Contract No. T-MCC-2302

March 23, 2023

ADDENDUM #1

The following is an update of Contract No. T-MCC-2302

Q1: Item 43.2.3 Asphaltic Concrete – Full Depth Concrete Pavement- Is this item for removal of the concrete structure under the roadway? Item description does not read this way in form of tender.

A: Correct, item is for removal of concrete structure under roadway.

Q2: In the Tender spec it states to use 50mm temp. water main line (page 38) but in the drawing on the temp water notes is states 100mm. What size will be needed?

A: Will be dependant on the temporary water plans developed by the Contractor and submitted to the Municipality and Engineer for review and approval.

Q3: In Item 43.2.1 (Asphaltic Concrete – Full Depth Asphalt Removal) & Item 43.2.2 (Asphaltic Concrete – Full Depth Asphalt Removal Above Concrete Base) - does this include removal of gravels as well? As this is what it states in the item description in the spec. I believe removal of existing crushed stone is also included in Item 3.1 (Earthworks -Mass excavation and Embankment – Common).

A: Only includes removal of the asphalt structure. Updated Tender Form and Supplementary Specifications included as part of the Addendum.

Q4: Can temporary water be hooked up to an existing FH not on Junction Rd? (FH on North St?)

A: Yes. Temporary water plan to be determined by Contractor and approved by Municipality and Engineer.

Q5: Can bore hole information or soil reports be provided? Any more information on the concrete base, including thickness etc?

A: Geotechnical Report is provided as part of this Addendum.

Q6: How is driveway restoration paid? (no item in tender)

A: Item will be added for driveway reinstatement, see revised Tender Form and Supplementary Specifications.

Q7: Is using a certified pole holding truck equivalent to a support system designed and stamped by a professional engineer as noted on page 3 of the drawings.

A: Pole support method must be approved by NSPI.

Q8: How are Sanitary/Storm laterals being paid? No tender item and not shown on drawings.

A: Tender form has been updated to add pay item for sanitary lateral connections. Storm lateral connections already included as Provisional item 78.

Q9: How much bedding required for box culvert?

A: Pipe bedding requirements 250mm Type 1. See typical trench detail.

Q10: Are we allowed to use Flowable fill on existing sewer line instead of removing it

A: Flowable fill acceptable for locations of existing sewer main identified as " to be abandoned" – pay item 80. Areas identified as to be removed shall be removed.

Q11: Item 37.1 What does the box culvert reinstatement include? I believe the quantity of square meters for type 1 and type 2 in the tender form does not include the area to be reinstated From North St. to outfall. Will all this gravel be paid under the box culvert item 37.1?

A: The cost of the box culver shall include full reinstatement to finished grade, including gravels and asphalt.

Q12: Are water service laterals (pipe) to be paid under item 15.1 curb stop?

A: Correct, regular water lateral installs shall be paid under item 15.1. However, if the line is discovered to be lead, replacement of the lateral to the building foundation will be paid under item 79.

Q13: Regarding the existing concrete base that needs to be removed below the asphalt, what is the thickness of the concrete? Is this concrete reinforced with rebar?

A: See Q5, Geotechnical Report attached.

Q14: Item 5 in the Summary of Work mentions unsuitable excavation and also there is a note in section 01 22 00 Measurement and Payment item .2 that states we are required to include removal of unsuitable and replacement with structural fill. Can you include an item in the tender form for this?

A: See revised Tender Form that includes this provisional item.

Q15: Item 6 in the Summary of Work states utility poles. Is the bidder only responsible to coordinate utility pole work? Meaning any NSPI costs will be directly billed to the Municipality?

A: Contractor to carry cost for coordination with NSPI and stabilization of utility poles during construction.

Q16: Regarding the PRV chamber electrical, we need details on how to power the pressure transmitters and flowmeter. There is typically a panel, heater, lighting, switches, conduit, and wiring for the PRV chamber. Please clarify.

A: Information to follow in Addendum #2.

Q17: Regarding the PRV chamber mechanical, the drawing shows both a vent inlet and outlet, but no indication that a powered fan is to be installed. Is a ventilation fan required?

A: Information to follow in Addendum #2.

Q18: Regarding the PRV chamber mechanical, please provide Valve, pipe and fitting specifications for pipework inside the PRV station.

A: Information to follow in Addendum #2.

Q19: Regarding the PRV chamber mechanical, the note states the pipe is stainless steel, but what type (304, 316)?

A: Information to follow in Addendum #2.

Q20: Regarding the PRV chamber mechanical, There are no pipe diameter sizes for the water main inside. We would need both the PRV line size and the bypass line size (including the reducers)

A: Information to follow in Addendum #2.

Q21: Regarding the PRV chamber, please provide a specification on the pressure transmitters , flow meter and PRV.

A: Information to follow in Addendum #2.

Q22: Regarding the reinstatement of damaged sanitary laterals as noted in section .2 of the Measurement and Payment, would these laterals need to be replaced from the sanitary main to the property line or can they just be repaired with a coupling?

A: Repaired with a coupling within the trench is acceptable.

Q23: There is an item 24.1 in the measurement any payment section to reconnect sanitary services to the new main but there is not item for this in the tender form. Please clarify.

A: See update Tender Form.

Q24: Please provide a trench detail for item 37.1 Box culvert that includes pipe bedding requirements.

A: Pipe bedding requirements 250mm Type 1. See typical trench detail.

Q25: Regarding the pay area for the gravel items 41.1 and 41.2, this is the same as the asphalt area even though the gravel area will extend beyond the curb width. Please clarify if we will be paid for the actual width of the gravels installed.

A: Quantities updated in the Tender Form.

Q26: Regarding the street details on sheet 12 of 12, please provide a detail that shows the gravel width under the curbs for any Type 2 and Type 1 gravels.

A: Detail will be revised and issued with Addendum #2.

Q27: Regarding item 43.1.3 in the tender form, please provide the asphalt thickness for this item.

A: Line item removed from Tender Form, asphalt reinstatement covered under box culvert installation. Asphalt thicknesses per detail on sheet 11.

Q28: Regarding item 43.2.1 Full depth asphalt removal, it states this is to include the removal of base and sub base gravels. What depth of gravels do we allow for this removal? Also, typically removal of these gravels would be paid under the mass common excavation, not under asphalt removal. Please clarify.

A: Pay item revised, see updated Tender Form and pay description.

Q29: There is an item 45.4 in the measurement and payment section for sidewalk removal but there is no item for this in the tender form. Please clarify.

A: Item 45.4 on the Tender Form.

Q30: Regarding item 79 in the tender form, can this be revised to a price per meter as we don't know the length of lateral to any given building foundation.

A: Item to remain as each.

Q31: Regarding pipe removal items 19.1 and 28.1, do we have the option to price this with grout per General Servicing Note 8 that states "services to be removed may either be removed or abandoned and filled with grout"? Or do we have to allow to remove these items with open excavation? Please clarify.

A: Drawing note revised to read: "ALL UNDERGROUND SERVICES TO BE REMOVED OR ABANDONED AND FILLE DWITH A HIGH SLUMP LOW STRENGTH FLOWABLE GROUT AS DIRECTED BY THE MUNICIPALITY. INSTALL VENT PIPING AND SUPPLY PUMPING AS NECESSARY TO COMPLETELY FILL THE PIPE. BOTH ENDS TO BE PLUGGED. ABANDON EXISTING PIPES THAT ARE WITHIN AN EXISITING TREES DRIPLINE.". Pipe to be removed. Only abandon pipe in locations indicated by the Municipality.

Q31: Regarding Water System note 12 on drawing 10 of 12, are we required to complete any internal building connection work?

A: No internal building work required. Work is to stop at the foundation wall.

Q32: How will the contractor be paid to reinstate the driveways where they are disturbed behind the new sidewalk?

A: Driveway reinstatement pay item will be added to the revised Tender Form.

Q33: In lieu of the above items to be clarified, would it be possible to receive a one week extension to the tender closing date?

A: New closing date will be April 3rd, 2023 at 2:00pm local time.

If required by the original solicitation, failure to acknowledge this addendum may result in the disqualification of the bid or proposal.

ALL OTHER SPECIFICATIONS, TERMS AND CONDITIONS REMAIN UNCHANGED.

Signed,

Justin Wagh-Cress, P.Eng.
Director of Public Works
Municipality of Cumberland

Attachments:

- Main Street and Junction Road Infrastructure Rehabilitation – Geotechnical Report – 2022-01-10
- Revised Tender Form
- Revised Supplementary Specifications

MUNICIPALITY OF THE COUNTY OF CUMBERLAND

MAIN STREET & JUNCTION ROAD INFRASTRUCTURE REHABILITATION PROJECT

GEOTECHNICAL INVESTIGATION REPORT

JANUARY 10, 2022



MAIN STREET & JUNCTION ROAD INFRASTRUCTURE AND REHABILITATION PROJECT

GEOTECHNICAL INVESTIGATION REPORT

MUNICIPALITY OF THE COUNTY OF CUMBERLAND

PROJECT NO.: 211-11078
CLIENT REF:
DATE: JANUARY 10, 2022

WSP
1 SPECTACLE LAKE DRIVE
DARTMOUTH, NS
CANADA B3B 1X7

T: +1 902-835-9955
F: +1 902-835-1645
WSP.COM

January 10, 2022

Kevin Healy, P.Eng.
Engineering and Operations
Municipality of Cumberland
Upper Nappan Service Centre
1395 Blair Lake Road
Upper Nappan, NS B4H 3Y4

Subject: **Geotechnical Investigation Report – Main Street & Junction Road Infrastructure Rehabilitation Project – Springhill, NS**

At your request WSP completed a geotechnical investigation for the Main Street & Junction Road Infrastructure Rehabilitation Project in Springhill, Nova Scotia. The attached report details the findings of the investigation as well as design and construction recommendations.

We trust this report meets your present requirements. If you have any questions with the information in the report, please do not hesitate to contact us at your convenience. This report was prepared by WSP Canada Inc.

Yours sincerely,

Scott S. Benton, MSc.
Geotechnical

Clayton J. Rogers, P.Eng.
Manager - Atlantic Geotechnical

Encl.

WSP ref.: 211-11078

1 SPECTACLE LAKE DRIVE
DARTMOUTH, NS
CANADA B3B 1X7

T: +1 902-835-9955
F: +1 902-835-1645
wsp.com

SIGNATURES

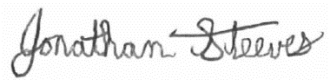
PREPARED BY



Scott S. Benton, MSc.
Geotechnical

10/01/2022
Date

REVIEWED BY

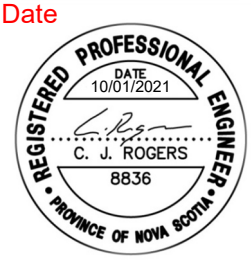


Jonathan K. Steeves, P.Eng.
Geotechnical

10/01/2022
Date

APPROVED[1] BY





Clayton J. Rogers, P.Eng.
Manager – Atlantic Geotechnical

Date

The intended recipient is solely responsible for the disclosure of any information contained in this report. The content and opinions contained in the present report are based on the observations and/or information available to WSP Canada Inc. at the time of preparation. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP Canada Inc. does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report. This limitations statement is considered an integral part of this report.

The original of this digital file will be conserved by WSP Canada Inc. for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP Canada Inc., its integrity cannot be assured. As such, WSP Canada Inc. does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

[1] Approval of this document is an administrative function indicating readiness for release and does not impart legal liability on to the Approver for any technical content contained herein. Technical accuracy and fit-for-purpose of this content is obtained through the review process. The Approver shall ensure the applicable review process has occurred prior to signing the document.

TABLE OF CONTENTS

1 INTRODUCTION AND BACKGROUND 1

2 SITE DESCRIPTION 2

2.1 General 2

2.2 Geology 2

2.3 Topographic Information 2

3 INVESTIGATION PROCEDURE 3

3.1 Drilling Program 3

3.2 Laboratory Testing 3

4 SUBSURFACE CONDITIONS 4

4.1 Asphalt / Concrete 4

4.2 Subbase (Sand Fill) 4

4.3 Fill (Re-Worked Till & Man-Made Fill) 5

4.4 Till 5

4.5 Groundwater 5

5 DISCUSSION AND RECOMMENDATIONS ... 6

5.1 General 6

5.2 Trench Excavation and Pipework 6

5.3 Fill Placement Using On-Site Materials 6

5.4 Slopes 7

5.5 Erosion and Sediment Control 7

5.6 Groundwater / Surface Water Control 7

5.7 Asphalt Re-instatement 7

6 CLOSURE 9

TABLES

TABLE 4-1 – SUMMARY OF SUBSURFACE CONDITIONS 4
TABLE 5-2 – PAVEMENT DESIGN CROSS-SECTION – IN-SITU TILL.....7

APPENDICES

A BOREHOLE LOG EXPLANATION FORM

B BOREHOLE LOGS AND PHOTOS

C LABORATORY TEST RESULTS

D FIGURE 1: BOREHOLE LOCATION PLAN

E REPORT LIMITATIONS

1 INTRODUCTION AND BACKGROUND

At the request of Municipality of the County of Cumberland, WSP Canada Inc. (WSP) has investigated subsurface conditions for the proposed Main Street & Junction Road Infrastructure Rehabilitation Project Springhill, Nova Scotia. The ultimate scope of the project will consist of approximately 1.2 kilometres of rehabilitation works along both Junction Road and Main Street Combined.

