#### CERTIFICATION

AGENCY: Florida Department of Transportation District One 801 North Broadway Avenue Bartow, Florida 33831-1249

I hereby certify that I am a registered professional engineer in the State of Florida and that I have supervised the preparation of, and approved the analysis, findings, opinions, conclusions and technical advice hereby reported for:

REPORT:	SR 72/Coash Road/Hawkins Road Intersection Control Evaluation (ICE) - Stage 1
PROJECT:	SR 72 Project Development and Environment (PD&E) Study
LOCATION:	SR 72 from East of I-75 to Lorraine Road Sarasota County, Florida
ROADWAY ID	: 17070000

MILEPOST No: 7.356

FPID No.: 444634-1-22-01

I acknowledge that the procedures and references used to develop the information contained in this memorandum are standard to the professional practice of transportation engineering as applied through professional judgement and experience.

Engineer in Responsible Charge:	Anastasiya A. Senyushkina	No. 82191
Professional Registration No.:	82191	STATE OF
Date:	3/4/2024	LORAL ENGLISH





# AIM Engineering & Surveying, Inc.

Tampa Office 201 E. Kennedy Boulevard, Suite 1800 Tampa, Florida 33602 813-627-4144 www.aimengr.com

Date:	March 4, 2024
To:	Steven Andrews, P.E FDOT District One DEMO Project Manager
From:	Greg Root/Anastasiya Senyushkina, P.E.
Subject:	SR 72 at Coash Road/Hawkins Road Intersection (Sarasota County) Stage 1+ Intersection Control Evaluation

#### INTRODUCTION/PROJECT BACKGROUND

This memorandum documents the Intersection Control Evaluation (ICE) conducted for the Coash Road/Hawkins Road intersection. This analysis was conducted in support of the SR 72 Project Development & Environment (PD&E) Study from east of I-75 to Lorraine Road in Sarasota County. The length of this study corridor is approximately 2.7 miles. This PD&E study is evaluating the costs and impacts of widening (i.e., four-laning) SR 72 from Hummingbird Avenue to Lorraine Road. This PD&E study is also looking to reduce the posted speeds/target speeds within the corridor. The PD&E study goals are to determine the location and conceptual design of the improvement(s) that satisfy the purpose and need for the project, while also minimizing the impacts to the natural and social environment and satisfying the requirements of the National Environmental Policy Act (NEPA). This memorandum documents the Stage 1 CAP-X and SPICE analyses, as well as the more detailed traffic operations analyses conducted using the SIDRA software.

#### EXISTING INTERSECTION CHARACTERISTICS

This intersection is a four-legged stop control intersection. Coash Road is the north leg of this intersection and Hawkins Road is the south leg. A residential development (i.e., Wildgrass) is located in the northeast quadrant and an animal rescue facility (Satchel's Last Resort Rescue and Sanctuary) is located in the northwest quadrant. Both of these land uses are accessed via Coash Road only. There is some undeveloped land in the northwest quadrant in the immediate vicinity of the intersection. The Suncoast Academy charter school is located on the east side of Hawkins Road and a small pond is located on the west side. An aerial image depicting the Coash Road/Hawkins Road intersection is provided in **Figure 1**, which is included in **Appendix A**. The posted speed limit on SR 72 in the vicinity of this intersection is 55 miles per hour (mph). The posted speed limits on Coash Road and Hawkins Road are 30 mph and 20 mph, respectively. SR 72 is a two-lane undivided roadway with 12-foot travel lanes and five-foot designated bicycle lanes both west and east of the intersection. Sidewalks exist in the northeast quadrant of the intersection (on both SR 72 and Coash Road) and on the east side of Hawkins Road. The context classification for this roadway is C3R (Suburban Residential).

Crash data from Signal Four Analytics was provided by District One for the years 2017 through 2021. The crash data is included in **Appendix B**. The intersection has experienced six crashes over this fiveyear period, resulting in five injuries and no fatalities. The most prevalent crash type is angle crashes (four). The other two crashes involved hitting an animal and driving into a ditch. There were no crashes involving bicyclists or pedestrians.

#### INTERSECTION CONTROL EVALUATION

The proposed typical section includes four 11-foot travel lanes (two in each direction), a 22-foot median and 12-foot shared use paths on both sides of the roadway. The FDOT-approved design speed and target speed for the proposed SR 72 typical section in this area is 45 mph. This speed is 10 mph lower than the existing posted speed limit. The following alternative intersection control strategies were initially analyzed for this intersection:

- Two-Way Stop Control
- Conventional Traffic Signal
- Unsignalized Restricted Crossing U-Turn (RCUT)
- Signalized RCUT
- Unsignalized Thru-Cut
- Signalized Thru-Cut
- Median U-Turn (MUT)
- Partial MUT
- Bowtie
- Two-lane (SR 72) x one-lane (Coash Road/Hawkins Road) roundabout
- Two-lane x two-lane roundabout

Stop control was analyzed since the results of the June 2022 Signal Warrant Study conducted by District One indicated that only Warrant 3B (peak hour volume) is currently satisfied. This study recommended that an ICE analysis be conducted for this intersection. The 2022 Signal Warrant Study is provided in **Appendix B**. The opening year (2030) and design year (2050) Average Annual Daily Traffic (AADT) volumes documented in the SR 72 Project Traffic Analysis Report are provided in **Appendix C** along with the 2050 peak hour volumes documented in this same report. The results of the CAP-X and SPICE analyses are summarized in **Table 1**. Mid-day peak hour CAP-X analyses were also conducted for this intersection to evaluate the capacity during the afternoon dismissal time period for Suncoast Academy. The CAP-X and SPICE analysis summary sheets for this intersection are provided in **Appendix D**.

The unsignalized alternatives (with the exception of the roundabout) were eliminated from further consideration due to the very high v/c ratios. The signalized alternatives were also eliminated from any further consideration because they would not provide positive speed control and are inconsistent with the recent roundabouts that have been constructed at Lorraine Road and Proctor Road/Dove Avenue. The roundabout was estimated to have the highest opening year and design year SSI scores and a low number of fatal and injury crashes (23) over the 20-year analysis period.. Design year (2050) peak hour SIDRA analyses were subsequently conducted to determine the optimal geometry for the roundabout and the results are summarized in **Table 2.** All of the movements are projected to operate under capacity during all three peak hours. In addition, the overall average vehicle delays are projected to be less than 12 seconds per vehicle during all three peak hours. The design year SIDRA analysis summary sheets are provided in **Appendix E**.

Table 1: Stage 1 ICE Analysis Summary - Coash Road/Hawkins Road Intersection							
	2	050 V/C Ratio	os	Life-Cycl	Life-Cycle Crashes		cores
	AM Peak	Mid-Day	PM Peak		Fatal &	Opening	Design
Intersection Type	Hour	Peak Hour	Hour	Total	Injury	Year	Year
Two-Way Stop Control	>10	2.76	1.44	52	21	95	90
Conventional Signalized Intersection	0.51	0.53	0.43	110	38	97	92
Unsignalized RCUT	0.75	1.56	0.54	n/a	n/a	96	92
Signalized RCUT	0.40	0.41	0.33	63	12	98	95
Unsignalized Thru-Cut	12.89	11.39	3.84	n/a	n/a	96	92
Signalized Thru-Cut	0.43	0.48	0.39	n/a	n/a	97	94
Median U-Turn (MUT)	0.47	0.52	0.39	69	29	98	97
Partial MUT (NS)	0.42	0.48	0.38	n/a	n/a	n/a	n/a
Bowtie (NS)	0.53	0.55	0.46	n/a	n/a	97	94
Roundabout (2EW x 1NS)	0.52	0.66	0.49	n/a	n/a	n/a	n/a
Roundabout (2EW x 2NS)	0.52	0.57	0.49	133	23	99	99

Lowest number of crashes of all alternatives analyzed

n/a = No Safety Performance Function (SPF) available

Table 2: Design Year (2050) Peak Hour Operational Analysis Summary -									
Coash Road/Hawkins Road Roundabout									
	AI	M Peak Hou	r	Mid-	Day Peak H	our	PI	M Peak Hou	-
Intersection									
Approach	V/C Ratio <sup>(1)</sup>	Avg. Delay	LOS	V/C Ratio <sup>(1)</sup>	Avg. Delay	LOS	V/C Ratio <sup>(1)</sup>	Avg. Delay	LOS
Northbound	0.29	10.6	В	0.51	19.1	С	0.14	9.7	А
Southbound	0.53	22.6	С	0.16	11.3	В	0.16	8.9	А
Westbound	0.59	10.6	В	0.45	8.6	А	0.42	7.2	А
Eastbound	0.53	9.6	А	0.62	11.3	В	0.48	7.4	А
Overall	0.59	11.0	В	0.62	11.6	В	0.48	7.5	А
<sup>(1)</sup> Highest volume-to-capacity ratio of any approach movements									

<sup>(1)</sup> Highest volume-to-capacity ratio of any approach movements

An initial geometric improvement concept was developed for this alternative and is provided in **Appendix F**. This roundabout alternative requires some additional right-of-way but does not result in any residential or business relocations.

#### RECOMMENDED INTERSECTION CONTROL STRATEGY

The implementation of a two-lane roundabout is expected to provide positive speed control and help to facilitate the approved 45 mph design speed/target speed for this portion of SR 72. Reduced vehicle speeds will provide additional safety benefits for the older driving population that travels in this corridor. The roundabout is projected to have a very low number of fatal/injury crashes, low design year peak hour vehicle delays, and the highest SSI scores. The implementation of a two-lane roundabout is also consistent with the recent roundabout construction that has occurred east and west of this intersection (i.e., at the Lorraine Road and Proctor Road/Dove Avenue intersections, respectively). A roundabout also serves as a good option if this intersection does not meet signal warrant criteria when the final design phase of the project is conducted and unsignalized alternatives are expected to result in operational and/or safety concerns. Consequently, the PD&E study recommends a two-lane roundabout for the Coash Road/Hawkins Road intersection.

## Appendix A

Existing Intersection Aerial

## Figure 1: Existing SR 72 / Coash Road / Hawkins Road Intersection



Appendix B

Historic Crash Data/Signal Warrant Study

LOCATION	CRASH_YEAR ON_STREET_ROAD_HIGH' FEET_FROM	I_INTERSECTIC DIRECTIC	ON FROM_INTERSECTION_OF	LIGHT_CONDITION	WEATHER_CONDITION	ROAD_SURFACE_C	(TYPE_OF_IMPACT	FIRST_HARMFUL_I
Hawkins	2020 CLARK RD	0	COASH RD	Daylight	Clear	Dry	Angle	Motor Vehicle in T
Hawkins	2020 CLARK RD	0	COASH RD	Daylight	Clear	Dry	Front to Front	Motor Vehicle in T
Hawkins	2021 CLARK RD	0	COASH RD	Daylight	Clear	Dry	Angle	Motor Vehicle in T
Hawkins	2017 COASH RD	0	CLARK RD	Daylight	Clear	Dry	Other	Motor Vehicle in T
e Hawkins	2018 STATE ROAD 72 (CLARK R	20 West	HAWKINS ROAD	Dark - Not Lighted	Rain	Wet	Other	Ditch
w Hawkins	2019 CLARK RD	31 West	HAWKINS RD	Dark - Not Lighted	Clear	Dry		Animal

RST_HARMFUL_EVENT	LOCATION	JUNCTION_FLA	A S4_CRASH_TYPE	S4_CRASH_TY
otor Vehicle in Transport	On Roadway	Intersection	Right Angle/Front to Side	Angle
otor Vehicle in Transport	On Roadway	Intersection	Right Angle/Front to Side	Angle
otor Vehicle in Transport	On Roadway	Intersection	Right Angle/Front to Side	Angle
otor Vehicle in Transport	On Roadway	Intersection	Right/Through/Front to Side	Right Turn
tch	Off Roadway	Non-Junction	Off Road	Off Road
nimal	On Roadway	Non-Junction	Animal	Animal

RST_HARMFUL_EVENT	LOCATION	JUNCTION_FL/	A S4_CRASH_TYPE	S4_CRASH_TYPE	SIN S4_CRASH_SEVERIT S4_INJURY_COUNT	S4_BICYCLIS	T_COUNT	S4_PEDESTRIAN_CO	UNT
lotor Vehicle in Transport	On Roadway	Intersection	Right Angle/Front to Side	Angle	Serious Injury	1	(	0	0
lotor Vehicle in Transport	On Roadway	Intersection	Right Angle/Front to Side	Angle	Injury	2	(	D	0
lotor Vehicle in Transport	On Roadway	Intersection	Right Angle/Front to Side	Angle	No Injury	0	(	D	0
lotor Vehicle in Transport	On Roadway	Intersection	Right/Through/Front to Side	Right Turn	No Injury	0	(	D	0
itch	Off Roadway	Non-Junction	Off Road	Off Road	Serious Injury	2	(	D	0
nimal	On Roadway	Non-Junction	Animal	Animal	No Injury	0	(	D	0
						5			

#### SIGNAL WARRANT STUDY

S.R. 72 at Hawkins Road/Coash Road Section 17070 – M.P. 7.356 Sarasota County

Prepared for:

#### FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 1 TRAFFIC OPERATIONS

P.O. Box 1249 801 North Broadway Avenue, MS 1-8 Bartow, Florida 33831-1249



Continuing Services Contract for Traffic Operations Financial Project Identification Number: 420112-2-32-01 Contract Number: C-AE23 TEDS Contract Number: 11489 Task Work Order: 17

Prepared by: **Traffic Engineering Data Solutions, Inc., A Stanley Consultants Company** 80 Spring Vista Drive DeBary, Florida 32713

June 2022

This item has been digitally signed and sealed by



Digitally signed by Colleen T Crigger DN: c=US, o=Florida, dnQualifier=A01410D 0000017BA2C43C760 00047AB, cn=Colleen T Crigger Date: 2022.06.15 19:10:49 -04'00'

On the date adjacent to the seal

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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#### EXECUTIVE SUMMARY

A Traffic Signal Warrant Study was conducted for the intersection of State Road (S.R.) 72 and Hawkins Road/Coash Road located in Sarasota County, Florida, to determine if a traffic signal should be installed at the intersection. Currently, this intersection operates under two-way STOP control. Based on the results of the traffic signal warrant analysis, a review of crash history, field observations, engineering judgment, and other considerations, **it is recommended that an ICE analysis be undertaken at this time for the intersection of S.R. 72 and Hawkins Road/Coash Road to verify a traffic signal is the appropriate traffic control improvement at this location.** 

In addition, the following improvement is recommended:

 Install SCHOOL ENTRANCE Warning Signs (FTP 33-06) with supplemental flashing beacons to operate during school arrival and dismissal periods on the eastbound and westbound approaches to the intersection.

# 

Traffic Engineering Data Solutions, Inc. (TEDS) was retained on behalf of the Florida Department of Transportation (FDOT) to conduct a Traffic Signal Warrant Study at the intersection of State Road (S.R.) 72 and Hawkins Road/Coash Road. The study intersection is located in Sarasota County, Florida, as shown in *Figure 1*.

The analysis methods used in completing this study are consistent with the Federal Highway Administration (FHWA) <u>Manual on Uniform Traffic Control Devices</u> (MUTCD), FDOT <u>Manual on Uniform Traffic Studies</u> (MUTS), FDOT <u>Traffic Engineering Manual</u> (TEM), and engineering judgment. This report documents existing conditions, traffic volumes, collision data, intersection delay, qualitative assessment, traffic signal warrant analysis, and recommendations.



Figure 1 General Location Map

Source: Google Maps

## 2 EXISTING CONDITIONS

S.R. 72 is an east/west roadway that extends a distance of approximately 43 miles from S.R. 758 in Siesta Key through Sarasota County to its terminus at S.R. 70 in DeSoto County. At the study intersection, S.R. 72 is a two-lane undivided rural arterial with bicycle lanes and swales. The south leg of the intersection is Hawkins Road which is a two-lane undivided east/west collector road, which turns to north/south as it approaches the study intersection. The north leg of the intersection is Coash Road which is a two-lane undivided north/south collector road. A location aerial of the study intersection is shown below in *Figure 2*.



Figure 2 General Location Aerial

Source: Google Earth

**Table 1** summarizes the existing conditions for the study intersection. An existing condition diagram, as provided in *Figure 3*, and photographs of the study intersection follow *Table 1*. A straight-line diagram is also included in the *Appendix*.

Table 1
Summary of Existing Conditions

Feature	Description
Main Street	• S.R. 72
Area Location	Sarasota County
Adjacent Land Uses	<ul> <li><u>Southwest:</u> Undeveloped</li> <li><u>Southeast:</u> Suncoast Community Church and Sarasota Suncoast Academy Public Charter School</li> <li><u>Northwest:</u> Private Residence</li> <li><u>Northeast:</u> Wildgrass Residential Community</li> </ul>
Traffic Control	Two-way STOP-sign controlled with S.R. 72 having right-of-way
Adjacent Signalized Intersections	<ul> <li><u>South:</u> None</li> <li><u>North:</u> None</li> <li><u>West:</u> Interstate 75 – 2.5 miles</li> <li><u>East:</u> None within 20 miles</li> </ul>
S.R. 72	<ul> <li><u>Cross Section:</u> Two-lane undivided rural roadway (no curb and gutter) with bicycle lanes and swales</li> <li><u>Posted Speed Limit</u>: 55 mph</li> <li><u>AADT</u>: 12,600 vehicles per day (vpd) (2021) (10,000 vpd in 2020 and 10,900 vpd in 2019)</li> <li><u>Eastbound Approach Lanes</u>: One (1) left-turn lane, one (1) through lane, and one (1) right-turn lane</li> <li><u>Westbound Approach Lanes</u>: One (1) left-turn lane and one (1) through/right-turn lane</li> <li><u>Pedestrian Crossings</u>: None</li> <li><u>Sidewalks</u>: Along the north side of the road east of the intersection, and along the south side of the road starting at approximately 160 feet west of the intersection and continuing west</li> <li><u>Utilities</u>: Overhead power lines run along the south side of the roadway</li> <li><u>Street Lighting</u>: None</li> </ul>
Hawkins Road/ Coash Road	<ul> <li><u>Cross Section</u>: Two-lane undivided roadway (no curb and gutter), no paved shoulders, with swales</li> <li><u>Posted Speed Limit</u>: 35 mph south of the intersection with a 20 mph curve warning south of S.R. 72, and 30 mph north of the intersection</li> <li><u>Northbound Approach Lanes</u>: One (1) left-turn lane and one (1) through/right-turn lane</li> <li><u>Southbound Approach Lanes</u>: One (1) left/through/right-turn lane</li> <li><u>Pedestrian Crossings</u>: None</li> <li><u>Sidewalks</u>: Along the east side of the roadway north and south of the intersection</li> <li><u>Utilities</u>: Overhead power lines along the east side of the roadway north of the intersection</li> <li><u>Street Lighting</u>: None</li> </ul>

#### Eastbound Approach Photographs



Looking East Towards Intersection



Looking West Away From Intersection

#### Westbound Approach Photographs



Looking West Towards Intersection



Looking East Away From Intersection

#### Northbound Approach Photographs



Looking North Towards Intersection



Looking South Away From Intersection

#### Southbound Approach Photographs



Looking South Towards Intersection



Looking North Away From Intersection



#### Traffic Volumes

Twenty-four (24) hour approach counts were conducted on all four (4) approaches as summarized below in *Table 2*. According to these counts, the intersection had a daily traffic volume of 15,312 vehicles that entered the intersection consisting of 1,664 northbound vehicles, 711 southbound vehicles, 6,944 eastbound vehicles, and 5,933 westbound vehicles.

TIME	Northbound	Southbound	N/S TOTAL	Eastbound	Westbound	E/W TOTAL	GRAND TOTAL
24 - 1	1	0	1	20	7	27	28
1 - 2	0	0	0	10	6	16	16
2 - 3	0	1	1	10	4	14	15
3 - 4	0	2	2	8	8	16	18
4 - 5	0	1	1	12	27	39	40
5 - 6	0	10	10	46	80	126	136
6 - 7	8	35	43	161	264	425	468
7 - 8	104	49	153	410	498	908	1,061
8 - 9	359	62	421	512	560	1,072	1,493
9 - 10	117	62	179	441	372	813	992
10 - 11	16	49	65	477	409	886	951
11 - 12	35	66	101	478	415	893	994
12 - 13	19	56	75	468	474	942	1,017
13 - 14	38	65	103	524	432	956	1,059
14 - 15	31	55	86	505	481	986	1,072
15 - 16	402	44	446	590	511	1,101	1,547
16 - 17	82	46	128	657	424	1,081	1,209
17 - 18	98	50	148	635	436	1,071	1,219
18 - 19	128	27	155	387	262	649	804
19 - 20	150	17	167	226	136	362	529
20 - 21	64	9	73	161	86	247	320
21 - 22	6	3	9	113	55	168	177
22 - 23	1	1	2	62	25	87	89
23 - 24	5	1	6	31	21	52	58
	1,664	711	2,375	6,944	5,993	12,937	15,312

Table 2Summary of 24-Hour Approach Counts

Based on a review of the twenty-four (24) hour count data, eight (8) hours of manual turning movement counts were collected from 7:00 a.m. to 10:00 a.m. and 3:00 p.m. to 8:00 p.m. on a typical weekday. The vehicular movements for these hours are summarized on the following page in *Table 3*. Vehicular, pedestrian, and bicycle movement summaries are provided in the *Appendix*.

- The intersection morning peak hour occurred from 7:30 to 8:30 a.m., while the afternoon peak hour occurred from 3:00 to 4:00 p.m. As depicted in a peak-hour turning movement summary found in the *Appendix*, 1,309 and 1,296 vehicles were counted entering the intersection during the morning and afternoon peak hours, respectively.
- During the eight (8) hours of manually collected turning movement counts, heavy trucks, which include single-unit trucks such as delivery trucks (Class 5 to 7) and tractor-trailer trucks (Class 8 to 15), accounted for 3.3 percent of the traffic passing through the intersection.
- During the eight (8) hours of manually collected turning movement counts, two (2) pedestrians and two (2) bicyclists were observed traversing the intersection.



