

May 24, 2016

Mr. Jason T. Wise, P.E.
E.L. Robinson Engineering
Project Manager - Cleveland
1468 West 9th Street, Suite 500
Cleveland, OH 44113
www.elrobinsonengineering.com

Re: Report for Bridge Deck Coring
Cuy-17-2.83
PID No.: 101682
Cleveland, Cuyahoga County, Ohio
PSI Project No.: 01412287

Dear Mr. Wise:

Enclosed is PSI's Report of Pavement Cores regarding the cores that were obtained from the site at the above-referenced project. PSI's services for this project were performed in accordance with PSI's Change Order No. 1 dated April 29, 2016 and PSI's Proposal No. 0141-169366, dated December 29, 2015. Authorization to perform this exploration was in the form of a signed sub consultant agreement between PSI and E.L. Robinson Engineering, on February 2, 2016.

The scope of services for this project included pavement coring at nine (9) specified locations, taking photographs of the existing pavement condition, measuring the GPS readings at each core location, measuring the thickness and condition of the pavement sections, and taking photographs of each core. Laboratory test results include compressive strength test.

The number and locations of the pavement cores were selected and field located by representatives of E.L. Robinson Engineering. Enclosed with this report are the following:

- Pavement Core Location Plans, showing the approximate locations of each pavement core;
- Core Photo Logs: showing the core number, approximate GPS reading, approximate thickness, composition, and condition of the pavement cores;
- Pavement Photo Logs: Show the existing condition of pavement at core locations.

PSI was on site to core nine (9) locations as directed by Noemy Roman of E.L. Robinson. PSI was directed to core C-1 and C-8 to 6 inches in depth, C-2 through C-7 to 12 inches in depth and C-9 to 8 inches in depth. Each core was drilled to the required depth. At all the locations other than C-5 and C-7, the deck material was in poor condition and broke down during coring operations and when attempting to retrieve the sample. Noemy was on site with PSI for the coring operations and was informed during the core drilling of these findings. At location C-7, Noemy directed PSI to core full depth through the deck to attempt to retrieve a sample for compressive testing. After recovering the C-7 sample, PSI and Noemy found that there was a crack down the middle of the core sample and PSI informed Noemy that this sample could not be tested for compressive strength.

Only core C-5 was tested for compressive strength due to the fact that the other cores were irretrievable. Compressive strength testing was conducted on one (1) core sample in general accordance to ASTM C42/C42M-13 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete. Test results can be found summarized in the table below.

Core Number	Diameter (in)	Height (in)	Area (in ²)	H/D	Load (lbs)	Correction Factor	Compressive Strength (psi)
C-5	3.70	7.90	10.75	2.14	84,060	1.00	7,819

PSI assumes no responsibility for interpretation made by others. The collected pavement core samples are available for inspection. The cores will be retained for a period of 30 days after the date of this report and disposed thereof.

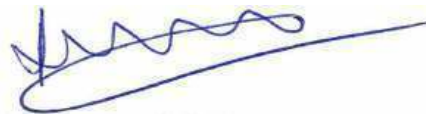
PSI appreciates the opportunity to have been of service to you on this project. If we can be of further assistance, please do not hesitate to contact us at 216-447-1335.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.



Jacob Pennington
Project Manager



A. Veeramani, P.E.
Vice President

Enclosures:

- Pavement Core Location Plans
- Core Photo Logs with Core Descriptions
- Pavement Photo Logs



psi Information
To Build On
Engineering • Consulting • Testing

Pavement Coring
CUY-17-2.83 (PID No.: 101682)
Cuyahoga County, Ohio

Date: 5/23/2016

Taken By: JP

Scale: NA

Core Location Plan

PSI Project No.:

01412287



psi Information
To Build On
Engineering • Consulting • Testing

Pavement Coring
CUY-17-2.83 (PID No.: 101682)
Cuyahoga County, Ohio

Date: 5/23/2016

Taken By: JP

Scale: NA

Core Location Plan

PSI Project No.:

01412287



psi Information
To Build On
Engineering • Consulting • Testing

Pavement Coring
CUY-17-2.83 (PID No.: 101682)
Cuyahoga County, Ohio

Date: 5/23/2016

Taken By: JP


Scale: NA

Core Location Plan


PSI Project No.:

01412287




Core Number	Location	Layers	Core Composition		Remarks	
			LMC Overlay	Bridge Deck		
C-1	CUY-17-2.83 WB-LL-MOL Latitude : 41.420399° Longitude : -81.860990°	A	2 ½"	--	Good Condition	
		B	--	2 ½"	Poor Condition, Broke Down While Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Core Number	Location	Layers	Core Composition		Remarks	
			Asphalt Patch	Bridge Deck		
C-2	CUY-17-2.83 EB-LL-LWT Latitude : 41.420313° Longitude : -81.860838°	A	1 3/4"	--	Poor Condition	
		B	--	1/2"	Poor Condition, Broke Down While Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Core Number	Location	Layers	Core Composition		Remarks	
			LMC Overlay	Bridge Deck		
C-3	CUY-17-2.83 WB-LL-LWT Latitude : 41.420335° Longitude : -81.860699°	A	2"	--	Good Condition	
		B	--	2 ½"	Poor Condition, Broke Down While Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Core Number	Location	Layers	Core Composition		Remarks	
			LMC Overlay	Bridge Deck		
C-4	CUY-17-2.83 EB-LL-RWL Latitude : 41.420042° Longitude : -81.859821°	A	1 3/4"	--	Good Condition	
		B	--	2 3/4"	Poor Condition, Broke Down While Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Core Number	Location	Layers	Core Composition		Remarks	
			LMC Overlay	Bridge Deck		
C-5	CUY-17-2.83 WB-LL-RWT Latitude : 41.420042° Longitude : -81.859659°	A	1 3/4"	--	Good Condition	
		B	--	10 3/4"	Good Condition, Separated During Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Core Number	Location	Layers	Core Composition		Remarks	
			LMC Overlay	Bridge Deck		
C-6	CUY-17-2.83 WB-LL-LWT Latitude : 41.419970° Longitude : -81.859344°	A	6"	--	Good Condition, Separated During Coring	
		B	--	1"	Poor Condition, Broke Down While Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016	Core Photo Log
					Taken By: JP	
					Scale: NA	01412287




Core Number	Location	Layers	Core Composition		Remarks
			LMC Overlay	Bridge Deck	
C-7	CUY-17-2.83 WB-LL-RWT Latitude : 41.419709° Longitude : -81.858395°	A	2 ½"	--	Good Condition, Separated During Coring
		B	--	14"	Fair Condition, Crack Down Middle Prior to Coring
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Core Number	Location	Layers	Core Composition		Remarks
			LMC Overlay	Bridge Deck	
C-8	CUY-17-2.83 WB-LL-RWT Latitude : 41.418968° Longitude : -81.855589°	A	5 ¼"	--	Good Condition
		B	--	--	--
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287



Core Number	Location	Layers	Core Composition		Remarks	
			LMC Overlay	Bridge Deck		
C-9	CUY-17-2.83 EB-LL-MOL Latitude : 41.418875° Longitude : -81.855413°	A	5"	--	Good Condition	
		B	--	1"	Poor Condition, Broke Down While Coring	
		Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio			Date: 5/23/2016 Taken By: JP Scale: NA	Core Photo Log PSI Project No.: 01412287




Pavement Photo C-2

 Information <i>To Build On</i> Engineering • Consulting • Testing	Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Pavement Photo Log
	Scale: NA	Taken By: JP	Date: 5/23/2016
			PSI Project No: 01412287




Pavement Photo C-2

 Information To Build On <i>Engineering • Consulting • Testing</i>	Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Pavement Photo Log
	Scale: NA	Taken By: JP	Date: 5/23/2016
			PSI Project No: 01412287



Pavement Photo C-3

 Information To Build On <i>Engineering • Consulting • Testing</i>	Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Pavement Photo Log
	Scale: NA	Taken By: JP	Date: 5/23/2016
			PSI Project No: 01412287



Pavement Photo C-4

psi Information
To Build On
Engineering • Consulting • Testing

Pavement Coring
CUY-17-2.83 (PID No.: 101682)
Cuyahoga County, Ohio

**Pavement
Photo Log**

PSI Project No:
01412287

Scale: NA

Taken By: JP

Date: 5/23/2016



Pavement Photo C-5

psi Information
To Build On
Engineering • Consulting • Testing

Pavement Coring
CUY-17-2.83 (PID No.: 101682)
Cuyahoga County, Ohio

**Pavement
Photo Log**

PSI Project No:

01412287

Scale: NA

Taken By: JP

Date: 5/23/2016



Pavement Photo C-6

psi Information
To Build On
Engineering • Consulting • Testing

Pavement Coring
CUY-17-2.83 (PID No.: 101682)
Cuyahoga County, Ohio

**Pavement
Photo Log**

PSI Project No:
01412287


Scale: NA

Taken By: JP

Date: 5/23/2016




Pavement Photo C-7

	Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Pavement Photo Log
	Scale: NA	Taken By: JP	Date: 5/23/2016
			PSI Project No: 01412287




Pavement Photo C-8

	Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Pavement Photo Log
	Scale: NA	Taken By: JP	PSI Project No: 01412287
		Date: 5/23/2016	



Pavement Photo C-9

	Pavement Coring CUY-17-2.83 (PID No.: 101682) Cuyahoga County, Ohio		Pavement Photo Log
	Scale: NA	Taken By: JP	Date: 5/23/2016
			PSI Project No: 01412287