



**The Corporation of the Town of Ingersoll
and
The County of Oxford**

Contract 2-2024

Pemberton Street Reconstruction

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1) SCOPE OF WORK

The Town of Ingersoll and The County of Oxford require the following scope of work to be completed.

Pemberton Street – from Charles Street East to Janes Road (Thames River)

- Full Depth (100mm) milling of existing pavement structure and regrading
- Supply and Place 50mm HL8 Basecoat and 50mm HL3 Topcoat
- Partial curb removal & replacement
- Maintenance hole frame and lid replacement c/w adjustment
- Catchbasin frame and grate replacement c/w adjustment
- Placement of new 1.8 wide concrete sidewalk c/w handrail
- Line and marker painting
- Saw cutting, Cold mill tie-ins and all other work as specified to complete the contract

Pemberton Street – from Wilson Street (Thames River) to Canadian National Railway crossing

- a. Full replacement of the existing 250mm cast iron watermain with new 250mm DR18 PVC pipe, complete with all new services and tie-ins as required. Replacement of existing water valves and hydrants are also required.
- b. Placement of new precast catchbasin(s) to proposed locations, complete with PVC leads.
- c. Complete reconstruction of Pemberton Street including all granulars for road base, HL8 asphalt base course, HL3 asphalt driveways, concrete curb and gutters, concrete sidewalks, topsoil/sod/seed restoration and line and marker painting as required.

The scope of work includes any works contingent to the completion of the project deliverables specified in the scope including but not limited to necessary dewatering, excavation, backfilling, pumping, drainage, sheathing, shoring, bracing, fencing, disposal of excess materials, saw cutting, cold mill planning. All such works and other related works required to complete the Contract as specified and shown on the drawings shall be supplied by the Contractor and shall form a part of the scope of work identified in this tender document.

2) FORM OF TENDER, DELIVERY AND OPENING OF TENDERS

All entries in the Form of Tender shall be made in ink.

The bidder must sign and submit the AC Index Acknowledgement Form with their Tender Submission. This form is located in the Contract in Section B - Form of Tender.

The bidder must include the Acknowledgement of Addendum in the tender submission. The acknowledgement will be forwarded only on the issuance of an addendum or addenda.

Sealed Tenders acquired from the town's **Bids and Tenders** site and in envelopes clearly marked as to contents, will be received by Matt Sweetland, Director of Infrastructure and Development, Town of Ingersoll, 130 Oxford Street, 2nd Floor, Ingersoll, Ontario N5C 2V5.

until 11:00 a.m. April 4th, 2024

3) TENDER DEPOSIT

Every Tender shall be accompanied by either a Certified Cheque, or Bid Bond payable to The Town of Ingersoll, or a cash deposit of **10% of the Tendered Bid Amount**. The deposit of the two (2) lowest Bidders will be retained until the formal contract has been signed by the successful bidder and a guarantee bond has been furnished to the satisfaction of the Owner. If the deposit is provided in the form of a Bid-Bond, such a bond must have a validity of at least 60 working days from the date of closing of the tender.

The Tender Deposit shall be returned to the bidders as below:

- ***All bidders, except the lowest two bidders within 10 working days of the date of closing of the tender.***
- ***The unsuccessful bidder out of the two lowest bidders within 10 working days of the date of signing a formal contract by the successful bidder and the successful bidder furnishing and providing the required contract securities.***
- ***The successful bidder, within 10 working days after formal signing of a contract and receipt of the contract security as required under this contract. Should the successful bidder fail to enter into a contract the said cheque, bid bond or cash submitted as tender deposit shall be forfeited.***

4) AGREEMENT TO BOND (SURETY'S CONSENT)

Every Tender shall be accompanied by an Agreement to Bond (Surety's Consent), signed and sealed by the Bonding Company, stating that the Bonding Company is willing and able to bind the Contractor for the due completion of the work described in this contract. Also to be issued is a performance bond and labour and materials bond as described herein.

5) AMOUNT OF SURETY AND BOND

The successful Bidder will supply a Performance Bond and a Labour & Material Payment Bond for the due completion of the work in compliance with the terms and conditions of the Contract, each of which Bonds shall be for one hundred percent (100%) of the estimated total value of this Contract.

6) DISQUALIFICATION / REJECTION OF TENDERS

Tenders that are not received prior to the advertised closing time shall be rejected, shall not be opened and shall be returned without any further consideration.

A tender submitted by a bidder shall be rejected as non-compliant and will be returned unopened without any further consideration, if the bidder has any current ongoing litigation, or any litigation concluded in the previous 3 years against the Town relating to previous tenders or performance of previous contracts awarded to them by the Town. For the purpose of this section, bidder includes a company, partnership, sole proprietor, a related company by shareholding or sole proprietorship and the officers, directors or principals of any company, partnership, and sole proprietorship.

The Town reserves the right to refuse bids from prospective bidders based on their past performance in previous contracts awarded by the Town. A bid by a bidder who has been in default on any previous construction contracts with the Municipality shall be rejected without any consideration if the tender is received within 12 months of the date of default on a previous contract.

The Town reserves the right to reject any or all tenders, or to accept any tender not the lowest tender, should it be deemed to be in the best interest of the Town to do so. The Town will not find the bid or tender satisfactory if the bid or tender fails to comply with the following:

- ☐ Is not conditional in any part;
- ☐ Contains the "Agreement to Bond" documentation;
- ☐ Contains a Bid-Bond or a certified cheque in lieu attached or enclosed;
- ☐ Signed and sealed;
- ☐ Acknowledges all addenda issued in the acknowledgement form attached with the Form of Tender;
- ☐ Includes the AC Index Acknowledgement Form;
- ☐ Is not incomplete, conditional or obscure;
- ☐ Does not contain additions not called for;
- ☐ Does not contains erasures, alterations or irregularities of any kind.

7) BLANK FORM OF TENDER

All Tenders must be completed upon the blank Form of Tender annexed hereto and shall give the price for each item of work proposed and shall include the proper completion of all Schedules and Statements, and shall be signed by the Bidder with their business address.

All index and reference numbers either in the Tender Form, Plans, Drawings, Specifications or Schedule are given for the convenience of the Bidder, and such must be taken only as a general guide to the items referred to. It must not be assumed that such numbering is the only reference to each item, but the **Plans and Specifications as a whole must be fully read in detail for each item.**

8) EXECUTION OF THE CONTRACT

The party to whom this Contract is awarded will be required to enter into a formal Contract with the **Town of Ingersoll** and forming this Contract will be this Tender Document, including Information for Bidders, Form of Tender, Special Provisions, General Conditions, Agreement and the Contract Plans and Specifications.

The bidder to whom the Contract is awarded will execute the Contract and furnish the Bonds, within ten (10) working days, from the date of delivery of the notice from the Town and County to the Bidder, at the address given by the bidder.

Once work has commenced the Contractor shall remain on site and work continuously until the work is complete in accordance with the 'Special Provisions - Order of Work' or unless given written authorization by the Town Engineer.

9) MAINTENANCE GUARANTEE

The Contractor shall provide a maintenance guarantee valid for **Twenty Four (24) months** from the date of issuance of the Certificate of Substantial Completion by the Town in accordance with the General Conditions forming a part of this contract.

The Town and County shall conduct a maintenance inspection twenty four (24) months after acceptance of the substantially completed work and issuance of the Certificate of Substantial Completion. Any deficiencies found during this inspection, or at any time during the 24 month guarantee period, shall be made good by the Contractor at his expense within thirty days of notification from the Town and County.

Should the Contractor fail to repair any deficiency within the prescribed time, or should the Town and/or County deem a deficiency to need emergency repair during the guarantee period, the Town and/or County may pay for the repair by drawing on the Letter of Credit, after giving the Contractor 24 hour notice.

10) EXAMINATION OF SITE

Each Bidder must satisfy himself by personal examination as to the local conditions to be met with during the construction and conduct of the work. The Bidder shall make his own estimate of the facilities and difficulties to be encountered including the nature of the sub-surface materials and conditions.

The Contractor shall **not** claim any extras on account of any misunderstanding or perception of misunderstanding of terms and conditions of the tender or the site conditions at the site of work.

Pre-construction excavation or test holes shall not be permitted. Refer to Geotechnical Report.

11) OMISSIONS AND DISCREPANCIES

Should a Bidder find discrepancies in, or omissions from, the Drawings, Specifications or other tender documents, or should he be in doubt as to their meaning, the Bidder should notify the Town Engineer who may send a written instruction/clarification to all Bidders.

12) ABILITY AND EXPERIENCE OF THE CONTRACTOR

It is not the purpose of the Owner to award this Contract to any Bidder who does not furnish satisfactory evidence that they have:

- a) The ability and experience in this class of work;
- b) Sufficient capital and plant to enable them to prosecute and complete the work successfully and within the identified time frame;
- c) Proper equipment and experienced operators for this class of work;
- d) Sufficient equipment to safely enable them to carry out the works described in the tender;
- e) Bidders shall make available all equipment for inspection by the Town prior to execution of the contract.

The Town reserves the right at its sole discretion to reject any bid submission or not enter into an agreement with any bidder if it is felt that any of the above conditions is not met or if, in its sole discretion, the Town determines that the contractor has been unable to furnish sufficient and satisfactory evidence of experience, available capital & plant or adequate & appropriate machinery.

Included at the back of the Contract is a sample Contractor Rating Form (Appendix A) which will be completed by the Town of Ingersoll Engineering Department upon substantial completion of the contract.

This form will be used to assess the Contractor and its Sub-contractor(s) on various criteria, including but not limited to supervision, workmanship, equipment, public relations and co-operation.

The rating may be used by the Town for a future reference regarding the awarding of contracts. The Town reserves the right to provide these ratings to their member municipalities for their use.

13) INFORMAL TENDERS

Informalities or irregularities noted during the tender opening, or during the review of tenders, will be forwarded to the Town Engineer, or designate for a ruling on whether the informality compromises the tendering process. This ruling may not necessarily happen at the time of tender opening.

The Town Engineer, in its sole discretion, will decide whether to accept or reject any tender for such informalities after completion of the tender openings.

14) UNBALANCED TENDERS

Each item in the Form of Tender shall be a reasonable price for such item. The Town reserves the right to reject any tender that is unbalanced. The Town through its Town Engineer shall be the sole judges of such matters.

15) LIQUIDATED DAMAGES

The liquidated damages referred to in the General Conditions under this Contract will be **\$ 1000.00** per day beyond the target date of substantial completion. It shall be noted that these charges are not a penalty to the contractor, but a lump sum amount payable by the contractor for costs related to administration, supervision, etc., beyond the target substantial completion date.

16) INSURANCE

The insurance coverage must be written by an insurance company licensed to conduct business in the Province of Ontario and must have a minimum AM Best Financial Rating of A-.

Commercial General Liability

a) The Commercial General Liability Insurance shall be maintained until the works have been completed and accepted by the Town and/or County and a Certificate of Completion has been issued.

b) The Liability Insurance shall:

(i) include the **Town of Ingersoll** and **County of Oxford** as additional insured only with respect to liability arising out of work performed by the Contractor in connection with this contract:

Contract 2 – 2024

(ii) have a limit of liability of not less than **\$5,000,000** per occurrence, and an aggregate limit of not less than **\$10,000,000**, within any policy year with respect to completed operations.

(iii) be **Commercial General Liability Insurance** covering all operations and liabilities assumed under the Contract with the Town and County. The deductible level shall not exceed **\$10,000**.

(vi) The Contractor will be required to have liability insurance of **\$10,000,000** to be able to work on railway property.

(iv) The policy shall include an extension for a standard provincial and territorial form of non-owned automobile liability policy.

This policy shall include but not be limited to:

- (a) Name the Owner as an additional insured
- (b) Cross-liability and severability of interest
- (c) Blanket Contractual
- (d) Products and Completed Operations
- (e) Premises and Operations Liability
- (f) Personal Injury Liability
- (g) Contingent Employers Liability
- (h) Owners and Contractors Protective

- (i) Broad Form Property Damage
 - (j) Firefighting Expenses
 - (k) Attached Machinery
 - (l) 30 days' Notice of Cancellation
- c) If the construction project is near old or heritage buildings or structures, the coverage shall include damage (both structural and cosmetic) to those buildings and/or structures.

The following may also apply:

- d) If applicable to the construction project described in the Agreement, coverage shall include shoring, blasting, excavation, underpinning, demolition, pile driving, caisson work and work below ground surface including tunneling and grading.
- e) If the work involves asbestos removal, the policy shall either provide coverage for this exposure or coverage shall be provided through a Professional Liability Policy.
- f) To achieve the desired limits, umbrella or excess liability insurance may be used.
- g) The Owner reserves the right to request in addition to the Commercial General Liability Insurance coverage Wrap-up Liability. The Wrap-up shall be in the names of the Owner, Contractor, all Sub-contractors, Architects, Engineers, Consultants, Planners and Project Managers. Limits and coverages shall be in compliance with the provisions outlined above.

Installation Floater

The Contractor shall, throughout the term of the contract, obtain and maintain an Installation Floater written on an "All Risk" perils basis of an amount not less than **\$1,000,000**. Coverage applies while property is in transit to the installation site, while stored at a temporary location, awaiting installation at the work site, during loading and unloading as well as the course of installation until completed.

Contractor's Pollution Liability

The Contractor shall carry a Contractor's Pollution Liability Policy, underwritten by an insurer licensed to conduct business in the Province of Ontario for a limit of not less than **\$5,000,000**. Coverage shall include bodily injury, property damage, clean-up and remediation costs. The Contractor shall purchase at minimum a 3 Year Extended Reporting Endorsement.

Contractor's Equipment Floater

The contractor shall provide and maintain coverage for equipment used during the term of this Agreement. Coverage will be provided, on a broad form basis, for construction machinery, equipment, tools and stock that will be used by the Contractor in the performance of the work. The coverage will also include rental expense. Coverage is to be carried from the date of commencement of the work until **24 months** after the date of Substantial Performance of the Work.

Automobile Insurance

Standard Form Automobile Liability Insurance that complies with all requirements of the current legislation of the Province of Ontario, having an inclusive limit of not less than **\$5,000,000** per occurrence for Third Party Liability, in respect of the use or operation of vehicles owned, operated or leased by the Contractor.

Crane Operators/Hook Liability

If booms or cranes are involved in moving any materials or installing equipment the contractor will require Hook or Crane Operators Liability. The limit for this coverage shall equal the cost of the most expensive piece to be moved or installed.

Primary Coverage

The proponent's insurance shall be primary coverage and not additional to and shall not seek contribution from any other insurance policies available to the municipality.

Certificate of Insurance

The proponent shall provide a Certificate of Insurance evidencing coverage in force at least 10 days prior to contract commencement.

17) Canadian Railroad Safety Certification

All employees (general contractor/sub-contractors) working within or around any railway right of way must be certified to work in that area. The contractor must contact the appropriate Canadian Railway and complete the training and certification required by the railway to work in the right of way.

<http://www.contractororientation.com/>

The Town must receive confirmation that all contractor and/or sub-contractor employees have completed the Canadian National Contractor Orientation within ten (10) business days of any work taking place within the CN right of way.

18) CANADIAN LABOUR AND MATERIALS

Unless otherwise specifically approved in writing by the Town Engineer, the Contractor shall, to the best of its ability, employ Canadian labour and shall utilize materials, parts and equipment of Canadian manufacture in constructing the works.

19) OWNER

Where herein reference is made to "Owner", "Corporation", "County" or "Town", it shall be taken to mean the Town of Ingersoll or the County of Oxford.

20) FORM OF TENDER

A copy of the Form of Tender is included with the tender documents. Submit **only pages B-1 to B-18** as the formal tender for this Contract.

21) PUBLIC INFORMATION CENTRE

Once the contract has been awarded, a Public Information Centre (PIC - drop in format) may be required and held at the Ingersoll Town Centre Council Chambers.

Should the Town require such a meeting, the Contractor is to be present at this PIC. This requirement will be performed at no cost to the Town.

The Contractor will be required to address their construction staging, number of crews working and other issues that may be encountered during the construction with the property owners.

PREVIEW ONLY

Contract: 2 - 2024

Project Description: Pemberton Street Reconstruction

BIDDER INFORMATION**CONTRACTOR'S**

Name: _____

Address: _____

Telephone Number: _____

E-mail Address: _____

Signing Authority for Tenderer: _____
(Please Print)

Position of Signing Authority: _____

Contractor's HST Number: _____

TO: THE COUNCIL OF THE TOWN of INGERSOLL

RE: 2 - 2024

Project Description: Pemberton Street Reconstruction

Mayor and Members of Council:

The Bidder has carefully examined the Provisions, Plans, Specifications and Conditions, referred to in the Schedule of Tender Items attached here as part of this Tender, and has carefully examined the site and location of the work to be done under this Contract. The Bidder also understands and accepts the said Provisions, Plans, Specifications and Conditions, and for the prices set forth in this Tender, hereby offers to: furnish all machinery, tools, apparatus and other means of construction; furnish all materials, except as otherwise specified in the Contract; and to complete the work in strict accordance with the Provisions, Plans, Specifications and Conditions referred to in the said Schedule.

The Bidder understands and accepts that the quantities shown are approximate only, and are subject to increase, decrease, or deletion entirely if found not to be required.

Attached to this Tender is an Agreement to Bond (Surety's Consent) from the Bonding Company, stating that the Bonding Company is willing and able to bond with the Bidder for the due completion of the work described in this contract. Also attached to this Tender is a Bid Bond or Certified Cheque for the sum of **10% of the Tendered Bid Amount** made payable to **Town of Ingersoll** or a cash deposit. This bond or cheque shall constitute a deposit which shall be forfeited to the Town if the successful Bidder fails to file with the Town a 100% Performance Bond and a 100% Labour and Material Payment Bond in a form satisfactory to the Town within ten (10) working days from the date of Notice of Acceptance of the Tender.

Notification of Acceptance may be given and delivery of the Form of Agreement may be by prepaid post, addressed to the Bidder at the address contained in this Tender.

THE TOTAL AMOUNT OF TENDER \$ _____

The aforesaid sum is made as follows: The prices quoted herein shall include compensation for the supply and installation of all works as mentioned in paragraph 1) Scope of Work, in Section A – Information for Bidders and as directed and shown on the contract drawings.

The prices shall also include all procedures, materials, equipment, labour, etc. and all protection, support, clearing, excavation, backfilling, compacting, and the supply and erection of forms, barricades and protection of new construction and existing structures, all as specified and shown on the Contract Drawings and/or as directed by the Town Engineer.

PEMBERTON STREET – CHARLES STREET EAST TO JANES ROAD (PART A TO C)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART "A" - GENERAL					
A101	Street Sweeping	each	3		
A102	Bonding	l.s.	1		
A103	Insurance	l.s.	1		
A104	Supply and Place all Temporary Traffic Control and Detours	l.s.	1		
TOTAL PART "A" - GENERAL					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART "B" - ROADWORK					
B101	Supply and Place Light Duty Silt Fence Barrier	l.m.	20		
B102	Supply and Place Silt Sack Inlet Sediment Device(s)	each	4		
B103	Excavation	c.m.	75		
B104	Grading - Roadbase	s.m.	1200		
B105	Cold Mill Planning – 3m Machine (Minimum 100mm depth)	s.m.	1200		
B106	Cold Mill Planning – 0.5 to 1m Machine (Minimum 50mm depth)	s.m.	30		
B107	Supply and Place HL8 Binder Coat Asphalt (Min. 50mm Thick)	tonne	150		
B108	Supply and Place HL3 Topcoat Asphalt (Min. 50mm Thick)	tonne	150		
B109	Supply and Place HL3 Driveways Machine Laid (Min. 50mm Thick)	tonne	5		
B110	Supply and Place Concrete Curb and Gutter as per OPSD 600.040 - Hand Laid	l.m.	25		
B111	Supply and Place Public Concrete Sidewalk	s.m.	180		

PEMBERTON STREET – CHARLES STREET EAST TO JANES ROAD (PART A TO C)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “B”- ROADWORK (cont'd)					
B112	Supply and Place 150mm Concrete Sidewalk at Commercial Entrances	s.m.	20		
B113	Supply and Place Pedestrian Detectable Warning Plates (Set)	each	3		
B114	Supply and Place Granular ‘A’ Driveway(s)	tonne	8		
B115	Supply and Place 125mm Topsoil and Growth Media Erosion Control	s.m.	400		
B116	Supply and Place New Wood Post and Steel Beam Guardrail System	l.m.	5.5		
B117	Supply and Place Metal Handrail – Public	l.m.	36		
B118	Supply, Place and Adjust Maintenance Hole Frame and Lid as per OPSD 401.010, with less than 150mm of adjustment	each	1		
B119	Supply, Place and Adjust Maintenance Hole Frame and Lid as per OPSD 401.010, with greater than 150mm of adjustment	each	1		
B120	Supply, Place and Adjust Catch Basin Frame and Grate as per OPSD 400.110 with less than 150mm of adjustment	each	2		
B121	Supply, Place and Adjust Catch Basin Frame and Grate as per OPSD 400.110 with greater than 150mm of adjustment	each	2		
B122	Adjust Existing Watervale Jacket	each	2		
B123	Remove Concrete Sidewalk	s.m.	55		
B124	Remove Concrete Curb and/or Curb and Gutter (Public and Private)	l.m.	25		
B125	Remove Existing Wood Post and Steel Beam Guardrail System	l.m.	16.4		
B126	Remove and Relocate Street and/or Regulatory Signs	each	2		
B127	Clear and Grubbing	l.s.	1		
B128	Track Protection/Railway Flagging	days	2		

PEMBERTON STREET – CHARLES STREET EAST TO JANES ROAD (PART A TO C)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “B”- ROADWORK (cont'd)					
B129	Supply and Place Line Painting (Yellow)	l.m.	100	_____	_____
B130	Supply and Place Stop Bar Painting (White)	each	4	_____	_____
B131	Supply and Place Railway Crossing Symbol (White)	each	1	_____	_____
TOTAL PART “B” - ROADWORK					_____

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “C”- INSPECTION					
C101	Residential/Industrial Inspection	each	2	_____	_____
TOTAL PART “C” - INSPECTION					_____

PEMBERTON STREET – WILSON STREET TO CANDIAN NATIONAL RAILWAY CROSSING (PART D TO G)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “D” - GENERAL					
D101	Construction Layout	l.s.	1		
D102	Supply and Place Calcium Chloride	tonne.	5		
D103	Street Sweeping	each	7		
D104	Bonding	l.s.	1		
D105	Insurance	l.s.	1		
D106	Supply and Place all Temporary Traffic Control and Detours	l.s.	1		
TOTAL PART “D” - GENERAL					

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “E” - WATERWORKS					
E101	Supply and Place Granular ‘B’ Trench Backfill	tonne	900		
E102	Supply and Place 250mm dia. DR18 Watermain (or Approved Equivalent)	l.m.	248		
E103	Supply and Place 150mm dia. DR18 Watermain (or Approved Equivalent)	l.m.	7.5		
E104	Supply and Place 250mm dia. Watervalue Series WV251	each	1		
E105	Supply and Place 150mm dia. Watervalue Series WV151	each	1		
E106	Supply and Place Fire Hydrant Set Series FH01-FH02	each	2		
E107	Tie into Existing 250mm PVC Watermain	each	1		
E108	Tie into Existing 250mm Ductile Iron Watermain	each	1		

PEMBERTON STREET – WILSON STREET TO CANDIAN NATIONAL RAILWAY CROSSING (PART D TO G)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “E”- WATERWORKS (cont’d)					
E109	Tie into Existing 100mm Service	each	1		
E110	Remove Watervalves Series 501-503	each	3		
E111	Remove Fire Hydrant Set Series FD01-FD02	each	2		
E112	Cut and Cap Existing Watermain c/w Blow-off	each	5		
E113	Watermain Testing and Commissioning	each	1		
TOTAL PART “E” - WATERWORKS					

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “F”- STORM SEWERS					
F101	Supply and Place Granular ‘B’ Trench Backfill	tonne	300		
F102	Adjust Ex. Storm Maintenance Hole as per OPSD 704.01 – less than 150mm Series 4000	each	1		
F103	Adjust Ex. Storm Maintenance Hole as per OPSD 704.01 – greater than 150mm Series 4000	each	2		
F104	Supply and Place Catchbasin c/w OPSD 400.110 Frame and Grate (1.68m Height) – Series 600	each	6		
F105	Supply and Place Twin Inlet Catchbasin c/w OPSD 400.110 Frame and Grate (1.68m Height) – Series 700	each	2		
F106	Core into Existing 825mm Concrete Storm Sewer for New 250mm Catchbasin Lead Series (SP)	each	4		
F107	Core into Existing Storm Maintenance Hole for New 250mm Catchbasin Lead Series 4005	each	1		
F108	Re-Bench Existing Storm Maintenance Hole - Series 4005	each	1		

PEMBERTON STREET – WILSON STREET TO CANDIAN NATIONAL RAILWAY CROSSING (PART D TO G)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “F” - STORM SEWERS (cont'd)					
F109	Supply and Place 250mm Catch Basin Leads	l.m.	84		
F110	Supply and Place 250mm Catch Basin Lead c/w PVC Cap	l.m.	2		
F111	Supply and Place Gutter Drains at Catch Basins	each	10		
F112	Remove Existing Twin Inlet Precast Catchbasin(s) – Series 400	each	2		
TOTAL PART “F” - STORM SEWERS					

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART “G” - ROADWORK					
G101	Supply and Place Light Duty Silt Fence Barrier	l.m.	20		
G102	Supply and Place Silt Sack Inlet Sediment Device(s)	each	14		
G103	Excavation	c.m.	2510		
G104	Supply and Place Granular ‘A’ - Roadbase	tonne	1300		
G105	Transport and Place Granular ‘B’ - Roadbase	tonne	5000		
G106	Supply and Place Granular ‘A’ Driveways and Shoulders	tonne	165		
G107	Supply and Place HL8 Binder Coat Asphalt (Min. 75mm Thick)	tonne	500		
G108	Supply and Place HL3 Driveways and Ramping - Machine Laid (Min. 50mm Thick)	tonne	60		
G109	Supply and Place Concrete Curb and Gutter as per OPSD 600.040	l.m.	520		
G110	Supply and Place Private Concrete Curb as per OPSD 600.11	l.m.	50		
G111	Supply and Place Public Concrete Sidewalk	s.m.	395		
G112	Supply and Place 150mm Concrete Sidewalk at Commercial Entrances	s.m.	40		

PEMBERTON STREET – WILSON STREET TO CANADIAN NATIONAL RAILWAY CROSSING (PART D TO G)

Item No.	Description	Unit	Est. Qty.	Unit Price	Total
PART "G" - ROADWORK (cont'd)					
G113	Supply and Place Pedestrian Detectable Warning Plates (Set)	each	3		
G114	Cold Mill Planning – 0.5 to 1m Machine (Minimum 50mm depth)	s.m.	30		
G115	Supply and Place 125mm Topsoil and Growth Media Erosion Control	s.m.	1800		
G116	Supply and Place New Wood Post and Steel Beam Guardrail System	l.m.	5		
G117	Clear and Grubbing	l.s.	1		
G118	Remove Concrete Curb and/or Curb and Gutter (Public and Private)	l.m.	115		
G119	Remove Asphalt Surface Driveway(s)	s.m.	250		
G120	Remove Existing Wood Post and Steel Beam Guardrail System	l.m.	8.5		
G121	Remove and Relocate Street and/or Regulatory Signs	each	3		
G122	Canadian National Railway Protection/Railway Flagging	days	3		
G123	Supply and Place Line Painting (Yellow)	l.m.	260		
G124	Supply and Place Stop Bar Painting (White)	each	2		
G125	Supply and Place Railway Crossing Symbols (White)	each	1		
TOTAL PART "G" - ROADWORK					

**PEMBERTON STREET – CHARLES STREET EAST TO JANES ROAD
(PART A TO C)**

TOTAL PART “A” - GENERAL _____

TOTAL PART “B” - ROADWORK _____

TOTAL PART “C” - INSPECTION _____

**PEMBERTON STREET – WILSON STREET TO CANDIAN NATIONAL
RAILWAY CROSSING (PART D TO G)**

TOTAL PART “D” - GENERAL _____

TOTAL PART “E” - WATERWORKS _____

TOTAL PART “F” - STORM SEWERS _____

TOTAL PART “G” - ROADWORK _____

SUB TOTAL CONTRACT ITEMS _____

APPLICABLE TAXES _____

TOTAL VALUE of CONSTRUCTION _____

The Bidder agrees that, if this Tender is accepted by the Town and County,

- (1) the Bidder will carry out any additional or extra work (including the supplying of any additional materials or equipment pertaining thereto) or will delete any work as may be required by the Town Engineer in accordance with the Contract.
- (2) the carrying out of any work referred to in paragraph (1) above or the issuance by the Town Engineer of a Contract Change Order relating to such work or the acceptance by the Tenderer of such Contract Change Order shall not, except as expressly stated in such Contract Change Order, waive or impair any of the terms of the Contract or of any Contract Change Order previously issued by the Town Engineer or any of the rights of the Town, or of the Town Engineer under the Contract.
- (3) the Bidder will pay to the Town (in addition to amounts payable by the Town in respect of site supervision of the work) the sum specified in the Contract as liquidated damages of each calendar day that the work under the Contract, as expressly modified by all Contract Change Orders issued by the Town Engineer, remains uncompleted after the expiry of the Time of Completion specified in the Contract or the extended time for completion allowed in writing by the Town Engineer.

- (4) the prices applicable to work referred to in paragraph (1) above shall be determined as follows:
- (a) the Schedule of Items and Prices shall apply where applicable;
 - (b) if the Schedule of Items and Prices is inapplicable the Schedule of Additional Unit Prices set out below shall apply where applicable.

SCHEDULE OF ADDITIONAL UNIT PRICES

All Equipment Prices are c/w Operator.

The Contractor may supply operated equipment rental rates or supply a list of your equipment rental rates. Where your list does not have items above the Schedule is to be completed.

ITEM No.	DESCRIPTION	UNIT	UNIT PRICE
1)	Sawcut Asphalt	l.m.	_____
2)	Sawcut Concrete	l.m.	_____
3)	20 MPa (with air) Concrete Supplied and Placed where directed by the Town Engineer	c.m.	_____
4)	15 MPa Concrete Supplied and Placed where directed by the Town Engineer	c.m.	_____
5)	Supply and Place Road Granular 'B'	tonne	_____
6)	Supply and Place 20mm Crushed Stone (clear) for Bedding (Extra Over Price)	tonne	_____
7)	Supply and Place 50 mm Crushed Stone (clear)	tonne	_____
8)	Supply and Place Pit Run	tonne	_____
9)	Disposal of Contaminated Material(s) and Supply and Place Granular 'B' Trench Backfill	tonne	_____
10)	Supply and Place "Non-Shrink" Backfill	c.m.	_____
11)	Supply and Place Topsoil and Sod as per OPSS.MUNI. 802 and 803	s.m.	_____
12)	Supply and Place Screened Topsoil only	s.m.	_____
13)	Place Ductwork supplied by Utility Agencies	l.m.	_____
14)	Supply and Place Ductwork	l.m.	_____
15)	Adjust Existing Utility Ductwork in conflict with construction.	l.m.	_____

SCHEDULE OF ADDITIONAL UNIT PRICES (cont'd)

ITEM No.	DESCRIPTION	UNIT	UNIT PRICE
16)	Adjust Existing Fire Hydrant		
	a) 150mm	each	_____
	b) 300mm	each	_____
17)	Adjust Existing Gas Valve Jacket	each	_____
18)	Adjust Existing Maintenance Hole - Greater than 300mm	each	_____
19)	Supply and Place Maintenance Hole Frame and Lid as per OPSD 401.010	each	_____
20)	Supply and Place New Watervalue Jacket	each	_____
21)	Supply and Place Permanent Bollard	each	_____
22)	Utility Pole Support	each	_____
23)	Labour		
	1) Foreman	hour	_____
	2) Skilled	hour	_____
	3) Common	hour	_____
24)	Front-end Loader	hour	_____
25)	Tractor-backhoe	hour	_____
26)	Tractor-backhoe c/w Hoe Pac	hour	_____
27)	Crawler-mounted Hydraulic Backhoe _____ c.m.	hour	_____
28)	Crawler-mounted Hydraulic Backhoe _____ c.m.	hour	_____
29)	Tandem Dump Truck _____ G.V.W.	hour	_____
30)	Tri-axle Dump Truck _____ G.V.W.	hour	_____
31)	Dump Trailer _____ G.V.W.	hour	_____
32)	Float with Tractor 30,000 G.V.W.	hour	_____
33)	Float with Tractor 45,000 G.V.W.	hour	_____
34)	Pick-up Truck	hour	_____
35)	Plate Tamper	hour	_____
36)	Vibratory Drum Packer (Bomag)	hour	_____
37)	Jumping Jack Packer	hour	_____

SCHEDULE OF ADDITIONAL UNIT PRICES (cont'd)

ITEM No.	DESCRIPTION	UNIT	UNIT PRICE
38)	Grader	hour	_____
39)	Concrete saw c/w Blades	hour	_____
40)	Self-propelled Vibratory Smooth-drum Packer	hour	_____
41)	Self-propelled Vibratory Sheeps-foot Packer	hour	_____
42)	Bulldozer (JD450C or equal), list your machine	hour	_____
43)	Skid Steer Loader – Rubber Tire or Tracked	hour	_____
44)	Hydro-vac excavation	hour	_____
45)	Water Truck and/or Tank	c.m.	_____
46)	Mini Excavator	hour	_____

- (5) The Bidder also agrees that this offer shall continue to remain open to acceptance for a period of sixty (60) days from the closing date of Tenders and that the Town and/or County may, without notice, accept this Tender whether any Tender has previously been accepted or not.
- (6) And the Bidder hereby agrees that, if this Tender is withdrawn before the Town and/or County shall have considered the Tenders and awarded the Contract, the amount of the deposit on this Tender shall be forfeited to the Town.
- (7) If this Tender is accepted, the undersigned Bidder agrees to furnish an approved surety for the proper fulfillment of the Contract as required under the terms of the General Conditions, and to execute the Agreement, in triplicate within ten (10) days after being notified to do so by the Town Engineer. In the event of default or failure to do so, the Town shall be at liberty to retain the money deposited to the use of the Town and to accept the next lowest or any tender, or to advertise for new tenders, or to carry out the work in any other way they may deem best.

(8) The Bidder proposes _____

(Name of Bonding Company)

which is willing to become bound with the undersigned for the due performance and fulfillment of the Contract for which this is a Tender. As proof of willingness to bond, a certificate of *Agreement to Bond* issued by the Bonding Company is attached with this bid.

Bidder's Signature _____

Witness' Signature _____

Dated at _____ This _____ day of _____, 2024.

[illegible]

<u>Name</u>	<u>Appointment</u>	<u>Qualifications & Experience</u>

Type	Make and/or Model, Year

Material	Weight (kg)
Granular	1000
Asphalt	1000
Ready Mix	1000
Sod	1000
Topsoil	1000
Sewer Pipe	1000
Watermain Pipe	1000
Maintenance Holes	1000
Castings	1000

[illegible]

CONSTRUCTION SCHEDULE FOR CONTRACT 2 - 2024

<u>Pemberton Street – Charles St to Janes Rd</u>									REMARKS
REPLACEMENT WORK									
CONCRETE WORK									
MILL and PAVE									
TOPSOIL & SOD									
CLEANUP									
<u>Pemberton Street – Wilson St to CN railway</u>									REMARKS
WATERWORKS									
STORM SEWER WORK									
CONCRETE WORK									
ASPHALT WORK									
TOPSOIL & SOD									
CLEANUP									

PLEASE FILL IN PROPOSED CONSTRUCTION SCHEDULE INCLUDING DATES



The Corporation of the Town of Ingersoll
and
The County of Oxford

Contract 2 – 2024

Pemberton Street Reconstruction

AC INDEX ACKNOWLEDGEMENT FORM

The Town of Ingersoll has set an AC Index price located in the Special Provisions under the Supply and Place of all asphalt mix items.

The Town of Ingersoll requires that all bidders acknowledge this AC Index price (for bidding purposes only), by certifying this attached document in the Form of Tender.

I/We hereby acknowledge and certify that all asphalt tender items have been bid using the Town of Ingersoll price index number set out for the above noted contract.

Signature of Bidder or Contractor

Office of Person

Dated: _____, 2024.

1) GENERAL

The Contractor shall provide all materials, equipment and labour necessary to complete the work in accordance with the terms of this Contract and the requirements of the Town Engineer there under; all fencing, lighting and watching; maintenance and protection of existing structures of all kinds; repairs to all damage done to structures; provision for all means of maintaining travel on streets, roads, walkways, and access to all premises; dust control; supplying and setting all pipes and appurtenances; backfilling and compacting all excavations; clearing away all rubbish and surplus material; and doing all other things necessary to build and put in complete working order the works of this Contract.

Work under this Contract will require the Contractor to supply all material and fencing, unless otherwise specified, equipment and labour necessary in the construction of new sanitary and storm sewer, watermain placement and road reconstruction as specified herein and shown on the Contract Drawings.

2) DETOURS

Contractors are to place advance road closure notice signs one (1) week prior to commencement of construction. These signs are to be reviewed and approved by the Town Engineer before placement.

All necessary detouring will be set up by, and maintained by, the Contractor. Detour signs, "Road Closed" signs, barricades, etc. at the limits of construction and/or the construction front in accordance with Book 7 (Temporary Conditions) of the Ontario Traffic Manual, shall be erected, and maintained throughout the course of the work, all at the expense of the Contractor and to the satisfaction of the Town Engineer. It shall be the responsibility of the Contractor to supply the town with their "**Traffic Control Plan**", if awarded the contract.

Any other improper use of any of the above will result in an order from the Town Engineer to stop work. The use of Flags is PROHIBITED!

3) PLANS AND SPECIFICATIONS

The sewers, watermain, appurtenances and road is to be constructed in the locations, and of the materials and sizes, dimensions, grades, depths as called for in the Specifications and as shown on the Contract Drawings or as directed by the Town Engineer.

All Water and Sanitary Sewer Construction, Materials and Testing shall be as per County of Oxford Design Guidelines and Supplemental Specifications. These specifications and guidelines can be viewed at:

www.oxfordcounty.ca/Services-for-You/Water-Wastewater/Design-guidelines

All Storm Sewer and Roadwork Construction, Materials and Testing shall be as per the Town of Ingersoll Design Guidelines and Specifications for Municipal Works.

<https://www.ingersoll.ca/download/engineering-design-guidelines-and-specifications>

The following are specifically referenced in these Special Provisions:

- General Conditions Pages GC-1 to GC-19
- Book – 7 (Temporary Conditions (Ontario Traffic Manual)
- Construction Safety Association of Ontario – Construction Traffic Controller's Handbook
- Town of Ingersoll – Health and Safety Policies and Procedure Documents are available upon request.
- Ontario Occupational Health and Safety Regulations.

Ontario Provincial Standard Specifications - Municipal and Ontario Provincial Standard Drawings, shall be used to govern this contract. If there is no municipal standard, the common standard shall be used. Specifications can be viewed at the following website:

<http://www.raqsa.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage>

Contract drawings forming a part of this contract are:

- Pemberton Street – C-610 to C-613
- TYP-1 – general specifications and typical sections

Geotechnical Reports located in back of this contract book.

4) PRECEDENCE OF SPECIFICATIONS

If the Special Provisions differ or conflict in any way with any other specifications in the document, the Special Provisions shall take precedence. Any item not covered in the special conditions and/or listed specifications above shall be referred to Ontario Provincial Standards first for interpretation and if not available, the Town Engineer shall be the sole judge.

5) SURVEY MARKERS

The Contractor shall endeavor to protect and preserve all survey markers, both property limits and bench marks. Any legal markers that are removed or disturbed because of carelessness on the part of the Contractor shall be replaced by an Ontario Land Surveyor at the Contractor's expense in accordance with OPSS 491.

6) TIMING AND SCHEDULING

The awarding of this Contract shall be carried out continuously starting:

July 15th, 2024

To completion on or before:

September 20th, 2024

7) DISPOSAL OF MATERIALS

The Contractor shall dispose of unsuitable and excess materials of any nature at their own risk and expense. Should the Contractor find a suitable landfill site(s) closer to the work than the County of Oxford Landfill at Salford they may dispose of the materials at that site. However, prior to utilization of this site, the Contractor shall obtain from the landowner(s) of the site(s) a written agreement, as per OPSS 180.

The said agreement shall set out the locations for disposal, and the terms, conditions, and ultimate responsibility for the materials to be disposed of. This agreement shall be submitted to the municipality at least forty-eight (48) hours in advance of the use of the site.

Prior to the start of construction, the Town may hire an independent soil consultant to test the proposed areas of backfill for contamination.

Should these tests show that the material is deemed unsuitable for backfill due to contamination then the Town shall be responsible for the cost of the removal.

The Contractor shall deliver any concrete removed on this project to the stockpile at the Public Works Department yard at 80 Pemberton Street, unless otherwise directed. They will also be responsible for assuring that the stockpile is pushed off and maintained to the standards of the Public Works Manager.

8) U.T.R.C.A. APPROVALS

The Contractor is reminded that under Ontario Regulation 180/80, "Fill, Construction and Alteration to Waterways Regulation" the Upper Thames River Conservation Authority (U.T.R.C.A.) oversees filling in flood plain, wetland and along steep slopes. As much of the land in Ingersoll is within flood plain control, the Contractor must obtain approval of the disposal site from the U.T.R.C.A. prior to disposing of excess material in flood plain areas.

9) ORDER OF WORK

The Town/County does require the successful Contractor to follow certain guidelines in the completion of the works. The Contractor shall schedule their operations to meet the following objectives:

- 1) adhere to the schedule attached on **page B-17**, and remain on site until completion of contract.
- 2) cause the least possible disruption and inconvenience to vehicular traffic, pedestrian traffic and adjacent residences and/or businesses.
- 3) allow adequate time and working room for Utility Companies and/or Town forces to complete their required work.
- 4) co-operate with and co-ordinate their activities to facilitate adjacent Contractors, if applicable.

- 5) co-operate with and co-ordinate their activities to facilitate ongoing water tower operations, as completed by Oxford County's Contractor.

10) COMPACTION TESTS

At any time during the performance of this contract the Town Engineer may order compaction tests to be carried out. If the test results indicate that the compaction meets the requirements outlined in the standard specifications for trench backfill, grading, granular base course and placing of asphalt the Owner shall bear the cost of the tests.

If the test results indicate that the compaction does not meet the requirements outlined in the standard specifications for placement of material, the Contractor shall re-compact the deficient courses, and have the area re-tested for compaction, (until compaction complies with the specification).

The costs of the second test, and any subsequent tests, shall be borne by the Contractor.

All compaction tests shall be carried out by an independent soil consultant, using acceptable testing methods.

11) PROTECTION OF THE GENERAL PUBLIC

The Contractor shall take all necessary precautions to protect the general public, as well as those engaged in the work, from injury during construction operations. Such precautions shall include the erection of fences, barricades, lights, warning signs and the employment of necessary watch persons, flag persons, etc., which shall be subject to the approval of the Town Engineer.

The cost of all necessary precautions to protect the general public and personnel on the site shall be included in the price schedule for the various forms in the Tender.

12) RIGHT OF ACCESS OF ADJACENT PROPERTY OWNERS

Where the construction will cross entrances that provide access to adjacent properties, it will be the Contractor's responsibility to give each owner or tenant reasonable notice of the time of construction and methods to be used across each entrance. If, in the opinion of the Town Engineer, the Contractor has not restored normal access within a reasonable time, the Town Engineer may order the Contractor to provide alternative means of access and the Contractor shall forthwith provide such access at their own expense.

13) MAINTENANCE OF TRAFFIC

The Contractor shall make every effort to provide adequate access to the residences, schools and businesses in the area, and also to provide local traffic and emergency vehicles with that access.

The Contractor shall avoid the blocking of vehicular and pedestrian traffic for a longer period than is necessary for the proper construction of the work. Access must be provided as soon as possible to owners residing on the street on which the work

is being done. The maintenance of traffic and the protection thereof shall constitute part of the cost of this construction and shall be the entire responsibility of the Contractor during the work.

The Contractor shall provide, at their expense, trained flag persons for the direction of traffic. The flag persons shall be on duty continuously when construction is being carried out adjacent to the traffic, unless directed otherwise by the Town Engineer. Where necessary, or when directed by the Town Engineer, or as shown on the Drawings, the Contractor shall provide an adequate detour lane within the road allowance, and shall strengthen, repair, and maintain such a detour lane, to accommodate traffic as specified above.

The Contractor shall ensure that flag persons are properly trained, wear proper safety vests, arm bands and hard hats. The Contractor shall maintain traffic signs in their original position where practical and ensure that the signs are not obscured.

The Contractor shall maintain vehicular and pedestrian access to adjacent private property at all times unless authorized in writing by the Town Engineer.

14) WORKING AREA

The Contractor shall confine his operations to the construction allowances as laid out by the Town Engineer. The Contractor shall use particular care and caution during construction within this right-of-way, to avoid damage to lands outside of the construction allowance and street right-of-way, both during and following construction. All damage to such lands shall be rectified at the Contractor's expense to a condition as good as or better than that existing prior to the construction.

Before entering on any private property with personnel, equipment or materials, the Contractor shall obtain the written permission of the owner.

15) GARBAGE COLLECTION

It shall be the Contractor's responsibility to work in conjunction with the County of Oxford's garbage collection contractor to ensure that all garbage and blue boxes from the residences affected are removed on their collection day. The Contractor shall pick up all the garbage and blue boxes and deposit it at a location which is convenient for the **County's garbage collection contractor** or into the collection vehicle if necessary.

The Town shall co-ordinate with the Waste Collection Contractor's the location of the pickup. This shall be carried out by 7:00 a.m. on the day of collection.

Collection Day is every TUESDAY

The Contractor shall be responsible for returning waste containers and blue boxes to the appropriate residence at no additional cost to the Town.

16) DUST CONTROL

The Contractor shall be responsible for dust control on all streets within the contract and all access streets to the construction area, once construction has commenced. Dust control shall be to the satisfaction of the Town Engineer and shall commence when the Contractor starts work and shall continue until all work is completed, the final inspection made, and the work approved for use.

17) CLEANLINESS OF WORK

The Contractor shall keep all their work and the areas occupied by them in a neat, clean and orderly condition at all times.

Scrap metal, waste materials, debris, etc. must be removed by the end of each week.

18) WATER, SNOW AND ICE

The Contractor shall assume full responsibility for all damage done to the works through the influence of water, snow and ice. They shall immediately make good any damage so caused without extra cost to the Town or County.

The cost of all such special precautions during freezing weather shall be borne by the Contractor.

19) CONDITION OF STREETS, SIDEWALKS AND BRIDGES

The Contractor shall be responsible for removing all materials, earth or debris which falls out of dump trucks or from the wheels of their own vehicles, their subcontractor's vehicles, and suppliers' vehicles onto Town streets, sidewalks and bridges used as a route between the site and source of material and/or the dump site(s).

The contractor shall employ a street sweeper or equivalent machinery to keep such streets, sidewalks, and bridges in a clean condition, free from materials, earth or debris. **See items A101 & D103.**

Should lack of prompt and/or adequate cleanup by the Contractor make it necessary for the Town's Public Works Department to clean dust or other construction debris from roadways used by the Contractor, the Contractor shall be responsible for the expenses incurred plus all Administration costs by the Town.

The Contractor shall be notified by the Town of such charges taking place as soon as possible after the cleanup is completed.

20) CO-ORDINATION MEETINGS

The Contractor shall attend such meetings with Municipal and Utility Company authorities as may be required by the Town Engineer to co-ordinate services affected by the Contract.

21) PERMISSION OF COUNTY OF OXFORD – WATER AND WASTE WATER DEPARTMENT

The Contractor must obtain a key fob and set-up a prepaid account in order to obtain bulk water. The bulk water station in Ingersoll is located at: Canterbury Street Water Treatment Facility – 280 Harris Street.

The Contractor must contact the County of Oxford and have the proper County staff on site for shutting or opening any watervalue or hydrant. This clause applies to subcontractors and suppliers as well.

22) SIGNS

The Contractor is responsible for the preservation and safeguarding of all street signs, traffic control signs and other Town/County or Ministry of Transportation markers within the Contract Limits.

Should lack of adequate protection or safeguarding by the Contractor make it necessary for the Town's Public Works Department to replace or repair any signage damaged by the Contractor, the Contractor shall be responsible for the expenses incurred plus all Administration costs by the Town. The Contractor shall be notified by the Town of such charges taking place as soon as possible.

23) ROAD AND FAIR WAGE SCHEDULE

Contractors must abide by the Employment Standards – Payment of Wages in accordance with the Ontario Ministry of Labour guidelines.

24) CONSTRUCTION LAYOUT

Unless otherwise specified, the placement of pre-construction and/or construction grades and offset stakes, will be the responsibility of the general contractor.

The Town of Ingersoll shall make provisions to supply the contractor or their sub-contractors with digital files for surface and sub-surface specifications and/or grade sheets.

Town staff may inspect the work once completed, and notify the general contractor of any issues or errors. Town staff may place a stop work order on the contractor, should the issue(s) not get resolved in a timely manner.

25) REFUELING AREAS

The Contractor shall undertake a detailed review of their proposed route of construction to plan access routes and refueling areas. Refueling and maintenance of equipment shall not be undertaken in or adjacent to a watercourse or protected lands. Suitable fuelling and maintenance areas shall be established away from the waterway or designated land and all maintenance and fuelling conducted in these areas. The location of such areas is subject to review by the Town Engineer. Procedures for the interception and rapid cleanup and disposal of spillages that do occur shall be submitted to the Town Engineer for review prior to start of work. All materials required for cleanup of fuel spillages shall be maintained readily

accessible on site.

The exception of these fuelling locations requirements shall be generators, cranes, backhoes or shovels which may be fuelled at other than the designated fuelling areas. However, no fuelling of backhoes shall be carried out within thirty metres of any watercourse or protected lands.

Any spills apt to cause impairment to the natural environment must be immediately reported by the Contractor to the Town Engineer and to the Ministry.

26) **TENDER ITEMS – GENERAL**

The unit prices quoted for each item shall be compensation in full for supplying all labour, equipment, and materials required to complete the work, and under the conditions listed on the following pages.

When performing each Tender Item, the Contractor shall take care to eliminate damage to existing and adjacent buildings, structures, pavements, utility appurtenances, vegetation, etc. The cost of repairing the careless damage shall be the Contractor's responsibility and shall be included in the quoted unit prices.

The Town Engineer shall be the sole judge in these matters.

The Contractor is also reminded that some utility poles adjacent to the installation of new sewer and water may require support during trench excavation. It will be the Contractor's responsibility to arrange with **ERTH Corp/J- MAR** for support of poles at least two (2) days prior to the actual excavation of the utilities adjacent to the said poles. The cost of any materials, equipment, labour, etc. required by **ERTH Corp/J- MAR** to support the said poles shall be included in the quoted unit price for Utility Pole Support.

The unit prices quoted for the supply and placement of new storm maintenance holes frame and lids shall be compensation in full for the supply and placement of a minimum of 150 mm of maintenance hole adjustment units, supply and placement of steps or rungs as required, and supply and placement of frames and covers. During the installation, the contractor must use a jumping jack packer to compact the granular "A" around them in maximum lifts of 150 mm thickness. Should compaction not be performed as specified, the quoted unit prices for these Tender Items may be reduced accordingly.