The purpose of this investigation was to obtain information on subsurface soil and bedrock conditions at the site and provide geotechnical recommendations for earthworks, site preparation, pavement, utility design and construction.

Fieldwork for the subsurface investigation was conducted on December 8th, 2021 and consisted of drilling ten (10) boreholes at the approximate locations as shown on the attached Figure 1 (Appendix D). This report presents the results of the field investigation and laboratory testing programs.

2 SITE DESCRIPTION

2.1 GENERAL

The site is located on Main Street between Lisgar Street and Junction Road, as well as Junction Road between Main Street and North Street. The proposed project will include approximately 1.2 kilometres of rehabilitation works. A site plan showing the proposed project limits and street location is provided on the attached Figure 1 (Appendix D).

2.2 GEOLOGY

Available geological soil mapping of the area indicates that the site is underlain by silty Till Plain of the Wisconsinan Stage described as silty, compact, material derived from both local and distant sources.

Geologic mapping of the proposed development area indicates that bedrock belongs to the Springhill Mines Formation. This Formation can be described as fluvial sandstone, mudstone, local lacustrine limestone.

2.3 TOPOGRAPHIC INFORMATION

Both carriageways slope downwards away from their intersection. With Junction Road starting off flat from Main Street going towards North Street and then sloping north, north-westerly past the school and becoming flat past North Street, with Main Street sloping east, south-east and flattening out near Elgin Street. The ground surface elevations at the borehole locations range from 130.1 to 165.3 metres.

3 INVESTIGATION PROCEDURE

3.1 DRILLING PROGRAM

Borehole drilling was carried out on December 8th, 2021 and included drilling ten (10) boreholes (designated BH01 to BH10) at locations shown on Figure 1 (Appendix D). The boreholes were drilled using a truck-mounted drill rig supplied by Nova Drilling Inc., supervised by WSP. Clearances of existing underground services were conducted prior to drilling at the site.

Qualified engineering field personnel logged the subsurface conditions in the field. All boreholes were located in the field by handheld GPS. Elevations of boreholes are referenced to WSP Topographic Survey data collected in 2021.

Soil samples were taken periodically at 600 mm increments using a 50 mm outside diameter split-spoon sampler, driven in accordance with standard penetration testing (SPT) resistance procedures (ASTM D1586). N values, described as the number of blows required to drive the sampler 305 mm (1ft) into the soil, were recorded at each sample location and are plotted on the borehole logs (Appendix B). The boreholes were terminated at approximately 3 metres, with some minor variance depending on the ground conditions.

3.2 LABORATORY TESTING

Basic laboratory testing and visual examinations were carried out on select soil samples from the borehole investigation. Tests were performed in accordance with materials testing requirements and procedures outlined in the ASTM and CSA testing manuals, as applicable. Laboratory testing was carried out by Stantec Inc. at the request of WSP, and laboratory certificates of results are attached in Appendix C.

An explanation of the symbols and terms used in the report are enclosed in Appendix A. Borehole logs and a photo log detailing the subsurface conditions are enclosed in Appendix B. Confirmatory laboratory index testing results are presented in Appendix C. Report Limitations are outlined in Appendix E.

2 SITE DESCRIPTION

2.1 GENERAL

The site is located on Main Street between Lisgar Street and Junction Road, as well as Junction Road between Main Street and North Street. The proposed project will include approximately 1.2 kilometres of rehabilitation works. A site plan showing the proposed project limits and street location is provided on the attached Figure 1 (Appendix D).

2.2 GEOLOGY

Available geological soil mapping of the area indicates that the site is underlain by silty Till Plain of the Wisconsinan Stage described as silty, compact, material derived from both local and distant sources.

Geologic mapping of the proposed development area indicates that bedrock belongs to the Springhill Mines Formation. This Formation can be described as fluvial sandstone, mudstone, local lacustrine limestone.

2.3 TOPOGRAPHIC INFORMATION

Both carriageways slope downwards away from their intersection. With Junction Road starting off flat from Main Street going towards North Street and then sloping north, north-westerly past the school and becoming flat past North Street, with Main Street sloping east, south-east and flattening out near Elgin Street. The ground surface elevations at the borehole locations range from 130.1 to 165.3 metres.

3 INVESTIGATION PROCEDURE

3.1 DRILLING PROGRAM

Borehole drilling was carried out on December 8th, 2021 and included drilling ten (10) boreholes (designated BH01 to BH10) at locations shown on Figure 1 (Appendix D). The boreholes were drilled using a truck-mounted drill rig supplied by Nova Drilling Inc., supervised by WSP. Clearances of existing underground services were conducted prior to drilling at the site.

Qualified engineering field personnel logged the subsurface conditions in the field. All boreholes were located in the field by handheld GPS. Elevations of boreholes are referenced to WSP Topographic Survey data collected in 2021.

Soil samples were taken periodically at 600 mm increments using a 50 mm outside diameter split-spoon sampler, driven in accordance with standard penetration testing (SPT) resistance procedures (ASTM D1586). N values, described as the number of blows required to drive the sampler 305 mm (1ft) into the soil, were recorded at each sample location and are plotted on the borehole logs (Appendix B). The boreholes were terminated at approximately 3 metres, with some minor variance depending on the ground conditions.

3.2 LABORATORY TESTING

Basic laboratory testing and visual examinations were carried out on select soil samples from the borehole investigation. Tests were performed in accordance with materials testing requirements and procedures outlined in the ASTM and CSA testing manuals, as applicable. Laboratory testing was carried out by Stantec Inc. at the request of WSP, and laboratory certificates of results are attached in Appendix C.

An explanation of the symbols and terms used in the report are enclosed in Appendix A. Borehole logs and a photo log detailing the subsurface conditions are enclosed in Appendix B. Confirmatory laboratory index testing results are presented in Appendix C. Report Limitations are outlined in Appendix E.

4 SUBSURFACE CONDITIONS

Generally, asphalt, sand and gravel fill/concrete, overlying granular fill mixed with re-worked Till, which was underlain by Till in all boreholes. Till was encountered at depths ranging from 1.1 to 3.3 meters below the ground level, with the bottom of the Till not being observed in any borehole. Groundwater was observed in BH09 at 1.8 metres below the ground level at the time of drilling. A summary of the subsurface conditions is provided in Table 4-1 and individual subsurface strata are further described below.

Table 4-1 – Summary of Subsurface Conditions

Borehole ID	Elevation (m)	Asphalt Thickness (mm)	Concrete Thickness (mm)	Depth to Till (m)	Total Depth (m)
BH01	162.4	150	-	1.5	2.7
BH02	157.2	120	-	1.5	2.7
BH03	146.3	120	-	1.7	2.7
BH04	143.3	180	-	1.8	3.3
BH05	143.5	150	-	1.8	2.7
BH06	130.1	120	120	1.4	2.3
BH07	144.0	120	180	1.1	3.0
BH08	162.7	120	120	1.5	2.7
BH09	164.3	120	180	1.2	3.0
BH10	165.3	150	160	1.2	3.0

*Approximate elevations are referenced to WSP Survey Data (Collected 2021).

4.1 ASPHALT / CONCRETE

An asphalt layer was encountered at the ground surface in all boreholes with a thickness ranging from 120 to 180 mm.

Beneath the asphalt within BH06 to BH10 was a layer of concrete that ranged in thickness from 120mm to 240mm.

4.2 SUBBASE (SAND FILL)

Subbase was encountered in boreholes BH01-BH05 below the asphalt and the thickness ranged from 420 mm to 480 mm. The subbase generally consisted of a brown to reddish brown slightly sandy gravelly Sand. The subbase was dry and compact to dense.

4.3 FILL (RE-WORKED TILL & MAN-MADE FILL)

Fill (re-worked Till and man-made Fill) deposits were encountered beneath the subbase or concrete in all boreholes. The fill generally consisted of reddish brown to black clayey/silty to very clayey/silty slightly gravelly Sand. The Sand was dry and generally compact to dense with some looser areas noted at select borehole locations. Bitumen and other man-made materials were present throughout this stratum.

A single grain size analysis/particle size distribution (psd) was carried out on the fill with the following results; gravel – 24.3%, sand – 51.1%, fines (silt & clay) – 24.5%.

4.4 TILL

Till was encountered beneath the fill deposits in all boreholes. The till generally consisted of reddish brown/brown to grey slightly gravelly to gravelly sandy Clay/Silt. The clay was dry to wet and firm to stiff.

Two grain size analysis/particle size distribution (psd) tests and one natural moisture content (nmc) test were carried out on the till, which gave the following results; psd – gravel 3.2 – 24.5%, sand 24.4 – 32.8%, fines (silt & clay) 51.1 – 64.0%, nmc – 10.3%.

4.5 GROUNDWATER

Groundwater was only observed within BH09 (at a depth of 1.8 metres) but given that groundwater was not observed in BH10 at similar elevation or BH08, this groundwater may be a perched aquifer and not the actual groundwater table. Groundwater levels can be expected to fluctuate seasonally.

5 DISCUSSION AND RECOMMENDATIONS

5.1 GENERAL

In the following paragraphs, discussion and recommendations for the proposed project are based on the observed subsurface conditions and are within the site limits as described in Section 2.1. Only preliminary design information has been provided and as a result, some of the below recommendations are preliminary in nature.

As noted previously, the subsurface conditions encountered at the site generally consist of asphalt, concrete, subbase (sand), overlying the fill and in-situ till.

5.2 TRENCH EXCAVATION AND PIPEWORK

Excavation for the new sanitary sewer, water and storm sewer mains should be taken to existing compact fill and/or in-situ till levels. Removal of loose/softened soils, if any, will be required at subgrade levels. It is not anticipated that bedrock will be encountered within the site limits. Inspection of the subgrade should be carried out by qualified geotechnical personnel prior to placement of pipe bedding gravels. Within BH04 & BH05 the in-situ soils were observed to be softer than within the rest of the soils (this may be due to movement of groundwater passing through this area more frequently due to its elevation being at the base of a slope), therefore, it is recommended to use geotextile fabrics when installing granular fill in this area if soft subgrade is encountered during construction. Placing the geotextile fabric beneath the granular fill to prevent migration of fines into the granular fill.

Following subgrade preparation, a minimum of 150 mm of bedding material should be placed below the pipes in the trenches. The bedding material should consist of Type 1 gravel (dry conditions) or 19 mm clear stone (wet conditions). The bedding material should be placed around and above the pipe to a thickness of at least one pipe diameter or 300 mm, whichever is greater. The bedding material should be compacted to a minimum of 95 percent of the materials Standard Proctor Maximum Dry Density (SPMDD). Approved site material can be used as backfill above the pipe bedding.

Compaction of the pipe base material will likely be carried out with a large diesel plate tamper or hydraulic hoe-pack. Any loose/softened soils observed during compaction should be excavated and replaced with an approved granular material. Quality control inspection and testing are recommended during pipe installation by qualified geotechnical personnel.

5.3 FILL PLACEMENT USING ON-SITE MATERIALS

Fill placement using on-site glacial soils and/or select portions of fill will likely be required during trench backfill operations. Select portions of the on-site fill/till may be suitable for re-use as trench backfill and/or roadway subgrade fill; materials must be approved by the Geotechnical Engineer prior to use. Use of proper construction methods during excavation, handling and stockpiling of the on-site materials will be required to prevent additional and excessive water content in the soil.

For material with elevated moisture, favourable weather conditions to allow drying will likely be required; some wastage of material should be expected.

5.4 SLOPES

Trench excavations for underground services should conform to Nova Scotia Occupational Safety Regulations. In general, temporary trench slopes for excavations deeper than 1.2 metres must be no greater than 1:1 (H:V), initiating at a height no greater than 1.2 metres above the base of the excavation. Alternatively, adequate trench or excavation shoring, bracing, or an adequate trench cage should be used when site requirements or subsurface conditions prevent sufficient sloping of excavation walls.

