

APPENDIX 'A'

GEOTECHNICAL REPORT



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"Engineering and Testing Solutions That Work for You"

September 30, 2022

File No.: 22-035-02

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

ATTENTION: Mark Vogt, P.Eng.

RE: City of Winnipeg RFP No. 796-2022, River Avenue, Stradbrook Avenue and Wellington Crescent 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 River Avenue, Stradbrook Avenue and Wellington Crescent in Winnipeg, Manitoba.

Scope of Work

The scope of work for the project entailed recovering a total of twelve (12) 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:

- River Avenue (Harkness Avenue to Wellington Crescent) – 5 cores
- Wellington Crescent (River Avenue to Stradbrook Avenue) – 3 cores
- Stradbrook Avenue (Wellington Crescent to Harkness Avenue) – 4 cores

Field Program

ENG-TECH conducted the coring program on the local streets on September 21st and 22nd, 2021 across the site locations previously stated. The cores were obtained by ENG-TECH at locations determined by WSP using a 100mm and 150mm diameter diamond end core barrels at mid slab locations. ENG-TECH repaired the core apertures with a City of Winnipeg approved material (Versaspeed 100) 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 Tables 1 to 3 below. Photographs of each core are shown in the attached Photographs 1 to 12. 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 – River Avenue (Harkness Avenue to Wellington Crescent)
Table 2 – Summary of Pavement Structure – Wellington Crescent (River Avenue to Stradbrook Avenue)
Table 3 – Summary of Pavement Structure – Stradbrook Avenue (Wellington Crescent to Harkness Avenue)
Obtaining and Testing Drilled Cores report (Ref. No. 22-35-2-1) (2 pages)
Photographs of Cores (12 cores) (12 pages)

Email: mark.vogt@wsp.com



Table 1 - Summary of Pavement Core Structure
River Avenue between Harkness Avenue and Wellington Crescent

Core No.	Date Collected	Lane	Test Hole Location		Type	Pavement Surface	
			UTM (N)	14U (E)		Core Diameter (mm)	Thickness (mm)
1	September 22, 2022	North Curb	5527080	633591	Asphalt	150	47
					Concrete	150	227
2	September 22, 2022	North Curb	5526960	633372	Asphalt	100	41
					Concrete	100	187
3	September 22, 2022	South Curb	5526791	633079	Asphalt	150	48
					Concrete	150	155
4	September 22, 2022	North Curb	5526748	632987	Asphalt	150	0
					Concrete	150	200
5	September 22, 2022	South Curb	5526731	632969	Asphalt	100	40
					Concrete	100	232

Table 1 - Summary of Pavement Core Structure
Wellington Crescent between River Avenue and Stradbroke Avenue

Core No.	Date Collected	Lane	Test Hole Location		Type	Pavement Surface	
			UTM (N)	14U (E)		Core Diameter (mm)	Thickness (mm)
6	September 21, 2022	West Curb	5526622	632796	Asphalt	100	57
					Concrete	100	212
7	September 21, 2022	Middle	5526605	632808	Asphalt	150	109
					Concrete	150	183
8	September 21, 2022	East Curb	5526538	632849	Asphalt	100	95
					Concrete	100	100

Table 1 - Summary of Pavement Core Structure Stradbroke Avenue between Wellington Crescent and Harkness Avenue							
Core No.	Date Collected	Lane	Test Hole Location		Pavement Surface		
			UTM (N)	14U (E)	Type	Core Diameter (mm)	Thickness (mm)
9	September 21, 2022	South Curb	55266550	633021	Asphalt	100	0
					Concrete	100	223
10	September 21, 2022	North Curb	55266608	633140	Asphalt	100	0
					Concrete	100	215
11	September 21, 2022	South Curb	55266635	633177	Asphalt	150	110
					Concrete	150	270
12	September 21, 2022	North Curb	5526723	633355	Asphalt	150	0
					Concrete	150	126



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**OBTAINING AND TESTING
DRILLED CORES**



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File No.: 22-035-02
Ref. No.: 22-35-2-1

Attention: Mark Vogt, M. Sc., P. Eng.

