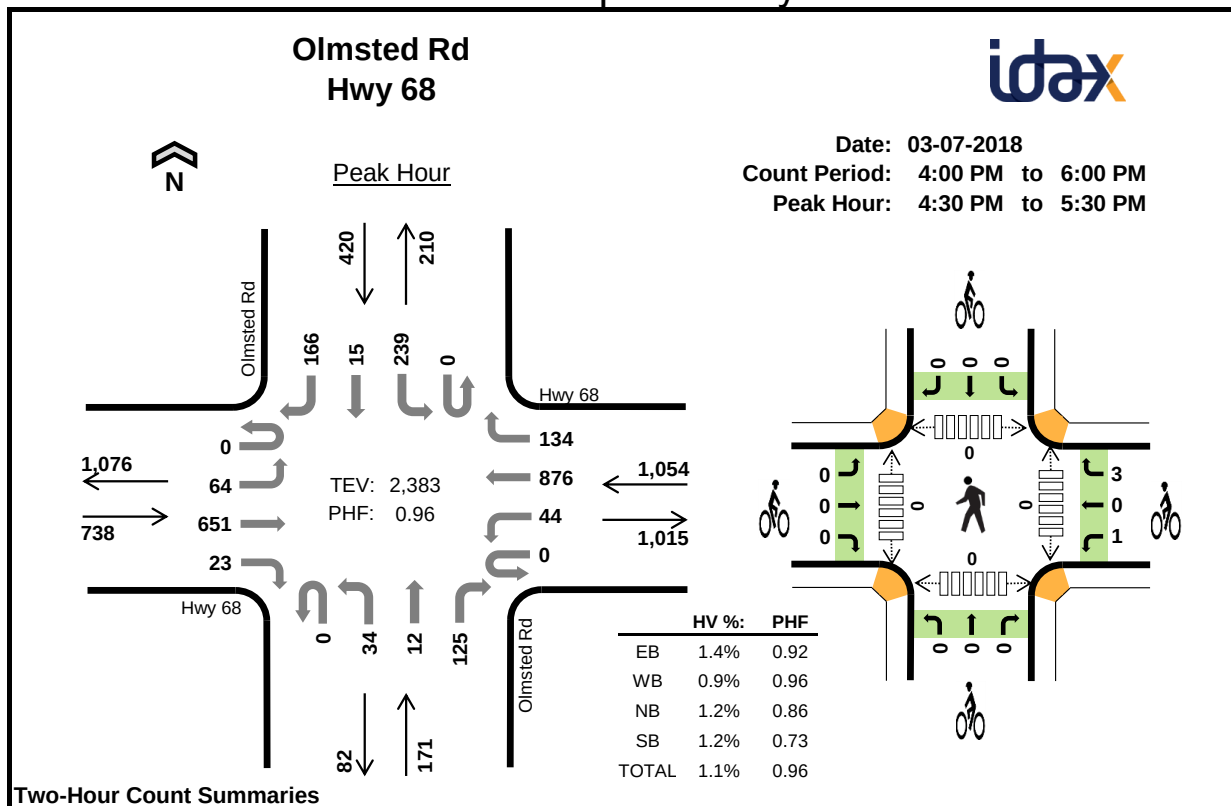
5. Traffic Impact Analysis

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hwy 68				Hwy 68				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	1	5	0	0	0	0	0	0	0	0	0	8	0
7:15 AM	0	0	5	0	0	0	1	1	0	0	0	0	0	0	1	0	8	0
7:30 AM	0	0	5	0	0	0	4	1	0	0	0	0	0	0	0	0	10	0
7:45 AM	0	0	5	1	0	0	2	3	0	0	0	3	0	1	2	0	17	43
8:00 AM	0	1	4	0	0	0	3	2	0	1	0	0	0	1	0	0	12	47
8:15 AM	0	0	3	0	0	0	7	2	0	0	0	0	0	2	0	2	16	55
8:30 AM	0	0	6	0	0	0	4	0	0	1	0	0	0	0	0	1	12	57
8:45 AM	0	0	2	0	0	0	7	1	0	0	0	0	0	1	0	1	12	52
Count Total	0	1	32	1	0	1	33	10	0	2	0	3	0	6	2	4	95	0
Peak Hour	0	1	17	1	0	0	16	8	0	1	0	3	0	4	2	2	55	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Hwy 68			Hwy 68			Olmsted Rd			Olmsted Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
Count Total	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0		
Peak Hour	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0		

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

5. Traffic Impact Analysis



Interval Start		Hwy 68				Hwy 68				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	11	169	1	0	7	213	31	0	6	2	19	0	51	5	38	553	0
4:15 PM		0	13	164	1	0	7	211	26	0	7	4	19	0	37	3	33	525	0
4:30 PM		0	15	177	8	0	9	230	35	0	14	2	34	0	54	5	37	620	0
4:45 PM		0	17	162	6	0	10	223	35	0	5	6	36	0	45	1	40	586	2,284
5:00 PM		0	12	154	7	0	11	217	25	0	8	3	26	0	79	4	61	607	2,338
5:15 PM		0	20	158	2	0	14	206	39	0	7	1	29	0	61	5	28	570	2,383
5:30 PM		0	18	161	3	0	13	244	41	0	4	3	18	0	40	2	23	570	2,333
5:45 PM		0	36	139	4	0	11	178	32	0	3	4	12	0	41	0	21	481	2,228
Count Total		0	142	1,284	32	0	82	1,722	264	0	54	25	193	0	408	25	281	4,512	0
Peak Hour	All	0	64	651	23	0	44	876	134	0	34	12	125	0	239	15	166	2,383	0
	HV	0	1	9	0	0	0	6	4	0	0	0	2	0	5	0	0	27	0
	HV%	-	2%	1%	0%	-	0%	1%	3%	-	0%	0%	2%	-	2%	0%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	2	0	1	4	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0
4:30 PM	2	4	0	3	9	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	2	0	1	5	0	1	0	0	1	0	0	0	0	0
5:00 PM	3	1	1	1	6	0	0	0	0	0	0	0	0	0	0
5:15 PM	3	3	1	0	7	0	3	0	0	3	0	0	0	0	0
5:30 PM	3	3	0	0	6	0	0	0	0	0	0	3	0	0	3
5:45 PM	3	0	0	2	5	0	0	0	0	0	0	0	0	0	0
Count Total	18	16	2	9	45	0	4	0	0	4	0	3	0	0	3
Peak Hour	10	10	2	5	27	0	4	0	0	4	0	0	0	0	0

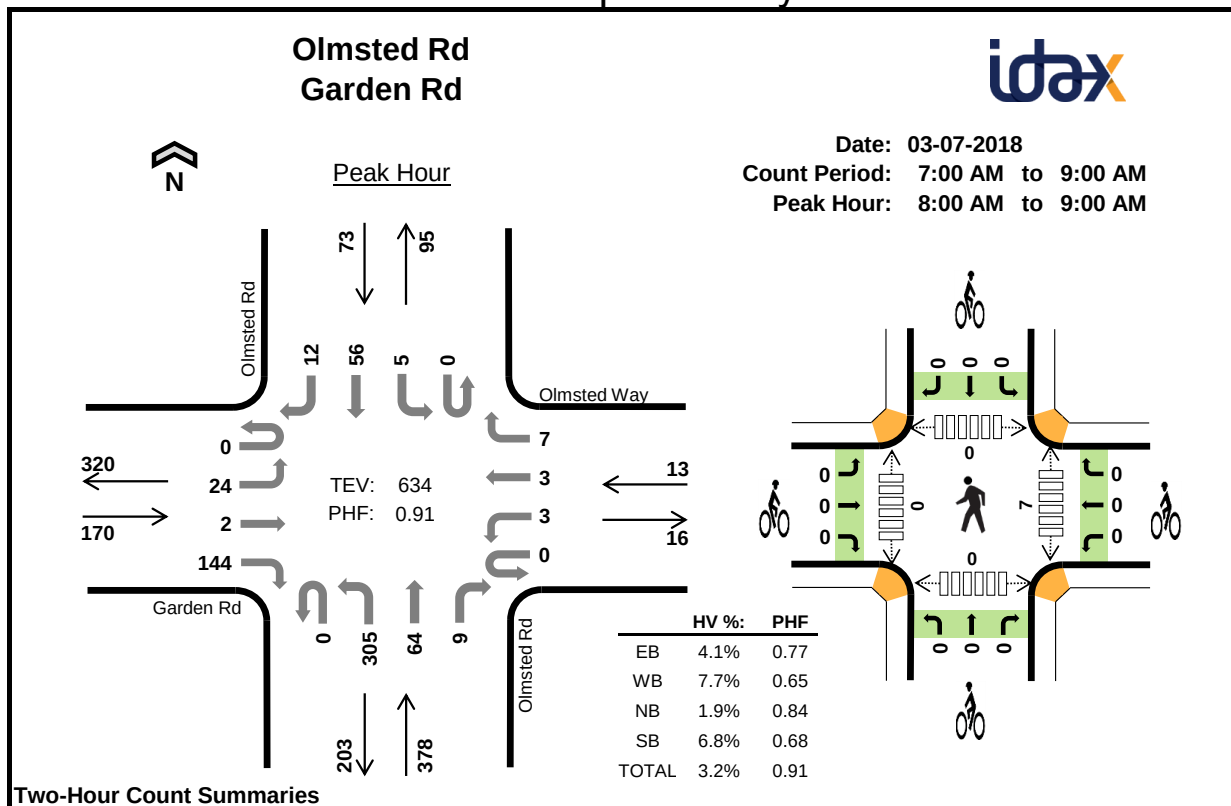
5. Traffic Impact Analysis

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hwy 68				Hwy 68				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	4	0
4:15 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	3	0
4:30 PM	0	0	2	0	0	0	3	1	0	0	0	0	0	3	0	0	9	0
4:45 PM	0	0	2	0	0	0	1	1	0	0	0	0	0	1	0	0	5	21
5:00 PM	0	1	2	0	0	0	1	0	0	0	0	1	0	1	0	0	6	23
5:15 PM	0	0	3	0	0	0	1	2	0	0	0	1	0	0	0	0	7	27
5:30 PM	0	0	3	0	0	0	1	2	0	0	0	0	0	0	0	0	6	24
5:45 PM	0	1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	5	24
Count Total	0	2	16	0	0	0	8	8	0	0	0	2	0	9	0	0	45	0
Peak Hour	0	1	9	0	0	0	6	4	0	0	0	2	0	5	0	0	27	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Hwy 68			Hwy 68			Olmsted Rd			Olmsted Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	1				
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
5:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	3	4				
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3				
Count Total	0	0	0	1	0	3	0	0	0	0	0	0	4	0				
Peak Hour	0	0	0	1	0	3	0	0	0	0	0	0	4	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

5. Traffic Impact Analysis



Interval Start		Garden Rd				Olmsted Way				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	7:00 AM	0	2	0	20	0	1	0	0	0	46	11	0	0	1	7	1	89	0
	7:15 AM	0	1	0	33	0	0	0	1	1	54	3	1	0	0	1	0	95	0
	7:30 AM	0	3	1	35	0	0	0	1	0	75	5	0	0	0	3	1	124	0
	7:45 AM	0	1	0	54	0	0	0	0	0	87	6	2	0	0	1	0	151	459
	8:00 AM	0	6	1	42	0	1	0	1	0	90	23	0	0	0	6	5	175	545
	8:15 AM	0	6	0	49	0	1	0	1	0	83	11	2	0	2	12	0	167	617
	8:30 AM	0	8	0	29	0	0	2	3	0	50	11	5	0	2	23	2	135	628
	8:45 AM	0	4	1	24	0	1	1	2	0	82	19	2	0	1	15	5	157	634
Count Total		0	31	3	286	0	4	3	9	1	567	89	12	0	6	68	14	1,093	0
Peak Hour	All	0	24	2	144	0	3	3	7	0	305	64	9	0	5	56	12	634	0
	HV	0	1	0	6	0	1	0	0	0	3	3	1	0	0	1	4	20	0
	HV%	-	4%	0%	4%	-	33%	0%	0%	-	1%	5%	11%	-	0%	2%	33%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	2	0	3	0	0	0	0	0	1	0	0	0	1
7:45 AM	3	0	2	0	5	0	0	1	0	1	0	0	0	0	0
8:00 AM	0	1	4	1	6	0	0	0	0	0	1	0	0	0	1
8:15 AM	3	0	2	1	6	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	0	0	1	0	0	0	0	0	4	0	0	0	4
8:45 AM	3	0	1	3	7	0	0	0	0	0	2	0	0	0	2
Count Total	14	1	11	5	31	0	0	1	0	1	8	0	0	0	8
Peak Hour	7	1	7	5	20	0	0	0	0	0	7	0	0	0	7

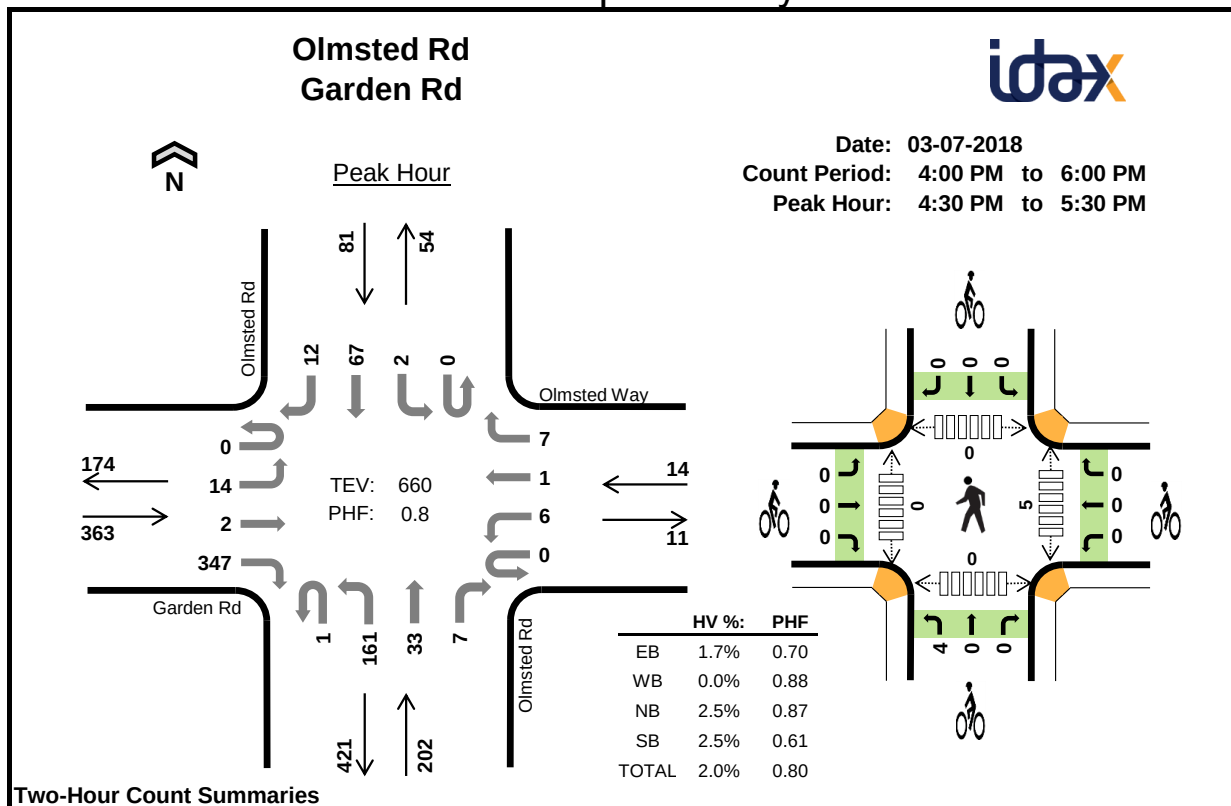
5. Traffic Impact Analysis

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Garden Rd				Olmsted Way				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	0
7:45 AM	0	0	0	3	0	0	0	0	0	0	1	1	0	0	0	0	5	11
8:00 AM	0	0	0	0	0	1	0	0	0	2	2	0	0	0	0	1	6	15
8:15 AM	0	0	0	3	0	0	0	0	0	1	0	1	0	0	1	0	6	20
8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	18
8:45 AM	0	1	0	2	0	0	0	0	0	0	1	0	0	0	0	3	7	20
Count Total	0	3	0	11	0	1	0	0	0	5	4	2	0	0	1	4	31	0
Peak Hour	0	1	0	6	0	1	0	0	0	3	3	1	0	0	1	4	20	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Garden Rd			Olmsted Way			Olmsted Rd			Olmsted Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	1				
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	0	0	1	0	0	0	0	0	1	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

5. Traffic Impact Analysis



Interval Start		Garden Rd				Olmsted Way				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	4:00 PM	0	4	0	80	1	3	1	3	1	32	13	1	1	1	13	3	157	0
	4:15 PM	0	2	1	64	0	4	3	0	0	34	5	4	0	0	5	1	123	0
	4:30 PM	0	2	0	77	0	3	0	1	0	33	13	2	0	0	13	1	145	0
	4:45 PM	0	5	0	64	0	1	0	3	0	45	12	1	0	2	23	3	159	584
	5:00 PM	0	6	1	122	0	1	0	3	1	33	4	1	0	0	26	7	205	632
	5:15 PM	0	1	1	84	0	1	1	0	0	50	4	3	0	0	5	1	151	660
	5:30 PM	0	1	0	63	0	1	1	2	0	51	8	5	0	1	2	1	136	651
	5:45 PM	0	1	1	50	0	4	0	0	0	58	11	1	0	0	8	3	137	629
Count Total		0	22	4	604	1	18	6	12	2	336	70	18	1	4	95	20	1,213	0
Peak Hour	All	0	14	2	347	0	6	1	7	1	161	33	7	0	2	67	12	660	0
	HV	0	3	0	3	0	0	0	0	0	1	1	3	0	0	2	0	13	0
	HV%	-	21%	0%	1%	-	0%	0%	0%	0%	1%	3%	43%	-	0%	3%	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	1	0	2	0	0	0	0	0	1	0	0	0	1
4:15 PM	1	0	2	0	3	0	0	1	0	1	5	0	0	0	5
4:30 PM	3	0	1	1	5	0	0	0	0	0	3	0	0	0	3
4:45 PM	2	0	1	1	4	0	0	0	0	0	1	0	0	0	1
5:00 PM	1	0	1	0	2	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	2	0	2	0	0	4	0	4	0	0	0	0	0
5:30 PM	0	0	2	0	2	0	0	0	0	0	3	0	0	0	3
5:45 PM	0	2	1	0	3	1	0	0	0	1	1	0	0	0	1
Count Total	8	2	11	2	23	1	0	5	0	6	15	0	0	0	15
Peak Hour	6	0	5	2	13	0	0	4	0	4	5	0	0	0	5

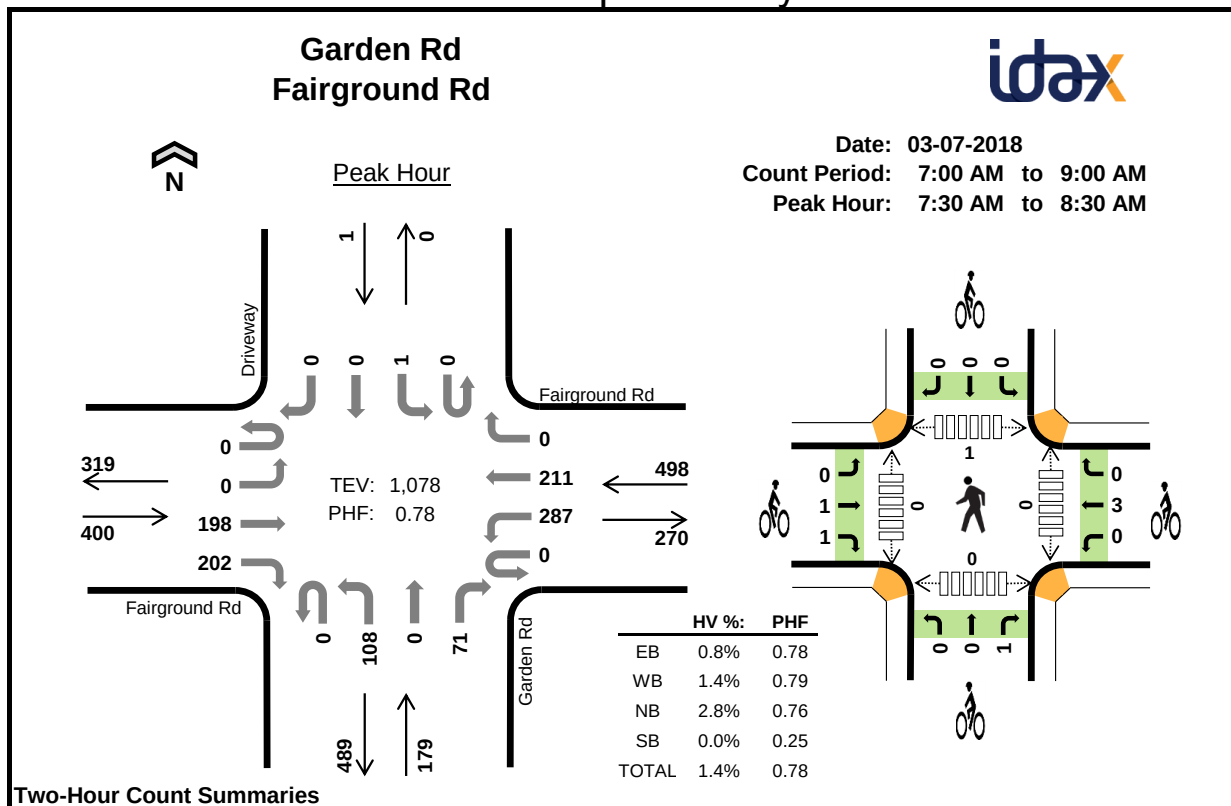
5. Traffic Impact Analysis

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Garden Rd				Olmsted Way				Olmsted Rd				Olmsted Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0
4:15 PM	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0
4:30 PM	0	1	0	2	0	0	0	0	0	1	0	0	0	0	0	1	0	5	0
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	4	14
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	14
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	2	13
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	10
5:45 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	3	9
Count Total	0	3	0	5	0	2	0	0	0	6	1	4	4	0	0	2	0	23	0
Peak Hour	0	3	0	3	0	0	0	0	0	1	1	3	3	0	0	2	0	13	0

Two-Hour Count Summaries - Bikes																			
Interval Start	Garden Rd			Olmsted Way			Olmsted Rd			Olmsted Rd			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	5
Count Total	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	6	0	0
Peak Hour	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

5. Traffic Impact Analysis



Interval Start		Fairground Rd				Fairground Rd				Garden Rd				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	18	21	0	34	40	0	0	17	0	12	0	0	0	0	142	0
7:15 AM		0	1	33	34	0	43	42	0	0	30	0	10	0	0	0	0	193	0
7:30 AM		0	0	46	35	0	67	79	0	0	31	0	11	0	0	0	0	269	0
7:45 AM		0	0	68	61	0	81	76	0	0	42	0	17	0	1	0	0	346	950
8:00 AM		0	0	45	50	0	73	34	0	0	15	0	28	0	0	0	0	245	1,053
8:15 AM		0	0	39	56	0	66	22	0	0	20	0	15	0	0	0	0	218	1,078
8:30 AM		0	0	35	45	0	53	35	0	0	21	0	20	0	0	0	0	209	1,018
8:45 AM		0	0	41	53	0	70	20	0	0	33	0	31	0	0	1	0	249	921
Count Total		0	1	325	355	0	487	348	0	0	209	0	144	0	1	1	0	1,871	0
Peak Hour	All	0	0	198	202	0	287	211	0	0	108	0	71	0	1	0	0	1,078	0
	HV	0	0	1	2	0	3	4	0	0	3	0	2	0	0	0	0	15	0
	HV%	-	-	1%	1%	-	1%	2%	-	-	3%	-	3%	-	0%	-	-	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	2	2	0	7	0	0	0	0	0	1	0	0	1	2
7:15 AM	2	2	6	0	10	0	2	0	0	2	0	0	1	0	1
7:30 AM	1	3	1	0	5	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	3	0	0	4	0	3	0	0	3	0	0	0	0	0
8:00 AM	0	1	2	0	3	0	0	1	0	1	0	0	1	0	1
8:15 AM	1	0	2	0	3	2	0	0	0	2	0	0	0	0	0
8:30 AM	1	0	2	0	3	0	3	0	0	3	0	0	0	0	0
8:45 AM	1	0	4	0	5	0	2	0	0	2	0	0	0	0	0
Count Total	10	11	19	0	40	2	10	1	0	13	1	0	2	1	4
Peak Hour	3	7	5	0	15	2	3	1	0	6	0	0	1	0	1

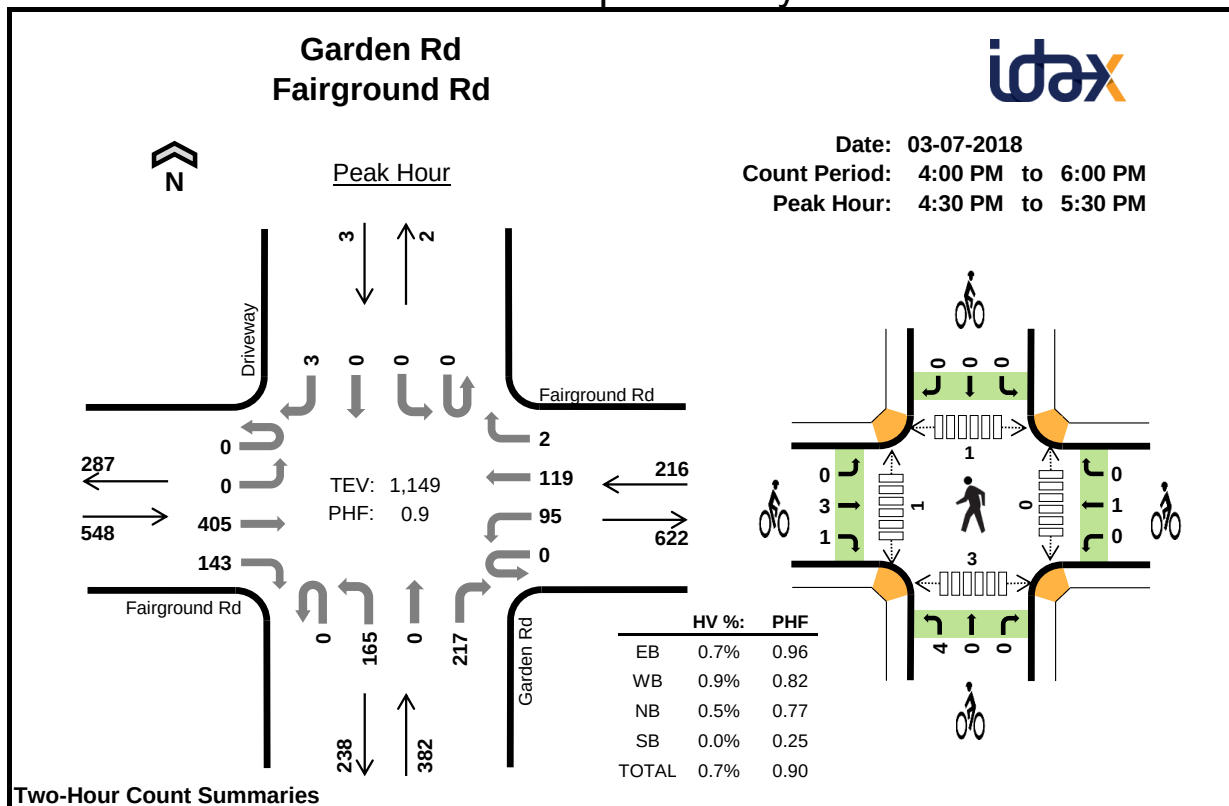
5. Traffic Impact Analysis

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Fairground Rd				Fairground Rd				Garden Rd				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	1	0	0	2	0	0	0	0	2	0	0	0	0	7	0
7:15 AM	0	0	1	1	0	0	2	0	0	0	0	6	0	0	0	0	10	0
7:30 AM	0	0	0	1	0	0	3	0	0	1	0	0	0	0	0	0	5	0
7:45 AM	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	4	26
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	22
8:15 AM	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	3	15
8:30 AM	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	3	13
8:45 AM	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	5	14
Count Total	0	0	5	5	0	3	8	0	0	4	0	15	0	0	0	0	40	0
Peak Hour	0	0	1	2	0	3	4	0	0	3	0	2	0	0	0	0	15	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Fairground Rd			Fairground Rd			Garden Rd			Driveway			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	2	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	3	0	0	0	0	0	0	0	3	5				
8:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	6				
8:15 AM	0	1	1	0	0	0	0	0	0	0	0	0	2	6				
8:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	3	9				
8:45 AM	0	0	0	0	2	0	0	0	0	0	0	0	2	8				
Count Total	0	1	1	1	9	0	0	0	1	0	0	0	13	0				
Peak Hour	0	1	1	0	3	0	0	0	1	0	0	0	6	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

5. Traffic Impact Analysis



Two-Hour Count Summaries

Interval Start		Fairground Rd				Fairground Rd				Garden Rd				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	4:00 PM	0	0	85	36	0	27	29	1	0	30	0	50	0	0	0	0	258	0
	4:15 PM	0	0	88	38	0	27	30	0	0	22	0	38	0	0	0	2	245	0
	4:30 PM	0	0	104	39	0	19	21	2	0	38	0	57	0	0	0	0	280	0
	4:45 PM	0	0	113	29	0	28	38	0	0	38	0	30	0	0	0	3	279	1,062
	5:00 PM	0	0	99	41	0	26	29	0	0	51	0	73	0	0	0	0	319	1,123
	5:15 PM	0	0	89	34	0	22	31	0	0	38	0	57	0	0	0	0	271	1,149
	5:30 PM	0	1	77	32	0	16	34	0	0	39	0	53	0	0	0	0	252	1,121
	5:45 PM	0	0	40	26	0	37	24	1	0	23	0	37	0	2	0	0	190	1,032
Count Total		0	1	695	275	0	202	236	4	0	279	0	395	0	2	0	5	2,094	0
Peak Hour	All	0	0	405	143	0	95	119	2	0	165	0	217	0	0	0	3	1,149	0
	HV	0	0	2	2	0	2	0	0	0	2	0	0	0	0	0	0	8	0
	HV%	-	-	0%	1%	-	2%	0%	0%	-	1%	-	0%	-	-	-	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	3	0	5	0	1	0	0	1	1	0	1	1	3
4:15 PM	3	4	2	0	9	0	0	0	0	0	0	0	0	1	1
4:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	1	1
4:45 PM	1	0	1	0	2	3	1	0	0	4	0	1	0	1	2
5:00 PM	0	2	1	0	3	1	0	0	0	1	0	0	0	0	0
5:15 PM	1	0	0	0	1	0	0	4	0	4	0	0	1	1	2
5:30 PM	1	1	2	0	4	1	1	0	0	2	0	0	1	1	2
5:45 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	9	9	10	0	28	5	3	4	0	12	1	1	3	6	11
Peak Hour	4	2	2	0	8	4	1	4	0	9	0	1	1	3	5

5. Traffic Impact Analysis

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Fairground Rd				Fairground Rd				Garden Rd				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	1	0	0	0	2	0	1	0	0	0	0	5	0
4:15 PM	0	0	1	2	0	2	2	0	0	1	0	1	0	0	0	0	9	0
4:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
4:45 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2	18
5:00 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3	16
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8
5:30 PM	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	4	10
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	10
Count Total	0	0	4	5	0	6	3	0	0	7	0	3	0	0	0	0	28	0
Peak Hour	0	0	2	2	0	2	0	0	0	2	0	0	0	0	0	0	8	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Fairground Rd			Fairground Rd			Garden Rd			Driveway			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:45 PM	0	2	1	0	1	0	0	0	0	0	0	0	4	5				
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	5				
5:15 PM	0	0	0	0	0	0	4	0	0	0	0	0	4	9				
5:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	2	11				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7				
Count Total	0	4	1	1	2	0	4	0	0	0	0	0	12	0				
Peak Hour	0	3	1	0	1	0	4	0	0	0	0	0	9	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix C

Level of Service Calculations

Appendix C.1 Existing Conditions

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing AM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	896	25	88	744	278	50	24	94	112	30	67
Future Volume (veh/h)	85	896	25	88	744	278	50	24	94	112	30	67
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	88	924	26	91	767	287	52	25	97	115	31	69
Adj No. of Lanes	1	1	1	1	1	1	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	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	915	905	108	915	924	67	20	325	72	11	325
Arrive On Green	0.06	0.58	0.58	0.06	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	97	1583	0	54	1583
Grp Volume(v), veh/h	88	924	26	91	767	287	77	0	97	146	0	69
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	97	0	1583	54	0	1583
Q Serve(g_s), s	4.4	52.5	0.6	4.6	35.9	8.3	0.0	0.0	4.7	0.0	0.0	3.3
Cycle Q Clear(g_c), s	4.4	52.5	0.6	4.6	35.9	8.3	18.5	0.0	4.7	18.5	0.0	3.3
Prop In Lane	1.00		1.00	1.00		1.00	0.68		1.00	0.79		1.00
Lane Grp Cap(c), veh/h	108	915	905	108	915	924	87	0	325	83	0	325
V/C Ratio(X)	0.81	1.01	0.03	0.84	0.84	0.31	0.89	0.00	0.30	1.77	0.00	0.21
Avail Cap(c_a), veh/h	108	915	905	108	915	924	87	0	325	83	0	325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.7	18.7	7.9	41.8	15.3	9.5	40.3	0.0	30.3	42.5	0.0	29.7
Incr Delay (d2), s/veh	35.5	32.2	0.0	41.3	6.9	0.2	68.8	0.0	2.3	389.2	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	3.2	30.5	0.3	3.5	17.1	3.6	3.6	0.0	2.2	11.0	0.0	1.6
LnGrp Delay(d),s/veh	77.3	50.9	8.0	83.1	22.2	9.7	109.1	0.0	32.6	431.8	0.0	31.2
LnGrp LOS	E	F	A	F	C	A	F		C	F		C
Approach Vol, veh/h	1038				1145				174		215	
Approach Delay, s/veh	52.1				23.9				66.4		303.2	
Approach LOS	D				C				E		F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.0		10.0	57.0	23.0		10.0	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.5	52.5	18.5		5.5	52.5				
Max Q Clear Time (g_c+l1), s	20.5		6.6	54.5	20.5		6.4	37.9				
Green Ext Time (p_c), s	0.0		0.0	0.0	0.0		0.0	4.9				
Intersection Summary												
HCM 2010 Ctrl Delay	61.5											
HCM 2010 LOS	E											

