SOUTHWEST TRAFFIC ENGINEERING, LLC

TRAFFIC IMPACT ANALYSIS – ADDENDUM #1

RESOLUTION COPPER MINE

SUPERIOR, ARIZONA

REVISED 19 AUGUST 2020
2 JULY 2020

PREPARED FOR
RESOLUTION COPPER
402 W MAIN STREET
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TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

Project Description

Resolution Copper Mining is proposing an underground mine, ore processing operation with associated facilities, and infrastructure. West Plant Site (WPS) will be located just north of Superior, Arizona. East Plant Site (EPS) is located approximately six miles east of the WPS. Additionally, a new Filter Plant and Loadout Facility will be constructed east of San Tan Valley, Arizona, seven miles northeast of Magma Junction. A Tailings Storage Facility (TSF) will also be constructed at Skunk Camp south of Superior (the preferred alternative identified in the draft Environmental Impact Statement, near the Ray open pit mining complex). The proposed project facilities will be connected via a series of transmission lines, conveyors and pipelines. The vicinity of the project is shown in **Figure 1**.

The impacts of the proposed mine expansion were previously analyzed in the *Resolution Copper Mine Traffic Impact Analysis* (Original TIA) completed by Southwest Traffic Engineering on *13 April 2017*. The Original TIA evaluated traffic impacts to the surrounding roadway network based on two scenarios; peak construction activities and typical operations after construction is completed. Traffic volumes related to the expansion will be higher during peak construction activities than during normal operations.

In response to USFS (Untied States Forest Service) review of the Original TIA this updated traffic impact analysis addendum has been completed. There have also been discussions with the Arizona Department of Transportation (ADOT) regarding the Original TIA. Specifically, regarding the study intersections under ADOT control that have the potential to be negatively impacted by traffic associated with the mine expansion during peak construction.

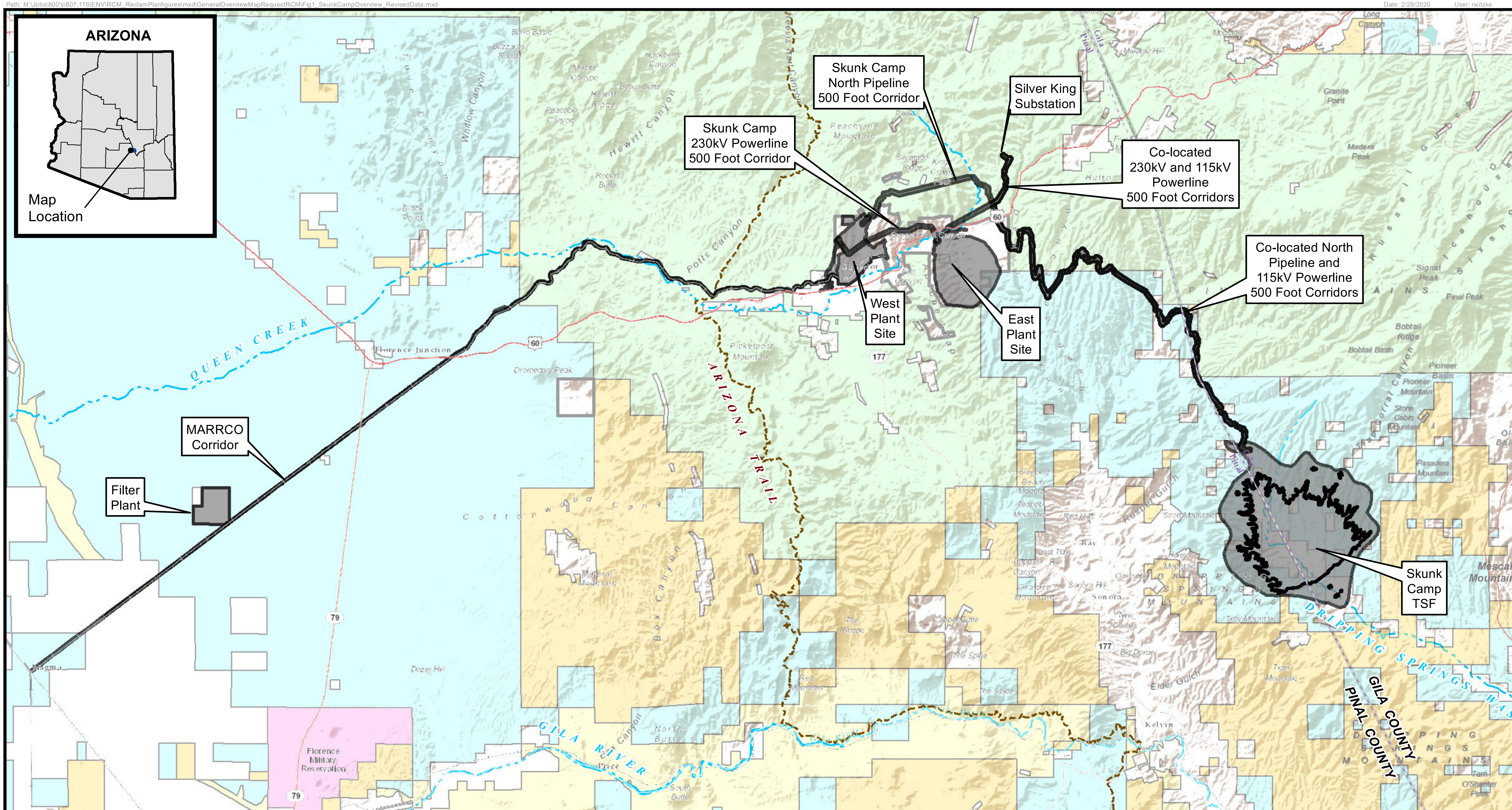
This Addendum to the Original TIA (TIA Addendum) also further explores possible mitigation measures and evaluate crash rates at the intersections of N Smeltertown Road/Main Street, Silver King Mine Road/US 60 and Main Street/US 60.

The author of this report is a registered Professional Engineer (Civil) in the State of Arizona having specific expertise and experience in the preparation of traffic analyses.

Existing Conditions

United States Route 60 (US 60) has an east/west alignment and posted speed limits of 45 miles per hour (mph), 50 mph and 65 mph in the project area. US 60 is a regional route in the area linking Superior, Miami and Globe to the Phoenix metropolitan area. The roadway is undivided east of Superior and divided west of Superior.

Main Street is an undivided two-lane roadway through downtown Superior with an east/west alignment. Main Street has a posted speed limit of 35 mph west of N Smeltertown Road (analyzed in the Original TIA as Lonetree Road) and 25 mph east of N Smeltertown Road. There are existing overhead utility poles along the south side of the roadway.



Pinal and Gila Counties, Arizona
Surface Management: BLM, WRI modified 2017
Data Source: SWCA DEIS
Image Source: World Terrain Base

Legend

- ArizonaTrail
- Preferred Alternative

Post Land Exchange Surface Management

- Bureau of Land Management (BLM)
- Bureau of Reclamation
- Military
- Private Land (No Color)
- State Trust Land
- US Forest Service (USFS)

N

0 3 6 Miles

WestLand Resources

RESOLUTION COPPER

GENERAL ARRANGEMENT WITH
POST LAND EXCHANGE SURFACE MANAGEMENT

Figure 1

Providing access to Tonto National Forest Service lands and various mining operations, Silver King Mine Road (Forest Service (FS) Road 229) exists as a two-lane graded dirt roadway with a north/south alignment. There is no posted speed limit on Silver King Mine Road (FS Road 229). Silver King Mine Road (FS Road 229) extends north of US 60. South of US 60 this roadway becomes FS Road 989.

As a two-lane graded dirt roadway, N Smeltertown Road provides access to Resolution Copper mining operations north of Main Street. There are no curb, gutter or sidewalks along N Smeltertown Road.

The un-signalized 'T' intersection of Main Street/US 60 is controlled by a STOP sign on the southbound approach. The approaches on US 60 are free flow. The eastbound and westbound approaches offer an exclusive left turn lane, a single through lane, and a shared through/right turn lane. Southbound traffic at the intersection of Main Street/US 60 offers an exclusive left turn lane and an exclusive right turn lane.

The un-signalized intersection of Silver King Mine Road (FS Road 229)/US 60 is controlled by a STOP sign on the northbound and southbound approaches. Eastbound and westbound traffic on US 60 is free flow and provided with a left turn lane, a through lane and a shared through/right turn lane. A single shared left turn/through/right turn lane is offered for the northbound and southbound approaches.

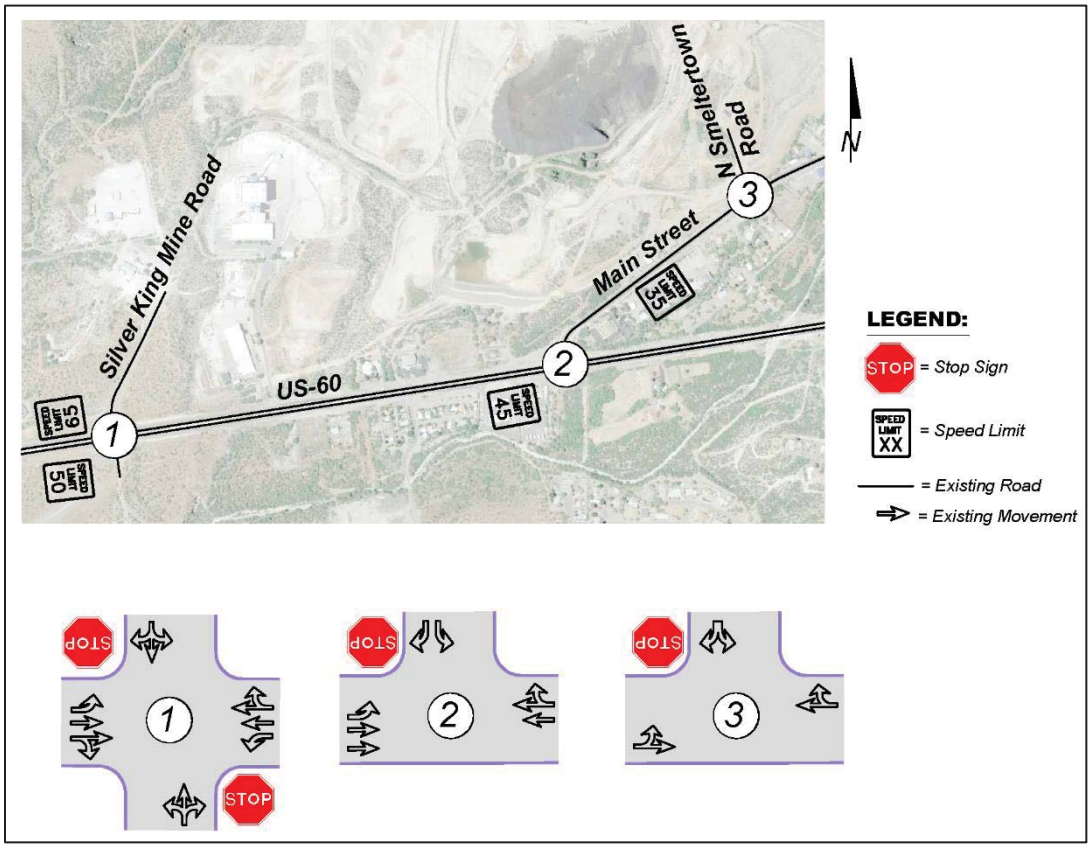
The un-signalized 'T' intersection of N Smeltertown Road/Main Street is controlled by a STOP sign on the southbound approach. Eastbound and westbound traffic on Main Street is free flow. The eastbound approach offers a single shared left turn/through lane, while the westbound approach provides a shared through/right turn lane. The southbound approach to the intersection offers a single shared left turn/right turn lane. N Smeltertown Road currently provides access to existing mining Resolution Copper Mine facilities.

The study intersection locations, lane configurations, and intersection control are shown in **Figure 2**.

Updates to the Original TIA

The Original TIA evaluated the project intersections assuming that the Tailings Storage Facility would be located west of the West Plant Site. The preferred alternative was identified as Skunk Camp and as such the TIA has been updated to incorporate this decision. Access to the Tailing Storage Facility's previous location would be provided by the intersection of Silver King Mine Road/US 60. Now that the Tailing Storage Facility has been relocated to Skunk Camp the intersection of Silver King Mine Road/US 60 would be utilized only for equipment and material deliveries associated with the West Plant and is expected to experience less traffic.

Figure 2 – Existing Lane Configurations and Traffic Control



The Original TIA also assumed that a relatively large portion of mine-related traffic during peak construction would travel to/from an existing mine facility located just north of Superior, Arizona. This traffic would utilize Magma Avenue. In response to the DEIS comments from the Town of Superior and to reduce traffic on town roads, it is now proposed that all mine-related traffic associated with the West Plant Site facilities would utilize the existing entrance at the intersection of Main Street/N Smeltertown Road during construction and operations.

It is expected that almost all the vehicles traveling to/from the mine entrance at N Smeltertown Road would utilize the intersection of US 60/Main Street. This is the fastest and most direct route to the West Plant. Trips into Superior using Main Street (north of N Smeltertown Road) and/or Magma Avenue are expected to be limited and consist of employees utilizing restaurants and other amenities within the Town.

Existing Traffic Data

Peak hour turning movement traffic counts and 24-hour bi-directional traffic counts were utilized to form a basis for analysis of the project impacts. These traffic counts were originally presented in the Original TIA. Per discussion with ADOT, and based on seasonal factors, all traffic counts taken for the Original TIA were obtained on a Friday. This is the day traffic volumes are typically highest due to people traveling for the weekend in the region. The collection of counts on the peak day results in a conservative analysis approach where traffic levels would be analyzed at a much higher level when compared to 'typical week in/week out' traffic levels.

Traffic counts for the project were originally collected in summer (August 2015) and winter (November 2016). The winter traffic counts revealed higher traffic volumes. To ensure that the results and calculations presented were conservative, the Original TIA utilized only the winter traffic counts. All turning movement counts were taken between 7:00 AM and 10:00 PM.

Turning movement counts (taken for the Original TIA) at the following intersections were utilized in this TIA Addendum:

- Main Street/US 60
- Silver King Mine Road (FS Road 229)/US 60
- N Smeltertown Road/Main Street

In addition, the following Friday 24-hour bi-directional traffic volumes were utilized:

- Main Street, west of Pinal Avenue
- US 60, west of Silver King Mine Road (FS Road 229)
- US 60, between Silver King Mine Road (FS Road 229) and Main Street
- US 60, between Main Street and SR 177

The 2016 daily and peak hour traffic volumes are shown in **Figure 3**. Complete traffic count data can be found in the Appendix

A review of historical traffic data in the area showed increasing and decreasing traffic volumes. Despite this, a 2% annual traffic growth rate was assumed to estimate current 2020 traffic volumes resulting in a conservative approach as this is higher than ADOT anticipated growth rates on the study roadways. Using a 2% annual growth rate, 2020 (existing) weekday peak hour traffic volumes without the project were estimated as shown in **Figure 4**.

It should be mentioned that the AM and PM peak hour volumes presented in this TIA Addendum are not the same as the single daily peak hour presented in the Original TIA. However, in both cases the traffic volumes originated from the turning movement counts conducted between 7:00 AM and 10:00 PM in November 2016. To ensure a conservative analysis, the Original TIA considered the highest single peak hour of the day and it was assumed that all traffic from the mine would occur within this peak hour. A conservative analysis was appropriate to ensure that all potential impacts were accounted for. Based

on conversations with ADOT and in response to USFS review of the Original TIA, this TIA Addendum refines the expected impacts at specific study intersections. The majority of mine expansion related traffic will occur during the AM and PM peak hours as workers travel to and from the construction site, with the majority of inbound mine traffic arriving during the AM peak hour and most of the outbound mine traffic occurring during the PM peak hour. As a result, all analyses in this TIA Addendum consider the AM peak hour (between 7:00 AM and 9:00 AM) and PM peak hour (between 4:00 PM and 6:00 PM).

Trip Generation

The trips expected to be generated by the project during peak construction and normal operations are shown in **Table 1** and **Table 2**.

Table 1 – Weekday Project Site Generated Trips (Peak Construction)

Time Period	East Plant		West Plant		Skunk Camp TSF		Filter Plant	
	Personnel	*Materials and Equipment*	*Personnel*	*Materials and Equipment*	*Personnel*	*Materials and Equipment*	*Personnel*	*Materials and Equipment*
Peak Hour, Inbound (vtph)	219	11	498	11	21	11	30	8
Peak Hour, Outbound (vtph)	219	11	498	11	21	11	30	8
Total Peak	**438**	**22**	**996**	**22**	**42**	**22**	**60**	**16**

-Personnel trips based on anticipated number of workers with a .66 shift reduction factor and a 1.7 divisor to account for carpooling.
-Materials trips based on the materials and equipment quantities anticipated to be required during construction and a maximum of 11 trucks per hour.
-vtpd - vehicle trips per day, vtph - vehicle trips per hour

Table 2 – Weekday Project Site Generated Trips (Normal Operations)

Time Period	East Plant		West Plant		Skunk Camp TSF		Filter Plant	
	Personnel	*Materials and Equipment*	*Personnel*	*Materials and Equipment*	*Personnel*	*Materials and Equipment*	*Personnel*	*Materials and Equipment*
Peak Hour, Inbound (vtph)	166	11	156	11	12	11	9	3
Peak Hour, Outbound (vtph)	166	11	156	11	12	11	9	3
Total Peak	**332**	**22**	**312**	**22**	**24**	**22**	**18**	**6**

-Personnel trips based on anticipated number of workers with a .66 shift reduction factor and a 1.7 divisor to account for carpooling.
-Materials trips based on the materials and equipment quantities anticipated to be required during construction and a maximum of 11 trucks per hour.
-vtpd - vehicle trips per day, vtph - vehicle trips per hour

It should be mentioned that the trip generation presented in this Addendum differs slightly from the Original TIA due to the proposed changes in development and relocation of the tailings storage facility. However, this change is minor and the overall trips generated by each facility is very similar in both documents.

Figure 3 – 2016 Weekday Peak Hour Traffic Volumes

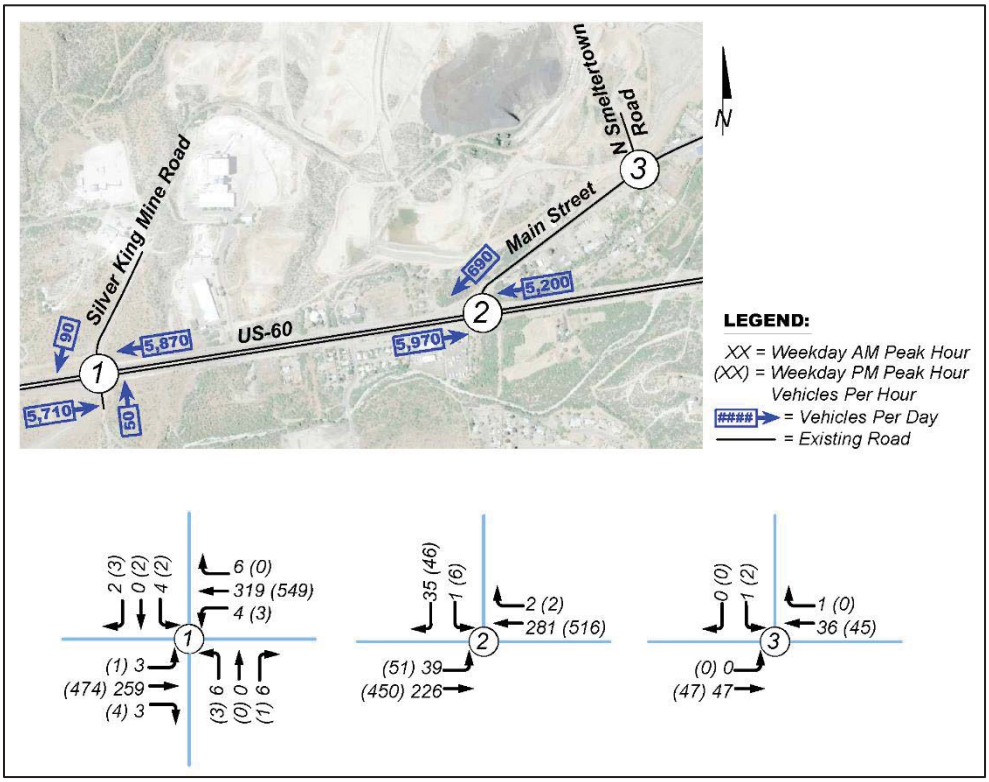
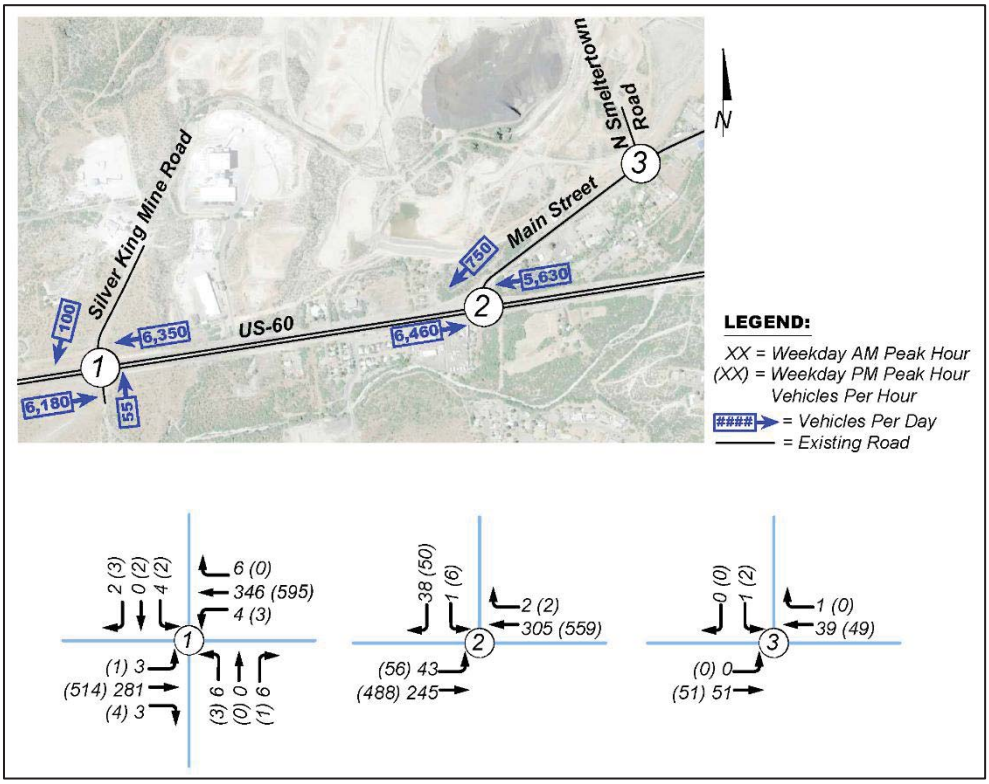


Figure 4 – Existing (2020) Weekday Peak Hour Traffic Volumes



Trip Distribution & Assignment

Trip distribution for the project is described in the Original TIA. The primary consideration for the distribution was the relative accessibility of cities and towns near the site that could provide housing for construction workers. **Figure 5** shows the weekday trip distribution for the project as a percentage of net new primary trips.

The Original TIA weekday peak hour traffic assignment of trips expected to be generated by the project are shown in **Figure 6** (peak construction) and **Figure 7** (normal operations).

As previously mentioned, the traffic assignment in the Original TIA assumed a different location for the Tailings Storage Facility (previously located west of the West Plant Site, currently located at Skunk Camp). The Original TIA also assumed that a portion of mine-related traffic would travel to/from an existing mine facility just north of Superior via Magma Avenue. Magma Avenue is no longer expected to be utilized by traffic associated with the mine expansion. Mine expansion traffic would be required to enter/exit the existing main access point at Main Street/N Smeltertown Road via the intersection of Main Street/US 60.

Moreover, the Original TIA analyzed a single peak hour and assumed that all mine traffic occurred at one time. In actuality, the vast majority of inbound mine traffic is expected to occur during the AM peak hour and most of the outbound mine traffic will occur during the PM peak hour. As a result, the Original TIA analysis was conservative.

For the purposes of this TIA Addendum, the traffic assignment from the Original TIA was revised to account for the relocation of the Tailings Storage Facility, to account for the reassignment of traffic from Magma Avenue to N Smeltertown Road, and to account for AM and PM travel patterns. The revised assignments are shown in **Figure 8** (peak construction) and **Figure 9** (normal operations).

Figure 5 – Weekday Peak Hour Trip Distribution

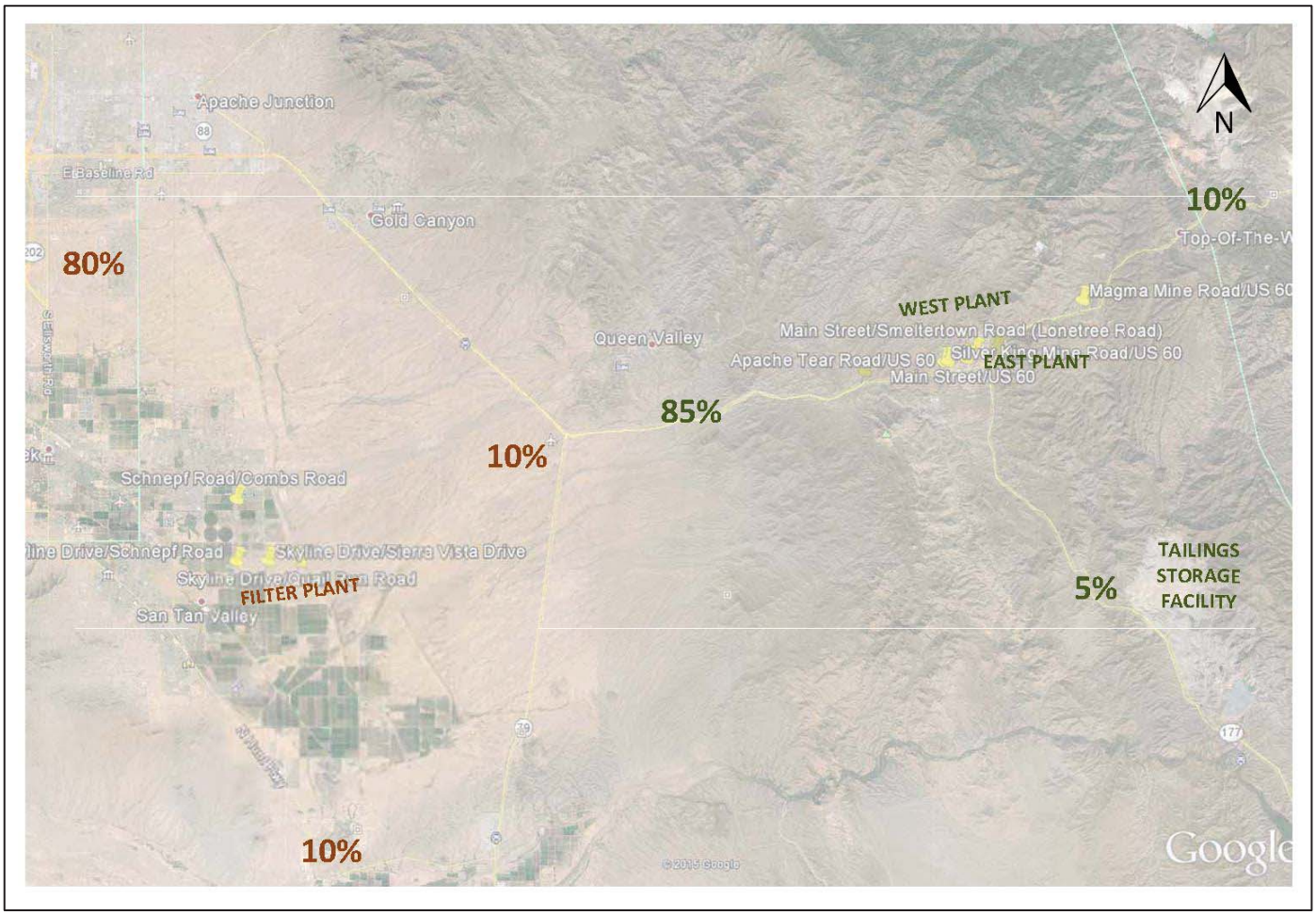


Figure 6 – Original TIA Weekday Peak Hour Trip Assignment (Peak Construction)

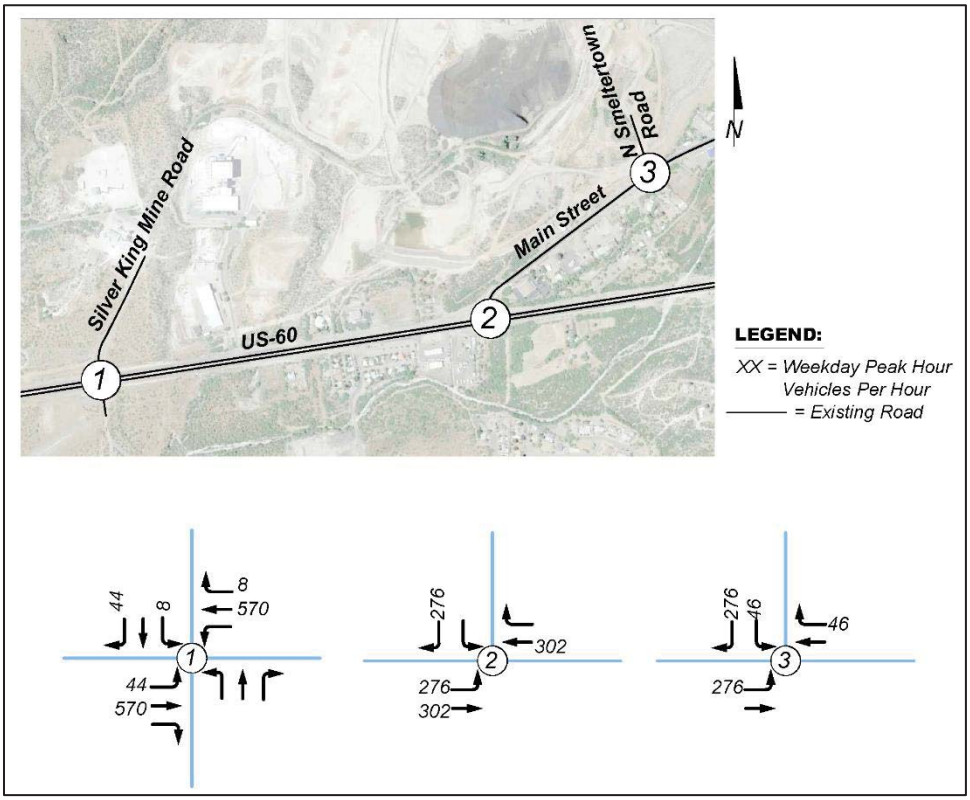


Figure 7 – Original TIA Weekday Peak Hour Trip Assignment (Normal Operations)