 Table 3

 Summary of 8-Hour Vehicular Turning Movements

#### Collision Data

Crash data for the 60-month period, between January 1, 2017 and December 31, 2021, was obtained from FDOT's *CAR* database and University of Florida's *Signal Four Analytics*. A total of five (5) crashes were reported at the intersection as summarized in *Table 4* below:

CRASH TYPE	2017	2018	2019	2020	2021	TOTAL	AVERAGE PER YEAR
Angle	1	0	0	2	1	4	0.8
Animal	0	0	1	0	0	1	0.2
Total	1	0	1	2	1	5	1.0

Table 4 Crash Type Summary

Source: Florida Department of Transportation and University of Florida's Signal Four Analytics

- The five (5) crashes resulted in no fatalities, three (3) injuries, and \$47,500 in estimated property damage.
- All five (5) of the crashes occurred during the day.
- All five (5) crashes occurred under dry pavement conditions.
- Four (4) of the five (5) crashes were angle crashes which occurred as described below:
  - A northbound left-turning driver failed to yield to an eastbound through vehicle.
  - A northbound through driver failed to yield to an eastbound through vehicle, resulting in one (1) non-incapacitating and one (1) possible injury.
  - A northbound through driver failed to yield to a westbound through vehicle.
  - A southbound through driver failed to yield to a westbound through vehicle, resulting in one (1) incapacitating injury.

Detailed collision summaries and collision diagrams are provided in the *Appendix*.

#### Intersection Delay

Intersection delay studies were performed during the peak hours for the northbound left-turn movement approach on Hawkins Road and southbound approach on Coash Road. Procedures from the MUTS document were applied to determine the summarized results presented in *Table 5*. Due to the southbound single-lane approach, separate left-turn and right-turn stop delays were not attainable.

Movement	Time	Maximum Queue (Veh)	Average Delay per Vehicle (Sec)	Maximum Delay per Vehicle (Sec)	Volume (Veh/Hr)	Total Delay (Veh-Sec)	Total Delay (Veh-Hr)
Northbound Left-	7:30 - 8:30 A.M.	8	50.2	155	103	5,175	1.51
Turn Lane	3:00 - 4:00 P.M.	9	57.9	240	90	5,211	1.46
Southbound	7:30 - 8:30 A.M.	2	9.6	38	58	559	0.16
Approach	3:00 - 4:00 P.M.	3	17.9	96	43	768	0.23

Table 5 Summary of Delay Studies

Generally, an average delay in excess of 60 seconds is considered excessive at an unsignalized intersection and is what could typically be expected if the intersection were signalized. As shown above in **Table 5**, the average minor street delay ranged from 50.2 to 57.9 seconds per vehicle for the northbound left-turn movement and the average delay for the southbound approach ranged from 9.6 to 17.9 seconds per vehicle. The maximum delays that were recorded for the northbound left-turn movement and southbound approach were 240 seconds and 96 seconds, respectively, which occurred during afternoon peak-hour period. A total of 74 vehicles experienced delay in excess of 60 seconds over the two-hour period with 39 and 35 of these vehicles experiencing this delay in the morning and afternoon peak hour, respectively. Also, 72 out of the 74 vehicles experiencing excessive delays were northbound left-turning vehicles. Based upon these results, the average delay did not exceed congestive-type levels (i.e., over 60 seconds). The worksheet results of the delay studies are provided in the **Appendix**.

# 3

#### QUALITATIVE ASSESSMENT

The intersection of S.R. 72 at Hawkins Road/Coash Road was observed by a registered professional engineer during the peak hours to assess existing operating conditions and to determine if installing a traffic signal would be potentially beneficial.

#### Operations

*General Observations:* The following observations were made with respect to the operations of the study location:

- The speed limit through the intersection is 55 mph and reduces to 45 mph approximately 0.4 miles west of the study intersection. Traffic was observed to generally be traveling at speeds at or slightly above the 55 mph speed limit.
- It should be noted construction was underway at the Proctor Road intersection located 0.85 miles west of the study intersection and a temporary traffic signal was installed at this location. It appears the construction activities, which involve turn lane improvements and installation of a permanent signal at this location, are not adversely affecting speeds along S.R. 72 through the study intersection. However, the temporary signal is likely producing consistent and steady platoons in the eastbound direction through the intersection.
- Sight distance for motorists is unobstructed from all directions though on Hawkins Road (northbound), motorists were observed to stop partially or fully over the stop line. No issues or conflicts were observed.
- No pedestrian and bicycle activity were observed during either of the peak hours.
- Along Hawkins Road, south of the study intersection, Sarasota Suncoast Academy exists which is a public charter school for elementary and middle school grade levels. School arrival begins at 8:00 a.m. and dismissal begins at 3:15 p.m. The study intersection generally functions as a school driveway during arrival and dismissal periods although there are through trips along Hawkins Road past the school site. The school has three driveways to access Hawkins Road: 200 feet, 980 feet, and 1,330 feet away from S.R. 72. The school has posted restrictive signage at their exits, prohibiting left-turns during school hours at all three (3) driveways. The northernmost driveway closest to S.R. 72 (approximately 200 feet away) is restricted by a raised concrete separator. A review of the school website indicates their car drop-off and pick-up routes are consistent with their signage. These maps are provided on the following page. The objective of the left-turn prohibition from the driveways was intended to route outbound school traffic northbound towards S.R. 72. The primary reason for the left-turn restrictions, per school officials, was to reduce the impacts to the surrounding neighborhoods to the west by school traffic as well as the narrow roadway width west of the school (18 feet) and no sidewalks. This prohibition resulted in significant queues on school property and delays to parents during the arrival and dismissal periods.



- During both the morning and afternoon peak hours, it was observed at the northernmost driveway that vehicles associated with parents dropping off or picking up their children from school would make U-turns south of the raised median to access this driveway. In the morning peak hour, the U-turns totaled approximately 25 vehicles while U-turns during the afternoon hour totaled over 75 vehicles. This movement was likely undertaken to avoid the school queues at the other two (2) driveways. No conflicts were observed with this maneuver.
- Although there is a left-turn prohibition at the northern driveway, it was also observed that at least 15 vehicles in the morning peak hour and over 30 vehicles in the afternoon peak hour turned left illegally south of the raised median. However, no conflicts were observed with this illegal turn because those vehicles turning left waited until no vehicles were coming to/from the south before executing that turn.



- The two (2) predominant turning movements at the study intersection during the eighthour time period involved the northbound left-turn movement and the eastbound rightturn movement. For the northbound left-turn movement, there were a total of 395 left turns during the eight-hour count period, with 99 and 85 left-turning vehicles during the morning and afternoon peak hours, respectively. For the eastbound right-turn movement, there were a total of 432 right turns during the eight-hour count period, with 155 and 91 right-turning vehicles during the morning and afternoon peak hours, respectively.
- Sidewalks exist along the east side of the side street approaches; however, the sidewalks do not connect to S.R. 72.

#### Morning Observation

- As previously stated, the morning peak northbound left-turn movement consists of 99 vehicles from 7:30 to 8:30 a.m., with 74 vehicles specifically occurring during the 30-minute period between 8:00 and 8:30 a.m. For the eastbound right-turn movement, a total of 155 vehicles were observed during the morning peak hour, with 102 vehicles occurring during the peak 30-minute period between 8:00 and 8:30 a.m.
- The maximum queue for the northbound left-turn movement was seven (7) vehicles on Hawkins Road; however, queues were much longer within the school property (in excess of 30 vehicles). While queues and delays appeared excessive, all queues had dissipated by 8:30 a.m.

- It was observed that several northbound left-turning vehicles were delayed by over 60 seconds waiting to make their turn. Once an adequate gap became available and the lead vehicle completed their turn, several trailing vehicles would disregard the stop sign to complete their left-turn movement. A few northbound left-turning drivers were observed completing their turn by using the eastbound left-turn lane as an acceleration lane to merge into the westbound traffic lane. While no conflicts were observed with this maneuver, the potential for higher-speed head-on collisions to occur exists.
- There were a few instances where westbound through drivers had to brake due to northbound left-turning vehicles entering the traffic stream initially at a slower speed than westbound traffic.
- It was noted that northbound right-turning drivers appeared to be delayed in completing their turn if a northbound left-turning vehicle had stopped beyond the stop bar, thus blocking their line of sight of approaching eastbound vehicles. However, their delay was not noted to be excessive or cause conflicts.
- The maximum queue for the southbound approach was two (2) vehicles and 10 vehicles for westbound left turns. Southbound and westbound queues dissipated quickly and without issue or conflict.
- One adult pedestrian was observed traveling along the south leg of S.R. 72. No conflicts were noted with this crossing. Also, no additional pedestrians or bicyclists were observed during this time period.

#### Afternoon Observation

- As previously stated, the afternoon peak northbound left-turn movement consists of 85 vehicles from 3:00 to 4:00 p.m., with 68 vehicles specifically occurring during the 30-minute period between 3:15 and 3:45 p.m. For the eastbound right-turn movement, a total of 91 vehicles were observed during the afternoon peak hour, with 71 vehicles occurring during the peak 30-minute period between 3:00 and 3:30 pm.
- The afternoon dismissal period operated similar to the morning arrival period, though slightly more efficiently with less delay. School dismissal began at 3:15 p.m. and all queues on-site had dissipated by 3:30 p.m.
- The maximum queue for the northbound left-turn movement was eight (8) vehicles on Hawkins Road; however, all queues had dissipated by 3:30 p.m.



- The maximum queue for the southbound approach was two (2) vehicles and three (3) vehicles for westbound left turns. Southbound and westbound queues dissipated quickly and without issue or conflict.
- No bicyclists and no pedestrians were observed during this time period.

#### Safety

In addition to the collision analysis, the following observations were made with respect to the safety of the study location:

- No signs of skid marks, broken glass, plastic, or other indications of a crash were observed.
- Due to the observed speeds of vehicles approaching the intersection along S.R. 72, in conjunction with the conflicts noted with northbound left-turning vehicles turning onto S.R. 72 at lower speeds, it is recommended that SCHOOL ENTRANCE Warning Signs (FTP 33-06) be installed on the eastbound and westbound approaches to the intersection with supplemental flashing beacons to operate during school arrival and dismissal periods. Per Chapter 15 of the FDOT Speed Zoning Manual, flashing beacons should be used in rural areas where roadway approach speeds are 45 mph or greater to increase conspicuity of the school entrances without school zones.

#### Maintenance

During the field reviews, the condition of the study intersection's asphalt, striping, signing, and lighting were observed. The following are observations related to maintenance of the intersection:

- The signing, pavement and pavement markings were observed to be in good condition, with the following exceptions:
  - The stop bar, lane lines, and the directional arrows on the northbound approach are worn.



- The STOP sign on the northbound approach is tilted to the west.
- The sign panel for the STOP sign on the southbound approach is bent/damaged and the STOP sign is tilted to the west.



Damaged STOP sign panel on the southbound approach

# **4** SIGNAL WARRANT ANALYSIS

The traffic volumes, geometric conditions, and crash data at the intersection were analyzed, summarized, and then compared with the warrants for the installation of a traffic signal contained within the MUTCD and MUTS.

Upon conducting the Signal Warrant Analysis, the eastbound and westbound approaches of S.R. 72 were used as the major street, and the northbound approach of Hawkins Road was used as the minor street because it had the highest minor street volumes. For the purposes of the warrant analysis, both the major and minor streets were treated as one-lane approaches. Additionally, the northbound left-turn and through volumes were used for the minor street volumes. Based on the critical speed of 55 mph on S.R. 72, the 70% volume criteria were applied to the analysis. When considering crash history for the signal warrant analysis, during the 12-month period from November 1, 2020 to October 31, 2021, there were two (2) crashes susceptible to correction by the installation of a traffic signal. *Table 6* below summarizes the results of the warrant analysis.

Warrant		Applicable	Satisfied	Comments
1A	Minimum Vehicular Volume	Yes	No	This warrant is not satisfied as the minor street volumes do not meet the threshold for any of the hours (must be met for eight (8) hours of an average day).
1B	Interruption of Continuous Traffic	No	N/A	This warrant is not applicable as excessive delay or conflict was not observed for minor street traffic.
2	Four Hour Vehicular Volume	Yes	No	This warrant is not satisfied as the minor street volumes meet the threshold for two (2) hours (must be met for four (4) hours of an average day).
3A	Peak Hour Delay	Yes	No	Peak hour delays do not satisfy the warrant.
3B	Peak Hour Volume	Yes	Yes	This warrant is satisfied. Also, peak hour volumes are directly related to the arrival and dismissal times of the Sarasota Suncoast Academy public charter school.
4	Pedestrian Volume	Yes	No	This warrant is not satisfied as only two (2) pedestrians were recorded traversing the major street during the eight (8) hours.
5	School Crossing	No	N/A	This warrant is not applicable as no school zone exists at the intersection.
6	Coordinated Signal System	Νο	N/A	This warrant is not applicable as the intersection is not within a coordinated signal system.
7	Crash Experience	Yes	No	This warrant is not met as there were two (2) crashes potentially correctable by the installation of a traffic signal that occurred within any 12-month study period (must have five (5) potentially correctable crashes within any 12-month study period for the warrant to be met.
8	Roadway Network	No	N/A	This warrant is not applicable, as the interesection is not considered to be part of a coordinated network.
9	Railroad Crossing	No	N/A	This warrant is not applicable, as there is no railroad crossing near the study intersection.

## Table 6Signal Warrant Analysis Summary

Based on the signal warrant analysis, only Warrant 3B (Peak-Hour Volume) is currently met for the consideration of the installation of a traffic signal at the intersection of S.R. 72 and Hawkins Road/Coash Road. The signal warrant analysis worksheets for the study intersection are provided in the *Appendix*.

In summary, based on the results of the warrant analysis, a review of crash history, field observations, engineering judgment, it is recommended an Intersection Control Evaluation (ICE) analysis be undertaken at this time for the intersection of S.R. 72 and Hawkins Road/Coash Road to verify that a traffic signal is the appropriate traffic control improvement at this location.

In addition, the following improvement is recommended:

 Install SCHOOL ENTRANCE Warning Signs (FTP 33-06) with supplemental flashing beacons to operate during school arrival and dismissal periods on the eastbound and westbound approaches to the intersection.

# 5 RECOMMENDATIONS

Based on the signal warrant analysis, data, crash history, field observations, and engineering judgment, it is recommended that an ICE analysis be undertaken at this time for the intersection of S.R. 72 and Hawkins Road/Coash Road to verify a traffic signal is the appropriate traffic control improvement at this location.

In addition, the following improvement is recommended:

• Install SCHOOL ENTRANCE Warning Signs (FTP 33-06) with supplemental flashing beacons to operate during school arrival and dismissal periods on the eastbound and westbound approaches to the intersection.



## **APPENDIX**

## **STRAIGHT-LINE DIAGRAM**

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## **TRAFFIC VOLUMES**


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04:30 PM	5	1	3	0	9	0	0	9	0	9	21	147	6	0	174	8	97	0	0	105	297
04:45 PM	5	3	6	0	14	0	1	11	0	12	14	144	14	0	172	4	101	0	0	105	303
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Total	32	3	21	0	56	0	9	40	0	49	48	503	71	0	622	39	387	1	2	429	1156
				-		-	,		-												
06:00 PM	7	0	3	0	10	0	0	7	0	7	12	82	14	0	108	7	80	0	0	87	212
06:15 PM	11	0	10	0	21	0	0	8	0	8	12	78	5	0	95	6	68	1	0	75	199
06:30 PM	11	1	4	1	17	0	0	7	0	7	11	66	9	0	86	2	61	0	0	63	173
06:45 PM	13	1	4	0	18	0	2	4	0	6	10	75	4	0	89	3	27	0	0	30	143
Total	42	2	21	1	66	0	2	26	0	28	45	301	32	0	378	18	236	1	0	255	727
07:00 PM	19	2	9	0	30	0	0	8	0	8	13	62	5	0	80	1	39	0	0	40	158
07:15 PM	18	0	3	Õ	21	Ő	Ő	2	Ő	2	6	49	2	Ő	57	1	35	1	Ő	37	117
07:30 PM	6	1	1	Õ	8	Ő	Ő	3	Õ	3	9	40	Ō	Ő	49	1	27	1	Ő	29	89
07:45 PM	10	0	6	Ő	16	0	Ő	5	Ő	5	4	28	Ő	Ő	32	0	25	0	0	25	78
Total	53	3	19	0	75	0	0	18	0	18	32	179	7	0	218	3	126	2	0	131	442
						-								-					-		
Grand Total	395	35	319	1	750	13	26	315	0	354	327	2924	432	0	3683	307	2694	14	2	3017	7804
Apprch %	52.7	4.7	42.5	0.1		3.7	7.3	89	0		8.9	79.4	11.7	0		10.2	89.3	0.5	0.1		
Total %	5.1	0.4	4.1	0	9.6	0.2	0.3	4	0	4.5	4.2	37.5	5.5	0	47.2	3.9	34.5	0.2	0	38.7	
Passenger Vehicles	392	35	316	1	744	13	26	311	0	350	327	2790	432	0	3549	305	2535	13	2	2855	7498
% Passenger Vehicles	99.2	100	99.1	100	99.2	100	100	98.7	0	98.9	100	95.4	100	0	96.4	99.3	94.1	92.9	100	94.6	96.1
Heavy Trucks	3	0	3	0	6	0	0	4	0	4	0	134	0	0	134	2	159	1	0	162	306
% Heavy Trucks	0.8	0	0.9	0	0.8	0	0	1.3	0	1.1	0	4.6	0	0	3.6	0.7	5.9	7.1	0	5.4	3.9

File Name : SR 72 at Hawkins Rd TMC (8-hr) Site Code : 00000000 Start Date : 1/27/2022 Page No : 2

		HAWKINS ROAD Northbound Left Thru Right U-Turns App. Tota						ASH R					TE RO					TE RO/			
Start Time	Left				App. Total	Left		Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru		U-Turns	App. Total	Int. Total
Peak Hour An																					
Peak Hour for	Entire	Inters	ection	Begins a	at 07:30	AM															
07:30 AM	22	0	5	0	27	0	2	12	0	14	7	80	26	0	113	18	93	1	0	112	266
07:45 AM	3	0	5	0	8	0	0	12	0	12	3	84	27	0	114	17	120	0	0	137	271
08:00 AM	35	5	40	0	80	0	1	12	0	13	9	82	46	0	137	62	107	0	0	169	399
08:15 AM	39	1	44	0	84	1	2	16	0	19	2	78	56	0	136	47	87	0	0	134	373
Total Volume	99	6	94	0	199	1	5	52	0	58	21	324	155	0	500	144	407	1	0	552	1309
% App. Total	49.7	3	47.2	0	500	1.7 .250	8.6	89.7	0	7/2	4.2	64.8	31	0	010	26.1	73.7	0.2	0	017	020
PHF	.635 98	.300	<u>.534</u> 93	<u>.000</u> 0	.592 197	.250	.625 5	<u>.813</u> 51	.000. 0	<u>.763</u> 57	.583 21	<u>.964</u> 302	<u>.692</u> 155	.000. 0	.912 478	.581 144	.848 367	.250 1	.000. 0	<u>.817</u> 512	.820 1244
Passenger Vehicles % Passenger Vehicles	99.0	100	98.9	0	99.0	100	100	98.1	0	98.3	100	93.2	100	0	95.6	100	90.2	100	0	92.8	95.0
Heavy Trucks	1	0	1	0	2	0	0	1	0	70.5	0	22	0	0	22	0	40	0	0	40	65
% Heavy Trucks	1.0	0	1.1	Ő	1.0	Ö	0	1.9	Ő	1.7	0	6.8	0	Ő	4.4	0	9.8	Ő	Ő	7.2	5.0
Peak Hour An Peak Hour for	alysis F		7:00 Al	VI to 09							07:30 AN					07:30 AN					
+0 mins.	22	0	5	0	27	1 100:15 AW	2	16	0	19	07:30 AN	80	26	0	113	18	93	1	0	112	
+15 mins.	3	0	5	0	27	Ó	2	11	0	13	3	84	20	0	114	17	120	0	0	137	
+30 mins.	35	5	40	Ő	80	0	0	17	Õ	17	9	82	46	0	137	62	107	Ő	Ő	169	
+45 mins.	39	1	44	0	84	3	0	19	0	22	2	78	56	0	136	47	87	0	0	134	
Total Volume	99	6	94	0	199	4	4	63	0	71	21	324	155	0	500	144	407	1	0	552	
% App. Total	49.7	3	47.2	0		5.6	5.6	88.7	0		4.2	64.8	31	0		26.1	73.7	0.2	0		
PHF	.635	.300	.534	.000	.592	.333	.500	.829	.000	.807	.583	.964	.692	.000	.912	.581	.848	.250	.000	.817	
Passenger Vehicles	98	6	93	0	197	4	4	63	0	71	21	302	155	0	478	144	367	1	0	512	
% Passenger Vehicles	99	100	98.9	0	99	100	100	100	0	100	100	93.2	100	0	95.6	100	90.2	100	0	92.8	
Heavy Trucks	1	0	1	0	2	0	0	0	0	0	0	22	0	0	22	0	40	0	0	40	
% Heavy Trucks	1	0	1.1	0	1	0	0	0	0	0	0	6.8	0	0	4.4	0	9.8	0	0	7.2	
Peak Hour An	5					Peak 1	of 1														
Peak Hour for				0		PIM 1	2	0	0	10	17	119	37	0	173	18	0.5	1	0	104	220
03:00 PM 03:15 PM	7 42	2 6	31 <b>39</b>	0 0	40 <b>87</b>	2	2 0	9 5	0 0	12 7	17	109	34	0 0	153	16	85 115	0	0 0	104	329 <b>378</b>
03:15 PM 03:30 PM	26	2	29	0	57	1	3	11 5	0	15	17	91	54 11	0	155	10	133	1	0	144	335
03:45 PM	10	2	29	0	16	0	0	9	0	9	18	93	9	0	120	2	106	1	0	109	254
Total Volume	85	11	104	0	200	4	5	34	0	43	62	412	91	0	565	46	439	3	0	488	1296
% App. Total	42.5	5.5	52	Ő	200	9.3	11.6	79.1	Ő	10	11	72.9	16.1	Ő	000	9.4	90	0.6	Ő	100	.270
PHF	.506	.458	.667	.000	.575	.500	.417	.773	.000	.717	.861	.866	.615	.000	.816	.639	.825	.750	.000	.847	.857
Passenger Vehicles	85	11	103	0	199	4	5	33	0	42	62	395	91	0	548	46	415	3	0	464	1253
% Passenger Vehicles	100	100	99.0	0	99.5	100	100	97.1	0	97.7	100	95.9	100	0	97.0	100	94.5	100	0	95.1	96.7
Heavy Trucks	0	0	1	0	1	0	0	1	0	1	0	17	0	0	17	0	24	0	0	24	43
% Heavy Trucks	0	0	1.0	0	0.5	0	0	2.9	0	2.3	0	4.1	0	0	3.0	0	5.5	0	0	4.9	3.3
Peak Hour An Peak Hour for					:45 PM -	Peak 1	of 1														
	03:00 PM	• •				04:45 PN	1				04:30 PN	1				03:00 PN	I				
+0 mins.	7	2	31	0	40	0	1	11	0	12	21	147	6	0	174	18	85	1	0	104	
+15 mins.	42	6	39	0	87	0	6	11	0	17	14	144	14	0	172	16		0	0	131	
+30 mins.	26	2	29	0	57	0	3	10	0	13	9	125	18	0	152	10	133	1	0	144	
+45 mins.	10	1	5	0	16	0	0	15	0	15	11	127	24	0	162	2	106	1	0	109	
Total Volume	85	11	104	0	200	0	10	47	0	57	55	543	62	0	660	46	439	3	0	488	
% App. Total	42.5	5.5	52	0		0	17.5	82.5	0	0.00	8.3	82.3	9.4	0		9.4	90	0.6	0	0.47	
PHF	.506	.458	.667	.000	.575	.000	.417	.783	.000	.838	.655	.923	.646	.000.	.948	.639	.825	.750	.000	.847	
Passenger Vehicles	85	11	103	0	199 00 F	0	10	46	0	56	55	533	62 100	0	650 09 F	46	415	3	0	464	
% Passenger Vehicles Heavy Trucks	100 0	100 0	99 1	0 0	99.5 1	0	100 0	97.9 1	0 0	98.2 1	100 0	98.2 10	100 0	0 0	98.5 10	100 0	94.5 24	100 0	0 0	95.1 24	
% Heavy Trucks	0	0	1	0	0.5	0	0	2.1	0	1.8	0	1.8	0	0	10 1.5	0	24 5.5	0	0	24 4.9	
so nouvy mucks	0	U	1	U	0.0	0	0	∠.1	U	1.0	0	1.0	0	U	1.5	0	5.5	U	0	4.7	