The unit prices quoted for the placement of new watermain, watervalves, fire hydrants, and curb stops shall be compensation in full for the bedding, installation, tracer wire, anodes, making good the pipe connections, and adjustment to finished grade. The Contractor is advised that all valves, bends, etc. shall be supported **by the use of grip rings.**

All mechanical joints including bolts, nuts & grip rings shall have Denso Paste and Tape or equivalent corrosion protection placed at time of installation.

During the installation of all new watervalves and curb stops, the contractor must use a jumping jack packer to compact the Granular 'A' around them in maximum lifts of 150 mm thickness, or a "HoePac" with maximum lifts of 300 mm thickness.

Should compaction not be performed as specified, the quoted unit prices for these Tender Items may be reduced accordingly.

Upon completion of the installation of the storm sewers, the contractor shall inspect the sewers by drawing a mandrel or pig (size as specified in the manufacturer's specifications) through the pipe. The mandrel is only necessary if the sewer pipe material is PVC (any type) or Polyethylene. Should inspection with a mandrel be necessary, then the mandrel shall be drawn through the pipe, followed immediately by the video camera. The inspection(s) shall be performed in the presence of a Town representative and shall be completely logged.

Copies of the video inspection, the mandrel's log and the inspection log shall be filed with the Town for their records. At or near the end of the **twenty four (24)** month warranty period the Contractor will then have the sewers videoed and re-inspected and a mandrel will again be drawn through the sewers to see if there are any problems. The cost of both the video inspections and loggings shall be that of the Contractor. Should the second inspection show problem areas, then the Contractor shall be responsible for the repairs to the sewer(s) and shall also bear all costs related to the rectify the issue.

OPSS Granular 'B' material as trench backfill shall be used for all sewer and watermain trenches. Granular 'B' backfill is to be used unless the native material is determined to be suitable by the Town Engineer.

Notwithstanding OPSS MUNI 1010 the Town requires that Granular "B" backfill shall have a maximum size of 100mm.

The Granular and/or Native backfill is to be placed in 150mm thick lifts and compacted to a minimum of 95% of the material's SPMDD.

Granular "A" and "B", not supplied by the Town of Ingersoll shall be in accordance with OPSS.MUNI 1010; however, notwithstanding the requirements of OPSS.MUNI 1010 the contractor shall supply a laboratory sieve analysis of the aggregates proposed for use on the project and shall be submitted within five (5) days of signing of the Contract. No granular materials shall be placed until such time as the analysis has been delivered to the Town Engineer. Should placement take place prior to the reports being supplied, there will be no payment for the quantity placed. Samples for analysis shall be taken in the presence of a Town representative.

If the initial reports do not meet the requirements of OPSS.MUNI 1010, new sources or methods of production must be found to produce the required quality and gradation. No work shall take place until such time as all granular materials have been approved.

The provisions of OPSS.MUNI 102.07.03 regarding daily truck tares must be observed. Notwithstanding the requirements of OPSS.MUNI 102, the Contractor shall ensure that each truck tare is submitted prior to morning and afternoon loading. This procedure shall be followed every day before material of any type is placed. The Town shall be supplied with a record of each day's tare.

Notwithstanding the requirements of OPSS.MUNI 102, the Town may provide a

weigh person who shall either monitor the weighing of each load of material and initial the weigh ticket or weigh each load themselves.

The Town of Ingersoll will allow for the placement of asphalt pavement prior to any adjustments, with the understanding that the Contractor must saw cut and/or mill said pavement for any adjustments.

Catchbasins and Maintenance holes are to be pumped and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

27) TENDER ITEMS – SPECIFIC

The following provisions refer specifically to items contained in this tender document:

Items A101 and D103 - Street Sweeping

Reference: No reference specifications for this item.

Description:

Under these items, the Contractor shall arrange to have the surrounding streets affected by construction traffic swept of debris.

Sweeping will occur once (1) a week during trenching operations, every Friday after work is completed, or as directed by the Engineer.

Should work within the construction limits continue once pavement is placed, the once a week item shall continue, unless otherwise directed by the Engineer.

Measurement/Payment:

Measurement for payment shall be per Each occurrence to the job site. Payment at the tendered unit price shall be compensation in full for all related work.

Items A102 and D104 - Bonding

Reference:

Description:

Under these items, the Contractor is directed to provide bonding for the project as specified under the Information for Bidders.

Measurement/Payment:

Full payment at the Lump Sum quoted unit price(s) for these items shall be made under the first progress payment.

Items A103 and D105 - Insurance

Reference:

Description:

Under these items, the Contractor is directed to provide insurance for the project as specified under the Information for Bidders.

The additional insured parties are to be identified in the Information for Bidders.

Measurement/Payment:

Full payment at the Lump Sum quoted unit price(s) for these items shall be made under the first progress payment.

Items A104 and D106 - Supply and Place All Temporary Traffic Control and Detours

Reference: OPSS.MUNI 706

Description:

Under these items, the Contractor is directed to supply, locate all required detour(s), other traffic control adjacent to and on the job site, as per OPSS and outlined in Section 2 of Special Provision. The number and location of the signs must conform to the Contractor's traffic control plan.

Also Included in the item price, the Contractor will be responsible to erect and maintain two (2) project sign boards for the duration of the project or as directed by the Town Engineer. These sign boards are to be a minimum of 1.2m x 1.2m.

Sign boards are to be placed one (1) week prior to beginning of construction. The sign board is to display the contractor's company name, project location and limits of construction, and dates of construction posted in hi-intensity tape or paint.

The contractor shall be responsible for supplying the Town with a copy of their traffic control plan. No work shall begin until the Traffic Control Plan has been reviewed and approved by the Town Engineer and any detours that are required are in place.

Traffic Control Devices and detours must be maintained throughout the duration of the construction. This will include proper heights and visibility (cleanliness). Should the Town Engineer see fit to request new, more or replacement of signs, the Contractor must stop work until these are in place.

The Town will not be responsible for the supplying of any type of traffic control measure, unless they determine it to be necessary.

Measurement/Payment:

Payment of these items shall be Lump Sum and proportionate to the length of the project.

Items B101 and G101 - Supply and Place Light Duty Silt Fence Barrier

Reference: OPSS.MUNI 805, OPSD 219.11

Description:

Under these items, the Contractor is to install a light duty silt fence as per OPSS.MUNI 805 and OPSD219.11 and as indicated on the contract drawings or as specified by the Town Engineer.

Light-duty silt fence barriers shall be installed within a trench excavated along the contour of the ground such that the elevation of the above ground portion of the fence is the same along its entire length except at the ends. Light-duty silt fence barriers shall be installed without breaks or gaps along their entire length. Light-duty silt fence barriers shall only be installed on flat ground with a minimum offset of 2 m from the toe of the slope being protected. When a longer sediment barrier is required, another light-duty silt fence barrier shall be installed.

The geotextile shall be attached firmly, without sagging, to the upslope side of the stakes. Stakes shall be spaced to ensure the geotextile remains vertical. Where the geotextile is joined to provide a continuous run, the ends shall be overlapped a minimum of 500 mm and securely fastened to the stakes using cable ties or soft wire at the top of the geotextile only. The geotextile shall be angled upslope at the ends of each run in a "J" pattern and so that the ends are at a higher elevation than the bottom of the run.

When geotextile is supplied without stakes attached, the geotextile shall be installed into the trench in the ground first, the stakes shall be driven into the ground behind the geotextile, and the geotextile shall be attached to the upslope side of the stakes using cable ties or soft wire at the top of geotextile only.

Included in the unit price shall be all materials, labour and equipment required to complete the installation.

Measurement/Payment:

These items shall be paid per Lineal Metre, and is to be maintained throughout the contract and will be paid 50% upon installation and 50% upon completion of the contract.

Items B102 and G102 - Supply and Place Silt Sack Inlet Sediment Device

Reference: OPSS.MUNI 1860

Description:

Under these items, the Contractor is to install an inlet sediment device (silt sac) or approved equivalent by the Town Engineer.

Silt sac shall conform to the OPSS.MUNI 1860 specifications for material.

Silt sacs shall be installed on the marked catch basins and/or manholes and each structure shall be cleaned after each rain event as deemed necessary by the Town Engineer.

Should the Town deem the silt sac damaged due to neglect, the contractor at their own expense shall remove and replace the sac, and clean out the existing structure.

The unit price shall include all costs to install and maintain the sediment traps.

Measurement/Payment:

These items shall be paid per Each sediment device placed and maintained throughout the contract and will be paid 50% upon installation and 50% upon completion of the contract.

Items B103 and G103 - Excavation

Reference: OPSS.MUNI 206 and 402

Description:

The price shown for these items shall be compensation in full for excavation of all natures, compaction of subgrade, and disposal of surplus or unsuitable material.

For on-site and excess soil management, see General Conditions – Section 6.

Asphalt road(s) and driveways are included in the excavation item and shall be disposed of separate from the other excavated material.

All excavation shall be to the lines and grades established by the Town of Ingersoll and as set out by the Contractor.

Where extra excavation is required by the Town Engineer, the quantity shall be adjusted to indicate the measured extra excavation. The extra excavation shall be measured during construction and shall be paid under the unit price for excavation.

Design sections may be seen at the Engineering Office, Town of Ingersoll. The allowable tolerance in subgrade elevation is plus or minus 25mm.

Measurement/Payment:

The unit price for these items shall be paid by the Cubic Metre.

Measurement and Payment for excavation shall be based on design quantities.

Item B104 - Grading - Roadbase

Reference: OPSS.MUNI 206

Description:

Under this item, the Contractor will be responsible for the grading and compaction of existing granular materials at the unit price(s) quoted, as set out by the Town Engineer.

All labour and equipment required to complete the grading shall be included in the unit price.

Measurement/Payment:

The unit price for this item shall be measured and paid by the Square Metre of grading completed.

Item B105 - Cold Mill Planing (3m Machine)

Reference:

Description:

Under this item, the Contractor is directed to mill the road surface as set out by the Town Engineer and dispose of the existing asphalt to a location identified by the contractor.

The use of a (minimum) 3m wide planing machine is required.

The cost of saw cutting and/or other techniques so as to affect a clean joint to the entire depth of the asphalt shall be included in the unit price quoted.

Milling depth shall be 100mm.

See Geotechnical Report for core samples.

Measurement/Payment:

The unit price for this item shall be paid by the Square Metre.

Items B106 and G114 - Cold Mill Planing (0.5m Machine)

Reference:

Description:

Under these items, the Contractor is directed to mill end cuts and driveway ramps or other areas as directed by the Town Engineer and dispose of the existing asphalt to a location identified by the contractor.

The use of a 0.5m wide or equivalent planing machine is required.

The cost of saw cutting and/or other techniques so as to affect a clean joint to the entire depth of the asphalt shall be included in the unit price quoted.

Milling depth shall verify from 50mm to 75mm.

Measurement/Payment:

The unit price for this item shall be paid by the Square Metre.

Items B107 and G107 - Supply and Place HL8 Binder Coat Asphalt

Reference: OPSS.MUNI 310, 1101 and 1150

Description:

Under these items, the Contractor is directed to supply and place HL8 binder coat asphalt to the depths and locations specified and at the unit price(s) quoted, all as set out by the Town Engineer.

Asphalt shall conform to OPSS.MUNI 310/1101 and 1150 and all referenced specifications.

Should the Contractor choose to use recycled asphalt (**maximum 15%**) in their base coat design, the materials used in the production of the HMA shall be according to OPSS.MUNI 1150 for Marshall Mix.

Design proposals must include details of the composition of the asphaltic concrete mix and the penetration grade of the new asphalt cement.

The design mix and JMF are to be submitted to the Town Engineer for approval ten (10) business days prior to the start of paving operations.

Mix design shall not include any shingles as a modifier, as they do not conform to the physical quality of the aggregates.

No asphaltic materials shall be placed until such time as the design mix has been delivered to the Town Engineer. Should placement take place prior to the mixes being supplied, there will be no payment for the quantity placed.

The Contractor is advised that the Town of Ingersoll will adjust the payment made to the Contractor for Hot Mixed Asphalt in this contract based on the increase or decrease in the Liquid Asphalt Price Index as follows:

1. The price index will be based on the price, excluding taxes, FOB the depots in the Toronto area, of asphalt cement grade PG 58-28 or equivalent. One index will be used to establish and calculate the payment adjustments for all grades.
2. A payment adjustment per tonne of new asphalt cement will be established for each month in which paving occurs and where the price index for that month increases or decreases by more than \$15.00 per tonne of liquid AC. The payment adjustment will be made for the volume of liquid AC incorporated into the hot mix laid each month and based on the percentage of new liquid AC in the mix. The initial \$15.00 increase or decrease in liquid AC price will not be adjusted for the contract.
3. The Town of Ingersoll has indicated below the Liquid Asphalt Price on which this bid is to be based.

\$ 1200.00 per tonne

Notes:

The bidder is to sign and submit the AC Index Acknowledgement Form with their Tender Submission. This form is located in the Contract in Section B - Form of Tender.

The Town has set the AC price so that all Contractor bids are without any monthly price discrepancies, and is only a tool for qualifying hot mix prices and not intended as a standard AC price.

The payment adjustment calculated using this formula is full compensation for any and all PGAC grades specified.

The contractor is required to have all their equipment meet or exceed the Town of Ingersoll minimum requirements for the placement and compaction of asphalt.

Minimum Equipment Requirements:

- Asphalt Spreader
 - Crawler or equivalent
 - c/w Grade and Slope controls, Grade sensors
 - Minimum Paving Width of 10' or 3m
- Smooth Drum Roller
 - Tandem Roller
 - Minimum Drum width 60" or 1.5m
- Rubber Tire Pneumatic Roller
 - Minimum 7 (4/3) tire wheel base
 - Minimum compaction width of 6.6" or 2.0m

Combination Roller will not be permitted.

Measurement/Payment:

The unit price for these items shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Item B108 - Supply and Place HL3 Topcoat Asphalt

Reference: OPSS.MUNI 310, 1101 and 1150

Description:

Under this item, the Contractor is directed to supply and place HL3 topcoat asphalt to the depths and locations specified and at the unit price(s) quoted, all as set out by the Town Engineer.

Asphalt shall conform to OPSS.MUNI 310/1101 and 1150 and all referenced specifications.

The Contractor is advised that they are responsible for all sweeping and cleaning of the streets before paving operations.

Also, to be included in the price shall be the application of tack coat on the entire surface of the street. The tack coat shall be placed at the rate of 0.35kg/square metre as per OPSS.MUNI 310.

HL3 asphalt design shall be in accordance with OPSS 1150 for Marshall Mix and shall not have any RAP included in the design.

Design proposals must include details of the composition of the asphaltic concrete mix and the penetration grade of the new asphalt cement.

The design mix and JMF are to be submitted to the Town Engineer for approval ten (10) business days prior to the start of paving operations.

Mix design shall not include any shingles as a modifier, as they do not conform to the physical quality of the aggregates.

No asphaltic materials shall be placed until such time as the design mix has been delivered to the Town Engineer. Should placement take place prior to the mixes being supplied, there will be no payment for the quantity placed.

The Contractor is advised that the Town of Ingersoll will adjust the payment made to the Contractor for Hot Mixed Asphalt in this contract based on the increase or decrease in the Liquid Asphalt Price Index as follows:

1. The price index will be based on the price, excluding taxes, FOB the depots in the Toronto area, of asphalt cement grade PG 58-28 or equivalent. One index will be

used to establish and calculate the payment adjustments for all grades.

2. A payment adjustment per tonne of new asphalt cement will be established for each month in which paving occurs and where the price index for that month increases or decreases by more than \$15.00 per tonne of liquid AC. The payment adjustment will be made for the volume of liquid AC incorporated into the hot mix laid each month and based on the percentage of new liquid AC in the mix. The initial \$15.00 increase or decrease in liquid AC price will not be adjusted for the contract.
3. The Town of Ingersoll has indicated below the Liquid Asphalt Price on which this bid is to be based.

\$ 1200.00 per tonne

Notes:

The bidder is to sign and submit the AC Index Acknowledgement Form with their Tender Submission. This form is located in the Contract in Section B - Form of Tender.

The Town has set the AC price so that all Contractor bids are without any monthly price discrepancies, and is only a tool for qualifying hot mix prices and not intended as a standard AC price.

The payment adjustment calculated using this formula is full compensation for any and all PGAC grades specified.

The contractor is required to have all their equipment meet or exceed the Town of Ingersoll minimum requirements for the placement and compaction of asphalt.

Minimum Equipment Requirements:

- Asphalt Spreader – Crawler or equivalent
 - c/w Grade and Slope controls, Grade sensors
 - Minimum Paving Width of 10' or 3m
- Smooth Drum Roller – Tandem Roller
 - Minimum Drum width 60" or 1.5m
- Rubber Tire Pneumatic Roller – Minimum 7 (4/3) tire wheel base
 - Minimum compaction width of 6.6" or 2.0m

Combination Roller will not be permitted.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Items B109 and G108 - Supply and Place HL3 Driveways - Machine Placed

Reference: OPSS.MUNI 311, 1101 and 1150

Description:

Under these items, the Contractor is directed to supply and place HL3 asphalt, with the use of an asphalt spreader at all driveways and boulevards identified on the contract drawings or as directed by the Town Engineer.

The unit price shall include a minimum of 50mm to a maximum of 75mm of asphalt placed.

Asphalt shall conform to OPSS.MUNI 310/1101 and 1150 and all referenced specifications outlined in Item B108.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Items B110, G109 and G110 - Supply and Place Concrete Curbing

Reference: OPSS.MUNI 353/1350, OPSS 1315
OPSD 351.01, 600.01, 600.3, 600.04, 600.06, 600.10 and 600.11

Description:

Under these items, the Contractor is directed to supply and place concrete curb as specified in the Form of Tender item and in accordance with OPSD 600 and OPSS.MUNI 1350.

Curb ramps shall be a minimum 1.5 metres in length where sidewalks are adjacent to the curb. The ramps shall be a minimum of 1.0 metre in length where there is no sidewalk within 2.0 metres of the curb.

Where curbs are to be placed against proposed sidewalk, a key or extra depth concrete is to be placed.

The curing compound shall be applied to ALL surfaces of the curbs (both sides and the top) as specified in OPSS 1315.

Should curing compound not be applied to all surfaces, the quoted unit price for this item may be reduced accordingly.

For Item B110, the contractor is required to place curb by hand or other approved method.

Measurement/Payment:

Payment for curbing will be based on the unit price(s) of per Lineal Metre and the measurements will be taken along the gutter line.

Items B111 and G111 - Supply and Place Concrete Sidewalk

Reference: OPSS.MUNI 351/1350, OPSS 1315
OPSD 310.01 - 310.05, 351.01

Description:

Under these items, the Contractor is directed to supply and place all forms, granular bases, concrete, sawcutting, expansion joints, barricades, lights, temporary access to premises, curing compounds, etc. required to pour concrete sidewalks.

The Contractor is reminded that the costs of the granular bases for the sidewalks will be included in their quoted unit prices.

Concrete sidewalks shall be constructed in accordance with OPSD 310.010, 310.020, 310.030, 310.040, 310.050, and 351.010, and shall have a minimum 100 mm depth of granular 'A' and 125 mm depth of concrete

The Contractor is reminded that in accordance with OPSS.MUNI 351.07.11 contraction and expansion joints shall be placed so each extends completely through the concrete and does not protrude above the concrete.

Where hand-laid sidewalk is being placed against new curbing and no key is placed, extra depth concrete is to be placed.

The Contractor shall provide one test area for every 500 square metres of sidewalk placed.

The curing compound shall be applied to ALL surfaces of the sidewalk (both sides and the top) and as specified in OPSS 1315 and applied at the rate of application not be less than 1 litre/5 square metres.

The OPSS standard further requires that all curing methods be implemented within 2 to 4 metres of the finishing operation.

Should curing compound not be applied to all surfaces, the quoted unit price for this item may be reduced accordingly.

Measurement/Payment:

Measurement and payment for sidewalk(s) shall be based on the unit price(s) of per Square Metre.

Items B112 and G112 - Supply and Place 150mm Concrete Sidewalk at Commercial Entrance(s)

Reference: OPSS.MUNI 351/1350, OPSS 1315
OPSD 310.01 - 310.05, 351.01

Description:

Under these items, the Contractor is directed to supply and place all forms, granular bases, concrete, sawcutting, expansion joints, barricades, lights, temporary access to premises, curing compounds, etc. required to pour concrete sidewalks.

The Contractor is reminded that the costs of the granular bases for the sidewalks will be included in their quoted unit prices.

Concrete driveways shall be constructed in accordance with OPSD 310.05, and 351.010, and shall have a minimum 150 mm depth of granular A and 150 mm depth of concrete, where industrial and/or commercial entrances have been identified.

Included in the price for driveway placement is the placement of wire mesh.

The Contractor is reminded that in accordance with OPSS.MUNI 351.07.11 contraction and expansion joints shall be placed so each extends completely through the concrete and does not protrude above the concrete.

Where driveway(s) are being placed against existing curbing or against new curbing with no key, extra depth concrete is to be placed.

The curing compound shall be applied to ALL surfaces of the sidewalk (both sides and the top) and as specified in OPSS 1315 and applied at the rate of application not be less than 1 litre/5 square metres.

The OPSS standard further requires that all curing methods be implemented within 2 to 4 metres of the finishing operation.

Should curing compound not be applied to all surfaces, the quoted unit price for this item may be reduced accordingly.

Measurement/Payment:

Measurement and payment for sidewalk(s) shall be based on the unit price(s) of per Square Metre.

Items B113 and G113 - Supply and Place Pedestrian Detectable Warning Plates (Set)

Reference: OPSS.MUNI 351
OPSD 310.033/310.039

Description:

Under these items, the Contractor is directed to supply and place a set of cast iron tactile walking surface indicator plates as per OPSS.MUNI 351, OPSD 310.033 and 310.039.

A set shall consist of **two (2) 0.6m x 0.6m or One (1) 1.2m x 0.6m** Duralast tactile walking surface indicator plates or approved equivalent.

The plates shall have a **red** finish and must be installed (c/w bolt package) concurrently with any intersection sidewalk pour. **Plates are not to have the plastic and stainless steel anchors.**

Measurement/Payment:

Payment for this item shall be made for each set of indicator plates installed.

Items B114 and G106 - Supply and Place Granular 'A' Driveway(s) and Shoulders

Reference: OPSS.MUNI 1001/1010

Description:

Under these items, the Contractor is directed to supply and place Granular 'A' material, including grading and compaction, to the depths, locations and grades shown on the Contract Drawings and at the unit prices quoted, all as set out by the Town Engineer.

The depth of the granular material placed at driveways shall be 250mm and 300mm on shoulders.

Granular 'A' shall be applied in accordance with OPSS.MUNI 1010.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Items B115 and G115 - Supply and Place 125mm Thick Topsoil and Growth Media Erosion

Reference: OPSS.MUNI 802

Description:

Under these items, the Contractor is directed to supply and place a minimum depth of 125 mm of screened topsoil free of lumps, stones, and other debris (in accordance with OPSS.MUNI 802) as directed by the Town Engineer.

Once topsoil is placed, the Contractor is directed to supply and place a **minimum of 25 mm** of growth media erosion control blanket, by the use of a pneumatic blower device or 'blower truck'. The equipment used must have a calibrated seeder attachment for 'living blanket' applications that require seeding.

The seed mix required for Town projects will consist of 30% Kentucky Bluegrass, 40% Creeping Red Fescue and 30% Perennial Ryegrass.

Growth Media is derived from composed materials and shall be weed free and derived from a well-decomposed source of organic matter. The growth media shall be produced using an aerobic composting process meeting or exceeding, MOE 101, CCME Type 'A' and Type 'AA' regulations and Compost Quality Alliance Program (CQA) including time and temperature data indicating effective weed seed, pathogen and insect larvae kill.

The growth media shall be free of any refuse, contaminants or other materials toxic to plant growth.

Non composting products will not be accepted.

The cost of all material, equipment and labour and/or other techniques required to complete the seeding installation shall be included in the unit price.

Measurement/Payment:

The unit price for this item shall be paid per Square Metre.

Items B116 and G116 - Supply and Place Wood Post and Steel Beam Guardrail System

Reference: OPSS.MUNI 721/1504/1601
OPSD 912

Description:

Under these items, the Contractor is directed to supply and place a wood post and steel beam guardrail system as per OPSS.MUNI 721/1504/1601, OPSD 912 and as directed by the Town Engineer.

The guiderail system shall be installed plumb and to the alignment and grade as specified on the Contract drawings, regardless of the material encountered.

Tops of wooden posts shall be cut and treated with two coats of 2% copper naphthenate wood preservative. Field applied wood preservative that comes in contact with any galvanized components shall be removed immediately.

The wood beam guiderail installation shall incorporate wood posts with wooden blocks.

All joints shall be lapped in the direction of traffic.

Rail elements shall have a minimum yield strength of 345 MPa. After fabrication, all rail elements and terminal sections shall be hot dip galvanized according to CAN/CSA G164.

All bolts, nuts, and washers shall be according to ASTM A 307 and hot dip galvanized according to CAN/CSA G164. Bolts shall be tightened to 100 N·m. Bolts that are field cut must have a maximum protrusion of 10 mm beyond the nut. The cut end of the bolt shall be ground smooth with all sharp edges and burrs removed.

Measurement/Payment:

Payment for this item shall be paid per Lineal Metre, along the centreline of the system from centre of anchor block to centre of anchor block at each end of an installation.

No additions shall be made for the overlapping length of cable at intermediate anchor blocks.

Item B117 - Supply and Place Metal Railing(s) - Public

Reference: OPSS.MUNI 908
OPSD 980.10

Description:

Under this item, the Contractor is directed to supply and place metal railing(s) as identified in the Form of Tender and as directed by the Town Engineer.

The railing(s) shall conform to OPSS.MUNI 908 and OPSD 980.10.

The Contractor shall provide shop drawings of the metal railing, all anchorage assemblies and materials including inserts, bolts and drilled holes, etc., required to detail the work and confirm its layout.

The specified pedestrian railing system shall be as per the contract drawings, and manufactured by A.J. Braun MGF Limited or approved equivalent. The barrier may be modified to suit field conditions as shown on the Contract drawings.

Construction shall conform to the requirements for the construction of a modified OPSD 980.101 pedestrian railing system. More specifically, the work administered under this item includes the fabrication, supply and installation of all barrier components, including rails and handrails, posts over the culvert and retaining walls and post anchorage systems, as indicated, including all inserts, bolts and washers, etc., required.

The Contractor shall field measure to confirm or identify all necessary dimensions including confirming dimensions of existing conditions as shown on the Contract drawings.

Field cutting and drilling shall be kept to a minimum.

Field welding where required shall be undertaken by Certified Welders under C.S.A. W47.

Rail to be hot dipped galvanized after fabrication in conformance with CSA G-164. Pipe shall be supplied in accordance with ASTM specification A53 Grade B.

The unit price shall include all labour, material and equipment necessary to undertake and complete the work specified in the contract.

Measurement/Payment:

Payment for the installed railing shall be based on the unit price(s) of per Lineal Metre.

Item B118 - Supply, Place and Adjust OPSD 401.010 Maintenance Hole Frame and Lid with less than 150mm of adjustment

Reference: OPSD 704.01, OPSD 401.010 Type 'A'

Description:

The unit price quoted for this item shall be compensation in full for the supply, placing and adjustment of a new maintenance hole frame(s) and lid(s) conforming to OPSD 401.010 Type 'A'.

All labour, material, equipment, etc. shall be included in the unit price to create adjustments up to 150 mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregrade at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The adjustments shall be to the elevations supplied by the Town Engineer.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering the maintenance hole(s).

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

These items are shown on the Contract Drawings as Series 4000.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item B119 - Supply, Place and Adjust OPSD 401.010 Maintenance Hole Frame and Lid with greater than 150mm of adjustment

Reference: OPSD 704.01, OPSD 401.010 Type 'A'

Description:

The unit price quoted for this item shall be compensation in full for the supply, placing and adjustment of a new maintenance hole frame(s) and lid(s) conforming to OPSD 401.010 Type 'A'.

All labour, material, equipment, etc. shall be included in the unit price to create any adjustment greater than 150mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregrade at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The maximum allowable adjustment is 0.23m using 3 units. Any adjustment greater than this depth, the use of rings shall be implemented. Wherever possible, adjustments should be completed using the minimum amount of units.

The adjustments shall be to the elevations supplied by the Town Engineer.

Any steps that need repair or replacement are also included in this price. Care shall be taken to eliminate concrete, asphalt and/or debris from entering catch basins and maintenance holes.

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

These items are shown on the Contract Drawings as Series 4000.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item B120 - Supply, Place and Adjust OPSD 400.110 Catchbasin Frame and Grate with less than 150mm of adjustment

Reference: OPSD 704.01, OPSD 400.11

Description:

The unit price quoted for this item shall be compensation in full for the supply, placing and adjustment of a new catchbasin frame(s) and grate(s) conforming to OPSD 400.11.

All labour, material, equipment, etc. shall be included in the unit price to create adjustments up to 150 mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregate at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The adjustments shall be to the elevations supplied by the Town Engineer.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering the maintenance hole(s).

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item B121 - Supply, Place and Adjust OPSD 400.110 Catchbasin Frame and Grate with greater than 150mm of adjustment

Reference: OPSD 704.01, OPSD 400.11

Description:

The unit price quoted for this item shall be compensation in full for the supply, placing and adjustment of a new catchbasin frame(s) and grate(s) conforming to OPSD 400.11.

All labour, material, equipment, etc. shall be included in the unit price to create any adjustment greater than 150mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregate at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The maximum allowable adjustment is 0.23m using 3 units. Any adjustment greater than this depth, the use of rings shall be implemented. Wherever possible, adjustments should be completed using the minimum amount of units.

The adjustments shall be to the elevations supplied by the Town Engineer.

Any steps that need repair or replacement are also included in this price.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering catch basins and maintenance holes.

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item B122 - Adjust Existing Watervale Jacket

Reference: D-1846-1-2009 (OXFORD)

Description:

The unit price quoted for this item shall be compensation in full for the excavation and adjustment of an existing watervale jacket to finish grade as directed by the Town Engineer.

All components, included extensions required to adjust the valve jacket to finish grade shall be included in the unit price.

All valve jackets and components are to be screw on style.

The adjustment item shall be shown on the contract drawings as Series 7000.

Measurement/Payment:

Payment for this item shall be per Each valve jacket adjusted.

Item B123 - Remove Concrete Sidewalk

Reference: No reference specifications for this item.

Description:

Under this item, the Contractor is directed to remove existing concrete sidewalk(s) as identified on the contract specified in the Form of Tender.

The cost of saw cutting and/or other techniques required to effect a clean removal joint shall be included in the unit prices quoted where new work will join old.

The concrete removed shall be transported to the Town of Ingersoll Public Works yard on Pemberton St. and placed as directed and shall be included in the unit price.

The contractor will also be responsible for assuring that the stockpile is pushed off and maintained to the standards of the Public Works Manager.

All removals shall be to the lines and grades established and set out by the Town's Engineering Department.

Measurement/Payment:

The unit price for these items shall be paid by the Square Metre.

Items B124 and G118 - Remove Concrete Curb and/or Curb and Gutter (Public or Private)

Reference: No reference specifications for this item.

Description:

Under these items, the Contractor is directed to remove existing concrete curb and/or curb and gutter as directed by the Town Engineer.

The cost of saw cutting and/or other techniques required to effect a clean removal joint shall be included in the unit price quoted where new work will join old.

The concrete removed shall be transported to the Town of Ingersoll Public Works yard on Pemberton St. and placed as directed and shall be included in the unit price.

The contractor will also be responsible for assuring that the stockpile is pushed off and maintained to the standards of the Public Works Manager.

All removals shall be to the lines and grades established and set out by the Town's Engineering Department.

Measurement/Payment:

The unit price for these items shall be paid by the Lineal Metre.

Items B125 and G120 - Remove Wood Post and Steel Beam Guardrail System

Reference:

Description:

Under these items, the Contractor is directed to remove and dispose of an existing wood post and steel beam guardrail system identified on the contract drawings and as directed by the Town Engineer.

The cost of all equipment and labour and/or other techniques required to remove and dispose of the guardrail shall be included in the unit price.

Measurement/Payment:

The unit price for this item shall be paid by the Lineal Metre.

Items B126 and G121- Remove and Relocate Street and/or Regulatory Signs

Reference: No reference specifications for this item.

Description:

Under these items, the Contractor is directed to remove and relocate existing street or regulatory signs as directed by the Town Engineer.

The relocation shall consist of the removal and backfill at existing location. The proper storage of the sign and post until the new location has been established. All excavating for the new post and placement of said post and sign.

The cost of all material, equipment and labour and/or other techniques required to remove and relocate the sign(s) shall be included in the unit price.

Measurement/Payment:

The unit price for these items shall be paid per Each sign relocated.

Items B127 and G117 - Clearing and Grubbing

Reference: OPSS.MUNI 201

Description:

Under these items, the Contractor is directed to cut and remove of all trees, shrubs, bushes and to remove all roots and stumps (in accordance with OPSS.MUNI 201) as required to complete the works shown on the Contract Drawings and at the direction of the Town Engineer.

Also included in this item is the trimming of existing trees as deemed fit by the Contractor and Town Engineer to complete the proposed work. It will be the responsibility of the Contractor to dispose of same.

The contractor shall check with the property owner to see if they wish to keep the wood from trees, or the shrubs slated for removal and grubbing. If the homeowner does not wish to retain the wood, then it is to be removed from the site at the Contractor's expense.

Existing stumps and remaining stumps from all trees shall be ground down and/or removed as per the direction of the Town Engineer.

Where the ground level around a tree is noticeably higher than the surrounding grade, the trunk will be reduced to a point 300 mm. (12") below the proposed grade in the area of the tree so that when seeded, sodded or covered, the smooth flowing contour gives no evidence of the work done.

Depressions remaining after grubbing shall be backfilled by the Contractor with suitable earth material and compacted to avoid settlement.

Measurement/Payment:

The unit price for this item shall be paid Lump Sum.

Item B128 - Track Protection/Railway Flagging

Reference:

Description:

This specification covers the requirements for the construction maintenance and monitoring of all protection systems made necessary by the excavation or other work required by the Town and/or County.

The Contractor shall coordinate rail flagging with the Town of Ingersoll and Ontario Southland/Canadian Pacific Rail as required.

Flagging will be mandatory for any activities carried out within the rails working limits (or as required per the railway authority) of the rail line or any work that could potentially affect the rail corridor on days when the rail line is operational.

It is important to note that trains currently traverse site daily. The Contractor is required to schedule the date and time of the work with railway authority, so as to allow time for the railway to minimize disruption to train service. Should scheduling not be completed correctly or the railway authority is not notified of change of work schedule, the contractor shall bore all costs charged back to the Town of Ingersoll.

The Contractor must schedule their work to minimize conflicts with rail traffic whenever feasible. The Contractor should be aware that the rail authority may impose significant fines if their actions disrupt rail traffic.

No work within the right-of-way is to be done by the Contractor until railway personnel are on site.

Upon acceptance of the awarded contract, the general contractor and all sub-contractors must produce proof to the Town Engineer that all pertinent staff have completed and obtained railway training certification. No work shall take place until proof has been verified by the Town of Ingersoll.

The contractor must bore all costs of this training and documentation.

Measurement/Payment:

The contractor shall be paid for coordination of scheduling and all administration to facilitate the required work on a per Day basis. The Town has established a pre-determined amount for this item.

All invoices by the track authority will be paid directly by the Town of Ingersoll, once confirmation of the work has been verified.

Items B129 and G123 - Supply and Place Line Painting – (Yellow)

Reference: OPSS 710

Description:

Work under this shall be in accordance with OPSS and Ontario Traffic Manual - Book 1 and 2 (Pavement Marking) and as amended herein.

Measurement/Payment:

Payment for dashed and solid line marking will be paid by the Lineal Metre of the line.

Items B130 and G124 - Supply and Place Stop Bar Painting

Reference: OPSS 710

Description:

Work under this shall be in accordance with OPSS and Ontario Traffic Manual - Book 1 and 2 (Pavement Marking) and as amended herein.

Measurement/Payment:

Payment for Stop Bars shall be per Each.

Items B131 and G125 - Supply and Place Railway Crossing Symbol

Reference: OPSS 710

Description:

Work under this shall be in accordance with OPSS and Ontario Traffic Manual - Book 1 and 2 (Pavement Marking) and as amended herein.

Measurement/Payment:

Payment for Railway Crossings shall be per Each.

Item C101- Residential and Industrial Inspection

Reference: No reference specifications for this item.

Description:

Under this item, the Contractor must obtain the services of a Professional Inspection Agency to do a preliminary inspections. These homes or buildings will be adjacent to the streets affected by the construction.

The Town of Ingersoll will designate the units to be inspected.

The inspection will require the approval of the homeowner or building owner to allow the inspection company access onto the property as well as entrance to the residence or building. Written notice must be given to the owners in advance. This notice is to be reviewed and approved by the Town Engineer before distribution.

The report shall include inspection of the exterior of the building(s) including all landscaping, driveways and sidewalks.

This is to be followed by an inspection of the interior which involves all exposed foundations, walls, windows, doors etc.

This will be obtained by both digital pictures and the use of a digital recorder.

The awarded Contractor will be given fifteen (15) working days from time of Acceptance to obtain this information.

The Town of Ingersoll requires that the Report be filed with the Town Engineer upon completion.

Measurement/Payment:

Payment will be per Unit, based on the following:

- Exterior Inspection 50% payment
- Interior Inspection 50% payment

The contractor may not make a full payment claim from their inspection company unless both interior and exterior has been completed.

Should the homeowner refuse inspection, no claim for payment may be submitted.

Item D101 - Construction LayoutReference:Description:

This item sets out the requirements for the Contractor to supply and undertake all facets of the construction layout from underground work, surface work and road reinstatement.

The Contractor shall use qualified personnel to do the layout work. They shall be thoroughly experienced in surveying and have extensive previous experience in construction layout.

The Town of Ingersoll shall provide background information, including without limitation, baseline and benchmark information, to facilitate the general location, alignment, elevation and layout of the work in both digital and hardcopy format.

The Contractor will be responsible for the true and proper setting out of the work and for the correctness of the position, levels, dimensions and alignment of all parts of the work, and for the provision of all necessary instruments and labour for the construction layout.

If, at any time during the progress of the work, any error shall appear or arise in the positions, levels, dimensions or alignment of any part of the work, the Contractor shall, at his own expense, rectify such error to the satisfaction of the Town, unless such error is based on incorrect data supplied in writing by the Town.

The checking of the setting out of any line or level by the Town shall not in any way relieve the Contractor of his responsibility for the correctness of the work.

The Contractor shall supply the Town with a copy of all necessary information to enable them to use the Contractor's field layout. All information, both on work sheets and stakes, shall be neat and legible.

Measurement/Payment:

Payment for this item shall be full compensation for all labour, equipment and materials necessary to complete all facets of construction work.

Payment shall Lump Sum and be made on each payment certificate based on the Town's estimate of the amount of layout that has been completed.

The layout required due to alterations in contract items shall be considered incidental to the work of the item, therefore no change will be made to the Lump Sum bid for this item.

Item D102 - Supply and Place Calcium Chloride (Solid)

Reference: OPSS.MUNI 506 and 2501

Description:

Under this item, the Contractor is directed to supply and place a solid calcium chloride product, as required per OPSS and as directed by the Town Engineer.

Measurement/Payment:

Payment for this item shall be by the Tonne.

Item E101 and F101 - Supply and Place Granular B Trench Backfill

Reference: OPSS.MUNI 401/1001/1010

Description:

Under these items, the Contractor is directed to supply, place and compact OPSS.MUNI Granular 'B' material in all trenches under the roadway and driveway surfaces, in the event that the native material proves to be unsuitable for use as trench backfill material.

Also included in the quoted unit price shall be the cost of the excavation, transportation and disposal of the material away from the construction site.

Backfilling and compaction of the Granular 'B' shall be according to OPSS.MUNI 401.

The Granular 'B' backfill will be placed to the elevation specified by the Town.

Measurement/Payment:

The unit price for these items shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Items E101 and E103 - Supply and Place Polyvinyl Chloride (PVC) DR18 Watermain – Open Cut

Reference: OPSS.MUNI 401/404/410/441/517 and 1010, OPSD 802
Oxford County Guidelines – Section 3

Description:

Under these items, the Contractor is directed to supply and place polyvinyl chloride (PVC) DR18 watermain pipe by open cut method at the depths, locations and grades shown on the contract drawings and at the unit price(s) quoted, all in conformance with OPSS.MUNI 410.

Pipe material must be pre-approved by the County of Oxford.

All bends, tees, etc. shall be fastened by use of grip rings and/or approved equivalent.

The County of Oxford requires that all mechanical joints including bolts, nuts & grip rings have Denso Paste and Tape or equivalent corrosion protection placed at time of installation.

As per County of Oxford guidelines, blue tracer must installed and inspected as per 3.13.7 and included in the unit price.

Cathodic Protection will be required and must be installed as per the County of Oxford Guidelines and Specifications. Payment for Cathodic Protection must be included in the per lineal meter price.

The Town will perform the inspection of the installation of the main. The County of Oxford Water and Wastewater Department will be responsible for looking after the observation of pressure testing, and the testing of the water after chlorination has taken place.

The contractor will be responsible for the delivery of the water samples to the lab assigned by the County of Oxford.

All testing shall be to the County of Oxford Guidelines and Specifications prior to the transfer of the new main and in accordance with OPSS.MUNI 441.

In both cases **48 Hour Notice** must be given to allow for the proper personnel to be on site **for inspection. Test results must be presented to the Town of Ingersoll and the County of Oxford Water and Wastewater Department before any transfer of watermain can be started.**

Also included in the unit price shall be all bedding as specified by the County of Oxford guidelines and/or specified in the geotechnical report.

Measurement/Payment:

Payment for these items shall be per Lineal Metre of main placed.

Items E104 and E105 - Supply and Place Watervale(s)

Reference: D-1846-1-2009 (OXFORD)

Description:

The unit price quoted for these items shall be compensation in full for the supply and placement of a watervale to the depth, location and grade shown on the contract drawings and at the unit price(s) quoted, all as set out by the Town Engineer.

The size of the valve shall be identified in the Form of Tender item.

The Town of Ingersoll and County of Oxford requires that all new valves are gate valve type, epoxy coated and open counter clockwise.

All valve jackets are to be screw on style and are to be included in the unit price.

These items shall be shown on the contract drawings as WV150 and WV250.

Measurement/Payment:

Payment for these items shall be per Each valve placed.

Item E106 - Supply and Place Fire Hydrant Set

Reference: OPSP 1005.010, D-1828-1-1993 (OXFORD)

Description:

The unit price quoted for this item shall be compensation for the supply and placement of a fire hydrant set, to the depth, location and grade as directed by the Town Engineer and in accordance with The County of Oxford Guidelines and Specifications.

The fire hydrant set shall consist of PVC pipe, restraints, tee, valve and jacket and the hydrant component.

The fire hydrant shall conform to the County of Oxford Guideline – Section 3 – Part 2.13 and be installed as per D-1828-1-1993.

All labour, equipment, clear stone, filter cloth, anodes and Denso materials required to complete the work shall be included in the price.

This item is show on the contract drawings as Series FH.

Measurement/Payment:

Payment for this item shall be per Each hydrant set.

Item E107 - Tie into Existing PVC Watermain

Reference: OPSS.MUNI 401/404/410/441/517/1010, OPSP 802

Description:

Under this item, the Contractor is directed to reconnect the existing polyvinyl chloride (PVC) watermain pipe to the newly placed PVC pipe.

The contractor must supply and place the same type of pipe material or approved equivalent to complete the connection.

All pipe material must be approved by the County of Oxford.

The following connections are pre-approved:

- Push on pipe c/w restraints
- Ductile Solid Sleeve c/w restraints
- PVC solid sleeve c/w restraints

The watermain size will be 250mm diameter.

Also included in the unit price shall be all bedding as specified by the County of Oxford guidelines and/or specified in the geotechnical report.

Measurement/Payment:

Measurement and payment shall be per Lineal Metre.

Item E108 - Tie into Existing Ductile Iron Watermain

Reference: OPSS.MUNI 401/404/410/441/517/1010, OPSD 802

Description:

Under this item, the Contractor is directed to reconnect the existing ductile iron watermain pipe to the newly placed PVC pipe.

The contractor must supply and place the same type of pipe material or approved equivalent to complete the connection.

All pipe material must be approved by the County of Oxford.

The following connections are pre-approved:

- Ductile Solid Sleeve c/w restraints or equivalent

The watermain size will be 250mm diameter.

Also included in the unit price shall be all bedding as specified by the County of Oxford guidelines and/or specified in the geotechnical report.

Measurement/Payment:

Payment shall be per Each pipe re-connection.

Item E109 - Tie into Existing 100mm Service

Reference: OPSS.MUNI 401/404/410/441/517/1010, OPSD 802

Description:

Under this item, the Contractor is directed to reconnect an existing water service to the newly placed 150mm diameter PVC pipe. All components required to complete the reduction and make a proper connection shall be included in the unit price.

The contractor must supply and place the same type of pipe material or approved equivalent to complete the connection.

All pipe material must be approved by the County of Oxford.

The following connections are pre-approved:

- Ductile Solid Sleeve c/w restraints
- PVC solid sleeve c/w restraints

The existing waterservice is 100mm diameter. However, the material of the service must be determined in the field. This will be paid under Additional Unit Pricing.

Also included in the unit price shall be all bedding as specified by the County of Oxford guidelines and/or specified in the geotechnical report.

Measurement/Payment:

Payment shall be per Each pipe re-connection.

Item E110 - Remove Existing Watervalue

Reference: No reference specifications for this item.

Description:

The unit price quoted for this item shall be compensation in full for the excavation, removal and disposal of an existing watervalue as shown on the contract drawings or as directed by the Town Engineer.

The removal item shall be shown on the contract drawings as Series 500.

Measurement/Payment:

Payment for this item shall be per Each valve removed.

Item E111 - Remove Existing Fire Hydrant

Reference: No reference specifications for this item.

Description:

The unit price quoted for this item shall be compensation in full for the excavation, removal and disposal of an existing fire hydrant as shown on the contract drawings or as directed by the Town Engineer.

The removal item shall be shown on the contract drawings as Series FD.

Included in the unit price for disposal, shall be the transportation of existing hydrant to the County of Oxford Shop on 59 George Johnson Boulevard for rehabilitation.

Measurement/Payment:

Payment for this item shall be per Each hydrant removed and transported.

Item E112 - Cut and Cap Existing Watermain c/w Blow off

Reference: OPSD 1104.03

Description:

The unit price quoted for this item shall be compensation in full to excavate and expose the existing watermain, cut and cap and restrain such main until future watermain is to be connected.

The pipe size for the cap shall be identified in the Form of Tender.

Should a blow-off stack be identified in the Form of Tender, it shall be included in this unit price.

The blow-off stack is to be a 50mm blow-off which is to extend above finish grade to allow for flushing. The blow-off must be operable without the need of excavation.

An additional cut and cap is required beyond the limits of construction to eliminate dual infrastructure and prepare for future construction. This is identified on the contract drawings.

Measurement/Payment:

Payment shall be per Each cut and cap completed.

Item E113 - Watermain Testing and Commissioning

Reference: OPSS 411

Oxford Guidelines – Section 3 – Part 6.7 (OXFORD)

Description:

Under this item, the contractor is to commission the newly installed watermain as per the County of Oxford Guidelines and under the supervision of the County of Oxford Water and Wastewater Department.

Contractors must provide in writing, a method of dewatering in order to protect the final connection from contamination of the new or existing watermain with foreign material or groundwater. Should contamination occur, the entire cost of disinfecting the mains will be at the contractors expense.

All new piping and appurtenances placed in the connection of the new main and existing waterworks system must be disinfected with a 1-% solution of sodium hypochlorite or equivalent method.

When all of the initial tests including the bacteriological samples are satisfactory, approval from the County of Oxford Water and Wastewater Department must be obtained prior to connecting the main to the existing water system.

Contractors shall give the County of Oxford Water and Wastewater Department a minimum of 48 hour notice prior to connecting.

A licensed operator from the County of Oxford Water and Wastewater Department must be present on site during the removal of the temporary connection and until the connection to the existing waterworks has been completed.

Measurement/Payment:

Payment for this item shall be paid for Each commissioning.

Item F102 - Adjust Existing Maintenance Hole Frame and Lid with less than 150mm of adjustment

Reference: OPSD 704.01

Description:

The unit price quoted for this item shall be compensation in full for the adjustment of existing maintenance hole frame(s) and lid(s).

All labour, material, equipment, etc. shall be included in the unit price to create adjustments up to 150 mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregrade at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The adjustments shall be to the elevations supplied by the Town Engineer.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering the maintenance hole(s).

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item F103 - Adjust Existing Maintenance Hole Frame and Lid with greater than 150mm of adjustment

Reference: OPSD 704.01

Description:

The unit price quoted for this item shall be compensation in full for the adjustment of existing maintenance hole frame(s) and lid(s).

All labour, material, equipment, etc. shall be included in the unit price to create any adjustment greater than 150mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregrade at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The maximum allowable adjustment is 0.23m using 3 units. Any adjustment greater than this depth, the use of rings shall be implemented. Wherever possible, adjustments should be completed using the minimum amount of units.

The adjustments shall be to the elevations supplied by the Town Engineer.

Any steps that need repair or replacement are also included in this price.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering catch basins and maintenance holes.

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item F104 - Supply and Place Precast Catchbasin c/w Frame and Grate

Reference: OPSD 705.01, OPSD 704.01, OPSD 400.11

Description:

Under this item, the Contractor is directed to supply and place a 600 x 600 precast catchbasin unit in accordance with OPSD 705.010, to the depths, locations and grades shown on the Contract Drawings (or as set out by the Town Engineer), at the unit price(s) quoted.

The basin height shall be identified in the Form of Tender item. The height shall mean the exterior height of the structure.

All basin unless otherwise specified shall have 0.6m of sump.

Frame and grate for all catch basins will conform to OPSD 400.110, and their costs will also be included in the quoted unit price(s) of the catchbasin.

Measurement/Payment:

Payment for this item shall be per Each structure placed.

Item F105 - Supply and Place Precast Twin Catchbasin c/w Frames and Grates

Reference: OPSD 705.02, OPSD 704.01, OPSD 400.11

Description:

Under this item, the Contractor is directed to supply and place a 600 x 1450 precast twin catchbasin unit in accordance with OPSD 705.020, to the depths, locations and grades shown on the Contract Drawings (or as set out by the Town Engineer), at the unit price(s) quoted.

The basin height shall be identified in the Form of Tender item. The height shall mean the exterior height of the structure.

All basin unless otherwise specified shall have 0.6m of sump.

Frame and grate for all catch basins will conform to OPSD 400.110, and their costs will also be included in the quoted unit price(s) of the catchbasin.

Measurement/Payment:

Payment for this item shall be per Each structure placed.

Item F106 - Core or Break Into Existing Concrete Storm Sewer

Reference:

Description:

Under this item, the contractor is directed to either core or saw cut into an existing concrete storm sewer and creating a clean opening for new piping.

The price shall include all equipment, labour and material necessary to create the opening and grout the new pipe in place using a non-shrink mortar or grout.

The proposed coring location(s) is shown on the contract drawings as Series BR.

Measurement/Payment:

Payment for this item shall be per Each opening created.

Item F107 - Core or Break Into Existing Maintenance Hole

Reference: OPSS.MUNI 410

Description:

Under this item, the contractor is directed to either core or saw cut into an existing precast or poured in place storm maintenance hole and creating a clean opening for new piping.

