Florida Department of
TRANSPORTATION

Pavement Survey and Evaluation Report

State Road 45

Collier County

Financial Project Number 441512-1

Milepost 1.175 To 5.970

District 1 & 7 Materials

Authors
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V. Seth Collie, PE

Date of Report
October 17, 2019

PAVEMENT SURVEY AND EVALUATION REPORT
SR 45 FROM SOUTH OF DUNRUSS CREEK TO SOUTH OF GULF PARK DRIVE

INTRODUCTION

In response to your request, District Materials Office conducted a pavement survey and evaluation on SR 45 in Collier County for the subject project. We understand this project involves milling and resurfacing throughout the project limits.

The objective of this work was to identify the existing pavement composition and to assess the pavement conditions, based on which to make recommendation for milling depth and resurfacing plan. This work involves a field review, pavement coring, data analysis, and reporting.

FIELD REVIEW

The objective of the field review is to gain a good understanding of the overall pavement condition, and to help determine the layout of the core locations. This review was performed on September 26, 2019 by our asphalt field specialist, Giovanni Spatazza and the results of this review are included in Appendix 1.

Typical Section

The typical section consists of a ix-lane divided asphalt pavement structure with turn lanes, curb and gutter and paved shoulders.

Pavement Condition

The pavement has a dense-graded friction course. The overall condition of this section is fair with top-down light cracking.

The 2019 pavement condition survey was performed and the results are included in the table below.

		LEFT ROADWAY			RIGHT ROADWAY		
Mile Post	Age	Crack	Ride	Rut	Crack	Ride	Rut
1.175 – 5.910	17	7	7.5	9	8.5	7.8	9
5.910 – 5.970	11	10	8.2	9	10	8.1	9

CORING INFORMATION

The pavement coring was performed on March 13, 2018 by Arehna Engineering, Inc. according to Section 3.2 of the Materials Manual- *Flexible Pavement Coring and Evaluation*.

A total of seventy-nine (79) cores were extracted, forty-four (44) from the mainline, nineteen (19) cores from the turn lanes, six (6) from the shoulder and ten (10) from side streets. Pictures of core samples and locations are illustrated in Appendix 2. The core layout and the coring data, including cross slope and the type of base materials, are presented in Appendix 3.

REHABILITATION RECOMMENDATIONS

Considering the extent and severity of the cracking, we render the following recommendation for milling and resurfacing.

MAINLINE, TURN LANES, SHOULDERS AND CROSSOVERS

- Mill 2.0 inches
- Resurface with resurface with one lift of 2.0 inches of FC 12.5 friction course.
- (Top of asphalt for crossovers must be flush with the mainline/turn lanes).

Appendix 4 provides an illustration of the milling and resurfacing recommendation.

COMMENTS AND GENERAL NOTES

In addition to the recommendations made within this report, the following items should be considered when preparing the contract documents for the subject project:

Notes to the Designer

1. Milling may need to be adjusted at the beginning and end of the project, side streets, bridge deck, approach slabs or areas in which constraints dictate. Appropriate plan details need to be illustrated in the plans in accordance with the FDOT Flexible Pavement Design Manual (FPDM).

The identification of the different pavement layers is based on visual classification as well as familiarity with the site. The actual classification may be different due to variability in asphalt mixes and roadway construction. The information in this report is based on the conditions found at the time of our investigation. The engineer shall notify us if the type of work proposed for the project changes and/or existing conditions change prior to the letting of the project. This report is based on the fact the project will be designed and constructed in accordance with the Standard Specifications, Roadway Design Standard Index, Flexible Pavement Design Manual and other available information unless stated otherwise within this report.

Please contact this office if additional service is required or if there are any questions regarding this report at D1-D7Pavement@dot.state.fl.us

Marlene Hebert

Marlene Hebert
District Materials Pavement Coordinator

V. Sea Coll

Vincent S Collie, PE 79305
District Pavement Evaluation Engineer

APPENDIX

1. Field Review Findings

2. Core Sample and Location Pictures

3. Core Data and Layout

4. Illustration of Milling and Resurfacing Recommendation

5. Asphalt Survey Request

APPENDIX 1

Field Review Findings

441512-1

Collier County

US 41 from South of Dunruss Creek to South of Gulf Park Drive

MP 1.175 – 5.970

6-lanes with outside shoulders, bike lane, turn lanes, divided median

Inspected by: Giovanni Spatazza 9/26/2019

Rdwy ID #: 03010000

Mile Post	Rdwy Side	MPH	Age (years)	Crack	Ride	Rut
1.175 – 5.910	L	50	17	7.0	7.5	9.0
1.175 – 5.910	R	50	17	8.5	7.8	9.0
5.910 – 8.223	L	45	11	10.0	8.2	9.0
5.910 – 8.223	R	45	11	10.0	8.1	9.0

Left Roadway

L-1

L-1, fair condition, light transverse and longitudinal cracking throughout

MP 1.193, transverse cracking, center of lane

MP 1.203 – MP 1.206, depression, center of lane, light raveling between inside wheel path and yellow edge line, **Pic 4-5**

MP 4.536, L-1, L-2, L-3, rutting approx. 0.125" – 0.50", bike lane has longitudinal and transverse cracking, crosswalk has rutting, **Pic 23-25**

L-1 Turn Lane

L-1 Turn lanes, fair condition

MP 2.996 – MP 3.030, L-1 outside turn lane, rutting approx. 0.125" – 0.25", at stop bar, **Pic 15-16**

MP 4.282 – MP 4.302, L-1 outside turn lane, rutting approx. 0.50", light raveling, at stop bar, **Pic 17-20**

MP 4.536, L-1 outside and inside turn lane, longitudinal and transverse cracking at stop bar

L-2

L-2, fair condition, light longitudinal cracking throughout

MP 1.190 – MP 1.193, light raveling with some delamination, **Pic 1**

MP 1.193 – MP 1.203, rutting approx. 0.125" – 0.25"

MP 2.327, bridge approach slab, transverse cracking width of all lanes and shoulder, patch with depression, inside wheel path, **Pic 10**

MP 4.942 – MP 4.971, transverse cracking, outside wheel path

L-3

L-3, fair condition, light to moderate longitudinal and transverse cracking throughout

MP 1.314 – MP 1.332, longitudinal cracking, inside wheel path, **Pic 6**

MP 1.429 – MP 1.440, light longitudinal cracking, inside wheel path

MP 1.549 – MP 1.553, light longitudinal cracking, outside wheel path

MP 1.631 – MP 1.781, longitudinal cracking, outside wheel path

MP 2.003 – MP 2.015, longitudinal cracking, outside wheel path, **Pic 9**
MP 4.780 – MP 4.915, light longitudinal cracking, inside wheel path
MP 4.942 – MP 4.971, light alligator cracking, width of lane

L-3 Turn Lane
L-3 Turn lanes, fair condition
MP 1.203 – MP 1.226, raveling, width of lane, **Pic 2-3**
MP 1.226 – MP 1.400, longitudinal cracking with widening crack, bike lane and turn lane
MP 1.553 – MP 1.693, longitudinal and transverse cracking, center of lane and inside wheel path
MP 1.766 – MP 1.770, raveling, **Pic 7**
MP 2.692 – MP 2.694, longitudinal and transverse cracking, turn lane and bike lane, **Pic 14**
MP 4.379 – MP 4.536, light longitudinal cracking, center of lane and inside wheel path turn lane and bike lane

Right Roadway

R-1
R-1, fair condition, some longitudinal cracking throughout

R-1 Turn Lane
R-1 turn lanes, fair condition
MP 4.620 – MP 4.553, R-1 outside turn and inside turn lane, longitudinal cracking, inside wheel path, rutting approx. 0.125”- 0.25”

R-2
R-2, fair condition, light to moderate longitudinal and transverse cracking throughout
MP 5.943, longitudinal and transverse cracking, center of lane
MP 5.617, transverse cracking, width of lane, **Pic 28**
MP 5.421 – MP 5.410, rutting approx. 0.125” – 0.25”, inside and outside wheel path, light longitudinal and transverse cracking**, Pic 29**

R-3
R-3, fair condition with light to moderate longitudinal and transverse cracking throughout
MP 5.898 – MP 5.746, light longitudinal cracking with some transverse cracking, width of lane, patch at MP 5.746, **Pic 27**
MP 5.6178, transverse cracking, width of lane, **Pic 28**
MP 1.693 – 1.689, R-3/R-3 Turn Lane/ Bike Lane patch, depression, storm drain located near patch, longitudinal and transverse cracking, **Pic 31**
MP 1.665 – MP 1.660, longitudinal cracking, outside wheel path

