

QUALITATIVE ASSESSMENT OF INTERSECTION OPERATIONS

State Road 40 at Interstate 95 Southbound Ramps

Section 79100
M.P. 26.292
Volusia County

Prepared for:

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5 TRAFFIC OPERATIONS

719 South Woodland Boulevard, MS 3-562
DeLand, Florida 32720



Continuing Service Contract for Traffic Operations
Financial Project Identification Number: 237974-1-32-17
Contract Number: CA652
TEDS Contract Number: 11265
Task Work Order: 12
Study: 2

Prepared by:
Traffic Engineering Data Solutions, Inc.
80 Spring Vista Drive
DeBary, Florida 32713

January 2021

This item has been digitally signed and sealed by

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.

TABLE OF CONTENTS

INTRODUCTION	1
EXISTING CONDITIONS.....	2
TRAFFIC VOLUMES.....	8
COLLISION ANALYSIS.....	9
QUALITATIVE ASSESSMENT.....	12
OPERATIONS	13
SAFETY:	14
MAINTENANCE:.....	15
IMPROVEMENT RECOMMENDATIONS	16
APPENDIX.....	18

LIST OF FIGURES

FIGURE 1 GENERAL LOCATION MAP	1
FIGURE 2 GENERAL LOCATION AERIAL.....	2
FIGURE 3 EXISTING CONDITIONS DIAGRAM	4
FIGURE 4 SUMMARY OF PEAK-HOUR TURNING MOVEMENTS.....	8
FIGURE 5 COLLISION DIAGRAM.....	112
FIGURE 6 IMPROVEMENTS DIAGRAM	177

LIST OF TABLES

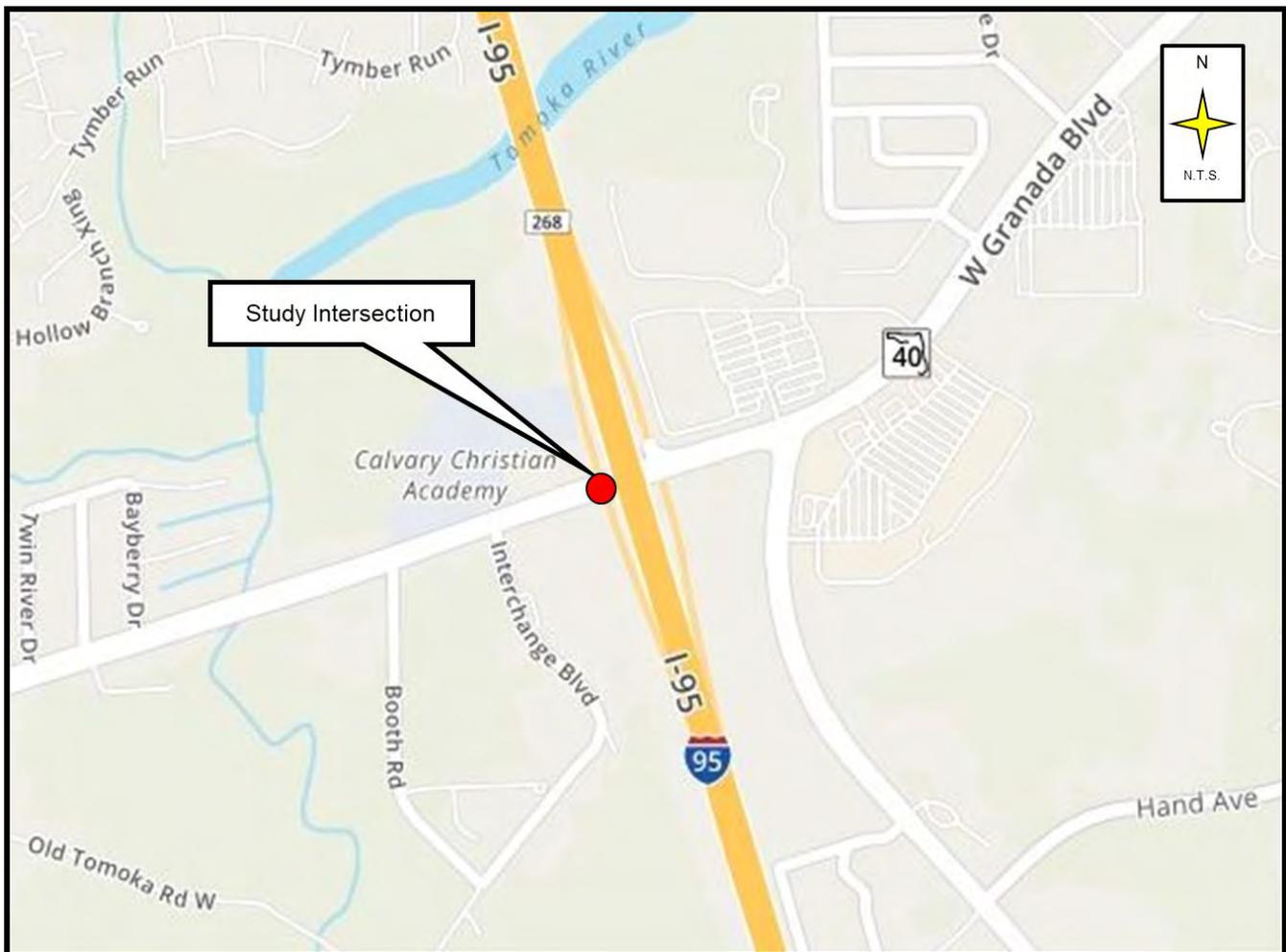
TABLE 1 EXISTING CONDITIONS.....	3
TABLE 2 SUMMARY OF COLLISION DATA.....	10

INTRODUCTION

Traffic Engineering Data Solutions, Inc. (TEDS) was retained on behalf of the Florida Department of Transportation (FDOT) to conduct a Qualitative Assessment of Intersection Operations for the intersection of State Road (S.R.) 40 at the Interstate 95 (I-95) southbound ramps, located in Ormond Beach (Volusia County), Florida. A location map of the study intersection is shown below as **Figure 1**.

The study was initiated by FDOT to investigate if right-turn on red restriction is needed for the ramp to assist downstream weaving issues. The analysis methods used in completing this study are consistent with the Manual on Uniform Traffic Control Devices (MUTCD), FDOT's Manual on Uniform Traffic Studies (MUTS), the Traffic Engineering Manual (TEM), and engineering judgment. This report documents existing conditions, vehicle / pedestrian / bicycle counts, collision analysis, qualitative assessment, and recommendations.

Figure 1
General Location Map
S.R. 40 at I-95 Southbound Ramps



Source: MapQuest

EXISTING CONDITIONS

S.R. 40 is an east/west arterial that extends east from Marion County, through the study intersection, to S.R. A1A in Ormond Beach. At the study intersection, S.R. 40 is a five-lane divided arterial with bike lanes and curb and gutter. I-95 is a north/south interstate highway that extends from the Volusia/Flagler County line to the Flagler/St. Johns County line. At the study interchange, the southbound off-ramp (Exit 268) is the west ramp terminal at the diamond interchange, which allows southbound I-95 traffic to access S.R. 40, and S.R. 40 traffic to access southbound I-95. The intersection of S.R. 40 at the I-95 Southbound Ramps is a signalized intersection. A location aerial is shown below in **Figure 2**.

Figure 2
General Location Aerial
S.R. 40 at I-95 Southbound Ramps

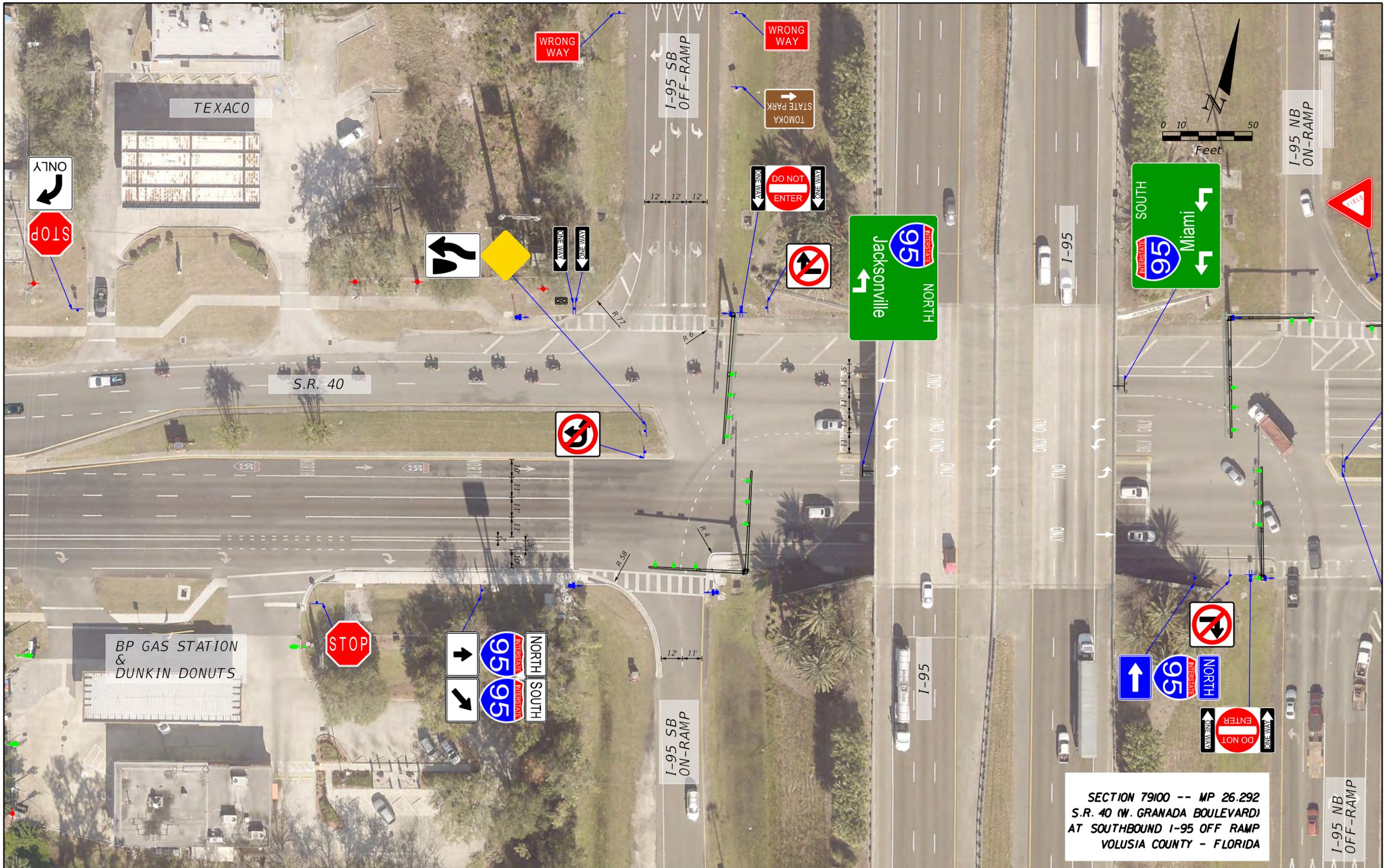


Source: Google Earth

Table 1 on the following page summarizes the existing conditions for the study location. An existing condition diagram is provided as **Figure 3** and photographs of the study intersection are included within this study. A straight-line diagram is also included in the **Appendix**.