The price shall include all equipment, labour and material necessary to create the opening and grout the new pipe in place using a non-shrink mortar or grout.

The maintenance hole(s) is shown on the contract drawings as Series 4005.

Measurement/Payment:

Payment for this item shall be per Each opening created.

Item F108 - Re-Bench Existing Maintenance Hole

Reference: OPSD 701.021
Town – Typical Detail – S-2

Description:

Under this item, the contractor is directed to break out the existing concrete benching and re-pour concrete to the specifications of OPSD 701.021.

The price shall include all equipment, labour and material necessary to repair or replace the benching.

The maintenance hole(s) is shown on the contract drawings as Series 4005.

Measurement/Payment:

Payment for this item shall be per Each maintenance hole re-benched.

Item F109 - Supply and Place PVC/HDPE Lead or Connection

Reference: OPSS.MUNI 410, OPSD 802, OPSD 708.03
Town – Typical Detail – S-7

Description:

Under this item, the Contractor is directed to supply and place a PVC/HDPE catchbasin connection at the depth, line and grade shown on the Contract Drawings and at the unit price(s) quoted, all in conformance with OPSS 410.

The catch basin connection shall be installed using only factory fittings, bends and pipe.

PVC/HDPE adaptors or rubber Fernco adaptors are only acceptable for connection to existing pipe.

The pipe diameter shall be specified in the Form of Tender item.

Pipe materials must be pre-approved by the Town Engineer.

Also included in the unit price shall be all bedding as specified in the contract and/or geotechnical report.

Measurement/Payment:

Measurement and payment shall be per Lineal Metre.

Item F110 - Supply and Place PVC/HDPE Lead c/w Cap

Reference: OPSS.MUNI 410, OPSD 802, OPSD 708.03
Town – Typical Detail – S-7

Description:

Under this item, the Contractor is directed to supply and place a PVC/HDPE catchbasin connection c/w cap at the depth, line and grade shown on the Contract Drawings and at the unit price(s) quoted, all in conformance with OPSS 410.

The catch basin connection shall be installed using only factory cap, fittings, bends and pipe.

PVC/HDPE adaptors or rubber Fernco adaptors are only acceptable for connection to existing pipe.

The pipe diameter shall be specified in the Form of Tender item.

Pipe materials must be pre-approved by the Town Engineer.

Also included in the unit price shall be all bedding as specified in the contract and/or geotechnical report.

Measurement/Payment:

Measurement and payment shall be per Lineal Metre.

Item F111 - Supply and Place Gutter Drain(s)

Reference: Town – Typical Detail – S-31

Description:

Under this item, the Contractor is directed to supply and place 100mm dia. DR28 PVC gutter drains as shown on Typical Detail S-31 and at the unit price(s) quoted, including make good the pipe connections.

The drain shall be placed flush with the base course asphalt.

The gutter drains may be placed in two (2) sections, the first section being placed before the installation of curb and gutter, and the second section being placed after the placement of the curb and gutter and prior to the placing of the asphalt.

Placement of the drain pipe within the adjustment units will not be accepted.

Included in the unit price shall be all equipment, material and labour used to create the opening in the catchbasin for the pipe installation.

Measurement/Payment:

Payment for this item shall be per Each drain placed.

Item F112 - Remove Existing Poured in Place or Precast Storm Catchbasin(s)

Reference:

Description:

Under this item, the Contractor is directed to remove and dispose of the following existing structures:

- Twin inlet catchbasin shown as Series 400

The structures shall be demolished and delivered to the Public Works yard on Pemberton Street, as well as any frames and covers and the cost for this shall also be included in the quoted unit price(s).

The costs of blocking up all inlet and outlet pipes after removals of the maintenance holes shall also be included in the quoted unit price(s), if required.

Measurement/Payment:

Payment for this item shall be per Each structure removed and disposed of.

Item G104 - Supply and Place Granular 'A' - Roadbase

Reference: OPSS.MUNI 1001/1010

Description:

Under this item, the Contractor is directed to supply and place Granular 'A' material, including grading and compaction, to the depths, locations and grades shown on the contract drawings and at the unit prices quoted, all as set out by the Town Engineer.

The depth of the granular material is shown on Typical Sections.

Granular 'A' shall be applied in accordance with OPSS.MUNI 1010; however, notwithstanding the requirements of OPSS.MUNI 1010, the Contractor shall supply a laboratory sieve analysis of the aggregates proposed for use on the project.

No granular materials shall be placed until such time as the analysis has been delivered to the Town Engineer.

The analyses shall be submitted two (2) weeks prior to start of the project. Samples for analysis shall be taken in the presence of a Town representative. If the initial reports do not meet the requirements of OPSS.MUNI 1010, new sources or methods or production must be found to produce the required quality and gradation.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Item G105 - Transport and Place Granular 'B' - Roadbase

Reference: OPSS.MUNI 1001/1010

Description:

Under this item, the Contractor is directed to load, transport and place granular material (Granular 'B'), including grading and compaction, to the depths, locations and grades shown on the contract drawings and at the unit price quoted, all as set out by the Town Engineer.

The depth of the granular material is shown on Typical Sections.

The granular material will be located at the Town's Public Works Yard at 80 Pemberton Street.

The granular material shall be applied in accordance with OPSS.MUNI 1010.

The Contractor is responsible for an on-site loader or equivalent with an **on board weighing system**. This scale is to be calibrated and approved by the Town prior to any material being removed.

A scale test may be conducted daily or as required by the Town Engineer.

The material shall be collected in truck boxes and the total mass for each truck recorded. The material shall be weighed on a recently verified scale (**Town of Ingersoll approved**), and the material mass compared.

The maximum allowable variation between the truck scale mass and the scale mass shall not exceed 0.5%. The test results are to be recorded and available at all times.

Once the load arrives on site, a weigh ticket must be provided to the on-site inspector.

Measurement/Payment:

The unit price for this item shall be paid by the Town, upon receipt of the weigh ticket by the Town.

Item G106 - Supply and Place Granular 'A' – Driveways and Shoulders

Reference: OPSS.MUNI 1001/1010

Description:

Under this item, the Contractor is directed to supply and place Granular 'A' material, including grading and compaction, to the depths, locations and grades shown on the contract drawings and at the unit prices quoted, all as set out by the Town Engineer.

The depth of the granular material is shown on Typical Sections.

Granular 'A' shall be applied in accordance with OPSS.MUNI 1010; however, notwithstanding the requirements of OPSS.MUNI 1010, the Contractor shall supply a laboratory sieve analysis of the aggregates proposed for use on the project.

No granular materials shall be placed until such time as the analysis has been delivered to the Town Engineer.

The analyses shall be submitted two (2) weeks prior to start of the project. Samples for analysis shall be taken in the presence of a Town representative. If the initial reports do not meet the requirements of OPSS.MUNI 1010, new sources or methods or production must be found to produce the required quality and gradation.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Item G119 - Remove Asphalt Surface Driveway

Reference:

Description:

Under this item, the Contractor is directed to saw cut, remove and dispose of existing asphalt laneway or driveway surface not included under the Excavation item.

The cost of saw cutting and/or other techniques required to affect a clean joint shall be included in the quoted unit price.

All removals shall be to the lines and grades established and set out by the Town's Engineering Department.

Measurement/Payment:

The unit price for this item shall be paid by the Square Metre.

Item G122 - Track Protection/Railway Flagging

Reference:

Description:

This specification covers the requirements for the construction maintenance and monitoring of all protection systems made necessary by the excavation or other work required by the Town and/or County.

The Contractor shall coordinate rail flagging with the Town of Ingersoll and Canadian National Rail as required.

Flagging will be mandatory for any activities carried out within the rails working limits (or as required per the railway authority) of the rail line or any work that could potentially affect the rail corridor on days when the rail line is operational.

It is important to note that trains currently traverse site daily. The Contractor is required to schedule the date and time of the work with railway authority, so as to allow time for the railway to minimize disruption to train service. Should scheduling not be completed correctly or the railway authority is not notified of change of work schedule, the contractor shall bore all costs charged back to the Town of Ingersoll.

The Contractor must schedule their work to minimize conflicts with rail traffic whenever feasible. The Contractor should be aware that the rail authority may impose significant fines if their actions disrupt rail traffic.
No work within the right-of-way is to be done by the Contractor until railway personnel are on site.

Upon acceptance of the awarded contract, the general contractor and all sub-contractors must produce proof to the Town Engineer that all pertinent staff have completed and obtained railway training certification. No work shall take place until proof has been verified by the Town of Ingersoll.

The contractor must bore all costs of this training and documentation.

Measurement/Payment:

The contractor shall be paid for coordination of scheduling and all administration to facilitate the required work on a per Day basis. The Town has established a pre-determined amount for this item.

All invoices by the track authority will be paid directly by the Town of Ingersoll, once confirmation of the work has been verified.

SCHEDULE OF ADDITIONAL UNIT PRICES

Items 1 and 2 - Sawcut (Asphalt/Concrete)

Reference: No reference specifications for this item.

Description:

Under these items, the Contractor is directed to supply additional sawcutting of asphalt or concrete that is not included in the quoted unit price(s) for the main tender items.

Measurement/Payment:

The unit price for these items shall be paid per Lineal Metre.

Items 3 and 4 - Supply and Place 20 MPa or 15 MPa Concrete

Reference: OSS.MUNI 1350

Description:

Under these items, the Contractor is directed to supply and place either 20 MPa or 15 MPa at locations specified by the Town Engineer.

Measurement/Payment:

The unit price for these items shall be paid per Cubic Metre.

Item 5 - Supply and Place Granular B - Roadbase

Reference: OPSS.MUNI 1001/1010

Description:

Under this item, the Contractor is directed to supply and place Granular 'B' **Type II** material, including grading and compaction, to the depths, locations and grades shown on the contract drawings and at the unit prices quoted, all as set out by the Town Engineer.

The depth of the granular material is shown on Typical Sections.

Granular 'B' shall be applied in accordance with OPSS.MUNI 1010; however, notwithstanding the requirements of OPSS.MUNI 1010 the Contractor shall supply a laboratory sieve analysis of the aggregates proposed for use on the project.

No granular materials shall be placed until such time as the analysis has been delivered to the Town Engineer.

The analyses shall be submitted two (2) weeks prior to start of the project. Samples for analysis shall be taken in the presence of a Town representative. If the initial reports do not meet the requirements of OPSS.MUNI 1010, new sources or methods or production must be found to produce the required quality and gradation.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Item 6 - Supply and Place 20 mm Crushed Stone (Clear Stone) for Bedding (Extra Over Price)

Reference: OPSS.MUNI 401/1001/1010
OPSD 802.010

Description:

Under this item, the Contractor is directed to supply and place 20 mm clear stone for bedding, instead of the standard Granular 'A' Bedding, due to soil conditions and as directed by the Town Engineer.

The unit price quoted shall clearly be the difference in the cost of supplying and placing 20 mm Clear Stone and the cost of supplying and placing Granular "A" Bedding, all in accordance with OPSD 802.010.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Items 7 and 8 - Supply and Place Additional Granular Material where directed by the Town Engineer

Reference: OPSS.MUNI 401/1001/1004/1010

Description:

Under these items the Contractor is directed to supply, place and compact the stated granular materials at locations not covered in the main Tender Items, as directed by the Town Engineer.

Measurement/Payment:

The unit price for these items shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Item 9 - Disposal of Contaminated Material(s) and Supply and Place Granular 'B' Trench Backfill

Reference: OPSS.MUNI 401/1001/1004/1010, Ontario Regulation 406/19

Description:

Under this item the Contractor is directed to supply, place and compact imported Granular 'B' material in all sanitary sewer and watermain trenches under road, sidewalks and driveway surfaces, in the event that the native material proves to be contaminated for use as trench backfill material.

This shall be determined by an independent soils consultant. See Item Special Provision 7.

Also included in the quoted unit price shall be the cost of the transportation and disposal of the unsuitable material away from the construction site, to a specified location where contaminated material can be safely placed. Backfilling and compaction of the Granular 'B' shall be according to OPSS.MUNI 401. The Granular 'B' backfill will be placed to the elevation of the sub-grade.

Measurement/Payment:

The unit price for this item shall be paid by the Tonne, upon receipt of the weigh ticket by the Town.

Item 10 - Supply and Place "Non-Shrink" Backfill

Reference: OPSS.MUNI 1359

Description:

Under this item, the Contractor is directed to supply and place 0.4 MPa concrete "non-shrink" backfill in accordance with OPSS.MUNI 1359. "Non-shrink" backfill will completely encompass any pipe where directed. "Non-shrink" backfill will be placed so that its elevation is no higher than the bottom of any granular base material.

Measurement/Payment:

The unit price for this item shall be paid per Cubic Metre.

Item 11 - Supply and Place 125mm Thick Topsoil and Sod

Reference: OPSS.MUNI 802 and 803

Description:

Under this item, the Contractor is directed to supply and place a minimum depth of 125 mm of screened topsoil free of lumps, stones/gravel, and other debris and for the supply and placement of nursery sod (in accordance with OPSS.MUNI 802 & 803 as directed by the Town Engineer.

All sod shall be cut in along the edge of existing grassed areas. Voids shall not be left between the soil portion of the sod and the underlying ground surface. Sod shall be securely placed lengthwise across the face of slopes and parallel to the centreline of ditches. End joints of adjacent sod pieces shall be staggered. The edges of adjacent sod pieces shall be placed tightly against one another without overlapping. Sod shall be countersunk to existing grade level at all edges. Joints shall be tamped to a uniform surface. Sod shall be placed up to the subgrade elevation on the roadway front slope.

When deemed necessary by the Town Engineer, to have the sod staked due to slope conditions as per OPSS.MUNI 803.05.02, the cost shall be included in the sod placement cost.

Sod shall be maintained for 30 Days following completion of placement. During this period, the placed sod shall be kept healthy, actively growing, and green in leaf colour. Town staff will monitor the placed sod for an additional 30 days, post warranty. Should they deem the sod requires additional maintenance, the Town will require the contractor to continue maintenance at the Town's expense.

Prior to any placement of topsoil the Town Engineer may request to have the topsoil tested and notification of where such material came from. The contractor shall bear the cost of such testing.

The cost of all material, equipment and labour and/or other techniques required to complete the sod installation shall be included in the unit price.

Measurement/Payment:

The unit price for these items shall be paid per Square Metre.

Item 12 - Supply and Place Screened Topsoil only

Reference: OPSS.MUNI 802

Description:

Under this item the Contractor is directed to supply and place a **minimum depth of 125 mm of screened topsoil free of lumps, stones, and other debris** (in accordance with OPSS.MUNI 802) as directed by the Town Engineer.

Prior to any placement of topsoil the Town Engineer may request to have the topsoil tested and notification of where such material came from. The contractor shall bear the cost of such testing.

Measurement/Payment:

Payment for this item shall be by the Square Metre.

Item 13 - Place Ductwork supplied by Utility Companies

Reference: OPSS.MUNI 603
OPSD 2101 and 2103
S-17 (TOWN)

Description:

Under this item, the Contractor is directed to excavate for, and to place, ductwork, supplied by the utility companies, in accordance with OPSS.MUNI 603 and at the depths, locations and grades shown on the Contract Drawings or as directed by the Town Engineer.

Depths will range from 0.75 m to 1.20 m from finished grade to the bottom of the bedding material.

The diameter size shall be identified in the Form of Tender item.

The costs of all bedding and native backfill shall be included in the unit price quote.

Should the cost of any granular backfill, concrete, or non-shrink backfill required for installation, it will be paid for under the appropriate Tender Price or Schedule of Additional Unit Price item.

Included in the unit price shall be all materials, labour and equipment required to complete the installation.

Duct placement may vary from single to a max of six (6) and shall be included in the unit rate.

Measurement/Payment:

The unit price for this item shall be paid per Lineal Metre of trench.

Item 14 - Supply and Place Ductwork

Reference: OPSS.MUNI 603
OPSD 2101 and 2103
S-17 (TOWN)

Description:

Under this item, the Contractor is directed to excavate for, and to supply and place, ductwork, in accordance with OPSS.MUNI 603 and at the depths, locations and grades shown on the Contract Drawings or as directed by the Town Engineer.

Depth will be a minimum 0.90m from finished grade to the bottom of the bedding material.

The diameter size shall be identified in the Form of Tender item.

The costs of all bedding and native backfill shall be included in the unit price quote.

Should the cost of any granular backfill, concrete, or non-shrink backfill required for installation, it will be paid for under the appropriate Tender Price or Schedule of Additional Unit Price item.

Included in the unit price shall be all materials, labour and equipment required to complete the installation.

Duct placement may vary from single to a max of six (6) and shall be included in the unit rate.

Measurement/Payment:

The unit price for this item shall be paid per Lineal Metre of placed duct.

Item 15 - Adjust Existing Utility Ductwork in conflict with construction

Reference: OPSS.MUNI 603

Description:

Under this item, the Contractor is directed to excavate for, and to re-align utility ductwork, in accordance with OPSS.MUNI 603. Depths will range from 0.75 m to 1.20 m from finished grade to the bottom of the bedding material. Duct size will not exceed 150 mm in diameter.

Included in the unit price is all bends, pipe, gaskets, sleeves, and all other materials necessary to complete the work.

Minimum clearance between the pipes and the waterservices shall be 0.3m.

Measurement/Payment:

Payment for this item shall be per Lineal Metre of adjusted pipe placed.

Item 16 - Adjust Existing Fire Hydrant

Reference: No reference specifications for this item.

Description:

The unit price quoted for this item shall be compensation for the supply and placement of a fire hydrant extension as directed by the Town Engineer.

The adjustment height shall be identified by the County of Oxford Water and Wastewater Department.

Adjustment to a fire hydrant must be completed under the supervision of the County of Oxford Water and Wastewater Department.

All labour, equipment, and materials required to complete the work shall be included in the price.

Measurement/Payment:

Payment for this item shall be per Each adjustment placed.

Item 17 - Adjust Existing Gas Valve Jacket

Reference:

Description:

The unit price quoted for this item shall be compensation in full for the adjustment of an existing valve jacket to the new elevation, as directed by the Town Engineer.

Included in the unit price shall be all materials, labour and equipment required to complete the adjustment.

Enbridge Gas will supply the Contractor with new components of the jacket if the existing is damaged.

The unit price for this item shall be paid per Each valve jacket adjusted.

Item 18 - Adjust Existing Maintenance Hole(s) – Greater than 300mm

Reference: OPSD 704.01, OPSD 401.010 Type 'A'.

Description:

The unit price quoted for this item shall be compensation in full for the supply, placing and adjustment of an existing maintenance hole frame(s) and lid(s) conforming to OPSD 401.010 Type 'A'.

All labour, material, equipment, etc. shall be included in the unit price to create any adjustment greater than 300mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregate at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The maximum allowable adjustment is 0.23m using 3 units. Any adjustment greater than this depth, the use of rings shall be implemented. Wherever possible, adjustments should be completed using the minimum amount of units.

The adjustments shall be to the elevations supplied by the Town Engineer.

Any steps that need repair or replacement are also included in this price.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering catch basins and maintenance holes.

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item 19 – Supply and Place Maintenance Hole Frame and Lid as per OPSD 401.010

Reference: OPSD 704.01, OPSD 401.010 Type 'A'

Description:

The unit price quoted for this item shall be compensation in full for the supply, placing and adjustment of a new maintenance hole frame(s) and lid(s) conforming to OPSD 401.010 Type 'A'.

All labour, material, equipment, etc. shall be included in the unit price to create adjustments up to 150 mm. **The measurement does not include the height of the frame.**

The Town requires the use of CPD Rapidcrete Fibregrade at all maintenance hole and catchbasin adjustments. This will include placement around and inside all of the adjustment units and around the frame at finished grade.

All adjustments shall require that the old brick or adjustment rings be removed and replaced with new adjustment units. The adjustment shall be effected by the use of precast concrete adjustment units and/or concrete rings.

The adjustments shall be to the elevations supplied by the Town Engineer.

Care shall be taken to eliminate concrete, asphalt and/or debris from entering the maintenance hole(s).

Maintenance holes are to be inspected and cleaned of excess concrete, asphalt and/or debris prior to final acceptance. The cost of cleaning shall be borne by the Contractor and included in the unit price.

Measurement/Payment:

Payment for this item shall be per Each adjustment.

Item 20 - Supply and Place Watervale Jacket

Reference: D-1846-1-2009 (OXFORD)

Description:

The unit price quoted for this item shall be compensation in full for the supply and placement of a watervale jacket to the depth, location and grade as directed by the Town Engineer.

All components, included extensions required to place the new jacket to finish grade shall also be included in the unit price.

All valve jackets are to be screw on style.

Measurement/Payment:

Payment for this item shall be per Each valve jacket placed.

Item 21 - Supply and Place Permanent Bollard

Reference: S-22 (TOWN)

Description:

Under this item, the Contractor is directed to supply and place a permanent bollard at the location shown on the contract drawings and at the direction of the Town Engineer.

The bollard installation shall be placed as per Town of Ingersoll Standard-S-22.

Included in the unit price shall be all materials, labour and equipment required to complete the installation.

Measurement/Payment:

Payment for this item shall be paid per Each bollard placed.

Item 22 - Utility Pole Support

Reference:

Description:

Under this item, the Contractor is required to hold either a hydro or utility pole adjacent to the installation of watermain or waterservice(s) during trench excavation.

It shall be the Contractor's responsibility to arrange with **ERTH Solutions** for support of the pole at least two (2) days prior to the actual excavation of said pole.

The cost of any materials, equipment, labour, etc. required by **ERTH Solutions** to support the said pole shall be included in the quoted unit price for pole support.

Should **ERTH Solutions** choose to leave a pole supported more than the allowable time and/or over the duration of an evening, the Town and/or County will not be charged any additional amount for said time.

Measurement/Payment:

Payment for this item shall be per Each pole held.

Items 23 to 46 - Labour and Equipment

Reference: OPSS.PROV 127

Description:

This specification covers equipment rental rate compensation for work on a Time and Material Basis. The calculated rate represents the cost of owning and operating the equipment and is made up of direct and indirect costs such as fuel, oil, lubrication, field repairs, overhaul, depreciation, financing, storage, insurance, overhead, and profit.

The rental rates in this schedule are hourly, unless otherwise stated.

All equipment rates are to include the cost complete with operator.

Measurement/Payment:

The unit prices quoted for these items shall be compensation in full for the hourly costs of all labour and equipment as noted.

(1) DEFINITIONS

- (a) "Town", "Corporation", "Council" and "County" mean the County of Oxford and the Council of The Corporation of the Town of Ingersoll which is, for the duration of this Contract, the "Owner" of the works to be constructed mentioned in this contract document.
- (b) "Contractor" means the person, persons, co-partnership or corporation or their assigns who have agreed to perform the work under this Contract.
- (c) "Town Engineer" means the Town Engineer of the Corporation of the Town of Ingersoll and/or the Director of Public Works of the County of Oxford.
- (d) "Inspector" means the duly authorized representative of the Town Engineer for the purpose of performing the duties and functions of inspection of the work, and with authority as outlined herein.
- (e) Words "directed", "required", "authorized", "considered necessary", or any other word of like import are used, it shall be understood to be the "direction", "requirements", authorization, etc., of the Town Engineer, and similarly the words "approval", "satisfactory", or words of like import shall be "approved by", "acceptable", or "satisfactory" to the Town Engineer.
- (f) "Plans" or "Drawings" mean all plans, drawings, profiles, sections and elevations, sketches, or copies thereof, exhibited, used or prepared for, or in connection with, the work mentioned under this Contract.
- (g) "Work" or "Works" mean the whole of the work, materials, matters and things required to be done, furnished and performed including all extra or additional work or materials, matters or things which may be ordered by the Town Engineer as herein provided.
- (h) "Specifications", "General Conditions", and "Agreement" mean respectively the Specifications and General Conditions and the Agreement forming part of this Contract.
- (i) "Contract" includes the Agreement to do the work entered into with the Corporation, the Bond or Security, the Specifications, the General Conditions, the Supplementary General Conditions, the Drawings, the Special Provisions, the Information for Bidders, the Tender and all other documents referred to or connected with the said Agreements.

(2) GENERAL REQUIREMENTS

Persons or firms submitting tenders shall be actively engaged in the type of work required by the specifications and shall be able to refer to work of a similar character and nature satisfactorily performed in the past.

(3) PLANT, LABOUR AND MATERIALS

The Contractor shall provide all necessary storage ground and furnish all required skilled and unskilled labour, and materials, fuel, machinery, tools and all other plant, so that the all the works under this contract can and will be carried on continuously and expeditiously to completion, in all respects to the satisfaction of the Town Engineer.

All materials necessary for the purpose of this Contract shall be, wherever possible, of Canadian origin and manufacture. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of good quality acceptable to the Town Engineer. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials used on the project. It is understood that approval of any materials shall not subject the Corporation to pay for the same, nor prevent the rejection afterwards of any portion thereof which may turn out to be unsound or unfit to be used, in the judgement of the Town Engineer, nor shall such approval be considered as a waiver of objection to the work of any subsequent period, on account of the unsoundness or imperfection of the materials used, or on any other account.

The Contractor shall be governed by the direction of the Town Engineer in all matters concerning the storage of machinery, materials and supplies along the line or on the site of the work, and shall at his own cost and expense shift or remove such machinery, materials and supplies immediately upon notice to do so from the Town Engineer. In case the Contractor shall neglect or refuse to so shift or remove any machinery, materials and supplies within ten (10) working hours after receipt of such notice, the Town Engineer may shift or remove such machinery, materials or supplies and the cost of so doing shall be charged to and paid by the Contractor, or such cost may be deducted or collected by the Corporation as laid out in the section hereof, entitled "Moneys Due to the Corporation".

(4) SAMPLES

Before any material of any kind is used on the work, the Contractor must submit samples thereof for the approval of the Town Engineer and no material shall be used which is in any way inferior to the approved sample; but it is understood that the approval of any material shall not subject the Corporation to pay for the same, nor prevent the rejection afterwards of any portion thereof which may turn out to be unsound or unfit to be used, in the judgement of the Town Engineer; nor shall such approval be considered as any waiver of objection to the work at any subsequent period, on account of the unsoundness or imperfection of the materials used, or on any other account.

(5) MATERIALS SUPPLIED BY CORPORATION OR COUNTY

All materials shall be supplied by the Contractor with the exception of such materials or equipment as is specifically stated to be supplied by the Corporation or County. In all cases where materials are supplied by the Corporation or County, every effort will be made to have a sufficient supply of such material tested, examined and approved and ready for use at such time as they may be required, but in case the

Corporation or County finds it impossible to furnish a sufficient supply at all times, the Contractor will not be entitled to any recompense for such delay, other than an extension of the time of completion, the amount of which shall be determined by the Town Engineer and which shall be as nearly as possible equivalent to the time delayed.

Unless otherwise specified, all materials supplied by the Corporation or County shall be transported to the work by the Contractor from the point designated for their supply, at his own expense.

Once material has been supplied to the Contractor by the Corporation or County, its storage prior to use is his responsibility. Any loss, theft, or damage occurring after the material is in the Contractor's custody shall be at his expense.

(6) MANAGEMENT OF EXCESS SOILS – O.Reg 409/19

All excess material shall be managed in accordance with O.Reg. 406/19 – On-Site and Excess Soil Management, OPSS.MUNI 180 and all other documents applicable to the Regulation including, but not limited to, the Rules for Soil Management and Excess Soil Quality Standards (the “Soil Rules”).

For this Contract the Town of Ingersoll shall be the designated Project Leader.

Chemical analysis of the existing site soils was completed as part of the Phase II ESA for the site during the design by a Canadian Association of Laboratory Accreditation (CALA) accredited laboratory. The Phase II ESA report is included in the reference documents for review.

The Owner does not have a designated excess material receiving site for this project. The Contractor shall be responsible for selecting the receiving sites.

Soil sampling and chemical analysis in the form of preconstruction boreholes was completed by the Town of Ingersoll. The boreholes and corresponding reports are for geotechnical and preliminary design and estimation purposes only and shall not be used for excess material sampling. The Contractor shall be responsible for sampling and testing all excess material.

Sampling shall be completed in accordance with Rules for Soil Management and Excess Soil Quality Standards, Section 15 – In Situ Sampling.

The following additional rules apply to samples collected using an in-situ sampling approach (in relation to the area identified where sampling is required):

1. a minimum of three soil samples shall be analysed if less than 600 cubic metres of soil will be excavated,
2. if more than 600 cubic metres of soil will be excavated, at least one soil sample shall be analysed for each 200 cubic metres of soil for the first 10,000 cubic metres of soil to be excavated,
3. at least one soil sample shall be analysed for each additional 450 cubic metres after the first 10,000 cubic metres of soil to be excavated, and

4. at least one soil sample shall be analysed for each additional 2,000 cubic metres after the first 40,000 cubic metres of soil to be excavated.

Submission Requirements

At least 30 days prior to mobilizing to site, the Contractor shall provide the Contract Administrator with the information as set out in Schedule 1 of O.Reg 406/19 for the purposes of filing a notice in the Registry.

The Contractor shall provide an Excess Soil Management Plan, as noted in OPSS.MUNI 180.04.01.08, a minimum of 30 days prior to commencing removal of excess material from site. The plan shall include at a minimum the following information:

- Municipal address, including lot and concession, latitude and longitude of disposal sites.
- The property use of the re-use site and any characteristics associated with the re-use site or nearby properties that may affect the excess soil quality standards applicable to the re-use site.
- The applicable excess soil quality standards for the re-use site completed by a Qualified Person.
- A description of the undertaking or the identified beneficial purpose for which the excess soil is to be re-used.
- The estimated quantities of excess soil to be re-used at each site.
- Documentation showing the appropriate landowner consultation and disclosure has taken place, and confirmation of the site owner's written consent to accept the excess soil.
- Identification and description of the record keeping/tracking system to be employed to track excess earth movements during the transportation and placement at the re-use site.
- Monthly updates of the Excess Earth Quantity Report, on form OPSF 180-6, identifying all fill removed from site.
- Upon completion of the work, the Contractor shall provide a summary report documenting that all excess soil has been placed at the correct re-use site(s) for the quantity and beneficial purposes noted in the plan. Any amendments to the plan shall be clearly identified in the summary report.

The Contractor shall provide a site-specific excess quality standard for the reuse site completed by a Qualified Person using the Beneficial Reuse Assessment Tool (BRAT).

Where the excess material has been identified as suitable for re-use, management as disposable fill, or non-hazardous solid industrial or commercial waste, the following forms shall be completed:

- A copy of the completed form OPSF 180-1, Site Selection Notification for Stockpiling Materials Managed Through Re-Use, or OPSF 180-2, Site

Selection Notification for Material Managed as Disposable Fill or both shall be submitted to the Contract Administrator and the property owner at least 2 weeks prior to the use of the property.

- At the completion of the work, a completed copy of the form OPSF 180-3, Property Owner's Release, shall be provided to the Contract Administrator.

Where excess material has been designated as subject waste, the following additional documentation shall be provided:

- A regulation 347 manifest with Part B completed by the carrier for each truckload of subject waste, shall be submitted to the Contract Administrator for Part A completion. Copies #1 and #2 of the manifest with Part A and B completed shall be retained by the Contract Administrator, and the remaining copies #3 to #6 returned to the carrier. Copy #6 shall be sent to the Contract Administrator within 4 weeks of shipment of the subject waste from the Working Area.
- A copy of the weigh ticket or receipt provided by the disposal site operator shall be submitted to the Contract Administrator on a weekly basis. When such documentation is not available, written confirmation that the waste has been received shall be obtained from the operator of the disposal site and provided to the Contract Administrator within 2 weeks after disposal activities are complete.
- Within 3 weeks of the completion of all disposal activities associated with the work, a completed copy of the OPSF 180-5, Waste Quantity Report, shall be provided to the Contract Administrator and shall account for all excess material managed by disposal as solid non-hazardous industrial or commercial waste.

Where excess material containing asbestos has been identified in the Contract drawings or documents, or where unexpected asbestos containing materials have been encountered, the Contractor shall remove the asbestos in accordance with O.Reg 278/05, and transport and dispose of the materials in accordance with O.Reg 347.

Trucking

All operators transporting excess material offsite will need to have the following information:

- Location at which excess soil was loaded for transportation
- Date and time the excess soil was loaded
- Quantity of excess soil
- Name of Contractor who can be contacted regarding the soil quality
- Name of Corporation/Owner of vehicle transporting the excess soil including all applicable licensing
- Location at which excess soil is to be deposited.

Construction

All excess soil shall be managed as per Table 1 and Table 2 from OPSS.MUNI 180, or as noted elsewhere in the Contract Documents. Where an excess material is a mixture of materials, it shall be managed in compliance with the most stringent conditions associated with any of the constituent excess material.

No open burning will be permitted on this project site.

Re-Use

Excess material noted for re-use including materials that are being reprocessed or recycled into construction material, or other useful products shall be managed and stored in accordance with Table 1 in OPSS.MUNI 180.

Typical excess materials designated for reuse include but are not limited to the following: suitable roadway embankment fill, rock fill, asphalt, concrete, recyclable metal, cardboard and clean recyclable plastics.

Disposable Fill

Excess material noted for disposable fill is non-contaminated fill that is used to construct a berm, mound or used as fill. The Contractor shall consult Table 1 in OPSS.MUNI 180 to determine if the Table 2 minimum distance separation limits apply for disposable fill sites utilized.

Typical excess materials designated as disposable fill include excess soil/rock generated from road, structure or pipe excavations, unsuitable subgrade materials, swamp excavation and natural wood.

Stockpiling of Excess Materials

The location of stockpiling of excess materials shall be in accordance with Tables 1 and 2 in OPSS.MUNI 180. Where stockpiles are located within the project limits, or on a property that shares a border with the right of way within the project limits, the Table 2 separation distances shall not apply for stockpiles in place for less than 120 days.

Non-Hazardous Solid Industrial or Commercial Waste

Non-hazardous solid industrial or commercial wastes are as identified in O.Reg 347. Typical non-hazardous industrial or commercial wastes include but are not limited to the following: Unused construction materials that are non-hazardous, including packaging.

Subject Waste

Typical excess materials designated as subject waste as identified in O.Reg 347 include but are not limited to the following: contaminated soils exceeding the limits of the Excess Soil Quality Standards tables, waste oils lubricants or other machinery hydrocarbons including their containers.

Where an excess material is identified as a dangerous good waste, or a subject waste, management of the excess soil shall be as follows:

- Subject waste shipments shall be manifested and transported directly to a certified waste disposal site.
- When the subject waste is also a dangerous good as described in the Transportation of Dangerous Goods Act (TDGA), the carrier shall provide all necessary TDGA labels and placards.

(7) OMISSIONS

Anything, whatever, which may be imperfectly specified or imperfectly shown on the Drawings, or shown on the Drawings and not specified, or which may be specified and not shown, must be taken, considered and done as if it were both shown on the Drawings and specified.

(8) VERBAL ARRANGEMENTS

In all cases of misunderstandings and disputes, verbal arrangements will not be considered, but the Contractor must produce written authority in support of his contentions and shall advance no claim in the absence of such written authority, or use, or attempt to use, any conversion with any parties against the Corporation, or in prosecuting any claim against the Corporation.

(9) TOWN ENGINEER SOLE JUDGE

Should any discrepancies appear, or differences of opinion or misunderstanding arise as to the meaning of the Contract or of the General Conditions, Specifications or Drawings as to any omissions there from or mis-statements therein in any respect, or as to the quality or dimensions, or sufficiency of the materials, plant or work, or any part thereof, or as to the measurement or quantity or valuation of any works executed, or to be executed under this Contract, or as to extras thereupon, or deductions there from, or as to any other questions or matters arising out of the Contract, the same shall be determined by the Town Engineer.

(10) INSPECTOR

All work to be done under the Contract shall be done to the satisfaction of the Town Engineer, or of the agent or inspector authorized to act for them and the materials or process of preparation and manufacture shall at all times be subject to their or his examination and inspection and rejection in any stage or the preparation and manufacture. The Contractor shall notify the Town Engineer, in writing, at least seven (7) days previous to the commencement of the time and place when the work is to commence in order that an Inspector may be present.

(11) PUBLIC CONVENIENCE, SAFETY AND PUBLIC RELATIONS

During the performance of the work, the convenience of the public must always be paramount and be especially considered and provided for by the Contractor. No street, thoroughfare or foot walk must be obstructed for any time longer or to any greater extent than is absolutely necessary in the opinion of the Town Engineer to carry out the work, and shall in no case tear up or open more of any street, roadway

or place than is ordered or sanctioned by the Town Engineer. The Contractor is to provide safe, ample and convenient means of approach and entrance to adjoining lanes, driveways, buildings and property, both for vehicles and pedestrians wherever necessary, and for crossing the same where it is practicable to do so, both during the prosecution of the work as well as at other times. For this purpose, the Contractor shall construct and maintain, in good and serviceable condition, suitable and convenient platforms, approaches, structures, bridges, crossings or other works, and shall save harmless the Corporation from any claims arising therefrom.

Satisfactory relations must at all times be maintained to the best of the Contractor's ability, between the Contractor and the public during the performance of this Contract. It will be the responsibility of the Contractor to ensure that all signs, notices, barricades, etc., are properly posted and that advance notifications of any shutoff, or interference with, any service affecting the public is properly given. The Contractor shall in all other respects conduct his operations in such a manner as to facilitate and promote good relations with the public.

Unless and otherwise expressly permitted by the Town Engineer in writing, use of any explosives is prohibited in the Corporation of the Town of Ingersoll.

(12) CONDITIONS ON SITE

The Contractor during the progress of the work shall keep the site and work in as tidy a condition as practicable. He shall not deposit any material on any portion of street, sidewalk, boulevard, grass plot, or other Corporation or public property without permission of the Town Engineer, and shall remove same without delay when and as directed by the Town Engineer. Upon completion of the work he shall remove all false work, plant or surplus materials, as well as any rubbish accumulated on account of his operations; and shall leave the site in a condition satisfactory to the Town Engineer.

(13) BARRIERS AND LIGHTS

The Contractor must, at his own expense, and without further or other orders, provide, erect and maintain all requisite lights, barriers, fences or other proper protection, in order to ensure safety to the public as well as to those engaged about the premises or works. All lights, barriers, fencing or other types of protection including the requirements for flagging operations shall be in conformance with the latest version of the Manual of Uniform Traffic Control Devices, as issued by the Ministry of Transportation and Communications. Any deviations from the manual shall be approved by the Town Engineer prior to their use. Flagging operations shall also follow the guidelines of the Construction Safety Association of Ontario's Construction Traffic Controllers' Handbook. Should the Contractor neglect to carry out the above requirement the Town Engineer is hereby authorized to place such lights, barriers, etc., as are required, and charge the cost to the Contractor, without relieving the Contractor of any claims for damages or accident. The Contractor must place "Detour" signage for the project where needed and shall be responsible for all lights, barriers, etc. on the project and for the maintenance, at all times (including weekends) of all signs, etc. Where it is practicable in the opinion of the Town Engineer, the Contractor must provide access to local residents and emergency

vehicles and personnel.

(14) CONTRACTOR'S LIABILITY

The Contractor shall assume the liability of and indemnify and save harmless the Corporation and its officers and agents from all claims relating to labour and materials furnished for the work, and to inventions, copyright, trademarks, or patents and rights thereto used in doing the work and in subsequent use and operation of the work or any part thereof upon completion.

In carrying out the works from the inception, and until the final acceptance of the same, the Contractor must be careful to cause as little injury or damage as possible to any adjacent property, public or private, or to any sidewalks, roadways, curbs, gutters, hydrants, manholes, frames, covers, or street gullies, boulevards, grass plots sodding, trees, shrubs or any other structures, works or things on or near the line, or in the vicinity of the works or elsewhere and, except as in the contract, is otherwise provided, if injury or damage is done, he must make good the same, at his own expense, in the manner directed by, and to the satisfaction of the Town Engineer.

The Contractor shall be responsible for any and all damages, or claims for damages, injuries or accidents done or caused by him or his employees, or resulting from the prosecution of the works, or any of his operations, or caused by reason of the existence or location or conditions of the works, or any materials, plant or machinery used thereon or therein, or which may happen by reason of, or arising from any failure, neglect or omission on his part or on the part of his employees to do or perform any or all these conditions and covenants, and agrees to hold the Corporation harmless and indemnified for all such damages and claims for damage; and in case of the Contractor's failure, neglect or omission to observe and perform faithfully and strictly, all the provisions of these conditions, the Town Engineer may, either with or without notice (except where in these conditions notice is specially provided for, and then upon giving the notice therein provided for), take such steps, procure such material, plant and trucks and men, and do such work or things as they may deem advisable toward carrying out and enforcing the same and any such work deemed necessary and all expenses so incurred may be deducted or collected by the Corporation under the provisions of the Section hereof, entitled "Moneys Due to the Corporation", and any such action by the Town Engineer as they are herein empowered to take, shall not in any way relieve the Contractor or his surety from any liability under the Contract.

The Contractor shall at all times pay or cause to be paid, any assessment or compensation required to be paid pursuant to the Workers' Compensation Act, and upon failure so to do, the Corporation may pay such assessment or compensation to the Workers' Compensation Board and deduct or collect such expenses under the provisions of the Section hereof, entitled "Moneys Due to the Corporation". The Contractor shall, at the time of entering into any Contract with the Corporation, make a statutory declaration that all assessments or compensations payable to the Workers' Compensation Board have been paid, and the Corporation, may at any time during the performance or upon the completion of such Contract, require a further declaration from the contractor that such assessments or compensations

have been paid.

The Contractor shall at all times be subject to and will be required to observe all rules and regulations which are or may from time to time be imposed by law, as related to all branches of the work under contract.

(15) HEALTH AND SAFETY

The Contractor shall at all times conduct his operations in a manner consistent with the regulations set out under the Occupational Health and Safety Act, R.S.O. 2017 as amended and as set out in the Town of Ingersoll Occupational Health and Safety Policies, a copy of which may be obtained from the Town office.

(16) NIGHT, SUNDAY AND HOLIDAY WORK

As per **Town of Ingersoll By-Law 19-5060**, no work shall be undertaken at night (between 8:00 p.m. and 7:00 a.m.) without the consent, in writing, of the Town Engineer. However, whenever, in the judgement of the Town Engineer, it may be necessary or expedient, in order to preserve and maintain traffic over or on any street or road, to do work at night or after or before the regular time of ending or beginning labour, such night or overtime work shall be performed by the Contractor without additional or extra cost to the Corporation beyond the price bid for the work.

No Sunday work will be permitted, except in the case of an emergency and then only with the written permission of the Town Engineer and to such extent as they may judge to be necessary.

The Contractor shall, as far as possible, refrain from work on days which are statutory holidays in the Province of Ontario. In case he desires to work on any such holiday, he shall notify the Town Engineer in writing at least four working (4) days in advance of such statutory holiday, stating the sites where work during statutory holidays is proposed to be carried out and the reasons for carrying out the work on those holidays. If the Contractor fails to provide such notice in advance of any holiday, it shall be considered that work requiring the presence of the Town Engineer or Inspector is not to be done by the Contractor on such a statutory holiday.

(17) COMMENCEMENT AND COMPLETION

The work shall not be commenced, nor shall any material be procured until the Contractor has signed the Contract, and obtained or received a written order to commence the works signed by the Town Engineer, and it shall thereupon be at once begun and continuously carried on to completion (subject as herein provided), and shall be completed, and full possession thereof given the Corporation, within the time-frame stated in the tender, starting from the date of the order to commence, unless a longer period shall be allowed in writing by the Town Engineer, in which case it shall be carried on to completion and possession given to the Corporation within the respective additional period so allowed.

In case the Contractor shall fail to complete the works as described in the tender document, in accordance with the Contract and to the satisfaction of the Town

Engineer within the time specified, the Contractor shall pay to the Corporation the sum stipulated in the specifications for each and every day that the work shall remain unfinished after the respective time specified; which said sum, in view of the difficulty of ascertaining the actual losses which the Corporation will suffer by reason of delay in the performance of said works, are hereby agreed upon, fixed and determined by the parties hereto as the liquidated damages that the Corporation will suffer by reason of said delay and default and not as a penalty; and the Corporation may deduct and retain the amounts of such liquidated damages out of the moneys which may be due or become due to the Contractor under the Contract, as provided in the Section hereof, entitled "Moneys Due to the Corporation".

In the event of delay caused by strikes or combinations on the part of the workmen employed, or by an act of the Dominion or Provincial Governments, or of the Corporation, or from such other cause, as in the opinion of the Town Engineer, the Contract or cannot reasonably be held responsible for, or in the event of extra or additional work being ordered by the Town Engineer, the Town Engineer will allow such additional time for completion as they deem fair and reasonable, providing the Contractor applies in writing for an extension of time at the time such delay occurs, or such extra or additional work is ordered, and satisfies the Engineer that he is justly entitled to a further time allowance. No progress or interim estimate or certificate shall release the Contractor or his surety from any responsibility, or be taken as evidence of any such release or as an acceptance or any work or material, or as a waiver of any conditions herein.

The whole work and every portion and detail thereof shall, during construction, be protected by the Contractor from damage from any cause whatsoever. The term of guaranteed maintenance shall be computed from and commence on the date of completion as shown on the Completion Certificate for payment.

In case of the Contractor's failure to finish the works or work properly and fully, and as required, or in the case of the work, or any part thereof, being taken out of his hands, as provided in these conditions, the Town Engineer may proceed to finish the work for him, as his agent in this respect, and at his expense, or proceed, as provided in the Section hereof, entitled "Forfeiture of Contract".

(18) ALTERATIONS, EXTRAS, DEDUCTIONS AND CLAIMS

The Town Engineer shall have the right to make or order any alterations and changes such as may deem advisable at any time before or during the execution of the works in any line, grade, drawing or detail, to suspend or omit any portion of the work or works, to increase or decrease the dimensions of any part of the work or works, to vary in any other way the work herein contracted for, or to order any additional or extra work to be done, or additional or extra materials to be furnished, and the Contractor shall, in pursuance of written orders of the Town Engineer, proceed with, carry out and execute the works as directed, and shall supply such additional materials, and do such additional or extra work, in pursuance of such orders, without being entitled to any extension of time for completion, or any additional payment on account thereof, except only as herein provided.

In each and every case where additional or extra work or material of any kind is

ordered to be done and supplied, and where the Contractor does or supplies, or contemplates doing or supplying any work or material which he considers extra or beyond the requirements of the Contract, or upon which he intends claiming any extra or additional payment, he is required, before commencing any such work or procuring any such material, to obtain a written order from the Town Engineer stating that the same is an extra and will be paid for as such, and also clearly defining the nature of such extra work or material, and the amount the Contractor is to receive therefor, or the terms under which the same is to be paid for and the extension of time, if any to be allowed; and the Contractor shall also, before beginning any such extra work or commencing to deliver any such additional material, notify the Town Engineer in writing, of his intention to commence work thereon or delivery thereof, so that a proper account or record of the same may be kept by the Town Engineer.

In case of the Contractor's neglect or failure to observe fully and faithfully the above conditions, he shall forfeit all right to payment which he otherwise might have had, and shall not make any claim in respect thereof, and if made, the Corporation may reject the same as invalid, and he shall not have any right of recovery in respect thereof, at law or otherwise, unless he shall have obtained the consent of the Town Engineer in writing to his making such claim.

Any extra work ordered by the Town Engineer which is to be carried out by the contractor on a "cost plus" basis shall be done by the Contractor, who shall be paid (subject in all respects to the above conditions and provisions) only the actual cost of carrying out the work as determined by the estimation of the Engineer and as substantiated by documented evidence provided by the contractor, **plus 20 percent** thereon for use of plant, tools, etc., and to cover Contractor's profits, and the Contractor must furnish the Town Engineer with satisfactory vouchers for all labour and material expended on the work. No such mark-up will be allowed for rental equipment and rental charges such as trucks etc. When extra work is required, and such extra work is performed by a subcontractor, the percentage paid by the Corporation for overhead, profit, etc., shall be no greater than the sum that would have been paid had the Contractor himself performed the work.

Nothing herein contained is to preclude the Corporation or the Town Engineer from having any extra or additional or other work done by the Corporation workmen or other parties, in the event of satisfactory arrangements not having been concluded between the Town Engineer and the Contractor, or for any other sufficient reason, in the opinion of the Town Engineer. In the event of any circumstances arising at any time which, in the Contractor's opinion, would entitle him to additional compensation, and which are not fully provided for herein, he shall at once, on the discovery of such circumstances, notify the Town Engineer, in writing, and shall state in his notification clearly and fully what the circumstance is, and the additional sum or compensation he intends to demand therefore, or otherwise he shall have no claim in respect thereof.

(19) SUSPENSION OF WORK

The Town Engineer may, by an order in writing, at any time stop or suspend any part of the work, or direct any portion to be commenced or completed in priority to any other part or portion, or may cancel the order to proceed with the work, or with any part thereof, and the Contractor shall not thereby be entitled to any additional payment or to any claim for loss or profit, or anticipated profit, or for damages or otherwise, how-so-ever, by reason of such order. When, in the opinion of the Town Engineer, for any reason it is deemed advisable to discontinue the work, or any part thereof, for the winter, the Contractor must, on notice from the Town Engineer, forthwith place the work in proper and satisfactory condition for the accommodation of the public, and for its effectual protection against damage from rain, snow, frost, ice or other causes, and must so maintain it for the duration that the work is discontinued.

(20) SUB-LETTING

The Contractor shall keep the work under his personal control. Every Contractor who proposes to sub-let any portion of the work must forward with his Tender a complete list of the names of the persons, firms, or corporations to whom he proposes to sub-let, and the portion of the work which he proposes to sub-let to each such person or entity. After award of the Contract, the Contractor will not be permitted to sub-let any portion of the work to any subcontractor not initially identified in the original tender submission. The fact that the Contractor is permitted to sub-let any portion of the work shall not, however, relieve him of any responsibility for the proper commencement, execution, and completion of the work according to the terms of the Contract, and the Contractor shall be fully responsible for the subcontractor and his work and acts, and shall, either in person or through an accredited agent, receive all notices, communications, orders, instructions, or legal service as if he were performing the work with his own plant and his own men.

(21) USE OF HYDRANTS AND WATER

The Contractor shall comply with the regulations of the County supplying the water, regarding the use and care of hydrants. Any damage to hydrants caused by the Contractor's operations shall be his responsibility. In the event the Contractor fails to make good such damage the Town Engineer will have the necessary repairs made and will retain the cost from moneys due the Contractor.

The Contractor shall at all times keep all hydrants, water-valves, stopcocks, street gutters and manholes, free and accessible to the Fire Department or other authorized persons.

(22) OTHER'S RIGHTS

The Contractor must afford all necessary and reasonable facilities to the Corporation or any of their employees or workmen as well as to any company corporation or party owning or operating any railway, tramway, wires, pipes, conduits or other works or property, on, along, or near the line of the works, or in their vicinity. He shall notify all such parties before interfering with any of their

property, rights, or privileges and must work in harmony with them as far as he possibly can; otherwise, he shall notify the Town Engineer, in writing, of his failure so to do, or of any difficulty that may at any time arise which he may be unable to overcome, in which case the Town Engineer shall deal with the matter as in their judgement may seem right and proper, and the Contractor shall abide by the decision and direction of the said Town Engineer.

The Corporation and its Engineering agents and employees, may at any time and for any purpose enter upon the work and the premises used by the Contractor, and the Contractor shall provide proper and safe facilities thereof. Other Contractors may also, when so authorized in writing by the Town Engineer, enter upon the work and the premises used by the Contractor for all lawful purposes as may be required by their contracts. Any differences or conflicts which may arise between the Contractor and other contractors in regard to their work shall be determined and adjusted by the Town Engineer.

