FINAL
Traffic Engineering Report

Kolb Road, Sabino Canyon Road to Sunrise Drive

Pima County Project No. 4KSCD

PREPARED FOR

PIMA COUNTY DOT

May 2017

Balancing the Natural and Built Environment

PSOMAS

FINAL
TRAFFIC ENGINEERING REPORT
KOLB ROAD,
SABINO CANYON ROAD TO SUNRISE DRIVE
PIMA COUNTY, ARIZONA

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Pima County Project No. 4KSCD
Psomas Project No. 7PIM160201
May 2017

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1. EXECUTIVE SUMMARY

This project consists of widening Kolb Road from two to three lanes between the intersections at Sabino Canyon Road and Sunrise Drive. The project will also include constructing improved shoulders, including the addition of paved shoulders.

The purpose of this report is to evaluate the current traffic operations and safety of the corridor as well as projected future performance. Kolb Road, as well as three signalized intersections (Kolb Road/Sabino Canyon Road, Kolb Road/Snyder Road, and Kolb Road/Sunrise Drive), and one major unsignalized intersection (Kolb Road/Territory Drive) were analyzed in this report.

Kolb Road from Sabino Canyon Road to Sunrise Drive is currently a two-lane, undivided roadway for much of the project length. Near the north end of the project area, there is an existing two-way center left turn lane which runs for approximately ¼ mile. The south leg of the Kolb Road/Sunrise Drive intersection has a raised median, which is approximately 300 feet long. The posted speed limit on Kolb Road is 35 mph. The existing ADT is 11,747 vehicles per day north of Snyder Road and 12,618 vehicles per day south of Snyder Road.

Based on historic growth in the area, it is assumed that traffic volumes in the project area will increase approximately 0.50% per year. In 2040, the horizon year for this study, Kolb Road is projected to carry approximately 13,200 vehicles per day north of Snyder Road and approximately 14,200 vehicles per day south of Snyder Road.

The operational analysis shows that all four study intersections and Kolb Road will continue to operate efficiently with this project through 2040. Based on the projected volumes, a northbound right turn lane is warranted at the Kolb Road/Snyder Road intersection. However, analyses show that the intersection will operate efficiently with or without the right turn lane.

An analysis of safety along the corridor showed that the predicted number of crashes (using the *Highway Safety Manual* methodology) would decrease with the project compared to the future conditions without the project.

The addition of a northbound right turn lane at the Kolb Road/Snyder Road intersection is expected to decrease the number of predicted crashes at the intersection slightly (from 2.27 crashes/year to 2.21 crashes/year). However, the crash history shows only one northbound crash at the intersection in five years, which may or may not have been related to the right turn movement. Given the low number of crashes, the fact that the intersection will operate efficiently with or without the addition of a northbound right turn lane, and the considerable cost which would be associated with the construction at this location (given the site constraints), it is not recommended that a northbound right turn lane be constructed at Kolb Road and Snyder Road.

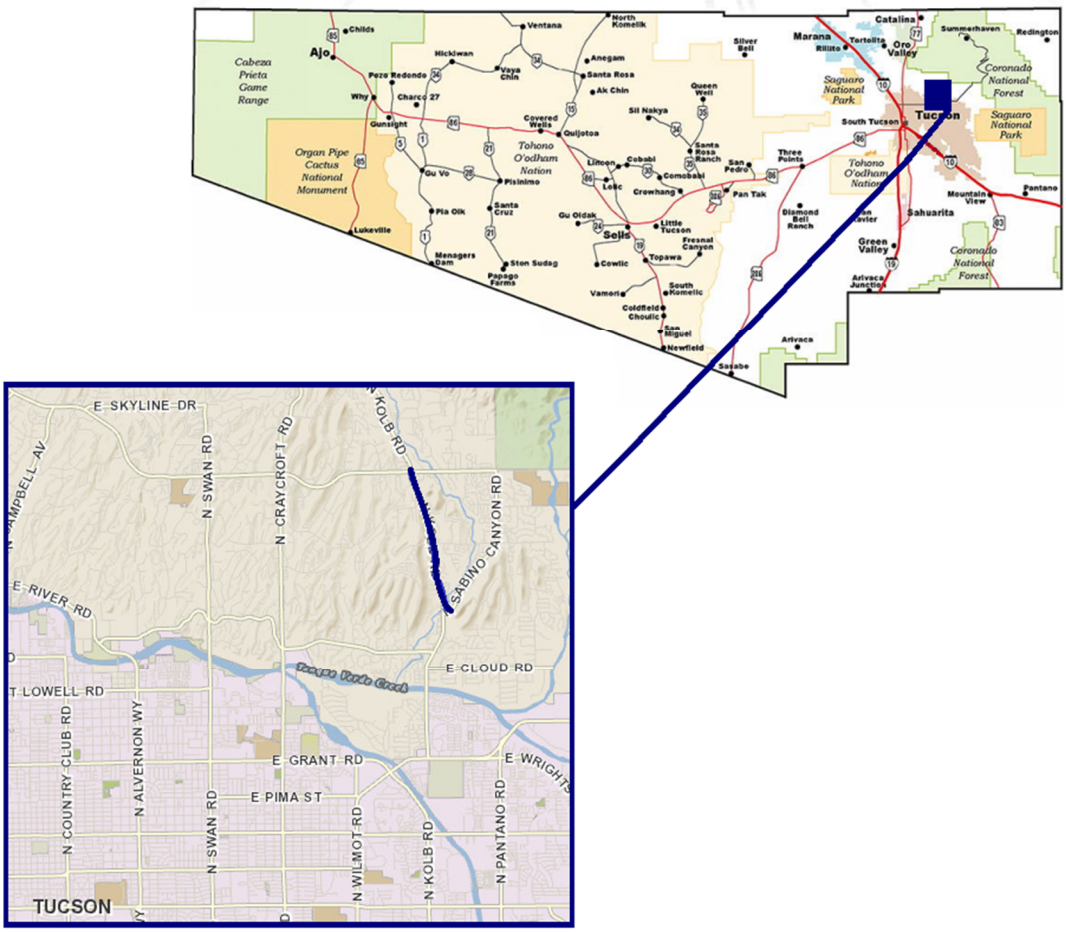
However, the following improvements should be constructed with this project:

- Widen Kolb Road to a three-lane roadway by adding a center two-way left turn lane throughout the project area. This will improve operations and safety by removing turning vehicles from the travel lanes.
- Improve the transition from two to one northbound lanes on Kolb Road just north of Sabino Canyon Road to avoid speeding and safety issues.
- Provide separate bike and right turn lanes for southbound travel at the Bashas' shopping center driveways.
- Include paved shoulders throughout the project area to provide multi-modal connectivity.
- Provide sidewalk along one side of the roadway to provide pedestrian connectivity through the corridor.
- Add street lighting to Kolb Road between Territory Drive and Sunrise Drive, including at the intersection of Kolb Road and Territory Drive.
- Remove, protect, or delineate roadside obstructions.
- Construct a solar powered flasher (or other comparable device, as determined during the design phase) near Fire Station 73 to improve general safety.

2. INTRODUCTION

This project consists of widening approximately 2.1 miles of Kolb Road from an existing two lane roadway to a three lane roadway (one travel lane per direction and a two-way left turn lane) between Sabino Canyon Road and Sunrise Drive, in compliance with the 1997 Bond program. Other potential improvements to be considered and evaluated include provisions for pedestrians and other users, as well as street lighting, improved access for emergency services, and paved shoulders. Figure 1 shows the project location.

Figure 1. Project Area



The purpose of this report is to analyze existing conditions and projected future conditions for Kolb Road from Sabino Canyon Road to Sunrise Drive, including four major intersections, for the horizon year of 2040.

3. EXISTING CONDITIONS

3.1. LAND USE

The land uses within the study area are primarily residential: single family subdivisions, single family homes on one- to five-acre lots, and multi-family buildings. Apartment complexes are located at the southeast corner of the Sunrise Drive/Kolb Road intersection and east of Kolb Road at its intersection with Snyder Road. While there are some vacant residential sites, most of the project area has already been developed.

Commercial uses also occur within the project limits. Bashas' grocery store anchors a group of retail stores and restaurants on the southwest corner of the Kolb Road/Sunrise Drive intersection. A second group of retail stores is located on the southeast corner of the same intersection. One four-acre commercial site located west of Kolb Road and south of Territory Drive has been developed. Other land uses include the Rural Metro fire station across from Cripple Creek Drive.

Most of the existing zoning is Single Residence Zone (CR-1), with some Suburban Ranch Zone (SR) lots remaining at the northern and southern ends of the study area. The east side of the intersection of Kolb Road with Snyder Road and the intersection of Kolb Road with Sunrise Drive are zoned for commercial, apartment, and office use – Local Business Zone (CB-1) and Transitional Zone (TR).

3.2. ROADWAY NETWORK

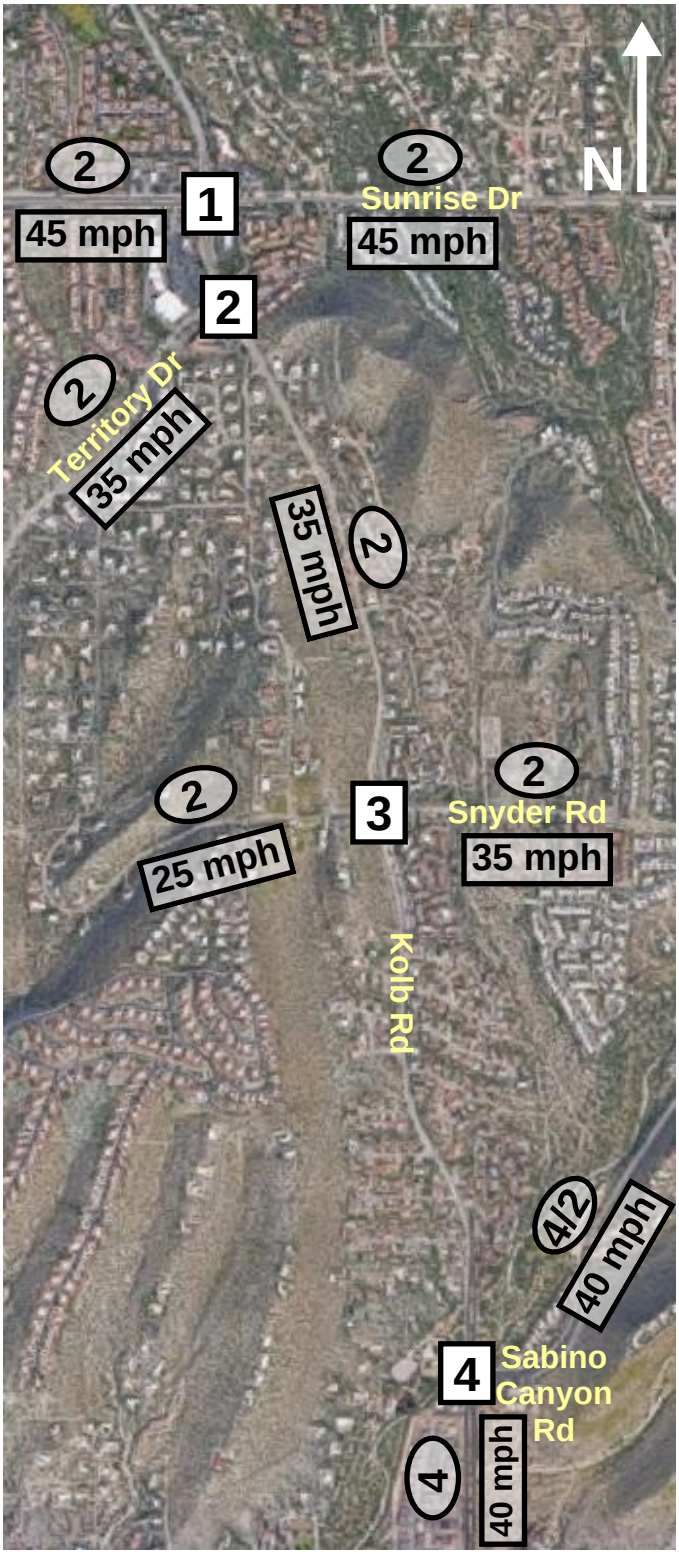
There are a total of three signalized intersections within the study area as well as one major un-signalized intersection, as shown in Figure 2. The lane configuration and available storage lengths for the existing turn lanes at each of the intersections are also shown in the figure. In the project area, Kolb Road is designated as a scenic arterial roadway in Pima County's *Major Streets and Scenic Routes Plan*[1]. The existing roadway is uncurbed, and the speed limit for Kolb Road is 35 mph. There is no existing street lighting along the corridor. However, street lighting currently exists at each of the three signalized intersections.

Of particular note are the lane transitions at the north and south ends of the project. The transition on the south end is 730 feet in length, which is appropriate for a design speed of 60 mph. At the north end of the project, the southbound bike lane becomes a shared bike lane and right turn lane into the Bashas' parking lot, then the bike lane is dropped completely after the intersection.

3.3. TRAFFIC VOLUMES

Traffic volumes were collected by Pima County in October 2016, and were provided to Psomas for this study. From the traffic volume data, it was found that the AM peak hour for the corridor is from 7:15 AM to 8:15 AM, and the PM peak hour is from 4:30 PM to 5:30 PM. The traffic volume data is included in Appendix A.

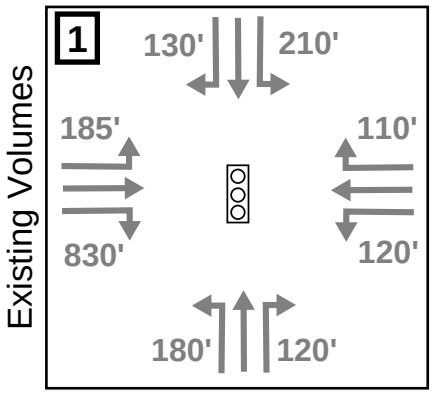
Figure 4 shows the existing traffic volumes at the study intersections as well as the existing daily volumes in the project area. As seen in the figure, Kolb Road currently carries approximately 11,750 vehicles per day north of Snyder Road and approximately 12,600 vehicles per day south of Snyder Road. Daily volumes on Snyder Road and Territory Drive are significantly lower.



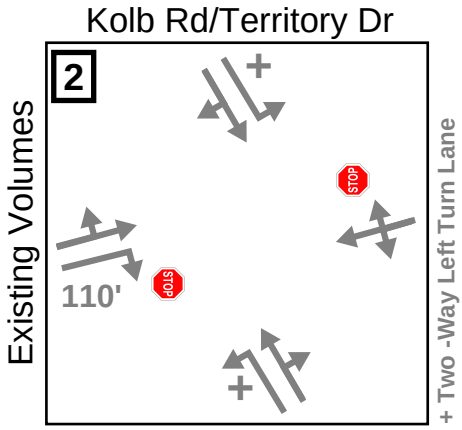
LEGEND

- Existing Lane
- xxx' Existing Turn Lane Storage
- \+ Existing Two-Way Left Turn Lane
- (X) Number of Lanes (Two-Way)
- [X] Speed Limit (mph)

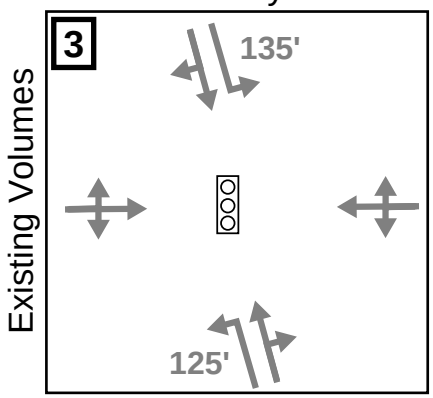
Kolb Rd/Sunrise Dr



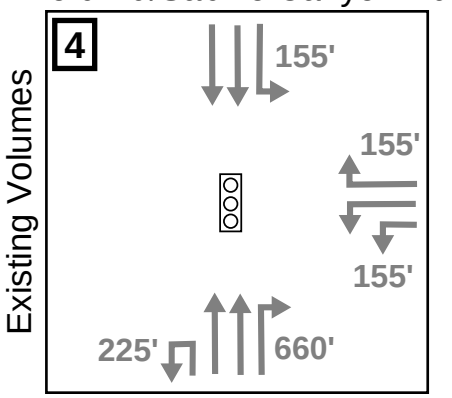
Kolb Rd/Territory Dr



Kolb Rd/Snyder Rd



Kolb Rd/Sabino Canyon Rd

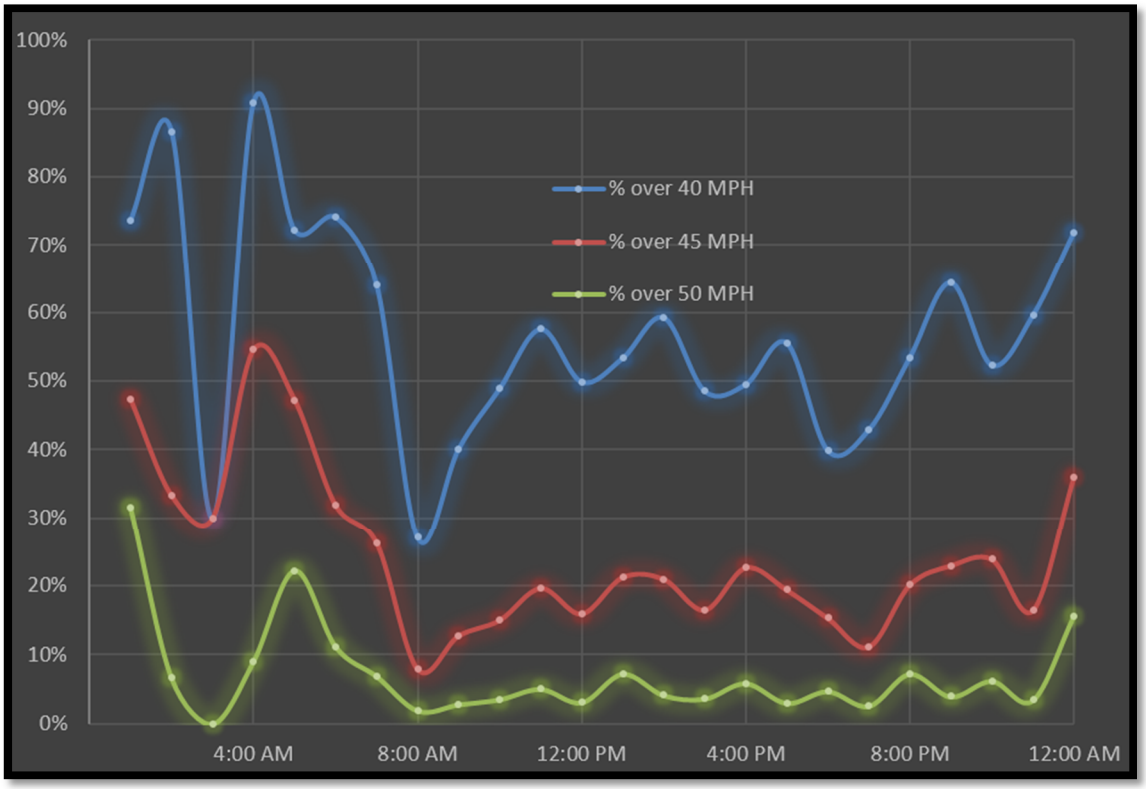


Kolb Road, Sabino Canyon Road to Sunrise Drive Traffic Engineering Report	*Figure 2.* *Existing Roadway Characteristics*	PSOMAS May 2017

3.5. SPEED SURVEY

A speed survey was conducted by Psomas to evaluate the prevailing driver speed behavior within the project area. Specifically, speed data was collected for northbound traffic on Kolb Road just north of Sabino Canyon Road. The results of the data collection are shown in Figure 3. As seen in the figure, the posted speed limit for Kolb Rd throughout the project is 35 mph. According to the speed survey, the 85th percentile speed was 46.2 mph, with the median speed being 40.1 mph. Higher speeds were more common during low volume periods.

Figure 3. Speed Survey Results

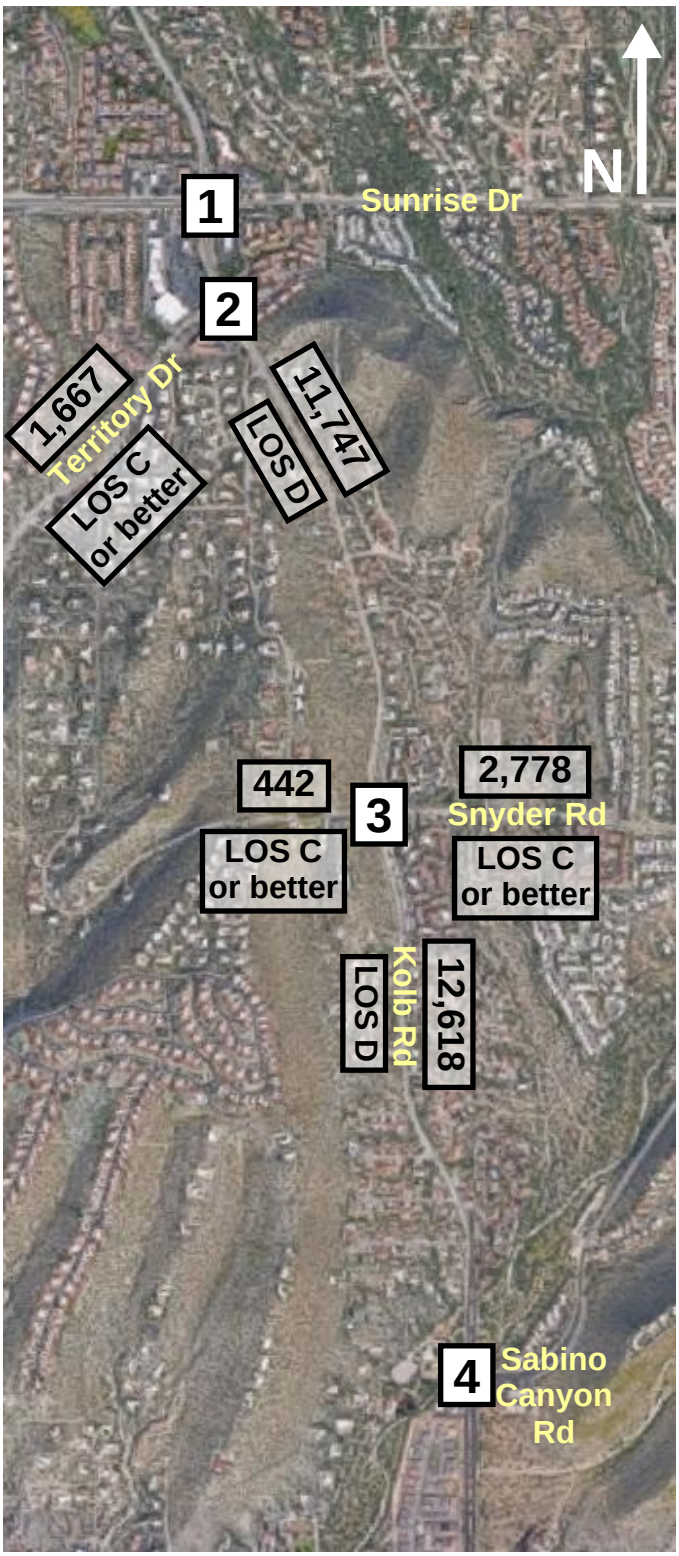


3.6. LEVEL OF SERVICE ANALYSIS

The Level of Service (LOS) is a qualitative measure that describes operational conditions in terms of travel speed (for arterials), density (for freeways and ramps), and delays (for intersections). LOS ranges from A to F, with A representing the best operating conditions and F representing the worst. Note that LOS D is generally considered acceptable for facilities in urban areas.

The existing Level of Service (LOS) at each of the signalized intersections in the study area was evaluated using *SimTraffic*, a traffic modeling software that follows the methodology of the *Highway Capacity Manual*[2]. Model inputs include the existing intersection geometry and the traffic volumes collected in 2016. The existing signal timings obtained from Pima County were also used in both the AM and PM peak hour models. The *SimTraffic* reports are included in Appendix B.

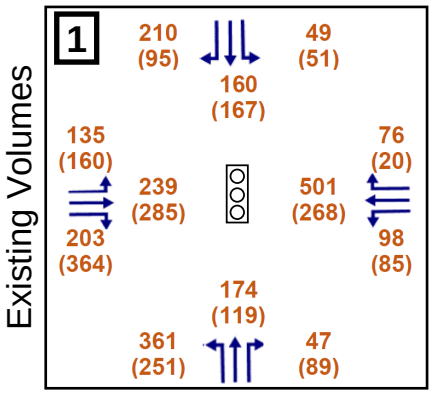
The resulting LOS are recorded in Figure 4. Note that overall intersection LOS is not defined for two-way stop controlled intersections. Under existing conditions, all three signalized intersections currently are operating at LOS C or better during the peak hour. Further, all movements at all four study intersections are operating at LOS D or better in the AM peak hour and at LOS C or better in the PM peak hour. Most of the movements are operating at LOS B or better. Segment LOS is also depicted in Figure 4 using the thresholds in the generalized Quality/LOS tables developed by the Florida Department of Transportation[3]. Note that all roadway segments currently operate at LOS D or better.

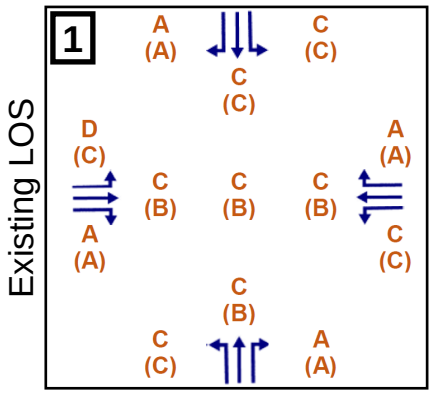


LEGEND

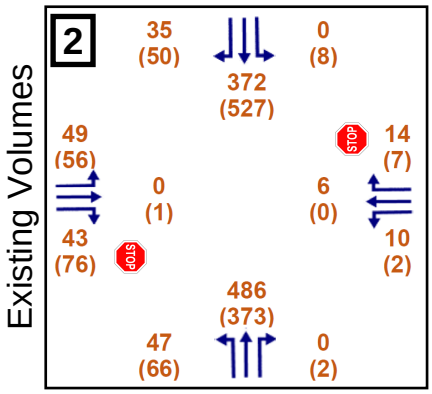
xx	AM Peak Hour Characteristics
(xx)	PM Peak Hour Characteristics
xx,xxx	Daily Characteristics

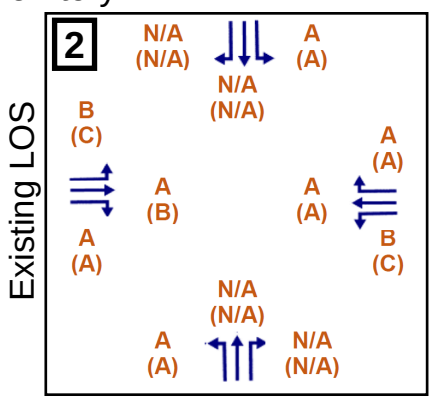
Kolb Rd/Sunrise Dr



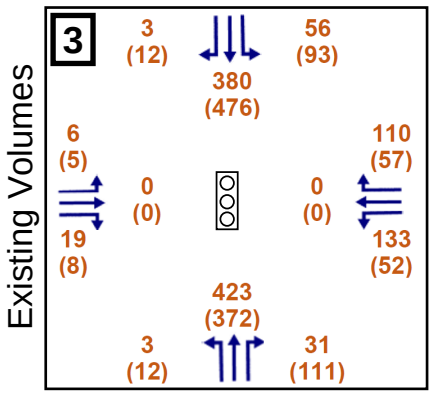


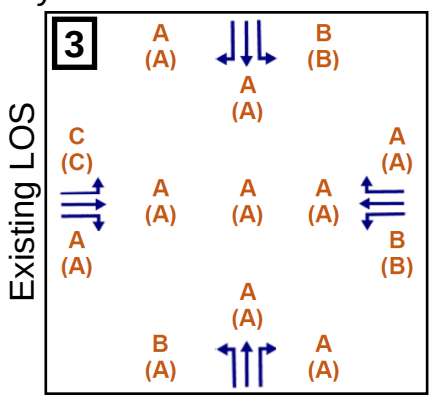
Kolb Rd/Territory Dr



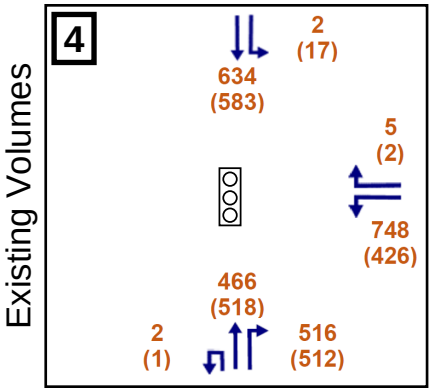


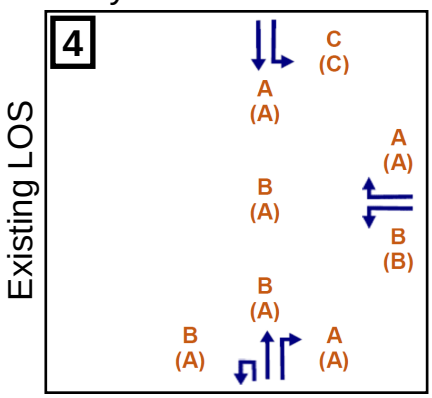
Kolb Rd/Snyder Rd





Kolb Rd/Sabino Canyon Rd





Kolb Road, Sabino Canyon Road to Sunrise Drive Traffic Engineering Report	*Figure 4.* *Existing Traffic Volumes and LOS (2016)*	PSOMAS May 2017

3.7. CRASH HISTORY

Psomas obtained crash data from Pima County for the latest available five-year period for the project area, September 2011 through August 2016. This section presents an analysis of the records obtained, which are included in Appendix C. During the five-year study period, there were a total of 93 crashes in the study area; 48 crashes at signalized intersections, 3 crashes at the major unsignalized intersection of Kolb Road and Territory Drive, and 42 crashes on road segments between intersections.

Table 1 shows the crashes at both the signalized and un-signalized intersections. Approximately 41% of the intersection crashes were rear-end crashes. The next most common type of crash was angle crashes (22%), followed by single vehicle and left turn crashes (16% each).

Table 1. Intersection Crash Type Summary

Intersection with Kolb Road	Angle	Left Turn	Sideswipe	Rear End	Single Vehicle	Head On	Bicycle/ Pedestrian	Other	Total
Sabino Canyon Road	2	0	1	3	4	0	1	0	**11**
Snyder Road	5	2	0	3	1	0	0	0	**11**
Sunrise Drive	3	6	1	14	2	0	0	0	**26**
Territory Drive	1	0	0	1	1	0	0	0	**3**
Total	**11**	**8**	**2**	**21**	**8**	**0**	**1**	**0**	**51**

Table 2 shows the crashes that occurred along Kolb Road that did not occur at the four study intersections. For the analysis, Kolb Road was split into three segments, as shown in the table. Approximately 33% of the segment crashes were single vehicle crashes. The second most common type was rear-end (29%), followed by angle crashes (17%).

Table 2. Roadway Segment Crash Type Summary

Kolb Road Segment	Angle	Left Turn	Sideswipe	Rear End	Single Vehicle	Head On	Bicycle/ Pedestrian	Other	Total
Sabino Canyon Rd to Snyder Rd	0	0	5	5	10	1	1	1	**23**
Snyder Rd to Territory Dr	0	0	1	4	3	0	0	0	**8**
Territory Dr to Sunrise Dr	7	0	0	3	1	0	0	0	**11**
Total	**7**	**0**	**6**	**12**	**14**	**1**	**1**	**1**	**42**

The majority of angle crashes that occurred on the roadway segments involved drivers who failed to yield when exiting from private driveways onto Kolb Road. All these angle crashes occurred on the short segment between Territory Drive and Sunrise Drive. Also of note are the sideswipe crashes that occurred on the segment of Kolb Road just north of Sabino Canyon Road. Of the five sideswipe crashes, three can be attributed to northbound merging of vehicles from two lanes to one lane. As previously discussed, the 85th percentile speed for northbound traffic in this area is 46 mph. The high speeds and the sideswipe crash history are likely related to the wide cross-section in this area and the long lane reduction taper from two to one northbound lanes, which is over twice as long as the Pima County standard. These factors may lead drivers to attempt to pass others in this area.

Tables 3, 4 and 5 present the crash rates and crash severity for signalized intersections, un-signalized intersections, and road segments. The crash rates were calculated using the following equations:

$$Crash\ Rate_{(Road\ segment)} = \frac{Crashes \times 10^6}{365 \times Period \times ADT \times Length} = Crashes/MVM$$

$$Crash\ Rate_{(Intersection)} = \frac{Crashes \times 10^6}{365 \times Period \times ADT_{(Entering)}} = Crashes/MEV$$

The severity index is calculated based on the following equation, which weighs fatal and injury accidents more heavily than property damage only crashes.

$$Severity\ Index = \frac{5.8 \times (C_F + C_I) + 2 \times (C_{NI} + C_P) + C_N}{Total\ Crashes}$$

Where,

C_F = Crashes with fatality

C_I = Crashes with incapacitating injury

C_{NI} = Crashes with non-incapacitating injury

C_P = Crashes with possible injury

C_N = Crashes without injury

From Table 3, only the intersection at Sabino Canyon Road has a severity index above the Pima County average of 1.39. However, the crash rate at that intersection (0.24 crashes/MEV) is considerably lower than the County average of 0.68 crashes/MEV. Overall, there were no fatalities at signalized intersections in the project area during the five-year period (9/1/2011 to 8/31/2016). Most (90%) of the crashes that occurred were of a low severity (no injury or possible injury), and two caused serious injury.

Table 3. Crash Severity for Signalized Intersections

Intersection with Kolb Road	Fatality	Incapacitating Injury	Non-Incapacitating Injury	Possible Injury	Property Damage Only	Total	Severity Index	Entering Veh/Day	Crash Rate Per MEV
Sabino Canyon Rd	0	1	0	2	8	11	**1.62**	24,737	**0.24**
Snyder Rd	0	0	1	2	8	11	**1.27**	13,793	**0.44**
Sunrise Dr	0	1	0	5	20	26	**1.38**	19,429	**0.73**
Total	**0**	**2**	**1**	**9**	**36**	**48**	**1.41**	N/A	N/A

Pima County Average Crash Rate: 0.68 crashes/MEV
Pima County Average Severity Index: 1.39

Table 4 shows that the crash rate and severity for the most recent five years at the Kolb Road/Territory Drive intersection are both very low, and are considerably lower than the County averages of 0.39 crashes per MEV and a severity index of 1.44.

Table 4. Crash Severity for Major Unsignalized Intersections

Intersection with Kolb Road	Fatality	Incapacitating Injury	Non-Incapacitating Injury	Possible Injury	Property Damage Only	Total	Severity Index	Entering Veh/Day	Crash Rate Per MEV
Territory Dr	0	0	0	0	3	3	**1.00**	13,414	**0.12**

Pima County Average Crash Rate: 0.39 crashes/MEV
Pima County Average Severity Index: 1.44

The crash rate and severity for Kolb Road segments are shown below in Table 5. Of the three segments, only the segment between Snyder Road and Territory Drive has a severity index above the Pima County average of 1.43. Also notable is the crash rate for the roadway segment between Territory Drive and Sunrise Drive, which is almost triple the average crash rate in Pima County for road segments. Although the high crash rate is likely due in part to the short length of the segment, the number of conflicts generated by the turns in and out of the commercial driveways in the area negatively impact safety conditions.

On that segment, 6 of the 11 crashes involved drivers exiting a driveway from the Bashas' shopping center driveways. Although the crash rate is high (almost three times the County average rate of 1.04 crashes per MVM), the severity index is below the County average of 1.43 for high-volume roadways.

Table 5. Crash Severity for Segments

Kolb Road Segment	Fatality	Incapacitating Injury	Non-Incapacitating Injury	Possible Injury	Property Damage Only	Total	Severity Index	Vehicles/ Day	Segment Length (mi)	Crash Rate Per MVM
Sabino Canyon Rd to Snyder Rd	0	0	2	2	19	**23**	1.17	12,618	1.07	0.93
Snyder Rd to Territory Dr	0	1	1	1	5	**8**	1.85	11,747	0.89	0.42
Territory Dr to Sunrise Dr	0	0	1	3	7	**11**	1.36	11,747	0.17	3.02
Total	**0**	**1**	**4**	**6**	**31**	**42**	**1.35**	N/A	N/A	N/A

Pima County Average Crash Rate: 1.04 crashes/MVM
Pima County Average Severity Index: 1.43

4. FUTURE TRAFFIC VOLUMES (2040)

The Pima Association of Governments (PAG) maintains a travel demand model that estimates the future volumes for the Tucson metropolitan area. The latest model provides projections for the year 2045, and shows volumes of 13,600 vehicles per day for Kolb Road between Sabino Canyon Road and Snyder Road, and 10,900 vehicles per day for Kolb Road between Snyder Road and Sunrise Drive. These volumes represent annual average growth rates of -0.3% and 0.3% per year, respectively (Table 6). Historic traffic volumes available from PAG are also shown in Figure 5, and indicate that volumes have not returned to their pre-recession levels.

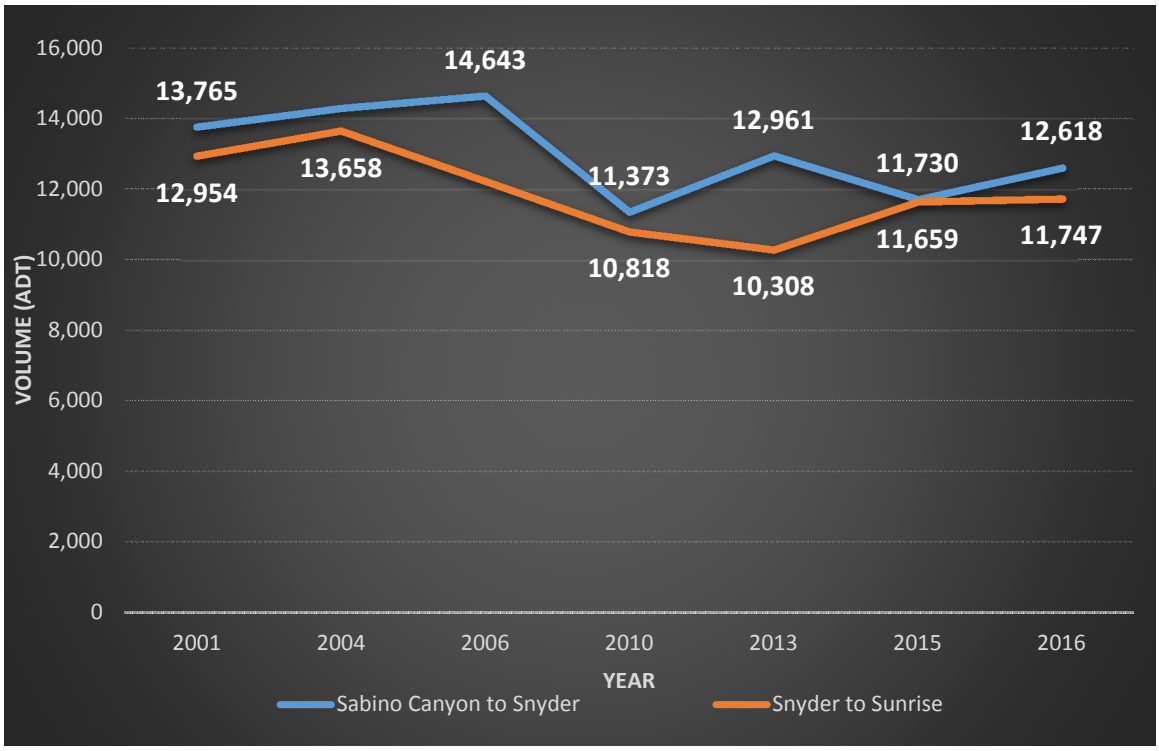
Table 6. Segment Existing and Projected Volumes

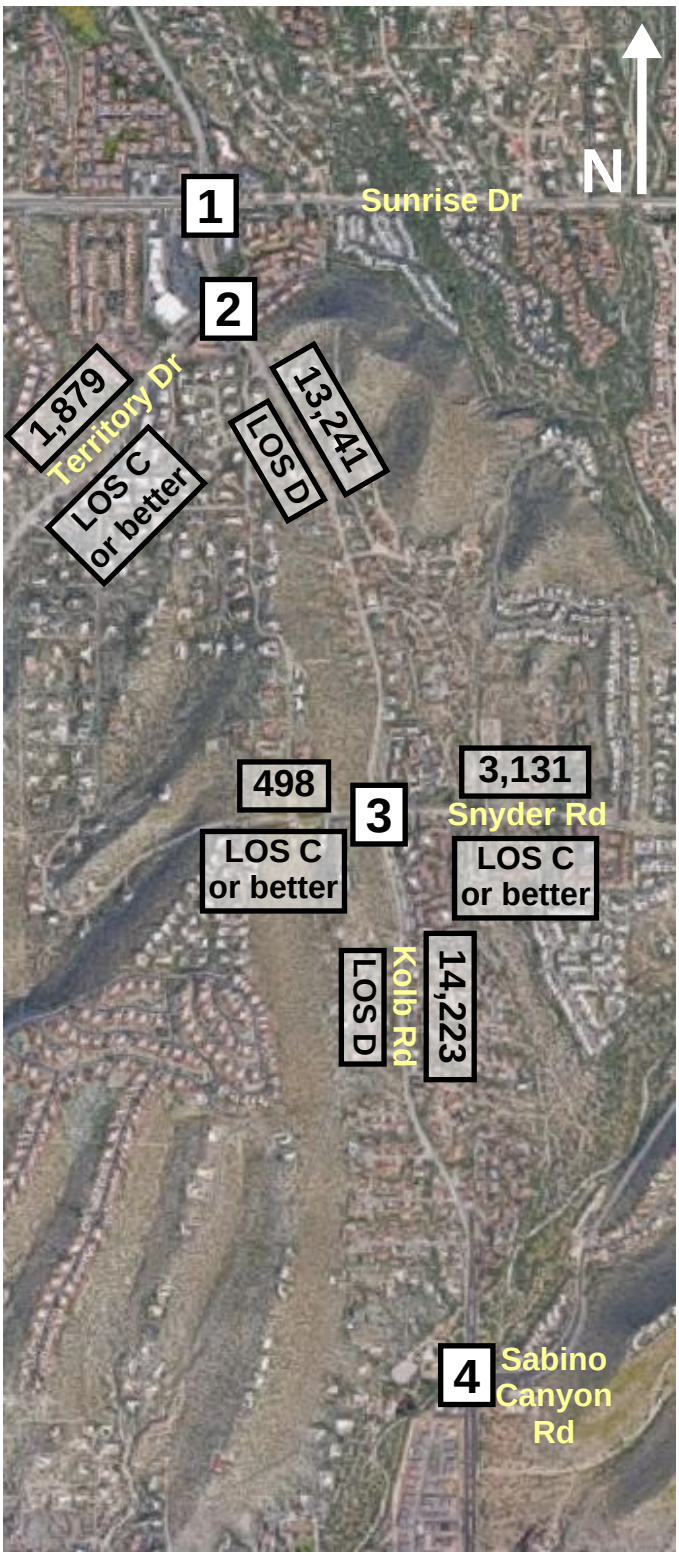
Kolb Road Segment	Existing (2016) Volume (veh/day)	PAG Projected 2045 Volume (veh/day)	Annual Growth Rate
Sabino Canyon Rd to Snyder Rd	12,618	13,600	0.3%
Snyder Rd to Sunrise Dr	11,747	10,900	-0.3%

While most of the area is already developed, it is reasonable to assume that residual development, combined with the economic recovery and an improved roadway will result in small increases in traffic volumes. Therefore, to be conservative and to provide a consistent estimate throughout the project area, an annual growth rate of 0.5% per year was used for this report. The resulting projected peak hour and daily volumes are shown in Figure 6. As seen in the figure, Kolb Road is expected to carry approximately 13,200 vehicles per day north of Snyder Road and approximately 14,200 vehicles per day south of Snyder Road.

Note that Figure 6 shows the volumes and LOS for the recommended roundabout alternative at the intersection of Kolb Road and Territory Drive. The development of this recommendation is discussed in detail in Section 6.

Figure 5. Historic PAG Volumes

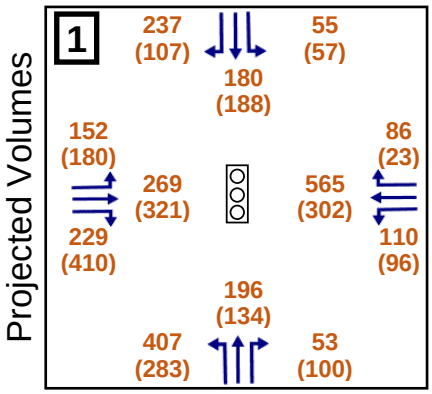


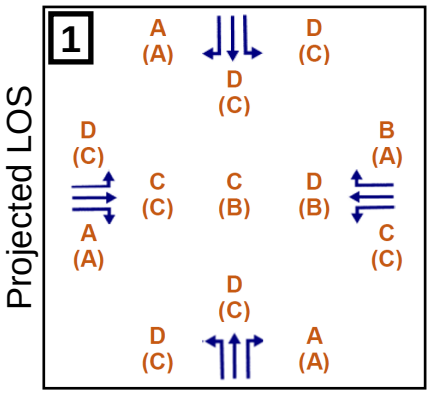


LEGEND

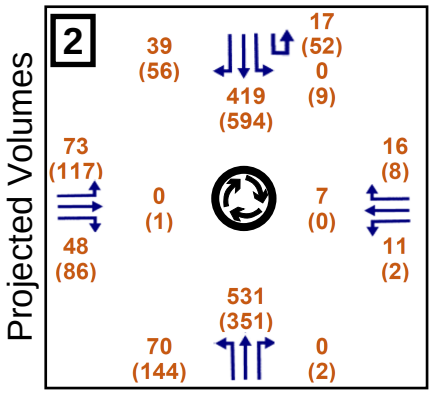
xx	AM Peak Hour Characteristics
(xx)	PM Peak Hour Characteristics
xx,xxx	Daily Characteristics

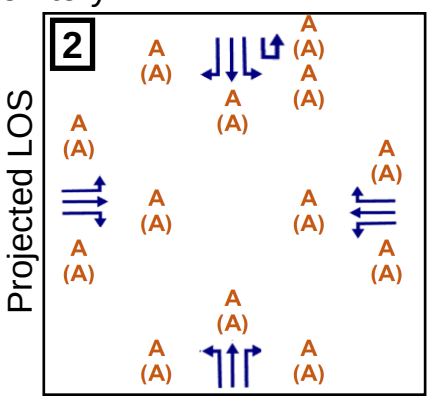
Kolb Rd/Sunrise Dr



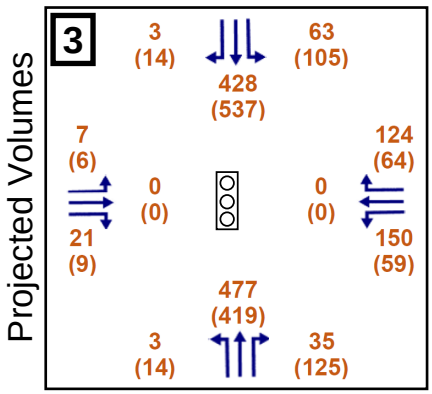


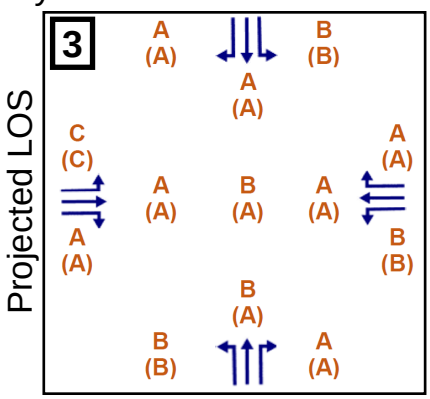
Kolb Rd/Territory Dr*



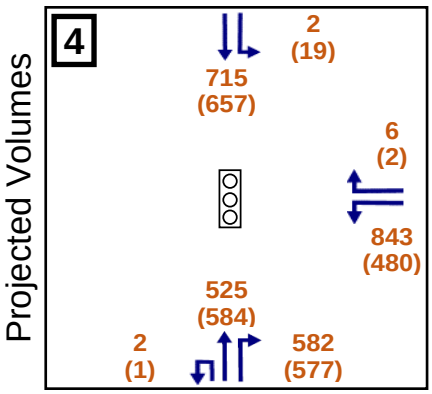


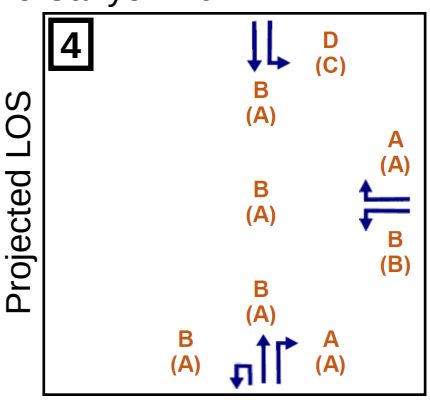
Kolb Rd/Snyder Rd





Kolb Rd/Sabino Canyon Rd





*See Section 6 for additional discussion about the recommended improvements at this intersection.

Kolb Road, Sabino Canyon Road to Sunrise Drive Traffic Engineering Report	*Figure 6.* *Future Traffic Volumes and LOS (2040)*	PSOMAS May 2017

5. FUTURE CONDITIONS – WITHOUT PROJECT (2040)

For this scenario, the lane configuration and storage lengths remained unchanged from the existing conditions. The following sections discuss the projected operation and safety analyses for the without project scenario.

5.1. OPERATIONAL ANALYSIS

The LOS for each of the signalized intersections in the study area was found using *SimTraffic* and the projected volumes shown in Figure 4. The *SimTraffic* reports are included in Appendix B.

As seen in Figure 4, all of the signalized intersections are expected operate at LOS C or better in the AM peak hour and at LOS B or better in the PM peak hour. Further, all of the movements are expected to operate at LOS D or better in the AM peak hour and at LOS C or better in the PM peak hour. At Kolb Road and Territory Drive, all movements are expected to operate at LOS C or better in both peak hours. Further, both segments of Kolb Road are expected to continue to operate at LOS D or better in 2040.

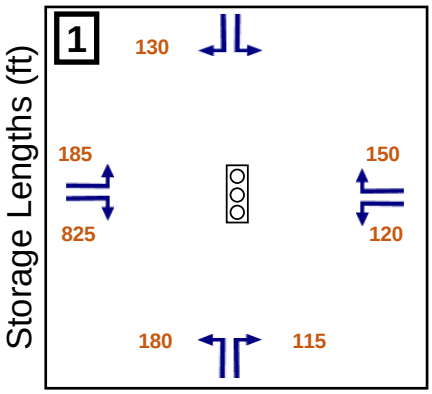
An evaluation of the 95th percentile queues was also conducted for each of the intersections in the study area. The 95th percentile queues are those which are exceeded only 5% of the time, and are typically used to determine the required turn lane storage lengths. The turn lane storage lengths were found to be sufficient at the Kolb Road/Snyder Road and Kolb Road/Territory Drive intersections, but several of the movements at the Kolb Road/Sabino Canyon Road and Kolb Road/Sunrise Drive intersections exceed the existing storage lengths. Figure 7 shows the turn bay storage lengths and predicted 95th percentile queue lengths for the AM and PM peak hour periods.

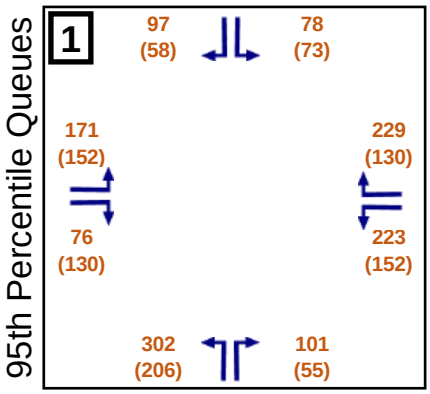
The future northbound left turn queue at Sunrise Drive is significantly longer than the available storage (300 feet vs. 180 feet), and falls within the project limits. Therefore, it is recommended that the northbound left turn storage be extended to 300 feet with this project. The queues for the westbound left- and right-turns on Sunrise Drive will also exceed the available storage, but they fall outside of the limits of this project.

LEGEND

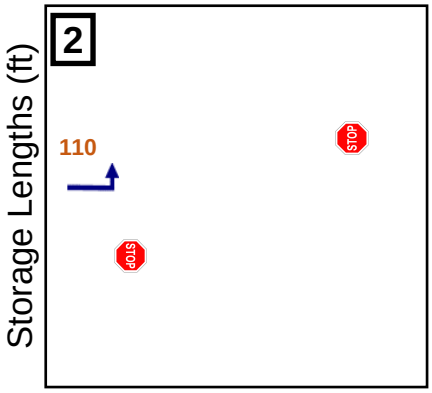
xx	AM Peak Hour Queue Lengths (ft)
(xx)	PM Peak Hour Queue Lengths (ft)
xx	Turn Lane Storage Length (ft)

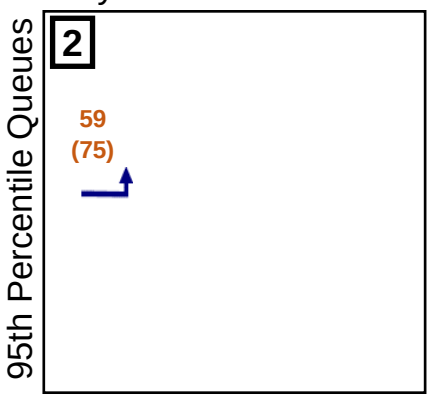
Kolb Rd/Sunrise Dr



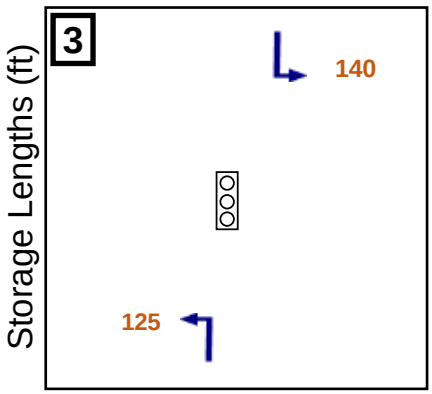


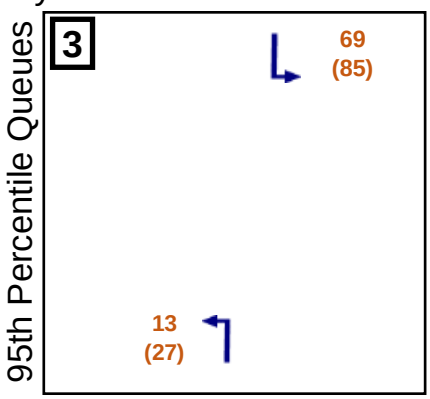
Kolb Rd/Territory Dr



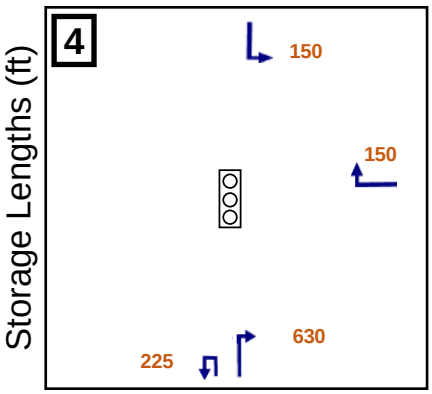


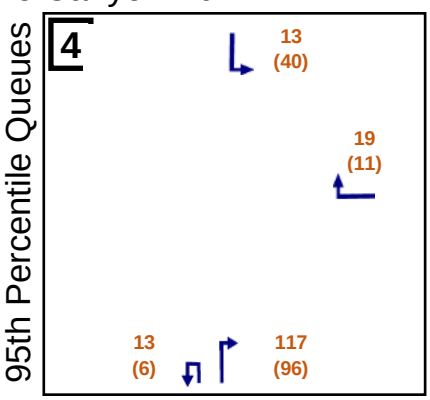
Kolb Rd/Snyder Rd





Kolb Rd/Sabino Canyon Rd





Kolb Road, Sabino Canyon Road to Sunrise Drive Traffic Engineering Report	*Figure 7.* *Design Year (2040) 95th Percentile Queue Lengths*	PSOMAS May 2017

Despite the queuing issue, both signalized intersections at the ends of the project (Sunrise Drive and Sabino Canyon Road) are expected to operate efficiently in the future. Therefore, the only recommended improvement is the lengthening of the storage for northbound left turns at Sunrise Drive.

5.2. SAFETY ANALYSIS

A crash safety analysis was conducted for each intersection and for Kolb Road using the Predictive Method for Urban and Suburban Arterials found in the *Highway Safety Manual, 1st Edition*[4]. This method analyzes the characteristics of each segment and intersection within the project area to predict the average crash frequency in crashes per year. Table 7 shows the results of the predictive method for the existing conditions and the future conditions without the project. More detailed results of the predictive method are included in Appendix D.

Table 7 shows that the number of crashes per year at each intersection is expected to increase at each intersection in 2040, which is a function of the projected increase in traffic volumes. The table also includes the existing observed crashes per year for comparison.

Table 7. Predicted Crashes per Year

Roadway Segments	Existing Observed	Existing Predicted	2040 Without Project	Percent Change*
Kolb Rd, Sabino Canyon Rd to Snyder Rd	4.60	4.16	4.36	4.7%
Kolb Rd, Snyder Rd to Territory Dr	1.60	2.04	2.17	6.6%
Kolb Rd, Territory Dr to Sunrise Dr	2.20	1.10	1.19	7.8%
Intersections	**Existing Observed**	**Existing Predicted**	**2040 Without Project**	**Percent Change***
Kolb Rd/Sabino Canyon Rd	2.20	2.49	2.66	6.8%
Kolb Rd/Snyder Rd	2.20	2.07	2.27	9.4%
Kolb Rd/Territory Dr	0.60	0.95	1.04	9.2%
Kolb Rd/Sunrise Dr	5.20	3.80	4.11	8.3%

*Percent change is from existing predicted to 2040 without project

6. FUTURE CONDITIONS – WITH PROJECT (2040)

6.1. PROPOSED IMPROVEMENTS

6.1.1. Roadway Improvements

As previously discussed, the project consists of widening Kolb Road from two to three lanes between the intersections of Sabino Canyon Road and Sunrise Drive by adding a center two-way left turn lane. All existing turn lanes will remain as-is during the project.

There are no planned changes at the Kolb Road/Sunrise Drive intersection or for any of the approaches at the Kolb Road/Sabino Canyon Road intersection. However, the lane drop from two to one lanes on the northbound section of Kolb Road just north of Sabino Canyon Road will be shortened to facilitate safer and smoother merging.

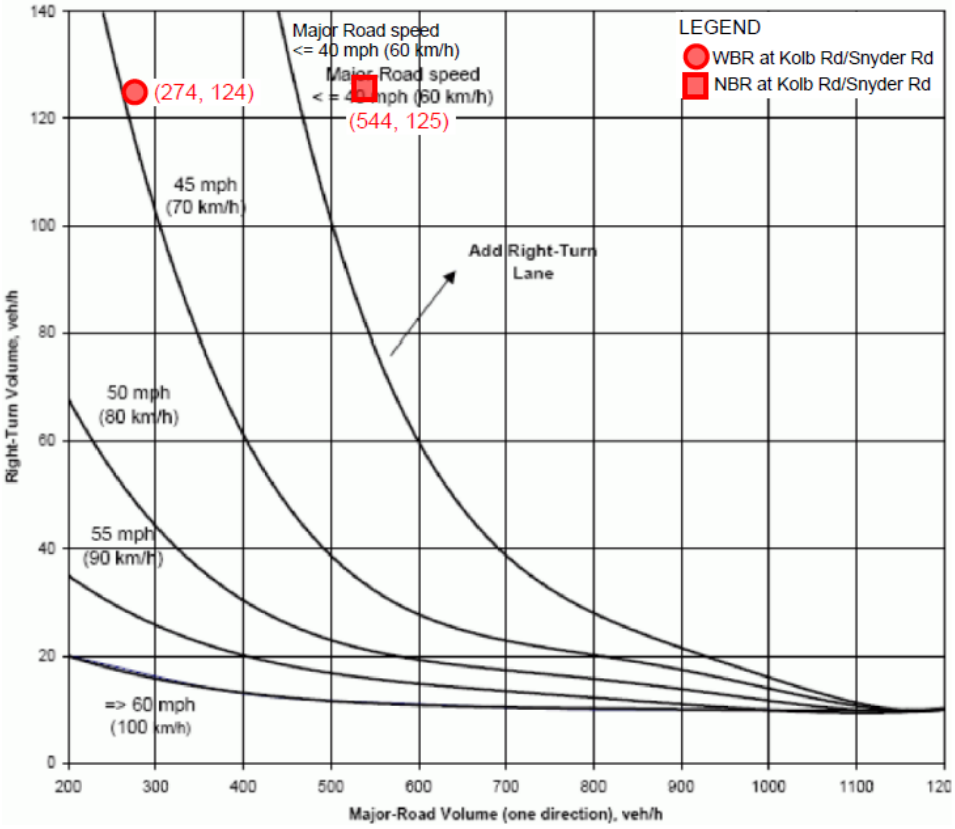
Pima County has expressed a desire to warn drivers of emergency vehicles entering the roadway from Fire Station 73. It is recommended that solar powered flashers (or other comparable devices, as determined during the design phase) be installed to provide advance notice to drivers. The flasher would only turn on when activated by a fire vehicle.

6.1.2. Turn Lane Needs

A turn lane warrant analysis was conducted at the Snyder Road intersection for northbound right turns and westbound right turns. The need for new turn lanes was evaluated using the 2040 projected volumes and the turn lane warrants in the *Pima County Subdivision and Development Street Standards* [5].

