

Project name:
35th Avenue BUILD Grant Application – City of
Phoenix

Project ref:

To:
Dayna Wesley

From:
Jeff Sandberg

CC:
Srividya Santhanam

Date:
July 9, 2019

Memorandum

Subject: 35th Avenue BUILD Grant Application - Predictive Safety Analysis Results

Background

AECOM is in the process of completing a BUILD Grant application for a highway improvement project on 35th Avenue, located in the City of Phoenix, AZ. As part of the grant application preparation, an economic analysis will be completed to show the benefit-cost of completing the project. Part of the economic benefit of the project will be reduced societal costs associated with reduced crash frequency. The purpose of this memo is to document the predictive safety analysis results that quantify the crash reduction associated with this project.

Existing Conditions

The project extends along 35th Avenue from I-10 to Camelback Road, a segment length of approximately 3.1 miles. 35th Avenue is an urban arterial in northwest Phoenix providing access to industrial, commercial, and residential properties. 35th Avenue is an unbalanced, divided multilane road with three northbound lanes and two southbound lanes. The northbound and southbound lanes are separated by a two way left turn lane (TWLTL) the entire length of the project. The posted speed limit on 35th Avenue is 35 MPH from the south project limits to Encanto Boulevard and 40 mph from Encanto Boulevard to the north project limits. A project location map is attached.

Proposed Improvements

The proposed improvements associated with the 35th Avenue project include:

1. Adding street lighting. The current street lighting system has luminaires on only one side of 35th Avenue.
2. Installing mid-block crossings with HAWK signals near bus stops and other high pedestrian crash locations.
3. Installing medians to provide refuge areas for pedestrians and help with access control.
4. Installing sustainable landscaping and other barriers from traffic to improve comfort for pedestrians.
5. Modify sidewalk and sidewalk curb ramps to improve condition and ADA compliance.
6. Update traffic signal controllers to enable connectivity with connected and autonomous vehicles.
7. Install progression speed signs to inform drivers of the optimal speed for navigating the signalized corridor.
8. Install fiber optic communications to improve connectivity and enhance economic competitiveness.
9. Improve roadway surface (fill potholes, address other roadway maintenance concerns).

10. Improve bridges to address any functional or structural deficiencies.

Methodology

Per the FHWA Highway Safety Manual (HSM), the appropriate method to measure the anticipated crash reduction associated with an improvement project is to complete a predictive safety analysis for both the “No-Build” and “Build” scenarios. The crash reduction is calculated as the difference in crash frequency between these scenarios. The two scenarios evaluated include:

- **No-Build:** Existing roadway geometry/configuration, forecasted traffic volumes for study period (2025-2044)
- **Build:** Proposed roadway geometry/configuration, forecasted traffic volumes for study period (2025-2044)

A predictive safety analysis was completed using the FHWA’s Interactive Highway Safety Design Model (IHSDM) for the “No-Build” scenario. However, the crash frequency of the individual improvements within the “Build” scenario (listed above) cannot be captured in IHSDM. When this situation occurs, HSM guidance recommends modifying the “No-Build” safety analysis results with individual Crash Modification Factors (CMFs) to produce “Build” safety analysis results.

Multiple CMFs can be applied in a multiplicative fashion to estimate the crash reduction of multiple improvements. However, HSM guidance indicates this should be done with caution, especially when more than 3 CMFs are applied, since CMF development didn’t account for the effects of individual CMFs targeting the same types of crashes. For the proposed improvements listed above, no CMFs were available for improvements 4, 5, 6, 7, 8, and 10. CMF utilization of the remaining CMFs is in table 1 below:

Improvement	CMF Number*	CMF Title	Crash Type	CMF Value	Adjusted CMF Value	Used?	Notes
1 (Street Lighting)	8797	Street Lighting	Night Time	0.977	0.993	Yes	29% Nighttime Crashes
2 (Mid-Block Crossing / HAWK)	9021	Install HAWK	Vehicle/Ped	0.432	-	No	Installed at only 3 locations.
3 (Install Medians)	175	Install Raised Median / Crosswalk	Vehicle/Ped	0.54	0.978	Yes	4.8% bike/ped crashes
4 (Improve Roadway Surface)	9289	Resurface Pavement	All	0.929	-	Yes	

* Source: cmfclearinghouse.org

It is expected improvements 1, 3, and 9 will have little to no overlap in crash benefit. As a result, the CMFs of these improvements can be combined into an effective CMF for all improvements by multiplying the adjusted CMF values together. This gives an effective CMF of **0.902** for the project.

IHSDM reports crash frequency in two different methods:

- **Predicted Number of Crashes:** The predicted number of crashes (PNC) is calculated using Safety Performance Functions (SPFs) derived from nationwide studies of similar roadway types.
- **Expected Number of Crashes:** The expected number of crashes (ENC) is a more “realistic” result than the PNC because it accounts for the crash history of the project roadways. The ENC is a modification to the PNC using crash history and the Empirical Bayes adjustment method.

The ENC is the most accurate method of predictive crash analysis and was used for this analysis.

A predictive safety analysis may also include the use of a calibration factor, a factor developed by local agencies to account for the differences between local experience and nationwide experience. It was unclear if there was a calibration factor that

could be applied for this analysis. Even if a calibration factor exists, it would have only minor impacts on the analysis results, since it would be applied to both the “Build” and “No-Build” scenarios. A calibration factor was not used for this analysis.

Results

The results of the predictive safety analysis are below. The IHSDM model uses safety performance functions for specific roadway conditions to estimate crash frequency. In some cases, the IHSDM model will not provide results if certain roadway attributes and details are not considered within the safety performance function. Roadway attributes and details that prevented IHSDM from providing results (and the modifications implemented as a fix) are as follows.

1. IHSDM won’t provide results for unbalanced typical sections (3 NB lanes, 2 SB lanes). To account for this, the road was modeled as a 5-lane typical section (2 lanes in each direction and a TWLTL). This likely causes a slight change in the expected crash frequency for the Build and No-Build scenarios.
2. IHSDM doesn’t recognize pedestrian and bicycle crashes as part of the Empirical Bayes adjustment for crash history. To account for this, pedestrian and bicycle crashes were coded as single vehicle crashes. This likely causes a slight change in the expected crash frequency for the Build and No-Build scenarios.
3. The AADT for 35th Avenue intersections with Thomas Road, Indian School Road, and Camelback Road were outside the model limits for the intersection type. This didn’t prevent the model from reporting crash frequency results for the intersection. This likely causes a slight change in the expected crash frequency for the Build and No-Build scenarios.

