

Appendix I – Traffic Impact Analysis

TERRACINA AT REDLANDS (TTM 20320) TRAFFIC IMPACT ANALYSIS

City of Redlands

August 13, 2021



Traffic Engineering • Transportation Planning • Parking • Noise & Vibration
Air Quality • Global Climate Change • Health Risk Assessment

TERRACINA AT REDLANDS (TTM 20320) TRAFFIC IMPACT ANALYSIS

City of Redlands

August 13, 2021

prepared by

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Project No. 19-0208

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EXECUTIVE SUMMARY

The purpose of this traffic impact analysis is to update the July 8, 2020 traffic impact analysis for this project and to provide an assessment of traffic operations resulting from development of the proposed Terracina at Redlands (TTM 20320) Project and to identify measures necessary to alleviate any substantial operational deficiencies, if any. The traffic issues related to the proposed land use and development have been evaluated in the context of the City of Redlands Traffic Impact Analysis (TIA) Guidelines. The City of Redlands is the lead agency responsible for evaluation of potential environmental impacts associated with the proposed project. In accordance with the City's traffic study requirements, this report analyzes traffic impacts for existing and existing plus project conditions.

The project's transportation impact as measured by vehicle miles traveled (VMT), for compliance with the California Environmental Quality Act (CEQA), is evaluated separate in the *Terracina at Redlands (TTM 20320) Project Vehicle Miles Traveled Screening Analysis* (Ganddini Group, Inc., July 28, 2021). As documented in that study, the proposed project satisfies the City-established project type screening criteria for single family residential developments of 167 dwelling units or fewer and is presumed to result in a less than significant VMT impact.

Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms related to transportation engineering.

Project Description

The approximately 64.56-acre project site is located north of Reservoir Road adjacent to Wabash Avenue in the City of Redlands. The project site is currently vacant. The proposed project involves construction of 67 single-family detached residential dwelling units.

Vehicular access for the project is proposed via internal residential streets that will intersect Wabash Avenue to provide full access at three new intersections. Wabash Avenue is currently unpaved between Reservoir Road and Panorama Drive. The proposed project will construct Wabash Avenue from Reservoir Road through the project site at its ultimate alignment and full-section width (72 feet right-of-way), including parkway improvements and two travel lanes in each direction.

Existing Conditions

The study intersections currently operate within acceptable Levels of Service (C or better) during the peak hours for Existing conditions, with the exception of the following study intersection that currently operates at Level of Service F (see Table 1):

- Ford Street at Reservoir Road - #1 (LOS F AM/PM)

The unsignalized study intersection of Ford Street at Reservoir Road currently satisfies the *California MUTCD* peak hour volume warrant.

Project Trip Generation

The proposed project is forecast to generate 632 daily trips, including 49 trips during the AM peak hour and 67 trips during the PM peak hour.

Site Access and On-Site Circulation

The proposed project will construct Wabash Avenue from Reservoir Road through the project site at its ultimate alignment and full-section width (72 feet right-of-way), including parkway improvements and two travel lanes in each direction.

This analysis assumes the proposed project shall construct the improvements necessary to provide project site access as specified in the Project Trip Forecasts & Site Access section of this report. This analysis also assumes the proposed project will be required to comply with the City of Redlands standard conditions for development review/approval to ensure adequate geometric design and emergency access as specified in the Project Trip Forecasts & Site Access section of this report.

Level of Service Analysis

The study intersections are forecast to operate within acceptable Levels of Service (C or better) during the peak hours for Existing Plus Project conditions, with the exception of the following study intersection that is forecast to continue operating at Level of Service F and would be further degraded by the proposed project, thus resulting in a substantial operational deficiency without improvements:

- Ford Street at Reservoir Road - #1 (LOS F - AM/PM peak hours)

Operational Improvements

The following improvement is recommended to alleviate the project-related deficiency at the substantially impacted intersection during the peak hours for Existing Plus Project conditions:

- Ford Street (NS) at Reservoir Road (EW) - #1
 - Install a traffic signal.

The proposed project is forecast to result in no substantial operational deficiencies at the study intersections during the peak hours for Existing Plus Project conditions with implementation of the recommended improvement.

Since the recommended improvement at the intersection of Ford Street and Reservoir Road is necessary to address the worsening of an existing deficiency, it is not equitable for the proposed project to be financially responsible for the total cost of the improvement; rather, the project should only be responsible for its share of the deficiency (e.g., project trips divided by Existing Plus Project volume entering the intersection). If the recommended improvement is included the City of Redlands Development Impact Fee (DIF) program, then payment of the project's DIF fees would address the project's share of the impact at this intersection. Based on Measure U requirements, however, the recommended improvements must occur prior to project opening. Therefore, if the recommended improvements are not scheduled for construction through the DIF program prior to project opening, the proposed project may be required to sponsor the improvements and request a DIF credit, reimbursement agreement, or wait until the improvements are constructed by the City or other developments.

State Highway and CMP Analysis

Since the project is forecast to generate fewer than 100 peak hour trips and is not forecast to contribute 50 or more peak hour trips to a CMP facility, no further State highway or CMP analysis is required for the project based on the thresholds outlined in the San Bernardino County CMP.

1. INTRODUCTION

This section describes the purpose of this traffic impact analysis, project location, proposed development, and study area.

Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PROJECT DESCRIPTION

The approximately 64.56-acre project site is located north of Reservoir Road adjacent to Wabash Avenue in the City of Redlands. The project site is currently vacant. The proposed project involves construction of 67 single-family detached residential dwelling units.

Vehicular access for the project is proposed via internal residential streets that will intersect Wabash Avenue to provide full access at three new intersections. Wabash Avenue is currently unpaved between Reservoir Road and Panorama Drive. The proposed project will construct Wabash Avenue from Reservoir Road through the project site at its ultimate alignment and full-section width (72 feet right-of-way), including parkway improvements and two travel lanes in each direction.

PROJECT PHASING

For the purposes of this analysis, the proposed project is assumed to be built in one phase.

ANALYSIS SCENARIOS

The following scenarios are analyzed during typical weekday AM and PM peak hour conditions:

- Existing
- Existing Plus Project

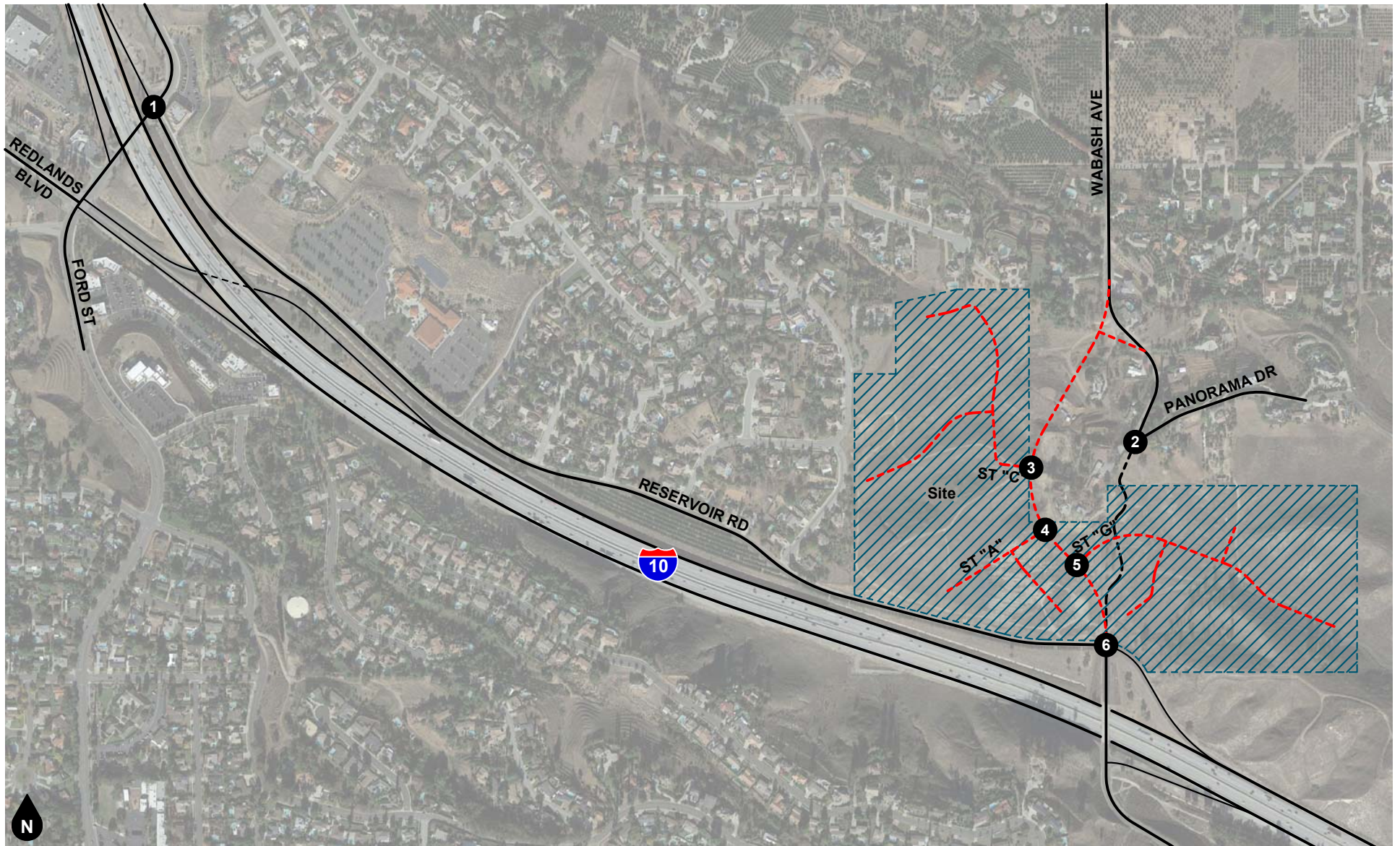
STUDY AREA

Based on the study intersections identified in the scoping agreement (Appendix B), the study area consists of the following study intersections and project driveways within the City of Redlands and California Department of Transportation (Caltrans) jurisdiction:

Study Intersections ¹	Jurisdiction
1. Ford Street (NS) at Reservoir Road (EW)	City of Redlands / Caltrans
2. Wabash Avenue (NS) at Panorama Drive (EW)	City of Redlands
3. Wabash Avenue (NS) at Project "Street C" (EW)	City of Redlands
4. Wabash Avenue (NS) at Project "Street A" (EW)	City of Redlands
5. Wabash Avenue (NS) at Project "Street G" (EW)	City of Redlands
6. Wabash Avenue (NS) at Reservoir Road/I-10 WB Off-Ramp (EW)	City of Redlands / Caltrans

Notes:

1. (NS) = North-South roadway; (EW) = East-West roadway



Legend

- # Study Intersection
- Future Roadway

Figure 1
Project Location Map

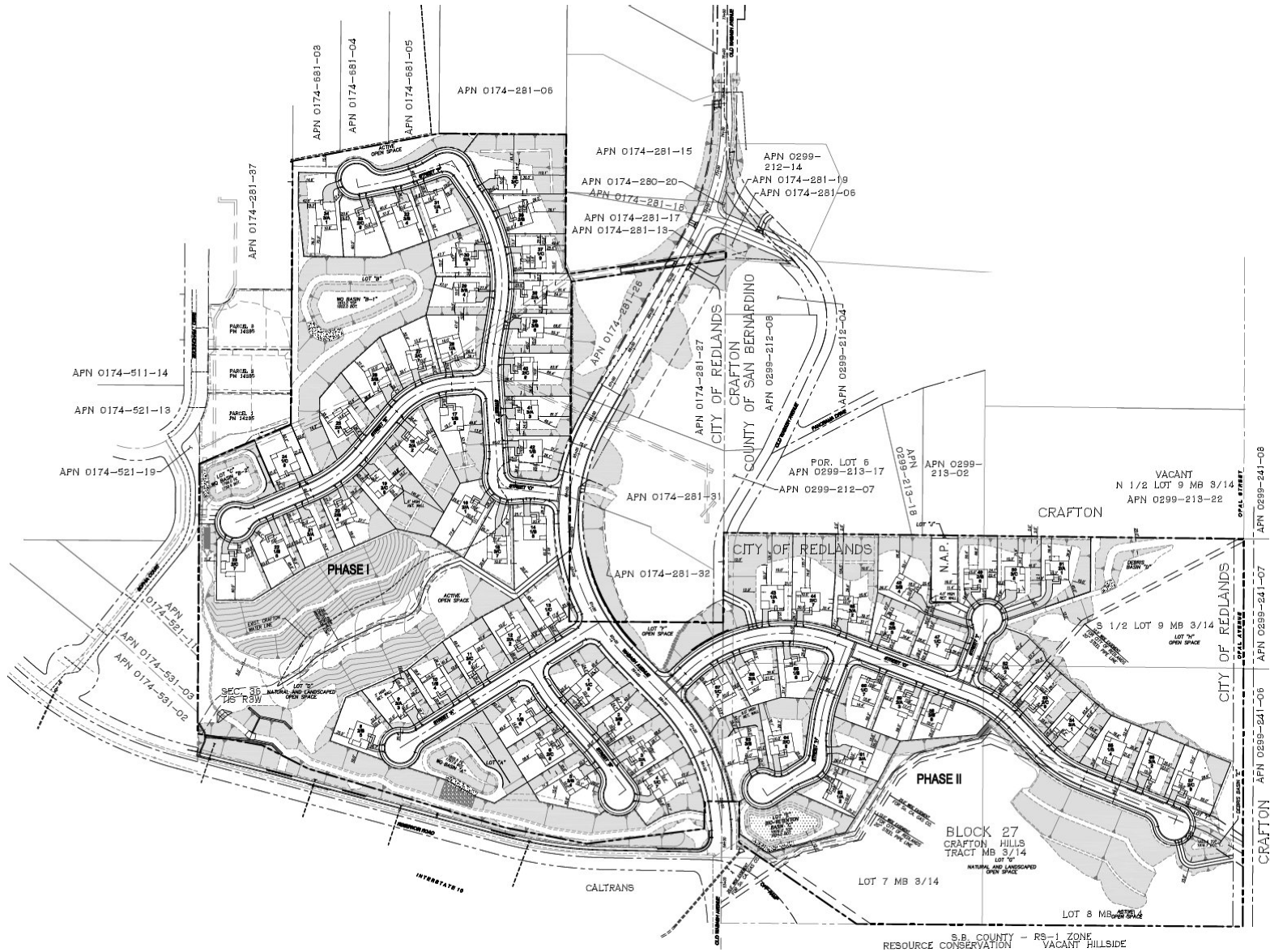


Figure 2
Site Plan

2. METHODOLOGY

This section describes the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies.

LEVEL OF SERVICE ANALYSIS

Level of Service analysis is performed for assessing conformance with General Plan operational standards. In accordance with current CEQA provisions, a project's effect on automobile delay (as measured by Level of Service) shall not constitute a significant environmental impact.

Intersection Delay Methodology

The technique used to assess the performance of intersections within the City of Redlands and California Department of Transportation (Caltrans) jurisdiction is known as the intersection delay methodology based on the procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

Level of Service	Intersection Control Delay (Seconds / Vehicle)		Description
	Signalized Intersection	Unsignalized Intersection	
A	≤ 10.0	≤ 10.0	EXCELLENT OPERATION. Unrestricted flow.
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	VERY GOOD OPERATION: Stable flow.
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	GOOD OPERATION. Occasionally backups.
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	FAIR OPERATION. No long-standing traffic queues. Typical, peak period design standard.
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	POOR OPERATION. Some long-standing vehicular queues.
F	> 80.0	> 50.0	FORCED FLOW. Backups may restrict intersection movements; and potential for stop-and-go type traffic flow.

Source: Transportation Research Board, Highway Capacity Manual (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level

of Service is determined by the average control delay for the worst individual movement (or movements sharing a single lane). Intersection delay analysis was performed using the Vistro software using default values recommended in the Highway Capacity Manual.

Performance Standards

City of Redlands

The City of Redlands General Plan has established the minimum acceptable Level of Service (LOS) for roadway segment and peak hour intersection operations. The General Plan states that peak hour intersection operations of Level of Service C or better are generally acceptable. Therefore, any intersection operating at Level of Service D to F is considered deficient.

In accordance to the City of Redlands Measure U Section 1A.60 Principle Six (a), all new development projects shall assure by appropriate mitigation measures that, at a minimum, traffic Levels of Service are maintained at a minimum of Level of Service C throughout the City, except where the current Level of Service is lower than Level of Service C, or as provided in Section 5.20 of the Redlands General Plan where a more intense Level of Service is specifically permitted. In any location where the Level of Service is below C at the time an application for a development project is submitted, operational improvements shall be imposed on that development project to assure, at a minimum, that the Level of Service is maintained at Levels of Service that are no worse than those existing at the time an application for development is filed, except as provided in Section 5.20b.

Measure U Section 5.0 Circulation Element sections 5.20a, 5.20b, 5.20c are listed as “Guiding Policies: Standards for Traffic Service:

- 5.20a Maintain Level of Service C or better as the standard at all intersections presently at Level of Service C or better.
- 5.20b Within the area identified in the General Plan (Figure 5.3), including that unincorporated County area identified as the “donut hole,” maintain Level of Service C or better; however, accept a reduced Level of Service D on a case-by-case basis upon approval by a four-fifths (4/5ths) vote of the total authorized membership of the City Council.
- 5.20c Where the current Level of Service at a location within the City of Redlands is below the Level of Service C standard, no development project shall be approved that cannot be mitigated so that it does not reduce the existing Level of Service at that location except as provided in Section 5.20b.

Caltrans

For purposes of environmental review, Caltrans reviews the transportation impact of development projects based on guidance in the *Vehicle Miles Traveled-Focused Transportation Impact Study Guide* (May 2020) [“the Caltrans TISG”]. The Caltrans TISG is largely based on State of California guidance for CEQA evaluation, which is based on vehicle miles traveled (VMT).

Historically, Level of Service requirements were outlined in the *Guide for the Preparation of Traffic Impact Studies* (2002), which noted that Caltrans endeavors to maintain a target Level of Service at the transition between Level of Service C and D on State highway facilities. The 2002 guidelines also acknowledge that this may not always be feasible and recommends consultation with the Caltrans to determine the appropriate target Level of Service.

For consistency with local requirements, this analysis defines Level of Service C as the minimum acceptable Level of Service for State Highway facilities. If a project is forecast to cause a substantial operational

deficiency, Caltrans shall be consulted to determine what improvements, if any, should be implemented to address the project's effect on traffic operations. As previously noted, however, a project's effect on automobile delay (as measured by Level of Service) shall not constitute a significant environmental impact in accordance with current CEQA provisions.

Substantial Operational Deficiency Criteria

City of Redlands

For study intersections within the City of Redlands, a substantial project-related operational deficiency is defined to occur if the addition of project-generated trips is forecast to cause or worsen Level of Service D, E, or F at a study intersection.¹

Caltrans

Based on the Caltrans-established performance standards, a substantial project-related operational deficiency is defined to occur if the addition of project generated trips is forecast to cause the performance of a State Highway study intersection to change from acceptable Level of Service (C or better) to unacceptable Level of Service (D, E, or F).

TRAFFIC SIGNAL WARRANT ANALYSIS

The potential need for installation of a traffic signal at unsignalized study intersections was evaluated based on the California Manual on Uniform Traffic Control Devices ("California MUTCD", November 2014), Section 4C-101, peak hour volume warrant (Warrant 3). The California MUTCD states that a traffic control signal should not be installed unless one or more warrants are satisfied. Application of the traffic signal warrants should be based on engineering judgement and satisfaction of one or more traffic signal warrants shall not in itself require the installation of a traffic signal.

¹ Defined as an increase in control delay.

3. EXISTING CONDITIONS

EXISTING ROADWAY SYSTEM

Figure 3 identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area. Regional access to the project area is provided by the Interstate 10 (I-10) freeway south of the project site. The key north-south roadways providing local circulation are Ford Street and Wabash Avenue. The key east-west roadways providing local circulation are Panorama Drive and Reservoir Road.

I-10 is an eight-lane freeway providing east-west regional access through Southern California from its terminus in west Los Angeles through City of Redlands to the Coachella Valley and onward through the southern United States.

Ford Street is a two-lane undivided to four-lane divided north-south roadway. Ford Street is classified as a Minor Arterial (various roadway cross-section) in the City of Redlands General Plan. On-street parking, and bicycle lanes are not provided in the study area. Sidewalks are provided on the east side of Ford Street north of Reservoir Road terminating at the northern property boundary of the existing development at the northeast corner of Ford Street at Reservoir Road, and on the east side of Ford Street south of Redlands Boulevard.

Wabash Avenue is a two-lane undivided north-south roadway in the study area. Wabash Avenue is classified as a Minor Arterial (various roadway cross-section) north of Reservoir Road and as a Collector (various roadway cross-section) south of Reservoir Road in the City of Redlands General Plan. On-street parking is generally not feasible due to existing roadway widths in the study area. Bicycle lanes and sidewalks are not provided in the study area.

Panorama Drive is a two-lane undivided east-west roadway. Panorama Drive is not classified in the City of Redlands General Plan. On-street parking is generally not feasible due to existing roadway widths in the study area. Bicycle lanes and sidewalks are not provided in the study area.

Reservoir Road is a two-lane undivided east-west roadway. Reservoir Road is classified as a Collector (various roadway cross-section) in the City of Redlands General Plan. On-street parking is generally prohibited on both sides of the road. On-street bicycle lanes are not provided in the study area. Sidewalks are provided on the north side of the road from Ford Street to the southwest corner of the proposed project site.

PEDESTRIAN FACILITIES

Existing pedestrian facilities in the project vicinity are shown on Figure 4. As shown on Figure 4, the existing project area is generally rural in character with limited to no pedestrian facilities.

TRANSIT FACILITIES

Figure 5 shows the existing transit routes available in the project vicinity. As shown in Figure 5, the study area is currently not served by Omnitrans. The study area used to be served by Omnitrans Route 208 along Reservoir Road, but the route has been eliminated due to low usage.

GENERAL PLAN CONTEXT

Figure 6 shows the City of Redlands General Plan Circulation Element roadway classifications map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The City of Redlands standard roadway cross-sections are illustrated on Figure 7.

BICYCLE ROUTES

On-street bicycle lanes are proposed in the study area on the City of Redlands General Plan Ford Street, Reservoir Road, and Wabash Avenue. The City of Redlands General Plan Bike Routes is depicted on Figure 8.

TRUCK ROUTES

Figure 9 shows the designated truck routes as identified in the City of Redlands General Plan. There are no designated truck routes in the study area.

EXISTING ROADWAY VOLUMES

Figure 10 shows the Existing average daily traffic volumes. The Existing average daily traffic volumes have been obtained from the 2017 Traffic Volumes on California State Highways by the California Department of Transportation and factored from peak hour intersection turning movement volumes using the following formula for each intersection leg:

$$\text{Evening Peak Hour (Approach Volume + Exit Volume)} \times 11.5 = \text{Leg Volume.}$$

Existing peak hour intersection turning movement volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in January 2020 during typical weekday conditions while local schools were session. The AM peak period was counted between 7:00 AM and 9:00 AM and the PM peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15-minute periods with the highest total volume when all movements are added together. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15-minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix C.

The current COVID-19 pandemic and related stay-at-home orders imposed by state and local municipalities have resulted in a substantial decrease in traffic volumes. In addition to the current public health restrictions, it is anticipated that the pandemic may have a lasting effect on travel behaviors, such as an increase telecommuting. To provide a conservative analysis, the Existing conditions traffic volumes used in this analysis are based on pre-pandemic historic counts from January 2020 with an annual ambient growth rate of 2 percent applied over a one-year period to reflect existing 2021 traffic counts.

The existing counts have been classified into passenger cars and trucks by number of axles. The truck volumes have been converted to Passenger Car Equivalent (PCE) trips based on PCE factors recommended by the County of San Bernardino Congestion Management Program (1.5 PCE factor for 2-axle trucks, 2.0 PCE factor for 3-axle trucks, and 3.0 PCE factor for 4+ axle trucks). All roadway volumes are shown in PCE trips throughout this report.

Figure 11 and Figure 12 show the Existing AM and PM peak hour intersection turning movement volumes, respectively.

EXISTING INTERSECTION LEVEL OF SERVICE

The study intersection Levels of Service for Existing conditions have been calculated and are shown in Table 1. Existing Level of Service worksheets are provided in Appendix D.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (C or better) during the peak hours for Existing conditions, with the exception of the following study intersection that currently operates at Level of Service F:

- Ford Street at Reservoir Road - #1 (LOS F AM/PM)

EXISTING TRAFFIC SIGNAL WARRANT ANALYSIS

The unsignalized study intersection of Ford Street at Reservoir Road currently satisfies the California MUTCD peak hour volume warrant. Traffic signal warrant worksheets are provided in Appendix E.

