APPENDIX F
Traffic Impact Analysis

Metro South Transit Oriented Development Project

FOCUSED TRAFFIC IMPACT STUDY

Prepared for

Related California

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JN 148971

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

INTRODUCTION

This study analyzes the forecast traffic impact of the proposed Metro South Transit-Oriented Development (TOD) in the City of Rialto. The proposed project consists of 78 residential apartment units along the north side of Bonnie View Drive between Willow Avenue and Riverside Drive. The Metrolink San Bernardino Rail Line is located along the northern boundary of the project site. The Rialto Metrolink Rail Transit Station is located on the north side of the rail line. A future access easement to the Rialto Metrolink Rail Transit Station is proposed along the western boundary of the project site.

Exhibit 1 shows the regional project vicinity.

Project Description

The proposed project consists of a 78-unit multi-family residential Transit-Oriented Development (TOD) located on a vacant 2.6-acre site along the north side of Bonnie View Drive between Willow Avenue and Riverside Drive in the City of Rialto. The project will take access from two driveways along Bonnie View Drive. The two driveways will provide access to 124 parking spaces that will be located along the western, eastern and northern boundaries of the project site.

The project will also include a 2,100 square-foot community center and 1,000 square-foot fitness center that will be provided for the use of the residents. A future access easement to the Rialto Metrolink Rail Transit Station is proposed along the western boundary of the project site.

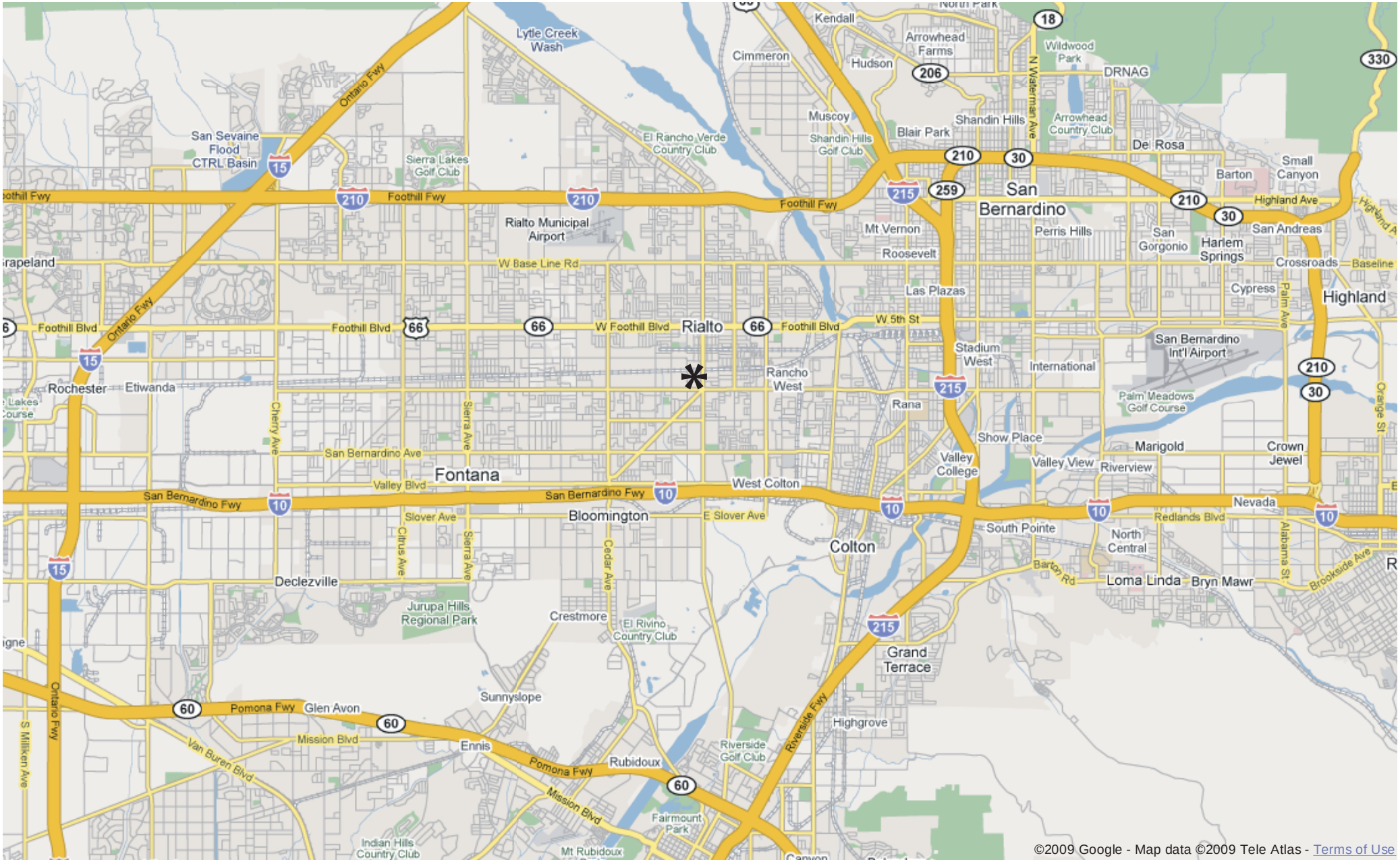
The project site plan is illustrated in **Exhibit 2**.

Project Study Area

The project study area was defined based on direction from the City of Rialto, which includes the following two (2) intersections:

1) Bonnie View Drive / Willow Avenue
2) Bonnie View Drive / Riverside Avenue

All study intersections are currently unsignalized and are controlled by stop signs on the minor street approaches. The project study area is shown in **Exhibit 3**.



Not to Scale

LEGEND

* Project Site

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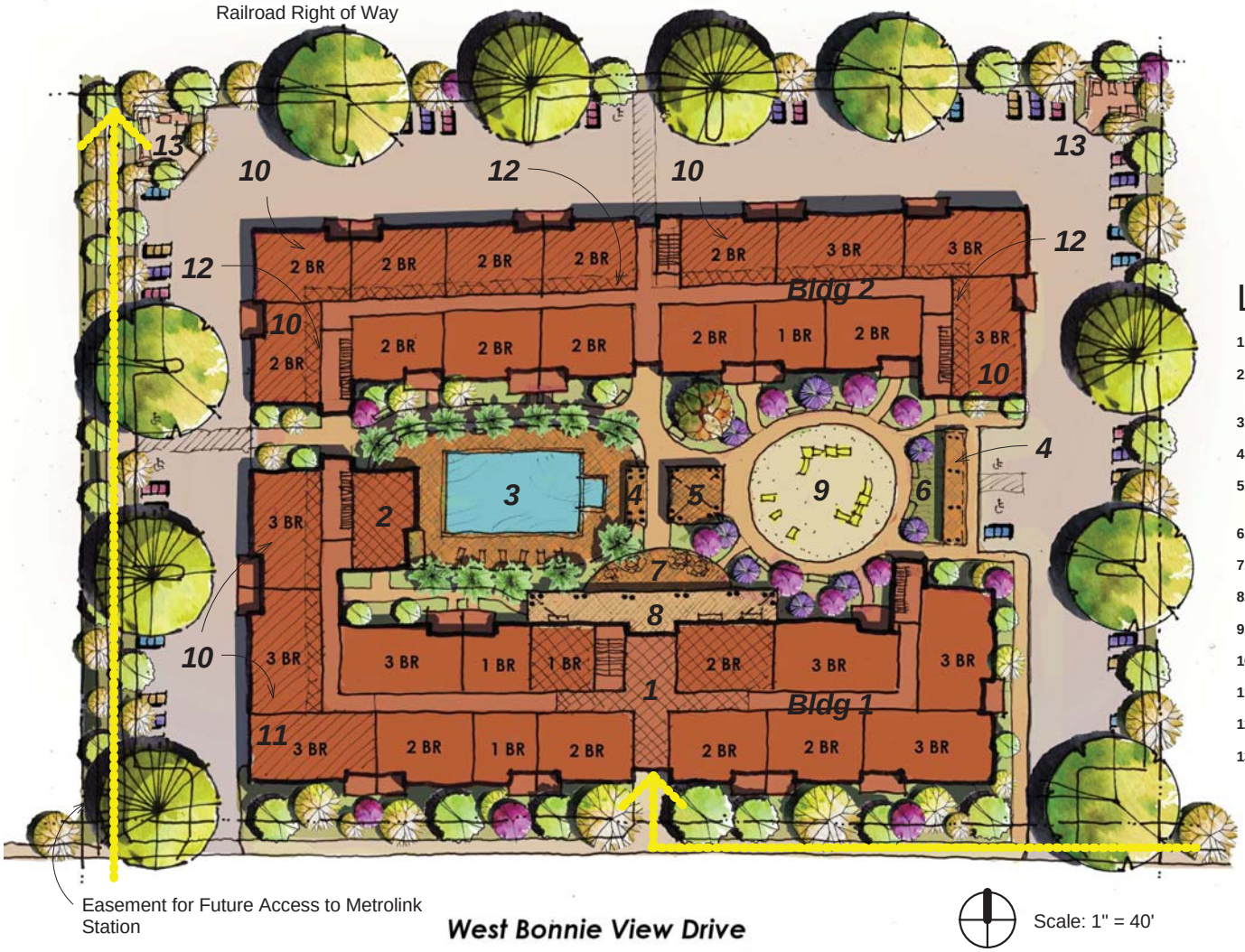
REGIONAL PROJECT VICINITY

EXHIBIT 1



Scale: 1" = 40'

Project Description

This proposal is for a multi-generation residential project consisting of 78 units in a mix of studios, one, two and three bedroom units.

A 2,100 SF community center and offices are provided for the use of the residents and property management. In addition, a 1,000 SF Fitness Center with Cabana and a 50'x30' pool and spa are provided to encourage physical fitness. Community Gardens and a 400 SF pavillion are located at the eastern courtyard opening for spiritual enrichment.

The buildings are three stories with flats accessed by double loaded corridors and partial tuck-under parking. The project is designed in a contemporary Mediterranean architectural style using color and massing to articulate a lively pedestrian friendly streetscape.

Legend

1. **2100 SF Community Center**
2. **1000 SF Fitness/Cabana**
3. **50'x30' Pool**
4. **Pergola**
5. **20'x20' Morning Pavillion (Yoga, etc.)**
6. **Community Gardens**
7. **Plaza**
8. **12'x90' Porch**
9. **50' Diameter Play Circle**
10. **Tuck-Under Parking**
11. **Mech/Elec.**
12. **(78) 5'x5' Bike/Storage**
13. **Trash Recycle**

Project Statistics

Site Area: 113,000 SF (2.6 AC)
Residential Density 30 DU/AC

Residential Unit Mix

Bldg. 1
(18) 3-Bedroom Units
(16) 2-Bedroom Units
(8) 1-BR Units
(42) Units Total

Bldg. 2
(6) 3-Bedroom Units
(27) 2-Bedroom Units
(3) 1-Bedroom Units
(36) Units Total

Aggregate
(24) 3-Bedroom Units
(43) 2 Bedroom Units
(11) 1 Bedroom Units
(78) Units Total

2,100 SF Community Center

Parking
(24) 3-BR Units @ 2 Spaces/Unit = 48 Spaces
(43) 2-BR Units @ 1.5 Spaces/Unit = 65 Spaces
(11) 1-BR Units @ 1 Space/Unit = 11 Spaces
(124) Spaces

Total Parking Provided: 124 Spaces

rrm design group

RELATED

Metro Link Station South Site - Alt. 4

09.15.2015

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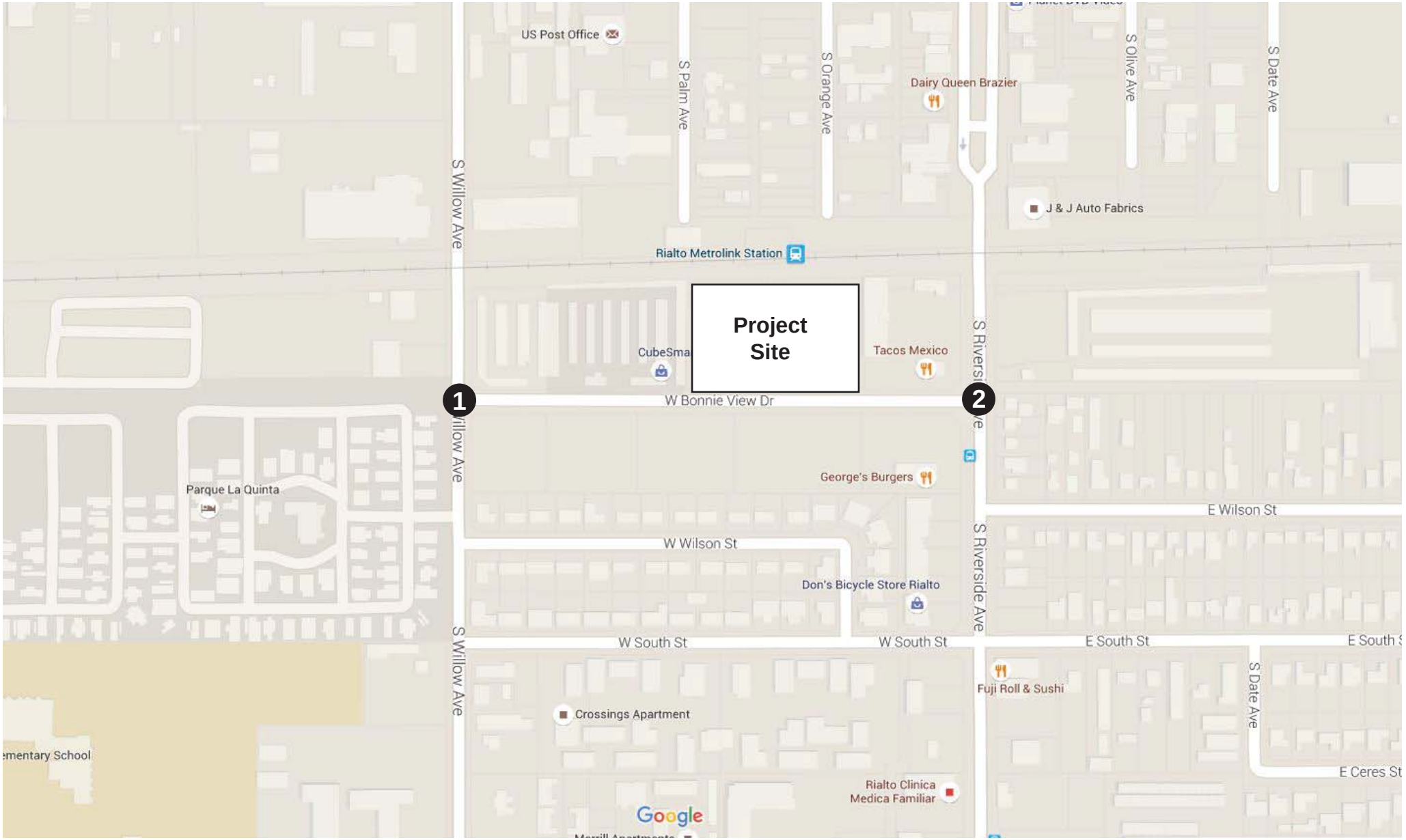
PROJECT SITE PLAN

EXHIBIT 2



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LEGEND

X Study Intersection

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PROJECT STUDY AREA

EXHIBIT 3

ANALYSIS METHODOLOGY

In accordance with the City of Rialto traffic impact study requirements, this study analyzes the following study scenarios:

- **Existing Conditions** – Analysis of existing traffic count volumes, intersection geometry and existing roadway network.

- **Existing Plus Project Conditions** – Analysis of existing traffic volumes overlaid with the forecast traffic generated by the proposed project.

- **Project Completion Year Without Project Conditions** – Analysis of existing traffic volumes plus ambient growth anticipated by project opening year (approximately Year 2018). A growth factor of 5% was applied to the existing traffic volumes to account for the increase in traffic within the study area. The growth factor is based on a 2.0-percent annual growth rate over a two and a half year period (from late 2015 to 2018).

- **Project Completion Year With Project Conditions** – Analysis of existing traffic volumes plus ambient growth overlaid with the forecasted traffic generated by the proposed project.

- **Cumulative Projects Without Project Conditions** – Analysis of existing traffic volumes plus ambient growth plus trips associated with other cumulative projects anticipated to be constructed by project opening year (approximately Year 2018).

- **Cumulative Projects With Project Conditions** – Analysis of existing traffic volumes plus ambient growth plus trips associated with other cumulative projects anticipated to be constructed by project opening year (approximately Year 2018) overlaid with the forecasted traffic generated by the proposed project.

Analysis of all intersections in the project study area is based on the 2000 Highway Capacity Manual (HCM) operation methodology for *Signalized and Unsignalized Intersections* to determine the operating Levels of Service (LOS) of the study intersections. The Traffix™ software package was used to evaluate the study intersections using the HCM methodology. The HCM methodology describes the operation of an intersection using a range of levels of service (LOS) from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on corresponding delay per vehicle thresholds for signalized and unsignalized intersections shown in Table 1.

Table 1
Level of Service & Delay Ranges

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

Source: 2000 Highway Capacity Manual.

The City of Rialto strives to attain LOS D or better for intersection operating conditions during peak traffic periods. The City of Rialto considers a project to have a significant traffic impact if the addition of project trips results in a change in level of service (LOS) from LOS D to LOS E or F, or the following peak hour delay increases:

- LOS A/B – by 10.0 Seconds
- LOS C – by 8.0 Seconds
- LOS D – by 5.0 Seconds
- LOS E - by 2.0 Seconds
- LOS F - by 1.0 Seconds

EXISTING CONDITIONS

Existing Land Use and Zoning

The project site is currently vacant, and is zoned for downtown mixed-use development according to the City of Rialto General Plan and Rialto Central Area Specific Plan.

Existing Roadway Circulation System

The existing intersection lane geometry is illustrated in **Exhibit 4**. The following is a detailed description of roadways in the study area.

Bonnie View Drive is currently constructed as a two-lane undivided roadway through the project study area, and is oriented in an east-west direction. The entirety of Bonnie View Drive is in the project study area with the western terminus at the intersection with Willow Avenue and the eastern terminus at the intersection with Riverside Avenue. Bonnie View Drive currently has no posted speed limit. Bonnie View Drive is currently an unclassified roadway in the City of Rialto 2010 General Plan Circulation Element.

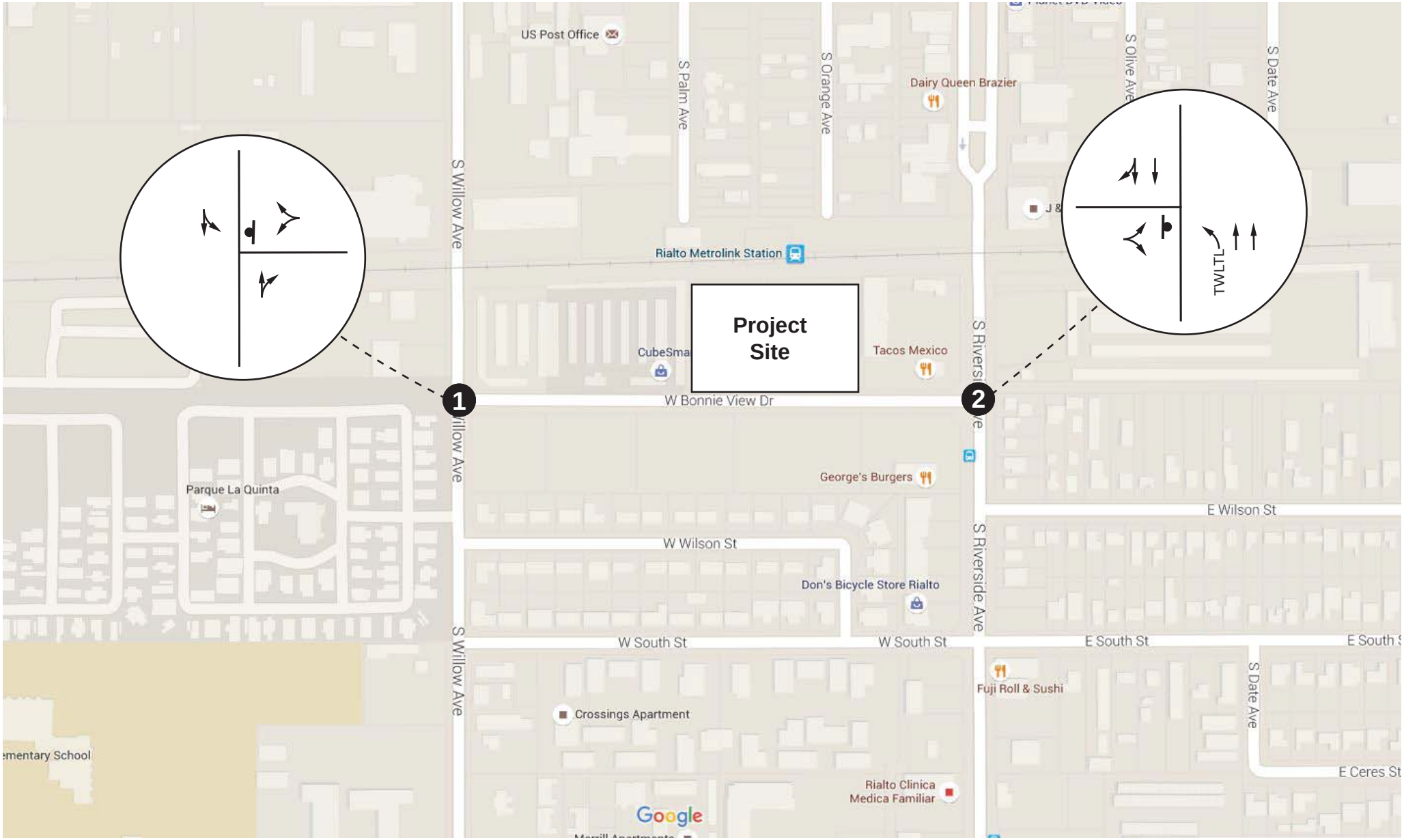
Willow Avenue is currently constructed as a two-lane undivided roadway through the project study area, and is oriented in a north-south direction. Willow Avenue currently has a posted speed limit of 35 miles per hour (mph). Willow Avenue is currently classified as a Collector Street in the City of Rialto 2010 General Plan Circulation Element.

Riverside Avenue is currently constructed as a four-lane roadway with a center two-way left turn lane through the project study area, and is oriented in a north-south direction. Riverside Avenue currently has a posted speed limit of 35 miles per hour (mph). Riverside Avenue is currently classified as a Major Arterial in the City of Rialto 2010 General Plan Circulation Element.

Existing Transit Facilities

As discussed earlier in the report, the project site is bounded along the north side by the Metrolink San Bernardino Rail Line, with the Rialto Metrolink Transit Station directly across the tracks from the project site. However, pedestrian access is prohibited across the rail line and it is approximately a quarter-mile walk between the project site and the Rialto Metrolink Transit Station. A future access easement to the Rialto Metrolink Rail Transit Station is proposed along the western boundary of the project site; however, Metrolink currently has no plans to allow pedestrian access across the rail line.

The Metrolink San Bernardino Line currently provides rail service seven days a week between Los Angeles Union Station and San Bernardino. From Monday through Friday, westbound trains depart the Rialto Metrolink Station toward Los Angeles from 4:07 a.m. to 7:17 p.m. approximately every 60 minutes. Eastbound trains depart the Rialto Metrolink Station toward San Bernardino from 8:12 a.m. to 10:50 p.m. approximately every 60 minutes Monday through Friday. Saturday service from Rialto to/from Los Angeles and San Bernardino is provided between 7:07 a.m. and 12:51 a.m. (early Sunday morning) on a variable schedule, and Sunday service is provided between 7:07 a.m. and 10:26 p.m. on a variable schedule.



LEGEND

X	Study Intersection
	Stop Sign
→	Existing Lane
TWLTL	Two-way Left Turn Lane

Not to Scale

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EXISTING INTERSECTION LANE GEOMETRIES

EXHIBIT 4

The nearest bus facility to the project site is a sheltered bus stop with bench located approximately 500 feet from the project site, along southbound Riverside Avenue approximately 150 feet south of Bonnie View Drive. An unsheltered bus stop is also provided along northbound Riverside Avenue approximately 150 feet north of Bonnie View Avenue.

These two bus stops serve Omnitrans Route 22. Route 22 serves north and south Rialto via Riverside Avenue and Valley Boulevard, extending from Live Oak Avenue at the north end of the City to the Arrowhead Regional Medical Center. Route 22 provides service from 5:00 a.m. to 10:30 p.m. from Monday through Friday, with headways every 30 minutes. Service is provided on Saturdays from 7:30 a.m. to 7:00 p.m., with headways every 60 minutes. Sunday service is provided from 6:30 a.m. to 7:30 p.m. with 60-minute headways.

Existing Pedestrian and Bicycle Facilities

There is no existing sidewalk along the project frontage; however, sidewalks are currently provided along the north side of Bonnie View Drive between Willow Avenue and the project site west boundary, and also between the project site east boundary and Riverside Avenue. When the project is developed, new sidewalk will be constructed along the project frontage, which will provide continuous sidewalk along the north side of Bonnie View Drive between Willow Avenue and Riverside Avenue.

Continuous sidewalks are provided along Willow Avenue and along Riverside Avenue in both directions of travel. From the project site, continuous sidewalk is currently provided to the Rialto Metrolink Transit Station, which is located approximately one-quarter mile by foot from the project site.

Curtis Elementary School is located slightly over a half-mile by foot from the project site, and continuous sidewalk is currently provided along the route between the project site and the school. A pedestrian crosswalk is provided across Willow Avenue on the north leg of the intersection with Orange Avenue one block south of Bonnie View Drive. An existing driveway into a mobile home park is located on the west side of Willow Avenue immediately north of the pedestrian crosswalk, which creates an offset intersection with Orange Avenue.

The location of the existing pedestrian crosswalk between the mobile home park driveway and Orange Avenue creates a potential safety issue for pedestrians using the crosswalk behind a northbound vehicle that is stopped to make a left-turn into the mobile home park driveway, which would be blocking crosswalk visibility for southbound vehicles.

This existing crosswalk is frequently used by children walking to and from Curtis Elementary School, and is likely to be used by residents of the proposed apartment units. As more development occurs in the area, the City may need to consider relocating the crosswalk to the south leg of the Willow Avenue / Orange Avenue intersection to improve the visibility and safety of pedestrians crossing Willow Avenue.

There are currently no bike lanes on any of the roadways within the project study area. Riverside Avenue is designated as a Class III Bike Route in which vehicles and bicyclists share right-of-way of the roadway.

Existing Conditions Levels of Service

To determine the existing operation of the study intersections, intersection turning movement counts were collected in September 2015 on a typical weekday during the a.m. (7:00 to 9:00 a.m.) and p.m. (4:00 to 6:00 p.m.) peak period. The counts were collected by vehicle classification to obtain existing heavy truck traffic count data for the study intersections. Passenger car equivalency (PCE) volumes were developed based on the proportion of vehicle types. The following PCE factors were applied to the vehicle classification counts:

- Cars = 1.0
- Light-Duty Trucks (2 axles) = 1.5
- Medium-Duty Trucks (3 axles) = 2.0
- Heavy-Duty Truck (4+ axles) = 3.0

Exhibit 5 shows existing a.m. and p.m. peak hour traffic volumes. Detailed traffic count data is provided in Appendix A.

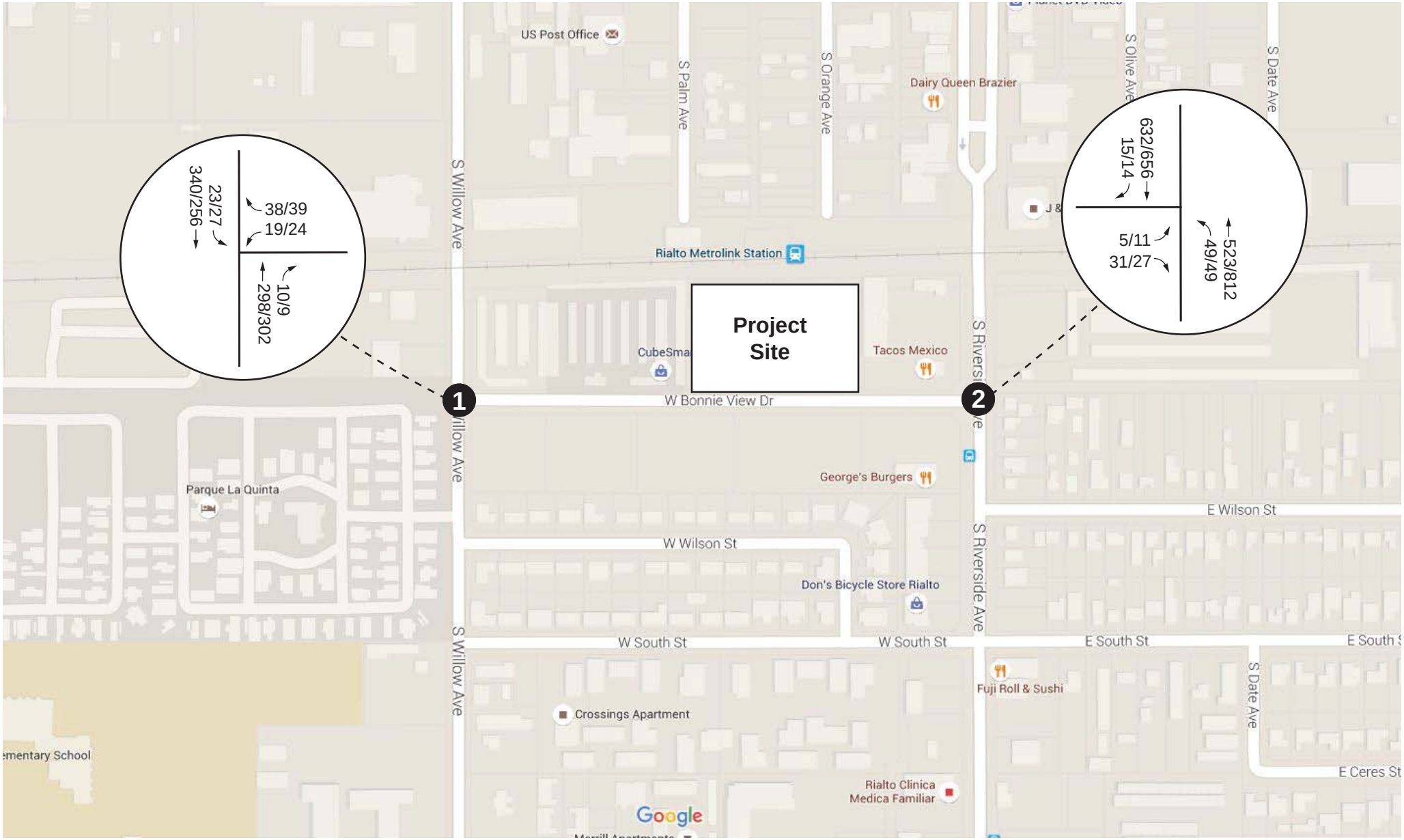
Table 2 summarizes the existing a.m. and p.m. peak hour intersection LOS of the study intersections based on the existing peak hour intersection volumes and existing intersection geometry. Detailed HCM calculation sheets are contained in Appendix B.

Table 2
Existing Conditions Peak Hour Intersection LOS

Study Intersection	Control	Existing Conditions	
		AM Delay (1) – LOS	PM Delay (1) – LOS
Bonnie View Drive / Willow Avenue	MSS	14.0 – B	12.2 – B
Bonnie View Drive / Riverside Avenue	MSS	13.0 – B	16.3 – C

(1) Seconds of delay per vehicle.
MSS = Minor Street Stop-Sign Control

As shown in Table 2, the two study intersections currently operate at LOS C or better during the peak hours.



