August 1, 2022

ODOT District 12
5500 Transportation Boulevard
Garfield Heights, OH 44125

Attention: Mr. Kyle J. Dohlen, P.E.

Reference: **District 12/3 Subsurface Investigation for Pavement & Bridges**
PID No. 114573 Agreement No. 36312

Pavement Core Exploration – Data Report
Task Order No. D12-07
CUY-17-7.09 – Pavement Cores (PID 89267)
Cuyahoga County, Ohio
S&ME Project No. 216069I

Mr. Dohlen:

In accordance with ODOT D12's April 22, 2022, Task Order Request for Proposal (RFP), S&ME, Inc. (S&ME) has completed the scope of work requested by ODOT District 12 (D12) for the above referenced CUY-17-7.09 – Pavement Cores project. S&ME's proposal for this task, dated May 24, 2022, was authorized by D12 via email on June 3, 2022.

Scope of Work

The authorized scope of work included obtaining twenty-eight (28) pavement cores at locations selected by ODOT along SR 17 (Brookpark Road) between West 130th Street and the on-ramp to IR 480 at the east end of the project. The Vicinity Map (Plate 1 in the Attachments) presents the general project location, and Plates 2A through 2H present more detailed views of the completed core locations.

Field Exploration

The proposed core locations were selected by ODOT D12 and were show in a .kmz file provided with the April 22, 2022 RFP. On July 13, 2022, S&ME marked the proposed core locations along project. The locations of the pavement cores (latitude/longitude) were obtained by S&ME using a hand-held GPS unit with submeter horizontal accuracy. some of the core locations requested by ODOT D12 had to be adjusted in the field to avoid traffic hazards, existing work zones, existing utilities, and worker safety. Personnel from S&ME and our sub-consultant, Ohio Concrete Sawing and Drilling, performed the cores on July 18 through July 20, 2022.

At each location, the pavement was cored with a nominal 4-inch diameter diamond tipped core bit. The pavement cores were then retrieved from the core hole, the bottom of the hole was checked to verify penetration through the existing pavement, and the recovered cores were then labeled and packaged for transportation to our

laboratory for further examination. Prior to demobilizing from the site, each pavement core hole was backfilled with cold-patch asphalt.

Findings and Observations

In our laboratory, the cores were examined, measured, and photographed. Plates 3 through 16 in the Attachments at the rear of this document include the photographs of each of the recovered pavement cores. The coordinates of each core location, along with material thicknesses, conditions, and other observations/notes are compiled and summarized on Plate 17, "Pavement Core Identification Sheet." An abbreviated summary of the observations of the recovered cores is as follows:

- The pavement section at twenty-one (21) of the twenty-eight (28) locations consisted of asphalt over concrete.
- At these twenty-one (21) locations, the existing asphalt thickness ranged from 2½ to 10 inches, with an average of approximately 6 inches. The underlying concrete thickness at these locations ranged from 6¼ to 13½ inches, averaging about 10 inches. Total pavement thicknesses among this group ranged from 12¾ to 20½ inches, averaging about 16 inches. Reinforcing steel was noted at various depths within the concrete in twelve of these cores. Four (4) of these cores encountered a layer of slag, ranging from approximately 1/8-inch to 2 ¾ inches thick, between the asphalt and the concrete.
- At six (6) locations, the existing pavement section consisted of 9 to roughly 15½ inches of asphalt (approximate average of 12¾ inches).
- One location, Core X-013-0-22, the existing pavement section consisted of 9 inches of concrete. This core was obtained between Ridge Road and West 78th Street, an area where the surface pavement is concrete.

Please refer to the photographs and the summary sheet (Plate 17) for additional details regarding the individual cores.

We appreciate being given the opportunity to be of service. Please do not hesitate to contact our office if you have any questions concerning our report.