The results of the predictive safety analysis are in table 2 below:

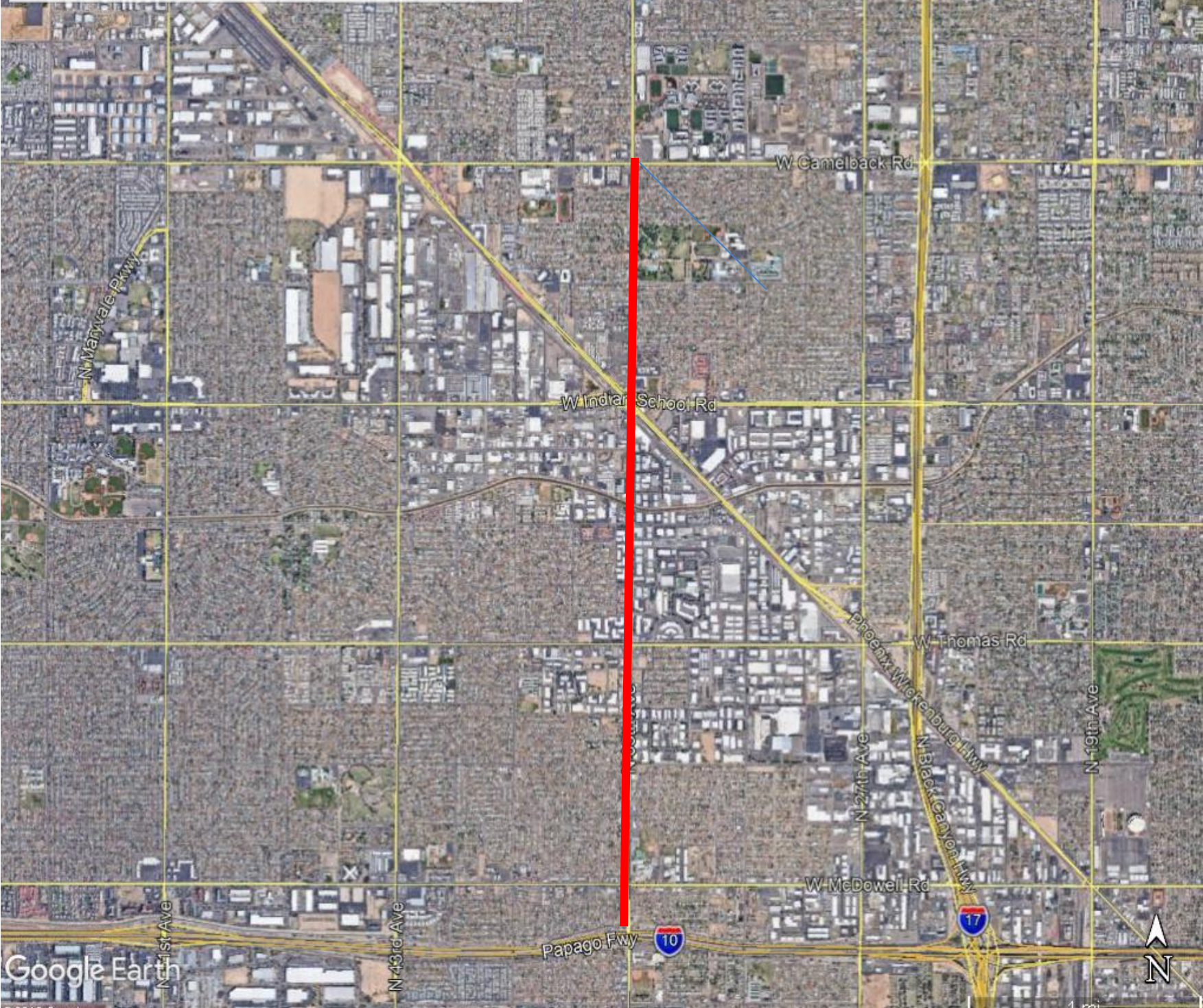
Table 2, Annual Crash Frequency (Crashes/Year)						
	Fatal/Injury		Property Damage Only		All Crashes	
	Annual	Study Period	Annual	Study Period	Annual	Study Period
“No-Build” Scenario						
Segments	22.94	458.80	47.05	941.00	69.99	1399.80
Intersections	70.12	1402.40	134.79	2695.80	204.91	4098.20
Total	93.06	1861.20	181.84	3636.80	274.90	5498.00
“Build” Scenario						
Segments	20.70	414.01	42.46	849.13	63.16	1263.13
Intersections	63.27	1265.48	121.63	2432.60	184.90	3698.07
Total	83.97	1679.48	164.09	3281.72	248.06	4961.20
Crash Reduction						
Segments	2.24	44.79	4.59	91.87	6.83	136.67
Intersections	6.85	136.92	13.16	263.20	20.01	400.13
Total	9.09	181.72	17.75	355.08	26.84	536.80

IHSDM reports are attached.

BUILD Application Project Location

35th Avenue from the I-10 to Camelback Road

Legend



Google Earth

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1 mi

Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

June 24, 2019

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Report Overview

Report Generated: Jun 24, 2019 9:04 AM

Report Template: System: Single Page, 508 Compliant [System] (mlcpm5, May 13, 2019 3:35 PM)

Evaluation Date: Mon Jun 24 09:03:28 CDT 2019

IHSDM Version: v14.1.0 (Mar 12, 2019)

Crash Prediction Module: v9.1.0 (Mar 12, 2019)

User Name: sandbergj

Organization Name:

Phone:

E-Mail:

Project Title: 35th Ave (Phoenix Build Grant)

Project Comment: Created Mon Jun 17 15:16:00 CDT 2019

Project Unit System: U.S. Customary

Highway Title: 35th Ave

Highway Comment: Created Mon Jun 17 15:16:55 CDT 2019

Highway Version: 2

Evaluation Title: Evaluation 12

Evaluation Comment: Created Mon Jun 24 09:03:00 CDT 2019

Minimum Location: 0.000

Maximum Location: 170+00.000

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: HSM Configuration

Crash Distribution: HSM Configuration

Model/CMF: HSM Configuration

First Year of Analysis: 2025

Last Year of Analysis: 2044

Empirical-Bayes Analysis: Site-Specific

Highway with Crash History: 35th Ave

Highway with Crash History Comment: Created Mon Jun 17 15:16:55 CDT 2019

Highway with Crash History Version: 2

First Year of Observed Crashes: 2013

Last Year of Observed Crashes: 2017

Section Types

Section 1 Evaluation

Section: Section 1

Evaluation Start Location: 0.000

Evaluation End Location: 170+00.000

Area Type: Urban

Functional Class: Arterial

Type of Alignment: Divided, Multilane

Model Category: Urban/Suburban Arterial

Calibration Factor: 3SG=1.0; 3ST=1.0; 4D=1.0; 4SG=1.0; 4ST=1.0; 5T=1.0;

Table 1. Observed Crashes Used in the Evaluation (Section 1)

Year	Observed Crashes	Total Crashes Used	FI Crashes	FI no/C Crashes	PDO Crashes
2013	215	215	77	0	138
2014	235	235	100	0	135
2015	261	261	111	0	150
2016	297	297	86	0	211
2017	326	326	93	0	233
All Years	1,334 ^[1]	1,334	467	0	867

Footnotes

^[1] Note: Observed crash data that does not comply with the associated CPM model requirements may not be used in EB processing.