The Contractor shall furnish proper facilities by means of ladders or otherwise to secure convenient access to all parts of the works as may be required by the Town Engineer.

(23) PAYMENTS

The Contractor shall be entitled to receive partial payment at monthly intervals or at intervals agreed upon by the Contractor and the Town Engineer.

These partial payments shall be in the form of a Progress Payment Certificate and shall be issued for ninety (90) percent (%) of the estimated value of the performed Work and Materials supplied. Also included in this payment shall be any extras etc., as the Town Engineer may deem necessary. Upon receipt of the payment, the Contractor shall promptly pay to every sub-contractor employed by him any amount due to such subcontractor on account of work covered by such certificate(s).

A Substantial Performance or Substantial Completion Certificate will be issued by the Town Engineer when the work or works covered under the contract are substantially complete. The work is substantially performed or substantially completed when:

- a) the work to be performed under the Contract or a significant part thereof is ready for use or is already being used for the purpose intended; and
- b) the work to be performed under the Contract is capable of completion or, where there is a known defect or deficiency and the cost of correction of such deficiency or defect, is not more than
 - i) 3% of the first \$1,000,000 of the Contract price
 - ii) 2% of the next \$1,000,000 of the Contract price
 - iii) 1% of the balance of the contract price

For the purpose of this Contract, where the work or a substantial part thereof is ready for use or is being used for the purposes intended and the remainder of the work cannot be completed expeditiously for reasons beyond the control of the Contractor, or where the Town and the Contractor agree not to complete the work expeditiously, the price of the services or materials remaining to be supplied and required to complete the work shall be deducted from the Contract price in determining Substantial Performance or Substantial Completion.

Sixty (60) days after the Substantial Performance or Substantial Completion of the Work or as soon thereafter as practicable, a certificate marked "Completion Certificate for Payment" will be issued by the Corporation and payments at the rate of ninety-eight percent (98%) of the whole amount due under the Contract, including extras (less forfeitures, deductions and payments already made), will be released or issued and the amount therein certified for payment shall be paid to the Contractor, where the Contractor has provided a bond and/or bonds of a satisfactory guarantee company as security for the due performance of the contract including maintenance of the work for the period of guaranteed maintenance.

After the provisions of the Contract including maintenance and guaranteed maintenance have been fully complied with, a "Final Certificate of Completion" shall be issued to the contractor and any or all of the balance due (if any) shall be issued and paid to the Contractor. No interest will be allowed to the Contractor on the said balance. The Corporation requires the Contractor to provide a "Letter of Credit" from a registered Canadian Financial Institution and upon receipt of that letter the Corporation shall pay to the Contractor the whole amount certified in the Final Certificate. The "Letter of Credit" shall be for the entire period of guaranteed maintenance and shall be for an amount equal to two (2) percent (%) of the whole amount certified in the Final Certificate. This final payment may take place **Sixty (60) days** after the completion of the work, or as soon thereafter as practicable.

Before the amount certified in such Final Contract is paid, the Contractor shall deposit with the Town Engineer a Statutory Declaration that all the material and/or labour incorporated in the work have been fully paid for, and such declaration shall be attached to such Final Certificate.

The Corporation, County shall not be liable for, or be held to pay, any money to the Contractor, except as provided above, and, on making the completion payment aforesaid, the Corporation, County shall be released from all claim or liability to the Contractor for anything done or furnished for, or relating to, the work, or for any act or neglect of the Corporation, County relating to or affecting the work, except the claim against the Corporation, County for the remainder, if any there be, of the amounts kept or retained as provided above.

Payments to the Contractor will be made out of the funds under the control of the Corporation or County in their public capacity and no member of the Corporation or the County or officer of the Corporation or County is, is to be or can be held personally liable or responsible to the Contractor under any circumstances.

(24) INTEREST

The Contractor shall not be entitled to any interest upon any bill for extra work or on account of delay in its approval by the Town Engineer.

(25) MONEYS DUE TO THE CORPORATION OR COUNTY

All moneys payable to the Corporation or County by the Contractor under any stipulation herein or to the Workers' Compensation Board, as provided in the Section hereof entitled "Contractor's Liability", may be retained out of any moneys then due, or which may become due, from the said Corporation or County to the Contractor under this or any other contract with the Corporation or County, or otherwise howsoever, or may be recovered from the Contractor or his surety, in any Court of competent jurisdiction, as a debt due to the Corporation or County and the Town Engineer, shall have full power to withhold any estimate or certificate, if circumstances arise which may indicate to them the advisability of so doing, though the sum to be retained may be unascertained.

(26) WORKER'S RIGHTS

The Contractor agrees to pay the rates of wages prevailing in the Town / County during the lifetime of this Contract.

(27) LIENS

The Contractor, his surety, their respective heirs, executors, administrators, successors and assigns, and any of them and all other parties in any way concerned, shall fully indemnify the Corporation and all its officers, servants and employees from any and all liability or expenses by way of legal costs or otherwise in respect to any claim which may be made for a lien or charge at law or in equity or to any claim or liability under the Construction Lien Act of Ontario or to any attachment for debt, garnishee process or otherwise.

(28) DOMICILE OF OWNERS OF TRUCKS

In the event that it is necessary to hire motor trucks in the execution of this Contract, the Contractor shall, where possible, engage where necessary only motor trucks owned by residents or of firms located in the Town of Ingersoll or County of Oxford.

(29) DOMICILE OF EMPLOYEES

The Contractor shall, in the execution or performance of this Contract to be, employ wherever feasible and possible, workmen who are bona fide residents of the Town of Ingersoll or County of Oxford.

(30) CONDUCT AND CALIBRE OF WORKER'S

The Contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

(31) DISCHARGE OF EMPLOYEES

Should an overseer, mechanic or workmen employed on or about the work or in conjunction therewith, give any just cause for complaint (of which the Town Engineer shall be the sole judge), the Town Engineer may dismiss such person forthwith, and he shall not again be employed by the Contractor on any Corporation work without the consent, in writing, of the Town Engineer.

(32) NO SPIRITUOUS LIQUORS or NARCOTIC SUBSTANCES

The Contractor shall neither permit nor suffer the introduction or use of spirituous liquors, vaping, marijuana or other narcotic substances, on or about the work assigned to him.

(33) FORFEITURE OF CONTRACT

- (a) If the Contractor shall neglect or refuse to sign the contract documents before commencing work or neglect or fail to commence work within ten (10) days after the date of the Town Engineer order to commence;
- (b) or if he becomes bankrupt or insolvent or compound with his creditors, commits any act of insolvency, transfers assigns or sub-lets, or attempts to transfer, assign or sub-let this contract or any part thereof without the consent of the Town Engineer;
- (c) or if at any time the work or any part thereof is, in the judgement of the Town Engineer, not executed or not being executed in a sound and workmanlike manner, to the satisfaction of the Town Engineer and in all respects in strict conformity with the Contract;
- (d) or if the work, or any part thereof, is not progressing continuously and in such a manner as to ensure its entire completion, in the judgement of the Town Engineer, within the time stipulated;
- (e) or if the Contractor shall refuse to or neglect forthwith, when so ordered, to conduct the work so as to ensure its completion, in the opinion of the Town Engineer, within the time stipulated or if the said time has expired and the work be not complete;
- (f) or if the Contractor shall refuse or neglect to take down, rebuild, repair, alter or amend any defective or unsatisfactory work, or to remove any condemned material or workmanship, and to replace the same with proper material or workmanship, or to comply with any reasonable order he may receive from the Town Engineer;
- (g) or if the Contractor shall persist in any course in violation of any of the provisions of this Contract;

then, in each and any such case, after 24 hours written notice from the Town Engineer, to the Contractor, the Town Engineer shall have the full right and power, at their discretion, without process or action at law, to take the whole work, or any

part or parts thereof specified in the said notice, out of the hands of the Contractor.

The Contractor, upon receiving notice to that effect, shall vacate possession and give up said work, or the part or parts thereof specified in the said notice, peaceably to the Town Engineer, who may either re-let the same to any other person or persons, with or without its being previously advertised, or may employ workmen and provide material, tools, transportation and all other necessary things at the expense of the Contractor, or may take such other steps as they, the Town Engineer, may consider necessary or advisable, in order to secure the completion of the said work to their satisfaction.

The Contractor and his surety in every case shall be liable for all damages, expenditure and extra expenditure, and for all additional cost of the work, which may be incurred by reason thereof, together with the amount of liquidated damages from the date fixed for the completion of the work, and the same may be deducted or collected by the Corporation as provided in the Section hereof entitled "Moneys Due to the Corporation ". All the powers of the Town Engineer with respect to the determination of any doubts, disputes and differences, and the determination of the sum or sums, or balance of money to be paid or received from the Contractor, and otherwise in respect of the Contract, shall nevertheless continue in force. The fulfilment by the Contractor of any stipulation in this Contract may be enforced by legal proceedings and judgement, or order of court, without prejudice to any other remedy herein contained.

In case the work, or any part thereof, is taken out of the hands of the Contractor, as herein provided, it shall in no way effect the relative obligations of the Corporation and the Contractor, or his surety, in respect of their obligations, or in respect of the remainder of the work (if any) as the Town Engineer may deem reasonable. If any balance of the Contract price, or other money payable by the Corporation upon the expiration of the period of guaranteed maintenance, the same shall be payable to the Contractor or the personnel legally representing him, but neither the Corporation nor any officer thereof shall be liable or accountable to the Contractor in any way for the manner in which, or the price at which, the said work, or any portion thereof, may have been or may be done or completed by the Town Engineer.

Neither an extension of time for any reason beyond the date fixed herein for the completion of the Contract nor the construction of and payment for any portion of the work called for by the Contract, shall be deemed to be a waiver by the Town Engineer of the right to abrogate the Contract for abandonment, delay or any other reason consistent with the Specifications and General Conditions.

(34) NOTICE TO CONTRACTOR

Any notice or communication to the Contractor shall be deemed to be well and sufficiently given and served if handed to the Contractor or any of his clerks, or agents, or if posted or sent to the address given in his Tender for the work, attached hereto, and any papers so left, sent or addressed shall be considered to be, and to have been legally serviced upon the Contractor.

(35) BRIBERY

Should the Contractor or any of his agents give or offer any gratuity to, or attempt to bribe, any member of the Corporation, County or Council, officer or servant of the Corporation, County or Council, the Corporation or County shall be at liberty to cancel the Contract forthwith, or to direct the Town Engineer to take the whole or any part of the work out of the hands of the Contractor, under the same provisions as those specified in the section hereof entitled "Forfeiture of Contract".

(36) ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT (AODA)

The Accessibility of Ontarians with Disabilities Act, 2005 (AODA), is a law passed by the Ontario legislature that allows the government to develop specific standards of accessibility and to enforce them. The standards are made into laws called regulations, and they provide the details to help meet the goal of the AODA, which is a fully accessible Ontario by 2025. The AODA is the foundation on which the subsequent accessibility standards are built. These standards include the Accessible Customer Service Standard, Ontario Regulation 429/07; the Integrated Accessibility Standards (encompassing Information and Communications, Employment and Transportation), Ontario Regulation 191/11; and finally, the Built Environment Standard, which is not yet law.

In 2007, the Ontario Government adopted the first AODA Standard, Ontario Regulation 429/07, respecting Accessibility Standards for Customer Service. All public sector organizations in Ontario, including the Town of Ingersoll, must comply with this regulation by January 1, 2010. The Accessibility Standard for Customer Service also applies to third parties that provide goods and services to members of the public on behalf of a public sector organization.

It is the successful Proponent's responsibility to ensure that it is fully aware of, and meets all requirements under the AODA and associated regulations. Further information on compliance can be found at the Ministry of Community and Social Services website:

<http://www.mcsc.gov.on.ca/mcss/english/pillars/accessibilityOntario/accession/compliance>.

Accessible formats or communication supports are available upon request.

Email engineering@ingersoll.ca or call 519-485-0120.

AGREEMENT

This is the form of Agreement, referred to in the annexed Tender, Specifications, General Clauses and in the Plans and Profiles therein referred to, and, with such Documents and Plans, forms the Contract in this matter.

THIS INDENTURE made (in triplicate) the _____ day of _____ Two Thousand and Twenty-Four.

BETWEEN

Town of Ingersoll

hereinafter called the Corporation, of the First Part,

and

XXX

hereinafter called the Contractor, of the Second Part.

WHEREAS the said Corporation has awarded to the Contractor the Contract for

Contract 2 – 2024

Pemberton Street Reconstruction

according to the Specifications, General Clauses and Drawings herein referred to, the said Contractor having put in a Tender therefore, a copy of which is hereto annexed and which said Tender was accepted by the said Corporation on the _____ day of _____ 2024.

NOW THESE PRESENT WITNESS that the said Contractor does hereby covenant and agree with the said Corporation that in consideration of the covenants and payments to be made as herein provided as follows:

- (1) To do and perform the whole of the work set out in the plans and tender, in the most substantial and workmanlike manner, tools, and labour of every kind required to construct and complete the work, and to maintain the same;
- (2) To indemnify and save harmless the said Corporation and each of its officers, servants and agents from and against any action, claims and demands which may be brought or made by any other party in consequence of the performance of the said work or of the non-execution or imperfect performance of such work.

(3) To pay to the said Corporation, on demand, all loss costs, damages or expenses which may be paid, sustained, or incurred by the said Corporation or any of its officers, servants or agents in consequence of any such action, suit, claim, lien, execution or demand as hereinbefore stated in Clause 2 above, and that in default of such payment all such loss, costs, damages and expenses may be deducted from any monies of the said Contractor then remaining in the possession of the said Corporation on account of this contract, or may be recovered from the said Contractor or the Surety named in the Bond hereto attached in any court or competent jurisdiction as money payable for such default.

(4) And the said Contractor further agrees that in the event of any action as hereinbefore stated in Clause 2 above, to authorize and empower the said Corporation or its Solicitor to defend, settle, or compromise any such actions, suits, claims, execution or demands as the said Corporation or its said solicitor may deem expedient, and hereby agrees to ratify and confirm all the costs and expenses of such action provided, however, that the said Contractor may, at his own expense, take charge of and conduct the defence in the name of the said Corporation for any such action, claim or suit.

The said Corporation covenants with the said Contractor that if the said work, including all extras in connection therewith, shall be duly and properly executed according to the terms and provisions of this contract, the said Corporation will pay the said contractor the contract price stated in the said Tender (including all approved extras as provided in the Schedule of Prices forming part of this contract) in the manner specified as to holdbacks and only upon estimates or certificates signed by the Engineers. It is hereby expressly provided that the granting of any estimate or certificate, or the payment of any monies there under, shall not be construed as an acceptance of any bad or defective work or material, to which the same relates, or as an admission of liability to pay any money in respect thereof, and shall not in any manner lessen the liability of the Contractor to replace such work or material, although the conditions of the same may not have been known to or discovered by the said Engineer at the time such estimate or certificate was granted, or money paid thereon.

And it is understood and agreed between the parties hereto as follows:

That this Agreement and the covenants and conditions herein, and in the said General Clauses contained shall extend to and be binding upon the heirs, executors, administrators, successors, and assigns of the said Contractor and the said Corporation respectively. In this Agreement, and in the Contract of which this Agreement forms part, the words, "persons", "plans", "shall", "may", "herein", "work", "Works", "Contract", "Contractor", "Inspector", "Town Engineer", "Drawings", "Council", "Solicitor", "Treasurer", and words used in the singular number of the masculine gender, shall have the meaning and effect given to them in the General Clauses hereto annexed, or in the Interpretation Act of the Revised Statutes of Ontario.

IN WITNESS WHEREOF the said Corporation has hereunto affixed its Corporate Seal and the hand of **Brian Petrie, Mayor**, and countersigned by **Danielle Richard, Clerk**, of the said Corporation and the said Contractor has hereunto affixed Corporate Seal and the name of _____, proper officer in that behalf.

(Name, Title)

N.B. Contractors will please read the foregoing before execution.

SIGNED, SEALED AND DELIVERED IN
THE PRESENCE OF:

Contractor Name:

Proper Officer:

Title:

TOWN OF INGERSOLL:

Brian Petrie (Mayor)

Danielle Richard (Clerk)

GEOTECHNICAL INVESTIGATION REPORT

PEMBERTON STREET RECONSTRUCTION

PEMBERTON STREET BETWEEN WILSON STREET AND
HUTCHINSON STREET, INGERSOLL, ONTARIO

The Town of Ingersoll

Final Report | Version 00

Reference no. 04-02110022.0200.0101-GS-R-0001-00

April 4, 2023



ENGLOBE

The Town of Ingersoll

Reference no. 04-02110022.0200.0101-GS-R-0001-00

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Approved by:



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Director of Operations –
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The Town of Ingersoll

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Revisions and publications log

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0A	2022-06-21	Preliminary version published for comments
00	2023-04-04	Final version published

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If tests have been performed, the results of these tests are valid only for the sample described in this report.

Subcontractors of Englobe who may have performed laboratory work are duly evaluated according to the purchasing procedure of our quality system. For further information or details, please contact your project manager.”

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1 Introduction

Englobe Corp. (Englobe) was retained by The Town of Ingersoll to perform a Geotechnical Investigation on Pemberton Street between Wilson Street and Hutchinson Street, Ingersoll, Ontario located as shown on the Site Location Plan, Drawing 1 in Appendix A. This work was authorized by the Town of Ingersoll on September 13, 2021.

The project consists of the placement of a new watermain and services including full road reconstruction and road widening of Pemberton Street between King Street East and Charles Street. It is understood that this project will be completed in phases. The first phase of construction is planned to commence in 2024 for the open cut watermain replacement and road reconstruction of Pemberton Street. It is further understood that the watermain replacement at the locations adjacent to and under the CP railway locations will be completed by the County using trenchless crossing techniques. It is noted that trenchless crossing recommendations are not part of the current scope of works for the geotechnical investigation performed by Englobe.

The purpose of this investigation was to determine the subsurface soil and groundwater conditions at the site and, based on that information; provide geotechnical recommendations pertaining to excavation, road reconstruction, watermain replacement, and dewatering considerations for the proposed project. A preliminary plan in AutoCAD completed by the client was available at time of report preparation. Plan and profile drawings showing site services conditions as constructed in 1992 were provided by the client. Upon review of the drawings, (Reference Numbers C-600(1998), C-611 to C-613 (1992 to 1996), and C-933 to C-935 (2007) prepared by the Corporation of the Town of Ingersoll and email correspondence received from the client on January 28, 2022, it is understood that the top of the new watermain will be located approximately 1.8 m below existing grades. It is further understood that the road reconstruction planned for 2024 will be constructed to match the existing roadway grades of Pemberton Street.

2 Investigation Procedure

2.1 Field Program

The fieldwork for this investigation was completed on February 24 and 25, 2022 and involved the drilling of seven (7) Boreholes (Boreholes BH-01-22 to BH-07-22) on Pemberton Street. The borehole elevations were inferred from centreline elevations on the plan and profile drawing received from the client. Boreholes BH-01-22, BH-02-22 and BH-05-22 to BH-07-22 were advanced to depths between 3.30 and 3.51 m below ground surface (m BGS) while BH-03-22 and BH-04-22 were advanced to depths between 5.18 and 5.63 m BGS. The approximate borehole locations are shown on Drawing 1 and detailed locations shown on Drawings 2 and 3 in Appendix A. The borehole locations were referenced to the following site features noted in Table 1 below, assuming the subject section of Pemberton Street has a north - south alignment.

Table 1: Borehole Locations Relative to Existing Site Features

Borehole Number	Approximate Elevation	Site Feature that Borehole was Offset from	Offset Distance from Site Feature	Location of Borehole in Reference to Existing Centreline of Pemberton Street
BH-01-22	276.5	Centreline of King Hiram Street	13 m north	1.5 m east
BH-02-22	271.6	Centreline of Carnegie Street	10 m north	2.6 m east
BH-03-22	269.5	Centreline of CN Tracks	25 m north	1.6 m west
BH-04-22	269.0	Centreline of CN Tracks	25 m south	1.7 m west
BH-05-22	267.8	Along hydro pole 0692	-	2.5 m east
BH-06-22	268.1	North Building Line of Zehr Transport (Municipal Number 30 Wilson street)	15 m south	1.8 m west
BH-07-22	269.5	Centreline of Wilson Street	16 m north	1.8 m east

The field investigation was carried out in general conformance with the professional standards set out in the Canadian Foundation Engineering Manual (CFEM 2006, 4th Edition), applicable Ontario Regulations, and the ASTM International (ASTM) standards. The following is a summary of field investigation tasks:

- Local utility companies were contacted prior to the start of drilling activities in order to demarcate underground utilities on the site.
 - The boreholes were advanced using a Diedrich D 50-T drillrig equipped with continuous flight hollow stem augers supplied and operated by London Soil Test under the supervision of an Englobe drilling supervisor. The boreholes were logged by our geotechnical supervisor.
 - Traffic protection was provided in accordance with MTO Ontario Traffic Manual, Book 7 - Temporary Conditions.
- Soil samples were recovered from the boreholes at regular depth intervals using a 50 mm outside diameter split spoon sampler in accordance with ASTM D1586 Standard Penetration Test (SPT).
- Details of the groundwater observations and measurements are provided on the appended borehole logs (and summarized in groundwater, Section 2.0 below).
 - The boreholes were backfilled with soil cuttings and bentonite in accordance with Ontario Regulation 903 as amended, under the Ontario Water Resources Act.

2.2 Laboratory Testing

All soil samples recovered during this investigation were returned to our laboratory for visual examination and moisture content testing. The moisture content values are shown on the appended borehole logs. A list of laboratory tests completed are summarized in Table 2.

Table 2: List of Laboratory Tests Conducted as per ASTM Standards

Test	Standard	Number of Samples
Natural Moisture Content	ASTM D2216	30
Particle Size Analysis (Sieve Analysis)	ASTM D6913	3
Particle Size Analysis (Sieve and Hydrometer)	ASTM D7298	1

Detailed description and the results of the laboratory tests are provided on the appended borehole logs in Appendix B, Laboratory results in Appendix C and summarized below.

It is important to note that as per the standard policy of Englobe, the soil samples will be stored for a period of three months from the date of sampling. These soil samples will be discarded after the three-month period unless prior arrangements have been made for longer storage

3 Subsurface Conditions

In summary, boreholes drilled on the existing roadway encountered: surficial asphalt and granular fill, underlain by fill material (BH-01-22 to BH-06-22), underlain by sand and gravel (BH-01-22 and BH-03-22 to BH-05-22) and silt to silt till (BH-06-22 and BH-07-22). Buried topsoil was observed at Borehole BH-06-22.

The existing pavement structure is represented by Boreholes BH-01-22 to BH-07-22 which comprises 150 to 200 mm of asphalt concrete over 230 to 610 mm (average 496 mm) of granular base and subbase material. A summary of pavement component thicknesses encountered at the borehole locations is provided in Table 3 below.

Table 3: Summary of Existing Pavement Thicknesses

Borehole No.	Asphalt (mm)	Granular Base and Subbase (mm)	Total Thickness (mm)	Subgrade
BH-01-22	150	840	990	Fill: Sand with some gravel over native sand and gravel
BH-02-22	150	510	660	Fill: Sandy silt topsoil over sand and gravel fill
BH-03-22	150	300	450	Fill: Sand some silt
BH-04-22	150	610	760	Fill: Sand some silt and gravel over native sand and gravel
BH-05-22	150	230	380	Fill: Sand some silt to silty over native sand and gravel
BH-06-22	200	560	760	Fill: Silty sand, some gravel and clay
BH-07-22	150	610	760	Silt till
Average	157	523	680	-

This section presents a brief summary of the subsurface soil and groundwater conditions encountered during the geotechnical investigation. The full details of the subsoil and groundwater conditions are presented on the borehole logs in Appendix B.

3.1 Asphalt Pavement Structure

A surface layer of asphalt was encountered at ground surface at all boreholes. The asphalt was 150 mm thick in all boreholes with exception of BH-06-21 where the asphalt layer was 200 mm thick.

3.1.1 Granular Fill Pavement Structure

All seven Boreholes (BH-01-22 to BH-07-22) revealed granular fill material comprising of granular base and subbase material under the surface asphalt. The granular fill material varied in total thickness from 0.23 m at Borehole BH-05-22 to approximately 0.84 m thick at Borehole BH-01-22 with an average thickness of 523 mm. Two composite samples of the granular material indicated that the combined granular base and subbase material comprised of Sand and Gravel with some silt to a trace of silt.

Geotechnical laboratory testing on the granular base auger samples obtained comprised of two particle size distribution analyses on composite samples of the granular material. Composite samples were compared to OPSS.MUNI 1010 gradation specifications for Granular B Type 1. The results are plotted on Figures 1 and 2 in Appendix C and summarized in Table 4 as follows.

Table 4: Summary of Laboratory Testing on Granular Material

Borehole	Sample Depth (m BGS)	% Gravel	% Sand	% Silt/Clay	Granular B-Type 1 Gradation Specifications	Frost Susceptibility	Figure Number in Appendix C
BH-01-22 to BH-04-22	Composite sample of all granular samples at surface	44.5	43.1	12.4	Does not meet spec	Low	1
BH-05-22 to BH-07-22	Composite sample of all granular samples at surface	38.2	53.5	8.5	Does not meet spec	Low	2

3.2 Fill

Fill material was contacted beneath the granular fill pavement structure at Boreholes BH-01-22 to BH-06-22 at depths ranging from 0.38 m to 0.99 m BGS. Beneath the granular pavement structures the fill material revealed varied in composition from sand with some gravel at BH-01-22 to a sandy silt topsoil at Borehole BH-02-22. The fill material comprised primarily of sand with some silt at Borehole BH-03-22, sand with some silt and gravel at BH-04-22, and sand with some silt to silty composition at BH-05-22. The fill material below the granular fill pavement structure comprised primarily of a silty sand some gravel and clay BH-06-22.

Beneath the sandy silt topsoil fill material at Borehole BH-02-22 and beneath the silty sand with some gravel and clay at Borehole BH-06-22, additional underlying fill materials were revealed. The underlying fill material at Boreholes BH-02-22 and BH-06-22 varied in composition from sand with some gravel to sand to a sand with some silt. A trace of wood fragments (organics) was noted in the fill at Borehole BH-06-22 from a depth of around 2.29 m to 3.05 m BGS.

The fill materials extended to depths ranging from 1.52 m BGS at Boreholes BH-01-22, BH-04-22, BH-05-22 to beyond the explored borehole depth of 3.51 m BGS at BH-02-22. The fill material was penetrated at a depth of around 3.05 m BGS at Boreholes BH-03-22 and BH-05-22.

Standard Penetration Test Results (SPT N-values) ranged from 6 to 25 blows (AVG = 13) inferring a loose to compact relative density (AVG = compact). The moisture content within the native sand deposit ranged from 4% to 20%.

One gradation analysis was carried out on a sample of this fill material and the results are summarized in Table 5 and provided in shown graphically in Appendix C.

Table 5: Particle Size Distribution Analyses - Fill

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH-06-22 SS-1	0.76 - 1.22	Silty Sand, Some Gravel and Clay	17.5	41.8	28.4	12.3

3.3 Sand and Gravel

A stratum of sand and gravel was contacted beneath the fill materials at Boreholes BH-01-22, BH-03-22, BH-04-22 and BH-05-22. The stratum comprised primarily of sand and gravel with a trace silt noted at Boreholes BH-04-22 and BH-05-22. The sand and gravel material was contacted at a depth of around 1.52 m BGS at Boreholes BH-01-22, BH-04-22 and BH-05-22 and was contacted at a depth of around 3.05 m BGS at Borehole BH-03-22. The sand stratum extended beyond the termination depths of those boreholes at depths ranging from 3.30 - 5.64 m BGS. SPT N-values ranged from 8 to greater than 100 blows (AVG = 31.6) inferring a loose to very dense relative density (AVG = Dense). Moisture content within the native sand deposit ranged from 2% to 14%.

One gradation analysis was carried out on a sample of this sand and gravel material and the results are summarized in Table 6 and provided in Appendix C.

Table 6: Particle Size Distribution Analyses - Native Sand and Gravel

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH-04-22 SS-3	2.29 - 2.75	Sand and Gravel, trace Silt	48.2	43.7	8.1	-

3.4 Buried Topsoil

Beneath the fill materials at Borehole BH-06-22, a buried topsoil layer was revealed from a depth of around 3.05 m to 3.28 m BGS. The topsoil layer comprised silt with some sand and a trace of organics. A moisture content of 68% was noted on a sample of the topsoil indicating a wet condition.

3.5 Silt

A silt stratum with some sand to some sand and clay was contacted beneath buried topsoil at a depth of around 3.28 m BGS at Borehole BH-06-22 and beneath silt till stratum at a depth of around 3.05 m BGS at Borehole BH-07-22. The silt stratum extended beyond the termination depths in both boreholes. SPT N-values within the silt ranged from 4 to 13 blows inferring a loose to compact relative density (AVG = loose). A moisture content of 8% was noted on a sample of the silt deposit.

3.6 Native Silt Till

A native silt till stratum was contacted beneath the granular pavement structure at Borehole BH-07-22. The stratum comprised silt, some sand and gravel, trace clay. The till material was contacted at a depth of around 0.76 m BGS and extended beyond to a depth of 3.05 m BGS. SPT N-values ranged from 34 to 75 blows (AVG = 53) inferring a dense to very dense relative density (AVG = very dense). Moisture content within the native silt till deposit ranged from 7% to 8%.

3.7 Groundwater

Boreholes BH-03-22 to BH-05-22 contacted groundwater at time of drilling and all remaining boreholes were dry during the brief time that the boreholes remained open upon completion of drilling. Groundwater observations and measurements carried out in the open boreholes are recorded on the appended borehole logs and summarized in Table 7 below.

Table 7: Water Level Measurements - February 24 & 25, 2022

Borehole No.	Ground Surface Elevation (m)	February 24 & 25, 2022	
		Groundwater Depth (m)	Groundwater Elevation (m)
BH-03-22	269.5	3.66	265.8±
BH-04-22	269.0	3.81	265.2±
BH-05-22	267.8	2.59	265.2±

It should be noted that no monitoring wells were installed on the site and that no stabilized long-term water level data results were available at time of report writing. It is important to note that the groundwater conditions described in this report refer only to those observed at the place and time of observation noted in the report. These elevations and conditions may vary locally due to seasonal fluctuations, groundwater regimes encountered at the site or as a consequence of construction activities on the site or adjacent sites.

4 Environmental Testing and Corrosion Potential

4.1 Removal of Site Excavated Material

Seven (7) subsoil samples were selected by Englobe and submitted to ALS Environmental in London for environmental analysis in accordance with Ontario Regulation 153/04 (as amended by Ontario Regulation 511/09) for Metals and Inorganics, Petroleum Hydrocarbons (PHC F1 to F4) and BTEX. The bulk analysis results were then compared with O.Reg.153/04 Table 1 Residential/Parkland/Industrial/Commercial/Community Property Use criteria, as amended by O.Reg. 511/09 (Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use).

None of the soil samples which were extracted from the boreholes exhibited any visible or olfactory evidence of chemical contamination.

A summary of the submitted samples and respective test results is provided in Table 8, including several parameters exceeding O.Reg. 153/04 Table 1 standards.

Table 8: Summary of Environmental Analysis

Soil Sample	Laboratory Analysis			Results
	O.REG 153/04			Exceedances for O.Reg. 153/04 (Table 1 -All Land Use)
	Metals and Inorganics	BTEX	PHC (F1-F4)	
BH-01-22 S1	✓	✓	✓	Conductivity, SAR, F4 (C34-C50), F4G-SG (GHH-Silica)
BH-02-22 S1	✓	✓	✓	Conductivity, SAR, Xylenes (total), F4G-SG (GHH-Silica)
BH-03-22 S1	✓	✓	✓	Conductivity, SAR,
BH-04-22 S1	✓	✓	✓	Conductivity, SAR, Xylenes (total), F2 (C-10-C-16), F4 (C34-C50), F4G-SG (GHH-Silica)
BH05-22 S1	✓	✓	✓	Conductivity, SAR,
BH06-22 S3	✓	✓	✓	Conductivity, SAR,
BH-07-22 S2	✓	✓	✓	SAR

The test results indicate that the Table 1 Soil Standards under Ont. Reg. 153/04 as amended have been exceeded for the parameters listed in Table 8. For the conductivity and sodium absorption ratio (SAR) exceedances noted in Table 8, these exceedances are likely the result of the application of road salt.

The complete environmental analysis results, including the ALS Environmental Certificate of Analysis are given in Appendix D.

Prior to removal of excavated soil from this site, a copy of the test results should be forwarded to authorities at the receiving sites for approval.

4.2 Soil Corrosiveness

Samples of the material from Boreholes BH-02-22 (sample 2), BH-04-22 (sample 4) and BH-06-22 (sample 3) were submitted to the ALS Environmental office in London to determine the corrosive potential of the soil and the requirement for sulphate resistant concrete. The Certificate of Analysis L2688556 is presented in Appendix D.

Points were assigned to the test results as shown on the Corrosion Potential Table in Appendix E. Soil is considered to be corrosive to ferrous pipe if ten or more points are obtained. Assuming the pipes are located within a continuously moist condition:

- Borehole BH-02-22 Sample 2 tested received 13 points
- Borehole BH-04-22 Sample 4 tested received 3 points
- Borehole BH-06-22 Sample 3 tested received 13 points

The test results show a total point value of greater than 10 for majority of the soils at the site, which indicates that the soils are moderately corrosive to ferrous pipes. A corrosion specialist should review this data with respect to buried metal structures.

The soil sample tested yielded a level of water-soluble sulphate of less than 0.20 to 0.24 mg/kg (0.0024% maximum) which is below the 0.1% level above which CSA specifies the use of sulphate resistant concrete.

5 Design and Construction Recommendations

5.1 Excavation and Soil Classification for Excavations

Excavations must be carried out in accordance with the Occupational Health and Safety Act, Ontario Regulation 213/91 (as amended), Construction Projects, Part III - Excavations, Sections 222 through 242. These regulations designate four (4) broad classifications of soils for specifying appropriate measures for excavation safety. The boreholes show that the excavations for the construction of new watermain and services is expected to extend through asphalt and granular fill, underlain by native; sand, underlain by sand and gravel and lower silt to silt till. As per the OHSA, the soil at this site may be classified as shown in the Table 9 below.

Table 9: Soil Classification for Excavations

Soil Type	Above Groundwater level	Below Groundwater Level
Granular Fill and Fill Material	Type 3	Type 4
Native Sand	Type 3	Type 4
Native Sand and Gravel	Type 3	Type 4
Native Silt	Type 3	Type 4
Native Silt Till	Type 2	Type 3

If an excavation contains more than one soil type, the soil shall be classified as the type with the highest number as per 227.3 of O.Reg 213/91.

Where workmen must enter a trench or excavation the soil must be suitably sloped and/or braced in accordance with the regulation requirements. The regulation stipulates safe excavation slopes by soil type as Table 10.

Table 10: Safe Excavation Slope Based on Soil Type (Ontario Regulation 213/91 Occupational Health and Safety Act (OHSA))

Soil Type	Base of Slope	Steepest Slope Inclination
1	Within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
2	Within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
3	From bottom of trench	1 horizontal to 1 vertical
4	From bottom of trench	3 horizontal to 1 vertical

Where space limitations (from utility poles, existing underground services, or buildings) do not permit overburden cut slopes at inclinations specified above, a steeper cut slope can be employed if a trench liner box is used to protect workers. Trench box liners could also be used to minimize the size of the excavation for installation of the underground services therefore minimizing the excess soil which is removed from the site. Some ground movement adjacent to the trench is to be expected if this option is used.

Every prefabricated hydraulic or engineered support system shall be designed by a professional engineer and shall be constructed, installed, used and maintained in accordance with its design drawings and specifications (O.Reg. 213/91, s. 236).

The trench side slopes should be regularly inspected for evidence of instability following periods of heavy rainfall, following periods of thawing, or when the trench has been left open for an extended period of time. Appropriate remedial action should be taken to ensure the continued stability of the slopes.

It is anticipated that existing utility conduits, municipal services and/or gas lines will be exposed in the trenches for the new services. To ensure stability, the pipes should be properly supported in the vicinity of the excavation, and in accordance with the specific requirements of the utility provider. Englobe can provide supplementary recommendations for pipe support at specific locations if required. Precautions concerning services should be as per O.Reg. 213/91, s. 228.

5.1.1 Shoring

Insertion and reception pit walls (if any) should be stabilized in accordance with OHSA requirements to protect the walls from collapse.

Excavations through the granular fill, loose fill, and/or native cohesionless soils, may require shoring during the construction of the trench.

The lateral earth pressure acting on temporary shoring may be calculated from the following expression.

All walls below grade can be designed using the following expression:

$$P = K (\gamma h + q)$$

Where

P = lateral earth pressure (kPa) acting at depth h

K = earth pressure coefficient

γ = unit weight of backfill (kN/m³)

h = depth to point of interest in metres

q = equivalent value of surcharge on the ground surface in kPa

The above expression assumes that the perimeter drainage system prevents the buildup of any hydrostatic pressure behind the wall and that granular fill is used.

The coefficients of lateral earth pressure given in the following table may be used for the design of the temporary shoring systems, based on the borehole results.

Table 11: Geotechnical Parameters for Shoring Systems

Geotechnical Parameters	Fill	Native Sand	Native Sand & Gravel	Native Silt	Native Silt Till
Bulk Unit Weight (kN/m ³)	17	18.5	19	18	19
Angle of Internal Friction (Φ)	10	34	35	27	30
Undrained Shear Strength (kPa)	0	0	0	0	5
Poisson's Ratio	0.4	0.4	0.4	0.4	0.4
Active Earth Pressure (K_a)	0.70	0.28	0.27	0.38	0.33
At-Rest Earth Pressure (K_o)	0.83	0.44	0.43	0.55	0.50
Passive Earth Pressure (K_p)	1.42	3.54	3.69	2.66	3.00

5.2 Groundwater Control

For preliminary design purposes with the new watermain top of pipe located at a reported depth of around 1.8 m below existing road grades, it is assumed that maximum depths of excavations will be 2.5 m below existing grades.

Based on the groundwater level conditions revealed at time of investigation, groundwater level will be expected during the excavation at depths of around 2.6 m to 3.8 m below existing grades (ELEV from 265.2 to 265.8 m near Boreholes BH-03-22 to BH-05-22).

Moderate inflow is expected where excavations extend up to 0.5 m below the stabilized groundwater level. It is believed that moderate groundwater can be controlled using a gravity dewatering system with perimeter interceptor ditches and high-capacity pumps.

Excavations below 0.5 m below the stabilized groundwater may require a positive dewatering system installed by a specialist dewatering contractor to lower the groundwater level prior to excavating to maintain a safe and adequately dry excavation. An Environmental Activity and Sector Registry (EASR) or a Permit to Take Water (PTTW) is required by the MECP in the event that the daily taking of groundwater exceeds 50,000 L or 400,000 L per day, respectively. Based on groundwater levels revealed at time of investigation and design watermain elevations proposed this is not anticipated to be necessary.

It should be noted that no monitoring wells were installed on the site and that no stabilized long-term water level data results were available at time of report writing. It is important to note that the groundwater conditions described in this report refer only to those observed at the place and time of observation noted in the report. These elevations and conditions may vary locally due to seasonal fluctuations, groundwater regimes encountered at the site or as a consequence of construction activities on the site or adjacent sites.

It is recommended that Englobe review the final invert elevations during design to check that the recommendations provided are sufficient for the proposed works.

It is recommended that several test pits be dug during the tendering stage, in order that prospective contractors may familiarize themselves with the soil and groundwater conditions to be contacted at the site.

5.3 Watermain Construction

The construction aspects of the underground servicing that should be considered within the context of the design, including excavation and dewatering, are discussed in Sections 4.1 and 4.2 of this report.

It is expected that excavation for underground services will generally penetrate the pavement structures and underlying fill material with the deeper services penetrating the underlying sand and gravel to silt till strata. It is anticipated that the invert elevations could be within the fill deposits in some areas (ie. BH-02-22, BH-03-22 and BH-06-22). Beneath the fill material buried topsoil was noted to be present at Borehole BH-06-22. It is recommended that Englobe inspect the subgrade soil at design depths prior to construction of watermain, particularly at locations where topsoil and fill material are revealed. Sub excavation and replacement of unsuitable material should be anticipated in areas where unsuitable subgrade soils are revealed during on site subgrade inspections.

5.4 Bedding

The bedding material should consist of OPSS Granular "A" uniformly compacted to at least 95 percent of standard Proctor maximum dry density. The pipes must be designed for a Class B bedding condition with Type 3 soil conditions assumed. Use of porous bedding materials, such as clear

crushed stone is not recommended for this project unless it is provided with effective filter protection. The underground plant including the pipe joints should be designed to optimize flexibility. Flexible rather than rigid pipe is recommended for this project.

The recommended minimum thickness of granular bedding below the bottom of the pipes is 150 mm and 300 mm above the top of the pipe. Where necessary, proper tapering as per standards should be provided.

To avoid the loss of soil fines from subgrade, uniformly graded clear stone should not be used unless a suitable, approved filter fabric (geotextile) is in place. The geotextile should extend along the sides of the trench and should be wrapped all around the poorly graded bedding material.

5.5 Backfilling

Backfill shall be considered as starting from 300 mm over top of the pipe. All materials below this point shall be considered as bedding. Where engineered fill is required to replace the loose materials or to develop the design grades and elevations, an approved clean soil should be used. All fill materials imported to the site must meet applicable municipal, provincial and federal guidelines and requirements associated with environmental characterization of the materials. Any selected subgrade materials to be used as backfill materials should be inspected and approved by qualified Geotechnical Engineer.

The placement of backfill should be supervised and tested for specified compaction requirements by qualified engineering staff, as specified in contract documents and/or Ingersoll Engineering Town Standards. Backfill should be placed in maximum 200 mm thick loose lifts at or near ($\pm 2\%$) their optimum moisture content and each layer should be compacted to at least 95% SPMDD as specified in Ingersoll Engineering Town Standards. It is recommended that the soil 1.0 m below design subgrade elevations be compacted to a minimum 98% SPMDD.

To avoid damaging or laterally dislocating the installed pipe, extra care should be exercised during the compaction of the fill adjacent to and immediately on top of the pipe, and compaction equipment should be restricted in size as per MTO convention. The backfilling operation for the utility pipes should be carried out simultaneously on both sides of the pipes as per MTO and Town of Ingersoll Engineering and Design Guideline.

5.6 Frost Depth

The depth of frost penetration is a crucial factor that should be considered in pavement design as well as differential frost heave treatment. An estimate of frost penetration depth can be made by referring to frost penetration contour lines in OPSD 3090.101. Considering the location of the project; the frost penetration depth is 1.2 m.

5.7 Pavement Structure

The subject section of Pemberton Street is a two-way arterial roadway with an average annual daily traffic of 2687 vehicles with 3.8% trucks provided from a traffic count conducted by the Town of Ingersoll in September 2021. This results in approximately 629,700 Equivalent single Axle Loads (ESALs) over the 20-year design period with an assumed 2% yearly growth rate and 1.31 truck factor.

5.7.1 Town of Ingersoll Pavement Structure for Industrial roads

The Town of Ingersoll Draft Engineering Design Guideline (2015) does not have cross-sections for minor arterial roadways. Englobe has selected the Industrial Cross Section, Drawing S-15, as the closest fit. The alternative being a residential cross section which is not appropriate for this roadway. The following pavement design presented in Table 12 was provided in Drawing S-15.

Table 12: Town of Ingersoll Pavement Structure

STREET	HL 3 or SP12.5 SURFACE ASPHALT	HL 8 or SP19.0 BASE ASPHALT	GRANULAR 'A' BASE	GRANULAR 'B' SUB-BASE
Pemberton Street	50 mm	75 mm	150 mm	500 mm

5.7.2 AASHTO 93 Analysis

The analysis is based on the 1993 AASHTO *Guide for the Design of Pavement Structures*, supplemented by the Ontario Ministry of Transportation MI-183 publication, *Adaptation and Verification of the AASHTO Pavement Design for Ontario Conditions* (Revised March 19, 2008) and significant Englobe experience with pavements of this type.

For the purpose of assessing pavement construction using the AASHTO 1993 *Guide for the Design of Pavement Structures* methodology, a subgrade resilient modulus of 30 MPa has been assumed.

Table 13 provides the design parameters used for the structural evaluation of the pavement section and the target design Structural Number (SN).

Table 13: AASHTO Structural Analysis Summary

Parameter	Design Values
Pemberton Street	
ESALs	629,700
Initial Serviceability	4.5
Terminal Serviceability	2.5
Reliability Level	90%
Overall Standard Deviation	0.47
Subgrade Resilient Modulus	30 MPa
Calculated Design SN	98

The SN coefficients used were 0.42 for new hot mix asphalt, 0.14 for granular base and 0.09 for granular subbase, with a drainage coefficient of 1.0.

The recommended pavement structure for Pemberton Street provides an SN value of 119.

5.7.3 Granular Base Equivalency (GBE) Analysis

The GBE minimum value for Pemberton Street is 530, based on Ontario Pavement Design and Rehabilitation Manual (2013 edition) and engineering judgement.

GBE Equivalency factors used were 2.0 for new hot mix asphalt, 1.0 for granular base and 0.67 for granular subbase.

The Town of Ingersoll pavement structure for Industrial Roads provides a pavement structure Granular Base Equivalency (GBE) of 735.

5.8 Pavement Construction Recommendations

For a minor arterial roadway, a pavement structure meeting the requirements of the AASHTO structural analysis is recommended for Pemberton Street. The recommended pavement structure is:

Table 14: Recommended Pavement Structure

STREET	HL 3 or SP12.5 SURFACE ASPHALT	HL 8 or SP19.0 BASE ASPHALT	GRANULAR 'A' BASE	GRANULAR 'B' SUB-BASE
Pemberton Street	40 mm	75 mm	150 mm	350 mm

Prior to placing the pavement Granular 'B' subbase layer, the road subgrade shall be proof-rolled to compact loose zones and to identify spongy areas. Any spongy zones identified shall be sub-excavated and replaced with approved drier soil compacted to 98% SPMDD.

It is recommended that the existing granular material excavated from below the existing asphalt surface be separated and stockpiled and considered for reuses as select subgrade material. Based on gradation results from composite samples of the existing granular base and subbase material the composite sample tested failed to meet the gradation requirements for a Granular 'B' Type 1 in accordance with OPSS MUNI 1010 - Granular 'B' Type I Specification. All granular base and subbase material used as pavement structure must meet applicable municipal, provincial and federal guidelines and requirements associated with environmental characterization of the materials.

The HL 3 surface course and HL 8 binder hot-mix asphalt should be produced and constructed in accordance with OPSS 1150 and 310 requirements. If consideration is given to using Superpave mixes, then OPSS 1151, SP 19.0 (Binder) and SP 12.5FC1 (Surface) should be used in lieu of the OPSS 1150 HL 8 (Binder) and HL 3 (Surface), respectively.

Performance graded asphalt cement PG 58-28 should be used for the binder and surface course and should conform to OPSS 1101 requirements.

A tack coat is recommended between all hot mixed asphalt layers.

It should be noted that a systematic program of crack sealing is considered a necessity for all newly reconstructed or rehabilitated pavements. As the pavements age, it will also be necessary to complete routine maintenance in the form of regular routing and crack sealing and localized patching in areas exhibiting distress.

A joint transition treatment will be necessary where old and new asphalt pavement layers abut. The recommended transition treatment consists of milling the old surface layer approximately 300 mm wide and 50 mm deep to provide better pavement tie-in to adjacent new asphalt pavement structure.

It is recommended that all construction joints at the ends of the pavement be cleaned with stiff bristle brooms and compressed air to remove all dust, dirt and other foreign matter. A light tack coat should be applied (and allowed to properly cure) to all construction joints prior to the placement of hot-mix asphalt to ensure an adequate bond between the old and new pavements.

The need for continuous construction supervision by a qualified, experienced technician, and quality control testing during construction projects cannot be over-emphasized.

All pavement construction, rehabilitation and maintenance work should only be completed during periods of favourable weather. The Englobe pavement design recommendations are contingent upon provision of a consistently competent, stable subgrade that is properly drained and free of soft spots and objectionable materials (such as organic material) and is capable of supporting the design traffic loads.

5.9 Drainage

The provision of adequate subsurface and surface drainage is critical to the structural performance of pavements. Prior to undertaking any pavement rehabilitation work, the roadway drainage and sub-drainage should be carefully assessed, noting that provision of proper drainage is fundamental to the performance of the roadway to mitigate frost-related movements and minimize seasonal loss of subgrade support (subgrade softening in spring).

Based on the upper granular soil encountered in the boreholes and the relatively shallow excavations, it is expected that subdrains will not be required. Installation of subdrains should be considered to enhance the pavement drainage and mitigate potential frost action, if silty materials are encountered during construction. The work of subdrain installation shall be in accordance with OPSS 405 and OPSD 216.021. The subdrain shall be 100 or 150 mm diameter perforated pipe conforming to OPSS 1801 or 1840, and wrapped with class 1 non woven geotextile with a filtration opening size of 0.300 mm conforming to OPSS 1860.

To provide drainage for the granular base and subbase material, road subgrades should be crowned to allow favourable drainage to side road ditches or catch basins. The surface of the completed pavement should be provided with a minimum centre-to-edge cross fall of 2% and the subgrade surface under the pavement should also be provided with a minimum cross fall of 3% or as specified in contract documents and Ingersoll Engineering town standards.

6 Materials Testing and Inspections

Appropriate laboratory and field testing of the pavement structure components (granulars and hot-mix asphalt) should be conducted. Compaction testing of the hot-mix asphalt should be carried out at the time of placement. Mix designs for the hot-mix asphalt and/or expanded asphalt base should be reviewed for suitability and specification compliance at least two weeks prior to production and placement.

The need for continuous repair work and paving supervision by a pavement inspector and quality assurance testing during pavement rehabilitation/construction projects cannot be over emphasized. It is also recommended that an annual maintenance program including localized repairs and crack sealing be implemented to ensure that the pavements are maintained at a suitable level.

Englobe would be pleased to provide the above noted inspection and testing services upon request.

7 Statement of Limitations

The geotechnical recommendations provided in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known at the time of report preparation, we recommend that we be retained during the final design stage to verify that the geotechnical recommendations have been correctly interpreted in the design. Also, if any further clarification and/or elaboration are needed concerning the geotechnical aspects of the project, Englobe should be contacted. We recommend that we be retained during construction to confirm that the subsurface conditions do not deviate materially from those encountered in the test holes and to ensure that our recommendations are properly understood. Quality assurance testing and inspection services during construction are a necessary part of the evaluation of the subsurface conditions.

The geotechnical recommendations provided in this report are intended for the use of the Client or its agent and may not be used by a Third Party without the expressed written consent of Englobe and the Client. They are not intended as specifications or instructions to contractors. Any use which a contractor makes of this report, or decisions made based on it, are the responsibility of the contractor. The contractor must also accept the responsibility for means and methods of construction, seek additional information if required, and draw their own conclusions as to how the subsurface conditions may affect their work. Englobe accepts no responsibility and denies any liability whatsoever for any damages arising from improper or unauthorized use of the report or parts thereof.