R-3 Turn Lane
MP 1.721 – 1.720, patch with depression, **Pic 30**
MP 1.718, longitudinal cracking, bike lane
MP 1.677, patch with depression, Royal Cove/R-3 Turn Lane, **Pic 32**


Picture 1
24 09 2019 13:00


Picture 2
24 09 2019 13:04


Picture 3
24 09 2019 13:04


Picture 4
24 09 2019 13:04


Picture 5
24 09 2019 13:04


Picture 6
24 09 2019 13:15


Picture 7
24 09 2019 13:27


Picture 8
24 09 2019 13:30


Picture 9
24 09 2019 13:32

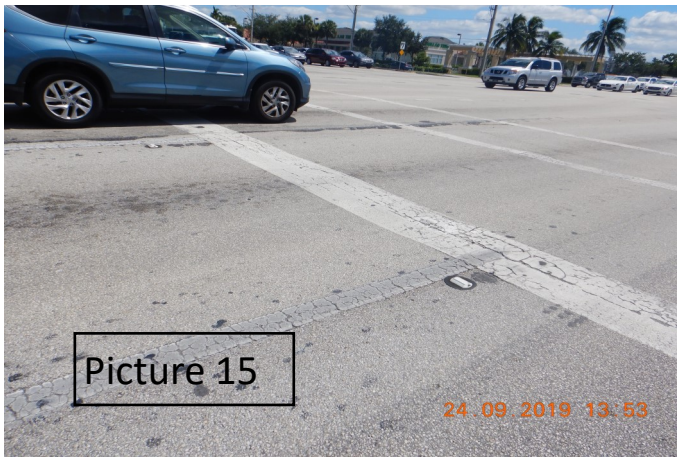

Picture 10
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Picture 11
24 09 2019 13:39


Picture 12
24 09 2019 13:43


Picture 13
24 09 2019 13:43


Picture 14
24 09 2019 13:46


Picture 15
24 09 2019 13:53


Picture 16
24 09 2019 13:53


Picture 17
24.09.2019 14:06


JOHNSON
Picture 18
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Picture 19
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Picture 20
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Picture 21
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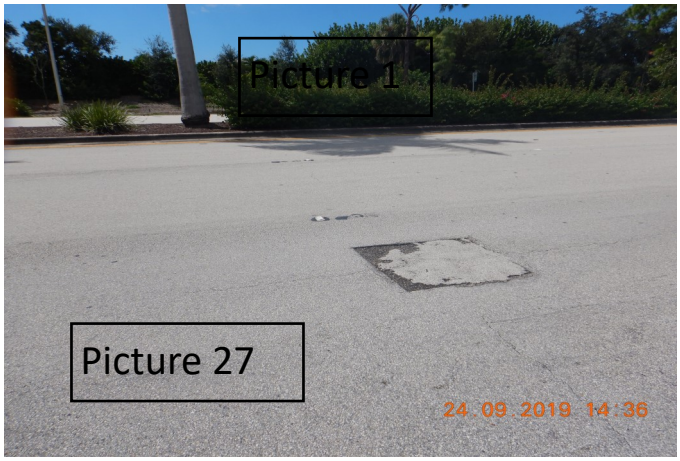

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Picture 23
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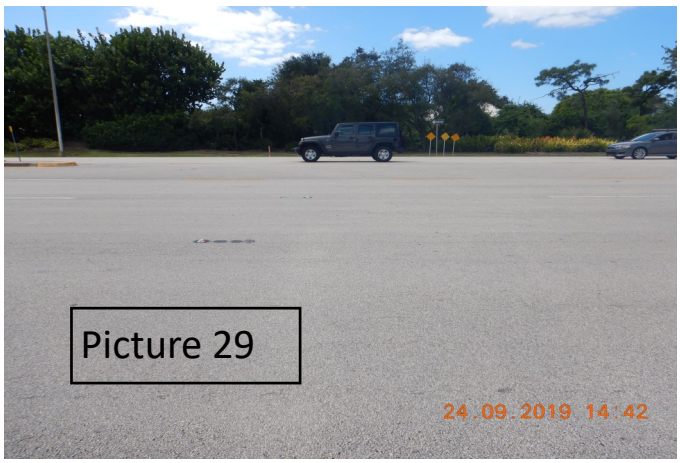

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Picture 25
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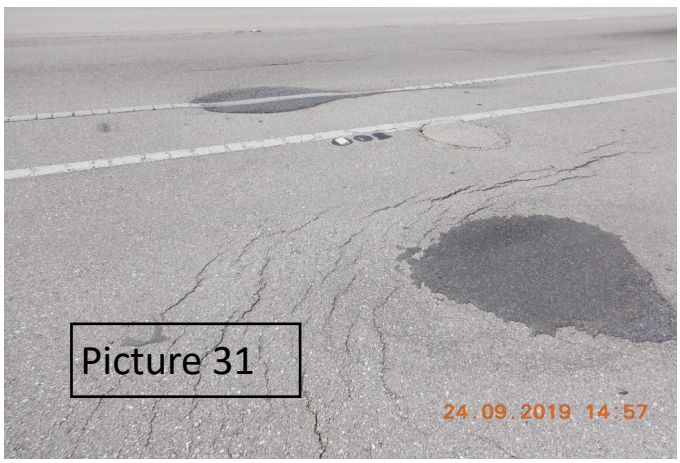

Picture 26
24.09.2019 14:23


Picture 1
Picture 27
24.09.2019 14:36


Picture 28
24.09.2019 14:38


Picture 29
24.09.2019 14:42


Picture 30
24.09.2019 14:55


Picture 31
24.09.2019 14:57


Picture 32
24.09.2019 14:58

APPENDIX 2

Core Sample and Location Pictures







AREHNA Project No.: B-18-089.05
US 41 Collier County
Date: September 29th to October 3rd, 2019

US 41 from South of Dunruss Creek to South of Gulf Park Drive
FDOT FIN.: 198296-1-32-12
FDOT Contract No.: C9S12
FIN Project No. 441512-1-52-01

AREHNA | Engineering, Inc.
5012 West Lemon Street, Tampa, FL 33609
Phone 813.944.3464 ▪ Fax 813.944.4959

Designed By: KME
Checked By: KME
Drawn By: AH







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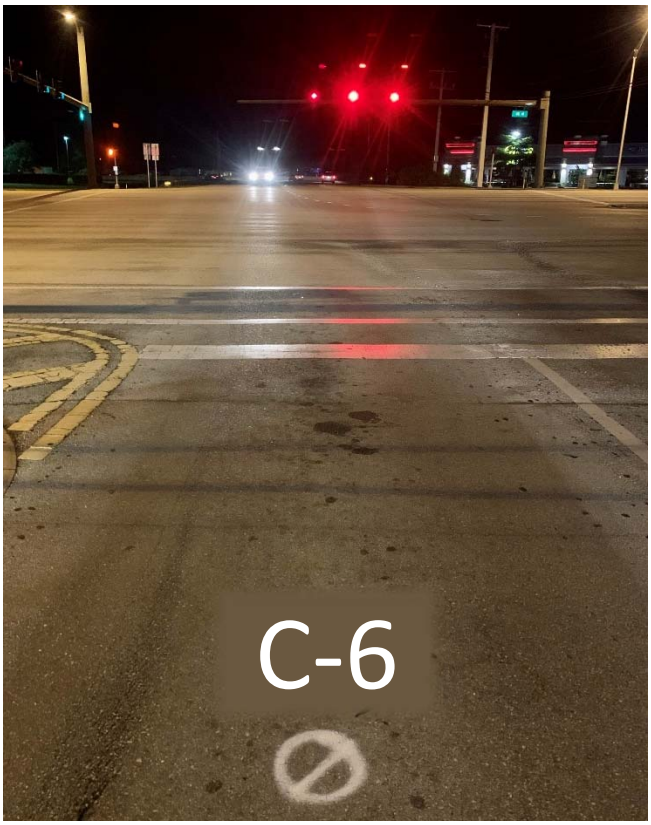






