Public Works Department
102 Roadrunner Drive Sedona, AZ 86336
(928) 204-7111 · Fax: (928) 282-5348;
Hanako Ueda, EIT (928) 203-5024

PZ21-00007 (DEV)
Navajo Lofts (Traffic Impact Analysis Review)
06/17/21

Engineering Comments

1. Please consider a driveway connection at Cantabile St. The need for additional neighborhood connections has been identified in Sedona In Motion (SIM) 6.
2. Trip distribution – we find 20% of users to Aria St. high. Please adjust or justify.
3. TIA Section 6.5: Please analyze if a new right turn lane is warranted on westbound 89A at Southwest using ADOT TGP245 as guidance.
4. In section 3.6, the ADT for SR89A should not be reduced by 36%. Based on historic data, the volumes identified may be accurate, as we have observed higher than recent historical volumes in the area. The applicant should set up a meeting with ADOT NRT to review the traffic volumes and update the report accordingly. Any updated peak traffic volumes should be used for analysis.
5. All parking spaces must be at least 16' long with a 2' landscape overhang. ADA spaces shall be at least 11' wide.
6. Please conduct the signal warrant analysis using ADOT TGP611 for 2022 conditions without a reduction factor.
7. In section 6.3, ADOT TGP 611 should be used in concert with the MUTCD signal warrant analysis.
8. In section 6.4, ADOT TGP 640 should be used in concert with the MUTCD PHB warrant analysis.
9. In Table 4, the impacts to the State Highway are not mitigated. Under the average conditions, the SB movement on Southwest at SR 89A delay goes from C (acceptable) to D (not acceptable for state routes) per ADOT TGP 240. Under Peak Conditions, the SB movement increases in LOS F delay with the project and the NB movement also results in additional delays. Both of these conditions require mitigation. Please refer to SIM 10 for 89A improvements or include alternate justified mitigations.
10. The consultant should consider if any volume adjustments from Tortilla, Dry Creek, Andante or other connections would change if a traffic signal were installed at Southwest.

ARIZONA
TEXAS
NEW MEXICO
OKLAHOMA

August 13, 2021

Ms. Hanako Ueda
Assistant City Engineer
Sedona Public Works Department
102 Roadrunner Drive
Sedona, AZ 86336

RE: Lee Engineering Responses to 1st Navajo Lofts TIA Review (06/17/21)

Dear Ms. Ueda:

We have received and reviewed project comments received from your office on 6/22/21 (attached). The email contained 10 comments specific to the report. The following response directly addresses each comment, with similar text/explanation provided in the revised TIA report.

Comment 1. Site connection to Cantabile St.

Lee Engineering Response: This is not a specific TIA comment, but it is understood from the developer that this connection can't be accomplished. The site plan is to basically remain as previously presented.

Comment 2. Trip distribution – we find 20% of users to Aria St. high. Please adjust or justify.

Lee Engineering Response: A travel duration analysis was conducted indicating approximately 13% of the site would benefit from using Aria Street, if destined to/from SR 89A east. Including potential delays, 20% of site traffic to Aria Street is reasonable. No changes to distribution percentages were made.

Comment 3. TIA Section 6.5: Please analyze if a new right turn lane is warranted on westbound 89A at Southwest.

Lee Engineering Response: Analysis indicates a right-turn lane is warranted on westbound SR 89A.

Comment 4. In section 3.6, the ADT for SR89A should not be reduced by 36%. Based on historic data, the volumes identified may be accurate, as we have observed higher than recent historical volumes in the area. The applicant should set up a meeting with ADOT NRT to review the traffic volumes and update the report accordingly. Any updated peak traffic volumes should be used for analysis.

Lee Engineering Response: This comment was not discussed with ADOT. The report maintains the adjustment to "average conditions" and continue its presentation of both average and peak conditions.

Analysis was also maintained showing the results from both traffic scenarios. Conclusions and recommendations are based only on the peak condition.

Comment 5. All parking spaces must be at least 16' long with a 2' landscape overhang. ADA spaces shall be at least 11' wide.

Lee Engineering Response: A revised site plan has not been provided but, has been indicated by the developer that the parking space adjustments will be made. The report underscores this comment.

Comment 6. Please conduct the signal warrant analysis using ADOT TGP611 for 2022 conditions without a reduction factor.

Lee Engineering Response: The analysis presented in the report addresses the majority of requirements outlined in the ADOT document using the 2022 Peak Season volumes. Analysis of the corridor progression has not been conducted and signal timing data not obtained for the analysis. A more detailed analysis, outside of this TIA could be conducted, if it is agreed that signalized control is the preferred option at the SR 89A/Southwest Drive intersection.

Comment 7 & 8. In section 6.3, ADOT TGP 611 should be used in concert with the MUTCD signal warrant analysis. In section 6.4, ADOT TGP 640 should be used in concert with the MUTCD PHB warrant analysis.

Lee Engineering Response: Analysis using the previous ADOT TGP 611 evaluation form and the evaluation form found in TGP 640 has been completed and placed in the report appendix.

Comment 9. In Table 4, the impacts to the State Highway are not mitigated. Under the average conditions, the SB movement on Southwest at SR 89A delay goes from C (acceptable) to D (not acceptable for state routes) per ADOT TGP 240. Under Peak Conditions, the SB movement increases in LOS F delay with the project and the NB movement also results in additional delays. Both of these conditions require mitigation. Please refer to SIM 10 for 89A improvements or include alternate justified mitigations.

Lee Engineering Response: SIM 10 refers to a raised median within the SR 89A ROW, as well as access management considerations for existing business driveways that access SR 89A. Options within the STMP specifically identify options for this intersection that include a raised center median with a Pedestrian Hybrid Beacon or a two-sided signalized pedestrian crossing. Any physical mitigation to be implemented at this location appears to be well outside the boundaries for this developer to implement. However, analysis has been conducted to indicate: 1) signalized control would mitigate the poor operations, and; 2) a raised median forcing all side street approach movements to turn right would operate in an acceptable manner.

Comment 10. The consultant should consider if any volume adjustments from Tortilla, Dry Creek, Andante or other connections would change if a traffic signal were installed at Southwest.

Lee Engineering Response: The ability to quantify the number of vehicles that may utilized this intersection if signalized can't be estimated without more detailed information. It is assumed that very few vehicles would

be attracted to this location from the west but would likely attract some vehicles from Tortilla Drive that are turning east onto SR 89A. Little to no vehicles on SR 89A are anticipated to be attracted to this location if signalized.

Closure

If a further discussion of these comments/conclusions is needed, I can be reached at (602) 955-7206 or by email at pguzek@lee-eng.com.

Respectfully Submitted,

Paul Guzek, PE, PTOE
Lee Engineering, LLC

Navajo Lofts

Sedona, Arizona

Traffic Impact Analysis

Lee Engineering Project No. 1165.03

August 2021

Prepared for:

MK Company, Inc.
15010 N. 78th Way, Suite 109
Scottsdale, AZ 85260

Prepared by:

Lee Engineering, LLC
3610 N. 44th Street
Suite 100
Phoenix, AZ 85018
(602) 955-7206

LEE ENGINEERING

Traffic Impact Study

Navajo Lofts

Prepared for:

MK Company, Inc.

15010 N. 78th Way, Suite 109
Scottsdale, Arizona, 85260

Prepared by:

Lee Engineering

3610 N. 44th Street, Suite 100
Phoenix, Arizona, 85018

August 2021

1165.03

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1.0 INTRODUCTION AND SUMMARY

1.1 Introduction

Lee Engineering has prepared this report to present the results of our traffic analysis for the proposed Navajo Lofts residential development located northeast of the State Route 89A and Southwest Drive intersection at 10 Navajo Drive in Sedona, Arizona. The objective of this analysis is to prepare a traffic impact study as outlined in the City of Sedona's Land Development Code (LDC) to evaluate adjacent major intersections, site access conditions, and on-site vehicle and pedestrian circulation characteristics to ensure safe and efficient movement of all travel modes.

This report follows the report format outlined in the Arizona Department of Transportation *Polices, Guidelines, and Procedures*, Section 240.

1.2 Executive Summary

1.2.1 Site Location and Study Area

A residential development is proposed for an undeveloped 4.5-acre parcel (APN 480-24-536B) located northeast of the State Route 89A (SR 89A) and Southwest Drive intersection in Sedona, Arizona, at the address of 10 Navajo Drive.

The study area includes the following intersections:

- SR 89A and Southwest Drive
- Southwest Drive and Navajo Drive
- Site Driveways

1.2.2 Development Description

The Navajo Lofts residential development is to consist of 30 new duplex buildings to accommodate a total of 60 multi-family dwelling units, or 13.3 units per acre (60 units / 4.5 ac.). Access to the site is via two driveways, one onto Southwest Drive and one onto Aria Street. The proposed land use is best defined by the Institute of Transportation Engineers as Land Use Code #220 Multifamily Housing (Low-Rise).

1.2.3 Principal Findings

At opening year/build-out in 2022, the site is anticipated to generate 30 AM peak-hour trip ends (7 in, 23 out), 38 PM peak-hour trip end (24 in, 14 out), and a total of 413 new daily trip ends.

Intersection capacity analysis indicates the minor-street STOP controlled intersection at SR 89A and Southwest Drive will operate at acceptable service levels (LOS D or better) during average volume conditions in the AM and PM peak hours with the proposed Navajo Lofts traffic. During peak-season conditions, the southbound Southwest Drive approach and the business driveways on the

south side of SR 89A are anticipated to operate at LOS F conditions, although volume to capacity ratios below 0.80 indicate acceptable operations.

If delays at SR 89A/Southwest Drive become predictable and are perceived to be long, drivers can use the local street connectivity to access SR 89A at the traffic signals located at Andante Drive or Dry Creek Road.

Analysis indicates a traffic signal is not warranted at SR 89A and Southwest Drive.

Analysis indicates a pedestrian hybrid beacon is not warranted near Southwest Drive due to no pedestrian crossings at this location over a 24-hour period. However, the City's TMP shows a preference for a pedestrian crossing at or near this location due to demand that may not have been captured in this study. If a PHB is to be installed, the proposed development should not be responsible for its cost, design, or installation since desire for the crossing has been established without the proposed development and the subject site is expected to contribute a negligible pedestrian crossing volume.

The site's driveway at the Southwest/Navajo Drives intersection is offset to the north by approximately 30 feet; however, low-speed low-volume conditions and positive offset that prevents interlocking left-turn movements on the major street are beneficial, causing the driveway's location to be considered acceptable.

When drivers are exiting the site and looking to the south from the proposed site driveway at the intersection of Southwest Drive/Navajo Drive, the AASHTO required 240 feet of roadway visibility cannot be confirmed due to the uncertainty of analysis (scale of site plan, placement of image, other). The City and developer should validate at least 240 feet of roadway visibility can be provided to drivers before the driveway is operational.

1.2.4 Conclusions and Recommendations

It is recommended that minor-street STOP control be maintained at the intersection of SR 89A and Southwest Drive. At times of perceived elevated delays, drivers can use the local street connectivity to access the signals at Andante Drive or Dry Creek Road, if desired.

If a pedestrian hybrid beacon is to be installed on SR 89A near Southwest Drive, the proposed development should not be responsible for its cost, design, or installation since desire for the crossing has been established without the proposed development and the subject site is expected to contribute a negligible pedestrian crossing volume.

The City or developer should validate that adequate sight visibility is available at the proposed site driveway location onto Southwest Drive when looking to the south. If adequate visibility is not or cannot be provided, mitigation to the design, location, or restriction of vehicle movements should be considered prior to site opening.

2.0 PROPOSED DEVELOPMENT

2.1 Site Location

A residential development is proposed for an undeveloped 4.5-acre parcel (APN 480-24-536B) located northeast of the State Route 89A (SR 89A) and Southwest Drive intersection in Sedona, Arizona, at the address of 10 Navajo Drive.

The subject property has approximately 775 feet of frontage on the east side of Southwest and Navajo Drives beginning approximately 192 feet north of the SR 89A right-of-way line. The property's frontage extends north to Aria Street then east along Aria Street for approximately 230 feet to Symphony Way. The property line then turns south 682 feet then west 418 feet to its point of beginning. A vicinity map is provided in **Figure 1**.

2.2 Site Characteristics

A conceptual site layout plan for Navajo Lofts is provided in **Figure 2**. The site has the following characteristics:

- 30 new duplex buildings to accommodate a total of 60 multi-family dwelling units, equal to 13.3 units per acre (60 units / 4.5 ac.).
- All units have 1-car garages with 54 units having a space fronting their garage for tandem parking for 1 additional vehicle.
- Additional parking spaces include 5 ADA spaces and 6 regular parking spaces with a depth of 15'-6" excluding 2-foot landscape overhang.
- Access is provided from two proposed driveways, one at the intersection of Southwest Drive and Navajo Drive and the other onto Aria Street.
- Internal drive aisles are 26 feet in width.
- A sidewalk/public trail is provided around the perimeter of the site.
- Internal ADA path, sidewalks, bicycle rack, and other amenities are provided on-site.
- Anticipated site opening year is 2022, planned for development in a single construction phase.

Based on the information provided, the land use of the subject property is best defined by the Institute of Transportation Engineers Land Use Code #220 Multifamily Housing (Low-Rise).

Site Location

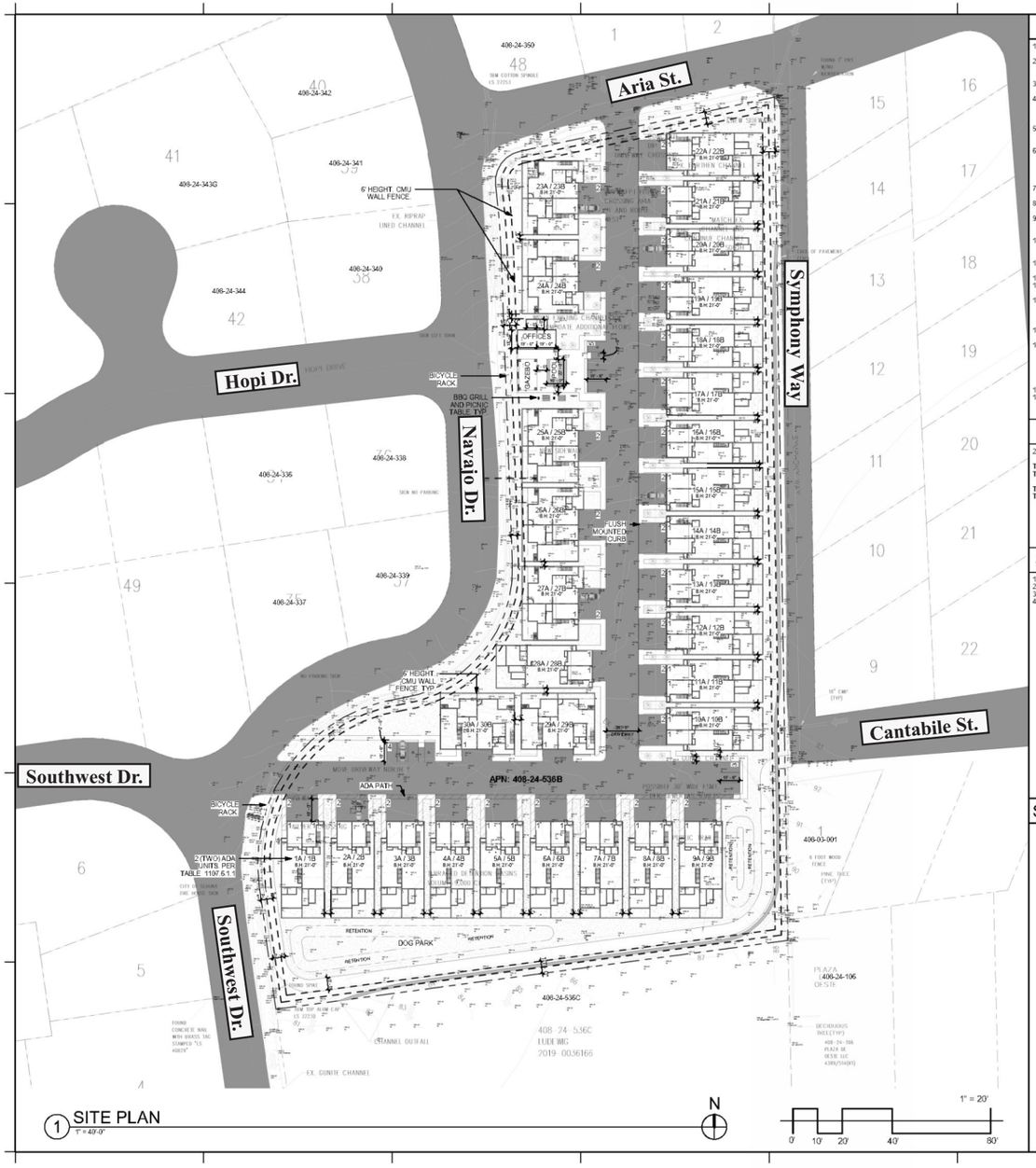
Enlargement

Not to scale

Vicinity Map

Figure 1

LEE ENGINEERING



1 SITE PLAN
1" = 40'-0"

SITE GENERAL NOTES:

1. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM WITH ALL APPLICABLE CODES AND ORDINANCES.
2. THIS PROJECT IS LOCATED IN THE CITY OF PHOENIX WATER SERVICES AREA AND HAS BEEN DESIGNATED AS HAVING AN ASSURED WATER SUPPLY.
3. ALL NEW OR RELOCATED UTILITIES WILL BE PLACED UNDERGROUND.
4. STRUCTURES AND LANDSCAPING WITHIN A TRIANGLE MEASURED BACK 10' FROM PROPERTY LINE AND 20' ALONG THE PROPERTY LINE ON EACH SIDE OF THE DRIVEWAYS ENTRANCES WILL BE MAINTAINED AT A MAXIMUM HEIGHT OF 3'.
5. STRUCTURES AND LANDSCAPING WITHIN A TRIANGLE, MEASURING 33' X 33' ALONG THE PROPERTY LINES WILL BE MAINTAINED AT THE MAXIMUM HEIGHT OF 3'.
6. AFTER FINAL APPROVAL, THE PROJECT WILL BE INSPECTED FOR ZONING COMPLIANCE DURING CONSTRUCTION AND PRIOR TO OCCUPANCY. THE APPLICANT IS TO NOTIFY DSD PRIOR TO OCCUPANCY TO ARRANGE FOR INSPECTION. CALL 602-262-6961 AND REQUEST A DESIGN REVIEW INSPECTION.
7. REFER TO LANDSCAPE PLAN, L1.1, FOR ADDITIONAL INFORMATION.
8. REFER TO CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR COORDINATION.
9. DUE TO SITE CONSTRAINTS, SITE DRAINAGE WILL BE COLLECTED AND REMOVED UNDERGROUND AT THE LOCATION OF THE PARKING AREAS, SEE CIVIL DRAWINGS.
10. DEMOLITION OF EXISTING SITE CONDITIONS, TO THE EXTENT NOT ASSOCIATED WITH NEW WORK, PROVIDED BY OWNER UNDER SEPARATE CONTRACT.
11. LIGHT FIXTURES ARE SURFACE-MOUNTED ON BUILDINGS, SEE ELEVATIONS.
12. FIRST FLOOR PLAN SHOWN LIGHT FOR CLARITY.
13. NEW BUILDINGS ARE ORIENTED TO TRUE NORTH-SOUTH, WHILE THE EXISTING SITE BOUNDARIES ARE ON ANGLES.
14. ALL EXISTING BROKEN, OR OUT OF GRADE CURB AND SIDEWALK ON THE PROJECT SITE WILL NEED TO BE REPLACED, AS WELL AS ANY NEW CURB OR SIDEWALK DAMAGED DURING CONSTRUCTION.
15. ALL VEHICLE AREAS MUST BE ON A PAVED SURFACE (ASPHALT OR CONCRETE) PER SECTION 702.B.3
16. ANY LIGHT WILL BE PLACED SO AS TO DIRECT LIGHT AWAY FROM ADJACENT RESIDENTIAL DISTRICTS AND WILL NOT EXCEED ONE FOOT CANDLE AT THE PROPERTY LINE. NO NOISE, ODOR, OR VIBRATION WILL BE EMITTED AT ANY LEVEL EXCEEDING THE GENERAL LEVEL OF NOISE, ODOR, OR VIBRATION EMITTED BY USES IN THE AREA OUTSIDE OF THE SITE.
17. EXISTING FENCE TO BE REMOVED.
18. GRAY AREA IS LIMITED TO CONSTRUCTION AREA.

