

CONTRACT DOCUMENTS
FOR

SHACKLETON LINE
WATERMAIN 2024

MUNICIPALITY OF
DUTTON DUNWICH



Our Reference No. 223068

January 2024

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INFORMATION FOR TENDERERS

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1. LOCATION

The work is located along Shackleton Line in the Municipality of Dutton Dunwich, east of the village of Dutton.

2. OWNER

Where the term "Owner" is used in these specifications and other contract documents, same refers to the Corporation of the Municipality of Dutton Dunwich.

3. ENGINEER

Where the term "Engineer" appears in these specifications, the same shall apply to Spriet Associates London Limited, Consulting Engineers.

The Engineer's site representative (inspector) will be in contact with the Municipality of Dutton Dunwich Water Department Director, Mr. Tim Hanson, throughout the duration of construction, particularly with regard to matters of concern or dispute.

4. CONTRACTOR

Where the term "Contractor" is used in these specifications, the same shall apply to the General Contractor who shall be responsible for his sub-contractors' compliance with the requirements of the contract drawings and the specifications.

Nothing contained in the Contract documents shall create any contractual relation between any sub-contractor and the Owner.

The sub-contractor shall be bound to the Contractor by the terms of the General Conditions, drawings and specifications insofar, as they relate or may be applied to the work of the sub-contractor, and the sub-contractor agrees to assume towards the Contractor all the obligations and responsibilities that the Contractor assumes toward the Owner. The Contractor agrees to be bound to the sub-contractor by all the obligations the Owner assumes to the Contractor under the General Conditions, drawings and specifications.

5. TENDER

Tenders to be entitled to consideration must be made on the forms provided therefore, and shall be enclosed in separate sealed brown envelopes which shall be addressed to:

CORPORATION OF THE MUNICIPALITY OF DUTTON DUNWICH
199 Currie Road
Dutton, Ontario N0L 1J0

and endorsed: "SHACKLETON LINE WATERMAIN 2024" shall arrive at the above address not later than:

12:00pm (noon), Thursday February 29, 2024



5. TENDER (cont'd)

All blank spaces shall be completely filled in. Numbers shall be stated in writing as well as in figures. There shall be no alterations or erasures and the tender shall be signed by the Tenderer or in the case of a Corporation, by its proper officers and the Corporate Seal shall be affixed.

The Owner reserves the right to reject all or any tenders received. The contract, when awarded, shall be made for each branch or division of the work or for the whole work as deemed in the best interest of the Owner.

The lowest or any bid not necessarily accepted.

The Owner reserves the right, upon award of Tender, to reduce the extent of work to be performed in this contract based on higher tendered versus estimated project costs.

6. TENDER SECURITY

The tender shall be accompanied by security in the amount equal to ten (10) per cent of the amount of the tender by a certified cheque or sealed and signed Bid Bond made payable to the Owner.

The tender deposits of all but the two (2) lowest tenderers will be returned within ten (10) days after the date of opening tenders. The tender deposits of the two (2) lowest tenderers will be retained until a tender has been accepted and the Performance Bond, the Labour and Material Payment Bond and other documents required herein have been furnished to the satisfaction of the Solicitor and the Engineer for the Owner to execute the Agreement within 45 days after the date of opening tenders or if the Engineer has not issued to the tenderers a written order to commence work within the said 45 days, his tender deposit will be returned, except as otherwise provided herein. After the execution of the Contract and the receipt by the owner of the Performance Bond and the Labour and Material Payment Bond, the tender deposit of the successful tenderer will be returned.

If either of the above-mentioned two (2) tenderers has not been notified within 30 days after the date of opening tenders that his tender has been recommended to the Owner for acceptance, he may apply to the Owner for the return of his tender deposit. Unless otherwise determined by the Owner, the tender deposit of one of the said two (2) tenders (normally the one who submitted the second lowest tender) will be returned when so applied for. The tender deposit of the other tenderer will be retained or returned by the Owner as provided for elsewhere in this clause.

The Owner may, in its discretion:

- (a) cash a tender deposit cheque and deposit the proceeds to its account, without prejudice to the ultimate disposition of such tender deposit as provided for herein; or
- (b) return a tender deposit to a tenderer at an earlier time than provided for herein; or



6. TENDER SECURITY (cont'd)

- (c) return a tender deposit to a tenderer on receipt from the said tenderer of an alternative security acceptable to the Owner in lieu of the said tender deposit; and no such action shall prejudice the validity of the tender to which such tender deposit relates.