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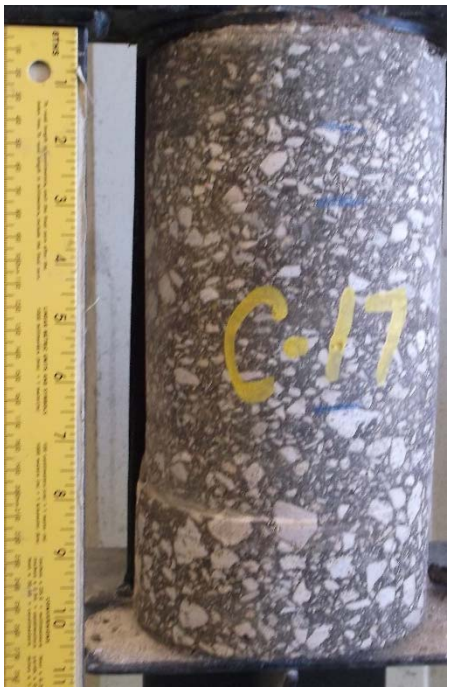
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FIN Project No. 441512-1-52-01

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Phone 813.944.3464 ▪ Fax 813.944.4959

Designed By: KME
Checked By: KME
Drawn By: AH







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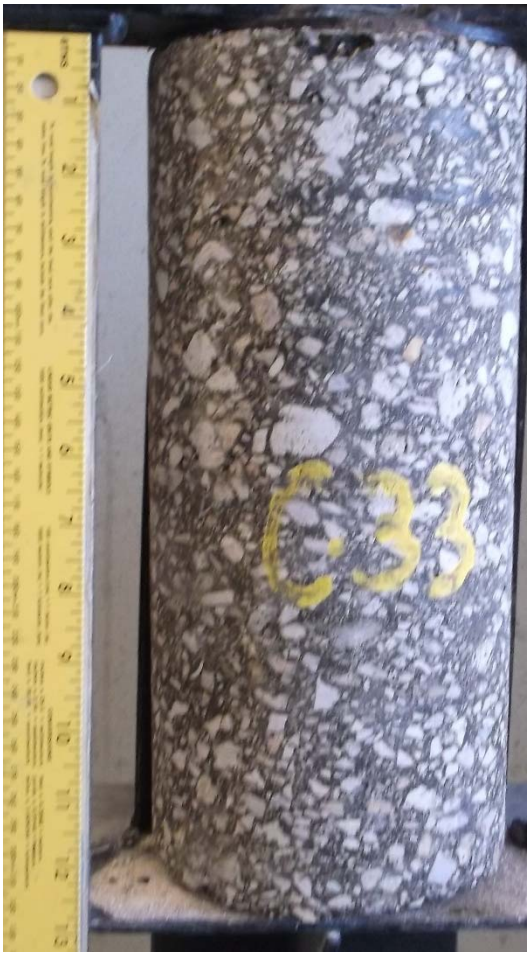
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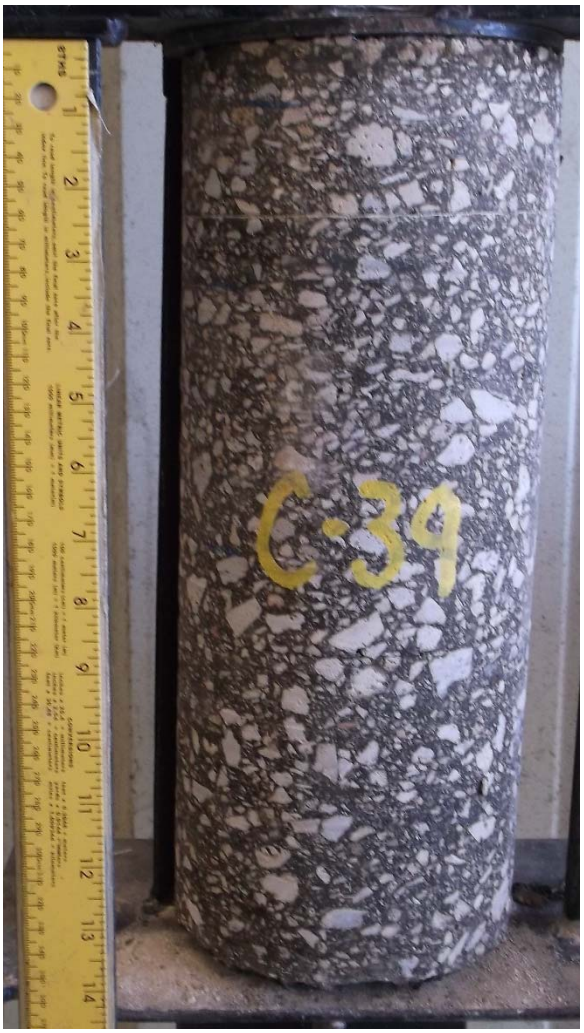