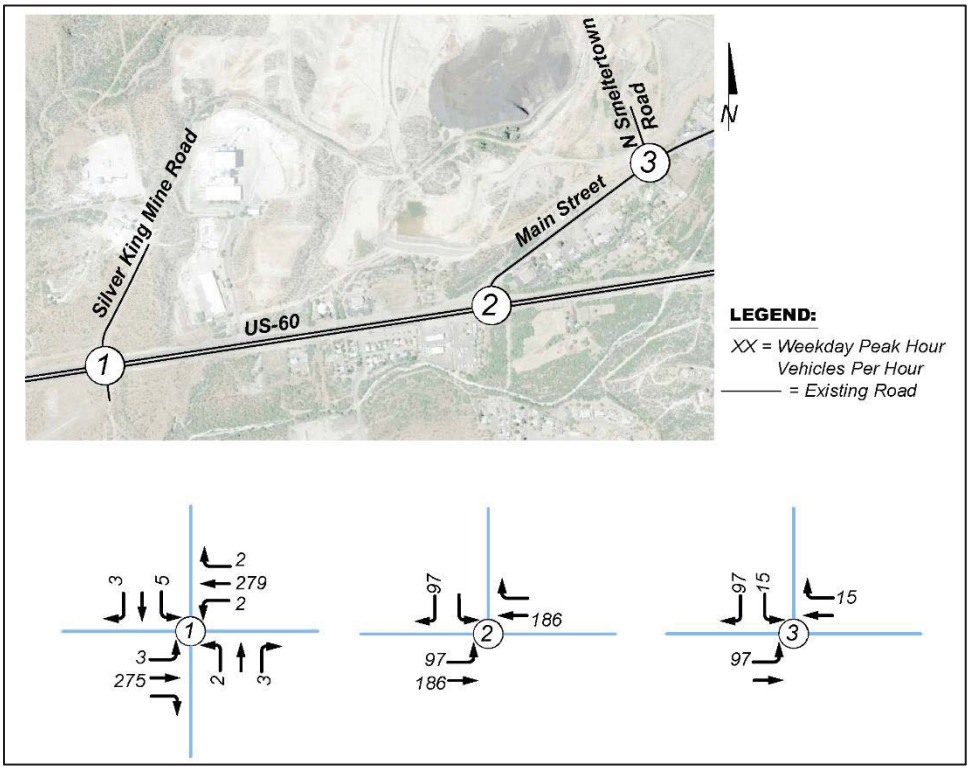


Figure 8 – Revised Weekday Peak Hour Trip Assignment (Peak Construction)

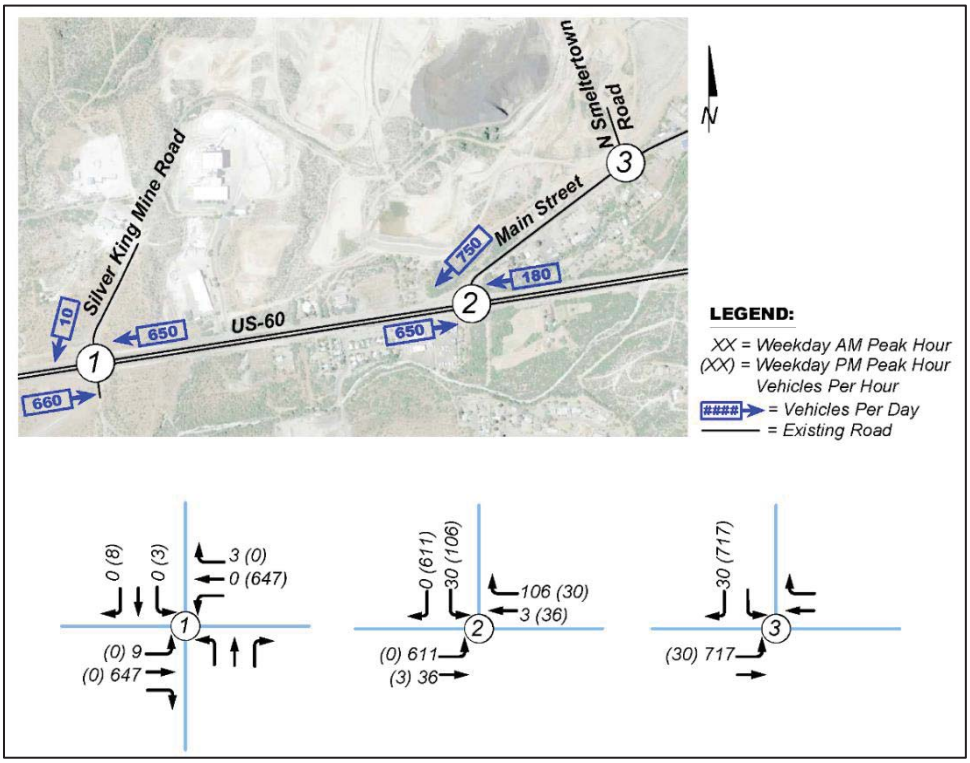
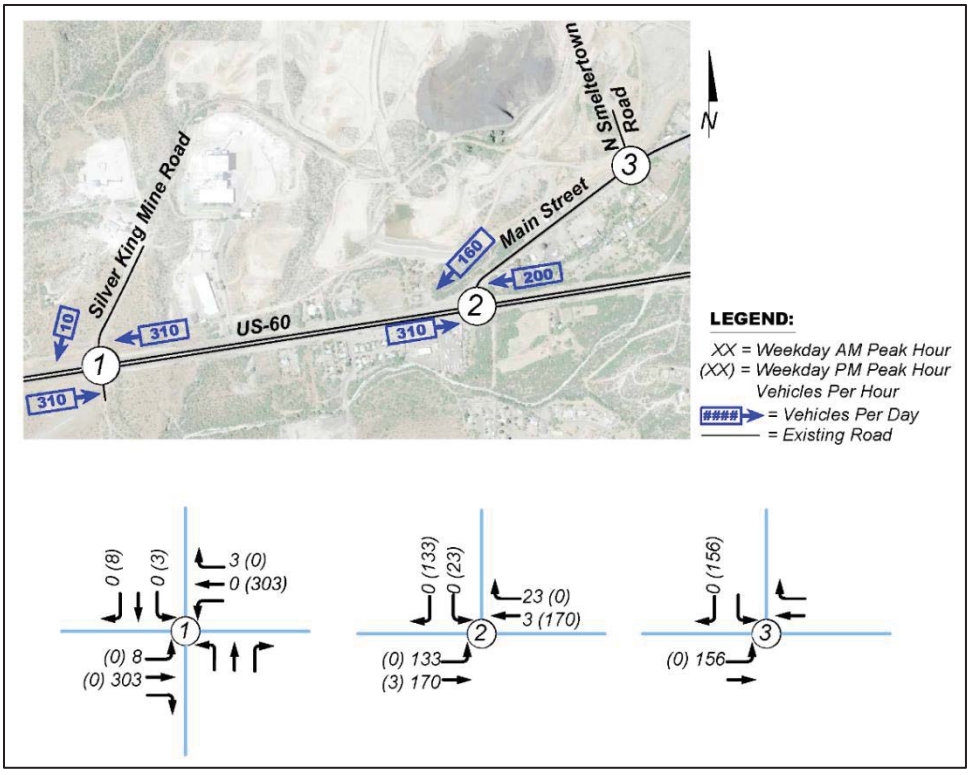


Figure 9 – Revised Weekday Peak Hour Trip Assignment (Normal Operations)



Existing Traffic Operations

Analysis of current intersection operations was conducted for the weekday AM and PM peak hours using the nationally accepted methodology set forth in the *Highway Capacity Manual,* Transportation Research Board, 2016 (HCM 6). The computer software Synchro 10 was utilized to calculate the levels of service for individual movements and approaches.

LOS is a qualitative measure of the traffic operations at an intersection or on a roadway segment. Level of service is ranked from LOS A, which signifies little or no congestion and is the highest rank, to LOS F, which signifies congestion and jam conditions. LOS D is typically considered adequate operation at signalized and un-signalized intersections in developed areas.

At signalized intersections, level of service is calculated for each movement and then summed in a weighted fashion to yield the LOS for the approach and for the intersections as a whole. Criteria for level of service at signalized intersections are shown in **Table 3.**

Table 3 – Level of Service Criteria – Signalized Intersections

Level-of-Service	Average Total Delay
A	≤ 10.0 seconds/vehicle
B	> 10.0 and ≤ 20.0 seconds/vehicle
C	> 20.0 and ≤ 35.0 seconds/vehicle
D	> 35.0 and ≤ 55.0 seconds/vehicle
E	> 55.0 and ≤ 80.0 seconds/vehicle
F	> 80.0 seconds/vehicle

In calculating the levels of service, assumed signal phasing and timing data was used. Other assumptions included:

- Cycle length – 90 seconds
- Lane widths – 12 feet
- Approach grade – 0%
- Right turn on red allowed

At un-signalized intersections, level of service is predicted/calculated for those movements, which must either stop for or yield to oncoming traffic and is based on average control delay for the particular movement. Control delay is the portion of total delay attributed to traffic control measures such as stop signs and traffic signals. The criteria for level of service at un-signalized intersections are shown in **Table 4.**

Table 4 – Level of Service Criteria – Un-signalized Intersections

Level-of-Service	Delay
A	< 10 seconds/vehicle
B	> 10 and < 15 seconds/vehicle
C	> 15 and < 25 seconds/vehicle
D	> 25 and < 35 seconds/vehicle
E	> 35 and < 50 seconds/vehicle
F	> 50 seconds/vehicle

Table 5 shows the existing levels of service that were calculated for the study intersections. Complete capacity calculations are included in the Appendix.

Table 5 – Existing Peak Hour Levels of Service

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Un-signalized Intersections				
Silver King Mine Road (FS Road 229)/US 60				
Eastbound Left	A	8.1	A	8.9
Westbound Left	A	7.9	A	8.6
Northbound Left/Through/Right	B	11.4	C	18.6
Southbound Left/Through/Right	B	12.5	C	18.5
Main Street/Smeltertown Road				
Eastbound Left	A	0.0	A	0.0
Southbound Left/Right	A	9.1	A	9.2
Main Street/US 60				
Eastbound Left/Through	A	8.1	A	9.1
Southbound Left	B	13.5	C	22.7
Southbound Right	A	9.5	B	10.8

Delay - seconds per vehicle

As shown in **Table 5**, all movements at the study intersections currently operate at an adequate LOS.

Future Traffic Operations Without Project

Due to the uncertainty regarding the Environmental Impact Study (EIS) timeline, the results and recommendations outlined in this report are based upon an assumed peak construction year (2022) and operations starting year (2027). It should be noted that these 'assumed' years for peak construction and normal operations are necessary to account for the expected changes in traffic levels associated with the project and growth rates in traffic. While these assumed timelines may change due to project development demands, the results of the analysis are not expected to be impacted due to the conservative nature of the analysis if the timelines shift by a few years.

In order to assess the impacts of the project on future traffic operations, traffic projections were made for the years peak construction and normal operations.

A review of historical traffic data in the area showed increasing and decreasing traffic volumes. Despite this, a 2% growth rate was used to provide a conservative analysis. Using a 2% annual traffic growth rate, 2022 and 2027 weekday peak hour traffic volumes without the project were estimated as shown in **Figures 10** and **11**.

As with the current volumes, levels of service were calculated for each of the intersections in the study area for peak construction and normal operations without the project.

Levels of service for peak construction and normal operations without the project are shown in **Tables 6** and **7.** Complete capacity calculations are included in the Appendix.

Figure 10 – 2022 Weekday Peak Hour Traffic Volumes Without Project

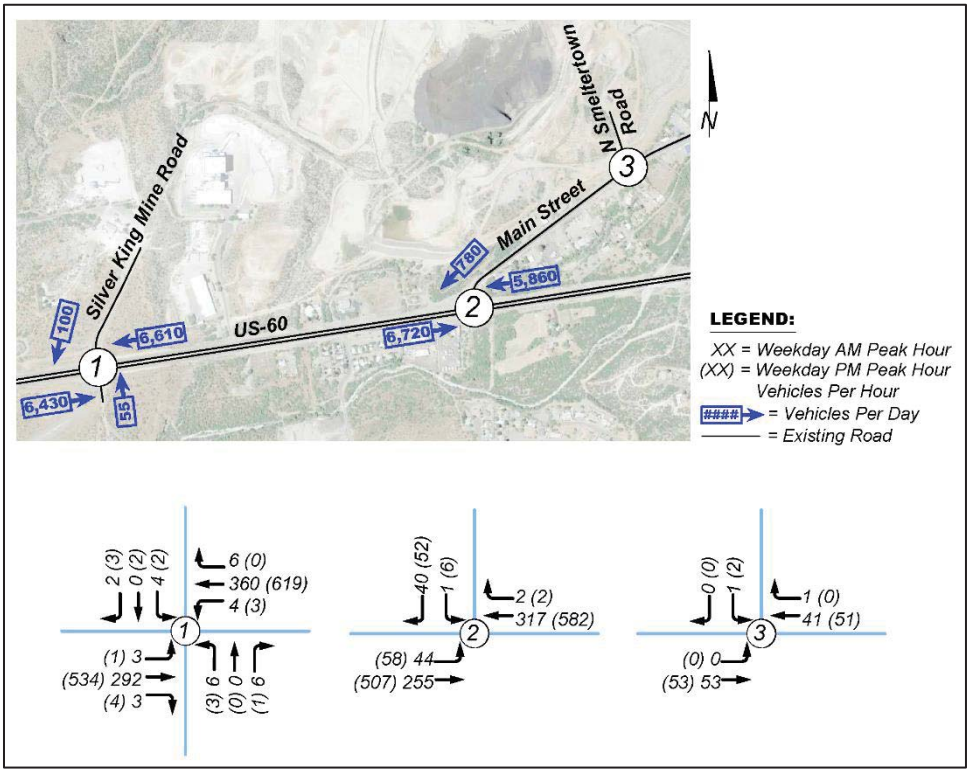


Figure 11 – 2027 Weekday Peak Hour Traffic Volumes Without Project

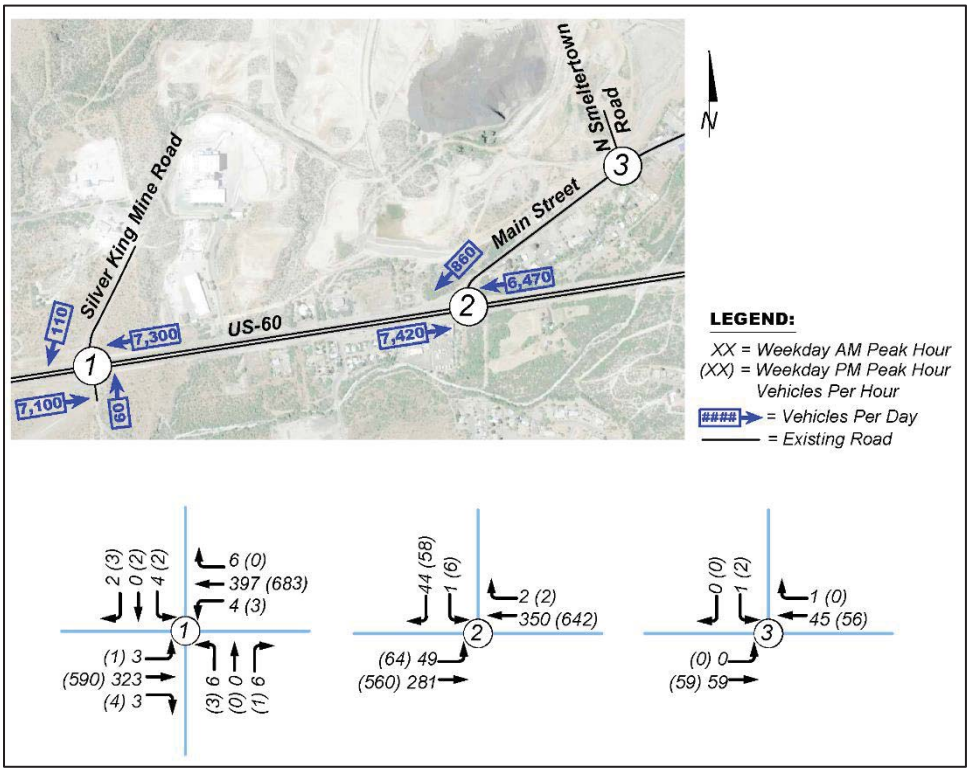


Table 6 – 2022 Peak Hour Levels of Service Without Project

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Un-signalized Intersections				
Silver King Mine Road (FS Road 229)/US 60				
Eastbound Left	A	8.1	A	9.0
Westbound Left	A	8.0	A	8.8
Northbound Left/Through/Right	B	11.8	C	20.3
Southbound Left/Through/Right	B	12.9	C	20.0
Main Street/Smeltertown Road				
Eastbound Left	A	0.0	A	0.0
Southbound Left/Right	A	9.1	A	9.2
Main Street/US 60				
Eastbound Left/Through	A	8.2	A	9.3
Southbound Left	B	14.2	D	25.7
Southbound Right	A	9.7	B	11.1

Delay - seconds per vehicle

Table 7 – 2027 Peak Hour Levels of Service Without Project

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Un-signalized Intersections				
Silver King Mine Road (FS Road 229)/US 60				
Eastbound Left	A	8.3	A	9.3
Westbound Left	A	8.1	A	9.0
Northbound Left/Through/Right	B	12.3	C	23.1
Southbound Left/Through/Right	B	13.6	C	22.8
Main Street/Smeltertown Road				
Eastbound Left	A	0.0	A	0.0
Southbound Left/Right	A	9.2	A	9.3
Main Street/US 60				
Eastbound Left/Through	A	8.3	A	9.5
Southbound Left	B	14.9	D	28.3
Southbound Right	A	9.8	B	11.4

Delay - seconds per vehicle

As shown in **Tables 6** and **7**, all movements at the study intersections are expected to operate at an adequate LOS in 2022 and 2027 without traffic from the project.

Future Traffic Volumes With Project

In order to assess the impacts of the project on future traffic operation, levels of service were calculated for each project intersection for peak construction and normal operations with the project. Weekday peak hour traffic volumes for 2022 and 2027 without the project were combined with the estimated trips generated by the project (**Figures 8** and **9**) to yield weekday peak hour traffic volumes with the project as shown in **Figures 12** and **13.**

Weekday intersection levels of service for peak construction and normal operations with the project were then calculated as shown in **Tables 8** and **9**. Complete capacity calculations are included in the Appendix.

Table 8 – 2022 Peak Hour Levels of Service With Project (Peak Construction)

Intersection	2022 Without Project				2022 With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Un-signalized Intersections								
Silver King Mine Road (FS Road 229)/US 60								
Eastbound Left	A	8.1	A	9.0	A	8.2	B	12.5
Westbound Left	A	8.0	A	8.8	B	10.5	A	8.7
Northbound Left/Through/Right	B	11.8	C	20.3	D	25.2	D	32.1
Southbound Left/Through/Right	B	12.9	C	20.0	C	18.7	E	41.8
Main Street/Smeltertown Road								
Eastbound Left	A	0.0	A	0.0	A	9.7	A	7.4
Southbound Left/Right	A	9.1	A	9.2	B	11.2	C	20.9
Main Street/US 60								
Eastbound Left/Through	A	8.2	A	9.3	B	14.9	A	9.4
Southbound Left	B	14.2	D	25.7	F	>120	E	67.0
Southbound Right	A	9.7	B	11.1	B	10.0	F	111.9

Delay - seconds per vehicle

Table 9 – 2027 Peak Hour Levels of Service With Project (Normal Operations)

Intersection	2027 Without Project				2027 With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Un-signalized Intersections								
Silver King Mine Road (FS Road 229)/US 60								
Eastbound Left	A	8.3	A	9.3	A	8.3	B	10.7
Westbound Left	A	8.1	A	9.0	A	9.1	A	8.9
Northbound Left/Through/Right	B	12.3	C	23.1	C	17.0	D	27.9
Southbound Left/Through/Right	B	13.6	C	22.8	C	16.2	D	28.0
Main Street/Smeltertown Road								
Eastbound Left	A	0.0	A	0.0	A	7.6	A	0.0
Southbound Left/Right	A	9.2	A	9.3	B	12.7	A	9.5
Main Street/US 60								
Eastbound Left/Through	A	8.3	A	9.5	A	8.9	B	10.4
Southbound Left	B	14.9	D	28.3	D	26.2	E	45.6
Southbound Right	A	9.8	B	11.4	A	9.8	C	15.8

Delay - seconds per vehicle

Figure 12 – 2022 Weekday Peak Hour Traffic Volumes With Project

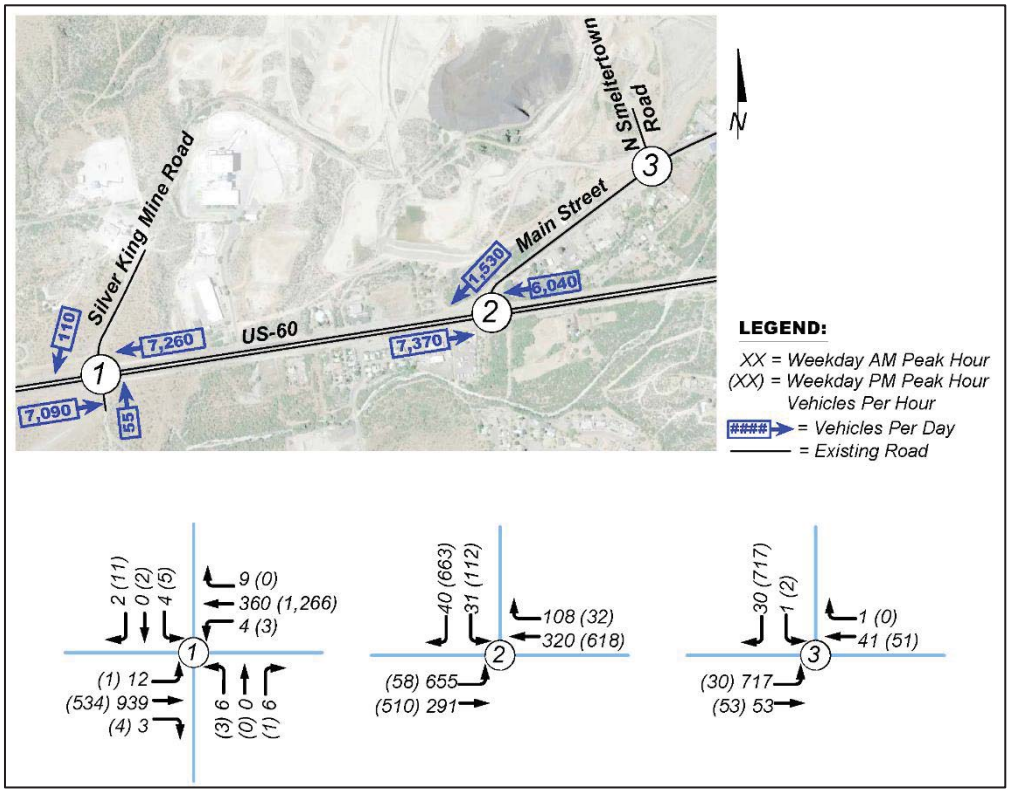


Figure 13 – 2027 Weekday Peak Hour Traffic Volumes With Project

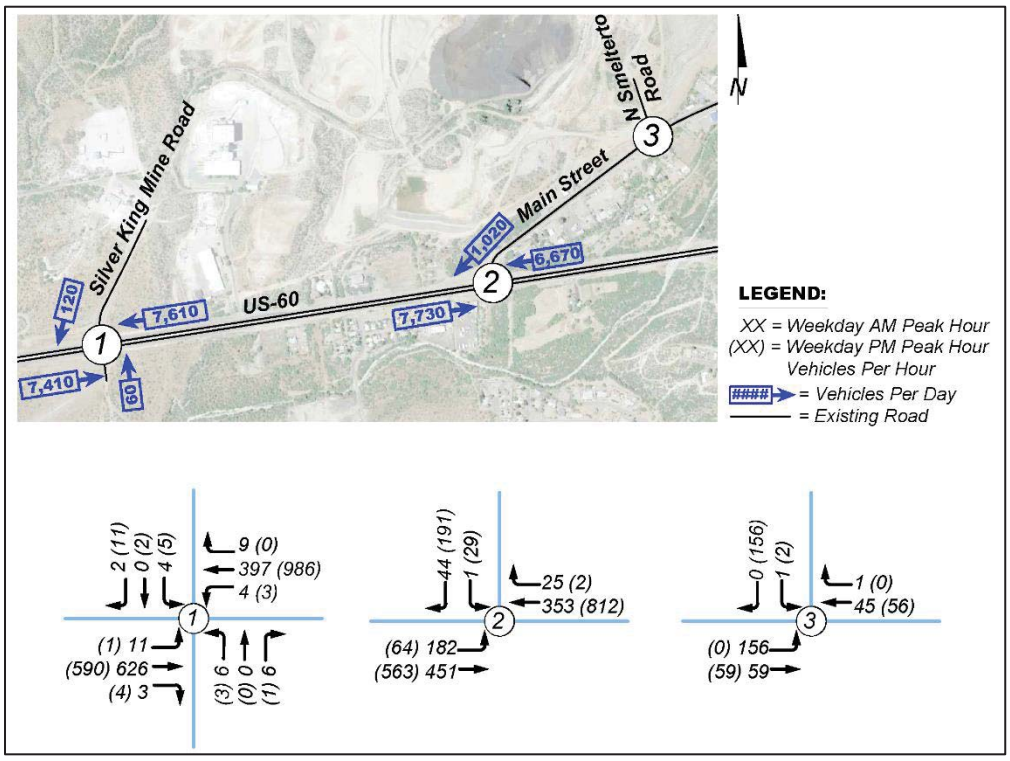


Table 8 and **Table 9** show that delays are expected to occur during peak construction and normal operations at the intersection of Main Street/US 60 with traffic from the proposed mine expansion. Delays are expected to be experienced by the southbound left and southbound right turning movements during peak construction (this volume of traffic only exists for approximately two years during the entire construction period). Traffic volumes are expected to decrease during other times of construction and during operations normal. As a result, only the southbound left turning movement is expected to experience delays during normal operations with the project.

The southbound movement at the intersection of Silver King Mine Road/US 60 is expected to operate at an inadequate LOS with traffic from peak construction. This delay is temporary (lasting approximately two years) and is expected to alleviate to an adequate level after traffic volumes drop on US 60 as construction activities slow and normal operations begin.

Turn Lane Analysis

A key element of this study is to determine if new left and/or right turn lanes are required at the study intersections. *ADOT Traffic Engineering Guidelines and Processes (TGP) 245 - Turn Lane Warrants* provides warrants for the inclusion of left and right turn lanes based on speed limit, through traffic volume and turning traffic volume during the peak hour. When needed, turn lanes remove the slowing turning traffic from the through traffic stream, improving capacity and reducing rear-end accidents. **Table 10** shows the locations that were evaluated for turn lanes based on expected traffic volumes during peak construction and normal operations.

Table 10 – Turn Lane Warrants

Intersection	Direction	Turn Treatment Analyzed	Turn Treatments Warranted? Peak Construction	Turn Treatments Warranted? Normal Operations
Silver King Mine Road/US 60	Eastbound	Left Turn Lane	Existing	Existing
	Westbound	Right Turn Lane	No	No
Main Street/US 60	Eastbound	Left Turn Lane	Existing	Existing
	Westbound	Right Turn Lane	Yes	No
Smeltertown Road/Main Street	Eastbound	Left Turn Lane	Yes	Yes
	Westbound	Right Turn Lane	No	No

Table 10 shows that an eastbound left turn lane is warranted at the intersection of N Smeltertown Road/Main Street during peak construction and during normal operations. It is recommended that this turn lane be constructed.

A westbound right turn lane is warranted at the intersection of Main Street/US 60 during peak construction. However, this same turn lane is not warranted during normal operations. Benefits of this turn lane are limited and it is recommended that a westbound right turn lane at Main Street/US 60 not be constructed. Although briefly warranted during construction activities, a turn lane is not expected to improve operations at the intersection and would be largely unutilized during normal operations.

Queue storage requirements for the recommended and warranted turn lane was calculated utilizing Synchro 10 95th percentile calculations. Typically, an average vehicle length of 25 feet is assumed.

Table 11 shows the calculated queue lengths for the warranted and recommended eastbound left turn lane at the intersection of N Smeltertown Road/Main Street during peak construction and normal operations.

Table 11 – Calculated Queue Lengths

Intersection	Left Turn Storage				Left Turn Storage			
	NB	SB	EB	WB	NB	SB	EB	WB
Smeltertown Road/Main Street								
Turning Volume (vph)			664				10	
Vehicles in Queue			5.5				0.7	
$S_{calculated}$ =			138				18	
$S_{rounded}$ =			150				25	

S - storage in feet, vph - vehicles per hour

As shown in **Table 11,** the anticipated eastbound left turning queue at the intersection of N Smeltertown Road/Main Street is 150 feet during peak construction and 25 feet during normal operations.

Traffic Signal Warrant Analysis

Traffic signal warrant analyses were performed at the intersections of Silver King Mine Road/US 60 and Main Street/US 60 to determine if a traffic signal is needed as a mitigation measure during peak construction and/or normal operations.

The intersection of Main Street/US 60 was analyzed based on existing traffic volumes as well as future traffic volumes without and with the project.

The *Manual on Uniform Traffic Control Devices (MUTCD),* Federal Highway Administration, 2009, lists nine warrants that are used to determine if a traffic signal should be considered for installation at an intersection. A traffic signal may be warranted if one or more of the warrants are satisfied. Warrants #1 (Eight Hour Volume) and #2 (Four Hour Vehicular Volume) were used to evaluate the need to signalize the intersection. Based on

existing conditions, availability of information, and applicability, the remaining warrants (#3, #4, #5, #6, #7, #8, and #9) do not apply to the given conditions.