Except as otherwise herein provided, the tenderer guarantees that if his tender is withdrawn before the Owner shall have considered the tenders or before or after he has been notified that his tender has been recommended to the Owner for acceptance or that if the Owner does not for any reason receive within the period of seven (7) days as stipulated and as required herein, the Agreement executed by the tenderer, the Performance Bond and the Labour and material Payment Bond executed by the tenderer and the surety company and other documents required herein, the Owner may retain the tender deposit for the use of the Owner and may accept any tender, advertise for new tenders, negotiate a contract or not accept any tender as the Owner may deem advisable.

7. BONDS

In accordance with Clause 23 of the General Conditions, "Guaranty Bonds", a Bond in the amount of 50 per cent of the Contract Price for Maintenance and Performance and a bond in the amount of 50 per cent of the Contract Price for Labour and Materials with a satisfactory Guaranty Surety Company with Head Office in the Province of Ontario will be required for this Contract. The cost of these Bonds shall be included in the Total Tender Price for this Contract.

8. AGREEMENT TO BOND

The Tenderer shall include with his tender an Agreement to Bond executed under its corporate seal by the surety company from which he proposed to obtain the required bonds.

9. INTEREST ON DEPOSITS

Tenderers are notified that they must make their own arrangements with their bankers as to the payment of interest, if any, on the amount of the certified cheque accompanying their tender. The Owner will not pay interest on said cheque pending the awarding of the Contract, nor be responsible for the payment of interest under any arrangement made by the Tenderer.

10. CONTRACT DOCUMENTS

The Contract Documents shall consist of the following and in case of any inconsistency or conflict between the provisions of this Agreement and the Plans and Specifications or General Conditions or Tender or any other document or writing, the provisions of such documents shall take precedence and govern in the following order, namely:

- (1) Form of Agreement
- (2) Special Provisions
- (3) Contract Drawings



10. CONTRACT DOCUMENTS (cont'd)

- (4) General Conditions
- (5) Information to Tenderers
- (6) Contract Specifications
 - (i) General Provisions
 - (ii) Watermain and Appurtenances
- (7) Construction Details
- (8) Form of Tender

11. TENDERER TO INVESTIGATE

Tenderers are required to submit their Tenders upon the following express conditions:

- (a) The Tenderer shall examine the Contract Documents and Drawings and make personal examination of the site in order to acquaint himself with the conditions under which he will be obliged to work.
- (b) The Tenderer shall make all the investigations necessary to thoroughly inform himself regarding all facilities for access to the site such as he may require for his construction operations.
- (c) With regard to existing underground services the Tenderer shall examine the files of the Engineer and of the various local private and public utilities to ascertain their existence and location. The onus shall be on the Tenderer as to the completeness and accuracy of the information obtained, by his personal examination and study. No plea for ignorance of conditions that exist, or that may hereafter exist, or of conditions or difficulties that may be encountered in the execution of the work under this Contract as a result of failure to make the necessary examinations and investigations, or ascertaining the required information will be accepted as an excuse for any failure or omission on the part of the Tenderer to fulfil in every detail all the requirements of the said Contract Documents, or will be accepted as a basis for any claims whatsoever for extra compensation, or for an extension of time.

12. INTERPRETATION OF CONTRACT DOCUMENTS

No oral interpretation will be made. Any interpretations made to Tenderers will be in the form of an Addendum to the Specifications which will be forwarded to all Tenderers.

Discrepancies, omissions or doubts as to the meaning of drawings and specifications should be communicated at once to the Engineer for interpretation. Tenderers should act promptly to allow sufficient time for a reply to reach them before the submission of their tender and any such interpretation made by the Engineer prior to the receipt of tenders shall be made a part of the Contract.