Figure 7 presents the results of that evaluation. As seen in the figure, the westbound right turn does not meet the warrant because of the low total approach volume, but the northbound right turn volume does meet the warrant. The eastbound and southbound right turn volumes are very low, so the turn lane warrant was not evaluated for those two approaches.

Figure 8. Right Turn Lane Warrants



6.1.3. Access Management

Between Sabino Canyon Road and Gate Ridge Road (just south of Territory Drive), Kolb Road almost exclusively serves residential properties. There are numerous driveways along this segment of Kolb Road to provide access to those properties, including many which provide access to only one residence. Therefore, it is necessary to provide safe access throughout this segment, which will be accomplished with the addition of a two-way left turn lane.

Conversely, the segment from Sunrise Drive to just south of Territory Drive is much more commercial, and access to existing development is concentrated at a few driveways. Generally speaking, direct access is not as often provided for commercial areas as it is for residential areas. The existing roadway provides full access along Kolb Road at three locations in this area, including at Territory Drive.

In the most recent five years of available data (09/01/2011-08/31/2016), there were 11 total crashes on Kolb Road between Sunrise Drive and Territory Drive, including 6 crashes involving drivers exiting the Bashas' shopping center on the west side of Kolb Road. At least 4 of the crashes involved drivers making a left turn out of the shopping center; 1 crash involved a right turn out of the shopping center, and the other is unclear from the data. Although this is a short segment, the crash rate is three times higher than the County's average rate.

To provide better access management and help improve safety in the area, the following three alternatives have been discussed:

- Alternative 1 – Improve shoulders, add lighting, and clarify southbound shared right turn/bike lane (this represents what is already planned with the project)
    - Paved shoulders will be widened and a safety edge will be added
    - Lighting will be added throughout the segment to improve nighttime visibility
    - The existing southbound shared right turn/bike lane at the main Bashas' shopping center driveway may be a source of confusion for drivers. With the project, separate right turn and bike lanes will be provided at this location, and each will be more clearly delineated to minimize confusion.
- Alternative 2 – In addition to the improvements in Alternative 1, restrict Bashas' shopping center driveway access to right-in right-out only with a raised pork chop median
    - By prohibiting left turn movements out of the driveway, the left turn conflicts with through traffic on Kolb Road would be eliminated. Drivers wishing to travel north would likely divert to Territory Drive, but they can also access Sunrise Drive directly.
        - With additional traffic on Territory Drive, delays for drivers on Territory Drive turning onto Kolb Road would likely increase. Although a signal would likely be warranted, installation is not recommended because of the intersection's proximity to Sunrise (800 feet). As a result, the eastbound left turn delay at the Territory Drive intersection would increase to approximately 55 seconds.

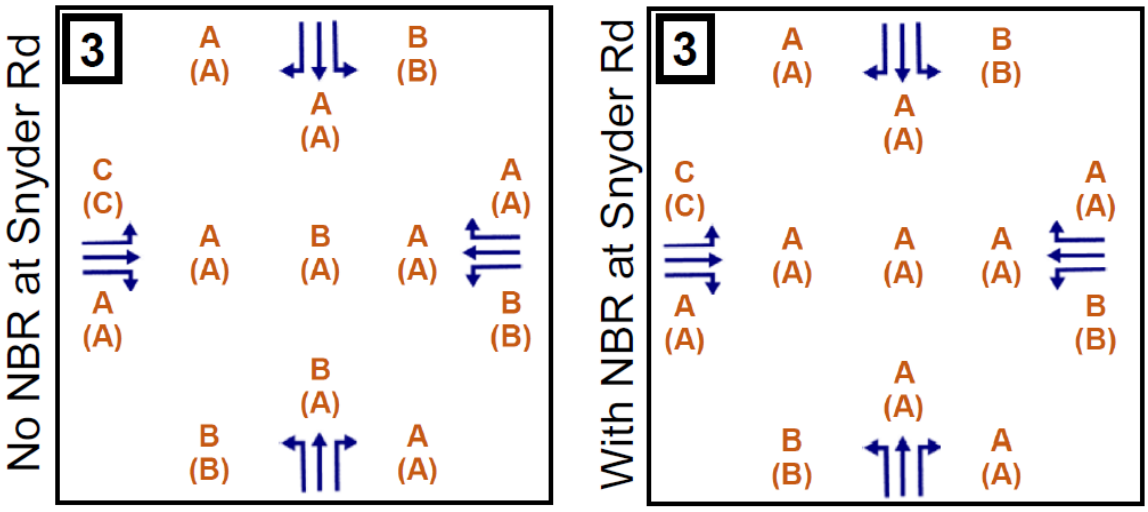
    - Full access would be maintained for the commercial driveway on the east side of Kolb Road.
- Alternative 3 – In addition to the improvements in Alternative 1, extend the median on Kolb Road south past the shopping center driveways and construct a one-lane roundabout at the Kolb Road/Territory Drive intersection.
    - By extending the raised median, all of the commercial driveways between Sunrise Drive and Territory Drive would operate at right-in right-out only, reducing potential conflicts. The only exception would be to allow left turns out of the southern driveway for the shopping center on the east side of the road in order to avoid excessively circuitous detours.
    - As with Alternative 2, drivers would likely divert to Territory Drive. A single lane roundabout would minimize delays and improve safety at the Territory Drive/Kolb Road intersection. The roundabout would also slow traffic through the area, facilitate pedestrian crossing across Kolb Road and act as a visual separation between the commercial area near Sunrise Drive and the residential areas further south.

6.2. LEVEL OF SERVICE ANALYSIS

Because of the turn lane warrant analysis results and various alternatives for improvements at the northern end of the project, multiple build alternatives were evaluated using SimTraffic. First, the potential change in operations with the addition of a northbound right turn lane on Kolb Road at Snyder Road was evaluated. The volumes used match those shown in Figure 6. The *SimTraffic* reports are included in Appendix B.

Figure 9 presents a comparison of the LOS for the Kolb Road/Snyder Road intersection with and without the addition of a northbound right turn lane at Snyder Road. Because the project is not expected to add any turn lanes at any of the other study intersections, they are each expected to operate with the project as they will without the project, as shown in Figure 6. As seen in Figure 9, the Kolb Road/Snyder Road intersection is expected to operate efficiently under either scenario, including all movements operating at LOS C or better in both peak hours.

Figure 9. Kolb Road and Snyder Road Projected Future Operations



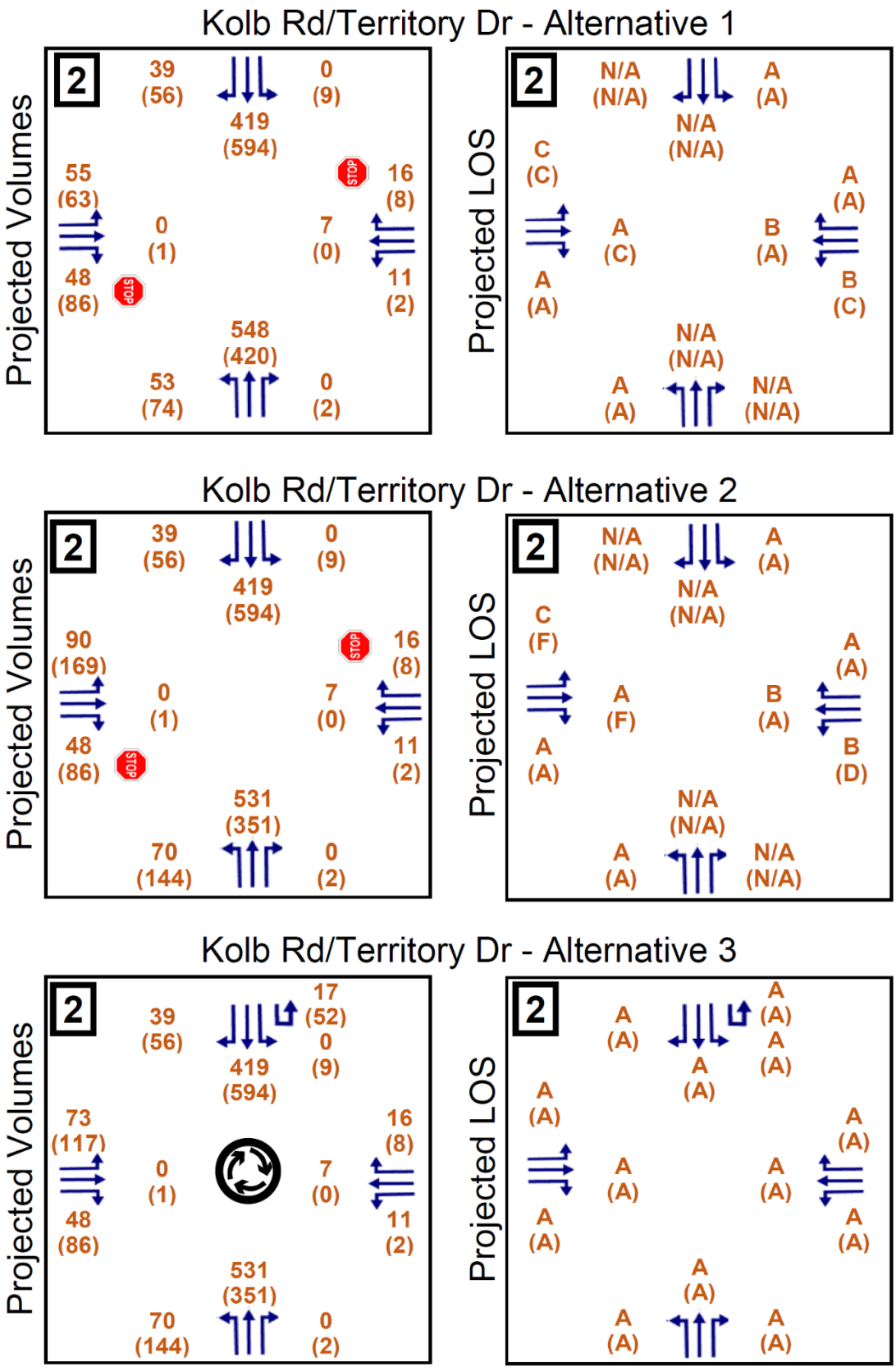
In addition, there are three access management alternatives at the north end of the project. Recall that the alternatives include:

1. Do nothing beyond the planned project improvements, which include improved shoulders, lighting, and separation of the southbound right turn lane and bike lane approaching the Bashas' driveway
2. Construct a median island on the existing full-access Bashas' driveway to convert it to a right-in right-out only driveway
3. Construct a roundabout at the Kolb Road/Territory Drive intersection and extend the existing median south to Territory Drive

Because access to the commercial areas on either side of Kolb Road would vary based on the alternative, turning movement volumes are expected to vary as well. For example, the prohibition of left turns out of the Bashas' shopping center would likely result in those drivers exiting the shopping center onto Territory Drive, then making a left turn onto Kolb Road to travel north. Figure 10 shows the projected traffic volumes and LOS for each of the three alternatives at Kolb Road and Territory Drive. Note that the volumes and LOS for Alternative 1 matches the information shown in Figure 6. The *SimTraffic* reports are included in Appendix B.

As seen in the figure, Alternative 2 would result in LOS F for the eastbound left turn and through movements in the PM peak hour. However, with Alternative 3, all movements at the intersection are expected to operate at LOS A in both peak hours.

Figure 10. Kolb Road and Territory Drive Projected Future Operations



6.3. SAFETY ANALYSIS

A crash safety analysis was conducted for each intersection and for Kolb Road using the Predictive Method for Urban and Suburban Arterials found in the *Highway Safety Manual, 1st Edition*. The predictive method was run for future conditions if the project is completed without new turn lanes or major intersection reconstruction, with the addition of a northbound right turn lane at the Kolb Road/Snyder Road intersection, and with a roundabout at the Kolb Road/Territory Drive intersection. Note that the conditions with the additional improvements assume no other changes in the corridor (i.e. 2040 conditions with a roundabout at Kolb Road and Territory Drive assumes no new right turn lane at Snyder Road). The results are shown below in Table 8.

Table 8. Predicted Crashes per Year for Future Conditions

Roadway Segments	2040 Without Project	2040 with Project
Kolb Rd, Sabino Canyon Rd to Snyder Rd	0.00	3.45
Kolb Rd, Snyder Rd to Territory Dr	0.00	1.58
Kolb Rd, Territory Dr to Sunrise Dr	0.00	0.78
Intersections	**2040 Without Project**	**2040 with Project**
Kolb Rd/Sabino Canyon Rd	0.00	2.66
Kolb Rd/Snyder Rd	0.00	2.27/2.21*
Kolb Rd/Territory Dr	0.00	0.69
Kolb Rd/Sunrise Dr	0.00	4.11

*With the project, this will remain 2.27 crashes per year, but if a northbound right turn lane is added at the intersection, the predicted number of crashes will decrease slightly.

The table shows that the predicted number of crashes is expected to decrease with construction of the project compared to the future conditions without the project. The most significant difference is seen on the roadway segments between intersections due to the addition a two-way left turn lane, construction of paved shoulders and the removal and/or protection of roadside obstructions.

As seen in Table 8, the construction of a right-turn lane at the Kolb Road/Snyder Road intersection is predicted to have only a very modest improvement over the project without the right-turn lane. Thus, considering the small safety improvement, the fact that the intersection will operate efficiently with or without the addition of a northbound right turn lane, and the considerable cost which would be associated with the construction at this location, the addition of a right-turn lane at Snyder Road is not recommended.

A comparison of the predicted crashes at the north end of the project is shown in Table 9. As seen in the table, all three alternatives are expected to reduce the number of crashes per year along the segment of Kolb Road between Territory Drive and Sunrise Drive, though Alternatives 2 and 3 are expected to have a greater reduction, likely due to the elimination of left turns at the Bashas' driveway. However, the predicted number of crashes at the Territory Drive intersection would increase with Alternative 2 because of the increased traffic volume. Conversely, the construction of a roundabout (Alternative 3) is expected to result in a significant reduction in the predicted crashes at the intersection, even with the additional volume which would be diverted from the Bashas' Driveway to Territory Drive.

Table 9. Predicted Crashes per Year for Kolb Road/Territory Drive Alternatives

Location	2040 Without Project	2040 with Project (Alt 1)	2040 with Project and Median Island (Alt 2)	2040 with Project and Roundabout (Alt 3)
		% Reduction*	% Reduction*	% Reduction*
Kolb Rd, Territory Dr to Sunrise Dr	1.19	0.98	0.78	0.78
		18%	**34%**	**34%**
Kolb Rd/Territory Dr Intersection	1.04	1.04	1.10	0.69
		0%	**-6%**	**34%**

*Percent reduction compared to 2040 conditions without project; negative values indicate increase in predicted number of crashes.

7. CONCLUSIONS AND RECOMMENDATIONS

This project consists of widening Kolb Road from two to three lanes between the intersections of Sabino Canyon Road and Sunrise Drive. The project will also include the addition of paved shoulders and improvements to drainage and landscaping, as well as consideration of neighborhood screening and noise mitigation.

Historic data and growth projections in the 2045 PAG model were used to project future traffic volumes for the study year of 2040. Based on that information, Kolb Road is projected to carry approximately 13,200 vehicles per day north of Snyder Road and approximately 14,200 vehicles per day south of Snyder Road.

Because a northbound right turn lane was found to be warranted at the Kolb Road/Snyder Road intersection, two future scenarios were evaluated – one with the turn lane and one without. Both scenarios include the addition of a center two-way left turn lane throughout the project. It was found that all study intersections and Kolb Road will operate efficiently through 2040 with or without the added northbound right turn lane at Kolb Road and Snyder Road.

The safety analysis showed that the project is expected to reduce the overall predicted number of crashes in the project area when compared to future conditions without the project. The addition of a northbound right turn lane on Kolb Road at Snyder Road is expected to further reduce the predicted number of crashes at that intersection, but only slightly (from 2.27 crashes/year to 2.21 crashes/year). In the most recent five years with available data, there was only one northbound crash at the intersection, which may or may not have been related to the right turn movement.

Considering the low number of historic crashes, the fact that the intersection will operate efficiently with or without the addition of a northbound right turn lane, and the considerable cost which would be associated with the construction at this location (given the site constraints), it is not recommended that a northbound right turn lane be constructed at Kolb Road and Snyder Road.

However, the following improvements should be constructed with this project:

- Widen Kolb Road to a three-lane roadway by adding a center two-way left turn lane throughout the project area. This will improve operations and safety by removing turning vehicles from the travel lanes.
- Improve the transition from two to one northbound lanes on Kolb Road just north of Sabino Canyon Road to avoid speeding and safety issues.
- Construct a single-lane roundabout at the intersection of Kolb Road and Territory Drive and extend the raised median from Sunrise Drive further south to the new roundabout to improve safety and access management in the area.
- With the extended median just south of Sunrise Drive, provide additional northbound left turn storage (300 feet total) to serve the projected 95th percentile queue.
- Provide separate bike and right turn lanes for southbound travel at the Bashas' shopping center driveways.
- Include paved shoulders throughout the project area to provide multi-modal connectivity.
- Provide sidewalk along one side of the roadway to provide pedestrian connectivity through the corridor.
- Add street lighting to Kolb Road between Territory Drive and Sunrise Drive, including at the intersection of Kolb Road and Territory Drive.
- Remove, protect, or delineate roadside obstructions.
- Construct a solar powered flasher (or other comparable device, as determined during the design phase) near Fire Station 73 to improve general safety.

8. REFERENCES

[1] *Major Streets and Scenic Routes Plan*. Pima County, 2015.

[2] *Highway Capacity Manual*. Transportation Research Board, Washington D.C., 2002.

[3] *2013 Quality/Level of Service Handbook*. Florida Department of Transportation, 2013.

[4] *Highway Safety Manual*. American Association of State Highway and Transportation Officials, 2010.

[5] *Pima County Subdivision and Development Street Standards*. Pima County, April 2005

9. APPENDIX A – TRAFFIC COUNTS

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR AVERAGE DAILY TRAFFIC TOTALS FOR: **KOLB RD**
LOCATION: **2500' N Snyder Rd**
BLOCK NUMBER: 5180 N

DATE	TIME	NB	SB
10/17/2016	12:00	365	387
Monday	13:00	395	421
	14:00	398	436
	15:00	460	536
	16:00	417	546
	17:00	450	524
	18:00	311	366
	19:00	170	257
	20:00	120	173
	21:00	92	141
	22:00	30	77
	23:00	21	33
	00:00	12	20
	01:00	8	10
	02:00	8	6
	03:00	13	6
	04:00	37	16
	05:00	109	61
	06:00	250	193
	07:00	531	355
	08:00	422	418
	09:00	391	336
Tuesday	10:00	334	366
10/18/2016	11:00	347	372
LANE TOTALS:		**5,691**	**6,056**
24HR TOTAL:		**11,747 ADT**	

Report Generated By: E. Vasquez 10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR AVERAGE DAILY TRAFFIC TOTALS FOR: **KOLB**
LOCATION: **1500' S Snyder Rd**
BLOCK NUMBER: 4474 N

DATE	TIME	SB	NB
10/18/2016	14:00	451	387
Tuesday	15:00	511	455
	16:00	473	491
	17:00	483	481
	18:00	387	419
	19:00	221	249
	20:00	173	177
	21:00	136	126
	22:00	65	70
	23:00	45	36
	00:00	14	13
	01:00	15	14
	02:00	9	11
	03:00	11	9
	04:00	39	32
	05:00	106	113
	06:00	267	222
	07:00	498	477
	08:00	506	434
	09:00	447	358
	10:00	404	337
	11:00	403	414
Wednesday	12:00	411	397
10/19/2016	13:00	427	394
LANE TOTALS:		**6,502**	**6,116**
24HR TOTAL:		**12,618 ADT**	

Report Generated By: E. Vasquez 10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR AVERAGE DAILY TRAFFIC TOTALS FOR: **SNYDER RD**
LOCATION: **800' E KOLB**
BLOCK NUMBER: 7274 E

DATE	TIME	EB	WB
10/17/2016	16:00	126	98
Monday	17:00	126	77
	18:00	103	81
	19:00	81	52
	20:00	55	17
	21:00	31	18
	22:00	19	12
	23:00	7	5
	00:00	4	1
	01:00	3	2
	02:00	1	0
	03:00	2	1
	04:00	0	12
	05:00	18	27
	06:00	46	70
	07:00	63	150
	08:00	95	97
	09:00	66	98
	10:00	81	73
	11:00	78	96
	12:00	112	84
	13:00	85	82
Tuesday	14:00	103	92
10/18/2016	15:00	126	102
LANE TOTALS:		**1,431**	**1,347**
24HR TOTAL:		**2,778 ADT**	

Report Generated By: E. Vasquez 10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR AVERAGE DAILY TRAFFIC TOTALS FOR: **SNYDER RD**
LOCATION: **800' W KOLB RD**
BLOCK NUMBER: 7050 E KOLB

DATE	TIME	EB	WB
10/17/2016	10:00	19	8
Monday	11:00	20	22
	12:00	15	15
	13:00	11	16
	14:00	17	16
	15:00	17	25
	16:00	17	27
	17:00	11	21
	18:00	11	17
	19:00	4	11
	20:00	0	5
	21:00	3	3
	22:00	2	2
	23:00	0	0
	00:00	0	0
	01:00	0	0
	02:00	0	0
	03:00	3	2
	04:00	1	1
	05:00	4	2
	06:00	9	4
	07:00	25	5
Tuesday	08:00	19	7
10/18/2016	09:00	17	8
LANE TOTALS:		**225**	**217**
24HR TOTAL:		**442 ADT**	

Report Generated By: E. Vasquez 10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR AVERAGE DAILY TRAFFIC TOTALS FOR: **TERITORY DR**
LOCATION: **150'W TERITORY**
BLOCK NUMBER: 6699 E

DATE	TIME	WB	EB
10/17/2016	15:00	77	61
Monday	16:00	72	67
	17:00	61	62
	18:00	42	44
	19:00	42	36
	20:00	22	10
	21:00	7	5
	22:00	6	5
	23:00	2	2
	00:00	1	0
	01:00	2	0
	02:00	1	0
	03:00	0	0
	04:00	1	3
	05:00	4	10
	06:00	22	27
	07:00	59	53
	08:00	60	51
	09:00	57	68
	10:00	68	59
	11:00	65	69
	12:00	64	64
Tuesday	13:00	51	52
10/18/2016	14:00	75	58
LANE TOTALS:		**861**	**806**
24HR TOTAL:		**1,667 ADT**	

Report Generated By: E. Vasquez 10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR INTERSECTION APPROACH TOTALS FOR: **KOLB RD**
AT THE INTERSECTION OF: **SNYDER RD**

INFO 1	ROAD: KOLB	SB	LOCATION:	4600 ADDRESS
INFO 2	ROAD: KOLB RD	NB	LOCATION:	4600 ADDRESS
INFO 3	ROAD: SNYDER RD	WB	LOCATION:	850' E KOLB
INFO 4	ROAD: SNYDER RD	EB	LOCATION:	800' W KOLB RD

DATE	TIME	SB	NB	WB	EB
10/19/2016	08:00	506	434	107	22
Wednesday	09:00	447	358	102	18
	10:00	404	337	93	13
	11:00	403	414	100	16
	12:00	411	397	88	22
	13:00	427	394	101	16
	14:00	455	427	102	11
	15:00	535	504	109	10
	16:00	485	499	106	14
	17:00	534	552	113	19
	18:00	353	396	72	6
	19:00	229	235	35	6
	20:00	179	203	27	4
	21:00	137	133	12	2
	22:00	75	68	11	0
	23:00	37	30	7	0
	00:00	15	17	1	0
	01:00	11	15	1	1
	02:00	10	12	0	0
	03:00	14	10	1	3
	04:00	28	34	7	2
	05:00	90	106	24	3
Thursday	06:00	249	205	63	12
10/20/2016	07:00	477	460	160	14
LANE TOTALS:		6511	6240	1442	214
24HR TOTAL:		14,407 ADT			

Report Generated By: E. Vasquez
10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR INTERSECTION APPROACH TOTALS FOR: **KOLB RD**
AT THE INTERSECTION OF: **SABINO CANYON RD**

INFO 1	ROAD: KOLB RD	SB	LOCATION:	300' N SABINO CANYON RD
INFO 2	ROAD: SABINO CANYON R	NB	LOCATION:	1000' S SABINO CANYON RD
INFO 3	ROAD: SABINO CANYON R	WB	LOCATION:	400'E KOLB RD

DATE	TIME	SB	NB	WB	EB
10/18/2016	13:00	444	646	363	
Tuesday	14:00	414	746	323	
	15:00	478	812	381	
	16:00	516	870	411	
	17:00	479	999	418	
	18:00	495	1028	393	
	19:00	393	857	279	
	20:00	227	540	170	
	21:00	178	413	98	
	22:00	134	272	86	
	23:00	66	136	62	
	00:00	47	73	23	
	01:00	14	37	6	
	02:00	16	31	7	
	03:00	9	20	10	
	04:00	12	13	8	
	05:00	37	68	49	
	06:00	121	186	127	
	07:00	289	432	313	
	08:00	540	827	659	
	09:00	541	810	525	
	10:00	481	654	443	
Wednesday	11:00	422	570	376	
10/19/2016	12:00	427	719	339	
LANE TOTALS:		6780	11759	5869	
24HR TOTAL:		24,408 ADT			

Report Generated By: C. Godoy
10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR INTERSECTION APPROACH TOTALS FOR: **KOLB RD**
AT THE INTERSECTION OF: **SUNRISE DR**

INFO 1	ROAD: KOLB RD	SB	LOCATION:	800' N SUNRISE DR
INFO 2	ROAD: KOLB RD	NB	LOCATION:	400' S SUNRISE DR
INFO 3	ROAD: SUNRISE DR	WB	LOCATION:	800' E KOLB RD
INFO 4	ROAD: SUNRISE DR	EB	LOCATION:	600' W KOLB RD

DATE	TIME	SB	NB	WB	EB
10/18/2016	11:00	267	401	307	493
Tuesday	12:00	244	399	276	546
	13:00	327	448	243	541
	14:00	276	436	316	620
	15:00	343	410	359	698
	16:00	257	488	371	728
	17:00	236	467	307	857
	18:00	172	390	228	626
	19:00	77	280	139	406
	20:00	75	190	81	351
	21:00	53	116	67	242
	22:00	23	54	37	116
	23:00	13	29	8	71
	00:00	5	8	14	40
	01:00	6	8	2	24
	02:00	5	8	3	9
	03:00	4	9	4	11
	04:00	12	30	19	26
	05:00	39	132	69	104
	06:00	120	272	212	265
	07:00	383	659	556	530
	08:00	293	520	458	619
Wednesday	09:00	260	399	437	517
10/19/2016	10:00	244	398	247	432
LANE TOTALS:		3734	6551	4760	8872
24HR TOTAL:		23,917 ADT			

Report Generated By: C. Godoy
10/21/2016

PIMA COUNTY DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

24HR INTERSECTION APPROACH TOTALS FOR: **KOLB RD**
AT THE INTERSECTION OF: **TERRITORY DR**

INFO 1 ROAD: KOLB RD SB LOCATION: 100' N TERRITORY DR

INFO 2 ROAD: KOLB RD NB LOCATION: 800' S TERRITORY DR

INFO 4 ROAD: TERRITORY DR EB LOCATION: 1000' W KOLB RD

DATE	TIME	SB	NB		EB
10/17/2016	15:00	539	461		64
Monday	16:00	556	435		82
	17:00	534	440		71
	18:00	347	321		50
	19:00	264	164		41
	20:00	177	124		10
	21:00	135	95		9
	22:00	69	29		5
	23:00	35	22		3
	00:00	20	12		1
	01:00	8	7		1
	02:00	6	8		0
	03:00	6	13		0
	04:00	11	37		5
	05:00	64	107		13
	06:00	168	248		47
	07:00	358	562		70
	08:00	431	438		67
	09:00	350	402		83
	10:00	360	341		76
	11:00	372	354		83
	12:00	438	379		74
Tuesday	13:00	405	433		60
10/18/2016	14:00	459	389		61
LANE TOTALS:		6112	5821		976
24HR TOTAL:		12,909 ADT			

Report Generated By: C. Godoy
10/26/2016

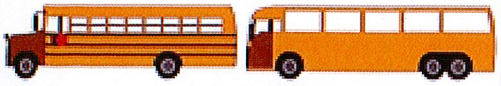
FHWA Vehicle Classifications

1. Motorcycles
2 axles, 2 or 3 tires

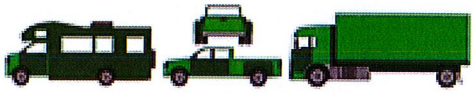
2. Passenger Cars
2 axles, can have 1- or 2-axle trailers

3. Pickups, Panels, Vans
2 axles, 4-tire single units
Can have 1 or 2 axle trailers

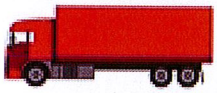
4. Buses
2 or 3 axles, full length



5. Single Unit 2-Axle Trucks
2 axles, 6 tires (dual rear tires), single-unit

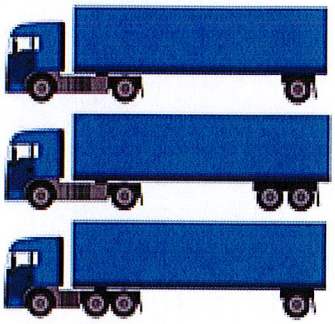


6. Single Unit 3-Axle Trucks
3 axles, single unit

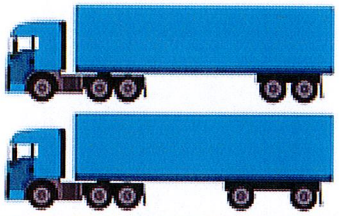


7. Single Unit 4 or More-Axle Trucks
4 or more axles, single unit

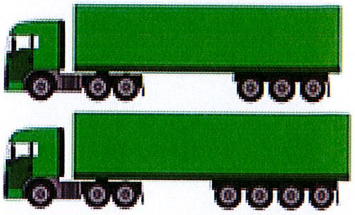
8. Single Trailer 3- or 4-Axle Trucks
3 or 4 axles, single trailer



9. Single Trailer 5-Axle Trucks
5 axles, single trailer

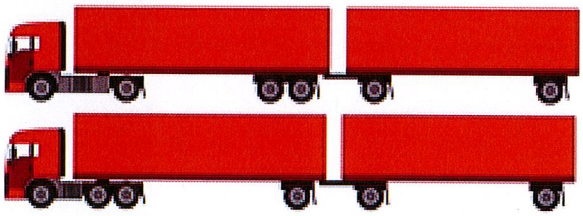


10. Single Trailer 6 or More-Axle Trucks
6 or more axles, single trailer

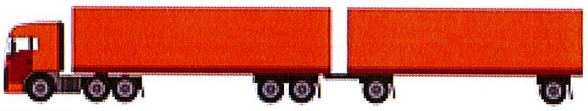


11. Multi-Trailer 5 or Less-Axle Trucks
5 or less axles, multiple trailers

12. Multi-Trailer 6-Axle Trucks
6 axles, multiple trailers



13. Multi-Trailer 7 or More-Axle Trucks
7 or more axles, multiple trailers



Basic Axle Classification Report: ANH4

Station ID : ANH4

Info Line 1 : SNYDER RD

Info Line 2 : 800' W KOLB RD

GPS Lat/Lon :

DB File : ANH4.DB

Last Connected Device Type : Unic-L

Version Number : 1.45

Serial Number :

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.	EB		Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 10:00 - 10/17/2016 To: 09:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	10:00	0	16	3	0	0	0	0	0	0	0	0	0	0	19
Mon	11:00	0	18	2	0	0	0	0	0	0	0	0	0	0	20
	12:00	0	10	4	0	0	0	0	0	0	0	0	0	0	14
	13:00	0	8	3	0	0	0	0	0	0	0	0	0	0	11
	14:00	0	16	1	0	0	0	0	0	0	0	0	0	0	17
	15:00	0	12	5	0	0	0	0	0	0	0	0	0	0	17
	16:00	0	13	3	0	0	0	0	0	0	0	0	0	0	16
	17:00	0	10	0	0	0	0	0	0	0	0	0	0	0	10
	18:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
	19:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
	20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
	22:00	1	1	0	0	0	0	0	0	0	0	0	0	0	2
	23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total :		1	119	23	0	0	0	0	0	0	0	0	0	0	143
Percent :		1%	83%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	9	2	0	0	0	0	0	0	0	0	0	0	11

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tue	01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	03:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
	04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	05:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
	06:00	0	8	1	0	0	0	0	0	0	0	0	0	0	9
	07:00	0	16	7	0	1	0	0	0	0	0	0	0	0	24
	08:00	0	14	5	0	0	0	0	0	0	0	0	0	0	19
	09:00	0	13	4	0	0	0	0	0	0	0	0	0	0	17
Daily Total :		0	58	18	0	1	0	0	0	0	0	0	0	0	77
Percent :		0%	75%	23%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	6	2	0	0	0	0	0	0	0	0	0	0	8

Basic Axle Class Summary: ANH4

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	1	177	41	0	1	0	0	0	0	0	0	0	0	220
		1	177	41	0	1	0	0	0	0	0	0	0	0	220
Percents :	#1.	0%	80%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	80%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	0	7	2	0	0	0	0	0	0	0	0	0	0	9
		0	7	2	0	0	0	0	0	0	0	0	0	0	9
Days & ADT :	#1.	1.0	220												
		1.0	220												

Basic Axle Classification Report: ANH5

Station ID : ANH5
Info Line 1 : SNYDER RD
Info Line 2 : 700' W KOLB
GPS Lat/Lon :
DB File : ANH5.DB

Last Connected Device Type : Unic-L
Version Number : 1.53
Serial Number :
Number of Lanes : 1
Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.	WB		Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 10:00 - 10/17/2016 To: 09:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	10:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
Mon	11:00	0	18	4	0	0	0	0	0	0	0	0	0	0	22
	12:00	0	9	4	0	0	0	0	0	0	0	0	0	0	13
	13:00	0	15	0	0	0	0	0	0	0	0	0	0	0	15
	14:00	0	12	3	0	0	0	0	0	0	0	0	0	0	15
	15:00	0	21	4	0	0	0	0	0	0	0	0	0	0	25
	16:00	0	20	6	0	0	0	0	1	0	0	0	0	0	27
	17:00	0	18	1	0	0	0	0	0	0	0	0	0	0	19
	18:00	1	14	2	0	0	0	0	0	0	0	0	0	0	17
	19:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10
	20:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
	21:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
	22:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
	23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total :		1	150	29	0	0	0	0	1	0	0	0	0	0	181
Percent :		1%	83%	16%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	
Average :		0	11	2	0	0	0	0	0	0	0	0	0	0	13

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tue	01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
	04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	05:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	06:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
	07:00	0	1	3	0	1	0	0	0	0	0	0	0	0	5
	08:00	0	4	3	0	0	0	0	0	0	0	0	0	0	7
	09:00	0	5	3	0	0	0	0	0	0	0	0	0	0	8
Daily Total :		0	17	10	0	1	0	0	0	0	0	0	0	0	28
	Percent :	0%	61%	36%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%	
	Average :	0	2	1	0	0	0	0	0	0	0	0	0	0	3

Basic Axle Class Summary: ANH5

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	1	167	39	0	1	0	0	1	0	0	0	0	0	209
		1	167	39	0	1	0	0	1	0	0	0	0	0	209
Percents :	#1.	0%	80%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	80%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	0	7	2	0	0	0	0	0	0	0	0	0	0	9
		0	7	2	0	0	0	0	0	0	0	0	0	0	9

Days & ADT :	#1.	1.0	209
		1.0	209

Basic Axle Classification Report: ANH6

Station ID : ANH6

Info Line 1 : SNYDER RD

Info Line 2 : 800' E KOLB

GPS Lat/Lon :

DB File : ANH6.DB

Last Connected Device Type : Unic-L

Version Number : 1.45

Serial Number :

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.	EB		Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 16:00 - 10/17/2016 To: 15:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	16:00	0	118	8	0	0	0	0	0	0	0	0	0	0	126
Mon	17:00	0	117	9	0	0	0	0	0	0	0	0	0	0	126
	18:00	0	101	2	0	0	0	0	0	0	0	0	0	0	103
	19:00	0	72	9	0	0	0	0	0	0	0	0	0	0	81
	20:00	1	51	3	0	0	0	0	0	0	0	0	0	0	55
	21:00	0	31	0	0	0	0	0	0	0	0	0	0	0	31
	22:00	0	19	0	0	0	0	0	0	0	0	0	0	0	19
	23:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
Daily Total :		1	515	32	0	0	0	0	0	0	0	0	0	0	548
Percent :		0%	94%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	64	4	0	0	0	0	0	0	0	0	0	0	68

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
Tue	01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
	02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
	04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	05:00	0	15	2	0	0	0	0	0	0	0	0	0	0	17
	06:00	0	35	10	0	1	0	0	0	0	0	0	0	0	46
	07:00	0	53	8	0	2	0	0	0	0	0	0	0	0	63
	08:00	1	71	22	0	1	0	0	0	0	0	0	0	0	95
	09:00	0	51	15	0	0	0	0	0	0	0	0	0	0	66
	10:00	0	72	8	0	0	0	0	1	0	0	0	0	0	81
	11:00	0	65	7	0	4	1	0	0	0	0	0	0	0	77
	12:00	0	95	16	0	0	0	0	1	0	0	0	0	0	112
	13:00	1	62	22	0	0	0	0	0	0	0	0	0	0	85
	14:00	0	88	13	0	2	0	0	0	0	0	0	0	0	103
	15:00	0	113	12	0	1	0	0	0	0	0	0	0	0	126
Daily Total :		2	728	137	0	11	1	0	2	0	0	0	0	0	881
Percent :		0%	83%	16%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	46	9	0	1	0	0	0	0	0	0	0	0	56

Basic Axle Class Summary: ANH6

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	3	1243	169	0	11	1	0	2	0	0	0	0	0	1429
		3	1243	169	0	11	1	0	2	0	0	0	0	0	1429
Percents :	#1.	0%	87%	12%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	87%	12%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	0	52	7	0	0	0	0	0	0	0	0	0	0	59
		0	52	7	0	0	0	0	0	0	0	0	0	0	59

Days & ADT :	#1.	1.0	1429
		1.0	1429

Basic Axle Classification Report: ANH7

Station ID : ANH7

Info Line 1 : SNYDER RD

Info Line 2 : 850' E KOLB

GPS Lat/Lon :

DB File : ANH7.DB

Last Connected Device Type : Unic-L

Version Number : 1.45

Serial Number :

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		WB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 11:00 - 10/17/2016 To: 10:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	11:00	0	83	14	0	0	1	0	0	0	0	0	0	0	98
Mon	12:00	0	67	20	0	0	0	0	0	0	0	0	0	0	87
	13:00	0	68	12	0	1	1	0	0	0	0	0	0	0	82
	14:00	0	89	19	0	2	0	0	0	0	0	0	0	0	110
	15:00	0	78	23	0	1	0	0	1	0	0	0	0	0	103
	16:00	1	77	18	0	2	0	0	0	0	0	0	0	0	98
	17:00	0	67	10	0	0	0	0	0	0	0	0	0	0	77
	18:00	1	69	9	0	1	0	0	0	0	0	0	0	0	80
	19:00	0	44	8	0	0	0	0	0	0	0	0	0	0	52
	20:00	0	15	2	0	0	0	0	0	0	0	0	0	0	17
	21:00	0	14	4	0	0	0	0	0	0	0	0	0	0	18
	22:00	0	10	2	0	0	0	0	0	0	0	0	0	0	12
	23:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
Daily Total :		2	685	142	0	7	2	0	1	0	0	0	0	0	839
Percent :		0%	82%	17%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	53	11	0	1	0	0	0	0	0	0	0	0	65

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Tue	01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
	02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	04:00	0	11	1	0	0	0	0	0	0	0	0	0	0	12
	05:00	0	23	4	0	0	0	0	0	0	0	0	0	0	27
	06:00	0	62	7	0	1	0	0	0	0	0	0	0	0	70
	07:00	0	135	10	0	4	1	0	0	0	0	0	0	0	150
	08:00	0	80	16	0	1	0	0	0	0	0	0	0	0	97
	09:00	0	78	16	0	0	0	0	0	0	0	0	0	1	95
	10:00	0	63	10	0	0	0	0	0	0	0	0	0	0	73
Daily Total :		0	454	66	0	6	1	0	0	0	0	0	0	1	528
Percent :		0%	86%	13%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	41	6	0	1	0	0	0	0	0	0	0	0	48

Basic Axle Class Summary: ANH7

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	2	1139	208	0	13	3	0	1	0	0	0	0	1	1367
		2	1139	208	0	13	3	0	1	0	0	0	0	1	1367
Percents :	#1.	0%	83%	15%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	83%	15%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	0	47	9	0	1	0	0	0	0	0	0	0	0	57
		0	47	9	0	1	0	0	0	0	0	0	0	0	57
Days & ADT :	#1.	1.0	1367												
		1.0	1367												

Basic Axle Classification Report: ANH9

Station ID : ANH9

Info Line 1 : KOLB RD

Info Line 2 : 1500' S Snyder Rd NB

GPS Lat/Lon :

DB File : ANH9.DB

Last Connected Device Type : Unic-L

Version Number : 1.41

Serial Number :

Number of Lanes : 1

Posted Speed Limit : 35.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		NB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 11:00 - 10/17/2016 To: 10:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	11:00	0	267	58	0	3	1	0	2	0	0	0	0	0	331
Mon	12:00	2	288	90	0	1	1	0	1	0	0	0	0	0	383
	13:00	1	306	77	0	2	1	0	1	0	0	0	0	0	388
	14:00	0	275	83	0	3	1	0	3	0	0	0	0	0	365
	15:00	1	403	86	0	5	0	0	1	0	0	0	0	0	496
	16:00	0	389	80	0	0	0	0	0	0	0	0	0	0	469
	17:00	3	452	66	0	1	1	0	0	0	0	0	0	0	523
	18:00	3	315	41	0	0	0	0	0	0	0	0	0	0	359
	19:00	0	178	27	1	0	0	0	0	0	0	0	0	0	206
	20:00	1	164	17	0	0	0	0	0	0	0	0	0	0	182
	21:00	1	110	11	0	0	0	0	0	0	0	0	0	0	122
	22:00	1	45	4	0	0	0	0	0	0	0	0	0	0	50
	23:00	0	24	3	0	0	0	0	0	0	0	0	0	0	27
Daily Total :		13	3216	643	1	15	5	0	8	0	0	0	0	0	3901
Percent :		0%	82%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		1	247	49	0	1	0	0	1	0	0	0	0	0	299

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	19	3	0	0	0	0	0	0	0	0	0	0	22
Tue	01:00	0	4	1	0	0	0	0	1	0	0	0	0	0	6
	02:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
	03:00	0	13	3	0	0	0	0	0	0	0	0	0	0	16
	04:00	1	23	12	0	0	0	0	0	0	0	0	0	0	36
	05:00	3	67	26	0	2	0	0	0	0	0	0	0	0	98
	06:00	2	153	70	0	2	0	0	0	0	0	0	0	1	228
	07:00	0	358	87	0	5	0	0	0	0	0	0	0	0	450
	08:00	0	291	101	0	0	0	0	0	0	0	0	0	0	392
	09:00	2	276	85	1	2	0	0	0	2	0	0	0	0	368
	10:00	2	280	63	0	3	1	1	0	0	0	1	0	0	351
Daily Total :		10	1493	451	1	14	1	1	1	2	0	1	0	1	1976
Percent :		1%	76%	23%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		1	136	41	0	1	0	0	0	0	0	0	0	0	179

Basic Axle Class Summary: ANH9

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	23	4709	1094	2	29	6	1	9	2	0	1	0	1	5877
		23	4709	1094	2	29	6	1	9	2	0	1	0	1	5877
Percents :	#1.	0%	80%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	80%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	1	196	46	0	1	0	0	0	0	0	0	0	0	244
		1	196	46	0	1	0	0	0	0	0	0	0	0	244
Days & ADT :	#1.	1.0	5877												
		1.0	5877												

Basic Axle Classification Report: ANH8

Station ID : ANH8

Info Line 1 : KOLB

Info Line 2 : 1500' S Snyder Rd

GPS Lat/Lon :

DB File : ANH8.DB

Last Connected Device Type : Unic-L

Version Number : 1.53

Serial Number : 15547

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		SB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 14:00 - 10/18/2016 To: 13:59 - 10/19/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	14:00	0	353	95	0	1	1	0	0	0	1	0	0	0	451
Tue	15:00	9	371	124	1	4	0	0	2	0	0	0	0	0	511
	16:00	3	376	90	0	1	0	0	3	0	0	0	0	0	473
	17:00	2	411	67	0	1	0	0	2	0	0	0	0	0	483
	18:00	2	334	48	0	1	0	0	2	0	0	0	0	0	387
	19:00	3	180	37	0	0	0	0	0	1	0	0	0	0	221
	20:00	1	144	27	0	0	0	0	1	0	0	0	0	0	173
	21:00	0	118	18	0	0	0	0	0	0	0	0	0	0	136
	22:00	2	57	6	0	0	0	0	0	0	0	0	0	0	65
	23:00	0	33	12	0	0	0	0	0	0	0	0	0	0	45
Daily Total :		22	2377	524	1	8	1	0	10	1	1	0	0	0	2945
Percent :		1%	81%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		2	238	52	0	1	0	0	1	0	0	0	0	0	294

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/19/16	00:00	0	12	2	0	0	0	0	0	0	0	0	0	0	14
Wed	01:00	0	13	2	0	0	0	0	0	0	0	0	0	0	15
	02:00	0	7	2	0	0	0	0	0	0	0	0	0	0	9
	03:00	0	9	2	0	0	0	0	0	0	0	0	0	0	11
	04:00	1	34	4	0	0	0	0	0	0	0	0	0	0	39
	05:00	2	79	24	0	0	0	0	0	1	0	0	0	0	106
	06:00	1	215	45	0	1	5	0	0	0	0	0	0	0	267
	07:00	2	418	73	0	1	1	0	2	1	0	0	0	0	498
	08:00	1	423	74	0	5	1	0	2	0	0	0	0	0	506
	09:00	7	348	88	0	3	0	0	1	0	0	0	0	0	447
	10:00	2	298	102	0	2	0	0	0	0	0	0	0	0	404
	11:00	3	298	99	0	3	0	0	0	0	0	0	0	0	403
	12:00	4	301	98	0	6	0	0	2	0	0	0	0	0	411
	13:00	1	329	93	0	3	1	0	0	0	0	0	0	0	427
Daily Total :		24	2784	708	0	24	8	0	7	2	0	0	0	0	3557
Percent :		1%	78%	20%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		2	199	51	0	2	1	0	1	0	0	0	0	0	256

Basic Axle Class Summary: ANH8

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	46	5161	1232	1	32	9	0	17	3	1	0	0	0	6502
		46	5161	1232	1	32	9	0	17	3	1	0	0	0	6502
Percents :	#1.	1%	79%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		1%	79%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	2	215	51	0	1	0	0	1	0	0	0	0	0	270
		2	215	51	0	1	0	0	1	0	0	0	0	0	270

Days & ADT :	#1.	1.0	6502
		1.0	6502

Basic Axle Classification Report: ANI1

Station ID : ANI1

Info Line 1 : KOLB RD

Info Line 2 : 2500' N Snyder Rd

GPS Lat/Lon :

DB File : ANI1.DB

Last Connected Device Type : Unic-L

Version Number : 1.45

Serial Number :

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		NB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 12:00 - 10/17/2016 To: 11:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	12:00	1	274	85	0	2	1	0	1	0	0	0	0	0	364
Mon	13:00	1	316	72	0	3	1	0	1	0	0	1	0	0	395
	14:00	0	314	80	0	3	0	0	1	0	0	0	0	0	398
	15:00	0	364	86	0	6	0	0	3	0	0	0	0	0	459
	16:00	1	336	73	0	2	0	0	1	0	0	0	0	0	413
	17:00	2	384	62	0	1	1	0	0	0	0	0	0	0	450
	18:00	2	277	32	0	0	0	0	0	0	0	0	0	0	311
	19:00	0	144	23	1	0	0	0	1	0	0	0	0	0	169
	20:00	0	109	11	0	0	0	0	0	0	0	0	0	0	120
	21:00	1	83	8	0	0	0	0	0	0	0	0	0	0	92
	22:00	0	27	3	0	0	0	0	0	0	0	0	0	0	30
	23:00	0	17	4	0	0	0	0	0	0	0	0	0	0	21
Daily Total :		8	2645	539	1	17	3	0	8	0	0	1	0	0	3222
Percent :		0%	82%	17%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		1	220	45	0	1	0	0	1	0	0	0	0	0	268

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	10	2	0	0	0	0	0	0	0	0	0	0	12
Tue	01:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
	02:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
	03:00	0	11	2	0	0	0	0	0	0	0	0	0	0	13
	04:00	1	25	11	0	0	0	0	0	0	0	0	0	0	37
	05:00	3	76	28	0	2	0	0	0	0	0	0	0	0	109
	06:00	2	183	63	0	1	0	0	0	0	0	0	0	1	250
	07:00	0	437	82	1	5	0	0	0	0	0	0	2	1	528
	08:00	0	327	92	0	2	0	0	1	0	0	0	0	0	422
	09:00	2	302	82	0	3	0	0	0	2	0	0	0	0	391
	10:00	2	266	62	0	2	0	0	1	0	0	1	0	0	334
	11:00	0	263	82	0	2	0	0	0	0	0	0	0	0	347
Daily Total :		10	1914	508	1	17	0	0	2	2	0	1	2	2	2459
	Percent :	0%	78%	21%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
	Average :	1	160	42	0	1	0	0	0	0	0	0	0	0	204

Basic Axle Class Summary: ANI1

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	18	4559	1047	2	34	3	0	10	2	0	2	2	2	5681
		18	4559	1047	2	34	3	0	10	2	0	2	2	2	5681
Percents :	#1.	0%	80%	18%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	80%	18%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	1	190	44	0	1	0	0	0	0	0	0	0	0	236
		1	190	44	0	1	0	0	0	0	0	0	0	0	236

Days & ADT :	#1.	1.0	5681
		1.0	5681

Basic Axle Classification Report: ANI2

Station ID : ANI2
Info Line 1 : KOLB RD
Info Line 2 : 2500' N Snyder Rd
GPS Lat/Lon :
DB File : ANI2.DB

Last Connected Device Type : Unic-L
Version Number : 1.41
Serial Number :
Number of Lanes : 1
Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		SB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 12:00 - 10/17/2016 To: 11:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	12:00	2	298	83	0	4	0	0	0	0	0	0	0	0	387
Mon	13:00	3	321	92	0	3	1	1	0	0	0	0	0	0	421
	14:00	1	328	98	0	3	2	1	1	0	0	1	0	1	436
	15:00	4	407	113	1	3	3	0	4	0	0	0	0	1	536
	16:00	2	447	96	0	1	0	0	0	0	0	0	0	0	546
	17:00	2	424	89	0	0	0	0	6	0	0	2	0	1	524
	18:00	2	319	44	0	1	0	0	0	0	0	0	0	0	366
	19:00	0	213	43	0	0	0	0	0	0	0	0	0	1	257
	20:00	1	141	30	0	1	0	0	0	0	0	0	0	0	173
	21:00	0	119	22	0	0	0	0	0	0	0	0	0	0	141
	22:00	0	71	6	0	0	0	0	0	0	0	0	0	0	77
	23:00	0	30	3	0	0	0	0	0	0	0	0	0	0	33
Daily Total :		17	3118	719	1	16	6	2	11	0	0	3	0	4	3897
Percent :		0%	80%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		1	260	60	0	1	1	0	1	0	0	0	0	0	324

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	16	4	0	0	0	0	0	0	0	0	0	0	20
Tue	01:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
	02:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
	03:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
	04:00	1	11	4	0	0	0	0	0	0	0	0	0	0	16
	05:00	3	40	17	0	0	1	0	0	0	0	0	0	0	61
	06:00	1	147	43	0	0	1	0	1	0	0	0	0	0	193
	07:00	1	292	56	0	1	0	2	1	0	0	0	0	2	355
	08:00	2	324	88	0	2	0	0	0	1	0	0	0	1	418
	09:00	3	254	77	0	0	1	0	1	0	0	0	0	0	336
	10:00	3	275	84	0	3	0	0	1	0	0	0	0	0	366
	11:00	1	280	88	0	3	0	0	0	0	0	0	0	0	372
Daily Total :		15	1658	464	0	9	3	2	4	1	0	0	0	3	2159
Percent :		1%	77%	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		1	138	39	0	1	0	0	0	0	0	0	0	0	179

Basic Axle Class Summary: ANI2

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	32	4776	1183	1	25	9	4	15	1	0	3	0	7	6056
		32	4776	1183	1	25	9	4	15	1	0	3	0	7	6056
Percents :	#1.	1%	79%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		1%	79%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	1	199	49	0	1	0	0	1	0	0	0	0	0	251
		1	199	49	0	1	0	0	1	0	0	0	0	0	251
Days & ADT :	#1.	1.0	6056												
		1.0	6056												

Basic Axle Classification Report: ANI4

Station ID : ANI4

Info Line 1 : TERRITORY DR

Info Line 2 : 150'W TERRITORY Dr

GPS Lat/Lon :

DB File : ANI4.DB

Last Connected Device Type : Unic-L

Version Number : 1.41

Serial Number : 88606

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		EB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 15:00 - 10/17/2016 To: 14:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	15:00	0	50	10	1	0	0	0	0	0	0	0	0	0	61
Mon	16:00	0	56	10	0	1	0	0	0	0	0	0	0	0	67
	17:00	0	52	10	0	0	0	0	0	0	0	0	0	0	62
	18:00	0	41	2	0	1	0	0	0	0	0	0	0	0	44
	19:00	0	33	3	0	0	0	0	0	0	0	0	0	0	36
	20:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10
	21:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
	22:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
	23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Daily Total :		0	252	37	1	2	0	0	0	0	0	0	0	0	292
Percent :		0%	86%	13%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	28	4	0	0	0	0	0	0	0	0	0	0	32

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/18/16	00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tue	01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
	05:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
	06:00	0	25	2	0	0	0	0	0	0	0	0	0	0	27
	07:00	0	46	5	1	1	0	0	0	0	0	0	0	0	53
	08:00	0	46	5	0	0	0	0	0	0	0	0	0	0	51
	09:00	0	58	9	0	0	0	0	0	1	0	0	0	0	68
	10:00	1	46	12	0	0	0	0	0	0	0	0	0	0	59
	11:00	0	55	13	0	1	0	0	0	0	0	0	0	0	69
	12:00	1	47	16	0	0	0	0	0	0	0	0	0	0	64
	13:00	0	41	10	0	0	1	0	0	0	0	0	0	0	52
	14:00	0	46	10	0	2	0	0	0	0	0	0	0	0	58
Daily Total :		2	422	83	1	4	1	0	0	1	0	0	0	0	514
Percent :		0%	82%	16%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	28	6	0	0	0	0	0	0	0	0	0	0	34

Basic Axle Class Summary: ANI4

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	2	674	120	2	6	1	0	0	1	0	0	0	0	806
		2	674	120	2	6	1	0	0	1	0	0	0	0	806
Percents :	#1.	0%	84%	15%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	84%	15%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	0	28	5	0	0	0	0	0	0	0	0	0	0	33
		0	28	5	0	0	0	0	0	0	0	0	0	0	33

Days & ADT :	#1.	1.0	806
		1.0	806

Basic Axle Classification Report: ANI3

Station ID : ANI3

Info Line 1 : TERITORY DR

Info Line 2 : 150'W TERITORY

GPS Lat/Lon :

DB File : ANI3.DB

Last Connected Device Type : Unic-L

Version Number : 1.45

Serial Number :

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane #1 Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length	Comment
1.		WB	Ax-Ax	5.0 ft	6.0 ft	

Lane #1 Basic Axle Classification Data From: 15:00 - 10/17/2016 To: 14:59 - 10/18/2016

(DEFAULTB) Date	Time	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
10/17/16	15:00	0	66	10	0	1	0	0	0	0	0	0	0	0	77
Mon	16:00	0	61	9	0	1	0	0	0	0	0	0	0	0	71
	17:00	0	54	6	0	1	0	0	0	0	0	0	0	0	61
	18:00	0	40	2	0	0	0	0	0	0	0	0	0	0	42
	19:00	0	40	2	0	0	0	0	0	0	0	0	0	0	42
	20:00	0	21	1	0	0	0	0	0	0	0	0	0	0	22
	21:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
	22:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
	23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Daily Total :		0	295	32	0	3	0	0	0	0	0	0	0	0	330
Percent :		0%	89%	10%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :		0	33	4	0	0	0	0	0	0	0	0	0	0	37

Basic Axle Class Summary: ANI3

(DEFAULTB) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
TOTAL COUNT :	#1.	1	722	119	0	9	2	0	2	1	0	0	0	0	856
		1	722	119	0	9	2	0	2	1	0	0	0	0	856
Percents :	#1.	0%	84%	14%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	100%
		0%	84%	14%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	
Average :	#1.	0	30	5	0	0	0	0	0	0	0	0	0	0	35
		0	30	5	0	0	0	0	0	0	0	0	0	0	35

Days & ADT :	#1.	1.0	856
		1.0	856

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Sunrise Dr

File Name : KolbRd@SunriseDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 1

Groups Printed- Unshifted

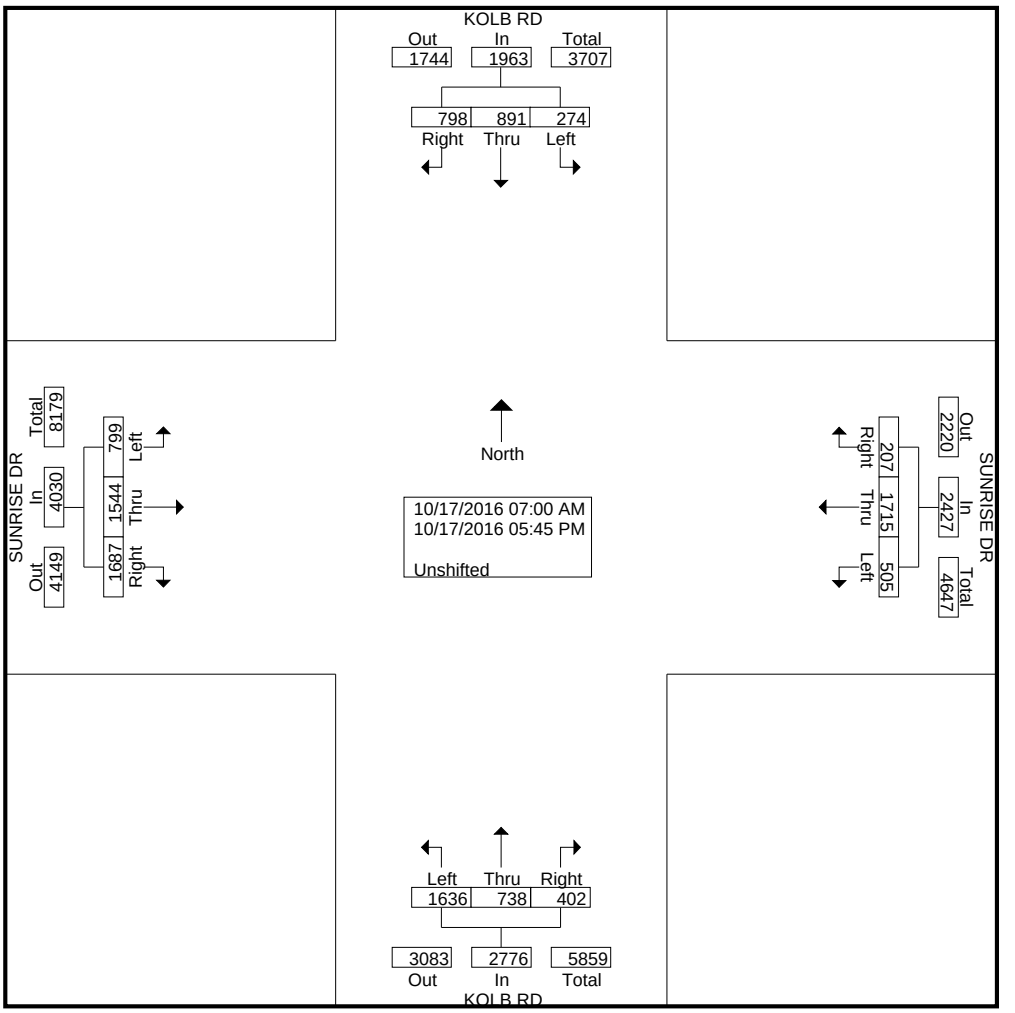
	KOLB RD SB				SUNRISE DR WB				KOLB RD NB				SUNRISE DR EB				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	13	17	28	58	16	98	10	124	89	20	17	126	30	61	28	119	427
07:15 AM	9	25	36	70	25	125	25	175	77	18	8	103	24	57	36	117	465
07:30 AM	7	30	47	84	19	105	20	144	98	52	16	166	40	50	54	144	538
07:45 AM	19	51	66	136	24	137	24	185	100	74	15	189	36	65	55	156	666
Total	48	123	177	348	84	465	79	628	364	164	56	584	130	233	173	536	2096
08:00 AM	14	54	61	129	30	134	7	171	86	30	8	124	35	67	58	160	584
08:15 AM	6	37	33	76	17	74	8	99	77	23	14	114	26	47	69	142	431
08:30 AM	7	31	23	61	16	74	4	94	75	17	8	100	19	54	63	136	391
08:45 AM	4	28	25	57	24	61	8	93	85	32	10	127	23	52	54	129	406
Total	31	150	142	323	87	343	27	457	323	102	40	465	103	220	244	567	1812
*** BREAK ***																	
02:00 PM	8	36	26	70	16	36	5	57	60	24	15	99	19	54	70	143	369
02:15 PM	7	41	33	81	10	37	9	56	69	39	14	122	34	45	65	144	403
02:30 PM	15	36	39	90	23	53	11	87	47	30	14	91	37	73	53	163	431
02:45 PM	8	27	29	64	28	70	12	110	62	32	24	118	33	68	68	169	461
Total	38	140	127	305	77	196	37	310	238	125	67	430	123	240	256	619	1664
03:00 PM	20	42	53	115	18	62	8	88	58	22	16	96	44	69	67	180	479
03:15 PM	7	45	39	91	46	65	0	111	52	34	13	99	28	59	87	174	475
03:30 PM	15	36	45	96	18	60	3	81	62	21	16	99	31	66	74	171	447
03:45 PM	10	35	29	74	21	50	2	73	65	31	15	111	45	74	71	190	448
Total	52	158	166	376	103	237	13	353	237	108	60	405	148	268	299	715	1849
04:00 PM	13	44	34	91	22	48	9	79	50	35	22	107	34	60	76	170	447
04:15 PM	9	43	23	75	18	63	11	92	52	32	16	100	39	80	97	216	483
04:30 PM	11	40	30	81	22	57	7	86	60	29	19	108	44	61	89	194	469
04:45 PM	12	48	15	75	22	62	5	89	64	33	23	120	30	67	89	186	470
Total	45	175	102	322	84	230	32	346	226	129	80	435	147	268	351	766	1869
05:00 PM	18	38	32	88	21	59	4	84	66	28	21	115	45	66	97	208	495
05:15 PM	10	41	18	69	20	90	4	114	61	29	26	116	41	91	89	221	520
05:30 PM	21	35	21	77	18	45	7	70	62	28	22	112	23	82	90	195	454
05:45 PM	11	31	13	55	11	50	4	65	59	25	30	114	39	76	88	203	437
Total	60	145	84	289	70	244	19	333	248	110	99	457	148	315	364	827	1906
Grand Total	274	891	798	1963	505	1715	207	2427	1636	738	402	2776	799	1544	1687	4030	11196
Apprch %	14	45.4	40.7		20.8	70.7	8.5		58.9	26.6	14.5		19.8	38.3	41.9		
Total %	2.4	8	7.1	17.5	4.5	15.3	1.8	21.7	14.6	6.6	3.6	24.8	7.1	13.8	15.1	36	