Not to Scale

LEGEND

X Study Intersection

XX/XX AM/PM Peak Hour Volumes

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EXISTING TRAFFIC VOLUMES

EXHIBIT 5

PROPOSED PROJECT

Project Trip Generation

To determine the trips forecast to be generated by the proposed project, the ITE *Trip Generation* (9th edition, 2012) manual was utilized. Trip rates for Land Use 220 (Apartments) from the ITE *Trip Generation* manual were used for the proposed project.

Table 3 summarizes the project trip generation for the proposed 78 residential apartment units.

As summarized in Table 3, the proposed project will generate a total of approximately 519 trips per day, which includes approximately 40 a.m. peak hour trips and approximately 48 p.m. peak hour trips.

Table 3
Proposed Project Trip Generation

Trip Generation Rates (ITE 9th Edition)

Land Use	Unit	Daily (per unit)	AM Peak Hour			PM Peak Hour		
			Total (per unit)	Inbound (% AM)	Outbound (% AM)	Total (per unit)	Inbound (% PM)	Outbound (% PM)
Apartments (LU 220)	DU	6.65	0.51	20%	80%	0.62	65%	35%

Forecast Project Generated Trips

Land Use	Size	Unit	Daily Trips	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Apartments (LU 220)	78	DU	519	40	8	32	48	31	17
TOTAL			**519**	**40**	**8**	**32**	**48**	**31**	**17**

Source: ITE Trip Generation (9th Edition).

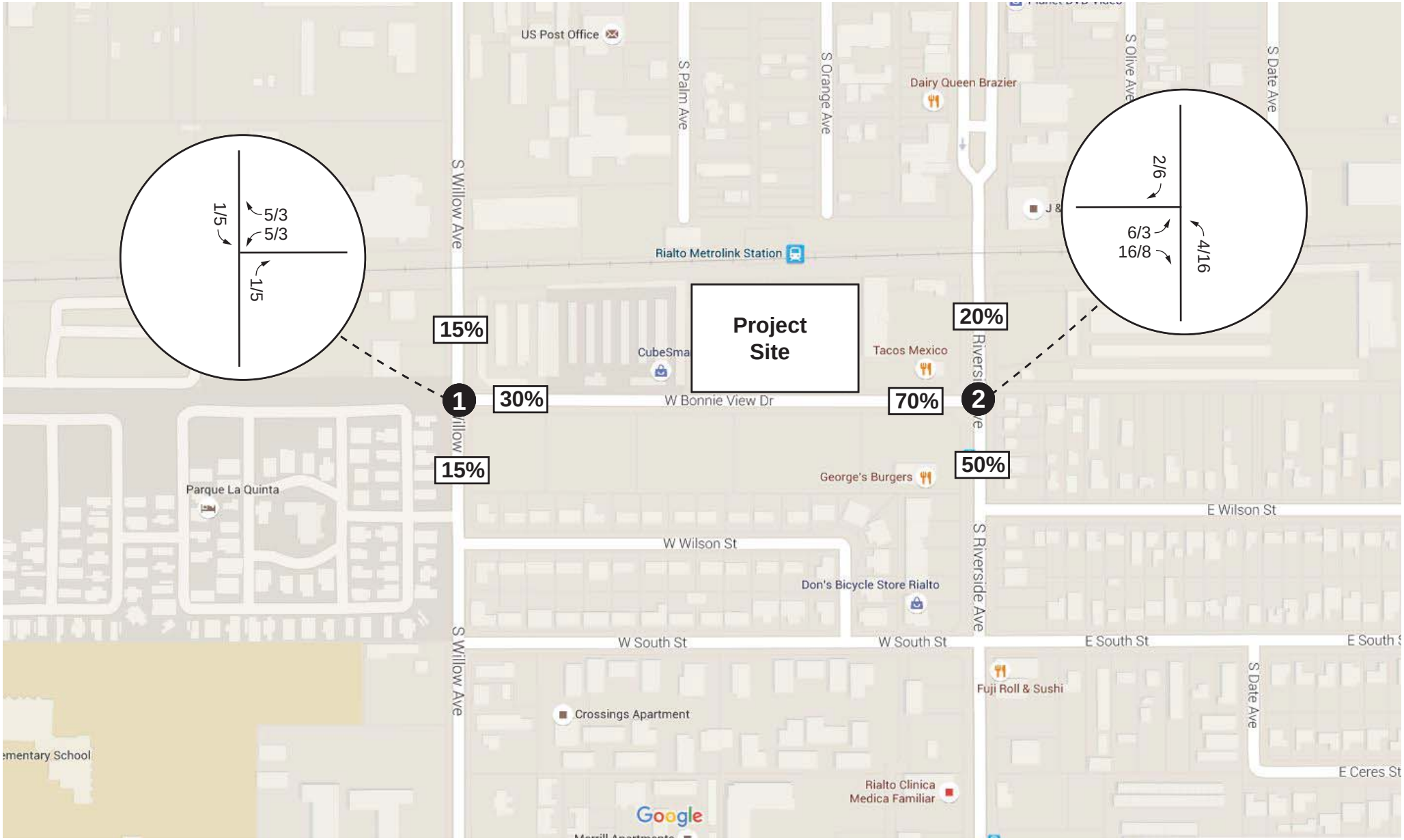
Project Trip Distribution and Assignment

The project trip distribution for the proposed 78 residential units was manually developed using the following assumptions:

- 30% of trips will take access from the intersection of Bonnie View Drive at Willow Avenue
- 70% of trips will take access from the intersection of Bonnie View Drive at Riverside Avenue

It is assumed that approximately 65% of the project trips will distribute to the south (50% along Riverside Avenue and 15% along Willow Avenue), and approximately 35% of the project trips will distribute to the north (20% along Riverside Avenue and 15% along Willow Avenue).

Exhibit 6 illustrates the project trip distribution and the assignment of project trips at the study intersections.



LEGEND

- X — Study Intersection
- XX% — Percent Trip Distribution
- XX/XX — AM/PM Peak Hour Project Trips

Not to Scale

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PROJECT TRIP DISTRIBUTION AND TRIP ASSIGNMENT

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EXHIBIT 6

Site Access and Circulation

The proposed project will take access from two driveways on Bonnie View Drive. The two proposed driveways are located at opposite ends of the project site along Bonnie View Drive, and will be spaced approximately 300 feet apart. The driveways will provide access to drive aisles that will be provided along the western, eastern and northern boundaries of the project site where all parking areas will be located.

The westerly project driveway would be located approximately 80 feet east of an existing driveway for the adjacent CubeSmart self-storage facility. However, this is a secondary access driveway for the self-storage facility that is rarely used, and the primary access driveway for the self-storage facility is located approximately 240 feet west of the westerly project driveway location. It is our professional opinion that the spacing between the secondary self-storage access driveway and the westerly project driveway would not create any safety issues and would be adequate for this location.

The easterly project driveway would be located approximately 175 feet west of an existing driveway for a small retail shopping center, and a second existing driveway for a restaurant on the south side of Bonnie View Drive is offset from the easterly project driveway at a distance of approximately 150 feet. Because Bonnie View Drive is a low-volume street (approximately 1,250 ADT) and is not classified as a Circulation Element roadway, it is our professional opinion that the spacing between the easterly project driveway and either of the existing driveways to the east would not create any safety issues and would be adequate for this location.

EXISTING PLUS PROJECT CONDITIONS

To determine the Existing Plus Project operating conditions at the study intersections, the project-generated trips were added to the existing conditions volumes. **Exhibit 7** shows Existing Plus Project traffic volumes.

Existing Plus Project Conditions Levels of Service

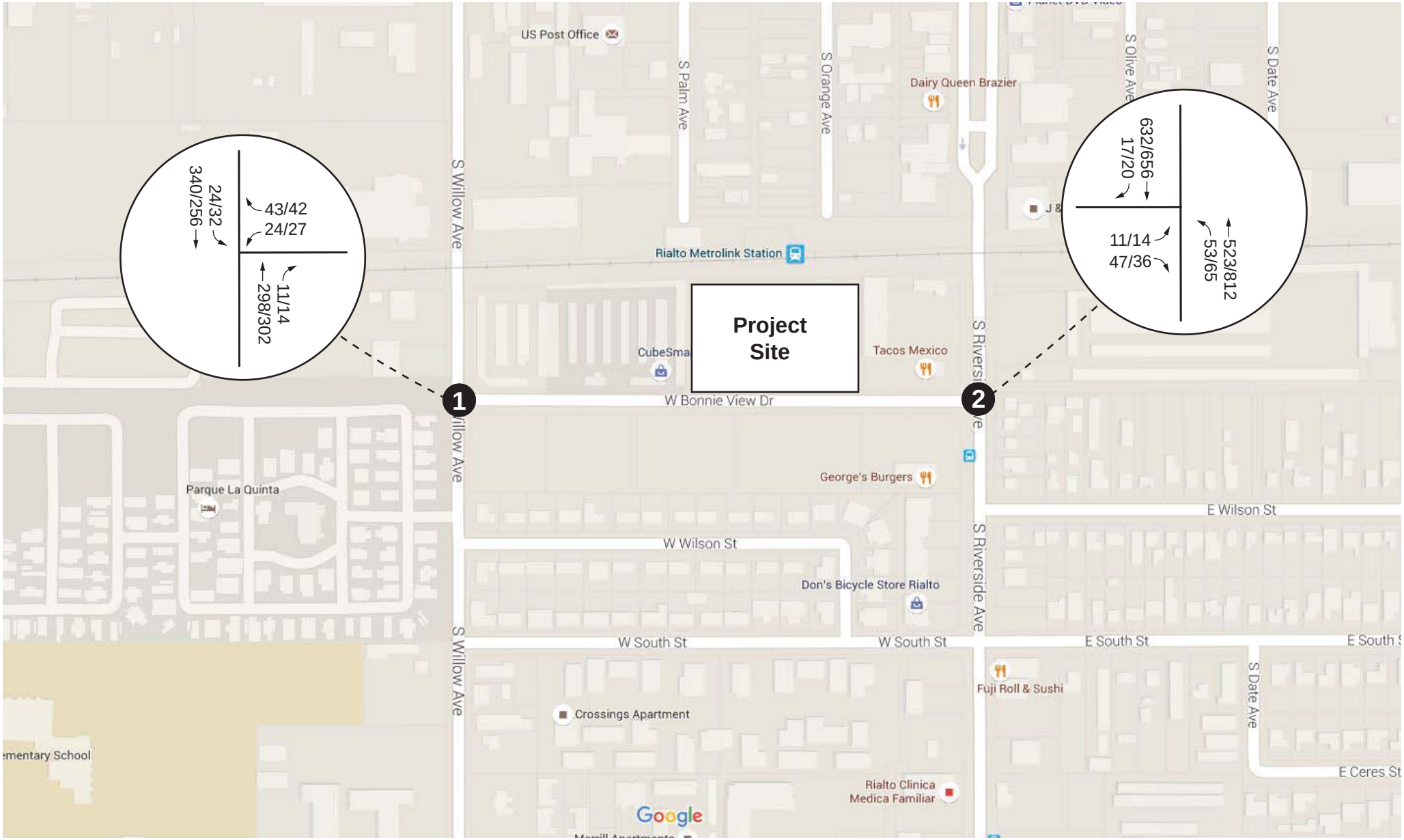
Table 4 summarizes the Existing Plus Project conditions a.m. and p.m. peak hour intersection LOS for the study intersections. Detailed HCM calculation sheets are contained in Appendix C.

Table 4
Existing Plus Project Conditions Peak Hour Intersection LOS

Study Intersection	Control	Existing Conditions		Existing + Project		Increase in Delay (1)	
		AM Delay (1) – LOS	PM Delay (1) – LOS	AM Delay (1) – LOS	PM Delay (1) – LOS	AM	PM
Bonnie View Drive / Willow Avenue	MSS	14.0 – B	12.2 – B	14.5 – B	12.4 – B	0.5	0.2
Bonnie View Drive / Riverside Avenue	MSS	13.0 – B	16.3 – C	14.4 – B	17.1 – C	1.4	0.8

(1) Seconds of delay per vehicle.
MSS = Minor Street Stop-Sign Control

As shown in Table 4, consistent with existing conditions, the study intersections are forecast to continue operating at LOS C or better with the addition of traffic generated by the proposed project. The increase in delay associated with the addition of project-generated traffic would not exceed the City's significant impact criteria for LOS B and LOS C operations. Therefore, no significant impacts were identified under Existing Plus Project conditions, and no mitigation measures are required.



Not to Scale

LEGEND

X Study Intersection

XX/XX AM/PM Peak Hour Volumes

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EXISTING + PROJECT TRAFFIC VOLUMES

EXHIBIT 7

PROJECT COMPLETION YEAR CONDITIONS – WITHOUT AND WITH PROJECT

To determine the Project Completion Year conditions in the project study area, a growth factor of 5% was applied to the existing traffic volumes to account for the increase in traffic within the study area. The growth factor is based on a 2.0-percent annual growth rate over a two and a half year period (from late 2015 to 2018).

Project Completion Year Conditions Levels of Service

Table 5 summarizes the Project Completion Year conditions peak hour intersection analysis without and with the proposed project. Detailed HCM calculation sheets are contained in Appendix D. **Exhibits 8 and 9** show the Project Completion Year traffic volumes without and with the proposed project, respectively.

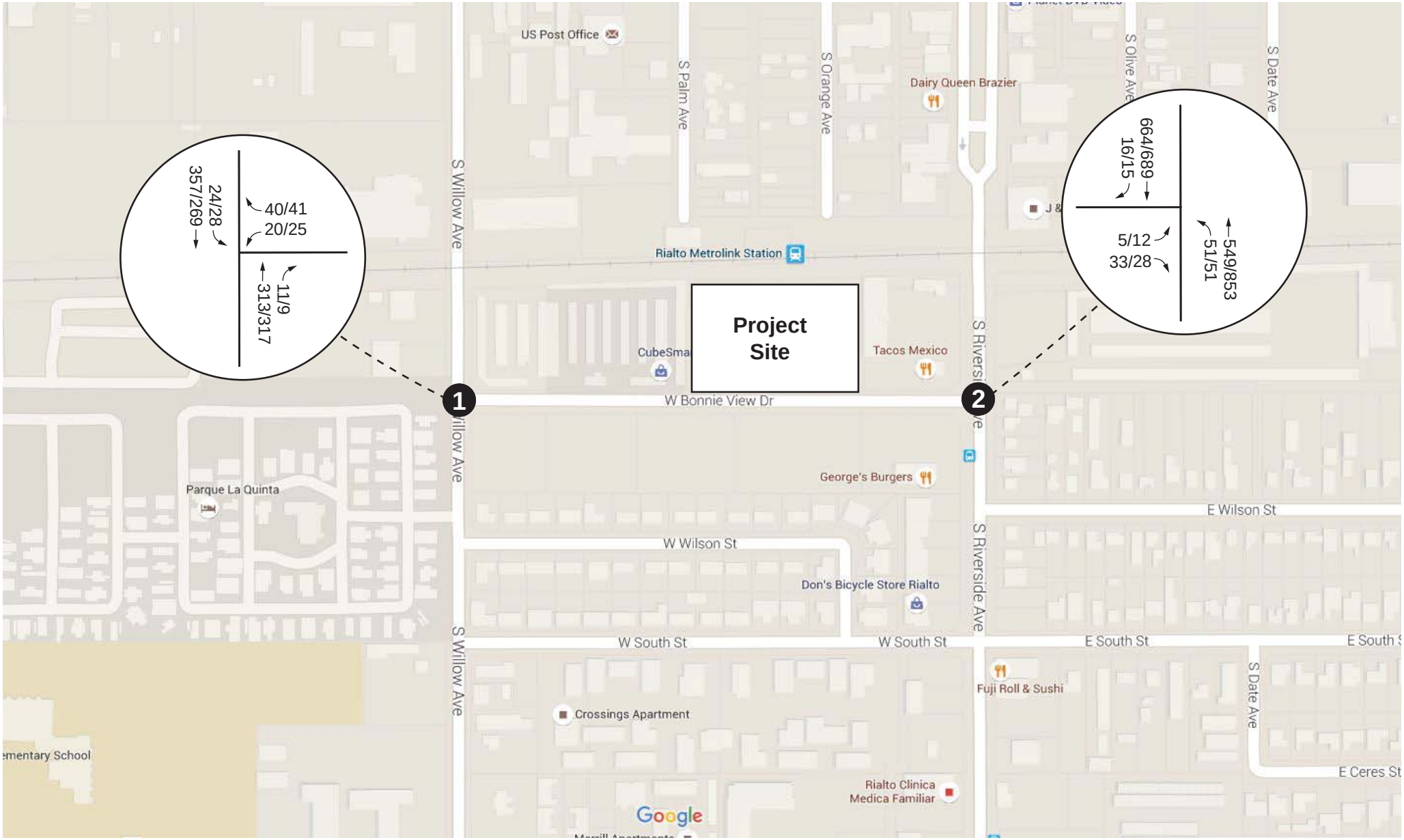
Table 5
Project Completion Year Conditions Without and With Project
Peak Hour Intersection LOS

Study Intersection	Control	Without Project		With Project		Increase in Delay (1)	
		AM Delay (1) – LOS	PM Delay (1) – LOS	AM Delay (1) – LOS	PM Delay (1) – LOS	AM	PM
Bonnie View Drive / Willow Avenue	MSS	14.5 – B	12.5 – B	15.0 – B	12.8 – B	0.5	0.3
Bonnie View Drive / Riverside Avenue	MSS	13.4 – B	17.2 – C	14.8 – B	18.3 – C	1.4	1.1

(1) Seconds of delay per vehicle.
MSS = Minor Street Stop-Sign Control

As shown in Table 5**,** the study intersections are forecast to operate at LOS C or better during the peak hours both without and with the project.

The increase in delay associated with the addition of project-generated traffic would not exceed the City's significant impact criteria for LOS B and LOS C operations. Therefore, no significant impacts were identified under Project Completion Year conditions with the proposed project, and no mitigation measures are required.



LEGEND

X Study Intersection

XX/XX AM/PM Peak Hour Volumes

Not to Scale

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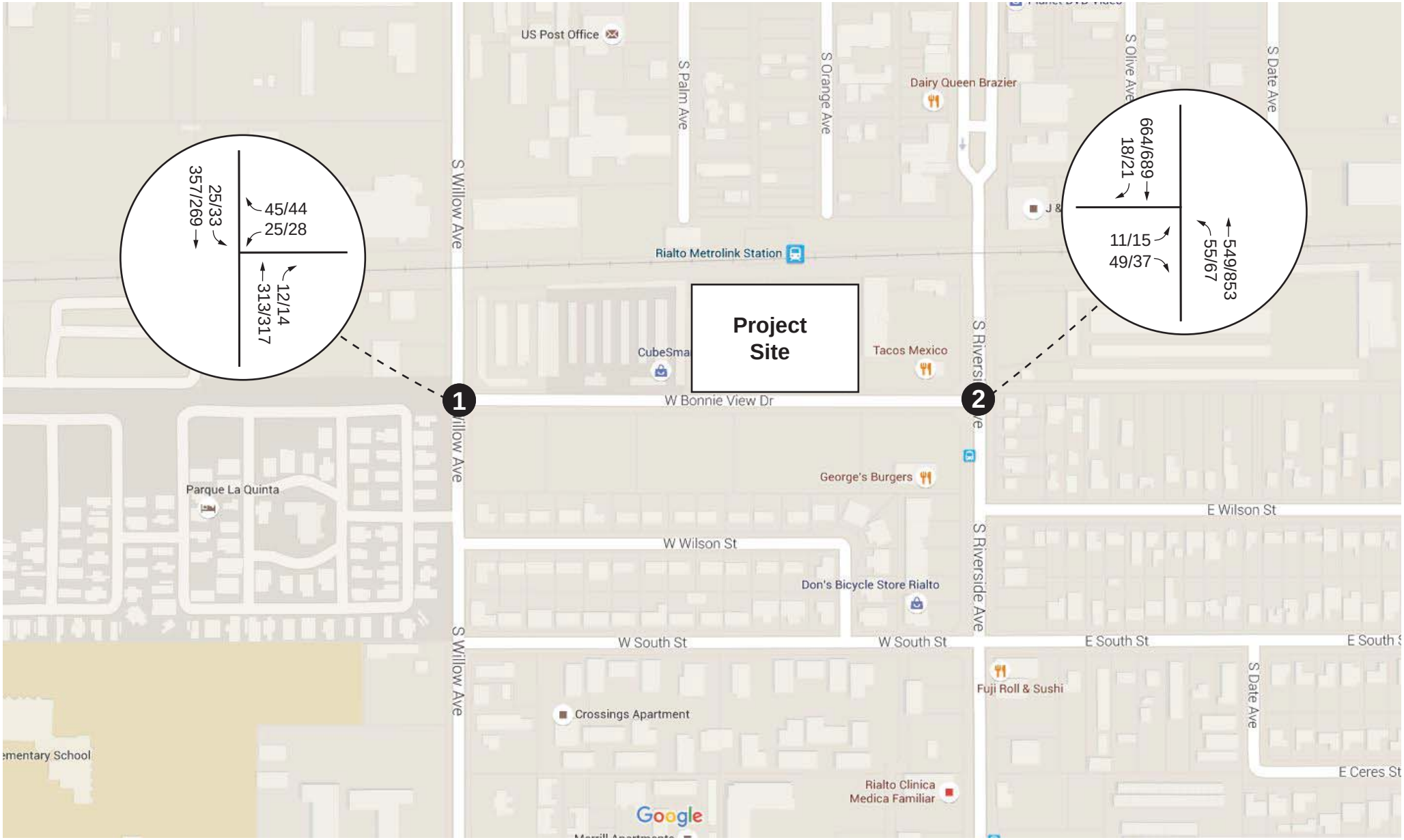
PROJECT COMPLETION YEAR WITHOUT PROJECT TRAFFIC VOLUMES

JN 148971 NOVEMBER 2015

EXHIBIT 8



Not to Scale

LEGEND

X Study Intersection

XX/XX AM/PM Peak Hour Volumes

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JN 148971 NOVEMBER 2015

PROJECT COMPLETION YEAR WITH PROJECT TRAFFIC VOLUMES

EXHIBIT 9

CUMULATIVE CONDITIONS – WITHOUT AND WITH PROJECT

To determine Cumulative conditions in the project study area, a growth factor of 5% was applied to the existing traffic volumes to account for the increase in traffic within the study area, plus trips associated with other cumulative projects anticipated to be constructed by project opening year (approximately Year 2018). The growth factor is based on a 2.0-percent annual growth rate over a two and a half year period (from late 2015 to 2018).

Cumulative Projects Trip Generation

To determine the trips forecast to be generated by the cumulative projects, the ITE *Trip Generation* (9th edition, 2012) manual was utilized. Trip rates for Land Use 210 (Single-Family Detached Housing), Land Use 150 (Warehousing), Land Use 220 (Apartments), Land Use 813 (Free-Standing Discount Superstore), Land Use 848 (Tire Store), Land Use 826 (Specialty Retail), and Land Use 934 (Fast Food Restaurant with Drive-Through Window) from the ITE *Trip Generation* manual were used for the cumulative projects.

Table 6 summarizes the trip generation for the six cumulative projects anticipated to be constructed by project opening year (2018). As shown in Table 6, the cumulative projects are forecast to generate a total of 16,997 trips per day, with a total of 740 trips occurring during the a.m. peak hour, and a total of 1,428 trips occurring during the p.m. peak hour.

Exhibit 10 shows the locations of the cumulative projects anticipated to be constructed by project opening year.

Exhibit 11 shows the a.m. and p.m. peak hour trips generated by the proposed cumulative projects through the study intersections.

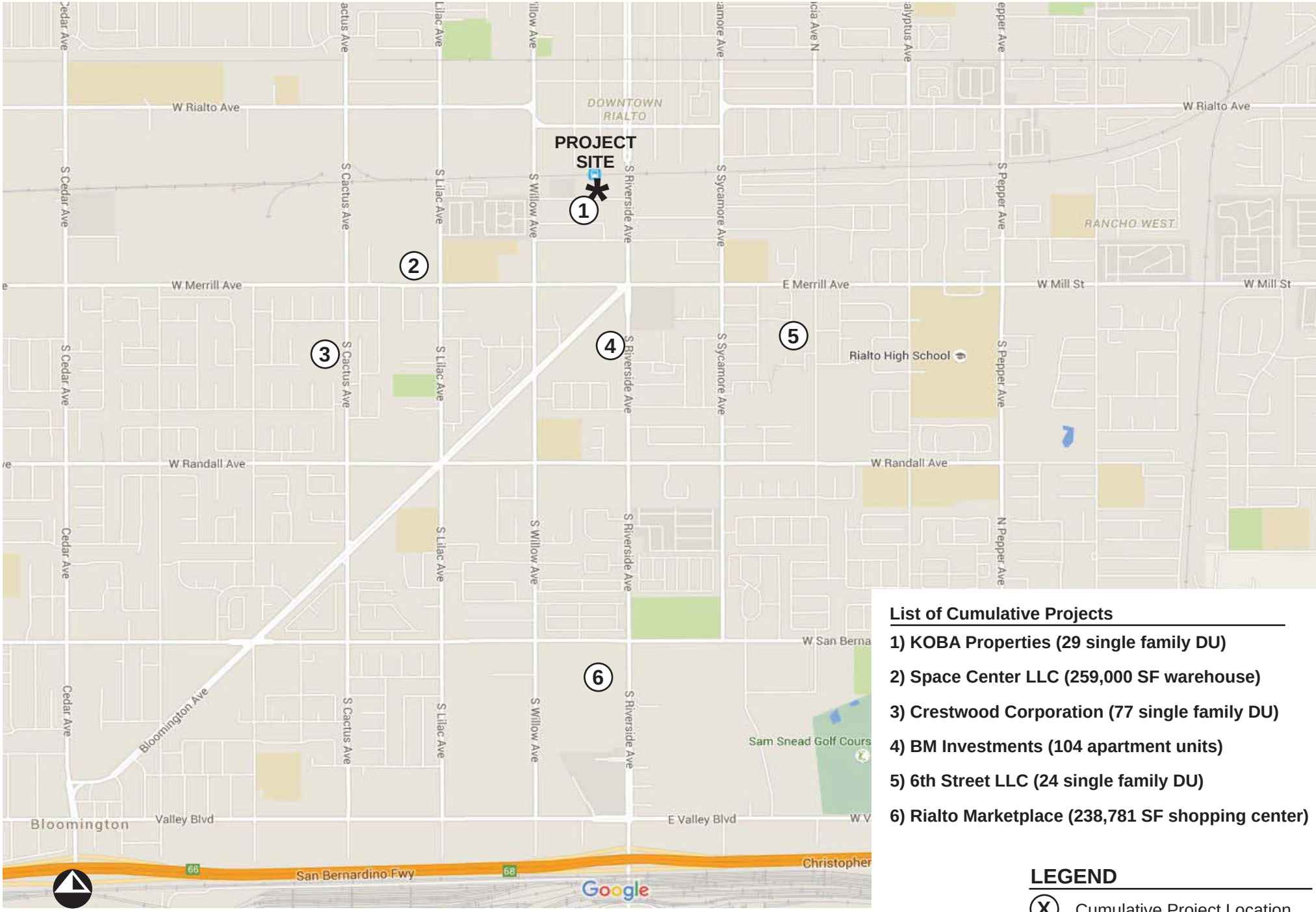
Table 6
Cumulative Projects Trip Generation

Trip Generation Rates (ITE 9th Edition)

Land Use	*Unit*	*Daily Trip Rate*	*AM Peak Rate*	*AM In*	*AM Out*	*PM Peak Rate*	*PM In*	*PM Out*
Single-Family Residential	DU	9.52	0.75	25%	75%	1.00	63%	37%
Warehousing	TSF	3.56	0.30	79%	21%	0.32	25%	75%
Apartments	DU	6.65	0.51	20%	80%	0.62	65%	35%
Discount Superstore	TSF	50.75	1.85	56%	44%	4.35	49%	51%
Tire Store	TSF	24.87	2.89	63%	37%	4.15	43%	57%
Specialty Retail	TSF	44.32	0.00	0%	0%	2.71	44%	56%
Fast-Food w/Drive-Thru	TSF	496.12	21.33	51%	49%	32.65	52%	48%

Forecast Cumulative Projects Generated Trips

Project		**Land Use**	**Intensity**	**Unit**	**Daily Trips**	**AM Peak Hour**			**PM Peak Hour**		
						Total	**In**	**Out**	**Total**	**In**	**Out**
1.	KOBA Properties, Inc.	Single-Family Residential	29	DU	276	22	6	16	29	18	11
2.	Space Center LLC	Warehousing	260	TSF	926	78	62	16	83	21	62
3.	Crestwood Corporation	Single-Family Residential	77	DU	733	58	15	43	77	49	28
4.	BM Investments, Inc.	Apartments	104	DU	692	53	11	42	64	42	22
5.	6th Street, LLC	Single-Family Residential	24	DU	228	18	5	13	24	15	9
6.	Rialto Marketplace	Discount Superstore	198	TSF	10,049	366	205	161	861	422	439
		Tire Store	9.861	TSF	245	28	18	10	41	18	23
		Specialty Retail	25.436	TSF	1,127	0	0	0	69	30	39
		Fast-Food w/Drive-Thru	5.484	TSF	2,721	117	60	57	179	93	86
		Subtotal			*14,142*	*512*	*283*	*229*	*1,150*	*563*	*587*
Total Project Trips					**16,997**	**740**	**380**	**360**	**1,428**	**708**	**720**



List of Cumulative Projects

1) KOBA Properties (29 single family DU)
2) Space Center LLC (259,000 SF warehouse)
3) Crestwood Corporation (77 single family DU)
4) BM Investments (104 apartment units)
5) 6th Street LLC (24 single family DU)
6) Rialto Marketplace (238,781 SF shopping center)

LEGEND

(X) Cumulative Project Location

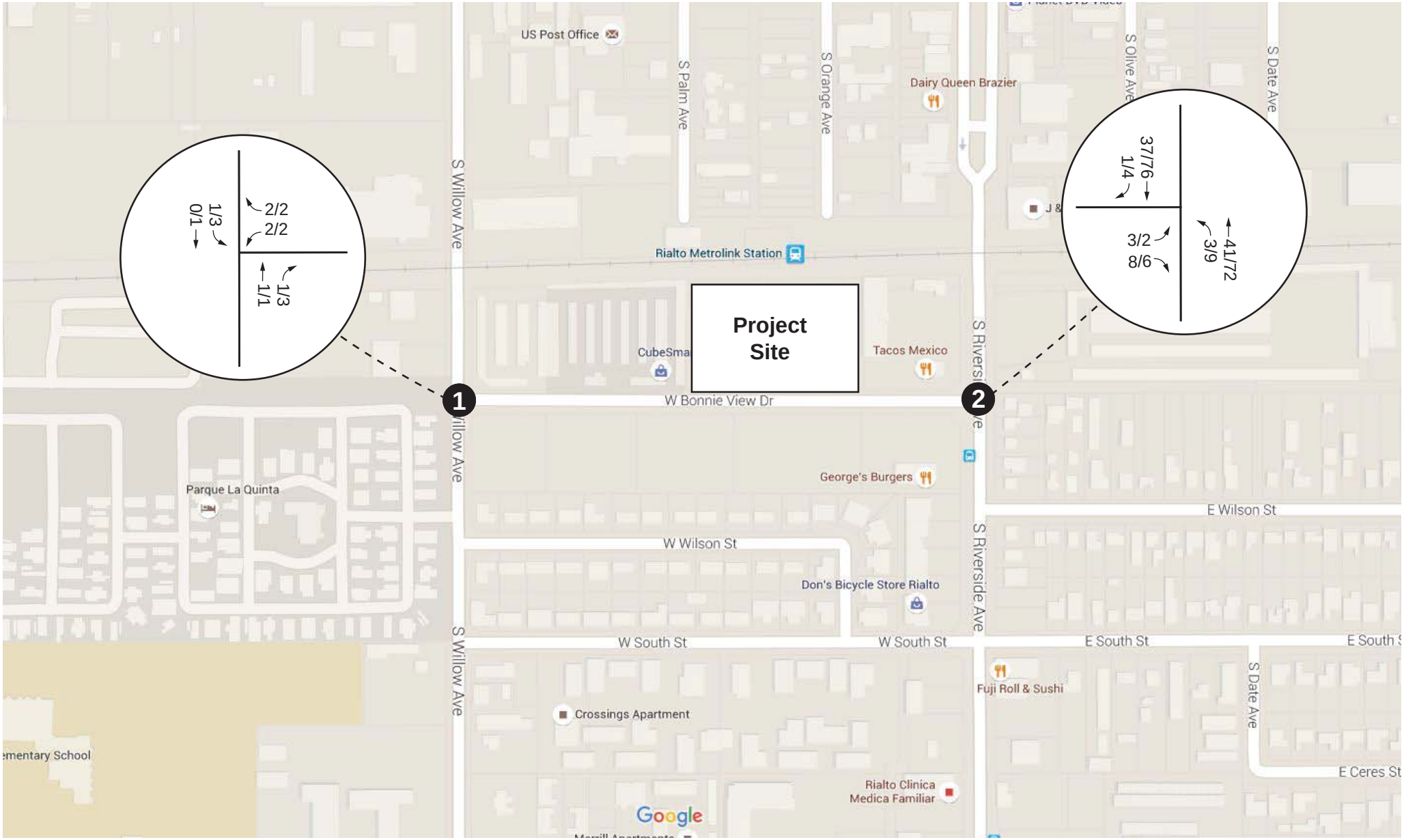
Not to Scale

Michael Baker INTERNATIONAL

JN 148971 NOVEMBER 2015

CUMULATIVE PROJECTS LOCATION MAP

EXHIBIT 10



Not to Scale

LEGEND

X Study Intersection

XX/XX AM/PM Peak Hour Volumes

Michael Baker INTERNATIONAL

JN 148971 NOVEMBER 2015

CUMULATIVE PROJECT TRIPS

EXHIBIT 11

Cumulative Conditions Levels of Service

Table 7 summarizes the Cumulative conditions peak hour intersection LOS without and with the proposed project. Detailed HCM calculation sheets are contained in Appendix E.

