ANTHEM
CONSULTING ENGINEERS

TO: **Mr. David Agacinski (FDOT)**
Mr. Albert Smidebush, PE (BALMORAL)
CC: **Mr. Richard Ramoutar, PE (ANTHEM)**
Mr. Jason Christopher, PE (ANTHEM)
Mr. Armando Perez, PE, (BALMORAL)
Mr. Matthew Crosby, PE (CORE)

March 28, 2024

RE: **448930-1-52-01; SR 90 (US 41) Resurfacing – Temporary Traffic Control Plan**

TEMPORARY TRAFFIC CONTROL TECHNICAL MEMORANDUM

Introduction

ANTHEM Consulting Engineers has been engaged as a sub-consultant to The Balmoral Group, the prime engineering consultant representing the Florida Department of Transportation (District 1), for the subject project. Our role involves providing engineering services, specifically the analysis and development of Temporary Traffic Control Plans (TTCP) and contract documents. These efforts aim to promote the safe and efficient movement of all modes of transportation and contractors throughout all phases of construction.

This technical memorandum presents the methodology and outcomes of the Lane Closure Analyses and Pedestrian Detour Assessment conducted by ANTHEM. These analyses were based on information sourced and supplied by District 1 and collected via field investigations. All processes were performed in accordance with the 2024 FDOT Design Manual (FDM) 240 and 241. The documented results and findings detailed within this memorandum will facilitate the proper planning and execution of lane closures and pedestrian detours for the project.

Methodology

Determination of lane closure restrictions and American with Disabilities Act (ADA) compliant pedestrian detours are critical aspects of developing the TTCP, establishing work phasing, and determining construction duration and schedule. Accurate lane closure restrictions are essential to prevent adverse impacts on both the project's roadway and the overall adjacent road network. Incorrect restrictions may lead to inefficiencies in the transportation system and create unsafe conditions for roadway contractors. ADA compliant pedestrian detours are critical to maintaining a safe, accessible alternative path of pedestrian travel during construction operations that negatively impact existing pedestrian routes.

Lane Closure Methodology

ANTHEM determined project-specific traffic volumes by reviewing existing traffic volumes, utilizing hourly data collected from a Portable Traffic Monitoring Site (PTMS), and then adjusting the volumes to account for expected growth over the construction period. Where applicable, these anticipated traffic volumes were further refined for potential vehicle detours and peak season factors that could influence the traffic flow. The result was a determination of the anticipated hourly traffic volumes during construction.

An effective TTCP must account for the anticipated roadway capacity within the project limits. ANTHEM evaluated the roadway capacity by reducing established vehicle per hour (vph) for an unobstructed roadway. Considerations when determining the reduction criteria include the total number of operable lanes, presence of signalized intersections, and

green clearance ratio (G/C) for those signalized intersections, travel lane widths, and proximity of the traveling public to the closest work zone hazard (lateral offset).

An hourly comparison of developed project traffic volumes and the reduced capacity was completed. Where the anticipated traffic volumes are below that of the reduced capacity for the roadway, a lane closure was determined feasible. Likewise, where the anticipated volume exceeds that of the adjusted capacity, a lane closure was determined unacceptable. ANTHEM's analysis sought consistent periods of time lasting at least 10 hours (accounting for setup and breakdown of traffic control devices in alignment with FDM 240.2.1.6) that allowed for lane closures. These identified time periods have been documented in the Findings section of this technical memorandum.

The Lane Closure Assumptions portion of this technical memorandum provides further details on the relevant vehicle data provided by District 1, assumed growth rates, signal modification factors, detour percentage, and other pertinent factors utilized in the development of the findings.

Pedestrian Detour Methodology

ANTHEM's evaluation of pedestrian detours started with the determination of specific project locations that require temporary sidewalk closures for the reconstruction of non-motorist facilities to meet ADA criteria or accommodate other necessary construction activities. These locations were determined by the prime engineering consultant and relayed to ANTHEM. The following locations were determined to require pedestrian detours to accommodate curb ramp reconstruction to meet the ADA criteria as outlined in FDM 222.2.2.

- Rattle Snake Hammock Road/Thomasson Drive – NW and NE quadrants
- 11363 Tamiami Trail E (Station 341+00, LT) – both ramps
- Treetops Drive – northern ramp
- 11432 Tamiami Trail E (Station 353+10, RT) – northern ramp
- Southwest Boulevard/Whistlers Cove Boulevard – NW and SW quadrants

To determine the most efficient and safe pedestrian alternatives, ANTHEM prioritized considerations including; access to a designated pedestrian crossing to safely traverse roadways, roadway and pedestrian route lighting conditions, functioning pedestrian signals and appropriate signing, accessible pedestrian widths of no less 36-in at a pinch point, clear sightlines, limited obstructions such as driveways, utility poles, signage, adverse slopes, and landscaping, and pedestrian detour length.

All proposed detour routes were traversed and photographed to capture conditions at the time of design. The design team walked all proposed detours twice, once at a normal walking speed and once at a moderately slow pace closely matching that of a mobility-impaired user. Conducting the reviews twice provided confidence that the proposed detours are accessible to all pedestrians.

The Pedestrian Detour Assumptions portion of this technical memorandum further clarifies the decision-making processes necessary to provide adequate pedestrian detour routes.

Assumptions

In formulating lane closure analyses and devising pedestrian detour routes, it is imperative to make assumptions regarding data characteristics and field conditions. These assumptions are supported by a thorough review of resources provided by FDOT and in-field observations. It is understood that changes in roadway characteristics from the present time to the construction phase influence the outcomes of the analyses undertaken. Changes may inadvertently lead to adverse consequences for TTCP. Consequently, it falls upon the contractor to coordinate closely if any of the assumptions utilized in the analysis are found to be no longer accurate. This collaborative effort ensures that the TTCP remains adaptive and responsive to evolving field conditions, thereby enhancing the overall efficacy and safety of the construction project.

Lane Closure Assumptions

The following assumptions and sources were utilized when completing the lane closure analysis.

Vehicle Counts and Growth: Vehicle data provided by District 1 includes the hourly vehicle counts from PTMS 030015, collected on August 16, 2022, and is located within the project limits. Review of FDOT's Peak Season Factors indicates that vehicle counts collected on August 16, 2022 should be adjusted by 1.16. District 1 provided the ESAL report, dated March 9. 2021 which was utilized to determine volume growth. A linear growth rate factor of 254 vehicles per day/per year was proportionally distributed based on the hourly data provided. This results in a 0.6% vehicle growth from when the data was collected in 2022 to 2028, the conservative estimated end year of construction.

Lane Widths and Lateral Clearance: Lane width was assumed at 11-ft minimum and the lateral clearance is 2-ft.

G/C Ratio: The project includes signalized intersections; however, at the time of the development of this technical memorandum, the latest signal timing information was not available, so an industry standard 0.6 G/C ratio was utilized.

Pedestrian Detour Assumptions

The following assumptions were utilized when determining whether selected pedestrian routes are appropriate for temporary pedestrian detours.

Signalized Intersection Operations: All pedestrian signalization equipment will operate with the same sequencing and timing cycles as observed at the time of design.

Non-concurrent Work Zones: This technical memorandum and the associated pedestrian detour design assume non-concurrent work zones for curb ramps. Curb ramps necessary for the pedestrian detours will not be closed at the same time at which that detour route must remain effective. Also, it is assumed that no work will be completed along the detour routes prior to this project which will negatively impact the operation of the pedestrian detour routes.

Work Hours: Implementation of pedestrian work zones shall correspond to the same hours of closure as permissible by the lane closure analysis, matching non-peak hours of travel use. FDOT Production Rates and experience indicate that reconstruction of the curb ramps can occur within one to two work periods (each) with phased construction such that the curb ramps can remain functional during non-work periods.

Findings

Building upon the methodologies outlined and drawing upon the assumptions and notes compiled during in-field investigations, the following findings have been established.

Lane Closure Findings

Based on the methodology outlined in this technical memorandum, the lane closure analyses have been completed, confirming the maximum allowable time for lane closures as specified in **Table 1** and **Table 2 (next page)**. Supporting documentation for **Table 1** and **Table 2** are attached as an Appendix. The resultant lane closures are applicable during periods when traffic volume and distribution align reasonably with the data collected from the PTMS, with adjustments made for increased traffic volume during the construction period and peak seasons.