Project: RFP NO. 796-2021; RIVER AVENUE, STRADBROOK AVENUE AND WELLINGTON CRESCENT REHABILITATION

Date Cored: See comments Cored By: ENG-TECH (Kyle Zebiere) Page: 1 of 2
Date Received: Sep 22/22 Received By: ENG-TECH (Kyle Zebiere) Structure: Pavement
Age of Concrete: - Concrete Design Strength: 32 Test Method: CSA A23.2-14C, 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)	Date Tested (m/d/y)	Compressive Strength (MPa)	Type of Fracture	Tested By ENG-TECH
		Cored (mm)	Tested (mm)					
1	River Avenue, North curb lane, 0.1 meter South of centreline of lane, Northing: 5527080, Easting: 633591	227	-	150	-	-	-	-
2	River Avenue, North curb lane, centreline of lane, Northing: 5526960, Easting: 633372	187	117	100	Sep 28/22	56.6*	1	Rey Batac
3	River Avenue, South curb lane, centreline of lane, Northing: 5526791, Easting: 633079	155	-	150	-	-	-	-
4	River Avenue, North curb lane, centreline of lane, Northing: 5526748, Easting: 632987	200	-	150	-	-	-	-
5	River Avenue, South curb lane, 0.1 meter South of centreline of lane, Northing: 5526731, Easting: 632969	232	201	100	Sep 28/22	46.4	1	Rey Batac
6	Wellington Crescent, West curb lane, centreline of lane, Northing: 5526622, Easting: 632796	213	193	100	Sep 28/22	43.9*	1	Rey Batac

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

Deviations from test procedure: None

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ENG-TECH Consulting Limited

Per D. Babisky
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Operations Manager - Laboratory
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Date Cored: See comments
Page: 2 of 2

Core No.	Location on Structure	Length		Average Diameter (mm)	Date Tested (m/d/y)	Compressive Strength (MPa)	Type of Fracture	Tested By ENG-TECH
		Cored (mm)	Tested (mm)					
7	Wellington Crescent, median lane, centreline of lane, Northing: 5526605, Easting: 632808	179	-	150	-	-	-	-
8	Wellington Crescent, East curb lane, 0.2 meters East of centreline of lane, Northing: 5526538, Easting: 632849	180	171	100	Sep 25/22	56.7*	1	Rey Batac
9	Stradbroom Avenue, North curb lane, 0.2 meters North of centreline of lane, Northing: 5526550, Easting: 633021	212	199	100	Sep 25/22	53.3	1	Rey Batac
10	Stradbroom Avenue, South curb lane, 0.1 meter South of centreline of lane, Northing: 5526608, Easting: 633140	215	198	100	Sep 25/22	46.2	1	Rey Batac
11	Stradbroom Avenue, North curb lane, centreline of lane, Northing: 5526635, Easting: 633177	170	-	150	-	-	-	-
12	Stradbroom Avenue, South curb lane, centreline of lane, Northing: 5526723, Easting: 633355	217	-	150	-	-	-	-

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.

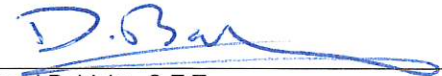
Strength Specification: Minimum 85% of design strength on an average of 3 cores - no single less than 75% as per CSA A23.1 Clause 4.4.2.2.2.2

Comments: Core No.'s 6 to 12 were recovered on September 21, 2022, Core No.'s 1 to 5 were recovered on September 22, 2022. Core No. 2 contained a 10M reinforcing steel bar, encountered 112.0 meters below surface of pavement. The steel was removed prior to testing.

Deviations from test procedure: None

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Per 
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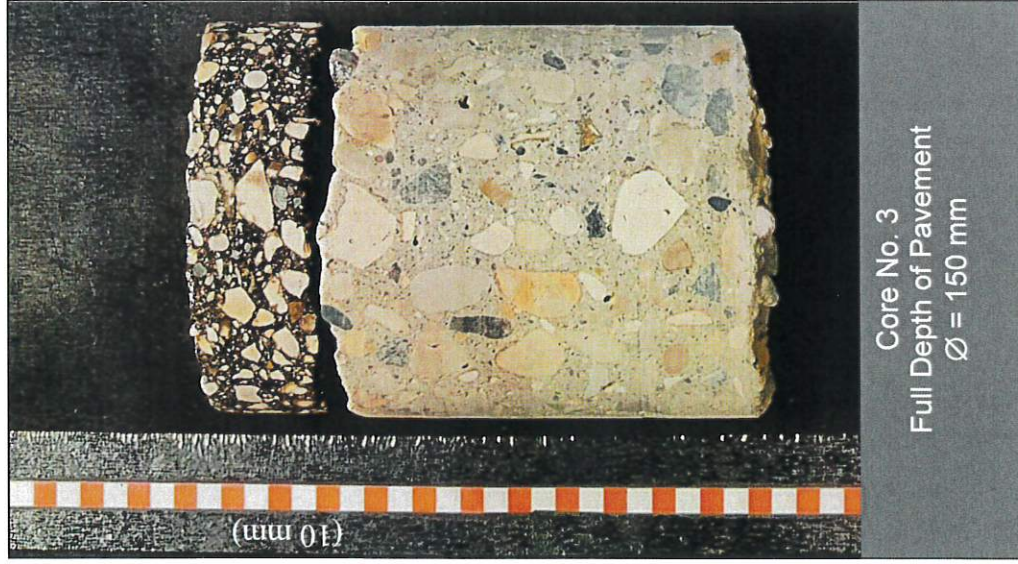
Photograph 1: Specimen from River Avenue, North Curb Lane