File Name : SR 72 at Hawkins Rd TMC (8-hr) Site Code : 00000000 Start Date : 1/27/2022 Page No : 1

										oups Pr	inted-	Heavy										
				VKINS orthbo					ASH R uthbo					FE ROA Astbou					TE ROA estbou			
Start T	ime	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	1	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right		App. Total	Int. Total
07:00		0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	7
07:15		0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	0	13	0	0	13	24
07:30		0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	8	0	0	8	15
07:45		0	0	0	0	0	0	0	<u>1</u>	0	1	0	<u>4</u> 29	0	0	4 29	0	14 35	0	0	14 35	<u>19</u> 65
I	otal	0	0	0	0	0	0	0	I	0	1	0	29	0	0	29	0	35	0	0	35	65
08:00	AM	1	0	1	0	2	0	0	0	0	0	0	2	0	0	2	0	12	0	0	12	16
08:15		0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	6	0	0	6	15
08:30	AM	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	5	1	0	6	15
08:45		0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	1	12	0	0	13	22
Т	otal	1	0	1	0	2	0	0	0	0	0	0	29	0	0	29	1	35	1	0	37	68
00.00		0	0	0	0	0		0	0	0		0	0	0	0	0	0	9	0	0	9	17
09:00 09:15		0 1	0 0	0	0	0 1	0	0	0	0 0	0	0	8 17	0	0	8 17	0 1	9 8	0	0	9	17 27
09:15		1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	11	0	0	9 11	14
09:45		0	0	0	0	0	0	0	1	0	1	0	8	0	0	8	0	15	0	0	15	24
	otal	2	0	0	0	2	0	0	1	0	1	0	35	0	0	35	1	43	0	0	44	82
*** BREA	۷۷ ***						-															
DREF																						
03:00	PM	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	4	0	0	4	11
03:15	PM	0	0	1	0	1	0	0	0	0	0	0	8	0	0	8	0	6	0	0	6	15
03:30	I	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	8	0	0	8	10
03:45		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	6	0	0	6	7
Т	otal	0	0	1	0	1	0	0	1	0	1	0	17	0	0	17	0	24	0	0	24	43
04:00	PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	4	0	0	4	9
04:15		0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
04:30	I	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	3	0	0	3	9
04:45		0	0	<u>1</u> 1	0	1	0	0	0	0	0	0	<u>1</u> 15	0	0	1 15	0	<u>2</u> 10	0	0	2 10	<u>4</u> 26
1	otal	0	0	I	0	I	0	0	0	0	0	0	15	0	0	15	0	10	0	0	10	20
05:00		0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	3	0	0	3	5
05:15		0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	2	0	0	2	4
05:30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
<u>05:45</u>	otal	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0 8	0	0	0	<u>3</u> 15
												-				,						
06:00 *** BREA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
06:30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
06:45	PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Т	otal	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
07:00		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
*** BREA		-	-	-	_	_ 1		_	-	-	_ 1	-		-	-	. 1	_	_	-	_	_ 1	-
07:30		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
07:45 		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
I	otal	U	U	U	U	U	U	U	U	U	U	U	2	U	U	2	U	I	U	U	I	3
Grand T	Fotal	3	0	3	0	6	0	0	4	0	4	0	134	0	0	134	2	159	1	0	162	306
Apprc	I	50	0	50	0		0	0	100	0		0	100	0	0		1.2	98.1	0.6	0		
Tota	al %	1	0	1	0	2	0	0	1.3	0	1.3	0	43.8	0	0	43.8	0.7	52	0.3	0	52.9	

File Name : SR 72 at Hawkins Rd TMC (8-hr) Site Code : 00000000 Start Date : 1/27/2022 Page No : 2

		HAWKINS ROAD Northbound						ASH R uthbo					TE RO					TE RO			
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour An	alysis F	rom 0	7:00 Al	V to 09	:45 AM -	Peak 1	l of 1														
Peak Hour for	- Entire	Inters	ection	Begins	at 09:00	AM															
09:00 AM	0	0	0	Ŭ 0	0	0	0	0	0	0	0	8	0	0	8	0	9	0	0	9	17
09:15 AM	1	0	0	0	1	0	0	0	0	0	0	17	0	0	17	1	8	0	0	9	27
09:30 AM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	11	0	0	11	14
09:45 AM	0	0	0	0	0	0	0	1	0	1	0	8	0	0	8	0	15	0	0	15	24
Total Volume	2	0	0	0	2	0	0	1	0	1	0	35	0	0	35	1	43	0	0	44	82
% App. Total	100	0	0	0		0	0	100	0		0	100	0	0		2.3	97.7	0	0		
PHF	.500	.000	.000	.000	.500	.000	.000	.250	.000	.250	.000	.515	.000	.000	.515	.250	.717	.000	.000	.733	.759
Peak Hour An Peak Hour for	,				:45 AM -	· Peak ´	l of 1														
	07:15 AM		on bog	inio ut.		07:00 AM	1				08:30 AM					07:15 AM	1				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	13	0	0	13	
+15 mins.	0	0	Ő	0	0	Ő	Ő	Ő	Ő	Ő	Ő	ý 9	0	Ő	9	0	8	0	0	8	
+30 mins.	0	0	0	Ő	0	Ő	Ő	0	Ő	Ő	Ő	8	Ő	Ő	8	0	14	Ő	Ő	14	
+45 mins.	1 1	Ő	ĭ	Ő	2	Ö	Ő	ĭ	õ	ĭ	ŏ	17	Ő	Ő	17	Ő	12	Ő	Ő	12	
Total Volume	1	0	1	0	2	0	0	1	0	1	0	43	0	0	43	0	47	0	0	47	
% App. Total	50	Ō	50	Ō	_	Ō	Ō	100	Ō		Ō	100	Ō	Ō		Ō	100	Ō	Ō		
PHF	.250	.000	.250	.000	.250	.000	.000	.250	.000	.250	.000	.632	.000	.000	.632	.000	.839	.000	.000	.839	
Peak Hour An	alysis F	rom 0	3:00 PI	V to 07	:45 PM -	Peak 1	of 1														
Peak Hour for																					
03:00 PM	0	0	0	Ŭ 0	0	0	0	0	0	0	0	7	0	0	7	0	4	0	0	4	11
03:15 PM	0	0	1	0	1	0	0	0	0	0	0	8	0	0	8	0	6	0	0	6	15
03:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	8	0	0	8	10
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	6	0	0	6	7
Total Volume	0	0	1	0	1	0	0	1	0	1	0	17	0	0	17	0	24	0	0	24	43
% App. Total	0	0	100	0		0	0	100	0		0	100	0	0		0	100	0	0		
PHF	.000	.000	.250	.000	.250	.000	.000	.250	.000	.250	.000	.531	.000	.000	.531	.000	.750	.000	.000	.750	.717
Peak Hour An Peak Hour for					:45 PM -	Peak 1	of 1														
	03:00 PM	• •				03:00 PM					03:00 PM					03:00 PM	I				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	4	0	0	4	
+15 mins.	0	0	1	0	1	0	0	0	0	0	0	8	0	0	8	0	6	0	0	6	
+30 mins.	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	8	0	0	8	
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	6	0	0	6	
Total Volume	0	0	1	0	1	0	0	1	0	1	0	17	0	0	17	0	24	0	0	24	
% App. Total	0	0	100	0		0	0	100	0		0	100	0	0		0	100	0	0		
PHF	.000	.000	.250	.000	.250	.000	.000	.250	.000	.250	.000	.531	.000	.000	.531	.000	.750	.000	.000	.750	

## **COLLISION SUMMARIES**

#### FLORIDA DEPARTMENT OF TRANSPORTATION

						COLLISI	ION SUM	I M A R Y						
Section:		17070-00	0			State Road:	S.R. 72			County:	Sarasota			
Intersecting	g route:	Hawkins	Road/Co	oash Road		Milepost:	7.356			Data by:	BA			
Study perio	od:	1/1/2017	to 12/31/2	2021						Date:	1/19/2021			
NO.	DATE	DAY	TIME	FATAL	INJURY	INJURY SEVERITY	PROPERTY DAMAGE	HARMFUL EVENT	FORM LENGTH	DUI	DAY / NIGHT	WET / DRY	CONTRIBUT	TING CAUSE
1	09/21/17	Thursday	8:25	0	0	1-No Injury	\$10,000	Angle	Long	No	Day	Dry	FTY	ROW
2	11/14/19	Thursday	17:55	0	0	1-No Injury	\$1,000	Animal	Short	No	Day	Dry	No Contrib	uting Action
3	11/15/20	Sunday	17:42	0	1	4-Incapacitating Injury	\$17,000	Angle	Long	No	Day	Dry	FTY	ROW
4	12/01/20	Tuesday	14:20	0	2	3-Non-Incapacitating Injury	\$12,500	Angle	Long	No	Day	Dry	FTY	ROW
5	11/26/21	Friday	12:28	0	0	1-No Injury	\$7,000	Angle	Long	No	Day	Dry		
TOTAL				0	3		\$47,500							
TOTAL		Injury	Severity			Angle	Animal							
NO.	Property Da	amage Only	Injury	Fatality		Angie	Anna							
5	3		2	0	0	4	1	0	0	0	0	0	0	0
Percent	60	%	40%	0%	0%	80%	20%	0%	0%	0%	0%	0%	0%	0%
CONTRIB-	Time of	of Day	Pavem	ent Cond.		No Contributing Action	FTYROW							
CAUSE	Day	Night	Dry	Wet		No Contributing Action	FIIROW							
Total	5	0	5	0	0	1	3	0	0	0	0	0	0	0
Percent	100%	0%	100%	0%	0%	20%	60%	0%	0%	0%	0%	0%	0%	0%



## **DELAY STUDY**

File Name : SR 72 at Hawkins Road NB Left-Turn & SB Delay 730-830 am

Site Code : 00000000 Start Date : 1/27/2022

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L	No.	Joined Queue	Released From	Delay
n.	110.	Joined Queue	Queue	Delay
1	1	7:32:11 AM	7:32:48 AM	37
1	2	7:32:17 AM	7:32:50 AM	33
1	3	7:32:35 AM		18
1	4		7:32:53 AM	
		7:34:33 AM	7:34:42 AM	9
1	5	7:35:57 AM	7:36:31 AM	34
1	6	7:36:28 AM	7:36:36 AM	8
1	7	7:36:40 AM	7:36:54 AM	14
1	8	7:36:41 AM	7:37:02 AM	21
1	9	7:36:42 AM	7:37:08 AM	26
1	10	7:36:45 AM	7:37:11 AM	26
1	11	7:38:04 AM	7:38:09 AM	5
1	12	7:38:07 AM	7:38:20 AM	13
1	13	7:38:15 AM	7:38:23 AM	8
1	14	7:38:28 AM	7:38:35 AM	7
1	15	7:38:37 AM	7:38:42 AM	5
1	16	7:38:40 AM	7:38:45 AM	5
1	17	7:40:11 AM	7:40:46 AM	35
1	18	7:40:20 AM	7:40:49 AM	29
1	19	7:40:36 AM	7:40:55 AM	19
1	20	7:40:54 AM	7:41:08 AM	14
1	21	7:41:40 AM	7:41:45 AM	5
1	22	7:43:31 AM	7:43:34 AM	3
1	23	7:44:25 AM	7:44:50 AM	25
1	24	7:44:54 AM	7:45:00 AM	6
1	25	7:56:27 AM	7:56:32 AM	5
1	26	8:00:49 AM	8:00:58 AM	9
1	20	8:01:06 AM		4
			8:01:10 AM	4
1	28	8:01:16 AM	8:01:20 AM	-
1	29	8:01:17 AM	8:01:24 AM	7
1	30	8:01:45 AM	8:02:47 AM	62
1	31	8:02:09 AM	8:03:18 AM	69
1	32	8:02:16 AM	8:03:21 AM	65
1	33	8:02:19 AM	8:03:24 AM	65
1	34	8:02:26 AM	8:03:57 AM	91
1	35	8:03:28 AM	8:04:03 AM	35
1	36	8:03:30 AM	8:04:09 AM	39
1	37	8:03:52 AM	8:04:29 AM	37
1	38	8:04:15 AM	8:04:59 AM	44
1	39	8:04:22 AM	8:05:05 AM	43
1	40	8:05:07 AM	8:06:00 AM	53
1	41	8:05:24 AM	8:06:11 AM	47
1	42	8:05:48 AM	8:06:18 AM	30
1	43	8:06:13 AM	8:06:22 AM	9
1	44	8:06:19 AM	8:06:25 AM	6
1	45	8:06:23 AM	8:06:59 AM	36
1	46	8:06:40 AM	8:07:44 AM	64
1	47	8:06:46 AM	8:07:47 AM	61
1	48	8:07:26 AM	8:07:51 AM	25
1	40	8:07:28 AM		48
1	1		8:08:16 AM	48
1	50 51	8:07:37 AM	8:09:29 AM 8:09:38 AM	
		8:08:11 AM		87
1	52	8:08:25 AM	8:10:28 AM	123
1	53	8:09:13 AM	8:11:29 AM	136
1	54	8:09:30 AM	8:12:05 AM	155
1	55	8:09:36 AM	8:12:09 AM	153
1	56	8:09:44 AM	8:12:11 AM	147
1	57	8:10:29 AM	8:12:14 AM	105
1	58	8:11:14 AM	8:12:23 AM	69
1	59	8:11:23 AM	8:12:26 AM	63
1	60	8:11:45 AM	8:12:29 AM	44
1	61	8:12:47 AM	8:12:52 AM	5
	62	8:13:29 AM	8:14:17 AM	48

File Name  $\,:\,$  SR 72 at Hawkins Road NB Left-Turn & SB Delay 730-830 am

Site Code : 0000000

Start Date : 1/27/2022

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			-	
L	No.	Joined Queue	Released From	Delay
n.	00	0.4.4.00.414		00
1	63	8:14:23 AM	8:14:59 AM	36
1	64	8:14:47 AM	8:15:02 AM	15
1	65	8:14:55 AM	8:15:34 AM	39
1	66	8:15:14 AM	8:15:46 AM	32
1	67	8:15:19 AM	8:15:52 AM	33
1	68	8:15:23 AM	8:16:09 AM	46
1	69	8:16:21 AM	8:16:49 AM	28
1	70	8:16:25 AM	8:16:52 AM	27
1	71	8:16:29 AM	8:17:59 AM	90
1	72	8:17:06 AM	8:18:43 AM	97
1	73	8:17:17 AM	8:18:46 AM	89
1	74	8:18:02 AM	8:18:51 AM	49
1	75	8:19:01 AM	8:20:11 AM	70
1	76	8:19:24 AM	8:20:28 AM	64
1	77	8:19:33 AM	8:20:31 AM	58
1	78	8:19:35 AM	8:20:35 AM	60
1	79	8:20:26 AM	8:20:54 AM	28
1	80	8:20:48 AM	8:21:11 AM	23
1	81	8:21:13 AM	8:21:18 AM	5
1	82	8:21:44 AM	8:21:54 AM	10
1	83	8:21:47 AM	8:22:05 AM	18
1	84	8:22:47 AM	8:23:06 AM	19
1	85	8:22:56 AM	8:23:50 AM	54
1	86	8:23:00 AM	8:23:55 AM	55
1	87	8:23:12 AM	8:24:00 AM	48
1	88	8:23:23 AM	8:24:49 AM	86
1	89	8:23:28 AM	8:24:59 AM	91
1	90	8:23:29 AM	8:25:00 AM	91
1	91	8:23:56 AM	8:25:06 AM	70
1	92	8:23:57 AM	8:25:10 AM	73
1	93	8:24:13 AM	8:25:20 AM	67
1	94	8:24:17 AM	8:26:22 AM	125
1	95	8:24:26 AM	8:26:33 AM	127
1	96	8:25:11 AM	8:26:34 AM	83
1	97	8:25:15 AM	8:26:38 AM	83
1	98	8:25:29 AM	8:27:00 AM	91
1	99	8:25:49 AM	8:27:13 AM	84
1	100	8:26:05 AM	8:27:24 AM	79
1	101	8:26:38 AM	8:28:36 AM	118
1	102	8:27:19 AM	8:29:09 AM	110
1	103	8:27:36 AM	8:29:10 AM	94
2	1	7:30:01 AM	7:30:05 AM	4
2	2	7:31:35 AM	7:31:55 AM	20
2	3	7:33:27 AM	7:33:42 AM	15
2	4	7:33:29 AM	7:33:47 AM	18
2	5	7:34:32 AM	7:34:39 AM	7
2	6	7:34:57 AM	7:35:03 AM	6
2	7	7:35:01 AM	7:35:07 AM	6
2	8	7:35:07 AM	7:35:11 AM	4
2	9	7:36:05 AM	7:36:22 AM	17
2	10	7:36:57 AM	7:36:59 AM	2
2	11	7:37:02 AM	7:37:05 AM	3
2	12	7:38:50 AM	7:38:58 AM	8
2	13	7:43:09 AM	7:43:12 AM	3
2	14	7:43:46 AM	7:43:57 AM	11
2	15	7:47:50 AM	7:47:54 AM	4
2	16	7:48:17 AM	7:48:34 AM	17
2	17	7:49:54 AM	7:50:00 AM	6
	18	7:50:30 AM	7:50:44 AM	14
2			7:50:50 AM	3
2	19	1.20:47 AM		
2	19 20	7:50:47 AM 7:52:59 AM		
2 2	20	7:52:59 AM	7:53:14 AM	15
2				

File Name : SR 72 at Hawkins Road NB Left-Turn & SB Delay 730-830 am

Site Code : 0000000

Start Date : 1/27/2022

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L	No.	Joined Queue	Released From	Delay
n.			Queue	
2	24	7:57:36 AM	7:57:43 AM	7
2	25	7:58:19 AM	7:58:25 AM	6
2	26	7:58:43 AM	7:58:47 AM	4
2	27	7:58:58 AM	7:59:11 AM	13
2	28	7:59:29 AM	7:59:39 AM	10
2	29	7:59:49 AM	7:59:57 AM	8
2	30	7:59:55 AM	8:00:05 AM	10
2	31	8:00:22 AM	8:00:26 AM	4
2	32	8:05:19 AM	8:05:28 AM	9
2	33	8:05:30 AM	8:05:35 AM	5
2 2 2 2 2 2 2	34	8:08:01 AM	8:08:08 AM	7
2	35	8:10:01 AM	8:10:05 AM	4
2	36	8:10:09 AM	8:10:16 AM	7
2	37	8:11:12 AM	8:11:20 AM	8
2	38	8:13:07 AM	8:13:13 AM	6
2	39	8:13:25 AM	8:13:30 AM	5
2	40	8:15:01 AM	8:15:11 AM	10
2	41	8:15:04 AM	8:15:17 AM	13
2	42	8:15:32 AM	8:15:37 AM	5
2	43	8:17:59 AM	8:18:01 AM	2
2	44	8:19:40 AM	8:19:44 AM	4
2	45	8:19:55 AM	8:19:59 AM	4
2	46	8:20:02 AM	8:20:18 AM	16
2	47	8:20:07 AM	8:20:22 AM	15
2	48	8:22:21 AM	8:22:42 AM	21
2 2 2	49	8:22:30 AM	8:22:55 AM	25
2	50	8:23:17 AM	8:23:33 AM	16
2	51	8:24:01 AM	8:24:07 AM	6
2	52	8:24:54 AM	8:24:58 AM	4
2	53	8:25:36 AM	8:26:14 AM	38
2	54	8:25:56 AM	8:26:18 AM	22
2	55	8:27:00 AM	8:27:17 AM	17
2	56	8:27:28 AM	8:27:38 AM	10
2	57	8:27:34 AM	8:27:50 AM	16
2	58	8:28:04 AM	8:28:08 AM	4

#### Summary Information:

Northbound Left-Turn	Southbound Approach
103	58
103	58
0	0
50.24	9.638
155	38
0	0
1.51	0.160
2.93	1.141
8	2
1.51	0.16
5175	559
	103         103         0         50.24         155         0         1.51         2.93         8         1.51

File Name : SR 72 at Hawkins Road NB Left-Turn & SB Delay 3-4 pm Site Code : 00000000