Table 1: Maximum Allowable Lane Closures for Northbound Direction

Lane Closure Type	Open Road Conditions	Signalized Conditions
Single Lane	12:00 AM to 11:59 PM	7:00 PM to 2:30 PM
Dual Lane	7:30 PM to 11:00 AM	10:00 PM to 7:00 AM

Table 2: Maximum Allowable Lane Closures for Southbound Direction

Lane Closure Type	Open Road Conditions	Signalized Conditions
Single Lane	12:00 AM to 11:59 PM	9:00 AM to 7:30 AM
Dual Lane	6:30 PM to 7:00 AM	8:00 PM to 6:30 AM

Given the roadway's essential function as the only major urban principal arterial in the region, consideration of FDM criteria, limited work outside milling and resurfacing operations, consistency with adjacent project lane closures, and traffic volumes; it is recommended that work be restricted to night-time closures, consistent with corridor practices, as shown in **Table 3**. Based on construction sequencing and standard production rates, it is not envisioned that the reduction of the lane closure times to a more restrictive period will extend the overall construction duration. Rather, the removal of traffic control devices at both signalized and non-signalized intersections during daytime conditions enhances safety by minimizing the complexity of traffic movements and adhering to driver's expectations.

Table 3: Recommended Lane Closure Times

Lane Closure Type	Open Road Conditions	Signalized Conditions
Single Lane	4:00 PM to 7:00 AM	8:00 PM to 7:00 AM
Dual Lane	7:30 PM to 7:00 AM	10:00 PM to 6:30 AM

The lane closure times outlined in **Table 3** were submitted to District 1 as part of the Phase II submittal and Open Road Conditions have been further restricted based on the recommendation of the client. **Table 4** has been added to show the client approved lane closure times for both northbound and southbound directions.

Table 4: Approved Lane Closure Times

Lane Closure Type	Open Road Conditions	Signalized Conditions
Single Lane	8:00 PM to 7:00 AM	8:00 PM to 7:00 AM
Dual Lane	8:00 PM to 7:00 AM	10:00 PM to 6:30 AM

It is essential for the contractor to adhere to the recommended lane closures as shown in **Table 4**, only applying them when traffic volume and distribution align with the data used in the analysis. Prior to deviating from the recommended lane closure periods, the contractor must coordinate with the Project's Construction Engineering and Inspection (CEI) representative and the TTCP Engineer of Record. This coordination will ensure that any deviations are handled appropriately and in line with project requirements.

Pedestrian Detour Findings

ANTHEM's appropriate selection of pedestrian detour routes balanced the considerations outlined in the methodology of this technical memorandum along with reasonable assumptions regarding the limited closure time necessary to reconstruct the curb ramps and return to normal pedestrian route operations.

The design team was able to establish equally safe pedestrian detour routes to the current conditions. In general, these routes were minimally disruptive to pedestrian travel times and distances. However, to provide the safest crossing option while reconstructing curb ramps at 11363 Tamiami Trail E, Treetops Drive, and 11432 Tamiami Trail E it was necessary to exceed FDM 240.2.1.9's recommendation that pedestrian detours "should not create more than a 30% increase in the length of the non-motorized facility, or not longer than 0.5 miles for bicyclists or 0.25 miles for pedestrians" to route pedestrians to the closest signalized intersection. Development of temporary pedestrian crossings is not advised due to traffic volumes and concurrent lane closures. Additionally, proposed closure times are expected at hours of low to no pedestrian volumes.

Conclusion

This technical memorandum outlines the approved lane closure timings and considerations in development of pedestrian detour routes for the subject project, based on industry best practices, FDM criteria, field investigations, and the latest available traffic data. The analysis permits single and dual lane closures for both open road and signalized conditions, with modified conditions specified for each travel direction. Design efforts for the pedestrian detour routes have been thoroughly documented and align with the detours as shown in the plans. Adherence to these documented lane closure restrictions and pedestrian detour route considerations, in conjunction with the contract plans' requirements, will enable the contractor to facilitate the safe and efficient movement of all modes of transportation through the work zone.

This item has been digitally signed and sealed by
Christopher Lee Karmeris, P.E. 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. The official record of this sheet is the electronic file signed and sealed under rule 61G15-23.004 F.A.C.

List of Appendices

030015 PTMS Hourly Traffic Data
448930-1 ESAL Report
Collier County Peak Season Factor
Traffic Growth Analysis
Lane Closure Analyses
Pedestrian Detour Route Photographs

APPENDICES

030015 PTMS Hourly Traffic Data

COUNTY: 03
STATION: 0015
DESCRIPTION: SR 90/US 41 SE OF CR 864/RATTLESNAKE HAMMOCK CC572
START DATE: 08/16/2022
START TIME: 0000

	DIRECTION: E					DIRECTION: W					COMBINED
TIME	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL	TOTAL
0000	23	19	22	20	84	16	15	7	12	50	134
0100	11	13	7	11	42	11	15	9	2	37	79
0200	8	8	9	7	32	7	9	5	4	25	57
0300	8	6	8	5	27	1	10	13	15	39	66
0400	8	8	17	19	52	11	19	35	35	100	152
0500	18	26	37	55	136	44	58	86	117	305	441
0600	67	87	146	221	521	138	186	385	339	1048	1569
0700	212	229	231	265	937	357	407	455	401	1620	2557
0800	257	235	286	273	1051	342	343	396	348	1429	2480
0900	300	229	272	288	1089	318	333	336	319	1306	2395
1000	277	287	306	278	1148	331	320	332	343	1326	2474
1100	310	309	342	331	1292	332	332	290	333	1287	2579
1200	322	365	308	316	1311	318	342	327	383	1370	2681
1300	313	324	312	338	1287	352	365	360	341	1418	2705
1400	393	367	340	379	1479	360	405	370	328	1463	2942
1500	345	420	397	436	1598	311	329	352	378	1370	2968
1600	430	470	416	387	1703	369	345	322	333	1369	3072
1700	431	434	462	364	1691	335	331	308	297	1271	2962
1800	315	328	306	256	1205	326	290	211	230	1057	2262
1900	273	272	245	204	994	183	214	150	160	707	1701
2000	217	238	228	226	909	143	143	152	115	553	1462
2100	172	178	129	92	571	102	82	101	85	370	941
2200	121	114	86	60	381	70	43	62	56	231	612
2300	52	43	45	38	178	32	45	28	22	127	305
24-HOUR TOTALS:					19718					19878	39596

PEAK VOLUME INFORMATION

	DIRECTION: E		DIRECTION: W		COMBINED DIRECTIONS	
	HOUR	VOLUME	HOUR	VOLUME	HOUR	VOLUME
A.M.	815	1094	700	1620	715	2587
P.M.	1545	1752	1345	1476	1530	3177
DAILY	1545	1752	700	1620	1530	3177

TRUCK PERCENTAGE 4.02 3.87 3.94

CLASSIFICATION SUMMARY DATABASE

DIR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTTRK	TOTVOL
E	50	14524	4351	33	508	60	5	163	24	0	0	0	0	0	0	793	19718
W	60	15125	3924	33	485	48	0	177	26	0	0	0	0	0	0	769	19878

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448930-1 ESAL Report

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: **March 9, 2021**
To: **Evan Agillon** **EXT 2261**

From: **Brittany Nichols, Traffic Analyst/RCI Coordinator**
Subject: **Financial Project No: 448930-1-52-01**
Roadway ID: 03010000
Project Name: SR 45
County: Collier
Type of Work: Pavement Resurfacing
From MP: 15.795 – 18.668

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from trends calculated from traffic counts provided by FDOT.

K =	9.0 %
D =	55.9 %
24 Hour T =	4.0 %
Design Hour T =	2.0 %
2019 AADT =	42,000
Functional Class =	Urban Prin Arterial Other

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 030014 & 030015.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

District One – Traffic Operations
801 North Broadway Avenue * Post Office Box 1249 * Bartow, FL 33831-1249
(863) 519-2553 * (863) 534-0915 (Fax) * MS 1-8
www.dot.state.fl.us

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 448930-1-52-01
COUNTY: Collier
ROADWAYID: 03010000
PROJECT DESCRIPTION: Paving RESURFACING

LOCATION #: 1

LOCATION DESCRIPTION: SR 45 (MP: 15.834 - 18.285)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	42000
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	48600

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 3

T24 values
Existing to Opening Year: 4.00%
Opening to Mid-Year: 4.00%
Mid-Year to Design-Year: 4.00%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	____	1.270	____
RURAL HIGHWAY:	0.960	____	1.350	____
URBAN HIGHWAY:	0.890	X	1.220	____
OTHER (Enter Factor and X):		____		____

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated December 1, 2000.

Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Brittany Nichols — Traffic Analyst Consultant — ATKINS
Name — Title — Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE...
Signature

3/9/2021 | 8:10 PM EST
Date

Reviewed by: Kyle Purvis — District Statistics Administrator — FDOT
Name — Title — Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4...
Signature

3/16/2021 | 10:27 AM EDT
Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 1

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03010000 **COUNTY:** Collier **FIN #:** 448930-1-52-01

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK Paving RESURFACING A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	42000	170	0	0.5	4.00%	0.621	0.890
2020	42200	171	0	0.5	4.00%	0.621	0.890
2021	42500	172	0	0.5	4.00%	0.620	0.890
2022	42700	172	0	0.5	4.00%	0.620	0.890
2023	43000	174	0	0.5	4.00%	0.619	0.890
2024	43200	174	0	0.5	4.00%	0.619	0.890
2025	43500	175	175	0.5	4.00%	0.618	0.890
2026	43700	176	351	0.5	4.00%	0.618	0.890
2027	44000	177	528	0.5	4.00%	0.617	0.890
2028	44200	178	706	0.5	4.00%	0.617	0.890
2029	44500	179	885	0.5	4.00%	0.616	0.890
2030	44700	179	1064	0.5	4.00%	0.616	0.890
2031	45000	180	1244	0.5	4.00%	0.616	0.890
2032	45300	182	1426	0.5	4.00%	0.615	0.890
2033	45500	182	1608	0.5	4.00%	0.615	0.890
2034	45800	183	1791	0.5	4.00%	0.614	0.890
2035	46000	184	1975	0.5	4.00%	0.614	0.890
2036	46300	185	2160	0.5	4.00%	0.613	0.890
2037	46500	186	2346	0.5	4.00%	0.613	0.890
2038	46800	187	2533	0.5	4.00%	0.612	0.890
2039	47000	187	2720	0.5	4.00%	0.612	0.890
2040	47300	188	2908	0.5	4.00%	0.611	0.890
2041	47500	189	3097	0.5	4.00%	0.611	0.890
2042	47800	190	3287	0.5	4.00%	0.611	0.890
2043	48000	191	3478	0.5	4.00%	0.610	0.890
2044	48300	192	3670	0.5	4.00%	0.610	0.890
2045	48600	193	3863	0.5	4.00%	0.609	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 1800

Opening to Design Year ESAL Accumulation (1000s): 3688

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE...

3/9/2021 | 8:10 PM EST

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4...

3/16/2021 | 10:27 AM EDT

Signature | Date

County: 03
Station: 0014
Description: SR 90/US 41, NORTHWEST OF SR 951 CC571
Start Date: 07/22/2020
Start Time: 0000

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	9	21	7	5	42	15	16	10	10	51	93
0100	6	6	12	8	32	8	10	7	6	31	63
0200	6	12	8	12	38	7	4	7	7	25	63
0300	2	7	8	12	29	5	8	6	5	24	53
0400	10	8	16	24	58	8	11	11	29	59	117
0500	21	34	49	54	158	24	25	50	58	157	315
0600	66	79	135	185	465	74	99	136	134	443	908
0700	142	178	206	221	747	166	191	187	200	744	1491
0800	185	180	205	220	790	178	197	189	190	754	1544
0900	183	184	186	193	746	173	207	204	224	808	1554
1000	184	197	248	235	864	214	203	233	271	921	1785
1100	244	245	261	271	1021	230	219	262	257	968	1989
1200	226	285	246	244	1001	266	275	271	294	1106	2107
1300	228	272	280	269	1049	242	289	251	239	1021	2070
1400	227	249	259	259	994	260	263	231	269	1023	2017
1500	266	253	268	312	1099	255	242	270	265	1032	2131
1600	292	292	265	260	1109	271	266	248	264	1049	2158
1700	279	256	238	236	1009	281	238	236	199	954	1963
1800	221	171	174	182	748	190	182	152	158	682	1430
1900	143	155	173	112	583	160	144	128	118	550	1133
2000	91	123	102	78	394	109	93	101	84	387	781
2100	72	89	77	58	296	82	64	65	51	262	558
2200	55	59	35	42	191	67	63	59	39	228	419
2300	30	32	30	12	104	35	42	28	18	123	227
24-Hour Totals:					13567					13402	26969

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	792	845	774	745	1555
P.M.	1530	1164	1200	1106	1530	2236
Daily	1530	1164	1200	1106	1530	2236

Truck Percentage 5.14 5.02 5.08

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	20	9579	3271	9	320	93	23	213	34	3	0	0	2	0	0	697	13567
W	24	9653	3052	9	320	114	9	186	27	5	0	0	3	0	0	673	13402

Generated by SPS 5.0.49P

County: 03
Station: 0014
Description: SR 90/US 41, NORTHWEST OF SR 951 CC571
Start Date: 02/26/2019
Start Time: 0000

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	25	18	18	14	75	26	19	18	16	79	154
0100	8	8	6	8	30	8	4	9	8	29	59
0200	3	11	8	8	30	8	8	6	8	30	60
0300	10	7	20	9	46	5	6	16	10	37	83
0400	12	16	17	38	83	7	13	21	18	59	142
0500	36	35	52	73	196	30	41	64	62	197	393
0600	66	101	143	199	509	77	105	198	266	646	1155
0700	231	292	296	270	1089	256	275	311	301	1143	2232
0800	261	264	301	308	1134	289	337	317	330	1273	2407
0900	278	254	289	308	1129	332	317	358	382	1389	2518
1000	320	277	307	318	1222	371	358	435	406	1570	2792
1100	364	352	346	402	1464	397	416	420	424	1657	3121
1200	359	382	390	370	1501	399	461	454	439	1753	3254
1300	376	377	398	349	1500	424	400	426	352	1602	3102
1400	413	425	439	421	1698	407	384	389	408	1588	3286
1500	389	438	424	421	1672	408	415	451	406	1680	3352
1600	420	466	432	430	1748	416	436	405	388	1645	3393
1700	403	376	272	415	1466	389	458	401	383	1631	3097
1800	392	295	268	315	1270	344	322	253	289	1208	2478
1900	246	244	185	217	892	249	227	210	177	863	1755
2000	199	207	177	220	803	162	159	134	139	594	1397
2100	145	157	178	131	611	138	104	101	82	425	1036
2200	125	88	95	78	386	96	119	78	67	360	746
2300	47	32	38	22	139	58	56	19	32	165	304
24-Hour Totals:					20693					21623	42316

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	815	1151	845	1337	815	2467
P.M.	1600	1748	1215	1778	1530	3440
Daily	1600	1748	1215	1778	1530	3440

Truck Percentage 3.32 2.95 3.13

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	48	16301	3658	39	365	60	8	178	26	4	1	0	5	0	0	686	20693
W	65	16832	4088	37	367	53	3	148	20	5	2	0	3	0	0	638	21623

Generated by SPS 5.0.48P

County: 03
Station: 0014
Description: SR 90/US 41, NORTHWEST OF SR 951 CC571
Start Date: 03/07/2018
Start Time: 0000

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	18	9	10	14	51	25	28	23	12	88	139
0100	10	8	10	5	33	24	10	22	11	67	100
0200	12	4	7	7	30	10	5	9	6	30	60
0300	10	13	16	5	44	11	10	11	4	36	80
0400	12	14	18	25	69	10	9	17	19	55	124
0500	31	45	59	63	198	31	44	51	72	198	396
0600	89	112	160	182	543	68	122	212	244	646	1189
0700	250	241	266	253	1010	230	240	283	285	1038	2048
0800	271	261	301	262	1095	271	303	301	291	1166	2261
0900	266	248	303	268	1085	260	308	336	339	1243	2328
1000	278	314	313	309	1214	371	333	336	362	1402	2616
1100	308	328	335	352	1323	406	385	386	402	1579	2902
1200	335	337	349	343	1364	369	403	396	384	1552	2916
1300	339	340	326	367	1372	425	386	378	428	1617	2989
1400	381	389	398	416	1584	404	394	357	362	1517	3101
1500	362	392	397	406	1557	354	376	406	427	1563	3120
1600	415	446	460	427	1748	413	432	406	360	1611	3359
1700	437	394	368	393	1592	412	376	405	375	1568	3160
1800	310	304	339	257	1210	343	284	295	250	1172	2382
1900	261	244	256	218	979	226	209	188	184	807	1786
2000	217	198	204	166	785	173	166	133	139	611	1396
2100	173	137	135	108	553	111	121	114	92	438	991
2200	91	112	78	58	339	86	103	85	61	335	674
2300	48	40	33	24	145	59	42	37	24	162	307
24-Hour Totals:					19923					20501	40424

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	800	1095	845	1195	845	2274
P.M.	1615	1770	1530	1678	1545	3405
Daily	1615	1770	1530	1678	1545	3405

Truck Percentage 4.22 3.56 3.88

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	61	14529	4492	39	524	44	5	196	25	3	0	0	5	0	0	841	19923
W	53	15307	4412	34	496	33	1	132	27	1	1	0	4	0	0	729	20501

Generated by SPS 5.0.48P

County: 03
Station: 0015
Description: SR 90/US 41 SE OF CR 864/RATTLESNAKE HAMMOCK CC572
Start Date: 07/01/2020
Start Time: 0000