Table 1
Existing Intersection Levels of Service

Study Intersection	Traffic Control ¹	AM Peak Hour		PM Peak Hour	
		Delay ²	LOS ³	Delay ²	LOS ³
1. Ford St (NS) at Reservoir Rd (EW)	CSS	>99.9	F	83.1	F
2. Wabash Ave (NS) at Panorama Dr (EW)	CSS	8.8	A	8.4	A
6. Wabash Ave (NS) at Reservoir Rd/I-10 WB Off-Ramp (EW)	CSS	16.3	C	11.8	B

Notes:

- (1) CSS = Cross Street Stop
- (2) Delay is shown in seconds/vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).
- (3) LOS = Level of Service

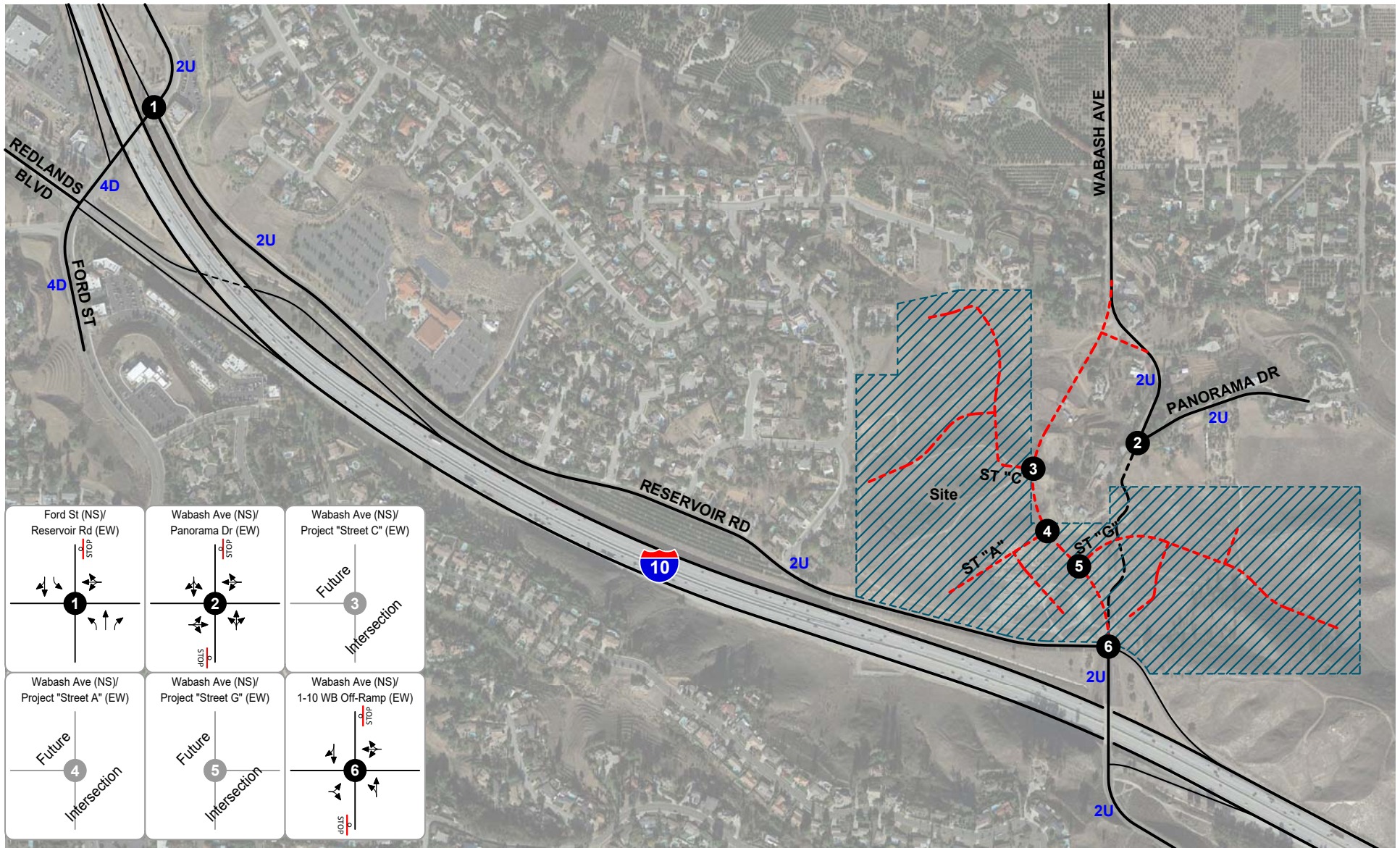
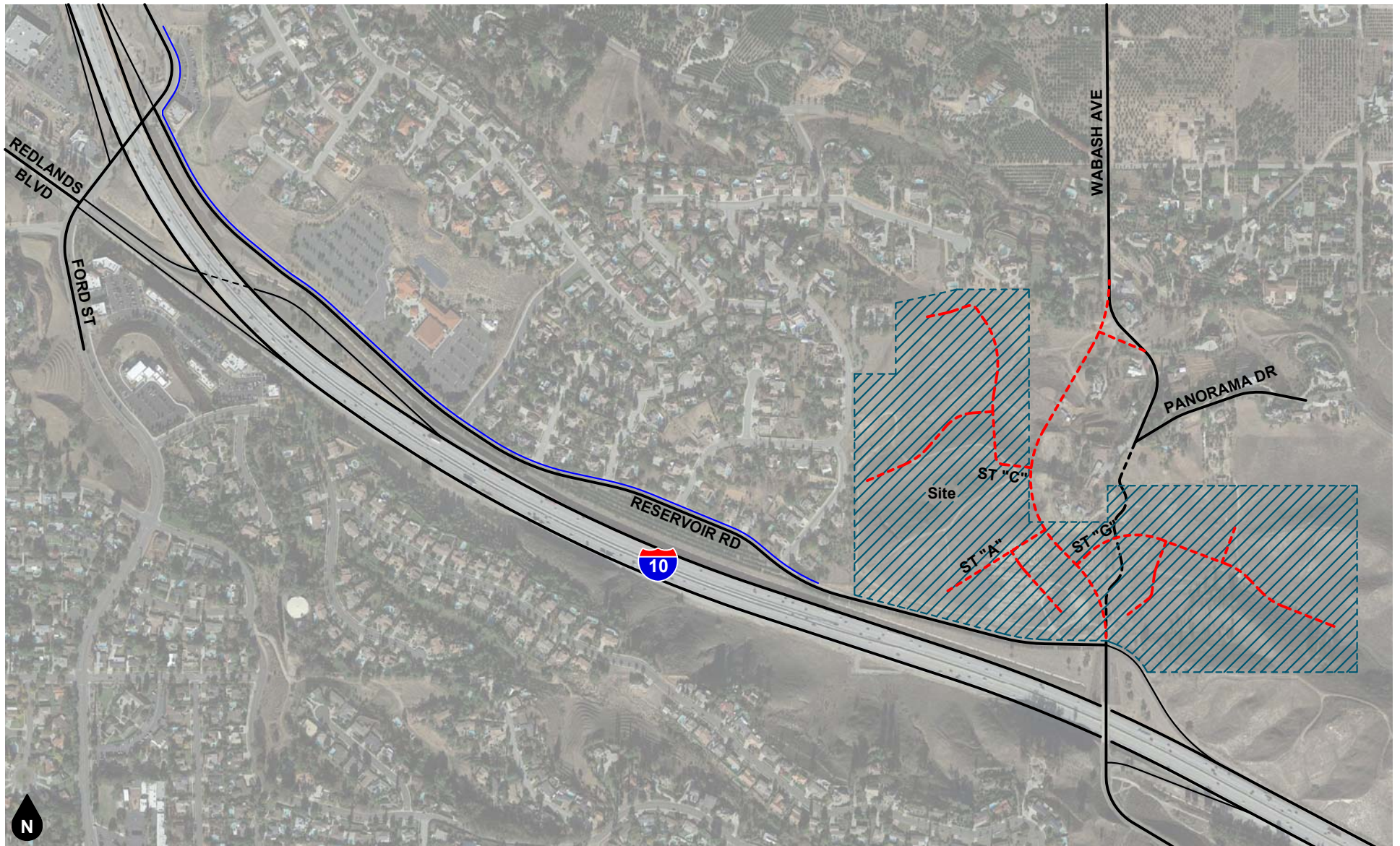


Figure 3
Existing Lane Geometry and Intersection Traffic Controls



Legend
 — Sidewalk

Figure 4
Existing Pedestrian Facilities

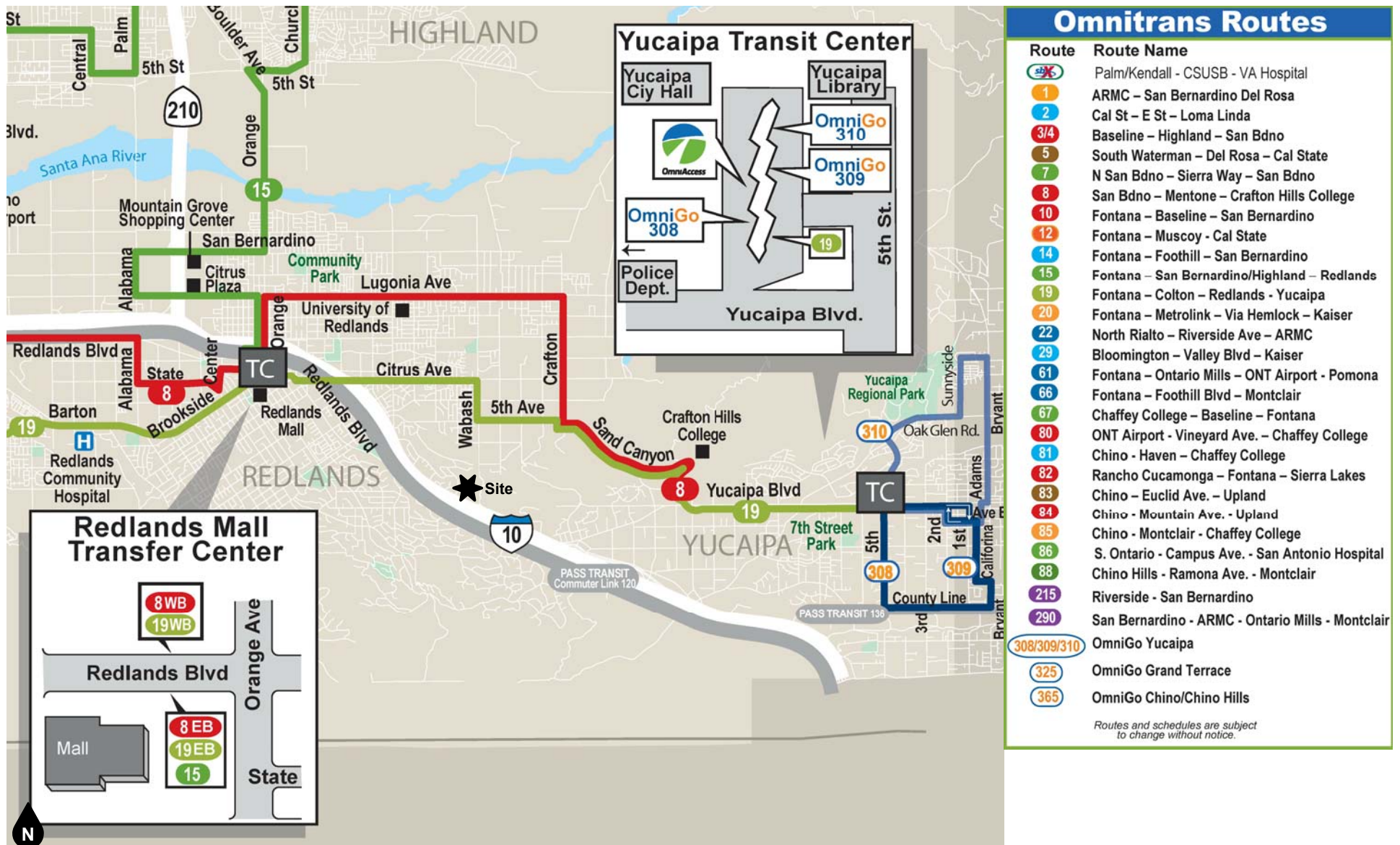
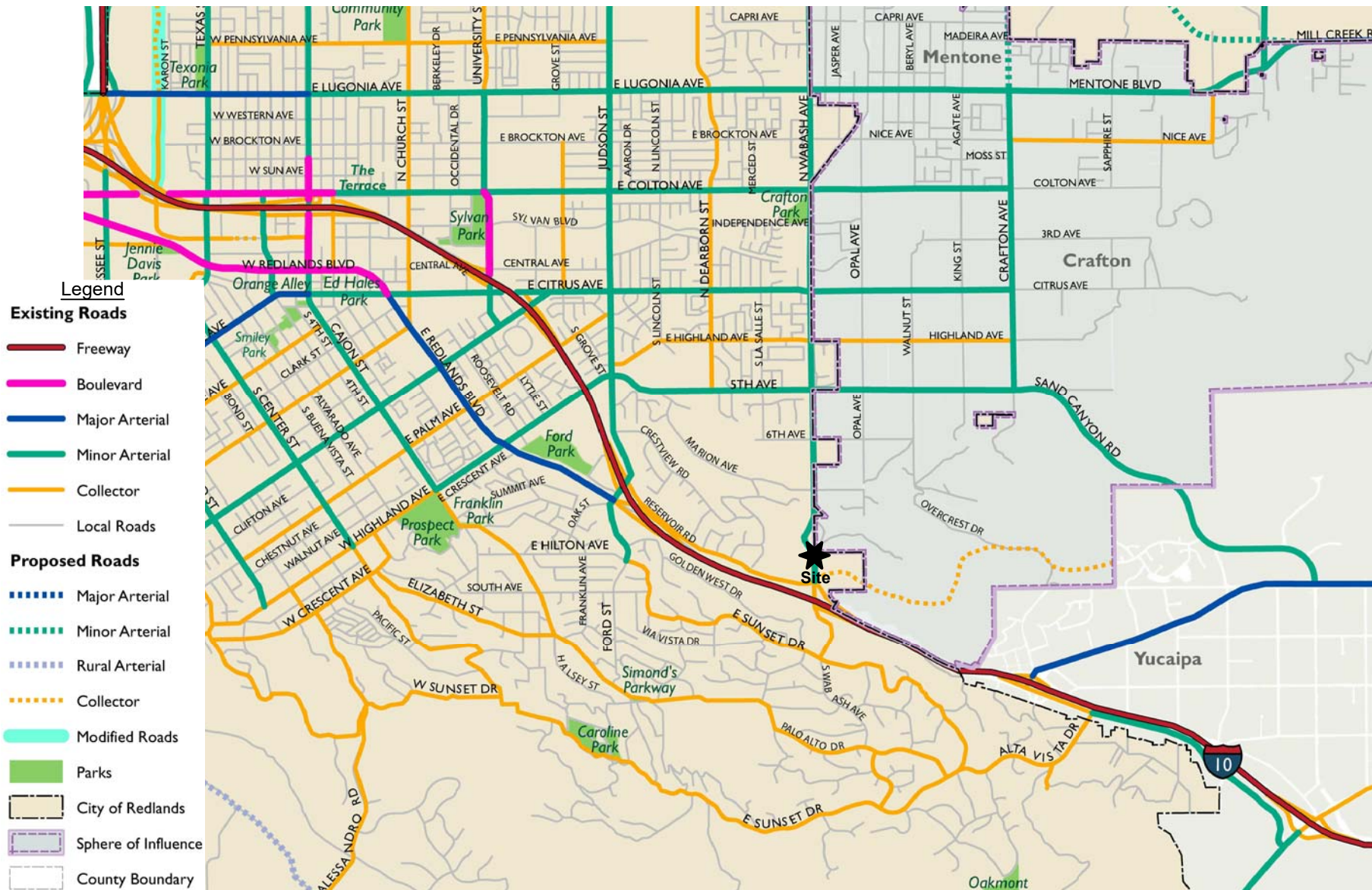


Figure 5
City of Redlands Transit Routes

Source: Omnitrans



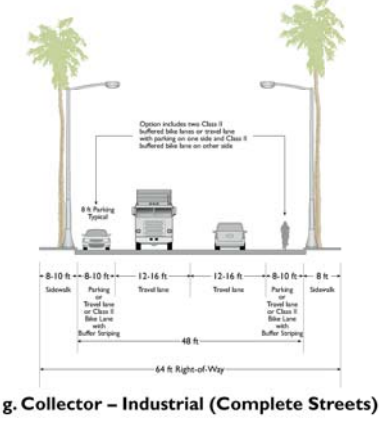
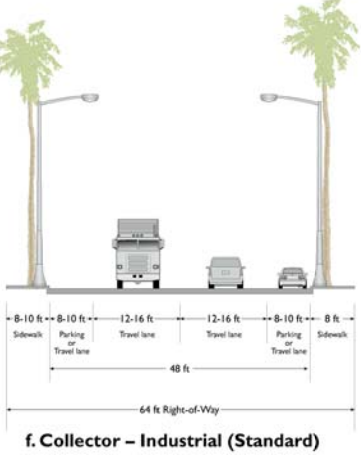
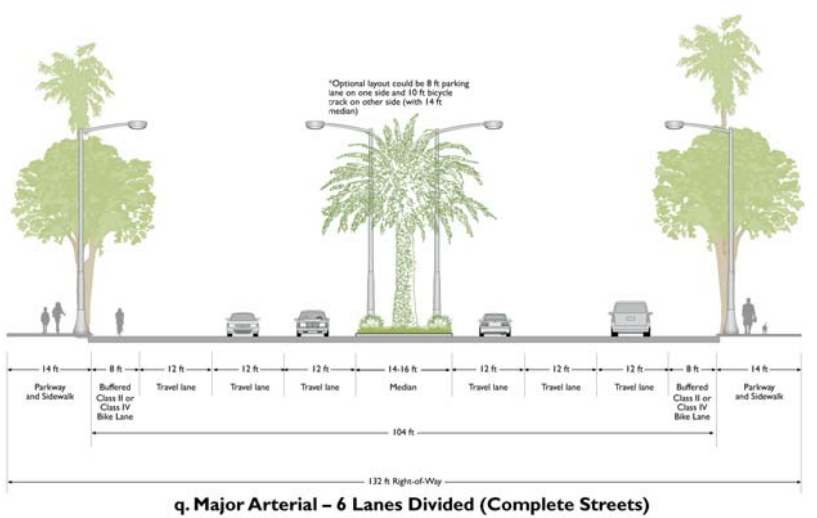
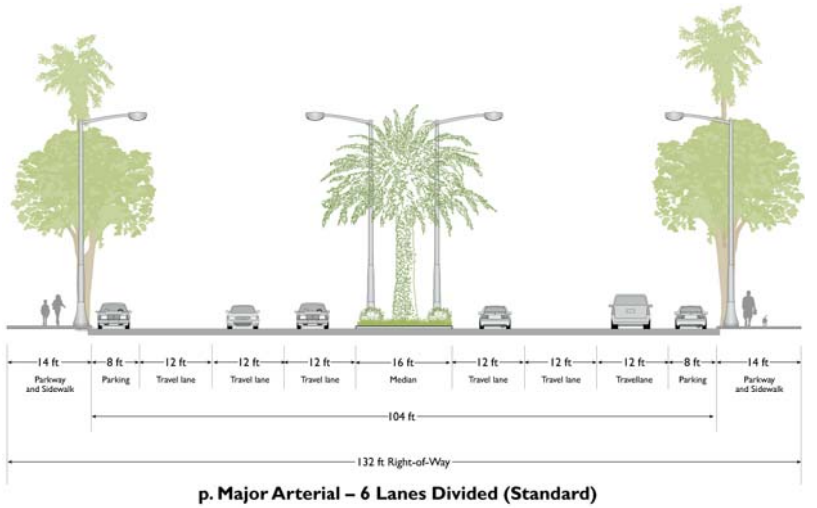
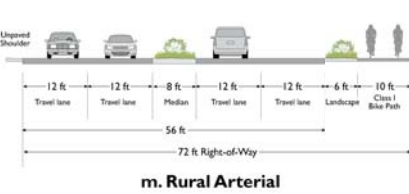
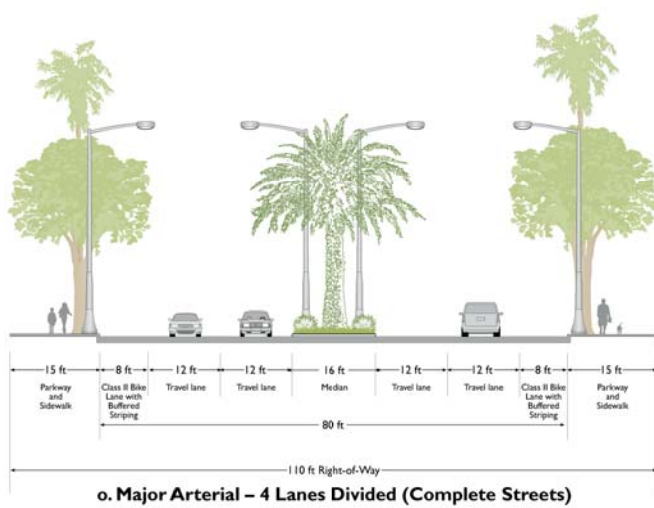
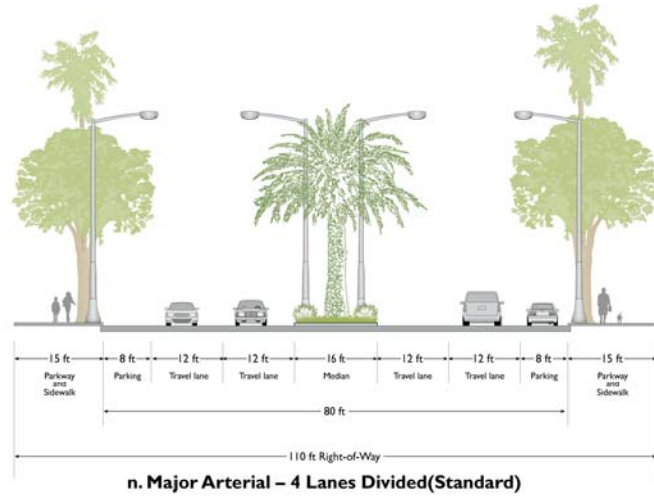
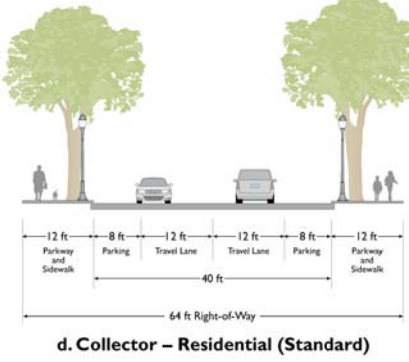
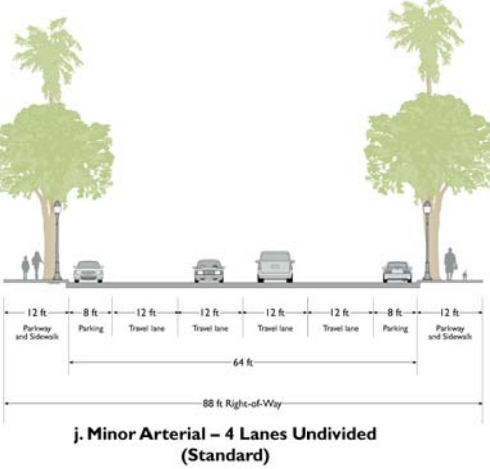
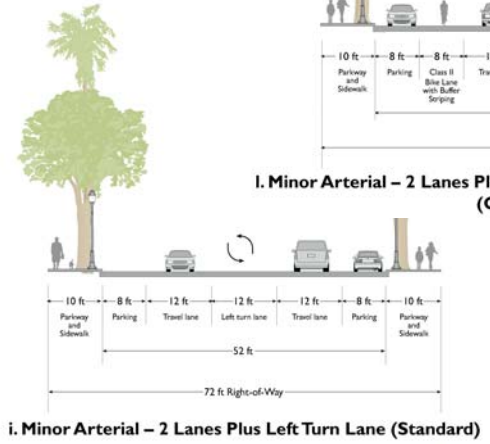
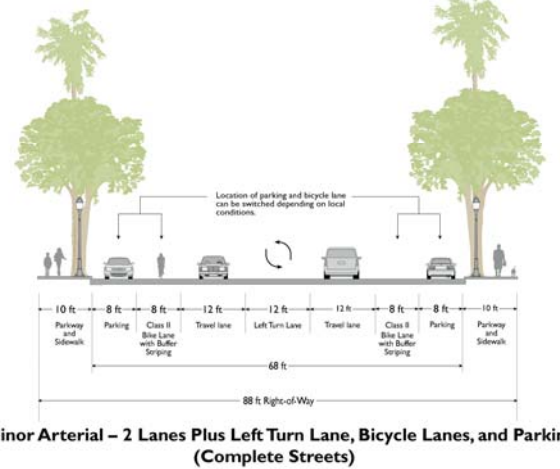
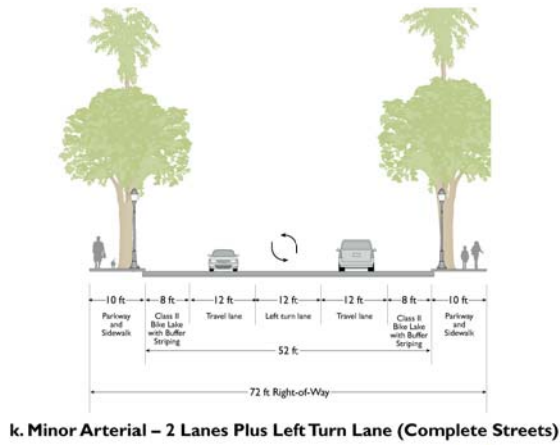
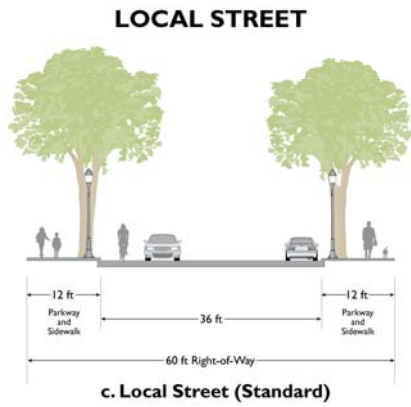
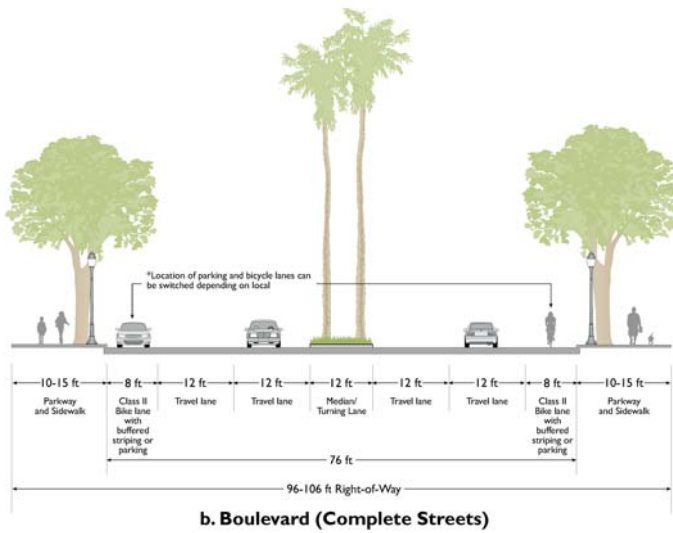
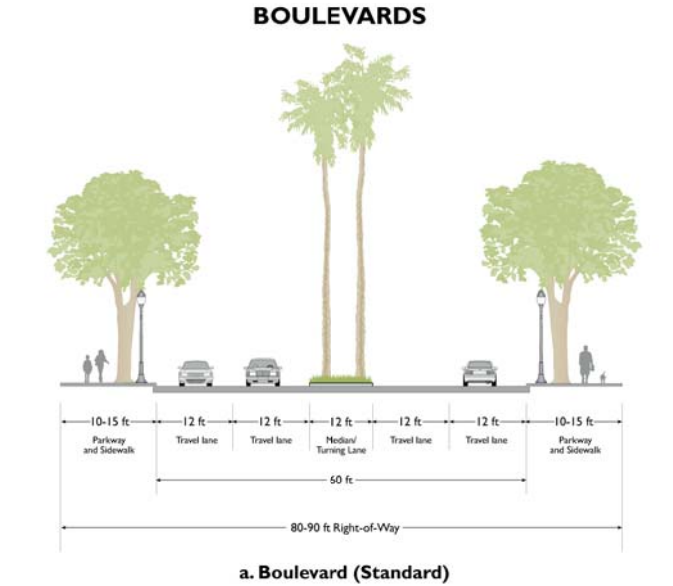
Source: City of Redlands