Photograph 2: Specimen from River Avenue, North Curb Lane



Photograph 3: Specimen from River Avenue, South Curb Lane



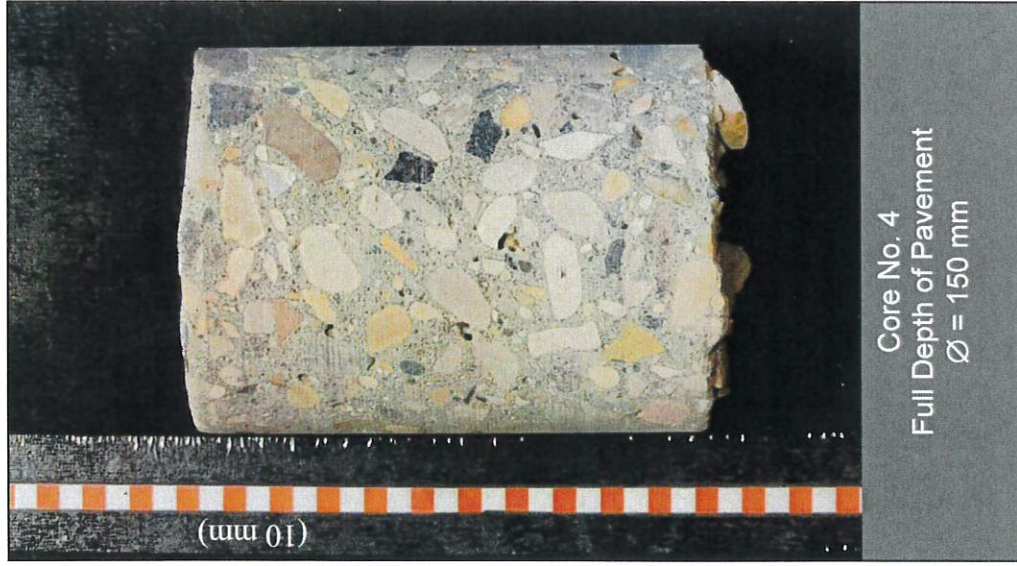
Core No. 3
Full Depth of Pavement
Ø = 150 mm



Core No. 3
Top of Pavement
Ø = 150 mm



Photograph 4: Specimen from River Avenue, North Curb Lane



Photograph 5: Specimen from River Avenue, South Curb Lane



Photograph 6: Specimen from Wellington Crescent, West Curb Lane



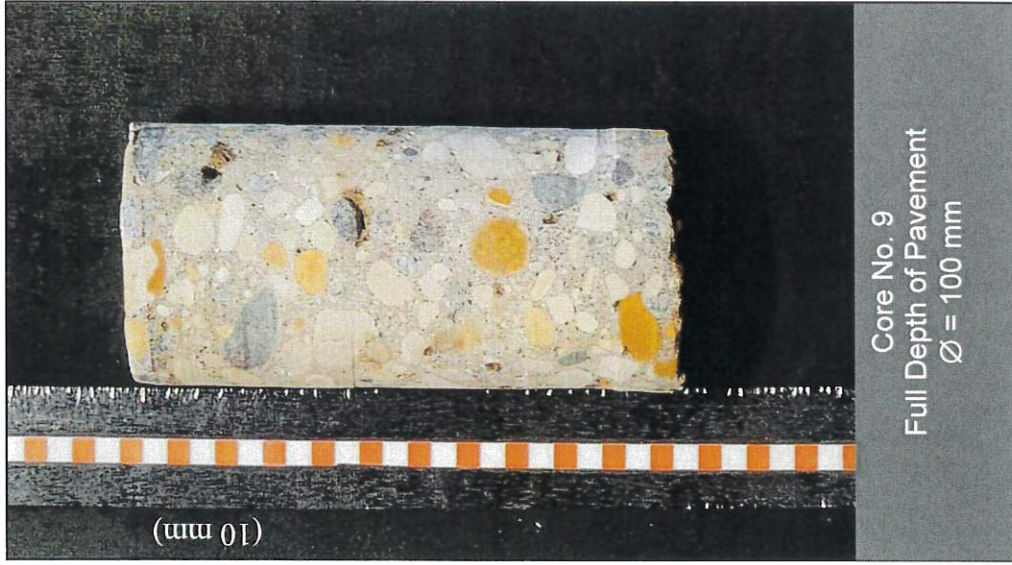
Photograph 7: Specimen from Wellington Crescent, Median Lane