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	34	16	16	14	80	23	13	17	8	61	141
0100	10	10	15	10	45	14	9	13	8	44	89
0200	9	6	8	11	34	8	7	4	11	30	64
0300	7	6	5	7	25	2	9	13	11	35	60
0400	7	10	13	13	43	14	17	31	40	102	145
0500	17	23	31	41	112	35	52	85	123	295	407
0600	44	74	134	146	398	121	190	275	255	841	1239
0700	173	185	227	197	782	248	308	339	314	1209	1991
0800	193	209	224	220	846	288	297	288	292	1165	2011
0900	262	243	236	282	1023	261	279	325	258	1123	2146
1000	207	256	265	278	1006	300	296	328	319	1243	2249
1100	269	298	311	318	1196	311	288	291	321	1211	2407
1200	318	311	287	307	1223	316	336	319	336	1307	2530
1300	282	331	283	365	1261	339	338	291	333	1301	2562
1400	331	337	329	339	1336	346	352	313	299	1310	2646
1500	338	317	376	393	1424	339	310	305	324	1278	2702
1600	398	388	383	353	1522	283	318	319	264	1184	2706
1700	368	358	377	316	1419	276	312	273	254	1115	2534
1800	304	286	254	232	1076	272	231	227	173	903	1979
1900	194	229	185	182	790	200	182	187	148	717	1507
2000	186	162	176	167	691	149	135	127	86	497	1188
2100	171	147	94	99	511	109	76	80	71	336	847
2200	107	90	80	70	347	55	62	46	50	213	560
2300	50	46	54	38	188	34	43	25	21	123	311
24-Hour Totals:					17378					17643	35021

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	845	961	715	1249	845	2118
P.M.	1545	1562	1345	1344	1545	2806
Daily	1545	1562	1345	1344	1545	2806

Truck Percentage 4.37 4.39 4.38

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	67	12573	3979	10	430	61	11	213	25	6	0	0	3	0	0	759	17378
W	58	12751	4060	12	432	86	5	207	24	6	0	0	2	0	0	774	17643

Generated by SPS 5.0.49P

County: 03
Station: 0015
Description: SR 90/US 41 SE OF CR 864/RATTLESNAKE HAMMOCK CC572
Start Date: 01/16/2019
Start Time: 0600

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	29	17	24	24	94	25	17	8	13	63	157
0100	18	15	12	8	53	7	8	7	3	25	78
0200	6	15	6	8	35	8	4	9	10	31	66
0300	7	12	6	8	33	7	7	23	21	58	91
0400	7	17	17	15	56	19	17	50	33	119	175
0500	17	28	29	58	132	36	64	82	134	316	448
0600	69	92	148	187	496	145	220	293	326	984	1480
0700	169	235	216	236	856	356	384	463	442	1645	2501
0800	251	270	253	274	1048	381	417	421	373	1592	2640
0900	288	282	276	273	1119	352	383	440	390	1565	2684
1000	281	327	328	357	1293	372	410	418	438	1638	2931
1100	363	378	376	366	1483	410	413	431	479	1733	3216
1200	429	411	443	436	1719	457	427	480	446	1810	3529
1300	442	458	423	431	1754	432	489	444	430	1795	3549
1400	424	486	522	470	1902	429	473	459	415	1776	3678
1500	507	514	499	556	2076	456	379	439	429	1703	3779
1600	525	535	510	619	2189	395	421	424	408	1648	3837
1700	540	519	547	460	2066	418	400	402	359	1579	3645
1800	430	419	343	332	1524	347	342	300	279	1268	2792
1900	330	315	276	242	1163	277	200	165	151	793	1956
2000	274	245	230	251	1000	140	117	100	93	450	1450
2100	174	215	220	185	794	87	95	85	72	339	1133
2200	147	165	99	70	481	83	56	59	55	253	734
2300	82	87	53	41	263	55	41	28	16	140	403
24-Hour Totals:					23629					23323	46952

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	845	1120	730	1703	730	2676
P.M.	1645	2225	1230	1847	1615	3875
Daily	1645	2225	1230	1847	1615	3875

Truck Percentage 2.92 3.10 3.01

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	68	18539	4332	23	394	59	5	176	17	9	0	0	7	0	0	690	23629
W	66	18215	4318	21	418	64	5	190	23	2	0	0	1	0	0	724	23323

Generated by SPS 5.0.48P

County: 03
Station: 0015
Description: SR 90/US 41 SE OF CR 864/RATTLESNAKE HAMMOCK CC572
Start Date: 06/05/2018
Start Time: 0000

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	32	24	20	24	100	31	12	13	9	65	165
0100	19	13	20	13	65	11	11	7	7	36	101
0200	9	4	9	6	28	6	6	5	10	27	55
0300	13	7	11	8	39	8	10	14	17	49	88
0400	3	12	18	21	54	11	21	37	36	105	159
0500	23	33	40	34	130	46	51	88	114	299	429
0600	44	76	124	146	390	134	193	290	251	868	1258
0700	163	165	220	194	742	279	334	372	373	1358	2100
0800	196	177	211	230	814	328	341	339	284	1292	2106
0900	230	205	230	231	896	297	296	345	273	1211	2107
1000	225	200	248	234	907	300	306	292	320	1218	2125
1100	252	257	303	266	1078	279	287	365	287	1218	2296
1200	261	321	296	337	1215	350	289	315	325	1279	2494
1300	303	299	307	297	1206	275	327	338	319	1259	2465
1400	324	312	314	349	1299	315	306	306	278	1205	2504
1500	343	358	353	398	1452	320	307	315	314	1256	2708
1600	378	387	444	387	1596	292	278	326	305	1201	2797
1700	371	436	432	311	1550	277	253	276	290	1096	2646
1800	328	283	248	235	1094	263	264	249	194	970	2064
1900	235	201	212	196	844	214	198	172	174	758	1602
2000	221	213	191	223	848	162	148	117	130	557	1405
2100	221	165	165	160	711	127	111	100	93	431	1142
2200	127	101	87	76	391	70	71	55	47	243	634
2300	65	65	45	24	199	37	44	31	30	142	341
24-Hour Totals:					17648					18143	35791

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	845	895	730	1414	730	2201
P.M.	1630	1638	1315	1299	1545	2817
Daily	1630	1638	730	1414	1545	2817

Truck Percentage 3.84 4.06 3.95

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	74	13296	3601	11	393	51	7	167	47	1	0	0	0	0	0	677	17648
W	73	13636	3697	17	430	59	1	190	36	3	0	0	1	0	0	737	18143

Generated by SPS 5.0.48P

Collier County Peak Season Factor

2022 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
CATEGORY: 0300 COLLIER COUNTYWIDE

MOCF: 0.90

WEEK	DATES	SF	PSCF
1	01/01/2022 - 01/01/2022	0.97	1.08
2	01/02/2022 - 01/08/2022	0.97	1.08
3	01/09/2022 - 01/15/2022	0.98	1.09
4	01/16/2022 - 01/22/2022	0.96	1.07
* 5	01/23/2022 - 01/29/2022	0.94	1.04
* 6	01/30/2022 - 02/05/2022	0.92	1.02
* 7	02/06/2022 - 02/12/2022	0.90	1.00
* 8	02/13/2022 - 02/19/2022	0.88	0.98
* 9	02/20/2022 - 02/26/2022	0.87	0.97
*10	02/27/2022 - 03/05/2022	0.87	0.97
*11	03/06/2022 - 03/12/2022	0.87	0.97
*12	03/13/2022 - 03/19/2022	0.87	0.97
*13	03/20/2022 - 03/26/2022	0.89	0.99
*14	03/27/2022 - 04/02/2022	0.91	1.01
*15	04/03/2022 - 04/09/2022	0.92	1.02
*16	04/10/2022 - 04/16/2022	0.94	1.04
*17	04/17/2022 - 04/23/2022	0.96	1.07
18	04/24/2022 - 04/30/2022	0.98	1.09
19	05/01/2022 - 05/07/2022	1.00	1.11
20	05/08/2022 - 05/14/2022	1.02	1.13
21	05/15/2022 - 05/21/2022	1.04	1.16
22	05/22/2022 - 05/28/2022	1.05	1.17
23	05/29/2022 - 06/04/2022	1.07	1.19
24	06/05/2022 - 06/11/2022	1.08	1.20
25	06/12/2022 - 06/18/2022	1.10	1.22
26	06/19/2022 - 06/25/2022	1.08	1.20
27	06/26/2022 - 07/02/2022	1.07	1.19
28	07/03/2022 - 07/09/2022	1.05	1.17
29	07/10/2022 - 07/16/2022	1.04	1.16
30	07/17/2022 - 07/23/2022	1.04	1.16
31	07/24/2022 - 07/30/2022	1.04	1.16
32	07/31/2022 - 08/06/2022	1.04	1.16
33	08/07/2022 - 08/13/2022	1.04	1.16
34	08/14/2022 - 08/20/2022	1.04	1.16
35	08/21/2022 - 08/27/2022	1.06	1.18
36	08/28/2022 - 09/03/2022	1.08	1.20
37	09/04/2022 - 09/10/2022	1.10	1.22
38	09/11/2022 - 09/17/2022	1.12	1.24
39	09/18/2022 - 09/24/2022	1.11	1.23
40	09/25/2022 - 10/01/2022	1.10	1.22
41	10/02/2022 - 10/08/2022	1.09	1.21
42	10/09/2022 - 10/15/2022	1.08	1.20
43	10/16/2022 - 10/22/2022	1.06	1.18
44	10/23/2022 - 10/29/2022	1.05	1.17
45	10/30/2022 - 11/05/2022	1.03	1.14
46	11/06/2022 - 11/12/2022	1.01	1.12
47	11/13/2022 - 11/19/2022	1.00	1.11
48	11/20/2022 - 11/26/2022	0.99	1.10
49	11/27/2022 - 12/03/2022	0.98	1.09
50	12/04/2022 - 12/10/2022	0.97	1.08
51	12/11/2022 - 12/17/2022	0.97	1.08
52	12/18/2022 - 12/24/2022	0.97	1.08
53	12/25/2022 - 12/31/2022	0.98	1.09

