

APPENDIX 'A'

GEOTECHNICAL REPORT



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"Engineering and Testing Solutions That Work for You"

March 25, 2021

File No.: 20-035-01

WSP Canada Inc.
111 – 93 Lombard Avenue
Winnipeg, Manitoba
R3B 3B1

ATTENTION: Kelly Groff, P.Eng.

RE: City of Winnipeg Project No. 20-C-10; 2021 Portage Avenue Rehabilitation

Introduction

ENG-TECH Consulting Limited (ENG-TECH) was retained by WSP Canada Inc. (WSP) to complete a pavement coring and testing program for a future rehabilitation project along sections of Portage Avenue in Winnipeg, Manitoba.

Scope of Work

The scope of work for the project entailed recovering a total of twenty-two (22) cores through the existing pavement structure, documenting findings in accordance with Appendix B – Site Investigation Requirements for Public Works Street Projects and providing a report outlining the work conducted, including photographs and pavement core summary tables showing the pavement core thicknesses and locations using UTM coordinates.

The sections of road from which cores were recovered were as follows:

- Portage Avenue (St Charles Street to David Street - Eastbound) – 13 cores
- Portage Avenue (St Charles Street to David Street - Westbound) – 9 cores

Field Program

ENG-TECH conducted the coring program on the local streets from March 17th to 19th, 2021 across the site locations previously stated. The cores were obtained by ENG-TECH at locations determined by WSP using a 150 mm diameter diamond end core barrel at joint locations and a 100mm diameter diamond end core barrel at mid slab locations. ENG-TECH repaired the core apertures with a City of Winnipeg approved material (cold lay asphalt concrete repair) that has been accepted on previous street renewal projects.

Laboratory Program

ENG-TECH measured core thicknesses and photographed the pavement structure. The core thicknesses, pavement structure and UTM coordinates are outlined in Table 1 below. Photographs of each core are shown in the attached Photographs 1 to 22. ENG-TECH also determined concrete compressive strengths in accordance with CSA A23.2-14C – moist condition on select cores from locations determined by WSP. The compressive strength results are shown on the attached Obtaining and Testing Drilled Cores report.

Closure

ENG-TECH trusts this is all the information required. If you have any questions, please contact the undersigned.

Sincerely,
ENG-TECH Consulting Limited



Darci Babisky, C.E.T.
Operations Manager - Laboratory

Enclosures: Table 1 – Summary of Pavement Structure – Portage Avenue (St Charles Street to David Street)
Obtaining and Testing Drilled Cores report (Ref. No. 's 21-35-1-1) (1page)
Photographs of Cores (22 cores) (22 pages)

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Table 1 - Summary of Pavement Core Structure Portage Avenue between St Charles Street and David Street							
Core No.	Date Collected	Lane Direction	Test Hole Location		Type	Pavement Surface	
			UTM (N)	14U (E)		Core Diameter (mm)	Thickness (mm)
1	March 17, 2021	Westbound	5526918	621349	Asphalt	150	50
					Concrete	150	230
2	March 17, 2021	Westbound	5526851	621026	Asphalt	150	50
					Concrete	150	230
3	March 17, 2021	Westbound	55826826	620830	Asphalt	150	75
					Concrete	150	230
4	March 17, 2021	Westbound	5526817	620841	Asphalt	150	50
					Concrete	150	230
5	March 17, 2021	Westbound	5526797	620760	Asphalt	150	50
					Concrete	150	200
6	March 18, 2021	Westbound	5526896	621204	Asphalt	150	50
					Concrete	150	230
7	March 18, 2021	Westbound	5526868	621102	Asphalt	150	75
					Concrete	150	200
8	March 18, 2021	Westbound	5526771	620642	Asphalt	150	90
					Concrete	150	230
9	March 18, 2021	Eastbound	5526786	620765	Asphalt	150	90
					Concrete	150	230
10	March 18, 2021	Eastbound	5526868	621154	Asphalt	150	75
					Concrete	150	230
11	March 18, 2021	Eastbound	5526757	620656	Asphalt	100	75
					Concrete	100	230

