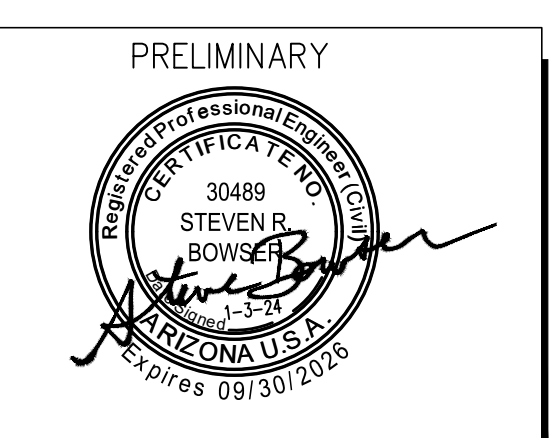


KEYED NOTES

1. NEW DRIVEWAY
2. NEW ONSITE PAVING
3. CONSTRUCT DETENTION BASIN - 7x50' 48" CMP UNDERGROUND RETENTION
4. NEW 36" STORM DRAIN AND DROP INLET
5. NEW ONSITE STORM DRAIN
6. NEW VANE DRAIN
7. NEW PRECAST SEPARATOR WITH COALESCING PACK
8. NEW 4" BLEED LINE
9. SIDEWALK TO REMAIN
10. NEW PIPE CULVERT - 15" RGRCP PIPE WITH TONGUE AND GROOVE JOINTS (NO BELL JOINTS)
11. EXISTING GRATE INLETS TO REMAIN
12. NEW ONSITE INLET
13. NEW APS TRANSFORMER
14. NEW 10' CONCRETE SIDEWALK
15. RIPRAP OVERFLOW
16. NEW REFUSE ENCLOSURE
17. NEW SIDEWALK WITH HANDRAIL
18. REMOVE INLET
19. REBUILD INLET TO CURB INLET
20. REMOVE SWALE AND CONSTRUCT CURB AND GUTTER
21. CONSTRUCT DECEL LANE
22. 18" STORM DRAIN
23. SEWER SERVICE CONNECTION
24. CITY OF SEDONA FLOODPLAIN
25. REMOVE INLETS, REPLACE WITH GRATE INLET AT CURB

CLIENT:
Land Development Consultants, LLC
 11811 N. Tatum Boulevard, Suite 1051
 Phoenix, AZ 85028
 ph: 602-684-5210
 fax: 480-393-0946
 contact: Michael Scarbrough



Helix Engineering, LLC
 Engineering / Surveying / Consulting
 3240 E Union Hills
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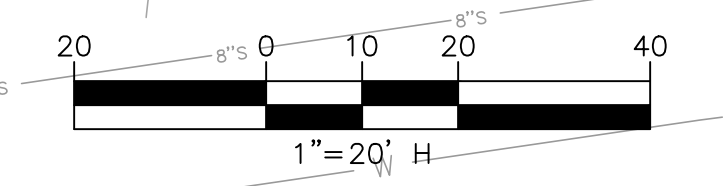
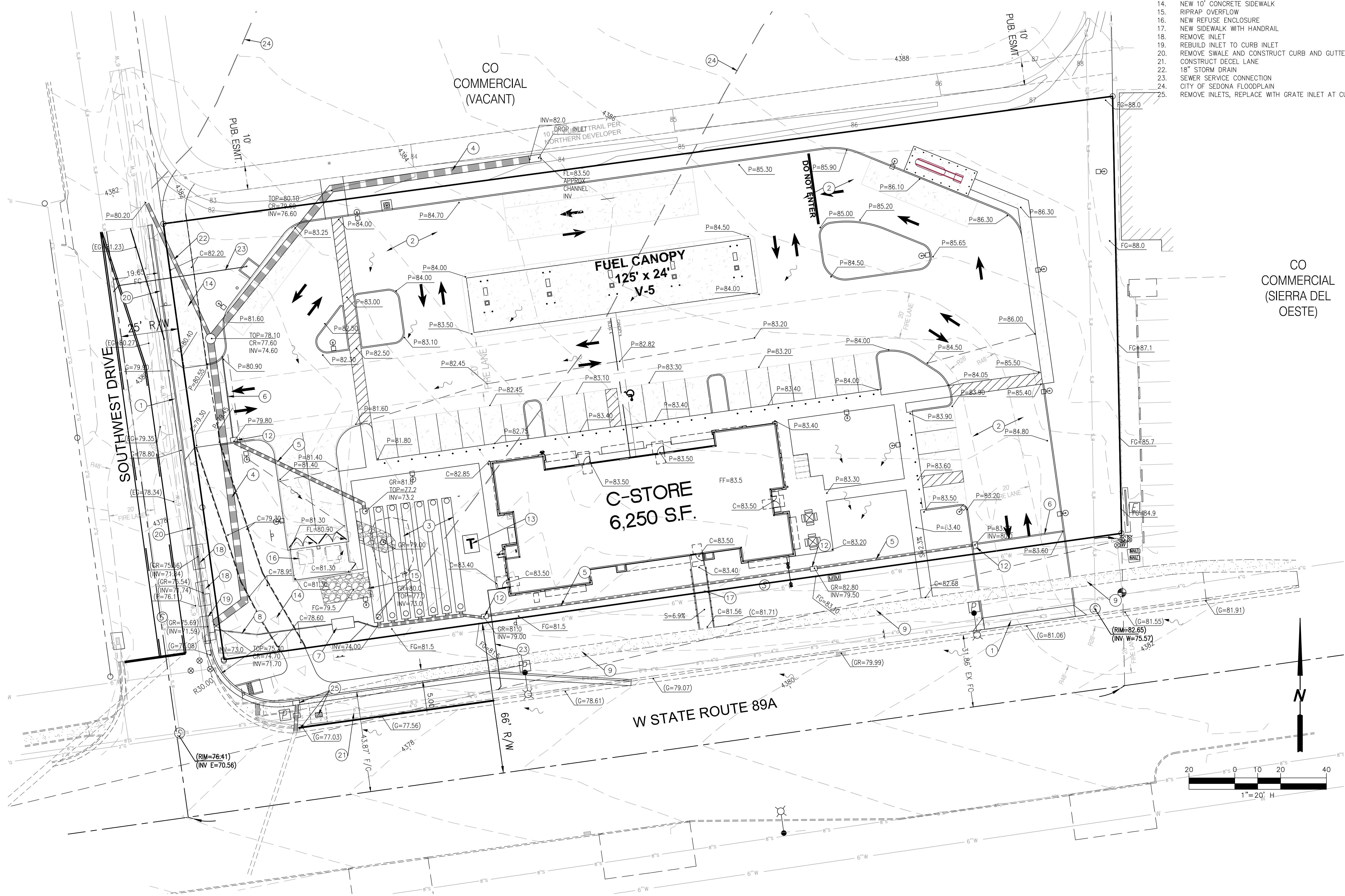
RELEASE	
DATE	
2-15-21	DRAFT GD
3-1-21	UG RETENTION
6-4-21	REV SP
10-11-22	REVISED SP-CITY COMMENTS
7-14-23	REVISED SP-CITY COMMENTS
7-20-23	REVISED SP
1-4-24	CITY COMMENTS

Contact Arizona 811 at least two full working days before you begin excavation

 Call 811 or click Arizona811.com

PROJECT NAME
CIRCLE K
 PROJECT ADDRESS
**W. AZ-89A
 Sedona, AZ
 86336**
 PROJECT AREA
89A / Southwest Dr.
 HELIX JOB NUMBER
470
 IN HOUSE
 DRAWN BY: HXE
 CHECKED BY: SB
 SHEET TITLE
PRELIM G / D PLAN

SHEET
GD-1
 PAGE
1 OF 1
 PLOT SCALE: 1:1 @ 24"x36"; 1:2.2 @ 11"x17"

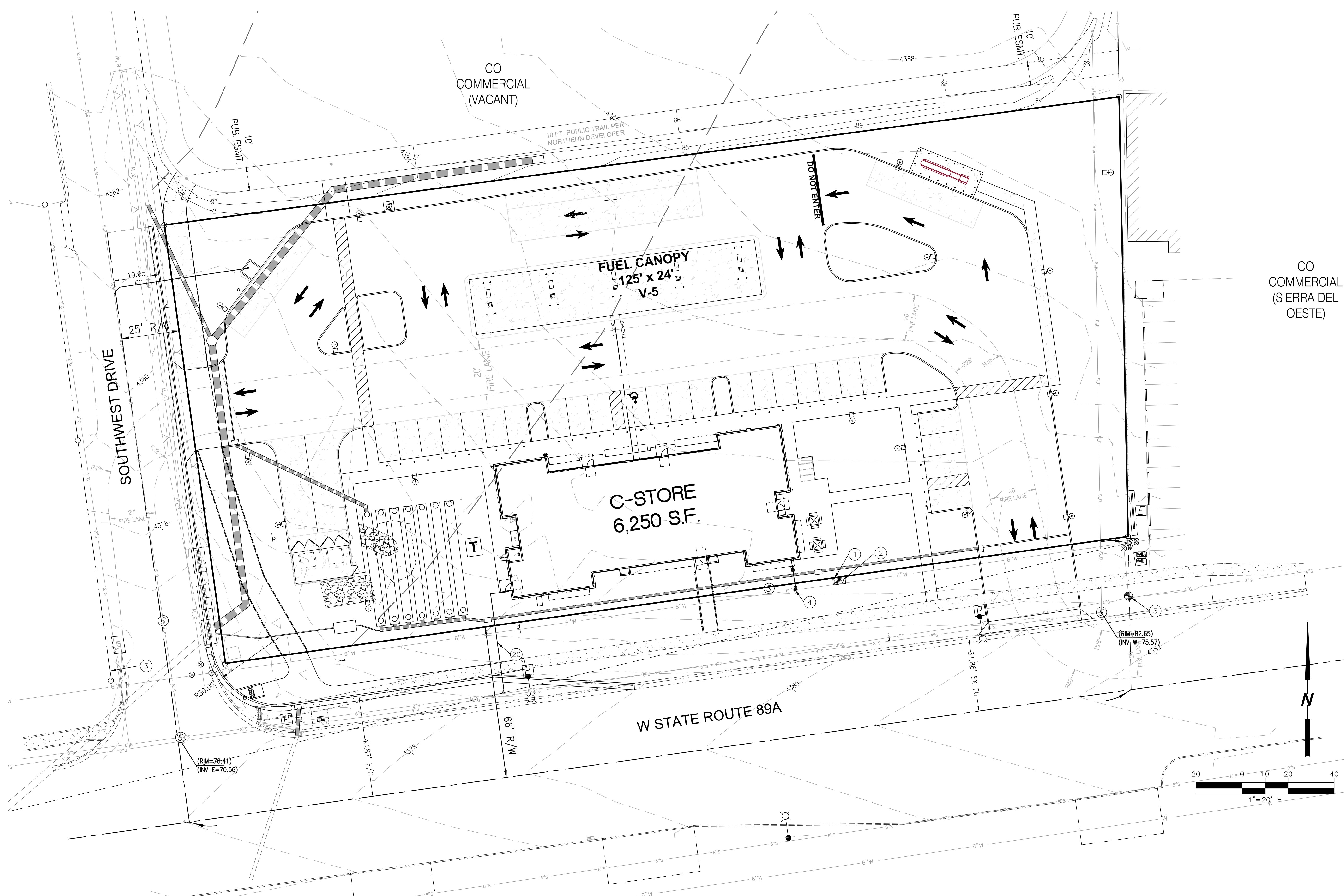


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PZ22-0004

KEYED NOTES

- 1. ISNTALL NEW 2" METER PER AWC DETAILS
 - 2. INSTALL NWE 1" METER PER AWC DETAILS (LDSC)
 - 3. EXISTING FH TO REMAIN
 - 4. CONSTRUCT 6" TS&V AND DOUBLE CHECK FOR FIRELINE
20. INSTALL NEW 6" SEWER TAP TO CITY MAIN



CLIENT:
Land Development Consultants, LLC
 11811 N. Tatum Boulevard, Suite 1051
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 ph: 602-684-5210
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PRELIMINARY

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DATE	RELEASE
2-15-21	DRAFT GD
3-1-21	UG RETENTION
6-4-21	REV SP
10-11-22	REVISED SP-CITY COMMENTS
7-14-23	REVISED SP-CITY COMMENTS
7-20-23	REVISED SP
1-4-24	CITY COMMENTS

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Call 811 or click Arizona811.com

PROJECT NAME
CIRCLE K

PROJECT ADDRESS
**W. AZ-89A
 Sedona, AZ
 86336**

PROJECT AREA
89A / Southwest Dr.

HELIX JOB NUMBER
470

IN HOUSE
 DRAWN BY: HXE
 CHECKED BY: SB

SHEET TITLE
PRELIM UTIL PLAN

SHEET **UT-1** PAGE **1 OF 1**

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

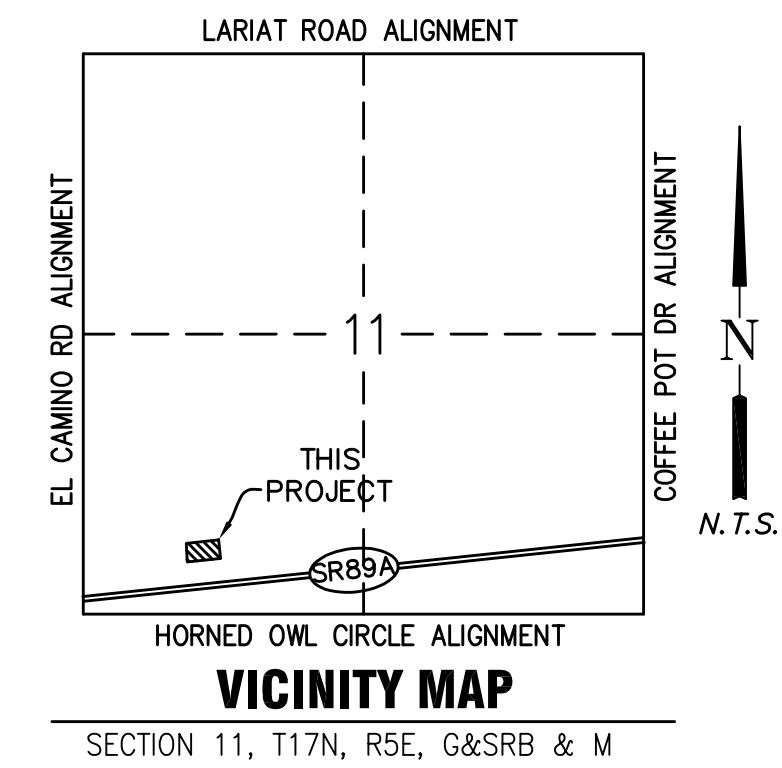
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PZ22-0004

ALTA/NSPS LAND TITLE SURVEY

THE PROPERTY DESCRIBED IN DEED 2019-0036166, YCR
YAVAPAI COUNTY, ARIZONA.

A PORTION OF THE SOUTHWEST QUARTER OF
SECTION 11, TOWNSHIP 17 NORTH, RANGE 5 EAST OF
THE GILA & SALT RIVER BASE & MERIDIAN, YAVAPAI COUNTY, ARIZONA



SCHEDULE B - PART TWO - EXCEPTIONS

- PROPERTY TAXES, INCLUDING ANY PERSONAL PROPERTY TAXES AND ANY ASSESSMENTS COLLECTED WITH TAXES, FOR THE SECOND INSTALLMENT OF 2019 TAXES.
- PROPERTY TAXES, WHICH ARE A LIEN NOT YET DUE AND PAYABLE, INCLUDING ANY ASSESSMENTS COLLECTED WITH TAXES TO BE LEVIED FOR THE YEAR 2020.
- LIABILITIES AND OBLIGATIONS IMPOSED UPON SAID LAND BY ITS INCLUSION WITHIN ANY DISTRICT FORMED PURSUANT TO TITLE 48, ARIZONA REVISED STATUTES.
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:
PURPOSE: ELECTRIC LINES
RECORDING NO.: BOOK 186 OF DEEDS, PAGE 293
NOT PLOTTED (AFFECTS ALL OF THE SUBJECT PROPERTY, BUT NOT THE SURVEY)
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:
PURPOSE: ELECTRIC LINES
RECORDING NO.: BOOK 1351 OF OFFICIAL RECORDS, PAGE 109
NOT PLOTTED (AFFECTS ALL OF THE SUBJECT PROPERTY, BUT NOT THE SURVEY)
- MATTERS SHOWN ON RECORD OF SURVEY:
RECORDING NO.: BOOK 175 OF LAND SURVEYS, PAGE 36
NOT PLOTTED (AFFECTS ALL OF THE SUBJECT PROPERTY, BUT NOT THE SURVEY)
- MATTERS SHOWN ON RECORD OF SURVEY:
RECORDING NO.: BOOK 183 OF LAND SURVEYS, PAGE 94
NOT PLOTTED (AFFECTS ALL OF THE SUBJECT PROPERTY, BUT NOT THE SURVEY)
- MATTERS SHOWN ON RECORD OF SURVEY:
RECORDING NO.: 2015-37171
NOT PLOTTED (AFFECTS ALL OF THE SUBJECT PROPERTY, BUT NOT THE SURVEY)
- MATTERS SHOWN ON RECORD OF SURVEY:
RECORDING NO.: 2019-38903
NOT PLOTTED (BOUNDARY SHOWN MATCHES BOUNDARY FROM THIS RECORD OF SURVEY)

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF YAVAPAI, STATE OF ARIZONA, AND IS DESCRIBED AS FOLLOWS:

A PORTION OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 11, TOWNSHIP 17 NORTH, RANGE 5 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, YAVAPAI COUNTY, ARIZONA, LYING NORTH OF U.S. HIGHWAY 89A PER ADOT PLAN PROJECT S-366-709 RECORD ADOT={RA} AND SOUTHEAST OF THE SOUTHWEST CENTER SUBDIVISION, BOOK 17 OF MAPS, PAGE PLATS, PAGE 16, YAVAPAI COUNTY RECORDER {YCR} RECORD = MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING FOR REFERENCE AT THE SOUTHWEST CORNER OF SAID SECTION 11, A FOUND BLM BRASS CAP;

THENCE NORTH 76°30'51" EAST 1351.90 FEET (NORTH 76°47'44" EAST 1351.83 FEET RA, TO STATION 977+47.98 RHT 63.22 BASIS OF BEARINGS RA) TO A FOUND ½ INCH REBAR NO IDENTIFICATION, TO WHICH A STAINLESS STEEL CAP LS 32230 WAS ADDED;

THENCE NORTH 01°10'20" WEST 2.80 FEET TO A SET ½" REBAR WITH ALUMINUM CAP LS 32230 ON THE NORTH RIGHT OF WAY OF SAID HWY 89A RA AND THE POINT OF BEGINNING;

THENCE NORTH 01°10'20" WEST 190.79 FEET TO A SET ½" REBAR WITH CAP LS 32230;

THENCE SOUTH 82°21'06" WEST 418.06 FEET TO A SET ½" REBAR WITH CAP LS 32230;

THENCE SOUTH 07°56'28" EAST 192.01 FEET TO THE NORTH LINE OF RA, A SET ½" REBAR WITH ALUMINUM CAP LS 32230 AND FROM WHICH A FOUND ½" REBAR WITH CAP LS 27253 LIES SOUTH 07°56'28" EAST 0.54 FEET;

THENCE NORTH 81°59'57" EAST 395.56 FEET (NORTH 82°00'15" EAST R) TO THE POINT OF BEGINNING.

APN: 408-24-536C

BASIS OF BEARING

FROM A BLM BC AT THE SW COR. OF SEC. 11, T.17N., R.5E., N. 76-30-51 E., TO A 3/4" PIPE W/CAP "LS32230", FROM LEGAL PROVIDED & ALTA SURVEY MAP 2019-0038903, YCR.

BENCHMARK

SPCS BM 62, 3" ADOT ALUMINUM CAP STAMPED "ELEV.4378.82" ON TOP OF CURB AT CL OF CATCH BASIN ON THE S. SIDE OF SR 89A, 220'+/- W. OF THUNDERBIRD DR. SPCS ELEV. 4382.50

APN#

408-24-536C

FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

COMMUNITY NUMBER	PANEL NUMBER (PANEL DATE)	SUFFIX	DATE OF FIRM (INDEX DATE)	FIRM ZONE	BASE FLOOD ELEVATION (IN AO ZONE, USE DEPTH)
040130	1435 NOV 4, 2015	G	SEP 3, 2010	X	1 TO 3 FEET

ZONE "X" IS DEFINED AS "AREAS OF 0.2% ANNUAL CHANCE FLOOD. AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS OF LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD."

UTILITY TABLE

UTILITY	PROVIDER	DATE ORDERED	RESULTS
ELECTRIC	APS	3/16/20	PENDING RESEARCH
NATURAL GAS	UNISOURCE SERVICES	3/16/20	SHOWN ON SURVEY
IRRIGATION	--	--	NONE SHOWN
WATER	ARIZONA WATER COMPANY	3/16/20	SHOWN ON SURVEY
SEWER	CITY OF SEDONA	3/16/20	SHOWN ON SURVEY
STORM DRAIN	CITY OF SEDONA	--	NONE SHOWN
COMMUNICATIONS	CENTURYLINK	3/16/20	PENDING RESEARCH
COMMUNICATIONS	COX COMMUNICATIONS	3/16/20	PENDING RESEARCH

OWNER

KATHERENE HELEN LUDEWIG, AN UNMARRIED WOMAN

PARCEL AREA

NET: 77,602 S.F. / 1.781 AC. GROSS: 109,904 S.F. / 2.523 AC.

NOTES

- THIS SURVEY WAS CONDUCTED ON THE GROUND OF THE PREMISES AS DEPICTED HEREON IN MARCH, 2020.
- THERE WAS NO ZONING REPORT OR LETTER PROVIDED TO THE SURVEYOR BY THE CLIENT REGARDING THE CURRENT ZONING CLASSIFICATION, SETBACK REQUIREMENTS, THE HEIGHT AND FLOOR SPACE AREA RESTRICTIONS, AND PARKING REQUIREMENTS. THEY HAVE NOT BEEN SHOWN.
- THERE ARE NO BUILDINGS ON THE SUBJECT PARCEL, NO EXTERIOR DIMENSIONS OR SQUARE FOOTAGE OF BUILDINGS AT GROUND LEVEL HAVE BEEN PROVIDED.
- THERE WAS NO DESIGNATION BY THE CLIENT REGARDING A DETERMINATION OF THE RELATIONSHIP AND LOCATION OF CERTAIN DIVISION OR PARTY WALLS WITH RESPECT TO ADJOINING PROPERTIES. THERE WAS NO DESIGNATION BY THE CLIENT REGARDING A DETERMINATION OF WHETHER CERTAIN WALLS ARE PLUMB.
- THIS SURVEY REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. ADDITIONALLY, AS PER THE 2016 ALTA STANDARDS: WITH REGARD TO TABLE A, ITEM 11, SOURCE INFORMATION FROM PLANS AND MARKINGS WILL BE COMBINED WITH OBSERVED EVIDENCE OF UTILITIES TO DEVELOP A VIEW OF THOSE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION MAY BE NECESSARY.
- THERE WAS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.
- THERE ARE NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES, NO SUCH INFORMATION WAS MADE AVAILABLE TO THE SURVEYOR BY THE CONTROLLING JURISDICTION. THERE WAS NO EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.
- THERE HAS NOT BEEN A FIELD DELINEATION OF WETLANDS CONDUCTED BY A QUALIFIED SPECIALIST HIRED BY THE CLIENT, THE SURVEYOR DID NOT OBSERVE ANY DELINEATION MARKERS IN THE PROCESS OF CONDUCTING THE FIELD WORK.

REFERENCE DOCUMENTS

- R1 2019-0038903 ALTA/NSPS SURVEY
- R2 2015-0037171 RECORD OF SURVEY
- R3 2019-0010245 ALTA/NSPS LAND TITLE SURVEY

CERTIFICATE OF SURVEY

TO:

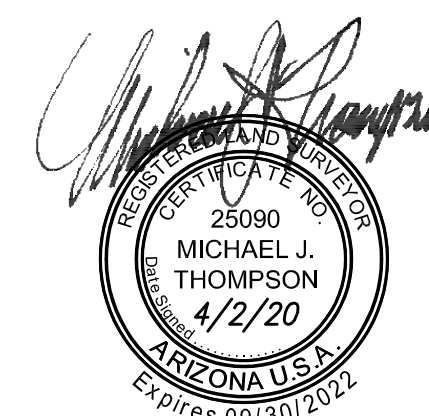
- COMMONWEALTH LAND TITLE INSURANCE COMPANY
- CIRCLE K STORES INC., A TEXAS CORPORATION
- KATHERENE HELEN LUDEWIG, AN UNMARRIED WOMAN

COMMONWEALTH LAND TITLE INSURANCE COMPANY, COMMITMENT FOR TITLE INSURANCE, FILE NO.: 01927255-295-NA-DG2
COMMITMENT DATE: FEBRUARY 7, 2020 AT 7:30 A.M.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, INCLUDES ITEMS 1, 2, 3, 4, 5, 6(A), 7(A), 7(B), 8, 9, 10, 11, 13, 14, 16, 17, 18, 19, 20 (\$1MM) AS DESCRIBED THEREIN.

FIELD WORK COMPLETED IN MARCH, 2020
DATE OF PLAT: MARCH 20, 2020

MICHAEL J. THOMPSON, RLS25090
HELIX ENGINEERING, LLC
3240 E UNION HILLS DR #112
PHOENIX, AZ 85050
mt@hxeng.com



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BLUE STAKE CENTER

RELEASE	
DATE	

REVISIONS	
NO.	DATE
△	
△	
△	

PROJECT NAME

ALTA LAND TITLE SURVEY

PROJECT ADDRESS

2820 W STATE ROUTE 89A
SEDONA, ARIZONA
86336

PROJECT AREA

AZ-89A & SOUTHWEST DR

HELIX JOB NUMBER

470

SHEET TITLE

ALTA/NSPS LAND TITLE SURVEY

A PORTION OF SW 1/4 SEC. 11,
T.17N., R.5E., G. & S.R.B. & M.

SHEET

COVER

1 OF 2

PLOT SCALE: 1:1 @ 24"x36"; 1:2.2 @ 11"x17"

LEGAL DESCRIPTION

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APN: 408-24-536C

Preliminary Drainage Report
For
Circle K
NE corner State Route 89A / Southwest Dr
Sedona, AZ

City Case : PZ22-0004
Job: 470
January 2024

Prepared by:

Steve Bowser, PE
Helix Engineering, LLC
3240 E. Union Hills Dr #113
Phoenix, AZ 85050
602-788-2616
sb@hxeng.com



EXP 9-30-26

**Preliminary DRAINAGE REPORT
For
Circle K
NE corner State Route 89A / Southwest Dr
Sedona, AZ**

1.0 INTRODUCTION..... 3

2.0 OBJECTIVES – PROJECT DEVELOPMENT AND BACKGROUND..... 3

3.0 EXISTING SITE CONDITIONS..... 3

4.0 FLOOD PLAIN DESIGNATION..... 3

5.0 PROPOSED STORMWATER SITE RETENTION 3

STORMWATER RETENTION..... 3

DISPOSAL..... 5

404 AND CONSTRUCTION STORMWATER..... 5

6.0 SUMMARY..... 5

7.0 REFERENCES..... 6

Figure 1 – Vicinity Map..... 6

Figure 2 – FEMA Map 7

Figure 3 – Detention Calculations and Pipe Hydraulics..... 8

Figure 4 – Drainage Exhibits.....9

1.0 INTRODUCTION

The proposed site is located at the northeast corner of W. State Route 89A and Southwest Drive located within the City of Sedona, Arizona. The site is situated within the Southwest Quarter of Section 11, Township 17 North, Range 5 East of the Gila and Salt River Base and Meridian, Yavapai County, Arizona. The site is currently vacant with developed streets on the west and south boundaries of the site. This project will develop a convenience store building, fuel canopy and car wash on the site.

2.0 OBJECTIVES – PROJECT DEVELOPMENT AND BACKGROUND

The purpose of this report is to verify the site compliance with the drainage requirements set forth in the *Drainage Design Manual for Yavapai County Dated 2015*.

3.0 EXISTING SITE CONDITIONS

Currently, the site is a vacant site. State Route 89A borders the south side the site and is developed with curb / gutter and detached sidewalk. The west boundary is Southwest Drive. Southwest Drive has no curb and gutter but has a shotcrete lined v ditch immediately east of the edge of pavement. Flows on the site generally flow from the northeast to the southwest.

The state highway has a developed drainage system. Three large inlets are located immediately north of the curb return at Southwest Dr and State Route 89A.

Site north of this site is vacant, and the site to the east is a commercial development.

Project titled Navajo Lofts has designated 103 CFS sheet flow entering the site along the north boundary of the site.

4.0 FLOOD PLAIN DESIGNATION

The west side of the site lies within zone X Shaded per (FEMA) Flood Insurance Rate Map (FIRM), Map Numbers 1456G, dated Sept 3 ,2010.

See Figure 3 for a copy of the FEMA map.

5.0 PROPOSED STORMWATER SITE DETENTION

STORMWATER RETENTION AND ONSITE STORM DRAIN

The intent of design of this project is to provide detention so the 2, 10 and 100 post construction flows do not exceed the preconstruction flows. The site is small, and a Tc of 10 minutes used for both pre and post analysis.

Preconstruction: The preconstruction conditions are an undeveloped site. Existing slope is approx. 2% from the northeast and preconstruction C factor of 0.50 was used.

Post Construction: A composite of 0.88 was used for the post construction site based on 0.95 for paved and roof areas and 0.50 for landscape areas.

Underground stormwater storage pipe will be located the southwest corner of the site to detail runoff to keep flows less than This basin contains a 6" orifice bleed pipe which bleeds to storm drain at the southwest corner of the site. A separator with coalescing pack will be installed in the bleed line to handle any hydrocarbon spills that may take place within the site.

A weir with an elevation of 80.50 at 6' wide will handle overflows at the southwest corner of the site.

Pre and post flows are calculated in Figure 3.

ONSITE STORM DRAIN

A storm drain will convey areas along the southeast corner of the site. The east driveway will have a vane drain installed to capture flows from existing the driveway. These flows will be conveyed to the detention basin. Per manufacturer, Vane drain capture is 0.5 cfs per linear feet. The west drive will capture the largest flow and is 35' wide. $0.5 \text{ CFS per LF} \times 35' = 17.5 \text{ CFS}$. 100 year peak flow for the site will be 8.7 CFS, therefore the peak flow will be captured by the vane drain.

A separate storm drain will convey offsite flows from the property to the north. The property to the north (Navajo Lofts) has designated 103 CFS entering the site at the north edge of the property. A 36" storm drain will convey these flows from the north property line to the existing inlets at the southwest corner of the site. This pipe will not intercept any onsite flows and will basic 'flow thru' conveyance pipe.

Two additional flows from the north will also be conveyed into a portion of this pipe. The Navajo Lofts project will have a 100 year post flow of 7.0 CFS. (per the Navajo Lofts prelim drainage report) The roadway swale from the north will also convey 4.8 cfs. The Circle K project will remove the roadway swale for the frontage and will intercept these flows int this storm drain.

For preliminary calculations, the roadway swale is calculated as follows:

Area: 1.2 acres (per drainage map from Navajo Lofts)

$i=5.7 \text{ in / hr}$ (NOAA 14, based on $T_c=15 \text{ min}$)

$C=0.70$ (for half street of Southwest Dr and Navajo Dr and upstream residential lots

$Q=0.70 \times 5.7 \text{ in/hr} \times 1.20 \text{ ac} = 4.8 \text{ cfs}$

The pipe conveying the roadside swale will be sized for 7.0 cfs (Navajo Lofts) + 4.8 cfs (roadside swale) = 11.8 cfs

C FACTORS

A C factor of 0.50 is used for new landscape areas and 0.95 for paved and roof areas. 0.50 is used for the native condition.

ULTIMATE OUTFALLS

This project ultimate outfall will remain at the southwest corner of the site at elevation 75.6. The finish floor is in excess of 2' above this elevation. This outfall is unchanged from historical. The site ultimate outfall is the storm drain inlet along Southwest Drive north of US 89A

DISPOSAL

Underground storage pipe will be bled off thru an interceptor and bleed into existing storm drain.

404 AND CONSTRUCTION STORMWATER

This project is not located in a 404 wash. Project exceeds 1 acre and will have a Stormwater Management Plan prepared and an NOI filed with ADEQ prior to improvement plan approval.

6.0 SUMMARY

- This project is the development of a Convenience store, fuel canopy and car wash.
- The site will provide detention for the 2,10 and 100 year. The site will detain 5059 cu ft (100 year event) which will allow each event post construction to not exceed preconstruction flow rates.
- A 36" storm drain will convey offsite flow from the outfall of the project Navajo Lofts and convey to the existing inlets at the corner of 89A and Southwest Drive.
- The Project Site is located within FEMA designated X.
- Site will outfall to the southwest corner of the site.
- The downstream ADOT storm drain is assumed to perform as originally designed. The existing inlets at the southwest corner of the site outfall to an ADOT 36" storm drain which outfalls to the ADOT 42" mainline storm drain on the south side of US89A. This storm drain outfalls to the natural drainageway 600' west of this site. This project is designed to not increase flows from the existing (predevelopment) condition. The post developed condition will detain onsite flow and bleed off through an environmental unit. This system will decrease sedimentation from this site from entering the ADOT storm drain.

7.0 REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Rate Map, Maricopa County, Arizona and Incorporated Areas, Map Number 0425C1435G, Sept 3, 2010.
2. Drainage Design Manual, Yavapai County 2015.



Figure 1-VICINITY MAP

Figure 2-FEMA MAP

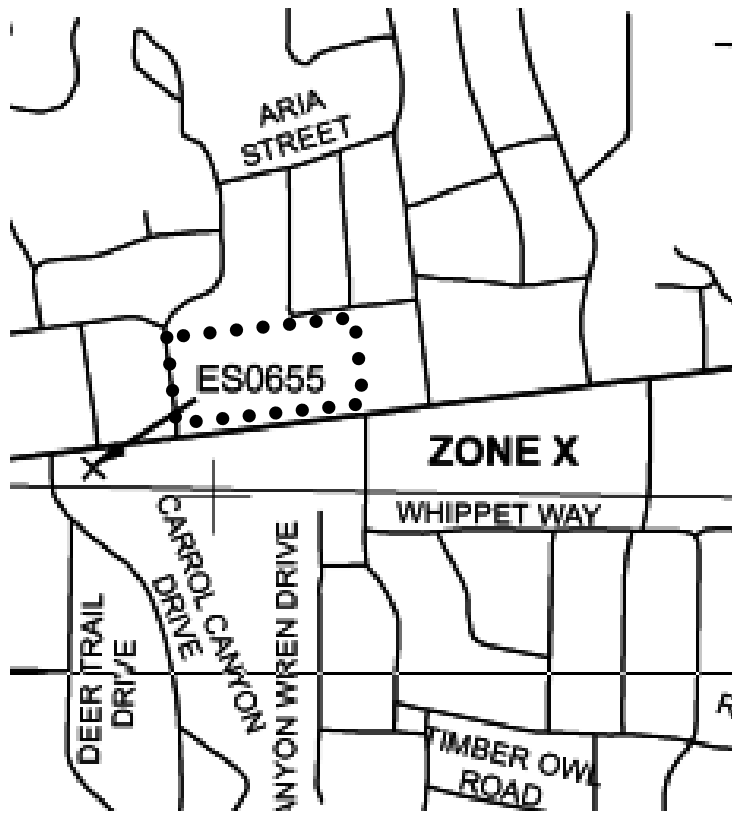


Figure 3-Detention Calculations and storm drain calculations

WEIGHTED C FACTORS

POST CONSTRUCTION

C FACTOR

Overall	59916		52605.6	0.88
Landscape	9588	0.5	4794	
Concrete/paving	50328	0.95	47811.6	

PRECONSTRUCTION

c factor

Overall	59916		29958	0.50
Landscape	59916	0.5	29958	
Non Landscape	0	0.95	0	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

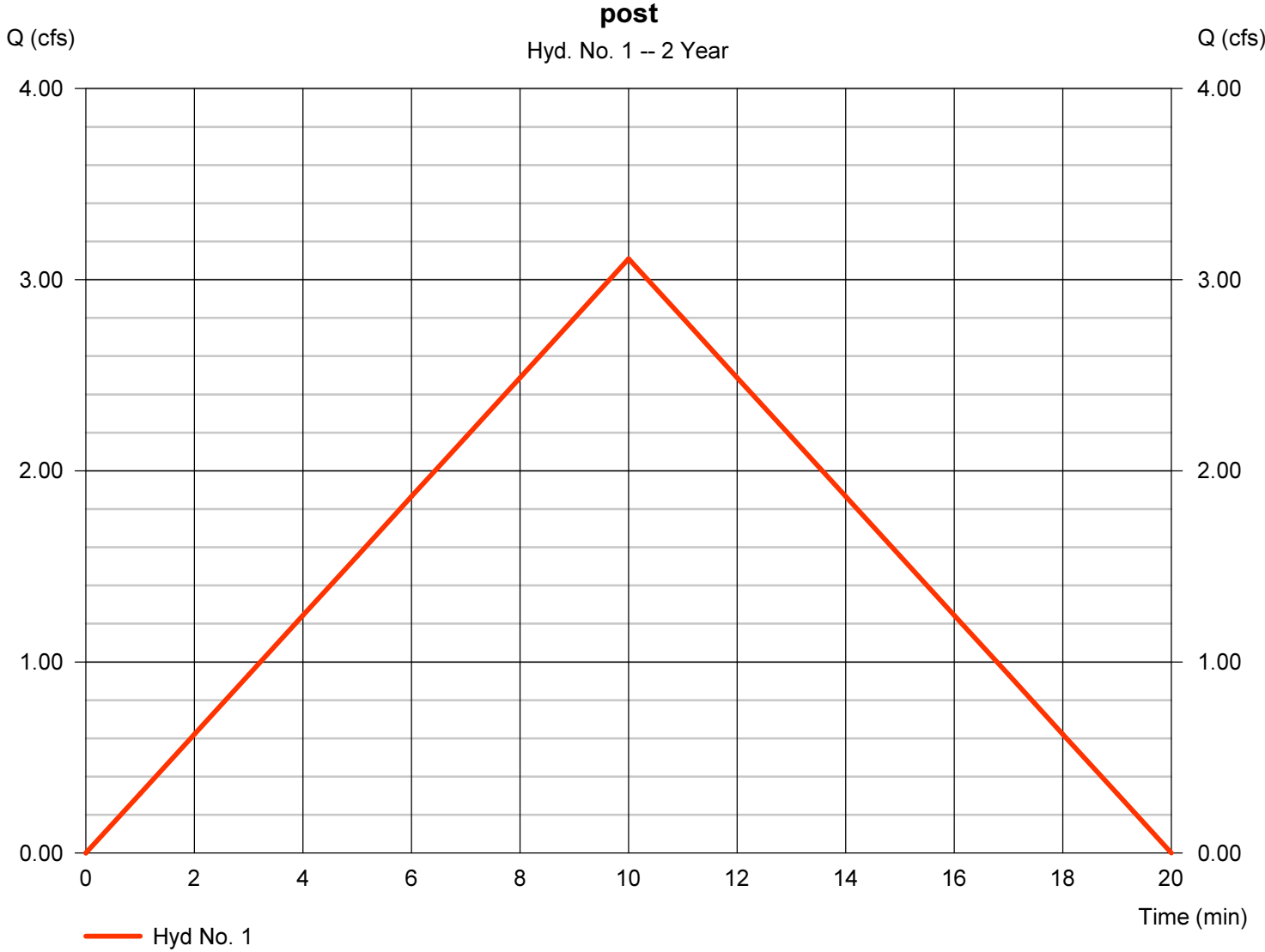
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	Rational	3.110	1	10	1,866	-----	-----	-----	post	
2	Reservoir	0.154	1	20	1,859	1	74.48	1,729	Post thru new basin	
3	Rational	1.767	1	10	1,060	-----	-----	-----	Pre rational	
470 100 year all underground.gpw					Return Period: 2 Year			Sunday, 07 / 16 / 2023		

Hydrograph Report

Hyd. No. 1

post

Hydrograph type	= Rational	Peak discharge	= 3.110 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 1,866 cuft
Drainage area	= 1.400 ac	Runoff coeff.	= 0.88
Intensity	= 2.524 in/hr	Tc by User	= 10.00 min
IDF Curve	= 470.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

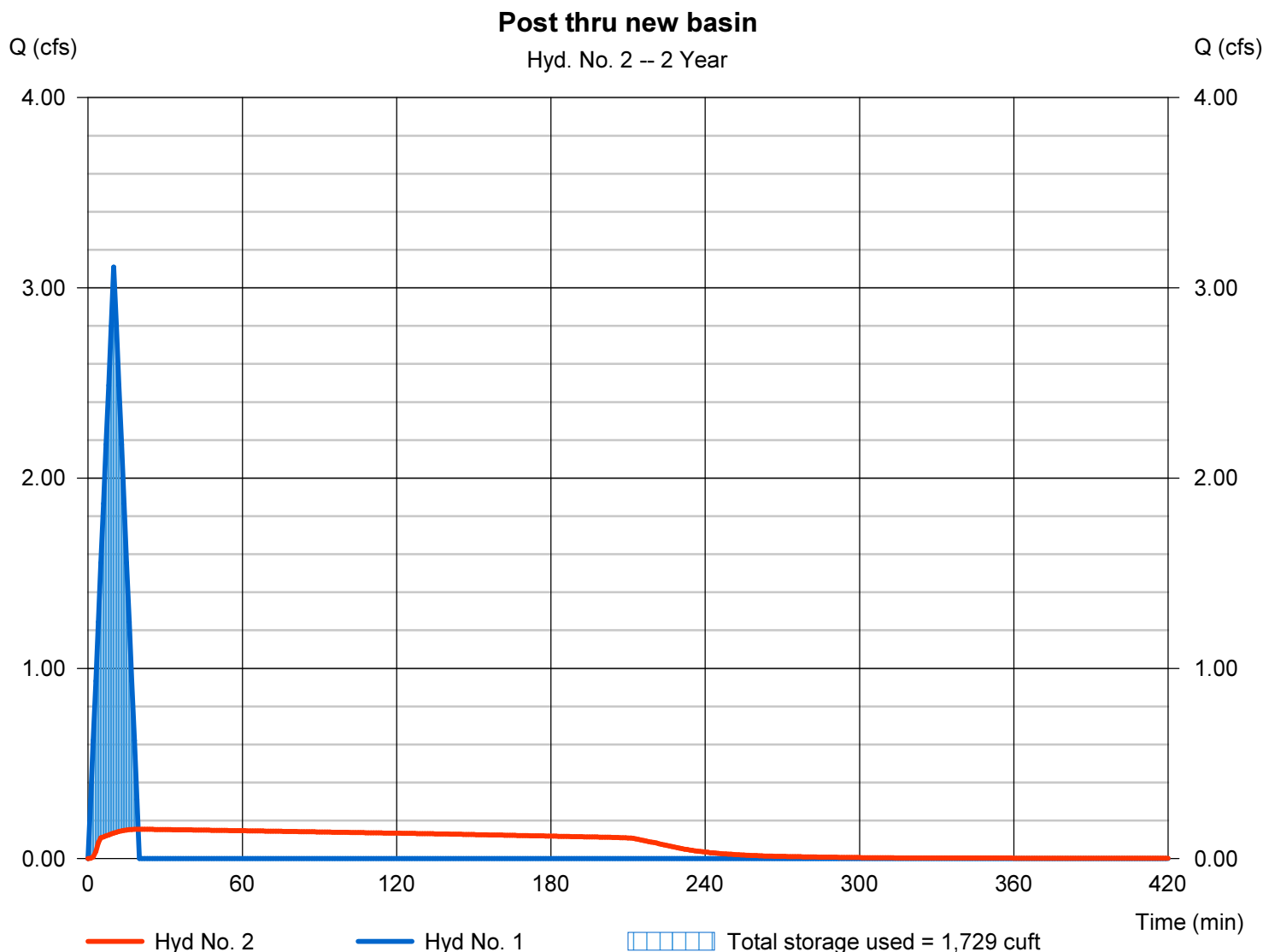
Sunday, 07 / 16 / 2023

Hyd. No. 2

Post thru new basin

Hydrograph type	= Reservoir	Peak discharge	= 0.154 cfs
Storm frequency	= 2 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 1,859 cuft
Inflow hyd. No.	= 1 - post	Max. Elevation	= 74.48 ft
Reservoir name	= onsite basin	Max. Storage	= 1,729 cuft

Storage Indication method used.

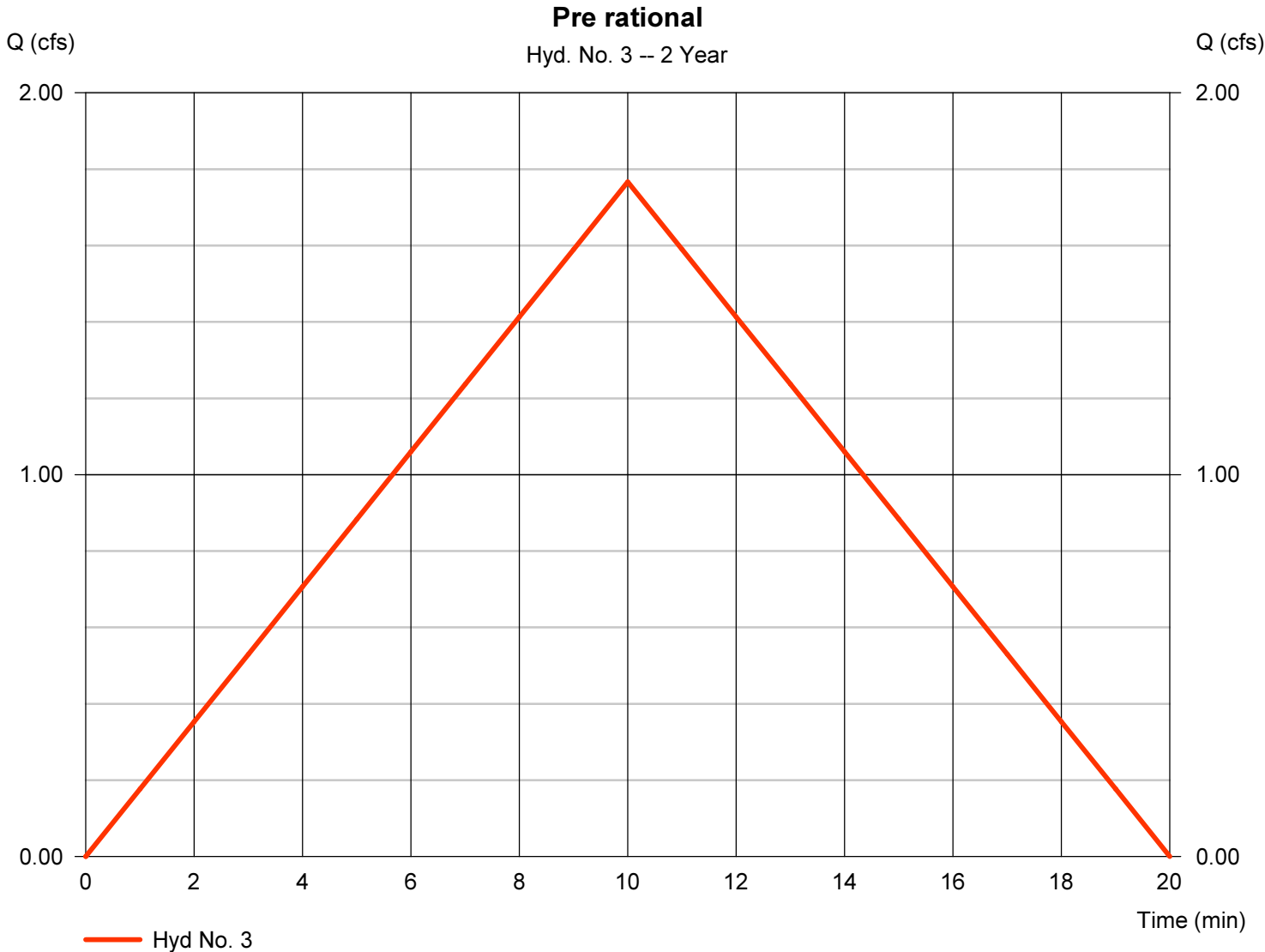


Hydrograph Report

Hyd. No. 3

Pre rational

Hydrograph type	= Rational	Peak discharge	= 1.767 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 1,060 cuft
Drainage area	= 1.400 ac	Runoff coeff.	= 0.5
Intensity	= 2.524 in/hr	Tc by User	= 10.00 min
IDF Curve	= 470.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

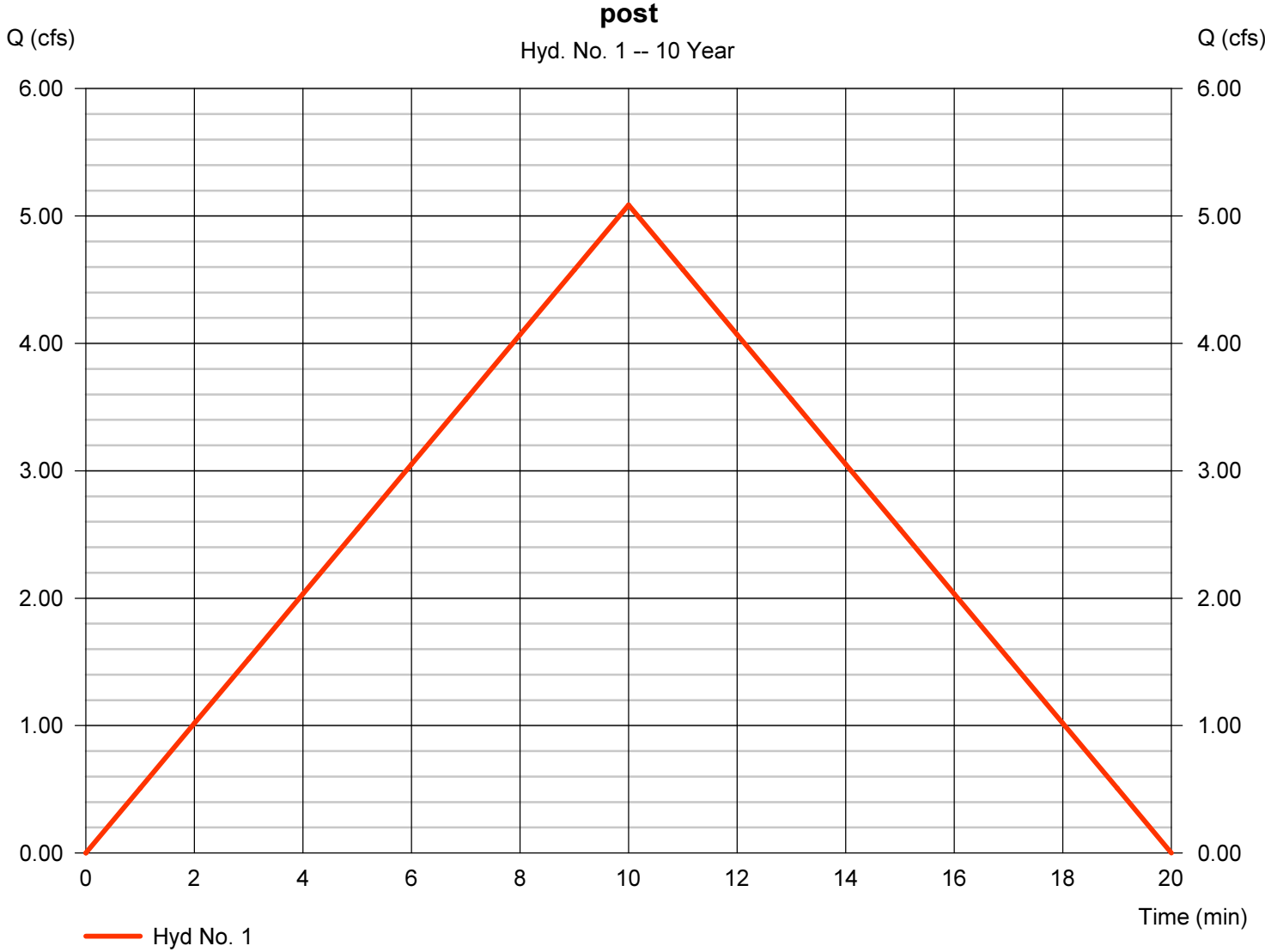
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	Rational	5.086	1	10	3,052	-----	-----	-----	post	
2	Reservoir	0.177	1	20	3,045	1	75.17	2,895	Post thru new basin	
3	Rational	2.890	1	10	1,734	-----	-----	-----	Pre rational	
470 100 year all underground.gpw					Return Period: 10 Year			Sunday, 07 / 16 / 2023		

Hydrograph Report

Hyd. No. 1

post

Hydrograph type	= Rational	Peak discharge	= 5.086 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 3,052 cuft
Drainage area	= 1.400 ac	Runoff coeff.	= 0.88
Intensity	= 4.128 in/hr	Tc by User	= 10.00 min
IDF Curve	= 470.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

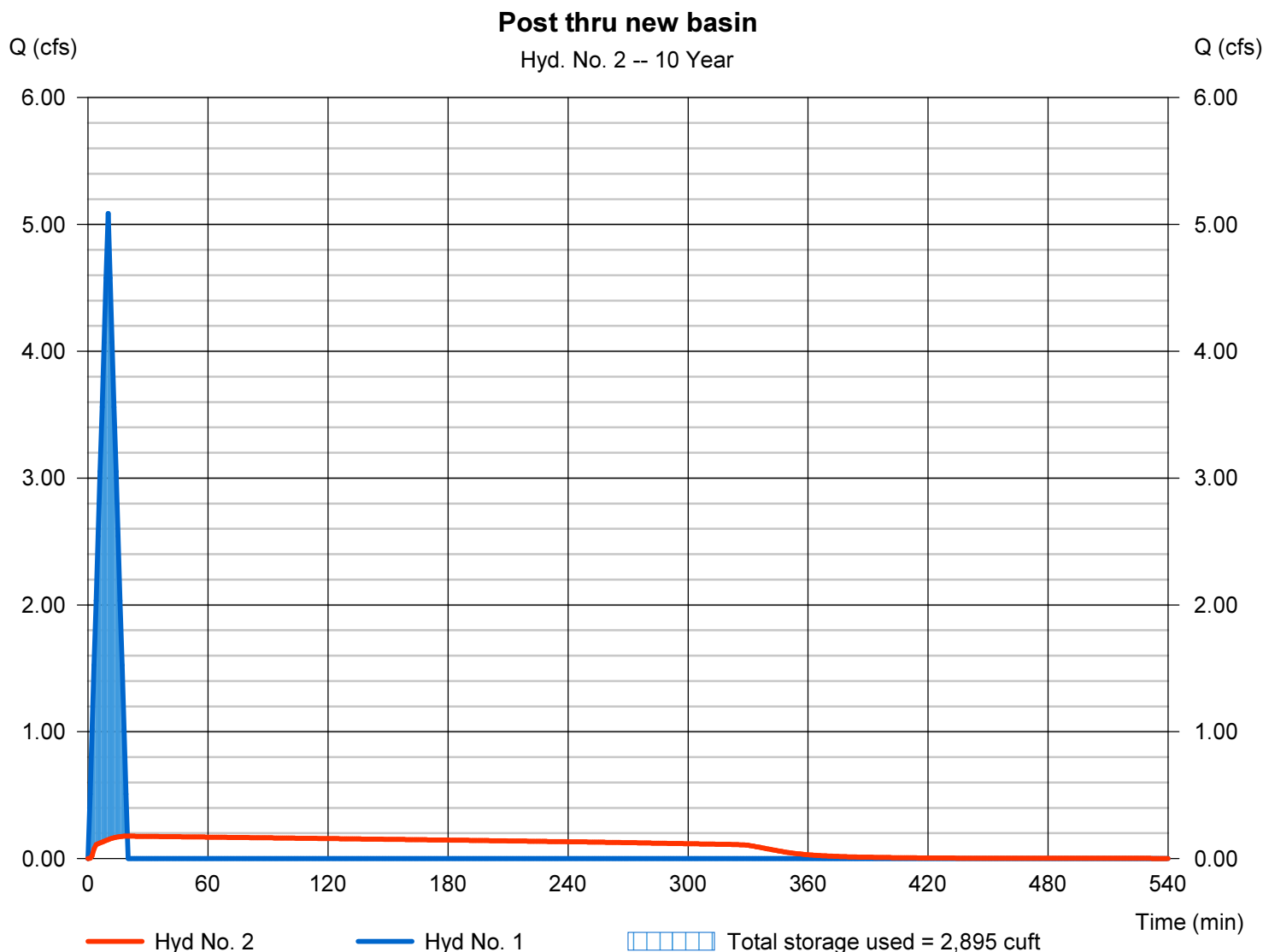
Sunday, 07 / 16 / 2023

Hyd. No. 2

Post thru new basin

Hydrograph type	= Reservoir	Peak discharge	= 0.177 cfs
Storm frequency	= 10 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 3,045 cuft
Inflow hyd. No.	= 1 - post	Max. Elevation	= 75.17 ft
Reservoir name	= onsite basin	Max. Storage	= 2,895 cuft

Storage Indication method used.

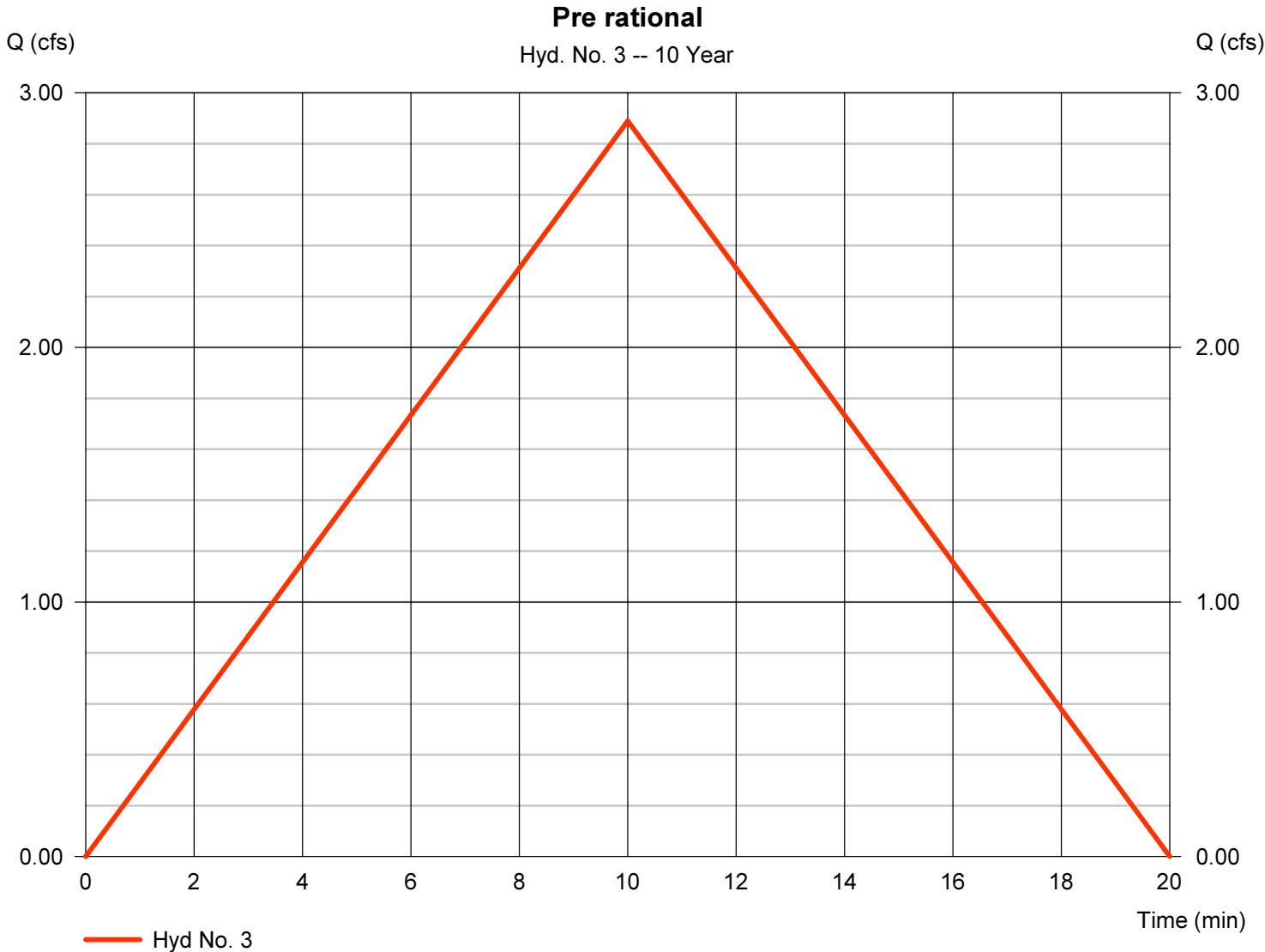


Hydrograph Report

Hyd. No. 3

Pre rational

Hydrograph type	= Rational	Peak discharge	= 2.890 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 1,734 cuft
Drainage area	= 1.400 ac	Runoff coeff.	= 0.5
Intensity	= 4.128 in/hr	Tc by User	= 10.00 min
IDF Curve	= 470.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	Rational	8.742	1	10	5,245	-----	-----	-----	post	
2	Reservoir	0.216	1	20	5,238	1	76.61	5,059	Post thru new basin	
3	Rational	4.967	1	10	2,980	-----	-----	-----	Pre rational	
470 100 year all underground.gpw					Return Period: 100 Year			Sunday, 07 / 16 / 2023		

Hydrograph Report

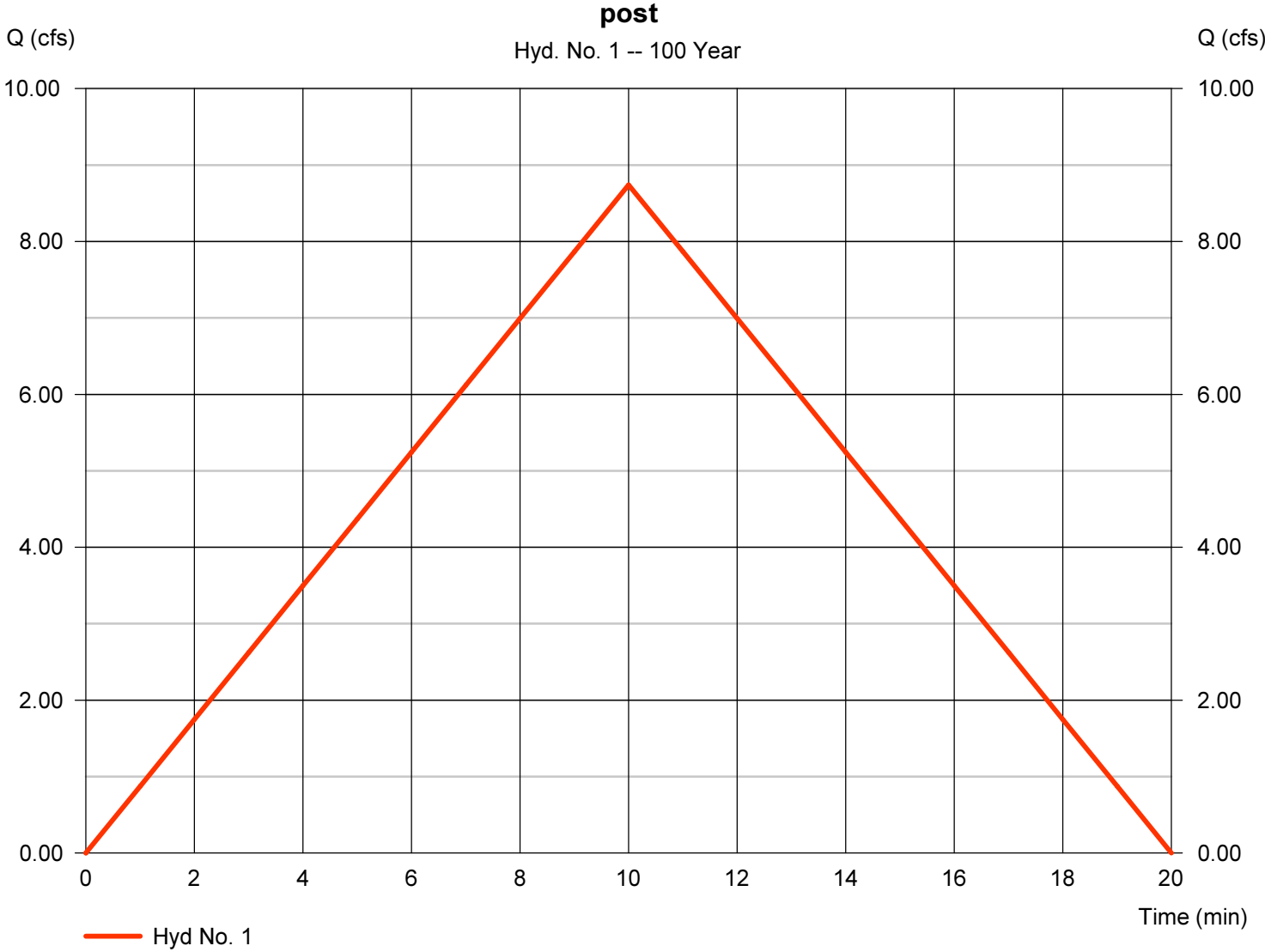
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Sunday, 07 / 16 / 2023

Hyd. No. 1

post

Hydrograph type	= Rational	Peak discharge	= 8.742 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 5,245 cuft
Drainage area	= 1.400 ac	Runoff coeff.	= 0.88
Intensity	= 7.096 in/hr	Tc by User	= 10.00 min
IDF Curve	= 470.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

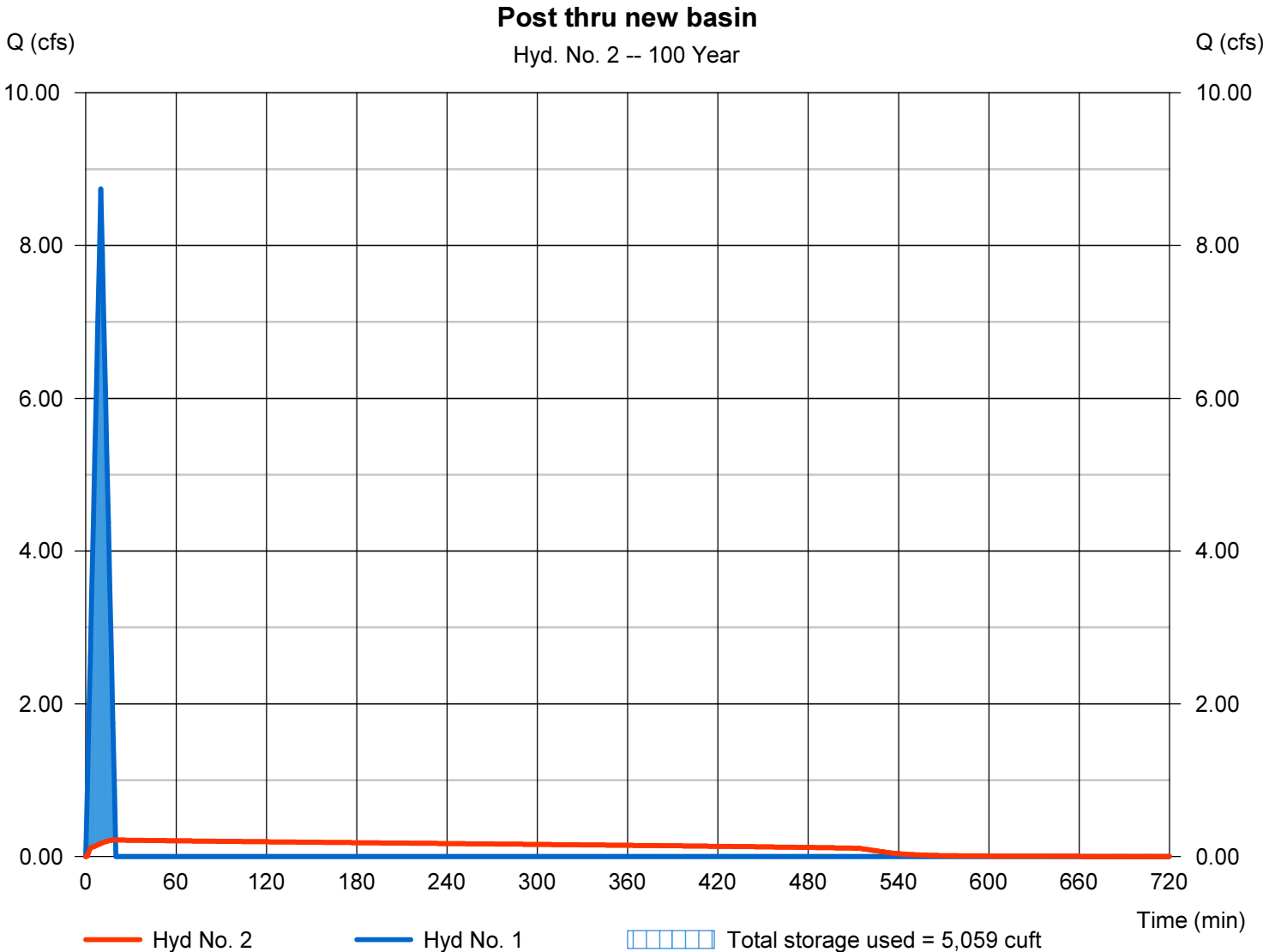
Sunday, 07 / 16 / 2023

Hyd. No. 2

Post thru new basin

Hydrograph type	= Reservoir	Peak discharge	= 0.216 cfs
Storm frequency	= 100 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 5,238 cuft
Inflow hyd. No.	= 1 - post	Max. Elevation	= 76.61 ft
Reservoir name	= onsite basin	Max. Storage	= 5,059 cuft

Storage Indication method used.