* PEAK SEASON

Traffic Growth Analysis

FPID Project ID Number:	448930-1-32-01
Federal Aid Project Number:	N/A
County:	Collier
Designer:	Christopher Karmeris, PE
Location:	SR 90 (US 41)
Count Site:	30015
Direction of Travel:	Westbound

ESAL Report Date: March 9. 2021

	Existing	Design
Year	2019	2045
AADT	42000	48600

Linear Rate: 254.00 Vehicles per day per year

0.6048% Percent of Start Value

PTMS AADT	Esal AADT						
39596	43000	43200	43500	43700	44000	44200	
			Begin Construction				Assumed End of Construction
Time	2022	Distribution of AADT	2023	2024	2025	2026	2027	2028
0000	84	0.21%	92	92	93	93	94	94
0100	42	0.11%	46	46	47	47	47	47
0200	32	0.08%	35	35	36	36	36	36
0300	27	0.07%	30	30	30	30	31	31
0400	52	0.13%	57	57	58	58	58	59
0500	136	0.34%	148	149	150	151	152	152
0600	521	1.32%	566	569	573	575	579	582
0700	937	2.37%	1018	1023	1030	1035	1042	1046
0800	1051	2.65%	1142	1147	1155	1160	1168	1174
0900	1089	2.75%	1183	1189	1197	1202	1211	1216
1000	1148	2.90%	1247	1253	1262	1267	1276	1282
1100	1292	3.26%	1404	1410	1420	1426	1436	1443
1200	1311	3.31%	1424	1431	1441	1447	1457	1464
1300	1287	3.25%	1398	1405	1414	1421	1431	1437
1400	1479	3.74%	1607	1614	1625	1633	1644	1651
1500	1598	4.04%	1736	1744	1756	1764	1776	1784
1600	1703	4.30%	1850	1859	1871	1880	1893	1902
1700	1691	4.27%	1837	1845	1858	1867	1880	1888
1800	1205	3.04%	1309	1315	1324	1330	1340	1346
1900	994	2.51%	1080	1085	1093	1098	1105	1110
2000	909	2.30%	988	992	999	1004	1011	1015
2100	571	1.44%	621	623	628	631	635	638
2200	381	0.96%	414	416	419	421	424	426
2300	178	0.45%	194	195	196	197	198	199
Total	19718	0.497979594	21426	21524	21675	21773	21924	22022

FPID Project ID Number:	448930-1-32-01
Federal Aid Project Number:	N/A
County:	Collier
Designer:	Christopher Karmeris, PE
Location:	SR 90 (US 41)
Count Site:	30015
Direction of Travel:	Westbound

ESAL Report Date: March 9. 2021

	Existing	Design
Year	2019	2045
AADT	42000	48600

Linear Rate 254.00 Vehicles per day per year
0.6048% Percent of Start Value

PTMS AADT	Esal AADT					
39596	43000	43200	43500	43700	44000	44200

					Begin Construction			Assumed End of Construction
Time	2022	Distribution of AADT	2023	2024	2025	2026	2027	2028
0000	50	0.13%	55	55	55	56	56	56
0100	37	0.09%	41	41	41	41	42	42
0200	25	0.06%	28	28	28	28	28	28
0300	39	0.10%	43	43	43	44	44	44
0400	100	0.25%	109	110	110	111	112	112
0500	305	0.77%	332	333	336	337	339	341
0600	1048	2.65%	1139	1144	1152	1157	1165	1170
0700	1620	4.09%	1760	1768	1780	1788	1801	1809
0800	1429	3.61%	1552	1560	1570	1578	1588	1596
0900	1306	3.30%	1419	1425	1435	1442	1452	1458
1000	1326	3.35%	1440	1447	1457	1464	1474	1481
1100	1287	3.25%	1398	1405	1414	1421	1431	1437
1200	1370	3.46%	1488	1495	1506	1512	1523	1530
1300	1418	3.58%	1540	1548	1558	1565	1576	1583
1400	1463	3.69%	1589	1597	1608	1615	1626	1634
1500	1370	3.46%	1488	1495	1506	1512	1523	1530
1600	1369	3.46%	1487	1494	1504	1511	1522	1529
1700	1271	3.21%	1381	1387	1397	1403	1413	1419
1800	1057	2.67%	1148	1154	1162	1167	1175	1180
1900	707	1.79%	768	772	777	781	786	790
2000	553	1.40%	601	604	608	611	615	618
2100	370	0.93%	402	404	407	409	412	414
2200	231	0.58%	251	253	254	255	257	258
2300	127	0.32%	138	139	140	141	142	142
Total	19878	50.20%	21597	21701	21848	21949	22102	22201

Lane Closure Analyses

LANE CLOSURE WORKSHEET

DATE: **October 26, 2023**

FINANCIAL PROJECT ID: ***448930-1-32-01*** FEDERAL AID PROJECT NO: ***N/A***

COUNTY: ***Collier*** DESIGNER: ***Christopher Karmeris, PE***

NO. OF EXISTING LANES: ***6*** LOCATION: ***SR 90 (US 41)***

SCOPE OF WORK: ***Resurfacing - From N of Thomasson Drive to S of Southwest Blvd - EB Direction - Single Lane*** US 41 NB DIRECTION OF TRAVEL (PTMS 030015 CATEGORIZED EB COLLECTION)

Calculate the peak hour traffic volume (V):

V = ATC ***22022*** X P/D ***0.086*** X D ***1.00*** X PSCF ***1.16*** X RTF ***1.00*** = ***2206***

LANE CLOSURE CAPACITY TABLE

Capacity (C) of an Existing 2-Lane – Converted to 2-Way, 1-Lane = 1400 VPH
Capacity (C) of an Existing 4-Lane – Converted to 1-Way, 1-Lane = 1800 VPH
Capacity (C) of an Existing 6-Lane – Converted to 1-Way, 2-Lane = 3600 VPH
Capacity (C) of an Existing 8-Lane – Converted to 1-Way, 3-Lane = 5400 VPH
User Defined Capacity (C) of Existing 2-Lane - Converted to 2-Way, 1-Lane =
User Defined Capacity (C) of an Existing Multi-Lane - Converted to 1-Way, 2-Lane =

Factors restricting Capacity:

TLW ***11*** LC ***2*** WZL ***0*** G/C ***0.6***

Calculate the Restricted Capacity (RC) at the Lane Closure Site by multiplying the appropriate 2L, 4L, or 6L Capacity (C) from the Table above by the Obstruction Factor (OF) and the Work Zone Factor (WZF). If the Lane Closure is through or within 600 ft. of a signalized intersection, multiply the RC by the G/C Ratio.

RC (Open Road) = C ***3600*** X OF ***0.9*** X WZF ***1.00*** = ***3240***

RC (Signalized) = RC (Open Road) ***3240*** X G/C ***0.6*** = ***1944***

If V ≤ RC, there is no restriction on Lane Closure
If V > RC, calculate the hourly percentage of ADT at which Lane Closure will be permitted

$$\text{Open Road } \% = \frac{\text{RC (Open Road) } 3240}{(\text{ATC } 22022 \times \text{D } 1 \times \text{PSCF } 1.16 \times \text{RTF } 1)} = 12.68\ \%$$

Signalized % = Open Road % ***12.68*** X G/C ***0.60*** = ***7.61 %***

Plot 24 hour traffic to determine when Lane Closure permitted.

NOTE: For Existing 2-Lane Roadways, D = 1.00.
Work Zone Factor (WZF) applies only to 2-Lane Roadways.