Table 2. Evaluation Highway - Homogeneous Segments (Section 1)

Segment No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AAADT	Number Major Commercial Driveways	Number Minor Commercial Driveways	Number Major Industrial/Institutional	Number Minor Industrial/Institutional	Number Major Residential Driveways	Number Minor Residential Driveways	Number Other Driveways	Lighting	Automated Speed Enforcement	Density (fixed objects/mi)	Median Width (ft)	Type	Effective Median Width (ft)	Speed Level	Number Rail Highway Crossings	Average Shoulder Width (ft)	Average Lane Width (ft)		
1	4 D	0.000	3+50.000	350.00	0.0663	2025: 39,048; 2026: 39,299; 2027: 39,551; 2028: 39,802; 2029: 40,054; 2030: 40,306; 2031: 40,557; 2032: 40,809; 2033: 41,061; 2034: 41,312; 2035: 41,564; 2036: 41,815; 2037: 42,067; 2038: 42,319; 2039: 42,570; 2040: 42,822; 2041: 43,074; 2042: 43,325; 2043: 43,577; 2044: 43,829	0	0	0	0	0	0	0	0	0	0	0	17.00	Non-Traversable Median	17.00	Intermediate/High	0	0.00	10.50	
2	ST	3+50.000	7+20.000	370.00	0.0701	2025: 39,048; 2026: 39,299; 2027: 39,551; 2028: 39,802; 2029: 40,054; 2030: 40,306; 2031: 40,557; 2032: 40,809; 2033: 41,061; 2034: 41,312; 2035: 41,564; 2036: 41,815; 2037: 42,067; 2038: 42,319; 2039: 42,570; 2040: 42,822; 2041: 43,074; 2042: 43,325; 2043: 43,577; 2044: 43,829	0	2	0	0	0	0	0	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50
3	ST	7+20.000	60+0.000	5.2800	1.0000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	0	22	0	9	0	6	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50	
4	ST	60+0.000	73+0.000	1.3000	0.2462	2025: 29,093; 2026: 29,159; 2027: 29,225; 2028: 29,292; 2029: 29,358; 2030: 29,425; 2031: 29,491; 2032: 29,557; 2033: 29,624; 2034: 29,690; 2035: 29,757; 2036: 29,823; 2037: 29,890; 2038: 29,956; 2039: 30,022; 2040: 30,089; 2041: 30,155; 2042: 30,222; 2043: 30,288; 2044: 30,355	0	11	0	0	0	1	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50	
5	ST	73+0.000	112+50.000	3.9500	0.7481	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	0	15	0	7	0	0	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50	
6	ST	112+50.000	139+50.000	2.7000	0.5114	2025: 28,901; 2026: 28,967; 2027: 29,033; 2028: 29,099; 2029: 29,165; 2030: 29,231; 2031: 29,297; 2032: 29,363; 2033: 29,429; 2034: 29,495; 2035: 29,561; 2036: 29,627; 2037: 29,693; 2038: 29,759; 2039: 29,825; 2040: 29,891; 2041: 29,957; 2042: 30,023; 2043: 30,089; 2044: 30,156	0	7	0	0	0	19	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50	
7	ST	139+50.000	154+0.000	1.4500	0.2746	2025: 27,654; 2026: 27,717; 2027: 27,780; 2028: 27,843; 2029: 27,906; 2030: 27,969; 2031: 28,032; 2032: 28,096; 2033: 28,159; 2034: 28,222; 2035: 28,285; 2036: 28,348; 2037: 28,411; 2038: 28,475; 2039: 28,538; 2040: 28,601; 2041: 28,664; 2042: 28,727; 2043: 28,790; 2044: 28,854	0	1	0	3	0	1	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50	
8	ST	154+0.000	170+0.000	1.6000	0.3030	2025: 28,926; 2026: 28,992; 2027: 29,058; 2028: 29,124; 2029: 29,190; 2030: 29,256; 2031: 29,322; 2032: 29,388; 2033: 29,454; 2034: 29,520; 2035: 29,587; 2036: 29,653; 2037: 29,719; 2038: 29,785; 2039: 29,851; 2040: 29,917; 2041: 29,983; 2042: 30,049; 2043: 30,115; 2044: 30,182	0	10	0	0	0	9	0	0	0	0	0.00	0.00	None	0.00	Intermediate/High	0	0.00	10.50	

Table 3. Crash Highway Highway - Homogeneous Segments (Section 1)

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commercial Driveways	Number Minor Commercial Driveways	Number Major Industrial/Institutional	Number Minor Industrial/Institutional	Number Major Residential Driveways	Number Minor Residential Driveways	Number Other Driveways	Lighting	Automated Speed Enforcement	Density (fixed objects /mi)	Median Width (ft)	Type	Effective Median Width (ft)	Speed Level	Number Rail Highway Crossings	Average Shoulder Width (ft)	Average Lane Width (ft)
1	4D	0.000	3+50.000	350.00	0.0663	2013-2017: 39,048	0	0	0	0	0	0	0	true	false	0.0	17.00	Non-Traversable Median	17.00	Intermediate/High	0	0.00	10.50
2	5T	3+50.000	7+20.000	370.00	0.0701	2013-2017: 39,048	0	2	0	0	0	0	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50
3	5T	7+20.000	60+00.000	5,280.00	1.0000	2013-2017: 39,394	0	22	0	9	0	6	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50
4	5T	60+00.000	73+00.000	1,300.00	0.2462	2013-2017: 29,093	0	11	0	0	0	1	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50
5	5T	73+00.000	112+50.000	3,950.00	0.7481	2013-2017: 36,615	0	15	0	7	0	0	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50
6	5T	112+50.000	139+50.000	2,700.00	0.5114	2013-2017: 28,901	0	7	0	0	0	19	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50
7	5T	139+50.000	154+00.000	1,450.00	0.2746	2013-2017: 27,654	0	1	0	3	0	1	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50
8	5T	154+00.000	170+00.000	1,600.00	0.3030	2013-2017: 28,926	0	10	0	0	0	9	0	true	false	0.0	0.00	None	0.00	Intermediate/High	0	0.00	10.50

Table 4. Evaluation Intersection (Section 1)

