

September 27, 2011

Mr. Tim Keefe, E.I.
1650 N. Kepler Road
Mail Station 519
Deland, Florida 32724

Reference: Asphalt Pavement Coring and Evaluation Services
FPN: 428688-1
SR 5 (US 1)
From South of Harbor Road to Fleming Avenue
Section# 79010
Volusia County, Florida
Contract No. C-8K13
TWO 57.03 (Phase 32)
E & A Project: 0149-0251

Dear Tim:

As requested, Ellis & Associates, Inc. (E&A) has completed the asphalt pavement coring along the alignment of the subject project. The project limits included both northbound and southbound lanes between MP 24.234 and MP 26.864. A total of 37 cores were obtained from the project limits.


The attached Pavement Evaluation and Condition Data (PECD) sheet shows the approximate locations of cores. Individual core data, including location of core, core depth, base type, cross slope and crack description was recorded on the PECD sheet. Representative roadway photographs and individual core photographs are also included.

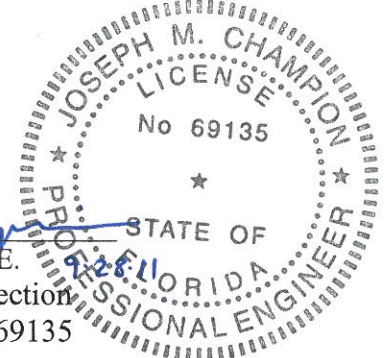
Thank you again for allowing E&A the opportunity to provide this service. If you should have any questions and/or comments regarding this letter, please contact us at (904) 880-0960. We look forward to working with you again in the future.

Respectfully submitted,

ELLIS & ASSOCIATES, INC.


Adam P. Knisely
Project Manager


Joseph M. Champion, P.E.
Director, CMT & Inspection
Licensed, Florida No. 69135



APK
w/attachments

**State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET**

Project No.: 428688-1	Cored By: Ellis & Associates	Date: 9/1/2011	Page No.: 1 of 3
County: Volusia	Highway Sect. No: 79010	From: S. of Harbor Road	To: Fleming Avenue
Road No.: SR 5	Begin M.P.: 24.234	End M.P.: 26.864	Length: 2.630

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)					Base			Crack				Payt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	FC-3	Type S	Type I	Binder	ABC	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class				
1	24.390	9.1	R2	X	0.9	-	1.3	0.8	-	-	-	LR	10.0	-	-	-	F		Some Air Voids in core No cracks in vicinity of core location	
2	24.390	1.1	OR	-	0.3	-	6.5	-	-	-	-	LR	6.2	-	-	-	F			
3	25.140	9.1	R2	X	-	0.8	1.4	-	1.2	-	-	LR	12.6	0.6	Br	II	M	P	Some Air Voids in core	
4	25.140	16.5	OR	-	-	0.7	3.0	-	-	-	-	LR	X	0.3	Br	IB	M	P	Some Air Voids in core	
5	26.009	1.1	R2	-	-	1.0	1.0	-	0.4	-	-	LR	X	B	Br	II	M	P		
6	26.009	12.3	OR	-	-	1.0	2.4	-	1.4	-	-	LR	X	3.1	Br	IB	M	P		
7	26.509	9.0	R2	X	-	0.7	1.3	1.1	1.9	-	-	LR	10.0	2.0	Br	II	M	P		
8	26.509	13.0	OR	-	-	0.8	1.5	1.0	1.3	-	-	LR	10.4	0.8	Br	IB	L	F	Some Air Voids in core	
9	26.610	9.4	R2	X	-	0.5	1.5	1.0	1.1	-	-	LR	10.9	2.0	Br	IB	M	P	Some Air Voids in core	
10	26.610	13.9	OR	-	-	1.0	1.2	0.5	0.7	-	-	LR	11.6	-	-	-	-	F		
11	26.684	11.1	OR	-	-	0.5	1.5	0.7	1.3	-	-	LR	11.0	0.1	Br	IB	L	F		
12	26.360	14.1	OL	-	-	0.7	1.1	-	1.1	-	-	LR	9.1	-	-	-	-	F		
13	26.360	8.5	L2	X	-	0.5	2.0	-	0.2	-	-	LR	8.3	1.0	Br	IB	M	P		
14	25.984	14.3	OL	-	-	0.5	1.7	-	1.1	-	-	LR	X	-	-	-	-	F		
15	25.984	5.6	L2	-	-	0.8	1.4	-	-	-	-	LR	X	B	Br	IB	L	F	Some Air Voids in core Rippling in vicinity of core location	
16	25.640	14.1	OL	-	-	0.5	1.4	-	1.7	-	-	LR	8.9	-	-	-	-	F		

Remarks: Crack Types: L=Longitudinal, T=Transverse, A=Alligator, BL=Block, Br=Branch, C=Combination
 S/S = Stabilized Subgrade, LR = Limerock, SBRM = Sand Bituminous Road Mix, ABC = Asphalt Base Course
 Crack Extent: L=Light, M=Moderate, S=Severe
 Pavement Condition: G=Good, F=Fair, P=Poor