All exposed slope faces (permanent) in soil should be protected using vegetation, gravel, riprap, etc. Control of groundwater using drainage systems (i.e. toe drains) may be required to prevent deterioration of slopes. Any change in soil conditions from those reported herein would require re-evaluation of the above recommendations.

5.5 EROSION AND SEDIMENT CONTROL

Erosion and sedimentation control measures (e.g. silt fences, check dams, settling ponds, etc.) should be provided, as required, for the site as part of the detailed design activity in accordance with the Cumberland County and Nova Scotia Environment (NSE) requirements. Application of these control measures should be utilized to minimize soil erosion.

5.6 GROUNDWATER / SURFACE WATER CONTROL

During pipe installation, surface runoff and/or groundwater should be expected during trench excavation for underground services at minor inflow. Controlling water at the site will minimize softening and loosening of the exposed subgrade.

Typical de-watering techniques may include grading excavations to sump locations to dispose of water by pumping. If necessary, soft/wet soils can be over excavated and replaced by an imported rock fill. Proper erosion and sedimentation control measures should be provided to limit site disturbance, as in accordance with provincial and municipal regulations.

5.7 ASPHALT RE-INSTATEMENT

Based on the current site investigation, the in-situ soils underlying the site are of a cohesive nature with the fill being predominantly granular in nature with a relatively high fines content. Table 5-2 provides the recommended cross-sections and gravel thicknesses. It is understood that the proposed works along Main Street and Junction Road within the project generally classify the roads an urban local and an urban minor collector respectively.

Table 5-1 – Pavement Design Cross-Section – In-situ Fill/Till

Material	Subgrade – (cohesive) Fill/Till	
	Main Street*	Junction road
Type C-HF Asphalt Pavement	50 mm	50 mm
Type B-HF Asphalt Pavement	75 mm	75 mm
Type 1 Gravel	150 mm	150 mm

Type 2 Gravel	500 mm	600 mm

The subgrade is to be compacted to 100 percent of the Standard Proctor Maximum Dry Density (SPMDD). If soft/wet areas are encountered in the subgrade, additional rock fill may be required for stabilization. Prior to placement of the pavement structure, a proof roll of the finished subgrade should be conducted under the direction of the geotechnical engineer to confirm satisfactory conditions.

All granular material is to be compacted to 100 percent of the Standard Proctor Maximum Dry Density (SPMDD). Asphalt concrete pavement should be compacted to a minimum 92 percent of the Maximum Theoretical Bulk Density. The pavement materials should be provided and constructed in accordance with the Municipal Specifications or other equivalent specifications.

Quality control inspection and testing are recommended during roadway construction by qualified geotechnical personnel.

6 CLOSURE

This report has been prepared for the sole benefit of the Municipality of the County of Cumberland and is not intended for use by others. This report may not be reproduced without the prior written permission of WSP and Municipality of the county of Cumberland. Contractors undertaking work must draw their own interpretations of the factual investigation results provided in this report as it affects construction costs, procedures and scheduling.

As boreholes provide a localized representation of the total study area, subsurface conditions may vary between and/or beyond the borehole locations. If conditions encountered at the site vary significantly from the reported herein, we should be notified immediately so that our interpretations and recommendations can be reviewed and revised if necessary.

We trust this report meets your present requirements. If you have any questions with the information contained in the report, please do not hesitate to contact us at your convenience.

Yours sincerely,



Scott S. Benton, MSc.
Geotechnical



Clayton J. Rogers, P.Eng.
Manager - Atlantic Geotechnical

APPENDIX

A BOREHOLE LOG EXPLANATION FORM

BOREHOLE LOG EXPLANATION FORM

This explanatory section provides the background to assist in the use of the borehole logs. Each of the headings used on the borehole log, is briefly explained.

DEPTH

This column gives the depth of interpreted geologic contacts in metres below ground surface.

STRATIGRAPHIC DESCRIPTION

This column gives a description of the soil based on a tactile examination of the samples and/or laboratory test results. Each stratum is described according to the following classification and terminology.

Soil Classification*		Terminology	Proportion
Clay	<0.002 mm		
Silt	0.002 to 0.06 mm	"trace" (e.g. trace sand)	<10%
Sand	0.06 to 2 mm	"some" (e.g. some sand)	10% - 20%
Gravel	2 to 60 mm	adjective (e.g. sandy)	20% - 35%
Cobbles	60 to 200 mm	"and" (e.g. and sand)	35% - 50%
Boulders	>200 mm	noun (e.g. sand)	>50%

* Extension of MIT Classification system unless otherwise noted.

The use of the geologic term "till" implies that both disseminated coarser grained (sand, gravel, cobbles or boulders) particles and finer grained (silt and clay) particles may occur within the described matrix.

The compactness of cohesionless soils and the consistency of cohesive soils are defined by the following:

COHESIONLESS SOIL		COHESIVE SOIL	
Compactness	Standard Penetration Resistance "N", Blows / 0.3 m	Consistency	Standard Penetration Resistance "N", Blows / 0.3 m
Very Loose	0 to 4	Very Soft	0 to 2
Loose	4 to 10	Soft	2 to 4
Compact	10 to 30	Firm	4 to 8
Dense	30 to 50	Stiff	8 to 15
Very Dense	Over 50	Very Stiff	15 to 30
		Hard	Over 30

The moisture conditions of cohesionless and cohesive soils are defined as follows.

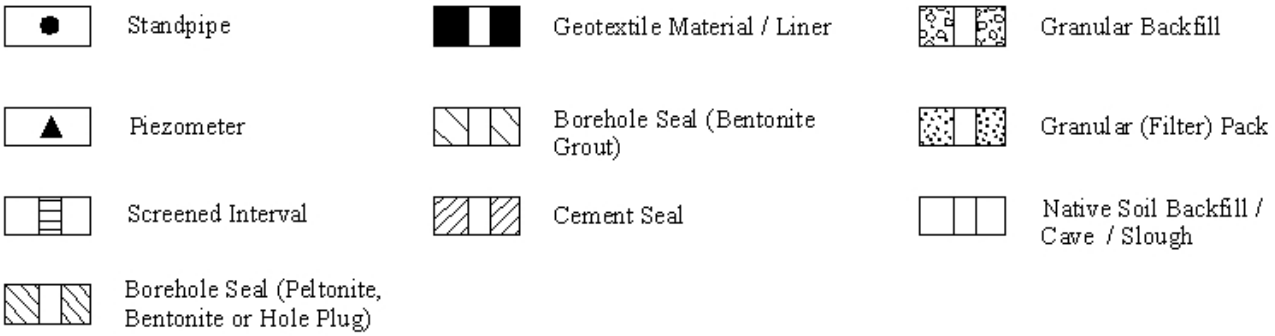
COHESIONLESS SOILS	COHESIVE SOILS		
Dry	DTPL	-	Drier Than Plastic Limit
Moist	APL	-	About Plastic Limit
Wet	WTPL	-	Wetter Than Plastic Limit
Saturated	MWTPL	-	Much Wetter Than Plastic Limit

STRATIGRAPHY

Symbols may be used to pictorially identify the interpreted stratigraphy of the soil and rock strata.

MONITOR DETAILS

This column shows the position and designation of standpipe and/or piezometer ground water monitors installed in the borehole. Also the water level may be shown for the date indicated.



Where monitors are placed in separate boreholes, these are shown individually in the "Monitor Details" column. Otherwise, monitors are in the same borehole. For further data regarding seals, screens, etc., the reader is referred to the summary of monitor details table.

SAMPLE

These columns describe the sample type and number, the "N" value, the water content, the percentage recovery, and Rock Quality Designation (RQD), of each sample obtained from the borehole where applicable. The information is recorded at the approximate depth at which the sample was obtained. The legend for sample type is explained below.

SS	=	Split Spoon	GS	=	Grab Sample
ST	=	Thin Walled Shelby Tube	CS	=	Channel Sample
AS	=	Auger Flight Sample	WS	=	Wash Sample
CC	=	Continuous Core	RC	=	Rock Core

$$\% \text{ Recovery} = \frac{\text{Length of Core Recovered Per Run}}{\text{Total Length of Run}} \times 100$$

Where rock drilling was carried out, the term RQD (Rock Quality Designation) is used. The RQD is an indirect measure of the number of fractures and soundness of the rock mass. It is obtained from the rock cores by summing the length of core recovered, counting only those pieces of sound core that are 100 mm or more in length. The RQD value is expressed as a percentage and is the ratio of the summed core lengths to the total length of core run. The classification based on the RQD value is given below.

RQD Classification	RQD (%)
Very poor quality	< 25
Poor quality	25 - 50
Fair quality	50 - 75
Good quality	75 - 90
Excellent quality	90 - 100

TEST DATA

The central section of the log provides graphs which are used to plot selected field and laboratory test results at the depth at which they were carried out. The plotting scales are shown at the head of the column.

Dynamic Penetration Resistance - The number of blows required to advance a 51 mm diameter, 60º steel cone fitted to the end of 45 mm OD drill rods, 0.3 m into the subsoil. The cone is driven with a 63.5 kg hammer over a fall of 750 mm.

Standard Penetration Resistance - Standard Penetration Test (SPT) "N" Value - The number of blows required to advance a 51 mm diameter standard split-spoon sampler 300 mm into the subsoil, driven by means of a 63.5 kg hammer falling freely a distance of 750 mm. In cases where the split spoon does not penetrate 300 mm, the number of blows over the distance of actual penetration in millimetres is shown as $\frac{xBlows}{mm}$

Water Content - The ratio of the mass of water to the mass of oven-dry solids in the soil expressed as a percentage.

W_P - Plastic Limit of a fine-grained soil expressed as a percentage as determined from the Atterberg Limit Test.

W_L - Liquid Limit of a fine-grained soil expressed as a percentage as determined from the Atterberg Limit Test.

REMARKS

The last column describes pertinent drilling details, field observations and/or provides an indication of other field or laboratory tests that were performed.

APPENDIX

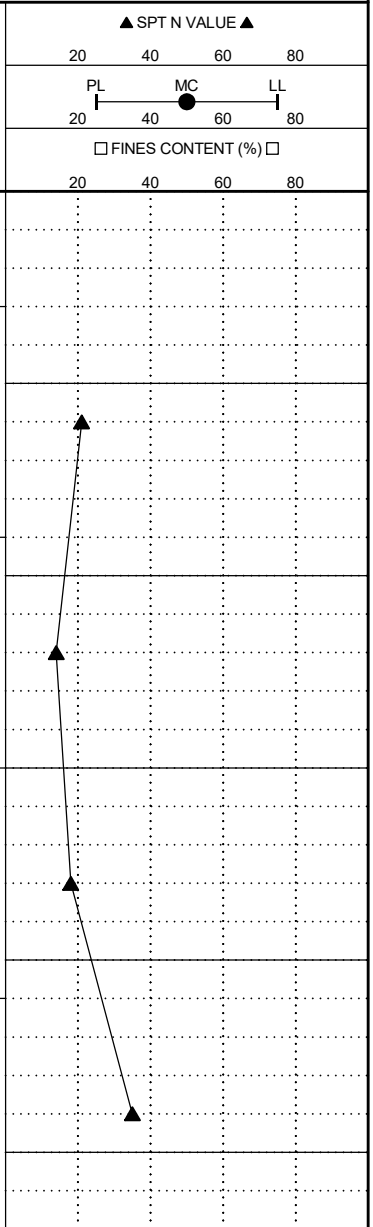
B BOREHOLE LOGS AND PHOTOS

BORING NUMBER BH01

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 162.4 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)
		162.4	ASPHALT (150mm in thickness).		AU 1		
		162.25	FILL (Sub-base): Brown to reddish brown slightly silty gravelly SAND. Gravel is sub-angular fine to medium grained of mixed lithologies. The Sand is compact and dry.				
0.5		162.05	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	10-12-9-7 (21)	70
1.0					SS 2	8-7-7-11 (14)	40
1.5		160.9	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 3	3-4-14-22 (18)	100
2.0					SS 4	14-16-19-23 (35)	60
2.5							
3.0			End of borehole.				
3.5							



GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH02

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 157.2 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	▲SPT N VALUE▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐FINES CONTENT (%)☐ 20 40 60 80
		157.2	ASPHALT (120mm in thickness).					
		157.08	FILL (Sub-base): Brown to reddish brown slightly silty gravelly SAND. Gravel is sub-angular fine to medium grained of mixed lithologies. The Sand is compact and dry.		AU 1			
0.5		156.8	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	18-14-13-11 (27)	25	
1.0					SS 2	11-8-10-9 (18)	15	
1.5		155.7	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 3	5-30-11-13 (41)	50	
2.0					SS 4	15-14-24-17 (38)	65	
2.5								
3.0			End of borehole.					
3.5								

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH03

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 146.3 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	▲SPT N VALUE▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐FINES CONTENT (%)☐ 20 40 60 80
		146.3	ASPHALT (120mm in thickness).					
		146.18	FILL (Sub-base): Brown to reddish brown slightly silty gravelly SAND. Gravel is sub-angular fine to medium grained of mixed lithologies. The Sand is compact and dry.		AU 1			
0.5		145.9	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	14-11-7-4 (18)	65	
1.0					SS 2	3-3-4-6 (7)	30	
1.5					SS 3	6-7-11-12 (18)	25	
2.0		144.6	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 4	9-13-14-14 (27)	50	
2.5								
3.0			End of borehole.					
3.5								

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH04

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 143.3 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)
		143.3	ASPHALT (180mm in thickness).		AU 1		
0.5		143.12	FILL (Sub-base): Brown to reddish brown slightly silty gravelly SAND. Gravel is sub-angular fine to medium grained of mixed lithologies. The Sand is dense and dry.		SS 1	21-21-14-12 (35)	75
1.0		142.8	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact to dense and dry. Note that fines content increases with depth.		SS 2	16-11-10-10 (21)	25
1.5					SS 3	3-10-3-3 (13)	70
2.0		141.5	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 4	5-5-4-3 (9)	80
2.5							
3.0					SS 5	3-5-5-5 (10)	50
3.5			End of borehole.				