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Vol, veh/h	24	2	144	3	3	7	305	64	9	5	56	12
Future Vol, veh/h	24	2	144	3	3	7	305	64	9	5	56	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	90	91	91	91	91	91	91	91
Heavy Vehicles, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	26	2	158	3	3	8	335	70	10	5	62	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	823	822	62	904	830	75	75	0	0	80	0	0
Stage 1	72	72	-	745	745	-	-	-	-	-	-	-
Stage 2	751	750	-	159	85	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	290	309	997	258	306	986	1524	-	-	1518	-	-
Stage 1	933	835	-	406	421	-	-	-	-	-	-	-
Stage 2	400	419	-	843	824	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	234	237	997	177	235	986	1524	-	-	1518	-	-
Mov Cap-2 Maneuver	234	237	-	177	235	-	-	-	-	-	-	-
Stage 1	718	832	-	313	324	-	-	-	-	-	-	-
Stage 2	302	323	-	705	822	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.3		15.6		6.5		0.5					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1524	-	-	234	997	353	1518	-	-			
HCM Lane V/C Ratio	0.22	-	-	0.122	0.159	0.041	0.004	-	-			
HCM Control Delay (s)	8	0	-	22.5	9.3	15.6	7.4	0	-			
HCM Lane LOS	A	A	-	C	A	C	A	A	-			
HCM 95th %tile O(veh)	0.8	-	-	0.4	0.6	0.1	0	-	-			

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	202	287	211	0	108	0	71	1	0	0
Future Volume (veh/h)	0	198	202	287	211	0	108	0	71	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	254	259	368	271	0	138	0	91	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	271	276	424	1034	0	566	0	489	435	0	0
Arrive On Green	0.00	0.32	0.32	0.16	0.56	0.00	0.31	0.00	0.31	0.31	0.00	0.00
Sat Flow, veh/h	0	836	853	1774	1863	0	1481	0	1583	1055	0	0
Grp Volume(v), veh/h	0	0	513	368	271	0	138	0	91	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1689	1774	1863	0	1481	0	1583	1055	0	0
Q Serve(g_s), s	0.0	0.0	19.6	8.4	5.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	19.6	8.4	5.0	0.0	3.9	0.0	2.8	3.9	0.0	0.0
Prop In Lane	0.00		0.50	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	547	424	1034	0	566	0	489	435	0	0
V/C Ratio(X)	0.00	0.00	0.94	0.87	0.26	0.00	0.24	0.00	0.19	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	547	522	1137	0	566	0	489	435	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	21.8	13.8	7.7	0.0	17.2	0.0	16.8	18.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	23.9	12.4	0.1	0.0	1.0	0.0	0.8	0.0	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	0.0	0.0	12.8	5.4	2.6	0.0	2.0	0.0	1.3	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	45.7	26.2	7.8	0.0	18.2	0.0	17.6	18.6	0.0	0.0
LnGrp LOS			D	C	A		B		B	B		
Approach Vol, veh/h		513			639			229			1	
Approach Delay, s/veh		45.7			18.4			18.0			18.6	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	15.3	26.0		25.0		41.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+l1), s		5.9	10.4	21.6		5.9		7.0				
Green Ext Time (p_c), s		0.8	0.5	0.0		0.0		1.6				
Intersection Summary												
HCM 2010 Ctrl Delay				28.5								
HCM 2010 LOS				C								

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing PM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	651	23	44	876	134	34	12	125	239	15	166
Future Volume (veh/h)	64	651	23	44	876	134	34	12	125	239	15	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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	67	678	24	46	912	140	35	12	130	249	16	173
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	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	86	938	927	68	922	931	70	14	337	78	0	337
Arrive On Green	0.05	0.60	0.60	0.04	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	67	1583	0	0	1583
Grp Volume(v), veh/h	67	678	24	46	912	140	47	0	130	265	0	173
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	67	0	1583	0	0	1583
Q Serve(g_s), s	3.3	27.3	0.6	2.3	51.1	3.6	0.0	0.0	6.3	0.0	0.0	8.6
Cycle Q Clear(g_c), s	3.3	27.3	0.6	2.3	51.1	3.6	19.0	0.0	6.3	19.0	0.0	8.6
Prop In Lane	1.00		1.00	1.00		1.00	0.74		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	86	938	927	68	922	931	85	0	337	78	0	337
V/C Ratio(X)	0.78	0.72	0.03	0.68	0.99	0.15	0.56	0.00	0.39	3.39	0.00	0.51
Avail Cap(c_a), veh/h	99	938	927	99	922	931	85	0	337	78	0	337
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.0	12.7	7.3	42.4	18.1	8.3	39.0	0.0	30.2	44.7	0.0	31.1
Incr Delay (d2), s/veh	28.3	2.8	0.0	11.4	26.9	0.1	23.8	0.0	3.3	1107.2	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	2.3	12.4	0.2	1.3	28.7	1.6	1.7	0.0	3.1	26.0	0.0	4.3
LnGrp Delay(d),s/veh	70.4	15.5	7.3	53.8	45.0	8.4	62.7	0.0	33.5	1151.9	0.0	36.6
LnGrp LOS	E	B	A	D	D	A	E		C	F		D
Approach Vol, veh/h		769			1098			177			438	
Approach Delay, s/veh		20.0			40.7			41.2			711.4	
Approach LOS		C			D			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.5	7.9	57.9		23.5	8.8	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.0	52.5		19.0	5.0	52.5				
Max Q Clear Time (g_c+I1), s		21.0	4.3	29.3		21.0	5.3	53.1				
Green Ext Time (p_c), s		0.0	0.0	4.1		0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			152.7									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	14	2	347	6	1	7	162	33	7	2	67	12
Future Vol, veh/h	14	2	347	6	1	7	162	33	7	2	67	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	18	3	434	8	1	9	203	41	9	3	84	15

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	547	546	84	768	557	46	99	0
Stage 1	90	90	-	452	452	-	-	-
Stage 2	457	456	-	316	105	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-
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	2.227	-
Pot Cap-1 Maneuver	448	445	975	319	439	1023	1488	-
Stage 1	917	820	-	587	570	-	-	-
Stage 2	583	568	-	695	808	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	395	382	975	157	377	1023	1488	-
Mov Cap-2 Maneuver	395	382	-	157	377	-	-	-
Stage 1	789	818	-	505	490	-	-	-
Stage 2	496	488	-	384	806	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	18.1	6.3	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1488	-	-	393	975	293	1557	-	-
HCM Lane V/C Ratio	0.136	-	-	0.051	0.445	0.06	0.002	-	-
HCM Control Delay (s)	7.8	0	-	14.7	11.6	18.1	7.3	0	-
HCM Lane LOS	A	A	-	B	B	C	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.2	2.3	0.2	0	-	-

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	405	143	95	119	2	165	0	217	0	0	3
Future Volume (veh/h)	0	405	143	95	119	2	165	0	217	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	450	159	106	132	2	183	0	241	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
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	0	488	172	284	953	14	579	0	514	0	0	514
Arrive On Green	0.00	0.37	0.37	0.07	0.52	0.52	0.32	0.00	0.32	0.00	0.00	0.32
Sat Flow, veh/h	0	1307	462	1774	1829	28	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	609	106	0	134	183	0	241	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1769	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	19.2	1.9	0.0	2.2	5.9	0.0	7.1	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	19.2	1.9	0.0	2.2	6.0	0.0	7.1	0.0	0.0	0.1
Prop In Lane	0.00		0.26	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	660	284	0	967	579	0	514	0	0	514
V/C Ratio(X)	0.00	0.00	0.92	0.37	0.00	0.14	0.32	0.00	0.47	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	684	315	0	1024	579	0	514	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	17.4	12.8	0.0	7.2	15.3	0.0	15.7	0.0	0.0	13.3
Incr Delay (d2), s/veh	0.0	0.0	17.9	0.8	0.0	0.1	1.4	0.0	3.1	0.0	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	0.0	0.0	12.6	1.0	0.0	1.1	2.5	0.0	3.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	35.3	13.7	0.0	7.3	16.7	0.0	18.7	0.0	0.0	13.3
LnGrp LOS			D	B		A	B		B			B
Approach Vol, veh/h		609			240			424			3	
Approach Delay, s/veh		35.3			10.1			17.9			13.3	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	8.6	26.2		23.4		34.8				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		9.1	3.9	21.2		2.1		4.2				
Green Ext Time (p_c), s		1.3	0.0	0.6		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			24.7									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68
Existing Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	52	2.0	0.350	12.9	LOS B	1.1	29.0	0.65	0.71	30.7
8	T1	25	2.0	0.350	12.9	LOS B	1.1	29.0	0.65	0.71	30.6
18	R2	97	2.0	0.350	12.9	LOS B	1.1	29.0	0.65	0.71	29.9
Approach		173	2.0	0.350	12.9	LOS B	1.1	29.0	0.65	0.71	30.2
East: Highway 68											
1	L2	91	2.0	0.610	12.7	LOS B	4.6	117.8	0.54	0.42	31.2
6	T1	767	2.0	0.610	12.7	LOS B	4.6	117.8	0.54	0.42	31.2
16	R2	287	2.0	0.610	12.7	LOS B	4.6	117.8	0.54	0.42	30.5
Approach		1144	2.0	0.610	12.7	LOS B	4.6	117.8	0.54	0.42	31.0
North: Olmsted Rd											
7	L2	115	2.0	0.372	11.7	LOS B	1.3	33.5	0.59	0.66	30.7
4	T1	31	2.0	0.372	11.7	LOS B	1.3	33.5	0.59	0.66	30.6
14	R2	69	2.0	0.372	11.7	LOS B	1.3	33.5	0.59	0.66	29.8
Approach		215	2.0	0.372	11.7	LOS B	1.3	33.5	0.59	0.66	30.4
West: Highway 68											
5	L2	88	2.0	0.596	13.0	LOS B	5.6	141.9	0.60	0.62	31.0
2	T1	924	2.0	0.596	13.0	LOS B	5.6	141.9	0.60	0.62	31.2
12	R2	26	2.0	0.596	13.0	LOS B	5.6	141.9	0.60	0.62	30.5
Approach		1037	2.0	0.596	13.0	LOS B	5.6	141.9	0.60	0.62	31.1
All Vehicles		2570	2.0	0.610	12.8	LOS B	5.6	141.9	0.57	0.54	31.0

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 2:15:35 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Existing\MontereyExistingAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Existing Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	35	2.0	0.327	11.4	LOS B	1.1	26.7	0.60	0.65	31.5
8	T1	13	2.0	0.327	11.4	LOS B	1.1	26.7	0.60	0.65	31.5
18	R2	130	2.0	0.327	11.4	LOS B	1.1	26.7	0.60	0.65	30.6
Approach		178	2.0	0.327	11.4	LOS B	1.1	26.7	0.60	0.65	30.9
East: Highway 68											
1	L2	46	2.0	0.557	10.9	LOS B	3.6	90.2	0.42	0.27	32.2
6	T1	912	2.0	0.557	10.9	LOS B	3.6	90.2	0.42	0.27	32.2
16	R2	140	2.0	0.557	10.9	LOS B	3.6	90.2	0.42	0.27	31.3
Approach		1098	2.0	0.557	10.9	LOS B	3.6	90.2	0.42	0.27	32.0
North: Olmsted Rd											
7	L2	249	2.0	0.803	32.3	LOS D	6.6	167.3	0.83	1.21	24.0
4	T1	16	2.0	0.803	32.3	LOS D	6.6	167.3	0.83	1.21	24.0
14	R2	173	2.0	0.803	32.3	LOS D	6.6	167.3	0.83	1.21	23.5
Approach		438	2.0	0.803	32.3	LOS D	6.6	167.3	0.83	1.21	23.8
West: Highway 68											
5	L2	67	2.0	0.476	10.8	LOS B	2.8	72.2	0.56	0.56	32.0
2	T1	678	2.0	0.476	10.8	LOS B	2.8	72.2	0.56	0.56	32.1
12	R2	24	2.0	0.476	10.8	LOS B	2.8	72.2	0.56	0.56	31.4
Approach		769	2.0	0.476	10.8	LOS B	2.8	72.2	0.56	0.56	32.1
All Vehicles		2482	2.0	0.803	14.7	LOS B	6.6	167.3	0.55	0.55	30.1

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 2:14:11 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Existing\MontereyExistingPM - Miti.sip7

Appendix C.2 Cumulative Without Project

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Without Project AM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	995	28	98	823	322	55	28	103	130	35	78
Future Volume (veh/h)	100	995	28	98	823	322	55	28	103	130	35	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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	103	1026	29	101	848	332	57	29	106	134	36	80
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	108	915	905	108	915	924	67	21	325	72	5	319
Arrive On Green	0.06	0.58	0.58	0.06	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	102	1583	0	27	1553
Grp Volume(v), veh/h	103	1026	29	101	848	332	86	0	106	170	0	80
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	102	0	1583	27	0	1553
Q Serve(g_s), s	5.2	52.5	0.7	5.1	44.1	9.9	0.0	0.0	5.1	0.0	0.0	3.9
Cycle Q Clear(g_c), s	5.2	52.5	0.7	5.1	44.1	9.9	18.5	0.0	5.1	18.5	0.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	0.66		1.00	0.79		1.00
Lane Grp Cap(c), veh/h	108	915	905	108	915	924	88	0	325	77	0	319
V/C Ratio(X)	0.95	1.12	0.03	0.93	0.93	0.36	0.98	0.00	0.33	2.21	0.00	0.25
Avail Cap(c_a), veh/h	108	915	905	108	915	924	88	0	325	77	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.1	18.7	8.0	42.1	17.0	9.9	40.6	0.0	30.4	43.7	0.0	29.9
Incr Delay (d2), s/veh	70.4	69.0	0.0	64.9	15.1	0.2	91.4	0.0	2.6	583.5	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	4.7	39.9	0.3	4.5	22.7	4.4	4.3	0.0	2.5	14.4	0.0	1.8
LnGrp Delay(d),s/veh	112.5	87.7	8.0	107.0	32.1	10.1	132.0	0.0	33.1	627.2	0.0	31.8
LnGrp LOS	F	F	A	F	C	B	F		C	F		C
Approach Vol, veh/h	1158			1281			192			250		
Approach Delay, s/veh	87.9			32.3			77.4			436.7		
Approach LOS	F			C			E			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.0		10.0	57.0	23.0		10.0	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.5	52.5	18.5		5.5	52.5				
Max Q Clear Time (g_c+I1), s	20.5		7.1	54.5	20.5		7.2	46.1				
Green Ext Time (p_c), s	0.0		0.0	0.0	0.0		0.0	3.3				
Intersection Summary												
HCM 2010 Ctrl Delay	92.8											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative Without Project AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	12.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	7	38	158	51	14	8	355	38	76	8	26	7
Future Vol, veh/h	7	38	158	51	14	8	355	38	76	8	26	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	-	-	100	-	-	-	-	-	-	-	-	25
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, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	8	41	170	55	15	9	382	41	82	9	28	8

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	904	933	28	1002	900	82	36	0
Stage 1	46	46	-	846	846	-	-	-
Stage 2	858	887	-	156	54	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	256	266	1041	221	278	978	1575	-
Stage 1	963	857	-	357	378	-	-	-
Stage 2	349	362	-	846	850	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	190	195	1041	124	204	978	1575	-
Mov Cap-2 Maneuver	190	195	-	124	204	-	-	-
Stage 1	710	852	-	263	279	-	-	-
Stage 2	241	267	-	670	845	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	52.7	6.1	1.5
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1575	-	-	194	1041	150	1464	-	-
HCM Lane V/C Ratio	0.242	-	-	0.249	0.163	0.523	0.006	-	-
HCM Control Delay (s)	8	0	-	29.6	9.1	52.7	7.5	0	-
HCM Lane LOS	A	A	-	D	A	F	A	A	-
HCM 95th %tile Q(veh)	1	-	-	0.9	0.6	2.6	0	-	-

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Without Project AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	218	222	316	232	0	119	0	78	1	0	0
Future Volume (veh/h)	0	218	222	316	232	0	119	0	78	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	266	271	385	283	0	145	0	95	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	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	0	265	269	432	1055	0	554	0	477	416	0	0
Arrive On Green	0.00	0.32	0.32	0.18	0.57	0.00	0.30	0.00	0.30	0.30	0.00	0.00
Sat Flow, veh/h	0	837	852	1774	1863	0	1487	0	1583	1028	0	0
Grp Volume(v), veh/h	0	0	537	385	283	0	145	0	95	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1689	1774	1863	0	1487	0	1583	1028	0	0
Q Serve(g_s), s	0.0	0.0	21.5	10.2	5.3	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	21.5	10.2	5.3	0.0	4.2	0.0	3.0	4.3	0.0	0.0
Prop In Lane	0.00		0.50	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	534	432	1055	0	554	0	477	416	0	0
V/C Ratio(X)	0.00	0.00	1.01	0.89	0.27	0.00	0.26	0.00	0.20	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	534	484	1109	0	554	0	477	416	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	23.3	16.6	7.5	0.0	18.1	0.0	17.6	19.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	40.3	17.2	0.1	0.0	1.1	0.0	0.9	0.0	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	0.0	0.0	15.9	9.0	2.7	0.0	2.2	0.0	1.4	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	63.6	33.8	7.7	0.0	19.2	0.0	18.6	19.7	0.0	0.0
LnGrp LOS			F	C	A		B		B	B		
Approach Vol, veh/h		537			668			240			1	
Approach Delay, s/veh		63.6			22.7			19.0			19.7	
Approach LOS		E			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	17.0	26.0		25.0		43.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		6.2	12.2	23.5		6.3		7.3				
Green Ext Time (p_c), s		0.9	0.3	0.0		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay				37.3								
HCM 2010 LOS				D								

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Without Project PM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	703	25	48	946	155	37	14	137	277	17	195
Future Volume (veh/h)	74	703	25	48	946	155	37	14	137	277	17	195
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	76	725	26	49	975	160	38	14	141	286	18	201
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	940	929	70	916	924	69	15	335	78	0	335
Arrive On Green	0.05	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	72	1583	0	0	1583
Grp Volume(v), veh/h	76	725	26	49	975	160	52	0	141	304	0	201
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	72	0	1583	0	0	1583
Q Serve(g_s), s	3.8	31.0	0.6	2.5	52.5	4.2	0.0	0.0	6.9	0.0	0.0	10.3
Cycle Q Clear(g_c), s	3.8	31.0	0.6	2.5	52.5	4.2	19.0	0.0	6.9	19.0	0.0	10.3
Prop In Lane	1.00		1.00	1.00		1.00	0.73		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	97	940	929	70	916	924	85	0	335	78	0	335
V/C Ratio(X)	0.78	0.77	0.03	0.70	1.06	0.17	0.62	0.00	0.42	3.91	0.00	0.60
Avail Cap(c_a), veh/h	99	940	929	99	916	924	85	0	335	78	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.0	13.4	7.3	42.7	18.7	8.7	39.5	0.0	30.7	45.0	0.0	32.0
Incr Delay (d2), s/veh	31.9	4.0	0.0	12.2	48.5	0.1	29.1	0.0	3.9	1341.3	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	2.7	14.3	0.3	1.4	34.7	1.8	2.0	0.0	3.4	30.9	0.0	5.2
LnGrp Delay(d),s/veh	73.8	17.4	7.4	54.8	67.3	8.8	68.6	0.0	34.6	1386.3	0.0	39.8
LnGrp LOS	E	B	A	D	F	A	E		C	F		D
Approach Vol, veh/h		827			1184			193			505	
Approach Delay, s/veh		22.3			58.8			43.7			850.4	
Approach LOS		C			E			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.5	8.0	58.4		23.5	9.4	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.0	52.5		19.0	5.0	52.5				
Max Q Clear Time (g_c+I1), s		21.0	4.5	33.0		21.0	5.8	54.5				
Green Ext Time (p_c), s		0.0	0.0	4.3		0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			194.2									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative Without Project PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	14.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	7	20	381	68	12	7	178	20	40	7	34	6
Future Vol, veh/h	7	20	381	68	12	7	178	20	40	7	34	6
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	9	24	465	83	15	9	217	24	49	9	41	7

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	554	566	41	790	549	49	48	0
Stage 1	59	59	-	483	483	-	-	-
Stage 2	495	507	-	307	66	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-
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	2.227	-
Pot Cap-1 Maneuver	443	434	1030	308	443	1020	1553	-
Stage 1	953	846	-	565	553	-	-	-
Stage 2	556	539	-	703	840	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	377	368	1030	142	376	1020	1553	-
Mov Cap-2 Maneuver	377	368	-	142	376	-	-	-
Stage 1	814	841	-	483	472	-	-	-
Stage 2	456	460	-	372	835	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	57.4	5.8	1.1
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1553	-	-	370	1030	168	1527	-	-
HCM Lane V/C Ratio	0.14	-	-	0.089	0.451	0.632	0.006	-	-
HCM Control Delay (s)	7.7	0	-	15.7	11.3	57.4	7.4	0	-
HCM Lane LOS	A	A	-	C	B	F	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.3	2.4	3.5	0	-	-

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Without Project PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	157	105	131	2	182	0	239	0	0	3
Future Volume (veh/h)	0	446	157	105	131	2	182	0	239	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	485	171	114	142	2	198	0	260	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	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	0	498	175	261	967	14	570	0	506	0	0	506
Arrive On Green	0.00	0.38	0.38	0.07	0.53	0.53	0.32	0.00	0.32	0.00	0.00	0.32
Sat Flow, veh/h	0	1308	461	1774	1832	26	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	656	114	0	144	198	0	260	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1769	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	21.6	2.1	0.0	2.3	6.6	0.0	7.9	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	21.6	2.1	0.0	2.3	6.7	0.0	7.9	0.0	0.0	0.1
Prop In Lane	0.00		0.26	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	673	261	0	981	570	0	506	0	0	506
V/C Ratio(X)	0.00	0.00	0.97	0.44	0.00	0.15	0.35	0.00	0.51	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	673	287	0	1008	570	0	506	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.0	13.4	0.0	7.1	16.0	0.0	16.4	0.0	0.0	13.7
Incr Delay (d2), s/veh	0.0	0.0	28.3	1.2	0.0	0.1	1.7	0.0	3.7	0.0	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	0.0	0.0	15.7	1.1	0.0	1.2	2.8	0.0	3.9	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	46.3	14.5	0.0	7.2	17.7	0.0	20.1	0.0	0.0	13.7
LnGrp LOS			D	B		A	B		C			B
Approach Vol, veh/h		656			258			458			3	
Approach Delay, s/veh		46.3			10.4			19.0			13.7	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	8.7	27.0		23.4		35.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		9.9	4.1	23.6		2.1		4.3				
Green Ext Time (p_c), s		1.4	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			30.4									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68
Cumulative Without Project Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	57	2.0	0.426	16.0	LOS C	1.5	38.2	0.72	0.81	29.5
8	T1	29	2.0	0.426	16.0	LOS C	1.5	38.2	0.72	0.81	29.4
18	R2	106	2.0	0.426	16.0	LOS C	1.5	38.2	0.72	0.81	28.7
Approach		192	2.0	0.426	16.0	LOS C	1.5	38.2	0.72	0.81	29.0
East: Highway 68											
1	L2	101	2.0	0.701	16.1	LOS C	10.4	265.0	0.66	0.71	29.8
6	T1	848	2.0	0.701	16.1	LOS C	10.4	265.0	0.66	0.71	29.8
16	R2	332	2.0	0.701	16.1	LOS C	10.4	265.0	0.66	0.71	29.1
Approach		1281	2.0	0.701	16.1	LOS C	10.4	265.0	0.66	0.71	29.6
North: Olmsted Rd											
7	L2	134	2.0	0.315	11.3	LOS B	1.0	25.1	0.60	0.65	30.4
4	T1	36	2.0	0.315	11.3	LOS B	1.0	25.1	0.60	0.65	30.3
14	R2	80	2.0	0.157	9.1	LOS A	0.4	10.8	0.58	0.58	31.9
Approach		251	2.0	0.315	10.6	LOS B	1.0	25.1	0.60	0.62	30.8
West: Highway 68											
5	L2	103	2.0	0.689	16.7	LOS C	9.3	235.2	0.71	0.88	29.6
2	T1	1026	2.0	0.689	16.7	LOS C	9.3	235.2	0.71	0.88	29.7
12	R2	29	2.0	0.689	16.7	LOS C	9.3	235.2	0.71	0.88	29.1
Approach		1158	2.0	0.689	16.7	LOS C	9.3	235.2	0.71	0.88	29.7
All Vehicles		2881	2.0	0.701	15.8	LOS C	10.4	265.0	0.68	0.78	29.7

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 2:58:33 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Cumulative\MontereyCumNoProAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Without Project Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	382	2.0	0.396	6.6	LOS A	2.5	64.6	0.25	0.11	32.4
8	T1	41	2.0	0.396	6.6	LOS A	2.5	64.6	0.25	0.11	32.3
18	R2	82	2.0	0.396	6.6	LOS A	2.5	64.6	0.25	0.11	31.5
Approach		504	2.0	0.396	6.6	LOS A	2.5	64.6	0.25	0.11	32.2
East: Olmsted Way											
1	L2	55	2.0	0.091	5.0	LOS A	0.4	9.4	0.50	0.40	33.3
6	T1	15	2.0	0.091	5.0	LOS A	0.4	9.4	0.50	0.40	33.2
16	R2	9	2.0	0.091	5.0	LOS A	0.4	9.4	0.50	0.40	32.3
Approach		78	2.0	0.091	5.0	LOS A	0.4	9.4	0.50	0.40	33.2
North: Olmsted Rd											
7	L2	9	2.0	0.054	4.8	LOS A	0.2	5.4	0.50	0.39	34.7
4	T1	28	7.0	0.054	5.0	LOS A	0.2	5.4	0.50	0.39	34.6
14	R2	8	7.0	0.054	5.0	LOS A	0.2	5.4	0.50	0.39	33.5
Approach		44	6.0	0.054	4.9	LOS A	0.2	5.4	0.50	0.39	34.4
West: Garden Rd											
5	L2	8	4.0	0.181	4.5	LOS A	0.9	22.0	0.25	0.12	35.3
2	T1	41	2.0	0.181	4.5	LOS A	0.9	22.0	0.25	0.12	35.3
12	R2	170	4.0	0.181	4.5	LOS A	0.9	22.0	0.25	0.12	34.2
Approach		218	3.6	0.181	4.5	LOS A	0.9	22.0	0.25	0.12	34.5
All Vehicles		845	2.6	0.396	5.9	LOS A	2.5	64.6	0.29	0.16	33.0

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.

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Cumulative Without Project Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	38	2.0	0.380	13.2	LOS B	1.3	33.3	0.65	0.73	30.8
8	T1	14	2.0	0.380	13.2	LOS B	1.3	33.3	0.65	0.73	30.7
18	R2	141	2.0	0.380	13.2	LOS B	1.3	33.3	0.65	0.73	29.9
Approach		194	2.0	0.380	13.2	LOS B	1.3	33.3	0.65	0.73	30.1
East: Highway 68											
1	L2	49	2.0	0.610	12.4	LOS B	4.2	106.6	0.49	0.33	31.5
6	T1	975	2.0	0.610	12.4	LOS B	4.2	106.6	0.49	0.33	31.5
16	R2	160	2.0	0.610	12.4	LOS B	4.2	106.6	0.49	0.33	30.7
Approach		1185	2.0	0.610	12.4	LOS B	4.2	106.6	0.49	0.33	31.4
North: Olmsted Rd											
7	L2	286	2.0	0.584	19.2	LOS C	2.8	71.4	0.73	0.89	27.3
4	T1	18	2.0	0.584	19.2	LOS C	2.8	71.4	0.73	0.89	27.2
14	R2	201	2.0	0.409	14.4	LOS B	1.5	38.6	0.68	0.76	29.7
Approach		504	2.0	0.584	17.2	LOS C	2.8	71.4	0.71	0.84	28.2
West: Highway 68											
5	L2	76	2.0	0.535	12.5	LOS B	4.0	100.4	0.62	0.71	31.2
2	T1	725	2.0	0.535	12.5	LOS B	4.0	100.4	0.62	0.71	31.4
12	R2	26	2.0	0.535	12.5	LOS B	4.0	100.4	0.62	0.71	30.7
Approach		827	2.0	0.535	12.5	LOS B	4.0	100.4	0.62	0.71	31.3
All Vehicles		2709	2.0	0.610	13.4	LOS B	4.2	106.6	0.58	0.57	30.6

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 2:57:20 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Cumulative\MontereyCumNoProPM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Without Project Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	217	3.0	0.226	4.7	LOS A	1.2	29.7	0.17	0.06	33.3
8	T1	24	3.0	0.226	4.7	LOS A	1.2	29.7	0.17	0.06	33.2
18	R2	49	2.0	0.226	4.7	LOS A	1.2	29.7	0.17	0.06	32.3
Approach		290	2.8	0.226	4.7	LOS A	1.2	29.7	0.17	0.06	33.1
East: Olmsted Way											
1	L2	83	2.0	0.102	4.4	LOS A	0.4	11.1	0.40	0.27	33.4
6	T1	15	2.0	0.102	4.4	LOS A	0.4	11.1	0.40	0.27	33.3
16	R2	9	2.0	0.102	4.4	LOS A	0.4	11.1	0.40	0.27	32.4
Approach		106	2.0	0.102	4.4	LOS A	0.4	11.1	0.40	0.27	33.3
North: Olmsted Rd											
7	L2	9	2.0	0.059	4.2	LOS A	0.2	6.2	0.43	0.30	35.3
4	T1	41	3.0	0.059	4.3	LOS A	0.2	6.2	0.43	0.30	35.2
14	R2	7	3.0	0.059	4.3	LOS A	0.2	6.2	0.43	0.30	34.1
Approach		57	2.9	0.059	4.3	LOS A	0.2	6.2	0.43	0.30	35.1
West: Garden Rd											
5	L2	9	2.0	0.422	7.4	LOS A	2.7	67.7	0.41	0.25	33.9
2	T1	24	2.0	0.422	7.4	LOS A	2.7	67.7	0.41	0.25	33.8
12	R2	465	2.0	0.422	7.4	LOS A	2.7	67.7	0.41	0.25	32.9
Approach		498	2.0	0.422	7.4	LOS A	2.7	67.7	0.41	0.25	32.9
All Vehicles		951	2.3	0.422	6.1	LOS A	2.7	67.7	0.33	0.20	33.1

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.

Appendix C.3
Existing Zoning – Office Buildout

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Office Buildout AM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	896	25	88	744	752	50	56	94	189	35	106
Future Volume (veh/h)	322	896	25	88	744	752	50	56	94	189	35	106
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	332	924	26	91	767	775	52	58	97	195	36	109
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	108	915	905	108	915	924	59	46	325	74	0	319
Arrive On Green	0.06	0.58	0.58	0.06	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	224	1583	0	0	1553
Grp Volume(v), veh/h	332	924	26	91	767	775	110	0	97	231	0	109
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	224	0	1583	0	0	1553
Q Serve(g_s), s	5.5	52.5	0.6	4.6	35.9	36.0	0.0	0.0	4.7	0.0	0.0	5.4
Cycle Q Clear(g_c), s	5.5	52.5	0.6	4.6	35.9	36.0	18.5	0.0	4.7	18.5	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	0.47		1.00	0.84		1.00
Lane Grp Cap(c), veh/h	108	915	905	108	915	924	105	0	325	74	0	319
V/C Ratio(X)	3.06	1.01	0.03	0.84	0.84	0.84	1.05	0.00	0.30	3.13	0.00	0.34
Avail Cap(c_a), veh/h	108	915	905	108	915	924	105	0	325	74	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	18.7	7.9	41.8	15.3	15.3	37.4	0.0	30.3	45.0	0.0	30.5
Incr Delay (d2), s/veh	952.1	32.2	0.0	41.3	6.9	6.9	101.4	0.0	2.3	993.8	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.4	30.5	0.3	3.5	17.1	17.3	5.6	0.0	2.2	22.2	0.0	2.6
LnGrp Delay(d),s/veh	994.3	50.9	8.0	83.1	22.2	22.2	139.5	0.0	32.6	1038.8	0.0	33.4
LnGrp LOS	F	F	A	F	C	C	F		C	F		C
Approach Vol, veh/h	1282			1633			207			340		
Approach Delay, s/veh	294.4			25.6			89.4			716.5		
Approach LOS	F			C			F			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	10.0	57.0		23.0	10.0	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.5	5.5	52.5		18.5	5.5	52.5				
Max Q Clear Time (g_c+I1), s		20.5	6.6	54.5		20.5	7.5	38.0				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	6.9				
Intersection Summary												
HCM 2010 Ctrl Delay	196.8											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing Plus Office Buildout AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	16.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	265	3	3	7	744	64	9	5	56	12
Future Vol, veh/h	24	2	265	3	3	7	744	64	9	5	56	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	26	2	291	3	3	8	818	70	10	5	62	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1789	1788	62	1936	1796	75	75	0	0	80	0	0
Stage 1	72	72	-	1711	1711	-	-	-	-	-	-	-
Stage 2	1717	1716	-	225	85	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	62	81	997	50	80	986	1524	-	-	1518	-	-
Stage 1	933	835	-	115	146	-	-	-	-	-	-	-
Stage 2	113	145	-	778	824	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	32	35	997	19	35	986	1524	-	-	1518	-	-
Mov Cap-2 Maneuver	32	35	-	19	35	-	-	-	-	-	-	-
Stage 1	409	832	-	50	64	-	-	-	-	-	-	-
Stage 2	47	64	-	548	822	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	36.7		98.6		9.2		0.5					
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1524	-	-	32	997	52	1518	-	-			
HCM Lane V/C Ratio	0.536	-	-	0.893	0.292	0.275	0.004	-	-			
HCM Control Delay (s)	10.1	0	-	\$ 307.4	10.1	98.6	7.4	0	-			
HCM Lane LOS	B	A	-	F	B	F	A	A	-			
HCM 95th %tile Q(veh)	3.3	-	-	3.1	1.2	0.9	0	-	-			