For RTF< 1.00, briefly describe alternate route:

LANE CLOSURES

24 HOUR COUNTS

	AM Hourly Volume	ATC %	PM Hourly Volume	ATC %
12 - 1	94	0.4	1464	6.6
1 - 2	47	0.2	1437	6.5
2 - 3	36	0.2	1651	7.5
3 - 4	31	0.1	1784	8.1
4 - 5	59	0.3	1902	8.6
5 - 6	152	0.7	1888	8.6
6 - 7	582	2.6	1346	6.1
7 - 8	1046	4.7	1110	5.0
8 - 9	1174	5.3	1015	4.6
9 - 10	1216	5.5	638	2.9
10 - 11	1282	5.8	426	1.9
11 - 12	1443	6.6	199	0.9
			TOTAL 22,022	100

P/D = 0.086

COUNT DATE:

Projected Volumes for 2028

Designer:

Christopher Karmeris, PE

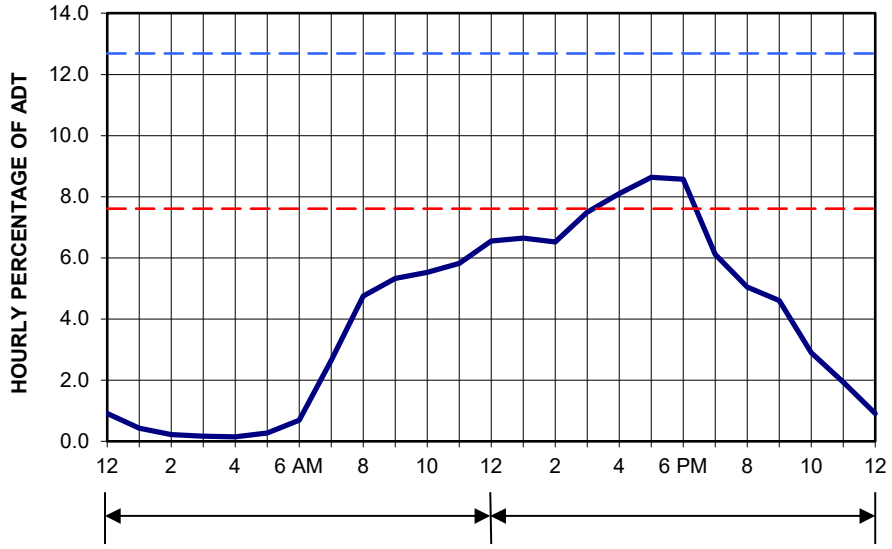
Financial Project ID No.:

448930-1-32-01

Location:

SR 90 (US 41)

HOURLY VARIATION OF DAILY TRAFFIC



- CONCLUSION -

ROUND TO THE NEAREST 1/2 HOUR CONSERVATIVELY

OPEN ROAD LANE CLOSURE

12:00 AM to 11:59 PM

SIGNALIZED LANE CLOSURE

7:00 PM to 2:30 PM

LANE CLOSURE WORKSHEET

DATE: **October 26, 2023**

FINANCIAL PROJECT ID: ***448930-1-32-01*** FEDERAL AID PROJECT NO: ***N/A***

COUNTY: ***Collier*** DESIGNER: ***Christopher Karmeris, PE***

NO. OF EXISTING LANES: ***6*** LOCATION: ***SR 90 (US 41)***

SCOPE OF WORK: ***Resurfacing - From N of Thomasson Drive to S of Southwest Blvd - WB Direction - Single Lane Closure*** US 41 SB DIRECTION OF TRAVEL (PTMS 030015 CATEGORIZED WB COLLECTION)

Calculate the peak hour traffic volume (V):

V = ATC ***22201*** X P/D ***0.081*** X D ***1.00*** X PSCF ***1.16*** X RTF ***1.00*** = ***2098***

LANE CLOSURE CAPACITY TABLE

Capacity (C) of an Existing 2-Lane – Converted to 2-Way, 1-Lane = 1400 VPH
Capacity (C) of an Existing 4-Lane – Converted to 1-Way, 1-Lane = 1800 VPH
Capacity (C) of an Existing 6-Lane – Converted to 1-Way, 2-Lane = 3600 VPH
Capacity (C) of an Existing 8-Lane – Converted to 1-Way, 3-Lane = 5400 VPH
User Defined Capacity (C) of Existing 2-Lane - Converted to 2-Way, 1-Lane =
User Defined Capacity (C) of an Existing Multi-Lane - Converted to 1-Way, 2-Lane =

Factors restricting Capacity:

TLW ***11*** LC ***2*** WZL ***0*** G/C ***0.6***

Calculate the Restricted Capacity (RC) at the Lane Closure Site by multiplying the appropriate 2L, 4L, or 6L Capacity (C) from the Table above by the Obstruction Factor (OF) and the Work Zone Factor (WZF). If the Lane Closure is through or within 600 ft. of a signalized intersection, multiply the RC by the G/C Ratio.

RC (Open Road) = C ***3600*** X OF ***0.9*** X WZF ***1.00*** = ***3240***

RC (Signalized) = RC (Open Road) ***3240*** X G/C ***0.6*** = ***1944***

If V ≤ RC, there is no restriction on Lane Closure
If V > RC, calculate the hourly percentage of ADT at which Lane Closure will be permitted

$$\text{Open Road } \% = \frac{\text{RC (Open Road) } 3240}{(\text{ATC } 22201 \times \text{D } 1 \times \text{PSCF } 1.16 \times \text{RTF } 1)} = 12.58\ \%$$

Signalized % = Open Road % ***12.58*** X G/C ***0.60*** = ***7.55 %***

Plot 24 hour traffic to determine when Lane Closure permitted.

NOTE: For Existing 2-Lane Roadways, D = 1.00.
Work Zone Factor (WZF) applies only to 2-Lane Roadways.

For RTF< 1.00, briefly describe alternate route:

LANE CLOSURES

24 HOUR COUNTS

	AM Hourly Volume	ATC %	PM Hourly Volume	ATC %
12 - 1	56	0.3	1530	6.9
1 - 2	42	0.2	1583	7.1
2 - 3	28	0.1	1634	7.4
3 - 4	44	0.2	1530	6.9
4 - 5	112	0.5	1529	6.9
5 - 6	341	1.5	1419	6.4
6 - 7	1170	5.3	1180	5.3
7 - 8	1809	8.1	790	3.6
8 - 9	1596	7.2	618	2.8
9 - 10	1458	6.6	414	1.9
10 - 11	1481	6.7	258	1.2
11 - 12	1437	6.5	142	0.6
			TOTAL 22,201	100

P/D = 0.081

COUNT DATE:

Projected Volumes for 2028

Designer:

Christopher Karmeris, PE

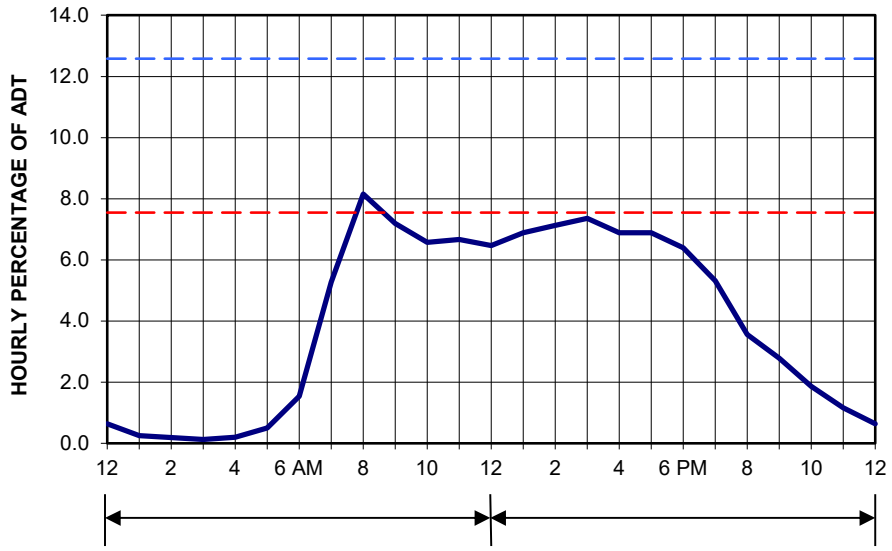
Financial Project ID No.:

448930-1-32-01

Location:

SR 90 (US 41)

HOURLY VARIATION OF DAILY TRAFFIC



- CONCLUSION -

ROUND TO THE NEAREST 1/2 HOUR CONSERVATIVELY

OPEN ROAD LANE CLOSURE

12:00 AM to 11:59 PM

SIGNALIZED LANE CLOSURE

9:00 AM to 7:30 AM

LANE CLOSURE WORKSHEET

DATE: **October 26, 2023**

FINANCIAL PROJECT ID: ***448930-1-32-01*** FEDERAL AID PROJECT NO: ***N/A***

COUNTY: ***Collier*** DESIGNER: ***Christopher Karmeris, PE***

NO. OF EXISTING LANES: ***6*** LOCATION: ***SR 90 (US 41)***

SCOPE OF WORK: ***Resurfacing - From N of Thomasson Drive to S of Southwest Blvd - EB Direction - Dual Lane*** US 41 NB DIRECTION OF TRAVEL (PTMS 030015 CATEGORIZED EB COLLECTION)