**Table 1
Existing Conditions
S.R. 40 at I-95 Southbound Ramps**

Feature	Description
Main Street	<ul style="list-style-type: none"> • S.R. 40
Side Street	<ul style="list-style-type: none"> • I-95 Southbound Ramps
Area Location	<ul style="list-style-type: none"> • Ormond Beach, Volusia County, Florida
Adjacent Land Uses	<ul style="list-style-type: none"> • <u>Northeast</u>: I-95 (mainline and northbound on-ramp) • <u>Northwest</u>: Texaco Gas Station • <u>Southeast</u>: I-95 (mainline and northbound off-ramp) • <u>Southwest</u>: BP Gas Station/Dunkin Donuts
Traffic Control	<ul style="list-style-type: none"> • Signalized Intersection
Adjacent Signalized Intersections	<ul style="list-style-type: none"> • <u>North</u>: None • <u>South</u>: None • <u>East</u>: I-95 NB On/Off Ramps – 330 feet • <u>West</u>: Booth Road – 0.265 miles
S.R. 40	<ul style="list-style-type: none"> • <u>Cross Section</u>: Five (5) lane divided arterial (three eastbound lanes and two westbound lanes) with curb and gutter and bicycle lanes • <u>Posted Speed Limit</u>: 45 mph • <u>AADT (2019)</u>: 31,500 vehicles per day (vpd) west of the intersection and 35,500 east of the intersection • <u>Eastbound Approach Lanes</u>: One (1) left-turn lane (for northbound I-95 ramp) three (3) through lanes, one (1) bicycle lane, and one (1) right-turn lane • <u>Westbound Approach Lanes</u>: Two (2) left-turn lanes, two (2) through lanes, and one (1) bicycle lane • <u>Pedestrian Crossings</u>: None • <u>Sidewalks</u>: Along both sides of the roadway • <u>Utilities</u>: Along the north side of the roadway • <u>Street Lighting</u>: None
I-95 Southbound Ramps	<ul style="list-style-type: none"> • <u>Cross Section</u>: Two (2) lane interstate off-ramp with paved shoulders and outside curb and gutter • <u>Posted Speed Limit</u>: 35 mph • <u>AADT (2019)</u>: 4,300 vpd • <u>Southbound Approach Lanes</u>: Two (2) left-turn lanes and one (1) right-turn lane • <u>Pedestrian Crossings</u>: Signalized crosswalks across both north and south legs of the intersection • <u>Sidewalks</u>: None • <u>Utilities</u>: None • <u>Street Lighting</u>: High mast light pole provided in the southwest quadrant of the intersection along the southbound I-95 on-ramp



- | | | |
|--------------|----------------------------|------------------------|
| Utility Pole | Symbols: | Signal Pole |
| Traffic Sign | Traffic Controller Cabinet | Pedestrian Signal Pole |
| Luminaire | Overhead Mounted Sign | Inlet |

Traffic Engineering Data Solutions, Inc.
 80 Spring Vista Drive Phone: 386.753.0558
 DeBary, FL 32713 Fax: 386.753.0778

STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION

FIGURE 3
 EXISTING CONDITION DIAGRAM

**Eastbound Approach Photographs
S.R. 40 at I-95 Southbound Ramps**



Looking East Towards Intersection



Looking West Away from Intersection

**Westbound Approach Photographs
S.R. 40 at I-95 Southbound Ramps**



Looking West Towards Intersection



Looking East Away from Intersection

**Southbound Approach Photographs
S.R. 40 at I-95 Southbound Ramps**



Looking South Towards Intersection

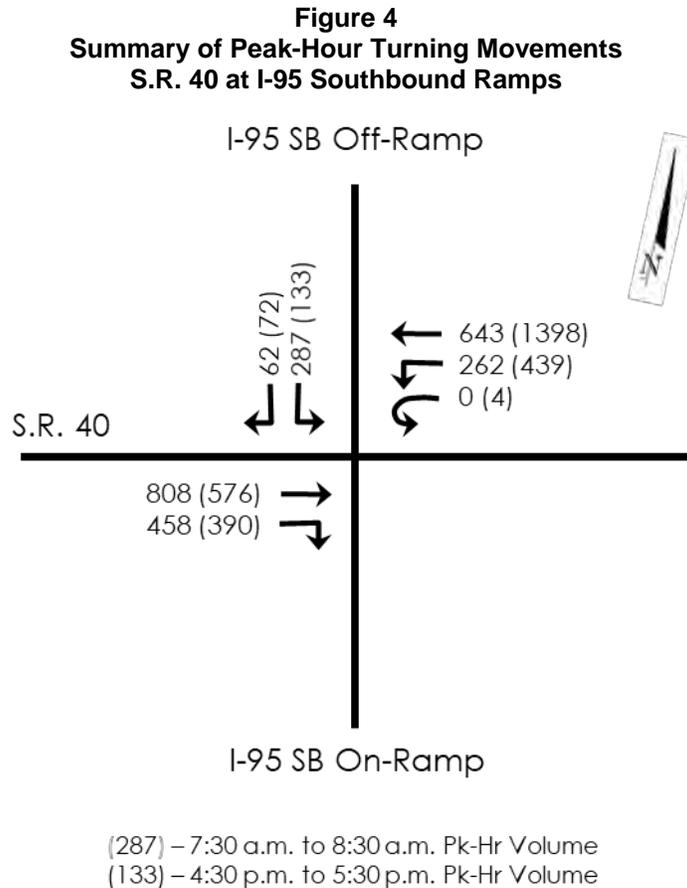


Looking North Away from Intersection

Traffic Volumes

Eight (8) hours of manual turning movement counts were collected from 7:00 to 9:00 a.m., 11:00 a.m. to 1:00 p.m., and 2:00 to 6:00 p.m. on a weekday at S.R. 40 at the I-95 southbound ramps (included in the **Appendix**).

- The morning peak hour at the intersection occurred from 7:30 to 8:30 a.m. while the afternoon peak hour occurred from 4:30 to 5:30 p.m. As summarized below in **Figure 4**, 2,520 and 3,008 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 approximately 2.07% of the traffic passing through the intersections.
- During the eight (8) hours of manually collected turning movement counts, 15 pedestrians and nine (9) bicyclists were observed traversing the intersection.

Collision Analysis: Crash data for the 36-month period between February 1, 2017 and January 31, 2019 was obtained from the FDOT's CAR database and the University of Florida's *Signal Four Analytics*. Fifty-seven (57) crashes were reported at the intersection, consisting of the following crash types:

- 24 rear-end;
 - 14 side-swipe;
 - 12 left-turn;
 - Three (3) angle;
 - One (1) other;
 - One (1) off-road;
 - One (1) backed-into;
 - One (1) right-turn.
- The crashes resulted in one (1) fatality, 25 injuries, and \$260,650 in estimated property damage.
 - 44 crashes occurred during the day and 13 crashes occurred at night.
 - 51 of the crashes occurred under dry pavement conditions and six (6) crashes occurred at during wet conditions.
 - 14 sideswipe crashes occurred as follows:
 - Three (3) involved westbound through vehicles.
 - One (1) involved westbound vehicles in the left-turn lanes to I-95 southbound.
 - One (1) involved westbound left-turning vehicles.
 - Two (2) involved eastbound through vehicles.
 - One (1) involved an eastbound driver in the right-turn lane striking a vehicle in the outside through lane.
 - One (1) involved an eastbound driver in the outside through lane striking a vehicle in the right-turn lane.
 - One (1) involved a westbound vehicle in the inside through lane striking a vehicle in the left-turn lane to I-95 northbound.
 - Three (3) involved southbound left-turning vehicles.
 - One (1) involved southbound right-turning vehicles.
 - 11 left-turn crashes occurred between eastbound through and westbound left-turning vehicles, which occurred as a result of disregarding the red traffic signal.
 - Nine (9) noted eastbound through drivers to be at fault. One (1) fatality occurred.
 - Two (2) noted westbound left-turning drivers to be at fault.
 - One (1) left-turn crash involved an eastbound motorist performing a prohibited U-turn and striking a westbound through vehicle.
 - Three (3) angle crashes occurred as a result of one (1) eastbound and two (2) westbound through drivers disregarding the red traffic signal and striking southbound left-turning vehicles.
 - One (1) off-road crash occurred when a westbound driver (noted to be under the influence) struck the median curb, continued westbound and went off-road.
 - One (1) right-turn crash occurred when an eastbound right-turning driver failed to yield the right of way to a westbound left-turning vehicle.

A detailed collision summary is provided on the following page in **Table 2**. A collision diagram is provided as **Figure 5**.