13. ABILITY AND EXPERIENCE OF TENDERERS

No Tender will be considered from any Tenderer unless known to be skilled and regularly engaged in work of a character similar to that covered by the Drawings and Specifications. In order to aid the Owner in determining the responsibility of any Tenderer, the Tenderer



13. ABILITY AND EXPERIENCE OF TENDERERS (cont'd)

shall, within 48 hours after being requested in writing by the Engineer so to do, furnish evidence satisfactory to the Owner of the Tenderer's experience and familiarity with work of a character specified, and his financial ability to prosecute the proposed work properly to completion within the specified time. The evidence requested may, without being limited thereto, include the following:

- (a) The Tenderer's performance record, with listing of work of a similar character and proportions which he has constructed, giving the name of the owner, date built, and construction costs.
- (b) A tabulation of other work now under contract, giving the location, type, size, required date of completion and the per cent of completion to date of each project.
- (c) An itemized list of the Tenderer's equipment available for use on the proposed Contract.
- (d) A listing of the major parts of the work which are proposed to be sublet.
- (e) The Tenderer's latest financial statement.
- (f) Evidence that the Tenderer is licensed to do business in the Province of Ontario; in the case of a corporation organized under the laws of any other Province or Country.
- (g) Such additional information as will satisfy the Owner that the Tenderer is adequately prepared to fulfil the Contract.

14. SUB-CONTRACTORS

Each Tenderer shall submit with the Tender a complete list of all the persons or firms to which he proposes to sublet any part of the work and the trades or divisions of the work which are sublet to each. The Owner reserves the right to approve the sub-contractor and the failure of the Tenderer to comply with this requirement may result in rejection of the Tender.

15. INSURANCE

The successful Tenderer shall be required to furnish, in addition to the bonds specified, the following types and amounts of insurance coverage to comply with the provisions of the Contract Documents:

- (a) Workplace Safety and Insurance

The Contractor shall effect and maintain insurance to cover his obligations under all applicable Workplace Safety and Insurance laws.



15. INSURANCE (cont'd)(b) Comprehensive General Liability

The Contractor shall effect and maintain Comprehensive General Liability policies of insurance that will protect the Owner for all sums the Owner may become obligated to pay as damages because of Property Damage, Bodily Injury and Personal Injury which are caused in the course of carrying out the Contract to an inclusive limit not less than five million (\$5,000,000.00) dollars per occurrence.

(c) Automobile Insurance

The Contractor shall effect and maintain Automobile Insurance (owned and non-owned or hired units) to an inclusive limit not less than two million (\$2,000,000.00) dollars per occurrence.

The policies referred to above shall not be cancelled, terminated or significantly modified unless a prior notice of at least thirty (30) days has been given to each insured.

The Municipality of Dutton Dunwich, the County of Elgin, and Spriet Associates London Limited shall be named additional insured and held harmless.

16. GUARANTEED MAINTENANCE

The Contractor shall guarantee the whole of the work for a period of twelve (12) months from the date of acceptance of the work, in writing, by the Engineer.

17. PROGRESS PAYMENTS

The Owner shall make payments on account of the contract as follows:

- (a) On or before the 15th day of each month ninety percent (90%) of the value of the work completed up to and including the last day of the month preceding.
- (b) Subject to Article 27 of the General Conditions on completion of the entire work and one day after all lien rights have expired the balance due under the contract provided that:
 - (i) If on account of climatic or other conditions reasonably beyond the Contractor's control, there are items of work that cannot readily be completed, the payment in full for the work which has been completed shall not be delayed on account thereof, but the Owner or Engineer may withhold a sufficient and reasonable sum until the uncompleted work is finished and such sum as will adequately protect the Owner against liens.
 - (ii) If the legislation dealing with mechanic's liens which is applicable at the location of work permits the Owner to release the holdback applicable to a sub-contract to the Contractor within a specified number of days following the completion of the sub-contract then such legislation shall be incorporated as forming a part of this Agreement and the balance



17. PROGRESS PAYMENTS (cont'd)

applicable to the sub-contract which has been retained by the Owner shall be released by the Owner to the Contractor in the manner provided for and upon compliance with the terms and conditions of such legislation.

Final payment will be made upon receipt of two copies of a Form of Release, provided by the Contractor and signed by each property owner, upon whose land the Contractor has entered for any purpose in conjunction with the contract. Any liquidated damages costs will be subtracted from the final payment.

The Municipality of Dutton Dunwich and the Engineer will only prepare one payment certificate per month to include all work completed up to and including the last day of the month preceding.

18. EXTRA WORK

If the Engineer orders in writing the performance of any work not covered by the Drawings or included in the Specifications that cannot be classified as coming under any of the contract units and for which no unit price, lump sum, or other basis can be agreed upon then such extra work shall be performed on a Cost-Plus Percentage basis.