Hydrograph Report

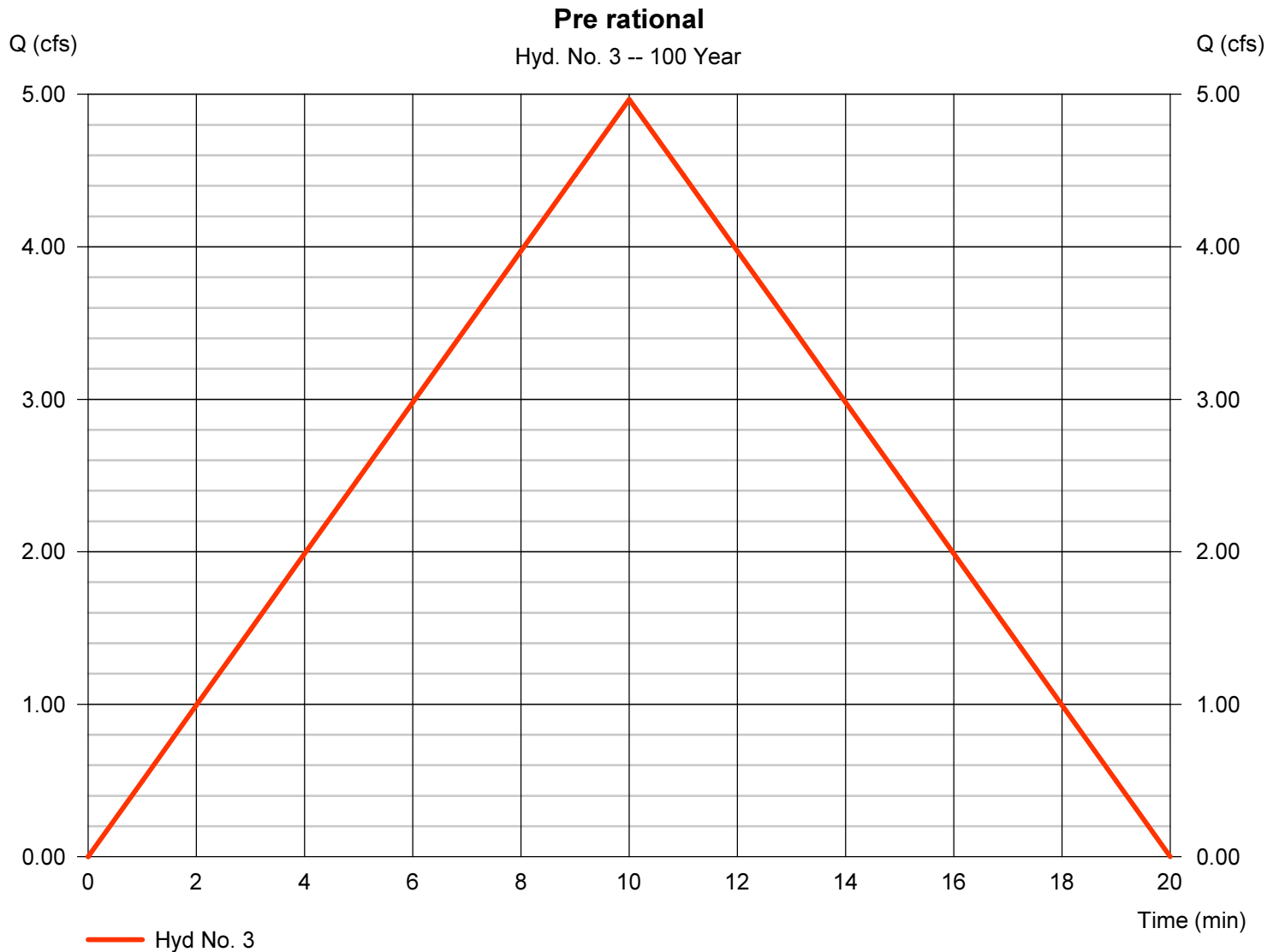
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Sunday, 07 / 16 / 2023

Hyd. No. 3

Pre rational

Hydrograph type	= Rational	Peak discharge	= 4.967 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 2,980 cuft
Drainage area	= 1.400 ac	Runoff coeff.	= 0.5
Intensity	= 7.096 in/hr	Tc by User	= 10.00 min
IDF Curve	= 470.IDF	Asc/Rec limb fact	= 1/1



Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	18.5	-40.1	None	0.00	0.00	0.00	0.0	71.70	4.32	72.50	36	Cir	0.013	0.00	78.90	
2	1	114.5	-49.9	MH	0.00	0.00	0.00	0.0	72.50	1.83	74.60	36	Cir	0.013	0.00	81.60	
3	2	85.0	46.8	None	0.00	0.00	0.00	0.0	74.60	2.35	76.60	36	Cir	0.013	0.00	83.00	
4	3	88.1	42.1	DrGrt	103.00	0.00	0.00	0.0	76.60	6.13	82.00	36	Cir	0.013	0.00	85.50	
5	2	64.0	-17.7	None	11.80	0.00	0.00	0.0	76.10	6.41	80.20	18	Cir	0.013	0.00	82.00	
Project File: 470 Culvert from north.stm												Number of lines: 5				Date: 7/16/2023	

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1		114.8	36	Cir	18.5	71.70	72.50	4.324	74.61	75.44	0.00	75.44	End	None
2		114.8	36	Cir	114.5	72.50	74.60	1.834	75.50*	78.89*	0.00	78.89	1	Manhole
3		103.0	36	Cir	85.0	74.60	76.60	2.353	78.89*	80.92*	0.00	80.92	2	None
4		103.0	36	Cir	88.1	76.60	82.00	6.129	80.92	84.91	0.00	84.91	3	DropGrate
5		11.80	18	Cir	64.0	76.10	80.20	6.406	78.89	81.51	n/a	81.51 j	2	None

Project File: 470 Culvert from north.stm

Number of lines: 5

Run Date: 7/16/2023

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	36	114.8	71.70	74.61	2.91	7.01	16.38	4.14	78.75	0.000	18.5	72.50	75.44	2.94**	7.03	16.32	4.14	79.58	0.000	0.000	n/a	0.00	0.00
2	36	114.8	72.50	75.50	3.00*	7.07	16.24	4.10	79.60	2.964	114.5	74.60	78.89	3.00	7.07	16.24	4.10	83.00	2.963	2.964	3.393	0.00	0.00
3	36	103.0	74.60	78.89	3.00	7.07	14.57	3.30	82.20	2.386	85.0	76.60	80.92	3.00	7.07	14.57	3.30	84.23	2.385	2.386	2.028	0.00	0.00
4	36	103.0	76.60	80.92	3.00	7.00	14.57	3.30	84.23	2.386	88.1	82.00	84.91	2.91**	7.00	14.71	3.36	88.27	2.096	2.241	n/a	0.00	0.00
5	18	11.80	76.10	78.89	1.50	1.63	6.68	0.69	79.59	1.263	64.0	80.20	81.51 j	1.31**	1.63	7.23	0.81	82.32	1.152	1.207	n/a	0.00	n/a

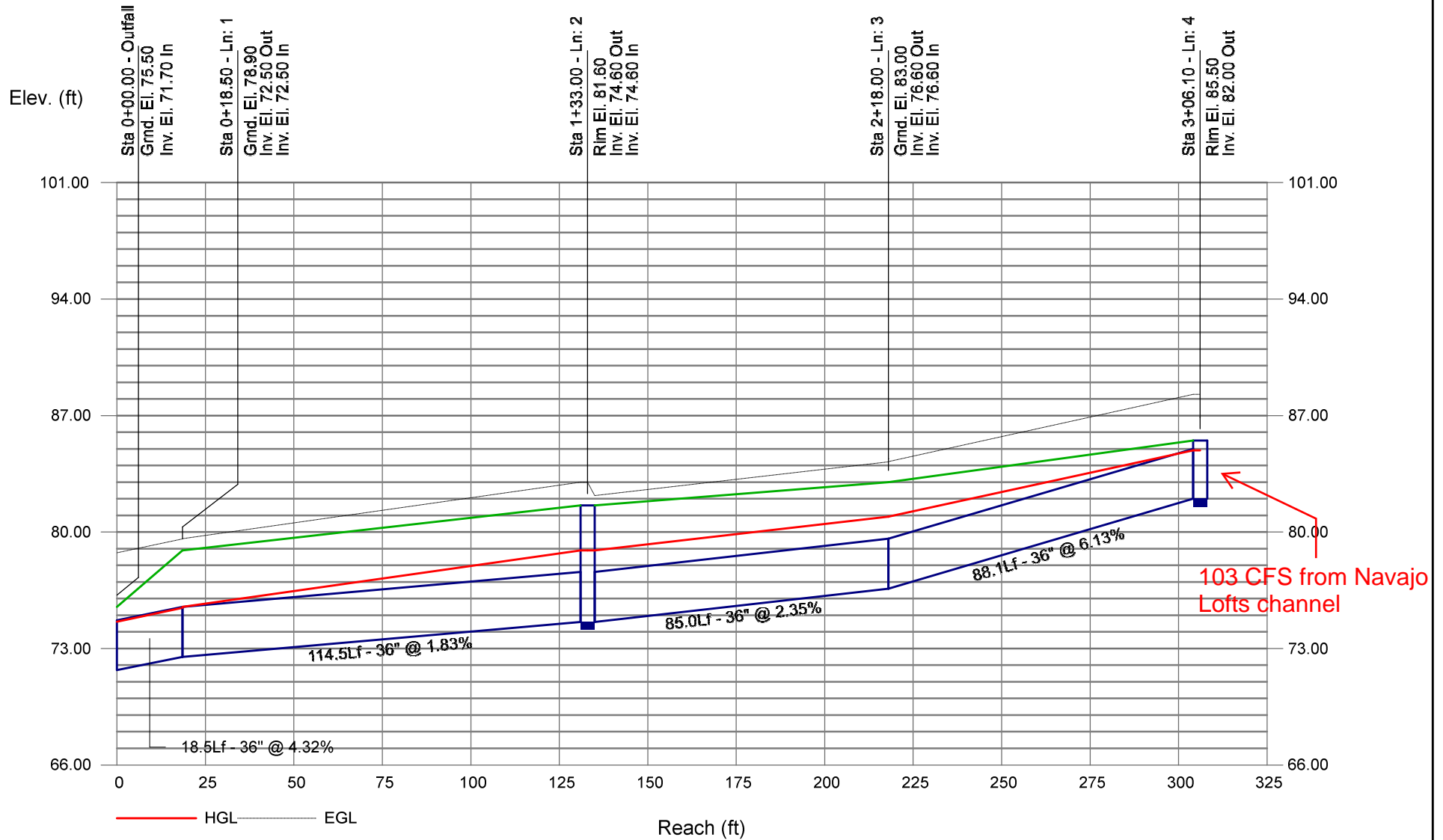
Project File: 470 Culvert from north.stm

Number of lines: 5

Run Date: 7/16/2023

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewer Profile



Storm Sewer Profile

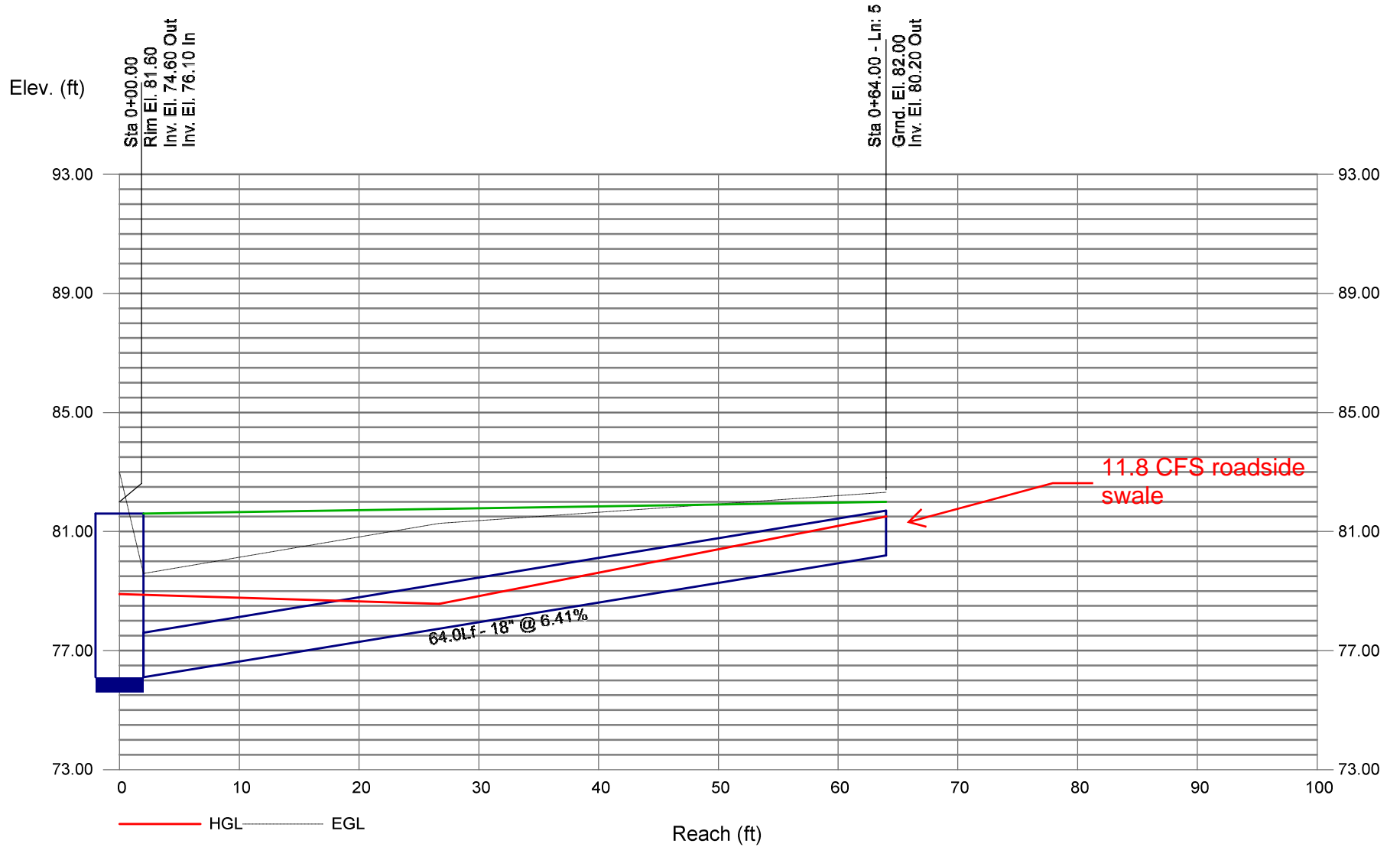


Figure 4-Drainage Exhibits

CLIENT:
Land Development Consultants, LLC
 11811 N. Tatum Boulevard, Suite 1051
 Phoenix, AZ 85028
 ph: 602-684-5210
 fax: 480-393-0946
 contact: Michael Scarbrough



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RELEASE	
DATE	
2-15-21	DRAFT GD
3-1-21	UG RETENTION
6-4-21	REV SP
10-11-22	REVISED SP-CITY COMMENTS
7-14-23	REVISED SP-CITY COMMENTS
7-20-23	REVISED SP
1-4-24	CITY COMMENTS



PROJECT NAME
CIRCLE K

PROJECT ADDRESS
**W. AZ-89A
 Sedona, AZ
 86336**

PROJECT AREA
89A / Southwest Dr.

HELIX JOB NUMBER
470

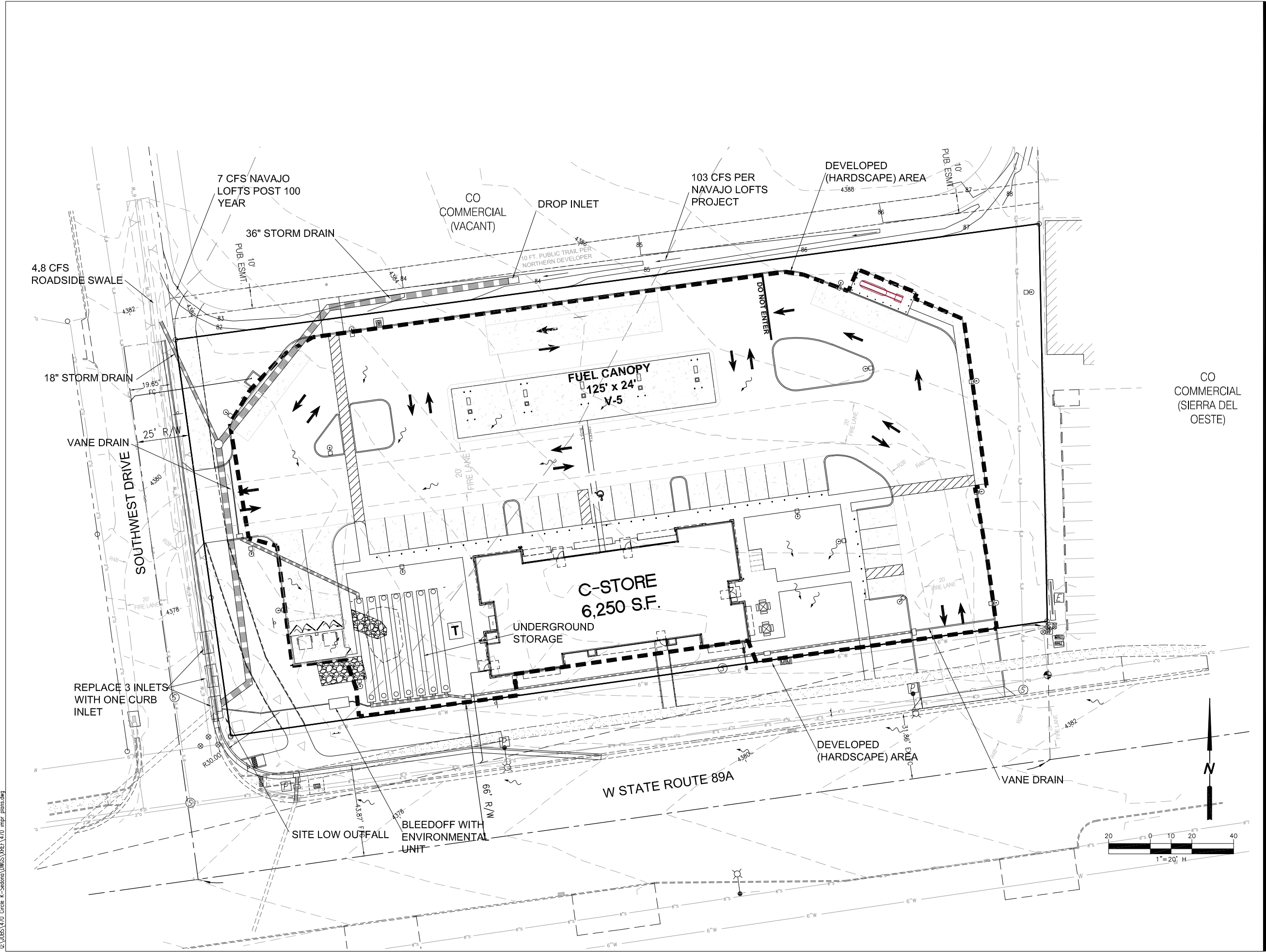
IN HOUSE
 DRAWN BY: HXE
 CHECKED BY: SB

SHEET TITLE
DRAINAGE EXHIBIT

SHEET **FIGURE 4** PAGE **1 OF 1**

PLOT SCALE: 1:1 @ 24"x36"; 1:2.2 @ 11"x17"

PZ22-00004



Jan 04, 2024 - 9:10am
 C:\V085_470_Circle K-Sedona\DWGS\VRET\470 impr_plans.dwg

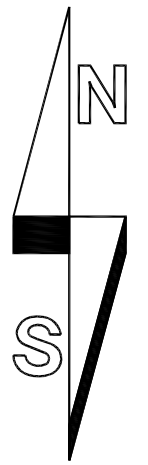
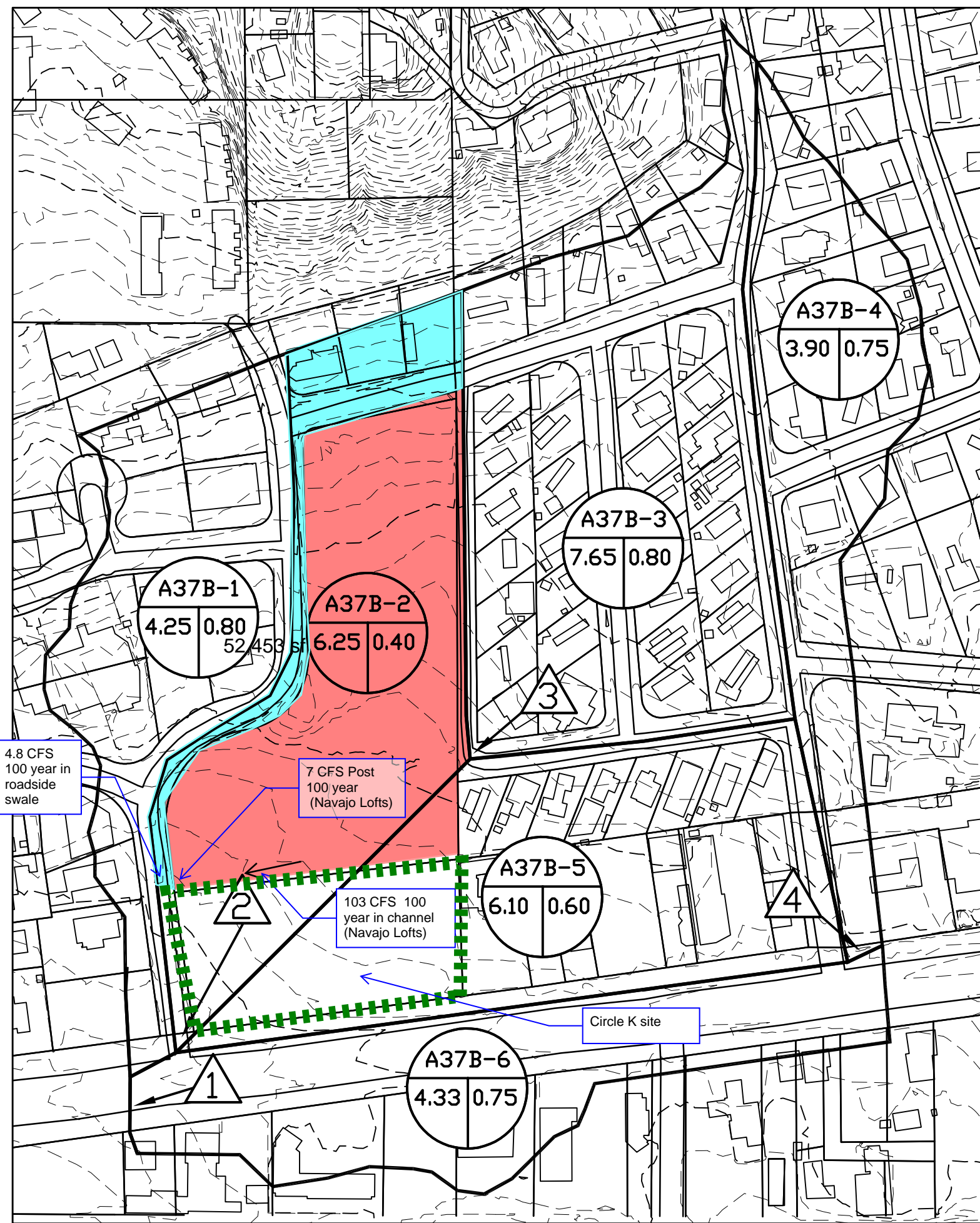
DRAINAGE MAP

PEAK DISCHARGES

SUB-BASIN	2-yr PEAK (cfs)	5-yr PEAK (cfs)	10-yr PEAK (cfs)	25-yr PEAK (cfs)	50-yr PEAK (cfs)	100-yr PEAK (cfs)
A37B-1	-	-	-	20.60	-	27.95
A37B-2	-	-	-	15.15	-	20.55
A37B-3	-	-	-	37.10	-	50.30
A37B-4	-	-	-	17.70	-	24.00
A37B-5	-	-	-	22.20	-	30.10
A37B-6	-	-	-	19.70	-	26.70
DESIGN PT						
1	-	-	-	132.45	-	179.60
2	-	-	-	74.45	-	100.95
3	-	-	-	37.10	-	50.30
4	-	-	-	17.70	-	24.00



A = BASIN DESIGNATION
 B = AREA IN ACRES
 C = COMPOSITE RUNOFF COEFFICIENTS
 D = DESIGN POINT DESIGNATION



NTS

Final Sewer Report
For
Circle K
NE corner W. State Route 89A / Southwest Dr
Sedona, AZ

City Case :
Job: 470
January 2023

Prepared by:

Steve Bowser, PE
Helix Engineering, LLC
3240 E. Union Hills Dr #113
Phoenix, AZ 85050
602-788-2616



EXPIRES 9-30-26

**Sewer Report
FOR
Circle K
NE corner W. State Route 89A / Southwest Dr
Sedona, AZ**

A. INTRODUCTION

B. SEWER DESIGN DOCUMENTATION

Figure 1 – Vicinity Map

A. Introduction

The proposed site is located at the northeast corner of W. State Route 89A and Southwest Drive located within the City of Sedona, Arizona. The site is situated within the Southwest Quarter of Section 11, Township 17 North, Range 5 East of the Gila and Salt River Base and Meridian, Yavapai County, Arizona. The site is currently vacant with developed streets on the west and south boundaries of the site. This project will develop a convenience store building, fuel canopy and car wash on the site.

See Figure 1 for the vicinity map.

B. Sewer Design Documentation

An Existing city 8" main is located on the north side of Highway 89 flowing east to west. Project will connect to this sewer main.

Based on 18 AAC 9 Table 1 (Pg 95):

Retail Store plus public Restroom: (20 gal per employee per day + 0.1 gal per sf per day).
Based on 8 employees per day

ADF = 20 gal per employee per day x 8 employee per day + 0.1 gal per sf per day x 5200 sf
= 680 gal per day

Use AAC Peak factor of 3.62 due to small size of site.

Max Daily Flow (MDF) = ADF x PF = 680 GPD x 3.62 = 2462 GPD

Project may be operational 24 hours, however main usage will be 5 AM to 11 PM.
Conservatively, use 18 hour operational day.

GPM of MDF = 2462 GPD / 18 HRS/DAY / 60 MIN/HR = 2.3 GPM

RV Dump: (40 gal per dump + 15 gallons flush and cleanout per dump = 55 gallons per dump)

Average prep, dump and cleanup: minimum 10 minutes

Assume 3 dumps per hour over 18 hour operational day

ADF = 55 gallons per dump x 3 dumps per hour x 18 operational hours per day = 2970 gal per day

Use AAC Peak factor of 3.62 due to small size of site.

Max Daily Flow (MDF) = ADF x PF = 2970 GPD x 3.62 = 10,751 GPD

Project may be operational 24 hours, however main usage will be 5 AM to 11 PM.
Conservatively, use 18 hour operational day.

GPM of MDF = 10,751 GPD / 18 HRS/DAY / 60 MIN/HR = 10.0 GPM

Project Peak flow = 10.0 gpm (RV dump) + 2.3 gpm (retail) = 12.3 gpm

This project will have a single 6" sewer tap to the main in street frontage. This tap shall be 1.04% min slope per plumbing code. At this slope, pipe capacity is 255 GPM flowing full, therefore sewer pipe for this project is adequate.

Figure 1-VICINITY MAP





TRAFFIC IMPACT ANALYSIS

SOUTHWEST CIRCLE K

SOUTHWEST DRIVE/SR 89A

REVISED 7 AUGUST 2023
1 NOVEMBER 2021



A handwritten signature in blue ink, likely belonging to Andrew R. Smigielski, is written across the bottom of the seal and extends to the right.

PREPARED FOR
LAND DEVELOPMENT CONSULTANTS
11811 NORTH TATUM BOULEVARD, SUITE 1051
PHOENIX, ARIZONA 85028

SOUTHWEST TRAFFIC ENGINEERING, LLC
3838 NORTH CENTRAL AVENUE, SUITE 1810
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Table of Contents

Executive Summary	5
Project Description	8
Study Methodology	8
Existing Conditions	11
Existing Traffic Data	13
Access	13
Trip Generation	16
Trip Distribution & Assignment	17
Existing Traffic Operations	17
Future Traffic Operations Without Project	21
Future Traffic Operations With Project	28
Turn Lane Analysis	33
Traffic Signal Warrant Analysis	35
Crash Analysis	37
Mitigation	38
Conclusion	39



Table of Figures

Figure 1 – Vicinity Map	9
Figure 2 – Site Plan	10
Figure 3 – Existing Lane Configurations and Traffic Control	12
Figure 4 – Existing Weekday Peak Hour Traffic Volumes	14
Figure 5 – Baseline Access Point and Intersection Configuration Assumptions	15
Figure 6 – Weekday Peak Hour Trip Distribution	18
Figure 7 – Weekday Peak Hour Trip Assignment	19
Figure 8 – 2022 Weekday Peak Hour Traffic Volumes Without Project	22
Figure 9 – 2025 Weekday Peak Hour Traffic Volumes Without Project	23
Figure 10 – 2022 Weekday Peak Hour Traffic Volumes Without Project With Navajo Lofts	24
Figure 11 – 2025 Weekday Peak Hour Traffic Volumes Without Project With Navajo Lofts	25
Figure 12 – 2022 Weekday Peak Hour Traffic Volumes With Project	29
Figure 13 – 2025 Weekday Peak Hour Traffic Volumes With Project	30
Figure 14 – Proposed Lane Configurations and Traffic Control	42



List of Tables

Table 1 – Project Site Generated Trips _____ **16**

Table 2 – Pass-By Reduction _____ **17**

Table 3 – Level of Service Criteria – Un-signalized Intersections _____ **20**

Table 4 – Existing Weekday Peak Hour Levels of Service _____ **20**

Table 5 – 2022 Weekday Peak Hour Levels of Service Without Project _____ **26**

With Navajo Lofts _____ **26**

Table 6 – 2025 Weekday Peak Hour Levels of Service Without Project _____ **27**

With Navajo Lofts _____ **27**

Table 7 – 2022 Weekday Peak Hour Levels of Service With Project _____ **31**

Table 8 – 2025 Weekday Peak Hour Levels of Service With Project _____ **32**

Table 9 – ADOT Right Turn Lane Requirements _____ **33**

Table 10 – Right Turn Lane Warrants, With Project _____ **34**

Table 11 – Calculated Queue Lengths _____ **35**

Table 12 – Turn Lane Length _____ **35**

Table 13 – Traffic Signal Warrant Analysis (Southwest Drive/SR 89A) _____ **36**

Table 14 – Tortilla Drive/SR 89A _____ **37**

Table 15 – Southwest Drive/SR 89A _____ **37**

Table 16 – Slingshot Rentals Driveway/SR 89A _____ **37**

Table 17 – Mitigation Measures, 2025 With Project _____ **38**

Appendix

- Traffic Counts
- Trip Generation Calculations
- Pass-By Trip Assignment
- Capacity Calculations
- Turn Lane Calculations
- Traffic Signal Warrant Analysis
- Crash Data
- Comment Resolution

Prepared By:

Andrew Smigielski, PE, PTOE, PTP
 Amy Forsythe, EIT



SOUTHWEST CIRCLE K SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A) TRAFFIC IMPACT ANALYSIS

Executive Summary

The purpose of this traffic study is to evaluate the current and future transportation system within the project study area surrounding the site without and with the proposed project.

Existing Traffic Data

The northbound approach to the intersection of Tortilla Drive/SR 89A currently experiences an inadequate delay during the weekday AM peak hour.

The remaining study intersections currently operate at an adequate level of service (LOS) during the weekday peak hours.

Future Traffic Data Without Project

An adjacent development, Navajo Lofts, is planned to be constructed in the near future. This development is located directly north of the Southwest Circle K project site. The expected trip assignment from this development was added to this analysis based on the traffic assignment from the following report: *Navajo Lofts Traffic Impact Analysis* (Navajo Lofts TIA) written by Lee Engineering, LLC, dated August 2021.

The northbound approach to the intersection of Tortilla Drive/SR 89A is anticipated to experience an inadequate delay during the weekday AM peak hour in 2022 without traffic from the project. In 2025 without traffic from the project, the northbound and southbound approaches to the intersection of Tortilla Drive/SR 89A are expected to experience inadequate delays during the weekday peak hours.

The southbound approach to the intersection of Plaza de Oeste Driveway/SR 89A is expected to operate at a LOS E during the weekday PM peak hour in 2025 without traffic from the project.

The remaining study intersections are expected to operate at an adequate LOS during the weekday peak hours in 2022 and 2025 without traffic from the project.

Future Traffic Data With Project

The northbound and southbound approaches to the intersection of Tortilla Drive/SR 89A are anticipated to experience inadequate delays during the weekday peak hours in 2022 and 2025 without and with traffic from the project.

The southbound approaches to Southwest Drive/SR 89A and East Access/SR 89A are expected to experience inadequate delays during the weekday peak hours in 2022 and 2025 with traffic from the project.

The northbound and southbound approaches to the intersection of Plaza de Oeste Driveway/SR 89A are expected to operate at a LOS E during the weekday PM peak hour in 2022 with the project and in 2025 without and with traffic from the project.



The remaining study intersections are expected to operate at an adequate LOS during the weekday peak hours in 2022 and 2025 without traffic from the project.

Turn Lane Analysis

While a westbound right turn lane is warranted at East Access/SR 89A in 2025 with the project, this turn lane cannot be constructed due to geometric constraints, as East Access is located approximately 55 feet west of an adjacent driveway. The installation of a continuous right turn lane would also not be possible as the driveways along SR 89A are located too closely to one another and do not provide an acceptable location for a right turn lane to be constructed without placing adjacent driveways within the taper of the right turn lane. Moreover, continuous right turn lanes can lead to driver confusion as it can be unclear which driveway vehicles are turning into.

It should be noted that shifting the location of East Access is not possible as it would negatively impact the layout and internal circulation of the site.

The southbound left turn lane at Southwest Drive/SR 89A is expected to require a minimum storage length of 75 feet.

The westbound right turn lane at Southwest Drive/SR 89A is expected to require a minimum total turn lane length of 150 feet.

Traffic Signal Warrant Analysis

The intersection of Southwest Drive/ SR 89A does not currently meet and is not expected to meet traffic signal warrants #1 or #2 in 2022 or 2025 without traffic from the project. In 2022 and 2025, traffic signal warrants #1 and #2 are expected to be met with the project and with the adjacent Navajo Lofts development.

Crash Analysis

Six collisions were reported at the intersection of Tortilla Drive/SR 89A during the five-year study period. None of the crashes resulted in injury.

A total of nine crashes were reported at the intersection of Southwest Drive/SR 89A during the five-year study period, four of which resulted in injury.

One crash was reported at the intersection of Slingshot Rentals Driveway/SR 89A within the five-year study period. The collision was a rear-end.

No crashes were reported at the remaining study intersections. This limited crash data provides no observable crash pattern for the area.



Mitigation

The delays at the intersections of Tortilla Drive/SR 89A, Southwest Drive/SR 89A, East Access/SR 89A, and Plaza de Oeste Driveway/SR 89A are due to the relatively high through traffic volumes along SR 89A not providing adequate gaps for vehicles turning from the minor approaches. Unsignalized, minor approaches to four or more lane major streets such as SR 89A tend to operate at a LOS E or F during the weekday peak hours.

Mitigation measures at these closely spaced intersections are limited. While a traffic signal would be expected to alleviate these delays, the intersections are too closely spaced for traffic signals to be installed at each intersection. Moreover, traffic signals are not appropriate for delays experienced by a relatively low number of vehicles for only a few hours of the day.

Although the installation of a traffic signal at Southwest Drive/SR 89A is expected to alleviate the delays at this intersection, it is not recommended. The Arizona Department of Transportation's (ADOT's) priority is to maintain traffic flow on SR 89A. Traffic signals impede such flow. There has also been discussion with ADOT that the intersection of Tortilla Drive/SR 89a would be signalized in the future making signal spacing inadequate with Southwest Drive. Furthermore, two existing business access points on the south side of the intersection are offset, cannot be combined or relocated, and would make such a traffic installation difficult at best in integrating three intersections within the design window of the traffic signal. However, the proposed widening of the southbound approach to the intersection to provide an exclusive left turn lane and exclusive right turn lane is expected to have a positive impact on the delay at this intersection.

Recommendations

The westbound right turn lane at Southwest Drive/SR 89A should be constructed to provide a minimum turn lane length of 150 feet.

The southbound left turn lane at Southwest Drive/SR 89A should be constructed to provide a minimum storage length of 75 feet.



SOUTHWEST CIRCLE K SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A) TRAFFIC IMPACT ANALYSIS

Project Description

Circle K is proposing a new ten (10) fueling station gas station and convenience store and a single tunnel car wash on the northeast corner of Southwest Drive/SR 89A in Sedona, Arizona. The vicinity of the project is shown in **Figure 1**. The site is located as shown in **Figure 2**. The project will be served by two proposed access points.

The purpose of this traffic impact analysis is to:

- Evaluate the current and future operational characteristics of the adjacent roadway network surrounding the project site.
- Estimate the traffic generation associated with the project and assign that traffic to the existing roadway system.
- Analyze future traffic operations at nine existing intersections and two proposed access points serving the project area.
- Determine the need for auxiliary (left and right turn) lanes at the proposed driveways that will serve the project site.
- Conduct traffic signal warrant analyses at the intersection of Southwest Drive/SR 89A.
- Perform a crash analysis to identify any specific crash trends within the study area.

The author of this report is a registered professional engineer (civil) in the State of Arizona having specific expertise and experience in the preparation of traffic impact analyses.

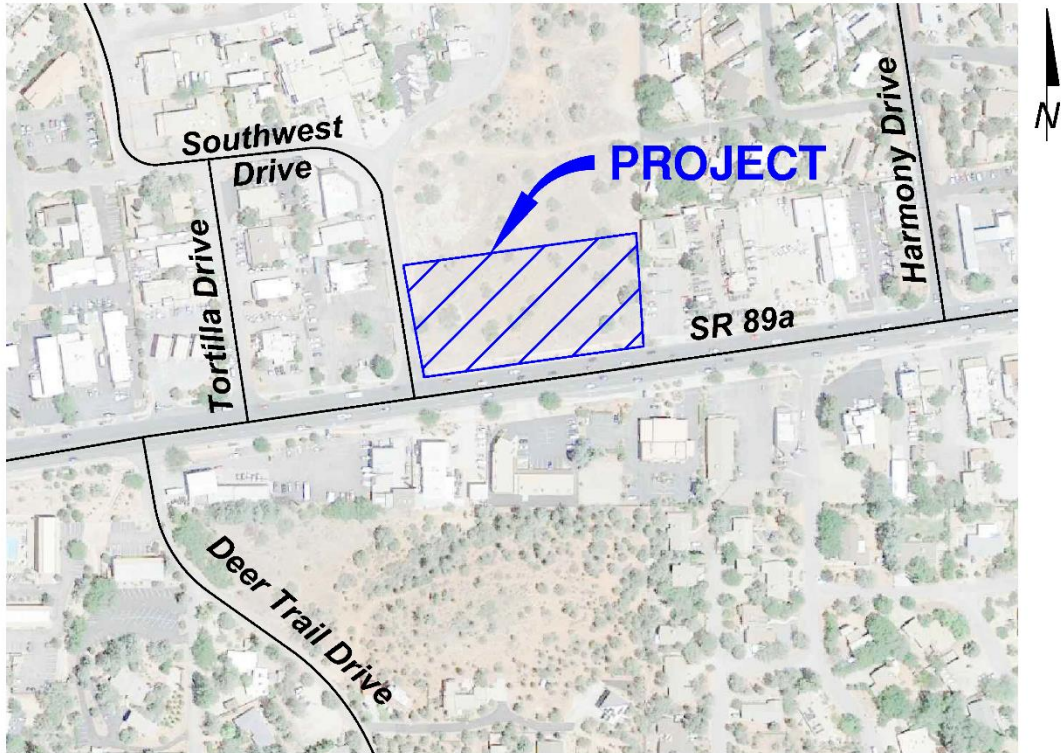
Study Methodology

In order to analyze and evaluate the potential traffic impacts of the proposed development, the following tasks were undertaken:

- Field observation of the proposed site and surrounding area was conducted to evaluate the existing physical and operational characteristics of the adjacent roadway network.
- Site traffic volumes generated by the proposed site were calculated using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017*.
- Calculated site traffic was distributed based on existing traffic patterns and assigned to the primary roadways within the project study limits.
- Capacity analyses were performed for the existing conditions and future conditions without and with the project based on an opening year of 2022 and a horizon year of 2025 using methodology presented in the *2016 Highway Capacity Manual (HCM 6)*.
- The need for auxiliary turn lanes at the study driveways was evaluated based on ADOT guidelines.
- Traffic signal warrant analyses were completed for the existing conditions, 2022 and 2025 without and with traffic from the proposed site.
- Crash records were obtained from the Arizona Department of Transportation (ADOT) database to identify any specific crash trends within the study area.



Figure 1 – Vicinity Map



LEGEND:

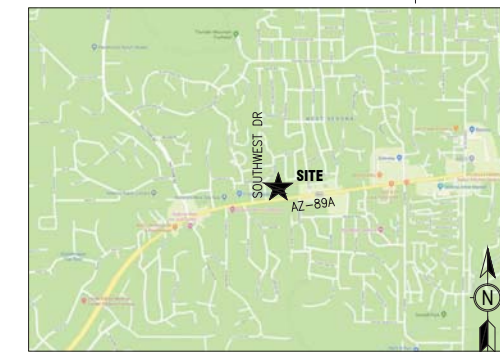
— EXISTING ROAD

 PROJECT SITE

CIRCLE K STORE SITE PLAN

NEC ARIZONA STATE HIGHWAY 89A & SOUTHWEST DRIVE, SEDONA, AZ

2016-C



VICINITY MAP



30 Executive Park
Suite 100
Irvine, CA 92614
t: 949 296 0450

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
02/25/20	PREP SP-3
02/26/20	PREP SP-4
07/14/20	PREP SP-5
08/28/20	PREP SP-6
08/28/20	PREP SP-7
08/15/20	PREP SP-8
08/24/20	REV SP-8
01/26/21	PREP SP-9
03/02/21	PREP SP-10
03/11/21	PREP SP-11
05/25/21	PREP SP-12
08/26/21	REV SP-12
08/24/22	REV SP-13
10/05/22	PREP SP-14
10/24/22	PREP SP-15
06/09/23	PREP SP-16
06/01/23	PREP SP-17
06/13/23	PREP SP-18
06/27/23	PREP SP-19
07/13/23	PREP SP-20
07/14/23	PREP SP-21
07/20/23	REV SP-21

OWNER:

CIRCLE K STORES INC.
30 EXECUTIVE PARK, SUITE 100
IRVINE, ARIZONA 85284

OWNER REPRESENTATIVE:

LAND DEVELOPMENT CONSULTANTS, LLC
11811 N. TATUM BLVD. #1051
PHOENIX, ARIZONA 85028
PHONE: (602) 850-8101
FAX: (602) 997-9807
CONTACT: MIKE SCARBROUGH

ARCHITECT:

GREENBERG FARROW
30 EXECUTIVE PARK, SUITE 100
IRVINE, CA 92614
PHONE: (949) 296-0450
FAX: (949) 296-0479
CONTACT: DOUG COUPER

PROJECT INFORMATION

PROJECT NAME: CIRCLE K CONVENIENCE STORE
PROJECT ADDRESS: NEC AZ-89A & SOUTHWEST DRIVE, SEDONA, AZ
PROJECT DESCRIPTION: PROPOSAL FOR A NEW CONVENIENCE STORE WITH ASSOCIATED FUEL SALES CONSISTING OF A 6,250 S.F. CONVENIENCE STORE, AND A FUEL CANOPY WITH 6 FUEL PUMPS.

ZONING INFORMATION

JURISDICTION: CITY OF SEDONA, AZ
EXISTING ZONING: CO (COMMERCIAL)
PROPOSED ZONING: CO (COMMERCIAL)
MAX. BLDG HEIGHT ALLOWED: 40' OVERALL
BLDG HEIGHT PROVIDED: 23'-0"
SETBACKS:
FRONT: 10'
SIDE: 0'
REAR: 0'
STREET: 10'
ABUTTING RESIDENTIAL: 20'

SITE DATA

PARCEL: APN: 408-24-536C
CIRCLE K NET SITE AREA: 11.781 AC (± 77,602 SF)

BUILDING AREA

CONVENIENCE STORE BLDG AREA: 6,250 SF
FUEL CANOPY AREA: 3,000 SF
CIRCLE K SITE COVERAGE (BASED ON 6,250 SF BLDG AREA PLUS 3,000 SF FUEL CANOPY AREA AND ± 11.9% AC OF NET SITE AREA): 11.9% (5,194 SF/AC)

PARKING REQUIREMENTS

CIRCLE K PARKING REQUIRED	
RETAIL 1 SP/250 SF	25 SP
CIRCLE K PARKING PROVIDED	
STANDARD PARKING SPACES	24 SP
ACCESSIBLE PARKING SPACES	1 SP
TOTAL CIRCLE K PARKING PROVIDED	25 SP
BICYCLE PARKING PROVIDED	4 SP
VENDOR PARKING PROVIDED	2 SP

GENERAL NOTES

- THIS IS A CONCEPTUAL SITE PLAN AND IS FOR PLANNING PURPOSES ONLY.
- THIS SITE PLAN IS BASED ON A PDF OF THE ALTA SURVEY PREPARED BY HELIX ENGINEERING, LLC, DATED 04/02/2020, AND AN AERIAL.



SCALE 1"=20'



PROFESSIONAL IN CHARGE

DOUG S. COUPER

PROJECT MANAGER

DC

QUALITY CONTROL

JN

PROJECT NAME

CIRCLE K STORES INC.
SEDONA,
ARIZONA
NEC AZ-89A
& SOUTHWEST DRIVE



LAND DEVELOPMENT
CONSULTANTS, LLC
11811 N. TATUM BLVD., #1051
PHOENIX, AZ 85028



CIRCLE K STORES INC.

PROJECT NUMBER

20191225.0

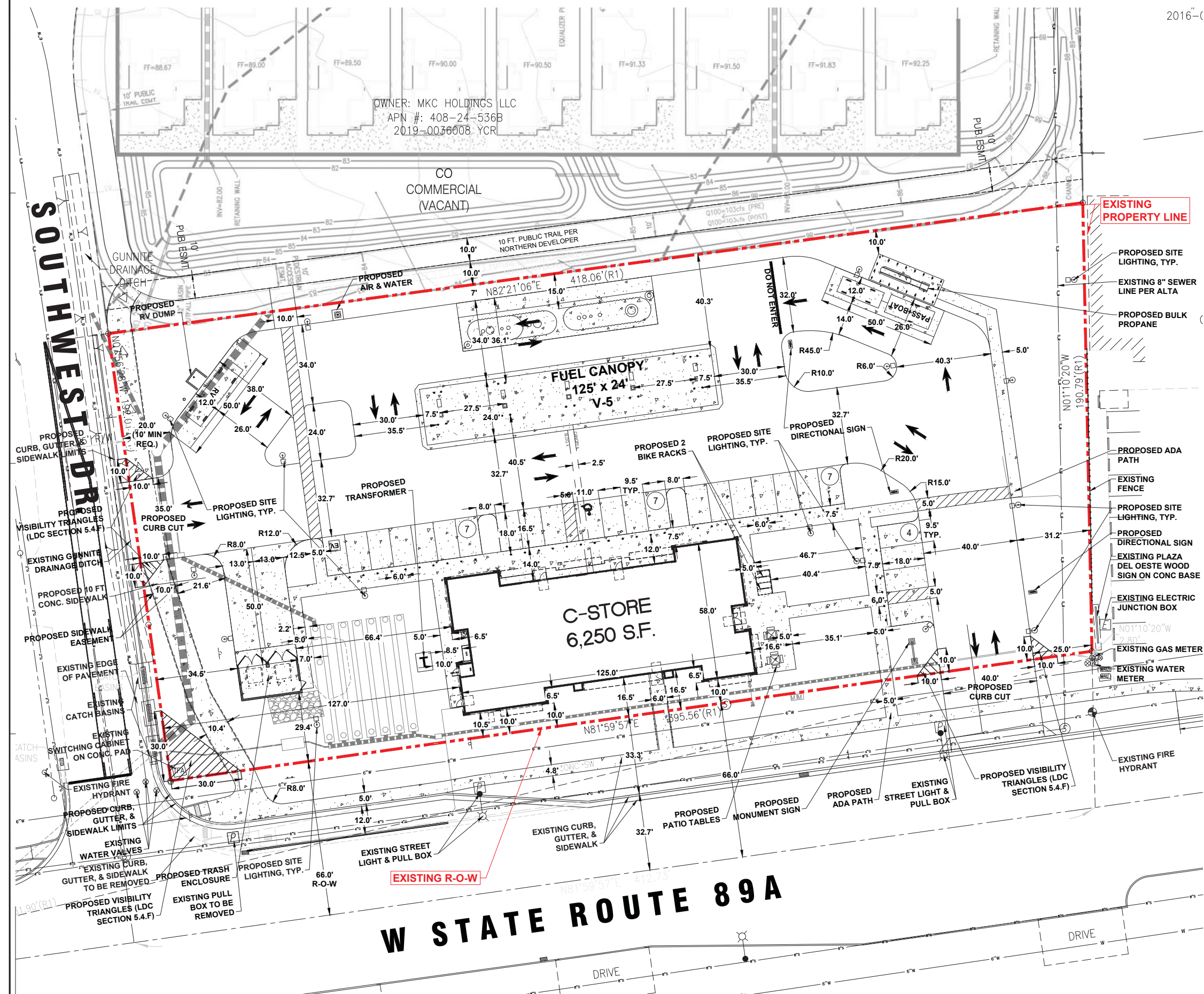
SHEET TITLE

SITE PLAN

SHEET NUMBER

CSP 21.0W

NOT ISSUED FOR CONSTRUCTION



W STATE ROUTE 89A



Existing Conditions

The proposed project will be located on the northeast corner of Southwest Drive/SR 89A.

SR 89A is aligned north/south aligned roadway serving as a scenic route between Prescott, Arizona and Flagstaff, Arizona. However, adjacent to the project site, the roadway is aligned east/west. Two through lanes are provided for each direction of travel, separated by a two-way center left turn lane. The posted speed limit on SR 89A is 35 miles per hour (mph) near the project site.

Southwest Drive is a two-lane roadway that extends north from SR 89A. Approximately 380 feet north of SR 89A, Southwest Drive curves west and then ends after approximately 650 feet at Sinagua Drive. The roadway serves a fire department and various land uses. There is a posted speed limit of 25 mph on Southwest Drive.

Navajo Drive extends to the north from Southwest Drive, approximately 380 feet north of SR 89A. The roadway continues north for approximately 820 feet, ending at an apartment complex. Functionally, Navajo Drive serves as a continuation of Southwest Drive. There is no posted speed limit on Navajo Drive.

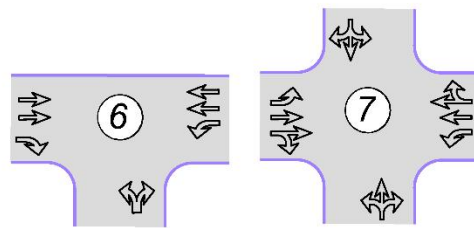
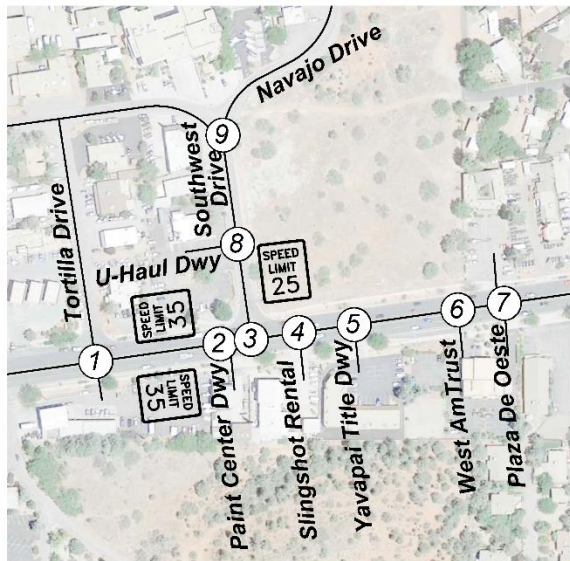
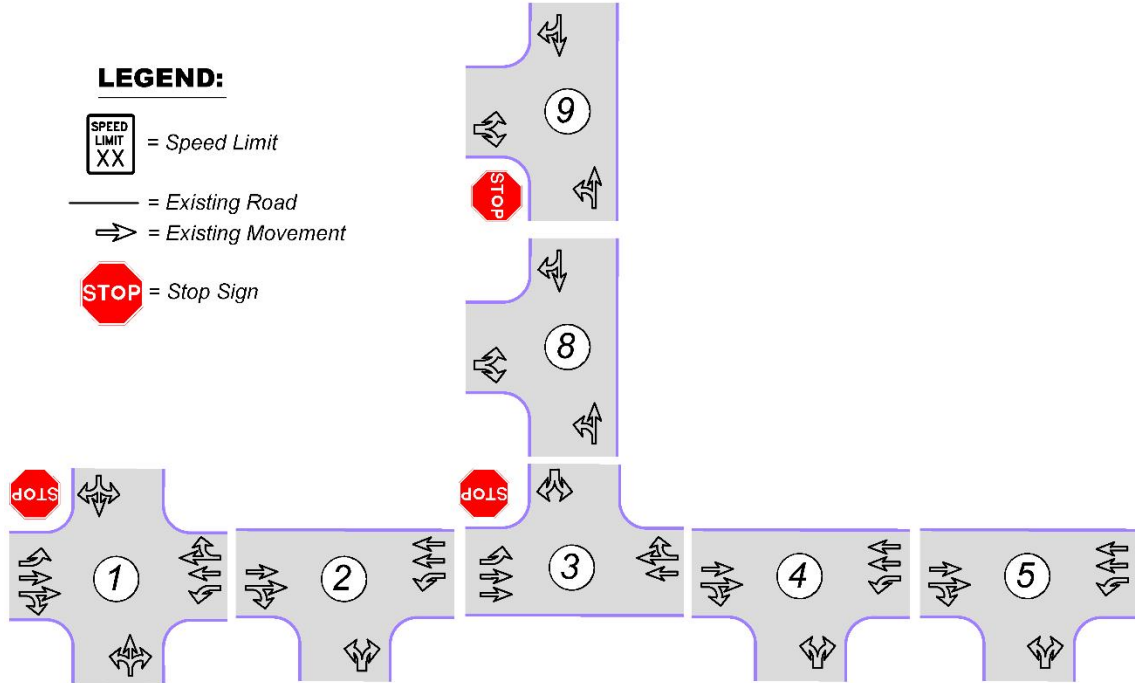
Tortilla Drive is a two-lane street that serves as a connection between SR 89A and Southwest Drive. There is no posted speed limit on Tortilla Drive. A driveway to Big O Tires, located on the south side of SR 89A, aligns with Tortilla Drive.

Several closely spaced driveways are located along SR 89A. Paint Center Driveway is located on the south side of SR 89A, immediately west of Southwest Drive. Slingshot Rentals Driveway, Yavapai Title Driveway, and West AmTrust Driveway are located approximately 30 feet, 150 feet, and 350 feet east of Southwest Drive, on the south side of SR 89A.

Plaza de Oeste Driveway is located approximately 430 feet east of Southwest Drive on the north side of SR 89A. This driveway aligns with a driveway for the AmTrust Bank on the south side of SR 89A. The driveway on the south side of SR 89A is intended as an exit-only from the bank and is marked with STOP (R1-1) signs and northbound pavement marking arrows to discourage vehicles from entering.

The study intersection locations, lane configurations, and intersection control are shown in **Figure 3**.

Figure 3 – Existing Lane Configurations and Traffic Control





Existing Traffic Data

In order to form a basis for analysis of the project impacts, weekday AM and PM peak hour turning movement counts were conducted at the following intersections:

- Tortilla Drive/SR 89A
- Paint Center Driveway/SR 89A
- Southwest Drive/SR 89A
- Slingshot Rental Driveway/SR 89A
- Yavapai Title Driveway/SR 89A
- West Amtrust Driveway/SR 89A
- Plaza de Oeste Driveway/SR 89A
- Uhaul Driveway/Southwest Drive
- Navajo Drive/Southwest Drive

In addition, a weekday 24-hour intersection approach count was taken at Southwest Drive/SR 89A.

The weekday turning movement counts were conducted from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. All traffic data was collected in September 2021 while school was in session. The existing weekday traffic volumes are shown in **Figure 4**. Complete traffic count data can be found in the Appendix.

Access

Two full access points are proposed to serve the site, East Access is proposed on SR 89A and North Access is proposed on Southwest Drive.

As part of the project, Southwest Drive will be widened adjacent to the project site to provide a new southbound approach to Southwest Drive/SR 89A that provides an exclusive left turn lane and exclusive right turn lane. A westbound right turn lane will also be installed at the intersection.

East Access is proposed on the north side of SR 89A, approximately 335 feet east of Southwest Drive. This driveway will align with the existing West AmTrust Driveway.

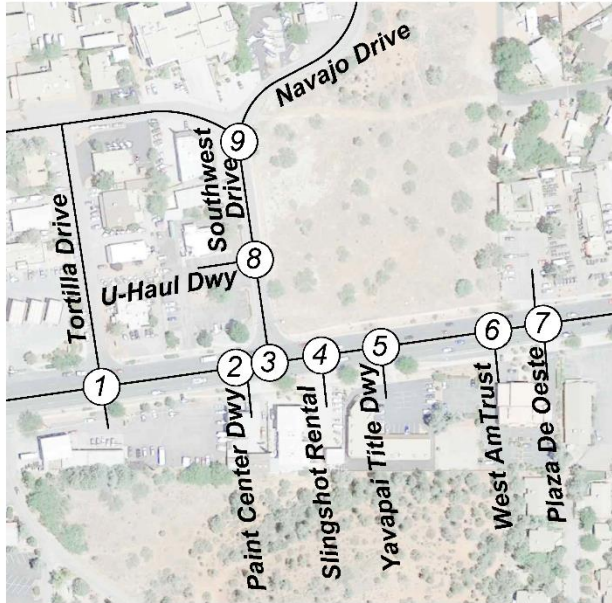
North Access is proposed on the east side of Southwest Drive approximately 95 feet north of SR 89A. This Driveway will align with Uhaul Driveway.

The adjacent Navajo Lofts site to the north is expected to construct an east leg at the intersection of Navajo Drive/Southwest Drive.

Figure 5 shows the locations, geometry and spacing for the proposed driveways serving the project site that will serve as a baseline of analysis in the report.