Figure 6
City of Redlands General Plan Circulation Element

Terracina at Redlands (TTM 20320)
Traffic Impact Analysis
19-0208

BOULEVARDS



Source: City of Redlands



Figure 7
City of Redlands General Plan Roadway Cross-Sections

Terracina at Redlands (TTM 20320)
Traffic Impact Analysis
19-0208

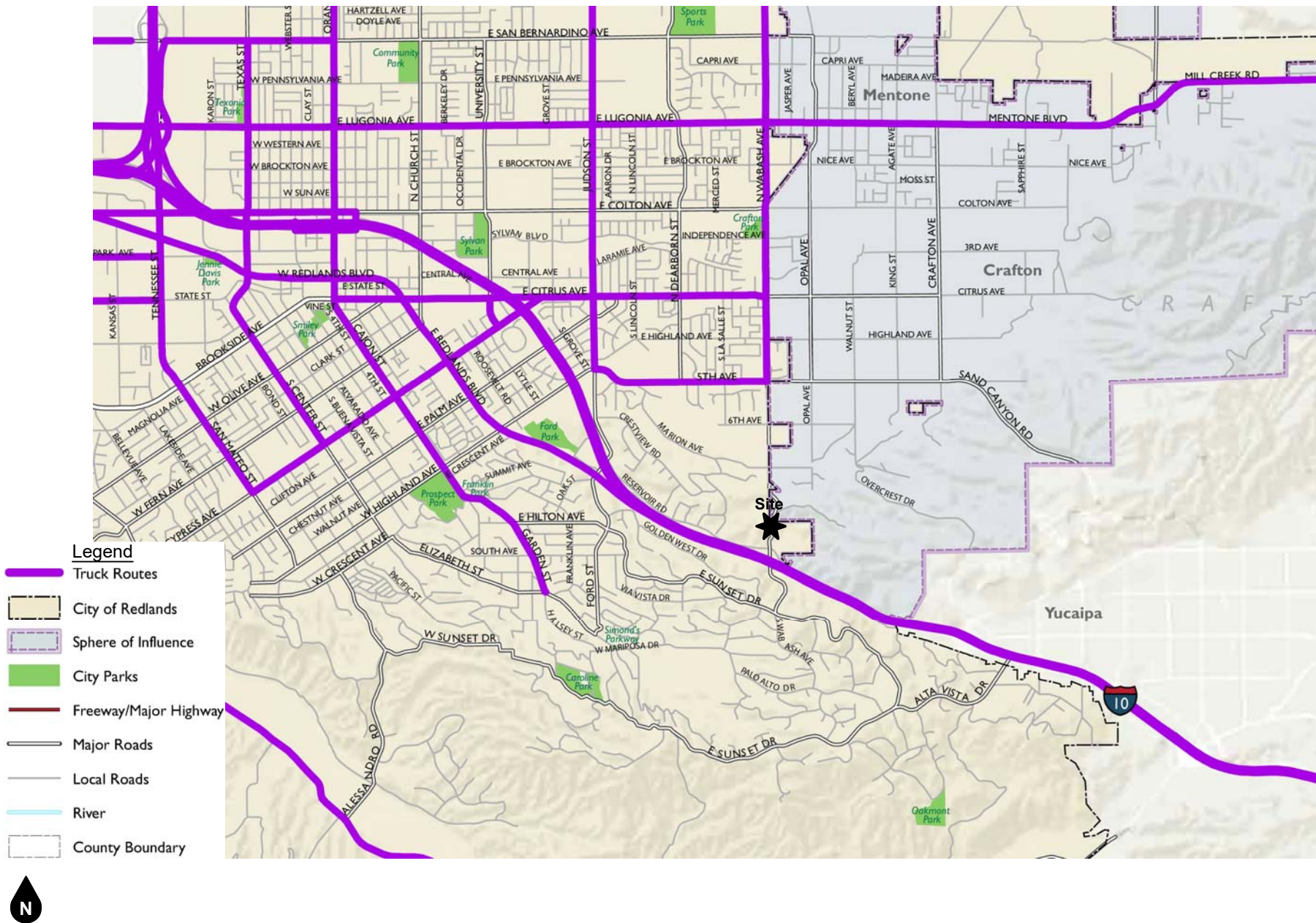
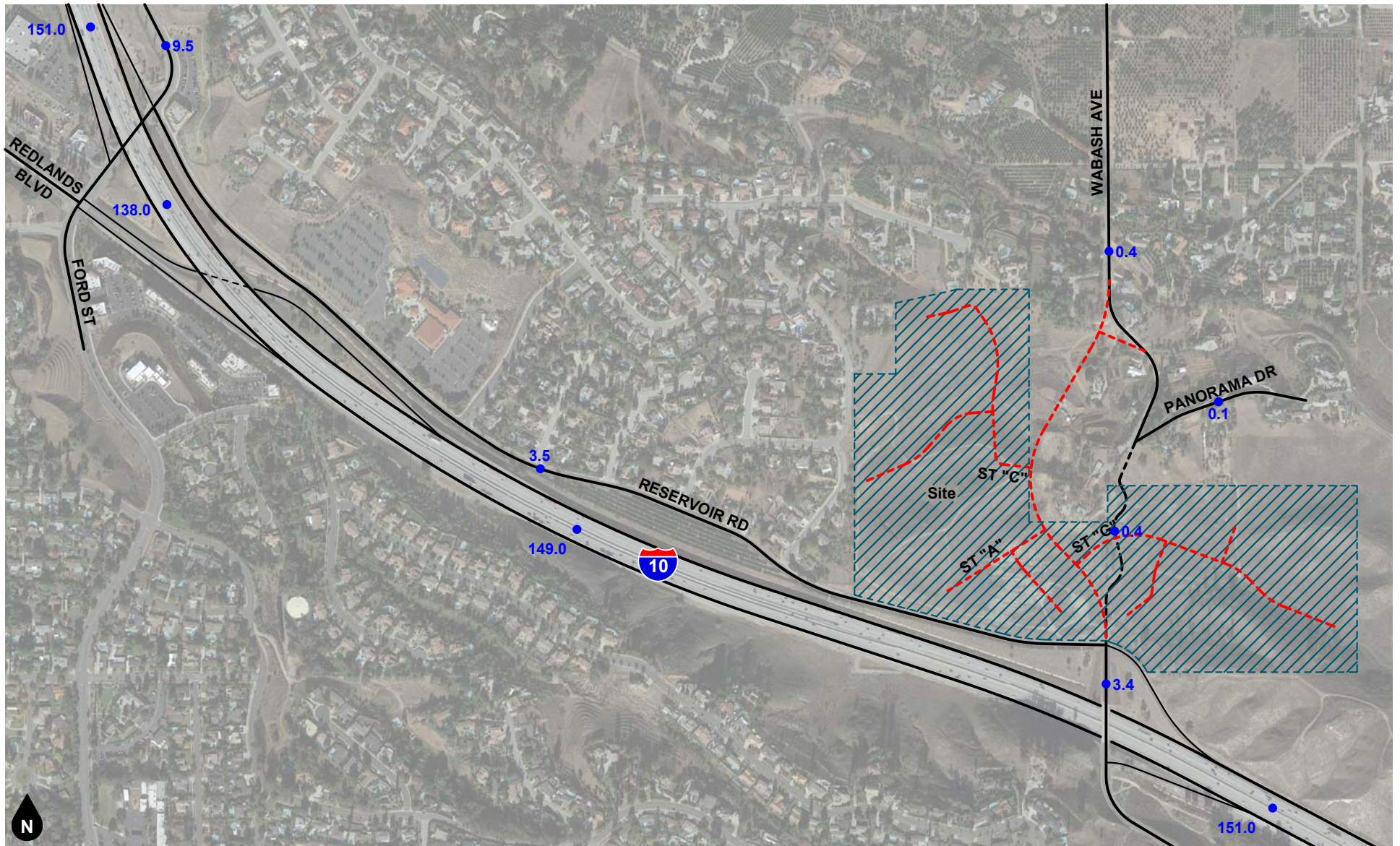


Figure 9
City of Redlands General Plan Roadway Truck Routes

Source: City of Redlands



Legend

●## Vehicles Per Day (1,000's)

Figure 10
Existing Average Daily Traffic Volumes

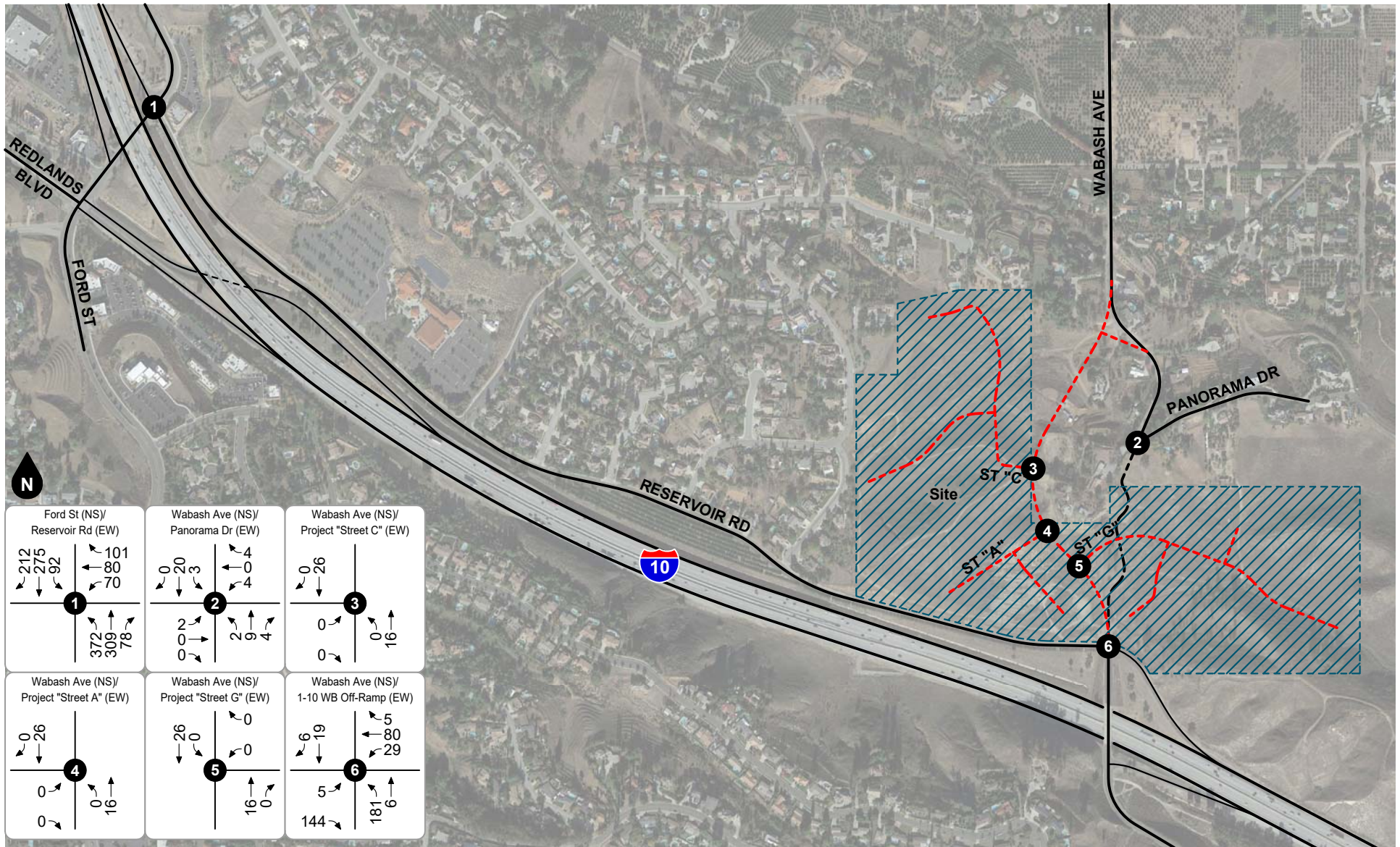


Figure 11
Existing AM Peak Hour Intersection Turning Movement Volumes

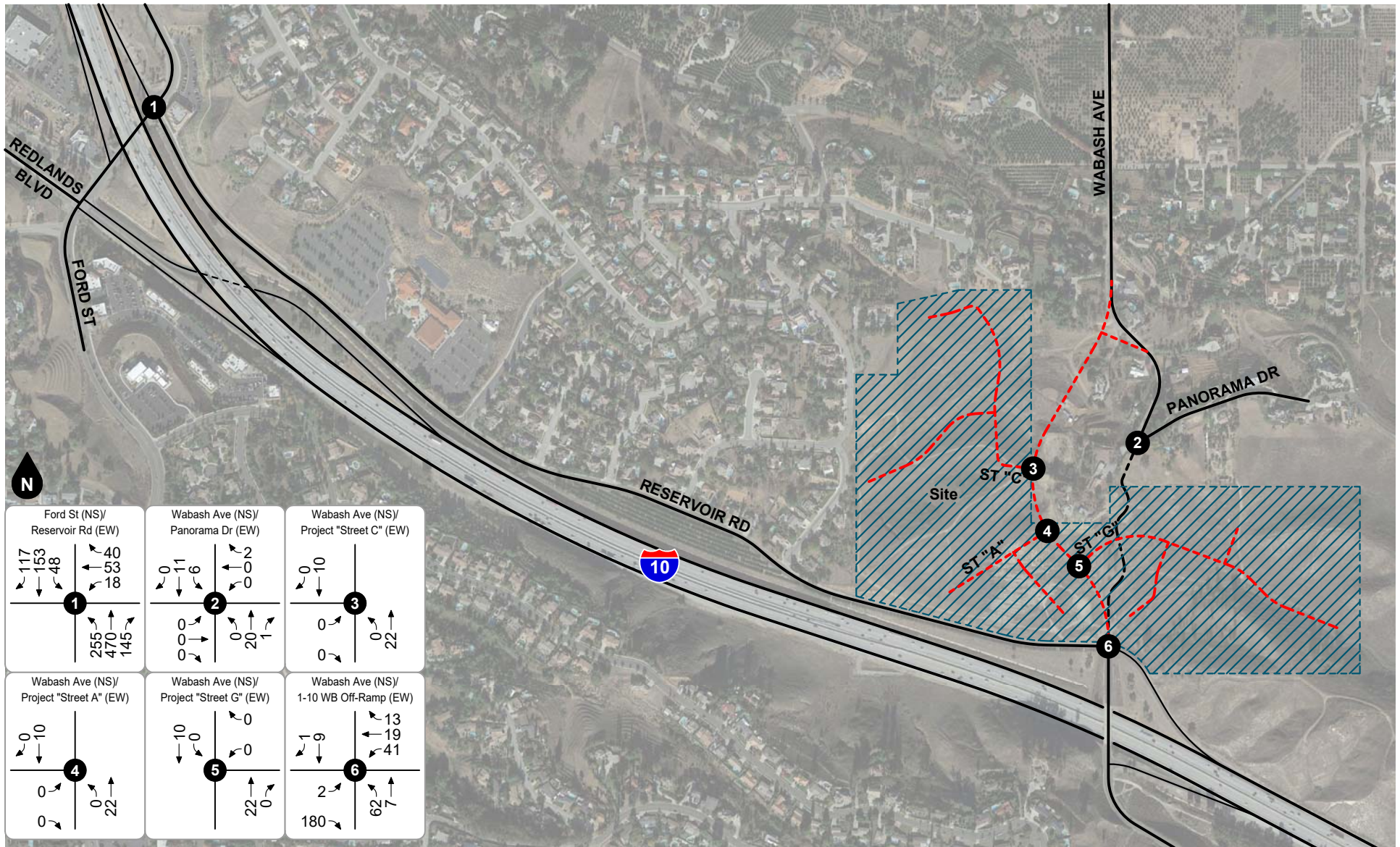


Figure 12
Existing PM Peak Hour Intersection Turning Movement Volumes

4. PROJECT TRIP FORECASTS & SITE ACCESS

This section describes how project trip generation, trip distribution, and trip assignment forecasts were developed. The forecast project volumes are illustrated on figures contained in this section.

TRIP GENERATION

Table 2 shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition, 2017). Based on review of the ITE land use description, trip generation rates for single-family detached housing (Land Use Code 210) were determined to adequately represent the proposed land use and were selected for use in this analysis. The project trip generation forecast is determined by multiplying the trip generation rates and directional distributions by the land use quantities.

As shown in Table 2, the proposed project is forecast to generate 632 daily trips, including 49 trips during the AM peak hour and 67 trips during the PM peak hour.

TRIP DISTRIBUTION & ASSIGNMENT

Figure 13 shows the forecast directional distribution patterns for the project generated trips. The project trip distribution patterns were determined in consultation with City staff based on review of existing traffic data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 14. The project AM and PM peak hour intersection turning movement volumes for the project are depicted on Figure 15 and Figure 16, respectively.

PROJECT CONSTRUCTION

Site development would require the use of haul trucks during site clearing and excavation and the use of a variety of other construction vehicles throughout the construction work at the site. Use of oversized vehicles on the State highways will require appropriate transportation permits from the Caltrans.

Compared to the project trip generation, trip generation associated with construction of the proposed project will generally occur before the peak commute hours. Therefore, traffic impacts associated with construction activity will be minor and temporary. To further lessen the impact of construction traffic, the project will be required to comply with all City of Redlands standard conditions pertaining to construction, including work hours, traffic control plan, haul route, access, oversized-vehicle transportation permit, site security, noise, vehicle emissions and dust control. All construction related trips should be restricted to off-peak hours, whenever possible.

SITE ACCESS AND ON-SITE CIRCULATION

Vehicular access for the project is proposed via internal residential streets that will intersect Wabash Avenue to provide full access at three new intersections. Wabash Avenue is currently unpaved between Reservoir Road and Panorama Drive. The proposed project will construct Wabash Avenue from Reservoir Road through the project site at its ultimate alignment and full-section width (72 feet right-of-way), including parkway improvements and two travel lanes in each direction.

Widening and extension of Wabash Avenue from Reservoir Road to 5th Avenue is included in the City of Redlands Development Impact Fee program and County of San Bernardino Nexus Study.

Project Design Features

The proposed project shall construct the following improvements necessary to provide project site access:

Wabash Avenue from Reservoir Road Through Project Site Limits

- Construct Wabash Avenue at its ultimate alignment and full-section width (72 feet right-of-way), including parkway improvements and two travel lanes in each direction.

Wabash Avenue from Project Site Limits to North of Future Panorama Drive Intersection

- Construct Wabash Avenue at its ultimate alignment within existing right-of-way constraints (66 feet right-of-way), including parkway improvements and one travel lane in each direction.

Wabash Avenue at Project "Street C" - #3

- Install eastbound stop control.
- Construct the northbound approach to provide one shared through/left turn lane and one through lane.
- Construct the southbound approach to provide one through lane and one shared through/right turn lane.
- Construct the eastbound approach to provide one shared left/right turn lane.

Wabash Avenue at Project "Street A" - #4

- Install eastbound stop control.
- Construct the northbound approach to provide one shared through/left turn lane and one through lane.
- Construct the southbound approach to provide one through lane and one shared through/right turn lane.
- Construct the eastbound approach to provide one shared left/right turn lane.

Wabash Avenue at Project "Street G" - #5

- Install westbound stop control.
- Construct the northbound approach to provide one through lane and one shared through/right turn lane.
- Construct the southbound approach to provide shared through/left turn lane and one through lane.
- Construct the westbound approach to provide one shared left/right turn lane.

Geometric Design and Emergency Access

The proposed project will be required to comply with the following City of Redlands standard conditions for development review to ensure adequate geometric design and emergency access:

- On-site and site-adjacent improvements, including project driveways, roadway design, traffic signing/stripping, and traffic control plans, shall be designed in accordance with applicable engineering standards and approved by City of Redlands engineering staff.
- The final grading, landscaping, and street improvement plans shall demonstrate that applicable City of Redlands/California Department of Transportation sight distance standards are provided at the project access points.
- The project development plans shall be reviewed and approved by the City of Redlands Fire Department to ensure adequate emergency access is provided.

As is the case for any roadway design, the City of Redlands should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Table 2
Project Trip Generation

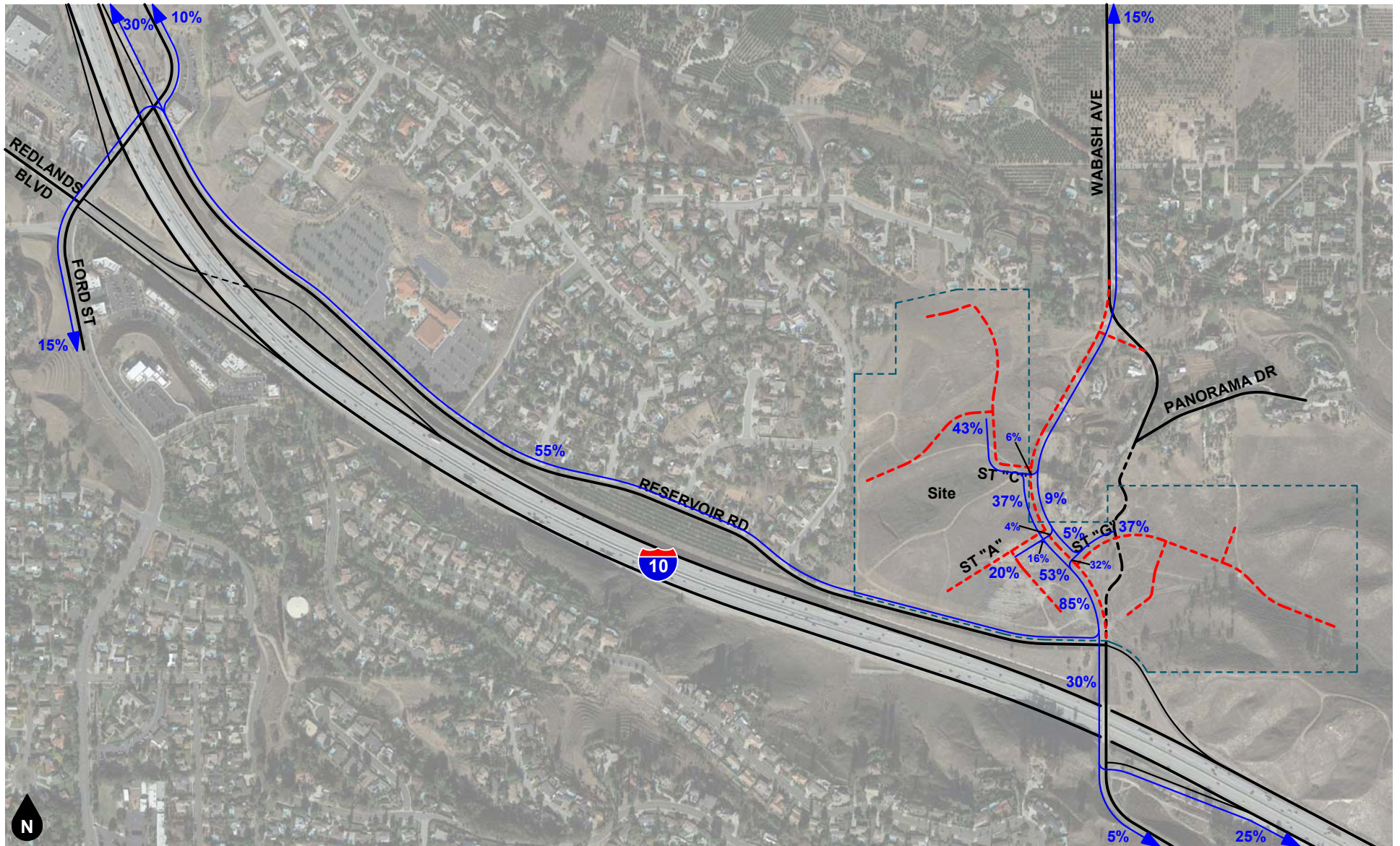
Trip Generation Rates									
Land Use	Source ¹	Units ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Single-Family Detached Residential	ITE 210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated								
Land Use	Quantity	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Single-Family Detached Residential	67 DU	12	37	49	42	25	67	632

Notes:

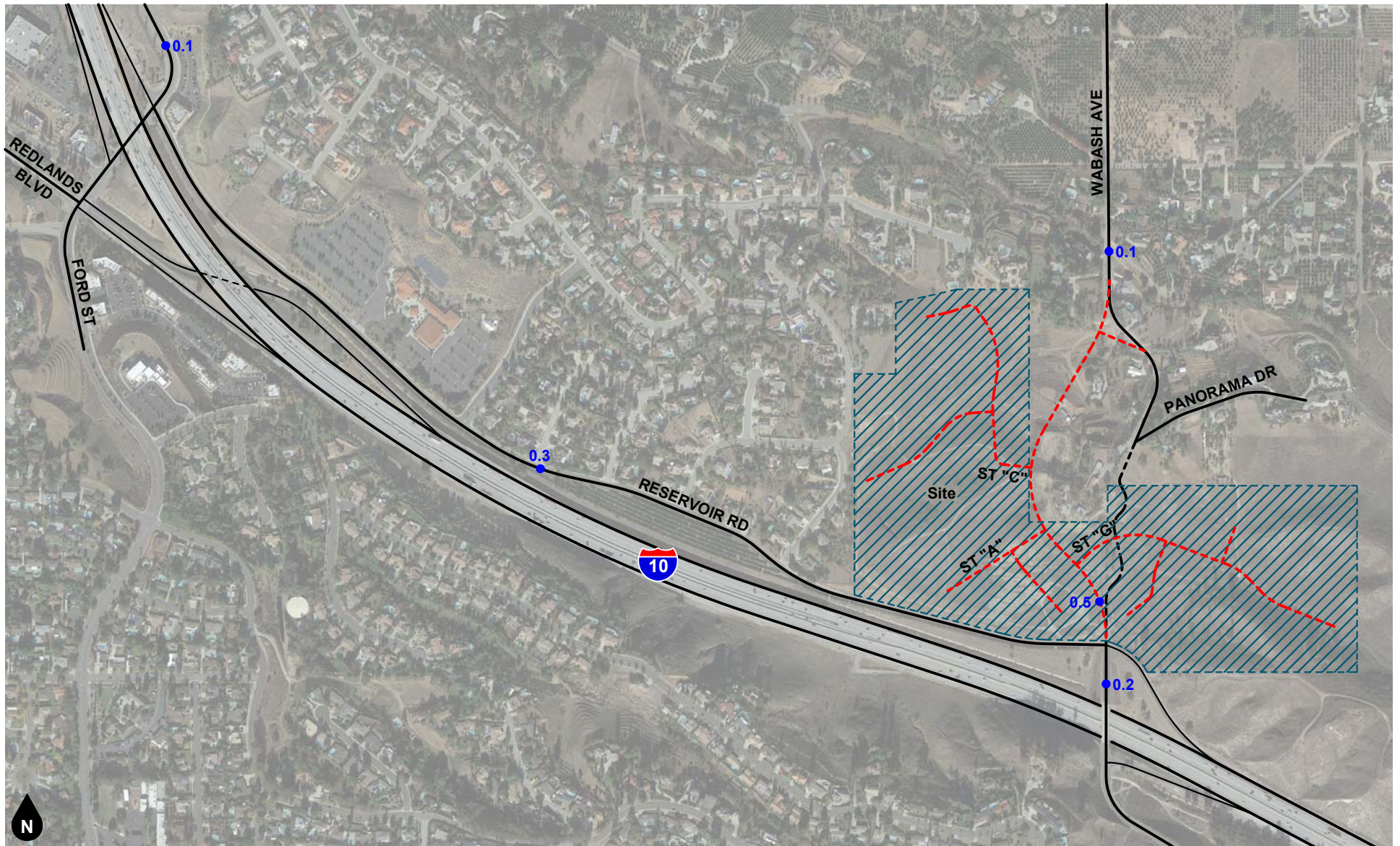
(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code.