Exhibits 12 and 13 show the Cumulative conditions traffic volumes without and with the proposed project, respectively.

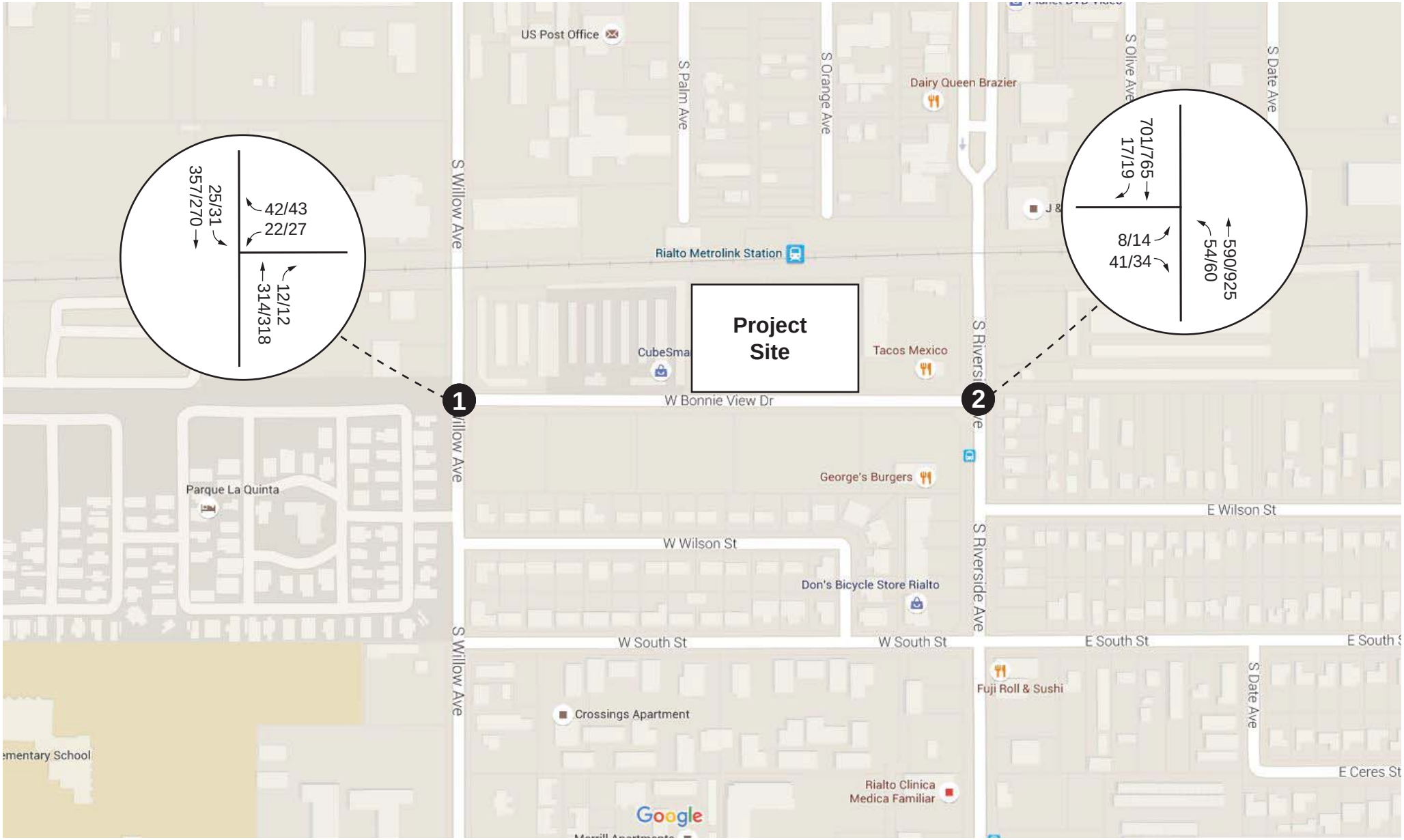
Table 7
Cumulative Conditions Without and With Project
Peak Hour Intersection LOS

Study Intersection	Control	Without Project		With Project		Increase in Delay (1)	
		AM Delay (1) – LOS	PM Delay (1) – LOS	AM Delay (1) – LOS	PM Delay (1) – LOS	AM	PM
Bonnie View Drive / Willow Avenue	MSS	14.8 – B	12.7 – B	15.5 – C	13.0 – B	0.7	0.3
Bonnie View Drive / Riverside Avenue	MSS	14.9 – B	20.1 – C	16.5 – C	21.6 – C	1.6	1.5

(1) Seconds of delay per vehicle.
MSS = Minor Street Stop-Sign Control

As shown in Table 7**,** the study intersections are forecast to operate at LOS C or better during the peak hours both without and with the proposed project under Cumulative conditions.

The increase in delay associated with the addition of project-generated traffic would not exceed the City's significant impact criteria for LOS B and LOS C operations. Therefore, no significant impacts were identified under Cumulative conditions with the proposed project, and no mitigation measures are required.



Not to Scale

LEGEND

X Study Intersection

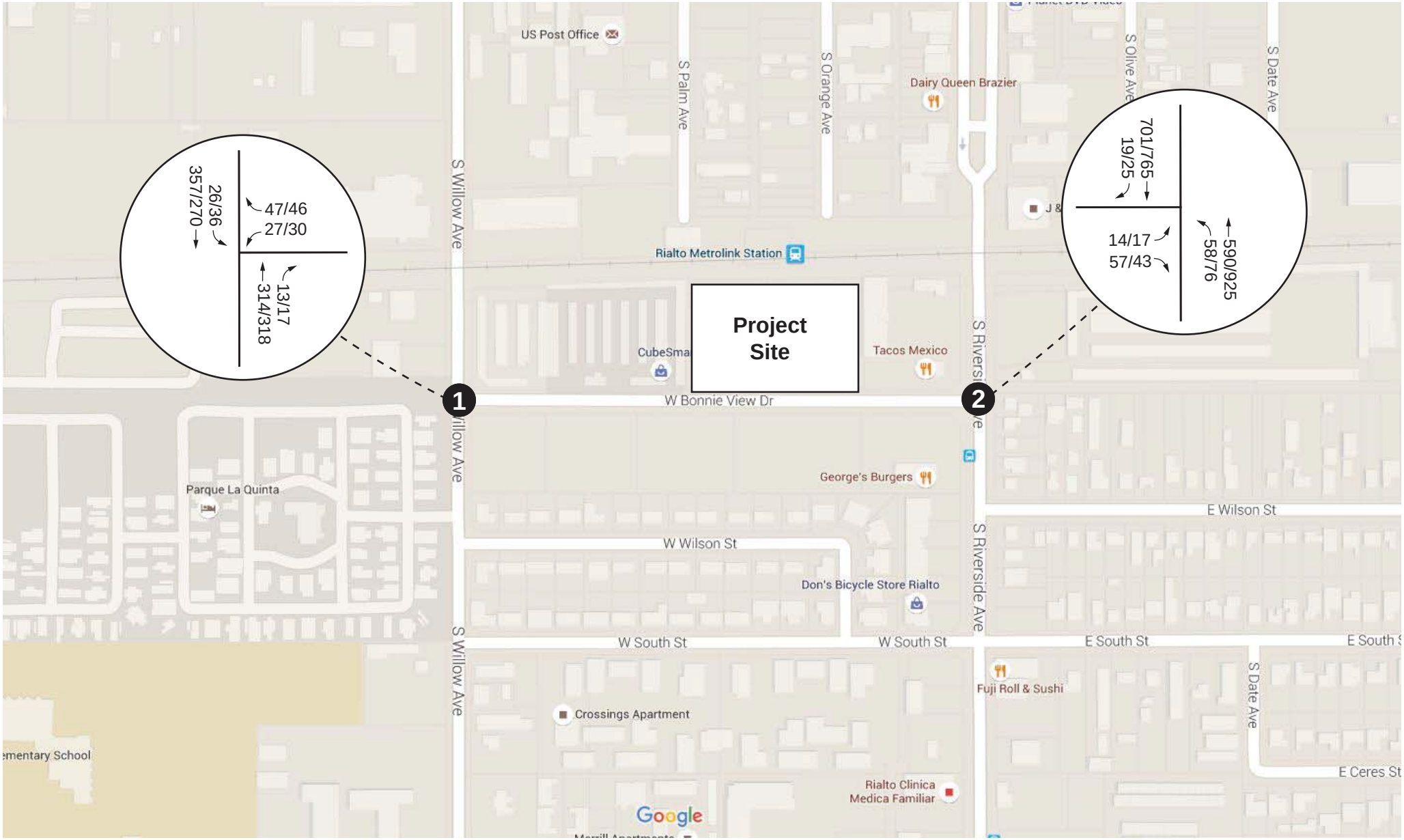
XX/XX AM/PM Peak Hour Volumes

Michael Baker INTERNATIONAL

CUMULATIVE CONDITIONS WITHOUT PROJECT TRAFFIC VOLUMES

JN 148971 NOVEMBER 2015

EXHIBIT 12



Not to Scale

LEGEND

X Study Intersection

XX/XX AM/PM Peak Hour Volumes

Michael Baker INTERNATIONAL

CUMULATIVE CONDITIONS WITH PROJECT TRAFFIC VOLUMES

JN 148971 NOVEMBER 2015

EXHIBIT 13

SIGNAL WARRANT ANALYSIS

A signal warrant analysis was conducted under all analysis scenarios for the two study intersections to determine if the existing and forecast future traffic volumes at these intersections justify the placement for traffic signals. This signal warrant analysis has been conducted in accordance with guidelines published in the 2014 California MUTCD Section 4C.01 “Studies and Factors for Justifying Traffic Signal Controls.” This section identifies various warrants that if met, provide the justification needed for the installation of a traffic signal.

Under Existing, Existing Plus Project, and Project Completion Year conditions without and with the project, the individual traffic signal warrants that were conducted at the two study intersections include:

- Warrant 1 - Eight-Hour Vehicular Volume.
- Warrant 2 - Four-Hour Vehicular Volume.
- Warrant 3 - Peak Hour.

Machine counts were collected over a 24-hour period at all approaches of the two study intersections of Bonnie View Drive / Riverside Avenue and Bonnie View Drive / Willow Avenue to conduct the analysis for Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume). The 24-hour traffic counts collected for the signal warrants are provided in Appendix F. The a.m. and p.m. peak hour turning movement counts collected at the intersections for the HCM analysis were used to conduct the Warrant 3 (Peak Hour) analysis.

The Existing Plus Project hourly volumes for each warrant were calculated by adding project-related trips to the Existing conditions traffic counts. Since hourly project trips are only estimated for the a.m. and p.m. peak hours, a.m. and p.m. peak hour project trips were added to the existing hourly counts used for Warrant 1 and Warrant 2 based on the time of day of the counts. The same methodology was used for the Project Completion Year conditions volumes, which also includes the 5% growth factor applied to the existing traffic volumes.

Under Cumulative conditions without and with the project, Table 4C-103 in the 2014 California MUTCD, which is based on average daily traffic, is used instead of the Eight Hour Vehicular Warrant. Table 4C-103 includes three individual warrants based on ADT volumes: the Minimum Vehicular warrant, the Interruption of Continuous Traffic warrant, and a combination of the first two warrants, which requires that both warrants be at least 80% satisfied. The Four Hour Vehicular Volume Warrant and Peak Hour Warrant are also included in the analysis of Cumulative conditions without and with the project.

It must be noted that this analysis is limited to the three warrants based on existing and future traffic volumes. The 2014 California MUTCD also includes several other signal warrants based on different criteria. Further study may be needed if it is determined that signalization is not feasible at locations where warrants are satisfied based on the ADT volume warrants.

The results of the traffic signal warrant analysis for Existing, Existing Plus Project, and Project Completion Year conditions without and with the project are presented in Table 8. Table 9 presents the results of the traffic signal warrant analysis for Cumulative conditions without and with the project. The 2014 California MUTCD signal warrant worksheets are provided in Appendix F.

As shown in Table 8 and Table 9, no warrants were satisfied at two study intersections under all analysis scenarios without and with the proposed project.

Table 8
Signal Warrant Analysis
Existing and Project Completion Year Conditions
(Warrant 1 with Eight Hour Vehicular Volumes)

Intersection	Control	Eight Hour Vehicular Volume (Warrant 1)					Four Hour Vehicular Volume (Warrant 2)	Peak Hour (Warrant 3)
		Condition A: Minimum Vehicular Volume		Condition B: Interruption of Continuous Traffic		Combination Warrant (80% of Conditions A&B)		
		Satisfied?	80% Satisfied?	Satisfied?	80% Satisfied?	Satisfied?	Satisfied?	Satisfied?
Existing Conditions								
Bonnie View Dr / Willow Ave	MSS	No	No	No	Yes	No	No	No
Bonnie View Dr / Riverside Ave	MSS	No	No	No	No	No	No	No
Existing Plus Project Conditions								
Bonnie View Dr / Willow Ave	MSS	No	No	No	Yes	No	No	No
Bonnie View Dr / Riverside Ave	MSS	No	No	No	No	No	No	No
Project Completion Year Conditions Without Project								
Bonnie View Dr / Willow Ave	MSS	No	No	No	Yes	No	No	No
Bonnie View Dr / Riverside Ave	MSS	No	No	No	No	No	No	No
Project Completion Year Conditions With Project								
Bonnie View Dr / Willow Ave	MSS	No	No	No	Yes	No	No	No
Bonnie View Dr / Riverside Ave	MSS	No	No	No	No	No	No	No

Source: 2014 CA MUTCD
MSS = Minor Street Stop-Sign Control

Table 9
Signal Warrant Analysis
Cumulative Conditions (Warrant 1 with ADT Volumes)

Intersection	Control	Average Daily Traffic Vehicular Volume (Warrant 1)					Four Hour Vehicular Volume (Warrant 2)	Peak Hour (Warrant 3)
		Condition A: Minimum Vehicular Volume		Condition B: Interruption of Continuous Traffic		Combination Warrant (80% of Conditions A&B)		
		Satisfied?	80% Satisfied?	Satisfied?	80% Satisfied?	Satisfied?	Satisfied?	Satisfied?
Cumulative Conditions Without Project								
Bonnie View Dr / Willow Ave	MSS	No	No	No	No	No	No	No
Bonnie View Dr / Riverside Ave	MSS	No	No	No	No	No	No	No
Cumulative Conditions With Project								
Bonnie View Dr / Willow Ave	MSS	No	No	No	No	No	No	No
Bonnie View Dr / Riverside Ave	MSS	No	No	No	Yes	No	No	No

Source: 2014 CA MUTCD
MSS = Minor Street Stop-Sign Control

SIGNIFICANT IMPACTS AND MITIGATION

Based on the City of Rialto's significant impact criteria, a project-related significant impact is forecast to occur if the addition of project trips results in a change in level of service (LOS) from LOS D to LOS E or F, or if the addition of project-related traffic results in the following delay increases during peak hours:

- LOS A/B – by 10.0 Seconds
- LOS C – by 8.0 Seconds
- LOS D – by 5.0 Seconds
- LOS E - by 2.0 Seconds
- LOS F - by 1.0 Seconds

The findings of the analysis show that the addition of project-generated traffic to the two study intersections under all analysis scenarios would not result in increases in delay that meet or exceed the City's significant impact criteria based on LOS B or LOS C operations. Therefore, trips generated by the proposed project would not result in significant impacts and no mitigation measures are required.

Although no off-site mitigation measures are required, the proposed project will be required to pay traffic-related Development Impact Fees (DIF) that will contribute to the overall roadway circulation network within the City of Rialto.

SUMMARY AND CONCLUSIONS

This study analyzed the forecast traffic impact of the proposed Metro South Transit-Oriented Development (TOD) in the City of Rialto. The proposed project consists of a total of 78 apartment units along the north side of Bonnie View Drive between Willow Avenue and Riverside Drive. The Metrolink railroad tracks are located along the northern boundary of the project site. The Downtown Rialto Metrolink Rail Transit Station is located on the north side of the railroad tracks. A future access easement to the Downtown Rialto Metrolink Rail Transit Station is provided along the western boundary of the project site.

The proposed project will generate a total of approximately 519 trips per day, which includes approximately 40 a.m. peak hour trips and approximately 48 p.m. peak hour trips.

The results of the existing conditions analysis show that all study intersections are currently operating at LOS C or better. Consistent with existing conditions, the study intersections are forecast to continue operating at LOS C or better with the addition of project-related traffic to existing traffic volumes.

The Project Completion Year conditions analysis results show that the study intersections are forecast to operate at LOS C or better during the peak hours both without and with the project.

The Cumulative conditions analysis results show that the study intersections are forecast to operate at LOS C or better during the peak hours both without and with the project.

The increase in delay associated with the addition of project-generated traffic under all analysis scenarios would not exceed the City's significant impact criteria for LOS B and LOS C operations. Therefore, no significant impacts were identified with the proposed project, and no mitigation measures are required.

A traffic signal warrant analysis was performed in accordance with the 2014 California MUTCD for the two study intersections under all analysis scenarios.

- Bonne View Drive / Willow Avenue
- Bonnie View Drive / Riverside Avenue

The results of the signal warrant analysis show that warrants were not satisfied for the two above-listed intersections under all analysis scenarios without and with the project.

Although no off-site mitigation measures are required, the proposed project will be required to pay traffic-related Development Impact Fees (DIF) that will contribute to the overall roadway circulation network within the City of Rialto.

A potential safety issue was identified at an existing pedestrian crosswalk that is provided across Willow Avenue on the north side of the intersection with Orange Avenue, located one block south of Bonnie View Drive. An existing driveway into a mobile home park is located on the west side of Willow Avenue immediately north of the pedestrian crosswalk, which creates an offset intersection with Orange Avenue. The location of the existing pedestrian crosswalk between the mobile home park driveway and Orange Avenue creates a potential safety issue for pedestrians using the crosswalk behind a northbound vehicle that is stopped to make a left-turn into the mobile home park driveway, which would be blocking crosswalk visibility for southbound vehicles.

This existing crosswalk is frequently used by children walking to and from Curtis Elementary School, and is likely to be used by residents of the proposed apartment units. As more development occurs in the area, the City may need to consider relocating the crosswalk to the south leg of the Willow Avenue / Orange Avenue intersection to improve the visibility and safety of pedestrians crossing Willow Avenue.

APPENDIX A

Traffic Count Data

Willow Avenue / Bonnie View Drive

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001

Day: Tuesday

TOTALS

City: Rialto

Date: 9/22/2015

AM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
7:00 AM	0	48	5	10	46	0	0	0	0	2	0	13	124
7:15 AM	0	49	0	4	54	0	0	0	0	5	0	9	121
7:30 AM	0	73	2	7	91	0	0	0	0	6	0	9	188
7:45 AM	0	93	4	3	114	0	0	0	0	7	0	12	233
8:00 AM	0	75	4	5	72	0	0	0	0	2	0	8	166
8:15 AM	0	49	0	6	62	0	0	0	0	2	0	8	127
8:30 AM	0	39	1	4	33	0	0	0	0	2	0	5	84
8:45 AM	0	35	0	2	38	0	0	0	0	1	0	8	84
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	461	16	41	510	0	0	0	0	27	0	72	1127
APPROACH %'s :	0.00%	96.65%	3.35%	7.44%	92.56%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	27.27%	0.00%	72.73%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	290	10	21	339	0	0	0	0	17	0	37	714
PEAK HR FACTOR :		0.773			0.769			0.000			0.711		0.766

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001 **Day:** Tuesday

TOTALS

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
4:00 PM	0	55	2	5	69	0	0	0	0	4	0	6	141
4:15 PM	0	73	2	4	57	0	0	0	0	4	0	5	145
4:30 PM	0	65	5	4	63	0	0	0	0	1	0	5	143
4:45 PM	0	76	2	7	63	0	0	0	0	8	0	8	164
5:00 PM	0	78	1	4	69	0	0	0	0	9	0	3	164
5:15 PM	0	83	4	6	66	0	0	0	0	2	0	13	174
5:30 PM	0	64	2	10	57	0	0	0	0	5	0	15	153
5:45 PM	0	72	3	2	69	0	0	0	0	2	0	12	160
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	566	21	42	513	0	0	0	0	35	0	67	1244
APPROACH %'s :	0.00%	96.42%	3.58%	7.57%	92.43%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	34.31%	0.00%	65.69%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	301	9	27	255	0	0	0	0	24	0	39	655
PEAK HR FACTOR :		0.891			0.966			0.000			0.788		0.941

CONTROL : 1-Way Stop (WB)

ITM Peak Hour Summary

Prepared by:

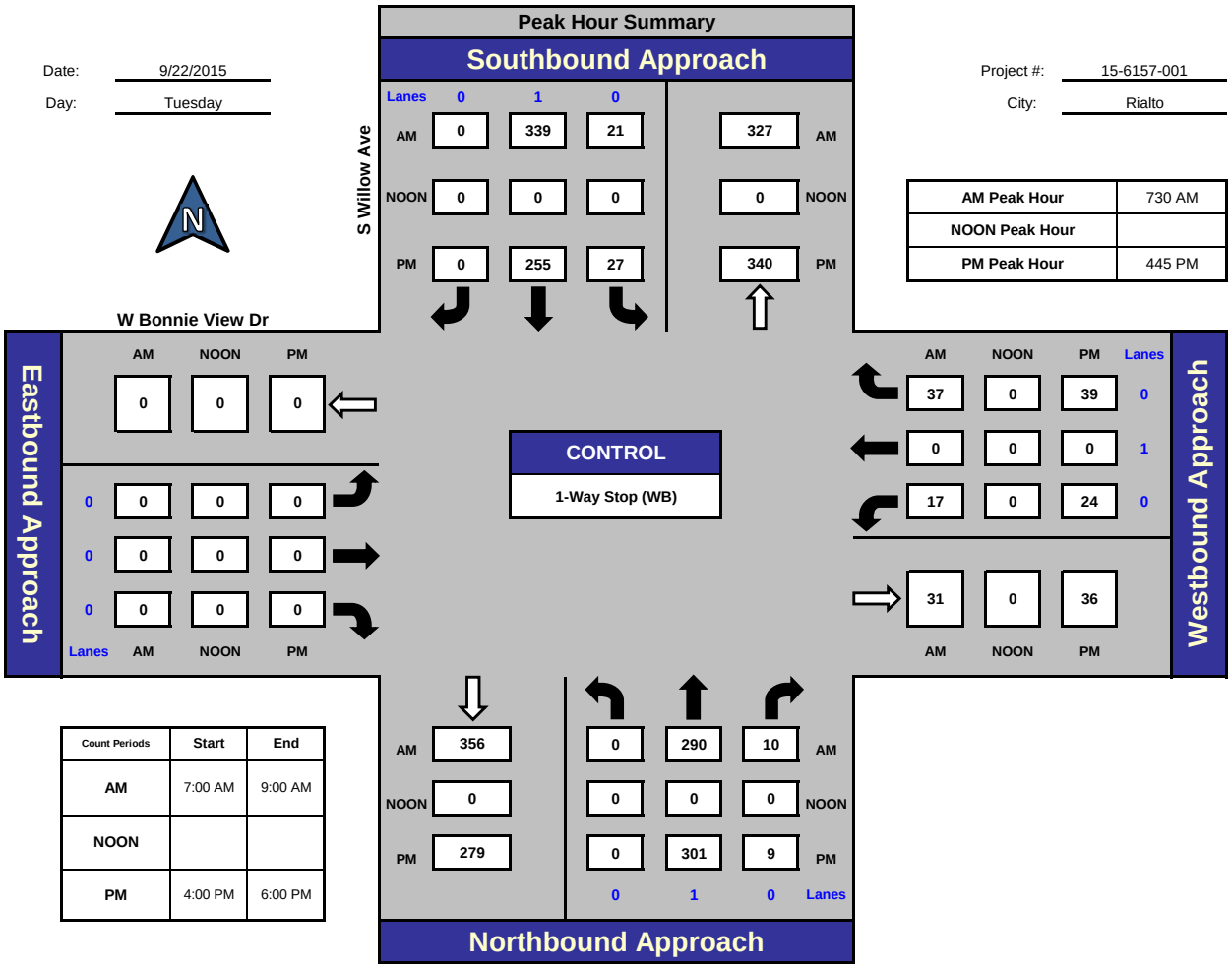
National Data & Surveying Services

S Willow Ave and W Bonnie View Dr , Rialto

Date: 9/22/2015
Day: Tuesday

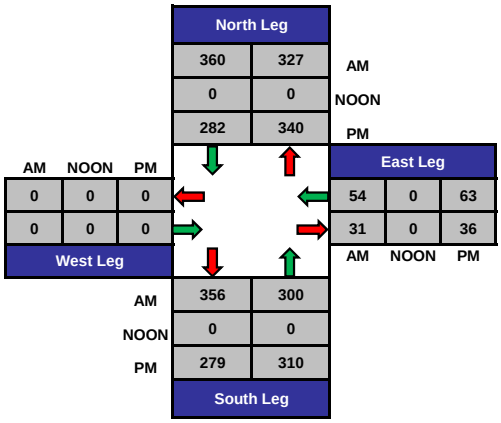
Project #: 15-6157-001
City: Rialto

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	445 PM

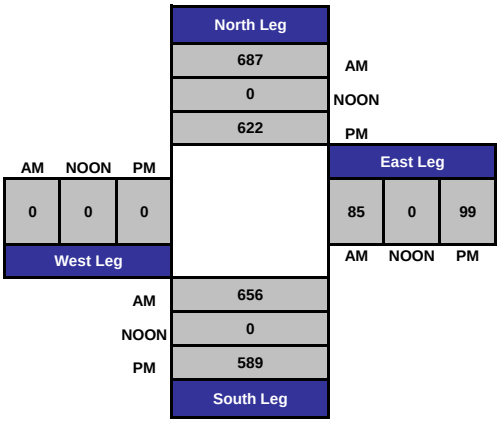


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001 **Day:** Tuesday

Cars

City: Rialto **Date:** 9/22/2015

AM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
7:00 AM	0	46	5	10	42	0	0	0	0	2	0	13	118
7:15 AM	0	49	0	4	54	0	0	0	0	2	0	9	118
7:30 AM	0	70	2	6	90	0	0	0	0	5	0	8	181
7:45 AM	0	89	4	3	114	0	0	0	0	7	0	12	229
8:00 AM	0	72	4	4	72	0	0	0	0	1	0	8	161
8:15 AM	0	47	0	6	61	0	0	0	0	2	0	8	124
8:30 AM	0	34	1	3	30	0	0	0	0	2	0	4	74
8:45 AM	0	34	0	2	38	0	0	0	0	1	0	8	83
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	441	16	38	501	0	0	0	0	22	0	70	1088
APPROACH %'s :	0.00%	96.50%	3.50%	7.05%	92.95%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	23.91%	0.00%	76.09%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	278	10	19	337	0	0	0	0	15	0	36	695
PEAK HR FACTOR :		0.774			0.761			0.000			0.671		0.759

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001 **Day:** Tuesday

Cars

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
4:00 PM	0	54	2	5	69	0	0	0	0	4	0	4	138
4:15 PM	0	73	2	4	57	0	0	0	0	4	0	5	145
4:30 PM	0	65	5	4	61	0	0	0	0	1	0	5	141
4:45 PM	0	76	2	7	62	0	0	0	0	8	0	8	163
5:00 PM	0	78	1	4	69	0	0	0	0	9	0	3	164
5:15 PM	0	82	4	6	66	0	0	0	0	2	0	13	173
5:30 PM	0	64	2	10	56	0	0	0	0	5	0	15	152
5:45 PM	0	72	3	2	69	0	0	0	0	2	0	12	160
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	564	21	42	509	0	0	0	0	35	0	65	1236
APPROACH %'s :	0.00%	96.41%	3.59%	7.62%	92.38%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	35.00%	0.00%	65.00%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	300	9	27	253	0	0	0	0	24	0	39	652
PEAK HR FACTOR :		0.898			0.959			0.000			0.788		0.942

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001 **Day:** Tuesday

2 Axle Trucks

City: Rialto **Date:** 9/22/2015

AM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
7:00 AM	0	2	0	0	4	0	0	0	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	3
7:30 AM	0	3	0	1	1	0	0	0	0	1	0	1	7
7:45 AM	0	3	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	2	0	0	1	0	0	0	0	0	0	0	3
8:30 AM	0	4	0	1	3	0	0	0	0	0	0	1	9
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	17	0	2	9	0	0	0	0	4	0	2	34
APPROACH %'s :	0.00%	100.00%	0.00%	18.18%	81.82%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	66.67%	0.00%	33.33%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	11	0	1	2	0	0	0	0	1	0	1	16
PEAK HR FACTOR :		0.917			0.375			0.000			0.250		0.759

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001 **Day:** Tuesday

2 Axle Trucks

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
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	1	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	4	0	0	0	0	0	0	2	6
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	0.00%	100.00%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	2	0	0	0	0	0	0	0	2
PEAK HR FACTOR :		0.000			0.500			0.000			0.000		0.942

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001

Day: Tuesday

3 Axle Trucks

City: Rialto

Date: 9/22/2015

AM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
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	1	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	2	0	1	0	0	0	0	0	1	0	0	4
APPROACH %'s :	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	0	0	1	0	0	2
PEAK HR FACTOR :		0.000			0.250			0.000			0.250		0.759

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001 **Day:** Tuesday

3 Axle Trucks

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
4:00 PM	0	1	0	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	0
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	1	0	0	0	0	0	0	0	0	0	0	1
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
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	0	0	0	0	0	0	0	2
APPROACH %'s :	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250			0.000			0.000			0.000		0.942

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001

Day: Tuesday

4 Axle+ Trucks

City: Rialto

Date: 9/22/2015

AM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	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	0
8:15 AM	0	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	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250			0.000			0.000			0.000		0.759

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-001

Day: Tuesday

4 Axle+ Trucks

City: Rialto

Date: 9/22/2015

PM

NS/EW Streets:	S Willow Ave			S Willow Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
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
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.942

CONTROL : 1-Way Stop (WB)