It is important to note that the geotechnical assessment involves a limited sampling of the site gathered at specific test hole locations and the conclusions in this report are based on this information gathered and in accordance with normally accepted practices. The subsurface geotechnical, hydrogeological, environmental and geologic conditions between and beyond the test holes will differ from those encountered at the test holes. Also, such conditions are not uniform and can vary over time. Should subsurface conditions be encountered which differ materially from those indicated at the test holes, we request that we be notified in order to assess the additional information and determine whether or not changes should be made as a result of the conditions. Englobe will not be responsible to any party for damages incurred as a result of failing to notify Englobe that differing site or subsurface conditions are present upon becoming aware of such conditions.

The professional services provided for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise stated specifically in the report. The recommendations and opinions given in this report are based on our professional judgment and are for the guidance of the Client or its Agent in the design of the specific project. No other warranties or guarantees, expressed or implied, are made.

Appendix A

Drawings

Drawing 1: Location Site Plan

Drawings 2-4: Borehole Location Plans

PREVIEW ONLY



eNGLOBE

10 cm

INGERSOLL 14_CADDWG001 - PEMBERSTON.DWG

0

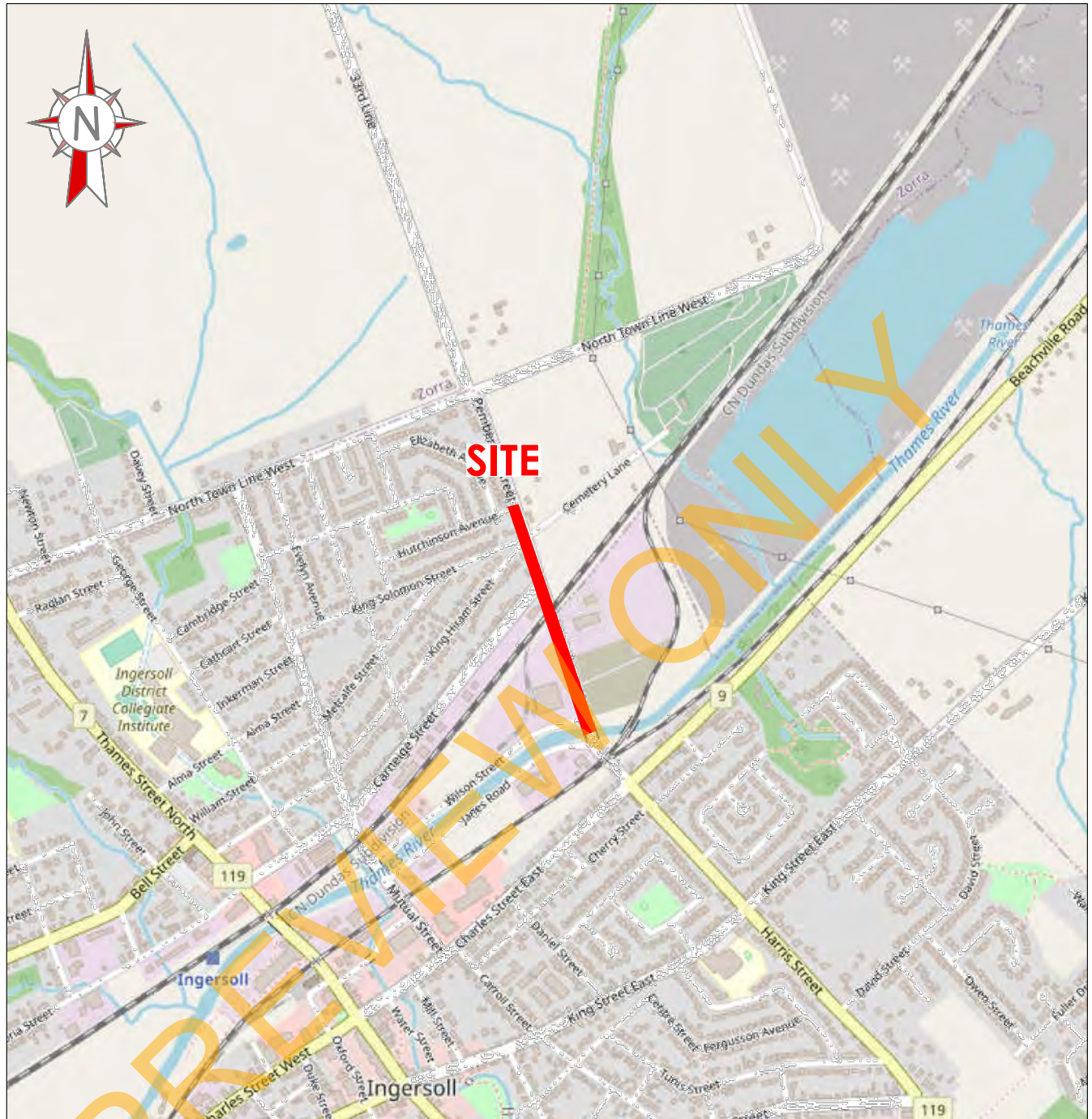
1

2

3

4

5



NOTES:

1-REFERENCE: © OpenStreetMap contributors (2022).

2-Drawing scale may be distorted due to file conversion and/or copying.
Measurements taken from the drawing must be verified in the field.

0 100 200 300 400 500 m



SCALE 1:15000

Project

GEOTECHNICAL INVESTIGATIONS

Pemberston Street, Wilson St to Hutchinson St, Ingersoll

Title

LOCATION PLAN



12-60 Meg Drive
London (Ontario) N6E 3T6
Telephone : 519.685.6400
Fax : 519.685.0943

Prepared **E.Nimer**

Drawn **E.Nimer**

Checked **M.Samms**

Discipline **GEOTECHNICAL**

Scale **1 : 15000**

Date **2022-06-08**

Project manager

R.Helwig

Sequence no.

01 of 04

M. dept.

04

Project

02110022.200

Disc.

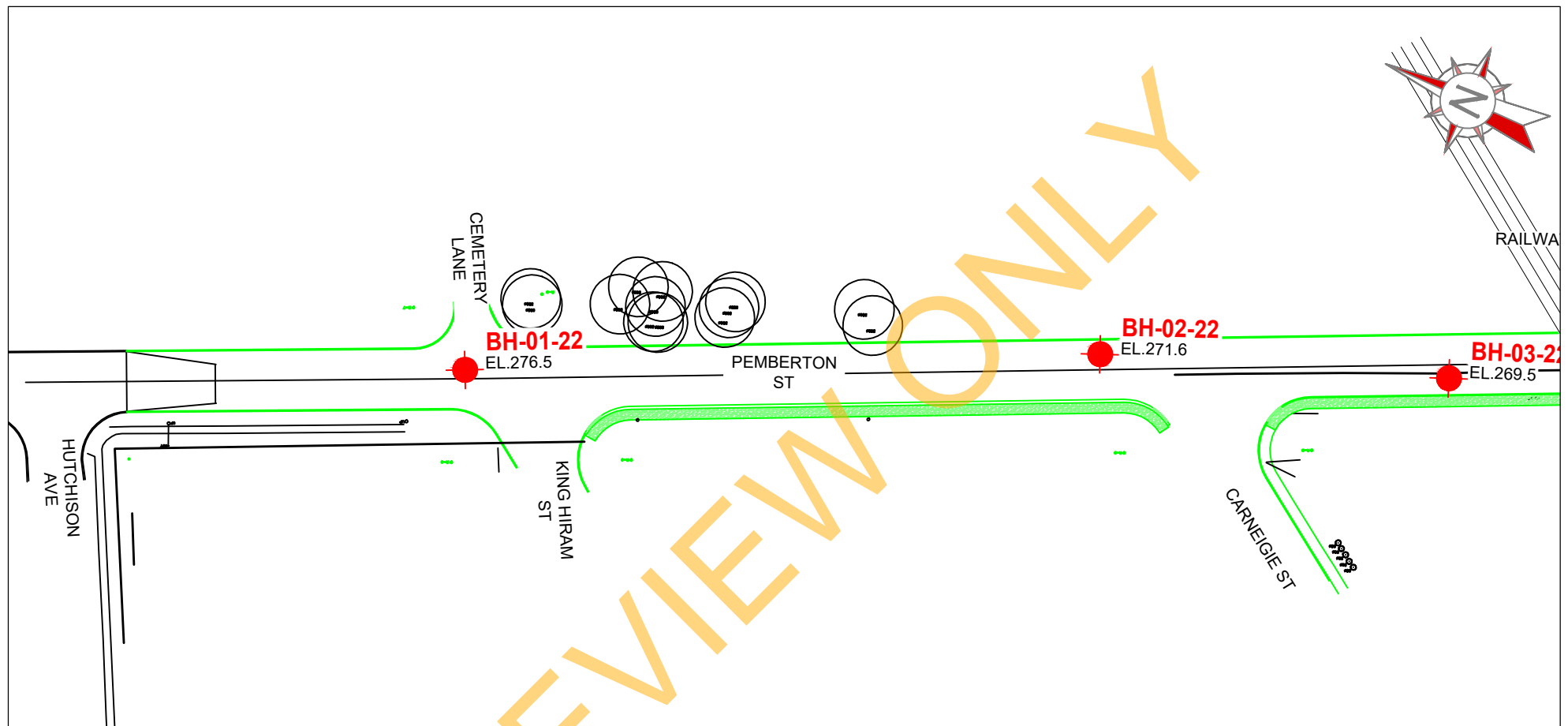
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Dwg no.

001

Rev.

00



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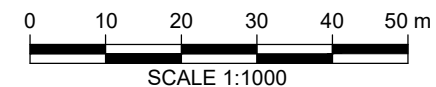


APPROXIMATE BOREHOLE LOCATION

EL. XXX.XX GROUND SURFACE ELEVATION (m)

NOTES :

- 1-REFERENCES : Town of Ingersoll, Pemberton Street_2021_Base, 2021
- 2-Borehole elevations inferred from drawings received by client.
- 3-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.



Project

GEOTECHNICAL INVESTIGATIONS

Pemberton Street from Wilson St to Hutchinson St, Ingersoll

Title

BOREHOLE LOCATION PLAN



12-60 Meg Drive
London (Ontario) N6E 3T6
Telephone : 519.685.6400
Fax : 519.685.0943

Prepared **E.Nimer**

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Checked **A.Stewart**

Discipline **GEOTECHNICAL**

Scale **1 : 1000**

Date **2023-04-04**

Project manager

R.Helwig

Sequence no.

02 of 04

M. dept.

04

Project

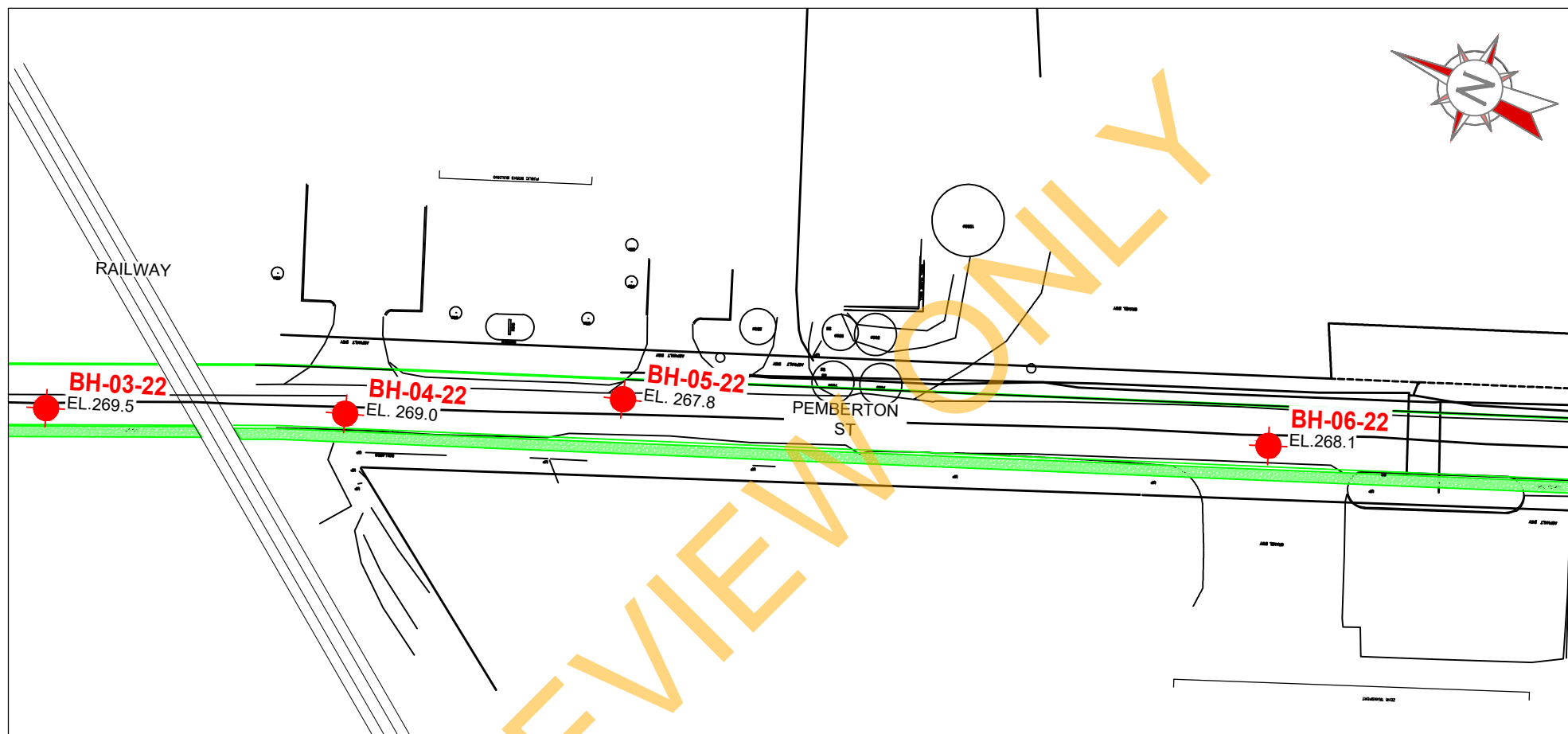
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Disc.

GE 02A00

Dwg no.

Rev.



LEGEND :



APPROXIMATE BOREHOLE LOCATION

EL. XXX.XX GROUND SURFACE ELEVATION (m)

NOTES :

1-REFERENCES : Town of Ingersoll, Pemberton Street_2021_Base, 2021

2-Borehole elevations inferred from drawings received by client.

3-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.



Project

GEOTECHNICAL INVESTIGATION

Pemberton Street from Wilson St to Hutchinson St, Ingersoll

Title

BOREHOLE LOCATION PLAN



12-60 Meg Drive
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Checked **A.Stewart**

Discipline **GEOTECHNICAL**

Scale **1 : 1000**

Date **2023-04-04**

Project manager

R.Helwig

Sequence no.

03 of 04

M. dept.

04

Project

02110022.200

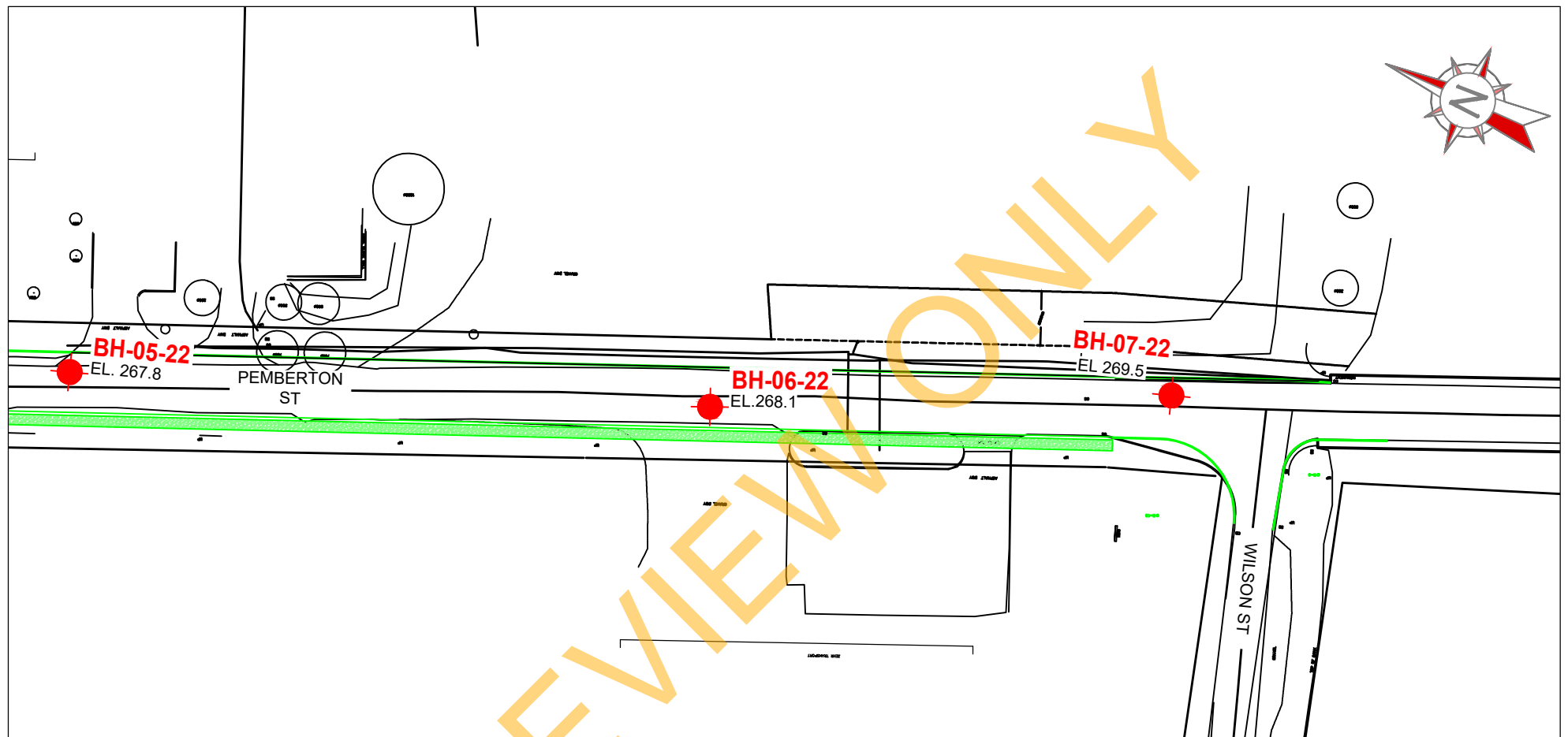
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Dwg no.

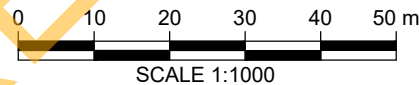
02B00

Rev.



LEGEND :

-  APPROXIMATE BOREHOLE LOCATION
EL. 269.76 GROUND SURFACE ELEVATION (m)



NOTES :

- 1-REFERENCES : Town of Ingersoll, Pemberton Street_2021_Base, 2021
- 2-Borehole elevations inferred from drawings received by client.
- 3-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

Project

GEOTECHNICAL INVESTIGATIONS

Pemberton Street from Wilson St to Hutchinson St, Ingersoll

Title

BOREHOLE LOCATION PLAN



12-60 Meg Drive
London (Ontario) N6E 3T6
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Prepared **E.Nimer**

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Checked **A.Stewart**

Discipline **GEOTECHNICAL**

Scale **1 : 1000**

Date **2023-04-04**

Project manager

R.Helwig

Sequence no.

04 of 04

M. dept. Project

04

02110022.200

Disc. Dwg no. Rev.

GE 02C 00

Appendix B

Borehole Logs

List of Abbreviations

Boreholes BH-01-22 to BH-07-22

PREVIEW ONLY



eNGLOBE

List of Abbreviations

The abbreviations commonly employed on the borehole logs, on the figures, and in the text of the report, are as follows:

Sample Types		Soil Test and Properties	
AS	Auger Sample	SPT	Standard Penetration Test
CS	Core Sample	UC	Unconfined Compression
RC	Rock Core	FV	Field Vane Test
SS	Split Spoon	ϕ	Angle of internal friction
TW	Thinwall, Open	γ	Unit weight
WS	Wash Sample	w_p	Plastic Limit
BS	Bulk Sample	w	Water content
GS	Grab Sample	w_L	Liquid Limit
WC	Water Content Sample	I_L	Liquidity Index
TP	Thinwall, Piston	I_p	Plastic Index
		PP	Pocket Penetrometer

Penetration Resistances	
Dynamic Penetration Resistance	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) diameter 60° cone a distance 300 mm (12 in.) The cone is attached to 'A' size drill rods and casing is not used.
Standard Penetration Resistance, N (ASTM D1586)	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a standard split spoon sampler 300 mm (12 in.)
WH	Sampler advanced by weight of hammer
PH	Sampler advanced by hydraulic pressure
PM	Sampler advanced by manual pressure

Soil Description		
Cohesionless Soils Compactness Condition	SPT N-Value (blows per 0.3 m)	Relative Density (D_r) (%)
Very Loose	0 to 4	0 to 20
Loose	4 to 10	20 to 40
Compact	10 to 30	40 to 60
Dense	30 to 50	60 to 80
Very Dense	Over 50	80 to 100
Cohesive Soils Consistency	Undrained Shear Strength (C_u)	
	kPa	psf
Very Soft	Less than 12	Less than 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very Stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000
DTPL	Drier than plastic limit	Low Plasticity, $w_L < 30$
APL	About plastic limit	Medium Plasticity, $30 < w_L < 50$
WTPL	Wetter than plastic limit	High Plasticity, $w_L > 50$

REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 1 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

01-22

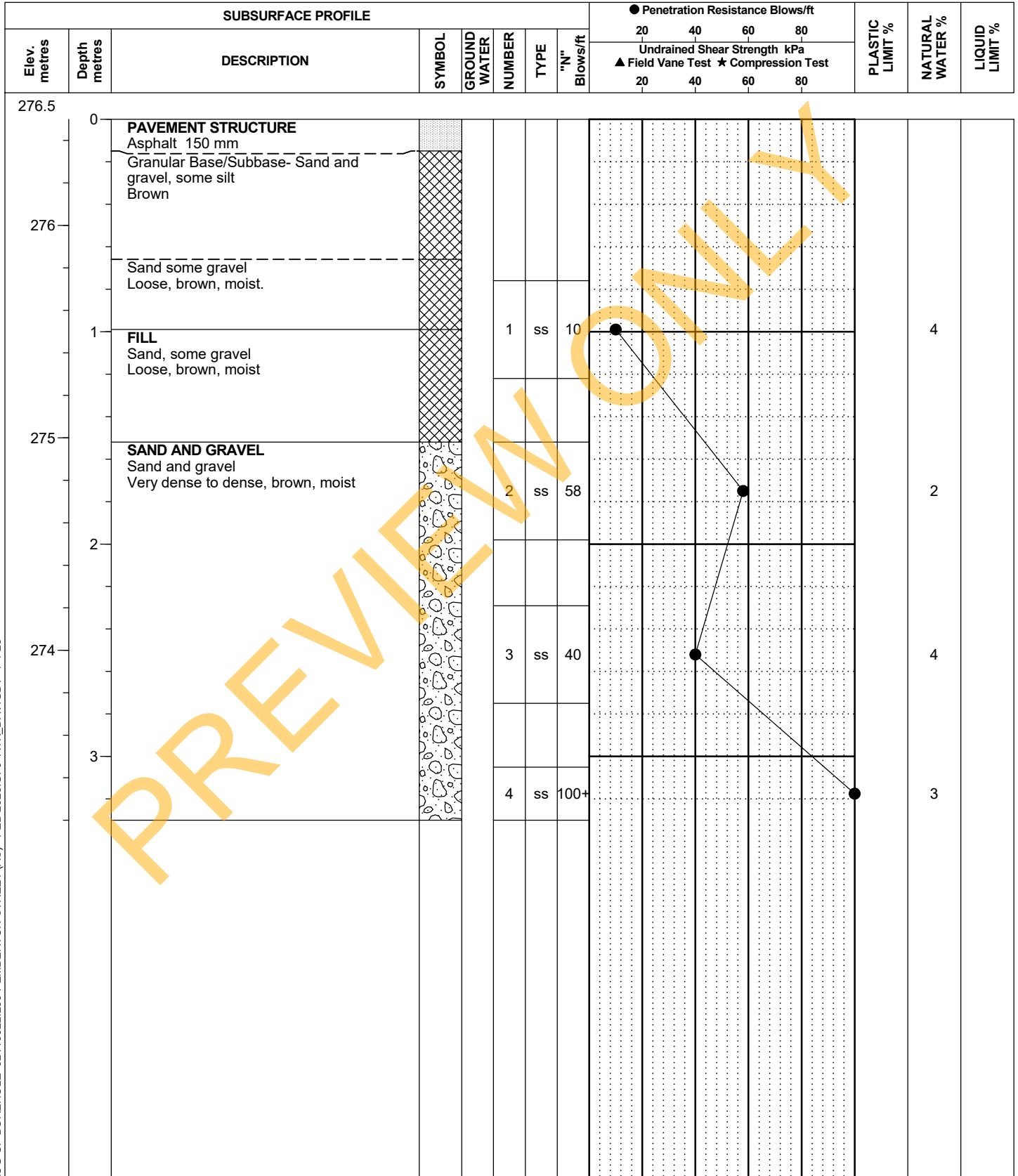
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 24, 2022



REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 2 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

02-22

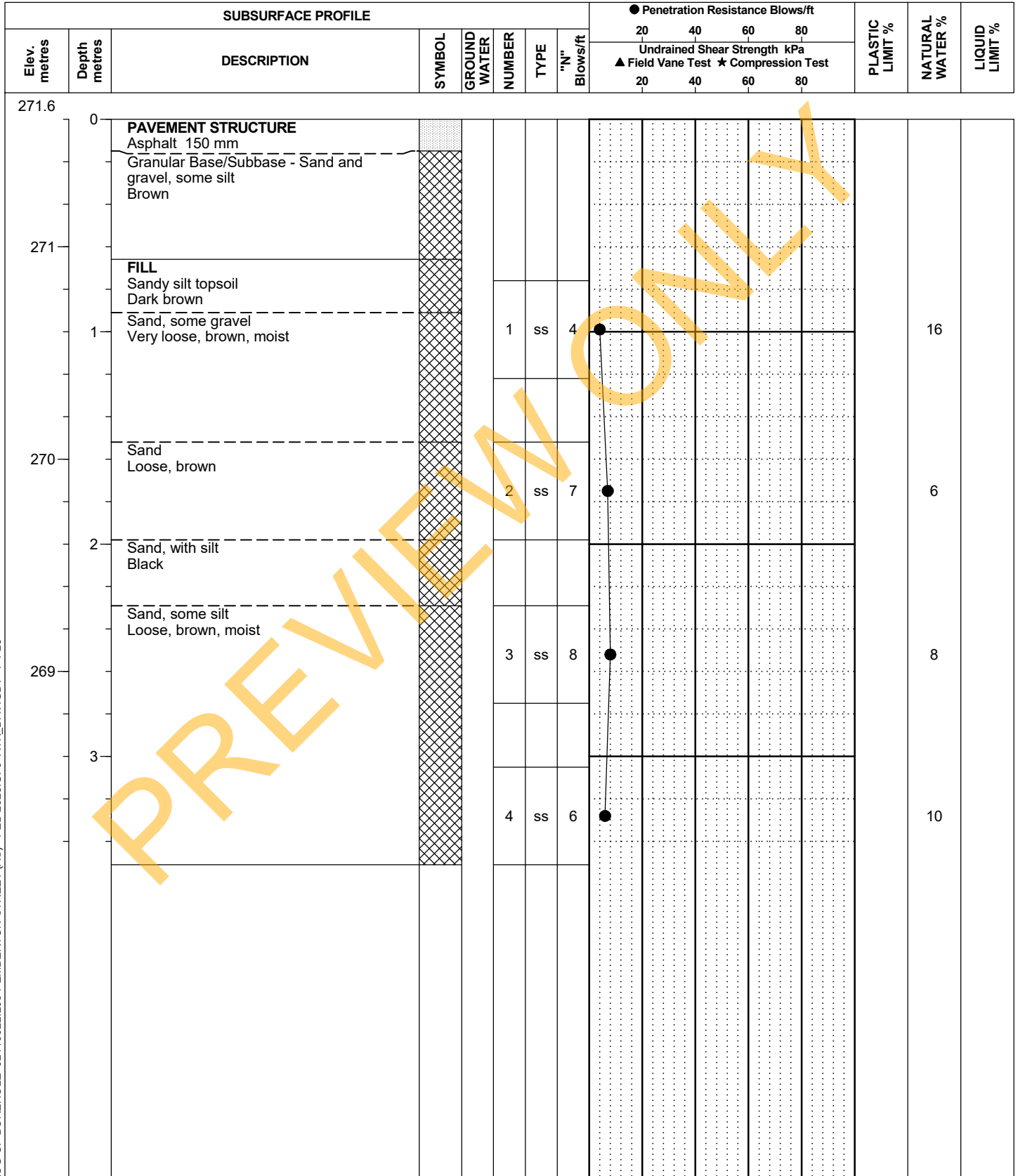
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 24, 2022



REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 3 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

03-22

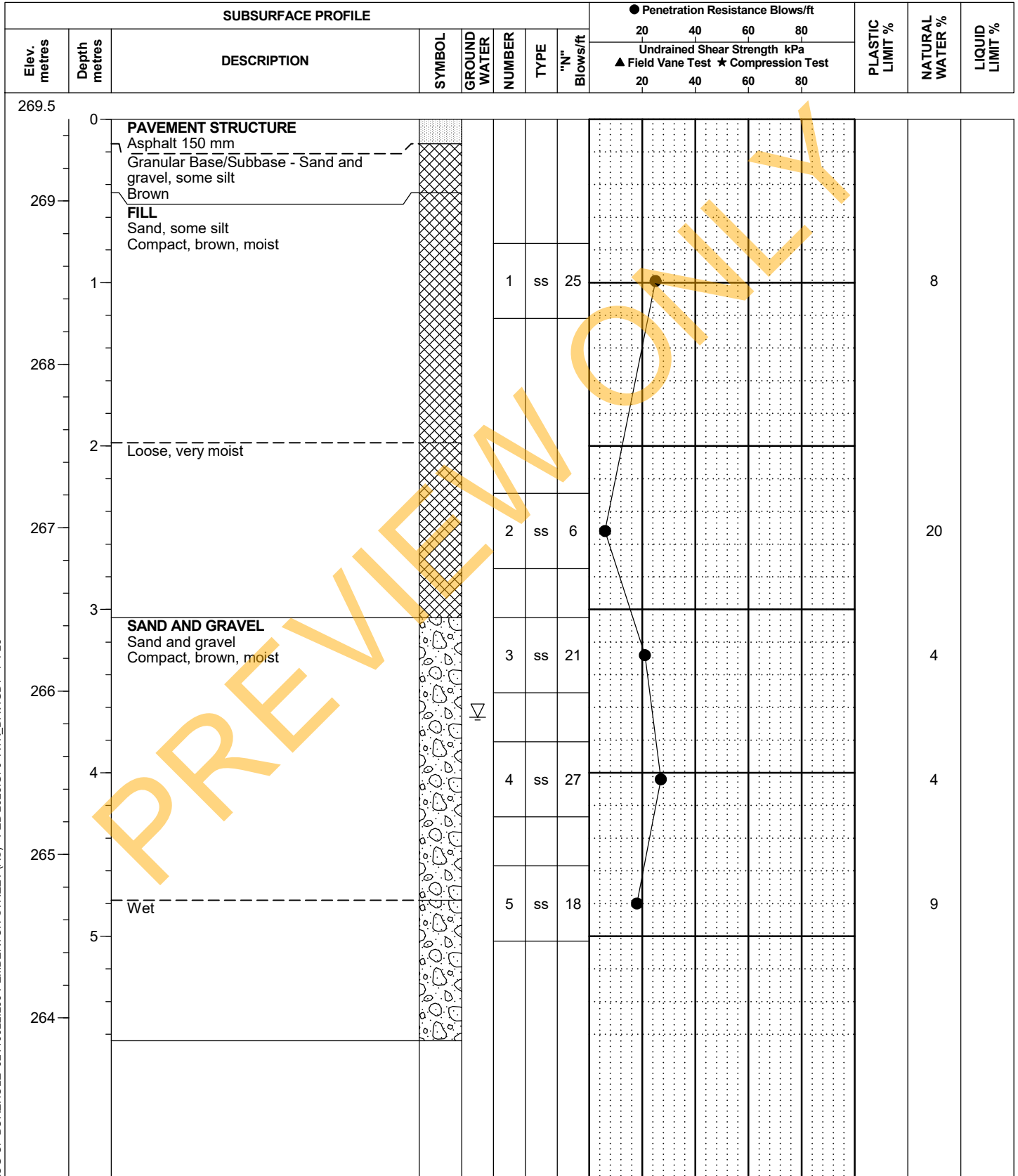
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 25, 2022



REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 4 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

04-22

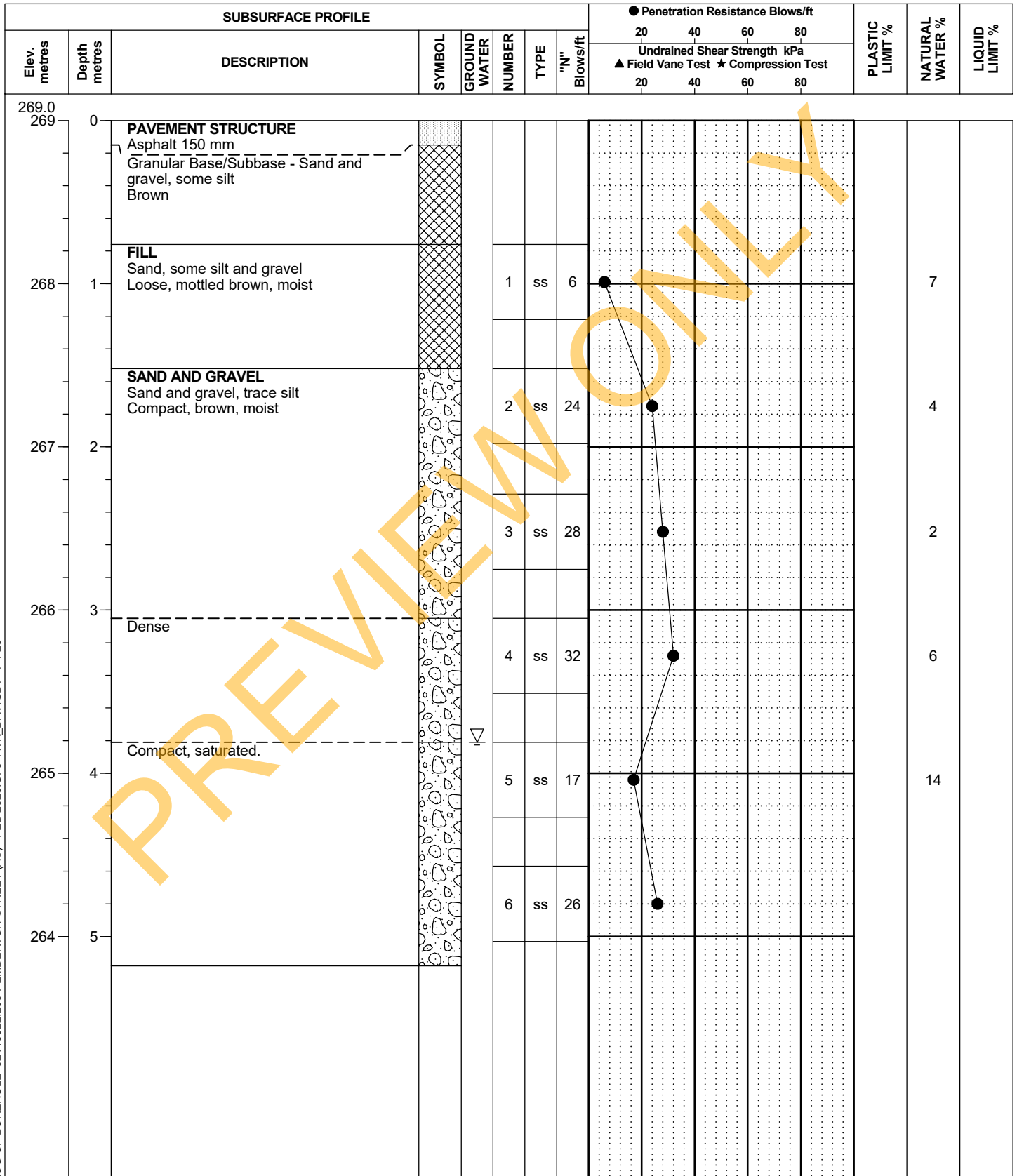
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 25, 2022



REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 5 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

05-22

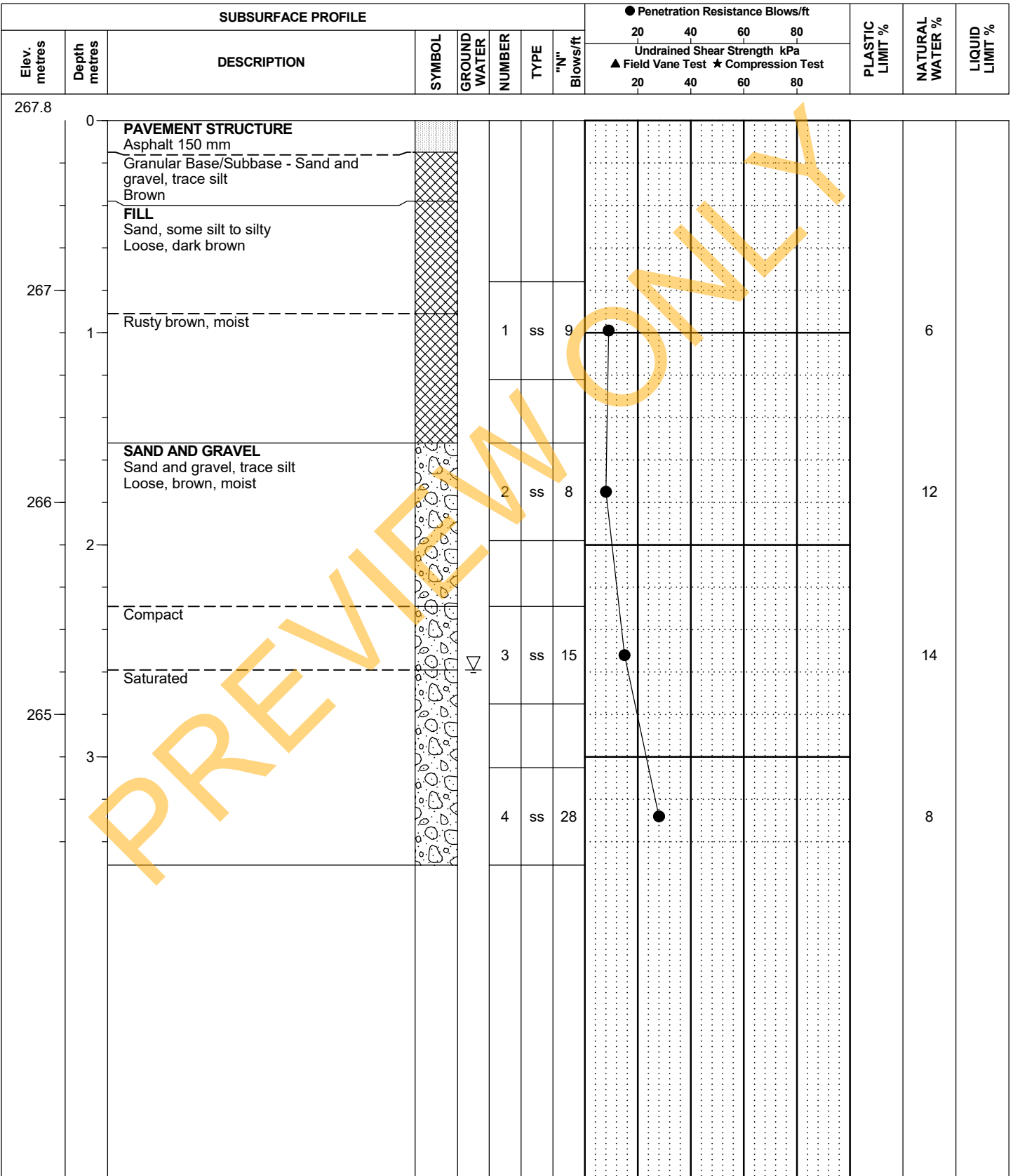
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 24, 2022



REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 6 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

06-22

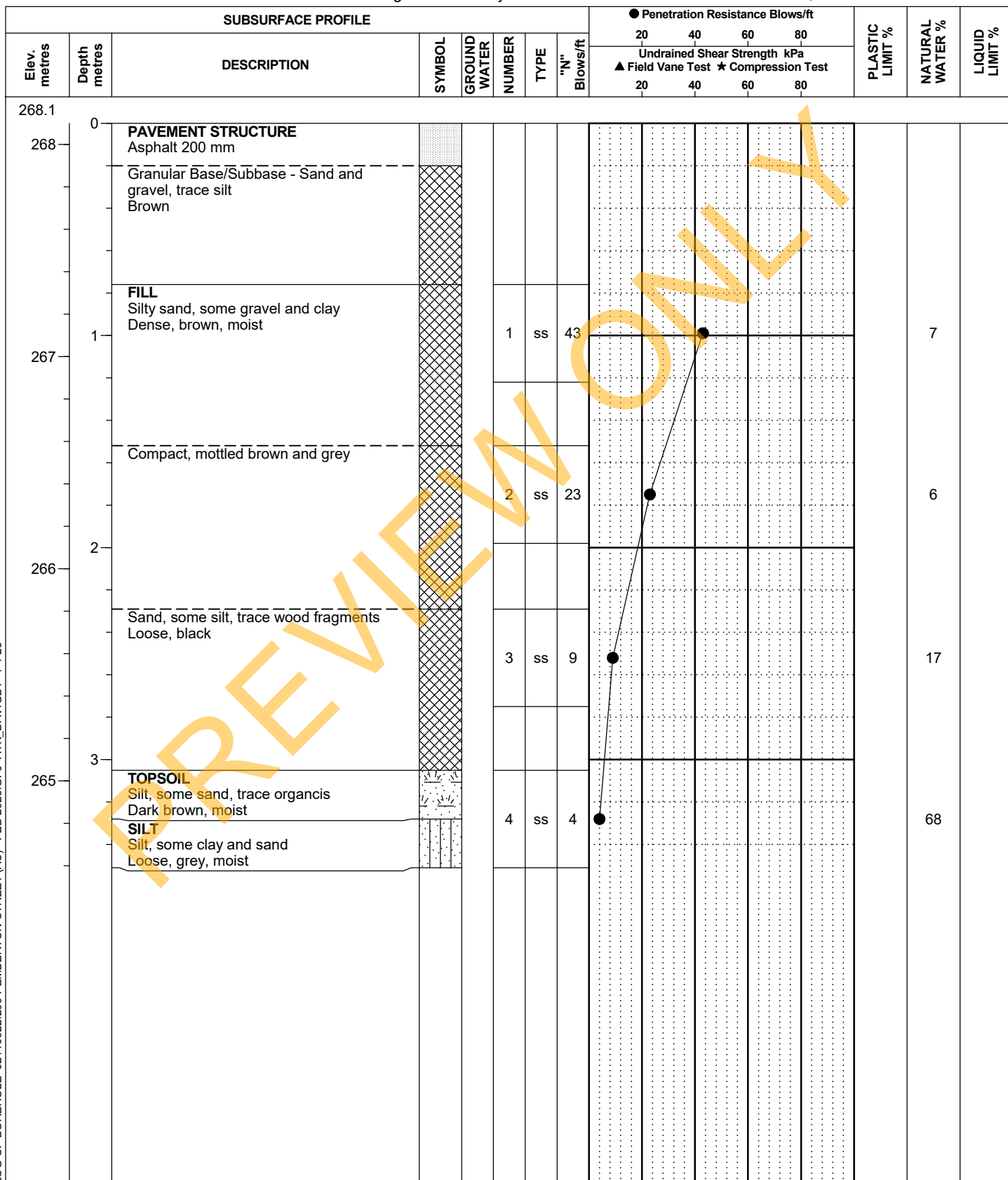
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 24, 2022



REF. NO.: 02110022.000.0200.0201

LOG OF BOREHOLE NO.

Encl. No. 7 (Sheet 1 of 1)

CLIENT: Town of Ingersoll

DRILLING DATA: Diedrich D 50-T

PROJECT: Pemberton Street Reconstruction

07-22

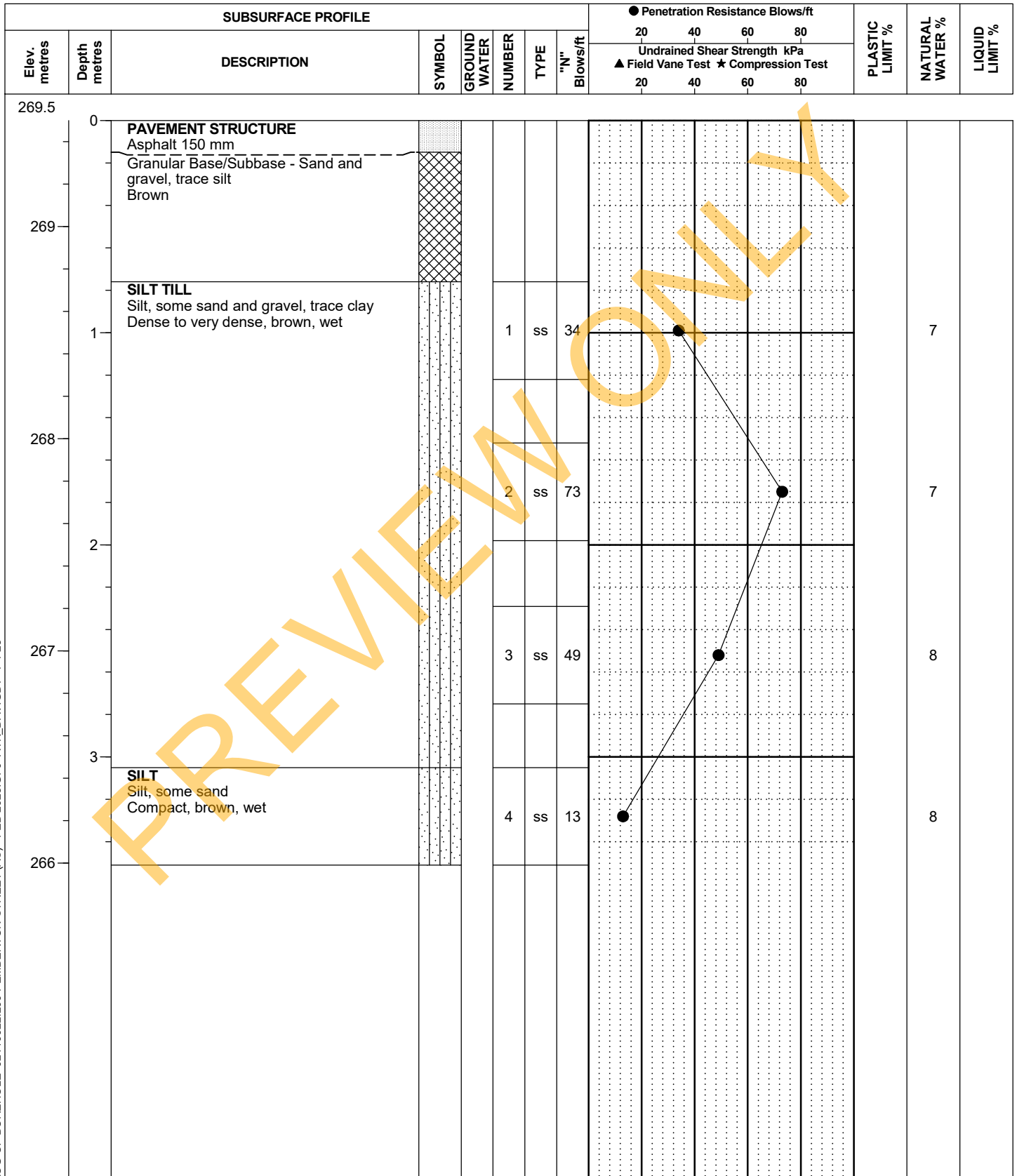
METHOD: Hollow Stem Auger

LOCATION: Pemberton Street from Wilson Street to Hutchinson Street, Ingersoll

DIAMETER: 83 mm

DATUM ELEVATION: Elevations Inferred from Drawings Received By Client.

DATE: Feb 24, 2022



Appendix C

Grain Size Distribution Analyses

Figure 1 - BH-01-22 to BH-04-22 Surface Grab Samples

Figure 2 - BH-05-22 to BH-07-22 Surface Grab Samples

Figure 3 - BH-04-22 SS3

Figure 4 - BH-06-22 SS1

PREVIEW ONLY



ENGLOBE



GRAIN SIZE ANALYSIS REPORT LS-602

PROJECT NUMBER: 04-02110022.000 PROJECT NAME: Ingersoll Streets - Pemberton Street CLIENT: The Town of Ingersoll
LAB NUMBER: S-177 SAMPLE ID: BH 1, 2, 3, 4 - GRAB SAMPLE DEPTH: Surface
SAMPLED BY: Ed VanPuymbroeck, BSc DATE RECEIVED: March 7, 2022 DATE COMPLETED: Thursday, March 10, 2022

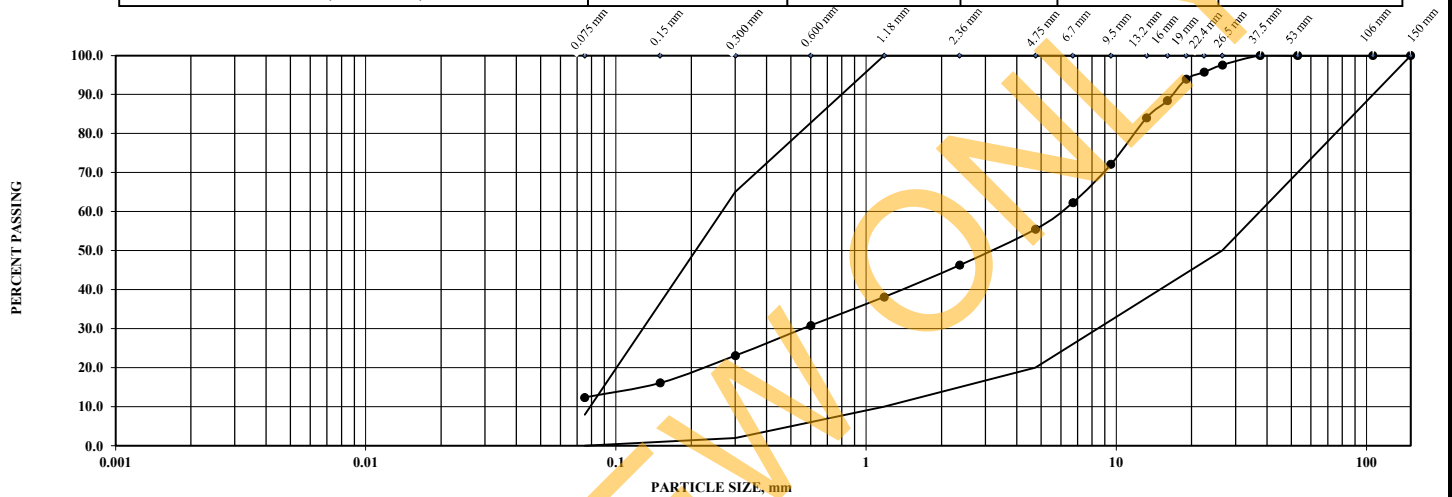
PARTICLE SIZE DISTRIBUTION, MTO LS-602

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM	COARSE	FINE	GRAVEL
------	------	----------------	-----------	--------	--------	------	--------

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------------	-----------	-------------	-------------	-------------	---------------



COEFFICIENTS

D60	6.038	D30	0.568	D10		Cc		Cu	
-----	-------	-----	-------	-----	--	----	--	----	--

GRAIN SIZE ANALYSIS

SIEVE SIZE mm	% PASSING
150	100.0
106	100.0
53	100.0
37.5	100.0
26.5	97.6
22.4	95.7
19	93.9
16	88.4
13.2	84.1
9.5	72.1
6.7	62.3
4.75	55.5
2.36	46.3
1.18	38.2
0.6	30.8
0.3	23.1
0.15	16.1
0.075	12.4

GRAIN SIZE PROPORTIONS, %

% GRAVEL (> 4.75 mm):	44.5
% SAND (75 µm to 4.75 mm):	43.1
% SILT (2 µm to 75 µm):	12.4
% CLAY (< 2 µm):	-

SOIL DESCRIPTION:

SAND and GRAVEL, some Silt

REMARKS

Some RAP Observed in Sample

Figure: 1

TESTED BY: Matt Bernard
Junior Technician

REVIEWED BY: Jason Taylor, B.A.Sc.
Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.