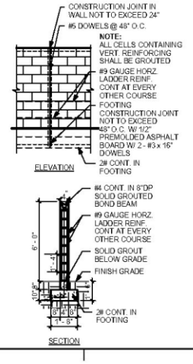
PARKING CALCULATIONS

2 PARKING SPACE PER UNIT:	60 UNITS X 2 =	120
TOTAL PARKING REQUIRED	=	120
TOTAL PARKING PROVIDED	=	126
TOTAL ADA PARKING REQUIRED	=	5 (PER 2018 IBC TABLE 1106.1)
TOTAL ADA PARKING PROVIDED	=	5

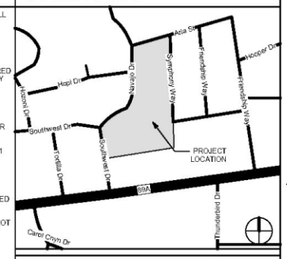
SITE AMENITIES

1 - BBQ GRILL AND PICNIC TABLE
2 - POOL
3 - DOG PARK
4 - BYCICLE RACK

SCREEN FENCE DETAIL:



VICINITY MAP



PROJECT NARRATIVE

THE SEDONA LOFT PROJECT WILL CONSIST OF THIRTY (30) NEW DUPLEX BUILDINGS PLACED ON THE PROPERTY AT 10 NAVAJO DR. SEDONA, ARIZONA 86336. TWO (2) BUILDING TYPES. BLDG. OPT. 1 WILL CONSIST OF 2,259 SQ. FT. BUILDING OPT. 2 WILL CONSIST OF 2,285 SQ. FT. EACH UNIT WILL HAVE AN ENCLOSED TWO (2) AND ONE (1) CAR GARAGE AND STORAGE.

PROJECT INFO

PROJECT DESCRIPTION:

SITE INFORMATION:

APN:	
ZONING:	406-24-536B
LOT SIZE (NET):	196,163 SQ. FT. = 4.50 AC.
SUBDIVISION:	N/A
LOT SALES:	NO
TOTAL SITE:	**196,163 SQ.FT.= 4.50 AC.**
OPEN SPACE AREA:	17,455 SQ. FT. = 0.40 AC. **17,455/196,163 = 8.90%**
NEW LANDSCAPE:	52,358 SQ. FT. = 1.20 AC.
SQ. FT. UNIT A:	2,009 SQ. FT.
SQ. FT. UNIT B:	2,157 SQ. FT.
SQ. FT. UNIT C:	1,866 SQ. FT.
SQ. FT. UNIT D:	2,115 SQ. FT.
FOOTPRINT - BLDG 1:	2,259 SQ. FT.
FOOTPRINT - BLDG 2:	2,285 SQ. FT.
# OF UNITS:	60 UNITS
# OF BLDGS:	30 BLDGS
UNIT TYPE:	TYPE-B

FLOOR AREA COVERAGE:

Opt. 1	2,259 x 7 =	15,813 S.F.
Opt. 2	2,285 x 23 =	52,555 S.F.
Offices	289 x 2 =	578 S.F.
Gazebo	375 x 1 =	375 S.F.
	69,321 / 196,163 =	35.33%

APPLICANT/DESIGN PROFESSIONAL:
KONTEXTURE
DANIEL ISTRATE
3334 N. 20TH. STREET
PHOENIX, AZ 85016
T. 602.875.6221
F. 602.875.6239
DANIEL.ISTRATE@KONTEXTURE.COM

OWNER / DEVELOPER:
MKC HOLDINGS LLC
15919 N 78TH WAY STE. 109
SCOTTSDALE, AZ. 85260

BUILDING CODES

International Building Code with Amendments	2018 IBC
International Mechanical Code with Amendments	2018 IMC
National Electrical Code/NFPA-70 with Amendments	2017 NEC
International Plumbing Code with Amendments	2018 IPC
International Energy Code with Amendments	2018 IECC
International Existing Building Code with Amendments	2018 IRC

SEDONA LOFTS
10 NAVAJO DR.
SEDONA, ARIZONA 86336

KONTEXTURE
architecture | interiors | urban planning

KONTEXTURE, LLC
ARCHITECT
3334 E. 20TH STREET
PHOENIX, AZ. 85016
602.875.6221

ISSUED FOR	REV	DATE

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

KEYPLAN

DRAWING TITLE
SITE PLAN

SCALE: As indicated

PROJECT NUMBER: 18-051

DRAWING NUMBER: **A0.2**

3.0 EXISTING CONDITIONS

3.1 Surrounding Land Use

The land uses neighboring the proposed Navajo Lofts development appear limited to mostly low trip-generating uses, including:

- East – The existing Harmony Hills residential subdivision.
- South – Undeveloped parcel.
- West – Southwest and Navajo Drives, small retail and commercial properties, and the Sedona-Red Rock Fire District (Station #1).
- North – Aria Street, a dental office, an undeveloped parcel, and residential properties.

3.2 Land Use and Zoning

The site is currently undeveloped and in its natural state. Per the Yavapai County Assessor's webpage, the parcel is zoned as CO (commercial).

3.3 Roadway Characteristics

State Route 89A. SR 89A is a 4-lane divided north-south roadway with a continuous center two-way left turn lane oriented on an east-west alignment near the subject site under ADOT jurisdiction but maintained by the city. The roadway is considered a principal arterial and is a major travel route connecting Sedona and Flagstaff in the east to Cottonwood and other places west and south. In the immediate area adjacent to the site, the roadway is scaled to have 11-foot travel lanes, bike lanes in each direction, and per Google Earth Street View imagery, has a relatively straight alignment with little vertical deflection near the Southwest Drive intersection. Detached sidewalks and decorative roadway lighting poles are located on each side of the street. The posted speed limit is 35 mph. Driveway curb cuts exist on both sides of the street serving local business while also accommodating numerous local street intersections. Traffic signals exist approximately 1,800 feet to the west and 1,600 feet to the east of Southwest Drive at Dry Creek Road and Andante Drive, respectively.

Southwest Drive. This is a local 2-lane roadway originating at SR 89A and continuing north for approximately 400 feet before turning to the west at its intersection with Navajo Drive. The roadway has a rural cross-section design with 12-foot travel lanes separated by a double yellow centerline. Driveways to local businesses exist on the west side of the street. No sidewalks, bike lanes, or roadway lighting exist. The road has a posted speed limit of 25 mph.

Navajo Drive. An 800-foot, 2-lane local north/south roadway originating at the Southwest Drive bend, terminating north of Aria Street at the Shadowbrook Apartments entrance. The roadway alignment shifts horizontally via an "S-curve" at its intersection with Southwest Drive. The roadway is marked with a solid double yellow centerline and white roadway edge lines to guide drivers around the curve section and separate the roadway from a local business parking area. No sidewalks, bike lanes, or roadway lighting exists. The road, as a continuation of Southwest Drive, has an assumed 25 mph speed limit.

Aria Street. A local 2-lane east-west residential street connecting to other residential roadways within the Harmony subdivision providing access to the SR89A/Andante Drive traffic signal.

3.4 Intersection Control

Currently, all study intersections have minor-street stop control.

3.5 Traffic Volumes

Historical Data

A review of historical traffic volumes on SR 89A from the ADOT Traffic Monitoring website, as shown in **Table 1**, indicates the following average annual daily traffic (AADT) volumes on SR 89A since 2018:

Table 1. Historical Traffic Volumes (SR 89A)

Location	Direction	2020	2019	2018
SR 89A East of Dry Creek Road	NB (EB)	10615	--	11355
	SB (WB)	9482	--	11476
	Total 2-way	20097	21654	22831

Additional information provided by ADOT for the 2019 AADT data indicates the SR 89A roadway segment between Dry Creek Road and Andante Drive has a K-factor (peak-hour factor) of 8%, a D-factor (directional distribution factor) of 56%, a T-factor (truck factor) of 9.9%, and a 2040 future daily traffic projection of 35,581 vehicles for a calculated growth rate of 2.4% per year. This rate is similar to the growth rate identified in the *Sedona Transportation Master Plan* (*STMP*, January 2018).

From review of the Sedona website, no side-street volumes on the local study-area residential streets are available.

3.6 Collected Intersection Volumes

Intersection turning movement counts were collected by Field Data Services (FDS) at the intersection of SR 89A and Southwest Drive on Wednesday, March 31, 2021, for a 24-hour period via traffic monitoring camera. As part of the traffic count, pedestrian and bicycle movements crossing each roadway approach were also recorded. A copy of the raw traffic count data is provided in the appendix. The results of the count indicate peak-hour traffic conditions occurred during typical commuter peak periods beginning at 8:00 AM and 4:00 PM. No vehicle movements were identified to or from the two business driveways near the Southwest Drive intersection on the south side of SR 89A. However, it is likely some vehicle in/out movements occur at these driveways and have some impact to the turn movement operation from Southwest Drive. Therefore, for traffic operational analysis purposes, nominal peak-hour turn volumes have been assumed from a combined driveway location on the south side of the street.

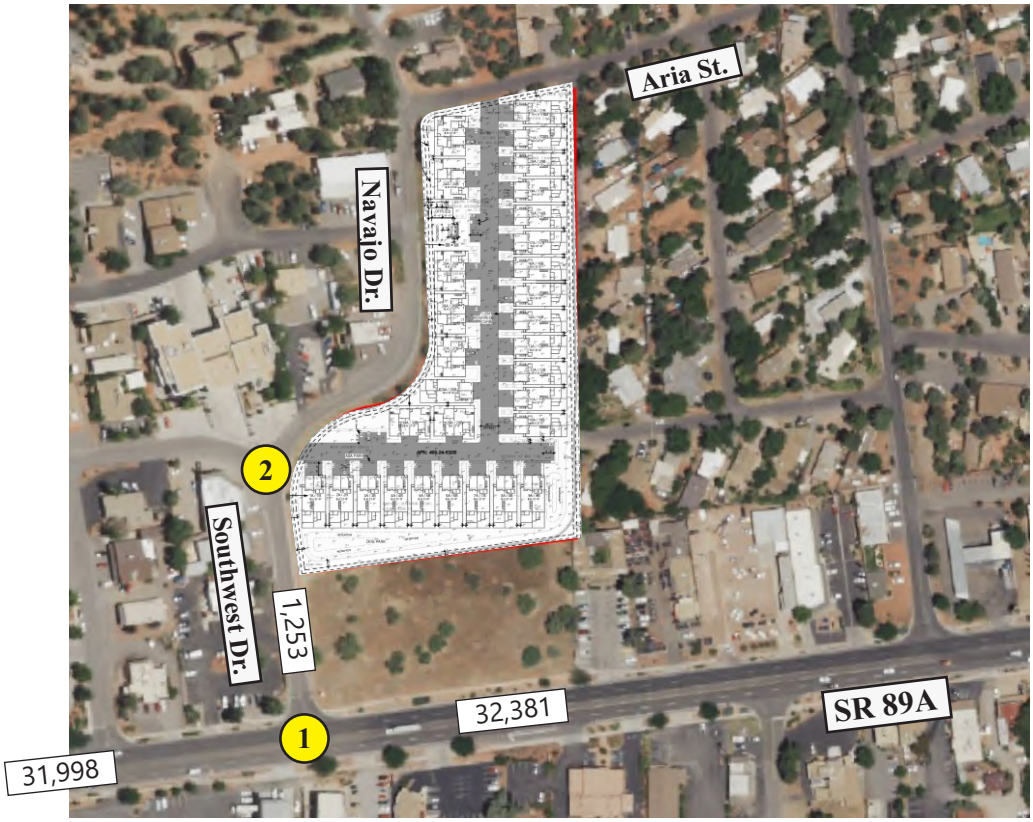
Counts were not conducted at the Southwest Drive and Navajo Drive intersection. However, to estimate traffic movements at this future site driveway location, vehicles were "flowed" from the SR 89A/Southwest Drive intersection and a 50/50 split between Southwest Drive and Navajo Drive assumed for all analysis periods.

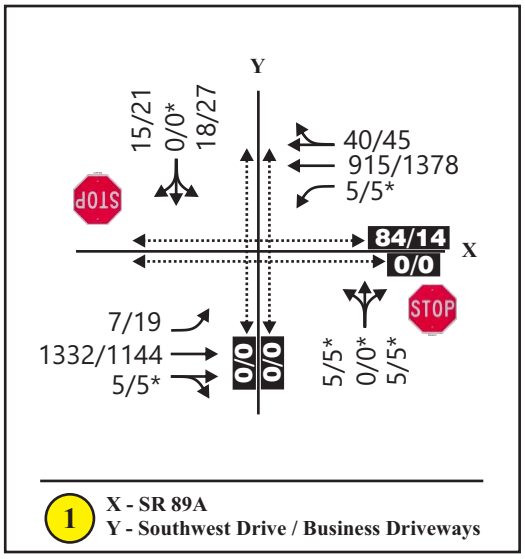
From discussion with the City Engineering Department, it was noted traffic volumes within the Sedona area are near seasonal peaks during the spring months. From the 24-hour traffic volumes collected on SR 89A west of Southwest Drive, a daily volume of 32,000 vehicles was identified. This calculates to a 59.2% increase in traffic compared to ADOT's 2020 AADT estimates (utilizing 2018 adjusted volumes), a concurrence of peak-season conditions.

For analysis purposes, two volume scenarios have been considered:

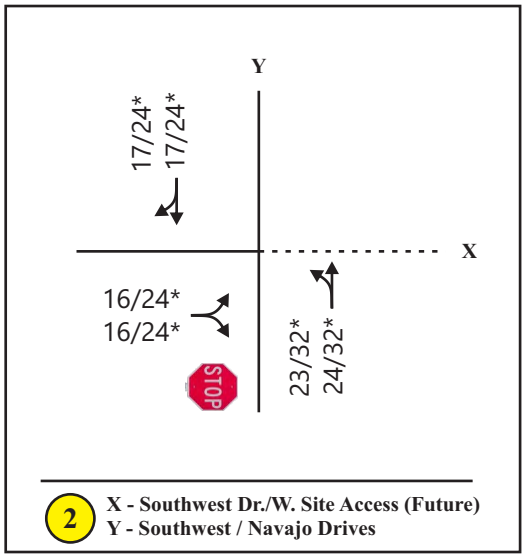
1. Peak Conditions. Volumes as collected by FDS without adjustment.
2. Average Conditions. Volumes as collected by FDS with SR 89A through volumes reduced by a factor of 0.64 to estimate 2021 AADT values (2020 AADT * 2.4% yearly growth).

The 2021 peak season vehicle counts, as collected by FDS, are displayed in **Figure 3.** The 2021 average conditions, as estimated by reducing SR 89A through volumes by a factor of 0.64, are displayed in **Figure 3A**.





Notes:
(*) Movements to/from driveways on south side of SR 89A assumed



Notes:
(*) Volumes flowed from Int. 1 and turn movements estimated.

LEGEND

#	Intersection Identifier
XX/XX	AM/PM Peak-Hour Volume
XX,XXX	24-Hour Vehicle Volume
x/x	Daily Pedestrian / Bicycle Crossings
	Approach Configuration

NOTES:

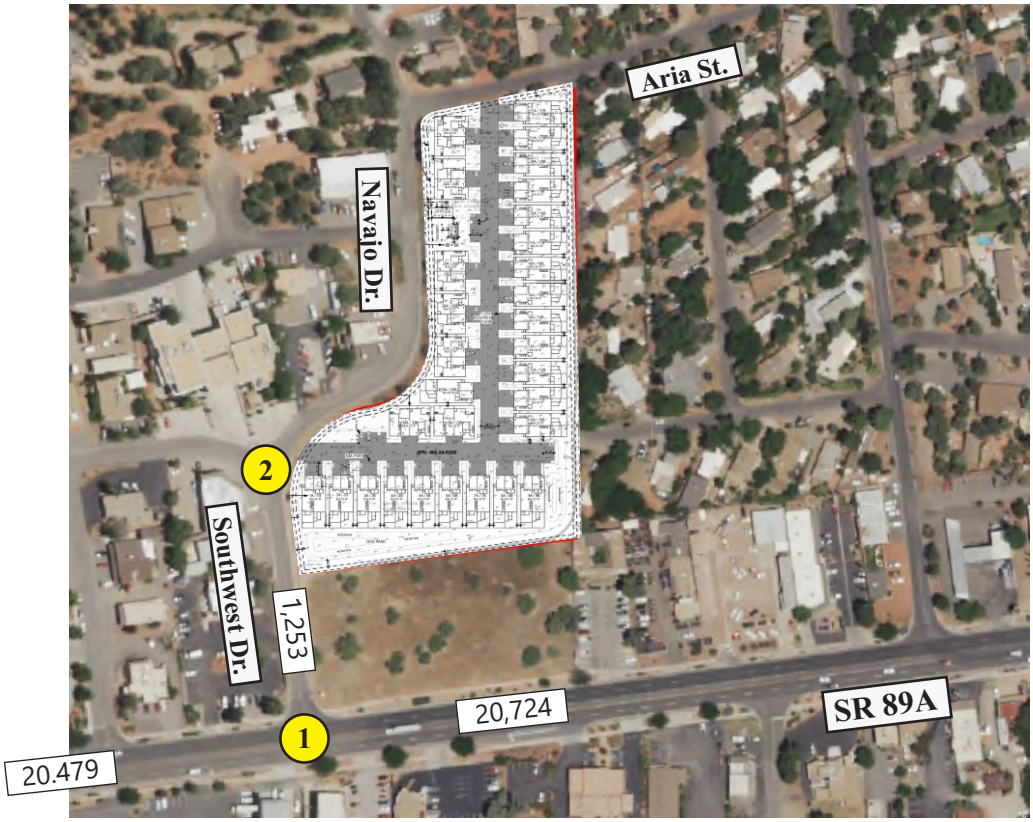
1. Volumes shown are from field collected information without adjustment.

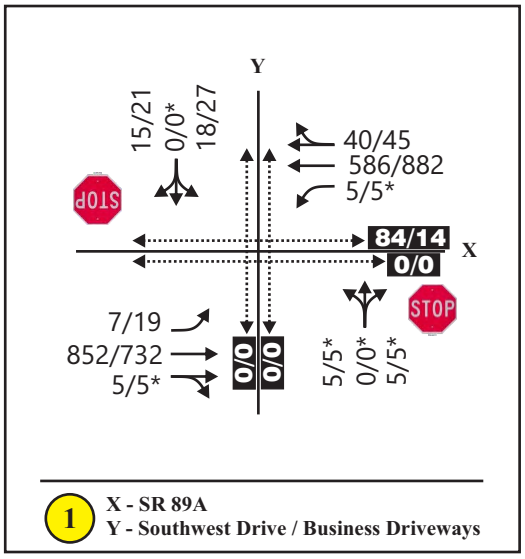
Not to scale

LEE ENGINEERING

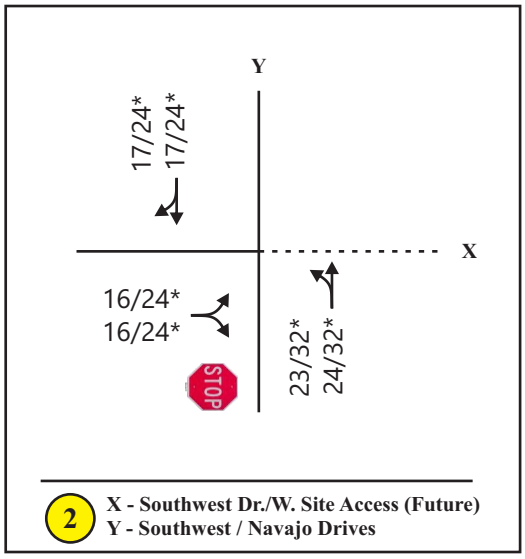
2021 Existing Traffic Volumes (Peak Season) and Conditions Diagram

Figure 3





Notes:
(*) Movements to/from driveways on south side of SR 89A assumed



Notes:
(*) Volumes flowed from Int. 1 and turn movements estimated.

LEGEND

#	Intersection Identifier
XX/XX	AM/PM Peak-Hour Volume
XX,XXX	24-Hour Vehicle Volume
x/x	Daily Pedestrian / Bicycle Crossings
	Approach Configuration

NOTES:

1. SR 89A volumes have been reduced by 0.64 to estimate average volumes conditions.

Not to scale

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2021 Existing Traffic Volumes (Average Volume) and Conditions Diagram

Figure 3a

4.0 PROPOSED DEVELOPMENT

4.1 Proposed Land Use

The proposed development is to construct 30 residential duplex buildings that will accommodate 60 new dwelling units. Per the Institute of Transportation Engineers (ITE) land use codes, the land use that best describes the proposed development is LUC #220, Multifamily Housing (low-rise).