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pedestrian Volume (crossings /day)	Lighted at Night	Red Light Camera	School Near by	Number of Bus Stops	Number of Alcohol Sales Establishments	Max Lanes Crossed	Replaced with Roundabout
1	Willetta St	60+000	2025: 39,048; 2026: 39,299; 2027: 39,551; 2028: 39,802; 2029: 40,054; 2030: 40,306; 2031: 40,557; 2032: 40,809; 2033: 41,061; 2034: 41,312; 2035: 41,564; 2036: 41,815; 2037: 42,067; 2038: 42,319; 2039: 42,570; 2040: 42,822; 2041: 43,074; 2042: 43,325; 2043: 43,577; 2044: 43,829	2025-2044: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
2	McDowell Rd	7+2000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,802; 2029: 40,054; 2030: 40,306; 2031: 40,557; 2032: 40,809; 2033: 41,061; 2034: 41,312; 2035: 41,564; 2036: 41,815; 2037: 42,067; 2038: 42,319; 2039: 42,570; 2040: 42,822; 2041: 43,074; 2042: 43,325; 2043: 43,577; 2044: 43,829	2025: 28,217; 2026: 28,069; 2027: 27,921; 2028: 27,773; 2029: 27,626; 2030: 27,478; 2031: 27,330; 2032: 27,183; 2033: 27,035; 2034: 26,887; 2035: 26,847; 2036: 26,951; 2037: 27,055; 2038: 27,158; 2039: 27,262; 2040: 27,366; 2041: 27,470; 2042: 27,574; 2043: 27,678; 2044: 27,782	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
3	Monte Vista Rd	26+4000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
4	Encanto Blvd	33+4000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
5	Lewis Ave	40+1000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
6	Thomas Rd	60+000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025: 38,155; 2026: 37,989; 2027: 37,823; 2028: 37,657; 2029: 37,491; 2030: 37,325; 2031: 37,159; 2032: 36,993; 2033: 36,827; 2034: 36,661; 2035: 36,496; 2036: 36,330; 2037: 36,164; 2038: 35,998; 2039: 35,832; 2040: 35,666; 2041: 35,500; 2042: 35,334; 2043: 35,168; 2044: 35,003	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
7	Earl Dr	73+000	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	2025-2044: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
8	Osborn Rd	86+3000	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	2025-2044: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
9	Clarendon Ave	102+3000	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	2025-2044: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
10	Highway 60	112+6000	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	2025: 61,123; 2026: 61,173; 2027: 61,224; 2028: 61,275; 2029: 61,326; 2030: 61,377; 2031: 61,428; 2032: 61,478; 2033: 61,529; 2034: 61,580; 2035: 61,631; 2036: 61,682; 2037: 61,733; 2038: 61,783; 2039: 61,834; 2040: 61,885; 2041: 61,936; 2042: 61,987; 2043: 62,038; 2044: 62,089	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
11	Campbell Ave	139+4000	2025: 28,901; 2026: 28,967; 2027: 29,033; 2028: 29,099; 2029: 29,165; 2030: 29,231; 2031: 29,297; 2032: 29,363; 2033: 29,429; 2034: 29,495; 2035: 29,561; 2036: 29,627; 2037: 29,693; 2038: 29,759; 2039: 29,825; 2040: 29,891; 2041: 29,957; 2042: 30,023; 2043: 30,089; 2044: 30,156	2025-2044: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pedestrian Volume (crossings/day)	Lighted at Night	Red Light Camera	School Near by	Number of Bus Stops	Number of Alcohol Sales Establishments	Max Lanes Crossed	Replaced with Roundabout	
12	Elm St	154+00.000	2025: 28,926; 2026: 28,992; 2027: 29,058; 2028: 29,124; 2029: 29,190; 2030: 29,256; 2031: 29,322; 2032: 29,388; 2033: 29,454; 2034: 29,520; 2035: 29,587; 2036: 29,653; 2037: 29,719; 2038: 29,785; 2039: 29,851; 2040: 29,917; 2041: 29,983; 2042: 30,049; 2043: 30,115; 2044: 30,182	2025-2044: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false					false
13	Mariposa St	158+70.000	2025: 28,926; 2026: 28,992; 2027: 29,058; 2028: 29,124; 2029: 29,190; 2030: 29,256; 2031: 29,322; 2032: 29,388; 2033: 29,454; 2034: 29,520; 2035: 29,587; 2036: 29,653; 2037: 29,719; 2038: 29,785; 2039: 29,851; 2040: 29,917; 2041: 29,983; 2042: 30,049; 2043: 30,115; 2044: 30,182	2025-2044: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false					false
14	Camelback Rd	165+50.000	2025: 28,926; 2026: 28,992; 2027: 29,058; 2028: 29,124; 2029: 29,190; 2030: 29,256; 2031: 29,322; 2032: 29,388; 2033: 29,454; 2034: 29,520; 2035: 29,587; 2036: 29,653; 2037: 29,719; 2038: 29,785; 2039: 29,851; 2040: 29,917; 2041: 29,983; 2042: 30,049; 2043: 30,115; 2044: 30,182	2025: 57,612; 2026: 57,651; 2027: 57,691; 2028: 57,731; 2029: 57,770; 2030: 57,810; 2031: 57,850; 2032: 57,889; 2033: 57,929; 2034: 57,969; 2035: 58,008; 2036: 58,048; 2037: 58,088; 2038: 58,127; 2039: 58,167; 2040: 58,207; 2041: 58,246; 2042: 58,286; 2043: 58,326; 2044: 58,366	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false	
15	Almeria Rd	10+50.000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
16	Coronado Rd	13+70.000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
17	Granada Rd	17+00.000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
18	Palm Lane (W)	20+30.000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
19	Vernon Ave	36+70.000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
20	Monterosa St	118+40.000	2025: 28,901; 2026: 28,967; 2027: 29,033; 2028: 29,099; 2029: 29,165; 2030: 29,231; 2031: 29,297; 2032: 29,363; 2033: 29,429; 2034: 29,495; 2035: 29,561; 2036: 29,627; 2037: 29,693; 2038: 29,759; 2039: 29,825; 2040: 29,891; 2041: 29,957; 2042: 30,023; 2043: 30,089; 2044: 30,156	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
21	Hazelwood St	144+20.000	2025: 27,654; 2026: 27,717; 2027: 27,780; 2028: 27,843; 2029: 27,906; 2030: 27,969; 2031: 28,032; 2032: 28,096; 2033: 28,159; 2034: 28,222; 2035: 28,285; 2036: 28,348; 2037: 28,411; 2038: 28,475; 2039: 28,538; 2040: 28,601; 2041: 28,664; 2042: 28,727; 2043: 28,790; 2044: 28,854	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
22	Coolidge St	149+00.000	2025: 27,654; 2026: 27,717; 2027: 27,780; 2028: 27,843; 2029: 27,906; 2030: 27,969; 2031: 28,032; 2032: 28,096; 2033: 28,159; 2034: 28,222; 2035: 28,285; 2036: 28,348; 2037: 28,411; 2038: 28,475; 2039: 28,538; 2040: 28,601; 2041: 28,664; 2042: 28,727; 2043: 28,790; 2044: 28,854	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
23	Palm Ln	19+60.000	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pedestrian Volume (crossings /day)	Lighted at Night	Red Light Camera	School Near by	Number of Bus Stops	Number of Alcohol Sales Establishments	Max Lanes Crossed	Replaced with Roundabout	
24	Holly St	23+00.00	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
25	Cypress St	29+90.00	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
26	Virginia Ave	46+60.00	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Signalized	Three-Legged Signalized	0	0	0	15	true	false	false	0	0	4		false
27	Roanoke Ave	54+50.00	2025: 39,394; 2026: 39,484; 2027: 39,574; 2028: 39,664; 2029: 39,754; 2030: 39,844; 2031: 39,934; 2032: 40,024; 2033: 40,114; 2034: 40,204; 2035: 40,294; 2036: 40,384; 2037: 40,474; 2038: 40,564; 2039: 40,654; 2040: 40,744; 2041: 40,834; 2042: 40,924; 2043: 41,014; 2044: 41,104	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
28	Catalina Rd	66+80.00	2025: 29,093; 2026: 29,159; 2027: 29,225; 2028: 29,292; 2029: 29,358; 2030: 29,425; 2031: 29,491; 2032: 29,557; 2033: 29,624; 2034: 29,690; 2035: 29,757; 2036: 29,823; 2037: 29,890; 2038: 29,956; 2039: 30,022; 2040: 30,089; 2041: 30,155; 2042: 30,222; 2043: 30,288; 2044: 30,355	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
29	Whitton Ave	93+40.00	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
30	Weldon Ave	97+70.00	2025: 36,615; 2026: 36,698; 2027: 36,782; 2028: 36,866; 2029: 36,949; 2030: 37,033; 2031: 37,117; 2032: 37,200; 2033: 37,284; 2034: 37,368; 2035: 37,451; 2036: 37,535; 2037: 37,619; 2038: 37,702; 2039: 37,786; 2040: 37,870; 2041: 37,953; 2042: 38,037; 2043: 38,121; 2044: 38,205	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
31	Glenrosa Ave	125+90.000	2025: 28,901; 2026: 28,967; 2027: 29,033; 2028: 29,099; 2029: 29,165; 2030: 29,231; 2031: 29,297; 2032: 29,363; 2033: 29,429; 2034: 29,495; 2035: 29,561; 2036: 29,627; 2037: 29,693; 2038: 29,759; 2039: 29,825; 2040: 29,891; 2041: 29,957; 2042: 30,023; 2043: 30,089; 2044: 30,156	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false
32	Turney Ave	132+50.000	2025: 28,901; 2026: 28,967; 2027: 29,033; 2028: 29,099; 2029: 29,165; 2030: 29,231; 2031: 29,297; 2032: 29,363; 2033: 29,429; 2034: 29,495; 2035: 29,561; 2036: 29,627; 2037: 29,693; 2038: 29,759; 2039: 29,825; 2040: 29,891; 2041: 29,957; 2042: 30,023; 2043: 30,089; 2044: 30,156	2025-2044: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false					false