(2) DU = Dwelling Units



Legend
 10% Percent To/From Project

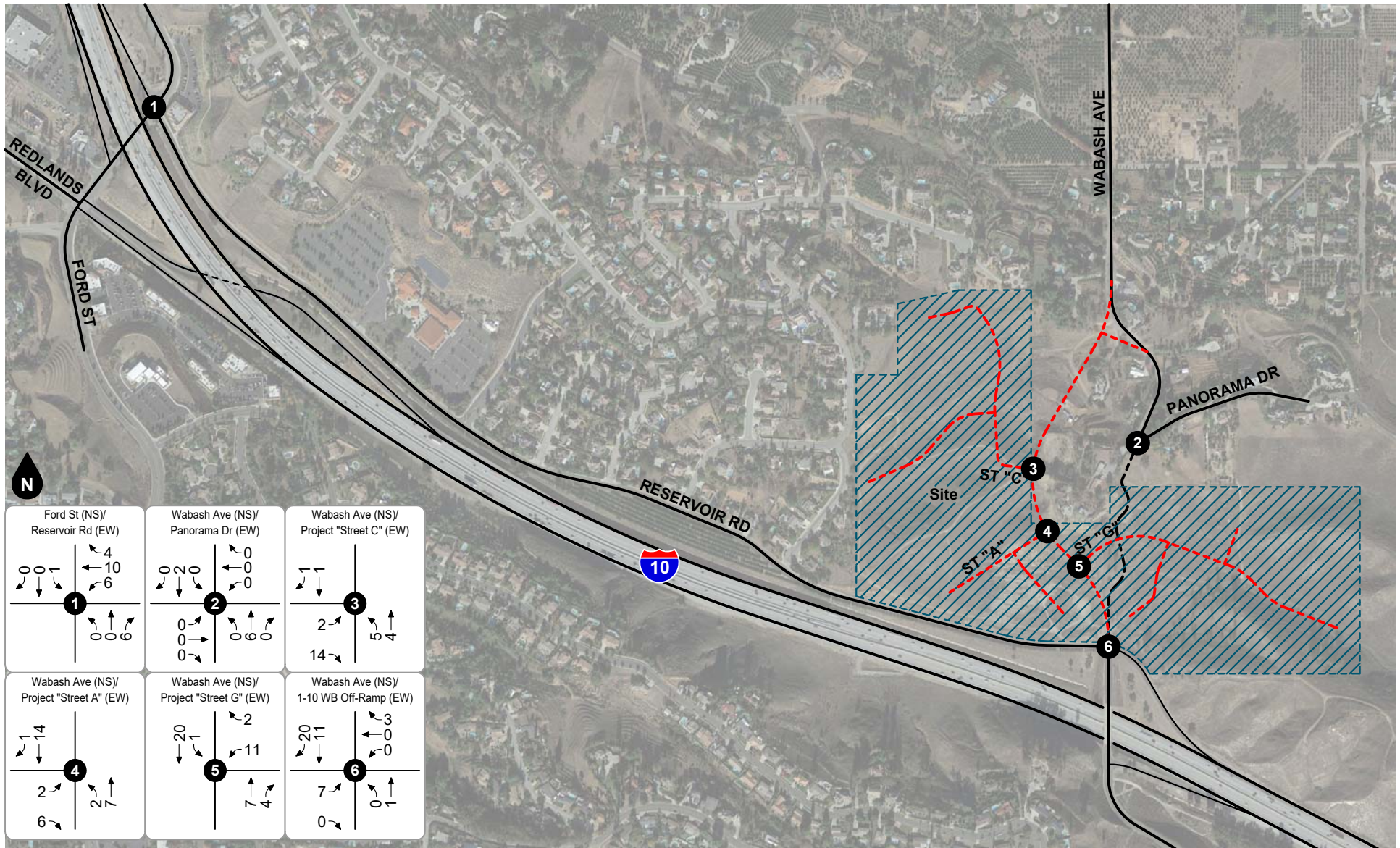
Figure 13
Project Trip Distribution



Legend

●## Vehicles Per Day (1,000's)

Figure 14
Project Average Daily Traffic Volumes

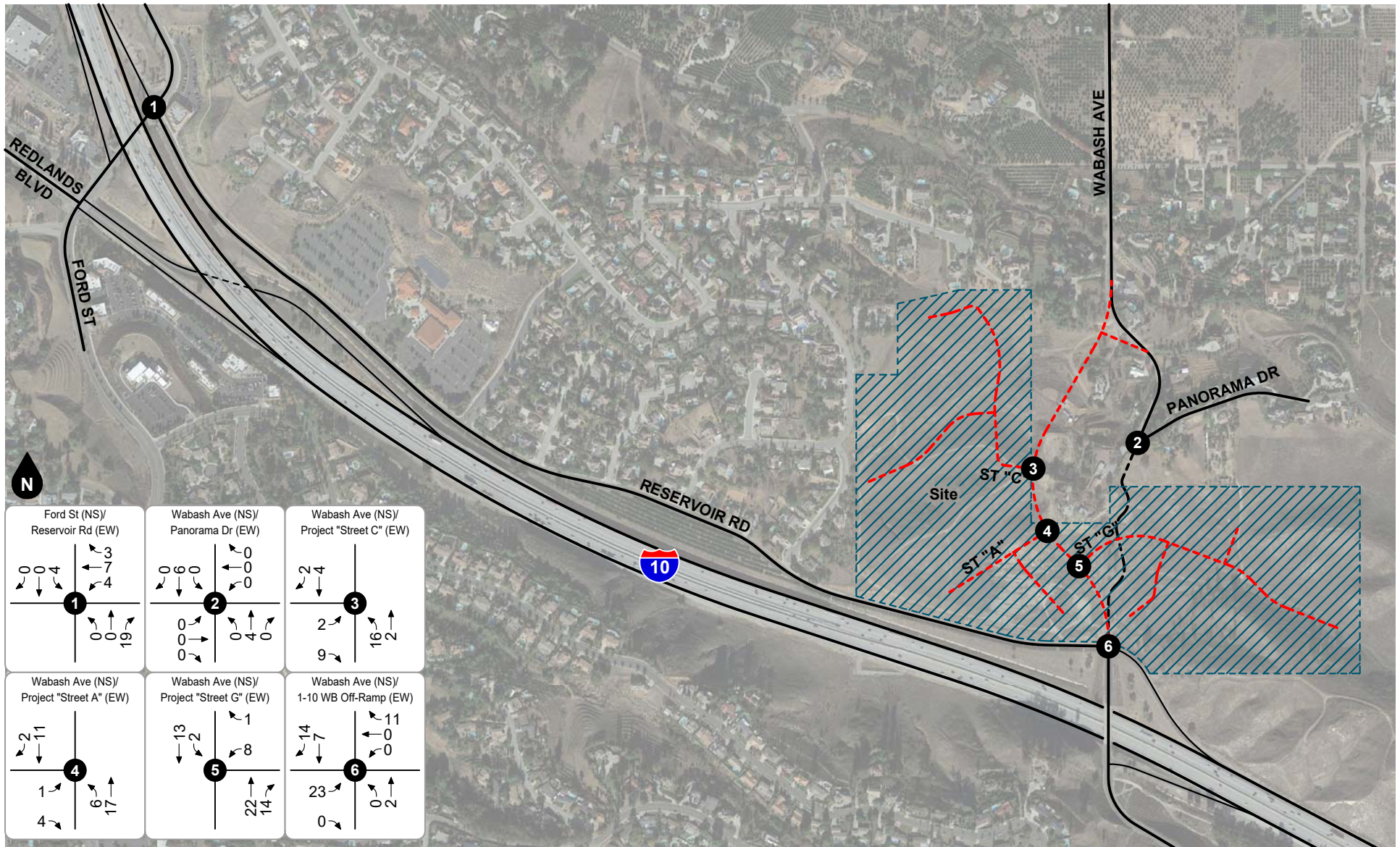


Legend

Study Intersection

--- Future Roadway

Figure 15
Project AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

--- Future Roadway

Figure 16
Project PM Peak Hour Intersection Turning Movement Volumes

5. EXISTING PLUS PROJECT VOLUME FORECASTS

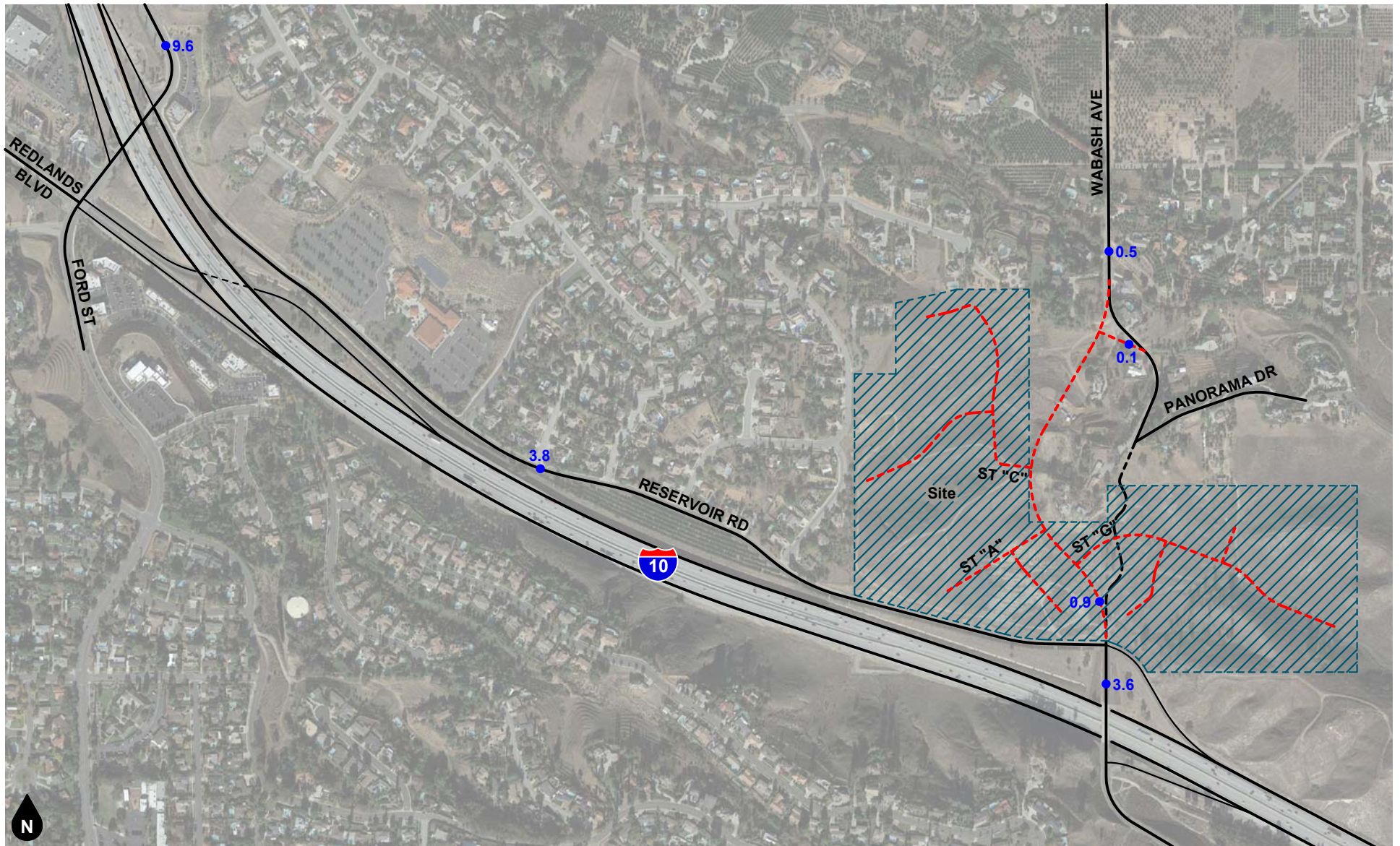
This section describes how Existing Plus Project volume forecasts were developed. Existing Plus Project study area volumes are illustrated on figures contained in this section.

METHOD OF PROJECTION

To assess Existing Plus Project conditions, existing roadway volumes are combined with project trips.

EXISTING PLUS PROJECT TRAFFIC VOLUMES

Existing Plus Project average daily traffic volumes are shown on Figure 17. Existing Plus Project AM and PM peak hour intersection turning movement volumes are shown on Figure 18 and Figure 19, respectively.



Legend
 ●## Vehicles Per Day (1,000's)

Figure 17
 Existing Plus Project Average Daily Traffic Volumes

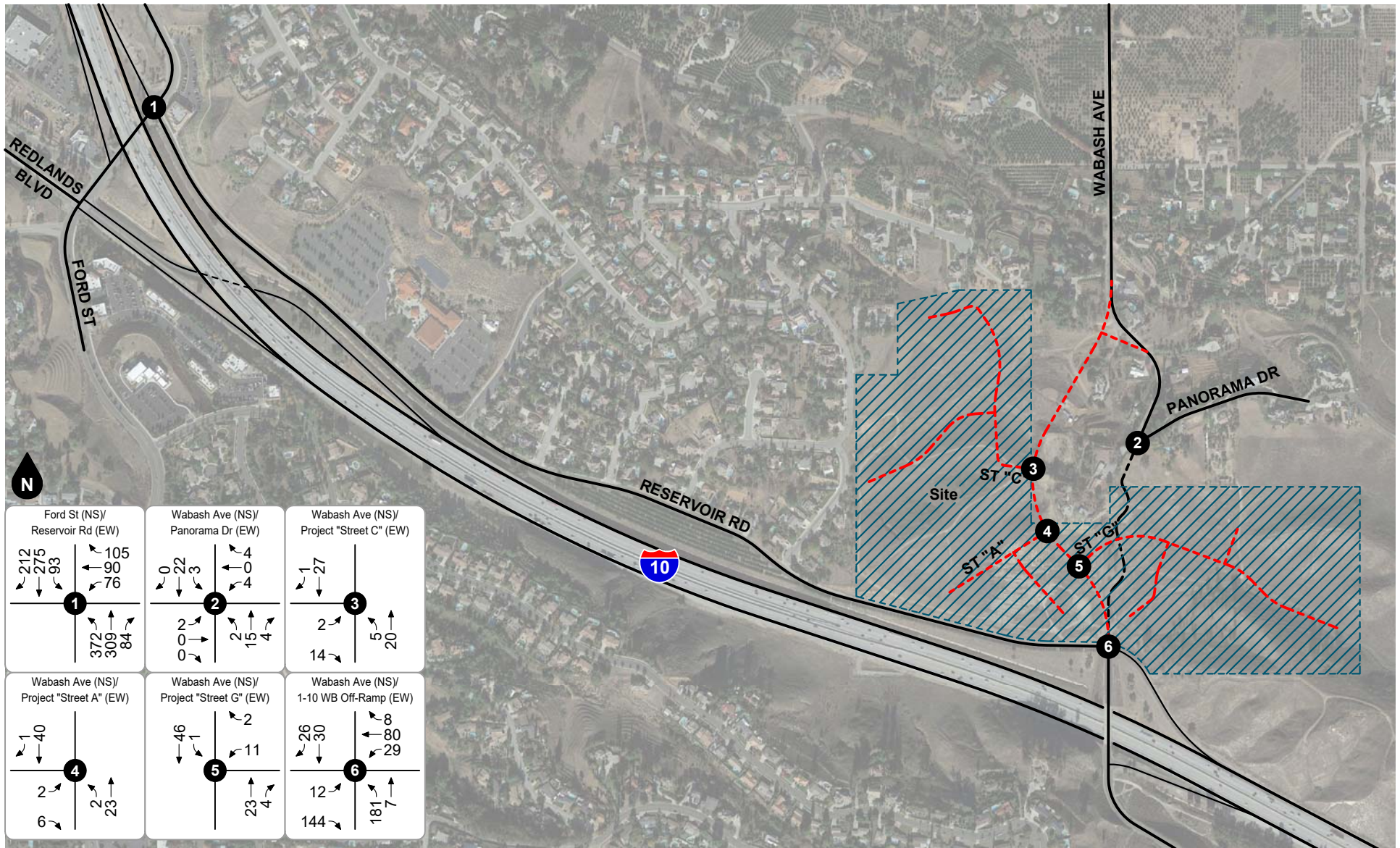


Figure 18
Existing Plus Project
AM Peak Hour Intersection Turning Movement Volumes

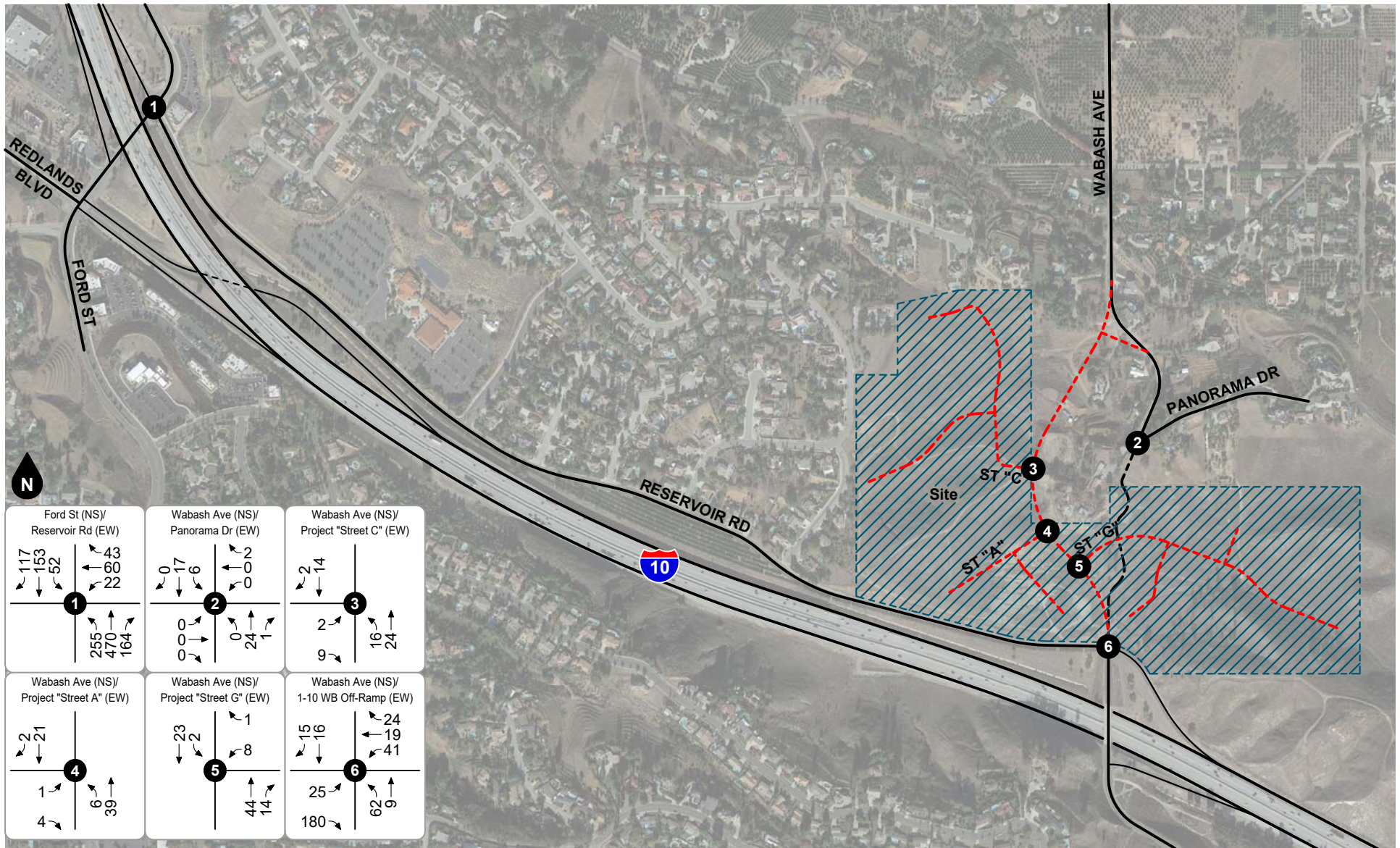


Figure 19
Existing Plus Project
PM Peak Hour Intersection Turning Movement Volumes

6. EXISTING PLUS PROJECT OPERATIONAL ANALYSIS

DETAILED INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS FOR THE EXISTING PLUS PROJECT SCENARIO IS PROVIDED IN APPENDIX D.

EXISTING PLUS PROJECT

Intersection Levels of Service

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 3. As shown in Table 3, the study intersections are forecast to operate within acceptable Levels of Service (C or better) during the peak hours for Existing Plus Project conditions, with the exception of the following study intersection that is forecast to continue operating at Level of Service F and would be further degraded by the proposed project, thus resulting in a substantial operational deficiency without improvements:

- Ford Street at Reservoir Road - #1 (LOS F - AM/PM peak hours)

Operational Improvements

The following improvement is recommended to alleviate the project-related deficiency at the substantially impacted intersection during the peak hours for Existing Plus Project conditions:

- Ford Street (NS) at Reservoir Road (EW) - #1
 - Install a traffic signal.

As shown in Table 3, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections during the peak hours for Existing Plus Project conditions with implementation of the recommended improvement.

Since the recommended improvement at the intersection of Ford Street and Reservoir Road is necessary to address the worsening of an existing deficiency, it is not equitable for the proposed project to be financially responsible for the total cost of the improvement; rather, the project should only be responsible for its share of the deficiency (e.g., project trips divided by Existing Plus Project volume entering the intersection). If the recommended improvement is included the City of Redlands Development Impact Fee (DIF) program, then payment of the project's DIF fees would address the project's share of the impact at this intersection. Based on Measure U requirements, however, the recommended improvements must occur prior to project opening. Therefore, if the recommended improvements are not scheduled for construction through the DIF program prior to project opening, the proposed project may be required to sponsor the improvements and request a DIF credit, reimbursement agreement, or wait until the improvements are constructed by the City or other developments.

Table 3
Existing Plus Project Intersection Levels of Service

Study Intersection	Traffic Control ¹	AM Peak Hour		PM Peak Hour	
		Delay ²	LOS ³	Delay ²	LOS ³
1. Ford St (NS) at Reservoir Rd (EW)	CSS	>99.9	F	>99.9	F
- With Improvements	TS	21.8	C	14.4	B
2. Wabash Ave (NS) at Panorama Dr (EW)	CSS	8.8	A	8.4	A
3. Wabash Ave (NS) at Project "Street C" (EW)	CSS	8.8	A	8.9	A
4. Wabash Ave (NS) at Project "Street A" (EW)	CSS	8.9	A	8.9	A
5. Wabash Ave (NS) at Project "Street G" (EW)	CSS	8.9	A	8.9	A
6. Wabash Ave (NS) at Reservoir Rd/I-10 WB Off-Ramp (EW)	CSS	16.9	C	12.0	B

Notes:

(1) CSS = Cross Street Stop

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

7. STATE HIGHWAY & CMP ANALYSIS

This section describes the prescribed methodology used to assess whether State highway or Congestion Management Program (CMP) analysis is required.

ANALYSIS REQUIREMENTS

State highway and CMP analysis guidelines are prescribed in Appendix B of the County of San Bernardino Congestion Management Program (2016 Update) (CMP), which state that a California Department of Transportation (Caltrans) or CMP analysis is required if the project is expected to contribute:

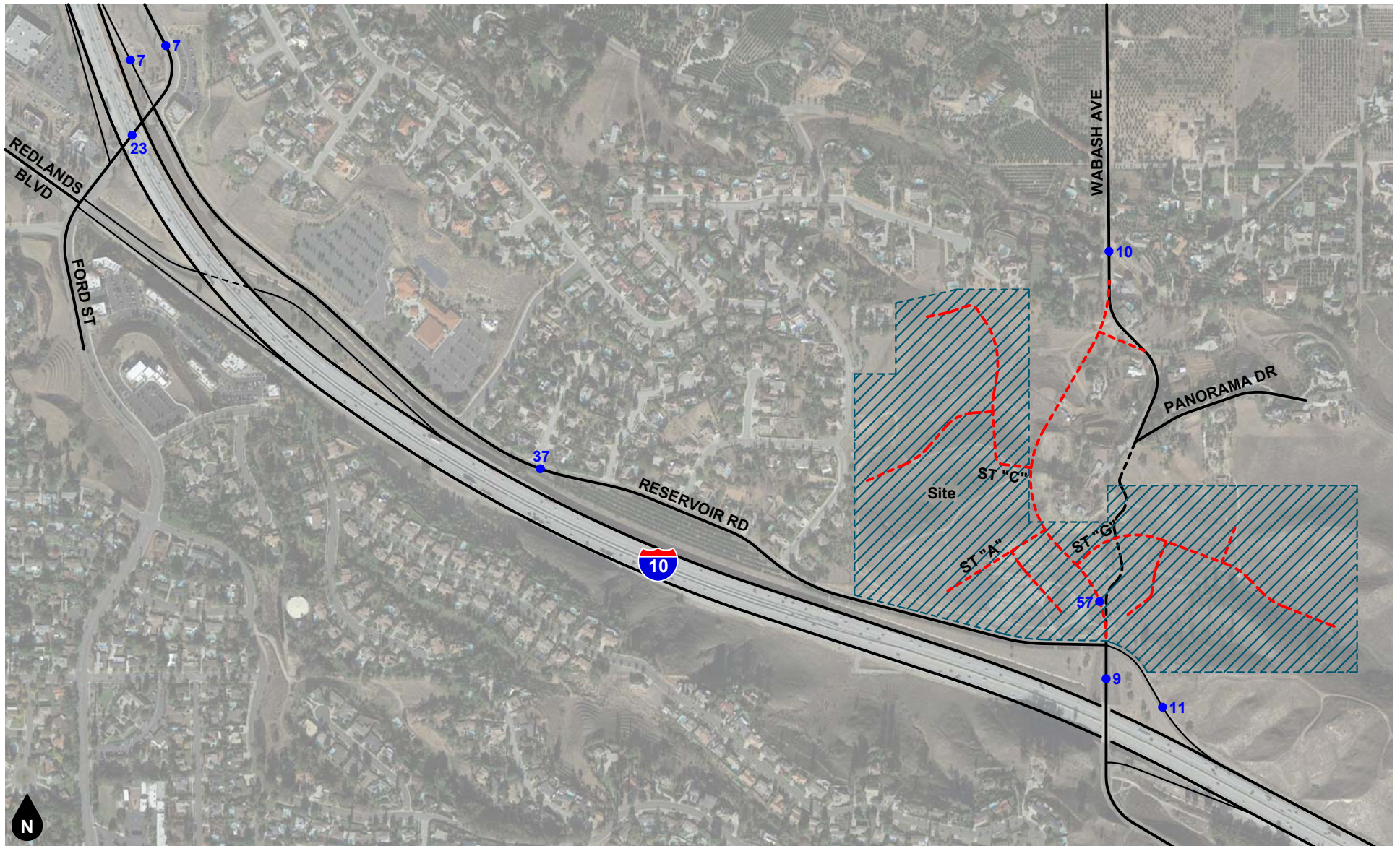
- 100 or more peak hour trips (two-way) to a freeway facility; or
- 50 or more peak hour trips to a CMP facility within another jurisdiction.

No CMP or Caltrans analysis is required if the project generates fewer than 100 peak hour trips.

PROJECT TRIP CONTRIBUTION

The project trip distributions depict the project trip contribution during the peak hours to the roadway segment closest to the I-10 freeway as shown on Figure 20. As shown on Figure 20, the proposed project is forecast to contribute fewer than 50 peak hour trips to a State highway facility.

Since the project is forecast to generate fewer than 100 peak hour trips and is not forecast to contribute 50 or more peak hour trips to a CMP facility, no further State highway or CMP analysis is required for the project based on the thresholds outlined in the San Bernardino County CMP.



Legend

●## Project PM Peak Hour Volume (Two-Way)

Figure 20
Project Trip Contribution

8. CONCLUSIONS

This section summarizes the findings, improvements, and recommended improvements (if any) identified in previous sections of this study.

PROJECT TRIP GENERATION

The proposed project is forecast to generate 632 daily trips, including 49 trips during the AM peak hour and 67 trips during the PM peak hour.

SITE ACCESS AND ON-SITE CIRCULATION

The proposed project will construct Wabash Avenue from Reservoir Road through the project site at its ultimate alignment and full-section width (72 feet right-of-way), including parkway improvements and two travel lanes in each direction.

This analysis assumes the proposed project shall construct the improvements necessary to provide project site access as specified in the Project Trip Forecasts & Site Access section of this report. This analysis also assumes the proposed project will be required to comply with the City of Redlands standard conditions for development review/approval to ensure adequate geometric design and emergency access as specified in the Project Trip Forecasts & Site Access section of this report.

LEVEL OF SERVICE ANALYSIS

The study intersections are forecast to operate within acceptable Levels of Service (C or better) during the peak hours for Existing Plus Project conditions, with the exception of the following study intersection that is forecast to continue operating at Level of Service F and would be further degraded by the proposed project, thus resulting in a substantial operational deficiency without improvements:

- Ford Street at Reservoir Road - #1 (LOS F - AM/PM peak hours)

OPERATIONAL IMPROVEMENTS

The following improvement is recommended to alleviate the project-related deficiency at the substantially impacted intersection during the peak hours for Existing Plus Project conditions:

- Ford Street (NS) at Reservoir Road (EW) - #1
 - Install a traffic signal.

The proposed project is forecast to result in no substantial operational deficiencies at the study intersections during the peak hours for Existing Plus Project conditions with implementation of the recommended improvement.

Since the recommended improvement at the intersection of Ford Street and Reservoir Road is necessary to address the worsening of an existing deficiency, it is not equitable for the proposed project to be financially responsible for the total cost of the improvement; rather, the project should only be responsible for its share of the deficiency (e.g., project trips divided by Existing Plus Project volume entering the intersection). If the recommended improvement is included the City of Redlands Development Impact Fee (DIF) program, then payment of the project's DIF fees would address the project's share of the impact at this intersection. Based on Measure U requirements, however, the recommended improvements must occur prior to project opening. Therefore, if the recommended improvements are not scheduled for construction through the DIF program prior to project opening, the proposed project may be required to sponsor the improvements and request a

DIF credit, reimbursement agreement, or wait until the improvements are constructed by the City or other developments.

STATE HIGHWAY AND CMP ANALYSIS

Since the project is forecast to generate fewer than 100 peak hour trips and is not forecast to contribute 50 or more peak hour trips to a CMP facility, no further State highway or CMP analysis is required for the project based on the thresholds outlined in the San Bernardino County CMP.