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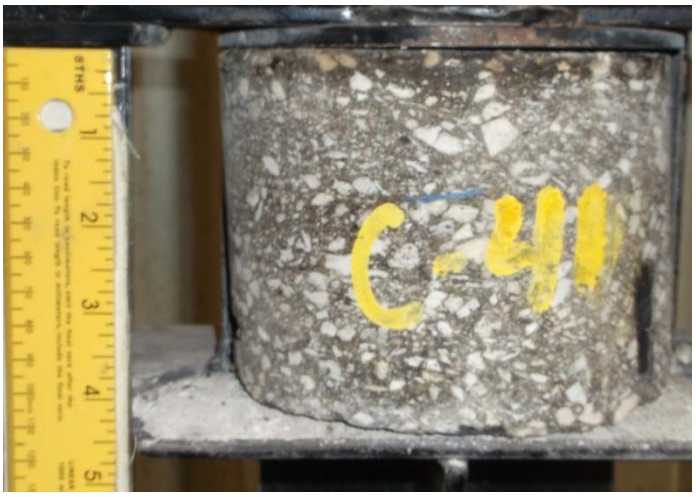
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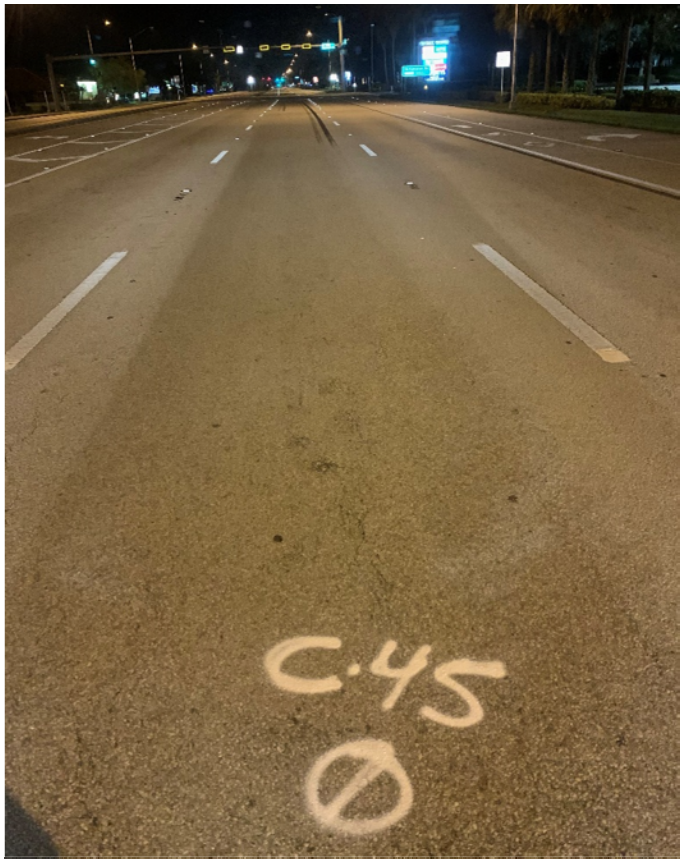
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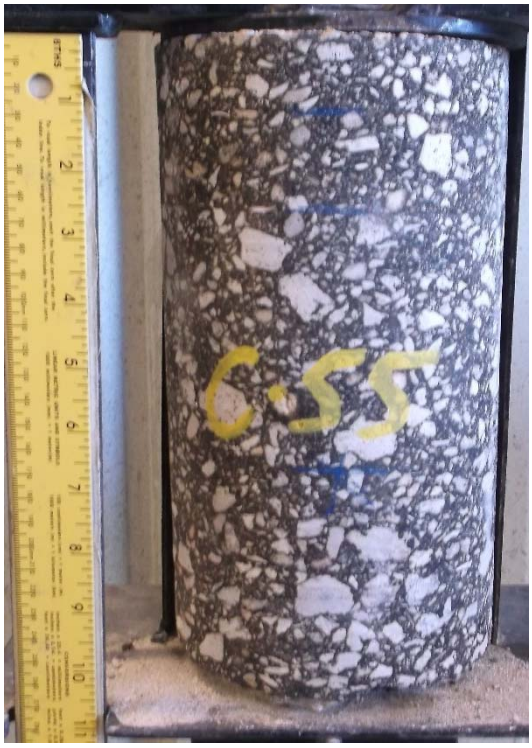
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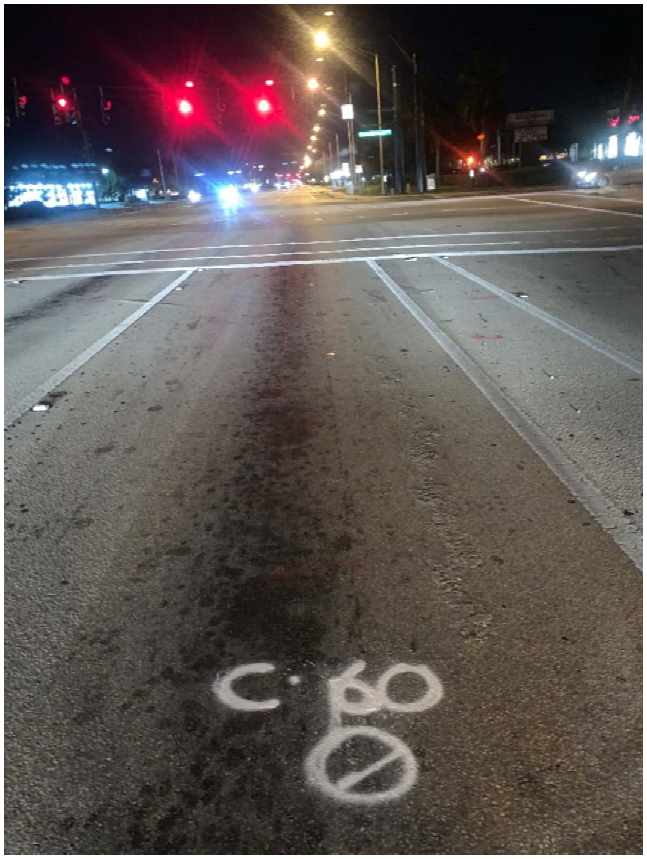
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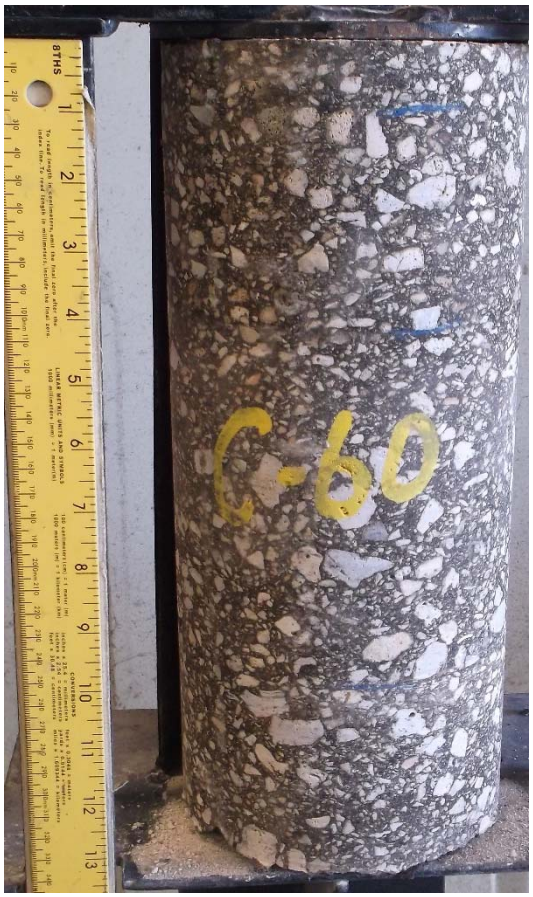
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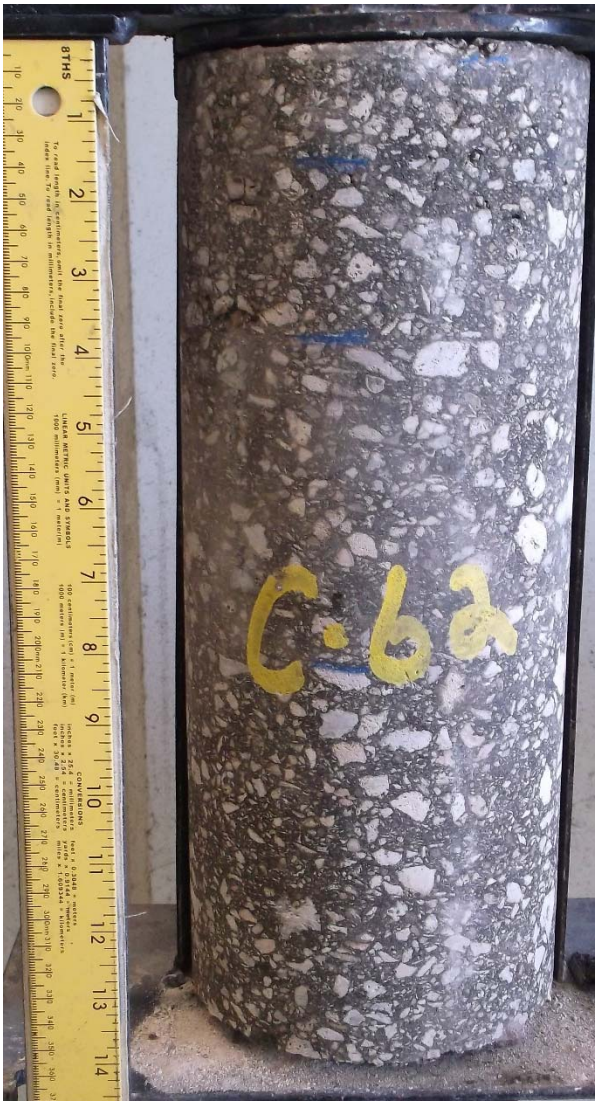