4.2 Trip Generation

The ITE *Trip Generation Manual* (10th Edition) was used to estimate the number of vehicle trip ends the subject site is expected to generate. **Table 2** shows the trip generation estimate for Navajo Lofts based on 60 multi-family residential dwelling units. All trips are assumed to be new passenger vehicle trips added to the adjacent roadway network.

Trip reductions due to transit, walk, bike, alternative travel modes or pass-by traffic were not believed to be significant and therefore, for a conservative analysis, were not considered.

Table 2. ITE Trip Generation Estimate

Sedona Lofts						
Land Use: (220) Multifamily Housing (Low-Rise)						
# of Units	Daily		AM Peak Roadway		PM Peak Roadway	
60	Enter	Exit	Enter	Exit	Enter	Exit
Dir. Dist.	50%	50%	23%	77%	63%	37%
Trips	207	207	7	23	24	14
	413		30		38	

All Units		
	# of Trips	Equation
Daily	413.0	T = 7.56(X) - 40.86
AM Pk	30.0	Ln(T) = 0.95 Ln(X) - 0.51
PM Pk	38.0	Ln(T) = 0.89 Ln(X) - 0.02

Source: ITE Trip Generation, 10th Edition

The results shown in Table 2 indicate the site is anticipated to generate a total of 413 daily trip ends with 30 trip ends (7 entering, 23 exiting) in the AM peak-hour and 38 trip ends (24 entering, 14 exiting) during the PM peak-hour.

4.3 Site Access

Access to the site is to be gained through two proposed paved driveways. Driveway 1 is to be constructed as the east leg to the Southwest/Navajo Drive intersection, its centerline aligned slightly to the north of the west leg while Driveway 2 is proposed onto Aria Street, midway between Navajo Drive and Symphony Way. Both driveways are scaled to be 26 feet wide without turn restrictions.

From the site's main ingress/egress point (Driveway 1), the majority of residents are anticipated to turn to/from the south and SR 89A. Travel on Southwest Drive to the west provides other options to/from SR 89A via Dry Creek Road, Roadrunner Drive, or Tortilla Drive. Other business and institutional access is possible as well as to minimize travel on SR 89A, although the overall number of site-related vehicles using the side-street connectivity to access the nearby businesses is

anticipated to be low. The site's Aria Street driveway is likely to be used by residents living closer to the property's north end destined to or originating from SR 89A east. When calculating travel distance and travel speed at the posted speed limit, it is estimated that 13% of site trips to and from the east would benefit via a shorter travel duration by using the local roadway network (Route 1), as calculated in **Table 3**. When considering left-turn delay onto SR 89A, use of the local roadway network via Harmony Drive and Melody Lane, to reach the traffic signal at Andante Drive is a more viable option opposed to using Southwest Drive. Based on unknown left-turn delay potential at the Southwest Drive/SR 89A as compared to the more uniform delay offered by the traffic signal at Andante Drive, 20% of site-related trips are assumed to use the internal network if destined or originating to/from the east.

Table 3. Routing Distribution Estimate

Roadway Segment	Length (ft)	Speed mph	Speed Ft/S	Travel Duration (sec)
Route 1 - Local Network				
Aria St	560	25	36.75	15.2
Harmony Dr	540	25	36.75	14.7
Melody Ln	655	25	36.75	17.8
Andante Dr	410	25	36.75	11.2
Total	**2165**			**58.9**
Route 2 - Major Network				
Southwest Dr	435	25	36.75	11.8
SR 89A	975	35	51.45	19.0
Total	**1410**			**30.8**
Site Internal				
Total	**840**	15	22.05	38.1
Travel Duration Total, Including Site Internal Travel				
Percent of Site	Route 1	13%	5.0	63.9
Percent of Site	Route 2	87%	33.1	63.9

4.4 Trip Distribution and Assignment

Based on the traffic volumes shown Figure 3 and local roadway options that are available along with the travel duration estimate calculated above, the trip distribution of the site-generated traffic has been estimated and shown in the top half of **Figure 4**. For simplicity, the percentages are assumed to be similar for all time periods as well as for entering and exiting traffic.

Applying the site's trip generation estimates shown in Table 2 to the distribution percentages shown in the top half of Figure 4, the peak-hour trip assignment of the development at full build-out can be calculated. The bottom half of Figure 4 shows the assignment of vehicle trip ends onto the adjacent street network.

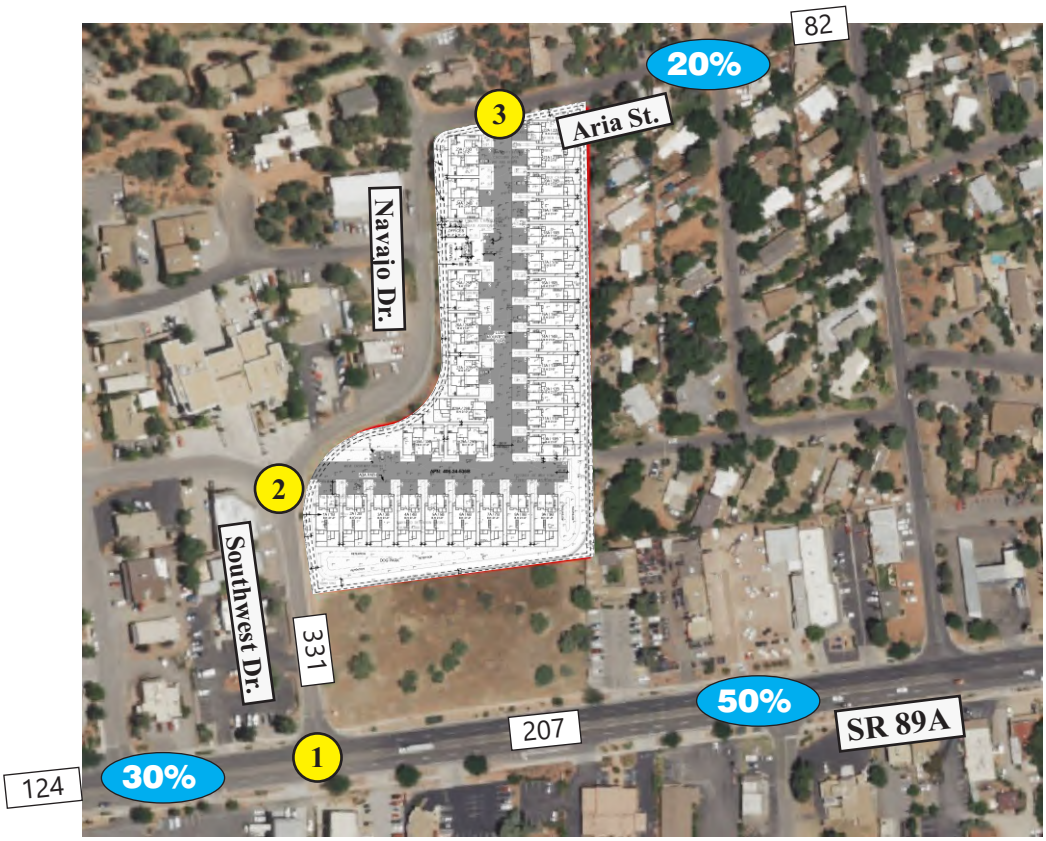
5.0 PROJECTED TRAFFIC

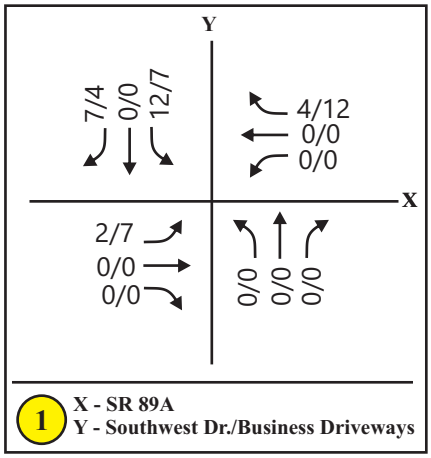
5.1 2022 Background Traffic Estimates (without site traffic)

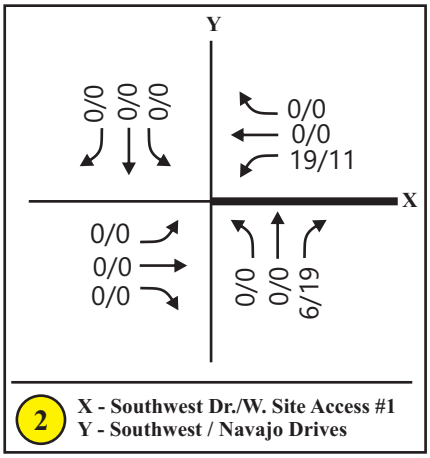
To estimate traffic conditions prior to the opening of the subject site, traffic volumes presented in Figures 3 and 3A have been increased by 2.4% to represent the ambient traffic growth of the community. Traffic volumes for the 2022 Peak and Average season conditions are presented in **Figure 5**. Because only the through traffic volume on SR 89A changes between conditions, the peak season through volumes on SR 89A are shown in red while the average SR 89A conditions and all other turn movement volumes applicable to both seasons are shown in black.

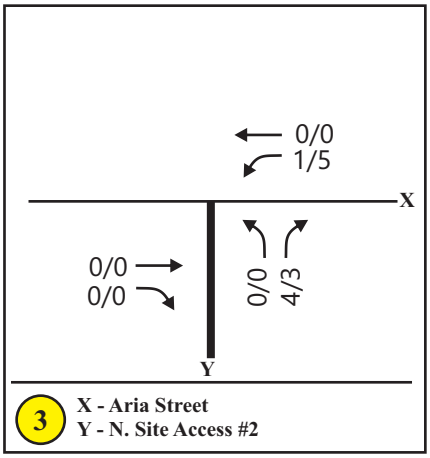
5.2 2022 Total Traffic Conditions at Site Opening (with site traffic)

To estimate total traffic volume conditions for the 2022 opening year (full build-out) of the site, the site-generated traffic volumes shown in the bottom half of Figure 4 have been added to the background traffic volumes shown in Figure 5. The resulting 2022 total traffic volumes for the average and peak-season volume conditions are presented in **Figure 6**.









LEGEND

XX%	Distribution Percentage
#	Intersection Identifier
XX/XX	AM/PM Peak-Hour Volume
XX,XXX	24-Hour Vehicle Volume
	Approach Movement

Not to scale

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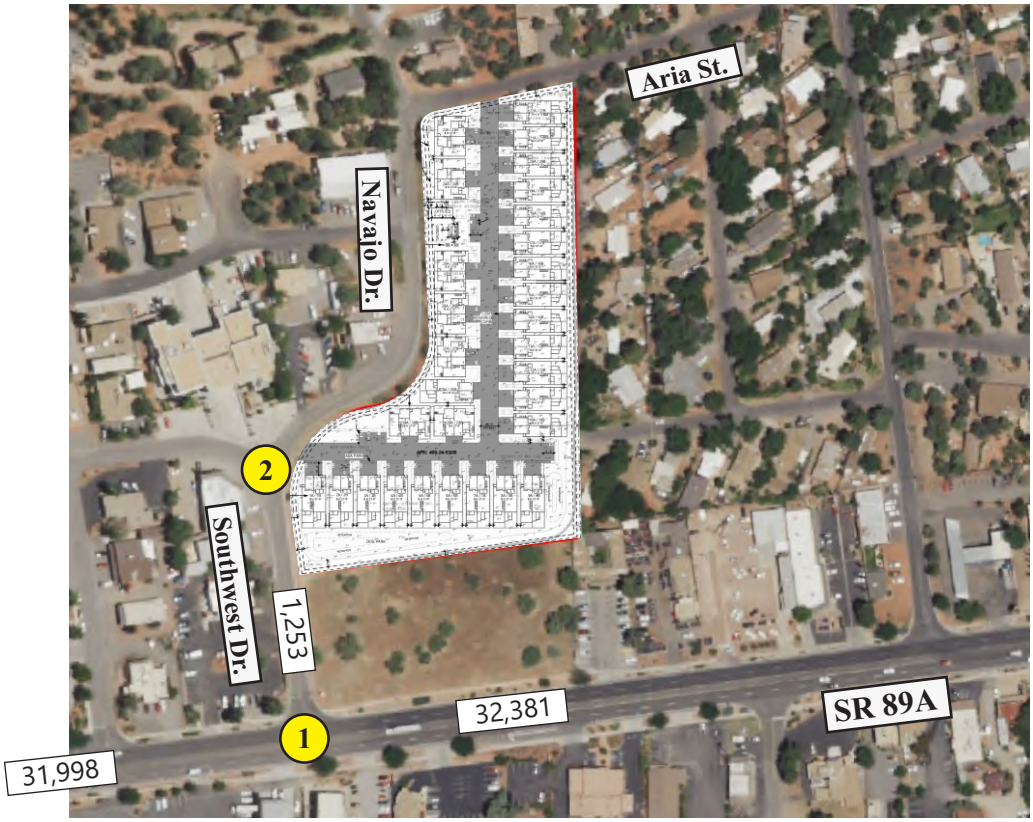
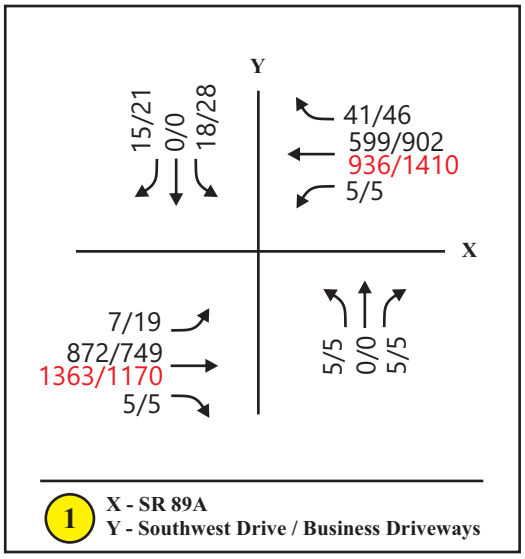
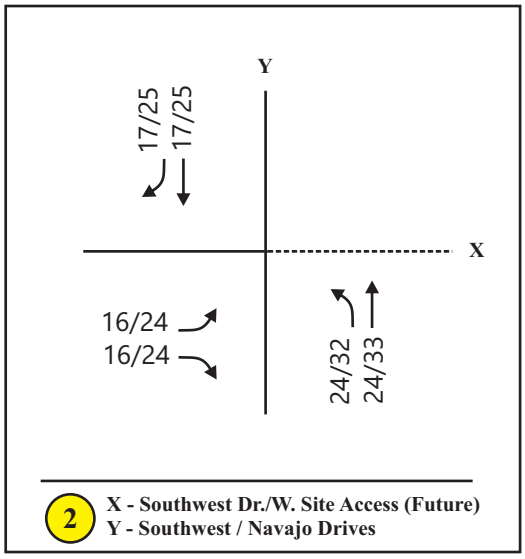
Site Traffic Distribution and Assignment

Figure 4







NOTES:

1. Volumes shown are a 1.023 increase (rounded) above the volumes shown in Figures 3 and 3A.

LEGEND

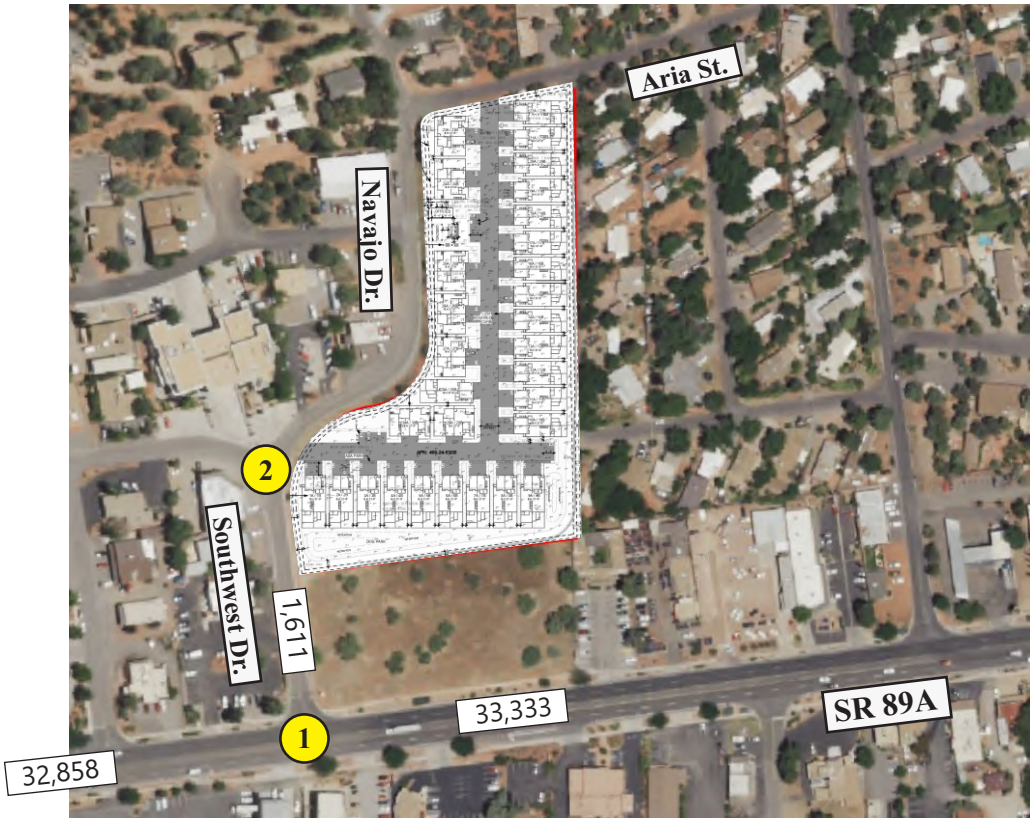
#	Intersection Identifier
XX/XX	AM/PM Peak-Hour Volume (Average Condition)
XX/XX	AM/PM Peak-Hour Volume (Peak Season)
XX,XXX	24-Hour Vehicle Volume (Peak Season)
	Approach Movement

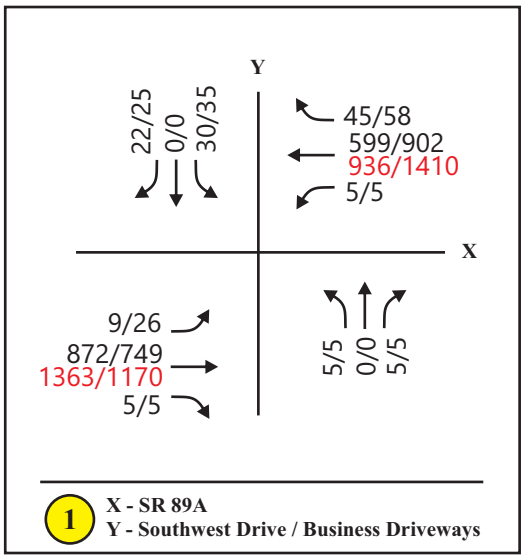
Not to scale

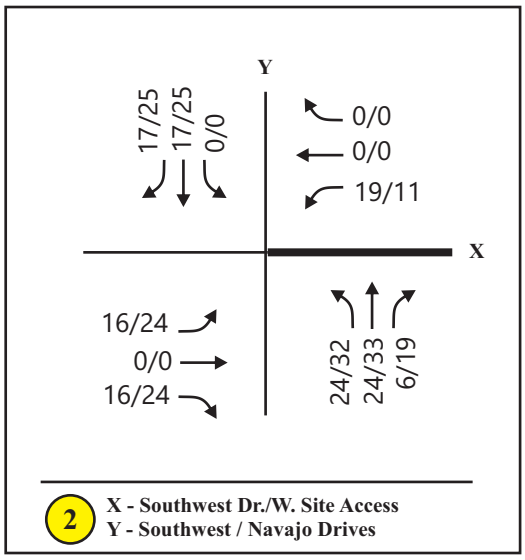
LEE ENGINEERING

2022 Background Traffic
Peak Season and Average Conditions

Figure 5







NOTES:

1. Volumes shown are a summation of the volumes shown in Figures 4 and 5.
2. Volumes are not shown for the north site driveway due to low volume conditions.