Table 5. Crash History Intersection (Section 1)

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pedestrian Volume (crossings/day)	Lighted at Night	Red Light Camera	School Nearby	Number of Bus Stops	Number of Alcohol Sales Establishments	Max Lanes Crossed	Replaced with Roundabout
1	Willetta St	60+0.000	2013-2017: 39,048	2013-2017: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
2	McDowell Rd	7+20.000	2013-2017: 39,394	2013-2017: 28,217	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
3	Monte Vista Rd	26+40.000	2013-2017: 39,394	2013-2017: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
4	Encanto Blvd	33+40.000	2013-2017: 39,394	2013-2017: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
5	Lewis Ave	40+10.000	2013-2017: 39,394	2013-2017: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
6	Thomas Rd	60+00.000	2013-2017: 39,394	2013-2017: 38,155	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
7	Earll Dr	73+00.000	2013-2017: 36,615	2013-2017: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
8	Osborn Rd	86+30.000	2013-2017: 36,615	2013-2017: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
9	Clarendon Ave	102+30.000	2013-2017: 36,615	2013-2017: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
10	Highway 60	112+60.000	2013-2017: 36,615	2013-2017: 61,123	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
11	Campbell Ave	139+40.000	2013-2017: 28,901	2013-2017: 500	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	4	false
12	Elm St	154+00.000	2013-2017: 28,926	2013-2017: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
13	Mariposa St	158+70.000	2013-2017: 28,926	2013-2017: 500	4	Stop-Controlled	Four-Legged w/STOP control	0	0			true	false	false				false
14	Camelback Rd	165+50.000	2013-2017: 28,926	2013-2017: 57,612	4	Signalized	Four-Legged Signalized	0	0	0	20	true	false	false	0	0	5	false
15	Almeria Rd	10+50.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
16	Coronado Rd	13+70.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
17	Granada Rd	17+00.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
18	Palm Lane (W)	20+30.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
19	Vernon Ave	36+70.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
20	Monterosa St	118+40.000	2013-2017: 28,901	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
21	Hazelwood St	144+20.000	2013-2017: 27,654	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
22	Coolidge St	149+00.000	2013-2017: 27,654	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
23	Palm Ln	19+60.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
24	Holly St	23+00.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
25	Cypress St	29+90.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
26	Virginia Ave	46+60.000	2013-2017: 39,394	2013-2017: 500	3	Signalized	Three-Legged Signalized	0	0	0	15	true	false	false	0	0	4	false
27	Roanoke Ave	54+50.000	2013-2017: 39,394	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
28	Catalina Rd	66+80.000	2013-2017: 29,093	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
29	Whitton Ave	93+40.000	2013-2017: 36,615	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
30	Weldon Ave	97+70.000	2013-2017: 36,615	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
31	Glenrosa Ave	125+90.000	2013-2017: 28,901	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false
32	Turney Ave	132+50.000	2013-2017: 28,901	2013-2017: 500	3	Stop-Controlled	Three-Legged w/STOP control	0	0			true	false	false				false

Table 6. Expected Highway Crash Rates and Frequencies Summary (Section 1)