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Office Buildout AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	519	809	211	0	159	0	156	1	0	0
Future Volume (veh/h)	0	198	519	809	211	0	159	0	156	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	254	665	1037	271	0	204	0	200	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	138	361	470	1078	0	550	0	464	340	0	0
Arrive On Green	0.00	0.31	0.31	0.21	0.58	0.00	0.29	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	0	449	1175	1774	1863	0	1526	0	1583	808	0	0
Grp Volume(v), veh/h	0	0	919	1037	271	0	204	0	200	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1623	1774	1863	0	1526	0	1583	808	0	0
Q Serve(g_s), s	0.0	0.0	21.5	14.5	5.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	21.5	14.5	5.0	0.0	6.4	0.0	7.2	6.5	0.0	0.0
Prop In Lane	0.00		0.72	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	499	470	1078	0	550	0	464	340	0	0
V/C Ratio(X)	0.00	0.00	1.84	2.20	0.25	0.00	0.37	0.00	0.43	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	499	470	1078	0	550	0	464	340	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	24.3	19.2	7.3	0.0	19.8	0.0	20.0	22.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	387.2	549.1	0.1	0.0	1.9	0.0	2.9	0.0	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	0.0	0.0	63.2	80.8	2.6	0.0	3.4	0.0	3.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	411.5	568.2	7.4	0.0	21.7	0.0	22.9	22.4	0.0	0.0
LnGrp LOS			F	F	A		C		C	C		
Approach Vol, veh/h		919			1308			404			1	
Approach Delay, s/veh		411.5			452.0			22.3			22.4	
Approach LOS		F			F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	19.0	26.0		25.0		45.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		9.2	16.5	23.5		8.5		7.0				
Green Ext Time (p_c), s		1.4	0.0	0.0		0.0		1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			371.8									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Office Buildout PM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	651	23	44	876	222	34	18	125	699	46	396
Future Volume (veh/h)	108	651	23	44	876	222	34	18	125	699	46	396
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	112	678	24	46	912	231	35	19	130	728	48	412
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	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	99	943	932	67	915	924	66	22	334	78	0	334
Arrive On Green	0.06	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	106	1583	0	0	1583
Grp Volume(v), veh/h	112	678	24	46	912	231	54	0	130	776	0	412
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	106	0	1583	0	0	1583
Q Serve(g_s), s	5.0	27.3	0.6	2.3	52.1	6.4	0.0	0.0	6.4	0.0	0.0	19.0
Cycle Q Clear(g_c), s	5.0	27.3	0.6	2.3	52.1	6.4	19.0	0.0	6.4	19.0	0.0	19.0
Prop In Lane	1.00		1.00	1.00		1.00	0.65		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	99	943	932	67	915	924	88	0	334	78	0	334
V/C Ratio(X)	1.14	0.72	0.03	0.68	1.00	0.25	0.61	0.00	0.39	10.01	0.00	1.23
Avail Cap(c_a), veh/h	99	943	932	99	915	924	88	0	334	78	0	334
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	12.6	7.3	42.8	18.7	9.1	37.3	0.0	30.5	45.0	0.0	35.5
Incr Delay (d2), s/veh	132.1	2.7	0.0	11.5	28.9	0.1	27.6	0.0	3.4	4079.9	0.0	128.0
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	6.1	12.4	0.2	1.3	29.6	2.8	2.0	0.0	3.1	89.8	0.0	20.1
LnGrp Delay(d),s/veh	174.6	15.3	7.3	54.3	47.6	9.3	64.9	0.0	33.9	4124.9	0.0	163.5
LnGrp LOS	F	B	A	D	D	A	E		C	F		F
Approach Vol, veh/h	814					1189		184		1188		
Approach Delay, s/veh	37.0					40.4		43.0		2751.1		
Approach LOS	D					D		D		F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.5		7.9	58.6	23.5		9.5	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	19.0		5.0	52.5	19.0		5.0	52.5				
Max Q Clear Time (g_c+I1), s	21.0		4.3	29.3	21.0		7.0	54.1				
Green Ext Time (p_c), s	0.0		0.0	4.1	0.0		0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	993.9											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing Plus Office Buildout PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	133.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	14	2	1068	6	1	7	299	33	7	2	67	12
Future Vol, veh/h	14	2	1068	6	1	7	299	33	7	2	67	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	18	3	1335	8	1	9	374	41	9	3	84	15

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	889	888	84	1561	899	46	99	0
Stage 1	90	90	-	794	794	-	-	-
Stage 2	799	798	-	767	105	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-
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	2.227	-
Pot Cap-1 Maneuver	264	283	~ 975	91	279	1023	1488	-
Stage 1	917	820	-	381	400	-	-	-
Stage 2	379	398	-	395	808	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	208	209	~ 975	-	206	1023	1488	-
Mov Cap-2 Maneuver	208	209	-	-	206	-	-	-
Stage 1	679	818	-	282	296	-	-	-
Stage 2	277	295	-	-	806	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	185.2		7.3	0.2
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1488	-	-	208	975	-	1557	-	-
HCM Lane V/C Ratio	0.251	-	-	0.096	1.369	-	0.002	-	-
HCM Control Delay (s)	8.2	0	-	24.1	187.6	-	7.3	0	-
HCM Lane LOS	A	A	-	C	F	-	A	A	-
HCM 95th %tile Q(veh)	1	-	-	0.3	54.2	-	0	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Office Buildout PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	405	201	191	119	2	472	0	723	0	0	3
Future Volume (veh/h)	0	405	201	191	119	2	472	0	723	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	450	223	212	132	2	524	0	803	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
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	0	438	217	271	979	15	562	0	499	0	0	499
Arrive On Green	0.00	0.38	0.38	0.09	0.53	0.53	0.31	0.00	0.31	0.00	0.00	0.31
Sat Flow, veh/h	0	1167	578	1774	1829	28	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	673	212	0	134	524	0	803	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1745	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	22.5	4.1	0.0	2.2	18.8	0.0	18.9	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	22.5	4.1	0.0	2.2	18.9	0.0	18.9	0.0	0.0	0.1
Prop In Lane	0.00		0.33	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	654	271	0	994	562	0	499	0	0	499
V/C Ratio(X)	0.00	0.00	1.03	0.78	0.00	0.13	0.93	0.00	1.61	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	654	271	0	994	562	0	499	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.8	13.7	0.0	7.0	22.1	0.0	20.5	0.0	0.0	14.1
Incr Delay (d2), s/veh	0.0	0.0	42.6	13.8	0.0	0.1	24.6	0.0	283.7	0.0	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	0.0	0.0	18.5	3.0	0.0	1.1	12.4	0.0	47.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	61.4	27.6	0.0	7.1	46.6	0.0	304.3	0.0	0.0	14.1
LnGrp LOS			F	C		A	D		F			B
Approach Vol, veh/h		673			346			1327			3	
Approach Delay, s/veh		61.4			19.6			202.5			14.1	
Approach LOS		E			B			F			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4		36.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		20.9	6.1	24.5		2.1		4.2				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			134.9									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68
Existing Plus Office Buildout Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows 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: Olmsted Rd											
3	L2	52	2.0	0.524	21.4	LOS C	2.0	50.6	0.79	0.92	27.6
8	T1	58	2.0	0.524	21.4	LOS C	2.0	50.6	0.79	0.92	27.6
18	R2	97	2.0	0.524	21.4	LOS C	2.0	50.6	0.79	0.92	26.9
Approach		206	2.0	0.524	21.4	LOS C	2.0	50.6	0.79	0.92	27.3
East: Highway 68											
1	L2	91	2.0	0.536	12.4	LOS B	3.4	87.0	0.56	0.69	31.2
6	T1	767	2.0	0.536	12.3	LOS B	3.4	87.0	0.54	0.67	31.5
16	R2	775	2.0	0.472	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1633	2.0	0.536	6.5	LOS A	3.4	87.0	0.29	0.35	33.8
North: Olmsted Rd											
7	L2	195	2.0	0.204	9.0	LOS A	0.6	14.5	0.55	0.55	31.1
4	T1	36	2.0	0.204	8.8	LOS A	0.5	13.9	0.53	0.53	31.5
14	R2	109	2.0	0.067	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		340	2.0	0.204	6.1	LOS A	0.6	14.5	0.37	0.37	32.8
West: Highway 68											
5	L2	332	2.0	0.383	8.6	LOS A	1.4	34.7	0.42	0.38	31.0
2	T1	924	2.0	0.544	11.6	LOS B	3.7	94.7	0.49	0.57	32.0
12	R2	26	2.0	0.544	11.6	LOS B	3.6	92.1	0.48	0.56	31.0
Approach		1281	2.0	0.544	10.9	LOS B	3.7	94.7	0.47	0.52	31.7
All Vehicles		3461	2.0	0.544	8.9	LOS A	3.7	94.7	0.39	0.45	32.4

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 2010.

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: JEFF WALLER CONSULTING | Processed: Tuesday, January 22, 2019 4:33:19 PM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+OfficeBOAM2 - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 2 [O/G]**

2. Olmsted Road / Garden Road
Existing Plus Office Buildout Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: RoadName											
3	L2	818	2.0	0.333	5.7	LOS A	1.8	46.6	0.16	0.06	32.4
8	T1	70	2.0	0.333	5.7	LOS A	1.8	46.6	0.16	0.06	32.6
18	R2	10	2.0	0.333	5.7	LOS A	1.8	46.6	0.16	0.06	31.7
Approach		898	2.0	0.333	5.7	LOS A	1.8	46.6	0.16	0.06	32.4
East: RoadName											
1	L2	3	2.0	0.023	6.0	LOS A	0.1	1.9	0.57	0.51	34.1
6	T1	3	2.0	0.023	6.0	LOS A	0.1	1.9	0.57	0.51	34.0
16	R2	8	2.0	0.023	6.0	LOS A	0.1	1.9	0.57	0.51	33.0
Approach		14	2.0	0.023	6.0	LOS A	0.1	1.9	0.57	0.51	33.5
North: RoadName											
7	L2	5	2.0	0.118	6.6	LOS A	0.4	10.4	0.58	0.58	34.3
4	T1	62	2.0	0.118	6.6	LOS A	0.4	10.4	0.58	0.58	34.2
14	R2	13	2.0	0.118	6.6	LOS A	0.4	10.4	0.58	0.58	33.2
Approach		80	2.0	0.118	6.6	LOS A	0.4	10.4	0.58	0.58	34.0
West: RoadName											
5	L2	26	4.0	0.022	3.0	LOS A	0.1	2.2	0.17	0.06	33.6
2	T1	2	4.0	0.022	3.0	LOS A	0.1	2.2	0.17	0.06	33.6
12	R2	291	4.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.00	37.1
Approach		320	4.0	0.181	0.3	LOS A	0.1	2.2	0.01	0.01	36.8
All Vehicles		1312	2.5	0.333	4.4	LOS A	1.8	46.6	0.15	0.08	33.5

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

Organisation: JEFF WALLER CONSULTING | Processed: Tuesday, January 22, 2019 4:40:19 PM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+OfficeBOAM2 - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Office Buildout AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	519	809	211	0	159	0	156	1	0	0
Future Volume (veh/h)	0	198	519	809	211	0	159	0	156	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	254	665	1037	271	0	204	0	200	1	0	0
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	1	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	373	670	1090	1056	0	404	0	1517	99	0	0
Arrive On Green	0.00	0.20	0.20	0.32	0.57	0.00	0.23	0.00	0.23	0.06	0.00	0.00
Sat Flow, veh/h	0	1863	1549	3442	1863	0	1774	0	2787	1774	0	0
Grp Volume(v), veh/h	0	254	665	1037	271	0	204	0	200	1	0	0
Grp Sat Flow(s),veh/h/ln	0	1863	1549	1721	1863	0	1774	0	1393	1774	0	0
Q Serve(g_s), s	0.0	11.4	18.0	26.5	6.6	0.0	9.0	0.0	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.4	18.0	26.5	6.6	0.0	9.0	0.0	3.2	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	373	670	1090	1056	0	404	0	1517	99	0	0
V/C Ratio(X)	0.00	0.68	0.99	0.95	0.26	0.00	0.50	0.00	0.13	0.01	0.00	0.00
Avail Cap(c_a), veh/h	0	373	670	1090	1056	0	404	0	1517	99	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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	33.3	19.9	30.1	9.9	0.0	30.3	0.0	10.1	40.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	5.0	32.6	16.9	0.1	0.0	4.5	0.0	0.2	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	0.0	6.4	22.5	15.1	3.4	0.0	4.9	0.0	1.3	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	38.4	52.5	47.0	10.0	0.0	34.8	0.0	10.2	40.4	0.0	0.0
LnGrp LOS		D	D	D	B		C		B	D		
Approach Vol, veh/h		919			1308			404			1	
Approach Delay, s/veh		48.6			39.3			22.6			40.3	
Approach LOS		D			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	33.0	22.5		9.5		55.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	28.5	18.0		5.0		51.0				
Max Q Clear Time (g_c+I1), s		11.0	28.5	20.0		2.0		8.6				
Green Ext Time (p_c), s		1.4	0.0	0.0		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			40.0									
HCM 2010 LOS			D									
Notes												

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68
Existing Plus Office Buildout Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	35	2.0	0.492	21.0	LOS C	1.8	44.8	0.79	0.91	27.8
8	T1	19	2.0	0.492	21.0	LOS C	1.8	44.8	0.79	0.91	27.7
18	R2	130	2.0	0.492	21.0	LOS C	1.8	44.8	0.79	0.91	27.1
Approach		184	2.0	0.492	21.0	LOS C	1.8	44.8	0.79	0.91	27.3
East: Highway 68											
1	L2	46	2.0	0.489	9.6	LOS A	2.1	53.8	0.35	0.26	32.7
6	T1	912	2.0	0.489	9.6	LOS A	2.1	53.8	0.34	0.25	32.8
16	R2	231	2.0	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1190	2.0	0.489	7.7	LOS A	2.1	53.8	0.28	0.20	33.5
North: Olmsted Rd											
7	L2	728	2.0	0.730	26.6	LOS D	4.9	125.2	0.79	1.08	25.1
4	T1	48	2.0	0.730	26.1	LOS D	4.9	125.0	0.78	1.07	25.3
14	R2	413	2.0	0.251	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1189	2.0	0.730	17.4	LOS C	4.9	125.2	0.52	0.70	28.1
West: Highway 68											
5	L2	113	2.0	0.190	8.5	LOS A	0.5	13.5	0.52	0.52	31.0
2	T1	678	2.0	0.582	16.8	LOS C	3.2	81.6	0.66	0.83	29.8
12	R2	24	2.0	0.582	16.6	LOS C	3.2	80.5	0.65	0.82	29.0
Approach		815	2.0	0.582	15.7	LOS C	3.2	81.6	0.64	0.79	29.9
All Vehicles		3377	2.0	0.730	13.8	LOS B	4.9	125.2	0.48	0.56	30.2

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 2010.

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: JEFF WALLER CONSULTING | Processed: Tuesday, January 22, 2019 4:42:20 PM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+OfficeBOPM2 - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 2 [O/G]**

2. Olmsted Road / Garden Road
Existing Plus Office Buildout Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	374	2.0	0.196	5.1	LOS A	0.8	20.2	0.10	0.03	32.7
8	T1	41	2.0	0.196	5.1	LOS A	0.8	20.2	0.10	0.03	33.0
18	R2	9	2.0	0.196	5.1	LOS A	0.8	20.2	0.10	0.03	32.1
Approach		424	2.0	0.196	5.1	LOS A	0.8	20.2	0.10	0.03	32.8
East: Olmsted Wy											
1	L2	8	2.0	0.022	4.6	LOS A	0.1	1.3	0.33	0.25	34.2
6	T1	1	2.0	0.022	4.6	LOS A	0.1	1.3	0.33	0.25	34.1
16	R2	9	2.0	0.022	4.6	LOS A	0.1	1.3	0.33	0.25	33.1
Approach		18	2.0	0.022	4.6	LOS A	0.1	1.3	0.33	0.25	33.7
North: Olmsted Rd											
7	L2	3	2.0	0.120	5.5	LOS A	0.3	8.0	0.33	0.28	35.0
4	T1	84	2.0	0.120	5.5	LOS A	0.3	8.0	0.33	0.28	34.9
14	R2	15	2.0	0.120	5.5	LOS A	0.3	8.0	0.33	0.28	33.9
Approach		101	2.0	0.120	5.5	LOS A	0.3	8.0	0.33	0.28	34.8
West: Garden Rd											
5	L2	18	2.0	0.020	3.7	LOS A	0.1	1.7	0.20	0.08	33.4
2	T1	3	2.0	0.020	3.7	LOS A	0.1	1.7	0.20	0.08	33.4
12	R2	1335	2.0	0.813	0.0	LOS A	0.0	0.0	0.00	0.00	36.8
Approach		1355	2.0	0.813	0.5	LOS A	0.1	1.7	0.00	0.00	36.8
All Vehicles		1898	2.0	0.813	1.5	LOS A	0.8	20.2	0.05	0.03	35.6

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 2010.

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: JEFF WALLER CONSULTING | Processed: Tuesday, January 22, 2019 4:25:03 PM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+OfficeBOPM2 - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Office Buildout PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	405	201	191	119	2	472	0	723	0	0	3
Future Volume (veh/h)	0	405	201	191	119	2	472	0	723	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	450	223	212	132	2	524	0	803	0	0	3
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	1	0
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, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	492	987	281	736	11	647	0	1245	0	0	100
Arrive On Green	0.00	0.26	0.26	0.08	0.40	0.40	0.36	0.00	0.36	0.00	0.00	0.06
Sat Flow, veh/h	0	1863	1549	3442	1829	28	1774	0	2787	0	0	1583
Grp Volume(v), veh/h	0	450	223	212	0	134	524	0	803	0	0	3
Grp Sat Flow(s),veh/h/ln	0	1863	1549	1721	0	1857	1774	0	1393	0	0	1583
Q Serve(g_s), s	0.0	18.6	5.0	4.8	0.0	3.7	21.2	0.0	17.8	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	18.6	5.0	4.8	0.0	3.7	21.2	0.0	17.8	0.0	0.0	0.1
Prop In Lane	0.00		1.00	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	492	987	281	0	747	647	0	1245	0	0	100
V/C Ratio(X)	0.00	0.92	0.23	0.75	0.00	0.18	0.81	0.00	0.65	0.00	0.00	0.03
Avail Cap(c_a), veh/h	0	504	997	281	0	759	647	0	1245	0	0	100
HCM Platoon Ratio	1.00	1.00	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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	28.4	6.4	35.7	0.0	15.3	22.8	0.0	17.1	0.0	0.0	35.0
Incr Delay (d2), s/veh	0.0	21.2	0.1	10.9	0.0	0.1	10.5	0.0	2.6	0.0	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	0.0	12.4	4.2	2.7	0.0	1.9	12.2	0.0	7.2	0.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	49.5	6.5	46.6	0.0	15.4	33.3	0.0	19.7	0.0	0.0	35.5
LnGrp LOS		D	A	D		B	C		B			D
Approach Vol, veh/h		673			346			1327			3	
Approach Delay, s/veh		35.3			34.5			25.0			35.5	
Approach LOS		D			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		33.5	11.0	25.5		9.5		36.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.0	6.5	21.5		5.0		32.5				
Max Q Clear Time (g_c+I1), s		23.2	6.8	20.6		2.1		5.7				
Green Ext Time (p_c), s		3.4	0.0	0.3		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			29.4									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Office Buildout AM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	337	995	28	98	823	796	55	60	103	207	40	117
Future Volume (veh/h)	337	995	28	98	823	796	55	60	103	207	40	117
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	347	1026	29	101	848	821	57	62	106	213	41	121
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	108	915	905	108	915	924	59	45	325	74	0	319
Arrive On Green	0.06	0.58	0.58	0.06	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	219	1583	0	0	1553
Grp Volume(v), veh/h	347	1026	29	101	848	821	119	0	106	254	0	121
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	219	0	1583	0	0	1553
Q Serve(g_s), s	5.5	52.5	0.7	5.1	44.1	40.4	0.0	0.0	5.1	0.0	0.0	6.0
Cycle Q Clear(g_c), s	5.5	52.5	0.7	5.1	44.1	40.4	18.5	0.0	5.1	18.5	0.0	6.0
Prop In Lane	1.00		1.00	1.00		1.00	0.48		1.00	0.84		1.00
Lane Grp Cap(c), veh/h	108	915	905	108	915	924	104	0	325	74	0	319
V/C Ratio(X)	3.20	1.12	0.03	0.93	0.93	0.89	1.14	0.00	0.33	3.45	0.00	0.38
Avail Cap(c_a), veh/h	108	915	905	108	915	924	104	0	325	74	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	18.7	8.0	42.1	17.0	16.2	37.5	0.0	30.4	45.0	0.0	30.8
Incr Delay (d2), s/veh	1013.9	69.0	0.0	64.9	15.1	10.6	132.0	0.0	2.6	1137.6	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	33.2	39.9	0.3	4.5	22.7	20.1	6.4	0.0	2.5	25.1	0.0	2.9
LnGrp Delay(d),s/veh	1056.2	87.7	8.0	107.0	32.1	26.8	169.4	0.0	33.1	1182.6	0.0	34.2
LnGrp LOS	F	F	A	F	C	C	F		C	F		C
Approach Vol, veh/h	1402					1770		225		375		
Approach Delay, s/veh	325.8					33.9		105.2		812.1		
Approach LOS	F					C		F		F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.0		10.0	57.0	23.0		10.0	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.5	52.5	18.5		5.5	52.5				
Max Q Clear Time (g_c+I1), s	20.5		7.1	54.5	20.5		7.5	46.1				
Green Ext Time (p_c), s	0.0		0.0	0.0	0.0		0.0	4.2				
Intersection Summary												
HCM 2010 Ctrl Delay	224.0											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative Plus Office Buildout AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	7	38	279	51	14	8	1079	38	76	8	26	7
Future Vol, veh/h	7	38	279	51	14	8	1079	38	76	8	26	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	-	-	100	-	-	-	-	-	-	-	-	25
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, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	8	41	300	55	15	9	1160	41	82	9	28	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2460	2489	28	2623	2456	82	36	0	0	123	0	0
Stage 1	46	46	-	2402	2402	-	-	-	-	-	-	-
Stage 2	2414	2443	-	221	54	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	21	~ 29	1041	~ 16	31	978	1575	-	-	1464	-	-
Stage 1	963	857	-	~ 45	65	-	-	-	-	-	-	-
Stage 2	43	62	-	781	850	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 6	1041	-	~ 6	978	1575	-	-	1464	-	-
Mov Cap-2 Maneuver	-	~ 6	-	-	~ 6	-	-	-	-	-	-	-
Stage 1	195	852	-	~ 9	~ 13	-	-	-	-	-	-	-
Stage 2	-	~ 13	-	526	845	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s					12.1		1.5					
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1575	-	-	-	1041	-	1464	-	-			
HCM Lane V/C Ratio	0.737	-	-	-	0.288	-	0.006	-	-			
HCM Control Delay (s)	13.4	0	-	-	9.9	-	7.5	0	-			
HCM Lane LOS	B	A	-	-	A	-	A	A	-			
HCM 95th %tile Q(veh)	7.4	-	-	-	1.2	-	0	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Office Buildout AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	218	539	838	232	0	170	0	163	1	0	0
Future Volume (veh/h)	0	218	539	838	232	0	170	0	163	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	266	657	1022	283	0	207	0	199	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	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	0	144	356	470	1078	0	550	0	464	338	0	0
Arrive On Green	0.00	0.31	0.31	0.21	0.58	0.00	0.29	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	0	469	1158	1774	1863	0	1528	0	1583	803	0	0
Grp Volume(v), veh/h	0	0	923	1022	283	0	207	0	199	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1627	1774	1863	0	1528	0	1583	803	0	0
Q Serve(g_s), s	0.0	0.0	21.5	14.5	5.3	0.0	0.0	0.0	7.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	21.5	14.5	5.3	0.0	6.5	0.0	7.1	6.6	0.0	0.0
Prop In Lane	0.00		0.71	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	500	470	1078	0	550	0	464	338	0	0
V/C Ratio(X)	0.00	0.00	1.85	2.17	0.26	0.00	0.38	0.00	0.43	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	500	470	1078	0	550	0	464	338	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	24.3	19.2	7.3	0.0	19.8	0.0	20.0	22.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	389.0	534.8	0.1	0.0	2.0	0.0	2.9	0.0	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	0.0	0.0	63.6	78.9	2.7	0.0	3.5	0.0	3.4	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	413.3	554.0	7.5	0.0	21.8	0.0	22.9	22.4	0.0	0.0
LnGrp LOS			F	F	A		C		C	C		
Approach Vol, veh/h		923			1305			406			1	
Approach Delay, s/veh		413.3			435.5			22.3			22.4	
Approach LOS		F			F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	19.0	26.0		25.0		45.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		9.1	16.5	23.5		8.6		7.3				
Green Ext Time (p_c), s		1.4	0.0	0.0		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			363.9									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Office Buildout PM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	703	25	48	946	243	37	21	137	737	48	423
Future Volume (veh/h)	118	703	25	48	946	243	37	21	137	737	48	423
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	122	725	26	49	975	251	38	22	141	760	49	436
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	941	930	70	915	924	65	24	334	78	0	334
Arrive On Green	0.06	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	114	1583	0	0	1583
Grp Volume(v), veh/h	122	725	26	49	975	251	60	0	141	809	0	436
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	114	0	1583	0	0	1583
Q Serve(g_s), s	5.0	31.0	0.6	2.5	52.5	7.1	0.0	0.0	6.9	0.0	0.0	19.0
Cycle Q Clear(g_c), s	5.0	31.0	0.6	2.5	52.5	7.1	19.0	0.0	6.9	19.0	0.0	19.0
Prop In Lane	1.00		1.00	1.00		1.00	0.63		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	99	941	930	70	915	924	89	0	334	78	0	334
V/C Ratio(X)	1.24	0.77	0.03	0.70	1.07	0.27	0.67	0.00	0.42	10.43	0.00	1.30
Avail Cap(c_a), veh/h	99	941	930	99	915	924	89	0	334	78	0	334
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	13.4	7.3	42.7	18.7	9.3	37.6	0.0	30.7	45.0	0.0	35.5
Incr Delay (d2), s/veh	167.7	4.0	0.0	12.2	48.8	0.2	33.6	0.0	3.9	4268.2	0.0	157.1
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	7.0	14.3	0.3	1.4	34.8	3.1	2.3	0.0	3.4	93.9	0.0	22.8
LnGrp Delay(d),s/veh	210.2	17.4	7.3	54.9	67.6	9.4	71.3	0.0	34.6	4313.2	0.0	192.6
LnGrp LOS	F	B	A	D	F	A	E		C	F		F
Approach Vol, veh/h	873				1275				201		1245	
Approach Delay, s/veh	44.0				55.6				45.6		2870.2	
Approach LOS	D				E				D		F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.5		8.0	58.5	23.5		9.5	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	19.0		5.0	52.5	19.0		5.0	52.5				
Max Q Clear Time (g_c+I1), s	21.0		4.5	33.0	21.0		7.0	54.5				
Green Ext Time (p_c), s	0.0		0.0	4.3	0.0		0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	1027.2											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative Plus Office Buildout PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	118.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	20	1102	68	12	7	174	20	40	7	34	6
Future Vol, veh/h	7	20	1102	68	12	7	174	20	40	7	34	6
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	9	24	1344	83	15	9	212	24	49	9	41	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	544	556	41	1220	539	49	48	0	0	73	0	0
Stage 1	59	59	-	473	473	-	-	-	-	-	-	-
Stage 2	485	497	-	747	66	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	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	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	450	439~	1030	157	449	1020	1553	-	-	1527	-	-
Stage 1	953	846	-	572	558	-	-	-	-	-	-	-
Stage 2	563	545	-	405	840	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	374~	1030	-	383	1020	1553	-	-	1527	-	-
Mov Cap-2 Maneuver	384	374	-	-	383	-	-	-	-	-	-	-
Stage 1	817	841	-	490	478	-	-	-	-	-	-	-
Stage 2	464	467	-	-	835	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	155.9				5.7		1.1					
HCM LOS	F		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1553	-	-	377	1030	-	1527	-	-			
HCM Lane V/C Ratio	0.137	-	-	0.087	1.305	-	0.006	-	-			
HCM Control Delay (s)	7.7	0	-	15.5	159.3	-	7.4	0	-			
HCM Lane LOS	A	A	-	C	F	-	A	A	-			
HCM 95th %tile Q(veh)	0.5	-	-	0.3	49.4	-	0	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Office Buildout PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	215	201	131	2	489	0	745	0	0	3
Future Volume (veh/h)	0	446	215	201	131	2	489	0	745	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	485	234	218	142	2	532	0	810	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	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	0	442	213	271	980	14	562	0	499	0	0	499
Arrive On Green	0.00	0.38	0.38	0.09	0.53	0.53	0.31	0.00	0.31	0.00	0.00	0.31
Sat Flow, veh/h	0	1179	569	1774	1832	26	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	719	218	0	144	532	0	810	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1747	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	22.5	4.3	0.0	2.3	18.8	0.0	18.9	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	22.5	4.3	0.0	2.3	18.9	0.0	18.9	0.0	0.0	0.1
Prop In Lane	0.00		0.33	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	655	271	0	994	562	0	499	0	0	499
V/C Ratio(X)	0.00	0.00	1.10	0.81	0.00	0.14	0.95	0.00	1.62	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	655	271	0	994	562	0	499	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.8	13.8	0.0	7.0	22.2	0.0	20.5	0.0	0.0	14.1
Incr Delay (d2), s/veh	0.0	0.0	64.8	16.1	0.0	0.1	26.9	0.0	289.9	0.0	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	0.0	0.0	22.5	3.3	0.0	1.2	12.9	0.0	48.4	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	83.5	29.9	0.0	7.1	49.1	0.0	310.5	0.0	0.0	14.1
LnGrp LOS			F	C		A	D		F			B
Approach Vol, veh/h		719			362			1342			3	
Approach Delay, s/veh		83.5			20.8			206.9			14.1	
Approach LOS		F			C			F			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4		36.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		20.9	6.3	24.5		2.1		4.3				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			142.3									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Cumulative Plus Office Buildout Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	57	2.0	0.630	28.9	LOS D	2.6	66.8	0.85	1.03	25.3
8	T1	62	2.0	0.630	28.9	LOS D	2.6	66.8	0.85	1.03	25.3
18	R2	106	2.0	0.630	28.9	LOS D	2.6	66.8	0.85	1.03	24.7
Approach		225	2.0	0.630	28.9	LOS D	2.6	66.8	0.85	1.03	25.0
East: Highway 68											
1	L2	101	2.0	0.605	14.5	LOS B	4.6	117.6	0.61	0.79	30.3
6	T1	848	2.0	0.605	14.4	LOS B	4.6	117.6	0.60	0.78	30.6
16	R2	821	2.0	0.500	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
Approach		1770	2.0	0.605	7.8	LOS A	4.6	117.6	0.32	0.42	33.2
North: Olmsted Rd											
7	L2	213	2.0	0.242	10.3	LOS B	0.7	17.4	0.59	0.60	30.6
4	T1	41	2.0	0.242	10.0	LOS A	0.7	16.7	0.58	0.58	31.1
14	R2	121	2.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		375	2.0	0.242	6.9	LOS A	0.7	17.4	0.40	0.40	32.4
West: Highway 68											
5	L2	347	2.0	0.412	9.3	LOS A	1.6	41.7	0.45	0.44	30.7
2	T1	1026	2.0	0.619	13.9	LOS B	5.5	139.6	0.57	0.74	31.0
12	R2	29	2.0	0.619	13.8	LOS B	5.4	136.9	0.55	0.73	30.1
Approach		1402	2.0	0.619	12.8	LOS B	5.5	139.6	0.54	0.66	30.9
All Vehicles		3772	2.0	0.630	10.8	LOS B	5.5	139.6	0.44	0.55	31.6

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, January 23, 2019 8:49:50 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ Miti\Cumulative\MontereyCum+OfficeBOAM2 - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Plus Office Buildout Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	1160	2.0	0.486	7.7	LOS A	3.3	84.5	0.27	0.12	31.5
8	T1	41	2.0	0.486	7.7	LOS A	3.3	84.5	0.27	0.12	31.7
18	R2	82	2.0	0.486	7.7	LOS A	3.3	84.5	0.27	0.12	30.8
Approach		1283	2.0	0.486	7.7	LOS A	3.3	84.5	0.27	0.12	31.5
East: Olmsted Way											
1	L2	55	2.0	0.161	9.6	LOS A	0.5	13.6	0.69	0.69	31.2
6	T1	15	2.0	0.161	9.6	LOS A	0.5	13.6	0.69	0.69	31.2
16	R2	9	2.0	0.161	9.6	LOS A	0.5	13.6	0.69	0.69	30.4
Approach		78	2.0	0.161	9.6	LOS A	0.5	13.6	0.69	0.69	31.1
North: Olmsted Rd											
7	L2	9	2.0	0.096	8.8	LOS A	0.3	7.8	0.68	0.68	32.7
4	T1	28	7.0	0.096	9.2	LOS A	0.3	7.8	0.68	0.68	32.5
14	R2	8	7.0	0.096	9.2	LOS A	0.3	7.8	0.68	0.68	31.6
Approach		44	6.0	0.096	9.1	LOS A	0.3	7.8	0.68	0.68	32.4
West: Garden Rd											
5	L2	8	4.0	0.038	3.2	LOS A	0.1	3.7	0.20	0.08	35.8
2	T1	41	2.0	0.038	3.1	LOS A	0.1	3.7	0.20	0.08	35.8
12	R2	300	4.0	0.186	0.0	LOS A	0.0	0.0	0.00	0.00	37.1
Approach		348	3.8	0.186	0.5	LOS A	0.1	3.7	0.03	0.01	37.0
All Vehicles		1754	2.5	0.486	6.4	LOS A	3.3	84.5	0.25	0.14	32.4

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

Organisation: JEFF WALLER CONSULTING | Processed: Wednesday, January 23, 2019 8:52:16 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ Miti\Cumulative\MontereyCum+OfficeBOAM2 - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Office Buildout AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	218	539	838	232	0	170	0	163	1	0	0
Future Volume (veh/h)	0	218	539	838	232	0	170	0	163	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	266	657	1022	283	0	207	0	199	1	0	0
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	1	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, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	374	672	1083	1053	0	405	0	1514	99	0	0
Arrive On Green	0.00	0.20	0.20	0.31	0.57	0.00	0.23	0.00	0.23	0.06	0.00	0.00
Sat Flow, veh/h	0	1863	1549	3442	1863	0	1774	0	2787	1774	0	0
Grp Volume(v), veh/h	0	266	657	1022	283	0	207	0	199	1	0	0
Grp Sat Flow(s),veh/h/ln	0	1863	1549	1721	1863	0	1774	0	1393	1774	0	0
Q Serve(g_s), s	0.0	12.0	18.0	26.0	7.0	0.0	9.1	0.0	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	12.0	18.0	26.0	7.0	0.0	9.1	0.0	3.2	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	374	672	1083	1053	0	405	0	1514	99	0	0
V/C Ratio(X)	0.00	0.71	0.98	0.94	0.27	0.00	0.51	0.00	0.13	0.01	0.00	0.00
Avail Cap(c_a), veh/h	0	374	672	1093	1059	0	405	0	1514	99	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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	33.5	19.8	30.0	10.0	0.0	30.2	0.0	10.1	40.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	6.2	29.0	15.5	0.1	0.0	4.5	0.0	0.2	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	0.0	6.8	21.5	14.7	3.6	0.0	5.0	0.0	1.3	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	39.7	48.7	45.5	10.1	0.0	34.8	0.0	10.3	40.2	0.0	0.0
LnGrp LOS		D	D	D	B		C		B	D		
Approach Vol, veh/h		923			1305			406			1	
Approach Delay, s/veh		46.1			37.8			22.8			40.2	
Approach LOS		D			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	32.7	22.5		9.5		55.2				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	28.5	18.0		5.0		51.0				
Max Q Clear Time (g_c+I1), s		11.1	28.0	20.0		2.0		9.0				
Green Ext Time (p_c), s		1.4	0.3	0.0		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			38.4									
HCM 2010 LOS			D									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68
Cumulative Plus Office Buildout Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	38	2.0	0.571	25.9	LOS D	2.2	55.7	0.83	0.98	26.2
8	T1	22	2.0	0.571	25.9	LOS D	2.2	55.7	0.83	0.98	26.2
18	R2	141	2.0	0.571	25.9	LOS D	2.2	55.7	0.83	0.98	25.6
Approach		201	2.0	0.571	25.9	LOS D	2.2	55.7	0.83	0.98	25.8
East: Highway 68											
1	L2	49	2.0	0.529	10.5	LOS B	2.4	61.3	0.39	0.30	32.3
6	T1	975	2.0	0.529	10.5	LOS B	2.4	61.3	0.38	0.29	32.4
16	R2	251	2.0	0.153	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1275	2.0	0.529	8.4	LOS A	2.4	61.3	0.31	0.23	33.2
North: Olmsted Rd											
7	L2	760	2.0	0.801	34.1	LOS D	6.2	157.9	0.85	1.22	23.2
4	T1	49	2.0	0.801	33.3	LOS D	6.2	157.9	0.84	1.21	23.4
14	R2	436	2.0	0.266	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1245	2.0	0.801	22.1	LOS C	6.2	157.9	0.55	0.79	26.6
West: Highway 68											
5	L2	122	2.0	0.212	9.0	LOS A	0.6	15.2	0.54	0.54	30.8
2	T1	725	2.0	0.639	19.6	LOS C	3.9	98.4	0.70	0.91	28.8
12	R2	26	2.0	0.639	19.2	LOS C	3.8	97.5	0.69	0.90	28.1
Approach		872	2.0	0.639	18.1	LOS C	3.9	98.4	0.68	0.86	29.0
All Vehicles		3594	2.0	0.801	16.5	LOS C	6.2	157.9	0.51	0.62	29.2

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, January 23, 2019 8:38:45 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ Miti\Cumulative\MontereyCum+OfficeBOPM2 - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Plus Office Buildout Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	212	3.0	0.107	3.6	LOS A	0.4	11.4	0.13	0.05	33.6
8	T1	24	3.0	0.107	3.6	LOS A	0.4	11.4	0.13	0.05	34.5
18	R2	49	2.0	0.107	3.5	LOS A	0.4	11.4	0.13	0.05	33.4
Approach		285	2.8	0.107	3.6	LOS A	0.4	11.4	0.13	0.05	33.6
East: Olmsted Way											
1	L2	83	2.0	0.094	4.0	LOS A	0.4	9.0	0.34	0.22	33.6
6	T1	15	2.0	0.094	4.0	LOS A	0.4	9.0	0.34	0.22	33.5
16	R2	9	2.0	0.094	4.0	LOS A	0.4	9.0	0.34	0.22	32.6
Approach		106	2.0	0.094	4.0	LOS A	0.4	9.0	0.34	0.22	33.5
North: Olmsted Rd											
7	L2	9	2.0	0.054	3.9	LOS A	0.2	4.9	0.37	0.25	35.5
4	T1	41	3.0	0.054	3.9	LOS A	0.2	4.9	0.37	0.25	35.4
14	R2	7	3.0	0.054	3.9	LOS A	0.2	4.9	0.37	0.25	34.3
Approach		57	2.9	0.054	3.9	LOS A	0.2	4.9	0.37	0.25	35.3
West: Garden Rd											
5	L2	9	2.0	0.027	3.1	LOS A	0.1	2.6	0.24	0.11	35.6
2	T1	24	2.0	0.027	3.1	LOS A	0.1	2.6	0.24	0.11	35.5
12	R2	1344	2.0	0.819	0.0	LOS A	0.0	0.0	0.00	0.00	36.8
Approach		1377	2.0	0.819	0.5	LOS A	0.1	2.6	0.01	0.00	36.8
All Vehicles		1826	2.2	0.819	1.0	LOS A	0.4	11.4	0.06	0.03	36.0

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.