Warrant #1 (Eight Hour Volume) is satisfied when for at least eight (8) hours of an average day, specific traffic volume levels are met for both the major and minor streets (Condition A – Minimum Vehicular Volume). The MUTCD states these volumes depend on the vehicles per hour (vph) combined for both approaches of the major street, and for the highest volume approach on the minor street. The values vary depending on the number of approach lanes and the 85th percentile speed of the roadways.

Warrant #1 also applies to operating conditions where the major street traffic levels are sufficiently high that traffic entering or crossing from a minor street suffers excessive delay (Condition B – Interruption of Continuous Traffic). Once again, the warrant is satisfied when for each of any of the same eight (8) hours of an average day, specific traffic volume levels are met for both the major and minor streets.

Warrant #2 (Four Hour Volume) is met when, for any four hours of the average day on both the major and minor streets, the hourly approach volumes are above the plotted curve contained in the MUTCD (see Appendix).

Tables 12 and **13** shows the results of the warrant analyses at the study intersections based on traffic volumes in the existing conditions, 2022 without traffic from project, 2027 without traffic form the project, 2022 during peak construction, and 2027 during normal operations. Complete traffic signal warrant calculations can be found in the Appendix.

Table 12 – Traffic Signal Warrant Analysis (Silver King Mine Road/US 60)

Silver King Mine Road/US 60	Warrant Number								
	1		2	3	4	5	6	7	8	9
	Condition A	Condition B								
Existing	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2022 Without	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2027 Without	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2022 With (Peak Construction)	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2027 With (Normal Operations)	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*

* Warrant Not Evaluated

Table 13 – Traffic Signal Warrant Analysis (Main Street/US 60)

Main Street/US 60	Warrant Number								
	1		2	3	4	5	6	7	8	9
	Condition A	Condition B								
Existing	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2022 Without	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2027 Without	No	No	No	*	*	*	*	*	*	*
Hours Met	0	3	0	*	*	*	*	*	*	*
2022 With (Peak Construction)	No	No	No	*	*	*	*	*	*	*
Hours Met	1	2	1	*	*	*	*	*	*	*
2027 With (Normal Operations)	No	No	No	*	*	*	*	*	*	*
Hours Met	1	3	1	*	*	*	*	*	*	*

* Warrant Not Evaluated

Tables 12 and **13** show that traffic signal warrants #1 (Conditions A and B) and #2 (Four Hour Volume) are not expected to be met at the intersections of Silver King Mine Road/US 60 or Main Street/US 60 during peak construction or during normal operations.

Crash Summary

Crash data on US 60, at Silver King Mine Road and Main Street, was obtained from ADOT's Traffic Records Section and reviewed as a part of this traffic analysis to determine if any trends can be observed. Records for the most recent five-year period were reviewed (2014 to 2018).

Results of the crash analysis are shown in **Tables 14** and **15.**

Table 14 – Silver King Mine Road/US 60 Crash Summary

Year	Crash Type							Fatal	Injury	Crash Totals
	Angle	Left Turn	Rear-End	Sideswipe	Single Vehicle	Head On	Other			
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
5-Year Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table 15 – Main Street/US 60 Crash Summary

Year	Crash Type							Fatal	Injury	Crash Totals
	Angle	Left Turn	Rear-End	Sideswipe	Single Vehicle	Head On	Other			
2014			1					0	0	1
2015		1						0	0	1
2016								0	0	0
2017								0	0	0
2018								0	0	0
5-Year Total	0	1	1	0	0	0	0	0	0	2

No crashes have been reported at the intersection of Silver King Mine Road/US 60 in the last five years for which data is available (2014-2018). One crash was reported at Main Street/US 60 in 2014 and one was reported in 2015. No crashes were reported at this intersection in 2016, 2017 or 2018.

The available crash data does not reveal any crash patterns or trends at the study intersections.

An expanded summary of the crash data can be found in the Appendix.

The mine expansion is expected to increase traffic at the study intersections during peak construction and during normal operations. Any traffic increase has the potential to increase crashes; however, the mine expansion is not expected to significantly influence crash patterns at the study intersections or elsewhere in the Town of Superior. The number of trips expected to be generated by the mine expansion are in line with any relatively small 'strip-mall' or shopping center: developments that are routinely analyzed and discussed with no expectations of town-wide, regional safety implications. While mitigation measures may be necessary at specific intersections or for specific movements (e.g. an eastbound left turn lane at N Smeltertown Road/Main Street) US 60 is operating well below capacity and it is expected that this traffic can be accommodated within the existing roadway system.

Mine-related cut-through traffic in the Town of Superior is expected to be minimal. US-60 to Main Street is a faster route to the mine entrance on N Smeltertown Road when compared to cutting through Superior. Mine-related traffic traveling to the West Plant during construction and normal operations will utilize Main Street between US-60 and N Smeltertown Road. This 0.02 mile section of Main Street represents less than 1% of the total roadway network within Superior (approximately 24.2 miles).

Mitigation

The southbound movement at the intersection of Silver King Mine Road/US 60 is expected to operate at an inadequate LOS with traffic from peak construction. This delay is expected to alleviate to an adequate level after construction ends and traffic volumes drop during normal operations. These temporary delays are not expected to impact through traffic on US 60 and adequate storage is available on Silver King Mine Road for queuing southbound vehicles. No mitigation measures are recommended.

During peak construction the southbound turning movements at the intersection of Main Street/US 60 are expected to experience delays during the peak hours. The only way to mitigate these delays, for two hours per day, is a traffic signal. A traffic signal is not recommended. Traffic analyses must also take into account the remaining twenty-two hours of the day. During these 'off peak' times, significantly less vehicles are expected to be traveling to/from Main Street via US 60. Any benefits experienced during the peak hours will be outweighed by the negative impacts to US 60 during the remainder of the day. Moreover, these delays are based on the absolute peak construction activities. During most of the construction period, traffic volumes are expected to be much less than analyzed in this document. These factors, combined with the fact that these delays will alleviate to adequate levels once typical mine operations begin, make a traffic signal an excessive mitigation measure that will result in a negative impact on the traveling public during non-peak daytime and nighttime hours due to unnecessary disruption in traffic flow.

Conclusion

All movements at the intersection of Main Street/US 60 and N Smeltertown Road/Main currently operate at an adequate LOS. These intersections are expected to continue operating adequately during peak construction and normal operations without traffic from the proposed mine expansion.

The southbound movement at the intersection of Silver King Mine Road/US 60 is expected to operate at an inadequate LOS with traffic from peak construction. This delay is temporary (approximately 2 years) and is expected to alleviate to an adequate level after construction ends and traffic volumes drop during normal operations. These temporary delays are not expected to impact through traffic on US 60 and adequate storage is available on Silver King Mine Road for queuing southbound vehicles. No mitigation measures are recommended.

During peak construction the southbound turning movements at the intersection of Main Street/US 60 are expected to experience delays during the peak hours. The only way to mitigate these delays, for two hours per day, is a traffic signal. A traffic signal is not recommended. Traffic analyses must also take into account the remaining twenty-two hours of the day. During these 'off peak' times, significantly less vehicles are expected to be traveling to/from Main Street via US 60. Any benefits experienced during the peak hours will be outweighed by the negative impacts to US 60 during the remainder of the day.

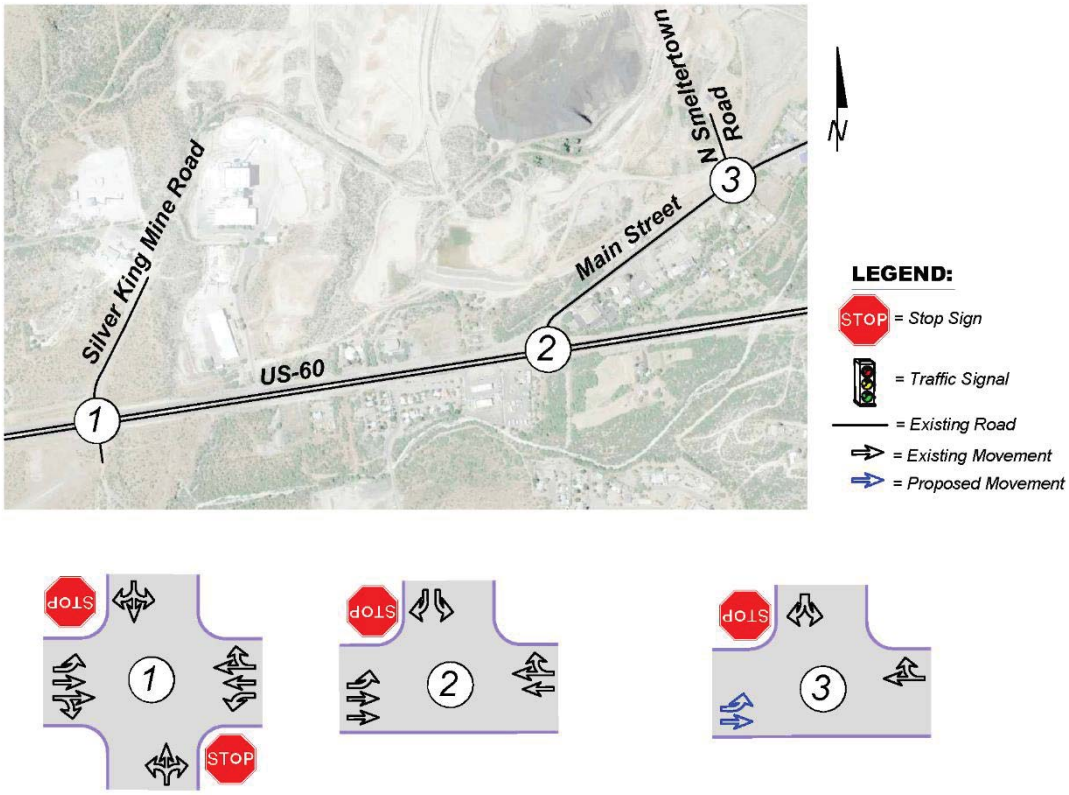
Moreover, these delays are based on the absolute peak construction activities. During most of the construction period, traffic volumes are expected to be much less than analyzed in this document. These factors, combined with the fact that these delays will alleviate to adequate levels once typical mine operations begin, make a traffic signal an excessive mitigation measure that will result in a negative impact on the traveling public during non-peak daytime and nighttime hours due to unnecessary disruption in traffic flow.

Traffic signal warrants #1 (Conditions A and B) and #2 (Four Hour Volume) are not met at the intersections of Silver King Mine Road/US 60 or Main Street/US 60 during peak construction or during normal operations.

The available crash data from the intersections of Silver King Mine Road/Main Street and Main Street/US 60 does not reveal any crash patterns or trends. The increase in traffic generated by the mine during peak construction and normal operations is not expected to have a significant impact on the crash patterns in the study area or at the study intersections.

Figure 14 shows the proposed lane configuration and traffic control at the project intersections during peak construction and normal operations.

Figure 14 – Proposed Lane Configurations and Traffic Control With Project (Peak Construction)



TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

APPENDIX

Traffic Counts

Capacity Calculations

Turn Lane Calculations

Traffic Signal Warrant Analysis

Crash Data

TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

APPENDIX

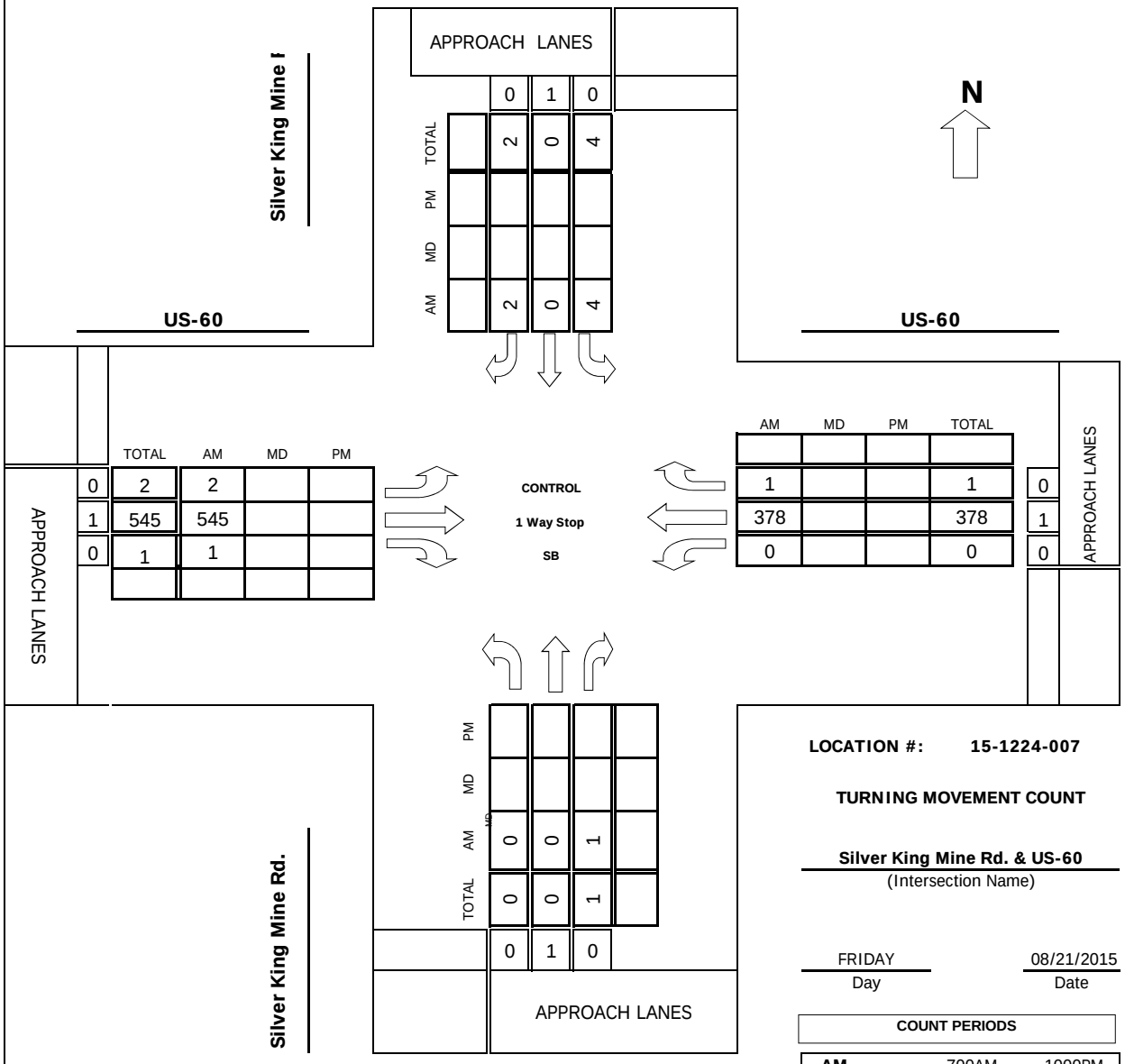
Traffic Counts

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 15-1224-007

TMC SUMMARY OF Silver King Mine Rd. & US-60



LOCATION #: 15-1224-007

TURNING MOVEMENT COUNT

Silver King Mine Rd. & US-60
(Intersection Name)

FRIDAY (Day) 08/21/2015 (Date)

COUNT PERIODS			
AM	700AM	-	1000PM
NOON		-	
PM		-	

AM PEAK HOUR 445 PM

NOON PEAK HOUR

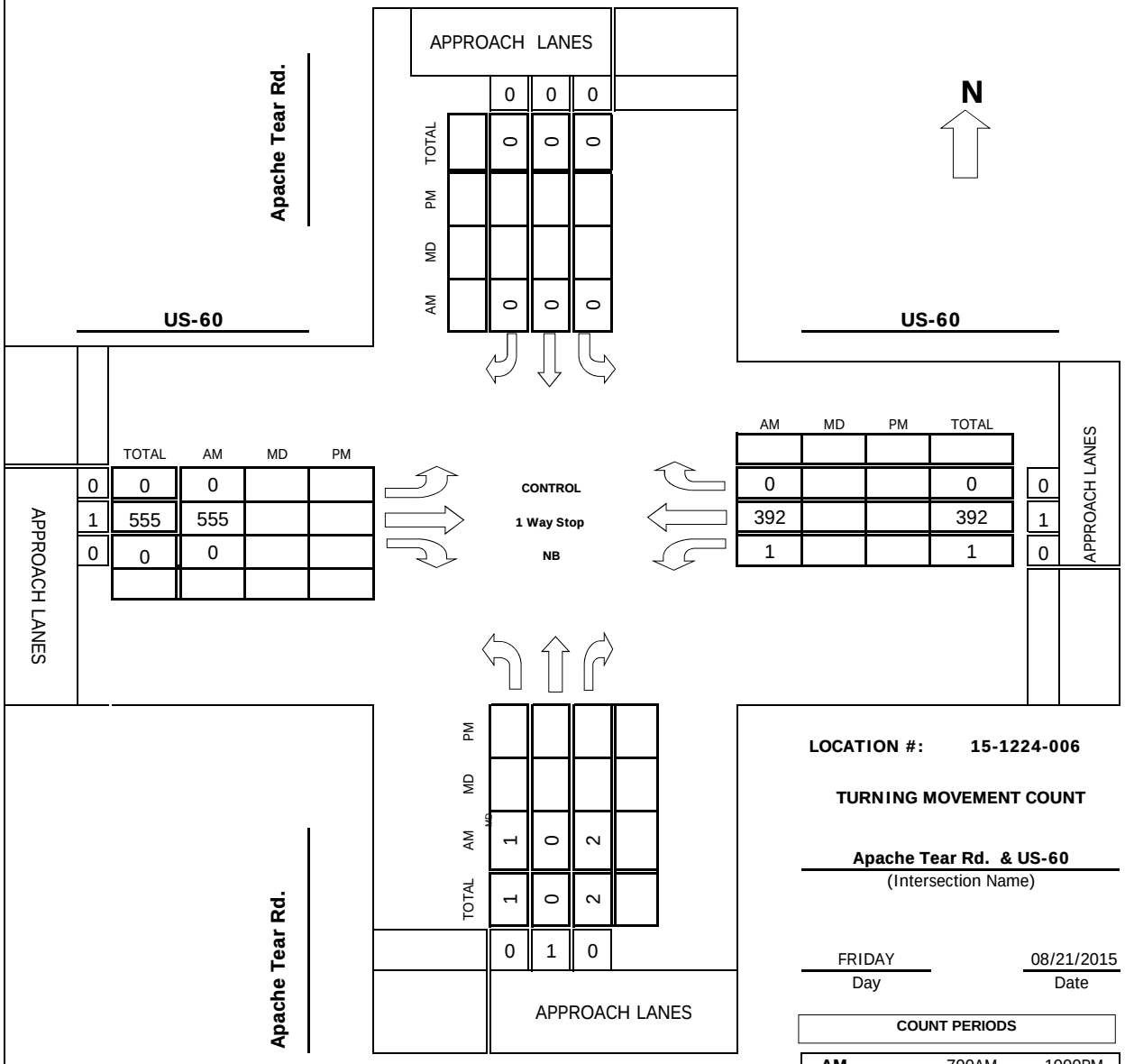
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 15-1224-006

TMC SUMMARY OF Apache Tear Rd. & US-60



LOCATION #: 15-1224-006

TURNING MOVEMENT COUNT

Apache Tear Rd. & US-60
(Intersection Name)

FRIDAY (Day) 08/21/2015 (Date)

COUNT PERIODS

AM	700AM	-	1000PM
NOON		-	
PM		-	

AM PEAK HOUR 515 PM

NOON PEAK HOUR

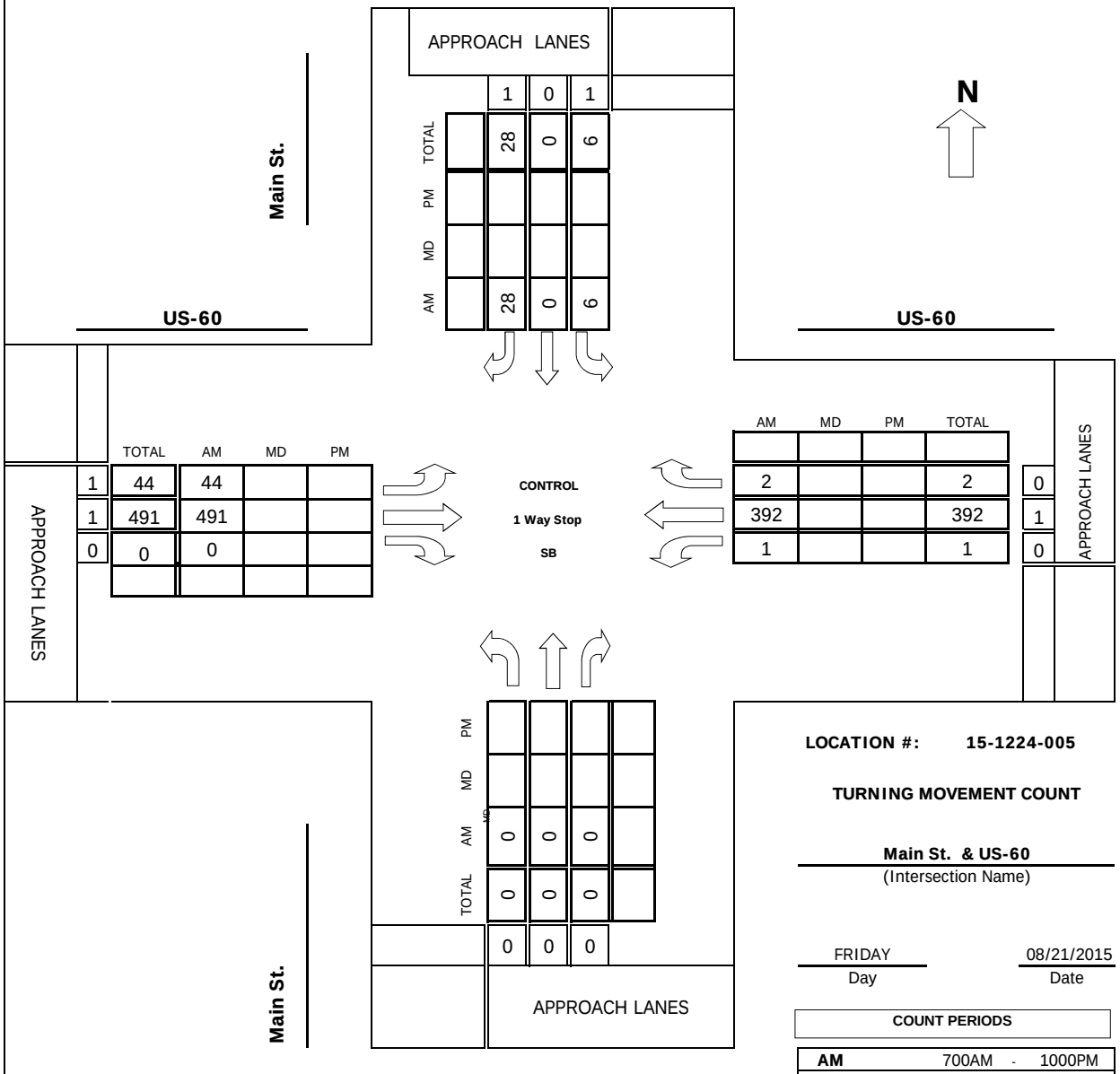
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 15-1224-005

TMC SUMMARY OF Main St. & US-60



LOCATION #: 15-1224-005

TURNING MOVEMENT COUNT

Main St. & US-60
(Intersection Name)

FRIDAY (Day) 08/21/2015 (Date)

COUNT PERIODS			
AM	700AM	-	1000PM
NOON		-	
PM		-	

AM PEAK HOUR 430 PM

NOON PEAK HOUR

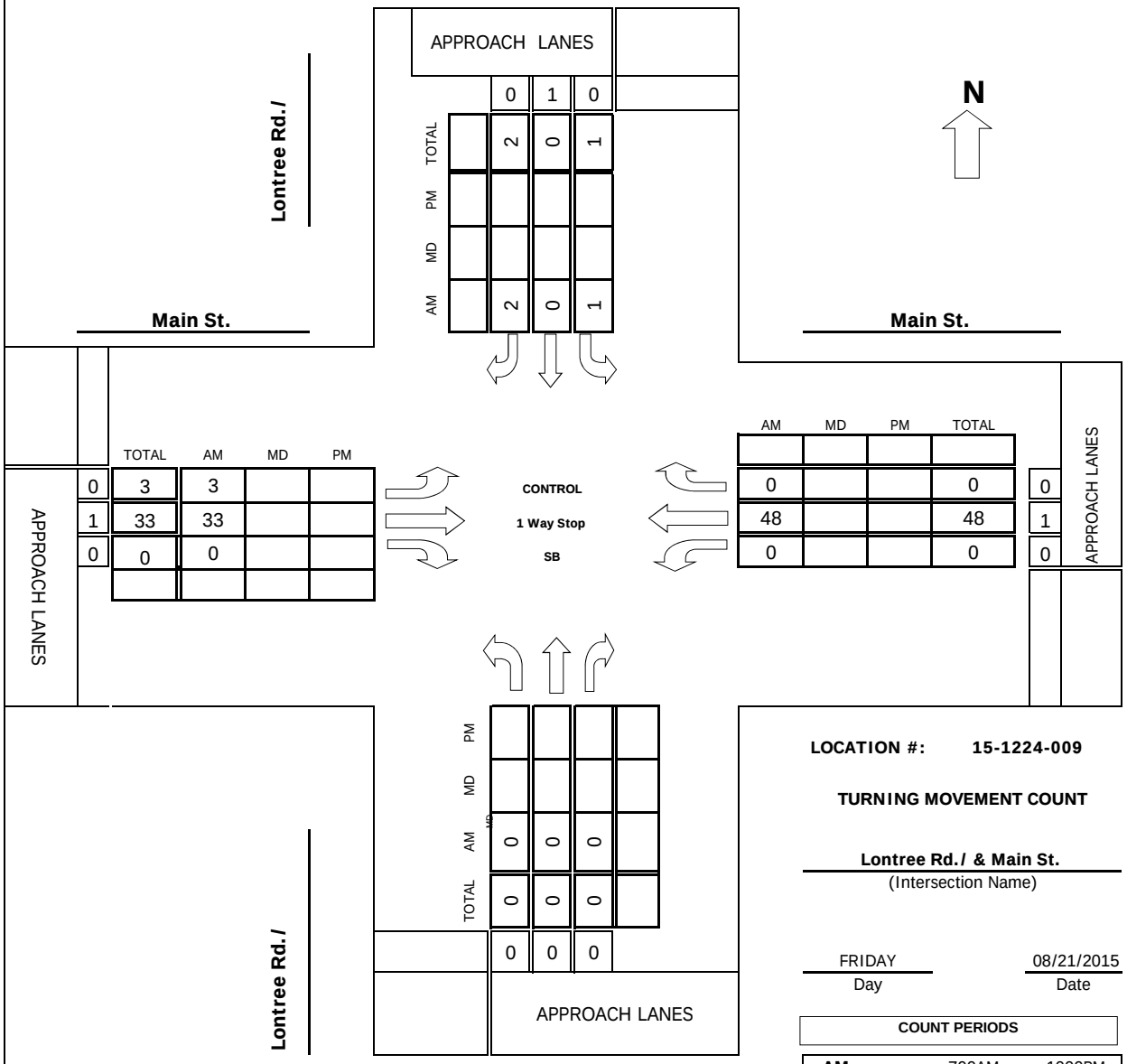
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 15-1224-009

TMC SUMMARY OF Lontree Rd./ & Main St.