Any extra work ordered by the Engineer to be done on a cost-plus basis shall be so done by the Contractor, who shall be paid therefor only the actual cost thereof, as determined by the estimation of the Engineer plus 15 per cent for use of plant, tools, etc., and to cover Contractor's profits, and the Contractor must furnish the Engineer with satisfactory vouchers for all labour and material expended on the work. Where rental charge is made for trucks, equipment, etc. no percentage will be allowed on such rental. When such extra work is required, and is performed by a Sub-contractor, the percentage paid by the Owner for overhead, profit, etc., shall be no greater than the sum that would have been paid had the Contractor himself performed the work.

The Contractor will only be monetarily compensated for performing "extra work" for the actual labour, machinery, and materials requested to perform the work. All attempts shall be made by the Contractor to ensure the labour and machinery not required to perform the extra work is constructing other works outside of the extra work.

All extra work must be approved by the Engineer prior to commencing construction in the field.

The Contractor must inform the Engineer's site representative (inspector) as soon as extra work is anticipated, to ensure the Engineer's approval is received in a timely fashion. The Contractor must also notify the Engineer's inspector when the extra work is being constructed to allow verification of time and materials required to perform the work.

19. SPECIAL PROVISIONS

The attention of all Tenderers is directed to the Special Provisions Section of the Contract Specifications. This Section describes the special or extraordinary requirements of this Contract which are in addition to or which supersede the standards specified in other Sections of the Contract Specifications.



20. LUMP SUM FOR OTHER REQUIREMENTS

Under this item in the Schedule of Items and Prices the tenderer shall enter his tender price for providing items such as his own site office, access to the site, watchmen, permits and approvals (other than those to be paid for by the Owner), items required by the Drawings or Specifications but which have been omitted from the Schedule of Items and Prices and other items required by the Contract but not specifically covered by or related to the other items in the Schedule of Items and Prices.

Each progress payment certificate will include a percentage of the tender price for this item in proportion to the percentage of the permanent works completed.

The submission by a tenderer of an unbalanced price for this item renders the tender liable to disqualification.

21. LIQUIDATED DAMAGES (N/A)

Should the Contractor fail to complete the works to the satisfaction of the Engineer and in accordance with the Contract within the Time for Completion as specified in the Contract or the extended time allowed in writing by the Engineer, the Contractor shall pay to the Owner as liquidated damages (in addition to amounts payable by the Owner in respect of site supervision and general supervision of the works) the sum of one thousand dollars (\$1,000.00) for each working day that the works remain uncompleted after the time so specified or allowed.

The work is to be performed during daylight hours from Monday to Friday, between 7:00 a.m. and 6:00 p.m. Once the Contractor has commenced operations, the work shall be continuous and uninterrupted to completion of the project.

22. INFORMAL AND UNBALANCED TENDERS

All entries in the Form of Tender shall be made in ink or by typewriter. Entries or changes made in pencil shall, unless otherwise decided by the Owner, be invalid or informal.

Tenders which are incomplete, conditional, illegible or obscure or that contain additions not called for, reservations, erasures, alterations, (unless properly made and clearly made and initialled by the tenderer's signing officer) or irregularities of any kind may be rejected as informal.

The Owner reserves the right to waive informalities at its discretion.

23. ACCEPTANCE OR REJECTION OF TENDERS

The Owner shall not be responsible for any liabilities, costs, expenses, loss or damage incurred, sustained or suffered by any tenderer prior to or subsequent to or by reason of the acceptance or the non-acceptance by the Owner of any tender or by reason of any delay in the acceptance of a tender. Tenders are subject to a formal contract being prepared and executed.



23. ACCEPTANCE OR REJECTION OF TENDERS (cont'd)

The prices entered by the tenderer in the Form of Tender shall be on the assumption that the Engineer's written order to commence work will be issued to the Tenderer within a 45-day period after the deadline for receiving tenders as described in Clause 5 hereof.

The terms "Total Tender Price" and "Total Contract Price" referred to in these Contract Documents are interchangeable and shall be considered to have the same meaning.

24. WORKER'S COMPENSATION BOARD

The Contractor shall at all times pay, or cause to be paid, any assessment or compensation required to be paid pursuant to the Workplace Safety and Insurance Act. The Contractor shall at the time of entering into any contract with the Owner, furnish a satisfactory clearance letter from the Workplace Safety and Insurance Board that the Contractor is in good standing with the said Board. In addition, the Contractor will be required to furnish a clearance letter from the said Board before final payment will be made to the Contractor.