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Office Buildout PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	215	201	131	2	489	0	745	0	0	3
Future Volume (veh/h)	0	446	215	201	131	2	489	0	745	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	485	234	218	142	2	532	0	810	0	0	3
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	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, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	530	441	290	768	11	659	0	1270	0	0	89
Arrive On Green	0.00	0.28	0.28	0.08	0.42	0.42	0.37	0.00	0.37	0.00	0.00	0.06
Sat Flow, veh/h	0	1863	1550	3442	1832	26	1774	0	2787	0	0	1583
Grp Volume(v), veh/h	0	485	234	218	0	144	532	0	810	0	0	3
Grp Sat Flow(s),veh/h/ln	0	1863	1550	1721	0	1857	1774	0	1393	0	0	1583
Q Serve(g_s), s	0.0	22.3	11.3	5.5	0.0	4.3	23.8	0.0	19.7	0.0	0.0	0.2
Cycle Q Clear(g_c), s	0.0	22.3	11.3	5.5	0.0	4.3	23.8	0.0	19.7	0.0	0.0	0.2
Prop In Lane	0.00		1.00	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	530	441	290	0	779	659	0	1270	0	0	89
V/C Ratio(X)	0.00	0.92	0.53	0.75	0.00	0.18	0.81	0.00	0.64	0.00	0.00	0.03
Avail Cap(c_a), veh/h	0	558	464	295	0	810	659	0	1270	0	0	89
HCM Platoon Ratio	1.00	1.00	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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	30.6	26.7	39.6	0.0	16.2	25.0	0.0	18.5	0.0	0.0	39.5
Incr Delay (d2), s/veh	0.0	19.4	1.0	10.2	0.0	0.1	10.2	0.0	2.5	0.0	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	14.3	4.9	3.0	0.0	2.2	13.5	0.0	8.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	50.0	27.7	49.8	0.0	16.3	35.2	0.0	20.9	0.0	0.0	40.2
LnGrp LOS		D	C	D		B	D		C			D
Approach Vol, veh/h		719			362			1342			3	
Approach Delay, s/veh		42.8			36.5			26.6			40.2	
Approach LOS		D			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		37.4	12.0	29.7		9.5		41.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		32.9	7.6	26.5		5.0		38.6				
Max Q Clear Time (g_c+I1), s		25.8	7.5	24.3		2.2		6.3				
Green Ext Time (p_c), s		4.0	0.0	0.9		0.0		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			32.9									
HCM 2010 LOS			C									

Appendix C.4
Proposed Rezoning – Maximum Residential

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Maximum Residential AM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	896	25	88	744	230	50	21	94	145	32	84
Future Volume (veh/h)	61	896	25	88	744	230	50	21	94	145	32	84
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	63	924	26	91	767	237	52	22	97	149	33	87
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	81	915	905	108	939	948	68	18	325	73	0	319
Arrive On Green	0.05	0.58	0.58	0.06	0.60	0.60	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	85	1583	0	0	1553
Grp Volume(v), veh/h	63	924	26	91	767	237	74	0	97	182	0	87
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	85	0	1583	0	0	1553
Q Serve(g_s), s	3.2	52.5	0.6	4.6	34.5	6.4	0.0	0.0	4.7	0.0	0.0	4.2
Cycle Q Clear(g_c), s	3.2	52.5	0.6	4.6	34.5	6.4	18.5	0.0	4.7	18.5	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	0.70		1.00	0.82		1.00
Lane Grp Cap(c), veh/h	81	915	905	108	939	948	86	0	325	73	0	319
V/C Ratio(X)	0.78	1.01	0.03	0.84	0.82	0.25	0.86	0.00	0.30	2.50	0.00	0.27
Avail Cap(c_a), veh/h	108	915	905	108	939	948	86	0	325	73	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	18.7	7.9	41.8	14.2	8.5	40.7	0.0	30.3	45.0	0.0	30.1
Incr Delay (d2), s/veh	22.2	32.2	0.0	41.3	5.7	0.1	64.9	0.0	2.3	714.8	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	2.1	30.5	0.3	3.5	16.2	2.8	3.4	0.0	2.2	16.2	0.0	2.0
LnGrp Delay(d),s/veh	64.7	50.9	8.0	83.1	19.8	8.6	105.6	0.0	32.6	759.8	0.0	32.2
LnGrp LOS	E	F	A	F	B	A	F		C	F		C
Approach Vol, veh/h	1013				1095				171		269	
Approach Delay, s/veh	50.7				22.7				64.2		524.5	
Approach LOS	D				C				E		F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.0		10.0	57.0	23.0		8.6	58.4				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.5	52.5	18.5		5.5	52.5				
Max Q Clear Time (g_c+I1), s	20.5		6.6	54.5	20.5		5.2	36.5				
Green Ext Time (p_c), s	0.0		0.0	0.0	0.0		0.0	5.0				
Intersection Summary												
HCM 2010 Ctrl Delay	89.6											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing Plus Maximum Residential AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Vol, veh/h	24	2	196	3	3	7	230	64	9	5	56	12
Future Vol, veh/h	24	2	196	3	3	7	230	64	9	5	56	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	90	91	91	91	91	91	91	91
Heavy Vehicles, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	26	2	215	3	3	8	253	70	10	5	62	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	659	658	62	768	666	75	75	0	0	80	0	0
Stage 1	72	72	-	581	581	-	-	-	-	-	-	-
Stage 2	587	586	-	187	85	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	374	384	997	319	380	986	1524	-	-	1518	-	-
Stage 1	933	835	-	499	500	-	-	-	-	-	-	-
Stage 2	492	497	-	815	824	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	318	316	997	215	313	986	1524	-	-	1518	-	-
Mov Cap-2 Maneuver	318	316	-	215	313	-	-	-	-	-	-	-
Stage 1	771	832	-	412	413	-	-	-	-	-	-	-
Stage 2	400	411	-	635	822	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.5		13.8		5.9		0.5					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1524	-	-	318	997	424	1518	-	-			
HCM Lane V/C Ratio	0.166	-	-	0.09	0.216	0.034	0.004	-	-			
HCM Control Delay (s)	7.8	0	-	17.4	9.6	13.8	7.4	0	-			
HCM Lane LOS	A	A	-	C	A	B	A	A	-			
HCM 95th %tile Q(veh)	0.6	-	-	0.3	0.8	0.1	0	-	-			

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Maximum Residential AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	170	234	211	0	130	0	108	1	0	0
Future Volume (veh/h)	0	198	170	234	211	0	130	0	108	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	254	218	300	271	0	167	0	138	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	285	244	412	980	0	606	0	521	439	0	0
Arrive On Green	0.00	0.31	0.31	0.14	0.53	0.00	0.33	0.00	0.33	0.33	0.00	0.00
Sat Flow, veh/h	0	916	786	1774	1863	0	1489	0	1583	982	0	0
Grp Volume(v), veh/h	0	0	472	300	271	0	167	0	138	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1702	1774	1863	0	1489	0	1583	982	0	0
Q Serve(g_s), s	0.0	0.0	16.5	6.5	5.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	16.5	6.5	5.0	0.0	4.3	0.0	4.0	4.4	0.0	0.0
Prop In Lane	0.00		0.46	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	529	412	980	0	606	0	521	439	0	0
V/C Ratio(X)	0.00	0.00	0.89	0.73	0.28	0.00	0.28	0.00	0.26	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	588	571	1211	0	606	0	521	439	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	20.5	13.3	8.2	0.0	15.5	0.0	15.3	17.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	14.9	2.9	0.2	0.0	1.1	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.9	3.4	2.6	0.0	2.3	0.0	1.9	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	35.4	16.3	8.3	0.0	16.6	0.0	16.6	17.1	0.0	0.0
LnGrp LOS			D	B	A		B		B	B		
Approach Vol, veh/h		472			571			305			1	
Approach Delay, s/veh		35.4			12.5			16.6			17.1	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	13.4	23.8		25.0		37.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		6.3	8.5	18.5		6.4		7.0				
Green Ext Time (p_c), s		1.2	0.5	0.9		0.0		1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			21.4									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Maximum Residential PM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	651	23	44	876	169	34	14	125	205	13	149
Future Volume (veh/h)	80	651	23	44	876	169	34	14	125	205	13	149
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	83	678	24	46	912	176	35	15	130	214	14	155
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	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	99	943	932	67	915	924	68	18	334	78	0	334
Arrive On Green	0.06	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	84	1583	0	0	1583
Grp Volume(v), veh/h	83	678	24	46	912	176	50	0	130	228	0	155
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	84	0	1583	0	0	1583
Q Serve(g_s), s	4.2	27.3	0.6	2.3	52.1	4.7	0.0	0.0	6.4	0.0	0.0	7.7
Cycle Q Clear(g_c), s	4.2	27.3	0.6	2.3	52.1	4.7	19.0	0.0	6.4	19.0	0.0	7.7
Prop In Lane	1.00		1.00	1.00		1.00	0.70		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	99	943	932	67	915	924	86	0	334	78	0	334
V/C Ratio(X)	0.84	0.72	0.03	0.68	1.00	0.19	0.58	0.00	0.39	2.94	0.00	0.46
Avail Cap(c_a), veh/h	99	943	932	99	915	924	86	0	334	78	0	334
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.1	12.6	7.3	42.8	18.7	8.8	38.4	0.0	30.5	45.0	0.0	31.0
Incr Delay (d2), s/veh	44.9	2.7	0.0	11.5	28.9	0.1	25.8	0.0	3.4	907.0	0.0	4.6
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	3.3	12.4	0.2	1.3	29.6	2.1	1.9	0.0	3.1	21.5	0.0	3.8
LnGrp Delay(d),s/veh	87.0	15.3	7.3	54.3	47.6	8.9	64.2	0.0	33.9	952.0	0.0	35.6
LnGrp LOS	F	B	A	D	D	A	E		C	F		D
Approach Vol, veh/h		785			1134			180			383	
Approach Delay, s/veh		22.6			41.8			42.3			581.1	
Approach LOS		C			D			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.5	7.9	58.6		23.5	9.5	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.0	52.5		19.0	5.0	52.5				
Max Q Clear Time (g_c+I1), s		21.0	4.3	29.3		21.0	6.2	54.1				
Green Ext Time (p_c), s		0.0	0.0	4.1		0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			119.0									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing Plus Maximum Residential PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	14	2	294	6	1	7	212	33	7	2	67	12
Future Vol, veh/h	14	2	294	6	1	7	212	33	7	2	67	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	18	3	368	8	1	9	265	41	9	3	84	15

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	671	670	84	859	681	46	99	0
Stage 1	90	90	-	576	576	-	-	-
Stage 2	581	580	-	283	105	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-
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	2.227	-
Pot Cap-1 Maneuver	370	378	975	277	373	1023	1488	-
Stage 1	917	820	-	503	502	-	-	-
Stage 2	499	500	-	724	808	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	314	308	975	147	304	1023	1488	-
Mov Cap-2 Maneuver	314	308	-	147	304	-	-	-
Stage 1	749	818	-	411	410	-	-	-
Stage 2	403	409	-	449	806	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	19	6.7	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1488	-	-	313	975	275	1557	-	-
HCM Lane V/C Ratio	0.178	-	-	0.064	0.377	0.064	0.002	-	-
HCM Control Delay (s)	7.9	0	-	17.3	10.9	19	7.3	0	-
HCM Lane LOS	A	A	-	C	B	C	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	1.8	0.2	0	-	-

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Existing Plus Maximum Residential PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	405	164	130	119	2	143	0	180	0	0	3
Future Volume (veh/h)	0	405	164	130	119	2	143	0	180	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	450	182	144	132	2	159	0	200	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
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	0	474	192	281	971	15	567	0	503	0	0	503
Arrive On Green	0.00	0.38	0.38	0.08	0.53	0.53	0.32	0.00	0.32	0.00	0.00	0.32
Sat Flow, veh/h	0	1253	507	1774	1829	28	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	632	144	0	134	159	0	200	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1760	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	20.7	2.7	0.0	2.2	5.2	0.0	5.9	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	20.7	2.7	0.0	2.2	5.2	0.0	5.9	0.0	0.0	0.1
Prop In Lane	0.00		0.29	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	666	281	0	985	567	0	503	0	0	503
V/C Ratio(X)	0.00	0.00	0.95	0.51	0.00	0.14	0.28	0.00	0.40	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	666	297	0	1003	567	0	503	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	17.9	13.4	0.0	7.1	15.6	0.0	15.8	0.0	0.0	13.9
Incr Delay (d2), s/veh	0.0	0.0	23.0	1.5	0.0	0.1	1.2	0.0	2.3	0.0	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	0.0	0.0	14.3	1.4	0.0	1.1	2.2	0.0	2.9	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	40.9	14.8	0.0	7.1	16.9	0.0	18.2	0.0	0.0	13.9
LnGrp LOS			D	B		A	B		B			B
Approach Vol, veh/h		632			278			359			3	
Approach Delay, s/veh		40.9			11.1			17.6			13.9	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	9.0	27.0		23.4		36.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		7.9	4.7	22.7		2.1		4.2				
Green Ext Time (p_c), s		1.2	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			27.8									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Existing Plus Maximum Residential Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	52	2.0	0.346	12.9	LOS B	1.1	28.4	0.65	0.71	30.7
8	T1	22	2.0	0.346	12.9	LOS B	1.1	28.4	0.65	0.71	30.6
18	R2	97	2.0	0.346	12.9	LOS B	1.1	28.4	0.65	0.71	29.8
Approach		170	2.0	0.346	12.9	LOS B	1.1	28.4	0.65	0.71	30.2
East: Highway 68											
1	L2	91	2.0	0.565	11.3	LOS B	3.6	90.8	0.46	0.32	31.8
6	T1	767	2.0	0.565	11.3	LOS B	3.6	90.8	0.46	0.32	31.8
16	R2	232	2.0	0.565	11.3	LOS B	3.6	90.8	0.46	0.32	31.1
Approach		1090	2.0	0.565	11.3	LOS B	3.6	90.8	0.46	0.32	31.7
North: Olmsted Rd											
7	L2	149	2.0	0.465	13.8	LOS B	1.9	49.4	0.63	0.74	29.8
4	T1	33	2.0	0.465	13.8	LOS B	1.9	49.4	0.63	0.74	29.7
14	R2	87	2.0	0.465	13.8	LOS B	1.9	49.4	0.63	0.74	29.0
Approach		269	2.0	0.465	13.8	LOS B	1.9	49.4	0.63	0.74	29.5
West: Highway 68											
5	L2	63	2.0	0.604	13.6	LOS B	5.9	149.1	0.63	0.70	30.9
2	T1	924	2.0	0.604	13.6	LOS B	5.9	149.1	0.63	0.70	31.0
12	R2	26	2.0	0.604	13.6	LOS B	5.9	149.1	0.63	0.70	30.2
Approach		1012	2.0	0.604	13.6	LOS B	5.9	149.1	0.63	0.70	30.9
All Vehicles		2541	2.0	0.604	12.6	LOS B	5.9	149.1	0.56	0.54	31.0

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 2:22:10 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Existing\MontereyEx+MaxResAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Existing Plus Maximum Residential Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	35	2.0	0.326	11.3	LOS B	1.1	26.7	0.60	0.64	31.6
8	T1	15	2.0	0.326	11.3	LOS B	1.1	26.7	0.60	0.64	31.5
18	R2	130	2.0	0.326	11.3	LOS B	1.1	26.7	0.60	0.64	30.7
Approach		180	2.0	0.326	11.3	LOS B	1.1	26.7	0.60	0.64	30.9
East: Highway 68											
1	L2	46	2.0	0.587	11.8	LOS B	3.9	98.0	0.48	0.32	31.8
6	T1	912	2.0	0.587	11.8	LOS B	3.9	98.0	0.48	0.32	31.8
16	R2	176	2.0	0.587	11.8	LOS B	3.9	98.0	0.48	0.32	30.9
Approach		1134	2.0	0.587	11.8	LOS B	3.9	98.0	0.48	0.32	31.6
North: Olmsted Rd											
7	L2	214	2.0	0.702	24.2	LOS C	4.4	112.4	0.77	1.02	26.2
4	T1	14	2.0	0.702	24.2	LOS C	4.4	112.4	0.77	1.02	26.2
14	R2	155	2.0	0.702	24.2	LOS C	4.4	112.4	0.77	1.02	25.6
Approach		382	2.0	0.702	24.2	LOS C	4.4	112.4	0.77	1.02	26.0
West: Highway 68											
5	L2	83	2.0	0.468	10.4	LOS B	2.5	64.5	0.53	0.48	32.1
2	T1	678	2.0	0.468	10.4	LOS B	2.5	64.5	0.53	0.48	32.3
12	R2	24	2.0	0.468	10.4	LOS B	2.5	64.5	0.53	0.48	31.6
Approach		785	2.0	0.468	10.4	LOS B	2.5	64.5	0.53	0.48	32.3
All Vehicles		2482	2.0	0.702	13.2	LOS B	4.4	112.4	0.55	0.51	30.7

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 2:24:28 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Existing\MontereyEx+MaxResPM - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary
1: Olmsted Rd & Highway 68

Cumulative Plus Maximum Residential AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	995	28	98	823	269	55	25	103	163	37	95
Future Volume (veh/h)	76	995	28	98	823	269	55	25	103	163	37	95
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	78	1026	29	101	848	277	57	26	106	168	38	98
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	100	915	905	108	923	931	67	19	325	73	0	319
Arrive On Green	0.06	0.58	0.58	0.06	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	92	1583	0	0	1553
Grp Volume(v), veh/h	78	1026	29	101	848	277	83	0	106	206	0	98
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	92	0	1583	0	0	1553
Q Serve(g_s), s	3.9	52.5	0.7	5.1	43.6	7.9	0.0	0.0	5.1	0.0	0.0	4.8
Cycle Q Clear(g_c), s	3.9	52.5	0.7	5.1	43.6	7.9	18.5	0.0	5.1	18.5	0.0	4.8
Prop In Lane	1.00		1.00	1.00		1.00	0.69		1.00	0.82		1.00
Lane Grp Cap(c), veh/h	100	915	905	108	923	931	86	0	325	73	0	319
V/C Ratio(X)	0.78	1.12	0.03	0.93	0.92	0.30	0.96	0.00	0.33	2.84	0.00	0.31
Avail Cap(c_a), veh/h	108	915	905	108	923	931	86	0	325	73	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.9	18.7	8.0	42.1	16.6	9.3	40.9	0.0	30.4	45.0	0.0	30.3
Incr Delay (d2), s/veh	28.0	69.0	0.0	64.9	14.0	0.2	86.6	0.0	2.6	863.1	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	2.7	39.9	0.3	4.5	22.2	3.4	4.1	0.0	2.5	19.2	0.0	2.3
LnGrp Delay(d),s/veh	70.0	87.7	8.0	107.0	30.6	9.4	127.5	0.0	33.1	908.1	0.0	32.8
LnGrp LOS	E	F	A	F	C	A	F		C	F		C
Approach Vol, veh/h	1133				1226				189		304	
Approach Delay, s/veh	84.5				32.1				74.6		626.0	
Approach LOS	F				C				E		F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.0		10.0	57.0	23.0		9.6	57.4				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.5	52.5	18.5		5.5	52.5				
Max Q Clear Time (g_c+I1), s	20.5		7.1	54.5	20.5		5.9	45.6				
Green Ext Time (p_c), s	0.0		0.0	0.0	0.0		0.0	3.4				
Intersection Summary												
HCM 2010 Ctrl Delay	119.0											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative Plus Maximum Residential AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	9.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕			↕	↕
Traffic Vol, veh/h	7	38	210	51	14	8	260	38	76	8	26	7
Future Vol, veh/h	7	38	210	51	14	8	260	38	76	8	26	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	-	-	100	-	-	-	-	-	-	-	-	25
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, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	8	41	226	55	15	9	280	41	82	9	28	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	700	729	28	826	696	82	36	0	0	123	0	0
Stage 1	46	46	-	642	642	-	-	-	-	-	-	-
Stage 2	654	683	-	184	54	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	350	1041	291	365	978	1575	-	-	1464	-	-
Stage 1	963	857	-	463	469	-	-	-	-	-	-	-
Stage 2	452	449	-	818	850	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	284	281	1041	172	293	978	1575	-	-	1464	-	-
Mov Cap-2 Maneuver	284	281	-	172	293	-	-	-	-	-	-	-
Stage 1	777	852	-	374	378	-	-	-	-	-	-	-
Stage 2	347	362	-	606	845	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.4		32.6		5.4		1.5					
HCM LOS	B		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1575	-	-	281	1041	207	1464	-	-			
HCM Lane V/C Ratio	0.178	-	-	0.172	0.217	0.379	0.006	-	-			
HCM Control Delay (s)	7.8	0	-	20.5	9.4	32.6	7.5	0	-			
HCM Lane LOS	A	A	-	C	A	D	A	A	-			
HCM 95th %tile Q(veh)	0.6	-	-	0.6	0.8	1.7	0	-	-			

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Maximum Residential AM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	218	190	263	232	0	141	0	115	1	0	0
Future Volume (veh/h)	0	218	190	263	232	0	141	0	115	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	266	232	321	283	0	172	0	140	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	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	0	291	254	411	1004	0	591	0	507	420	0	0
Arrive On Green	0.00	0.32	0.32	0.15	0.54	0.00	0.32	0.00	0.32	0.32	0.00	0.00
Sat Flow, veh/h	0	909	793	1774	1863	0	1495	0	1583	960	0	0
Grp Volume(v), veh/h	0	0	498	321	283	0	172	0	140	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1701	1774	1863	0	1495	0	1583	960	0	0
Q Serve(g_s), s	0.0	0.0	18.0	7.1	5.3	0.0	0.0	0.0	4.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	18.0	7.1	5.3	0.0	4.7	0.0	4.2	4.7	0.0	0.0
Prop In Lane	0.00		0.47	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	545	411	1004	0	591	0	507	420	0	0
V/C Ratio(X)	0.00	0.00	0.91	0.78	0.28	0.00	0.29	0.00	0.28	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	571	549	1178	0	591	0	507	420	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	20.9	13.6	8.0	0.0	16.4	0.0	16.2	18.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	18.9	5.2	0.2	0.0	1.2	0.0	1.3	0.0	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	0.0	0.0	11.3	4.0	2.7	0.0	2.5	0.0	2.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	39.8	18.8	8.2	0.0	17.6	0.0	17.6	18.1	0.0	0.0
LnGrp LOS			D	B	A		B		B	B		
Approach Vol, veh/h		498			604			312			1	
Approach Delay, s/veh		39.8			13.8			17.6			18.1	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	14.0	25.0		25.0		39.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		6.7	9.1	20.0		6.7		7.3				
Green Ext Time (p_c), s		1.2	0.5	0.5		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			23.8									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Maximum Residential PM

1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	703	25	48	946	190	37	16	137	243	15	176
Future Volume (veh/h)	90	703	25	48	946	190	37	16	137	243	15	176
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	93	725	26	49	975	196	38	16	141	251	15	181
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	941	930	70	915	924	68	17	334	78	0	334
Arrive On Green	0.06	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	83	1583	0	0	1583
Grp Volume(v), veh/h	93	725	26	49	975	196	54	0	141	266	0	181
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	83	0	1583	0	0	1583
Q Serve(g_s), s	4.7	31.0	0.6	2.5	52.5	5.3	0.0	0.0	6.9	0.0	0.0	9.2
Cycle Q Clear(g_c), s	4.7	31.0	0.6	2.5	52.5	5.3	19.0	0.0	6.9	19.0	0.0	9.2
Prop In Lane	1.00		1.00	1.00		1.00	0.70		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	99	941	930	70	915	924	86	0	334	78	0	334
V/C Ratio(X)	0.94	0.77	0.03	0.70	1.07	0.21	0.63	0.00	0.42	3.42	0.00	0.54
Avail Cap(c_a), veh/h	99	941	930	99	915	924	86	0	334	78	0	334
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.4	13.4	7.3	42.7	18.7	8.9	39.0	0.0	30.7	45.0	0.0	31.6
Incr Delay (d2), s/veh	72.3	4.0	0.0	12.2	48.8	0.1	30.4	0.0	3.9	1121.4	0.0	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	4.3	14.3	0.3	1.4	34.8	2.3	2.1	0.0	3.4	26.1	0.0	4.6
LnGrp Delay(d),s/veh	114.7	17.4	7.3	54.9	67.6	9.0	69.4	0.0	34.6	1166.4	0.0	37.8
LnGrp LOS	F	B	A	D	F	A	E		C	F		D
Approach Vol, veh/h		844			1220			195			447	
Approach Delay, s/veh		27.8			57.7			44.2			709.4	
Approach LOS		C			E			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.5	8.0	58.5		23.5	9.5	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.0	52.5		19.0	5.0	52.5				
Max Q Clear Time (g_c+I1), s		21.0	4.5	33.0		21.0	6.7	54.5				
Green Ext Time (p_c), s		0.0	0.0	4.3		0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			155.0									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative Plus Maximum Residential PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	15.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	20	328	68	12	7	228	20	40	7	34	6
Future Vol, veh/h	7	20	328	68	12	7	228	20	40	7	34	6
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	9	24	400	83	15	9	278	24	49	9	41	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	676	688	41	880	671	49	48	0	0	73	0	0
Stage 1	59	59	-	605	605	-	-	-	-	-	-	-
Stage 2	617	629	-	275	66	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	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	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	367	369	1030	268	378	1020	1553	-	-	1527	-	-
Stage 1	953	846	-	485	487	-	-	-	-	-	-	-
Stage 2	477	475	-	731	840	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	299	298	1030	131	305	1020	1553	-	-	1527	-	-
Mov Cap-2 Maneuver	299	298	-	131	305	-	-	-	-	-	-	-
Stage 1	774	841	-	394	395	-	-	-	-	-	-	-
Stage 2	370	386	-	432	835	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.3		68.6		6.2		1.1					
HCM LOS	B		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1553	-	-	298	1030	154	1527	-	-			
HCM Lane V/C Ratio	0.179	-	-	0.11	0.388	0.689	0.006	-	-			
HCM Control Delay (s)	7.8	0	-	18.6	10.7	68.6	7.4	0	-			
HCM Lane LOS	A	A	-	C	B	F	A	A	-			
HCM 95th %tile O(veh)	0.7	-	-	0.4	1.9	4	0	-	-			

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary

Cumulative Plus Maximum Residential PM

3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	178	140	131	2	160	0	202	0	0	3
Future Volume (veh/h)	0	446	178	140	131	2	160	0	202	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	485	193	152	142	2	174	0	220	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	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	0	476	190	258	973	14	566	0	503	0	0	503
Arrive On Green	0.00	0.38	0.38	0.08	0.53	0.53	0.32	0.00	0.32	0.00	0.00	0.32
Sat Flow, veh/h	0	1260	501	1774	1832	26	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	678	152	0	144	174	0	220	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1761	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	22.5	2.8	0.0	2.3	5.7	0.0	6.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	22.5	2.8	0.0	2.3	5.8	0.0	6.6	0.0	0.0	0.1
Prop In Lane	0.00		0.28	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	666	258	0	986	566	0	503	0	0	503
V/C Ratio(X)	0.00	0.00	1.02	0.59	0.00	0.15	0.31	0.00	0.44	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	666	273	0	1002	566	0	503	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.5	13.5	0.0	7.1	15.9	0.0	16.1	0.0	0.0	13.9
Incr Delay (d2), s/veh	0.0	0.0	39.5	3.0	0.0	0.1	1.4	0.0	2.8	0.0	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	0.0	0.0	18.0	1.6	0.0	1.2	2.4	0.0	3.2	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	58.0	16.5	0.0	7.2	17.3	0.0	18.8	0.0	0.0	13.9
LnGrp LOS			F	B		A	B		B			B
Approach Vol, veh/h		678			296			394			3	
Approach Delay, s/veh		58.0			12.0			18.1			13.9	
Approach LOS		E			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	9.1	27.0		23.4		36.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		8.6	4.8	24.5		2.1		4.3				
Green Ext Time (p_c), s		1.3	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			36.5									
HCM 2010 LOS			D									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Cumulative Plus Maximum Residential Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	57	2.0	0.422	15.9	LOS C	1.5	37.6	0.72	0.81	29.5
8	T1	26	2.0	0.422	15.9	LOS C	1.5	37.6	0.72	0.81	29.4
18	R2	106	2.0	0.422	15.9	LOS C	1.5	37.6	0.72	0.81	28.7
Approach		189	2.0	0.422	15.9	LOS C	1.5	37.6	0.72	0.81	29.0
East: Highway 68											
1	L2	101	2.0	0.652	14.0	LOS B	6.6	168.8	0.57	0.49	30.7
6	T1	848	2.0	0.652	14.0	LOS B	6.6	168.8	0.57	0.49	30.7
16	R2	277	2.0	0.652	14.0	LOS B	6.6	168.8	0.57	0.49	30.0
Approach		1227	2.0	0.652	14.0	LOS B	6.6	168.8	0.57	0.49	30.5
North: Olmsted Rd											
7	L2	168	2.0	0.382	12.6	LOS B	1.3	34.2	0.63	0.70	29.8
4	T1	38	2.0	0.382	12.6	LOS B	1.3	34.2	0.63	0.70	29.7
14	R2	98	2.0	0.191	9.6	LOS A	0.5	13.3	0.59	0.59	31.7
Approach		304	2.0	0.382	11.7	LOS B	1.3	34.2	0.61	0.66	30.3
West: Highway 68											
5	L2	78	2.0	0.700	17.6	LOS C	9.3	236.2	0.74	0.96	29.3
2	T1	1026	2.0	0.700	17.6	LOS C	9.3	236.2	0.74	0.96	29.4
12	R2	29	2.0	0.700	17.6	LOS C	9.3	236.2	0.74	0.96	28.7
Approach		1133	2.0	0.700	17.6	LOS C	9.3	236.2	0.74	0.96	29.3
All Vehicles		2853	2.0	0.700	15.3	LOS C	9.3	236.2	0.65	0.72	29.9

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 3:26:47 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Cumulative\MontereyCum+MaxResAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Plus Maximum Residential Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	280	2.0	0.315	5.7	LOS A	1.8	46.1	0.23	0.10	33.0
8	T1	41	2.0	0.315	5.7	LOS A	1.8	46.1	0.23	0.10	32.9
18	R2	82	2.0	0.315	5.7	LOS A	1.8	46.1	0.23	0.10	32.0
Approach		402	2.0	0.315	5.7	LOS A	1.8	46.1	0.23	0.10	32.8
East: Olmsted Way											
1	L2	55	2.0	0.082	4.5	LOS A	0.3	8.6	0.44	0.32	33.6
6	T1	15	2.0	0.082	4.5	LOS A	0.3	8.6	0.44	0.32	33.5
16	R2	9	2.0	0.082	4.5	LOS A	0.3	8.6	0.44	0.32	32.6
Approach		78	2.0	0.082	4.5	LOS A	0.3	8.6	0.44	0.32	33.4
North: Olmsted Rd											
7	L2	9	2.0	0.049	4.3	LOS A	0.2	4.9	0.44	0.31	35.0
4	T1	28	7.0	0.049	4.5	LOS A	0.2	4.9	0.44	0.31	34.8
14	R2	8	7.0	0.049	4.5	LOS A	0.2	4.9	0.44	0.31	33.8
Approach		44	6.0	0.049	4.4	LOS A	0.2	4.9	0.44	0.31	34.7
West: Garden Rd											
5	L2	8	4.0	0.227	5.0	LOS A	1.1	29.1	0.27	0.13	35.1
2	T1	41	2.0	0.227	4.9	LOS A	1.1	29.1	0.27	0.13	35.1
12	R2	226	4.0	0.227	5.0	LOS A	1.1	29.1	0.27	0.13	34.0
Approach		274	3.7	0.227	5.0	LOS A	1.1	29.1	0.27	0.13	34.2
All Vehicles		799	2.8	0.315	5.3	LOS A	1.8	46.1	0.27	0.14	33.4

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

Organisation: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 3:30:12 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Cumulative\MontereyCum+MaxResAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Cumulative Plus Maximum Residential Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	38	2.0	0.379	13.1	LOS B	1.3	33.3	0.65	0.72	30.8
8	T1	16	2.0	0.379	13.1	LOS B	1.3	33.3	0.65	0.72	30.8
18	R2	141	2.0	0.379	13.1	LOS B	1.3	33.3	0.65	0.72	30.0
Approach		196	2.0	0.379	13.1	LOS B	1.3	33.3	0.65	0.72	30.2
East: Highway 68											
1	L2	49	2.0	0.640	13.4	LOS B	5.1	128.6	0.54	0.41	31.1
6	T1	975	2.0	0.640	13.4	LOS B	5.1	128.6	0.54	0.41	31.0
16	R2	196	2.0	0.640	13.4	LOS B	5.1	128.6	0.54	0.41	30.2
Approach		1221	2.0	0.640	13.4	LOS B	5.1	128.6	0.54	0.41	30.9
North: Olmsted Rd											
7	L2	251	2.0	0.513	16.6	LOS C	2.2	55.6	0.70	0.83	28.1
4	T1	15	2.0	0.513	16.6	LOS C	2.2	55.6	0.70	0.83	28.1
14	R2	181	2.0	0.369	13.4	LOS B	1.3	32.8	0.66	0.73	30.1
Approach		447	2.0	0.513	15.3	LOS C	2.2	55.6	0.68	0.79	28.9
West: Highway 68											
5	L2	93	2.0	0.525	12.0	LOS B	3.8	96.2	0.60	0.64	31.4
2	T1	725	2.0	0.525	12.0	LOS B	3.8	96.2	0.60	0.64	31.6
12	R2	26	2.0	0.525	12.0	LOS B	3.8	96.2	0.60	0.64	30.9
Approach		843	2.0	0.525	12.0	LOS B	3.8	96.2	0.60	0.64	31.5
All Vehicles		2707	2.0	0.640	13.3	LOS B	5.1	128.6	0.59	0.57	30.7

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 2010.