APPENDICES

Appendix A Glossary
Appendix B Scoping Agreement
Appendix C Intersection Turning Movement Count Worksheets
Appendix D Intersection Level of Service Worksheets
Appendix E Traffic Signal Warrant Worksheets

APPENDIX A

GLOSSARY

GLOSSARY OF TERMS

ACRONYMS

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
LOS	Level of Service
PCE	Passenger Car Equivalent
TSF	Thousand Square Feet
V/C	Volume/Capacity
VMT	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The average 24-hour volume for a stated period divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CONTROL DELAY: The component of delay, typically expressed in seconds per vehicle, resulting from the type of traffic control at an intersection. Control delay is measured by comparison with the uncontrolled condition; it includes delay incurred by slowing down, stopping/waiting, and speeding up.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic travelling at a given speed to radically alter their speed or trajectory. Corner sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 36 inches above the pavement in the center of the nearest approach lane.

CYCLE LENGTH: The time period in seconds required for a traffic signal to complete one full cycle of indications.

CUL-DE-SAC: A local street open at one end only and with special provisions for turning around.

DAILY CAPACITY: A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

PASSENGER CAR EQUIVALENT (PCE): A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

QUEUE: The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

QUEUE LENGTH: The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SHARED/RECIPROCAL PARKING AGREEMENT: A written binding document executed between property owners to provide a designated number of off-street parking stalls within a designated area to be available for specified businesses or land uses.

SIGHT DISTANCE: The continuous length of roadway visible to a driver or roadway user.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STACKING DISTANCE: The length of area available behind a service area, such as a traffic signal or gate, for vehicle queueing to occur.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through an intersection.

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle on the major roadway travelling at a given speed to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 6 inches above the pavement.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

TURNING RADIUS: The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheel base as well as the steering mechanism of the vehicle.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

SCOPING AGREEMENT



MEMORANDUM OF UNDERSTANDING

TO: Don Young | CITY OF REDLANDS

FROM: Bryan Crawford | GANDDINI GROUP, INC.
Giancarlo Ganddini | GANDDINI GROUP, INC.

DATE: December 18, 2019

SUBJECT: Terracina at Redlands (TTM 20320) Traffic Study Scope
19-0208

INTRODUCTION

The purpose of this scoping document is to outline the proposed traffic analysis parameters and assumptions for the Terracina at Redlands (TTM 20320) project for review/concurrence by City of REDLANDS staff.

PROJECT DESCRIPTION

Figure 1 shows the project location map. The project site is located north of Reservoir Road adjacent to Wabash Avenue in the City of REDLANDS.

The proposed project involves construction of 70 single-family detached residential dwelling units. The site plan is illustrated on Figure 2.

PROJECT TRIP GENERATION & DISTRIBUTION

Table 1 shows the project trip generation based on rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017). As shown in Table 1, the proposed project is forecast to generate approximately 52 trips during the morning peak hour, 70 additional trips during the evening peak hour, and 661 daily trips.

Figure 3 illustrates the forecast directional distribution patterns of project-generated trips..

STUDY AREA

The study area is proposed to consist of the following six (6) study intersections:

Study Intersections

1. Ford Street (NS) at Reservoir Road (EW)
2. Wabash Avenue (NS) at Project "Street C" (EW)
3. Wabash Avenue (NS) at Project "Street A" (EW)
4. Wabash Avenue (NS) at Project "Street G" (EW)
5. Wabash Avenue (NS) at Reservoir Road/I-10 WB Off-Ramp (EW)
6. Wabash Avenue (NS) at Panorama Drive (EW)

ANALYSIS SCENARIOS

The traffic study shall evaluate the following analysis scenarios for typical weekday morning and evening peak hour conditions:

- Existing
- Existing Plus Project
- Opening Year (2022) Without Project
- Opening Year (2022) With Project
- Year 2040 Without Project
- Year 2040 With Project

TRAFFIC COUNTS

New intersection turning movement counts will be collected at the study intersections during the morning peak period (7:00 AM – 9:00 AM) and evening peak period (4:00 PM – 6:00 PM) on a typical weekday (Tuesday, Wednesday, or Thursday) while local schools are in session. These traffic counts will be separated into cars and trucks (by axle).

ANALYSIS METHODOLOGY

The study intersections shall be analyzed using the Intersection Capacity Utilization methodology in accordance with the parameters and impact thresholds prescribed in the City of Redlands.

Performance Standards

The City of REDLANDS has established Level of Service C as the minimum acceptable Level of Service during peak hour conditions.

As stated in the Guide for the Preparation of Traffic Impact Studies (State of California, 2002), “California Department of Transportation endeavors to maintain a target LOS [Level of Service] at the transition between LOS “C” and LOS “D” on State highway facilities”. The California Department of Transportation acknowledges this may not always be feasible and recommends consultation with the California Department of Transportation to determine the appropriate target Level of Service. For consistency with local requirements, this analysis defines Level of Service C as the minimum acceptable Level of Service for State Highway facilities.

Thresholds of Significance – Measure U

Based on the established performance standards for City of REDLANDS as specified in Measure U of the City of Redlands General Plan 2035 (December 5, 2017, a potentially significant transportation impact is defined to occur if:

- The addition of project-generated trips is forecast to cause the performance of a study intersection to deteriorate from acceptable Level of Service (C or better) to unacceptable Level of Service (D, E, or F); or,

- Where existing level of service is below Level of Service C, no development project shall be approved that cannot be mitigated so that it does not reduce the existing level of service at that location unless the location is within the “donut hole” region. This analysis does not include the “donut hole” region.

FORECASTING METHODOLOGY

The San Bernardino Transportation Analysis Model (SBTAM) traffic volume forecasts will be obtained for Year 2012 and 2040 during the AM peak period, PM peak period, and daily. Future traffic volumes will be determined through interpolation of SBTAM and existing intersection turning movement volumes based on the growth increment approach.

In addition, a list of pending and approved other development projects shall be requested from the City of REDLANDS. Trip forecasts for other development projects within the project study area shall be determined based on the Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition, 2017 and will be added to existing roadway volumes for the applicable analysis scenarios.

SPECIAL ISSUES TO BE ANALYZED

The potential traffic impact on the I-10 Freeway (Wabash Avenue interchange) and the projects proximity to this interchange shall be considered. This consultation shall include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002). If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response.

This traffic impact analysis will be analyzed with the Wabash connection constructed and operational for future analysis scenarios. This traffic impact analysis will analyze the traffic impacts on the surrounding roadway network as a result of the proposed project, but will not analyze the impacts of creating a completion of the Wabash Avenue connection to the north.

VMT ANALYSIS

A Vehicles Mile Traveled (VMT) analysis will be conducted for the project to satisfy CEQA requirements. VMT measures the quantity of travel by multiplying the trip length by the number of trips. Coordination with the San Bernardino County Transportation Authority to obtain the VMT per traffic analysis zone within the City of Redlands will be obtained to conduct this analysis. The Technical Advisory on Evaluating Transportation Impacts in CEQA, prepared by the Governor's Office on Planning and Research in the State of California, December 2018, will be used as the basis for the VMT analysis.

CONCLUSION

This traffic impact analysis will be conducted in conformance with the CEQA requirements for VMT and the City of Redlands requirements for Measure U. Recommendations will be made for opening year mitigation and Year 2040 mitigation paid through fair share analysis, and Year 2040 mitigation paid through participation in the City of Redlands Transportation Impact Fee Program.

We appreciate the opportunity to provide this scoping document for your review. Should you have any questions or comments regarding the proposed scope, please contact me at (714) 795-3100 x 104.

Table 1
Project Trip Generation

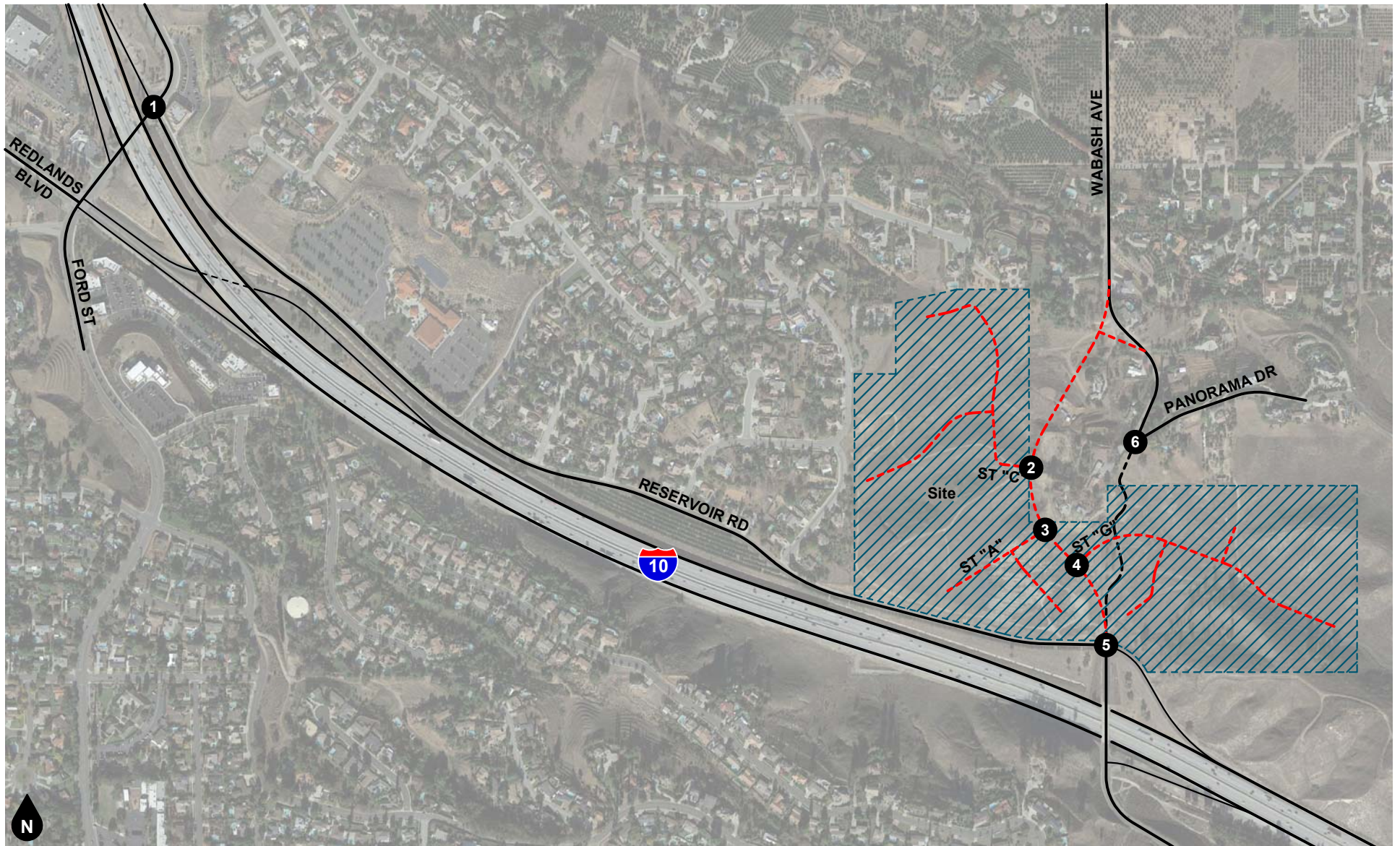
Trip Generation Rates									
Land Use	Source ¹	Units ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Single-Family Detached Residential	ITE 210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated								
Land Use	Quantity	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Single-Family Detached Residential	70 DU	13	39	52	44	26	70	661

Notes:

(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code.

(2) DU = Dwelling Units



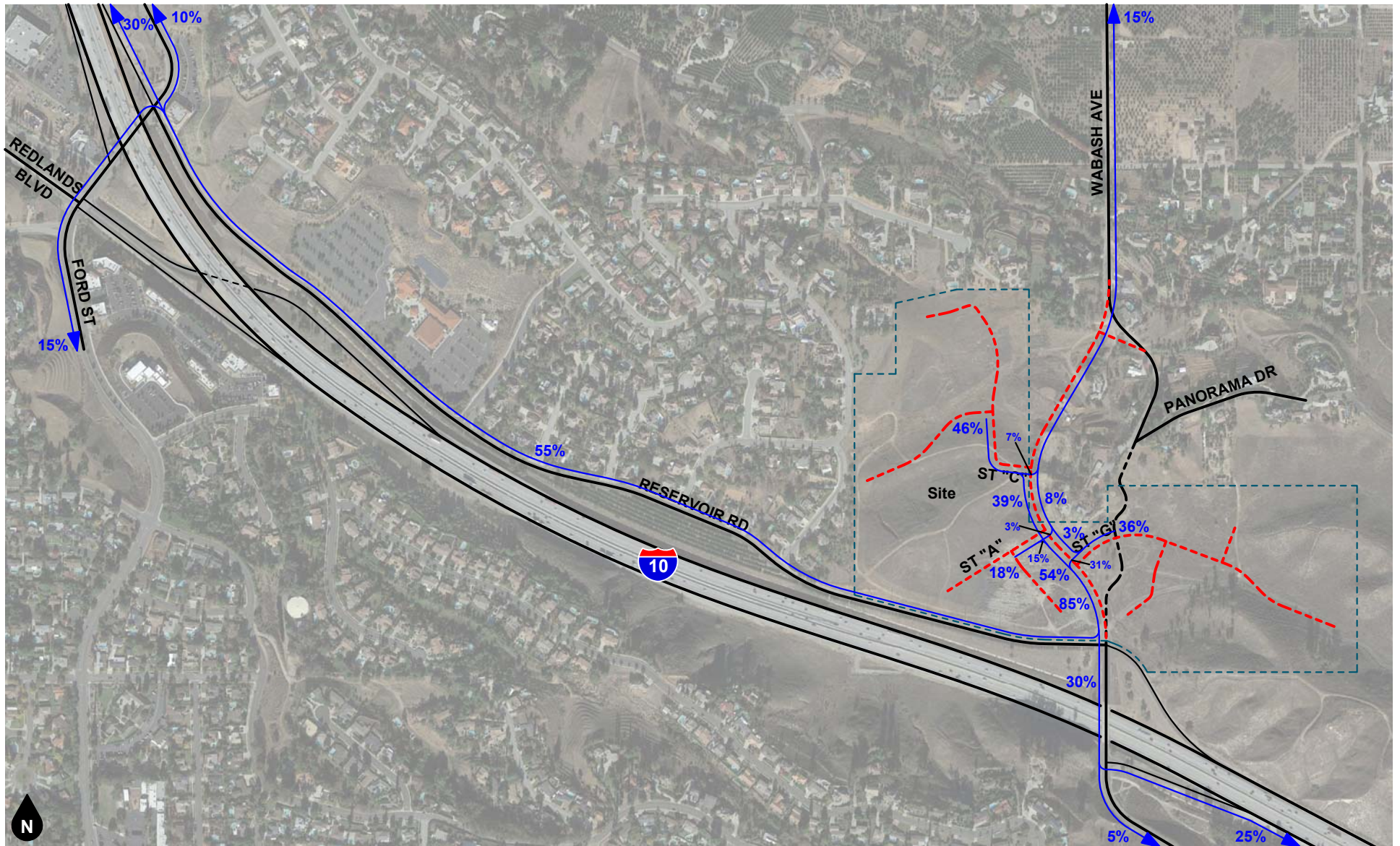
Legend

- # Study Intersection
- Future Roadway

Figure 1
Project Location Map



Figure 2
Site Plan



Legend
 10% Percent To/From Project

Figure 3
Project Trip Distribution



Bryan Crawford <bryandavidcrawford@gmail.com>

Terracina at Redlands (TTM 20320) Traffic Study MOU

7 messages

Bryan Crawford <bryan@ganddini.com>

Tue, Nov 26, 2019 at 12:59 PM

To: "Young, Don" <dyoung@cityofredlands.org>

Don,

Attached is the MOU for the Terracina at Redlands Traffic Study. Last August we worked on a queuing analysis for the project based on Caltrans comments. We've now been contacted and authorized to do a traffic impact analysis for the project. Please review and let me know if there are any questions/comments or if you'd like to discuss the project. I know it's a bit hectic with the holidays but we would like to schedule the traffic counts for next week. Therefore, if it'd be possible to get approval on the study area intersections so that counts can be taken, it'd be greatly appreciated. Thank you and have a great Thanksgiving.

--

Kind Regards,

Bryan Crawford

Senior Transportation Planner

GANDDINI GROUP, INC.

550 Parkcenter Drive, Suite 202

Santa Ana, CA 92705

o. 714 795 3100 x 104

c. 714 376 0224

www.ganddini.com**19-0208 Scope.pdf**

3229K

Bryan Crawford <bryan@ganddini.com>

Fri, Dec 6, 2019 at 2:07 PM

To: "Young, Don" <dyoung@cityofredlands.org>

Don,

Have you had a chance to review the scope and specifically the study area intersections?

[Quoted text hidden]

Bryan Crawford <bryan@ganddini.com>

Tue, Dec 10, 2019 at 7:01 PM

To: "Young, Don" <dyoung@cityofredlands.org>

Don,

Mohamad Younes provided the following information when I asked about their case planner:

We have not submitted the case application yet. However, Lorelee Faris has been attending the meetings when we discuss the TTM layout with Planning Staff.

[Quoted text hidden]

Don Young <dyoung@cityofredlands.org>

Tue, Dec 10, 2019 at 7:20 PM

To: Bryan Crawford <bryan@ganddini.com>
Cc: Lorelee Farris <lfarris@cityofredlands.org>

Bryan

Please update the scope with the attached comments and resubmit.

Donald Young

Manager - One Stop Permit Center

City of Redlands

909-798-7585 x6

dyoung@cityofredlands.org

[Quoted text hidden]



19-0208 Scope with comments.pdf
3191K

Bryan Crawford <bryan@ganddini.com>
To: Don Young <dyoung@cityofredlands.org>
Cc: Lorelee Farris <lfarris@cityofredlands.org>

Wed, Dec 18, 2019 at 4:35 PM

Don,

Attached is the revised scoping agreement with your comments incorporated into it. Please let me know if you have any questions. Thank you.

[Quoted text hidden]



19-0208 Scope - 12-18.pdf
3413K

Don Young <dyoung@cityofredlands.org>
To: Bryan Crawford <bryan@ganddini.com>
Cc: Lorelee Farris <lfarris@cityofredlands.org>

Mon, Dec 23, 2019 at 1:09 PM

Looks good.

[Quoted text hidden]

Bryan Crawford <bryan@ganddini.com>
To: Roma Stromberg <Roma@ganddini.com>

Mon, Dec 23, 2019 at 6:12 PM

[Quoted text hidden]

APPENDIX C

INTERSECTION TURNING MOVEMENT COUNT WORKSHEETS

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
Wed, Jan 15, 20

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Reservoir
Ford

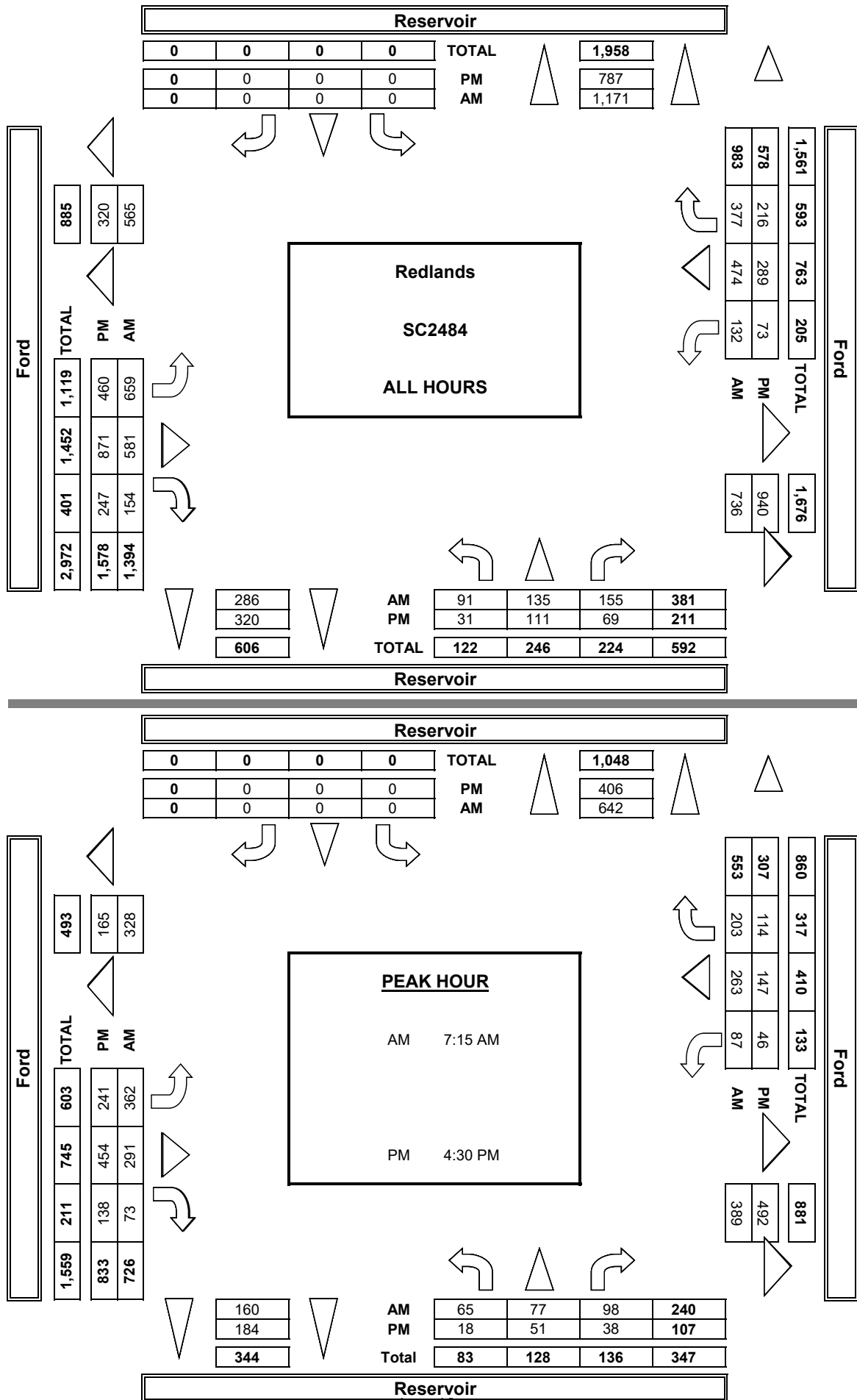
PROJECT #: SC2484
LOCATION #: 1
CONTROL: STOP N

NOTES:										AM		▲	
										PM		N	
										MD	◀ W		▶ E
										OTHER		S	
										OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	X	X	X	1	1	0	1	1	0	

AM	7:00 AM	4	18	13	0	0	0	81	82	12	7	47	47	311
	7:15 AM	19	19	13	0	0	0	88	68	15	12	80	66	380
	7:30 AM	17	17	17	0	0	0	90	64	11	25	62	58	361
	7:45 AM	15	19	22	0	0	0	96	67	26	36	70	37	388
	8:00 AM	14	22	46	0	0	0	88	92	21	14	51	42	390
	8:15 AM	10	19	24	0	0	0	67	82	13	8	51	50	324
	8:30 AM	4	8	16	0	0	0	73	71	14	14	49	41	290
	8:45 AM	8	13	4	0	0	0	76	55	42	16	64	36	314
	VOLUMES	91	135	155	0	0	0	659	581	154	132	474	377	2,758
	APPROACH %	24%	35%	41%	0%	0%	0%	47%	42%	11%	13%	48%	38%	
PM	APP/DEPART	381	/	1,171	0	/	286	1,394	/	736	983	/	565	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	65	77	98	0	0	0	362	291	73	87	263	203	1,519
	APPROACH %	27%	32%	41%	0%	0%	0%	50%	40%	10%	16%	48%	37%	
	PEAK HR FACTOR	0.732			0.000			0.903			0.875			0.974
	APP/DEPART	240	/	642	0	/	160	726	/	389	553	/	328	0
	4:00 PM	5	10	7	0	0	0	54	90	17	5	34	29	251
	4:15 PM	3	22	10	0	0	0	57	100	25	3	34	27	281
	4:30 PM	4	13	9	0	0	0	49	122	34	11	37	27	306
	4:45 PM	6	17	7	0	0	0	42	139	44	14	35	34	338
	5:00 PM	6	11	9	0	0	0	83	100	32	10	36	27	314
	5:15 PM	2	10	13	0	0	0	67	93	28	11	39	26	289
	5:30 PM	1	12	7	0	0	0	53	111	35	12	38	17	286
	5:45 PM	4	16	7	0	0	0	55	116	32	7	36	29	302
	VOLUMES	31	111	69	0	0	0	460	871	247	73	289	216	2,367
	APPROACH %	15%	53%	33%	0%	0%	0%	29%	55%	16%	13%	50%	37%	
	APP/DEPART	211	/	787	0	/	320	1,578	/	940	578	/	320	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	18	51	38	0	0	0	241	454	138	46	147	114	1,247
	APPROACH %	17%	48%	36%	0%	0%	0%	29%	55%	17%	15%	48%	37%	
	PEAK HR FACTOR	0.892			0.000			0.926			0.925			0.922
	APP/DEPART	107	/	406	0	/	184	833	/	492	307	/	165	0

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Reservoir Ford	PROJECT #: LOCATION #: CONTROL:	SC2484 1 STOP N
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CLASS 1: PASSENGER VEHICLES	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	E ▶
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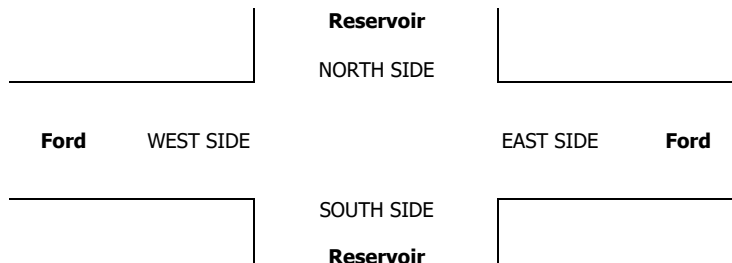
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL 0	NT 1	NR 0	SL X	ST X	SR X	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	4	16	13	0	0	0	80	81	10	5	42	47	298
	7:15 AM	16	19	13	0	0	0	87	65	13	11	75	65	364
	7:30 AM	16	16	16	0	0	0	89	60	10	23	62	58	350
	7:45 AM	15	18	21	0	0	0	95	63	25	36	69	36	378
	8:00 AM	12	22	46	0	0	0	87	88	20	12	49	40	376
	8:15 AM	10	19	24	0	0	0	65	78	13	5	47	50	311
	8:30 AM	3	8	15	0	0	0	72	67	12	14	48	39	278
	8:45 AM	7	13	3	0	0	0	73	53	39	14	58	35	295
	VOLUMES	83	131	151	0	0	0	648	555	142	120	450	370	2,650
	APPROACH %	23%	36%	41%	0%	0%	0%	48%	41%	11%	13%	48%	39%	
PM	APP/DEPART	365	/	1,149	0	/	262	1,345	/	706	940	/	533	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	59	75	96	0	0	0	358	276	68	82	255	199	1,468
	APPROACH %	26%	33%	42%	0%	0%	0%	51%	39%	10%	15%	48%	37%	
	PEAK HR FACTOR	0.719			0.000			0.900			0.887			0.971
	APP/DEPART	230	/	632	0	/	150	702	/	372	536	/	314	0
	4:00 PM	5	9	6	0	0	0	46	88	17	5	32	29	237
	4:15 PM	3	17	10	0	0	0	51	96	25	3	33	25	263
	4:30 PM	4	13	8	0	0	0	45	119	30	10	37	27	293
	4:45 PM	6	16	7	0	0	0	40	134	43	13	34	32	325
	5:00 PM	6	11	9	0	0	0	79	98	31	10	35	27	306
	5:15 PM	2	9	13	0	0	0	65	92	27	11	37	26	282
	5:30 PM	1	12	6	0	0	0	51	110	35	12	37	17	281
	5:45 PM	4	16	7	0	0	0	54	115	32	7	36	28	299
	VOLUMES	31	103	66	0	0	0	431	852	240	71	281	211	2,286
	APPROACH %	16%	52%	33%	0%	0%	0%	28%	56%	16%	13%	50%	37%	
	APP/DEPART	200	/	745	0	/	311	1,523	/	918	563	/	312	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	18	49	37	0	0	0	229	443	131	44	143	112	1,206
	APPROACH %	17%	47%	36%	0%	0%	0%	29%	55%	16%	15%	48%	37%	
	PEAK HR FACTOR	0.897			0.000			0.925			0.946			0.928
	APP/DEPART	104	/	390	0	/	175	803	/	480	299	/	161	0