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Sunrise Dr

File Name : KolbRd@SunriseDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 2



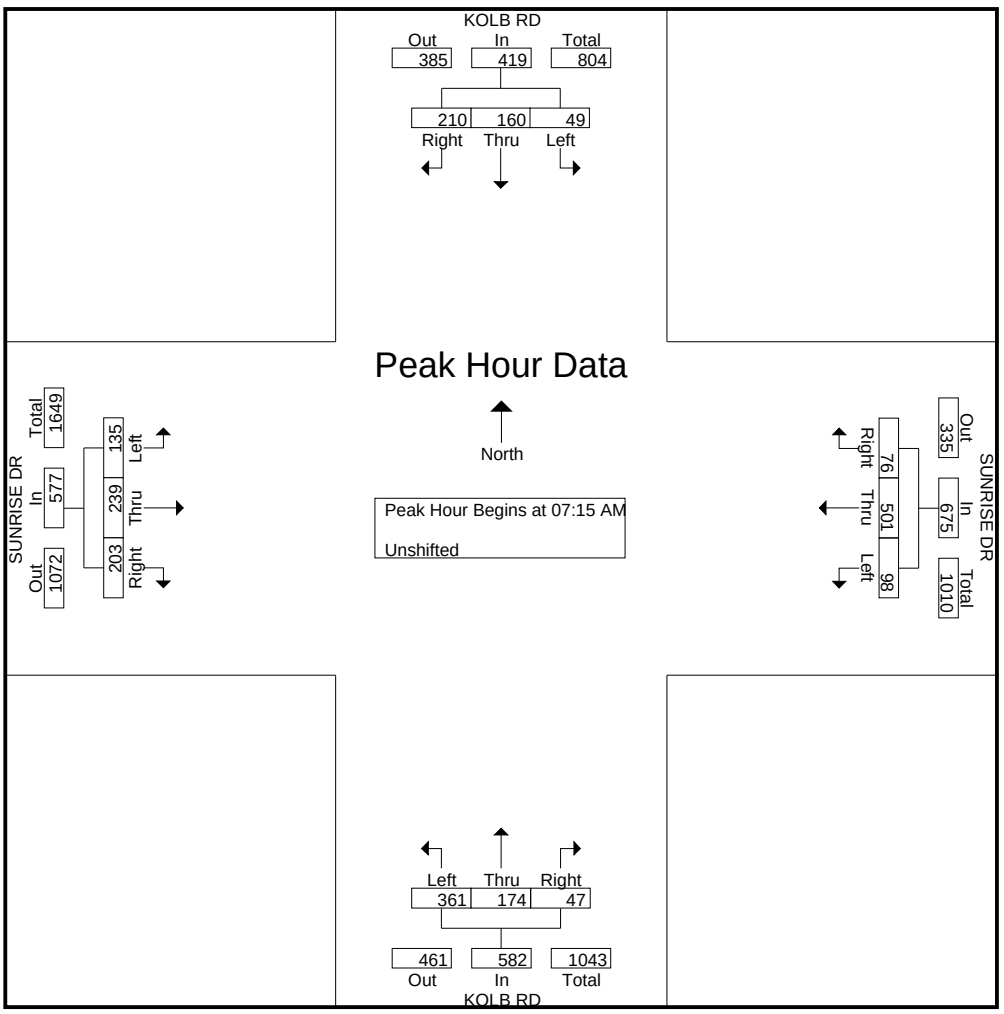
Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Sunrise Dr

File Name : KolbRd@SunriseDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 3

	KOLB RD SB				SUNRISE DR WB				KOLB RD NB				SUNRISE DR EB				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	25	36	70	25	125	**25**	175	77	18	8	103	24	57	36	117	465
07:30 AM	7	30	47	84	19	105	20	144	98	52	**16**	166	**40**	50	54	144	538
07:45 AM	**19**	51	**66**	**136**	24	**137**	24	**185**	**100**	**74**	15	**189**	36	65	55	156	**666**
08:00 AM	14	**54**	61	129	**30**	134	7	171	86	30	8	124	35	**67**	**58**	**160**	584
Total Volume	49	160	210	419	98	501	76	675	361	174	47	582	135	239	203	577	2253
% App. Total	11.7	38.2	50.1		14.5	74.2	11.3		62	29.9	8.1		23.4	41.4	35.2		
PHF	.645	.741	.795	.770	.817	.914	.760	.912	.903	.588	.734	.770	.844	.892	.875	.902	.846



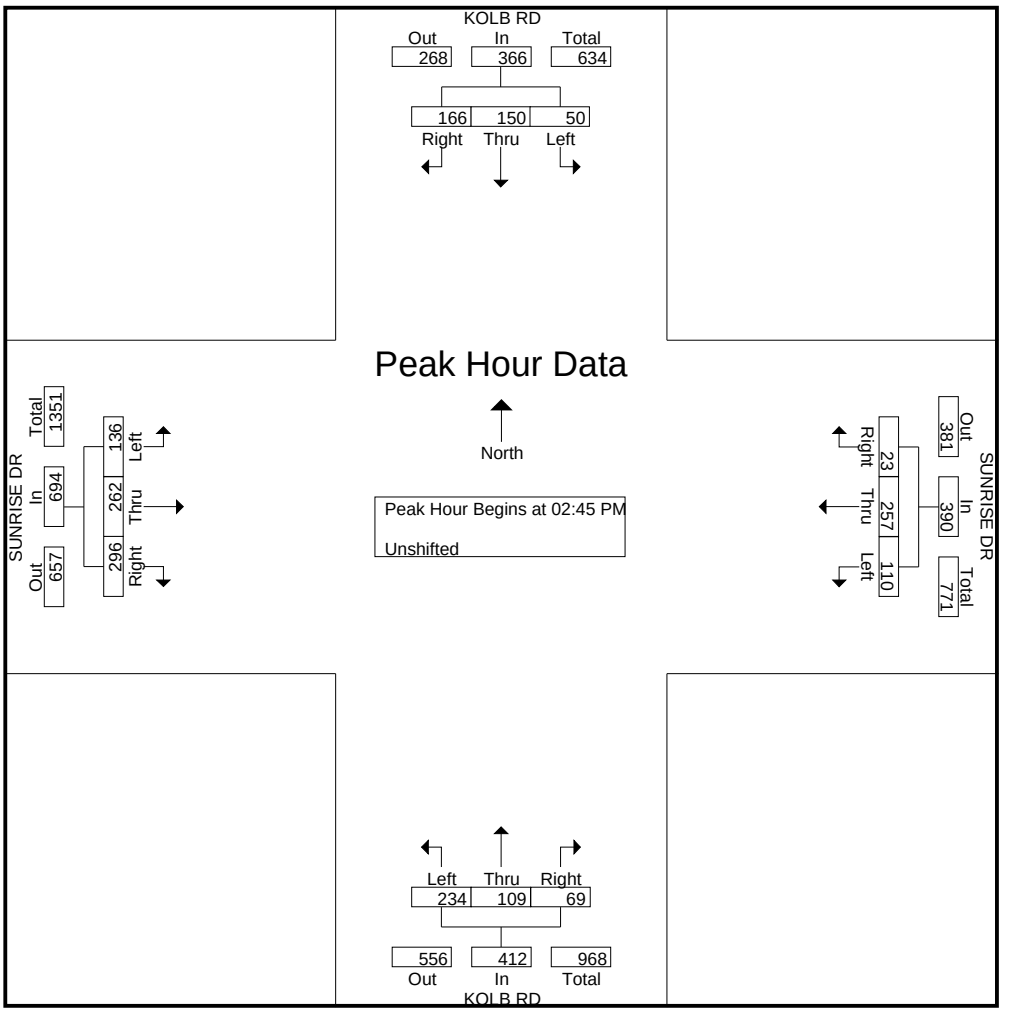
Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Sunrise Dr

File Name : KolbRd@SunriseDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 4

	KOLB RD SB				SUNRISE DR WB				KOLB RD NB				SUNRISE DR EB				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:45 PM																	
02:45 PM	8	27	29	64	28	**70**	**12**	110	**62**	32	**24**	**118**	33	68	68	169	461
03:00 PM	**20**	42	**53**	**115**	18	62	8	88	58	22	16	96	**44**	**69**	67	**180**	**479**
03:15 PM	7	**45**	39	91	**46**	65	0	**111**	52	**34**	13	99	28	59	**87**	174	475
03:30 PM	15	36	45	96	18	60	3	81	62	21	16	99	31	66	74	171	447
Total Volume	50	150	166	366	110	257	23	390	234	109	69	412	136	262	296	694	1862
% App. Total	13.7	41	45.4		28.2	65.9	5.9		56.8	26.5	16.7		19.6	37.8	42.7		
PHF	.625	.833	.783	.796	.598	.918	.479	.878	.944	.801	.719	.873	.773	.949	.851	.964	.972



Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Sunrise Dr

File Name : KolbRd@SunriseDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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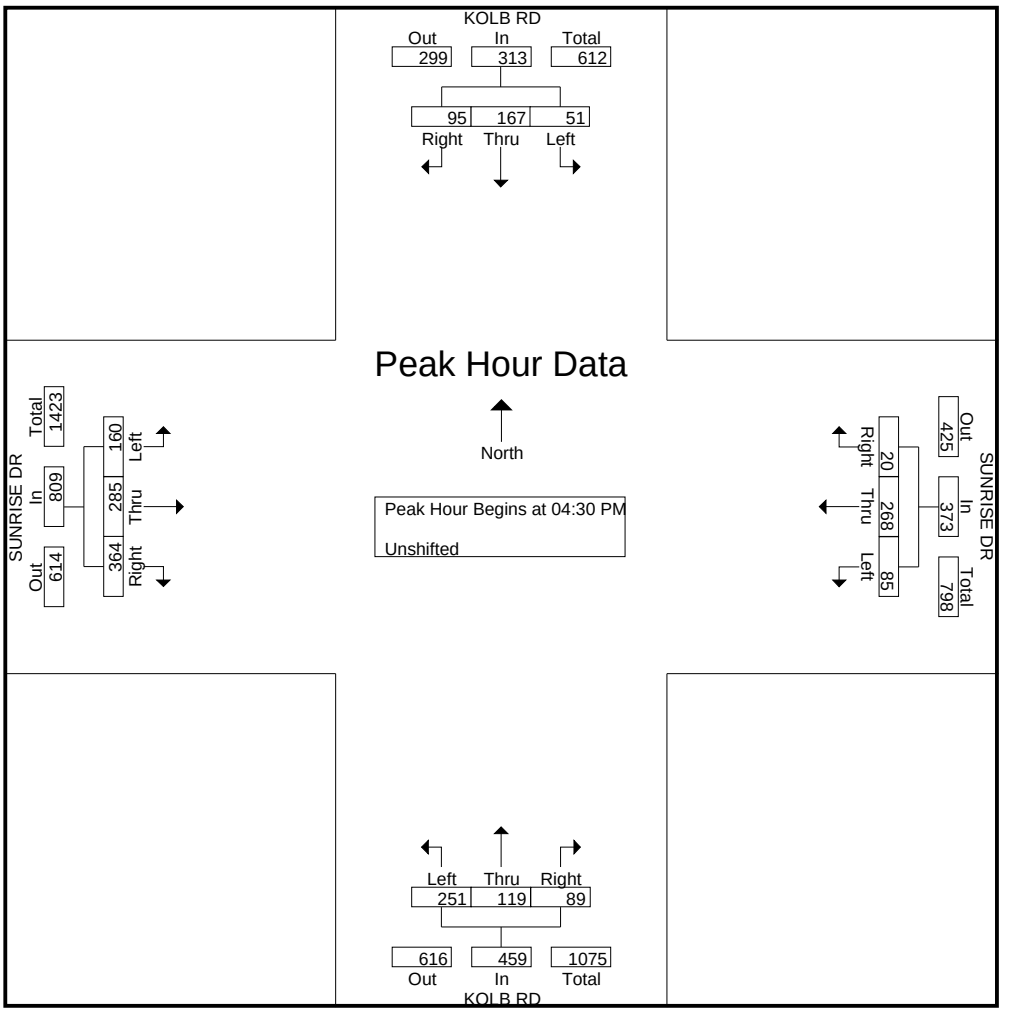
	KOLB RD SB				SUNRISE DR WB				KOLB RD NB				SUNRISE DR EB				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	11	40	30	81	**22**	57	**7**	86	60	29	19	108	44	61	89	194	469
04:45 PM	12	**48**	15	75	22	62	5	89	64	**33**	23	**120**	30	67	89	186	470
05:00 PM	**18**	38	**32**	**88**	21	59	4	84	**66**	28	21	115	**45**	66	**97**	208	495
05:15 PM	10	41	18	69	20	**90**	4	**114**	61	29	**26**	116	41	**91**	89	**221**	**520**
Total Volume	51	167	95	313	85	268	20	373	251	119	89	459	160	285	364	809	1954
% App. Total	16.3	53.4	30.4		22.8	71.8	5.4		54.7	25.9	19.4		19.8	35.2	45		
PHF	.708	.870	.742	.889	.966	.744	.714	.818	.951	.902	.856	.956	.889	.783	.938	.915	.939



Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Territory Dr

File Name : KolbRd@TerritoryDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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Groups Printed- Unshifted

	KOLB RD SB					TERRITORY DR WB					KOLB RD NB					TERRITORY DR EB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	49	4	0	53	1	0	6	1	8	9	99	0	0	108	15	0	7	1	23	192
07:15 AM	0	66	10	0	76	4	0	1	0	5	10	89	0	0	99	9	0	2	0	11	191
07:30 AM	0	92	5	0	97	1	3	2	1	7	12	131	0	0	143	13	0	13	0	26	273
07:45 AM	0	105	10	0	115	3	3	6	0	12	16	160	0	0	176	13	0	8	1	22	325
Total	0	312	29	0	341	9	6	15	2	32	47	479	0	0	526	50	0	30	2	82	981
08:00 AM	0	109	10	0	119	2	0	5	1	8	9	106	0	0	115	14	0	20	0	34	276
08:15 AM	0	97	11	0	108	1	0	2	0	3	12	97	0	0	109	13	0	6	0	19	239
08:30 AM	1	87	15	0	103	2	0	1	0	3	14	83	2	0	99	10	0	10	0	20	225
08:45 AM	0	89	13	0	102	0	0	2	0	2	7	107	1	0	115	10	0	10	0	20	239
Total	1	382	49	0	432	5	0	10	1	16	42	393	3	0	438	47	0	46	0	93	979
*** BREAK ***																					
04:00 PM	0	116	14	0	130	2	0	4	0	6	21	98	2	0	121	19	0	10	0	29	286
04:15 PM	2	122	17	0	141	0	0	1	0	1	12	93	1	0	106	17	2	21	0	40	288
04:30 PM	0	128	9	0	137	1	0	3	0	4	13	99	0	0	112	6	0	22	0	28	281
04:45 PM	3	127	18	0	148	0	0	3	2	5	19	95	0	0	114	19	0	21	0	40	307
Total	5	493	58	0	556	3	0	11	2	16	65	385	3	0	453	61	2	74	0	137	1162
05:00 PM	1	134	13	0	148	1	0	1	0	2	20	88	1	0	109	19	0	12	0	31	290
05:15 PM	4	138	10	0	152	0	0	0	0	0	14	91	1	0	106	12	1	21	1	35	293
05:30 PM	1	116	11	0	128	0	0	1	2	3	13	87	0	0	100	15	0	13	2	30	261
05:45 PM	1	113	13	0	127	1	1	2	0	4	16	98	3	0	117	8	0	7	0	15	263
Total	7	501	47	0	555	2	1	4	2	9	63	364	5	0	432	54	1	53	3	111	1107
Grand Total	13	1688	183	0	1884	19	7	40	7	73	217	1621	11	0	1849	212	3	203	5	423	4229
Apprch %	0.7	89.6	9.7	0		26	9.6	54.8	9.6		11.7	87.7	0.6	0		50.1	0.7	48	1.2		
Total %	0.3	39.9	4.3	0	44.5	0.4	0.2	0.9	0.2	1.7	5.1	38.3	0.3	0	43.7	5	0.1	4.8	0.1	10	

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Territory Dr

File Name : KolbRd@TerritoryDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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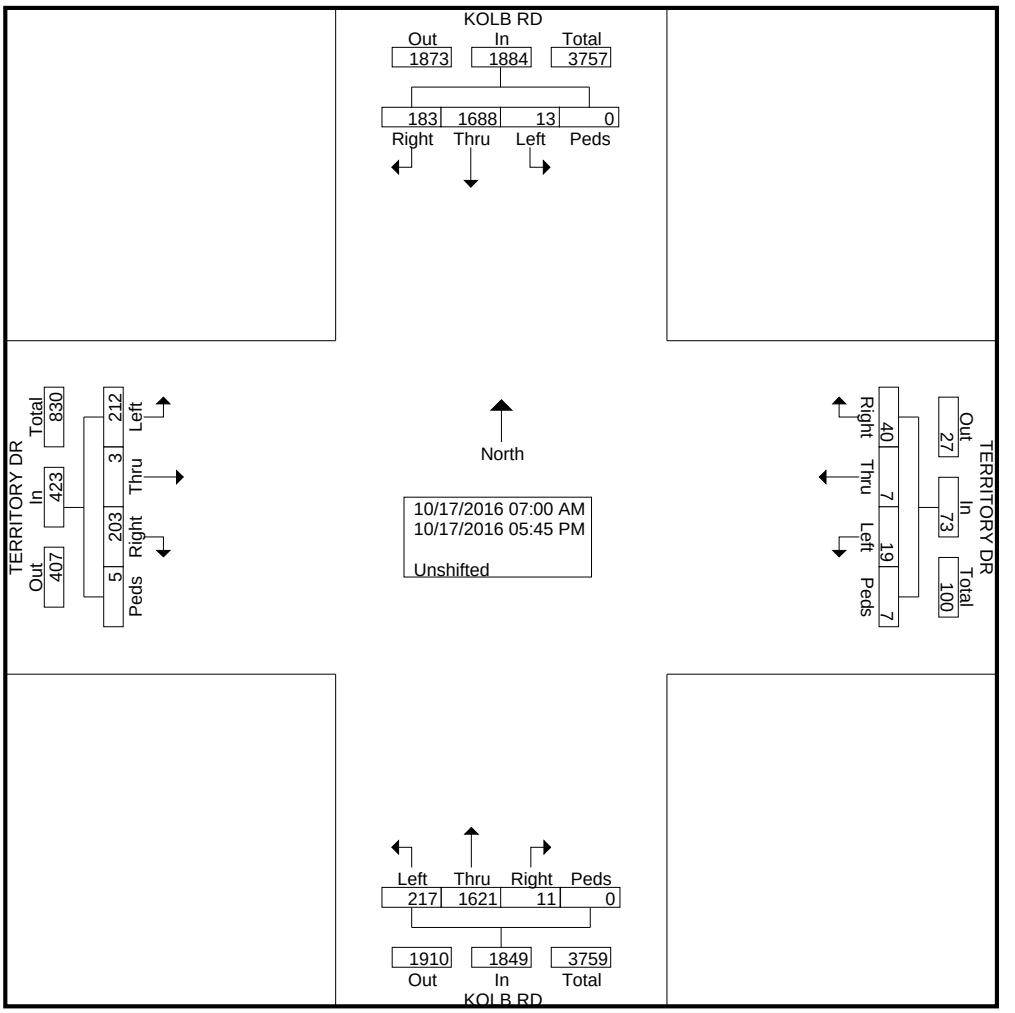


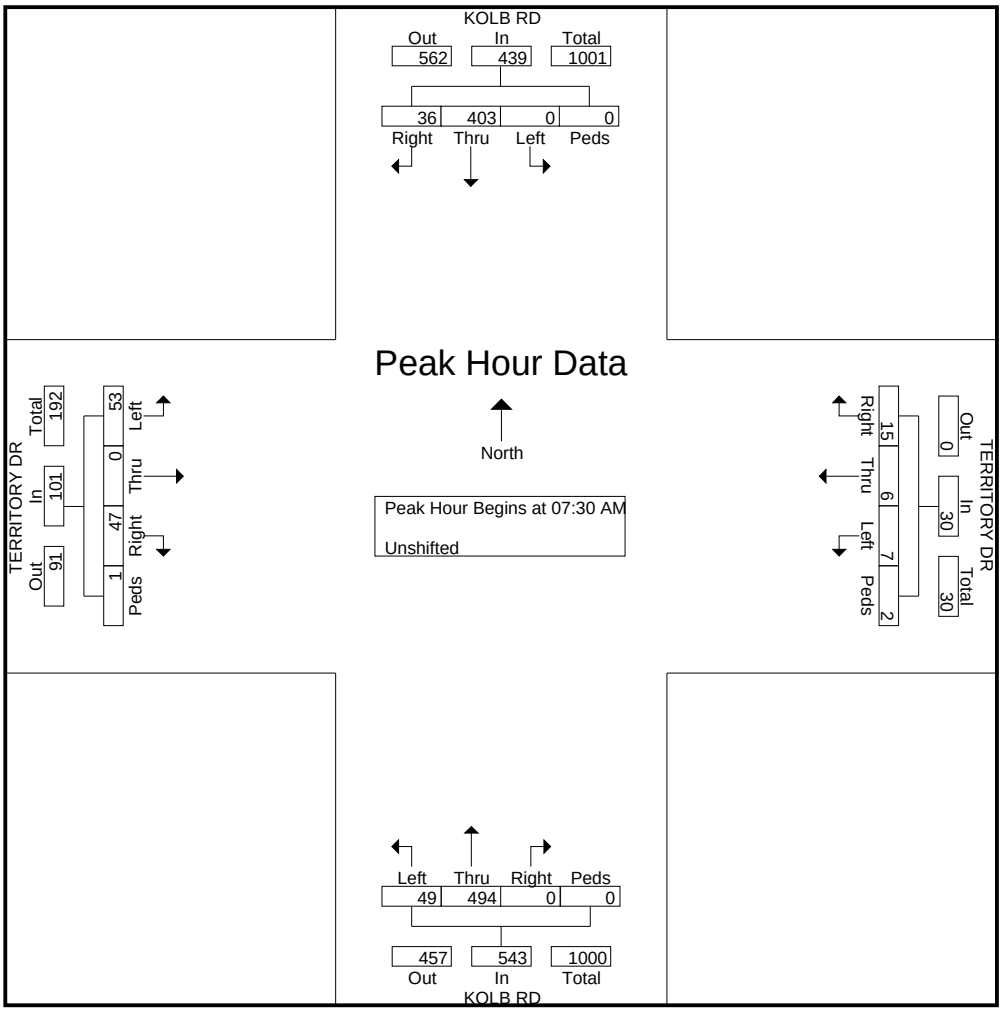
Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Territory Dr

File Name : KolbRd@TerritoryDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 3

	KOLB RD SB					TERRITORY DR WB					KOLB RD NB					TERRITORY DR EB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	92	5	0	97	1	**3**	2	**1**	7	12	131	0	0	143	13	0	13	0	26	273
07:45 AM	0	105	10	0	115	**3**	3	**6**	0	**12**	**16**	**160**	0	0	**176**	13	0	8	**1**	22	**325**
08:00 AM	0	**109**	10	0	**119**	2	0	5	1	8	9	106	0	0	115	**14**	0	**20**	0	**34**	276
08:15 AM	0	97	**11**	0	108	1	0	2	0	3	12	97	0	0	109	13	0	6	0	19	239
Total Volume	0	403	36	0	439	7	6	15	2	30	49	494	0	0	543	53	0	47	1	101	1113
% App. Total	0	91.8	8.2	0		23.3	20	50	6.7		9	91	0	0		52.5	0	46.5	1		
PHF	.000	.924	.818	.000	.922	.583	.500	.625	.500	.625	.766	.772	.000	.000	.771	.946	.000	.588	.250	.743	.856



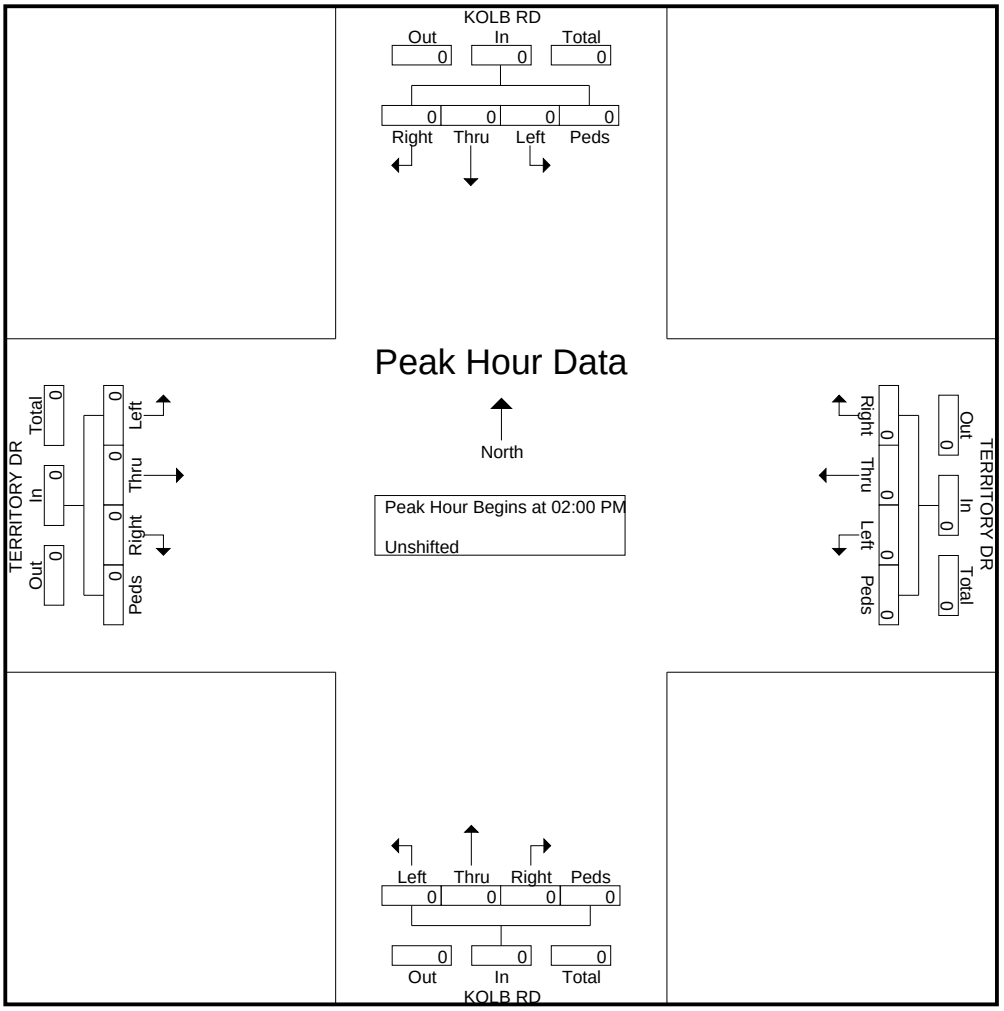
Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Territory Dr

File Name : KolbRd@TerritoryDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 4

	KOLB RD SB					TERRITORY DR WB					KOLB RD NB					TERRITORY DR EB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Territory Dr

File Name : KolbRd@TerritoryDr 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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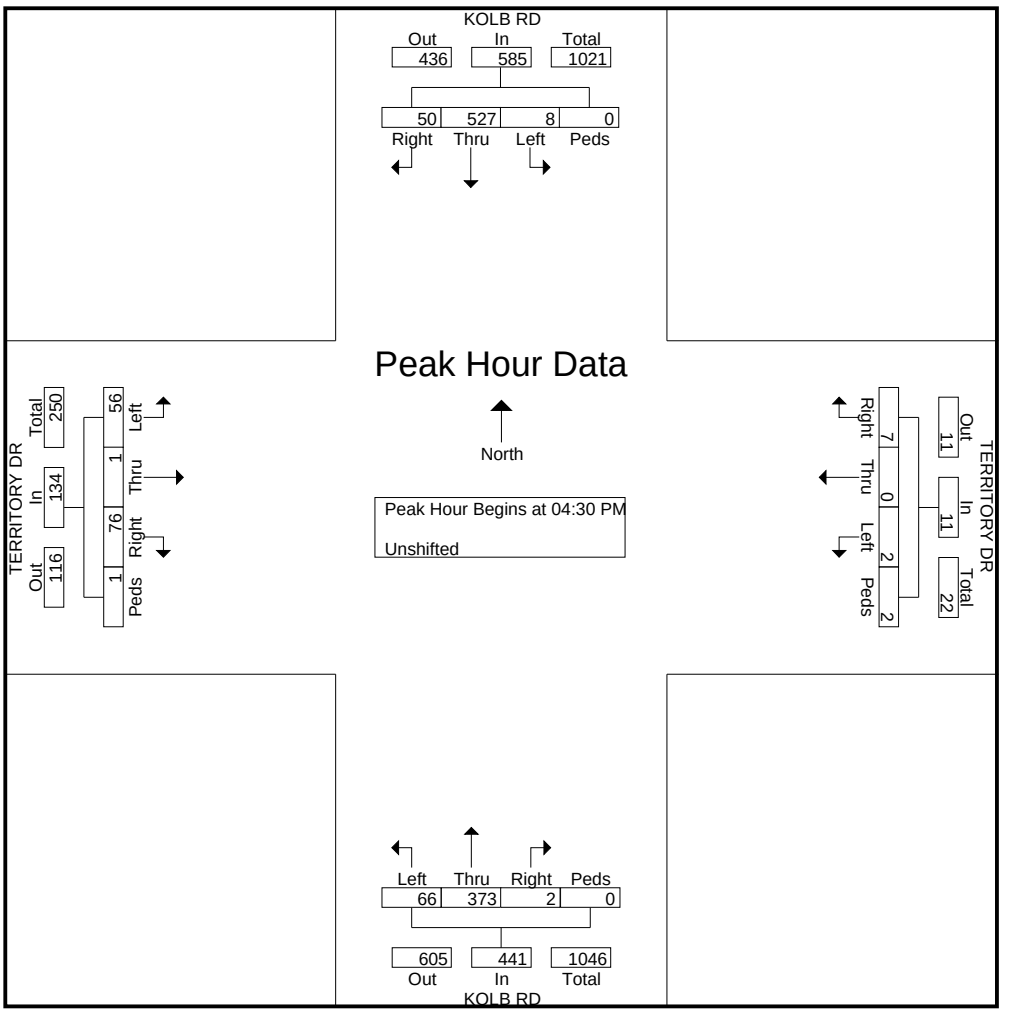
	KOLB RD SB					TERRITORY DR WB					KOLB RD NB					TERRITORY DR EB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	128	9	0	137	**1**	0	**3**	0	4	13	**99**	0	0	112	6	0	**22**	0	28	281
04:45 PM	3	127	**18**	0	148	0	0	3	**2**	**5**	19	95	0	0	**114**	**19**	0	21	0	**40**	**307**
05:00 PM	1	134	13	0	148	1	0	1	0	2	**20**	88	**1**	0	109	19	0	12	0	31	290
05:15 PM	**4**	**138**	10	0	**152**	0	0	0	0	0	14	91	1	0	106	12	**1**	21	**1**	35	293
Total Volume	8	527	50	0	585	2	0	7	2	11	66	373	2	0	441	56	1	76	1	134	1171
% App. Total	1.4	90.1	8.5	0		18.2	0	63.6	18.2		15	84.6	0.5	0		41.8	0.7	56.7	0.7		
PHF	.500	.955	.694	.000	.962	.500	.000	.583	.250	.550	.825	.942	.500	.000	.967	.737	.250	.864	.250	.838	.954



Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Snyder Rd

File Name : KolbRd@SnyderRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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Groups Printed- Unshifted

	KOLB RD SB					SNYDER RD WB					KOLB RD NB					SNYDER RD EB					
Start Time	Left	Thru	Right	Bicycles	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	7	59	0	0	66	53	1	18	0	72	0	66	4	0	70	2	1	4	0	7	215
07:15 AM	12	70	1	0	83	34	0	22	0	56	1	104	3	0	108	1	0	8	0	9	256
07:30 AM	12	91	1	0	104	35	0	40	0	75	0	133	10	0	143	1	0	4	0	5	327
07:45 AM	17	109	1	0	127	29	0	23	0	52	0	121	10	0	131	3	0	1	0	4	314
Total	48	329	3	0	380	151	1	103	0	255	1	424	27	0	452	7	1	17	0	25	1112
08:00 AM	15	110	0	0	125	35	0	25	0	60	2	65	8	0	75	1	0	6	0	7	267
08:15 AM	18	75	1	0	94	32	0	12	0	44	0	101	17	0	118	0	0	2	0	2	258
08:30 AM	16	93	1	0	110	26	0	18	0	44	1	78	14	0	93	2	0	1	0	3	250
08:45 AM	13	89	1	1	104	18	0	11	0	29	2	88	12	0	102	5	0	2	0	7	242
Total	62	367	3	1	433	111	0	66	0	177	5	332	51	0	388	8	0	11	0	19	1017
*** BREAK ***																					
04:00 PM	22	94	5	0	121	16	1	15	0	32	0	84	34	0	118	2	0	2	0	4	275
04:15 PM	28	113	2	0	143	17	0	17	0	34	4	93	16	0	113	2	1	5	0	8	298
04:30 PM	20	122	2	0	144	10	0	18	0	28	6	86	28	0	120	1	0	2	0	3	295
04:45 PM	27	105	6	0	138	14	0	17	0	31	3	98	22	0	123	2	0	3	0	5	297
Total	97	434	15	0	546	57	1	67	0	125	13	361	100	0	474	7	1	12	0	20	1165
05:00 PM	15	121	2	0	138	11	0	11	0	22	1	87	31	0	119	1	0	3	0	4	283
05:15 PM	31	128	2	0	161	17	0	11	0	28	2	101	30	0	133	1	0	0	0	1	323
05:30 PM	18	105	2	0	125	15	0	13	0	28	3	99	31	0	133	0	0	2	0	2	288
05:45 PM	23	85	5	0	113	13	0	14	0	27	4	99	32	0	135	0	0	2	0	2	277
Total	87	439	11	0	537	56	0	49	0	105	10	386	124	0	520	2	0	7	0	9	1171
Grand Total	294	1569	32	1	1896	375	2	285	0	662	29	1503	302	0	1834	24	2	47	0	73	4465
Apprch %	15.5	82.8	1.7	0.1		56.6	0.3	43.1	0		1.6	82	16.5	0		32.9	2.7	64.4	0		
Total %	6.6	35.1	0.7	0	42.5	8.4	0	6.4	0	14.8	0.6	33.7	6.8	0	41.1	0.5	0	1.1	0	1.6	

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Snyder Rd

File Name : KolbRd@SnyderRd 2016.10.17
Site Code : 00000000
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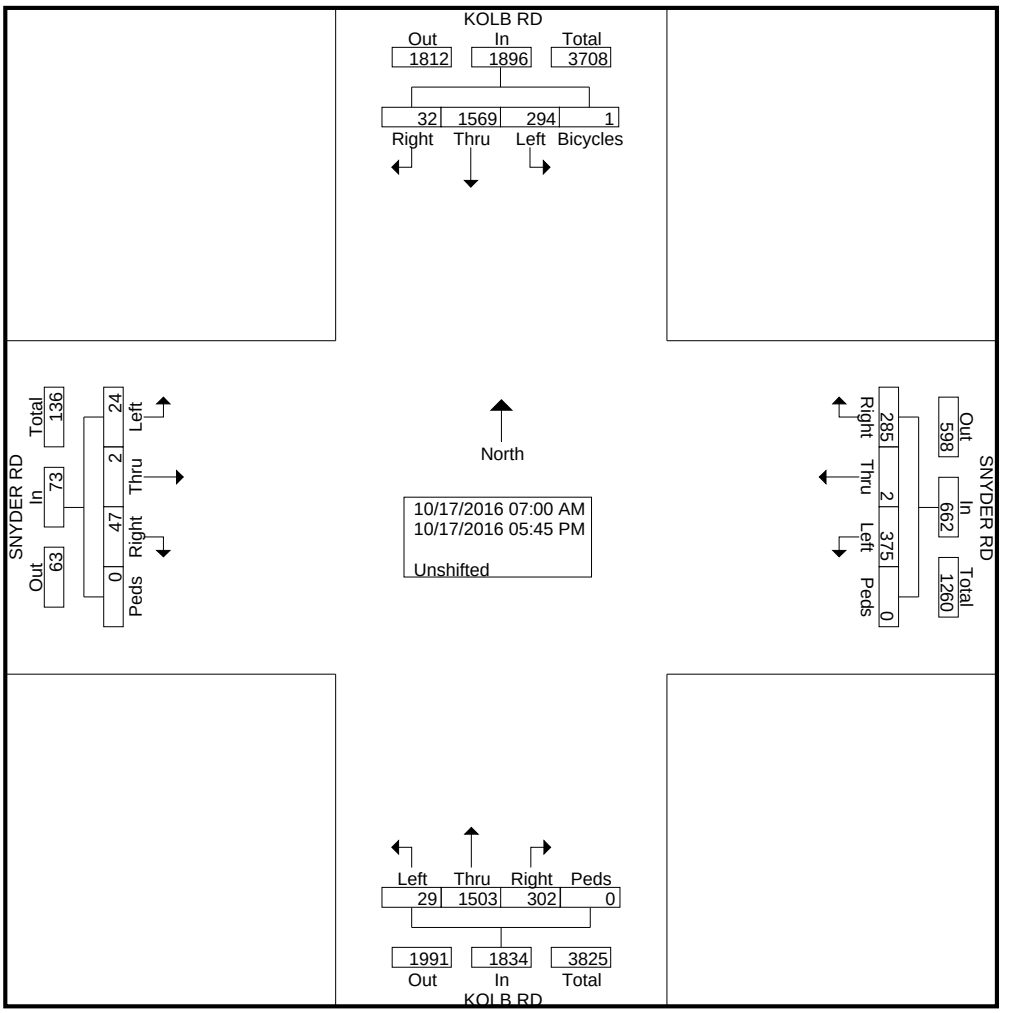

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Snyder Rd

File Name : KolbRd@SnyderRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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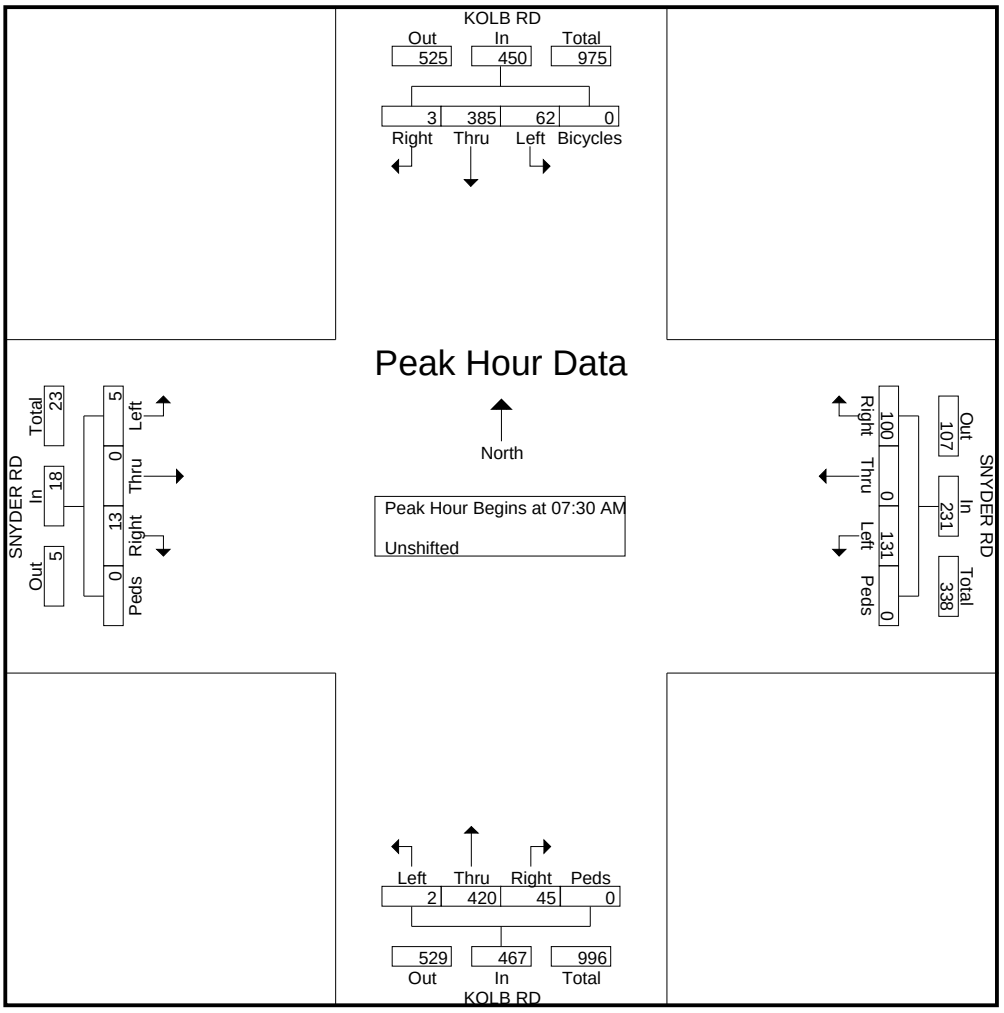
	KOLB RD SB					SNYDER RD WB					KOLB RD NB					SNYDER RD EB					
Start Time	Left	Thru	Right	Bicycles	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	12	91	**1**	0	104	**35**	0	**40**	0	**75**	0	**133**	10	0	**143**	1	0	4	0	5	**327**
07:45 AM	17	109	1	0	**127**	29	0	23	0	52	0	121	10	0	131	**3**	0	1	0	4	314
08:00 AM	15	**110**	0	0	125	35	0	25	0	60	**2**	65	8	0	75	1	0	**6**	0	**7**	267
08:15 AM	**18**	75	1	0	94	32	0	12	0	44	0	101	**17**	0	118	0	0	2	0	2	258
Total Volume	62	385	3	0	450	131	0	100	0	231	2	420	45	0	467	5	0	13	0	18	1166
% App. Total	13.8	85.6	0.7	0		56.7	0	43.3	0		0.4	89.9	9.6	0		27.8	0	72.2	0		
PHF	.861	.875	.750	.000	.886	.936	.000	.625	.000	.770	.250	.789	.662	.000	.816	.417	.000	.542	.000	.643	.891



Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Snyder Rd

File Name : KolbRd@SnyderRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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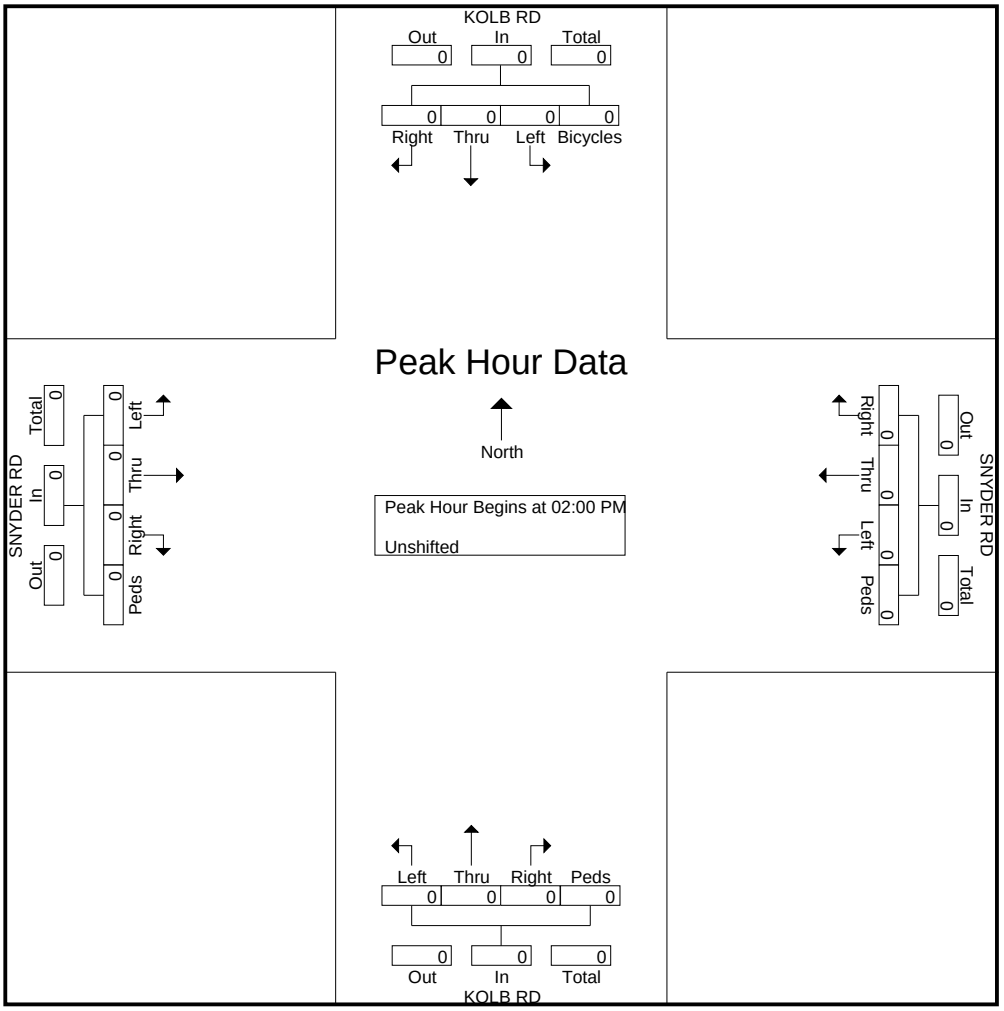
	KOLB RD SB					SNYDER RD WB					KOLB RD NB					SNYDER RD EB					
Start Time	Left	Thru	Right	Bicycles	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



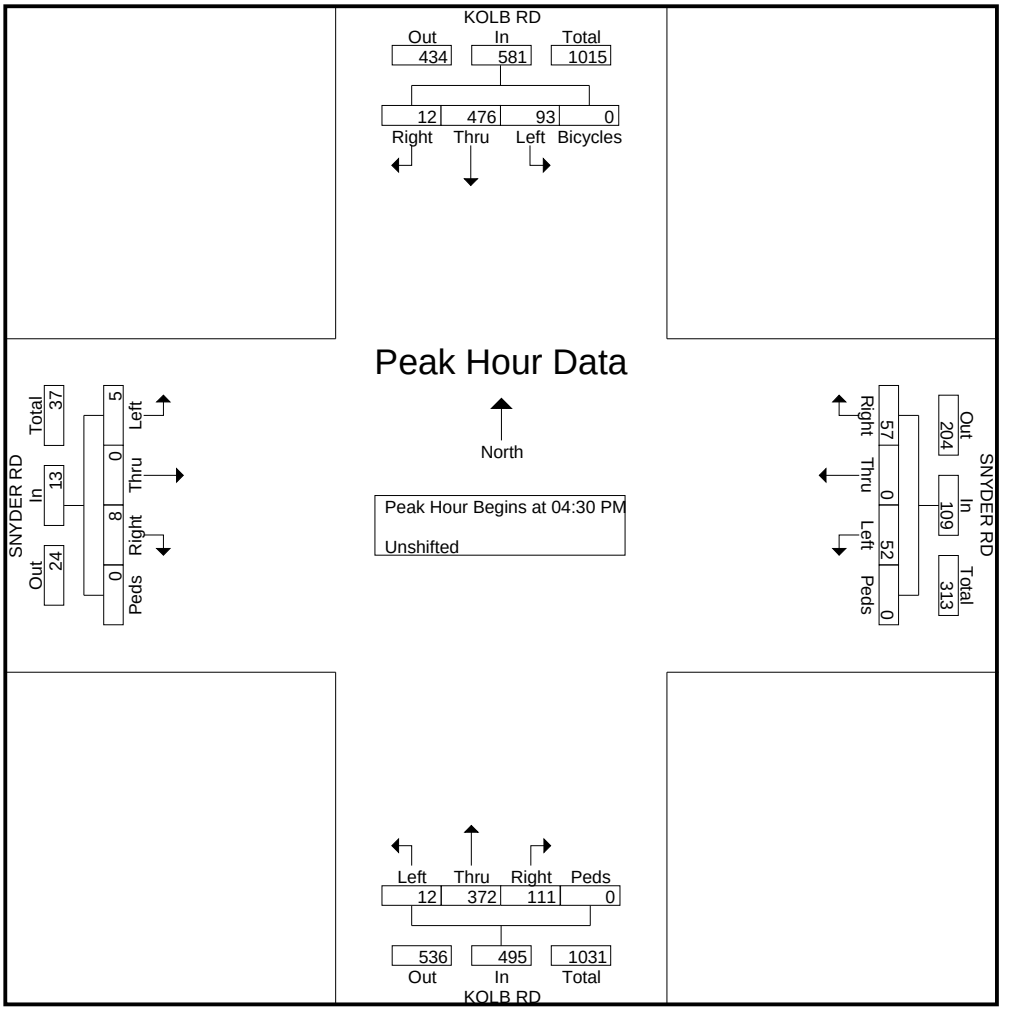
Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd @ Snyder Rd

File Name : KolbRd@SnyderRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 5

	KOLB RD SB					SNYDER RD WB					KOLB RD NB					SNYDER RD EB					
Start Time	Left	Thru	Right	Bicycles	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	20	122	2	0	144	10	0	**18**	0	28	**6**	86	28	0	120	1	0	2	0	3	295
04:45 PM	27	105	**6**	0	138	14	0	17	0	**31**	3	98	22	0	123	**2**	0	**3**	0	**5**	297
05:00 PM	15	121	2	0	138	11	0	11	0	22	1	87	**31**	0	119	1	0	3	0	4	283
05:15 PM	**31**	**128**	2	0	**161**	**17**	0	11	0	28	2	**101**	30	0	**133**	1	0	0	0	1	**323**
Total Volume	93	476	12	0	581	52	0	57	0	109	12	372	111	0	495	5	0	8	0	13	1198
% App. Total	16	81.9	2.1	0		47.7	0	52.3	0		2.4	75.2	22.4	0		38.5	0	61.5	0		
PHF	.750	.930	.500	.000	.902	.765	.000	.792	.000	.879	.500	.921	.895	.000	.930	.625	.000	.667	.000	.650	.927



Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd / Sabino Canyon Rd @ Sabino Canyon Rd

File Name : KolbRd_SabinoCanyonRd@SabinoCanyonRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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Groups Printed- Unshifted

	KOLB RD SB					SABINO CANYON RD WB					SABINO CANYON RD NB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	96	0	0	99	134	0	0	0	134	9	82	152	0	243	476
07:15 AM	0	124	0	0	124	224	0	2	0	226	0	104	137	0	241	591
07:30 AM	0	147	0	0	147	178	0	0	0	178	1	130	87	0	218	543
07:45 AM	1	180	0	0	181	180	0	2	0	182	0	141	178	0	319	682
Total	4	547	0	0	551	716	0	4	0	720	10	457	554	0	1021	2292
08:00 AM	1	183	0	0	184	166	0	1	0	167	1	91	114	1	207	558
08:15 AM	0	119	0	0	119	131	0	0	0	131	1	106	93	3	203	453
08:30 AM	1	109	0	0	110	116	0	1	0	117	1	95	71	0	167	394
08:45 AM	0	105	0	0	105	113	0	1	0	114	0	115	73	0	188	407
Total	2	516	0	0	518	526	0	3	0	529	3	407	351	4	765	1812
*** BREAK ***																
04:00 PM	1	119	0	0	120	89	2	0	0	91	9	108	125	0	242	453
04:15 PM	0	132	0	0	132	115	0	2	0	117	1	128	123	0	252	501
04:30 PM	1	157	0	0	158	104	3	1	0	108	0	110	126	0	236	502
04:45 PM	3	161	0	0	164	102	0	0	0	102	0	151	126	0	277	543
Total	5	569	0	0	574	410	5	3	0	418	10	497	500	0	1007	1999
05:00 PM	12	107	0	0	119	106	0	1	0	107	0	122	117	0	239	465
05:15 PM	1	158	0	0	159	114	0	0	0	114	1	135	143	0	279	552
05:30 PM	1	143	0	0	144	74	0	1	0	75	3	127	164	0	294	513
05:45 PM	0	123	0	0	123	62	0	2	0	64	0	155	157	0	312	499
Total	14	531	0	0	545	356	0	4	0	360	4	539	581	0	1124	2029
Grand Total	25	2163	0	0	2188	2008	5	14	0	2027	27	1900	1986	4	3917	8132
Apprch %	1.1	98.9	0	0		99.1	0.2	0.7	0		0.7	48.5	50.7	0.1		
Total %	0.3	26.6	0	0	26.9	24.7	0.1	0.2	0	24.9	0.3	23.4	24.4	0	48.2	

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

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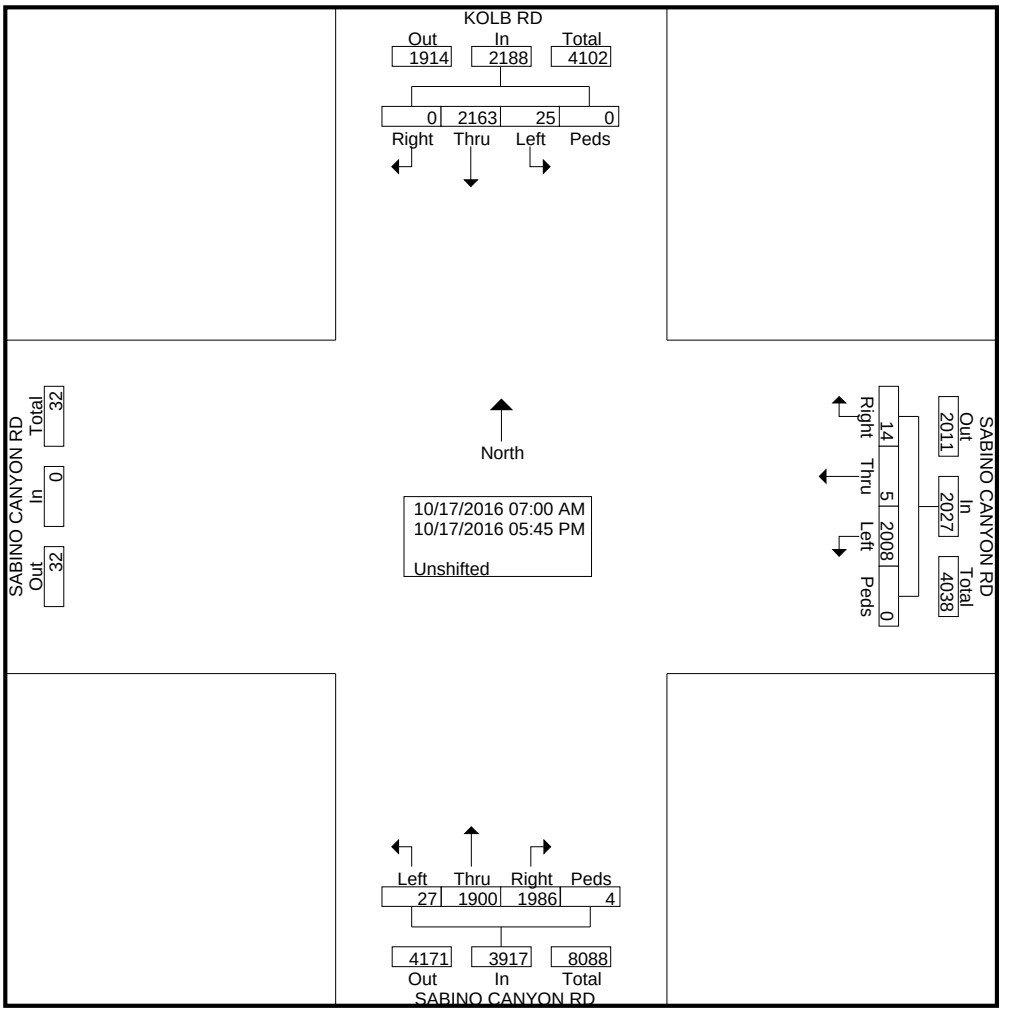

Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd / Sabino Canyon Rd @ Sabino Canyon Rd

File Name : KolbRd_SabinoCanyonRd@SabinoCanyonRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
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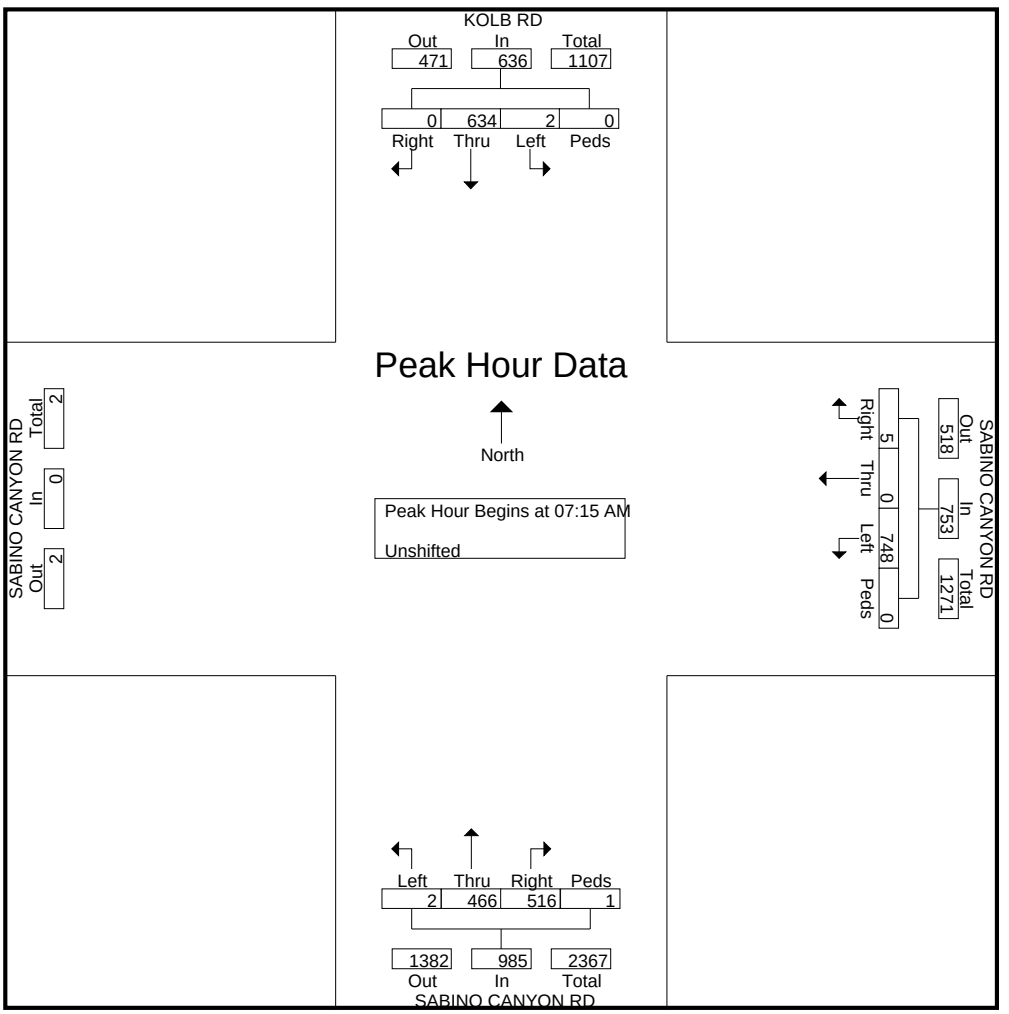
	KOLB RD SB					SABINO CANYON RD WB					SABINO CANYON RD NB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:15 AM																
07:15 AM	0	124	0	0	124	**224**	0	**2**	0	**226**	0	104	137	0	241	591
07:30 AM	0	147	0	0	147	178	0	0	0	178	**1**	130	87	0	218	543
07:45 AM	**1**	180	0	0	181	180	0	2	0	182	0	**141**	**178**	0	**319**	**682**
08:00 AM	1	**183**	0	0	**184**	166	0	1	0	167	1	91	114	**1**	207	558
Total Volume	2	634	0	0	636	748	0	5	0	753	2	466	516	1	985	2374
% App. Total	0.3	99.7	0	0		99.3	0	0.7	0		0.2	47.3	52.4	0.1		
PHF	.500	.866	.000	.000	.864	.835	.000	.625	.000	.833	.500	.826	.725	.250	.772	.870