**Table 2
Summary of Collision Data
S.R. 40 at I-95 Southbound Ramps**

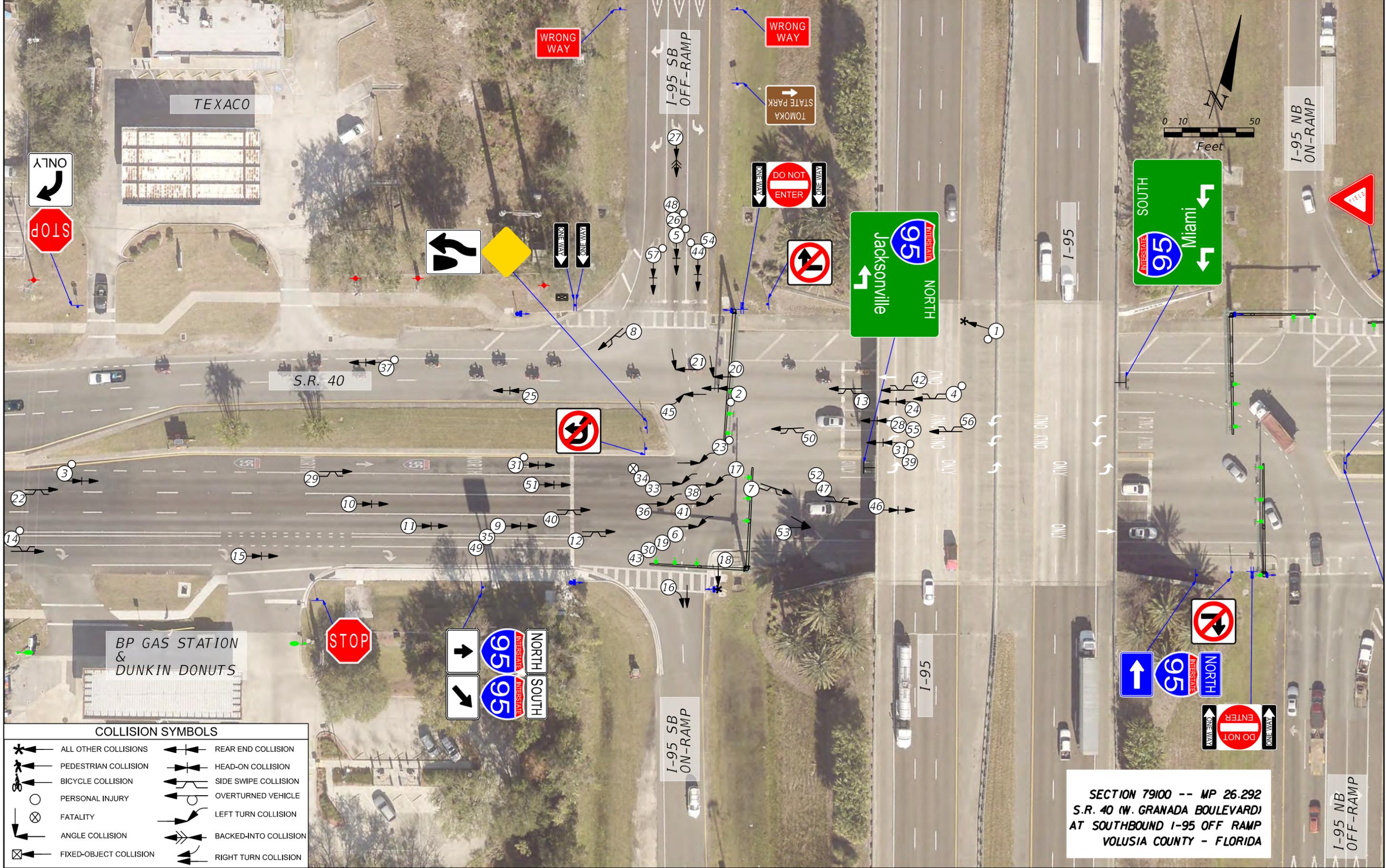
FLORIDA DEPARTMENT OF TRANSPORTATION												
COLLISION SUMMARY												
Section: 79100			State Road: 40				County: Volusia					
Intersecting route: I-95 SB Ramps			Milepost: 26.292				Data by: SEN					
Study period: 2/1/2017 to 1/31/2020			Date: 3/23/2020									
NO.	DATE	DAY	TIME	FATAL	INJURY	INJURY SEVERITY	PROPERTY DAMAGE	HARMFUL EVENT	DUI	DAY / NIGHT	WET / DRY	CONTRIBUTING CAUSE
1	03/18/17	Saturday	3:30	0	1	4-Incapacitating	\$16,000	Off-Road	Yes	Night	Dry	DUI
2	03/23/17	Thursday	20:19	0	2	2-Possible	\$6,500	Rear-End	No	Night	Dry	Following Too Closely
3	04/27/17	Thursday	15:45	0	2	2-Possible	\$2,000	Rear-End	No	Day	Dry	Careless Driving
4	05/01/17	Monday	9:47	0	1	3-Non-Incapacitating	\$8,500	Side-Swipe	No	Day	Dry	Improper Lane Change
5	05/10/17	Wednesday	12:55	0	1	2-Possible	\$4,600	Rear-End	No	Day	Dry	Careless Driving
6	05/19/17	Friday	20:30	0	0	1-None	\$2,500	Left-Turn	No	Day	Dry	Ran Red Light
7	07/24/17	Monday	9:20	0	0	1-None	\$800	Side-Swipe	No	Day	Dry	Improper Lane Change
8	10/04/17	Wednesday	18:20	0	0	1-None	\$6,500	Side-Swipe	No	Day	Dry	Improper Turn
9	01/12/18	Friday	10:34	0	0	1-None	\$700	Rear-End	No	Day	Dry	Careless Driving
10	01/22/18	Monday	7:45	0	0	1-None	\$2,000	Rear-End	No	Day	Dry	Careless Driving
11	01/23/18	Tuesday	7:37	0	0	1-None	\$700	Rear-End	No	Day	Dry	Careless Driving
12	01/29/18	Monday	8:40	0	0	1-None	\$1,000	Side-Swipe	No	Day	Wet	Improper Lane Change
13	02/05/18	Monday	11:45	0	0	1-None	\$150	Side-Swipe	No	Day	Dry	Improper Lane Change
14	02/14/18	Wednesday	7:40	0	1	3-Non-Incapacitating	\$2,000	Side-Swipe	No	Day	Dry	Improper Lane Change
15	02/15/18	Thursday	7:29	0	0	1-None	\$500	Rear-End	No	Day	Dry	Careless Driving
16	02/27/18	Tuesday	8:54	0	0	1-None	\$1,500	Right-Turn	No	Day	Dry	FTYROW
17	02/27/18	Tuesday	11:42	0	0	1-None	\$6,000	Left-Turn	No	Day	Dry	Ran Red Light
18	03/14/18	Wednesday	6:06	0	0	1-None	\$0	Other	No	Night	Dry	Improper Backing
19	03/16/18	Friday	6:54	0	0	1-None	\$7,000	Left-Turn	No	Night	Dry	Ran Red Light
20	03/30/18	Friday	8:32	0	0	1-None	\$5,000	Angle	No	Day	Dry	Ran Red Light
21	04/03/18	Tuesday	8:56	0	0	1-None	\$10,000	Angle	No	Day	Dry	Ran Red Light
22	05/01/18	Tuesday	14:00	0	0	1-None	\$2,000	Side-Swipe	No	Day	Dry	Careless Driving
23	05/12/18	Saturday	12:36	0	3	2-Possible	\$8,000	Left-Turn	No	Day	Dry	Ran Red Light
24	05/17/18	Thursday	17:24	0	0	1-None	\$1,500	Rear-End	No	Day	Dry	Careless Driving
25	05/20/18	Sunday	14:55	0	0	1-None	\$3,000	Rear-End	No	Day	Wet	Careless Driving
26	05/30/18	Wednesday	9:47	0	1	2-Possible	\$2,000	Rear-End	No	Day	Wet	Careless Driving
27	06/06/18	Wednesday	15:28	0	0	1-None	\$500	Backed-Into	No	Day	Wet	Improper Backing
28	09/12/18	Wednesday	7:34	0	0	1-None	\$2,000	Rear-End	No	Day	Dry	Careless Driving
29	09/21/18	Friday	8:06	0	0	1-None	\$1,000	Side-Swipe	No	Day	Dry	Improper Lane Change
30	10/22/18	Monday	16:42	0	0	1-None	\$5,000	Left-Turn	No	Day	Dry	Ran Red Light
31	12/04/18	Tuesday	6:17	0	1	2-Possible	\$16,000	Rear-End	No	Night	Dry	Careless Driving
32	12/17/18	Monday	20:38	0	2	2-Possible	\$7,000	Rear-End	No	Night	Dry	Careless Driving
33	02/20/19	Wednesday	19:39	0	0	1-None	\$5,500	Left-Turn	No	Night	Dry	Ran Red Light
34	03/08/19	Friday	12:18	1	4	5-Fatal	\$25,000	Left-Turn	No	Day	Dry	Ran Red Light
35	03/23/19	Saturday	16:40	0	0	1-None	\$3,000	Rear-End	No	Day	Dry	Careless Driving
36	04/04/19	Thursday	17:39	0	0	1-None	\$1,500	Left-Turn	No	Day	Dry	Ran Red Light
37	04/20/19	Saturday	8:11	0	1	3-Non-Incapacitating	\$1,100	Rear-End	No	Day	Dry	Careless Driving
38	05/08/19	Wednesday	22:10	0	3	3-Non-Incapacitating	\$10,000	Left-Turn	No	Night	Dry	Ran Red Light
39	05/30/19	Thursday	8:15	0	0	1-None	\$2,500	Rear-End	No	Day	Dry	Careless Driving

(Continued)