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: JEFF WALLER CONSULTING | Processed: Wednesday, June 13, 2018 3:36:17 PM

Project: C:\Users\mapma\Documents\Jobs\JMW-007 Garden Road\Sidra\Analysis\Cumulative\MontereyCum+MaxResPM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Plus Maximum Residential Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	278	3.0	0.273	5.2	LOS A	1.5	38.0	0.18	0.07	32.9
8	T1	24	3.0	0.273	5.2	LOS A	1.5	38.0	0.18	0.07	32.9
18	R2	49	2.0	0.273	5.2	LOS A	1.5	38.0	0.18	0.07	32.0
Approach		351	2.9	0.273	5.2	LOS A	1.5	38.0	0.18	0.07	32.8
East: Olmsted Way											
1	L2	83	2.0	0.109	4.7	LOS A	0.5	11.7	0.44	0.32	33.2
6	T1	15	2.0	0.109	4.7	LOS A	0.5	11.7	0.44	0.32	33.2
16	R2	9	2.0	0.109	4.7	LOS A	0.5	11.7	0.44	0.32	32.3
Approach		106	2.0	0.109	4.7	LOS A	0.5	11.7	0.44	0.32	33.1
North: Olmsted Rd											
7	L2	9	2.0	0.063	4.5	LOS A	0.3	6.5	0.46	0.35	35.1
4	T1	41	3.0	0.063	4.6	LOS A	0.3	6.5	0.46	0.35	35.0
14	R2	7	3.0	0.063	4.6	LOS A	0.3	6.5	0.46	0.35	34.0
Approach		57	2.9	0.063	4.6	LOS A	0.3	6.5	0.46	0.35	34.9
West: Garden Rd											
5	L2	9	2.0	0.368	6.7	LOS A	2.2	54.9	0.38	0.23	34.3
2	T1	24	2.0	0.368	6.7	LOS A	2.2	54.9	0.38	0.23	34.2
12	R2	400	2.0	0.368	6.7	LOS A	2.2	54.9	0.38	0.23	33.2
Approach		433	2.0	0.368	6.7	LOS A	2.2	54.9	0.38	0.23	33.3
All Vehicles		948	2.4	0.368	5.8	LOS A	2.2	54.9	0.32	0.19	33.2

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.

Appendix C.5
Maximum Residential Plus
Remaining Office Buildout

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Existing + Res. BO + Remaining Office BO AM
1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	896	25	88	744	595	50	24	94	204	36	114
Future Volume (veh/h)	244	896	25	88	744	595	50	24	94	204	36	114
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	252	924	26	91	767	613	52	25	97	210	37	118
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	108	915	905	108	915	924	67	20	325	74	0	319
Arrive On Green	0.06	0.58	0.58	0.06	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	97	1583	0	0	1553
Grp Volume(v), veh/h	252	924	26	91	767	613	77	0	97	247	0	118
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	97	0	1583	0	0	1553
Q Serve(g_s), s	5.5	52.5	0.6	4.6	35.9	23.7	0.0	0.0	4.7	0.0	0.0	5.9
Cycle Q Clear(g_c), s	5.5	52.5	0.6	4.6	35.9	23.7	18.5	0.0	4.7	18.5	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	0.68		1.00	0.85		1.00
Lane Grp Cap(c), veh/h	108	915	905	108	915	924	87	0	325	74	0	319
V/C Ratio(X)	2.32	1.01	0.03	0.84	0.84	0.66	0.89	0.00	0.30	3.34	0.00	0.37
Avail Cap(c_a), veh/h	108	915	905	108	915	924	87	0	325	74	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	18.7	7.9	41.8	15.3	12.7	40.3	0.0	30.3	45.0	0.0	30.7
Incr Delay (d2), s/veh	623.8	32.2	0.0	41.3	6.9	1.8	68.8	0.0	2.3	1085.5	0.0	3.3
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	21.5	30.5	0.3	3.5	17.1	10.7	3.6	0.0	2.2	24.1	0.0	2.8
LnGrp Delay(d),s/veh	666.1	50.9	8.0	83.1	22.2	14.5	109.1	0.0	32.6	1130.5	0.0	34.0
LnGrp LOS	F	F	A	F	C	B	F		C	F		C
Approach Vol, veh/h	1202				1471				174		365	
Approach Delay, s/veh	179.0				22.8				66.4		776.0	
Approach LOS	F				C				E		F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.0		10.0	57.0	23.0		10.0	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.5	52.5	18.5		5.5	52.5				
Max Q Clear Time (g_c+I1), s	20.5		6.6	54.5	20.5		7.5	37.9				
Green Ext Time (p_c), s	0.0		0.0	0.0	0.0		0.0	6.2				
Intersection Summary												
HCM 2010 Ctrl Delay	169.2											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing + Res. BO + Remaining Office BO AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	21.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	24	2	289	3	3	7	803	64	9	5	56	12
Future Vol, veh/h	24	2	289	3	3	7	803	64	9	5	56	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	26	2	318	3	3	8	882	70	10	5	62	13

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	1917	1916	62	2078	1924	75	75	0
Stage 1	72	72	-	1839	1839	-	-	-
Stage 2	1845	1844	-	239	85	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	50	68	997	39	67	986	1524	-
Stage 1	933	835	-	97	126	-	-	-
Stage 2	95	125	-	764	824	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	~ 23	27	997	13	26	986	1524	-
Mov Cap-2 Maneuver	~ 23	27	-	13	26	-	-	-
Stage 1	368	832	-	38	50	-	-	-
Stage 2	35	49	-	518	822	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	52.1	153.9	9.7	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	23	997	37	1518	-	-
HCM Lane V/C Ratio	0.579	-	-	1.242	0.319	0.386	0.004	-	-
HCM Control Delay (s)	10.6	0	-	\$ 516.8	10.3	153.9	7.4	0	-
HCM Lane LOS	B	A	-	F	B	F	A	A	-
HCM 95th %tile Q(veh)	3.9	-	-	3.6	1.4	1.3	0	-	-

Notes									
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined					*: All major volume in platoon		

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Existing + Res. BO + Remaining Office BO AM
3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	414	636	211	0	169	0	173	1	0	0
Future Volume (veh/h)	0	198	414	636	211	0	169	0	173	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	254	531	815	271	0	217	0	222	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	163	340	470	1078	0	552	0	464	327	0	0
Arrive On Green	0.00	0.31	0.31	0.21	0.58	0.00	0.29	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	0	530	1107	1774	1863	0	1535	0	1583	766	0	0
Grp Volume(v), veh/h	0	0	785	815	271	0	217	0	222	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1637	1774	1863	0	1535	0	1583	766	0	0
Q Serve(g_s), s	0.0	0.0	21.5	14.5	5.0	0.0	0.0	0.0	8.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	21.5	14.5	5.0	0.0	6.9	0.0	8.1	6.9	0.0	0.0
Prop In Lane	0.00		0.68	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	503	470	1078	0	552	0	464	327	0	0
V/C Ratio(X)	0.00	0.00	1.56	1.73	0.25	0.00	0.39	0.00	0.48	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	503	470	1078	0	552	0	464	327	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	24.3	19.2	7.3	0.0	19.9	0.0	20.4	22.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	262.2	338.6	0.1	0.0	2.1	0.0	3.5	0.0	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	0.0	0.0	46.3	53.2	2.6	0.0	3.7	0.0	3.9	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	286.4	357.7	7.4	0.0	22.0	0.0	23.9	22.7	0.0	0.0
LnGrp LOS			F	F	A		C		C	C		
Approach Vol, veh/h		785			1086			439			1	
Approach Delay, s/veh		286.4			270.3			23.0			22.7	
Approach LOS		F			F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	19.0	26.0		25.0		45.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		10.1	16.5	23.5		8.9		7.0				
Green Ext Time (p_c), s		1.5	0.0	0.0		0.0		1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			228.7									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Existing + Res. BO + Remaining Office BO PM
1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	651	23	44	876	237	34	12	125	559	37	326
Future Volume (veh/h)	114	651	23	44	876	237	34	12	125	559	37	326
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	119	678	24	46	912	247	35	12	130	582	39	340
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	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	99	943	932	67	915	924	70	14	334	77	0	334
Arrive On Green	0.06	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	67	1583	0	0	1583
Grp Volume(v), veh/h	119	678	24	46	912	247	47	0	130	621	0	340
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	67	0	1583	0	0	1583
Q Serve(g_s), s	5.0	27.3	0.6	2.3	52.1	6.9	0.0	0.0	6.4	0.0	0.0	19.0
Cycle Q Clear(g_c), s	5.0	27.3	0.6	2.3	52.1	6.9	19.0	0.0	6.4	19.0	0.0	19.0
Prop In Lane	1.00		1.00	1.00		1.00	0.74		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	99	943	932	67	915	924	84	0	334	77	0	334
V/C Ratio(X)	1.21	0.72	0.03	0.68	1.00	0.27	0.56	0.00	0.39	8.01	0.00	1.02
Avail Cap(c_a), veh/h	99	943	932	99	915	924	84	0	334	77	0	334
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	12.6	7.3	42.8	18.7	9.3	39.4	0.0	30.5	45.0	0.0	35.5
Incr Delay (d2), s/veh	156.7	2.7	0.0	11.5	28.9	0.2	24.3	0.0	3.4	3182.7	0.0	53.7
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	0.1
%ile BackOfQ(50%),veh/ln	6.7	12.4	0.2	1.3	29.6	3.1	1.7	0.0	3.1	70.4	0.0	13.2
LnGrp Delay(d),s/veh	199.2	15.3	7.3	54.3	47.6	9.4	63.6	0.0	33.9	3227.7	0.0	89.2
LnGrp LOS	F	B	A	D	D	A	E		C	F		F
Approach Vol, veh/h		821			1205			177			961	
Approach Delay, s/veh		41.7			40.0			41.8			2117.3	
Approach LOS		D			D			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.5	7.9	58.6		23.5	9.5	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.0	52.5		19.0	5.0	52.5				
Max Q Clear Time (g_c+I1), s		21.0	4.3	29.3		21.0	7.0	54.1				
Green Ext Time (p_c), s		0.0	0.0	4.1		0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					671.5							
HCM 2010 LOS					F							

5. Traffic Impact Analysis

HCM 2010 TWSC

Existing + Res. BO + Remaining Office BO PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh		51										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕			↕	↕
Traffic Vol, veh/h	14	2	849	6	1	7	319	33	7	2	67	12
Future Vol, veh/h	14	2	849	6	1	7	319	33	7	2	67	12
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	18	3	1061	8	1	9	399	41	9	3	84	15
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	939	938	84	1474	949	46	99	0	0	50	0	0
Stage 1	90	90	-	844	844	-	-	-	-	-	-	-
Stage 2	849	848	-	630	105	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	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	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	244	264	~ 975	105	260	1023	1488	-	-	1557	-	-
Stage 1	917	820	-	358	379	-	-	-	-	-	-	-
Stage 2	356	378	-	470	808	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	189	191	~ 975	-	188	1023	1488	-	-	1557	-	-
Mov Cap-2 Maneuver	189	191	-	-	188	-	-	-	-	-	-	-
Stage 1	664	818	-	259	274	-	-	-	-	-	-	-
Stage 2	254	274	-	-	806	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	74.7				7.4		0.2					
HCM LOS	F		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1488	-	-	189	975	-	1557	-	-			
HCM Lane V/C Ratio	0.268	-	-	0.106	1.088	-	0.002	-	-			
HCM Control Delay (s)	8.3	0	-	26.3	75.6	-	7.3	0	-			
HCM Lane LOS	A	A	-	D	F	-	A	A	-			
HCM 95th %tile Q(veh)	1.1	-	-	0.3	26.1	-	0	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Existing + Res. BO + Remaining Office BO PM
3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	405	209	204	119	2	380	0	570	0	0	3
Future Volume (veh/h)	0	405	209	204	119	2	380	0	570	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	450	232	227	132	2	422	0	633	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	0
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	0	431	222	271	979	15	562	0	499	0	0	499
Arrive On Green	0.00	0.38	0.38	0.09	0.53	0.53	0.31	0.00	0.31	0.00	0.00	0.31
Sat Flow, veh/h	0	1150	593	1774	1829	28	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	682	227	0	134	422	0	633	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1742	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	22.5	4.5	0.0	2.2	17.6	0.0	18.9	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	22.5	4.5	0.0	2.2	17.7	0.0	18.9	0.0	0.0	0.1
Prop In Lane	0.00		0.34	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	653	271	0	994	562	0	499	0	0	499
V/C Ratio(X)	0.00	0.00	1.04	0.84	0.00	0.13	0.75	0.00	1.27	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	653	271	0	994	562	0	499	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.8	13.8	0.0	7.0	20.2	0.0	20.5	0.0	0.0	14.1
Incr Delay (d2), s/veh	0.0	0.0	47.2	20.1	0.0	0.1	9.0	0.0	136.3	0.0	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	0.0	0.0	19.3	3.7	0.0	1.1	8.2	0.0	27.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	65.9	34.0	0.0	7.1	29.1	0.0	156.8	0.0	0.0	14.1
LnGrp LOS			F	C		A	C		F			B
Approach Vol, veh/h		682			361			1055			3	
Approach Delay, s/veh		65.9			24.0			105.7			14.1	
Approach LOS		E			C			F			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4		36.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		20.9	6.5	24.5		2.1		4.2				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			78.6									
HCM 2010 LOS			E									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Existing Plus Residential Buildout Plus Remaining Office Buildout Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	52	2.0	0.453	19.2	LOS C	1.6	39.6	0.77	0.88	28.3
8	T1	25	2.0	0.453	19.2	LOS C	1.6	39.6	0.77	0.88	28.2
18	R2	97	2.0	0.453	19.2	LOS C	1.6	39.6	0.77	0.88	27.5
Approach		173	2.0	0.453	19.2	LOS C	1.6	39.6	0.77	0.88	27.9
East: Highway 68											
1	L2	91	2.0	0.532	12.2	LOS B	3.4	85.8	0.55	0.67	31.3
6	T1	767	2.0	0.532	12.1	LOS B	3.4	85.8	0.54	0.66	31.6
16	R2	613	2.0	0.374	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1471	2.0	0.532	7.1	LOS A	3.4	85.8	0.31	0.39	33.6
North: Olmsted Rd											
7	L2	210	2.0	0.219	9.3	LOS A	0.6	15.7	0.55	0.55	31.0
4	T1	37	2.0	0.219	9.0	LOS A	0.6	15.0	0.54	0.54	31.4
14	R2	118	2.0	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		365	2.0	0.219	6.3	LOS A	0.6	15.7	0.37	0.37	32.7
West: Highway 68											
5	L2	355	2.0	0.415	9.2	LOS A	1.6	41.3	0.44	0.42	30.7
2	T1	924	2.0	0.550	11.9	LOS B	3.9	98.1	0.51	0.60	31.8
12	R2	26	2.0	0.550	11.8	LOS B	3.8	95.5	0.49	0.59	30.9
Approach		1304	2.0	0.550	11.2	LOS B	3.9	98.1	0.49	0.55	31.5
All Vehicles		3313	2.0	0.550	9.2	LOS A	3.9	98.1	0.41	0.48	32.3

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 2010.

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: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 8:58:35 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+ResBO+RemOfficeBOAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 2 [O/G]**

2. Olmsted Road / Garden Road
Existing Plus Residential Buildout Plus Remaining Office Buildout Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: RoadName											
3	L2	882	2.0	0.357	5.9	LOS A	2.0	51.6	0.16	0.06	32.3
8	T1	70	2.0	0.357	5.9	LOS A	2.0	51.6	0.16	0.06	32.5
18	R2	10	2.0	0.357	5.9	LOS A	2.0	51.6	0.16	0.06	31.5
Approach		963	2.0	0.357	5.9	LOS A	2.0	51.6	0.16	0.06	32.3
East: RoadName											
1	L2	3	2.0	0.024	6.3	LOS A	0.1	2.0	0.59	0.53	33.9
6	T1	3	2.0	0.024	6.3	LOS A	0.1	2.0	0.59	0.53	33.8
16	R2	8	2.0	0.024	6.3	LOS A	0.1	2.0	0.59	0.53	32.9
Approach		14	2.0	0.024	6.3	LOS A	0.1	2.0	0.59	0.53	33.3
North: RoadName											
7	L2	5	2.0	0.125	7.0	LOS A	0.4	10.9	0.59	0.59	34.1
4	T1	62	2.0	0.125	7.0	LOS A	0.4	10.9	0.59	0.59	34.0
14	R2	13	2.0	0.125	7.0	LOS A	0.4	10.9	0.59	0.59	33.0
Approach		80	2.0	0.125	7.0	LOS A	0.4	10.9	0.59	0.59	33.8
West: RoadName											
5	L2	26	4.0	0.022	3.0	LOS A	0.1	2.2	0.17	0.06	33.6
2	T1	2	4.0	0.022	3.0	LOS A	0.1	2.2	0.17	0.06	33.6
12	R2	318	4.0	0.197	0.0	LOS A	0.0	0.0	0.00	0.00	37.1
Approach		346	4.0	0.197	0.3	LOS A	0.1	2.2	0.01	0.00	36.8
All Vehicles		1403	2.5	0.357	4.6	LOS A	2.0	51.6	0.16	0.08	33.4

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

Organisation: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 9:00:48 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+ResBO+RemOfficeBOAM - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Existing + Res. BO + Remaining Office BO AM
 3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	414	636	211	0	169	0	173	1	0	0
Future Volume (veh/h)	0	198	414	636	211	0	169	0	173	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	254	531	815	271	0	217	0	222	1	0	0
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	1	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	419	715	881	1001	0	410	0	1358	111	0	0
Arrive On Green	0.00	0.23	0.23	0.26	0.54	0.00	0.23	0.00	0.23	0.06	0.00	0.00
Sat Flow, veh/h	0	1863	1549	3442	1863	0	1774	0	2787	1774	0	0
Grp Volume(v), veh/h	0	254	531	815	271	0	217	0	222	1	0	0
Grp Sat Flow(s),veh/h/ln	0	1863	1549	1721	1863	0	1774	0	1393	1774	0	0
Q Serve(g_s), s	0.0	9.8	18.0	18.5	6.3	0.0	8.6	0.0	3.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.8	18.0	18.5	6.3	0.0	8.6	0.0	3.5	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	419	715	881	1001	0	410	0	1358	111	0	0
V/C Ratio(X)	0.00	0.61	0.74	0.92	0.27	0.00	0.53	0.00	0.16	0.01	0.00	0.00
Avail Cap(c_a), veh/h	0	419	715	882	1002	0	410	0	1358	111	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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.8	16.7	29.0	10.0	0.0	26.9	0.0	11.4	35.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.5	4.2	15.3	0.1	0.0	4.8	0.0	0.3	0.1	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	0.0	5.3	12.5	10.6	3.3	0.0	4.7	0.0	1.4	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	30.3	20.9	44.3	10.2	0.0	31.7	0.0	11.7	35.3	0.0	0.0
LnGrp LOS		C	C	D	B		C		B	D		
Approach Vol, veh/h		785			1086			439			1	
Approach Delay, s/veh		23.9			35.7			21.6			35.3	
Approach LOS		C			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.0	25.0	22.5		9.5		47.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5	20.5	18.0		5.0		43.0				
Max Q Clear Time (g_c+I1), s		10.6	20.5	20.0		2.0		8.3				
Green Ext Time (p_c), s		1.4	0.0	0.0		0.0		1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			29.0									
HCM 2010 LOS			C									
Notes												

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68
Existing Plus Residential Buildout Plus Remaining Office Buildout Conditions
PM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	35	2.0	0.430	17.3	LOS C	1.5	37.7	0.74	0.84	29.1
8	T1	13	2.0	0.430	17.3	LOS C	1.5	37.7	0.74	0.84	29.1
18	R2	130	2.0	0.430	17.3	LOS C	1.5	37.7	0.74	0.84	28.4
Approach		178	2.0	0.430	17.3	LOS C	1.5	37.7	0.74	0.84	28.6
East: Highway 68											
1	L2	46	2.0	0.489	9.6	LOS A	2.1	53.8	0.35	0.26	32.7
6	T1	912	2.0	0.489	9.6	LOS A	2.1	53.8	0.34	0.25	32.8
16	R2	247	2.0	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1205	2.0	0.489	7.6	LOS A	2.1	53.8	0.27	0.20	33.6
North: Olmsted Rd											
7	L2	582	2.0	0.584	18.8	LOS C	2.9	74.7	0.72	0.89	27.4
4	T1	39	2.0	0.584	18.4	LOS C	2.9	73.8	0.71	0.88	27.6
14	R2	340	2.0	0.207	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		960	2.0	0.584	12.1	LOS B	2.9	74.7	0.46	0.57	30.1
West: Highway 68											
5	L2	119	2.0	0.179	7.5	LOS A	0.5	12.8	0.47	0.47	31.5
2	T1	678	2.0	0.519	13.5	LOS B	2.8	70.1	0.60	0.73	31.1
12	R2	24	2.0	0.519	13.3	LOS B	2.7	68.6	0.59	0.72	30.3
Approach		821	2.0	0.519	12.6	LOS B	2.8	70.1	0.58	0.69	31.2
All Vehicles		3165	2.0	0.584	10.8	LOS B	2.9	74.7	0.44	0.48	31.5

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 2010.

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: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 9:03:33 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+ResBO+RemOfficeBOPM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 2 [O/G]**

2. Olmsted Road / Garden Road
Existing Plus Residential Buildout Plus Remaining Office Buildout Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	399	2.0	0.207	5.2	LOS A	0.9	21.7	0.11	0.03	32.7
8	T1	41	2.0	0.207	5.2	LOS A	0.9	21.7	0.11	0.03	32.9
18	R2	9	2.0	0.207	5.2	LOS A	0.9	21.7	0.11	0.03	32.0
Approach		449	2.0	0.207	5.2	LOS A	0.9	21.7	0.11	0.03	32.7
East: Olmsted Wy											
1	L2	8	2.0	0.022	4.7	LOS A	0.1	1.3	0.34	0.26	34.1
6	T1	1	2.0	0.022	4.7	LOS A	0.1	1.3	0.34	0.26	34.1
16	R2	9	2.0	0.022	4.7	LOS A	0.1	1.3	0.34	0.26	33.1
Approach		18	2.0	0.022	4.7	LOS A	0.1	1.3	0.34	0.26	33.6
North: Olmsted Rd											
7	L2	3	2.0	0.122	5.6	LOS A	0.3	8.1	0.35	0.30	35.0
4	T1	84	2.0	0.122	5.6	LOS A	0.3	8.1	0.35	0.30	34.9
14	R2	15	2.0	0.122	5.6	LOS A	0.3	8.1	0.35	0.30	33.9
Approach		101	2.0	0.122	5.6	LOS A	0.3	8.1	0.35	0.30	34.7
West: Garden Rd											
5	L2	18	2.0	0.020	3.7	LOS A	0.1	1.7	0.20	0.08	33.4
2	T1	3	2.0	0.020	3.7	LOS A	0.1	1.7	0.20	0.08	33.4
12	R2	1061	2.0	0.646	0.0	LOS A	0.0	0.0	0.00	0.00	37.1
Approach		1081	2.0	0.646	0.2	LOS A	0.1	1.7	0.00	0.00	37.0
All Vehicles		1649	2.0	0.646	1.9	LOS A	0.9	21.7	0.06	0.03	35.5

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 2010.

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: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 9:05:17 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Existing\MontereyEx+ResBO+RemOfficeBOPM - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Existing + Res. BO + Remaining Office BO PM
 3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	405	209	204	119	2	380	0	570	0	0	3
Future Volume (veh/h)	0	405	209	204	119	2	380	0	570	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	450	232	227	132	2	422	0	633	0	0	3
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	1	0
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, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	497	946	301	759	11	597	0	1181	0	0	107
Arrive On Green	0.00	0.27	0.27	0.09	0.41	0.41	0.34	0.00	0.34	0.00	0.00	0.07
Sat Flow, veh/h	0	1863	1549	3442	1829	28	1774	0	2787	0	0	1583
Grp Volume(v), veh/h	0	450	232	227	0	134	422	0	633	0	0	3
Grp Sat Flow(s),veh/h/ln	0	1863	1549	1721	0	1857	1774	0	1393	0	0	1583
Q Serve(g_s), s	0.0	17.4	5.2	4.8	0.0	3.4	15.4	0.0	12.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	17.4	5.2	4.8	0.0	3.4	15.4	0.0	12.6	0.0	0.0	0.1
Prop In Lane	0.00		1.00	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	497	946	301	0	770	597	0	1181	0	0	107
V/C Ratio(X)	0.00	0.91	0.25	0.75	0.00	0.17	0.71	0.00	0.54	0.00	0.00	0.03
Avail Cap(c_a), veh/h	0	514	960	301	0	787	597	0	1181	0	0	107
HCM Platoon Ratio	1.00	1.00	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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	26.4	6.9	33.1	0.0	13.7	21.5	0.0	16.0	0.0	0.0	32.4
Incr Delay (d2), s/veh	0.0	19.3	0.1	10.3	0.0	0.1	6.9	0.0	1.7	0.0	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	0.0	11.5	4.1	2.7	0.0	1.7	8.6	0.0	5.1	0.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	45.7	7.0	43.4	0.0	13.8	28.4	0.0	17.7	0.0	0.0	32.9
LnGrp LOS		D	A	D		B	C		B			C
Approach Vol, veh/h		682			361			1055			3	
Approach Delay, s/veh		32.5			32.4			22.0			32.9	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		29.5	11.0	24.3		9.5		35.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.0	6.5	20.5		5.0		31.5				
Max Q Clear Time (g_c+I1), s		17.4	6.8	19.4		2.1		5.4				
Green Ext Time (p_c), s		3.4	0.0	0.5		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay				27.2								
HCM 2010 LOS				C								

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Cumulative + Res. BO + Remaining Office BO AM
1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	995	28	98	823	639	55	50	103	222	41	125
Future Volume (veh/h)	259	995	28	98	823	639	55	50	103	222	41	125
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1827	1827
Adj Flow Rate, veh/h	267	1026	29	101	848	659	57	52	106	229	42	129
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	108	915	905	108	915	924	61	38	325	74	0	319
Arrive On Green	0.06	0.58	0.58	0.06	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	184	1583	0	0	1553
Grp Volume(v), veh/h	267	1026	29	101	848	659	109	0	106	271	0	129
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	184	0	1583	0	0	1553
Q Serve(g_s), s	5.5	52.5	0.7	5.1	44.1	26.7	0.0	0.0	5.1	0.0	0.0	6.5
Cycle Q Clear(g_c), s	5.5	52.5	0.7	5.1	44.1	26.7	18.5	0.0	5.1	18.5	0.0	6.5
Prop In Lane	1.00		1.00	1.00		1.00	0.52		1.00	0.85		1.00
Lane Grp Cap(c), veh/h	108	915	905	108	915	924	99	0	325	74	0	319
V/C Ratio(X)	2.46	1.12	0.03	0.93	0.93	0.71	1.11	0.00	0.33	3.67	0.00	0.40
Avail Cap(c_a), veh/h	108	915	905	108	915	924	99	0	325	74	0	319
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	18.7	8.0	42.1	17.0	13.4	38.3	0.0	30.4	45.0	0.0	31.0
Incr Delay (d2), s/veh	685.1	69.0	0.0	64.9	15.1	2.6	121.8	0.0	2.6	1235.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.3	39.9	0.3	4.5	22.7	12.2	5.8	0.0	2.5	27.1	0.0	3.1
LnGrp Delay(d),s/veh	727.4	87.7	8.0	107.0	32.1	16.0	160.1	0.0	33.1	1280.1	0.0	34.7
LnGrp LOS	F	F	A	F	C	B	F		C	F		C
Approach Vol, veh/h	1322			1608			215			400		
Approach Delay, s/veh	215.2			30.2			97.5			878.4		
Approach LOS	F			C			F			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	10.0	57.0		23.0	10.0	57.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.5	5.5	52.5		18.5	5.5	52.5				
Max Q Clear Time (g_c+I1), s		20.5	7.1	54.5		20.5	7.5	46.1				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	3.9				
Intersection Summary												
HCM 2010 Ctrl Delay	199.0											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative + Res. BO + Remaining Office BO AM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	51.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	7	38	303	51	14	8	883	38	76	8	26	7
Future Vol, veh/h	7	38	303	51	14	8	883	38	76	8	26	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	-	-	100	-	-	-	-	-	-	-	-	25
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, %	4	2	4	2	2	2	2	2	2	2	7	7
Mvmt Flow	8	41	326	55	15	9	949	41	82	9	28	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2038	2067	28	2214	2034	82	36	0	0	123	0	0
Stage 1	46	46	-	1980	1980	-	-	-	-	-	-	-
Stage 2	1992	2021	-	234	54	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.24	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.336	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	41	54	1041	~31	57	978	1575	-	-	1464	-	-
Stage 1	963	857	-	80	107	-	-	-	-	-	-	-
Stage 2	78	102	-	769	850	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	8	~19	1041	-	20	978	1575	-	-	1464	-	-
Mov Cap-2 Maneuver	8	~19	-	-	20	-	-	-	-	-	-	-
Stage 1	334	852	-	~28	37	-	-	-	-	-	-	-
Stage 2	16	~35	-	500	845	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	190		9.5	1.5
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1575	-	-	16	1041	-	1464	-	-
HCM Lane V/C Ratio	0.603	-	-	3.024	0.313	-	0.006	-	-
HCM Control Delay (s)	10.7	0	\$ 1402.1	10	-	7.5	0	-	-
HCM Lane LOS	B	A	-	F	B	-	A	A	-
HCM 95th %tile Q(veh)	4.3	-	-	6.7	1.3	-	0	-	-

Notes												
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined						*: All major volume in platoon				

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Cumulative + Res. BO + Remaining Office BO AM
3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	218	434	665	232	0	180	0	180	1	0	0
Future Volume (veh/h)	0	218	434	665	232	0	180	0	180	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	266	529	811	283	0	220	0	220	1	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	1	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	0	169	335	470	1078	0	553	0	464	326	0	0
Arrive On Green	0.00	0.31	0.31	0.21	0.58	0.00	0.29	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	0	549	1091	1774	1863	0	1536	0	1583	761	0	0
Grp Volume(v), veh/h	0	0	795	811	283	0	220	0	220	1	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1640	1774	1863	0	1536	0	1583	761	0	0
Q Serve(g_s), s	0.0	0.0	21.5	14.5	5.3	0.0	0.0	0.0	8.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	21.5	14.5	5.3	0.0	7.0	0.0	8.0	7.1	0.0	0.0
Prop In Lane	0.00		0.67	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	504	470	1078	0	553	0	464	326	0	0
V/C Ratio(X)	0.00	0.00	1.58	1.72	0.26	0.00	0.40	0.00	0.47	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	504	470	1078	0	553	0	464	326	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	24.3	19.2	7.3	0.0	20.0	0.0	20.3	22.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	269.6	334.8	0.1	0.0	2.1	0.0	3.5	0.0	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	0.0	0.0	47.4	52.8	2.7	0.0	3.8	0.0	3.9	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	293.8	354.0	7.5	0.0	22.1	0.0	23.8	22.8	0.0	0.0
LnGrp LOS			F	F	A		C		C	C		
Approach Vol, veh/h		795			1094			440			1	
Approach Delay, s/veh		293.8			264.3			22.9			22.8	
Approach LOS		F			F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	19.0	26.0		25.0		45.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5	14.5	21.5		20.5		40.5				
Max Q Clear Time (g_c+I1), s		10.0	16.5	23.5		9.1		7.3				
Green Ext Time (p_c), s		1.5	0.0	0.0		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			228.7									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Cumulative + Res. BO + Remaining Office BO PM
1: Olmsted Rd & Highway 68

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	703	25	48	946	258	37	21	137	597	39	353
Future Volume (veh/h)	124	703	25	48	946	258	37	21	137	597	39	353
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1569	1863	1863	1569	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	128	725	26	49	975	266	38	22	141	615	40	364
Adj No. of Lanes	1	1	1	1	1	1	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	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	941	930	70	915	924	65	24	334	78	0	334
Arrive On Green	0.06	0.60	0.60	0.04	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1569	1551	1774	1569	1583	0	114	1583	0	0	1583
Grp Volume(v), veh/h	128	725	26	49	975	266	60	0	141	655	0	364
Grp Sat Flow(s),veh/h/ln	1774	1569	1551	1774	1569	1583	114	0	1583	0	0	1583
Q Serve(g_s), s	5.0	31.0	0.6	2.5	52.5	7.6	0.0	0.0	6.9	0.0	0.0	19.0
Cycle Q Clear(g_c), s	5.0	31.0	0.6	2.5	52.5	7.6	19.0	0.0	6.9	19.0	0.0	19.0
Prop In Lane	1.00		1.00	1.00		1.00	0.63		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	99	941	930	70	915	924	89	0	334	78	0	334
V/C Ratio(X)	1.30	0.77	0.03	0.70	1.07	0.29	0.67	0.00	0.42	8.45	0.00	1.09
Avail Cap(c_a), veh/h	99	941	930	99	915	924	89	0	334	78	0	334
HCM Platoon Ratio	1.00	1.00	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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	13.4	7.3	42.7	18.7	9.4	37.6	0.0	30.7	45.0	0.0	35.5
Incr Delay (d2), s/veh	190.5	4.0	0.0	12.2	48.8	0.2	33.6	0.0	3.9	3376.5	0.0	75.2
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	7.7	14.3	0.3	1.4	34.8	3.3	2.3	0.0	3.4	74.7	0.0	15.2
LnGrp Delay(d),s/veh	233.0	17.4	7.3	54.9	67.6	9.6	71.3	0.0	34.6	3421.5	0.0	110.7
LnGrp LOS	F	B	A	D	F	A	E		C	F		F
Approach Vol, veh/h	879		1290			201			1019			
Approach Delay, s/veh	48.5		55.1			45.6			2238.8			
Approach LOS	D		E			D			F			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	23.5		8.0	58.5	23.5		9.5	57.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5		4.5	4.5				
Max Green Setting (Gmax), s	19.0		5.0	52.5	19.0		5.0	52.5				
Max Q Clear Time (g_c+I1), s	21.0		4.5	33.0	21.0		7.0	54.5				
Green Ext Time (p_c), s	0.0		0.0	4.3	0.0		0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	709.4											
HCM 2010 LOS	F											