▲SPT N VALUE▲
20 40 60 80
PL MC LL
20 40 60 80
☐FINES CONTENT (%)☐
20 40 60 80

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH05

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 143.1 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)
		143.1	ASPHALT (150mm in thickness).		AU 1		
0.5		142.95	FILL (Sub-base): Brown to reddish brown slightly silty gravelly SAND. Gravel is sub-angular fine to medium grained of mixed lithologies. The Sand is dense and dry.		SS 1	38-25-17-13 (42)	75
1.0		142.6	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact to dense and dry. Note that fines content increases with depth.		SS 2	17-15-4-6 (19)	50
1.5					SS 3	9-3-3-4 (6)	95
2.0		141.3	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 4	2-3-3-6 (6)	90
2.5							
3.0			End of borehole.				
3.5							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH06

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 130.1 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	▲SPT N VALUE▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐FINES CONTENT (%)☐ 20 40 60 80
		130.1	ASPHALT (120mm in thickness).		AU 1			
		129.98	CONCRETE (120mm in thickness).					
		129.86	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	2-2-5-7 (7)	50	
0.5								
1.0					SS 2	13-15-12-14 (27)	70	
1.5		128.7	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 3	6-7-7-9 (14)	50	
2.0					SS 4	11-13-11-10 (24)	100	
2.5								
3.0			End of borehole.					
3.5								

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH07

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 144 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)
		144	ASPHALT (120mm in thickness).				
		143.88	CONCRETE (180mm in thickness).		AU 1		
0.5		143.7	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	3-4-10-15 (14)	55
1.0							
1.5		142.9	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 2	4-7-9-11 (16)	85
2.0					SS 3	11-12-11-15 (23)	60
2.5					SS 4	9-10-14-17 (24)	55
3.0			End of borehole.				
3.5							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH08

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 162.7 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	▲SPT N VALUE▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐FINES CONTENT (%)☐ 20 40 60 80
		162.7	ASPHALT (120mm in thickness).		AU 1			
		162.58	CONCRETE (120mm in thickness).					
		162.46	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is loose to compact and dry. Note that fines content increases with depth.		SS 1	3-3-3-15 (6)	20	
0.5								
1.0					SS 2	11-4-6-9 (10)	80	
1.5								
		161.2	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 3	6-7-7-9 (14)	100	
2.0								
					SS 4	9-16-13-17 (29)	65	
2.5								
			End of borehole.					
3.0								
3.5								

BORING NUMBER BH09

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 164.3 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
▽ **AT TIME OF DRILLING** 1.80 m / Elev 162.50 m
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)
		164.3	ASPHALT (120mm in thickness).		AU 1		
		164.18	CONCRETE (180mm in thickness).				
0.5		164	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	4-13-15-8 (28)	40
1.0							
1.5		163.1	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to wet.	▽	SS 2	2-5-9-8 (14)	50
2.0					SS 3	7-9-9-11 (18)	0
2.5					SS 4	12-15-54-11 (69)	80
3.0			Boulder encountered, but broken through using Split-Spoon.				
3.5			End of borehole.				

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21

BORING NUMBER BH10

WSP

CLIENT Municipality of Cumberland
PROJECT NAME Main Street and Junction Road Infrastructure Rehabilitation
PROJECT NUMBER 211-11078-00
PROJECT LOCATION Sprinhill, NS
DATE STARTED 21-8-12 **COMPLETED** 21-8-12
GROUND ELEVATION 165.3 m * **HOLE SIZE** 125mm
DRILLING CONTRACTOR Nova Drilling Inc.
GROUND WATER LEVELS:
DRILLING METHOD Truck Mounted Drill Rig
AT TIME OF DRILLING ---
LOGGED BY S.B **CHECKED BY** J. Steeves
AT END OF DRILLING ---
NOTES Approximate elevations from WSP survey data collected in 2021.
AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEVATION (m)	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)
		165.3	ASPHALT (150mm in thickness).		AU 1		
		165.18	CONCRETE (160mm in thickness).				
0.5		164.95	FILL: Reddish brown to black clayey/silty to very clayey/silty slightly gravelly SAND. The Sand is compact and dry. Note that fines content increases with depth.		SS 1	14-6-6-12 (12)	75
1.0							
1.5		164.1	Glacial Till: Brown/Reddish brown to grey sandy slightly gravelly Clay. clay is firm to stiff and dry to moist.		SS 2	5-6-7-10 (13)	85
2.0					SS 3	12-14-14-11 (28)	25
2.5					SS 4	9-13-17-14 (30)	30
3.0							
3.5			End of borehole.				

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

GEOTECH BH (N-VALUES) SPRINGHILL_BH LOGS.GPJ WSP_STANDARD_OCT2017.GDT 21-12-21


Main Street & Junction Road Infrastructure
and Rehabilitation Project – Photo Log


Fill/Subbase


Fill


Till

APPENDIX

C LABORATORY TEST RESULTS

Stantec

STANTEC MATERIALS TESTING REPORT

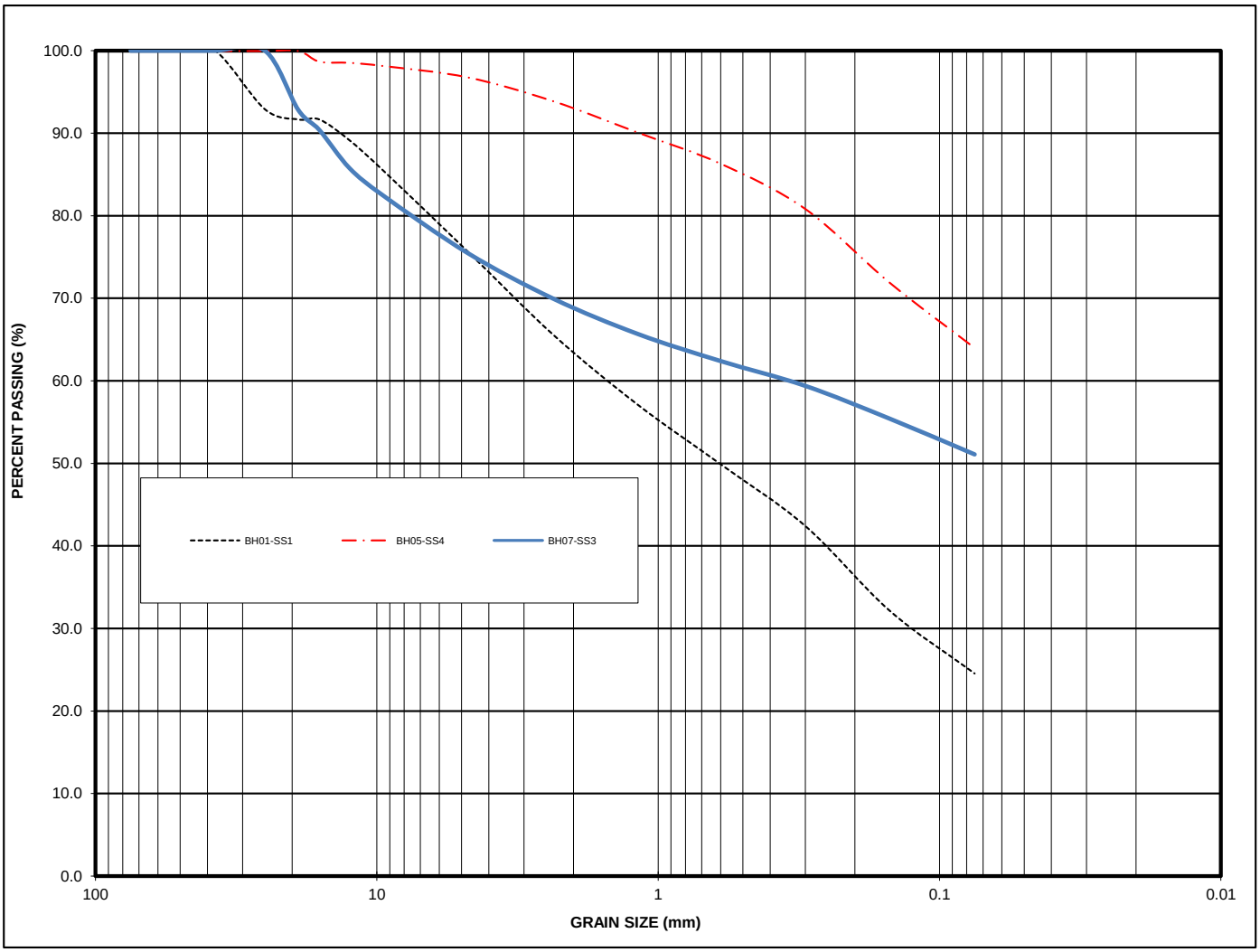
Project #: 121621777
Task#: 500.569

Client: WSP Canada Inc
Project: Main Street & Junction Road
Source 1: BH01-SS1
Source 2: BH05-SS4
Source 3: BH07-SS3

Material Type: Geotech
Date Received: December 12,2021
Date Tested: December 17, 2021

GRADING				
SOURCE #	BH01-SS1	BH05-SS4	BH07-SS3	Spec.
SIEVE (mm)	% PASSING	% PASSING	% PASSING	
75	100.0	100.0	100.0	-
50	100.0	100.0	100.0	-
37.5	100.0	100.0	100.0	-
25	92.9	100.0	100.0	-
19	91.7	100.0	92.8	-
16	91.7	98.7	90.4	-
12.5	89.1	98.5	85.8	-
9.5	85.5	98.1	82.5	-
4.75	75.7	96.8	75.5	-
2.36	65.6	93.9	70.0	-
1.18	57.1	90.1	65.7	-
0.600	49.9	86.3	62.4	-
0.300	42.4	80.8	59.4	-
0.150	32.1	71.9	55.4	-
0.075	24.5	64.0	51.1	-

PHYSICAL PROPERTY TESTS			
Source Number	BH01-SS1	BH05-SS4	BH07-SS3
Gravel, %	24.3	3.2	24.5
Sand, %	51.1	32.8	24.4
Silt & Clay, %	24.5	64.0	51.1
Classification			
Natural Moisture Content, %			10.3
Abrasion Loss, %			
Soundness Loss, %			
Micro Deval Loss, %			
Fine Absorption, %			
Flat & Elongated Particles,%			
Coarse Absorption, %			
Coarse Spec. Gravity, kg/m³			
Fractured Faces, %			
Liquid Limit, %			
Plastic Limit, %			
Plasticity Index, %			
Max. Dry Density: Standard			
Optimum Moisture Content %			