Pima County Department of Transporation
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TURNING MOVEMENT COUNT

Oct. 17, 2016

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Site Code : 00000000
Start Date : 10/17/2016
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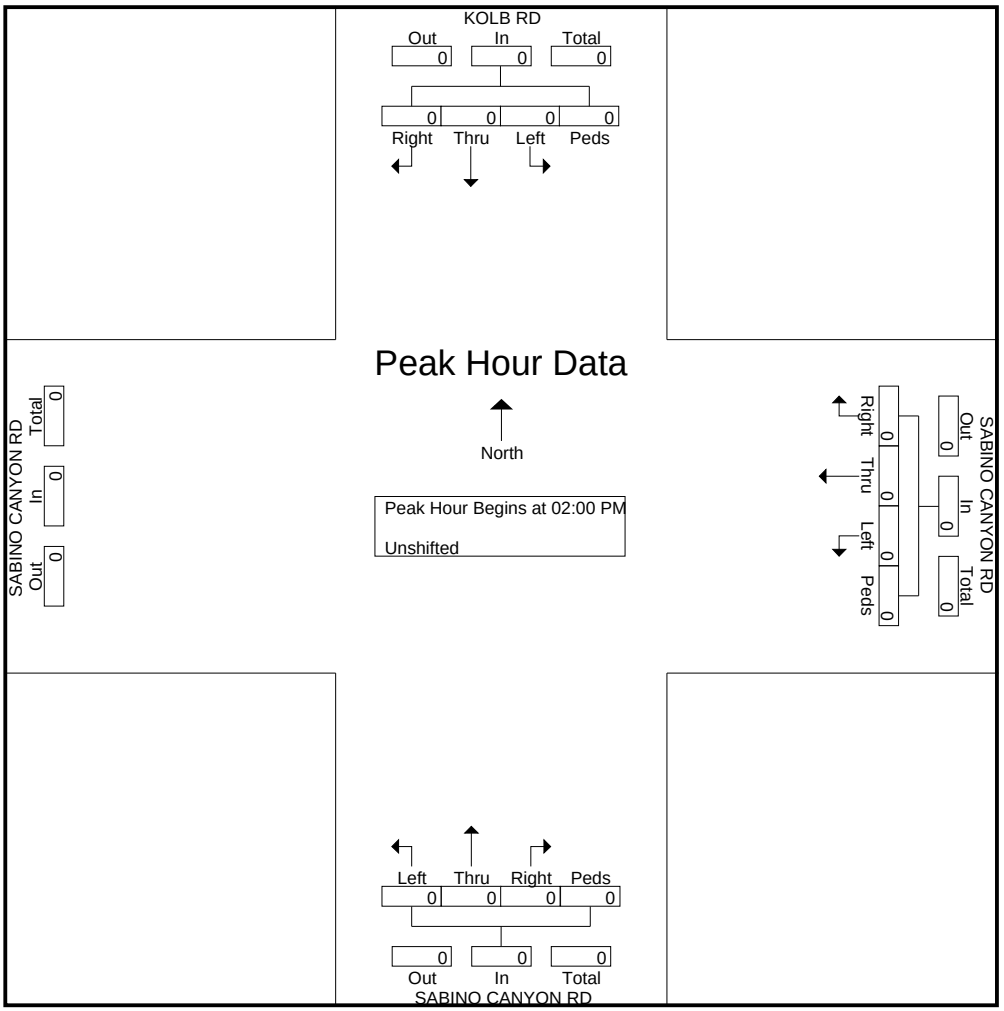
	KOLB RD SB					SABINO CANYON RD WB					SABINO CANYON RD NB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 02:00 PM																
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



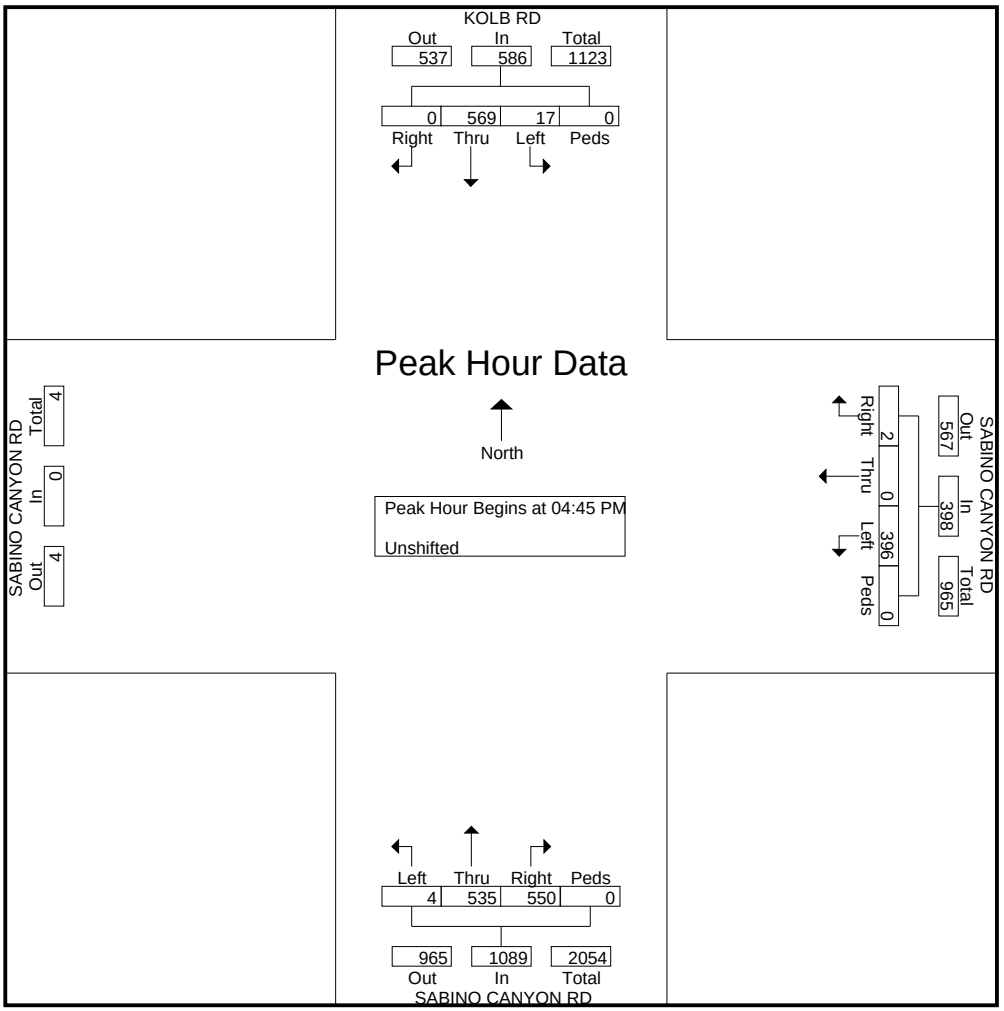
Pima County Department of Transporation
Traffic Engineering Division
TURNING MOVEMENT COUNT

Oct. 17, 2016

Kolb Rd / Sabino Canyon Rd @ Sabino Canyon Rd

File Name : KolbRd_SabinoCanyonRd@SabinoCanyonRd 2016.10.17
Site Code : 00000000
Start Date : 10/17/2016
Page No : 5

	KOLB RD SB					SABINO CANYON RD WB					SABINO CANYON RD NB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:45 PM																
04:45 PM	3	**161**	0	0	**164**	102	0	0	0	102	0	**151**	126	0	277	543
05:00 PM	**12**	107	0	0	119	106	0	**1**	0	107	0	122	117	0	239	465
05:15 PM	1	158	0	0	159	**114**	0	0	0	**114**	1	135	143	0	279	**552**
05:30 PM	1	143	0	0	144	74	0	1	0	75	**3**	127	**164**	0	**294**	513
Total Volume	17	569	0	0	586	396	0	2	0	398	4	535	550	0	1089	2073
% App. Total	2.9	97.1	0	0		99.5	0	0.5	0		0.4	49.1	50.5	0		
PHF	.354	.884	.000	.000	.893	.868	.000	.500	.000	.873	.333	.886	.838	.000	.926	.939



10. APPENDIX B – SIMTRAFFIC REPORTS

Existing
AM Peak Hour

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:10	7:10	7:10	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3934	4012	4029	3802	3957	3881	3951
Vehs Exited	3917	4033	4012	3798	3910	3865	3923
Starting Vehs	137	150	131	134	121	152	123
Ending Vehs	154	129	148	138	168	168	151
Denied Entry Before	3	3	2	2	2	3	0
Denied Entry After	2	0	2	1	0	3	3
Travel Distance (mi)	3896	3957	3974	3781	3893	3860	3872
Travel Time (hr)	150.3	154.9	158.9	145.3	149.7	150.0	149.4
Total Delay (hr)	35.8	38.2	41.6	33.7	34.7	35.9	35.1
Total Stops	3422	3605	3769	3307	3405	3397	3478
Fuel Used (gal)	131.6	133.7	134.7	127.3	130.9	130.0	131.0

Summary of All Intervals

Run Number	8	9	Exst AM	Avg
Start Time	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4005	4012	3949	3955
Vehs Exited	3990	3990	3959	3939
Starting Vehs	146	136	147	136
Ending Vehs	161	158	137	147
Denied Entry Before	1	0	1	0
Denied Entry After	3	2	1	0
Travel Distance (mi)	3968	4004	3966	3917
Travel Time (hr)	155.8	159.3	154.4	152.8
Total Delay (hr)	38.7	41.3	37.3	37.2
Total Stops	3571	3769	3462	3517
Fuel Used (gal)	134.5	136.0	135.1	132.5

Interval #0 Information Seeding

Start Time	7:10
End Time	7:15
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3934	4012	4029	3802	3957	3881	3951
Vehs Exited	3917	4033	4012	3798	3910	3865	3923
Starting Vehs	137	150	131	134	121	152	123
Ending Vehs	154	129	148	138	168	168	151
Denied Entry Before	3	3	2	2	2	3	0
Denied Entry After	2	0	2	1	0	3	3
Travel Distance (mi)	3896	3957	3974	3781	3893	3860	3872
Travel Time (hr)	150.3	154.9	158.9	145.3	149.7	150.0	149.4
Total Delay (hr)	35.8	38.2	41.6	33.7	34.7	35.9	35.1
Total Stops	3422	3605	3769	3307	3405	3397	3478
Fuel Used (gal)	131.6	133.7	134.7	127.3	130.9	130.0	131.0

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	Exst AM	Avg
Vehs Entered	4005	4012	3949	3955
Vehs Exited	3990	3990	3959	3939
Starting Vehs	146	136	147	136
Ending Vehs	161	158	137	147
Denied Entry Before	1	0	1	0
Denied Entry After	3	2	1	0
Travel Distance (mi)	3968	4004	3966	3917
Travel Time (hr)	155.8	159.3	154.4	152.8
Total Delay (hr)	38.7	41.3	37.3	37.2
Total Stops	3571	3769	3462	3517
Fuel Used (gal)	134.5	136.0	135.1	132.5

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	1.2	3.5	0.0	0.0	0.0	0.1	0.0	0.3	2.0	0.7	2.1
Total Delay (hr)	1.5	1.4	0.3	0.7	3.5	0.1	3.2	1.4	0.1	0.4	1.4	0.4
Total Del/Veh (s)	39.4	20.6	4.9	24.7	25.4	6.4	31.0	29.7	5.7	30.2	29.7	7.6
Stop Delay (hr)	1.3	0.9	0.2	0.6	2.6	0.1	2.8	1.1	0.1	0.4	1.1	0.3
Stop Del/Veh (s)	35.0	13.7	3.6	21.2	18.8	4.9	27.2	24.7	5.1	26.3	23.5	5.1
Total Stops	128	135	122	88	314	54	334	133	38	43	123	153
Stop/Veh	0.93	0.57	0.60	0.92	0.64	0.69	0.90	0.80	0.76	0.86	0.74	0.73
Travel Dist (mi)	30.5	53.2	45.7	4.9	25.6	4.1	23.3	10.6	3.2	19.1	64.6	80.8
Travel Time (hr)	2.5	2.6	1.8	0.9	4.0	0.3	4.1	1.7	0.2	1.0	3.3	3.1
Vehicles Entered	135	236	203	95	489	78	367	166	50	49	165	206
Vehicles Exited	136	235	202	95	488	78	364	166	50	49	164	206
Hourly Exit Rate	136	235	202	95	488	78	364	166	50	49	164	206
Input Volume	135	239	203	98	501	76	361	174	47	49	160	210
% of Volume	101	98	100	97	97	103	101	95	106	100	102	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.6
Denied Del/Veh (s)	1.0
Total Delay (hr)	14.3
Total Del/Veh (s)	22.8
Stop Delay (hr)	11.4
Stop Del/Veh (s)	18.3
Total Stops	1665
Stop/Veh	0.74
Travel Dist (mi)	365.6
Travel Time (hr)	25.5
Vehicles Entered	2239
Vehicles Exited	2233
Hourly Exit Rate	2233
Input Volume	2253
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	4.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.2	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.0	0.9
Total Del/Veh (s)	12.3	4.1	11.7	9.8	4.9	5.5	3.1	0.6	0.3	2.7
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Stop Del/Veh (s)	10.5	3.9	10.4	7.3	4.9	1.9	0.3	0.0	0.0	1.0
Total Stops	46	41	10	6	14	18	19	0	0	154
Stop/Veh	1.00	1.00	1.00	1.00	1.00	0.38	0.04	0.00	0.00	0.14
Travel Dist (mi)	7.1	6.4	0.3	0.2	0.4	7.9	82.8	38.1	3.2	146.3
Travel Time (hr)	0.4	0.3	0.0	0.0	0.0	0.3	2.8	1.3	0.1	5.5
Vehicles Entered	46	41	10	6	14	48	503	428	34	1130
Vehicles Exited	46	41	10	6	14	48	502	428	34	1129
Hourly Exit Rate	46	41	10	6	14	48	502	428	34	1129
Input Volume	49	43	10	6	14	47	493	426	35	1123
% of Volume	94	95	100	100	100	102	102	100	97	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.5	0.3	0.0	1.2	0.1	0.3	0.8	0.0	3.2
Total Del/Veh (s)	20.8	6.9	13.6	8.6	11.5	9.6	6.6	16.6	7.7	4.1	9.6
Stop Delay (hr)	0.0	0.0	0.4	0.2	0.0	0.5	0.0	0.2	0.4	0.0	1.8
Stop Del/Veh (s)	19.4	6.6	10.2	6.6	7.6	4.1	3.3	13.3	3.5	2.4	5.4
Total Stops	5	18	96	81	2	169	14	43	135	1	564
Stop/Veh	0.83	0.95	0.70	0.70	0.67	0.38	0.47	0.78	0.36	0.33	0.47
Travel Dist (mi)	0.6	2.2	15.8	13.1	0.5	88.7	6.1	7.8	53.6	0.4	188.7
Travel Time (hr)	0.1	0.1	1.1	0.8	0.0	3.8	0.3	0.5	2.4	0.0	9.0
Vehicles Entered	6	19	137	114	3	444	30	55	378	3	1189
Vehicles Exited	6	18	138	114	3	443	30	55	377	3	1187
Hourly Exit Rate	6	18	138	114	3	443	30	55	377	3	1187
Input Volume	6	19	133	110	3	437	31	56	380	3	1178
% of Volume	100	95	104	104	100	101	97	98	99	100	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0	2.9	0.5	2.3	0.0	0.0	0.6
Total Delay (hr)	3.8	0.0	0.0	1.5	0.8	0.0	1.7	7.9
Total Del/Veh (s)	17.6	3.3	19.9	11.4	5.7	24.9	9.8	11.8
Stop Delay (hr)	2.8	0.0	0.0	0.9	0.0	0.0	1.1	4.8
Stop Del/Veh (s)	13.1	2.1	18.0	6.5	0.0	22.2	6.0	7.1
Total Stops	566	3	2	230	0	2	288	1091
Stop/Veh	0.73	0.50	1.00	0.48	0.00	1.00	0.46	0.45
Travel Dist (mi)	92.8	0.7	0.6	115.0	107.5	0.2	61.3	378.1
Travel Time (hr)	6.8	0.0	0.0	4.9	4.3	0.0	3.5	19.5
Vehicles Entered	770	6	2	471	516	2	630	2397
Vehicles Exited	769	6	2	471	515	2	630	2395
Hourly Exit Rate	769	6	2	471	515	2	630	2395
Input Volume	748	5	2	466	516	2	634	2373
% of Volume	103	120	100	101	100	100	99	101
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.3
Denied Del/Veh (s)	1.2
Total Delay (hr)	35.9
Total Del/Veh (s)	31.6
Stop Delay (hr)	18.8
Stop Del/Veh (s)	16.6
Total Stops	3517
Stop/Veh	0.86
Travel Dist (mi)	3917.1
Travel Time (hr)	152.8
Vehicles Entered	3955
Vehicles Exited	3939
Hourly Exit Rate	3939
Input Volume	19994
% of Volume	20
Denied Entry Before	0
Denied Entry After	0

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	169	191	84	194	294	215	204	272	288	87	55	84
Average Queue (ft)	79	86	35	79	192	48	22	168	103	20	4	34
95th Queue (ft)	145	160	66	188	311	162	124	262	228	72	61	73
Link Distance (ft)		1183			215		841		288		441	
Upstream Blk Time (%)					9	0		0	1	0	0	
Queuing Penalty (veh)					0	0		0	5	0	0	
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	0	0		0	23			12	5			
Queuing Penalty (veh)	2	1		2	40			26	21			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	179	100
Average Queue (ft)	83	51
95th Queue (ft)	150	85
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	2	0
Queuing Penalty (veh)	6	0

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	TR
Maximum Queue (ft)	61	53	42	154	6
Average Queue (ft)	27	22	20	29	0
95th Queue (ft)	54	47	44	98	4
Link Distance (ft)		820	140	819	441
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	110				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	52	139	24	241	82	177
Average Queue (ft)	17	71	2	96	30	76
95th Queue (ft)	44	119	12	187	66	149
Link Distance (ft)	616	603		1015		706
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			125		140	
Storage Blk Time (%)				3	0	1
Queuing Penalty (veh)				0	0	0

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	R	L	T	T
Maximum Queue (ft)	193	197	30	27	175	149	4	28	146	158
Average Queue (ft)	125	121	3	2	100	30	0	2	73	85
95th Queue (ft)	175	175	18	15	155	99	4	14	125	138
Link Distance (ft)	581	581			1289	1289			506	506
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			150	225			630	150		
Storage Blk Time (%)		2			0				0	
Queuing Penalty (veh)		0			0				0	

Network Summary

Network wide Queuing Penalty: 104

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	7.6	28.8	14.3	17.9	7.7	28.8	16.0	17.9
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	78	0	28	2	52	0	91	2
Cycles @ Minimum (%)	9	2	9	24	22	2	0	24
Cycles Maxed Out (%)	9	39	24	46	22	39	2	46
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	19.2	9.4	17.4	19.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	18.8	7.5	11.8	18.8
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	13	94	35	13
Cycles @ Minimum (%)	9	5	31	9
Cycles Maxed Out (%)	64	0	5	64
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	20.8	16.9	20.8
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	10	7	10
Cycles Maxed Out (%)	32	15	32
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Existing
PM Peak Hour

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:25	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3277	3374	3229	3344	3310	3249	3366
Vehs Exited	3260	3346	3202	3325	3278	3248	3349
Starting Vehs	117	105	115	116	120	123	123
Ending Vehs	134	133	142	135	152	124	140
Denied Entry Before	1	1	2	0	1	2	1
Denied Entry After	1	2	0	2	0	1	1
Travel Distance (mi)	3664	3703	3616	3682	3654	3649	3821
Travel Time (hr)	135.1	136.3	132.7	135.6	134.3	135.6	141.1
Total Delay (hr)	26.2	26.7	25.7	26.6	26.3	26.9	27.8
Total Stops	2691	2649	2581	2700	2675	2686	2814
Fuel Used (gal)	119.8	120.8	119.1	120.5	119.9	119.5	124.7

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3308	3221	3246	3293
Vehs Exited	3283	3207	3232	3273
Starting Vehs	104	126	116	114
Ending Vehs	129	140	130	133
Denied Entry Before	3	1	2	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	3634	3526	3518	3647
Travel Time (hr)	134.1	130.0	129.0	134.4
Total Delay (hr)	26.0	25.5	24.5	26.2
Total Stops	2647	2596	2534	2655
Fuel Used (gal)	119.1	115.8	115.9	119.5

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3277	3374	3229	3344	3310	3249	3366
Vehs Exited	3260	3346	3202	3325	3278	3248	3349
Starting Vehs	117	105	115	116	120	123	123
Ending Vehs	134	133	142	135	152	124	140
Denied Entry Before	1	1	2	0	1	2	1
Denied Entry After	1	2	0	2	0	1	1
Travel Distance (mi)	3664	3703	3616	3682	3654	3649	3821
Travel Time (hr)	135.1	136.3	132.7	135.6	134.3	135.6	141.1
Total Delay (hr)	26.2	26.7	25.7	26.6	26.3	26.9	27.8
Total Stops	2691	2649	2581	2700	2675	2686	2814
Fuel Used (gal)	119.8	120.8	119.1	120.5	119.9	119.5	124.7

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3308	3221	3246	3293
Vehs Exited	3283	3207	3232	3273
Starting Vehs	104	126	116	114
Ending Vehs	129	140	130	133
Denied Entry Before	3	1	2	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	3634	3526	3518	3647
Travel Time (hr)	134.1	130.0	129.0	134.4
Total Delay (hr)	26.0	25.5	24.5	26.2
Total Stops	2647	2596	2534	2655
Fuel Used (gal)	119.1	115.8	115.9	119.5

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	1.9	3.4	0.0	0.0	0.0	0.0	0.0	0.2	2.0	0.5	2.0
Total Delay (hr)	1.0	1.4	0.6	0.5	1.1	0.0	1.6	0.6	0.1	0.3	1.0	0.1
Total Del/Veh (s)	21.8	17.0	6.2	22.7	14.1	2.9	22.7	17.7	5.1	22.0	21.3	5.0
Stop Delay (hr)	0.8	0.8	0.4	0.5	0.7	0.0	1.4	0.5	0.1	0.3	0.7	0.1
Stop Del/Veh (s)	17.4	9.9	3.8	20.6	9.7	2.6	19.8	14.1	4.8	18.5	15.9	3.3
Total Stops	135	156	201	74	141	11	222	74	61	42	113	65
Stop/Veh	0.82	0.53	0.57	0.89	0.52	0.55	0.86	0.64	0.70	0.81	0.68	0.68
Travel Dist (mi)	36.7	65.8	78.5	4.3	14.1	1.0	16.3	7.3	5.6	19.8	63.5	36.7
Travel Time (hr)	2.2	3.0	3.2	0.7	1.4	0.1	2.3	0.8	0.4	0.9	2.8	1.3
Vehicles Entered	164	292	348	83	270	20	256	115	86	51	162	94
Vehicles Exited	162	290	347	82	269	20	256	116	86	51	162	94
Hourly Exit Rate	162	290	347	82	269	20	256	116	86	51	162	94
Input Volume	160	285	364	85	268	20	251	119	89	51	167	95
% of Volume	101	102	95	96	100	100	102	97	97	100	97	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.4
Total Delay (hr)	8.3
Total Del/Veh (s)	15.4
Stop Delay (hr)	6.3
Stop Del/Veh (s)	11.6
Total Stops	1295
Stop/Veh	0.66
Travel Dist (mi)	349.5
Travel Time (hr)	19.1
Vehicles Entered	1941
Vehicles Exited	1935
Hourly Exit Rate	1935
Input Volume	1954
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	4.0	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.3	0.0	0.1	0.0	0.0	0.1	0.4	0.0	0.0	0.1	0.0	1.0
Total Del/Veh (s)	18.5	14.8	5.6	17.7	3.8	7.3	3.7	1.8	3.1	0.7	0.3	3.2
Stop Delay (hr)	0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.5
Stop Del/Veh (s)	16.4	9.4	5.0	15.9	3.9	3.8	0.6	0.3	1.2	0.0	0.0	1.5
Total Stops	52	1	75	1	7	40	30	0	2	0	1	209
Stop/Veh	1.00	1.00	1.00	1.00	1.00	0.61	0.08	0.00	0.33	0.00	0.02	0.18
Travel Dist (mi)	8.0	0.2	11.6	0.0	0.2	10.8	62.2	0.3	0.6	49.6	4.5	148.1
Travel Time (hr)	0.6	0.0	0.5	0.0	0.0	0.5	2.2	0.0	0.0	1.8	0.2	5.8
Vehicles Entered	52	1	75	1	7	66	378	2	6	538	48	1174
Vehicles Exited	51	1	74	1	7	66	378	2	6	538	48	1172
Hourly Exit Rate	51	1	74	1	7	66	378	2	6	538	48	1172
Input Volume	56	1	76	2	7	66	373	2	8	558	50	1199
% of Volume	91	100	97	50	100	100	101	100	75	96	96	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.8	0.1	0.3	0.6	0.0	2.4
Total Del/Veh (s)	20.9	5.3	17.6	7.8	9.8	6.9	4.6	12.6	4.8	2.7	6.9
Stop Delay (hr)	0.0	0.0	0.2	0.1	0.0	0.2	0.0	0.2	0.2	0.0	1.1
Stop Del/Veh (s)	19.4	5.0	15.1	6.8	5.7	1.8	1.5	9.2	1.5	1.1	3.2
Total Stops	4	7	44	51	6	85	32	62	87	3	381
Stop/Veh	1.00	0.88	0.83	0.85	0.50	0.21	0.28	0.67	0.18	0.25	0.31
Travel Dist (mi)	0.5	0.9	6.1	6.8	2.5	78.9	23.0	13.1	67.4	1.7	200.9
Travel Time (hr)	0.0	0.1	0.5	0.4	0.1	3.1	0.9	0.8	2.6	0.1	8.5
Vehicles Entered	4	8	53	60	12	402	114	90	479	12	1234
Vehicles Exited	4	7	53	59	12	402	114	91	479	11	1232
Hourly Exit Rate	4	7	53	59	12	402	114	91	479	11	1232
Input Volume	5	8	52	57	12	397	111	93	500	12	1247
% of Volume	80	88	102	104	100	101	103	98	96	92	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0		0.5	2.3	0.3	0.0	0.7
Total Delay (hr)	1.9	0.0	0.0	1.3	0.8	0.1	1.2	5.2
Total Del/Veh (s)	16.0	4.7		9.0	5.5	20.2	7.5	9.2
Stop Delay (hr)	1.5	0.0	0.0	0.6	0.0	0.1	0.6	2.9
Stop Del/Veh (s)	13.0	4.2		4.3	0.0	17.7	4.2	5.1
Total Stops	313	2	0	219	1	13	221	769
Stop/Veh	0.75	1.00		0.41	0.00	0.87	0.39	0.38
Travel Dist (mi)	50.0	0.3	0.1	129.1	107.3	1.5	56.1	344.4
Travel Time (hr)	3.5	0.0	0.0	5.1	4.3	0.1	2.8	15.8
Vehicles Entered	414	2	0	528	514	15	560	2033
Vehicles Exited	414	2	0	528	514	15	561	2034
Hourly Exit Rate	414	2	0	528	514	15	561	2034
Input Volume	426	2	1	518	512	17	583	2059
% of Volume	97	100	0	102	100	88	96	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.3
Denied Del/Veh (s)	1.4
Total Delay (hr)	24.9
Total Del/Veh (s)	26.3
Stop Delay (hr)	11.0
Stop Del/Veh (s)	11.6
Total Stops	2655
Stop/Veh	0.78
Travel Dist (mi)	3646.8
Travel Time (hr)	134.4
Vehicles Entered	3293
Vehicles Exited	3273
Hourly Exit Rate	3273
Input Volume	18783
% of Volume	17
Denied Entry Before	0
Denied Entry After	0

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	147	185	113	110	185	37	196	120	71	82	150	67
Average Queue (ft)	65	86	52	43	79	6	106	45	25	31	70	30
95th Queue (ft)	119	156	94	86	147	24	171	95	54	67	124	56
Link Distance (ft)		1183			215			288			2064	
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	185		825	120		150	180		115	210		130
Storage Blk Time (%)	0	0		0	2		1	0	0		1	
Queuing Penalty (veh)	0	1		0	2		2	1	0		1	

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	L	TR
Maximum Queue (ft)	77	79	31	149	22	17
Average Queue (ft)	31	33	7	43	1	1
95th Queue (ft)	62	61	28	109	11	8
Link Distance (ft)		820	140	819		441
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	110				50	
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	36	97	32	177	112	155
Average Queue (ft)	9	43	5	68	39	59
95th Queue (ft)	32	77	24	145	82	129
Link Distance (ft)	616	603		1015		706
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			125		140	
Storage Blk Time (%)				1	0	0
Queuing Penalty (veh)				0	1	0

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	136	119	23	9	167	147	46	119	148
Average Queue (ft)	81	64	2	0	91	20	13	58	72
95th Queue (ft)	120	109	12	6	140	80	39	106	127
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		0			0			0	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 10

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	8.2	22.6	10.3	17.3	7.6	22.6	10.4	17.3
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	86	0	59	8	78	0	95	8
Cycles @ Minimum (%)	8	10	15	35	10	10	3	35
Cycles Maxed Out (%)	3	10	2	27	8	10	0	27
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	27.2	9.4	9.4	27.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	24.3	7.9	10.0	24.3
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	7	95	59	7
Cycles @ Minimum (%)	8	4	40	8
Cycles Maxed Out (%)	45	0	41	45
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	21.1	12.2	21.1
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	10	46	10
Cycles Maxed Out (%)	37	1	37
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 Without Project
AM Peak Hour

Summary of All Intervals

Run Number	1	11	13	14	15	3	5
Start Time	7:10	7:10	7:10	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4340	4476	4433	4386	4509	4349	4381
Vehs Exited	4351	4463	4406	4352	4513	4338	4333
Starting Vehs	179	149	155	171	181	159	154
Ending Vehs	168	162	182	205	177	170	202
Denied Entry Before	4	2	1	1	0	2	0
Denied Entry After	1	1	2	0	1	0	2
Travel Distance (mi)	4405	4393	4443	4222	4480	4301	4297
Travel Time (hr)	176.4	180.7	181.5	170.6	190.6	180.8	182.5
Total Delay (hr)	46.5	51.3	50.5	46.0	58.3	53.9	55.6
Total Stops	4126	4275	4330	4017	4729	4478	4543
Fuel Used (gal)	151.3	150.9	152.6	144.9	156.0	150.5	149.4

Summary of All Intervals

Run Number	6	8	9	Avg
Start Time	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4474	4462	4411	4419
Vehs Exited	4426	4468	4397	4405
Starting Vehs	151	194	152	160
Ending Vehs	199	188	166	182
Denied Entry Before	1	2	2	1
Denied Entry After	0	0	2	0
Travel Distance (mi)	4447	4359	4355	4370
Travel Time (hr)	183.6	184.2	178.6	181.0
Total Delay (hr)	52.7	55.5	49.9	52.0
Total Stops	4455	4569	4282	4380
Fuel Used (gal)	153.2	150.7	150.4	151.0

Interval #0 Information Seeding

Start Time	7:10
End Time	7:15
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	11	13	14	15	3	5
Vehs Entered	4340	4476	4433	4386	4509	4349	4381
Vehs Exited	4351	4463	4406	4352	4513	4338	4333
Starting Vehs	179	149	155	171	181	159	154
Ending Vehs	168	162	182	205	177	170	202
Denied Entry Before	4	2	1	1	0	2	0
Denied Entry After	1	1	2	0	1	0	2
Travel Distance (mi)	4405	4393	4443	4222	4480	4301	4297
Travel Time (hr)	176.4	180.7	181.5	170.6	190.6	180.8	182.5
Total Delay (hr)	46.5	51.3	50.5	46.0	58.3	53.9	55.6
Total Stops	4126	4275	4330	4017	4729	4478	4543
Fuel Used (gal)	151.3	150.9	152.6	144.9	156.0	150.5	149.4

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	6	8	9	Avg
Vehs Entered	4474	4462	4411	4419
Vehs Exited	4426	4468	4397	4405
Starting Vehs	151	194	152	160
Ending Vehs	199	188	166	182
Denied Entry Before	1	2	2	1
Denied Entry After	0	0	2	0
Travel Distance (mi)	4447	4359	4355	4370
Travel Time (hr)	183.6	184.2	178.6	181.0
Total Delay (hr)	52.7	55.5	49.9	52.0
Total Stops	4455	4569	4282	4380
Fuel Used (gal)	153.2	150.7	150.4	151.0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.5	1.4	3.4	0.0	0.0	0.0	0.2	0.1	0.4	2.1	0.8	2.0
Total Delay (hr)	1.9	1.8	0.4	1.1	5.8	0.3	5.0	2.2	0.1	0.5	1.7	0.6
Total Del/Veh (s)	45.7	24.1	5.7	33.8	36.9	12.5	44.4	40.9	7.3	36.2	35.9	8.8
Stop Delay (hr)	1.7	1.2	0.3	0.9	4.5	0.2	4.5	1.9	0.1	0.5	1.4	0.4
Stop Del/Veh (s)	40.6	16.6	4.1	29.3	29.1	10.1	40.2	35.0	6.1	32.1	29.0	6.1
Total Stops	140	161	144	116	394	63	406	179	43	48	137	178
Stop/Veh	0.95	0.60	0.62	1.01	0.70	0.78	1.00	0.93	0.83	0.91	0.78	0.76
Travel Dist (mi)	32.6	60.3	52.4	5.9	29.2	4.3	25.3	12.2	3.4	20.4	67.6	90.4
Travel Time (hr)	2.9	3.3	2.1	1.3	6.4	0.5	6.0	2.5	0.3	1.2	3.7	3.6
Vehicles Entered	144	267	232	114	558	81	402	192	52	52	173	231
Vehicles Exited	146	267	232	114	554	81	396	191	52	52	173	232
Hourly Exit Rate	146	267	232	114	554	81	396	191	52	52	173	232
Input Volume	152	269	229	110	565	86	407	196	53	55	180	237
% of Volume	96	99	101	104	98	94	97	97	98	95	96	98
Denied Entry Before	0	0	1	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	1.0
Total Delay (hr)	21.3
Total Del/Veh (s)	30.4
Stop Delay (hr)	17.7
Stop Del/Veh (s)	25.2
Total Stops	2009
Stop/Veh	0.80
Travel Dist (mi)	404.1
Travel Time (hr)	33.8
Vehicles Entered	2498
Vehicles Exited	2490
Hourly Exit Rate	2490
Input Volume	2539
% of Volume	98
Denied Entry Before	1
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	4.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.2	0.1	0.1	0.0	0.0	0.1	0.5	0.1	0.0	1.1
Total Del/Veh (s)	15.9	4.5	15.0	10.9	7.1	6.4	3.3	0.7	0.3	3.1
Stop Delay (hr)	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Stop Del/Veh (s)	14.0	4.1	13.7	8.4	7.1	2.8	0.3	0.0	0.0	1.3
Total Stops	51	48	12	7	15	26	27	0	1	187
Stop/Veh	0.98	0.98	1.00	0.88	1.00	0.52	0.05	0.00	0.03	0.15
Travel Dist (mi)	8.0	7.6	0.3	0.2	0.4	8.3	90.9	42.9	3.6	162.3
Travel Time (hr)	0.5	0.3	0.1	0.0	0.1	0.4	3.1	1.5	0.2	6.2
Vehicles Entered	51	49	12	7	15	50	552	480	39	1255
Vehicles Exited	51	48	12	8	15	50	550	479	39	1252
Hourly Exit Rate	51	48	12	8	15	50	550	479	39	1252
Input Volume	55	48	11	7	16	53	555	480	39	1264
% of Volume	93	100	109	114	94	94	99	100	100	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.6	0.3	0.0	1.4	0.1	0.4	1.1	0.0	3.9
Total Del/Veh (s)	23.6	7.2	14.3	9.3	12.6	10.2	7.3	18.8	8.9	6.4	10.6
Stop Delay (hr)	0.0	0.0	0.5	0.2	0.0	0.6	0.0	0.3	0.5	0.0	2.2
Stop Del/Veh (s)	22.1	6.8	10.7	7.1	8.2	4.3	3.8	15.5	4.2	4.2	6.0
Total Stops	7	21	108	89	2	194	16	56	172	2	667
Stop/Veh	0.88	0.95	0.71	0.72	0.67	0.39	0.46	0.84	0.40	0.67	0.50
Travel Dist (mi)	0.9	2.6	17.3	14.0	0.7	97.6	7.0	9.4	60.9	0.4	210.7
Travel Time (hr)	0.1	0.2	1.2	0.9	0.0	4.2	0.3	0.7	2.8	0.0	10.4
Vehicles Entered	8	22	150	122	3	488	35	66	430	3	1327
Vehicles Exited	8	22	150	122	3	490	34	66	431	3	1329
Hourly Exit Rate	8	22	150	122	3	490	34	66	431	3	1329
Input Volume	7	21	150	124	3	493	35	63	428	3	1327
% of Volume	114	105	100	98	100	99	97	105	101	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.5
Denied Del/Veh (s)	0.0	0.0	1.5	0.6	2.2	1.3	0.0	0.6
Total Delay (hr)	4.2	0.0	0.0	1.9	1.0	0.0	2.3	9.4
Total Del/Veh (s)	17.9	4.5	18.0	12.8	6.1	46.5	11.3	12.5
Stop Delay (hr)	3.0	0.0	0.0	1.1	0.0	0.0	1.4	5.6
Stop Del/Veh (s)	12.9	2.9	16.2	7.5	0.0	42.4	6.9	7.4
Total Stops	602	4	2	271	0	1	363	1243
Stop/Veh	0.71	0.67	1.00	0.51	0.00	1.00	0.50	0.46
Travel Dist (mi)	101.7	0.7	0.4	127.4	122.0	0.1	69.8	422.1
Travel Time (hr)	7.5	0.0	0.0	5.6	4.9	0.0	4.3	22.4
Vehicles Entered	844	6	2	521	584	1	720	2678
Vehicles Exited	840	6	2	522	586	1	720	2677
Hourly Exit Rate	840	6	2	522	586	1	720	2677
Input Volume	843	6	2	525	582	2	715	2675
% of Volume	100	100	100	99	101	50	101	100
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.6
Denied Del/Veh (s)	1.3
Total Delay (hr)	50.5
Total Del/Veh (s)	39.6
Stop Delay (hr)	28.6
Stop Del/Veh (s)	22.5
Total Stops	4380
Stop/Veh	0.95
Travel Dist (mi)	4370.2
Travel Time (hr)	181.0
Vehicles Entered	4419
Vehicles Exited	4405
Hourly Exit Rate	4405
Input Volume	22529
% of Volume	20
Denied Entry Before	1
Denied Entry After	0

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	214	211	95	195	306	215	529	280	359	176	138	93
Average Queue (ft)	95	105	41	113	254	82	150	209	176	27	16	38
95th Queue (ft)	171	184	76	233	345	229	469	302	345	101	115	78
Link Distance (ft)		1183			215		841		288		441	
Upstream Blk Time (%)					28	0	0	2	5	0	0	
Queuing Penalty (veh)					0	0	0	0	28	0	0	
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	1	1		0	43	0		28	12			
Queuing Penalty (veh)	3	3		3	83	0		70	57			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	180	117
Average Queue (ft)	97	57
95th Queue (ft)	165	97
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	4	0
Queuing Penalty (veh)	12	0

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	TR
Maximum Queue (ft)	68	60	54	157	12
Average Queue (ft)	30	25	22	36	1
95th Queue (ft)	59	49	47	106	7
Link Distance (ft)		820	140	819	441
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	110				
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	50	150	25	226	75	190
Average Queue (ft)	19	78	2	108	36	92
95th Queue (ft)	46	126	13	192	69	165
Link Distance (ft)	616	603		1015		706
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			125		140	
Storage Blk Time (%)				4		1
Queuing Penalty (veh)				0		1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	204	202	31	29	187	169	25	176	190
Average Queue (ft)	135	129	3	2	111	41	2	92	102
95th Queue (ft)	184	180	19	13	166	117	13	153	164
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		2			0			1	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 260

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	7.8	33.0	16.8	18.4	7.7	33.0	17.1	18.4
g/C Ratio	-0.01	NA	-0.01	NA	-0.01	NA	-0.01	NA
Cycles Skipped (%)	64	0	11	0	23	0	87	0
Cycles @ Minimum (%)	10	0	3	15	26	0	0	15
Cycles Maxed Out (%)	21	79	53	56	46	79	8	56
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	19.2	9.4	17.4	19.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	19.0	7.7	12.2	19.0
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	7	91	29	7
Cycles @ Minimum (%)	7	7	29	7
Cycles Maxed Out (%)	75	0	6	75
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	21.5	18.8	21.5
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	6	3	6
Cycles Maxed Out (%)	43	28	43
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 Without Project
PM Peak Hour

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:25	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3758	3784	3733	3728	3635	3641	3819
Vehs Exited	3721	3786	3704	3679	3593	3642	3829
Starting Vehs	146	157	141	122	128	157	155
Ending Vehs	183	155	170	171	170	156	145
Denied Entry Before	1	1	2	0	1	2	3
Denied Entry After	2	2	0	2	1	1	0
Travel Distance (mi)	4197	4214	4101	4073	4050	4014	4282
Travel Time (hr)	158.2	159.2	154.6	152.2	150.5	151.0	163.3
Total Delay (hr)	33.8	34.0	33.0	31.8	30.7	31.6	36.5
Total Stops	3149	3207	3174	3139	2930	3023	3259
Fuel Used (gal)	138.1	138.8	135.8	134.3	132.5	131.7	141.6

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3727	3736	3653	3720
Vehs Exited	3702	3734	3635	3703
Starting Vehs	138	166	130	144
Ending Vehs	163	168	148	158
Denied Entry Before	1	1	1	0
Denied Entry After	0	2	0	0
Travel Distance (mi)	4058	4192	4093	4127
Travel Time (hr)	153.6	159.1	153.7	155.5
Total Delay (hr)	33.4	34.5	32.1	33.2
Total Stops	3211	3230	2972	3130
Fuel Used (gal)	134.9	138.6	135.0	136.1

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3758	3784	3733	3728	3635	3641	3819
Vehs Exited	3721	3786	3704	3679	3593	3642	3829
Starting Vehs	146	157	141	122	128	157	155
Ending Vehs	183	155	170	171	170	156	145
Denied Entry Before	1	1	2	0	1	2	3
Denied Entry After	2	2	0	2	1	1	0
Travel Distance (mi)	4197	4214	4101	4073	4050	4014	4282
Travel Time (hr)	158.2	159.2	154.6	152.2	150.5	151.0	163.3
Total Delay (hr)	33.8	34.0	33.0	31.8	30.7	31.6	36.5
Total Stops	3149	3207	3174	3139	2930	3023	3259
Fuel Used (gal)	138.1	138.8	135.8	134.3	132.5	131.7	141.6

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3727	3736	3653	3720
Vehs Exited	3702	3734	3635	3703
Starting Vehs	138	166	130	144
Ending Vehs	163	168	148	158
Denied Entry Before	1	1	1	0
Denied Entry After	0	2	0	0
Travel Distance (mi)	4058	4192	4093	4127
Travel Time (hr)	153.6	159.1	153.7	155.5
Total Delay (hr)	33.4	34.5	32.1	33.2
Total Stops	3211	3230	2972	3130
Fuel Used (gal)	134.9	138.6	135.0	136.1

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.6	2.1	3.5	0.0	0.0	0.0	0.0	0.0	0.3	1.9	0.5	2.1
Total Delay (hr)	1.4	1.8	1.0	0.7	1.5	0.0	2.0	0.8	0.2	0.4	1.3	0.2
Total Del/Veh (s)	26.9	20.1	8.4	27.3	17.6	3.3	26.1	22.7	5.9	25.0	25.6	5.4
Stop Delay (hr)	1.1	1.1	0.6	0.7	1.1	0.0	1.8	0.7	0.2	0.3	1.0	0.1
Stop Del/Veh (s)	22.0	12.2	5.4	25.0	12.6	2.8	22.9	18.6	5.5	21.1	19.6	3.6
Total Stops	158	180	246	88	171	14	244	93	73	48	133	78
Stop/Veh	0.84	0.55	0.59	0.93	0.57	0.64	0.87	0.70	0.72	0.83	0.72	0.70
Travel Dist (mi)	41.8	72.9	92.7	4.9	15.7	1.1	17.5	8.5	6.4	22.3	71.4	43.2
Travel Time (hr)	2.7	3.6	4.1	0.9	1.8	0.1	2.7	1.1	0.5	1.1	3.4	1.6
Vehicles Entered	186	324	411	94	300	22	278	132	100	57	182	110
Vehicles Exited	183	323	410	94	299	22	277	131	100	57	181	110
Hourly Exit Rate	183	323	410	94	299	22	277	131	100	57	181	110
Input Volume	180	321	410	96	302	23	283	134	100	57	188	107
% of Volume	102	101	100	98	99	96	98	98	100	100	96	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.5
Total Delay (hr)	11.3
Total Del/Veh (s)	18.4
Stop Delay (hr)	8.7
Stop Del/Veh (s)	14.1
Total Stops	1526
Stop/Veh	0.69
Travel Dist (mi)	398.4
Travel Time (hr)	23.6
Vehicles Entered	2196
Vehicles Exited	2187
Hourly Exit Rate	2187
Input Volume	2201
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.9	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.4	0.0	0.2	0.0	0.0	0.2	0.6	0.0	0.0	0.2	0.0	1.6
Total Del/Veh (s)	24.5	20.0	6.6	19.1	4.6	9.5	5.3	5.1	4.3	0.9	0.4	4.3
Stop Delay (hr)	0.4	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.9
Stop Del/Veh (s)	22.5	15.0	5.8	17.8	4.6	5.8	1.6	1.9	2.2	0.0	0.0	2.3
Total Stops	61	1	88	1	10	54	59	1	4	0	1	280
Stop/Veh	0.98	1.00	0.99	1.00	1.00	0.71	0.14	0.50	0.44	0.00	0.02	0.21
Travel Dist (mi)	9.4	0.2	13.7	0.0	0.3	12.6	67.8	0.3	0.8	57.6	4.8	167.6
Travel Time (hr)	0.8	0.0	0.6	0.0	0.0	0.6	2.6	0.0	0.0	2.1	0.2	7.0
Vehicles Entered	60	1	88	1	10	76	411	2	9	626	51	1335
Vehicles Exited	61	1	88	1	10	76	410	2	9	626	51	1335
Hourly Exit Rate	61	1	88	1	10	76	410	2	9	626	51	1335
Input Volume	63	1	86	2	8	74	420	2	9	629	56	1350
% of Volume	97	100	102	50	125	103	98	100	100	100	91	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.2	0.0	0.9	0.2	0.4	0.8	0.0	2.8
Total Del/Veh (s)	21.8	6.8	17.3	7.9	11.0	7.1	4.8	13.9	5.4	3.6	7.3
Stop Delay (hr)	0.0	0.0	0.2	0.1	0.0	0.2	0.1	0.3	0.3	0.0	1.3
Stop Del/Veh (s)	20.4	6.5	14.6	6.8	6.9	1.8	1.5	10.3	1.6	1.4	3.3
Total Stops	5	11	45	58	8	86	30	78	109	4	434
Stop/Veh	1.00	1.00	0.80	0.84	0.62	0.20	0.24	0.72	0.19	0.29	0.31
Travel Dist (mi)	0.6	1.3	6.4	7.9	2.7	86.1	24.9	15.5	79.0	2.1	226.5
Travel Time (hr)	0.1	0.1	0.5	0.4	0.1	3.4	1.0	0.9	3.1	0.1	9.7
Vehicles Entered	5	11	56	68	13	438	123	107	560	14	1395
Vehicles Exited	5	11	55	69	13	438	124	108	560	14	1397
Hourly Exit Rate	5	11	55	69	13	438	124	108	560	14	1397
Input Volume	6	9	59	64	14	447	125	105	563	14	1406
% of Volume	83	122	93	108	93	98	99	103	99	100	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0		0.6	2.2	0.4	0.0	0.7
Total Delay (hr)	2.3	0.0	0.0	1.6	0.9	0.1	1.4	6.3
Total Del/Veh (s)	16.7	3.3		9.9	5.9	21.2	7.8	9.8
Stop Delay (hr)	1.8	0.0	0.0	0.8	0.0	0.1	0.8	3.4
Stop Del/Veh (s)	13.3	2.6		4.9	0.0	18.5	4.2	5.3
Total Stops	366	1	0	248	1	15	257	888
Stop/Veh	0.75	0.50		0.43	0.00	0.94	0.39	0.38
Travel Dist (mi)	58.1	0.3	0.1	140.1	119.8	1.6	65.2	385.2
Travel Time (hr)	4.1	0.0	0.0	5.7	4.8	0.2	3.3	18.1
Vehicles Entered	482	2	0	573	574	16	649	2296
Vehicles Exited	482	2	0	572	574	16	648	2294
Hourly Exit Rate	482	2	0	572	574	16	648	2294
Input Volume	480	2	1	584	577	19	657	2320
% of Volume	100	100	0	98	99	84	99	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.5
Denied Del/Veh (s)	1.5
Total Delay (hr)	31.6
Total Del/Veh (s)	29.5
Stop Delay (hr)	14.6
Stop Del/Veh (s)	13.6
Total Stops	3130
Stop/Veh	0.81
Travel Dist (mi)	4127.4
Travel Time (hr)	155.5
Vehicles Entered	3720
Vehicles Exited	3703
Hourly Exit Rate	3703
Input Volume	21166
% of Volume	17
Denied Entry Before	0
Denied Entry After	0

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	188	219	167	138	198	30	238	209	68	94	172	66
Average Queue (ft)	85	107	72	53	98	7	125	62	28	35	84	32
95th Queue (ft)	152	188	130	105	176	25	206	136	55	73	147	58
Link Distance (ft)		1183			215			288			2064	
Upstream Blk Time (%)					0		0	0				
Queuing Penalty (veh)					0		0	0				
Storage Bay Dist (ft)	185		825	120		150	180		115	210		130
Storage Blk Time (%)	0	1		0	5		3	1			2	
Queuing Penalty (veh)	2	6		1	6		7	5			4	

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	L	TR
Maximum Queue (ft)	100	84	33	221	27	18
Average Queue (ft)	37	36	9	66	3	1
95th Queue (ft)	75	65	31	170	17	10
Link Distance (ft)		820	140	819		441
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	110				50	
Storage Blk Time (%)	0	0				0
Queuing Penalty (veh)	0	0				0

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	38	109	32	184	103	159
Average Queue (ft)	13	46	7	69	45	68
95th Queue (ft)	38	83	27	148	85	142
Link Distance (ft)	616	603		1015		706
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			125		140	
Storage Blk Time (%)				1	0	1
Queuing Penalty (veh)				0	0	1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	161	146	26	9	172	147	42	134	142
Average Queue (ft)	94	78	1	0	100	29	13	63	77
95th Queue (ft)	138	126	11	6	155	96	40	116	126
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		0						0	
Queuing Penalty (veh)		0						0	

Network Summary

Network wide Queuing Penalty: 32

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	7.9	26.1	11.2	17.3	7.6	26.1	13.3	17.3
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	75	0	44	2	69	0	92	2
Cycles @ Minimum (%)	14	4	13	31	12	4	2	31
Cycles Maxed Out (%)	10	23	6	33	13	23	0	33
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	27.2	9.4	9.4	27.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	25.4	7.4	10.1	25.4
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	5	95	56	5
Cycles @ Minimum (%)	5	4	44	5
Cycles Maxed Out (%)	59	0	44	59
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	21.5	12.9	21.5
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	6	35	6
Cycles Maxed Out (%)	47	1	47
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project
AM Peak Hour

Summary of All Intervals

Run Number	1	10	12	13	14	3	4
Start Time	7:10	7:10	7:10	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4441	4448	4378	4443	4437	4390	4354
Vehs Exited	4431	4400	4360	4420	4439	4369	4371
Starting Vehs	159	158	153	155	175	156	170
Ending Vehs	169	206	171	178	173	177	153
Denied Entry Before	2	1	0	1	1	1	3
Denied Entry After	2	4	1	2	0	3	1
Travel Distance (mi)	4332	4307	4303	4413	4360	4333	4212
Travel Time (hr)	177.3	181.9	183.3	183.1	178.8	177.8	172.1
Total Delay (hr)	49.2	55.0	56.2	53.2	50.1	50.2	47.9
Total Stops	4205	4468	4512	4466	4247	4304	4192
Fuel Used (gal)	149.1	149.6	149.9	152.6	150.2	148.8	145.0

Summary of All Intervals

Run Number	6	7	8	Avg
Start Time	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4415	4477	4449	4421
Vehs Exited	4397	4417	4404	4400
Starting Vehs	147	140	161	155
Ending Vehs	165	200	206	179
Denied Entry Before	2	0	1	0
Denied Entry After	2	5	0	0
Travel Distance (mi)	4347	4426	4297	4333
Travel Time (hr)	177.9	193.6	182.1	180.8
Total Delay (hr)	49.6	62.9	55.4	53.0
Total Stops	4304	4944	4497	4415
Fuel Used (gal)	149.6	154.3	149.1	149.8

Interval #0 Information Seeding

Start Time	7:10
End Time	7:15
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	12	13	14	3	4
Vehs Entered	4441	4448	4378	4443	4437	4390	4354
Vehs Exited	4431	4400	4360	4420	4439	4369	4371
Starting Vehs	159	158	153	155	175	156	170
Ending Vehs	169	206	171	178	173	177	153
Denied Entry Before	2	1	0	1	1	1	3
Denied Entry After	2	4	1	2	0	3	1
Travel Distance (mi)	4332	4307	4303	4413	4360	4333	4212
Travel Time (hr)	177.3	181.9	183.3	183.1	178.8	177.8	172.1
Total Delay (hr)	49.2	55.0	56.2	53.2	50.1	50.2	47.9
Total Stops	4205	4468	4512	4466	4247	4304	4192
Fuel Used (gal)	149.1	149.6	149.9	152.6	150.2	148.8	145.0

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	6	7	8	Avg
Vehs Entered	4415	4477	4449	4421
Vehs Exited	4397	4417	4404	4400
Starting Vehs	147	140	161	155
Ending Vehs	165	200	206	179
Denied Entry Before	2	0	1	0
Denied Entry After	2	5	0	0
Travel Distance (mi)	4347	4426	4297	4333
Travel Time (hr)	177.9	193.6	182.1	180.8
Total Delay (hr)	49.6	62.9	55.4	53.0
Total Stops	4304	4944	4497	4415
Fuel Used (gal)	149.6	154.3	149.1	149.8

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	1.4	3.4	0.0	0.0	0.0	0.2	0.1	0.4	2.1	0.7	2.0
Total Delay (hr)	2.2	1.9	0.3	1.1	6.0	0.3	5.1	2.1	0.1	0.7	1.9	0.7
Total Del/Veh (s)	51.8	24.4	5.4	36.1	38.2	12.2	45.8	40.6	7.5	39.9	36.5	9.5
Stop Delay (hr)	2.0	1.3	0.2	0.9	4.7	0.2	4.6	1.8	0.1	0.6	1.5	0.5
Stop Del/Veh (s)	46.3	16.8	3.9	31.6	30.3	9.7	41.4	34.8	6.3	35.4	29.5	6.6
Total Stops	148	162	138	110	394	66	411	170	44	52	150	188
Stop/Veh	0.97	0.59	0.60	1.03	0.70	0.78	1.03	0.91	0.85	0.88	0.79	0.76
Travel Dist (mi)	33.6	61.6	51.4	5.4	29.2	4.5	25.2	11.8	3.4	22.7	72.9	95.1
Travel Time (hr)	3.2	3.4	2.0	1.3	6.6	0.5	6.1	2.4	0.3	1.4	4.1	3.8
Vehicles Entered	149	273	228	105	559	85	398	185	52	58	186	243
Vehicles Exited	149	274	228	104	555	85	394	183	52	58	185	242
Hourly Exit Rate	149	274	228	104	555	85	394	183	52	58	185	242
Input Volume	152	269	229	110	565	86	407	196	53	55	180	237
% of Volume	98	102	100	95	98	99	97	93	98	105	103	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	1.0
Total Delay (hr)	22.3
Total Del/Veh (s)	31.5
Stop Delay (hr)	18.5
Stop Del/Veh (s)	26.1
Total Stops	2033
Stop/Veh	0.80
Travel Dist (mi)	416.7
Travel Time (hr)	35.1
Vehicles Entered	2521
Vehicles Exited	2509
Hourly Exit Rate	2509
Input Volume	2539
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	4.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.3	0.1	0.0	0.0	0.0	0.1	0.5	0.1	0.0	1.1
Total Del/Veh (s)	15.8	4.6	15.1	13.5	7.3	6.9	3.5	0.7	0.4	3.3
Stop Delay (hr)	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5
Stop Del/Veh (s)	13.9	4.2	13.8	10.8	7.2	3.3	0.4	0.0	0.0	1.4
Total Stops	58	48	10	6	15	26	27	0	1	191
Stop/Veh	1.00	0.98	1.00	1.00	1.00	0.51	0.05	0.00	0.02	0.15
Travel Dist (mi)	9.0	7.5	0.3	0.2	0.4	8.4	88.5	42.6	3.7	160.6
Travel Time (hr)	0.6	0.3	0.1	0.0	0.1	0.4	3.1	1.5	0.2	6.2
Vehicles Entered	58	48	10	6	15	50	537	478	40	1242
Vehicles Exited	58	48	10	6	15	51	537	478	40	1243
Hourly Exit Rate	58	48	10	6	15	51	537	478	40	1243
Input Volume	55	48	11	7	16	53	555	480	39	1264
% of Volume	105	100	91	86	94	96	97	100	103	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.6	0.3	0.0	1.4	0.1	0.3	1.0	0.0	3.8
Total Del/Veh (s)	27.1	7.3	14.3	9.2	15.0	10.3	7.2	16.5	8.4	6.3	10.4
Stop Delay (hr)	0.0	0.0	0.5	0.2	0.0	0.6	0.0	0.2	0.5	0.0	2.1
Stop Del/Veh (s)	25.5	7.0	10.6	6.8	11.7	4.3	3.7	13.1	4.0	4.2	5.8
Total Stops	6	20	107	84	2	188	16	50	161	2	636
Stop/Veh	1.00	0.95	0.69	0.69	0.67	0.39	0.47	0.79	0.38	0.50	0.49
Travel Dist (mi)	0.7	2.5	17.5	13.8	0.6	95.0	6.7	8.8	60.2	0.5	206.4
Travel Time (hr)	0.1	0.2	1.2	0.8	0.0	4.1	0.3	0.6	2.7	0.0	10.1
Vehicles Entered	6	21	152	120	3	477	33	62	425	4	1303
Vehicles Exited	6	21	152	119	3	476	33	62	425	4	1301
Hourly Exit Rate	6	21	152	119	3	476	33	62	425	4	1301
Input Volume	7	21	150	124	3	493	35	63	428	3	1327
% of Volume	86	100	101	96	100	97	94	98	99	133	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0	1.6	0.6	2.3	1.7	0.0	0.6
Total Delay (hr)	4.3	0.0	0.0	1.9	0.9	0.0	2.1	9.3
Total Del/Veh (s)	18.3	4.0	20.6	13.3	5.9	24.2	10.6	12.6
Stop Delay (hr)	3.1	0.0	0.0	1.1	0.0	0.0	1.4	5.6
Stop Del/Veh (s)	13.3	1.9	19.4	7.8	0.0	22.1	6.8	7.6
Total Stops	613	3	2	276	1	1	350	1246
Stop/Veh	0.72	0.50	1.00	0.54	0.00	1.00	0.49	0.47
Travel Dist (mi)	101.8	0.7	0.4	123.2	118.1	0.1	47.3	391.6
Travel Time (hr)	7.6	0.0	0.0	5.5	4.8	0.0	3.5	21.4
Vehicles Entered	843	6	2	505	566	1	715	2638
Vehicles Exited	844	6	2	504	567	1	712	2636
Hourly Exit Rate	844	6	2	504	567	1	712	2636
Input Volume	843	6	2	525	582	2	715	2675
% of Volume	100	100	100	96	97	50	100	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.6
Denied Del/Veh (s)	1.3
Total Delay (hr)	51.4
Total Del/Veh (s)	40.4
Stop Delay (hr)	29.6
Stop Del/Veh (s)	23.2
Total Stops	4415
Stop/Veh	0.96
Travel Dist (mi)	4333.0
Travel Time (hr)	180.8
Vehicles Entered	4421
Vehicles Exited	4400
Hourly Exit Rate	4400
Input Volume	22529
% of Volume	20
Denied Entry Before	0
Denied Entry After	0

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	205	274	90	195	310	215	506	280	359	180	155	126
Average Queue (ft)	102	111	40	113	258	93	163	211	171	30	18	43
95th Queue (ft)	184	213	73	234	346	245	482	306	355	122	114	91
Link Distance (ft)		1183			215		841		288		441	
Upstream Blk Time (%)					30	0	0	2	6	0		
Queuing Penalty (veh)					0	0	0	0	35	0		
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	2	1		1	44	0		27	11			
Queuing Penalty (veh)	11	4		6	86	0		68	52			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	220	149
Average Queue (ft)	102	61
95th Queue (ft)	175	108
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	6	0
Queuing Penalty (veh)	16	1

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	TR
Maximum Queue (ft)	76	57	52	170	13
Average Queue (ft)	32	25	21	39	1
95th Queue (ft)	61	48	47	117	6
Link Distance (ft)		820	140	819	441
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	110				
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	B2	SB	SB
Directions Served	LTR	LTR	L	TR	T	L	TR
Maximum Queue (ft)	52	166	24	234	44	95	182
Average Queue (ft)	19	77	2	107	1	34	87
95th Queue (ft)	46	131	13	200	43	74	155
Link Distance (ft)	616	603		1015	330		706
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)			125			140	
Storage Blk Time (%)				4			1
Queuing Penalty (veh)				0			1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	222	217	27	24	220	159	15	164	166
Average Queue (ft)	138	132	3	2	117	25	1	87	94
95th Queue (ft)	197	195	17	14	186	95	10	141	149
Link Distance (ft)	582	582			1289	1289		330	330
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		3			0			0	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 279