5. Traffic Impact Analysis

HCM 2010 TWSC

Cumulative + Res. BO + Remaining Office BO PM

2: Olmsted Rd & Garden Rd/Olmsted Way

Intersection												
Int Delay, s/veh	39.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	↔
Traffic Vol, veh/h	7	20	883	68	12	7	335	20	40	7	34	6
Future Vol, veh/h	7	20	883	68	12	7	335	20	40	7	34	6
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	-	-	-	-	-	-	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	3	3	2	2	3	3
Mvmt Flow	9	24	1077	83	15	9	409	24	49	9	41	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	938	950	41	1480	933	49	48	0	0	73	0	0
Stage 1	59	59	-	867	867	-	-	-	-	-	-	-
Stage 2	879	891	-	613	66	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	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	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	244	260 ~ 1030	104	266	1020	1553	-	-	1527	-	-	-
Stage 1	953	846	-	348	370	-	-	-	-	-	-	-
Stage 2	342	361	-	480	840	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	179	187 ~ 1030	-	192	1020	1553	-	-	1527	-	-	-
Mov Cap-2 Maneuver	179	187	-	-	192	-	-	-	-	-	-	-
Stage 1	690	841	-	252	268	-	-	-	-	-	-	-
Stage 2	232	261	-	-	835	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	59.6				6.9		1.1					
HCM LOS	F		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1553	-	-	185	1030	-	1527	-	-			
HCM Lane V/C Ratio	0.263	-	-	0.178	1.045	-	0.006	-	-			
HCM Control Delay (s)	8.1	0	-	28.6	60.5	-	7.4	0	-			
HCM Lane LOS	A	A	-	D	F	-	A	A	-			
HCM 95th %tile Q(veh)	1.1	-	-	0.6	23.2	-	0	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Cumulative + Res. BO + Remaining Office BO PM
3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	223	214	131	2	397	0	592	0	0	3
Future Volume (veh/h)	0	446	223	214	131	2	397	0	592	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	485	242	233	142	2	432	0	643	0	0	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	1	0	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	0	436	218	271	980	14	562	0	499	0	0	499
Arrive On Green	0.00	0.38	0.38	0.09	0.53	0.53	0.31	0.00	0.31	0.00	0.00	0.31
Sat Flow, veh/h	0	1164	581	1774	1832	26	1402	0	1583	0	0	1583
Grp Volume(v), veh/h	0	0	727	233	0	144	432	0	643	0	0	3
Grp Sat Flow(s),veh/h/ln	0	0	1745	1774	0	1857	1402	0	1583	0	0	1583
Q Serve(g_s), s	0.0	0.0	22.5	4.6	0.0	2.3	18.2	0.0	18.9	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	22.5	4.6	0.0	2.3	18.3	0.0	18.9	0.0	0.0	0.1
Prop In Lane	0.00		0.33	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	0	654	271	0	994	562	0	499	0	0	499
V/C Ratio(X)	0.00	0.00	1.11	0.86	0.00	0.14	0.77	0.00	1.29	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	654	271	0	994	562	0	499	0	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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.8	13.9	0.0	7.0	20.4	0.0	20.5	0.0	0.0	14.1
Incr Delay (d2), s/veh	0.0	0.0	69.8	23.3	0.0	0.1	9.8	0.0	144.6	0.0	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	0.0	0.0	23.4	4.0	0.0	1.2	8.5	0.0	28.2	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	88.5	37.2	0.0	7.1	30.1	0.0	165.2	0.0	0.0	14.1
LnGrp LOS			F	D		A	C		F			B
Approach Vol, veh/h		727			377			1075			3	
Approach Delay, s/veh		88.5			25.7			110.9			14.1	
Approach LOS		F			C			F			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4		36.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9		32.1				
Max Q Clear Time (g_c+I1), s		20.9	6.6	24.5		2.1		4.3				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			88.6									
HCM 2010 LOS			F									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 **Site: 1 [O/68]**

1. Olmsted Road / Highway 68
Cumulative Plus Residential Buildout Plus Remaining Office Buildout Conditions
AM Peak Hour Volumes - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	57	2.0	0.574	24.7	LOS C	2.3	57.6	0.82	0.97	26.5
8	T1	52	2.0	0.574	24.7	LOS C	2.3	57.6	0.82	0.97	26.5
18	R2	106	2.0	0.574	24.7	LOS C	2.3	57.6	0.82	0.97	25.9
Approach		214	2.0	0.574	24.7	LOS C	2.3	57.6	0.82	0.97	26.2
East: Highway 68											
1	L2	101	2.0	0.566	12.6	LOS B	4.1	104.7	0.55	0.68	31.1
6	T1	848	2.0	0.566	12.5	LOS B	4.1	104.7	0.53	0.67	31.4
16	R2	659	2.0	0.401	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1608	2.0	0.566	7.4	LOS A	4.1	104.7	0.32	0.40	33.4
North: Olmsted Rd											
7	L2	229	2.0	0.257	10.5	LOS B	0.8	19.1	0.60	0.61	30.5
4	T1	42	2.0	0.257	10.2	LOS B	0.7	18.4	0.58	0.60	30.9
14	R2	129	2.0	0.078	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		400	2.0	0.257	7.1	LOS A	0.8	19.1	0.40	0.41	32.3
West: Highway 68											
5	L2	267	2.0	0.320	7.9	LOS A	1.1	26.8	0.42	0.39	31.3
2	T1	1026	2.0	0.627	14.3	LOS B	5.6	142.8	0.58	0.77	30.8
12	R2	29	2.0	0.627	14.2	LOS B	5.5	140.2	0.57	0.76	29.9
Approach		1322	2.0	0.627	13.0	LOS B	5.6	142.8	0.55	0.69	30.9
All Vehicles		3544	2.0	0.627	10.5	LOS B	5.6	142.8	0.44	0.54	31.8

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 2010.

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: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 10:22:18 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Cumulative\MontereyCum+ResBO+RemOfficeBOAM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Plus Residential Buildout Plus Remaining Office Buildout Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	896	2.0	0.386	6.4	LOS A	2.3	57.3	0.23	0.10	32.2
8	T1	41	2.0	0.386	6.4	LOS A	2.3	57.3	0.23	0.10	32.4
18	R2	82	2.0	0.386	6.4	LOS A	2.3	57.3	0.23	0.10	31.5
Approach		1018	2.0	0.386	6.4	LOS A	2.3	57.3	0.23	0.10	32.1
East: Olmsted Way											
1	L2	55	2.0	0.128	7.4	LOS A	0.4	11.1	0.61	0.61	32.2
6	T1	15	2.0	0.128	7.4	LOS A	0.4	11.1	0.61	0.61	32.1
16	R2	9	2.0	0.128	7.4	LOS A	0.4	11.1	0.61	0.61	31.3
Approach		78	2.0	0.128	7.4	LOS A	0.4	11.1	0.61	0.61	32.1
North: Olmsted Rd											
7	L2	9	2.0	0.076	6.9	LOS A	0.2	6.4	0.60	0.60	33.6
4	T1	28	7.0	0.076	7.2	LOS A	0.2	6.4	0.60	0.60	33.5
14	R2	8	7.0	0.076	7.2	LOS A	0.2	6.4	0.60	0.60	32.5
Approach		44	6.0	0.076	7.1	LOS A	0.2	6.4	0.60	0.60	33.3
West: Garden Rd											
5	L2	8	4.0	0.038	3.2	LOS A	0.1	3.7	0.20	0.08	35.8
2	T1	41	2.0	0.038	3.1	LOS A	0.1	3.7	0.20	0.08	35.8
12	R2	326	4.0	0.202	0.0	LOS A	0.0	0.0	0.00	0.00	37.1
Approach		374	3.8	0.202	0.4	LOS A	0.1	3.7	0.03	0.01	37.0
All Vehicles		1515	2.6	0.386	5.0	LOS A	2.3	57.3	0.21	0.12	33.2

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

Organisation: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 10:23:49 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Cumulative\MontereyCum+ResBO+RemOfficeBOAM - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Cumulative + Res. BO + Remaining Office BO AM
 3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	218	434	665	232	0	180	0	180	1	0	0
Future Volume (veh/h)	0	218	434	665	232	0	180	0	180	1	0	0
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		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	266	529	811	283	0	220	0	220	1	0	0
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	1	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, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	420	715	879	1000	0	411	0	1357	111	0	0
Arrive On Green	0.00	0.23	0.23	0.26	0.54	0.00	0.23	0.00	0.23	0.06	0.00	0.00
Sat Flow, veh/h	0	1863	1549	3442	1863	0	1774	0	2787	1774	0	0
Grp Volume(v), veh/h	0	266	529	811	283	0	220	0	220	1	0	0
Grp Sat Flow(s),veh/h/ln	0	1863	1549	1721	1863	0	1774	0	1393	1774	0	0
Q Serve(g_s), s	0.0	10.3	18.0	18.3	6.6	0.0	8.7	0.0	3.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	10.3	18.0	18.3	6.6	0.0	8.7	0.0	3.5	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	420	715	879	1000	0	411	0	1357	111	0	0
V/C Ratio(X)	0.00	0.63	0.74	0.92	0.28	0.00	0.54	0.00	0.16	0.01	0.00	0.00
Avail Cap(c_a), veh/h	0	420	715	883	1002	0	411	0	1357	111	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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	28.0	16.7	29.0	10.1	0.0	26.9	0.0	11.4	35.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.1	4.1	14.9	0.2	0.0	4.9	0.0	0.3	0.1	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	0.0	5.7	12.4	10.5	3.4	0.0	4.8	0.0	1.4	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	31.1	20.8	43.9	10.3	0.0	31.9	0.0	11.7	35.3	0.0	0.0
LnGrp LOS		C	C	D	B		C		B	D		
Approach Vol, veh/h		795			1094			440			1	
Approach Delay, s/veh		24.2			35.2			21.8			35.3	
Approach LOS		C			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.0	24.9	22.5		9.5		47.4				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5	20.5	18.0		5.0		43.0				
Max Q Clear Time (g_c+I1), s		10.7	20.3	20.0		2.0		8.6				
Green Ext Time (p_c), s		1.4	0.1	0.0		0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			28.9									
HCM 2010 LOS			C									

5. Traffic Impact Analysis

MOVEMENT SUMMARY

 Site: 1 [O/68]

1. Olmsted Road / Highway 68

Cumulative Plus Residential Buildout Plus Remaining Office Buildout Conditions

PM Peak Hour Volumes - With Improvement

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	38	2.0	0.518	21.4	LOS C	1.9	49.2	0.79	0.92	27.7
8	T1	22	2.0	0.518	21.4	LOS C	1.9	49.2	0.79	0.92	27.6
18	R2	141	2.0	0.518	21.4	LOS C	1.9	49.2	0.79	0.92	27.0
Approach		201	2.0	0.518	21.4	LOS C	1.9	49.2	0.79	0.92	27.2
East: Highway 68											
1	L2	49	2.0	0.531	10.6	LOS B	2.4	61.6	0.40	0.31	32.3
6	T1	975	2.0	0.531	10.5	LOS B	2.4	61.6	0.39	0.30	32.4
16	R2	266	2.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1291	2.0	0.531	8.4	LOS A	2.4	61.6	0.31	0.24	33.2
North: Olmsted Rd											
7	L2	615	2.0	0.649	22.6	LOS C	3.5	90.0	0.77	0.98	26.2
4	T1	40	2.0	0.649	22.1	LOS C	3.5	89.4	0.76	0.97	26.4
14	R2	364	2.0	0.222	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1020	2.0	0.649	14.6	LOS B	3.5	90.0	0.49	0.63	29.2
West: Highway 68											
5	L2	128	2.0	0.198	7.9	LOS A	0.6	14.3	0.49	0.49	31.3
2	T1	725	2.0	0.570	15.3	LOS C	3.3	84.3	0.63	0.80	30.4
12	R2	26	2.0	0.570	15.1	LOS C	3.3	82.8	0.62	0.79	29.6
Approach		878	2.0	0.570	14.3	LOS B	3.3	84.3	0.61	0.75	30.5
All Vehicles		3390	2.0	0.649	12.5	LOS B	3.5	90.0	0.47	0.53	30.8

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 2010.

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: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 10:26:46 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\ - Miti\Cumulative\MontereyCum+ResBO+RemOfficeBOPM - Miti.sip7

5. Traffic Impact Analysis

MOVEMENT SUMMARY

Site: 2 [O/G-O]

2. Olmsted Road / Garden Road - Olmsted Way
Cumulative Plus Residential Buildout Plus Remaining Office Buildout Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows 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: Olmsted Rd											
3	L2	409	3.0	0.181	4.2	LOS A	0.8	20.8	0.15	0.05	33.2
8	T1	24	3.0	0.181	4.2	LOS A	0.8	20.8	0.15	0.05	33.6
18	R2	49	2.0	0.181	4.2	LOS A	0.8	20.8	0.15	0.05	32.6
Approach		482	2.9	0.181	4.2	LOS A	0.8	20.8	0.15	0.05	33.1
East: Olmsted Way											
1	L2	83	2.0	0.112	4.8	LOS A	0.4	10.5	0.45	0.37	33.2
6	T1	15	2.0	0.112	4.8	LOS A	0.4	10.5	0.45	0.37	33.1
16	R2	9	2.0	0.112	4.8	LOS A	0.4	10.5	0.45	0.37	32.2
Approach		106	2.0	0.112	4.8	LOS A	0.4	10.5	0.45	0.37	33.1
North: Olmsted Rd											
7	L2	9	2.0	0.065	4.6	LOS A	0.2	5.8	0.46	0.38	35.1
4	T1	41	3.0	0.065	4.7	LOS A	0.2	5.8	0.46	0.38	35.0
14	R2	7	3.0	0.065	4.7	LOS A	0.2	5.8	0.46	0.38	33.9
Approach		57	2.9	0.065	4.7	LOS A	0.2	5.8	0.46	0.38	34.8
West: Garden Rd											
5	L2	9	2.0	0.027	3.1	LOS A	0.1	2.6	0.24	0.11	35.6
2	T1	24	2.0	0.027	3.1	LOS A	0.1	2.6	0.24	0.11	35.5
12	R2	1077	2.0	0.656	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		1110	2.0	0.656	0.3	LOS A	0.1	2.6	0.01	0.00	37.0
All Vehicles		1755	2.3	0.656	1.7	LOS A	0.8	20.8	0.09	0.05	35.5

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

Organisation: JEFF WALLER CONSULTING | Processed: Friday, March 8, 2019 10:28:20 AM

Project: C:\Users\mapma\OneDrive\Jobs\2018\JMW-007 Garden Road\Sidra\Analysis\Miti\Cumulative\MontereyCum+ResBO+RemOfficeBOPM - Miti.sip7

5. Traffic Impact Analysis

HCM 2010 Signalized Intersection Summary Cumulative + Res. BO + Remaining Office BO PM
 3: Garden Rd/Private Dwy & Mark Thomas Dr/Fairgrounds Rd With Improvement

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	223	214	131	2	397	0	592	0	0	3
Future Volume (veh/h)	0	446	223	214	131	2	397	0	592	0	0	3
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		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	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	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	485	242	233	142	2	432	0	643	0	0	3
Adj No. of Lanes	0	1	1	2	1	0	0	1	2	0	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, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	533	443	314	795	11	586	0	1175	0	0	101
Arrive On Green	0.00	0.29	0.29	0.09	0.43	0.43	0.33	0.00	0.33	0.00	0.00	0.06
Sat Flow, veh/h	0	1863	1550	3442	1832	26	1774	0	2787	0	0	1583
Grp Volume(v), veh/h	0	485	242	233	0	144	432	0	643	0	0	3
Grp Sat Flow(s),veh/h/ln	0	1863	1550	1721	0	1857	1774	0	1393	0	0	1583
Q Serve(g_s), s	0.0	19.8	10.4	5.2	0.0	3.7	17.0	0.0	13.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	19.8	10.4	5.2	0.0	3.7	17.0	0.0	13.6	0.0	0.0	0.1
Prop In Lane	0.00		1.00	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	533	443	314	0	807	586	0	1175	0	0	101
V/C Ratio(X)	0.00	0.91	0.55	0.74	0.00	0.18	0.74	0.00	0.55	0.00	0.00	0.03
Avail Cap(c_a), veh/h	0	556	463	328	0	838	586	0	1175	0	0	101
HCM Platoon Ratio	1.00	1.00	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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.1	23.8	34.8	0.0	13.6	23.3	0.0	17.1	0.0	0.0	34.6
Incr Delay (d2), s/veh	0.0	18.8	1.2	8.4	0.0	0.1	8.0	0.0	1.8	0.0	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	0.0	12.9	4.6	2.8	0.0	1.9	9.6	0.0	5.5	0.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	45.9	25.0	43.3	0.0	13.7	31.3	0.0	18.9	0.0	0.0	35.1
LnGrp LOS		D	C	D		B	C		B			D
Approach Vol, veh/h		727			377			1075			3	
Approach Delay, s/veh		38.9			32.0			23.9			35.1	
Approach LOS		D			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		30.5	11.7	27.0		9.5		38.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		26.0	7.5	23.5		5.0		35.5				
Max Q Clear Time (g_c+I1), s		19.0	7.2	21.8		2.1		5.7				
Green Ext Time (p_c), s		3.2	0.0	0.7		0.0		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			30.3									
HCM 2010 LOS			C									

Appendix D
Garden Road 7-Day
Vehicle Classification Counts

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 - 3/23/2018
Site Code: 01

5. Traffic Impact Analysis

Time	Saturday			Sunday			Monday			Tuesday			Wednesday			Thursday			Friday			Mid-Week Average		
	3/17/2018			3/18/2018			3/19/2018			3/20/2018			3/21/2018			3/22/2018			3/23/2018					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	7	6	13	12	3	15	4	7	11	8	6	14	4	5	9	5	10	15	6	6	12	6	7	13
1:00 AM	5	1	6	9	5	14	7	4	11	4	2	6	5	3	8	4	4	8	2	2	4	4	3	7
2:00 AM	12	5	17	11	4	15	9	6	15	11	4	15	8	6	14	8	5	13	13	12	25	9	5	14
3:00 AM	9	5	14	10	11	21	6	10	16	8	8	16	8	7	15	6	7	13	13	7	20	7	7	15
4:00 AM	19	14	33	7	17	24	22	16	38	29	27	56	15	17	32	19	18	37	20	13	33	21	21	42
5:00 AM	17	22	39	16	8	24	57	26	83	65	35	100	48	24	72	54	14	68	51	23	74	56	24	80
6:00 AM	20	14	34	31	13	44	90	38	128	110	52	162	109	37	146	93	41	134	100	38	138	104	43	147
7:00 AM	56	41	97	53	33	86	285	148	433	260	152	412	290	161	451	271	130	401	278	166	444	274	148	421
8:00 AM	85	54	139	164	55	219	364	169	533	379	153	532	329	136	465	313	118	431	309	142	451	340	136	476
9:00 AM	89	80	169	158	122	280	213	152	365	277	166	443	203	152	355	248	159	407	210	174	384	243	159	402
10:00 AM	102	113	215	106	92	198	189	174	363	199	169	368	206	168	374	202	183	385	204	187	391	202	173	376
11:00 AM	84	83	167	199	222	421	187	230	417	222	257	479	211	252	463	192	253	445	265	275	540	208	254	462
12:00 PM	84	87	171	86	202	288	229	304	533	251	276	527	270	244	514	230	253	483	268	262	530	250	258	508
1:00 PM	84	85	169	87	141	228	268	205	473	264	213	477	255	213	468	264	207	471	280	213	493	261	211	472
2:00 PM	91	115	206	77	98	175	297	231	528	243	197	440	209	197	406	178	173	351	223	181	404	210	189	399
3:00 PM	100	87	187	85	77	162	259	234	493	232	240	472	218	226	444	178	245	423	240	257	497	209	237	446
4:00 PM	53	72	125	71	75	146	189	287	476	183	294	477	194	287	481	167	251	418	140	243	383	181	277	459
5:00 PM	59	75	134	72	75	147	209	323	532	150	330	480	210	305	515	155	284	439	150	260	410	172	306	478
6:00 PM	44	46	90	42	73	115	115	170	285	126	121	247	115	150	265	108	131	239	94	126	220	116	134	250
7:00 PM	30	42	72	31	44	75	68	104	172	73	113	186	64	116	180	64	91	155	60	68	128	67	107	174
8:00 PM	17	23	40	28	34	62	59	80	139	44	65	109	56	66	122	51	59	110	52	82	134	50	63	114
9:00 PM	29	19	48	6	25	31	25	42	67	25	72	97	23	58	81	25	46	71	28	38	66	24	59	83
10:00 PM	11	20	31	16	13	29	10	17	27	18	25	43	15	27	42	18	36	54	22	31	53	17	29	46
11:00 PM	20	14	34	20	14	34	14	14	28	13	11	24	12	12	24	22	15	37	17	13	30	16	13	28
Total	1,127	1,123	2,250	1,397	1,456	2,853	3,175	2,991	6,166	3,194	2,988	6,182	3,077	2,869	5,946	2,875	2,733	5,608	3,045	2,819	5,864	3,049	2,863	5,912
Percent	50%	50%	50%	49%	51%	49%	51%	49%	51%	52%	48%	52%	48%	52%	48%	51%	49%	51%	52%	48%	52%	48%	52%	48%

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: Garden Rd / Olmstead Rd and Fairground Rd
Count Direction: Eastbound / Westbound
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Eastbound	220	12,726	3,476	7	939	475	0	5	18	17	0	0	7	17,890
Percent	1.2%	71.1%	19.4%	0.0%	5.2%	2.7%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	100%
Westbound	130	11,276	4,062	12	1,330	161	0	5	0	3	0	0	0	16,979
Percent	0.8%	66.4%	23.9%	0.1%	7.8%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	350	24,002	7,538	19	2,269	636	0	10	18	20	0	0	7	34,869
Percent	1.0%	68.8%	21.6%	0.1%	6.5%	1.8%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Saturday, March 17, 2018
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0	6
1:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:00 AM	0	4	0	0	0	1	0	0	0	0	0	0	0	5
3:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	5
4:00 AM	0	12	2	0	0	0	0	0	0	0	0	0	0	14
5:00 AM	0	14	6	0	1	1	0	0	0	0	0	0	0	22
6:00 AM	0	7	5	0	2	0	0	0	0	0	0	0	0	14
7:00 AM	0	21	13	0	5	2	0	0	0	0	0	0	0	41
8:00 AM	0	27	22	0	5	0	0	0	0	0	0	0	0	54
9:00 AM	0	59	9	0	11	1	0	0	0	0	0	0	0	80
10:00 AM	1	73	27	0	8	4	0	0	0	0	0	0	0	113
11:00 AM	0	62	16	0	5	0	0	0	0	0	0	0	0	83
12:00 PM	1	61	18	0	7	0	0	0	0	0	0	0	0	87
1:00 PM	0	58	22	0	5	0	0	0	0	0	0	0	0	85
2:00 PM	2	79	25	0	8	0	0	1	0	0	0	0	0	115
3:00 PM	1	61	18	0	7	0	0	0	0	0	0	0	0	87
4:00 PM	1	49	11	0	10	0	0	1	0	0	0	0	0	72
5:00 PM	1	47	22	0	5	0	0	0	0	0	0	0	0	75
6:00 PM	2	33	9	0	2	0	0	0	0	0	0	0	0	46
7:00 PM	0	27	13	0	2	0	0	0	0	0	0	0	0	42
8:00 PM	0	16	5	0	2	0	0	0	0	0	0	0	0	23
9:00 PM	0	13	4	0	2	0	0	0	0	0	0	0	0	19
10:00 PM	1	13	4	0	2	0	0	0	0	0	0	0	0	20
11:00 PM	0	10	4	0	0	0	0	0	0	0	0	0	0	14
Total	10	756	256	0	90	9	0	2	0	0	0	0	0	1,123
Percent	0.9%	67.3%	22.8%	0.0%	8.0%	0.8%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Sunday, March 18, 2018
 Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	6	2	0	1	3	0	0	0	0	0	0	0	12
1:00 AM	0	6	2	0	1	0	0	0	0	0	0	0	0	9
2:00 AM	0	8	1	0	1	1	0	0	0	0	0	0	0	11
3:00 AM	0	8	2	0	0	0	0	0	0	0	0	0	0	10
4:00 AM	0	6	0	0	1	0	0	0	0	0	0	0	0	7
5:00 AM	0	10	3	0	1	2	0	0	0	0	0	0	0	16
6:00 AM	1	21	8	0	0	1	0	0	0	0	0	0	0	31
7:00 AM	0	32	18	0	2	1	0	0	0	0	0	0	0	53
8:00 AM	2	118	33	0	7	4	0	0	0	0	0	0	0	164
9:00 AM	4	113	36	0	5	0	0	0	0	0	0	0	0	158
10:00 AM	3	78	19	0	4	2	0	0	0	0	0	0	0	106
11:00 AM	3	145	38	0	9	3	0	0	0	1	0	0	0	199
12:00 PM	0	57	21	0	5	2	0	0	1	0	0	0	0	86
1:00 PM	1	56	22	0	5	3	0	0	0	0	0	0	0	87
2:00 PM	0	50	19	0	5	3	0	0	0	0	0	0	0	77
3:00 PM	2	65	15	0	1	2	0	0	0	0	0	0	0	85
4:00 PM	0	38	19	1	10	2	0	0	1	0	0	0	0	71
5:00 PM	1	42	21	0	3	5	0	0	0	0	0	0	0	72
6:00 PM	0	27	13	0	1	1	0	0	0	0	0	0	0	42
7:00 PM	0	23	7	0	1	0	0	0	0	0	0	0	0	31
8:00 PM	0	21	1	0	4	2	0	0	0	0	0	0	0	28
9:00 PM	0	3	2	0	1	0	0	0	0	0	0	0	0	6
10:00 PM	0	12	2	0	1	1	0	0	0	0	0	0	0	16
11:00 PM	0	15	1	0	2	2	0	0	0	0	0	0	0	20
Total	17	960	305	1	71	40	0	0	2	1	0	0	0	1,397
Percent	1.2%	68.7%	21.8%	0.1%	5.1%	2.9%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Sunday, March 18, 2018
Westbound