Figure 4 – Existing Weekday Peak Hour Traffic Volumes



LEGEND:

XX = Weekday AM Peak Hour
 (XX) = Weekday PM Peak Hour
 Vehicles Per Hour

— = Existing Road
 ##### = Vehicles Per Day

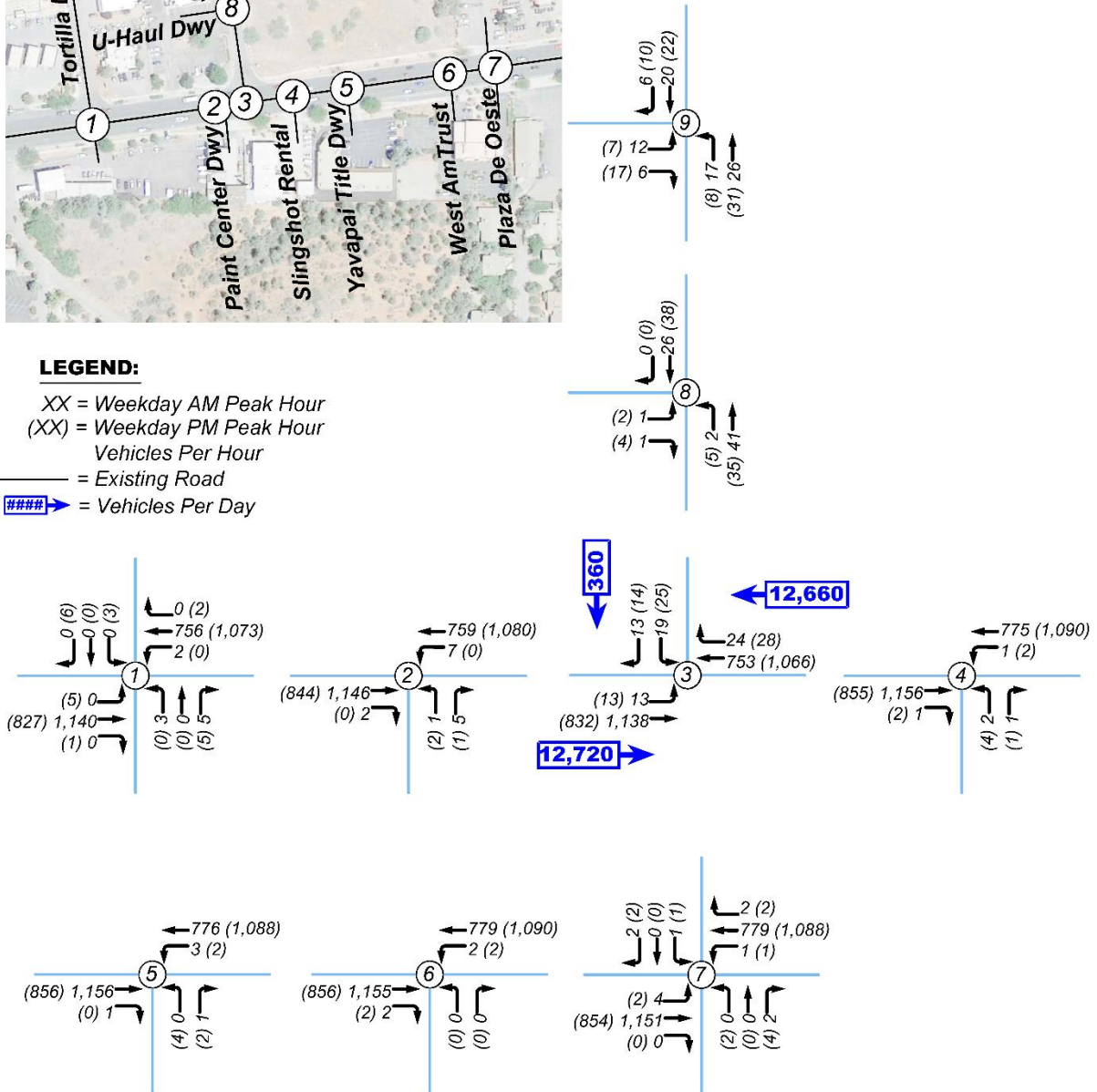
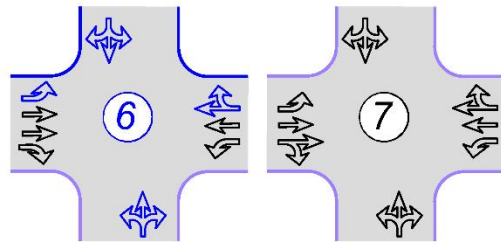
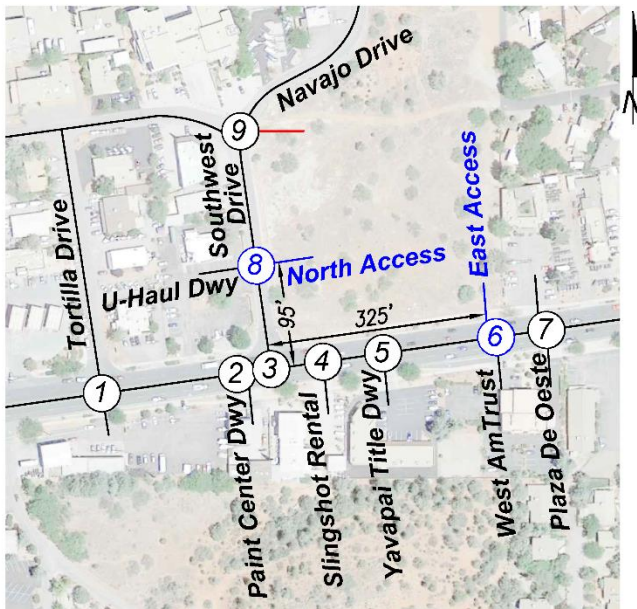
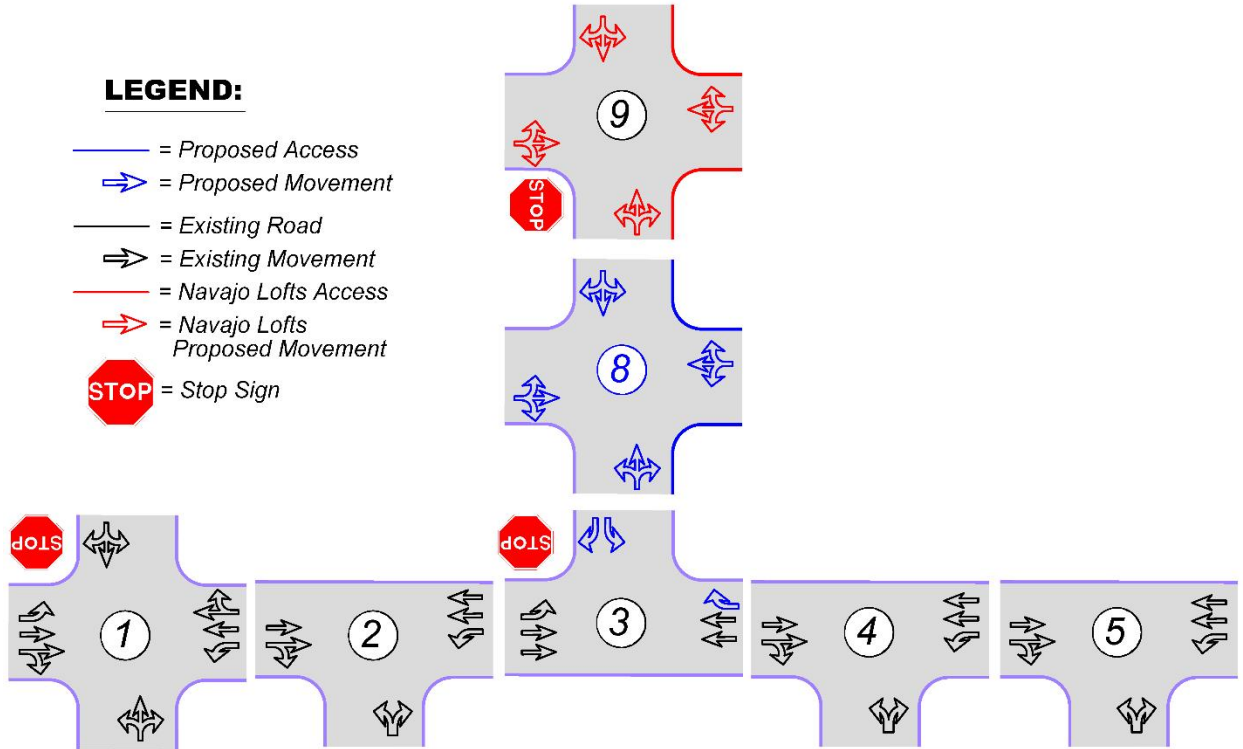




Figure 5 – Baseline Access Point and Intersection Configuration Assumptions





Trip Generation

Trip generation was developed utilizing nationally agreed upon data contained in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 11th Edition, 2021*. The project trip generation was estimated for a ten (10) fueling station gas station based on ITE Land Use Code 945, Convenience Market/Gas Station (LUC 945) and a single tunnel car wash based on LUC 948, Automated Car Wash. The result is the expected weekday trip generation for the project as shown in **Table 1**. The complete trip generation calculations can be found in the Appendix.

Table 1 – Project Site Generated Trips

Time Period	10 Fueling Station Convenience Market/ Gas Station (LUC 945)	*Single Tunnel Automated Car Wash (LUC 948)	Total
Average Daily, Inbound (vtpd)	2,189	390	2,579
Average Daily, Outbound (vtpd)	2,189	390	2,579
Total Weekday Daily	4,378	780	5,158
AM Peak Hour, Inbound (vtph)	177	N/A	177
AM Peak Hour, Outbound (vtph)	177	N/A	177
Total AM Peak	354	N/A	354
PM Peak Hour, Inbound (vtph)	171	39	210
PM Peak Hour, Outbound (vtph)	171	39	210
Total PM Peak	342	78	420

vtpd - vehicle trips per day, vtph - vehicle trips per hour

*Weekday daily volume based on 10% peak hour assumption

Pass-By Reduction

Gas stations do not typically generate all new traffic on a roadway system, many are ‘pass-by’ trips. The Institute of Transportation Engineers’ (ITE) publication *Trip Generation, 11th Edition, 2021* defines pass-by trips as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Primary trips are trips where the primary purpose of the trip is to visit a specific location (i.e. gas station). Pass-by trips are trips where the secondary purpose of the trip is to visit the gas station, in conjunction with some other primary trip purpose (such as driving home from work).

ITE estimates that 76% of the external weekday AM peak hour trips and 75% of the external weekday PM peak hour trips will be from pass-by. Pass-By trips lower the through traffic volumes at project access points as vehicles choose to turn into the site instead of continuing through the intersection. **Table 2** shows the pass-by reductions expected at the project site.



Table 2 – Pass-By Reduction

Time Period	10 Fueling Station Convenience Market/ Gas Station (LUC 945)	Pass-By Reduction	Total (Primary Trips)
AM Peak Hour, Inbound (vtph)	177	-135	42
AM Peak Hour, Outbound (vtph)	177	-135	42
Total AM Peak	354	-270	84
PM Peak Hour, Inbound (vtph)	160	-120	40
PM Peak Hour, Outbound (vtph)	160	-120	40
Total PM Peak	320	-240	80

vtph - vehicle trips per hour

Trip Distribution & Assignment

Trip distribution for the project was based on existing traffic volume patterns near the proposed site. **Figure 6** shows the weekday trip distribution for the project as a percentage of net new primary trips.

Figure 7 shows the assignment of the new site generated trips to the project intersections, including the pass-by trip reduction. The pass-by trip assignment for the gas station be found in the Appendix.

Existing Traffic Operations

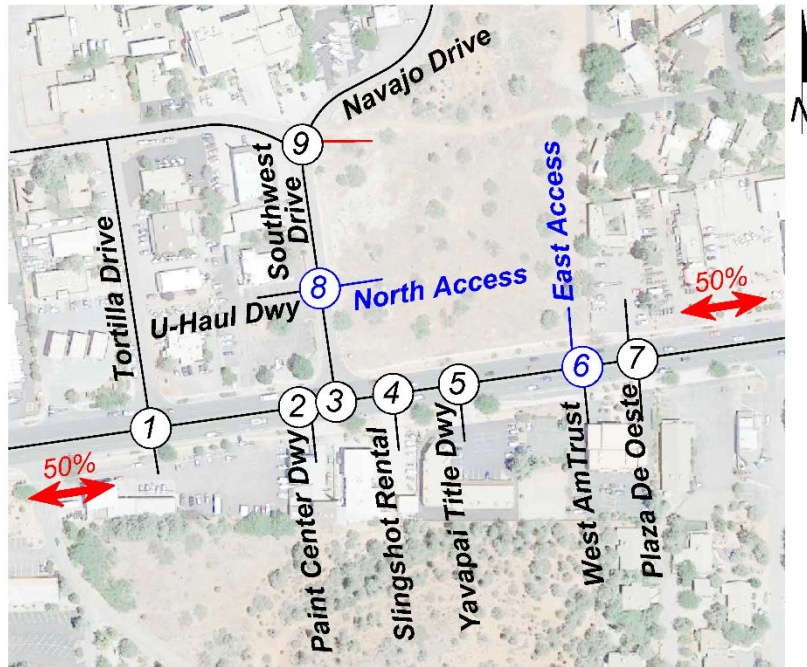
Analysis of current intersection operations was conducted for the weekday AM and PM peak hours using the nationally accepted methodology set forth in the *Highway Capacity Manual*, Transportation Research Board, 2016 (HCM 6). The computer software Synchro 10 was utilized to calculate the levels of service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

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

At un-signalized intersections, level of service is predicted/calculated for those movements, which must either stop for or yield to oncoming traffic and is based on average control delay for the particular movement. Control delay is the portion of total delay attributed to traffic control measures such as stop signs and traffic signals. The criteria for level of service at un-signalized intersections are shown in **Table 3**.



Figure 6 – Weekday Peak Hour Trip Distribution



LEGEND:

- = Existing Road
- XX% = Distribution of Vehicle Trips
- (blue) = New Access
- (red) = Navajo Lofts Access



Figure 7 – Weekday Peak Hour Trip Assignment

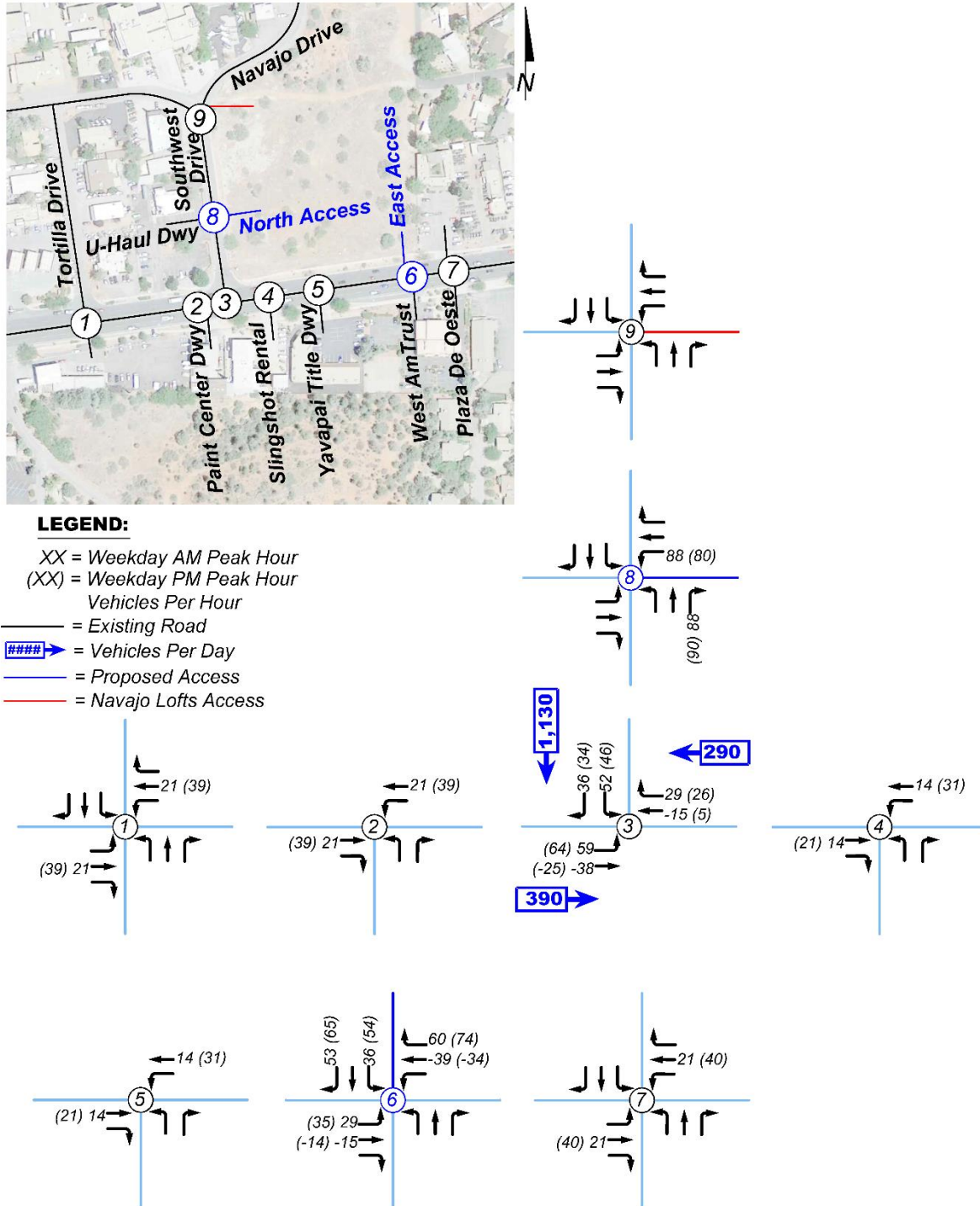




Table 3 – Level of Service Criteria – Un-signalized Intersections

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

Table 4 shows the existing levels of service that were calculated for the study intersections. Complete capacity calculations are included in the Appendix.

Table 4 – Existing Weekday Peak Hour Levels of Service

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Un-signalized Intersections				
Tortilla Drive/SR 89a				
Eastbound Left	A	0.0	B	11.3
Westbound Left	B	11.6	A	0.0
Northbound Left/Through/Right	E	35.2	B	11.6
Southbound Left/Through/Right	A	0.0	D	31.7
Paint Center Driveway/SR 89a				
Westbound Left	B	11.8	A	0.0
Northbound Left/Right	C	15.8	C	17.7
Southwest Drive/SR 89a				
Eastbound Left	A	9.8	B	11.5
Southbound Left/Right	C	18.2	C	24.5
Slingshot Rental Driveway/SR 89a				
Westbound Left	B	11.7	B	10.0
Northbound Left/Right	C	21.7	C	19.3
Yavapai Title Driveway/SR 89a				
Westbound Left	B	11.8	B	10.0
Northbound Left/Right	B	13.7	C	17.2
West AmTrust Driveway/SR 89a				
Westbound Left	B	11.8	B	10.0
Northbound Left/Right	A	0.0	A	0.0
Plaza de Oeste Driveway/SR 89a				
Eastbound Left	A	9.7	B	11.3
Westbound Left	B	11.7	B	10.0
Northbound Left/Through/Right	B	13.7	D	26.4
Southbound Left/Through/Right	C	24.4	D	31.4
Uhaul Driveway/Southwest Drive				
Eastbound Left/Right	A	8.7	A	8.7
Northbound Left/Through	A	7.3	A	7.3
Navajo Drive/Southwest Drive				
Eastbound Left/Right	A	9.0	A	8.7
Northbound Left/Through	A	7.3	A	7.3

Delay - seconds per vehicle

As shown in **Table 4**, the northbound approach to the intersection of Tortilla Drive/SR 89A currently experiences an inadequate delay during the weekday AM peak hour. This delay is due to the relatively high through traffic volumes along SR 89A not providing adequate gaps for vehicles turning from the minor approach.



The remaining study intersections currently operate at an adequate LOS during the weekday peak hours.

Future Traffic Operations Without Project

In order to assess the impacts of the project on future traffic operations, traffic projections were made for the opening year of 2022 and the horizon year of 2025.

A review of historical traffic data in the vicinity of the project showed increasing and decreasing traffic volumes along SR 89A. Due to this, a conservative 2% growth rate was used to account for future development near the project area. Weekday peak hour traffic volumes without the project in 2022 and 2025 were estimated using a 2% annual traffic growth rate, as shown in **Figures 8** and **9**.

An adjacent development, Navajo Lofts, is planned to be constructed in the near future. This development is located directly north of the Southwest Circle K project site. The expected trip assignment from this development was added to this analysis based on the traffic assignment from the following report: *Navajo Lofts TIA* written by Lee Engineering, LLC, dated August 2021. The trip assignment from the *Navajo Lofts TIA* can be found in the Appendix.

Traffic volumes from Navajo Lofts were then combined with the estimated 2022 and 2025 traffic volumes without the project (**Figures 8** and **9**) to yield 2022 and 2025 weekday AM and PM peak hour traffic volumes, without the project, with adjacent developments, as shown in **Figure 10** and **11**.

As with the current volumes, levels of service were calculated for the study intersection in 2022 and 2025 without the project, with the adjacent development. Intersection levels of service for 2022 and 2025 without the project are shown in **Tables 5** and **6**. Complete capacity calculations are included in the Appendix.



Figure 8 – 2022 Weekday Peak Hour Traffic Volumes Without Project

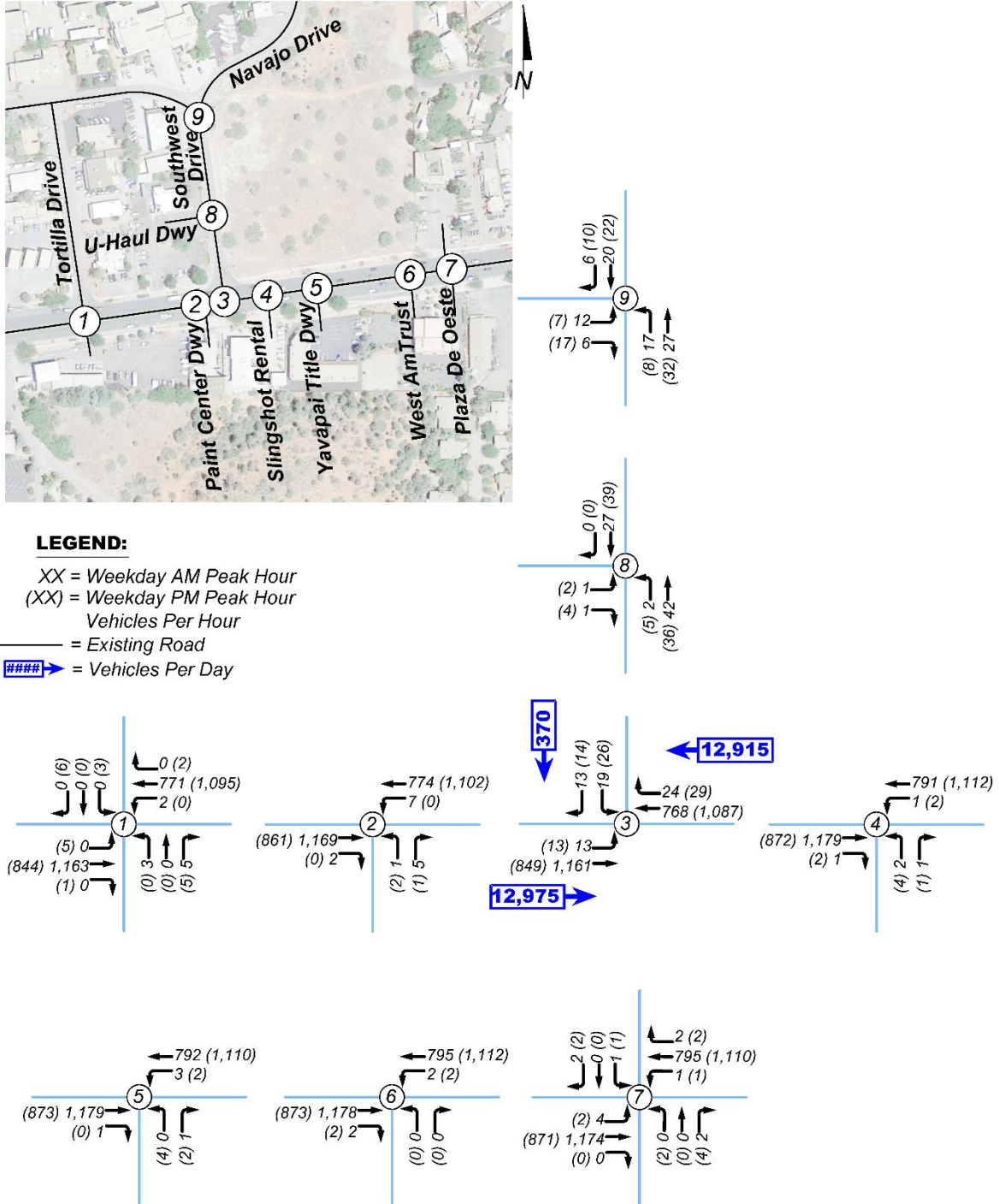
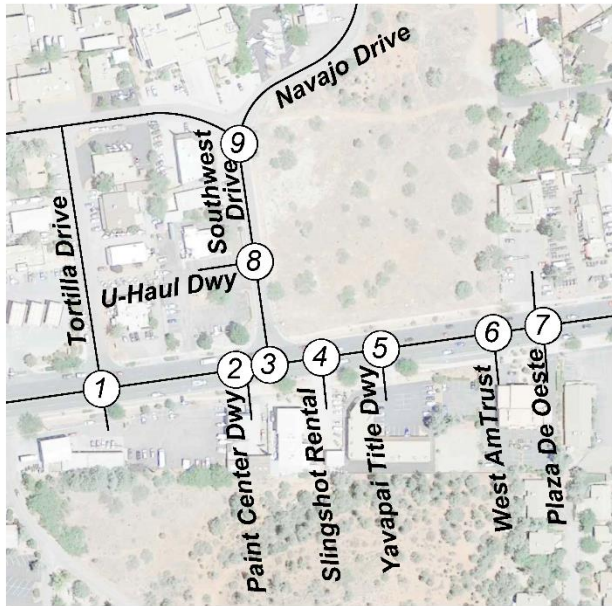




Figure 9 – 2025 Weekday Peak Hour Traffic Volumes Without Project



LEGEND:

- XX = Weekday AM Peak Hour
- (XX) = Weekday PM Peak Hour
- Vehicles Per Hour
- = Existing Road
- #### = Vehicles Per Day

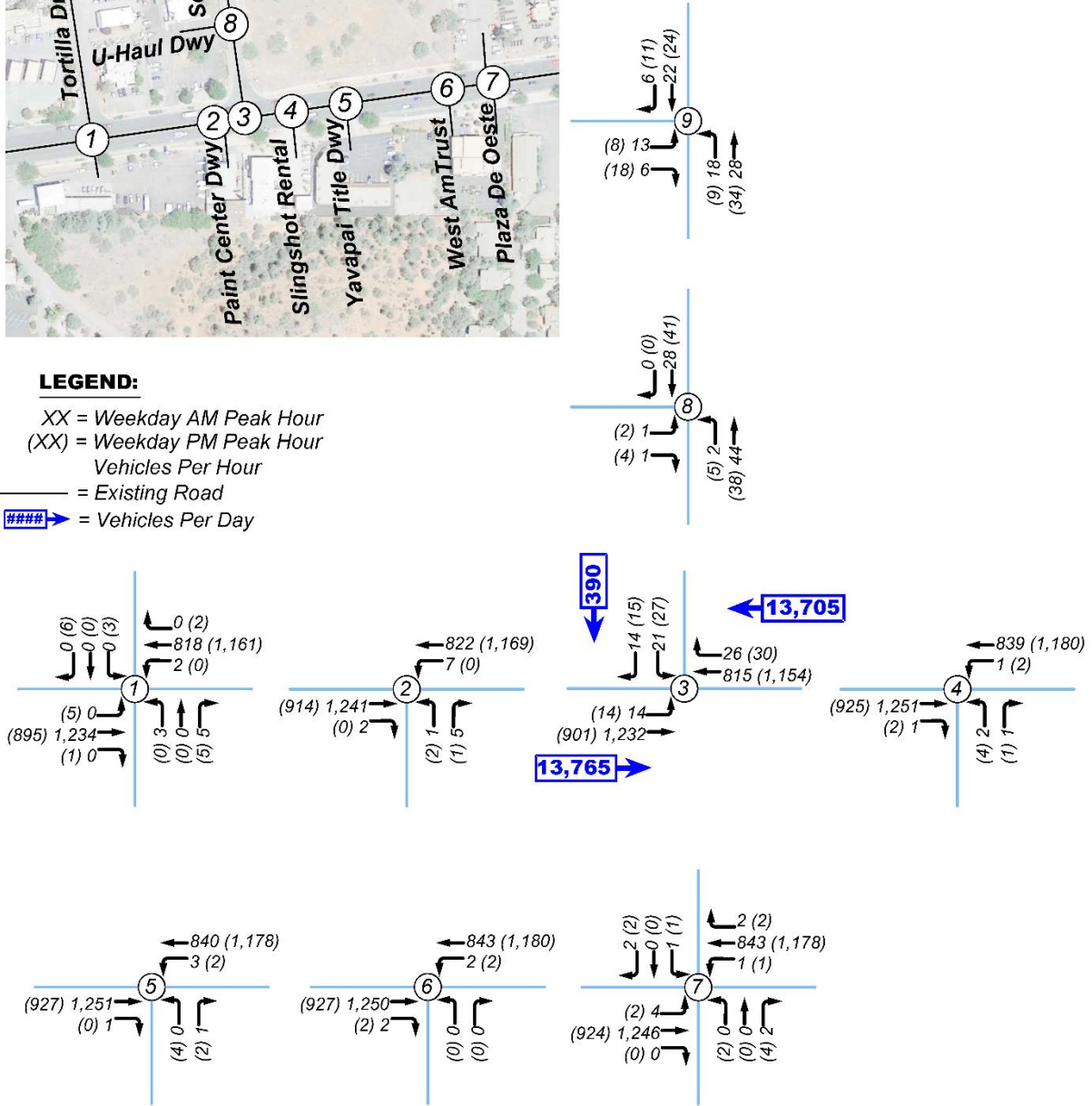




Figure 10 – 2022 Weekday Peak Hour Traffic Volumes Without Project With Navajo Lofts

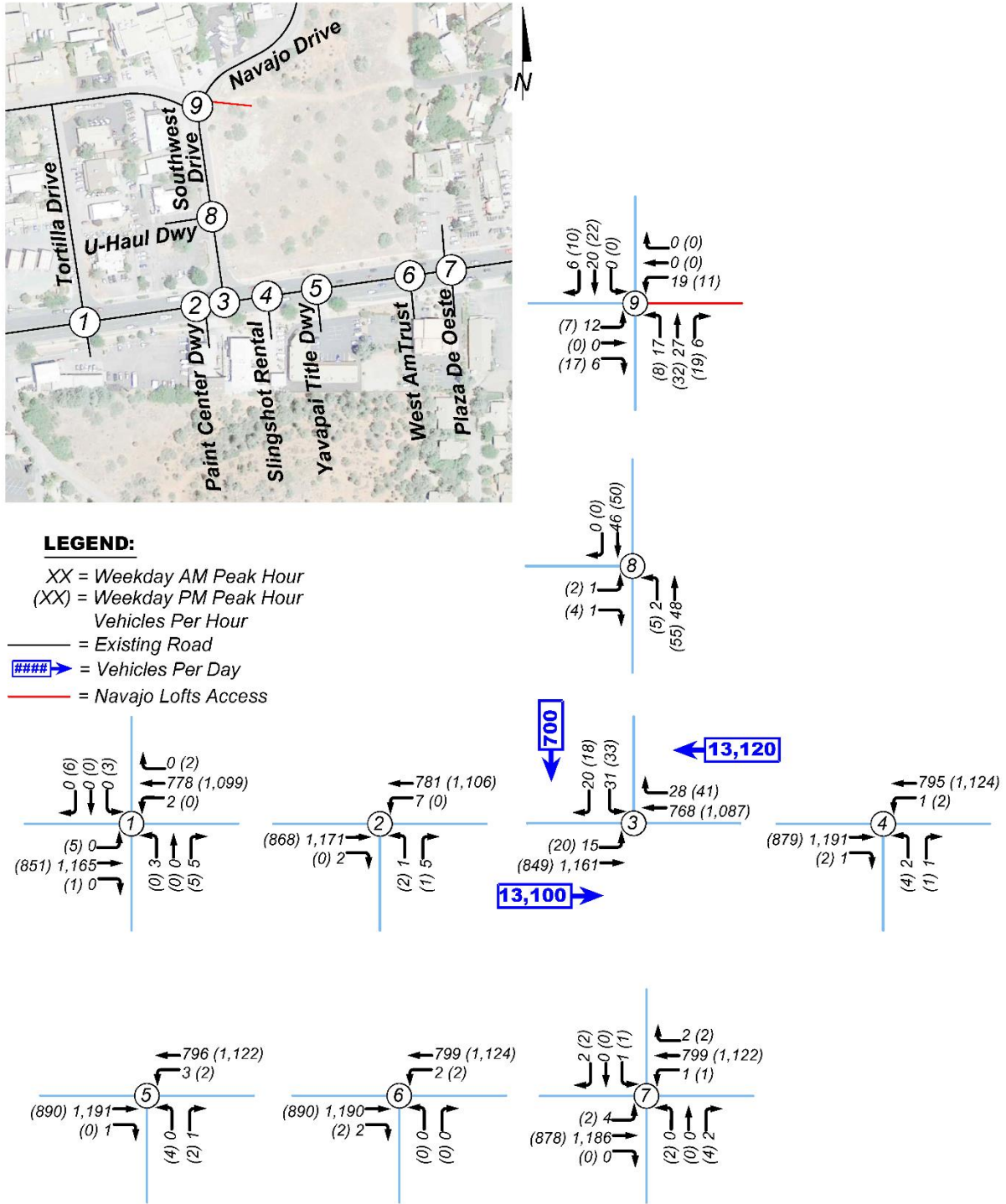
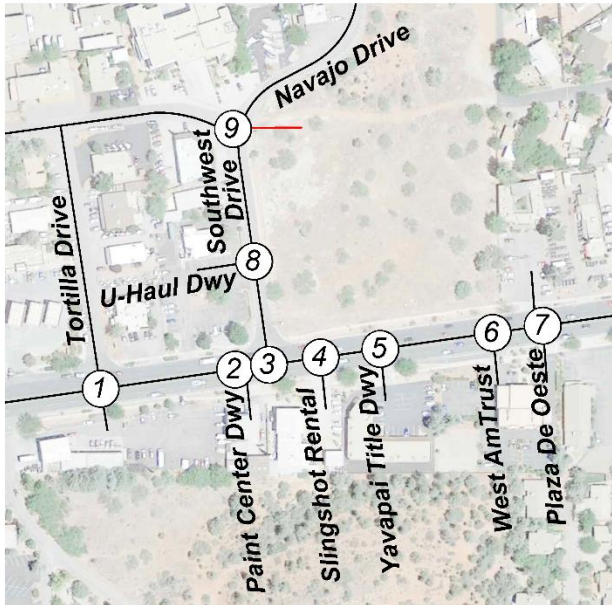




Figure 11 – 2025 Weekday Peak Hour Traffic Volumes Without Project With Navajo Lofts



LEGEND:

XX = Weekday AM Peak Hour
(XX) = Weekday PM Peak Hour
Vehicles Per Hour

— = Existing Road
####> = Vehicles Per Day

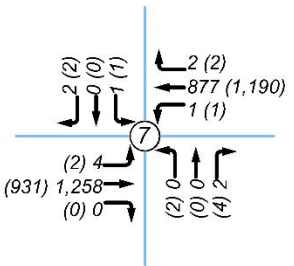
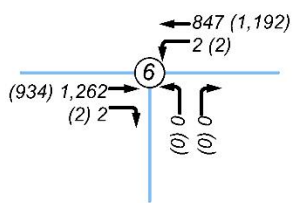
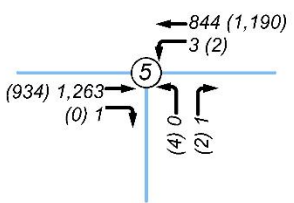
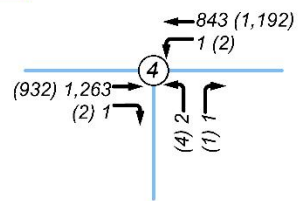
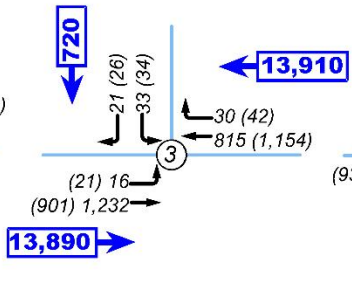
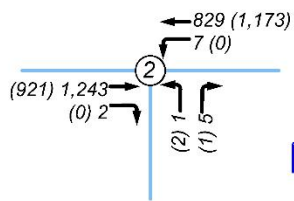
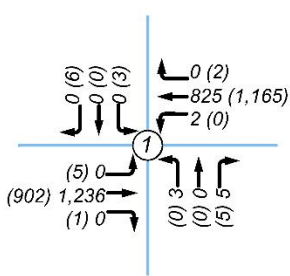
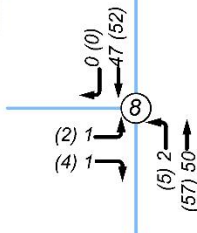
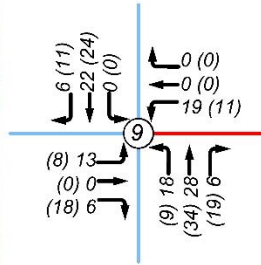




Table 5 – 2022 Weekday Peak Hour Levels of Service Without Project With Navajo Lofts

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Un-signalized Intersections				
Tortilla Drive/SR 89a				
Eastbound Left	A	0.0	B	11.4
Westbound Left	B	11.8	A	0.0
Northbound Left/Through/Right	E	37.1	B	11.8
Southbound Left/Through/Right	A	0.0	D	33.6
Paint Center Driveway/SR 89a				
Westbound Left	B	11.9	A	0.0
Northbound Left/Right	C	16.0	C	18.1
Southwest Drive/SR 89a				
Eastbound Left	A	9.8	B	11.8
Southbound Left/Right	C	20.2	D	27.9
Slingshot Rental Driveway/SR 89a				
Westbound Left	B	12.0	B	10.2
Northbound Left/Right	C	22.5	C	19.9
Yavapai Title Driveway/SR 89a				
Westbound Left	B	12.0	B	10.2
Northbound Left/Right	B	13.9	C	17.7
West AmTrust Driveway/SR 89a				
Westbound Left	B	12.0	B	10.2
Northbound Left/Right	A	0.0	A	0.0
Plaza de Oeste Driveway/SR 89a				
Eastbound Left	A	9.8	B	11.5
Westbound Left	B	11.9	B	10.1
Northbound Left/Through/Right	B	13.9	D	28.0
Southbound Left/Through/Right	D	25.7	D	33.7
Uhaul Driveway/Southwest Drive				
Eastbound Left/Right	A	8.7	A	8.8
Northbound Left/Through	A	7.3	A	7.3
Navajo Drive/Southwest Drive				
Eastbound Left/Through/Right	A	9.0	A	8.8
Westbound Left/Through/Right	A	9.4	A	9.4
Northbound Left/Through	A	7.3	A	7.3
Southbound Left/Through/Right	A	0.0	A	0.0

Delay - seconds per vehicle



Table 6 – 2025 Weekday Peak Hour Levels of Service Without Project With Navajo Lofts

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Un-signalized Intersections				
Tortilla Drive/SR 89a				
Eastbound Left	A	0.0	B	11.9
Westbound Left	B	12.3	A	0.0
Northbound Left/Through/Right	E	43.3	B	12.1
Southbound Left/Through/Right	A	0.0	E	39.0
Paint Center Driveway/SR 89a				
Westbound Left	B	12.5	A	0.0
Northbound Left/Right	C	16.9	C	19.1
Southwest Drive/SR 89a				
Eastbound Left	B	10.1	B	12.4
Southbound Left/Right	C	22.0	D	30.5
Slingshot Rental Driveway/SR 89a				
Westbound Left	B	12.5	B	10.4
Northbound Left/Right	C	24.2	C	21.1
Yavapai Title Driveway/SR 89a				
Westbound Left	B	12.5	B	10.4
Northbound Left/Right	B	14.5	C	18.6
West AmTrust Driveway/SR 89a				
Westbound Left	B	12.5	B	10.4
Northbound Left/Right	A	0.0	A	0.0
Plaza de Oeste Driveway/SR 89a				
Eastbound Left	B	10.2	B	12.0
Westbound Left	B	12.4	B	10.4
Northbound Left/Through/Right	B	14.5	D	32.0
Southbound Left/Through/Right	D	30.1	E	38.9
Uhaul Driveway/Southwest Drive				
Eastbound Left/Right	A	8.9	A	8.9
Northbound Left/Through	A	7.3	A	7.4
Navajo Drive/Southwest Drive				
Eastbound Left/Through/Right	A	9.1	A	8.8
Westbound Left/Through/Right	A	9.4	A	9.4
Northbound Left/Through	A	7.3	A	7.3
Southbound Left/Through/Right	A	0.0	A	0.0

Delay - seconds per vehicle

As shown in **Table 5** and **6**, the northbound approach to the intersection of Tortilla Drive/SR 89A is anticipated to experience an inadequate delay during the weekday AM peak hour in 2022 without traffic from the project. In 2025 without traffic from the project, the northbound and southbound approaches to the intersection of Tortilla Drive/SR 89A are expected to experience inadequate delays during the weekday peak hours.



The southbound approach to the intersection of Plaza de Oeste Driveway/SR 89A is expected to operate at a LOS E during the weekday PM peak hour in 2025 without traffic from the project.

The delays at the intersections of Tortilla Drive/SR 89A and Plaza de Oeste Driveway/SR 89A are due to the relatively high through traffic volumes along SR 89A not providing adequate gaps for vehicles turning from the minor approaches.

The remaining study intersections are expected to operate at an adequate LOS during the weekday peak hours in 2022 and 2025 without traffic from the project.

Future Traffic Operations With Project

In order to assess the impacts of the project on future traffic operations, levels of service were calculated for each project intersection in 2022 and 2025, with the project.

Weekday peak hour traffic volumes for 2022 and 2025 without the project were combined with the estimated trips generated by the project to yield weekday peak hour traffic volumes with the project as shown in **Figures 12 and 13**.

Weekday intersection levels of service for 2022 and 2025, with the project, were then calculated as shown in **Tables 7 and 8**. Complete capacity calculations are included in the Appendix.

As shown in **Tables 7 and 8**, the northbound and southbound approaches to the intersection of Tortilla Drive/SR 89A are anticipated to experience inadequate delays during the weekday peak hours in 2022 and 2025 without and with traffic from the project.

The southbound approach to Southwest Drive/SR 89A is expected to experience an inadequate delay during the weekday peak hours in 2022 and 2025 with traffic from the project.

The southbound approach to East Access/SR 89A is anticipated to operate at a LOS F in 2022 and 2025 with traffic from the project.

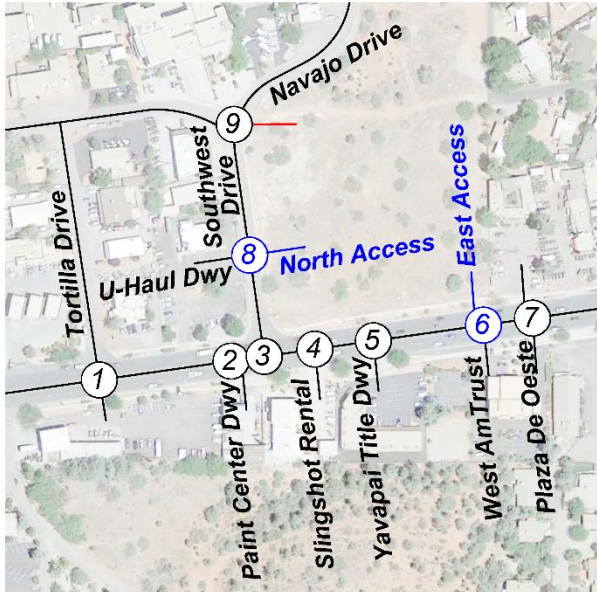
The southbound approach to the intersection of Plaza de Oeste Driveway/SR 89A is expected to operate at a LOS E during the weekday PM peak hour in 2022 with the project and in 2025 without and with traffic from the project. The northbound approach is also expected to experience an inadequate delay in 2025 with traffic from the project.

The delays at these intersections are due to the relatively high through traffic volumes along SR 89A not providing adequate gaps for vehicles turning from the minor approaches.

The remaining study intersections are expected to operate at an adequate LOS during the weekday peak hours in 2022 and 2025 without traffic from the project.



Figure 12 – 2022 Weekday Peak Hour Traffic Volumes With Project



LEGEND:

- XX = Weekday AM Peak Hour
- (XX) = Weekday PM Peak Hour
- Vehicles Per Hour
- = Existing Road
- = Proposed Access
- = Navajo Lofts Access
- #### → = Vehicles Per Day

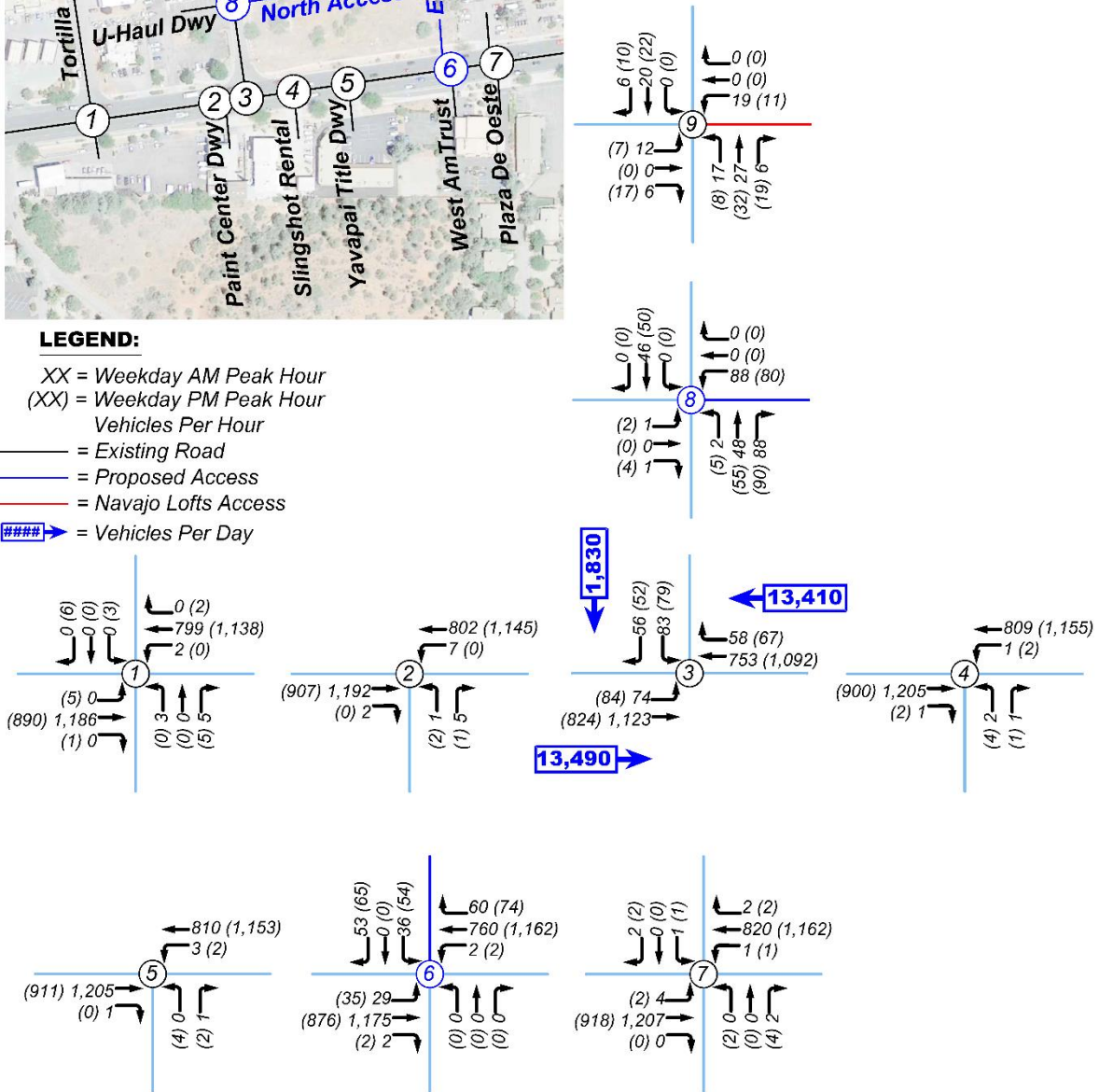




Figure 13 – 2025 Weekday Peak Hour Traffic Volumes With Project

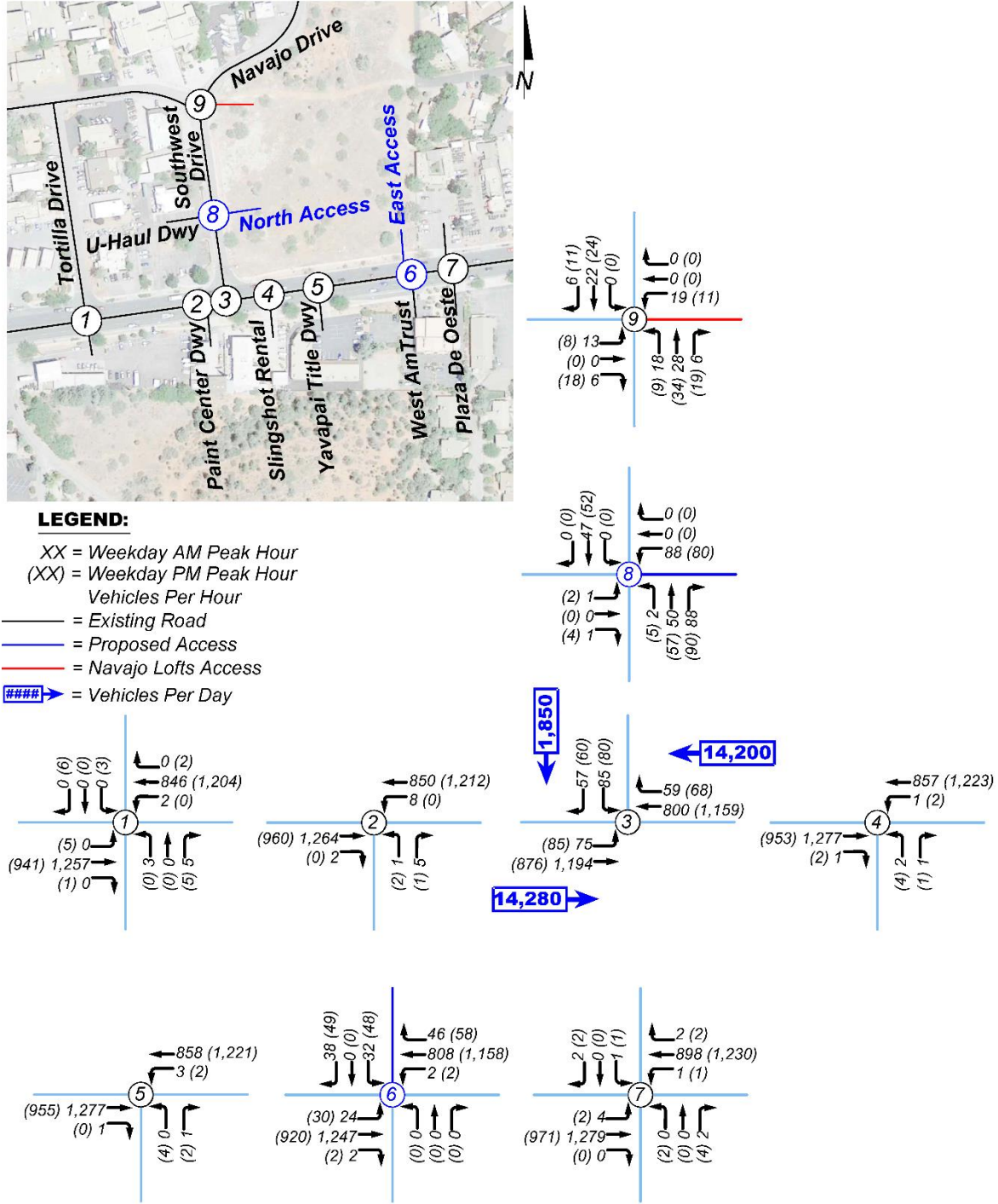




Table 7 – 2022 Weekday Peak Hour Levels of Service With Project

Intersection	2022 Without Project				2022 With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Un-signalized Intersections								
Tortilla Drive/SR 89a								
Eastbound Left	A	0.0	B	11.4	A	0.0	B	11.7
Westbound Left	B	11.8	A	0.0	B	12.0	A	0.0
Northbound Left/Through/Right	E	37.1	B	11.8	E	38.9	B	12.0
Southbound Left/Through/Right	A	0.0	D	33.6	A	0.0	E	36.6
Paint Center Driveway/SR 89a								
Westbound Left	B	11.9	A	0.0	B	12.1	A	0.0
Northbound Left/Right	C	16.0	C	18.1	C	16.3	C	18.8
Southwest Drive/SR 89a								
Eastbound Left	A	9.8	B	11.8	B	10.5	B	13.5
Southbound Left/Right	C	20.2	D	27.9	N/A		N/A	
Southbound Left	N/A		N/A		E	38.4	F	66.0
Southbound Right	N/A		N/A		B	11.9	B	14.6
Slingshot Rental Driveway/SR 89a								
Westbound Left	B	12.0	B	10.2	B	12.1	B	10.3
Northbound Left/Right	C	22.5	C	19.9	C	22.9	C	20.3
Yavapai Title Driveway/SR 89a								
Westbound Left	B	12.0	B	10.2	B	12.1	B	10.3
Northbound Left/Right	B	13.9	C	17.7	B	14.1	C	18.1
East Access/SR 89a								
Eastbound Left	N/A		N/A		B	10.1	B	12.4
Westbound Left	B	12.0	B	10.2	B	11.9	B	10.1
Northbound Left/Right	A	0.0	A	0.0	N/A		N/A	
Northbound Left/Through/Right	N/A		N/A		A	0.0	A	0.0
Southbound Left/Through/Right	N/A		N/A		F	91.0	F	>120
Plaza de Oeste Driveway/SR 89a								
Eastbound Left	A	9.8	B	11.5	A	9.9	B	11.8
Westbound Left	B	11.9	B	10.1	B	12.1	B	10.3
Northbound Left/Through/Right	B	13.9	D	28.0	B	14.1	D	30.6
Southbound Left/Through/Right	D	25.7	D	33.7	D	26.8	E	36.8
Uhaul Driveway/Southwest Drive								
Eastbound Left/Right	A	8.7	A	8.8	N/A		N/A	
Eastbound Left/Through/Right	N/A		N/A		A	9.1	A	9.0
Westbound Left/Through/Right	N/A		N/A		B	10.3	A	10.4
Northbound Left/Through	A	7.3	A	7.3	N/A		N/A	
Northbound Left/Through/Right	N/A		N/A		A	7.3	A	7.3
Southbound Left/Through/Right	N/A		N/A		A	0.0	A	0.0
Navajo Drive/Southwest Drive								
Eastbound Left/Through/Right	A	9.0	A	8.8	A	9.0	A	8.8
Westbound Left/Through/Right	A	9.4	A	9.4	A	9.4	A	9.4
Northbound Left/Through	A	7.3	A	7.3	A	7.3	A	7.3
Southbound Left/Through/Right	A	0.0	A	0.0	A	0.0	A	0.0

Delay - seconds per vehicle



Table 8 – 2025 Weekday Peak Hour Levels of Service With Project

Intersection	2025 Without Project				2025 With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Un-signalized Intersections								
Tortilla Drive/SR 89a								
Eastbound Left	A	0.0	B	11.9	A	0.0	B	12.1
Westbound Left	B	12.3	A	0.0	B	12.5	A	0.0
Northbound Left/Through/Right	E	43.3	B	12.1	E	45.9	B	12.3
Southbound Left/Through/Right	A	0.0	E	39.0	A	0.0	E	43.0
Paint Center Driveway/SR 89a								
Westbound Left	B	12.5	A	0.0	B	12.6	A	0.0
Northbound Left/Right	C	16.9	C	19.1	C	17.2	C	19.9
Southwest Drive/SR 89a								
Eastbound Left	B	10.1	B	12.4	B	10.8	B	14.1
Southbound Left/Right	C	22.0	D	30.5	N/A		N/A	
Southbound Left	N/A		N/A		E	44.0	F	82.7
Southbound Right	N/A		N/A		B	12.3	C	15.4
Slingshot Rental Driveway/SR 89a								
Westbound Left	B	12.5	B	10.4	B	12.6	B	10.5
Northbound Left/Right	C	24.2	C	21.1	C	24.5	C	21.5
Yavapai Title Driveway/SR 89a								
Westbound Left	B	12.5	B	10.4	B	12.6	B	10.5
Northbound Left/Right	B	14.5	C	18.6	B	14.6	C	18.9
East Access/SR 89a								
Eastbound Left	N/A		N/A		B	10.4	B	12.9
Westbound Left	B	12.5	B	10.4	B	12.4	B	10.4
Northbound Left/Right	A	0.0	A	0.0	N/A		N/A	
Northbound Left/Through/Right	N/A		N/A		A	0.0	A	0.0
Southbound Left/Through/Right	N/A		N/A		F	>120	F	>120
Plaza de Oeste Driveway/SR 89a								
Eastbound Left	B	10.2	B	12.0	B	10.3	B	12.3
Westbound Left	B	12.4	B	10.4	B	12.6	B	10.6
Northbound Left/Through/Right	B	14.5	D	32.0	B	14.7	D	34.6
Southbound Left/Through/Right	D	30.1	E	38.9	D	31.8	E	42.4
Uhaul Driveway/Southwest Drive								
Eastbound Left/Right	A	8.7	A	8.7	N/A		N/A	
Eastbound Left/Through/Right	N/A		N/A		A	9.1	A	9.0
Westbound Left/Through/Right	N/A		N/A		A	10.3	B	10.5
Northbound Left/Through	A	7.3	A	7.3	N/A		N/A	
Northbound Left/Through/Right	N/A		N/A		A	7.3	A	7.4
Southbound Left/Through/Right	N/A		N/A		A	0.0	A	0.0
Navajo Drive/Southwest Drive								
Eastbound Left/Through/Right	A	9.1	A	8.8	A	9.1	A	8.8
Westbound Left/Through/Right	A	9.4	A	9.4	A	9.4	A	9.4
Northbound Left/Through	A	7.3	A	7.3	A	7.3	A	7.3
Southbound Left/Through/Right	A	0.0	A	0.0	A	0.0	A	0.0

Delay - seconds per vehicle



Turn Lane Analysis

A key element of this traffic analysis is to determine if a right turn lane is required at East Access. The need for a northbound right turn lane at North Access/Southwest Drive was not evaluated due to the low-speed, low-volume nature of Southwest Drive. Additionally, the need for eastbound left turn lanes at Southwest Drive/SR 89A and East Access/SR 89A was not analyzed due to the existing two-way center left turn lane on SR 89A that will be available for eastbound left turning vehicles. Additionally, a southbound left turn lane and a westbound right turn lane are proposed at Southwest Drive/SR 89A.

The need for right turn lanes was based on the ADOT’s *Traffic Guidelines and Processes 245 – Turn Lane Warrants* (TGP 245). The criteria for determining if right turn lanes are needed are based on speed, through traffic volume, and turning traffic volume during the peak hour. **Table 9** shows ADOT’s right turn lane warrant requirements.

Table 9 – ADOT Right Turn Lane Requirements

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

When needed, turn lanes remove the slowing turning traffic from the through traffic stream, improving capacity. **Table 10** shows the locations that were evaluated for a right turn lane based on traffic volumes in 2025 with the project.



Table 10 – Right Turn Lane Warrants, With Project

Intersection	Direction	Peak Hour	# of Thru Lanes per Direction	Posted Speed	Peak Hour Traffic Volume in Advancing Direction	Right Turn Volume (vph)	Minimum Right Turn Volume Criteria	Warranted
East Access/SR 89A	Westbound	AM	2	35 mph	854 vph	46	40	Yes
		PM			1216 vph	58	14	

vph - vehicles per hour, mph - miles per hour

Table 10 shows that a westbound right turn lane is warranted at East Access/SR 89A in 2025 with the project.

While a westbound right turn lane is warranted at East Access/SR 89A in 2025 with the project, this turn lane cannot be constructed due to geometric constraints, as East Access is located approximately 55 feet west of an adjacent driveway. The installation of a continuous right turn lane would also not be possible as the driveways along SR 89A are located too closely to one another and do not provide an acceptable location for a right turn lane to be constructed without placing adjacent driveways within the taper of the right turn lane. Moreover, continuous right turn lanes can lead to driver confusion as it can be unclear which driveway vehicles are turning into.

It should be noted that shifting the location of East Access is not possible as it would negatively impact the layout and internal circulation of the site.

Queue storage requirements for proposed westbound right turn lane and southbound left turn lane at Southwest Drive/SR 89A were calculated using the following method as recommended in ADOT *TGP 430 – Turn Lane Design* for an un-signalized intersection. Typically, an average vehicle length of 25 feet is assumed.

For un-signalized intersections, storage for vehicles likely to arrive in an average two-minute period within the peak hour should be provided.

$$\begin{aligned} \text{Vehicles per 2 min. period} &= (\text{vehicles/hour}) \div (30 \text{ periods/hour}) \\ \text{Storage length} &= \text{vehicles per 2 min. period} \times \text{vehicle length} \end{aligned}$$

Table 11 shows the calculated queue lengths for the proposed turn lanes based on 2025 weekday peak hour traffic volumes with traffic from the project. The computed values are typically rounded to the nearest 25 feet. Complete queue length calculations are available in the Appendix.

It should be noted that the westbound right turning movement from SR 89A to Southwest Drive is not expected to generate a queue, as it will be a free flow movement. Based on an average vehicle length of 25 feet, ADOT requires a minimum queue length of 50 feet for turn lanes.



Table 11 – Calculated Queue Lengths

Intersection	Left Turn Storage				Right Turn Storage			
	NB	SB	EB	WB	NB	SB	EB	WB
North Access/SR 89								
Turning Volume (vph)		85						68
$S_{\text{calculated}} =$		71						0
$S_{\text{rounded}} =$		75						50

S - storage in feet, vph - vehicles per hour

Once the queue length is determined, gap and braking distance must be calculated for turn lanes on ADOT controlled roadways. *ADOT TGP 430 – Turn Lane Design* provides gap and braking distance criteria based on the posted roadway speed limit. The speed limit at the project site on SR 89A is 35 mph. The minimum total turn length is shown in **Table 12**.

Table 12 – Turn Lane Length

Intersection	Queue	Minimum Braking Distance	Gap	Minimum Total
Southwest Drive/SR 89A				
Westbound Right Turn Lane	50	40	60	150

All Lengths in Feet, Calculations Based on Posted Speed, Minimum Requirements

As shown in **Table 12**, the westbound right turn lane at Southwest Drive/SR 89A should be constructed to provide minimum turn lane lengths of 150 feet.

Traffic Signal Warrant Analysis

Traffic signal warrant analyses were performed at the intersection of Southwest Drive/SR 89A to determine if and/or when a traffic signal will be needed. The study intersection was analyzed for the existing conditions and in 2022 and 2025 without and with the project.

The *Manual on Uniform Traffic Control Devices (MUTCD)*, Federal Highway Administration, 2009, lists nine warrants that are used to determine if a traffic signal should be considered for installation at an intersection. A traffic signal may be warranted if one or more of the warrants are satisfied. Warrants #1 (Eight Hour Volume) and #2 (Four Hour Vehicular Volume) were used to evaluate the need to signalize the intersection. Based on existing conditions, availability of information, and applicability, the remaining warrants (#3, #4, #5, #6, #7, #8, and #9) do not apply to the given conditions.



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

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

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

Daily traffic generated by the project was distributed throughout the 24 hours of a day based on existing daily traffic distributions and included in the future 2022 and 2025 calculations. **Table 13** shows the results of the warrant analyses at the study intersection. A complete set of the warrant analyses can be found in the Appendix.

Table 13 – Traffic Signal Warrant Analysis (Southwest Drive/SR 89A)

Southwest Drive/SR 89A	Warrant Number									
	1		2	3	4	5	6	7	8	9
	Condition A	Condition B								
Existing	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2022 Without Project	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2025 Without Project	No	No	No	*	*	*	*	*	*	*
Hours Met	0	0	0	*	*	*	*	*	*	*
2022 With Project	No	Yes	Yes	*	*	*	*	*	*	*
Hours Met	0	10	10	*	*	*	*	*	*	*
2025 With Project	No	Yes	Yes	*	*	*	*	*	*	*
Hours Met	0	10	10	*	*	*	*	*	*	*

* Warrant Does Not Apply

As shown in **Table 13**, the intersection of Southwest Drive/ SR 89A does not currently meet and is not expected to meet traffic signal warrants #1 or #2 in 2022 or 2025 without traffic from the project, with the adjacent Navajo Lofts development. In 2022 and 2025, traffic signal warrants #1 and #2 are expected to be met with the project and with the adjacent Navajo Lofts development.

It is important to mention that traffic signals should not be installed because one or more of the warrants are satisfied. The MUTCD warrants reflect only the lowest minimum levels on which traffic engineers agree. It also states that, “The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.”



Crash Analysis

Crash history for the existing study intersections was obtained from ADOT from 1 January 2016 to 31 December 2020. The results of the crash analysis at the nine existing study intersections are shown in **Table 14** through **Table 16**. A summary of the crash data can be found in the Appendix.

Table 14 – Tortilla Drive/SR 89A

Year	Crash Type							Fatal	Injury	Crash Totals
	Angle	Left Turn	Rear-End	Sideswipe	Single Vehicle	Head On	Other			
2016		1								1
2017			1							1
2018	1									1
2019			1	1						2
2020		1								1
5-Year Total	1	2	2	1	0	0	0	0	0	6

As shown in **Table 14**, six collisions were reported at the intersection of Tortilla Drive/SR 89A during the five-year study period. None of the crashes resulted in injury.

Table 15 – Southwest Drive/SR 89A

Year	Crash Type							Fatal	Injury	Crash Totals
	Angle	Left Turn	Rear-End	Sideswipe	Single Vehicle	Head On	Other			
2016		1							1	1
2017			1		1				1	2
2018	2								2	2
2019				1						1
2020		1	1	1						3
5-Year Total	2	2	2	2	1	0	0	0	4	9

Table 15 shows that a total of nine crashes were reported at the intersection of Southwest Drive/SR 89A during the five-year study period, four of which resulted in injury.

Table 16 – Slingshot Rentals Driveway/SR 89A

Year	Crash Type							Fatal	Injury	Crash Totals
	Angle	Left Turn	Rear-End	Sideswipe	Single Vehicle	Head On	Other			
2016										0
2017										0
2018			1							1
2019										0
2020										0
5-Year Total	0	0	1	0	0	0	0	0	0	1



As shown in **Table 16**, one crash was reported at the intersection of Slingshot Rentals Driveway/SR 89A within the five-year study period. The collision was a rear-end.

No crashes were reported at the remaining study intersections. This limited crash data provides no observable crash pattern for the area.

It should be noted that this crash summary only includes crashes where a police officer was contacted and wrote a report, otherwise, there is no record of the incident. It is possible that other minor crashes occurred in the area where the Police Department was not contacted, and no official record of these crashes exists.

Mitigation

The delays at the intersections of Tortilla Drive/SR 89A, Southwest Drive/SR 89A, East Access/SR 89A, and Plaza de Oeste Driveway/SR 89A are due to the relatively high through traffic volumes along SR 89A not providing adequate gaps for vehicles turning from the minor approaches. Unsignalized, minor approaches to four or more lane major streets such as SR 89A tend to operate at a LOS E or F during the weekday peak hours. Mitigation measures at these closely spaced intersections are limited. While a traffic signal would be expected to alleviate these delays, the intersections are too closely spaced for traffic signals to be installed at each intersection. Moreover, traffic signals are not appropriate for delays experienced by a relatively low number of vehicles for only a few hours of the day.

The installation of a traffic signal at Southwest Drive/SR 89A is expected to alleviate the delays at this intersection.

Table 17 shows the corresponding levels of service with the proposed mitigation measure described above using 2025 peak hour traffic volumes with traffic from the project. Complete capacity calculations can be found in the Appendix.

Table 17 – Mitigation Measures, 2025 With Project

Intersection	Mitigation Measure	2025 Without Mitigation				2025 With Mitigation			
		AM Peak		PM Peak		AM Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Southwest Drive/SR 89a	Install a Traffic Signal	N/A		N/A		B		14.7	
Overall Intersection		N/A		N/A		B	14.7	B	12.8
Eastbound Left		B	10.8	B	14.1	B	12.3	B	12.9
Eastbound Through		N/A		N/A		B	13.1	A	7.8
Westbound Through		N/A		N/A		B	17.3	B	15.7
Westbound Through/Right		N/A		N/A		B	13.2	B	10.1
Southbound Left		E	44.0	F	82.7	B	15.6	C	21.6
Southbound Right		B	12.3	C	15.4	B	15.3	C	21.3

Delay - seconds per vehicle



Although the installation of a traffic signal at Southwest Drive/SR 89A is expected to alleviate the delays at this intersection, it is not recommended. The Arizona Department of Transportation's (ADOT's) priority is to maintain traffic flow on SR 89A. Traffic signals impede such flow. There has also been discussion with ADOT that the intersection of Tortilla Drive/SR 89a would be signalized in the future making signal spacing inadequate with Southwest Drive. Furthermore, two existing business access points on the south side of the intersection are offset, cannot be combined or relocated, and would make such a traffic installation difficult at best in integrating three intersections within the design window of the traffic signal. However, the proposed widening of the southbound approach to the intersection to provide an exclusive left turn lane and exclusive right turn lane is expected to have a positive impact on the delay at this intersection.

Conclusion

When fully completed, the proposed project is predicted to generate an additional 5,158 vehicle trips per day (vtpd) on weekdays to the adjacent street system from the new project site. Fifty percent of these new trips (2,579 vehicle trips) will be into the project and fifty percent will be out of the project.