Calculate the peak hour traffic volume (V):

V = ATC ***22022*** X P/D ***0.086*** X D ***1.00*** X PSCF ***1.16*** X RTF ***1.00*** = ***2206***

LANE CLOSURE CAPACITY TABLE

Capacity (C) of an Existing 2-Lane – Converted to 2-Way, 1-Lane = 1400 VPH
Capacity (C) of an Existing 4-Lane – Converted to 1-Way, 1-Lane = 1800 VPH
Capacity (C) of an Existing 6-Lane – Converted to 1-Way, 2-Lane = 3600 VPH
Capacity (C) of an Existing 8-Lane – Converted to 1-Way, 3-Lane = 5400 VPH
User Defined Capacity (C) of Existing 2-Lane - Converted to 2-Way, 1-Lane =
User Defined Capacity (C) of an Existing Multi-Lane - Converted to 1-Way, 2-Lane =

Factors restricting Capacity:

TLW ***11*** LC ***2*** WZL ***0*** G/C ***0.6***

Calculate the Restricted Capacity (RC) at the Lane Closure Site by multiplying the appropriate 2L, 4L, or 6L Capacity (C) from the Table above by the Obstruction Factor (OF) and the Work Zone Factor (WZF). If the Lane Closure is through or within 600 ft. of a signalized intersection, multiply the RC by the G/C Ratio.

RC (Open Road) = C ***1800*** X OF ***0.9*** X WZF ***1.00*** = ***1620***

RC (Signalized) = RC (Open Road) ***1620*** X G/C ***0.6*** = ***972***

If V ≤ RC, there is no restriction on Lane Closure
If V > RC, calculate the hourly percentage of ADT at which Lane Closure will be permitted

$$\text{Open Road } \% = \frac{\text{RC (Open Road) } 1620}{(\text{ATC } 22022 \times \text{D } 1 \times \text{PSCF } 1.16 \times \text{RTF } 1)} = 6.34\ \%$$

Signalized % = Open Road % ***6.34*** X G/C ***0.60*** = ***3.80 %***

Plot 24 hour traffic to determine when Lane Closure permitted.

NOTE: For Existing 2-Lane Roadways, D = 1.00.
Work Zone Factor (WZF) applies only to 2-Lane Roadways.

For RTF< 1.00, briefly describe alternate route:

LANE CLOSURES

24 HOUR COUNTS

	AM Hourly Volume	ATC %	PM Hourly Volume	ATC %
12 - 1	94	0.4	1464	6.6
1 - 2	47	0.2	1437	6.5
2 - 3	36	0.2	1651	7.5
3 - 4	31	0.1	1784	8.1
4 - 5	59	0.3	1902	8.6
5 - 6	152	0.7	1888	8.6
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9 - 10	1216	5.5	638	2.9
10 - 11	1282	5.8	426	1.9
11 - 12	1443	6.6	199	0.9
			TOTAL 22,022	100

P/D = 0.086

COUNT DATE:

Projected Volumes for 2028

Designer:

Christopher Karmeris, PE

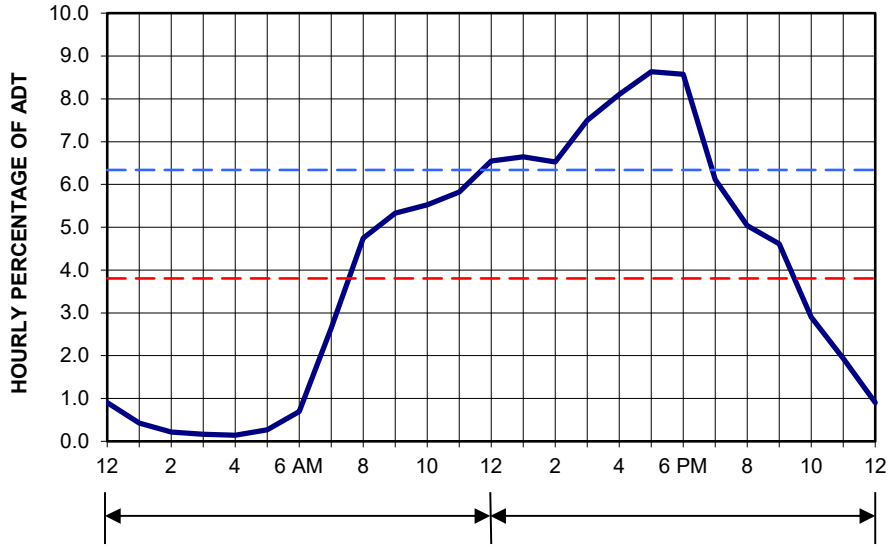
Financial Project ID No.:

448930-1-32-01

Location:

SR 90 (US 41)

HOURLY VARIATION OF DAILY TRAFFIC



- CONCLUSION -

ROUND TO THE NEAREST 1/2 HOUR CONSERVATIVELY

OPEN ROAD LANE CLOSURE

7:30 PM to 11:00 AM

SIGNALIZED LANE CLOSURE

10:00 PM to 7:00 AM

LANE CLOSURE WORKSHEET

DATE: **October 26, 2023**

FINANCIAL PROJECT ID: ***448930-1-32-01*** FEDERAL AID PROJECT NO: ***N/A***

COUNTY: ***Collier*** DESIGNER: ***Christopher Karmeris, PE***

NO. OF EXISTING LANES: ***6*** LOCATION: ***SR 90 (US 41)***

SCOPE OF WORK: ***Resurfacing - From N of Thomasson Drive to S of Southwest Blvd - WB Direction - Dual Lane Closure*** US 41 SB DIRECTION OF TRAVEL (PTMS 030015 CATEGORIZED WB COLLECTION)

Calculate the peak hour traffic volume (V):

V = ATC ***22201*** X P/D ***0.081*** X D ***1.00*** X PSCF ***1.16*** X RTF ***1.00*** = ***2098***

LANE CLOSURE CAPACITY TABLE

Capacity (C) of an Existing 2-Lane – Converted to 2-Way, 1-Lane = 1400 VPH
Capacity (C) of an Existing 4-Lane – Converted to 1-Way, 1-Lane = 1800 VPH
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Factors restricting Capacity:

TLW ***11*** LC ***2*** WZL ***0*** G/C ***0.6***

Calculate the Restricted Capacity (RC) at the Lane Closure Site by multiplying the appropriate 2L, 4L, or 6L Capacity (C) from the Table above by the Obstruction Factor (OF) and the Work Zone Factor (WZF). If the Lane Closure is through or within 600 ft. of a signalized intersection, multiply the RC by the G/C Ratio.

RC (Open Road) = C ***1800*** X OF ***0.9*** X WZF ***1.00*** = ***1620***

RC (Signalized) = RC (Open Road) ***1620*** X G/C ***0.6*** = ***972***

If V ≤ RC, there is no restriction on Lane Closure
If V > RC, calculate the hourly percentage of ADT at which Lane Closure will be permitted

$$\text{Open Road } \% = \frac{\text{RC (Open Road) } 1620}{(\text{ATC } 22201 \times \text{D } 1 \times \text{PSCF } 1.16 \times \text{RTF } 1)} = 6.29\ \%$$

Signalized % = Open Road % ***6.29*** X G/C ***0.60*** = ***3.77 %***

Plot 24 hour traffic to determine when Lane Closure permitted.

NOTE: For Existing 2-Lane Roadways, D = 1.00.
Work Zone Factor (WZF) applies only to 2-Lane Roadways.