Sincerely,

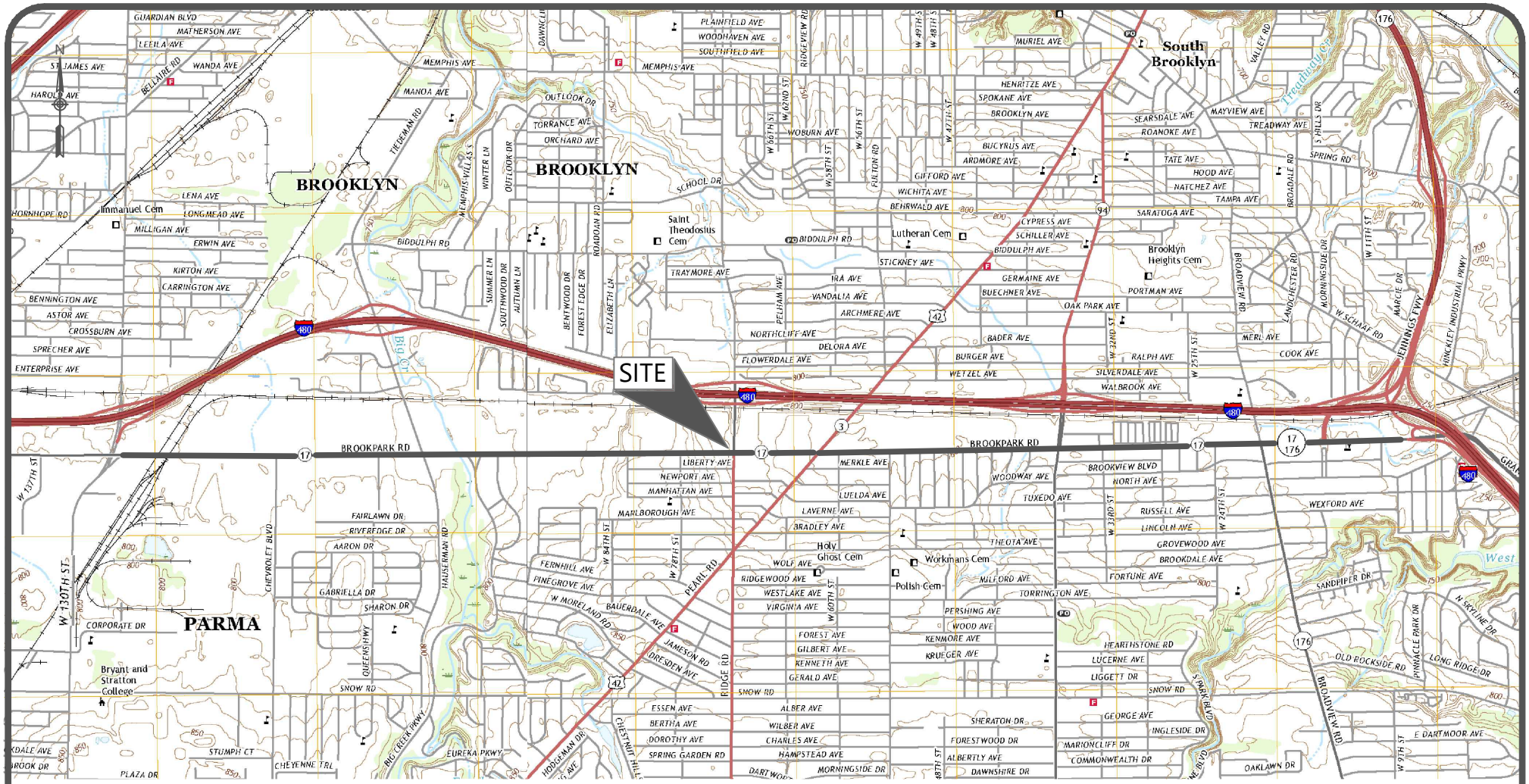
S&ME, Inc.

Shawn H. Smith, P.E.
Staff Professional II

Richard S. Weigand, P.E.
Principal Engineer/Senior Reviewer

Attachments: Vicinity Map (1 sheet)
Plan of Cores (8 sheets)
Pavement Core Photo Log (14 sheets)
Pavement Core Identification Sheet (1 sheet)