First Year of Analysis	2025
Last Year of Analysis	2044
Evaluated Length (mi)	3.2197
Average Future Road AADT (vpd)	35,102
Expected Crashes	
Total Crashes	5,498.04
Fatal and Injury Crashes	1,861.29
Property-Damage-Only Crashes	3,636.75
Percent of Total Expected Crashes	
Percent Fatal and Injury Crashes (%)	34
Percent Property-Damage-Only Crashes (%)	66
Expected Crash Rate	
Crash Rate (crashes/mi/yr)	85.3813
FI Crash Rate (crashes/mi/yr)	28.9048
PDO Crash Rate (crashes/mi/yr)	56.4766
Expected Travel Crash Rate	
Total Travel (million veh-mi)	825.03
Travel Crash Rate (crashes/million veh-mi)	6.66
Travel FI Crash Rate (crashes/million veh-mi)	2.26
Travel PDO Crash Rate (crashes/million veh-mi)	4.41

Table 7. Expected Crash Frequencies and Rates by Highway Segment/Intersection (Section 1)

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Expected Crashes for Evaluation Period	Total Predicted Crashes for Evaluation Period	Expected Total Crash Frequency (crashes/yr)	Expected FI Crash Frequency (crashes/yr)	Expected PDO Crash Frequency (crashes/yr)	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	(Expected - Predicted) Total Crash Frequency (crashes/yr)	(Expected - Predicted) FI Crash Frequency (crashes/yr)	(Expected - Predicted) PDO Crash Frequency (crashes/yr)	Expected Crash Rate (crashes/mi/yr)	Expected Travel Crash Rate (crashes/million veh-mi)	Expected Intersection Travel Crash Rate (crashes/million veh)
1	0.000	3+50.000	0.0663	13.492	11.510	0.6746	0.0953	0.5793	0.5755	0.1589	0.4166	0.0991	-0.0636	0.1627	10.1768	0.67	
Willetta St	60.000			41.070	81.340	2.0535	0.9548	1.0987	4.0670	1.7238	2.3432	-2.0135	-0.7691	-1.2444			0.13
2	3+50.000	7+20.000	0.0701	33.719	31.332	1.6859	0.5187	1.1673	1.5666	0.4429	1.1237	0.1193	0.0757	0.0436	24.0588	1.59	
McDowell Rd	7+20.000			618.679	289.080	30.9340	9.8278	21.1061	14.4540	5.1164	9.3377	16.4800	4.7115	11.7685			1.25
3	7+20.000	60+00.000	1.0000	380.783	430.834	19.0392	7.6614	11.3778	21.5417	6.0942	15.4475	-2.5026	-1.5672	-4.0697	19.0392	1.30	
Almeria Rd	10+50.000			37.542	51.827	1.8771	0.7902	1.0869	2.5914	1.1061	1.4853	-0.7142	-0.3159	-0.3984			0.13
Coronado Rd	13+70.000			50.340	51.827	2.5170	1.1894	1.3276	2.5914	1.1061	1.4853	-0.0744	0.0833	-0.1577			0.17
Granada Rd	17+00.000			208.170	51.827	10.4085	3.1685	7.2399	2.5914	1.1061	1.4853	7.8171	2.0625	5.7547			0.70
Palm Ln	19+60.000			13.086	51.827	0.6543	0.2443	0.4100	2.5914	1.1061	1.4853	-1.9371	-0.8618	-1.0753			0.04
Palm Lane (W)	20+30.000			56.027	51.827	2.8014	0.8164	1.9850	2.5914	1.1061	1.4853	0.2100	-0.2897	0.4997			0.19
Holly St	23+00.000			28.158	51.827	1.4079	0.7623	0.6456	2.5914	1.1061	1.4853	-1.1835	-0.3438	-0.8397			0.10
Monte Vista Rd	26+40.000			98.840	79.519	4.9420	2.1549	2.7871	3.9759	1.6810	2.2949	0.9661	0.4739	0.4922			0.33
Cypress St	29+90.000			50.340	51.827	2.5170	1.0270	1.4900	2.5914	1.1061	1.4853	-0.0744	-0.0791	0.0047			0.17
Encanto Blvd	33+40.000			153.107	79.519	7.6554	2.8720	4.7833	3.9759	1.6810	2.2949	3.6794	1.1910	2.4884			0.51
Vernon Ave	36+70.000			26.452	51.827	1.3226	0.4627	0.8599	2.5914	1.1061	1.4853	-1.2688	-0.6433	-0.6254			0.09
Lewis Ave	40+10.000			50.601	79.519	2.5301	1.2610	1.2691	3.9759	1.6810	2.2949	-1.4459	-0.4200	-1.0258			0.17
Virginia Ave	46+60.000			61.103	66.960	3.0551	1.2924	1.7627	3.3480	1.3278	2.0202	-0.2929	-0.0353	-0.2575			0.21
Roanoke Ave	54+50.000			52.330	51.827	2.6165	0.9734	1.6431	2.5914	1.1061	1.4853	0.0251	-0.1326	0.1578			0.18
Thomas Rd	60+00.000			646.114	299.532	32.3057	10.4988	21.8069	14.9766	5.2703	9.7063	17.3291	5.2286	12.1005			1.25
4	60+00.000	73+00.000	0.2462	137.374	86.343	6.8687	1.3914	5.4773	4.3171	1.2359	3.0812	2.5516	0.1554	2.3961	27.8975	2.57	
Catalina Rd	66+80.000			7.246	37.662	0.3623	0.2050	0.1573	1.8831	0.8063	1.0768	-1.5208	-0.6014	-0.9194			0.03
Earl Dr	73+00.000			94.668	106.654	4.7334	1.5177	3.2157	5.3327	1.9576	3.3750	-0.5993	-0.4400	-0.1593			0.38
5	73+00.000	112+50.000	0.7481	282.235	289.312	14.1117	4.3246	9.7871	14.4656	4.0960	10.3696	-0.3539	0.2286	-0.5825	18.8633	1.38	
Osborn Rd	86+30.000			217.791	106.654	10.8895	3.7135	7.1761	5.3327	1.9576	3.3750	5.5569	1.7558	3.8010			0.79
Whitton Ave	93+40.000			27.809	47.964	1.3905	0.4565	0.9340	2.3982	1.0245	1.3737	-1.0077	-0.5680	-0.4397			0.10
Weldon Ave	97+70.000			26.115	47.964	1.3057	0.4516	0.8541	2.3982	1.0245	1.3737	-1.0925	-0.5729	-0.5196			0.10
Clarendon Ave	102+30.000			130.542	106.654	6.5271	1.9984	4.5286	5.3327	1.9576	3.3750	1.1944	0.0408	1.1556			0.47
6	112+50.000	139+50.000	0.5114	378.631	153.532	18.9315	6.5439	12.3876	7.6766	2.1890	5.4876	11.2549	4.3549	6.9000	37.0217	3.44	
Highway 60	112+60.000			107.990	254.750	5.3995	2.1010	3.2985	12.7375	4.4338	8.3037	-7.3380	-2.3328	-5.0052			0.16
Monterosa St	118+40.000			127.133	37.404	6.3567	2.0954	4.2613	1.8702	0.8008	1.0693	4.4865	1.2945	3.1920			0.58
Glenrosa Ave	125+90.000			61.970	37.404	3.0985	0.7618	2.3368	1.8702	0.8008	1.0693	1.2283	-0.0391	1.2674			0.29
Turney Ave	132+50.000			30.218	37.404	1.5109	0.4822	1.0287	1.8702	0.8008	1.0693	-0.3593	-0.3186	-0.0407			0.14
Campbell Ave	139+40.000			117.674	83.181	5.8837	1.7275	4.1562	4.1590	1.4939	2.6652	1.7247	0.2337	1.4910			0.55
7	139+50.000	154+00.000	0.2746	37.329	69.546	1.8665	0.9366	0.9298	3.4773	0.9892	2.4881	-1.6108	-0.0526	-1.5583	6.7965	0.66	
Hazelwood St	144+20.000			17.730	35.721	0.8865	0.3885	0.4980	1.7860	0.7651	1.0209	-0.8995	-0.3766	-0.5230			0.09
Coolidge St	149+00.000			14.199	35.721	0.7099	0.3694	0.3406	1.7860	0.7651	1.0209	-1.0761	-0.3957	-0.6804			0.07
Elm St	154+00.000			46.702	62.540	2.3351	0.8894	1.4457	3.1270	1.2877	1.8392	-0.7919	-0.3983	-0.3935			0.22
8	154+00.000	170+00.000	0.3030	136.254	102.876	6.8127	1.4706	5.3421	5.1438	1.4718	3.6720	1.6689	-0.0012	1.6701	22.4819	2.08	
Mariposa St	158+70.000			47.085	62.540	2.3543	0.8964	1.4578	3.1270	1.2877	1.8392	-0.7727	-0.3913	-0.3814			0.21
Camelback Rd	165+50.000			831.392	241.420	41.5696	13.7718	27.7977	12.0710	4.1163	7.9547	29.4986	9.6555	19.8430			1.38