Riverside Avenue / Bonnie View Drive

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002

Day: Tuesday

TOTALS

City: Rialto

Date: 9/22/2015

AM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
7:00 AM	12	92	0	0	128	4	1	0	11	0	0	0	248
7:15 AM	14	119	0	1	176	3	0	0	6	0	0	0	319
7:30 AM	12	124	0	0	160	5	1	0	12	0	0	0	314
7:45 AM	13	152	0	0	166	3	3	0	5	0	0	0	342
8:00 AM	7	118	0	0	121	3	1	0	6	0	0	0	256
8:15 AM	9	102	0	0	129	4	1	0	5	0	0	0	250
8:30 AM	5	108	0	0	118	0	2	0	5	0	0	0	238
8:45 AM	10	132	0	0	116	0	0	0	1	0	0	0	259
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	82	947	0	1	1114	22	9	0	51	0	0	0	2226
APPROACH %'s :	7.97%	92.03%	0.00%	0.09%	97.98%	1.93%	15.00%	0.00%	85.00%	#DIV/0!	#DIV/0!	#DIV/0!	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	46	513	0	1	623	14	5	0	29	0	0	0	1231
PEAK HR FACTOR :		0.847			0.886			0.654			0.000		0.900

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

TOTALS

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
4:00 PM	9	182	0	1	160	3	0	0	5	0	0	0	360
4:15 PM	6	208	0	0	175	4	1	0	8	0	0	0	402
4:30 PM	7	191	0	0	141	1	3	0	5	0	0	0	348
4:45 PM	12	180	0	0	169	7	1	0	8	0	0	0	377
5:00 PM	5	211	0	0	151	6	4	0	7	0	0	0	384
5:15 PM	17	202	0	1	175	0	3	0	7	0	0	0	405
5:30 PM	16	177	0	0	181	4	3	0	9	0	0	0	390
5:45 PM	11	216	0	0	142	4	1	0	4	0	0	0	378
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	83	1567	0	2	1294	29	16	0	53	0	0	0	3044
APPROACH %'s :	5.03%	94.97%	0.00%	0.15%	97.66%	2.19%	23.19%	0.00%	76.81%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	49	806	0	1	649	14	11	0	27	0	0	0	1557
PEAK HR FACTOR :		0.942			0.897			0.792			0.000		0.961

CONTROL : 1-Way Stop (EB)

ITM Peak Hour Summary

Prepared by:

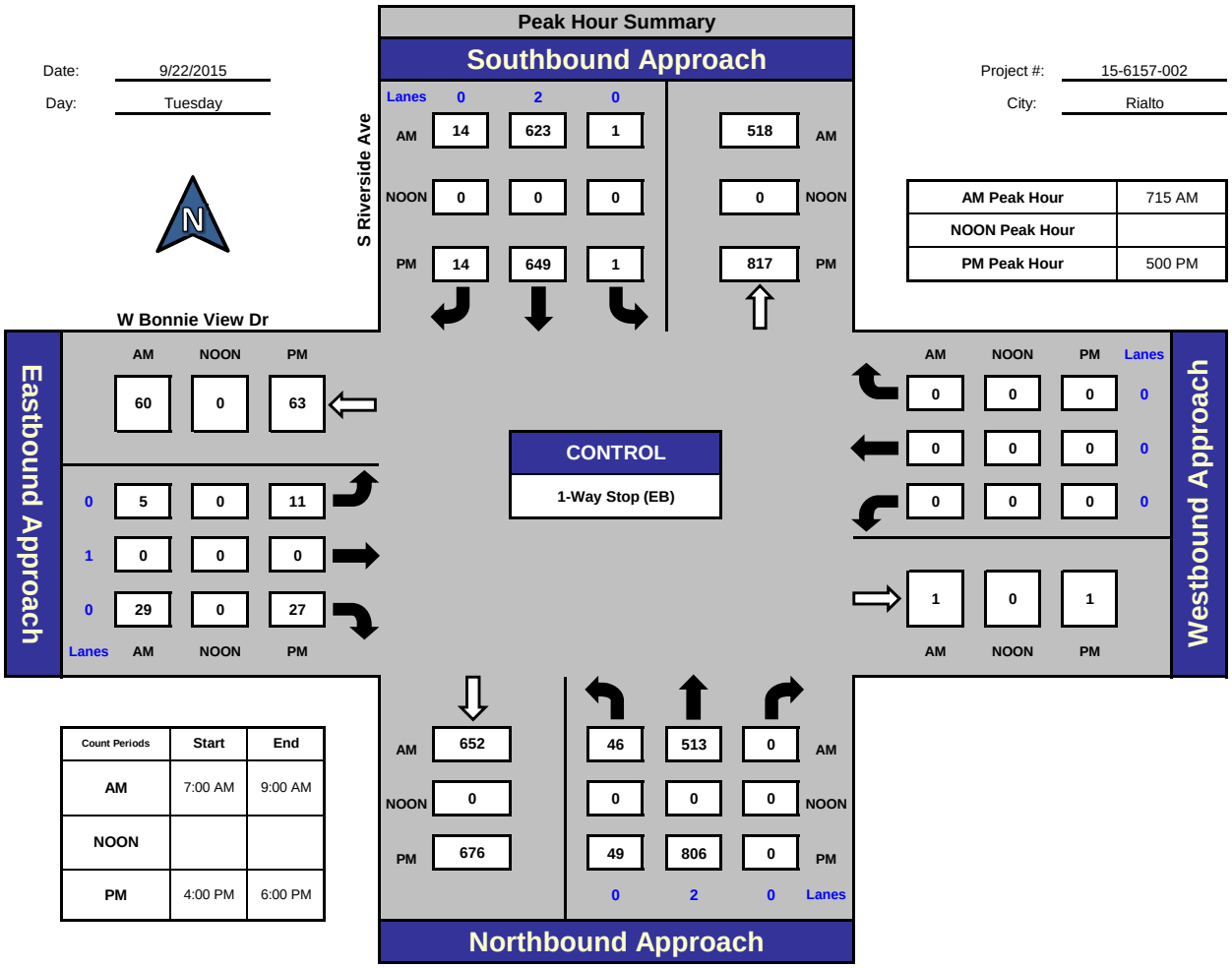
National Data & Surveying Services

S Riverside Ave and W Bonnie View Dr , Rialto

Date: 9/22/2015
Day: Tuesday

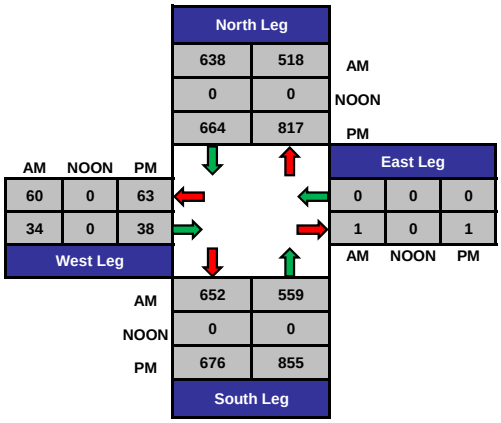
Project #: 15-6157-002
City: Rialto

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

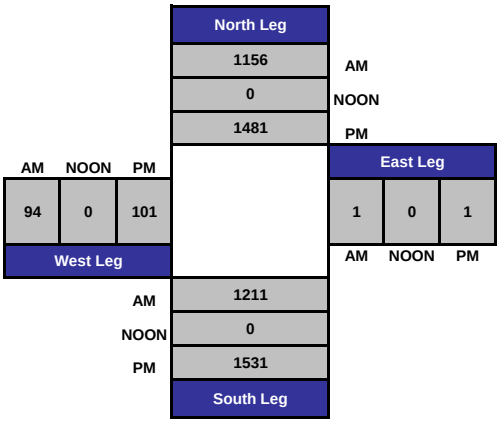


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

Cars

City: Rialto **Date:** 9/22/2015

AM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
7:00 AM	12	89	0	0	126	4	1	0	11	0	0	0	243
7:15 AM	12	114	0	1	170	1	0	0	6	0	0	0	304
7:30 AM	10	122	0	0	159	5	1	0	11	0	0	0	308
7:45 AM	13	150	0	0	163	3	3	0	5	0	0	0	337
8:00 AM	7	113	0	0	118	3	1	0	5	0	0	0	247
8:15 AM	9	97	0	0	125	4	1	0	5	0	0	0	241
8:30 AM	4	105	0	0	111	0	1	0	5	0	0	0	226
8:45 AM	10	130	0	0	112	0	0	0	1	0	0	0	253
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	77	920	0	1	1084	20	8	0	49	0	0	0	2159
APPROACH %'s :	7.72%	92.28%	0.00%	0.09%	98.10%	1.81%	14.04%	0.00%	85.96%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	42	499	0	1	610	12	5	0	27	0	0	0	1196
PEAK HR FACTOR :		0.830			0.906			0.667			0.000		0.887

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

Cars

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
4:00 PM	8	181	0	1	158	3	0	0	5	0	0	0	356
4:15 PM	6	205	0	0	173	4	1	0	8	0	0	0	397
4:30 PM	7	190	0	0	140	1	3	0	5	0	0	0	346
4:45 PM	12	178	0	0	167	7	1	0	8	0	0	0	373
5:00 PM	5	209	0	0	150	6	4	0	7	0	0	0	381
5:15 PM	17	200	0	1	173	0	3	0	7	0	0	0	401
5:30 PM	16	175	0	0	179	4	3	0	9	0	0	0	386
5:45 PM	11	215	0	0	140	4	1	0	4	0	0	0	375
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	82	1553	0	2	1280	29	16	0	53	0	0	0	3015
APPROACH %'s :	5.02%	94.98%	0.00%	0.15%	97.64%	2.21%	23.19%	0.00%	76.81%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	49	799	0	1	642	14	11	0	27	0	0	0	1543
PEAK HR FACTOR :		0.938			0.898			0.792			0.000		0.962

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

2 Axle Trucks

City: Rialto **Date:** 9/22/2015

AM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
7:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	4
7:15 AM	2	2	0	0	5	2	0	0	0	0	0	0	11
7:30 AM	1	2	0	0	1	0	0	0	1	0	0	0	5
7:45 AM	0	1	0	0	3	0	0	0	0	0	0	0	4
8:00 AM	0	5	0	0	2	0	0	0	0	0	0	0	7
8:15 AM	0	4	0	0	1	0	0	0	0	0	0	0	5
8:30 AM	1	1	0	0	3	0	1	0	0	0	0	0	6
8:45 AM	0	1	0	0	4	0	0	0	0	0	0	0	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	18	0	0	21	2	1	0	1	0	0	0	47
APPROACH %'s :	18.18%	81.82%	0.00%	0.00%	91.30%	8.70%	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	3	10	0	0	11	2	0	0	1	0	0	0	27
PEAK HR FACTOR :		0.650			0.464			0.250			0.000		0.887

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

2 Axle Trucks

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
4:00 PM	1	1	0	0	1	0	0	0	0	0	0	0	3
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	4
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	0	0	2	0	0	0	0	0	0	0	3
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
5:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	4
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	10	0	0	10	0	0	0	0	0	0	0	21
APPROACH %'s :	9.09%	90.91%	0.00%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	0	5	0	0	5	0	0	0	0	0	0	0	10
PEAK HR FACTOR :		0.625			0.625			0.000			0.000		0.962

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

3 Axle Trucks

City: Rialto **Date:** 9/22/2015

AM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	3	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	1	0	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	0
8:00 AM	0	0	0	0	1	0	0	0	1	0	0	0	2
8:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	5	0	0	4	0	0	0	1	0	0	0	11
APPROACH %'s :	16.67%	83.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	1	3	0	0	1	0	0	0	1	0	0	0	6
PEAK HR FACTOR :		0.333			0.250			0.250			0.000		0.887

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002 **Day:** Tuesday

3 Axle Trucks

City: Rialto **Date:** 9/22/2015

PM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	3	0	0	1	0	0	0	0	0	0	0	4
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250			0.000			0.000			0.000		0.962

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002

Day: Tuesday

4 Axle+ Trucks

City: Rialto

Date: 9/22/2015

AM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	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	0
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	2
8:30 AM	0	2	0	0	3	0	0	0	0	0	0	0	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	4	0	0	5	0	0	0	0	0	0	0	9
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	1	0	0	1	0	0	0	0	0	0	0	2
PEAK HR FACTOR :		0.250			0.250			0.000			0.000		0.887

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6157-002

Day: Tuesday

4 Axle+ Trucks

City: Rialto

Date: 9/22/2015

PM

NS/EW Streets:	S Riverside Ave			S Riverside Ave			W Bonnie View Dr			W Bonnie View Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1	0	0	3	0	0	0	0	0	0	0	4
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	0	1	0	0	2	0	0	0	0	0	0	0	3
PEAK HR FACTOR :		0.250			0.500			0.000			0.000		0.962

CONTROL : 1-Way Stop (EB)

APPENDIX B

Existing Conditions HCM Intersection Analysis Worksheets

Metro South TOD Project TIA
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[14.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 22 Sep 2015 << 07:30 - 08:30												
Base Vol:	0	298	10	23	340	0	0	0	0	19	0	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	298	10	23	340	0	0	0	0	19	0	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	298	10	23	340	0	0	0	0	19	0	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	389	13	30	443	0	0	0	0	25	0	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	389	13	30	443	0	0	0	0	25	0	50
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	402	xxxx	xxxxx	xxxx	xxxx	xxxxx	898	898	395
Potent Cap.:	xxxx	xxxx	xxxxx	1168	xxxx	xxxxx	xxxx	xxxx	xxxxx	312	281	659
Move Cap.:	xxxx	xxxx	xxxxx	1168	xxxx	xxxxx	xxxx	xxxx	xxxxx	306	274	659
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.08	0.00	0.08
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	476	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.0	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.0		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[13.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 07:15 - 08:15												
Base Vol:	49 523	0	0	632	15	5	0	31	0	0	0	
Growth Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	49 523	0	0	632	15	5	0	31	0	0	0	
Added Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
PasserByVol:	0 0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	49 523	0	0	632	15	5	0	31	0	0	0	
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.91 0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
PHF Volume:	54 577	0	0	698	17	6	0	34	0	0	0	
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
FinalVolume:	54 577	0	0	698	17	6	0	34	0	0	0	
Critical Gap Module:												
Critical Gp:	4.1 xxxx xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2 xxxx xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		
Capacity Module:												
Cnflict Vol:	714 xxxx xxxxx	xxxx	xxxx	xxxxx	1103	1391	357	xxxx	xxxx	xxxxx		
Potent Cap.:	895 xxxx xxxxx	xxxx	xxxx	xxxxx	209	143	645	xxxx	xxxx	xxxxx		
Move Cap.:	895 xxxx xxxxx	xxxx	xxxx	xxxxx	199	135	645	xxxx	xxxx	xxxxx		
Volume/Cap:	0.06 xxxx xxxx	xxxx	xxxx	xxxx	0.03	0.00	0.05	xxxx	xxxx	xxxx		
Level Of Service Module:												
2Way95thQ:	0.2 xxxx xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Control Del:	9.3 xxxx xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
LOS by Move:	A *	*	*	*	*	*	*	*	*	*		
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx xxxxx			xxxx xxxx xxxxx			xxxx 492 xxxxx			xxxx xxxx xxxxx		
SharedQueue:	xxxxx xxxx xxxxx			xxxxx xxxx xxxxx			xxxxx 0.3 xxxxx			xxxxx xxxx xxxxx		
Shrd ConDel:	xxxxx xxxx xxxxx			xxxxx xxxx xxxxx			xxxxx 13.0 xxxxx			xxxxx xxxx xxxxx		
Shared LOS:	* *	*	*	*	*	*	B	*	*	*	*	
ApproachDel:	xxxxxx			xxxxxx			13.0			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.5 Worst Case Level Of Service: B[12.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:16:45 - 15:45												
Base Vol:	0	302	9	27	256	0	0	0	0	24	0	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	302	9	27	256	0	0	0	0	24	0	39
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	302	9	27	256	0	0	0	0	24	0	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	322	10	29	273	0	0	0	0	26	0	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	322	10	29	273	0	0	0	0	26	0	42
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	331	xxxx	xxxxx	xxxx	xxxx	xxxxx	657	657	326
Potent Cap.:	xxxx	xxxx	xxxxx	1240	xxxx	xxxxx	xxxx	xxxx	xxxxx	433	387	719
Move Cap.:	xxxx	xxxx	xxxxx	1240	xxxx	xxxxx	xxxx	xxxx	xxxxx	425	378	719
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.06
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	569	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.2	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.2		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: C[16.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1 0 2	0	0		0 0 1	1	0		0 0 1!	0	0		0 0 0	0	0	
Volume Module: >> Count Date: 22 Sep 2015 << 17:00 - 18:00																
Base Vol:	49 812	0	0		656	14	11		0	27	0		0	0	0	
Growth Adj:	1.00 1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	49 812	0	0		656	14	11		0	27	0		0	0	0	
Added Vol:	0 0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0 0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	49 812	0	0		656	14	11		0	27	0		0	0	0	
User Adj:	1.00 1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.96 0.96	0.96	0.96		0.96	0.96	0.96		0.96	0.96	0.96		0.96	0.96	0.96	
PHF Volume:	51 842	0	0		680	15	11		0	28	0		0	0	0	
Reduct Vol:	0 0	0	0		0	0	0		0	0	0		0	0	0	
FinalVolume:	51 842	0	0		680	15	11		0	28	0		0	0	0	
Critical Gap Module:																
Critical Gp:	4.1 xxxx	xxxxx	xxxxx		xxxx	xxxxx	6.8		6.5	6.9	xxxxx		xxxx	xxxxx		
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx		xxxx	xxxxx	3.5		4.0	3.3	xxxxx		xxxx	xxxxx		
Capacity Module:																
Cnflict Vol:	695 xxxx	xxxxx	xxxx		xxxx	xxxxx	1211		1632	348	xxxx		xxxx	xxxxx		
Potent Cap.:	910 xxxx	xxxxx	xxxx		xxxx	xxxxx	178		102	654	xxxx		xxxx	xxxxx		
Move Cap.:	910 xxxx	xxxxx	xxxx		xxxx	xxxxx	170		97	654	xxxx		xxxx	xxxxx		
Volume/Cap:	0.06 xxxx	xxxx	xxxx		xxxx	xxxx	0.07		0.00	0.04	xxxx		xxxx	xxxx		
Level Of Service Module:																
2Way95thQ:	0.2 xxxx	xxxxx	xxxx		xxxx	xxxxx	xxxx		xxxx	xxxxx	xxxx		xxxx	xxxxx		
Control Del:	9.2 xxxx	xxxxx	xxxxx		xxxx	xxxxx	xxxxx		xxxx	xxxxx	xxxxx		xxxx	xxxxx		
LOS by Move:	A	*	*		*	*	*		*	*	*		*	*		
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx xxxx	xxxxx			xxxx xxxx	xxxxx	xxxx		359	xxxxx	xxxx		xxxx	xxxxx		
SharedQueue:	xxxxx xxxx	xxxxx			xxxxx xxxx	xxxxx	xxxxx		0.4	xxxxx	xxxxx		xxxx	xxxxx		
Shrd ConDel:	xxxxx xxxx	xxxxx			xxxxx xxxx	xxxxx	xxxxx		16.3	xxxxx	xxxxx		xxxx	xxxxx		
Shared LOS:	* *	*			* *	*	*		C	*	*		*	*		
ApproachDel:	xxxxxx				xxxxxx		16.3			xxxxxx						
ApproachLOS:	*				*		C			*						

Note: Queue reported is the number of cars per lane.

APPENDIX C

Existing Plus Project Conditions
HCM Intersection Analysis Worksheets

Metro South TOD Project TIA
Existing Plus Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[14.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 22 Sep 2015 << 07:30 - 08:30												
Base Vol:	0	298	10	23	340	0	0	0	0	19	0	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	298	10	23	340	0	0	0	0	19	0	38
Added Vol:	0	0	1	1	0	0	0	0	0	5	0	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	298	11	24	340	0	0	0	0	24	0	43
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	389	14	31	443	0	0	0	0	31	0	56
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	389	14	31	443	0	0	0	0	31	0	56
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	403	xxxx	xxxxx	xxxx	xxxx	xxxxx	902	902	396
Potent Cap.:	xxxx	xxxx	xxxxx	1167	xxxx	xxxxx	xxxx	xxxx	xxxxx	311	280	658
Move Cap.:	xxxx	xxxx	xxxxx	1167	xxxx	xxxxx	xxxx	xxxx	xxxxx	304	272	658
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.09
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	465	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.5	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.5		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Existing Plus Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: B[14.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 07:15 - 08:15												
Base Vol:	49 523	0	0	632	15	5	0	31	0	0	0	
Growth Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	49 523	0	0	632	15	5	0	31	0	0	0	
Added Vol:	4 0	0	0	0	2	6	0	16	0	0	0	
PasserByVol:	0 0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	53 523	0	0	632	17	11	0	47	0	0	0	
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.91 0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
PHF Volume:	58 577	0	0	698	19	12	0	52	0	0	0	
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
FinalVolume:	58 577	0	0	698	19	12	0	52	0	0	0	
Critical Gap Module:												
Critical Gp:	4.1 xxxx xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2 xxxx xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		
Capacity Module:												
Cnflict Vol:	716 xxxx xxxxx	xxxx	xxxx	xxxxx	1113	1401	358	xxxx	xxxx	xxxxx		
Potent Cap.:	894 xxxx xxxxx	xxxx	xxxx	xxxxx	206	141	644	xxxx	xxxx	xxxxx		
Move Cap.:	894 xxxx xxxxx	xxxx	xxxx	xxxxx	196	132	644	xxxx	xxxx	xxxxx		
Volume/Cap:	0.07 xxxx xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.08	xxxx	xxxx	xxxx		
Level Of Service Module:												
2Way95thQ:	0.2 xxxx xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Control Del:	9.3 xxxx xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
LOS by Move:	A *	*	*	*	*	*	*	*	*	*		
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx xxxxx		xxxx	xxxx	xxxxx	xxxx	449	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx xxxxx		xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx xxxxx		xxxxx	xxxx	xxxxx	xxxxx	14.4	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	*	*	B	*	*	*	*	
ApproachDel:	xxxxxx		xxxxxx			14.4			xxxxxx			
ApproachLOS:	*		*			B			*			

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Existing Plus Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[12.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:16:45 - 15:45												
Base Vol:	0	302	9	27	256	0	0	0	0	24	0	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	302	9	27	256	0	0	0	0	24	0	39
Added Vol:	0	0	5	5	0	0	0	0	0	3	0	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	302	14	32	256	0	0	0	0	27	0	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	322	15	34	273	0	0	0	0	29	0	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	322	15	34	273	0	0	0	0	29	0	45
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	337	xxxx	xxxxx	xxxx	xxxx	xxxxx	670	670	329
Potent Cap.:	xxxx	xxxx	xxxxx	1234	xxxx	xxxxx	xxxx	xxxx	xxxxx	425	381	717
Move Cap.:	xxxx	xxxx	xxxxx	1234	xxxx	xxxxx	xxxx	xxxx	xxxxx	416	370	717
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.06
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	559	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.4	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.4		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Existing Plus Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: C[17.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0 0		0 0 1	1 0		0 0 1!	0 0		0 0 0	0 0	
Volume Module: >> Count Date: 22 Sep 2015 << 17:00 - 18:00												
Base Vol:	49	812	0	0	656	14	11	0	27	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	812	0	0	656	14	11	0	27	0	0	0
Added Vol:	16	0	0	0	0	6	3	0	9	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	65	812	0	0	656	20	14	0	36	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	67	842	0	0	680	21	15	0	37	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	67	842	0	0	680	21	15	0	37	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	701	xxxx	xxxxx	xxxx	xxxx	xxxxx	1247	1668	351	xxxx	xxxx	xxxxx
Potent Cap.:	905	xxxx	xxxxx	xxxx	xxxx	xxxxx	168	97	651	xxxx	xxxx	xxxxx
Move Cap.:	905	xxxx	xxxxx	xxxx	xxxx	xxxxx	159	90	651	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	xxxx	xxxx	xxxx	xxxx	xxxx	0.09	0.00	0.06	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	349	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	17.1	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			17.1			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

APPENDIX D

Project Completion Year Conditions
Without and With Project
HCM Intersection Analysis Worksheets

Project Completion Year Conditions Without Project

Metro South TOD Project TIA
Project Completion Year without Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[14.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 22 Sep 2015 << 07:30 - 08:30												
Base Vol:	0	298	10	23	340	0	0	0	0	19	0	38
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	313	11	24	357	0	0	0	0	20	0	40
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	313	11	24	357	0	0	0	0	20	0	40
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	408	14	31	465	0	0	0	0	26	0	52
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	408	14	31	465	0	0	0	0	26	0	52
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	422	xxxx	xxxxx	xxxx	xxxx	xxxxx	943	943	415
Potent Cap.:	xxxx	xxxx	xxxxx	1148	xxxx	xxxxx	xxxx	xxxx	xxxxx	294	265	642
Move Cap.:	xxxx	xxxx	xxxxx	1148	xxxx	xxxxx	xxxx	xxxx	xxxxx	288	257	642
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.09	0.00	0.08
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	455	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.6	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.5	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.5		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Project Completion Year without Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B[13.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 07:15 - 08:15												
Base Vol:	49 523		0	0 632		15	5	0	31	0 0		0
Growth Adj:	1.05 1.05		1.05	1.05 1.05		1.05	1.05 1.05		1.05	1.05 1.05		1.05
Initial Bse:	51 549		0	0 664		16	5	0	33	0 0		0
Added Vol:	0 0		0	0 0		0	0	0	0	0 0		0
PasserByVol:	0 0		0	0 0		0	0	0	0	0 0		0
Initial Fut:	51 549		0	0 664		16	5	0	33	0 0		0
User Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
PHF Adj:	0.91 0.91		0.91	0.91 0.91		0.91	0.91 0.91		0.91	0.91 0.91		0.91
PHF Volume:	57 606		0	0 732		17	6	0	36	0 0		0
Reduct Vol:	0 0		0	0 0		0	0	0	0	0 0		0
FinalVolume:	57 606		0	0 732		17	6	0	36	0 0		0
Critical Gap Module:												
Critical Gp:	4.1 xxxx xxxxx		xxxxx	xxxx xxxxx		6.8	6.5		6.9	xxxxx xxxx		xxxxx
FollowUpTim:	2.2 xxxx xxxxx		xxxxx	xxxx xxxxx		3.5	4.0		3.3	xxxxx xxxx		xxxxx
Capacity Module:												
Cnflict Vol:	750 xxxx xxxxx		xxxx	xxxx xxxxx		1158	1461		375	xxxx xxxx		xxxxx
Potent Cap.:	868 xxxx xxxxx		xxxx	xxxx xxxxx		192	130		628	xxxx xxxx		xxxxx
Move Cap.:	868 xxxx xxxxx		xxxx	xxxx xxxxx		183	122		628	xxxx xxxx		xxxxx
Volume/Cap:	0.07 xxxx xxxx		xxxx	xxxx xxxx		0.03	0.00		0.06	xxxx xxxx		xxxx
Level Of Service Module:												
2Way95thQ:	0.2 xxxx xxxxx		xxxx	xxxx xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.4 xxxx xxxxx		xxxxx	xxxx xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A *	*	*	*	*	*	*	*	*	*	*	
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx xxxxx			xxxx xxxx xxxxx		xxxx	469	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx xxxxx			xxxxx xxxx xxxxx		xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx xxxxx			xxxxx xxxx xxxxx		xxxxx	13.4	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	*	*	B	*	*	*	*	
ApproachDel:	xxxxxx			xxxxxx			13.4			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Project Completion Year without Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.5 Worst Case Level Of Service: B[12.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:16:45 - 15:45												
Base Vol:	0	302	9	27	256	0	0	0	0	24	0	39
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	317	9	28	269	0	0	0	0	25	0	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	317	9	28	269	0	0	0	0	25	0	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	338	10	30	286	0	0	0	0	27	0	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	338	10	30	286	0	0	0	0	27	0	44
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	348	xxxx	xxxxx	xxxx	xxxx	xxxxx	689	689	343
Potent Cap.:	xxxx	xxxx	xxxxx	1222	xxxx	xxxxx	xxxx	xxxx	xxxxx	414	371	704
Move Cap.:	xxxx	xxxx	xxxxx	1222	xxxx	xxxxx	xxxx	xxxx	xxxxx	406	362	704
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.06
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	551	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.5	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.5		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Project Completion Year without Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: C[17.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 17:00 - 18:00												
Base Vol:	49 812		0	0 656		14	11	0	27	0 0		0
Growth Adj:	1.05 1.05		1.05	1.05 1.05		1.05	1.05	1.05	1.05	1.05 1.05		1.05
Initial Bse:	51 853		0	0 689		15	12	0	28	0 0		0
Added Vol:	0 0		0	0 0		0	0	0	0	0 0		0
PasserByVol:	0 0		0	0 0		0	0	0	0	0 0		0
Initial Fut:	51 853		0	0 689		15	12	0	28	0 0		0
User Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00	1.00	1.00	1.00 1.00		1.00
PHF Adj:	0.96 0.96		0.96	0.96 0.96		0.96	0.96	0.96	0.96	0.96 0.96		0.96
PHF Volume:	53 884		0	0 715		15	12	0	29	0 0		0
Reduct Vol:	0 0		0	0 0		0	0	0	0	0 0		0
FinalVolume:	53 884		0	0 715		15	12	0	29	0 0		0
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx xxxxx		6.8	6.5	6.9	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx xxxxx		3.5	4.0	3.3	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	730 xxxx	xxxxx	xxxx	xxxx xxxxx		1271	1713	365	xxxx	xxxx	xxxxx	
Potent Cap.:	883 xxxx	xxxxx	xxxx	xxxx xxxxx		162	91	638	xxxx	xxxx	xxxxx	
Move Cap.:	883 xxxx	xxxxx	xxxx	xxxx xxxxx		155	86	638	xxxx	xxxx	xxxxx	
Volume/Cap:	0.06 xxxx	xxxx	xxxx	xxxx xxxx		0.08	0.00	0.05	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.2 xxxx	xxxxx	xxxx	xxxx xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.3 xxxx	xxxxx	xxxxx	xxxx xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A *		*	*	*		*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx	335	xxxxx	xxxx xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx	0.4	xxxxx	xxxxx xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx	17.2	xxxxx	xxxxx xxxx	xxxxx	
Shared LOS:	* *		*	*	*		*	C		*	*	*
ApproachDel:	xxxxxx			xxxxxx			17.2			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

Project Completion Year Conditions With Project

Metro South TOD Project TIA
Project Completion Year with Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: C[15.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 22 Sep 2015 << 07:30 - 08:30												
Base Vol:	0	298	10	23	340	0	0	0	0	19	0	38
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	313	11	24	357	0	0	0	0	20	0	40
Added Vol:	0	0	1	1	0	0	0	0	0	5	0	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	313	12	25	357	0	0	0	0	25	0	45
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	408	15	33	465	0	0	0	0	33	0	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	408	15	33	465	0	0	0	0	33	0	59
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	423	xxxx	xxxxx	xxxx	xxxx	xxxxx	946	946	415
Potent Cap.:	xxxx	xxxx	xxxxx	1147	xxxx	xxxxx	xxxx	xxxx	xxxxx	292	263	641
Move Cap.:	xxxx	xxxx	xxxxx	1147	xxxx	xxxxx	xxxx	xxxx	xxxxx	286	256	641
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.11	0.00	0.09
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	444	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.8	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.2	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			15.2		
ApproachLOS:	*			*			*			C		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Project Completion Year with Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[15.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 07:15 - 08:15												
Base Vol:	49 523	0	0	632	15	5	0	31	0	0	0	
Growth Adj:	1.05 1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	
Initial Bse:	51 549	0	0	664	16	5	0	33	0	0	0	
Added Vol:	4 0	0	0	0	2	6	0	16	0	0	0	
PasserByVol:	0 0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	55 549	0	0	664	18	11	0	49	0	0	0	
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.91 0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
PHF Volume:	61 606	0	0	732	20	12	0	54	0	0	0	
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
FinalVolume:	61 606	0	0	732	20	12	0	54	0	0	0	
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	752 xxxx	xxxxx	xxxx	xxxx	xxxxx	1168	1471	376	xxxx	xxxx	xxxxx	
Potent Cap.:	867 xxxx	xxxxx	xxxx	xxxx	xxxxx	190	128	627	xxxx	xxxx	xxxxx	
Move Cap.:	867 xxxx	xxxxx	xxxx	xxxx	xxxxx	179	119	627	xxxx	xxxx	xxxxx	
Volume/Cap:	0.07 xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.09	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.2 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.5 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A *	*	*	*	*	*	*	*	*	*	*	
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	427	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.0	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	*	*	B	*	*	*	*	
ApproachDel:	xxxxxx		xxxxxx			15.0		xxxxxx				
ApproachLOS:	*		*			B		*				

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Project Completion Year with Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[12.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:16:45 - 15:45												
Base Vol:	0	302	9	27	256	0	0	0	0	24	0	39
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	317	9	28	269	0	0	0	0	25	0	41
Added Vol:	0	0	5	5	0	0	0	0	0	3	0	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	317	14	33	269	0	0	0	0	28	0	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	338	15	36	286	0	0	0	0	30	0	47
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	338	15	36	286	0	0	0	0	30	0	47
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	353	xxxx	xxxxx	xxxx	xxxx	xxxxx	703	703	345
Potent Cap.:	xxxx	xxxx	xxxxx	1217	xxxx	xxxxx	xxxx	xxxx	xxxxx	407	365	702
Move Cap.:	xxxx	xxxx	xxxxx	1217	xxxx	xxxxx	xxxx	xxxx	xxxxx	398	354	702
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.08	0.00	0.07
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	540	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.8	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Project Completion Year with Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: C[18.3]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 17:00 - 18:00												
Base Vol:	49 812	0	0	656	14	11	0	27	0	0	0	
Growth Adj:	1.05 1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	
Initial Bse:	51 853	0	0	689	15	12	0	28	0	0	0	
Added Vol:	16 0	0	0	0	6	3	0	9	0	0	0	
PasserByVol:	0 0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	67 853	0	0	689	21	15	0	37	0	0	0	
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.96 0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
PHF Volume:	70 884	0	0	715	21	15	0	39	0	0	0	
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
FinalVolume:	70 884	0	0	715	21	15	0	39	0	0	0	
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	736 xxxx	xxxxx	xxxx	xxxx	xxxxx	1307	1750	368	xxxx	xxxx	xxxxx	
Potent Cap.:	879 xxxx	xxxxx	xxxx	xxxx	xxxxx	154	87	635	xxxx	xxxx	xxxxx	
Move Cap.:	879 xxxx	xxxxx	xxxx	xxxx	xxxxx	144	80	635	xxxx	xxxx	xxxxx	
Volume/Cap:	0.08 xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.06	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.3 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.5 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	
Movement:	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	325	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.6	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	18.3	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	*	*	C	*	*	*	*	
ApproachDel:	xxxxxx		xxxxxx			18.3			xxxxxx			
ApproachLOS:	*		*			C			*			

Note: Queue reported is the number of cars per lane.