Site Code	: 00000000
Start Date	: 1/27/2022
Page No	: 1

n.         Queue           1         1         3:00:01 PM         3:00:08 PM         7           1         2         3:01:39 PM         3:01:56 PM         1           1         3         3:07:55 PM         3:08:53 PM         5           1         4         3:13:09 PM         3:13:25 PM         1           1         5         3:13:22 PM         3:13:25 PM         1           1         5         3:13:22 PM         3:13:25 PM         1           1         6         3:13:22 PM         3:13:55 PM         1           1         7         3:13:26 PM         3:16:15 PM         1           1         8         3:14:20 PM         3:16:13 PM         1           1         12         3:14:20 PM         3:18:29 PM         2           1         14         3:15:34 PM         3:18:50 PM         1           1         15         3:16:16 PM         3:19:00 PM         1           1         16         3:16:21 PM         3:19:13 PM         1           1         18         3:16:27 PM         3:20:08 PM         1           1         12         3:18:34 PM         3:20:13 PM         1 </th <th></th> <th></th> <th></th> <th></th> <th></th>					
1         1         3:00:01 PM         3:00:08 PM         7           1         2         3:01:39 PM         3:01:56 PM         1           1         3         3:07:55 PM         3:08:53 PM         1           1         4         3:13:09 PM         3:13:25 PM         1           1         5         3:13:09 PM         3:13:25 PM         1           1         6         3:13:22 PM         3:13:35 PM         1           1         6         3:13:43 PM         3:15:56 PM         1           1         9         3:14:19 PM         3:16:15 PM         1           1         10         3:14:20 PM         3:16:15 PM         1           1         11         3:14:28 PM         3:16:15 PM         1           1         13         3:14:29 PM         3:18:29 PM         2           1         14         3:15:34 PM         3:19:09 PM         1           1         15         3:15:48 PM         3:19:09 PM         1           1         16         3:16:47 PM         3:19:13 PM         1           1         19         3:16:47 PM         3:20:16 PM         1           1         20         <	L	No.	Joined Queue	Released From	Delay
1         2         3:01:39 PM         3:01:56 PM         1           1         3         3:07:55 PM         3:08:53 PM         5           1         4         3:13:06 PM         3:13:25 PM         1           1         5         3:13:09 PM         3:13:25 PM         1           1         6         3:13:22 PM         3:13:35 PM         1           1         7         3:13:26 PM         3:14:12 PM         4           1         8         3:13:43 PM         3:15:56 PM         1           1         10         3:14:20 PM         3:16:05 PM         1           1         11         3:14:51 PM         3:18:47 PM         2           1         14         3:15:34 PM         3:19:00 PM         1           1         15         3:16:21 PM         3:19:13 PM         1           1         16         3:16:27 PM         3:19:31 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:42 PM         3:20:08 PM         1           1         23         3:19:34 PM         3:20:19 PM         2           1         23					-
1         3         3:07:55 PM         3:08:53 PM         5           1         4         3:13:06 PM         3:13:25 PM         1           1         5         3:13:09 PM         3:13:25 PM         1           1         6         3:13:22 PM         3:13:35 PM         1           1         7         3:13:26 PM         3:14:12 PM         4           1         8         3:13:43 PM         3:16:15 PM         1           1         10         3:14:20 PM         3:16:13 PM         1           1         11         3:14:29 PM         3:18:29 PM         2           1         11         3:14:21 PM         3:18:29 PM         2           1         14         3:15:34 PM         3:18:50 PM         1           1         15         3:15:48 PM         3:19:00 PM         1           1         16         3:16:16 PM         3:19:13 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:37 PM         3:20:18 PM         3:20:18 PM           1         20         3:19:06 PM         3:20:13 PM         1           1         23 <td>_</td> <td></td> <td></td> <td></td> <td>7</td>	_				7
1       4       3:13:00 PM       3:13:25 PM       1         1       5       3:13:00 PM       3:13:25 PM       2         1       6       3:13:22 PM       3:13:35 PM       1         1       7       3:13:26 PM       3:13:35 PM       1         1       8       3:13:43 PM       3:15:56 PM       1         1       9       3:14:19 PM       3:16:15 PM       1         1       10       3:14:20 PM       3:16:15 PM       1         1       11       3:14:29 PM       3:18:29 PM       2         1       13       3:14:51 PM       3:18:47 PM       2         1       14       3:15:48 PM       3:19:00 PM       1         1       16       3:16:16 PM       3:19:09 PM       1         1       18       3:16:27 PM       3:19:31 PM       1         1       18       3:16:37 PM       3:20:08 PM       1         1       20       3:16:57 PM       3:20:08 PM       1         1       21       3:19:34 PM       3:20:13 PM       2         1       22       3:19:09 PM       2       2       3:20:09 PM       2         1       26					17
1         5         3:13:29 PM         3:13:29 PM         2           1         6         3:13:22 PM         3:13:35 PM         1           1         7         3:13:26 PM         3:14:12 PM         4           1         9         3:14:19 PM         3:16:15 PM         1           1         9         3:14:19 PM         3:16:15 PM         1           1         11         3:14:29 PM         3:16:15 PM         2           1         12         3:14:29 PM         3:18:50 PM         2           1         13         3:14:51 PM         3:18:50 PM         1           1         15         3:16:21 PM         3:19:09 PM         1           1         16         3:16:16 PM         3:19:03 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:47 PM         3:20:08 PM         1           1         19         3:16:34 PM         3:20:18 PM         1           1         20         3:16:37 PM         3:20:18 PM         2           1         23         3:19:34 PM         3:20:18 PM         2           1         23	-	-			58
1         6         3:13:22 PM         3:13:35 PM         1           1         7         3:13:26 PM         3:14:12 PM         4           1         8         3:13:43 PM         3:15:56 PM         1           1         9         3:14:19 PM         3:16:13 PM         1           1         10         3:14:20 PM         3:16:15 PM         1           1         12         3:14:29 PM         3:18:29 PM         2           1         13         3:14:51 PM         3:18:50 PM         1           1         14         3:15:34 PM         3:18:00 PM         1           1         16         3:16:16 PM         3:19:00 PM         1           1         16         3:16:21 PM         3:19:31 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:42 PM         3:20:08 PM         1           1         20         3:16:34 PM         3:20:13 PM         9           1         21         3:19:34 PM         3:20:27 PM         5           1         23         3:19:34 PM         3:20:27 PM         5           1         24					19
1         7         3:13:26 PM         3:14:12 PM         2           1         8         3:13:43 PM         3:15:56 PM         1           1         9         3:14:19 PM         3:16:05 PM         1           1         10         3:14:20 PM         3:16:15 PM         1           1         11         3:14:29 PM         3:16:15 PM         1           1         12         3:14:51 PM         3:18:29 PM         2           1         13         3:14:51 PM         3:18:50 PM         1           1         15         3:15:48 PM         3:19:00 PM         1           1         16         3:16:16 PM         3:19:09 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         18         3:16:27 PM         3:20:08 PM         1           1         20         3:16:57 PM         3:20:18 PM         3:20:17 PM         2           1         21         3:19:34 PM         3:20:17 PM         2         1         26         3:20:19 PM         2         1         26         3:20:19 PM         3:21:19 PM         6         1         1         28         3:20:57 PM         3:	1	5			20
1         8         3:13:43 PM         3:15:56 PM         1           1         9         3:14:19 PM         3:16:05 PM         1           1         10         3:14:20 PM         3:16:13 PM         1           1         11         3:14:29 PM         3:16:13 PM         1           1         12         3:14:29 PM         3:18:29 PM         2           1         13         3:14:51 PM         3:18:47 PM         2           1         14         3:15:34 PM         3:19:09 PM         1           1         15         3:15:48 PM         3:19:09 PM         1           1         16         3:16:16 PM         3:19:09 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:44 PM         3:20:13 PM         2           1         21         3:18:34 PM         3:20:13 PM         2           1         22         3:19:09 PM         3:20:18 PM         2           1         23         3:19:34 PM         3:20:27 PM         2           1         24         3:20:19 PM         3:20:19 PM         2           1         25			3:13:22 PM	3:13:35 PM	13
1         9         3:14:19 PM         3:16:05 PM         1           1         10         3:14:20 PM         3:16:15 PM         1           1         11         3:14:29 PM         3:16:15 PM         2           1         12         3:14:29 PM         3:18:29 PM         2           1         13         3:14:51 PM         3:18:29 PM         2           1         14         3:15:34 PM         3:18:00 PM         1           1         15         3:16:16 PM         3:19:00 PM         1           1         16         3:16:21 PM         3:19:31 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         20         3:16:57 PM         3:20:08 PM         1           1         21         3:18:34 PM         3:20:13 PM         9           1         21         3:18:34 PM         3:20:27 PM         6           1         25         3:20:11 PM         3:20:49 PM         4           1         25         3:20:16 PM         3:21:09 PM         6           1         26         3:20:16 PM         3:21:09 PM         6           1         28	1	7	3:13:26 PM	3:14:12 PM	46
1         10         3:14:20 PM         3:16:13 PM         1           1         11         3:14:29 PM         3:16:15 PM         1           1         12         3:14:29 PM         3:18:29 PM         2           1         13         3:14:51 PM         3:18:50 PM         1           1         14         3:15:34 PM         3:19:00 PM         1           1         15         3:16:21 PM         3:19:09 PM         1           1         16         3:16:27 PM         3:19:31 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:57 PM         3:20:08 PM         1           1         20         3:16:57 PM         3:20:13 PM         9           1         21         3:18:34 PM         3:20:13 PM         9           1         23         3:19:34 PM         3:20:14 PM         2           1         24         3:20:09 PM         3:20:17 PM         5           1         26         3:20:19 PM         3:21:19 PM         6           1         28         3:20:57 PM         3:22:07 PM         7           1         28		8	3:13:43 PM	3:15:56 PM	133
1         11         3:14:28 PM         3:16:15 PM         1           1         12         3:14:29 PM         3:18:29 PM         2           1         13         3:14:51 PM         3:18:50 PM         1           1         14         3:15:34 PM         3:18:50 PM         1           1         15         3:15:48 PM         3:19:00 PM         1           1         16         3:16:21 PM         3:19:09 PM         1           1         18         3:16:27 PM         3:19:31 PM         1           1         19         3:16:44 PM         3:19:31 PM         1           1         19         3:16:44 PM         3:20:08 PM         1           1         21         3:18:34 PM         3:20:13 PM         2           1         22         3:19:34 PM         3:20:27 PM         2           1         23         3:20:09 PM         3:20:57 PM         2           1         26         3:20:16 PM         3:20:7P M         7           1         30         3:21:22 PM         3:22:07 PM         7           1         30         3:21:22 PM         3:22:32 PM         7           1         33	1	9	3:14:19 PM	3:16:05 PM	106
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1         58         3:31:00 PM         3:31:15 PM         1           1         59         3:31:08 PM         3:31:28 PM         2	1	57	3:30:21 PM	3:30:28 PM	7
1 59 3:31:08 PM 3:31:28 PM 2	1	58	3:31:00 PM	3:31:15 PM	15
	1	59			20
1 60 3:31:52 PM 3:32:20 PM 2	1				28
					26
					25

File Name : SR 72 at Hawkins Road NB Left-Turn & SB Delay 3-4 pm

Site Code	: 00000000
Start Date	: 1/27/2022
Page No	: 2

L         No.         Joined Queue         Released Fro.           n.         0         0         0         0         0         0           1         63         3:32:42 PM         3:33:34 PM         0<	Delay           52           61           56           30           14           5           4           62           33           40           39           61
1         63         3:32:42 PM         3:33:34 PM           1         64         3:32:42 PM         3:33:43 PM           1         65         3:32:57 PM         3:33:53 PM           1         65         3:32:57 PM         3:33:53 PM           1         66         3:33:51 PM         3:34:00 PM           1         67         3:33:51 PM         3:34:05 PM           1         68         3:34:18 PM         3:34:23 PM           1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	61 56 30 14 5 4 62 25 33 40 39
1         64         3:32:42 PM         3:33:43 PM           1         65         3:32:57 PM         3:33:53 PM           1         66         3:33:30 PM         3:34:00 PM           1         67         3:33:51 PM         3:34:05 PM           1         68         3:34:18 PM         3:34:23 PM           1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	61 56 30 14 5 4 62 25 33 40 39
1         65         3:32:57 PM         3:33:53 PM           1         66         3:33:30 PM         3:34:00 PM           1         67         3:33:51 PM         3:34:05 PM           1         68         3:34:18 PM         3:34:23 PM           1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	56 30 14 5 4 62 25 33 40 39
1         66         3:33:30 PM         3:34:00 PM           1         67         3:33:51 PM         3:34:05 PM           1         68         3:34:18 PM         3:34:23 PM           1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	30 14 5 4 62 25 33 40 39
1         67         3:33:51 PM         3:34:05 PM           1         68         3:34:18 PM         3:34:23 PM           1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	14 5 4 62 25 33 40 39
1         68         3:34:18 PM         3:34:23 PM           1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	5 4 62 25 33 40 39
1         69         3:34:27 PM         3:34:31 PM           1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	4 62 25 33 40 39
1         70         3:34:40 PM         3:35:42 PM           1         71         3:35:57 PM         3:36:22 PM	62 25 33 40 39
1 71 3:35:57 PM 3:36:22 PM	25 33 40 39
	33 40 39
1 72 3:35:58 PM 3:36:31 PM	40 39
	39
1 73 3:36:01 PM 3:36:41 PM	
1 74 3:36:47 PM 3:37:26 PM	61
1 75 3:37:21 PM 3:38:22 PM	
1 76 3:38:15 PM 3:38:29 PM	14
1 77 3:38:17 PM 3:38:53 PM	36
1 78 3:38:45 PM 3:39:00 PM	15
1 79 3:39:29 PM 3:39:40 PM	11
1 80 3:45:56 PM 3:46:01 PM	5
1 81 3:47:11 PM 3:48:10 PM	59
1 82 3:47:50 PM 3:48:16 PM	26
1 83 3:51:16 PM 3:51:46 PM	30
1 84 3:51:18 PM 3:51:50 PM	32
1 85 3:52:19 PM 3:52:59 PM	40
1 86 3:53:58 PM 3:54:18 PM	20
1 87 3:54:26 PM 3:54:51 PM	25
1 88 3:56:45 PM 3:56:53 PM	8
1 89 3:58:39 PM 3:58:51 PM	12
1 90 3:59:25 PM 3:59:33 PM	8
2 1 3:01:20 PM 3:01:28 PM	8
2 2 3:02:18 PM 3:02:20 PM	2
2 3 3:02:49 PM 3:02:53 PM	4
2 4 3:03:31 PM 3:03:41 PM	10
2 5 3:05:36 PM 3:05:42 PM	6
2 6 3:05:49 PM 3:06:01 PM	12
2 7 3:05:58 PM 3:06:06 PM	8
2 8 3:05:59 PM 3:06:09 PM	10
2 9 3:06:26 PM 3:06:28 PM	2
2 10 3:10:53 PM 3:10:59 PM	6
2 11 3:11:19 PM 3:11:49 PM	30
2 12 3:12:23 PM 3:12:33 PM	10
2 13 3:14:19 PM 3:15:55 PM	96
2 14 3:16:56 PM 3:17:29 PM	33
2 15 3:23:25 PM 3:24:26 PM	61
2 16 3:23:43 PM 3:24:32 PM	49
2 17 3:26:32 PM 3:26:36 PM	4
2 18 3:27:17 PM 3:27:21 PM	4
2 19 3:28:44 PM 3:28:50 PM	6
2 20 3:30:38 PM 3:31:07 PM	29
2 21 3:30:51 PM 3:31:11 PM	20
2 22 3:32:33 PM 3:32:41 PM	8
2 23 3:32:39 PM 3:32:52 PM	13
2 24 3:35:20 PM 3:35:26 PM	6
2 25 3:36:55 PM 3:37:01 PM	6
2 26 3:36:56 PM 3:37:04 PM	8
2 27 3:38:20 PM 3:38:24 PM	4
2 28 3:39:01 PM 3:39:23 PM	22
2 29 3:40:47 PM 3:41:01 PM	14
2 30 3:41:05 PM 3:41:28 PM	23
2 31 3:42:15 PM 3:42:18 PM	3
2 32 3:42:40 PM 3:42:49 PM	9
2 33 3:43:26 PM 3:44:15 PM	49
2 34 3:43:31 PM 3:44:26 PM	55
2 35 3:45:16 PM 3:45:33 PM	17
2 36 3:46:27 PM 3:46:46 PM	19

# File Name : SR 72 at Hawkins Road NB Left-Turn & SB Delay 3-4 pm Site Code : 00000000

Site Code	: 00000000
Start Date	: 1/27/2022
Page No	: 3

L	No.	Joined Queue	Released From	Delay
n.			Queue	
2	37	3:50:19 PM	3:50:34 PM	15
2	38	3:51:04 PM	3:51:14 PM	10
2	39	3:53:59 PM	3:54:17 PM	18
2	40	3:54:00 PM	3:54:36 PM	36
2	41	3:55:42 PM	3:55:53 PM	11
2	42	3:55:57 PM	3:56:05 PM	8
2	43	3:57:53 PM	3:57:57 PM	4

#### Summary Information:

3:00:00 PM - 4:00:00 PM	Northbound Left-Turn	Southbound Approach
Total Vehicle Count:	90	43
Delayed Vehicle Count:	90	43
Through Vehicle Count:	0	0
Average Stopped Time:	57.90	17.860
Maximum Stopped Time:	240	96
Min. Secs. for Delay:	0	0
Average Queue:	1.46	0.226
Queue Density:	3.13	1.217
Maximum Queue:	9	3
Delay in Vehicle Hour:	1.46	0.23
Total Delay:	5211	768

## SIGNAL WARRANT ANALYSIS WORKSHEET

Form 750-020-01 TRAFFIC ENGINEERING - 07/99 Page 1 of 5

#### TRAFFIC SIGNAL WARRANT SUMMARY

City: County: <b>S</b>	arasota					En	gineer: Date:	-	N	BA larch 3,		
ajor Street: <b>S.R. 72</b> nor Street: <b>Hawkins Ro</b>						Lan Lan		1 1				eed: 55
ume Level Criteria												
1. Is the critical speed of	-										Yes	🗆 No
2. Is the intersection in	a built-up	area of	f isolate	d comm	nunity o	f <10,00	0 popu	lation?			Yes	🗆 No
If Question 1 or 2 above	is answe	ered "Ye	es", ther	ı use "7	0%" vol	ume lev	el			-	70%	□ 100%
RRANT 1 - EIGHT-I		/EHICI	JLAR	VOLU	ME			Арр	licable:		Yes	🗆 No
Warrant 1 is satisfied if Col								Sa	atisfied:		Yes	No
Warrant is also satisfied if	oth Condi	ition A <u>a</u>	<u>nd</u> Cond	lition B a	re "80%	/ 56%" s	atisfied.					
Condition A - Minimun	NVehicu	lar Volu	ime				1	00% Sa	atisfied:		Yes	■ No
							80% /	56% Sa	atisfied:		Yes	No
	Mini	mum Re	oquiron	onte			Fie	ght High	ost Ho	ure		
		Shown						jint ringi				
(volumes in veh/hr)		Shown										
Approach Lanes		1		more		0	0	1500	1600	1700	1800	1900
Volume Level	100%		100%	70%	700	800	006	15	16	17	18	19
Both Approaches	500	350	600	420	848	1,000	723	1,053	1,043	1,051	633	349
on Major Street Highest Approach	(400)	(280)* 105	(480) 200	(336)* 140								<u> </u>
on Minor Street	(120)	(84)*	(160)	(112)*	36	90	44	96	29	35	44	56
Record 8 highest hours and	· /	<b>``</b>	· ,	· ,	es provid	led. Con	dition is	100% sa	atisfied if	the		<b></b>
minimum volumes are met											for eight	hours.
Condition B. Interrupt	ion of C	ntinua		fie				٨٥٥	liaablar	_	Vaa	■ No
Condition B - Interrupt Condition B is intended for					ie	Eve	acciva	Delay/C	licable:		Yes Yes	■ No
so heavy that traffic on the								00% Sa			Yes	■ No
					,			56% Sa			Yes	■ No
	<u> </u>											
		mum Ro	-				Eig	ht High	nest Ho	urs		
	(80%)	Shown Shown	in Bra	CKEIS) kets)*								
(volumes in veh/hr)	100%	01101111					_	9	9	9	9	l a l
(volumes in veh/hr) Approach Lanes	_	1	2 or	more				. 0		. 0		
(volumes in veh/hr) Approach Lanes Volume Level		1	2 or 100%		700	800	006	15(	16	17	18	1 19
Approach Lanes	_		<b>2 or</b> <b>100%</b> 900	more 70% 630	00L	<b>008</b>	<b>006</b>	<b>1053</b>	1003	1 051	1800	<b>1900</b>
Approach Lanes Volume Level Both Approaches on Major Street	100%	1 70%	100%	70%	<b>00</b> 848	<b>000</b> 1,000	<b>06</b> 723	<b>5</b> 1,053	<b>ද</b> 1,043	<b>E</b> 1,051	<b>8</b> 633	<b>£</b> 349
Approach Lanes Volume Level Both Approaches	<b>100%</b>	1 70% 525	<b>100%</b> 900	<b>70%</b> 630								

Source: Revised from NCHRP Report 457

	City:								Er	nginee	r:			BA	۸.		
(	County:	Sa	aras	ota						Date			М	arch 3	, 2022		
	Street: S.F								Lar	nes:	1	(	Critical	Appro	ach Sp	eed:	55
Minor	Street: Ha	wkins Roa	d/C	oas	n Road				Lar	nes:	1						
1.	e Level Cri Is the critica Is the inters	al speed of	-							) թօբւ	ilation	?			Yes Yes		No No
lf G	uestion 1 o	or 2 above i	s an	swe	red "Yes	s", the	n use "70%	6" volu	me leve	el					70%		100%
	RANT 2 -							-			/		able:		Yes		No
lf a	ny four point	s lie above tl	he ap	prop	vriate line,	then	the warrant i	is satisfi	ed.			Sati	sfied:		Yes		No
							Plot four	volume	combin	ations	on the	applic	able fig	gure bel	ow.		
							FIGI	JRE 40	1· C	ritori	a for "	1000		umo l	ovol		
Warr	anting Vol	umes		let	]	700			-1. 0			100/					]
	Major	Minor	100%	70%	H	600											-
Hour	Street	Street	16	2	- 	500			2 OR M	ORE LANE	S & 2 OR	MORELA	NES				
700	848	36			REET	400		$\checkmark$									
800	1,000	90			E APP	400					41.48/5	8 2 0 0	MORE LAN				1
900	723	44	+	$\vdash$	MINOR STREET HIGH VOLUME APPROACH - VPH	300			$\leftarrow$								-
500	123	44				200		+	$\succ$			$\square$		& 1 LANE			-
1500	1,053	96			- <sup>-</sup>	100							••				*115 *80
1600	1,043	29				0			•	•			IES & LA				
1700	1,051	35		$\square$		3		500 6 JOR STR							200 13	UU 1	400
1800	633	44				,	applies as the applies as the										Ind
1000	240	EG				ου νρη										ane.	
1900	349	56					FIGU (Community L	JRE 4 .ess than								reet)	
						400		1		1							1
					НИЛ				2 OR M	ORE LANE	ES & 2 OR	MORE LA	NES				
					MINOR STREET HIGH VOLUME APPROACH - VPH	300		$\checkmark$									-
					TREE PRO/					1 LANE	& 2 OR M	ORE LAN	IES				
					IOR S VE AF	200			×		$\leftarrow$						-
										$\sim$	+		1 LANE &	1 LANE			
					V HOII	100					+	1				:	*80
					r	0		•			2 OR MO		S & 1 LAN				*60
						20	0 300	400	) 5	500	600	70	00	800	900	1(	000