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	8.1	32.9	16.6	18.5	7.7	32.9	15.4	18.5
g/C Ratio	-0.01	NA	-0.01	NA	-0.01	NA	-0.01	NA
Cycles Skipped (%)	68	0	8	0	21	0	82	0
Cycles @ Minimum (%)	8	0	3	13	24	0	0	13
Cycles Maxed Out (%)	18	79	53	56	50	79	8	56
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	19.2	9.4	17.4	19.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	18.9	7.6	12.2	18.9
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	8	92	29	8
Cycles @ Minimum (%)	8	6	29	8
Cycles Maxed Out (%)	73	0	8	73
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	21.7	18.5	21.7
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	3	4	3
Cycles Maxed Out (%)	47	28	47
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project
PM Peak Hour

Summary of All Intervals

Run Number	1	10	2	3	4	6	7
Start Time	4:25	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3696	3803	3676	3695	3835	3746	3664
Vehs Exited	3707	3817	3636	3670	3822	3735	3652
Starting Vehs	173	156	135	140	134	144	147
Ending Vehs	162	142	175	165	147	155	159
Denied Entry Before	2	2	2	1	4	0	1
Denied Entry After	2	1	3	1	3	2	1
Travel Distance (mi)	4160	4290	4098	4122	4223	4138	4063
Travel Time (hr)	156.4	162.4	155.2	154.8	160.9	156.7	152.6
Total Delay (hr)	33.1	35.0	33.4	32.9	35.8	34.3	32.1
Total Stops	3192	3296	3134	3133	3283	3256	3141
Fuel Used (gal)	137.1	141.2	136.3	135.6	140.1	136.3	135.2

Summary of All Intervals

Run Number	8	9	With Proj	Avg
Start Time	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3759	3656	3784	3733
Vehs Exited	3736	3625	3772	3717
Starting Vehs	148	133	159	145
Ending Vehs	171	164	171	160
Denied Entry Before	2	2	3	0
Denied Entry After	2	1	1	1
Travel Distance (mi)	4218	4067	4210	4159
Travel Time (hr)	159.8	151.8	158.8	157.0
Total Delay (hr)	34.8	31.7	34.1	33.7
Total Stops	3264	3156	3248	3208
Fuel Used (gal)	139.1	135.0	139.0	137.5

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	6	7
Vehs Entered	3696	3803	3676	3695	3835	3746	3664
Vehs Exited	3707	3817	3636	3670	3822	3735	3652
Starting Vehs	173	156	135	140	134	144	147
Ending Vehs	162	142	175	165	147	155	159
Denied Entry Before	2	2	2	1	4	0	1
Denied Entry After	2	1	3	1	3	2	1
Travel Distance (mi)	4160	4290	4098	4122	4223	4138	4063
Travel Time (hr)	156.4	162.4	155.2	154.8	160.9	156.7	152.6
Total Delay (hr)	33.1	35.0	33.4	32.9	35.8	34.3	32.1
Total Stops	3192	3296	3134	3133	3283	3256	3141
Fuel Used (gal)	137.1	141.2	136.3	135.6	140.1	136.3	135.2

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	With Proj	Avg
Vehs Entered	3759	3656	3784	3733
Vehs Exited	3736	3625	3772	3717
Starting Vehs	148	133	159	145
Ending Vehs	171	164	171	160
Denied Entry Before	2	2	3	0
Denied Entry After	2	1	1	1
Travel Distance (mi)	4218	4067	4210	4159
Travel Time (hr)	159.8	151.8	158.8	157.0
Total Delay (hr)	34.8	31.7	34.1	33.7
Total Stops	3264	3156	3248	3208
Fuel Used (gal)	139.1	135.0	139.0	137.5

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.6	2.1	3.5	0.0	0.0	0.0	0.0	0.0	0.2	1.9	0.5	2.0
Total Delay (hr)	1.3	1.9	1.0	0.7	1.4	0.0	1.9	0.9	0.2	0.4	1.3	0.2
Total Del/Veh (s)	26.1	20.6	8.4	27.7	16.5	4.0	25.2	22.0	5.8	26.8	25.1	5.6
Stop Delay (hr)	1.1	1.2	0.6	0.7	1.0	0.0	1.7	0.7	0.2	0.4	1.0	0.1
Stop Del/Veh (s)	21.0	12.8	5.4	25.4	11.7	3.5	22.0	17.9	5.4	23.1	19.1	3.7
Total Stops	155	186	246	88	170	15	243	96	74	48	134	80
Stop/Veh	0.84	0.57	0.59	0.92	0.55	0.62	0.88	0.69	0.71	0.86	0.71	0.71
Travel Dist (mi)	41.0	72.9	93.4	4.9	16.2	1.3	17.4	9.0	6.7	21.6	72.5	43.4
Travel Time (hr)	2.6	3.7	4.1	0.9	1.8	0.1	2.6	1.1	0.5	1.1	3.4	1.6
Vehicles Entered	183	323	414	96	309	24	275	140	103	56	184	111
Vehicles Exited	182	324	414	96	309	24	273	138	104	55	185	111
Hourly Exit Rate	182	324	414	96	309	24	273	138	104	55	185	111
Input Volume	180	321	410	96	302	23	283	134	100	57	188	107
% of Volume	101	101	101	100	102	104	96	103	104	96	98	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.5
Total Delay (hr)	11.2
Total Del/Veh (s)	18.1
Stop Delay (hr)	8.6
Stop Del/Veh (s)	13.8
Total Stops	1535
Stop/Veh	0.69
Travel Dist (mi)	400.3
Travel Time (hr)	23.6
Vehicles Entered	2218
Vehicles Exited	2215
Hourly Exit Rate	2215
Input Volume	2201
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.9	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.4	0.0	0.2	0.0	0.0	0.2	0.6	0.0	0.2	0.0	1.5
Total Del/Veh (s)	25.1	12.1	6.5	28.3	4.5	8.6	4.8	4.0	0.9	0.4	4.1
Stop Delay (hr)	0.4	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.8
Stop Del/Veh (s)	22.9	8.8	5.8	26.7	4.6	4.8	1.2	1.8	0.0	0.0	2.1
Total Stops	60	1	89	1	9	52	55	3	0	2	272
Stop/Veh	0.98	1.00	1.00	1.00	1.00	0.68	0.13	0.38	0.00	0.04	0.20
Travel Dist (mi)	9.4	0.1	13.8	0.0	0.2	12.4	69.6	0.8	57.9	5.3	169.7
Travel Time (hr)	0.8	0.0	0.7	0.0	0.0	0.6	2.6	0.0	2.1	0.2	7.0
Vehicles Entered	60	1	89	1	9	75	422	8	629	57	1351
Vehicles Exited	60	1	89	1	9	75	422	8	629	56	1350
Hourly Exit Rate	60	1	89	1	9	75	422	8	629	56	1350
Input Volume	63	1	86	2	8	74	420	9	629	56	1348
% of Volume	95	100	103	50	112	101	100	89	100	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.2	0.0	1.0	0.2	0.4	0.9	0.0	3.1
Total Del/Veh (s)	25.7	7.4	18.6	8.2	11.8	7.7	5.5	14.0	5.7	3.9	7.8
Stop Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.3	0.1	0.3	0.3	0.0	1.4
Stop Del/Veh (s)	24.1	7.2	15.7	6.9	7.6	2.0	1.9	10.1	1.8	1.5	3.5
Total Stops	4	11	51	58	10	98	37	80	118	3	470
Stop/Veh	1.00	0.92	0.84	0.85	0.67	0.21	0.30	0.73	0.21	0.21	0.33
Travel Dist (mi)	0.5	1.4	6.9	7.8	2.9	88.7	24.9	15.7	78.4	2.0	229.1
Travel Time (hr)	0.0	0.1	0.6	0.4	0.1	3.5	1.0	0.9	3.1	0.1	10.0
Vehicles Entered	4	12	60	68	14	452	123	108	556	14	1411
Vehicles Exited	4	12	60	68	15	450	124	109	556	14	1412
Hourly Exit Rate	4	12	60	68	15	450	124	109	556	14	1412
Input Volume	6	9	59	64	14	447	125	105	563	14	1406
% of Volume	67	133	102	106	107	101	99	104	99	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0		0.5	2.2	0.8	0.0	0.7
Total Delay (hr)	2.3	0.0	0.0	1.8	0.9	0.1	1.3	6.6
Total Del/Veh (s)	17.0	2.8		11.2	5.9	25.4	7.5	10.2
Stop Delay (hr)	1.9	0.0	0.0	0.9	0.0	0.1	0.8	3.7
Stop Del/Veh (s)	13.7	2.5		5.6	0.0	23.0	4.3	5.7
Total Stops	367	1	0	280	0	19	260	927
Stop/Veh	0.75	0.50		0.47	0.00	0.95	0.40	0.40
Travel Dist (mi)	58.1	0.2	0.1	143.2	116.9	1.4	44.5	364.4
Travel Time (hr)	4.2	0.0	0.0	6.1	4.7	0.2	2.6	17.8
Vehicles Entered	482	2	0	586	560	20	648	2298
Vehicles Exited	482	2	0	586	560	20	645	2295
Hourly Exit Rate	482	2	0	586	560	20	645	2295
Input Volume	480	2	1	584	577	19	657	2320
% of Volume	100	100	0	100	97	105	98	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	1

Total Network Performance

Denied Delay (hr)	1.5
Denied Del/Veh (s)	1.5
Total Delay (hr)	32.2
Total Del/Veh (s)	29.9
Stop Delay (hr)	14.8
Stop Del/Veh (s)	13.7
Total Stops	3208
Stop/Veh	0.83
Travel Dist (mi)	4158.9
Travel Time (hr)	157.0
Vehicles Entered	3733
Vehicles Exited	3717
Hourly Exit Rate	3717
Input Volume	21162
% of Volume	18
Denied Entry Before	0
Denied Entry After	1

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	192	213	157	138	202	32	226	182	86	87	164	66
Average Queue (ft)	79	107	71	56	97	9	123	65	30	33	83	33
95th Queue (ft)	147	185	128	110	171	27	198	134	63	73	142	59
Link Distance (ft)		1183			215			288			2064	
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	185		825	120		150	180		115	210		130
Storage Blk Time (%)	0	1		1	4		2	1	0		2	
Queuing Penalty (veh)	3	4		2	5		5	5	0		3	

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	L	TR
Maximum Queue (ft)	94	77	31	208	29	19
Average Queue (ft)	37	36	9	62	3	1
95th Queue (ft)	72	62	30	147	16	11
Link Distance (ft)		820	140	819		441
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	110				50	
Storage Blk Time (%)	0	0			0	0
Queuing Penalty (veh)	0	0			0	0

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	49	111	34	208	100	189
Average Queue (ft)	13	49	9	75	45	75
95th Queue (ft)	39	90	30	161	83	157
Link Distance (ft)	616	603		1015		706
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			125		140	
Storage Blk Time (%)				2	0	1
Queuing Penalty (veh)				0	0	1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	154	138	22	8	211	136	49	141	138
Average Queue (ft)	91	78	1	0	114	19	18	67	76
95th Queue (ft)	133	122	10	6	182	76	46	121	126
Link Distance (ft)	581	581			1289	1289		330	330
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		0			0			0	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 29

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	7.7	25.9	11.1	17.5	7.8	25.9	12.3	17.5
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	75	0	46	2	65	0	92	2
Cycles @ Minimum (%)	12	4	15	31	16	4	2	31
Cycles Maxed Out (%)	10	23	4	37	16	23	0	37
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	27.2	9.4	9.4	27.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	25.4	7.2	10.1	25.4
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	5	94	55	5
Cycles @ Minimum (%)	5	5	44	5
Cycles Maxed Out (%)	58	0	45	58
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	22.1	12.9	22.1
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	7	34	7
Cycles Maxed Out (%)	54	1	54
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project and NBR at Snyder Rd
AM Peak Hour

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:10	7:10	7:10	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4411	4394	4462	4384	4351	4438	4475
Vehs Exited	4409	4390	4436	4363	4330	4441	4437
Starting Vehs	161	157	140	168	163	165	147
Ending Vehs	163	161	166	189	184	162	185
Denied Entry Before	4	0	0	3	2	1	2
Denied Entry After	2	1	1	0	2	1	0
Travel Distance (mi)	4363	4285	4480	4318	4272	4389	4378
Travel Time (hr)	174.9	178.1	191.8	177.2	173.7	179.2	179.7
Total Delay (hr)	45.7	51.5	59.2	49.6	47.8	49.2	50.4
Total Stops	4127	4262	4732	4318	4180	4211	4296
Fuel Used (gal)	149.2	147.9	156.9	148.4	146.2	149.6	149.6

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4463	4480	4470	4434
Vehs Exited	4425	4417	4455	4410
Starting Vehs	143	159	170	156
Ending Vehs	181	222	185	179
Denied Entry Before	2	0	0	0
Denied Entry After	3	11	4	1
Travel Distance (mi)	4349	4472	4374	4368
Travel Time (hr)	195.3	204.9	191.6	184.6
Total Delay (hr)	67.1	72.7	62.7	55.6
Total Stops	4702	4908	4910	4461
Fuel Used (gal)	153.4	158.0	153.4	151.3

Interval #0 Information Seeding

Start Time	7:10
End Time	7:15
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	4411	4394	4462	4384	4351	4438	4475
Vehs Exited	4409	4390	4436	4363	4330	4441	4437
Starting Vehs	161	157	140	168	163	165	147
Ending Vehs	163	161	166	189	184	162	185
Denied Entry Before	4	0	0	3	2	1	2
Denied Entry After	2	1	1	0	2	1	0
Travel Distance (mi)	4363	4285	4480	4318	4272	4389	4378
Travel Time (hr)	174.9	178.1	191.8	177.2	173.7	179.2	179.7
Total Delay (hr)	45.7	51.5	59.2	49.6	47.8	49.2	50.4
Total Stops	4127	4262	4732	4318	4180	4211	4296
Fuel Used (gal)	149.2	147.9	156.9	148.4	146.2	149.6	149.6

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	4463	4480	4470	4434
Vehs Exited	4425	4417	4455	4410
Starting Vehs	143	159	170	156
Ending Vehs	181	222	185	179
Denied Entry Before	2	0	0	0
Denied Entry After	3	11	4	1
Travel Distance (mi)	4349	4472	4374	4368
Travel Time (hr)	195.3	204.9	191.6	184.6
Total Delay (hr)	67.1	72.7	62.7	55.6
Total Stops	4702	4908	4910	4461
Fuel Used (gal)	153.4	158.0	153.4	151.3

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	1.4	3.4	0.0	0.0	0.0	0.2	0.2	0.4	2.1	0.7	2.0
Total Delay (hr)	2.1	1.9	0.4	1.1	5.8	0.3	5.3	2.3	0.1	0.6	1.9	0.6
Total Del/Veh (s)	49.7	25.5	5.7	34.7	37.8	12.8	46.8	43.2	8.1	37.8	36.2	9.3
Stop Delay (hr)	1.9	1.3	0.3	0.9	4.6	0.3	4.8	2.0	0.1	0.5	1.5	0.4
Stop Del/Veh (s)	44.4	17.8	4.3	30.2	30.0	10.4	42.3	37.1	6.8	33.5	29.4	6.4
Total Stops	145	162	139	108	389	69	415	186	48	48	144	188
Stop/Veh	0.96	0.60	0.62	0.98	0.70	0.78	1.02	0.95	0.86	0.89	0.78	0.76
Travel Dist (mi)	33.5	60.0	50.7	5.6	29.0	4.6	25.7	12.4	3.6	20.8	70.7	95.8
Travel Time (hr)	3.1	3.4	2.0	1.3	6.5	0.5	6.3	2.7	0.3	1.2	3.9	3.8
Vehicles Entered	149	266	225	108	552	88	405	194	55	53	181	245
Vehicles Exited	148	266	225	109	552	88	402	192	55	53	180	244
Hourly Exit Rate	148	266	225	109	552	88	402	192	55	53	180	244
Input Volume	152	269	229	110	565	86	407	196	53	55	180	237
% of Volume	97	99	98	99	98	102	99	98	104	96	100	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	1.0
Total Delay (hr)	22.4
Total Del/Veh (s)	31.7
Stop Delay (hr)	18.6
Stop Del/Veh (s)	26.4
Total Stops	2041
Stop/Veh	0.80
Travel Dist (mi)	412.2
Travel Time (hr)	35.1
Vehicles Entered	2521
Vehicles Exited	2514
Hourly Exit Rate	2514
Input Volume	2539
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	4.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.3	0.1	0.0	0.0	0.0	0.1	0.6	0.1	0.0	1.2
Total Del/Veh (s)	18.0	4.5	12.7	17.6	7.9	6.7	3.8	0.7	0.3	3.5
Stop Delay (hr)	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5
Stop Del/Veh (s)	16.2	4.2	11.4	14.8	7.8	3.0	0.6	0.0	0.0	1.5
Total Stops	54	46	12	7	18	23	32	0	0	192
Stop/Veh	0.98	1.00	1.00	1.00	1.00	0.46	0.06	0.00	0.00	0.15
Travel Dist (mi)	8.4	7.1	0.3	0.2	0.5	8.3	91.7	42.4	3.6	162.6
Travel Time (hr)	0.6	0.3	0.1	0.0	0.1	0.4	3.3	1.5	0.2	6.4
Vehicles Entered	54	46	12	7	18	50	558	476	38	1259
Vehicles Exited	54	46	12	7	18	50	557	476	38	1258
Hourly Exit Rate	54	46	12	7	18	50	557	476	38	1258
Input Volume	55	48	11	7	16	53	555	480	39	1264
% of Volume	98	96	109	100	112	94	100	99	97	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.6	0.3	0.0	1.3	0.0	0.3	1.0	0.0	3.7
Total Del/Veh (s)	20.3	6.8	14.2	9.1	15.6	9.7	3.6	16.4	8.6	5.3	10.0
Stop Delay (hr)	0.0	0.0	0.4	0.2	0.0	0.6	0.0	0.2	0.5	0.0	2.0
Stop Del/Veh (s)	18.8	6.5	10.6	6.8	11.5	4.1	1.4	13.1	4.0	3.0	5.6
Total Stops	7	20	106	86	1	190	14	48	163	2	637
Stop/Veh	1.00	0.91	0.71	0.70	0.50	0.38	0.39	0.75	0.39	0.50	0.48
Travel Dist (mi)	0.8	2.5	16.8	13.7	0.4	99.1	7.2	9.0	59.1	0.5	209.2
Travel Time (hr)	0.1	0.2	1.2	0.8	0.0	4.2	0.3	0.6	2.7	0.0	10.1
Vehicles Entered	7	21	149	122	2	496	36	63	418	4	1318
Vehicles Exited	7	21	150	122	2	494	35	63	418	4	1316
Hourly Exit Rate	7	21	150	122	2	494	35	63	418	4	1316
Input Volume	7	21	150	124	3	493	35	63	428	3	1327
% of Volume	100	100	100	98	67	100	100	100	98	133	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.5
Denied Del/Veh (s)	0.0	0.0	3.7	0.6	2.2	2.4	0.0	0.6
Total Delay (hr)	4.3	0.0	0.0	2.1	1.0	0.0	2.1	9.6
Total Del/Veh (s)	18.5	3.3	30.8	14.1	6.1	32.5	10.9	12.8
Stop Delay (hr)	3.2	0.0	0.0	1.2	0.0	0.0	1.4	5.8
Stop Del/Veh (s)	13.4	1.8	29.1	8.3	0.0	30.2	7.1	7.8
Total Stops	615	4	1	297	1	1	353	1272
Stop/Veh	0.73	0.57	1.00	0.56	0.00	1.00	0.50	0.47
Travel Dist (mi)	101.1	0.8	0.3	128.5	122.7	0.1	46.5	400.0
Travel Time (hr)	7.6	0.0	0.0	5.9	5.0	0.0	3.5	22.0
Vehicles Entered	836	7	1	526	588	1	705	2664
Vehicles Exited	838	7	1	526	590	1	706	2669
Hourly Exit Rate	838	7	1	526	590	1	706	2669
Input Volume	843	6	2	525	582	2	715	2675
% of Volume	99	117	50	100	101	50	99	100
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	2.0
Denied Del/Veh (s)	1.7
Total Delay (hr)	53.6
Total Del/Veh (s)	42.0
Stop Delay (hr)	31.4
Stop Del/Veh (s)	24.6
Total Stops	4461
Stop/Veh	0.97
Travel Dist (mi)	4368.0
Travel Time (hr)	184.6
Vehicles Entered	4434
Vehicles Exited	4410
Hourly Exit Rate	4410
Input Volume	22529
% of Volume	20
Denied Entry Before	0
Denied Entry After	1

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	200	239	99	195	310	215	470	280	360	182	232	93
Average Queue (ft)	96	111	41	116	255	84	185	214	181	27	36	39
95th Queue (ft)	170	207	77	239	344	232	610	304	357	99	211	82
Link Distance (ft)		1183			215		841		288		441	
Upstream Blk Time (%)					29	0	6	2	7	0	1	
Queuing Penalty (veh)					0	0	0	0	45	0	5	
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	2	1		0	43	0		30	14			
Queuing Penalty (veh)	10	4		2	85	0		74	63			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	211	123
Average Queue (ft)	103	60
95th Queue (ft)	179	101
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	5	0
Queuing Penalty (veh)	15	0

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	TR
Maximum Queue (ft)	73	56	60	189	6
Average Queue (ft)	30	25	22	40	0
95th Queue (ft)	60	50	50	131	4
Link Distance (ft)		820	140	819	441
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	110				
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	51	165	22	222	53	82	209
Average Queue (ft)	19	77	1	100	12	31	89
95th Queue (ft)	46	131	9	193	38	67	165
Link Distance (ft)	616	590		1013			706
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			125		150	140	
Storage Blk Time (%)				3			1
Queuing Penalty (veh)				1			1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	231	215	30	21	224	159	21	183	172
Average Queue (ft)	138	135	3	1	125	28	1	91	97
95th Queue (ft)	198	197	18	12	197	102	10	150	153
Link Distance (ft)	582	582			1289	1289		330	330
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		3			0			1	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 306

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	7.9	32.8	16.4	18.3	7.8	32.8	17.0	18.3
g/C Ratio	-0.01	NA	-0.01	NA	-0.01	NA	-0.01	NA
Cycles Skipped (%)	68	0	5	0	21	0	82	0
Cycles @ Minimum (%)	11	0	5	15	24	0	0	15
Cycles Maxed Out (%)	18	82	58	62	50	82	11	62
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	19.2	9.4	17.4	19.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	18.7	7.3	12.0	18.7
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	8	91	27	8
Cycles @ Minimum (%)	9	8	31	9
Cycles Maxed Out (%)	72	0	8	72
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	22.0	18.6	22.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	6	4	6
Cycles Maxed Out (%)	51	25	51
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

2040 With Project and NBR at Snyder Rd
PM Peak Hour

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:25	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3710	3703	3627	3733	3674	3601	3801
Vehs Exited	3713	3717	3616	3696	3626	3596	3798
Starting Vehs	173	153	135	140	132	140	141
Ending Vehs	170	139	146	177	180	145	144
Denied Entry Before	2	0	2	1	3	0	2
Denied Entry After	2	3	3	1	0	2	2
Travel Distance (mi)	4129	4082	4020	4129	4001	3955	4207
Travel Time (hr)	155.9	154.8	151.4	155.8	150.9	148.9	159.7
Total Delay (hr)	33.6	33.9	32.5	33.2	32.4	31.1	35.0
Total Stops	3218	3176	3094	3193	3031	3001	3263
Fuel Used (gal)	136.2	134.9	133.8	136.6	132.4	130.1	139.3

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3759	3750	3689	3703
Vehs Exited	3735	3743	3671	3691
Starting Vehs	147	154	147	142
Ending Vehs	171	161	165	158
Denied Entry Before	1	0	3	0
Denied Entry After	1	2	1	1
Travel Distance (mi)	4127	4186	4105	4094
Travel Time (hr)	157.1	158.2	154.9	154.8
Total Delay (hr)	34.9	34.1	32.9	33.4
Total Stops	3243	3199	3112	3153
Fuel Used (gal)	136.7	138.0	135.5	135.3

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3710	3703	3627	3733	3674	3601	3801
Vehs Exited	3713	3717	3616	3696	3626	3596	3798
Starting Vehs	173	153	135	140	132	140	141
Ending Vehs	170	139	146	177	180	145	144
Denied Entry Before	2	0	2	1	3	0	2
Denied Entry After	2	3	3	1	0	2	2
Travel Distance (mi)	4129	4082	4020	4129	4001	3955	4207
Travel Time (hr)	155.9	154.8	151.4	155.8	150.9	148.9	159.7
Total Delay (hr)	33.6	33.9	32.5	33.2	32.4	31.1	35.0
Total Stops	3218	3176	3094	3193	3031	3001	3263
Fuel Used (gal)	136.2	134.9	133.8	136.6	132.4	130.1	139.3

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3759	3750	3689	3703
Vehs Exited	3735	3743	3671	3691
Starting Vehs	147	154	147	142
Ending Vehs	171	161	165	158
Denied Entry Before	1	0	3	0
Denied Entry After	1	2	1	1
Travel Distance (mi)	4127	4186	4105	4094
Travel Time (hr)	157.1	158.2	154.9	154.8
Total Delay (hr)	34.9	34.1	32.9	33.4
Total Stops	3243	3199	3112	3153
Fuel Used (gal)	136.7	138.0	135.5	135.3

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.6	2.2	3.6	0.0	0.0	0.0	0.0	0.0	0.2	2.1	0.5	2.0
Total Delay (hr)	1.4	2.0	0.9	0.7	1.5	0.0	2.0	0.9	0.2	0.4	1.4	0.2
Total Del/Veh (s)	27.1	21.5	7.9	27.6	18.0	3.5	26.0	23.8	5.9	27.1	26.7	5.6
Stop Delay (hr)	1.2	1.2	0.6	0.7	1.1	0.0	1.8	0.7	0.1	0.4	1.1	0.1
Stop Del/Veh (s)	21.9	13.4	5.1	25.3	13.0	2.8	22.8	19.6	5.4	23.4	20.8	3.6
Total Stops	165	198	234	86	178	12	243	94	66	48	139	78
Stop/Veh	0.86	0.59	0.59	0.92	0.59	0.57	0.87	0.70	0.71	0.84	0.73	0.72
Travel Dist (mi)	42.9	74.4	88.8	4.8	15.9	1.1	17.6	8.6	6.0	22.1	73.4	41.9
Travel Time (hr)	2.8	3.9	3.8	0.9	1.9	0.1	2.7	1.1	0.4	1.1	3.6	1.5
Vehicles Entered	191	330	394	92	304	21	278	133	93	56	187	107
Vehicles Exited	189	330	392	92	302	21	278	133	93	56	187	107
Hourly Exit Rate	189	330	392	92	302	21	278	133	93	56	187	107
Input Volume	180	321	410	96	302	23	283	134	100	57	188	107
% of Volume	105	103	96	96	100	91	98	99	93	98	99	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	1	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.5
Total Delay (hr)	11.6
Total Del/Veh (s)	19.0
Stop Delay (hr)	9.0
Stop Del/Veh (s)	14.6
Total Stops	1541
Stop/Veh	0.70
Travel Dist (mi)	397.5
Travel Time (hr)	23.9
Vehicles Entered	2186
Vehicles Exited	2180
Hourly Exit Rate	2180
Input Volume	2201
% of Volume	99
Denied Entry Before	0
Denied Entry After	1

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.9	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	0.5	0.0	0.2	0.0	0.0	0.2	0.6	0.0	0.1	0.0	1.5
Total Del/Veh (s)	26.0	15.1	6.6	15.2	4.2	8.9	5.0	3.5	0.9	0.5	4.2
Stop Delay (hr)	0.4	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.8
Stop Del/Veh (s)	23.9	11.0	5.8	14.0	4.3	5.1	1.3	1.6	0.0	0.0	2.3
Total Stops	63	1	83	2	10	47	50	3	0	1	260
Stop/Veh	1.00	1.00	0.99	1.00	1.00	0.66	0.12	0.33	0.00	0.02	0.20
Travel Dist (mi)	9.8	0.1	12.9	0.1	0.3	11.7	67.0	0.8	56.5	4.8	164.0
Travel Time (hr)	0.8	0.0	0.6	0.0	0.0	0.6	2.5	0.0	2.0	0.2	6.9
Vehicles Entered	63	1	83	2	10	71	406	9	612	51	1308
Vehicles Exited	62	1	83	2	10	70	406	9	613	51	1307
Hourly Exit Rate	62	1	83	2	10	70	406	9	613	51	1307
Input Volume	63	1	86	2	8	74	420	9	629	56	1348
% of Volume	98	100	97	100	125	95	97	100	97	91	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.1	0.1	0.6	0.1	0.3	0.9	0.0	2.5
Total Del/Veh (s)	28.1	7.0	18.3	7.7	11.8	5.1	1.8	11.2	5.8	3.2	6.4
Stop Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.2	0.0	0.2	0.3	0.0	1.2
Stop Del/Veh (s)	26.5	6.7	15.7	6.6	8.8	1.6	0.9	7.5	1.9	1.2	3.1
Total Stops	4	10	48	50	11	84	33	72	121	4	437
Stop/Veh	1.00	0.91	0.83	0.78	0.69	0.19	0.26	0.68	0.22	0.29	0.31
Travel Dist (mi)	0.5	1.3	6.5	7.1	3.3	85.7	25.6	15.1	77.1	2.0	224.2
Travel Time (hr)	0.1	0.1	0.5	0.4	0.2	3.1	0.9	0.8	3.1	0.1	9.3
Vehicles Entered	4	11	58	63	16	436	126	105	547	14	1380
Vehicles Exited	4	11	58	63	16	435	127	105	549	14	1382
Hourly Exit Rate	4	11	58	63	16	435	127	105	549	14	1382
Input Volume	6	9	59	64	14	447	125	105	563	14	1406
% of Volume	67	122	98	98	114	97	102	100	98	100	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.5
Denied Del/Veh (s)	0.0	0.0		0.6	2.2	0.6	0.0	0.7
Total Delay (hr)	2.2	0.0	0.0	1.8	1.0	0.1	1.3	6.4
Total Del/Veh (s)	16.8	2.8		11.0	6.0	24.1	7.5	10.1
Stop Delay (hr)	1.8	0.0	0.0	0.9	0.0	0.1	0.8	3.6
Stop Del/Veh (s)	13.6	2.2		5.5	0.0	21.7	4.2	5.6
Total Stops	362	1	0	272	1	16	256	908
Stop/Veh	0.75	0.50		0.47	0.00	0.89	0.40	0.39
Travel Dist (mi)	57.3	0.3	0.1	140.8	120.9	1.3	43.8	364.5
Travel Time (hr)	4.1	0.0	0.0	5.9	4.9	0.2	2.6	17.7
Vehicles Entered	475	2	0	577	579	18	637	2288
Vehicles Exited	476	2	0	576	580	18	635	2287
Hourly Exit Rate	476	2	0	576	580	18	635	2287
Input Volume	480	2	1	584	577	19	657	2320
% of Volume	99	100	0	99	101	95	97	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.5
Denied Del/Veh (s)	1.5
Total Delay (hr)	31.8
Total Del/Veh (s)	29.8
Stop Delay (hr)	14.9
Stop Del/Veh (s)	13.9
Total Stops	3153
Stop/Veh	0.82
Travel Dist (mi)	4094.1
Travel Time (hr)	154.8
Vehicles Entered	3703
Vehicles Exited	3691
Hourly Exit Rate	3691
Input Volume	21162
% of Volume	17
Denied Entry Before	0
Denied Entry After	1

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	L	T
Maximum Queue (ft)	202	247	160	160	214	48	2	220	174	75	102	196
Average Queue (ft)	88	112	68	55	103	8	0	126	62	27	35	87
95th Queue (ft)	161	203	124	112	184	34	2	203	126	58	78	154
Link Distance (ft)		1183			215		841		288			2064
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (ft)	185		825	120		150		180		115	210	
Storage Blk Time (%)	1	1		0	5			3	1	0		3
Queuing Penalty (veh)	4	5		1	6			6	5	0		5

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	67
Average Queue (ft)	32
95th Queue (ft)	58
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	130
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	L	TR
Maximum Queue (ft)	103	77	33	213	24	22
Average Queue (ft)	37	35	10	59	2	1
95th Queue (ft)	75	64	32	152	15	10
Link Distance (ft)		820	140	819		441
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	110				50	
Storage Blk Time (%)	1	0				0
Queuing Penalty (veh)	0	0				0

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	38	104	36	156	62	100	190
Average Queue (ft)	12	43	9	54	21	39	76
95th Queue (ft)	37	78	29	124	51	76	153
Link Distance (ft)	616	590		1013	1013		706
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			125			140	
Storage Blk Time (%)				1		0	1
Queuing Penalty (veh)				0		0	1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	150	137	23	14	200	141	52	141	141
Average Queue (ft)	91	78	1	1	110	22	16	64	77
95th Queue (ft)	135	123	10	7	179	88	44	117	127
Link Distance (ft)	581	581			1289	1289		330	330
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		0			0			0	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 34

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	8.0	34.0	19.0	19.3	8.0	34.0	19.0	19.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	7.9	25.9	11.6	17.3	7.5	25.9	9.8	17.3
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	76	0	41	2	61	0	92	2
Cycles @ Minimum (%)	14	6	14	31	16	6	4	31
Cycles Maxed Out (%)	8	22	4	35	18	22	0	35
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	27.2	9.4	9.4	27.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	24.4	8.0	10.2	24.4
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	95	53	6
Cycles @ Minimum (%)	6	4	47	6
Cycles Maxed Out (%)	48	0	47	48
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	4	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	24.0	24.0	24.0
Minimum Green (s)	15.0	10.0	15.0
Recall	Min	None	Min
Avg. Green (s)	22.1	13.0	22.1
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	5	36	5
Cycles Maxed Out (%)	51	0	51
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project and Median Island at Bashas' (North End Alternative 2) AM Peak Hour

Summary of All Intervals

Run Number	2	3	5	7	8	Avg
Start Time	7:10	7:10	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4575	4604	4442	4547	4581	4548
Vehs Exited	4561	4537	4459	4538	4565	4530
Starting Vehs	164	156	187	163	175	174
Ending Vehs	178	223	170	172	191	184
Denied Entry Before	2	3	2	1	2	0
Denied Entry After	2	14	0	1	0	3
Travel Distance (mi)	4424	4400	4317	4417	4446	4401
Travel Time (hr)	190.1	196.1	188.5	193.6	184.5	190.6
Total Delay (hr)	59.2	66.7	60.9	63.4	53.3	60.7
Total Stops	4658	4758	4671	4327	4376	4558
Fuel Used (gal)	155.0	155.1	150.9	154.8	152.8	153.7

Interval #0 Information Seeding

Start Time	7:10
End Time	7:15
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	2	3	5	7	8	Avg
Vehs Entered	4575	4604	4442	4547	4581	4548
Vehs Exited	4561	4537	4459	4538	4565	4530
Starting Vehs	164	156	187	163	175	174
Ending Vehs	178	223	170	172	191	184
Denied Entry Before	2	3	2	1	2	0
Denied Entry After	2	14	0	1	0	3
Travel Distance (mi)	4424	4400	4317	4417	4446	4401
Travel Time (hr)	190.1	196.1	188.5	193.6	184.5	190.6
Total Delay (hr)	59.2	66.7	60.9	63.4	53.3	60.7
Total Stops	4658	4758	4671	4327	4376	4558
Fuel Used (gal)	155.0	155.1	150.9	154.8	152.8	153.7

10: Kolb Road Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.3
Total Del/Veh (s)	4.4	4.0	1.0	0.3	0.3	0.1	0.7
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	4.6	4.6	0.1	0.1	0.0	0.0	0.2
Total Stops	26	0	0	0	1	0	27
Stop/Veh	1.00	0.00	0.00	0.00	0.00	0.00	0.02
Travel Dist (mi)	0.5	0.0	38.0	0.4	17.3	2.3	58.5
Travel Time (hr)	0.1	0.0	1.4	0.0	0.6	0.1	2.2
Vehicles Entered	26	8	659	6	490	66	1255
Vehicles Exited	26	8	658	6	490	65	1253
Hourly Exit Rate	26	8	658	6	490	65	1253
Input Volume	28	8	669	9	490	69	1273
% of Volume	93	100	98	67	100	94	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	1.4	3.5	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.7	2.1
Total Delay (hr)	2.2	2.1	0.3	1.1	7.3	0.4	4.1	1.4	0.1	0.4	2.9	0.7
Total Del/Veh (s)	46.7	27.4	4.3	39.3	46.5	16.2	36.5	23.3	6.3	25.1	54.3	10.5
Stop Delay (hr)	1.9	1.5	0.2	1.0	6.0	0.3	3.6	1.2	0.1	0.3	2.5	0.5
Stop Del/Veh (s)	40.7	19.1	2.5	34.2	37.9	13.3	32.1	19.1	5.4	20.4	46.4	7.2
Total Stops	159	172	142	100	406	70	380	128	34	45	180	198
Stop/Veh	0.96	0.62	0.61	0.95	0.71	0.82	0.95	0.58	0.67	0.87	0.93	0.84
Travel Dist (mi)	36.6	61.3	51.4	5.4	29.5	4.5	26.0	13.7	3.4	19.8	73.2	91.3
Travel Time (hr)	3.3	3.6	1.9	1.4	8.0	0.6	5.1	1.8	0.2	1.0	5.1	3.7
Vehicles Entered	163	273	230	104	564	85	396	218	51	51	187	233
Vehicles Exited	163	274	231	103	560	85	394	217	51	51	185	232
Hourly Exit Rate	163	274	231	103	560	85	394	217	51	51	185	232
Input Volume	152	269	229	110	565	86	407	217	53	55	180	237
% of Volume	107	102	101	94	99	99	97	100	96	93	103	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	1.0
Total Delay (hr)	22.9
Total Del/Veh (s)	32.0
Stop Delay (hr)	18.9
Stop Del/Veh (s)	26.3
Total Stops	2014
Stop/Veh	0.78
Travel Dist (mi)	416.0
Travel Time (hr)	35.7
Vehicles Entered	2555
Vehicles Exited	2546
Hourly Exit Rate	2546
Input Volume	2560
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.9	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	0.4	0.1	0.0	0.0	0.0	0.1	0.3	0.1	0.0	1.1
Total Del/Veh (s)	16.8	4.7	15.0	13.8	6.9	5.4	2.0	0.7	0.3	3.0
Stop Delay (hr)	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Stop Del/Veh (s)	14.7	4.4	13.6	11.2	6.7	2.2	0.0	0.0	0.0	1.5
Total Stops	85	52	9	6	17	31	0	0	0	200
Stop/Veh	0.99	1.00	1.00	0.86	1.00	0.42	0.00	0.00	0.00	0.15
Travel Dist (mi)	13.3	8.0	0.3	0.2	0.5	12.1	87.7	26.6	2.2	150.7
Travel Time (hr)	0.9	0.4	0.0	0.0	0.1	0.5	2.8	1.0	0.1	5.9
Vehicles Entered	85	51	9	7	17	74	534	478	38	1293
Vehicles Exited	86	51	9	6	17	73	531	479	37	1289
Hourly Exit Rate	86	51	9	6	17	73	531	479	37	1289
Input Volume	90	48	11	7	16	70	538	479	39	1298
% of Volume	96	106	82	86	106	104	99	100	95	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.0	0.1	0.8	0.4	0.0	1.1	0.0	0.3	0.8	0.0	3.5
Total Del/Veh (s)	23.2	8.4	18.9	12.6	10.9	7.8	3.0	13.5	6.9	6.0	9.5
Stop Delay (hr)	0.0	0.1	0.6	0.3	0.0	0.4	0.0	0.2	0.3	0.0	2.0
Stop Del/Veh (s)	21.6	8.0	14.8	9.8	7.1	2.9	1.0	10.1	2.8	3.6	5.4
Total Stops	5	23	122	96	3	144	12	51	129	2	587
Stop/Veh	0.83	0.96	0.78	0.77	0.75	0.29	0.30	0.76	0.30	0.50	0.44
Travel Dist (mi)	0.7	2.8	17.5	13.8	0.7	97.7	8.0	9.5	59.9	0.5	211.1
Travel Time (hr)	0.1	0.2	1.4	1.0	0.0	3.9	0.3	0.6	2.5	0.0	10.0
Vehicles Entered	6	24	155	123	4	490	40	66	424	4	1336
Vehicles Exited	6	24	154	123	4	490	39	67	426	4	1337
Hourly Exit Rate	6	24	154	123	4	490	39	67	426	4	1337
Input Volume	7	21	150	124	3	493	35	63	428	3	1327
% of Volume	86	114	103	99	133	99	111	106	100	133	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0	3.4	0.5	2.3	1.0	0.0	0.6
Total Delay (hr)	3.5	0.0	0.0	1.7	0.9	0.0	2.0	8.1
Total Del/Veh (s)	14.9	3.9	29.1	11.4	5.9	10.6	10.0	11.0
Stop Delay (hr)	2.5	0.0	0.0	0.9	0.0	0.0	1.2	4.7
Stop Del/Veh (s)	10.7	2.3	27.7	6.5	0.0	8.0	5.9	6.3
Total Stops	539	3	1	253	1	0	340	1137
Stop/Veh	0.64	0.60	1.00	0.48	0.00	0.00	0.47	0.43
Travel Dist (mi)	100.7	0.6	0.3	127.4	117.9	0.1	70.1	417.1
Travel Time (hr)	6.7	0.0	0.0	5.4	4.7	0.0	4.1	21.0
Vehicles Entered	834	5	1	522	565	1	727	2655
Vehicles Exited	835	5	1	522	564	1	724	2652
Hourly Exit Rate	835	5	1	522	564	1	724	2652
Input Volume	843	6	2	525	582	2	715	2675
% of Volume	99	83	50	99	97	50	101	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	2.3
Denied Del/Veh (s)	1.8
Total Delay (hr)	58.5
Total Del/Veh (s)	44.6
Stop Delay (hr)	35.4
Stop Del/Veh (s)	27.1
Total Stops	4558
Stop/Veh	0.97
Travel Dist (mi)	4400.6
Travel Time (hr)	190.6
Vehicles Entered	4548
Vehicles Exited	4530
Hourly Exit Rate	4530
Input Volume	24010
% of Volume	19
Denied Entry Before	0
Denied Entry After	3

Intersection: 10: Kolb Road

Movement	EB	WB	SB
Directions Served	R	R	T
Maximum Queue (ft)	40	29	23
Average Queue (ft)	15	6	1
95th Queue (ft)	36	24	10
Link Distance (ft)	95	24	136
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	212	249	73	195	312	215	837	279	338	150	67	145
Average Queue (ft)	113	122	41	119	278	106	420	191	139	19	5	40
95th Queue (ft)	191	215	64	241	332	262	919	289	310	77	44	118
Link Distance (ft)		1180			215		841		289		136	
Upstream Blk Time (%)					45	0	10	0	2	0	0	
Queuing Penalty (veh)					0	0	0	0	13	0	1	
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	1	2		1	53	0		17	5			
Queuing Penalty (veh)	7	9		5	105	0		43	22			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	331	223
Average Queue (ft)	132	70
95th Queue (ft)	260	160
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	14	0
Queuing Penalty (veh)	41	0

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	L	TR
Maximum Queue (ft)	94	56	58	47	4
Average Queue (ft)	41	27	22	17	0
95th Queue (ft)	74	48	50	42	4
Link Distance (ft)		822	140		251
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300			150	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	51	194	20	197	41	76	195
Average Queue (ft)	20	89	2	81	10	32	77
95th Queue (ft)	50	155	14	162	33	66	148
Link Distance (ft)	616	590		1013			706
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			125		110	140	
Storage Blk Time (%)				3			1
Queuing Penalty (veh)				1			0

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	198	211	30	23	178	159	12	170	177
Average Queue (ft)	126	123	3	1	105	35	0	87	97
95th Queue (ft)	177	190	17	11	159	107	6	149	157
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		3						0	
Queuing Penalty (veh)		0						0	

Network Summary

Network wide Queuing Penalty: 248

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	10.0	34.0	21.0	15.3	10.0	34.0	10.0	26.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	8.9	34.0	19.5	15.5	8.9	34.0	9.4	31.8
g/C Ratio	-0.01	NA	NA	NA	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	69	0	0	0	14	0	41	3
Cycles @ Minimum (%)	8	0	3	16	22	0	38	0
Cycles Maxed Out (%)	8	92	65	81	43	92	5	84
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	27.2	7.4	11.4	27.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	23.5	7.1	10.9	23.5
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	10	93	25	10
Cycles @ Minimum (%)	8	5	27	8
Cycles Maxed Out (%)	37	1	40	37
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	3	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	27.0	23.0	27.0
Minimum Green (s)	15.0	5.0	15.0
Recall	Min	None	Min
Avg. Green (s)	22.8	18.9	22.8
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	4	0	4
Cycles Maxed Out (%)	28	43	28
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project and Median Island at Bashas' (North End Alternative 2) PM Peak Hour

Summary of All Intervals

Run Number	2	3	Rin5	Rout DW, 6	Stop Control	Avg
Start Time	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3934	4021	3894	4074	4048	3997
Vehs Exited	3921	4016	3862	4032	4051	3975
Starting Vehs	144	153	137	145	156	142
Ending Vehs	157	158	169	187	153	164
Denied Entry Before	1	1	1	3	1	0
Denied Entry After	1	2	0	2	1	0
Travel Distance (mi)	4082	4143	4107	4279	4182	4159
Travel Time (hr)	155.3	159.0	155.9	163.5	159.7	158.7
Total Delay (hr)	34.0	35.5	33.5	36.2	35.1	34.9
Total Stops	3191	3196	3170	3350	3229	3225
Fuel Used (gal)	136.4	138.3	136.4	142.1	140.9	138.8

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	2	3	Rin5	Rout DW, 6	Stop Control	Avg
Vehs Entered	3934	4021	3894	4074	4048	3997
Vehs Exited	3921	4016	3862	4032	4051	3975
Starting Vehs	144	153	137	145	156	142
Ending Vehs	157	158	169	187	153	164
Denied Entry Before	1	1	1	3	1	0
Denied Entry After	1	2	0	2	1	0
Travel Distance (mi)	4082	4143	4107	4279	4182	4159
Travel Time (hr)	155.3	159.0	155.9	163.5	159.7	158.7
Total Delay (hr)	34.0	35.5	33.5	36.2	35.1	34.9
Total Stops	3191	3196	3170	3350	3229	3225
Fuel Used (gal)	136.4	138.3	136.4	142.1	140.9	138.8

10: Kolb Road Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.0	0.1	0.0	0.4
Total Del/Veh (s)	6.2	4.2	1.0	0.4	0.4	0.2	1.0
Stop Delay (hr)	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Stop Del/Veh (s)	6.4	4.8	0.2	0.2	0.0	0.0	0.6
Total Stops	84	1	0	0	1	0	86
Stop/Veh	0.99	0.05	0.00	0.00	0.00	0.00	0.06
Travel Dist (mi)	1.7	0.1	31.5	0.9	21.3	4.2	59.6
Travel Time (hr)	0.3	0.0	1.2	0.0	0.8	0.2	2.6
Vehicles Entered	84	22	545	15	611	120	1397
Vehicles Exited	85	22	545	15	610	120	1397
Hourly Exit Rate	85	22	545	15	610	120	1397
Input Volume	86	20	552	14	635	123	1430
% of Volume	99	110	99	107	96	98	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.5	2.1	3.5	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.5	2.0
Total Delay (hr)	1.5	2.1	0.7	0.7	1.7	0.0	1.9	0.8	0.1	0.3	1.6	0.2
Total Del/Veh (s)	30.3	23.8	6.1	26.4	19.6	4.2	24.1	15.2	5.2	18.0	29.7	5.8
Stop Delay (hr)	1.3	1.4	0.3	0.6	1.3	0.0	1.7	0.6	0.1	0.2	1.3	0.1
Stop Del/Veh (s)	24.9	15.5	3.0	23.9	14.3	3.6	21.0	12.3	5.0	14.3	24.0	3.6
Total Stops	161	196	236	84	187	19	239	85	64	45	142	74
Stop/Veh	0.89	0.61	0.59	0.88	0.59	0.66	0.84	0.46	0.65	0.76	0.76	0.73
Travel Dist (mi)	40.0	71.6	88.5	4.9	16.4	1.5	18.6	10.7	6.4	22.8	71.4	38.8
Travel Time (hr)	2.8	3.9	3.6	0.9	2.1	0.1	2.6	1.1	0.4	1.0	3.6	1.4
Vehicles Entered	179	319	397	94	314	29	285	186	97	58	183	100
Vehicles Exited	178	320	394	94	314	29	283	185	97	59	184	99
Hourly Exit Rate	178	320	394	94	314	29	283	185	97	59	184	99
Input Volume	180	321	410	96	302	23	283	189	100	57	188	107
% of Volume	99	100	96	98	104	126	100	98	97	104	98	93
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.4
Total Delay (hr)	11.7
Total Del/Veh (s)	18.5
Stop Delay (hr)	8.9
Stop Del/Veh (s)	14.2
Total Stops	1532
Stop/Veh	0.68
Travel Dist (mi)	391.7
Travel Time (hr)	23.7
Vehicles Entered	2241
Vehicles Exited	2236
Hourly Exit Rate	2236
Input Volume	2256
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	3.8	2.6	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay (hr)	2.6	0.0	0.1	0.0	0.0	0.4	0.2	0.0	0.0	0.2	0.0	3.5
Total Del/Veh (s)	54.2	56.4	5.8	29.1	8.1	8.6	2.2	1.5	2.8	1.0	0.5	8.7
Stop Delay (hr)	2.5	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	2.9
Stop Del/Veh (s)	52.5	53.3	5.2	28.1	8.1	5.1	0.0	0.0	0.9	0.1	0.1	7.2
Total Stops	170	1	78	2	11	103	0	0	2	0	3	370
Stop/Veh	0.99	1.00	1.00	1.00	1.00	0.67	0.00	0.00	0.25	0.00	0.06	0.25
Travel Dist (mi)	26.4	0.1	12.1	0.0	0.3	24.8	57.1	0.5	0.5	35.8	3.1	160.7
Travel Time (hr)	3.6	0.0	0.6	0.0	0.0	1.2	1.9	0.0	0.0	1.5	0.2	9.0
Vehicles Entered	169	1	78	2	11	151	348	3	8	635	53	1459
Vehicles Exited	168	1	78	2	11	151	347	3	8	634	52	1455
Hourly Exit Rate	168	1	78	2	11	151	347	3	8	634	52	1455
Input Volume	169	1	86	2	8	144	351	2	9	656	56	1484
% of Volume	99	100	91	100	138	105	99	150	89	97	93	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.7	0.1	0.3	0.8	0.0	2.4
Total Del/Veh (s)	21.5	5.9	17.7	7.7	9.5	5.5	3.3	11.5	5.3	3.1	6.3
Stop Delay (hr)	0.0	0.0	0.2	0.1	0.0	0.2	0.0	0.2	0.2	0.0	1.1
Stop Del/Veh (s)	19.9	5.8	15.1	6.4	5.8	1.6	0.9	8.0	1.6	0.9	2.9
Total Stops	3	8	47	55	7	87	36	66	106	3	418
Stop/Veh	1.00	0.89	0.81	0.82	0.58	0.19	0.28	0.67	0.19	0.20	0.30
Travel Dist (mi)	0.4	1.0	6.5	7.5	2.4	88.8	26.2	14.2	77.0	2.1	226.1
Travel Time (hr)	0.0	0.1	0.5	0.4	0.1	3.3	1.0	0.8	3.0	0.1	9.3
Vehicles Entered	3	9	58	67	12	447	129	98	545	14	1382
Vehicles Exited	3	8	58	67	12	450	129	98	546	15	1386
Hourly Exit Rate	3	8	58	67	12	450	129	98	546	15	1386
Input Volume	6	9	59	64	14	444	128	105	563	14	1406
% of Volume	50	89	98	105	86	101	101	93	97	107	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.4
Denied Del/Veh (s)	0.0	0.0		0.6	2.2	0.5	0.0	0.7
Total Delay (hr)	1.9	0.0	0.0	1.5	1.0	0.1	1.3	5.7
Total Del/Veh (s)	13.5	8.2		9.0	6.0	21.1	7.2	8.8
Stop Delay (hr)	1.5	0.0	0.0	0.7	0.0	0.1	0.7	2.9
Stop Del/Veh (s)	10.8	7.5		4.2	0.0	18.5	3.9	4.6
Total Stops	329	1	0	236	1	13	235	815
Stop/Veh	0.66	1.00		0.40	0.00	0.87	0.37	0.35
Travel Dist (mi)	59.1	0.1	0.0	143.6	118.7	1.5	64.1	387.2
Travel Time (hr)	3.7	0.0	0.0	5.7	4.8	0.1	3.1	17.5
Vehicles Entered	489	1	0	587	570	15	638	2300
Vehicles Exited	490	1	0	588	569	15	638	2301
Hourly Exit Rate	490	1	0	588	569	15	638	2301
Input Volume	480	2	1	584	577	19	657	2320
% of Volume	102	50	0	101	99	79	97	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.6
Denied Del/Veh (s)	1.5
Total Delay (hr)	33.3
Total Del/Veh (s)	28.9
Stop Delay (hr)	16.4
Stop Del/Veh (s)	14.3
Total Stops	3225
Stop/Veh	0.78
Travel Dist (mi)	4158.5
Travel Time (hr)	158.7
Vehicles Entered	3997
Vehicles Exited	3975
Hourly Exit Rate	3975
Input Volume	23076
% of Volume	17
Denied Entry Before	0
Denied Entry After	0

Intersection: 10: Kolb Road

Movement	EB	WB	NB	SB
Directions Served	R	R	TR	T
Maximum Queue (ft)	69	31	5	19
Average Queue (ft)	29	14	0	1
95th Queue (ft)	55	38	3	10
Link Distance (ft)	95	24	251	136
Upstream Blk Time (%)	0	3		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	194	225	115	182	215	73	222	168	63	73	162	66
Average Queue (ft)	94	121	59	55	108	12	121	59	25	33	92	33
95th Queue (ft)	161	202	93	119	181	55	199	123	50	64	146	55
Link Distance (ft)		1180			215			289			2064	
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (ft)	185		825	120		150	180		115	210		130
Storage Blk Time (%)	0	2		1	6		2	1			2	
Queuing Penalty (veh)	3	10		3	7		4	3			3	

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	260	113	48	97	30	18
Average Queue (ft)	112	35	11	44	2	2
95th Queue (ft)	214	76	37	80	13	12
Link Distance (ft)		822	140			251
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	300			150	150	
Storage Blk Time (%)	0	0		0		
Queuing Penalty (veh)	0	0		0		

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	NB	B2	SB	SB
Directions Served	LTR	LTR	L	T	R	T	L	TR
Maximum Queue (ft)	38	92	29	175	61	108	94	173
Average Queue (ft)	9	43	5	57	23	4	39	68
95th Queue (ft)	32	76	23	135	53	76	78	147
Link Distance (ft)	616	590		1013		506		706
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (ft)			125		110		140	
Storage Blk Time (%)				1				1
Queuing Penalty (veh)				2				1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	144	146	23	5	166	340	44	139	145
Average Queue (ft)	88	69	1	0	98	33	12	61	76
95th Queue (ft)	130	116	10	3	151	219	38	115	131
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)						0			
Queuing Penalty (veh)						0			
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		0						0	
Queuing Penalty (veh)		0						0	

Network Summary

Network wide Queuing Penalty: 38

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	12.0	36.0	14.0	18.3	12.0	36.0	8.0	24.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	8.9	26.4	12.5	17.0	9.2	26.4	13.6	26.6
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	78	0	2	2	63	0	50	11
Cycles @ Minimum (%)	9	4	9	39	13	4	26	4
Cycles Maxed Out (%)	4	15	50	33	4	15	17	53
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	29.2	7.4	9.4	29.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	25.2	8.4	10.1	25.2
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	96	55	6
Cycles @ Minimum (%)	5	4	44	5
Cycles Maxed Out (%)	41	0	45	41
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	3	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	29.0	21.0	29.0
Minimum Green (s)	15.0	5.0	15.0
Recall	Min	None	Min
Avg. Green (s)	23.1	13.0	23.1
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	6	0	6
Cycles Maxed Out (%)	22	9	22
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project and Roundabout at Territory Drive (North End Alternative 3) AM Peak Hour

Summary of All Intervals

Run Number	3	4	5	6	7	Avg
Start Time	7:10	7:10	7:10	7:10	7:10	7:10
End Time	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4595	4528	4470	4580	4584	4552
Vehs Exited	4563	4428	4471	4578	4550	4516
Starting Vehs	173	125	174	165	172	158
Ending Vehs	205	225	173	167	206	199
Denied Entry Before	4	1	5	1	2	2
Denied Entry After	1	1	1	2	0	1
Travel Distance (mi)	4429	4336	4374	4458	4404	4400
Travel Time (hr)	186.4	189.2	179.9	183.7	187.7	185.4
Total Delay (hr)	55.8	61.6	50.5	52.5	57.8	55.7
Total Stops	4442	4505	4191	4264	4498	4379
Fuel Used (gal)	155.1	154.1	151.7	155.3	155.6	154.4

Interval #0 Information Seeding

Start Time	7:10
End Time	7:15
Total Time (min)	5

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	3	4	5	6	7	Avg
Vehs Entered	4595	4528	4470	4580	4584	4552
Vehs Exited	4563	4428	4471	4578	4550	4516
Starting Vehs	173	125	174	165	172	158
Ending Vehs	205	225	173	167	206	199
Denied Entry Before	4	1	5	1	2	2
Denied Entry After	1	1	1	2	0	1
Travel Distance (mi)	4429	4336	4374	4458	4404	4400
Travel Time (hr)	186.4	189.2	179.9	183.7	187.7	185.4
Total Delay (hr)	55.8	61.6	50.5	52.5	57.8	55.7
Total Stops	4442	4505	4191	4264	4498	4379
Fuel Used (gal)	155.1	154.1	151.7	155.3	155.6	154.4

10: Kolb Road Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.5	0.0	0.1	0.0	0.6
Total Del/Veh (s)	5.5	6.4	2.4	2.4	0.5	0.1	1.7
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	5.8	6.9	0.1	0.4	0.0	0.0	0.3
Total Stops	45	0	4	0	0	0	49
Stop/Veh	1.00	0.00	0.01	0.00	0.00	0.00	0.04
Travel Dist (mi)	0.9	0.0	47.6	0.6	16.7	2.1	67.9
Travel Time (hr)	0.1	0.0	1.9	0.0	0.6	0.1	2.8
Vehicles Entered	45	8	681	9	473	61	1277
Vehicles Exited	45	8	682	9	473	61	1278
Hourly Exit Rate	45	8	682	9	473	61	1278
Input Volume	45	8	669	9	490	69	1290
% of Volume	100	100	102	100	97	88	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.5	1.5	3.4	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.7	1.9
Total Delay (hr)	2.0	2.0	0.3	1.1	6.8	0.3	4.3	1.4	0.1	0.4	2.4	0.6
Total Del/Veh (s)	45.8	26.8	4.3	38.6	43.7	13.3	37.0	23.5	5.4	23.5	48.5	9.9
Stop Delay (hr)	1.7	1.4	0.2	0.9	5.5	0.3	3.8	1.2	0.1	0.3	2.0	0.4
Stop Del/Veh (s)	40.1	18.9	2.4	33.7	35.4	10.5	32.6	19.4	4.6	19.0	41.2	6.8
Total Stops	145	157	137	94	405	69	419	133	36	48	160	186
Stop/Veh	0.92	0.60	0.60	0.93	0.72	0.80	1.00	0.61	0.65	0.81	0.90	0.83
Travel Dist (mi)	34.6	58.1	50.4	5.2	29.0	4.5	27.5	13.7	3.6	22.5	67.7	86.6
Travel Time (hr)	3.1	3.4	1.9	1.3	7.4	0.5	5.4	1.8	0.2	1.1	4.4	3.5
Vehicles Entered	154	260	225	100	556	86	419	217	54	57	173	220
Vehicles Exited	155	259	225	100	549	86	417	217	55	58	173	223
Hourly Exit Rate	155	259	225	100	549	86	417	217	55	58	173	223
Input Volume	152	269	229	110	565	86	407	217	53	55	180	237
% of Volume	102	96	98	91	97	100	102	100	104	105	96	94
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	0.9
Total Delay (hr)	21.6
Total Del/Veh (s)	30.5
Stop Delay (hr)	17.8
Stop Del/Veh (s)	25.1
Total Stops	1989
Stop/Veh	0.78
Travel Dist (mi)	403.4
Travel Time (hr)	34.0
Vehicles Entered	2521
Vehicles Exited	2517
Hourly Exit Rate	2517
Input Volume	2560
% of Volume	98
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBU	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.2	1.3	0.0	0.5	0.1	2.3
Total Del/Veh (s)	5.6	4.9	3.4	2.9	3.3	8.6	8.6	4.6	4.0	4.5	6.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.3
Stop Del/Veh (s)	1.0	0.4	1.0	0.6	0.8	1.1	1.2	0.8	0.4	0.7	0.8
Total Stops	22	8	4	2	5	14	88	2	39	5	189
Stop/Veh	0.31	0.17	0.40	0.25	0.29	0.19	0.16	0.12	0.08	0.12	0.15
Travel Dist (mi)	10.4	6.7	0.2	0.2	0.3	11.2	86.6	0.8	21.8	2.1	140.3
Travel Time (hr)	0.4	0.3	0.0	0.0	0.0	0.5	3.8	0.1	1.3	0.1	6.5
Vehicles Entered	70	46	10	8	17	71	554	17	460	41	1294
Vehicles Exited	70	46	10	8	17	71	551	17	459	42	1291
Hourly Exit Rate	70	46	10	8	17	71	551	17	459	42	1291
Input Volume	73	48	11	7	16	70	538	17	479	39	1298
% of Volume	96	96	91	114	106	101	102	100	96	108	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.8	0.4	0.0	1.1	0.0	0.3	0.8	0.0	3.6
Total Del/Veh (s)	26.3	7.7	18.9	11.7	7.8	7.9	3.4	15.4	7.1	3.3	9.6
Stop Delay (hr)	0.0	0.0	0.6	0.3	0.0	0.4	0.0	0.2	0.4	0.0	2.1
Stop Del/Veh (s)	24.8	7.4	14.8	9.1	2.7	3.0	1.1	12.1	3.1	2.0	5.5
Total Stops	7	23	123	96	1	150	12	48	127	2	589
Stop/Veh	1.00	1.00	0.78	0.77	0.33	0.29	0.33	0.76	0.31	0.67	0.44
Travel Dist (mi)	0.8	2.7	17.5	14.1	0.6	101.7	7.2	8.9	57.7	0.5	211.6
Travel Time (hr)	0.1	0.2	1.4	0.9	0.0	4.1	0.3	0.6	2.5	0.0	10.1
Vehicles Entered	7	23	156	125	3	508	36	63	407	3	1331
Vehicles Exited	7	23	155	125	3	507	36	63	407	3	1329
Hourly Exit Rate	7	23	155	125	3	507	36	63	407	3	1329
Input Volume	7	21	150	124	3	493	35	63	428	3	1327
% of Volume	100	110	103	101	100	103	103	100	95	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.5
Denied Del/Veh (s)	0.0	0.0	3.2	0.6	2.2	0.0	0.0	0.6
Total Delay (hr)	3.4	0.0	0.0	1.8	1.0	0.0	2.1	8.3
Total Del/Veh (s)	14.2	3.9	21.3	12.0	5.9	26.5	10.6	11.0
Stop Delay (hr)	2.4	0.0	0.0	1.0	0.0	0.0	1.3	4.7
Stop Del/Veh (s)	10.2	2.8	20.2	6.6	0.0	22.5	6.4	6.3
Total Stops	525	4	2	269	1	2	338	1141
Stop/Veh	0.61	0.80	1.00	0.49	0.00	1.00	0.48	0.42
Travel Dist (mi)	102.3	0.7	0.6	132.3	121.2	0.2	68.0	425.2
Travel Time (hr)	6.6	0.0	0.0	5.7	4.9	0.0	4.1	21.4
Vehicles Entered	849	5	2	541	581	2	702	2682
Vehicles Exited	846	5	2	542	581	2	703	2681
Hourly Exit Rate	846	5	2	542	581	2	703	2681
Input Volume	843	6	2	525	582	2	715	2675
% of Volume	100	83	100	103	100	100	98	100
Denied Entry Before	0	0	0	0	1	0	0	1
Denied Entry After	0	0	0	0	1	0	0	1