Table 2 (Continued)
Summary of Collision Data
S.R. 40 at I-95 Southbound Ramps

FLORIDA DEPARTMENT OF TRANSPORTATION													
COLLISION SUMMARY													
Section: 79100			State Road: 40				County: Volusia						
Intersecting route: I-95 SB Ramps			Milepost: 26.292				Data by: SEN						
Study period: 2/1/2017 to 1/31/2020			Date: 3/23/2020										
NO.	DATE	DAY	TIME	FATAL	INJURY	INJURY SEVERITY	PROPERTY DAMAGE	HARMFUL EVENT	DUI	DAY / NIGHT	WET / DRY	CONTRIBUTING CAUSE	
40	06/25/19	Tuesday	13:09	0	0	1-None	\$5,000	Side-Swipe	No	Day	Dry	Improper Lane Change	
41	06/25/19	Tuesday	20:10	0	0	1-None	\$6,000	Left-Turn	No	Day	Dry	Ran Red Light	
42	07/24/19	Wednesday	22:35	0	0	1-None	\$8,000	Side-Swipe	No	Night	Dry	Improper Lane Change	
43	08/13/19	Tuesday	15:20	0	0	1-None	\$12,000	Left-Turn	No	Day	Dry	Ran Red Light	
44	08/14/19	Wednesday	17:30	0	1	2-Possible	\$14,000	Rear-End	No	Day	Wet	Careless Driving	
45	08/20/19	Tuesday	11:12	0	0	1-None	\$2,000	Left-Turn	No	Day	Dry	Improper Turn	
46	08/23/19	Friday	7:51	0	0	1-None	\$2,500	Rear-End	No	Day	Dry	Careless Driving	
47	09/06/19	Friday	14:30	0	0	1-None	\$700	Side-Swipe	No	Day	Dry	Improper Lane Change	
48	10/27/19	Sunday	17:00	0	0	1-None	\$2,700	Rear-End	No	Day	Dry	Careless Driving	
49	11/05/19	Tuesday	18:28	0	0	1-None	\$2,400	Rear-End	No	Night	Wet	Careless Driving	
50	11/07/19	Thursday	1:00	0	0	1-None	\$2,500	Side-Swipe	No	Day	Dry	Improper Lane Change	
51	11/11/19	Monday	18:15	0	0	1-None	\$11,000	Rear-End	No	Night	Dry	Careless Driving	
52	12/02/19	Monday	8:02	0	0	1-None	\$800	Side-Swipe	No	Day	Dry	Improper Lane Change	
53	12/09/19	Monday	8:03	0	0	1-None	\$3,000	Angle	No	Day	Dry	Ran Red Light	
54	12/10/19	Tuesday	22:25	0	0	1-None	\$2,000	Rear-End	No	Night	Dry	Careless Driving	
55	12/20/19	Friday	14:18	0	0	1-None	\$1,000	Rear-End	No	Day	Dry	Careless Driving	
56	12/29/19	Sunday	21:34	0	0	1-None	\$3,500	Side-Swipe	No	Night	Dry	Careless Driving	
57	01/25/20	Saturday	16:33	0	1	2-Possible	\$1,000	Rear-End	No	Day	Dry	Careless Driving	
TOTAL				1	25		\$260,650						
TOTAL NO.	Injury Severity			Angle	Rear-End	Side-Swipe	Left-Turn	Right-Turn	Other	Off-Road	Backed-Into		
	Property Damage Only	Injury	Fatality										
57	42	14	1	3	24	14	12	1	1	1	1	0	
Percent	74%	25%	2%	5%	42%	25%	21%	2%	2%	2%	2%	0%	
CONTRIB-CAUSE	Time of Day		Pavement Cond.		DUI	Improper Lane Change	Careless Driving	Following Too Closely	FTYROW	Improper Turn	Lost Control	Improper Backing	Ran Red Light
	Day	Night	Dry	Wet									
Total	44	13	51	6	1	11	25	1	1	2	0	2	14
Percent	77%	23%	89%	11%	2%	19%	44%	2%	2%	4%	0%	4%	25%

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



COLLISION SYMBOLS	
	ALL OTHER COLLISIONS
	PEDESTRIAN COLLISION
	BICYCLE COLLISION
	PERSONAL INJURY
	FATALITY
	ANGLE COLLISION
	FIXED-OBJECT COLLISION
	REAR END COLLISION
	HEAD-ON COLLISION
	SIDE SWIPE COLLISION
	OVERTURNED VEHICLE
	LEFT TURN COLLISION
	BACKED-INTO COLLISION
	RIGHT TURN COLLISION

	Utility Pole		Signal Pole
	Traffic Sign		Pedestrian Signal Pole
	Luminaire		Inlet
	Traffic Controller Cabinet		
	Overhead Mounted Sign		

Traffic Engineering Data Solutions, Inc.
 80 Spring Vista Drive Phone: 386.753.0558
 DeBary, FL 32713 Fax: 386.753.0778

STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION

FIGURE 5
 COLLISION DIAGRAM
 (2/1/2017 - 1/31/2020)

SECTION 79100 -- MP 26.292
 S.R. 40 (W. GRANADA BOULEVARD)
 AT SOUTHBOUND I-95 OFF RAMP
 VOLUSIA COUNTY - FLORIDA

I-95 NB
 OFF-RAMP

QUALITATIVE ASSESSMENT

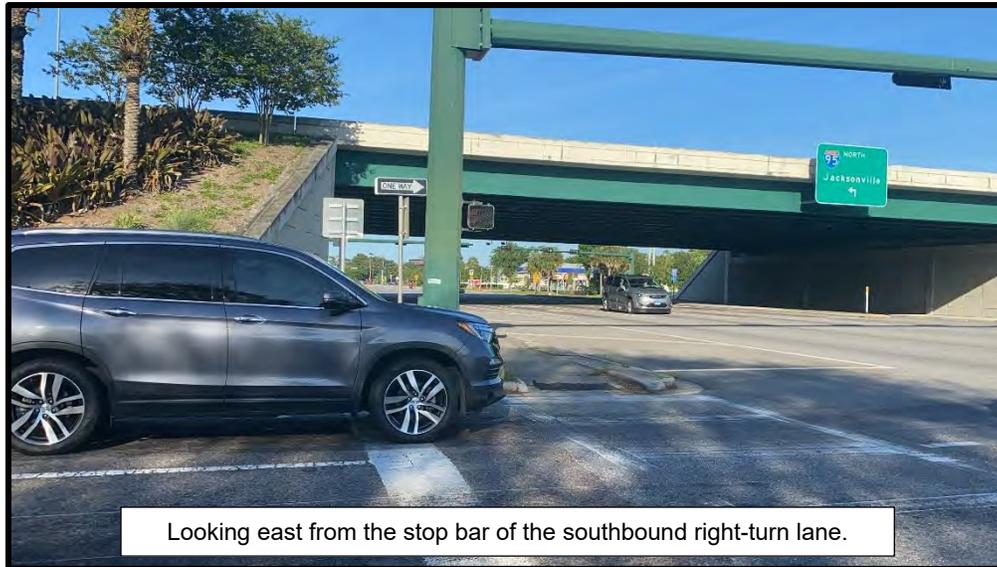
The intersection of S.R. 40 at I-95 southbound ramps was observed by a registered professional engineer during the morning and afternoon peak periods. The goal of the observations was to determine the need for any improvements to enhance the safety and efficiency of the study intersection.

Operations:

Operations include the efficiency of operation and interaction of motor vehicles, pedestrians, and bicycles at the intersection.

General Observations:

- S.R. 40 serves as an east/west arterial roadway while Interstate 95 serves as a north/south interstate roadway throughout Florida and the eastern seaboard of the United States. S.R. 40 provides access to commercial businesses, local streets and beaches. This condition leads to intersection usage by local residents as well as travelers unfamiliar with the area searching for fuel and other travel related needs.
- Pedestrian activity through the intersection is low with 15 pedestrians (eastbound and westbound) crossing the intersection during the 8-hour count period. Bicycle usage through the intersection was an infrequent occurrence, however was observed along SR 40 during all of the observation and data collection periods.
- Vehicles traveling on S.R. 40 were generally observed to be traveling at or below the 45-mph posted speed limit during the peak period.
- The study intersection is part of a coordinated system that includes the I-95 northbound ramp intersection (330 feet to the east). Circulation between both intersections appeared efficient with few phase failures during the peak periods. Minor eastbound through queue spillbacks extended from the northbound ramp intersection through the southbound ramp. Drivers did not block the intersection during the periods of longer queues.
- Dual left-turn lanes and a single right-turn lane are provided on the I-95 southbound off-ramp. The southbound left-turn movement is high, averaging 187 vph during the 8-hour count period. Right-turn volumes were moderate and averaged 68 vph throughout the 8-hour count period. The southbound left-turn signal phase is concurrent with the eastbound through signal phase at the I-95 northbound ramp intersection. A few phase failures were observed with the left-turn movement during the morning peak hour.
- Right-turn-on-red (RTOR) movements accounted for 75% of the total right-turn volume over the 8-hour count period. While RTOR movement is permitted, some challenges were observed:
 - From the southbound stop bar, visibility to the east can be restricted by the signal mast arm on the northeast corner (see photo on following page). The majority of southbound right-turning drivers were observed stopping on the crosswalk or beyond to get a better view of oncoming westbound through vehicles.
 - On a few occasions, right-turning drivers were observed turning within smaller gaps of approaching westbound through vehicles, resulting in westbound drivers braking slightly or changing lanes to avoid a collision.
- In general, RTOR drivers continuing west of S.R. 40 appeared to take smaller gaps while those who intended to turn left at Interchange Boulevard or Booth Road waited for larger gap or all lanes to be clear.



Looking east from the stop bar of the southbound right-turn lane.