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Expected Crashes for Evaluation Period	Total Predicted Crashes for Evaluation Period	Expected Total Crash Frequency (crashes/yr)	Expected FI Crash Frequency (crashes/yr)	Expected PDO Crash Frequency (crashes/yr)	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	(Expected - Predicted) Total Crash Frequency (crashes/yr)	(Expected - Predicted) FI Crash Frequency (crashes/yr)	(Expected - Predicted) PDO Crash Frequency (crashes/yr)	Expected Crash Rate (crashes/mi/yr)	Expected Travel Crash Rate (crashes/million veh-mi)	Expected Intersection Travel Crash Rate (crashes/million veh)
All Segments			3.2197	1,399.816	1,175.286	69.9908	22.9425	47.0483	58.7643	16.6780	42.0863	11.2265	6.2645	4.9620	21.7383	1.70	
All Intersections				4,098.223	2,783.549	204.9112	70.1221	134.7891	139.1775	53.7164	85.4611	65.7337	16.4057	49.3280			0.42
Total			3.2197	5,498.040	3,958.836	274.9020	93.0646	181.8374	197.9418	70.3944	127.5474	76.9602	22.6702	54.2900	85.3813		

Table 8. Expected Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Expected Crashes for Evaluation Period	Total Predicted Crashes for Evaluation Period	Expected Total Crash Frequency (crashes/yr)	Expected FI Crash Frequency (crashes/yr)	Expected PDO Crash Frequency (crashes/yr)	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	(Expected - Predicted) Total Crash Frequency (crashes/yr)	(Expected - Predicted) FI Crash Frequency (crashes/yr)	(Expected - Predicted) PDO Crash Frequency (crashes/yr)	Expected Crash Rate (crashes/mi/yr)	Expected Travel Crash Rate (crashes/million veh-mi)
Tangent	0.000	170+00.000	3.2197	1,399,816	1,175,286	69,9908	22,9425	47,0483	58,7643	16,6780	42,0863	11,2265	6,2645	4,9620	21,7383	1.77

Table 9. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2025	193.15	68.63	35.532	124.52	64.468
2026	193.60	68.80	35.534	124.81	64.466
2027	194.05	68.96	35.537	125.09	64.463
2028	194.55	69.14	35.541	125.41	64.460
2029	195.06	69.33	35.544	125.73	64.456
2030	195.57	69.52	35.548	126.05	64.452
2031	196.08	69.71	35.551	126.37	64.449
2032	196.59	69.90	35.555	126.69	64.445
2033	197.09	70.08	35.558	127.01	64.442
2034	197.60	70.27	35.562	127.33	64.438
2035	198.12	70.46	35.565	127.66	64.435
2036	198.66	70.66	35.568	128.00	64.432
2037	199.20	70.86	35.572	128.34	64.428
2038	199.74	71.06	35.575	128.68	64.425
2039	200.28	71.25	35.578	129.02	64.422
2040	200.82	71.45	35.581	129.36	64.419
2041	201.35	71.65	35.584	129.70	64.415
2042	201.90	71.85	35.588	130.04	64.412
2043	202.44	72.05	35.591	130.39	64.409
2044	202.98	72.25	35.594	130.73	64.406
Total	3,958.84	1,407.89	35.563	2,550.95	64.437
Average	197.94	70.39	35.563	127.55	64.437

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 10. Expected Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2025	268.25	90.73	33.824	177.52	66.179
2026	268.87	90.95	33.826	177.93	66.176
2027	269.50	91.17	33.829	178.34	66.173
2028	270.20	91.41	33.832	178.79	66.169
2029	270.90	91.66	33.836	179.25	66.166
2030	271.61	91.91	33.839	179.70	66.162
2031	272.31	92.16	33.842	180.16	66.159
2032	273.02	92.41	33.846	180.62	66.155
2033	273.73	92.65	33.849	181.07	66.151
2034	274.43	92.90	33.852	181.53	66.148
2035	275.15	93.16	33.856	182.00	66.144
2036	275.90	93.42	33.859	182.48	66.141
2037	276.65	93.68	33.862	182.97	66.138
2038	277.40	93.94	33.865	183.46	66.134
2039	278.15	94.20	33.868	183.94	66.131
2040	278.90	94.47	33.871	184.43	66.128
2041	279.64	94.73	33.874	184.91	66.124
2042	280.39	94.99	33.877	185.40	66.121
2043	281.14	95.25	33.880	185.88	66.118
2044	281.89	95.52	33.883	186.37	66.115
Total	5,498.04	1,861.29	33.854	3,636.75	66.146
Average	274.90	93.06	33.854	181.84	66.146