LOCATION #: 15-1224-009

TURNING MOVEMENT COUNT

Lontree Rd./ & Main St.
(Intersection Name)

FRIDAY (Day) 08/21/2015 (Date)

COUNT PERIODS			
AM	700AM	-	1000PM
NOON		-	
PM		-	

AM PEAK HOUR 1015 AM

NOON PEAK HOUR

PM PEAK HOUR

TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

APPENDIX

Capacity Calculations

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	43	245	305	2	1	38
Future Vol, veh/h	43	245	305	2	1	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	54	272	339	2	1	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	341	0	-	0	584	171
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	244	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1215	-	-	-	443	843
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	774	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1215	-	-	-	424	843
Mov Cap-2 Maneuver	-	-	-	-	424	-
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	774	-

Approach	EB	WB	SW
HCM Control Delay, s	1.3	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	1215	-	-	-	424	843
HCM Lane V/C Ratio	0.044	-	-	-	0.003	0.056
HCM Control Delay (s)	8.1	-	-	-	13.5	9.5
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	51	39	1
Future Vol, veh/h	1	0	0	51	39	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	0	0	64	49	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	114	50	50	0	-	0
Stage 1	50	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	882	1018	1557	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	882	1018	1557	-	-	-
Mov Cap-2 Maneuver	882	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	959	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1557	-	882	-	-
HCM Lane V/C Ratio	-	-	0.001	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	281	3	4	346	6	6	0	6	4	0	2
Future Vol, veh/h	3	281	3	4	346	6	6	0	6	4	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	312	3	4	384	7	7	0	7	4	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	315	0	0	520	719	158	558	717	196
Stage 1	-	-	-	-	-	-	320	320	-	396	396	-
Stage 2	-	-	-	-	-	-	200	399	-	162	321	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1164	-	-	1242	-	-	439	353	859	412	354	812
Stage 1	-	-	-	-	-	-	666	651	-	601	602	-
Stage 2	-	-	-	-	-	-	783	601	-	824	650	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1242	-	-	436	351	859	407	352	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	436	351	-	407	352	-
Stage 1	-	-	-	-	-	-	664	649	-	599	600	-
Stage 2	-	-	-	-	-	-	778	599	-	815	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	11.4	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	578	1164	-	-	1242	-	-	488
HCM Lane V/C Ratio	0.023	0.003	-	-	0.004	-	-	0.014
HCM Control Delay (s)	11.4	8.1	-	-	7.9	-	-	12.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	56	488	559	2	6	50
Future Vol, veh/h	56	488	559	2	6	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	70	542	621	2	8	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	623	0	-	0	1033	312
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	411	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	954	-	-	-	228	684
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	954	-	-	-	211	684
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	638	-

Approach	EB	WB	SW
HCM Control Delay, s	1	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	954	-	-	-	211	684
HCM Lane V/C Ratio	0.073	-	-	-	0.036	0.091
HCM Control Delay (s)	9.1	-	-	-	22.7	10.8
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.3

Intersection	
Int Delay, s/veh	0.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	51	49	0
Future Vol, veh/h	2	0	0	51	49	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	3	0	0	64	61	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	125	61	61	0	-	0
Stage 1	61	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	870	1004	1542	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	870	1004	1542	-	-	-
Mov Cap-2 Maneuver	870	-	-	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	959	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1542	-	870	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	0	-	9.2	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	514	4	3	595	0	3	0	1	2	2	3
Future Vol, veh/h	1	514	4	3	595	0	3	0	1	2	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	571	4	3	661	0	3	0	1	2	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	661	0	0	575	0	0	913	1242	288	955	1244	331
Stage 1	-	-	-	-	-	-	575	575	-	667	667	-
Stage 2	-	-	-	-	-	-	338	667	-	288	577	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	923	-	-	994	-	-	228	173	709	213	173	665
Stage 1	-	-	-	-	-	-	470	501	-	414	455	-
Stage 2	-	-	-	-	-	-	650	455	-	695	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	923	-	-	994	-	-	224	172	709	212	172	665
Mov Cap-2 Maneuver	-	-	-	-	-	-	224	172	-	212	172	-
Stage 1	-	-	-	-	-	-	470	500	-	414	454	-
Stage 2	-	-	-	-	-	-	642	454	-	693	500	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	18.6	18.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	270	923	-	-	994	-	-	274
HCM Lane V/C Ratio	0.016	0.001	-	-	0.003	-	-	0.028
HCM Control Delay (s)	18.6	8.9	-	-	8.6	-	-	18.5
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	292	3	4	360	6	6	0	6	4	0	2
Future Vol, veh/h	3	292	3	4	360	6	6	0	6	4	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	85	85	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	4	344	4	5	400	7	8	0	8	5	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	407	0	0	348	0	0	564	771	174	594	770	204
Stage 1	-	-	-	-	-	-	354	354	-	414	414	-
Stage 2	-	-	-	-	-	-	210	417	-	180	356	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1148	-	-	1208	-	-	408	329	839	389	330	803
Stage 1	-	-	-	-	-	-	636	629	-	586	591	-
Stage 2	-	-	-	-	-	-	773	590	-	804	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1148	-	-	1208	-	-	404	327	839	383	328	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	404	327	-	383	328	-
Stage 1	-	-	-	-	-	-	634	627	-	584	589	-
Stage 2	-	-	-	-	-	-	767	588	-	794	626	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	11.8	12.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	545	1148	-	-	1208	-	-	464
HCM Lane V/C Ratio	0.028	0.003	-	-	0.004	-	-	0.016
HCM Control Delay (s)	11.8	8.1	-	-	8	-	-	12.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	44	255	317	2	1	40
Future Vol, veh/h	44	255	317	2	1	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	85	85	85	80	80
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	55	300	373	2	1	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	375	0	-	0	634	188
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	260	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1180	-	-	-	411	822
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1180	-	-	-	392	822
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	SW
HCM Control Delay, s	1.3	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	1180	-	-	-	392	822
HCM Lane V/C Ratio	0.047	-	-	-	0.003	0.061
HCM Control Delay (s)	8.2	-	-	-	14.2	9.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	53	41	1
Future Vol, veh/h	1	0	0	53	41	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	0	0	66	51	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	118	52	52	0	-	0
Stage 1	52	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	878	1016	1554	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	878	1016	1554	-	-	-
Mov Cap-2 Maneuver	878	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	957	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1554	-	878	-	-
HCM Lane V/C Ratio	-	-	0.001	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	534	4	3	619	0	3	0	1	2	2	3
Future Vol, veh/h	1	534	4	3	619	0	3	0	1	2	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	85	85	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	1	628	5	4	688	0	4	0	1	3	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	688	0	0	633	0	0	987	1329	317	1012	1331	344
Stage 1	-	-	-	-	-	-	633	633	-	696	696	-
Stage 2	-	-	-	-	-	-	354	696	-	316	635	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	902	-	-	946	-	-	202	154	679	193	153	652
Stage 1	-	-	-	-	-	-	434	472	-	398	441	-
Stage 2	-	-	-	-	-	-	636	441	-	670	471	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	902	-	-	946	-	-	198	153	679	192	152	652
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	153	-	192	152	-
Stage 1	-	-	-	-	-	-	434	472	-	398	439	-
Stage 2	-	-	-	-	-	-	626	439	-	668	471	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	20.3	20
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	241	902	-	-	946	-	-	248
HCM Lane V/C Ratio	0.021	0.001	-	-	0.004	-	-	0.035
HCM Control Delay (s)	20.3	9	-	-	8.8	-	-	20
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	58	507	582	2	6	52
Future Vol, veh/h	58	507	582	2	6	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	85	85	85	80	80
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	73	596	685	2	8	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	687	0	-	0	1130	344
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	444	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	903	-	-	-	197	652
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	903	-	-	-	181	652
Mov Cap-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	SW
HCM Control Delay, s	1	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	903	-	-	-	181	652
HCM Lane V/C Ratio	0.08	-	-	-	0.041	0.1
HCM Control Delay (s)	9.3	-	-	-	25.7	11.1
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.1	0.3

Intersection	
Int Delay, s/veh	0.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	53	51	0
Future Vol, veh/h	2	0	0	53	51	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	3	0	0	66	64	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	130	64	64	0	-	0
Stage 1	64	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	864	1000	1538	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	864	1000	1538	-	-	-
Mov Cap-2 Maneuver	864	-	-	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	957	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1538	-	864	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	0	-	9.2	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	323	3	4	397	6	6	0	6	4	0	2
Future Vol, veh/h	3	323	3	4	397	6	6	0	6	4	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	85	85	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	4	380	4	5	441	7	8	0	8	5	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	384	0	0	621	848	192	653	847	224
Stage 1	-	-	-	-	-	-	390	390	-	455	455	-
Stage 2	-	-	-	-	-	-	231	458	-	198	392	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1109	-	-	1171	-	-	372	297	817	352	297	779
Stage 1	-	-	-	-	-	-	606	606	-	554	567	-
Stage 2	-	-	-	-	-	-	751	565	-	785	605	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1109	-	-	1171	-	-	369	295	817	347	295	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	369	295	-	347	295	-
Stage 1	-	-	-	-	-	-	604	604	-	552	565	-
Stage 2	-	-	-	-	-	-	745	563	-	775	603	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	12.3	13.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	508	1109	-	-	1171	-	-	426
HCM Lane V/C Ratio	0.03	0.003	-	-	0.004	-	-	0.018
HCM Control Delay (s)	12.3	8.3	-	-	8.1	-	-	13.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	49	281	350	2	1	44
Future Vol, veh/h	49	281	350	2	1	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	85	90	90	80	80
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	61	331	389	2	1	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	678	196
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1164	-	-	-	386	812
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	735	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1164	-	-	-	366	812
Mov Cap-2 Maneuver	-	-	-	-	366	-
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	SW
HCM Control Delay, s	1.3	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	1164	-	-	-	366	812
HCM Lane V/C Ratio	0.053	-	-	-	0.003	0.068
HCM Control Delay (s)	8.3	-	-	-	14.9	9.8
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	59	45	1
Future Vol, veh/h	1	0	0	59	45	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	0	0	74	56	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	131	57	57	0	-	0
Stage 1	57	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	863	1009	1547	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	863	1009	1547	-	-	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	949	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1547	-	863	-	-
HCM Lane V/C Ratio	-	-	0.001	-	-
HCM Control Delay (s)	0	-	9.2	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	590	4	3	683	0	3	0	1	2	2	3
Future Vol, veh/h	1	590	4	3	683	0	3	0	1	2	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	85	85	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	1	694	5	4	759	0	4	0	1	3	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	759	0	0	699	0	0	1088	1466	350	1116	1468	380
Stage 1	-	-	-	-	-	-	699	699	-	767	767	-
Stage 2	-	-	-	-	-	-	389	767	-	349	701	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	848	-	-	893	-	-	170	127	646	162	127	618
Stage 1	-	-	-	-	-	-	397	440	-	361	410	-
Stage 2	-	-	-	-	-	-	606	410	-	640	439	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	848	-	-	893	-	-	166	126	646	161	126	618
Mov Cap-2 Maneuver	-	-	-	-	-	-	166	126	-	161	126	-
Stage 1	-	-	-	-	-	-	397	440	-	361	408	-
Stage 2	-	-	-	-	-	-	596	408	-	638	439	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	23.1	22.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	204	848	-	-	893	-	-	211
HCM Lane V/C Ratio	0.025	0.001	-	-	0.004	-	-	0.041
HCM Control Delay (s)	23.1	9.3	-	-	9	-	-	22.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	64	560	642	2	5	58
Future Vol, veh/h	64	560	642	2	5	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	85	90	90	80	80
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	80	659	713	2	6	73

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	715	0	-	0	1204	358
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	881	-	-	-	177	638
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	881	-	-	-	161	638
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	SW
HCM Control Delay, s	1	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	881	-	-	-	161	638
HCM Lane V/C Ratio	0.091	-	-	-	0.039	0.114
HCM Control Delay (s)	9.5	-	-	-	28.3	11.4
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.1	0.4

Intersection	
Int Delay, s/veh	0.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	59	56	0
Future Vol, veh/h	2	0	0	59	56	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	3	0	0	74	70	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	144	70	70	0	-	0
Stage 1	70	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	849	993	1531	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	849	993	1531	-	-	-
Mov Cap-2 Maneuver	849	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	949	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1531	-	849	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	0	-	9.3	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	939	3	4	360	9	6	0	6	4	0	2
Future Vol, veh/h	12	939	3	4	360	9	6	0	6	4	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	15	1043	3	5	400	10	8	0	8	5	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	1046	0	0	1285	1495	523	967	1491	205
Stage 1	-	-	-	-	-	-	1075	1075	-	415	415	-
Stage 2	-	-	-	-	-	-	210	420	-	552	1076	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1145	-	-	661	-	-	122	122	499	209	123	802
Stage 1	-	-	-	-	-	-	234	294	-	585	591	-
Stage 2	-	-	-	-	-	-	773	588	-	486	294	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1145	-	-	661	-	-	120	119	499	203	120	802
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	119	-	203	120	-
Stage 1	-	-	-	-	-	-	231	290	-	577	586	-
Stage 2	-	-	-	-	-	-	765	583	-	472	290	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	25.2	18.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	193	1145	-	-	661	-	-	270
HCM Lane V/C Ratio	0.078	0.013	-	-	0.008	-	-	0.028
HCM Control Delay (s)	25.2	8.2	-	-	10.5	-	-	18.7
HCM Lane LOS	D	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	34.4

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	655	291	320	108	31	40
Future Vol, veh/h	655	291	320	108	31	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	80	90
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	728	323	356	120	39	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	476	0	-	0	2034	238
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	1618	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1082	-	-	-	49	763
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	148	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1082	-	-	-	~ 16	763
Mov Cap-2 Maneuver	-	-	-	-	~ 16	-
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	148	-

Approach	EB	WB	SW
HCM Control Delay, s	10.3	0	$ 536.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	1082	-	-	-	16	763
HCM Lane V/C Ratio	0.673	-	-	-	2.422	0.058
HCM Control Delay (s)	14.9	-	-	-	$ 1139.5	10
HCM Lane LOS	B	-	-	-	F	B
HCM 95th %tile Q(veh)	5.5	-	-	-	5.5	0.2

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

Intersection	
Int Delay, s/veh	8.6

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	30	717	53	41	1
Future Vol, veh/h	1	30	717	53	41	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	33	797	59	48	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1702	49	49	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	1653	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	101	1020	1558	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	48	1020	1558	-	-	-
Mov Cap-2 Maneuver	48	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	171	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	11.2	9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1558	-	617	-	-
HCM Lane V/C Ratio	0.511	-	0.056	-	-
HCM Control Delay (s)	9.7	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	3	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	534	4	3	1266	0	3	0	1	5	2	11
Future Vol, veh/h	1	534	4	3	1266	0	3	0	1	5	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	1	593	4	4	1407	0	4	0	1	6	3	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1407	0	0	597	0	0	1310	2012	299	1714	2014	704
Stage 1	-	-	-	-	-	-	597	597	-	1415	1415	-
Stage 2	-	-	-	-	-	-	713	1415	-	299	599	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	481	-	-	976	-	-	117	58	697	58	58	379
Stage 1	-	-	-	-	-	-	456	490	-	144	202	-
Stage 2	-	-	-	-	-	-	389	202	-	685	489	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	481	-	-	976	-	-	109	58	697	58	58	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	58	-	58	58	-
Stage 1	-	-	-	-	-	-	455	489	-	144	201	-
Stage 2	-	-	-	-	-	-	369	201	-	682	488	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	32.1	41.8
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	138	481	-	-	976	-	-	120
HCM Lane V/C Ratio	0.036	0.003	-	-	0.004	-	-	0.188
HCM Control Delay (s)	32.1	12.5	-	-	8.7	-	-	41.8
HCM Lane LOS	D	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	41.4

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	58	510	618	32	112	663
Future Vol, veh/h	58	510	618	32	112	663
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	80	90
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	64	567	687	36	140	737

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	723	0	-	0	1117	362
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	412	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	875	-	-	-	201	~ 635
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	637	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	875	-	-	-	186	~ 635
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	637	-

Approach	EB	WB	SW
HCM Control Delay, s	1	0	104.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	875	-	-	-	186	635
HCM Lane V/C Ratio	0.074	-	-	-	0.753	1.16
HCM Control Delay (s)	9.4	-	-	-	67	111.9
HCM Lane LOS	A	-	-	-	F	F
HCM 95th %tile Q(veh)	0.2	-	-	-	4.9	24.1

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

Intersection	
Int Delay, s/veh	17.8

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	717	30	53	51	0
Future Vol, veh/h	2	717	30	53	51	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	2	797	33	59	60	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	185	60	60	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	804	1005	1544	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	786	1005	1544	-	-	-
Mov Cap-2 Maneuver	786	-	-	-	-	-
Stage 1	942	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	20.9	2.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1544	-	1004	-	-
HCM Lane V/C Ratio	0.022	-	0.796	-	-
HCM Control Delay (s)	7.4	0	20.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	8.7	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	626	3	4	397	9	6	0	6	4	0	2
Future Vol, veh/h	11	626	3	4	397	9	6	0	6	4	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	14	696	3	5	441	10	8	0	8	5	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	451	0	0	699	0	0	957	1187	350	832	1183	226
Stage 1	-	-	-	-	-	-	726	726	-	456	456	-
Stage 2	-	-	-	-	-	-	231	461	-	376	727	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1106	-	-	893	-	-	212	187	646	262	188	777
Stage 1	-	-	-	-	-	-	382	428	-	554	567	-
Stage 2	-	-	-	-	-	-	751	564	-	617	427	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1106	-	-	893	-	-	208	183	646	255	184	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	208	183	-	255	184	-
Stage 1	-	-	-	-	-	-	377	422	-	547	564	-
Stage 2	-	-	-	-	-	-	744	561	-	602	421	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	17	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	315	1106	-	-	893	-	-	329
HCM Lane V/C Ratio	0.048	0.012	-	-	0.006	-	-	0.023
HCM Control Delay (s)	17	8.3	-	-	9.1	-	-	16.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	182	451	353	25	1	44
Future Vol, veh/h	182	451	353	25	1	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	90	90	90	80	85
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	214	501	392	28	1	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	420	0	-	0	1085	210
Stage 1	-	-	-	-	406	-
Stage 2	-	-	-	-	679	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1136	-	-	-	211	796
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1136	-	-	-	171	796
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	465	-

Approach	EB	WB	SW
HCM Control Delay, s	2.7	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	1136	-	-	-	171	796
HCM Lane V/C Ratio	0.188	-	-	-	0.007	0.065
HCM Control Delay (s)	8.9	-	-	-	26.2	9.8
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0.7	-	-	-	0	0.2

Intersection	
Int Delay, s/veh	4.6

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	0	156	59	45	1
Future Vol, veh/h	1	0	156	59	45	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	0	184	69	53	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	491	54	54	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	537	1013	1551	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	471	1013	1551	-	-	-
Mov Cap-2 Maneuver	471	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	12.7	5.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1551	-	471	-	-
HCM Lane V/C Ratio	0.118	-	0.002	-	-
HCM Control Delay (s)	7.6	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	590	4	3	986	0	3	0	1	5	2	11
Future Vol, veh/h	1	590	4	3	986	0	3	0	1	5	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	17	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	1	656	4	4	1096	0	4	0	1	6	3	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1096	0	0	660	0	0	1218	1764	330	1434	1766	548
Stage 1	-	-	-	-	-	-	660	660	-	1104	1104	-
Stage 2	-	-	-	-	-	-	558	1104	-	330	662	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	633	-	-	924	-	-	136	83	666	94	83	480
Stage 1	-	-	-	-	-	-	418	458	-	225	285	-
Stage 2	-	-	-	-	-	-	482	285	-	657	457	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	633	-	-	924	-	-	129	83	666	93	83	480
Mov Cap-2 Maneuver	-	-	-	-	-	-	129	83	-	93	83	-
Stage 1	-	-	-	-	-	-	417	457	-	225	284	-
Stage 2	-	-	-	-	-	-	462	284	-	655	456	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	27.9	28
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	162	633	-	-	924	-	-	179
HCM Lane V/C Ratio	0.031	0.002	-	-	0.004	-	-	0.126
HCM Control Delay (s)	27.9	10.7	-	-	8.9	-	-	28
HCM Lane LOS	D	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	64	563	812	2	29	191
Future Vol, veh/h	64	563	812	2	29	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	125	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	90	90	90	80	85
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	75	626	902	2	36	225

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	904	0	-	0	1366	452
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	748	-	-	-	138	555
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	748	-	-	-	124	555
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SW
HCM Control Delay, s	1.1	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (veh/h)	748	-	-	-	124	555
HCM Lane V/C Ratio	0.101	-	-	-	0.292	0.405
HCM Control Delay (s)	10.4	-	-	-	45.6	15.8
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1	1.9

Intersection	
Int Delay, s/veh	5.4

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	156	0	59	56	0
Future Vol, veh/h	2	156	0	59	56	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	2	184	0	69	66	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	135	66	66	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	859	998	1536	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	859	998	1536	-	-	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	954	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1536	-	996	-	-
HCM Lane V/C Ratio	-	-	0.187	-	-
HCM Control Delay (s)	0	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

APPENDIX

Turn Lane Calculations

Intersection	
Int Delay, s/veh	8.6

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	30	717	53	41	1
Future Vol, veh/h	1	30	717	53	41	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	33	797	59	48	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1702	49	49	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	1653	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	101	1020	1558	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	48	1020	1558	-	-	-
Mov Cap-2 Maneuver	48	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	171	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	11.2	9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1558	-	617	-	-
HCM Lane V/C Ratio	0.511	-	0.056	-	-
HCM Control Delay (s)	9.7	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	3	-	0.2	-	-

More vehicles queue in AM.

Intersection	
Int Delay, s/veh	17.8

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	717	30	53	51	0
Future Vol, veh/h	2	717	30	53	51	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	2	797	33	59	60	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	185	60	60	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	804	1005	1544	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	786	1005	1544	-	-	-
Mov Cap-2 Maneuver	786	-	-	-	-	-
Stage 1	942	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	20.9	2.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1544	-	1004	-	-
HCM Lane V/C Ratio	0.022	-	0.796	-	-
HCM Control Delay (s)	7.4	0	20.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	8.7	-	-

2022 With Project (Peak Construction)

Intersection	
Int Delay, s/veh	4.6

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	1	0	156	59	45	1
Future Vol, veh/h	1	0	156	59	45	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	1	0	184	69	53	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	491	54	54	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	537	1013	1551	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	471	1013	1551	-	-	-
Mov Cap-2 Maneuver	471	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	12.7	5.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1551	-	471	-	-
HCM Lane V/C Ratio	0.118	-	0.002	-	-
HCM Control Delay (s)	7.6	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0	-	-

More vehicles queue in AM.

Intersection	
Int Delay, s/veh	5.4

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	156	0	59	56	0
Future Vol, veh/h	2	156	0	59	56	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	15	7	2
Mvmt Flow	2	184	0	69	66	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	135	66	66	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	859	998	1536	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	859	998	1536	-	-	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	954	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SBLn1	SWT	SWR
Capacity (veh/h)	1536	-	996	-	-
HCM Lane V/C Ratio	-	-	0.187	-	-
HCM Control Delay (s)	0	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

2027 With Project (Normal Operations)

TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

APPENDIX

Traffic Signal Warrant Analysis

General Description of Intersection

2020 Without Project

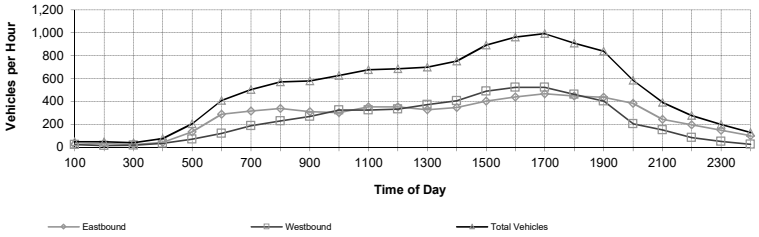
Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	45 *mph*
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Main Street
Direction:	N/S
# of NB Lanes:	0
# of SB Lanes:	2
85th percentile speed:	25 *mph*
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry
	Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Main Street**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **12,093**

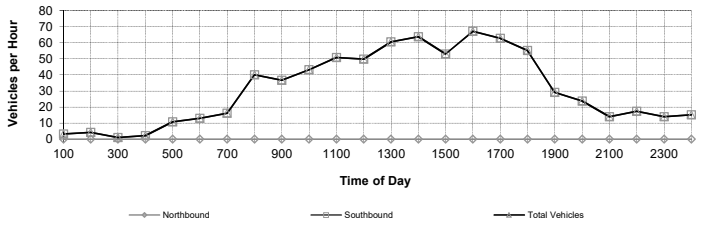
Time	Eastbound		Westbound		Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds		Vehicles	Peds	Vehicles	Peds
12:00 AM					12:00 PM				
12:15 AM					12:15 PM				
12:30 AM					12:30 PM				
12:45 AM					12:45 PM				
1:00 AM	26		22		1:00 PM	327		372	
1:15 AM					1:15 PM				
1:30 AM					1:30 PM				
1:45 AM					1:45 PM				
2:00 AM	34		14		2:00 PM	347		406	
2:15 AM					2:15 PM				
2:30 AM					2:30 PM				
2:45 AM					2:45 PM				
3:00 AM	23		17		3:00 PM	404		488	
3:15 AM					3:15 PM				
3:30 AM					3:30 PM				
3:45 AM					3:45 PM				
4:00 AM	42		34		4:00 PM	438		523	
4:15 AM					4:15 PM				
4:30 AM					4:30 PM				
4:45 AM					4:45 PM				
5:00 AM	134		69		5:00 PM	468		524	
5:15 AM					5:15 PM				
5:30 AM					5:30 PM				
5:45 AM					5:45 PM				
6:00 AM	288		120		6:00 PM	448		461	
6:15 AM					6:15 PM				
6:30 AM					6:30 PM				
6:45 AM					6:45 PM				
7:00 AM	317		187		7:00 PM	437		403	
7:15 AM					7:15 PM				
7:30 AM					7:30 PM				
7:45 AM					7:45 PM				
8:00 AM	340		229		8:00 PM	382		203	
8:15 AM					8:15 PM				
8:30 AM					8:30 PM				
8:45 AM					8:45 PM				
9:00 AM	310		270		9:00 PM	242		150	
9:15 AM					9:15 PM				
9:30 AM					9:30 PM				
9:45 AM					9:45 PM				
10:00 AM	301		325		10:00 PM	195		83	
10:15 AM					10:15 PM				
10:30 AM					10:30 PM				
10:45 AM					10:45 PM				
11:00 AM	353		324		11:00 PM	149		50	
11:15 AM					11:15 PM				
11:30 AM					11:30 PM				
11:45 AM					11:45 PM				
12:00 PM	353		332		12:00 AM	102		26	
						6,460		5,633	
					24-Hour Volume			12,093	

Equipment ID#:

Automated Traffic Counts

Street: **Main Street**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **748**

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM			3	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM			4	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM			1	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM			2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM			11	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM			13	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM			16	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM			40	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM			37	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM			43	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM			51	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM			50	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM			61	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM			64	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM			53	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM			67	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM			63	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM			55	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM			29	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM			24	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM			14	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM			17	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM			14	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM			15	
	0		748	
		24-Hour Volume	748	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2020 Without Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

#	Route #	Name	Control	Section	85% Speed
Major		US 60		-	45
Minor		Main Street		-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	420	150	105
2 or more		2 or more	600	**420**	200	**140**
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 140	Both Meet
12:00 AM	1:00 AM	47.62702	3.2472965	N	N	N
1:00 AM	2:00 AM	47.62702	4.3297286	N	N	N
2:00 AM	3:00 AM	40.04999	1.0824322	N	N	N
3:00 AM	4:00 AM	75.77025	2.1648643	N	N	N
4:00 AM	5:00 AM	203.4972	10.824322	N	N	N
5:00 AM	6:00 AM	408.0769	12.989186	N	N	N
6:00 AM	7:00 AM	504.4134	16.236482	Y	N	N
7:00 AM	8:00 AM	569.3593	40.04999	Y	N	N
8:00 AM	9:00 AM	579.1012	36.802693	Y	N	N
9:00 AM	10:00 AM	625.6458	43.297286	Y	N	N
10:00 AM	11:00 AM	676.5201	50.874312	Y	N	N
11:00 AM	12:00 PM	685.1796	49.791879	Y	N	N
12:00 PM	1:00 PM	699.2512	60.616201	Y	N	N
1:00 PM	2:00 PM	753.3728	63.863497	Y	N	N
2:00 PM	3:00 PM	891.9241	53.039176	Y	N	N
3:00 PM	4:00 PM	961.1998	67.110794	Y	N	N
4:00 PM	5:00 PM	991.5079	62.781065	Y	N	N
5:00 PM	6:00 PM	909.243	55.20404	Y	N	N
6:00 PM	7:00 PM	839.9674	29.225668	Y	N	N
7:00 PM	8:00 PM	585.5958	23.813508	Y	N	N
8:00 PM	9:00 PM	392.9229	14.071618	N	N	N
9:00 PM	10:00 PM	278.1851	17.318915	N	N	N
10:00 PM	11:00 PM	199.1675	14.071618	N	N	N
11:00 PM	12:00 AM	127.727	15.15405	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	630	75	53
2 or more		2 or more	900	**630**	100	**70**
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 630	>=70	Both Meet
12:00 AM	1:00 AM	47.62702	3.2472965	N	N	N
1:00 AM	2:00 AM	47.62702	4.3297286	N	N	N
2:00 AM	3:00 AM	40.04999	1.0824322	N	N	N
3:00 AM	4:00 AM	75.77025	2.1648643	N	N	N
4:00 AM	5:00 AM	203.4972	10.824322	N	N	N
5:00 AM	6:00 AM	408.0769	12.989186	N	N	N
6:00 AM	7:00 AM	504.4134	16.236482	N	N	N
7:00 AM	8:00 AM	569.3593	40.04999	N	N	N
8:00 AM	9:00 AM	579.1012	36.802693	N	N	N
9:00 AM	10:00 AM	625.6458	43.297286	N	N	N
10:00 AM	11:00 AM	676.5201	50.874312	Y	N	N
11:00 AM	12:00 PM	685.1796	49.791879	Y	N	N
12:00 PM	1:00 PM	699.2512	60.616201	Y	N	N
1:00 PM	2:00 PM	753.3728	63.863497	Y	N	N
2:00 PM	3:00 PM	891.9241	53.039176	Y	N	N
3:00 PM	4:00 PM	961.1998	67.110794	Y	N	N
4:00 PM	5:00 PM	991.5079	62.781065	Y	N	N
5:00 PM	6:00 PM	909.243	55.20404	Y	N	N
6:00 PM	7:00 PM	839.9674	29.225668	Y	N	N
7:00 PM	8:00 PM	585.5958	23.813508	N	N	N
8:00 PM	9:00 PM	392.9229	14.071618	N	N	N
9:00 PM	10:00 PM	278.1851	17.318915	N	N	N
10:00 PM	11:00 PM	199.1675	14.071618	N	N	N
11:00 PM	12:00 AM	127.727	15.15405	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This w is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000
45
Major Street Lanes: 2
Minor Street Lanes: 2