Table 1 - Summary of Pavement Core Structure Portage Avenue between St Charles Street and David Street									
Core No.	Date Collected	Lane Direction	Test Hole Location		Type	Pavement Surface		Thickness (mm)	
			UTM (N)	14U (E)		Core Diameter (mm)			
12	March 18, 2021	Eastbound	5526787	620801	Asphalt	100	110		
					Concrete	100	200		
13	March 18, 2021	Eastbound	5526804	620850	Asphalt	100	146		
					Concrete	100	200		
14	March 18, 2021	Eastbound	5526831	621025	Asphalt	100	50		
					Concrete	100	230		
15	March 18, 2021	Eastbound	5526919	621417	Asphalt	100	100		
					Concrete	100	200		
16	March 18, 2021	Eastbound	5526889	621250	Asphalt	100	95		
					Concrete	100	200		
17	March 19, 2021	Westbound	5526940	621405	Asphalt	150	85		
					Concrete	150	200		
18	March 19, 2021	Eastbound	5526818	620952	Asphalt	150	55		
					Concrete	150	230		
19	March 19, 2021	Eastbound	5526838	621048	Asphalt	150	45		
					Concrete	150	230		
20	March 19, 2021	Eastbound	5526862	621131	Asphalt	150	100		
					Concrete	150	200		
21	March 19, 2021	Eastbound	5526904	621369	Asphalt	150	150		
					Concrete	150	200		
22	March 19, 2021	Eastbound	5526903	621328	Asphalt	150	150		
					Concrete	150	200		

Notes: Core No.'s 8, 9, 14 and 20 contained reinforcing steel bars.



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**OBTAINING AND TESTING
DRILLED CORES**



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111 - 93 Lombard Avenue
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R3B 3B1

File No.: 21-035-02

Ref. No.: 21-35-2-1

Attention: Kelly Groff, P. Eng.

Project: CITY OF WINNIPEG PROJECT NO. 20-C-10; 2021 PORTAGE AVENUE REHABILITATION

Date Cored: Mar 18/21 Cored By: ENG-TECH (Kyle Zebiere) Page: 1 of 1
 Date Received: Mar 19/21 Received By: ENG-TECH (Kyle Zebiere) Structure: Pavement
 Age of Concrete - Concrete Design Strength: 32 MPa Method: CSA A23.2-19-14C,9C
 Core Conditioning: As per CSA A23.2-14C Clause 7.3.1 (moist) Direction of Load: Parallel

Core No.	Location on Structure	Length		Average Diameter (mm)	Compressive Strength (MPa)	Type of Fracture	Date Tested (m/d/y)	Tested By ENG-TECH
		Cored (mm)	Tested (mm)					
11	Northing: 5526757, Easting: 620656, curb lane, centreline	222	206	100.0	58.3	1	Mar 25/21	Paul L'Anglais
12	Northing: 5526787, Easting: 620801, curb lane, centreline	187	169	100.0	43.5*	1	Mar 25/21	Paul L'Anglais
13	Northing: 5526804, Easting: 620850, median lane, 0.1 meter South of centreline	-	-	-	-	-	-	-
14	Northing: 5526831, Easting: 621025, South centre lane, centreline	219	104	100.0	65.6*	1	Mar 25/21	Paul L'Anglais
15	Northing: 5526919, Easting: 621417, centre lane, centreline	195	177	100.0	54.6*	1	Mar 25/21	Paul L'Anglais
16	Northing: 5526885, Easting: 621250, middle lane, 0.3 meters North of centerline	181	165	100.0	54.4*	1	Mar 25/21	Paul L'Anglais

Reporting of these results constitutes a testing service only. Engineering interpretation or evaluation of the test results is provided only on written request.
 *Denotes corrected strength for Length/Diameter ratio less than 2.0 to 1.0.

Strength Specification: Minimum 85% of design strength on an average of 3 cores - no single less than 75% as per CSA A23.1 Clause 4.4.2.2.2.2

Comments: A compressive strength results was not determined from Core No. 13 location as an intact specimen was not recoverable after two attempts. Core No. 14 contained a 10M reinforcing steel bar located 100mm below top of core. The steel was removed prior to testing.