Total Network Performance

Denied Delay (hr)	1.7
Denied Del/Veh (s)	1.3
Total Delay (hr)	54.0
Total Del/Veh (s)	41.2
Stop Delay (hr)	30.1
Stop Del/Veh (s)	23.0
Total Stops	4379
Stop/Veh	0.93
Travel Dist (mi)	4400.1
Travel Time (hr)	185.4
Vehicles Entered	4552
Vehicles Exited	4516
Hourly Exit Rate	4516
Input Volume	24027
% of Volume	19
Denied Entry Before	2
Denied Entry After	1

Intersection: 10: Kolb Road

Movement	EB	WB	NB	SB
Directions Served	R	R	TR	T
Maximum Queue (ft)	56	29	40	9
Average Queue (ft)	22	6	2	0
95th Queue (ft)	44	26	29	6
Link Distance (ft)	95	24	207	136
Upstream Blk Time (%)		2	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	189	208	72	195	309	215	711	280	358	137	106	182
Average Queue (ft)	102	113	39	106	270	92	261	206	140	19	8	40
95th Queue (ft)	172	191	63	231	338	241	698	292	311	74	57	109
Link Distance (ft)		1180			215		841		289		136	
Upstream Blk Time (%)					38	0	4	0	2	0	0	
Queuing Penalty (veh)					0	0	0	0	16	0	2	
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	1	1		0	51			20	4			
Queuing Penalty (veh)	5	5		3	100			50	16			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	241	158
Average Queue (ft)	115	59
95th Queue (ft)	199	110
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	9	0
Queuing Penalty (veh)	27	1

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	ULTR
Maximum Queue (ft)	53	30	159	110
Average Queue (ft)	20	8	47	25
95th Queue (ft)	48	30	123	73
Link Distance (ft)	780	102	779	207
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	47	181	10	209	46	66	198
Average Queue (ft)	20	92	1	87	10	32	74
95th Queue (ft)	46	155	7	169	35	62	151
Link Distance (ft)	616	590		1013			706
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			125		110	140	
Storage Blk Time (%)				3			1
Queuing Penalty (veh)				1			0

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	190	191	24	23	193	165	35	188	188
Average Queue (ft)	122	115	3	2	111	42	2	88	98
95th Queue (ft)	173	170	19	14	167	120	15	156	159
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		1			0			1	
Queuing Penalty (veh)		0			0			0	

Network Summary

Network wide Queuing Penalty: 226

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	10.0	34.0	21.0	15.3	10.0	34.0	10.0	26.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	8.9	33.6	20.0	15.5	8.7	33.6	9.5	33.0
g/C Ratio	-0.01	NA	NA	NA	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	72	0	0	0	14	0	46	3
Cycles @ Minimum (%)	8	0	0	19	27	0	27	0
Cycles Maxed Out (%)	8	92	76	76	32	92	5	86
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	27.2	7.4	11.4	27.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	23.6	7.8	10.9	23.6
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	8	91	25	8
Cycles @ Minimum (%)	8	8	25	8
Cycles Maxed Out (%)	38	1	38	38
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	3	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	27.0	23.0	27.0
Minimum Green (s)	15.0	5.0	15.0
Recall	Min	None	Min
Avg. Green (s)	22.7	19.4	22.7
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	7	0	7
Cycles Maxed Out (%)	28	44	28
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

2040 With Project and Roundabout at Territory Drive (North End Alternative 3) PM Peak Hour

Summary of All Intervals

Run Number	3	4	6	7	Roundabout	Avg
Start Time	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4094	4092	4067	4018	4109	4079
Vehs Exited	4116	4067	4033	4008	4074	4060
Starting Vehs	167	137	142	132	131	141
Ending Vehs	145	162	176	142	166	161
Denied Entry Before	0	1	2	1	0	0
Denied Entry After	0	0	1	1	1	0
Travel Distance (mi)	4307	4198	4177	4202	4259	4228
Travel Time (hr)	163.8	158.9	159.1	159.5	162.2	160.7
Total Delay (hr)	36.4	35.0	35.6	34.7	36.0	35.5
Total Stops	3380	3335	3295	3416	3454	3376
Fuel Used (gal)	144.1	140.7	140.3	141.0	142.9	141.8

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	3	4	6	7	Roundabout	Avg
Vehs Entered	4094	4092	4067	4018	4109	4079
Vehs Exited	4116	4067	4033	4008	4074	4060
Starting Vehs	167	137	142	132	131	141
Ending Vehs	145	162	176	142	166	161
Denied Entry Before	0	1	2	1	0	0
Denied Entry After	0	0	1	1	1	0
Travel Distance (mi)	4307	4198	4177	4202	4259	4228
Travel Time (hr)	163.8	158.9	159.1	159.5	162.2	160.7
Total Delay (hr)	36.4	35.0	35.6	34.7	36.0	35.5
Total Stops	3380	3335	3295	3416	3454	3376
Fuel Used (gal)	144.1	140.7	140.3	141.0	142.9	141.8

10: Kolb Road Performance by movement

Movement	EBR	WBR	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.7	0.1	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	0.5	0.0	0.4	0.0	0.2	0.0	1.1
Total Del/Veh (s)	12.4	3.5	2.6	2.1	1.0	0.2	2.7
Stop Delay (hr)	0.5	0.0	0.0	0.0	0.0	0.0	0.6
Stop Del/Veh (s)	12.9	4.1	0.2	0.2	0.0	0.0	1.4
Total Stops	139	1	5	0	3	0	148
Stop/Veh	0.95	0.05	0.01	0.00	0.00	0.00	0.10
Travel Dist (mi)	2.8	0.1	39.6	1.1	21.7	4.4	69.7
Travel Time (hr)	0.7	0.0	1.6	0.1	0.9	0.2	3.5
Vehicles Entered	146	20	541	15	627	126	1475
Vehicles Exited	145	20	540	15	627	126	1473
Hourly Exit Rate	145	20	540	15	627	126	1473
Input Volume	138	20	552	14	635	123	1482
% of Volume	105	100	98	107	99	102	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.6	2.3	3.6	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.5	2.1
Total Delay (hr)	1.5	2.1	0.8	0.7	1.8	0.0	1.7	0.7	0.1	0.3	1.6	0.2
Total Del/Veh (s)	28.6	23.2	6.6	28.9	20.4	3.5	22.7	13.5	5.1	18.6	30.0	6.0
Stop Delay (hr)	1.2	1.4	0.4	0.7	1.3	0.0	1.5	0.6	0.1	0.2	1.3	0.1
Stop Del/Veh (s)	23.2	14.9	3.3	26.5	15.3	2.7	19.7	10.7	4.7	14.6	23.8	3.9
Total Stops	167	197	243	81	192	13	227	84	62	44	150	86
Stop/Veh	0.86	0.60	0.59	0.90	0.61	0.59	0.83	0.44	0.64	0.76	0.78	0.76
Travel Dist (mi)	42.7	72.7	91.1	4.6	16.3	1.2	17.8	11.1	6.4	22.6	74.6	43.8
Travel Time (hr)	2.9	4.0	3.8	0.9	2.1	0.1	2.4	1.0	0.4	1.0	3.8	1.6
Vehicles Entered	191	325	408	89	311	22	272	191	97	58	190	112
Vehicles Exited	191	325	406	89	311	22	272	191	97	58	190	111
Hourly Exit Rate	191	325	406	89	311	22	272	191	97	58	190	111
Input Volume	180	321	410	96	302	23	283	189	100	57	188	107
% of Volume	106	101	99	93	103	96	96	101	97	102	101	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

11: Sunrise Drive & Kolb Road Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.5
Total Delay (hr)	11.6
Total Del/Veh (s)	18.3
Stop Delay (hr)	8.8
Stop Del/Veh (s)	13.9
Total Stops	1546
Stop/Veh	0.68
Travel Dist (mi)	404.9
Travel Time (hr)	24.0
Vehicles Entered	2266
Vehicles Exited	2263
Hourly Exit Rate	2263
Input Volume	2256
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

14: Kolb Road & Territory Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.2	0.0	0.0	0.4	0.8	0.0	0.1	0.0	1.2	0.1
Total Del/Veh (s)	6.9	5.7	6.8	4.7	3.2	8.7	8.5	9.7	6.4	5.8	6.9	7.1
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.5	0.1
Stop Del/Veh (s)	1.8	1.0	1.6	1.8	0.8	1.8	1.5	1.4	2.3	1.9	3.0	3.3
Total Stops	50	0	31	1	3	42	82	0	14	3	199	17
Stop/Veh	0.44	0.00	0.35	0.50	0.27	0.28	0.24	0.00	0.26	0.33	0.30	0.29
Travel Dist (mi)	16.7	0.1	13.0	0.0	0.2	23.3	53.7	0.3	2.7	0.4	31.1	2.9
Travel Time (hr)	0.7	0.0	0.5	0.0	0.0	1.0	2.4	0.0	0.2	0.0	2.4	0.2
Vehicles Entered	113	1	88	2	11	150	343	2	54	9	652	58
Vehicles Exited	113	1	88	2	11	148	342	2	53	9	651	58
Hourly Exit Rate	113	1	88	2	11	148	342	2	53	9	651	58
Input Volume	117	1	86	2	8	144	351	2	52	9	656	56
% of Volume	97	100	102	100	138	103	97	100	102	100	99	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

14: Kolb Road & Territory Drive Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	3.1
Total Del/Veh (s)	7.4
Stop Delay (hr)	0.9
Stop Del/Veh (s)	2.3
Total Stops	442
Stop/Veh	0.30
Travel Dist (mi)	144.4
Travel Time (hr)	7.6
Vehicles Entered	1483
Vehicles Exited	1478
Hourly Exit Rate	1478
Input Volume	1484
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

16: Kolb Road & Snyder Road Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.6	0.1	0.3	0.9	0.0	2.4
Total Del/Veh (s)	18.9	8.3	17.0	7.7	10.8	5.0	3.1	10.9	5.4	3.8	6.2
Stop Delay (hr)	0.0	0.0	0.2	0.1	0.0	0.2	0.0	0.2	0.3	0.0	1.1
Stop Del/Veh (s)	17.6	7.9	14.5	6.7	7.1	1.3	0.8	7.3	1.7	1.7	2.8
Total Stops	5	10	46	51	9	73	32	71	114	2	413
Stop/Veh	1.00	1.00	0.81	0.81	0.64	0.16	0.24	0.65	0.20	0.15	0.29
Travel Dist (mi)	0.6	1.2	6.4	7.1	2.8	87.5	27.4	15.5	79.5	1.8	229.8
Travel Time (hr)	0.1	0.1	0.5	0.4	0.1	3.1	1.0	0.8	3.1	0.1	9.4
Vehicles Entered	5	10	57	63	14	445	136	108	564	13	1415
Vehicles Exited	5	10	56	62	14	446	135	108	565	13	1414
Hourly Exit Rate	5	10	56	62	14	446	135	108	565	13	1414
Input Volume	6	9	59	64	14	444	128	105	563	14	1406
% of Volume	83	111	95	97	100	100	105	103	100	93	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

19: Sabino Canyon Road & Kolb Road Performance by movement

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.5
Denied Del/Veh (s)	0.0	0.0	0.9	0.6	2.2	0.4	0.0	0.7
Total Delay (hr)	1.9	0.0	0.0	1.5	1.0	0.1	1.3	5.7
Total Del/Veh (s)	13.7	1.8	10.2	8.9	6.0	20.6	7.1	8.8
Stop Delay (hr)	1.5	0.0	0.0	0.7	0.0	0.1	0.7	3.0
Stop Del/Veh (s)	11.1	1.4	8.8	4.1	0.0	17.9	3.7	4.5
Total Stops	331	0	0	225	0	20	234	810
Stop/Veh	0.68	0.00	0.00	0.38	0.00	0.95	0.36	0.34
Travel Dist (mi)	58.9	0.1	0.2	144.8	122.0	2.1	65.2	393.3
Travel Time (hr)	3.7	0.0	0.0	5.7	4.9	0.2	3.2	17.8
Vehicles Entered	488	1	1	592	585	21	654	2342
Vehicles Exited	485	1	1	593	585	21	654	2340
Hourly Exit Rate	485	1	1	593	585	21	654	2340
Input Volume	480	2	1	584	577	19	657	2320
% of Volume	101	50	100	102	101	111	100	101
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.5
Denied Del/Veh (s)	1.3
Total Delay (hr)	34.0
Total Del/Veh (s)	29.0
Stop Delay (hr)	14.8
Stop Del/Veh (s)	12.6
Total Stops	3376
Stop/Veh	0.80
Travel Dist (mi)	4228.4
Travel Time (hr)	160.7
Vehicles Entered	4079
Vehicles Exited	4060
Hourly Exit Rate	4060
Input Volume	23128
% of Volume	18
Denied Entry Before	0
Denied Entry After	0

Intersection: 10: Kolb Road

Movement	EB	WB	SB
Directions Served	R	R	T
Maximum Queue (ft)	106	29	28
Average Queue (ft)	52	14	2
95th Queue (ft)	91	37	20
Link Distance (ft)	95	24	136
Upstream Blk Time (%)	2	2	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	EB	EB	EB	WB	WB	WB	B12	NB	NB	NB	B8	SB
Directions Served	L	T	R	L	T	R	T	L	T	R	T	L
Maximum Queue (ft)	195	256	139	159	243	67	11	221	228	111	11	79
Average Queue (ft)	95	121	64	52	114	10	0	111	58	25	0	31
95th Queue (ft)	156	205	109	108	197	41	8	188	140	68	8	67
Link Distance (ft)		1180			215		841		289		136	
Upstream Blk Time (%)					1	0		0	0	0		
Queuing Penalty (veh)					0	0		0	1	0		
Storage Bay Dist (ft)	185		825	120		150		180		115		210
Storage Blk Time (%)	0	2		0	7			2	1			
Queuing Penalty (veh)	0	9		1	8			5	2			

Intersection: 11: Sunrise Drive & Kolb Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	188	66
Average Queue (ft)	96	34
95th Queue (ft)	161	60
Link Distance (ft)	2064	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		130
Storage Blk Time (%)	3	
Queuing Penalty (veh)	5	

Intersection: 14: Kolb Road & Territory Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	ULTR
Maximum Queue (ft)	99	24	154	192
Average Queue (ft)	36	4	58	75
95th Queue (ft)	69	19	121	169
Link Distance (ft)	780	102	779	207
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Kolb Road & Snyder Road

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	38	87	31	154	63	89	163
Average Queue (ft)	12	41	7	49	21	39	74
95th Queue (ft)	36	72	26	114	52	75	153
Link Distance (ft)	616	590		1013			706
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			125		110	140	
Storage Blk Time (%)				1	0		1
Queuing Penalty (veh)				1	0		1

Intersection: 19: Sabino Canyon Road & Kolb Road

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	U	T	T	L	T	T
Maximum Queue (ft)	142	139	5	6	164	138	54	135	155
Average Queue (ft)	84	74	0	0	96	28	17	61	74
95th Queue (ft)	126	120	4	6	147	90	46	112	128
Link Distance (ft)	581	581			1289	1289		506	506
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			150	225			150		
Storage Blk Time (%)		0						0	
Queuing Penalty (veh)		0						0	

Network Summary

Network wide Queuing Penalty: 34

Intersection: 11: Sunrise Drive & Kolb Road

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	12.0	36.0	14.0	18.3	12.0	36.0	8.0	24.3
Minimum Green (s)	7.0	15.0	7.0	15.0	7.0	15.0	7.0	15.0
Recall	None	Min	None	None	None	Min	None	None
Avg. Green (s)	8.1	26.6	12.1	17.1	8.7	26.6	10.7	26.2
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	81	0	2	6	60	0	50	6
Cycles @ Minimum (%)	13	2	15	32	17	2	28	6
Cycles Maxed Out (%)	0	19	45	40	4	19	13	57
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Kolb Road & Snyder Road

Phase	2	3	4	6
Movement(s) Served	SBTL	EBTL	WBTL	NBTL
Maximum Green (s)	29.2	7.4	9.4	29.2
Minimum Green (s)	15.0	7.0	10.0	15.0
Recall	None	None	None	None
Avg. Green (s)	25.4	7.3	10.2	25.4
g/C Ratio	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	95	57	6
Cycles @ Minimum (%)	6	4	42	6
Cycles Maxed Out (%)	38	0	43	38
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 19: Sabino Canyon Road & Kolb Road

Phase	2	3	6
Movement(s) Served	SBTL	WBL	NBTU
Maximum Green (s)	29.0	21.0	29.0
Minimum Green (s)	15.0	5.0	15.0
Recall	Min	None	Min
Avg. Green (s)	23.1	12.9	23.1
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	8	0	8
Cycles Maxed Out (%)	26	10	26
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

11. APPENDIX C – CRASH DATA

PIMA COUNTY
TRANSPORTATION

TRAFFIC ENGINEERING DIVISION

KOLB RD FROM 4050N TO 5600N

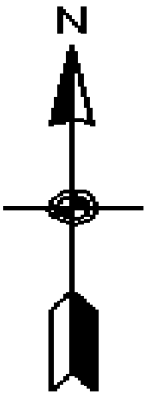
9/1/11 THROUGH 8/31/16

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC.
- FIXED OBJ.
- BACKING
- HEAD ON
- SIDE SWIPE
- PEDESTRIAN OR ANIMAL
- BODILY INJURY
- FATALITY

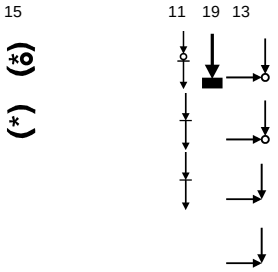
CRASH AND INJURY SEVERITY SUMMARY

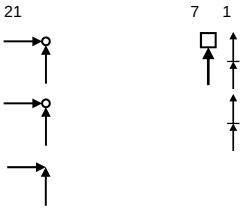
PROPERTY	29
INJURY	10
FATALITY	0
TOTAL	**39**



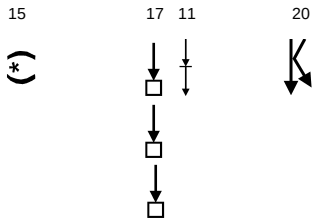
Print Date: 10/26/2016

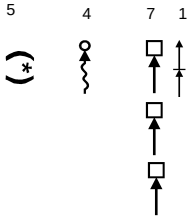
5600N



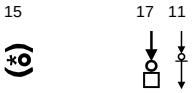


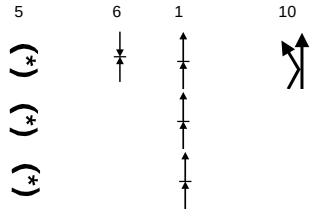
KOLB RD





4050N





PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD: 4050 - 5600 N

9/1/11 to 8/31/16

TYPE	DATE CASE #	TIME LIGHT	DAY	SEVERITY BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
21	8/30/2016 160830276	17 : 0 Day	Tue	INJURY - 3 5520 N		VEH 1: FAILURE TO YIELD VEH 2: NONE	EBRT FTY & HIT SB
1	8/26/2016 160826256	16 : 0 Day	Fri	PROPERTY 5465 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE VEH 3: NONE	NB RE MULTI NB
	7/21/2016 160721262	17 : 28 Day	Thu	PROPERTY 4220 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NB RE NB
11	5/26/2016 160526252	18 : 7 Day	Thu	INJURY - 2 5280 N		VEH 1: NONE VEH 2: NONE	SB RE SB
5	5/20/2016 160520125	10 : 1 Day	Fri	PROPERTY 4100 N	DR 1: UNKNOWN DISTRACTIONS DR 2: UNKNOWN DISTRACTIONS	VEH 1: UNKNOWN VEH 2: UNKNOWN	NB MERGING HIT NB
13	5/19/2016 160519159	11 : 0 Day	Thu	INJURY - 2 5520 N		VEH 1: NONE VEH 2: FAILURE TO YIELD	SB MOTORCYCLE HIT EBLT EXITING PRIVATE DRIVE (FTY)
10	4/4/2016 160404218	16 : 54 Day	Mon	PROPERTY 4180 N	DR 1: UNKNOWN DISTRACTIONS DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: UNSAFE LANE CHANGE	NB MERGING SIDESWIPED NB
13	3/2/2016 160302129	10 : 54 Day	Wed	PROPERTY 5520 N		VEH 1: FAILURE TO YIELD VEH 2: NONE	WBLT FTY EXITING PRIVATE DRIVE & HIT SB
5	2/4/2016 160204089	9 : 36 Day	Thu	PROPERTY 4130 N	DR 1: UNKNOWN DISTRACTIONS DR 2: UNKNOWN DISTRACTIONS	VEH 1: FAILURE TO YIELD VEH 2: FAILURE TO YIELD	NB MERGING HIT NB
11	10/30/2015 151030209	16 : 47 Day	Fri	PROPERTY 5200 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	SB RE SB
1	10/1/2015 151001241	16 : 10 Day	Thu	PROPERTY 5390 N	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS	NB RE NB
21	6/16/2015 150616071	9 : 28 Day	Tue	INJURY - 2 5560 N		VEH 1: NONE VEH 2: FAILURE TO YIELD	EB EXITING PARKING LOT FTY AND HIT NB
13	5/13/2015 150513216	15 : 11 Day	Wed	INJURY - 2 5570 N		VEH 1: FAILURE TO YIELD VEH 2: NONE	EB EXITING PARKING LOT HIT SB

** Denotes Driver Impairment

TYPE	DATE CASE #	TIME LIGHT	DAY	SEVERITY BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
21	2/26/2015 150226275	21 : 28 Dark--lighted	Thu	PROPERTY 5560 n		VEH 1: FAILURE TO YIELD VEH 2: NONE	EB EXITINGN PRIV PROP FTY AND HIT NB
4	2/23/2015 150223305	20 : 21 Dark	Mon	INJURY - 3 4730 N	DR 1: PASSENGER	VEH 1: UNKNOWN	NB LOST CONTROL AND HIT WALL
1	1/20/2015 150120278	16 : 54 Day	Tue	PROPERTY 4570 N		VEH 1: SPEED TOO FAST FOR CONDITIONS OTHER VEH 2: NONE	NB RE NB
7	1/3/2015 150103031	3 : 35 Dark	Sat	PROPERTY 4730 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: UNKNOWN	NB LOST CONTROL, RAN OFF ROAD & HIT UTILITY POLE, TREES & BLOCK WALL (HIT & RUN)
15	12/9/2014 141209301	18 : 51 Dark	Tue	PROPERTY 4700 N		VEH 1: NONE	SB AVOIDING NB IN WRONG LANE RAN OFF ROAD
	11/1/2014 141101028	2 : 5 Dark	Sat	INJURY - 4 5170 N	DR 1: UNKNOWN DISTRACTIONS	** VEH 1: SPEED TOO FAST FOR CONDITIONS FAILED TO KEEP IN PROPER LANE	SB LEFT RDWY OVER CORRECTED AND ROLLED OVER
17	10/3/2014 141003010	1 : 27 Dark	Fri	INJURY - 2 4300 N	DR 1: UNKNOWN DISTRACTIONS	** VEH 1: SPEED TOO FAST FOR CONDITIONS	SB LEFT RDWY & HIT A TREE (FELL ASLEEP)
15	11/23/2013 131123339	22 : 38	Sat	INJURY - 3 4300 N		VEH 1: DISREGARD TRAFFIC SIGNAL MADE IMPROPER TURN VEH 2: NONE	SB MADE A LEFT U-TURN & HIT A SB
5	11/13/2013 131113018	03 : 16 Dark	Wed	PROPERTY 4790 N		VEH 1: SPEED TOO FAST FOR CONDITIONS	NB LEFT THE RDWY, SPUN & ROLLED
7	10/8/2013 131008214	15 : 45 Day	Tue	PROPERTY 5600 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NB RE NB
	9/27/2013 130927335	23 : 21 Dark	Fri	PROPERTY 4780 N		** VEH 1: SPEED TOO FAST FOR CONDITIONS FAILED TO KEEP IN PROPER LANE VEH 2: NONE VEH 3: NONE	NB LEFT RDWY HIT CABLE BOX, TREE AND WALL. ROCKS FEEL ON TWO PARKED VEH'S
20	9/23/2013 130923315	19 : 2 Dark	Mon	PROPERTY 4770 N		VEH 1: NONE	NB SIDESWIPED SB MOTORCYCLE CAUSING MOTORCYCLE TO FALL (HIT AND RUN)
1	9/17/2013 130917041	08 : 9 Day	Tue	PROPERTY 4460 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NR REAR-END
11	7/1/2013 130701249	16 : 20 Day	Mon	PROPERTY 5000 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	SB REAR-ENDED A SB LT INTO PVT DRWY

** Denotes Driver Impairment

TYPE	DATE CASE #	TIME LIGHT	DAY	SEVERITY BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
17	4/3/2013 130403016	01 : 40 Dark	Wed	PROPERTY 4900 N		** VEH 1: SPEED TOO FAST FOR CONDITIONS FAILED TO KEEP IN PROPER LANE	SB LEFT THE RDWY & HIT THE GUARDRAIL
5	2/14/2013 130214212	16 : 3 Day	Thu	PROPERTY 4340 N		VEH 1: NONE	NB BRAKED HARD, FISHTAILED & ROLLED
17	2/7/2013 130207147	11 : 39 Day	Thu	PROPERTY 4750 N		VEH 1: FAILED TO KEEP IN PROPER LANE	NB LEFT THE RDWY & HIT A FENCE (CEMENT WALL)
	12/13/2012 121213195	16 : 27 Day	Thu	PROPERTY 4700 N	DR 1: UNKNOWN DISTRACTIONS		NB CROSSED CENTERLINE, LEFT RDWY & HIT AN EMBANKMENT
13	11/29/2012 121129182	15 : 6 Day	Thu	PROPERTY 5570 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: MADE IMPROPER TURN VEH 2: NONE	EB LT EXITING PRVT DR HIT SB
11	11/15/2012 121115297	18 : 42 Dark	Thu	INJURY - 2 4490 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: UNKNOWN	SB REAR-ENDED A SB BICYCLE (WITH-TRAILER)
6	11/4/2012 121104191	14 : 47 Day	Sun	PROPERTY 4310 N		VEH 1: DROVE/RODE IN OPPOSING LANE VEH 2: NONE	SB IN NB LANE HIT A NB
11	10/24/2012 121024172	14 : 30 Day	Wed	PROPERTY 5450 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	SB REAR-END
1	9/11/2012 120911099	10 : 59 Day	Tue	PROPERTY 4200 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NB RE NB
19	5/6/2012 120506280	19 : 58 Dark	Sun	PROPERTY 5410 N		VEH 1: NONE	SB HIT ANIMAL (COW)
7	3/26/2012 120326007	02 : 2 Dark	Mon	PROPERTY 4780 N		** VEH 1: SPEED TOO FAST FOR CONDITIONS	NB CROSSED CENTER LINE & WENT OFF RD & HIT BLOCK WALL (ALCOHOL)
15	1/18/2012 120118169	14 : 40 Day	Wed	PROPERTY 5150 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: DROVE/RODE IN OPPOSING LANE	SB IN NB LANE, SWERVED, LEFT RDWY & HIT A GARBAGE CAN

** Denotes Driver Impairment

PIMA COUNTY
TRANSPORTATION

TRAFFIC ENGINEERING DIVISION

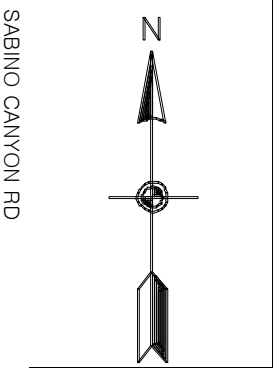
KOLB RD/SABINO CANYON RD@SABINO CANYON RD

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY

KOLB RD/SABINO CANYON RD



17

22

13

7

24

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10

Print Date: 10/26/2016

CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	8
INJURY	3
FATALITY	0
TOTAL	**11**

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD/SABINO CANYON RD @ SABINO CANYON RD

9/1/2011 to 8/31/2016

TYPE	DATE / CASE #	TIME / LIGHT	DAY	SEVERITY / BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
13	8/6/2016 160806277	21 : 0 Dark--lighted	Sat	PROPERTY 4050 N		VEH 1: UNKNOWN VEH 2: UNKNOWN	WBLT HIT SB IN INTERSECTION
17	1/2/2016 160102152	12 : 44 Day	Sat	PROPERTY 4060 N		VEH 1: SPEED TOO FAST FOR CONDITIONS UNKNOWN VEH 2: NONE	SB RE SB AT TRAFFIC LIGHT
13	10/11/2015 151011085	9 : 20 Day	Sun	PROPERTY 4050 N		VEH 1: DISREGARD TRAFFIC SIGNAL VEH 2: NONE	SB RAN RED LIGHT & HIT WBLT
24	6/29/2015 150629248	15 : 31 Day	Mon	INJURY - 2 4050 N	DR 1: OUTSIDE VEH DISTRACTION	VEH 1: MADE IMPROPER TURN FAILED TO KEEP IN PROPER LANE	WB LT HIT MEDIAN AND POST
7	1/21/2015 150121214	16 : 1 Day	Wed	PROPERTY 4050 N		VEH 1: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY VEH 2: NONE	NB RE NB
	1/7/2015 150107299	19 : 6 Dark--lighted	Wed	INJURY - 4 3940 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NB CHANGED LANES & RE A NB BICYCLIST
24	12/28/2014 141228051	7 : 31 Dawn	Sun	PROPERTY 4050 N		VEH 1: NONE	WB LT LOST CTRL ON ICE & HIT A WALL
17	1/9/2014 140109164	14 : 25 Day	Thu	PROPERTY 4050 N		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: FAILURE TO YIELD	SB REAR-END
10	2/27/2013 130227148	13 : 5 Day	Wed	PROPERTY 4050 N		VEH 1: SPEED TOO FAST FOR CONDITIONS FAILED TO KEEP IN PROPER LANE VEH 2: NONE	WB LT SIDESWIPED WB LT AT INTERSECTION
22	1/24/2013 130124107	11 : 47 Day	Thu	INJURY - 2 4050 N		VEH 1: OTHER	WB LT LOST CTRL, SPUN, OVER-CORRECTED, YAWED, JUMPED CURB & HIT A WALL
10	1/13/2012 120113275	17 : 45 Dusk	Fri	PROPERTY 4050 W		VEH 1: UNKNOWN	WB LT HIT THE MEDIAN CURB, LOST CTRL & HIT A BLOCK WALL

** Denotes Driver Impairment

PIMA COUNTY
TRANSPORTATION

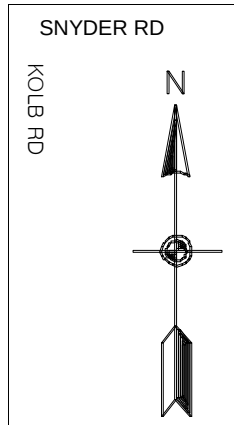
TRAFFIC ENGINEERING DIVISION

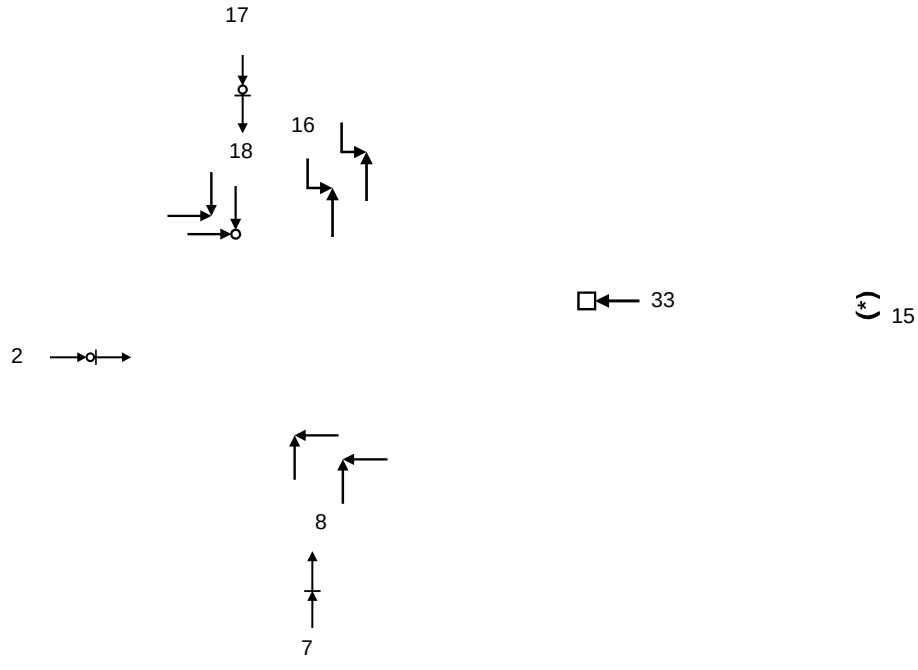
KOLB RD@SNYDER RD

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY





Print Date: 10/26/2016

CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	8
INJURY	3
FATALITY	0
TOTAL	**11**

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD @ SNYDER RD

9/1/2011 to 8/31/2016

TYPE	DATE / CASE #	TIME / LIGHT	DAY	SEVERITY / BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
16	7/1/2016 160701370	21:27 Dark--lighted	Fri	PROPERTY 7170 E		VEH 1: SPEED TOO FAST FOR CONDITIONS FAILURE TO YIELD VEH 2: NONE	NB HIT SBLT IN INTERSECTION (FTY)
8	6/14/2016 160614345	21:39 Dark--lighted	Tue	PROPERTY 7180 E	DR 1: UNKNOWN DISTRACTIONS DR 2: UNKNOWN DISTRACTIONS	** VEH 1: MADE IMPROPER TURN VEH 2: NONE	NBRT TURNED WIDE & HIT WB (ALCOHOL)
16	4/5/2016 160405274	19:6 Dark--lighted	Tue	PROPERTY 4800 N		VEH 1: FAILURE TO YIELD VEH 2: NONE	NB RAN RED LIGHT(FTY) & HIT SBLT
17	2/4/2016 160204059	8:52 Day	Thu	INJURY - 2 4800 N	DR 1: UNKNOWN DISTRACTIONS DR 2: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS OTHER VEH 2: NONE	SB RE SB AT TRAFFIC LIGHT
7	8/11/2015 150811156	11:40 Day	Tue	PROPERTY 4800 N	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY	NB RE NB AT TRAFFIC LIGHT
15	3/21/2015 150321252	19:47 Dark--lighted	Sat	PROPERTY 7170 E		** VEH 1: MADE IMPROPER TURN VEH 2: NONE	NB RT HIT WB (ALCOHOL)
18	10/2/2014 141002210	16:44 Day	Thu	INJURY - 3 7150 E	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS DISREGARD TRAFFIC SIGNAL VEH 2: NONE	EB RAN RED LIGHT & HIT SB
8	5/9/2014 140509312	21:28 Day	Fri	PROPERTY 7150 E		VEH 1: MADE IMPROPER TURN FAILED TO KEEP IN PROPER LANE VEH 2: NONE	NB RT HIT A WB
18	5/2/2014 140502063	08:11 Day	Fri	PROPERTY 4800 N		VEH 1: NONE VEH 2: DISREGARD TRAFFIC SIGNAL	EB RT HIT SB
33	5/7/2013 130507083	09:14 Day	Tue	PROPERTY 7200 E		VEH 1: UNKNOWN	WB HIT LIGHT POLE (HIT AND RUN)
2	9/26/2011 110926052	07:26 Day	Mon	INJURY - 2 7150 E	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS	EB REAR-END

** Denotes Driver Impairment

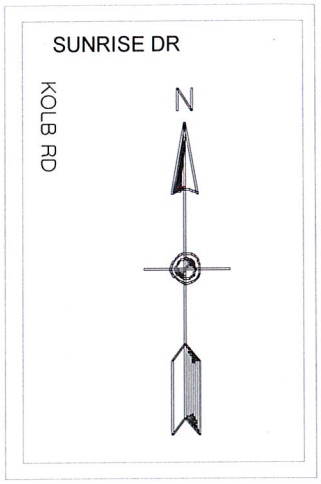
PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

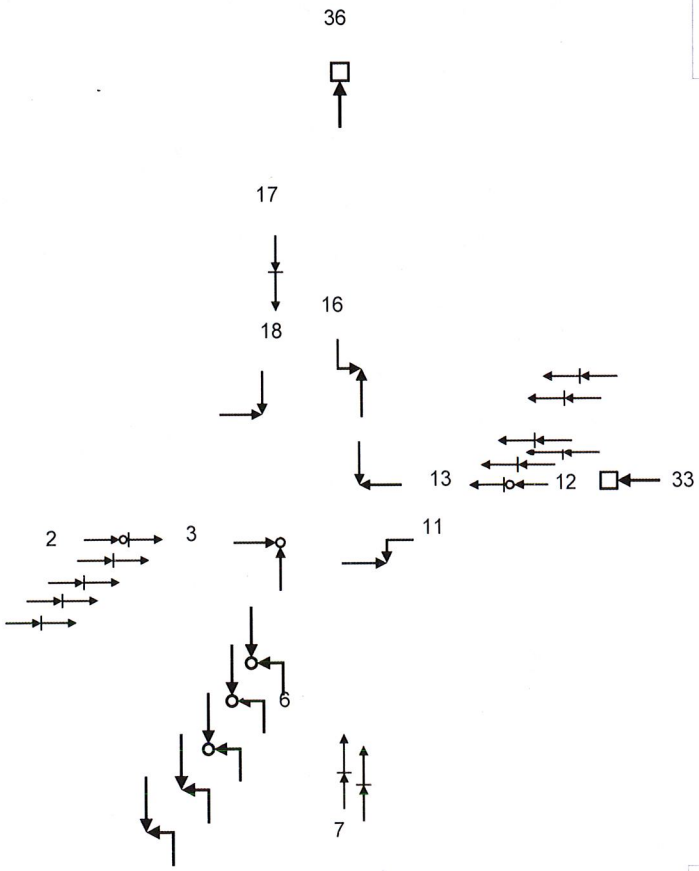
KOLB RD@SUNRISE DR

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY





Print Date: 10/26/2016

CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	20
INJURY	6
FATALITY	0
TOTAL	26

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD @ SUNRISE DR

9/1/2011 to 8/31/2016

TYPE	DATE / CASE #	TIME / LIGHT	DAY	SEVERITY / BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
6	5/31/2016 160531050	7:55 Day	Tue	INJURY - 4 6940 E	DR 1: UNKNOWN DISTRACTIONS DR 2: UNKNOWN DISTRACTIONS	VEH 1: FAILURE TO YIELD VEH 2: NONE	NBLT FTY & HIT SB IN INTERSECTION
12	1/8/2016 160108209	15:11 Day	Fri	PROPERTY 6950 E	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE VEH 3: NONE	WB RE MULTI WB AT TRAFFIC LIGHT (HIT & RUN)
33	12/8/2014 141208250	17:11 Day	Mon	PROPERTY 7010 E		VEH 1: FAILED TO KEEP IN PROPER LANE	WB LT HIT CURB/MEDIAN & HIT A SIGN
36	11/15/2014 141115185	17:22 Dusk	Sat	PROPERTY 5600 N		VEH 1: FAILURE TO YIELD	EB LT AVOIDING BICYCLIST HIT A CURB
6	10/10/2014 141010255	18:32 Dark--lighted	Fri	PROPERTY 5600 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: FAILURE TO YIELD VEH 2: NONE	NB LT HIT SB
13	7/8/2014 140708043	07:40 Day	Tue	PROPERTY 5600 N		VEH 1: UNKNOWN VEH 2: UNKNOWN	SB HIT A WB
17	5/8/2014 140508037	07:47 Day	Thu	PROPERTY 5600 N		VEH 1: FOLLOWED TOO CLOSELY VEH 2: NONE	SB REAR-END
2	3/12/2014 140312134	13:8 Day	Wed	PROPERTY 6940 E	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS	EB RE EB
	3/8/2014 140308103	11:17 Day	Sat	INJURY - 2 6900 E	DR 1: UNKNOWN DISTRACTIONS	** VEH 2: NONE	EB REAR-ENDED AN EB LT
7	2/7/2014 140207062	08:58 Day	Fri	PROPERTY 5600 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NB RE NB AT LIGHT
12	11/17/2013 131117156	15:20 Day	Sun	PROPERTY 6950 E	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	WB RE WB AT LIGHT
	11/1/2013 131101383	22:57 Dark--lighted	Fri	PROPERTY 6950 E	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	WB RE WB AT LIGHT
7	9/16/2013 130916070	09:3 Day	Mon	PROPERTY 5600 N		VEH 1: NONE VEH 2: FOLLOWED TOO CLOSELY	NB REAR-END

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** Denotes Driver Impairment

TYPE	DATE CASE #	TIME LIGHT	DAY	SEVERITY BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
12	8/2/2013 130802045	06:45 Day	Fri	PROPERTY 6950 E	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	WB RE WB
3	5/10/2013 130510114	10:17 Day	Fri	INJURY - 2 5600 N	DR 1: UNKNOWN DISTRACTIONS	** VEH 2: NONE	EB HIT A NB
12	3/2/2013 130302090	09:45 Day	Sat	INJURY - 2 6950 E	DR 3: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: NONE VEH 3: EXCEEDED LAWFUL SPEED	WB RE MULTI WB
2	11/18/2012 121118098	09:0 Day	Sun	PROPERTY 6950 E	DR 1: UNKNOWN DISTRACTIONS	VEH 2: NONE	EB REAR-END
12	6/20/2012 120620163	14:48 Day	Wed	PROPERTY 6950 E		VEH 1: FOLLOWED TOO CLOSELY VEH 2: NONE	WB RE WB AT YELLOW LIGHT
11	5/15/2012 120515269	17:58 Day	Tue	PROPERTY 6900 E		VEH 1: NONE VEH 2: FAILURE TO YIELD	EB RT FTY & SIDESWIPED A WB LT
6	3/15/2012 120315227	16:35 Day	Thu	PROPERTY 5600 N	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	NB U-TURN HIT SB
2	2/16/2012 120216194	14:7 Day	Thu	PROPERTY 6950 E		VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS	EB RE EB
6	2/6/2012 120206192	16:16 Day	Mon	INJURY - 2 5600 N		VEH 1: NONE VEH 2: OTHER	NB LT FTY & HIT A SB
18	12/22/2011 111222113	11:23 Day	Thu	PROPERTY 6900 E	DR 1: UNKNOWN DISTRACTIONS	VEH 2: SPEED TOO FAST FOR CONDITIONS	EB RAN THE RED LIGHT & HIT A SB
16	11/13/2011 111113220	17:22 Dark--lighted	Sun	PROPERTY 5600 N		VEH 1: MADE IMPROPER TURN VEH 2: MADE IMPROPER TURN	SB LT HIT A NB RT
6	10/25/2011 111025036	06:56 Day	Tue	INJURY - 2 5600 N	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	NB LT FTY & HIT A SB
2	9/16/2011 110916245	16:47 Day	Fri	PROPERTY 7000 E		VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY VEH 3: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY VEH 4: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY	EB REAR-END (MULTI-VEHICLE)

Date Printed 10/26/2016

** Denotes Driver Impairment

TYPE	DATE CASE #	TIME LIGHT	DAY	SEVERITY BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
12	8/2/2013 130802045	06:45 Day	Fri	PROPERTY 6950 E	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	WB RE WB
3	5/10/2013 130510114	10:17 Day	Fri	INJURY - 2 5600 N	DR 1: UNKNOWN DISTRACTIONS	** VEH 2: NONE	EB HIT A NB
12	3/2/2013 130302090	09:45 Day	Sat	INJURY - 2 6950 E	DR 3: UNKNOWN DISTRACTIONS	VEH 1: NONE VEH 2: NONE VEH 3: EXCEEDED LAWFUL SPEED	WB RE MULTI WB
2	11/18/2012 121118098	09:0 Day	Sun	PROPERTY 6950 E	DR 1: UNKNOWN DISTRACTIONS	VEH 2: NONE	EB REAR-END
12	6/20/2012 120620163	14:48 Day	Wed	PROPERTY 6950 E		VEH 1: FOLLOWED TOO CLOSELY VEH 2: NONE	WB RE WB AT YELLOW LIGHT
11	5/15/2012 120515269	17:58 Day	Tue	PROPERTY 6900 E		VEH 1: NONE VEH 2: FAILURE TO YIELD	EB RT FTY & SIDESWIPED A WB LT
6	3/15/2012 120315227	16:35 Day	Thu	PROPERTY 5600 N	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	NB U-TURN HIT SB
2	2/16/2012 120216194	14:7 Day	Thu	PROPERTY 6950 E		VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS	EB RE EB
6	2/6/2012 120206192	16:16 Day	Mon	INJURY - 2 5600 N		VEH 1: NONE VEH 2: OTHER	NB LT FTY & HIT A SB
18	12/22/2011 111222113	11:23 Day	Thu	PROPERTY 6900 E	DR 1: UNKNOWN DISTRACTIONS	VEH 2: SPEED TOO FAST FOR CONDITIONS	EB RAN THE RED LIGHT & HIT A SB
16	11/13/2011 111113220	17:22 Dark--lighted	Sun	PROPERTY 5600 N		VEH 1: MADE IMPROPER TURN VEH 2: MADE IMPROPER TURN	SB LT HIT A NB RT
6	10/25/2011 111025036	06:56 Day	Tue	INJURY - 2 5600 N	DR 2: UNKNOWN DISTRACTIONS	VEH 1: NONE	NB LT FTY & HIT A SB
2	9/16/2011 110916245	16:47 Day	Fri	PROPERTY 7000 E		VEH 1: NONE VEH 2: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY VEH 3: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY VEH 4: SPEED TOO FAST FOR CONDITIONS FOLLOWED TOO CLOSELY	EB REAR-END (MULTI-VEHICLE)

Date Printed 10/26/2016

** Denotes Driver Impairment

PIMA COUNTY

TRANSPORTATION

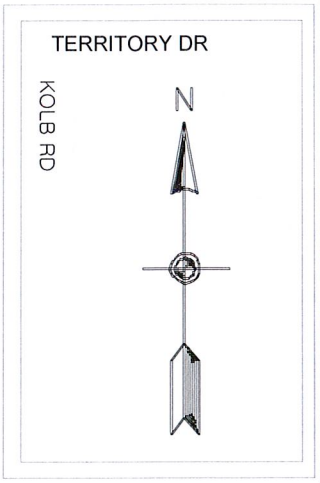
TRAFFIC ENGINEERING DIVISION

KOLB RD@TERRITORY DR

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY



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CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	3
INJURY	0
FATALITY	0
TOTAL	3

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD @ TERRITORY DR

9/1/2011 to 8/31/2016

TYPE	DATE / CASE #	TIME / LIGHT	DAY	SEVERITY / BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
2	4/30/2016 160430123	12:52 Day	Sat	PROPERTY 6960 E		VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	EB RE EB AT STOP SIGN
3	10/29/2014 141029266	18:25 Dark--lighted	Wed	PROPERTY 5470 N		VEH 1: FAILURE TO YIELD VEH 2: NONE	EB LT FTY AND HIT NB LT
34	7/29/2012 120729365	22:21 Dark--lighted	Sun	PROPERTY 6980 E	DR 1: UNKNOWN DISTRACTIONS	** VEH 1: SPEED TOO FAST FOR CONDITIONS	EB WENT THRU INTERSECTION & HIT TREE

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** Denotes Driver Impairment

PIMA COUNTY
TRANSPORTATION

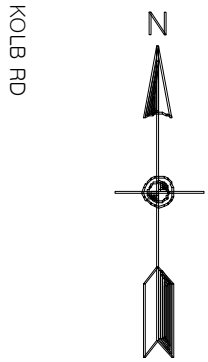
TRAFFIC ENGINEERING DIVISION

GAMBEL CI@KOLB RD

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY



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CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	1
INJURY	0
FATALITY	0
TOTAL	**1**

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

GAMBEL CI @ KOLB RD

9/1/2011 to 8/31/2016

TYPE	DATE CASE #	TIME LIGHT	DAY	SEVERITY BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
10	2/7/2014 140207112	11 : 43 Day	Fri	PROPERTY 4350 N		VEH 1: SPEED TOO FAST FOR CONDITIONS FAILED TO KEEP IN PROPER LANE VEH 2: FAILED TO KEEP IN PROPER LANE	NB SIDESWIPED A SB IN THE INTERSECTION

** Denotes Driver Impairment

PIMA COUNTY
TRANSPORTATION

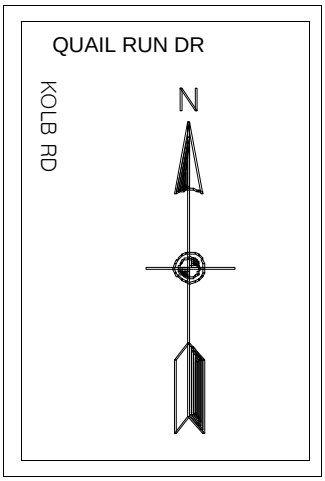
TRAFFIC ENGINEERING DIVISION

KOLB RD@QUAIL RUN DR

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY



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CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	1
INJURY	0
FATALITY	0
TOTAL	**1**

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD @ QUAIL RUN DR

9/1/2011 to 8/31/2016

TYPE	DATE / CASE #	TIME / LIGHT	DAY	SEVERITY / BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
7	8/22/2012 120822222	15:52 Day	Wed	PROPERTY 4570 N	DR 1: UNKNOWN DISTRACTIONS	VEH 1: SPEED TOO FAST FOR CONDITIONS VEH 2: NONE	NB REAR-END

** Denotes Driver Impairment

PIMA COUNTY
TRANSPORTATION

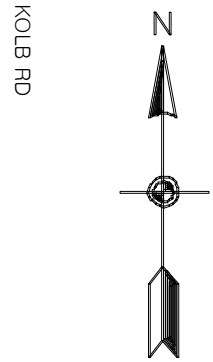
TRAFFIC ENGINEERING DIVISION

KOLB RD@ROCKY RIDGE DR

9/1/2011 to 8/31/2016

LEGEND

- REAR END
- TURNING
- ANGLE
- OUT OF CONTROL
- MISC
- FIXED OBJ
- BACKING
- HEAD ON
- BODILY INJURY
- FATALITY



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CRASH AND INJURY SEVERITY SUMMARY

PROPERTY	0
INJURY	1
FATALITY	0
TOTAL	**1**

PIMA COUNTY
TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

KOLB RD @ ROCKY RIDGE DR

9/1/2011 to 8/31/2016

TYPE	DATE / CASE #	TIME / LIGHT	DAY	SEVERITY / BLOCK #	DISTRACTED DRIVING	VIOLATIONS CITED	NARRATIVE
15	12/14/2013 131214025	01:46 Dark	Sat	INJURY - 3 5120 N		** VEH 1: DROVE/RODE IN OPPOSING LANE FAILED TO KEEP IN PROPER LANE VEH 2: NONE	SB IN NB LANE SIDESWIPED A NB

** Denotes Driver Impairment

12. APPENDIX D – SAFETY ANALYSIS WORKSHEETS

Existing Conditions

	SC to SN	SN to TR	TR to SU	Sabino Canyon	Snyder	Territory	Sunrise
N_expect	4.13	2.01	1.24	2.45	2.04	0.81	3.75
N_ped	0.02	0.01	0.01	0.01	0.00	0.02	0.00
N_bike	0.01	0.01	0.01	0.03	0.03	0.02	0.04
N_total	4.16	2.04	1.26	2.49	2.07	0.85	3.80

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Sabino Canyon to Snyder Road
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	1.07
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	12,618
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	14
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	49
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	20
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.10	1.00	1.00	1.00	1.10

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	2.037	1.000	2.037	1.10	1.00	2.251
Fatal and Injury (FI)	-16.22	1.66	0.65	0.621	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.292	0.596	1.10	1.00	0.658
Property Damage Only (PDO)	-15.62	1.69	0.87	1.501	$(5)_{TOTAL}-(5)_{FI}$ = 0.708	1.441	1.10	1.00	1.593

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.658	1.000	1.593	2.251
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.481	0.778	1.239	1.720
Head-on collision	0.068	0.045	0.004	0.006	0.051
Angle collision	0.085	0.056	0.079	0.126	0.182
Sideswipe, same direction	0.015	0.010	0.031	0.049	0.059
Sideswipe, opposite direction	0.073	0.048	0.055	0.088	0.136
Other multiple-vehicle collision	0.029	0.019	0.053	0.084	0.104

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.892	1.000	0.892	1.10	1.00	0.985
Fatal and Injury (FI)	-3.96	0.23	0.50	0.179	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.211	0.188	1.10	1.00	0.207
Property Damage Only (PDO)	-6.51	0.64	0.87	0.671	$(5)_{TOTAL}-(5)_{FI}$ = 0.789	0.704	1.10	1.00	0.778

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.207	1.000	0.778	0.985
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.005	0.066	0.051	0.057
Collision with fixed object	0.723	0.150	0.759	0.590	0.741
Collision with other object	0.010	0.002	0.013	0.010	0.012
Other single-vehicle collision	0.241	0.050	0.162	0.126	0.176

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.158	1.000	0.000	--
Minor commercial	0	0.050	1.000	0.000	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	0	0.023	1.000	0.000	
Major residential	0	0.083	1.000	0.000	
Minor residential	14	0.016	1.000	0.188	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.188	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.188	1.000	0.188	1.10	1.00	0.208
Fatal and injury (FI)	--	0.323	0.061	1.10	1.00	0.067
Property damage only (PDO)	--	0.677	0.128	1.10	1.00	0.141

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	2.251	0.985	0.208	3.445	0.005	1.00	0.017
Fatal and injury (FI)	--	--	--	--	--	1.00	0.017

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	2.251	0.985	0.208	3.445	0.004	1.00	0.014
Fatal and injury (FI)	--	--	--	--	--	1.00	0.014

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.481	1.239	1.720
Head-on collisions (from Worksheet 1D)	0.045	0.006	0.051
Angle collisions (from Worksheet 1D)	0.056	0.126	0.182
Sideswipe, same direction (from Worksheet 1D)	0.010	0.049	0.059
Sideswipe, opposite direction (from Worksheet 1D)	0.048	0.088	0.136
Driveway-related collisions (from Worksheet 1H)	0.067	0.141	0.208
Other multiple-vehicle collision (from Worksheet 1D)	0.019	0.084	0.104
Subtotal	0.726	1.734	2.459
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.005	0.051	0.057
Collision with fixed object (from Worksheet 1F)	0.150	0.590	0.741
Collision with other object (from Worksheet 1F)	0.002	0.010	0.012
Other single-vehicle collision (from Worksheet 1F)	0.050	0.126	0.176
Collision with pedestrian (from Worksheet 1I)	0.017	0.000	0.017
Collision with bicycle (from Worksheet 1J)	0.014	0.000	0.014
Subtotal	0.238	0.778	1.016
Total	0.964	2.512	3.476

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	3.5	1.07	3.2
Fatal and injury (FI)	1.0	1.07	0.9
Property damage only (PDO)	2.5	1.07	2.3

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Snyder Road to Territory Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	0.89
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	11,747
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	16
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	28
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	20
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.03	1.00	1.00	1.00	1.03

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	1.503	1.000	1.503	1.03	1.00	1.555
Fatal and Injury (FI)	-16.22	1.66	0.65	0.458	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.293	0.440	1.03	1.00	0.455
Property Damage Only (PDO)	-15.62	1.69	0.87	1.106	$(5)_{TOTAL}-(5)_{FI}$ = 0.707	1.063	1.03	1.00	1.099

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.455	1.000	1.099	1.555
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.332	0.778	0.855	1.188
Head-on collision	0.068	0.031	0.004	0.004	0.035
Angle collision	0.085	0.039	0.079	0.087	0.126
Sideswipe, same direction	0.015	0.007	0.031	0.034	0.041
Sideswipe, opposite direction	0.073	0.033	0.055	0.060	0.094
Other multiple-vehicle collision	0.029	0.013	0.053	0.058	0.071

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.713	1.000	0.713	1.03	1.00	0.737
Fatal and Injury (FI)	-3.96	0.23	0.50	0.146	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.215	0.154	1.03	1.00	0.159
Property Damage Only (PDO)	-6.51	0.64	0.87	0.533	$(5)_{TOTAL}-(5)_{FI}$ = 0.785	0.559	1.03	1.00	0.579

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.159	1.000	0.579	0.737
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.004	0.066	0.038	0.042
Collision with fixed object	0.723	0.115	0.759	0.439	0.554
Collision with other object	0.010	0.002	0.013	0.008	0.009
Other single-vehicle collision	0.241	0.038	0.162	0.094	0.132

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.158	1.000	0.124	--
Minor commercial	0	0.050	1.000	0.000	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	0	0.023	1.000	0.000	
Major residential	0	0.083	1.000	0.000	
Minor residential	16	0.016	1.000	0.200	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.324	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.324	1.000	0.324	1.03	1.00	0.335
Fatal and injury (FI)	--	0.323	0.105	1.03	1.00	0.108
Property damage only (PDO)	--	0.677	0.219	1.03	1.00	0.227

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.555	0.737	0.335	2.628	0.005	1.00	0.013
Fatal and injury (FI)	--	--	--	--	--	1.00	0.013

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.555	0.737	0.335	2.628	0.004	1.00	0.011
Fatal and injury (FI)	--	--	--	--	--	1.00	0.011

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.332	0.855	1.188
Head-on collisions (from Worksheet 1D)	0.031	0.004	0.035
Angle collisions (from Worksheet 1D)	0.039	0.087	0.126
Sideswipe, same direction (from Worksheet 1D)	0.007	0.034	0.041
Sideswipe, opposite direction (from Worksheet 1D)	0.033	0.060	0.094
Driveway-related collisions (from Worksheet 1H)	0.108	0.227	0.335
Other multiple-vehicle collision (from Worksheet 1D)	0.013	0.058	0.071
Subtotal	0.564	1.326	1.890
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.004	0.038	0.042
Collision with fixed object (from Worksheet 1F)	0.115	0.439	0.554
Collision with other object (from Worksheet 1F)	0.002	0.008	0.009
Other single-vehicle collision (from Worksheet 1F)	0.038	0.094	0.132
Collision with pedestrian (from Worksheet 1I)	0.013	0.000	0.013
Collision with bicycle (from Worksheet 1J)	0.011	0.000	0.011
Subtotal	0.183	0.579	0.761
Total	0.746	1.905	2.651

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	2.7	0.89	3.0
Fatal and injury (FI)	0.7	0.89	0.8
Property damage only (PDO)	1.9	0.89	2.1

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Territory Drive to Sunrise Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.17
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	11,747
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	4
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	7
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	20
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.00	1.00	1.00	1.00	1.00

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	0.384	1.000	0.384	1.00	1.00	0.384
Fatal and Injury (FI)	-16.45	1.69	0.59	0.092	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.245	0.094	1.00	1.00	0.094
Property Damage Only (PDO)	-11.95	1.33	0.59	0.284	$(5)_{TOTAL}-(5)_{FI}$ = 0.755	0.290	1.00	1.00	0.290

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.094	1.000	0.290	0.384
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.079	0.842	0.244	0.323
Head-on collision	0.034	0.003	0.020	0.006	0.009
Angle collision	0.069	0.006	0.020	0.006	0.012
Sideswipe, same direction	0.001	0.000	0.078	0.023	0.023
Sideswipe, opposite direction	0.017	0.002	0.020	0.006	0.007
Other multiple-vehicle collision	0.034	0.003	0.020	0.006	0.009

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.086	1.000	0.086	1.00	1.00	0.086
Fatal and Injury (FI)	-6.37	0.47	1.06	0.024	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.284	0.024	1.00	1.00	0.024
Property Damage Only (PDO)	-6.29	0.56	1.93	0.060	$(5)_{TOTAL}-(5)_{FI}$ = 0.716	0.062	1.00	1.00	0.062