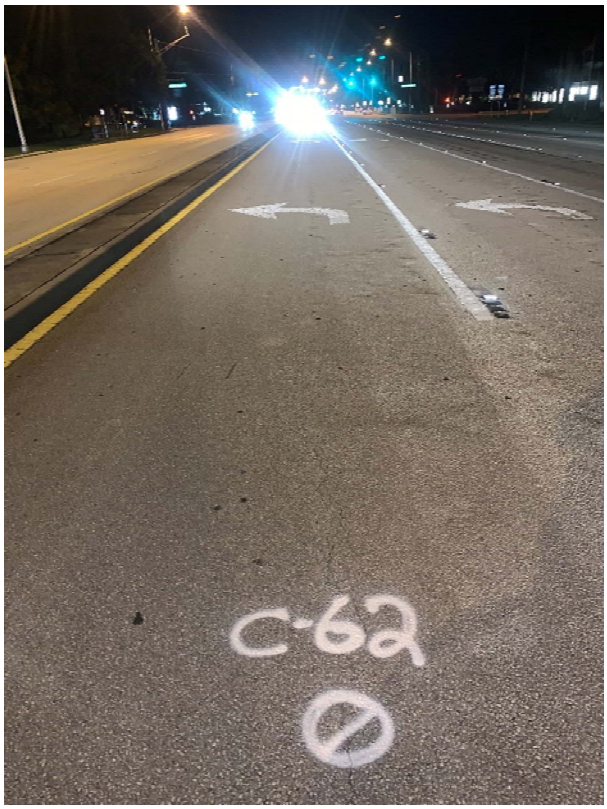




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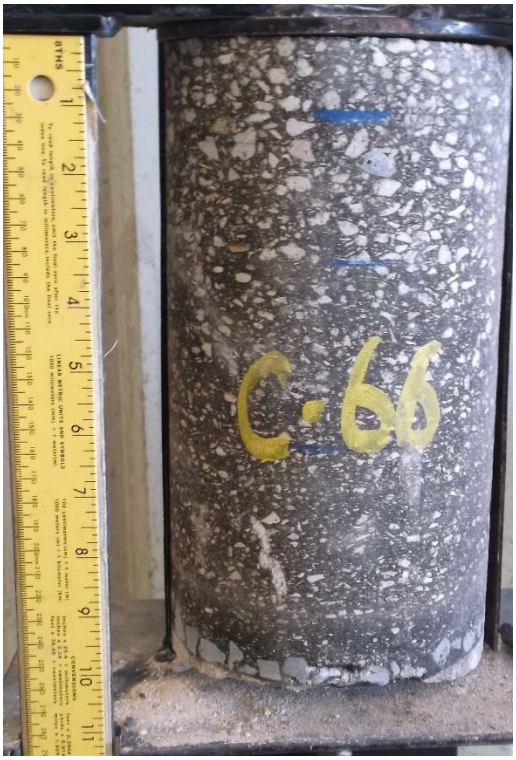
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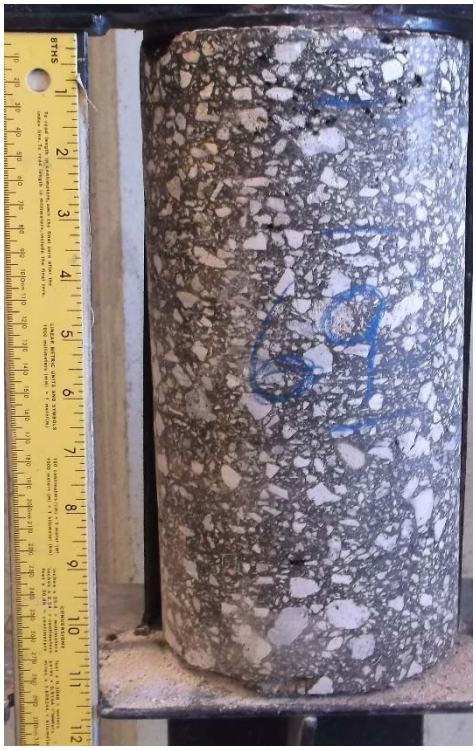


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AREHNA Project No.: B-18-089.05 US 41 Collier County Date: September 29th to October 3rd, 2019	**US 41 from South of Dunruss Creek to South of Gulf Park Drive** **FDOT FIN.: 198296-1-32-12** **FDOT Contract No.: C9S12** **FIN Project No. 441512-1-52-01**	AREHNA | Engineering, Inc. 5012 West Lemon Street, Tampa, FL 33609 Phone 813.944.3464 ▪ Fax 813.944.4959 Designed By: KME Checked By: KME Drawn By: AH







AREHNA Project No.: B-18-089.05
US 41 Collier County
Date: September 29th to October 3rd, 2019

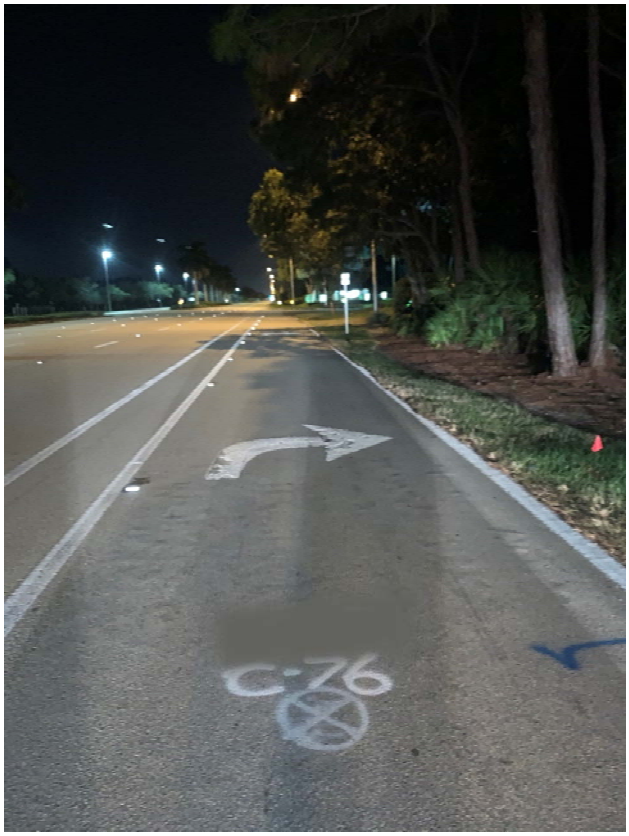
US 41 from South of Dunruss Creek to South of Gulf Park Drive
FDOT FIN.: 198296-1-32-12
FDOT Contract No.: C9S12
FIN Project No. 441512-1-52-01

AREHNA | Engineering, Inc.
5012 West Lemon Street, Tampa, FL 33609
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Designed By: KME
Checked By: KME
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AREHNA Project No.: B-18-089.05
US 41 Collier County
Date: September 29th to October 3rd, 2019

US 41 from South of Dunruss Creek to South of Gulf Park Drive
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AREHNA Project No.: B-18-089.05 US 41 Collier County Date: September 29th to October 3rd, 2019	**US 41 from South of Dunruss Creek to South of Gulf Park Drive** **FDOT FIN.: 198296-1-32-12** **FDOT Contract No.: C9S12** **FIN Project No. 441512-1-52-01**	AREHNA | Engineering, Inc. 5012 West Lemon Street, Tampa, FL 33609 Phone 813.944.3464 ▪ Fax 813.944.4959 Designed By: KME Checked By: KME Drawn By: AH

APPENDIX 3

Core Data and Layout

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PAVEMENT EVALUATION CORING AND CONDITION DATA

Cored by: Shannon Davidson/David Teslicko Date: 10/07/19 Page 1 of 2 Typical Section No.: ---

W.P.I. No.:		Name: US 41			Lanes: 12
Fin. Proj. ID: 441512-1-52-01		From: DUNRUSS CREEK			Shoulder Type and Condition:
F.A. Proj. No.:		To: GULF PARK DR.			Inside: Paved, Good
County: Collier	SR No.:	Beg MP: 1.175	End MP: 5.97	Lgth: 4.795	Outside: Paved, Good
Median Curbed (Y / N):		Other:			Curb & Gutter (Y / N): N

Core No.	MP	Lane	Wheel Path	Pavement Layer (in.)									Base			Crack				Pvmt Cond	Rut Depth (in.)	Cross Slope (%)	Comments
				FC5	F95	FC125	SP1F	SP2F	S	T1	WC	Core Lgth (in.)	ABC (in)	Limerock (in)	Stab (in)	Depth (in.)	Type	Class	Extent				
21	1.8	L1	N		1.8		1.8		2.0			5.6	5.7		12.0					F		1.35	36" sand w/ shell and limerock subgrage
35	2.8	L1	N		1.3		1.4		4.9			7.6	4.1							F		2.05	
51	3.9	L1	N		1.1		1.6		1.3	5.2	0.6	9.8								F		1.10	
66	4.9	L1	N		1.0		2.2			6.5	0.5	10.2								F		1.00	
77	5.9	L1	N		1.0		0.9			6.8	0.4	9.1				1.0	A	II	M	F		1.30	Alligator cracks
17	1.6	L2	N		1.6		1.3		3.4			6.3	4.5							F		2.40	
29	2.3	L2	N		1.2		2.0		2.6			5.8	5.4							F		1.30	Ripppling
40	3	L2	N		1.1		2.0		2.9			6.0	6.9							F		2.00	L2 WB 846
45	3.4	L2	N		1.0		1.0			1.7	0.5	4.2		10.0		0.2	A	I	L	F		3.45	
56	4.4	L2	N		1.4		1.3			1.5	0.7	4.9				BASE	BL	II	M	F		2.40	Widening Crack 1/2 LR 1/2 RAP
71	5.3	L2	N		1.1		1.2		1.4	2.5	0.7	6.9		11.0						F		2.15	
2	1.2	L3	N	1.4			1.9		2.4			5.7	6.3							F		1.70	
7	1.3	L3	N		1.4		1.6		2.3			5.3	4.0							G		0.65	Bike lane
14	1.5	L3	N		1.5		2.3		4.5			8.3	4.6							F		3.10	
18	1.7	L3	N		1.0		2.3		4.8			8.1	3.3							F		3.20	Alligator Cracks
25	2	L3	N		1.4		1.8		5.4			8.6	3.4							F		4.35	
34	2.8	L3	N		1.1		1.9		3.7			6.7	5.6							F		2.25	
37	2.9	L3	N		1.1		1.7		4.2			7.0	4.8		12.0					F		3.80	24" sand w/ shell and limerock subgrade
42	3.1	L3	N		1.2		1.9		2.5			5.6	6.9							F		3.05	Alligator cracks
48	3.7	L3	N		1.1		1.7		4.4			7.2	4.8							F		2.60	
52	4	L3	N		1.1		1.5		5.2			7.8	5.2							F		3.05	
58	4.5	L3	N		0.7		1.8					2.5	-	18.0	12.0					F		1.65	L3 WB Vanderbilt Beach Rd 24" sand w/ shell and limerock subgrade