Submitted: Email Copy (Kyle.Dohlen@dot.ohio.gov)Attachments



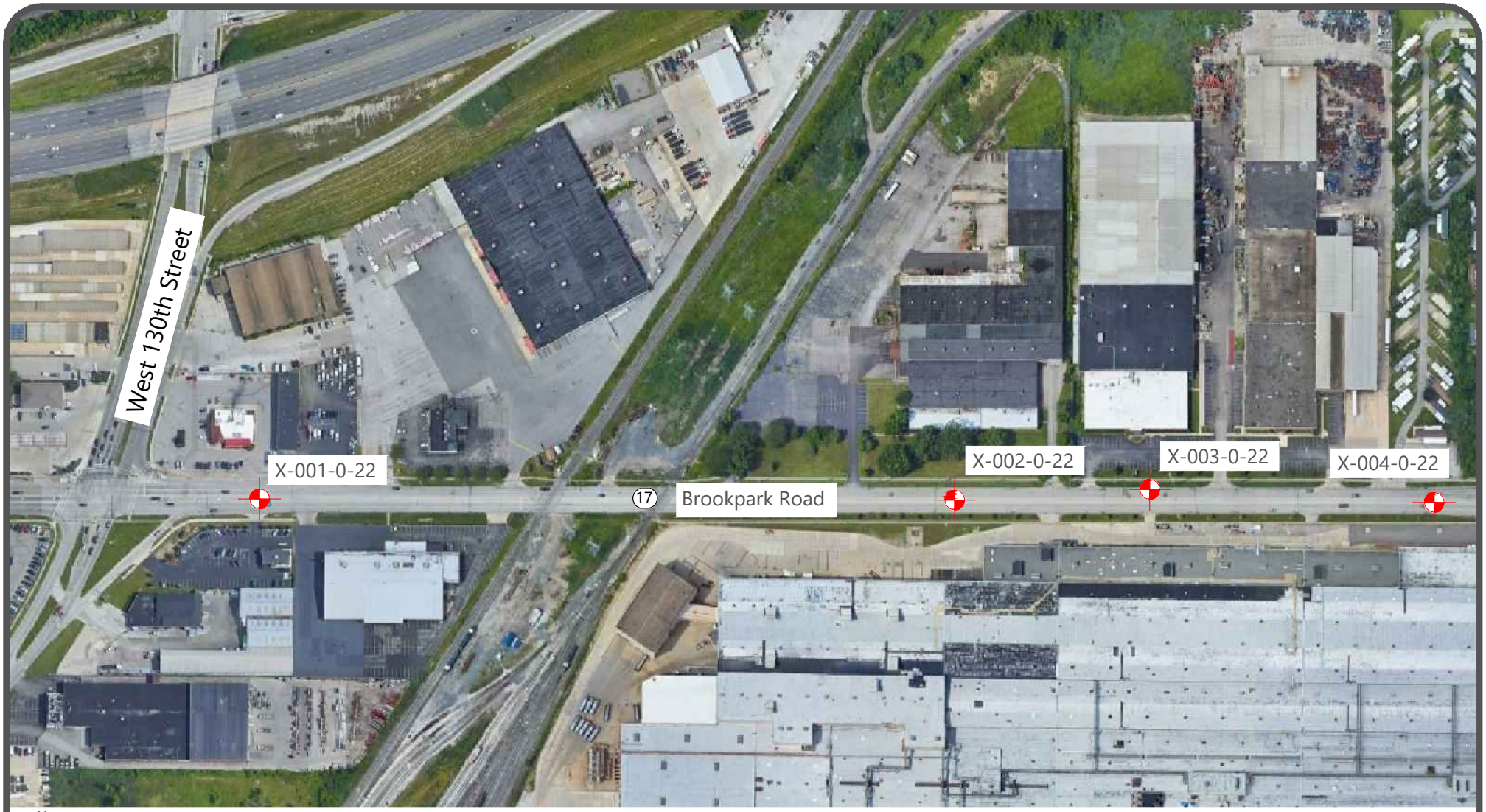
USGS Mapping:
Lakewood and Cleveland South USGS Quads

0 3000 6000
GRAPHIC SCALE (IN FEET)

Vicinity Map

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	1
DATE: 08-01-2022	
PROJECT NUMBER 216069I	



N

LEGEND

X-001-0-22 Core Location and Number

0 300 600

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - West 130th Street to Chevrolet Boulevard

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2A
DATE: 07-28-2022	
PROJECT NUMBER 216069I	

N

LEGEND

X-001-0-22 Core Location and Number

0 300 600

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - Chevrolet Boulevard to Tiedeman Road

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2B
DATE: 07-28-2022	
PROJECT NUMBER 216069I	

N

LEGEND

X-001-0-22 Core Location and Number

0 300 600

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - Tiedeman Road to the VA Medical Center

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2C
DATE: 07-28-2022	
PROJECT NUMBER 216069I	

N

LEGEND

X-001-0-22 Core Location and Number

0 300 600

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - VA Medical Center to Ridge Road

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2D
DATE: 08-01-2022	
PROJECT NUMBER 216069I	

N

LEGEND

X-001-0-22 Core Location and Number

0 300 600

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - Ridge Road to West 54th Street

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2E
DATE: 07-28-2022	
PROJECT NUMBER 216069I	