LEGEND

#	Intersection Identifier
XX/XX XX/XX	AM/PM Peak-Hour Volume (Average Condition) AM/PM Peak-Hour Volume (Peak Season)
XX,XXX	24-Hour Vehicle Volume (Peak Season)
	Approach Movement

Not to scale

LEE ENGINEERING

2022 Total Traffic
Peak Season and Average Conditions

Figure 6

6.0 ANALYSIS OF CONDITIONS

6.1 Intersection Capacity Analysis

The study area intersections were analyzed based on the methodologies presented in the Highway Capacity Manual 6th Edition (HCM6, 2017) and evaluated using the Synchro software package (version 10). To provide an indication of intersection performance, signalized and unsignalized intersections are typically reported in terms of Levels of Service (LOS). The analysis of signalized intersections is based on the approach control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay for all movements. Unsignalized STOP-controlled intersection analysis is based on the minor street approach or critical movement, whichever is applicable. The capacity criteria for signalized and unsignalized intersection analysis are presented in **Table 4**.

Table 4. Level of Service Criteria for Signalized/Unsignalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	
LOS	**Signalized**	**Unsignalized**
A	≤10.0	≤10.0
B	>10.0 and ≤20.0	>10.0 and ≤15.0
C	>20.0 and ≤35.0	>15.0 and ≤25.0
D	>35.0 and ≤55.0	>25.0 and ≤35.0
E	>55.0 and ≤80.0	>35.0 and ≤50.0
F	>80.0	>50.0

Source: *Highway Capacity Manual*, *HCM 6th Edition*, Transportation Research Board, 2017.

Additional performance measures such as volume to capacity (v/c) ratios and queue lengths also provide an indication of operation. The HCM6 offers the following in Chapter 19:

> "For a typical major street with two lanes in each direction and an average traffic volume in the range of 15,000 to 20,000 vehicles/day (roughly equivalent to a peak hour flow rate of 1,500 to 2,000 vehicles/hour), the delay equation will predict greater than 50s of delay (LOS F) for many urban two-way-stop-controlled (TWSC) intersections that allow minor-street left-turn movements. LOS F will be predicted regardless of the volume of minor-street left-turning traffic. Even with a LOS F estimate, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization noted in the Manual on Uniform Traffic Control Devices. As a result, analysts who use the HCM LOS thresholds as the sole measure to determine the design accuracy of TWSC intersections should do so with caution. In evaluating the overall performance of TWSC intersections, it is important to consider measures of effectiveness such as volume-to-capacity ratios for individual movements, average queue lengths, and 95th percentile queue lengths in addition to considering delay. By focusing on a single measure of effectiveness for the worst movement only, such as delay for the minor-street left-turn, users may make less effective traffic control decisions."

For the purposes of this study, TWSC movements operating at LOS E or F with v/c ratios under 0.80 will be considered as operating at an acceptable level when the side street traffic volumes do not warrant a traffic signal.

A City of Sedona comment has indicated that the higher, peak-season volumes presented and analysis pertaining to these values are to be use for conclusion purposes.

6.2 Capacity Analysis Summary

Analysis of the SR 89A/Southwest Drive and the Southwest/Navajo/Site Driveway 1 intersections was conducted for the AM and PM peak-hour periods. Analysis of the Aria Street/Site Driveway 2 was not conducted, noting low volume conditions and anticipated very good operational conditions (LOS A) for all periods and conditions. The volumes corresponding to 2021 Existing, 2022 Background (no site traffic), and 2022 Total (with site traffic) conditions were input into the Synchro software program (version 10) to estimate the operational conditions of the study intersections with and without site traffic to determine the impacts associated with the proposed site. Using typical ADOT peak-hour factors based on vehicles per lane and a 10% truck percentage on SR 89A, the capacity analysis results for both average and peak season volume conditions are presented in **Table 5**. The capacity output sheets are provided in the appendix.

Table 5. Intersection Level of Service Summary

	Average Volume Condition								Peak Season Volume Condition							
	AM Peak				PM Peak				AM Peak				PM Peak			
Intersection/Movement	LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
2021 Existing																
Int 1. SR 89A/Southwest Dr (MSS)																
EB Left	A	9.1	--	<50	B	10.6	--	<50	B	10.6	--	<50	B	14.3	--	<50
WB Left	B	10.1	--	<50	A	9.5	--	<50	B	13.1	--	<50	B	11.7	--	<50
NB Left/Thru/Right	D	25.9	--	<50	D	28.3	--	<50	F	81.7	0.21	<50	F	102.0	0.26	<50
SB Left/Thru/Right	C	16.1	--	<50	C	23.4	--	<50	D	25.2	--	<50	F	59.4	0.49	55
Int 2. Southwest/Navajo Drives (MSS)																
EB Left/Right	A	9.0	--	<50	A	9.3	--	<50	A	9.0	--	<50	A	9.3	--	<50
WB Approach	Not Applicable				Not Applicable				Not Applicable				Not Applicable			
NB Left	A	7.3	--	<50	A	7.4	--	<50	A	7.3	--	<50	A	7.4	--	<50
2022 Background																
Int 1. SR 89A/Southwest Dr (MSS)																
EB Left	A	9.1	--	<50	B	10.7	--	<50	B	10.7	--	<50	B	14.7	--	<50
WB Left	B	10.2	--	<50	A	9.6	--	<50	B	13.4	--	<50	B	11.9	--	<50
NB Left/Thru/Right	D	26.7	--	<50	D	29.6	--	<50	F	90.7	0.23	<50	F	116.5	0.28	<50
SB Left/Thru/Right	C	16.4	--	<50	C	24.5	--	<50	D	26.2	--	<50	F	65.5	0.52	60
Int 2. Southwest/Navajo Drives (MSS)																
EB Left/Right	A	9.0	--	<50	A	9.4	--	<50	A	9.0	--	<50	A	9.4	--	<50
WB Approach	Not Applicable				Not Applicable				Not Applicable				Not Applicable			
NB Left	A	7.3	--	<50	A	7.4	--	<50	A	7.3	--	<50	A	7.4	--	<50
2022 Total																
Int 1. SR 89A/Southwest Dr (MSS)																
EB Left	A	9.2	--	<50	B	10.9	--	<50	B	10.8	--	<50	C	15.0	--	<50
WB Left	B	10.2	--	<50	A	9.6	--	<50	B	13.4	--	<50	B	11.9	--	<50
NB Left/Thru/Right	D	27.3	--	<50	D	30.6	--	<50	F	90.7	0.23	<50	F	123.6	0.30	<50
SB Left/Thru/Right	C	17.8	--	<50	D	27.1	--	<50	D	30.9	--	<50	F	87.7	0.68	88
Int 2. Southwest/Navajo Drives and Site Driveway 1 (MSS)																
EB Left/Thru/Right	A	9.1	--	<50	A	9.4	--	<50	A	9.1	--	<50	A	9.4	--	<50
WB Left/Thru/Right	A	9.6	--	<50	B	10.0	--	<50	A	9.6	--	<50	B	10.1	--	<50
NB Left	A	7.3	--	<50	A	7.4	--	<50	A	7.3	--	<50	A	7.4	--	<50
SB Left	A	0.0	--	<50	A	0.0	--	<50	A	0.0	--	<50	A	0.0	--	<50

Notes:

1. MMS = Minor Street Stop Control

Table 5 indicates the following:

2022 Total Traffic, Average Conditions

- All movements at both study area intersections are estimated to operate at acceptable service levels, LOS D or better conditions, in all analysis scenarios.

2022 Total Traffic, Peak Season Conditions

- During both AM and PM peak hours, all movements at the Southwest Drive/Navajo Drive/Site Driveway location are anticipated to operate at LOS A/B.
- During the AM peak-hour at the SR 89A/Southwest Drive intersection, the northbound business driveways are anticipated to operate at LOS F while the southbound Southwest Drive approach is anticipated to operate at LOS D. These conditions are the same as the 2021 Existing operational conditions during peak visitor season. Although operating at LOS F, the northbound volume to capacity (v/c) ratio is well below 0.80 (at 0.23) indicating longer than desirable delays, but sufficient gaps in the traffic stream are available for turn movements to be conducted, permitting the movements to operate well below capacity. During the PM peak-hour, both stop-controlled northbound and southbound approaches indicate LOS F conditions for all volume scenarios (Existing, Background, and Total). Although delays are higher during the PM peak hour than the AM peak, the v/c ratios are still below 0.80 (highest is 0.68) and considered acceptable.

Overall, it is likely motorists exiting the business driveways and those turning left from Southwest Drive are repeat drivers familiar with Sedona roadway conditions. Drivers are likely to find alternative routes to minimize their travel delay if conditions are repeatable. Similarly, Navajo Lofts residents who anticipate long delays turning east onto SR 89A will likely utilize the local street connectivity to travel to Andante Drive to make a left turn at the existing signalized intersection. No traffic control modifications are recommended due to the small increase in site traffic volumes at the SR 89A/Southwest Drive intersection.

6.3 Intersection Capacity Analysis, Mitigation Options

Looking exclusively at the peak season conditions, a number of mitigation options at the Southwest Drive/SR 89A intersection exist to improve the poor operational conditions, as identified below:

- No change. Drivers will learn to use local roadway connectivity to access other signalized or unsignalized intersection locations where excess capacity or shorter delay times exist. Because of site-generated traffic added to this intersection, the estimated northbound approach condition (opposite driveway) will always show decreased operation compared to background conditions.
- Change traffic control from stop to signalized control. If warranted and beneficial, a traffic signal would provide side-street drivers guaranteed access onto SR 89A, although to the detriment of vehicles travelling SR 89A. Business driveways on the south side of SR 89A would be negatively impacted (access) by signal installation. Sedona In Motion (SIM) Strategy 10 identifies the need for access management along SR 89A along this section of roadway. Signalized control would require the elimination or consolidation of driveways on the south side of SR 89A. Analysis indicates under signalized control conditions (assuming

a 4-leg intersection) the intersection would operate at LOS A during the higher volume PM peak-hour with all movements operating at LOS C or better.

- Install a median treatment to eliminate one or more left-turn movements at the intersection. A diverter within the Southwest Drive approach could eliminate left-turn movements toward eastbound SR 89A, forcing only right-turn movements, or a raised median within SR 89A could eliminate all left-turn movements (to/from SR 89A, Southwest Drive, and business driveways on the south side of the street). Any median or diverter may lead to U-turn maneuvers to circumvent the turn restrictions if easily accessed alternatives are not provided. Under a raised median scenario, eliminating all left-turn movements from this location, the northbound and southbound approaches would operate at LOS C or better conditions. This would also allow for the potential installation of a two-stage pedestrian crossing as outlined in Figure 4.16 (attached) of the *STMP*.
- Install a roundabout. A roundabout would accommodate trips to and from Southwest Drive but would likely not be beneficial to the businesses near the site due to their close proximity and access being restricted. Right-of-way purchase/condemnation would be expensive and likely to the detriment of businesses on the south side of SR 89A. This alternative has not been analyzed and is not an alternative consideration within the *STMP*.

The PM peak-hour mitigation options for signalized control and a raised median control with minor-street STOP are provided below for peak season volumes during the higher volume PM peak hour. All left-turn movements were converted to through or right-turn movements and signal timing conditions assumed using a 90-second cycle:

Capacity Analysis Summary, Potential Mitigation Options

SIGNALIZED CONTROL	**LOS**	**Delay**	**Queue**
Int 1. SR 89A/Southwest Dr (S)	A	8.3	
EB Left	A	3.4	<50
EB Thru/Right	A	4.4	181
WB Left	A	6.4	<50
WB Thru/Right	B	10.6	438
NB Left/Thru/Right	A	0.5	<50
SB Left	D	44.5	<50
SB Thru/Right	A	0.5	<50
RAISED SR 89A MEDIAN	**LOS**	**Delay**	**Queue**
Int 1. SR 89A/Southwest Dr (MSS)			
NB Right	B	14.3	<50
SB Right	C	19.8	<50

6.4 Crash Analysis

A crash analysis of the latest 3-year time period (2017 through 2019) was conducted for the intersections of SR 89A/Southwest Drive and Southwest Drive/Navajo Drive using the ADOT Safety Data Mart database. An inquiry of crashes within 250 feet identified no reported crashes at the Southwest/Navajo Drive location. The following results are a summary of crashes near the SR 89A/Southwest Drive intersection. A more detailed summary of crashes is provided in the appendix.

Year	Crashes
2017	4
2018	5
2019	3
Total	**12**

Collision Manner	Crashes
Single Vehicle	1
Angle, other than left	2
Left Turn	2
Rear-End	5
Sideswipe, Same Direction	2
Total	**12**

Injury Severity	Crashes
No Injury	9
Possible	2
Minor	1
Serious	0
Fatal	0
Total	**12**

Results indicate a total of 12 reported crashes occurred near the intersection over the 3-year period, an average of 4 crashes per year. Of these crashes, none were recorded as serious or fatal, with only 1 crash coded as a minor injury. The remaining crashes resulted in either possible or no injury. It is noted that 4 of the 12 crashes identified Tortilla Drive as the nearest cross-street. The most common manner of collision was rear-end crashes, two occurring in the eastbound direction, 3 in the westbound direction, with 4 of the crashes located 125 feet or farther away from the intersection.

Overall, the majority of crashes can likely be attributed to the abundance of driveway openings that exist along SR 89A. Low speed conditions in the general area is a likely factor to the low rate of injury occurrence.

6.5 Traffic Signal Needs Analysis

The City has requested analysis to determine if a traffic signal is warranted at the SR 89A and Southwest Drive intersection. A signal warrant analysis reviewing the *Manual on Uniform Traffic Control Devices* (MUTCD) volume warrants has been conducted below. However, the City should consider the following information before changing the existing traffic control at this location:

- The City's *STMP* does not propose a traffic signal at this location, but it supports a potential pedestrian crossing strategy such as a pedestrian hybrid beacon (PHB) or a signalized two-stage crosswalk. The pedestrian crossing is shown to include a potential raised median within SR 89A, which would prohibit left-turn movements to and from Southwest Drive.
- A new traffic signal would increase stops and delays along SR 89A due to other traffic signals in close proximity. Two-way vehicle progression may be difficult to provide.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

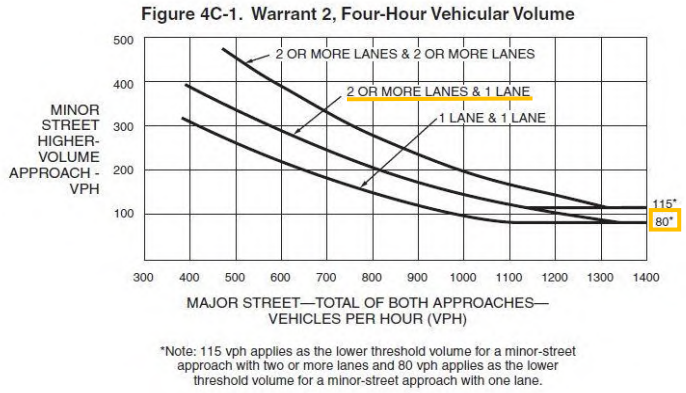
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

- Other travel route options are available to local residents permitting access to the adjacent traffic signals at Dry Creek Road (west) and at Andante Drive (east), if so desired, without a

significant increase in travel duration or distance.

A traffic signal assessment for the intersection of SR 89A and Southwest Drive was conducted for the 2022 Total traffic condition with site traffic based on criteria from the MUTCD. Only Warrant 1A and 1B (Eight-Hour Volume) and Warrant 2 (Four-Hour Volume) were evaluated. Warrant 3, Peak Hour, was not evaluated since the warrant is intended to be applied only in unusual cases. Volumes associated with Warrants 1 and 2 must meet the values associated with the 100% column since the posted speed limit on SR 89A does not exceed 40 mph and the population of Sedona, based on US Census Bureau population estimates for 2019, exceeds 10,000. The peak hour volumes used as the basis for this analysis were obtained from the 12-hour count and adjusted to 2022 conditions as previously discussed. Site traffic was added based on the ITE hourly breakdown of vehicles exiting the site as well as the distribution of site trips displayed in Figure 4.



The table at right summarizes the hourly volume results estimated for the SR 89A mainline (summation of both approach volumes) and the higher southbound Southwest Drive approach for the 2022 Total traffic conditions. From the side street volume rank, the 7:00AM period is the 8th highest hour while the 6:00PM period is the 4th highest hourly condition. When the volume table at right is compared to the volume criteria for Warrants 1A, 1B and 2, the results are summarized in **Table 5**.

Hour	Mainline Volume	Southwest Dr. Approach Volume	Rank
6:00 AM	856	15	13
7:00 AM	1787	50	6
8:00 AM	2358	49	9
9:00 AM	2343	50	6
10:00 AM	2372	48	10
11:00 AM	2537	51	5
12:00 PM	2566	48	10
1:00 PM	2629	43	12
2:00 PM	2683	50	6
3:00 PM	2676	57	2
4:00 PM	2651	68	1
5:00 PM	2244	54	3
6:00 PM	1798	53	4

Table 5. Signal Warrant Analysis Results Summary – SR 89A and Southwest Drive

Time Period	Warrant 1A Hours Satisfied	Warrant 1A Criteria Met	Warrant 1B Hours Satisfied	Warrant 1B Criteria Met	Warrant 2 Hours Satisfied	Warrant 2 Criteria Met
2022 Total Condtion						
Int 1. SR 89A / Southwest Dr	0	No	0	No	0	No

The results indicate, with the site-generated traffic included, low side street volumes will not satisfy any hourly volume criteria for the MUTCD volume warrants analyzed. Therefore, installation of a traffic signal at this location is not warranted or recommended based on anticipated traffic volume.

As a supplement to the crash and signal warrant analysis, Figure 611-B, Traffic Signal Priority

Evaluation sheet, as provided in ADOT TGP 611, has been completed and provided within the appendix. The evaluation of this intersection resulted in a point total of 5 points. This total assumes the SR 89A corridor is within a progressed traffic signal system, although signal timing data has not been provided.

If a traffic signal were to be installed at this location, it would likely draw some SR 89A eastbound destined vehicles from developments north of the subject site (Shadowbrook apartments) that may use Andante Drive and some drivers originating east of Roadrunner Drive currently using Roadrunner Drive and Tortilla Drive. It is unlikely to attract any vehicles currently using the traffic signal at Dry Creek Road. Without traffic counts being taken at these intersections it is difficult to project diverted traffic numbers. Signalization is unlikely to draw many new drivers destined to the west (right turn movement). Similarly, a traffic signal is unlikely to attract other left- and right-turn vehicles currently using other SR 89A intersection locations.

Based on the analyzed data, signalizing this intersection is not recommended.

6.6 Pedestrian Hybrid Beacon

The City of Sedona has requested analysis pertaining to the warranting of a PHB to assist pedestrians in crossing SR 89A near Southwest Drive. The desire for a pedestrian crossing of SR 89A near this location is highlighted in the City's TMP.

The latest edition of the MUTCD provides guidance to help determine if a PHB should be considered for installation. From Section 4F.01:

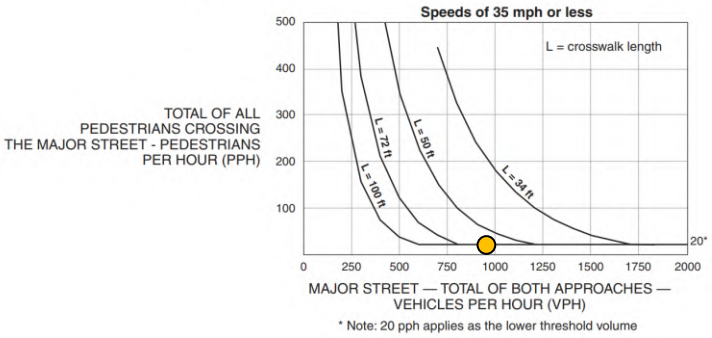
> *If one of the signal warrants of Chapter 4C is met and a traffic control signal is justified by an engineering study, and if a decision is made to install a traffic control signal, it should be installed based upon the provisions of Chapters 4D and 4E.*
>
> *If a traffic control signal is not justified under the signal warrants of Chapter 4C and if gaps in traffic are not adequate to permit pedestrians to cross, or if the speed for vehicles approaching on the major street is too high to permit pedestrians to cross, or if pedestrian delay is excessive, the need for a pedestrian hybrid beacon should be considered on the basis of an engineering study that considers major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay.*
>
> *For a major street where the posted or statutory speed limit or the 85th-percentile speed is 35 mph or less, the need for a pedestrian hybrid beacon should be considered if the engineering study finds that the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding total of all pedestrians crossing the major street for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4F-1 for the length of the crosswalk.*
>
> *For a major street where the posted or statutory speed limit or the 85th-percentile speed exceeds 35 mph, the need for a pedestrian hybrid beacon should be considered if the engineering study finds that the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding total of all pedestrians crossing the major street for 1 hour (any*

four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4F-2 for the length of the crosswalk.

For crosswalks that have lengths other than the four that are specifically shown in Figures 4F-1 and 4F-2, the values should be interpolated between the curves.