Core Numbers 5, 10, 11, 12, 40, 58, 6, 13, 41, and 59 were performed on side roads outside the path of US41

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PAVEMENT EVALUATION CORING AND CONDITION DATA

Cored by: Shannon Davidson/David Teslicko Date: 10/07/19 Page 1 of 2 Typical Section No.: ---

W.P.I. No.:		Name: US 41			Lanes: 12
Fin. Proj. ID: 441512-1-52-01		From: DUNRUSS CREEK			Shoulder Type and Condition:
F.A. Proj. No.:		To: GULF PARK DR.			Inside: Paved, Good
County: Collier	SR No.:	Beg MP: 1.175	End MP: 5.97	Lgth: 4.795	Outside: Paved, Good
Median Curbed (Y / N):		Other:			Curb & Gutter (Y / N): N

Core No.	MP	Lane	Wheel Path	Pavement Layer (in.)								Core Lgth (in.)	Base			Crack				Pvmt Cond	Rut Depth (in.)	Crosslope (%)	Comments
				FC5	F95	FC125	SP1F	SP2F	S	T1	WC		ABC (in)	Limerock (in)	Stab (in)	Depth (in.)	Type	Class	Extent				
60	4.5	L3	N		0.9		3.1		5.6			9.6	3.6							F		3.20	
69	5	L3	N		1.1		2.0		3.3			6.4	4.9							F		3.60	Alligator cracks
5	1.3	LITL	N		1.1		1.5		3.5			6.1	6.9							F		0.50	Inside Left Turn Lane WB Old 41 Rd
16	1.6	LITL	N		1.4		1.5		3.7			6.6	4.4							F		1.30	Left turn lane
31	2.5	LITL	N		0.6		1.2		4.5			6.3	4.5							F		1.55	Left turn lane
44	3.3	LITL	N		0.7		1.9		3.0			5.6	5.6							F		1.90	Left Turn Lane
62	4.6	LITL	N		1.4		2.3		4.4			8.1	6.1			0.3	SL	I	L	F		1.20	Inside Left Turn Lane
73	5.5	LITL	N		1.4		1.4		3.6			6.4	5.6			0.7	SL	I	L	F		2.15	Left Turn Lane
10	1.5	LOTL	N		1.5							1.5								P		0.30	NE corner of US 41 and Wiggins Pass Road Poor Patch
11	1.5	LOTL	N		1.3		2.6		3.8			7.7	5.9							F		3.20	Outside turn lane of WB Wiggins Pass Rd
12	1.5	LOTL	N		1.0		1.6					2.6		8.0						F		3.15	Outside turn lane of WB Wiggins Pass Rd
20	1.7	LOTL	N		1.2		3.4		4.6			9.2	3.2							F		2.25	Right turn lane
26	2	LOTL	N		0.7		1.0		5.3			7.0	4.9							F		2.85	Right Turn Lane
49	3.8	LOTL	N		1.2		1.6		4.2			7.0	5.6							F		3.10	Right turn lane
65	4.8	LOTL	N		0.9		2.1		4.7			7.7	6.0							F		3.05	Right Turn Lane
68	5	LOTL	N		1.5		1.8		3.9			7.2	4.2							F		3.80	Right Turn Lane
3	1.3	OL	N	2.2			3.3					5.5	1.7							G		0.60	
54	4.1	OL	N		1.2		1.3		4.2			6.7								F		5.85	
75	5.6	OL	N		0.9		1.7		2.5			5.1	0.9							G		##	
47	3.7	OR	N		1.2		1.7		4.6			7.5	4.5		12.0					F		2.25	36" sand w/ shell subgrage
64	4.7	OR	N		1.0		2.0					3.0	3.4							G		5.05	
79	5.9	OR	N			1.4		1.4				2.8		11.0						F		5.30	

Core Numbers 5, 10, 11, 12, 40, 58, 6, 13, 41, and 59 were performed on side roads outside the path of US41

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PAVEMENT EVALUATION CORING AND CONDITION DATA

Cored by: Shannon Davidson/David Teslicko Date: 10/07/19 Page 1 of 2 Typical Section No.: ---

W.P.I. No.:		Name: US 41			Lanes: 12
Fin. Proj. ID: 441512-1-52-01		From: DUNRUSS CREEK			Shoulder Type and Condition:
F.A. Proj. No.:		To: GULF PARK DR.			Inside: Paved, Good
County: Collier	SR No.:	Beg MP: 1.175	End MP: 5.97	Lgth: 4.795	Outside: Paved, Good
Median Curbed (Y / N):		Other:			Curb & Gutter (Y / N): N

Core No.	MP	Lane	Wheel Path	Pavement Layer (in.)									Base			Crack				Pvmt Cond	Rut Depth (in.)	Crs Slope (%)	Comments
				FC5	F95	FC125	SP1F	SP2F	S	T1	WC	Core Lgth (in.)	ABC (in)	Limerock (in)	Stab (in)	Depth (in.)	Type	Class	Extent				
13	1.5	R1	N		1.1		1.9					3.0		12.0						F		4.60	R1 EB Wiggins Pass Rd 888
23	1.9	R1	N		1.0		1.9		3.5			6.4	5.1							F		1.45	
33	2.7	R1	N		1.0		1.6		5.1			7.7	5.1							F		1.30	
50	3.8	R1	N		1.0		1.5		4.4			6.9	5.3							F		1.20	
67	4.9	R1	N		1.9		1.8		3.8			7.5	5.0							F		1.80	
78	5.9	R1	N			1.6		1.9	1.5			5.0		11.0						F		1.55	
19	1.7	R2	N		1.2		1.2		5.6			8.0	4.5							F		3.20	
30	2.4	R2	N		0.9		2.0		4.2			7.1	4.4							F		3.05	
46	3.5	R2	N		1.1		1.7		4.5			7.3	4.8							F		2.75	
61	4.6	R2	N		1.1		2.2		1.8			5.1	-	7.3	12.0					F		1.65	Linear cracks across lanes 18" sand w/ shell subgrade
74	5.5	R2	N		1.1		1.3		1.9			4.3		8.5						F		1.35	bottom up cracking
1	1.2	R3	N	1.2			1.2		4.9			7.3	4.6		12.0					F		3.90	Ripples along lane line 24" sand w/ shell subgrade
4	1.3	R3	N	1.2			1.9		4.8			8.0		18.0						F		2.85	Bike lane
9	1.5	R3	N		1.1		2.2		3.5			6.8	7.1							G		2.70	Bike lane
22	1.9	R3	N		1.0		2.3		3.2			6.5	4.4							F		2.85	Small divots along lane
24	2	R3	N		1.1		1.8		3.1			6.0	5.5							F		3.05	
27	2.1	R3	N		1.2		1.8		3.3			6.3	5.4							F		2.95	
38	2.9	R3	N		1.0		2.1		4.0			7.1	5.0							F		4.70	
39	3	R3	N		0.9		2.5		3.8			7.2	7.2							F		4.25	
41	3	R3	N		1.6		0.9		1.7			4.2	5.4	5.0						F		2.15	R3 EB 846
53	4	R3	N		0.7		1.5		4.2			6.4	5.1							F		2.40	
55	4.4	R3	N		1.1		1.3		4.0			6.4	3.9							F		3.30	

Core Numbers 5, 10, 11, 12, 40, 58, 6, 13, 41, and 59 were performed on side roads outside the path of US41