Safety:

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

- A collision summary was performed for the 36-month period from February 1, 2017 to January 31, 2020. A total of 57 collisions were reported, resulting in one (1) fatality, 25 injuries and \$260,650 in estimated property damage.
- One (1) eastbound left-turn crash occurred when an eastbound driver performed a prohibited U-turn and struck a westbound through vehicle. A combination No U-Turn/No Left Turn is ground mounted in the median of the westbound approach and no U-turn movements were observed during the 8-hour count period.
- No sideswipe crashes occurred as a result of southbound right-turning drivers weaving across the westbound lanes of S.R. 40. One (1) sideswipe crash involved two (2) southbound right-turning vehicles and occurred because the leading driver stopped after initiating their turn and the following driver attempted to go around to avoid a rear end crash, ultimately sideswiping the leading vehicle.
- No crashes were reported that involved a southbound right-turning driver failing to yield to a westbound through vehicle. Due to the lower volume of right-turns and the observed efficiency with the RTOR movements, **it is recommended southbound RTOR continue to be permitted at the intersection.**
- All signal heads are mounted horizontally and backplates are provided on the east/west facing signal heads. 11 of the 12 left-turn crashes and the three (3) angle crashes were the result of eastbound through and westbound left-turning drivers disregarding the red traffic signal. **It is recommended retroreflective strips be added to the existing backplates of the east/west facing signal heads.**

Maintenance:

During the various field reviews, the condition of the study intersection's pavement, striping and signing were observed. The following are observations based on the various field reviews of the intersection:

- The signs, pavement markings and pavement conditions appeared to be in good condition with the exception of the following:
 - The crosswalk on the southbound approach and the stop bar on the westbound approach are faded. **It is recommended the crosswalk and stop bar be restriped.**
 - The tactile mats on all four corners are damaged. **It is recommended the tactile mats be replaced.**

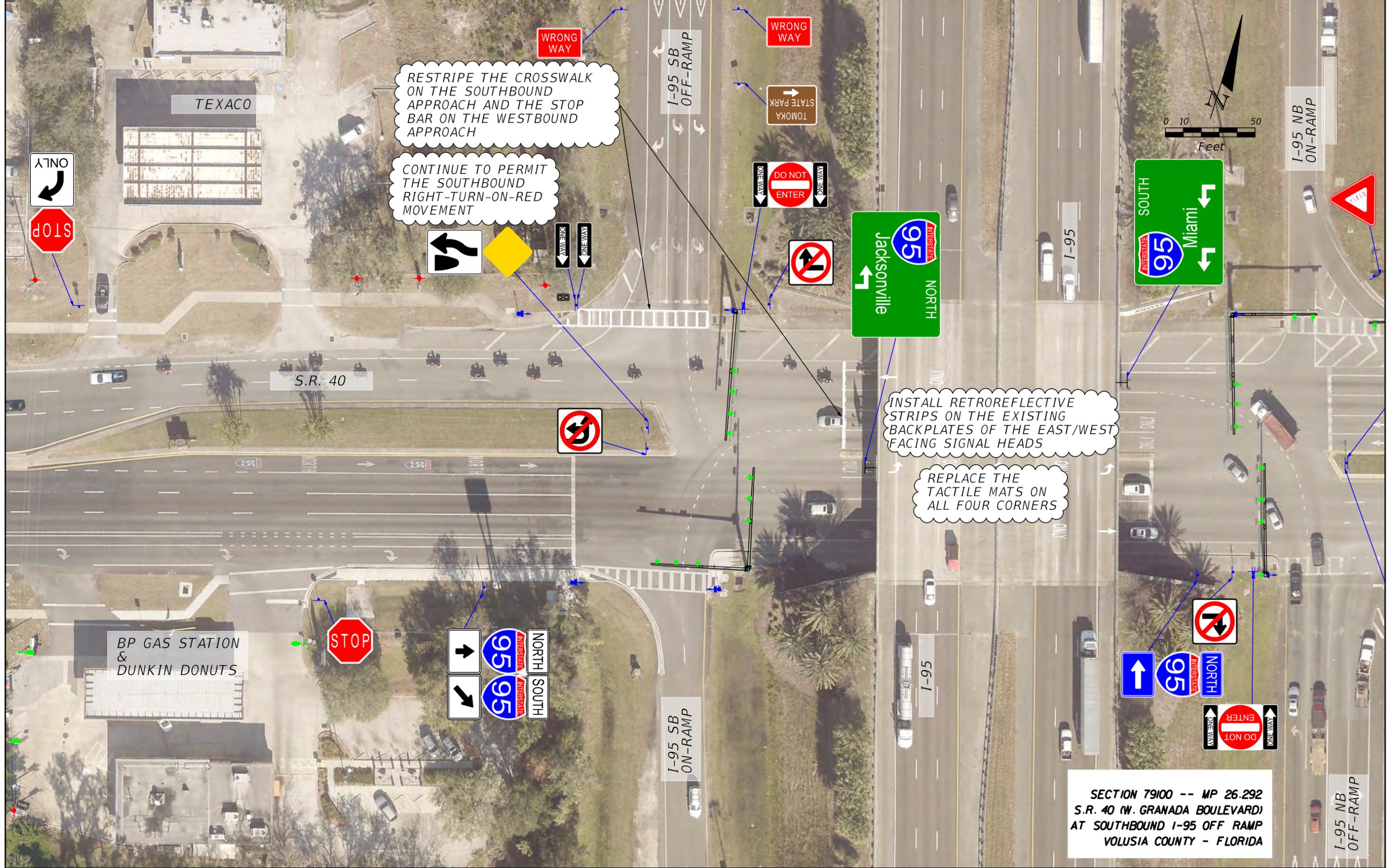


IMPROVEMENT RECOMMENDATIONS

Based on the data collected, field observations, and engineering judgment, the following improvements are recommended for the intersection of S.R. 40 at I-95 southbound ramps, located in Ormond Beach (Volusia County), Florida:

- Continue to permit the southbound right-turn-on-red movement.
- Install retroreflective strips on the existing backplates of the east/west facing signal heads.
- Restripe the crosswalk on the southbound approach and the stop bar on the westbound approach.
- Replace the tactile mats on all four corners.

These improvements are depicted on the following page as an Improvements Diagram in **Figure 6**.



RESTRIPE THE CROSSWALK ON THE SOUTHBOUND APPROACH AND THE STOP BAR ON THE WESTBOUND APPROACH

CONTINUE TO PERMIT THE SOUTHBOUND RIGHT-TURN-ON-RED MOVEMENT

INSTALL RETROREFLECTIVE STRIPS ON THE EXISTING BACKPLATES OF THE EXISTING EAST/WEST FACING SIGNAL HEADS

REPLACE THE TACTILE MATS ON ALL FOUR CORNERS

SECTION 79100 -- MP 26.292
S.R. 40 (W. GRANADA BOULEVARD)
AT SOUTHBOUND I-95 OFF RAMP
VOLUSIA COUNTY - FLORIDA

- Utility Pole
- Traffic Sign
- Luminaire
- Symbols:**
- Traffic Controller Cabinet
- Overhead Mounted Sign
- Signal Pole
- Pedestrian Signal Pole
- Inlet

Traffic Engineering Data Solutions, Inc.
80 Spring Vista Drive Phone: 386.753.0558
DeBary, FL 32713 Fax: 386.753.0778

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

FIGURE 6
IMPROVEMENT DIAGRAM

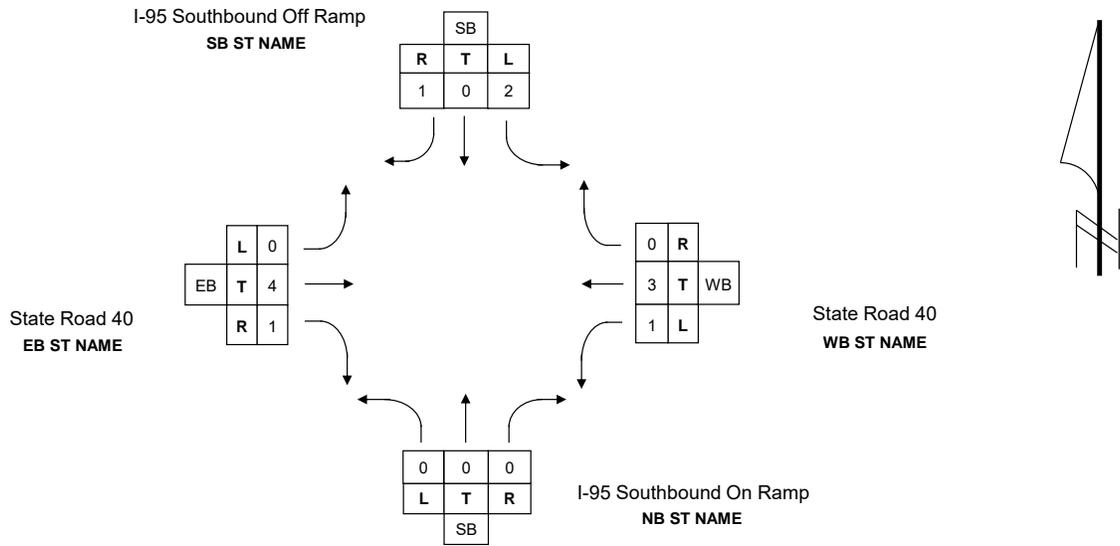
APPENDIX

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION 79100 CITY Ormond Beach COUNTY Volusia
 STATE ROUTE State Road 40 INTERSECTING ROUTE I-95 Southbound Ramps
 OBSERVER TEDS DATE 3/18/2020 MILEPOST 26.292
 WEATHER Sunny ROAD CONDITION Good
 REMARKS _____

 FORM COMPLETED BY CML DATE 04/07/20



TIME	NORTHBOUND					SOUTHBOUND					TOTAL	EASTBOUND					WESTBOUND					TOTAL	
	BEGIN/END	L	T	R	U	TOT	L	T	R	RTOR		TOT	N/S	L	T	R	U	TOT	L	T	R		U
7:00 - 8:00	0	0	0	0	0	0	222	0	46	83%	269	269	0	718	425	0	1,143	250	553	0	0	803	1,946
8:00 - 9:00	0	0	0	0	0	0	238	0	64	81%	303	303	0	800	415	0	1,215	239	713	0	0	952	2,167
11:00 - 12:00	0	0	0	0	0	0	183	0	59	78%	243	243	0	735	331	0	1,066	298	932	0	2	1,232	2,298
12:00 - 1:00	0	0	0	0	0	0	210	0	87	69%	298	298	0	825	312	0	1,137	303	1,018	0	3	1,324	2,461
2:00 - 3:00	0	0	0	0	0	0	198	0	63	87%	262	262	0	707	332	0	1,039	290	964	0	3	1,257	2,296
3:00 - 4:00	0	0	0	0	0	0	152	0	73	78%	226	226	0	676	324	0	1,000	365	1,117	0	2	1,484	2,484
4:00 - 5:00	0	0	0	0	0	0	128	0	69	74%	198	198	0	607	368	0	975	393	1,336	0	2	1,731	2,706
5:00 - 6:00	0	0	0	0	0	0	165	0	79	72%	245	245	0	542	353	0	895	425	1,379	0	4	1,808	2,703
TOTAL	0	0	0	0	0	0	1,496	0	540		2,042	2,042	0	5,610	2,860	0	8,470	2,563	8,012	0	16	10,591	19,061