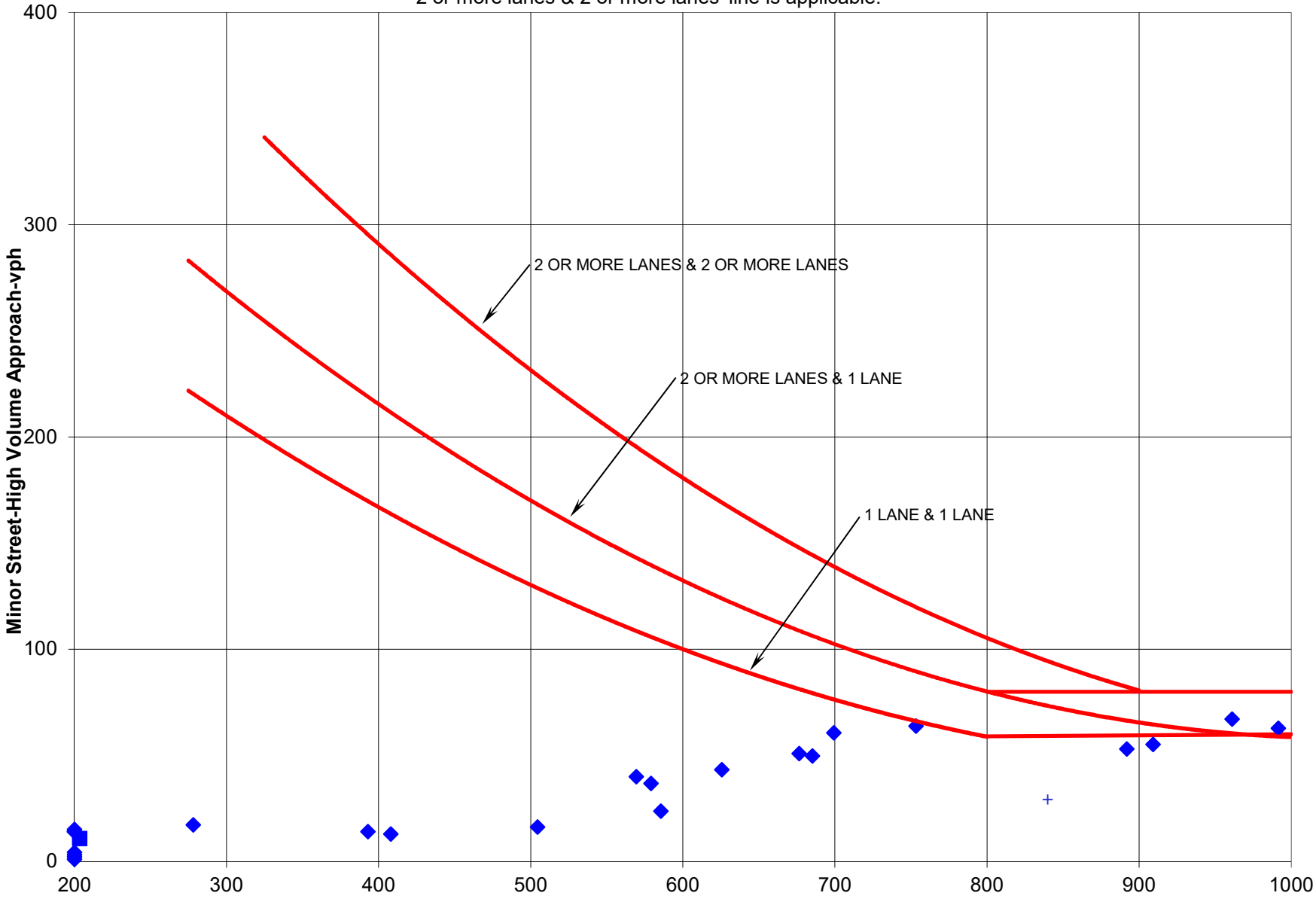
Use Figure: 4C-2 2&2

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	127.7269949	15.1540502	-	-	-	-	-	N
2	47.62701504	3.24729648	-	-	-	-	-	N
3	47.62701504	4.32972864	-	-	-	-	-	N
4	40.04998992	1.08243216	-	-	-	-	-	N
5	75.7702512	2.16486432	-	-	-	-	-	N
6	203.4972461	10.8243216	-	-	-	-	-	N
7	408.0769243	12.9891859	-	-	-	-	-	N
8	504.4133866	16.2364824	-	-	-	-	-	N
9	569.3593162	40.0499899	-	-	-	-	-	N
10	579.1012056	36.8026934	-	-	-	-	-	N
11	625.6457885	43.2972864	-	-	-	-	-	N
12	676.5201	50.8743115	-	-	-	-	-	N
13	685.1795573	49.7918794	-	-	-	-	-	N
14	699.2511754	60.616201	-	-	-	-	-	N
15	753.3727834	63.8634974	-	-	-	-	-	N
16	891.9240998	53.0391758	-	-	-	-	-	N
17	961.1997581	67.1107939	-	-	-	-	-	N
18	991.5078586	62.7810653	-	-	-	-	-	N
19	909.2430144	55.2040402	-	-	-	-	-	N
20	839.9673562	29.2256683	-	-	-	-	-	N
21	585.5957986	23.8135075	-	-	-	-	-	N
22	392.9228741	14.0716181	-	-	-	-	-	N
23	278.1850651	17.3189146	-	-	-	-	-	N
24	199.1675174	14.0716181	-	-	-	-	-	N
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 2 or more lanes' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2022 Without Project

Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	45 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Main Street
Direction:	N/S
# of NB Lanes:	0
# of SB Lanes:	2
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry
	Smooth

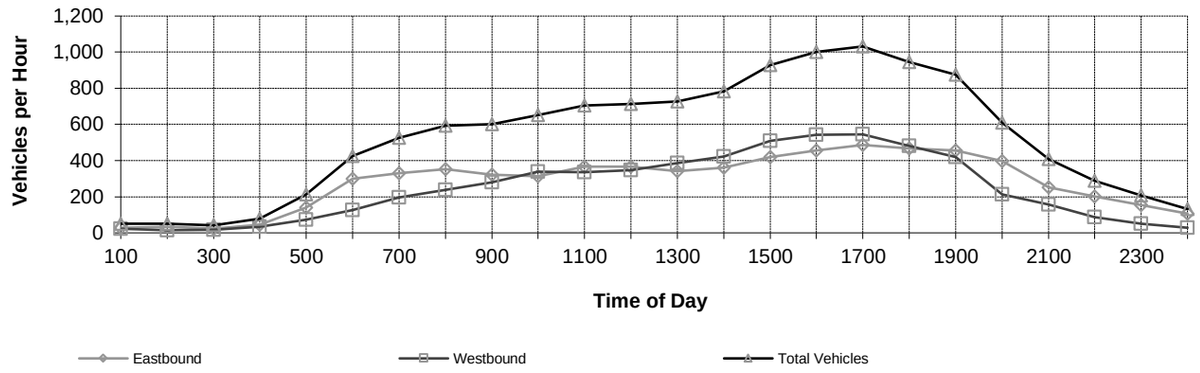
Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Main Street**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **12,581**



Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	27		23	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	35		15	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	24		18	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	44		35	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	140		72	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	300		125	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	330		195	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	354		239	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	322		280	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	313		338	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	367		337	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	367		346	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	340		387	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	361		422	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	420		508	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	456		544	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	487		545	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	466		480	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	455		419	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	398		212	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	252		157	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	203		87	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	155		52	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	106		27	
	6,721		5,861	
	24-Hour Volume		12,581	

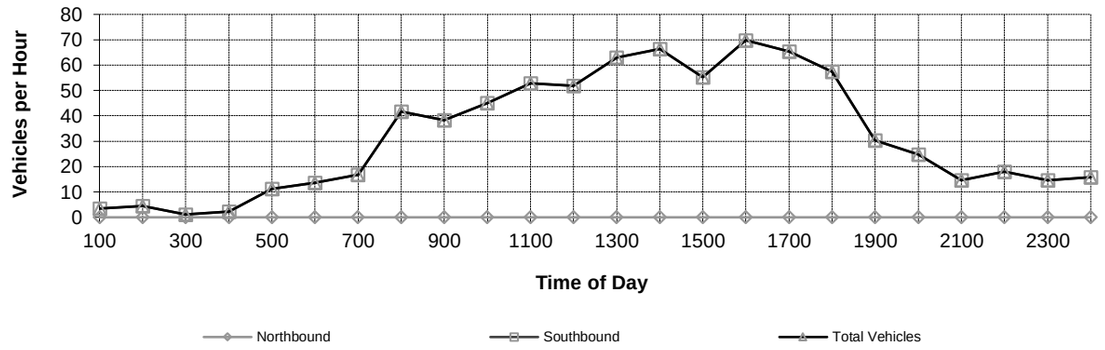
Equipment ID#:

Automated Traffic Counts

Street: **Main Street**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **778**



Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM			3	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM			5	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM			1	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM			2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM			11	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM			14	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM			17	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM			42	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM			38	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM			45	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM			53	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM			52	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM			63	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM			66	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM			55	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM			70	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM			65	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM			57	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM			30	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM			25	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM			15	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM			18	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM			15	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM			16	
	0		778	
24-Hour Volume			778	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2022 Without Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Speed
Major	_____	US 60	_____	-	45
Minor	_____	Main Street	_____	-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	420	150	105
2 or more		2 or more	600	**420**	200	**140**
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 140	Both Meet
12:00 AM	1:00 AM	49.55115	3.3784873	N	N	N
1:00 AM	2:00 AM	49.55115	4.5046497	N	N	N
2:00 AM	3:00 AM	41.66801	1.1261624	N	N	N
3:00 AM	4:00 AM	78.83137	2.2523248	N	N	N
4:00 AM	5:00 AM	211.7185	11.261624	N	N	N
5:00 AM	6:00 AM	424.5632	13.513949	Y	N	N
6:00 AM	7:00 AM	524.7917	16.892436	Y	N	N
7:00 AM	8:00 AM	592.3614	41.66801	Y	N	N
8:00 AM	9:00 AM	602.4969	38.289522	Y	N	N
9:00 AM	10:00 AM	650.9219	45.046497	Y	N	N
10:00 AM	11:00 AM	703.8515	52.929634	Y	N	N
11:00 AM	12:00 PM	712.8608	51.803471	Y	N	N
12:00 PM	1:00 PM	727.5009	63.065095	Y	N	N
1:00 PM	2:00 PM	783.809	66.443583	Y	N	N
2:00 PM	3:00 PM	927.9578	55.181959	Y	N	N
3:00 PM	4:00 PM	1000.032	69.82207	Y	N	N
4:00 PM	5:00 PM	1031.565	65.31742	Y	N	N
5:00 PM	6:00 PM	945.9764	57.434283	Y	N	N
6:00 PM	7:00 PM	873.902	30.406385	Y	N	N
7:00 PM	8:00 PM	609.2539	24.775573	Y	N	N
8:00 PM	9:00 PM	408.797	14.640111	N	N	N
9:00 PM	10:00 PM	289.4237	18.018599	N	N	N
10:00 PM	11:00 PM	207.2139	14.640111	N	N	N
11:00 PM	12:00 AM	132.8872	15.766274	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	630	75	53
2 or more		2 or more	900	**630**	100	**70**
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 630	>=70	Both Meet
12:00 AM	1:00 AM	49.55115	3.3784873	N	N	N
1:00 AM	2:00 AM	49.55115	4.5046497	N	N	N
2:00 AM	3:00 AM	41.66801	1.1261624	N	N	N
3:00 AM	4:00 AM	78.83137	2.2523248	N	N	N
4:00 AM	5:00 AM	211.7185	11.261624	N	N	N
5:00 AM	6:00 AM	424.5632	13.513949	N	N	N
6:00 AM	7:00 AM	524.7917	16.892436	N	N	N
7:00 AM	8:00 AM	592.3614	41.66801	N	N	N
8:00 AM	9:00 AM	602.4969	38.289522	N	N	N
9:00 AM	10:00 AM	650.9219	45.046497	Y	N	N
10:00 AM	11:00 AM	703.8515	52.929634	Y	N	N
11:00 AM	12:00 PM	712.8608	51.803471	Y	N	N
12:00 PM	1:00 PM	727.5009	63.065095	Y	N	N
1:00 PM	2:00 PM	783.809	66.443583	Y	N	N
2:00 PM	3:00 PM	927.9578	55.181959	Y	N	N
3:00 PM	4:00 PM	1000.032	69.82207	Y	N	N
4:00 PM	5:00 PM	1031.565	65.31742	Y	N	N
5:00 PM	6:00 PM	945.9764	57.434283	Y	N	N
6:00 PM	7:00 PM	873.902	30.406385	Y	N	N
7:00 PM	8:00 PM	609.2539	24.775573	N	N	N
8:00 PM	9:00 PM	408.797	14.640111	N	N	N
9:00 PM	10:00 PM	289.4237	18.018599	N	N	N
10:00 PM	11:00 PM	207.2139	14.640111	N	N	N
11:00 PM	12:00 AM	132.8872	15.766274	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This wa is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 2

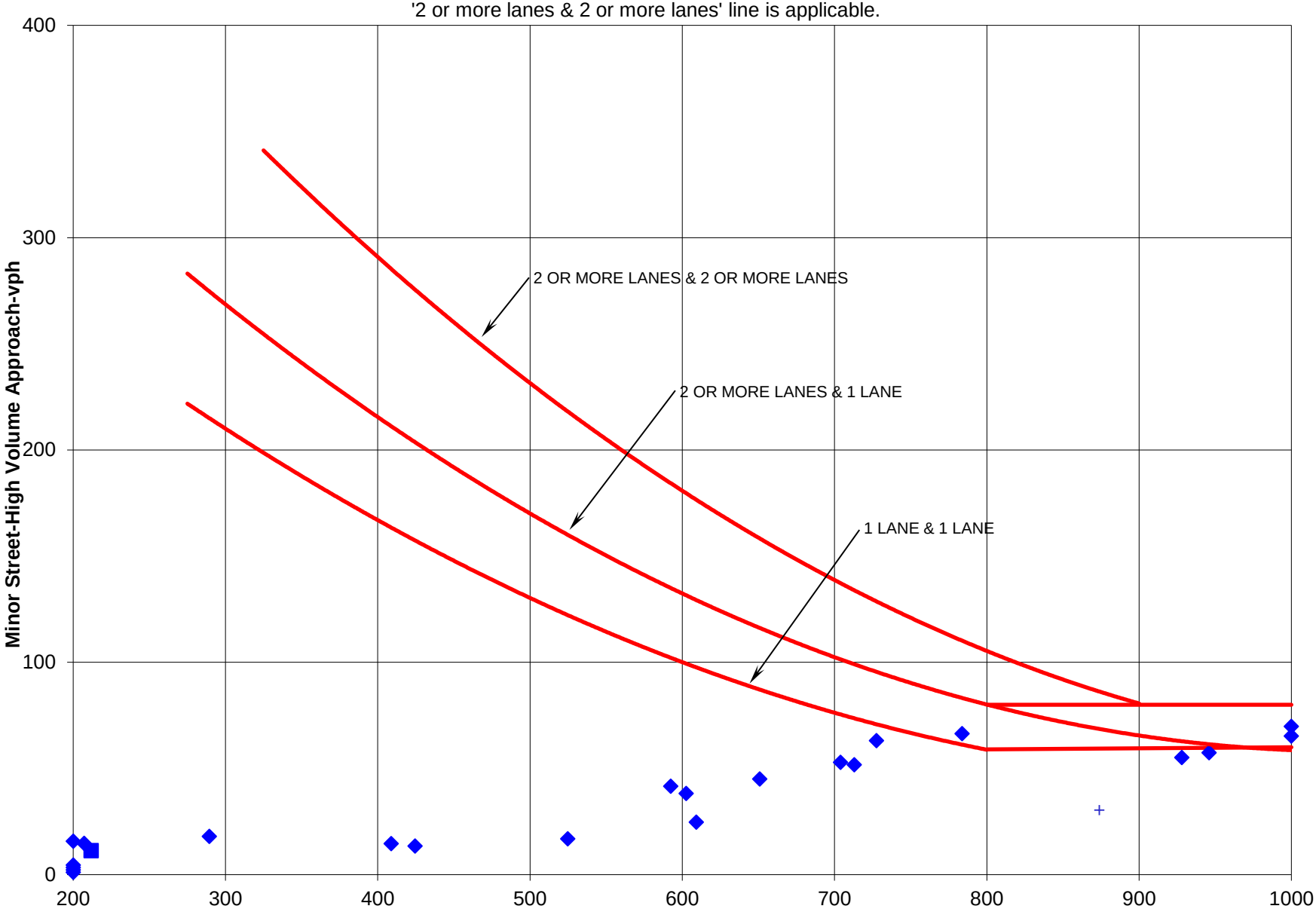
Use Figure: 4C-2 2&2

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	132.8871655	15.7662739	-	-	-	-	-	N
2	49.55114645	3.37848726	-	-	-	-	-	N
3	49.55114645	4.50464968	-	-	-	-	-	N
4	41.66800951	1.12616242	-	-	-	-	-	N
5	78.83136935	2.25232484	-	-	-	-	-	N
6	211.7185348	11.2616242	-	-	-	-	-	N
7	424.5632321	13.513949	-	-	-	-	-	N
8	524.7916874	16.8924363	-	-	-	-	-	N
9	592.3614325	41.6680095	-	-	-	-	-	N
10	602.4968943	38.2895223	-	-	-	-	-	N
11	650.9218783	45.0464968	-	-	-	-	-	N
12	703.851512	52.9296337	-	-	-	-	-	N
13	712.8608114	51.8034713	-	-	-	-	-	N
14	727.5009228	63.0650955	-	-	-	-	-	N
15	783.8090438	66.4435827	-	-	-	-	-	N
16	927.9578335	55.1819585	-	-	-	-	-	N
17	1000.032228	69.82207	-	-	-	-	-	N
18	1031.564776	65.3174203	-	-	-	-	-	N
19	945.9764322	57.4342834	-	-	-	-	-	N
20	873.9020373	30.4063853	-	-	-	-	-	N
21	609.2538688	24.7755732	-	-	-	-	-	N
22	408.7969582	14.6401115	-	-	-	-	-	N
23	289.4237418	18.0185987	-	-	-	-	-	N
24	207.2138851	14.6401115	-	-	-	-	-	N
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 2 or more lanes' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2027 Without Project

Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	45 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Main Street
Direction:	N/S
# of NB Lanes:	0
# of SB Lanes:	2
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry / Smooth

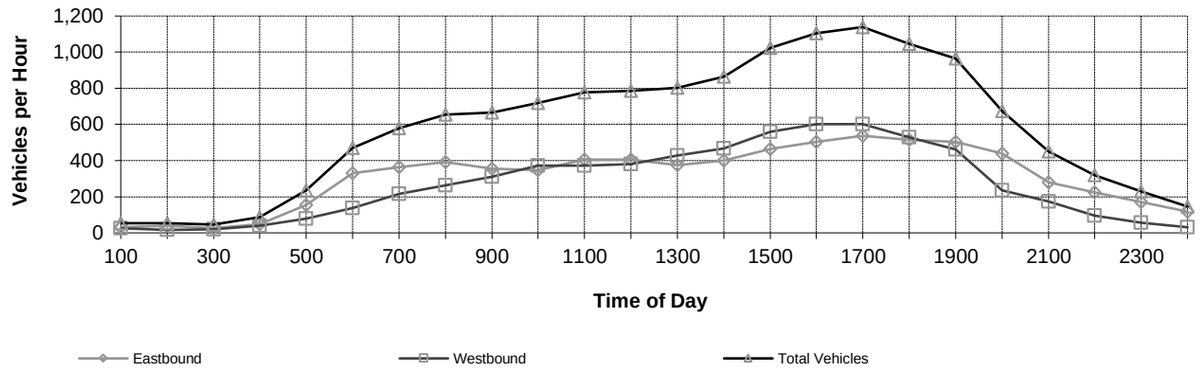
Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Main Street**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **13,891**



Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	30		25	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	39		16	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	26		20	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	48		39	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	154		80	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	331		138	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	364		215	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	390		264	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	356		310	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	346		373	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	405		372	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	405		382	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	375		428	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	399		466	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	464		561	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	504		601	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	537		602	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	515		530	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	502		463	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	439		234	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	279		173	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	224		96	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	172		57	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	117		30	
	7,420		6,471	
24-Hour Volume			13,891	

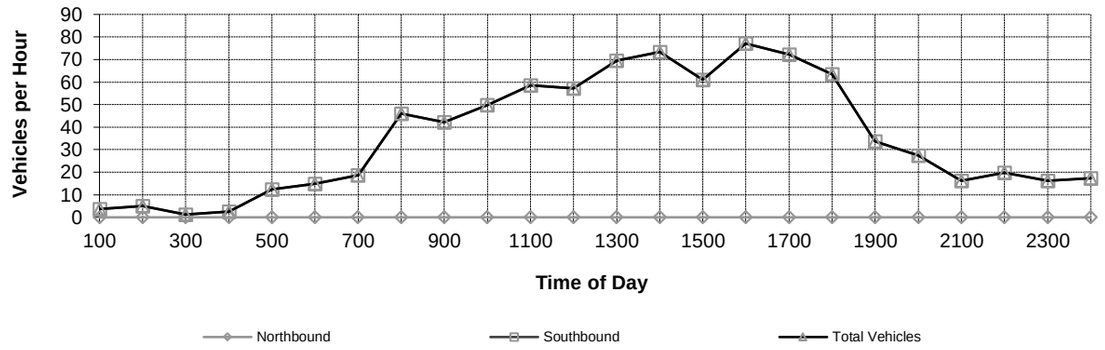
Equipment ID#:

Automated Traffic Counts

Street: **Main Street**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **859**



Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM			4	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM			5	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM			1	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM			2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM			12	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM			15	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM			19	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM			46	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM			42	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM			50	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM			58	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM			57	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM			70	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM			73	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM			61	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM			77	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM			72	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM			63	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM			34	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM			27	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM			16	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM			20	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM			16	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM			17	
	0		859	
24-Hour Volume			859	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2027 Without Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Spee
Major	_____	US 60	_____	-	45
Minor	_____	Main Street	_____	-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	420	150	105
2 or more		2 or more	600	**420**	200	**140**
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 140	Both Meet
12:00 AM	1:00 AM	54.70847	3.7301229	N	N	N
1:00 AM	2:00 AM	54.70847	4.9734972	N	N	N
2:00 AM	3:00 AM	46.00485	1.2433743	N	N	N
3:00 AM	4:00 AM	87.0362	2.4867486	N	N	N
4:00 AM	5:00 AM	233.7544	12.433743	N	N	N
5:00 AM	6:00 AM	468.7521	14.920492	Y	N	N
6:00 AM	7:00 AM	579.4124	18.650615	Y	N	N
7:00 AM	8:00 AM	654.0149	46.004849	Y	N	N
8:00 AM	9:00 AM	665.2053	42.274726	Y	N	N
9:00 AM	10:00 AM	718.6704	49.734972	Y	N	N
10:00 AM	11:00 AM	777.1089	58.438592	Y	N	N
11:00 AM	12:00 PM	787.0559	57.195218	Y	N	N
12:00 PM	1:00 PM	803.2198	69.628961	Y	N	N
1:00 PM	2:00 PM	865.3885	73.359084	Y	N	N
2:00 PM	3:00 PM	1024.54	60.925341	Y	N	N
3:00 PM	4:00 PM	1104.116	77.089207	Y	N	N
4:00 PM	5:00 PM	1138.931	72.11571	Y	N	N
5:00 PM	6:00 PM	1044.434	63.41209	Y	N	N
6:00 PM	7:00 PM	964.8585	33.571106	Y	N	N
7:00 PM	8:00 PM	672.6655	27.354235	Y	N	N
8:00 PM	9:00 PM	451.3449	16.163866	Y	N	N
9:00 PM	10:00 PM	319.5472	19.893989	N	N	N
10:00 PM	11:00 PM	228.7809	16.163866	N	N	N
11:00 PM	12:00 AM	146.7182	17.40724	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	630	75	53
2 or more		2 or more	900	**630**	100	**70**
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 630	>=70	Both Meet
12:00 AM	1:00 AM	54.70847	3.7301229	N	N	N
1:00 AM	2:00 AM	54.70847	4.9734972	N	N	N
2:00 AM	3:00 AM	46.00485	1.2433743	N	N	N
3:00 AM	4:00 AM	87.0362	2.4867486	N	N	N
4:00 AM	5:00 AM	233.7544	12.433743	N	N	N
5:00 AM	6:00 AM	468.7521	14.920492	N	N	N
6:00 AM	7:00 AM	579.4124	18.650615	N	N	N
7:00 AM	8:00 AM	654.0149	46.004849	Y	N	N
8:00 AM	9:00 AM	665.2053	42.274726	Y	N	N
9:00 AM	10:00 AM	718.6704	49.734972	Y	N	N
10:00 AM	11:00 AM	777.1089	58.438592	Y	N	N
11:00 AM	12:00 PM	787.0559	57.195218	Y	N	N
12:00 PM	1:00 PM	803.2198	69.628961	Y	N	N
1:00 PM	2:00 PM	865.3885	73.359084	Y	Y	Y
2:00 PM	3:00 PM	1024.54	60.925341	Y	N	N
3:00 PM	4:00 PM	1104.116	77.089207	Y	Y	Y
4:00 PM	5:00 PM	1138.931	72.11571	Y	Y	Y
5:00 PM	6:00 PM	1044.434	63.41209	Y	N	N
6:00 PM	7:00 PM	964.8585	33.571106	Y	N	N
7:00 PM	8:00 PM	672.6655	27.354235	Y	N	N
8:00 PM	9:00 PM	451.3449	16.163866	N	N	N
9:00 PM	10:00 PM	319.5472	19.893989	N	N	N
10:00 PM	11:00 PM	228.7809	16.163866	N	N	N
11:00 PM	12:00 AM	146.7182	17.40724	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 3

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES	NO	Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES	NO	Are the adjacent signals in a signal system?
YES	NO	Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES	NO	Is 80% or more of one of Warrants #1, #2, or #3 met?
YES	NO	Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES	NO	Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?
YES	NO	Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?
YES	NO	Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 2

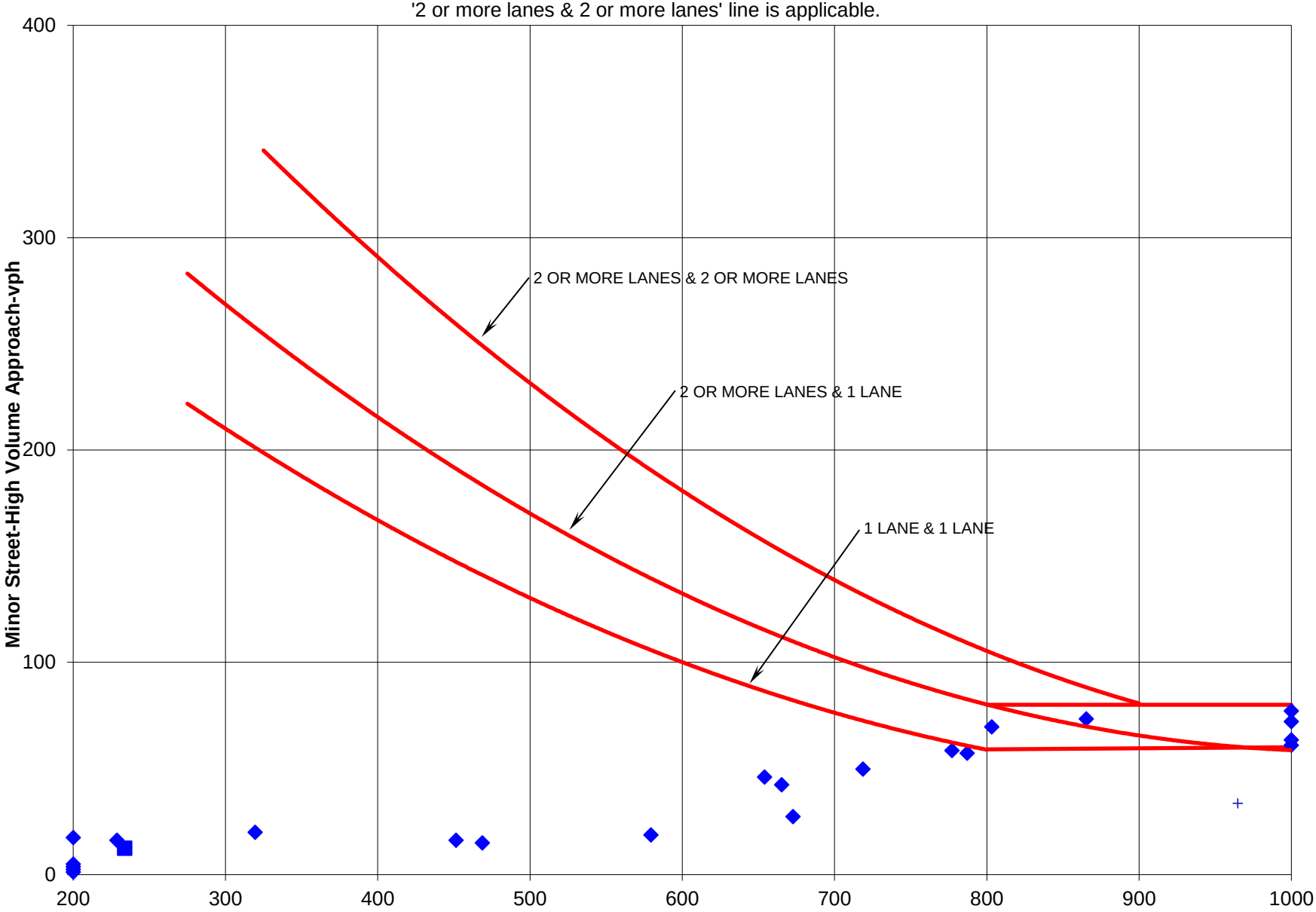
Use Figure: 4C-2 2&2

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	146.7181684	17.4072403	-	-	-	-	-	N
2	54.70846957	3.73012293	-	-	-	-	-	N
3	54.70846957	4.97349723	-	-	-	-	-	N
4	46.00484941	1.24337431	-	-	-	-	-	N
5	87.03620159	2.48674862	-	-	-	-	-	N
6	233.75437	12.4337431	-	-	-	-	-	N
7	468.7521143	14.9204917	-	-	-	-	-	N
8	579.4124277	18.6506146	-	-	-	-	-	N
9	654.0148862	46.0048494	-	-	-	-	-	N
10	665.205255	42.2747265	-	-	-	-	-	N
11	718.6703503	49.7349723	-	-	-	-	-	N
12	777.1089427	58.4385925	-	-	-	-	-	N
13	787.0559372	57.1952182	-	-	-	-	-	N
14	803.2198032	69.6289613	-	-	-	-	-	N
15	865.3885186	73.3590842	-	-	-	-	-	N
16	1024.54043	60.9253411	-	-	-	-	-	N
17	1104.116386	77.0892071	-	-	-	-	-	N
18	1138.930866	72.1157099	-	-	-	-	-	N
19	1044.434419	63.4120897	-	-	-	-	-	N
20	964.8584633	33.5711063	-	-	-	-	-	N
21	672.6655008	27.3542348	-	-	-	-	-	N
22	451.3448739	16.163866	-	-	-	-	-	N
23	319.5471973	19.8939889	-	-	-	-	-	N
24	228.7808727	16.163866	-	-	-	-	-	N
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 2 or more lanes' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2022 With Project

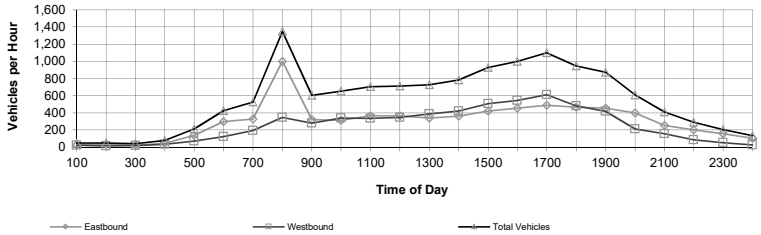
Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	45 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Main Street
Direction:	N/S
# of NB Lanes:	0
# of SB Lanes:	2
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry / Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Main Street**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **13,406**

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	27		23	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	35		15	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	24		18	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	44		35	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	140		72	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	300		125	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	330		195	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	1001		348	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	322		280	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	313		338	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	367		337	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	367		346	