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 11. Comparing Predicted and Expected Crashes for the Evaluation Period (Section 1)

Scope	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
Predicted	3,958.84	1,407.89	35.563	2,550.95	64.437
Expected	5,498.04	1,861.29	33.854	3,636.75	66.146
Expected - Predicted	1,539.20	453.40		1,085.80	
Percent Difference	28.00	24.36		29.86	

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 12. Expected Five Lane or Fewer Crash Type Distribution (Section 1)

Element Type	Crash Type	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)	Total Crashes	Percent Total (%)
Highway Segment	Collision with Animal	1.11	0.0	5.26	0.1	6.37	0.1
Highway Segment	Collision with Bicycle	13.55	0.2	0.00	0.0	13.55	0.2
Highway Segment	Collision with Fixed Object	27.66	0.5	82.33	1.5	109.98	2.0
Highway Segment	Collision with Other Object	0.35	0.0	6.50	0.1	6.86	0.1
Highway Segment	Other Single-vehicle Collision	40.32	0.7	13.06	0.2	53.38	1.0
Highway Segment	Collision with Pedestrian	26.07	0.5	0.00	0.0	26.07	0.5
Highway Segment	Total Single Vehicle Crashes	109.06	2.0	107.15	1.9	216.22	3.9
Highway Segment	Angle Collision	15.63	0.3	44.60	0.8	60.23	1.1
Highway Segment	Driveway-related Collision	36.98	0.7	73.64	1.3	110.62	2.0
Highway Segment	Head-on Collision	6.57	0.1	3.07	0.1	9.64	0.2
Highway Segment	Other Multi-vehicle Collision	5.67	0.1	22.50	0.4	28.18	0.5
Highway Segment	Rear-end Collision	264.61	4.8	495.00	9.0	759.61	13.8
Highway Segment	Sideswipe, Opposite Direction Collision	1.26	0.0	6.75	0.1	8.01	0.1
Highway Segment	Sideswipe, Same Direction Collision	19.07	0.3	188.25	3.4	207.32	3.8
Highway Segment	Total Multiple Vehicle Crashes	349.79	6.4	833.81	15.2	1,183.60	21.5
Highway Segment	Total Highway Segment Crashes	458.85	8.3	940.97	17.1	1,399.82	25.5
Intersection	Collision with Animal	0.17	0.0	1.63	0.0	1.80	0.0
Intersection	Collision with Bicycle	42.46	0.8	0.00	0.0	42.46	0.8
Intersection	Collision with Fixed Object	57.93	1.1	133.77	2.4	191.70	3.5
Intersection	Non-Collision	10.68	0.2	5.46	0.1	16.14	0.3
Intersection	Collision with Other Object	6.36	0.1	11.95	0.2	18.32	0.3
Intersection	Other Single-vehicle Collision	3.27	0.1	3.20	0.1	6.47	0.1
Intersection	Collision with Parked Vehicle	0.08	0.0	0.25	0.0	0.33	0.0
Intersection	Collision with Pedestrian	28.60	0.5	0.00	0.0	28.60	0.5
Intersection	Total Intersection Single Vehicle Crashes	149.56	2.7	156.26	2.8	305.82	5.6

Element Type	Crash Type	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)	Total Crashes	Percent Total (%)
Intersection	Angle Collision	446.06	8.1	648.39	11.8	1,094.45	19.9
Intersection	Head-on Collision	58.97	1.1	72.38	1.3	131.35	2.4
Intersection	Other Multi-vehicle Collision	72.09	1.3	548.69	10.0	620.79	11.3
Intersection	Rear-end Collision	542.55	9.9	1,182.03	21.5	1,724.59	31.4
Intersection	Sideswipe	133.21	2.4	88.02	1.6	221.23	4.0
Intersection	Total Intersection Multiple Vehicle Crashes	1,252.88	22.8	2,539.52	46.2	3,792.40	69.0
Intersection	Total Intersection Crashes	1,402.44	25.5	2,695.78	49.0	4,098.22	74.5
	Total Crashes	1,861.29	33.9	3,636.75	66.1	5,498.04	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 13. Evaluation Message

Start Location (Sta. ft)	End Location (Sta. ft)	Message
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (38,155 vpd) for 2013 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (38,155 vpd) for 2014 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (38,155 vpd) for 2015 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (38,155 vpd) for 2016 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (38,155 vpd) for 2017 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,123 vpd) for 2013 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,123 vpd) for 2014 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,123 vpd) for 2015 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,123 vpd) for 2016 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,123 vpd) for 2017 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,612 vpd) for 2013 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,612 vpd) for 2014 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,612 vpd) for 2015 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,612 vpd) for 2016 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,612 vpd) for 2017 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (38,155 vpd) for 2025 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (37,989 vpd) for 2026 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (37,823 vpd) for 2027 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG

Start Location (Sta. ft)	End Location (Sta. ft)	Message
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (37,657 vpd) for 2028 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (37,491 vpd) for 2029 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (37,325 vpd) for 2030 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (37,159 vpd) for 2031 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (36,993 vpd) for 2032 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (36,827 vpd) for 2033 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (36,661 vpd) for 2034 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (36,496 vpd) for 2035 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (36,330 vpd) for 2036 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (36,164 vpd) for 2037 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,998 vpd) for 2038 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,832 vpd) for 2039 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,666 vpd) for 2040 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,500 vpd) for 2041 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,334 vpd) for 2042 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,168 vpd) for 2043 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
60+00.000	60+00.000	for intersection #6 (60+00.000 to 60+00.000), minor road traffic volume (35,003 vpd) for 2044 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,123 vpd) for 2025 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,173 vpd) for 2026 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
112+60.000	112+60.000	for intersection #10 (112+60.000 to 112+60.000), minor road traffic volume (61,224 vpd) for 2027 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG

Start Location (Sta. ft)	End Location (Sta. ft)	Message
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,731 vpd) for 2028 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,770 vpd) for 2029 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,810 vpd) for 2030 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,850 vpd) for 2031 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,889 vpd) for 2032 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,929 vpd) for 2033 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (57,969 vpd) for 2034 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,008 vpd) for 2035 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,048 vpd) for 2036 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,088 vpd) for 2037 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,127 vpd) for 2038 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,167 vpd) for 2039 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,207 vpd) for 2040 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,246 vpd) for 2041 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,286 vpd) for 2042 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,326 vpd) for 2043 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG
165+50.000	165+50.000	for intersection #14 (165+50.000 to 165+50.000), minor road traffic volume (58,366 vpd) for 2044 is not within the model limit (33,400 vpd) for reliable results for intersection type 4SG