Percentage	0%	0%	0%	0%		73%	0%	26%	77%				0%	66%	34%	0%		24%	76%	0%	0%		
Average	0	0	0	0	0	187	0	68	1	255			0	701	358	0	1,059	320	1,002	0	2	1,324	
Maximum	0	0	0	0		238	0	87	1				0	825	425	0		425	1379	0	4		
Minimum	0	0	0	0		128	0	46	0.69				0	542	312	0		239	553	0	0		

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 79100 CITY Ormond Beach COUNTY Volusia
 STATE ROUTE State Road 40 INTERSECTING ROUTE I-95 Southbound Ramps
 OBSERVER TEDS DATE 3/18/2020

REMARKS _____

FORM COMPLETED BY CML DATE 04/07/20

H O U R S	West side of			East side of			North side of			South side of			GRAND TOTAL
	I-95 Southbound Ramps			I-95 Southbound Ramps			State Road 40			State Road 40			
	NB	SB	TOTAL	NB	SB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL	
7:00 - 8:00	0	0	0	0	0	0	0	1	1	0	1	1	<u>2</u>
8:00 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	<u>0</u>
11:00 - 12:00	0	0	0	0	0	0	1	1	2	0	1	1	<u>3</u>
12:00 - 1:00	0	0	0	0	0	0	1	0	1	0	0	0	<u>1</u>
2:00 - 3:00	0	0	0	0	0	0	0	0	0	0	0	0	<u>0</u>
3:00 - 4:00	0	0	0	0	0	0	0	1	1	3	4	7	<u>8</u>
4:00 - 5:00	0	0	0	0	0	0	0	0	0	1	0	1	<u>1</u>
5:00 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	<u>0</u>
TOTAL	0	0	0	0	0	0	2	3	5	4	6	10	<u>15</u>

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 79100 CITY Ormond Beach COUNTY Volusia
 STATE ROUTE State Road 40 INTERSECTING ROUTE I-95 Southbound Ramps
 OBSERVER TEDS DATE 3/18/2020

REMARKS _____

FORM COMPLETED BY CML DATE 04/07/20

H O U R S	West side of			East side of			North side of			South side of			GRAND TOTAL
	I-95 Southbound Ramps			I-95 Southbound Ramps			State Road 40			State Road 40			
	NB	SB	TOTAL	NB	SB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL	
7:00 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 12:00	0	0	0	0	0	0	1	0	1	0	1	1	2
12:00 - 1:00	0	0	0	0	0	0	0	1	1	1	1	2	3
2:00 - 3:00	0	0	0	0	0	0	0	1	1	0	0	0	1
3:00 - 4:00	0	0	0	0	0	0	0	0	0	1	0	1	1
4:00 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 6:00	0	0	0	0	0	0	0	1	1	1	0	1	2
TOTAL	0	0	0	0	0	0	1	3	4	3	2	5	9

Traffic Engineering Data Solutions Inc.

File Name : SR 40 at I-95 SB Ramps TMC (8-hr)

Site Code : 00000000

Start Date : 3/18/2020

Page No : 1

Groups Printed- Passenger Vehicles - Heavy Trucks

Start Time	I-95 SOUTHBOUND ON RAMP Northbound					I-95 SOUTHBOUND OFF RAMP Southbound					STATE ROAD 40 Eastbound					STATE ROAD 40 Westbound					Int. Total
	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	
07:00 AM	0	0	0	0	0	30	0	10	0	40	0	127	85	0	212	49	98	0	0	147	399
07:15 AM	0	0	0	0	0	40	0	11	0	51	0	173	107	0	280	64	142	0	0	206	537
07:30 AM	0	0	0	0	0	68	0	11	0	79	0	216	131	0	347	71	148	0	0	219	645
07:45 AM	0	0	0	0	0	84	0	14	0	98	0	202	102	0	304	66	165	0	0	231	633
Total	0	0	0	0	0	222	0	46	0	268	0	718	425	0	1143	250	553	0	0	803	2214
08:00 AM	0	0	0	0	0	58	0	20	0	78	0	203	109	0	312	60	147	0	0	207	597
08:15 AM	0	0	0	0	0	77	0	17	0	94	0	187	116	0	303	65	183	0	0	248	645
08:30 AM	0	0	0	0	0	62	0	16	0	78	0	203	99	0	302	46	166	0	0	212	592
08:45 AM	0	0	0	0	0	41	0	11	0	52	0	207	91	0	298	68	217	0	0	285	635
Total	0	0	0	0	0	238	0	64	0	302	0	800	415	0	1215	239	713	0	0	952	2469
*** BREAK ***																					
11:00 AM	0	0	0	0	0	43	0	14	0	57	0	172	91	0	263	84	225	0	1	310	630
11:15 AM	0	0	0	0	0	43	0	17	0	60	0	196	76	0	272	69	215	0	0	284	616
11:30 AM	0	0	0	0	0	47	0	14	0	61	0	178	80	0	258	80	258	0	1	339	658
11:45 AM	0	0	0	0	0	50	0	14	0	64	0	189	84	0	273	65	234	0	0	299	636
Total	0	0	0	0	0	183	0	59	0	242	0	735	331	0	1066	298	932	0	2	1232	2540
12:00 PM	0	0	0	0	0	45	0	26	0	71	0	218	83	0	301	74	258	0	1	333	705
12:15 PM	0	0	0	0	0	55	0	20	0	75	0	214	80	0	294	65	272	0	1	338	707
12:30 PM	0	0	0	0	0	54	0	20	0	74	0	200	90	0	290	71	245	0	1	317	681
12:45 PM	0	0	0	0	0	56	0	21	0	77	0	193	59	0	252	93	243	0	0	336	665
Total	0	0	0	0	0	210	0	87	0	297	0	825	312	0	1137	303	1018	0	3	1324	2758
*** BREAK ***																					
02:00 PM	0	0	0	0	0	38	0	10	0	48	0	177	86	0	263	71	260	0	0	331	642
02:15 PM	0	0	0	0	0	48	0	22	0	70	0	174	67	0	241	61	251	0	2	314	625
02:30 PM	0	0	0	0	0	51	0	11	0	62	0	191	92	0	283	83	211	0	0	294	639
02:45 PM	0	0	0	0	0	61	0	20	0	81	0	165	87	0	252	75	242	0	1	318	651
Total	0	0	0	0	0	198	0	63	0	261	0	707	332	0	1039	290	964	0	3	1257	2557
03:00 PM	0	0	0	0	0	27	0	17	0	44	0	172	80	0	252	88	276	0	0	364	660
03:15 PM	0	0	0	0	0	45	0	23	0	68	0	178	80	0	258	94	253	0	1	348	674
03:30 PM	0	0	0	0	0	31	0	11	0	42	0	162	80	0	242	95	300	0	1	396	680
03:45 PM	0	0	0	0	0	49	0	22	0	71	0	164	84	0	248	88	288	0	0	376	695
Total	0	0	0	0	0	152	0	73	0	225	0	676	324	0	1000	365	1117	0	2	1484	2709
04:00 PM	0	0	0	0	0	32	0	16	0	48	0	149	79	0	228	94	339	0	0	433	709
04:15 PM	0	0	0	0	0	36	0	25	0	61	0	157	92	0	249	90	325	0	1	416	726
04:30 PM	0	0	0	0	0	33	0	12	0	45	0	157	103	0	260	107	322	0	1	430	735
04:45 PM	0	0	0	0	0	27	0	16	0	43	0	144	94	0	238	102	350	0	0	452	733
Total	0	0	0	0	0	128	0	69	0	197	0	607	368	0	975	393	1336	0	2	1731	2903
05:00 PM	0	0	0	0	0	33	0	17	0	50	0	137	92	0	229	117	330	0	1	448	727
05:15 PM	0	0	0	0	0	40	0	27	0	67	0	138	101	0	239	113	396	0	2	511	817
05:30 PM	0	0	0	0	0	43	0	17	0	60	0	139	94	0	233	105	318	0	0	423	716
05:45 PM	0	0	0	0	0	49	0	18	0	67	0	128	66	0	194	90	335	0	1	426	687
Total	0	0	0	0	0	165	0	79	0	244	0	542	353	0	895	425	1379	0	4	1808	2947
Grand Total	0	0	0	0	0	1496	0	540	0	2036	0	5610	2860	0	8470	2563	8012	0	16	10591	21097
Apprch %	0	0	0	0	0	73.5	0	26.5	0		0	66.2	33.8	0		24.2	75.6	0	0.2		
Total %	0	0	0	0	0	7.1	0	2.6	0	9.7	0	26.6	13.6	0	40.1	12.1	38	0	0.1	50.2	
Passenger Vehicles	0	0	0	0	0	1457	0	511	0	1968	0	5544	2748	0	8292	2491	7894	0	16	10401	20661
% Passenger Vehicles	0	0	0	0	0	97.4	0	94.6	0	96.7	0	98.8	96.1	0	97.9	97.2	98.5	0	100	98.2	97.9
Heavy Trucks	0	0	0	0	0	39	0	29	0	68	0	66	112	0	178	72	118	0	0	190	436
% Heavy Trucks	0	0	0	0	0	2.6	0	5.4	0	3.3	0	1.2	3.9	0	2.1	2.8	1.5	0	0	1.8	2.1

Traffic Engineering Data Solutions Inc.