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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
1/15/20
WEDNESDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Reservoir
Ford

PROJECT #:
LOCATION #:
CONTROL:

SC2484
1
STOP N

CLASS 2:	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	▶ E
2-AXLE WORK VEHICLES/ TRUCKS				

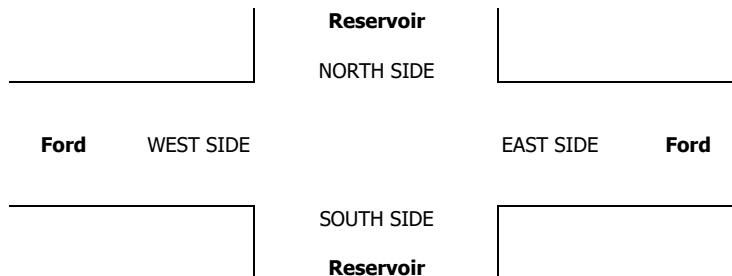
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL 0	NT 1	NR 0	SL X	ST X	SR X	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	1	0	0	0	0	1	0	2	1	3	0	8
	7:15 AM	2	0	0	0	0	0	1	2	2	0	3	0	10
	7:30 AM	1	0	0	0	0	0	1	2	1	1	0	0	6
	7:45 AM	0	0	1	0	0	0	1	3	1	0	1	0	7
	8:00 AM	1	0	0	0	0	0	0	3	1	1	1	0	7
	8:15 AM	0	0	0	0	0	0	1	3	0	2	2	0	8
	8:30 AM	1	0	1	0	0	0	1	2	1	0	1	0	7
	8:45 AM	1	0	1	0	0	0	3	1	2	2	3	0	13
	VOLUMES	6	1	3	0	0	0	9	16	10	7	14	0	66
	APPROACH %	60%	10%	30%	0%	0%	0%	26%	46%	29%	33%	67%	0%	
PM	APP/DEPART	10	/	10	0	/	17	35	/	19	21	/	20	0
	BEGIN PEAK HR	8:00 AM												
	VOLUMES	3	0	2	0	0	0	5	9	4	5	7	0	35
	APPROACH %	60%	0%	40%	0%	0%	0%	28%	50%	22%	42%	58%	0%	
	PEAK HR FACTOR	0.625			0.000			0.750			0.600			0.673
	APP/DEPART	5	/	5	0	/	9	18	/	11	12	/	10	0
	4:00 PM	0	1	1	0	0	0	6	2	0	0	1	0	11
	4:15 PM	0	2	0	0	0	0	5	4	0	0	0	2	13
	4:30 PM	0	0	1	0	0	0	4	3	4	1	0	0	13
	4:45 PM	0	1	0	0	0	0	1	4	1	1	1	2	11
	5:00 PM	0	0	0	0	0	0	2	1	1	0	1	0	5
	5:15 PM	0	1	0	0	0	0	1	0	1	0	1	0	4
	5:30 PM	0	0	0	0	0	0	0	1	0	0	1	0	2
	5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
	VOLUMES	0	5	2	0	0	0	20	15	7	2	5	4	60
	APPROACH %	0%	71%	29%	0%	0%	0%	48%	36%	17%	18%	45%	36%	
	APP/DEPART	7	/	29	0	/	9	42	/	17	11	/	5	0
	BEGIN PEAK HR	4:00 PM												
	VOLUMES	0	4	2	0	0	0	16	13	5	2	2	4	48
	APPROACH %	0%	67%	33%	0%	0%	0%	47%	38%	15%	25%	25%	50%	
	PEAK HR FACTOR	0.750			0.000			0.773			0.500			0.923
	APP/DEPART	6	/	24	0	/	7	34	/	15	8	/	2	0

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0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Reservoir Ford	PROJECT #: LOCATION #: CONTROL:	SC2484 1 STOP N
-------------------------------	---	-------------------------------	---------------------------------------	-----------------------

CLASS 3: 3-AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E ▼
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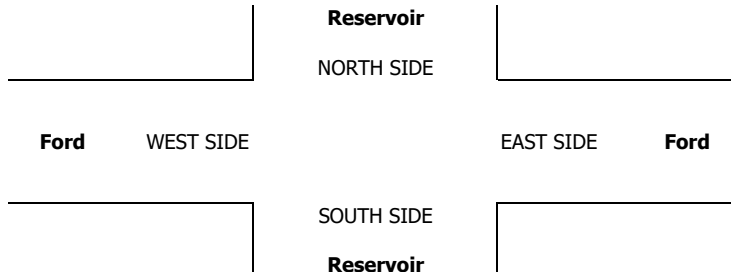
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL 0	NT 1	NR 0	SL X	ST X	SR X	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	1	0	0	0	0	1	0	0	1	0	3
	7:15 AM	0	0	0	0	0	0	0	0	0	2	0	2
	7:30 AM	0	0	0	0	0	0	2	0	0	0	0	2
	7:45 AM	0	0	0	0	0	0	0	0	0	0	1	1
	8:00 AM	1	0	0	0	0	1	0	0	1	0	2	5
	8:15 AM	0	0	0	0	0	0	1	0	1	2	0	4
	8:30 AM	0	0	0	0	0	0	1	1	0	0	1	3
	8:45 AM	0	0	0	0	0	0	1	1	0	1	0	3
	VOLUMES	1	1	0	0	0	0	6	2	2	6	4	23
	APPROACH %	50%	50%	0%	0%	0%	11%	67%	22%	17%	50%	33%	
PM	APP/DEPART	2	/	6	0	/	4	9	/	6	12	/	0
	BEGIN PEAK HR	8:00 AM											
	VOLUMES	1	0	0	0	0	0	3	2	2	3	3	15
	APPROACH %	100%	0%	0%	0%	0%	17%	50%	33%	25%	38%	38%	
	PEAK HR FACTOR	0.250			0.000			0.750			0.667		
	APP/DEPART	1	/	4	0	/	4	6	/	3	8	/	0
	4:00 PM	0	0	0	0	0	0	2	0	0	0	0	2
	4:15 PM	0	1	0	0	0	0	1	0	0	0	0	2
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	1	0	0	0	0	1
	5:00 PM	0	0	0	0	0	0	1	1	0	0	0	2
	5:15 PM	0	0	0	0	0	0	1	1	0	0	1	3
	5:30 PM	0	0	1	0	0	0	1	0	0	0	0	2
	5:45 PM	0	0	0	0	0	0	0	1	0	0	1	2
	VOLUMES	0	1	1	0	0	0	7	3	0	0	1	14
	APPROACH %	0%	50%	50%	0%	0%	0%	70%	30%	0%	0%	50%	50%
	APP/DEPART	2	/	9	0	/	0	10	/	4	2	/	0
	BEGIN PEAK HR	5:00 PM											
	VOLUMES	0	0	1	0	0	0	3	3	0	0	1	9
	APPROACH %	0%	0%	100%	0%	0%	0%	50%	50%	0%	0%	50%	50%
	PEAK HR FACTOR	0.250			0.000			0.750			0.500		
	APP/DEPART	1	/	4	0	/	0	6	/	4	2	/	0

0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Reservoir Ford	PROJECT #: LOCATION #: CONTROL:	SC2484 1 STOP N
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E ▼
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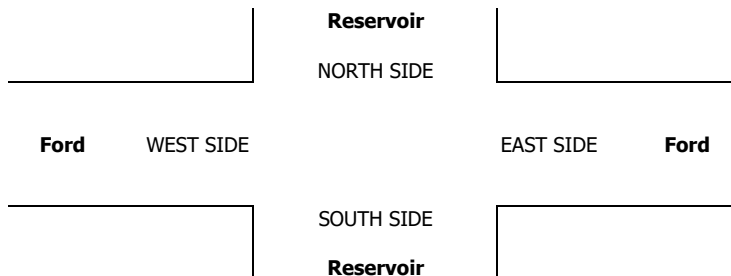
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL 0	NT 1	NR 0	SL X	ST X	SR X	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	
	7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	
	7:30 AM	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	1	
	8:00 AM	0	0	0	0	0	0	0	1	0	0	1	2	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	1	0	0	0	1	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	3
	VOLUMES	0	0	0	0	0	0	3	0	0	4	2	9	
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	67%	33%	
APP/DEPART	0	/	2	0	/	0	3	/	3	6	/	4	0	
BEGIN PEAK HR	8:00 AM			0	0	0	0	2	0	0	3	1	6	
VOLUMES	0	0	0	0	0	0	0	2	0	0	3	1	6	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	75%	25%		
PEAK HR FACTOR	0.000			0.000			0.500			0.333			0.500	
APP/DEPART	0	/	1	0	/	0	2	/	2	4	/	3	0	
PM	4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	
	4:15 PM	0	2	0	0	0	0	0	0	0	1	0	3	
	4:30 PM	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	
	5:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	0	2	0	0	0	0	2	0	0	0	2	0	6
	APPROACH %	0%	100%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	
	APP/DEPART	2	/	4	0	/	0	2	/	0	2	/	2	0
	BEGIN PEAK HR	3:30 PM			0	0	0	1	0	0	0	1	0	4
	VOLUMES	0	2	0	0	0	0	1	0	0	0	1	0	4
	APPROACH %	0%	100%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	
PEAK HR FACTOR	0.250			0.000			0.250			0.250			0.333	
APP/DEPART	2	/	3	0	/	0	1	/	0	1	/	1	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Reservoir Ford	PROJECT #: LOCATION #: CONTROL:	SC2484 1 STOP N
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CLASS 5:	NOTES:	AM		▲	
RV		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

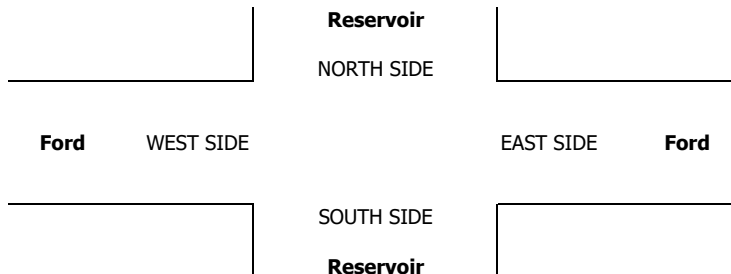
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	X	X	X	1	1	0	1	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	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
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	1	0	0	0	0	0	1
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	1	0	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	
PM	APP/DEPART	0	/	1	0	/	0	1	/	0	0	/	0
	BEGIN PEAK HR	7:30 AM			0	0	0	1	0	0	0	0	1
	VOLUMES	0	0	0	0	0	0	100%	0%	0%	0%	0%	
	APPROACH %	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.250			0.000		
	APP/DEPART	0	/	1	0	/	0	1	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0%	0%	0%	0%	0%	
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0

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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Reservoir Ford	PROJECT #: LOCATION #: CONTROL:	SC2484 1 STOP N
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CLASS 6:	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	▶ E
BUSES				

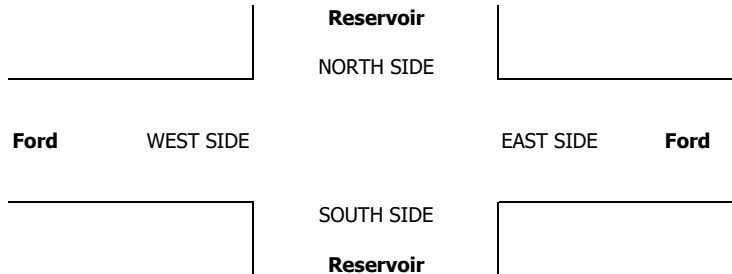
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Reservoir			Reservoir			Ford			Ford			
LANES:	NL 0	NT 1	NR 0	SL X	ST X	SR X	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	1	0	0	1
	7:15 AM	1	0	0	0	0	0	1	0	1	0	0	3
	7:30 AM	0	1	1	0	0	0	0	0	1	0	0	3
	7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	1	1
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	1	2	1	0	0	0	1	0	3	0	1	9
	APPROACH %	25%	50%	25%	0%	0%	0%	100%	0%	75%	0%	25%	
PM	APP/DEPART	4	/	3	0	/	3	1	/	2	4	/	0
	BEGIN PEAK HR	7:00 AM											
	VOLUMES	1	2	1	0	0	0	0	1	0	3	0	8
	APPROACH %	25%	50%	25%	0%	0%	0%	100%	0%	100%	0%	0%	
	PEAK HR FACTOR	0.500			0.000			0.250			0.750		
	APP/DEPART	4	/	2	0	/	3	1	/	2	3	/	0
	4:00 PM	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
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	1	0	0	0	0	1
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	1	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0
	BEGIN PEAK HR	4:45 PM											
	VOLUMES	0	0	0	0	0	0	1	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.250			0.000		
	APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

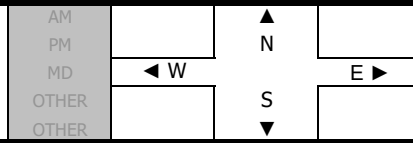
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
Wed, Jan 15, 20

LOCATION:
NORTH & SOUTH: Redlands
EAST & WEST: Wabash
Panorama

PROJECT #: SC2484
LOCATION #: 3
CONTROL: NO CONTROL

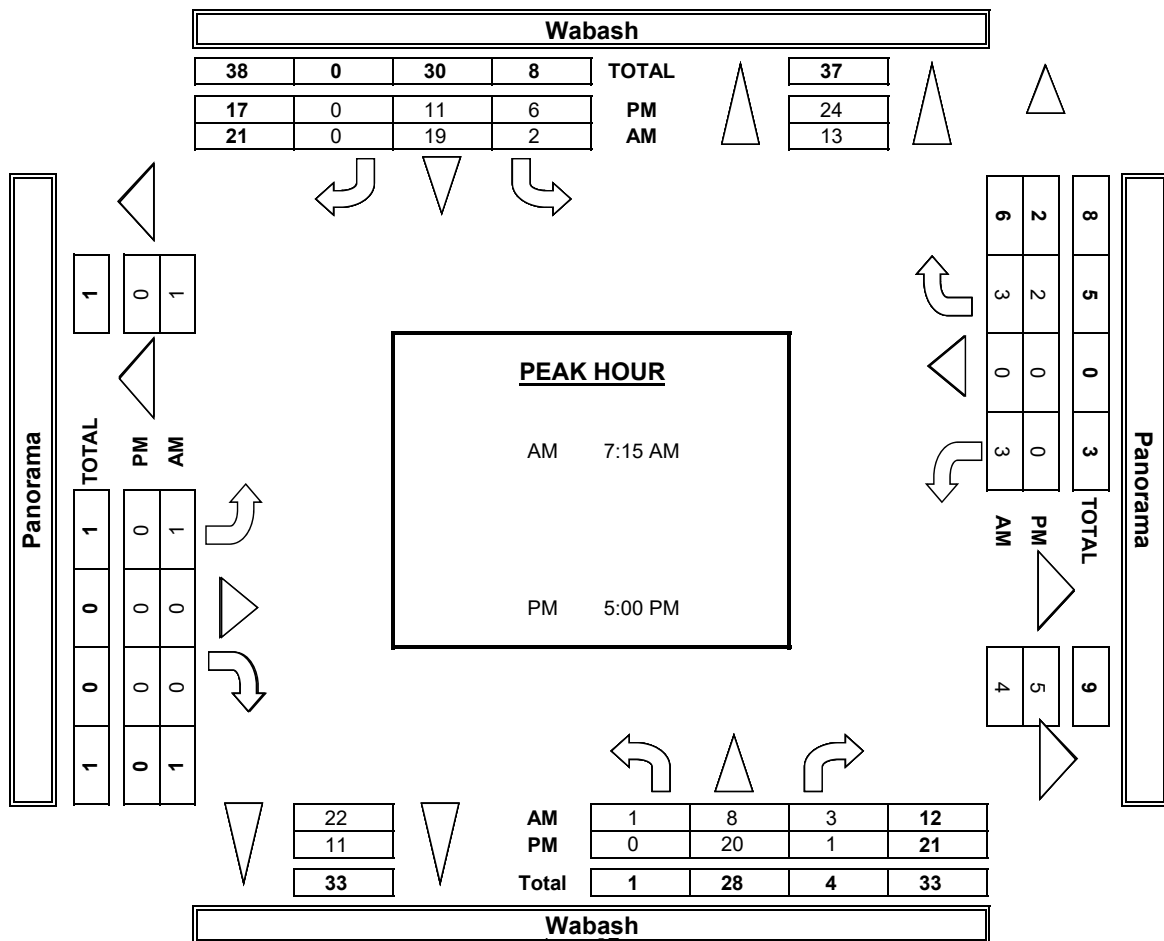
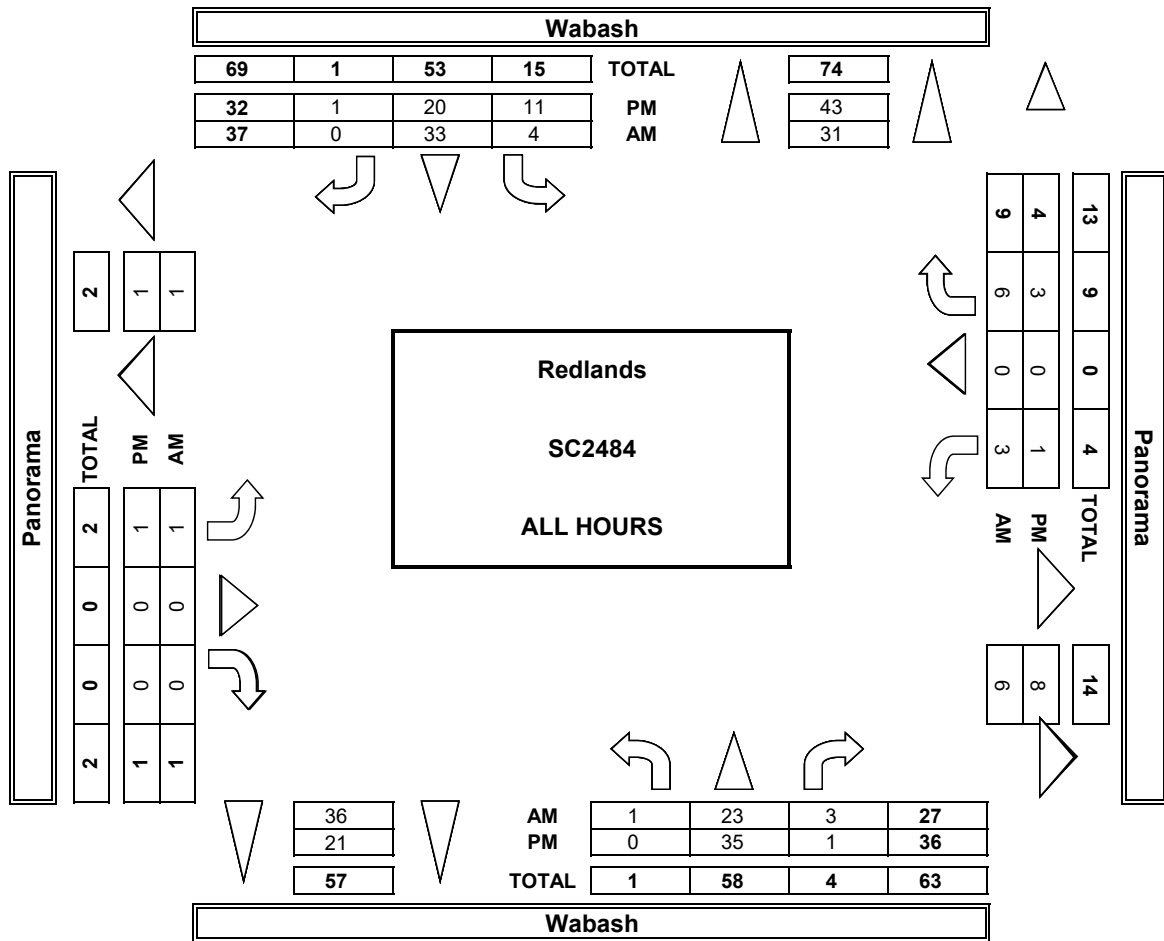
NOTES:



	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Panorama			Panorama			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

AM	7:00 AM	0	8	0	0	4	0	0	0	0	0	0	0	12
	7:15 AM	0	2	2	0	3	0	0	0	0	1	0	0	8
	7:30 AM	0	2	0	1	4	0	0	0	0	1	0	0	8
	7:45 AM	0	0	0	0	8	0	0	0	0	1	0	2	11
	8:00 AM	1	4	1	1	4	0	1	0	0	0	0	1	13
	8:15 AM	0	2	0	1	2	0	0	0	0	0	0	1	6
	8:30 AM	0	1	0	0	5	0	0	0	0	0	0	1	7
	8:45 AM	0	4	0	1	3	0	0	0	0	0	0	1	9
	VOLUMES	1	23	3	4	33	0	1	0	0	3	0	6	74
	APPROACH %	4%	85%	11%	11%	89%	0%	100%	0%	0%	33%	0%	67%	
APP/DEPART	27	/	31	37	/	36	1	/	6	9	/	1	0	
BEGIN PEAK HR	7:15 AM													
VOLUMES	1	8	3	2	19	0	1	0	0	3	0	3	40	
APPROACH %	8%	67%	25%	10%	90%	0%	100%	0%	0%	50%	0%	50%		
PEAK HR FACTOR	0.500													
APP/DEPART	12	/	13	21	/	22	1	/	4	6	/	1	0	
PM	4:00 PM	0	6	0	2	0	0	1	0	0	0	0	0	9
	4:15 PM	0	3	0	1	3	1	0	0	0	0	0	0	8
	4:30 PM	0	4	0	1	3	0	0	0	0	0	0	1	9
	4:45 PM	0	2	0	1	3	0	0	0	0	1	0	0	7
	5:00 PM	0	6	0	1	2	0	0	0	0	0	0	1	10
	5:15 PM	0	2	0	1	1	0	0	0	0	0	0	1	5
	5:30 PM	0	8	0	2	6	0	0	0	0	0	0	0	16
	5:45 PM	0	4	1	2	2	0	0	0	0	0	0	0	9
	VOLUMES	0	35	1	11	20	1	1	0	0	1	0	3	73
	APPROACH %	0%	97%	3%	34%	63%	3%	100%	0%	0%	25%	0%	75%	
	APP/DEPART	36	/	43	32	/	21	1	/	8	4	/	1	0
	BEGIN PEAK HR	5:00 PM												
	VOLUMES	0	20	1	6	11	0	0	0	0	0	0	2	40
APPROACH %	0%	95%	5%	35%	65%	0%	0%	0%	0%	0%	0%	100%		
PEAK HR FACTOR	0.656													
APP/DEPART	21	/	24	17	/	11	0	/	5	2	/	0	0	

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Panorama	PROJECT #: LOCATION #: CONTROL:	SC2484 3 NO CONTROL
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CLASS 1: PASSENGER VEHICLES	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	▶ E
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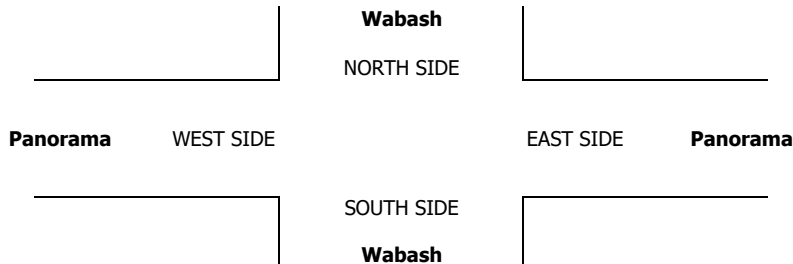
	NORTHBOUND Wabash			SOUTHBOUND Wabash			EASTBOUND Panorama			WESTBOUND Panorama			
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	8	0	0	4	0	0	0	0	0	0	12
	7:15 AM	0	2	1	0	3	0	0	0	1	0	0	7
	7:30 AM	0	2	0	1	4	0	0	0	0	0	0	7
	7:45 AM	0	0	0	0	8	0	0	0	1	0	2	11
	8:00 AM	0	3	1	0	3	0	0	0	0	0	0	7
	8:15 AM	0	2	0	1	2	0	0	0	0	0	1	6
	8:30 AM	0	1	0	0	4	0	0	0	0	0	1	6
	8:45 AM	0	3	0	1	3	0	0	0	0	0	1	8
	VOLUMES	0	21	2	3	31	0	0	0	2	0	5	64
	APPROACH %	0%	91%	9%	9%	91%	0%	0%	0%	29%	0%	71%	
PM	APP/DEPART	23	/	27	34	/	33	0	/	4	7	/	0
	BEGIN PEAK HR	7:00 AM											
	VOLUMES	0	12	1	0	19	0	0	0	2	0	2	37
	APPROACH %	0%	92%	8%	0%	95%	0%	0%	0%	50%	0%	50%	
	PEAK HR FACTOR	0.406											
	APP/DEPART	13	/	15	20	/	21	0	/	1	4	/	0
	4:00 PM	0	5	0	2	0	0	1	0	0	0	0	8
	4:15 PM	0	3	0	1	3	1	0	0	0	0	0	8
	4:30 PM	0	3	0	1	3	0	0	0	0	0	1	8
	4:45 PM	0	2	0	1	3	0	0	0	1	0	0	7
PM	5:00 PM	0	6	0	1	2	0	0	0	0	0	1	10
	5:15 PM	0	2	0	1	1	0	0	0	0	0	1	5
	5:30 PM	0	8	0	2	6	0	0	0	0	0	0	16
	5:45 PM	0	4	1	2	2	0	0	0	0	0	0	9
	VOLUMES	0	33	1	11	20	1	1	0	0	1	0	3
	APPROACH %	0%	97%	3%	34%	63%	3%	100%	0%	0%	25%	0%	75%
	APP/DEPART	34	/	41	32	/	21	1	/	8	4	/	1
	BEGIN PEAK HR	5:00 PM											
	VOLUMES	0	20	1	4	11	0	0	0	0	0	2	40
	APPROACH %	0%	95%	5%	24%	65%	0%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR	0.656											
PM	APP/DEPART	21	/	24	17	/	11	0	/	5	2	/	0

0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1

0	1	0	0	1
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	1	0	0	1
0	4	0	0	4



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
1/15/20
WEDNESDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Wabash
Panorama

PROJECT #:
LOCATION #:
CONTROL:

SC2484
3
NO CONTROL

CLASS 2:	NOTES:	AM	PM	MD	OTHER	OTHER
2-AXLE WORK VEHICLES/ TRUCKS						

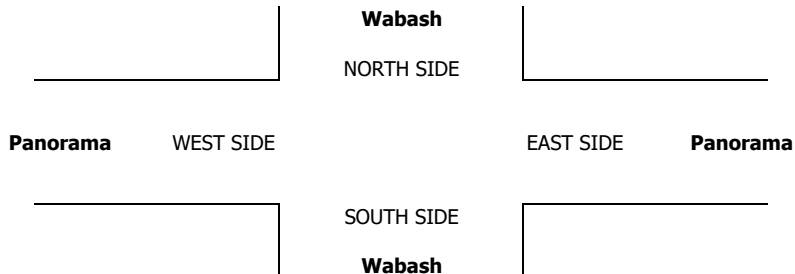
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Panorama			Panorama			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	1	0	0	0	0	0	0	0	0	1
	7:30 AM	0	0	0	0	0	0	0	0	1	0	0	1
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	1	1	0	1	1	0	1	0	0	0	1	6
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	1	0	0	0	0	0	0	0	0	0	1
	VOLUMES	1	2	1	1	1	0	0	0	1	0	1	9
	APPROACH %	25%	50%	25%	50%	50%	0%	100%	0%	0%	50%	50%	
PM	APP/DEPART	4	/	4	2	/	2	1	/	2	2	/	0
	BEGIN PEAK HR	7:15 AM			1	1	0	1	0	0	1	0	8
	VOLUMES	1	1	1	50%	50%	0%	100%	0%	0%	50%	50%	
	APPROACH %	33%	33%	33%	50%	50%	0%	100%	0%	0%	50%	50%	
	PEAK HR FACTOR	0.375			0.250			0.250			0.500		
	APP/DEPART	3	/	3	2	/	2	1	/	2	2	/	0
	4:00 PM	0	1	0	0	0	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	1	0	0	0	0	0	0	0	0	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	2	0	0	0	0	0	0	0	0	0	2
	APPROACH %	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	2	/	2	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:45 PM			0	0	0	0	0	0	0	0	2
	VOLUMES	0	2	0	0%	0%	0%	0%	0%	0%	0%	0%	
	APPROACH %	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.500			0.000			0.000			0.000		
	APP/DEPART	2	/	2	0	/	0	0	/	0	0	/	0

0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Panorama	PROJECT #: LOCATION #: CONTROL:	SC2484 3 NO CONTROL
CLASS 3: 3-AXLE TRUCKS	NOTES:		AM PM MD OTHER OTHER	<div> <div>▲</div> <div>◀ W</div> <div>S</div> <div>▼</div> </div> <div> <div>N</div> <div>E ▶</div> </div>

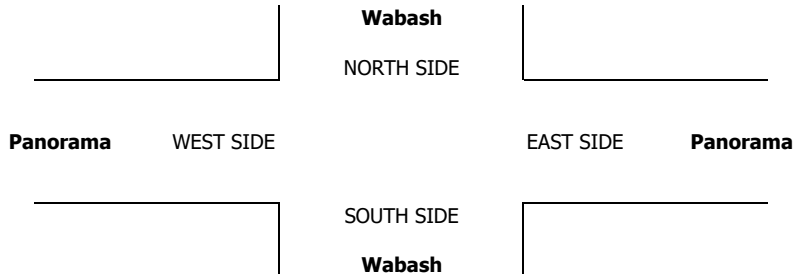
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Panorama			Panorama			
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	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
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
PM	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	7:00 AM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
1/15/20
WEDNESDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Wabash
Panorama

PROJECT #:
LOCATION #:
CONTROL:

SC2484
3
NO CONTROL

CLASS 4:	NOTES:	AM	PM	MD	OTHER
4 OR MORE AXLE TRUCKS					

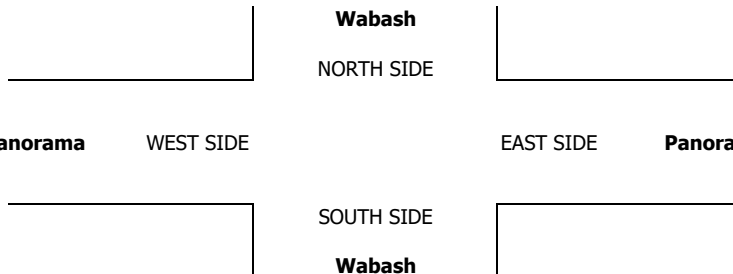
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Panorama			Panorama			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	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
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	1	0	0	0	0	0	0	1
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	1	0	0	0	0	0	0	1
	APPROACH %	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	
PM	APP/DEPART	0	/	0	1	/	1	0	/	0	0	/	0
	BEGIN PEAK HR	7:45 AM			0	1	0	0	0	0	0	0	1
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	
	APPROACH %	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.250			0.000			0.000		
	APP/DEPART	0	/	0	1	/	1	0	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
1/15/20
WEDNESDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Wabash
Panorama

PROJECT #:
LOCATION #:
CONTROL:

SC2484
3
NO CONTROL

CLASS 5:	NOTES:	AM		▲	
RV		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

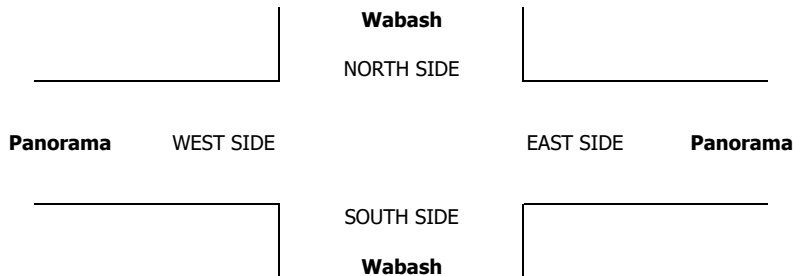
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Panorama			Panorama			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	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
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
PM	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	7:00 AM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Panorama	PROJECT #: LOCATION #: CONTROL:	SC2484 3 NO CONTROL
--------------------------------------	--	--------------------------------	--	---------------------------

CLASS 6:	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	▶ E
BUSES				

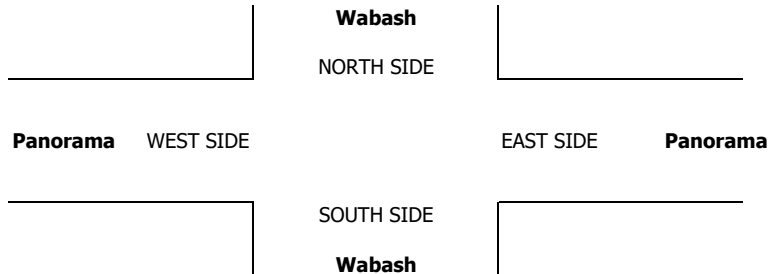
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Panorama			Panorama			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	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
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PM	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	7:00 AM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

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0	0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

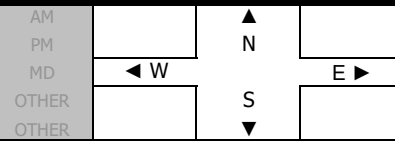
DATE:
Wed, Jan 15, 20

LOCATION:
NORTH & SOUTH: Redlands
EAST & WEST: Wabash Reservoir

PROJECT #: SC2484
LOCATION #: 2
CONTROL: STOP E/W

NOTES:

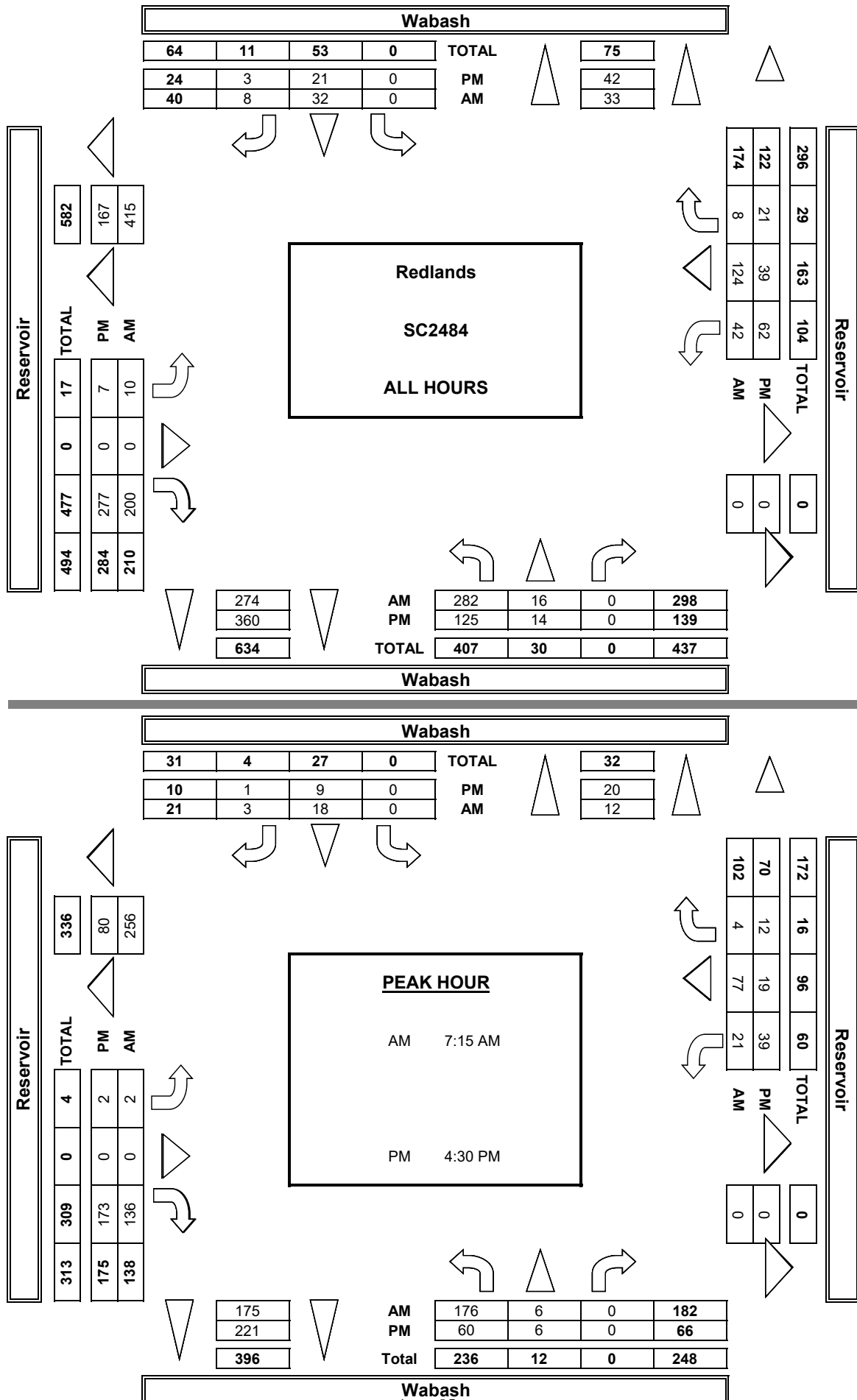
NB AM Construction



	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Reservoir			Reservoir			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

AM	7:00 AM	38	8	0	0	5	4	5	0	19	4	13	0	96
	7:15 AM	34	3	0	0	5	0	2	0	23	2	13	1	83
	7:30 AM	25	1	0	0	2	1	0	0	36	9	18	0	92
	7:45 AM	61	1	0	0	9	0	0	0	58	8	21	1	159
	8:00 AM	56	1	0	0	2	2	0	0	19	2	25	2	109
	8:15 AM	29	1	0	0	3	0	1	0	12	6	14	1	67
	8:30 AM	21	1	0	0	5	0	0	0	23	5	6	2	63
	8:45 AM	18	0	0	0	1	1	2	0	10	6	14	1	53
	VOLUMES	282	16	0	0	32	8	10	0	200	42	124	8	722
	APPROACH %	95%	5%	0%	0%	80%	20%	5%	0%	95%	24%	71%	5%	
	APP/DEPART	298	/	33	40	/	274	210	/	0	174	/	415	0
PM	BEGIN PEAK HR	7:15 AM												
	VOLUMES	176	6	0	0	18	3	2	0	136	21	77	4	443
	APPROACH %	97%	3%	0%	0%	86%	14%	1%	0%	99%	21%	75%	4%	
	PEAK HR FACTOR	0.734			0.583			0.595			0.850			0.697
	APP/DEPART	182	/	12	21	/	175	138	/	0	102	/	256	0
	4:00 PM	21	3	0	0	0	0	3	0	13	7	8	3	58
	4:15 PM	15	0	0	0	3	2	0	0	23	3	3	1	50
	4:30 PM	17	2	0	0	3	0	0	0	45	10	6	3	86
	4:45 PM	15	0	0	0	3	1	1	0	47	8	5	2	82
	5:00 PM	15	2	0	0	2	0	1	0	41	11	5	2	79
	5:15 PM	13	2	0	0	1	0	0	0	40	10	3	5	74
	5:30 PM	17	4	0	0	7	0	1	0	36	9	5	1	80
	5:45 PM	12	1	0	0	2	0	1	0	32	4	4	4	60
	VOLUMES	125	14	0	0	21	3	7	0	277	62	39	21	569
	APPROACH %	90%	10%	0%	0%	88%	13%	2%	0%	98%	51%	32%	17%	
	APP/DEPART	139	/	42	24	/	360	284	/	0	122	/	167	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	60	6	0	0	9	1	2	0	173	39	19	12	321
	APPROACH %	91%	9%	0%	0%	90%	10%	1%	0%	99%	56%	27%	17%	
	PEAK HR FACTOR	0.868			0.625			0.911			0.921			0.933
	APP/DEPART	66	/	20	10	/	221	175	/	0	70	/	80	0

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Reservoir	PROJECT #: LOCATION #: CONTROL:	SC2484 2 STOP E/W
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CLASS 1: PASSENGER VEHICLES	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	E ▶
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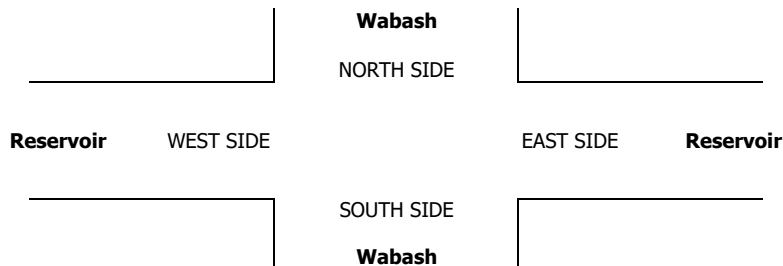
	NORTHBOUND Wabash			SOUTHBOUND Wabash			EASTBOUND Reservoir			WESTBOUND Reservoir			
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	38	8	0	0	5	3	4	0	14	4	12	0	88
	7:15 AM	33	3	0	0	5	0	1	0	22	1	13	0	78
	7:30 AM	24	1	0	0	2	0	0	0	33	7	18	0	85
	7:45 AM	61	1	0	0	8	0	0	0	57	7	19	1	154
	8:00 AM	56	1	0	0	2	1	0	0	16	2	25	2	105
	8:15 AM	29	1	0	0	3	0	1	0	10	6	14	1	65
	8:30 AM	21	1	0	0	4	0	0	0	21	4	6	2	59
	8:45 AM	18	0	0	0	1	1	1	0	6	4	13	1	45
	VOLUMES	280	16	0	0	30	5	7	0	179	35	120	7	679
	APPROACH %	95%	5%	0%	0%	86%	14%	4%	0%	96%	22%	74%	4%	
PM	APP/DEPART	296	/	29	35	/	244	186	/	0	162	/	406	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	174	6	0	0	17	1	1	0	128	17	75	3	422
	APPROACH %	97%	3%	0%	0%	94%	6%	1%	0%	99%	18%	79%	3%	
	PEAK HR FACTOR	0.726												
	APP/DEPART	180	/	10	18	/	162	129	/	0	95	/	250	0
	4:00 PM	20	3	0	0	0	0	3	0	13	7	6	2	54
	4:15 PM	13	0	0	0	3	2	0	0	22	3	3	1	47
	4:30 PM	17	1	0	0	3	0	0	0	41	10	6	3	81
	4:45 PM	15	0	0	0	3	1	1	0	46	7	5	2	80
	5:00 PM	15	2	0	0	2	0	1	0	40	11	5	2	78
	5:15 PM	12	2	0	0	1	0	0	0	40	10	3	4	72
	5:30 PM	17	4	0	0	7	0	1	0	36	9	5	1	80
	5:45 PM	11	1	0	0	2	0	1	0	32	4	4	4	59
	VOLUMES	120	13	0	0	21	3	7	0	270	61	37	19	551
	APPROACH %	90%	10%	0%	0%	88%	13%	3%	0%	97%	52%	32%	16%	
	APP/DEPART	133	/	39	24	/	352	277	/	0	117	/	160	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	59	5	0	0	9	1	2	0	167	38	19	11	311
	APPROACH %	92%	8%	0%	0%	90%	10%	1%	0%	99%	56%	28%	16%	
	PEAK HR FACTOR	0.889												
	APP/DEPART	64	/	18	10	/	214	169	/	0	68	/	79	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0

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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Reservoir	PROJECT #: SC2484 LOCATION #: 2 CONTROL: STOP E/W
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	▶ E
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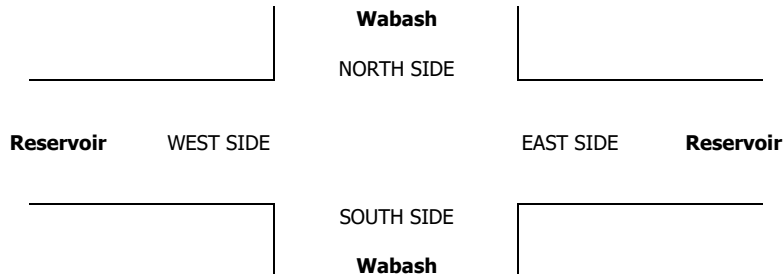
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Reservoir			Reservoir			
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	1	1	0	3	0	0	0	5
	7:15 AM	0	0	0	0	0	0	1	0	1	0	0	0	2
	7:30 AM	0	0	0	0	0	1	0	0	3	1	0	0	5
	7:45 AM	0	0	0	0	1	0	0	0	1	0	2	0	4
	8:00 AM	0	0	0	0	0	0	0	0	2	0	0	0	2
	8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
	8:30 AM	0	0	0	0	0	0	0	2	1	0	0	0	3
	8:45 AM	0	0	0	0	0	0	1	0	3	2	0	0	6
	VOLUMES	0	0	0	0	1	2	3	0	16	4	2	0	28
	APPROACH %	0%	0%	0%	0%	33%	67%	16%	0%	84%	67%	33%	0%	
PM	APP/DEPART	0	/	3	3	/	21	19	/	0	6	/	4	0
	BEGIN PEAK HR	7:00 AM			0	1	2	2	0	8	1	2	0	16
	VOLUMES	0	0	0	0	1	2	2	0	8	1	2	0	
	APPROACH %	0%	0%	0%	0%	33%	67%	20%	0%	80%	33%	67%	0%	
	PEAK HR FACTOR	0.000			0.750			0.625			0.375			0.800
	APP/DEPART	0	/	2	3	/	10	10	/	0	3	/	4	0
	4:00 PM	1	0	0	0	0	0	0	0	0	0	1	1	3
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	1	0	0	0	0	0	0	4	0	0	0	5
	4:45 PM	0	0	0	0	0	0	0	0	1	1	0	0	2
	5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
	5:15 PM	1	0	0	0	0	0	0	0	0	0	0	1	2
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
	VOLUMES	3	1	0	0	0	0	0	0	6	1	1	2	14
	APPROACH %	75%	25%	0%	0%	0%	0%	0%	0%	100%	25%	25%	50%	
	APP/DEPART	4	/	3	0	/	7	6	/	0	4	/	4	0
	BEGIN PEAK HR	4:00 PM			0	0	0	0	0	5	1	1	1	10
	VOLUMES	1	1	0	0	0	0	0	0	5	1	1	1	
	APPROACH %	50%	50%	0%	0%	0%	0%	0%	0%	100%	33%	33%	33%	
	PEAK HR FACTOR	0.500			0.000			0.313			0.375			0.500
	APP/DEPART	2	/	2	0	/	6	5	/	0	3	/	2	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Reservoir	PROJECT #: SC2484 LOCATION #: 2 CONTROL: STOP E/W
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CLASS 3:	NOTES:	AM	PM	MD	OTHER	OTHER
3-AXLE TRUCKS						

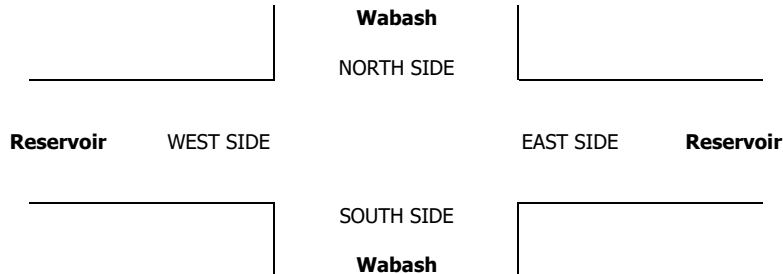
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Reservoir			Reservoir			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	1
	7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	2
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
	8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
	VOLUMES	0	0	0	0	0	0	2	0	3	0	0	1	6
	APPROACH %	0%	0%	0%	0%	0%	0%	40%	0%	60%	0%	0%	100%	
PM	APP/DEPART	0	/	1	0	/	3	5	/	0	1	/	2	0
	BEGIN PEAK HR	8:00 AM												
	VOLUMES	0	0	0	0	0	0	0	0	3	0	0	0	3
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.750			0.000			0.750
	APP/DEPART	0	/	0	0	/	3	3	/	0	0	/	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	2	0	0	0	0	0	0	0	0	0	0	0	2
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	2	/	0	0	/	0	0	/	0	0	/	2	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	2	0	0	0	0	0	0	0	0	0	0	0	2
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.250			0.000			0.000			0.000			0.250
	APP/DEPART	2	/	0	0	/	0	0	/	0	0	/	2	0

0	0	1	0	1
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0	0	0	0	0
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0	0	2	0	2

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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
1/15/20
WEDNESDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Wabash
Reservoir

PROJECT #:
LOCATION #:
CONTROL:

SC2484
2
STOP E/W

CLASS 4:	NOTES:	AM		▲	
4 OR MORE AXLE TRUCKS		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

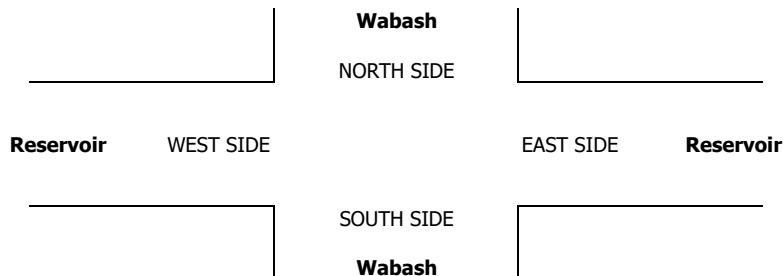
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Reservoir			Reservoir			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	1	0	1
	7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1
	7:30 AM	0	0	0	0	0	0	0	0	1	0	0	1
	7:45 AM	0	0	0	0	0	0	0	0	1	0	0	1
	8:00 AM	0	0	0	0	1	0	0	0	0	0	0	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	1	0	0	0	0	0	0	1
	8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
	VOLUMES	0	0	0	0	1	1	0	0	0	3	2	0
	APPROACH %	0%	0%	0%	0%	50%	50%	0%	0%	0%	60%	40%	0%
PM	APP/DEPART	0	/	0	2	/	4	0	/	0	5	/	3
	BEGIN PEAK HR	7:15 AM											
	VOLUMES	0	0	0	0	0	1	0	0	0	3	0	0
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
	PEAK HR FACTOR	0.000			0.250			0.000			0.750		
	APP/DEPART	0	/	0	1	/	3	0	/	0	3	/	1
	4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1
	4:15 PM	0	0	0	0	0	0	0	1	0	0	0	1
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	1	0	1	0	2
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	0%	
	APP/DEPART	0	/	0	0	/	1	1	/	0	1	/	1
	BEGIN PEAK HR	3:30 PM											
	VOLUMES	0	0	0	0	0	0	0	1	0	1	0	2
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	0%	
	PEAK HR FACTOR	0.000			0.000			0.250			0.250		
	APP/DEPART	0	/	0	0	/	1	1	/	0	1	/	1

0	0	0	0	0
0	0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 1/15/20 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Redlands Wabash Reservoir	PROJECT #: LOCATION #: CONTROL:	SC2484 2 STOP E/W
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CLASS 5:	NOTES:	AM		▲	
RV		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

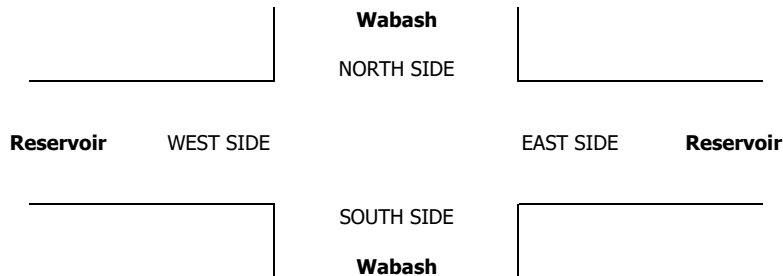
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Reservoir			Reservoir			
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	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
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
PM	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	7:00 AM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM			0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
1/15/20
WEDNESDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Redlands
Wabash
Reservoir

PROJECT #:
LOCATION #:
CONTROL:

SC2484
2
STOP E/W

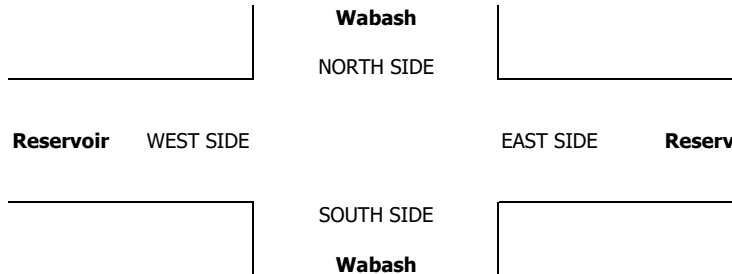
CLASS 6:	NOTES:	AM		▲	
BUSES		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Wabash			Wabash			Reservoir			Reservoir			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	1	0	0	1	0	

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

AM	7:00 AM	0	0	0	0	0	0	0	2	0	0	0	2
	7:15 AM	1	0	0	0	0	0	0	0	0	0	0	1
	7:30 AM	1	0	0	0	0	0	0	0	0	0	0	1
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	2	0	0	0	0	0	0	2	0	0	0	4
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	
PM	APP/DEPART	2	/	0	0	/	2	2	/	0	0	/	2
	BEGIN PEAK HR	7:00 AM											
	VOLUMES	2	0	0	0	0	0	0	2	0	0	0	4
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	
	PEAK HR FACTOR	0.500			0.000			0.250			0.000		
	APP/DEPART	2	/	0	0	/	2	2	/	0	0	/	2
	4:00 PM	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
	4:30 PM	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
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0
	BEGIN PEAK HR	3:00 PM											
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR	0.000			0.000			0.000			0.000		
	APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



APPENDIX D

INTERSECTION LEVEL OF SERVICE WORKSHEETS

EXISTING

Vistro File: C:\...\AME.vistro
Report File: C:\...\AME.pdf

Terracina at Redlands (TTM 20320)

Scenario 1 Existing AM Peak Hour
7/28/2021

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Ford St (NS) at Reservoir Rd (EW)	Two-way stop	HCM 6th Edition	WB Left	1.375	3,703.7	F
2	Wabash Ave (NS) at Panorama Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	0.002	8.8	A
6	Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)	Two-way stop	HCM 6th Edition	WB Left	0.072	16.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Ford St (NS) at Reservoir Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	3,703.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.375

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	365	303	76	90	270	208	0	0	0	69	78	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	309	78	92	275	212	0	0	0	70	80	101
Peak Hour Factor	0.9740	0.9740	0.9740	0.9740	0.9740	0.9740	0.9500	0.9500	0.9500	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	79	20	24	71	54	0	0	0	18	21	26
Total Analysis Volume [veh/h]	382	317	80	94	282	218	0	0	0	72	82	104
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	1.38	1.47	0.14
d_M, Delay for Movement [s/veh]	10.04	0.00	0.00	8.30	0.00	0.00	0.00	0.00	0.00	3703.65	3698.96	3637.81
Movement LOS	B	A	A	A	A	A				F	F	F
95th-Percentile Queue Length [veh/ln]	1.56	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	87.69	87.69	87.69
95th-Percentile Queue Length [ft/ln]	38.88	0.00	0.00	6.32	0.00	0.00	0.00	0.00	0.00	2192.13	2192.13	2192.13
d_A, Approach Delay [s/veh]	4.92			1.32			0.00			3675.66		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	583.44											
Intersection LOS	F											