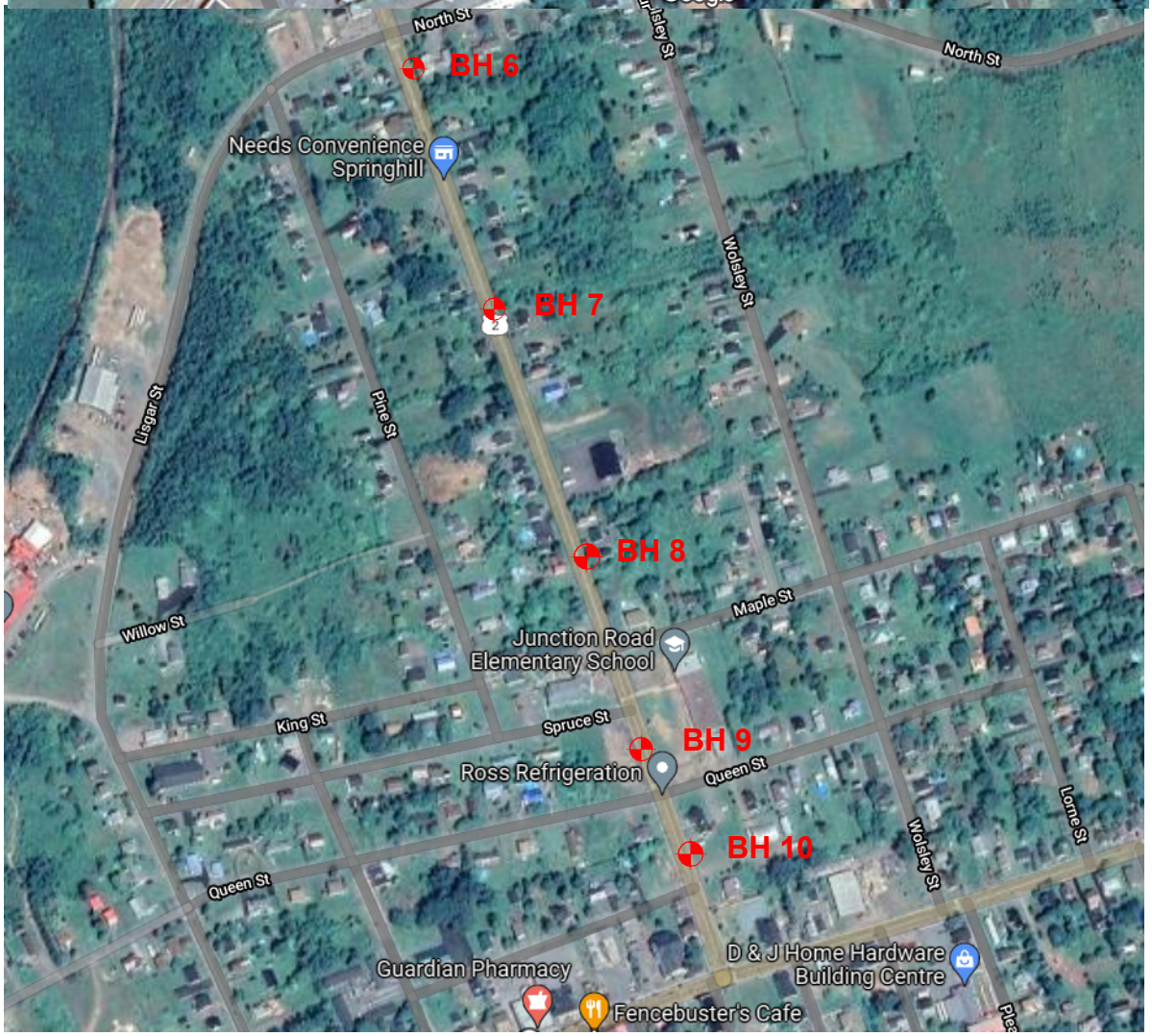
Technician: RC

Reviewed By: S. Aldous

APPENDIX

D FIGURE 1: BOREHOLE LOCATION PLAN


NORTH
Ross Anderson PharmaChoice
Hwy 321
BH 1
Fir St
Canada Post
Guardian Pharmacy
Tim Hortons
Takeout
Glooscap Trail
BH 2
Elgin St
Pioneer St
Fencebuster's Cafe
Takeout · Delivery
Choisnuts Tire & Auto Parts
Auto parts store
Paizano's Pizzeria & Donair
Takeout · Delivery
Victoria St
Elm St
Anne Murray Centre
Temporarily closed
Church St
Main St
BH 3
CIBC Branch with ATM
Drummond St
Lisgar St
BH 4
Subway
Takeout
Sociables Pub and Eatery
Takeout
Thompson's Metro Service Station
BH 5
Foodland - Springhill
Nova Scotia Trunk 2 & Lisgar Street...
Google


North St
BH 6
Needs Convenience Springhill
Wolsley St
BH 7
Lisgar St
Pine St
BH 8
Maple St
Willow St
Junction Road Elementary School
King St
Spruce St
BH 9
Ross Refrigeration
Queen St
Lorne St
BH 10
Queen St
Guardian Pharmacy
D & J Home Hardware Building Centre
Fencebuster's Cafe

APPENDIX

E REPORT LIMITATIONS

LIMITATIONS

Limited use

This Report was prepared for the Municipality of the County of Cumberland, solely for their exclusive use to provide an Assessment of current environmental conditions in association with the Site. WSP will not be responsible for any use of this report by any other party, for any decisions to be made based on it, or for the consequences thereof, unless written reliance is granted by WSP. Unless otherwise agreed in writing by WSP, it shall not be used to express or imply warranty as to the suitability of the property for a particular purpose. WSP disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

Excerpts

The Report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

Information from others

In evaluating the Site, WSP has relied in good faith on information provided by others, as noted in the Report. WSP has assumed that the information provided is correct and WSP assumes no responsibility for the accuracy, completeness or workmanship of any such information.

Standard of care

This project has been carried out using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners, working under similar conditions and subject to the time, financial and physical constraints applicable to this project. The conclusions presented in this Report are based on Work undertaken by trained professional and technical staff and the reasonable and professional interpretation using accepted engineering and scientific practices current at the time the work was performed. Conclusions presented in this report should not be construed as legal advice. WSP makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in the Report, including, but not limited to, ownership of any property, or the application of any law to the findings of the Assessment.

Limited scope

The Report summarizes WSP's review of available data in accordance with the principal components of the stated regulations, standards and guidelines and the scope, terms and conditions of the contract or proposal to which the Assignment was conducted. No other warranties are either expressed or implied with respect to the professional services provided under the terms of the contract or proposal and represented in this Report. Conditions may exist which were not detected given the nature of the inquiry WSP was retained to undertake with respect to the Site. Additional environmental studies and actions may be recommended.

1 Spectacle Lake Drive
Dartmouth, NS
Canada B3B 1X7

T: +1 902-835-9955
F: +1 902-835-1645
wsp.com

Changes over time

The Report is based on data and information collected at the time of this Assessment, as stated in the Report. Site use or conditions change and the information and conclusions in the Report may no longer apply following the date of this Report. If any conditions become apparent that differ significantly from that presented in this Report, we request that we be notified to reassess the conclusions and recommendations provided herein. WSP disclaims any obligation to update this Report for conditions that may be identified after the date of this Report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation or evidence.

Variability between test locations

Conclusions are based on the Site conditions observed by WSP at the time the work was performed and may include information obtained at specific testing and/or sampling locations. It is recognized that overall conditions can only be extrapolated to an undefined limited area around these testing and sampling locations. The conditions that WSP interprets to exist between testing and sampling points may differ from those that actually exist. The accuracy of any extrapolation and interpretation beyond the sampling locations will depend on natural conditions, the history of Site development and changes through construction and other activities. In addition, analysis has been carried out for the identified chemical and physical parameters only, and it should not be inferred that other chemical species or physical conditions are not present. WSP cannot warrant against undiscovered environmental liabilities or adverse impacts off-Site.

Use for design and construction

Design recommendations given in this report are applicable only to the project and areas as described in the text and then only if constructed in accordance with the details stated in this report. The comments made in this report on potential construction issues and possible methods are intended only for the guidance of the designer. The number of testing and/or sampling locations may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. Contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

TENDER FORM

Section 00 41 43
March 13, 2023
Contract No. T-MCC-2302

thanks1. SALUTATION:

.1 To: Municipality of the County of Cumberland
1395 Blair Lake Road
Upper Nappan, NS B4H 3Y4

.2 For: Junction Road, Springhill – Infrastructure Upgrades
Tender No. T-MCC-2302

.3 From: _____

2. TENDERER DECLARES:

.1 That this tender was made without collusion or fraud.

.2 That the proposed work was carefully examined.

.3 That the Tenderer was familiar with local conditions.

.4 That Contract Documents and Addenda No. ___ to ___ inclusive were carefully examined.

.5 That all the above were taken into consideration in preparation of this Tender.

3. TENDERER AGREES:

.1 To enter into a contract to supply all labour, materials and equipment and to do all work necessary to construct the Work as described and specified herein for the unit prices stated in Subsection 4 hereunder, Schedule of Quantities and Unit Prices.

.2 That the Estimated Contract Price shall be the sum of the products of the tendered unit prices times the estimated quantities in Subsection 4 hereunder.

.3 That this Tender is valid for acceptance for 60 days from Tender Closing.

.4 That measurement and payment for items listed in Subsection 4 hereunder shall be in accordance with corresponding items in Section 01 22 00 Measurement and Payment.

.5 To provide evidence of ability and experience within five (5) working days of request, including: experience in similar work, work currently under contract, senior supervisory staff available for the project, equipment available for use on the Work, and financial resources.

.6 To execute in triplicate the Agreement and forward same together with the specified contract security and insurance documents to the Owner within ten (10) working days of written notice of award.

.7 That failure to provide post-tender submission documents or failure to enter into a formal contract and provide specified insurance documents and contract security within time required will constitute grounds for forfeiture of tender security.

.8 That if tender security is forfeited, Owner will retain difference in money between amount of tender and amount for which Owner legally contracts with another party to perform the Work and will refund balance, if any, to tenderer.

.9 That the Contract Documents include:

.1 Standard Specifications for Municipal Services (Latest Edition)

.2 Nova Scotia Environment Regulations (Latest Edition)

.3 Project Documents
- .1 Tender Form, Section 00 41 43
- .2 Form of Agreement (for information only), Section 00 53 43
- .3 Supplementary Specifications, Section 00 74 00
- .4 Drawings:

Junction Road, Springhill – Infrastructure Upgrades, Issued for Tender, dated Mar. 13, 2023.

- .1 Cover Sheet
- .2 Sheet 1: Junction Road – Site Layout - STA -0+020 to 0+420
- .3 Sheet 2: Junction Road – Site Layout - STA 0+420 to 0+820
- .4 Sheet 3: North Street – Plan and Profile - STA 0+000 to 0+110
- .5 Sheet 4: Junction Road – Plan and Profile - STA -0+020 to 0+220
- .6 Sheet 5: Junction Road – Plan and Profile - STA 0+220 to 0+520
- .7 Sheet 6: Junction Road – Plan and Profile - STA 0+520 to 0+820
- .8 Sheet 7: Junction Road – Cross Sections – STA 0+020 to 0+780
- .9 Sheet 8: Pavement Marking and Signage Plan – STA 0+000 to 0+480
- .10 Sheet 9: Pavement Marking and Signage Plan – STA 0+480 to 0+800
- .11 Sheet 10: Construction Notes and Details I
- .12 Sheet 11: Construction Notes and Details II

.13 Sheet 12: Construction Notes and Details III

.4 Addenda as issued and as confirmed in subsection 2.4 of this section.