File Name : SR 40 at I-95 SB Ramps TMC (8-hr)

Site Code : 00000000

Start Date : 3/18/2020

Page No : 2

Start Time	I-95 SOUTHBOUND ON RAMP Northbound					I-95 SOUTHBOUND OFF RAMP Southbound					STATE ROAD 40 Eastbound					STATE ROAD 40 Westbound					Int. Total
	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	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	68	0	11	0	79	0	216	131	0	347	71	148	0	0	219	645
07:45 AM	0	0	0	0	0	84	0	14	0	98	0	202	102	0	304	66	165	0	0	231	633
08:00 AM	0	0	0	0	0	58	0	20	0	78	0	203	109	0	312	60	147	0	0	207	597
08:15 AM	0	0	0	0	0	77	0	17	0	94	0	187	116	0	303	65	183	0	0	248	645
Total Volume	0	0	0	0	0	287	0	62	0	349	0	808	458	0	1266	262	643	0	0	905	2520
% App. Total	0	0	0	0	0	82.2	0	17.8	0		0	63.8	36.2	0		29	71	0	0		
PHF	.000	.000	.000	.000	.000	.854	.000	.775	.000	.890	.000	.935	.874	.000	.912	.923	.878	.000	.000	.912	.977
Passenger Vehicles	0	0	0	0	0	283	0	56	0	339	0	799	446	0	1245	255	628	0	0	883	2467
% Passenger Vehicles	0	0	0	0	0	98.6	0	90.3	0	97.1	0	98.9	97.4	0	98.3	97.3	97.7	0	0	97.6	97.9
Heavy Trucks	0	0	0	0	0	4	0	6	0	10	0	9	12	0	21	7	15	0	0	22	53
% Heavy Trucks	0	0	0	0	0	1.4	0	9.7	0	2.9	0	1.1	2.6	0	1.7	2.7	2.3	0	0	2.4	2.1

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM					07:30 AM					08:00 AM									
+0 mins.	0	0	0	0	0	68	0	11	0	79	0	216	131	0	347	60	147	0	0	207
+15 mins.	0	0	0	0	0	84	0	14	0	98	0	202	102	0	304	65	183	0	0	248
+30 mins.	0	0	0	0	0	58	0	20	0	78	0	203	109	0	312	46	166	0	0	212
+45 mins.	0	0	0	0	0	77	0	17	0	94	0	187	116	0	303	68	217	0	0	285
Total Volume	0	0	0	0	0	287	0	62	0	349	0	808	458	0	1266	239	713	0	0	952
% App. Total	0	0	0	0	0	82.2	0	17.8	0		0	63.8	36.2	0		25.1	74.9	0	0	
PHF	.000	.000	.000	.000	.000	.854	.000	.775	.000	.890	.000	.935	.874	.000	.912	.879	.821	.000	.000	.835
Passenger Vehicles	0	0	0	0	0	283	0	56	0	339	0	799	446	0	1245	228	694	0	0	922
% Passenger Vehicles	0	0	0	0	0	98.6	0	90.3	0	97.1	0	98.9	97.4	0	98.3	95.4	97.3	0	0	96.8
Heavy Trucks	0	0	0	0	0	4	0	6	0	10	0	9	12	0	21	11	19	0	0	30
% Heavy Trucks	0	0	0	0	0	1.4	0	9.7	0	2.9	0	1.1	2.6	0	1.7	4.6	2.7	0	0	3.2

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 12:00 PM

12:00 PM	0	0	0	0	0	45	0	26	0	71	0	218	83	0	301	74	258	0	1	333	705
12:15 PM	0	0	0	0	0	55	0	20	0	75	0	214	80	0	294	65	272	0	1	338	707
12:30 PM	0	0	0	0	0	54	0	20	0	74	0	200	90	0	290	71	245	0	1	317	681
12:45 PM	0	0	0	0	0	56	0	21	0	77	0	193	59	0	252	93	243	0	0	336	665
Total Volume	0	0	0	0	0	210	0	87	0	297	0	825	312	0	1137	303	1018	0	3	1324	2758
% App. Total	0	0	0	0	0	70.7	0	29.3	0		0	72.6	27.4	0		22.9	76.9	0	0.2		
PHF	.000	.000	.000	.000	.000	.938	.000	.837	.000	.964	.000	.946	.867	.000	.944	.815	.936	.000	.750	.979	.975
Passenger Vehicles	0	0	0	0	0	201	0	79	0	280	0	815	303	0	1118	292	1000	0	3	1295	2693
% Passenger Vehicles	0	0	0	0	0	95.7	0	90.8	0	94.3	0	98.8	97.1	0	98.3	96.4	98.2	0	100	97.8	97.6
Heavy Trucks	0	0	0	0	0	9	0	8	0	17	0	10	9	0	19	11	18	0	0	29	65
% Heavy Trucks	0	0	0	0	0	4.3	0	9.2	0	5.7	0	1.2	2.9	0	1.7	3.6	1.8	0	0	2.2	2.4

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:00 AM					12:00 PM					11:45 AM					12:00 PM				
+0 mins.	0	0	0	0	0	45	0	26	0	71	0	189	84	0	273	74	258	0	1	333
+15 mins.	0	0	0	0	0	55	0	20	0	75	0	218	83	0	301	65	272	0	1	338
+30 mins.	0	0	0	0	0	54	0	20	0	74	0	214	80	0	294	71	245	0	1	317
+45 mins.	0	0	0	0	0	56	0	21	0	77	0	200	90	0	290	93	243	0	0	336
Total Volume	0	0	0	0	0	210	0	87	0	297	0	821	337	0	1158	303	1018	0	3	1324
% App. Total	0	0	0	0	0	70.7	0	29.3	0		0	70.9	29.1	0		22.9	76.9	0	0.2	
PHF	.000	.000	.000	.000	.000	.938	.000	.837	.000	.964	.000	.942	.936	.000	.962	.815	.936	.000	.750	.979
Passenger Vehicles	0	0	0	0	0	201	0	79	0	280	0	811	326	0	1137	292	1000	0	3	1295
% Passenger Vehicles	0	0	0	0	0	95.7	0	90.8	0	94.3	0	98.8	96.7	0	98.2	96.4	98.2	0	100	97.8
Heavy Trucks	0	0	0	0	0	9	0	8	0	17	0	10	11	0	21	11	18	0	0	29
% Heavy Trucks	0	0	0	0	0	4.3	0	9.2	0	5.7	0	1.2	3.3	0	1.8	3.6	1.8	0	0	2.2

Traffic Engineering Data Solutions Inc.

File Name : SR 40 at I-95 SB Ramps TMC (8-hr)

Site Code : 00000000

Start Date : 3/18/2020

Page No : 3

Start Time	I-95 SOUTHBOUND ON RAMP Northbound					I-95 SOUTHBOUND OFF RAMP Southbound					STATE ROAD 40 Eastbound					STATE ROAD 40 Westbound					Int. Total
	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	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	33	0	12	0	45	0	157	103	0	260	107	322	0	1	430	735
04:45 PM	0	0	0	0	0	27	0	16	0	43	0	144	94	0	238	102	350	0	0	452	733
05:00 PM	0	0	0	0	0	33	0	17	0	50	0	137	92	0	229	117	330	0	1	448	727
05:15 PM	0	0	0	0	0	40	0	27	0	67	0	138	101	0	239	113	396	0	2	511	817
Total Volume	0	0	0	0	0	133	0	72	0	205	0	576	390	0	966	439	1398	0	4	1841	3012
% App. Total	0	0	0	0	0	64.9	0	35.1	0	0	0	59.6	40.4	0	0	23.8	75.9	0	0.2	0	0
PHF	.000	.000	.000	.000	.000	.831	.000	.667	.000	.765	.000	.917	.947	.000	.929	.938	.883	.000	.500	.901	.922
Passenger Vehicles	0	0	0	0	0	130	0	69	0	199	0	567	381	0	948	427	1394	0	4	1825	2972
% Passenger Vehicles	0	0	0	0	0	97.7	0	95.8	0	97.1	0	98.4	97.7	0	98.1	97.3	99.7	0	100	99.1	98.7
Heavy Trucks	0	0	0	0	0	3	0	3	0	6	0	9	9	0	18	12	4	0	0	16	40
% Heavy Trucks	0	0	0	0	0	2.3	0	4.2	0	2.9	0	1.6	2.3	0	1.9	2.7	0.3	0	0	0.9	1.3

Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:00 PM					02:30 PM					04:30 PM									
+0 mins.	0	0	0	0	0	38	0	10	0	48	0	191	92	0	283	107	322	0	1	430
+15 mins.	0	0	0	0	0	48	0	22	0	70	0	165	87	0	252	102	350	0	0	452
+30 mins.	0	0	0	0	0	51	0	11	0	62	0	172	80	0	252	117	330	0	1	448
+45 mins.	0	0	0	0	0	61	0	20	0	81	0	178	80	0	258	113	396	0	2	511
Total Volume	0	0	0	0	0	198	0	63	0	261	0	706	339	0	1045	439	1398	0	4	1841
% App. Total	0	0	0	0	0	75.9	0	24.1	0	0	0	67.6	32.4	0	0	23.8	75.9	0	0.2	0
PHF	.000	.000	.000	.000	.000	.811	.000	.716	.000	.806	.000	.924	.921	.000	.923	.938	.883	.000	.500	.901
Passenger Vehicles	0	0	0	0	0	192	0	61	0	253	0	692	318	0	1010	427	1394	0	4	1825
% Passenger Vehicles	0	0	0	0	0	97	0	96.8	0	96.9	0	98	93.8	0	96.7	97.3	99.7	0	100	99.1
Heavy Trucks	0	0	0	0	0	6	0	2	0	8	0	14	21	0	35	12	4	0	0	16
% Heavy Trucks	0	0	0	0	0	3	0	3.2	0	3.1	0	2	6.2	0	3.3	2.7	0.3	0	0	0.9

Traffic Engineering Data Solutions Inc.