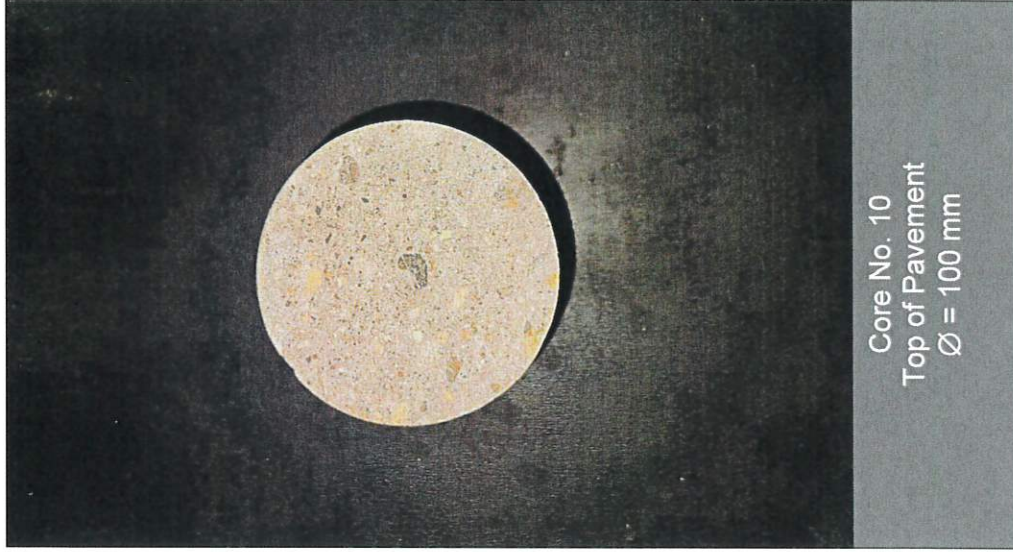
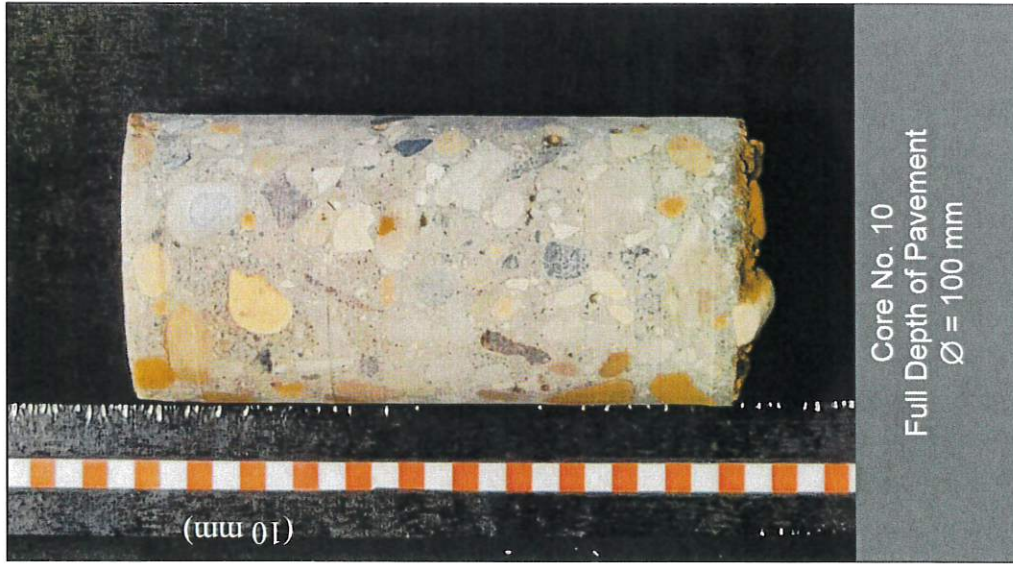
Photograph 8: Specimen from Wellington Crescent, East Curb Lane



Photograph 9: Specimen from Stradbroom Avenue, North Curb Lane



Photograph 10: Specimen from Stradbroke Avenue, South Curb Lane



Photograph 11: Specimen from Stradbroke Avenue, North Curb Lane



Photograph 12: Specimen from Stradbrook Avenue, South Curb Lane