4. SCHEDULE OF QUANTITIES AND UNIT PRICES

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	$ Amount
3.1	**Earthworks -** Mass Excavation and Embankment - Common	m^3	5350		
11.1	**Water Main -** 300 mm DI - CL52	m	800		
12.1	**Water Main –** Installation of Fire Hydrants	ea.	5		
13.1	**Water Main -** PRV Chamber	l.s	1		
14.1	**Water Main -** Direct Buried Valves, 300mm dia. GV	ea.	10		
15.1	**Water Main -** 25mm dia. PEX incl. Curbstop	ea.	35		
16.1	**Water Main -** Connections to Existing Main	ea.	5		
18.1	**Water Main -** Temporary Water	l.s.	1		
19.1	**Water Main -** Water Line Removal	m	375		
21.1	**Sanitary Pipe -** 150 mm dia. PVC DR35 sanitary gravity pipe	m	8		
21.2	**Sanitary Pipe -** 200 mm dia. PVC DR35 sanitary gravity pipe	m	321		
21.3	**Sanitary Pipe -** 300 mm dia. PVC DR35 sanitary gravity pipe	m	360		
23.1	**Manholes -** 1050 mm dia. Precast Concrete	ea.	13		

24.1	**Sanitary –** Reconnect Existing Sanitary Services	ea.	40		
25.1	**Sanitary -** Connection to Existing	ea.	5		
28.1	**Remove existing infrastructure -** 300 mm dia. sanitary pipe	m	620		
28.2	**Remove existing infrastructure -** Existing sanitary manholes	ea.	3		
31.1	**Storm pipe -** 375 mm dia. PVC DR35 storm pipe	m	25		
31.2	**Storm Pipe -** 350 mm dia. PVC DR18 storm pipe	m	71		
31.3	**Storm Pipe -** 400 mm dia. PVC DR18 storm pipe	m	4		
31.4	**Storm Pipe -** 525 mm dia. Concrete, 65D storm pipe	m	52		
31.5	**Storm Pipe -** 600 mm dia. Concrete, 65D storm pipe	m	419		
31.6	**Storm Pipe -** 750 mm dia. Concrete, 65D storm pipe	m	101		
32.1	**Manholes -** 2400 mm dia. Precast Concrete	ea.	1		
32.2	**Manholes -** 1500 mm dia. Precast Concrete	ea.	1		
32.3	**Manholes -** 1200 mm dia. Precast Concrete	ea.	5		
32.4	**Manholes -** 1050 mm dia. Precast Concrete	ea.	3		
32.5	**Manholes -** Access Shaft (North St. to Outfall)	ea.	3		
33.1	**Catchbasins -** 1050 mm dia. Double Precast Concrete c/w S361 frame and grate - storm	ea.	2		
33.2	**Catchbasins -** 1050 mm dia. Precast Concrete c/w S361 frame and grate - storm	ea.	19		
34.1.1	**Catchbasin leads -** 100 mm dia. PVC DR35 storm pipe	m	7		

34.1.2	**Catchbasin leads -** 200 mm dia. PVC DR35 storm pipe	m	33		
34.1.3	**Catchbasin leads -** 250 mm dia. PVC DR35 storm pipe	m	6		
34.1.4	**Catchbasin leads -** 300 mm dia. PVC DR35 storm pipe	m	34		
34.1.5	**Catchbasin leads -** 200 mm dia. PVC DR18 storm pipe (CB lead including reinstatement)	m	35		
34.1.6	**Catchbasin leads -** 250 mm dia. PVC DR18 storm pipe (CB lead including reinstatement)	m	5		
37.1	**Culvert -** 1250mm x 625mm Box Culvert (North Street) including reinstatement	m	103		
39.1	**Headwall -** 750 Wing Storm Headwall 1500 x 1500 (North Street)	ea.	1		
39.2	**Headwall -** 525 Wing Storm Headwall 1050 x 1383 (North Street)	ea.	1		
39.3	**Headwall -** 450 Wing Storm Headwall 1050 x 1383	ea.	2		
40.1	**Remove existing structures -** Catchbasin	ea.	7		
40.2	**Replace existing structures -** S361 frame and grate including grade adjustment	ea.	1		
41.1	**Gravels -** Type 1 (150mm)	m²	7115		
41.2	**Gravels -** Type 2 (600mm)	m²	7715		
43.1.1	**Asphaltic concrete -** Type C-HF (50mm)	m²	6520		
43.1.2	**Asphaltic concrete -** Type B-HF (75mm)	m²	6520		
43.2.1	**Asphaltic concrete -** Full Depth Asphalt Removal	m²	7115		

43.2.2	**Asphaltic concrete -** Full Depth Concrete Pavement Removal	m²	6535		
44.1	**Curb -** Concrete Curb and Gutter	m	1575		
44.2	**Curb -** Mountable Curb	m	30		
45.1	**Sidewalk -** Concrete Sidewalk - 100 mm thick	m²	2884		
45.2	**Sidewalk -** Concrete Sidewalk - 150 mm thick with welded wire mesh	m²	76		
45.3	**Sidewalk -** Concrete Driveways	m²	250		
45.4	**Sidewalk -** Sidewalk Removal	m²	575		
46.1	**Tactile walking surface indicators -** Tactile Plates	ea.	60		
62.1	**Landscaping -** Topsoil and seed - 100mm	m²	1850		
76.1	**Driveway Reinstatement -** Gravel	ea.	13		
76.2	**Driveway Reinstatement -** Type D Asphalt – 65mm	ea.	23		
77	**Traffic Control**	l.s.	1		
77	**Line painting and road signage**	l.s.	1		
78	**Provisional -** Connection of Private Storm Laterals	ea.	4		
79	**Provisional -** Lead Water Lateral Replacement to Building Foundation (including reinstatement)	ea.	4		
80	**Provisional –** Abandonment of existing sanitary pipe	m	1		
81	**Provisional –** Replace unsuitable fill with structural fill	m³	100		
90	**Environmental Protection -** Erosion and Sediment Control Plan	l.s.	1		

SUMMARY

Total Tendered Price (Excluding HST)	$
Add HST (15% of Total Tendered Price)	$
Estimated Contract Price	$

Tenderer's HST Registration No. _____

5. COMPLETION TIME

.1 Refer to Supplementary Specifications and the Tender Drawings for general requirements required to complete the work that shall be included in the Tenderer's total price (i.e., disposal of existing services, coordination with utility owners during construction, pavement markings, etc.).

6. COMPLETION TIME

.1 Construction must be substantially completed on October 31, 2023. Should the Contractor fail to meet this deadline, Liquidated Damages shall be applied as per GC 6.5 – Delays (refer to section 00 74 00 – Supplementary Specifications).

7. SIGNATURE*

DATED THIS _____ DAY OF _____ , 2023.

[Seal]

_____
Name of Firm Tendering

_____ _____
Witness Signature of Signing Officer

_____

Name and Title (printed)

Witness

Signature of Signing Officer

Name and Title (printed)

Company Address

Telephone No.

Fax No.

*NOTE: Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.

*******End of Section 00 41 43*******

INTENT

.1 Construct the Work of this Contract in accordance with the latest edition of the Standard Specifications for Municipal Services as developed by the Nova Scotia Road Builders Association and the Consulting Engineers of Nova Scotia Joint Committee on Contract Documents, except as modified herein.

.2 These Supplementary Specifications modify the specification sections to which they refer.

.3 These Supplementary Specifications take precedence over the specification to which they refer.

Delete Sections 00 21 00, Section 00 41 43 and Section 00 53 43 and replace with the sections included in the tender.

SECTION 00 71 00 – DEFINITIONS

Add new definitions as follows:

31. SPECIALIST CONTRACTOR
.1 Specialist Contractor means a firm or person with whom the Owner has or will enter into a Contract or has placed or will place a purchase order for items or plant and equipment for incorporation in the Work.

32. PROVISIONAL ITEM
.1 The Provisional Items are for work that may be required in the execution of the Contract but are not anticipated at the tendering stage. Provisional items, if applicable, are listed in Subsection 4 – Schedule of Quantities and Unit Prices – Tender Form. Provisional items shall mean that the unit price as tendered shall be included in the estimated contract price, and that the owner reserves the right to delete all or portions of the item from the estimated contract price.

SECTION 00 73 00 – Supplementary General Conditions

Delete Section 1. and replace with the following:

1. PROJECT DOCUMENTS
.1 Project Documents are those documents prepared to supplement the Standard Specifications for the Work on

a specific Project. Where applicable, they consist of the Information for Tenderers, Tender Form, , Form of Agreement, Supplementary Specifications, drawings and addenda.

SECTION 00 72 45 – GENERAL CONDITIONS

*****Where the term "Consultant" is used throughout the General Conditions, revise to read "Engineer"*****

GC 5.4 BASIS OF PAYMENT FOR COST PLUS WORK

Add the following section as GC 5.4.7:

5.4.7 The fee for Contractor's overhead and profit shall be 10% of the cost of the work

Add the following section as GC 5.4.8:

5.4.8 BASIS OF PAYMENT FOR OTHER THAN COST PLUS WORK

.1 Clause GC 5.4.7 does not preclude the option of the Contract Administrator and the Contractor negotiating a Lump Sum Item of unit price payment for the Change in the Work, Extra Work, and Additional Work.

.2 When the method of payment has been negotiated to be Lump Sum for a Change in the Work, Extra Work, or Additional Work the following mark-ups shall be used.

.1 Where the Contractor has received approval from the Owner prior to the commencement of the Work, the Owner shall pay the Contractor the approved lump sum cost, plus a 10% mark-up to the Contractor for all, but not limited to, administration, supervision, bonding premiums, record documentation, overheads, profits, and all other incidental costs.

.2 Where the Contractor arranges for the Work to be carried out by a Subcontractor, working directly under the Contractor, the Owner, through the Contractor, will provide the primary Subcontractor, an additional 10% mark-up on work paid for on a lump sum basis.

.3 Where the primary Subcontractor arranges for the Work to be carried out by another Subcontractor, working under the primary Subcontractor, the Owner, through the Contractor, will provide for an additional 5% mark-up to each subsequent Subcontractor, working under the primary Subcontractor for work paid for on a lump sum basis.

.4 All mark-ups shall be applied to the original lump sum value, before any mark-ups have been applied. The maximum total mark-up for any Change Order or Change Directive shall not exceed an aggregate total of 35%, subject to the following limitation: clause (a) above may be applied only once, clause (b) above may be applied only once, and clause (c) above may be applied multiple times if applicable.

GC 5.8 – PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

Delete Subsection GC 5.8.4 and replace with the following:

5.8.4.1 Within sixty (60) days after the issue by the Engineer of the Certificate of Substantial Performance of the Works, provided that the Contractor has by then signed the Final Measure, and has provided the Engineer with the following documents:

.1 A statutory declaration to the effect that all expenses incurred by him in carrying out the Contract have been paid and releasing the Owner from any and all further claims relating to the Contract.

.2 A certificate from a barrister stating that there are no Mechanics Liens filed relating to the Contract Works.

.3 A clearance certificate from the Worker's Compensation Board.

Then the Owner shall release to the Contractor one hundred percent (100%) of the Holdback. If, however, the Final Measure is not signed within the sixty (60) days following the issue of the Certificate of Substantial Performance or if the Contractor has failed to provide the required documents as listed above, then the Owner shall release one hundred percent (100%) of the Holdback within two (2) weeks following the date on which the Contractor meets these requirements.

GC 5.10 – FINAL PAYMENT

Delete Subsection GC 5.10.4 and replace with the following:

5.10.4 Subject to provisions of paragraph 10.4.1 of GC 10.4 – WORKERS' COMPENSATION, and any lien legislation applicable to the Place of the Work, the Owner shall, no later than 15 calendar days after the issuance of a final certificate for payment, pay the Contractor as provided in Article A-5 of the Agreement – Payment.

GC 6.2 – CHANGE ORDER

Add the following Subsection to GC 6.2 – CHANGE ORDERS.

6.2.4 After the Owner and Contractor have agreed to the value, additional time (if any) and the revised date of completion (if any) of a change order, no further application for reimbursement by the Contractor shall be made.

GC 6.5 – DELAYS

Add the following Subsection to GC 6.5 – DELAYS.

6.5.6 Notwithstanding the above subsections, time shall be construed as being of the essence for the Contract. The date of expiring of the time allowed in accordance with the Contract for substantial performance of the Work shall be termed the Date for Completion. Should the Contractor fail to substantially perform the Work by the Date of Completion, the period of time from the Date for Completion to the date of Substantial Performance of the Work as determined by the Engineer, shall be termed the Period of Delay.

GC 10.1 – TAXES AND DUTIES

Add the following Subsection to GC 10.1 – TAXES AND DUTIES

10.1.3 The contractor will indicate on each application for payment, as a separate amount, the appropriate Harmonized Sales Tax the Owner is legally obliged to pay. This amount will be paid to the Contractor in addition to the amount certified for payment under the Contract.

GC 11.2 – CONTRACT SECURITY

Delete Subsection GC 11.2 CONTRACT SECURITY and replace with the following:

.1 The Contractor shall provide to the Owner within fourteen (14) days of acceptance of his Tender a Performance Bond and a Labour and Material Payment Bond each in the amount of 50% of the Estimated Contract Price, or alternatively, provide an unconditional irrevocable letter of credit for 100% of the Estimated Contract Price.

.2 The bonds shall be issued by a duly licensed surety company authorized to transact a business of suretyship in the Province of Nova Scotia and shall be maintained in good standing until the fulfillment of the Contract. The form of the bonds shall be in accordance with the latest edition of the CCDC approved bond forms.

.3 The letter of credit shall be issued by a chartered Canadian Bank and shall be valid until the conditions of GC 5.8.4.1 are fulfilled.

GC 12.3 – WARRANTY

Add the following to Subsection GC 12.3 WARRANTY:

12.3.7 The Contract requires an operational combination of several components comprising the Work which are customarily guaranteed by their suppliers. Under the terms of this Contract, the Contractor shall provide a guarantee for the Works for a period of one (1) year following the date of continuous operation. The terms of the guarantee shall be as follows:

.1 Where failure or incipient failure of the material is apparent, the Contractor shall actively commence repair or other remedy not more than twenty-four (24) hours after receiving due notice of trouble.