GRAIN SIZE ANALYSIS REPORT LS-602

PROJECT NUMBER: 04-02110022.000 PROJECT NAME: Ingersoll Streets - Pemberton Street CLIENT: The Town of Ingersoll
LAB NUMBER: S-178 SAMPLE ID: BH 5, 6, 7 - GRAB SAMPLE DEPTH: Surface
SAMPLED BY: Ed VanPuymbroeck, BSc DATE RECEIVED: March 7, 2022 DATE COMPLETED: Monday, March 14, 2022

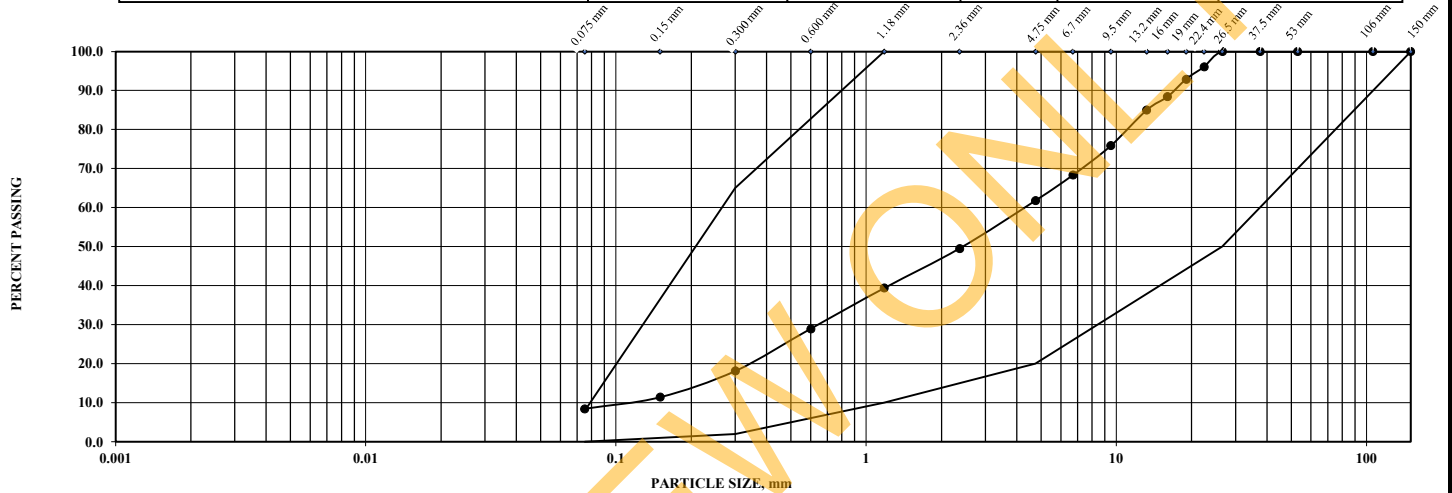
PARTICLE SIZE DISTRIBUTION, MTO LS-602

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM	COARSE	FINE	GRAVEL
------	------	----------------	-----------	--------	--------	------	--------

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------------	-----------	-------------	-------------	-------------	---------------



COEFFICIENTS

D60	4.396	D30	0.658	D10	0.114	Cc	0.867	Cu	38.73
-----	-------	-----	-------	-----	-------	----	-------	----	-------

GRAIN SIZE ANALYSIS

SIEVE SIZE mm	% PASSING
150	100.0
106	100.0
53	100.0
37.5	100.0
26.5	100.0
22.4	96.1
19	92.9
16	88.4
13.2	85.0
9.5	75.9
6.7	68.4
4.75	61.8
2.36	49.5
1.18	39.4
0.6	29.0
0.3	18.2
0.15	11.4
0.075	8.5

GRAIN SIZE PROPORTIONS, %

% GRAVEL (> 4.75 mm):	38.2
% SAND (75 µm to 4.75 mm):	53.3
% SILT (2 µm to 75 µm):	8.5
% CLAY (< 2 µm):	-

SOIL DESCRIPTION:

SAND and GRAVEL, trace Silt

REMARKS

Some RAP Observed in Sample

Figure: 2

TESTED BY: Matt Bernard
Junior Technician

REVIEWED BY: Jason Taylor, B.A.Sc.
Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.



GRAIN SIZE ANALYSIS REPORT

LS-602

PROJECT NUMBER: 04-02110022.000

PROJECT NAME: Ingersoll Streets - Pemberton Street

CLIENT: Town of Ingersoll

LAB NUMBER: S-179

SAMPLE ID: BH 4 SS 3

SAMPLE DEPTH: 2.29 – 2.75

SAMPLED BY: Ed VanPuymbroeck, BSc

DATE RECEIVED: March 9, 2022

DATE COMPLETED: March 16, 2022

PARTICLE SIZE DISTRIBUTION, MTO LS-602

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM	COARSE	FINE	GRAVEL
------	------	----------------	-----------	--------	--------	------	--------

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------------	-----------	-------------	-------------	-------------	---------------

PERCENT PASSING

0.0010.010.11100

0.075 mm0.15 mm0.300 mm0.600 mm1.18 mm2.36 mm4.75 mm6.7 mm9.5 mm13.2 mm16 mm19 mm22.4 mm26.5 mm37.5 mm53 mm106 mm150 mm

100.090.080.070.060.050.040.030.020.010.00

0.0010.010.11100

PARTICLE SIZE, mm

COEFFICIENTS

D60	8.675	D30	0.542	D10	0.121	Cc	0.280	Cu	71.68
-----	-------	-----	-------	-----	-------	----	-------	----	-------

GRAIN SIZE ANALYSIS

SIEVE SIZE mm	% PASSING
150	100.0
106	100.0
53	100.0
37.5	100.0
26.5	90.1
22.4	83.6
19	78.1
16	69.5
13.2	67.9
9.5	61.7
6.7	56.0
4.75	51.8
2.36	45.7
1.18	41.4
0.6	33.1
0.3	17.3
0.15	11.2
0.075	8.1

GRAIN SIZE PROPORTIONS, %

% GRAVEL (> 4.75 mm):	48.2
% SAND (75 µm to 4.75 mm):	43.7
% SILT (2 µm to 75 µm):	8.1
% CLAY (<2 µm):	-

SOIL DESCRIPTION: SAND and GRAVEL, trace Silt

REMARKS

TESTED BY: Matt Bernard

REVIEWED BY: David McBay, CET.

Junior TechnicianLaboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

353 Bridge Street East, Kitchener N2K 2Y5

60 Meg Drive, Unit 12, London N6E 3T6

440 Hardy Road, Brantford N3T 5L8



GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:

04-02110022.000

PROJECT NAME:

Ingersoll Streets - Pemberton Street

CLIENT:

The Town of Ingersoll

LAB NUMBER:

S-180

SAMPLE ID:

BH 6 SS 1

SAMPLE DEPTH:

0.76-1.22

SAMPLED BY:

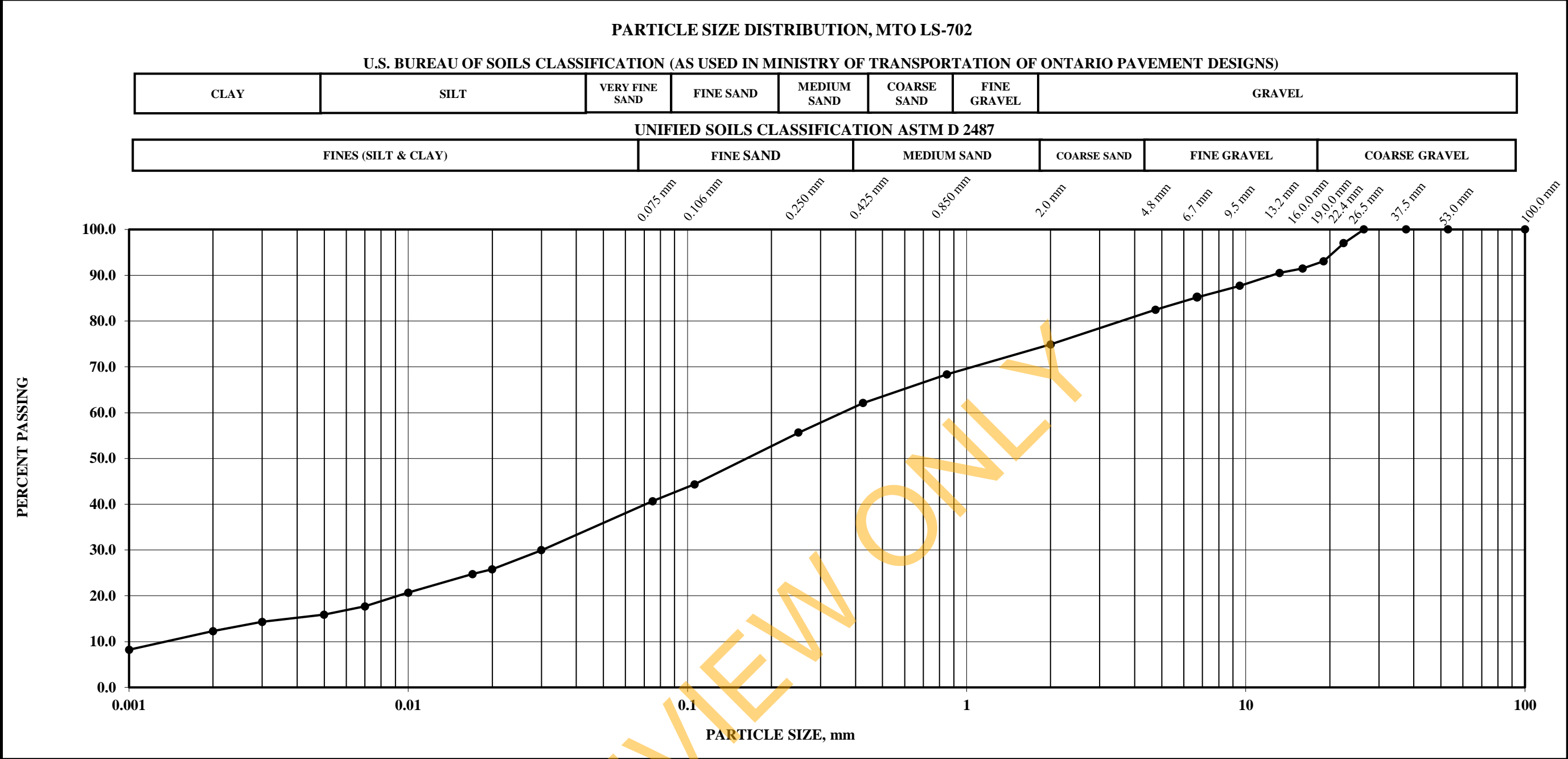
Ed VanPuymbroeck, BSc

DATE RECEIVED:

March 7, 2022

DATE COMPLETED:

March 14, 2022



COEFFICIENTS									
D60	0.369	D30	0.030	D10	0.001	Cc	1.708	Cu	256.29

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	% PASSING	DIAMETER mm	% PASSING
53	100.0	0.030	30.0
37.5	100.0	0.020	25.8
26.5	100.0	0.017	24.8
22.4	97.0	0.010	20.7
19	93.1	0.007	17.7
16	91.5	0.005	15.9
13.2	90.5	0.002	12.3
9.5	87.7	0.001	8.2
6.7	85.2	ATTERBERG LIMITS	
4.75	82.5		
2.00	74.9		
0.850	68.4	Liquid Limit	
0.425	62.1	Plastic Limit	
0.250	55.6	Plastic Index	
0.106	44.3		
0.075	40.7		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	17.5
% SAND (75 µm to 4.75 mm):	41.8
% SILT (2 µm to 75 µm):	28.4
% CLAY (<2 µm):	12.3
SOIL DESCRIPTION:	Silty Sand, Some Gravel and Clay
SUSCEPTIBILITY TO FROST HEAVING:	
LOW	
REMARKS	

Figure: 4

TESTED BY:

Sarah Pietrasik
Junior Technician

REVIEWED BY

David McBay, CET.
Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

Appendix D

Chemical Analysis

ALS Lab Work Order: L2688548

ALS Lab Work Order: L2688556

PREVIEW ONLY



ENGLOBE



EnGlobe Corp. (London)
ATTN: Ed VanPuymbroeck
417 Exeter Road
LONDON ON N6E 2Z3

Date Received: 25-FEB-22
Report Date: 07-MAR-22 15:00 (MT)
Version: FINAL

Client Phone: 519-680-3868

Certificate of Analysis

Lab Work Order #: L2688548
Project P.O. #: NOT SUBMITTED
Job Reference: 02110022 PEMBERTON ST INGERSOLL
C of C Numbers:
Legal Site Desc:

PREVIEW ONLY

Gayle Braun
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 309 Exeter Road Unit #29, London, ON N6L 1C1 Canada | Phone: +1 519 652 6044 | Fax: +1 519 652 0671
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Summary of Guideline Exceedances

Guideline	ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Regulation 406/19 - Excess Soils - 17-December-20 - T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use							
L2688548-1	BH01-22 S-1	Physical Tests	Conductivity	2.25	0.57	mS/cm	
		Saturated Paste Extractables	SAR	66.3	2.4	SAR	
		Hydrocarbons	F4 (C34-C50)	132	120	ug/g	
L2688548-2	BH02-22 S-1		F4G-SG (GHH-Silica)	360	120	ug/g	
		Physical Tests	Conductivity	2.39	0.57	mS/cm	
		Saturated Paste Extractables	SAR	59.6	2.4	SAR	
		Volatile Organic Compounds	Xylenes (Total)	0.206	0.05	ug/g	
L2688548-3	BH03-22 S-1	Hydrocarbons	F4G-SG (GHH-Silica)	350	120	ug/g	
		Physical Tests	Conductivity	0.634	0.57	mS/cm	
		Saturated Paste Extractables	SAR	16.1	2.4	SAR	
L2688548-4	BH04-22 S-1	Physical Tests	Conductivity	0.918	0.57	mS/cm	
		Saturated Paste Extractables	SAR	28.6	2.4	SAR	
		Volatile Organic Compounds	Xylenes (Total)	0.313	0.05	ug/g	
		Hydrocarbons	F2 (C10-C16)	13	10	ug/g	
L2688548-5	BH05-22 S-1		F4 (C34-C50)	379	120	ug/g	
			F4G-SG (GHH-Silica)	1130	120	ug/g	
		Physical Tests	Conductivity	0.767	0.57	mS/cm	
		Saturated Paste Extractables	SAR	20.4	2.4	SAR	
L2688548-6	BH06-22 S-3	Physical Tests	Conductivity	1.87	0.57	mS/cm	
		Saturated Paste Extractables	SAR	9.25	2.4	SAR	
L2688548-7	BH07-22 S-2	Saturated Paste Extractables	SAR	7.61	2.4	SAR	

PRELIMINARY ONLY

* Please refer to the Reference Information section for an explanation of any qualifiers noted.



ANALYTICAL REPORT

Physical Tests - SOIL

Analyte	Unit	Guide Limits		Lab ID						
		#1	#2	Sample Date						
				Sample ID						
				L2688548-1	L2688548-2	L2688548-3	L2688548-4	L2688548-5	L2688548-6	L2688548-7
				24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22
				BH01-22 S-1	BH02-22 S-1	BH03-22 S-1	BH04-22 S-1	BH05-22 S-1	BH06-22 S-3	BH07-22 S-2
Conductivity	mS/cm	0.57	-	2.25	2.39	0.634	0.918	0.767	1.87	0.555
% Moisture	%	-	-	10.8	12.9	7.64	7.83	12.2	13.0	6.22
pH	pH units	-	-	7.91	7.72	7.74	7.66	7.57	7.43	8.02

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Cyanides - SOIL

Analyte	Unit	Guide Limits		Cyanide, Weak Acid Diss							
		#1	#2	Lab ID		Sample Date		Sample ID			
				L2688548-1	L2688548-2	L2688548-3	L2688548-4	L2688548-5	L2688548-6		L2688548-7
				24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	
				BH01-22 S-1	BH02-22 S-1	BH03-22 S-1	BH04-22 S-1	BH05-22 S-1	BH06-22 S-3	BH07-22 S-2	
</											

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Comm Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Saturated Paste Extractables - SOIL

Analyte	Unit	Guide Limits		Lab ID							
		#1	#2	Sample Date							
				Sample ID							
				L2688548-1	L2688548-2	L2688548-3	L2688548-4	L2688548-5	L2688548-6	L2688548-7	
				24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	
				BH01-22 S-1	BH02-22 S-1	BH03-22 S-1	BH04-22 S-1	BH05-22 S-1	BH06-22 S-3	BH07-22 S-2	
SAR	SAR	2.4	-	66.3	59.6	16.1	28.6 SAR:M	20.4 SAR:M	9.25	7.61	
Calcium (Ca)	mg/L	-	-	2.64	3.36	3.62	3.07	4.19	50.8	8.28	
Magnesium (Mg)	mg/L	-	-	0.50	0.80	1.00	<0.50	<0.50	12.5	1.73	
Sodium (Na)	mg/L	-	-	448	468	134	182	152	284	92.2	

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Comm Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Metals - SOIL

Analyte	Unit	Guide Limits		Lab ID						
		#1	#2	Sample Date	Sample ID	Sample Date	Sample ID	Sample Date	Sample ID	Sample Date
Antimony (Sb)	ug/g	1.3	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	-	2.7	7.2	2.2	3.5	2.5	3.6	1.7
Barium (Ba)	ug/g	220	-	27.6	45.6	26.7	46.9	42.1	43.8	32.2
Beryllium (Be)	ug/g	2.5	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B)	ug/g	36	-	<5.0	5.8	<5.0	5.1	<5.0	6.7	5.6
Boron (B), Hot Water Ext.	ug/g	36	-	0.13	0.35	0.36	0.49	0.33	1.06	<0.10
Cadmium (Cd)	ug/g	1.2	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	-	13.4	11.4	8.2	12.9	9.4	10.5	10.9
Cobalt (Co)	ug/g	21	-	3.8	3.8	2.5	4.3	3.5	3.5	3.7
Copper (Cu)	ug/g	92	-	7.2	14.4	9.5	12.0	7.7	14.5	10.0
Lead (Pb)	ug/g	120	-	6.1	62.5	16.2	13.3	8.3	22.6	4.5
Mercury (Hg)	ug/g	0.27	-	0.0256	0.0450	0.0321	0.0434	0.0356	0.0516	0.0152
Molybdenum (Mo)	ug/g	2	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	-	7.9	8.7	5.8	9.0	6.6	7.4	8.5
Selenium (Se)	ug/g	1.5	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	-	32.2	19.8	16.1	27.9	19.1	21.1	16.3
Zinc (Zn)	ug/g	290	-	22.1	67.2	38.2	56.5	47.1	63.3	31.9

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Comm Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Speciated Metals - SOIL

Speciated Metals - Cr(VI)											
Analyte	Unit	Guide Limits		Lab ID							
		#1	#2	Sample Date		Sample ID		Sample Date		Sample ID	
Chromium, Hexavalent	ug/g	0.66	-	0.52	<0.20	<0.20	0.51	<0.20	<0.20	<0.20	

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Comm Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Volatile Organic Compounds - SOIL

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	L2688548-1	L2688548-2	L2688548-3	L2688548-4	L2688548-5	L2688548-6	L2688548-7
		#1	#2										
Benzene	ug/g	0.02	-	<0.0068	0.0118	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	ug/g	0.05	-	<0.018	0.033	<0.018	0.022	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	ug/g	0.2	-	<0.080	0.093	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
o-Xylene	ug/g	-	-	<0.020	0.112	0.028	0.136	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	-	<0.030	0.094	<0.030	0.178	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	0.05	-	<0.050	0.206	<0.050	0.313	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-	103.9	99.1	95.1	92.4	93.9	94.8	100.0	100.0	100.0	100.0
Surrogate: 1,4-Difluorobenzene	%	-	-	109.1	101.9	101.6	103.6	104.2	106.0	107.7	107.7	107.7	107.7

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use

 Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Hydrocarbons - SOIL

Analyte	Unit	Guide Limits		Lab ID							
		#1	#2	Sample Date							
				Sample ID							
				L2688548-1	L2688548-2	L2688548-3	L2688548-4	L2688548-5	L2688548-6	L2688548-7	
				24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	24-FEB-22	
				BH01-22 S-1	BH02-22 S-1	BH03-22 S-1	BH04-22 S-1	BH05-22 S-1	BH06-22 S-3	BH07-22 S-2	
F1 (C6-C10)	ug/g	25	-	<5.0	<5.0	<5.0	10.0	<5.0	<5.0	<5.0	
F1-BTEX	ug/g	25	-	<5.0	<5.0	<5.0	9.7	<5.0	<5.0	<5.0	
F2 (C10-C16)	ug/g	10	-	<10	<10	<10	13	<10	<10	<10	
F3 (C16-C34)	ug/g	240	-	69	80	<50	225	<50	<50	<50	
F4 (C34-C50)	ug/g	120	-	132	114	<50	379	51	<50	<50	
F4G-SG (GHH-Silica)	ug/g	120	-	360	350		1130				
Total Hydrocarbons (C6-C50)	ug/g	-	-	201	194	<72	627	<72	<72	<72	
Chrom. to baseline at nC50		-	-	NO	NO	YES	NO	YES	YES		
Chrom. to baseline at nC50	ppm	-	-								YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	91.0	92.0	96.3	95.2	85.1	95.2	94.1	
Surrogate: 3,4-Dichlorotoluene	%	-	-	73.3	110.0	62.1	81.4	94.0	88.9	86.9	

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
SAR:M	Reported SAR represents a maximum value. Actual SAR may be lower if both Ca and Mg were detectable.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B
<p>A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260
<p>BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD
<p>The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199
<p>This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).</p>			
EC-WT	Soil	Conductivity (EC)	MOEE E3138
<p>A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).</p>			
F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<p>In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.</p> <p>Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:</p> <ol style="list-style-type: none"> 1. All extraction and analysis holding times were met. 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene. 3. Linearity of gasoline response within 15% throughout the calibration range. <p>Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:</p> <ol style="list-style-type: none"> 1. All extraction and analysis holding times were met. 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average. 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors. 4. Linearity of diesel or motor oil response within 15% throughout the calibration range. 			
F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
<p>Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1
<p>Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16. 2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34. 3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50. 4. F4G: Gravimetric Heavy Hydrocarbons 5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment. 6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4. 7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons. 8. This method is validated for use. 9. Data from analysis of validation and quality control samples is available upon request. 10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated. <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
F4G-ADD-511-WT	Soil	F4G SG-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1
<p>F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.</p> <p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)
<p>Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.</p>			

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)
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Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H₂S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
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PH-WT	Soil	pH	MOEE E3137A
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A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C
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A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
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Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
----------------------------	---------------------

WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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Reference Information

L2688548 CONT'D....
Job Reference: 02110022 PEMBERTON ST INGERS
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07-MAR-22 15:00 (MT)

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Quality Control Report

Workorder: L2688548

Report Date: 07-MAR-22

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Client: EnGlobe Corp. (London)
417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuybroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT		Soil						
Batch R5731957								
WG3702083-4	DUP	L2688710-1						
Boron (B), Hot Water Ext.		0.19	0.20		ug/g	2.4	30	03-MAR-22
WG3702083-2	IRM	WT SAR4						
Boron (B), Hot Water Ext.			100.1		%		70-130	03-MAR-22
WG3702083-3	LCS							
Boron (B), Hot Water Ext.			99.2		%		70-130	03-MAR-22
WG3702083-1	MB							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	03-MAR-22
Batch R5732047								
WG3702152-4	DUP	L2688573-6						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	03-MAR-22
WG3702152-2	IRM	WT SAR4						
Boron (B), Hot Water Ext.			103.7		%		70-130	03-MAR-22
WG3702152-3	LCS							
Boron (B), Hot Water Ext.			99.9		%		70-130	03-MAR-22
WG3702152-1	MB							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	03-MAR-22
BTX-511-HS-WT		Soil						
Batch R5730339								
WG3700700-4	DUP	WG3700700-3						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	01-MAR-22
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	01-MAR-22
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	01-MAR-22
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	01-MAR-22
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	01-MAR-22
WG3700700-2	LCS							
Benzene			106.2		%		70-130	01-MAR-22
Ethylbenzene			103.3		%		70-130	01-MAR-22
m+p-Xylenes			104.9		%		70-130	01-MAR-22
o-Xylene			104.0		%		70-130	01-MAR-22
Toluene			102.7		%		70-130	01-MAR-22
WG3700700-1	MB							
Benzene			<0.0068		ug/g		0.0068	01-MAR-22
Ethylbenzene			<0.018		ug/g		0.018	01-MAR-22
m+p-Xylenes			<0.030		ug/g		0.03	01-MAR-22
o-Xylene			<0.020		ug/g		0.02	01-MAR-22



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Client: EnGlobe Corp. (London)
417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuybroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT								
Soil								
Batch R5730339								
WG3700700-1 MB								
Toluene			<0.080		ug/g		0.08	01-MAR-22
Surrogate: 1,4-Difluorobenzene			119.9		%		50-140	01-MAR-22
Surrogate: 4-Bromofluorobenzene			115.8		%		50-140	01-MAR-22
WG3700700-5 MS								
		WG3700700-3						
Benzene			118.0		%		60-140	01-MAR-22
Ethylbenzene			114.5		%		60-140	01-MAR-22
m+p-Xylenes			117.3		%		60-140	01-MAR-22
o-Xylene			115.6		%		60-140	01-MAR-22
Toluene			107.1		%		60-140	02-MAR-22
Batch R5730349								
WG3700425-4 DUP								
		WG3700425-3						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	01-MAR-22
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	01-MAR-22
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	01-MAR-22
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	01-MAR-22
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	01-MAR-22
WG3700425-2 LCS								
Benzene			107.0		%		70-130	01-MAR-22
Ethylbenzene			99.5		%		70-130	01-MAR-22
m+p-Xylenes			94.6		%		70-130	01-MAR-22
o-Xylene			96.8		%		70-130	01-MAR-22
Toluene			105.6		%		70-130	01-MAR-22
WG3700425-1 MB								
Benzene			<0.0068		ug/g		0.0068	01-MAR-22
Ethylbenzene			<0.018		ug/g		0.018	01-MAR-22
m+p-Xylenes			<0.030		ug/g		0.03	01-MAR-22
o-Xylene			<0.020		ug/g		0.02	01-MAR-22
Toluene			<0.080		ug/g		0.08	01-MAR-22
Surrogate: 1,4-Difluorobenzene			109.8		%		50-140	01-MAR-22
Surrogate: 4-Bromofluorobenzene			102.1		%		50-140	01-MAR-22
WG3700425-5 MS								
		WG3700425-3						
Benzene			106.7		%		60-140	01-MAR-22
Ethylbenzene			101.9		%		60-140	01-MAR-22
m+p-Xylenes			97.6		%		60-140	01-MAR-22



Quality Control Report

Workorder: L2688548

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Client: EnGlobe Corp. (London)
417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuymbroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT								
Soil								
Batch R5730349								
WG3700425-5 MS		WG3700425-3						
o-Xylene			100.7		%		60-140	01-MAR-22
Toluene			108.8		%		60-140	01-MAR-22
CN-WAD-R511-WT								
Soil								
Batch R5730922								
WG3701337-3 DUP		L2688548-1						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	02-MAR-22
WG3701337-2 LCS			89.4		%		80-120	02-MAR-22
Cyanide, Weak Acid Diss								
WG3701337-1 MB			<0.050		ug/g		0.05	02-MAR-22
Cyanide, Weak Acid Diss								
WG3701337-4 MS		L2688548-1						
Cyanide, Weak Acid Diss			98.6		%		70-130	02-MAR-22
CR-CR6-IC-WT								
Soil								
Batch R5731660								
WG3701339-5 CRM		WT-SQC012						
Chromium, Hexavalent			88.2		%		70-130	03-MAR-22
WG3701339-3 DUP		L2688548-1						
Chromium, Hexavalent		0.52	0.39		ug/g	28	35	03-MAR-22
WG3701339-2 LCS			89.9		%		80-120	03-MAR-22
Chromium, Hexavalent								
WG3701339-1 MB			<0.20		ug/g		0.2	03-MAR-22
Chromium, Hexavalent								
EC-WT								
Soil								
Batch R5732936								
WG3702120-4 DUP		WG3702120-3						
Conductivity		1.60	1.55		mS/cm	3.2	20	04-MAR-22
WG3702120-2 IRM		WT SAR4						
Conductivity			99.8		%		70-130	04-MAR-22
WG3702536-1 LCS			95.8		%		90-110	04-MAR-22
Conductivity								
WG3702120-1 MB			<0.0040		mS/cm		0.004	04-MAR-22
Conductivity								
Batch R5733063								
WG3702186-4 DUP		WG3702186-3						
Conductivity		0.180	0.177		mS/cm	1.2	20	04-MAR-22
WG3702186-2 IRM		WT SAR4						



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Client: EnGlobe Corp. (London)
417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuymbroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT		Soil						
Batch	R5733063							
WG3702186-2	IRM	WT SAR4						
Conductivity			98.3		%		70-130	04-MAR-22
WG3702567-1	LCS							
Conductivity			95.3		%		90-110	04-MAR-22
WG3702186-1	MB							
Conductivity			<0.0040		mS/cm		0.004	04-MAR-22
F1-HS-511-WT		Soil						
Batch	R5730339							
WG3700700-4	DUP	WG3700700-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	01-MAR-22
WG3700700-2	LCS							
F1 (C6-C10)			112.2		%		80-120	01-MAR-22
WG3700700-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	01-MAR-22
Surrogate: 3,4-Dichlorotoluene			113.5		%		60-140	01-MAR-22
WG3700700-5	MS	WG3700700-3						
F1 (C6-C10)			112.6		%		60-140	01-MAR-22
Batch	R5730349							
WG3700425-4	DUP	WG3700425-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	01-MAR-22
WG3700425-2	LCS							
F1 (C6-C10)			103.8		%		80-120	01-MAR-22
WG3700425-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	01-MAR-22
Surrogate: 3,4-Dichlorotoluene			103.6		%		60-140	01-MAR-22
WG3700425-5	MS	WG3700425-3						
F1 (C6-C10)			102.2		%		60-140	01-MAR-22
F2-F4-511-WT		Soil						
Batch	R5732192							
WG3701846-3	DUP	WG3701846-5						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	03-MAR-22
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	03-MAR-22
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	03-MAR-22
WG3701846-2	LCS							
F2 (C10-C16)			81.6		%		70-130	03-MAR-22
F3 (C16-C34)			108.7		%		70-130	03-MAR-22
F4 (C34-C50)			101.8		%		70-130	03-MAR-22

Quality Control Report

Workorder: L2688548

Report Date: 07-MAR-22

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Client: EnGlobe Corp. (London)
417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuybroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch	R5732055							
WG3702030-16 CRM		WT-SS-2						
Antimony (Sb)			92.8		%		70-130	03-MAR-22
Arsenic (As)			97.8		%		70-130	03-MAR-22
Barium (Ba)			104.9		%		70-130	03-MAR-22
Beryllium (Be)			98.6		%		70-130	03-MAR-22
Boron (B)			8.7		mg/kg		3.5-13.5	03-MAR-22
Cadmium (Cd)			95.3		%		70-130	03-MAR-22
Chromium (Cr)			98.3		%		70-130	03-MAR-22
Cobalt (Co)			99.8		%		70-130	03-MAR-22
Copper (Cu)			102.1		%		70-130	03-MAR-22
Lead (Pb)			97.8		%		70-130	03-MAR-22
Molybdenum (Mo)			99.6		%		70-130	03-MAR-22
Nickel (Ni)			100.4		%		70-130	03-MAR-22
Selenium (Se)			0.12		mg/kg		0-0.34	03-MAR-22
Silver (Ag)			114.2		%		70-130	03-MAR-22
Thallium (Tl)			0.078		mg/kg		0.029-0.129	03-MAR-22
Uranium (U)			94.7		%		70-130	03-MAR-22
Vanadium (V)			99.6		%		70-130	03-MAR-22
Zinc (Zn)			98.4		%		70-130	03-MAR-22
WG3702030-20 DUP		WG3702030-19						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	03-MAR-22
Arsenic (As)		1.44	1.44		ug/g	0.3	30	03-MAR-22
Barium (Ba)		10.7	10.2		ug/g	4.8	40	03-MAR-22
Beryllium (Be)		0.10	0.10		ug/g	2.1	30	03-MAR-22
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	03-MAR-22
Cadmium (Cd)		0.139	0.133		ug/g	4.4	30	03-MAR-22
Chromium (Cr)		5.40	5.23		ug/g	3.3	30	03-MAR-22
Cobalt (Co)		1.50	1.38		ug/g	8.5	30	03-MAR-22
Copper (Cu)		4.88	4.67		ug/g	4.3	30	03-MAR-22
Lead (Pb)		10.1	9.78		ug/g	3.5	40	03-MAR-22
Molybdenum (Mo)		0.29	0.30		ug/g	3.6	40	03-MAR-22
Nickel (Ni)		3.01	2.78		ug/g	7.7	30	03-MAR-22
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	03-MAR-22
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	03-MAR-22



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Contact: Ed VanPuymbroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch R5732055								
WG3702030-20	DUP	WG3702030-19						
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	03-MAR-22
Uranium (U)		0.379	0.354		ug/g	6.9	30	03-MAR-22
Vanadium (V)		11.8	11.2		ug/g	5.4	30	03-MAR-22
Zinc (Zn)		66.1	59.7		ug/g	10	30	03-MAR-22
WG3702030-18	LCS							
Antimony (Sb)			104.7		%		80-120	03-MAR-22
Arsenic (As)			100.6		%		80-120	03-MAR-22
Barium (Ba)			102.1		%		80-120	03-MAR-22
Beryllium (Be)			98.0		%		80-120	03-MAR-22
Boron (B)			96.4		%		80-120	03-MAR-22
Cadmium (Cd)			98.9		%		80-120	03-MAR-22
Chromium (Cr)			100.2		%		80-120	03-MAR-22
Cobalt (Co)			99.8		%		80-120	03-MAR-22
Copper (Cu)			99.9		%		80-120	03-MAR-22
Lead (Pb)			101.8		%		80-120	03-MAR-22
Molybdenum (Mo)			100.3		%		80-120	03-MAR-22
Nickel (Ni)			99.0		%		80-120	03-MAR-22
Selenium (Se)			100.8		%		80-120	03-MAR-22
Silver (Ag)			93.6		%		80-120	03-MAR-22
Thallium (Tl)			98.5		%		80-120	03-MAR-22
Uranium (U)			101.6		%		80-120	03-MAR-22
Vanadium (V)			101.7		%		80-120	03-MAR-22
Zinc (Zn)			97.5		%		80-120	03-MAR-22
WG3702030-15	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	03-MAR-22
Arsenic (As)			<0.10		mg/kg		0.1	03-MAR-22
Barium (Ba)			<0.50		mg/kg		0.5	03-MAR-22
Beryllium (Be)			<0.10		mg/kg		0.1	03-MAR-22
Boron (B)			<5.0		mg/kg		5	03-MAR-22
Cadmium (Cd)			<0.020		mg/kg		0.02	03-MAR-22
Chromium (Cr)			<0.50		mg/kg		0.5	03-MAR-22
Cobalt (Co)			<0.10		mg/kg		0.1	03-MAR-22
Copper (Cu)			<0.50		mg/kg		0.5	03-MAR-22
Lead (Pb)			<0.50		mg/kg		0.5	03-MAR-22

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT								
Soil								
Batch R5732055								
WG3702030-15 MB								
Molybdenum (Mo)			<0.10		mg/kg		0.1	03-MAR-22
Nickel (Ni)			<0.50		mg/kg		0.5	03-MAR-22
Selenium (Se)			<0.20		mg/kg		0.2	03-MAR-22
Silver (Ag)			<0.10		mg/kg		0.1	03-MAR-22
Thallium (Tl)			<0.050		mg/kg		0.05	03-MAR-22
Uranium (U)			<0.050		mg/kg		0.05	03-MAR-22
Vanadium (V)			<0.20		mg/kg		0.2	03-MAR-22
Zinc (Zn)			<2.0		mg/kg		2	03-MAR-22
Batch R5732301								
WG3702123-2 CRM								
WT-SS-2								
Antimony (Sb)			96.8		%		70-130	03-MAR-22
Arsenic (As)			97.3		%		70-130	03-MAR-22
Barium (Ba)			104.5		%		70-130	03-MAR-22
Beryllium (Be)			94.0		%		70-130	03-MAR-22
Boron (B)			7.3		mg/kg		3.5-13.5	03-MAR-22
Cadmium (Cd)			93.4		%		70-130	03-MAR-22
Chromium (Cr)			88.3		%		70-130	03-MAR-22
Cobalt (Co)			95.1		%		70-130	03-MAR-22
Copper (Cu)			97.5		%		70-130	03-MAR-22
Lead (Pb)			93.1		%		70-130	03-MAR-22
Molybdenum (Mo)			98.3		%		70-130	03-MAR-22
Nickel (Ni)			96.8		%		70-130	03-MAR-22
Selenium (Se)			0.11		mg/kg		0-0.34	03-MAR-22
Silver (Ag)			94.8		%		70-130	03-MAR-22
Thallium (Tl)			0.072		mg/kg		0.029-0.129	03-MAR-22
Uranium (U)			90.7		%		70-130	03-MAR-22
Vanadium (V)			92.2		%		70-130	03-MAR-22
Zinc (Zn)			96.6		%		70-130	03-MAR-22
WG3702123-6 DUP								
WG3702123-5								
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	03-MAR-22
Arsenic (As)		1.75	1.86		ug/g	6.3	30	03-MAR-22
Barium (Ba)		32.2	35.0		ug/g	8.4	40	03-MAR-22
Beryllium (Be)		0.20	0.22		ug/g	9.4	30	03-MAR-22
Boron (B)		5.6	6.0		ug/g	6.7	30	03-MAR-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5732301							
WG3702123-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	03-MAR-22
Arsenic (As)			<0.10		mg/kg		0.1	03-MAR-22
Barium (Ba)			<0.50		mg/kg		0.5	03-MAR-22
Beryllium (Be)			<0.10		mg/kg		0.1	03-MAR-22
Boron (B)			<5.0		mg/kg		5	03-MAR-22
Cadmium (Cd)			<0.020		mg/kg		0.02	03-MAR-22
Chromium (Cr)			<0.50		mg/kg		0.5	03-MAR-22
Cobalt (Co)			<0.10		mg/kg		0.1	03-MAR-22
Copper (Cu)			<0.50		mg/kg		0.5	03-MAR-22
Lead (Pb)			<0.50		mg/kg		0.5	03-MAR-22
Molybdenum (Mo)			<0.10		mg/kg		0.1	03-MAR-22
Nickel (Ni)			<0.50		mg/kg		0.5	03-MAR-22
Selenium (Se)			<0.20		mg/kg		0.2	03-MAR-22
Silver (Ag)			<0.10		mg/kg		0.1	03-MAR-22
Thallium (Tl)			<0.050		mg/kg		0.05	03-MAR-22
Uranium (U)			<0.050		mg/kg		0.05	03-MAR-22
Vanadium (V)			<0.20		mg/kg		0.2	03-MAR-22
Zinc (Zn)			<2.0		mg/kg		2	03-MAR-22
MOISTURE-WT		Soil						
Batch	R5731139							
WG3701880-3	DUP	L2688548-1						
% Moisture		10.8	10.3		%	4.6	20	02-MAR-22
WG3701880-2	LCS							
% Moisture			100.9		%		90-110	02-MAR-22
WG3701880-1	MB							
% Moisture			<0.25		%		0.25	02-MAR-22
PH-WT		Soil						
Batch	R5731716							
WG3701742-1	DUP	L2688548-5						
pH		7.57	7.60	J	pH units	0.03	0.3	03-MAR-22
WG3702047-1	LCS							
pH			6.99		pH units		6.9-7.1	03-MAR-22
SAR-R511-WT		Soil						

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417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuybroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT		Soil						
Batch	R5732916							
WG3702120-4	DUP	WG3702120-3						
Calcium (Ca)		3.00	2.83		mg/L	5.8	30	04-MAR-22
Sodium (Na)		308	304		mg/L	1.3	30	04-MAR-22
Magnesium (Mg)		<0.50	<0.50	RPD-NA	mg/L	N/A	30	04-MAR-22
WG3702120-2	IRM	WT SAR4						
Calcium (Ca)			90.8		%		70-130	04-MAR-22
Sodium (Na)			93.7		%		70-130	04-MAR-22
Magnesium (Mg)			92.0		%		70-130	04-MAR-22
WG3702120-5	LCS							
Calcium (Ca)			98.7		%		80-120	04-MAR-22
Sodium (Na)			95.8		%		80-120	04-MAR-22
Magnesium (Mg)			96.4		%		80-120	04-MAR-22
WG3702120-1	MB							
Calcium (Ca)			<0.50		mg/L		0.5	04-MAR-22
Sodium (Na)			<0.50		mg/L		0.5	04-MAR-22
Magnesium (Mg)			<0.50		mg/L		0.5	04-MAR-22
Batch	R5732937							
WG3702186-4	DUP	WG3702186-3						
Calcium (Ca)		17.3	17.3		mg/L	0.0	30	04-MAR-22
Sodium (Na)		12.6	12.5		mg/L	0.8	30	04-MAR-22
Magnesium (Mg)		3.26	3.26		mg/L	0.0	30	04-MAR-22
WG3702186-2	IRM	WT SAR4						
Calcium (Ca)			95.6		%		70-130	04-MAR-22
Sodium (Na)			89.5		%		70-130	04-MAR-22
Magnesium (Mg)			94.6		%		70-130	04-MAR-22
WG3702186-5	LCS							
Calcium (Ca)			103.7		%		80-120	04-MAR-22
Sodium (Na)			100.8		%		80-120	04-MAR-22
Magnesium (Mg)			101.2		%		80-120	04-MAR-22
WG3702186-1	MB							
Calcium (Ca)			<0.50		mg/L		0.5	04-MAR-22
Sodium (Na)			<0.50		mg/L		0.5	04-MAR-22
Magnesium (Mg)			<0.50		mg/L		0.5	04-MAR-22

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

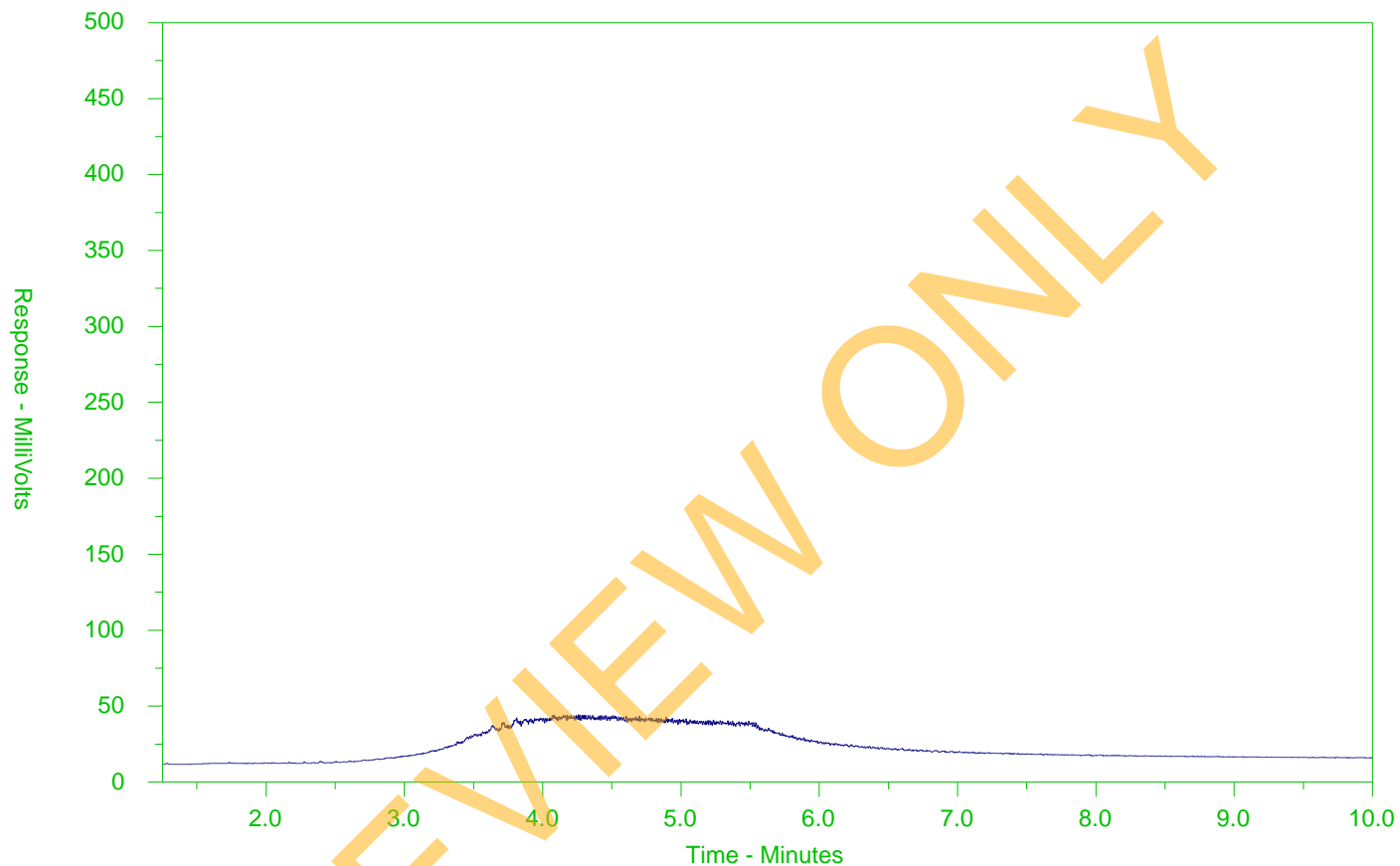
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2688548-1
Client Sample ID: BH01-22 S-1



F2		F3		F4	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

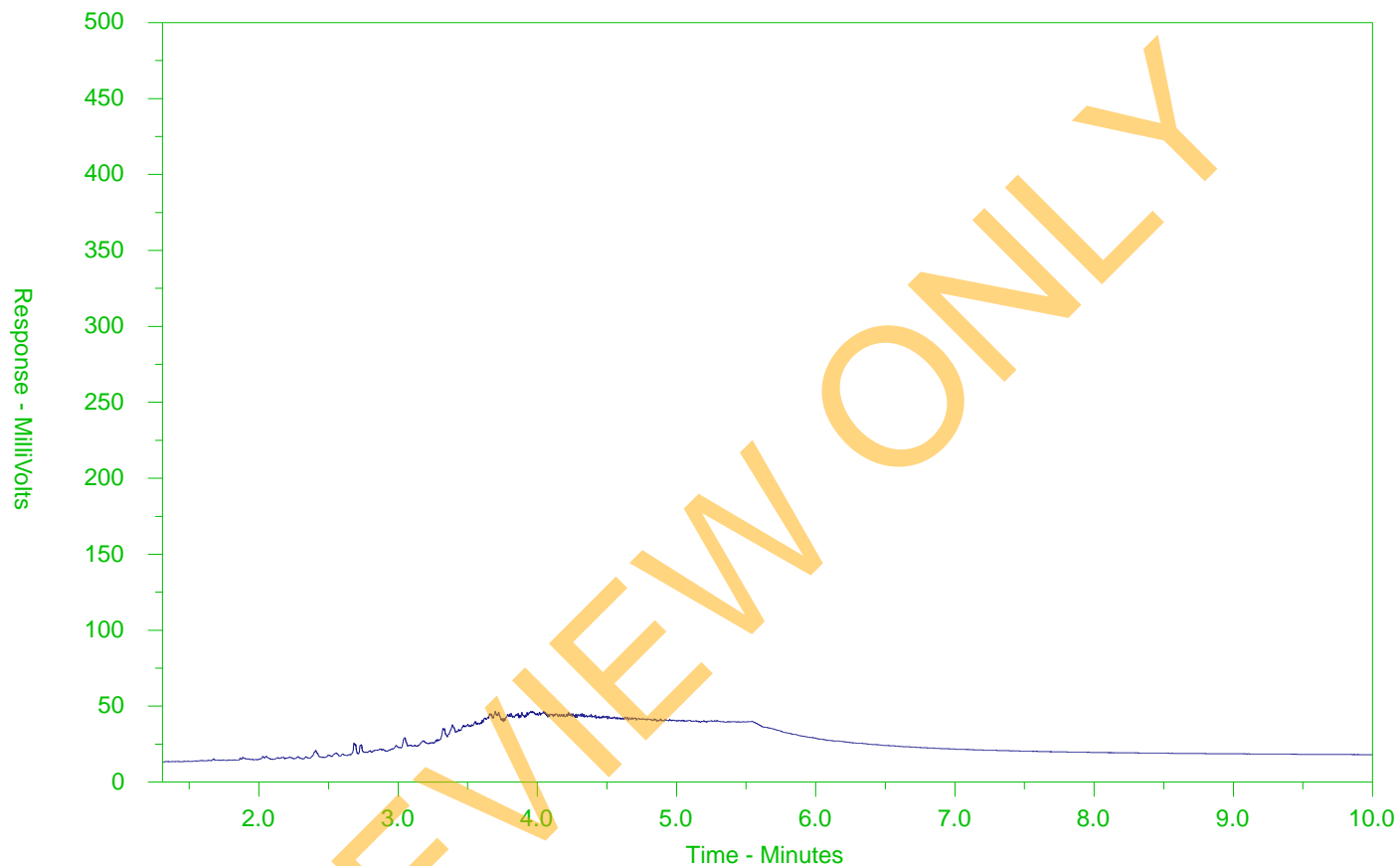
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

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CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2688548-2
Client Sample ID: BH02-22 S-1



← F2 →		← F3 →		← F4 →	
nC10	nC16	nC34		nC50	
174°C	287°C	481°C		575°C	
346°F	549°F	898°F		1067°F	
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