Figure 4F-1 from the MUTCD is provided for major streets that have a speed limit of 35 mph or less. Assuming the existing SR 89A roadway width of 64 feet would be the minimum crossing distance and a two-way PM peak hour volume on SR 89A exceeds 1800 vph (2022 build-out volume, Figure 4), a 20-person crossing of SR 89A in one hour would meet guidelines for a PHB. Per the count data collected, zero pedestrian crossings of SR 89A near Southwest Drive were identified over a 24-hour period. Based on this information, the site does not meet MUTCD criteria for installation of a PHB.

Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways



If the City determines the need for a PHB, Navajo Lofts should not be required to participate in the cost of design or installation since need has already been established without the proposed development, and the proposed development is expected to contribute a negligible pedestrian volume.

Supplemental to the above analysis, an ADOT PHB evaluation form, as outlined in ADOT TGP 640, has been completed and results presented in the appendix. The evaluation resulted in a total of 23 points, less than a minimum score of 35 points to merit PHB consideration. However, it is noted that this is a City-preferred location for a pedestrian crossing (Sedona in Motion, attached) and other factors than those outlined in the evaluation form may elevate this location for potential treatment.

6.7 Turn Lane Requirements

Exclusive right- and left-turn lanes are typically not required at minor street intersections or on low volume, low-speed collector roadways when adequate stopping sight distance is provided since vehicle turn speed compared to through speeds are not excessively different. For a 25-mph roadway, AASHTO recommends a minimum stopping sight distance of 155 feet. Per review of Google Earth images, over 155 feet of sight distance can be provided to motorists travelling Navajo Drive, Southwest Drive, or Aria Street to safely recognize a vehicle within either proposed site driveway and can come to a safe stop prior to reaching the intersection, if required. Therefore, right- or left-turn lanes at the site driveways are not recommended. Moreover, as indicated in the capacity analysis table, LOS A/B conditions are anticipated at the site driveways under existing single-lane conditions.

Right-Turn Lane Warrants

Peak Hour Traffic Volume on the Highway in Advancing Direction	Minimum Peak Hour Right-turn Traffic Volume				
	# of thru lanes per direction				
	1		2		3
	< 45 MPH Posted Speed	≥ 45 MPH Posted Speed	< 45 MPH Posted Speed	≥ 45 MPH Posted Speed	All Speeds
≤ 200					
201 – 300	-	30	-	-	-
301 – 400	-	19	-	55	-
401 – 500	85	14	-	30	-
501 – 600	58	12	140	25	-
601 – 700	27	9	80	18	-
701 – 800	20	8	53	15	-
801 – 900	12	7	40	12	-
901 – 1000	9	6	30	11	-
1001 – 1100	8	5	23	9	18
1101 – 1200	7	5	18	8	16
1201 – 1300	6	4	14	8	15
1301 – 1400	6	4	11	6	12
1400+	5	3	8	6	10

To determine if a westbound right-turn lane is warranted on SR 89A at Southwest Drive, ADOT TGP 245, Turn Lane Warrants, was referenced. A right-turn lane is warranted based on a combination of through traffic volume, turning traffic volume, the posted roadway speed, and the number of through lanes on the roadway. The warranting criteria for this location is shown at right with an orange box highlighting the minimum number of turn vehicles for the prevailing intersection conditions (peak season conditions). Referencing Figure 6, it is estimated that 56 vehicles will make a right-turn during the PM peak-hour (46 non-site vehicles), exceeding the 8 vehicles that would warrant the turn lane. Based on this analysis, a right-turn lane is warranted on SR 89A at Southwest Drive. If average season conditions are analyzed, an advancing 900 vehicle hourly volume would require 30 right-turn vehicles to warrant the turn lane.

Based on the above analysis, a westbound right-turn lane is warranted on SR 89A at Southwest Drive; however, the agencies should consider the following:

- Many locations in the immediate area have similar characteristics to this intersection without a right-turn lane.
- The subject site is only projected to add 10 peak-hour turn vehicles to this location, far fewer than the 46 current vehicles that make this movement.
- The proposed development is not on the immediate corner.
- A turn lane will increase the walking distance pedestrians will have to navigate when crossing SR 89A.
- Sidewalks, drainage, roadway lighting, and other utilities will be impacted.
- Referencing ADOT TGP 430, a taper design equal to the gap length (60 feet) plus storage length equal to the braking plus queue lengths (115 feet + 50 feet) or a total design of 225 feet leaving approximately 130 feet of frontage for the parcel to the south for potential access onto SR 89A. This parcel does have frontage on Southwest Drive for potential access.

6.8 Intersection Sight Distance

Utilizing AASHTO's *A Policy on Geometric Design of Highways and Streets*, minimum intersection sight visibility requirements for left and right turning movements onto a 2-lane roadway from a stopped condition requires the following distance for departing drivers from a location 15 feet from the edge of travelled way:

- ISD Right Turn Movement (looking left): 1.47 * 25 mph * 6.5 sec = 240 feet (rounded)
- ISD Left Turn Movement (looking right): 1.47 * 25 mph * 7.5 sec = 280 feet (rounded)

Images 1 and 2 below show the conceptual site layout plan overlayed on a Google Earth map. The images also indicate a driver's unobstructed line of sight needed to observe vehicles approaching from within the driveway, 15 feet from the edge of travelled way. Because of uncertainty in the site scale, placement of the image, rotation angle, and Google Earth image skew, the exact location of the driver eye to the edge of travelled way and physical features cannot be determined with certainty. Image 1, looking north, shows over 280 feet of sight visibility can be provided, exceeding minimum sight requirements. Image 2, looking south, appears to show the driver line of sight extending into the far west dwelling unit by approximately 4 feet, which may or may not be the actual field condition. Scaling the actual site layout plan appears to indicate the line of sight without infringement. The city and developer should validate that at least 240 feet of unobstructed sight distance can be provided to exiting motorists. If mitigation is required, the driveway could be positioned further to the south, the duplex itself positioned further to the south, outbound left turns prohibited from the driveway, or other options that have not been considered. Within the sight triangles formed on the images, no landscaping materials (between 3 feet and 6 feet in height, Sedona LDC), walls, fences, utilities, bike racks, signs, or other structures that may obscure driver visibility to approaching vehicles should be placed. The design does exceed the visibility requirements (30' x 10') identified in the Sedona *Land Development Code*.

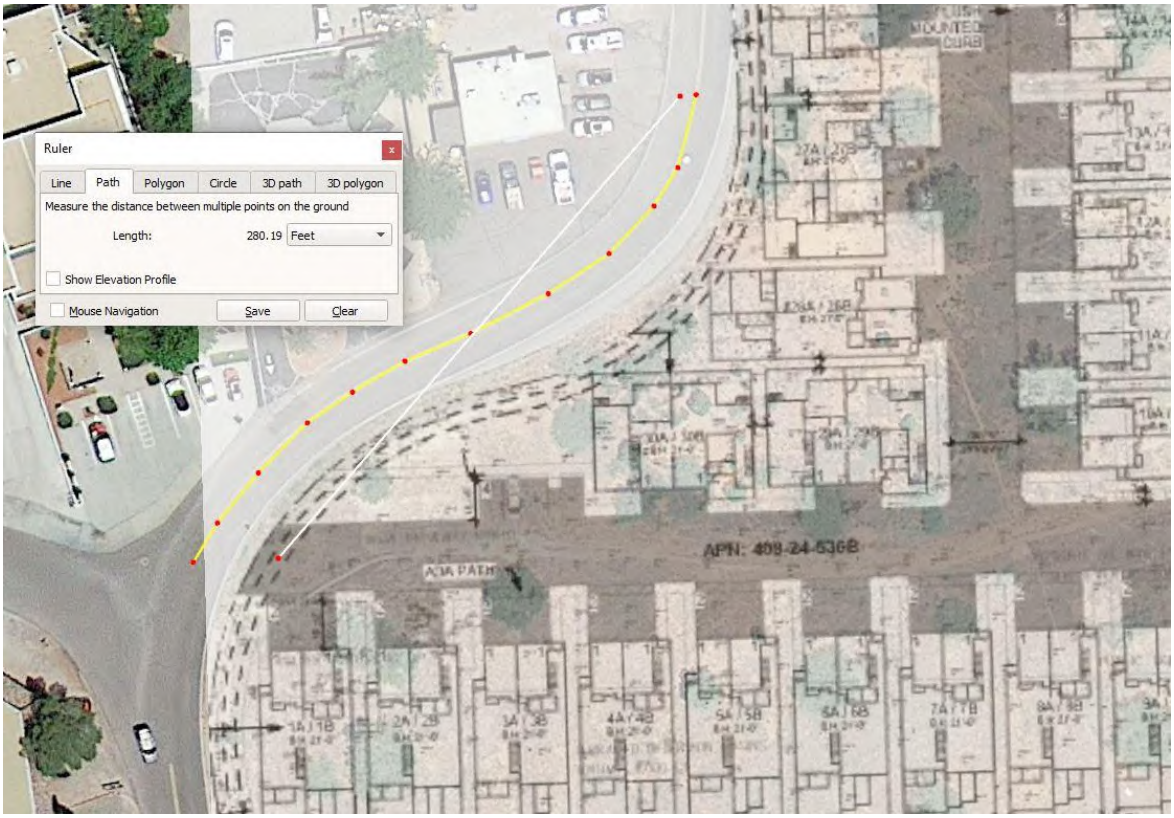


Image 1. Looking North on Navajo Drive from Proposed Site Access Location

Image 2. Looking South on Southwest Drive at Proposed Site Access Location

6.9 Driveway Design / Parking Characteristics

Driveway clearance distance to adjacent STOP-controlled intersections exceeds the 75/50-foot requirements for collector/local streets identified in Table 3.6 of the of Sedona *Design Review, Engineering and Administrative Manual* (DREAM).

The offset of the site's proposed driveway north of the Southwest/Navajo Drives intersection is estimated to be about 30 feet for opposing movements. This separation is not ideal, but low-volume low-speed conditions and positive offset preventing interlocking left-turn movements on the major-street is beneficial. The design, as shown in the site layout plan is identified to be acceptable.

Driveways and drive aisles are 26 feet in width and meet the City's 30-foot wide maximum design requirement in the LDC and are adequate for maneuvering into and out of 90 degree parking spaces.

Parking space design shown on the site plan include the following:

- Tandem spaces fronting garages: 18' x 9'
- General parking spaces: 15.5' x 9' (excluding 2' overhang)
- ADA car spaces: 15.5' x 8.5' (excluding 2' overhang)

The general parking space width appear to be appropriate, however, the 17.5-foot overall length dimension is one-half foot below guidance. A city comment identified minimum parking space depth to be 16 feet (with 2' landscape overhang) and minimum ADA spaces to be 11 feet wide. It is assumed the site plan will be modified to accommodate the City requirements.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis conducted within this traffic statement, the following conclusions and recommendations are identified:

- The development is planned for a single construction phase that will provide a total of 60 multi-family dwelling units. The development is planned for a 2022 opening.
- At full occupancy, ITE estimates that the planned development will generate 30 AM peak-hour trip ends (7 in, 23 out), 38 PM peak-hour trip end (24 in, 14 out), and a total of 413 new daily vehicle trip ends.
- Count data collected during peak-season conditions at the intersection of SR 89A and Southwest Drive indicate traffic volumes exceed ADOT average conditions by over 50%. No pedestrian crossings of SR 89A were identified during the 24-hour period.
- Intersection capacity analysis with the proposed Navajo Lofts traffic indicates the minor-street STOP-controlled intersection at SR 89A and Southwest Drive will operate at acceptable service levels (LOS D or better) during average volume conditions in the AM and PM peak hours. During peak-season conditions, the southbound Southwest Drive approach and the business driveways on the south side of SR 89A are anticipated to operate at LOS F (similar to background results) although volume to capacity ratios increase slightly but remain below 0.80, indicating acceptable operation per HCM6 interpretation. Mitigation of the LOS F would require elimination of left-turn movements from the business driveways on the south side of SR 89A, a raised median island within the SR 89A center lane, or unwarranted signalized control that would be detrimental to traffic on SR 89A.
- If delays at SR 89A/Southwest Drive become predictable and are perceived to be long, drivers can use the local street connectivity to access SR 89A at the traffic signals located at Andante Drive or Dry Creek Road.
- Analysis indicates a traffic signal is not warranted at SR 89A and Southwest Drive. It is recommended that minor-street STOP control be maintained.
- Analysis indicates MUTCD criteria for a pedestrian hybrid beacon are not met near Southwest Drive due to no pedestrian crossings over a 24-hour period. However, the City's TMP shows a preference for a pedestrian crossing at or near this location. If a PHB is to be installed, the proposed development should not be responsible for its cost, design, or installation since desire for the crossing has been established without the proposed development and the subject site is expected to contribute a negligible pedestrian volume.
- Turn lanes are not required at the site driveways due to good operational levels, low volume and speed conditions, and sight distance that exceeds AASHTO's minimum stopping sight distance.
- A right-turn lane on westbound SR 89A at Southwest Drive is warranted based on existing and projected site traffic, but a right-turn lane has significant disadvantages as discussed, and the turn lane is warranted in current conditions without the addition of site traffic.
- Intersection sight distance for the site's proposed driveway at the Southwest/Navajo Drives intersection indicates over 280 feet of sight visibility can be provided to exiting site drivers when looking to the north, exceeding AASHTO requirements. When looking to the south, the AASHTO required 240 feet of roadway visibility may or may not be provided due to the uncertainty of analysis (scale of site plan, placement of image, other). The City and

developer should validate 240 feet or more roadway visibility can be provided to drivers before the driveway is operational.

- The site's driveway location at the Southwest/Navajo Drives intersection is offset to the north by approximately 30 feet; however, low-speed low-volume conditions and positive offset that prevents interlocking left-turn movements on the major street are beneficial, causing the location of the driveway to be considered acceptable.
- Some on-site parking spaces show a 17.5-foot design length. It is assumed that the design will be revised to show 18-foot parking spaces to comply with city requirements.

APPENDIX

REVIEW COMMENT AND LEE ENGINEERING RESPONESE

Public Works Department
102 Roadrunner Drive Sedona, AZ 86336
(928) 204-7111 · Fax: (928) 282-5348;
Hanako Ueda, EIT (928) 203-5024

PZ21-00007 (DEV)
Navajo Lofts (Traffic Impact Analysis Review)
06/17/21

Engineering Comments

1. Please consider a driveway connection at Cantabile St. The need for additional neighborhood connections has been identified in Sedona In Motion (SIM) 6.
2. Trip distribution – we find 20% of users to Aria St. high. Please adjust or justify.
3. TIA Section 6.5: Please analyze if a new right turn lane is warranted on westbound 89A at Southwest using ADOT TGP245 as guidance.
4. In section 3.6, the ADT for SR89A should not be reduced by 36%. Based on historic data, the volumes identified may be accurate, as we have observed higher than recent historical volumes in the area. The applicant should set up a meeting with ADOT NRT to review the traffic volumes and update the report accordingly. Any updated peak traffic volumes should be used for analysis.
5. All parking spaces must be at least 16' long with a 2' landscape overhang. ADA spaces shall be at least 11' wide.
6. Please conduct the signal warrant analysis using ADOT TGP611 for 2022 conditions without a reduction factor.
7. In section 6.3, ADOT TGP 611 should be used in concert with the MUTCD signal warrant analysis.
8. In section 6.4, ADOT TGP 640 should be used in concert with the MUTCD PHB warrant analysis.
9. In Table 4, the impacts to the State Highway are not mitigated. Under the average conditions, the SB movement on Southwest at SR 89A delay goes from C (acceptable) to D (not acceptable for state routes) per ADOT TGP 240. Under Peak Conditions, the SB movement increases in LOS F delay with the project and the NB movement also results in additional delays. Both of these conditions require mitigation. Please refer to SIM 10 for 89A improvements or include alternate justified mitigations.
10. The consultant should consider if any volume adjustments from Tortilla, Dry Creek, Andante or other connections would change if a traffic signal were installed at Southwest.

ARIZONA
TEXAS
NEW MEXICO
OKLAHOMA

August 13, 2021

Ms. Hanako Ueda
Assistant City Engineer
Sedona Public Works Department
102 Roadrunner Drive
Sedona, AZ 86336

RE: Lee Engineering Responses to 1st Navajo Lofts TIA Review (06/17/21)

Dear Ms. Ueda:

We have received and reviewed project comments received from your office on 6/22/21 (attached). The email contained 10 comments specific to the report. The following response directly addresses each comment, with similar text/explanation provided in the revised TIA report.

Comment 1. Site connection to Cantabile St.

Lee Engineering Response: This is not a specific TIA comment, but it is understood from the developer that this connection can't be accomplished. The site plan is to basically remain as previously presented.

Comment 2. Trip distribution – we find 20% of users to Aria St. high. Please adjust or justify.

Lee Engineering Response: A travel duration analysis was conducted indicating approximately 13% of the site would benefit from using Aria Street, if destined to/from SR 89A east. Including potential delays, 20% of site traffic to Aria Street is reasonable. No changes to distribution percentages were made.

Comment 3. TIA Section 6.5: Please analyze if a new right turn lane is warranted on westbound 89A at Southwest.

Lee Engineering Response: Analysis indicates a right-turn lane is warranted on westbound SR 89A.

Comment 4. In section 3.6, the ADT for SR89A should not be reduced by 36%. Based on historic data, the volumes identified may be accurate, as we have observed higher than recent historical volumes in the area. The applicant should set up a meeting with ADOT NRT to review the traffic volumes and update the report accordingly. Any updated peak traffic volumes should be used for analysis.

Lee Engineering Response: This comment was not discussed with ADOT. The report maintains the adjustment to "average conditions" and continue its presentation of both average and peak conditions.

Analysis was also maintained showing the results from both traffic scenarios. Conclusions and recommendations are based only on the peak condition.

Comment 5. All parking spaces must be at least 16' long with a 2' landscape overhang. ADA spaces shall be at least 11' wide.

Lee Engineering Response: A revised site plan has not been provided but, has been indicated by the developer that the parking space adjustments will be made. The report underscores this comment.

Comment 6. Please conduct the signal warrant analysis using ADOT TGP611 for 2022 conditions without a reduction factor.

Lee Engineering Response: The analysis presented in the report addresses the majority of requirements outlined in the ADOT document using the 2022 Peak Season volumes. Analysis of the corridor progression has not been conducted and signal timing data not obtained for the analysis. A more detailed analysis, outside of this TIA could be conducted, if it is agreed that signalized control is the preferred option at the SR 89A/Southwest Drive intersection.

Comment 7 & 8. In section 6.3, ADOT TGP 611 should be used in concert with the MUTCD signal warrant analysis. In section 6.4, ADOT TGP 640 should be used in concert with the MUTCD PHB warrant analysis.

Lee Engineering Response: Analysis using the previous ADOT TGP 611 evaluation form and the evaluation form found in TGP 640 has been completed and placed in the report appendix.

Comment 9. In Table 4, the impacts to the State Highway are not mitigated. Under the average conditions, the SB movement on Southwest at SR 89A delay goes from C (acceptable) to D (not acceptable for state routes) per ADOT TGP 240. Under Peak Conditions, the SB movement increases in LOS F delay with the project and the NB movement also results in additional delays. Both of these conditions require mitigation. Please refer to SIM 10 for 89A improvements or include alternate justified mitigations.

Lee Engineering Response: SIM 10 refers to a raised median within the SR 89A ROW, as well as access management considerations for existing business driveways that access SR 89A. Options within the STMP specifically identify options for this intersection that include a raised center median with a Pedestrian Hybrid Beacon or a two-sided signalized pedestrian crossing. Any physical mitigation to be implemented at this location appears to be well outside the boundaries for this developer to implement. However, analysis has been conducted to indicate: 1) signalized control would mitigate the poor operations, and; 2) a raised median forcing all side street approach movements to turn right would operate in an acceptable manner.

Comment 10. The consultant should consider if any volume adjustments from Tortilla, Dry Creek, Andante or other connections would change if a traffic signal were installed at Southwest.

Lee Engineering Response: The ability to quantify the number of vehicles that may utilized this intersection if signalized can't be estimated without more detailed information. It is assumed that very few vehicles would

be attracted to this location from the west but would likely attract some vehicles from Tortilla Drive that are turning east onto SR 89A. Little to no vehicles on SR 89A are anticipated to be attracted to this location if signalized.

Closure

If a further discussion of these comments/conclusions is needed, I can be reached at (602) 955-7206 or by email at pguzek@lee-eng.com.