Deviations from test procedure: None

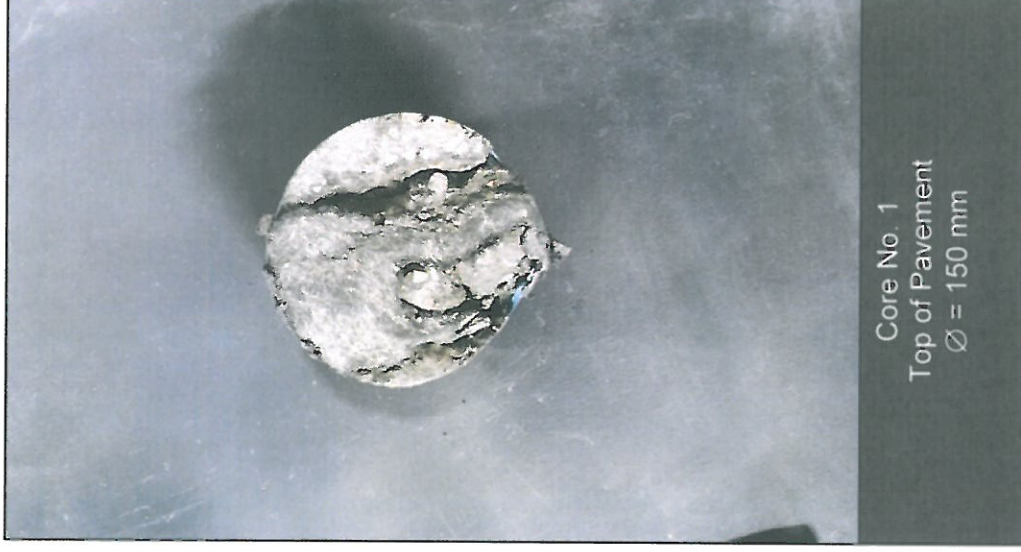
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ENG-TECH Consulting Limited

Per 
 Darci Babisky, C.E.T.
 Operations Manager - Laboratory
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Photograph 1: Specimen from Westbound, South Centre Lane



Photograph 2: Specimen from Westbound, South Centre Lane



Photograph 3: Specimen from Westbound, Curb Lane



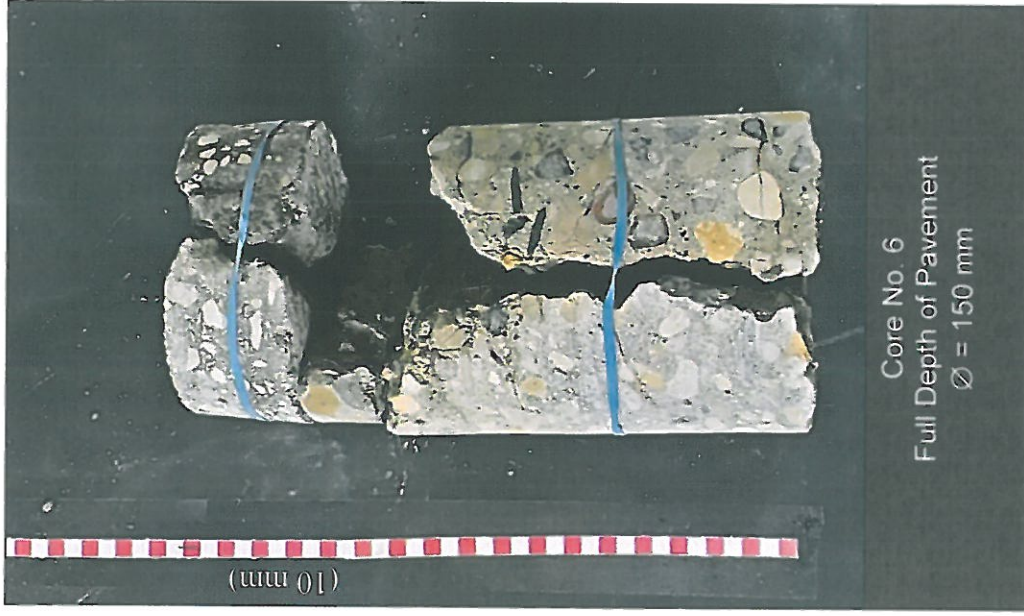
Photograph 4: Specimen from Westbound, Curb Lane