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.024	1.000	0.062	0.086
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.017	0.963	0.059	0.076
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.008	0.035	0.002	0.010

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	4	0.102	1.000	0.320	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	0	0.010	1.000	0.000	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.320	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.320	1.000	0.320	1.00	1.00	0.320
Fatal and injury (FI)	--	0.243	0.078	1.00	1.00	0.078
Property damage only (PDO)	--	0.757	0.242	1.00	1.00	0.242

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.384	0.086	0.320	0.789	0.013	1.00	0.010
Fatal and injury (FI)	--	--	--	--	--	1.00	0.010

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.384	0.086	0.320	0.789	0.007	1.00	0.006
Fatal and injury (FI)	--	--	--	--	--	1.00	0.006

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.079	0.244	0.323
Head-on collisions (from Worksheet 1D)	0.003	0.006	0.009
Angle collisions (from Worksheet 1D)	0.006	0.006	0.012
Sideswipe, same direction (from Worksheet 1D)	0.000	0.023	0.023
Sideswipe, opposite direction (from Worksheet 1D)	0.002	0.006	0.007
Driveway-related collisions (from Worksheet 1H)	0.078	0.242	0.320
Other multiple-vehicle collision (from Worksheet 1D)	0.003	0.006	0.009
Subtotal	0.172	0.531	0.703
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.017	0.059	0.076
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.008	0.002	0.010
Collision with pedestrian (from Worksheet 1I)	0.010	0.000	0.010
Collision with bicycle (from Worksheet 1J)	0.006	0.000	0.006
Subtotal	0.040	0.062	0.102
Total	0.212	0.593	0.805

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.8	0.17	4.7
Fatal and injury (FI)	0.2	0.17	1.2
Property damage only (PDO)	0.6	0.17	3.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sabino Canyon
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	24,478
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	12,378
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			4
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.80	0.94	0.92	1.00	0.91	1.00	0.63

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	4.652	1.000	4.652	0.63	1.00	2.936
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.391	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.315	1.464	0.63	1.00	0.924
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	3.027	$(5)_{TOTAL}-(5)_{FI}$ = 0.685	3.188	0.63	1.00	2.012

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.924	1.000	2.012	2.936
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.507	0.546	1.098	1.606
Head-on collision	0.038	0.035	0.020	0.040	0.075
Angle collision	0.280	0.259	0.204	0.410	0.669
Sideswipe	0.076	0.070	0.032	0.064	0.135
Other multiple-vehicle collision	0.057	0.053	0.198	0.398	0.451

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.366	1.000	0.366	0.63	1.00	0.231
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.109	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.312	0.114	0.63	1.00	0.072
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.241	$(5)_{TOTAL}-(5)_{FI}$ = 0.688	0.252	0.63	1.00	0.159

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.072	1.000	0.159	0.231
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.001
Collision with fixed object	0.653	0.047	0.895	0.142	0.189
Collision with other object	0.091	0.007	0.069	0.011	0.018
Other single-vehicle collision	0.045	0.003	0.018	0.003	0.006
Single-vehicle noncollision	0.209	0.015	0.014	0.002	0.017

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.936	0.231	3.167	0.011	1.00	0.035
Fatal and injury (FI)	--	--	--	--	1.00	0.035

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.507	1.098	1.606
Head-on collisions (from Worksheet 2D)	0.035	0.040	0.075
Angle collisions (from Worksheet 2D)	0.259	0.410	0.669
Sideswipe (from Worksheet 2D)	0.070	0.064	0.135
Other multiple-vehicle collision (from Worksheet 2D)	0.053	0.398	0.451
Subtotal	0.924	2.012	2.936
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.001
Collision with fixed object (from Worksheet 2F)	0.047	0.142	0.189
Collision with other object (from Worksheet 2F)	0.007	0.011	0.018
Other single-vehicle collision (from Worksheet 2F)	0.003	0.003	0.006
Single-vehicle noncollision (from Worksheet 2F)	0.015	0.002	0.017
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.035	0.000	0.035
Subtotal	0.112	0.159	0.271
Total	1.036	2.171	3.207

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.2
Fatal and injury (FI)	1.0
Property damage only (PDO)	2.2

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Rd
Agency or Company	PSOMAS	Intersection	Kolb Rd and Snyder Rd
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	12,618
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	2,778
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF* $_{COMB}$
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.97	1.00	1.00	0.91	1.00	0.72

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Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.554	1.000	2.554	0.72	1.00	1.828
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.777	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.317	0.810	0.72	1.00	0.579
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.673	$(5)_{TOTAL}-(5)_{FI}$ = 0.683	1.744	0.72	1.00	1.249

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.579	1.000	1.249	1.828
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.261	0.483	0.603	0.864
Head-on collision	0.049	0.028	0.030	0.037	0.066
Angle collision	0.347	0.201	0.244	0.305	0.506
Sideswipe	0.099	0.057	0.032	0.040	0.097
Other multiple-vehicle collision	0.055	0.032	0.211	0.263	0.295

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.192	1.000	0.192	0.72	1.00	0.138
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.056	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.289	0.056	0.72	1.00	0.040
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.136	$(5)_{TOTAL}-(5)_{FI}$ = 0.711	0.137	0.72	1.00	0.098

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.040	1.000	0.098	0.138
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.030	0.870	0.085	0.115
Collision with other object	0.072	0.003	0.070	0.007	0.010
Other single-vehicle collision	0.040	0.002	0.023	0.002	0.004
Single-vehicle noncollision	0.141	0.006	0.034	0.003	0.009

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.003	1.00	1.00	0.003
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.003

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.828	0.138	1.966	0.015	1.00	0.029
Fatal and injury (FI)	--	--	--	--	1.00	0.029

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.261	0.603	0.864
Head-on collisions (from Worksheet 2D)	0.028	0.037	0.066
Angle collisions (from Worksheet 2D)	0.201	0.305	0.506
Sideswipe (from Worksheet 2D)	0.057	0.040	0.097
Other multiple-vehicle collision (from Worksheet 2D)	0.032	0.263	0.295
Subtotal	0.579	1.249	1.828
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.030	0.085	0.115
Collision with other object (from Worksheet 2F)	0.003	0.007	0.010
Other single-vehicle collision (from Worksheet 2F)	0.002	0.002	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.003	0.009
Collision with pedestrian (from Worksheet 2G or 2I)	0.003	0.000	0.003
Collision with bicycle (from Worksheet 2J)	0.029	0.000	0.029
Subtotal	0.072	0.098	0.170
Total	0.651	1.346	1.998

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.0
Fatal and injury (FI)	0.7
Property damage only (PDO)	1.3

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Territory Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	11,747
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	1,667
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	1
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.53	1.00	0.86	1.00	0.91	1.00	0.42

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	1.895	1.000	1.895	0.42	1.00	0.789
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.714	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.373	0.707	0.42	1.00	0.294
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.200	$(5)_{TOTAL}-(5)_{FI}$ = 0.627	1.188	0.42	1.00	0.494

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.294	1.000	0.494	0.789
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.099	0.374	0.185	0.284
Head-on collision	0.041	0.012	0.030	0.015	0.027
Angle collision	0.440	0.129	0.335	0.166	0.295
Sideswipe	0.121	0.036	0.044	0.022	0.057
Other multiple-vehicle collision	0.060	0.018	0.217	0.107	0.125

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.260	1.000	0.260	0.42	1.00	0.108
Fatal and Injury (FI)	--	--	--	--	0.073	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.308	0.080	0.42	1.00	0.033
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.163	$(5)_{TOTAL}-(5)_{FI}$ = 0.692	0.180	0.42	1.00	0.075

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.033	1.000	0.075	0.108
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.002	0.002
Collision with fixed object	0.679	0.023	0.847	0.063	0.086
Collision with other object	0.089	0.003	0.070	0.005	0.008
Other single-vehicle collision	0.051	0.002	0.007	0.001	0.002
Single-vehicle noncollision	0.179	0.006	0.049	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.789	0.108	0.897	0.022	1.00	0.020
Fatal and injury (FI)	--	--	--	--	1.00	0.020

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.789	0.108	0.897	0.018	1.00	0.016
Fatal and injury (FI)	--	--	--	--	1.00	0.016

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.099	0.185	0.284
Head-on collisions (from Worksheet 2D)	0.012	0.015	0.027
Angle collisions (from Worksheet 2D)	0.129	0.166	0.295
Sideswipe (from Worksheet 2D)	0.036	0.022	0.057
Other multiple-vehicle collision (from Worksheet 2D)	0.018	0.107	0.125
Subtotal	0.294	0.494	0.789
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.002	0.002
Collision with fixed object (from Worksheet 2F)	0.023	0.063	0.086
Collision with other object (from Worksheet 2F)	0.003	0.005	0.008
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.002
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.020	0.000	0.020
Collision with bicycle (from Worksheet 2J)	0.016	0.000	0.016
Subtotal	0.069	0.075	0.144
Total	0.363	0.569	0.933

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	0.9
Fatal and injury (FI)	0.4
Property damage only (PDO)	0.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sunrise Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	17,067
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	11,747
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Protected / Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Protected / Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.96	0.85	1.00	0.91	1.00	0.49

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	4.916	1.000	4.916	0.49	1.00	2.411
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.523	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.321	1.579	0.49	1.00	0.774
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.219	$(5)_{TOTAL}-(5)_{FI}$ = 0.679	3.337	0.49	1.00	1.636

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.774	1.000	1.636	2.411
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.348	0.483	0.790	1.139
Head-on collision	0.049	0.038	0.030	0.049	0.087
Angle collision	0.347	0.269	0.244	0.399	0.668
Sideswipe	0.099	0.077	0.032	0.052	0.129
Other multiple-vehicle collision	0.055	0.043	0.211	0.345	0.388

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.349	1.000	0.349	0.49	1.00	0.171
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.096	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.280	0.098	0.49	1.00	0.048
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.248	$(5)_{TOTAL}-(5)_{FI}$ = 0.720	0.251	0.49	1.00	0.123

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.048	1.000	0.123	0.171
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.036	0.870	0.107	0.143
Collision with other object	0.072	0.003	0.070	0.009	0.012
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.004	0.011

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) CMF for Bus Stops	(2) CMF for Schools	(3) CMF for Alcohol Sales Establishments	(4) Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) Crash Severity Level	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.411	0.171	2.582	0.015	1.00	0.039
Fatal and injury (FI)	--	--	--	--	1.00	0.039

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.348	0.790	1.139
Head-on collisions (from Worksheet 2D)	0.038	0.049	0.087
Angle collisions (from Worksheet 2D)	0.269	0.399	0.668
Sideswipe (from Worksheet 2D)	0.077	0.052	0.129
Other multiple-vehicle collision (from Worksheet 2D)	0.043	0.345	0.388
Subtotal	0.774	1.636	2.411
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.036	0.107	0.143
Collision with other object (from Worksheet 2F)	0.003	0.009	0.012
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.004	0.011
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.039	0.000	0.039
Subtotal	0.091	0.123	0.214
Total	0.866	1.760	2.625

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.6
Fatal and injury (FI)	0.9
Property damage only (PDO)	1.8

Sabino Canyon to Snyder
Segment

Multiple-Vehicle Nondriveway Collisions	
N_observed	2.6
N_predicted	2.251033
Overdispersion Parameter, k	0.84
Weighted Adjustment, w	0.244437
N_expected	2.514699

Single-Vehicle Crashes	
N_observed	2.00
N_predicted	0.985471
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.556102
N_expected	1.435818

Multiple-Vehcile Driveway Related Collisions	
N_observed	0
N_predicted	0.21
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.855705
N_expected	0.178142

Npred combined	3.44
Nexpected combined	4.12866

Snyder to Territory

Multiple-Vehicle Nondriveway Collisions	
N_observed	0.8
N_predicted	1.554839
Overdispersion Parameter, k	0.84
Weighted Adjustment, w	0.294565
N_expected	1.022349

Single-Vehicle Crashes	
N_observed	0.6
N_predicted	0.73746
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.62604
N_expected	0.686055

Multiple-Vehcile Driveway Related Collisions	
N_observed	0.2
N_predicted	0.335441
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.786345
N_expected	0.306503

Npred combined	2.63
Nexpected combined	2.014907

Territory to Sunrise

Multiple-Vehicle Nondriveway Collisions	
N_observed	0.8
N_predicted	0.383526
Overdispersion Parameter, k	0.66
Weighted Adjustment, w	0.48935
N_expected	0.596198

Single-Vehicle Crashes	
N_observed	0.2
N_predicted	0.086171
Overdispersion Parameter, k	1.37
Weighted Adjustment, w	0.894411
N_expected	0.09819

Multiple-Vehcile Driveway Related Collisions	
N_observed	1.2
N_predicted	0.319518
Overdispersion Parameter, k	1.10
Weighted Adjustment, w	0.739935
N_expected	0.548501

Npred combined	0.79
Nexpected combined	1.242889

Intersection

Sabino Canyon

Multiple-Vehicle Driveway Related Collisions	
N_observed	1.4
N_predicted	2.936121
Overdispersion Parameter, k	0.33
Weighted Adjustment, w	0.507893
N_expected	2.180185

Single-Vehicle Driveway Related Collisions	
N_observed	0.8
N_predicted	0.230752
Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.923301
N_expected	0.274413

Npred combined	3.166873
Nexpted combined	2.454598

Snyder Rd

Multiple-Vehicle Driveway Related Collisions	
N_observed	2
N_predicted	1.828049
Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.583792
N_expected	1.899616

Single-Vehicle Driveway Related Collisions	
N_observed	0.2
N_predicted	0.137753
Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.952752
N_expected	0.140694

Npred combined	1.965802
Nexpted combined	2.04031

Territory

Multiple-Vehicle Driveway Related Collisions	
N_observed	0.4
N_predicted	0.788567
Overdispersion Parameter, k	0.40
Weighted Adjustment, w	0.760209
N_expected	0.695392

Single-Vehicle Driveway Related Collisions	
N_observed	0.2
N_predicted	0.108182
Overdispersion Parameter, k	0.65
Weighted Adjustment, w	0.934302
N_expected	0.114214

Npred combined	0.896749
Nexpted combined	0.809607

Sunrise

Multiple-Vehicle Driveway Related Collisions	
N_observed	4.8
N_predicted	2.410683
Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.51542
N_expected	3.568499

Single-Vehicle Driveway Related Collisions	
N_observed	0.4
N_predicted	0.171059
Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.941991
N_expected	0.184339

Npred combined	2.581741
Nexpted combined	3.752838

Predicted Pedestrian and Bicycle Crashes

Segments	Nped	Nbike
SC to SN	0.017223	0.013779
SN to TR	0.013139	0.010511
TR to SU	0.01026	0.005525
Intersections		
Sabino Canyon	0.00541	0.034836
Snyder Rd	0.002614	0.029487
Territory	0.019728	0.016141
Sunrise	0.004702	0.038726
Combined	0.073077	0.149004

Site Specific EB Method Summary Results

	Npredicted	Nped	Nbike	N expected (veh)	N expected
Total	15.47	0.073077	0.149004	16.44380857	16.66589008

2040 Without Project

	SC to SN	SN to TR	TR to SU	abino Canyo	Snyder	Territory	Sunrise
N_expect	4.32	2.15	1.34	2.62	2.23	0.89	4.06
N_ped	0.02	0.02	0.01	0.01	0.00	0.02	0.00
N_bike	0.02	0.01	0.01	0.04	0.03	0.02	0.05
N_total	4.36	2.17	1.36	2.66	2.27	0.93	4.11

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Sabino Canyon to Snyder Road
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	1.07
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	14,223
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	14
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	49
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	20
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.10	1.00	1.00	1.00	1.10

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	2.491	1.000	2.491	1.10	1.00	2.753
Fatal and Injury (FI)	-16.22	1.66	0.65	0.757	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.292	0.727	1.10	1.00	0.803
Property Damage Only (PDO)	-15.62	1.69	0.87	1.838	$(5)_{TOTAL}-(5)_{FI}$ = 0.708	1.765	1.10	1.00	1.950

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.803	1.000	1.950	2.753
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.586	0.778	1.517	2.103
Head-on collision	0.068	0.055	0.004	0.008	0.062
Angle collision	0.085	0.068	0.079	0.154	0.222
Sideswipe, same direction	0.015	0.012	0.031	0.060	0.072
Sideswipe, opposite direction	0.073	0.059	0.055	0.107	0.166
Other multiple-vehicle collision	0.029	0.023	0.053	0.103	0.127

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.954	1.000	0.954	1.10	1.00	1.054
Fatal and Injury (FI)	-3.96	0.23	0.50	0.184	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.203	0.193	1.10	1.00	0.213
Property Damage Only (PDO)	-6.51	0.64	0.87	0.725	$(5)_{TOTAL}-(5)_{FI}$ = 0.797	0.761	1.10	1.00	0.840

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.213	1.000	0.840	1.054
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.006	0.066	0.055	0.061
Collision with fixed object	0.723	0.154	0.759	0.638	0.792
Collision with other object	0.010	0.002	0.013	0.011	0.013
Other single-vehicle collision	0.241	0.051	0.162	0.136	0.188

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.158	1.000	0.000	--
Minor commercial	0	0.050	1.000	0.000	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	0	0.023	1.000	0.000	
Major residential	0	0.083	1.000	0.000	
Minor residential	14	0.016	1.000	0.212	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.212	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.212	1.000	0.212	1.10	1.00	0.235
Fatal and injury (FI)	--	0.323	0.069	1.10	1.00	0.076
Property damage only (PDO)	--	0.677	0.144	1.10	1.00	0.159

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	2.753	1.054	0.235	4.041	0.005	1.00	0.020
Fatal and injury (FI)	--	--	--	--	--	1.00	0.020

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	2.753	1.054	0.235	4.041	0.004	1.00	0.016
Fatal and injury (FI)	--	--	--	--	--	1.00	0.016

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.586	1.517	2.103
Head-on collisions (from Worksheet 1D)	0.055	0.008	0.062
Angle collisions (from Worksheet 1D)	0.068	0.154	0.222
Sideswipe, same direction (from Worksheet 1D)	0.012	0.060	0.072
Sideswipe, opposite direction (from Worksheet 1D)	0.059	0.107	0.166
Driveway-related collisions (from Worksheet 1H)	0.076	0.159	0.235
Other multiple-vehicle collision (from Worksheet 1D)	0.023	0.103	0.127
Subtotal	0.879	2.108	2.987
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.006	0.055	0.061
Collision with fixed object (from Worksheet 1F)	0.154	0.638	0.792
Collision with other object (from Worksheet 1F)	0.002	0.011	0.013
Other single-vehicle collision (from Worksheet 1F)	0.051	0.136	0.188
Collision with pedestrian (from Worksheet 1I)	0.020	0.000	0.020
Collision with bicycle (from Worksheet 1J)	0.016	0.000	0.016
Subtotal	0.250	0.840	1.090
Total	1.129	2.949	4.077

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	4.1	1.07	3.8
Fatal and injury (FI)	1.1	1.07	1.1
Property damage only (PDO)	2.9	1.07	2.8

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Snyder Road to Territory Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	0.89
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	16
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	28
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	20
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.03	1.00	1.00	1.00	1.03

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	1.838	1.000	1.838	1.03	1.00	1.901
Fatal and Injury (FI)	-16.22	1.66	0.65	0.559	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.292	0.537	1.03	1.00	0.556
Property Damage Only (PDO)	-15.62	1.69	0.87	1.354	$(5)_{TOTAL}-(5)_{FI}$ = 0.708	1.301	1.03	1.00	1.346

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.556	1.000	1.346	1.901
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.406	0.778	1.047	1.452
Head-on collision	0.068	0.038	0.004	0.005	0.043
Angle collision	0.085	0.047	0.079	0.106	0.154
Sideswipe, same direction	0.015	0.008	0.031	0.042	0.050
Sideswipe, opposite direction	0.073	0.041	0.055	0.074	0.115
Other multiple-vehicle collision	0.029	0.016	0.053	0.071	0.087

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.762	1.000	0.762	1.03	1.00	0.789
Fatal and Injury (FI)	-3.96	0.23	0.50	0.151	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.207	0.158	1.03	1.00	0.163
Property Damage Only (PDO)	-6.51	0.64	0.87	0.576	$(5)_{TOTAL}-(5)_{FI}$ = 0.793	0.604	1.03	1.00	0.625

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.163	1.000	0.625	0.789
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.004	0.066	0.041	0.046
Collision with fixed object	0.723	0.118	0.759	0.474	0.593
Collision with other object	0.010	0.002	0.013	0.008	0.010
Other single-vehicle collision	0.241	0.039	0.162	0.101	0.141

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.158	1.000	0.139	--
Minor commercial	0	0.050	1.000	0.000	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	0	0.023	1.000	0.000	
Major residential	0	0.083	1.000	0.000	
Minor residential	16	0.016	1.000	0.226	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.365	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.365	1.000	0.365	1.03	1.00	0.378
Fatal and injury (FI)	--	0.323	0.118	1.03	1.00	0.122
Property damage only (PDO)	--	0.677	0.247	1.03	1.00	0.256

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.901	0.789	0.378	3.068	0.005	1.00	0.015
Fatal and injury (FI)	--	--	--	--	--	1.00	0.015

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.901	0.789	0.378	3.068	0.004	1.00	0.012
Fatal and injury (FI)	--	--	--	--	--	1.00	0.012

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.406	1.047	1.452
Head-on collisions (from Worksheet 1D)	0.038	0.005	0.043
Angle collisions (from Worksheet 1D)	0.047	0.106	0.154
Sideswipe, same direction (from Worksheet 1D)	0.008	0.042	0.050
Sideswipe, opposite direction (from Worksheet 1D)	0.041	0.074	0.115
Driveway-related collisions (from Worksheet 1H)	0.122	0.256	0.378
Other multiple-vehicle collision (from Worksheet 1D)	0.016	0.071	0.087
Subtotal	0.678	1.602	2.279
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.004	0.041	0.046
Collision with fixed object (from Worksheet 1F)	0.118	0.474	0.593
Collision with other object (from Worksheet 1F)	0.002	0.008	0.010
Other single-vehicle collision (from Worksheet 1F)	0.039	0.101	0.141
Collision with pedestrian (from Worksheet 1I)	0.015	0.000	0.015
Collision with bicycle (from Worksheet 1J)	0.012	0.000	0.012
Subtotal	0.191	0.625	0.816
Total	0.869	2.227	3.096

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	3.1	0.89	3.5
Fatal and injury (FI)	0.9	0.89	1.0
Property damage only (PDO)	2.2	0.89	2.5

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Territory Drive to Sunrise Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.17
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	4
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	7
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	20
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.00	1.00	1.00	1.00	1.00

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	0.454	1.000	0.454	1.00	1.00	0.454
Fatal and Injury (FI)	-16.45	1.69	0.59	0.113	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.115	1.00	1.00	0.115
Property Damage Only (PDO)	-11.95	1.33	0.59	0.333	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	0.339	1.00	1.00	0.339

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.115	1.000	0.339	0.454
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.097	0.842	0.286	0.383
Head-on collision	0.034	0.004	0.020	0.007	0.011
Angle collision	0.069	0.008	0.020	0.007	0.015
Sideswipe, same direction	0.001	0.000	0.078	0.026	0.027
Sideswipe, opposite direction	0.017	0.002	0.020	0.007	0.009
Other multiple-vehicle collision	0.034	0.004	0.020	0.007	0.011

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.092	1.000	0.092	1.00	1.00	0.092
Fatal and Injury (FI)	-6.37	0.47	1.06	0.025	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.026	1.00	1.00	0.026
Property Damage Only (PDO)	-6.29	0.56	1.93	0.064	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.066	1.00	1.00	0.066

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.026	1.000	0.066	0.092
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.018	0.963	0.064	0.081
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.008	0.035	0.002	0.010

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	4	0.102	1.000	0.360	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	0	0.010	1.000	0.000	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.360	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.360	1.000	0.360	1.00	1.00	0.360
Fatal and injury (FI)	--	0.243	0.088	1.00	1.00	0.088
Property damage only (PDO)	--	0.757	0.273	1.00	1.00	0.273

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.454	0.092	0.360	0.906	0.013	1.00	0.012
Fatal and injury (FI)	--	--	--	--	--	1.00	0.012

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.454	0.092	0.360	0.906	0.007	1.00	0.006
Fatal and injury (FI)	--	--	--	--	--	1.00	0.006

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.097	0.286	0.383
Head-on collisions (from Worksheet 1D)	0.004	0.007	0.011
Angle collisions (from Worksheet 1D)	0.008	0.007	0.015
Sideswipe, same direction (from Worksheet 1D)	0.000	0.026	0.027
Sideswipe, opposite direction (from Worksheet 1D)	0.002	0.007	0.009
Driveway-related collisions (from Worksheet 1H)	0.088	0.273	0.360
Other multiple-vehicle collision (from Worksheet 1D)	0.004	0.007	0.011
Subtotal	0.202	0.612	0.814
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.018	0.064	0.081
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.008	0.002	0.010
Collision with pedestrian (from Worksheet 1I)	0.012	0.000	0.012
Collision with bicycle (from Worksheet 1J)	0.006	0.000	0.006
Subtotal	0.044	0.066	0.110
Total	0.246	0.678	0.924

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.9	0.17	5.4
Fatal and injury (FI)	0.2	0.17	1.4
Property damage only (PDO)	0.7	0.17	4.0

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sabino Canyon
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	27,135
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	13,268
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			4
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.80	0.94	0.92	1.00	0.91	1.00	0.63

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	5.311	1.000	5.311	0.63	1.00	3.352
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.563	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	1.647	0.63	1.00	1.040
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	3.475	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	3.663	0.63	1.00	2.312

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	1.040	1.000	2.312	3.352
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.571	0.546	1.262	1.833
Head-on collision	0.038	0.040	0.020	0.046	0.086
Angle collision	0.280	0.291	0.204	0.472	0.763
Sideswipe	0.076	0.079	0.032	0.074	0.153
Other multiple-vehicle collision	0.057	0.059	0.198	0.458	0.517

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.393	1.000	0.393	0.63	1.00	0.248
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.116	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	0.122	0.63	1.00	0.077
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.258	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	0.271	0.63	1.00	0.171

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.077	1.000	0.171	0.248
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.001	0.001
Collision with fixed object	0.653	0.050	0.895	0.153	0.203
Collision with other object	0.091	0.007	0.069	0.012	0.019
Other single-vehicle collision	0.045	0.003	0.018	0.003	0.007
Single-vehicle noncollision	0.209	0.016	0.014	0.002	0.018

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	3.352	0.248	3.600	0.011	1.00	0.040
Fatal and injury (FI)	--	--	--	--	1.00	0.040

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.571	1.262	1.833
Head-on collisions (from Worksheet 2D)	0.040	0.046	0.086
Angle collisions (from Worksheet 2D)	0.291	0.472	0.763
Sideswipe (from Worksheet 2D)	0.079	0.074	0.153
Other multiple-vehicle collision (from Worksheet 2D)	0.059	0.458	0.517
Subtotal	1.040	2.312	3.352
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.050	0.153	0.203
Collision with other object (from Worksheet 2F)	0.007	0.012	0.019
Other single-vehicle collision (from Worksheet 2F)	0.003	0.003	0.007
Single-vehicle noncollision (from Worksheet 2F)	0.016	0.002	0.018
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.040	0.000	0.040
Subtotal	0.122	0.171	0.293
Total	1.162	2.483	3.645

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.6
Fatal and injury (FI)	1.2
Property damage only (PDO)	2.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Rd
Agency or Company	PSOMAS	Intersection	Kolb Rd and Snyder Rd
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	14,223
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	3,131
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF* $_{COMB}$
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.97	1.00	1.00	0.91	1.00	0.72

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.984	1.000	2.984	0.72	1.00	2.136
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.918	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.321	0.957	0.72	1.00	0.685
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.946	$(5)_{TOTAL}-(5)_{FI}$ = 0.679	2.027	0.72	1.00	1.451

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.685	1.000	1.451	2.136
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.308	0.483	0.701	1.009
Head-on collision	0.049	0.034	0.030	0.044	0.077
Angle collision	0.347	0.238	0.244	0.354	0.592
Sideswipe	0.099	0.068	0.032	0.046	0.114
Other multiple-vehicle collision	0.055	0.038	0.211	0.306	0.344

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.216	1.000	0.216	0.72	1.00	0.154
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.061	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.061	0.72	1.00	0.044
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.154	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.155	0.72	1.00	0.111

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.044	1.000	0.111	0.154
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.032	0.870	0.096	0.129
Collision with other object	0.072	0.003	0.070	0.008	0.011
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.004
Single-vehicle noncollision	0.141	0.006	0.034	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.003	1.00	1.00	0.003
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.003

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.136	0.154	2.290	0.015	1.00	0.034
Fatal and injury (FI)	--	--	--	--	1.00	0.034

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.308	0.701	1.009
Head-on collisions (from Worksheet 2D)	0.034	0.044	0.077
Angle collisions (from Worksheet 2D)	0.238	0.354	0.592
Sideswipe (from Worksheet 2D)	0.068	0.046	0.114
Other multiple-vehicle collision (from Worksheet 2D)	0.038	0.306	0.344
Subtotal	0.685	1.451	2.136
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.032	0.096	0.129
Collision with other object (from Worksheet 2F)	0.003	0.008	0.011
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.003	0.000	0.003
Collision with bicycle (from Worksheet 2J)	0.034	0.000	0.034
Subtotal	0.081	0.111	0.191
Total	0.765	1.562	2.327

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.3
Fatal and injury (FI)	0.8
Property damage only (PDO)	1.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Territory Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	13,241
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	1,879
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	1
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.53	1.00	0.86	1.00	0.91	1.00	0.42

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.154	1.000	2.154	0.42	1.00	0.896
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.825	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.379	0.816	0.42	1.00	0.340
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.353	$(5)_{TOTAL}-(5)_{FI}$ = 0.621	1.338	0.42	1.00	0.557

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.340	1.000	0.557	0.896
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.115	0.374	0.208	0.323
Head-on collision	0.041	0.014	0.030	0.017	0.031
Angle collision	0.440	0.149	0.335	0.187	0.336
Sideswipe	0.121	0.041	0.044	0.024	0.066
Other multiple-vehicle collision	0.060	0.020	0.217	0.121	0.141

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.274	1.000	0.274	0.42	1.00	0.114
Fatal and Injury (FI)	--	--	--	--	0.077	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.304	0.083	0.42	1.00	0.035
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.176	$(5)_{TOTAL}-(5)_{FI}$ = 0.696	0.191	0.42	1.00	0.079

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.035	1.000	0.079	0.114
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.002	0.002
Collision with fixed object	0.679	0.024	0.847	0.067	0.091
Collision with other object	0.089	0.003	0.070	0.006	0.009
Other single-vehicle collision	0.051	0.002	0.007	0.001	0.002
Single-vehicle noncollision	0.179	0.006	0.049	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.896	0.114	1.011	0.022	1.00	0.022
Fatal and injury (FI)	--	--	--	--	1.00	0.022

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
Crash Severity Level	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.896	0.114	1.011	0.018	1.00	0.018
Fatal and injury (FI)	--	--	--	--	1.00	0.018

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.115	0.208	0.323
Head-on collisions (from Worksheet 2D)	0.014	0.017	0.031
Angle collisions (from Worksheet 2D)	0.149	0.187	0.336
Sideswipe (from Worksheet 2D)	0.041	0.024	0.066
Other multiple-vehicle collision (from Worksheet 2D)	0.020	0.121	0.141
Subtotal	0.340	0.557	0.896
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.002	0.002
Collision with fixed object (from Worksheet 2F)	0.024	0.067	0.091
Collision with other object (from Worksheet 2F)	0.003	0.006	0.009
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.002
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.022	0.000	0.022
Collision with bicycle (from Worksheet 2J)	0.018	0.000	0.018
Subtotal	0.075	0.079	0.155
Total	0.415	0.636	1.051

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.1
Fatal and injury (FI)	0.4
Property damage only (PDO)	0.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sunrise Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	19,242
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	13,241
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Protected / Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Protected / Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.96	0.85	1.00	0.91	1.00	0.49

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	5.745	1.000	5.745	0.49	1.00	2.817
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.325	1.866	0.49	1.00	0.915
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.743	$(5)_{TOTAL}-(5)_{FI}$ = 0.675	3.879	0.49	1.00	1.902

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.915	1.000	1.902	2.817
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.412	0.483	0.919	1.331
Head-on collision	0.049	0.045	0.030	0.057	0.102
Angle collision	0.347	0.318	0.244	0.464	0.782
Sideswipe	0.099	0.091	0.032	0.061	0.151
Other multiple-vehicle collision	0.055	0.050	0.211	0.401	0.452

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.391	1.000	0.391	0.49	1.00	0.192
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.105	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.272	0.106	0.49	1.00	0.052
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.280	$(5)_{TOTAL}-(5)_{FI}$ = 0.728	0.284	0.49	1.00	0.139

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.139	0.192
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.039	0.870	0.121	0.160
Collision with other object	0.072	0.004	0.070	0.010	0.014
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) CMF for Bus Stops	(2) CMF for Schools	(3) CMF for Alcohol Sales Establishments	(4) Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) Crash Severity Level	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.817	0.192	3.009	0.015	1.00	0.045
Fatal and injury (FI)	--	--	--	--	1.00	0.045

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.412	0.919	1.331
Head-on collisions (from Worksheet 2D)	0.045	0.057	0.102
Angle collisions (from Worksheet 2D)	0.318	0.464	0.782
Sideswipe (from Worksheet 2D)	0.091	0.061	0.151
Other multiple-vehicle collision (from Worksheet 2D)	0.050	0.401	0.452
Subtotal	0.915	1.902	2.817
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.039	0.121	0.160
Collision with other object (from Worksheet 2F)	0.004	0.010	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.045	0.000	0.045
Subtotal	0.102	0.139	0.242
Total	1.018	2.042	3.059

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.1
Fatal and injury (FI)	1.0
Property damage only (PDO)	2.0

Sabino Canyon to Snyder
Segment

Multiple-Vehicle Nondriveway Collisions	
N_observed	2.6
N_predicted	2.752599
Overdispersion Parameter, k	0.84
Weighted Adjustment, w	0.217742
N_expected	2.633227
Single-Vehicle Crashes	
N_observed	2.00
N_predicted	1.053814
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.539494
N_expected	1.489539
Multiple-Vehcile Driveway Related Collisions	
N_observed	0
N_predicted	0.23
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.840282
N_expected	0.197183
Npred combined	4.04
Nexpected combined	4.319949

Snyder to Territory

Multiple-Vehicle Nondriveway Collisions	
N_observed	0.8
N_predicted	1.901231
Overdispersion Parameter, k	0.84
Weighted Adjustment, w	0.267292
N_expected	1.09435
Single-Vehicle Crashes	
N_observed	0.6
N_predicted	0.788596
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.610216
N_expected	0.715085
Multiple-Vehcile Driveway Related Collisions	
N_observed	0.2
N_predicted	0.378103
Overdispersion Parameter, k	0.81
Weighted Adjustment, w	0.765542
N_expected	0.336345
Npred combined	3.07
Nexpected combined	2.14578

Territory to Sunrise

Multiple-Vehicle Nondriveway Collisions	
N_observed	0.8
N_predicted	0.454052
Overdispersion Parameter, k	0.66
Weighted Adjustment, w	0.473025
N_expected	0.636358
Single-Vehicle Crashes	
N_observed	0.2
N_predicted	0.091925
Overdispersion Parameter, k	1.37
Weighted Adjustment, w	0.888148
N_expected	0.104014
Multiple-Vehcile Driveway Related Collisions	
N_observed	1.2
N_predicted	0.360155
Overdispersion Parameter, k	1.10
Weighted Adjustment, w	0.716245
N_expected	0.598466
Npred combined	0.91
Nexpected combined	1.338837

Intersection

Sabino Canyon

Multiple-Vehicle Driveway Related Collisions	
N_observed	1.4
N_predicted	3.3519
Overdispersion Parameter, k	0.33
Weighted Adjustment, w	0.474805
N_expected	2.326772
Single-Vehicle Driveway Related Collisions	
N_observed	0.8
N_predicted	0.247745
Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.918115
N_expected	0.292966
Npred combined	3.599645
Nexpected combined	2.619738

Snyder Rd

Multiple-Vehicle Driveway Related Collisions	
N_observed	2
N_predicted	2.135882
Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.545556
N_expected	2.074131
Single-Vehicle Driveway Related Collisions	
N_observed	0.2
N_predicted	0.154343
Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.947361
N_expected	0.156747
Npred combined	2.290225
Nexpected combined	2.230878

Territory

Multiple-Vehicle Driveway Related Collisions	
N_observed	0.4
N_predicted	0.896337
Overdispersion Parameter, k	0.40
Weighted Adjustment, w	0.736087
N_expected	0.765347
Single-Vehicle Driveway Related Collisions	
N_observed	0.2
N_predicted	0.11417
Overdispersion Parameter, k	0.65
Weighted Adjustment, w	0.930916
N_expected	0.120099
Npred combined	1.010507
Nexpected combined	0.885447

Sunrise

Multiple-Vehicle Driveway Related Collisions	
N_observed	4.8
N_predicted	2.817333
Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.476472
N_expected	3.855315
Single-Vehicle Driveway Related Collisions	
N_observed	0.4
N_predicted	0.191693
Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.935445
N_expected	0.205141
Npred combined	3.009026
Nexpected combined	4.060455

Predicted Pedestrian and Bicycle Crashes

Segments	Nped	Nbike
SC to SN	0.020205	0.016164
SN to TR	0.01534	0.012272
TR to SU	0.01178	0.006343
Intersections		
Sabino Canyon	0.005391	0.039596
Snyder Rd	0.002743	0.034353
Territory	0.022231	0.018189
Sunrise	0.004933	0.045135
Combined	0.082623	0.172053

Site Specific EB Method Summary Results

	Npredicted	Nped	Nbike	N expected (veh)	N expected
Total	17.92	0.082623	0.172053	17.60108369	17.85575927

2040 With Project

	SC to SN	SN to TR	TR to SU	Sabino Canyon	Snyder	Territory	Sunrise
N_expect	3.40	1.54	0.97	2.62	2.23	0.89	4.06
N_ped	0.03	0.02	0.01	0.01	0.00	0.02	0.00
N_bike	0.02	0.01	0.00	0.04	0.03	0.02	0.05
N_total	3.45	1.58	0.98	2.66	2.27	0.93	4.11

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Sabino Canyon to Snyder Road
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	1.07
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	14,223
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	14
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	12.25
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	3.161	1.000	3.161	0.61	1.00	1.932
Fatal and Injury (FI)	-16.45	1.69	0.59	0.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.258	0.815	0.61	1.00	0.498
Property Damage Only (PDO)	-11.95	1.33	0.59	2.307	$(5)_{TOTAL}-(5)_{FI}$ = 0.742	2.346	0.61	1.00	1.434

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.498	1.000	1.434	1.932
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.421	0.842	1.207	1.628
Head-on collision	0.034	0.017	0.020	0.029	0.046
Angle collision	0.069	0.034	0.020	0.029	0.063
Sideswipe, same direction	0.001	0.000	0.078	0.112	0.112
Sideswipe, opposite direction	0.017	0.008	0.020	0.029	0.037
Other multiple-vehicle collision	0.034	0.017	0.020	0.029	0.046

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.601	1.000	0.601	0.61	1.00	0.367
Fatal and Injury (FI)	-6.37	0.47	1.06	0.164	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.281	0.169	0.61	1.00	0.103
Property Damage Only (PDO)	-6.29	0.56	1.93	0.420	$(5)_{TOTAL}-(5)_{FI}$ = 0.719	0.433	0.61	1.00	0.264

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.103	1.000	0.264	0.367
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.071	0.963	0.255	0.326
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.032	0.035	0.009	0.041

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.102	1.000	0.000	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	14	0.010	1.000	0.133	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.133	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(7) from Worksheet 1B		(4)*(5)*(6)
Total	0.133	1.000	0.133	0.61	1.00	0.081
Fatal and injury (FI)	--	0.243	0.032	0.61	1.00	0.020
Property damage only (PDO)	--	0.757	0.100	0.61	1.00	0.061

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.013	1.00	0.031
Fatal and injury (FI)	--	--	--	--	--	1.00	0.031

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.007	1.00	0.017
Fatal and injury (FI)	--	--	--	--	--	1.00	0.017

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.421	1.207	1.628
Head-on collisions (from Worksheet 1D)	0.017	0.029	0.046
Angle collisions (from Worksheet 1D)	0.034	0.029	0.063
Sideswipe, same direction (from Worksheet 1D)	0.000	0.112	0.112
Sideswipe, opposite direction (from Worksheet 1D)	0.008	0.029	0.037
Driveway-related collisions (from Worksheet 1H)	0.020	0.061	0.081
Other multiple-vehicle collision (from Worksheet 1D)	0.017	0.029	0.046
Subtotal	0.518	1.495	2.013
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.071	0.255	0.326
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.032	0.009	0.041
Collision with pedestrian (from Worksheet 1I)	0.031	0.000	0.031
Collision with bicycle (from Worksheet 1J)	0.017	0.000	0.017
Subtotal	0.151	0.264	0.415
Total	0.668	1.759	2.428

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	2.4	1.07	2.3
Fatal and injury (FI)	0.7	1.07	0.6
Property damage only (PDO)	1.8	1.07	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Snyder Road to Territory Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.89
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	16
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	7
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	2.377	1.000	2.377	0.61	1.00	1.453
Fatal and Injury (FI)	-16.45	1.69	0.59	0.591	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.601	0.61	1.00	0.367
Property Damage Only (PDO)	-11.95	1.33	0.59	1.745	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	1.776	0.61	1.00	1.085

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.367	1.000	1.085	1.453
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.310	0.842	0.914	1.224
Head-on collision	0.034	0.012	0.020	0.022	0.034
Angle collision	0.069	0.025	0.020	0.022	0.047
Sideswipe, same direction	0.001	0.000	0.078	0.085	0.085
Sideswipe, opposite direction	0.017	0.006	0.020	0.022	0.028
Other multiple-vehicle collision	0.034	0.012	0.020	0.022	0.034

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.481	1.000	0.481	0.61	1.00	0.294
Fatal and Injury (FI)	-6.37	0.47	1.06	0.132	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.136	0.61	1.00	0.083
Property Damage Only (PDO)	-6.29	0.56	1.93	0.336	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.346	0.61	1.00	0.211

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.083	1.000	0.211	0.294
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.057	0.963	0.203	0.260
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.026	0.035	0.007	0.033

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.102	1.000	0.090	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	16	0.010	1.000	0.141	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.231	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.231	1.000	0.231	0.61	1.00	0.141
Fatal and injury (FI)	--	0.243	0.056	0.61	1.00	0.034
Property damage only (PDO)	--	0.757	0.175	0.61	1.00	0.107

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.013	1.00	0.025
Fatal and injury (FI)	--	--	--	--	--	1.00	0.025

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.007	1.00	0.013
Fatal and injury (FI)	--	--	--	--	--	1.00	0.013

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.310	0.914	1.224
Head-on collisions (from Worksheet 1D)	0.012	0.022	0.034
Angle collisions (from Worksheet 1D)	0.025	0.022	0.047
Sideswipe, same direction (from Worksheet 1D)	0.000	0.085	0.085
Sideswipe, opposite direction (from Worksheet 1D)	0.006	0.022	0.028
Driveway-related collisions (from Worksheet 1H)	0.034	0.107	0.141
Other multiple-vehicle collision (from Worksheet 1D)	0.012	0.022	0.034
Subtotal	0.402	1.192	1.594
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.057	0.203	0.260
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.026	0.007	0.033
Collision with pedestrian (from Worksheet 1I)	0.025	0.000	0.025
Collision with bicycle (from Worksheet 1J)	0.013	0.000	0.013
Subtotal	0.121	0.211	0.332
Total	0.522	1.403	1.926

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	1.9	0.89	2.2
Fatal and injury (FI)	0.5	0.89	0.6
Property damage only (PDO)	1.4	0.89	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Territory Drive to Sunrise Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.17
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	4
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	1.75
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	0.93	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	0.454	1.000	0.454	0.57	1.00	0.259
Fatal and Injury (FI)	-16.45	1.69	0.59	0.113	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.115	0.57	1.00	0.066
Property Damage Only (PDO)	-11.95	1.33	0.59	0.333	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	0.339	0.57	1.00	0.194

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.066	1.000	0.194	0.259
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.055	0.842	0.163	0.218
Head-on collision	0.034	0.002	0.020	0.004	0.006
Angle collision	0.069	0.005	0.020	0.004	0.008
Sideswipe, same direction	0.001	0.000	0.078	0.015	0.015
Sideswipe, opposite direction	0.017	0.001	0.020	0.004	0.005
Other multiple-vehicle collision	0.034	0.002	0.020	0.004	0.006

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.092	1.000	0.092	0.57	1.00	0.052
Fatal and Injury (FI)	-6.37	0.47	1.06	0.025	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.026	0.57	1.00	0.015
Property Damage Only (PDO)	-6.29	0.56	1.93	0.064	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.066	0.57	1.00	0.038

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.015	1.000	0.038	0.052
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.010	0.963	0.036	0.046
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.005	0.035	0.001	0.006

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	4	0.102	1.000	0.360	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	0	0.010	1.000	0.000	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.360	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.360	1.000	0.360	0.57	1.00	0.206
Fatal and injury (FI)	--	0.243	0.088	0.57	1.00	0.050
Property damage only (PDO)	--	0.757	0.273	0.57	1.00	0.156

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.259	0.052	0.206	0.517	0.013	1.00	0.007
Fatal and injury (FI)	--	--	--	--	--	1.00	0.007

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.259	0.052	0.206	0.517	0.007	1.00	0.004
Fatal and injury (FI)	--	--	--	--	--	1.00	0.004

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.055	0.163	0.218
Head-on collisions (from Worksheet 1D)	0.002	0.004	0.006
Angle collisions (from Worksheet 1D)	0.005	0.004	0.008
Sideswipe, same direction (from Worksheet 1D)	0.000	0.015	0.015
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.004	0.005
Driveway-related collisions (from Worksheet 1H)	0.050	0.156	0.206
Other multiple-vehicle collision (from Worksheet 1D)	0.002	0.004	0.006
Subtotal	0.115	0.349	0.465
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.010	0.036	0.046
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.005	0.001	0.006
Collision with pedestrian (from Worksheet 1I)	0.007	0.000	0.007
Collision with bicycle (from Worksheet 1J)	0.004	0.000	0.004
Subtotal	0.025	0.038	0.063
Total	0.141	0.387	0.527

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.5	0.17	3.1
Fatal and injury (FI)	0.1	0.17	0.8
Property damage only (PDO)	0.4	0.17	2.3

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sabino Canyon
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	27,135
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	13,268
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			4
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.80	0.94	0.92	1.00	0.91	1.00	0.63

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	5.311	1.000	5.311	0.63	1.00	3.352
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.563	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	1.647	0.63	1.00	1.040
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	3.475	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	3.663	0.63	1.00	2.312

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	1.040	1.000	2.312	3.352
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.571	0.546	1.262	1.833
Head-on collision	0.038	0.040	0.020	0.046	0.086
Angle collision	0.280	0.291	0.204	0.472	0.763
Sideswipe	0.076	0.079	0.032	0.074	0.153
Other multiple-vehicle collision	0.057	0.059	0.198	0.458	0.517

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.393	1.000	0.393	0.63	1.00	0.248
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.116	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	0.122	0.63	1.00	0.077
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.258	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	0.271	0.63	1.00	0.171

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.077	1.000	0.171	0.248
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.001	0.001
Collision with fixed object	0.653	0.050	0.895	0.153	0.203
Collision with other object	0.091	0.007	0.069	0.012	0.019
Other single-vehicle collision	0.045	0.003	0.018	0.003	0.007
Single-vehicle noncollision	0.209	0.016	0.014	0.002	0.018

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	3.352	0.248	3.600	0.011	1.00	0.040
Fatal and injury (FI)	--	--	--	--	1.00	0.040

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.571	1.262	1.833
Head-on collisions (from Worksheet 2D)	0.040	0.046	0.086
Angle collisions (from Worksheet 2D)	0.291	0.472	0.763
Sideswipe (from Worksheet 2D)	0.079	0.074	0.153
Other multiple-vehicle collision (from Worksheet 2D)	0.059	0.458	0.517
Subtotal	1.040	2.312	3.352
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.050	0.153	0.203
Collision with other object (from Worksheet 2F)	0.007	0.012	0.019
Other single-vehicle collision (from Worksheet 2F)	0.003	0.003	0.007
Single-vehicle noncollision (from Worksheet 2F)	0.016	0.002	0.018
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.040	0.000	0.040
Subtotal	0.122	0.171	0.293
Total	1.162	2.483	3.645

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.6
Fatal and injury (FI)	1.2
Property damage only (PDO)	2.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Rd
Agency or Company	PSOMAS	Intersection	Kolb Rd and Snyder Rd
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	14,223
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	3,131
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF* $_{COMB}$
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.97	1.00	1.00	0.91	1.00	0.72

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.984	1.000	2.984	0.72	1.00	2.136
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.918	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.321	0.957	0.72	1.00	0.685
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.946	$(5)_{TOTAL}-(5)_{FI}$ = 0.679	2.027	0.72	1.00	1.451

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.685	1.000	1.451	2.136
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.308	0.483	0.701	1.009
Head-on collision	0.049	0.034	0.030	0.044	0.077
Angle collision	0.347	0.238	0.244	0.354	0.592
Sideswipe	0.099	0.068	0.032	0.046	0.114
Other multiple-vehicle collision	0.055	0.038	0.211	0.306	0.344

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.216	1.000	0.216	0.72	1.00	0.154
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.061	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.061	0.72	1.00	0.044
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.154	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.155	0.72	1.00	0.111

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.044	1.000	0.111	0.154
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.032	0.870	0.096	0.129
Collision with other object	0.072	0.003	0.070	0.008	0.011
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.004
Single-vehicle noncollision	0.141	0.006	0.034	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.003	1.00	1.00	0.003
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.003

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.136	0.154	2.290	0.015	1.00	0.034
Fatal and injury (FI)	--	--	--	--	1.00	0.034

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.308	0.701	1.009
Head-on collisions (from Worksheet 2D)	0.034	0.044	0.077
Angle collisions (from Worksheet 2D)	0.238	0.354	0.592
Sideswipe (from Worksheet 2D)	0.068	0.046	0.114
Other multiple-vehicle collision (from Worksheet 2D)	0.038	0.306	0.344
Subtotal	0.685	1.451	2.136
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.032	0.096	0.129
Collision with other object (from Worksheet 2F)	0.003	0.008	0.011
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.003	0.000	0.003
Collision with bicycle (from Worksheet 2J)	0.034	0.000	0.034
Subtotal	0.081	0.111	0.191
Total	0.765	1.562	2.327

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.3
Fatal and injury (FI)	0.8
Property damage only (PDO)	1.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Territory Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	13,241
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	1,879
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	1
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.53	1.00	0.86	1.00	0.91	1.00	0.42

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.154	1.000	2.154	0.42	1.00	0.896
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.825	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.379	0.816	0.42	1.00	0.340
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.353	$(5)_{TOTAL}-(5)_{FI}$ = 0.621	1.338	0.42	1.00	0.557

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.340	1.000	0.557	0.896
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.115	0.374	0.208	0.323
Head-on collision	0.041	0.014	0.030	0.017	0.031
Angle collision	0.440	0.149	0.335	0.187	0.336
Sideswipe	0.121	0.041	0.044	0.024	0.066
Other multiple-vehicle collision	0.060	0.020	0.217	0.121	0.141

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.274	1.000	0.274	0.42	1.00	0.114
Fatal and Injury (FI)	--	--	--	--	0.077	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.304	0.083	0.42	1.00	0.035
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.176	$(5)_{TOTAL}-(5)_{FI}$ = 0.696	0.191	0.42	1.00	0.079

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.035	1.000	0.079	0.114
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.002	0.002
Collision with fixed object	0.679	0.024	0.847	0.067	0.091
Collision with other object	0.089	0.003	0.070	0.006	0.009
Other single-vehicle collision	0.051	0.002	0.007	0.001	0.002
Single-vehicle noncollision	0.179	0.006	0.049	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.896	0.114	1.011	0.022	1.00	0.022
Fatal and injury (FI)	--	--	--	--	1.00	0.022

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
Crash Severity Level	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.896	0.114	1.011	0.018	1.00	0.018
Fatal and injury (FI)	--	--	--	--	1.00	0.018

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.115	0.208	0.323
Head-on collisions (from Worksheet 2D)	0.014	0.017	0.031
Angle collisions (from Worksheet 2D)	0.149	0.187	0.336
Sideswipe (from Worksheet 2D)	0.041	0.024	0.066
Other multiple-vehicle collision (from Worksheet 2D)	0.020	0.121	0.141
Subtotal	0.340	0.557	0.896
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.002	0.002
Collision with fixed object (from Worksheet 2F)	0.024	0.067	0.091
Collision with other object (from Worksheet 2F)	0.003	0.006	0.009
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.002
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.022	0.000	0.022
Collision with bicycle (from Worksheet 2J)	0.018	0.000	0.018
Subtotal	0.075	0.079	0.155
Total	0.415	0.636	1.051

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.1
Fatal and injury (FI)	0.4
Property damage only (PDO)	0.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sunrise Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	19,242
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	13,241
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Protected / Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Protected / Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.96	0.85	1.00	0.91	1.00	0.49

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	5.745	1.000	5.745	0.49	1.00	2.817
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.325	1.866	0.49	1.00	0.915
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.743	$(5)_{TOTAL}-(5)_{FI}$ = 0.675	3.879	0.49	1.00	1.902

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.915	1.000	1.902	2.817
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.412	0.483	0.919	1.331
Head-on collision	0.049	0.045	0.030	0.057	0.102
Angle collision	0.347	0.318	0.244	0.464	0.782
Sideswipe	0.099	0.091	0.032	0.061	0.151
Other multiple-vehicle collision	0.055	0.050	0.211	0.401	0.452

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.391	1.000	0.391	0.49	1.00	0.192
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.105	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.272	0.106	0.49	1.00	0.052
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.280	$(5)_{TOTAL}-(5)_{FI}$ = 0.728	0.284	0.49	1.00	0.139

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.139	0.192
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.039	0.870	0.121	0.160
Collision with other object	0.072	0.004	0.070	0.010	0.014
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) CMF for Bus Stops	(2) CMF for Schools	(3) CMF for Alcohol Sales Establishments	(4) Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) Crash Severity Level	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.817	0.192	3.009	0.015	1.00	0.045
Fatal and injury (FI)	--	--	--	--	1.00	0.045

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.412	0.919	1.331
Head-on collisions (from Worksheet 2D)	0.045	0.057	0.102
Angle collisions (from Worksheet 2D)	0.318	0.464	0.782
Sideswipe (from Worksheet 2D)	0.091	0.061	0.151
Other multiple-vehicle collision (from Worksheet 2D)	0.050	0.401	0.452
Subtotal	0.915	1.902	2.817
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.039	0.121	0.160
Collision with other object (from Worksheet 2F)	0.004	0.010	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.045	0.000	0.045
Subtotal	0.102	0.139	0.242
Total	1.018	2.042	3.059

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.1
Fatal and injury (FI)	1.0
Property damage only (PDO)	2.0

Sabino Canyon to Snyder		**Snyder to Territory**		**Territory to Sunrise**	
Segment					
Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions	
N_observed	2.6	N_observed	0.8	N_observed	0.8
N_predicted	1.931673	N_predicted	1.452548	N_predicted	0.259134
Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66
Weighted Adjustment, w	0.278422	Weighted Adjustment, w	0.32128	Weighted Adjustment, w	0.521068
N_expected	2.413923	N_expected	1.009651	N_expected	0.518172
Single-Vehicle Crashes		Single-Vehicle Crashes		Single-Vehicle Crashes	
N_observed	2.00	N_observed	0.6	N_observed	0.2
N_predicted	0.367479	N_predicted	0.294077	N_predicted	0.052463
Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37
Weighted Adjustment, w	0.665139	Weighted Adjustment, w	0.712817	Weighted Adjustment, w	0.932945
N_expected	0.914147	N_expected	0.381933	N_expected	0.062356
Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions	
N_observed	0	N_observed	0.2	N_observed	1.2
N_predicted	0.08	N_predicted	0.141324	N_predicted	0.205546
Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10
Weighted Adjustment, w	0.918081	Weighted Adjustment, w	0.865459	Weighted Adjustment, w	0.815594
N_expected	0.074472	N_expected	0.149218	N_expected	0.388929
Npred combined	2.38	Npred combined	1.89	Npred combined	0.52
Nexpected combined	3.402542	Nexpected combined	1.540802	Nexpected combined	0.969457

Intersection							
Sabino Canyon		**Snyder Rd**		**Territory**		**Sunrise**	
Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions	
N_observed	1.4	N_observed	2	N_observed	0.4	N_observed	4.8
N_predicted	3.3519	N_predicted	2.135882	N_predicted	0.896337	N_predicted	2.817333
Overdispersion Parameter, k	0.33	Overdispersion Parameter, k	0.39	Overdispersion Parameter, k	0.40	Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.474805	Weighted Adjustment, w	0.545556	Weighted Adjustment, w	0.736087	Weighted Adjustment, w	0.476472
N_expected	2.326772	N_expected	2.074131	N_expected	0.765347	N_expected	3.855315
Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions	
N_observed	0.8	N_observed	0.2	N_observed	0.2	N_observed	0.4
N_predicted	0.247745	N_predicted	0.154343	N_predicted	0.11417	N_predicted	0.191693
Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.65	Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.918115	Weighted Adjustment, w	0.947361	Weighted Adjustment, w	0.930916	Weighted Adjustment, w	0.935445
N_expected	0.292966	N_expected	0.156747	N_expected	0.120099	N_expected	0.205141
Npred combined	3.599645	Npred combined	2.290225	Npred combined	1.010507	Npred combined	3.009026
Nexpted combined	2.619738	Nexpected combined	2.230878	Nexpected combined	0.885447	Nexpected combined	4.060455

Predicted Pedestrian and Bicycle Crashes

Segments	Nped	Nbike
SC to SN	0.030943	0.016662
SN to TR	0.024543	0.013216
TR to SU	0.006723	0.00362
Intersections		
Sabino Canyon	0.005391	0.039596
Snyder Rd	0.002743	0.034353
Territory	0.022231	0.018189
Sunrise	0.004933	0.045135
Combined	0.097508	0.170772

Site Specific EB Method Summary Results

	Npredicted	Nped	Nbike	N expected (veh)	N expected
Total	14.69	0.097508	0.170772	15.70931918	15.97759825

2040 With Project and NBR at Snyder Rd

	SC to SN	SN to TR	TR to SU	Sabino Canyon	Snyder	Territory	Sunrise
N_expect	3.40	1.54	0.97	2.62	2.18	0.89	4.06
N_ped	0.03	0.02	0.01	0.01	0.00	0.02	0.00
N_bike	0.02	0.01	0.00	0.04	0.03	0.02	0.05
N_total	3.45	1.58	0.98	2.66	2.21	0.93	4.11

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Sabino Canyon to Snyder Road
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	1.07
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	14,223
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	14
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	12.25
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	3.161	1.000	3.161	0.61	1.00	1.932
Fatal and Injury (FI)	-16.45	1.69	0.59	0.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.258	0.815	0.61	1.00	0.498
Property Damage Only (PDO)	-11.95	1.33	0.59	2.307	$(5)_{TOTAL}-(5)_{FI}$ = 0.742	2.346	0.61	1.00	1.434

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.498	1.000	1.434	1.932
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.421	0.842	1.207	1.628
Head-on collision	0.034	0.017	0.020	0.029	0.046
Angle collision	0.069	0.034	0.020	0.029	0.063
Sideswipe, same direction	0.001	0.000	0.078	0.112	0.112
Sideswipe, opposite direction	0.017	0.008	0.020	0.029	0.037
Other multiple-vehicle collision	0.034	0.017	0.020	0.029	0.046

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.601	1.000	0.601	0.61	1.00	0.367
Fatal and Injury (FI)	-6.37	0.47	1.06	0.164	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.281	0.169	0.61	1.00	0.103
Property Damage Only (PDO)	-6.29	0.56	1.93	0.420	$(5)_{TOTAL}-(5)_{FI}$ = 0.719	0.433	0.61	1.00	0.264

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.103	1.000	0.264	0.367
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.071	0.963	0.255	0.326
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.032	0.035	0.009	0.041

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.102	1.000	0.000	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	14	0.010	1.000	0.133	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.133	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.133	1.000	0.133	0.61	1.00	0.081
Fatal and injury (FI)	--	0.243	0.032	0.61	1.00	0.020
Property damage only (PDO)	--	0.757	0.100	0.61	1.00	0.061

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.013	1.00	0.031
Fatal and injury (FI)	--	--	--	--	--	1.00	0.031

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.007	1.00	0.017
Fatal and injury (FI)	--	--	--	--	--	1.00	0.017

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.421	1.207	1.628
Head-on collisions (from Worksheet 1D)	0.017	0.029	0.046
Angle collisions (from Worksheet 1D)	0.034	0.029	0.063
Sideswipe, same direction (from Worksheet 1D)	0.000	0.112	0.112
Sideswipe, opposite direction (from Worksheet 1D)	0.008	0.029	0.037
Driveway-related collisions (from Worksheet 1H)	0.020	0.061	0.081
Other multiple-vehicle collision (from Worksheet 1D)	0.017	0.029	0.046
Subtotal	0.518	1.495	2.013
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.071	0.255	0.326
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.032	0.009	0.041
Collision with pedestrian (from Worksheet 1I)	0.031	0.000	0.031
Collision with bicycle (from Worksheet 1J)	0.017	0.000	0.017
Subtotal	0.151	0.264	0.415
Total	0.668	1.759	2.428

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	2.4	1.07	2.3
Fatal and injury (FI)	0.7	1.07	0.6
Property damage only (PDO)	1.8	1.07	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Snyder Road to Territory Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.89
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	16
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	7
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	2.377	1.000	2.377	0.61	1.00	1.453
Fatal and Injury (FI)	-16.45	1.69	0.59	0.591	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.601	0.61	1.00	0.367
Property Damage Only (PDO)	-11.95	1.33	0.59	1.745	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	1.776	0.61	1.00	1.085