File Name : SR 40 at I-95 SB Ramps TMC (8-hr)

Site Code : 00000000

Start Date : 3/18/2020

Page No : 1

Groups Printed- Heavy Trucks

Start Time	I-95 SOUTHBOUND ON RAMP Northbound					I-95 SOUTHBOUND OFF RAMP Southbound					STATE ROAD 40 Eastbound					STATE ROAD 40 Westbound					Int. Total
	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	
07:00 AM	0	0	0	0	0	2	0	0	0	2	0	1	8	0	9	1	2	0	0	3	14
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	7	0	0	7	9
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	0	4	0	0	4	7
07:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	6	0	6	1	5	0	0	6	13
Total	0	0	0	0	0	2	0	1	0	3	0	2	18	0	20	2	18	0	0	20	43
08:00 AM	0	0	0	0	0	4	0	1	0	5	0	3	0	0	3	1	3	0	0	4	12
08:15 AM	0	0	0	0	0	0	0	4	0	4	0	5	4	0	9	5	3	0	0	8	21
08:30 AM	0	0	0	0	0	0	0	1	0	1	0	2	4	0	6	0	5	0	0	5	12
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6	5	8	0	0	13	19
Total	0	0	0	0	0	4	0	6	0	10	0	14	10	0	24	11	19	0	0	30	64
*** BREAK ***																					
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	7	0	0	8	10
11:15 AM	0	0	0	0	0	1	0	1	0	2	0	3	7	0	10	1	6	0	0	7	19
11:30 AM	0	0	0	0	0	6	0	1	0	7	0	2	3	0	5	5	6	0	0	11	23
11:45 AM	0	0	0	0	0	0	0	1	0	1	0	3	4	0	7	3	2	0	0	5	13
Total	0	0	0	0	0	7	0	3	0	10	0	8	16	0	24	10	21	0	0	31	65
12:00 PM	0	0	0	0	0	0	0	1	0	1	0	3	3	0	6	5	3	0	0	8	15
12:15 PM	0	0	0	0	0	3	0	3	0	6	0	1	2	0	3	3	8	0	0	11	20
12:30 PM	0	0	0	0	0	4	0	2	0	6	0	3	2	0	5	1	4	0	0	5	16
12:45 PM	0	0	0	0	0	2	0	2	0	4	0	3	2	0	5	2	3	0	0	5	14
Total	0	0	0	0	0	9	0	8	0	17	0	10	9	0	19	11	18	0	0	29	65
*** BREAK ***																					
02:00 PM	0	0	0	0	0	2	0	1	0	3	0	4	4	0	8	3	3	0	0	6	17
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	3	4	0	0	7	11
02:30 PM	0	0	0	0	0	2	0	0	0	2	0	2	8	0	10	3	5	0	0	8	20
02:45 PM	0	0	0	0	0	2	0	1	0	3	0	4	4	0	8	0	2	0	0	2	13
Total	0	0	0	0	0	6	0	2	0	8	0	11	19	0	30	9	14	0	0	23	61
03:00 PM	0	0	0	0	0	2	0	0	0	2	0	6	2	0	8	4	4	0	0	8	18
03:15 PM	0	0	0	0	0	0	0	4	0	4	0	2	7	0	9	3	2	0	0	5	18
03:30 PM	0	0	0	0	0	1	0	0	0	1	0	1	7	0	8	0	0	0	0	0	9
03:45 PM	0	0	0	0	0	3	0	2	0	5	0	3	3	0	6	2	4	0	0	6	17
Total	0	0	0	0	0	6	0	6	0	12	0	12	19	0	31	9	10	0	0	19	62
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	4	0	0	4	7
04:15 PM	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	1	4	0	0	5	7
04:30 PM	0	0	0	0	0	2	0	1	0	3	0	1	4	0	5	6	1	0	0	7	15
04:45 PM	0	0	0	0	0	1	0	2	0	3	0	2	4	0	6	3	1	0	0	4	13
Total	0	0	0	0	0	5	0	3	0	8	0	3	11	0	14	10	10	0	0	20	42
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	1	1	0	0	2	8
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	1	0	0	3	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	4	4	0	0	8	16
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	2	0	0	5	6
Total	0	0	0	0	0	0	0	0	0	0	0	6	10	0	16	10	8	0	0	18	34
Grand Total	0	0	0	0	0	39	0	29	0	68	0	66	112	0	178	72	118	0	0	190	436
Apprch %	0	0	0	0	0	57.4	0	42.6	0		0	37.1	62.9	0		37.9	62.1	0	0		
Total %	0	0	0	0	0	8.9	0	6.7	0	15.6	0	15.1	25.7	0	40.8	16.5	27.1	0	0	43.6	

Traffic Engineering Data Solutions Inc.

File Name : SR 40 at I-95 SB Ramps TMC (8-hr)
 Site Code : 00000000
 Start Date : 3/18/2020
 Page No : 2

Start Time	I-95 SOUTHBOUND ON RAMP Northbound					I-95 SOUTHBOUND OFF RAMP Southbound					STATE ROAD 40 Eastbound					STATE ROAD 40 Westbound					Int. Total
	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	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	4	0	1	0	5	0	3	0	0	3	1	3	0	0	4	12
08:15 AM	0	0	0	0	0	0	0	4	0	4	0	5	4	0	9	5	3	0	0	8	21
08:30 AM	0	0	0	0	0	0	0	1	0	1	0	2	4	0	6	0	5	0	0	5	12
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6	5	8	0	0	13	19
Total Volume	0	0	0	0	0	4	0	6	0	10	0	14	10	0	24	11	19	0	0	30	64
% App. Total	0	0	0	0	0	40	0	60	0		0	58.3	41.7	0		36.7	63.3	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.375	.000	.500	.000	.700	.625	.000	.667	.550	.594	.000	.000	.577	.762

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM					07:45 AM					07:45 AM					08:00 AM					
+0 mins.	0	0	0	0	0	0	0	1	0	1	0	0	6	0	6	1	3	0	0	4	4
+15 mins.	0	0	0	0	0	4	0	1	0	5	0	3	0	0	3	5	3	0	0	8	8
+30 mins.	0	4	0	4	0	5	4	0	9	0	5	0	0	5	5						
+45 mins.	0	0	0	0	0	0	0	1	0	1	0	2	4	0	6	5	8	0	0	13	13
Total Volume	0	0	0	0	0	4	0	7	0	11	0	10	14	0	24	11	19	0	0	30	30
% App. Total	0	0	0	0	0	36.4	0	63.6	0		0	41.7	58.3	0		36.7	63.3	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.438	.000	.550	.000	.500	.583	.000	.667	.550	.594	.000	.000	.577	

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:30 AM

11:30 AM	0	0	0	0	0	6	0	1	0	7	0	2	3	0	5	5	6	0	0	11	23
11:45 AM	0	0	0	0	0	0	0	1	0	1	0	3	4	0	7	3	2	0	0	5	13
12:00 PM	0	0	0	0	0	0	0	1	0	1	0	3	3	0	6	5	3	0	0	8	15
12:15 PM	0	0	0	0	0	3	0	3	0	6	0	1	2	0	3	3	8	0	0	11	20
Total Volume	0	0	0	0	0	9	0	6	0	15	0	9	12	0	21	16	19	0	0	35	71
% App. Total	0	0	0	0	0	60	0	40	0		0	42.9	57.1	0		45.7	54.3	0	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.500	.000	.536	.000	.750	.750	.000	.750	.800	.594	.000	.000	.795	.772

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:00 AM					12:00 PM					11:15 AM					11:30 AM					
+0 mins.	0	0	0	0	0	0	0	1	0	1	0	3	7	0	10	5	6	0	0	11	11
+15 mins.	0	0	0	0	0	3	0	3	0	6	0	2	3	0	5	3	2	0	0	5	5
+30 mins.	0	0	0	0	0	4	0	2	0	6	0	3	4	0	7	5	3	0	0	8	8
+45 mins.	0	0	0	0	0	2	0	2	0	4	0	3	3	0	6	3	8	0	0	11	11
Total Volume	0	0	0	0	0	9	0	8	0	17	0	11	17	0	28	16	19	0	0	35	35
% App. Total	0	0	0	0	0	52.9	0	47.1	0		0	39.3	60.7	0		45.7	54.3	0	0		
PHF	.000	.000	.000	.000	.000	.563	.000	.667	.000	.708	.000	.917	.607	.000	.700	.800	.594	.000	.000	.795	

Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 02:30 PM

02:30 PM	0	0	0	0	0	2	0	0	0	2	0	2	8	0	10	3	5	0	0	8	20
02:45 PM	0	0	0	0	0	2	0	1	0	3	0	4	4	0	8	0	2	0	0	2	13
03:00 PM	0	0	0	0	0	2	0	0	0	2	0	6	2	0	8	4	4	0	0	8	18
03:15 PM	0	4	0	4	0	2	7	0	9	3	2	0	0	5	18						
Total Volume	0	0	0	0	0	6	0	5	0	11	0	14	21	0	35	10	13	0	0	23	69
% App. Total	0	0	0	0	0	54.5	0	45.5	0		0	40	60	0		43.5	56.5	0	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.313	.000	.688	.000	.583	.656	.000	.875	.625	.650	.000	.000	.719	.863

Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:00 PM					03:00 PM					02:30 PM					02:15 PM					
+0 mins.	0	0	0	0	0	2	0	0	0	2	0	2	8	0	10	3	4	0	0	7	7
+15 mins.	0	0	0	0	0	0	0	4	0	4	0	4	4	0	8	3	5	0	0	8	8
+30 mins.	0	0	0	0	0	1	0	0	0	1	0	6	2	0	8	0	2	0	0	2	2
+45 mins.	0	0	0	0	0	3	0	2	0	5	0	2	7	0	9	4	4	0	0	8	8
Total Volume	0	0	0	0	0	6	0	6	0	12	0	14	21	0	35	10	15	0	0	25	25
% App. Total	0	0	0	0	0	50	0	50	0		0	40	60	0		40	60	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.375	.000	.600	.000	.583	.656	.000	.875	.625	.750	.000	.000	.781	