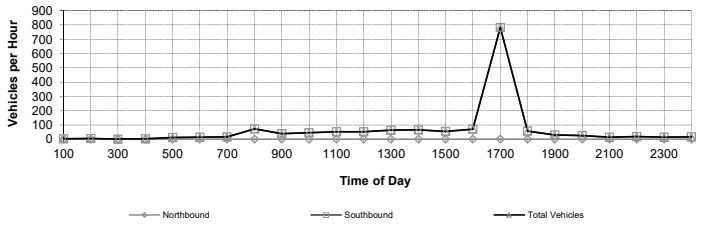
Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	340		387	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	361		422	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	420		508	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	456		544	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	490		611	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	466		480	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	455		419	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	398		212	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	252		157	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	203		87	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	155		52	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	106		27	
	7,371		6,036	
	24-Hour Volume		13,406	

Equipment ID#:

Automated Traffic Counts

Street: **Main Street**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **1,525**

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM			3	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM			5	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM			1	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM			2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM			11	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM			14	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM			17	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM			72	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM			38	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM			45	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM			53	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM			52	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM			63	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM			66	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM			55	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM			70	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM			782	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM			57	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM			30	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM			25	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM			15	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM			18	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM			15	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM			16	
	0		1,525	
		24-Hour Volume	1,525	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2022 With Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Spee
Major		US 60		-	45
Minor		Main Street		-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	420	150	105
2 or more		2 or more	600	**420**	200	**140**
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 140	Both Meet
12:00 AM	1:00 AM	49.55115	3.3784873	N	N	N
1:00 AM	2:00 AM	49.55115	4.5046497	N	N	N
2:00 AM	3:00 AM	41.66801	1.1261624	N	N	N
3:00 AM	4:00 AM	78.83137	2.2523248	N	N	N
4:00 AM	5:00 AM	211.7185	11.261624	N	N	N
5:00 AM	6:00 AM	424.5632	13.513949	Y	N	N
6:00 AM	7:00 AM	524.7917	16.892436	Y	N	N
7:00 AM	8:00 AM	1348.361	71.66801	Y	N	N
8:00 AM	9:00 AM	602.4969	38.289522	Y	N	N
9:00 AM	10:00 AM	650.9219	45.046497	Y	N	N
10:00 AM	11:00 AM	703.8515	52.929634	Y	N	N
11:00 AM	12:00 PM	712.8608	51.803471	Y	N	N
12:00 PM	1:00 PM	727.5009	63.065095	Y	N	N
1:00 PM	2:00 PM	783.809	66.443583	Y	N	N
2:00 PM	3:00 PM	927.9578	55.181959	Y	N	N
3:00 PM	4:00 PM	1000.032	69.82207	Y	N	N
4:00 PM	5:00 PM	1100.565	782.31742	Y	Y	Y
5:00 PM	6:00 PM	945.9764	57.434283	Y	N	N
6:00 PM	7:00 PM	873.902	30.406385	Y	N	N
7:00 PM	8:00 PM	609.2539	24.775573	Y	N	N
8:00 PM	9:00 PM	408.797	14.640111	N	N	N
9:00 PM	10:00 PM	289.4237	18.018599	N	N	N
10:00 PM	11:00 PM	207.2139	14.640111	N	N	N
11:00 PM	12:00 AM	132.8872	15.766274	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 1

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	630	75	53
2 or more		2 or more	900	**630**	100	**70**
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 630	>=70	Both Meet
12:00 AM	1:00 AM	49.55115	3.3784873	N	N	N
1:00 AM	2:00 AM	49.55115	4.5046497	N	N	N
2:00 AM	3:00 AM	41.66801	1.1261624	N	N	N
3:00 AM	4:00 AM	78.83137	2.2523248	N	N	N
4:00 AM	5:00 AM	211.7185	11.261624	N	N	N
5:00 AM	6:00 AM	424.5632	13.513949	N	N	N
6:00 AM	7:00 AM	524.7917	16.892436	N	N	N
7:00 AM	8:00 AM	1348.361	71.66801	Y	Y	Y
8:00 AM	9:00 AM	602.4969	38.289522	N	N	N
9:00 AM	10:00 AM	650.9219	45.046497	Y	N	N
10:00 AM	11:00 AM	703.8515	52.929634	Y	N	N
11:00 AM	12:00 PM	712.8608	51.803471	Y	N	N
12:00 PM	1:00 PM	727.5009	63.065095	Y	N	N
1:00 PM	2:00 PM	783.809	66.443583	Y	N	N
2:00 PM	3:00 PM	927.9578	55.181959	Y	N	N
3:00 PM	4:00 PM	1000.032	69.82207	Y	N	N
4:00 PM	5:00 PM	1100.565	782.31742	Y	Y	Y
5:00 PM	6:00 PM	945.9764	57.434283	Y	N	N
6:00 PM	7:00 PM	873.902	30.406385	Y	N	N
7:00 PM	8:00 PM	609.2539	24.775573	N	N	N
8:00 PM	9:00 PM	408.797	14.640111	N	N	N
9:00 PM	10:00 PM	289.4237	18.018599	N	N	N
10:00 PM	11:00 PM	207.2139	14.640111	N	N	N
11:00 PM	12:00 AM	132.8872	15.766274	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 2

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic is only present for one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

General Description of Intersection

2027 With Project

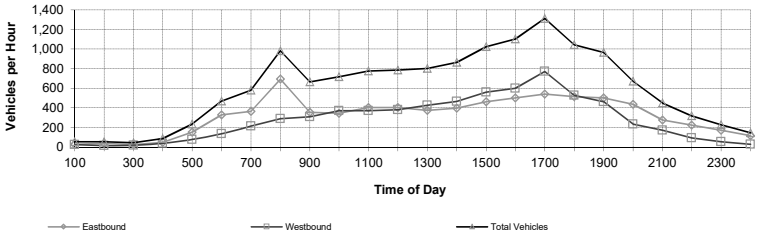
Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	45 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Main Street
Direction:	N/S
# of NB Lanes:	0
# of SB Lanes:	2
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry / Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Main Street**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **14,393**

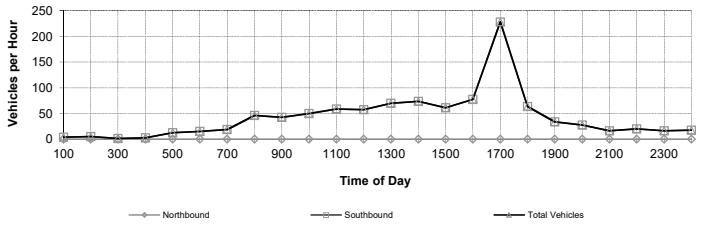
Time	Eastbound		Westbound		Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds		Vehicles	Peds	Vehicles	Peds
12:00 AM					12:00 PM				
12:15 AM					12:15 PM				
12:30 AM					12:30 PM				
12:45 AM					12:45 PM				
1:00 AM	30		25		1:00 PM	375		428	
1:15 AM					1:15 PM				
1:30 AM					1:30 PM				
1:45 AM					1:45 PM				
2:00 AM	39		16		2:00 PM	399		466	
2:15 AM					2:15 PM				
2:30 AM					2:30 PM				
2:45 AM					2:45 PM				
3:00 AM	26		20		3:00 PM	464		561	
3:15 AM					3:15 PM				
3:30 AM					3:30 PM				
3:45 AM					3:45 PM				
4:00 AM	48		39		4:00 PM	504		601	
4:15 AM					4:15 PM				
4:30 AM					4:30 PM				
4:45 AM					4:45 PM				
5:00 AM	154		80		5:00 PM	540		772	
5:15 AM					5:15 PM				
5:30 AM					5:30 PM				
5:45 AM					5:45 PM				
6:00 AM	331		138		6:00 PM	515		530	
6:15 AM					6:15 PM				
6:30 AM					6:30 PM				
6:45 AM					6:45 PM				
7:00 AM	364		215		7:00 PM	502		463	
7:15 AM					7:15 PM				
7:30 AM					7:30 PM				
7:45 AM					7:45 PM				
8:00 AM	693		290		8:00 PM	439		234	
8:15 AM					8:15 PM				
8:30 AM					8:30 PM				
8:45 AM					8:45 PM				
9:00 AM	356		310		9:00 PM	279		173	
9:15 AM					9:15 PM				
9:30 AM					9:30 PM				
9:45 AM					9:45 PM				
10:00 AM	346		373		10:00 PM	224		96	
10:15 AM					10:15 PM				
10:30 AM					10:30 PM				
10:45 AM					10:45 PM				
11:00 AM	405		372		11:00 PM	172		57	
11:15 AM					11:15 PM				
11:30 AM					11:30 PM				
11:45 AM					11:45 PM				
12:00 PM	405		382		12:00 AM	117		30	
						7,726		6,667	
					24-Hour Volume			14,393	

Equipment ID#:

Automated Traffic Counts

Street: **Main Street**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **1,015**

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM			4	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM			5	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM			1	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM			2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM			12	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM			15	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM			19	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM			46	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM			42	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM			50	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM			58	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM			57	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM			70	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM			73	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM			61	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM			77	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM			228	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM			63	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM			34	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM			27	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM			16	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM			20	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM			16	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM			17	
	0		1,015	
		24-Hour Volume	1,015	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2027 With Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Spee
Major		US 60		-	45
Minor		Main Street		-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	420	150	105
2 or more		2 or more	600	**420**	200	**140**
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 420	Minor >= 140	Both Meet
12:00 AM	1:00 AM	54.70847	3.7301229	N	N	N
1:00 AM	2:00 AM	54.70847	4.9734972	N	N	N
2:00 AM	3:00 AM	46.00485	1.2433743	N	N	N
3:00 AM	4:00 AM	87.0362	2.4867486	N	N	N
4:00 AM	5:00 AM	233.7544	12.433743	N	N	N
5:00 AM	6:00 AM	468.7521	14.920492	Y	N	N
6:00 AM	7:00 AM	579.4124	18.650615	Y	N	N
7:00 AM	8:00 AM	983.0149	46.004849	Y	N	N
8:00 AM	9:00 AM	665.2053	42.274726	Y	N	N
9:00 AM	10:00 AM	718.6704	49.734972	Y	N	N
10:00 AM	11:00 AM	777.1089	58.438592	Y	N	N
11:00 AM	12:00 PM	787.0559	57.195218	Y	N	N
12:00 PM	1:00 PM	803.2198	69.628961	Y	N	N
1:00 PM	2:00 PM	865.3885	73.359084	Y	N	N
2:00 PM	3:00 PM	1024.54	60.925341	Y	N	N
3:00 PM	4:00 PM	1104.116	77.089207	Y	N	N
4:00 PM	5:00 PM	1311.931	228.11571	Y	Y	Y
5:00 PM	6:00 PM	1044.434	63.41209	Y	N	N
6:00 PM	7:00 PM	964.8585	33.571106	Y	N	N
7:00 PM	8:00 PM	672.6655	27.354235	Y	N	N
8:00 PM	9:00 PM	451.3449	16.163866	Y	N	N
9:00 PM	10:00 PM	319.5472	19.893989	N	N	N
10:00 PM	11:00 PM	228.7809	16.163866	N	N	N
11:00 PM	12:00 AM	146.7182	17.40724	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 1

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	630	75	53
2 or more		2 or more	900	**630**	100	**70**
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 630	>=70	Both Meet
12:00 AM	1:00 AM	54.70847	3.7301229	N	N	N
1:00 AM	2:00 AM	54.70847	4.9734972	N	N	N
2:00 AM	3:00 AM	46.00485	1.2433743	N	N	N
3:00 AM	4:00 AM	87.0362	2.4867486	N	N	N
4:00 AM	5:00 AM	233.7544	12.433743	N	N	N
5:00 AM	6:00 AM	468.7521	14.920492	N	N	N
6:00 AM	7:00 AM	579.4124	18.650615	N	N	N
7:00 AM	8:00 AM	983.0149	46.004849	Y	N	N
8:00 AM	9:00 AM	665.2053	42.274726	Y	N	N
9:00 AM	10:00 AM	718.6704	49.734972	Y	N	N
10:00 AM	11:00 AM	777.1089	58.438592	Y	N	N
11:00 AM	12:00 PM	787.0559	57.195218	Y	N	N
12:00 PM	1:00 PM	803.2198	69.628961	Y	N	N
1:00 PM	2:00 PM	865.3885	73.359084	Y	Y	Y
2:00 PM	3:00 PM	1024.54	60.925341	Y	N	N
3:00 PM	4:00 PM	1104.116	77.089207	Y	Y	Y
4:00 PM	5:00 PM	1311.931	228.11571	Y	Y	Y
5:00 PM	6:00 PM	1044.434	63.41209	Y	N	N
6:00 PM	7:00 PM	964.8585	33.571106	Y	N	N
7:00 PM	8:00 PM	672.6655	27.354235	Y	N	N
8:00 PM	9:00 PM	451.3449	16.163866	N	N	N
9:00 PM	10:00 PM	319.5472	19.893989	N	N	N
10:00 PM	11:00 PM	228.7809	16.163866	N	N	N
11:00 PM	12:00 AM	146.7182	17.40724	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met:	3
Hours Required:	8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic is only present for one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

General Description of Intersection

2020 Without Project

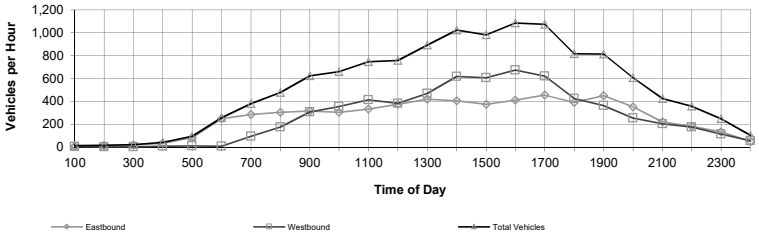
Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	65 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Silver King Mine Road
Direction:	N/S
# of NB Lanes:	1
# of SB Lanes:	1
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry / Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Silver King Mine Road**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **12,528**

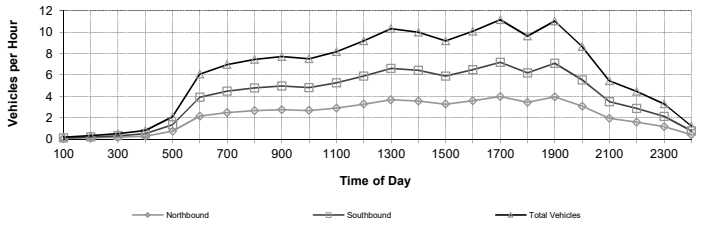
Time	Eastbound		Westbound		Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds		Vehicles	Peds	Vehicles	Peds
12:00 AM					12:00 PM				
12:15 AM					12:15 PM				
12:30 AM					12:30 PM				
12:45 AM					12:45 PM				
1:00 AM	8		6		1:00 PM	420		471	
1:15 AM					1:15 PM				
1:30 AM					1:30 PM				
1:45 AM					1:45 PM				
2:00 AM	14		2		2:00 PM	407		617	
2:15 AM					2:15 PM				
2:30 AM					2:30 PM				
2:45 AM					2:45 PM				
3:00 AM	21		3		3:00 PM	375		606	
3:15 AM					3:15 PM				
3:30 AM					3:30 PM				
3:45 AM					3:45 PM				
4:00 AM	34		8		4:00 PM	411		674	
4:15 AM					4:15 PM				
4:30 AM					4:30 PM				
4:45 AM					4:45 PM				
5:00 AM	86		11		5:00 PM	455		620	
5:15 AM					5:15 PM				
5:30 AM					5:30 PM				
5:45 AM					5:45 PM				
6:00 AM	248		9		6:00 PM	393		424	
6:15 AM					6:15 PM				
6:30 AM					6:30 PM				
6:45 AM					6:45 PM				
7:00 AM	285		95		7:00 PM	450		365	
7:15 AM					7:15 PM				
7:30 AM					7:30 PM				
7:45 AM					7:45 PM				
8:00 AM	304		175		8:00 PM	352		255	
8:15 AM					8:15 PM				
8:30 AM					8:30 PM				
8:45 AM					8:45 PM				
9:00 AM	315		308		9:00 PM	222		203	
9:15 AM					9:15 PM				
9:30 AM					9:30 PM				
9:45 AM					9:45 PM				
10:00 AM	306		354		10:00 PM	182		176	
10:15 AM					10:15 PM				
10:30 AM					10:30 PM				
10:45 AM					10:45 PM				
11:00 AM	333		415		11:00 PM	134		114	
11:15 AM					11:15 PM				
11:30 AM					11:30 PM				
11:45 AM					11:45 PM				
12:00 PM	375		382		12:00 AM	50		55	
						6,177		6,351	
					24-Hour Volume			12,528	

Equipment ID#:

Automated Traffic Counts

Street: **Silver King Mine Road**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **152**

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		0	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		0	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		0	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		1	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	1		1	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	2		4	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	2		4	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	3		5	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	3		5	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	3		5	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	3		5	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	3		6	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM	4		7	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM	4		6	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM	3		6	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM	4		6	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM	4		7	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM	3		6	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM	4		7	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM	3		6	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM	2		3	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM	2		3	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM	1		2	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		1	
	54		97	
	24-Hour Volume		152	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2020 Without Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Speed
Major		US 60		-	65
Minor		Silver King Mine Road		-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	**420**	150	**105**
2 or more		2 or more	600	420	200	140
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 420	Minor >= 105	Both Meet
12:00 AM	1:00 AM	14.07162	0.1194905	N	N	N
1:00 AM	2:00 AM	16.23648	0.2219109	N	N	N
2:00 AM	3:00 AM	23.81351	0.3243313	N	N	N
3:00 AM	4:00 AM	41.13242	0.5291722	N	N	N
4:00 AM	5:00 AM	96.33646	1.3485356	N	N	N
5:00 AM	6:00 AM	256.5364	3.9090462	N	N	N
6:00 AM	7:00 AM	379.9337	4.4894286	N	N	N
7:00 AM	8:00 AM	479.5174	4.7966899	Y	N	N
8:00 AM	9:00 AM	623.4809	4.9673906	Y	N	N
9:00 AM	10:00 AM	660.2836	4.8308301	Y	N	N
10:00 AM	11:00 AM	747.9606	5.2575818	Y	N	N
11:00 AM	12:00 PM	756.6201	5.9062445	Y	N	N
12:00 PM	1:00 PM	890.8417	6.6231875	Y	N	N
1:00 PM	2:00 PM	1023.981	6.4183466	Y	N	N
2:00 PM	3:00 PM	980.6835	5.9062445	Y	N	N
3:00 PM	4:00 PM	1085.679	6.4866269	Y	N	N
4:00 PM	5:00 PM	1074.855	7.1694298	Y	N	N
5:00 PM	6:00 PM	817.2363	6.1964357	Y	N	N
6:00 PM	7:00 PM	815.0714	7.1011495	Y	N	N
7:00 PM	8:00 PM	607.2444	5.547773	Y	N	N
8:00 PM	9:00 PM	425.3958	3.4993645	Y	N	N
9:00 PM	10:00 PM	358.285	2.8677719	N	N	N
10:00 PM	11:00 PM	247.877	2.1166888	N	N	N
11:00 PM	12:00 AM	104.9959	0.7852233	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	**630**	75	**53**
2 or more		2 or more	900	630	100	70
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 630	> = 53	Both Meet
12:00 AM	1:00 AM	14.07162	0.1194905	N	N	N
1:00 AM	2:00 AM	16.23648	0.2219109	N	N	N
2:00 AM	3:00 AM	23.81351	0.3243313	N	N	N
3:00 AM	4:00 AM	41.13242	0.5291722	N	N	N
4:00 AM	5:00 AM	96.33646	1.3485356	N	N	N
5:00 AM	6:00 AM	256.5364	3.9090462	N	N	N
6:00 AM	7:00 AM	379.9337	4.4894286	N	N	N
7:00 AM	8:00 AM	479.5174	4.7966899	N	N	N
8:00 AM	9:00 AM	623.4809	4.9673906	N	N	N
9:00 AM	10:00 AM	660.2836	4.8308301	Y	N	N
10:00 AM	11:00 AM	747.9606	5.2575818	Y	N	N
11:00 AM	12:00 PM	756.6201	5.9062445	Y	N	N
12:00 PM	1:00 PM	890.8417	6.6231875	Y	N	N
1:00 PM	2:00 PM	1023.981	6.4183466	Y	N	N
2:00 PM	3:00 PM	980.6835	5.9062445	Y	N	N
3:00 PM	4:00 PM	1085.679	6.4866269	Y	N	N
4:00 PM	5:00 PM	1074.855	7.1694298	Y	N	N
5:00 PM	6:00 PM	817.2363	6.1964357	Y	N	N
6:00 PM	7:00 PM	815.0714	7.1011495	Y	N	N
7:00 PM	8:00 PM	607.2444	5.547773	N	N	N
8:00 PM	9:00 PM	425.3958	3.4993645	N	N	N
9:00 PM	10:00 PM	358.285	2.8677719	N	N	N
10:00 PM	11:00 PM	247.877	2.1166888	N	N	N
11:00 PM	12:00 AM	104.9959	0.7852233	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This w is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

	Required*	Existing
100 or more for each of any four hours		_____
OR		
190 or more during any one hour		_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

TRAFFIC SIGNAL WARRANT EVALUATION

This review is based on the methodology presented in the 2009 revision of the Manual on Uniform Traffic Control Devices (MUTCD), Please refer to Chapter 4C of the current manual.

Warrant 1, Condition A- MINIMUM VEHICULAR VOLUME

The installation of a traffic signal may be necessary to control an intersection with large volumes of conflicting traffic. The required traffic volumes must be present for at least 8 hours (not an average) of an average day. The minimum volumes vary according to the number of lanes on the intersecting streets, the speed of the traffic on the main street, and the community size.

Number of Lanes		Major Street - Both Approaches			Minor Street - High Volume Approach			Major & Minor Street Volumes
Major Street	Minor Street	Required		Total Hours Satisfied	Required		Total Hours Satisfied	Total Hours Both Satisfied
		Urban	Rural*		Urban	Rural*		
1	1	500	350	-	150	105	-	-
2 or more	1	600	**420**	14	150	**105**	0	8
2 or more	2 or more	600	420	-	200	140	-	-
1	2 or more	500	350	-	200	140	-	-

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1- Condition A is not satisfied

Warrant 1, Condition B - INTERRUPTION OF CONTINUOUS TRAFFIC

On major streets with high traffic volume, it may be necessary to use traffic signal control to provide an adequate number of gaps in traffic to allow vehicles to enter from a side street. The required traffic volumes must be present for at least 8 hours (not an average) of an average day. The minimum volumes vary according to the number of lanes on the intersecting streets, the speed of the traffic on the main street, and the community size.

Number of Lanes		Major Street - Both Approaches			Minor Street - High Volume Approach			Major & Minor Street Volumes
Major Street	Minor Street	Required		Total Hours Satisfied	Required		Total Hours Satisfied	Total Hours Both Satisfied
		Urban	Rural*		Urban	Rural*		
1	1	750	525	-	75	53	-	-
2 or more	1	900	**630**	10	75	**53**	0	0
2 or more	2 or more	900	630	-	100	70	-	-
1	2 or more	750	525	-	100	70	-	-

Warrant 1- Condition B is not satisfied

To satisfy Warrant 1, either Condition A or B must be must be satisfied.
Warrant 1 is not satisfied

Warrant 2 - FOUR HOUR VOLUMES

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-2) shown in the MUTCD.

*** These traffic volumes are not known.**

Warrant 2 is not satisfied

Warrant 3, Condition A- PEAK HOUR DELAY

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - PEAK HOUR VOLUME

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This warrant is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is not applicable.

Warrant 4 - MINIMUM PEDESTRIAN VOLUME

This warrant is similar to Warrant 2, but is intended to identify locations where additional gaps are needed to provide safe pedestrian crossing of a major street. A signal installed solely for pedestrians should use a fully actuated controller and, if in a signal system, be coordinated with that system. A signal installed only under this warrant shall include pedestrian signals. When installed at a midblock location, additional restrictions may apply (See section 4C-5):

100 or more for each of fours hours; or
190 or more during any one hour.

The necessary pedestrian volumes are not present or have not been collected.

Warrant 4 is not applicable.

Warrant 5 - SCHOOL CROSSING

An established school crossing may require signal protection if an engineering study reveals that there is less than one adequate gap per minute during the period of crossing usage. The restrictions on signals installed under this warrant are similar to those of Warrant 3, above.

Warrant 5 is not applicable.

Warrant 6 - Coordinate Systems

A traffic signal may occasionally be used to maintain vehicle grouping in a coordinated system. Such a signal should not be within 1,000 ft of adjacent signalized intersections in the system.

Warrant 6 is not applicable.

Warrant 7 - CRASH EXPERIENCE

Many traffic signals are installed on the premise of reducing accidents; however, it must be recognized that signals may actually increase some types of accidents. The result is often contrary to the intended goal. Four conditions must be met before a signal is installed solely to reduce accidents:

(1) less restrictive solutions have been tried and enforced with unsatisfactory results.

(2) There has been five or more accidents of types preventable by traffic signals (i.e. right angle) in the last 12 months;

(3) volume of vehicular and pedstrian traffic not less than 80% of Warrants 1, 2, or 3.

(4) traffic progression would not be seriously disrupted, and

A signal installed solely under this warrant should be traffic actuated.

*** The number of preventable accidents in the past 12 months is l**

*** None of the Warrant 7 volume requirements are met.**

Warrant 7 is not applicable.

Warrant 8 - ROADWAY NETWORK

Traffic signal control may be used to encourage concentration and organization of vehicles on the major street networks. Such a signal may be installed at the intersection of two major street routes as defined by section 4C-9 of the TMUTCD if the intersection has a total existing , or immediately projected, entering volume of at least 1000 vehicles:

1) during the peak hour of a typical weekday and has five year projected volumes, based on an engineering study, which meet one or more of Warrant 1, 2, and 3 during an average weekday; or

2) for each of any five hours of a Saturday and/or Sunday.