The northbound approach to the intersection of Tortilla Drive/SR 89A currently experiences an inadequate delay during the weekday AM peak hour.

The remaining study intersections currently operate at an adequate level of service (LOS) during the weekday peak hours.

An adjacent development, Navajo Lofts, is planned to be constructed in the near future. This development is located directly north of the Southwest Circle K project site. The expected trip assignment from this development was added to this analysis based on the traffic assignment from the following report: *Navajo Lofts Traffic Impact Analysis* (Navajo Lofts TIA) written by Lee Engineering, LLC, dated August 2021.

The northbound approach to the intersection of Tortilla Drive/SR 89A is anticipated to experience an inadequate delay during the weekday AM peak hour in 2022 without traffic from the project. In 2025 without traffic from the project, the northbound and southbound approaches to the intersection of Tortilla Drive/SR 89A are expected to experience inadequate delays during the weekday peak hours.

The southbound approach to the intersection of Plaza de Oeste Driveway/SR 89A is expected to operate at a LOS E during the weekday PM peak hour in 2025 without traffic from the project.

The remaining study intersections are expected to operate at an adequate LOS during the weekday peak hours in 2022 and 2025 without traffic from the project.



The northbound and southbound approaches to the intersection of Tortilla Drive/SR 89A are anticipated to experience inadequate delays during the weekday peak hours in 2022 and 2025 without and with traffic from the project.

The southbound approaches to Southwest Drive/SR 89A and East Access/SR 89A are expected to experience inadequate delays during the weekday peak hours in 2022 and 2025 with traffic from the project.

The northbound and southbound approaches to the intersection of Plaza de Oeste Driveway/SR 89A are expected to operate at a LOS E during the weekday PM peak hour in 2022 with the project and in 2025 without and with traffic from the project.

The remaining study intersections are expected to operate at an adequate LOS during the weekday peak hours in 2022 and 2025 without traffic from the project.

While a westbound right turn lane is warranted at East Access/SR 89A in 2025 with the project, this turn lane cannot be constructed due to geometric constraints, as East Access is located approximately 55 feet west of an adjacent driveway. The installation of a continuous right turn lane would also not be possible as the driveways along SR 89A are located too closely to one another and do not provide an acceptable location for a right turn lane to be constructed without placing adjacent driveways within the taper of the right turn lane. Moreover, continuous right turn lanes can lead to driver confusion as it can be unclear which driveway vehicles are turning into.

It should be noted that shifting the location of East Access is not possible as it would negatively impact the layout and internal circulation of the site.

The westbound right turn lane at Southwest Drive/SR 89A is expected to require a minimum total turn lane length of 150 feet.

The southbound left turn lane at Southwest Drive/SR 89A is expected to require a minimum storage length of 75 feet.

The intersection of Southwest Drive/ SR 89A does not currently meet and is not expected to meet traffic signal warrants #1 or #2 in 2022 or 2025 without traffic from the project. In 2022 and 2025, traffic signal warrants #1 and #2 are expected to be met with the project and with the adjacent Navajo Lofts development.

Six collisions were reported at the intersection of Tortilla Drive/SR 89A during the five-year study period. None of the crashes resulted in injury.

A total of nine crashes were reported at the intersection of Southwest Drive/SR 89A during the five-year study period, four of which resulted in injury.

One crash was reported at the intersection of Slingshot Rentals Driveway/SR 89A within the five-year study period. The collision was a rear-end.



No crashes were reported at the remaining study intersections. This limited crash data provides no observable crash pattern for the area.

The delays at the intersections of Tortilla Drive/SR 89A, Southwest Drive/SR 89A, East Access/SR 89A, and Plaza de Oeste Driveway/SR 89A are due to the relatively high through traffic volumes along SR 89A not providing adequate gaps for vehicles turning from the minor approaches. Unsignalized, minor approaches to four or more lane major streets such as SR 89A tend to operate at a LOS E or F during the weekday peak hours.

Mitigation measures at these closely spaced intersections are limited. While a traffic signal would be expected to alleviate these delays, the intersections are too closely spaced for traffic signals to be installed at each intersection. Moreover, traffic signals are not appropriate for delays experienced by a relatively low number of vehicles for only a few hours of the day.

Although the installation of a traffic signal at Southwest Drive/SR 89A is expected to alleviate the delays at this intersection, it is not recommended. The Arizona Department of Transportation's (ADOT's) priority is to maintain traffic flow on SR 89A. Traffic signals impede such flow. There has also been discussion with ADOT that the intersection of Tortilla Drive/SR 89a would be signalized in the future making signal spacing inadequate with Southwest Drive. Furthermore, two existing business access points on the south side of the intersection are offset, cannot be combined or relocated, and would make such a traffic installation difficult at best in integrating three intersections within the design window of the traffic signal. However, the proposed widening of the southbound approach to the intersection to provide an exclusive left turn lane and exclusive right turn lane is expected to have a positive impact on the delay at this intersection.

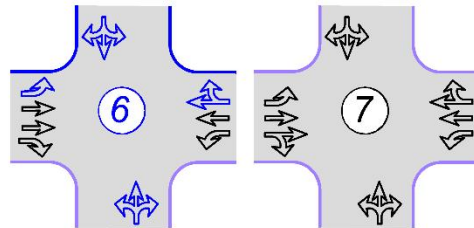
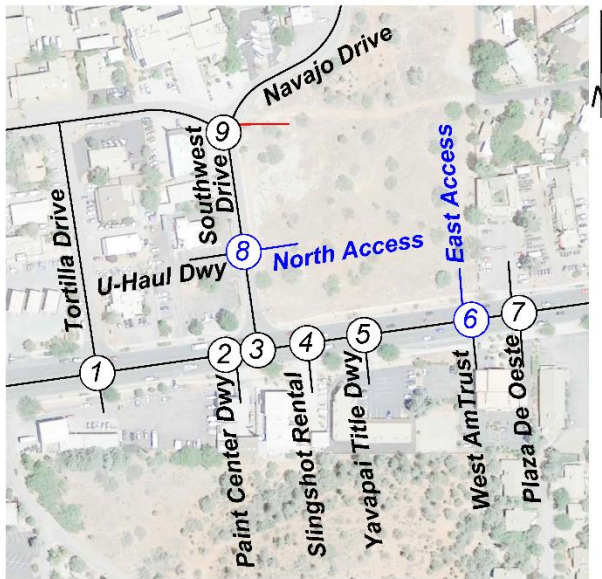
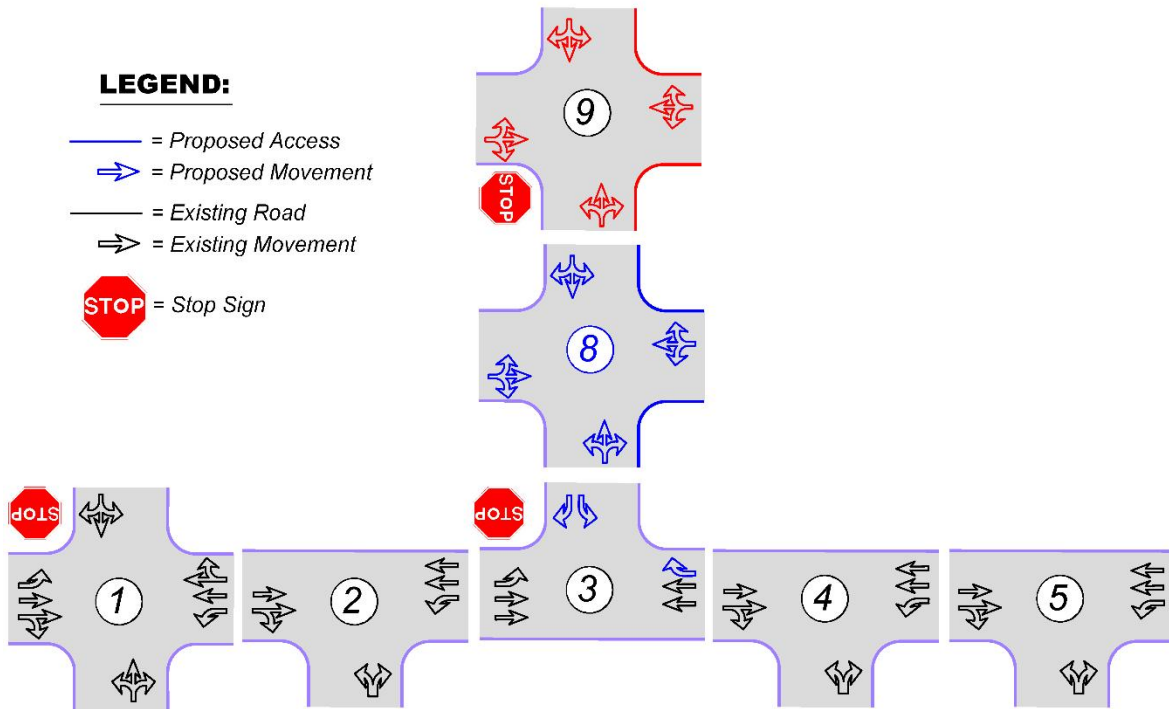
The westbound right turn lane at Southwest Drive/SR 89A should be constructed to provide a minimum turn lane length of 150 feet.

The southbound left turn lane at Southwest Drive/SR 89A should be constructed to provide a minimum storage length of 75 feet.

Proposed lane configurations and traffic control are shown in **Figure 14**.



Figure 14 – Proposed Lane Configurations and Traffic Control





**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Traffic Counts

Trip Generation Calculations

Pass-By Trip Assignment

Capacity Calculations

Turn Lane Calculations

Traffic Signal Warrant Analysis

Crash Data

Comment Resolution



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Traffic Counts

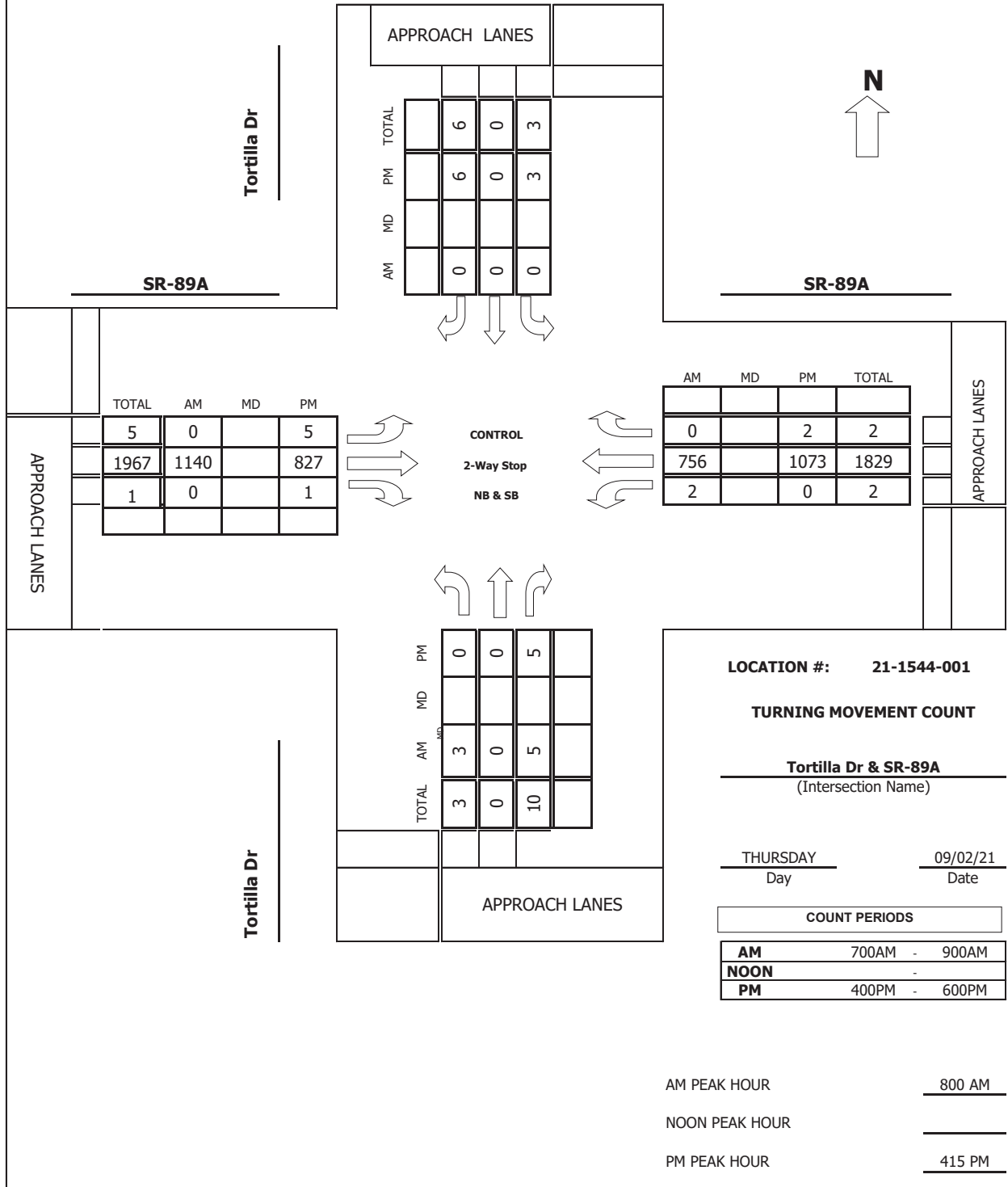
Intersection Turning Movement

Prepared by:



Project #: 21-1544-001

TMC SUMMARY OF Tortilla Dr & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: **Tortilla Dr** DATE: **09/02/21** LOCATION: **Sedona**
 E-W STREET: **SR-89A** DAY: **THURSDAY** PROJECT# **21-1544-001**

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	2	0	0	0	1	168	1	4	115	0	291
7:15 AM	2	0	1	0	0	0	0	181	1	2	116	0	303
7:30 AM	0	0	0	0	0	1	0	249	0	0	133	0	383
7:45 AM	0	0	1	0	0	2	1	261	2	2	138	0	407
8:00 AM	2	0	1	0	0	0	0	285	0	0	185	0	473
8:15 AM	1	0	1	0	0	0	0	292	0	1	211	0	506
8:30 AM	0	0	1	0	0	0	0	308	0	0	196	0	505
8:45 AM	0	0	2	0	0	0	0	255	0	1	164	0	422
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	5	0	9	0	0	3	2	1999	4	10	1258	0	3290
Approach %	35.71	0.00	64.29	0.00	0.00	100.00	0.10	99.70	0.20	0.79	99.21	0.00	
App/Depart	14	/	2	3	/	14	2005	/	2008	1268	/	1266	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	3	0	5	0	0	0	0	1140	0	2	756	0	1906
Approach %	37.50	0.00	62.50	####	####	####	0.00	100.00	0.00	0.26	99.74	0.00	

PEAK HR.

FACTOR:	0.667	0.000	0.925	0.894	0.942
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CONTROL: **2-Way Stop (NB & SB)**
 COMMENT 1:
 GPS: **34.862163, -111.811080**

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Tortilla Dr DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	2	0	0	2	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	3	2	0	1	2	218	0	1	242	1	470
4:15 PM	0	0	1	1	0	2	4	208	1	0	232	0	449
4:30 PM	0	0	2	1	0	0	1	215	0	0	271	2	492
4:45 PM	0	0	0	1	0	4	0	191	0	0	262	0	458
5:00 PM	0	0	2	0	0	0	0	213	0	0	308	0	523
5:15 PM	0	0	1	0	0	0	0	179	1	0	238	0	419
5:30 PM	0	0	0	0	0	1	0	179	0	0	202	0	382
5:45 PM	0	0	0	1	0	2	0	170	0	0	201	0	374
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	9	6	0	10	7	1573	2	1	1956	3	3567
Approach %	0.00	0.00	100.00	37.50	0.00	62.50	0.44	99.43	0.13	0.05	99.80	0.15	
App/Depart	9	/	10	16	/	3	1582	/	1588	1960	/	1966	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	0	0	5	3	0	6	5	827	1	0	1073	2	1922
Approach %	0.00	0.00	100.00	33.33	0.00	66.67	0.60	99.28	0.12	0.00	99.81	0.19	

PEAK HR.

FACTOR:	0.625	0.450	0.964	0.873	0.919
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CONTROL: 2-Way Stop (NB & SB)
 COMMENT 1: 0
 GPS: 34.862163, -111.811080

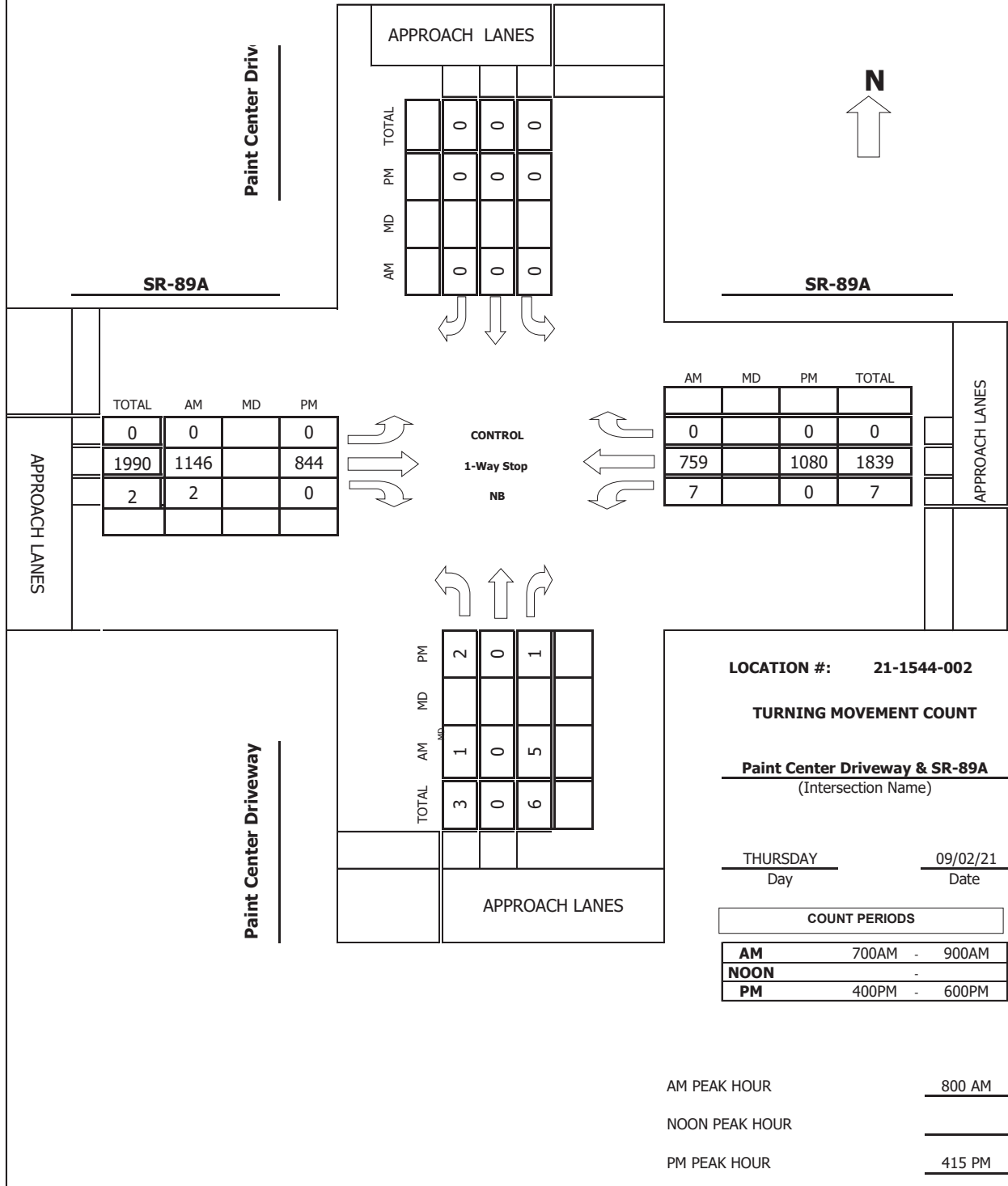
Intersection Turning Movement

Prepared by:



Project #: 21-1544-002

TMC SUMMARY OF Paint Center Driveway & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Paint Center Driveway DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT# 21-1544-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	2	0	0	0	0	164	0	1	121	0	288
7:15 AM	1	0	1	0	0	0	0	186	0	2	119	0	309
7:30 AM	0	0	3	0	0	0	0	245	1	1	134	0	384
7:45 AM	0	0	0	0	0	0	0	263	0	0	139	0	402
8:00 AM	1	0	0	0	0	0	0	284	1	3	183	0	472
8:15 AM	0	0	3	0	0	0	0	299	0	0	214	0	516
8:30 AM	0	0	1	0	0	0	0	305	1	2	198	0	507
8:45 AM	0	0	1	0	0	0	0	258	0	2	164	0	425
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	2	0	11	0	0	0	0	2004	3	11	1272	0	3303
Approach %	15.38	0.00	84.62	####	####	####	0.00	99.85	0.15	0.86	99.14	0.00	
App/Depart	13	/	0	0	/	14	2007	/	2015	1283	/	1274	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	1	0	5	0	0	0	0	1146	2	7	759	0	1920
Approach %	16.67	0.00	83.33	####	####	####	0.00	99.83	0.17	0.91	99.09	0.00	

PEAK HR.

FACTOR:	0.500	0.000	0.938	0.895	0.930
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CONTROL: 1-Way Stop (NB)
 COMMENT 1:
 GPS: 34.862252, -111.810185

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Paint Center Driveway DATE: 09/02/21 LOCATION: Sedona
0
 E-W STREET: SR-89A DAY: THURSDAY PROJECT# 21-1544-002

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	0	0	0	2	0	0	2	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	2	0	0	0	0	223	1	0	243	0	469
4:15 PM	0	0	0	0	0	0	0	214	0	0	236	0	450
4:30 PM	1	0	1	0	0	0	0	220	0	0	269	0	491
4:45 PM	1	0	0	0	0	0	0	193	0	0	264	0	458
5:00 PM	0	0	0	0	0	0	0	217	0	0	311	0	528
5:15 PM	0	0	0	0	0	0	0	183	0	0	236	0	419
5:30 PM	0	0	0	0	0	0	0	176	0	0	203	0	379
5:45 PM	1	0	0	0	0	0	0	164	2	0	202	0	369
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	3	0	3	0	0	0	0	1590	3	0	1964	0	3563
Approach %	50.00	0.00	50.00	####	####	####	0.00	99.81	0.19	0.00	100.00	0.00	
App/Depart	6	/	0	0	/	3	1593	/	1593	1964	/	1967	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	2	0	1	0	0	0	0	844	0	0	1080	0	1927
Approach %	66.67	0.00	33.33	####	####	####	0.00	100.00	0.00	0.00	100.00	0.00	

PEAK HR.

FACTOR:	0.375	0.000	0.959	0.868	0.912
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CONTROL: 1-Way Stop (NB)
 COMMENT 1: 0
 GPS: 34.862252, -111.810185

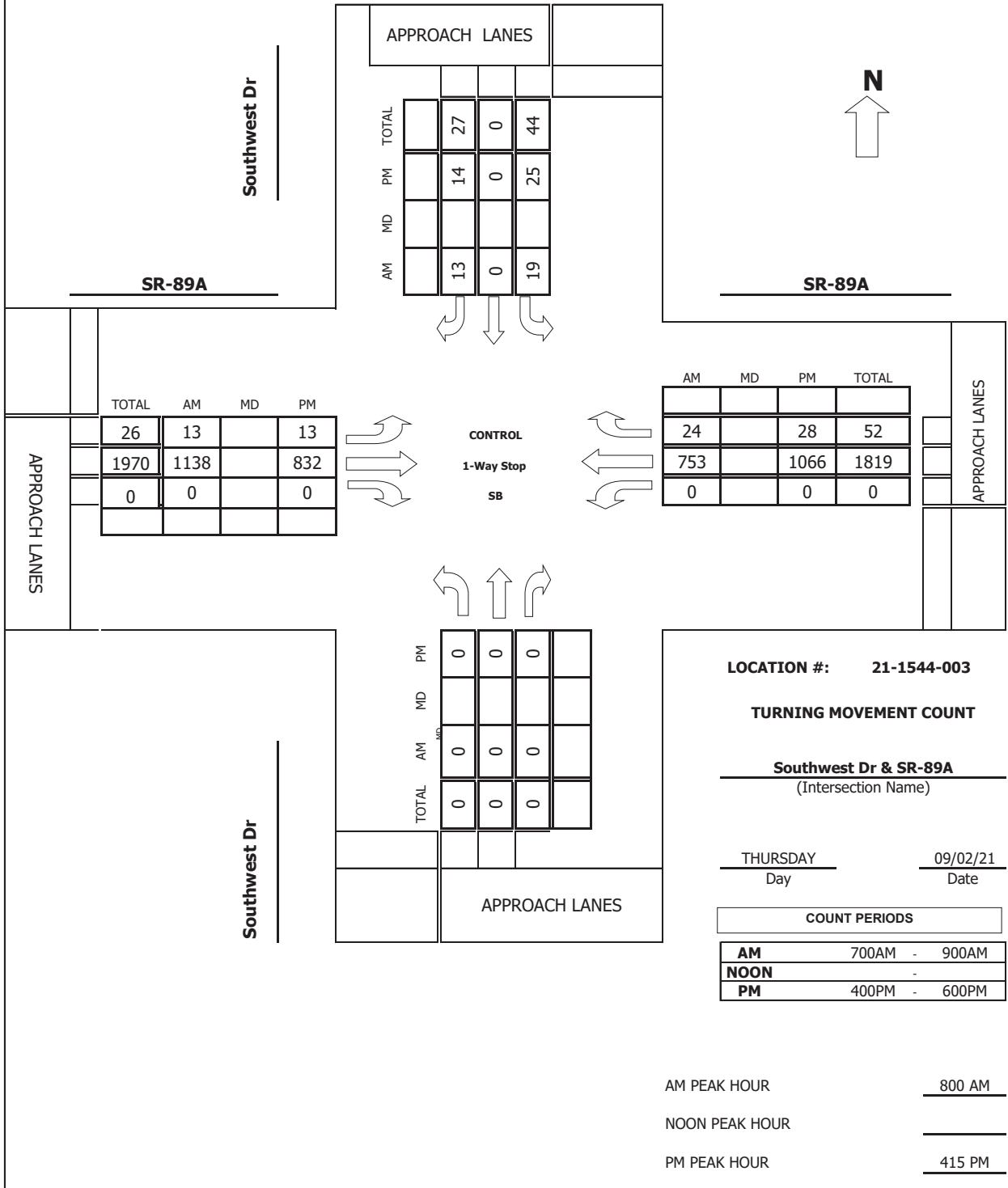
Intersection Turning Movement

Prepared by:



Project #: 21-1544-003

TMC SUMMARY OF Southwest Dr & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Southwest Dr DATE: 09/02/21 LOCATION: Sedona
E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-003

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	0	0	0	1	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	3	0	1	1	165	0	0	121	5	296
7:15 AM	0	0	0	2	0	4	2	185	0	0	117	6	316
7:30 AM	0	0	0	2	0	1	6	242	0	0	134	9	394
7:45 AM	0	0	0	2	0	2	1	262	0	0	137	9	413
8:00 AM	0	0	0	3	0	3	1	283	0	0	183	8	481
8:15 AM	0	0	0	7	0	3	5	297	0	0	211	5	528
8:30 AM	0	0	0	4	0	3	5	301	0	0	197	9	519
8:45 AM	0	0	0	5	0	4	2	257	0	0	162	2	432
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	28	0	21	23	1992	0	0	1262	53	3379
Approach %	####	####	####	57.14	0.00	42.86	1.14	98.86	0.00	0.00	95.97	4.03	
App/Depart	0	/	76	49	/	0	2015	/	2020	1315	/	1283	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	0	0	0	19	0	13	13	1138	0	0	753	24	1960
Approach %	####	####	####	59.38	0.00	40.63	1.13	98.87	0.00	0.00	96.91	3.09	

PEAK HR.

FACTOR:	0.000	0.800	0.940	0.899	0.928
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CONTROL: 1-Way Stop (SB)
COMMENT 1:
GPS: 34.862276, -111.810032

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Southwest Dr DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-003

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	0	0	0	1	0	0	2	0	0	2	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	0	7	0	4	5	220	0	0	239	6	481
4:15 PM	0	0	0	5	0	4	4	210	0	0	232	4	459
4:30 PM	0	0	0	10	0	2	1	220	0	0	267	7	507
4:45 PM	0	0	0	6	0	4	4	189	0	0	260	9	472
5:00 PM	0	0	0	4	0	4	4	213	0	0	307	8	540
5:15 PM	0	0	0	6	0	2	2	181	0	0	234	6	431
5:30 PM	0	0	0	4	0	3	4	172	0	0	200	4	387
5:45 PM	0	0	0	8	0	7	1	163	0	0	195	6	380
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	50	0	30	25	1568	0	0	1934	50	3657
Approach %	####	####	####	62.50	0.00	37.50	1.57	98.43	0.00	0.00	97.48	2.52	
App/Depart	0	/	75	80	/	0	1593	/	1618	1984	/	1964	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	0	0	0	25	0	14	13	832	0	0	1066	28	1978
Approach %	####	####	####	64.10	0.00	35.90	1.54	98.46	0.00	0.00	97.44	2.56	

PEAK HR.

FACTOR:	0.000	0.813	0.956	0.868	0.916
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CONTROL: 1-Way Stop (SB)
 COMMENT 1: 0
 GPS: 34.862276, -111.810032

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

Volumes for: Thursday, September 02, 2021

City: Sedona

Project #: 21-1544-010

Location: Southwest Dr & SR-89A

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB							
00:00		0	8	7	12:00		4	272	262							
00:15		0	2	7	12:15		8	244	191							
00:30		1	5	6	12:30		5	237	232							
00:45		0	1	6	21	4	24	46	12:45	9	26	243	996	238	923	1945
01:00		2	3	4	13:00		6	250	223							
01:15		0	2	3	13:15		8	215	255							
01:30		0	4	1	13:30		5	236	241							
01:45		0	2	4	13	0	8	23	13:45	7	26	243	944	213	932	1902
02:00		1	2	1	14:00		11	221	283							
02:15		0	4	5	14:15		10	214	266							
02:30		1	2	2	14:30		7	240	281							
02:45		1	3	3	11	5	13	27	14:45	4	32	252	927	300	1130	2089
03:00		0	3	3	15:00		8	259	330							
03:15		0	6	4	15:15		5	251	280							
03:30		0	7	3	15:30		9	303	292							
03:45		1	1	11	27	5	15	43	15:45	6	28	203	1016	278	1180	2224
04:00		2	6	5	16:00		11	225	245							
04:15		1	10	5	16:15		9	214	236							
04:30		0	15	14	16:30		12	221	274							
04:45		0	3	25	56	9	33	92	16:45	10	42	193	853	269	1024	1919
05:00		0	27	14	17:00		8	217	315							
05:15		1	29	32	17:15		8	183	240							
05:30		0	68	29	17:30		7	176	204							
05:45		0	1	96	220	39	114	335	17:45	15	38	164	740	201	960	1738
06:00		0	80	46	18:00		7	165	201							
06:15		1	96	71	18:15		4	169	174							
06:30		2	155	73	18:30		5	146	170							
06:45		3	6	158	489	83	273	768	18:45	2	18	130	610	143	688	1316
07:00		4	166	126	19:00		6	133	163							
07:15		6	187	123	19:15		3	136	165							
07:30		3	248	143	19:30		2	93	126							
07:45		4	17	263	864	146	538	1419	19:45	1	12	108	470	123	577	1059
08:00		6	284	191	20:00		0	54	133							
08:15		10	302	216	20:15		1	45	95							
08:30		7	306	206	20:30		2	49	107							
08:45		9	32	259	1151	164	777	1960	20:45	1	4	47	195	103	438	637
09:00		7	222	175	21:00		0	52	102							
09:15		4	234	185	21:15		0	38	74							
09:30		8	249	197	21:30		1	28	86							
09:45		5	24	254	959	222	779	1762	21:45	0	1	32	150	84	346	497
10:00		9	240	188	22:00		1	28	52							
10:15		6	224	195	22:15		0	28	37							
10:30		3	250	191	22:30		0	21	67							
10:45		2	20	239	953	182	756	1729	22:45	2	3	16	93	39	195	291
11:00		5	258	214	23:00		0	12	33							
11:15		2	212	213	23:15		1	11	19							
11:30		4	211	197	23:30		2	8	18							
11:45		7	18	237	918	231	855	1791	23:45	0	3	12	43	13	83	129

Total Vol. 128 5682 4185 **9995** 233 7037 8476 **15746**

GPS Coordinates: 34.862276, -111.810032

Daily Totals				
NB	SB	EB	WB	Combined
	361	12719	12661	25741

Split %	AM				PM			
	1.3%	56.8%	41.9%	38.8%	1.5%	44.7%	53.8%	61.2%
Peak Hour	08:15	07:45	11:45	08:00	16:00	14:45	14:45	14:45
Volume	33	1155	916	1960	42	1065	1202	2293
P.H.F.	0.83	0.94	0.87	0.93	0.88	0.88	0.91	0.95

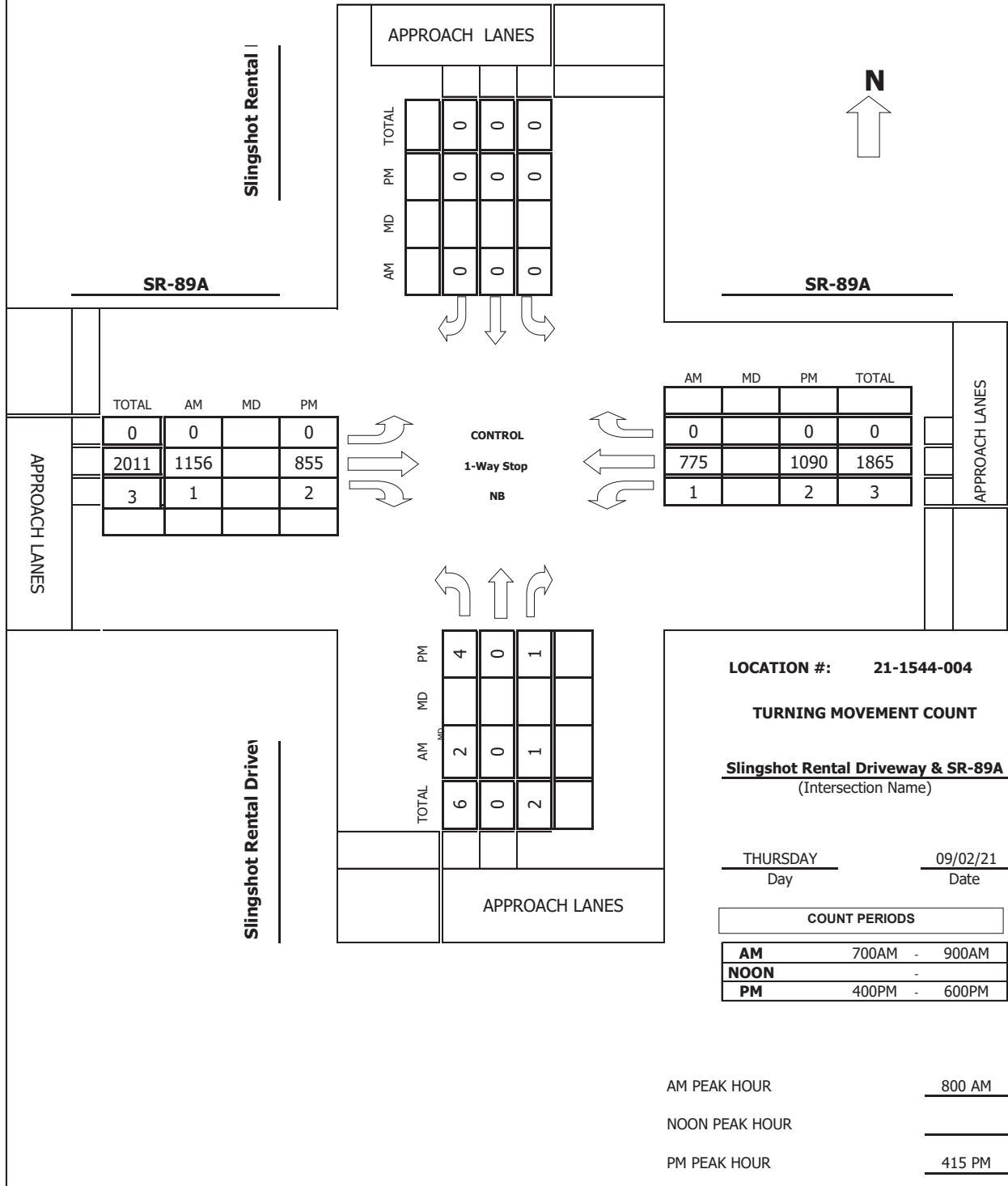
Intersection Turning Movement

Prepared by:



Project #: 21-1544-004

TMC SUMMARY OF Slingshot Rental Driveway & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Slingshot Rental Driveway DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-004

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	0	0	0	2	0	0	2	0	

6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	0	0	0	0	167	1	0	126	0	294
7:15 AM	0	0	0	0	0	0	0	187	0	2	123	0	312
7:30 AM	0	0	0	0	0	0	0	243	1	0	143	0	387
7:45 AM	0	0	0	0	0	0	0	264	0	0	146	0	410
8:00 AM	1	0	1	0	0	0	0	285	1	1	190	0	479
8:15 AM	1	0	0	0	0	0	0	304	0	0	215	0	520
8:30 AM	0	0	0	0	0	0	0	305	0	0	206	0	511
8:45 AM	0	0	0	0	0	0	0	262	0	0	164	0	426
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	2	0	1	0	0	0	0	2017	3	3	1313	0	3339
Approach %	66.67	0.00	33.33	####	####	####	0.00	99.85	0.15	0.23	99.77	0.00	
App/Depart	3	/	0	0	/	6	2020	/	2018	1316	/	1315	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	2	0	1	0	0	0	0	1156	1	1	775	0	1936
Approach %	66.67	0.00	33.33	####	####	####	0.00	99.91	0.09	0.13	99.87	0.00	

PEAK HR.

FACTOR:	0.375	0.000	0.948	0.902	0.931
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CONTROL: 1-Way Stop (NB)
 COMMENT 1:
 GPS: 34.862298, -111.809787

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Slingshot Rental Driveway DATE: 09/02/21 LOCATION: Sedona
0
 E-W STREET: SR-89A DAY: THURSDAY PROJECT# 21-1544-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	0	0	0	2	0	0	2	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	0	0	0	0	0	227	0	0	245	0	472
4:15 PM	4	0	0	0	0	0	0	213	2	2	232	0	453
4:30 PM	0	0	0	0	0	0	0	230	0	0	274	0	504
4:45 PM	0	0	0	0	0	0	0	195	0	0	269	0	464
5:00 PM	0	0	1	0	0	0	0	217	0	0	315	0	533
5:15 PM	0	0	0	0	0	0	0	187	0	0	240	0	427
5:30 PM	0	0	1	0	0	0	0	176	0	1	204	0	382
5:45 PM	0	0	1	0	0	0	0	171	0	0	201	0	373
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	4	0	3	0	0	0	0	1616	2	3	1980	0	3608
Approach %	57.14	0.00	42.86	####	####	####	0.00	99.88	0.12	0.15	99.85	0.00	
App/Depart	7	/	0	0	/	5	1618	/	1619	1983	/	1984	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	4	0	1	0	0	0	0	855	2	2	1090	0	1954
Approach %	80.00	0.00	20.00	####	####	####	0.00	99.77	0.23	0.18	99.82	0.00	

PEAK HR.

FACTOR:	0.313	0.000	0.932	0.867	0.917
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CONTROL: 1-Way Stop (NB)
 COMMENT 1: 0
 GPS: 34.862298, -111.809787

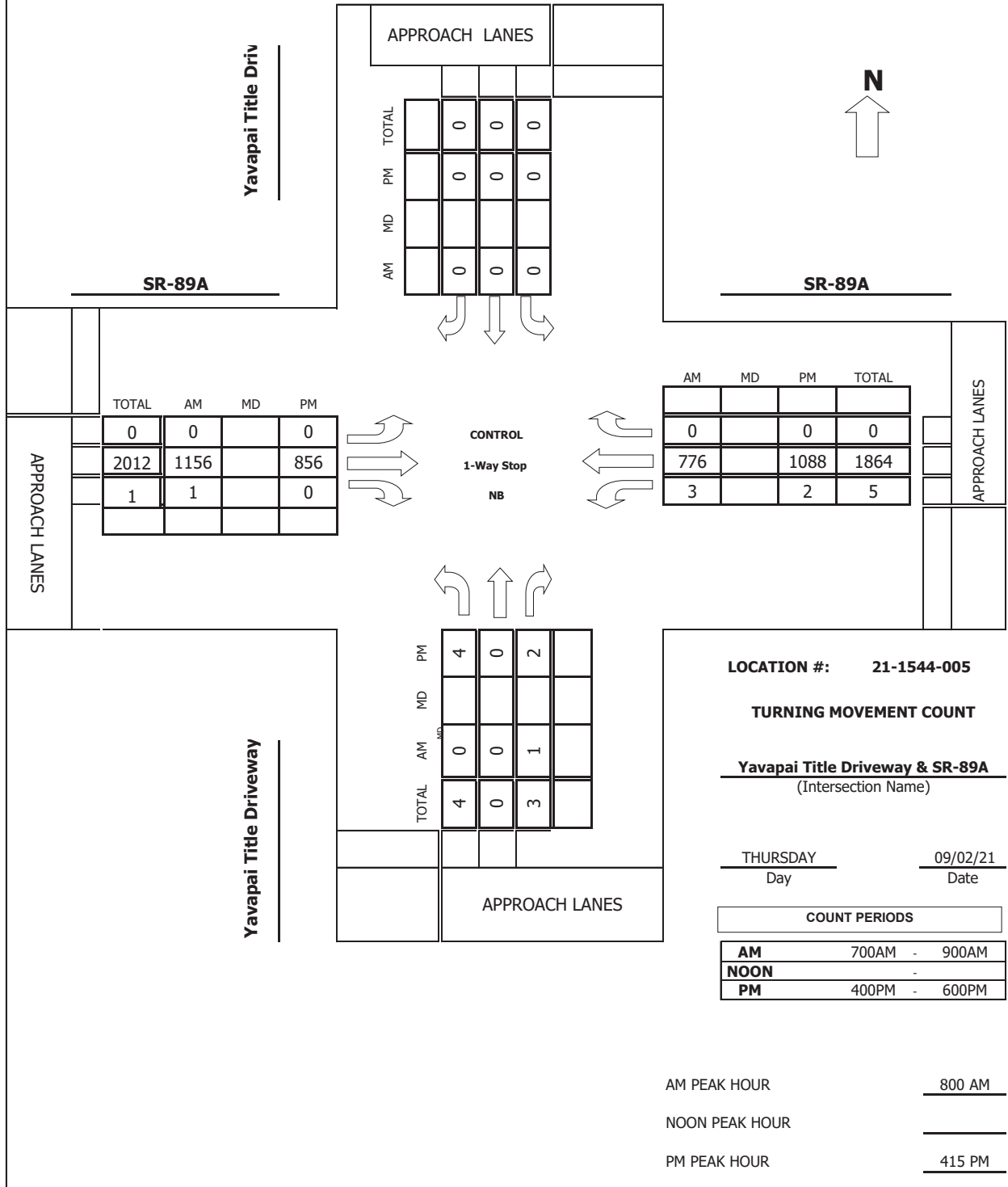
Intersection Turning Movement

Prepared by:



Project #: 21-1544-005

TMC SUMMARY OF Yavapai Title Driveway & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Yavapai Title Driveway DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-005

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	0	0	0	2	0	0	2	0	

6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	0	0	0	0	167	0	1	126	0	294
7:15 AM	0	0	0	0	0	0	0	187	0	0	125	0	312
7:30 AM	0	0	0	0	0	0	0	241	2	0	143	0	386
7:45 AM	0	0	0	0	0	0	0	263	1	0	146	0	410
8:00 AM	0	0	0	0	0	0	0	285	1	0	191	0	477
8:15 AM	0	0	0	0	0	0	0	304	0	2	215	0	521
8:30 AM	0	0	0	0	0	0	0	305	0	1	206	0	512
8:45 AM	0	0	1	0	0	0	0	262	0	0	164	0	427
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	1	0	0	0	0	2014	4	4	1316	0	3339
Approach %	0.00	0.00	100.00	####	####	####	0.00	99.80	0.20	0.30	99.70	0.00	
App/Depart	1	/	0	0	/	8	2018	/	2015	1320	/	1316	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	0	0	1	0	0	0	0	1156	1	3	776	0	1937
Approach %	0.00	0.00	100.00	####	####	####	0.00	99.91	0.09	0.39	99.61	0.00	

PEAK HR.

FACTOR:	0.250	0.000	0.948	0.897	0.929
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CONTROL: 1-Way Stop (NB)
 COMMENT 1:
 GPS: 34.862342, -111.809399

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Yavapai Title Driveway
0 DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-005

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	0	0	0	2	0	0	2	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	2	0	0	0	0	226	1	2	245	0	476
4:15 PM	0	0	1	0	0	0	0	213	0	1	234	0	449
4:30 PM	1	0	0	0	0	0	0	230	0	0	273	0	504
4:45 PM	3	0	0	0	0	0	0	195	0	0	266	0	464
5:00 PM	0	0	1	0	0	0	0	218	0	1	315	0	535
5:15 PM	0	0	0	0	0	0	0	187	0	0	240	0	427
5:30 PM	1	0	1	0	0	0	0	177	0	0	204	0	383
5:45 PM	1	0	0	0	0	0	0	172	0	0	200	0	373
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	6	0	5	0	0	0	0	1618	1	4	1977	0	3611
Approach %	54.55	0.00	45.45	####	####	####	0.00	99.94	0.06	0.20	99.80	0.00	
App/Depart	11	/	0	0	/	5	1619	/	1623	1981	/	1983	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	4	0	2	0	0	0	0	856	0	2	1088	0	1952
Approach %	66.67	0.00	33.33	####	####	####	0.00	100.00	0.00	0.18	99.82	0.00	

PEAK HR.

FACTOR:	0.500	0.000	0.930	0.862	0.912
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CONTROL: 1-Way Stop (NB)
 COMMENT 1: 0
 GPS: 34.862342, -111.809399

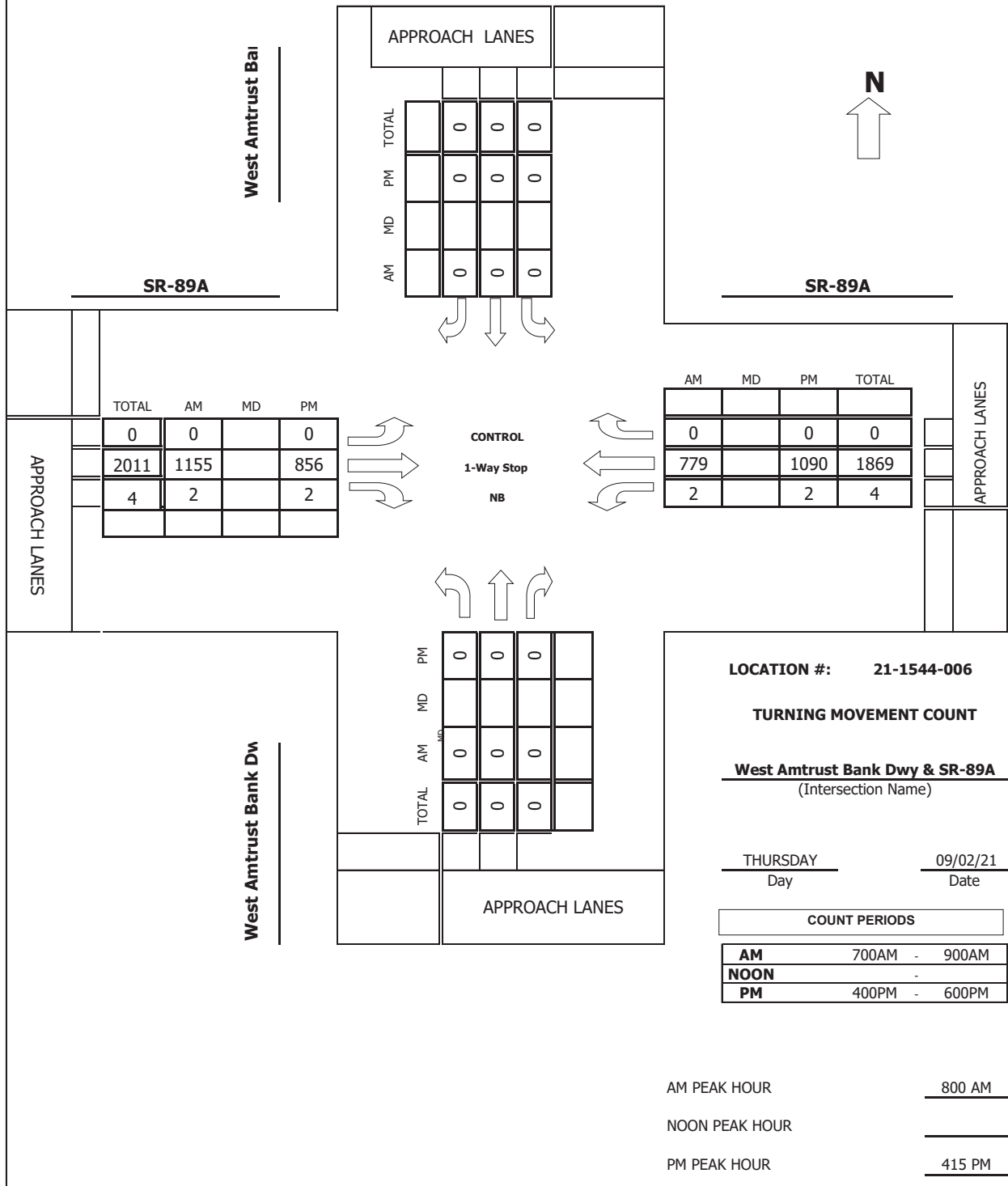
Intersection Turning Movement

Prepared by:



Project #: 21-1544-006

TMC SUMMARY OF West Amtrust Bank Dwy & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: West Amtrust Bank Dwy DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-006

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	0	0	0	2	1	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	0	0	0	0	166	1	0	127	0	294
7:15 AM	0	0	0	0	0	0	0	187	0	0	125	0	312
7:30 AM	0	0	0	0	0	0	0	240	1	1	143	0	385
7:45 AM	0	0	0	0	0	0	0	262	1	0	146	0	409
8:00 AM	0	0	0	0	0	0	0	284	1	0	191	0	476
8:15 AM	0	0	0	0	0	0	0	303	1	0	217	0	521
8:30 AM	0	0	0	0	0	0	0	305	0	0	207	0	512
8:45 AM	0	0	0	0	0	0	0	263	0	2	164	0	429
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	0	0	0	0	2010	5	3	1320	0	3338
Approach %	####	####	####	####	####	####	0.00	99.75	0.25	0.23	99.77	0.00	
App/Depart	0	/	0	0	/	8	2015	/	2010	1323	/	1320	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	0	0	0	0	0	0	0	1155	2	2	779	0	1938
Approach %	####	####	####	####	####	####	0.00	99.83	0.17	0.26	99.74	0.00	

PEAK HR.

FACTOR:	0.000	0.000	0.948	0.900	0.930
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CONTROL: 1-Way Stop (NB)
 COMMENT 1:
 GPS: 34.862426, -111.808727

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: West Amtrust Bank Dwy
0 DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: SR-89A DAY: THURSDAY PROJECT#: 21-1544-006

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	0	0	0	2	1	0	2	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	1	0	1	0	0	0	0	228	0	1	246	0	477
4:15 PM	0	0	0	0	0	0	0	214	0	0	235	0	449
4:30 PM	0	0	0	0	0	0	0	229	1	0	273	0	503
4:45 PM	0	0	0	0	0	0	0	194	1	2	266	0	463
5:00 PM	0	0	0	0	0	0	0	219	0	0	316	0	535
5:15 PM	0	0	0	0	0	0	0	187	0	0	240	0	427
5:30 PM	0	0	0	0	0	0	0	178	0	0	204	0	382
5:45 PM	1	0	0	0	0	0	0	172	0	1	199	0	373
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	2	0	1	0	0	0	0	1621	2	4	1979	0	3609
Approach %	66.67	0.00	33.33	####	####	####	0.00	99.88	0.12	0.20	99.80	0.00	
App/Depart	3	/	0	0	/	6	1623	/	1622	1983	/	1981	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	0	0	0	0	0	0	0	856	2	2	1090	0	1950
Approach %	####	####	####	####	####	####	0.00	99.77	0.23	0.18	99.82	0.00	

PEAK HR.

FACTOR:	0.000	0.000	0.933	0.864	0.911
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CONTROL: 1-Way Stop (NB)
 COMMENT 1: 0
 GPS: 34.862426, -111.808727

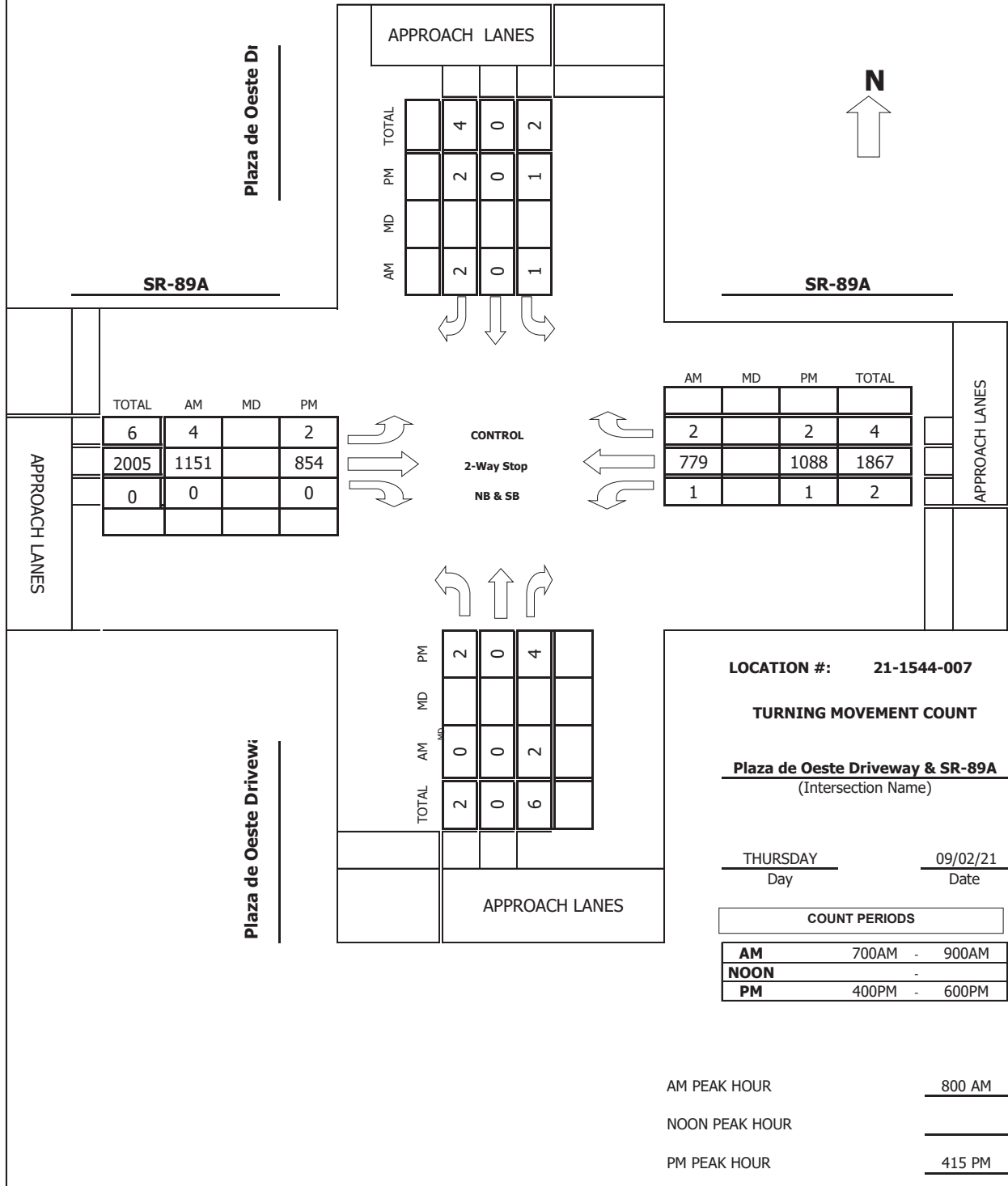
Intersection Turning Movement

Prepared by:



Project #: 21-1544-007

TMC SUMMARY OF Plaza de Oeste Driveway & SR-89A



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: **Plaza de Oeste Driveway** DATE: **09/02/21** LOCATION: **Sedona**
 E-W STREET: **SR-89A** DAY: **THURSDAY** PROJECT# **21-1544-007**

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	0	0	0	0	166	0	0	127	0	293
7:15 AM	0	0	1	0	0	0	0	187	0	0	125	0	313
7:30 AM	0	0	1	0	0	0	0	240	0	0	144	0	385
7:45 AM	0	0	0	0	0	0	0	262	0	0	146	0	408
8:00 AM	0	0	0	0	0	0	0	284	0	0	191	0	475
8:15 AM	0	0	0	0	0	0	0	303	0	0	217	0	520
8:30 AM	0	0	1	1	0	1	3	302	0	1	206	1	516
8:45 AM	0	0	1	0	0	1	1	262	0	0	165	1	431
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	4	1	0	2	4	2006	0	1	1321	2	3341
Approach %	0.00	0.00	100.00	33.33	0.00	66.67	0.20	99.80	0.00	0.08	99.77	0.15	
App/Depart	4	/	6	3	/	1	2010	/	2011	1324	/	1323	

AM Peak Hr Begins at: 800 AM

PEAK

Volumes	0	0	2	1	0	2	4	1151	0	1	779	2	1942
Approach %	0.00	0.00	100.00	33.33	0.00	66.67	0.35	99.65	0.00	0.13	99.62	0.26	

PEAK HR.

FACTOR:	0.500	0.375	0.947	0.901	0.934
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CONTROL: **2-Way Stop (NB & SB)**
 COMMENT 1:
 GPS: **34.862466, -111.808478**

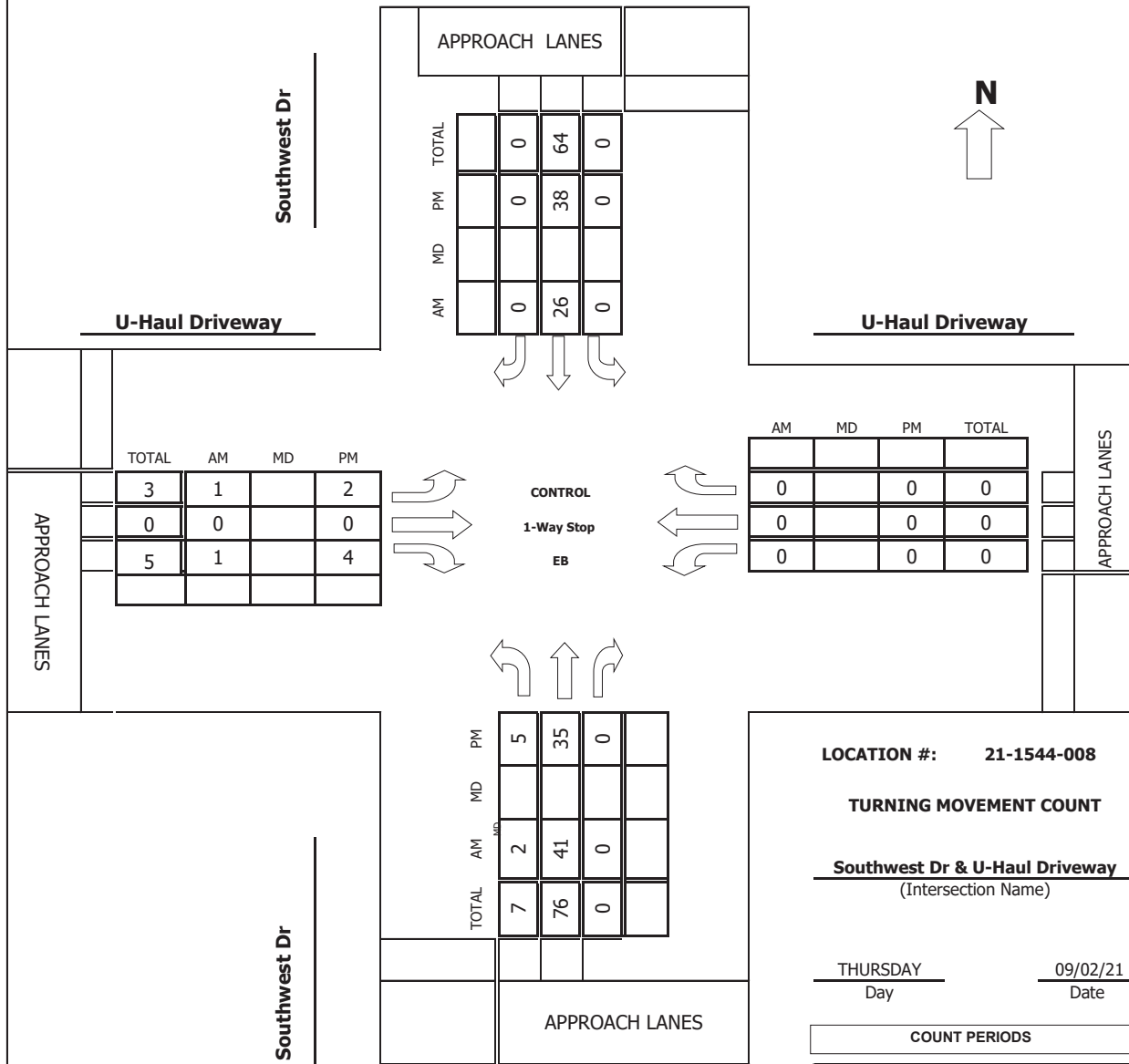
Intersection Turning Movement

Prepared by:



Project #: 21-1544-008

TMC SUMMARY OF Southwest Dr & U-Haul Driveway



TOTAL	AM	MD	PM
3	1		2
0	0		0
5	1		4

AM	MD	PM	TOTAL
0		0	0
0		0	0
0		0	0

TOTAL	AM	MD	PM
7	2		5
76	41		35
0	0		0

LOCATION #: **21-1544-008**

TURNING MOVEMENT COUNT

Southwest Dr & U-Haul Driveway
(Intersection Name)

THURSDAY 09/02/21
Day Date

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

AM PEAK HOUR 745 AM
NOON PEAK HOUR _____
PM PEAK HOUR 400 PM

Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Southwest Dr DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: U-Haul Driveway DAY: THURSDAY PROJECT#: 21-1544-008

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	1	0	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	3	3	0	0	4	0	0	0	0	0	0	0	10
7:15 AM	3	5	0	0	6	0	0	0	0	0	0	0	14
7:30 AM	1	14	0	0	3	0	0	0	0	0	0	0	18
7:45 AM	1	9	0	0	4	0	0	0	0	0	0	0	14
8:00 AM	0	9	0	0	6	0	0	0	0	0	0	0	15
8:15 AM	0	10	0	0	10	0	1	0	0	0	0	0	21
8:30 AM	1	13	0	0	6	0	0	0	1	0	0	0	21
8:45 AM	0	4	0	0	9	0	0	0	0	0	0	0	13
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	9	67	0	0	48	0	1	0	1	0	0	0	126
Approach %	11.84	88.16	0.00	0.00	100.00	0.00	50.00	0.00	50.00	####	####	####	
App/Depart	76	/	68	48	/	49	2	/	0	0	/	9	

AM Peak Hr Begins at: 745 AM

PEAK

Volumes	2	41	0	0	26	0	1	0	1	0	0	0	71
Approach %	4.65	95.35	0.00	0.00	100.00	0.00	50.00	0.00	50.00	####	####	####	

PEAK HR.

FACTOR:	0.768	0.650	0.500	0.000	0.845
---------	-------	-------	-------	-------	-------

CONTROL: 1-Way Stop (EB)
 COMMENT 1:
 GPS: 34.862694, -111.810137

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Southwest Dr DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: U-Haul Driveway DAY: THURSDAY PROJECT#: 21-1544-008

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	1	0	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	8	0	0	9	0	0	0	2	0	0	0	22
4:15 PM	1	7	0	0	8	0	1	0	1	0	0	0	18
4:30 PM	1	7	0	0	11	0	1	0	1	0	0	0	21
4:45 PM	0	13	0	0	10	0	0	0	0	0	0	0	23
5:00 PM	0	12	0	0	8	0	0	0	0	0	0	0	20
5:15 PM	1	7	0	0	7	0	0	0	1	0	0	0	16
5:30 PM	1	7	0	0	7	0	0	0	0	0	0	0	15
5:45 PM	1	6	0	0	15	0	0	0	0	0	0	0	22
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	8	67	0	0	75	0	2	0	5	0	0	0	157
Approach %	10.67	89.33	0.00	0.00	100.00	0.00	28.57	0.00	71.43	####	####	####	
App/Depart	75	/	69	75	/	80	7	/	0	0	/	8	

PM Peak Hr Begins at: 400 PM

PEAK

Volumes	5	35	0	0	38	0	2	0	4	0	0	0	84
Approach %	12.50	87.50	0.00	0.00	100.00	0.00	33.33	0.00	66.67	####	####	####	

PEAK HR.