For RTF< 1.00, briefly describe alternate route:

LANE CLOSURES

24 HOUR COUNTS

	AM Hourly Volume	ATC %	PM Hourly Volume	ATC %
12 - 1	56	0.3	1530	6.9
1 - 2	42	0.2	1583	7.1
2 - 3	28	0.1	1634	7.4
3 - 4	44	0.2	1530	6.9
4 - 5	112	0.5	1529	6.9
5 - 6	341	1.5	1419	6.4
6 - 7	1170	5.3	1180	5.3
7 - 8	1809	8.1	790	3.6
8 - 9	1596	7.2	618	2.8
9 - 10	1458	6.6	414	1.9
10 - 11	1481	6.7	258	1.2
11 - 12	1437	6.5	142	0.6
			TOTAL 22,201	100

P/D = 0.081

COUNT DATE:

Projected Volumes for 2028

Designer:

Christopher Karmeris, PE

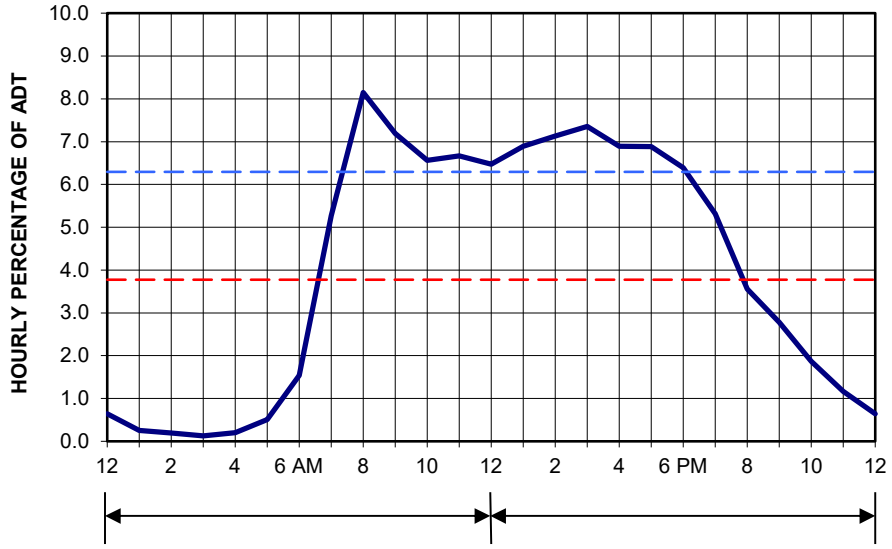
Financial Project ID No.:

448930-1-32-01

Location:

SR 90 (US 41)

HOURLY VARIATION OF DAILY TRAFFIC



- CONCLUSION -

ROUND TO THE NEAREST 1/2 HOUR CONSERVATIVELY

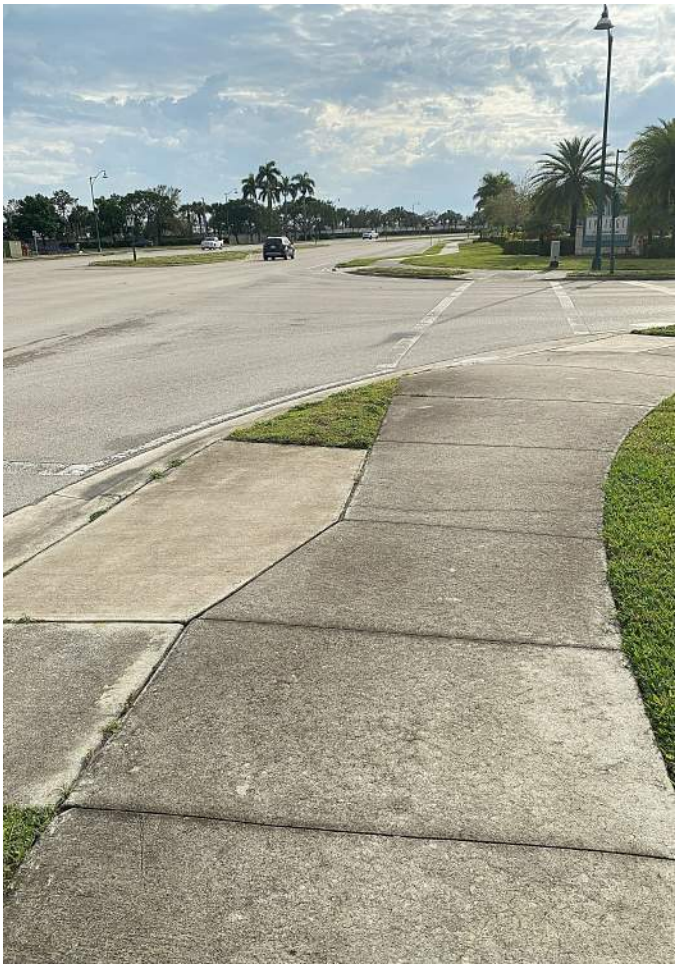
OPEN ROAD LANE CLOSURE

6:30 PM to 7:00 AM

SIGNALIZED LANE CLOSURE

8:00 PM to 6:30 AM

Pedestrian Detour Route Photographs




US


RIGHT
LANE
ONLY

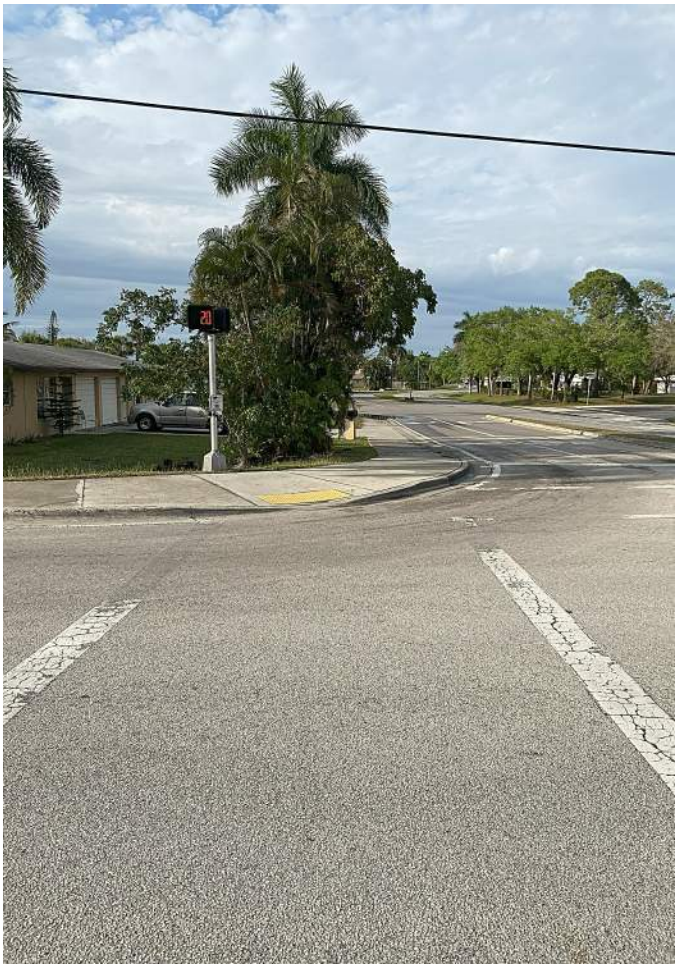

publix


EAST
864


OLLAR
ENERAL
Anthony's
Wawa


AHEAD


SPEED
LIMIT
45



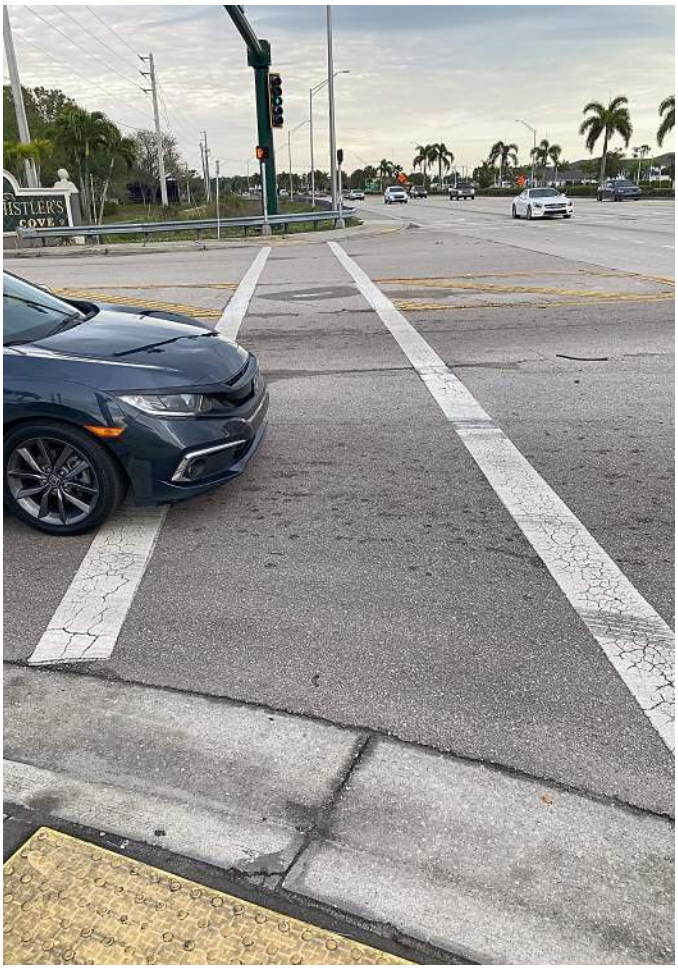

US 41
CAUTION
UNEVEN
SIDEWALK
REPAIR
SCHEDULED


ONLY


SOUTH
41


Broward


DIVIDED
HIGHWAY




IRRIGATED WITH
RECLAIMED WATER
DO NOT
DRINK
NO
BEACH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649


Night5capes
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WHISTLER'S
COVE


DRIVE
SAFELY
Mark L. Carder