Intersection Level Of Service Report**Intersection 2: Wabash Ave (NS) at Panorama Dr (EW)**





Control Type:
Analysis Method:
Analysis Period:

Two-way stop
HCM 6th Edition
1 hour

Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

8.8
A
0.002

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	2	9	4	3	20	0	2	0	0	4	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	9	4	3	20	0	2	0	0	4	0	4
Peak Hour Factor	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	3	1	1	7	0	1	0	0	1	0	1
Total Analysis Volume [veh/h]	3	12	5	4	26	0	3	0	0	5	0	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0





Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.24	0.00	0.00	7.23	0.00	0.00	8.76	9.24	8.39	8.76	9.25	8.37
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.09	0.09	0.09	0.14	0.14	0.14	0.16	0.16	0.16	0.59	0.59	0.59
d_A, Approach Delay [s/veh]	0.97			0.94			8.76			8.57		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.55											
Intersection LOS	A											

Intersection Level Of Service Report**Intersection 6: Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.072

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	177	6	0	0	19	6	5	0	141	28	78	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.00	1.00	1.02	1.02	1.02	1.00	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	6	0	0	19	6	5	0	144	29	80	5
Peak Hour Factor	0.6980	0.6980	0.9500	0.9500	0.6980	0.6980	0.6980	0.9500	0.6980	0.6980	0.6980	0.6980
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	2	0	0	7	2	2	0	52	10	29	2
Total Analysis Volume [veh/h]	259	9	0	0	27	9	7	0	206	42	115	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.14	0.07	0.17	0.00
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	0.00	0.00	0.00	14.04	0.00	9.01	16.31	14.85	10.75
Movement LOS	A	A			A	A	B		A	C	B	B
95th-Percentile Queue Length [veh/ln]	0.38	0.38	0.00	0.00	0.00	0.00	0.52	0.00	0.52	0.95	0.95	0.95
95th-Percentile Queue Length [ft/ln]	9.54	9.54	0.00	0.00	0.00	0.00	12.95	0.00	12.95	23.73	23.73	23.73
d_A, Approach Delay [s/veh]	7.29			0.00			9.18			15.04		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	9.36											
Intersection LOS	C											

Vistro File: C:\...\PME.vistro
Report File: C:\...\PME.pdf

Scenario 1 Existing PM Peak Hour
7/28/2021

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Ford St (NS) at Reservoir Rd (EW)	Two-way stop	HCM 6th Edition	WB Left	0.165	83.1	F
2	Wabash Ave (NS) at Panorama Dr (EW)	Two-way stop	HCM 6th Edition	WB Right	0.002	8.4	A
6	Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)	Two-way stop	HCM 6th Edition	WB Left	0.070	11.8	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Ford St (NS) at Reservoir Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	83.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.165

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	250	461	142	47	150	115	0	0	0	18	52	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	470	145	48	153	117	0	0	0	18	53	40
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9500	0.9500	0.9500	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	127	39	13	41	32	0	0	0	5	14	11
Total Analysis Volume [veh/h]	277	510	157	52	166	127	0	0	0	20	57	43
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.17	0.45	0.07
d_M, Delay for Movement [s/veh]	8.43	0.00	0.00	8.89	0.00	0.00	0.00	0.00	0.00	83.11	80.87	56.07
Movement LOS	A	A	A	A	A	A				F	F	F
95th-Percentile Queue Length [veh/ln]	0.73	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	5.41	5.41	5.41
95th-Percentile Queue Length [ft/ln]	18.19	0.00	0.00	3.88	0.00	0.00	0.00	0.00	0.00	135.15	135.15	135.15
d_A, Approach Delay [s/veh]	2.47			1.34			0.00			72.30		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	8.16											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: Wabash Ave (NS) at Panorama Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.002

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	20	1	6	11	0	0	0	0	0	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	20	1	6	11	0	0	0	0	0	0	2
Peak Hour Factor	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	8	0	2	4	0	0	0	0	0	0	1
Total Analysis Volume [veh/h]	0	32	2	10	18	0	0	0	0	0	0	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0





Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.25	0.00	0.00	8.76	9.24	8.35	8.75	9.25	8.39
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.28	0.28	0.28	0.00	0.00	0.00	0.14	0.14	0.14
d_A, Approach Delay [s/veh]	0.00			2.56			8.78			8.39		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	1.51											
Intersection LOS	A											

Intersection Level Of Service Report**Intersection 6: Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.070

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	61	7	0	0	9	1	2	0	176	40	19	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.00	1.00	1.02	1.02	1.02	1.00	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	7	0	0	9	1	2	0	180	41	19	13
Peak Hour Factor	0.9330	0.9330	0.9500	0.9500	0.9330	0.9330	0.9330	0.9500	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	2	0	0	2	0	1	0	48	11	5	3
Total Analysis Volume [veh/h]	66	8	0	0	10	1	2	0	193	44	20	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.07	0.03	0.01
d_M, Delay for Movement [s/veh]	7.31	0.00	0.00	0.00	0.00	0.00	10.39	0.00	9.02	11.75	10.61	8.97
Movement LOS	A	A			A	A	B		A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.12	0.12	0.00	0.00	0.00	0.00	0.61	0.00	0.61	0.36	0.36	0.36
95th-Percentile Queue Length [ft/ln]	2.98	2.98	0.00	0.00	0.00	0.00	15.30	0.00	15.30	9.05	9.05	9.05
d_A, Approach Delay [s/veh]	6.57			0.00			9.04			10.96		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.68											
Intersection LOS	B											

EXISTING PLUS PROJECT

Terracina at Redlands (TTM 20320)

Vistro File: C:\...\AME.vistro

Scenario 2 Existing Plus Project AM Peak Hour

Report File: C:\...\AMEP.pdf

7/28/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Ford St (NS) at Reservoir Rd (EW)	Two-way stop	HCM 6th Edition	WB Left	1.500	4,279.8	F
2	Wabash Ave (NS) at Panorama Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	0.002	8.8	A
3	Wabash Ave (NS) at Project "Street C" (EW)	Two-way stop	HCM 6th Edition	EB Left	0.002	8.8	A
4	Wabash Ave (NS) at Project "Street A" (EW)	Two-way stop	HCM 6th Edition	EB Left	0.002	8.9	A
5	Wabash Ave (NS) at Project "Street G" (EW)	Two-way stop	HCM 6th Edition	WB Left	0.012	8.9	A
6	Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)	Two-way stop	HCM 6th Edition	WB Left	0.075	16.9	C




V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Ford St (NS) at Reservoir Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	4,279.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.500

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	365	303	76	90	270	208	0	0	0	69	78	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	6	1	0	0	0	0	0	6	10	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	309	84	93	275	212	0	0	0	76	90	105
Peak Hour Factor	0.9740	0.9740	0.9740	0.9740	0.9740	0.9740	0.9500	0.9500	0.9500	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	79	22	24	71	54	0	0	0	20	23	27
Total Analysis Volume [veh/h]	382	317	86	95	282	218	0	0	0	78	92	108
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	1.50	1.66	0.14
d_M, Delay for Movement [s/veh]	10.04	0.00	0.00	8.32	0.00	0.00	0.00	0.00	0.00	4279.79	4275.06	4213.63
Movement LOS	B	A	A	A	A	A				F	F	F
95th-Percentile Queue Length [veh/ln]	1.56	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	98.58	98.58	98.58
95th-Percentile Queue Length [ft/ln]	38.88	0.00	0.00	6.43	0.00	0.00	0.00	0.00	0.00	2464.38	2464.38	2464.38
d_A, Approach Delay [s/veh]	4.88			1.33			0.00			4252.58		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	715.94											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: Wabash Ave (NS) at Panorama Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.002

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	2	9	4	3	20	0	2	0	0	4	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	15	4	3	22	0	2	0	0	4	0	4
Peak Hour Factor	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690	0.7690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	1	1	7	0	1	0	0	1	0	1
Total Analysis Volume [veh/h]	3	20	5	4	29	0	3	0	0	5	0	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.24	0.00	0.00	7.24	0.00	0.00	8.81	9.29	8.40	8.80	9.30	8.40
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.09	0.09	0.09	0.14	0.14	0.14	0.16	0.16	0.16	0.60	0.60	0.60
d_A, Approach Delay [s/veh]	0.69			0.87			8.81			8.60		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.19											
Intersection LOS	A											

Intersection Level Of Service Report**Intersection 3: Wabash Ave (NS) at Project "Street C" (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	16	25	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	4	1	1	2	14
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	20	27	1	2	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	7	0	1	4
Total Analysis Volume [veh/h]	5	21	28	1	2	15
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.26	0.00	0.00	0.00	8.84	8.47
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.24	0.24	0.00	0.00	1.17	1.17
d_A, Approach Delay [s/veh]	1.45		0.00		8.52	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.50					
Intersection LOS	A					

Intersection Level Of Service Report**Intersection 4: Wabash Ave (NS) at Project "Street A" (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	16	25	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	7	14	1	2	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	23	40	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	6	11	0	1	2
Total Analysis Volume [veh/h]	2	24	42	1	2	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	0.00	8.85	8.50
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.09	0.09	0.00	0.00	0.60	0.60
d_A, Approach Delay [s/veh]	0.58		0.00		8.59	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.13					
Intersection LOS	A					

Intersection Level Of Service Report**Intersection 5: Wabash Ave (NS) at Project "Street G" (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.012

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	16	0	0	25	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	4	1	20	11	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	4	1	46	11	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	0	12	3	1
Total Analysis Volume [veh/h]	24	4	1	48	12	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results





V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	8.90	8.46
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.05	0.05	1.04	1.04
d_A, Approach Delay [s/veh]	0.00		0.15		8.83	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.40					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 6: Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.075

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	177	6	0	0	19	6	5	0	141	28	78	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.00	1.00	1.02	1.02	1.02	1.00	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	11	20	7	0	0	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	7	0	0	30	26	12	0	144	29	80	8
Peak Hour Factor	0.6980	0.6980	0.9500	0.9500	0.6980	0.6980	0.6980	0.9500	0.6980	0.6980	0.6980	0.6980
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	3	0	0	11	9	4	0	52	10	29	3
Total Analysis Volume [veh/h]	259	10	0	0	43	37	17	0	206	42	115	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.14	0.07	0.17	0.01
d_M, Delay for Movement [s/veh]	7.61	0.00	0.00	0.00	0.00	0.00	14.63	0.00	9.28	16.92	15.44	11.00
Movement LOS	A	A			A	A	B		A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.00	0.00	0.00	0.00	0.61	0.00	0.61	1.02	1.02	1.02
95th-Percentile Queue Length [ft/ln]	9.83	9.83	0.00	0.00	0.00	0.00	15.21	0.00	15.21	25.47	25.47	25.47
d_A, Approach Delay [s/veh]	7.32			0.00			9.69			15.51		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	9.10											
Intersection LOS	C											

Terracina at Redlands (TTM 20320)

Vistro File: C:\...\PME.vistro

Report File: C:\...\PMEP.pdf

Scenario 2 Existing Plus Project PM Peak Hour

7/28/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Ford St (NS) at Reservoir Rd (EW)	Two-way stop	HCM 6th Edition	WB Left	0.206	114.7	F
2	Wabash Ave (NS) at Panorama Dr (EW)	Two-way stop	HCM 6th Edition	WB Right	0.002	8.4	A
3	Wabash Ave (NS) at Project "Street C" (EW)	Two-way stop	HCM 6th Edition	EB Left	0.002	8.9	A
4	Wabash Ave (NS) at Project "Street A" (EW)	Two-way stop	HCM 6th Edition	EB Left	0.001	8.9	A
5	Wabash Ave (NS) at Project "Street G" (EW)	Two-way stop	HCM 6th Edition	WB Left	0.009	8.9	A
6	Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)	Two-way stop	HCM 6th Edition	WB Left	0.072	12.0	B




V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Ford St (NS) at Reservoir Rd (EW)

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 1 hour

Delay (sec / veh): 114.7
 Level Of Service: F
 Volume to Capacity (v/c): 0.206

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	250	461	142	47	150	115	0	0	0	18	52	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	19	4	0	0	0	0	0	4	7	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	470	164	52	153	117	0	0	0	22	60	43
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9500	0.9500	0.9500	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	127	44	14	41	32	0	0	0	6	16	12
Total Analysis Volume [veh/h]	277	510	178	56	166	127	0	0	0	24	65	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.21	0.52	0.07
d_M, Delay for Movement [s/veh]	8.43	0.00	0.00	8.97	0.00	0.00	0.00	0.00	0.00	114.71	112.37	87.07
Movement LOS	A	A	A	A	A	A				F	F	F
95th-Percentile Queue Length [veh/ln]	0.73	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	7.95	7.95	7.95
95th-Percentile Queue Length [ft/ln]	18.19	0.00	0.00	4.30	0.00	0.00	0.00	0.00	0.00	198.76	198.76	198.76
d_A, Approach Delay [s/veh]	2.42			1.45			0.00			104.08		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	11.70											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: Wabash Ave (NS) at Panorama Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.002

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	20	1	6	11	0	0	0	0	0	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	24	1	6	17	0	0	0	0	0	0	2
Peak Hour Factor	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	10	0	2	7	0	0	0	0	0	0	1
Total Analysis Volume [veh/h]	0	38	2	10	27	0	0	0	0	0	0	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.23	0.00	0.00	7.25	0.00	0.00	8.81	9.30	8.37	8.81	9.30	8.41
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.28	0.28	0.28	0.00	0.00	0.00	0.14	0.14	0.14
d_A, Approach Delay [s/veh]	0.00			1.89			8.83			8.41		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	1.21											
Intersection LOS	A											

Intersection Level Of Service Report**Intersection 3: Wabash Ave (NS) at Project "Street C" (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	22	10	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	2	4	2	2	9
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	24	14	2	2	9
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	6	4	1	1	2
Total Analysis Volume [veh/h]	17	25	15	2	2	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.25	0.00	0.00	0.00	8.91	8.40
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.75	0.75	0.00	0.00	0.80	0.80
d_A, Approach Delay [s/veh]	2.90		0.00		8.49	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.13					
Intersection LOS	A					

Intersection Level Of Service Report**Intersection 4: Wabash Ave (NS) at Project "Street A" (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.001

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	22	10	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	17	11	2	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	39	21	2	1	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	10	6	1	0	1
Total Analysis Volume [veh/h]	6	41	22	2	1	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.25	0.00	0.00	0.00	8.88	8.41
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.28	0.28	0.00	0.00	0.36	0.36
d_A, Approach Delay [s/veh]	0.97		0.00		8.50	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.18					
Intersection LOS	A					

Intersection Level Of Service Report**Intersection 5: Wabash Ave (NS) at Project "Street G" (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	22	0	0	10	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	14	2	13	8	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	14	2	23	8	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	4	1	6	2	0
Total Analysis Volume [veh/h]	46	15	2	24	8	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0





Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	8.91	8.56
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.10	0.10	0.73	0.73
d_A, Approach Delay [s/veh]	0.00		0.58		8.87	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.03					
Intersection LOS	A					

Intersection Level Of Service Report**Intersection 6: Wabash Ave (NS) at 1-10 WB Off-Ramp (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.072

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	61	7	0	0	9	1	2	0	176	40	19	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.00	1.00	1.02	1.02	1.02	1.00	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	0	7	14	23	0	0	0	0	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	9	0	0	16	15	25	0	180	41	19	24
Peak Hour Factor	0.9330	0.9330	0.9500	0.9500	0.9330	0.9330	0.9330	0.9500	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	2	0	0	4	4	7	0	48	11	5	6
Total Analysis Volume [veh/h]	66	10	0	0	17	16	27	0	193	44	20	26
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.17	0.07	0.03	0.02
d_M, Delay for Movement [s/veh]	7.35	0.00	0.00	0.00	0.00	0.00	10.83	0.00	9.32	12.00	10.83	9.05
Movement LOS	A	A			A	A	B		A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.12	0.12	0.00	0.00	0.00	0.00	0.77	0.00	0.77	0.41	0.41	0.41
95th-Percentile Queue Length [ft/ln]	3.03	3.03	0.00	0.00	0.00	0.00	19.20	0.00	19.20	10.29	10.29	10.29
d_A, Approach Delay [s/veh]	6.42			0.00			9.50			10.89		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.49											
Intersection LOS	B											

**EXISTING PLUS PROJECT
WITH IMPROVEMENTS**

Terracina at Redlands (TTM 20320)

Vistro File: C:\...\AME.vistro

Scenario 3 Existing Plus Project AM Peak Hour - With
Improvements

Report File: C:\...\AMEPI.pdf

7/28/2021

Intersection Analysis Summary


ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Ford St (NS) at Reservoir Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.760	21.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Ford St (NS) at Reservoir Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.760

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	365	303	76	90	270	208	0	0	0	69	78	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	6	1	0	0	0	0	0	6	10	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	309	84	93	275	212	0	0	0	76	90	105
Peak Hour Factor	0.9740	0.9740	0.9740	0.9740	0.9740	0.9740	0.9500	0.9500	0.9500	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	79	22	24	71	54	0	0	0	20	23	27
Total Analysis Volume [veh/h]	382	317	86	95	282	218	0	0	0	78	92	108
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	0	0	0	7	0
Maximum Green [s]	130	130	0	130	130	0	0	0	0	0	130	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	19	0	24	24	0	0	0	0	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No						No	
Maximum Recall	No	No		No	No						No	
Pedestrian Recall	No	No		No	No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C		C
C, Cycle Length [s]	60	60	60	60	60		60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00		4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00		0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00		2.00
g_i, Effective Green Time [s]	16	31	31	6	21		11
g / C, Green / Cycle	0.27	0.52	0.52	0.09	0.34		0.19
(v / s)_i Volume / Saturation Flow Rate	0.23	0.17	0.05	0.06	0.29		0.16
s, saturation flow rate [veh/h]	1619	1800	1530	1619	1672		1663
c, Capacity [veh/h]	433	930	791	149	571		318
d1, Uniform Delay [s]	20.93	8.46	7.42	26.26	18.36		23.47
k, delay calibration	0.11	0.50	0.50	0.11	0.11		0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00		1.00
d2, Incremental Delay [s]	5.40	0.96	0.27	4.30	3.88		6.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00		0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00		1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00		1.00

Lane Group Results

X, volume / capacity	0.86	0.33	0.11	0.62	0.85		0.85
d, Delay for Lane Group [s/veh]	26.33	9.42	7.69	30.56	22.24		30.34
Lane Group LOS	C	A	A	C	C		C
Critical Lane Group	Yes	No	No	No	Yes		Yes
50th-Percentile Queue Length [veh/ln]	4.94	2.01	0.48	1.34	5.86		3.82
50th-Percentile Queue Length [ft/ln]	123.51	50.18	11.96	33.56	146.48		95.51
95th-Percentile Queue Length [veh/ln]	8.59	3.61	0.86	2.42	9.83		6.88
95th-Percentile Queue Length [ft/ln]	214.64	90.32	21.53	60.41	245.73		171.92

Movement, Approach, & Intersection Results

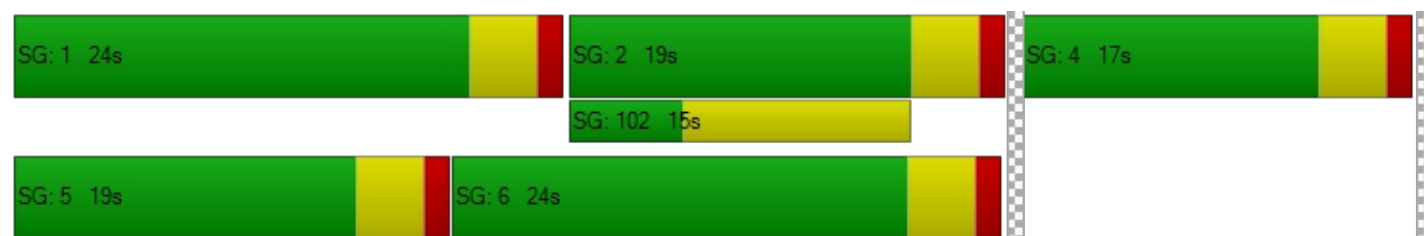
d_M, Delay for Movement [s/veh]	26.33	9.42	7.69	30.56	22.24	22.24	0.00	0.00	0.00	30.34	30.34	30.34
Movement LOS	C	A	A	C	C	C				C	C	C
d_A, Approach Delay [s/veh]	17.46			23.57			0.00			30.34		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	21.81											
Intersection LOS	C											
Intersection V/C	0.760											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			21.68		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			2.023		
Crosswalk LOS	F			F			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			667			0			433		
d_b, Bicycle Delay [s]	16.88			13.33			30.00			18.41		
I_b,int, Bicycle LOS Score for Intersection	2.822			2.517			4.132			2.007		
Bicycle LOS	C			B			D			B		

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Terracina at Redlands (TTM 20320)

Vistro File: C:\...\PME.vistro

Scenario 3 Existing Plus Project PM Peak Hour - With
Improvements

Report File: C:\...\PMEPI.pdf

7/28/2021

Intersection Analysis Summary


ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Ford St (NS) at Reservoir Rd (EW)	Signalized	HCM 6th Edition	WB Thru	0.437	14.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Ford St (NS) at Reservoir Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.437

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	250	461	142	47	150	115	0	0	0	18	52	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	19	4	0	0	0	0	0	4	7	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	470	164	52	153	117	0	0	0	22	60	43
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9500	0.9500	0.9500	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	127	44	14	41	32	0	0	0	6	16	12
Total Analysis Volume [veh/h]	277	510	178	56	166	127	0	0	0	24	65	47
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	0	0	0	7	0
Maximum Green [s]	130	130	0	130	130	0	0	0	0	0	130	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	14	19	0	11	16	0	0	0	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No						No	
Maximum Recall	No	No		No	No						No	
Pedestrian Recall	No	No		No	No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C		C
C, Cycle Length [s]	60	60	60	60	60		60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00		4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00		0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00		2.00
g_i, Effective Green Time [s]	12	38	38	4	30		6
g / C, Green / Cycle	0.19	0.63	0.63	0.07	0.51		0.10
(v / s)_i Volume / Saturation Flow Rate	0.16	0.26	0.11	0.03	0.16		0.07
s, saturation flow rate [veh/h]	1619	1800	1530	1619	1672		1683
c, Capacity [veh/h]	311	1133	963	110	845		173
d1, Uniform Delay [s]	23.25	5.58	4.62	26.94	8.77		26.12
k, delay calibration	0.11	0.50	0.50	0.11	0.11		0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00		1.00
d2, Incremental Delay [s]	5.56	1.13	0.38	3.12	0.22		5.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00		0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00		1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00		1.00

Lane Group Results

X, volume / capacity	0.82	0.41	0.17	0.47	0.32		0.72
d, Delay for Lane Group [s/veh]	28.81	6.71	5.01	30.06	8.98		31.93
Lane Group LOS	C	A	A	C	A		C
Critical Lane Group	Yes	No	No	No	Yes		Yes
50th-Percentile Queue Length [veh/ln]	3.55	2.16	0.62	0.75	1.63		1.82
50th-Percentile Queue Length [ft/ln]	88.72	53.96	15.59	18.79	40.75		45.46
95th-Percentile Queue Length [veh/ln]	6.39	3.89	1.12	1.35	2.93		3.27
95th-Percentile Queue Length [ft/ln]	159.69	97.13	28.06	33.82	73.34		81.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.81	6.71	5.01	30.06	8.98	8.98	0.00	0.00	0.00	31.93	31.93	31.93
Movement LOS	C	A	A	C	A	A				C	C	C
d_A, Approach Delay [s/veh]	12.74			12.39			0.00			31.93		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	14.45											
Intersection LOS	B											
Intersection V/C	0.437											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			21.68		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			1.945		
Crosswalk LOS	F			F			F			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			400			0			867		
d_b, Bicycle Delay [s]	16.88			19.20			30.00			9.63		
I_b,int, Bicycle LOS Score for Intersection	3.026			2.091			4.132			1.766		
Bicycle LOS	C			B			D			A		

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX E

TRAFFIC SIGNAL WARRANT WORKSHEETS

PEAK HOUR VOLUME WARRANT (Rural Areas)

Existing

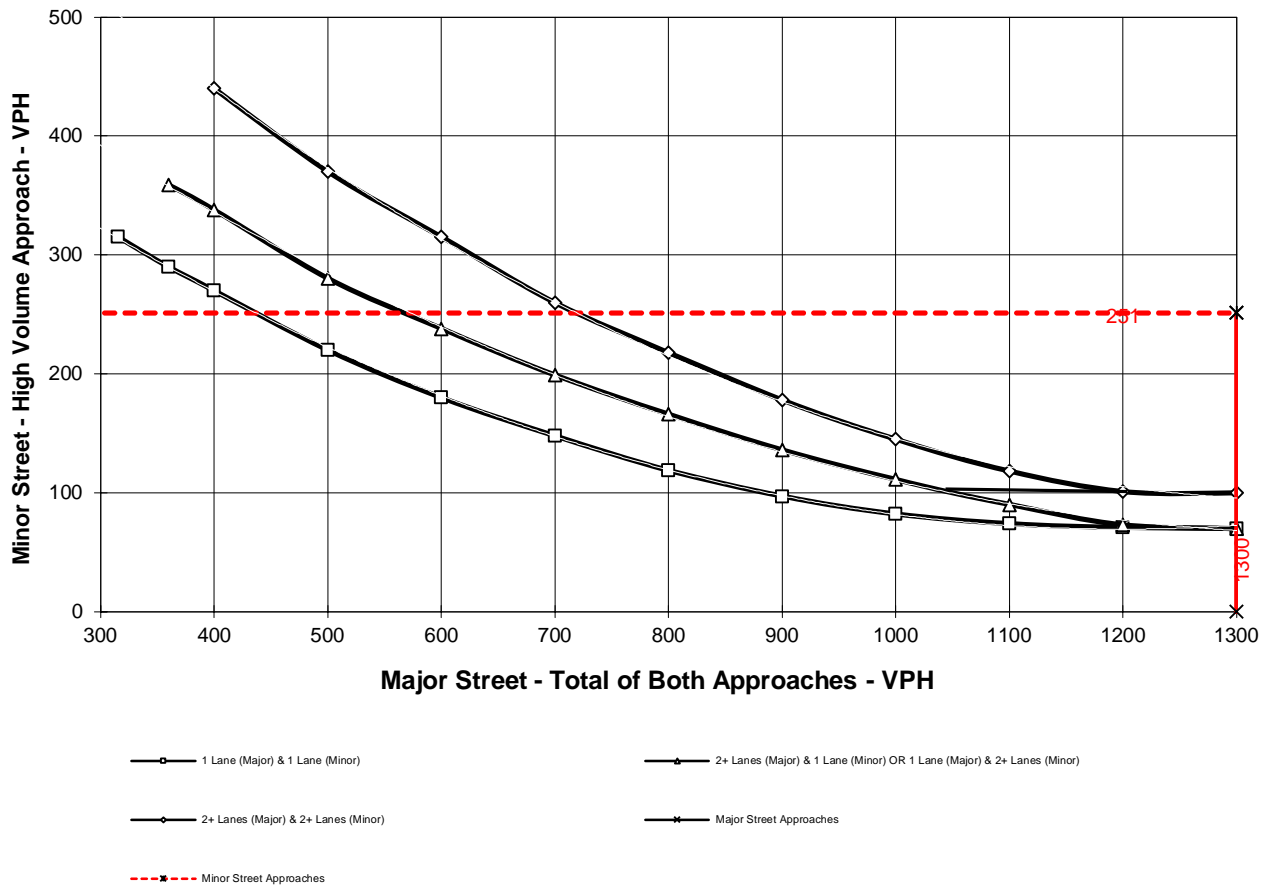
Major Street Name = **Ford Street**

Total of Both Approaches (VPH) = **1338**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Reservoir Road**

High Volume Approach (VPH) = **251**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



* NOTE:

Warrant includes adjustments to right turning movements from the minor approach consistent with CAMUTCD procedures.

** NOTE:

100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.



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