Note:

**State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET**

Project No.: 428688-1		Cored By: Ellis & Associates		Date: 9/1/2011		Page No.: 2 of 3																														
County: Volusia		Highway Sect. No.: 79010		From: S. of Harbor Road		To: Fleming Avenue																														
Road No.: SR 5		Begin M.P.: 24.234		End M.P.: 26.864		Length: 2.630																														
Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in)					Base			Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments																
					FC-5	FC-3	Type S	Type I	Binder	ABC	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class					Extent															
17	25.640	8.3	L2	X	-	1.1	2.6	-	-	-	-	3.7	LR	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No crack in vicinity of core location						
18	25.210	15.2	OL	-	-	0.8	1.5	-	1.0	-	-	3.3	LR	X	0.2	Br	IB	S	P	-	-	-	-	-	-	-	-	-	-	-						
19	25.210	8.8	L2	X	-	0.5	1.4	-	0.9	-	-	2.8	LR	X	0.1	Br	IB	L	F	-	-	-	-	-	-	-	-	-	-	-						
20	25.009	15.0	OL	-	-	0.4	1.2	-	-	-	5.4	7.0	ABC	5.4	-	-	-	-	F	-	-	-	-	-	-	-	-	-	-	-	-					
21	24.260	14.8	OL	-	-	1.0	1.0	0.8	1.6	-	-	4.4	LR	3.6	0.5	Br	IB	L	F	-	-	-	-	-	-	-	-	-	-	-	-					
22	24.260	9.0	L2	X	-	0.6	1.2	0.6	1.0	-	-	3.4	LR	11.6	-	-	-	-	F	-	-	-	-	-	-	-	-	-	-	-	-	No crack in vicinity of core location				
23	24.330	30.9	MXO	-	-	0.6	1.0	0.6	2.0	-	-	4.2	LR	8.8	-	Br	IB	M	P	-	-	-	-	-	-	-	-	-	-	-	-	-				
24	24.390	2.6	R1	X	-	0.5	1.4	1.3	-	-	-	3.2	LR	8.8	-	-	-	-	F	-	-	-	-	-	-	-	-	-	-	-	-	-	No crack in vicinity of core location			
25	25.140	3.4	R1	X	-	0.4	5.6	-	-	-	-	6.0	LR	10.0	0.4	Br	III	S	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No crack in vicinity of core location		
26	25.284	13.6	MXO	-	-	0.4	-	1.4	1.6	-	-	3.4	LR	10.1	B	Br	III	S	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Some Air Voids in core Raveling also present in vicinity of core location	
27	25.785	7.1	RLTL	-	-	0.8	-	2.0	1.1	-	-	3.9	LR	12.1	B	Br	III	S	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
28	26.009	3.3	R1	X	-	0.7	1.4	-	1.4	-	-	3.5	LR	X	0.5	Br	IB	S	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29	26.509	2.2	R1	X	-	0.6	1.3	1.0	1.8	-	-	4.7	LR	9.3	1.8	Br	II	M	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	26.610	14.7	R1	X	-	1.0	1.3	1.0	1.4	-	-	4.7	LR	8.3	1.3	Br	IB	S	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	26.360	3.1	L1	X	-	0.8	1.5	-	0.4	-	-	2.7	LR	9.3	0.1	Br	IB	S	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	25.984	8.3	L1	X	-	0.8	1.2	-	0.7	-	-	2.7	LR	X	-	-	-	-	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks: Crack Types: L=Longitudinal, T=Transverse, A=Alligator, B=Block, Br=Branch, C=Combination
 S/S = Stabilized Subgrade, LR = Limerock, SBRM = Sand Bituminous Road Mix, ABC = Asphalt Base Course
 Crack Extent: L=Light, M=Moderate, S=Severe
 Pavement Condition: G=Good, F=Fair, P=Poor

Note:

State of Florida Department of Transportation PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 428688-1			Cored By: Ellis & Associates			Date: 9/1/2011			Page No.: 3 of 3												
County: Volusia			Highway Sect. No.: 79010			From: S. of Harbor Road			To: Fleming Avenue												
Road No.: SR 5			Begin M.P.: 24.234			End M.P.: 26.864			Length: 2.630												
Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (m)						Base Thickness (in)	Crack Depth (in)	Crack Type	Crack Class	Crack Extent	Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments		
					FC-5	FC-3	Type S	Type I	Binder	ABC										Core Length (in)	Type
33	25.810	3.0	LLTL	X	-	0.7	1.2	-	1.0	LR	12.1	0.4	Br	III	S	P					
34	25.640	2.9	L1	X	-	1.0	1.6	-	1.1	LR	9.3	0.1	Br	IB	L	F					
35	25.210	9.1	L1	X	-	0.6	1.4	0.8	1.3	LR	X	1.8	Br	III	L	F					
36	25.200	3.1	LLTL	X	-	1.0		1.1	1.6	LR	9.3	-	-	-	-	F					
37	24.260	2.8	L1	X	0.8	-	1.8	-	-	LR	7.4	-	-	-	-	F					