APPENDIX E

Cumulative Conditions
Without and With Project
HCM Intersection Analysis Worksheets

Cumulative Conditions Without Project

Metro South TOD Project TIA
Cumulative without Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.5 Worst Case Level Of Service: B[14.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 22 Sep 2015 << 07:30 - 08:30												
Base Vol:	0	298	10	23	340	0	0	0	0	19	0	38
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	313	11	24	357	0	0	0	0	20	0	40
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative:	0	1	1	1	0	0	0	0	0	2	0	2
Initial Fut:	0	314	12	25	357	0	0	0	0	22	0	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	409	15	33	465	0	0	0	0	29	0	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	409	15	33	465	0	0	0	0	29	0	55
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	424	xxxx	xxxxx	xxxx	xxxx	xxxxx	948	948	417
Potent Cap.:	xxxx	xxxx	xxxxx	1146	xxxx	xxxxx	xxxx	xxxx	xxxxx	292	263	640
Move Cap.:	xxxx	xxxx	xxxxx	1146	xxxx	xxxxx	xxxx	xxxx	xxxxx	285	255	640
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.09
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	449	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.8	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Cumulative without Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[14.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 07:15 - 08:15												
Base Vol:	49 523	0	0	632	15	5	0	31	0	0	0	
Growth Adj:	1.05 1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	
Initial Bse:	51 549	0	0	664	16	5	0	33	0	0	0	
Added Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
Cumulative:	3 41	0	0	37	1	3	0	8	0	0	0	
Initial Fut:	54 590	0	0	701	17	8	0	41	0	0	0	
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.91 0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
PHF Volume:	60 651	0	0	773	18	9	0	45	0	0	0	
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
FinalVolume:	60 651	0	0	773	18	9	0	45	0	0	0	
Critical Gap Module:												
Critical Gp:	4.1 xxxx xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2 xxxx xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		
Capacity Module:												
Cnflict Vol:	792 xxxx xxxxx	xxxx	xxxx	xxxxx	1228	1554	396	xxxx	xxxx	xxxxx		
Potent Cap.:	838 xxxx xxxxx	xxxx	xxxx	xxxxx	173	114	609	xxxx	xxxx	xxxxx		
Move Cap.:	838 xxxx xxxxx	xxxx	xxxx	xxxxx	164	106	609	xxxx	xxxx	xxxxx		
Volume/Cap:	0.07 xxxx xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.07	xxxx	xxxx	xxxx		
Level Of Service Module:												
2Way95thQ:	0.2 xxxx xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Control Del:	9.6 xxxx xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
LOS by Move:	A *	*	*	*	*	*	*	*	*	*		
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx xxxxx		xxxx	xxxx	xxxxx	xxxx	417	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx xxxxx		xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx xxxxx		xxxxx	xxxx	xxxxx	xxxxx	14.9	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	*	*	B	*	*	*	*	
ApproachDel:	xxxxxx		xxxxxx			14.9			xxxxxx			
ApproachLOS:	*		*			B			*			

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Cumulative without Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[12.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:16:45 - 15:45												
Base Vol:	0	302	9	27	256	0	0	0	0	24	0	39
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	317	9	28	269	0	0	0	0	25	0	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative:	0	1	3	3	1	0	0	0	0	2	0	2
Initial Fut:	0	318	12	31	270	0	0	0	0	27	0	43
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	339	13	33	287	0	0	0	0	29	0	46
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	339	13	33	287	0	0	0	0	29	0	46
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	352	xxxx	xxxxx	xxxx	xxxx	xxxxx	699	699	345
Potent Cap.:	xxxx	xxxx	xxxxx	1218	xxxx	xxxxx	xxxx	xxxx	xxxxx	409	366	702
Move Cap.:	xxxx	xxxx	xxxxx	1218	xxxx	xxxxx	xxxx	xxxx	xxxxx	400	356	702
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.07
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	543	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.7	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.7		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Cumulative without Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: C[20.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0 0		0 0 1	1 0		0 0 1!	0 0		0 0 0	0 0	
Volume Module: >> Count Date: 22 Sep 2015 << 17:00 - 18:00												
Base Vol:	49	812	0	0	656	14	11	0	27	0	0	0
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	51	853	0	0	689	15	12	0	28	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative:	9	72	0	0	76	4	2	0	6	0	0	0
Initial Fut:	60	925	0	0	765	19	14	0	34	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	63	959	0	0	793	19	14	0	36	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	63	959	0	0	793	19	14	0	36	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	813	xxxx	xxxxx	xxxx	xxxx	xxxxx	1408	1888	406	xxxx	xxxx	xxxxx
Potent Cap.:	823	xxxx	xxxxx	xxxx	xxxx	xxxxx	132	71	600	xxxx	xxxx	xxxxx
Move Cap.:	823	xxxx	xxxxx	xxxx	xxxx	xxxxx	124	66	600	xxxx	xxxx	xxxxx
Volume/Cap:	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	0.11	0.00	0.06	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	288	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.6	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	20.1	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			20.1			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

Cumulative Conditions With Project

Metro South TOD Project TIA
Cumulative with Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: C[15.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 22 Sep 2015 << 07:30 - 08:30												
Base Vol:	0	298	10	23	340	0	0	0	0	19	0	38
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	313	11	24	357	0	0	0	0	20	0	40
Added Vol:	0	0	1	1	0	0	0	0	0	5	0	5
Cumulative:	0	1	1	1	0	0	0	0	0	2	0	2
Initial Fut:	0	314	13	26	357	0	0	0	0	27	0	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	409	16	34	465	0	0	0	0	35	0	61
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	409	16	34	465	0	0	0	0	35	0	61
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	426	xxxx	xxxxx	xxxx	xxxx	xxxxx	951	951	417
Potent Cap.:	xxxx	xxxx	xxxxx	1145	xxxx	xxxxx	xxxx	xxxx	xxxxx	291	262	640
Move Cap.:	xxxx	xxxx	xxxxx	1145	xxxx	xxxxx	xxxx	xxxx	xxxxx	284	254	640
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.12	0.00	0.10
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	439	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.8	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.5	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			15.5		
ApproachLOS:	*			*			*			C		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Cumulative with Project Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: C[16.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	2 0	0	0 0	1 1	0	0 0	1! 0	0	0 0	0 0	0
Volume Module: >> Count Date: 22 Sep 2015 << 07:15 - 08:15												
Base Vol:	49	523	0	0	632	15	5	0	31	0	0	0
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	51	549	0	0	664	16	5	0	33	0	0	0
Added Vol:	4	0	0	0	0	2	6	0	16	0	0	0
Cumulative:	3	41	0	0	37	1	3	0	8	0	0	0
Initial Fut:	58	590	0	0	701	19	14	0	57	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	65	651	0	0	773	21	16	0	62	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	65	651	0	0	773	21	16	0	62	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	794	xxxx	xxxxx	xxxx	xxxx	xxxxx	1238	1564	397	xxxx	xxxx	xxxxx
Potent Cap.:	836	xxxx	xxxxx	xxxx	xxxx	xxxxx	171	113	608	xxxx	xxxx	xxxxx
Move Cap.:	836	xxxx	xxxxx	xxxx	xxxx	xxxxx	160	104	608	xxxx	xxxx	xxxxx
Volume/Cap:	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.10	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	389	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.5	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			16.5			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Cumulative with Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Willow Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[13.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:16:45 - 15:45												
Base Vol:	0	302	9	27	256	0	0	0	0	24	0	39
Growth Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Initial Bse:	0	317	9	28	269	0	0	0	0	25	0	41
Added Vol:	0	0	5	5	0	0	0	0	0	3	0	3
Cumulative:	0	1	3	3	1	0	0	0	0	2	0	2
Initial Fut:	0	318	17	36	270	0	0	0	0	30	0	46
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	339	19	39	287	0	0	0	0	32	0	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	339	19	39	287	0	0	0	0	32	0	49
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	357	xxxx	xxxxx	xxxx	xxxx	xxxxx	713	713	348
Potent Cap.:	xxxx	xxxx	xxxxx	1213	xxxx	xxxxx	xxxx	xxxx	xxxxx	402	360	700
Move Cap.:	xxxx	xxxx	xxxxx	1213	xxxx	xxxxx	xxxx	xxxx	xxxxx	392	348	700
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.08	0.00	0.07
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	533	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.0	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.0		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Metro South TOD Project TIA
Cumulative with Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Riverside Avenue at Bonnie View Drive

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[21.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 22 Sep 2015 << 17:00 - 18:00												
Base Vol:	49 812	0	0	656	14	11	0	27	0	0	0	
Growth Adj:	1.05 1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	
Initial Bse:	51 853	0	0	689	15	12	0	28	0	0	0	
Added Vol:	16 0	0	0	0	6	3	0	9	0	0	0	
Cumulative:	9 72	0	0	76	4	2	0	6	0	0	0	
Initial Fut:	76 925	0	0	765	25	17	0	43	0	0	0	
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.96 0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
PHF Volume:	79 959	0	0	793	26	17	0	45	0	0	0	
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	
FinalVolume:	79 959	0	0	793	26	17	0	45	0	0	0	
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	819 xxxx	xxxxx	xxxx	xxxx	xxxxx	1444	1924	409	xxxx	xxxx	xxxxx	
Potent Cap.:	818 xxxx	xxxxx	xxxx	xxxx	xxxxx	125	68	597	xxxx	xxxx	xxxxx	
Move Cap.:	818 xxxx	xxxxx	xxxx	xxxx	xxxxx	116	61	597	xxxx	xxxx	xxxxx	
Volume/Cap:	0.10 xxxx	xxxx	xxxx	xxxx	xxxx	0.15	0.00	0.08	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.3 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.9 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	
Movement:	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	278	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.8	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	21.6	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*	C	*	*	*	*	
ApproachDel:	xxxxxx		xxxxxx			21.6		xxxxxx				
ApproachLOS:	*		*			C		*				

Note: Queue reported is the number of cars per lane.

APPENDIX F

24-Hour Traffic Count Data
MUTCD Signal Warrant Analysis Worksheets

24-Hour Traffic Count Data

Prepared by NDS/ATD

VOLUME

W Bonnie View Dr Bet. S Willow Dr & S Riverside Ave

Day: Thursday
Date: 10/8/2015

City: Rialto
Project #: CA15_6166_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	462	787	1,249

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		1		1		12:00			10		15		25	
00:15			1		1		2		12:15			4		7		11	
00:30			1		1		2		12:30			8		9		17	
00:45			1	3	3	6	4	9	12:45			6	28	5	36	11	64
01:00			0		0		0		13:00			10		15		25	
01:15			0		0		0		13:15			11		11		22	
01:30			1		6		7		13:30			6		15		21	
01:45			1	2	1	7	2	9	13:45			8	35	5	46	13	81
02:00			0		1		1		14:00			12		10		22	
02:15			1		1		2		14:15			12		7		19	
02:30			2		1		3		14:30			9		15		24	
02:45			0	3	2	5	2	8	14:45			8	41	8	40	16	81
03:00			0		2		2		15:00			11		20		31	
03:15			0		1		1		15:15			10		15		25	
03:30			1		1		2		15:30			7		12		19	
03:45			0	1	2	6	2	7	15:45			9	37	14	61	23	98
04:00			1		2		3		16:00			16		15		31	
04:15			2		6		8		16:15			13		10		23	
04:30			2		3		5		16:30			5		17		22	
04:45			3	8	5	16	8	24	16:45			6	40	9	51	15	91
05:00			0		6		6		17:00			7		18		25	
05:15			2		3		5		17:15			6		7		13	
05:30			0		7		7		17:30			8		12		20	
05:45			0	2	12	28	12	30	17:45			9	30	14	51	23	81
06:00			3		8		11		18:00			9		14		23	
06:15			2		12		14		18:15			15		15		30	
06:30			4		9		13		18:30			9		11		20	
06:45			5	14	23	52	28	66	18:45			8	41	13	53	21	94
07:00			15		11		26		19:00			6		13		19	
07:15			7		18		25		19:15			2		10		12	
07:30			6		20		26		19:30			5		13		18	
07:45			8	36	21	70	29	106	19:45			5	18	9	45	14	63
08:00			5		17		22		20:00			6		11		17	
08:15			6		7		13		20:15			6		4		10	
08:30			6		7		13		20:30			4		9		13	
08:45			4	21	14	45	18	66	20:45			1	17	6	30	7	47
09:00			7		9		16		21:00			2		3		5	
09:15			9		6		15		21:15			1		5		6	
09:30			2		6		8		21:30			3		1		4	
09:45			3	21	8	29	11	50	21:45			2	8	2	11	4	19
10:00			3		2		5		22:00			3		8		11	
10:15			4		7		11		22:15			1		4		5	
10:30			7		3		10		22:30			3		5		8	
10:45			7	21	10	22	17	43	22:45			0	7	3	20	3	27
11:00			4		8		12		23:00			1		4		5	
11:15			7		7		14		23:15			3		4		7	
11:30			5		13		18		23:30			2		3		5	
11:45			5	21	16	44	21	65	23:45			1	7	2	13	3	20
TOTALS				153		330		**483**	**TOTALS**				309		457		**766**
SPLIT %				31.7%		68.3%		**38.7%**	**SPLIT %**				40.3%		59.7%		**61.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	462	787	1,249

AM Peak Hour			07:00	07:15	**07:00**	**PM Peak Hour**			15:30	15:00	**15:45**
AM Pk Volume			36	76	**106**	**PM Pk Volume**			45	61	**99**
Pk Hr Factor			0.600	0.905	**0.914**	**Pk Hr Factor**			0.703	0.763	**0.798**
7 - 9 Volume	0	0	57	115	**172**	**4 - 6 Volume**	0	0	70	102	**172**
7 - 9 Peak Hour			07:00	07:15	**07:00**	**4 - 6 Peak Hour**			16:00	16:15	**16:00**
7 - 9 Pk Volume	0	0	36	76	**106**	**4 - 6 Pk Volume**	0	0	40	54	**91**
Pk Hr Factor	0.000	0.000	0.600	0.905	**0.914**	**Pk Hr Factor**	0.000	0.000	0.625	0.750	**0.734**

Prepared by NDS/ATD

VOLUME

S Willow Dr N/O W Bonnie View Dr

Day: Thursday
Date: 10/8/2015

City: Rialto
Project #: CA15_6166_002

DAILY TOTALS	NB	SB	EB	WB	Total
	4,263	4,208	0	0	8,471

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	10		6				16		12:00	66		69				135	
00:15	4		7				11		12:15	52		70				122	
00:30	7		7				14		12:30	56		55				111	
00:45	6	27	6	26			12	53	12:45	45	219	59	253			104	472
01:00	7		2				9		13:00	74		77				151	
01:15	5		3				8		13:15	77		71				148	
01:30	9		6				15		13:30	62		67				129	
01:45	4	25	2	13			6	38	13:45	72	285	88	303			160	588
02:00	5		3				8		14:00	89		98				187	
02:15	6		6				12		14:15	71		70				141	
02:30	3		3				6		14:30	73		67				140	
02:45	4	18	3	15			7	33	14:45	95	328	67	302			162	630
03:00	6		5				11		15:00	94		75				169	
03:15	6		7				13		15:15	89		92				181	
03:30	10		4				14		15:30	60		96				156	
03:45	13	35	8	24			21	59	15:45	84	327	69	332			153	659
04:00	6		12				18		16:00	76		68				144	
04:15	11		10				21		16:15	68		76				144	
04:30	11		19				30		16:30	96		79				175	
04:45	19	47	15	56			34	103	16:45	116	356	69	292			185	648
05:00	18		15				33		17:00	74		80				154	
05:15	14		19				33		17:15	69		77				146	
05:30	10		39				49		17:30	85		68				153	
05:45	25	67	32	105			57	172	17:45	97	325	72	297			169	622
06:00	26		24				50		18:00	73		72				145	
06:15	22		25				47		18:15	78		73				151	
06:30	32		42				74		18:30	61		65				126	
06:45	53	133	46	137			99	270	18:45	73	285	58	268			131	553
07:00	48		47				95		19:00	72		54				126	
07:15	61		79				140		19:15	53		50				103	
07:30	75		85				160		19:30	41		51				92	
07:45	110	294	119	330			229	624	19:45	37	203	39	194			76	397
08:00	66		85				151		20:00	35		64				99	
08:15	87		77				164		20:15	24		31				55	
08:30	39		53				92		20:30	42		31				73	
08:45	55	247	52	267			107	514	20:45	30	131	26	152			56	283
09:00	59		54				113		21:00	30		28				58	
09:15	50		51				101		21:15	19		22				41	
09:30	61		42				103		21:30	33		24				57	
09:45	56	226	41	188			97	414	21:45	33	115	24	98			57	213
10:00	39		54				93		22:00	13		31				44	
10:15	61		51				112		22:15	20		14				34	
10:30	49		56				105		22:30	14		8				22	
10:45	70	219	71	232			141	451	22:45	13	60	13	66			26	126
11:00	53		56				109		23:00	17		7				24	
11:15	59		48				107		23:15	14		20				34	
11:30	57		55				112		23:30	9		4				13	
11:45	79	248	59	218			138	466	23:45	3	43	9	40			12	83
TOTALS		1586		1611				3197	TOTALS		2677		2597				5274
SPLIT %		49.6%		50.4%				37.7%	SPLIT %		50.8%		49.2%				62.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	4,263	4,208	0	0	8,471

AM Peak Hour	07:30	07:15				07:30	PM Peak Hour	16:00	15:00				14:45
AM Pk Volume	338	368				704	PM Pk Volume	356	332				668
Pk Hr Factor	0.768	0.773				0.769	Pk Hr Factor	0.767	0.865				0.923
7 - 9 Volume	541	597	0	0		1138	4 - 6 Volume	681	589	0	0		1270
7 - 9 Peak Hour	07:30	07:15				07:30	4 - 6 Peak Hour	16:00	16:30				16:30
7 - 9 Pk Volume	338	368	0	0		704	4 - 6 Pk Volume	356	305	0	0		660
Pk Hr Factor	0.768	0.773	0.000	0.000		0.769	Pk Hr Factor	0.767	0.953	0.000	0.000		0.892

Prepared by NDS/ATD

VOLUME

S Willow Dr S/O W Bonnie View Dr

Day: Thursday
Date: 10/8/2015

City: Rialto
Project #: CA15_6166_003

DAILY TOTALS	NB	SB	EB	WB	Total
	4,051	4,303	0	0	8,354

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	10		7						17		12:00	58		62						120	
00:15	7		8						15		12:15	43		61						104	
00:30	8		6						14		12:30	50		50						100	
00:45	11	36	3	24					14	60	12:45	54	205	58	231					112	436
01:00	4		2						6		13:00	68		73						141	
01:15	6		2						8		13:15	69		63						132	
01:30	3		4						7		13:30	54		77						131	
01:45	2	15	2	10					4	25	13:45	76	267	87	300					163	567
02:00	6		3						9		14:00	87		105						192	
02:15	7		5						12		14:15	77		65						142	
02:30	3		5						8		14:30	76		64						140	
02:45	5	21	4	17					9	38	14:45	84	324	75	309					159	633
03:00	5		8						13		15:00	74		75						149	
03:15	8		10						18		15:15	87		74						161	
03:30	11		7						18		15:30	59		82						141	
03:45	11	35	9	34					20	69	15:45	79	299	56	287					135	586
04:00	7		14						21		16:00	68		57						125	
04:15	9		12						21		16:15	74		87						161	
04:30	5		24						29		16:30	79		86						165	
04:45	14	35	17	67					31	102	16:45	109	330	71	301					180	631
05:00	11		22						33		17:00	71		88						159	
05:15	13		29						42		17:15	67		79						146	
05:30	10		37						47		17:30	88		79						167	
05:45	24	58	35	123					59	181	17:45	98	324	79	325					177	649
06:00	16		26						42		18:00	78		75						153	
06:15	16		36						52		18:15	85		59						144	
06:30	21		48						69		18:30	62		78						140	
06:45	33	86	50	160					83	246	18:45	79	304	62	274					141	578
07:00	39		52						91		19:00	68		63						131	
07:15	59		75						134		19:15	60		54						114	
07:30	69		100						169		19:30	42		54						96	
07:45	96	263	141	368					237	631	19:45	48	218	45	216					93	434
08:00	68		78						146		20:00	38		61						99	
08:15	66		74						140		20:15	31		27						58	
08:30	34		54						88		20:30	35		24						59	
08:45	44	212	60	266					104	478	20:45	33	137	34	146					67	283
09:00	54		47						101		21:00	32		29						61	
09:15	49		41						90		21:15	27		23						50	
09:30	56		49						105		21:30	38		24						62	
09:45	57	216	43	180					100	396	21:45	39	136	19	95					58	231
10:00	37		44						81		22:00	13		33						46	
10:15	43		55						98		22:15	19		17						36	
10:30	49		59						108		22:30	17		10						27	
10:45	61	190	70	228					131	418	22:45	15	64	16	76					31	140
11:00	51		58						109		23:00	16		11						27	
11:15	52		51						103		23:15	15		20						35	
11:30	59		55						114		23:30	7		6						13	
11:45	69	231	59	223					128	454	23:45	7	45	6	43					13	88
TOTALS		1398		1700						**3098**	**TOTALS**		2653		2603						**5256**
SPLIT %		45.1%		54.9%						**37.1%**	**SPLIT %**		50.5%		49.5%						**62.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	4,051	4,303	0	0	8,354

AM Peak Hour	07:30	07:15			**07:30**	**PM Peak Hour**	17:30	13:30			**16:15**
AM Pk Volume	299	394			**692**	**PM Pk Volume**	349	334			**665**
Pk Hr Factor	0.779	0.699			**0.730**	**Pk Hr Factor**	0.890	0.795			**0.924**
7 - 9 Volume	475	634	0	0	**1109**	**4 - 6 Volume**	654	626	0	0	**1280**
7 - 9 Peak Hour	07:30	07:15			**07:30**	**4 - 6 Peak Hour**	16:45	16:15			**16:15**
7 - 9 Pk Volume	299	394	0	0	**692**	**4 - 6 Pk Volume**	335	332	0	0	**665**
Pk Hr Factor	0.779	0.699	0.000	0.000	**0.730**	**Pk Hr Factor**	0.768	0.943	0.000	0.000	**0.924**

Prepared by NDS/ATD

VOLUME

S Riverside Ave N/O W Bonnie View Dr

Day: Thursday
Date: 10/8/2015

City: Rialto
Project #: CA15_6166_004

DAILY TOTALS	NB	SB	EB	WB	Total
	10,737	10,470	0	0	21,207

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	41		30				71		12:00	149		156				305	
00:15	45		24				69		12:15	141		180				321	
00:30	39		21				60		12:30	158		156				314	
00:45	34	159	19	94			53	253	12:45	155	603	140	632			295	1235
01:00	30		20				50		13:00	192		204				396	
01:15	25		25				50		13:15	180		169				349	
01:30	20		21				41		13:30	157		153				310	
01:45	30	105	17	83			47	188	13:45	189	718	160	686			349	1404
02:00	22		17				39		14:00	156		161				317	
02:15	18		13				31		14:15	182		169				351	
02:30	13		15				28		14:30	142		134				276	
02:45	18	71	15	60			33	131	14:45	204	684	204	668			408	1352
03:00	24		24				48		15:00	174		159				333	
03:15	21		34				55		15:15	173		155				328	
03:30	10		55				65		15:30	198		166				364	
03:45	28	83	26	139			54	222	15:45	192	737	158	638			350	1375
04:00	18		41				59		16:00	199		173				372	
04:15	34		59				93		16:15	211		162				373	
04:30	46		91				137		16:30	180		183				363	
04:45	35	133	66	257			101	390	16:45	215	805	164	682			379	1487
05:00	31		77				108		17:00	204		166				370	
05:15	30		83				113		17:15	193		155				348	
05:30	49		100				149		17:30	247		224				471	
05:45	51	161	70	330			121	491	17:45	197	841	166	711			363	1552
06:00	51		66				117		18:00	176		170				346	
06:15	49		101				150		18:15	151		131				282	
06:30	66		100				166		18:30	225		190				415	
06:45	91	257	127	394			218	651	18:45	207	759	143	634			350	1393
07:00	119		111				230		19:00	171		155				326	
07:15	108		152				260		19:15	155		141				296	
07:30	147		183				330		19:30	149		132				281	
07:45	153	527	172	618			325	1145	19:45	130	605	88	516			218	1121
08:00	127		135				262		20:00	124		131				255	
08:15	125		126				251		20:15	88		79				167	
08:30	105		141				246		20:30	117		148				265	
08:45	136	493	130	532			266	1025	20:45	111	440	90	448			201	888
09:00	118		126				244		21:00	121		90				211	
09:15	118		122				240		21:15	111		79				190	
09:30	134		134				268		21:30	91		89				180	
09:45	142	512	121	503			263	1015	21:45	70	393	72	330			142	723
10:00	138		124				262		22:00	83		58				141	
10:15	142		121				263		22:15	78		74				152	
10:30	137		131				268		22:30	56		49				105	
10:45	152	569	131	507			283	1076	22:45	61	278	53	234			114	512
11:00	133		166				299		23:00	67		45				112	
11:15	158		152				310		23:15	56		49				105	
11:30	135		108				243		23:30	33		32				65	
11:45	184	610	189	615			373	1225	23:45	38	194	33	159			71	353
TOTALS		3680		4132				7812	TOTALS		7057		6338				13395
SPLIT %		47.1%		52.9%				36.8%	SPLIT %		52.7%		47.3%				63.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	10,737	10,470	0	0	21,207

AM Peak Hour	11:45	11:45			11:45	PM Peak Hour	16:45	17:15			16:45
AM Pk Volume	632	681			1313	PM Pk Volume	859	715			1568
Pk Hr Factor	0.859	0.901			0.880	Pk Hr Factor	0.869	0.798			0.832
7 - 9 Volume	1020	1150	0	0	2170	4 - 6 Volume	1646	1393	0	0	3039
7 - 9 Peak Hour	07:30	07:15			07:15	4 - 6 Peak Hour	16:45	17:00			16:45
7 - 9 Pk Volume	552	642	0	0	1177	4 - 6 Pk Volume	859	711	0	0	1568
Pk Hr Factor	0.902	0.877	0.000	0.000	0.892	Pk Hr Factor	0.869	0.794	0.000	0.000	0.832

Prepared by NDS/ATD

VOLUME

S Riverside Ave S/O W Bonnie View Dr

Day: Thursday
Date: 10/8/2015

City: Rialto
Project #: CA15_6166_005

DAILY TOTALS	NB	SB	EB	WB	Total
	11,302	10,565	0	0	21,867

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	42		29				71		12:00	154		167				321	
00:15	48		25				73		12:15	152		171				323	
00:30	40		22				62		12:30	162		156				318	
00:45	31	161	21	97			52	258	12:45	178	646	149	643			327	1289
01:00	32		20				52		13:00	177		203				380	
01:15	26		29				55		13:15	178		170				348	
01:30	23		29				52		13:30	168		160				328	
01:45	31	112	19	97			50	209	13:45	181	704	162	695			343	1399
02:00	21		18				39		14:00	166		166				332	
02:15	15		13				28		14:15	193		159				352	
02:30	13		19				32		14:30	163		149				312	
02:45	21	70	15	65			36	135	14:45	195	717	200	674			395	1391
03:00	25		25				50		15:00	199		161				360	
03:15	23		38				61		15:15	190		162				352	
03:30	12		58				70		15:30	205		164				369	
03:45	26	86	26	147			52	233	15:45	192	786	156	643			348	1429
04:00	17		37				54		16:00	209		186				395	
04:15	38		63				101		16:15	219		160				379	
04:30	53		97				150		16:30	188		177				365	
04:45	39	147	69	266			108	413	16:45	217	833	159	682			376	1515
05:00	31		81				112		17:00	205		177				382	
05:15	33		84				117		17:15	226		153				379	
05:30	58		99				157		17:30	232		215				447	
05:45	59	181	65	329			124	510	17:45	211	874	176	721			387	1595
06:00	56		71				127		18:00	190		176				366	
06:15	60		95				155		18:15	200		135				335	
06:30	71		109				180		18:30	197		194				391	
06:45	107	294	123	398			230	692	18:45	214	801	140	645			354	1446
07:00	123		114				237		19:00	181		161				342	
07:15	117		145				262		19:15	164		134				298	
07:30	165		188				353		19:30	159		136				295	
07:45	174	579	181	628			355	1207	19:45	151	655	79	510			230	1165
08:00	148		133				281		20:00	127		130				257	
08:15	125		126				251		20:15	110		89				199	
08:30	109		132				241		20:30	113		146				259	
08:45	142	524	125	516			267	1040	20:45	114	464	87	452			201	916
09:00	123		127				250		21:00	121		91				212	
09:15	132		124				256		21:15	116		78				194	
09:30	132		133				265		21:30	91		96				187	
09:45	149	536	122	506			271	1042	21:45	81	409	70	335			151	744
10:00	133		119				252		22:00	89		61				150	
10:15	146		134				280		22:15	77		73				150	
10:30	148		140				288		22:30	61		51				112	
10:45	159	586	121	514			280	1100	22:45	66	293	49	234			115	527
11:00	134		168				302		23:00	67		48				115	
11:15	167		154				321		23:15	62		51				113	
11:30	182		105				287		23:30	41		32				73	
11:45	153	636	176	603			329	1239	23:45	38	208	34	165			72	373
TOTALS		3912		4166				**8078**	**TOTALS**		7390		6399				**13789**
SPLIT %		48.4%		51.6%				**36.9%**	**SPLIT %**		53.6%		46.4%				**63.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	11,302	10,565	0	0	21,867