.2 If the Contractor on being notified does not for any reason commence repairs within twenty-four (24) hours, the Owner shall have the right to have repairs made by others as necessary to restore or continue service. The cost of such repairs by others is to be borne by the Contractor. The Owner shall at all times inform or attempt to inform the Contractor before hiring others to effect any repairs and it shall be at all times the Contractor's right to be informed as soon as possible of difficulties and proposed remedial action by others and to make or where practical to complete such repairs at any other time of the guarantee period in preference to others.

.3 The employment of some other person or persons for reasons set out shall in no wise affect the Contractor's obligations or liability hereunder or relieve him of the performance and fulfillment of any or all of his covenants, undertakings, obligations, or duties under the Contract.

.4 In the event of damage, failure or incipient failure of any part or parts directly attributable to inadequate or improper maintenance, the Contractor shall be responsible for remedial action but the cost of all such repairs will be reimbursed by the Owner.

.5 If the Contractor arranges that the manufacturer of some component or some other party approved by the Engineer provide the guarantee on a sub-contract basis, he may designate the direct implementer of the guarantee as his agent under the Contract in which case due notice to the agent will be taken as due notice to the Contractor. This will be a matter for Contractor's convenience only, and shall in no wise affect the Contractor's obligations and liabilities hereunder or relieve him from

the performance and fulfillment of any or all of his covenants, undertakings, or duties under this Contract.

.6 In emergency situations, as determined by the Owner, the Owner reserves the right to make appropriate repairs at the Contractor's expense.

After Section 12, add the following new Section:

GC 13 – RIGHTS-OF-WAY AND EASEMENTS

13.1.1 The acquisition or obtaining of easements in respect of the lands comprising the Site will be affected by the Owner. If the Contractor deems it advisable to acquire the right or rights to use, enjoy or occupy any additional or adjacent land or lands in order to facilitate the execution of the Work, he shall obtain such right or rights at his own expense and shall, at all times, indemnify and save harmless the Owner from any and all claims arising from the acquisition of such right or rights or the use, enjoyment or occupancy of such lands or land.

SECTION 01 10 00 – GENERAL REQUIREMENTS

Delete Subsection 2 – SUMMARY OF WORK and replace with the following:

2. SUMMARY OF WORK

.1 The proposed street reconstruction includes new water, storm and sanitary sewer infrastructure, new road gravels, asphalt, curb and gutter and sidewalk including landscaping reinstatement.

.2 The Work to be performed under this Contract generally entails:

.1 Negotiations and coordination with the power utility for their services and obtaining all necessary permits

.2 Supply and installation of water distribution piping, storm and sanitary gravity piping, valves, chambers, manholes, culverts and service lateral connections to existing infrastructure complete with all testing as per the Standard Specifications for Municipal Services.

.3 Coordination with the Owner regarding connection procedures and methods associated with connecting the new distribution piping to the existing systems.

.4 The supply, placement, and compaction of granular base and pipe bedding, and selected excavated material for backfill of all piping and associated infrastructure.

.5 All mass excavation of embankment common, import of borrow and mass excavation and embankment and removal of unsuitable material which might be encountered for the construction of the indicated water distribution, sanitary and storm piping systems.

.6 Rebuilding the Junction Road structure, including full depth asphalt removal, removal of the existing concrete pavement sub-structure along much of Junction Road, removal of existing sidewalk, and the construction of the new roadway cross section to the extents indicated on the drawings, including reinstatement of culvert crossings, water, sanitary sewer piping and laterals, road shoulders, curb, sidewalk, driveways (as indicated), utility poles (as required), existing surface features, and revegetation of disturbed soils and all incidentals.

.7 The supply, installation and maintenance of all environmental protection measures required for work on this project. Including but not limited to dust control on the roads and areas affected by the proposed work.

.8 Collection of record information as specified herein and as directed by the Owner or Engineer.

.9 Commissioning, testing, and certification of all the Works including but not limited to pressure testing, flushing, pipe video, exfiltration testing, chlorination, disinfection repair of leaks and re-instatement.

.10 Once substantial performance has been issued, Contractor to complete all deficiencies within 14 calendar days of the Contractor being made aware of the deficiency by the Owner or Engineer. If the Contractor does not repair the deficiency with the 14 calendar day period, the Owner has the right to have outside forces complete the work and deduct the value of this work from the Contract Price.

.11 All related work, including traffic controls and incidentals associated with the above, obtaining street opening permits and bonding for connection to existing services.

Add the following Subsections to 3:

3. SCHEDULING AND COORDINATION

.5 The Contractor is to ensure that all required inspections by various approval authorities are performed and that documentation of these inspections is provided to the Engineer.

.6 The Contractor is to ensure access to Junction Road Elementary School, located at 19 Junction Road, is maintained. Major road works on Junction Road between Queen Street and Maple Street are to be completed during the school summer break (July 1 – September 1).

A**dd the following Subsections to 7.1:**

7.1 SHOP DRAWINGS

.8 This review will not mean that the Engineer approves the detailed design inherent in the shop drawings. Responsibility remains with the Contractor, and such review does not relieve the Contractor from his responsibility for meeting all requirements of the Contract Documents.

.9 If pre-ordered materials and equipment purchased and supplied by Owner form part of the Work, the Contractor is to make his own arrangements with suppliers for the provision of shop drawings and be responsible for obtaining further information required to facilitate and ensure correct installation of materials and equipment.

Delete Subsection 8 and replace with the following:

8. RECORD DRAWINGS

.1 The Owner or Engineer may direct the Contractor to capture the measurements of other affected infrastructure or features as required.

.2 In addition to Clause 8.1 above, maintain one separate set of drawings on site. These drawings shall be reserved exclusively as record drawings. Have these drawings marked up daily to record any alterations made during construction to the contract drawings. Transmit these drawings to the Engineer at Substantial Completion. The submission of an acceptable set of record drawings to the Engineer is a condition of issuance of Substantial Performances. The contractor will be supplied with a separate set of drawings specifically for the purpose of keeping records.

Add the following to Subsection 9 - QUALITY CONTROL:

9. QUALITY CONTROL

.1 Provide assistance, labour, and materials, as are normally required for examining, testing, and measuring the quality, weight, or quantity of any material used and supply samples of material requested before incorporation into the Work.

.2 Include in Contract Price the costs for providing assistance and samples for testing and for arranging tests.

.3 Provide the Engineer with assistance for tests and inspections.

Add the following to Subsection 12 – TRAFFIC CONTROL:

12. TRAFFIC CONTROL

.1 Maintain access to all adjacent properties.

.2 The Contractor shall be responsible for the determination and placement of all appropriate signage and for the management of safety on the site.

.3 A Construction Management Plan, including traffic control plans shall be submitted to the Onwer for approval prior to commencement of the work. A traffic control plan that does not include all of the required elements listed below will be found incomplete, and returned for revision and re-submittal. Proposed street closures will require approval from the Onwer and the Engineer.

.1 Traffic control plan shall indicate construction methods allowing work within rights-of-way to be completed efficiently and effectively, while maintaining a safe and organized movement of vehicles and pedestrians around and through temporary workplaces and, as well, to protect workers from errant vehicles. Traffic control plans to include details for controlling traffic at any signalized intersections and proposed lengths and estimated duration of each diversion. Traffic control plans to also indicate how vehicular access will be maintained for residents of the affected streets during construction.

.4 Provide and maintain signs, delineators, barricades, and miscellaneous warning devices to indicate construction activities or other temporary or unusual conditions.

.5 The following traffic related items must also be addressed in the Traffic Control Plan:

.1 Planned traffic diversions/lane closures will require advanced notifications as part of Public Service Announcements.

.2 Block by block street closures will be required during construction. Closure of more than one block at a time will not be accepted. During a closure, the Contractor must maintain access for local traffic.

.3 During street closures, the Construction Management Plan must include a proposed plan to ensure resident and business garbage pickups and business deliveries are not impeded.

.4 Coordinated closures may be considered for adjacent neighborhood streets if adequate justification can be provided as part of the Construction Management Plan.

.5 The contractor shall provide a temporary detour plan for each road closure, subject to approval in advance by the Onwer. Signage regarding diversions will be required at key area intersections.

.6 Truck traffic is to be detoured around the construction site via Lisgar Street to Main Street for the duration of the project.

.6 Maintain access to all adjacent properties

.7 All costs associated with traffic and pedestrian management, permitting and advertising will be borne by the Contractor.

Add the following Subsections:

17. PHOTOGRAPHS

.1 Prior to commencement of the Works, the Engineer may arrange for photographs to be taken of the site and those properties adjacent to the site.

.2 Accompany Engineer during the taking of photographs and document any comments on the conditions of the site or adjacent properties.

.3 Engineer will retain photographs, together with a written report, on the condition of existing roads, sidewalks, trees, lawns, and adjacent properties as determined by mutual agreement as a record of existing conditions prior to the start of Work.

18. NOISE

.1 Operate construction equipment, such that there is a minimum amount of noise and vibration.

19. FLOATATION AND

FLOODING

.1 Prevent floatation and flooding during construction of the Work. Make good any damage to pipes or structures caused by floatation and flooding at no extra cost to the Contract.

.2 De-water all excavations and remove accumulations of water prior to backfilling.

.3 Dispose of water drained or pumped in a manner acceptable to the Owner such that the Work and adjacent properties are not damaged.

20. UTILITIES

.1 Do not operate valves, electrical and telephone controls on existing utility systems.

.2 Apply to the utility having jurisdiction for permission to operate such systems if it becomes necessary, and only operate such systems in accordance with, and in the presence of a representative of the utility company affected.

.3 Include an amount in the contract price to cover the cost of having a utility company representative present when the Work passes under or in close proximity to underground cables, structures or utility poles.

.4 Provide, prior to substantial completion, a letter from the utility affected stating that any services damaged during construction have been repaired to the utility company's approval.

.5 Obtain Nova Scotia Power Services Safe Clearance report prior to commencement of construction.

21. DAMAGE AND INJURY

.1 Protect the Work and adjacent property from damage and injury in accordance with Section 00 72 45, General Conditions, Part 9 – GC 9.1 PROTECTION OF WORK AND PROPERTY.

.2 Immediately inform Engineer of any damage or injury to any persons, property, services or materials.

.3 Relocate survey markers, monuments, and survey pins disturbed during construction under the direction of a qualified provincial land surveyor. Include costs in Contract Price.

22. DUST CONTROL

.1 Provide Dust Control within the project area and any and all access points to the project area as necessary or as directed by the Owners and/or Engineers site representative.

SECTION 01 22 00 – MEASUREMENT AND PAYMENT

General

Delete subsection .2 and replace with the following:

.2 For each item include in the pay item all of the following as required where individual quantities are not provided in the Tender Form: environmental protection and controls, traffic control, dust control, protection of existing trees, mobilization, costs of surety, assistance to the Engineer, clearing and grubbing, common excavation, supply and placement of imported materials, removal or abandonment of existing infrastructure and re-instatement as indicated, shoring, control of water and dewatering, bedding, backfilling, compaction, disposal of surplus common, disposal of unsuitable material and replacement with structural imported material, reinstatement, marker stakes, marker tape, joint restraints and thrust blocks, thrust anchors, tracer wire, insulation, record drawing data collection activities, closed circuit television inspection, re-instatement of damaged sanitary laterals, installation of watermain sleeves complete with water tight ends, re-instatement of damaged culverts, re-instatement of damaged water laterals, re-instatement of damaged sanitary laterals and all reinstatement of surface features to original or better conditions and all incidentals.

Add the following:

.6 The Contractor is responsible to obtain and include in the individual quantities, the cost of all necessary permits and inspections required to perform the Work.

.7 Where required, each item to include all items necessary to maintain traffic control as per the Nova Scotia Temporary Workplace Traffic Control Manual, Current Edition and all other applicable local specifications.

.8 The unit and lump sum prices for all items in the form of tender "Schedule of Quantities and Unit Prices" shall be full compensation for the work of the Item and shall include the cost of furnishing all materials, labor, tools, and equipment necessary to complete the work in accordance with the Contract, the Drawings and Specifications, and shall cover all cost of surety, mobilization, assistance to the engineer and site offices. Each item shall include for all necessary supervision, labor, tools and equipment, materials, plant and services, Quality assurance and all operations and allowances customary and necessary to complete each item and the Contract as a whole notwithstanding the fact that not every such necessary operation is mentioned or included specifically for measurement.

.9 Payment to the contractor will be based on actual quantities for the work completed in accordance with the drawings and specifications.

.10 Where required, each item to include all items necessary for all work that affects removal, securing and reinstatement of utility poles, street lights, guard rail including coordination with infrastructure owner.