Respectfully Submitted,

Paul Guzek, PE, PTOE
Lee Engineering, LLC

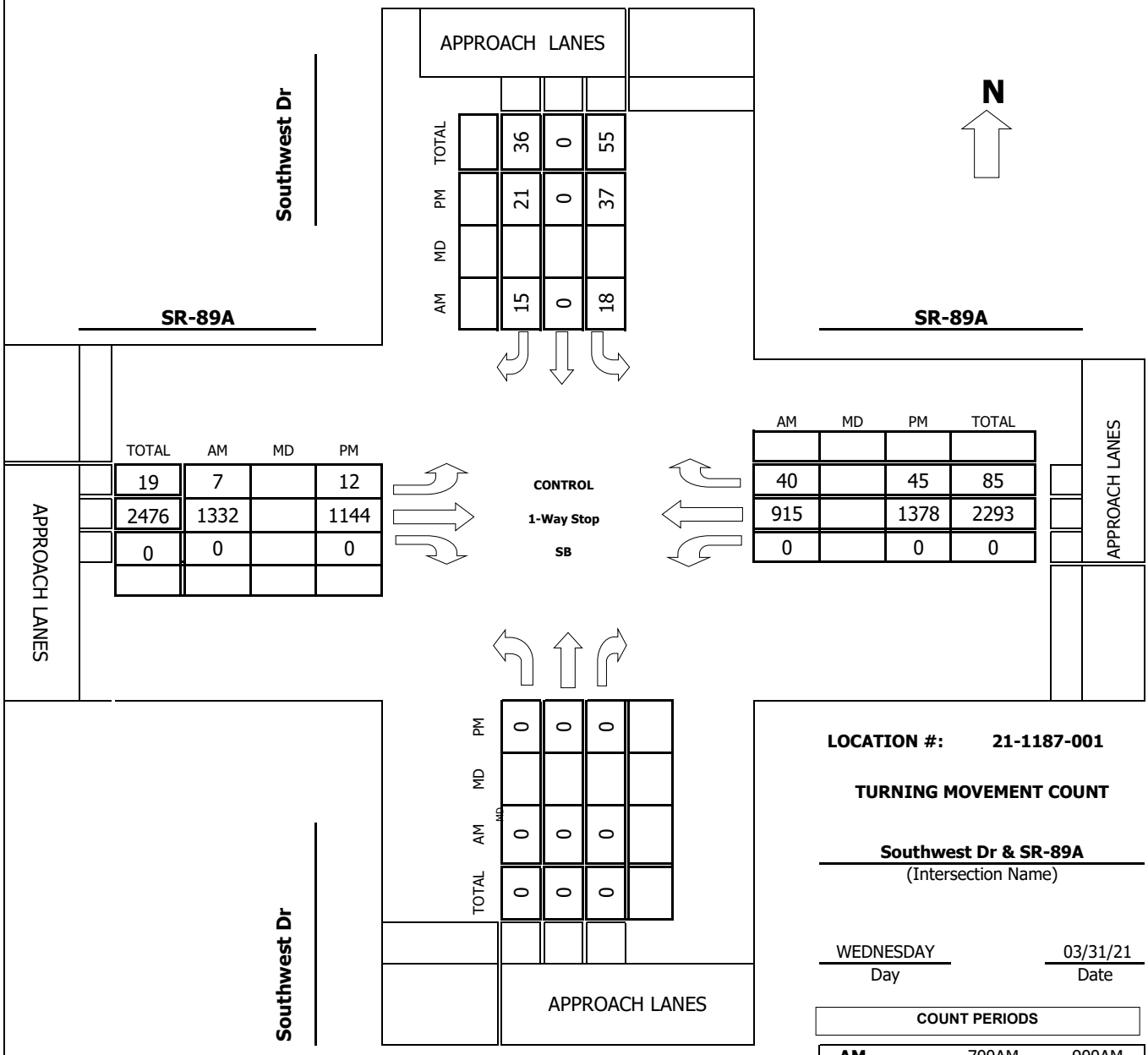
TRAFFIC COUNTS

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 21-1187-001

TMC SUMMARY OF Southwest Dr & SR-89A



LOCATION #: 21-1187-001

TURNING MOVEMENT COUNT

Southwest Dr & SR-89A
(Intersection Name)

WEDNESDAY (Day) 03/31/21 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 400 PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Southwest Dr
E-W STREET: SR-89A

Date: 03/31/21
Day: WEDNESDAY

City: Sedona
Project #: 21-1187-001

	PEDESTRIANS				BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG	N-LEG	S-LEG	E-LEG	W-LEG
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	1	0	0	0	0	0	0	0
6:45 AM	3	0	0	0	0	0	0	0
7:00 AM	4	0	0	0	0	0	0	0
7:15 AM	5	0	0	0	0	0	0	0
7:30 AM	6	0	0	0	0	0	0	0
7:45 AM	5	0	0	0	0	0	0	0
8:00 AM	1	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	1	0	0	0	0	0	0	0
8:45 AM	1	0	0	0	0	0	0	0
9:00 AM	3	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	2	0	0	0
9:30 AM	4	0	0	0	0	0	0	0
9:45 AM	1	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	7	0	0	0	0	0	0	0
10:30 AM	1	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	2	0	0	0
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	2	0	0	0	0	0	0	0
11:30 AM	1	0	0	0	0	0	0	0
11:45 AM	2	0	0	0	3	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	2	0	0	0
12:30 PM	3	0	0	0	0	0	0	0
12:45 PM	2	0	0	0	0	0	0	0
1:00 PM	5	0	0	0	1	0	0	0
1:15 PM	2	0	0	0	0	0	0	0
1:30 PM	7	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
2:00 PM	2	0	0	0	1	0	0	0
2:15 PM	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
3:00 PM	1	0	0	0	0	0	0	0
3:15 PM	4	0	0	0	1	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	2	0	0	0
4:30 PM	1	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	0	0	0	0
5:00 PM	2	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	4	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	1	0	0	0	0	0	0	0
TOTAL	**84**	**0**	**0**	**0**	**14**	**0**	**0**	**0**

North Leg

West Leg

East Leg

South Leg

Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Wednesday, March 31, 2021 City: Sedona Project #: 21-1187-001

Location: SR-89A east of Southwest Dr

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			5		7			12:00			362		304		
00:15			2		3			12:15			332		328		
00:30			4		9			12:30			298		269		
00:45			2	13	15	34	47	12:45			327	1319	276	1177	2496
01:00			3		6			13:00			353		311		
01:15			4		1			13:15			335		295		
01:30			0		3			13:30			351		309		
01:45			1	8	6	16	24	13:45			293	1332	309	1224	2556
02:00			2		3			14:00			348		328		
02:15			1		4			14:15			318		298		
02:30			1		4			14:30			302		364		
02:45			0	4	2	13	17	14:45			307	1275	350	1340	2615
03:00			4		1			15:00			306		343		
03:15			5		3			15:15			329		327		
03:30			4		2			15:30			323		316		
03:45			6	19	1	7	26	15:45			289	1247	368	1354	2601
04:00			8		2			16:00			291		365		
04:15			4		2			16:15			284		344		
04:30			10		5			16:30			295		343		
04:45			16	38	8	17	55	16:45			311	1181	371	1423	2604
05:00			23		8			17:00			262		339		
05:15			21		11			17:15			242		345		
05:30			35		27			17:30			254		296		
05:45			84	163	42	88	251	17:45			195	953	267	1247	2200
06:00			94		35			18:00			205		263		
06:15			104		65			18:15			219		243		
06:30			122		89			18:30			208		230		
06:45			202	522	116	305	827	18:45			208	840	192	928	1768
07:00			196		117			19:00			174		247		
07:15			229		161			19:15			150		208		
07:30			264		205			19:30			141		166		
07:45			323	1012	244	727	1739	19:45			91	556	157	778	1334
08:00			365		216			20:00			72		145		
08:15			318		224			20:15			83		143		
08:30			328		243			20:30			61		122		
08:45			339	1350	272	955	2305	20:45			65	281	114	524	805
09:00			280		253			21:00			51		101		
09:15			314		230			21:15			51		94		
09:30			319		270			21:30			37		108		
09:45			345	1258	269	1022	2280	21:45			31	170	77	380	550
10:00			301		262			22:00			25		66		
10:15			318		258			22:15			24		70		
10:30			306		301			22:30			24		54		
10:45			304	1229	263	1084	2313	22:45			14	87	48	238	325
11:00			339		290			23:00			9		45		
11:15			318		331			23:15			14		40		
11:30			316		279			23:30			12		25		
11:45			320	1293	288	1188	2481	23:45			6	41	11	121	162
Total Vol.				6909		5456	**12365**					9282		10734	**20016**

GPS Coordinates: 34.862335, -111.809603

Daily Totals

NB	SB	EB	WB	Combined
		16191	16190	**32381**

	AM			PM		
Split %	55.9%	44.1%	**38.2%**	46.4%	53.6%	**61.8%**
Peak Hour	08:00	11:15	**11:30**	12:45	16:00	**14:30**
Volume	1350	1202	**2529**	1366	1423	**2628**
P.H.F.	0.92	0.91	**0.95**	0.97	0.96	**0.99**

Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Wednesday, March 31, 2021 City: Sedona Project #: 21-1187-001

Location: SR-89A west of Southwest Dr

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			5		7			12:00			362		300		
00:15			2		3			12:15			338		321		
00:30			4		9			12:30			294		262		
00:45			2	13	15	34	47	12:45			325	1319	275	1158	2477
01:00			3		7			13:00			351		303		
01:15			5		1			13:15			334		286		
01:30			0		3			13:30			351		308		
01:45			1	9	7	18	27	13:45			297	1333	305	1202	2535
02:00			3		3			14:00			349		325		
02:15			1		4			14:15			316		293		
02:30			1		4			14:30			301		360		
02:45			0	5	2	13	18	14:45			304	1270	344	1322	2592
03:00			4		1			15:00			304		340		
03:15			5		3			15:15			332		330		
03:30			4		2			15:30			322		318		
03:45			6	19	1	7	26	15:45			291	1249	362	1350	2599
04:00			8		2			16:00			286		359		
04:15			4		2			16:15			273		326		
04:30			9		5			16:30			290		343		
04:45			16	37	8	17	54	16:45			307	1156	371	1399	2555
05:00			23		8			17:00			257		340		
05:15			21		11			17:15			238		336		
05:30			34		27			17:30			247		292		
05:45			83	161	42	88	249	17:45			194	936	265	1233	2169
06:00			94		34			18:00			199		258		
06:15			105		64			18:15			215		237		
06:30			124		89			18:30			202		228		
06:45			205	528	106	293	821	18:45			205	821	187	910	1731
07:00			196		111			19:00			167		245		
07:15			229		152			19:15			145		205		
07:30			268		198			19:30			137		161		
07:45			318	1011	234	695	1706	19:45			89	538	156	767	1305
08:00			361		213			20:00			72		146		
08:15			315		217			20:15			82		140		
08:30			326		239			20:30			61		119		
08:45			337	1339	261	930	2269	20:45			66	281	112	517	798
09:00			277		249			21:00			49		97		
09:15			315		227			21:15			51		93		
09:30			318		263			21:30			37		106		
09:45			347	1257	258	997	2254	21:45			32	169	76	372	541
10:00			297		257			22:00			25		68		
10:15			317		251			22:15			23		72		
10:30			307		292			22:30			23		53		
10:45			302	1223	266	1066	2289	22:45			14	85	48	241	326
11:00			342		279			23:00			9		45		
11:15			312		327			23:15			14		40		
11:30			317		278			23:30			13		24		
11:45			309	1280	282	1166	2446	23:45			6	42	13	122	164
Total Vol.				6882		5324	**12206**					9199		10593	**19792**

GPS Coordinates: 34.862234, -111.810335

Daily Totals

NB	SB	EB	WB	Combined
		16081	15917	**31998**

	AM			PM		
Split %	56.4%	43.6%	**38.1%**	46.5%	53.5%	**61.9%**
Peak Hour	08:00	11:15	**11:30**	12:45	16:00	**14:30**
Volume	1339	1187	**2507**	1361	1399	**2615**
P.H.F.	0.93	0.91	**0.95**	0.97	0.94	**0.99**

Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Wednesday, March 31, 2021 City: Sedona Project #: 21-1187-001

Location: Southwest Dr north of SR-89A

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	1		1					12:00	13		9				
00:15	0		0					12:15	22		9				
00:30	0		0					12:30	14		11				
00:45	0	1	0	1			2	12:45	8	57	9	38			95
01:00	0		1					13:00	15		9				
01:15	1		0					13:15	20		12				
01:30	0		0					13:30	11		10				
01:45	0	1	1	2			3	13:45	11	57	3	34			91
02:00	1		0					14:00	19		15				
02:15	0		0					14:15	13		10				
02:30	0		0					14:30	10		7				
02:45	0	1	0	0			1	14:45	10	52	7	39			91
03:00	0		0					15:00	12		11				
03:15	0		0					15:15	15		15				
03:30	0		0					15:30	10		13				
03:45	0	0	0	0				15:45	16	53	8	47			100
04:00	0		0					16:00	15		14				
04:15	0		0					16:15	21		14				
04:30	0		1					16:30	11		16				
04:45	0	0	0	1			1	16:45	10	57	14	58			115
05:00	0		0					17:00	9		15				
05:15	0		0					17:15	12		7				
05:30	1		2					17:30	13		16				
05:45	0	1	1	3			4	17:45	5	39	4	42			81
06:00	2		1					18:00	14		15				
06:15	4		2					18:15	9		7				
06:30	2		0					18:30	7		11				
06:45	15	23	2	5			28	18:45	11	41	9	42			83
07:00	8		2					19:00	4		9				
07:15	13		4					19:15	6		8				
07:30	18		7					19:30	6		5				
07:45	20	59	15	28			87	19:45	2	18	3	25			43
08:00	10		11					20:00	5		6				
08:15	10		6					20:15	4		2				
08:30	11		9					20:30	5		2				
08:45	16	47	7	33			80	20:45	5	19	2	12			31
09:00	7		6					21:00	4		2				
09:15	16		12					21:15	3		2				
09:30	12		6					21:30	3		1				
09:45	26	61	13	37			98	21:45	4	14	2	7			21
10:00	15		14					22:00	1		3				
10:15	17		11					22:15	1		4				
10:30	14		4					22:30	2		2				
10:45	5	51	10	39			90	22:45	0	4	0	9			13
11:00	22		8					23:00	0		0				
11:15	7		9					23:15	0		0				
11:30	11		9					23:30	2		0				
11:45	10	50	15	41			91	23:45	0	2	2	2			4
Total Vol.		295		190			**485**			413		355			**768**

GPS Coordinates: 34.862513, -111.810102

Daily Totals

NB	SB	EB	WB	Combined
708	545			**1253**

	AM			PM		
Split %	60.8%	39.2%	**38.7%**	53.8%	46.2%	**61.3%**
Peak Hour	09:45	09:15	**09:15**	15:45	16:15	**15:45**
Volume	72	45	**114**	63	59	**115**
P.H.F.	0.69	0.80	**0.73**	0.75	0.92	**0.82**

CAPACITY ANALYSIS OUTPUT SHEETS
Average Volume Conditions

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	852	5	5	586	40	5	0	5	18	0	15
Future Vol, veh/h	7	852	5	5	586	40	5	0	5	18	0	15
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	9	947	6	6	651	50	6	0	6	23	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	701	0	0	953	0	0	1306	1681	477	1180	1659	351
Stage 1	-	-	-	-	-	-	968	968	-	688	688	-
Stage 2	-	-	-	-	-	-	338	713	-	492	971	-
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	892	-	-	717	-	-	117	94	534	146	97	645
Stage 1	-	-	-	-	-	-	273	330	-	403	445	-
Stage 2	-	-	-	-	-	-	650	434	-	527	329	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	892	-	-	717	-	-	112	92	534	142	95	645
Mov Cap-2 Maneuver	-	-	-	-	-	-	112	92	-	268	211	-
Stage 1	-	-	-	-	-	-	270	327	-	399	441	-
Stage 2	-	-	-	-	-	-	626	431	-	516	326	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	25.9	16.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	185	892	-	-	717	-	-	365
HCM Lane V/C Ratio	0.068	0.01	-	-	0.009	-	-	0.113
HCM Control Delay (s)	25.9	9.1	-	-	10.1	-	-	16.1
HCM Lane LOS	D	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	16	0	0	0	23	24	0	0	17	17
Future Vol, veh/h	16	0	16	0	0	0	23	24	0	0	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	20	0	0	0	29	30	0	0	21	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	120	120	32	130	130	30	42	0	0	30	0	0
Stage 1	32	32	-	88	88	-	-	-	-	-	-	-
Stage 2	88	88	-	42	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	855	770	1042	843	761	1044	1567	-	-	1583	-	-
Stage 1	984	868	-	920	822	-	-	-	-	-	-	-
Stage 2	920	822	-	972	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	843	755	1042	815	747	1044	1567	-	-	1583	-	-
Mov Cap-2 Maneuver	843	755	-	815	747	-	-	-	-	-	-	-
Stage 1	965	868	-	903	806	-	-	-	-	-	-	-
Stage 2	903	806	-	953	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	3.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	932	-	1583	-	-
HCM Lane V/C Ratio	0.018	-	-	0.043	-	-	-	-
HCM Control Delay (s)	7.3	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	1144	5	5	1378	45	5	0	5	27	0	21
Future Vol, veh/h	19	1144	5	5	1378	45	5	0	5	27	0	21
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	24	1271	6	6	1531	56	6	0	6	34	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1587	0	0	1277	0	0	2100	2921	639	2255	2896	794
Stage 1	-	-	-	-	-	-	1322	1322	-	1571	1571	-
Stage 2	-	-	-	-	-	-	778	1599	-	684	1325	-
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	410	-	-	540	-	-	30	15	419	~ 23	16	331
Stage 1	-	-	-	-	-	-	165	224	-	115	169	-
Stage 2	-	-	-	-	-	-	355	164	-	405	223	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	410	-	-	540	-	-	26	14	419	~ 21	15	331
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	14	-	83	91	-
Stage 1	-	-	-	-	-	-	155	211	-	108	167	-
Stage 2	-	-	-	-	-	-	323	162	-	376	210	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	102	59.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	49	410	-	-	540	-	-	123
HCM Lane V/C Ratio	0.255	0.058	-	-	0.012	-	-	0.488
HCM Control Delay (s)	102	14.3	-	-	11.7	-	-	59.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0	-	-	2.2