AM Peak Hour	11:15	11:45				**11:45**	**PM Peak Hour**	16:45	17:00				**17:00**
AM Pk Volume	656	670				**1291**	**PM Pk Volume**	880	721				**1595**
Pk Hr Factor	0.901	0.952				**0.981**	**Pk Hr Factor**	0.948	0.838				**0.892**
7 - 9 Volume	1103	1144	0	0		**2247**	**4 - 6 Volume**	1707	1403	0	0		**3110**
7 - 9 Peak Hour	07:30	07:15				**07:15**	**4 - 6 Peak Hour**	16:45	17:00				**17:00**
7 - 9 Pk Volume	612	647	0	0		**1251**	**4 - 6 Pk Volume**	880	721	0	0		**1595**
Pk Hr Factor	0.879	0.860	0.000	0.000		**0.881**	**Pk Hr Factor**	0.948	0.838	0.000	0.000		**0.892**

MUTCD Signal Warrant Analysis Worksheets

Willow Avenue / Bonnie View Drive

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Existing Conditions

COUNT DATE 10/8/15
CALC _____ DATE _____
CHK _____ DATE _____

DIST CO RTE PM

		Lanes 1	Lanes 2 or more			
Major St:	Willow Avenue	☑	☐	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)..... ☐
or RURAL (R)

In built area of isolated community of < 10,000 population..... ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	3:00 PM	4:00 PM	5:00 PM	2:00 PM	7:00 AM	6:00 PM	1:00 PM	12:00 PM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	631	622	621	626	593	572	570	458
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	61	51	51	40	70	53	46	36

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☑ **NO** ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	3:00 PM	4:00 PM	5:00 PM	2:00 PM	7:00 AM	6:00 PM	1:00 PM	12:00 PM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	631	622	621	626	593	572	570	458
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	61	51	51	40	70	53	46	36

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Existing Conditions

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 3:00 PM	4:00 PM	5:00 PM	2:00 PM
Both Approaches - Major Street	X		631	622	621	626
Higher Approach - Minor Street	X		61	51	51	40

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

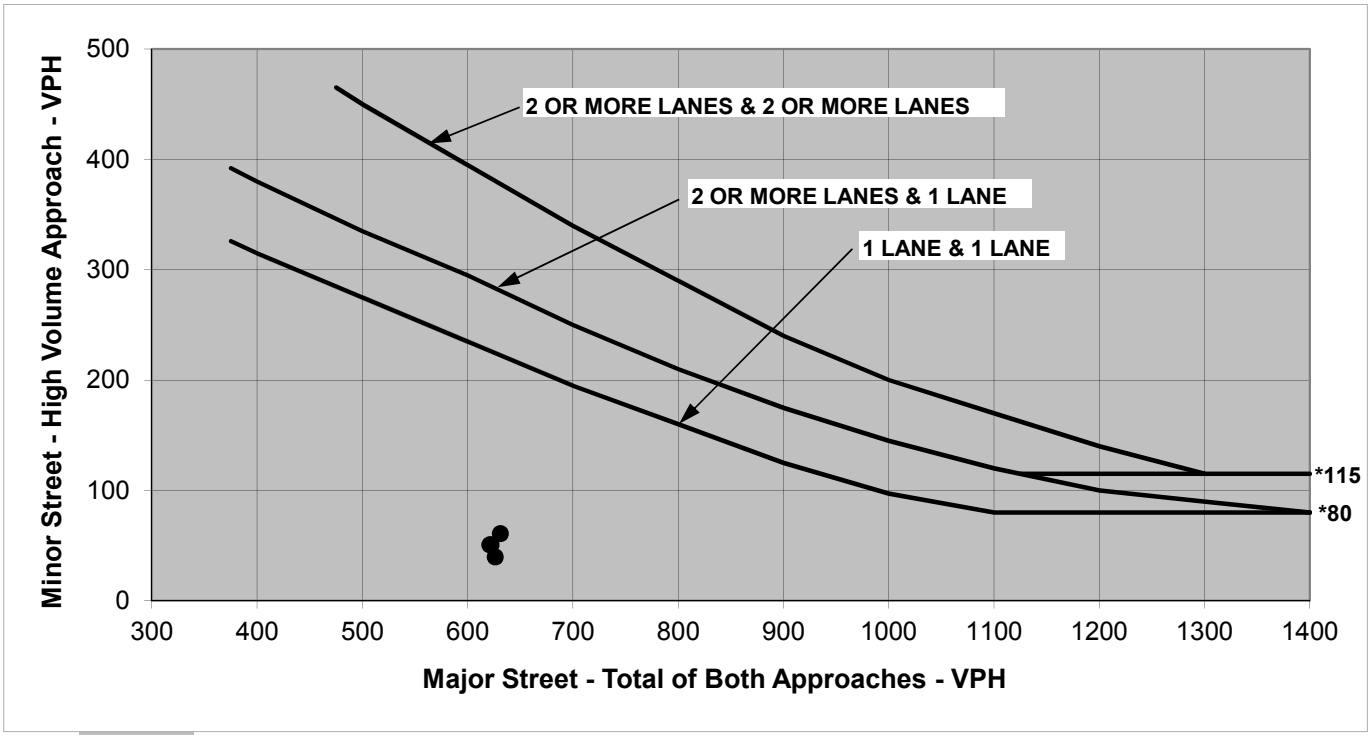
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:30 AM	4:45 PM
Both Approaches - Major Street	X		660	592
Higher Approach - Minor Street	X		54	63

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

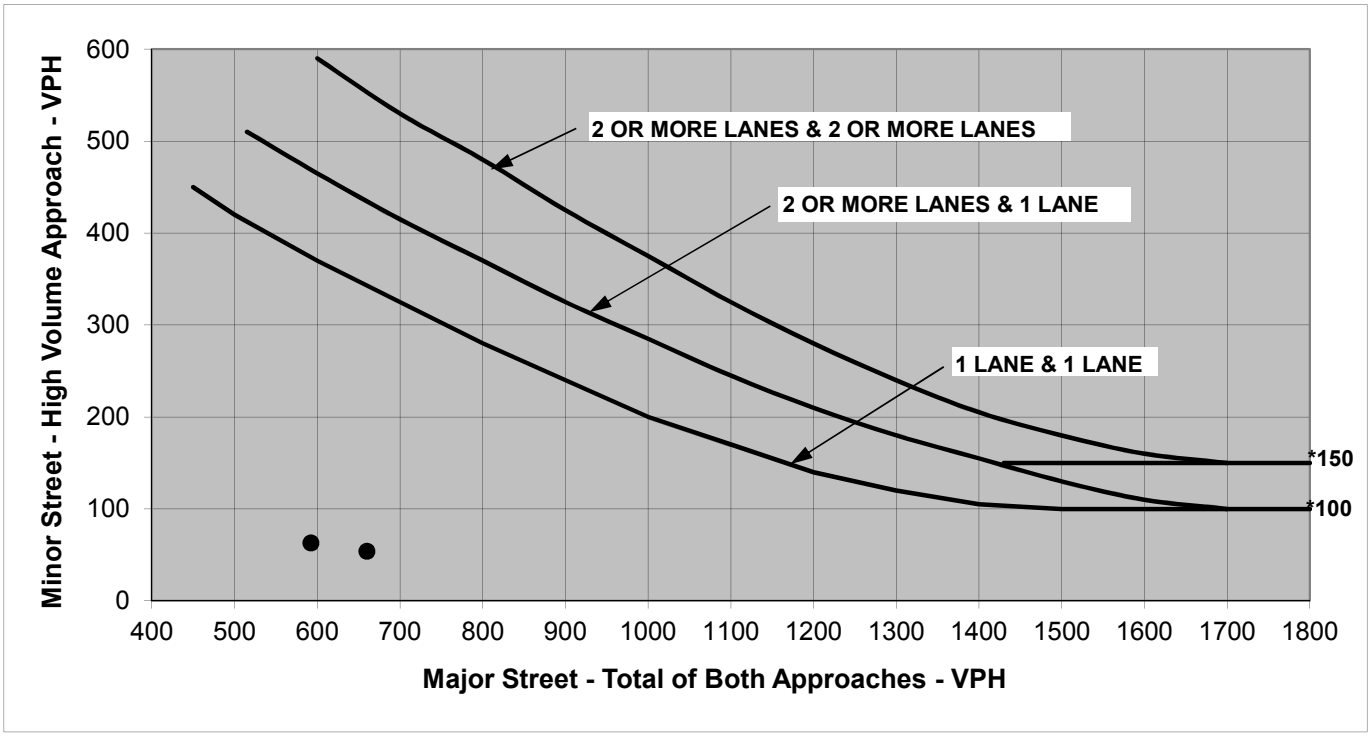
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Existing + Project Conditions

COUNT DATE 10/28/15
CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

		Lanes 1	Lanes 2 or more			
Major St:	Willow Avenue	☑	☐	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)…… ☐ or RURAL (R)

In built area of isolated community of < 10,000 population…….. ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	3:00 PM	5:00 PM	4:00 PM	7:00 AM	2:00 PM	6:00 PM	1:00 PM	12:00 PM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	633	631	628	595	626	586	572	464
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	63	55	54	78	41	56	48	41

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☑ **NO** ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	3:00 PM	5:00 PM	4:00 PM	7:00 AM	2:00 PM	6:00 PM	1:00 PM	12:00 PM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	633	631	628	595	626	586	572	464
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	63	55	54	78	41	56	48	41

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Existing + Project Conditions

#######

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 3:00 PM	5:00 PM	4:00 PM	7:00 AM
Both Approaches - Major Street	X		633	631	628	595
Higher Approach - Minor Street	X		63	55	54	78

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

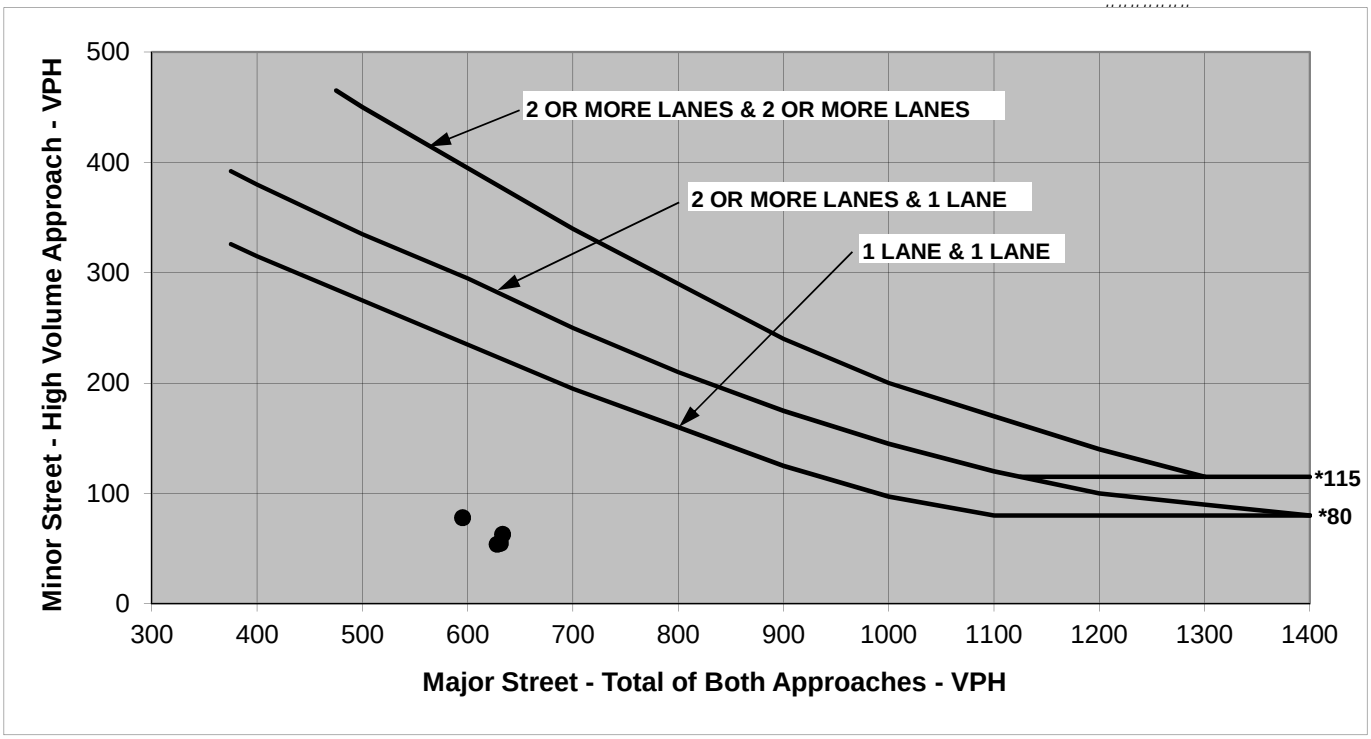
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:30 AM	4:45 PM
Both Approaches - Major Street	X		673	604
Higher Approach - Minor Street	X		67	69

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

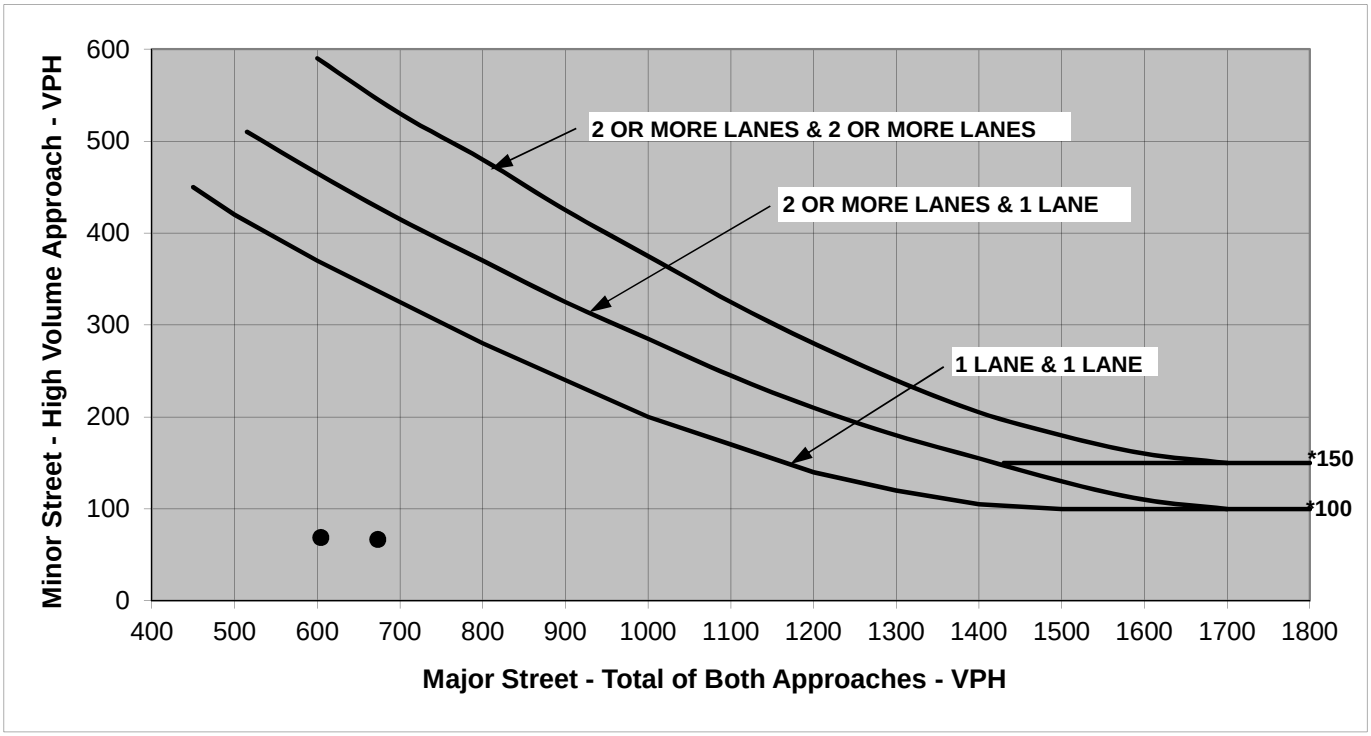
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Project Completion Year without Project Conditions

COUNT DATE 10/8/15
CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

		Lanes 1	Lanes 2 or more			
Major St:	Willow Avenue	☑	☐	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)..... ☐
or RURAL (R)

In built area of isolated community of < 10,000 population..... ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	3:00 PM	4:00 PM	5:00 PM	2:00 PM	7:00 AM	6:00 PM	1:00 PM	12:00 PM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	663	653	652	657	623	601	599	481
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	64	54	54	42	74	56	48	38

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☑ **NO** ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	3:00 PM	4:00 PM	5:00 PM	2:00 PM	7:00 AM	6:00 PM	1:00 PM	12:00 PM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	663	653	652	657	623	601	599	481
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	64	54	54	42	74	56	48	38

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Project Completion Year without Project Conditions

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 3:00 PM	4:00 PM	5:00 PM	2:00 PM
Both Approaches - Major Street	X		663	653	652	657
Higher Approach - Minor Street	X		64	54	54	42

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

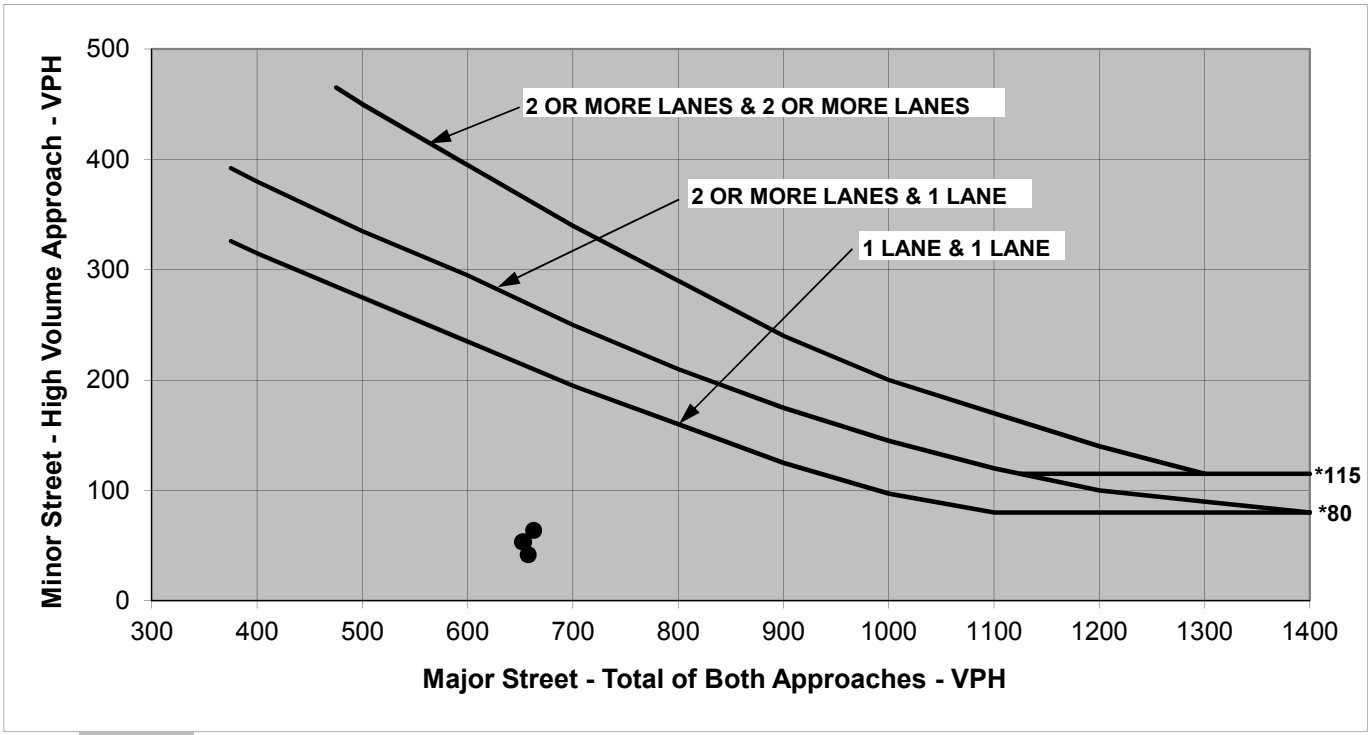
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:30 AM	4:45 PM
Both Approaches - Major Street	X		705	623
Higher Approach - Minor Street	X		60	66

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

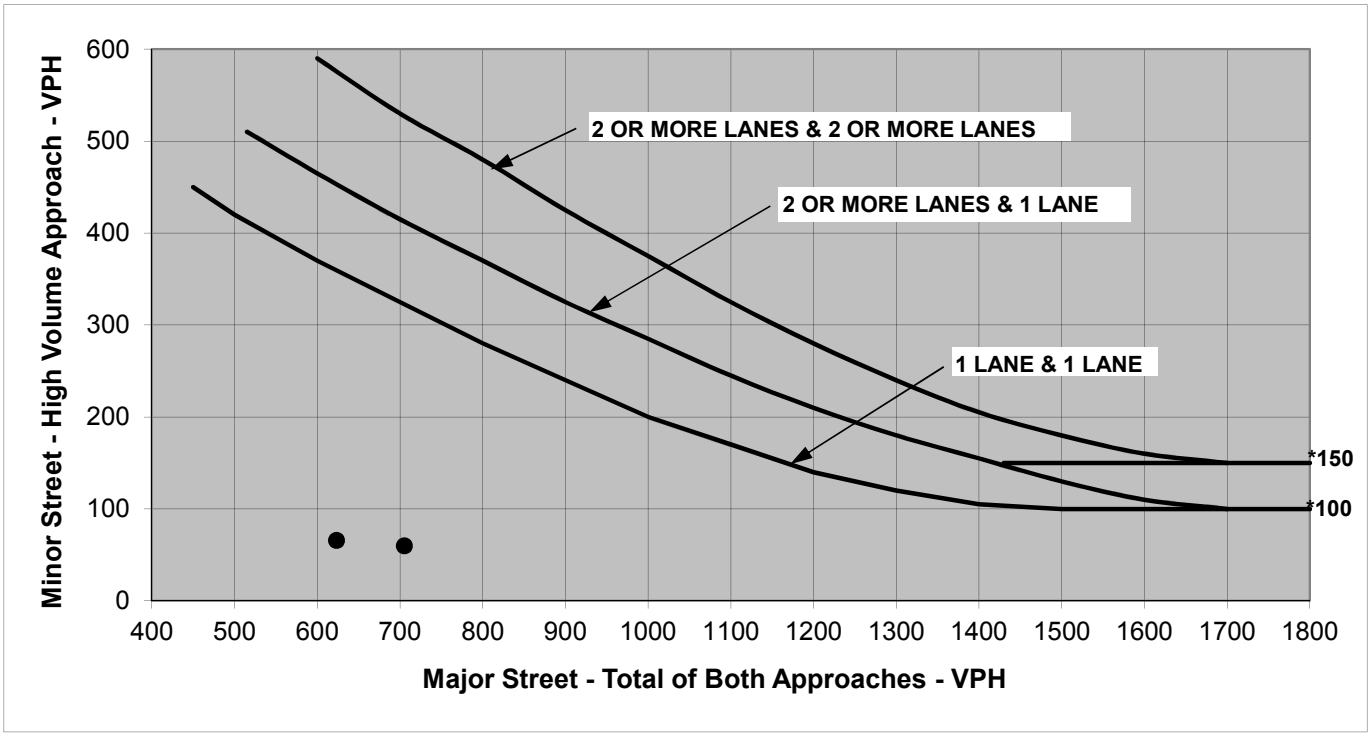
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Project Completion Year with Project Conditions

COUNT DATE 10/28/15
CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

		Lanes 1	Lanes 2 or more			
Major St:	Willow Avenue	☑	☐	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)…… ☐ or RURAL (R)

In built area of isolated community of < 10,000 population…….. ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	HOUR 3:00 PM	5:00 PM	4:00 PM	7:00 AM	2:00 PM	6:00 PM	1:00 PM	12:00 PM
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	665	662	659	625	657	615	601	487
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	66	58	57	82	43	59	50	43

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☑ **NO** ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	HOUR 3:00 PM	5:00 PM	4:00 PM	7:00 AM	2:00 PM	6:00 PM	1:00 PM	12:00 PM
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	665	662	659	625	657	615	601	487
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	66	58	57	82	43	59	50	43

Combination of Conditions A & B 70 **7200%** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Project Completion Year with Project Conditions

#######

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

			Hour			
APPROACH LANES	One	2 or More	3:00 PM	5:00 PM	4:00 PM	7:00 AM
Both Approaches - Major Street	X		665	662	659	625
Higher Approach - Minor Street	X		66	58	57	82

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

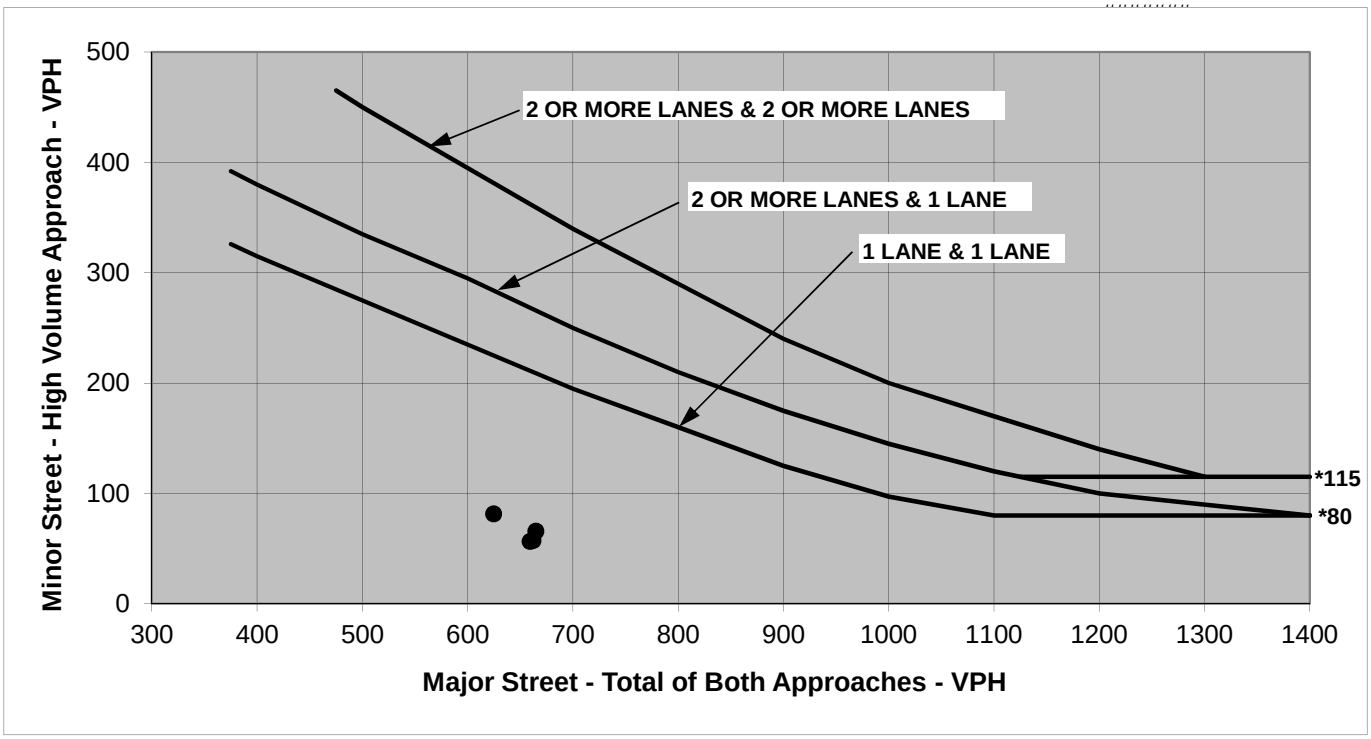
PART B **SATISFIED** **YES** ☐ **NO** ☑

			Hour	
APPROACH LANES	One	2 or More	7:30 AM	4:45 PM
Both Approaches - Major Street	X		707	633
Higher Approach - Minor Street	X		70	72

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

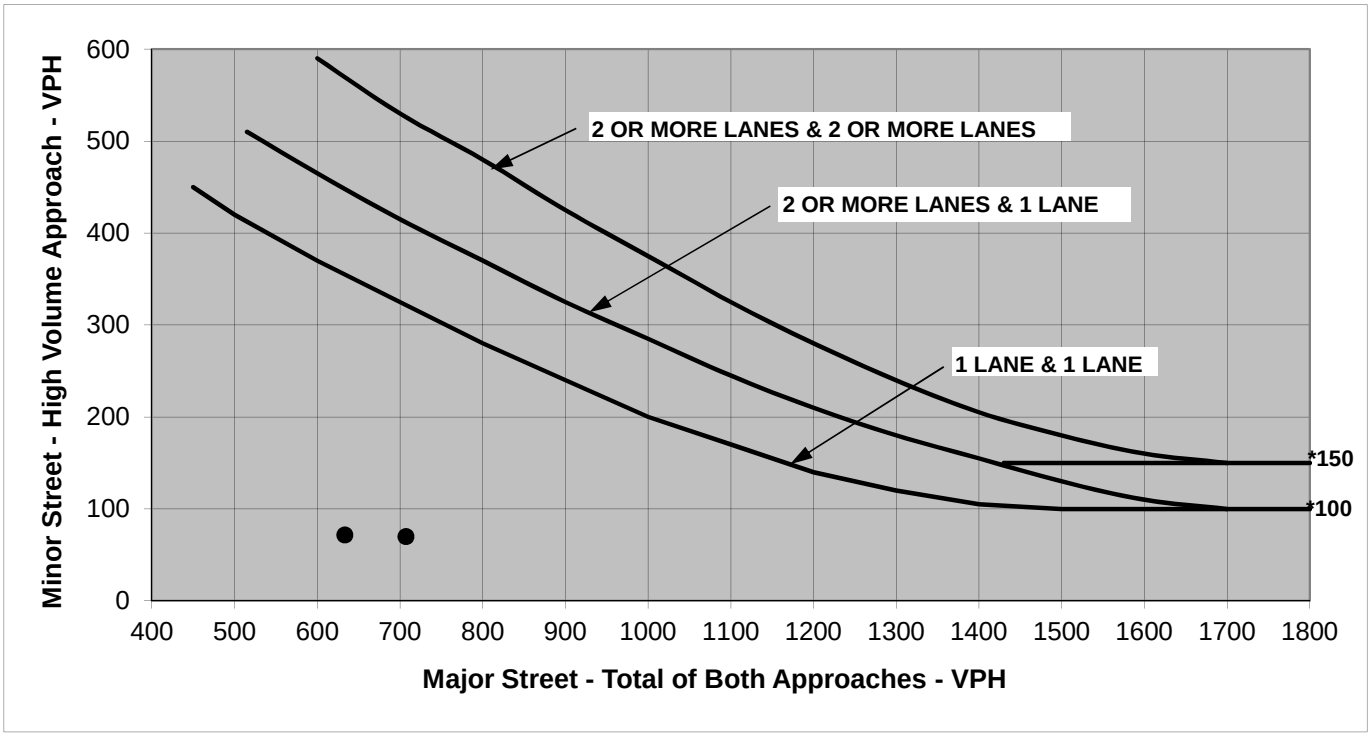
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

COUNT DATE 2015-10-8

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE ____

CHK ____ DATE ____

Major St: WILLOW AVE — Critical Approach Speed 35 MPH mph

Minor St: BONNIE VIEW DR — Critical Approach Speed 25 MPH mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
or
In built up area of isolated community of < 10,000 population..... ☐

☐ RURAL (R)

☑ URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN..... ✓ RURAL.....