FACTOR:	0.769	0.864	0.750	0.000	0.913
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CONTROL: 1-Way Stop (EB)
 COMMENT 1: 0
 GPS: 34.862694, -111.810137

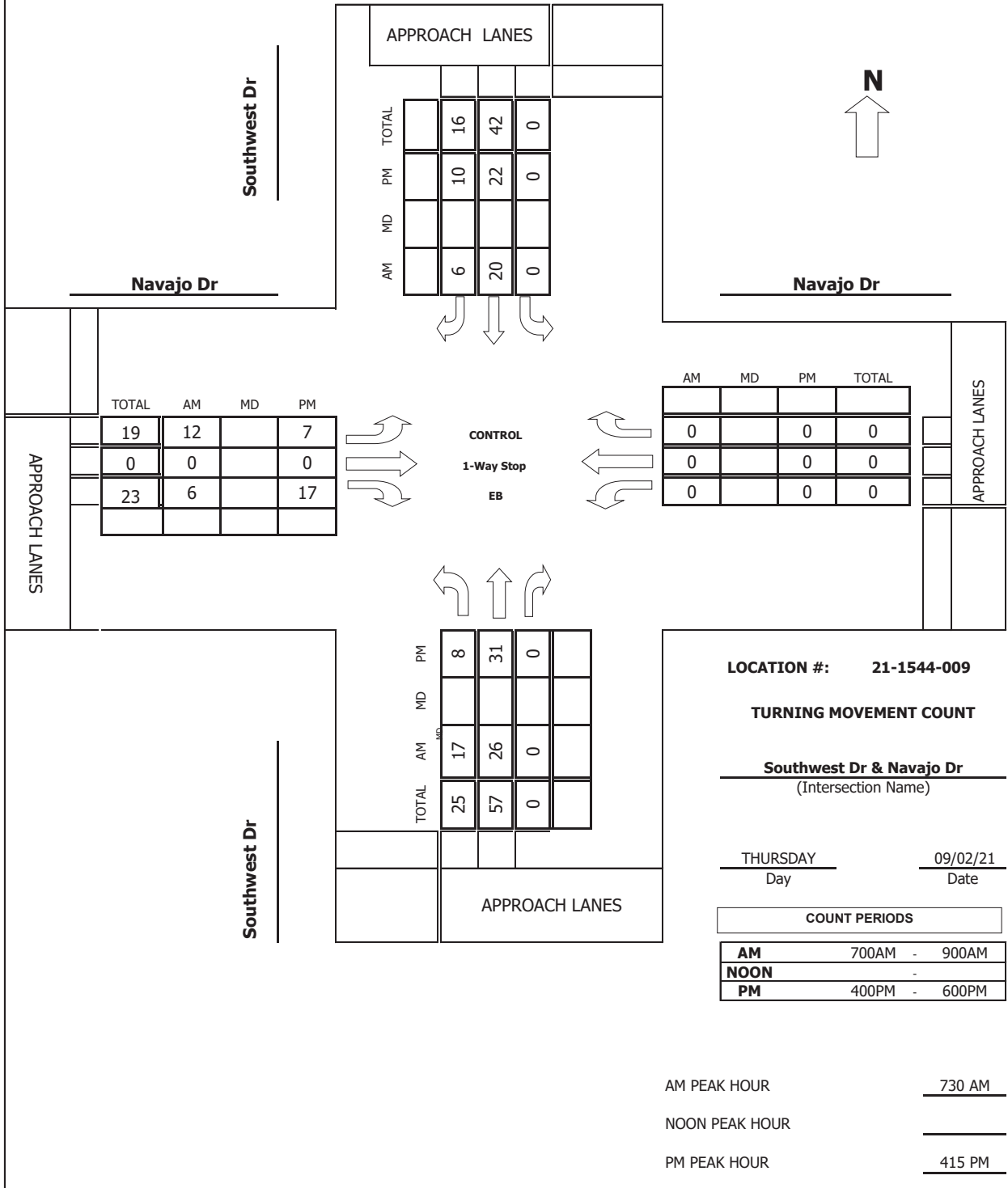
Intersection Turning Movement

Prepared by:



Project #: 21-1544-009

TMC SUMMARY OF Southwest Dr & Navajo Dr



Intersection Turning Movement Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Southwest Dr DATE: 09/02/21 LOCATION: Sedona
E-W STREET: Navajo Dr DAY: THURSDAY PROJECT#: 21-1544-009

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	1	0	0	1	0	0	1	0	0	0	0	
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	3	0	0	4	1	1	0	0	0	0	0	10
7:15 AM	0	5	0	0	4	0	1	0	2	0	0	0	12
7:30 AM	4	9	0	0	4	0	3	0	0	0	0	0	20
7:45 AM	5	4	0	0	3	5	1	0	1	0	0	0	19
8:00 AM	4	5	0	0	6	1	1	0	1	0	0	0	18
8:15 AM	4	8	0	0	7	0	7	0	4	0	0	0	30
8:30 AM	2	10	0	0	3	2	0	0	2	0	0	0	19
8:45 AM	1	4	0	0	7	1	3	0	1	0	0	0	17
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	21	48	0	0	38	10	17	0	11	0	0	0	145
Approach %	30.43	69.57	0.00	0.00	79.17	20.83	60.71	0.00	39.29	####	####	####	
App/Depart	69	/	65	48	/	49	28	/	0	0	/	31	

AM Peak Hr Begins at: 730 AM

PEAK

Volumes	17	26	0	0	20	6	12	0	6	0	0	0	87
Approach %	39.53	60.47	0.00	0.00	76.92	23.08	66.67	0.00	33.33	####	####	####	

PEAK HR.

FACTOR:	0.827	0.813	0.409	0.000	0.725
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CONTROL: 1-Way Stop (EB)
COMMENT 1:
GPS: 34.863466, -111.810273

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



N-S STREET: Southwest Dr DATE: 09/02/21 LOCATION: Sedona
 E-W STREET: Navajo Dr DAY: THURSDAY PROJECT#: 21-1544-009

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	1	0	0	0	0	

1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	7	0	0	7	1	5	0	1	0	0	0	23
4:15 PM	1	7	0	0	7	0	3	0	1	0	0	0	19
4:30 PM	4	4	0	0	5	1	3	0	7	0	0	0	24
4:45 PM	1	11	0	0	4	4	0	0	6	0	0	0	26
5:00 PM	2	9	0	0	6	5	1	0	3	0	0	0	26
5:15 PM	4	4	0	0	3	1	2	0	4	0	0	0	18
5:30 PM	1	5	0	0	4	1	1	0	2	0	0	0	14
5:45 PM	0	6	0	0	10	1	1	0	6	0	0	0	24
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	15	53	0	0	46	14	16	0	30	0	0	0	174
Approach %	22.06	77.94	0.00	0.00	76.67	23.33	34.78	0.00	65.22	####	####	####	
App/Depart	68	/	69	60	/	76	46	/	0	0	/	29	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	8	31	0	0	22	10	7	0	17	0	0	0	95
Approach %	20.51	79.49	0.00	0.00	68.75	31.25	29.17	0.00	70.83	####	####	####	

PEAK HR.

FACTOR:	0.813	0.727	0.600	0.000	0.913
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CONTROL: 1-Way Stop (EB)
 COMMENT 1: 0
 GPS: 34.863466, -111.810273



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Trip Generation Calculations

Convenience Market/Gas Station - GFA (5.5-10k) (LUC 945)

LAND USE: 6,250 Square Feet Convenience Market/Gas Station - VFP (9-15)

TRIP GENERATION CALCULATIONS ARE BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS' TRIP GENERATION, 11TH EDITION. THE ITE LAND USE CODE IS Convenience Market/Gas Station - VFP (9-15) (945), General Urban/Suburban

Weekday

Average Rate = 700.43 Trips per 1000 Square Feet

$$T = 700.43 \text{ Trips} \times 6250 \text{ sqft} / 1000$$

$$T = \mathbf{4,378 \text{ VTPD}}$$

$$\text{ENTER: } (0.5) \times (4378) = \mathbf{2,189 \text{ VTPD}}$$

$$\text{EXIT: } (0.5) \times (4378) = \mathbf{2,189 \text{ VTPD}}$$

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

Average Rate = 56.52 Trips per 1000 Square Feet

$$T = 56.52 \text{ Trips} \times 6250 \text{ sqft} / 1000$$

$$T = \mathbf{354 \text{ VPH}}$$

$$\text{ENTER: } (0.5) \times (354) = \mathbf{177 \text{ VPH}}$$

$$\text{EXIT: } (0.5) \times (354) = \mathbf{177 \text{ VPH}}$$

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

Average Rate = 54.52 Trips per 1000 Square Feet

$$T = 54.52 \text{ Trips} \times 6250 \text{ sqft} / 1000$$

$$T = \mathbf{342 \text{ VPH}}$$

$$\text{ENTER: } (0.5) \times (342) = \mathbf{171 \text{ VPH}}$$

$$\text{EXIT: } (0.5) \times (342) = \mathbf{171 \text{ VPH}}$$

*where, T = trip ends

TRIP GENERATION SUMMARY

WEEKDAY

4,378 VTPD

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

354 VPH

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

342 VPH

Automated Car Wash

LAND USE: 1 Car Wash Tunnels Automated Car Wash

TRIP GENERATION CALCULATIONS ARE BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS' TRIP GENERATION, 11TH EDITION. THE ITE LAND USE CODE IS Automated Car Wash (948), General Urban/Suburban

WEEKDAY

Average Rate = N/A Trips per Car Wash Tunnel (CWT)

$T = \text{N/A Trips} \times 1 \text{ CWT}$

T = N/A VTPD

ENTER: $(0) \times (\text{N/A}) = \text{N/A VTPD}$

EXIT: $(0) \times (\text{N/A}) = \text{N/A VTPD}$

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

Average Rate = N/A Trips per Car Wash Tunnel (CWT)

$T = \text{N/A Trips} \times 1 \text{ CWT}$

T = N/A VPH

ENTER: $(0) \times (\text{N/A}) = \text{N/A VPH}$

EXIT: $(0) \times (\text{N/A}) = \text{N/A VPH}$

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

Average Rate = 77.5 Trips per Car Wash Tunnel (CWT)

$T = 77.5 \text{ Trips} \times 1 \text{ CWT}$

T = 78 VPH

ENTER: $(0.5) \times (78) = 39 \text{ VPH}$

EXIT: $(0.5) \times (78) = 39 \text{ VPH}$

*where, T = trip ends

TRIP GENERATION SUMMARY

WEEKDAY

N/A VTPD

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

N/A VPH

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

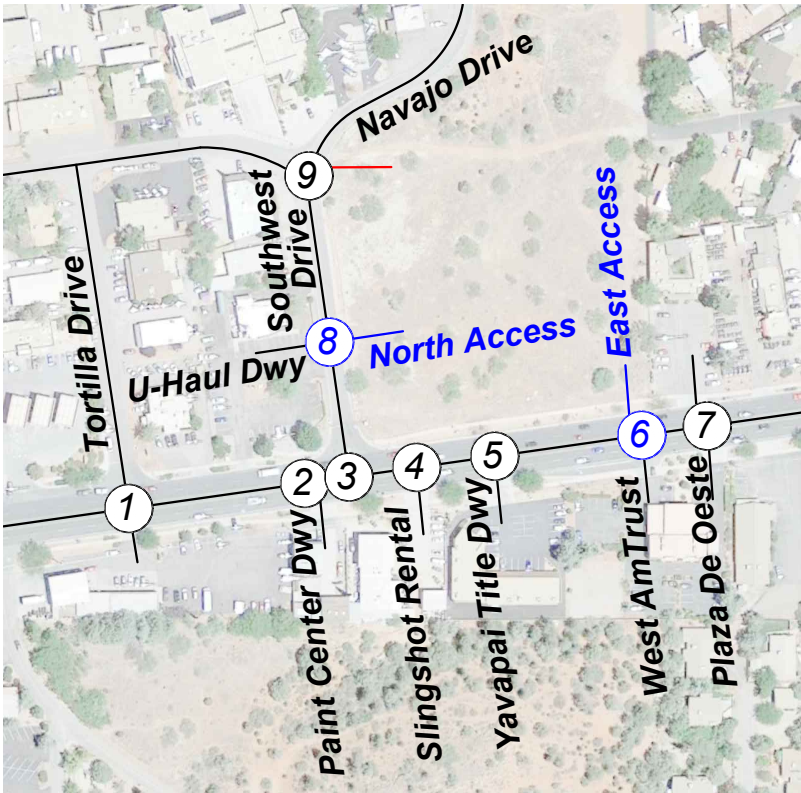
78 VPH



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

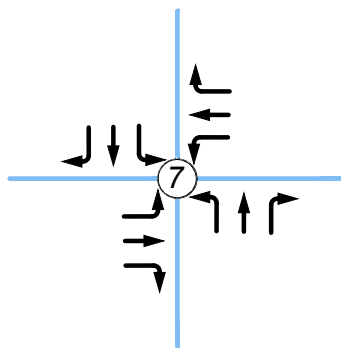
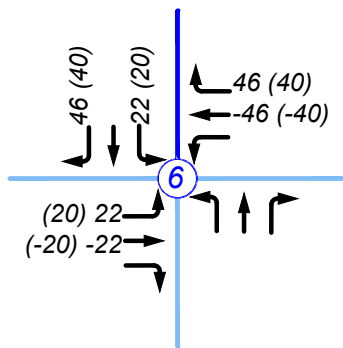
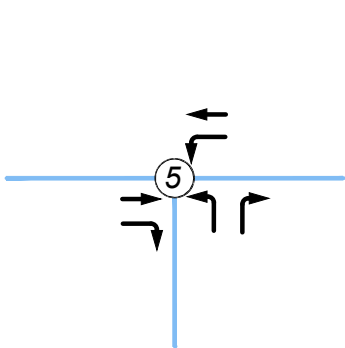
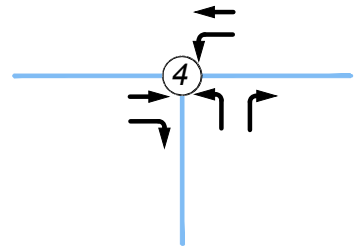
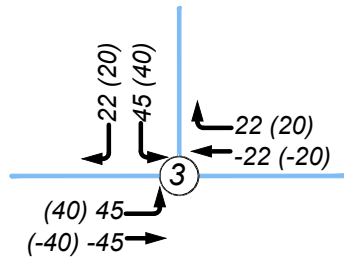
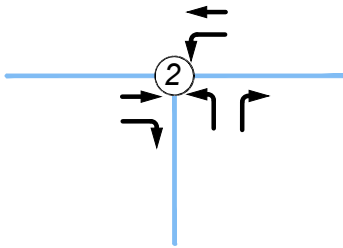
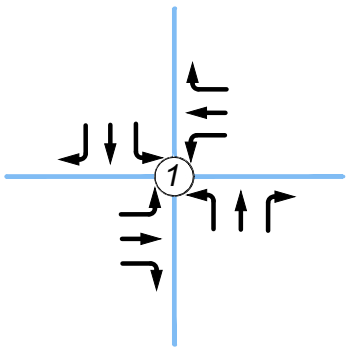
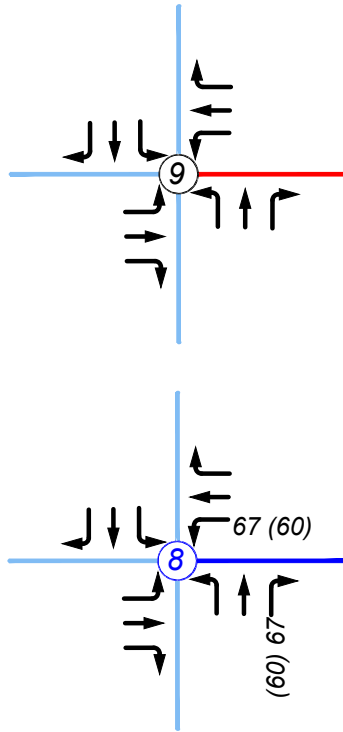
Pass-By Trip Assignment



LEGEND:

XX = Weekday AM Peak Hour
 (XX) = Weekday PM Peak Hour
 Vehicles Per Hour

- = Existing Road
- = Proposed Access
- = Navajo Lofts Access





**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Capacity Calculations

HCM 6th TWSC
1: SR 89a & Tortilla Drive

09/29/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	0	1140	0	2	756	0	3	0	5	0	0	0
Future Vol, veh/h	0	1140	0	2	756	0	3	0	5	0	0	0
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1267	0	3	840	0	4	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	840	0	0	1267	0	0	1693	2113	634	1480	2113	420
Stage 1	-	-	-	-	-	-	1267	1267	-	846	846	-
Stage 2	-	-	-	-	-	-	426	846	-	634	1267	-
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	791	-	-	544	-	-	60	50	422	87	50	582
Stage 1	-	-	-	-	-	-	179	238	-	323	377	-
Stage 2	-	-	-	-	-	-	577	377	-	434	238	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	791	-	-	544	-	-	60	50	422	85	50	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	50	-	85	50	-
Stage 1	-	-	-	-	-	-	179	238	-	323	375	-
Stage 2	-	-	-	-	-	-	574	375	-	428	238	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			35.2			0		
HCM LOS							E			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	129	791	-	-	544	-	-	-
HCM Lane V/C Ratio	0.078	-	-	-	0.005	-	-	-
HCM Control Delay (s)	35.2	0	-	-	11.6	-	-	0
HCM Lane LOS	E	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1146	2	7	759	1	5
Future Vol, veh/h	1146	2	7	759	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1273	2	9	843	1	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1275	0	1714
Stage 1	-	-	-	-	1274
Stage 2	-	-	-	-	440
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	540	-	81
Stage 1	-	-	-	-	226
Stage 2	-	-	-	-	616
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	540	-	80
Mov Cap-2 Maneuver	-	-	-	-	177
Stage 1	-	-	-	-	226
Stage 2	-	-	-	-	606

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	341	-	-	540	-
HCM Lane V/C Ratio	0.022	-	-	0.016	-
HCM Control Delay (s)	15.8	-	-	11.8	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

09/29/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	1138	753	24	19	13
Future Vol, veh/h	13	1138	753	24	19	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	1264	837	27	24	16
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	864	0	-	0	1515	432
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	664	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	774	-	-	-	110	572
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	474	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	774	-	-	-	108	572
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	474	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.1	0	18.2			
HCM LOS			C			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	774	-	-	-	-	312
HCM Lane V/C Ratio	0.021	-	-	-	-	0.128
HCM Control Delay (s)	9.8	-	-	-	-	18.2
HCM Lane LOS	A	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.4

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1156	1	1	775	2	1
Future Vol, veh/h	1156	1	1	775	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1284	1	1	861	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1285	0	1718
Stage 1	-	-	-	-	1285
Stage 2	-	-	-	-	433
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	536	-	81
Stage 1	-	-	-	-	223
Stage 2	-	-	-	-	621
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	536	-	81
Mov Cap-2 Maneuver	-	-	-	-	177
Stage 1	-	-	-	-	223
Stage 2	-	-	-	-	620

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	-	-	536	-
HCM Lane V/C Ratio	0.017	-	-	0.002	-
HCM Control Delay (s)	21.7	-	-	11.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑↑	↘	
Traffic Vol, veh/h	1156	1	3	776	0	1
Future Vol, veh/h	1156	1	3	776	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1284	1	4	862	0	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1285	0	1638
Stage 1	-	-	-	-	1285
Stage 2	-	-	-	-	353
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	536	-	115
Stage 1	-	-	-	-	219
Stage 2	-	-	-	-	646
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	536	-	114
Mov Cap-2 Maneuver	-	-	-	-	184
Stage 1	-	-	-	-	219
Stage 2	-	-	-	-	641

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	416	-	-	536	-
HCM Lane V/C Ratio	0.003	-	-	0.007	-
HCM Control Delay (s)	13.7	-	-	11.8	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	
Traffic Vol, veh/h	1155	2	2	779	0	0
Future Vol, veh/h	1155	2	2	779	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	80	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1283	3	3	866	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1286	0	1722
Stage 1	-	-	-	-	1283
Stage 2	-	-	-	-	439
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	535	-	80
Stage 1	-	-	-	-	224
Stage 2	-	-	-	-	617
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	535	-	80
Mov Cap-2 Maneuver	-	-	-	-	177
Stage 1	-	-	-	-	224
Stage 2	-	-	-	-	613

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	535	-
HCM Lane V/C Ratio	-	-	-	0.005	-
HCM Control Delay (s)	0	-	-	11.8	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

09/29/2021

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕			↕	
Traffic Vol, veh/h	4	1151	0	1	779	2	0	0	2	1	0	2
Future Vol, veh/h	4	1151	0	1	779	2	0	0	2	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1279	0	1	866	2	0	0	3	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	868	0	0	1279	0	0	1724	2159	640	1519	2158	434
Stage 1	-	-	-	-	-	-	1289	1289	-	869	869	-
Stage 2	-	-	-	-	-	-	435	870	-	650	1289	-
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	772	-	-	539	-	-	57	47	418	82	47	570
Stage 1	-	-	-	-	-	-	173	232	-	313	367	-
Stage 2	-	-	-	-	-	-	570	367	-	424	232	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	772	-	-	539	-	-	56	47	418	81	47	570
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	47	-	81	47	-
Stage 1	-	-	-	-	-	-	172	231	-	311	366	-
Stage 2	-	-	-	-	-	-	566	366	-	419	231	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			13.7			24.4		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	418	772	-	-	539	-	-	189
HCM Lane V/C Ratio	0.006	0.006	-	-	0.002	-	-	0.02
HCM Control Delay (s)	13.7	9.7	-	-	11.7	-	-	24.4
HCM Lane LOS	B	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

09/29/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	1	2	41	26	0
Future Vol, veh/h	1	1	2	41	26	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	3	51	33	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	90	33	33	0	0
Stage 1	33	-	-	-	-
Stage 2	57	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	910	1041	1579	-	-
Stage 1	989	-	-	-	-
Stage 2	966	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	908	1041	1579	-	-
Mov Cap-2 Maneuver	908	-	-	-	-
Stage 1	987	-	-	-	-
Stage 2	966	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	970	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

09/29/2021

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	12	6	17	26	20	6
Future Vol, veh/h	12	6	17	26	20	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	8	21	33	25	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	104	29	33	0	0
Stage 1	29	-	-	-	-
Stage 2	75	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	894	1046	1579	-	-
Stage 1	994	-	-	-	-
Stage 2	948	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	881	1046	1579	-	-
Mov Cap-2 Maneuver	881	-	-	-	-
Stage 1	980	-	-	-	-
Stage 2	948	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	2.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	930	-	-
HCM Lane V/C Ratio	0.013	-	0.024	-	-
HCM Control Delay (s)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

09/29/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	5	827	1	0	1073	2	0	0	5	3	0	6
Future Vol, veh/h	5	827	1	0	1073	2	0	0	5	3	0	6
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	919	1	0	1192	2	0	0	6	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1194	0	0	920	0	0	1528	2126	460	1665	2125	597
Stage 1	-	-	-	-	-	-	932	932	-	1193	1193	-
Stage 2	-	-	-	-	-	-	596	1194	-	472	932	-
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	580	-	-	738	-	-	80	49	548	63	49	446
Stage 1	-	-	-	-	-	-	287	343	-	198	258	-
Stage 2	-	-	-	-	-	-	457	258	-	542	343	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	580	-	-	738	-	-	78	49	548	62	49	446
Mov Cap-2 Maneuver	-	-	-	-	-	-	78	49	-	62	49	-
Stage 1	-	-	-	-	-	-	284	340	-	196	258	-
Stage 2	-	-	-	-	-	-	449	258	-	530	340	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			11.6			31.7		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	548	580	-	-	738	-	-	146
HCM Lane V/C Ratio	0.011	0.011	-	-	-	-	-	0.077
HCM Control Delay (s)	11.6	11.3	-	-	0	-	-	31.7
HCM Lane LOS	B	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	844	0	0	1080	2	1
Future Vol, veh/h	844	0	0	1080	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	938	0	0	1200	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	938	0	1538
Stage 1	-	-	-	-	938
Stage 2	-	-	-	-	600
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	726	-	106
Stage 1	-	-	-	-	341
Stage 2	-	-	-	-	511
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	726	-	106
Mov Cap-2 Maneuver	-	-	-	-	232
Stage 1	-	-	-	-	341
Stage 2	-	-	-	-	511

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	287	-	-	726	-
HCM Lane V/C Ratio	0.013	-	-	-	-
HCM Control Delay (s)	17.7	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

09/29/2021

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	832	1066	28	25	14
Future Vol, veh/h	13	832	1066	28	25	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	924	1184	31	31	18

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1215	0	-	0	1694 608
Stage 1	-	-	-	-	1200 -
Stage 2	-	-	-	-	494 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	570	-	-	-	84 439
Stage 1	-	-	-	-	248 -
Stage 2	-	-	-	-	579 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	570	-	-	-	82 439
Mov Cap-2 Maneuver	-	-	-	-	185 -
Stage 1	-	-	-	-	241 -
Stage 2	-	-	-	-	579 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	570	-	-	-	233
HCM Lane V/C Ratio	0.029	-	-	-	0.209
HCM Control Delay (s)	11.5	-	-	-	24.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	855	2	2	1090	4	1
Future Vol, veh/h	855	2	2	1090	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	950	2	3	1211	5	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	952	0	1563
Stage 1	-	-	-	-	951
Stage 2	-	-	-	-	612
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	717	-	102
Stage 1	-	-	-	-	336
Stage 2	-	-	-	-	504
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	717	-	102
Mov Cap-2 Maneuver	-	-	-	-	228
Stage 1	-	-	-	-	336
Stage 2	-	-	-	-	502

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	717	-
HCM Lane V/C Ratio	0.024	-	-	0.003	-
HCM Control Delay (s)	19.3	-	-	10	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑↑	↘	
Traffic Vol, veh/h	856	0	2	1088	4	2
Future Vol, veh/h	856	0	2	1088	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	951	0	3	1209	5	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	951	0	1441
Stage 1	-	-	-	-	951
Stage 2	-	-	-	-	490
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	718	-	151
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	548
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	718	-	150
Mov Cap-2 Maneuver	-	-	-	-	249
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	546

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	303	-	-	718	-
HCM Lane V/C Ratio	0.025	-	-	0.003	-
HCM Control Delay (s)	17.2	-	-	10	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
 6: West AmTrust Bank Driveway & SR 89a

09/29/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	
Traffic Vol, veh/h	856	2	2	1090	0	0
Future Vol, veh/h	856	2	2	1090	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	80	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	951	3	3	1211	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	954	0	1563 476
Stage 1	-	-	-	-	951 -
Stage 2	-	-	-	-	612 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	716	-	102 535
Stage 1	-	-	-	-	336 -
Stage 2	-	-	-	-	504 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	716	-	102 535
Mov Cap-2 Maneuver	-	-	-	-	228 -
Stage 1	-	-	-	-	336 -
Stage 2	-	-	-	-	502 -

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	716	-
HCM Lane V/C Ratio	-	-	-	0.003	-
HCM Control Delay (s)	0	-	-	10	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

09/29/2021

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	2	854	0	1	1088	2	2	0	4	1	0	2
Future Vol, veh/h	2	854	0	1	1088	2	2	0	4	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	949	0	1	1209	2	3	0	5	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1211	0	0	949	0	0	1562	2168	475	1693	2167	606
Stage 1	-	-	-	-	-	-	955	955	-	1212	1212	-
Stage 2	-	-	-	-	-	-	607	1213	-	481	955	-
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	572	-	-	719	-	-	76	46	536	60	46	440
Stage 1	-	-	-	-	-	-	278	335	-	193	253	-
Stage 2	-	-	-	-	-	-	450	253	-	535	335	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	572	-	-	719	-	-	75	46	536	59	46	440
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	46	-	59	46	-
Stage 1	-	-	-	-	-	-	277	333	-	192	253	-
Stage 2	-	-	-	-	-	-	447	253	-	527	333	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			26.4			31.4		
HCM LOS							D			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	572	-	-	719	-	-	140
HCM Lane V/C Ratio	0.043	0.004	-	-	0.002	-	-	0.027
HCM Control Delay (s)	26.4	11.3	-	-	10	-	-	31.4
HCM Lane LOS	D	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

HCM 6th TWSC
 8: Southwest Drive & Uhaul Driveway

09/29/2021

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	2	4	5	35	38	0
Future Vol, veh/h	2	4	5	35	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	6	44	48	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	104	48	48	0	-	0
Stage 1	48	-	-	-	-	-
Stage 2	56	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	894	1021	1559	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	890	1021	1559	-	-	-
Mov Cap-2 Maneuver	890	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	967	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1559	-	973	-	-
HCM Lane V/C Ratio	0.004	-	0.008	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

09/29/2021

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	7	17	8	31	22	10
Future Vol, veh/h	7	17	8	31	22	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	21	10	39	28	13

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	94	35	41	0	0
Stage 1	35	-	-	-	-
Stage 2	59	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	906	1038	1568	-	-
Stage 1	987	-	-	-	-
Stage 2	964	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	900	1038	1568	-	-
Mov Cap-2 Maneuver	900	-	-	-	-
Stage 1	980	-	-	-	-
Stage 2	964	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1568	-	994	-	-
HCM Lane V/C Ratio	0.006	-	0.03	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

10/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	0	1165	0	2	778	0	3	0	5	0	0	0
Future Vol, veh/h	0	1165	0	2	778	0	3	0	5	0	0	0
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1294	0	3	864	0	4	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	864	0	0	1294	0	0	1732	2164	647	1517	2164	432
Stage 1	-	-	-	-	-	-	1294	1294	-	870	870	-
Stage 2	-	-	-	-	-	-	438	870	-	647	1294	-
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	774	-	-	531	-	-	56	47	414	82	47	572
Stage 1	-	-	-	-	-	-	172	231	-	313	367	-
Stage 2	-	-	-	-	-	-	567	367	-	426	231	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	774	-	-	531	-	-	56	47	414	80	47	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	47	-	80	47	-
Stage 1	-	-	-	-	-	-	172	231	-	313	365	-
Stage 2	-	-	-	-	-	-	564	365	-	420	231	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			37.1			0		
HCM LOS							E			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	122	774	-	-	531	-	-	-
HCM Lane V/C Ratio	0.082	-	-	-	0.005	-	-	-
HCM Control Delay (s)	37.1	0	-	-	11.8	-	-	0
HCM Lane LOS	E	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1171	2	7	781	1	5
Future Vol, veh/h	1171	2	7	781	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1301	2	9	868	1	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1303	0	1754
Stage 1	-	-	-	-	1302
Stage 2	-	-	-	-	452
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	527	-	76
Stage 1	-	-	-	-	219
Stage 2	-	-	-	-	608
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	527	-	75
Mov Cap-2 Maneuver	-	-	-	-	172
Stage 1	-	-	-	-	219
Stage 2	-	-	-	-	598

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	334	-	-	527	-
HCM Lane V/C Ratio	0.022	-	-	0.017	-
HCM Control Delay (s)	16	-	-	11.9	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

10/01/2021

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	1161	768	28	31	20
Future Vol, veh/h	15	1161	768	28	31	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	1290	853	31	39	25

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	884	0	-	0	1552
Stage 1	-	-	-	-	869
Stage 2	-	-	-	-	683
Critical Hdwy	4.14	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	2.22	-	-	-	3.52
Pot Cap-1 Maneuver	761	-	-	-	104
Stage 1	-	-	-	-	371
Stage 2	-	-	-	-	463
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	761	-	-	-	101
Mov Cap-2 Maneuver	-	-	-	-	231
Stage 1	-	-	-	-	362
Stage 2	-	-	-	-	463

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	20.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	761	-	-	-	300
HCM Lane V/C Ratio	0.025	-	-	-	0.213
HCM Control Delay (s)	9.8	-	-	-	20.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1191	1	1	795	2	1
Future Vol, veh/h	1191	1	1	795	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1323	1	1	883	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1324	0	1768
Stage 1	-	-	-	-	1324
Stage 2	-	-	-	-	444
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	518	-	75
Stage 1	-	-	-	-	213
Stage 2	-	-	-	-	614
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	518	-	75
Mov Cap-2 Maneuver	-	-	-	-	169
Stage 1	-	-	-	-	213
Stage 2	-	-	-	-	613

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	210	-	-	518	-
HCM Lane V/C Ratio	0.018	-	-	0.002	-
HCM Control Delay (s)	22.5	-	-	12	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑↑	↵	
Traffic Vol, veh/h	1191	1	3	796	0	1
Future Vol, veh/h	1191	1	3	796	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1323	1	4	884	0	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1324	0	1686
Stage 1	-	-	-	-	1324
Stage 2	-	-	-	-	362
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	518	-	108
Stage 1	-	-	-	-	209
Stage 2	-	-	-	-	639
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	518	-	107
Mov Cap-2 Maneuver	-	-	-	-	176
Stage 1	-	-	-	-	209
Stage 2	-	-	-	-	634

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	-	-	518	-
HCM Lane V/C Ratio	0.003	-	-	0.007	-
HCM Control Delay (s)	13.9	-	-	12	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	
Traffic Vol, veh/h	1190	2	2	799	0	0
Future Vol, veh/h	1190	2	2	799	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	80	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1322	3	3	888	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1325	0	1772
Stage 1	-	-	-	-	1322
Stage 2	-	-	-	-	450
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	517	-	74
Stage 1	-	-	-	-	213
Stage 2	-	-	-	-	609
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	517	-	74
Mov Cap-2 Maneuver	-	-	-	-	168
Stage 1	-	-	-	-	213
Stage 2	-	-	-	-	605

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	517	-
HCM Lane V/C Ratio	-	-	-	0.005	-
HCM Control Delay (s)	0	-	-	12	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

10/01/2021

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	4	1186	0	1	799	2	0	0	2	1	0	2
Future Vol, veh/h	4	1186	0	1	799	2	0	0	2	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1318	0	1	888	2	0	0	3	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	890	0	0	1318	0	0	1774	2220	659	1560	2219	445
Stage 1	-	-	-	-	-	-	1328	1328	-	891	891	-
Stage 2	-	-	-	-	-	-	446	892	-	669	1328	-
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	757	-	-	520	-	-	52	43	406	76	43	561
Stage 1	-	-	-	-	-	-	164	223	-	304	359	-
Stage 2	-	-	-	-	-	-	561	358	-	413	223	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	757	-	-	520	-	-	51	43	406	75	43	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	43	-	75	43	-
Stage 1	-	-	-	-	-	-	163	221	-	302	358	-
Stage 2	-	-	-	-	-	-	557	357	-	408	221	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			13.9			25.7		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	406	757	-	-	520	-	-	178
HCM Lane V/C Ratio	0.006	0.007	-	-	0.002	-	-	0.021
HCM Control Delay (s)	13.9	9.8	-	-	11.9	-	-	25.7
HCM Lane LOS	B	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC
 8: Southwest Drive & Uhaul Driveway

10/01/2021

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	1	2	48	46	0
Future Vol, veh/h	1	1	2	48	46	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	3	60	58	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	124	58	58	0	-	0
Stage 1	58	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	871	1008	1546	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	869	1008	1546	-	-	-
Mov Cap-2 Maneuver	869	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	957	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1546	-	933	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

10/01/2021

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	12	0	6	19	0	0	17	27	6	0	20	6
Future Vol, veh/h	12	0	6	19	0	0	17	27	6	0	20	6
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	15	0	8	24	0	0	21	34	8	0	25	8

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	109	113	29	113	113	38	33	0	0	42	0	0
Stage 1	29	29	-	80	80	-	-	-	-	-	-	-
Stage 2	80	84	-	33	33	-	-	-	-	-	-	-
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	870	777	1046	864	777	1034	1579	-	-	1567	-	-
Stage 1	988	871	-	929	828	-	-	-	-	-	-	-
Stage 2	929	825	-	983	868	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	860	766	1046	848	766	1034	1579	-	-	1567	-	-
Mov Cap-2 Maneuver	860	766	-	848	766	-	-	-	-	-	-	-
Stage 1	974	871	-	916	816	-	-	-	-	-	-	-
Stage 2	916	813	-	976	868	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		9.4		2.5		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1579	-	-	914	848	1567	-
HCM Lane V/C Ratio	0.013	-	-	0.025	0.028	-	-
HCM Control Delay (s)	7.3	0	-	9	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

10/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	5	851	1	0	1099	2	0	0	5	3	0	6
Future Vol, veh/h	5	851	1	0	1099	2	0	0	5	3	0	6
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	946	1	0	1221	2	0	0	6	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1223	0	0	947	0	0	1570	2182	474	1707	2181	612
Stage 1	-	-	-	-	-	-	959	959	-	1222	1222	-
Stage 2	-	-	-	-	-	-	611	1223	-	485	959	-
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	566	-	-	721	-	-	75	45	537	59	45	436
Stage 1	-	-	-	-	-	-	276	334	-	190	250	-
Stage 2	-	-	-	-	-	-	448	250	-	532	334	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	566	-	-	721	-	-	73	45	537	58	45	436
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	45	-	58	45	-
Stage 1	-	-	-	-	-	-	273	330	-	188	250	-
Stage 2	-	-	-	-	-	-	440	250	-	520	330	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			11.8			33.6		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	537	566	-	-	721	-	-	137
HCM Lane V/C Ratio	0.012	0.011	-	-	-	-	-	0.082
HCM Control Delay (s)	11.8	11.4	-	-	0	-	-	33.6
HCM Lane LOS		B	B	-	-	A	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	868	0	0	1106	2	1
Future Vol, veh/h	868	0	0	1106	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	964	0	0	1229	3	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	964	0	1579	482
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	615	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	710	-	100	530
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	502	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	710	-	100	530
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	502	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	18.1			
HCM LOS						C
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	278	-	-	710	-	
HCM Lane V/C Ratio	0.013	-	-	-	-	
HCM Control Delay (s)	18.1	-	-	0	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 6th TWSC
3: SR 89a & Southwest Drive

10/01/2021

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	849	1087	41	33	18
Future Vol, veh/h	20	849	1087	41	33	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	943	1208	46	41	23

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1254	0	-	0	1753 627
Stage 1	-	-	-	-	1231 -
Stage 2	-	-	-	-	522 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	551	-	-	-	76 426
Stage 1	-	-	-	-	239 -
Stage 2	-	-	-	-	560 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	551	-	-	-	73 426
Mov Cap-2 Maneuver	-	-	-	-	174 -
Stage 1	-	-	-	-	228 -
Stage 2	-	-	-	-	560 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	27.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	551	-	-	-	220
HCM Lane V/C Ratio	0.045	-	-	-	0.29
HCM Control Delay (s)	11.8	-	-	-	27.9
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	879	2	2	1124	4	1
Future Vol, veh/h	879	2	2	1124	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	977	2	3	1249	5	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	979	0	1609
Stage 1	-	-	-	-	978
Stage 2	-	-	-	-	631
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	701	-	95
Stage 1	-	-	-	-	325
Stage 2	-	-	-	-	492
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	701	-	95
Mov Cap-2 Maneuver	-	-	-	-	219
Stage 1	-	-	-	-	325
Stage 2	-	-	-	-	490

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	248	-	-	701	-
HCM Lane V/C Ratio	0.025	-	-	0.004	-
HCM Control Delay (s)	19.9	-	-	10.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑↑	↵	
Traffic Vol, veh/h	890	0	2	1122	4	2
Future Vol, veh/h	890	0	2	1122	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	989	0	3	1247	5	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	989	0	1494
Stage 1	-	-	-	-	989
Stage 2	-	-	-	-	505
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	695	-	140
Stage 1	-	-	-	-	313
Stage 2	-	-	-	-	538
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	695	-	139
Mov Cap-2 Maneuver	-	-	-	-	237
Stage 1	-	-	-	-	313
Stage 2	-	-	-	-	536

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	695	-
HCM Lane V/C Ratio	0.026	-	-	0.004	-
HCM Control Delay (s)	17.7	-	-	10.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
 6: West AmTrust Bank Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	
Traffic Vol, veh/h	890	2	2	1124	0	0
Future Vol, veh/h	890	2	2	1124	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	80	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	989	3	3	1249	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	992	0	1620
Stage 1	-	-	-	-	989
Stage 2	-	-	-	-	631
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	693	-	94
Stage 1	-	-	-	-	321
Stage 2	-	-	-	-	492
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	693	-	94
Mov Cap-2 Maneuver	-	-	-	-	218
Stage 1	-	-	-	-	321
Stage 2	-	-	-	-	490

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	693	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	0	-	-	10.2	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

10/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕			↕	
Traffic Vol, veh/h	2	878	0	1	1122	2	2	0	4	1	0	2
Future Vol, veh/h	2	878	0	1	1122	2	2	0	4	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	976	0	1	1247	2	3	0	5	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1249	0	0	976	0	0	1608	2233	488	1744	2232	625
Stage 1	-	-	-	-	-	-	982	982	-	1250	1250	-
Stage 2	-	-	-	-	-	-	626	1251	-	494	982	-
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	553	-	-	703	-	-	70	42	526	55	42	428
Stage 1	-	-	-	-	-	-	267	325	-	183	243	-
Stage 2	-	-	-	-	-	-	439	242	-	526	325	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	553	-	-	703	-	-	69	42	526	54	42	428
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	42	-	54	42	-
Stage 1	-	-	-	-	-	-	266	323	-	182	243	-
Stage 2	-	-	-	-	-	-	436	242	-	518	323	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			28			33.7		
HCM LOS							D			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	164	553	-	-	703	-	-	129
HCM Lane V/C Ratio	0.046	0.005	-	-	0.002	-	-	0.029
HCM Control Delay (s)	28	11.5	-	-	10.1	-	-	33.7
HCM Lane LOS	D	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

10/01/2021

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	2	4	5	55	50	0
Future Vol, veh/h	2	4	5	55	50	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	6	69	63	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	144	63	63	0	-	0
Stage 1	63	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	849	1002	1540	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	942	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	846	1002	1540	-	-	-
Mov Cap-2 Maneuver	846	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	942	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	944	-	-
HCM Lane V/C Ratio	0.004	-	0.008	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

10/01/2021

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	0	17	11	0	0	8	32	19	0	22	10
Future Vol, veh/h	7	0	17	11	0	0	8	32	19	0	22	10
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	9	0	21	14	0	0	10	40	24	0	28	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	107	119	35	117	113	52	41	0	0	64	0	0
Stage 1	35	35	-	72	72	-	-	-	-	-	-	-
Stage 2	72	84	-	45	41	-	-	-	-	-	-	-
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	872	771	1038	859	777	1016	1568	-	-	1538	-	-
Stage 1	981	866	-	938	835	-	-	-	-	-	-	-
Stage 2	938	825	-	969	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	868	766	1038	837	772	1016	1568	-	-	1538	-	-
Mov Cap-2 Maneuver	868	766	-	837	772	-	-	-	-	-	-	-
Stage 1	974	866	-	931	829	-	-	-	-	-	-	-
Stage 2	931	819	-	949	861	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	9.4	1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	982	837	1538	-
HCM Lane V/C Ratio	0.006	-	-	0.031	0.016	-	-
HCM Control Delay (s)	7.3	0	-	8.8	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

10/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	0	1236	0	2	825	0	3	0	5	0	0	0
Future Vol, veh/h	0	1236	0	2	825	0	3	0	5	0	0	0
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1373	0	3	917	0	4	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	917	0	0	1373	0	0	1838	2296	687	1610	2296	459
Stage 1	-	-	-	-	-	-	1373	1373	-	923	923	-
Stage 2	-	-	-	-	-	-	465	923	-	687	1373	-
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	740	-	-	496	-	-	47	38	389	70	38	549
Stage 1	-	-	-	-	-	-	153	212	-	290	347	-
Stage 2	-	-	-	-	-	-	547	347	-	403	212	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	740	-	-	496	-	-	47	38	389	69	38	549
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	38	-	69	38	-
Stage 1	-	-	-	-	-	-	153	212	-	290	345	-
Stage 2	-	-	-	-	-	-	544	345	-	397	212	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			43.3			0		
HCM LOS							E			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	104	740	-	-	496	-	-	-
HCM Lane V/C Ratio	0.096	-	-	-	0.005	-	-	-
HCM Control Delay (s)	43.3	0	-	-	12.3	-	-	0
HCM Lane LOS	E	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	1243	2	8	829	1	5
Future Vol, veh/h	1243	2	8	829	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1381	2	10	921	1	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1383	0	1863
Stage 1	-	-	-	-	1382
Stage 2	-	-	-	-	481
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	491	-	65
Stage 1	-	-	-	-	198
Stage 2	-	-	-	-	588
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	491	-	64
Mov Cap-2 Maneuver	-	-	-	-	155
Stage 1	-	-	-	-	198
Stage 2	-	-	-	-	576

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	-	-	491	-
HCM Lane V/C Ratio	0.024	-	-	0.02	-
HCM Control Delay (s)	16.9	-	-	12.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

10/01/2021

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	1232	815	30	33	21
Future Vol, veh/h	16	1232	815	30	33	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	1369	906	33	41	26

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	939	0	-	0	1648 470
Stage 1	-	-	-	-	923 -
Stage 2	-	-	-	-	725 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	726	-	-	-	90 540
Stage 1	-	-	-	-	347 -
Stage 2	-	-	-	-	440 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	726	-	-	-	87 540
Mov Cap-2 Maneuver	-	-	-	-	213 -
Stage 1	-	-	-	-	337 -
Stage 2	-	-	-	-	440 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	726	-	-	-	279
HCM Lane V/C Ratio	0.028	-	-	-	0.242
HCM Control Delay (s)	10.1	-	-	-	22
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1263	1	1	843	2	1
Future Vol, veh/h	1263	1	1	843	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1403	1	1	937	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1404	0	1875
Stage 1	-	-	-	-	1404
Stage 2	-	-	-	-	471
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	482	-	63
Stage 1	-	-	-	-	193
Stage 2	-	-	-	-	594
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	482	-	63
Mov Cap-2 Maneuver	-	-	-	-	153
Stage 1	-	-	-	-	193
Stage 2	-	-	-	-	593

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	482	-
HCM Lane V/C Ratio	0.02	-	-	0.003	-
HCM Control Delay (s)	24.2	-	-	12.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑↑	↑	
Traffic Vol, veh/h	1263	1	3	844	0	1
Future Vol, veh/h	1263	1	3	844	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1403	1	4	938	0	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1404	0	1787
Stage 1	-	-	-	-	1404
Stage 2	-	-	-	-	383
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	482	-	94
Stage 1	-	-	-	-	189
Stage 2	-	-	-	-	623
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	482	-	93
Mov Cap-2 Maneuver	-	-	-	-	159
Stage 1	-	-	-	-	189
Stage 2	-	-	-	-	618

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	381	-	-	482	-
HCM Lane V/C Ratio	0.003	-	-	0.008	-
HCM Control Delay (s)	14.5	-	-	12.5	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	
Traffic Vol, veh/h	1262	2	2	847	0	0
Future Vol, veh/h	1262	2	2	847	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	80	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1402	3	3	941	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1405	0	1879
Stage 1	-	-	-	-	1402
Stage 2	-	-	-	-	477
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	482	-	63
Stage 1	-	-	-	-	193
Stage 2	-	-	-	-	590
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	482	-	63
Mov Cap-2 Maneuver	-	-	-	-	153
Stage 1	-	-	-	-	193
Stage 2	-	-	-	-	586

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	482	-
HCM Lane V/C Ratio	-	-	-	0.005	-
HCM Control Delay (s)	0	-	-	12.5	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

10/01/2021

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	4	1258	0	1	877	2	0	0	2	1	0	2
Future Vol, veh/h	4	1258	0	1	877	2	0	0	2	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1398	0	1	974	2	0	0	3	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	976	0	0	1398	0	0	1897	2386	699	1686	2385	488
Stage 1	-	-	-	-	-	-	1408	1408	-	977	977	-
Stage 2	-	-	-	-	-	-	489	978	-	709	1408	-
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	703	-	-	485	-	-	42	34	382	61	34	526
Stage 1	-	-	-	-	-	-	146	204	-	269	327	-
Stage 2	-	-	-	-	-	-	529	327	-	391	204	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	703	-	-	485	-	-	41	34	382	60	34	526
Mov Cap-2 Maneuver	-	-	-	-	-	-	41	34	-	60	34	-
Stage 1	-	-	-	-	-	-	145	203	-	267	326	-
Stage 2	-	-	-	-	-	-	525	326	-	386	203	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			14.5			30.1		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	382	703	-	-	485	-	-	147
HCM Lane V/C Ratio	0.007	0.007	-	-	0.003	-	-	0.026
HCM Control Delay (s)	14.5	10.2	-	-	12.4	-	-	30.1
HCM Lane LOS		B	B	-	-	B	-	D
HCM 95th %tile Q(veh)		0	0	-	-	0	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

10/01/2021

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	1	2	50	47	0
Future Vol, veh/h	1	1	2	50	47	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	3	63	59	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	128	59	59	0	0
Stage 1	59	-	-	-	-
Stage 2	69	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	866	1007	1545	-	-
Stage 1	964	-	-	-	-
Stage 2	954	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	864	1007	1545	-	-
Mov Cap-2 Maneuver	864	-	-	-	-
Stage 1	962	-	-	-	-
Stage 2	954	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1545	-	930	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

10/01/2021

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	13	0	6	19	0	0	18	28	6	0	22	6
Future Vol, veh/h	13	0	6	19	0	0	18	28	6	0	22	6
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	16	0	8	24	0	0	23	35	8	0	28	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	117	121	32	121	121	39	36	0	0	43	0	0
Stage 1	32	32	-	85	85	-	-	-	-	-	-	-
Stage 2	85	89	-	36	36	-	-	-	-	-	-	-
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	859	769	1042	854	769	1033	1575	-	-	1566	-	-
Stage 1	984	868	-	923	824	-	-	-	-	-	-	-
Stage 2	923	821	-	980	865	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	850	757	1042	838	757	1033	1575	-	-	1566	-	-
Mov Cap-2 Maneuver	850	757	-	838	757	-	-	-	-	-	-	-
Stage 1	969	868	-	909	812	-	-	-	-	-	-	-
Stage 2	909	809	-	973	865	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		9.4		2.5		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1575	-	-	903	838	1566	-
HCM Lane V/C Ratio	0.014	-	-	0.026	0.028	-	-
HCM Control Delay (s)	7.3	0	-	9.1	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

10/01/2021

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	5	902	1	0	1165	2	0	0	5	3	0	6
Future Vol, veh/h	5	902	1	0	1165	2	0	0	5	3	0	6
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1002	1	0	1294	2	0	0	6	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1296	0	0	1003	0	0	1662	2311	502	1808	2310	648
Stage 1	-	-	-	-	-	-	1015	1015	-	1295	1295	-
Stage 2	-	-	-	-	-	-	647	1296	-	513	1015	-
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	531	-	-	686	-	-	64	38	515	49	38	413
Stage 1	-	-	-	-	-	-	255	314	-	172	231	-
Stage 2	-	-	-	-	-	-	426	231	-	512	314	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	531	-	-	686	-	-	62	38	515	48	38	413
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	38	-	48	38	-
Stage 1	-	-	-	-	-	-	252	311	-	170	231	-
Stage 2	-	-	-	-	-	-	418	231	-	500	311	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			12.1			39		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	515	531	-	-	686	-	-	117
HCM Lane V/C Ratio	0.012	0.012	-	-	-	-	-	0.096
HCM Control Delay (s)	12.1	11.9	-	-	0	-	-	39
HCM Lane LOS		B	B	-	-	A	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	921	0	0	1173	2	1
Future Vol, veh/h	921	0	0	1173	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1023	0	0	1303	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1023	0	1675
Stage 1	-	-	-	-	1023
Stage 2	-	-	-	-	652
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	674	-	86
Stage 1	-	-	-	-	308
Stage 2	-	-	-	-	480
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	674	-	86
Mov Cap-2 Maneuver	-	-	-	-	208
Stage 1	-	-	-	-	308
Stage 2	-	-	-	-	480

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	259	-	-	674	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	19.1	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

10/01/2021

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	901	1154	42	34	26
Future Vol, veh/h	21	901	1154	42	34	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	1001	1282	47	43	33

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1329	0	-	0	1859 665
Stage 1	-	-	-	-	1306 -
Stage 2	-	-	-	-	553 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	515	-	-	-	65 403
Stage 1	-	-	-	-	218 -
Stage 2	-	-	-	-	540 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	515	-	-	-	62 403
Mov Cap-2 Maneuver	-	-	-	-	158 -
Stage 1	-	-	-	-	207 -
Stage 2	-	-	-	-	540 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	30.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	515	-	-	-	215
HCM Lane V/C Ratio	0.051	-	-	-	0.349
HCM Control Delay (s)	12.4	-	-	-	30.5
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5

HCM 6th TWSC
 4: Slingshot Rental Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	932	2	2	1192	4	1
Future Vol, veh/h	932	2	2	1192	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1036	2	3	1324	5	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1038	0	1705
Stage 1	-	-	-	-	1037
Stage 2	-	-	-	-	668
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	665	-	82
Stage 1	-	-	-	-	303
Stage 2	-	-	-	-	471
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	665	-	82
Mov Cap-2 Maneuver	-	-	-	-	203
Stage 1	-	-	-	-	303
Stage 2	-	-	-	-	469

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	230	-	-	665	-
HCM Lane V/C Ratio	0.027	-	-	0.004	-
HCM Control Delay (s)	21.1	-	-	10.4	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑↑	↵	
Traffic Vol, veh/h	934	0	2	1190	4	2
Future Vol, veh/h	934	0	2	1190	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1038	0	3	1322	5	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1038	0	1573
Stage 1	-	-	-	-	1038
Stage 2	-	-	-	-	535
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	665	-	126
Stage 1	-	-	-	-	295
Stage 2	-	-	-	-	519
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	665	-	125
Mov Cap-2 Maneuver	-	-	-	-	222
Stage 1	-	-	-	-	295
Stage 2	-	-	-	-	516

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	273	-	-	665	-
HCM Lane V/C Ratio	0.027	-	-	0.004	-
HCM Control Delay (s)	18.6	-	-	10.4	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

10/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	
Traffic Vol, veh/h	934	2	2	1192	0	0
Future Vol, veh/h	934	2	2	1192	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	80	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1038	3	3	1324	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1041	0	1706
Stage 1	-	-	-	-	1038
Stage 2	-	-	-	-	668
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	664	-	82
Stage 1	-	-	-	-	302
Stage 2	-	-	-	-	471
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	664	-	82
Mov Cap-2 Maneuver	-	-	-	-	203
Stage 1	-	-	-	-	302
Stage 2	-	-	-	-	469

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	664	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	0	-	-	10.4	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

10/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	2	931	0	1	1190	2	2	0	4	1	0	2
Future Vol, veh/h	2	931	0	1	1190	2	2	0	4	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1034	0	1	1322	2	3	0	5	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1324	0	0	1034	0	0	1703	2366	517	1848	2365	662
Stage 1	-	-	-	-	-	-	1040	1040	-	1325	1325	-
Stage 2	-	-	-	-	-	-	663	1326	-	523	1040	-
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	518	-	-	668	-	-	59	35	503	46	35	404
Stage 1	-	-	-	-	-	-	246	306	-	164	223	-
Stage 2	-	-	-	-	-	-	417	223	-	505	306	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	518	-	-	668	-	-	58	35	503	45	35	404
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	35	-	45	35	-
Stage 1	-	-	-	-	-	-	245	304	-	163	223	-
Stage 2	-	-	-	-	-	-	414	223	-	497	304	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			32			38.9		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	141	518	-	-	668	-	-	110
HCM Lane V/C Ratio	0.053	0.005	-	-	0.002	-	-	0.034
HCM Control Delay (s)	32	12	-	-	10.4	-	-	38.9
HCM Lane LOS	D	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

HCM 6th TWSC
 8: Southwest Drive & Uhaul Driveway

10/01/2021

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	4	5	57	52	0
Future Vol, veh/h	2	4	5	57	52	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	6	71	65	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	148	65	65	0	0
Stage 1	65	-	-	-	-
Stage 2	83	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	844	999	1537	-	-
Stage 1	958	-	-	-	-
Stage 2	940	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	841	999	1537	-	-
Mov Cap-2 Maneuver	841	-	-	-	-
Stage 1	954	-	-	-	-
Stage 2	940	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1537	-	940	-	-
HCM Lane V/C Ratio	0.004	-	0.008	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

10/01/2021

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	0	18	11	0	0	9	34	19	0	24	11
Future Vol, veh/h	8	0	18	11	0	0	9	34	19	0	24	11
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	10	0	23	14	0	0	11	43	24	0	30	14

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	114	126	37	126	121	55	44	0	0	67	0	0
Stage 1	37	37	-	77	77	-	-	-	-	-	-	-
Stage 2	77	89	-	49	44	-	-	-	-	-	-	-
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	863	764	1035	848	769	1012	1564	-	-	1535	-	-
Stage 1	978	864	-	932	831	-	-	-	-	-	-	-
Stage 2	932	821	-	964	858	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	859	759	1035	825	764	1012	1564	-	-	1535	-	-
Mov Cap-2 Maneuver	859	759	-	825	764	-	-	-	-	-	-	-
Stage 1	971	864	-	925	825	-	-	-	-	-	-	-
Stage 2	925	815	-	943	858	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	9.4	1.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1564	-	-	974	825	1535	-
HCM Lane V/C Ratio	0.007	-	-	0.033	0.017	-	-
HCM Control Delay (s)	7.3	0	-	8.8	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

07/25/2023

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	0	1186	0	2	799	0	3	0	5	0	0	0
Future Vol, veh/h	0	1186	0	2	799	0	3	0	5	0	0	0
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1318	0	3	888	0	4	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	888	0	0	1318	0	0	1768	2212	659	1553	2212	444
Stage 1	-	-	-	-	-	-	1318	1318	-	894	894	-
Stage 2	-	-	-	-	-	-	450	894	-	659	1318	-
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	758	-	-	520	-	-	53	43	406	77	43	561
Stage 1	-	-	-	-	-	-	166	225	-	302	358	-
Stage 2	-	-	-	-	-	-	558	358	-	419	225	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	758	-	-	520	-	-	53	43	406	75	43	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	43	-	75	43	-
Stage 1	-	-	-	-	-	-	166	225	-	302	356	-
Stage 2	-	-	-	-	-	-	555	356	-	413	225	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	38.9	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	116	758	-	-	520	-	-	-
HCM Lane V/C Ratio	0.086	-	-	-	0.005	-	-	-
HCM Control Delay (s)	38.9	0	-	-	12	-	-	0
HCM Lane LOS	E	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1192	2	7	802	1	5
Future Vol, veh/h	1192	2	7	802	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1324	2	9	891	1	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1326	0	1789
Stage 1	-	-	-	-	1325
Stage 2	-	-	-	-	464
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	517	-	72
Stage 1	-	-	-	-	213
Stage 2	-	-	-	-	599
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	517	-	71
Mov Cap-2 Maneuver	-	-	-	-	167
Stage 1	-	-	-	-	213
Stage 2	-	-	-	-	589

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	327	-	-	517	-
HCM Lane V/C Ratio	0.023	-	-	0.017	-
HCM Control Delay (s)	16.3	-	-	12.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

07/25/2023

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	74	1123	753	58	83	53
Future Vol, veh/h	74	1123	753	58	83	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	1248	837	64	98	62

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	901	0	-	0	1647 419
Stage 1	-	-	-	-	837 -
Stage 2	-	-	-	-	810 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	750	-	-	-	~ 90 583
Stage 1	-	-	-	-	385 -
Stage 2	-	-	-	-	398 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	750	-	-	-	~ 79 583
Mov Cap-2 Maneuver	-	-	-	-	202 -
Stage 1	-	-	-	-	337 -
Stage 2	-	-	-	-	398 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	28.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	750	-	-	-	202	583
HCM Lane V/C Ratio	0.123	-	-	-	0.483	0.107
HCM Control Delay (s)	10.5	-	-	-	38.4	11.9
HCM Lane LOS	B	-	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	2.4	0.4

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

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1205	1	1	809	2	1
Future Vol, veh/h	1205	1	1	809	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1339	1	1	899	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1340	0	1792
Stage 1	-	-	-	-	1340
Stage 2	-	-	-	-	452
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	510	-	72
Stage 1	-	-	-	-	209
Stage 2	-	-	-	-	608
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	510	-	72
Mov Cap-2 Maneuver	-	-	-	-	165
Stage 1	-	-	-	-	209
Stage 2	-	-	-	-	607

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	205	-	-	510	-
HCM Lane V/C Ratio	0.018	-	-	0.002	-
HCM Control Delay (s)	22.9	-	-	12.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑↑	↘	
Traffic Vol, veh/h	1205	1	3	810	0	1
Future Vol, veh/h	1205	1	3	810	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1339	1	4	900	0	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1340	0	1708
Stage 1	-	-	-	-	1340
Stage 2	-	-	-	-	368
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	510	-	105
Stage 1	-	-	-	-	205
Stage 2	-	-	-	-	634
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	510	-	104
Mov Cap-2 Maneuver	-	-	-	-	172
Stage 1	-	-	-	-	205
Stage 2	-	-	-	-	629

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	399	-	-	510	-
HCM Lane V/C Ratio	0.003	-	-	0.007	-
HCM Control Delay (s)	14.1	-	-	12.1	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

07/25/2023

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑			↕			↕	
Traffic Vol, veh/h	29	1175	2	2	760	60	0	0	0	36	0	53
Future Vol, veh/h	29	1175	2	2	760	60	0	0	0	36	0	53
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	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	1306	3	3	844	67	0	0	0	45	0	66

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	911	0	0	1309	0	0	1806	2295	653	1609	2265	456
Stage 1	-	-	-	-	-	-	1378	1378	-	884	884	-
Stage 2	-	-	-	-	-	-	428	917	-	725	1381	-
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	743	-	-	524	-	-	50	38	410	70	40	551
Stage 1	-	-	-	-	-	-	152	210	-	307	362	-
Stage 2	-	-	-	-	-	-	575	349	-	383	210	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	743	-	-	524	-	-	42	36	410	67	38	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	42	36	-	67	38	-
Stage 1	-	-	-	-	-	-	145	200	-	292	360	-
Stage 2	-	-	-	-	-	-	503	347	-	364	200	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	91
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	743	-	-	524	-	-	140
HCM Lane V/C Ratio	-	0.049	-	-	0.005	-	-	0.795
HCM Control Delay (s)	-	0	10.1	-	-	11.9	-	91
HCM Lane LOS	-	A	B	-	-	B	-	F
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	4.9

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

07/25/2023

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	4	1207	0	1	820	2	0	0	2	1	0	2
Future Vol, veh/h	4	1207	0	1	820	2	0	0	2	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1341	0	1	911	2	0	0	3	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	913	0	0	1341	0	0	1809	2266	671	1595	2265	457
Stage 1	-	-	-	-	-	-	1351	1351	-	914	914	-
Stage 2	-	-	-	-	-	-	458	915	-	681	1351	-
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	742	-	-	510	-	-	49	40	399	72	40	551
Stage 1	-	-	-	-	-	-	158	217	-	294	350	-
Stage 2	-	-	-	-	-	-	552	350	-	407	217	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	742	-	-	510	-	-	48	40	399	71	40	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	48	40	-	71	40	-
Stage 1	-	-	-	-	-	-	157	215	-	292	349	-
Stage 2	-	-	-	-	-	-	548	349	-	402	215	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			14.1			26.8		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	399	742	-	-	510	-	-	169
HCM Lane V/C Ratio	0.006	0.007	-	-	0.002	-	-	0.022
HCM Control Delay (s)	14.1	9.9	-	-	12.1	-	-	26.8
HCM Lane LOS	B	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

07/25/2023

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	1	88	0	0	2	48	88	0	46	0
Future Vol, veh/h	1	0	1	88	0	0	2	48	88	0	46	0
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	85	85	85	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	1	110	0	0	2	56	104	0	58	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	170	222	58	171	170	108	58	0	0	160	0	0
Stage 1	58	58	-	112	112	-	-	-	-	-	-	-
Stage 2	112	164	-	59	58	-	-	-	-	-	-	-
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	794	677	1008	792	723	946	1546	-	-	1419	-	-
Stage 1	954	847	-	893	803	-	-	-	-	-	-	-
Stage 2	893	762	-	953	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	793	676	1008	790	722	946	1546	-	-	1419	-	-
Mov Cap-2 Maneuver	793	676	-	790	722	-	-	-	-	-	-	-
Stage 1	953	847	-	892	802	-	-	-	-	-	-	-
Stage 2	892	761	-	952	847	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		10.3		0.1		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	888	790	1419	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.139	-	-
HCM Control Delay (s)	7.3	0	-	9.1	10.3	0	-
HCM Lane LOS	A	A	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

07/25/2023

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	12	0	6	19	0	0	17	27	6	0	20	6
Future Vol, veh/h	12	0	6	19	0	0	17	27	6	0	20	6
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	15	0	8	24	0	0	21	34	8	0	25	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	109	113	29	113	113	38	33	0	0	42	0	0
Stage 1	29	29	-	80	80	-	-	-	-	-	-	-
Stage 2	80	84	-	33	33	-	-	-	-	-	-	-
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	870	777	1046	864	777	1034	1579	-	-	1567	-	-
Stage 1	988	871	-	929	828	-	-	-	-	-	-	-
Stage 2	929	825	-	983	868	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	860	766	1046	848	766	1034	1579	-	-	1567	-	-
Mov Cap-2 Maneuver	860	766	-	848	766	-	-	-	-	-	-	-
Stage 1	974	871	-	916	816	-	-	-	-	-	-	-
Stage 2	916	813	-	976	868	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		9.4		2.5		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1579	-	-	914	848	1567	-
HCM Lane V/C Ratio	0.013	-	-	0.025	0.028	-	-
HCM Control Delay (s)	7.3	0	-	9	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

07/25/2023

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	5	890	1	0	1138	2	0	0	5	3	0	6
Future Vol, veh/h	5	890	1	0	1138	2	0	0	5	3	0	6
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	989	1	0	1264	2	0	0	6	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1266	0	0	990	0	0	1634	2268	495	1772	2267	633
Stage 1	-	-	-	-	-	-	1002	1002	-	1265	1265	-
Stage 2	-	-	-	-	-	-	632	1266	-	507	1002	-
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	545	-	-	694	-	-	67	40	520	53	40	422
Stage 1	-	-	-	-	-	-	260	318	-	179	239	-
Stage 2	-	-	-	-	-	-	435	238	-	516	318	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	545	-	-	694	-	-	65	40	520	52	40	422
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	40	-	52	40	-
Stage 1	-	-	-	-	-	-	257	315	-	177	239	-
Stage 2	-	-	-	-	-	-	427	238	-	504	315	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			12			36.6		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	520	545	-	-	694	-	-	125
HCM Lane V/C Ratio	0.012	0.011	-	-	-	-	-	0.09
HCM Control Delay (s)	12	11.7	-	-	0	-	-	36.6
HCM Lane LOS	B	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	907	0	0	1145	2	1
Future Vol, veh/h	907	0	0	1145	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1008	0	0	1272	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1008	0	1644
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	636
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	683	-	90
Stage 1	-	-	-	-	313
Stage 2	-	-	-	-	489
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	683	-	90
Mov Cap-2 Maneuver	-	-	-	-	213
Stage 1	-	-	-	-	313
Stage 2	-	-	-	-	489

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	265	-	-	683	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	18.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