N

LEGEND

X-001-0-22 Core Location and Number

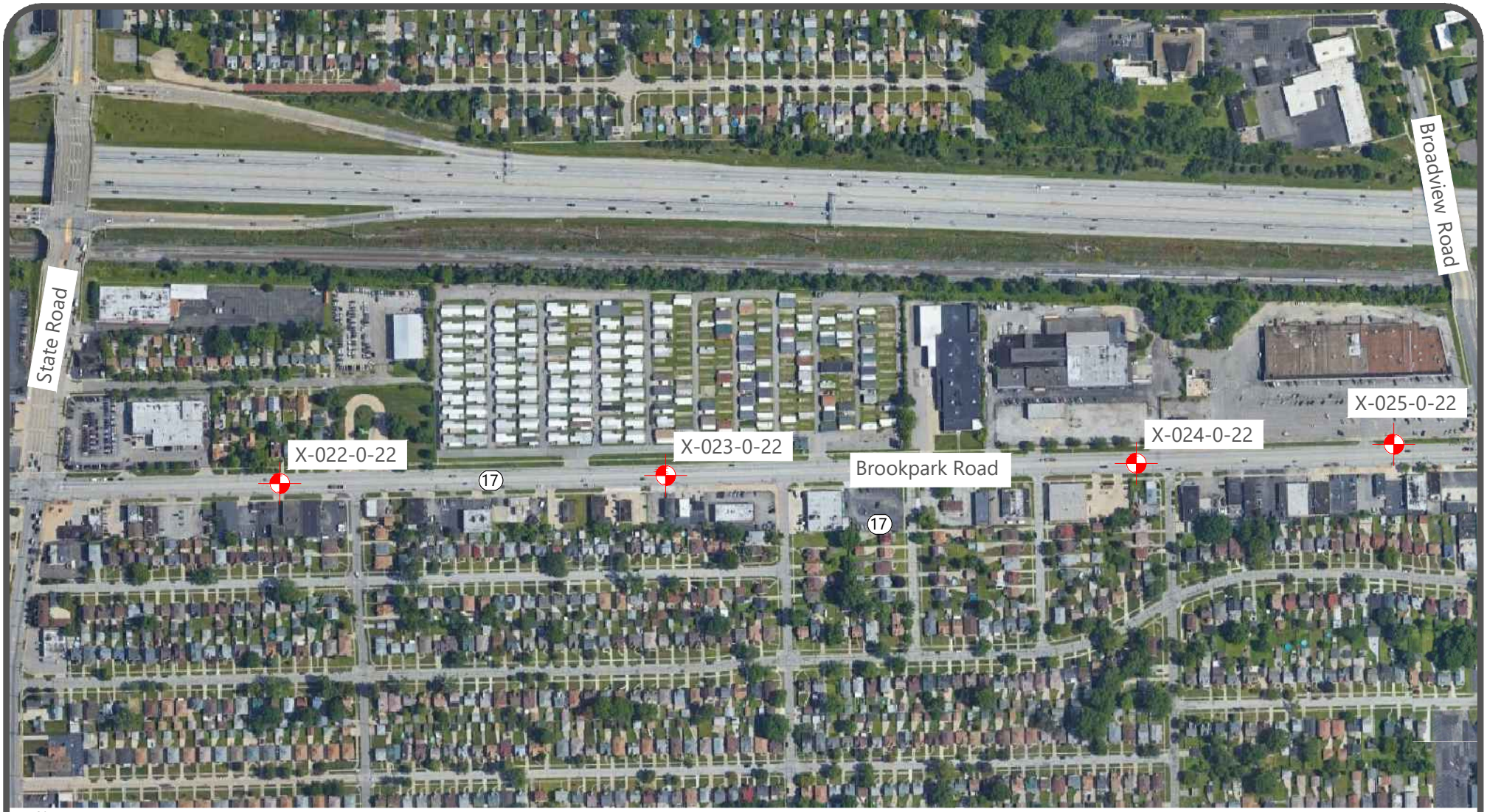
0 300 600

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - West 50th Street to State Road

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2F
DATE: 07-28-2022	
PROJECT NUMBER 216069I	



N

LEGEND

X-001-0-22 Core Location and Number

0 400 800

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - State Road to Broadview Road

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2G
DATE: 07-28-2022	
PROJECT NUMBER 216069I	

N

LEGEND

X-001-0-22 Core Location and Number

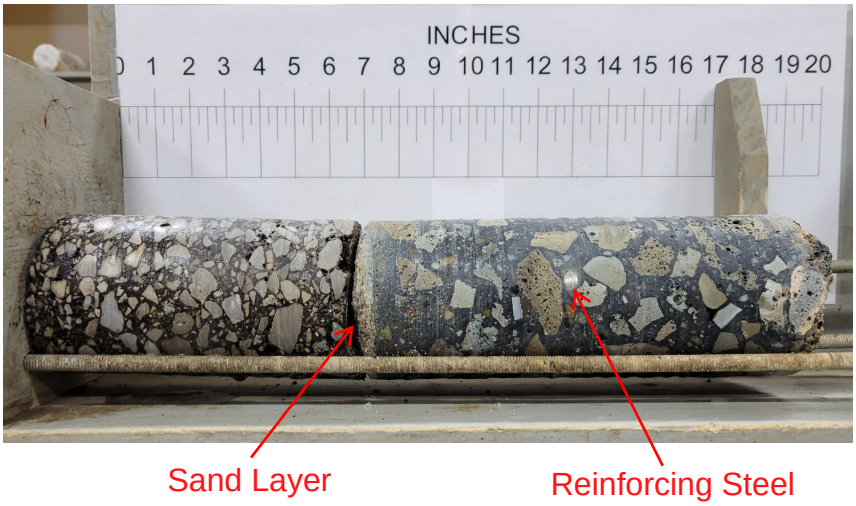
0 400 800

GRAPHIC SCALE (IN FEET)

Plan of Core Locations - Broadview Road to Grainger Road

Pavement Core Exploration
CUY-17-7.09 - Pavement Cores
Cuyahoga County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	2H
DATE: 07-28-2022	
PROJECT NUMBER 216069I	



Date: 7/23/2022

Photographer: SHS

1	**Core Number / Thickness**	X-001-0-22 Asphalt = 7″ / Concrete = 10″
	Remarks	Approximately ⅛-inch of thick fine to coarse sand observed between the asphalt and concrete. Reinforcing steel observed approximately 4¼ inches below the top of concrete.