CONDITION A - Minimum Vehicular Volume

Satisfied ____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1 ✓	1 ✓
2 or More	1
2 or More	2 or More
1	2 or More

Minimum Requirements EADT

Vehicles Per Day on Major Street (Total of Both Approaches)			Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)		
Urban ✓		Rural	Urban ✗		Rural
8,000	8798	5,600	2,400	908	1,680
9,600		6,720	2,400		1,680
9,600		6,720	3,200		2,240
8,000		5,600	3,200		2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied ____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1 ✓	1 ✓
2 or More	1
2 or More	2 or More
1	2 or More

Vehicles Per Day on Major Street (Total of Both Approaches)			Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)		
Urban		Rural	Urban		Rural
✗ 12,000	8798	8,400	✗ 1,200	908	850
14,400		10,080	1,200		850
14,400		10,080	1,600		1,120
12,000		8,400	1,600		1,120

Combination of CONDITIONS A + B

Satisfied ____ Not Satisfied ✓

No one condition satisfied, but following conditions fulfilled 80% or more..... ____ (A) ____ (B)

2 CONDITIONS 80%	2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Cumulative Conditions Without Project
Bonnie View Drive / Willow Avenue

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 3:00 PM	4:00 PM	5:00 PM	2:00 PM
Both Approaches - Major Street	X		667	657	656	661
Higher Approach - Minor Street	X		70	60	60	48

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

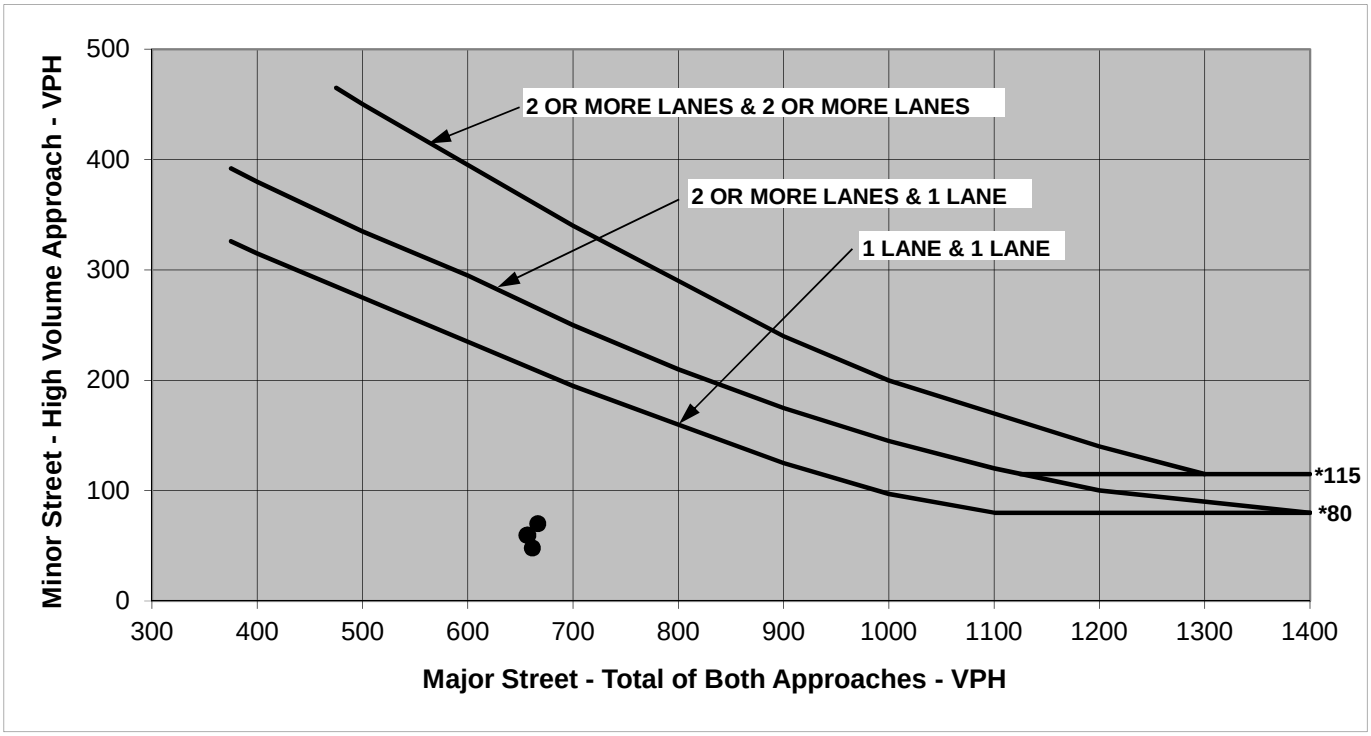
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:30 AM	4:45 PM
Both Approaches - Major Street	X		708	627
Higher Approach - Minor Street	X		64	72

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

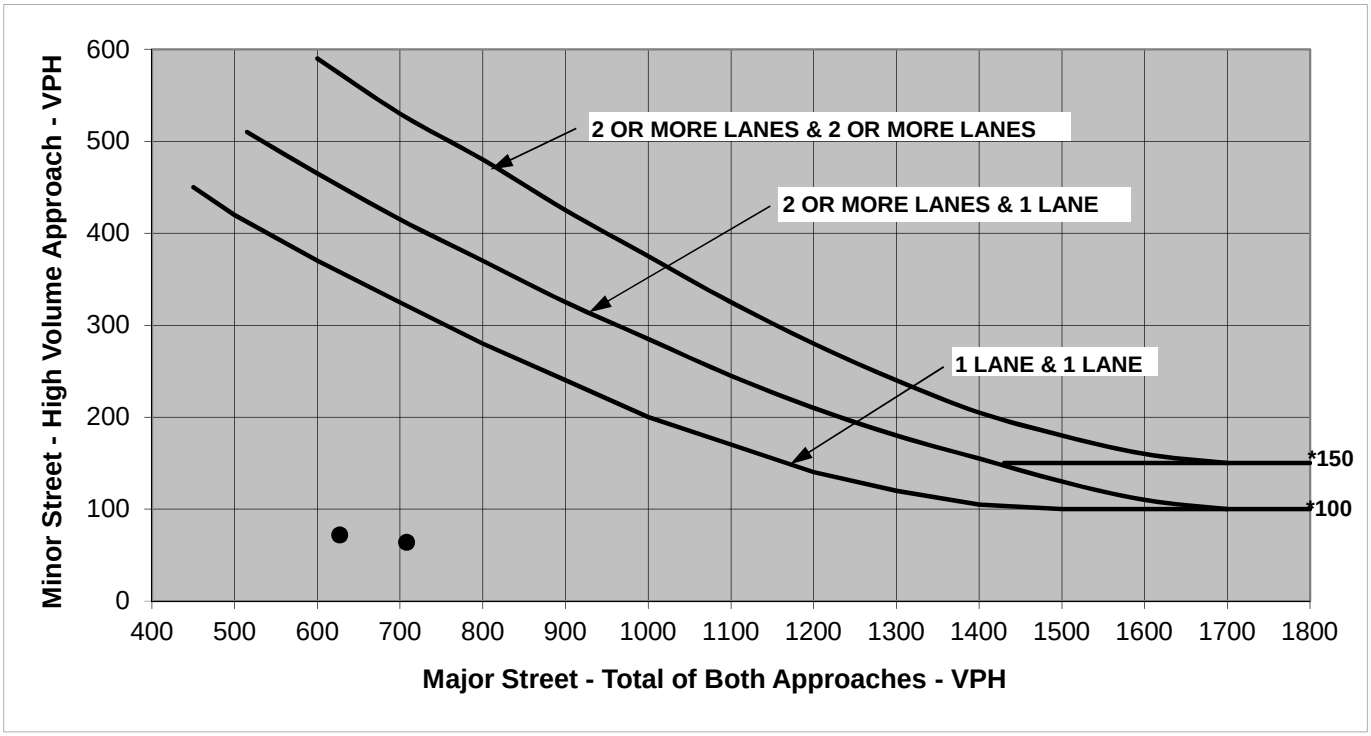
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

COUNT DATE 2015-10-28

DIST CO RTE PM

CALC _____ DATE _____

CHK _____ DATE _____

Major St: WILLOW AVE — Critical Approach Speed 35 MPH mph

Minor St: BONNIE VIEW DR — Critical Approach Speed 25 MPH mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
or
In built up area of isolated community of < 10,000 population..... ☐

☐ RURAL (R)

☑ URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN..... ✓ RURAL.....

CONDITION A - Minimum Vehicular Volume

Satisfied _____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1..... ✓	1..... ✓
2 or More.....	1.....
2 or More.....	2 or More.....
1.....	2 or More.....

Minimum Requirements EADT

Vehicles Per Day on Major Street (Total of Both Approaches)			Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)		
Urban		Rural	Urban		Rural
✓ 8,000	8954	5,600	✗ 2,400	1064	1,680
9,600		6,720	2,400		1,680
9,600		6,720	3,200		2,240
8,000		5,600	3,200		2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1..... ✓	1..... ✓
2 or More.....	1.....
2 or More.....	2 or More.....
1.....	2 or More.....

Vehicles Per Day on Major Street (Total of Both Approaches)			Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)		
Urban		Rural	Urban		Rural
✗ 12,000	8954	8,400	✓ (80%) 1,200	1064	850
14,400		10,080	1,200		850
14,400		10,080	1,600		1,120
12,000		8,400	1,600		1,120

Combination of CONDITIONS A + B

Satisfied _____ Not Satisfied ✓

No one condition satisfied, but following conditions fulfilled 80% or more..... _____ A _____ B

2 CONDITIONS 80%

2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Cumulative Conditions With Project
Bonnie View Drive / Willow Avenue

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 3:00 PM	5:00 PM	4:00 PM	2:00 PM
Both Approaches - Major Street	X		669	666	663	661
Higher Approach - Minor Street	X		72	64	63	49

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

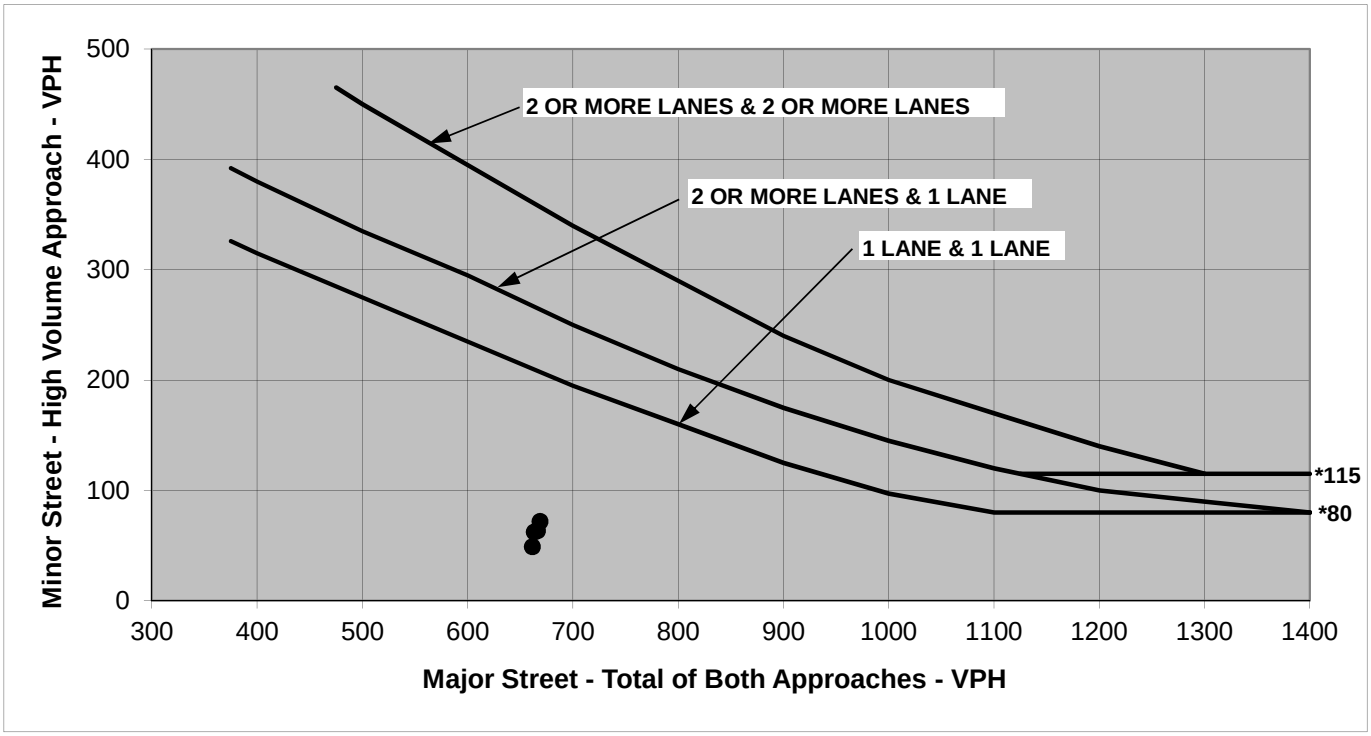
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:30 AM	4:45 PM
Both Approaches - Major Street	X		710	637
Higher Approach - Minor Street	X		74	78

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

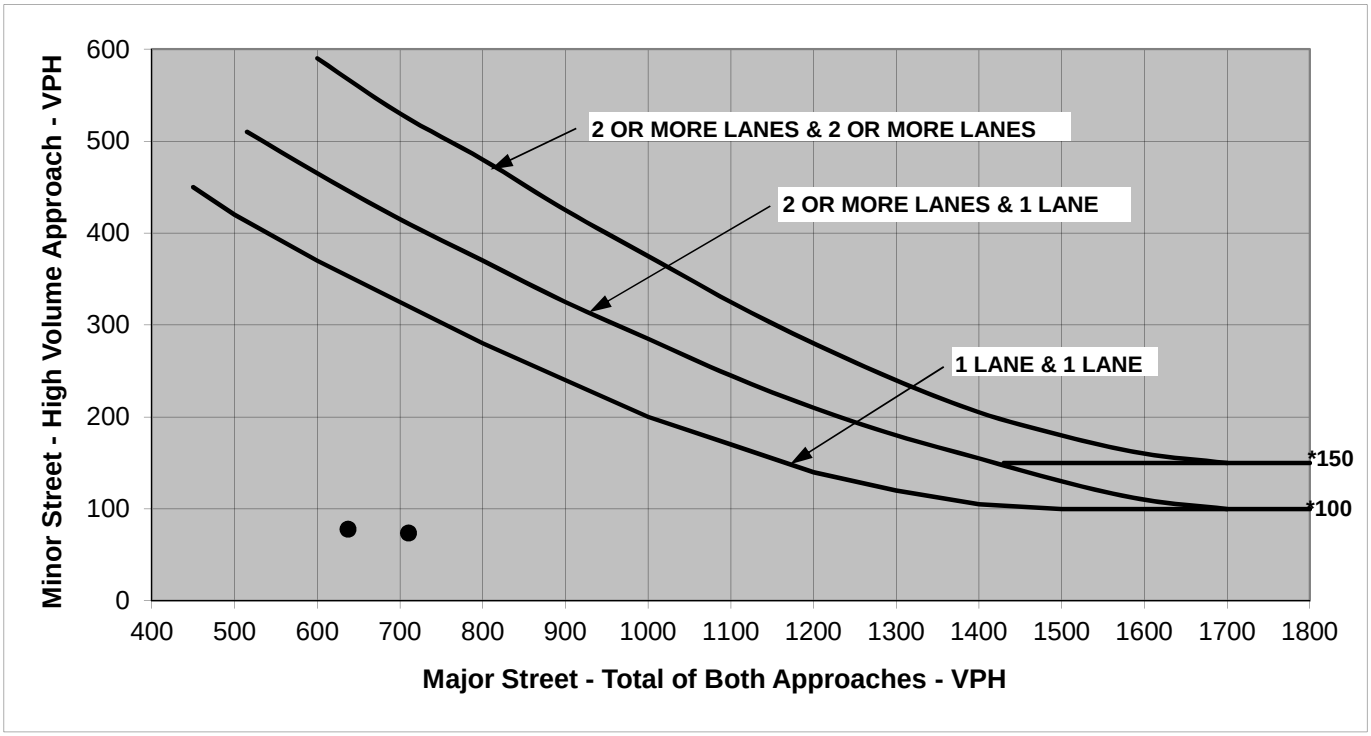
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Riverside Avenue / Bonnie View Drive

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Existing Conditions

COUNT DATE 10/8/15
CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

		Lanes 1	Lanes 2 or more			
Major St:	Riverside Avenue	☐	☑	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)…… ☐ or RURAL (R)

In built area of isolated community of < 10,000 population…….. ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1585	1515	1435	1424	1385	1390	1278	1251
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	30	40	41	37	41	35	28	21

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1585	1515	1435	1424	1385	1390	1278	1251
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	30	40	41	37	41	35	28	21

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Existing Conditions

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 5:00 PM	4:00 PM	6:00 PM	3:00 PM
Both Approaches - Major Street		X	1585	1515	1435	1424
Higher Approach - Minor Street	X		30	40	41	37

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

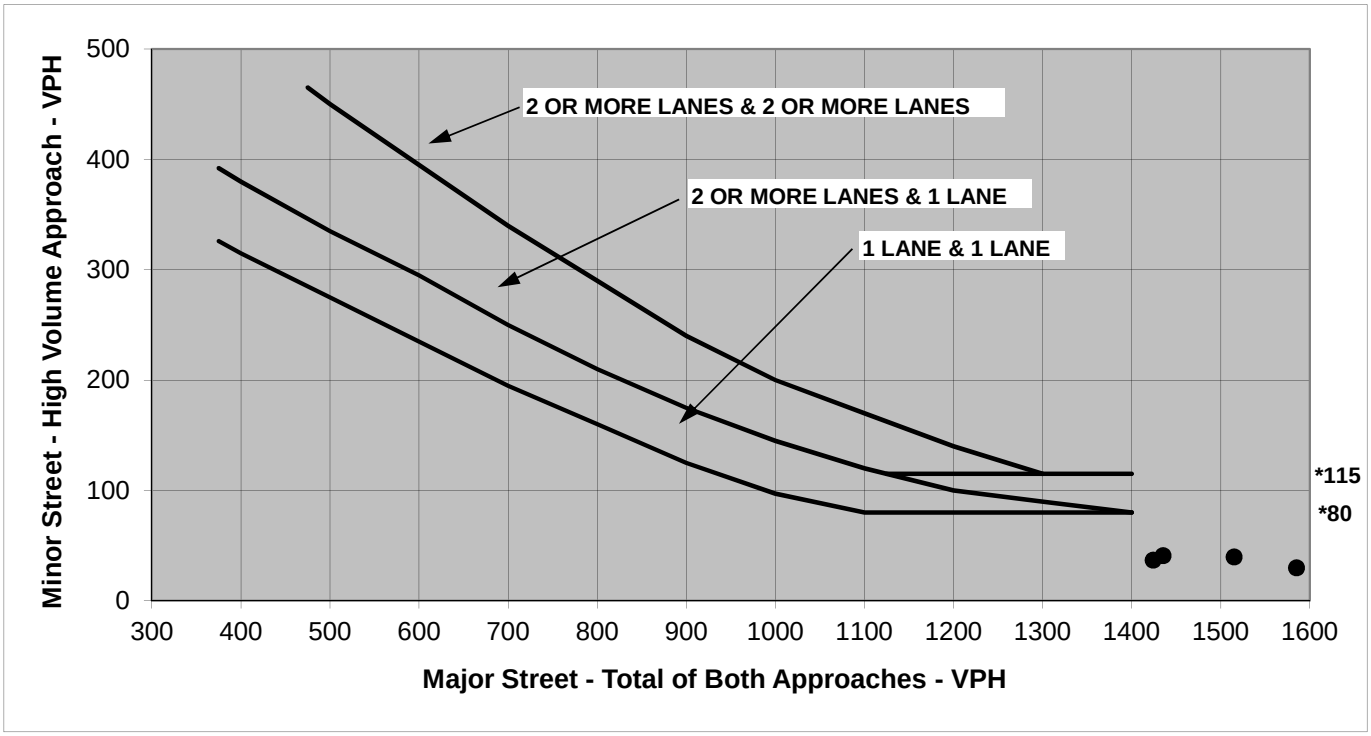
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:15 AM	5:00 PM
Both Approaches - Major Street		X	1224	1549
Higher Approach - Minor Street	X		54	48

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

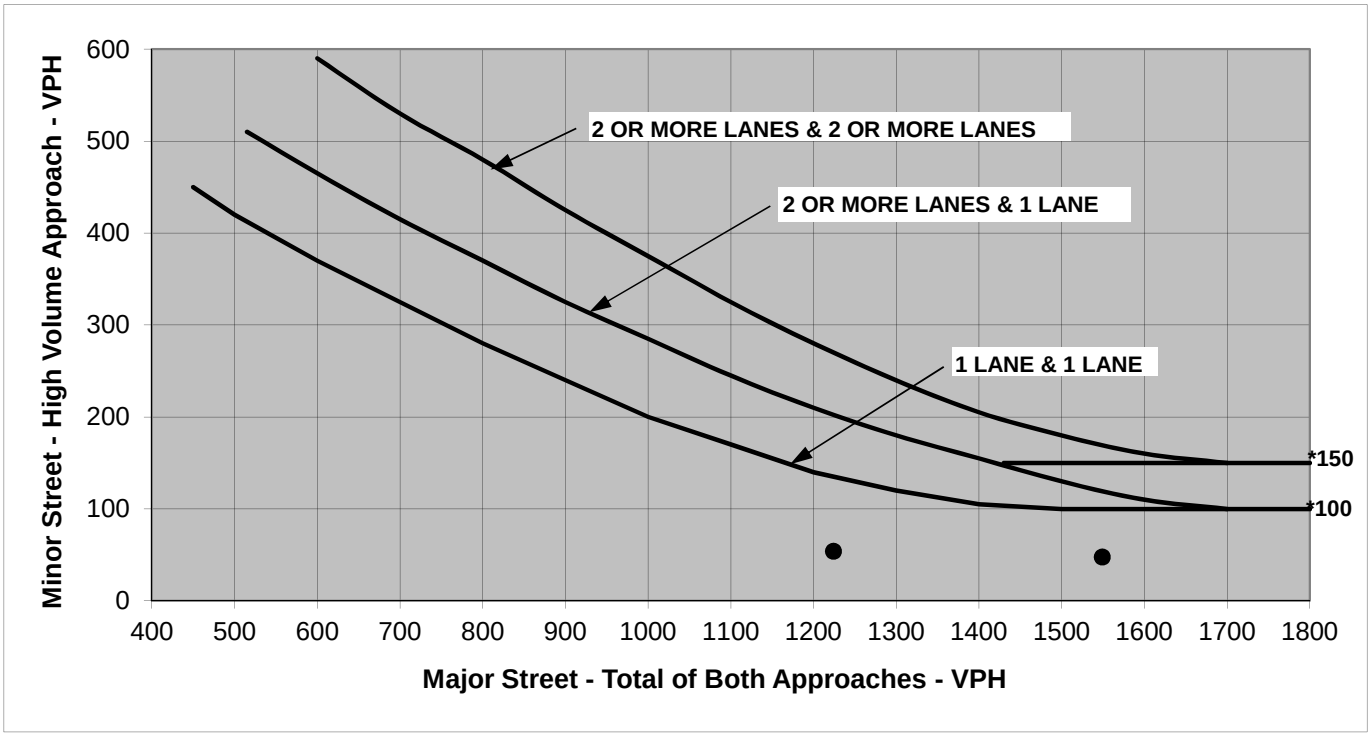
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Existing + Project Conditions

COUNT DATE 10/28/15
CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

		Lanes 1	Lanes 2 or more			
Major St:	Riverside Avenue	☐	☑	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)…… ☐
or RURAL (R)

In built area of isolated community of < 10,000 population…….. ☐
☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1607	1533	1456	1437	1395	1397	1283	1256
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	39	46	52	42	49	45	39	33

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1607	1533	1456	1437	1395	1397	1283	1256
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	39	46	52	42	49	45	39	33

Combination of Conditions A & B 58 **5000%** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Existing + Project Conditions

#######

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 5:00 PM	4:00 PM	6:00 PM	3:00 PM
Both Approaches - Major Street		X	1607	1533	1456	1437
Higher Approach - Minor Street	X		39	46	52	42

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

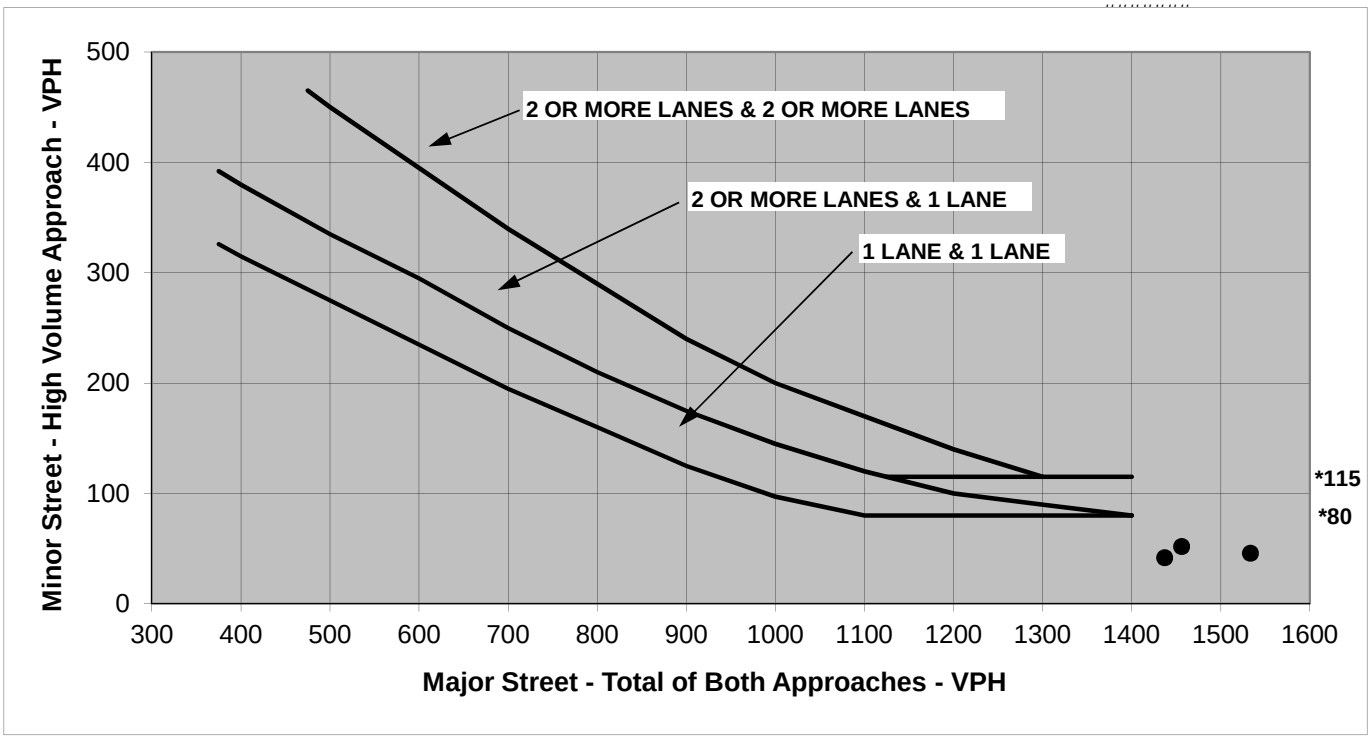
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:15 AM	5:00 PM
Both Approaches - Major Street		X	1225	1553
Higher Approach - Minor Street	X		58	50

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

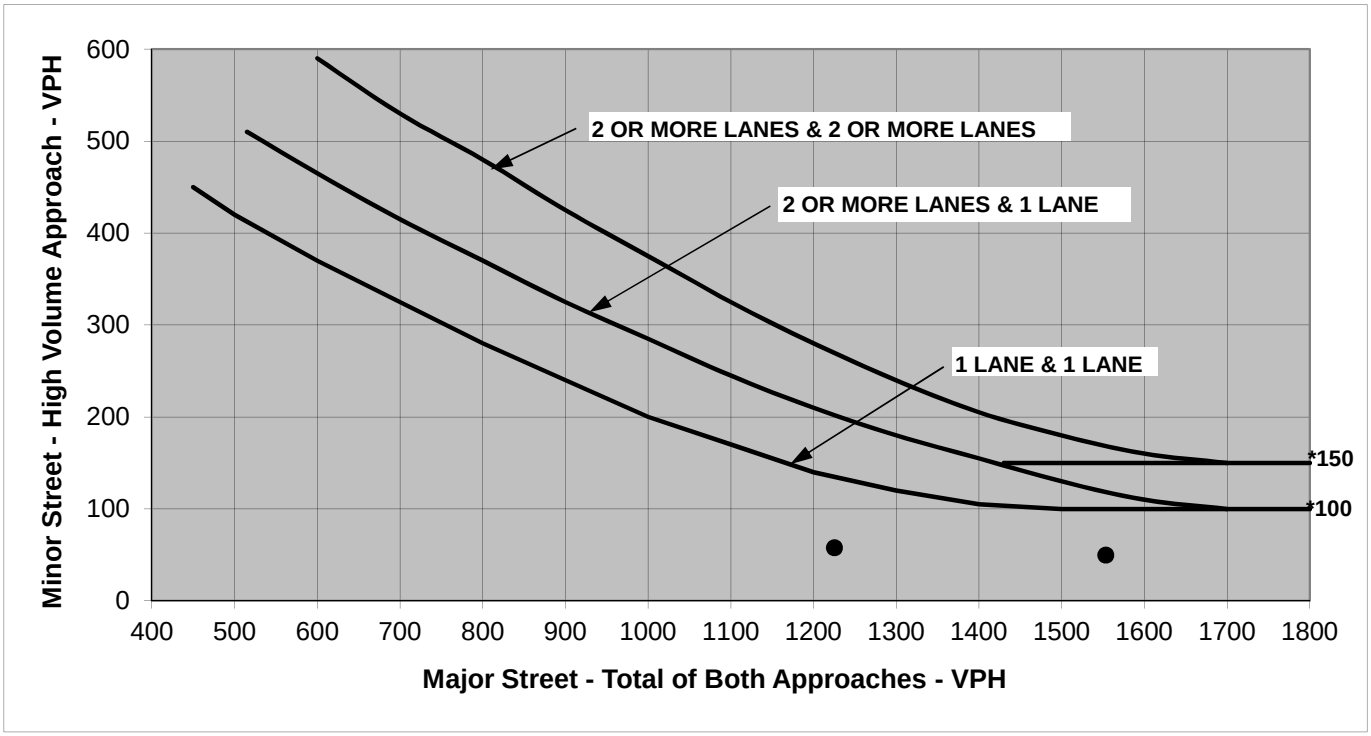
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Project Completion Year without Project Conditions

COUNT DATE 10/28/15
CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

		Lanes 1	Lanes 2 or more			
Major St:	Riverside Avenue	☐	☑	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)…… ☐ or RURAL (R)

In built area of isolated community of < 10,000 population…….. ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1664	1591	1507	1495	1454	1460	1342	1314
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	32	42	43	39	43	37	29	22

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1664	1591	1507	1495	1454	1460	1342	1314
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	32	42	43	39	43	37	29	22

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Project Completion Year without Project Conditions

#######

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

			Hour			
APPROACH LANES	One	2 or More	5:00 PM	4:00 PM	6:00 PM	3:00 PM
Both Approaches - Major Street		X	1664	1591	1507	1495
Higher Approach - Minor Street	X		32	42	43	39