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

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	24	0	0	0	32	32	0	0	24	24
Future Vol, veh/h	24	0	24	0	0	0	32	32	0	0	24	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	30	0	0	0	40	40	0	0	30	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	165	165	45	180	180	40	60	0	0	40	0	0
Stage 1	45	45	-	120	120	-	-	-	-	-	-	-
Stage 2	120	120	-	60	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	800	728	1025	782	714	1031	1544	-	-	1570	-	-
Stage 1	969	857	-	884	796	-	-	-	-	-	-	-
Stage 2	884	796	-	951	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	784	709	1025	744	695	1031	1544	-	-	1570	-	-
Mov Cap-2 Maneuver	784	709	-	744	695	-	-	-	-	-	-	-
Stage 1	944	857	-	861	775	-	-	-	-	-	-	-
Stage 2	861	775	-	923	845	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	0	3.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	888	-	1570	-	-
HCM Lane V/C Ratio	0.026	-	-	0.068	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.3	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	872	5	5	599	41	5	0	5	18	0	15
Future Vol, veh/h	7	872	5	5	599	41	5	0	5	18	0	15
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	9	969	6	6	666	51	6	0	6	23	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	717	0	0	975	0	0	1335	1719	488	1207	1697	359
Stage 1	-	-	-	-	-	-	990	990	-	704	704	-
Stage 2	-	-	-	-	-	-	345	729	-	503	993	-
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	880	-	-	703	-	-	112	89	526	139	92	638
Stage 1	-	-	-	-	-	-	264	323	-	394	438	-
Stage 2	-	-	-	-	-	-	644	426	-	519	322	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	880	-	-	703	-	-	107	87	526	135	90	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	107	87	-	261	206	-
Stage 1	-	-	-	-	-	-	261	320	-	390	434	-
Stage 2	-	-	-	-	-	-	620	422	-	508	319	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	26.7	16.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	880	-	-	703	-	-	357
HCM Lane V/C Ratio	0.07	0.01	-	-	0.009	-	-	0.116
HCM Control Delay (s)	26.7	9.1	-	-	10.2	-	-	16.4
HCM Lane LOS	D	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	16	0	0	0	24	24	0	0	17	17
Future Vol, veh/h	16	0	16	0	0	0	24	24	0	0	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	20	0	0	0	30	30	0	0	21	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	122	122	32	132	132	30	42	0	0	30	0	0
Stage 1	32	32	-	90	90	-	-	-	-	-	-	-
Stage 2	90	90	-	42	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	853	768	1042	840	759	1044	1567	-	-	1583	-	-
Stage 1	984	868	-	917	820	-	-	-	-	-	-	-
Stage 2	917	820	-	972	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	841	753	1042	812	745	1044	1567	-	-	1583	-	-
Mov Cap-2 Maneuver	841	753	-	812	745	-	-	-	-	-	-	-
Stage 1	965	868	-	900	804	-	-	-	-	-	-	-
Stage 2	900	804	-	953	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	3.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	931	-	1583	-	-
HCM Lane V/C Ratio	0.019	-	-	0.043	-	-	-	-
HCM Control Delay (s)	7.3	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	749	5	5	902	46	5	0	5	28	0	21
Future Vol, veh/h	19	749	5	5	902	46	5	0	5	28	0	21
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	24	832	6	6	1002	58	6	0	6	35	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1060	0	0	838	0	0	1396	1955	419	1507	1929	530
Stage 1	-	-	-	-	-	-	883	883	-	1043	1043	-
Stage 2	-	-	-	-	-	-	513	1072	-	464	886	-
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	653	-	-	792	-	-	101	63	583	83	66	493
Stage 1	-	-	-	-	-	-	307	362	-	245	305	-
Stage 2	-	-	-	-	-	-	512	295	-	548	361	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	653	-	-	792	-	-	92	60	583	79	63	493
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	60	-	178	175	-
Stage 1	-	-	-	-	-	-	296	349	-	236	303	-
Stage 2	-	-	-	-	-	-	481	293	-	522	348	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	29.6	24.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	159	653	-	-	792	-	-	245
HCM Lane V/C Ratio	0.079	0.036	-	-	0.008	-	-	0.25
HCM Control Delay (s)	29.6	10.7	-	-	9.6	-	-	24.5
HCM Lane LOS	D	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	24	0	0	0	32	33	0	0	25	25
Future Vol, veh/h	24	0	24	0	0	0	32	33	0	0	25	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	30	0	0	0	40	41	0	0	31	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	168	168	47	183	183	41	62	0	0	41	0	0
Stage 1	47	47	-	121	121	-	-	-	-	-	-	-
Stage 2	121	121	-	62	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	796	725	1022	778	711	1030	1541	-	-	1568	-	-
Stage 1	967	856	-	883	796	-	-	-	-	-	-	-
Stage 2	883	796	-	949	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	779	705	1022	740	692	1030	1541	-	-	1568	-	-
Mov Cap-2 Maneuver	779	705	-	740	692	-	-	-	-	-	-	-
Stage 1	941	856	-	859	775	-	-	-	-	-	-	-
Stage 2	859	775	-	921	843	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	0	3.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1541	-	-	884	-	1568	-	-
HCM Lane V/C Ratio	0.026	-	-	0.068	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.4	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	872	5	5	599	45	5	0	5	30	0	22
Future Vol, veh/h	9	872	5	5	599	45	5	0	5	30	0	22
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	11	969	6	6	666	56	6	0	6	38	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	722	0	0	975	0	0	1339	1728	488	1213	1703	361
Stage 1	-	-	-	-	-	-	994	994	-	706	706	-
Stage 2	-	-	-	-	-	-	345	734	-	507	997	-
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	876	-	-	703	-	-	111	88	526	138	91	636
Stage 1	-	-	-	-	-	-	263	321	-	393	437	-
Stage 2	-	-	-	-	-	-	644	424	-	516	320	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	876	-	-	703	-	-	104	86	526	134	89	636
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	86	-	259	204	-
Stage 1	-	-	-	-	-	-	260	317	-	388	433	-
Stage 2	-	-	-	-	-	-	611	420	-	503	316	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	27.3	17.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	174	876	-	-	703	-	-	346
HCM Lane V/C Ratio	0.072	0.013	-	-	0.009	-	-	0.188
HCM Control Delay (s)	27.3	9.2	-	-	10.2	-	-	17.8
HCM Lane LOS	D	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	16	19	0	0	24	24	6	0	17	17
Future Vol, veh/h	16	0	16	19	0	0	24	24	6	0	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	20	24	0	0	30	30	8	0	21	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	126	130	32	136	136	34	42	0	0	38	0	0
Stage 1	32	32	-	94	94	-	-	-	-	-	-	-
Stage 2	94	98	-	42	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	848	761	1042	835	755	1039	1567	-	-	1572	-	-
Stage 1	984	868	-	913	817	-	-	-	-	-	-	-
Stage 2	913	814	-	972	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	835	746	1042	807	740	1039	1567	-	-	1572	-	-
Mov Cap-2 Maneuver	835	746	-	807	740	-	-	-	-	-	-	-
Stage 1	964	868	-	895	801	-	-	-	-	-	-	-
Stage 2	895	798	-	953	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.6	3.3	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	927	807	1572	-	-
HCM Lane V/C Ratio	0.019	-	-	0.043	0.029	-	-	-
HCM Control Delay (s)	7.3	0	-	9.1	9.6	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	749	5	5	902	58	5	0	5	35	0	25
Future Vol, veh/h	26	749	5	5	902	58	5	0	5	35	0	25
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	33	832	6	6	1002	73	6	0	6	44	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1075	0	0	838	0	0	1414	1988	419	1533	1955	538
Stage 1	-	-	-	-	-	-	901	901	-	1051	1051	-
Stage 2	-	-	-	-	-	-	513	1087	-	482	904	-
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	644	-	-	792	-	-	98	60	583	80	63	488
Stage 1	-	-	-	-	-	-	299	355	-	243	302	-
Stage 2	-	-	-	-	-	-	512	290	-	534	354	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	644	-	-	792	-	-	88	56	583	76	59	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	56	-	173	170	-
Stage 1	-	-	-	-	-	-	284	337	-	231	300	-
Stage 2	-	-	-	-	-	-	476	288	-	501	336	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	30.6	27.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	153	644	-	-	792	-	-	237
HCM Lane V/C Ratio	0.082	0.05	-	-	0.008	-	-	0.316
HCM Control Delay (s)	30.6	10.9	-	-	9.6	-	-	27.1
HCM Lane LOS	D	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	24	11	0	0	32	33	19	0	25	25
Future Vol, veh/h	24	0	24	11	0	0	32	33	19	0	25	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	30	14	0	0	40	41	24	0	31	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	180	192	47	195	195	53	62	0	0	65	0	0
Stage 1	47	47	-	133	133	-	-	-	-	-	-	-
Stage 2	133	145	-	62	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	782	703	1022	764	700	1014	1541	-	-	1537	-	-
Stage 1	967	856	-	870	786	-	-	-	-	-	-	-
Stage 2	870	777	-	949	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	766	684	1022	727	681	1014	1541	-	-	1537	-	-
Mov Cap-2 Maneuver	766	684	-	727	681	-	-	-	-	-	-	-
Stage 1	941	856	-	847	765	-	-	-	-	-	-	-
Stage 2	847	756	-	921	843	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	10	2.8	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1541	-	-	876	727	1537	-	-
HCM Lane V/C Ratio	0.026	-	-	0.068	0.019	-	-	-
HCM Control Delay (s)	7.4	0	-	9.4	10	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

CAPACITY ANALYSIS OUTPUT SHEETS
Peak Season Volume Conditions

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1332	5	5	915	40	5	0	5	18	0	15
Future Vol, veh/h	7	1332	5	5	915	40	5	0	5	18	0	15
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	9	1480	6	6	1017	50	6	0	6	23	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1067	0	0	1486	0	0	2022	2580	743	1812	2558	534
Stage 1	-	-	-	-	-	-	1501	1501	-	1054	1054	-
Stage 2	-	-	-	-	-	-	521	1079	-	758	1504	-
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	649	-	-	448	-	-	34	25	358	49	26	491
Stage 1	-	-	-	-	-	-	128	183	-	242	301	-
Stage 2	-	-	-	-	-	-	507	293	-	365	183	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	649	-	-	448	-	-	32	24	358	47	25	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	32	24	-	150	111	-
Stage 1	-	-	-	-	-	-	126	180	-	239	297	-
Stage 2	-	-	-	-	-	-	481	289	-	354	180	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	81.7	25.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	59	649	-	-	448	-	-	219
HCM Lane V/C Ratio	0.212	0.013	-	-	0.014	-	-	0.188
HCM Control Delay (s)	81.7	10.6	-	-	13.1	-	-	25.2
HCM Lane LOS	F	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	16	0	0	0	23	24	0	0	17	17
Future Vol, veh/h	16	0	16	0	0	0	23	24	0	0	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	20	0	0	0	29	30	0	0	21	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	120	120	32	130	130	30	42	0	0	30	0	0
Stage 1	32	32	-	88	88	-	-	-	-	-	-	-
Stage 2	88	88	-	42	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	855	770	1042	843	761	1044	1567	-	-	1583	-	-
Stage 1	984	868	-	920	822	-	-	-	-	-	-	-
Stage 2	920	822	-	972	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	843	755	1042	815	747	1044	1567	-	-	1583	-	-
Mov Cap-2 Maneuver	843	755	-	815	747	-	-	-	-	-	-	-
Stage 1	965	868	-	903	806	-	-	-	-	-	-	-
Stage 2	903	806	-	953	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	3.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	932	-	1583	-	-
HCM Lane V/C Ratio	0.018	-	-	0.043	-	-	-	-
HCM Control Delay (s)	7.3	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	1144	5	5	1378	45	5	0	5	27	0	21
Future Vol, veh/h	19	1144	5	5	1378	45	5	0	5	27	0	21
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	24	1271	6	6	1531	56	6	0	6	34	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1587	0	0	1277	0	0	2100	2921	639	2255	2896	794
Stage 1	-	-	-	-	-	-	1322	1322	-	1571	1571	-
Stage 2	-	-	-	-	-	-	778	1599	-	684	1325	-
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	410	-	-	540	-	-	30	15	419	~ 23	16	331
Stage 1	-	-	-	-	-	-	165	224	-	115	169	-
Stage 2	-	-	-	-	-	-	355	164	-	405	223	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	410	-	-	540	-	-	26	14	419	~ 21	15	331
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	14	-	83	91	-
Stage 1	-	-	-	-	-	-	155	211	-	108	167	-
Stage 2	-	-	-	-	-	-	323	162	-	376	210	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	102	59.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	49	410	-	-	540	-	-	123
HCM Lane V/C Ratio	0.255	0.058	-	-	0.012	-	-	0.488
HCM Control Delay (s)	102	14.3	-	-	11.7	-	-	59.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0	-	-	2.2

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

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	24	0	0	0	32	32	0	0	24	24
Future Vol, veh/h	24	0	24	0	0	0	32	32	0	0	24	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	30	0	0	0	40	40	0	0	30	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	165	165	45	180	180	40	60	0	0	40	0	0
Stage 1	45	45	-	120	120	-	-	-	-	-	-	-
Stage 2	120	120	-	60	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	800	728	1025	782	714	1031	1544	-	-	1570	-	-
Stage 1	969	857	-	884	796	-	-	-	-	-	-	-
Stage 2	884	796	-	951	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	784	709	1025	744	695	1031	1544	-	-	1570	-	-
Mov Cap-2 Maneuver	784	709	-	744	695	-	-	-	-	-	-	-
Stage 1	944	857	-	861	775	-	-	-	-	-	-	-
Stage 2	861	775	-	923	845	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	0	3.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	888	-	1570	-	-
HCM Lane V/C Ratio	0.026	-	-	0.068	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.3	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1363	5	5	936	41	5	0	5	18	0	15
Future Vol, veh/h	7	1363	5	5	936	41	5	0	5	18	0	15
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	9	1514	6	6	1040	51	6	0	6	23	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1091	0	0	1520	0	0	2067	2638	760	1853	2616	546
Stage 1	-	-	-	-	-	-	1535	1535	-	1078	1078	-
Stage 2	-	-	-	-	-	-	532	1103	-	775	1538	-
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	635	-	-	435	-	-	31	23	349	46	24	482
Stage 1	-	-	-	-	-	-	122	176	-	233	293	-
Stage 2	-	-	-	-	-	-	499	285	-	357	176	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	635	-	-	435	-	-	29	22	349	44	23	482
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	22	-	144	107	-
Stage 1	-	-	-	-	-	-	120	174	-	230	289	-
Stage 2	-	-	-	-	-	-	473	281	-	346	174	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	90.7	26.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	54	635	-	-	435	-	-	211
HCM Lane V/C Ratio	0.231	0.014	-	-	0.014	-	-	0.195
HCM Control Delay (s)	90.7	10.7	-	-	13.4	-	-	26.2
HCM Lane LOS	F	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	16	0	0	0	24	24	0	0	17	17
Future Vol, veh/h	16	0	16	0	0	0	24	24	0	0	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	20	0	0	0	30	30	0	0	21	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	122	122	32	132	132	30	42	0	0	30	0	0
Stage 1	32	32	-	90	90	-	-	-	-	-	-	-
Stage 2	90	90	-	42	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	853	768	1042	840	759	1044	1567	-	-	1583	-	-
Stage 1	984	868	-	917	820	-	-	-	-	-	-	-
Stage 2	917	820	-	972	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	841	753	1042	812	745	1044	1567	-	-	1583	-	-
Mov Cap-2 Maneuver	841	753	-	812	745	-	-	-	-	-	-	-
Stage 1	965	868	-	900	804	-	-	-	-	-	-	-
Stage 2	900	804	-	953	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	3.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	931	-	1583	-	-
HCM Lane V/C Ratio	0.019	-	-	0.043	-	-	-	-
HCM Control Delay (s)	7.3	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	1170	5	5	1410	46	5	0	5	28	0	21
Future Vol, veh/h	19	1170	5	5	1410	46	5	0	5	28	0	21
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	24	1300	6	6	1567	58	6	0	6	35	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1625	0	0	1306	0	0	2147	2988	653	2306	2962	813
Stage 1	-	-	-	-	-	-	1351	1351	-	1608	1608	-
Stage 2	-	-	-	-	-	-	796	1637	-	698	1354	-
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	396	-	-	526	-	-	27	14	410	~ 21	14	322
Stage 1	-	-	-	-	-	-	158	217	-	109	162	-
Stage 2	-	-	-	-	-	-	347	157	-	397	216	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	396	-	-	526	-	-	23	13	410	~ 20	13	322
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	13	-	79	86	-
Stage 1	-	-	-	-	-	-	148	204	-	102	160	-
Stage 2	-	-	-	-	-	-	315	155	-	367	203	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	116.5	65.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	44	396	-	-	526	-	-	117
HCM Lane V/C Ratio	0.284	0.06	-	-	0.012	-	-	0.524
HCM Control Delay (s)	116.5	14.7	-	-	11.9	-	-	65.5
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1	0.2	-	-	0	-	-	2.4

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

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	24	0	0	0	32	33	0	0	25	25
Future Vol, veh/h	24	0	24	0	0	0	32	33	0	0	25	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	30	0	0	0	40	41	0	0	31	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	168	170	47	185	185	43	62	0	0	43	0	0
Stage 1	47	47	-	123	123	-	-	-	-	-	-	-
Stage 2	121	123	-	62	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	796	723	1022	776	709	1027	1541	-	-	1566	-	-
Stage 1	967	856	-	881	794	-	-	-	-	-	-	-
Stage 2	883	794	-	949	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	779	702	1022	736	688	1025	1541	-	-	1563	-	-
Mov Cap-2 Maneuver	779	702	-	736	688	-	-	-	-	-	-	-
Stage 1	941	856	-	855	771	-	-	-	-	-	-	-
Stage 2	859	771	-	921	843	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	0	3.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1541	-	-	884	-	1563	-	-
HCM Lane V/C Ratio	0.026	-	-	0.068	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.4	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1363	5	5	936	45	5	0	5	30	0	22
Future Vol, veh/h	9	1363	5	5	936	45	5	0	5	30	0	22
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	11	1514	6	6	1040	56	6	0	6	38	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1096	0	0	1520	0	0	2071	2647	760	1859	2622	548
Stage 1	-	-	-	-	-	-	1539	1539	-	1080	1080	-
Stage 2	-	-	-	-	-	-	532	1108	-	779	1542	-
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	-	-	435	-	-	31	23	349	45	24	480
Stage 1	-	-	-	-	-	-	121	176	-	233	293	-
Stage 2	-	-	-	-	-	-	499	284	-	355	175	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	633	-	-	435	-	-	29	22	349	43	23	480
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	22	-	143	106	-
Stage 1	-	-	-	-	-	-	119	173	-	229	289	-
Stage 2	-	-	-	-	-	-	464	280	-	343	172	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	90.7	30.9
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	54	633	-	-	435	-	-	203
HCM Lane V/C Ratio	0.231	0.018	-	-	0.014	-	-	0.32
HCM Control Delay (s)	90.7	10.8	-	-	13.4	-	-	30.9
HCM Lane LOS	F	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	16	19	0	0	24	24	6	0	17	17
Future Vol, veh/h	16	0	16	19	0	0	24	24	6	0	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	20	24	0	0	30	30	8	0	21	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	126	130	32	136	136	34	42	0	0	38	0	0
Stage 1	32	32	-	94	94	-	-	-	-	-	-	-
Stage 2	94	98	-	42	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	848	761	1042	835	755	1039	1567	-	-	1572	-	-
Stage 1	984	868	-	913	817	-	-	-	-	-	-	-
Stage 2	913	814	-	972	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	835	746	1042	807	740	1039	1567	-	-	1572	-	-
Mov Cap-2 Maneuver	835	746	-	807	740	-	-	-	-	-	-	-
Stage 1	964	868	-	895	801	-	-	-	-	-	-	-
Stage 2	895	798	-	953	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.6	3.3	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	927	807	1572	-	-
HCM Lane V/C Ratio	0.019	-	-	0.043	0.029	-	-	-
HCM Control Delay (s)	7.3	0	-	9.1	9.6	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1170	5	5	1410	58	5	0	5	35	0	25
Future Vol, veh/h	26	1170	5	5	1410	58	5	0	5	35	0	25
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	33	1300	6	6	1567	73	6	0	6	44	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1640	0	0	1306	0	0	2165	3021	653	2332	2988	820
Stage 1	-	-	-	-	-	-	1369	1369	-	1616	1616	-
Stage 2	-	-	-	-	-	-	796	1652	-	716	1372	-
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	391	-	-	526	-	-	26	13	410	~ 20	14	318
Stage 1	-	-	-	-	-	-	154	213	-	108	161	-
Stage 2	-	-	-	-	-	-	347	154	-	387	212	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	391	-	-	526	-	-	22	12	410	~ 18	13	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	12	-	76	85	-
Stage 1	-	-	-	-	-	-	141	195	-	99	159	-
Stage 2	-	-	-	-	-	-	309	152	-	349	194	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	123.6	87.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	42	391	-	-	526	-	-	111
HCM Lane V/C Ratio	0.298	0.083	-	-	0.012	-	-	0.676
HCM Control Delay (s)	123.6	15	-	-	11.9	-	-	87.7
HCM Lane LOS	F	C	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1	0.3	-	-	0	-	-	3.5

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

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	24	11	0	0	32	33	19	0	25	25
Future Vol, veh/h	24	0	24	11	0	0	32	33	19	0	25	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	30	14	0	0	40	41	24	0	31	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	180	194	47	197	197	55	62	0	0	67	0	0
Stage 1	47	47	-	135	135	-	-	-	-	-	-	-
Stage 2	133	147	-	62	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	782	701	1022	762	699	1012	1541	-	-	1535	-	-
Stage 1	967	856	-	868	785	-	-	-	-	-	-	-
Stage 2	870	775	-	949	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	766	681	1022	723	679	1010	1541	-	-	1532	-	-
Mov Cap-2 Maneuver	766	681	-	723	679	-	-	-	-	-	-	-
Stage 1	941	856	-	843	762	-	-	-	-	-	-	-
Stage 2	847	753	-	921	843	-	-	-	-	-	-	-