Photograph 5: Specimen from Westbound, Centre Lane



Photograph 6: Specimen from Westbound, Curb Lane



Photograph 7: Specimen from Westbound, Median Lane



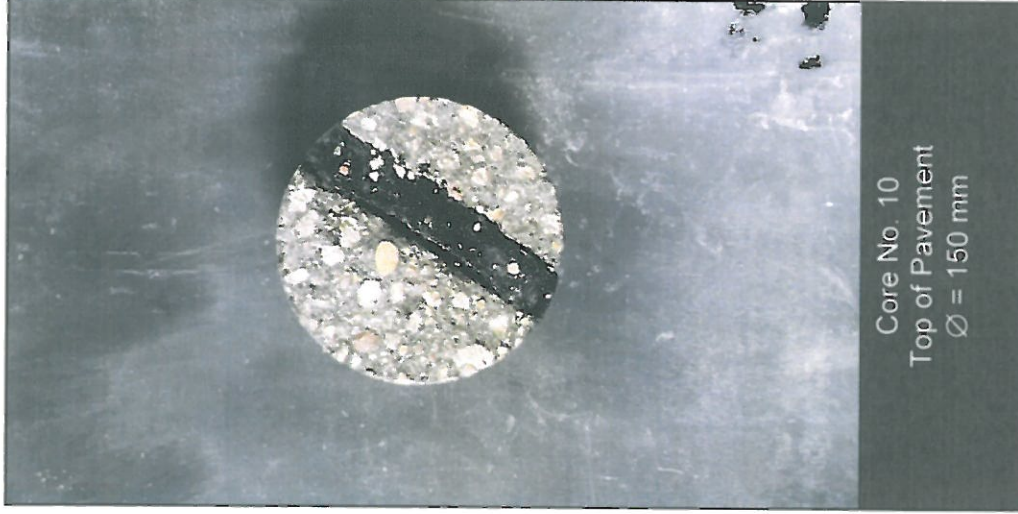
Photograph 8: Specimen from Westbound, Median Lane



Photograph 9: Specimen from Eastbound, Centre Lane



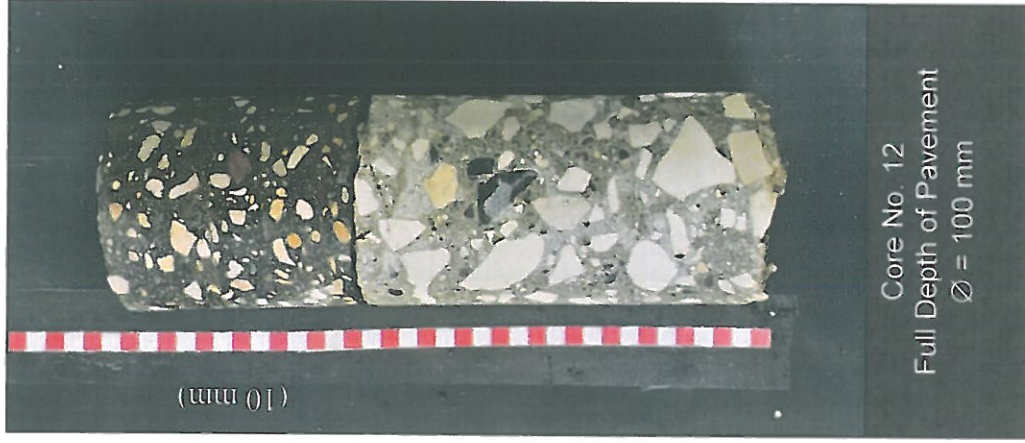
Photograph 10: Specimen from Eastbound, Curb Lane