Date: 7/23/2022

Photographer: SHS

2	**Core Number / Thickness**	X-002-0-22 Asphalt = 10″ / Concrete = 10½″
	Remarks	

Date: 7/23/2022

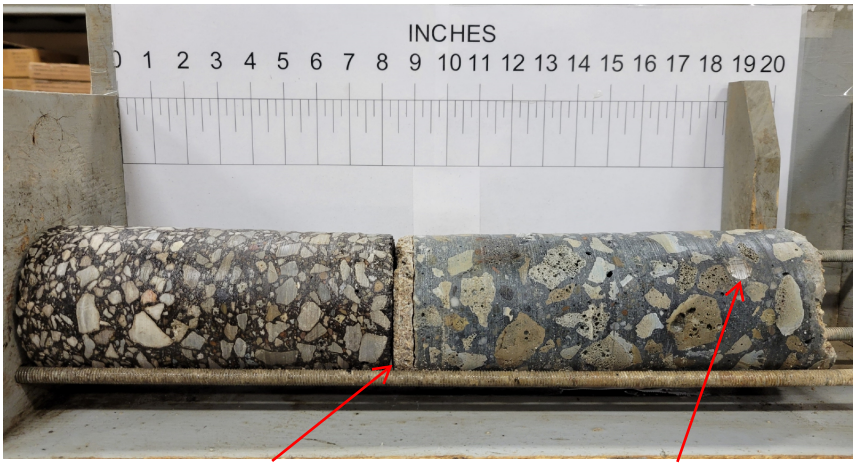
Photographer: SHS

3	**Core Number / Thickness**	X-003-0-22 Asphalt = 2½" / Concrete = 10¼"
	Remarks	

Date: 7/23/2022

Photographer: SHS

4	**Core Number / Thickness**	X-004-0-22 Asphalt = 8¼" / Concrete = 9¾"
	Remarks	



Date: 7/23/2022

Photographer: SHS

5	**Core Number / Thickness**	X-005-0-22 Asphalt = 8½″ / Concrete = 9½″
	Remarks	An approximately ½-inch thick layer of slag (fine to coarse sand sized) observed between the asphalt and concrete. Reinforcing steel observed at approximately 7¾ inches below the top of concrete.

Date: 7/23/2022

Photographer: SHS

6	**Core Number / Thickness**	X-006-0-22 Asphalt = 3¼″ / Concrete = 11¾″
	Remarks	

Reinforcing Steel

Date: 7/23/2022

Photographer: SHS

7	**Core Number / Thickness**	X-007-0-22 Asphalt = 7½" / Concrete = 11"
	Remarks	Reinforcing steel observed approximately 5¾ inches below the top of concrete.

Date: 7/23/2022

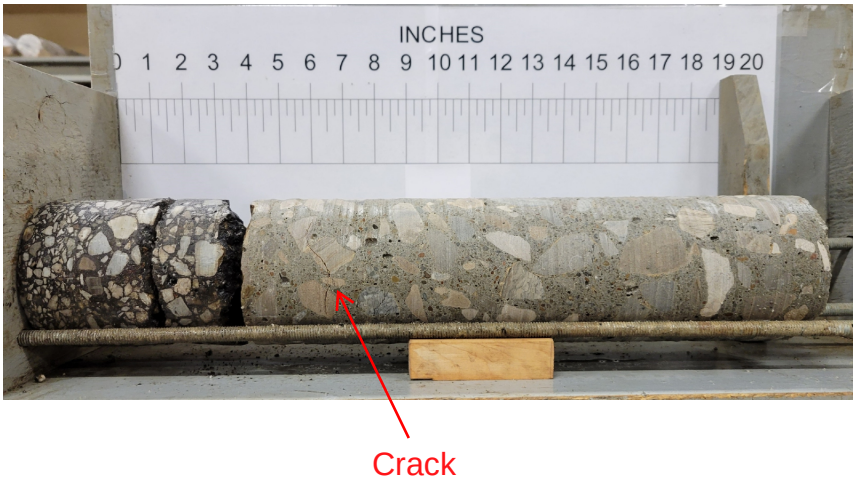
Photographer: SHS

8	**Core Number / Thickness**	X-008-0-22 Asphalt = 3" / Concrete = 12¾"
	Remarks	

Date: 7/23/2022

Photographer: SHS

9	**Core Number / Thickness**	X-009-0-22 Asphalt = 8¾" / Concrete = 10¼"
	Remarks	