Time	FHWA Vehicle Classification												Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13
12:00 AM	0	1	1	0	1	0	0	0	0	0	0	0	0
1:00 AM	0	4	0	0	1	0	0	0	0	0	0	0	0
2:00 AM	0	2	0	0	1	1	0	0	0	0	0	0	0
3:00 AM	0	11	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	14	3	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	5	3	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	2	8	2	1	0	0	0	0	0	0	0	0
7:00 AM	0	13	13	0	7	0	0	0	0	0	0	0	0
8:00 AM	0	36	11	0	7	1	0	0	0	0	0	0	0
9:00 AM	0	90	24	0	7	1	0	0	0	0	0	0	0
10:00 AM	1	63	23	1	4	0	0	0	0	0	0	0	0
11:00 AM	3	156	50	0	12	1	0	0	0	0	0	0	0
12:00 PM	0	155	39	0	8	0	0	0	0	0	0	0	0
1:00 PM	2	103	24	0	12	0	0	0	0	0	0	0	0
2:00 PM	1	63	24	0	8	2	0	0	0	0	0	0	0
3:00 PM	3	53	17	0	4	0	0	0	0	0	0	0	0
4:00 PM	1	54	15	0	5	0	0	0	0	0	0	0	0
5:00 PM	0	48	20	0	6	1	0	0	0	0	0	0	0
6:00 PM	0	49	17	0	6	1	0	0	0	0	0	0	0
7:00 PM	0	39	4	0	0	1	0	0	0	0	0	0	0
8:00 PM	0	26	6	0	2	0	0	0	0	0	0	0	0
9:00 PM	1	16	6	0	2	0	0	0	0	0	0	0	0
10:00 PM	0	8	5	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	11	2	0	1	0	0	0	0	0	0	0	0
Total	12	1,022	315	3	95	9	0	0	0	0	0	0	0
Percent	0.8%	70.2%	21.6%	0.2%	6.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Monday, March 19, 2018
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	4
1:00 AM	0	6	0	0	0	1	0	0	0	0	0	0	0	7
2:00 AM	0	7	1	0	0	1	0	0	0	0	0	0	0	9
3:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	0	6
4:00 AM	0	17	4	0	0	1	0	0	0	0	0	0	0	22
5:00 AM	1	31	19	0	4	1	0	0	0	1	0	0	0	57
6:00 AM	3	64	14	0	5	4	0	0	0	0	0	0	0	90
7:00 AM	0	200	54	0	17	13	0	0	1	0	0	0	0	285
8:00 AM	3	278	48	0	16	19	0	0	0	0	0	0	0	364
9:00 AM	2	162	32	0	6	9	0	1	0	0	0	0	1	213
10:00 AM	3	122	41	0	18	5	0	0	0	0	0	0	0	189
11:00 AM	2	141	33	0	6	4	0	0	0	1	0	0	0	187
12:00 PM	1	172	40	0	9	7	0	0	0	0	0	0	0	229
1:00 PM	3	193	54	0	13	5	0	0	0	0	0	0	0	268
2:00 PM	3	222	48	0	19	4	0	1	0	0	0	0	0	297
3:00 PM	5	180	46	1	17	10	0	0	0	0	0	0	0	259
4:00 PM	7	123	43	0	8	8	0	0	0	0	0	0	0	189
5:00 PM	1	141	52	0	10	2	0	0	1	2	0	0	0	209
6:00 PM	3	77	33	0	1	1	0	0	0	0	0	0	0	115
7:00 PM	0	47	19	0	2	0	0	0	0	0	0	0	0	68
8:00 PM	0	36	18	0	4	1	0	0	0	0	0	0	0	59
9:00 PM	0	20	3	0	1	1	0	0	0	0	0	0	0	25
10:00 PM	0	6	2	0	2	0	0	0	0	0	0	0	0	10
11:00 PM	0	10	2	0	2	0	0	0	0	0	0	0	0	14
Total	37	2,265	606	1	160	97	0	2	2	4	0	0	1	3,175
Percent	1.2%	71.3%	19.1%	0.0%	5.0%	3.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Monday, March 19, 2018
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	5	2	0	0	0	0	0	0	0	0	0	0	7
1:00 AM	0	3	0	0	1	0	0	0	0	0	0	0	0	4
2:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	0	6
3:00 AM	0	6	3	0	1	0	0	0	0	0	0	0	0	10
4:00 AM	0	14	1	0	1	0	0	0	0	0	0	0	0	16
5:00 AM	0	13	10	0	2	1	0	0	0	0	0	0	0	26
6:00 AM	0	28	7	0	3	0	0	0	0	0	0	0	0	38
7:00 AM	0	84	52	0	11	0	0	0	0	1	0	0	0	148
8:00 AM	1	120	24	0	20	4	0	0	0	0	0	0	0	169
9:00 AM	1	110	25	0	15	1	0	0	0	0	0	0	0	152
10:00 AM	4	112	43	0	12	3	0	0	0	0	0	0	0	174
11:00 AM	4	157	47	0	19	3	0	0	0	0	0	0	0	230
12:00 PM	1	236	49	0	15	3	0	0	0	0	0	0	0	304
1:00 PM	1	156	31	0	16	1	0	0	0	0	0	0	0	205
2:00 PM	0	179	33	1	16	2	0	0	0	0	0	0	0	231
3:00 PM	1	152	52	0	24	5	0	0	0	0	0	0	0	234
4:00 PM	1	213	56	0	16	1	0	0	0	0	0	0	0	287
5:00 PM	6	242	51	0	24	0	0	0	0	0	0	0	0	323
6:00 PM	1	118	38	0	13	0	0	0	0	0	0	0	0	170
7:00 PM	5	75	18	0	6	0	0	0	0	0	0	0	0	104
8:00 PM	0	60	15	0	4	1	0	0	0	0	0	0	0	80
9:00 PM	0	31	9	0	1	1	0	0	0	0	0	0	0	42
10:00 PM	1	11	4	0	1	0	0	0	0	0	0	0	0	17
11:00 PM	1	12	1	0	0	0	0	0	0	0	0	0	0	14
Total	28	2,143	571	1	221	26	0	0	0	1	0	0	0	2,991
Percent	0.9%	71.6%	19.1%	0.0%	7.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Tuesday, March 20, 2018
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	7	1	0	0	0	0	0	0	0	0	0	0	8
1:00 AM	0	3	0	0	1	0	0	0	0	0	0	0	0	4
2:00 AM	0	6	5	0	0	0	0	0	0	0	0	0	0	11
3:00 AM	0	4	1	0	1	2	0	0	0	0	0	0	0	8
4:00 AM	0	22	7	0	0	0	0	0	0	0	0	0	0	29
5:00 AM	2	46	12	0	4	1	0	0	0	0	0	0	0	65
6:00 AM	2	72	18	0	15	3	0	0	0	0	0	0	0	110
7:00 AM	1	196	45	0	12	4	0	0	0	1	0	0	1	260
8:00 AM	2	301	55	0	14	7	0	0	0	0	0	0	0	379
9:00 AM	1	218	39	0	12	7	0	0	0	0	0	0	0	277
10:00 AM	1	143	39	0	12	4	0	0	0	0	0	0	0	199
11:00 AM	1	162	38	0	11	9	0	0	0	0	0	0	1	222
12:00 PM	2	195	41	0	9	4	0	0	0	0	0	0	0	251
1:00 PM	2	205	41	1	6	7	0	0	1	0	0	0	1	264
2:00 PM	2	180	40	0	12	8	0	0	0	0	0	0	1	243
3:00 PM	2	176	42	0	9	3	0	0	0	0	0	0	0	232
4:00 PM	0	111	49	0	13	10	0	0	0	0	0	0	0	183
5:00 PM	1	93	41	0	11	4	0	0	0	0	0	0	0	150
6:00 PM	2	94	25	0	2	2	0	0	1	0	0	0	0	126
7:00 PM	4	45	18	0	4	2	0	0	0	0	0	0	0	73
8:00 PM	1	26	11	0	3	3	0	0	0	0	0	0	0	44
9:00 PM	0	19	5	0	0	0	0	0	0	1	0	0	0	25
10:00 PM	0	11	4	0	2	1	0	0	0	0	0	0	0	18
11:00 PM	0	12	0	0	1	0	0	0	0	0	0	0	0	13
Total	26	2,347	577	1	154	81	0	0	2	2	0	0	4	3,194
Percent	0.8%	73.5%	18.1%	0.0%	4.8%	2.5%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Tuesday, March 20, 2018
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	0	1	1	0	0	0	0	0	0	0	0	6
1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	4
3:00 AM	0	4	3	0	1	0	0	0	0	0	0	0	0	8
4:00 AM	0	14	13	0	0	0	0	0	0	0	0	0	0	27
5:00 AM	1	22	6	0	6	0	0	0	0	0	0	0	0	35
6:00 AM	1	33	12	0	4	2	0	0	0	0	0	0	0	52
7:00 AM	0	78	56	0	11	7	0	0	0	0	0	0	0	152
8:00 AM	1	77	54	2	17	2	0	0	0	0	0	0	0	153
9:00 AM	2	92	51	0	18	3	0	0	0	0	0	0	0	166
10:00 AM	0	108	42	0	16	3	0	0	0	0	0	0	0	169
11:00 AM	1	123	106	0	27	0	0	0	0	0	0	0	0	257
12:00 PM	2	171	76	0	24	2	0	0	0	1	0	0	0	276
1:00 PM	0	124	66	0	21	2	0	0	0	0	0	0	0	213
2:00 PM	0	119	63	0	13	2	0	0	0	0	0	0	0	197
3:00 PM	0	131	78	0	30	0	0	0	0	1	0	0	0	240
4:00 PM	0	84	183	1	26	0	0	0	0	0	0	0	0	294
5:00 PM	1	176	138	0	15	0	0	0	0	0	0	0	0	330
6:00 PM	0	66	44	0	10	1	0	0	0	0	0	0	0	121
7:00 PM	1	72	36	0	4	0	0	0	0	0	0	0	0	113
8:00 PM	0	43	17	0	5	0	0	0	0	0	0	0	0	65
9:00 PM	2	45	19	0	5	1	0	0	0	0	0	0	0	72
10:00 PM	0	19	4	0	2	0	0	0	0	0	0	0	0	25
11:00 PM	1	9	1	0	0	0	0	0	0	0	0	0	0	11
Total	13	1,620	1,068	4	256	25	0	0	0	2	0	0	0	2,988
Percent	0.4%	54.2%	35.7%	0.1%	8.6%	0.8%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Wednesday, March 21, 2018
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	2	1	0	1	0	0	0	0	0	0	0	0	4
1:00 AM	0	3	2	0	0	0	0	0	0	0	0	0	0	5
2:00 AM	0	6	2	0	0	0	0	0	0	0	0	0	0	8
3:00 AM	0	7	1	0	0	0	0	0	0	0	0	0	0	8
4:00 AM	2	9	4	0	0	0	0	0	0	0	0	0	0	15
5:00 AM	0	31	14	0	1	2	0	0	0	0	0	0	0	48
6:00 AM	3	74	16	1	11	4	0	0	0	0	0	0	0	109
7:00 AM	4	218	47	0	16	5	0	0	0	0	0	0	0	290
8:00 AM	3	252	50	0	14	9	0	0	0	1	0	0	0	329
9:00 AM	1	152	37	0	7	5	0	0	1	0	0	0	0	203
10:00 AM	0	155	38	0	9	4	0	0	0	0	0	0	0	206
11:00 AM	4	154	35	0	13	5	0	0	0	0	0	0	0	211
12:00 PM	6	196	44	0	15	9	0	0	0	0	0	0	0	270
1:00 PM	5	192	37	1	15	3	0	0	2	0	0	0	0	255
2:00 PM	5	139	44	0	14	7	0	0	0	0	0	0	0	209
3:00 PM	3	149	51	0	10	5	0	0	0	0	0	0	0	218
4:00 PM	4	118	48	0	18	5	0	0	1	0	0	0	0	194
5:00 PM	1	133	54	0	13	7	0	1	0	1	0	0	0	210
6:00 PM	0	84	26	0	3	2	0	0	0	0	0	0	0	115
7:00 PM	1	41	19	0	1	1	0	0	0	1	0	0	0	64
8:00 PM	2	38	12	0	2	2	0	0	0	0	0	0	0	56
9:00 PM	0	16	5	0	1	1	0	0	0	0	0	0	0	23
10:00 PM	0	8	2	0	3	2	0	0	0	0	0	0	0	15
11:00 PM	0	9	2	0	1	0	0	0	0	0	0	0	0	12
Total	44	2,186	591	2	168	78	0	1	4	3	0	0	0	3,077
Percent	1.4%	71.0%	19.2%	0.1%	5.5%	2.5%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Wednesday, March 21, 2018
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	3	1	0	1	0	0	0	0	0	0	0	0	5
1:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	3
2:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	0	6
3:00 AM	0	3	3	0	0	1	0	0	0	0	0	0	0	7
4:00 AM	0	12	5	0	0	0	0	0	0	0	0	0	0	17
5:00 AM	0	10	8	0	5	1	0	0	0	0	0	0	0	24
6:00 AM	0	22	8	1	6	0	0	0	0	0	0	0	0	37
7:00 AM	2	63	67	0	24	5	0	0	0	0	0	0	0	161
8:00 AM	2	81	33	1	17	2	0	0	0	0	0	0	0	136
9:00 AM	1	86	41	0	23	1	0	0	0	0	0	0	0	152
10:00 AM	5	104	46	0	10	3	0	0	0	0	0	0	0	168
11:00 AM	3	183	41	0	22	3	0	0	0	0	0	0	0	252
12:00 PM	2	180	48	0	13	1	0	0	0	0	0	0	0	244
1:00 PM	1	163	32	1	13	3	0	0	0	0	0	0	0	213
2:00 PM	1	139	36	0	20	1	0	0	0	0	0	0	0	197
3:00 PM	1	143	54	0	26	2	0	0	0	0	0	0	0	226
4:00 PM	3	212	55	0	16	1	0	0	0	0	0	0	0	287
5:00 PM	1	229	58	0	15	1	0	1	0	0	0	0	0	305
6:00 PM	1	118	22	0	7	2	0	0	0	0	0	0	0	150
7:00 PM	0	90	24	0	2	0	0	0	0	0	0	0	0	116
8:00 PM	1	48	10	0	5	2	0	0	0	0	0	0	0	66
9:00 PM	0	37	21	0	0	0	0	0	0	0	0	0	0	58
10:00 PM	0	18	8	0	1	0	0	0	0	0	0	0	0	27
11:00 PM	0	8	3	0	1	0	0	0	0	0	0	0	0	12
Total	24	1,961	624	3	227	29	0	1	0	0	0	0	0	2,869
Percent	0.8%	68.4%	21.7%	0.1%	7.9%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Thursday, March 22, 2018
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	5
1:00 AM	0	2	1	0	1	0	0	0	0	0	0	0	0	4
2:00 AM	0	6	2	0	0	0	0	0	0	0	0	0	0	8
3:00 AM	0	5	1	0	0	0	0	0	0	0	0	0	0	6
4:00 AM	0	14	2	0	2	1	0	0	0	0	0	0	0	19
5:00 AM	0	31	18	0	2	3	0	0	0	0	0	0	0	54
6:00 AM	0	62	15	0	9	7	0	0	0	0	0	0	0	93
7:00 AM	4	190	55	0	15	7	0	0	0	0	0	0	0	271
8:00 AM	0	246	42	0	16	9	0	0	0	0	0	0	0	313
9:00 AM	1	167	58	0	17	4	0	0	1	0	0	0	0	248
10:00 AM	6	135	40	1	12	6	0	0	2	0	0	0	0	202
11:00 AM	2	127	35	0	14	11	0	0	1	2	0	0	0	192
12:00 PM	2	158	42	0	22	6	0	0	0	0	0	0	0	230
1:00 PM	1	211	40	0	7	3	0	0	0	2	0	0	0	264
2:00 PM	2	127	30	0	12	7	0	0	0	0	0	0	0	178
3:00 PM	0	125	35	0	13	5	0	0	0	0	0	0	0	178
4:00 PM	6	104	44	0	8	3	0	1	0	1	0	0	0	167
5:00 PM	4	101	42	0	6	1	0	0	1	0	0	0	0	155
6:00 PM	0	68	22	0	11	7	0	0	0	0	0	0	0	108
7:00 PM	1	47	15	0	1	0	0	0	0	0	0	0	0	64
8:00 PM	1	28	17	0	3	2	0	0	0	0	0	0	0	51
9:00 PM	0	14	7	0	3	1	0	0	0	0	0	0	0	25
10:00 PM	0	14	2	0	1	0	0	0	0	0	0	0	1	18
11:00 PM	0	12	5	0	2	3	0	0	0	0	0	0	0	22
Total	30	1,998	571	1	177	86	0	1	5	5	0	0	1	2,875
Percent	1.0%	69.5%	19.9%	0.0%	6.2%	3.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Thursday, March 22, 2018
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	2	0	4	0	0	0	0	0	0	0	0	10
1:00 AM	0	2	1	0	1	0	0	0	0	0	0	0	0	4
2:00 AM	0	4	0	0	1	0	0	0	0	0	0	0	0	5
3:00 AM	0	4	2	0	1	0	0	0	0	0	0	0	0	7
4:00 AM	0	7	10	0	1	0	0	0	0	0	0	0	0	18
5:00 AM	0	6	6	0	1	1	0	0	0	0	0	0	0	14
6:00 AM	0	14	17	0	8	2	0	0	0	0	0	0	0	41
7:00 AM	1	51	62	0	16	0	0	0	0	0	0	0	0	130
8:00 AM	0	60	35	0	20	3	0	0	0	0	0	0	0	118
9:00 AM	0	89	48	0	19	3	0	0	0	0	0	0	0	159
10:00 AM	0	98	63	1	17	4	0	0	0	0	0	0	0	183
11:00 AM	0	158	67	0	27	1	0	0	0	0	0	0	0	253
12:00 PM	0	182	46	0	23	2	0	0	0	0	0	0	0	253
1:00 PM	1	137	43	0	22	3	0	1	0	0	0	0	0	207
2:00 PM	0	114	38	0	17	4	0	0	0	0	0	0	0	173
3:00 PM	0	158	55	0	29	3	0	0	0	0	0	0	0	245
4:00 PM	1	178	58	0	13	1	0	0	0	0	0	0	0	251
5:00 PM	1	214	51	0	18	0	0	0	0	0	0	0	0	284
6:00 PM	0	95	32	0	4	0	0	0	0	0	0	0	0	131
7:00 PM	1	71	14	0	5	0	0	0	0	0	0	0	0	91
8:00 PM	0	41	17	0	1	0	0	0	0	0	0	0	0	59
9:00 PM	2	30	9	0	3	2	0	0	0	0	0	0	0	46
10:00 PM	0	26	8	0	2	0	0	0	0	0	0	0	0	36
11:00 PM	0	12	2	0	1	0	0	0	0	0	0	0	0	15
Total	7	1,755	686	1	254	29	0	1	0	0	0	0	0	2,733
Percent	0.3%	64.2%	25.1%	0.0%	9.3%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Friday, March 23, 2018
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	2	0	0	0	0	0	0	0	0	0	0	6
1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	9	3	0	0	1	0	0	0	0	0	0	0	13
3:00 AM	0	7	4	0	1	1	0	0	0	0	0	0	0	13
4:00 AM	0	17	3	0	0	0	0	0	0	0	0	0	0	20
5:00 AM	0	30	15	0	3	2	0	0	1	0	0	0	0	51
6:00 AM	0	72	17	0	9	2	0	0	0	0	0	0	0	100
7:00 AM	3	209	45	0	17	3	0	0	1	0	0	0	0	278
8:00 AM	7	240	43	0	11	8	0	0	0	0	0	0	0	309
9:00 AM	2	166	27	0	10	5	0	0	0	0	0	0	0	210
10:00 AM	2	142	44	0	12	4	0	0	0	0	0	0	0	204
11:00 AM	4	188	51	0	15	6	0	1	0	0	0	0	0	265
12:00 PM	6	207	35	0	12	8	0	0	0	0	0	0	0	268
1:00 PM	7	218	48	0	4	3	0	0	0	0	0	0	0	280
2:00 PM	3	161	44	0	11	3	0	0	0	0	0	0	1	223
3:00 PM	5	169	55	0	9	1	0	0	1	0	0	0	0	240
4:00 PM	1	98	27	0	9	5	0	0	0	0	0	0	0	140
5:00 PM	4	92	44	0	5	5	0	0	0	0	0	0	0	150
6:00 PM	1	68	19	0	5	1	0	0	0	0	0	0	0	94
7:00 PM	2	33	20	0	3	1	0	0	0	1	0	0	0	60
8:00 PM	0	31	13	1	5	2	0	0	0	0	0	0	0	52
9:00 PM	0	22	4	0	1	1	0	0	0	0	0	0	0	28
10:00 PM	0	14	6	0	1	1	0	0	0	0	0	0	0	22
11:00 PM	0	15	1	0	1	0	0	0	0	0	0	0	0	17
Total	47	2,214	570	1	144	63	0	1	3	1	0	0	1	3,045
Percent	1.5%	72.7%	18.7%	0.0%	4.7%	2.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Friday, March 23, 2018
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	0	0	2	0	0	0	0	0	0	0	0	6
1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	10	1	0	0	1	0	0	0	0	0	0	0	12
3:00 AM	0	2	4	0	0	1	0	0	0	0	0	0	0	7
4:00 AM	0	10	3	0	0	0	0	0	0	0	0	0	0	13
5:00 AM	0	12	5	0	3	3	0	0	0	0	0	0	0	23
6:00 AM	0	24	10	0	4	0	0	0	0	0	0	0	0	38
7:00 AM	1	95	52	0	16	2	0	0	0	0	0	0	0	166
8:00 AM	3	91	31	0	12	5	0	0	0	0	0	0	0	142
9:00 AM	0	116	40	0	18	0	0	0	0	0	0	0	0	174
10:00 AM	2	134	34	0	16	1	0	0	0	0	0	0	0	187
11:00 AM	5	184	59	0	18	8	0	1	0	0	0	0	0	275
12:00 PM	3	199	43	0	13	4	0	0	0	0	0	0	0	262
1:00 PM	4	164	32	0	13	0	0	0	0	0	0	0	0	213
2:00 PM	3	123	39	0	15	1	0	0	0	0	0	0	0	181
3:00 PM	4	188	50	0	13	2	0	0	0	0	0	0	0	257
4:00 PM	0	186	37	0	17	3	0	0	0	0	0	0	0	243
5:00 PM	4	209	37	0	9	1	0	0	0	0	0	0	0	260
6:00 PM	3	102	13	0	7	1	0	0	0	0	0	0	0	126
7:00 PM	2	55	8	0	3	0	0	0	0	0	0	0	0	68
8:00 PM	1	54	22	0	4	1	0	0	0	0	0	0	0	82
9:00 PM	0	26	10	0	2	0	0	0	0	0	0	0	0	38
10:00 PM	1	20	9	0	1	0	0	0	0	0	0	0	0	31
11:00 PM	0	9	3	0	1	0	0	0	0	0	0	0	0	13
Total	36	2,019	542	0	187	34	0	1	0	0	0	0	0	2,819
Percent	1.3%	71.6%	19.2%	0.0%	6.6%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

**Total Study Average
Eastbound**

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	5
1:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0	6
2:00 AM	0	7	2	0	0	0	0	0	0	0	0	0	0	9
3:00 AM	0	7	1	0	0	0	0	0	0	0	0	0	0	8
4:00 AM	0	14	4	0	0	0	0	0	0	0	0	0	0	18
5:00 AM	0	28	12	0	2	2	0	0	0	0	0	0	0	44
6:00 AM	1	55	13	0	7	3	0	0	0	0	0	0	0	79
7:00 AM	2	154	40	0	12	5	0	0	0	0	0	0	0	213
8:00 AM	3	213	41	0	12	8	0	0	0	0	0	0	0	277
9:00 AM	2	148	36	0	9	5	0	0	0	0	0	0	0	200
10:00 AM	2	120	35	0	10	4	0	0	0	0	0	0	0	171
11:00 AM	2	140	35	0	11	6	0	0	0	1	0	0	0	195
12:00 PM	3	148	35	0	11	6	0	0	0	0	0	0	0	203
1:00 PM	3	161	38	0	7	4	0	0	0	0	0	0	0	213
2:00 PM	2	135	34	0	12	5	0	0	0	0	0	0	0	188
3:00 PM	3	134	38	0	9	4	0	0	0	0	0	0	0	188
4:00 PM	3	90	34	0	10	5	0	0	0	0	0	0	0	142
5:00 PM	2	90	40	0	7	4	0	0	0	0	0	0	0	143
6:00 PM	1	64	21	0	4	2	0	0	0	0	0	0	0	92
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	1	27	11	0	3	2	0	0	0	0	0	0	0	44
9:00 PM	0	16	5	0	1	1	0	0	0	0	0	0	0	23
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	13	2	0	1	1	0	0	0	0	0	0	0	17
Total	30	1,772	479	0	129	67	0	0	0	1	0	0	0	2,478
Percent	1.2%	71.5%	19.3%	0.0%	5.2%	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Note: Average only considered on days with 24-hours of data.

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Total Study Average
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0	6
1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	5
3:00 AM	0	5	2	0	0	0	0	0	0	0	0	0	0	7
4:00 AM	0	12	5	0	0	0	0	0	0	0	0	0	0	17
5:00 AM	0	12	6	0	3	1	0	0	0	0	0	0	0	22
6:00 AM	0	19	10	0	4	1	0	0	0	0	0	0	0	34
7:00 AM	1	58	45	0	13	2	0	0	0	0	0	0	0	119
8:00 AM	1	70	30	0	14	2	0	0	0	0	0	0	0	117
9:00 AM	1	92	34	0	16	1	0	0	0	0	0	0	0	144
10:00 AM	2	99	40	0	12	3	0	0	0	0	0	0	0	156
11:00 AM	2	146	55	0	19	2	0	0	0	0	0	0	0	224
12:00 PM	1	169	46	0	15	2	0	0	0	0	0	0	0	233
1:00 PM	1	129	36	0	15	1	0	0	0	0	0	0	0	182
2:00 PM	1	117	37	0	14	2	0	0	0	0	0	0	0	171
3:00 PM	1	127	46	0	19	2	0	0	0	0	0	0	0	195
4:00 PM	1	139	59	0	15	1	0	0	0	0	0	0	0	215
5:00 PM	2	166	54	0	13	0	0	0	0	0	0	0	0	235
6:00 PM	1	83	25	0	7	1	0	0	0	0	0	0	0	117
7:00 PM	1	61	17	0	3	0	0	0	0	0	0	0	0	82
8:00 PM	0	41	13	0	3	1	0	0	0	0	0	0	0	58
9:00 PM	1	28	11	0	2	1	0	0	0	0	0	0	0	43
10:00 PM	0	16	6	0	1	0	0	0	0	0	0	0	0	23
11:00 PM	0	10	2	0	1	0	0	0	0	0	0	0	0	13
Total	17	1,610	580	0	190	23	0	0	0	0	0	0	0	2,420
Percent	0.7%	66.5%	24.0%	0.0%	7.9%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Note: Average only considered on days with 24-hours of data.

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

3-Day (Tuesday - Thursday) Average
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	6
1:00 AM	0	3	1	0	1	0	0	0	0	0	0	0	0	4
2:00 AM	0	6	3	0	0	0	0	0	0	0	0	0	0	9
3:00 AM	0	5	1	0	0	1	0	0	0	0	0	0	0	7
4:00 AM	1	15	4	0	1	0	0	0	0	0	0	0	0	21
5:00 AM	1	36	15	0	2	2	0	0	0	0	0	0	0	56
6:00 AM	2	69	16	0	12	5	0	0	0	0	0	0	0	104
7:00 AM	3	201	49	0	14	5	0	0	0	0	0	0	0	274
8:00 AM	2	266	49	0	15	8	0	0	0	0	0	0	0	340
9:00 AM	1	179	45	0	12	5	0	0	1	0	0	0	0	243
10:00 AM	2	144	39	0	11	5	0	0	1	0	0	0	0	202
11:00 AM	2	148	36	0	13	8	0	0	0	1	0	0	0	208
12:00 PM	3	183	42	0	15	6	0	0	0	0	0	0	0	250
1:00 PM	3	203	39	1	9	4	0	0	1	1	0	0	0	261
2:00 PM	3	149	38	0	13	7	0	0	0	0	0	0	0	210
3:00 PM	2	150	43	0	11	4	0	0	0	0	0	0	0	209
4:00 PM	3	111	47	0	13	6	0	0	0	0	0	0	0	181
5:00 PM	2	109	46	0	10	4	0	0	0	0	0	0	0	172
6:00 PM	1	82	24	0	5	4	0	0	0	0	0	0	0	116
7:00 PM	2	44	17	0	2	1	0	0	0	0	0	0	0	67
8:00 PM	1	31	13	0	3	2	0	0	0	0	0	0	0	50
9:00 PM	0	16	6	0	1	1	0	0	0	0	0	0	0	24
10:00 PM	0	11	3	0	2	1	0	0	0	0	0	0	0	17
11:00 PM	0	11	2	0	1	1	0	0	0	0	0	0	0	16
Total	33	2,177	580	1	166	82	0	1	4	3	0	0	2	3,049
Percent	1.1%	71.4%	19.0%	0.0%	5.5%	2.7%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

3-Day (Tuesday - Thursday) Average
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	4	1	0	2	0	0	0	0	0	0	0	0	7
1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	3
2:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	5
3:00 AM	0	4	3	0	1	0	0	0	0	0	0	0	0	7
4:00 AM	0	11	9	0	0	0	0	0	0	0	0	0	0	21
5:00 AM	0	13	7	0	4	1	0	0	0	0	0	0	0	24
6:00 AM	0	23	12	0	6	1	0	0	0	0	0	0	0	43
7:00 AM	1	64	62	0	17	4	0	0	0	0	0	0	0	148
8:00 AM	1	73	41	1	18	2	0	0	0	0	0	0	0	136
9:00 AM	1	89	47	0	20	2	0	0	0	0	0	0	0	159
10:00 AM	2	103	50	0	14	3	0	0	0	0	0	0	0	173
11:00 AM	1	155	71	0	25	1	0	0	0	0	0	0	0	254
12:00 PM	1	178	57	0	20	2	0	0	0	0	0	0	0	258
1:00 PM	1	141	47	0	19	3	0	0	0	0	0	0	0	211
2:00 PM	0	124	46	0	17	2	0	0	0	0	0	0	0	189
3:00 PM	0	144	62	0	28	2	0	0	0	0	0	0	0	237
4:00 PM	1	158	99	0	18	1	0	0	0	0	0	0	0	277
5:00 PM	1	206	82	0	16	0	0	0	0	0	0	0	0	306
6:00 PM	0	93	33	0	7	1	0	0	0	0	0	0	0	134
7:00 PM	1	78	25	0	4	0	0	0	0	0	0	0	0	107
8:00 PM	0	44	15	0	4	1	0	0	0	0	0	0	0	63
9:00 PM	1	37	16	0	3	1	0	0	0	0	0	0	0	59
10:00 PM	0	21	7	0	2	0	0	0	0	0	0	0	0	29
11:00 PM	0	10	2	0	1	0	0	0	0	0	0	0	0	13
Total	15	1,779	793	3	246	28	0	1	0	1	0	0	0	2,863
Percent	0.5%	62.1%	27.7%	0.1%	8.6%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

5. Traffic Impact Analysis

Vehicle Speed Report Summary

Location: Garden Rd / Olmstead Rd and Fairground Rd
Count Direction: Eastbound / Westbound
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Eastbound	470	1,148	543	793	2,457	6,385	4,761	1,162	158	11	2	0	0	0	0	0	0	17,890
Percent	2.6%	6.4%	3.0%	4.4%	13.7%	35.7%	26.6%	6.5%	0.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	63	258	235	378	1,347	4,149	6,268	3,442	749	71	17	2	0	0	0	0	0	16,979
Percent	0.4%	1.5%	1.4%	2.2%	7.9%	24.4%	36.9%	20.3%	4.4%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	533	1,406	778	1,171	3,804	10,534	11,029	4,604	907	82	19	2	0	0	0	0	0	34,869
Percent	1.5%	4.0%	2.2%	3.4%	10.9%	30.2%	31.6%	13.2%	2.6%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary		Total Study Speed Statistics	
Eastbound		Eastbound	
50th Percentile (Median)	32.9 mph	Mean (Average) Speed	31.1 mph
85th Percentile	37.8 mph	10 mph Pace	28.9 - 38.9 mph
95th Percentile	41.0 mph	Percent in Pace	63.7 %
Westbound		Westbound	
50th Percentile (Median)	36.5 mph	Mean (Average) Speed	35.9 mph
85th Percentile	41.6 mph	10 mph Pace	32.1 - 42.1 mph
95th Percentile	44.9 mph	Percent in Pace	65.2 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Saturday, March 17, 2018
Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	1	3	2	1	0	0	0	0	0	0	0	0	0	7
1:00 AM	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	5
2:00 AM	0	0	0	0	0	3	4	3	1	1	0	0	0	0	0	0	0	12
3:00 AM	0	0	0	0	1	3	2	3	0	0	0	0	0	0	0	0	0	9
4:00 AM	0	0	0	2	6	7	3	1	0	0	0	0	0	0	0	0	0	19
5:00 AM	0	0	0	0	0	6	6	4	1	0	0	0	0	0	0	0	0	17
6:00 AM	0	0	0	1	6	10	3	0	0	0	0	0	0	0	0	0	0	20
7:00 AM	1	5	1	3	8	22	12	4	0	0	0	0	0	0	0	0	0	56
8:00 AM	0	9	1	3	3	37	26	6	0	0	0	0	0	0	0	0	0	85
9:00 AM	3	8	2	5	15	32	17	6	1	0	0	0	0	0	0	0	0	89
10:00 AM	5	3	4	1	9	45	22	11	2	0	0	0	0	0	0	0	0	102
11:00 AM	3	6	1	11	7	31	17	8	0	0	0	0	0	0	0	0	0	84
12:00 PM	0	8	3	7	11	23	24	8	0	0	0	0	0	0	0	0	0	84
1:00 PM	7	8	6	2	9	26	19	5	2	0	0	0	0	0	0	0	0	84
2:00 PM	1	5	0	2	4	46	25	7	1	0	0	0	0	0	0	0	0	91
3:00 PM	1	8	1	1	18	37	28	6	0	0	0	0	0	0	0	0	0	100
4:00 PM	0	5	5	2	5	10	18	8	0	0	0	0	0	0	0	0	0	53
5:00 PM	2	2	5	4	5	14	16	7	4	0	0	0	0	0	0	0	0	59
6:00 PM	0	4	2	4	2	13	12	6	1	0	0	0	0	0	0	0	0	44
7:00 PM	0	2	1	1	6	9	9	1	1	0	0	0	0	0	0	0	0	30
8:00 PM	1	0	1	0	3	6	6	0	0	0	0	0	0	0	0	0	0	17
9:00 PM	0	0	0	1	4	9	7	7	1	0	0	0	0	0	0	0	0	29
10:00 PM	0	0	0	0	0	5	6	0	0	0	0	0	0	0	0	0	0	11
11:00 PM	0	0	0	0	3	11	5	1	0	0	0	0	0	0	0	0	0	20
Total	24	73	33	50	126	411	289	105	15	1	0	0	0	0	0	0	0	1,127
Percent	2.1%	6.5%	2.9%	4.4%	11.2%	36.5%	25.6%	9.3%	1.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	33.2 mph	Mean (Average) Speed	31.7 mph
85th Percentile	38.7 mph	10 mph Pace	29.4 - 39.4 mph
95th Percentile	41.9 mph	Percent in Pace	62.9 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
 Date Range: 3/17/2018 to 3/23/2018
 Site Code: 01

Saturday, March 17, 2018
 Westbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	0	3	1	2	0	0	0	0	0	0	0	0	0	6
1:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:00 AM	0	0	1	0	0	2	1	1	0	0	0	0	0	0	0	0	0	5
3:00 AM	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	5
4:00 AM	0	0	0	0	4	2	4	3	1	0	0	0	0	0	0	0	0	14
5:00 AM	0	0	0	0	3	6	6	5	1	0	1	0	0	0	0	0	0	22
6:00 AM	0	0	0	0	4	5	4	1	0	0	0	0	0	0	0	0	0	14
7:00 AM	0	1	1	0	1	3	23	7	5	0	0	0	0	0	0	0	0	41
8:00 AM	0	0	0	2	5	7	23	14	2	1	0	0	0	0	0	0	0	54
9:00 AM	2	4	1	1	5	15	35	11	6	0	0	0	0	0	0	0	0	80
10:00 AM	1	3	2	1	10	30	44	15	5	2	0	0	0	0	0	0	0	113
11:00 AM	1	5	0	0	10	22	27	12	6	0	0	0	0	0	0	0	0	83
12:00 PM	0	0	0	3	6	22	38	12	5	1	0	0	0	0	0	0	0	87
1:00 PM	0	0	2	0	7	23	33	15	4	0	0	1	0	0	0	0	0	85
2:00 PM	1	0	1	3	10	28	40	25	7	0	0	0	0	0	0	0	0	115
3:00 PM	0	0	1	3	3	24	33	21	2	0	0	0	0	0	0	0	0	87
4:00 PM	0	0	0	3	13	16	18	21	1	0	0	0	0	0	0	0	0	72
5:00 PM	0	1	1	2	5	13	32	17	3	1	0	0	0	0	0	0	0	75
6:00 PM	2	2	3	2	1	8	13	12	3	0	0	0	0	0	0	0	0	46
7:00 PM	1	1	1	1	3	11	16	4	4	0	0	0	0	0	0	0	0	42
8:00 PM	0	0	0	0	2	3	8	6	3	0	1	0	0	0	0	0	0	23
9:00 PM	0	0	0	0	2	2	8	7	0	0	0	0	0	0	0	0	0	19
10:00 PM	0	0	0	1	1	2	6	6	4	0	0	0	0	0	0	0	0	20
11:00 PM	0	0	0	0	0	3	2	7	2	0	0	0	0	0	0	0	0	14
Total	8	17	14	22	96	253	417	224	64	5	2	1	0	0	0	0	0	1,123
Percent	0.7%	1.5%	1.2%	2.0%	8.5%	22.5%	37.1%	19.9%	5.7%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	36.6 mph	Mean (Average) Speed	36 mph
85th Percentile	41.9 mph	10 mph Pace	32.1 - 42.1 mph
95th Percentile	45.5 mph	Percent in Pace	63.9 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
 Date Range: 3/17/2018 to 3/23/2018
 Site Code: 01

Sunday, March 18, 2018
 Eastbound

Time	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
12:00 AM	0	0	0	0	2	3	6	0	1	0	0	0	0	0	0	0	0	12
1:00 AM	0	0	0	0	1	4	3	0	1	0	0	0	0	0	0	0	0	9
2:00 AM	0	0	0	0	0	5	4	1	1	0	0	0	0	0	0	0	0	11
3:00 AM	0	0	0	0	1	2	2	4	1	0	0	0	0	0	0	0	0	10
4:00 AM	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0	0	0	7
5:00 AM	0	0	0	1	1	5	4	2	3	0	0	0	0	0	0	0	0	16
6:00 AM	0	1	0	0	2	7	11	5	3	1	1	0	0	0	0	0	0	31
7:00 AM	0	5	0	2	6	11	16	11	1	1	0	0	0	0	0	0	0	53
8:00 AM	0	0	3	0	7	57	73	22	2	0	0	0	0	0	0	0	0	164
9:00 AM	1	4	4	3	10	37	70	26	3	0	0	0	0	0	0	0	0	158
10:00 AM	4	7	3	7	15	32	22	14	2	0	0	0	0	0	0	0	0	106
11:00 AM	3	12	6	14	25	84	41	11	3	0	0	0	0	0	0	0	0	199
12:00 PM	1	3	5	2	10	26	28	10	1	0	0	0	0	0	0	0	0	86
1:00 PM	2	7	1	1	16	23	30	7	0	0	0	0	0	0	0	0	0	87
2:00 PM	1	4	4	2	14	37	12	3	0	0	0	0	0	0	0	0	0	77
3:00 PM	0	9	2	0	17	34	13	9	1	0	0	0	0	0	0	0	0	85
4:00 PM	0	4	2	8	11	25	16	4	1	0	0	0	0	0	0	0	0	71
5:00 PM	0	6	3	3	14	23	20	2	1	0	0	0	0	0	0	0	0	72
6:00 PM	0	3	1	5	7	13	11	1	1	0	0	0	0	0	0	0	0	42
7:00 PM	0	1	0	0	3	9	14	3	1	0	0	0	0	0	0	0	0	31
8:00 PM	0	0	1	0	5	9	11	2	0	0	0	0	0	0	0	0	0	28
9:00 PM	0	0	0	0	1	3	1	1	0	0	0	0	0	0	0	0	0	6
10:00 PM	0	0	0	0	3	6	4	3	0	0	0	0	0	0	0	0	0	16
11:00 PM	0	0	0	0	1	2	8	9	0	0	0	0	0	0	0	0	0	20
Total	12	66	35	49	173	464	426	142	27	2	1	0	0	0	0	0	0	1,397
Percent	0.9%	4.7%	2.5%	3.5%	12.4%	33.2%	30.5%	10.2%	1.9%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	33.9 mph	Mean (Average) Speed	32.9 mph
85th Percentile	39.2 mph	10 mph Pace	29.2 - 39.2 mph
95th Percentile	42.6 mph	Percent in Pace	64.3 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
 Date Range: 3/17/2018 to 3/23/2018
 Site Code: 01