07/25/2023

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗↗	↗↗	↘	↘	↘
Traffic Vol, veh/h	84	824	1092	67	79	52
Future Vol, veh/h	84	824	1092	67	79	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	80	85	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	916	1213	84	93	65

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	1297	0	-	0	1881 607
Stage 1	-	-	-	-	1213 -
Stage 2	-	-	-	-	668 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	530	-	-	-	63 439
Stage 1	-	-	-	-	244 -
Stage 2	-	-	-	-	471 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	530	-	-	-	51 439
Mov Cap-2 Maneuver	-	-	-	-	145 -
Stage 1	-	-	-	-	196 -
Stage 2	-	-	-	-	471 -

Approach

	EB	WB	SB
HCM Control Delay, s	1.4	0	44.8
HCM LOS			E

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	530	-	-	-	145	439
HCM Lane V/C Ratio	0.198	-	-	-	0.641	0.148
HCM Control Delay (s)	13.5	-	-	-	66	14.6
HCM Lane LOS	B	-	-	-	F	B
HCM 95th %tile Q(veh)	0.7	-	-	-	3.5	0.5

Notes

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

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	900	2	2	1155	4	1
Future Vol, veh/h	900	2	2	1155	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1000	2	3	1283	5	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1002	0	1649
Stage 1	-	-	-	-	1001
Stage 2	-	-	-	-	648
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	687	-	90
Stage 1	-	-	-	-	316
Stage 2	-	-	-	-	483
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	687	-	90
Mov Cap-2 Maneuver	-	-	-	-	213
Stage 1	-	-	-	-	316
Stage 2	-	-	-	-	481

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	-	-	687	-
HCM Lane V/C Ratio	0.026	-	-	0.004	-
HCM Control Delay (s)	20.3	-	-	10.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
 5: Yavapai Title Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑↑	↘	
Traffic Vol, veh/h	911	0	2	1153	4	2
Future Vol, veh/h	911	0	2	1153	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1012	0	3	1281	5	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1012	0	1530
Stage 1	-	-	-	-	1012
Stage 2	-	-	-	-	518
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	681	-	134
Stage 1	-	-	-	-	305
Stage 2	-	-	-	-	529
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	681	-	133
Mov Cap-2 Maneuver	-	-	-	-	231
Stage 1	-	-	-	-	305
Stage 2	-	-	-	-	527

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	283	-	-	681	-
HCM Lane V/C Ratio	0.027	-	-	0.004	-
HCM Control Delay (s)	18.1	-	-	10.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

07/25/2023

Intersection												
Int Delay, s/veh	27.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑			↕			↕	
Traffic Vol, veh/h	35	876	2	2	1090	74	0	0	0	54	0	65
Future Vol, veh/h	35	876	2	2	1090	74	0	0	0	54	0	65
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	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	973	3	3	1211	82	0	0	0	68	0	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1293	0	0	976	0	0	1673	2360	487	1833	2322	647
Stage 1	-	-	-	-	-	-	1061	1061	-	1258	1258	-
Stage 2	-	-	-	-	-	-	612	1299	-	575	1064	-
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	532	-	-	703	-	-	62	35	526	~ 47	37	414
Stage 1	-	-	-	-	-	-	239	299	-	181	241	-
Stage 2	-	-	-	-	-	-	447	230	-	470	298	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	532	-	-	703	-	-	47	32	526	~ 44	34	414
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	32	-	~ 44	34	-
Stage 1	-	-	-	-	-	-	219	274	-	166	240	-
Stage 2	-	-	-	-	-	-	358	229	-	431	273	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	0	\$ 455
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	532	-	-	703	-	-	86
HCM Lane V/C Ratio	-	0.082	-	-	0.004	-	-	1.73
HCM Control Delay (s)	0	12.4	-	-	10.1	-	-	\$ 455
HCM Lane LOS	A	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	12.4

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

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

07/25/2023

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	2	918	0	1	1162	2	2	0	4	1	0	2
Future Vol, veh/h	2	918	0	1	1162	2	2	0	4	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1020	0	1	1291	2	3	0	5	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1293	0	0	1020	0	0	1674	2321	510	1810	2320	647
Stage 1	-	-	-	-	-	-	1026	1026	-	1294	1294	-
Stage 2	-	-	-	-	-	-	648	1295	-	516	1026	-
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	532	-	-	676	-	-	62	37	509	49	37	414
Stage 1	-	-	-	-	-	-	251	310	-	172	231	-
Stage 2	-	-	-	-	-	-	425	231	-	510	310	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	532	-	-	676	-	-	61	37	509	48	37	414
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	37	-	48	37	-
Stage 1	-	-	-	-	-	-	249	308	-	171	231	-
Stage 2	-	-	-	-	-	-	422	231	-	502	308	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			30.6			36.8		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	148	532	-	-	676	-	-	117
HCM Lane V/C Ratio	0.051	0.005	-	-	0.002	-	-	0.032
HCM Control Delay (s)	30.6	11.8	-	-	10.3	-	-	36.8
HCM Lane LOS	D	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

07/25/2023

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	4	80	0	0	5	55	90	0	50	0
Future Vol, veh/h	2	0	4	80	0	0	5	55	90	0	50	0
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	85	85	85	85	85	85	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	5	94	0	0	6	65	106	0	63	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	193	246	63	196	193	118	63	0	0	171	0	0
Stage 1	63	63	-	130	130	-	-	-	-	-	-	-
Stage 2	130	183	-	66	63	-	-	-	-	-	-	-
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	767	656	1002	763	702	934	1540	-	-	1406	-	-
Stage 1	948	842	-	874	789	-	-	-	-	-	-	-
Stage 2	874	748	-	945	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	765	653	1002	757	699	934	1540	-	-	1406	-	-
Mov Cap-2 Maneuver	765	653	-	757	699	-	-	-	-	-	-	-
Stage 1	944	842	-	871	786	-	-	-	-	-	-	-
Stage 2	871	745	-	940	842	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	9		10.4		0.2		0			
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1540	-	-	908	757	1406	-	-
HCM Lane V/C Ratio	0.004	-	-	0.008	0.124	-	-	-
HCM Control Delay (s)	7.3	0	-	9	10.4	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

07/25/2023

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	0	17	11	0	0	8	32	19	0	22	10
Future Vol, veh/h	7	0	17	11	0	0	8	32	19	0	22	10
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	9	0	21	14	0	0	10	40	24	0	28	13

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	107	119	35	117	113	52	41	0	0	64	0	0
Stage 1	35	35	-	72	72	-	-	-	-	-	-	-
Stage 2	72	84	-	45	41	-	-	-	-	-	-	-
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	872	771	1038	859	777	1016	1568	-	-	1538	-	-
Stage 1	981	866	-	938	835	-	-	-	-	-	-	-
Stage 2	938	825	-	969	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	868	766	1038	837	772	1016	1568	-	-	1538	-	-
Mov Cap-2 Maneuver	868	766	-	837	772	-	-	-	-	-	-	-
Stage 1	974	866	-	931	829	-	-	-	-	-	-	-
Stage 2	931	819	-	949	861	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	9.4	1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	982	837	1538	-
HCM Lane V/C Ratio	0.006	-	-	0.031	0.016	-	-
HCM Control Delay (s)	7.3	0	-	8.8	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

07/25/2023

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕			↕	
Traffic Vol, veh/h	0	1257	0	2	846	0	3	0	5	0	0	0
Future Vol, veh/h	0	1257	0	2	846	0	3	0	5	0	0	0
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1397	0	3	940	0	4	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	940	0	0	1397	0	0	1873	2343	699	1645	2343	470
Stage 1	-	-	-	-	-	-	1397	1397	-	946	946	-
Stage 2	-	-	-	-	-	-	476	946	-	699	1397	-
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	725	-	-	485	-	-	44	36	382	66	36	540
Stage 1	-	-	-	-	-	-	148	206	-	281	338	-
Stage 2	-	-	-	-	-	-	539	338	-	397	206	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	725	-	-	485	-	-	44	36	382	65	36	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	36	-	65	36	-
Stage 1	-	-	-	-	-	-	148	206	-	281	336	-
Stage 2	-	-	-	-	-	-	536	336	-	391	206	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	45.9	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	98	725	-	-	485	-	-	-
HCM Lane V/C Ratio	0.102	-	-	-	0.005	-	-	-
HCM Control Delay (s)	45.9	0	-	-	12.5	-	-	0
HCM Lane LOS	E	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1264	2	8	850	1	5
Future Vol, veh/h	1264	2	8	850	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1404	2	10	944	1	6
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1406	0	1897	703
Stage 1	-	-	-	-	1405	-
Stage 2	-	-	-	-	492	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	481	-	61	380
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	580	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	481	-	60	380
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	568	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.1	17.2			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	303	-	-	481	-	
HCM Lane V/C Ratio	0.025	-	-	0.021	-	
HCM Control Delay (s)	17.2	-	-	12.6	-	
HCM Lane LOS	C	-	-	B	-	
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	

HCM 6th TWSC
3: SR 89a & Southwest Drive

07/25/2023

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	75	1194	800	59	85	57
Future Vol, veh/h	75	1194	800	59	85	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	1327	889	66	100	67

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	955	0	-	0	1741 445
Stage 1	-	-	-	-	889 -
Stage 2	-	-	-	-	852 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	715	-	-	-	~ 78 561
Stage 1	-	-	-	-	362 -
Stage 2	-	-	-	-	378 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	715	-	-	-	~ 68 561
Mov Cap-2 Maneuver	-	-	-	-	188 -
Stage 1	-	-	-	-	315 -
Stage 2	-	-	-	-	378 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	31.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	715	-	-	-	188	561
HCM Lane V/C Ratio	0.131	-	-	-	0.532	0.12
HCM Control Delay (s)	10.8	-	-	-	44	12.3
HCM Lane LOS	B	-	-	-	E	B
HCM 95th %tile Q(veh)	0.5	-	-	-	2.7	0.4

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

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1277	1	1	857	2	1
Future Vol, veh/h	1277	1	1	857	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1419	1	1	952	3	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1420	0	1898
Stage 1	-	-	-	-	1420
Stage 2	-	-	-	-	478
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	475	-	61
Stage 1	-	-	-	-	189
Stage 2	-	-	-	-	590
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	475	-	61
Mov Cap-2 Maneuver	-	-	-	-	150
Stage 1	-	-	-	-	189
Stage 2	-	-	-	-	589

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	188	-	-	475	-
HCM Lane V/C Ratio	0.02	-	-	0.003	-
HCM Control Delay (s)	24.5	-	-	12.6	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑↑	↘	
Traffic Vol, veh/h	1277	1	3	858	0	1
Future Vol, veh/h	1277	1	3	858	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1419	1	4	953	0	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1420	0	1809
Stage 1	-	-	-	-	1420
Stage 2	-	-	-	-	389
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	475	-	91
Stage 1	-	-	-	-	185
Stage 2	-	-	-	-	619
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	475	-	90
Mov Cap-2 Maneuver	-	-	-	-	156
Stage 1	-	-	-	-	185
Stage 2	-	-	-	-	614

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	376	-	-	475	-
HCM Lane V/C Ratio	0.003	-	-	0.008	-
HCM Control Delay (s)	14.6	-	-	12.6	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

07/25/2023

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑			↔			↔	
Traffic Vol, veh/h	29	1247	2	2	808	60	0	0	0	36	0	53
Future Vol, veh/h	29	1247	2	2	808	60	0	0	0	36	0	53
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	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	1386	3	3	898	67	0	0	0	45	0	66

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	965	0	0	1389	0	0	1913	2429	693	1703	2399	483
Stage 1	-	-	-	-	-	-	1458	1458	-	938	938	-
Stage 2	-	-	-	-	-	-	455	971	-	765	1461	-
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	709	-	-	489	-	-	41	32	386	59	33	530
Stage 1	-	-	-	-	-	-	136	192	-	284	341	-
Stage 2	-	-	-	-	-	-	554	329	-	362	192	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	709	-	-	489	-	-	34	30	386	56	31	530
Mov Cap-2 Maneuver	-	-	-	-	-	-	34	30	-	56	31	-
Stage 1	-	-	-	-	-	-	129	182	-	270	339	-
Stage 2	-	-	-	-	-	-	482	327	-	344	182	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	131.7
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	709	-	-	489	-	-	120
HCM Lane V/C Ratio	-	0.051	-	-	0.005	-	-	0.927
HCM Control Delay (s)	0	10.4	-	-	12.4	-	-	131.7
HCM Lane LOS		A	B	-	B	-	-	F
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	5.9

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

07/25/2023

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	4	1279	0	1	898	2	0	0	2	1	0	2
Future Vol, veh/h	4	1279	0	1	898	2	0	0	2	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1421	0	1	998	2	0	0	3	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1000	0	0	1421	0	0	1932	2433	711	1722	2432	500
Stage 1	-	-	-	-	-	-	1431	1431	-	1001	1001	-
Stage 2	-	-	-	-	-	-	501	1002	-	721	1431	-
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	688	-	-	475	-	-	40	31	375	57	31	516
Stage 1	-	-	-	-	-	-	141	198	-	260	319	-
Stage 2	-	-	-	-	-	-	521	318	-	385	198	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	688	-	-	475	-	-	40	31	375	56	31	516
Mov Cap-2 Maneuver	-	-	-	-	-	-	40	31	-	56	31	-
Stage 1	-	-	-	-	-	-	140	197	-	258	318	-
Stage 2	-	-	-	-	-	-	517	317	-	380	197	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			14.7			31.8		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	375	688	-	-	475	-	-	138
HCM Lane V/C Ratio	0.007	0.007	-	-	0.003	-	-	0.027
HCM Control Delay (s)	14.7	10.3	-	-	12.6	-	-	31.8
HCM Lane LOS		B	B	-	-	B	-	D
HCM 95th %tile Q(veh)		0	0	-	-	0	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

07/25/2023

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	1	88	0	0	2	50	88	0	47	0
Future Vol, veh/h	1	0	1	88	0	0	2	50	88	0	47	0
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	85	85	85	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	1	110	0	0	2	59	104	0	59	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	174	226	59	175	174	111	59	0	0	163	0	0
Stage 1	59	59	-	115	115	-	-	-	-	-	-	-
Stage 2	115	167	-	60	59	-	-	-	-	-	-	-
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	789	673	1007	788	719	942	1545	-	-	1416	-	-
Stage 1	953	846	-	890	800	-	-	-	-	-	-	-
Stage 2	890	760	-	951	846	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	788	672	1007	786	718	942	1545	-	-	1416	-	-
Mov Cap-2 Maneuver	788	672	-	786	718	-	-	-	-	-	-	-
Stage 1	952	846	-	889	799	-	-	-	-	-	-	-
Stage 2	889	759	-	950	846	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		10.3		0.1		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1545	-	-	884	786	1416	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.14	-	-
HCM Control Delay (s)	7.3	0	-	9.1	10.3	0	-
HCM Lane LOS	A	A	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

07/25/2023

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	13	0	6	19	0	0	18	28	6	0	22	6
Future Vol, veh/h	13	0	6	19	0	0	18	28	6	0	22	6
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	16	0	8	24	0	0	23	35	8	0	28	8

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	117	121	32	121	121	39	36	0	0	43	0	0
Stage 1	32	32	-	85	85	-	-	-	-	-	-	-
Stage 2	85	89	-	36	36	-	-	-	-	-	-	-
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	859	769	1042	854	769	1033	1575	-	-	1566	-	-
Stage 1	984	868	-	923	824	-	-	-	-	-	-	-
Stage 2	923	821	-	980	865	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	850	757	1042	838	757	1033	1575	-	-	1566	-	-
Mov Cap-2 Maneuver	850	757	-	838	757	-	-	-	-	-	-	-
Stage 1	969	868	-	909	812	-	-	-	-	-	-	-
Stage 2	909	809	-	973	865	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		9.4		2.5		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1575	-	-	903	838	1566	-
HCM Lane V/C Ratio	0.014	-	-	0.026	0.028	-	-
HCM Control Delay (s)	7.3	0	-	9.1	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: SR 89a & Tortilla Drive

07/25/2023

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↗		↖	↕↗			↕↗			↕↗	
Traffic Vol, veh/h	5	941	1	0	1204	2	0	0	5	3	0	6
Future Vol, veh/h	5	941	1	0	1204	2	0	0	5	3	0	6
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	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1046	1	0	1338	2	0	0	6	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1340	0	0	1047	0	0	1728	2399	524	1874	2398	670
Stage 1	-	-	-	-	-	-	1059	1059	-	1339	1339	-
Stage 2	-	-	-	-	-	-	669	1340	-	535	1059	-
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	510	-	-	660	-	-	57	33	498	44	33	399
Stage 1	-	-	-	-	-	-	240	299	-	161	220	-
Stage 2	-	-	-	-	-	-	413	220	-	497	299	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	510	-	-	660	-	-	55	33	498	43	33	399
Mov Cap-2 Maneuver	-	-	-	-	-	-	55	33	-	43	33	-
Stage 1	-	-	-	-	-	-	237	295	-	159	220	-
Stage 2	-	-	-	-	-	-	405	220	-	485	295	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			12.3			43		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	498	510	-	-	660	-	-	106
HCM Lane V/C Ratio	0.013	0.012	-	-	-	-	-	0.106
HCM Control Delay (s)	12.3	12.1	-	-	0	-	-	43
HCM Lane LOS	B	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

HCM 6th TWSC
2: Paint Center Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	
Traffic Vol, veh/h	960	0	0	1212	2	1
Future Vol, veh/h	960	0	0	1212	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1067	0	0	1347	3	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1067	0	1741
Stage 1	-	-	-	-	1067
Stage 2	-	-	-	-	674
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	649	-	78
Stage 1	-	-	-	-	292
Stage 2	-	-	-	-	468
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	649	-	78
Mov Cap-2 Maneuver	-	-	-	-	197
Stage 1	-	-	-	-	292
Stage 2	-	-	-	-	468

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	246	-	-	649	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	19.9	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
3: SR 89a & Southwest Drive

07/25/2023

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	85	876	1159	68	80	60
Future Vol, veh/h	85	876	1159	68	80	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	90	90	90	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	973	1288	76	94	71

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1364	0	-	0	1987
Stage 1	-	-	-	-	1288
Stage 2	-	-	-	-	699
Critical Hdwy	4.14	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	2.22	-	-	-	3.52
Pot Cap-1 Maneuver	500	-	-	-	53
Stage 1	-	-	-	-	223
Stage 2	-	-	-	-	454
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	500	-	-	-	42
Mov Cap-2 Maneuver	-	-	-	-	131
Stage 1	-	-	-	-	176
Stage 2	-	-	-	-	454

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	53.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	500	-	-	-	131	416
HCM Lane V/C Ratio	0.213	-	-	-	0.718	0.17
HCM Control Delay (s)	14.1	-	-	-	82.7	15.4
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.8	-	-	-	4.1	0.6

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

HCM 6th TWSC
4: Slingshot Rental Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	953	2	2	1223	4	1
Future Vol, veh/h	953	2	2	1223	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1059	2	3	1359	5	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1061	0	1746
Stage 1	-	-	-	-	1060
Stage 2	-	-	-	-	686
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	652	-	77
Stage 1	-	-	-	-	294
Stage 2	-	-	-	-	461
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	652	-	77
Mov Cap-2 Maneuver	-	-	-	-	197
Stage 1	-	-	-	-	294
Stage 2	-	-	-	-	459

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	224	-	-	652	-
HCM Lane V/C Ratio	0.028	-	-	0.004	-
HCM Control Delay (s)	21.5	-	-	10.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
5: Yavapai Title Driveway & SR 89a

07/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑↑	↘	
Traffic Vol, veh/h	955	0	2	1221	4	2
Future Vol, veh/h	955	0	2	1221	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	80	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1061	0	3	1357	5	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1061	0	1610
Stage 1	-	-	-	-	1061
Stage 2	-	-	-	-	549
Critical Hdwy	-	-	4.14	-	6.29
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	6.04
Follow-up Hdwy	-	-	2.22	-	3.67
Pot Cap-1 Maneuver	-	-	652	-	120
Stage 1	-	-	-	-	287
Stage 2	-	-	-	-	510
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	652	-	119
Mov Cap-2 Maneuver	-	-	-	-	216
Stage 1	-	-	-	-	287
Stage 2	-	-	-	-	507

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	266	-	-	652	-
HCM Lane V/C Ratio	0.028	-	-	0.004	-
HCM Control Delay (s)	18.9	-	-	10.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
6: West AmTrust Bank Driveway & SR 89a

07/25/2023

Intersection												
Int Delay, s/veh	34.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑			↕			↕	
Traffic Vol, veh/h	35	920	2	2	1158	74	0	0	0	54	0	65
Future Vol, veh/h	35	920	2	2	1158	74	0	0	0	54	0	65
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	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	80	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	1022	3	3	1287	82	0	0	0	68	0	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1369	0	0	1025	0	0	1760	2485	511	1933	2447	685
Stage 1	-	-	-	-	-	-	1110	1110	-	1334	1334	-
Stage 2	-	-	-	-	-	-	650	1375	-	599	1113	-
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	497	-	-	673	-	-	54	29	508	~ 40	31	391
Stage 1	-	-	-	-	-	-	223	283	-	162	221	-
Stage 2	-	-	-	-	-	-	424	211	-	455	282	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	497	-	-	673	-	-	40	26	508	~ 37	28	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	40	26	-	~ 37	28	-
Stage 1	-	-	-	-	-	-	203	258	-	148	220	-
Stage 2	-	-	-	-	-	-	334	210	-	415	257	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	0	\$ 603.6
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	497	-	-	673	-	-	73
HCM Lane V/C Ratio	-	0.088	-	-	0.004	-	-	2.038
HCM Control Delay (s)	0	12.9	-	-	10.4	-	-	\$ 603.6
HCM Lane LOS	A	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	13.6

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

HCM 6th TWSC
7: SR 89a & Plaza De Oeste Driveway

07/25/2023

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕			↕	
Traffic Vol, veh/h	2	971	0	1	1230	2	2	0	4	1	0	2
Future Vol, veh/h	2	971	0	1	1230	2	2	0	4	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	90	90	80	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1079	0	1	1367	2	3	0	5	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1369	0	0	1079	0	0	1771	2456	540	1916	2455	685
Stage 1	-	-	-	-	-	-	1085	1085	-	1370	1370	-
Stage 2	-	-	-	-	-	-	686	1371	-	546	1085	-
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	497	-	-	642	-	-	53	30	486	41	30	391
Stage 1	-	-	-	-	-	-	231	291	-	154	212	-
Stage 2	-	-	-	-	-	-	404	212	-	490	291	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	497	-	-	642	-	-	52	30	486	40	30	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	52	30	-	40	30	-
Stage 1	-	-	-	-	-	-	230	289	-	153	212	-
Stage 2	-	-	-	-	-	-	401	212	-	482	289	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			34.6			42.4		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	129	497	-	-	642	-	-	100
HCM Lane V/C Ratio	0.058	0.005	-	-	0.002	-	-	0.038
HCM Control Delay (s)	34.6	12.3	-	-	10.6	-	-	42.4
HCM Lane LOS	D	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

HCM 6th TWSC
8: Southwest Drive & Uhaul Driveway

07/25/2023

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	4	80	0	0	5	57	90	0	52	0
Future Vol, veh/h	2	0	4	80	0	0	5	57	90	0	52	0
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	85	85	85	85	85	85	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	5	94	0	0	6	67	106	0	65	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	197	250	65	200	197	120	65	0	0	173	0	0
Stage 1	65	65	-	132	132	-	-	-	-	-	-	-
Stage 2	132	185	-	68	65	-	-	-	-	-	-	-
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	762	653	999	759	699	931	1537	-	-	1404	-	-
Stage 1	946	841	-	871	787	-	-	-	-	-	-	-
Stage 2	871	747	-	942	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	760	650	999	753	696	931	1537	-	-	1404	-	-
Mov Cap-2 Maneuver	760	650	-	753	696	-	-	-	-	-	-	-
Stage 1	942	841	-	868	784	-	-	-	-	-	-	-
Stage 2	868	744	-	937	841	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		10.5		0.2		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1537	-	-	904	753	1404	-
HCM Lane V/C Ratio	0.004	-	-	0.008	0.125	-	-
HCM Control Delay (s)	7.4	0	-	9	10.5	0	-
HCM Lane LOS	A	A	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-

HCM 6th TWSC
 9: Southwest Drive & Navajo Drive

07/25/2023

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	0	17	11	0	0	8	32	19	0	22	10
Future Vol, veh/h	7	0	17	11	0	0	8	32	19	0	22	10
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	9	0	21	14	0	0	10	40	24	0	28	13

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	107	119	35	117	113	52	41	0	0	64	0	0
Stage 1	35	35	-	72	72	-	-	-	-	-	-	-
Stage 2	72	84	-	45	41	-	-	-	-	-	-	-
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	872	771	1038	859	777	1016	1568	-	-	1538	-	-
Stage 1	981	866	-	938	835	-	-	-	-	-	-	-
Stage 2	938	825	-	969	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	868	766	1038	837	772	1016	1568	-	-	1538	-	-
Mov Cap-2 Maneuver	868	766	-	837	772	-	-	-	-	-	-	-
Stage 1	974	866	-	931	829	-	-	-	-	-	-	-
Stage 2	931	819	-	949	861	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		9.4		1		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	982	837	1538	-
HCM Lane V/C Ratio	0.006	-	-	0.031	0.016	-	-
HCM Control Delay (s)	7.3	0	-	8.8	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th Signalized Intersection Summary

3: SR 89a & Southwest Drive

07/25/2023

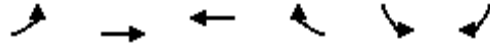


Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	75	1194	800	59	85	57	
Future Volume (veh/h)	75	1194	800	59	85	57	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	94	1327	889	66	100	67	
Peak Hour Factor	0.80	0.90	0.90	0.90	0.85	0.85	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	325	1837	1380	616	622	554	
Arrive On Green	0.06	0.52	0.39	0.39	0.35	0.35	
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585	
Grp Volume(v), veh/h	94	1327	889	66	100	67	
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585	
Q Serve(g_s), s	1.9	19.4	13.7	1.8	2.6	1.9	
Cycle Q Clear(g_c), s	1.9	19.4	13.7	1.8	2.6	1.9	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	325	1837	1380	616	622	554	
V/C Ratio(X)	0.29	0.72	0.64	0.11	0.16	0.12	
Avail Cap(c_a), veh/h	348	3038	3038	1355	622	554	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	11.8	12.5	16.8	13.1	15.1	14.9	
Incr Delay (d2), s/veh	0.5	0.5	0.5	0.1	0.6	0.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.7	6.6	4.9	0.6	1.1	2.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	12.3	13.1	17.3	13.2	15.6	15.3	
LnGrp LOS	B	B	B	B	B	B	
Approach Vol, veh/h		1421	955		167		
Approach Delay, s/veh		13.0	17.0		15.5		
Approach LOS		B	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				39.3	28.0	8.6	30.6
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				57.5	23.5	5.0	57.5
Max Q Clear Time (g_c+I1), s				21.4	4.6	3.9	15.7
Green Ext Time (p_c), s				13.4	0.4	0.0	7.3
Intersection Summary							
HCM 6th Ctrl Delay			14.7				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary

3: SR 89a & Southwest Drive

07/25/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	85	876	1159	68	80	60	
Future Volume (veh/h)	85	876	1159	68	80	60	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	106	973	1288	76	94	71	
Peak Hour Factor	0.80	0.90	0.90	0.90	0.85	0.85	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	284	2165	1730	772	476	424	
Arrive On Green	0.06	0.61	0.49	0.49	0.27	0.27	
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585	
Grp Volume(v), veh/h	106	973	1288	76	94	71	
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585	
Q Serve(g_s), s	2.0	10.7	21.3	1.9	3.0	2.5	
Cycle Q Clear(g_c), s	2.0	10.7	21.3	1.9	3.0	2.5	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	284	2165	1730	772	476	424	
V/C Ratio(X)	0.37	0.45	0.74	0.10	0.20	0.17	
Avail Cap(c_a), veh/h	299	2997	2997	1337	476	424	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	12.1	7.7	15.1	10.1	20.7	20.5	
Incr Delay (d2), s/veh	0.8	0.1	0.7	0.1	0.9	0.9	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.7	3.4	7.3	0.6	1.3	0.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	12.9	7.8	15.7	10.1	21.6	21.3	
LnGrp LOS	B	A	B	B	C	C	
Approach Vol, veh/h		1079	1364		165		
Approach Delay, s/veh		8.3	15.4		21.5		
Approach LOS		A	B		C		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				48.9	24.0	8.9	40.0
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				61.5	19.5	5.0	61.5
Max Q Clear Time (g_c+I1), s				12.7	5.0	4.0	23.3
Green Ext Time (p_c), s				9.0	0.4	0.0	12.2
Intersection Summary							
HCM 6th Ctrl Delay			12.8				
HCM 6th LOS			B				



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Turn Lane Calculations

Un-Signalized Intersection (Left Turn Lane)

Location: Southwest Drive/SR 89A

Approach/Leg: Southbound

2025 With Project

V = vehicles per hour

AM Peak Hour

V = 85 vph

S = Storage = (V * 2 min * 25 ft/veh)/60 min/hr

$$S \text{ (ft)} = \frac{85 \text{ vph} * (2 \text{ min}) * (25 \text{ ft/veh})}{(60 \text{ min/hr})} = 71 \text{ feet}$$

Minimum Recommended Storage: 75 feet

Un-Signalized Intersection (Right Turn Lane)

Location: Southwest Drive/SR 89A

Approach/Leg: Westbound

2025 With Project

V = vehicles per hour

PM Peak Hour

V = 68 vph

S = Storage = (V * 2 min * 25 ft/veh)/60 min/hr

$$S \text{ (ft)} = \frac{68 \text{ vph} * (2 \text{ min}) * (25 \text{ ft/veh})}{(60 \text{ min/hr})} = 57 \text{ feet}$$

Minimum Recommended Storage: 75 feet



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Traffic Signal Warrant Analysis

General Description of Intersection

Project Number: 21130

Existing

Name of Major Roadway: SR 89A

Direction: E/W

of EB Lanes: 2

of WB Lanes: 2

85th percentile speed: 40 mph

Control #:

Section #:

Route #:

Name of Minor Roadway: Southwest Drive

Direction: N/S

of NB Lanes: 0

of SB Lanes: 1

85th percentile speed: 25 mph

Control #:

Section #:

Route #:

City: Sedona

Population: 10,300

County:

District:

Data Source: 24-hour approach

Date of Survey: 9/2/2021 (press Ctrl + ;)

Day of Week: Thursday

Weather: Sunny

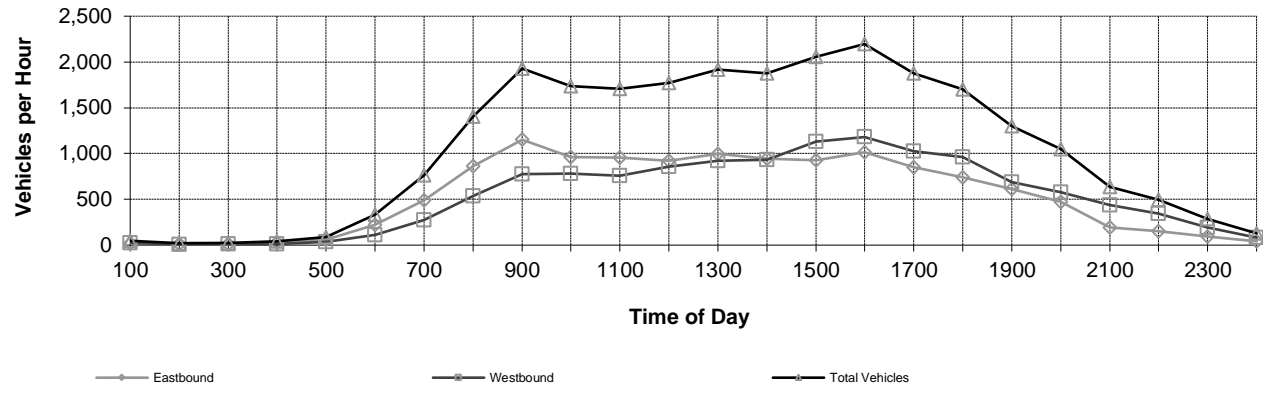
Surface Conditions: Dry

Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **SR 89A**
 Location: **Southwest Drive**
 City/State: **Sedona, AZ**
 Project #: **21130**
 Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: **25,380**

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	21		24	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	13		8	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	11		13	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	27		15	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	56		33	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	220		114	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	489		273	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	864		538	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	1151		777	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	959		779	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	953		756	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	918		855	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	996		923	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	944		932	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	927		1130	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	1016		1180	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	853		1024	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	740		960	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	610		688	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	470		577	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	195		438	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	150		346	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	93		195	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	43		83	

Equipment ID#:

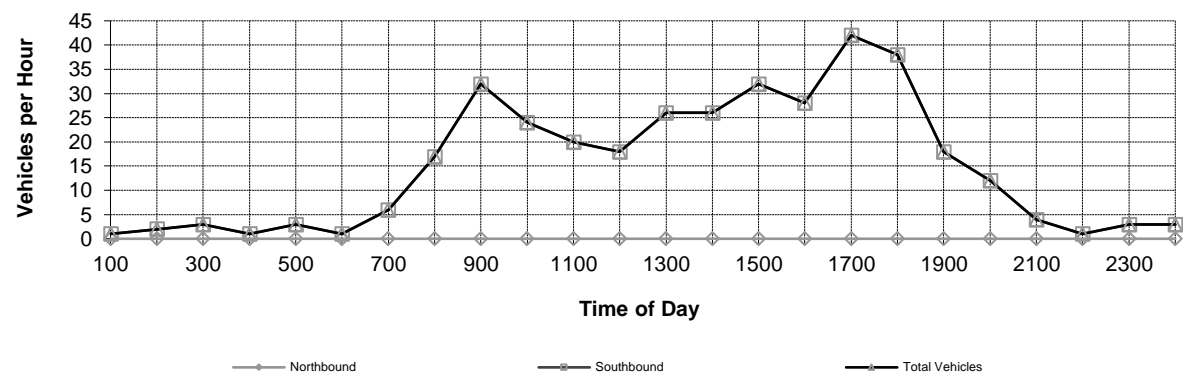
12,719	12,661
24-Hour Volume	
25,380	

Automated Traffic Counts

Street: **Southwest Drive**
 Location: **SR 89A**

City/State: **Sedona, AZ**
 Project #:

Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: **361**

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		1	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		2	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		3	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		1	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	0		3	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	0		1	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	0		6	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	0		17	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	0		32	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	0		24	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	0		20	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	0		18	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	0		26	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	0		26	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	0		32	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	0		28	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	0		42	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	0		38	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	0		18	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	0		12	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	0		4	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	0		1	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	0		3	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		3	

Equipment ID#:

0	361
24-Hour Volume	361

TRAFFIC SURVEY - COUNT ANALYSIS
2009 MUTCD WARRANTS

Existing

County: _____		District No.: _____	
City: <u>Sedona</u>		Population: <u>10,300</u>	Survey Date: <u>9/2/2021</u>
Route #	Name	Control	Section
Major	SR 89A	-	40
Minor	Southwest Drive	-	25

Warrant 1: Eight- Hour Volumes
Condition A

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

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

Time		Volume		Criteria		
Begin	End	Major	Minor	Major ≥ 600	Minor ≥ 150	Both Meet
12:00 AM	1:00 AM	45	1	N	N	N
1:00 AM	2:00 AM	21	2	N	N	N
2:00 AM	3:00 AM	24	3	N	N	N
3:00 AM	4:00 AM	42	1	N	N	N
4:00 AM	5:00 AM	89	3	N	N	N
5:00 AM	6:00 AM	334	1	N	N	N
6:00 AM	7:00 AM	762	6	Y	N	N
7:00 AM	8:00 AM	1402	17	Y	N	N
8:00 AM	9:00 AM	1928	32	Y	N	N
9:00 AM	10:00 AM	1738	24	Y	N	N
10:00 AM	11:00 AM	1709	20	Y	N	N
11:00 AM	12:00 PM	1773	18	Y	N	N
12:00 PM	1:00 PM	1919	26	Y	N	N
1:00 PM	2:00 PM	1876	26	Y	N	N
2:00 PM	3:00 PM	2057	32	Y	N	N
3:00 PM	4:00 PM	2196	28	Y	N	N
4:00 PM	5:00 PM	1877	42	Y	N	N
5:00 PM	6:00 PM	1700	38	Y	N	N
6:00 PM	7:00 PM	1298	18	Y	N	N
7:00 PM	8:00 PM	1047	12	Y	N	N
8:00 PM	9:00 PM	633	4	Y	N	N
9:00 PM	10:00 PM	496	1	N	N	N
10:00 PM	11:00 PM	288	3	N	N	N
11:00 PM	12:00 AM	126	3	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
Hours Required: 8

Condition A is not satisfied
Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

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

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

Warrant 2						
Time		Volume		Criteria		
Begin	End	Major	Minor	Major ≥ 900	Minor ≥ 75	Both Meet
12:00 AM	1:00 AM	45	1	N	N	N
1:00 AM	2:00 AM	21	2	N	N	N
2:00 AM	3:00 AM	24	3	N	N	N
3:00 AM	4:00 AM	42	1	N	N	N
4:00 AM	5:00 AM	89	3	N	N	N
5:00 AM	6:00 AM	334	1	N	N	N
6:00 AM	7:00 AM	762	6	N	N	N
7:00 AM	8:00 AM	1402	17	Y	N	N
8:00 AM	9:00 AM	1928	32	Y	N	N
9:00 AM	10:00 AM	1738	24	Y	N	N
10:00 AM	11:00 AM	1709	20	Y	N	N
11:00 AM	12:00 PM	1773	18	Y	N	N
12:00 PM	1:00 PM	1919	26	Y	N	N
1:00 PM	2:00 PM	1876	26	Y	N	N
2:00 PM	3:00 PM	2057	32	Y	N	N
3:00 PM	4:00 PM	2196	28	Y	N	N
4:00 PM	5:00 PM	1877	42	Y	N	N
5:00 PM	6:00 PM	1700	38	Y	N	N
6:00 PM	7:00 PM	1298	18	Y	N	N
7:00 PM	8:00 PM	1047	12	Y	N	N
8:00 PM	9:00 PM	633	4	N	N	N
9:00 PM	10:00 PM	496	1	N	N	N
10:00 PM	11:00 PM	288	3	N	N	N
11:00 PM	12:00 AM	126	3	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
 Hours Required: 8

Condition B is not satisfied
Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

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

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

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

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

- (1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**
- (2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**
- (3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

*Part 1 - N/A

*Part 2 - N/A

*Part 3 - N/A

Warrant 3, Condition B - Peak Hour Volume

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

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

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

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

Gap Requirements

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

Warrant 4 is N/A.

Warrant 5: School Crossing

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

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

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

Warrant 6 is N/A.

Warrant 7: Crash Experience

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

Warrant 7 is N/A.

Warrant 8: Roadway Network

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

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

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

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

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

Major Street Lanes: 2
 Minor Street Lanes: 1

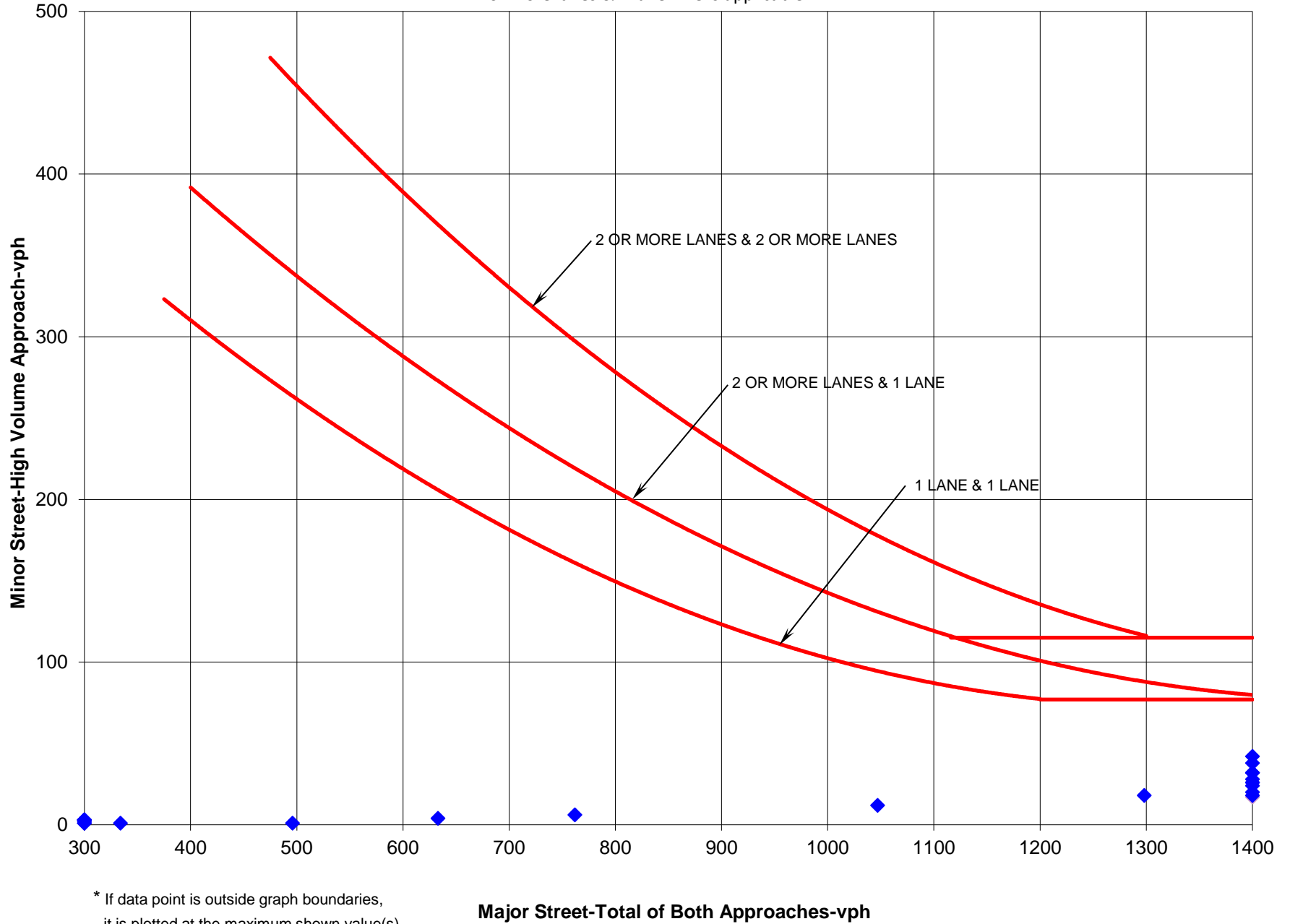
Use Figure: 4C-1 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	126	3	-	N	-	-	-	-
2	45	1	-	N	-	-	-	-
3	21	2	-	N	-	-	-	-
4	24	3	-	N	-	-	-	-
5	42	1	-	N	-	-	-	-
6	89	3	-	N	-	-	-	-
7	334	1	-	N	-	-	-	-
8	762	6	-	N	-	-	-	-
9	1402	17	-	N	-	-	-	-
10	1928	32	-	N	-	-	-	-
11	1738	24	-	N	-	-	-	-
12	1709	20	-	N	-	-	-	-
13	1773	18	-	N	-	-	-	-
14	1919	26	-	N	-	-	-	-
15	1876	26	-	N	-	-	-	-
16	2057	32	-	N	-	-	-	-
17	2196	28	-	N	-	-	-	-
18	1877	42	-	N	-	-	-	-
19	1700	38	-	N	-	-	-	-
20	1298	18	-	N	-	-	-	-
21	1047	12	-	N	-	-	-	-
22	633	4	-	N	-	-	-	-
23	496	1	-	N	-	-	-	-
24	288	3	-	N	-	-	-	-
			0	0	0	0	0	0
			N	N	N	N	N	N

Warrant 2 is not satisfied.

**Warrant 2
Figure 4C-1 Four Hour Volume Warrant**

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



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

General Description of Intersection

Project Number: 21166

2022 Without

Name of Major Roadway: SR 89A

Direction: E/W

of EB Lanes: 2

of WB Lanes: 2

85th percentile speed: 40 mph

Control #:

Section #:

Route #:

Name of Minor Roadway: Southwest Drive

Direction: N/S

of NB Lanes: 0

of SB Lanes: 1

85th percentile speed: 25 mph

Control #:

Section #:

Route #:

City: Sedona

Population: 10,300

County:

District:

Data Source: 24-hour approach

Date of Survey: 9/2/2021 (press Ctrl + ;)

Day of Week: Thursday

Weather: Sunny

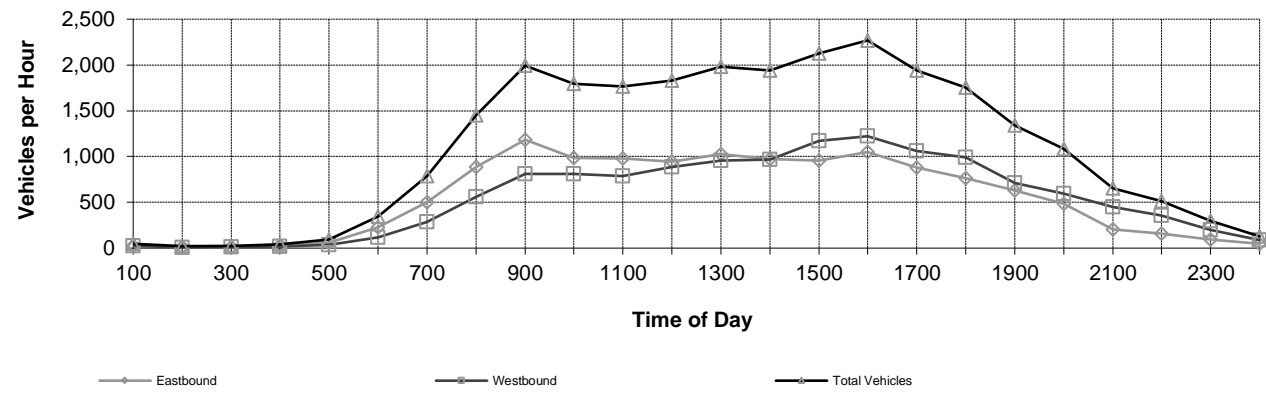
Surface Conditions: Dry

Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **SR 89A**
 Location: **Southwest Drive**
 City/State: **Sedona, AZ**
 Project #: **21166**
 Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: **26,219**

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	22		25	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	13		8	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	11		13	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	28		16	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	58		34	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	226		119	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	502		285	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	888		560	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	1183		808	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	987		809	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	980		785	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	945		887	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	1025		957	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	972		966	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	956		1169	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	1047		1221	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	879		1060	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	763		993	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	629		712	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	485		597	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	202		452	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	155		357	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	96		201	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	44		86	

Equipment ID#:

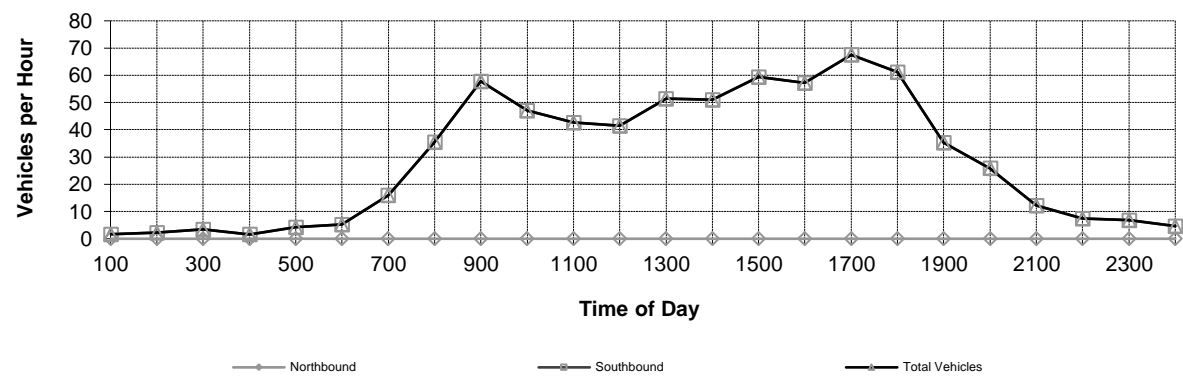
13,097	13,121
24-Hour Volume	
26,219	

Automated Traffic Counts

Street: **Southwest Drive**
 Location: **SR 89A**

City/State: **Sedona, AZ**
 Project #:

Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: 699

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		2	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		2	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		3	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	0		4	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	0		5	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	0		16	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	0		36	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	0		58	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	0		47	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	0		43	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	0		41	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	0		52	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	0		51	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	0		60	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	0		57	
4:15 PM				
4:30 PM				
12:00 AM				
5:00 PM	0		68	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	0		61	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	0		35	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	0		26	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	0		12	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	0		7	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	0		7	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		5	

Equipment ID#:

0 699
24-Hour Volume 699

TRAFFIC SURVEY - COUNT ANALYSIS
2009 MUTCD WARRANTS

2022 Without

County: _____		District No.: _____	
City: <u>Sedona</u>		Population: <u>10,300</u>	
Route #		Name	
Major	_____	SR 89A	_____
Minor	_____	Southwest Drive	_____
		Control	Section
		-	_____
			85% Speed
			40
			25

Warrant 1: Eight- Hour Volumes
Condition A

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

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

Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 600	Minor >= 150	Both Meet
12:00 AM	1:00 AM	46.49151	1.6115077	N	N	N
1:00 AM	2:00 AM	21.71575	2.3357539	N	N	N
2:00 AM	3:00 AM	24.82719	3.4071893	N	N	N
3:00 AM	4:00 AM	43.39293	1.5729311	N	N	N
4:00 AM	5:00 AM	91.96302	4.2430154	N	N	N
5:00 AM	6:00 AM	344.9877	5.3277192	N	N	N
6:00 AM	7:00 AM	787.1156	15.995607	Y	N	N
7:00 AM	8:00 AM	1448.287	35.586727	Y	N	N
8:00 AM	9:00 AM	1991.763	57.843372	Y	N	N
9:00 AM	10:00 AM	1795.417	47.137317	Y	N	N
10:00 AM	11:00 AM	1765.413	42.632975	Y	N	N
11:00 AM	12:00 PM	1831.49	41.390224	Y	N	N
12:00 PM	1:00 PM	1982.39	51.530489	Y	N	N
1:00 PM	2:00 PM	1937.978	50.977558	Y	N	N
2:00 PM	3:00 PM	2125.002	59.502165	Y	N	N
3:00 PM	4:00 PM	2268.518	57.158112	Y	N	N
4:00 PM	5:00 PM	1939.216	67.516159	Y	N	N
5:00 PM	6:00 PM	1756.349	61.108704	Y	N	N
6:00 PM	7:00 PM	1340.882	35.282264	Y	N	N
7:00 PM	8:00 PM	1081.558	25.857536	Y	N	N
8:00 PM	9:00 PM	653.8511	12.271096	Y	N	N
9:00 PM	10:00 PM	512.3109	7.4108551	N	N	N
10:00 PM	11:00 PM	297.5019	6.8019292	N	N	N
11:00 PM	12:00 AM	130.1788	4.7187934	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
Hours Required: 8

Condition A is not satisfied
Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

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

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

Warrant 2						
Time		Volume		Criteria		
Begin	End	Major	Minor	Major ≥ 900	Minor ≥ 75	Both Meet
12:00 AM	1:00 AM	46.49151	1.6115077	N	N	N
1:00 AM	2:00 AM	21.71575	2.3357539	N	N	N
2:00 AM	3:00 AM	24.82719	3.4071893	N	N	N
3:00 AM	4:00 AM	43.39293	1.5729311	N	N	N
4:00 AM	5:00 AM	91.96302	4.2430154	N	N	N
5:00 AM	6:00 AM	344.9877	5.3277192	N	N	N
6:00 AM	7:00 AM	787.1156	15.995607	N	N	N
7:00 AM	8:00 AM	1448.287	35.586727	Y	N	N
8:00 AM	9:00 AM	1991.763	57.843372	Y	N	N
9:00 AM	10:00 AM	1795.417	47.137317	Y	N	N
10:00 AM	11:00 AM	1765.413	42.632975	Y	N	N
11:00 AM	12:00 PM	1831.49	41.390224	Y	N	N
12:00 PM	1:00 PM	1982.39	51.530489	Y	N	N
1:00 PM	2:00 PM	1937.978	50.977558	Y	N	N
2:00 PM	3:00 PM	2125.002	59.502165	Y	N	N
3:00 PM	4:00 PM	2268.518	57.158112	Y	N	N
4:00 PM	5:00 PM	1939.216	67.516159	Y	N	N
5:00 PM	6:00 PM	1756.349	61.108704	Y	N	N
6:00 PM	7:00 PM	1340.882	35.282264	Y	N	N
7:00 PM	8:00 PM	1081.558	25.857536	Y	N	N
8:00 PM	9:00 PM	653.8511	12.271096	N	N	N
9:00 PM	10:00 PM	512.3109	7.4108551	N	N	N
10:00 PM	11:00 PM	297.5019	6.8019292	N	N	N
11:00 PM	12:00 AM	130.1788	4.7187934	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
 Hours Required: 8

Condition B is not satisfied
Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

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

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

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

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

- (1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**
- (2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**
- (3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

*Part 1 - N/A

*Part 2 - N/A

*Part 3 - N/A

Warrant 3, Condition B - Peak Hour Volume

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

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

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

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

Gap Requirements

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

Warrant 4 is N/A.

Warrant 5: School Crossing

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

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

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

Warrant 6 is N/A.

Warrant 7: Crash Experience

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

Warrant 7 is N/A.

Warrant 8: Roadway Network

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

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

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

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

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

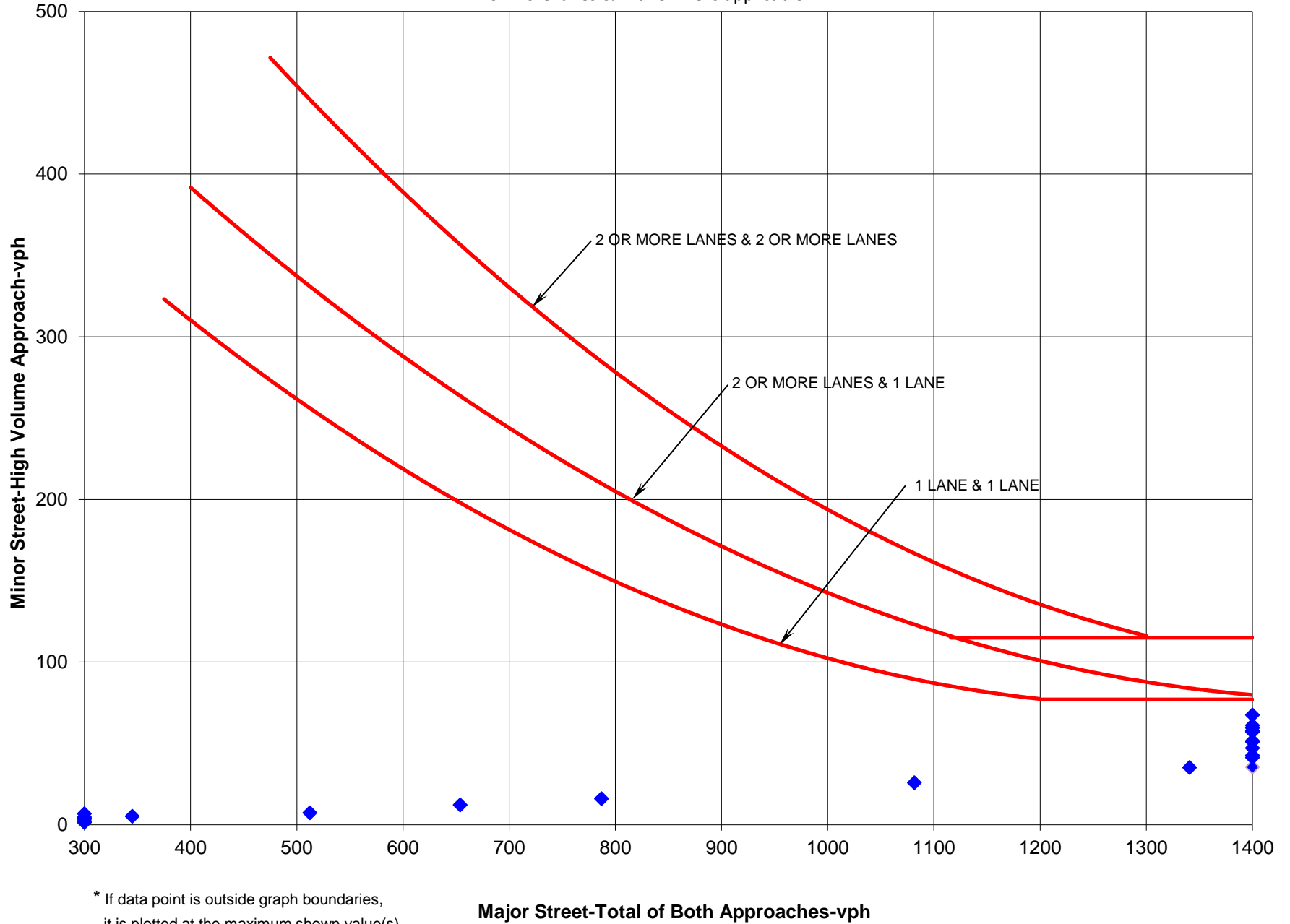
Major Street Lanes: 2
 Minor Street Lanes: 1

Use Figure: 4C-1 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	130.1787934	4.71879336	-	N	-	-	-	-
2	46.49150771	1.61150771	-	N	-	-	-	-
3	21.71575386	2.33575386	-	N	-	-	-	-
4	24.82718931	3.40718931	-	N	-	-	-	-
5	43.39293112	1.57293112	-	N	-	-	-	-
6	91.96301542	4.24301542	-	N	-	-	-	-
7	344.9877192	5.3277192	-	N	-	-	-	-
8	787.115607	15.995607	-	N	-	-	-	-
9	1448.286727	35.586727	-	N	-	-	-	-
10	1991.763372	57.8433721	-	N	-	-	-	-
11	1795.417317	47.1373171	-	N	-	-	-	-
12	1765.412975	42.6329746	-	N	-	-	-	-
13	1831.490224	41.3902242	-	N	-	-	-	-
14	1982.390489	51.5304891	-	N	-	-	-	-
15	1937.977558	50.977558	-	N	-	-	-	-
16	2125.002165	59.5021654	-	N	-	-	-	-
17	2268.518112	57.158112	-	N	-	-	-	-
18	1939.216159	67.5161587	-	N	-	-	-	-
19	1756.348704	61.1087044	-	N	-	-	-	-
20	1340.882264	35.2822641	-	N	-	-	-	-
21	1081.557536	25.8575362	-	N	-	-	-	-
22	653.8510959	12.2710959	-	N	-	-	-	-
23	512.3108551	7.41085506	-	N	-	-	-	-
24	297.5019292	6.80192922	-	N	-	-	-	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

**Warrant 2
Figure 4C-1 Four Hour Volume Warrant**

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



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

General Description of Intersection

Project Number: 21166

2025 Without

Name of Major Roadway: SR 89A

Direction: E/W

of EB Lanes: 2

of WB Lanes: 2

85th percentile speed: 40 mph

Control #:

Section #:

Route #:

Name of Minor Roadway: Southwest Drive

Direction: N/S

of NB Lanes: 0

of SB Lanes: 1

85th percentile speed: 25 mph

Control #:

Section #:

Route #:

City: Sedona

Population: 10,300

County:

District:

Data Source: 24-hour approach

Date of Survey: 9/2/2021 (press Ctrl + ;)

Day of Week: Thursday

Weather: Sunny

Dry

Surface Conditions: Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **SR 89A**
 Location: **Southwest Drive**

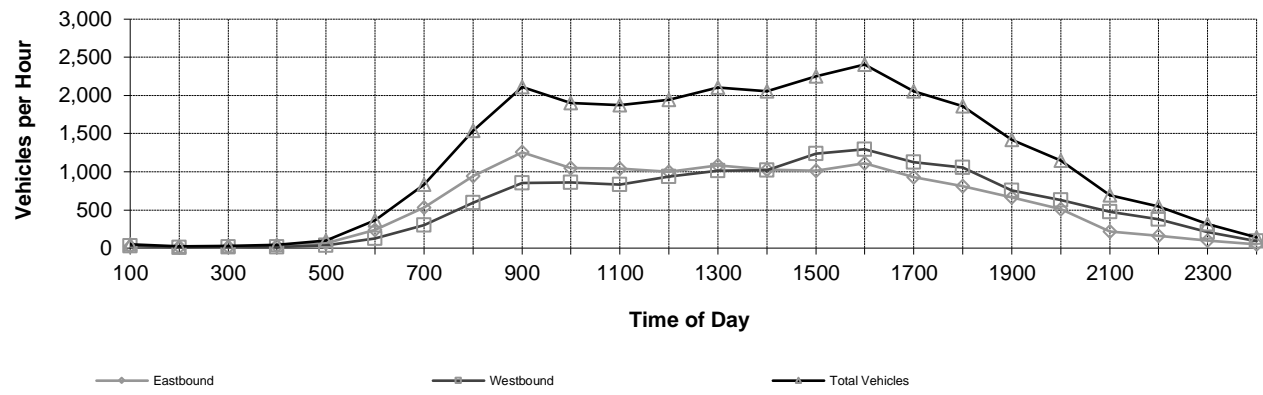
City/State: **Sedona, AZ**

Project #: **21166**

Date: **9/2/2021**

Day of Week: **Thursday**

Data Source: **24-hour approach**



24-Hour Volume: **27,803**

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	23		26	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	14		9	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	12		14	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	29		17	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	61		36	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	240		126	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	533		302	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	942		594	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	1255		857	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	1047		857	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	1040		832	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	1002		940	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	1087		1015	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	1031		1024	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	1013		1240	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	1110		1295	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	933		1124	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	809		1053	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	667		755	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	514		633	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	214		479	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	165		379	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	102		213	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	47		91	

Equipment ID#:

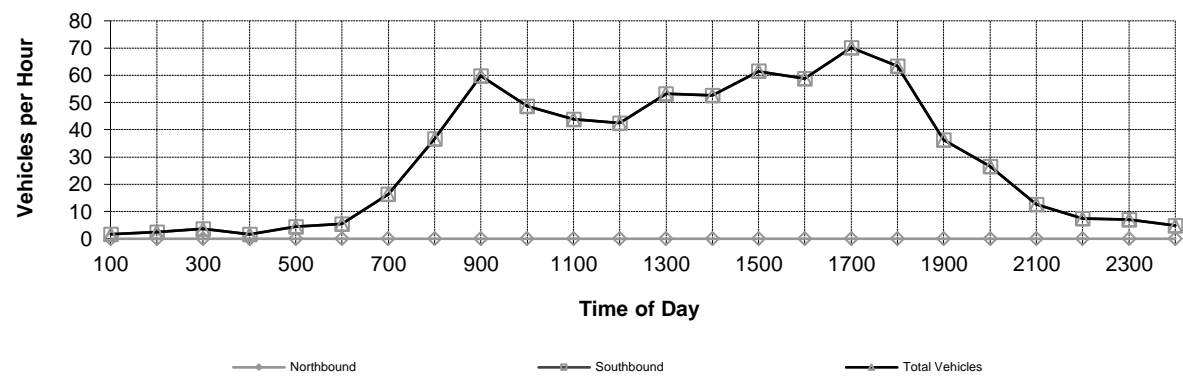
13,891	13,912
24-Hour Volume	
27,803	

Automated Traffic Counts

Street: **Southwest Drive**
 Location: **SR 89A**

City/State: **Sedona, AZ**
 Project #:

Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: 722

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		2	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		2	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		4	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		2	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	0		4	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	0		5	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	0		16	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	0		37	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	0		60	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	0		49	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	0		44	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	0		43	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	0		53	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	0		53	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	0		61	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	0		59	
4:15 PM				
4:30 PM				
12:00 AM				
5:00 PM	0		70	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	0		63	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	0		36	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	0		27	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	0		13	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	0		7	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	0		7	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		5	

Equipment ID#:

0 722
24-Hour Volume 722

TRAFFIC SURVEY - COUNT ANALYSIS
2009 MUTCD WARRANTS

2025 Without

County: _____		District No.: _____	
City: _____	Sedona	Population: _____	10,300
Survey Date: _____		9/2/2021	
Route #	Name	Control	Section
Major	SR 89A	-	40
Minor	Southwest Drive	-	25

Warrant 1: Eight- Hour Volumes
Condition A

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

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

Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 600	Minor >= 150	Both Meet
12:00 AM	1:00 AM	49.30095	1.6739399	N	N	N
1:00 AM	2:00 AM	23.02683	2.4606182	N	N	N
2:00 AM	3:00 AM	26.32556	3.5944858	N	N	N
3:00 AM	4:00 AM	46.01508	1.6353633	N	N	N
4:00 AM	5:00 AM	97.51948	4.4303119	N	N	N
5:00 AM	6:00 AM	365.8401	5.3901514	N	N	N
6:00 AM	7:00 AM	834.6889	16.3702	Y	N	N
7:00 AM	8:00 AM	1535.817	36.648074	Y	N	N
8:00 AM	9:00 AM	2112.133	59.841201	Y	N	N
9:00 AM	10:00 AM	1903.924	48.635689	Y	N	N
10:00 AM	11:00 AM	1872.11	43.881618	Y	N	N
11:00 AM	12:00 PM	1942.182	42.514003	Y	N	N
12:00 PM	1:00 PM	2102.198	53.153725	Y	N	N
1:00 PM	2:00 PM	2055.1	52.600794	Y	N	N
2:00 PM	3:00 PM	2253.425	61.499995	Y	N	N
3:00 PM	4:00 PM	2405.619	58.906212	Y	N	N
4:00 PM	5:00 PM	2056.401	70.138309	Y	N	N
5:00 PM	6:00 PM	1862.483	63.481126	Y	N	N
6:00 PM	7:00 PM	1421.919	36.406043	Y	N	N
7:00 PM	8:00 PM	1146.924	26.606722	Y	N	N
8:00 PM	9:00 PM	693.3707	12.520825	Y	N	N
9:00 PM	10:00 PM	543.2772	7.4732872	N	N	N
10:00 PM	11:00 PM	315.4824	6.9892257	N	N	N
11:00 PM	12:00 AM	138.0452	4.9060898	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
Hours Required: 8

Condition A is not satisfied
Warrant 1 not satisfied.