Warrant 8 is not applicable.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 1

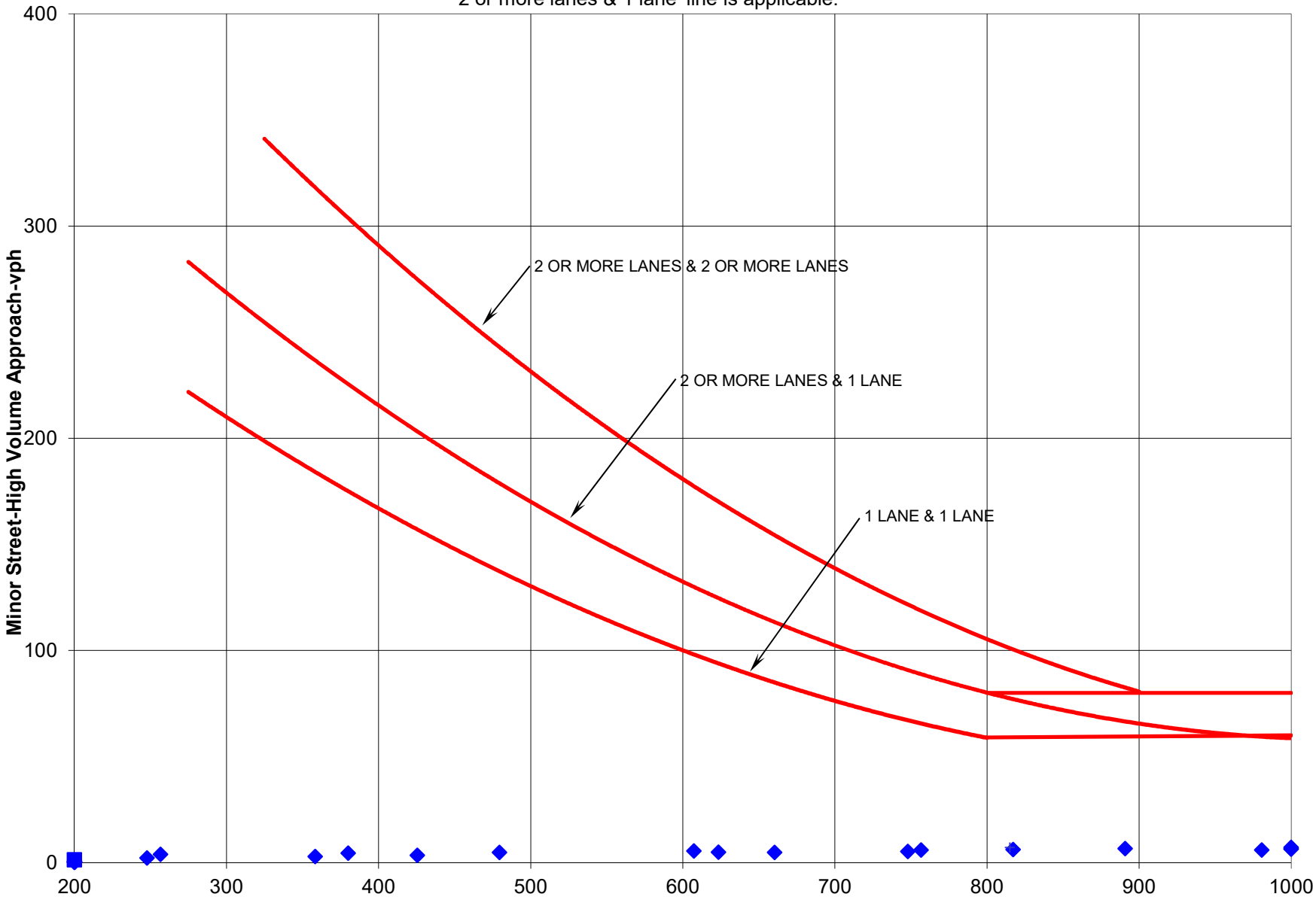
Use Figure: 4C-2 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	104.9959195	0.78522326	-	-	-	-	N	-
2	14.07161808	0.1194905	-	-	-	-	N	-
3	16.2364824	0.22191092	-	-	-	-	N	-
4	23.81350752	0.32433135	-	-	-	-	N	-
5	41.13242208	0.5291722	-	-	-	-	N	-
6	96.33646224	1.3485356	-	-	-	-	N	-
7	256.5364219	3.90904623	-	-	-	-	N	-
8	379.9336882	4.48942864	-	-	-	-	N	-
9	479.5174469	4.79668991	-	-	-	-	N	-
10	623.4809242	4.96739062	-	-	-	-	N	-
11	660.2836176	4.83083005	-	-	-	-	N	-
12	747.9606226	5.25758182	-	-	-	-	N	-
13	756.6200798	5.90624452	-	-	-	-	N	-
14	890.8416677	6.62318749	-	-	-	-	N	-
15	1023.980823	6.41834664	-	-	-	-	N	-
16	980.683537	5.90624452	-	-	-	-	N	-
17	1085.679456	6.48662693	-	-	-	-	N	-
18	1074.855135	7.16942976	-	-	-	-	N	-
19	817.2362808	6.19643572	-	-	-	-	N	-
20	815.0714165	7.10114948	-	-	-	-	N	-
21	607.2444418	5.54777303	-	-	-	-	N	-
22	425.3958389	3.49936453	-	-	-	-	N	-
23	358.285045	2.8677719	-	-	-	-	N	-
24	247.8769646	2.11668879	-	-	-	-	N	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 1 lane' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2022 Without Project

Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	65 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Silver King Mine Road
Direction:	N/S
# of NB Lanes:	1
# of SB Lanes:	1
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry
	Smooth

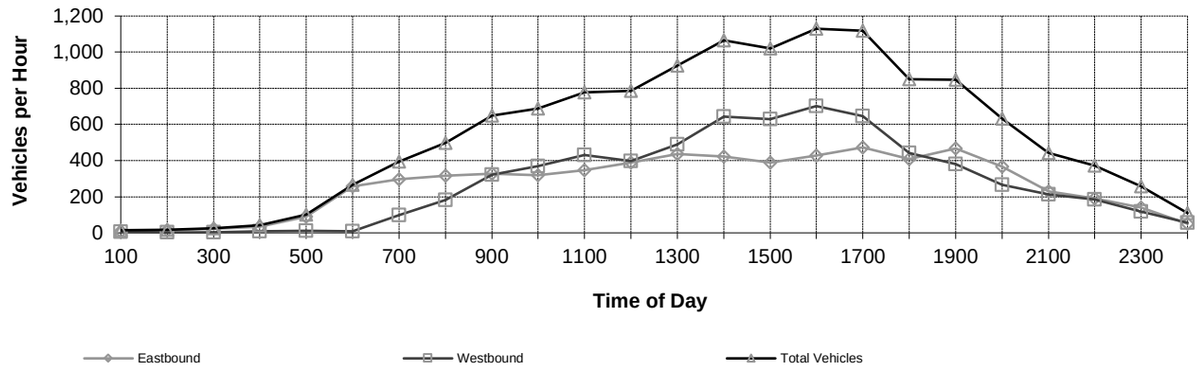
Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Silver King Mine Road**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **13,034**



Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	8		7	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	15		2	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	21		3	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	35		8	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	89		11	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	258		9	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	296		99	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	316		182	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	328		321	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	319		368	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	347		431	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	390		398	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	437		490	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	423		642	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	390		631	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	428		702	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	473		645	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	409		441	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	468		380	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	366		266	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	231		212	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	189		184	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	140		118	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	52		57	
	6,427		6,607	
24-Hour Volume			13,034	

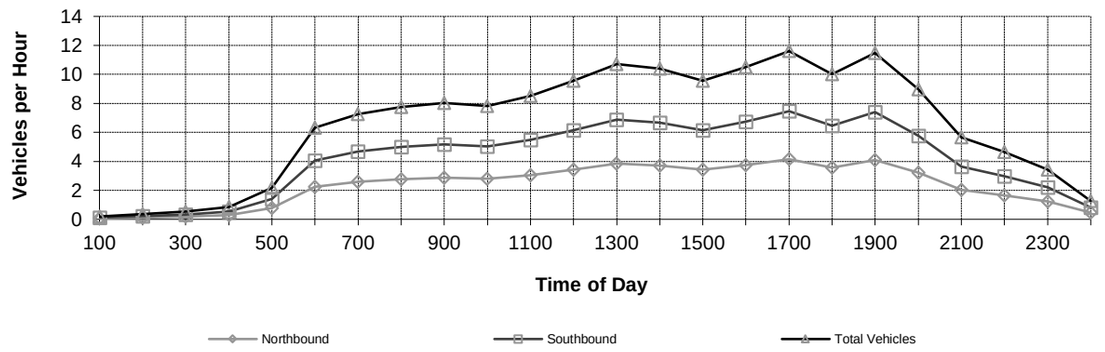
Equipment ID#:

Automated Traffic Counts

Street: **Silver King Mine Road**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **158**



Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		0	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		0	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		0	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		1	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	1		1	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	2		4	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	3		5	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	3		5	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	3		5	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	3		5	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	3		5	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	3		6	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM	4		7	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM	4		7	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM	3		6	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM	4		7	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM	4		7	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM	4		6	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM	4		7	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM	3		6	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM	2		4	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM	2		3	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM	1		2	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		1	
	56		101	
24-Hour Volume			158	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2022 Without Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Speed
Major	_____	US 60	_____	-	65
Minor	_____	Silver King Mine Road	_____	-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	**420**	150	**105**
2 or more		2 or more	600	420	200	140
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 105	Both Meet
12:00 AM	1:00 AM	14.64011	0.1243179	N	N	N
1:00 AM	2:00 AM	16.89244	0.2308761	N	N	N
2:00 AM	3:00 AM	24.77557	0.3374343	N	N	N
3:00 AM	4:00 AM	42.79417	0.5505508	N	N	N
4:00 AM	5:00 AM	100.2285	1.4030164	N	N	N
5:00 AM	6:00 AM	266.9005	4.0669717	N	N	N
6:00 AM	7:00 AM	395.283	4.6708016	N	N	N
7:00 AM	8:00 AM	498.89	4.9904762	Y	N	N
8:00 AM	9:00 AM	648.6696	5.1680732	Y	N	N
9:00 AM	10:00 AM	686.9591	5.0259956	Y	N	N
10:00 AM	11:00 AM	778.1782	5.4699881	Y	N	N
11:00 AM	12:00 PM	787.1875	6.1448568	Y	N	N
12:00 PM	1:00 PM	926.8317	6.8907643	Y	N	N
1:00 PM	2:00 PM	1065.35	6.6776478	Y	N	N
2:00 PM	3:00 PM	1020.303	6.1448568	Y	N	N
3:00 PM	4:00 PM	1129.541	6.7486867	Y	N	N
4:00 PM	5:00 PM	1118.279	7.4590747	Y	N	N
5:00 PM	6:00 PM	850.2526	6.4467717	Y	N	N
6:00 PM	7:00 PM	848.0003	7.3880359	Y	N	N
7:00 PM	8:00 PM	631.7771	5.7719031	Y	N	N
8:00 PM	9:00 PM	442.5818	3.6407389	Y	N	N
9:00 PM	10:00 PM	372.7598	2.9836299	N	N	N
10:00 PM	11:00 PM	257.8912	2.202203	N	N	N
11:00 PM	12:00 AM	109.2378	0.8169463	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	**630**	75	**53**
2 or more		2 or more	900	630	100	70
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria Major	Minor	
Begin	End	Major	Minor	>= 630	> = 53	Both Meet
12:00 AM	1:00 AM	14.64011	0.1243179	N	N	N
1:00 AM	2:00 AM	16.89244	0.2308761	N	N	N
2:00 AM	3:00 AM	24.77557	0.3374343	N	N	N
3:00 AM	4:00 AM	42.79417	0.5505508	N	N	N
4:00 AM	5:00 AM	100.2285	1.4030164	N	N	N
5:00 AM	6:00 AM	266.9005	4.0669717	N	N	N
6:00 AM	7:00 AM	395.283	4.6708016	N	N	N
7:00 AM	8:00 AM	498.89	4.9904762	N	N	N
8:00 AM	9:00 AM	648.6696	5.1680732	Y	N	N
9:00 AM	10:00 AM	686.9591	5.0259956	Y	N	N
10:00 AM	11:00 AM	778.1782	5.4699881	Y	N	N
11:00 AM	12:00 PM	787.1875	6.1448568	Y	N	N
12:00 PM	1:00 PM	926.8317	6.8907643	Y	N	N
1:00 PM	2:00 PM	1065.35	6.6776478	Y	N	N
2:00 PM	3:00 PM	1020.303	6.1448568	Y	N	N
3:00 PM	4:00 PM	1129.541	6.7486867	Y	N	N
4:00 PM	5:00 PM	1118.279	7.4590747	Y	N	N
5:00 PM	6:00 PM	850.2526	6.4467717	Y	N	N
6:00 PM	7:00 PM	848.0003	7.3880359	Y	N	N
7:00 PM	8:00 PM	631.7771	5.7719031	Y	N	N
8:00 PM	9:00 PM	442.5818	3.6407389	N	N	N
9:00 PM	10:00 PM	372.7598	2.9836299	N	N	N
10:00 PM	11:00 PM	257.8912	2.202203	N	N	N
11:00 PM	12:00 AM	109.2378	0.8169463	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This wa is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 1

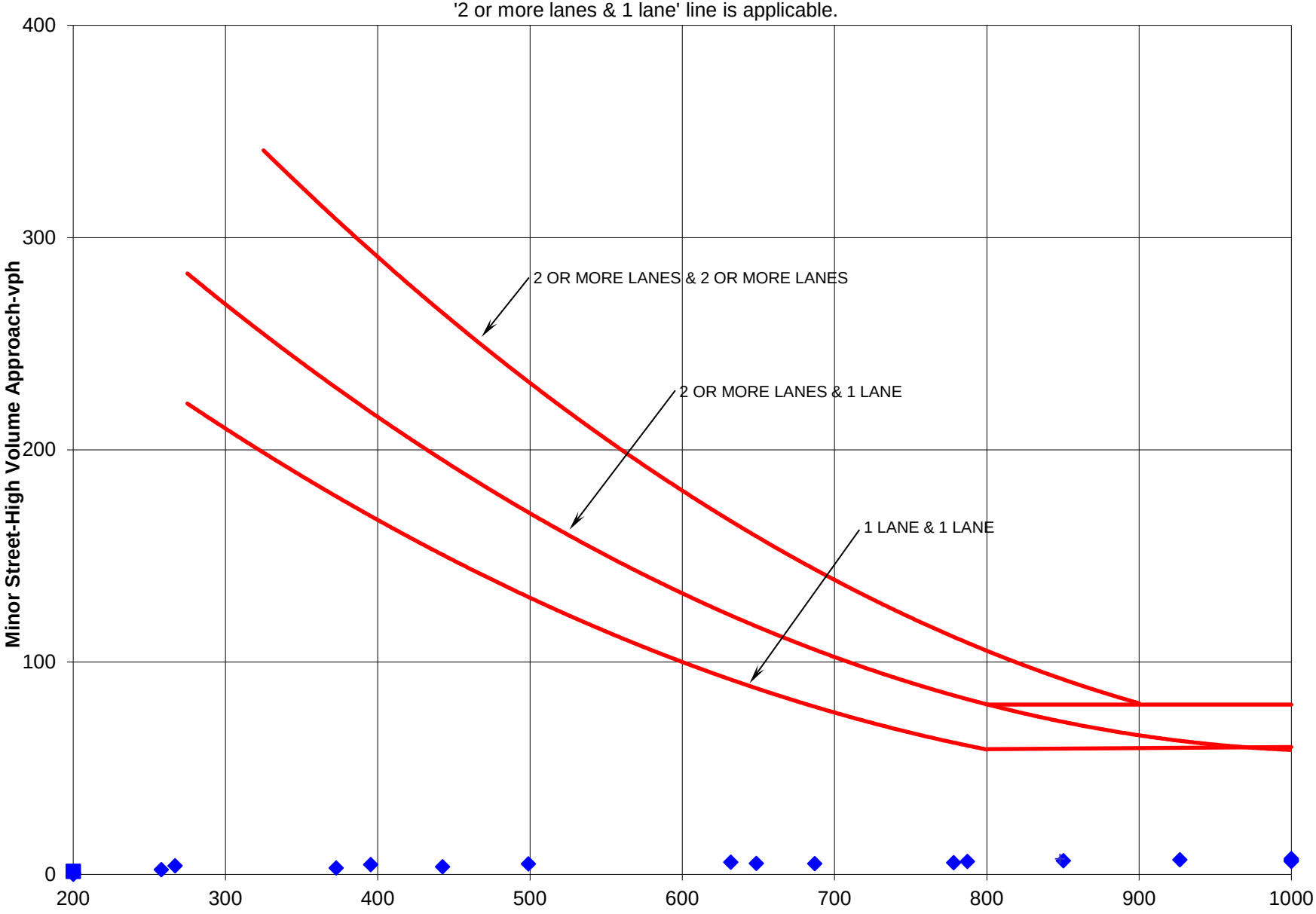
Use Figure: 4C-2 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	109.2377547	0.81694628	-	-	-	-	N	-
2	14.64011145	0.12431791	-	-	-	-	N	-
3	16.89243629	0.23087612	-	-	-	-	N	-
4	24.77557322	0.33743433	-	-	-	-	N	-
5	42.79417193	0.55055075	-	-	-	-	N	-
6	100.2284553	1.40301644	-	-	-	-	N	-
7	266.9004934	4.06697169	-	-	-	-	N	-
8	395.2830092	4.67080155	-	-	-	-	N	-
9	498.8899517	4.99047618	-	-	-	-	N	-
10	648.6695535	5.1680732	-	-	-	-	N	-
11	686.9590758	5.02599559	-	-	-	-	N	-
12	778.1782317	5.46998813	-	-	-	-	N	-
13	787.1875311	6.1448568	-	-	-	-	N	-
14	926.8316711	6.89076427	-	-	-	-	N	-
15	1065.349649	6.67764785	-	-	-	-	N	-
16	1020.303152	6.1448568	-	-	-	-	N	-
17	1129.540907	6.74868665	-	-	-	-	N	-
18	1118.279282	7.45907472	-	-	-	-	N	-
19	850.2526265	6.44677173	-	-	-	-	N	-
20	848.0003017	7.38803592	-	-	-	-	N	-
21	631.7771172	5.77190306	-	-	-	-	N	-
22	442.5818308	3.64073885	-	-	-	-	N	-
23	372.7597608	2.98362989	-	-	-	-	N	-
24	257.891194	2.20220301	-	-	-	-	N	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 1 lane' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2027 Without Project

Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	65 *mph*
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Silver King Mine Road
Direction:	N/S
# of NB Lanes:	1
# of SB Lanes:	1
85th percentile speed:	25 *mph*
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry
	Smooth

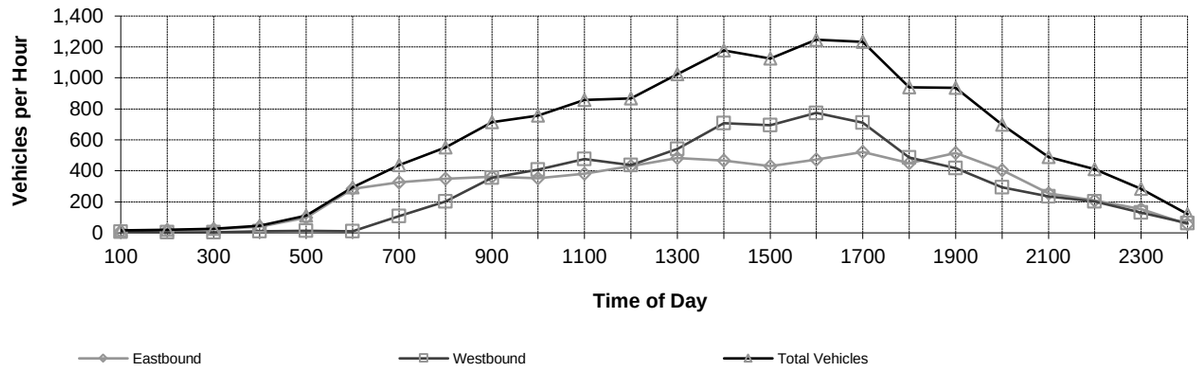
Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Silver King Mine Road**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **14,391**



Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	9		7	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	16		2	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	24		4	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	39		9	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	98		12	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	285		10	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	327		109	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	349		201	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	362		354	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	352		407	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	383		476	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	430		439	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	482		541	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	468		709	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	430		696	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	472		775	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	522		712	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	451		487	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	517		419	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	404		293	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	255		234	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	209		203	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	154		131	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	57		63	
	7,096		7,295	
24-Hour Volume			14,391	

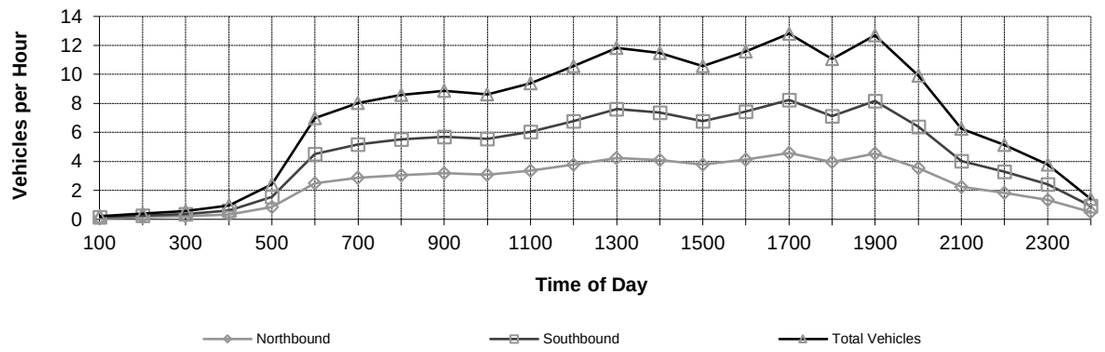
Equipment ID#:

Automated Traffic Counts

Street: **Silver King Mine Road**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **174**



Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		0	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		0	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		0	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		1	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	1		2	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	2		4	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	3		5	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	3		6	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	3		6	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	3		6	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	3		6	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	4		7	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM	4		8	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM	4		7	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM	4		7	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM	4		7	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM	5		8	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM	4		7	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM	5		8	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM	4		6	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM	2		4	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM	2		3	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM	1		2	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM	1		1	
	62		112	
24-Hour Volume			174	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2027 Without Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Speed
Major	_____	US 60	_____	-	65
Minor	_____	Silver King Mine Road	_____	-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	**420**	150	**105**
2 or more		2 or more	600	420	200	140
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 105	Both Meet
12:00 AM	1:00 AM	16.16387	0.137257	N	N	N
1:00 AM	2:00 AM	18.65061	0.2549059	N	N	N
2:00 AM	3:00 AM	27.35423	0.3725548	N	N	N
3:00 AM	4:00 AM	47.24822	0.6078525	N	N	N
4:00 AM	5:00 AM	110.6603	1.5490435	N	N	N
5:00 AM	6:00 AM	294.6797	4.4902654	N	N	N
6:00 AM	7:00 AM	436.4244	5.1569423	Y	N	N
7:00 AM	8:00 AM	550.8148	5.509889	Y	N	N
8:00 AM	9:00 AM	716.1836	5.7059704	Y	N	N
9:00 AM	10:00 AM	758.4583	5.5491052	Y	N	N
10:00 AM	11:00 AM	859.1716	6.0393089	Y	N	N
11:00 AM	12:00 PM	869.1186	6.7844184	Y	N	N
12:00 PM	1:00 PM	1023.297	7.6079605	Y	N	N
1:00 PM	2:00 PM	1176.232	7.3726628	Y	N	N
2:00 PM	3:00 PM	1126.497	6.7844184	Y	N	N
3:00 PM	4:00 PM	1247.104	7.4510954	Y	N	N
4:00 PM	5:00 PM	1234.671	8.2354212	Y	N	N
5:00 PM	6:00 PM	938.7476	7.1177569	Y	N	N
6:00 PM	7:00 PM	936.2609	8.1569886	Y	N	N
7:00 PM	8:00 PM	697.533	6.3726474	Y	N	N
8:00 PM	9:00 PM	488.6461	4.0196699	Y	N	N
9:00 PM	10:00 PM	411.5569	3.2941685	N	N	N
10:00 PM	11:00 PM	284.7327	2.4314101	N	N	N
11:00 PM	12:00 AM	120.6073	0.9019747	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major Street		Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	**630**	75	**53**
2 or more		2 or more	900	630	100	70
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria Major	Minor	
Begin	End	Major	Minor	>= 630	> = 53	Both Meet
12:00 AM	1:00 AM	16.16387	0.137257	N	N	N
1:00 AM	2:00 AM	18.65061	0.2549059	N	N	N
2:00 AM	3:00 AM	27.35423	0.3725548	N	N	N
3:00 AM	4:00 AM	47.24822	0.6078525	N	N	N
4:00 AM	5:00 AM	110.6603	1.5490435	N	N	N
5:00 AM	6:00 AM	294.6797	4.4902654	N	N	N
6:00 AM	7:00 AM	436.4244	5.1569423	N	N	N
7:00 AM	8:00 AM	550.8148	5.509889	N	N	N
8:00 AM	9:00 AM	716.1836	5.7059704	Y	N	N
9:00 AM	10:00 AM	758.4583	5.5491052	Y	N	N
10:00 AM	11:00 AM	859.1716	6.0393089	Y	N	N
11:00 AM	12:00 PM	869.1186	6.7844184	Y	N	N
12:00 PM	1:00 PM	1023.297	7.6079605	Y	N	N
1:00 PM	2:00 PM	1176.232	7.3726628	Y	N	N
2:00 PM	3:00 PM	1126.497	6.7844184	Y	N	N
3:00 PM	4:00 PM	1247.104	7.4510954	Y	N	N
4:00 PM	5:00 PM	1234.671	8.2354212	Y	N	N
5:00 PM	6:00 PM	938.7476	7.1177569	Y	N	N
6:00 PM	7:00 PM	936.2609	8.1569886	Y	N	N
7:00 PM	8:00 PM	697.533	6.3726474	Y	N	N
8:00 PM	9:00 PM	488.6461	4.0196699	N	N	N
9:00 PM	10:00 PM	411.5569	3.2941685	N	N	N
10:00 PM	11:00 PM	284.7327	2.4314101	N	N	N
11:00 PM	12:00 AM	120.6073	0.9019747	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This wa is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 1

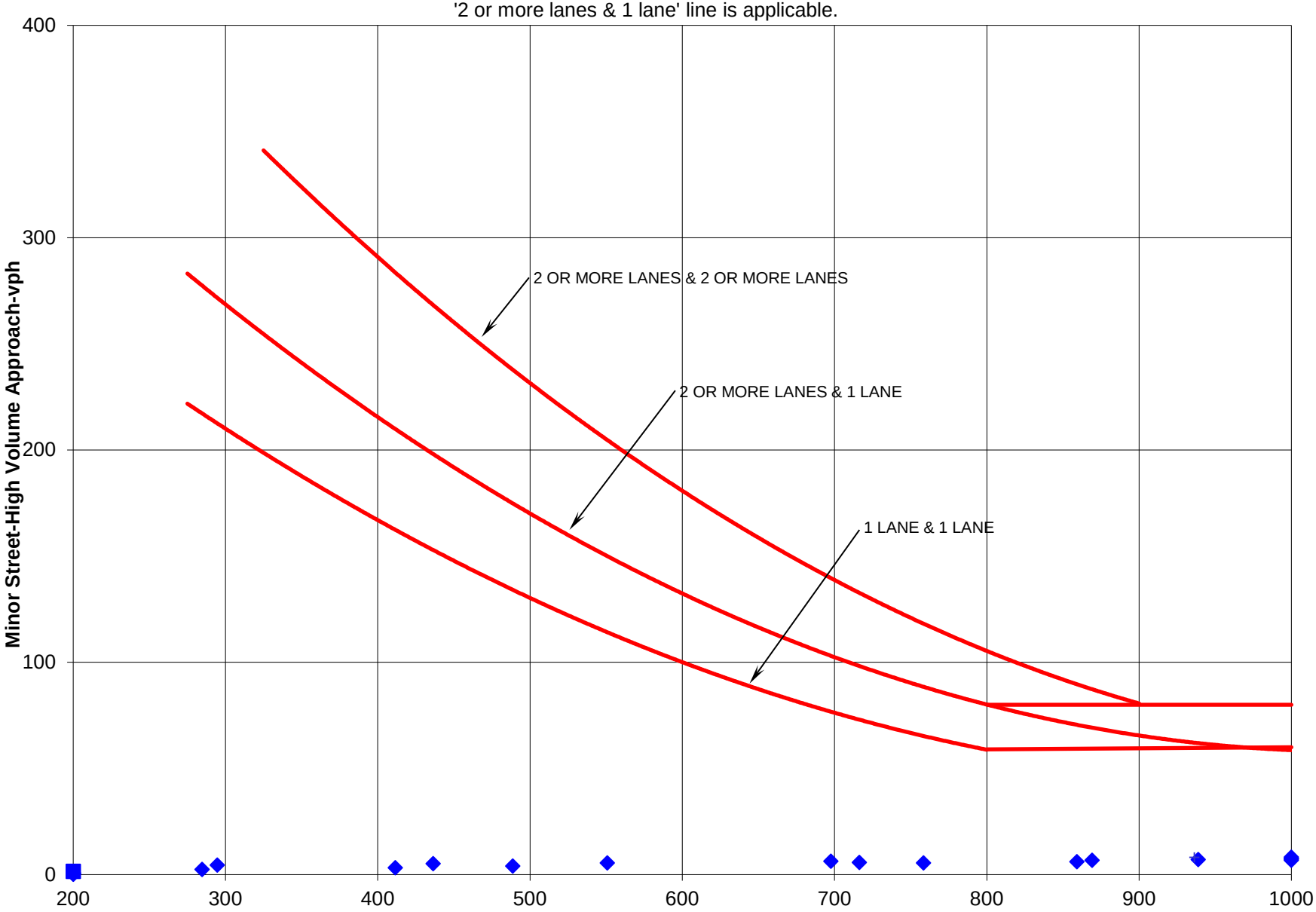
Use Figure: 4C-2 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	120.6073079	0.9019747	-	-	-	-	N	-
2	16.16386601	0.13725702	-	-	-	-	N	-
3	18.65061463	0.25490589	-	-	-	-	N	-
4	27.35423478	0.37255477	-	-	-	-	N	-
5	47.24822372	0.60785252	-	-	-	-	N	-
6	110.6603134	1.54904351	-	-	-	-	N	-
7	294.6797111	4.49026538	-	-	-	-	N	-
8	436.4243822	5.15694233	-	-	-	-	N	-
9	550.8148186	5.50988895	-	-	-	-	N	-
10	716.1836016	5.70597041	-	-	-	-	N	-
11	758.4583281	5.54910525	-	-	-	-	N	-
12	859.1716471	6.03930889	-	-	-	-	N	-
13	869.1186416	6.78441843	-	-	-	-	N	-
14	1023.297056	7.60796055	-	-	-	-	N	-
15	1176.232096	7.3726628	-	-	-	-	N	-
16	1126.497123	6.78441843	-	-	-	-	N	-
17	1247.104431	7.45109538	-	-	-	-	N	-
18	1234.670688	8.23542121	-	-	-	-	N	-
19	938.7476028	7.1177569	-	-	-	-	N	-
20	936.2608542	8.15698863	-	-	-	-	N	-
21	697.532987	6.37264737	-	-	-	-	N	-
22	488.6461032	4.01966988	-	-	-	-	N	-
23	411.5568961	3.29416848	-	-	-	-	N	-
24	284.7327166	2.43141007	-	-	-	-	N	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 1 lane' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2022 With Project

Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	65 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Silver King Mine Road
Direction:	N/S
# of NB Lanes:	1
# of SB Lanes:	1
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry
	Smooth

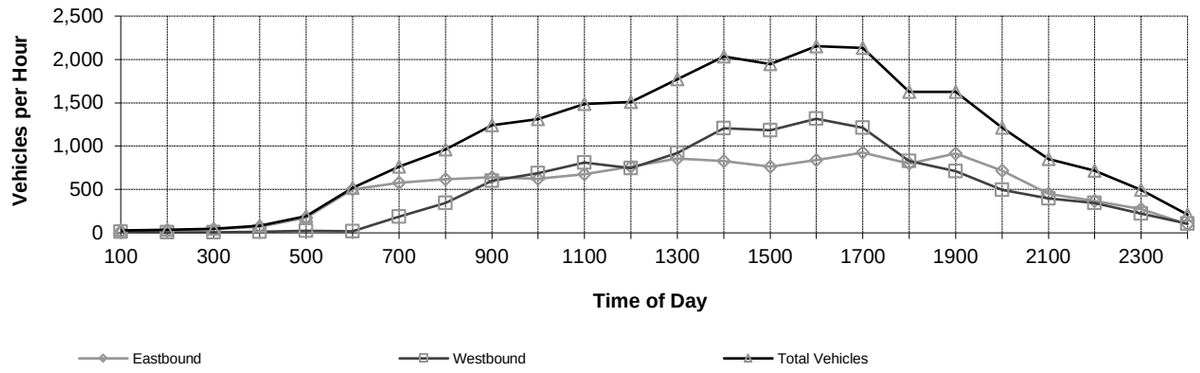
Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Silver King Mine Road**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **24,954**



Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	15		13	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	29		4	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	42		6	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	68		15	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	174		21	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	504		17	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	579		186	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	619		342	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	641		602	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	623		690	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	678		809	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	762		745	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	854		918	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	828		1203	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	762		1182	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	837		1315	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	925		1210	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	799		828	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	916		712	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	716		498	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	451		397	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	370		344	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	273		222	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	101		108	
	12,567		12,387	
24-Hour Volume	24,954			

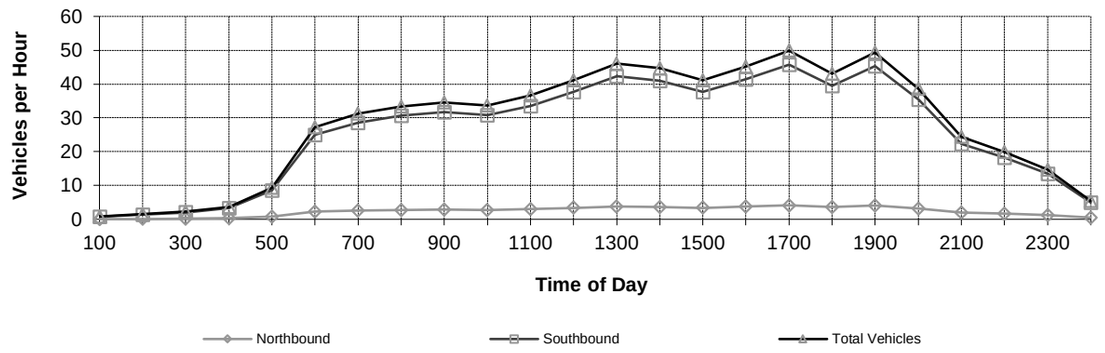
Equipment ID#:

Automated Traffic Counts

Street: **Silver King Mine Road**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **678**



Time	Northbound		Southbound		Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds		Vehicles	Peds	Vehicles	Peds
12:00 AM					12:00 PM				
12:15 AM					12:59 PM				
12:30 AM					12:30 PM				
12:45 AM					12:45 PM				
1:00 AM	0		1		1:00 PM	4		42	
1:15 AM					1:59 PM				
1:30 AM					1:30 PM				
1:45 AM					1:45 PM				
2:00 AM	0		1		2:00 PM	4		41	
2:15 AM					2:59 PM				
2:30 AM					2:30 PM				
2:45 AM					2:45 PM				
3:00 AM	0		2		3:00 PM	3		38	
3:15 AM					3:59 PM				
3:30 AM					3:30 PM				
3:45 AM					3:45 PM				
4:00 AM	0		3		4:00 PM	4		41	
4:15 AM					4:59 PM				
4:30 AM					4:30 PM				
4:45 AM					12:00 AM				
5:00 AM	1		9		5:00 PM	4		46	
5:15 AM					5:59 PM				
5:30 AM					5:30 PM				
5:45 AM					5:45 PM				
6:00 AM	2		25		6:00 PM	4		40	
6:15 AM					6:59 PM				
6:30 AM					6:30 PM				
6:45 AM					6:45 PM				
7:00 AM	3		29		7:00 PM	4		45	
7:15 AM					7:59 PM				
7:30 AM					7:30 PM				
7:45 AM					7:45 PM				
8:00 AM	3		31		8:00 PM	3		35	
8:15 AM					8:59 PM				
8:30 AM					8:30 PM				
8:45 AM					8:45 PM				
9:00 AM	3		32		9:00 PM	2		22	
9:15 AM					9:59 PM				
9:30 AM					9:30 PM				
9:45 AM					9:45 PM				
10:00 AM	3		31		10:00 PM	2		18	
10:15 AM					10:59 PM				
10:30 AM					10:30 PM				
10:45 AM					10:45 PM				
11:00 AM	3		34		11:00 PM	1		14	
11:15 AM					11:59 PM				
11:30 AM					11:30 PM				
11:45 AM					11:45 PM				
12:00 PM	3		38		12:00 AM	0		5	
						56		621	
								24-Hour Volume	678

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2022 With Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Speed
Major	_____	US 60	_____	-	65
Minor	_____	Silver King Mine Road	_____	-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	**420**	150	**105**
2 or more		2 or more	600	420	200	140
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 105	Both Meet
12:00 AM	1:00 AM	28.08224	0.7621311	N	N	N
1:00 AM	2:00 AM	32.84911	1.4153864	N	N	N
2:00 AM	3:00 AM	48.17265	2.0686416	N	N	N
3:00 AM	4:00 AM	83.04239	3.3751521	N	N	N
4:00 AM	5:00 AM	195.074	8.6011941	N	N	N
5:00 AM	6:00 AM	521.1565	24.932575	Y	N	N
6:00 AM	7:00 AM	764.9323	28.634355	Y	N	N
7:00 AM	8:00 AM	960.8077	30.594121	Y	N	N
8:00 AM	9:00 AM	1242.522	31.68288	Y	N	N
9:00 AM	10:00 AM	1313.582	30.811873	Y	N	N
10:00 AM	11:00 AM	1486.867	33.533769	Y	N	N
11:00 AM	12:00 PM	1507.205	37.671053	Y	N	N
12:00 PM	1:00 PM	1772.819	42.243839	Y	N	N
1:00 PM	2:00 PM	2031.425	40.937329	Y	N	N
2:00 PM	3:00 PM	1944.251	37.671053	Y	N	N
3:00 PM	4:00 PM	2152.134	41.372832	Y	N	N
4:00 PM	5:00 PM	2134.649	45.727867	Y	N	N
5:00 PM	6:00 PM	1626.981	39.521943	Y	N	N
6:00 PM	7:00 PM	1627.566	45.292364	Y	N	N
7:00 PM	8:00 PM	1213.936	35.384659	Y	N	N
8:00 PM	9:00 PM	848.3477	22.319554	Y	N	N
9:00 PM	10:00 PM	714.0891	18.291147	Y	N	N
10:00 PM	11:00 PM	494.7423	13.500608	Y	N	N
11:00 PM	12:00 AM	208.9716	5.0082902	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major Street		Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	**630**	75	**53**
2 or more		2 or more	900	630	100	70
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria Major	Minor	
Begin	End	Major	Minor	>= 630	> = 53	Both Meet
12:00 AM	1:00 AM	28.08224	0.7621311	N	N	N
1:00 AM	2:00 AM	32.84911	1.4153864	N	N	N
2:00 AM	3:00 AM	48.17265	2.0686416	N	N	N
3:00 AM	4:00 AM	83.04239	3.3751521	N	N	N
4:00 AM	5:00 AM	195.074	8.6011941	N	N	N
5:00 AM	6:00 AM	521.1565	24.932575	N	N	N
6:00 AM	7:00 AM	764.9323	28.634355	Y	N	N
7:00 AM	8:00 AM	960.8077	30.594121	Y	N	N
8:00 AM	9:00 AM	1242.522	31.68288	Y	N	N
9:00 AM	10:00 AM	1313.582	30.811873	Y	N	N
10:00 AM	11:00 AM	1486.867	33.533769	Y	N	N
11:00 AM	12:00 PM	1507.205	37.671053	Y	N	N
12:00 PM	1:00 PM	1772.819	42.243839	Y	N	N
1:00 PM	2:00 PM	2031.425	40.937329	Y	N	N
2:00 PM	3:00 PM	1944.251	37.671053	Y	N	N
3:00 PM	4:00 PM	2152.134	41.372832	Y	N	N
4:00 PM	5:00 PM	2134.649	45.727867	Y	N	N
5:00 PM	6:00 PM	1626.981	39.521943	Y	N	N
6:00 PM	7:00 PM	1627.566	45.292364	Y	N	N
7:00 PM	8:00 PM	1213.936	35.384659	Y	N	N
8:00 PM	9:00 PM	848.3477	22.319554	Y	N	N
9:00 PM	10:00 PM	714.0891	18.291147	Y	N	N
10:00 PM	11:00 PM	494.7423	13.500608	N	N	N
11:00 PM	12:00 AM	208.9716	5.0082902	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This wa is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 1

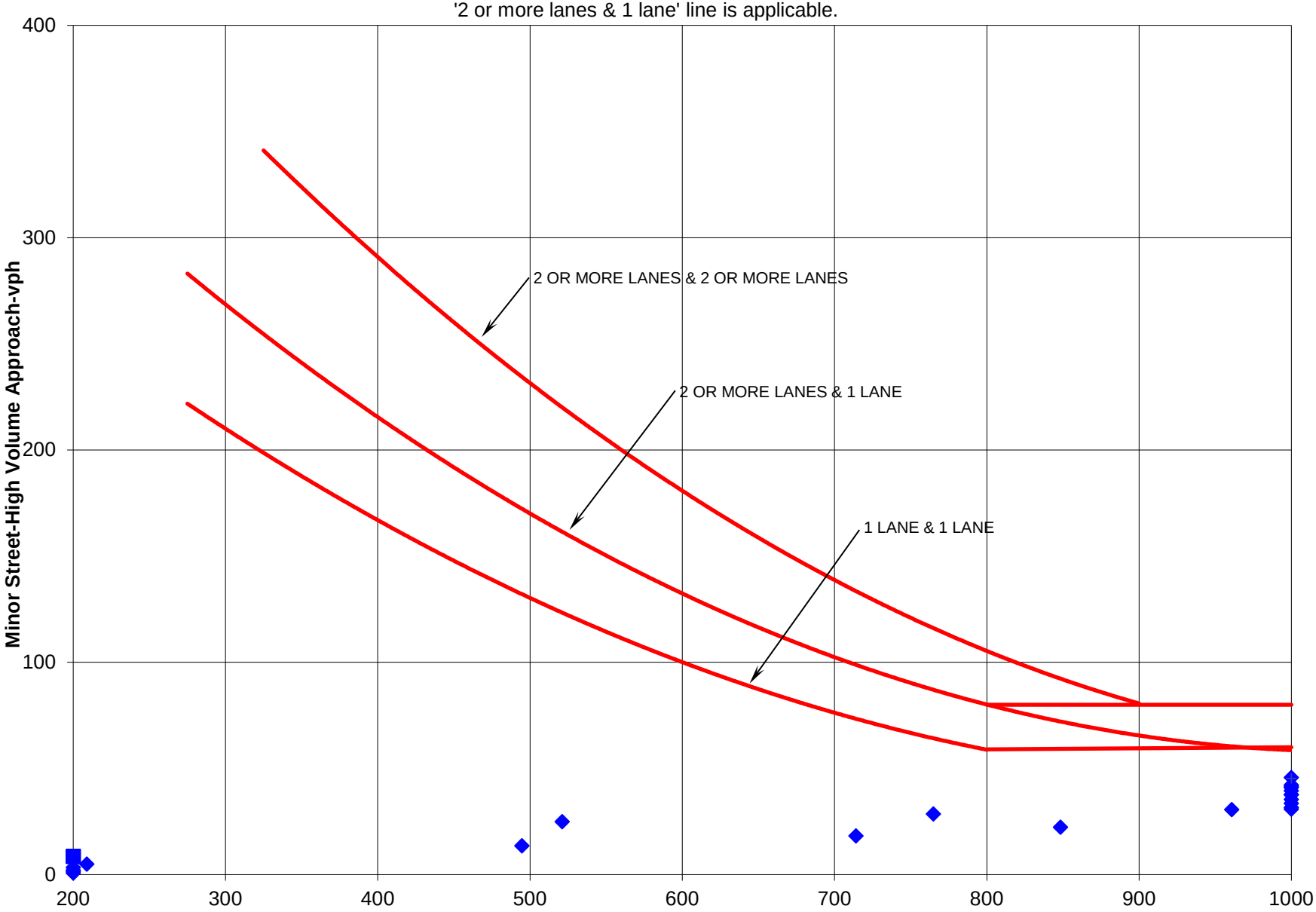
Use Figure: 4C-2 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	208.9715907	5.00829024	-	-	-	-	N	-
2	28.08224139	0.76213112	-	-	-	-	N	-
3	32.84911146	1.41538637	-	-	-	-	N	-
4	48.17265011	2.06864162	-	-	-	-	N	-
5	83.04239484	3.37515212	-	-	-	-	N	-
6	195.0740355	8.60119411	-	-	-	-	N	-
7	521.1564914	24.9325753	-	-	-	-	N	-
8	764.93235	28.6343551	-	-	-	-	N	-
9	960.8076598	30.5941208	-	-	-	-	N	-
10	1242.522048	31.6828796	-	-	-	-	N	-
11	1313.581791	30.8118726	-	-	-	-	N	-
12	1486.867333	33.5337695	-	-	-	-	N	-
13	1507.20462	37.6710527	-	-	-	-	N	-
14	1772.819419	42.2438394	-	-	-	-	N	-
15	2031.425061	40.9373289	-	-	-	-	N	-
16	1944.250699	37.6710527	-	-	-	-	N	-
17	2152.133884	41.3728324	-	-	-	-	N	-
18	2134.648565	45.7278674	-	-	-	-	N	-
19	1626.981215	39.5219426	-	-	-	-	N	-
20	1627.565671	45.2923639	-	-	-	-	N	-
21	1213.935858	35.3846593	-	-	-	-	N	-
22	848.3477406	22.3195543	-	-	-	-	N	-
23	714.0891339	18.291147	-	-	-	-	N	-
24	494.7422755	13.5006085	-	-	-	-	N	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 1 lane' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

General Description of Intersection

2027 With Project

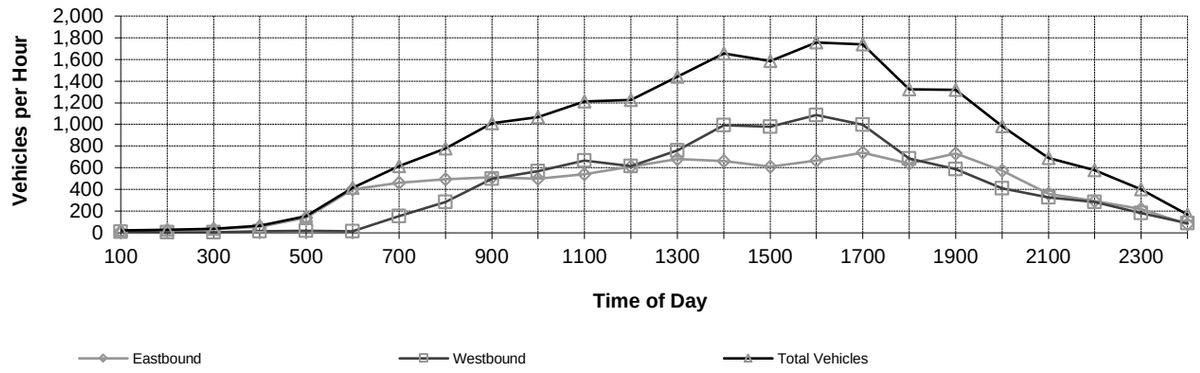
Project Number:	20010
Name of Major Roadway:	US 60
Direction:	E/W
# of EB Lanes:	2
# of WB Lanes:	2
85th percentile speed:	65 mph
Control #:	
Section #:	
Route #:	
Name of Minor Roadway:	Silver King Mine Road
Direction:	N/S
# of NB Lanes:	1
# of SB Lanes:	1
85th percentile speed:	25 mph
Control #:	
Section #:	
Route #:	
City:	Superior
Population:	4,000
County:	
District:	
Data Source:	24-hour approach
Date of Survey:	11/18/2016 *(press Ctrl + ;)*
Day of Week:	Friday
Weather:	Sunny
Surface Conditions:	Dry
	Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **US 60**
Location: **Silver King Mine Road**

City/State: **Superior, AZ**
Project #: **20010**
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**



24-Hour Volume: **20,281**

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	12		10	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	23		3	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	33		5	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	55		12	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	139		17	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	403		14	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	463		154	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	495		283	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	512		497	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	498		570	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	542		668	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	609		616	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	683		759	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	662		994	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	609		977	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	669		1087	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	739		1000	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	639		684	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	732		588	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	572		412	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	361		328	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	296		284	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	218		183	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	81		89	
	10,046		10,235	
24-Hour Volume			20,281	

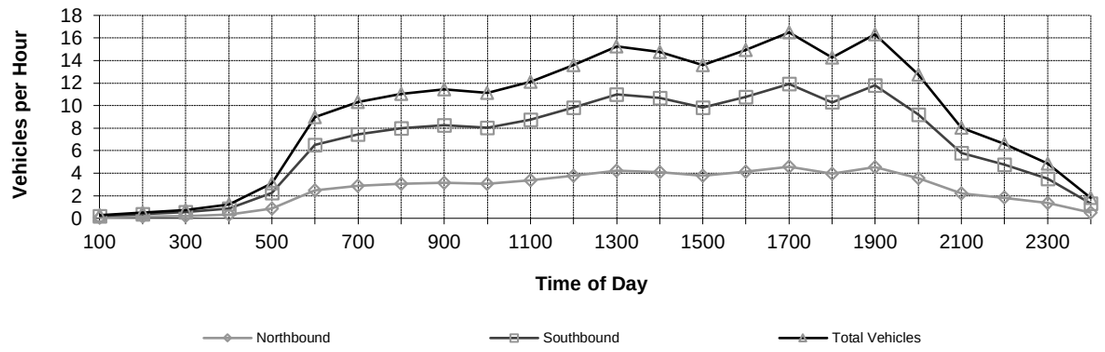
Equipment ID#:

Automated Traffic Counts

Street: **Silver King Mine Road**
Location: **US 60**

City/State: **Superior, AZ**
Project #:
Date: **11/18/2016**
Day of Week: **Friday**
Data Source: **24-hour approach**

24-Hour Volume: **224**



Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		0	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		0	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		1	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		1	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	1		2	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	2		6	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	3		7	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	3		8	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	3		8	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	3		8	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	3		9	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	4		10	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM	4		11	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM	4		11	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM	4		10	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM	4		11	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM	5		12	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM	4		10	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM	5		12	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM	4		9	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM	2		6	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM	2		5	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM	1		4	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM	1		1	
	62		162	
24-Hour Volume			224	

Equipment ID#:

TRAFFIC SURVEY - COUNT ANALYSIS

2009 MUTCD WARRANTS

2027 With Project

County: _____ **District No.:** _____

City: Superior **Population:** 4,000 **Survey Date:** 11/18/2016

	Route #	Name	Control	Section	85% Speed
Major	_____	US 60	_____	-	65
Minor	_____	Silver King Mine Road	_____	-	25

Warrant 1: Eight- Hour Volumes

Condition A

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major	Street	Minor Street	Urban	Rural*	Urban	Rural*
1		1	500	350	150	105
2 or more		1	600	**420**	150	**105**
2 or more		2 or more	600	420	200	140
1		2 or more	500	350	200	140

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 1

Time		Volume		Criteria		
				Major	Minor	
Begin	End	Major	Minor	>= 420	>= 105	Both Meet
12:00 AM	1:00 AM	22.78888	0.1985852	N	N	N
1:00 AM	2:00 AM	26.37265	0.3688011	N	N	N
2:00 AM	3:00 AM	38.67883	0.539017	N	N	N
3:00 AM	4:00 AM	66.78016	0.8794488	N	N	N
4:00 AM	5:00 AM	156.5072	2.241176	N	N	N
5:00 AM	6:00 AM	417.0607	6.4965734	N	N	N
6:00 AM	7:00 AM	616.469	7.4611302	Y	N	N
7:00 AM	8:00 AM	777.2457	7.9717779	Y	N	N
8:00 AM	9:00 AM	1009.42	8.255471	Y	N	N
9:00 AM	10:00 AM	1068.606	8.0285165	Y	N	N
10:00 AM	11:00 AM	1210.304	8.7377494	Y	N	N
11:00 AM	12:00 PM	1224.86	9.8157834	Y	N	N
12:00 PM	1:00 PM	1441.84	11.007295	Y	N	N
1:00 PM	2:00 PM	1656.221	10.666863	Y	N	N
2:00 PM	3:00 PM	1585.968	9.8157834	Y	N	N
3:00 PM	4:00 PM	1755.72	10.78034	Y	N	N
4:00 PM	5:00 PM	1738.907	11.915113	Y	N	N
5:00 PM	6:00 PM	1322.82	10.298062	Y	N	N
6:00 PM	7:00 PM	1320.168	11.801636	Y	N	N
7:00 PM	8:00 PM	983.7899	9.2200278	Y	N	N
8:00 PM	9:00 PM	688.8207	5.8157098	Y	N	N
9:00 PM	10:00 PM	580.0782	4.7660451	Y	N	N
10:00 PM	11:00 PM	401.4458	3.5177952	N	N	N
11:00 PM	12:00 AM	169.9416	1.3049885	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition A is not satisfied

Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

Number of Lanes			Major Street Both Approaches Required		Minor Street High Volume Approach Required	
Major Street		Minor Street	Urban	Rural*	Urban	Rural*
1		1	750	525	75	53
2 or more		1	900	**630**	75	**53**
2 or more		2 or more	900	630	100	70
1		2 or more	750	525	100	70

*Criteria when the 85th percentile speed is greater than 40 mph or when the population is less than 10,000

Warrant 2

Time		Volume		Criteria Major	Minor	
Begin	End	Major	Minor	>= 630	> = 53	Both Meet
12:00 AM	1:00 AM	22.78888	0.1985852	N	N	N
1:00 AM	2:00 AM	26.37265	0.3688011	N	N	N
2:00 AM	3:00 AM	38.67883	0.539017	N	N	N
3:00 AM	4:00 AM	66.78016	0.8794488	N	N	N
4:00 AM	5:00 AM	156.5072	2.241176	N	N	N
5:00 AM	6:00 AM	417.0607	6.4965734	N	N	N
6:00 AM	7:00 AM	616.469	7.4611302	N	N	N
7:00 AM	8:00 AM	777.2457	7.9717779	Y	N	N
8:00 AM	9:00 AM	1009.42	8.255471	Y	N	N
9:00 AM	10:00 AM	1068.606	8.0285165	Y	N	N
10:00 AM	11:00 AM	1210.304	8.7377494	Y	N	N
11:00 AM	12:00 PM	1224.86	9.8157834	Y	N	N
12:00 PM	1:00 PM	1441.84	11.007295	Y	N	N
1:00 PM	2:00 PM	1656.221	10.666863	Y	N	N
2:00 PM	3:00 PM	1585.968	9.8157834	Y	N	N
3:00 PM	4:00 PM	1755.72	10.78034	Y	N	N
4:00 PM	5:00 PM	1738.907	11.915113	Y	N	N
5:00 PM	6:00 PM	1322.82	10.298062	Y	N	N
6:00 PM	7:00 PM	1320.168	11.801636	Y	N	N
7:00 PM	8:00 PM	983.7899	9.2200278	Y	N	N
8:00 PM	9:00 PM	688.8207	5.8157098	Y	N	N
9:00 PM	10:00 PM	580.0782	4.7660451	N	N	N
10:00 PM	11:00 PM	401.4458	3.5177952	N	N	N
11:00 PM	12:00 AM	169.9416	1.3049885	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0

Hours Required: 8

Condition B is not satisfied

Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

This warrant is similar to Warrant 1A, except that the required traffic volumes must be present for at least four hours of an average day. The traffic volumes required are based on curves (Figure 4C-1) shown in the MUTCD.

*** The required traffic volumes for Warrant 2 do not meet for any one hour.**

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the major street. The peak hour delay warrant is satisfied when the following conditions exist for one hour (any four consecutive 15-minute periods) of an average weekday:

(1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**

(2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**

(3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**
***Part 2 - N/A**
***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

This warrant applies to traffic entering from the minor street which encounters undue delay crossing the main street. This wa is satisfied when the main street and side street traffic volumes satisfy the curves shown in Figure 4C-4 of the TMUTCD.

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

Required*	Existing
100 or more for each of any four hours	_____
OR	
190 or more during any one hour	_____

* For predominant pedestrian crossing speeds less than 3.5 ft/sec, the pedestrian volume may be reduced as much as 50 percent.

Gap Requirements

YES	NO	Is the nearest signal located more than 300 feet away?
YES	NO	For traffic flow which is not platooned, are there less than 60 gaps per hour of adequate length for the pedestrians to cross the street?

Warrant 4 is N/A.

Warrant 5: School Crossing

YES NO Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

YES NO Are the adjacent signals in a signal system?
YES NO Would the resultant spacing be 1000 feet or more?

Warrant 6 is N/A.

Warrant 7: Crash Experience

YES NO Is 80% or more of one of Warrants #1, #2, or #3 met?
YES NO Have there been more than five accidents susceptible to correction by a traffic signal in 12 months?

Warrant 7 is N/A.

Warrant 8: Roadway Network

YES NO Does the major street having an existing or immediately projected entering volume of > 1000 vehicles per hour of a typical weekday?

YES NO Do 5-year projected traffic volumes meet Warrants 1, 2, or 3?

YES NO Is there an entering traffic volume of at least 1000 vehicles per hour for each of any 5 hours on a Saturday or Sunday?

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

Warrants not applicable: 3, 4, 5, 6, 7, 8

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

85th % speed: > 40 mph
Population: < 10,000

Major Street Lanes: 2
Minor Street Lanes: 1

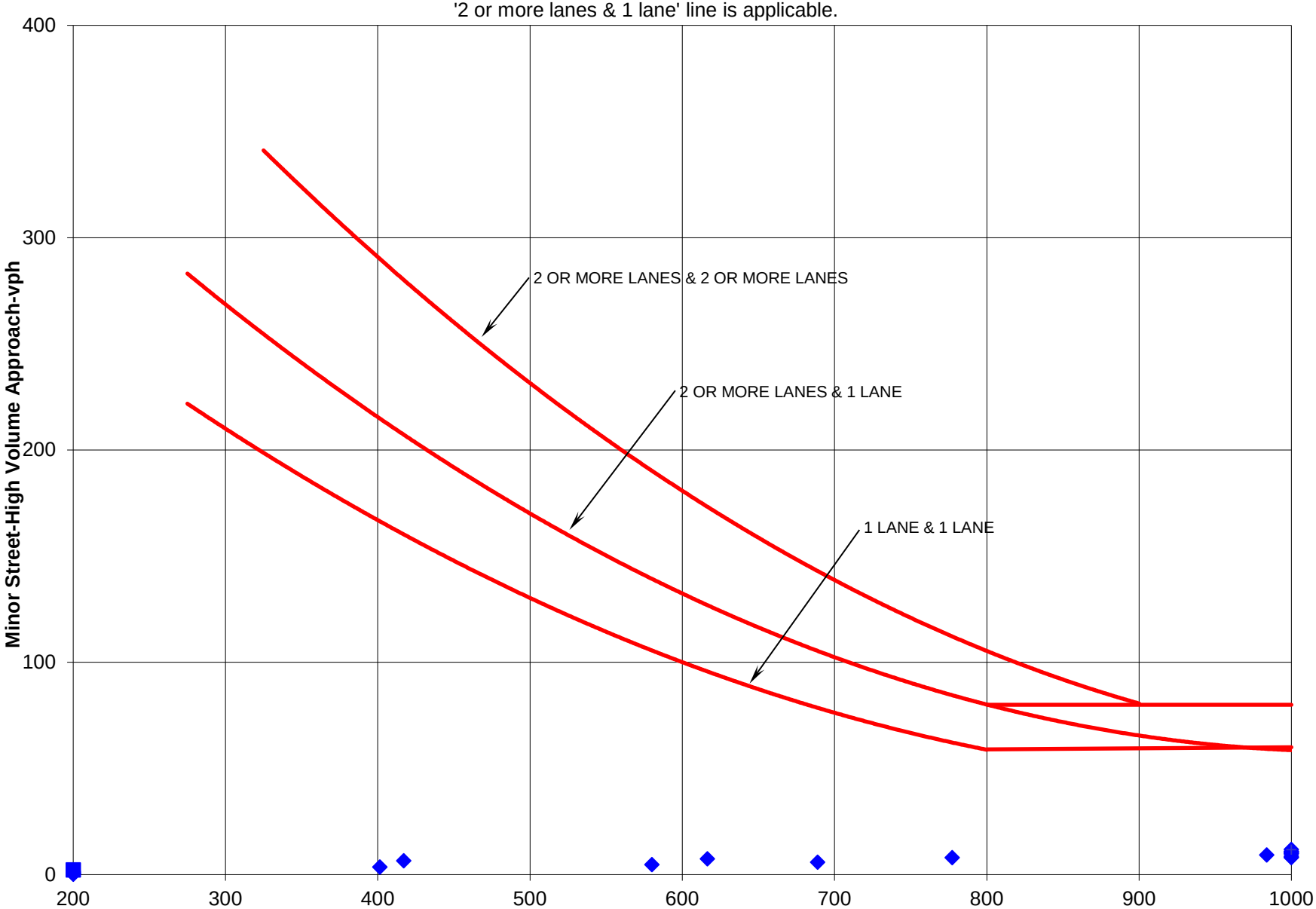
Use Figure: 4C-2 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	169.9416271	1.30498855	-	-	-	-	N	-
2	22.78887677	0.19858521	-	-	-	-	N	-
3	26.37264818	0.36880111	-	-	-	-	N	-
4	38.67883058	0.53901701	-	-	-	-	N	-
5	66.78015979	0.8794488	-	-	-	-	N	-
6	156.507208	2.24117598	-	-	-	-	N	-
7	417.0607487	6.49657342	-	-	-	-	N	-
8	616.4689592	7.46113017	-	-	-	-	N	-
9	777.2457427	7.97177786	-	-	-	-	N	-
10	1009.419887	8.25547102	-	-	-	-	N	-
11	1068.605872	8.02851649	-	-	-	-	N	-
12	1210.30396	8.7377494	-	-	-	-	N	-
13	1224.860262	9.81578342	-	-	-	-	N	-
14	1441.839704	11.0072947	-	-	-	-	N	-
15	1656.2214	10.6668629	-	-	-	-	N	-
16	1585.968077	9.81578342	-	-	-	-	N	-
17	1755.72009	10.7803402	-	-	-	-	N	-
18	1738.907315	11.9151128	-	-	-	-	N	-
19	1322.819885	10.2980618	-	-	-	-	N	-
20	1320.168382	11.8016356	-	-	-	-	N	-
21	983.7898936	9.22002778	-	-	-	-	N	-
22	688.8207439	5.81570983	-	-	-	-	N	-
23	580.0782043	4.76604513	-	-	-	-	N	-
24	401.4457686	3.51779521	-	-	-	-	N	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

Warrant 2

Figure 4C-2 Four Hour Volume Warrant (population<10,000 or >40 mph on major street)

'2 or more lanes & 1 lane' line is applicable.



* If data point is outside graph boundaries, it is plotted at the maximum shown value(s).

TRAFFIC IMPACT ANALYIS - ADDENDUM #1
RESOLUTION COPPER MINE PROJECT
SUPERIOR, ARIZONA

APPENDIX

Crash Data

2014-2018

IncidentID	IncidentDate	CollisionManner	TotalInjuries	TotalFatalities	InjurySeverity	Onroad	CrossingFeature	Offset
2818772	3/15/2014 0:00	4	0	0	1	US Highway 60	Main St	0.0379
3012714	10/7/2015 0:00	3	0	0	1	US Highway 60	Main St	0

LEGEND

CollisionManner

1 SINGLE_VEHICLE
2 ANGLE (front to side)(other than left turn)
3 LEFT_TURN
4 REAR_END
5 HEAD_ON
6 SIDESWIPE_SAME_DIRECTION
7 SIDESWIPE_OPPOSITE_DIRECTION
8 REAR_TO_SIDE
9 REAR_TO_REAR
10 U_TURN
97 OTHER
99 UNKNOWN

InjurySeverity

1 NO_INJURY
2 POSSIBLE_INJURY
3 SUSPECTED_MINOR_INJURY
4 SUSPECTED_SERIOUS_INJURY
5 FATAL
99 UNKNOWN