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.367	1.000	1.085	1.453
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.310	0.842	0.914	1.224
Head-on collision	0.034	0.012	0.020	0.022	0.034
Angle collision	0.069	0.025	0.020	0.022	0.047
Sideswipe, same direction	0.001	0.000	0.078	0.085	0.085
Sideswipe, opposite direction	0.017	0.006	0.020	0.022	0.028
Other multiple-vehicle collision	0.034	0.012	0.020	0.022	0.034

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.481	1.000	0.481	0.61	1.00	0.294
Fatal and Injury (FI)	-6.37	0.47	1.06	0.132	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.136	0.61	1.00	0.083
Property Damage Only (PDO)	-6.29	0.56	1.93	0.336	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.346	0.61	1.00	0.211

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.083	1.000	0.211	0.294
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.057	0.963	0.203	0.260
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.026	0.035	0.007	0.033

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.102	1.000	0.090	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	16	0.010	1.000	0.141	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.231	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.231	1.000	0.231	0.61	1.00	0.141
Fatal and injury (FI)	--	0.243	0.056	0.61	1.00	0.034
Property damage only (PDO)	--	0.757	0.175	0.61	1.00	0.107

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.013	1.00	0.025
Fatal and injury (FI)	--	--	--	--	--	1.00	0.025

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.007	1.00	0.013
Fatal and injury (FI)	--	--	--	--	--	1.00	0.013

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.310	0.914	1.224
Head-on collisions (from Worksheet 1D)	0.012	0.022	0.034
Angle collisions (from Worksheet 1D)	0.025	0.022	0.047
Sideswipe, same direction (from Worksheet 1D)	0.000	0.085	0.085
Sideswipe, opposite direction (from Worksheet 1D)	0.006	0.022	0.028
Driveway-related collisions (from Worksheet 1H)	0.034	0.107	0.141
Other multiple-vehicle collision (from Worksheet 1D)	0.012	0.022	0.034
Subtotal	0.402	1.192	1.594
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.057	0.203	0.260
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.026	0.007	0.033
Collision with pedestrian (from Worksheet 1I)	0.025	0.000	0.025
Collision with bicycle (from Worksheet 1J)	0.013	0.000	0.013
Subtotal	0.121	0.211	0.332
Total	0.522	1.403	1.926

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	1.9	0.89	2.2
Fatal and injury (FI)	0.5	0.89	0.6
Property damage only (PDO)	1.4	0.89	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Territory Drive to Sunrise Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.17
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	4
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	1.75
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	0.93	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	0.454	1.000	0.454	0.57	1.00	0.259
Fatal and Injury (FI)	-16.45	1.69	0.59	0.113	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.115	0.57	1.00	0.066
Property Damage Only (PDO)	-11.95	1.33	0.59	0.333	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	0.339	0.57	1.00	0.194

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.066	1.000	0.194	0.259
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.055	0.842	0.163	0.218
Head-on collision	0.034	0.002	0.020	0.004	0.006
Angle collision	0.069	0.005	0.020	0.004	0.008
Sideswipe, same direction	0.001	0.000	0.078	0.015	0.015
Sideswipe, opposite direction	0.017	0.001	0.020	0.004	0.005
Other multiple-vehicle collision	0.034	0.002	0.020	0.004	0.006

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.092	1.000	0.092	0.57	1.00	0.052
Fatal and Injury (FI)	-6.37	0.47	1.06	0.025	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.026	0.57	1.00	0.015
Property Damage Only (PDO)	-6.29	0.56	1.93	0.064	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.066	0.57	1.00	0.038

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.015	1.000	0.038	0.052
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.010	0.963	0.036	0.046
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.005	0.035	0.001	0.006

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	4	0.102	1.000	0.360	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	0	0.010	1.000	0.000	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.360	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.360	1.000	0.360	0.57	1.00	0.206
Fatal and injury (FI)	--	0.243	0.088	0.57	1.00	0.050
Property damage only (PDO)	--	0.757	0.273	0.57	1.00	0.156

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.259	0.052	0.206	0.517	0.013	1.00	0.007
Fatal and injury (FI)	--	--	--	--	--	1.00	0.007

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.259	0.052	0.206	0.517	0.007	1.00	0.004
Fatal and injury (FI)	--	--	--	--	--	1.00	0.004

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.055	0.163	0.218
Head-on collisions (from Worksheet 1D)	0.002	0.004	0.006
Angle collisions (from Worksheet 1D)	0.005	0.004	0.008
Sideswipe, same direction (from Worksheet 1D)	0.000	0.015	0.015
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.004	0.005
Driveway-related collisions (from Worksheet 1H)	0.050	0.156	0.206
Other multiple-vehicle collision (from Worksheet 1D)	0.002	0.004	0.006
Subtotal	0.115	0.349	0.465
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.010	0.036	0.046
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.005	0.001	0.006
Collision with pedestrian (from Worksheet 1I)	0.007	0.000	0.007
Collision with bicycle (from Worksheet 1J)	0.004	0.000	0.004
Subtotal	0.025	0.038	0.063
Total	0.141	0.387	0.527

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.5	0.17	3.1
Fatal and injury (FI)	0.1	0.17	0.8
Property damage only (PDO)	0.4	0.17	2.3

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sabino Canyon
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	27,135
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	13,268
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			4
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.80	0.94	0.92	1.00	0.91	1.00	0.63

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	5.311	1.000	5.311	0.63	1.00	3.352
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.563	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	1.647	0.63	1.00	1.040
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	3.475	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	3.663	0.63	1.00	2.312

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	1.040	1.000	2.312	3.352
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.571	0.546	1.262	1.833
Head-on collision	0.038	0.040	0.020	0.046	0.086
Angle collision	0.280	0.291	0.204	0.472	0.763
Sideswipe	0.076	0.079	0.032	0.074	0.153
Other multiple-vehicle collision	0.057	0.059	0.198	0.458	0.517

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.393	1.000	0.393	0.63	1.00	0.248
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.116	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	0.122	0.63	1.00	0.077
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.258	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	0.271	0.63	1.00	0.171

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.077	1.000	0.171	0.248
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.001	0.001
Collision with fixed object	0.653	0.050	0.895	0.153	0.203
Collision with other object	0.091	0.007	0.069	0.012	0.019
Other single-vehicle collision	0.045	0.003	0.018	0.003	0.007
Single-vehicle noncollision	0.209	0.016	0.014	0.002	0.018

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	3.352	0.248	3.600	0.011	1.00	0.040
Fatal and injury (FI)	--	--	--	--	1.00	0.040

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.571	1.262	1.833
Head-on collisions (from Worksheet 2D)	0.040	0.046	0.086
Angle collisions (from Worksheet 2D)	0.291	0.472	0.763
Sideswipe (from Worksheet 2D)	0.079	0.074	0.153
Other multiple-vehicle collision (from Worksheet 2D)	0.059	0.458	0.517
Subtotal	1.040	2.312	3.352
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.050	0.153	0.203
Collision with other object (from Worksheet 2F)	0.007	0.012	0.019
Other single-vehicle collision (from Worksheet 2F)	0.003	0.003	0.007
Single-vehicle noncollision (from Worksheet 2F)	0.016	0.002	0.018
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.040	0.000	0.040
Subtotal	0.122	0.171	0.293
Total	1.162	2.483	3.645

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.6
Fatal and injury (FI)	1.2
Property damage only (PDO)	2.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Rd
Agency or Company	PSOMAS	Intersection	Kolb Rd and Snyder Rd
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	14,223
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	3,131
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF* $_{COMB}$
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.97	0.96	1.00	0.91	1.00	0.69

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.984	1.000	2.984	0.69	1.00	2.050
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.918	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.321	0.957	0.69	1.00	0.657
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.946	$(5)_{TOTAL}-(5)_{FI}$ = 0.679	2.027	0.69	1.00	1.393

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.657	1.000	1.393	2.050
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.296	0.483	0.673	0.969
Head-on collision	0.049	0.032	0.030	0.042	0.074
Angle collision	0.347	0.228	0.244	0.340	0.568
Sideswipe	0.099	0.065	0.032	0.045	0.110
Other multiple-vehicle collision	0.055	0.036	0.211	0.294	0.330

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.216	1.000	0.216	0.69	1.00	0.148
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.061	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.061	0.69	1.00	0.042
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.154	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.155	0.69	1.00	0.106

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.042	1.000	0.106	0.148
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.031	0.870	0.093	0.124
Collision with other object	0.072	0.003	0.070	0.007	0.010
Other single-vehicle collision	0.040	0.002	0.023	0.002	0.004
Single-vehicle noncollision	0.141	0.006	0.034	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.003	1.00	1.00	0.003
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.003

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.050	0.148	2.199	0.015	1.00	0.033
Fatal and injury (FI)	--	--	--	--	1.00	0.033

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.296	0.673	0.969
Head-on collisions (from Worksheet 2D)	0.032	0.042	0.074
Angle collisions (from Worksheet 2D)	0.228	0.340	0.568
Sideswipe (from Worksheet 2D)	0.065	0.045	0.110
Other multiple-vehicle collision (from Worksheet 2D)	0.036	0.294	0.330
Subtotal	0.657	1.393	2.050
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.031	0.093	0.124
Collision with other object (from Worksheet 2F)	0.003	0.007	0.010
Other single-vehicle collision (from Worksheet 2F)	0.002	0.002	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.003	0.000	0.003
Collision with bicycle (from Worksheet 2J)	0.033	0.000	0.033
Subtotal	0.077	0.106	0.184
Total	0.735	1.499	2.234

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.2
Fatal and injury (FI)	0.7
Property damage only (PDO)	1.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Territory Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	13,241
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	1,879
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	1
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.53	1.00	0.86	1.00	0.91	1.00	0.42

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.154	1.000	2.154	0.42	1.00	0.896
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.825	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.379	0.816	0.42	1.00	0.340
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.353	$(5)_{TOTAL}-(5)_{FI}$ = 0.621	1.338	0.42	1.00	0.557

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.340	1.000	0.557	0.896
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.115	0.374	0.208	0.323
Head-on collision	0.041	0.014	0.030	0.017	0.031
Angle collision	0.440	0.149	0.335	0.187	0.336
Sideswipe	0.121	0.041	0.044	0.024	0.066
Other multiple-vehicle collision	0.060	0.020	0.217	0.121	0.141

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.274	1.000	0.274	0.42	1.00	0.114
Fatal and Injury (FI)	--	--	--	--	0.077	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.304	0.083	0.42	1.00	0.035
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.176	$(5)_{TOTAL}-(5)_{FI}$ = 0.696	0.191	0.42	1.00	0.079

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.035	1.000	0.079	0.114
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.002	0.002
Collision with fixed object	0.679	0.024	0.847	0.067	0.091
Collision with other object	0.089	0.003	0.070	0.006	0.009
Other single-vehicle collision	0.051	0.002	0.007	0.001	0.002
Single-vehicle noncollision	0.179	0.006	0.049	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.896	0.114	1.011	0.022	1.00	0.022
Fatal and injury (FI)	--	--	--	--	1.00	0.022

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
Crash Severity Level	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.896	0.114	1.011	0.018	1.00	0.018
Fatal and injury (FI)	--	--	--	--	1.00	0.018

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.115	0.208	0.323
Head-on collisions (from Worksheet 2D)	0.014	0.017	0.031
Angle collisions (from Worksheet 2D)	0.149	0.187	0.336
Sideswipe (from Worksheet 2D)	0.041	0.024	0.066
Other multiple-vehicle collision (from Worksheet 2D)	0.020	0.121	0.141
Subtotal	0.340	0.557	0.896
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.002	0.002
Collision with fixed object (from Worksheet 2F)	0.024	0.067	0.091
Collision with other object (from Worksheet 2F)	0.003	0.006	0.009
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.002
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.022	0.000	0.022
Collision with bicycle (from Worksheet 2J)	0.018	0.000	0.018
Subtotal	0.075	0.079	0.155
Total	0.415	0.636	1.051

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.1
Fatal and injury (FI)	0.4
Property damage only (PDO)	0.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sunrise Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	19,242
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	13,241
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Protected / Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Protected / Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.96	0.85	1.00	0.91	1.00	0.49

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	5.745	1.000	5.745	0.49	1.00	2.817
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.325	1.866	0.49	1.00	0.915
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.743	$(5)_{TOTAL}-(5)_{FI}$ = 0.675	3.879	0.49	1.00	1.902

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.915	1.000	1.902	2.817
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.412	0.483	0.919	1.331
Head-on collision	0.049	0.045	0.030	0.057	0.102
Angle collision	0.347	0.318	0.244	0.464	0.782
Sideswipe	0.099	0.091	0.032	0.061	0.151
Other multiple-vehicle collision	0.055	0.050	0.211	0.401	0.452

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.391	1.000	0.391	0.49	1.00	0.192
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.105	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.272	0.106	0.49	1.00	0.052
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.280	$(5)_{TOTAL}-(5)_{FI}$ = 0.728	0.284	0.49	1.00	0.139

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1) Collision Type	(2) Proportion of Collision Type$_{(FI)}$	(3) Predicted N $_{bisv\ (FI)}$ (crashes/year)	(4) Proportion of Collision Type $_{(PDO)}$	(5) Predicted N $_{bisv\ (PDO)}$ (crashes/year)	(6) Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.139	0.192
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.039	0.870	0.121	0.160
Collision with other object	0.072	0.004	0.070	0.010	0.014
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1) Crash Severity Level	(2) Predicted N_{bimv}	(3) Predicted N_{bisv}	(4) Predicted N_{bi}	(5) f_{pedi}	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) CMF for Bus Stops	(2) CMF for Schools	(3) CMF for Alcohol Sales Establishments	(4) Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1) Crash Severity Level	(2) SPF Coefficients from Table 12-14					(3) Overdispersion Parameter, k	(4) $N_{pedbase}$	(5) Combined CMF	(6) Calibration factor, C_i	(7) Predicted N_{pedi}
	a	b	c	d	e		from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.817	0.192	3.009	0.015	1.00	0.045
Fatal and injury (FI)	--	--	--	--	1.00	0.045

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.412	0.919	1.331
Head-on collisions (from Worksheet 2D)	0.045	0.057	0.102
Angle collisions (from Worksheet 2D)	0.318	0.464	0.782
Sideswipe (from Worksheet 2D)	0.091	0.061	0.151
Other multiple-vehicle collision (from Worksheet 2D)	0.050	0.401	0.452
Subtotal	0.915	1.902	2.817
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.039	0.121	0.160
Collision with other object (from Worksheet 2F)	0.004	0.010	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.045	0.000	0.045
Subtotal	0.102	0.139	0.242
Total	1.018	2.042	3.059

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.1
Fatal and injury (FI)	1.0
Property damage only (PDO)	2.0

Sabino Canyon to Snyder Segment		**Snyder to Territory**		**Territory to Sunrise**	
Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions	
N_observed	2.6	N_observed	0.8	N_observed	0.8
N_predicted	1.931673	N_predicted	1.452548	N_predicted	0.259134
Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66
Weighted Adjustment, w	0.278422	Weighted Adjustment, w	0.32128	Weighted Adjustment, w	0.521068
N_expected	2.413923	N_expected	1.009651	N_expected	0.518172
Single-Vehicle Crashes		Single-Vehicle Crashes		Single-Vehicle Crashes	
N_observed	2.00	N_observed	0.6	N_observed	0.2
N_predicted	0.367479	N_predicted	0.294077	N_predicted	0.052463
Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37
Weighted Adjustment, w	0.665139	Weighted Adjustment, w	0.712817	Weighted Adjustment, w	0.932945
N_expected	0.914147	N_expected	0.381933	N_expected	0.062356
Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions	
N_observed	0	N_observed	0.2	N_observed	1.2
N_predicted	0.08	N_predicted	0.141324	N_predicted	0.205546
Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10
Weighted Adjustment, w	0.918081	Weighted Adjustment, w	0.865459	Weighted Adjustment, w	0.815594
N_expected	0.074472	N_expected	0.149218	N_expected	0.388929
Npred combined	2.38	Npred combined	1.89	Npred combined	0.52
Nexpected combined	3.402542	Nexpected combined	1.540802	Nexpected combined	0.969457

Intersection							
Sabino Canyon		**Snyder Rd**		**Territory**		**Sunrise**	
Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions	
N_observed	1.4	N_observed	2	N_observed	0.4	N_observed	4.8
N_predicted	3.3519	N_predicted	2.050447	N_predicted	0.896337	N_predicted	2.817333
Overdispersion Parameter, k	0.33	Overdispersion Parameter, k	0.39	Overdispersion Parameter, k	0.40	Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.474805	Weighted Adjustment, w	0.555656	Weighted Adjustment, w	0.736087	Weighted Adjustment, w	0.476472
N_expected	2.326772	N_expected	2.028031	N_expected	0.765347	N_expected	3.855315
Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions	
N_observed	0.8	N_observed	0.2	N_observed	0.2	N_observed	0.4
N_predicted	0.247745	N_predicted	0.14817	N_predicted	0.11417	N_predicted	0.191693
Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.65	Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.918115	Weighted Adjustment, w	0.94936	Weighted Adjustment, w	0.930916	Weighted Adjustment, w	0.935445
N_expected	0.292966	N_expected	0.150794	N_expected	0.120099	N_expected	0.205141
Npred combined	3.599645	Npred combined	2.198616	Npred combined	1.010507	Npred combined	3.009026
Nexpted combined	2.619738	Nexpected combined	2.178825	Nexpected combined	0.885447	Nexpected combined	4.060455

Predicted Pedestrian and Bicycle Crashes

Segments	Nped	Nbike
SC to SN	0.030943	0.016662
SN to TR	0.024543	0.013216
TR to SU	0.006723	0.00362
Intersections		
Sabino Canyon	0.005391	0.039596
Snyder Rd	0.002743	0.032979
Territory	0.022231	0.018189
Sunrise	0.004933	0.045135
Combined	0.097508	0.169397

Site Specific EB Method Summary Results

	Npredicted	Nped	Nbike	N expected (veh)	N expected
Total	14.60	0.097508	0.169397	15.65726667	15.9241716

2040 With Project and Median Island at Bashas' (North End Alternative 2)

	SC to SN	SN to TR	TR to SU	Sabino Canyon	Snyder	Territory	Sunrise
N_expect	3.40	1.54	0.78	2.62	2.23	1.05	4.06
N_ped	0.03	0.02	0.00	0.01	0.00	0.03	0.00
N_bike	0.02	0.01	0.00	0.04	0.03	0.02	0.05
N_total	3.45	1.58	0.78	2.66	2.27	1.10	4.11

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Sabino Canyon to Snyder Road
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	1.07
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	14,223
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	14
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	12.25
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	3.161	1.000	3.161	0.61	1.00	1.932
Fatal and Injury (FI)	-16.45	1.69	0.59	0.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.258	0.815	0.61	1.00	0.498
Property Damage Only (PDO)	-11.95	1.33	0.59	2.307	$(5)_{TOTAL}-(5)_{FI}$ = 0.742	2.346	0.61	1.00	1.434

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.498	1.000	1.434	1.932
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.421	0.842	1.207	1.628
Head-on collision	0.034	0.017	0.020	0.029	0.046
Angle collision	0.069	0.034	0.020	0.029	0.063
Sideswipe, same direction	0.001	0.000	0.078	0.112	0.112
Sideswipe, opposite direction	0.017	0.008	0.020	0.029	0.037
Other multiple-vehicle collision	0.034	0.017	0.020	0.029	0.046

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.601	1.000	0.601	0.61	1.00	0.367
Fatal and Injury (FI)	-6.37	0.47	1.06	0.164	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.281	0.169	0.61	1.00	0.103
Property Damage Only (PDO)	-6.29	0.56	1.93	0.420	$(5)_{TOTAL}-(5)_{FI}$ = 0.719	0.433	0.61	1.00	0.264

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.103	1.000	0.264	0.367
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.071	0.963	0.255	0.326
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.032	0.035	0.009	0.041

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.102	1.000	0.000	
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	--
Major residential	0	0.053	1.000	0.000	
Minor residential	14	0.010	1.000	0.133	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.133	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(7) from Worksheet 1B		(4)*(5)*(6)
Total	0.133	1.000	0.133	0.61	1.00	0.081
Fatal and injury (FI)	--	0.243	0.032	0.61	1.00	0.020
Property damage only (PDO)	--	0.757	0.100	0.61	1.00	0.061

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.013	1.00	0.031
Fatal and injury (FI)	--	--	--	--	--	1.00	0.031

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.007	1.00	0.017
Fatal and injury (FI)	--	--	--	--	--	1.00	0.017

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.421	1.207	1.628
Head-on collisions (from Worksheet 1D)	0.017	0.029	0.046
Angle collisions (from Worksheet 1D)	0.034	0.029	0.063
Sideswipe, same direction (from Worksheet 1D)	0.000	0.112	0.112
Sideswipe, opposite direction (from Worksheet 1D)	0.008	0.029	0.037
Driveway-related collisions (from Worksheet 1H)	0.020	0.061	0.081
Other multiple-vehicle collision (from Worksheet 1D)	0.017	0.029	0.046
Subtotal	0.518	1.495	2.013
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.071	0.255	0.326
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.032	0.009	0.041
Collision with pedestrian (from Worksheet 1I)	0.031	0.000	0.031
Collision with bicycle (from Worksheet 1J)	0.017	0.000	0.017
Subtotal	0.151	0.264	0.415
Total	0.668	1.759	2.428

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	2.4	1.07	2.3
Fatal and injury (FI)	0.7	1.07	0.6
Property damage only (PDO)	1.8	1.07	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Snyder Road to Territory Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.89
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	16
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	7
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	2.377	1.000	2.377	0.61	1.00	1.453
Fatal and Injury (FI)	-16.45	1.69	0.59	0.591	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.601	0.61	1.00	0.367
Property Damage Only (PDO)	-11.95	1.33	0.59	1.745	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	1.776	0.61	1.00	1.085

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.367	1.000	1.085	1.453
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.310	0.842	0.914	1.224
Head-on collision	0.034	0.012	0.020	0.022	0.034
Angle collision	0.069	0.025	0.020	0.022	0.047
Sideswipe, same direction	0.001	0.000	0.078	0.085	0.085
Sideswipe, opposite direction	0.017	0.006	0.020	0.022	0.028
Other multiple-vehicle collision	0.034	0.012	0.020	0.022	0.034

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.481	1.000	0.481	0.61	1.00	0.294
Fatal and Injury (FI)	-6.37	0.47	1.06	0.132	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.136	0.61	1.00	0.083
Property Damage Only (PDO)	-6.29	0.56	1.93	0.336	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.346	0.61	1.00	0.211

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.083	1.000	0.211	0.294
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.057	0.963	0.203	0.260
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.026	0.035	0.007	0.033

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.102	1.000	0.090	
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	--
Major residential	0	0.053	1.000	0.000	
Minor residential	16	0.010	1.000	0.141	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.231	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.231	1.000	0.231	0.61	1.00	0.141
Fatal and injury (FI)	--	0.243	0.056	0.61	1.00	0.034
Property damage only (PDO)	--	0.757	0.175	0.61	1.00	0.107

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.013	1.00	0.025
Fatal and injury (FI)	--	--	--	--	--	1.00	0.025

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.007	1.00	0.013
Fatal and injury (FI)	--	--	--	--	--	1.00	0.013

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.310	0.914	1.224
Head-on collisions (from Worksheet 1D)	0.012	0.022	0.034
Angle collisions (from Worksheet 1D)	0.025	0.022	0.047
Sideswipe, same direction (from Worksheet 1D)	0.000	0.085	0.085
Sideswipe, opposite direction (from Worksheet 1D)	0.006	0.022	0.028
Driveway-related collisions (from Worksheet 1H)	0.034	0.107	0.141
Other multiple-vehicle collision (from Worksheet 1D)	0.012	0.022	0.034
Subtotal	0.402	1.192	1.594
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.057	0.203	0.260
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.026	0.007	0.033
Collision with pedestrian (from Worksheet 1I)	0.025	0.000	0.025
Collision with bicycle (from Worksheet 1J)	0.013	0.000	0.013
Subtotal	0.121	0.211	0.332
Total	0.522	1.403	1.926

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	1.9	0.89	2.2
Fatal and injury (FI)	0.5	0.89	0.6
Property damage only (PDO)	1.4	0.89	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Territory Drive to Sunrise Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.17
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	4
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	1.75
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	0.93	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	0.454	1.000	0.454	0.38	1.00	0.172
Fatal and Injury (FI)	-16.45	1.69	0.59	0.113	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.115	0.38	1.00	0.044
Property Damage Only (PDO)	-11.95	1.33	0.59	0.333	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	0.339	0.38	1.00	0.129

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.044	1.000	0.129	0.172
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.037	0.842	0.108	0.145
Head-on collision	0.034	0.001	0.020	0.003	0.004
Angle collision	0.069	0.003	0.020	0.003	0.006
Sideswipe, same direction	0.001	0.000	0.078	0.010	0.010
Sideswipe, opposite direction	0.017	0.001	0.020	0.003	0.003
Other multiple-vehicle collision	0.034	0.001	0.020	0.003	0.004

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.092	1.000	0.092	0.38	1.00	0.035
Fatal and Injury (FI)	-6.37	0.47	1.06	0.025	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.026	0.38	1.00	0.010
Property Damage Only (PDO)	-6.29	0.56	1.93	0.064	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.066	0.38	1.00	0.025

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.010	1.000	0.025	0.035
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.007	0.963	0.024	0.031
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.003	0.035	0.001	0.004

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	4	0.102	1.000	0.360	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	0	0.010	1.000	0.000	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.360	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.360	1.000	0.360	0.38	1.00	0.137
Fatal and injury (FI)	--	0.243	0.088	0.38	1.00	0.033
Property damage only (PDO)	--	0.757	0.273	0.38	1.00	0.103

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.172	0.035	0.137	0.344	0.013	1.00	0.004
Fatal and injury (FI)	--	--	--	--	--	1.00	0.004

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.172	0.035	0.137	0.344	0.007	1.00	0.002
Fatal and injury (FI)	--	--	--	--	--	1.00	0.002

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.037	0.108	0.145
Head-on collisions (from Worksheet 1D)	0.001	0.003	0.004
Angle collisions (from Worksheet 1D)	0.003	0.003	0.006
Sideswipe, same direction (from Worksheet 1D)	0.000	0.010	0.010
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.003	0.003
Driveway-related collisions (from Worksheet 1H)	0.033	0.103	0.137
Other multiple-vehicle collision (from Worksheet 1D)	0.001	0.003	0.004
Subtotal	0.077	0.232	0.309
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.007	0.024	0.031
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.003	0.001	0.004
Collision with pedestrian (from Worksheet 1I)	0.004	0.000	0.004
Collision with bicycle (from Worksheet 1J)	0.002	0.000	0.002
Subtotal	0.017	0.025	0.042
Total	0.094	0.257	0.351

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.4	0.17	2.1
Fatal and injury (FI)	0.1	0.17	0.6
Property damage only (PDO)	0.3	0.17	1.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sabino Canyon
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	27,135
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	13,268
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			4
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.80	0.94	0.92	1.00	0.91	1.00	0.63

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	5.311	1.000	5.311	0.63	1.00	3.352
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.563	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	1.647	0.63	1.00	1.040
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	3.475	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	3.663	0.63	1.00	2.312

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	1.040	1.000	2.312	3.352
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.571	0.546	1.262	1.833
Head-on collision	0.038	0.040	0.020	0.046	0.086
Angle collision	0.280	0.291	0.204	0.472	0.763
Sideswipe	0.076	0.079	0.032	0.074	0.153
Other multiple-vehicle collision	0.057	0.059	0.198	0.458	0.517

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.393	1.000	0.393	0.63	1.00	0.248
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.116	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	0.122	0.63	1.00	0.077
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.258	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	0.271	0.63	1.00	0.171

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.077	1.000	0.171	0.248
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.001	0.001
Collision with fixed object	0.653	0.050	0.895	0.153	0.203
Collision with other object	0.091	0.007	0.069	0.012	0.019
Other single-vehicle collision	0.045	0.003	0.018	0.003	0.007
Single-vehicle noncollision	0.209	0.016	0.014	0.002	0.018

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	3.352	0.248	3.600	0.011	1.00	0.040
Fatal and injury (FI)	--	--	--	--	1.00	0.040

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.571	1.262	1.833
Head-on collisions (from Worksheet 2D)	0.040	0.046	0.086
Angle collisions (from Worksheet 2D)	0.291	0.472	0.763
Sideswipe (from Worksheet 2D)	0.079	0.074	0.153
Other multiple-vehicle collision (from Worksheet 2D)	0.059	0.458	0.517
Subtotal	1.040	2.312	3.352
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.050	0.153	0.203
Collision with other object (from Worksheet 2F)	0.007	0.012	0.019
Other single-vehicle collision (from Worksheet 2F)	0.003	0.003	0.007
Single-vehicle noncollision (from Worksheet 2F)	0.016	0.002	0.018
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.040	0.000	0.040
Subtotal	0.122	0.171	0.293
Total	1.162	2.483	3.645

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.6
Fatal and injury (FI)	1.2
Property damage only (PDO)	2.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Rd
Agency or Company	PSOMAS	Intersection	Kolb Rd and Snyder Rd
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	14,223
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	3,131
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF* $_{COMB}$
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.97	1.00	1.00	0.91	1.00	0.72

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.984	1.000	2.984	0.72	1.00	2.136
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.918	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.321	0.957	0.72	1.00	0.685
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.946	$(5)_{TOTAL}-(5)_{FI}$ = 0.679	2.027	0.72	1.00	1.451

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.685	1.000	1.451	2.136
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.308	0.483	0.701	1.009
Head-on collision	0.049	0.034	0.030	0.044	0.077
Angle collision	0.347	0.238	0.244	0.354	0.592
Sideswipe	0.099	0.068	0.032	0.046	0.114
Other multiple-vehicle collision	0.055	0.038	0.211	0.306	0.344

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.216	1.000	0.216	0.72	1.00	0.154
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.061	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.061	0.72	1.00	0.044
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.154	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.155	0.72	1.00	0.111

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.044	1.000	0.111	0.154
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.032	0.870	0.096	0.129
Collision with other object	0.072	0.003	0.070	0.008	0.011
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.004
Single-vehicle noncollision	0.141	0.006	0.034	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.003	1.00	1.00	0.003
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.003

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.136	0.154	2.290	0.015	1.00	0.034
Fatal and injury (FI)	--	--	--	--	1.00	0.034

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.308	0.701	1.009
Head-on collisions (from Worksheet 2D)	0.034	0.044	0.077
Angle collisions (from Worksheet 2D)	0.238	0.354	0.592
Sideswipe (from Worksheet 2D)	0.068	0.046	0.114
Other multiple-vehicle collision (from Worksheet 2D)	0.038	0.306	0.344
Subtotal	0.685	1.451	2.136
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.032	0.096	0.129
Collision with other object (from Worksheet 2F)	0.003	0.008	0.011
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.003	0.000	0.003
Collision with bicycle (from Worksheet 2J)	0.034	0.000	0.034
Subtotal	0.081	0.111	0.191
Total	0.765	1.562	2.327

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.3
Fatal and injury (FI)	0.8
Property damage only (PDO)	1.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Territory Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	13,241
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	2,711
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.53	1.00	1.00	1.00	0.91	1.00	0.48

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.361	1.000	2.361	0.48	1.00	1.142
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.914	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.383	0.905	0.48	1.00	0.438
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.472	$(5)_{TOTAL}-(5)_{FI}$ = 0.617	1.456	0.48	1.00	0.705

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 11-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.438	1.000	0.705	1.142
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.148	0.374	0.264	0.411
Head-on collision	0.041	0.018	0.030	0.021	0.039
Angle collision	0.440	0.193	0.335	0.236	0.429
Sideswipe	0.121	0.053	0.044	0.031	0.084
Other multiple-vehicle collision	0.060	0.026	0.217	0.153	0.179

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.287	1.000	0.287	0.48	1.00	0.139
Fatal and Injury (FI)	--	--	--	--	0.080	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.294	0.084	0.48	1.00	0.041
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.193	$(5)_{TOTAL}-(5)_{FI}$ = 0.706	0.202	0.48	1.00	0.098

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.041	1.000	0.098	0.139
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.003	0.003
Collision with fixed object	0.679	0.028	0.847	0.083	0.111
Collision with other object	0.089	0.004	0.070	0.007	0.010
Other single-vehicle collision	0.051	0.002	0.007	0.001	0.003
Single-vehicle noncollision	0.179	0.007	0.049	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	1.142	0.139	1.281	0.022	1.00	0.028
Fatal and injury (FI)	--	--	--	--	1.00	0.028

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--

Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.142	0.139	1.281	0.018	1.00	0.023
Fatal and injury (FI)	--	--	--	--	1.00	0.023

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.148	0.264	0.411
Head-on collisions (from Worksheet 2D)	0.018	0.021	0.039
Angle collisions (from Worksheet 2D)	0.193	0.236	0.429
Sideswipe (from Worksheet 2D)	0.053	0.031	0.084
Other multiple-vehicle collision (from Worksheet 2D)	0.026	0.153	0.179
Subtotal	0.438	0.705	1.142
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.003	0.003
Collision with fixed object (from Worksheet 2F)	0.028	0.083	0.111
Collision with other object (from Worksheet 2F)	0.004	0.007	0.010
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.003
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.028	0.000	0.028
Collision with bicycle (from Worksheet 2J)	0.023	0.000	0.023
Subtotal	0.092	0.098	0.190
Total	0.530	0.803	1.332

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.3
Fatal and injury (FI)	0.5
Property damage only (PDO)	0.8

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sunrise Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	19,242
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	13,241
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Protected / Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Protected / Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.96	0.85	1.00	0.91	1.00	0.49

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	5.745	1.000	5.745	0.49	1.00	2.817
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.325	1.866	0.49	1.00	0.915
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.743	$(5)_{TOTAL}-(5)_{FI}$ = 0.675	3.879	0.49	1.00	1.902

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.915	1.000	1.902	2.817
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.412	0.483	0.919	1.331
Head-on collision	0.049	0.045	0.030	0.057	0.102
Angle collision	0.347	0.318	0.244	0.464	0.782
Sideswipe	0.099	0.091	0.032	0.061	0.151
Other multiple-vehicle collision	0.055	0.050	0.211	0.401	0.452

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.391	1.000	0.391	0.49	1.00	0.192
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.105	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.272	0.106	0.49	1.00	0.052
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.280	$(5)_{TOTAL}-(5)_{FI}$ = 0.728	0.284	0.49	1.00	0.139

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.139	0.192
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.039	0.870	0.121	0.160
Collision with other object	0.072	0.004	0.070	0.010	0.014
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.005	1.00	1.00	0.005

Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.817	0.192	3.009	0.015	1.00	0.045
Fatal and injury (FI)	--	--	--	--	1.00	0.045

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.412	0.919	1.331
Head-on collisions (from Worksheet 2D)	0.045	0.057	0.102
Angle collisions (from Worksheet 2D)	0.318	0.464	0.782
Sideswipe (from Worksheet 2D)	0.091	0.061	0.151
Other multiple-vehicle collision (from Worksheet 2D)	0.050	0.401	0.452
Subtotal	0.915	1.902	2.817
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.039	0.121	0.160
Collision with other object (from Worksheet 2F)	0.004	0.010	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.045	0.000	0.045
Subtotal	0.102	0.139	0.242
Total	1.018	2.042	3.059

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.1
Fatal and injury (FI)	1.0
Property damage only (PDO)	2.0

Sabino Canyon to Snyder		**Snyder to Territory**		**Territory to Sunrise**	
Segment					
Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions	
N_observed	2.6	N_observed	0.8	N_observed	0.8
N_predicted	1.931673	N_predicted	1.452548	N_predicted	0.172322
Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66
Weighted Adjustment, w	0.278422	Weighted Adjustment, w	0.32128	Weighted Adjustment, w	0.545755
N_expected	2.413923	N_expected	1.009651	N_expected	0.457442
Single-Vehicle Crashes		Single-Vehicle Crashes		Single-Vehicle Crashes	
N_observed	2.00	N_observed	0.6	N_observed	0.2
N_predicted	0.367479	N_predicted	0.294077	N_predicted	0.034888
Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37
Weighted Adjustment, w	0.665139	Weighted Adjustment, w	0.712817	Weighted Adjustment, w	0.954384
N_expected	0.914147	N_expected	0.381933	N_expected	0.042419
Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions	
N_observed	0	N_observed	0.2	N_observed	1.2
N_predicted	0.08	N_predicted	0.141324	N_predicted	0.136687
Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10
Weighted Adjustment, w	0.918081	Weighted Adjustment, w	0.865459	Weighted Adjustment, w	0.869297
N_expected	0.074472	N_expected	0.149218	N_expected	0.275665
Npred combined	2.38	Npred combined	1.89	Npred combined	0.34
Nexpected combined	3.402542	Nexpected combined	1.540802	Nexpected combined	0.775526

Intersection							
Sabino Canyon		**Snyder Rd**		**Territory**		**Sunrise**	
Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions	
N_observed	1.4	N_observed	2	N_observed	0.4	N_observed	4.8
N_predicted	3.3519	N_predicted	2.135882	N_predicted	1.142283	N_predicted	2.817333
Overdispersion Parameter, k	0.33	Overdispersion Parameter, k	0.39	Overdispersion Parameter, k	0.40	Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.474805	Weighted Adjustment, w	0.545556	Weighted Adjustment, w	0.686383	Weighted Adjustment, w	0.476472
N_expected	2.326772	N_expected	2.074131	N_expected	0.90949	N_expected	3.855315
Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions	
N_observed	0.8	N_observed	0.2	N_observed	0.2	N_observed	0.4
N_predicted	0.247745	N_predicted	0.154343	N_predicted	0.138726	N_predicted	0.191693
Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.65	Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.918115	Weighted Adjustment, w	0.947361	Weighted Adjustment, w	0.917287	Weighted Adjustment, w	0.935445
N_expected	0.292966	N_expected	0.156747	N_expected	0.143794	N_expected	0.205141
Npred combined	3.599645	Npred combined	2.290225	Npred combined	1.281009	Npred combined	3.009026
Nexpted combined	2.619738	Nexpected combined	2.230878	Nexpected combined	1.053284	Nexpected combined	4.060455

Predicted Pedestrian and Bicycle Crashes

Segments	Nped	Nbike
SC to SN	0.030943	0.016662
SN to TR	0.024543	0.013216
TR to SU	0.004471	0.002407
Intersections		
Sabino Canyon	0.005391	0.039596
Snyder Rd	0.002743	0.034353
Territory	0.028182	0.023058
Sunrise	0.004933	0.045135
Combined	0.101206	0.174428

Site Specific EB Method Summary Results

	Npredicted	Nped	Nbike	N expected (veh)	N expected
Total	14.79	0.101206	0.174428	15.68322562	15.95885983

2040 With Project and Roundabout at Territory Drive (North End Alternative 3)

	SC to SN	SN to TR	TR to SU	Sabino Canyon	Snyder	Territory	Sunrise
N_expect	3.40	1.54	0.78	2.62	2.23	0.66	4.06
N_ped	0.03	0.02	0.00	0.01	0.00	0.02	0.00
N_bike	0.02	0.01	0.00	0.04	0.03	0.01	0.05
N_total	3.45	1.58	0.78	2.66	2.27	0.69	4.11

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Sabino Canyon to Snyder Road
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	1.07
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	14,223
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	14
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	12.25
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	3.161	1.000	3.161	0.61	1.00	1.932
Fatal and Injury (FI)	-16.45	1.69	0.59	0.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.258	0.815	0.61	1.00	0.498
Property Damage Only (PDO)	-11.95	1.33	0.59	2.307	$(5)_{TOTAL}-(5)_{FI}$ = 0.742	2.346	0.61	1.00	1.434

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.498	1.000	1.434	1.932
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.421	0.842	1.207	1.628
Head-on collision	0.034	0.017	0.020	0.029	0.046
Angle collision	0.069	0.034	0.020	0.029	0.063
Sideswipe, same direction	0.001	0.000	0.078	0.112	0.112
Sideswipe, opposite direction	0.017	0.008	0.020	0.029	0.037
Other multiple-vehicle collision	0.034	0.017	0.020	0.029	0.046

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.601	1.000	0.601	0.61	1.00	0.367
Fatal and Injury (FI)	-6.37	0.47	1.06	0.164	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.281	0.169	0.61	1.00	0.103
Property Damage Only (PDO)	-6.29	0.56	1.93	0.420	$(5)_{TOTAL}-(5)_{FI}$ = 0.719	0.433	0.61	1.00	0.264

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.103	1.000	0.264	0.367
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.071	0.963	0.255	0.326
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.032	0.035	0.009	0.041

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.102	1.000	0.000	
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	--
Major residential	0	0.053	1.000	0.000	
Minor residential	14	0.010	1.000	0.133	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.133	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(7) from Worksheet 1B		(4)*(5)*(6)
Total	0.133	1.000	0.133	0.61	1.00	0.081
Fatal and injury (FI)	--	0.243	0.032	0.61	1.00	0.020
Property damage only (PDO)	--	0.757	0.100	0.61	1.00	0.061

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.013	1.00	0.031
Fatal and injury (FI)	--	--	--	--	--	1.00	0.031

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.932	0.367	0.081	2.380	0.007	1.00	0.017
Fatal and injury (FI)	--	--	--	--	--	1.00	0.017

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.421	1.207	1.628
Head-on collisions (from Worksheet 1D)	0.017	0.029	0.046
Angle collisions (from Worksheet 1D)	0.034	0.029	0.063
Sideswipe, same direction (from Worksheet 1D)	0.000	0.112	0.112
Sideswipe, opposite direction (from Worksheet 1D)	0.008	0.029	0.037
Driveway-related collisions (from Worksheet 1H)	0.020	0.061	0.081
Other multiple-vehicle collision (from Worksheet 1D)	0.017	0.029	0.046
Subtotal	0.518	1.495	2.013
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.071	0.255	0.326
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.032	0.009	0.041
Collision with pedestrian (from Worksheet 1I)	0.031	0.000	0.031
Collision with bicycle (from Worksheet 1J)	0.017	0.000	0.017
Subtotal	0.151	0.264	0.415
Total	0.668	1.759	2.428

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	2.4	1.07	2.3
Fatal and injury (FI)	0.7	1.07	0.6
Property damage only (PDO)	1.8	1.07	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Snyder Road to Territory Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.89
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Not Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	16
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	7
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	1.00	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	2.377	1.000	2.377	0.61	1.00	1.453
Fatal and Injury (FI)	-16.45	1.69	0.59	0.591	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.601	0.61	1.00	0.367
Property Damage Only (PDO)	-11.95	1.33	0.59	1.745	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	1.776	0.61	1.00	1.085

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.367	1.000	1.085	1.453
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.310	0.842	0.914	1.224
Head-on collision	0.034	0.012	0.020	0.022	0.034
Angle collision	0.069	0.025	0.020	0.022	0.047
Sideswipe, same direction	0.001	0.000	0.078	0.085	0.085
Sideswipe, opposite direction	0.017	0.006	0.020	0.022	0.028
Other multiple-vehicle collision	0.034	0.012	0.020	0.022	0.034

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.481	1.000	0.481	0.61	1.00	0.294
Fatal and Injury (FI)	-6.37	0.47	1.06	0.132	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.136	0.61	1.00	0.083
Property Damage Only (PDO)	-6.29	0.56	1.93	0.336	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.346	0.61	1.00	0.211

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.083	1.000	0.211	0.294
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.057	0.963	0.203	0.260
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.026	0.035	0.007	0.033

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.102	1.000	0.090	
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	--
Major residential	0	0.053	1.000	0.000	
Minor residential	16	0.010	1.000	0.141	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.231	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.231	1.000	0.231	0.61	1.00	0.141
Fatal and injury (FI)	--	0.243	0.056	0.61	1.00	0.034
Property damage only (PDO)	--	0.757	0.175	0.61	1.00	0.107

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.013	1.00	0.025
Fatal and injury (FI)	--	--	--	--	--	1.00	0.025

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	1.453	0.294	0.141	1.888	0.007	1.00	0.013
Fatal and injury (FI)	--	--	--	--	--	1.00	0.013

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.310	0.914	1.224
Head-on collisions (from Worksheet 1D)	0.012	0.022	0.034
Angle collisions (from Worksheet 1D)	0.025	0.022	0.047
Sideswipe, same direction (from Worksheet 1D)	0.000	0.085	0.085
Sideswipe, opposite direction (from Worksheet 1D)	0.006	0.022	0.028
Driveway-related collisions (from Worksheet 1H)	0.034	0.107	0.141
Other multiple-vehicle collision (from Worksheet 1D)	0.012	0.022	0.034
Subtotal	0.402	1.192	1.594
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.057	0.203	0.260
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.026	0.007	0.033
Collision with pedestrian (from Worksheet 1I)	0.025	0.000	0.025
Collision with bicycle (from Worksheet 1J)	0.013	0.000	0.013
Subtotal	0.121	0.211	0.332
Total	0.522	1.403	1.926

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	1.9	0.89	2.2
Fatal and injury (FI)	0.5	0.89	0.6
Property damage only (PDO)	1.4	0.89	1.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Roadway Section	Territory Drive to Sunrise Drive
Date Performed	01/10/17	Jurisdiction	Pima County
		Analysis Year	2016

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	3T
Length of segment, L (mi)		--	0.17
AADT (veh/day)	$AADT_{MAX}$ = 32,900 (veh/day)	--	13,241
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	15
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	4
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	1.75
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	25
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Upgraded Shoulder	CMF for Safety Edge
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5281*	CMF 4311
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from HSM Clearinghouse	from HSM Clearinghouse
1.00	1.00	1.00	0.93	0.82	0.935

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.40	1.41	0.66	0.454	1.000	0.454	0.38	1.00	0.172
Fatal and Injury (FI)	-16.45	1.69	0.59	0.113	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.253	0.115	0.38	1.00	0.044
Property Damage Only (PDO)	-11.95	1.33	0.59	0.333	$(5)_{TOTAL}-(5)_{FI}$ = 0.747	0.339	0.38	1.00	0.129

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.044	1.000	0.129	0.172
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.845	0.037	0.842	0.108	0.145
Head-on collision	0.034	0.001	0.020	0.003	0.004
Angle collision	0.069	0.003	0.020	0.003	0.006
Sideswipe, same direction	0.001	0.000	0.078	0.010	0.010
Sideswipe, opposite direction	0.017	0.001	0.020	0.003	0.003
Other multiple-vehicle collision	0.034	0.001	0.020	0.003	0.004

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(8) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.74	0.54	1.37	0.092	1.000	0.092	0.38	1.00	0.035
Fatal and Injury (FI)	-6.37	0.47	1.06	0.025	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.026	0.38	1.00	0.010
Property Damage Only (PDO)	-6.29	0.56	1.93	0.064	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.066	0.38	1.00	0.025

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.010	1.000	0.025	0.035
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.000
Collision with fixed object	0.688	0.007	0.963	0.024	0.031
Collision with other object	0.001	0.000	0.001	0.000	0.000
Other single-vehicle collision	0.310	0.003	0.035	0.001	0.004

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	4	0.102	1.000	0.360	--
Minor commercial	0	0.032	1.000	0.000	
Major industrial/institutional	0	0.110	1.000	0.000	
Minor industrial/institutional	0	0.015	1.000	0.000	
Major residential	0	0.053	1.000	0.000	
Minor residential	0	0.010	1.000	0.000	
Other	0	0.016	1.000	0.000	
Total	--	--	--	0.360	1.10

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(8) from Worksheet 1B		(4)*(5)*(6)
Total	0.360	1.000	0.360	0.38	1.00	0.137
Fatal and injury (FI)	--	0.243	0.088	0.38	1.00	0.033
Property damage only (PDO)	--	0.757	0.273	0.38	1.00	0.103

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.172	0.035	0.137	0.344	0.013	1.00	0.004
Fatal and injury (FI)	--	--	--	--	--	1.00	0.004

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.172	0.035	0.137	0.344	0.007	1.00	0.002
Fatal and injury (FI)	--	--	--	--	--	1.00	0.002

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.037	0.108	0.145
Head-on collisions (from Worksheet 1D)	0.001	0.003	0.004
Angle collisions (from Worksheet 1D)	0.003	0.003	0.006
Sideswipe, same direction (from Worksheet 1D)	0.000	0.010	0.010
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.003	0.003
Driveway-related collisions (from Worksheet 1H)	0.033	0.103	0.137
Other multiple-vehicle collision (from Worksheet 1D)	0.001	0.003	0.004
Subtotal	0.077	0.232	0.309
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 1F)	0.007	0.024	0.031
Collision with other object (from Worksheet 1F)	0.000	0.000	0.000
Other single-vehicle collision (from Worksheet 1F)	0.003	0.001	0.004
Collision with pedestrian (from Worksheet 1I)	0.004	0.000	0.004
Collision with bicycle (from Worksheet 1J)	0.002	0.000	0.002
Subtotal	0.017	0.025	0.042
Total	0.094	0.257	0.351

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.4	0.17	2.1
Fatal and injury (FI)	0.1	0.17	0.6
Property damage only (PDO)	0.3	0.17	1.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sabino Canyon
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	27,135
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	13,268
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			4
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.80	0.94	0.92	1.00	0.91	1.00	0.63

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	5.311	1.000	5.311	0.63	1.00	3.352
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.563	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	1.647	0.63	1.00	1.040
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	3.475	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	3.663	0.63	1.00	2.312

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	1.040	1.000	2.312	3.352
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.571	0.546	1.262	1.833
Head-on collision	0.038	0.040	0.020	0.046	0.086
Angle collision	0.280	0.291	0.204	0.472	0.763
Sideswipe	0.076	0.079	0.032	0.074	0.153
Other multiple-vehicle collision	0.057	0.059	0.198	0.458	0.517

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.393	1.000	0.393	0.63	1.00	0.248
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.116	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.310	0.122	0.63	1.00	0.077
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.258	$(5)_{TOTAL}-(5)_{FI}$ = 0.690	0.271	0.63	1.00	0.171

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.077	1.000	0.171	0.248
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.001	0.001
Collision with fixed object	0.653	0.050	0.895	0.153	0.203
Collision with other object	0.091	0.007	0.069	0.012	0.019
Other single-vehicle collision	0.045	0.003	0.018	0.003	0.007
Single-vehicle noncollision	0.209	0.016	0.014	0.002	0.018

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.005	1.00	1.00	0.005
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	3.352	0.248	3.600	0.011	1.00	0.040
Fatal and injury (FI)	--	--	--	--	1.00	0.040

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.571	1.262	1.833
Head-on collisions (from Worksheet 2D)	0.040	0.046	0.086
Angle collisions (from Worksheet 2D)	0.291	0.472	0.763
Sideswipe (from Worksheet 2D)	0.079	0.074	0.153
Other multiple-vehicle collision (from Worksheet 2D)	0.059	0.458	0.517
Subtotal	1.040	2.312	3.352
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.050	0.153	0.203
Collision with other object (from Worksheet 2F)	0.007	0.012	0.019
Other single-vehicle collision (from Worksheet 2F)	0.003	0.003	0.007
Single-vehicle noncollision (from Worksheet 2F)	0.016	0.002	0.018
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.040	0.000	0.040
Subtotal	0.122	0.171	0.293
Total	1.162	2.483	3.645

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.6
Fatal and injury (FI)	1.2
Property damage only (PDO)	2.5

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Rd
Agency or Company	PSOMAS	Intersection	Kolb Rd and Snyder Rd
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	14,223
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	3,131
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Permissive / Protected
Type of left-turn signal phasing for Leg #2		--	Permissive / Protected
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF* $_{COMB}$
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.97	1.00	1.00	0.91	1.00	0.72

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.984	1.000	2.984	0.72	1.00	2.136
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.918	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.321	0.957	0.72	1.00	0.685
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.946	$(5)_{TOTAL}-(5)_{FI}$ = 0.679	2.027	0.72	1.00	1.451

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.685	1.000	1.451	2.136
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.308	0.483	0.701	1.009
Head-on collision	0.049	0.034	0.030	0.044	0.077
Angle collision	0.347	0.238	0.244	0.354	0.592
Sideswipe	0.099	0.068	0.032	0.046	0.114
Other multiple-vehicle collision	0.055	0.038	0.211	0.306	0.344

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.216	1.000	0.216	0.72	1.00	0.154
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.061	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.061	0.72	1.00	0.044
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.154	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.155	0.72	1.00	0.111

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.044	1.000	0.111	0.154
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.032	0.870	0.096	0.129
Collision with other object	0.072	0.003	0.070	0.008	0.011
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.004
Single-vehicle noncollision	0.141	0.006	0.034	0.004	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.003	1.00	1.00	0.003
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.003

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.136	0.154	2.290	0.015	1.00	0.034
Fatal and injury (FI)	--	--	--	--	1.00	0.034

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.308	0.701	1.009
Head-on collisions (from Worksheet 2D)	0.034	0.044	0.077
Angle collisions (from Worksheet 2D)	0.238	0.354	0.592
Sideswipe (from Worksheet 2D)	0.068	0.046	0.114
Other multiple-vehicle collision (from Worksheet 2D)	0.038	0.306	0.344
Subtotal	0.685	1.451	2.136
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.032	0.096	0.129
Collision with other object (from Worksheet 2F)	0.003	0.008	0.011
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.004	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	0.003	0.000	0.003
Collision with bicycle (from Worksheet 2J)	0.034	0.000	0.034
Subtotal	0.081	0.111	0.191
Total	0.765	1.562	2.327

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.3
Fatal and injury (FI)	0.8
Property damage only (PDO)	1.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Territory Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	13,241
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	2,454
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Protected / Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Roundabout	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*		*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from HSM pg 12-48	(1)*(2)*(3)*(4)*(5)*(6)
0.53	1.00	1.00	1.00	0.91	0.56	0.27

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.303	1.000	2.303	0.27	1.00	0.624
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.889	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.382	0.880	0.27	1.00	0.238
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.438	$(5)_{TOTAL}-(5)_{FI}$ = 0.618	1.423	0.27	1.00	0.386

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.238	1.000	0.386	0.624
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.081	0.374	0.144	0.225
Head-on collision	0.041	0.010	0.030	0.012	0.021
Angle collision	0.440	0.105	0.335	0.129	0.234
Sideswipe	0.121	0.029	0.044	0.017	0.046
Other multiple-vehicle collision	0.060	0.014	0.217	0.084	0.098

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.283	1.000	0.283	0.27	1.00	0.077
Fatal and Injury (FI)	--	--	--	--	0.079	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.297	0.084	0.27	1.00	0.023
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.188	$(5)_{TOTAL}-(5)_{FI}$ = 0.703	0.199	0.27	1.00	0.054

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.023	1.000	0.054	0.077
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.001	0.001
Collision with fixed object	0.679	0.015	0.847	0.046	0.061
Collision with other object	0.089	0.002	0.070	0.004	0.006
Other single-vehicle collision	0.051	0.001	0.007	0.000	0.002
Single-vehicle noncollision	0.179	0.004	0.049	0.003	0.007

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.624	0.077	0.701	0.022	1.00	0.015
Fatal and injury (FI)	--	--	--	--	1.00	0.015

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--

Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.624	0.077	0.701	0.018	1.00	0.013
Fatal and injury (FI)	--	--	--	--	1.00	0.013

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.081	0.144	0.225
Head-on collisions (from Worksheet 2D)	0.010	0.012	0.021
Angle collisions (from Worksheet 2D)	0.105	0.129	0.234
Sideswipe (from Worksheet 2D)	0.029	0.017	0.046
Other multiple-vehicle collision (from Worksheet 2D)	0.014	0.084	0.098
Subtotal	0.238	0.386	0.624
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.015	0.046	0.061
Collision with other object (from Worksheet 2F)	0.002	0.004	0.006
Other single-vehicle collision (from Worksheet 2F)	0.001	0.000	0.002
Single-vehicle noncollision (from Worksheet 2F)	0.004	0.003	0.007
Collision with pedestrian (from Worksheet 2G or 2I)	0.015	0.000	0.015
Collision with bicycle (from Worksheet 2J)	0.013	0.000	0.013
Subtotal	0.051	0.054	0.105
Total	0.289	0.440	0.729

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	0.7
Fatal and injury (FI)	0.3
Property damage only (PDO)	0.4

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	MJS	Roadway	Kolb Road
Agency or Company	PSOMAS	Intersection	Kolb Road and Sunrise Dr
Date Performed	07/09/16	Jurisdiction	
		Analysis Year	2040

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	19,242
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	13,241
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	2
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Permissive / Protected
Type of left-turn signal phasing for Leg #2		--	Permissive / Protected
Type of left-turn signal phasing for Leg #3		--	Permissive / Protected
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Permissive / Protected
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			1
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.96	0.85	1.00	0.91	1.00	0.49

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	5.745	1.000	5.745	0.49	1.00	2.817
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.801	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.325	1.866	0.49	1.00	0.915
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.743	$(5)_{TOTAL}-(5)_{FI}$ = 0.675	3.879	0.49	1.00	1.902

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.915	1.000	1.902	2.817
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.412	0.483	0.919	1.331
Head-on collision	0.049	0.045	0.030	0.057	0.102
Angle collision	0.347	0.318	0.244	0.464	0.782
Sideswipe	0.099	0.091	0.032	0.061	0.151
Other multiple-vehicle collision	0.055	0.050	0.211	0.401	0.452

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.391	1.000	0.391	0.49	1.00	0.192
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.105	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.272	0.106	0.49	1.00	0.052
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.280	$(5)_{TOTAL}-(5)_{FI}$ = 0.728	0.284	0.49	1.00	0.139

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.139	0.192
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.039	0.870	0.121	0.160
Collision with other object	0.072	0.004	0.070	0.010	0.014
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
1.00	1.00	1.00	1.00

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.005	1.00	1.00	0.005

Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.005

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.817	0.192	3.009	0.015	1.00	0.045
Fatal and injury (FI)	--	--	--	--	1.00	0.045

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.412	0.919	1.331
Head-on collisions (from Worksheet 2D)	0.045	0.057	0.102
Angle collisions (from Worksheet 2D)	0.318	0.464	0.782
Sideswipe (from Worksheet 2D)	0.091	0.061	0.151
Other multiple-vehicle collision (from Worksheet 2D)	0.050	0.401	0.452
Subtotal	0.915	1.902	2.817
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.039	0.121	0.160
Collision with other object (from Worksheet 2F)	0.004	0.010	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.005	0.000	0.005
Collision with bicycle (from Worksheet 2J)	0.045	0.000	0.045
Subtotal	0.102	0.139	0.242
Total	1.018	2.042	3.059

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.1
Fatal and injury (FI)	1.0
Property damage only (PDO)	2.0

Sabino Canyon to Snyder		**Snyder to Territory**		**Territory to Sunrise**	
Segment					
Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions		Multiple-Vehicle Nondriveway Collisions	
N_observed	2.6	N_observed	0.8	N_observed	0.8
N_predicted	1.931673	N_predicted	1.452548	N_predicted	0.172322
Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66	Overdispersion Parameter, k	0.66
Weighted Adjustment, w	0.278422	Weighted Adjustment, w	0.32128	Weighted Adjustment, w	0.545755
N_expected	2.413923	N_expected	1.009651	N_expected	0.457442
Single-Vehicle Crashes		Single-Vehicle Crashes		Single-Vehicle Crashes	
N_observed	2.00	N_observed	0.6	N_observed	0.2
N_predicted	0.367479	N_predicted	0.294077	N_predicted	0.034888
Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37	Overdispersion Parameter, k	1.37
Weighted Adjustment, w	0.665139	Weighted Adjustment, w	0.712817	Weighted Adjustment, w	0.954384
N_expected	0.914147	N_expected	0.381933	N_expected	0.042419
Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions		Multiple-Vehcile Driveway Related Collisions	
N_observed	0	N_observed	0.2	N_observed	1.2
N_predicted	0.08	N_predicted	0.141324	N_predicted	0.136687
Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10	Overdispersion Parameter, k	1.10
Weighted Adjustment, w	0.918081	Weighted Adjustment, w	0.865459	Weighted Adjustment, w	0.869297
N_expected	0.074472	N_expected	0.149218	N_expected	0.275665
Npred combined	2.38	Npred combined	1.89	Npred combined	0.34
Nexpected combined	3.402542	Nexpected combined	1.540802	Nexpected combined	0.775526

Intersection							
Sabino Canyon		**Snyder Rd**		**Territory**		**Sunrise**	
Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions		Multiple-Vehicle Driveway Related Collisions	
N_observed	1.4	N_observed	2	N_observed	0.4	N_observed	4.8
N_predicted	3.3519	N_predicted	2.135882	N_predicted	0.623947	N_predicted	2.817333
Overdispersion Parameter, k	0.33	Overdispersion Parameter, k	0.39	Overdispersion Parameter, k	0.40	Overdispersion Parameter, k	0.39
Weighted Adjustment, w	0.474805	Weighted Adjustment, w	0.545556	Weighted Adjustment, w	0.80027	Weighted Adjustment, w	0.476472
N_expected	2.326772	N_expected	2.074131	N_expected	0.579218	N_expected	3.855315
Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions		Single-Vehicle Driveway Related Collisions	
N_observed	0.8	N_observed	0.2	N_observed	0.2	N_observed	0.4
N_predicted	0.247745	N_predicted	0.154343	N_predicted	0.076763	N_predicted	0.191693
Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.36	Overdispersion Parameter, k	0.65	Overdispersion Parameter, k	0.36
Weighted Adjustment, w	0.918115	Weighted Adjustment, w	0.947361	Weighted Adjustment, w	0.952475	Weighted Adjustment, w	0.935445
N_expected	0.292966	N_expected	0.156747	N_expected	0.08262	N_expected	0.205141
Npred combined	3.599645	Npred combined	2.290225	Npred combined	0.700711	Npred combined	3.009026
Nexpted combined	2.619738	Nexpected combined	2.230878	Nexpected combined	0.661838	Nexpected combined	4.060455

Predicted Pedestrian and Bicycle Crashes

Segments	Nped	Nbike
SC to SN	0.030943	0.016662
SN to TR	0.024543	0.013216
TR to SU	0.004471	0.002407
Intersections		
Sabino Canyon	0.005391	0.039596
Snyder Rd	0.002743	0.034353
Territory	0.015416	0.012613
Sunrise	0.004933	0.045135
Combined	0.08844	0.163982

Site Specific EB Method Summary Results

	Npredicted	Nped	Nbike	N expected (veh)	N expected
Total	14.21	0.08844	0.163982	15.29178008	15.54420238

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