Photograph 11: Specimen from Eastbound, Curb Lane



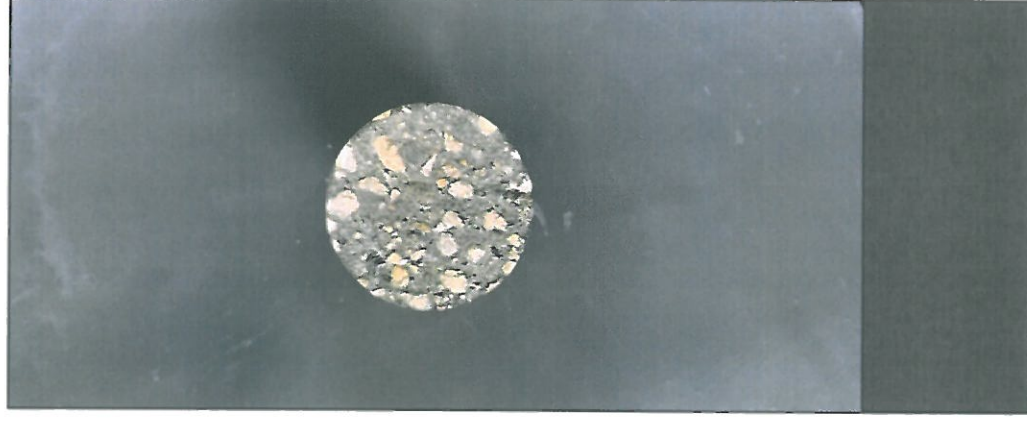
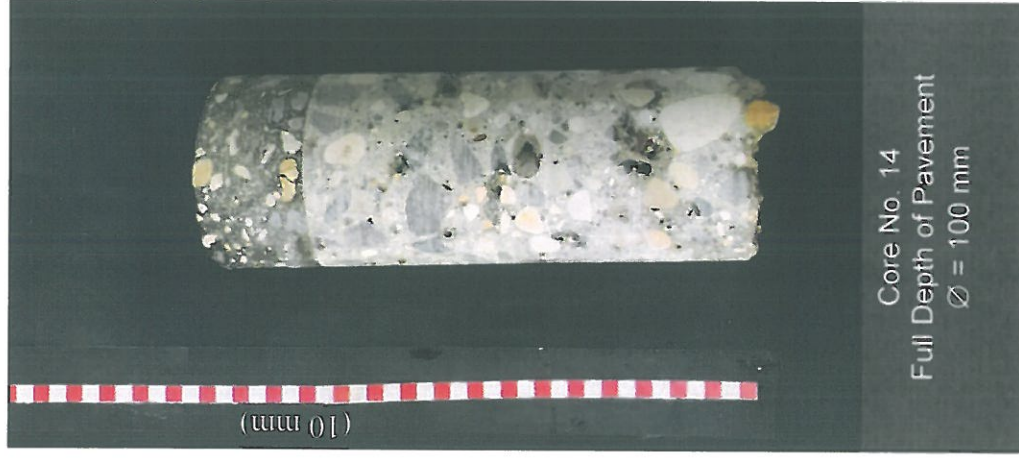
Photograph 12: Specimen from Eastbound, Curb Lane



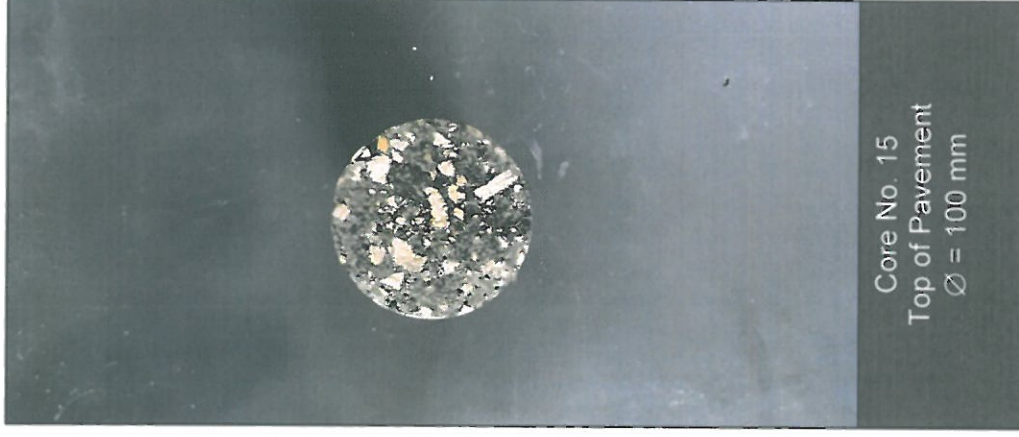
Photograph 13: Specimen from Eastbound, Median Lane