Source: Revised from NCHRP Report 457

Form 750-020-01 TRAFFIC ENGINEERING - 07/99 Page 1 of 5

#### TRAFFIC SIGNAL WARRANT SUMMARY

C Cour	ity:			Sara	sota					E	ingine Da	er: ite:			Marcl	BA h 3. 2	2022		
Major Stre Minor Stre			Roa	d/Co	ash Road					-	ines: ines: -	1	_	Critic	al App	proa	ch Sp	eed:	55
2. Is the	e critica e inters	al speed ection i	n a	built	or street traffic -up area of isc swered "Yes",	lated	comm	unity	of <10	•	opulat	ion?				■ `	Yes Yes 70%		No No 100%
WARRAN	IT 3 - I	PEAK	нс	UR									Appl	icable	:	<b>•</b> `	Yes		No
	e criteria	a are fulli	fillea		ny of the plotted	point	s lie abo	ove the	appro	priate lii	ne,			tisfied		<b>•</b> `	Yes		No
								Plot v	olume	combina	ation o	n the a	applica	ble figi	ire be	low.			
		on justify	/ing					FIG	URF	4C-3:	Crite	eria fo	or "10	٥%" ١	/olun	ne l	evel		
u	se of wa	inant:				60	0												
	Scho	ol			HdA	50	0				20	R MORE	LANES & 2	OR MOF	E LANES	\$			
Record hour	when cr	riteria are	e fulf	filled	۲	40	n 🔼		$\searrow$										
and the corre	•	ng delay	or vo	olum	REE'	40				$\searrow$			1 LAN	IE & 2 OR	MORE L	ANES			
in boxes prov	nded.				R ST	30	0		$\rightarrow$	$\checkmark$	$\succ$	$\square$	$\searrow$		_				
Warrantii	ng Vol	umes	%00	70%	MINOR STREET HIGH VOLUME APPROACH - VPH	20	0									LANE 8	& 1 LANE		*150
700	848	36	<u> </u>	7	HOI	10													*100
800	1,000	90			I	10			•			•	2 08	MORE LA	NES & 1		1		100
900	723	44					0		•	•		•							
1500	1,053	96						60 60					0 1200			500 1	600 17	700 18	00
1600 1700	1,043 1,051	29 35					N	AJOR	STREET	- TOTAL	OF BC	OTH AP	PROAC	HES - V	PH				
1800	633	44	-		* Noto	. 150 .	unh annlic	a aa tha	lower t	nreshold v	(olumo t	for a mir	or stree	tonnror	ob with	<i>two o</i>	r moro	00000	nd
1900	349	56			Note					reshold v									nu
1. Delay	on Min	or Appro	oacl	n			(Co			<b>4C-4:</b> an 10,000								treet)	
	ehicle-l	,				500	(00)				point					,	,		
Approach I		1	_	2	Ŧ						21		LANES &	2 OR MO	RELANE	s			
Delay Crit Delav		4.0 1.5		5.0 ).0	MINOR STREET MIGH VOLUME APPROACH - VPH	400		$\mid$	+		+					-			-
,	□ Yes		No	0.0	ET														
2. Volum	_			ch	TRE	300	$\overline{}$		$\leftarrow$	$\succ$		1 LANE 8	2 OR MO	RE LANE	3				-
		er hour)			IOR S AE AF						$\times$								
Approach I		1		2	MIN	200			$\succ$	$\sim$	$\checkmark$	$\rightarrow$			E & 1 LAI	NE			_
Approacin	iteria*	100	1	50	л к Х					$\rightarrow$		$\rightarrow$	$\angle$						*100
Volume Cr		103		0	Ξ	100						$\rightarrow$	K						
Volume Cr Volume							٠						Ţ				1		*75
Volume Cr Volume Fulfilled?:	Yes		No					1	1						1 A				
Volume Cr Volume Fulfilled?: <b>3. Tota</b>	■ Yes I Enteri	ng Volu	me			_							2 OR N	IORE LAN	IES & 1 L	<sub>ane</sub> /			
Volume Cr Volume Fulfilled?: 3. Tota *(vel	Yes I Enterinicles p	ng Volu er hour)	me )	4		0 30	00 4	00	500	600	700	800	2 OR M 900		IES & 1 L 000	<sub>ANE</sub> / 1100	120	0 1	300
Volume Cr Volume Fulfilled?: 3. Tota *(vel No. of Appro	Yes I Enterinicles p Daches	ng Volu er hour) 3	me )	4			00 4			600 ET - TOT			900	) 10	000	ANE / 1100	120	0 1	300
Volume Cr Volume Fulfilled?: 3. Tota *(vel No. of Appro Volume Cr	■ Yes I Enteri nicles p baches iteria*	ng Volu er hour)	me ) 8	00	* Note	30		MAJ	OR STRE	ET - TOT	AL OF B	OTH API	900 PROACH	) 1( ES - VPI	000 I				
Volume Cr Volume Fulfilled?: 3. Tota *(vel No. of Appro	■ Yes I Enteri nicles p baches iteria*	ng Volu er hour) 3 650 0	me ) 8		* Note	30 : 100 v	rph applie	MAJ s as the	OR STRE		AL OF B	OTH API	900 PROACH	) 1( ES - VPI t approa	000 I Inch with	two o	r more l	anes a	

City:	Engi	neer:	BA		
County: Sarasota				22	
Najor Street: S.R. 72	Lanes	·· 1 C	ritical Approach	Snood	58
Alinor Street: Hawkins Road/Coash Road	Lanes:       1       Critical Approach S         Road       Lanes:       1         Childer       Applicable:       Yes         and the corresponding volume or gap       Satisfied:       Yes         arrant is satisfied if condition 1 or 2 is fulfilled       Satisfied:       Yes         arrant is satisfied if condition 1 or 2 is fulfilled       Pedestrian       Pedestrian         arrant is satisfied if condition 1 or 2 is fulfilled       Pedestrian       Pedestrian         arrant is satisfied if condition 1 or 2 is fulfilled       Pedestrian       Pedestrian         arrant is satisfied if condition 1 or 2 is fulfilled       Pedestrian       Pedestrian         arrant is satisfied if condition 1 or 2 is fulfilled       Pedestrian       Pedestrian         arrant is satisfied if condition 1 or 2 is fulfilled       Pedestrian       Pedestrian         arrant is located more than 90 m (300 ft) away, or the nearest signal       Interfic signal will not restrict the progressive movement of traffic.         SING       Applicable:       Yes         arrant is satisfied if all three of the criteria       Applicable:       Yes         Criteria       Criteria       Applicable:       Yes	opeeu.			
ARRANT 4 - PEDESTRIAN VOLUME Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati and condition 3 is fulfilled.		Satis			No No
Criteria	Hour			Fulf Yes	illed?
. Pedestrian volume crossing the major street is					
100 ped/hr or more for each of any four hours	800	0		1	_
and there are less than 60 gaps per hour in the	1600	2		]	
major street traffic stream of adequate length.	1700	0		<u> </u>	
. Pedestrian volume crossing the major street is 190 ped/hr or more for any one hour <u>and</u> there are less than 60 gaps per hour in the major street traffic stream of adequate length.	1600	2			
. The nearest traffic signal along the major street is lo	will not restrict the progressive	e movement of tra	affic.		No No
The nearest traffic signal along the major street is lo is within 90 m (300 ft) but the proposed traffic signal ARRANT 5 - SCHOOL CROSSING	will not restrict the progressive	e movement of tra	affic.	s∎	No
The nearest traffic signal along the major street is lo is within 90 m (300 ft) but the proposed traffic signal ARRANT 5 - SCHOOL CROSSING Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati	will not restrict the progressive responding volume or gap sfied if all three of the criteria	e movement of tra	affic.	s ■ Fulf	No
The nearest traffic signal along the major street is lo is within 90 m (300 ft) but the proposed traffic signal <b>ARRANT 5 - SCHOOL CROSSING</b> Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.	will not restrict the progressive responding volume or gap isfied if all three of the criteria	e movement of tra Applic Satis	affic.	s∎	No Illed?
The nearest traffic signal along the major street is lo is within 90 m (300 ft) but the proposed traffic signal <b>ARRANT 5 - SCHOOL CROSSING</b> Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.	will not restrict the progressive responding volume or gap isfied if all three of the criteria	e movement of tra Applic Satis	affic.	s ■ Fulf	No Illed?
The nearest traffic signal along the major street is lo is within 90 m (300 ft) but the proposed traffic signal     ARRANT 5 - SCHOOL CROSSING     Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.     There are a minimum of 20 students crossing the m during the highest crossing hour.     There are fewer adequate gaps in the major street tr	will not restrict the progressive responding volume or gap sfied if all three of the criteria Criteria ajor street Stude raffic stream during the period	Applic Satis	affic. able: sfied: Ye	s ■ Fulf	No illed?
<ul> <li>The nearest traffic signal along the major street is lois within 90 m (300 ft) but the proposed traffic signal</li> <li>ARRANT 5 - SCHOOL CROSSING</li> <li>Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.</li> <li>There are a minimum of 20 students crossing the m during the highest crossing hour.</li> <li>There are fewer adequate gaps in the major street tr when the children are using the crossing than the number of the construction of the construction.</li> </ul>	will not restrict the progressive         responding volume or gap         isfied if all three of the criteria         Criteria         ajor street       Stude         raffic stream during the period         umber of minutes in the same	Applic Satis	affic. able: □ Ye sfied: □ Ye 0 es: □ Gaps: 0 0	s ■ Fulf	No illed?
The nearest traffic signal along the major street is lo is within 90 m (300 ft) but the proposed traffic signal <b>ARRANT 5 - SCHOOL CROSSING</b> Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.     There are a minimum of 20 students crossing the m during the highest crossing hour.     There are fewer adequate gaps in the major street tr	will not restrict the progressive         responding volume or gap         isfied if all three of the criteria         Criteria         ajor street       Stude         raffic stream during the period         umber of minutes in the same         cated more than 90 m (300 ft)	Applic Satis	affic. able: sfied: Ye sfied: Ye yes: Gaps: 0 0 rest signal	s ■ Fulf	
<ul> <li>The nearest traffic signal along the major street is lois is within 90 m (300 ft) but the proposed traffic signal</li> <li>ARRANT 5 - SCHOOL CROSSING</li> <li>Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.</li> <li>There are a minimum of 20 students crossing the m during the highest crossing hour.</li> <li>There are fewer adequate gaps in the major street to when the children are using the crossing than the nut.</li> <li>The nearest traffic signal along the major street is low</li> </ul>	will not restrict the progressive         responding volume or gap         isfied if all three of the criteria         Criteria         ajor street       Stude         raffic stream during the period         umber of minutes in the same producted more than 90 m (300 ft)         will not restrict the progressive         SYSTEM         led. The warrant is         nould not be applied when the	Applic Satis	affic.	s Fulfi Yes	No illed?
<ul> <li>The nearest traffic signal along the major street is loo is within 90 m (300 ft) but the proposed traffic signal</li> <li><b>ARRANT 5 - SCHOOL CROSSING</b></li> <li>Record hours where criteria are fulfilled and the corr frequency in the boxes provided. The warrant is sati are fulfilled.</li> <li>There are a minimum of 20 students crossing the m during the highest crossing hour.</li> <li>There are fewer adequate gaps in the major street is loo is within 90 m (300 ft) but the proposed traffic signal</li> <li><b>ARRANT 6 - COORDINATED SIGNAL S</b></li> <li>Indicate if the criteria are fulfilled in the boxes provide satisfied if either criterion is fulfilled. This warrant stresulting signal spacing would be less than 300 m (19)</li> </ul>	will not restrict the progressive         responding volume or gap         responding if all three of the criteria <b>Criteria</b> ajor street       Stude         raffic stream during the period         umber of minutes in the same           reated more than 90 m (300 ft)         will not restrict the progressive <b>SYSTEM</b> led. The warrant is         hould not be applied when the         1,000 ft).	Applic Satis	affic.	s ■ Fulfi Yes s ■ s ■	No Illed? No No No
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Source: Revised from NCHRP Report 457

City:					Engineer:			BA		
County:					-		Marc	h 3, 202	22	
	0.0.70								o 1	
Major Street: Minor Street:	S.R. 72 Hawkins Road/Coast	h Road			Lanes: Lanes:	1 Cri 1	tical Ap	proach	Speed:	55
		II KOdu				<u> </u>				
Record hou	7 - CRASH EXPER rs where criteria are fulfille in the boxes provided. Th	ed, the corresp	-			Applical Satisfi		■ Ye: □ Ye:		No No
							Me	et?	Fulfi	lled?
	Criteria			Hour		Volume	Yes	No	Yes	No
1. One of the	Warrant 1, Condition A (8	80% satisfied)								
warrants	Warrant 1, Condition B (8	80% satisfied)							1	
to the right	Warrant 4, Pedestr	ian Volume		700		0			]	╵╺
is met.	at 80% of volume re	•		800		0				-
	80 ped/hr for four (			1600		2				
	152 ped/hr for one			1700		0				L
	ial of other remedial meas		Meas	sure tried:		None				•
has failed to	reduce crash frequency.									
	a ranariad arc-bf+									
<ol> <li>Five or more correction b</li> <li>ARRANT</li> <li>Record hour information</li> </ol>	e reported crashes, of type y signal, have occurred w <b>8 - ROADWAY NE</b> rs where criteria are fulfille in the boxes provided. The nd if all intersecting routes	ithin a 12-mo. TWORK ed, and the come warrant is s	period. rresponding	g volume or o t least one of	ther the criteria	per 12 mont Applica Satisfi	ble:	3 Yes Yes		No No
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3. Five or mor correction b /ARRANT Record hou information	y signal, have occurred w <b>8 - ROADWAY NE</b> rs where criteria are fulfille in the boxes provided. Th	ithin a 12-mo. TWORK ed, and the come warrant is s	period. rresponding atisfied if a more of the	g volume or o t least one of	ther the criteria	Applica	ble:	□ Ye: □ Ye:	s ∎	No No
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<ol> <li>Five or mor correction b</li> <li>VARRANT Record hou information is fulfilled and is fulfil</li></ol>	y signal, have occurred w 8 - ROADWAY NET rs where criteria are fulfille in the boxes provided. Th- nd if all intersecting routes a. Total entering volum during a typical week b. Five-year projected w one or more of Warr ng volume at least r for each of any 5 hrs rmal business day a.) Charac street or highway system t through traffic flow.	ithin a 12-mo. TWORK ed, and the co. he warrant is s is have one or r Criteri e of at least 1, kday peak hou volumes that s ants 1, 2, or 3. N/A N/A N/A Steristics of that serves as	period. rresponding atisfied if a more of the a 0000 veh/hr rr. atisfy N/A N/A N/A Major Ro the principa	g volume or o t least one of o characteristic Warrant: Satisfied?: N/A N/A N/A al roadway	ther the criteria cs listed. Entering Vo 1, 1 NO N N/A N/A M M M	Applical Satisfi 109 2 3 10 YES N/A N/A ajor Street: inor Street:	ble: ied: Yes ← Hou ← Vol Yes	□ Yes □ Yes No ume et? No	s  Fulfi Yes Fulfi	No No Iled? No Iled?
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City:				Т	RAFFIC SIGNA	AL W	ARR				,			C ENGINE	m 750-020 ERING - 07 Page 1
Major Street: S.R. 72       Number of Minor Street Approach Lanes       0         Analizability Criteria       Statisfied       Number of Minor Street, Hawkins Road/Coash Road       0         Analizability Criteria       Statisfied       Number of Minor Street, Hawkins Road/Coash Road       0         Analizability Criteria       Statisfied       Number of Minor Street, Hawkins Road/Coash Road       0         Adequate consideration has been given to other alternatives that were considered to alleviate the safety concerns associated with the grade crossing. Among the alternatives that were considered to alleviate the safety concerns associated with the grade crossing. Among the alternatives that were considered to alleviate the safety concerns associated with the grade crossing. Among the alternatives that were considered to alleviate the safety concerns associated with the grade crossing. Among the alternatives that were considered to alleviate the safety concerns associated with the grade crossing. Among the alternatives that were considered or the concerns the reack neares the resection is within the grade crossing on an approach controlled by a STOP or VIELD sign and the center of the track neares the resection is within 40 feel of the stop line or yield line on the approach are and any point is above the approach and the react reast the resection is within a satisfied.         Warrant Statisfied       Yes       No         Yes       No         Yes       No         Yes       No         Yes       No         Yes       No         Yes			Sa	arasota				E	-	-					
Minor Street:       Hawkins Road/Coash Road       0         Applicability Criteria       Clear Storage Dislance (D) feet:       0         Is there a railroad grade crossing in the proximity of the intersection?       Vas       No         None of the conditions described in the other eight traffic signal warrants are met.       Vas       No         Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate       Vas       No         Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate       Vas       No         Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate       Vas       No         Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate       Vas       No         Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate       Vas       No         A Providing additional pavement that would enable vehicles to clear the track or that would provide       space for an evasive maneuver, or       B       Reassigning the stop controls at the intersection to make the approach caros sthe track an ano-stopping approach.       Warrant Applicable:       Yes       No         Approviding additional pavement that would enable vehicles to other algorithm on the paproach cantrolled by a STOP or YIELD sign and the center of the track nearest the													,		
Applicability Criteria       Clear Storage Distance (D) feet:       Image: Clear Storage Distance (D) feet:       Imag		-		each F	and								ach La	nes	0
Is there a railroad grade crossing in the proximity of the intersection?       Image: State in the conditions described in the other eight rafic signal warrants are met.       Image: State intersection is state intersection?       Image: State intersection is intersection is intersection is intersection is intersection is within the approach controlled by a STOP or VIELD sign and the center of the track nearest the resection is within 140 feet of the stop line or yield line on the approach, and any point line above the appropriate line, then the errant is satisfied.	IVIIII		WKITIS KOAU/C	Joasnir	Jau								et:		0
Is there a railroad grade crossing in the proximity of the intersection?       Image: State in the conditions described in the other eight rafic signal warrants are met.       Image: State intersection is state intersection?       Image: State intersection is intersection is intersection is intersection is intersection is within the approach controlled by a STOP or VIELD sign and the center of the track nearest the resection is within 140 feet of the stop line or yield line on the approach, and any point line above the appropriate line, then the errant is satisfied.															
None of the conditions described in the other eight traffic signal warrants are met.       □ Yes       No         Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate the safely concerns associated with the grade crossing. Among the alternatives that were considered or thed are:       □ Yes       No         A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or       B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.       Warrant Applicable:       Yes       No <b>Atrant 9 - INTERSECTION NEAR A GRADE CROSSING</b> Image: Statisfied       Warrant Satisfied:       Yes       No         The is a railroad grade crossing on an approach control due on the approach, and any point lies above the appropriate line, then the arrant is satisfied:       Warrant Satisfied:       Yes       No         The is a railroad grade crossing on an approach control due on the approach, and any point lies above the approach line, then the arrant is satisfied:       Warrant Satisfied:       Warrant Satisfied:       Yes       No         The is a satisfied       1000       1063       32       Tord add tord to satisfied:       Figure 4C-9. Warrant 9 Intersection Near a Grade Crossing         1000       1,063       12       Tord add tord tord to satisfied:       Tord for porcentage of 1.000       Tord for porcentage of 1.000       Tord for porcentage of 1.000				a in the	proximity of the inter	section	7								
Adequate consideration has been given to other alternatives or a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing. Among the alternatives that were considered or tried are:           A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or         B Yes         No           B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.         Warrant Applicable:         Yes         No           NARRANT 9 - INTERSECTION NEAR A GRADE CROSSING         Warrant and grade crossing on an approach controlled by a STOP or YIELD sign and the center of the track nearest the reaction is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the trant is satisfied.         Varrant Satisfied:         Yes         No           Maior         Maior         Timore street         Figure 4C-9. Warrant 9 intersection Near a Grade Crossing         Marrant Satisfied         Varrant Satisfied         No           Maior         Maior         Timore street         Timore street         Timore street         Timore street         Timore street         No         No           1000         1,051         12         Timore street         Timore str				0				o mot					Yes	-	No
the safety concerns associated with the grade crossing. Among the alternatives that were considered or tried are:					0 0				tive has	المعالم	llevie		Yes	-	No
<ul> <li>A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or</li> <li>B. Reassing the stop controls at the intersection to make the approach across the track a non-stopping approach.</li> <li>Warrant Applicable:  Yes • No</li> </ul> <b>ArRANT 9 - INTERSECTION NEAR A GRADE CROSSING</b> There is a railroad grade crossing on an approach controlled by a STOP or YIELD sign and the center of the track nearest the resection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track reserves the structure of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track reserves the structure of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track reserves the structure of the stop line or yield line on the approach. And any point lies above the appropriate line, then the track is a structure of the stop line or yield line on the approach. And any point lies above the approach control to an a Grade Crossing (One Approach Lane at the Track Crossing) <u>Nono 300 100 100 100 300 1100 1003 32 1100 100 1003 32 1100 100 1005 32 22 1100 100 1005 32 20 100 100 1005 32 20 100 100 1005 32 20 100 100 1005 32 20 100 100 1005 32 20 100 100 1005 32 20 100 100 100 1005 32 20 100 100 100 1005 32 20 100 100 100 1005 32 20 100 100 100 100 100 100 100 100 100</u>	the safe											ed		_	Ne
B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.       Warrant Applicable:       I'es       • No         MARRANT 9. INTERSECTION NEAR A GRADE CROSSING       Inter is a railroad grade crossing on an approach controlled by a STOP or YIELD sign and the center of the track nearest the resection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the resection is within 140 feet of the stop line or yield line on the approach, and any point lies above the approach lane at the Track Crossing (One Approach Lane at the Track Crossing)         Hour Street Equiv.       Imon St. 1/2       Imon St. 1/2 <td></td> <td></td> <td></td> <td></td> <td>would enable vehicle</td> <td>s to cle</td> <td>ar the t</td> <td>rack or</td> <td>that wo</td> <td>uld prov</td> <td>ide</td> <td></td> <td>res</td> <td>-</td> <td>NO</td>					would enable vehicle	s to cle	ar the t	rack or	that wo	uld prov	ide		res	-	NO
Maran Applicable	B. Rea	assigning the	e stop contro		intersection to make	e the ap	proach	across	the trac	ck a nor	-				
here is a railroad grade crossing on an approach controlled by a STOP or YIELD sign and the center of the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection line, then the track or estimates of the track nearest the ersection line, then the track reases the ersection line of the track nearest the expression line, then the track or estimates of the track nearest the ersection line, then the track or estimates of the track nearest the ersection line of the track nearest the ersection line, then the track or estimates of the track nearest the ersection line of the track nearest the ersection line of the track nearest the track or estimates of the track or esting of the track or e	310								Wa	rrant Ap	plicable:		Yes		No
here is a railroad grade crossing on an approach controlled by a STOP or YIELD sign and the center of the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection is within 140 feet of the stop line or yield line on the approach, and any point lies above the appropriate line, then the track nearest the ersection line, then the track or estimates of the track nearest the ersection line, then the track reases the ersection line of the track nearest the expression line, then the track or estimates of the track nearest the ersection line, then the track or estimates of the track nearest the ersection line of the track nearest the ersection line, then the track or estimates of the track nearest the ersection line of the track nearest the ersection line of the track nearest the track or estimates of the track or esting of the track or e															
Warranting Volumes         Met           Hour         Street         Equiv.         T         N           700         848         12         Image: Construction of the constructio					_		Figure	4C-9. V							No
Major         Minor St.         Y         N           700         848         12         1           800         1,000         30         1           900         723         15         1           1100         1,053         32         1           1400         1,051         12         1           1500         1,051         12         1           1600         633         15         1           1700         349         19         1           1700         349         19         1           ustment Factor for Percentage of hoccuparcy Buses         1.00           ustment Factor for Percentage of corbration of 0.50         1.00           ustment Factor for Percentage of 0.50         1.00	Wa					350 -									
TOO         848         12         Image: constraint of the second seco	Hour	-													
MINOR STREET (CROSSING APPROACH- 100         100 (CROSSING APPROACH- 100         100 (CROSSING CROSSING APPROACH- 100         100 (CROSSING APPROACH- 100         100 (CROSSING APPROACH- 1	700	848	· · · · · · · · · · · · · · · · · · ·												
900       723       15         1100       1,053       32         1400       1,043       10         1500       1,051       12         1600       633       15         1700       349       19         Image: statisfied with the state of the state	800	1 000	20		CROSSING										
1100       1,053       32         1400       1,043       10         1500       1,051       12         1600       633       15         1700       349       19         100       349       19         100       Satisfied         100       Satisfied         100       0.67         100       10.020         100       0.020         100       0.020         100       0.020         100       100         100       100         100       100         100       100         100       100         100       100         100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100         1100       100		,					D=90'								
1400       1,043       10         1500       1,051       12         1600       633       15         1700       349       19         withment Factor for Daily equency of Rail Traffic ustment Factor for Percentage of hO ccupancy Buses       0.67         withment Factor for Percentage of tho Ccupancy Buses       1.00         ustment Factor for Percentage of tho Ccupancy Buses       0.50	1100	1,053	32				D=50'								_
1500       1,051       12       1         1600       633       15       1         1700       349       19       1         1700       349       19       1         Instruct Factor for Dally query of Rail Traffic copancy Buses       0.67         In Occupancy Buses       1.00         Intermet Factor for Percentage of hoccupancy Buses       0.50				$\left  \right $		50	D=30'								-
VEHICLES PER HOUR (VPH)         1600       633       15         1700       349       19         Satisfied       Image: state sta													00	700	800
1600       633       15       Image: statistical statis statistical statis stati	1500	1,051	12						VEHICLE	S PER HO	UR (VPH)				
Satisfied         Satisfied         ustment Factor for Daily         quency of Rail Traffic         ustment Factor for Percentage of         1.00         ustment Factor for Percentage of         0.50	1600	633	15												
Satisfied	1700	349	19												
ustment Factor for Daily requency of Rail Traffic       0.67         ustment Factor for Percentage of h Occupancy Buses       1.00         ustment Factor for Percentage of h Occupancy Buses       0.50			Satisfied						re Appr				rossin	<u>9)</u>	
introduction     0.67       introduction     0.67       introduction     0.67       introduction     0.67       introduction     1.00       introduction     1.00       introduction     0.50		Factor 5	-11-4		ק			y.							
APPROACH- by Occupancy Buses instment Factor for Percentage of instment Fa	•			0.67				$\backslash /$							
ustment Factor for Percentage of 0.50	djustment	Factor for Pe		1.00	APPROACH-	200	D=70'	$\overline{}$	$\checkmark$						
<u>ctor-Trailer Trucks</u> 0.50			ercentage of	0.50	1	150		$\mathbf{\mathbf{\mathbf{\mathbf{'}}}}$	$\checkmark$						_
0 100 200 300 400 500 600 700 800			-	0.50	J	100	D=50'								
0 100 200 300 400 500 600 700 800						50	D=30'								
							10	10 2	00 3	300	400 5	00 6	00	700	800
VEHICLES PER HOUR (VPH)						5									500