Date: 7/23/2022

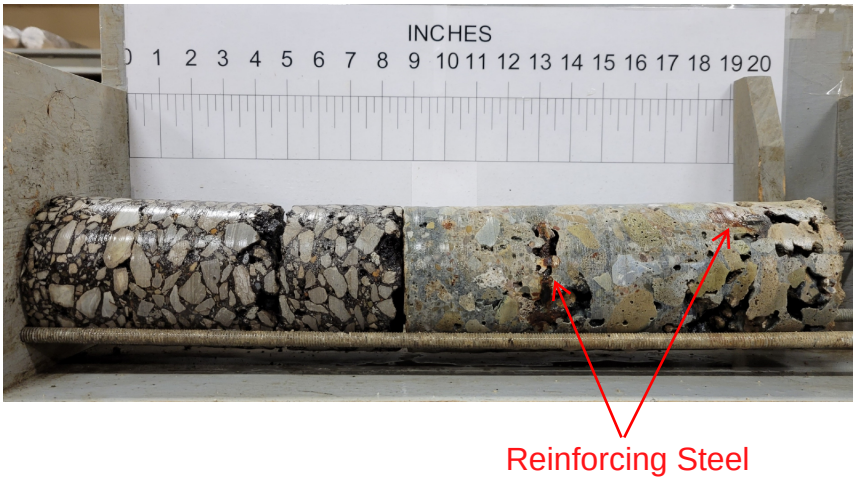
Photographer: SHS

10	**Core Number / Thickness**	X-010-0-22 Asphalt = 5¼" / Concrete = 13½"
	Remarks	Horizontal cracks were observed at approximately ¾ and 2-inches from top of concrete.

Date: 7/23/2022

Photographer: SHS

11	**Core Number / Thickness**	X-011-0-22 Asphalt = 5¾" / Concrete = 9¼"
	Remarks	Reinforcing steel observed approximately 3¼, 3¾, and 4½, inches below the top of concrete.



Date: 7/23/2022

Photographer: SHS

12	**Core Number / Thickness**	X-012-0-22 Asphalt = 8¾" / Concrete = 10¼"
	Remarks	Reinforcing steel observed approximately 3¼ and 8¼ inches below the top of concrete.

Date: 7/23/2022

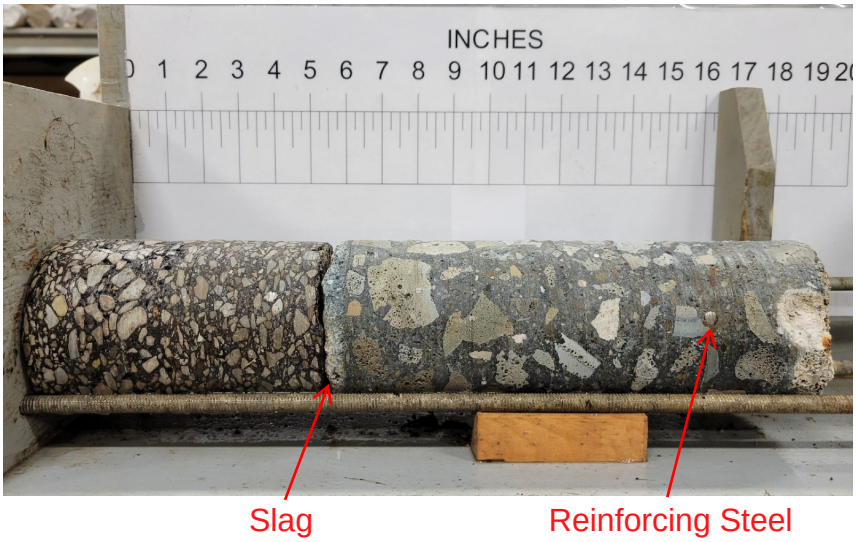
Photographer: SHS

13	**Core Number / Thickness**	X-013-0-22 Concrete = 9″
	Remarks	Core was located between Ridge Road and West 78th Street where surface pavement was concrete. Reinforcing steel observed approximately 4 inches from the top of concrete.

Date: 7/23/2022

Photographer: SHS

14	**Core Number / Thickness**	X-014-0-22 Asphalt = 12¾″
	Remarks	A layer of geotextile was encountered at the bottom of the asphalt.



Date: 7/23/2022

Photographer: SHS

15	**Core Number / Thickness**	X-015-0-22 Asphalt = 6″ / Concrete = 10¼″
	Remarks	Approximately ⅛-inch of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. Reinforcing steel observed approximately 7½ inches below the top of concrete.

Date: 7/23/2022

Photographer: SHS

16	**Core Number / Thickness**	X-016-0-22 Asphalt = 14″
	Remarks	

Date: 7/23/2022

Photographer: SHS

17	**Core Number / Thickness**	X-017-0-22 Asphalt = 11″
	Remarks	Debris, consisting of paper and plastic, observed from about 4¼ to 5½ inches from the pavement surface.