Warrant 1: Eight- Hour Volumes

Condition B

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

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

Warrant 2						
Time		Volume		Criteria		
Begin	End	Major	Minor	Major ≥ 900	Minor ≥ 75	Both Meet
12:00 AM	1:00 AM	49.30095	1.6739399	N	N	N
1:00 AM	2:00 AM	23.02683	2.4606182	N	N	N
2:00 AM	3:00 AM	26.32556	3.5944858	N	N	N
3:00 AM	4:00 AM	46.01508	1.6353633	N	N	N
4:00 AM	5:00 AM	97.51948	4.4303119	N	N	N
5:00 AM	6:00 AM	365.8401	5.3901514	N	N	N
6:00 AM	7:00 AM	834.6889	16.3702	N	N	N
7:00 AM	8:00 AM	1535.817	36.648074	Y	N	N
8:00 AM	9:00 AM	2112.133	59.841201	Y	N	N
9:00 AM	10:00 AM	1903.924	48.635689	Y	N	N
10:00 AM	11:00 AM	1872.11	43.881618	Y	N	N
11:00 AM	12:00 PM	1942.182	42.514003	Y	N	N
12:00 PM	1:00 PM	2102.198	53.153725	Y	N	N
1:00 PM	2:00 PM	2055.1	52.600794	Y	N	N
2:00 PM	3:00 PM	2253.425	61.499995	Y	N	N
3:00 PM	4:00 PM	2405.619	58.906212	Y	N	N
4:00 PM	5:00 PM	2056.401	70.138309	Y	N	N
5:00 PM	6:00 PM	1862.483	63.481126	Y	N	N
6:00 PM	7:00 PM	1421.919	36.406043	Y	N	N
7:00 PM	8:00 PM	1146.924	26.606722	Y	N	N
8:00 PM	9:00 PM	693.3707	12.520825	N	N	N
9:00 PM	10:00 PM	543.2772	7.4732872	N	N	N
10:00 PM	11:00 PM	315.4824	6.9892257	N	N	N
11:00 PM	12:00 AM	138.0452	4.9060898	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
 Hours Required: 8

Condition B is not satisfied
Warrant 1 not satisfied.

Warrant 2: Four Hour Vehicular Volumes

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

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

Warrant 2 is not satisfied

Warrant 3, Condition A- Peak Hour Delay

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

- (1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**
- (2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**
- (3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

*Part 1 - N/A

*Part 2 - N/A

*Part 3 - N/A

Warrant 3, Condition B - Peak Hour Volume

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

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

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

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

Gap Requirements

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

Warrant 4 is N/A.

Warrant 5: School Crossing

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

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

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

Warrant 6 is N/A.

Warrant 7: Crash Experience

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

Warrant 7 is N/A.

Warrant 8: Roadway Network

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

Warrant 8 is N/A.

Summary:

Warrants satisfied: none

Warrants not satisfied: 1, 2

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

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

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

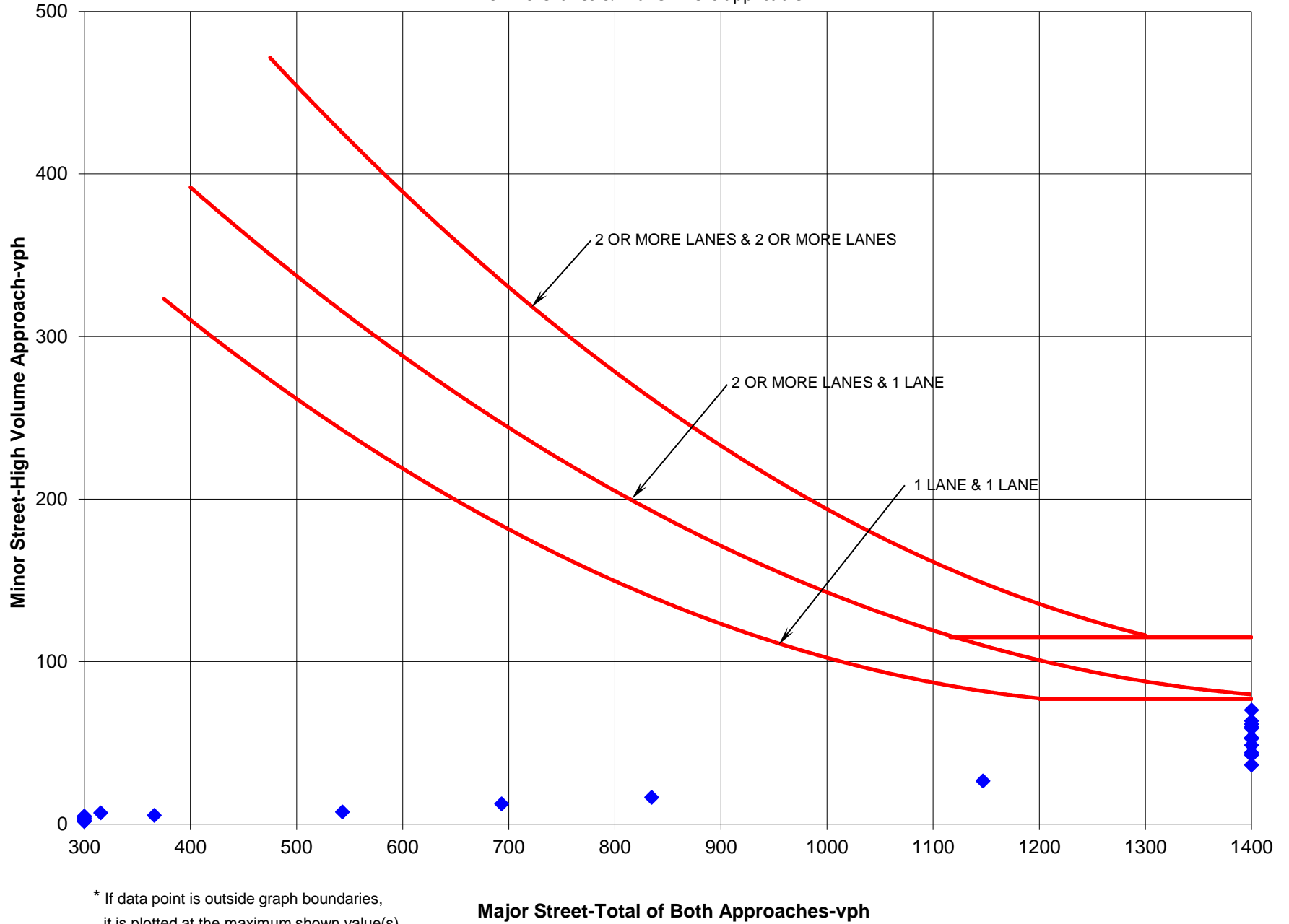
Major Street Lanes: 2
 Minor Street Lanes: 1

Use Figure: 4C-1 2&1

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	138.0452455	4.90608984	-	N	-	-	-	-
2	49.30095491	1.67393987	-	N	-	-	-	-
3	23.02682922	2.46061818	-	N	-	-	-	-
4	26.32556115	3.59448579	-	N	-	-	-	-
5	46.01508184	1.63536328	-	N	-	-	-	-
6	97.51947766	4.4303119	-	N	-	-	-	-
7	365.8400606	5.39015136	-	N	-	-	-	-
8	834.6889129	16.3702	-	N	-	-	-	-
9	1535.816615	36.6480737	-	N	-	-	-	-
10	2112.132577	59.8412012	-	N	-	-	-	-
11	1903.924411	48.635689	-	N	-	-	-	-
12	1872.109536	43.8816178	-	N	-	-	-	-
13	1942.182444	42.514003	-	N	-	-	-	-
14	2102.197804	53.1537253	-	N	-	-	-	-
15	2055.10029	52.6007941	-	N	-	-	-	-
16	2253.425119	61.4999945	-	N	-	-	-	-
17	2405.619135	58.9062124	-	N	-	-	-	-
18	2056.401323	70.1383094	-	N	-	-	-	-
19	1862.483376	63.4811265	-	N	-	-	-	-
20	1421.919208	36.406043	-	N	-	-	-	-
21	1146.924008	26.6067221	-	N	-	-	-	-
22	693.3706532	12.5208246	-	N	-	-	-	-
23	543.2772064	7.47328722	-	N	-	-	-	-
24	315.4823913	6.9892257	-	N	-	-	-	-
			0	0	0	0	0	0
Warrant 2 is not satisfied.			N	N	N	N	N	N

**Warrant 2
Figure 4C-1 Four Hour Volume Warrant**

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



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

General Description of Intersection

Project Number: 21166

2022 With

Name of Major Roadway: SR 89A

Direction: E/W

of EB Lanes: 2

of WB Lanes: 2

85th percentile speed: 35 mph

Control #:

Section #:

Route #:

Name of Minor Roadway: Southwest Drive

Direction: N/S

of NB Lanes: 0

of SB Lanes: 2

85th percentile speed: 25 mph

Control #:

Section #:

Route #:

City: Sedona

Population: 10,300

County:

District:

Data Source: 24-hour approach

Date of Survey: 9/2/2021 (press Ctrl + ;)

Day of Week: Thursday

Weather: Sunny

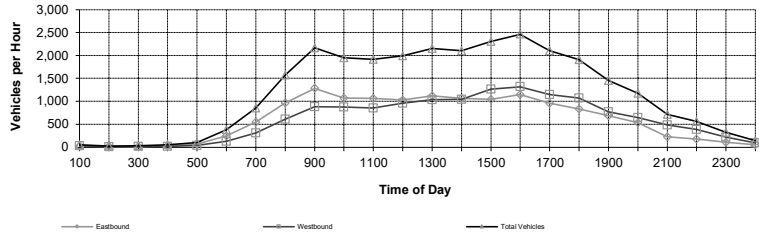
Surface Conditions: Dry

Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **SR 89A**
 Location: **Southwest Drive**
 City/State: **Sedona, AZ**
 Project #: **21166**
 Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: 28,483

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	24		27	
1:15 AM				
1:30 AM				
1:45 AM			9	
2:00 AM	15			
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	12		15	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	30		17	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	62		37	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	245		130	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	545		310	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	964		610	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	1285		879	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	1073		877	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	1066		852	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	1029		960	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	1117		1037	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	1060		1046	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	1045		1263	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	1144		1320	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	962		1145	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	836		1073	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	687		770	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	530		645	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	224		486	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	172		384	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	106		217	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	49		92	

Equipment ID#:

14,281	14,202
24-Hour Volume	
28,483	

Automated Traffic Counts

Street: **Southwest Drive**
 Location: **SR 89A**

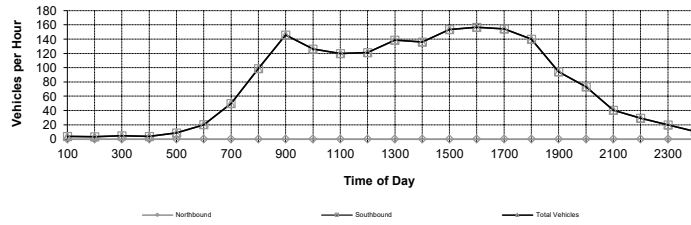
City/State: **Sedona, AZ**

Project #:

Date: **9/2/2021**

Day of Week: **Thursday**

Data Source: **24-hour approach**



24-Hour Volume: 1,852

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		4	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		3	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		5	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		4	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	0		8	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	0		20	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	0		50	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	0		99	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	0		146	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	0		126	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	0		120	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	0		121	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:59 PM				
12:30 PM				
12:45 PM				
1:00 PM	0		139	
1:59 PM				
1:30 PM				
1:45 PM				
2:00 PM	0		136	
2:59 PM				
2:30 PM				
2:45 PM				
3:00 PM	0		153	
3:59 PM				
3:30 PM				
3:45 PM				
4:00 PM	0		157	
4:59 PM				
4:30 PM				
12:00 AM				
5:00 PM	0		154	
5:59 PM				
5:30 PM				
5:45 PM				
6:00 PM	0		140	
6:59 PM				
6:30 PM				
6:45 PM				
7:00 PM	0		94	
7:59 PM				
7:30 PM				
7:45 PM				
8:00 PM	0		73	
8:59 PM				
8:30 PM				
8:45 PM				
9:00 PM	0		40	
9:59 PM				
9:30 PM				
9:45 PM				
10:00 PM	0		29	
10:59 PM				
10:30 PM				
10:45 PM				
11:00 PM	0		20	
11:59 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		11	

Equipment ID#:

0 1,852
24-Hour Volume 1,852

TRAFFIC SURVEY - COUNT ANALYSIS
2009 MUTCD WARRANTS

2022 With

County: _____		District No.: _____	
City: <u>Sedona</u>		Population: <u>10,300</u>	
Route #		Name	
Major	_____	SR 89A	Control
Minor	_____	Southwest Drive	Section
			85% Speed
			-
			35
			-
			25

Warrant 1: Eight- Hour Volumes
Condition A

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

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

Warrant 1						
Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 600	Minor >= 200	Both Meet
12:00 AM	1:00 AM	50.51614	3.6932864	N	N	N
1:00 AM	2:00 AM	23.63442	3.4702915	N	N	N
2:00 AM	3:00 AM	27.03882	4.7797544	N	N	N
3:00 AM	4:00 AM	47.15101	3.5230133	N	N	N
4:00 AM	5:00 AM	99.94984	8.469005	N	N	N
5:00 AM	6:00 AM	374.6898	20.096262	N	N	N
6:00 AM	7:00 AM	854.9772	50.084508	Y	N	N
7:00 AM	8:00 AM	1573.302	98.940525	Y	N	N
8:00 AM	9:00 AM	2163.91	145.88292	Y	N	N
9:00 AM	10:00 AM	1950.471	125.98544	Y	N	N
10:00 AM	11:00 AM	1917.785	119.78271	Y	N	N
11:00 AM	12:00 PM	1989.495	121.13682	Y	N	N
12:00 PM	1:00 PM	2153.579	138.53697	Y	N	N
1:00 PM	2:00 PM	2105.345	136.09638	Y	N	N
2:00 PM	3:00 PM	2308.61	153.20467	Y	N	N
3:00 PM	4:00 PM	2464.371	156.53723	Y	N	N
4:00 PM	5:00 PM	2107.096	154.38018	Y	N	N
5:00 PM	6:00 PM	1908.396	139.77731	Y	N	N
6:00 PM	7:00 PM	1456.684	94.176914	Y	N	N
7:00 PM	8:00 PM	1174.9	73.095592	Y	N	N
8:00 PM	9:00 PM	710.1983	40.484385	Y	N	N
9:00 PM	10:00 PM	556.4065	29.29101	N	N	N
10:00 PM	11:00 PM	323.1697	19.763788	N	N	N
11:00 PM	12:00 AM	141.453	10.56904	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
Hours Required: 8

Condition A is not satisfied
Warrant 1 satisfied.

Warrant 1: Eight- Hour Volumes
Condition B

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

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

Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 900	Minor >=100	Both Meet
12:00 AM	1:00 AM	50.51614	3.6932864	N	N	N
1:00 AM	2:00 AM	23.63442	3.4702915	N	N	N
2:00 AM	3:00 AM	27.03882	4.7797544	N	N	N
3:00 AM	4:00 AM	47.15101	3.5230133	N	N	N
4:00 AM	5:00 AM	99.94984	8.469005	N	N	N
5:00 AM	6:00 AM	374.6898	20.096262	N	N	N
6:00 AM	7:00 AM	854.9772	50.084508	N	N	N
7:00 AM	8:00 AM	1573.302	98.940525	Y	N	N
8:00 AM	9:00 AM	2163.91	145.88292	Y	Y	Y
9:00 AM	10:00 AM	1950.471	125.98544	Y	Y	Y
10:00 AM	11:00 AM	1917.785	119.78271	Y	Y	Y
11:00 AM	12:00 PM	1989.495	121.13682	Y	Y	Y
12:00 PM	1:00 PM	2153.579	138.53697	Y	Y	Y
1:00 PM	2:00 PM	2105.345	136.09638	Y	Y	Y
2:00 PM	3:00 PM	2308.61	153.20467	Y	Y	Y
3:00 PM	4:00 PM	2464.371	156.53723	Y	Y	Y
4:00 PM	5:00 PM	2107.096	154.38018	Y	Y	Y
5:00 PM	6:00 PM	1908.396	139.77731	Y	Y	Y
6:00 PM	7:00 PM	1456.684	94.176914	Y	N	N
7:00 PM	8:00 PM	1174.9	73.095592	Y	N	N
8:00 PM	9:00 PM	710.1983	40.484385	N	N	N
9:00 PM	10:00 PM	556.4065	29.29101	N	N	N
10:00 PM	11:00 PM	323.1697	19.763788	N	N	N
11:00 PM	12:00 AM	141.453	10.56904	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 10
 Hours Required: 8

Condition B is satisfied
Warrant 1 satisfied.

Warrant 2: Four Hour Vehicular Volumes

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

*** The required traffic is present for at least four hours.**

Warrant 2 is satisfied

Warrant 3, Condition A- Peak Hour Delay

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

- (1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**
- (2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**
- (3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

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

Warrant 3, Condition B - Peak Hour Volume

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

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

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

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

Gap Requirements

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

Warrant 4 is N/A.

Warrant 5: School Crossing

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

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

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

Warrant 6 is N/A.

Warrant 7: Crash Experience

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

Warrant 7 is N/A.

Warrant 8: Roadway Network

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

Warrant 8 is N/A.

Summary:

Warrants satisfied: 1, 2

Warrants not satisfied: none

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

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

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

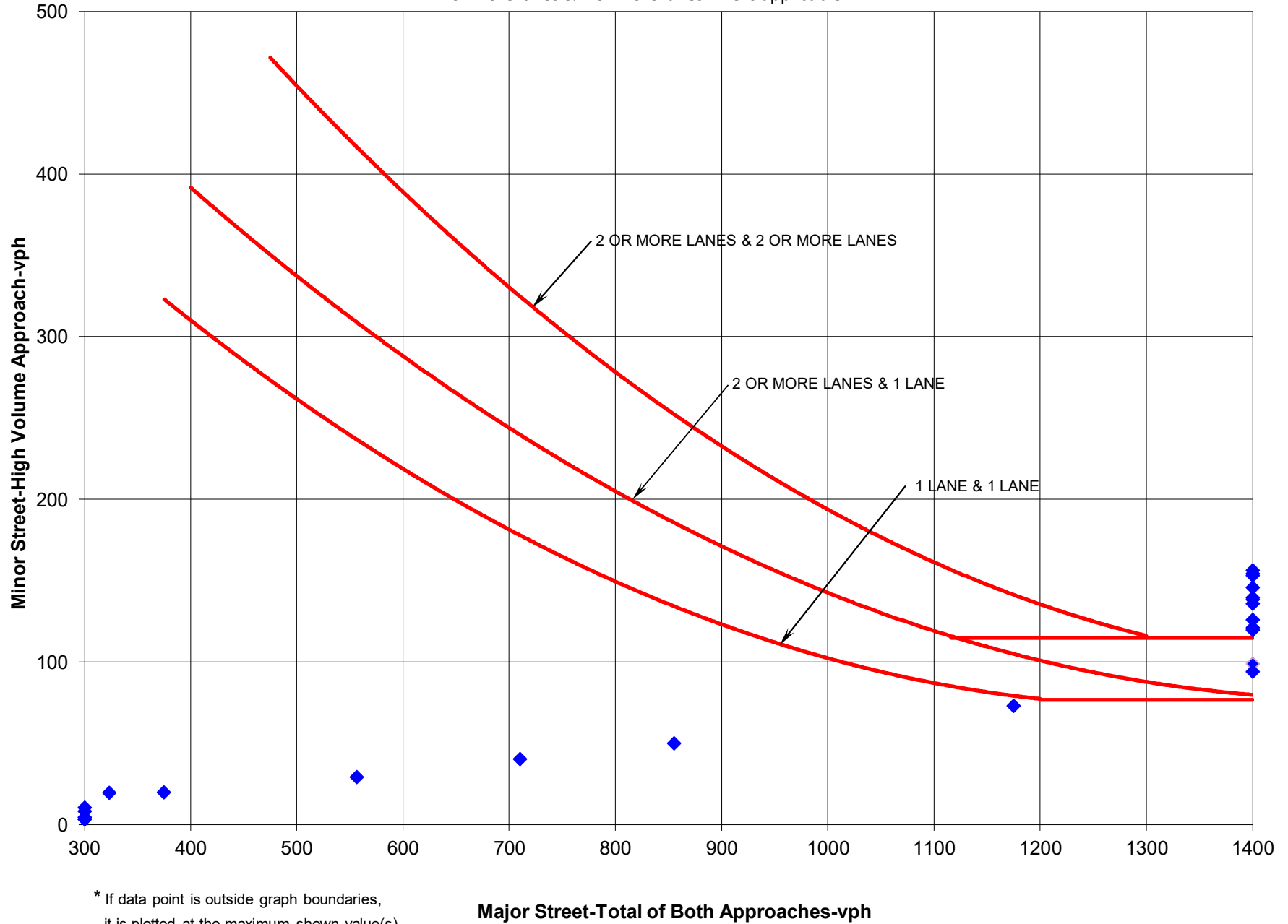
Major Street Lanes: 2
 Minor Street Lanes: 2

Use Figure: 4C-1 2&2

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	141.4530385	10.56904	-	-	N	-	-	-
2	50.51613692	3.69328644	-	-	N	-	-	-
3	23.63442022	3.47029146	-	-	N	-	-	-
4	27.03882015	4.77975443	-	-	N	-	-	-
5	47.15101285	3.52301333	-	-	N	-	-	-
6	99.94984167	8.46900504	-	-	N	-	-	-
7	374.6897557	20.0962622	-	-	N	-	-	-
8	854.977169	50.0845079	-	-	N	-	-	-
9	1573.302338	98.9405255	-	-	N	-	-	-
10	2163.909897	145.882924	-	-	Y	-	-	-
11	1950.471165	125.985442	-	-	Y	-	-	-
12	1917.784529	119.782709	-	-	Y	-	-	-
13	1989.495291	121.136823	-	-	Y	-	-	-
14	2153.578869	138.536966	-	-	Y	-	-	-
15	2105.345424	136.096385	-	-	Y	-	-	-
16	2308.610232	153.204668	-	-	Y	-	-	-
17	2464.370544	156.537229	-	-	Y	-	-	-
18	2107.095546	154.38018	-	-	Y	-	-	-
19	1908.396123	139.777308	-	-	Y	-	-	-
20	1456.68398	94.1769143	-	-	N	-	-	-
21	1174.899611	73.095592	-	-	N	-	-	-
22	710.1982823	40.4843846	-	-	N	-	-	-
23	556.4064555	29.2910099	-	-	N	-	-	-
24	323.1697383	19.7637877	-	-	N	-	-	-
			0	0	10	0	0	0
Warrant 2 is satisfied.			N	N	Y	N	N	N

Warrant 2
Figure 4C-1 Four Hour Volume Warrant

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



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

General Description of Intersection

Project Number: 21166

2025 With

Name of Major Roadway: SR 89A

Direction: E/W

of EB Lanes: 2

of WB Lanes: 2

85th percentile speed: 40 mph

Control #:

Section #:

Route #:

Name of Minor Roadway: Southwest Drive

Direction: N/S

of NB Lanes: 0

of SB Lanes: 2

85th percentile speed: 25 mph

Control #:

Section #:

Route #:

City: Sedona

Population: 10,300

County:

District:

Data Source: 24-hour approach

Date of Survey: 9/2/2021 (press Ctrl + ;)

Day of Week: Thursday

Weather: Sunny

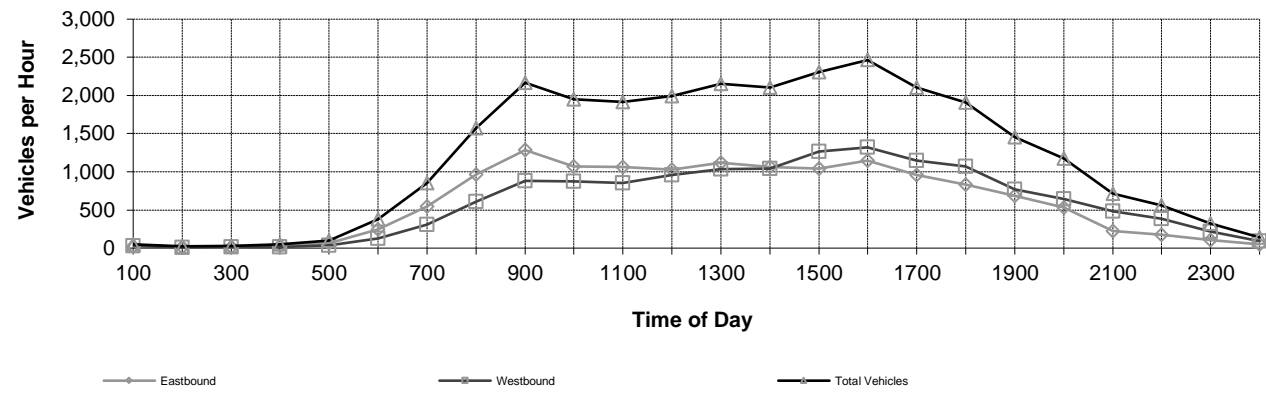
Surface Conditions: Dry

Smooth

Enter Traffic Volumes:

Automated Traffic Counts

Street: **SR 89A**
 Location: **Southwest Drive**
 City/State: **Sedona, AZ**
 Project #: **21166**
 Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: **28,483**

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	24		27	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	15		9	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	12		15	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	30		17	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	62		37	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	245		130	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	545		310	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	964		610	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	1285		879	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	1073		877	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	1066		852	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	1029		960	

Time	Eastbound		Westbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	1117		1037	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	1060		1046	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	1045		1263	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	1144		1320	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	962		1145	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	836		1073	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	687		770	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	530		645	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	224		486	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	172		384	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	106		217	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	49		92	

Equipment ID#:

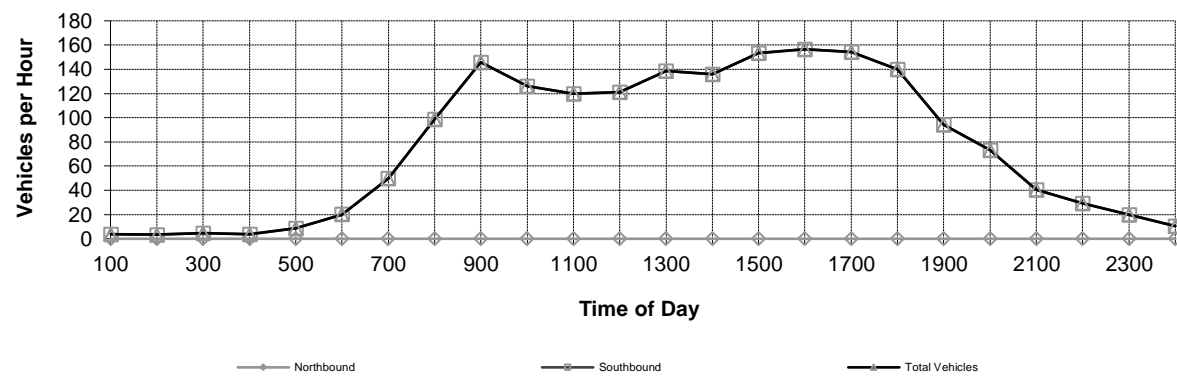
14,281	14,202
24-Hour Volume	
28,483	

Automated Traffic Counts

Street: **Southwest Drive**
 Location: **SR 89A**

City/State: **Sedona, AZ**
 Project #:

Date: **9/2/2021**
 Day of Week: **Thursday**
 Data Source: **24-hour approach**



24-Hour Volume: **1,852**

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 AM				
12:15 AM				
12:30 AM				
12:45 AM				
1:00 AM	0		4	
1:15 AM				
1:30 AM				
1:45 AM				
2:00 AM	0		3	
2:15 AM				
2:30 AM				
2:45 AM				
3:00 AM	0		5	
3:15 AM				
3:30 AM				
3:45 AM				
4:00 AM	0		4	
4:15 AM				
4:30 AM				
4:45 AM				
5:00 AM	0		8	
5:15 AM				
5:30 AM				
5:45 AM				
6:00 AM	0		20	
6:15 AM				
6:30 AM				
6:45 AM				
7:00 AM	0		50	
7:15 AM				
7:30 AM				
7:45 AM				
8:00 AM	0		99	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM	0		146	
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM	0		126	
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	0		120	
11:15 AM				
11:30 AM				
11:45 AM				
12:00 PM	0		121	

Time	Northbound		Southbound	
	Vehicles	Peds	Vehicles	Peds
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM				
1:00 PM	0		139	
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM	0		136	
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	0		153	
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM	0		157	
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	0		154	
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM	0		140	
6:15 PM				
6:30 PM				
6:45 PM				
7:00 PM	0		94	
7:15 PM				
7:30 PM				
7:45 PM				
8:00 PM	0		73	
8:15 PM				
8:30 PM				
8:45 PM				
9:00 PM	0		40	
9:15 PM				
9:30 PM				
9:45 PM				
10:00 PM	0		29	
10:15 PM				
10:30 PM				
10:45 PM				
11:00 PM	0		20	
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM	0		11	

Equipment ID#:

0 1,852
24-Hour Volume 1,852

TRAFFIC SURVEY - COUNT ANALYSIS
2009 MUTCD WARRANTS

2025 With

County: _____		District No.: _____	
City: <u>Sedona</u>		Population: <u>10,300</u>	Survey Date: <u>9/2/2021</u>
	Route #	Name	Control Section 85% Speed
Major		SR 89A	- 40
Minor		Southwest Drive	- 25

Warrant 1: Eight- Hour Volumes
Condition A

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

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

Time		Volume		Criteria		
Begin	End	Major	Minor	Major >= 600	Minor >= 200	Both Meet
12:00 AM	1:00 AM	50.51614	3.6932864	N	N	N
1:00 AM	2:00 AM	23.63442	3.4702915	N	N	N
2:00 AM	3:00 AM	27.03882	4.7797544	N	N	N
3:00 AM	4:00 AM	47.15101	3.5230133	N	N	N
4:00 AM	5:00 AM	99.94984	8.469005	N	N	N
5:00 AM	6:00 AM	374.6898	20.096262	N	N	N
6:00 AM	7:00 AM	854.9772	50.084508	Y	N	N
7:00 AM	8:00 AM	1573.302	98.940525	Y	N	N
8:00 AM	9:00 AM	2163.91	145.88292	Y	N	N
9:00 AM	10:00 AM	1950.471	125.98544	Y	N	N
10:00 AM	11:00 AM	1917.785	119.78271	Y	N	N
11:00 AM	12:00 PM	1989.495	121.13682	Y	N	N
12:00 PM	1:00 PM	2153.579	138.53697	Y	N	N
1:00 PM	2:00 PM	2105.345	136.09638	Y	N	N
2:00 PM	3:00 PM	2308.61	153.20467	Y	N	N
3:00 PM	4:00 PM	2464.371	156.53723	Y	N	N
4:00 PM	5:00 PM	2107.096	154.38018	Y	N	N
5:00 PM	6:00 PM	1908.396	139.77731	Y	N	N
6:00 PM	7:00 PM	1456.684	94.176914	Y	N	N
7:00 PM	8:00 PM	1174.9	73.095592	Y	N	N
8:00 PM	9:00 PM	710.1983	40.484385	Y	N	N
9:00 PM	10:00 PM	556.4065	29.29101	N	N	N
10:00 PM	11:00 PM	323.1697	19.763788	N	N	N
11:00 PM	12:00 AM	141.453	10.56904	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 0
Hours Required: 8

Condition A is not satisfied
Warrant 1 satisfied.

Warrant 1: Eight- Hour Volumes
Condition B

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

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

Warrant 2						
Time		Volume		Criteria		
Begin	End	Major	Minor	Major ≥ 900	Minor ≥ 100	Both Meet
12:00 AM	1:00 AM	50.51614	3.6932864	N	N	N
1:00 AM	2:00 AM	23.63442	3.4702915	N	N	N
2:00 AM	3:00 AM	27.03882	4.7797544	N	N	N
3:00 AM	4:00 AM	47.15101	3.5230133	N	N	N
4:00 AM	5:00 AM	99.94984	8.469005	N	N	N
5:00 AM	6:00 AM	374.6898	20.096262	N	N	N
6:00 AM	7:00 AM	854.9772	50.084508	N	N	N
7:00 AM	8:00 AM	1573.302	98.940525	Y	N	N
8:00 AM	9:00 AM	2163.91	145.88292	Y	Y	Y
9:00 AM	10:00 AM	1950.471	125.98544	Y	Y	Y
10:00 AM	11:00 AM	1917.785	119.78271	Y	Y	Y
11:00 AM	12:00 PM	1989.495	121.13682	Y	Y	Y
12:00 PM	1:00 PM	2153.579	138.53697	Y	Y	Y
1:00 PM	2:00 PM	2105.345	136.09638	Y	Y	Y
2:00 PM	3:00 PM	2308.61	153.20467	Y	Y	Y
3:00 PM	4:00 PM	2464.371	156.53723	Y	Y	Y
4:00 PM	5:00 PM	2107.096	154.38018	Y	Y	Y
5:00 PM	6:00 PM	1908.396	139.77731	Y	Y	Y
6:00 PM	7:00 PM	1456.684	94.176914	Y	N	N
7:00 PM	8:00 PM	1174.9	73.095592	Y	N	N
8:00 PM	9:00 PM	710.1983	40.484385	N	N	N
9:00 PM	10:00 PM	556.4065	29.29101	N	N	N
10:00 PM	11:00 PM	323.1697	19.763788	N	N	N
11:00 PM	12:00 AM	141.453	10.56904	N	N	N

Total number of hours, both the major(both approaches) and minor(high volume approach) met: 10
Hours Required: 8

Condition B is satisfied
Warrant 1 satisfied.

Warrant 2: Four Hour Vehicular Volumes

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

*** The required traffic is present for at least four hours.**

Warrant 2 is satisfied

Warrant 3, Condition A- Peak Hour Delay

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

- (1) The total delay by the traffic on a side street controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, **and**
- (2) the volume on the side street (one direction) equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes, **and**
- (3) the total traffic volume serviced during 1 hour equals or exceeds 800 vph for an intersection with four (or more) approaches or 650 vph for three approaches.

***Part 1 - N/A**

***Part 2 - N/A**

***Part 3 - N/A**

Warrant 3, Condition B - Peak Hour Volume

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

Warrant 3 is N/A.

Warrant 4: Pedestrian Volume

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

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

Gap Requirements

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

Warrant 4 is N/A.

Warrant 5: School Crossing

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

Warrant 5 is N/A.

Warrant 6: Coordinate Systems

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

Warrant 6 is N/A.

Warrant 7: Crash Experience

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

Warrant 7 is N/A.

Warrant 8: Roadway Network

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

Warrant 8 is N/A.

Summary:

Warrants satisfied: 1, 2

Warrants not satisfied: none

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

Warrants not included in study: none

Warrant 2 - Four Hour Vehicular Volumes

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

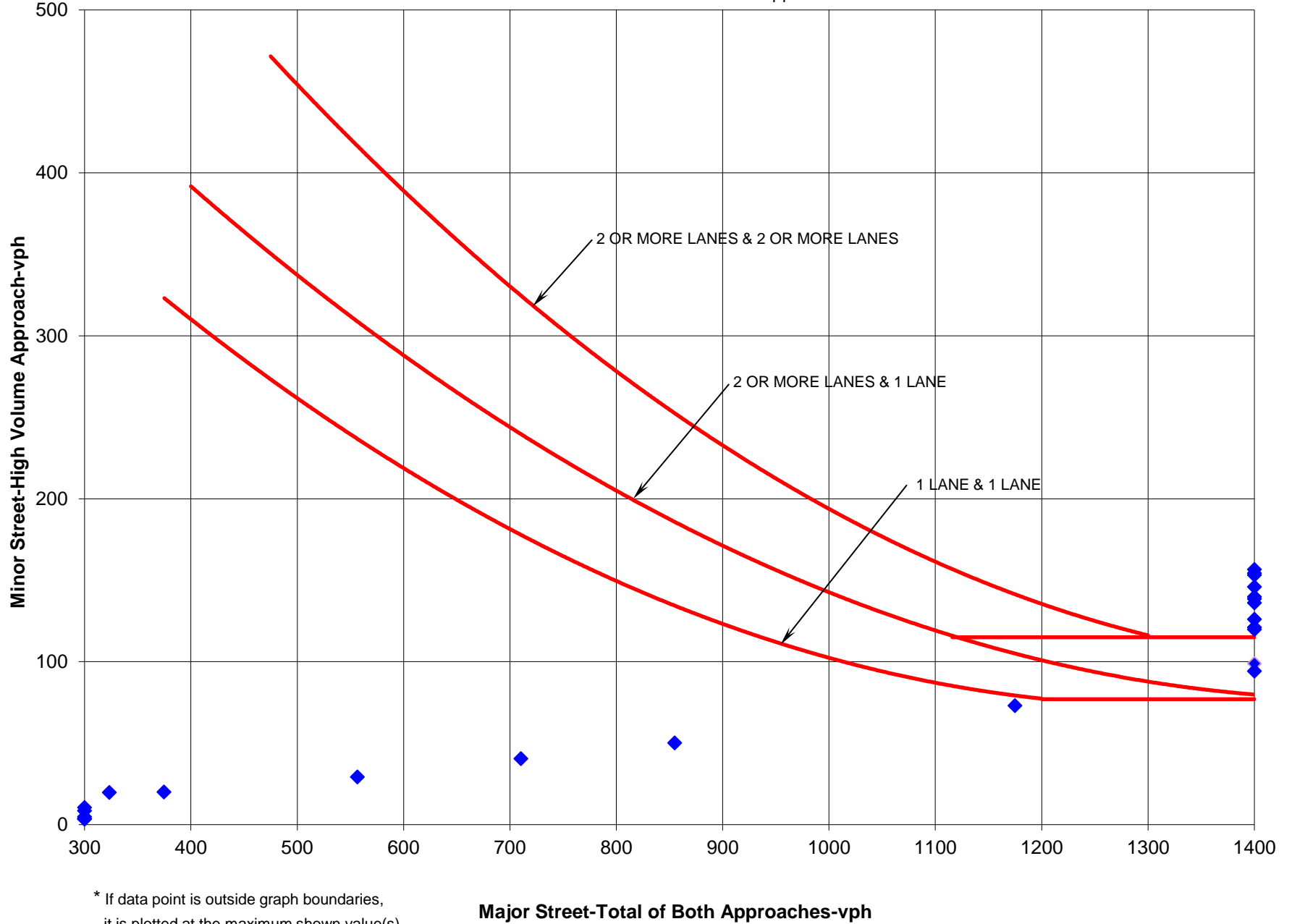
Major Street Lanes: 2
 Minor Street Lanes: 2

Use Figure: 4C-1 2&2

Rank	Major Street Volume	Minor Street Volume	Figure 4C-1			Figure 4C-2		
			1&1	2&1	2&2	1&1	2&1	2&2
1	141.4530385	10.56904	-	-	N	-	-	-
2	50.51613692	3.69328644	-	-	N	-	-	-
3	23.63442022	3.47029146	-	-	N	-	-	-
4	27.03882015	4.77975443	-	-	N	-	-	-
5	47.15101285	3.52301333	-	-	N	-	-	-
6	99.94984167	8.46900504	-	-	N	-	-	-
7	374.6897557	20.0962622	-	-	N	-	-	-
8	854.977169	50.0845079	-	-	N	-	-	-
9	1573.302338	98.9405255	-	-	N	-	-	-
10	2163.909897	145.882924	-	-	Y	-	-	-
11	1950.471165	125.985442	-	-	Y	-	-	-
12	1917.784529	119.782709	-	-	Y	-	-	-
13	1989.495291	121.136823	-	-	Y	-	-	-
14	2153.578869	138.536966	-	-	Y	-	-	-
15	2105.345424	136.096385	-	-	Y	-	-	-
16	2308.610232	153.204668	-	-	Y	-	-	-
17	2464.370544	156.537229	-	-	Y	-	-	-
18	2107.095546	154.38018	-	-	Y	-	-	-
19	1908.396123	139.777308	-	-	Y	-	-	-
20	1456.68398	94.1769143	-	-	N	-	-	-
21	1174.899611	73.095592	-	-	N	-	-	-
22	710.1982823	40.4843846	-	-	N	-	-	-
23	556.4064555	29.2910099	-	-	N	-	-	-
24	323.1697383	19.7637877	-	-	N	-	-	-
			0	0	10	0	0	0
Warrant 2 is satisfied.			N	N	Y	N	N	N

**Warrant 2
Figure 4C-1 Four Hour Volume Warrant**

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



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



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Crash Data

**Southwest Circle K TIA
2016-2020 Crash Summary**

IncidentID	IncidentDate	CollisionManner	TotalInjuries	TotalFatalities	Onroad	CrossingFeature
3727397	11/20/2020	3	0	0	SR-89A	Tortilla Dr
3608757	10/11/2019	4	0	0	SR-89A	Tortilla Dr
3525388	4/25/2019	6	0	0	Tortilla Dr	SR-89A
3457437	11/6/2018	2	0	0	SR-89A	Tortilla Dr
3234849	5/16/2017	4	0	0	SR-89A	Tortilla Dr
3058684	2/15/2016	3	0	0	SR-89A	Tortilla Dr
3506508	3/19/2019	6	0	0	SR-89A	Southwest Dr
3566494	8/22/2019	4	0	0	SR-89A	Southwest Dr
3608755	10/7/2019	3	0	0	SR-89A	Southwest Dr
3405734	6/9/2018	6	0	0	SR-89A	Tortilla Dr
3379115	5/11/2018	2	2	0	SR-89A	Southwest Dr
3379117	5/8/2018	2	1	0	SR-89A	Southwest Dr
3204850	2/24/2017	1	0	0	SR-89A	Southwest Dr
3234851	4/28/2017	4	1	0	SR-89A	Southwest Dr
3187800	11/26/2016	3	2	0	SR-89A	Southwest Dr
3426852	9/24/2018	4	0	0	SR-89A	Tortilla Dr

LEGEND

Collision Manner

- | | |
|------------------------------|----------------------------------|
| 1 - Single Vehicle | 7 - Sideswipe Opposite Direction |
| 2 - Angle | 8 - Rear to Side |
| 3 - Left Turn | 9 - Rear to Rear |
| 4 - Rear End | 10 - U Turn |
| 5 - Head On | 97 - Other |
| 6 - Sideswipe Same Direction | 99 - Unknown |



**SOUTHWEST CIRCLE K
SOUTHWEST DRIVE/STATE ROUTE 89A (SR 89A)
TRAFFIC IMPACT ANALYSIS**

APPENDIX

Comment Resolution



**Southwest Circle K
TIA Dated 1 November 2021
Comment Resolution**

7/31/2023

Item No.	Page No.	Reviewer	Code	Comment	Response
Sedona					
1	General	Sedona	A	Provide ADOT comments for the Traffic Impact Analysis.	Report has been submitted to ADOT. See below.
2	General	Sedona	A	The current edition of the ITE Trip Generation is the 11th Edition (September 2021). Please update the analysis to that edition.	See revised report.
3	General	Sedona	A	Show circulation & wheel paths for the fuel tank truck.	See revised site plan.
4	General	Sedona	D	Please clarify what adequate LOS and inadequate delay are. City of Sedona (LOS D – City Streets, ADOT roadways and intersections – LOS C).	Per ADOT standards, and meeting with ADOT and Sedona on 21 June 2023, Sedona is considered an urban area and LOS D is acceptable.
5	General	Sedona	D	Mitigation measures should be identified for any movement, driveway, or intersection that does not meet the agency driven LOS criteria.	See Mitigation section of the report.
6	General	Sedona	A	In the study methodology, note that the 2025 conditions have the growth factor and the traffic from the Navajo Lofts added as the 2025 “without” project analysis.(similar to what is noted on page 19).	See revised report.
7	General	Sedona	A	Update Tables 4, 5, 6, 7 and 8, and related text, based on the trip generation update and LOS criteria.	See revised report.
8	General	Sedona	D	Since the warrant analysis is for intersections on State Route 89A, ADOT TGP 611 should be used to prepare the warrant evaluation.	The portion of the traffic signal warrant analysis outlined in the TIA, along with supporting crash data and capacity analysis in the other sections of the TIA, have been deemed appropriate for the traffic signal warrant analysis by both ADOT and Sedona.
9	General	Sedona	D	Crash Analysis: There are two key patterns (angle/left turn crashes and rear end/sideswipe crashes) that are apparent for Tortilla and SR 89A and Southwest and SR 89A. Both of these patterns represent a significant number of crashes at the two locations and are associated with the majority of the injury crashes. These types of crash patterns are typically experienced in areas of high congestion and limited right turn lanes and should be discussed in the report.	Six observed crashes within a five year study period, along a high traffic volume roadway, is not discernible pattern.

A - Will Comply
 B - Consultant to Evaluate
 C - Sedona/ADOT to Evaluate
 D - See Response

Item No.	Page No.	Reviewer	Code	Comment	Response
10	General	Sedona	D	<p>Mitigation (starting on Page 35)</p> <p>i) Please remove commentary that notes that the poor LOS experienced along SR 89A driveways is not significant – not enough gaps is a factor, not a mitigation measure. Please provide feasible mitigation measures to improve the operation of these driveways and intersections to mitigate the project’s impacts.</p> <p>ii) The report notes that the installation of a traffic signal at the Southwest Drive SR 89A intersection will mitigate the poor intersection operation but does not note it as a mitigating measure due to the project specific impact as shown in Tables 7, 8 and 17.</p> <p>ii. No mitigation is recommended to address the poor intersection operation at Tortilla and SR 89A.</p> <p>iii. Specific mitigation measures for the unacceptable LOS delay driveways and intersections along SR 89A are not provided.</p> <p>iv. Please provide a detailed sketch to scale showing how the right turn lanes that are warranted along westbound SR 89A at Southwest and at the eastern site driveway could be constructed given the dimensions noted in the report.</p> <p>v. For the proposed traffic signal at Southwest and SR 89A, please provide how a traffic signal could be installed considering the location of the driveways on the southside of SR 89A.</p> <p>vi. The report notes that the installation of a traffic signal at the Southwest Drive SR 89A intersection will mitigate the poor intersection operation but does not note it as a mitigating measure due to the project specific impact (Tables 7, 8 and 17). The conclusion should note that since the warrants for signalization combined with the poor intersection LOS, that the project should contribute to the signalization and require construction before the project is constructed.</p> <p>vii. Please remove commentary that notes that the poor LOS experienced along SR 89A driveways is not significant – not enough gaps is a factor, generic statement that with roadways like 89A, that poor LOS is to be expected are not mitigation measures. Please provide feasible mitigation measures to improve the operation of these driveways and intersections to mitigate the project’s impacts.</p>	<p>i) Text does not say 'insignificant'. Poor levels of service can only be mitigated by closure of driveways or installation of multiple traffic signals, both unrealistic. Further mitigation measures are limited.</p> <p>ii) ADOT's priority is to maintain traffic flow on SR 89a. Traffic signals impede such flow. Furthermore the intersection operates inadequately without the project. In addition, there has been discussion with ADOT that the intersection of Tortilla Drive/SR 89a would be signalized in the future making signal spacing inadequate with Southwest Drive. Knowing these issues, a traffic signal was not recommended at Southwest Drive/SR 89a.</p> <p>ii. See response to ii) above and Mitigation section of the report.</p> <p>iii. See response to i) above and Mitigation section of the report.</p> <p>iv. Per meeting with ADOT and Sedona on 21 June 2023, a westbound right turn lane is not required at East Access. See revised site plan and report.</p> <p>v. A traffic signal is not proposed. See response to ii) above.</p> <p>vi. A traffic signal is not proposed. See response to ii) above.</p> <p>vii. See response to i) above.</p>
11	37	Sedona	A	On the fourth paragraph from the bottom of page 37, please clarify that the Navajo Lofts traffic is included in the base 2022 and 2025 traffic conditions. The current text is not clear.	Traffic signal warrants at Southwest Drive/SR 89a are expected to be met with both the Navajo Lots and Circle K project. See revised report.
12	General	Sedona	A	Update Figure 14 with the proposed lane configurations (right turn lanes not shown) and any mitigated lane geometry/signalization is not shown. There are two location 7's on the figure.	See revised report.
ADOT					
13	General	Ryan Wolff	A	The TIA states right turn lanes are warranted at intersections 3 and 6 and should be installed but then they are not proposed in figure 14 (also intersection 6 is mislabeled as intersection 7 in this figure) or shown on the site plan.	See revised report.
14	General	Ryan Wolff	D	Has there been discussion on extending Cantabile St to Southwest Dr to separate the apartments and gas station and allow cross access? This would also provide better connectivity if Southwest were to be signalized in the future.	There is not currently a plan to extend Cantabile Street to Southwest Drive.
15	General	Ryan Wolff	A	A dedicated left turn lane out of Southwest is warranted and should be installed with this project.	See revised report.
16	General	Chuck King	D	We require a completed application at the time of the submission for tracking purposes and to provide contact information for the encroachment owner and the civil engineer.	Noted.



1250 E. State Route 89A
Cottonwood, AZ 86326

Feb 16, 2020

Robin Nash
Helix Engineering, LLC
3240 E. Union Hills Dr.
Suite # 113
Phoenix, AZ 85050
Cell # 623-418-5344
Office # 602-788-2616

ADDRESS: 2820 W. State Route 89A Sedona, AZ parcel # 408-24-124E

The above referenced project is located in Arizona Public Service Company's electric service area. As a matter of fact, this property is already being served by APS. The Company extends its lines in accordance with the "Conditions Governing Extensions of Electric Distribution Lines and Services," Schedule 3, and the "Terms and Conditions for the Sale of Electric Service," Schedule 1, on file with the Arizona Corporation Commission at the time we begin installation of the electric facilities. These Schedules are available on-line at aps.com.

Application for the Company's electric service often involves construction of new facilities for various distances and costs depending upon customer's location, load size and load characteristics. With such variations, it is necessary to establish conditions under which Arizona Public Service will extend its facilities.

Sincerely,

Patty G

Verde Control Desk
928 646 8502
Verdecontroldesk@apsc.com

Our Purpose: As Arizona stewards, we do what is right for the people and prosperity of our state.

Our Vision: Create a sustainable energy future for Arizona.

Our Mission: Serve our customers with clean, reliable and affordable energy.

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, AZ 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

March 5, 2021

Robin Nash
Helix Engineering, LLC
3240 E. Union Hills Dr.
Suite 113
Phoenix, AZ 85050

Re: Domestic Water Service to APN 408-24-536C

Dear Ms. Nash:

Arizona Water Company (the "Company") certifies that the above-described property is located within its Certificate of Convenience and Necessity in Sedona, Arizona, and that it will provide water service to the property in accordance with the Company's tariffs and the Arizona Corporation Commission's rules and regulations. It will be the responsibility of the developer to provide the funds to install the necessary water facilities, and the Company assumes no liability to install those facilities if the funds are not advanced by the developer.

The design of the water distribution system must comply with the Company's standard specifications that are on file at the Arizona Department of Environmental Quality. Both preliminary and final water system designs must be approved by the Company.

It will also be the responsibility of the developer to meet all the requirements of regulatory agencies having jurisdiction over Arizona subdivisions and of Arizona statutes applicable to subdivided or unsubdivided land, including, but not limited to, requirements relating to a Certificate of Assured Water Supply, as set forth in the Arizona Groundwater Management Act, A.R.S. §45-576.

Very truly yours,

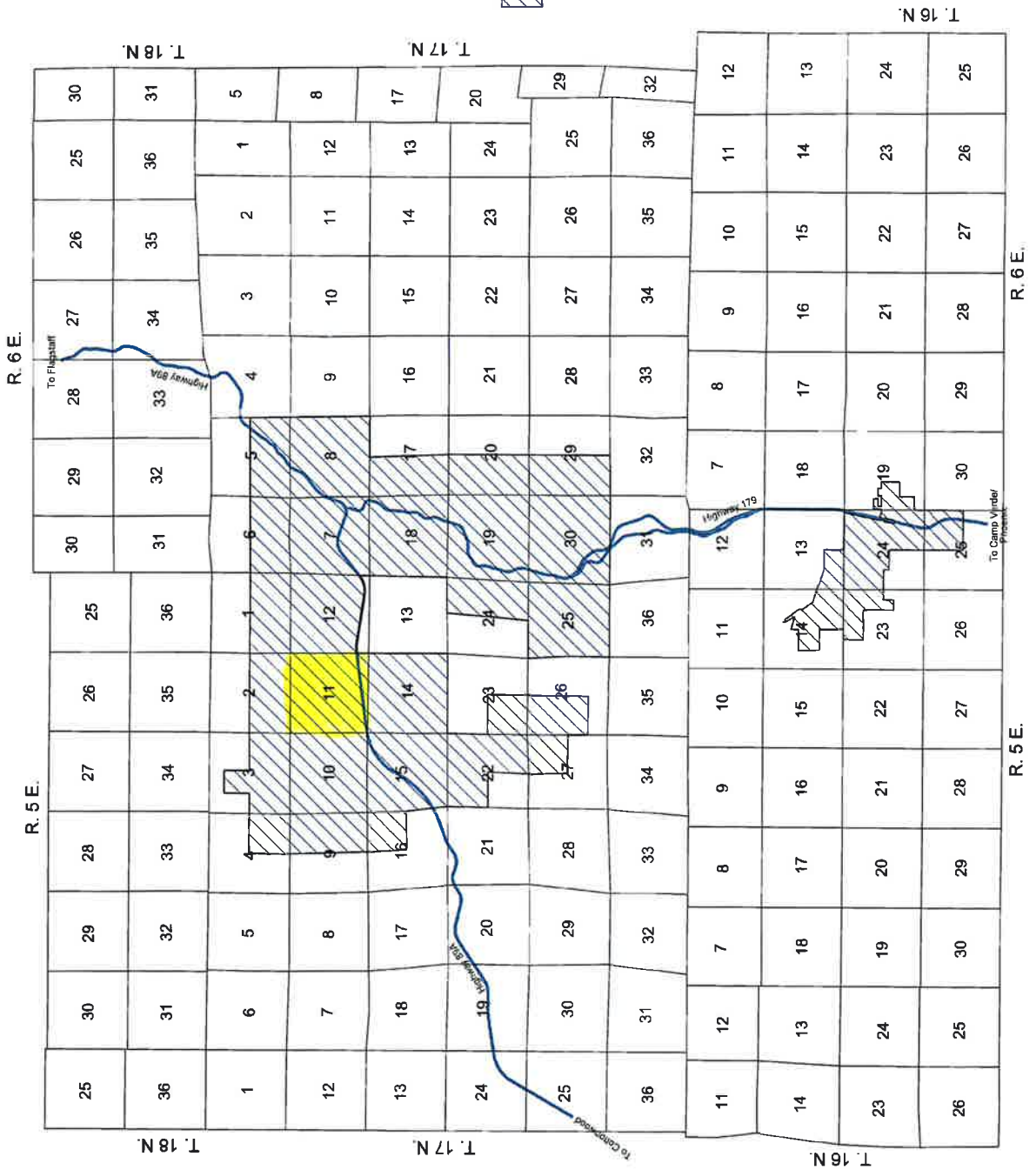


Andrew J. Haas, P.E.
Vice President - Engineering
engineering@azwater.com

sla

E-MAIL: engineering@azwater.com





Area Covered By Present CCR

28		
27		
26		
25		
24	Decision No. 80300 (VOCC)	CR 106
23	Decision No. 80300 (VOCC)	CR 106
22	Decision No. 81849 (VOCC)	CR 400
21	Decision No. 81849 (VOCC)	CR 400
20	Decision No. 86711 (VOCC)	CR 509
19	Decision No. 80206	CR 509
18	Decision No. 80300 (VOCC)	CR 106
17	Decision No. 80300 (VOCC)	CR 106
16	Decision No. 80300 (VOCC)	CR 106
15	Decision No. 80300 (VOCC)	CR 106
14	Decision No. 80300 (VOCC)	CR 106
13	Decision No. 80300 (VOCC)	CR 106
12	Decision No. 80300 (VOCC)	CR 106
11	Decision No. 80300 (VOCC)	CR 106
10	Decision No. 80300 (VOCC)	CR 106
9	Decision No. 80300 (VOCC)	CR 106
8	Decision No. 80300 (VOCC)	CR 106
7	Decision No. 80300 (VOCC)	CR 106
6	Decision No. 80300 (VOCC)	CR 106
5	Decision No. 80300 (VOCC)	CR 106
4	Decision No. 80300 (VOCC)	CR 106
3	Decision No. 80300 (VOCC)	CR 106
2	Decision No. 80300 (VOCC)	CR 106
1	Decision No. 80300 (VOCC)	CR 106

ARIZONA WATER COMPANY

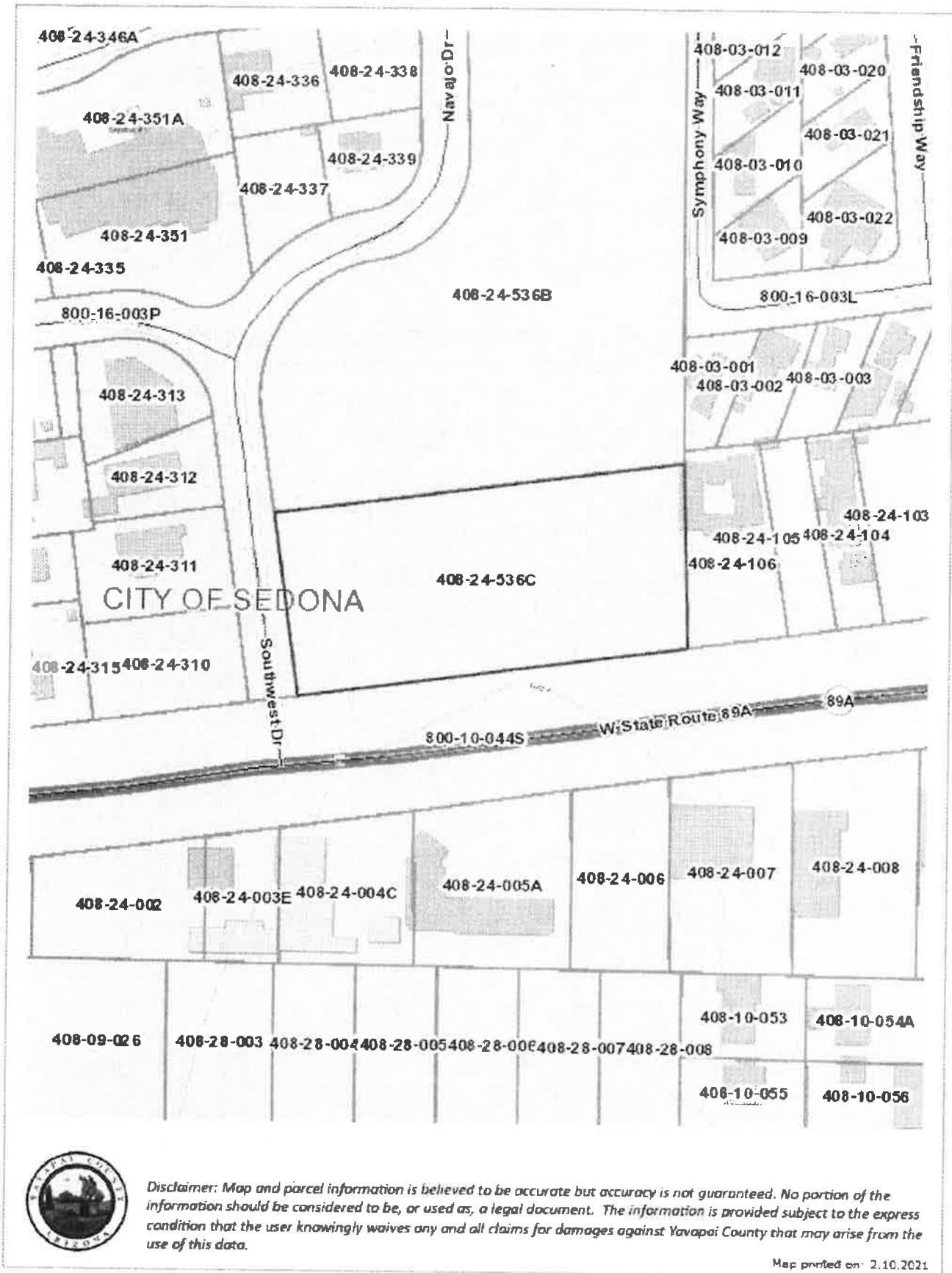
AREA COVERED BY PRESENT CCR AT

SEDONA

DATE August 1980

SCALE

1" = 1 Mile



Disclaimer: Map and parcel information is believed to be accurate but accuracy is not guaranteed. No portion of the information should be considered to be, or used as, a legal document. The information is provided subject to the express condition that the user knowingly waives any and all claims for damages against Yavapai County that may arise from the use of this data.

Map printed on: 2.10.2021

SERVICEABILITY LETTER

Casey Goff

From: Robin Nash [rn@hxeng.com]
Sent: Wednesday, February 10, 2021 9:40 AM
To: Casey Goff
Subject: Will serve letter

Hello, I am looking for a will serve letter for 2820 W. State Route A Sedona, AZ.
APN# ~~408-24-124E~~: You can mail it to Helix Engineering LLC 3240 E. Union Hills Dr. #113 Phoenix, AZ 85050.

Thank you

↘ 408-24-536C

--

Robin Nash

Helix Engineering, LLC

3240 E. Union Hills Dr.

Suite # 113

Phoenix, AZ 85050

Cell # 623-418-5344

Office # 602-788-2616

← SEND TO :



Mail:
102 Roadrunner Dr.
Sedona, AZ 86336

Site:
7500 W. SR 89A
Sedona, AZ 86336

(928) 204-2234
sedonaaz.gov

FAX (928) 204-7137

February 18, 2021

Robin Nash
Helix Engineering, LLC
3240 E. Union Hills Dr., Suite #113
Phoenix, AZ 85050

SUBJECT: WILL SERVE SEWER – 2820 W. SR89A
APN 408-24-536C

This letter is in response to your request regarding sewer service availability for the property referenced above.

The parcel has sewer availability, due to sewer being available adjacent to the point of access to the property, as defined in City Code section 13.15. Currently, the parcel is being billed the sewer standby fee. However, depending on the scope and impact of the development proposal, adequate capacity may not be available. Available sewer capacity is on a first come-first served basis, and there are no guarantees of sewer capacity for this property until a development proposal is approved.

In conclusion, sewer service is available on this property and, if adequate capacity is available at the time of development approval, sewer will be served by the city of Sedona. If you have any questions or concerns, please contact me at (928) 203-5069.

Sincerely,

A handwritten signature in blue ink, appearing to read "Roxanne Holland".

Roxanne Holland, PE
Director of Wastewater

RH:ms

cc: J. Andy Dickey, Director of Public Works/City Engineer (e-copy)
James Crowley, Associate Engineer (e-copy)
Hanako Ueda, Assistant Engineer (e-copy)
Sal Valenzuela, Chief Public Works Inspector (e-copy)
Marsha Beckwith, Accounting Technician (e-copy)
Streets file: SR89A

Wastewater Department

**REPORT ON
GEOTECHNICAL INVESTIGATION**



DESIGNATION: Circle K Sedona

LOCATION: NEC Highway 89A & Southwest Drive
Sedona, Arizona

CLIENT: Circle K Stores, Inc.

PROJECT NO: 200448SF

DATE: March 31, 2020

TABLE OF CONTENTS

1.0 INTRODUCTION1

2.0 GENERAL SITE AND SOIL CONDITIONS1

 2.1 Site Conditions1

 2.2 Seismic Design Parameters2

 2.3 General Subsurface Conditions3

3.0 ANALYSIS AND RECOMMENDATIONS3

 3.1 Analysis3

 3.2 Site Preparation6

 3.3 Foundation Design6

 3.4 Lateral Pressures9

 3.5 Fill and Backfill10

 3.6 Utilities Installation11

 3.7 Slabs-On-Grade11

 3.8 Asphalt Concrete Pavement11

 3.9 Underground Storm Water Storage13

4.0 GENERAL15

APPENDIX – Field and Laboratory Data



1.0 INTRODUCTION

This report presents the results of a subsoil investigation carried out at the site of a proposed *Circle K Sedona* store to be located at the northeast corner of Highway 89A and Southwest Drive in Sedona, Arizona.

We understand that construction will consist of an approximate 5,187 square foot convenience store along with a 5,304 square foot fuel pump canopy with 9 fuel dispensers and underground fuel storage tanks on 1.8-acres of undeveloped land. The building will be single story, slab on grade with masonry, wood frame, or light gauge steel construction. Structural loads are expected to be light to moderate and no special considerations regarding settlement tolerances are known at this time although the industry standard of a maximum of 1-inch of settlement will be assumed to be accepted and used in design. Adjacent areas will be landscaped or paved to support moderate passenger and light truck traffic. Landscaped areas will be utilized for stormwater retention and disposal.

2.0 GENERAL SITE AND SOIL CONDITIONS

2.1 Site Conditions

The property currently consists of a vacant lot that slopes slightly upward to the northeast. The site is bounded on the north by a vacant lot followed by Navajo Drive, on the east by commercial properties, on the south by Arizona State Route 89A, and on the west by Southwest Drive. A cursory review of available historical aerials was conducted. Aerials prior to 2007 were not readily available, but based on the photos that were viewed, the site appears to have remained the undeveloped land that is seen today.

It is recommended to obtain and review any Phase I/II Environmental Site Assessments available for the site that may provide a detailed site history to address issues that may impact site development. Refer to the following historical aerial and site photos:

Figure 2.1.1 Dated 1997



Figure 2.1.2 Dated 2003



Figure 2.1.3 Dated 2010



Figure 2.1.4 Dated 20017



2.2 Seismic Design Parameters

The project area is in a seismic zone that is considered to have low historical seismicity. The seismicity of the Phoenix area has had only three magnitude 3.0 events in over 100 years. Liquefaction is not considered a concern as groundwater exceeds 50 feet below ground surface.