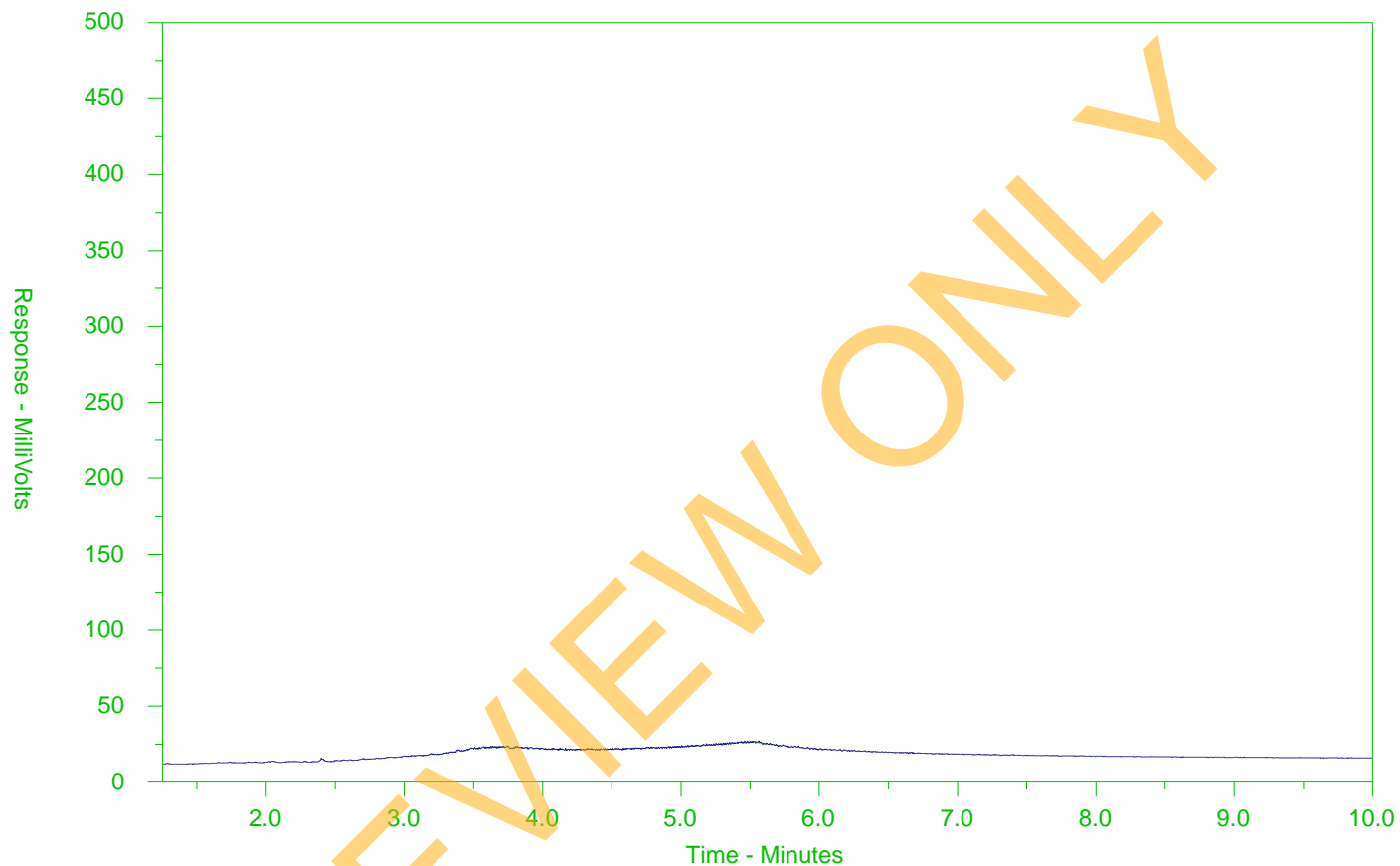
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

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CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2688548-3
Client Sample ID: BH03-22 S-1



F2		F3		F4	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

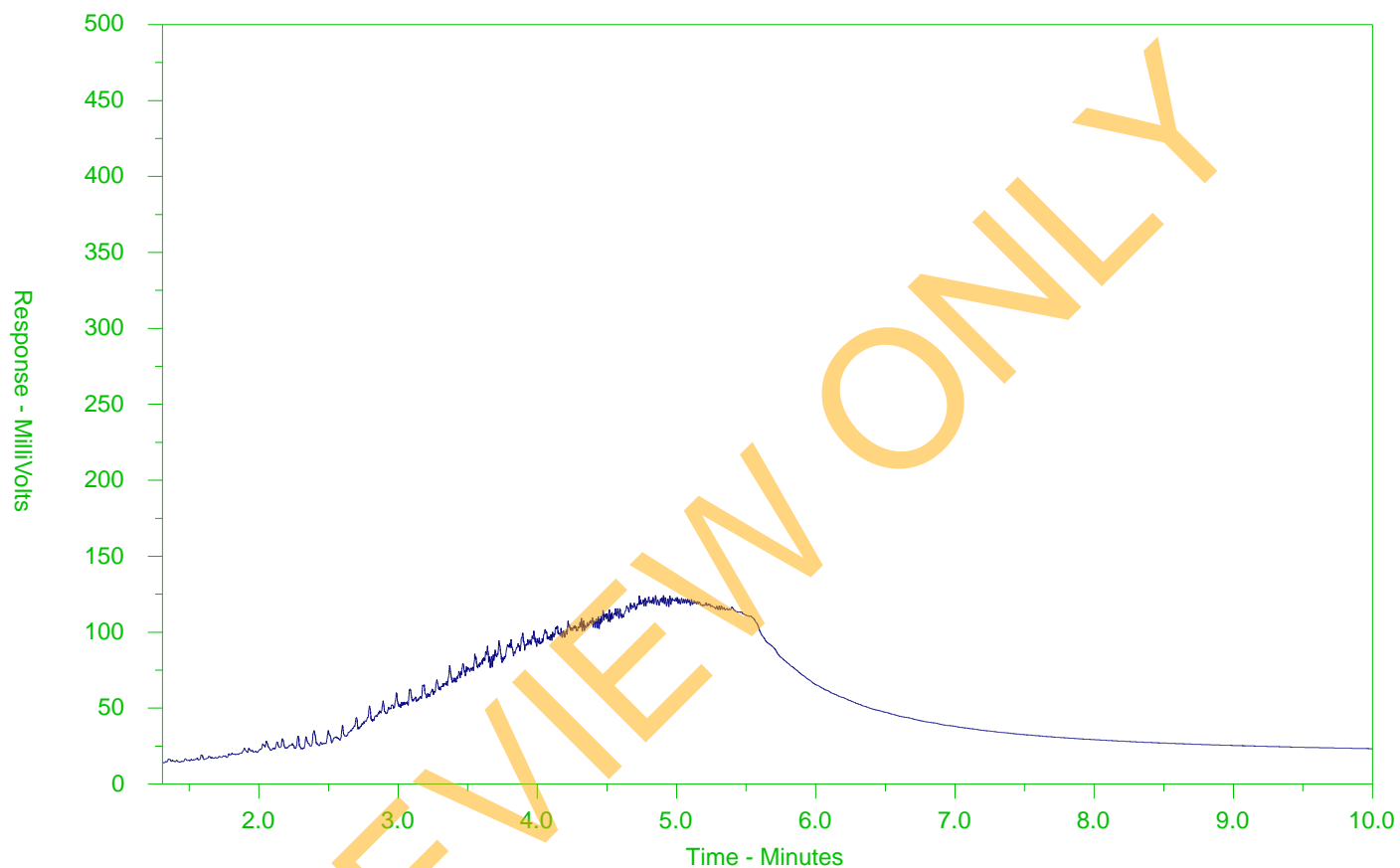
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

PREVIEW ONLY

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2688548-4
Client Sample ID: BH04-22 S-1



F2		F3		F4	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

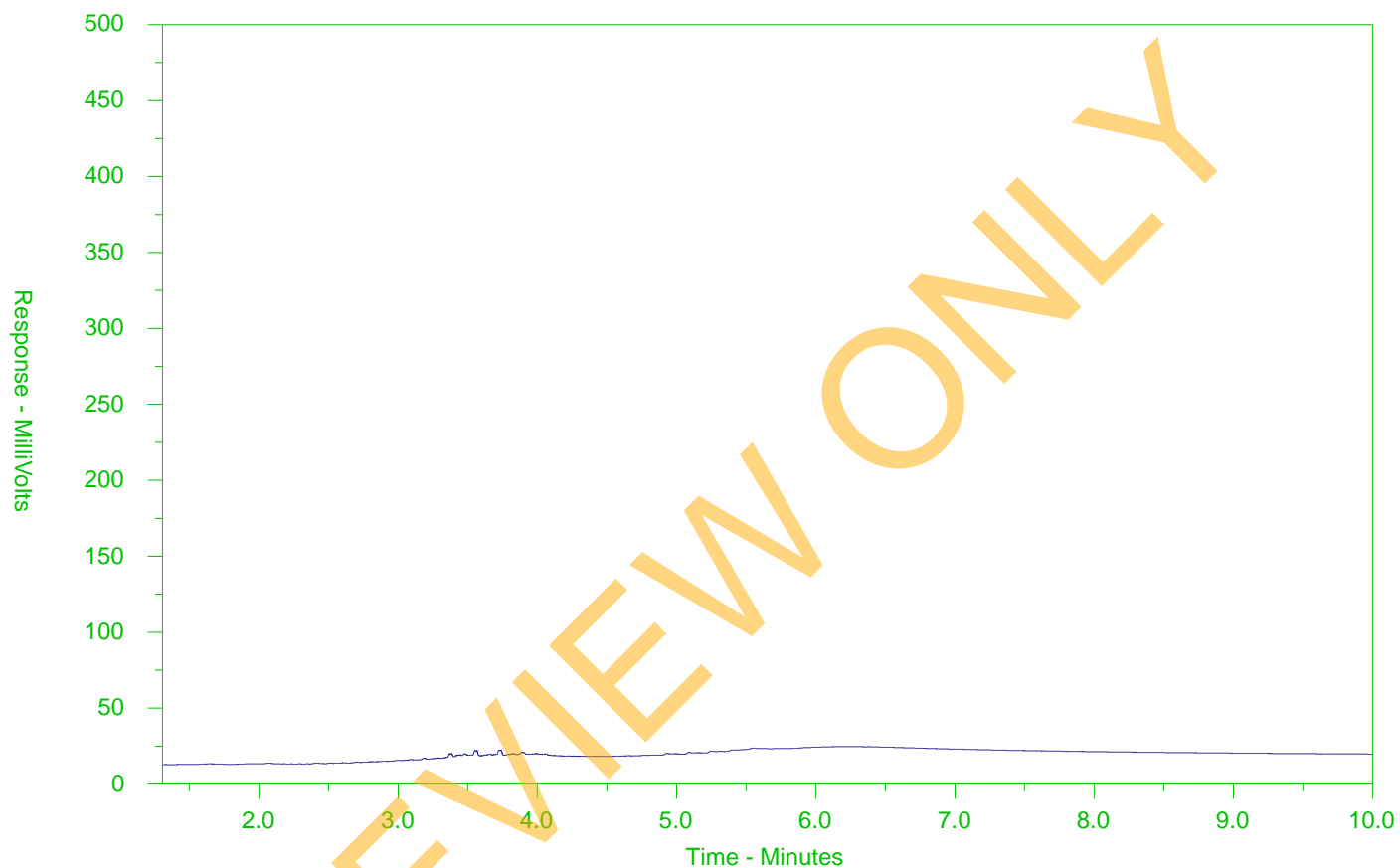
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

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CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2688548-6
Client Sample ID: BH06-22 S-3



F2		F3		F4	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

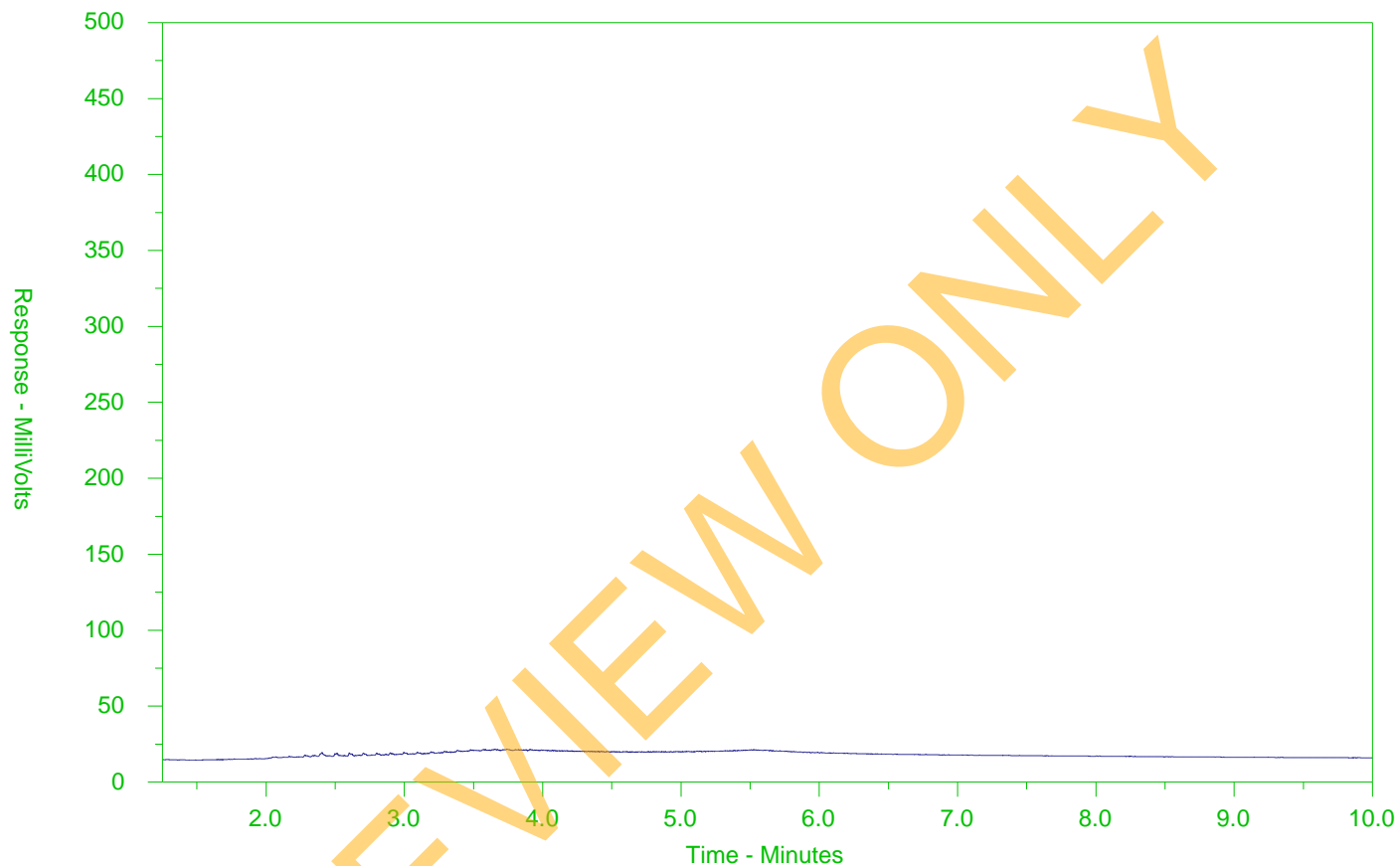
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

PREVIEW ONLY

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2688548-7
Client Sample ID: BH07-22 S-2



F2		F3		F4	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

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AUG 2029 FROM

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.



EnGlobe Corp. (London)
ATTN: Ed VanPuymbroeck
417 Exeter Road
LONDON ON N6E 2Z3

Date Received: 25-FEB-22
Report Date: 07-MAR-22 15:02 (MT)
Version: FINAL

Client Phone: 519-680-3868

Certificate of Analysis

Lab Work Order #: L2688556
Project P.O. #: PEMBERTON ST
Job Reference: 02110022 INGERSOLL
C of C Numbers:
Legal Site Desc:

PREVIEW ONLY

Gayle Braun
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 309 Exeter Road Unit #29, London, ON N6L 1C1 Canada | Phone: +1 519 652 6044 | Fax: +1 519 652 0671
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2688556-1 SOIL 24-FEB-22 BH02-22 S-2	L2688556-2 SOIL 24-FEB-22 BH04-22 S-4	L2688556-3 SOIL 24-FEB-22 BH06-22 S-3		
Grouping	Analyte					
SOIL						
Physical Tests	Conductivity (mS/cm)	2.17	0.429	1.64		
	% Moisture (%)	7.93	5.43	12.7		
	pH (pH units)	7.66	7.96	7.41		
	Redox Potential (mV)	303	269	257		
	Resistivity (ohm*cm)	461	2330	609		
Leachable Anions & Nutrients	Chloride (ug/g)	1240	208	1040		
Anions and Nutrients	Sulphate (ug/g)	24	<20	<20		
Inorganic Parameters	Acid Volatile Sulphides (mg/kg)	0.32	<0.20	0.57		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-R511-WT	Soil	Chloride-O.Reg 153/04 (July 2011)	EPA 300.0
5 grams of dried soil is mixed with 10 grams of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
EC-WT	Soil	Conductivity (EC)	MOEE E3138
A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PH-WT	Soil	pH	MOEE E3137A
A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
REDOX-POTENTIAL-WT	Soil	Redox Potential	APHA 2580
This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Samples are extracted at a fixed ratio with DI water. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
RESISTIVITY-CALC-WT	Soil	Resistivity Calculation	APHA 2510 B
"Soil Resistivity (calculated)" is determined as the inverse of the conductivity of a 2:1 water:soil leachate (dry weight). This method is intended as a rapid approximation for Soil Resistivity. Where high accuracy results are required, direct measurement of Soil Resistivity by the Wenner Four-Electrode Method (ASTM G57) is recommended.			
SO4-WT	Soil	Sulphate	EPA 300.0
5 grams of soil is mixed with 50 mL of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.			
SULPHIDE-WT	Soil	Sulphide, Acid Volatile	APHA 4500S2J
This analysis is carried out in accordance with the method described in APHA 4500 S2-J. Hydrochloric acid is added to sediment samples within a purge and trap system. The evolved hydrogen sulphide (H ₂ S) is carried into a basic solution by inert gas. The acid volatile sulfide is then determined colourimetrically.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg ww - milligrams per kilogram based on wet weight of sample.

mg/kg lw - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

PREVIEW ONLY

Quality Control Report

Workorder: L2688556

Report Date: 07-MAR-22

Page 1 of 3

Client: EnGlobe Corp. (London)
417 Exeter Road
LONDON ON N6E 2Z3

Contact: Ed VanPuymbroeck

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-R511-WT								
Soil								
Batch	R5731723							
WG3701635-3	CRM	AN-CRM-WT						
Chloride			98.2		%		70-130	02-MAR-22
WG3701635-2	LCS							
Chloride			102.5		%		80-120	02-MAR-22
WG3701635-1	MB							
Chloride			<5.0		ug/g		5	02-MAR-22
EC-WT								
Soil								
Batch	R5730967							
WG3701360-2	IRM	WT SAR4						
Conductivity			100.4		%		70-130	02-MAR-22
WG3701706-1	LCS							
Conductivity			96.5		%		90-110	02-MAR-22
WG3701360-1	MB							
Conductivity			<0.0040		mS/cm		0.004	02-MAR-22
Batch	R5731024							
WG3701660-2	IRM	WT SAR4						
Conductivity			110.3		%		70-130	02-MAR-22
WG3701801-1	LCS							
Conductivity			92.5		%		90-110	02-MAR-22
WG3701660-1	MB							
Conductivity			<0.0040		mS/cm		0.004	02-MAR-22
MOISTURE-WT								
Soil								
Batch	R5730338							
WG3700531-2	LCS							
% Moisture			99.4		%		90-110	01-MAR-22
WG3700531-1	MB							
% Moisture			<0.25		%		0.25	01-MAR-22
PH-WT								
Soil								
Batch	R5730856							
WG3701581-1	LCS							
pH			7.00		pH units		6.9-7.1	02-MAR-22
REDOX-POTENTIAL-WT								
Soil								
Batch	R5730583							
WG3701071-1	CRM	WT-REDOX						
Redox Potential			101.1		%		90-110	01-MAR-22
WG3700528-1	DUP	L2688556-1						

Quality Control Report

Workorder: L2688556

Report Date: 07-MAR-22

Page 2 of 3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
REDOX-POTENTIAL-WT Soil								
Batch	R5730583							
WG3700528-1	DUP	L2688556-1						
Redox Potential		303	281		mV	7.5	25	01-MAR-22
SO4-WT Soil								
Batch	R5731723							
WG3701635-3	CRM	AN-CRM-WT						
Sulphate			100.5		%		60-140	02-MAR-22
WG3701635-2	LCS							
Sulphate			103.4		%		70-130	02-MAR-22
WG3701635-1	MB							
Sulphate			<20		ug/g		20	02-MAR-22
SULPHIDE-WT Soil								
Batch	R5732340							
WG3702224-3	DUP	L2688556-2						
Acid Volatile Sulphides		<0.20	<0.20	RPD-NA	mg/kg	N/A	45	03-MAR-22
WG3702224-2	LCS							
Acid Volatile Sulphides			70.5		%		70-130	03-MAR-22
WG3702224-1	MB							
Acid Volatile Sulphides			<0.20		mg/kg		0.2	03-MAR-22

Quality Control Report

Workorder: L2688556

Report Date: 07-MAR-22

Page 3 of 3

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

[illegible]

Page 1 of 1

L2688556-COFC

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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1. If any water samples are taken from a Regulated Drinking Water (RDW) System, please submit using an Authorized DW COC form.

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AUG 2020 FRCA

Appendix E

Corrosion Potential Table

PREVIEW ONLY



CORROSION POTENTIAL TABLE

Soil Characteristics	CIPRA Rating System		BH-02-22 Sample 2		BH-04-22 Sample 4		BH-06-22 Sample 3	
	Result	Points	Result	Points	Result	Points	Result	Points
Resistivity (ohm-cm)	<700 700-1000 1000-1200 1200-1500 1500-2000 >2000	10 8 5 2 1 0	461	10	2330	0	609	10
pH	0-2 2-4 4-6.5 6.5-7.5 7.5-8.5 >8.5	5 3 0 0* 0 3	7.66	0	7.96	0	7.41	0
Redox Potential (mV)	>+100 +50-+100 0-+50 negative	0 3.5 4 5	303	0	269	0	257	0
Sulphides (mg/kg)	positive trace negative	3.5 2 0	0.32	2	<0.20	2	0.57	2
Moisture	wet moist dry	2 1 0	7.93%	1	5.43%	1	12.7%	1
TOTAL POINTS			-	13	-	3	-	13

For ten or more points, then corrosion protection is required for ferrous pipe.

* If sulfides are present and low or negative redox-potential results are obtained, three points shall be given for this range.





January 8, 2024

The Town of Ingersoll
130 Oxford Street
Ingersoll, Ontario N5C 2V5
Attention: Mr. Todd Elley, Advisor

Subject: Supplemental Geotechnical Boreholes
Pemberton Street Reconstruction
Ingersoll, Ontario
Englobe reference: 04-02308506.001-L-0001-00

As requested, Englobe drilled two additional boreholes on Pemberton Street between James street and Charles Street in the Town of Ingersoll, to provide information for contractors bidding on the project. The site location and borehole location plans are attached as Drawings 1 and 2 in Appendix A. The borehole logs are included in Appendix B.

Previous boreholes were put down at the subject site and findings with recommendations were provided in a geotechnical report prepared by Englobe, Reference Number 04-02110022.0200.0101.GS-R-0001-00 dated April 4, 2023. The stratigraphy revealed in the latest boreholes is similar to that revealed in nearby boreholes, and the recommendations presented in the geotechnical report are still considered valid.

We trust this letter report is sufficient for your present requirements. Please contact our office if further discussion is required

Yours very truly,

Englobe Corp.

Robert Helwig, P. Geo., QP
Senior Geoscientist

Zaheer Babar, M.A.Sc., PMP
Project Manger

APPENDICES

Appendix A Drawings
Appendix B Borehole Logs

Appendix A

Drawings

PREVIEW ONLY



eNGLOBE



NOTES:
1-REFERENCES: © Google Earth 2023.
2-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.


Project

Road Reconstruction

Pemberton Street from Wilson St to Charles St, Ingersoll, ON

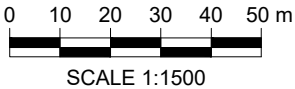
Title

Site Location Plan


ENGLOBE 

440, Hardy Road, Unit 3
Brantford (Ontario) N3T 5L8
Telephone : 519.720.0078
Fax : 519.720.0976

Prepared A.Teka	Discipline GEOTECHNICAL	Project manager Z. Babar
Drawn A.Teka	Scale 1:7500	Sequence no.
Checked Z. Babar	Date 2023-12-18	01 of 02
M. dept. 04	Project 02308586.001	Disc. GE Dwg no. 001 Rev. 00



LEGEND :

 **BH - 01** BOREHOLE LOCATION
EL.269.0 GROUND SURFACE ELEVATION (m)

NOTES :

1-REFERENCES:
2-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.



Project

Road Reconstruction

Pemberton Street from Wilson St to Charles St, Ingersoll, ON

Title

Borehole Location Plan



Englobe Corp.
440 Hardy Road, Suite 3
Brantford, ON N3T 5L8
T 519 720-0078
F 519 720-0976

Prepared	A.Teka	Discipline	GEOTECHNICAL	
Drawn	A.Teka	Scale	1:1500	
Checked	Z. Babar	Date	2023-12-18	
Project manager	Z. Babar	Sequence no.	02 of 02	
M. dept.	Project	Disc.	Dwg no.	Rev.
04	02308586.001	GE	002	00

Appendix B

Borehole Logs

PREVIEW ONLY



eNGLOBE

Project No. : 02308586.001 Client : Town of Ingersoll Originated by : MA
 Date started : November 16, 2023 Project : Reconstruction of Pemberton Street Compiled by : ZB
 Sheet No. : 1 of 1 Location : Pemberton Street from Wilson St to Chaires St, Ingersoll, Ontario Checked by : RB

Position : E: 510052, N: 4765810 (UTM 17T) Elevation Datum : Geodetic
 Rig type : D50, truck-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	269.0	GROUND SURFACE					269								
0.3	268.7	75mm ASPHALT		1	AS		269								
		180mm GRANULAR BASE, Sand and Gravel, some silt, crushed, brown													
0.9	268.1	560mm GRANULAR SUB BASE, Sand and Gravel, trace silt, trace cobbles, brown		2	SS	18	268								
		FILL, sand, trace silt, trace gravel, trace topsoil, compact, brown, moist													
		...very loose		3	SS	1	267								
		...loose		4	SS	6	267								
2.9	266.1	FILL, sandy topsoil, dark brown, moist ...compact		5	SS	20	266								
3.3	265.7	GRAVELLY SAND, compact, brown, moist					265								
		...sand, trace silt, trace gravel, loose to compact, brown					264								
5.2	263.8	END OF BOREHOLE													

Borehole was dry and open upon completion of drilling.

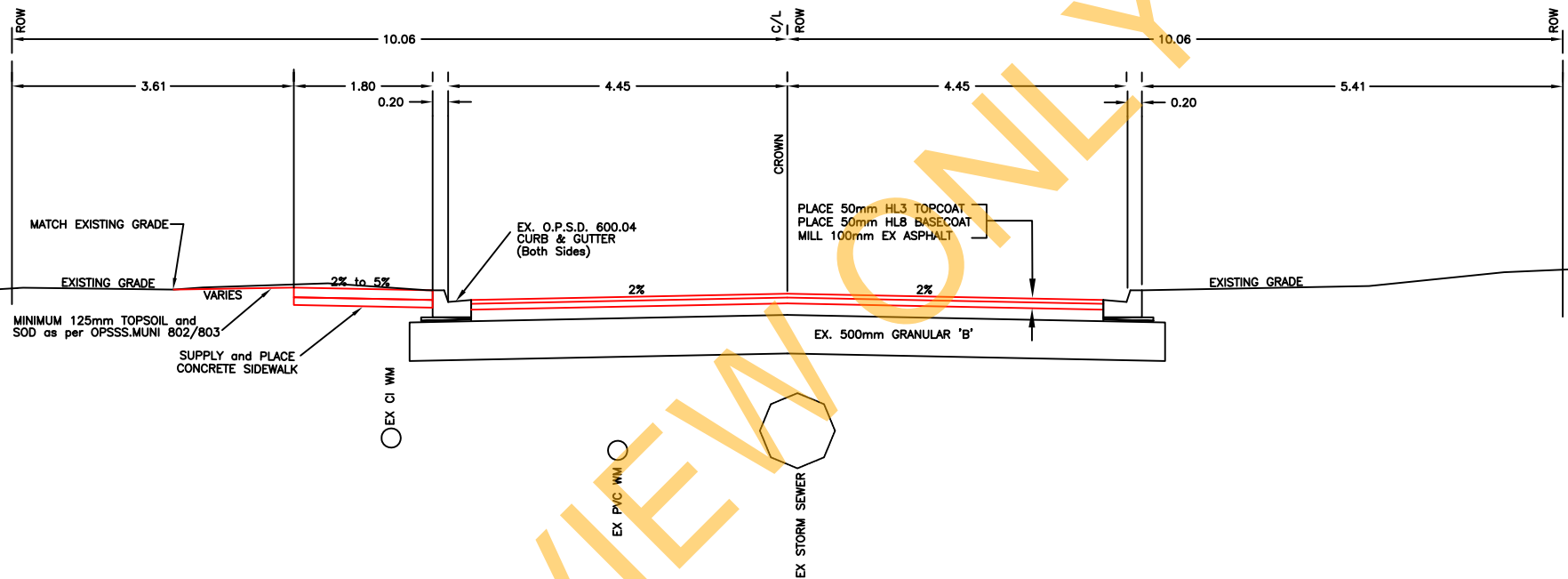
Project No. : 02308586.001 Client : Town of Ingersoll Originated by : MA
 Date started : November 16, 2023 Project : Reconstruction of Pemberton Street Compiled by : ZB
 Sheet No. : 1 of 1 Location : Pemberton Street from Wilson St to Chaires St, Ingersoll, Ontario Checked by : RB

Position : E: 510094, N: 4765771 (UTM 17T) Elevation Datum : Geodetic
 Rig type : D50, truck-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	269.9	GROUND SURFACE													
0.2	269.7	75mm ASPHALT		1	AS										
0.5	269.4	150mm GRANULAR BASE, Sand and Gravel, some silt, crushed, brown													
1	268.5	280mm GRANULAR SUB BASE, Sand and Gravel, trace silt, trace cobbles, brown		2	SS	17									
1.4	268.5	FILL, gravelly sand, trace silt, trace cobbles, compact, brown, moist													
2	267.3	FILL, sandy silt, some topsoil, trace clay, trace gravel, compact, brown, moist		3	SS	11									
2.6	267.3	...loose		4	SS	7									
3	265.6	FILL, sand, some silt, trace to some topsoil, trace gravel, loose to very loose, brown, moist		5	SS	4									
4	265.6				SS	7									
5	264.7	SAND FINE, trace silt, loose, brown, moist													
5.2	264.7	END OF BOREHOLE													

Borehole was dry and open upon completion of drilling.



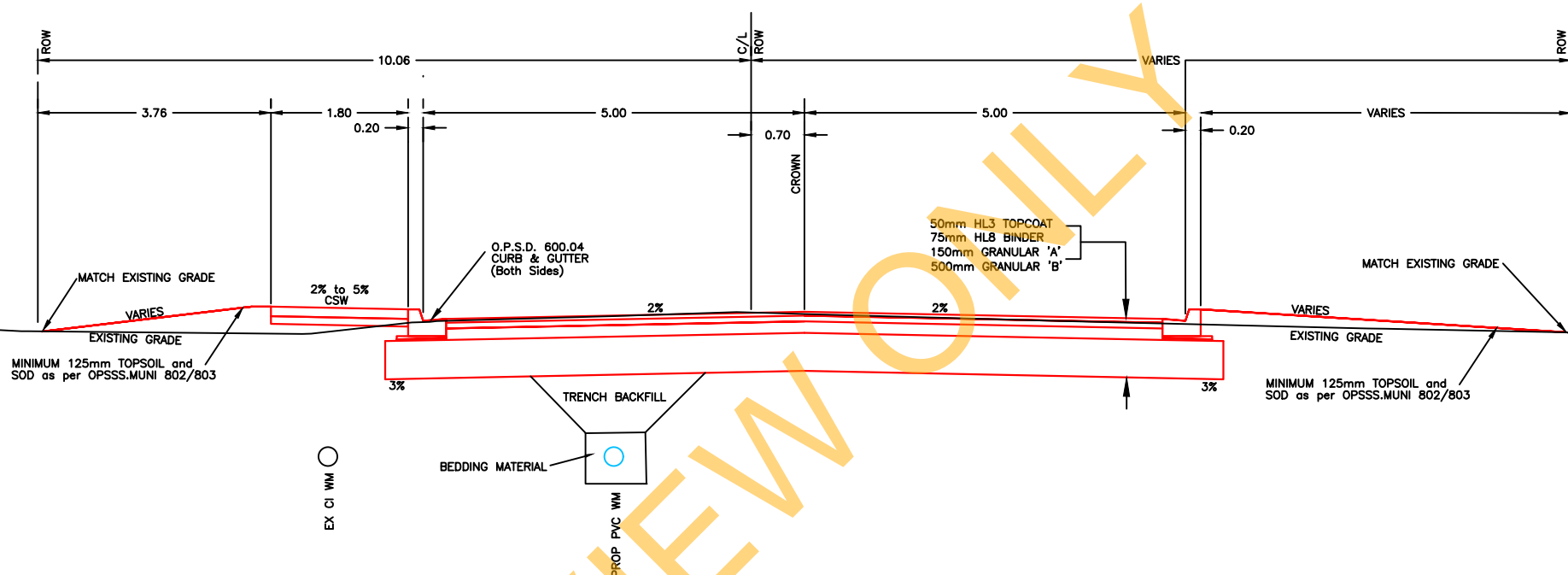


PEMBERTON STREET – MILL and PAVE 9+285 (CHARLES ST) to 9+414 (JANES ROAD)

NTS - Not to Scale

METRIC: ALL DIMENSIONS ARE IN METRES AND/OR
MILLIMETRES UNLESS OTHERWISE NOTED.

				<i>The Corporation of The Town of Ingersoll</i>			
				PEMBERTON STREET			
				MILL and PAVE			
				(CHARLES ST to JANES ROAD)			
No.	BY	DATE	DESCRIPTION				
REVISIONS				DRAWN BY:	APPROVED BY:	DATE:	STANDARD No.
				T.W.E.		FEB 2024	STD 1

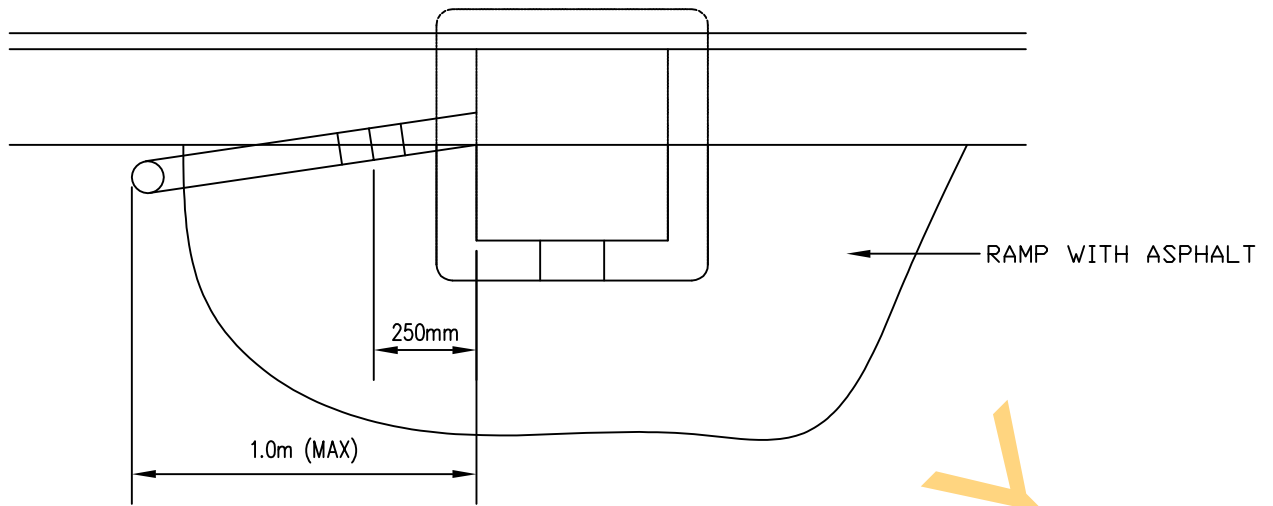


PEMBERTON STREET – CURB BOTH SIDES
9+478 (WILSON STREET) to 9+722 (CNR TRACKS)

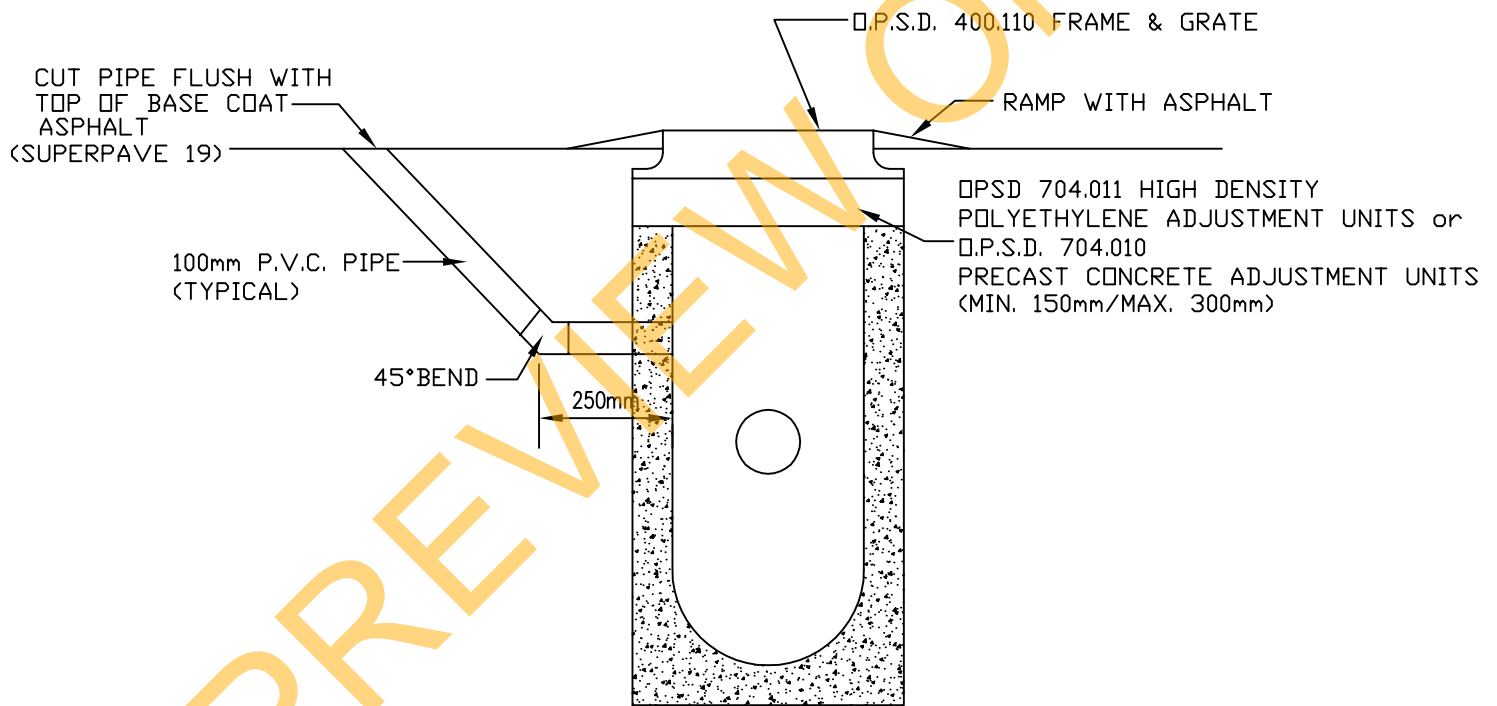
NTS - Not to Scale

METRIC: ALL DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

				The Corporation of The Town of Ingersoll			
				PEMBERTON STREET ROAD RECONSTRUCTION (WILSON RD) to (CNR TRACKS)			
No.	BY	DATE	DESCRIPTION				
REVISIONS				DRAWN BY: T.W.E.	APPROVED BY:	DATE: JAN. 2024	STANDARD No. STD 2



PLAN VIEW



D.P.S.D. 705.010 - CATCHBASIN

METRIC: ALL DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

				<i>The Corporation of The Town of Ingersoll</i>			
				GUTTER DRAIN INSTALLATION			
1		May,2012	COUNCIL APPROVED				
No.	BY	DATE	DESCRIPTION				
REVISIONS				DRAWN BY: T.W.E.	APPROVED BY: E.R.M.	DATE: February 27/01	STANDARD No. S - 31



BULK WATER STATION SERVICES

Bulk water is now available in Oxford County from automatic dispensing stations using a key fob system and prepaid account.

Bulk water key fobs can be purchased for \$25 and customers can also add money to their bulk water account (minimum \$50), paying by cash or cheque, at the Oxford County Administration Building (OCAB) Customer Service, 21 Reeve Street, Woodstock; 519-539-9800.

The current bulk water rate (2019) is \$1.65 per cubic meter (1000 litres)

Bulk water is available at the following locations:

Ingersoll: Canterbury Street Water Treatment Facility – 280 Harris Street

Operating instructions are posted at each station and are also available at OCAB customer service. The discharge pipe at each location is equipped with a 75mm male camlock hose connection.

The County of Oxford will only permit the use of top-filling tanks. Hoses must be clean and dedicated for water use only.

For further information contact the County of Oxford, Water Services at 519-539-9800



BULK WATER STATION OPERATING INSTRUCTIONS

1. Use key provided to unlock cabinet and cap on discharge pipe.
2. Connect own hose to discharge pipe and vehicle. Own hose must be clean and used for water only.

Discharge pipe = 75mm male camlock

3. Open cabinet and ensure that WATER ON/OFF switch is in the WATER OFF position.
4. The display on the THE ATTENDANT will show 'Enter Vehicle Number'. Vehicle number is the same as key fob number and is entered by swiping the key fob on the card reader.
5. After swiping the fob, use the keypad on THE ATTENDANT as follows:

Press: PUMP

Press: 1

Press: OPR

Enter assigned Operator number and press OK

6. When the display on THE ATTENDANT reads BEGIN PUMPING turn the WATER ON/OFF switch to the WATER ON position. Water will begin to flow. If the water is turned off during filling you must re-enter the login information.
7. Water flow will stop if:
 - i) the set quantity is reached
 - ii) the credit limit is reached
 - iii) the WATER ON/OFF switch is turned to the WATER OFF position

Note: the set quantity is pre-programmed for each vehicle.

8. Ensure the WATER ON/OFF switch is turned to the WATER OFF position.
9. Disconnect hose, lock the cap on the discharge pipe, and lock the cabinet.

If you experience any difficulties please call the County of Oxford, Public Works Dept., at 519- 539-9800.

CONCRETE FLATWORK SURFACE DEFECTS

This spring has once again seen a significant increase in the number of salt-scaling problems for exterior concrete flatwork used in residential and municipal applications throughout Ontario, Quebec and New York State. This may be related to the less than ideal placing, finishing and curing practices utilized, combined with the harsher weather extremes now being experienced in the summer and winter months. It may also be due in part to recent modifications to de-icing methods, materials and application rates.

These facts only serve to further highlight the critical need for proper concrete placing, finishing and curing. For all municipal concrete projects using OPSS specifications (351, 353 & 904), the use of one of the following curing methods is specified (OPSS 904.07.03.05): • Burlap and water (Burlap to be presoaked for 24 hours prior to use and to be left in place for 96 hours) • Moisture vapour barrier (to be left in place for 96 hours) • White pigmented compound (protection to be fully maintained for 7 days)

The OPSS standard further requires that all curing methods be implemented within 2 to 4 metres of the finishing operation. The current practice of placing an entire day's work of exterior concrete flatwork while leaving the curing/protection operation until the end of the day is in clear violation of the OPSS requirements and has an extremely detrimental effect on the surface of the concrete. The ultimate durability of the concrete surface is being reduced by the non-existent or incomplete application of the selected curing method.

Another very significant factor that the concrete industry is just beginning to investigate, in both the United States and Canada, is the recent change in winter road maintenance procedures - away from solid chemicals and salt/sand mixtures towards liquid de-icing chemicals.

Enclosed for your review is a technical bulletin prepared by Professor Doug Hooton of the University of Toronto. Professor Hooton is one of the three principal researchers currently conducting a 3-year study on the long term effects of de-icing chemicals on pavements and concrete structures. This research is being conducted on behalf of the South Dakota Department of Transportation with additional financial support being provided by the Federal Highway Administration pooled fund study including California, Colorado, Illinois, Iowa, Montana, Texas and Wyoming.

The Ontario Concrete and Cement industries are currently in discussions with Professor Doug Hooton to expand the research that he is conducting for the US DOT's. The primary purpose of this additional research is to better understand how these new de-icing materials and changes to winter maintenance operations and procedures affect concrete.

In the meantime, we ask that both public and private users of de-icing chemicals be aware of the possible effects that these materials and procedures may have on both their own concrete infrastructure and the concrete infrastructure of third parties.

Ready Mixed Concrete Association of Ontario
365 Brunel Road, Unit 3, Mississauga ON L4Z 1Z5
905-507-1122 Fax: 905-890-8122
info@rmcao.org
www.rmcao.org



FUELS SAFETY DIVISION

May 2005
GA 05/1

ADVISORY

Protection against Vehicular Traffic

The Liquid Fuels Handling Code requires that aboveground tanks, exposed to vehicular traffic, be protected from impact and that the protection be constructed in accordance with good engineering practice.

The following excerpts from the CSA B149.2-00, *Propane Storage and Handling Code*, is considered good engineering practice:

6.19.4.1

Posts used for the protection of a *tank* shall

- (a) be spaced not more than 54 in (1350 mm) apart;
- (b) be buried not less than 36 in (900 mm) below grade;
- (c) extend at least 30 in (750 mm) above grade; and
- (d) be one of the following:
 - (i) 4 in (100 mm) capped steel pipe;
 - (ii) 4 in (100 mm) tubing filled with concrete;
 - (iii) 8 in (200 mm) pressure-treated wood, either square or round; or
 - (iv) 6 in (150 mm) minimum dimension reinforced concrete.

6.19.4.2

Guardrails used for the protection of a *tank* shall be either

- (a) of the steel deep beam type, 12 × 162 in (300 × 4050 mm), supported by 6 in (150 mm) minimum pressure-treated wooden posts located not more than 75 in (1875 mm) apart, centre to centre, and with the top of the beam not more than 24 in (600 mm) above grade; or
- (b) of the reinforced concrete barrier type, commonly referred to as the New Jersey Turnpike barrier, not less than 30 in (750 mm) in height, and the width of the base not less than the height.

6.19.4.3

Posts or guardrails used for the protection of a *tank* shall be located not less than 3.5 ft (1 m) from all sides of the *tank*.

Please note that the above examples may not be adequate in all situations. For example, where there is a potential for impact from heavy construction or logging equipment, a more robust form of vehicle protection may be required.

CONTRACTOR RATING FORM

		Contract No.	
Department: Engineering		Contract Description:	
Contractor:		Final Contract Price:	
		Date Prepared:	
Item	RATING CRITERIA (refer to guide attached)	MAXIMUM POINTS OBTAINABLE	ACTUAL POINTS AWARDED
1.	COMMENCEMENT Any rating below 5 indicates extent of delay by Contractor in commencing work or the amount of Effort required by Staff in order to get the Contractor to commence project on time.	10	
2.	ADEQUATE AND PROPER SUPERVISION The extent to which Staff found it necessary to provide more than normal supervision and guidance due to inadequate supervision by Contractor.	10	
3.	ADEQUATE AND PROPER EQUIPMENT Degree to which Contractor failed to provide adequate equipment to execute work efficiently and expeditiously.	10	
4.	WORKMANSHIP/SERVICE Measure of "polish" a Contractor gives job or Difficulty experienced by Staff in obtaining acceptable work. IE. Normal workmanship/service = 20+/- Difficulties encountered achieving acceptable Workmanship/service = 15 Exceptional workmanship/service = 30	30	
5.	SAFETY PROCEDURES Degree of pressure required to ensure adequate and proper safety procedures.	10	
6.	CO-OPERATION Degree of co-operation with Town officials.	5	
7.	PUBLIC RELATIONS Contractor's consideration of general public, motorists and residents.	5	
8.	EXTRAS Requests for unreasonable extras.	5	
9.	CLEAN-UP Degree of effort by Staff to have project cleaned up in an acceptable manner.	5	
10.	COMPLETION Degree of effort by Contractor to finish on time, or Whether he finished on time.	10	
TOTAL POINTS FOR THIS CONTRACT		100*	
General Comments:			
Rated by:		Approved by:	

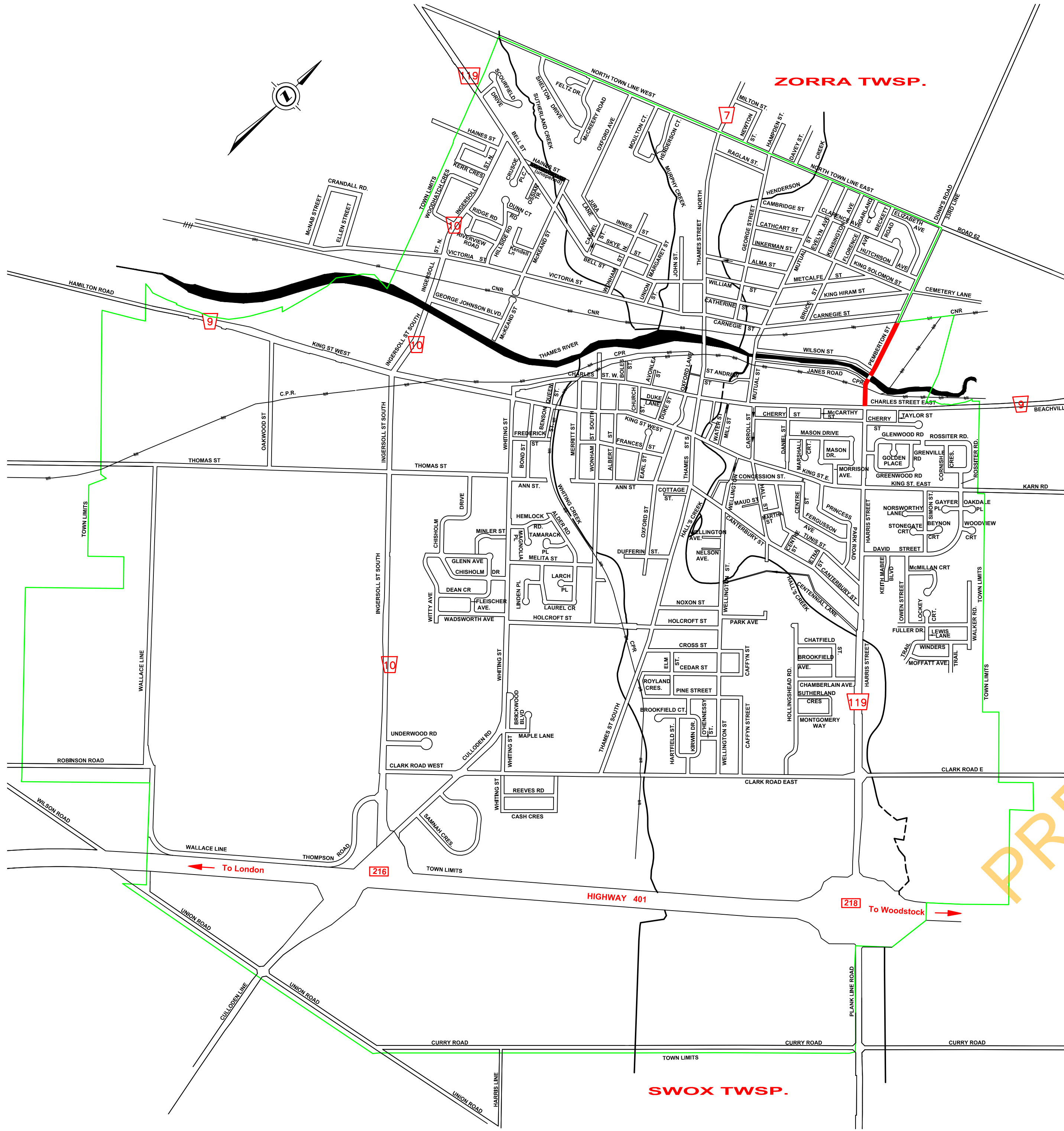
*Excellent 95 - 100 Very Good 90 - 95 Good 85 - 90 Fair 75 - 85 Poor Below 75 points

CONTRACTOR RATING GUIDELINES

Staff prepares the Contractor Rating Form after issuance of the Certificate of Substantial Completion, or completion of the required works. The completed form provides a record of the Contractor's performance on the contract. If, from a perusal of the completed form, it is felt advisable to discuss this with the parties concerned, the Contract Administrator will arrange a meeting.