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PAVEMENT EVALUATION CORING AND CONDITION DATA

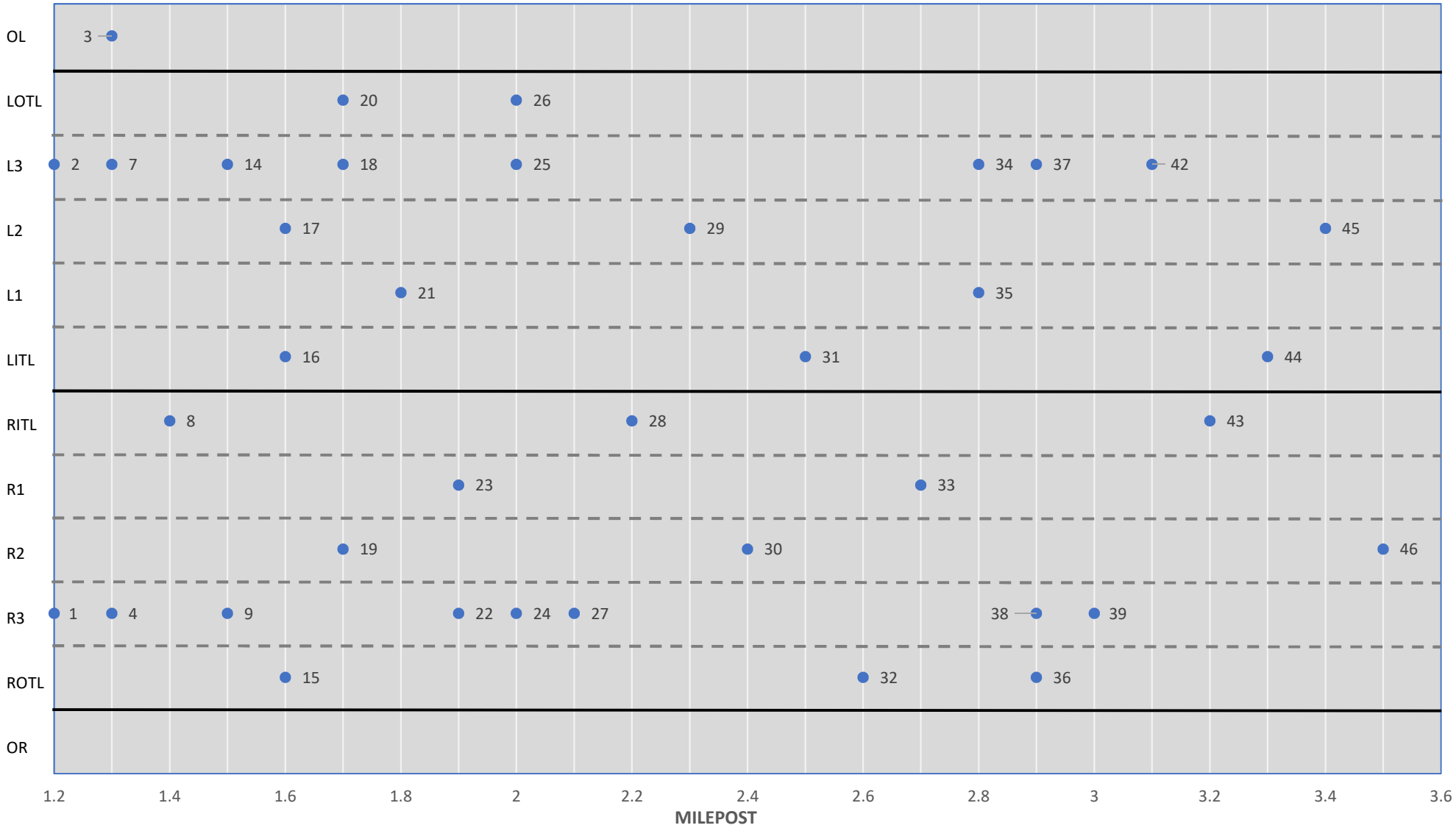
Cored by: Shannon Davidson/David Teslicko Date: 10/07/19 Page 1 of 2 Typical Section No.: ---

W.P.I. No.:		Name: US 41			Lanes: 12
Fin. Proj. ID: 441512-1-52-01		From: DUNRUSS CREEK			Shoulder Type and Condition:
F.A. Proj. No.:		To: GULF PARK DR.			Inside: Paved, Good
County: Collier	SR No.:	Beg MP: 1.175	End MP: 5.97	Lgth: 4.795	Outside: Paved, Good
Median Curbed (Y / N):		Other:			Curb & Gutter (Y / N): N

Core No.	MP	Lane	Wheel Path	Pavement Layer (in.)									Base			Crack				Pvmt Cond	Rut Depth (in.)	Cross Slope (%)	Comments
				FC5	F95	FC125	SP1F	SP2F	S	T1	WC	Core Lgth (in.)	ABC (in)	Limerock (in)	Stab (in)	Depth (in.)	Type	Class	Extent				
57	4.5	R3	N		1.2		1.4		2.8			5.4	6.7							F		3.05	Large ruts in turn lane
59	4.5	R3	N		0.9				2.4			3.3	-							F		1.55	R3 EB Vanderbilt Beach Rd
70	5.1	R3	N		1.3		1.9		2.1			5.3		11.0						F		2.50	
8	1.4	RITL	N		1.4		1.9		2.4			5.7	6.5							G		2.05	Left Turn Lane
28	2.2	RITL	N		1.4		1.5		2.5			5.4	6.8		12.0					F		2.25	Left turn lane Rippling 36" sand w/ shell subgrade
43	3.2	RITL	N		0.9		1.9		2.8			5.6	5.4							F		2.00	Left Turn Lane
63	4.6	RITL	N		1.1		2.0		5.0			8.1	4.3							F		1.90	Inside Left Turn Lane
72	5.3	RITL	N		1.1		2.6		3.9			7.6	4.0							F		2.85	Left Turn Lane
6	1.3	ROTL	N		1.0		1.8					2.8								F		0.60	Right Turn Lane EB Old 41 Rd
15	1.6	ROTL	N		1.1		1.4		4.5			7.0	5.3							F		3.90	Right turn lane
32	2.6	ROTL	N		1.4		2.1		3.0			6.5	6.3							F		2.40	Right turn lane
36	2.9	ROTL	N		1.6		1.8		4.6			8.0	4.7							F		2.15	Right turn lane
76	5.7	ROTL	N		1.0		2.2		3.5			6.7	4.7		12.0					F		3.40	Right Turn Lane 24" sand w/ limerock subgrade

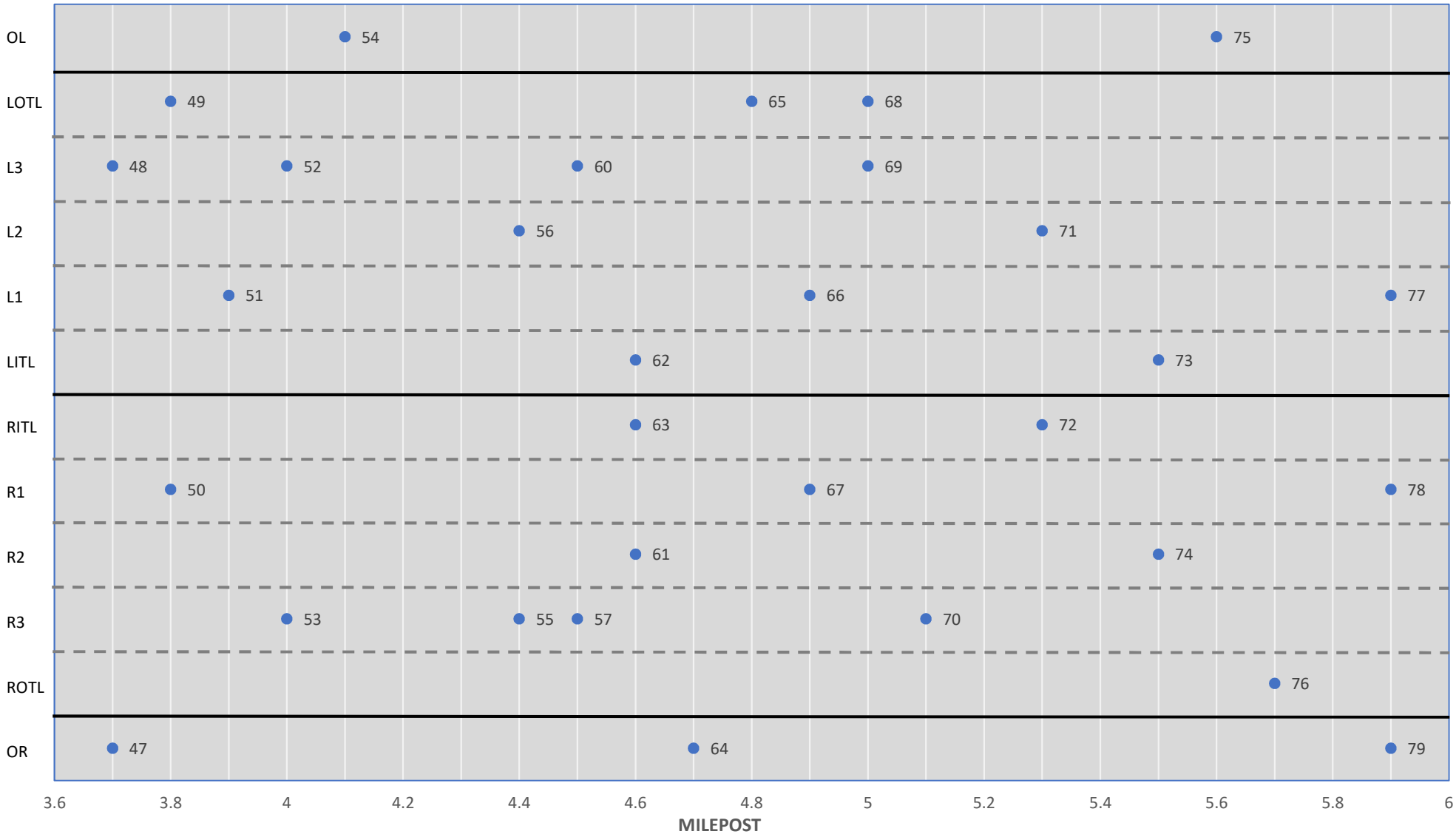
Core Numbers 5, 10, 11, 12, 40, 58, 6, 13, 41, and 59 were performed on side roads outside the path of US41