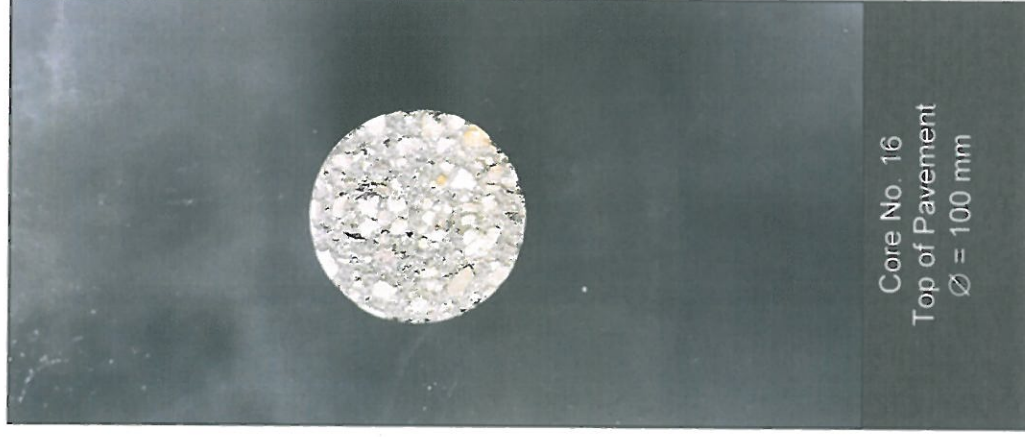
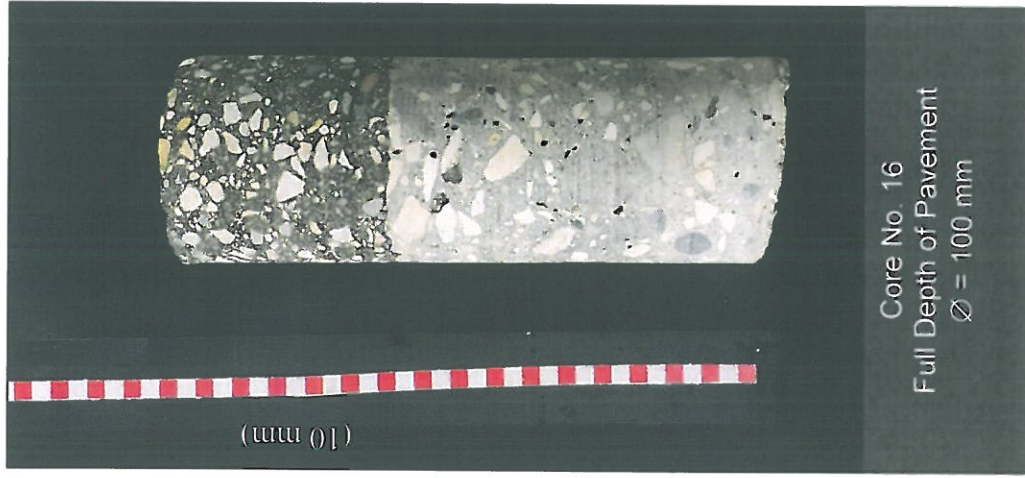
Photograph 14: Specimen from Eastbound, South Centre Lane



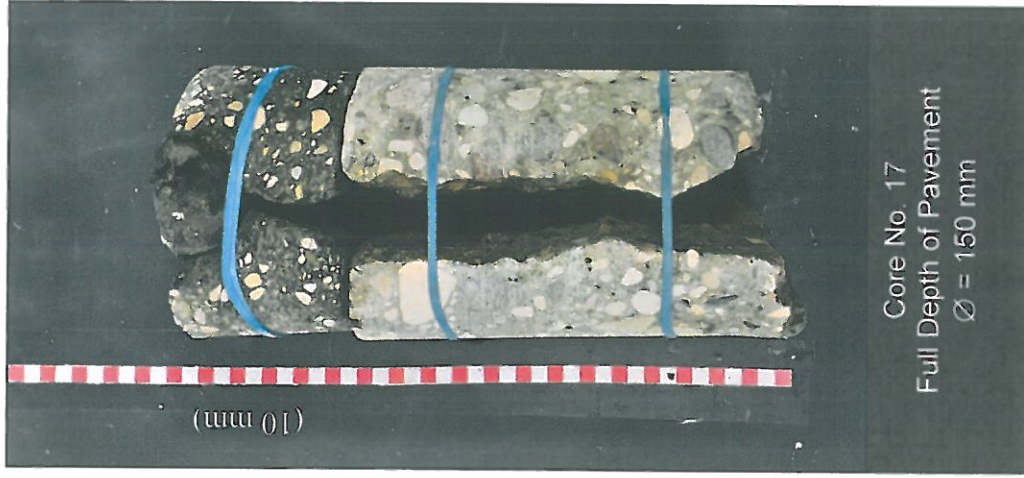
Photograph 15: Specimen from Eastbound, Centre Lane



Photograph 16: Specimen from Eastbound, Middle Lane



Photograph 17: Specimen from Westbound, Acceleration Lane



Photograph 18: Specimen from Eastbound, Curb Lane



Photograph 19: Specimen from Eastbound, Curb Lane



Photograph 20: Specimen from Eastbound, North Centre Lane



Photograph 21: Specimen from Eastbound, Curb Lane



Photograph 22: Specimen from Eastbound, Median Lane