Date: 7/23/2022

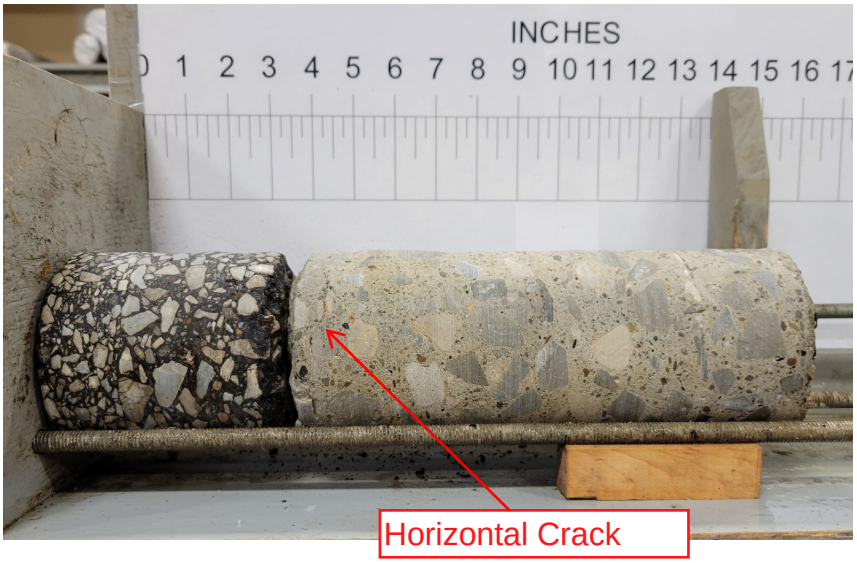
Photographer: SHS

18	**Core Number / Thickness**	X-018-0-22 Asphalt = 14″
	Remarks	

Date: 7/23/2022

Photographer: SHS

19	**Core Number / Thickness**	X-019-0-22 Asphalt = 5¼" / Concrete = 8½"
	Remarks	A layer of cemented slag was attached to the bottom of the core. Reinforcing steel observed approximately 6½ inches below the top of concrete.



Date: 7/23/2022

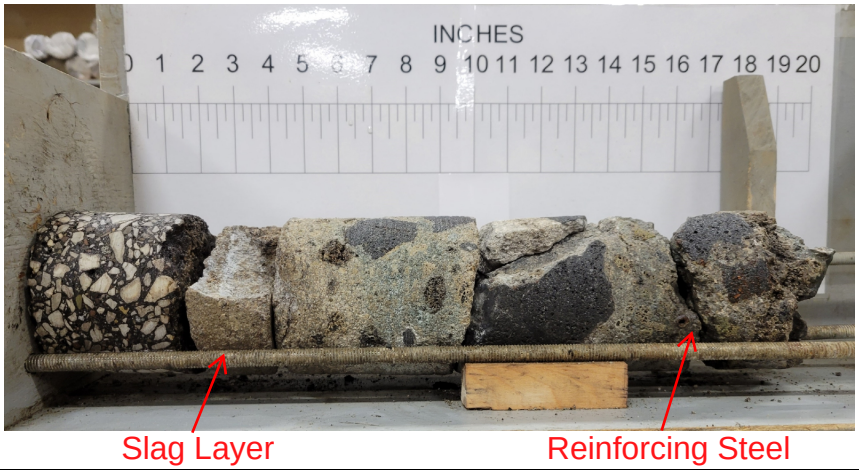
Photographer: SHS

20	**Core Number / Thickness**	X-020-0-22 Asphalt = 7¾" / Concrete = 9½"
	Remarks	A horizontal crack observed at approximately ½-inch from the top of concrete.

Date: 7/23/2022

Photographer: SHS

21	**Core Number / Thickness**	X-021-0-22 Asphalt = 15½"
	Remarks	A layer of cemented slag was attached to the bottom of the core.



Date: 7/23/2022

Photographer: SHS

22	**Core Number / Thickness**	X-022-0-22 Asphalt = 2½" / Concrete = 12"
	Remarks	Approximately 2¾ inches of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. Reinforcing steel observed approximately 11 inches from the top of concrete.

Date: 7/23/2022

Photographer: SHS

23	**Core Number / Thickness**	X-023-0-22 Asphalt = 9″
	Remarks	

Date: 7/23/2022

Photographer: SHS

24	**Core Number / Thickness**	X-024-0-22 Asphalt = 7¼″ / Concrete = 6¾″
	Remarks	Reinforcing steel observed approximately 3½ inches below the top of concrete.

Date: 7/23/2022

Photographer: SHS

25	**Core Number / Thickness**	X-025-0-22 Asphalt = 7¼" / Concrete = 7¾"
	Remarks	Approximately 1 inch of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. Reinforcing steel observed approximately 5¾ and 7½ inches below the top of concrete.

Date: 7/23/2022

Photographer: SHS

26	**Core Number / Thickness**	X-026-0-22 Asphalt = 7¾" / Concrete = 6¼"
	Remarks	Reinforcing steel observed at approximately 4¼ and 5 inches below the top of concrete.

Date: 7/23/2022

Photographer: SHS

27	**Core Number / Thickness**	X-027-0-22 Asphalt = 3¾" / Concrete = 9¼"
	Remarks	

Date: 7/23/2022

Photographer: SHS

28	**Core Number / Thickness**	X-028-0-22 Asphalt = 3¾" / Concrete – 10"
	Remarks	Reinforcing steel observed at approximately 4¼ inches below the top of concrete.