FIN Project No. 441512-1 - US 41/SR 45 (MP 1.175 - MP 5.970)



*During the field operation 10% of the cores were checked for stabilization thickness. For pavement design assume 12 inch thickness for stabilization.
Core Numbers 5, 10, 11, 12, 40, 58, 6, 13, 41, and 59 were performed on side roads outside the path of US41. These cores do not appear on this Core Location Diagram.

FIN Project No. 441512-1 - US 41/SR 45 (MP 1.175 - MP 5.970)



*During the field operation 10% of the cores were checked for stabilization thickness. For pavement design assume 12 inch thickness for stabilization.
Core Numbers 5, 10, 11, 12, 40, 58, 6, 13, 41, and 59 were performed on side roads outside the path of US41. These cores do not appear on this Core Location Diagram.

APPENDIX 4

Illustration of Milling and Resurfacing Recommendation

Illustration of Milling and Resurfacing Recommendation

Design Sketch Not Drawn To Scale

MAINLINE	TURN LANES	SHOULDERS
FC 12.5 / 2.0”		FC 12.5 / 1.5”
Mill 2.0”		Mill 2.0”
Remaining Asphalt After Milling	Remaining Asphalt After Milling	Remaining Asphalt After Milling
Existing Base	Existing Base	Existing Base
Subgrade	Subgrade	Subgrade

Note:

- **Structural requirements were not calculated in this design.**
- **In the event that the depicted pavement design will not be adequate based on structural calculations, overbuild thickness should be adjusted to meet the required structural number and/or other constructability purposes. If modification to the milling depth will be necessary to meet the required structural number contact this office for a revised recommendation.**

APPENDIX 5

Pavement Survey Request

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

MEMORANDUM

Date: 06/26/2019
To: Richard J. Arico, P.E.
From: Dajana Gibson, P.E.
Subject: Request for Asphalt Survey

FM No: 441512-1-52-01
County/Section: Collier County / 03010
Description: US 41 from South of Dunruss Creek to South of Gulf Park Drive
Begin MP: 1.175 End MP: 5.970

BACKGROUND INFORMATION: Skid Hazard ☐ RRR ☑ Intersection ☐ Safety ☐

These attached items are for your information in obtaining the necessary asphalt data needed for our preparation of the pavement design package:

	YES	NO		YES	NO
Scope or Concept Report:	☑	☐	FWD:	☐	☑
Location Map:	☑	☐	ESAL's:	☐	☑
Proposed Typical Sections:	☐	☑	As Builts:	☑	☐
Old Pavement Typical:	☑	☐			

Please specify if the project has any realignment involved and/or locations of widening/reconstruction)

Review of Project by Project Manager: _____

Typical Section: Urban ☑ Rural ☐ Spec Year: 2023 Friction Course Type: FC-5 ☐ FC-12.5 ☑ FC-9.5 ☐

Traffic Level: A ☐ B ☐ C ☑ D ☐ E ☐

Pavement Condition: Rutting ☐ Cracking ☐ Shoving ☐ Spalling ☐

Cracking: Longitudinal ☐ Horizontal ☐ Alligator ☐

Structures: Bridges ☐ Manholes ☐ Tractor Crossings ☐ Cross Drains ☐

Areas of Concern:
1. General - Need cores throughout the limits of the project.
2. Specific - At least one boring at each leg of the following intersections: US 41 and Vanderbilt Beach Rd. , US 41 and Immokalee Rd., US 41 and Wiggins Pass Rd., US 41 and Old 41 (see attached)
3. Specific - Within the northbound Right Turn Lane for Royal Cove Drive (see attached)

Is this a "Goes With" project? N/A If so, Lead Project Number: N/A

Charge to Financial Project ID: 441512-1-52-01 for all preliminary engineering work performed on this project.

To keep our project on schedule, we are requesting a return date of: 08/09/2019

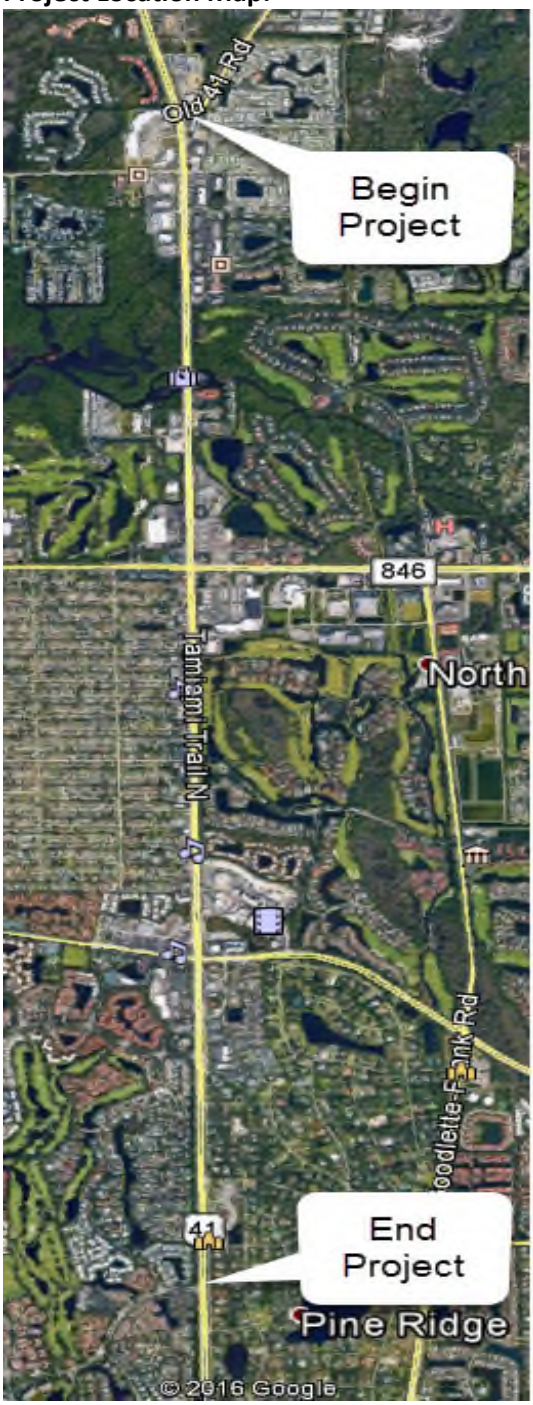
If you have any questions, please contact me at: dgibson@aimengr.com

Email to Pavement Evaluation Group

APPENDIX 6

Project Location Map

Project Location Map:



Project Abstract

Milling and resurfacing with signal and Americans with Disabilities Act (ADA) improvements on SR 45 from south of Dunruss Creek to south of Gulf Park Drive.

Intent and Nature of Project:
This is a Resurfacing, Restoration, and Rehabilitation (RRR) project that is intended to extend the service life of the existing roadway. This project was identified as a result of deficient pavement conditions noted in the 2016 Pavement Condition Survey. Additional improvements to this roadway shall adhere to the standards set forth in the Florida Department of Transportation (FDOT) Plans Preparation Manual (PPM), Volume 1, Chapter 25.

Project Description:

- The project is located in the City of Naples, Collier County.
- The project will begin at MP 1.175 approximately 650-feet north of Old US 41.
- The project will end at MP 5.970 approximately 770-feet south of Gulf Park Drive.