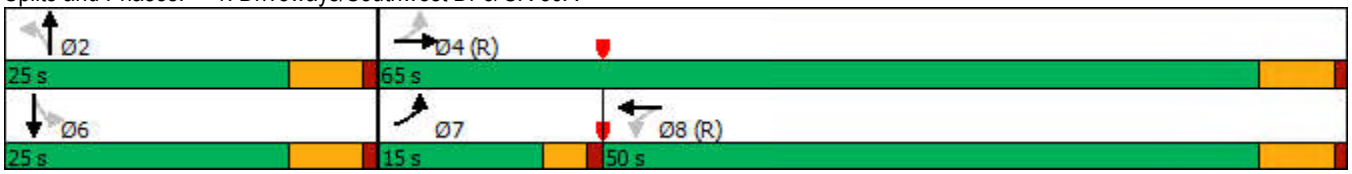
Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	10.1	2.8	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1541	-	-	876	723	1532	-	-
HCM Lane V/C Ratio	0.026	-	-	0.068	0.019	-	-	-
HCM Control Delay (s)	7.4	0	-	9.4	10.1	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1170	5	5	1410	58	5	0	5	35	0	25
Future Volume (vph)	26	1170	5	5	1410	58	5	0	5	35	0	25
Satd. Flow (prot)	1770	3280	0	1770	3269	0	0	1694	0	1770	1583	0
Flt Permitted	0.099			0.211				0.826		0.750		
Satd. Flow (perm)	184	3280	0	393	3269	0	0	1434	0	1397	1583	0
Satd. Flow (RTOR)		1			7			85			229	
Lane Group Flow (vph)	33	1306	0	6	1640	0	0	12	0	44	31	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	65.0		50.0	50.0		25.0	25.0		25.0	25.0	
Total Lost Time (s)	4.0	6.0		6.0	6.0			6.0		6.0	6.0	
Act Effct Green (s)	74.0	73.2		67.1	67.1			8.3		8.3	8.3	
Actuated g/C Ratio	0.82	0.81		0.75	0.75			0.09		0.09	0.09	
v/c Ratio	0.13	0.49		0.02	0.67			0.06		0.34	0.09	
Control Delay	3.4	4.4		6.4	10.6			0.5		44.5	0.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	3.4	4.4		6.4	10.6			0.5		44.5	0.5	
LOS	A	A		A	B			A		D	A	
Approach Delay		4.4			10.6			0.5			26.3	
Approach LOS		A			B			A			C	
Queue Length 50th (ft)	3	112		1	287			0		24	0	
Queue Length 95th (ft)	8	181		5	438			0		48	0	
Internal Link Dist (ft)		2149			2319			431			385	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	344	2666		293	2439			369		294	514	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.10	0.49		0.02	0.67			0.03		0.15	0.06	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 40 (44%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 55.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Driveways/Southwest Dr & SR 89A



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	0	1196	5	0	1415	58	0	0	10	0	0	60
Future Vol, veh/h	0	1196	5	0	1415	58	0	0	10	0	0	60
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	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	80	80	80	80	80	80	80
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	0	1329	6	0	1572	73	0	0	13	0	0	75

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	668	-	-	823
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	401	0	0	317
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	401	-	-	317
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	14.3	19.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	401	-	-	-	-	317
HCM Lane V/C Ratio	0.031	-	-	-	-	0.237
HCM Control Delay (s)	14.3	-	-	-	-	19.8
HCM Lane LOS	B	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.9

MISCELLANEOUS DATA

Figure 4.14: Potential Pedestrian Crossing Locations

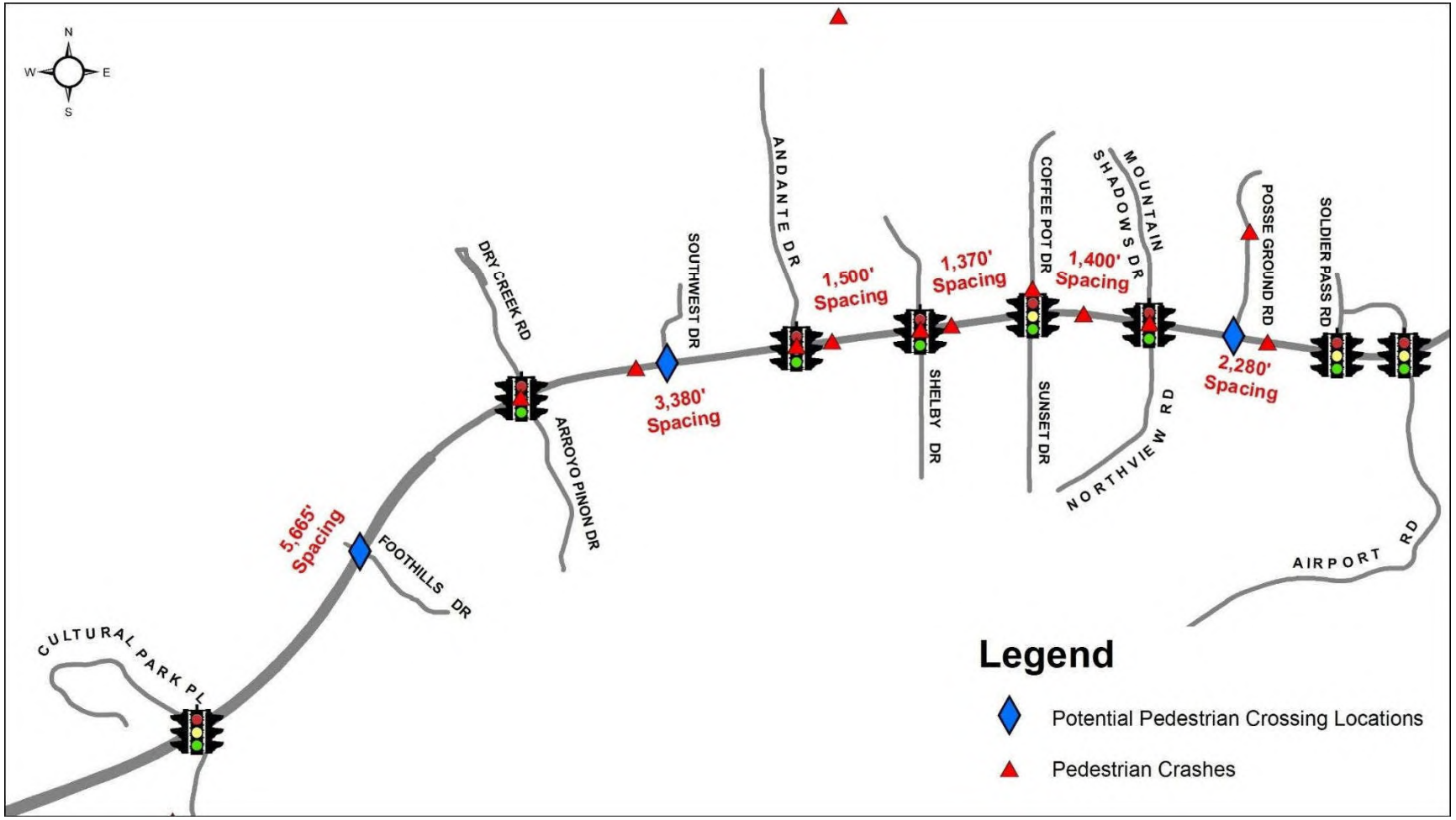
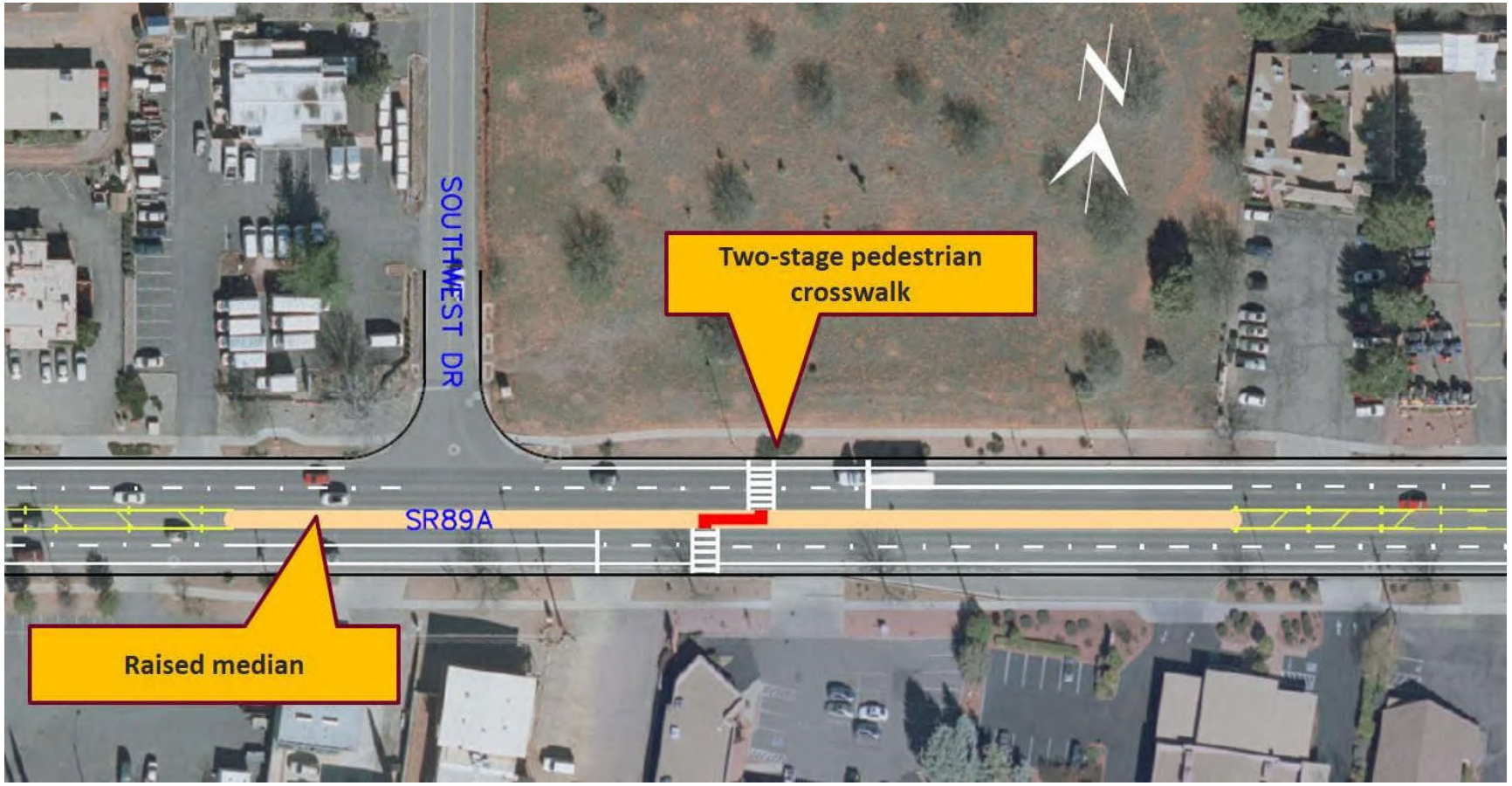


Figure 4.16: Example of a Two-Stage Pedestrian Cross-walk



SR 89A / SOUTHWEST DRIVE 2017 THRU 2019 CRASH SUMMARY

IncidentID	IncidentDateTime	CollisionManner	LightCondition	TotalUnits	TotalMotorists	TotalInjuries	TotalFatalities	InjurySeverity	Onroad	CrossingFeature	Offset	IntersectionATISCode	TrafficWayType	IntersectionType	JunctionRelation	Weather	X	Y
3323398	12/12/2017 8:32	3	2	2	2	0	0	1	Southwest Dr	SA089	0		3	2	1	1		
3204850	2/24/2017 23:07	1	4	1	1	0	0	1	State Alternate 89	13 SOUTHWEST DR	0.0379		3	0	0	1		
3234851	4/28/2017 16:29	4	1	2	3	1	0	3	State Alternate 89	13 SOUTHWEST DR	0.0379		4	0	0	1		
3234849	5/16/2017 13:39	4	1	2	5	0	0	1	State Alternate 89	13 TORTILLA DR	0.0174	13 TORTILLA DR	3	2	2	1		
3379115	5/11/2018 15:46	2	1	2	2	2	0	2	SA089	Southwest Dr	0		3	2	1	1	731984.6942	1405196.45
3379117	5/8/2018 16:26	2	1	2	5	1	0	2	SA089	Southwest Dr	0		2	2	1	1	731984.6942	1405196.45
3405734	6/9/2018 10:52	6	1	2	3	0	0	1	SA089	Tortilla Dr	250		3	0	0	1	731929.1657	1405188.536
3426852	9/24/2018 14:37	4	1	2	2	0	0	1	SA089	Tortilla Dr	430		2	0	0	1	732107.7796	1405212.55
3420455	8/6/2018 15:34	4	1	2	2	0	0	1	SA089	Tortilla Dr	116		2	0	0	1	731796.8157	1405169.674
3566494	8/22/2019 8:20	4	1	3	3	0	0	1	SA089	Southwest Dr	0		4	0	0	1	731984.6941	1405196.45
3608755	10/7/2019 15:30	3	1	2	2	0	0	1	SA089	Southwest Dr	0		3	255	203	1	731984.6941	1405196.45
3506508	3/19/2019 21:20	6	4	2	3	0	0	1	SA089	Southwest Dr	50		3	255	206	1	732034.0727	1405202.909

IncidentID	TravelDirectionDesc	EnvCondition1	EnvConditionDesc1	BodyStyle	PostedSpeed	EstimatedSpeed	DefectDesc1	entSequenceDes	EventSequence2	EventSequenceDesc2	ControlType	ControlTypeDesc	SurfaceCondition1	SurfaceConditionDesc1
3323398	2 - SOUTH	0	ONTRIBUTING_CIRCUMSTA	41	35	5	BUTING_CIRCL	VEHICLE_IN_TRA	0		2	STOP_SIGN	1	DRY
3323398	3 - EAST	0	ONTRIBUTING_CIRCUMSTA	44	35	10	BUTING_CIRCL	VEHICLE_IN_TRA	0		0	NO_CONTROLS	1	DRY
3204850	4 - WEST	97	OTHER	57	35	35	OTHER	ROSS_CENTERLIN	12	RAN_OFF_ROAD_LEFT	0	NO_CONTROLS	1	DRY
3234851	4 - WEST	0	ONTRIBUTING_CIRCUMSTA	50	35	35	BUTING_CIRCL	VEHICLE_IN_TRA	0		0	NO_CONTROLS	1	DRY
3234851	4 - WEST	20	STOPPED_PARKED_VEHICLI	47	35	0	No Data	_VEHICLE_IN_TRA	0		0	NO_CONTROLS	1	DRY
3234849	3 - EAST	21	MOVING_VEHICLE	50	35	30	No Data	_VEHICLE_IN_TRA	0		0	NO_CONTROLS	1	DRY
3234849	3 - EAST	21	MOVING_VEHICLE	44	35	20	No Data	_VEHICLE_IN_TRA	0		0	NO_CONTROLS	1	DRY
3379115	8 - Southeast	21	Moving Vehicle	31	35	10		Motor Vehicle In Tran	0		2	Stop Signs	1	Dry
3379115	7 - Southwest	21	Moving Vehicle	50	35	40		Motor Vehicle In Tran	0		0	No Controls	1	Dry
3379117	3 - East	21	Moving Vehicle	44	0	0		Motor Vehicle In Tran	0		2	Stop Signs	1	Dry
3379117	4 - West	0	Contributing Circumstanc	50	35	30	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3405734	3 - East	99	Unknown	47	35	1	Unknown	r Vehicle In Tran	0		0	No Controls	1	Dry
3405734	3 - East	99	Unknown	44	35	32	Unknown	r Vehicle In Tran	0		0	No Controls	1	Dry
3426852	4 - West	0	Contributing Circumstanc	62	35	45	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3426852	4 - West	0	Contributing Circumstanc	50	35	5	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3420455	4 - West	0	Contributing Circumstanc	50	35	35	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3420455	4 - West	0	Contributing Circumstanc	44	35	5	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3566494	3 - East	0	Contributing Circumstanc	50	35	15	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3566494	3 - East	0	Contributing Circumstanc	50	35	0	ributing Circun	r Vehicle In Tran	16	Motor Vehicle In Transport	0	No Controls	1	Dry
3566494	3 - East	0	Contributing Circumstanc	31	35	0	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3608755	3 - East	0	Contributing Circumstanc	47	35	10	ributing Circun	r Vehicle In Tran	0		2	Stop Sign	1	Dry
3608755	4 - West	0	Contributing Circumstanc	50	35	35	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3506508	4 - West	0	Contributing Circumstanc	44	35	35	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry
3506508	4 - West	0	Contributing Circumstanc	31	35	35	ributing Circun	r Vehicle In Tran	0		0	No Controls	1	Dry

Figure 611-B. Traffic Signal Priority Evaluation

TRAFFIC SIGNAL PROIRITY EVALUATION

Location: SR89A and Southwest Drive Date: 7/13/21

1. **Frequency of crashes susceptible to correction by signalization – Award 15 points** if the yearly average of right angle collisions over the 3-year evaluation period is more than 5 per year. **Award 10 points** if the yearly average is 4 to 5 per year and **award 5 points** if the yearly average is 3 to 4 angle collisions per year.

   0

2. **Vehicle volumes in excess of warrant minimums (Volume warrants 1 and 2)- Award 1 point** for each hour that the high volume minor street approach exceeds 200% of stated values for volume warrants.

   0

3. **Peak hour stopped time delay for volume on high volume minor street approach – Award points** if the average delay per vehicle measured at the subject location is equal to or more than the stated delay value given for the appropriate roadway environment:

Rural Environment*	Urban Environment*
5 points => 15sec./veh.	> 20sec./veh.
10 points => 20sec./veh.	> 30sec./veh.
15 points => 30sec./veh.	> 35sec./veh.

   *The subject location may have a combination of both urban and rural characteristics. The evaluator should use engineering judgment in choosing the proper classification. Some parameters to consider in classifying the roadway environment along the major route are listed below:

   Rural – 2-lane, random arrival rate at intersection, high speeds, little to medium development, low to medium ADT, low number of access points.

   Urban – 4-lane, fairly uniform arrival rate at intersection, low speeds, medium to heavy development, medium to high ADT, significant number of access points.

   15

4. **Intersection geometric – Award 10 points** if geometric or physical constraints at the intersection make cross-corner sight distance inadequate for the minor leg traffic and that no cost-effective, remedial measure can be realized to correct it. This includes sight restrictions due to vertical or horizontal alignments, buildings or permanent structures within sight distance triangle, etc.

   0

5. **Progressive system compatibility – Award 10 points** if the intersection is within an existing progressive system or spacing between adjacent traffic signals and the study location is not less than 1000 feet. **Deduct 10 points** if the study location is less than 1000 feet form an existing signal. **No points** if the intersection is considered stand alone (one-half mile from any adjacent signal)

   -10

GRAND TOTAL 5

Exhibit 640-A. PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

Location: SR89A & Southwest Dr Date: 7/13/21

1. Motor vehicle crashes correctable by installation of PHB – Award 5 points for each crash (for the most recent 5 years of data) involving pedestrians, bicyclists, wheel chairs, skateboards, motorized scooters, or golf carts crossing within 500 feet on either side of the proposed PHB locations, or half the distance to the nearest signal (whichever is less): 0

2. Peak hour pedestrian crossing volume – Award points if the average peak hour pedestrian crossing volume within 500 feet on either side of the proposed PHB location, or half the distance to the nearest traffic signal (whichever is less): 0
   - 0 points → 0 – 10 pedestrians per peak hour (average)
   - 2 points → 11 – 20 pedestrians per peak hour (average)
   - 4 points → 21 – 39 pedestrians per peak hour (average)
   - 6 points → 40+ pedestrians per peak hour (average)

3. Location of nearest existing traffic signal or existing PHB – Award points: 5
   - - 5 points → Less than 500 feet
   - 0 points → 500 – 1,000 feet
   - 5 points → Over 1,000 feet

4. Posted speed limit – Award points: 2
   - 0 points → Under 30 mph
   - 2 points → 30 – 35 mph
   - 4 points → 40 – 45 mph

5. Roadway traffic volume (AADT) – Award points: 6
   - 0 points → Less than 5,000
   - 2 points → 5,000 – 9,999
   - 4 points → 10,000 – 14,999
   - 6 points → 15,000+

6. Raised median – Award 5 points if the roadway does not have a raised median with a minimum width of 6 feet. 5

7. Shared-use path or walkway – Award 5 points if a designated, maintained, and permitted shared-use path or walkway crosses the road at the proposed PHB location. 0

8. Pedestrian activity generator – Award 5 points if the proposed PHB location is within 500 feet of a senior center, medical facility, community center, school, or other pedestrian activity generator. 0

9. Roadway illumination – Award 5 points if the proposed PHB location does not have roadway illumination. 0

10. Crossing distance – Award 5 points if the crossing distance is greater than 36 feet. (If a raised median with a minimum width of 6 feet is present, the crossing distance is measured to the median). 5

GRAND TOTAL 23