Source: 2009 MUTCD

Appendix C

Opening Year and Design Year Traffic Volumes



FIGURE 3-4: OPENING YEAR (2030) AADT VOLUMES - BUILD ALTERNATIVE

1.4



FIGURE 3-2: DESIGN YEAR (2050) AADT VOLUMES - BUILD ALTERNATIVE





				M PEAK HO				_
E	BLT		BTH		BRT	. L	EB APPROACH	
Vol.	Truck %	Vol.	Truck %	Vol.	Truck %	Vol.	Truck Vol.	
65	0.00	731	0.06	156	0.01	952	45	4.8%
V	VB LT	W	/В ТН	W	/B RT	E [] 1 E	WB APPROAC	н
Vol.	Truck %	Vol.	Truck %	Vol.	Truck %	Vol.	Truck Vol.	Truck %
173	0.01	879	0.05	27	0.00	1079	46	4.2%
N	NB LT		B TH	N	IB RT	1.1.1.1.1	NB APPROACH	1
Vol.	Truck %	Vol.	Truck %	Vol.	Truck %	Vol.	Truck Vol.	Truck 9
112	0.00	7	0.00	134	0.02	253	3	1.1%
S	BLT	S	BTH	S	BRT	1.1.1.1.1.1.1.1	SB APPROACH	ł
Vol.	Truck %		Truck %	Vol.	Truck %	Vol.	Truck Vol.	Truck %
13	0.00	11	0.00	139	0.03	163	4	2.6%
			MID	DAY PEAK	HOUR			a
E	BLT	E	BTH	E	BRT	1.1.1.1.1	EB APPROACH	1
	Truck %		Truck %		Truck %	Vol.	Truck Vol.	Truck %
62	0.03	992	0.07	135	0.00	1189	71	6.0%
W	VB LT	Ŵ	BTH	W	/B RT	1	WB APPROACH	1
Vol.	Truck %		Truck %	Vol.	Truck %	Vol.	Truck Vol.	Truck %
144	0.04	618	0.11	13	0.00	775	74	9.5%
N	IB LT	N	ВТН	N	BRT		NB APPROACH	1.
	Truck %	Vol.	Truck %	Vol.	Truck %	Vol.	Truck Vol.	Truck %
133	0.01	19	0.00	186	0.02	338	5	1.5%
S	BLT	S	BTH	S	BRT		SB APPROACH	
Vol.	Truck %	Vol.	Truck %	Vol.	Truck %	Vol.	Truck Vol.	Truck %
10	0.50	3	0.00	41	0.02	54	6	10.8%
-			PI	VI PEAK HO	UR			
E	BLT	E	BTH	E	BRT		EB APPROACH	
	Truck %		Truck %	Vol.	1	Vol.	Truck Vol.	
	0.00	And a second sec	0.01	58	0.00	1154	10	0.9%
	/B LT		ВТН	W	'B RT		WB APPROACH	
	Truck %		Truck %		Truck %	Vol.	Truck Vol.	
69	0.03	824		17	0.25	910	39	4.3%
2.01	BLT		втн	N	BRT	1	NB APPROACH	
	Truck %	Vol.			Truck %	Vol.	Truck Vol.	
	0.00	7		64		124	1	1.0%
	BLT		втн		BRT		SB APPROACH	
	Truck %		Truck %		Truck %	Vol.	Truck Vol.	
5	0.00	5	0.00	67	0.04	77	3	3.5%

#### COASH ROAD/HAWKINS ROAD INTERSECTION DESIGN YEAR (2050) PEAK HOUR APPROACH TRUCK PERCENTAGES

Appendix D

CAP-X and SPICE Analysis Summary Sheets

Detailed Report - Page 1 of 4

Project Name:	SR 72 PD&E Study from East of I-75 to Lorraine Road
Project Number:	FPID No. 444634-1-22-01
Location:	SR 72 at Coash Road/Hawkins Road
Date:	Design Year (2050) AM Peak Hour
Number of Intersection Legs:	4
Major Street Direction:	East-West

			Tra	ffic Volume D	emand			
			Volume	(Veh/hr)			Perce	nt (%)
	U-Turn	Le	eft	Thru	Right			
	Ŋ	4				Heavy \	/ehicles	Volume Growth
Eastbound	0	6	5	731	156	4.8	0%	0.00%
Westbound	0	17	73	879	27	4.2	0%	0.00%
Southbound	0	1	3	11	139	2.6	0%	0.00%
Northbound	0	11	12	7	134	1.1	0%	0.00%
Adjustment Factor	0.80	0.9	95		0.85			
Suggested	0.80	0.	95		0.85			
	Truck to	PCE Fa	ctor		Suggested =	2.00		2.00
FDC	OT Context Zone			C	3R-Suburban R	esidentia	al	
E-W / Cro	ssing East-West	Legs		Low	Low			Low
N-S / Cros	sing North-South	Legs		Low	Low			Low
			2-pha	se signal	Suggested =	1800		1800
	Lane Volume		3-pha	se signal	Suggested =	1750		1750
			4-pha	se signal	Suggested =	1700		1700

### **Capacity Analysis for Planning of Junctions**

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Number o	of Lanes	for	No	n-r	oun	dak	oou	t In	ters	sect	ion	S					
TYPE OF INTERSECTION	Sheet	N	orth	bou	nd	Sc	outh	bou	nd	E	astb	our	nd	W	est	oour	nd
THE OF INTERSECTION	Sneet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Traffic Signal	<u>FULL</u>	$\checkmark$	1	1	0		0	1	0	$\square$	1	2	1	$\checkmark$	1	2	0
Two-Way Stop Control	<u>E-W</u>	$\checkmark$	1	1	0	$\checkmark$	0	1	0		1	2	1	$\checkmark$	1	2	0
Signalized Restricted Crossing U-Turn	<u>E-W</u>	$\checkmark$	$\checkmark$	$\checkmark$	2	$\checkmark$			1	1	1	2	1	1	1	2	0
Unsignalized Restricted Crossing U- Turn	<u>E-W</u>	$\checkmark$	$\checkmark$	/	1	$\checkmark$		/	1	1	1	2	1	1	1	2	0
Median U-Turn	<u>E-W</u>	$\checkmark$	$\checkmark$	1	1	$\checkmark$	$\checkmark$	1	0	1	$\square$	2	1	1	$\checkmark$	2	0
Signalized ThruCut	<u>E-W</u>	$\bigvee$	1	$\checkmark$	1	$\checkmark$	1		0	$\checkmark$	1	2	1	$\checkmark$	1	2	0
Unsignalized ThruCut	<u>E-W</u>	$\checkmark$	1	$\square$	1		1	/	0	$\square$	1	2	1	$\checkmark$	1	2	0
٩	Number	of L	.ane	es f	or I	ntei	rcha	ang	es	-				-			
TYPE OF INTERCHANGE	Sheet	N	orth	bou	nd	Sc	outh	bou	nd	E	astb	our	nd	W	est	bour	ıd
	Sileet	U	L	Τ	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Capacity Analy	ysis fo	or	Pl	an	ni	ng	0	fJ	ur	nct	io	ns	;				
	Detailed R	epo	rt - F	Page	e 3 o	f 4											

	Res	ults f	or No	on-roi	undal	bout	Inters	sectio	ons					
TYPE OF INTERSECTION	Sheet	-	ne 1 orth)	-	ne 2 uth)	Zone 3	B (East)		ne 4 est)		ne 5 nter)	Overall v/c	Ped Accomm	Bicycle Accomm
	Chicot	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	Ratio		odations
Traffic Signal	<u>FULL</u>	$\checkmark$	$\triangleright$	$\checkmark$	$\searrow$	$\checkmark$	$\backslash$	$\nearrow$	$\langle$	865	<u>0.51</u>	0.51	4.94	4.79
Two-Way Stop Control	<u>E-W</u>		$\square$	$\checkmark$	$\square$	$\checkmark$					<u>&gt;10</u>	>10	2.50	4.04
Signalized Restricted Crossing U-Turn	<u>E-W</u>	711	<u>0.39</u>	579	<u>0.32</u>	712	<u>0.40</u>	529	<u>0.29</u>	$\nearrow$		0.40	2.91	4.41
Unsignalized Restricted Crossing U-Turn	<u>E-W</u>	1047	<u>0.75</u>	779	<u>0.75</u>	1124	<u>0.24</u>	997	<u>0.04</u>	$\nearrow$	$\nearrow$	0.75	2.70	3.72
Median U-Turn	<u>E-W</u>	$\checkmark$	$\square$	$\checkmark$	$\square$	788	<u>0.44</u>	740	<u>0.41</u>	854	<u>0.47</u>	0.47	3.07	4.79
Signalized ThruCut	<u>E-W</u>	$\nearrow$	$\square$	$\checkmark$	$\square$	$\checkmark$				748	<u>0.43</u>	0.43	3.72	4.79
Unsignalized ThruCut	<u>E-W</u>	$\nearrow$	$\square$	$\nearrow$	$\square$	$\nearrow$				-	<u>12.89</u>	12.89	3.51	4.45

# Capacity Analysis for Planning of Junctions Detailed Report - Page 4 of 4

						Resul	ts for F	Rounda	bouts						
TYPE OF	Zo	one 1 (Nor	th)	Zo	one 3 (Eas	st)	Zo	one 2 (Sou	th)	Zo	one 4 (We	st)	Overall v/c	Ped	Bicycle
ROUNDABOUT	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Ratio	Accomm odations	
<u>1NS X 2EW</u>	<u>0.35</u>			<u>0.44</u>	<u>0.47</u>		<u>0.39</u>			<u>0.49</u>	<u>0.52</u>		0.52	5.01	4.67
<u>2 X 2</u>	<u>0.06</u>	<u>0.30</u>		<u>0.49</u>	<u>0.52</u>		<u>0.20</u>	<u>0.21</u>	$\nearrow$	<u>0.44</u>	<u>0.47</u>	$\nearrow$	0.52	4.72	4.58

				ŀ	Resul	ts fo	r Inte	rchar	nges							
	Sheet	Zor (Rt I	ne 1 Mrg)	Zone 2 Mi	(Lt rg)	-	ne 3 r. 1)	Zon (Ctr	-	Zone 5 Mr	(Lt 'g)	Zon (Rt I		Overall v/c	Ped Accomm	Bicycle Accomm
TYPE OF INTERCHANGE	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	Ratio	odations	

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Project Name:	SR 72 PD&E Study from East of I-75 to Lorraine Road
Project Number:	FPID No. 444634-1-22-01
Location:	SR 72 at Coash Road/Hawkins Road
Date:	Design Year (2050) AM Peak Hour
Number of Intersection Legs:	4
Major Street Direction:	North-South

			Tra	ffic Volume D	emand			
			Volume	(Veh/hr)			Perce	nt (%)
	U-Turn	Le	eft	Thru	Right			
	ฦ	<b></b>		Î		Heavy \	/ehicles	Volume Growth
Eastbound	0	6	5	731	156	4.8	0%	0.00%
Westbound	0	17	73	879	27	4.2	0%	0.00%
Southbound	0	1	3	11	139	2.6	0%	0.00%
Northbound	0	11	12	7	134	1.1	0%	0.00%
Adjustment Factor	0.80	0.9	95		0.85			
Suggested	0.80	0.9	95		0.85			
	Truck to	PCE Fa	ctor		Suggested =	2.00		2.00
FDC	OT Context Zone			C	3R-Suburban R	esidenti	al	
E-W / Cro	ssing East-West	Legs		Low	Low			Low
N-S / Cros	sing North-South	Legs		Low	Low			Low
			2-pha	se signal	Suggested =	1800		1800
	Lane Volume		3-pha	se signal	Suggested =	1750		1750
			4-pha	se signal	Suggested =	1700		1700

#### Capacity Analysis for Planning of Junctions

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Number	of Lanes	for	No	n-re	oun	dak	ooui	t Int	ers	ect	ions	S					
TYPE OF INTERSECTION	Sheet	No	orth	bou	nd	So	outh	bou	nd	Е	astb	oun	d	V	lestk	oour	nd
TTPE OF INTERSECTION	Sheet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	Westh L 1	Т	R
Traffic Signal	<u>FULL</u>	$\checkmark$	1	1	0	$\square$	0	1	0	$\square$	1	2	1	$\square$	1	2	0
Partial Median U-Turn	<u>N-S</u>	1	$\nearrow$	1	1	1	$\checkmark$	1	0	$\square$	1	2	1	$\square$	1	2	0
Bowtie	<u>N-S</u>	$\checkmark$	$\checkmark$	1	1	$\square$	$\checkmark$	1	0	$\square$	$\checkmark$	2	1	$\square$	$\checkmark$	2	1

	Number	of L	.ane	es f	or l	nte	rcha	ang	es								
TYPE OF INTERCHANGE	Sheet	No	orth	bou	nd	So	outh	bou	nd	E	astb	oun	d	W	est	our	nd
TTPE OF INTERCHANGE	Sneet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R

### **Capacity Analysis for Planning of Junctions**

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Results for Non-roundabout Intersections														
TYPE OF INTERSECTION	Sheet	Zoi (No	ne 1 orth)	-	ne 2 uth)	Zone 3	8 (East)	Zone 4	(West)	Zor (Cer		Overall v/c Ratio	Ped Accomm	Bicycle
TITE OF INTERSECTION	Sileet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		odations	
Traffic Signal	<u>FULL</u>	$\nearrow$	$\checkmark$	$\nearrow$	$\checkmark$	$\nearrow$	$\nearrow$	$\mathbf{>}$		865	<u>0.51</u>	0.51	4.94	4.57
Partial Median U-Turn	<u>N-S</u>	308	<u>0.17</u>	271	<u>0.15</u>	$\checkmark$				739	<u>0.42</u>	0.42	3.04	4.57
Bowtie	<u>N-S</u>	571	<u>0.40</u>	708	<u>0.50</u>	638	<u>0.53</u>	546	<u>0.46</u>	897	<u>0.50</u>	0.53	4.85	4.57

### **Capacity Analysis for Planning of Junctions**

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						Resul	ts for F	Rounda	bouts						
TYPE OF	Zo	one 1 (Nort	th)	Z	one 3 (Eas	st)	Zo	one 2 (Sou	th)	Z	one 4 (Wes	,	Overall v/c Ratio	Ped Accomm	Bicycle
ROUNDABOUT	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3			odations

				F	Resul	lts foi	r Inte	rchar	iges							
TYPE OF INTERCHANGE	Sheet		rg)	Zone 2 Mi	·g)	Zone 3 1	)	Zone 4 2	:)	Zone 5 Mr	g)	Zone 6 Mr	•	Overall v/c Ratio	Ped Accomm	Bicycle Accomm
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		odations	odations

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Project Name:	SR 72 PD&E Study from East of I-75 to Lorraine Road
Project Number:	FPID No. 444634-1-22-01
Location:	SR 72 at Coash Road/Hawkins Road
Date:	Design Year (2050) Mid-Day Peak Hour
Number of Intersection Legs:	4
Major Street Direction:	East-West

			Tra	ffic Volume D	emand			
			Volume	(Veh/hr)			Perce	ent (%)
	U-Turn	Le	eft	Thru	Right			
	Ŋ	+		Î	ſ	Heavy \	/ehicles	Volume Growth
Eastbound	0	6	2	992	135	6.0	0%	0.00%
Westbound	0	14	14	618	13	9.5	0%	0.00%
Southbound	0	1	0	3	41	10.8	30%	0.00%
Northbound	0	13	33	19	186	1.5	0%	0.00%
Adjustment Factor	0.80	0.9	95		0.85			
Suggested	0.80	0.	95		0.85			
	Truck to	PCE Fa	ctor		Suggested =	2.00		2.00
FDC	OT Context Zone			C	3R-Suburban R	esidentia	al	
E-W / Cro	ssing East-West	Legs		Low	Low			Low
N-S / Cros	sing North-South	Legs		Low	Low			Low
			2-pha	se signal	Suggested =	1800		1800
	Lane Volume		3-pha	se signal	Suggested =	1750		1750
			4-pha	se signal	Suggested =	1700		1700

### **Capacity Analysis for Planning of Junctions**

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Number o	of Lanes	for	No	n-r	oun	dak	bou	t Ini	ters	sect	ion	S					
TYPE OF INTERSECTION	Ohaat	N	orth	boui	nd	Sc	outh	bou	nd	Ε	astb	oun	nd	W	estk	oour	ıd
TTPE OF INTERSECTION	Sheet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Traffic Signal	<u>FULL</u>		1	1	0		0	1	0		1	2	1		1	2	0
Two-Way Stop Control	<u>E-W</u>	$\checkmark$	1	1	0	$\square$	0	1	0	$\square$	1	2	1	$\square$	1	2	0
Signalized Restricted Crossing U-Turn	Unsignalized Postricted Crossing IL																
Unsignalized Restricted Crossing U- Turn	<u>E-W</u>	$\square$	$\square$	$\square$	1	$\angle$		$\square$	1	1	1	2	1	1	1	2	0
Median U-Turn	<u>E-W</u>	$\checkmark$	$\checkmark$	1	1	$\checkmark$	/	1	0	1	$\checkmark$	2	1	1	$\checkmark$	2	0
Signalized ThruCut	<u>E-W</u>	$\checkmark$	1	$\checkmark$	1	$\checkmark$	1	$\nearrow$	0	$\checkmark$	1	2	1	$\checkmark$	1	2	0
Unsignalized ThruCut	<u>E-W</u>	$\checkmark$	1	$\square$	1		1	$\checkmark$	0		1	2	1		1	2	0
						4											
	Number	ot L	.ane	es f	or I	ntei	rcha	ang	es								
TYPE OF INTERCHANGE	Sheet	N	orth	bou	nd	Sc	outh	bou	nd	E	astb	oun	nd	W	estk	oour	d
TTE OF INTERCHANGE	Sheet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Conceity Analy			Ы	0 12	ni			6 1									
Capacity Analy	ysis to	or	PI	an	Ш	19	0	ΓJ	ur	ICI	.10	ns					
				_	-												