Although borings were not advanced to 100 feet, based on the nature of the subsoils encountered in the borings and geology in the area, Site Class Definition, Class C may be used for design of the structures. In addition, the following seismic parameters may be used for design (based on ASCE7-16 and IBC 2015, utilizing the ATC Hazards by Location Tool):

Table 2.2.1 Seismic Parameters

Building Design Code:	ASCE 7-16	IBC 2015
MCE ¹ spectral response acceleration for 0.2 second period, S _S :	0.295g	0.318g
MCE ¹ spectral response acceleration for 1.0 second period, S ₁ :	0.093g	0.093g
Site coefficient, F _a :	1.3	1.2
Site coefficient, F _v :	1.5	1.7
MCE ¹ spectral response acceleration adjusted for site class, S _{MS} :	0.384g	0.382g
MCE ¹ spectral response acceleration adjusted for site class, S _{M1} :	0.139g	0.158g
5% Damped spectral response acceleration, S _{DS} :	0.256g	0.254g
5% Damped spectral response acceleration, S _{D1} :	0.093g	0.105g
NOTE 1: MCE = maximum considered earthquake		

2.3 General Subsurface Conditions

The subsoils consist predominately of layers of sandy silt to depths of 11.5 to 16 feet underlain by decomposed/residual and moderately weathered sandstone to the maximum termination depth of 20.4 feet below existing grade. Borings B-2 and UST-1 encountered auger refusal due to bedrock at ~15 and 19 feet respectively. Standard Penetration Resistance Test (SPT) values ranged from 2 to 10 blows per foot (bpf) in the upper soils extending down to depths on the order of 10 feet indicating very loose conditions. The relative density gradually increases with depth, increasing to 50+ bpf in the residual sandstone. No groundwater was encountered during this investigation. Based on visual and tactile observation, the upper soils were in a 'dry' to 'moist' state at the time of the investigation.

Laboratory testing indicates in-situ dry densities of the upper soils ranged from 94.7 to 104.6 pcf and water contents ranged from 10.9 to 11.1 percent at the time of investigation. Liquid limits were non-plastic (NP) as well as the tested plasticity indices. The upper clayey soils exhibit volume increase (**swell**) due to wetting of less than 1 percent when compacted to moisture and density levels normally expected during construction. Undisturbed samples displayed minor to moderate (1.6 to 2.1%) compression due to incremental loading to a maximum confining load of 3,200 psf and minor (<1%) additional compression due to inundation (hydro-collapse).

3.0 ANALYSIS AND RECOMMENDATIONS

3.1 Analysis

Analysis of the field and laboratory data indicates that subsoils at the site are generally favorable for the support of the proposed structures on shallow foundations and slab-on-grade construction subject to remedial earthworks. An option to support the canopy structure on drilled shafts is also provided. **Review of the grading plans is recommended for final design recommendations to determine if any modifications to the foundations are required to accommodate cuts and fills to make the building pad grades, and/ surface or underground storm water retention basins or tanks.**

As noted above, no groundwater was encountered during this investigation. It is not uncommon to encounter seasonal perched water at the soil/rock interface during periods of wet weather. Consideration should be given to designing and installing a French drain on the uphill side of the building to intercept water from entering under the building and discharging on the low side of the site.

Field and laboratory testing indicate that the upper soils are of very low relative density and capable of post-construction settlement, due to inundation (**hydro-collapse**). Accordingly, recommendations are made to over-excavate and re-compact the bearing soils to increase density and reduce the potential for

collapse. The over-excavated and re-compacted soil will mitigate, but not eliminate the potential for additional settlement if the deeper soils become wet. This will also ensure a uniform bearing condition for the new foundations.

For standard foundations to perform as expected, attention must be paid to provide proper drainage to limit the potential for water infiltration of deeper soils. It is assumed that the landscape plan will use mostly low water use or "green" desert type plants (xeriscape). It is preferred to keep irrigated plants at least 5 feet away from structures with irrigation schedules set and maintained to run intermittently. **Unpaved planter areas should be sloped at least 5 percent for a distance of at least 10 feet away from the building.** It is understood that this may not be possible due to ADA maximum slope requirements for the adjacent sidewalks and patios. The slope may be reduced to 2 percent provided extra care is taken to ensure sidewalks and other hardscape features do not create a "dam" that prevents positive drainage away from the buildings, creating a "pond" adjacent to the building. Roof drainage should also be directed away from the building in paved scuppers. Pre-cast loose splash blocks should not be used as they can be dislodged and/or eroded. Roof drains should not be allowed to discharge into planters adjacent to the structure. It is preferred that they be directed to discharge to pavement (per photo example), retention basins or discharge points located at least 10 feet away from the building.



It is reiterated that shallow spread footings are recommended for the exterior walls and other light interior columns since this is the most economical system available. However, this shallow system relies on the dry strength of the unsaturated native soils. A limited depth of re-compaction is recommended to increase density of the near surface soils that are more likely to encounter seasonal moisture changes, or deeper foundations. **The deeper native soils are moisture sensitive and could experience differential settlement if subjected to significant surface water infiltration.** Recognizing the need to minimize significant water penetration adjacent to the building perimeter that could detrimentally impact the building foundation, the following additional recommendations are made to protect foundations:

1. Take extra precaution to backfill and compact native soil fill to 95 percent in all exterior wall locations.
2. Avoid utility trenches passing through retention basins leading to the building. If unavoidable, backfill the trench with MAG Section 728 ½-sack CLSM to cut off preferred drainage paths.
3. Avoid placing retention basins or underground storage tanks (USTs) next to building foundations. **A distance of at least 10 feet should be maintained between structures and the location of any retention basin maximum fill level and 15 feet from any USTs.**
4. Create and maintain positive drainage away from the exterior wall for a minimum of 10 feet.
5. Avoid sidewalks, curbs or other elements that create a dam that could cause water to pond within 5 feet of the perimeter wall.

6. Include no irrigated landscape materials in the first 3 feet next to the building.
7. Between 3 feet and 5 feet, include only landscape materials that can be irrigated with a maximum of 1 gallon per hour emitter heads. Set and maintain irrigation controllers to prevent 24/7 flows.
8. Any landscape materials requiring greater than 1 gallon per hour irrigation, including turf, shall be at least 5 feet from the outside face of the building.
9. All irrigation feeder lines, other than those that supply individual emitters, shall not be placed closer than 5 feet to the building.

Groundwater is not expected to be a factor in the design or construction of shallow foundations and underground utilities. Excavation operations should be relatively straightforward with conventional equipment.

Open-cut excavation appears feasible for the site depending on proximity of the proposed underground fuel and/or storage tanks (UST) to sidewalks, streets and underground utilities. Temporary shoring, bracing or underpinning to provide structural stability and protect personnel working in the excavation will be required if loose sandy soils are encountered. Excavations for UST's can be accomplished with conventional track mounted heavy excavators. **Due to the decomposed to weathered sandstone bedrock below 15 feet hard dig conditions should be expected.**

All excavations must comply with current governmental regulations including the current OSHA Excavation and Trench Safety Standards. The upper native soils are classified as Type C. Side slopes for open-cut excavation shall be cut back at 1½:1 (horizontal to vertical). The slopes shall be protected from erosion due to run-off or long-term surcharge at the slope crest. Construction equipment, building materials, excavated soil and vehicular traffic shall not be allowed within 10 feet or one-third the slope height, whichever is greater, from the top of slope. All cut slopes shall be observed by the Soils Engineer during excavation. Adjustments to the recommended slopes may be necessary due to wet zones, loose strata and other conditions not observed in the borings. Localized shoring may also be required. Shotcrete or soil stabilizer on the slope face may be useful in preventing erosion due to run-off and/or drying of the slope.

For exterior slabs-on-grade, frequent jointing is recommended to control cracking and reduce tripping hazards should differential movement occur. It is also recommended to pin the landing slab to the building floor/stem wall. This will reduce the potential for the exterior slab lifting and blocking the operation of out-swinging doors. Pinning typically consists of 24-inch long No. 4 reinforcing steel dowels placed at 12-inch centers.

3.2 Site Preparation

The entire area to be occupied by the proposed construction should be stripped of all vegetation, debris, rubble and obviously loose surface soils.

Subsoils under the building foundations should be over-excavated **at least 4 feet below** proposed footing bottom elevation, **or existing grade, whichever is deeper**, extending at least 5 feet beyond the foundation edges. The entire building pad does not require deep over-excavation if footing lines can be accurately located during earthwork operations. It may be more feasible to just over-excavate the entire building pads if the building footprint is relatively small. A representative of the Geotechnical Engineer should examine the subgrade once sub-excavation is complete and prior to backfilling to ensure removal of deleterious. Fill placement and quality should be as defined in the "Fill and Backfill" section of this report.

Prior to placing engineered fill below foundations and slab on grades the exposed grade should be scarified to a depth of 8 inches, moisture-conditioned to optimum (± 2 percent) and compacted to at least 95 percent of maximum dry density as determined by ASTM D-698.

Pavement areas should be scarified, moisture-conditioned and compacted in a similar manner.

The silty fine sand soils may be sensitive to excessive moisture content and will become unstable at elevated moisture content. Accordingly, it may be necessary to compact soils on the dry side of optimum, especially in asphalt pavement areas. The reduced moisture content under slabs-on-grade should only be used upon approval of the engineer in the field.

3.3 Foundation Design

The following bearing capacities can be utilized for design:

Table 3.3.1 Foundation Bearing Capacities

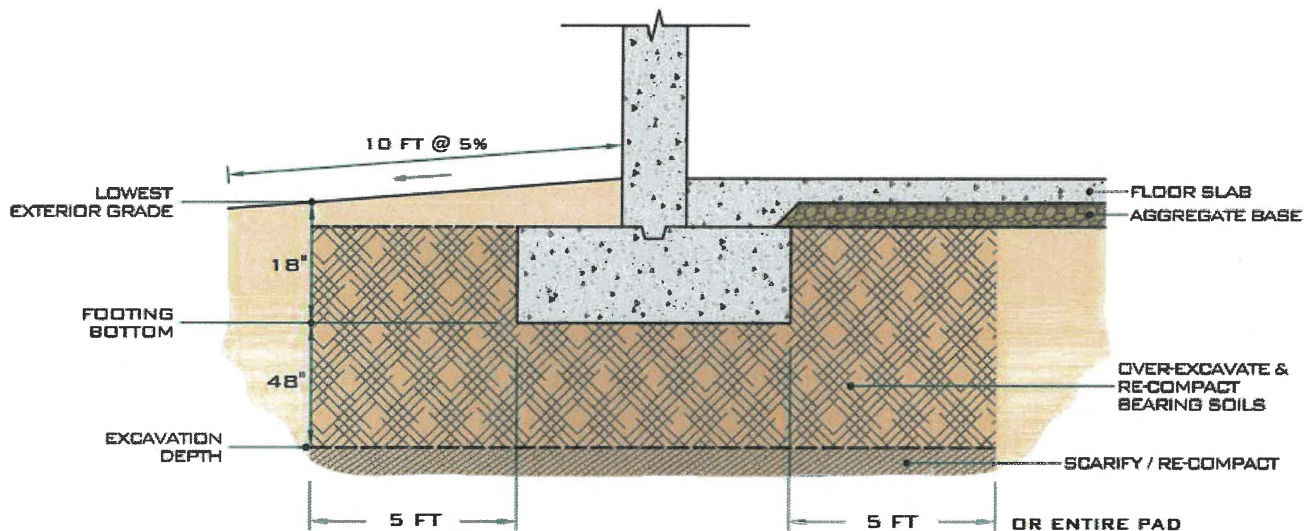
Structure	Foundation Type	Foundation Depth ⁽¹⁾	Bearing Medium	Bearing Capacity	Comments
Minor Structures	Spread	1.5 ft.	Compacted Subgrade	1,000 psf	2
Main Structure	Spread	1.5 ft.	Min. 4ft Engineered Fill	2,000 psf	3
Canopy Option	Drilled Shafts	15.0 ft.	Dense Residual Soils or Decomposed Bedrock	6,000 psf	4

Comments:

1. Depth refers to bottom of footing elevation below lowest adjacent finished grade, or finished floor for interior footings.
2. Minor structures such as screen walls, small utility buildings, etc. The bottom of footing excavation should be scarified to a depth of 8 inches, moisture-conditioned to optimum (± 2 percent) and compacted to at least 95 percent of maximum dry density as determined by ASTM D-698.
3. Shallow spread footings bearing on at least 4 feet of engineered fill +8" pre-compacted subgrade extending at least 5 feet beyond the footing edges. Please refer to the following detail: Figure 3.3.1. Continuous and square footings should **not exceed 5 feet and 10 feet respectively** to stay within settlement tolerances. If higher capacity is needed, please contact our office for recommendations.
4. Drilled Shafts bearing on hard soils at a **minimum depth of 15 feet below existing grade or completely through soft upper soil layers for end bearing on dense soils or decomposed bedrock**. Design curves with uplift and skin friction can be provided, please contact Speedie and Associates.

These bearing capacities refer to the total of all loads, dead and live, and are net pressures. They may be increased one-third for wind, seismic or other loads of short duration. All footing excavations shall be level and cleaned of all loose or disturbed materials. **Positive drainage away from the proposed building must always be maintained.**

Figure 3.3.1 Foundation Detail – Engineered Fill



Continuous wall footings and isolated rectangular footings should be designed with minimum widths of 16 and 24 inches respectively, regardless of the resultant bearing pressure. Lightly loaded interior partitions (less than 800 plf) may be supported on reinforced thickened slab sections (minimum 12 inches of bearing width).

Estimated settlements under design loads are on the order of ½ to 1-inch, virtually all of which will occur during construction. Post-construction differential settlements will be on the order of one-half the total settlement, under existing and compacted moisture contents. Additional localized settlements of the same magnitude could occur if native supporting soils were to experience a significant increase in moisture content. **Positive drainage away from structures and controlled routing of roof runoff must be provided and maintained to prevent ponding adjacent to perimeter walls.** Planters requiring heavy watering should not be placed adjacent to or within 5 feet of the building. Care should be taken in design and construction to ensure that domestic and interior storm drain water is contained to prevent seepage. Roof drainage should be directed to paved areas or storm drains. They should not discharge into planters adjacent to the structures.

Drilled shafts shall penetrate the upper soils and bear within the predominately decomposed sandstone. A minimum shaft diameter of 30 inches is recommended. The length of the drilled shafts will vary depending upon the elevation of the bedrock surface and amount of fill placed. Shafts on the order of 15 feet in length should be anticipated.

Design and construction should consider straight shaft drilled shafts. Rock and boulder inclusions may impede drilling. Based on the soil type, casing may be required to maintain open shafts in the upper soils, especially if left open for any length of time. All drilled shafts should be examined by a representative of the geotechnical engineer to verify cleaning, depth, dimensions and proper bearing strata. Straight shaft drilled shafts may be "machine cleaned" provided the contractor can show the ability to adequately remove loose material. The minimum allowable drilled shaft spacing is 3 diameters, center-to-center. Adjacent drilled shaft base (tip) elevations should not vary by more than 45 degrees.

Continuous footings and stem walls should be reinforced to distribute stresses arising from small differential movements, and long walls should be provided with control joints to accommodate these movements. Reinforcement and frequent control joints are suggested to allow slight movement and prevent minor floor slab cracking especially in floor areas to be covered with hard tile.

3.4 Lateral Pressures

The following lateral pressure values may be utilized for the proposed construction:

Active Pressures	
Unrestrained Walls	35 pcf
At-Rest Pressures	
Restrained Walls	60 pcf
Passive Pressures	
Continuous Footings	300 pcf
Spread Footings	350 pcf
Coefficient of Friction (w/ passive pressure)	0.35
Coefficient of Friction (w/out passive pressure)	0.45

All backfill must be compacted to not less than 95 percent (ASTM D-698) to mobilize these passive values at low strain. Expansive soils should not be used as retaining wall backfill, except as a surface seal to limit infiltration of storm/irrigation water. The expansive pressures could greatly increase active pressures.

Soil resistance to lateral loading of drilled shafts may be calculated using nominal (allowable) values from IBC 2012/15 (Table 1806.2) as follows. An allowable lateral soil resistance of 200 psf/ft may be used for design in the upper stiff soils to depths of 15 feet. This can be increased to 500 psf/ft within the deeper decomposed sandstone. An increase of 1/3 is permitted when using the alternate load combinations in Section 1605.3.2 that include wind or earthquake loads. For increased capacity, a detailed site-specific analysis using L-pile or similar program should be conducted. Per IBC Section 1810.2.1 the unsaturated soils are not fluid or subject to liquefaction and therefore provide enough lateral support to prevent buckling.

3.5 Fill and Backfill

Native soils are considered suitable for use in all grading and engineered fills. The silty fine sand soils may be sensitive to excessive moisture content and will become unstable at elevated moisture content. Accordingly, it may be necessary to compact soils on the dry side of optimum, especially in asphalt pavement areas. The reduced moisture content under slabs-on-grade should only be used upon approval of the engineer in the field.

Imported common fill for use in site grading should be examined by a Soils Engineer to ensure that it is of low swell potential and free of organic or otherwise deleterious material. In general, the fill should have 100 percent passing the 3-inch sieve and no more than 60 percent passing the #200 sieve. For the fine fraction (passing the 40 sieve), the liquid limit and plasticity index should not exceed 30 percent and 10 percent, respectively. It should exhibit less than 1.5 percent swell potential when compacted to 95 percent of maximum dry density (ASTM D-698) at a moisture content of 2 percent below optimum, confined under a 100 psf surcharge, and inundated.

Fill should be placed on subgrade which has been properly prepared and approved by a Soils Engineer. Fill must be wetted and thoroughly mixed to achieve optimum moisture content, ± 2 percent. Fill should be placed in horizontal lifts of 8-inch thickness (or as dictated by compaction equipment) and compacted to the percent of maximum dry density per ASTM D-698 set forth as follows:

A.	Building Areas	
	1. Below footing level	95
	2. Below slabs-on-grade (non-expansive soils)	95
B.	Pavement Subgrade or Fill	95
C.	Utility Trench Backfill	95
D.	Aggregate Base Course	
	1. Below floor slabs	95
	2. Below asphalt paving	100
E.	Landscape Areas	90

3.6 Utilities Installation

Trench excavations for utilities can be accomplished by conventional trenching equipment. Trench walls should stand near-vertical for the short periods of time required to install shallow utilities although some sloughing may occur in looser and/or sandier soils requiring laying back of side slopes and/or temporary shoring. Adequate precautions must be taken to protect workmen in accordance with all current governmental regulations.

Backfill of trenches above bedding zones may be carried out with native excavated material. This material should be moisture-conditioned, placed in 8-inch lifts and mechanically compacted. Water settling is not recommended. Compaction requirements are summarized in the "Fill and Backfill" section of this report.

3.7 Slabs-On-Grade

To facilitate fine grading operations and aid in concrete curing, a 4-inch thick layer of granular material conforming to the gradation for Aggregate Base (A.B.) as per M.A.G. Specification Section 702 should be utilized beneath the slab. Dried subgrade soils **must** be re-moistened prior to placing the aggregate base if allowed to dry out, especially if fine-grained soils are used in the top 12-inches of the pad.

The native soils can store a significant amount of moisture, which could increase the natural vapor drive through the slab. Accordingly, if moisture sensitive flooring and/or adhesive are planned, the use of a vapor barrier directly under the slab is recommended. Vapor barriers should be a minimum 15-mil thick polyolefin (or equivalent), which meets ASTM E 1745 Class A specifications. Vapor barriers do increase the potential for slab curling and water entrapment under the slab. Accordingly, if a vapor barrier is used, additional precautions such as low slump concrete, frequent jointing and proper curing will be required to reduce curling potential and detailed to prevent the entrapment of outside water sources.

3.8 Asphalt Concrete Pavement

If earthwork in paved areas is carried out to finish subgrade elevation as set forth herein, the subgrade will provide adequate support for pavements. The location designation is for reference only. **The designer/owner should choose the appropriate sections to meet the anticipated traffic volume and life expectancy.** The section capacity is reported as daily ESALs, Equivalent 18-kip Single Axle Loads. Typical heavy trucks impart 1.0 to 2.5 ESALs per truck depending on load. It takes approximately 1,200 passenger cars to impart 1 ESAL.

Table 3.8.1 Pavement Sections

Area of Placement	Flexible (AC Pavement)			Rigid (PCC Pavement)	
	Thickness		Daily 18-kip ESALs	Thickness PCCP	Daily 18-kip ESALs
AC (0.39)	ABC (0.12)				
Auto Parking	2.0"	4.0"	5	5.0"	8
Truck Parking, Main Drives, & Fire Lanes	3.0"	4.0"	23	6.0"	21
	3.0"	6.0"	53	7.0"	46

Notes:

1. Designs are based on AASHTO design equations and ADOT correlated R-Values.
2. The PCCP thickness is increased to provide better load transfer and reduce potential for joint & edge failures. Design PCCP per ACI 330R-87.
3. Full depth asphalt or increased asphalt thickness can be increased by adding 1.0-inch asphalt for each 3 inches of base course replaced.

Pavement Design Parameters:

Assume:	One 18-kip Equivalent Single Axle Load (ESAL)/Truck
Life:	20 years
Subgrade Soil Profile:	
% Passing #200 sieve:	65%
Plasticity Index:	0
k:	150 pci (assumed)
R value:	41 (per ADOT tables)
M _R :	25,100 (per AASHTO design)

These designs assume that all subgrades are prepared in accordance with the recommendations contained in the "Site Preparation" and "Fill and Backfill" sections of this report, and paving operations are carried out in a proper manner. If pavement subgrade preparation is not carried out immediately prior to paving, the entire area should be proof-rolled at that time with a heavy pneumatic-tired roller to identify locally unstable areas for repair.

Pavement base course material should be aggregate base per M.A.G. Section 702 Specifications. Asphalt concrete materials and mix design should conform to M.A.G. 710. It is recommended that a ½-inch or ¾-inch mix designation be used for the pavements. The actual mix design may be dependent on the selected pavement section and the specified minimum lift thicknesses for the different types of mixes. **Follow M.A.G. Section 710 for recommended minimum lift thicknesses.** Pavement installation should be

carried out under applicable portions of M.A.G. Section 321 and municipality standards. The asphalt supplier should be informed of the pavement use and be required to provide a mix that will provide stability and be aesthetically acceptable. Some of the newer M.A.G. mixes are very coarse and could cause placing and finish problems. A mix design should be submitted for review to determine if it will be acceptable for the intended use.

For sidewalks and other areas not subjective to vehicular traffic a 4-inch section of concrete will be enough. For trash and dumpster enclosures a thicker section of 6 inches of concrete is recommended.

Portland Cement Concrete Pavement must have a minimum 28-day flexural strength 550 psi (compressive strength of approximately 3,700 psi). It may be cast directly on the prepared subgrade with proper compaction (reduced) and the elevated moisture content as recommended in the report. Lacking an aggregate base course, attention must be paid to using low slump concrete and proper curing, especially on the thinner sections. No reinforcing is necessary. Joint design and spacing should be in accordance with ACI recommendations. Construction joints should contain dowels or be tongue-and-grooved to provide load transfer. Tie bars are recommended on the joints adjacent to unsupported edges. Maximum joint spacing in feet should not exceed 2 to 3 times the thickness in inches. Joint sealing with a quality silicone sealer is recommended to prevent water from entering the subgrade allowing pumping and loss of support.

Proper subgrade preparation and joint sealing will reduce (but not eliminate) the potential for slab movements (thus cracking) on the expansive native soils. Frequent jointing will reduce uncontrolled cracking and increase the efficiency of aggregate interlock joint transfer.

3.9 Underground Storm Water Storage

It is understood that underground storage tanks may be used for storm water retention. Although the location or needs of UST's for storm water are not know at the writing of this report. A sample from 5 to 10 feet from the fuel tank boring and was tested for pH, resistivity, chloride and sulfate concentrations. The following data should be used for design.

Table 3.9.1 Laboratory Results

Boring	pH	Resistivity (Ω-cm)	Sulfate (ppm)	Chlorides (ppm)
UST-1	8.0	6,200	3	12

The laboratory resistivity test is conducted under a saturated condition. In the field, saturation of the soils should not be expected which would thereby increase the resistivity.

The results of laboratory testing indicate a **low** degree of corrosiveness. Per the Handbook of Steel Drainage & Highway Construction, using the equation $\text{years} = 2.94 R^{0.41}$, the following tables provide design life for the specified gage plain galvanized pipe.

Table 3.9.2 Life Capacity for Galvanized Pipe

Location	18 Gage (Years)	16 Gage (Years)	14 Gage (Years)	12 Gage (Years)
UST-1	106	137	169	232

According to the testing results a minimum 18-gage pipe will be required to meet a 75-year design life. Although depending on the size and loading condition a thicker pipe may be required.

Manufacturer Standard details for CMP storage tanks typically recommend 90 percent compaction for backfill around the pipes. We have observed several cases with settlement problems with the pavement section placed above the pipe. Based upon this, as a minimum, it is recommended to increase the compaction requirement to at least 95 percent. **It is critical that the entire depth of backfill is properly moisture conditioned and compacted, including underneath the haunches of the pipe.** The use of 3/8 inch minus open graded “pea gravel” shall be considered for backfill up to at least the pipe spring line. The use of imported granular fill meeting MAG Spec Section 601.4.8 from the spring line up to one (1.0) foot above the top of pipe would help increase performance. If fine grained native soils are used, a geo-textile filter fabric such as Mirafi 160N or equal should be used at the interface of the open graded fill and fine-grained soils. Refer to City of Chandler Detail No. C-509 for example details. *We also recommend a visual inspection of the piping installation to ensure the integrity of the pipe connections and final installation inspection after backfilling is completed prior to paving to make sure there are no open or warped pipe, bad connections etc.* Any moisture introduced into the backfill material from leaks, or introduced through planters placed above, will increase the potential settlement. Inspection should ensure all connections are properly made.

4.0 GENERAL

The scope of this investigation and report includes only regional published considerations for seismic activity and ground fissures resulting from subsidence due to groundwater withdrawal, not any site-specific studies. The scope does not include any considerations of hazardous releases or toxic contamination of any type.

Our analysis of data and the recommendations presented herein assume that soil conditions do not vary significantly from those found at specific sample locations. Our work has been performed in accordance with generally accepted engineering principles and practice; this warranty is in lieu of all other warranties expressed or implied.

We recommend that a representative of the Geotechnical Engineer observe and test the earthwork and foundation portions of this project to ensure compliance to project specifications and the field applicability of subsurface conditions which are the basis of the recommendations presented in this report. If any significant changes are made in the scope of work or type of construction that was assumed in this report, we must review such revised conditions to confirm our findings if the conclusions and recommendations presented herein are to apply.

Respectfully submitted,
SPEEDIE & ASSOCIATES, INC.



Nicholas J. Vitale, P.E.



Keith R. Gravel, P.E.

APPENDIX

FIELD AND LABORATORY INVESTIGATION

SOIL BORING LOCATION PLAN

SOIL LEGEND

LOG OF TEST BORINGS

TABULATION OF TEST DATA

CONSOLIDATION TEST

MOISTURE-DENSITY RELATIONS

SWELL TEST DATA

CORROSIVE TEST DATA

FIELD AND LABORATORY INVESTIGATION

On March 5, 2020, soil test borings were drilled at the approximate locations shown on the attached Soil Boring Location Plan. All exploration work was carried out under the full-time supervision of our staff engineer, who recorded subsurface conditions and obtained samples for laboratory testing. The soil borings were advanced with a truck-mounted CME-75 drill rig utilizing 7-inch diameter hollow stem flight augers. Detailed information regarding the borings and samples obtained can be found on an individual Log of Test Boring prepared for each drilling location.

Laboratory testing consisted of moisture content, dry density, grain-size distribution and plasticity (Atterberg Limits) tests for classification and pavement design parameters. Remolded swell tests were performed on samples compacted to densities and moisture contents expected during construction. Compression tests were performed on a selected ring sample in order to estimate settlements and determine effects of inundation. All field and laboratory data are presented in this appendix.



◆ - APPROXIMATE SOIL BORING LOCATIONS



DR: MM	CHK: XXX	DATE: 03/03/20	PROJECT NO. 20044BSF	SHEET: 1 OF 1
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**SOIL BORING
LOCATION PLAN**

CIRCLE K STORE
NEC HIGHWAY 89A & SOUTHWEST DRIVE
SEDONA, ARIZONA

**SPEEDIE
AND ASSOCIATES**
GEOTECHNICAL/ENVIRONMENTAL/MATERIALS ENGINEERS
3331 E. WOOD ST. PHOENIX, ARIZONA 85040 (602) 997-8391

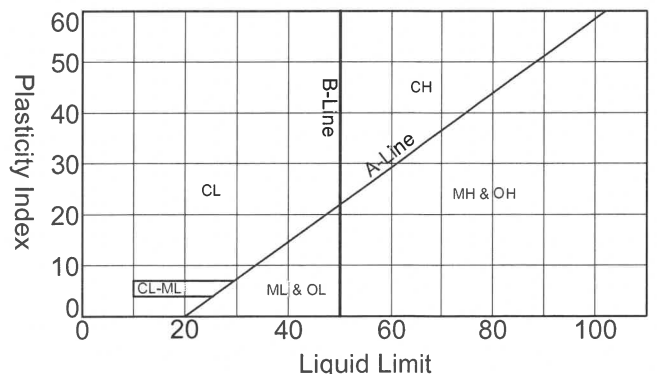
SOIL LEGEND

SAMPLE DESIGNATION	DESCRIPTION		
AS	Auger Sample	A grab sample taken directly from auger flights.	
BS	Large Bulk Sample	A grab sample taken from auger spoils or from bucket of backhoe.	
S	Spoon Sample	Standard Penetration Test (ASTM D-1586) Driving a 2.0 inch outside diameter split spoon sampler into undisturbed soil for three successive 6-inch increments by means of a 140 lb. weight free falling through a distance of 30 inches. The cumulative number of blows for the final 12 inches of penetration is the Standard Penetration Resistance.	
RS	Ring Sample	Driving a 3.0 inch outside diameter spoon equipped with a series of 2.42-inch inside diameter, 1-inch long brass rings, into undisturbed soil for one 12-inch increment by the same means of the Spoon Sample. The blows required for the 12 inches of penetration are recorded.	
LS	Liner Sample	Standard Penetration Test driving a 2.0-inch outside diameter split spoon equipped with two 3-inch long, 3/8-inch inside diameter brass liners, separated by a 1-inch long spacer, into undisturbed soil by the same means of the Spoon Sample.	
ST	Shelby Tube	A 3.0-inch outside diameter thin-walled tube continuously pushed into the undisturbed soil by a rapid motion, without impact or twisting (ASTM D-1587).	
--	Continuous Penetration Resistance	Driving a 2.0-inch outside diameter "Bullnose Penetrometer" continuously into undisturbed soil by the same means of the spoon sample. The blows for each successive 12-inch increment are recorded.	

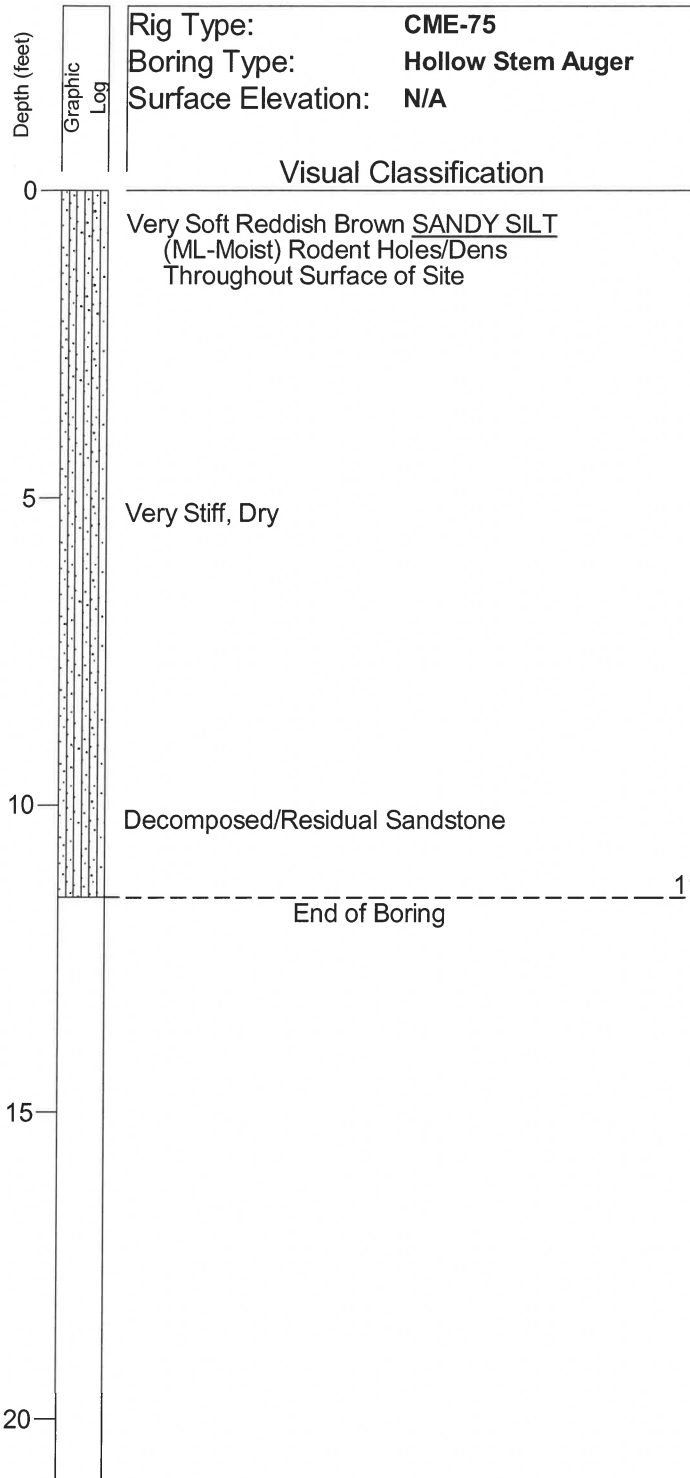
CONSISTENCY			RELATIVE DENSITY	
Clays & Silts	Blows/Foot	Strength (tons/sq ft)	Sands & Gravels	Blows/Foot
Very Soft	0 - 2	0 - 0.25	Very Loose	0 - 4
Soft	2 - 4	0.25 - 0.5	Loose	5 - 10
Firm	5 - 8	0.5 - 1.0	Medium Dense	11 - 30
Stiff	9 - 15	1 - 2	Dense	31 - 50
Very Stiff	16 - 30	2 - 4	Very Dense	> 50
Hard	> 30	> 4		

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GM	POORLY-GRADED GRAVELS, GRAVEL - SAND - SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	Liquid Limit LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	Liquid Limit GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

MATERIAL SIZE	PARTICLE SIZE				
	Lower Limit		Upper Limit		
	mm	Sieve Size ♦	mm	Sieve Size ♦	
SANDS	Fine	0.075	#200	0.42	#40
	Medium	0.420	#40	2.00	#10
	Coarse	2.000	#10	4.75	#4
GRAVELS	Fine	4.75	#4	19	0.75" x
	Coarse	19	0.75" x	75	3" x
COBBLES	75	3" x	300	12" x	
BOULDERS	300	12" x	900	36" x	
♦U.S. Standard		xClear Square Openings			



NOTE: DUAL OR MODIFIED SYMBOLS MAY BE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS OR TO PROVIDE A BETTER GRAPHICAL PRESENTATION OF THE SOIL



Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
RS-1	3.0	10.9	94.7	
AS-3	6.0	NT	NT	
S-2	6.5	NT	NT	
S-4	11.5	NT	NT	

Boring Date: 3-5-20
 Field Engineer/Technician: G. Chott
 Driller: P. Driscoll
 Contractor: Geomechanics SW

Water Level		
Depth	Hour	Date
<i>Free Water was Not Encountered</i>		

NT = Not Tested

SPEEDIE AND ASSOCIATES

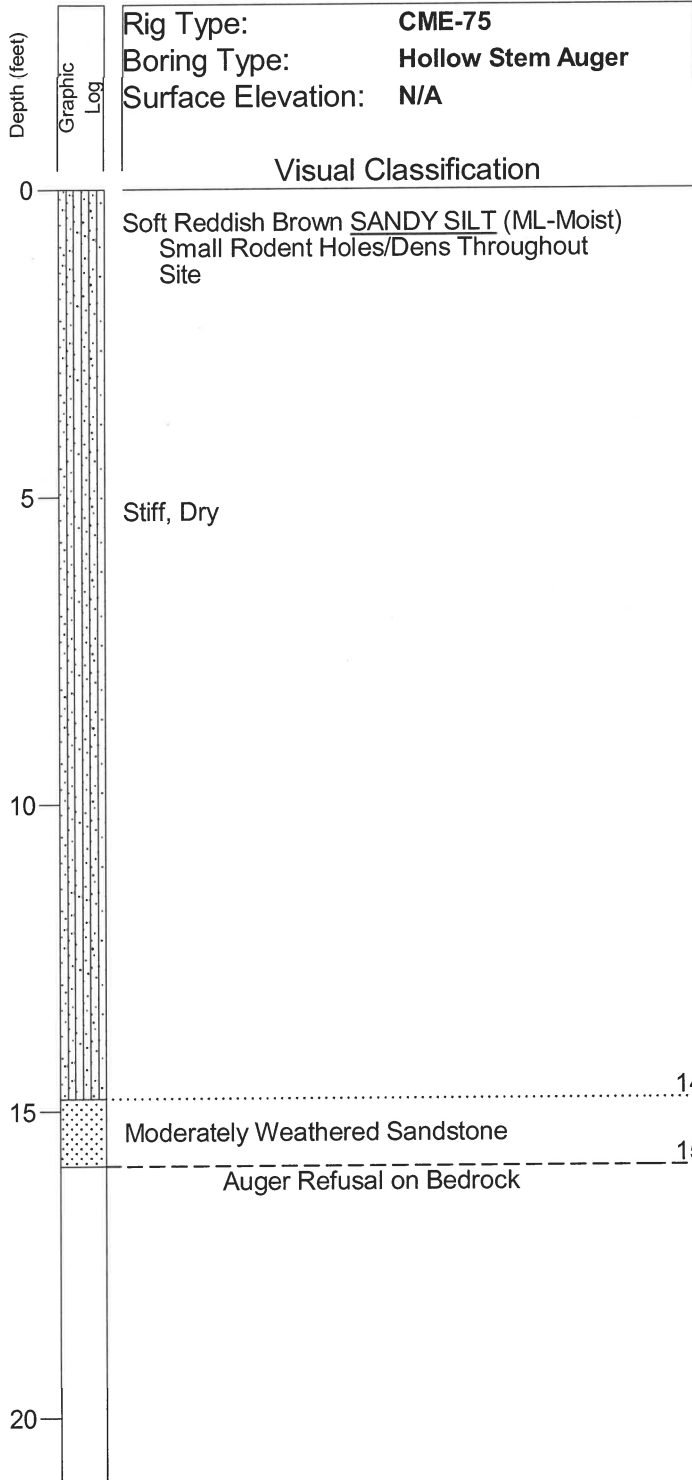
Log of Test Boring Number: **B-1**

Circle K Sedona

NEC Highway 89A & Southwest Drive

Sedona, Arizona

Project No.: 200448SF



Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
S-2	3.5	NT	NT	
AS-1	5.0	NT	NT	
S-3	6.5	NT	NT	
S-4	11.5	NT	NT	
S-5	15.9	NT	NT	50/5"

Boring Date: 3-5-20
 Field Engineer/Technician: G. Chott
 Driller: P. Driscoll
 Contractor: Geomechanics SW

Water Level		Date
Depth	Hour	
Free Water was Not Encountered		

NT = Not Tested

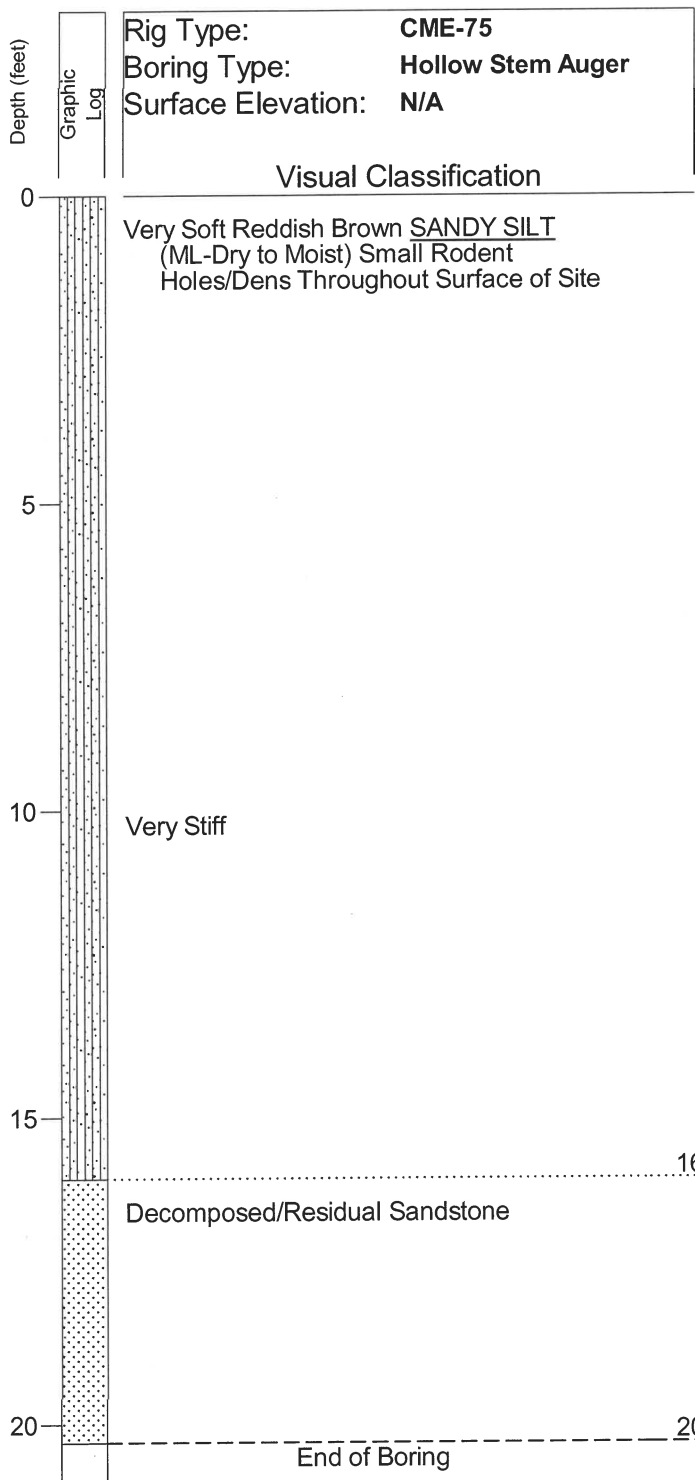
SPEEDIE AND ASSOCIATES

Log of Test Boring Number: **B-2**

Circle K Sedona
 NEC Highway 89A & Southwest Drive
 Sedona, Arizona

Project No.: 200448SF

SPEEDIE 200448SF.GPJ GENGEO.GDT 3/27/20



Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
RS-1	3.0	NT	NT	
S-3	6.5	NT	NT	
S-4	11.5	NT	NT	
BS-2	12.0	NT	NT	
S-5	16.5	NT	NT	63/12"
S-6	20.3	NT	NT	50/3"

Boring Date: 3-5-20
 Field Engineer/Technician: G. Chott
 Driller: P. Driscoll
 Contractor: Geomechanics SW

Water Level		
Depth	Hour	Date
Free Water was Not Encountered		

NT = Not Tested

SPEEDIE AND ASSOCIATES

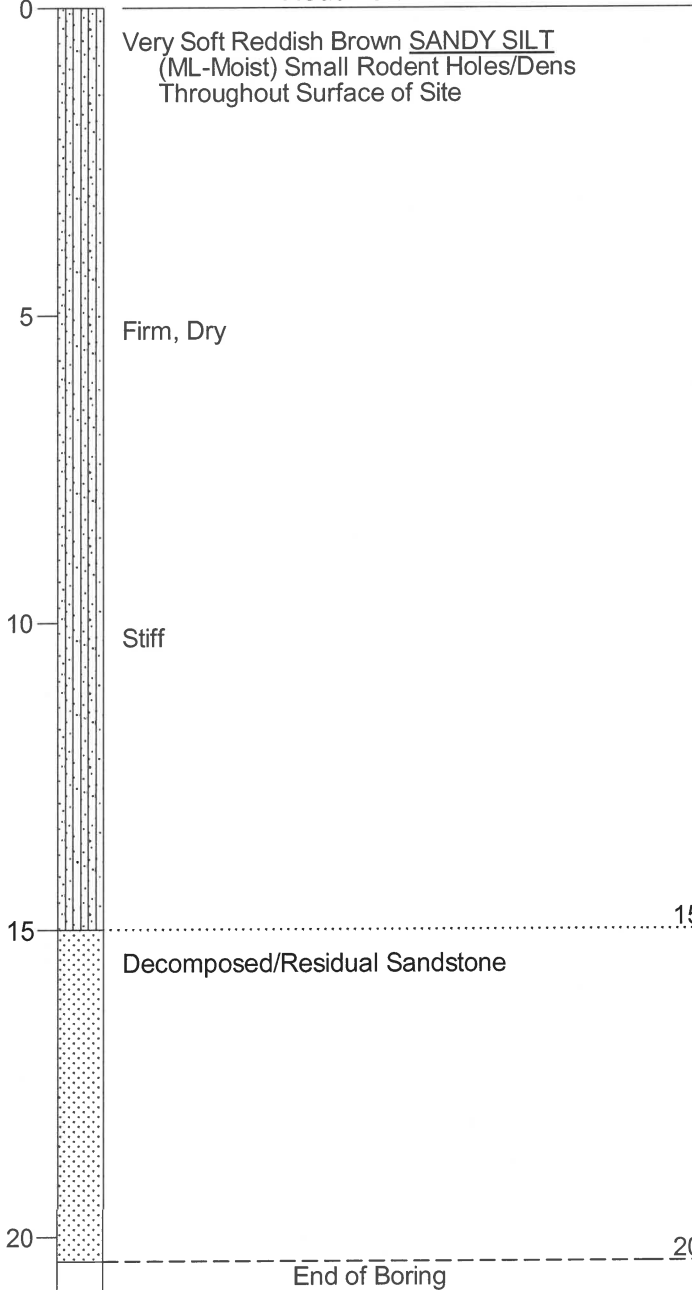
Log of Test Boring Number: C-1

Circle K Sedona
 NEC Highway 89A & Southwest Drive
 Sedona, Arizona

Project No.: 200448SF

SPEEDIE 200448SF.GPJ GENGEO.GDT 3/7/20

Rig Type: **CME-75**
 Boring Type: **Hollow Stem Auger**
 Surface Elevation: **N/A**



Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
RS-1	3.0	NT	NT	
S-3	6.5	NT	NT	
BS-2	10.0	NT	NT	
S-4	11.5	NT	NT	
S-5	16.5	NT	NT	80/11"
S-6	20.4	NT	NT	50/5"

Boring Date: **3-5-20**
 Field Engineer/Technician: **G. Chott**
 Driller: **P. Driscoll**
 Contractor: **Geomechanics SW**

Water Level		
Depth	Hour	Date
Free Water was Not Encountered		

NT = Not Tested

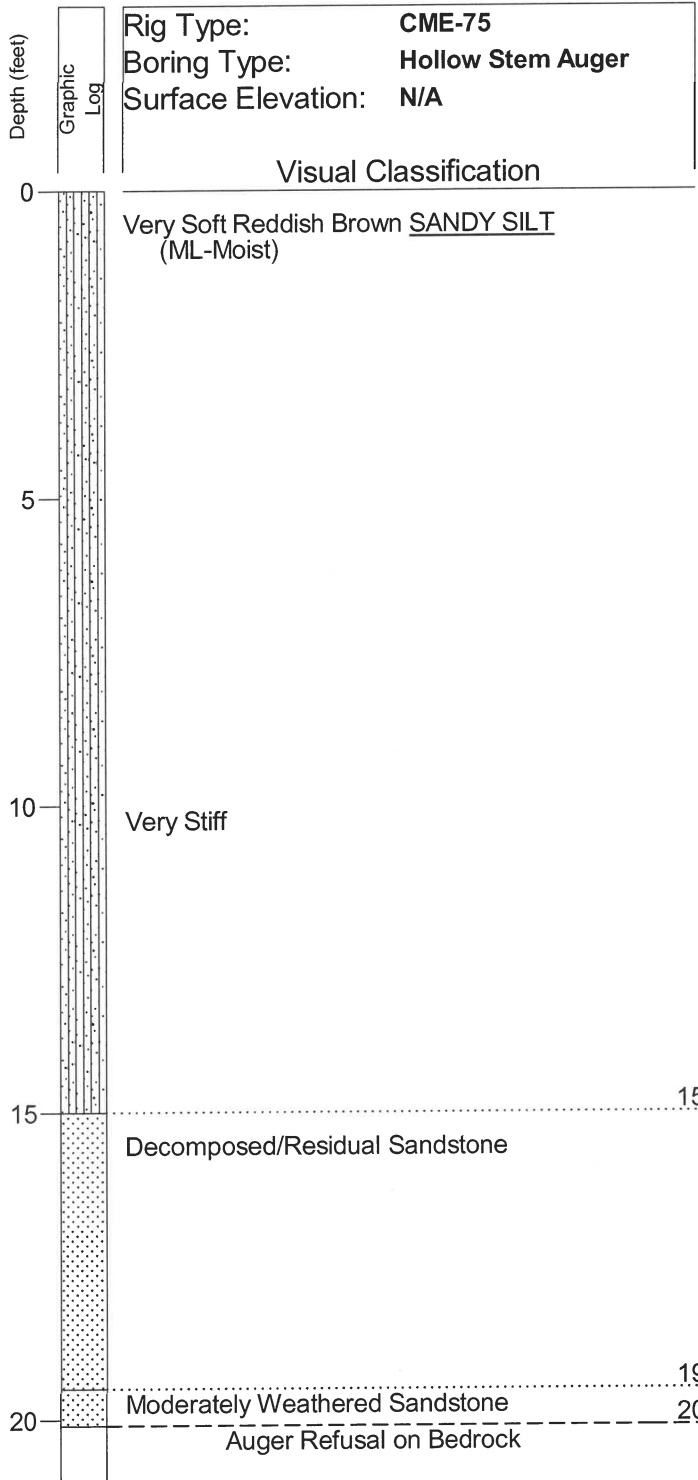
SPEEDIE AND ASSOCIATES

Log of Test Boring Number: **C-2**

Circle K Sedona
NEC Highway 89A & Southwest Drive
Sedona, Arizona

Project No.: **200448SF**

_SPEEDIE 200448SF.GPJ GEN GEO.GDT 3/27/20



Rig Type: **CME-75**
 Boring Type: **Hollow Stem Auger**
 Surface Elevation: **N/A**

Visual Classification

Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
S-1	3.5	NT	NT	
S-2	6.5	NT	NT	
RS-3	11.0	11.1	104.6	
S-4	15.4	NT	NT	50/5"
S-5	20.1	NT	NT	50/1"

Boring Date: **3-5-20**
 Field Engineer/Technician: **G. Chott**
 Driller: **P. Driscoll**
 Contractor: **Geomechanics SW**

Water Level		
Depth	Hour	Date
<i>Free Water was Not Encountered</i>		

NT = Not Tested

SPEEDIE AND ASSOCIATES

Log of Test Boring Number: **UST-1**

Circle K Sedona
NEC Highway 89A & Southwest Drive
Sedona, Arizona

Project No.: **200448SF**

SPEEDIE 200448SF.GPJ GENGEO.GDT 3/27/20

TABULATION OF TEST DATA

SOIL BORING or TEST PIT NUMBER	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE INTERVAL (ft)	NATURAL WATER CONTENT (Percent of Dry Weight)	IN-PLACE DRY DENSITY (Pounds Per Cubic Foot)	PARTICLE SIZE DISTRIBUTION (Percent Finer)					ATTERBERG LIMITS			UNIFIED SOIL CLASSIFICATION	SPECIMEN DESCRIPTION
						#200 SIEVE	#40 SIEVE	#10 SIEVE	#4 SIEVE	3" SIEVE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX		
B-1	RS-1	RING	2.0 - 3.0	10.9	94.7	61.2	98	99	99	100	NP	NP	NP	ML	SANDY SILT
C-1	BS-2	BULK	2.5 - 12.0	NT	NT	69.0	96	97	98	100	NP	NP	NP	ML	SANDY SILT
C-2	BS-2	BULK	2.0 - 10.0	NT	NT	64.1	97	98	99	100	NP	NP	NP	ML	SANDY SILT
UST-1	RS-3	RING	10.0 - 11.0	11.1	104.6	57.4	97	99	100	100	NP	NP	NP	ML	SANDY SILT

Sieve analysis results do not include material greater than 3". Refer to the actual boring logs for the possibility of cobble and boulder sized materials.

NT=Not Tested
Sheet 1 of 1

Circle K Sedona
NEC Highway 89A & Southwest Drive
Sedona, Arizona
Project No. 200448SF



CONSOLIDATION TEST

PROJECT: Circle K Sedona

PROJECT NO.: 200448SF

LOCATION: NEC Highway 89A & Southwest Drive

DATE: 3/5/20

BORING NO.: B-1

SAMPLE NO.: RS-1

SAMPLE DEPTH: 2 to 3

LABORATORY NO.: AMA78

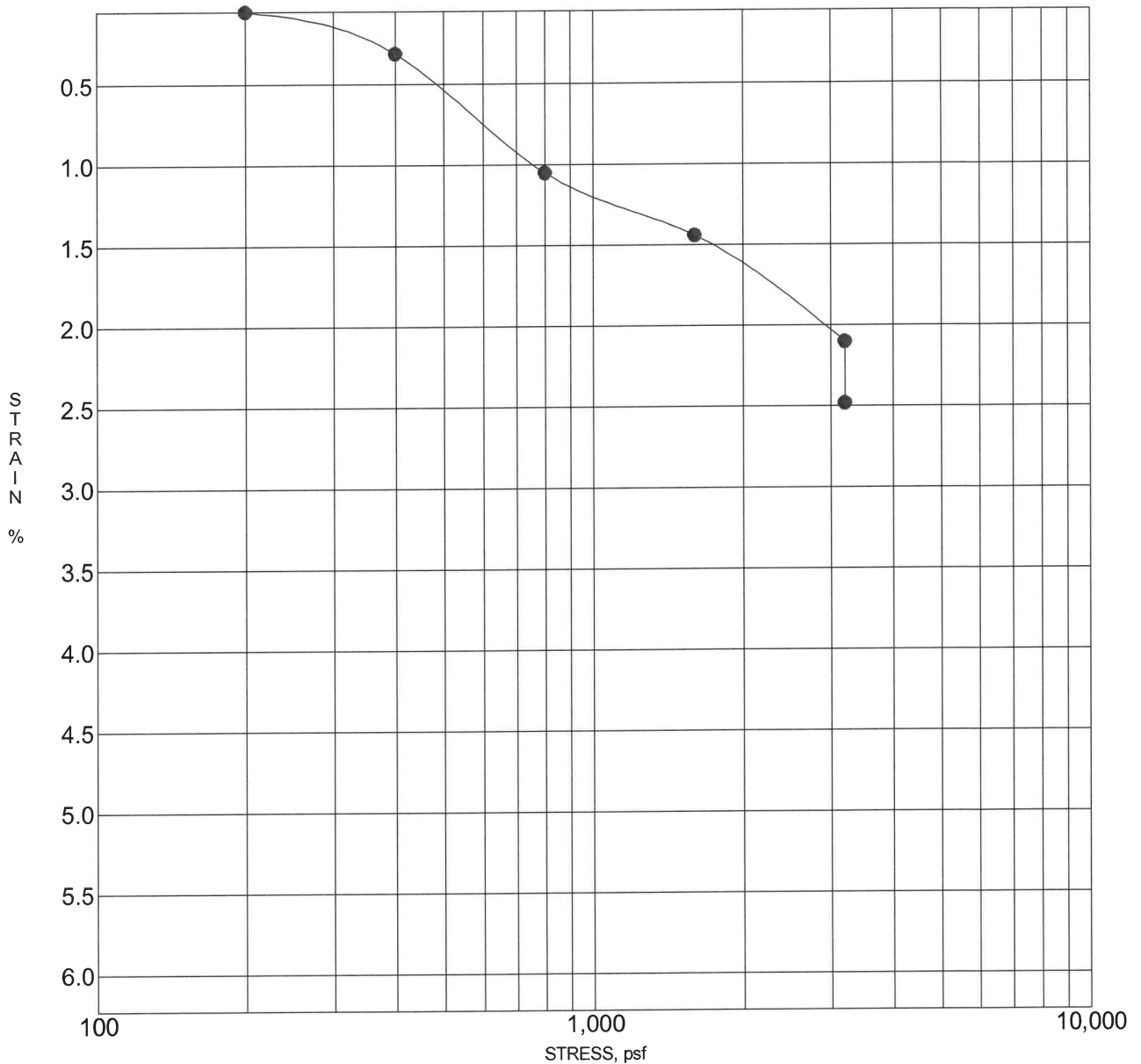
LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

CLASSIFICATION: ML

ASTM SOIL DESCRIPTION: SANDY SILT



Sample inundated at end of test at 3200 psf

**SPEEDIE
AND ASSOCIATES**

CONSOLIDATION TEST

PROJECT: Circle K Sedona

PROJECT NO.: 200448SF

LOCATION: NEC Highway 89A & Southwest Drive

DATE: 3/5/20

BORING NO.: UST-1

SAMPLE NO.: RS-3

SAMPLE DEPTH: 10 to 11

LABORATORY NO.: AMC02

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

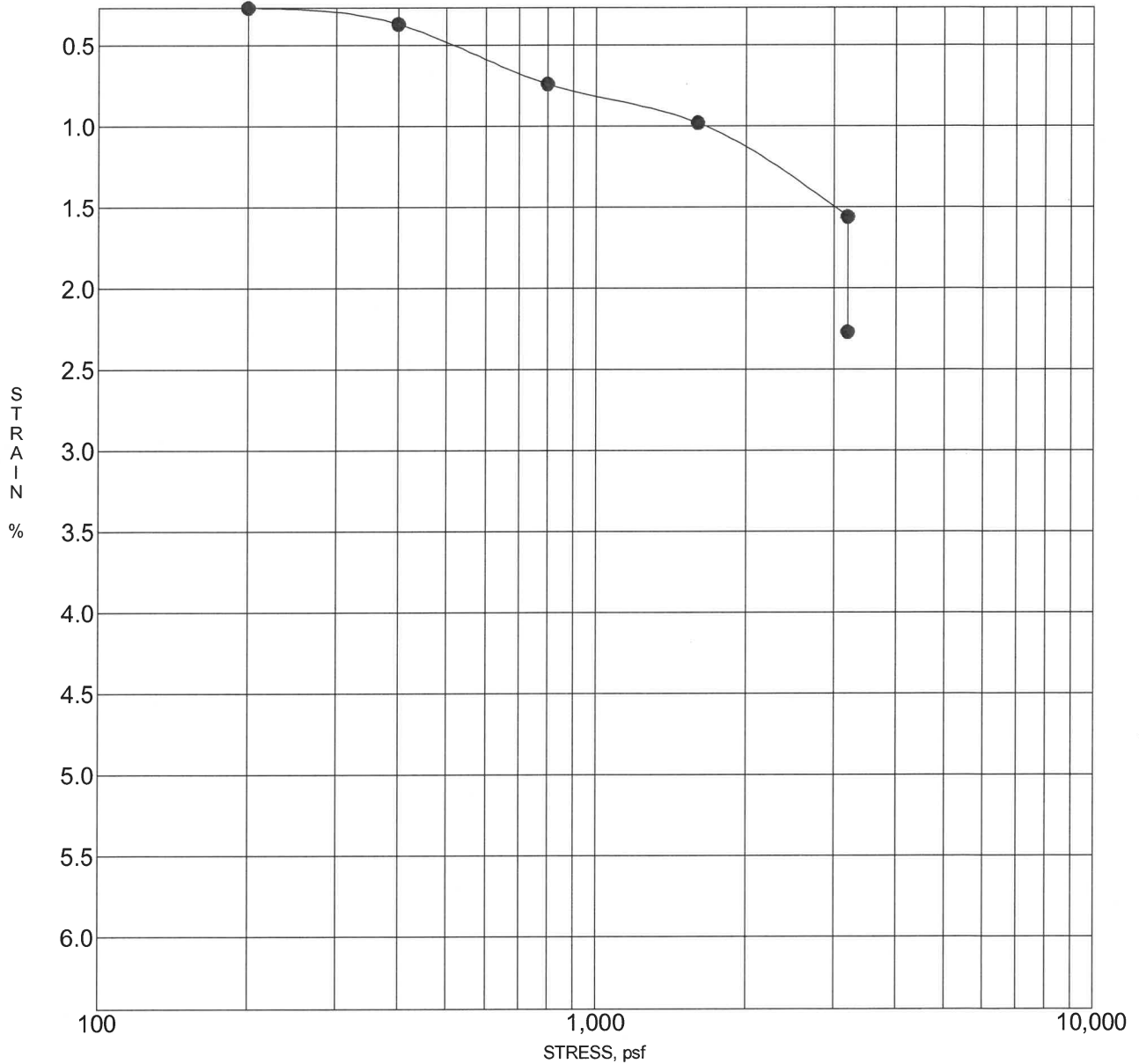
PLASTICITY INDEX: NP

NP

CLASSIFICATION: ML

ASTM SOIL DESCRIPTION:

SANDY SILT



Sample inundated at end of test at 3200 psf

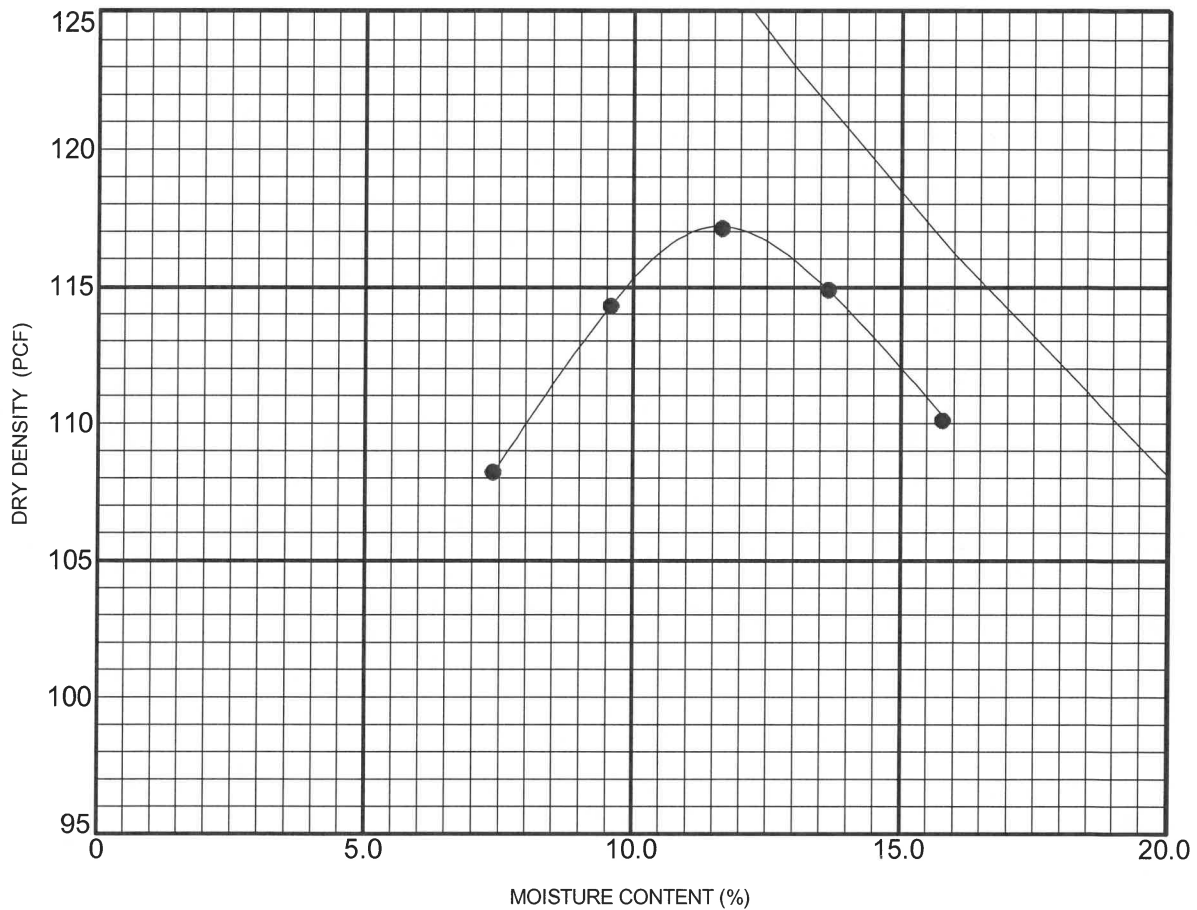
**SPEEDIE
AND ASSOCIATES**

MOISTURE-DENSITY RELATIONS

PROJECT: Circle K Sedona PROJECT NO.: 200448SF
LOCATION: NEC Highway 89A & Southwest Drive DATE: 3/5/20
BORING NO.: C-1 SAMPLE NO.: BS-2 SAMPLE DEPTH: 2.5 to 12 LABORATORY NO.: AMA88
METHOD OF COMPACTION: D698A
LIQUID LIMIT: NP PLASTIC LIMIT: NP PLASTICITY INDEX: NP
CLASSIFICATION: ML ASTM SOIL DESCRIPTION: SANDY SILT

MAXIMUM DRY DENSITY: 117.1 PCF

OPTIMUM MOISTURE CONTENT: 11.7%



SWELL TEST DATA

BORING or TEST PIT No.	SAMPLE DEPTH, ft	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)	REMOLED DRY DENSITY (pcf)	INITIAL MOISTURE CONTENT (%)	PERCENT COMPACTION	FINAL MOISTURE CONTENT (%)	CONFINING LOAD (psf)	TOTAL SWELL (%)
C-1, BS-2	12.0	117.1	11.7	111.7	10.0	95.4	16.9	100	0.5

Circle K Sedona
 NEC Highway 89A & Southwest Drive
 Sedona, Arizona
 Project No. 200448SF



CORROSIVE TEST DATA

SOIL BORING or TEST PIT NUMBER	C-2	SAMPLE NUMBER	BS-2	SAMPLE TYPE	BULK	SAMPLE INTERVAL (ft)	2.0 - 10.0	PERCENT FINER #200 SIEVE	64.1	pH	8.03	RESISTIVITY (Ohm-Centimeters)	6201	SULFATE (SO ₄) (ppm)	3	CHLORIDE (CL) (ppm)	12	SULFIDE (+ or -)	NT	REDOX (millivolts)	NT	UNIFIED SOIL CLASSIFICATION	ML	SPECIMEN DESCRIPTION	SANDY SILT
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Circle K Sedona
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 Project No. 200448SF