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

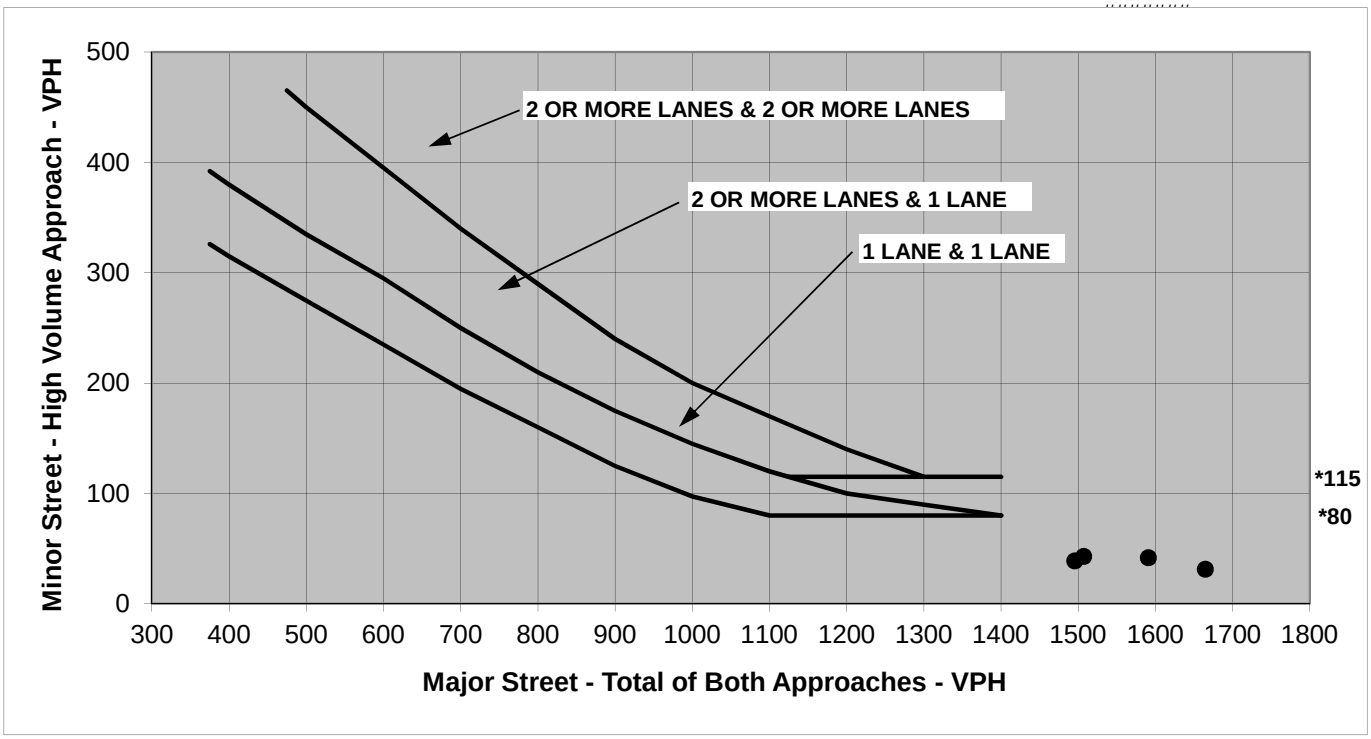
PART B **SATISFIED** **YES** ☐ **NO** ☑

			Hour	
APPROACH LANES	One	2 or More	7:15 AM	5:00 PM
Both Approaches - Major Street		X	1280	1608
Higher Approach - Minor Street	X		38	40

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

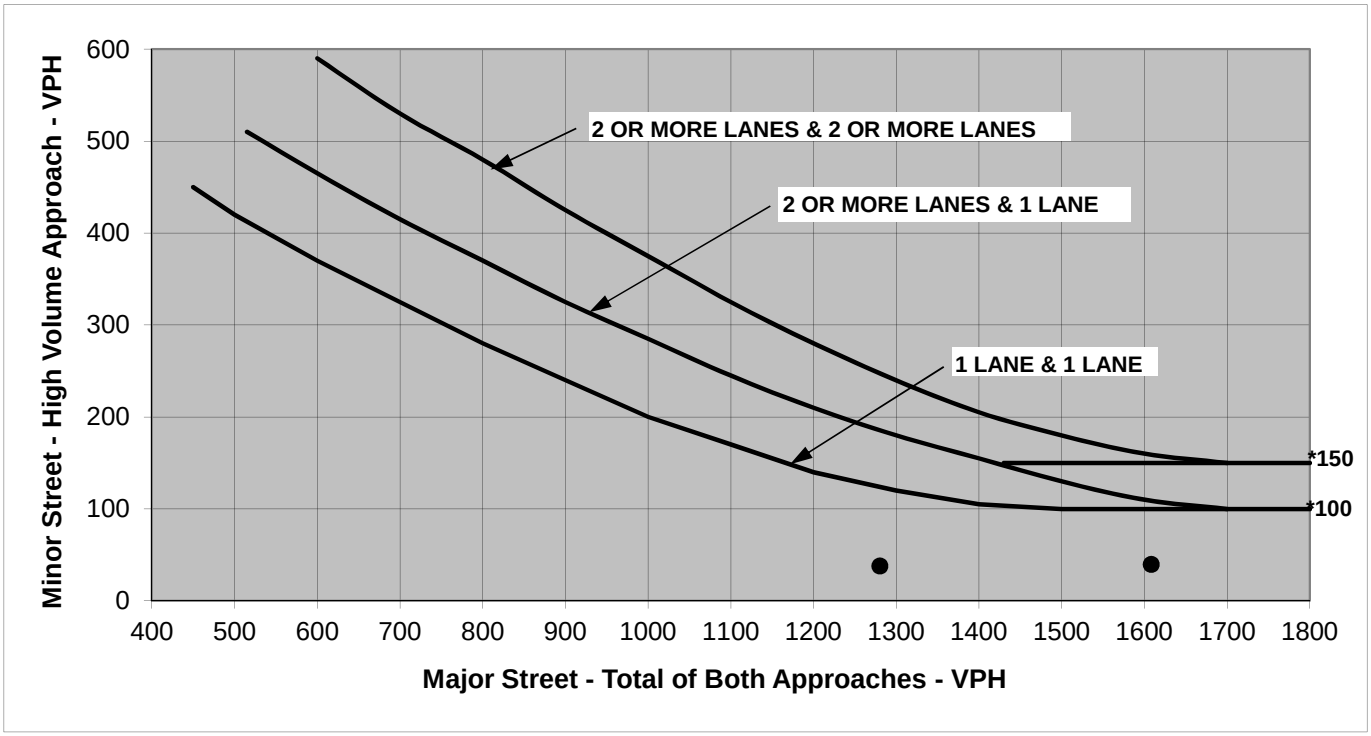
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Project Completion Year with Project Conditions

COUNT DATE 10/28/15
CALC _____ DATE _____
CHK _____ DATE _____

DIST CO RTE PM

		Lanes 1	Lanes 2 or more			
Major St:	Riverside Avenue	☐	☑	Critical Approach Speed	35	mph
Minor St:	Bonnie View Drive	☑	☐	Critical Approach Speed	25	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph)…… ☐ or RURAL (R)

In built area of isolated community of < 10,000 population…….. ☐

☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **YES** ☐ **NO** ☑

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1686	1609	1528	1508	1464	1467	1347	1319
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	41	48	54	44	51	47	40	34

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **YES** ☐ **NO** ☑

80% SATISFIED **YES** ☐ **NO** ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U	R	U	R	5:00 PM	4:00 PM	6:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM
APPROACH LANES	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1686	1609	1528	1508	1464	1467	1347	1319
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	41	48	54	44	51	47	40	34

Combination of Conditions A & B 60 **5200%** **YES** ☐ **NO** ☑

REQUIREMENT	CONDITION		FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		**YES** ☐ **NO** ☑
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Project Completion Year with Project Conditions

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

			Hour			
APPROACH LANES	One	2 or More	5:00 PM	4:00 PM	6:00 PM	3:00 PM
Both Approaches - Major Street		X	1686	1609	1528	1508
Higher Approach - Minor Street	X		41	48	54	44

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

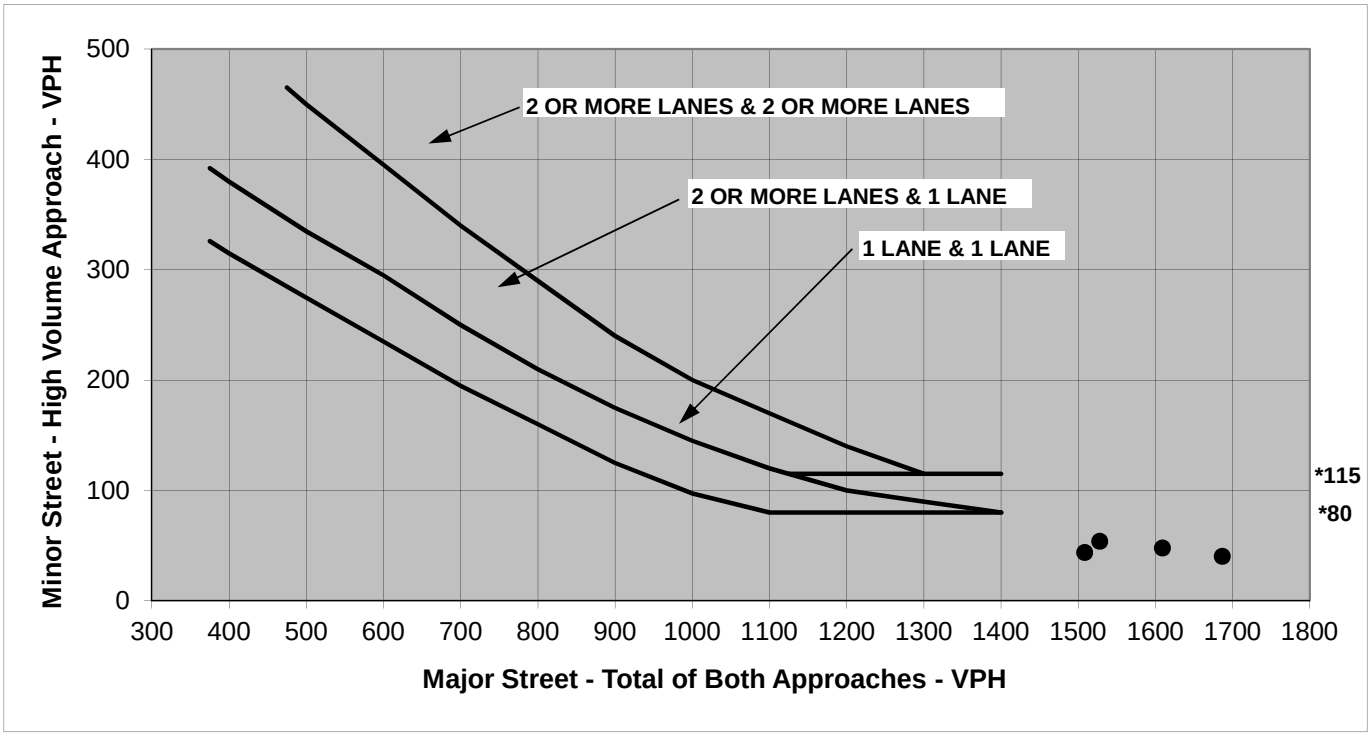
PART B **SATISFIED** **YES** ☐ **NO** ☑

			Hour	
APPROACH LANES	One	2 or More	7:15 AM	5:00 PM
Both Approaches - Major Street		X	1286	1630
Higher Approach - Minor Street	X		60	52

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

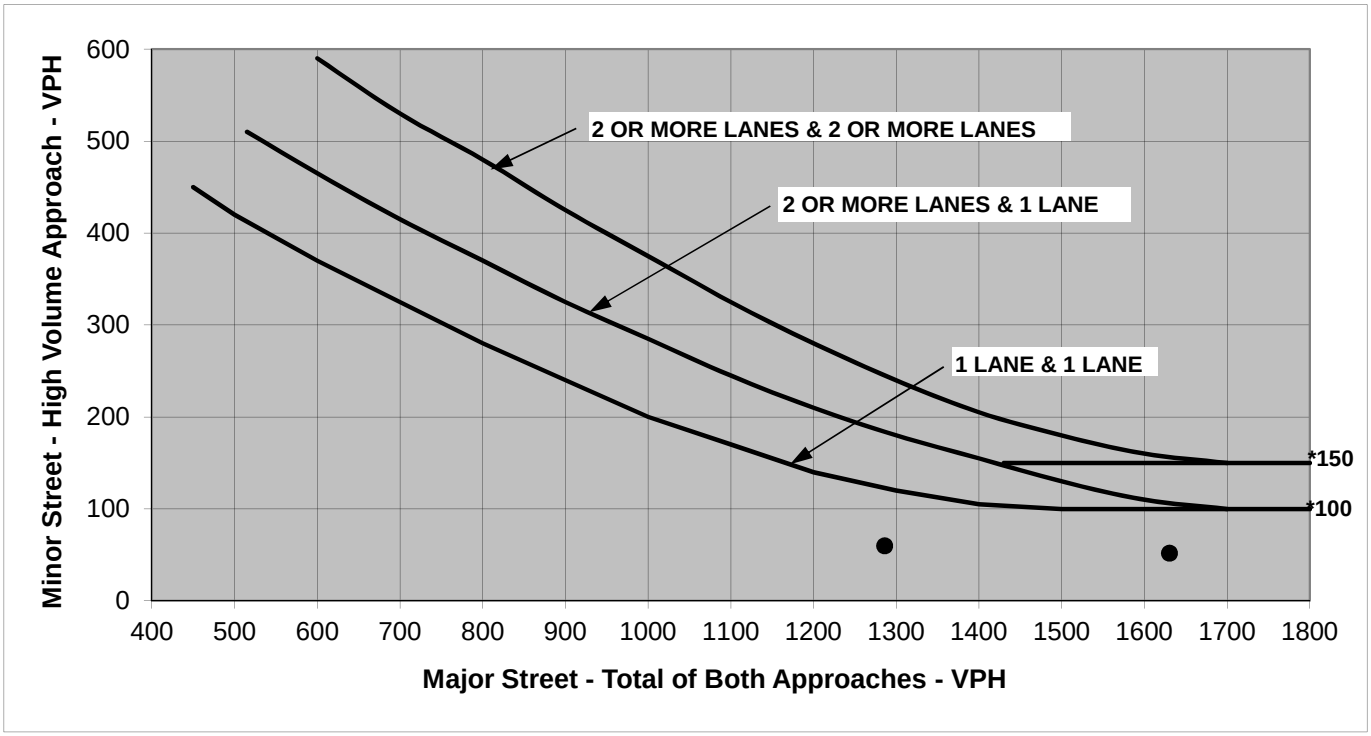
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

COUNT DATE 2015-10-8

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE ____

CHK ____ DATE ____

Major St: RIVERSIDE AVE — Critical Approach Speed 35 MPH mph

Minor St: BONNIE VIEW DR — Critical Approach Speed 25 MPH mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
or
In built up area of isolated community of < 10,000 population..... ☐ **RURAL (R)**
☑ **URBAN (U)**

(Based on Estimated Average Daily Traffic - See Note)

URBAN..✓.. RURAL.....

CONDITION A - Minimum Vehicular Volume

Satisfied ____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1..✓..	1..✓..
2 or More..✓..	1.....
2 or More.....	2 or More.....
1.....	2 or More.....

Minimum Requirements EADT

Vehicles Per Day on Major Street (Total of Both Approaches)			Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)		
Urban		Rural	Urban		Rural
✓8,000	24809	5,600	✗2,400	678	1,680
9,600		6,720	2,400		1,680
9,600		6,720	3,200		2,240
8,000		5,600	3,200		2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied ____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1..✓..	1..✓..
2 or More..✓..	1.....
2 or More.....	2 or More.....
1.....	2 or More.....

Vehicles Per Day on Major Street (Total of Both Approaches)			Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)		
Urban		Rural	Urban		Rural
✓12,000	24809	8,400	✗1,200	678	850
14,400		10,080	1,200		850
14,400		10,080	1,600		1,120
12,000		8,400	1,600		1,120

Combination of CONDITIONS A + B

Satisfied ____ Not Satisfied ✓

No one condition satisfied, but following conditions fulfilled 80% or more..... ____ (A) ____ (B)

2 CONDITIONS 80%

2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Cumulative Conditions Without Project
Bonnie View Drive / Riverside Avenue

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 5:00 PM	4:00 PM	6:00 PM	3:00 PM
Both Approaches - Major Street		X	1817	1744	1660	1648
Higher Approach - Minor Street	X		47	57	58	54

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

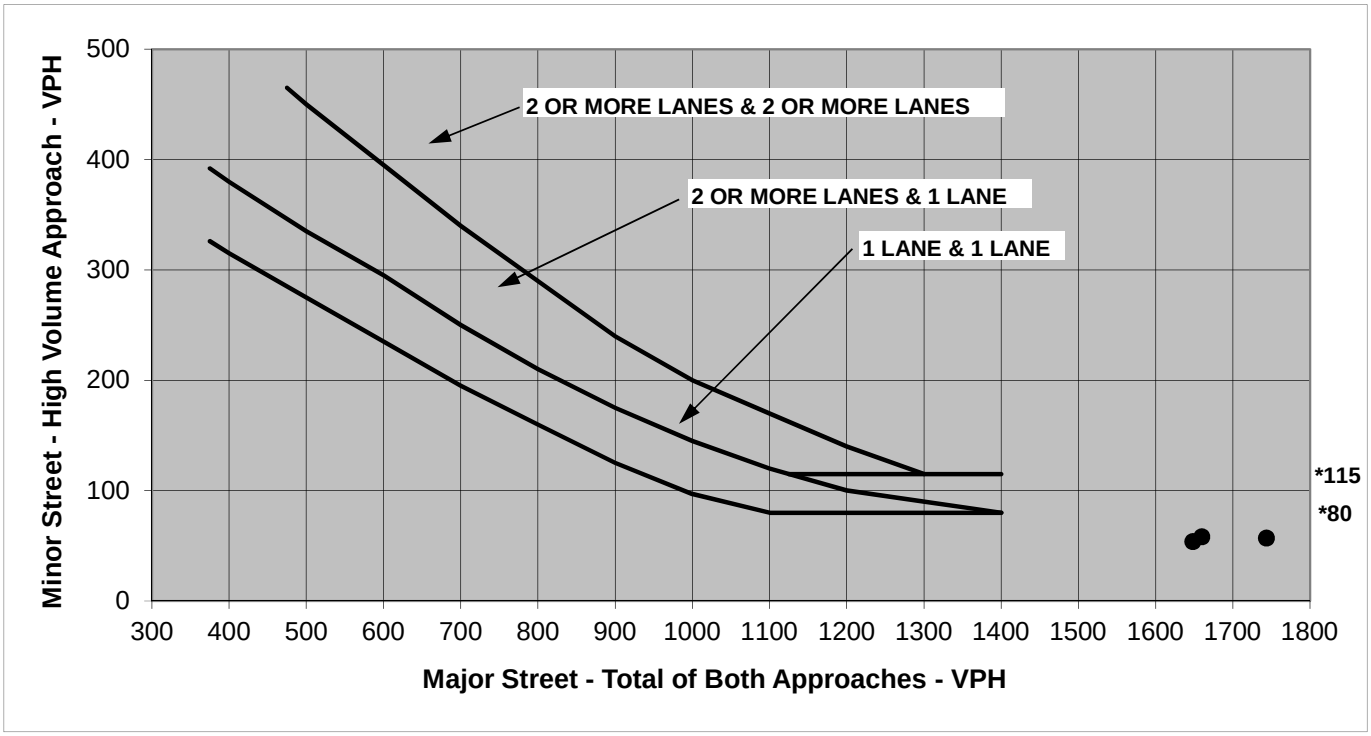
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:15 AM	5:00 PM
Both Approaches - Major Street		X	1362	1761
Higher Approach - Minor Street	X		49	55

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

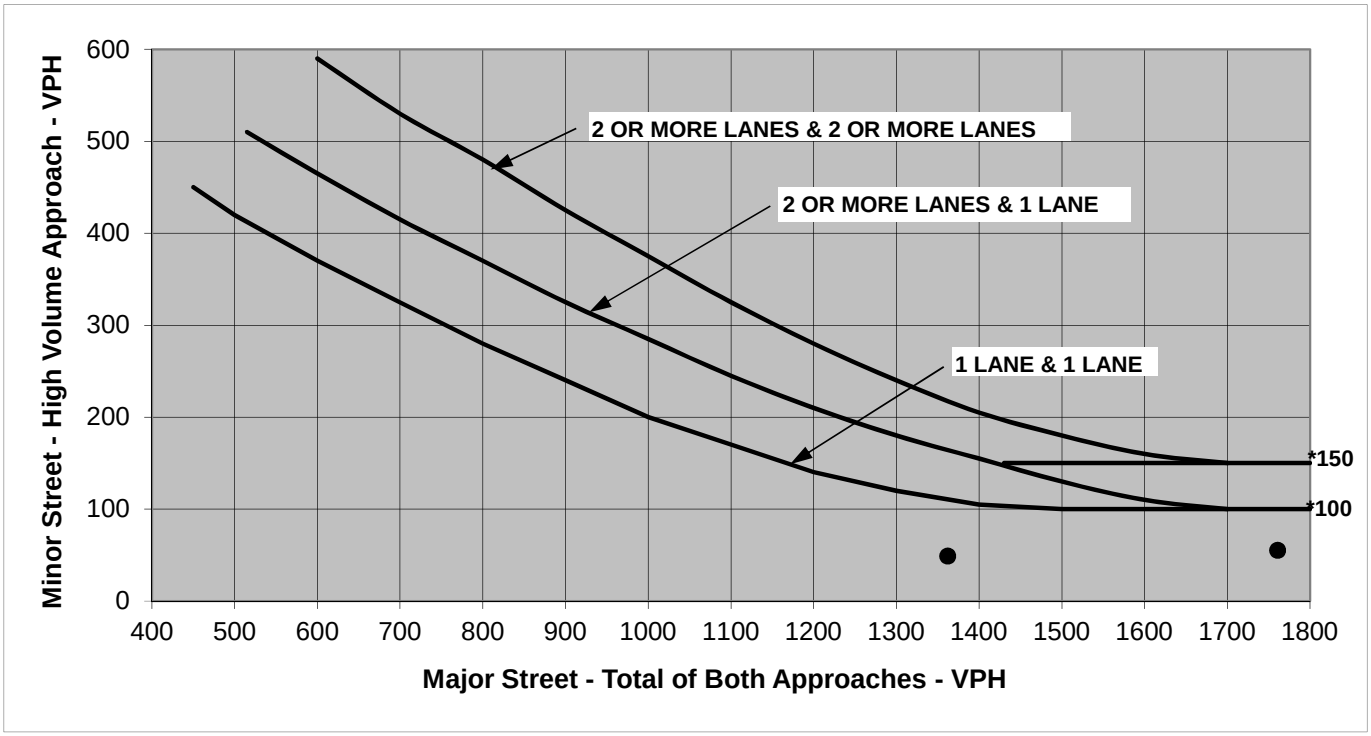
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

COUNT DATE 2015-10-28

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE ____

CHK ____ DATE ____

Major St: RIVERSIDE AVE — Critical Approach Speed 35 MPH mph

Minor St: BONNIE VIEW DR — Critical Approach Speed 25 MPH mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
or
In built up area of isolated community of < 10,000 population..... ☐ **RURAL (R)**
☑ **URBAN (U)**

(Based on Estimated Average Daily Traffic - See Note)

URBAN..... ✓ RURAL.....

CONDITION A - Minimum Vehicular Volume

Satisfied ____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1..... ✓	1..... ✓
2 or More.....	1.....
2 or More.....	2 or More.....
1.....	2 or More.....

Minimum Requirements EADT			
Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Urban	Rural	Urban	Rural
✓ 8,000	5,600	✗ 2,400 1041	1,680
9,600 25173	6,720	2,400	1,680
9,600	6,720	3,200	2,240
8,000	5,600	3,200	2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied ____ Not Satisfied ✓

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1..... ✓	1..... ✓
2 or More.....	1.....
2 or More.....	2 or More.....
1.....	2 or More.....

Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Urban	Rural	Urban	Rural
✓ 12,000 25173	8,400	✓ 1,200 1041	850
14,400	10,080 (80%)	1,200	850
14,400	10,080	1,600	1,120
12,000	8,400	1,600	1,120

Combination of CONDITIONS A + B

Satisfied ____ Not Satisfied ✓

No one condition satisfied, but following conditions fulfilled 80% or more..... ____ A ✓ B

2 CONDITIONS 80%	2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Cumulative Conditions With Project
Bonnie View Drive / Riverside Avenue

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED*** **YES** ☐ **NO** ☑

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour 5:00 PM	4:00 PM	6:00 PM	3:00 PM
Both Approaches - Major Street		X	1839	1762	1681	1661
Higher Approach - Minor Street	X		56	63	69	59

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	YES ☐	NO ☑
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	YES ☐	NO ☐

WARRANT 3 - Peak Hour **100% SATISFIED** **YES** ☐ **NO** ☑

(Part A or Part B must be satisfied)

PART A **SATISFIED** **YES** ☐ **NO** ☑

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	YES ☐	NO ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES ☐	NO ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☑	NO ☐

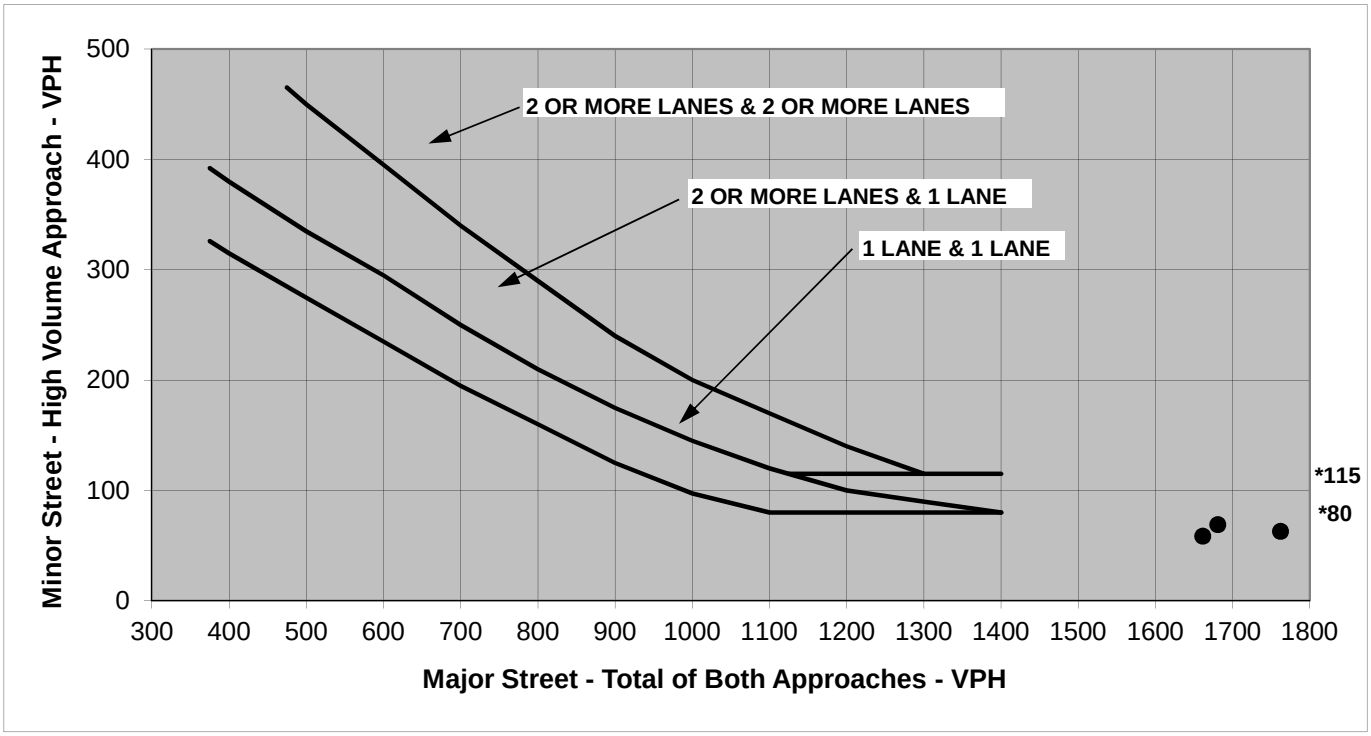
PART B **SATISFIED** **YES** ☐ **NO** ☑

APPROACH LANES	One	2 or More	Hour 7:15 AM	5:00 PM
Both Approaches - Major Street		X	1368	1783
Higher Approach - Minor Street	X		71	67

The plotted point falls above the curve in Figure 4C-3	YES ☐	NO ☑
OR, The plotted points fall above the curves in Figure 4C-4.	YES ☐	NO ☐

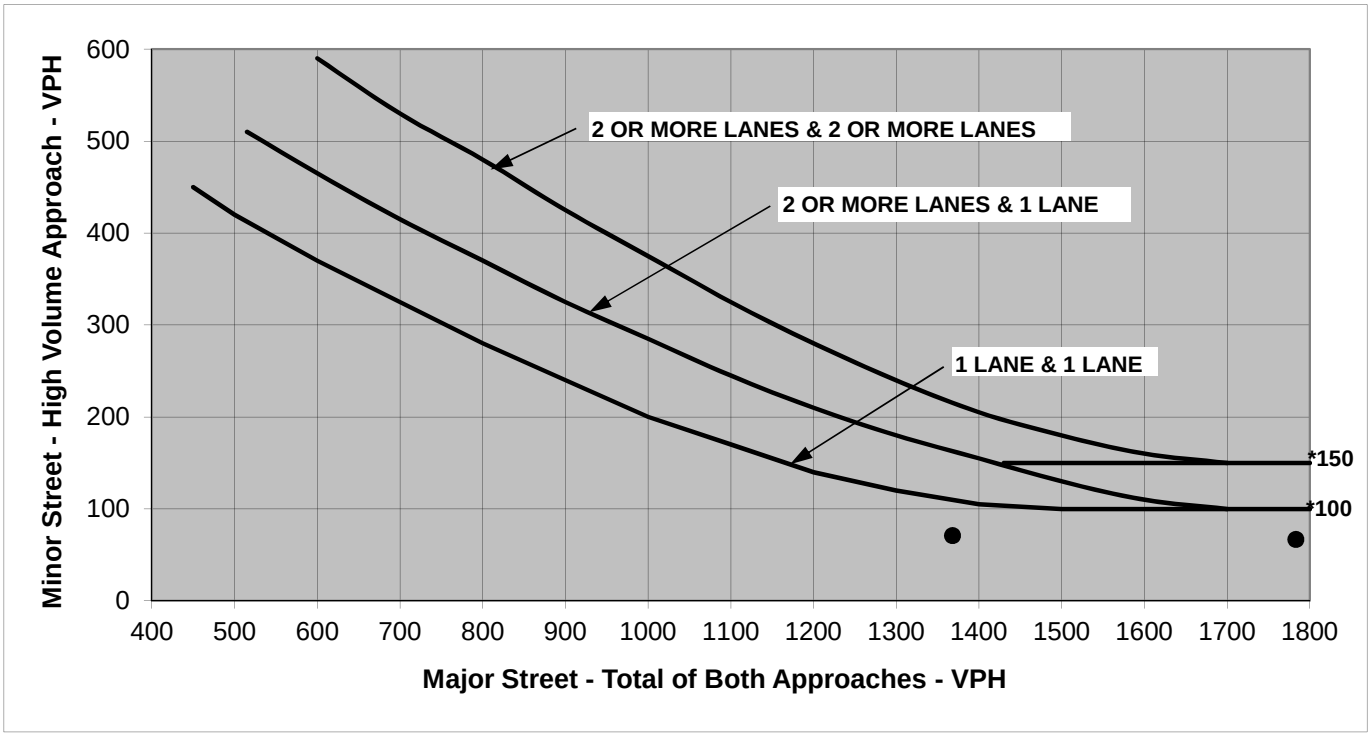
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower thershold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower thershold volume for a minor-street approach with one lane.