Earthwork

Delete Subsection 2 and replace with the following:

2 Mass Excavation and Embankment - Common

Unit of Measurement: cubic metre (m^3)

Method of Measurement: surface-to-surface volume method between topographical survey taken after grubbing and topsoil removal, asphalt pavement removal and/or concrete pavement removal, and the lines and elevations indicated.

This item includes: excavation, placement and compaction to lines and elevations indicated, and disposal of surplus or unsuitable material.

Water Main System

Delete Subsection 11 and replace with the following:

11 Pipe

.1 Pipe

Unit of Measurement: metre (m)

Method of Measurement: along center line of pipe through fittings, valves, and valve chambers.

This item includes: supply and installation of pipe complete with all fittings, removal, and disposal of existing pipe within the trench of the new pipe (unless otherwise indicated). Gaskets, mechanical thrust restraint, thrust blocks, jumper wires, wire bond straps, anodes, bedding, testing, and commissioning, and all incidentals. Includes backfilling up to and including Type 2 gravels.

Delete Subsection 12 and replace with the following:

12. Fire Hydrants

.1 Installation of Fire Hydrant

Unit of Measurement: each (ea.)

This item includes: hydrant complete with lead(s) as indicated, polyethylene encasement, anchor tee, valve and valve box, anodes, thrust blocks, reinstatement and stabilization of area around hydrant, permanent reflective marker, painting of hydrant, excavation, backfilling up to and including Type 2 gravels. Hydrants types as indicated on drawings.

Includes removal of existing hydrant to be returned to Owner.

Delete Subsection 15 and replace with the following:

15. Water Services

.1 Reconnect Existing Water Services

Unit of Measurement: each (ea.)

This item includes: saddle as required, tapping, corporation stop, service pipe (if required), couplings (if required), zinc anode (if required), magnesium anode cad welded (if required). For large services, greater than 50mm diameter this item shall include tee, valve, and fittings. Includes backfilling up to and including Type 2 gravels, coordination with homeowner, all incidentals and reinstatement as required to complete the work and as indicated on the Drawings. One coupling will be permitted to connect to existing lateral.

.2 Replace Existing Water Service (Lead Service) – Private (PROVISIONAL)

Unit of Measurement: each (ea.)

This item includes: supply and installation of service pipe (to any length) and fittings from the curb stop to the building foundation, removal and disposal of existing lead pipe within or partially within theoretical trench, saddle as required, tapping, corporation stop, curb stop, tee, gate valve as required, service box (c/w finish grade adjustment), anode, rigid insulation as required, coordination with homeowner, excavation, all incidentals and reinstatement as required to complete the work and as indicated on the Drawings. In paved areas, includes backfilling up to and including Type 2 gravels and reinstatement of disturbed surfaces to project standards (where not covered by separate pay items as part of the planned street recapitalization work). In areas outside of the paved roadway, item includes reinstatement to existing surface conditions or better. For large services, greater than 50mm diameter, this item shall include fittings and couplings.

Item includes solution for working around existing trees or infrastructure (such as hydro excavation, directional drilling, pipe bursting, etc.). Lateral locations shown on the drawings are approximate in nature and are to be reviewed and confirmed in the field during construction. Installation either open trench or directional drill. If directional drilling, this item also includes access pits and directional drilling.

Note: this item does not cover repair or replacement of services damaged during construction, which shall be at the expense of the contractor.

Delete Subsection 18 and replace with the following:

18. Temporary Water

Unit of Measurement: Lump Sum (LS)

This item includes: but is not limited to, the supply of all labour, material and equipment required for installing, maintaining and removing temporary main line (min 50mm) and service laterals complete with valves, pipe, backflow prevention device, meter (supplied by Owner), temporary pressure reducing valves (to match temporary main size), vacuum breakers at the connection to homes, road cuts and temporary asphalt if required, testing and disinfection, and reinstatement as required. All pipes must be disinfected to contract documents. Coordinate connection to homes with homeowners. Limits of temporary water service may extend outside the limits of construction. Larger temporary lines may be required to ensure that an adequate supply of water is provided to all customers. Submit a proposed plan 2 weeks prior to installation for review by Owner. This item also includes installation of approved vehicle and pedestrian crossing protective measures, frost

protection as required, producing and distributing notice to customers that will be placed on temporary water and/or affected by shutdowns to facilitate temporary connections to the main.

Delete Subsection 19 and replace with the following:

19. Water Line Removal

Unit of Measurement: metre (m)

This item includes: excavation, removal and disposal of the existing water main outside of the new water main trench, including backfill and reinstatement to underside of sub-base materials.

SANITARY SEWER SYSTEM

Delete subsection 21 and replace with the following

21 Gravity Pipe

Unit of Measurement: meter (m) measured along centerline of pipe in horizontal plane

This item includes: supply and installation of pipe, excavation, backfill and compaction to subgrade as shown on the Contract Drawings.

Delete subsection 23 and replace with the following

23 Manholes

Unit of Measurement: each (ea)

This item includes: manhole, frame, cover, grout, grade adjustment, backfill, gravel base, and compaction to top of subgrade as shown on the Contract Drawings.

Delete subsection 24 and replace with the following

24 Services

.1 Connection of Existing Service to new main

Unit of Measurement: each

This item includes: locating existing service and supply and installation of pipe, fittings and incidentals, including backfill and compaction to subgrade.

Delete subsection 26 and replace with the following:

26 CCTV Inspection

Unit of Measurement: meter (m)

Method of Measurement: along centerline of pipe in horizontal plane

This item includes: Conduction of a CCTV inspection of sanitary piping prior to and following construction as indicated, as well as at the end of the warranty period, determining locations of existing service laterals and report findings to the engineer or for final takeover or warrantee verification.

Add subsection 28 as follows:

28 Removal of Existing Infrastructure

.1 Removal of Existing Sanitary Pipe

Unit of Measurement: metre (m)

This item includes: excavation, removal and disposal of the existing sanitary pipe as indicated on the drawings, including backfill and reinstatement to underside of sub-base materials.

.2 Removal of Existing Sanitary Manholes

Unit of Measurement: Each (ea)

This item includes: excavation, removal and disposal of the existing sanitary manholes as indicated on the drawings, including backfill and reinstatement to underside of sub-base materials.

STORM SEWER SYSTEM

Delete subsection 31 and replace with the following

31 Pipe

Unit of Measurement: meter (m) measured along centerline of pipe in horizontal plane

This item includes: supply and installation of pipe, excavation, backfill and compaction as shown on the Contract Drawings.

Delete subsection 33 and replace with the following

33 Catch Basins

Unit of Measurement: each (ea)

This item includes: catch basins, grate, grout, grade adjustment, backfill, gravel base, and compaction to subgrade as shown on the Contract Drawings.

Delete subsection 34 and replace with the following

34 Catch Basin Leads

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe from centre of catch basin to centre of main sewer, centre of manhole, or termination point indicated.

This item includes: pipe complete with all fittings and connections to existing catch basins as shown on the Contract Drawings.

Delete subsection 38 and replace with the following

38 CCTV Inspection

Unit of Measurement: meter (m)

Method of Measurement: along centerline of pipe

This item includes: Conduction a CCTV inspection of storm piping following construction as indicated, as well as at the end of the warranty period, determining locations of existing service laterals and report findings to the engineer or for final takeover or warrantee verification.

Add subsection 40 as follows:

40 Remove Existing Structures: Catchbasin

Unit of Measurement: each

This item includes: excavation, and disposal of surplus material, Catchbasin structure and frame and grate, supply and install backfill and compaction to subgrade as indicated on contract drawings.

STREET CONSTRUCTION

Remove subsection 41 and replace with the following:

41 Gravels

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area at mean depth.

This item includes: supply, placement and compaction of gravel as indicated, and supply and placement of geotextile as noted on the contract documents.

Remove subsection 43 and replace with the following:

43 Asphaltic Concrete

.1 Asphaltic Concrete

Unit of Measurement: square metre (m^2)

Method of measurement: slope measure of indicated area.

This item includes: cleaning, supply, placement and compaction of asphaltic concrete as indicated including dry sweeping milled surfaces prior to tacking, tack coat, temporary pavement markings and saw cutting as necessary. This item also includes supply, placement and compaction of asphalt concrete ramps installed at all limits including side streets and pedestrian ramps using hot mix asphalt (or approved equivalent) and a bond separator. Asphalt ramps are to be installed before work is completed for the day, and before the area is opened to live traffic. Asphalt ramps to be constructed to at least a 20 to 1 horizontal to vertical ratio.

.2 Asphalt Concrete Removals

.1 Full Depth Asphalt Removal

Unit of Measurement: square metre (m^2)

Method of measurement: slope measure of indicated area.

This item includes: the supply of all necessary materials, labour and equipment required for the full depth asphaltic concrete removal for the project area on Junction Road, excluding the alignment of the box culvert on North Street. Item also includes disposal of asphalt materials as specified in the contract documents. This item also includes cleaning of all milled surfaces, temporary pavement markings and all other work as designated by the Engineer. This item also includes supply, placement and compaction of asphalt concrete ramps installed between the planed surface and the existing asphalt at all limits including side streets and pedestrian ramps using hot mix asphalt (or approved equivalent) and a bond separator. Asphalt ramps are to be installed before work is completed for the day, and before the area is opened to live traffic. Asphalt ramps to be constructed to at least a 20 to 1 horizontal to vertical ratio.

.2 Full Depth Concrete Pavement Removal

Unit of Measurement: square metre (m^2)

Method of measurement: slope measure of indicated area.

This item includes: the supply of all necessary materials, labour and equipment required for the full depth concrete pavement where it exists below the current asphalt pavement surface of Junction Road (Junction Road from approximately Fir Street to North Street). Item also includes disposal of concrete materials as specified in the contract documents.

Add subsection 45 as follows:

45 Sidewalk

.4 Sidewalk Removal

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area

This item includes: common excavation, removal and disposal of existing sidewalk as per tender Drawings.

ADDITIONAL ITEMS

Add subsection 76 as follows:

76 Driveway Reinstatement

.1 Gravel

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area

This item includes: excavation, supply, placement, and compaction of Type 1 gravel (150 mm minimum thickness)

.2 Asphalt

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area

This item includes: excavation, supply, placement and compaction of 65mm Type D-HF asphalt as specified. It also includes excavation, supply, placement and compaction of 150 mm Type 1 gravel base and reinstatement tape along cut edge of existing asphalt.

Add subsection 77 as follows:

77 Line Painting

Unit of Measurement: lump sum (L.S.)

This item includes: accurate inventory of existing pavement markings, layout and pre-marking, the supply and application of paint in the colours, sizes, and configurations shown on the drawings and as specified by the Engineer. Also includes common excavation, backfill, supply and installation of concrete, reinforcing steel, iron pipe sleeve sign post and water tight cap, and supply and installation of road signs.

SECTION 03 30 00 – CONCRETE

Revise 2.2 Concrete Mix to read as follows:

.1 Proportion normal density concrete in accordance with CSA – A23.1. Alternative 1 to give following properties for all concrete:

.1 Cement: Type 10.
.2 Minimum compressive strength at 28 days: 30 MPa.
.3 Class of exposure: F-2.
.4 Nominal size of coarse aggregate: 20 mm.
.5 Slump at time and point of discharge: 80 mm +/- 30 mm.
.6 Air content: 5 to 8 %.
.7 Chemical admixtures: type as approved, and in accordance with ASTM C494.
.8 Maximum water cement ratio: 0.50.

SECTION 33 11 00 – WATER MAIN

Delete Section 2.3 and replace with the following:

2.3 Polyvinyl Chloride and Polyvinyl Chloride Biaxial Oriented Pipe and Fittings

.1 Pipe and Joints: to CAN/CSA B137.3, AWWA C900

.2 Fittings:

.1 PVC/PVCO: to CAN/CSA B137.
.2 Gray or ductile-iron: to AWWA C110 and C153 cement mortar lined to AWWA C104, minimum pressure rating 1035 kPa for cast, 1720 kPa for ductile iron
.3 Polyvinyl Chloride Biaxial Oriented Pipe Acceptable Product:
.1 IPEX Bionax.

Add the following as Subsection 2.7.9:

.9 Acceptable Products

.1 Clow Brigadier “M67”
.2 Canada Valve “Century”
.3 Mueller “Super Centurion 250”

.4 AVK Series 2780 “Nostalgic”

Add the following as Subsection 2.8.4:

.4 Acceptable products:

.1 Clow McAvity F-6100 Resilient Seat Valve
.2 Mueller A2360-23 resilient Wedge Valve
.3 AVK Series 25/20 resilient Seat Valve

*******End of Supplementary Specifications 00 74 00*******