Remarks: Crack Types: L=Longitudinal, T=Transverse, A=Alligator, B=Block, Br=Branch, C=Combination
 S/S = Stabilized Subgrade, LR = Limerock, SBRM = Sand Bituminous Road Mix, ABC = Asphalt Base Course
 Crack Extent: L=Light, M=Moderate, S=Severe
 Pavement Condition: G=Good, F=Fair, P=Poor

Note:

Supplemental Data to PECD

(Cross-Slope Data Collected at Each Locations Cored)

Core #	MP	Lane	Cross-Slope	
			0 to 6 feet	6 to 12 feet
1	24.390	R2	-4.3	-4.2
2	24.390	OR	-4.2	-4.1
3	25.140	R2	2.8	2.4
4	25.140	OR	2.5	5.7
5	26.509	R2	3.2	3.9
6	26.509	OR	3.0	3.8
7	26.009	R2	-2.9	0.0
8	26.009	OR	-1.8	-2.7
9	26.610	R2	2.6	9.0
10	26.610	OR	3.4	8.4
11	26.684	OR	4.0	4.8
12	26.360	OL	3.7	3.7
13	26.360	L2	4.6	3.2
14	25.984	OL	3.7	3.2
15	25.984	L2	3.5	5.5
16	25.640	OL	3.8	4.8
17	25.640	L2	3.4	5.1
18	25.210	OL	3.3	5.7
19	25.210	L2	4.4	3.1

Core #	MP	Lane	Cross-Slope	
			0 to 6 feet	6 to 12 feet
20	25.009	OL	1.2	6.2
21	24.260	OL	2.5	2.5
22	24.260	L2	2.6	2.1
23	24.330	MXO	0.8 / 1.5 / 0.9 / 1.8 / 0.6 / 2.3	
24	24.390	R1	-7.8	-8.2
25	25.140	R1	2.7	2.2
26	25.284	MXO	1.5 / 0.4 / 1.3	
27	26.509	R1	1.7	1.4
28	25.785	RRTL	4.0	3.9
29	26.009	R1	1.0	1.2
30	26.610	R1	2.9	3.1
31	26.360	L1	4.3	2.4
32	25.984	L1	3.6	3.5
33	25.810	LLTL	2.1	2.1
34	25.640	L1	3.2	3.2
35	25.210	L1	3.2	3.3
36	25.200	LLTL	0.9	1.1
37	24.260	L1	2.9	3.3

Supplemental Data to PECD

(GPS Coordinates for Each Location Cored)

Core #	MP	GPS Coordinates
1	24.390	29° 6.006N, 80° 58.228W
2	24.390	29° 6.006N, 80° 58.228W
3	25.140	29° 6.613N, 80° 58.389W
4	25.140	29° 6.613N, 80° 58.389W
5	26.509	29° 7.323N, 80° 58.599W
6	26.509	29° 7.323N, 80° 58.599W
7	26.009	29° 7.698N, 80° 58.792W
8	26.009	29° 7.698N, 80° 58.792W
9	26.610	29° 7.764N, 80° 58.849W
10	26.610	29° 7.764N, 80° 58.849W
11	26.684	29° 7.808N, 80° 58.893W
12	26.360	29° 7.628N, 80° 58.769W
13	26.360	29° 7.628N, 80° 58.769W
14	25.984	29° 7.377N, 80° 58.636W
15	25.984	29° 7.377N, 80° 58.636W
16	25.640	29° 7.102N, 80° 58.523W
17	25.640	29° 7.102N, 80° 58.523W
18	25.210	29° 6.758N, 80° 58.412W
19	25.210	29° 6.758N, 80° 58.412W

Core #	MP	GPS Coordinates
20	25.009	29° 6.584N, 80° 58.404W
21	24.260	29° 5.885N, 80° 58.244W
22	24.260	29° 5.885N, 80° 58.244W
23	24.330	29° 5.937N, 80° 58.233W
24	24.390	29° 6.007N, 80° 58.233W
25	25.140	29° 6.613N, 80° 58.389W
26	25.284	29° 6.743N, 80° 58.402W
27	26.509	29° 7.146N, 80° 58.538W
28	25.785	29° 7.323N, 80° 58.599W
29	26.009	29° 7.698N, 80° 58.792W
30	26.610	29° 7.764N, 80° 58.849W
31	26.360	29° 7.628N, 80° 58.769W
32	25.984	29° 7.377N, 80° 58.636W
33	25.810	29° 7.155N, 80° 58.541W
34	25.640	29° 7.102N, 80° 58.523W
35	25.210	29° 6.752N, 80° 58.407W
36	25.200	29° 6.675N, 80° 58.399W
37	24.260	29° 5.884N, 80° 58.239W