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	Res	ults f	or No	on-roi	undal	bout	Inters	sectio	ons					
TYPE OF INTERSECTION	Sheet	-	ne 1 orth)	-	ne 2 uth)	Zone 3	8 (East)	-	ne 4 est)	-	ne 5 nter)	Overall v/c	Ped Accomm	Bicycle
	oneer	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	Ratio	odations	
Traffic Signal	<u>FULL</u>	$\nearrow$	$\square$	$\nearrow$	$\triangleright$	$\checkmark$		$\nearrow$	$\triangleright$	901	<u>0.53</u>	0.53	4.94	4.71
Two-Way Stop Control	<u>E-W</u>	$\checkmark$		$\checkmark$	$\square$	$\checkmark$		$\nearrow$			<u>&gt;10</u>	>10	2.55	3.95
Signalized Restricted Crossing U-Turn	<u>E-W</u>	475	<u>0.26</u>	733	<u>0.41</u>	617	<u>0.34</u>	648	<u>0.36</u>	$\nearrow$		0.41	2.91	4.32
Unsignalized Restricted Crossing U-Turn	<u>E-W</u>	829	<u>0.20</u>	1063	<u>1.56</u>	849	<u>0.25</u>	1261	<u>0.03</u>	$\nearrow$		1.56	2.70	3.62
Median U-Turn	<u>E-W</u>	$\checkmark$		$\checkmark$	$\square$	676	<u>0.38</u>	842	<u>0.47</u>	940	<u>0.52</u>	0.52	3.07	4.71
Signalized ThruCut	<u>E-W</u>	$\checkmark$	$\square$	$\checkmark$	$\square$	$\checkmark$		$\checkmark$		844	<u>0.48</u>	0.48	3.72	4.79
Unsignalized ThruCut	<u>E-W</u>	$\nearrow$	$\square$	$\nearrow$	$\square$	$\checkmark$		$\nearrow$		-	<u>11.39</u>	11.39	3.51	4.45

# Capacity Analysis for Planning of Junctions Detailed Report - Page 4 of 4

						Resul	ts for F	Rounda	bouts						
TYPE OF	Zo	one 1 (Nor	th)	Z	one 3 (Eas	st)	Zo	one 2 (Sou	th)	Zo	one 4 (We	st)	Overall v/c	Ped	Bicycle
ROUNDABOUT	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Ratio	Accomm odations	
<u>1NS X 2EW</u>	<u>0.10</u>			<u>0.54</u>	<u>0.57</u>		<u>0.66</u>			<u>0.38</u>	<u>0.40</u>		0.66	5.01	4.62
<u>2 X 2</u>	<u>0.03</u>	<u>0.08</u>		<u>0.38</u>	<u>0.40</u>		<u>0.34</u>	<u>0.37</u>		<u>0.54</u>	<u>0.57</u>		0.57	4.72	4.54

				ŀ	Resul	ts for	<sup>-</sup> Inte	rchan	nges							
TYPE OF INTERCHANGE	Sheet	Zor (Rt I	ne 1 Mrg)	Zone 2 Mi	: (Lt rg)	Zon (Ctr		Zon (Ctr	-	Zone 5 Mr	(Lt rg)	Zor (Rt I		Overall v/c	Ped Accomm	Bicycle Accomm
TTPE OF INTERCHANGE	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	Ratio	odations	

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Project Name:	SR 72 PD&E Study from East of I-75 to Lorraine Road
Project Number:	FPID No. 444634-1-22-01
Location:	SR 72 at Coash Road/Hawkins Road
Date:	Design Year (2050) Mid-Day Peak Hour
Number of Intersection Legs:	4
Major Street Direction:	North-South

			Tra	ffic Volume D	emand			
			Volume	(Veh/hr)			Perce	nt (%)
	U-Turn	Le	eft	Thru	Right			
	ฦ	<b></b>	ן			Heavy \	/ehicles	Volume Growth
Eastbound	0	6	2	992	135	6.0	0%	0.00%
Westbound	0	14	14	618	13	9.5	0%	0.00%
Southbound	0	1	0	3	41	10.8	30%	0.00%
Northbound	0	13	33	19	186	1.5	0%	0.00%
Adjustment Factor	0.80	0.	95		0.85			
Suggested	0.80	0.	95		0.85			
-	Truck to	PCE Fa	ctor		Suggested =	2.00		2.00
FDC	OT Context Zone			C	3R-Suburban R	esidenti	al	
E-W / Cro	ssing East-West	Legs		Low	Low			Low
N-S / Cros	sing North-South	Legs		Low	Low			Low
			2-pha	se signal	Suggested =	1800		1800
	Lane Volume		3-pha	se signal	Suggested =	1750		1750
			4-pha	se signal	Suggested =	1700		1700

#### Capacity Analysis for Planning of Junctions

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Number	of Lanes	for	No	n-re	oun	dak	ooui	t Int	ers	ect	ions	S					
TYPE OF INTERSECTION	Sheet	No	orth	bou	nd	So	outh	bou	nd	Е	astb	oun	d	V	lestk	oour	nd
TTPE OF INTERSECTION	Sheet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Traffic Signal	<u>FULL</u>	$\checkmark$	1	1	0	$\square$	0	1	0	$\square$	1	2	1	$\square$	1	2	0
Partial Median U-Turn	<u>N-S</u>	1	$\nearrow$	1	1	1	$\checkmark$	1	0	$\square$	1	2	1	$\square$	1	2	0
Bowtie	<u>N-S</u>	$\checkmark$	$\checkmark$	1	1	$\square$	$\checkmark$	1	0	$\square$	$\checkmark$	2	1	$\square$	$\checkmark$	2	1

	Number	of L	.ane	es f	or I	nte	rcha	ang	es								
TYPE OF INTERCHANGE	Sheet	No	orthl	bour	nd	So	outh	bou	nd	E	astb	oun	d	W	lestk	our	nd
	Sneet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R

### **Capacity Analysis for Planning of Junctions**

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	Res	ults f	or No	on-rou	undal	oout l	nters	ectio	ons					Results for Non-roundabout Intersections														
TYPE OF INTERSECTION	Sheet	Zor (No	ne 1 rth)	Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Ped Accomm	Bicycle														
	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		odations															
Traffic Signal	<u>FULL</u>	$\nearrow$		$\nearrow$	$\nearrow$	$\nearrow$	$\ /$	$\mathbf{>}$		901	<u>0.53</u>	0.53	4.94	4.57														
Partial Median U-Turn	<u>N-S</u>	228	<u>0.13</u>	357	<u>0.20</u>					846	<u>0.48</u>	0.48	3.06	4.57														
Bowtie	<u>N-S</u>	733	<u>0.52</u>	575	<u>0.40</u>	497	<u>0.42</u>	669	<u>0.55</u>	946	<u>0.53</u>	0.55	4.85	4.57														

### **Capacity Analysis for Planning of Junctions**

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	Results for Roundabouts														
TYPE OF	TYPE OF Zone 1 (North)					st)	Zo	one 2 (Sout	th)	Zone 4 (West)			Overall v/c Ratio	Ped Accomm	Bicycle
ROUNDABOUT	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3			odations

	Results for Interchanges															
TYPE OF INTERCHANGE	Sheet	Zone 1 Mi	(Rt rg)	Zone 2 Mi	g)	Zone 3 1	(Ctr. )	Zone 4 2	(Ctr. ?)	Zone 5 Mr	• •	Zone 6 Mr	(Rt g)	Overall v/c Ratio	Ped Accomm	Bicycle
THE OF INTERCHANGE	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C			odations

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Project Name:	SR 72 PD&E Study from East of I-75 to Lorraine Road
Project Number:	FPID No. 444634-1-22-01
Location:	SR 72 at Coash Road/Hawkins Road
Date:	Design Year (2050) PM Peak Hour
Number of Intersection Legs:	4
Major Street Direction:	East-West

			Tra	ffic Volume D	emand				
			Volume	(Veh/hr)			Perce	nt (%)	
	U-Turn	Le	eft	Thru	Right				
	Ŋ	<b></b>		Î	ſ	Heavy \	/ehicles	Volume Growth	
Eastbound	0	8	1	1015	58	1.0	0%	0.00%	
Westbound	0	6	9	824	17	4.3	0%	0.00%	
Southbound	0	Ę	5	5	67	3.5	0%	0.00%	
Northbound	0	5	3	7	64	1.0	0%	0.00%	
Adjustment Factor	0.80	0.9	95		0.85				
Suggested	0.80	0.	95		0.85				
	Truck to	PCE Fa	ctor		Suggested =	2.00		2.00	
FDC	OT Context Zone			C	3R-Suburban R	esidentia	al		
E-W / Cro	ssing East-West	Legs		Low	Low			Low	
N-S / Cros	sing North-South	Legs		Low	Low			Low	
			2-pha	se signal	Suggested =	1800		1800	
	Lane Volume		3-pha	se signal	Suggested =	1750	<mark>/50</mark> 1750		
			4-pha	se signal	Suggested =	Suggested = 1700			

### **Capacity Analysis for Planning of Junctions**

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Number o	Number of Lanes for Non-roundabout Intersections																
TYPE OF INTERSECTION	Sheet	N	orth	bou	nd	So	outh	bou	nd	E	astk	our	nd	W	est	oour	nd
THE OF INTERSECTION	Sneet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Traffic Signal	$\checkmark$	1	1	0	$\checkmark$	0	1	0		1	2	1	$\checkmark$	1	2	0	
Two-Way Stop Control	<u>E-W</u>	$\checkmark$	1	1	0	$\checkmark$	0	1	0	$\checkmark$	1	2	1	$\checkmark$	1	2	0
Signalized Restricted Crossing U-Turn	<u>E-W</u>	$\checkmark$	$\checkmark$	$\checkmark$	2	$\checkmark$		$\checkmark$	1	1	1	2	1	1	1	2	0
Unsignalized Restricted Crossing U- Turn         E-W         1         1         1         1         2         1         1         2         0           Madien U Turn         E-W         I																	
Median U-Turn	<u>E-W</u>	$\checkmark$	$\checkmark$	1	1	$\checkmark$	$\checkmark$	1	0	1	$\checkmark$	2	1	1	$\checkmark$	2	0
Signalized ThruCut	<u>E-W</u>	$\bigvee$	1	$\checkmark$	1	$\checkmark$	1	$\nearrow$	0	$\checkmark$	1	2	1	$\checkmark$	1	2	0
Unsignalized ThruCut	<u>E-W</u>	$\checkmark$	1	$\square$	1	$\checkmark$	1	$\square$	0		1	2	1	$\checkmark$	1	2	0
Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE Sheet Northbound Southbound Eastbound Westbound																	
U L T R U L T R U L T R U L T R																	
Capacity Analy	ysis fo	or	Pl	an	ni	ng	0	f J	ur	nct	io	ns	;				
	Detailed R	epo	rt - F	Page	e 3 o	of 4											

	Res	ults f	or No	on-roi	undal	bout	Inters	sectio	ons					
TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		-	ne 5 nter)	Overall v/c	Ped Accomm	Bicycle Accomm
	Oncer	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	Ratio		odations
Traffic Signal	<u>FULL</u>	$\nearrow$	$\square$	$\nearrow$		$\nearrow$		$\nearrow$		727	<u>0.43</u>	0.43	4.94	4.83
Two-Way Stop Control	<u>E-W</u>										<u>&gt;10</u>	>10	2.60	4.08
Signalized Restricted Crossing U-Turn	<u>E-W</u>	549	<u>0.31</u>	591	<u>0.33</u>	551	<u>0.31</u>	596	<u>0.33</u>	$\nearrow$		0.33	2.91	4.45
Unsignalized Restricted Crossing U-Turn	<u>E-W</u>	926	<u>0.29</u>	1030	<u>0.54</u>	949	<u>0.10</u>	1166	<u>0.02</u>	$\nearrow$	$\nearrow$	0.54	2.72	3.77
Median U-Turn	<u>E-W</u>	$\nearrow$	$\square$	$\nearrow$		645	<u>0.36</u>	679	<u>0.38</u>	694	<u>0.39</u>	0.39	3.11	4.83
Signalized ThruCut	<u>E-W</u>		$\square$	$\nearrow$		$\nearrow$		$\nearrow$		676	<u>0.39</u>	0.39	3.72	4.83
Unsignalized ThruCut	<u>E-W</u>	$\nearrow$	$\square$	$\nearrow$	$\square$	$\nearrow$		$\nearrow$			<u>3.84</u>	3.84	3.53	4.49

# Capacity Analysis for Planning of Junctions Detailed Report - Page 4 of 4

	Results for Roundabouts															
TYPE OF	Zo	one 1 (Nor	th)	Zo	one 3 (Eas	it)	Zo	one 2 (Sou	th)	Zo	one 4 (Wes	st)	Overall v/c	Ped	Bicycle	
ROUNDABOUT	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Ratio	Accomm odations	odations	
<u>1NS X 2EW</u>	<u>0.14</u>			<u>0.46</u>	<u>0.49</u>		<u>0.24</u>			<u>0.40</u>	<u>0.42</u>	$\nearrow$	0.49	5.08	4.75	
<u>2 X 2</u>	<u>0.02</u>	<u>0.12</u>		<u>0.40</u>	<u>0.42</u>		<u>0.13</u>	<u>0.13</u>	$\nearrow$	<u>0.46</u>	<u>0.49</u>	$\nearrow$	0.49	4.79	4.67	

Results for Interchanges																
	Shoot	Zor (Rt I	ne 1 Mrg)	Zone 2 Mi	: (Lt rg)	Zor (Cti		Zon (Ctr	-	Zone 5 Mı	(Lt rg)	Zor (Rt I		Overall v/c	Ped Accomm	Bicycle
TYPE OF INTERCHANGE	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	Ratio	Accomm odations	
## Capacity Analysis for Planning of Junctions

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Project Name:	SR 72 PD&E Study from East of I-75 to Lorraine Road
Project Number:	FPID No. 444634-1-22-01
Location:	SR 72 at Coash Road/Hawkins Road
Date:	Design Year (2050) PM Peak Hour
Number of Intersection Legs:	4
Major Street Direction:	North-South

			Tra	ffic Volume D	emand			
			Volume	(Veh/hr)			Perce	nt (%)
	U-Turn	Le	eft	Thru	Right			
	ฦ	4		Î		Heavy \	/ehicles	Volume Growth
Eastbound	0	8	1	1015	58	1.0	0%	0.00%
Westbound	0	6	9	824	17	4.3	0%	0.00%
Southbound	0	Ę	5	5	67	3.5	0%	0.00%
Northbound	0	5	3	7	64	1.0	0%	0.00%
Adjustment Factor	0.80	0.9	95		0.85			
Suggested	0.80	0.9	95		0.85			
_	Truck to	PCE Fa	ctor		Suggested =	2.00		2.00
FDC	OT Context Zone			C	3R-Suburban R	esidenti	al	
E-W / Cro	ssing East-West	Legs		Low	Low			Low
N-S / Cros	sing North-South	Legs		Low	Low			Low
0.11			2-pha	se signal	Suggested =	1800		1800
	Lane Volume reshold		3-pha	se signal	Suggested =	1750		1750
			4-pha	se signal	Suggested =	1700		1700

## **Capacity Analysis for Planning of Junctions**

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Number	of Lanes	for	No	n-re	oun	dak	ooui	t Int	ers	ect	ions	S					
TYPE OF INTERSECTION	Sheet	No	orth	bou	nd	So	outh	bou	nd	Е	astb	oun	d	V	lestk	oour	nd
TTPE OF INTERSECTION	Sheet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Traffic Signal	<u>FULL</u>	$\checkmark$	1	1	0	$\square$	0	1	0	$\square$	1	2	1	$\square$	1	2	0
Partial Median U-Turn	<u>N-S</u>	1	$\nearrow$	1	1	1	$\checkmark$	1	0	$\square$	1	2	1	$\square$	1	2	0
Bowtie	<u>N-S</u>	$\checkmark$	$\checkmark$	1	1	$\square$	$\checkmark$	1	0	$\square$	$\checkmark$	2	1	$\square$	$\checkmark$	2	1

	Number	of L	.ane	es f	or l	ntei	rcha	ang	es								
TYPE OF INTERCHANGE	Sheet	No	orth	oour	nd	Sc	outh	bou	nd	E	astb	oun	d	W	estk	our	d
TTPE OF INTERCHANGE	Sneet	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R

# **Capacity Analysis for Planning of Junctions**

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	Res	ults f	or No	on-rou	undal	oout l	nters	ectio	ons					
TYPE OF INTERSECTION	Sheet	Zor (No	ne 1 orth)	-	ne 2 uth)	Zone 3	(East)	Zone 4	(West)	Zor (Cer		Overall v/c Ratio	Ped Accomm	Bicycle
	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C			odations
Traffic Signal	<u>FULL</u>	$\nearrow$		$\nearrow$	$\nearrow$	$\nearrow$	$\ /$	$\mathbf{>}$		727	<u>0.43</u>	0.43	4.94	4.57
Partial Median U-Turn	<u>N-S</u>	147	<u>0.08</u>	132	<u>0.07</u>					667	<u>0.38</u>	0.38	3.06	4.57
Bowtie	<u>N-S</u>	651	<u>0.46</u>	534	<u>0.38</u>	502	<u>0.40</u>	572	<u>0.43</u>	696	<u>0.39</u>	0.46	4.85	4.57

## **Capacity Analysis for Planning of Junctions**

**Detailed Report - Page 4 of 4** 

						Resul	ts for F	Rounda	bouts						
TYPE OF	Zo	one 1 (Nort	th)	Z	one 3 (Eas	st)	Zo	one 2 (Sout	th)	Z	one 4 (Wes	,	Overall v/c Ratio	Ped Accomm	Bicycle
ROUNDABOUT	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3			odations

				ŀ	Resul	ts foi	r Inte	rchar	nges							
TYPE OF INTERCHANGE	Sheet	Zone 1 Mi	(Rt rg)	Zone 2 Mi	g)	Zone 3 1	(Ctr. )	Zone 4 2	(Ctr. 2)	Zone 5 Mr	•	Zone 6 Mr	(Rt g)	Overall v/c Ratio	Ped Accomm	Bicycle
THE OF INTERCHANGE	Sheet	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C			odations

				Safety Performance for In	Results							
												1
					ction results for each altern	native						l
				-	t Information							Leg
ne:		m East of I-75 to Lorrain	ne Road	Intersection Type						At-Gra	ade Intersection	AADT >=
:	Coash Road/Hawkins	Road		Opening Year					_		2030	AADT >=
	FDOT District One			Design Year					_		2050	AADT >=
erence:	FPID No.: 444634-1-2	2-01		Facility Type					(	On Urban a	nd Suburban Arterial	AADT >=
	Sarasota County			Number of Legs					_		4-leg	AADT >
	Florida			1-Way/2-Way				ntersecting 2-way	1			
	2/26/2024			# of Major Street Lanes (both o							5 or fewer	1
	AIM Engineering & Su	urveying, Inc.		Major Street Approach Speed				s than 50 mph	1			
			Crash				SSI Score					
Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	Source of Prediction	Opening	Design	Rank				
control strategy	Crash Type	Opening rear	Design real		Crash Prediction Rank	(Open Year)	(Design Year)	Jource of Frediction	Year	Year	Naik	
Troffic Cignal	Total	3.83	6.69	109.88 -						02	7	1
Traffic Signal	Fatal & Injury	1.29	2.32	37.69	5	Yes	Yes	Calibrated SPF	<u>97</u>	<u>92</u>		1
Minor Road Stop	Total	1.96	3.02	52.22	n	Vec	Vec	Collibrated CDE	05	00	0	1
	Fatal & Injury	0.77	1.25	21.19	Z	Yes	Yes	Calibrated SPF	<u>95</u>	<u>90</u>	9	1
	Total	4.70	7.96	132.51								1
2-lane Roundabout	Fatal & Injury	0.80	1.43	23.27	3	Yes	Yes	Uncalibrated SPF	<u>99</u>	<u>99</u>	1	
Madian II Turn (MIIT)	Total	2.41	4.21	69.22	Λ	NI/A	NI/A	CME	00	07	n	1
Median U-Turn (MUT)	Fatal & Injury	0.98	1.77	28.65	4	N/A	N/A	CMF	<u>98</u>	<u>97</u>	Ζ	1
Signalized DCUT	Total	2.08	3.98	62.93	1	Vec	Vec	Lincolibrated CDF	00	05	2	1
Signalized RCUT	Fatal & Injury	0.39	0.77	12.09	L	Yes	Yes	Uncalibrated SPF	<u>98</u>	<u>95</u>	5	1
Unsignalized RCUT	Total	No SPF	No SPF	No SPF		Yes	Yes	Uncalibrated SPF	06	02	E	1
	Fatal & Injury	No SPF	No SPF	No SPF		165	165		<u>96</u>	<u>92</u>	6	1
Signalized Thru-Cut	Total	No SPF	No SPF	No SPF		N/A	N/A	N/A	07	01	4	1
Signalizeu Thru-Cut	Fatal & Injury	No SPF	No SPF	No SPF				IN/ A	<u>97</u>	<u>94</u>	4	1
Unsignalized Thru-Cut	Total	No SPF	No SPF	No SPF		N/A	N/A	N/A	96	02	8	1
	Fatal & Injury	No SPF	No SPF	No SPF		N/A	11/7		<u>96</u>	<u>92</u>	0	1
Bowtie	Total	No SPF	No SPF	No SPF		N/A	N/A	N/A	<u>97</u>	<u>94</u>	ς	1
	Fatal & Injury	No SPF	No SPF	No SPF			1 177	11/7	J 31	34	5	1

Legend
AADT >= 75%
AADT >= 50%
AADT >= 25%
AADT >= 10%
AADT > 0%

Appendix E

Design Year SIDRA Analysis Summary Sheets

### SITE LAYOUT

𝒱 Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Design Year (2050) Build Alternative 2 - AM Peak Hour Site Category: (None) Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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#### MOVEMENT SUMMARY

Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Design Year (2050) Build Alternative 2 - AM Peak Hour Site Category: (None) Roundabout

Mov ID	Turn	Mov Class		hand lows		rrival Iows	Deg. Satn	Aver. Delay	Level of Service		Back Of Ieue	Prop Que	Eff. Stop	Aver No. of	Ave
		21400	[ Total	HV]	Total veh/h	HV]	v/c	sec	00,100	[ Veh. veh	Dist ] ft	Guic	Rate	Cycles	mpi
South	Haw	kins Road										-		_	
3	L2	All MCs	135	0.0	135	0.0	0.273	10.7	LOS B	1.0	25.7	0.68	0.69	0.71	28.9
8	T1	All MCs	8	0.0	8	0.0	0.273	10.7	LOS B	1.0	25.7	0.68	0.69	0.71	29.
18	R2	All MCs	161	2.0	161	2.0	0.288	10.4	LOS B	1.1	26.7	0.67	0.68	0.73	31.0
Appro	ach		305	1.1	305	1.1	0.288	10.6	LOS B	1.1	26.7	0.67	0.69	0.72	29.9
East:	SR 72														
1	L2	All MCs	208	1.0	208	1.0	0.590	10.2	LOS B	4.8	124.2	0.60	0.39	0.66	30.
3	T1	All MCs	1059	5.0	1059	5.0	0.590	10.7	LOS B	4.9	126.0	0.60	0.39	0.66	31.
16	R2	All MCs	33	0.0	33	0.0	0.590	10.1	LOS B	4.9	126.0	0.60	0.39	0.67	31.
Appro	ach		1300	4.2	1300	4.2	0.590	10.6	LOS B	4.9	126.0	0.60	0.39	0.66	30.8
North:	Coas	h Road													
7	L2	All MCs	16	0.0	16	0.0	0.530	20.5	LOS C	2.1	54.1	0.84	0.95	1.24	26.3
4	T1	All MCs	13	0.0	13	0.0	0.530	20.5	LOS C	2.1	54.1	0.84	0.95	1.24	26.7
14	R2	All MCs	167	3.0	167	3.0	0.530	23.0	LOS C	2.1	54.1	0.84	0.95	1.24	26.5
Approa	ach		196	2.6	196	2.6	0.530	22.6	LOS C	2.1	54.1	0.84	0.95	1.24	26.5
Nest:	SR 72	1													
5	L2	All MCs	78	0.0	78	0.0	0.533	9.1	LOSA	3.4	87.3	0.56	0.35	0.57	30.9
2	T1	All MCs	881	6.0	881	6.0	0.533	9.7	LOSA	3.4	87.3	0.56	0.35	0.57	31.
12	R2	All MCs	188	1.0	188	1.0	0.533	9.2	LOSA	3.3	86.2	0.56	0.34	0.56	31.5
Approa	ach		1147	4.8	1147	4.8	0.533	9.6	LOS A	3.4	87.3	0.56	0.35	0.57	31.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6). Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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#### LANE SUMMARY

Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Design Year (2050) Build Alternative 2 - AM Peak Hour Site Category: (None) Roundabout

Lane Us															_
	Demano	d Flow	s Arrival	Flows	Cap.	Deg. Satn	Lane Util	Aver. Delay	Level of Service		Back Of Ieue	Lane Config	Lane. Length	Cap. F Adj. E	Prob. Block.
	[ Total veh/h	HV] %	[ Total veh/h	HV ] %	veh/h	v/c	%	sec		[ Veh	Dist] ft		ft	%	%
South: Ha	wkins Ro	bad													
Lane 1	143	0.0	143	0.0	525	0.273	100	10.7	LOS B	1.0	25.7	Full	1600	0.0	0.0
Lane 2 <sup>d</sup>	161	2.0	161	2.0	560	0.288	100	10.4	LOS B	1.1	26.7	Short	250	0.0	NA
Approach	305	1.1	305	1.1		0.288		10.6	LOS B	1.1	26.7				
East: SR 7	2														
Lane 1 <sup>d</sup>	654	3.7	654	3.7	1108	0.590	100	10.5	LOS B	4.8	124.2	Full	1600	0.0	0.0
Lane 2	646	4.7	646	4.7	1095	0.590	100	10.6	LOS B	4.9	126.0	Full	1600	0.0	0.0
Approach	1300	4.2	1300	4.2		0.590		10.6	LOS B	4.9	126.0				
North: Coa	ash Road	ł													
Lane 1 <sup>d</sup>	196	2.6	196	2.6	371	0.530	100	22.6	LOS C	2.1	54.1	Full	1600	0.0	0.0
Approach	196	2.6	196	2.6		0.530		22.6	LOS C	2.1	54.1				
West: SR	72														
Lane 1	571	5.2	571	5.2	1071	0.533	100	9.6	LOS A	3.4	87.3	Full	1600	0.0	0.0
Lane 2 <sup>d</sup>	576	4.4	576	4.4	1081	0.533	100	9.6	LOSA	3.3	86.2	Full	1600	0.0	0.0
Approach	1147	4.8	1147	4.8		0.533		9.6	LOSA	3.4	87.3				
All Vehicles	2948	4.0	2948	4.0		0.590		11.0	LOS B	4.9	126.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6). Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach	Lane Flo	ws (ve	eh/h)								-
South: Haw	kins Road										
Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	 
Lane 1 Lane 2	135	8	- 161	143 161	0.0 2.0		0.273 0.288	100 100	NA 0.0	NA 1	

East: SR 72 Mov. From E To Exit: Lane 1	L2 S 208	T1 W	R2	Total	%HV	_					
From E To Exit: Lane 1	s			Total	%HV						
Lane 1	-	vv	No.			Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	208		N								 
		446	-	654	3.7	1108		100	NA	NA	
Lane 2	-	613	33	646	4.7	1095	0.590	100	NA	NA	
Approach	208	1059	33	1300	4.2		0.590				
North: Coash R	Road										
Mov.	L2	T1	R2	Total	%HV	4	Deg.	Lane	Prob.	Ov.	
From N						Cap.	Satn		SL Ov.	Lane	
To Exit:	E	S	W		-	veh/h	v/c	%	%	No.	 
Lane 1	16	13	167	196	2.6	371	0.530	100	NA	NA	
Approach	16	13	167	196	2.6		0.530				
West: SR 72											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From W						Cap.	Satn		SL Ov.	Lane	
To Exit:	Ν	E	S			veh/h	v/c	%	%	No.	
Lane 1	78	492	-	571	5.2	1071	0.533	100	NA	NA	
Lane 2	-	388	188	576	4.4	1081	0.533	100	NA	NA	
Approach	78	881	188	1147	4.8		0.533				
	Total	%HV D	eg.Sat	n (v/c)							
All Vehicles 2	2948	4.0		0.590							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis			1				-	
Exit Lane Number	Lane	Percent Opposing Opng in Flow Rate Lane	Critical Gap	Follow-up Headway			Min. Delay	Merge Delay
Number	ft	% veh/h pcu/h	sec	sec	veh/h	v/c	sec	sec

There are no Exit Short Lanes for Merge Analysis at this Site.

	Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	sec
South: Hawkins	Road			
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: SR 72				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Coash R	oad			
Lane 1	0.0	0.0	0.0	0.0
West: SR 72				
Lane 1	0.0	0.0	0.0	0.0

Lane 2	0.0	0.0	0.0	0.0

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### SITE LAYOUT

V Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Design Year (2050) Build Alternative 2 - MID\_DAY Peak Hour Site Category: (None) Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings



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#### MOVEMENT SUMMARY

Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Design Year (2050) Build Alternative 2 - MID\_DAY Peak Hour Site Category: (None) Roundabout

Mov ID	Turr	Mov Class		mand Flows		rrival Iows	Deg Satn	Aver Delay	Level of Service		Back Of Jeue	Prop. Que	Eff. Stop	Aver. No. of	Ave Speed
		51455		HV]		HV ]	v/c	sec	Cervice	[ Veh veh	Dist]	Que	Rate	Cycles	mpl
South	n: Haw	kins Road			- Contra			5010		(CIII				_	0.19
3	L2	All MCs	155	1.0	155	1.0	0.456	19.0	LOS C	1.9	47.4	0.81	0.89	1.11	26.
в	T1	All MCs	22	0.0	22	0.0	0.456	18.4	LOS C	1.9	47.4	0.81	0.89	1.11	26.
18	R2	All MCs	216	2.0	216	2.0	0.506	19.1	LOS C	2.1	54.3	0.81	0.91	1.17	27.
Appro	bach		393	1.5	393	1.5	0.506	19.1	LOS C	2.1	54.3	0.81	0.90	1.14	27.
East:	SR 72	-													
1	L2	All MCs	167	4.0	167	4.0	0.449	8.1	LOSA	2.4	62.9	0.51	0.32	0.51	30.
5	T1	All MCs	719	11.0	719	11.0	0.449	8.8	LOSA	2.4	62.9	0.51	0.32	0.51	31.
16	R2	All MCs	15	0.0	15	0.0	0.449	7.6	LOSA	2.3	62.3	0.51	0.32	0.51	31.
Appro	bach		901	9.5	901	9.5	0.449	8.6	LOSA	2.4	62.9	0.51	0.32	0.51	31.
North	: Coas	h Road													
7	L2	All MCs	12	50.0	12	50.0	0.156	36.7	LOS E	0.4	10.8	0.66	0.66	0.66	29.
4	T1	All MCs	3	0.0	3	0.0	0.156	7.1	LOS A	0.4	10.8	0.66	0.66	0.66	30.
14	R2	All MCs	48	2.0	48	2.0	0.156	7.8	LOS A	0.4	10.8	0.66	0.66	0.66	30.
Appro	ach		63	10.8	63	10.8	0.156	11.3	LOS B	0.4	10.8	0.66	0.66	0.66	30.
Nest:	SR 72	2													
5	L2	All MCs	72	3.0	72	3.0	0.624	11.0	LOS B	5.6	147.1	0.60	0.38	0.68	30.
2	T1	All MCs	1153	7.0	1153	7.0	0.624	11.4	LOS B	5.6	147.1	0.60	0.38	0.67	30.
2	R2	All MCs	157	0.0	157	0.0	0.624	10.7	LOS B	5.5	144.3	0.60	0.38	0.67	30.
ppro	ach		1383	6.0	1383	6.0	0.624	11.3	LOS B	5.6	147.1	0.60	0.38	0.67	30.
I Ve	hicles		2740	6.6	2740	6.6	0.624	11.6	LOS B	5.6	147.1	0.61	0.44	0.69	30.4
				212		212			222.2		1			0.00	

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6). Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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### LANE SUMMARY

Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Design Year (2050) Build Alternative 2 - MID\_DAY Peak Hour Site Category: (None) Roundabout

Lane Us	e and P	Perform	nance												
-	Deman	d Flow	s Arriva	Flows	Cap.	Deg Satn	Lane Util.	Aver. Delay	Level of Service	QL	Back Of Ieue	Lane Config	Lane Length	Cap. I Adj. E	
	[ Total veh/h	HV] %	[ Total veh/h	HV] %	veh/h	v/c	%	sec		[ Veh	Dist ) ft		ft	%	%
South: Ha	wkins R	oad													
Lane 1	177	0.9	177	0.9	388	0.456	100	19.0	LOS C	1.9	47.4	Full	1600	0.0	0.0
Lane 2 <sup>d</sup>	216	2.0	216	2.0	427	0.506	100	19.1	LOS C	2.1	54.3	Short	250	0.0	NA
Approach	393	1.5	393	1.5		0.506		19.1	LOS C	2.1	54.3				
East: SR 7	2														
Lane 1 <sup>d</sup>	456	8.4	456	8.4	1017	0.449	100	8.5	LOSA	2.4	62.9	Full	1600	0.0	0.0
Lane 2	445	10.6	445	10.6	991	0.449	100	8.7	LOSA	2.3	62.3	Full	1600	0.0	0.0
Approach	901	9.5	901	9.5		0.449		8.6	LOS A	2.4	62.9				
North: Coa	sh Roa	d													
Lane 1 <sup>d</sup>	63	10.8	63	10.8	404	0.156	100	11.3	LOS B	0.4	10.8	Full	1600	0.0	0.0
Approach	63	10.8	63	10.8		0.156		11.3	LOS B	0.4	10.8				
West: SR	72														
Lane 1	687	6.6	687	6.6	1100	0.624	100	11.4	LOS B	5.6	147.1	Full	1600	0.0	0.0
Lane 2 <sup>d</sup>	696	5.4	696	5.4	1115	0.624	100	11.3	LOS B	5.5	144.3	Full	1600	0.0	0.0
Approach	1383	6.0	1383	6.0		0.624		11.3	LOS B	5.6	147.1				
All Vehicles	2740	6.6	2740	6.6		0.624		11.6	LOS B	5.6	147.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6). Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach	Lane Flo	ws (ve	eh/h)												
South: Haw	outh: Hawkins Road														
Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util %	Prob. SL Ov. %	Ov. Lane No.					
Lane 1 Lane 2	155 -	22	- 216	177 216	0.9 2.0	388 427	0.456 0.506	100 100	NA 0.0	NA 1					

Approach	155	22	216	393	1.5		0.506				
East: SR 72											
Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	SL Ov.	Ov. Lane No.	
Lane 1	167	289		456	8.4	1017	0.449	100	NA	NA	
Lane 2	-	430	15	445	10.6	991	0.449	100	NA	NA	
Approach	167	719	15	901	9.5		0.449				
North: Coash	Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	12	3	48	63	10.8	404	0.156	100	NA	NA	
Approach	12	3	48	63	10.8		0.156				
West: SR 72											
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	72	615	-	687	6.6	1100	0.624	100	NA	NA	-
Lane 2	-	539	157	696	5.4	1115	0.624	100	NA	NA	
Approach	72	1153	157	1383	6.0		0.624				
-	Total	%HV D	Deg.Sat	in (v/c)			-		-		
All Vehicles	2740	6.6		0.624							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis		and a second				
Exit Lane	Lane	Percent Opposing Opng in Flow Rate	Critical Gap	Follow-up Lane Capacity Headway Flow	Deg. Min. Satn Delay	Merge Delay
Number	Length ft	Lane % veh/h pcu/h	sec	Rate sec veh/h veh/ł	v/c sec	sec

There are no Exit Short Lanes for Merge Analysis at this Site.

Variable Dem	and Analysis			
	Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
1 and the second	veh	veh	sec	sec
South: Hawkins	Road			
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: SR 72				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Coash R	oad			
Lane 1	0.0	0.0	0.0	0.0
West: SR 72				
Lane 1	0.0	0.0	0.0	0.0

Lane 2	0.0	0.0	0.0	0.0

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#### SITE LAYOUT

V Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Design Year (2050) Build Alternative 2 - PM Peak Hour Site Category: (None) Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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#### MOVEMENT SUMMARY

Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Design Year (2050) Build Alternative 2 - PM Peak Hour Site Category: (None) Roundabout

Mov ID	Turn	Mov Class		nand Iows		rrival Iows	Deg. Satn	Aver Delay	Level of Service		Back Of eue	Prop. Que	Eff. Stop	Aver. No. of	Aver
		01855		HV]		HV]	v/c	sec	Service	(Veh veh	Dist j ft	Que	Rate	Cycles	Speed
South	: Haw	kins Road	10000	70	Venin	/0	VIG	Sec		ven	jų.		-		mph
3	L2	All MCs	57	0.0	57	0.0	0.143	10.0	LOS B	0.5	12.2	0.70	0.70	0.70	29.
3	T1	All MCs	8	0.0	8	0.0	0.143	10.0	LOS B	0.5	12.2	0.70	0.70	0.70	29.
8	R2	All MCs	69	2.0	69	2.0	0.143	9.4	LOSA	0.5	11.5	0.67	0.67	0.67	31.4
Appro	bach		133	1.0	133	1.0	0.143	9.7	LOSA	0.5	12.2	0.69	0.69	0.69	30.3
East:	SR 72														
	L2	All MCs	74	3.0	74	3.0	0.415	7.1	LOSA	2.4	60.9	0.39	0.20	0.39	31.
5	T1	All MCs	886	4.0	886	4.0	0.415	7.1	LOSA	2.4	60.9	0.39	0.20	0.39	32.
6	R2	All MCs	18	25.0	18	25.0	0.415	9.2	LOSA	2.3	60.7	0.39	0.20	0.39	32.
Appro	ach		978	4.3	978	4.3	0.415	7.2	LOS A	2.4	60.9	0.39	0.20	0.39	32.
North	Coas	h Road													
	L2	All MCs	5	0.0	5	0.0	0.158	7.6	LOS A	0.5	12.8	0.63	0.63	0.63	31.
P.	T1	All MCs	5	0.0	5	0.0	0.158	7.6	LOS A	0.5	12.8	0.63	0.63	0.63	31.
4	R2	All MCs	72	4.0	72	4.0	0.158	9.1	LOS A	0.5	12.8	0.63	0.63	0.63	31.6
ppro	ach		83	3.5	83	3.5	0.158	8.9	LOS A	0.5	12.8	0.63	0.63	0.63	31.
Vest:	SR 72														
j.	L2	All MCs	87	0.0	87	0.0	0.477	7.3	LOSA	3.2	81.4	0.33	0.14	0.33	31.9
	T1	All MCs	1091	1.0	1091	1.0	0.477	7.4	LOSA	3.2	81.4	0.33	0.14	0.33	32.0
2	R2	All MCs	62	0.0	62	0.0	0.477	7.3	LOSA	3.2	81.4	0.33	0.14	0.33	32.
ppro	ach		1241	0.9	1241	0.9	0.477	7.4	LOS A	3.2	81.4	0.33	0.14	0.33	32.0
	hicles		2435	24	2435	2.4	0.477	7.5	LOSA	3.2	81.4	0.38	0.21	0.38	32.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab) Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6). Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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#### LANE SUMMARY

Site: 101 [Coash Road/Hawkins Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Design Year (2050) Build Alternative 2 - PM Peak Hour Site Category: (None) Roundabout

Lane Us		199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199				_									
	Deman	d Flow	s Arrival	Flows	Cap	Deg. Satn	Lane Util.	Aver. Delav	Level of Service		Back Of eue	Lane Config	Lane Length	Cap. I Adj. I	Prob. Block
	[ Total veh/h	HV J %	[ Total veh/h	HV ] %	veh/h	v/c	%	sec	Gervice	(Veh	Dist]	Connig	ft	лиј. 1 %	%
South: Ha	wkins Ro	bad										_			1.04
Lane 1	65	0.0	65	0.0	450	0.143	100	10.0	LOS B	0.5	12.2	Full	1600	0.0	0.0
Lane 2 <sup>d</sup>	69	2.0	69	2.0	481	0.143	100	9.4	LOSA	0.5	11.5	Short	250	0.0	NA
Approach	133	1.0	133	1.0		0.143		9.7	LOS A	0.5	12.2				
East: SR 7	2														
Lane 1 <sup>d</sup>	492	3.8	492	3.8	1184	0.415	100	7.1	LOSA	2.4	60.9	Full	1600	0.0	0.0
Lane 2	487	4.8	487	4.8	1172	0.415	100	7.2	LOS A	2.3	60.7	Full	1600	0.0	0.0
Approach	978	4.3	978	4.3		0.415		7.2	LOSA	2.4	60.9				
North: Coa	sh Road	ł													
Lane 1 <sup>d</sup>	83	3.5	83	3.5	524	0.158	100	8.9	LOSA	0.5	12.8	Full	1600	0.0	0.0
Approach	83	3.5	83	3.5		0.158		8.9	LOSA	0.5	12.8				
West: SR	72														
Lane 1	621	0.9	621	0.9	1300	0.477	100	7.4	LOSA	3.2	81.4	Full	1600	0.0	0.0
Lane 2 <sup>d</sup>	620	0.9	620	0.9	1299	0.477	100	7.4	LOSA	3.2	81.4	Full	1600	0.0	0.0
Approach	1241	0.9	1241	0.9		0.477		7.4	LOSA	3.2	81.4				
All Vehicles	2435	2.4	2435	2.4		0.477		7.5	LOSA	3.2	81.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab), Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6). Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach	Lane Flo	ws (ve	h/h)								
South: Hawk	kins Road										
Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	SL Ov.	Ov. Lane No.	
Lane 1 Lane 2	57	8	- 69	65 69	0.0 2.0	1683	0.143 0.143	100 100	NA 0.0	NA 1	

Approach	57	8	69	133	1.0		0.143				
East: SR 72											
Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	SL Ov.	Ov. Lane No.	
Lane 1	74	418	-	492	3.8	1184	0.415	100	NA	NA	
Lane 2	-	468	18	487	4.8	1172	0.415	100		NA	
Approach	74	886	18	978	4.3		0.415				
North: Coash	Road										
Mov. From N	L2	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	SL Ov.	Ov. Lane No.	
To Exit:	E	S	W		25			-			
Lane 1	5 5	5 5	72 72	83 83	3.5 3.5	524	0.158	100	NA	NA	
Approach	5	5	12	03	3.5		0.156				
West: SR 72	-		-								
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	87	533		621	0.9	1300	0.477	100	NA	NA	
Lane 2	-	558	62	620	0.9	1299	0.477	100	NA	NA	
Approach	87	1091	62	1241	0.9		0.477				
	Total	%HV D	eg.Sa	tn (v/c)						-	
All Vehicles	2435	2.4		0.477							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis								
Exit		Percent Opposing	Critical Gap	Follow-up Lane	Capacity			Merge
Lane Number	Length	Opng in Flow Rate Lane	Gap	Headway Flow Rate		Sath	Delay	Delay
	ft	% veh/h pcu/h	sec	sec veh/h	veh/h	v/c	sec	sec

There are no Exit Short Lanes for Merge Analysis at this Site.

	Initial Queued	Residual Queued	Time for Residual	Duration of	
	Demand	Demand	Demand to Clear	Oversatn	
and a state of the second	veh	veh	sec	sec	
South: Hawkins I	Road				
Lane 1	0.0	0.0	0.0	0.0	
Lane 2	0.0	0.0	0.0	0.0	
East: SR 72					
Lane 1	0.0	0.0	0.0	0.0	
Lane 2	0.0	0.0	0.0	0.0	
North: Coash Ro	ad				
Lane 1	0.0	0.0	0.0	0.0	
West: SR 72					
Lane 1	0.0	0.0	0.0	0.0	

Lane 2	0.0	0.0	0.0	0.0

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Preliminary Roundabout Concept and Performance Checks