Sunday, March 18, 2018
 Westbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3
1:00 AM	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	5
2:00 AM	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	4
3:00 AM	0	0	0	1	0	2	4	4	0	0	0	0	0	0	0	0	0	11
4:00 AM	0	0	0	0	0	11	2	4	0	0	0	0	0	0	0	0	0	17
5:00 AM	0	0	0	0	0	1	4	2	0	1	0	0	0	0	0	0	0	8
6:00 AM	0	0	0	0	0	0	11	1	1	0	0	0	0	0	0	0	0	13
7:00 AM	0	0	0	0	0	10	11	8	1	1	2	0	0	0	0	0	0	33
8:00 AM	0	0	3	1	2	9	17	17	5	1	0	0	0	0	0	0	0	55
9:00 AM	0	2	1	2	6	18	53	34	5	1	0	0	0	0	0	0	0	122
10:00 AM	0	2	1	0	5	13	41	26	4	0	0	0	0	0	0	0	0	92
11:00 AM	1	1	0	2	8	54	100	52	4	0	0	0	0	0	0	0	0	222
12:00 PM	0	1	2	3	7	43	102	35	9	0	0	0	0	0	0	0	0	202
1:00 PM	0	0	0	5	13	33	49	38	3	0	0	0	0	0	0	0	0	141
2:00 PM	1	1	1	4	11	27	29	21	3	0	0	0	0	0	0	0	0	98
3:00 PM	0	0	2	4	9	21	28	11	1	0	1	0	0	0	0	0	0	77
4:00 PM	0	0	0	1	11	20	26	12	4	1	0	0	0	0	0	0	0	75
5:00 PM	0	1	2	6	6	18	23	16	2	1	0	0	0	0	0	0	0	75
6:00 PM	0	1	1	0	16	22	25	6	1	1	0	0	0	0	0	0	0	73
7:00 PM	2	3	1	1	4	12	14	6	1	0	0	0	0	0	0	0	0	44
8:00 PM	0	2	0	0	4	12	9	7	0	0	0	0	0	0	0	0	0	34
9:00 PM	0	0	0	1	3	8	7	5	1	0	0	0	0	0	0	0	0	25
10:00 PM	0	0	0	0	1	4	5	3	0	0	0	0	0	0	0	0	0	13
11:00 PM	0	0	0	0	0	7	2	4	1	0	0	0	0	0	0	0	0	14
Total	4	14	14	32	107	349	567	313	46	7	3	0	0	0	0	0	0	1,456
Percent	0.3%	1.0%	1.0%	2.2%	7.3%	24.0%	38.9%	21.5%	3.2%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	36.6 mph	Mean (Average) Speed	36.2 mph
85th Percentile	41.3 mph	10 mph Pace	32.2 - 42.2 mph
95th Percentile	44.3 mph	Percent in Pace	68.5 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Monday, March 19, 2018
Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	4
1:00 AM	0	0	0	0	1	2	3	1	0	0	0	0	0	0	0	0	0	7
2:00 AM	0	0	0	0	0	1	2	5	1	0	0	0	0	0	0	0	0	9
3:00 AM	0	0	0	0	1	0	1	3	0	1	0	0	0	0	0	0	0	6
4:00 AM	0	3	0	0	1	4	10	3	1	0	0	0	0	0	0	0	0	22
5:00 AM	2	11	1	3	7	19	11	2	1	0	0	0	0	0	0	0	0	57
6:00 AM	0	6	2	2	2	27	30	17	4	0	0	0	0	0	0	0	0	90
7:00 AM	3	15	6	5	23	89	118	24	2	0	0	0	0	0	0	0	0	285
8:00 AM	2	16	8	6	29	115	149	33	6	0	0	0	0	0	0	0	0	364
9:00 AM	6	20	5	8	26	80	54	14	0	0	0	0	0	0	0	0	0	213
10:00 AM	6	8	3	6	36	80	39	10	1	0	0	0	0	0	0	0	0	189
11:00 AM	4	11	6	9	32	62	52	9	2	0	0	0	0	0	0	0	0	187
12:00 PM	4	11	6	3	44	84	69	8	0	0	0	0	0	0	0	0	0	229
1:00 PM	2	14	6	12	67	111	47	9	0	0	0	0	0	0	0	0	0	268
2:00 PM	4	20	12	5	52	123	72	8	1	0	0	0	0	0	0	0	0	297
3:00 PM	12	16	10	10	35	118	50	8	0	0	0	0	0	0	0	0	0	259
4:00 PM	11	21	11	10	37	66	28	5	0	0	0	0	0	0	0	0	0	189
5:00 PM	8	17	11	15	18	57	68	13	2	0	0	0	0	0	0	0	0	209
6:00 PM	1	26	8	6	14	28	24	8	0	0	0	0	0	0	0	0	0	115
7:00 PM	1	15	4	10	5	18	9	6	0	0	0	0	0	0	0	0	0	68
8:00 PM	0	14	11	3	6	16	7	0	2	0	0	0	0	0	0	0	0	59
9:00 PM	0	1	1	0	4	12	4	3	0	0	0	0	0	0	0	0	0	25
10:00 PM	0	0	0	0	1	3	6	0	0	0	0	0	0	0	0	0	0	10
11:00 PM	0	0	0	0	0	7	6	1	0	0	0	0	0	0	0	0	0	14
Total	66	245	111	114	441	1,125	859	190	23	1	0	0	0	0	0	0	0	3,175
Percent	2.1%	7.7%	3.5%	3.6%	13.9%	35.4%	27.1%	6.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	32.9 mph	Mean (Average) Speed	31.0 mph
85th Percentile	37.8 mph	10 mph Pace	28.5 - 38.5 mph
95th Percentile	40.6 mph	Percent in Pace	64.0 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
 Date Range: 3/17/2018 to 3/23/2018
 Site Code: 01

Monday, March 19, 2018
 Westbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0	0	7
1:00 AM	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	4
2:00 AM	0	0	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0	6
3:00 AM	0	0	0	1	1	1	3	1	2	0	1	0	0	0	0	0	0	10
4:00 AM	0	0	0	0	1	4	5	5	1	0	0	0	0	0	0	0	0	16
5:00 AM	0	0	0	0	4	9	5	6	1	1	0	0	0	0	0	0	0	26
6:00 AM	0	0	0	0	2	8	12	13	3	0	0	0	0	0	0	0	0	38
7:00 AM	0	1	2	0	4	20	52	45	22	1	1	0	0	0	0	0	0	148
8:00 AM	1	2	8	3	9	29	73	34	9	1	0	0	0	0	0	0	0	169
9:00 AM	0	10	3	2	8	35	54	35	4	1	0	0	0	0	0	0	0	152
10:00 AM	2	7	2	5	12	56	67	21	2	0	0	0	0	0	0	0	0	174
11:00 AM	1	3	4	6	23	77	84	27	3	1	1	0	0	0	0	0	0	230
12:00 PM	0	3	5	1	35	99	127	30	4	0	0	0	0	0	0	0	0	304
1:00 PM	3	3	3	6	20	70	78	20	2	0	0	0	0	0	0	0	0	205
2:00 PM	0	3	4	6	20	76	95	25	2	0	0	0	0	0	0	0	0	231
3:00 PM	0	8	5	2	24	75	76	38	6	0	0	0	0	0	0	0	0	234
4:00 PM	0	2	2	5	16	64	104	77	17	0	0	0	0	0	0	0	0	287
5:00 PM	0	1	1	10	15	52	138	83	22	1	0	0	0	0	0	0	0	323
6:00 PM	0	0	0	10	18	47	58	31	6	0	0	0	0	0	0	0	0	170
7:00 PM	0	5	6	5	16	38	23	9	1	1	0	0	0	0	0	0	0	104
8:00 PM	0	1	3	5	13	28	23	6	1	0	0	0	0	0	0	0	0	80
9:00 PM	0	2	1	0	8	11	13	7	0	0	0	0	0	0	0	0	0	42
10:00 PM	0	0	0	1	1	5	8	2	0	0	0	0	0	0	0	0	0	17
11:00 PM	0	0	0	1	0	5	6	2	0	0	0	0	0	0	0	0	0	14
Total	7	51	49	69	250	815	1,113	519	108	7	3	0	0	0	0	0	0	2,991
Percent	0.2%	1.7%	1.6%	2.3%	8.4%	27.2%	37.2%	17.4%	3.6%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	36.0 mph	Mean (Average) Speed	35.4 mph
85th Percentile	41.1 mph	10 mph Pace	31.8 - 41.8 mph
95th Percentile	44.1 mph	Percent in Pace	66.7 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Tuesday, March 20, 2018
Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	3	1	3	1	0	0	0	0	0	0	0	0	0	8
1:00 AM	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	4
2:00 AM	0	0	0	0	1	3	5	1	0	1	0	0	0	0	0	0	0	11
3:00 AM	0	0	0	0	1	1	4	2	0	0	0	0	0	0	0	0	0	8
4:00 AM	1	2	1	0	4	8	8	3	2	0	0	0	0	0	0	0	0	29
5:00 AM	1	7	1	4	9	20	17	5	1	0	0	0	0	0	0	0	0	65
6:00 AM	0	7	1	1	9	20	46	22	2	2	0	0	0	0	0	0	0	110
7:00 AM	1	10	4	7	14	100	94	26	4	0	0	0	0	0	0	0	0	260
8:00 AM	5	11	1	16	63	148	114	17	3	1	0	0	0	0	0	0	0	379
9:00 AM	16	20	7	22	40	98	63	11	0	0	0	0	0	0	0	0	0	277
10:00 AM	3	12	10	14	41	73	39	7	0	0	0	0	0	0	0	0	0	199
11:00 AM	16	7	20	29	26	75	41	7	1	0	0	0	0	0	0	0	0	222
12:00 PM	17	12	3	19	40	106	49	5	0	0	0	0	0	0	0	0	0	251
1:00 PM	3	14	14	16	51	111	51	4	0	0	0	0	0	0	0	0	0	264
2:00 PM	11	5	16	29	47	103	27	4	1	0	0	0	0	0	0	0	0	243
3:00 PM	9	15	3	24	27	102	48	4	0	0	0	0	0	0	0	0	0	232
4:00 PM	3	6	5	6	18	57	56	27	5	0	0	0	0	0	0	0	0	183
5:00 PM	7	19	9	7	31	40	29	6	2	0	0	0	0	0	0	0	0	150
6:00 PM	10	10	11	8	22	44	18	2	1	0	0	0	0	0	0	0	0	126
7:00 PM	5	11	4	5	17	19	8	4	0	0	0	0	0	0	0	0	0	73
8:00 PM	1	9	3	5	9	11	3	3	0	0	0	0	0	0	0	0	0	44
9:00 PM	0	4	0	2	4	4	9	2	0	0	0	0	0	0	0	0	0	25
10:00 PM	0	0	0	0	1	3	11	1	2	0	0	0	0	0	0	0	0	18
11:00 PM	0	0	0	0	4	4	4	1	0	0	0	0	0	0	0	0	0	13
Total	109	181	113	214	483	1,153	748	165	24	4	0	0	0	0	0	0	0	3,194
Percent	3.4%	5.7%	3.5%	6.7%	15.1%	36.1%	23.4%	5.2%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	32.2 mph	Mean (Average) Speed	30.4 mph
85th Percentile	37.3 mph	10 mph Pace	28.7 - 38.7 mph
95th Percentile	40.5 mph	Percent in Pace	62.2 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Tuesday, March 20, 2018
Westbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	6
1:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	4
3:00 AM	0	0	0	1	0	2	2	2	0	1	0	0	0	0	0	0	0	8
4:00 AM	0	0	1	0	1	7	2	9	3	3	1	0	0	0	0	0	0	27
5:00 AM	1	0	6	1	4	7	12	3	0	1	0	0	0	0	0	0	0	35
6:00 AM	0	1	0	0	5	9	16	21	0	0	0	0	0	0	0	0	0	52
7:00 AM	0	0	3	0	3	32	45	53	15	1	0	0	0	0	0	0	0	152
8:00 AM	0	5	1	3	11	21	60	41	11	0	0	0	0	0	0	0	0	153
9:00 AM	1	4	4	8	16	46	52	33	2	0	0	0	0	0	0	0	0	166
10:00 AM	1	2	6	4	24	46	57	26	3	0	0	0	0	0	0	0	0	169
11:00 AM	0	7	5	1	22	67	100	40	14	1	0	0	0	0	0	0	0	257
12:00 PM	2	2	7	8	19	80	88	53	14	1	2	0	0	0	0	0	0	276
1:00 PM	1	9	3	4	19	67	72	35	3	0	0	0	0	0	0	0	0	213
2:00 PM	2	4	3	10	16	67	60	27	7	1	0	0	0	0	0	0	0	197
3:00 PM	0	6	1	5	21	70	95	36	5	1	0	0	0	0	0	0	0	240
4:00 PM	0	0	2	2	16	25	88	115	41	5	0	0	0	0	0	0	0	294
5:00 PM	0	3	1	3	13	63	137	89	20	1	0	0	0	0	0	0	0	330
6:00 PM	0	0	1	4	4	28	58	21	5	0	0	0	0	0	0	0	0	121
7:00 PM	0	2	4	8	8	26	42	20	3	0	0	0	0	0	0	0	0	113
8:00 PM	0	0	0	0	6	21	22	12	2	2	0	0	0	0	0	0	0	65
9:00 PM	1	3	6	2	9	17	19	13	2	0	0	0	0	0	0	0	0	72
10:00 PM	0	0	0	0	0	7	5	12	1	0	0	0	0	0	0	0	0	25
11:00 PM	0	1	1	0	1	4	3	1	0	0	0	0	0	0	0	0	0	11
Total	9	49	56	65	219	713	1,039	666	151	18	3	0	0	0	0	0	0	2,988
Percent	0.3%	1.6%	1.9%	2.2%	7.3%	23.9%	34.8%	22.3%	5.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	36.7 mph	Mean (Average) Speed	36.1 mph
85th Percentile	42.2 mph	10 mph Pace	32.8 - 42.8 mph
95th Percentile	45.5 mph	Percent in Pace	62.3 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Wednesday, March 21, 2018
Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	4
1:00 AM	0	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	0	5
2:00 AM	0	0	0	0	0	0	3	4	1	0	0	0	0	0	0	0	0	8
3:00 AM	0	0	0	0	1	1	4	2	0	0	0	0	0	0	0	0	0	8
4:00 AM	1	4	0	1	0	2	5	1	1	0	0	0	0	0	0	0	0	15
5:00 AM	0	3	3	3	5	11	20	3	0	0	0	0	0	0	0	0	0	48
6:00 AM	0	5	0	0	11	39	38	16	0	0	0	0	0	0	0	0	0	109
7:00 AM	2	15	1	4	22	103	106	33	4	0	0	0	0	0	0	0	0	290
8:00 AM	2	15	8	14	48	117	94	25	6	0	0	0	0	0	0	0	0	329
9:00 AM	7	10	8	8	37	81	44	8	0	0	0	0	0	0	0	0	0	203
10:00 AM	3	18	3	11	39	74	45	11	1	0	1	0	0	0	0	0	0	206
11:00 AM	15	3	4	14	40	72	53	8	2	0	0	0	0	0	0	0	0	211
12:00 PM	10	14	10	16	42	112	61	5	0	0	0	0	0	0	0	0	0	270
1:00 PM	3	12	5	20	45	79	72	17	2	0	0	0	0	0	0	0	0	255
2:00 PM	8	18	6	10	24	84	51	8	0	0	0	0	0	0	0	0	0	209
3:00 PM	10	13	3	8	44	72	54	12	2	0	0	0	0	0	0	0	0	218
4:00 PM	8	16	11	13	29	67	42	7	1	0	0	0	0	0	0	0	0	194
5:00 PM	13	18	6	6	32	74	49	11	1	0	0	0	0	0	0	0	0	210
6:00 PM	7	12	3	12	21	35	22	2	1	0	0	0	0	0	0	0	0	115
7:00 PM	3	11	4	1	11	15	13	5	1	0	0	0	0	0	0	0	0	64
8:00 PM	3	12	1	9	17	6	6	2	0	0	0	0	0	0	0	0	0	56
9:00 PM	0	2	0	1	6	9	5	0	0	0	0	0	0	0	0	0	0	23
10:00 PM	0	0	1	0	4	8	2	0	0	0	0	0	0	0	0	0	0	15
11:00 PM	0	0	0	0	3	4	3	2	0	0	0	0	0	0	0	0	0	12
Total	95	201	77	151	484	1,066	797	182	23	0	1	0	0	0	0	0	0	3,077
Percent	3.1%	6.5%	2.5%	4.9%	15.7%	34.6%	25.9%	5.9%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	32.7 mph	Mean (Average) Speed	30.8 mph
85th Percentile	37.7 mph	10 mph Pace	28.7 - 38.7 mph
95th Percentile	40.5 mph	Percent in Pace	62.6 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Wednesday, March 21, 2018
Westbound

Time	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
12:00 AM	0	0	0	0	1	2	0	1	0	1	0	0	0	0	0	0	0	5
1:00 AM	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
2:00 AM	0	0	0	0	0	1	2	2	0	1	0	0	0	0	0	0	0	6
3:00 AM	0	0	1	0	0	3	1	0	1	1	0	0	0	0	0	0	0	7
4:00 AM	0	0	0	1	3	3	3	5	1	1	0	0	0	0	0	0	0	17
5:00 AM	0	0	0	0	1	6	6	7	3	1	0	0	0	0	0	0	0	24
6:00 AM	0	1	1	0	1	13	13	5	3	0	0	0	0	0	0	0	0	37
7:00 AM	0	2	2	2	6	25	52	43	28	1	0	0	0	0	0	0	0	161
8:00 AM	2	5	1	5	15	20	49	32	6	0	1	0	0	0	0	0	0	136
9:00 AM	0	3	6	7	15	41	58	19	2	0	1	0	0	0	0	0	0	152
10:00 AM	2	2	1	8	25	42	56	26	6	0	0	0	0	0	0	0	0	168
11:00 AM	0	6	1	6	28	56	113	33	9	0	0	0	0	0	0	0	0	252
12:00 PM	0	0	1	7	18	72	88	49	8	1	0	0	0	0	0	0	0	244
1:00 PM	3	5	5	6	27	64	67	31	5	0	0	0	0	0	0	0	0	213
2:00 PM	0	3	3	3	14	59	85	24	6	0	0	0	0	0	0	0	0	197
3:00 PM	0	3	1	7	20	65	73	48	8	1	0	0	0	0	0	0	0	226
4:00 PM	0	2	3	3	19	63	99	77	21	0	0	0	0	0	0	0	0	287
5:00 PM	0	0	1	6	20	63	125	73	15	2	0	0	0	0	0	0	0	305
6:00 PM	0	2	1	5	18	38	60	23	3	0	0	0	0	0	0	0	0	150
7:00 PM	0	0	0	0	13	36	39	24	4	0	0	0	0	0	0	0	0	116
8:00 PM	2	1	2	2	12	18	24	5	0	0	0	0	0	0	0	0	0	66
9:00 PM	0	4	1	4	14	15	13	7	0	0	0	0	0	0	0	0	0	58
10:00 PM	0	0	0	0	3	9	9	4	2	0	0	0	0	0	0	0	0	27
11:00 PM	0	0	0	2	2	2	5	0	1	0	0	0	0	0	0	0	0	12
Total	9	39	31	74	275	716	1,042	539	132	10	2	0	0	0	0	0	0	2,869
Percent	0.3%	1.4%	1.1%	2.6%	9.6%	25.0%	36.3%	18.8%	4.6%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	36.1 mph	Mean (Average) Speed	35.7 mph
85th Percentile	41.6 mph	10 mph Pace	31.7 - 41.7 mph
95th Percentile	44.9 mph	Percent in Pace	63.9 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Thursday, March 22, 2018
Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	5
1:00 AM	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	4
2:00 AM	0	0	0	0	0	1	5	1	1	0	0	0	0	0	0	0	0	8
3:00 AM	0	0	0	0	0	4	0	1	1	0	0	0	0	0	0	0	0	6
4:00 AM	0	1	2	0	6	2	6	1	0	1	0	0	0	0	0	0	0	19
5:00 AM	0	8	5	2	4	9	20	6	0	0	0	0	0	0	0	0	0	54
6:00 AM	0	2	1	1	12	35	35	6	1	0	0	0	0	0	0	0	0	93
7:00 AM	1	7	2	2	10	108	120	20	1	0	0	0	0	0	0	0	0	271
8:00 AM	3	12	5	5	49	120	94	23	1	1	0	0	0	0	0	0	0	313
9:00 AM	9	14	13	17	40	108	37	9	1	0	0	0	0	0	0	0	0	248
10:00 AM	11	28	10	13	29	78	31	2	0	0	0	0	0	0	0	0	0	202
11:00 AM	10	16	5	11	31	79	34	5	1	0	0	0	0	0	0	0	0	192
12:00 PM	8	4	4	4	40	90	67	12	0	1	0	0	0	0	0	0	0	230
1:00 PM	2	12	4	12	41	122	67	4	0	0	0	0	0	0	0	0	0	264
2:00 PM	2	11	7	10	37	64	39	7	1	0	0	0	0	0	0	0	0	178
3:00 PM	5	10	5	4	46	65	39	4	0	0	0	0	0	0	0	0	0	178
4:00 PM	14	19	7	15	25	45	36	5	1	0	0	0	0	0	0	0	0	167
5:00 PM	10	24	9	4	15	40	35	14	4	0	0	0	0	0	0	0	0	155
6:00 PM	8	14	7	6	9	43	15	4	2	0	0	0	0	0	0	0	0	108
7:00 PM	1	6	1	1	19	15	16	5	0	0	0	0	0	0	0	0	0	64
8:00 PM	0	6	2	2	5	21	10	4	1	0	0	0	0	0	0	0	0	51
9:00 PM	1	1	3	3	3	8	5	0	1	0	0	0	0	0	0	0	0	25
10:00 PM	0	0	0	1	4	7	5	1	0	0	0	0	0	0	0	0	0	18
11:00 PM	0	1	0	0	3	12	4	2	0	0	0	0	0	0	0	0	0	22
Total	85	196	92	113	430	1,079	722	138	17	3	0	0	0	0	0	0	0	2,875
Percent	3.0%	6.8%	3.2%	3.9%	15.0%	37.5%	25.1%	4.8%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	32.4 mph	Mean (Average) Speed	30.6 mph
85th Percentile	37.4 mph	10 mph Pace	29.0 - 39.0 mph
95th Percentile	40.3 mph	Percent in Pace	65.0 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Thursday, March 22, 2018
Westbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	0	3	2	3	2	0	0	0	0	0	0	0	0	10
1:00 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	4
2:00 AM	0	0	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	5
3:00 AM	0	0	1	0	1	0	3	2	0	0	0	0	0	0	0	0	0	7
4:00 AM	0	0	0	0	2	3	8	2	2	0	1	0	0	0	0	0	0	18
5:00 AM	0	0	0	0	2	2	6	3	0	1	0	0	0	0	0	0	0	14
6:00 AM	0	2	0	2	0	10	16	8	2	1	0	0	0	0	0	0	0	41
7:00 AM	1	1	1	0	6	11	31	61	16	1	1	0	0	0	0	0	0	130
8:00 AM	1	1	3	3	11	29	44	20	6	0	0	0	0	0	0	0	0	118
9:00 AM	0	7	5	5	7	40	69	21	5	0	0	0	0	0	0	0	0	159
10:00 AM	2	3	1	2	14	47	80	31	3	0	0	0	0	0	0	0	0	183
11:00 AM	2	3	2	10	19	67	90	52	8	0	0	0	0	0	0	0	0	253
12:00 PM	2	2	0	1	22	55	106	55	10	0	0	0	0	0	0	0	0	253
1:00 PM	3	2	3	6	27	62	82	21	1	0	0	0	0	0	0	0	0	207
2:00 PM	0	8	0	7	13	52	60	31	2	0	0	0	0	0	0	0	0	173
3:00 PM	0	5	5	10	28	67	84	41	4	1	0	0	0	0	0	0	0	245
4:00 PM	0	2	1	3	9	49	108	68	9	2	0	0	0	0	0	0	0	251
5:00 PM	0	1	0	3	20	51	110	83	15	1	0	0	0	0	0	0	0	284
6:00 PM	0	1	1	3	12	42	46	21	5	0	0	0	0	0	0	0	0	131
7:00 PM	0	1	0	8	14	25	27	13	3	0	0	0	0	0	0	0	0	91
8:00 PM	0	0	1	2	9	15	23	7	2	0	0	0	0	0	0	0	0	59
9:00 PM	2	2	4	3	5	18	7	3	2	0	0	0	0	0	0	0	0	46
10:00 PM	0	1	0	1	4	10	9	8	1	2	0	0	0	0	0	0	0	36
11:00 PM	0	0	0	0	0	3	8	4	0	0	0	0	0	0	0	0	0	15
Total	13	42	28	69	226	663	1,022	561	98	9	2	0	0	0	0	0	0	2,733
Percent	0.5%	1.5%	1.0%	2.5%	8.3%	24.3%	37.4%	20.5%	3.6%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	36.4 mph	Mean (Average) Speed	35.8 mph
85th Percentile	41.5 mph	10 mph Pace	32.2 - 42.2 mph
95th Percentile	44.4 mph	Percent in Pace	66.2 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Friday, March 23, 2018
Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	2	1	1	1	1	0	0	0	0	0	0	0	0	6
1:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	0	0	0	0	3	6	2	2	0	0	0	0	0	0	0	0	13
3:00 AM	0	0	1	0	1	4	6	0	1	0	0	0	0	0	0	0	0	13
4:00 AM	0	4	2	0	1	7	5	1	0	0	0	0	0	0	0	0	0	20
5:00 AM	0	5	7	2	6	13	12	5	1	0	0	0	0	0	0	0	0	51
6:00 AM	0	4	2	0	5	27	46	14	2	0	0	0	0	0	0	0	0	100
7:00 AM	3	9	4	3	10	72	121	49	7	0	0	0	0	0	0	0	0	278
8:00 AM	9	6	7	9	25	123	96	30	4	0	0	0	0	0	0	0	0	309
9:00 AM	6	9	7	11	28	77	64	8	0	0	0	0	0	0	0	0	0	210
10:00 AM	12	9	4	6	26	79	53	14	1	0	0	0	0	0	0	0	0	204
11:00 AM	10	23	5	5	35	111	67	9	0	0	0	0	0	0	0	0	0	265
12:00 PM	8	19	5	7	36	108	69	14	2	0	0	0	0	0	0	0	0	268
1:00 PM	3	15	5	15	35	111	80	16	0	0	0	0	0	0	0	0	0	280
2:00 PM	4	9	4	10	29	87	68	11	1	0	0	0	0	0	0	0	0	223
3:00 PM	2	25	4	12	32	73	69	21	2	0	0	0	0	0	0	0	0	240
4:00 PM	8	13	9	4	10	52	36	8	0	0	0	0	0	0	0	0	0	140
5:00 PM	9	13	7	11	12	46	39	13	0	0	0	0	0	0	0	0	0	150
6:00 PM	3	6	4	3	10	30	31	6	1	0	0	0	0	0	0	0	0	94
7:00 PM	2	14	5	1	7	15	10	4	2	0	0	0	0	0	0	0	0	60
8:00 PM	0	3	0	2	4	22	17	3	1	0	0	0	0	0	0	0	0	52
9:00 PM	0	0	0	1	3	10	7	7	0	0	0	0	0	0	0	0	0	28
10:00 PM	0	0	0	0	1	6	11	4	0	0	0	0	0	0	0	0	0	22
11:00 PM	0	0	0	0	2	10	4	0	1	0	0	0	0	0	0	0	0	17
Total	79	186	82	102	320	1,087	920	240	29	0	0	0	0	0	0	0	0	3,045
Percent	2.6%	6.1%	2.7%	3.3%	10.5%	35.7%	30.2%	7.9%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	33.6 mph	Mean (Average) Speed	31.8 mph
85th Percentile	38.3 mph	10 mph Pace	29.3 - 39.3 mph
95th Percentile	41.5 mph	Percent in Pace	66.2 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
 Date Range: 3/17/2018 to 3/23/2018
 Site Code: 01

Friday, March 23, 2018
 Westbound

Time	Speed Range (mph)																Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +
12:00 AM	0	0	0	1	0	2	0	2	1	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
2:00 AM	1	0	0	1	0	3	3	2	2	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	1	0	0	4	0	1	1	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	4	2	5	1	1	0	0	0	0	0	0	0
5:00 AM	1	0	0	0	2	5	5	9	1	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	4	11	13	8	2	0	0	0	0	0	0	0	0
7:00 AM	0	3	3	1	11	22	43	57	25	1	0	0	0	0	0	0	0
8:00 AM	5	5	3	3	11	29	34	39	12	1	0	0	0	0	0	0	0
9:00 AM	0	2	6	3	10	39	74	34	5	1	0	0	0	0	0	0	0
10:00 AM	3	2	3	3	9	49	69	38	10	0	1	0	0	0	0	0	0
11:00 AM	1	9	8	7	17	53	112	55	12	1	0	0	0	0	0	0	0
12:00 PM	0	2	2	2	18	60	124	45	9	0	0	0	0	0	0	0	0
1:00 PM	0	4	2	1	11	77	85	29	4	0	0	0	0	0	0	0	0
2:00 PM	0	3	3	6	11	63	49	35	9	1	0	1	0	0	0	0	0
3:00 PM	0	4	1	10	13	53	102	61	11	2	0	0	0	0	0	0	0
4:00 PM	1	5	4	0	6	41	91	76	18	1	0	0	0	0	0	0	0
5:00 PM	0	2	4	3	14	48	116	59	13	1	0	0	0	0	0	0	0
6:00 PM	0	1	2	1	14	23	61	21	3	0	0	0	0	0	0	0	0
7:00 PM	0	2	1	1	8	24	23	4	4	0	1	0	0	0	0	0	0
8:00 PM	1	1	1	1	12	19	24	21	2	0	0	0	0	0	0	0	0
9:00 PM	0	1	0	1	2	7	15	6	2	4	0	0	0	0	0	0	0
10:00 PM	0	0	0	1	0	6	14	8	2	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	2	5	6	0	0	0	0	0	0	0	0	0
Total	13	46	43	47	174	640	1,068	620	150	15	2	1	0	0	0	0	2,819
Percent	0.5%	1.6%	1.5%	1.7%	6.2%	22.7%	37.9%	22.0%	5.3%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Daily Percentile Speed Summary		Speed Statistics	
50th Percentile (Median)	37.0 mph	Mean (Average) Speed	36.4 mph
85th Percentile	41.9 mph	10 mph Pace	32.4 - 42.4 mph
95th Percentile	45.4 mph	Percent in Pace	67.1 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
Date Range: 3/17/2018 to 3/23/2018
Site Code: 01

Total Study Average Eastbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	2	2	2	1	0	0	0	0	0	0	0	0	0	7
1:00 AM	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	0	6
2:00 AM	0	0	0	0	0	2	4	2	1	0	0	0	0	0	0	0	0	9
3:00 AM	0	0	0	0	1	2	3	2	0	0	0	0	0	0	0	0	0	8
4:00 AM	0	2	1	0	3	4	6	2	1	0	0	0	0	0	0	0	0	19
5:00 AM	0	5	2	2	5	12	13	4	1	0	0	0	0	0	0	0	0	44
6:00 AM	0	4	1	1	7	24	30	11	2	0	0	0	0	0	0	0	0	80
7:00 AM	2	9	3	4	13	72	84	24	3	0	0	0	0	0	0	0	0	214
8:00 AM	3	10	5	8	32	102	92	22	3	0	0	0	0	0	0	0	0	277
9:00 AM	7	12	7	11	28	73	50	12	1	0	0	0	0	0	0	0	0	201
10:00 AM	6	12	5	8	28	66	36	10	1	0	0	0	0	0	0	0	0	172
11:00 AM	9	11	7	13	28	73	44	8	1	0	0	0	0	0	0	0	0	194
12:00 PM	7	10	5	8	32	78	52	9	0	0	0	0	0	0	0	0	0	201
1:00 PM	3	12	6	11	38	83	52	9	1	0	0	0	0	0	0	0	0	215
2:00 PM	4	10	7	10	30	78	42	7	1	0	0	0	0	0	0	0	0	189
3:00 PM	6	14	4	8	31	72	43	9	1	0	0	0	0	0	0	0	0	188
4:00 PM	6	12	7	8	19	46	33	9	1	0	0	0	0	0	0	0	0	141
5:00 PM	7	14	7	7	18	42	37	9	2	0	0	0	0	0	0	0	0	143
6:00 PM	4	11	5	6	12	29	19	4	1	0	0	0	0	0	0	0	0	91
7:00 PM	2	9	3	3	10	14	11	4	1	0	0	0	0	0	0	0	0	57
8:00 PM	1	6	3	3	7	13	9	2	1	0	0	0	0	0	0	0	0	45
9:00 PM	0	1	1	1	4	8	5	3	0	0	0	0	0	0	0	0	0	23
10:00 PM	0	0	0	0	2	5	6	1	0	0	0	0	0	0	0	0	0	14
11:00 PM	0	0	0	0	2	8	5	1	0	0	0	0	0	0	0	0	0	16
Total	67	164	79	112	353	910	680	166	23	0	0	0	0	0	0	0	0	2,554
Percent	2.6%	6.4%	3.1%	4.4%	13.8%	35.6%	26.6%	6.5%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Note: Average only considered on days with 24-hours of data.

Total Study Percentile Speed Summary		Total Study Speed Statistics	
50th Percentile (Median)	32.9 mph	Mean (Average) Speed	31.1 mph
85th Percentile	37.8 mph	10 mph Pace	28.9 - 38.9 mph
95th Percentile	41.0 mph	Percent in Pace	63.7 %

5. Traffic Impact Analysis

Location: Garden Rd / Olmstead Rd and Fairground Rd
 Date Range: 3/17/2018 to 3/23/2018
 Site Code: 01

Total Study Average Westbound

Time	Speed Range (mph)																Total Volume	
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85		85 +
12:00 AM	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	4
1:00 AM	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
2:00 AM	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	5
3:00 AM	0	0	0	1	0	1	3	1	1	0	0	0	0	0	0	0	0	7
4:00 AM	0	0	0	0	2	5	4	5	1	1	0	0	0	0	0	0	0	18
5:00 AM	0	0	1	0	2	5	6	5	1	1	0	0	0	0	0	0	0	21
6:00 AM	0	1	0	0	2	8	12	8	2	0	0	0	0	0	0	0	0	33
7:00 AM	0	1	2	0	4	18	37	39	16	1	1	0	0	0	0	0	0	119
8:00 AM	1	3	3	3	9	21	43	28	7	1	0	0	0	0	0	0	0	119
9:00 AM	0	5	4	4	10	33	56	27	4	0	0	0	0	0	0	0	0	143
10:00 AM	2	3	2	3	14	40	59	26	5	0	0	0	0	0	0	0	0	154
11:00 AM	1	5	3	5	18	57	89	39	8	0	0	0	0	0	0	0	0	225
12:00 PM	1	1	2	4	18	62	96	40	8	0	0	0	0	0	0	0	0	232
1:00 PM	1	3	3	4	18	57	67	27	3	0	0	0	0	0	0	0	0	183
2:00 PM	1	3	2	6	14	53	60	27	5	0	0	0	0	0	0	0	0	171
3:00 PM	0	4	2	6	17	54	70	37	5	1	0	0	0	0	0	0	0	196
4:00 PM	0	2	2	2	13	40	76	64	16	1	0	0	0	0	0	0	0	216
5:00 PM	0	1	1	5	13	44	97	60	13	1	0	0	0	0	0	0	0	235
6:00 PM	0	1	1	4	12	30	46	19	4	0	0	0	0	0	0	0	0	117
7:00 PM	0	2	2	3	9	25	26	11	3	0	0	0	0	0	0	0	0	81
8:00 PM	0	1	1	1	8	17	19	9	1	0	0	0	0	0	0	0	0	57
9:00 PM	0	2	2	2	6	11	12	7	1	1	0	0	0	0	0	0	0	44
10:00 PM	0	0	0	1	1	6	8	6	1	0	0	0	0	0	0	0	0	23
11:00 PM	0	0	0	0	0	4	4	3	1	0	0	0	0	0	0	0	0	12
Total	7	38	33	54	190	595	894	492	106	8	1	0	0	0	0	0	0	2,418
Percent	0.3%	1.6%	1.4%	2.2%	7.9%	24.6%	37.0%	20.3%	4.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note: Average only considered on days with 24-hours of data.

Total Study Percentile Speed Summary		Total Study Speed Statistics	
50th Percentile (Median)	36.5 mph	Mean (Average) Speed	35.9 mph
85th Percentile	41.6 mph	10 mph Pace	32.1 - 42.1 mph
95th Percentile	44.9 mph	Percent in Pace	65.2 %