The following breakdown of the form is provided to assist Staff in preparing the form so that uniformity may be provided in the ratings.

<u>Item</u>	<u>Description</u>	<u>Points</u>
1	Deduct one point from maximum obtainable for each day where an unreasonable delay in commencement by Contractor inconvenienced public and/or caused the Town undue expense.	0 - 10
2	Little supervision required	8 - 10
	Moderate supervision required	4 - 7
	Considerable supervision required	0 - 3
3	Adequate equipment	10
	Short of adequate equipment	6 - 9
	Inadequate equipment	0 - 5
4	Average to extraordinary workmanship with little or no Town effort	25 - 30
	Average workmanship with some Town effort	15 - 25
	Average workmanship with considerable Town effort and pressure	0 - 15
5	No pressure to ensure adequate safety	10
	Some pressure to ensure adequate safety	5 - 9
	Considerable pressure to ensure adequate safety	0 - 4
6 & 7	Excellent	5
	Good	4
	Fair	3
	Poor	0 - 2
8	None	5
	Few prices high or few quantities high	4
	Some prices high and few quantities high	3
	Few prices high and few quantities high	2
	Most prices high and many quantities high	0 - 1
9	Excellent clean-up without direction	5
	Clean-up with direction	4
	Clean-up with pressure and direction	3
	Clean-up with considerable delay and pressure	2
	Clean-up with considerable delay, pressure and causing inconvenience to the public	1
	Clean-up completed by the Town and charged to the Contractor	0
10	Concerted effort to expedite work.	10
	Satisfactory effort to expedite work.	5 - 9
	Not overly concerned with time allowance	2 - 4
	No effort to expedite work - very slow	0 - 1



CONTRACT # 2 - 2024

Pemberton Street - New Watermain and Road Reconstruction - Phase I

PREVIEW ONLY

LIST OF DRAWINGS	
#	TITLE
	COVERSHEET
C-610	int. Charles St E to Janes Road
C-611	Janes Road to 60m North of Wilson St
C-612	60m North of Wilson St to 50m South of CN tracks
C-613	60m South of CN tracks to 50m North of CN tracks
TYP-1	Typical Sections and General Notes

KEY PLAN
SCALE: NTS
— PROJECT LOCATION

THE CORPORATION OF THE TOWN OF INGERSOLL
and COUNTY OF OXFORD

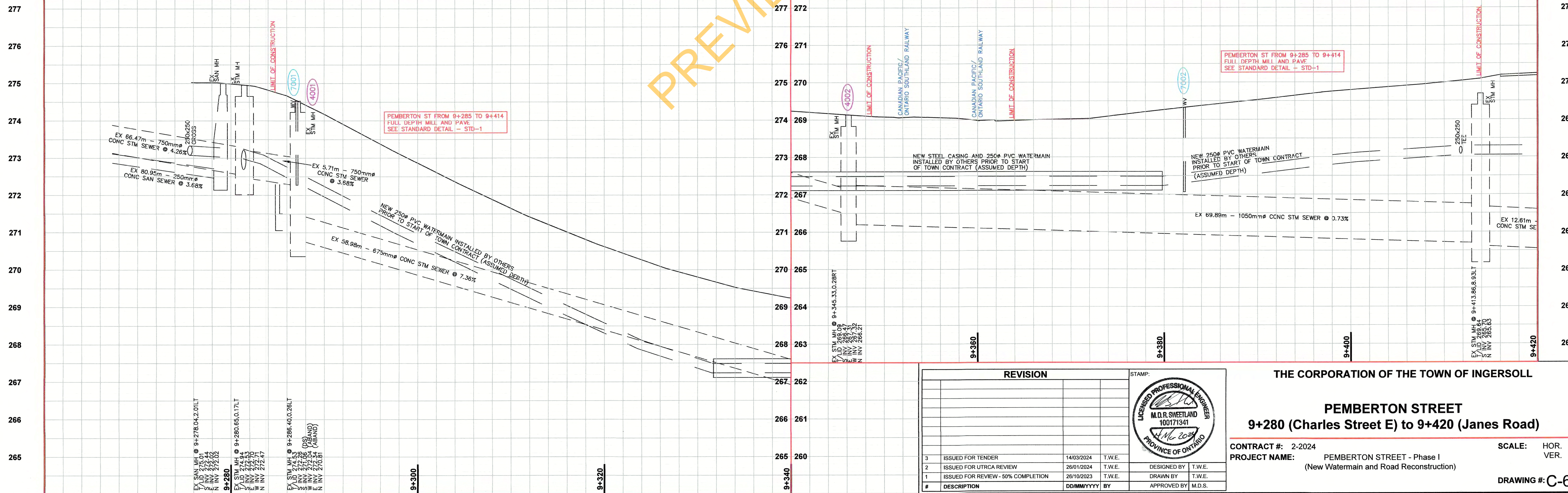
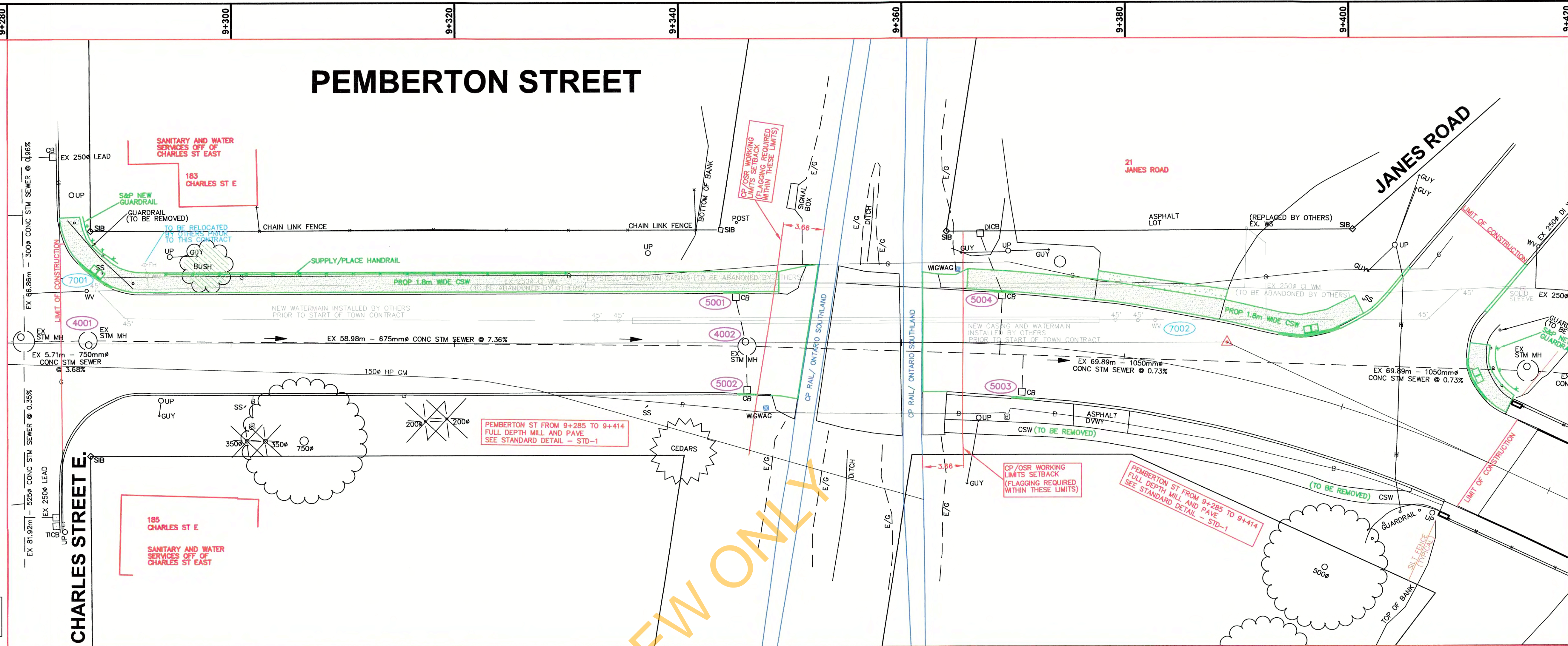
PEMBERTON STREET

- 300 REMOVE CATCHBASIN
- 400 REMOVE TWIN INLET CATCHBASIN
- 600 PROPOSED CATCHBASIN
- 700 PROPOSED TWIN INLET CATCHBASIN
- 4000 ADJUST EXISTING MAINTENANCE HOLE
- 5000 ADJUST CATCHBASIN
- 500 REMOVE EXISTING WATERVALVE
- 7000 ADJUST EXISTING WATERVALVE
- WV PROPOSED WATERVALVE
- FD REMOVE EXISTING FIRE HYDRANT
- FH PROPOSED FIRE HYDRANT
- SILT FENCING

- LEGEND
- ASPHALT
 - CONCRETE
 - GRANULAR 'A'
 - O.P.S.D. 600.04 C&G
 - CLEAR AND GRUBBING



LOCATE NOTES:
THE LOCATION AND EXTENT OF EXISTING UTILITIES IS APPROXIMATE ONLY. THE CONTRACTOR SHALL CONTACT ONTARIO ONE CALL AND RECEIVE PROJECT LOCATES PRIOR TO ANY EXCAVATION.



REVISION			STAMP:	
3	ISSUED FOR TENDER	14/03/2024	T.W.E.	
2	ISSUED FOR UTRCA REVIEW	26/01/2024	T.W.E.	
1	ISSUED FOR REVIEW - 50% COMPLETION	26/10/2023	T.W.E.	
#	DESCRIPTION	DD/MM/YYYY	BY	
			APPROVED BY	M.D.S.

THE CORPORATION OF THE TOWN OF INGERSOLL

PEMBERTON STREET
9+280 (Charles Street E) to 9+420 (Janet Road)

CONTRACT #: 2-2024
PROJECT NAME: PEMBERTON STREET - Phase I
(New Watermain and Road Reconstruction)

SCALE: HOR. 1:200
VER. 1:50

DRAWING #: C-610

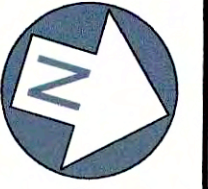
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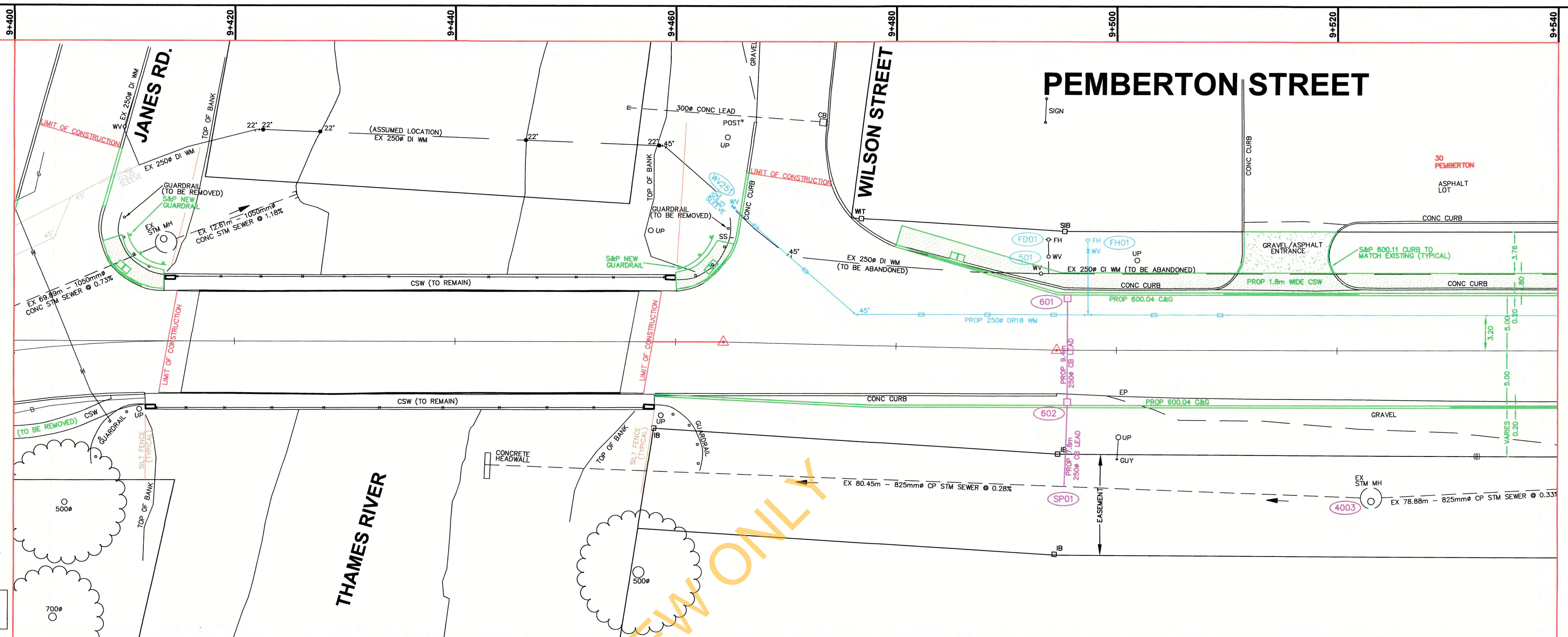
OxfordCounty
Growing stronger together

Ingersoll
our heritage, your future

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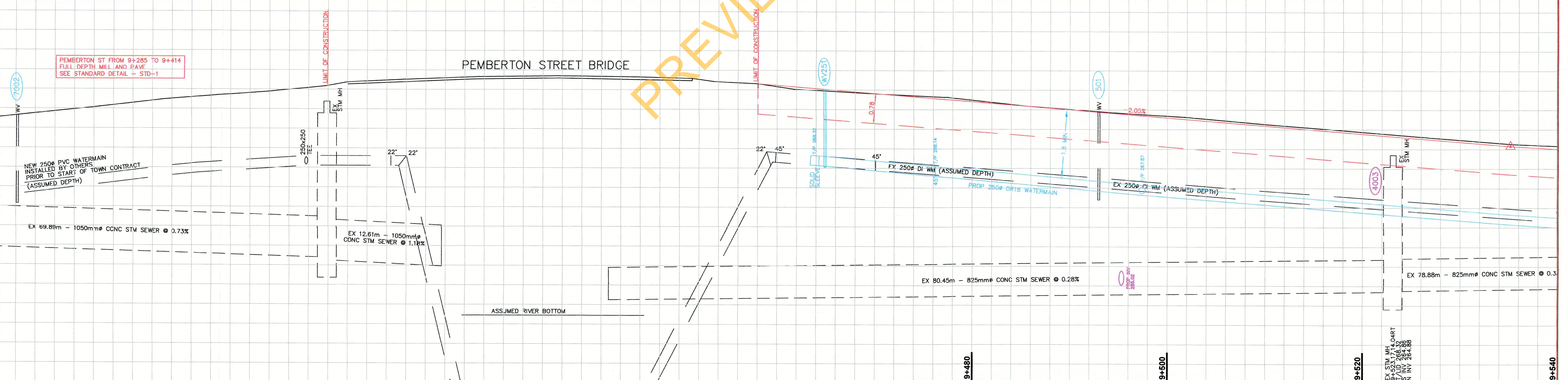


PEMBERTON STREET



PREVIEW ONLY

PEMBERTON STREET BRIDGE



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#	DESCRIPTION	DDMMYYYY	BY

STAMP:

LICENSED PROFESSIONAL ENGINEER

M.D.R. SWEETLAND

100171341

PROVINCE OF ONTARIO

DESIGNED BY	T.W.E.
DRAWN BY	T.W.E.
APPROVED BY	M.D.S.

THE CORPORATION OF THE TOWN OF INGERSOLL

PEMBERTON STREET

9+400 (Janes Road) to

9+540 (60m North of Wilson Street)

CONTRACT #: 2-2024

PROJECT NAME: PEMBERTON STREET - Phase I
(New Watermain and Road Reconstruction)

SCALE: HOR. 1:200
VER. 1:50

DRAWING #: C-611

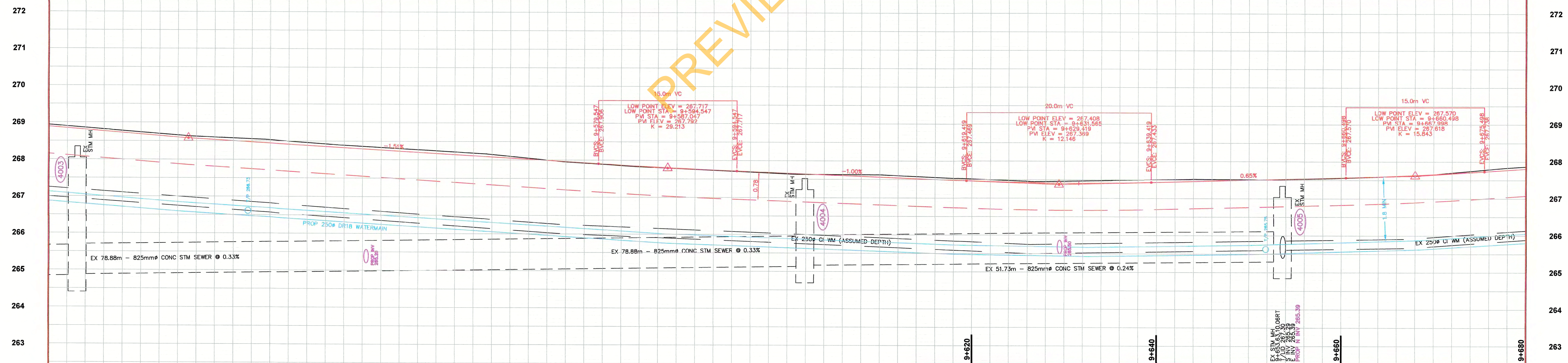
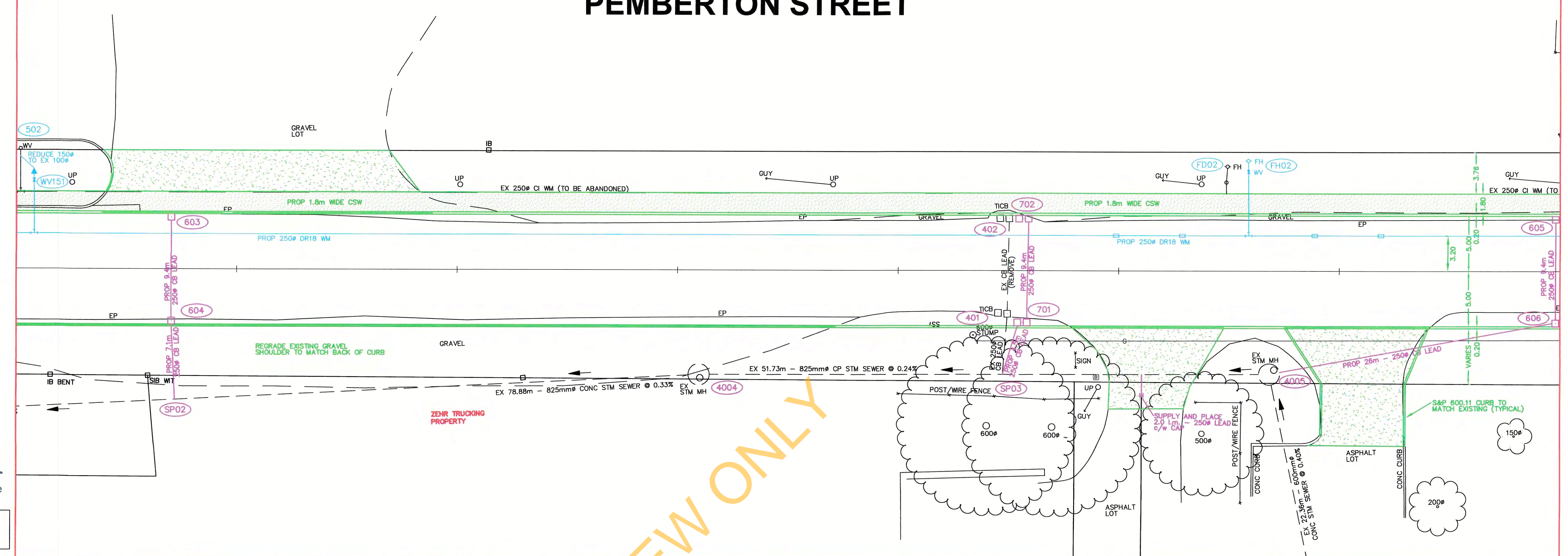
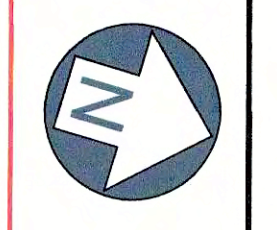
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LOCATE NOTES:
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PEMBERTON STREET



REVISION			STAMP:	
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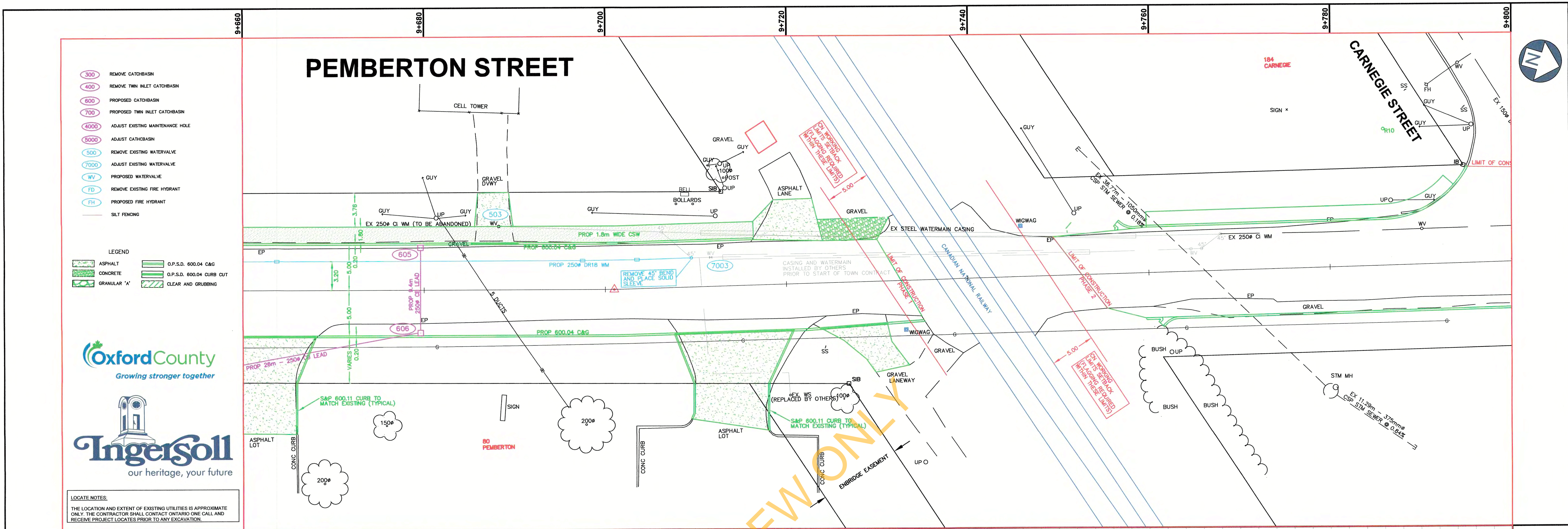
THE CORPORATION OF THE TOWN OF INGERSOLL

PEMBERTON STREET
9+540 to 9+680 (50m South of CN Tracks)

CONTRACT #: 2-2024
PROJECT NAME: PEMBERTON STREET - Phase I
(New Watermain and Road Reconstruction)

SCALE: HOR. 1:200
VER. 1:50

DRAWING #: C-612



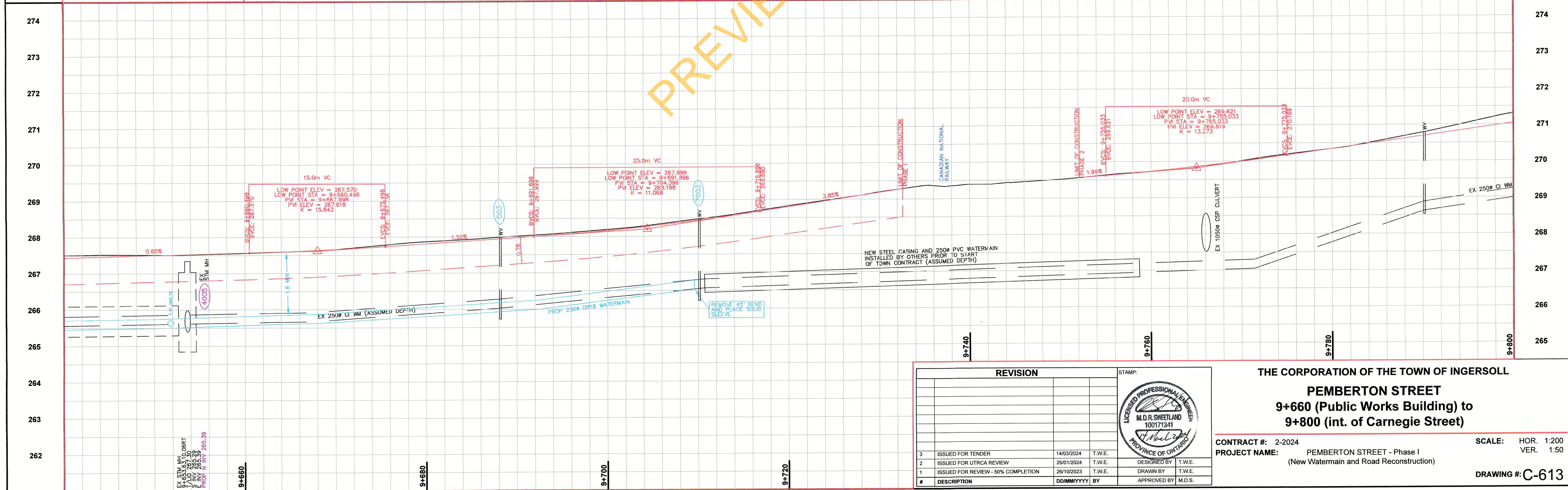
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 - O.P.S.D. 600.04 C&G
 - O.P.S.D. 600.04 CURB CUT
 - CLEAR AND GRUBBING

OxfordCounty
Growing stronger together



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#	DESCRIPTION	DD/MM/YYYY	BY	APPROVED BY

PROFESSIONAL ENGINEER
M.D.R. SWEETLAND
100171341
PROVINCE OF ONTARIO

THE CORPORATION OF THE TOWN OF INGERSOLL
PEMBERTON STREET
9+660 (Public Works Building) to
9+800 (int. of Carnegie Street)

CONTRACT #: 2-2024
PROJECT NAME: PEMBERTON STREET - Phase I
(New Watermain and Road Reconstruction)

SCALE: HOR. 1:200
VER. 1:50

DRAWING #: C-613

GENERAL NOTES:

- THESE DRAWINGS ARE NOT FOR CONSTRUCTION UNTIL APPROVED BY THE TOWN ENGINEER OR ITS DESIGNATE.
- IN THE EVENT OF A CONFLICT BETWEEN THE CONTRACT DOCUMENT AND THESE NOTES, SPECIFICATIONS IN THE CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE.
- NO CHANGES ARE TO BE MADE WITHOUT THE APPROVAL OF THE MUNICIPALITY AND/OR COUNTY.
- ALL DIMENSIONS ARE IN METERS, EXCEPT PIPE DIAMETERS, WHICH ARE IN MILLIMETERS, UNLESS SPECIFIED OTHERWISE.
- THE CONTRACTOR SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO EXISTING WORKS. THE CONTRACTOR IS RESPONSIBLE FOR THE RESTORATION OF ALL DAMAGED AND/OR DISTURBED PROPERTY WITHIN THE MUNICIPAL RIGHT OF WAY TO TOWN OF INGERSOLL STANDARDS. TRACKING OF CLEATED EQUIPMENT IS NOT PERMITTED ON PAVED SURFACES THAT ARE TO REMAIN. CARELESS DAMAGE TO PAVED AREAS SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE TO THE TOWN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD. ALL SAFETY MEASURES SHALL BE IN ACCORDANCE WITH CURRENT ONTARIO TRAFFIC MANUAL BOOK 7. TEMPORARY CONDITIONS FIELD EDITION, TRAFFIC CONTROL AND DETOURS MUST BE SUBMITTED FOR TOWN REVIEW PRIOR TO WORK TAKING PLACE.
- ACCESS TO ALL BUSINESSES AND RESIDENTS IS TO BE MAINTAINED AT ALL TIMES, UNLESS OTHERWISE DIRECTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A STAGING/LAY-DOWN LOCATION SUBJECT TO THE APPROVAL OF THE MUNICIPALITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL SITES FOR ALL MATERIALS SUBJECT TO THE APPROVAL OF THE TOWN ENGINEER AND REGULATORY AUTHORITIES.
- THE LOCATION OF UTILITIES SHOWN ON THE CONTRACT DRAWINGS, ARE FOR REFERENCE PURPOSE ONLY. THE CONTRACTOR SHALL CONTACT ONTARIO ONE CALL AND RECEIVE LOCATES PRIOR TO ANY EXCAVATION. ANY UTILITY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE TOWN ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE TOWN OF CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
- EXISTING UTILITIES IN CONFLICT WITH CONSTRUCTION SHALL BE RELOCATED BY OTHERS.
- ALL EXCAVATION SHALL MEET REQUIREMENTS OF OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
- REFER TO THE GEOTECHNICAL INVESTIGATION REPORT SUPPLIED BY THE TOWN FOR REQUIREMENTS OF COMPACTION BACKFILL MATERIAL, BEDDING MATERIAL, GROUNDWATER, EXCAVATION ETC. GEOTECHNICAL REPORT IS LOCATED IN THE CONTRACT DOCUMENT.
- SURFACE COURSE ASPHALT IS NOT PLACED THIS CONTRACT. THE CONTRACTOR SHALL RAMP ALL DRIVEWAYS, SIDEWALK CROSSINGS AND CATCHBASINS WITH A MINIMUM OF 0.3m RAMPING.
- SOD AND/OR SEED MUST BE MAINTAINED AND WATERED BY THE CONTRACTOR FOR 30 DAYS FROM PLACEMENT.

STANDARDS:

- THESE NOTES APPLY TO ALL WORK.
- REVIEW ALL CONTRACT DOCUMENTS FOR APPLICABLE STANDARDS.
- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF THE TOWN OF INGERSOLL AND COUNTY OF OXFORD DESIGN GUIDELINES AND SUPPLEMENTARY SPECIFICATIONS FOR MUNICIPAL SERVICES AND OTHER REGULATORY STANDARDS, POLICIES AND GUIDELINES.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEEK CLARIFICATION DURING THE TENDERING OF WORK IF THEY ARE UNCLEAR AS TO THE STANDARD THAT APPLIES TO THE WORK.
- THE MINIMUM ACCEPTABLE STANDARD FOR ALL WORK, WHERE NO STANDARD IS EXPLICITLY STATED IS TO BE THE MOST APPROPRIATE ONTARIO PROVINCIAL STANDARD DRAWING (OPSD) AND/OR ONTARIO PROVINCIAL STANDARD SPECIFICATION (OPSS).
- MUNICIPAL AND/OR COUNTY STANDARDS SUPERCEDE ALL OTHER STANDARDS FOR THE WORK.

EROSION CONTROL:

- THE CONTRACTOR SHALL INSTALL ANY SILT CONTROL MEASURES REQUIRED TO STOP SILT MIGRATION FROM ENTERING STORM SEWERS TO THE SATISFACTION OF THE MINISTRY OF NATURAL RESOURCES, UPPER THAMES REGIONAL CONSERVATION AUTHORITY, MINISTRY OF THE ENVIRONMENT OR ANY OTHER REGULATORY AGENCY OR MINISTRY AND, IN PARTICULAR, TO THE GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES (MNR). THE CONTRACTOR SHALL ASSUME THE DEFENSE OF AND INDEMNIFY AND SAVE HARMLESS TO THE TOWN OR COUNTY FROM ALL FINES, CHARGES AND CLAIMS RELATING TO THE PROJECT FROM ANY REGULATORY AGENCY OR MINISTRY.
- ALL EROSION CONTROL MEASURES INSTALLED, SHALL BE MAINTAINED TO THE SATISFACTION OF THE TOWN ENGINEER AND SHALL REMAIN IN PLACE UNTIL FINAL ASSUMPTION OR AS DIRECTED.
- ALL SEDIMENT CONTROL FENCING MUST BE INSTALLED PRIOR TO EXCAVATION. FENCING TO BE MONITORED WEEKLY, WITH ANY REPAIRS TO BE REPAIRED IMMEDIATELY. THE TOWN ENGINEER MAY PLACE A WORK STOPPAGE UNTIL FENCING IS REPAIRED TO THE THEIR APPROVAL.

BURIED PIPE WORK (OPEN CUT):

- THESE NOTES APPLY TO ALL WORK OF THIS TYPE EITHER SPECIFICALLY IDENTIFIED OR REASONABLY IMPLIED WITHIN THE CONTRACT DOCUMENTS.
- ALL MATERIALS SHALL BE C.S.A. CERTIFIED.
- BACKFILL MATERIAL TO BE APPROVED BY THE TOWN ENGINEER PRIOR TO START OF CONSTRUCTION.
- ALL EMBEDMENT AND BACKFILL AS PER TABLE 1 UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
- ITEMS LISTED IN TABLE 1 APPLY TO THIS WORK.

SEWER AND WATERMAIN WORKS:

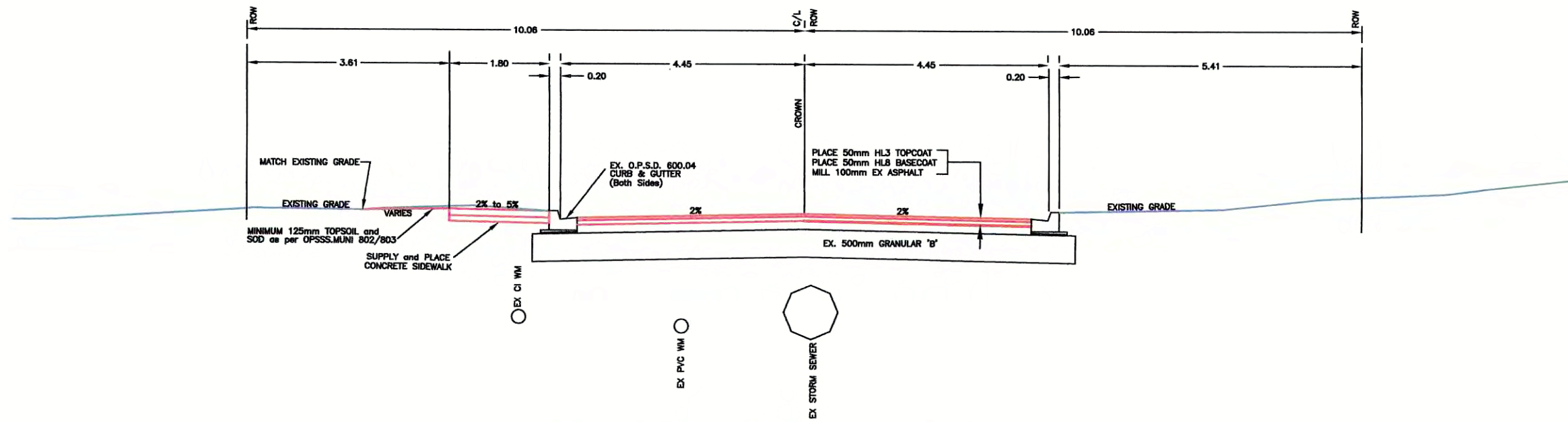
- ALL STORM SEWER WORKS MUST COMPLY WITH THE TOWN OF INGERSOLL STANDARDS.
- ALL STORM SEWER PIPE MUST BE APPROVED BY THE TOWN ENGINEER PRIOR TO PLACEMENT.
- THE CONTRACTOR SHALL MAINTAIN THE FLOW OF ALL EXISTING DRAINS ENCOUNTERED WHETHER SHOWN ON THE DRAWINGS OR NOT. SHOULD THE CONTRACTOR ENCOUNTER A DRAIN NOT SHOWN, IT IS THE RESPONSIBILITY OF THE TOWN ENGINEER TO DETERMINE IF SAID PIPE MAY BE ABANDONED.
- CEMENT MORTAR FOR SETTING PIPE, BENCHING, ADJUSTMENTS AND SETTING OF FRAMES SHALL CONSIST OF TWO PARTS MASONRY SAND (OR EQUIVALENT) WITH ONLY SUFFICIENT WATER TO MAKE MIXTURE PLASTIC.
- ABANDONED PIPE NOT REMOVED MUST BE SEALED WITH CEMENT MORTAR AND/OR BRICK BULKHEAD, AS DIRECTED BY THE TOWN ENGINEER.
- ALL CATCHBASIN DEPTH MUST A 1.5m INTERIOR NOMINAL DEPTH, UNLESS OTHERWISE SPECIFIED.
- CATCHBASIN MAINTENANCE HOLES AND CATCHBASINS TO HAVE A MINIMUM 500mm SUMP.
- STORM MANHOLE LIDS TO BE PER OPSD 401.010 - TYPE 'A' AND CATCHBASIN MANHOLE GRATES TO BE PER OPSD 400.110.
- STORM SEWERS TO HAVE A MINIMAL 1.5m COVER TO TOP OF PIPE WHERE COVER TO TOP IS DEFICIENT, CONTRACTOR SHALL INSTALL SHALLOW PIPE AS PER TOWN STANDARDS AND TYPICAL DRAWING S-24.
- ALL ADJUST RINGS ARE TO BE PARGED ON OUTSIDE, INSIDE JOINTS TO BE POINTED ONLY, NOT PARGED.
- ALL BASINS AND MAINTENANCE HOLES MUST BE INSPECTED AND CLEANED OF DEBRIS PRIOR TO SUBSTANTIAL COMPLETION.
- ALL WATERWORKS MUST COMPLY WITH THE COUNTY OF OXFORD STANDARDS.
- ALL WATERMAIN PIPE AND APPURTENANCES MUST BE APPROVED BY THE COUNTY ENGINEER PRIOR TO PLACEMENT.
- ABANDONED WATERMAIN PIPE NOT REMOVED MUST BE SEALED WITH CEMENT MORTAR OR BRICK BULKHEAD, AS DIRECTED BY APPOINTED COUNTY STAFF.
- WATERMAIN TO HAVE A MINIMAL 1.8m COVER TO TOP OF PIPE. WHERE COVER TO TOP IS DEFICIENT, CONTRACTOR SHALL INSTALL SHALLOW PIPE AS PER COUNTY STANDARDS AND TYPICAL DRAWING S-24.
- ALL WATERMAIN TESTING SHALL BE PER COUNTY OF OXFORD SPECIFICATIONS PRIOR TO ACCEPTANCE. TOWN OF INGERSOLL SHALL PROVIDE INSPECTION OF ALL INSTALLATION. THE COUNTY OF OXFORD SHALL BE RESPONSIBLE FOR ALL TESTING AND OVER SEEING COMMISSIONING INCLUDING CHLORINATION. THE CONTRACTOR IS RESPONSIBLE FOR THE DELIVERY OF ALL SAMPLES TO THE COUNTY ASSIGNED LAB AT THEIR EXPENSE.
- CONTRACTORS SHALL NOT OPERATE ANY VALVE OR HYDRANT ON THE EXISTING WATER DISTRIBUTION SYSTEM, WITHOUT PROPER COUNTY STAFF ON SITE.
- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE TOWN AND COUNTY PRIOR TO ANY ACCEPTANCE OF WATERMAIN SHUTDOWN. THE TOWN AND/OR COUNTY WILL NOTIFY THE PROPER AUTHORITIES (BUSINESSES AND RESIDENTS WITHIN THAT TIMELINE OF THE PROPOSED SHUTDOWN).
- BEFORE COMMENCING ANY WATERMAIN SHUTDOWN, THE CONTRACTOR MUST ENSURE THAT ALL LABOUR, MATERIAL AND EQUIPMENT ARE ON SITE TO COMPLETE THE WORK OUTLINED IN THE SHUTDOWN AND ALLOTTED TIME.

RAILWAY NOTES:

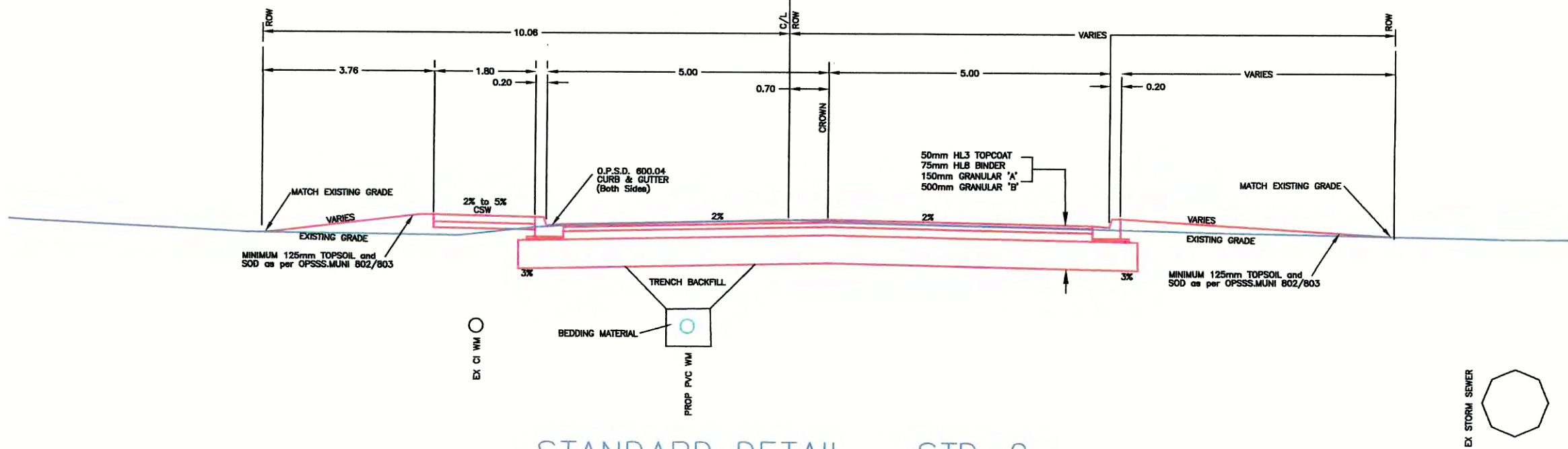
- THE TOWN WILL COMPLETE A 24 HOUR EMERGENCY CONTACT LIST, INCLUDING RAILWAY PERSONNEL FOR ALL STAKEHOLDERS.
- THE TOWN OF INGERSOLL SHALL ARRANGE A PRE-CONSTRUCTION MEETING WITH ALL STAKEHOLDERS TO DISCUSS PROJECT AND CONSTRUCTION DETAILS INCLUDING WORK DESCRIPTION, CONSTRUCTION METHODS, RESTRICTIONS, SAFETY, RAILWAY REQUIREMENTS AND AGREED UPON PROTOCOL PRIOR TO COMMENCEMENT OF ANY WORK WITHIN THE RAILWAY PROPERTY/ROW.
- A RECOVERY PLAN OUTLINING THE STEPS/AND PROCEDURES TO BE IMPLEMENTED IN THE EVENT OF FAILURE SHALL BE PROVIDED BY THE CONTRACTOR AND REVIEWED BY THE PROPERTY AUTHORITIES.
- ALL CONTRACTORS AND SUB CONTRACTORS MUST HAVE PROPER RAILWAY IDENTIFICATION PRIOR TO ANY WORK TAKEN PLACE ON OR WITHIN THE RAILWAY PROPERTY /ROW.
- NO WORK SHALL TAKE PLACE BY LABOUR OR MACHINE ON RAILWAY PROPERTY WITHOUT THE PERMISSION OF THE RAILWAY AND THE PRESENCE OF A RAILWAY FLAGPERSON.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE AND/OR SCHEDULE FLAGGING.
- ALL UTILITIES ARE TO BE FIELD LOCATED INCLUDING THE RAILWAY PROPERTY PRIOR TO BEGINNING OF WORK.

COUNTY of OXFORD STANDARDS SECTION 3 – WATERMANS		
SECTION NAME	SUB	SECTION
WATERMANS		1.1
VALVES		1.3
BLOW-OFFS		1.4
WATER SERVICES		1.6
BACKFLOW PREVENTION		1.8
SERVICE VALVES		1.9
HYDRANTS AND HYDRANT TESTING		1.10
TEMPORARY WATERMAIN AND SERVICES		1.11
PIPE MATERIALS	2.1 TO 2.19	
OPEN CUT INSTALLATION – LINE AND GRADE		3.1
OPEN CUT INSTALLATION – EXCAVATION AND TRENCH PREPARATION		3.3
OPEN CUT INSTALLATION – DEWATERING		3.4
OPEN CUT INSTALLATION – LOWERING AND LAYING		3.5
OPEN CUT INSTALLATION – BEDDING		3.6
OPEN CUT INSTALLATION – BACKFILLING		3.7
OPEN CUT INSTALLATION – COMPACTION TEST		3.8
CONNECTIONS TO EXISTING MAINS		3.14
CONNECTION – JOINTING OF PUSH ON JOINT PIPES		3.15
CONNECTIONS TO VALVE, HYDRANTS & FITTINGS		3.16
CATHODIC PROTECTION FOR PVC WATERMAIN		3.18
SERVICE INSTALLATION	4.1 TO 4.4	
FIELD TESTING – GENERAL		5.1
INITIAL FLUSHING AND SWABBING		5.2
TEST PRESSURE		5.3
BLOCKING AND BLANKING		5.4
FILLING PIPE		5.6
LEAKAGE TEST		5.7
DISINFECTION – GENERAL		6.1
DISINFECTION – CONTRACTOR TO SUPPLY		6.2
DISINFECTION – POINT OF APPLICATION		6.3
DISINFECTION		6.4
FINAL FLUSHING		6.5
CONNECTION SAMPLES		6.8
COMMISSIONING OF NEW MAIN		6.7
CONTRACTORS LIABILITY		6.8
REMOVAL OF EQUIPMENT		6.9
DEFECTS IN PIPEWORK		6.10
TYPICAL DETAILS	DWG #	
RIGID BOARD INSULATION – SLAB TYPE	D 1812–1–2007	
FIRE HYDRANT AND VALVE INSTALLATION	D 1828–1–1993	
MECHANICAL JOINT OFFSET INSTALLATION – UNDER	D 1832–1–1993	
MECHANICAL JOINT OFFSET INSTALLATION – OVER	D 1833–1–1993	
BACK FLOW PREVENTOR – EXISTING TO NEW WATERMAIN	D 1836–1–2006	
WATER SERVICE CONNECTION – 25mm DIAMETER	D 1836–1–2007	
WATER SERVICE CONNECTION – 32–50mm DIAMETER	D 1839–1–2007	
TRACER WIRE VALVE BOX INSTALLATION	D 1846–1–2006	
TRACER WIRE CONNECTOR DETAILS	D 1858–1–2016	

TOWN of INGERSOLL STANDARDS SECTION 7 – STORM SEWERS		
SECTION NAME	SUB	SECTION
7.0 LOCATION AND DESIGN		
PERMITTED USE		3.0
LOCATION AND ALIGNMENT		7.0
PIPE SIZE		11.0
PIPE DEPTH		13.0
MAINTENANCE HOLES		14.0
CATCHBASINS		14.0
7.2 MATERIAL		
PIPE MATERIALS		1.0
APPROVED MATERIAL		2.0
BEDDING MATERIAL		4.0
7.3 INSTALLATION		
OPEN CUT INSTALLATION – LINE AND GRADE		1.0
OPEN CUT INSTALLATION – EXCAVATION AND TRENCH PREPARATION		1.0
OPEN CUT INSTALLATION – DEWATERING		1.0
OPEN CUT INSTALLATION – LOWERING AND LAYING		1.0
OPEN CUT INSTALLATION – BEDDING		1.0
OPEN CUT INSTALLATION – BACKFILLING		1.0
OPEN CUT INSTALLATION – COMPACTION TEST		1.0
CONNECTIONS TO EXISTING SEWERS		3.0
7.4 SERVICE INSTALLATION		
7.5 CCTV INSPECTION, FLUSHING AND CLEANING		
TYPICAL DETAILS	DWG #	
PIPE SLOING FOR PRECAST CONCRETE MAINTENANCE HOLES	S–2	
STANDARD SERVICE LOCATION – RESIDENTIAL STORM PDC CONNECTION	S–6	
PRIVATE DRAIN CONNECTION	S–7	
STORM SEWER VERTICAL SEPARATION – UNDER	S–8	
STORM SEWER VERTICAL SEPARATION – OVER	S–9	
GUTTER DRAIN INSTALLATION	S–31	



STANDARD DETAIL – STD-1
PEMBERTON STREET – FULL DEPTH MILL and PAVE
9+285 (CHARLES ST) to 9+414 (JANES ROAD)



STANDARD DETAIL – STD-2
PEMBERTON STREET – CURB BOTH SIDES
9+478 (WILSON STREET) to 9+722 (CNR TRACKS)



THE CORPORATION OF THE TOWN OF INGERSOLL

PEMBERTON STREET
Typical Sections and General Notes

CONTRACT #: 2-2024

PROJECT NAME: PEMBERTON STREET
(New Watermain and Road Reconstruction)

SCALE: AS NOTED

DRAWING #: TYP-1

REVISION				STAMP:	
3	ISSUED FOR TENDER	14/03/2024	T.W.E.		
2	ISSUED FOR UTRCA REVIEW	26/01/2024	T.W.E.		
1	ISSUED FOR REVIEW - 50% COMPLETION	26/10/2023	T.W.E.		
#	DESCRIPTION	DDMMYYYY	BY	APPROVED BY	M.D.S.