Pavement Core Identification Sheet

Dates Cored: 7/18/22 through 7/20/22
Identified By: Shawn Smith
Dates Identified: 7/23/22 and 7/25/22

S&ME Project No.: 216069I
Project Name: CUY-17-7.09 -- Pavement Cores
Client: ODOT District 12

Project Area	Core	Coordinates		Lane	Asphalt (in.)	Concrete (in.)	Total Core Depth (in.)	Notes:
		Latitude	Longitude					
West 130th Street to Chevrolet Boulevard	X-001-0-22	41.4184374	-81.7798167	Center turn lane	7	10	17	· Approximately ⅛-inch of thick fine to coarse sand observed between the asphalt and concrete. · Reinforcing steel observed approximately 4¼ inches below the top of concrete.
	X-002-0-22	41.4184336	-81.7744651	Center turn lane	10	10½	20½	· Core location was shifted approximately 200 feet east to avoid conflict with utility work.
	X-003-0-22	41.4184918	-81.772959	Westbound right lane	2½	10¼	12¾	
	X-004-0-22	41.4184249	-81.7707516	Center turn lane	8¼	9¾	18	
Chevrolet Boulevard to Tiedeman Road	X-005-0-22	41.4184527	-81.7652748	Center turn lane	8½	9½	18½	· Approximately ½-inch of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. · Reinforcing steel observed at approximately 7¾ inches below the top of concrete.
	X-006-0-22	41.4185222	-81.7623912	Westbound right lane	3¼	11¾	15	
	X-007-0-22	41.4184681	-81.7604642	Center turn lane	7½	11	18½	· Reinforcing steel observed approximately 5¾ inches below the top of concrete.
Tiedeman Road to Ridge Road	X-008-0-22	41.4184955	-81.7559351	Center turn lane	3	12¾	15¾	
	X-009-0-22	41.4185203	-81.750967	Center turn lane	8¾	10¼	19	
	X-010-0-22	41.4184843	-81.7479787	Eastbound right lane	5¼	13½	18¾	· Horizontal cracks were observed at approximately ¾ and 2-inches from top of concrete.
	X-011-0-22	41.4185622	-81.7461432	Center turn lane	5¾	9¼	15	· Reinforcing steel observed approximately 3¼, 3¾, and 4½, inches below the top of concrete.
	X-012-0-22	41.4185904	-81.741582	Center turn lane	8¾	10¼	19	· Reinforcing steel observed approximately 3¼ and 8¼ inches below the top of concrete.
	X-013-0-22	41.4186217	-81.7368749	Center turn lane	Not Enc.	9	9	· Core was located between Ridge Road and West 78th Street, in an area where the surface pavement was concrete. · Reinforcing steel observed approximately 4 inches below the top of concrete.
Ridge Road to Pearl Road	X-014-0-22	41.4186551	-81.732377	Center turn lane	12¾	Not Enc.	12¾	· A layer of geotextile was encountered at the bottom of the asphalt.
	X-015-0-22	41.4187540	-81.729407	Westbound right lane	6	10¼	16¼	· Approximately ⅛-inch of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. · Reinforcing steel observed approximately 7½ inches below the top of concrete.
Pearl Road to State Road	X-016-0-22	41.4186994	-81.7268771	Center turn lane	14	Not Enc.	14	
	X-017-0-22	41.418745	-81.7235023	Center turn lane	11	Not Enc.	11	· Debris, consisting of paper and plastic, observed from about 4¼ to 5½ inches from the pavement surface.
	X-018-0-22	41.4188135	-81.7176107	Center turn lane	14	Not Enc.	14	
	X-019-0-22	41.4187896	-81.7144622	Eastbound right lane	5¼	8½	13¾	· A layer of cemented slag was attached to the bottom of the core. · Reinforcing steel observed approximately 6½ inches below the top of concrete.
	X-020-0-22	41.4188745	-81.7126206	Center turn lane	7¾	9½	13¾	· A horizontal crack observed at approximately ½-inch from top of concrete.
	X-021-0-22	41.4189739	-81.7077304	Center turn lane	15½	Not Enc.	15½	· A layer of cemented slag was attached to the bottom of the core.
State Road to Broadview Road	X-022-0-22	41.4190354	-81.7037349	Center turn lane	2½	12	17¼	· Approximately 2¾ inches of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. · Reinforcing steel observed approximately 11 inches from the top of concrete.
	X-023-0-22	41.4191365	-81.6988831	Center turn lane	9	Not Enc.	9	
	X-024-0-22	41.4192702	-81.6962128	Westbound right lane	7¼	6¾	14	· Reinforcing steel observed approximately 3½ inches below the top of concrete.
Broadview Road to Grainger Road	X-025-0-22	41.4192349	-81.6942399	Center turn lane	7¼	7¾	15¾	· Approximately 1 inch of cemented slag (fine to coarse sand sized) observed between the asphalt and concrete. · Reinforcing steel observed approximately 5¾ and 7½ inches below the top of concrete.
	X-026-0-22	41.4193457	-81.689134	Center turn lane	7¾	6¼	14	· Reinforcing steel observed at approximately 4¼ and 5 inches below the top of concrete.
	X-027-0-22	41.4193323	-81.6869748	Eastbound right lane	3¾	9¼	12¾	
	X-028-0-22	41.4194319	-81.6854093	Center turn lane	3¾	10	13¾	· Reinforcing steel observed at approximately 4¼ inches below the top of concrete.