25. TAXES

The tendered price shall include the Harmonized Sales Tax in respect to all materials, services and equipment required to be incorporated in the work. Accordingly, the Contractor is required by the contract to pay the applicable Federal Tax and Ontario Tax when purchasing all materials or services or equipment. The Owner may be able to obtain a refund of the taxes paid by the Contractor on its behalf and included in the tendered prices, on eligible materials, services and equipment and in this regard, the Contractor shall provide, at the Contractor's expense, such supporting invoices and assistance as may be required by the Owner. The Contractor's H.S.T. registration number must be provided with the Tender.

26. START OF CONSTRUCTION

Tenderers are advised that they will be required to commence construction within two weeks of the Engineer's written order to start construction. Construction is to take place approximately March 1, 2024 – November 30, 2024, with the proposed watermain successfully pressure tested, swabbed, chlorinated, sampled, and placed in to service by November 30, 2024. The Ministry of Environment Certificate of Approval has been obtained for this project, a copy of which will be provided to the successful bidder.

27. IRON BAR MONUMENTS

Standard iron bar survey monuments exist in the field. The Tenderer shall allow in his tender, a sum sufficient to cover the resetting, by an Ontario Land Surveyor, of all survey bars displaced during construction.

28. WAGE RATES

The Contractor shall comply with all applicable Municipal Bylaws and any Act and Regulations thereunder of the Province of Ontario that relate to wages, hours of work or other labour conditions.



29. STATEMENTS A TO D

All tenderers are required to complete Statements A to D in the Form of Tender inclusive at the time of submission of any Tender. The Owner reserves the right to accept or reject any or all sub-contractors proposed. Failure of the Tenderer to complete these statements may result in the tender being rejected by the Owner.

30. TRAFFIC CONTROL

The Contractor shall be fully responsible for the provision of complete traffic control and signage at all times. All traffic control and signage shall be in accordance with the requirements of Book 7 of the M.T.O. Traffic Control Manual. Sufficient signage must be kept on site for all possible traffic situations. Signage must be clean and of good quality.

31. CONSTRUCTION SPECIFICATIONS

In general, the work shall be carried out in accordance with the Ontario Provincial Standard (O.P.S.) Specifications unless amended in the Contract Documents.

The Contractor shall be obliged to keep a set of the O.P.S. Specifications (Volumes 1 and 2) at the work site at all times during the construction period if so directed by the Engineer.

32. SOILS INVESTIGATION

A formal soils investigation for the works not has been undertaken. **Test holes are not proposed for this project.**

33. TIME FOR COMPLETION

The "Time for Completion" of the works is November 30, 2024, commencing two weeks (14-days) from the date of the Engineer's written order to commence work.

A "working day" shall be as defined under GC1.04 - Definitions of the O.P.S. Specifications.

The works shall be deemed to be completed when:

- (a) the works have satisfactorily passed the required inspection and are ready for use or are being used for the purposes intended, and
- (b) the cost of completion of all outstanding work and known defects is not more than one percent of the Total Contract Price, excluding the value of works which cannot be completed for reasons beyond the control of the Contractor as determined by the Engineer or where the Owner and the Contractor agree to delay completion of certain parts of the works.

If the Contractor elects to terminate construction during the winter season, or significant portion thereof, the Municipality of Dutton Dunwich stipulates that the bulk, if not all, of the watermain installed prior to that date be fully flushed, tested, chlorinated, etc. and put into use.



34. CONSTRUCTION WORK CREWS

The successful Tenderer will be required to have sufficient equipment, material and labour on site to complete the project within the prescribed "Time of Completion". The Tenderer awarded the Contract shall satisfy the Engineer in this regard and shall maintain two (2) mainline construction crews working simultaneously if directed by the Engineer.



SHACKLETON LINE WATERMAIN 2024

MUNICIPALITY OF DUTTON DUNWICH

Tender for Shackleton Line Watermain 2024 in the Municipality of Dutton Dunwich, in the Province of Ontario.

Tender By

Residing At (or Place of Business)

.....

and

Residing At (or Place of Business).....

.....

Comprising the Firm of.....

.....

A company duly incorporated under the laws of.....

and having its head office at.....

Hereinafter called the "Tenderer".

NOTE: The Tenderer's name and residence must be inserted above, and in the case of a firm, the name and residence of each and every member of the firm must be inserted.

TO: The Corporation of the Municipality of Dutton Dunwich
199 Currie Road
Dutton, Ontario N0L 1J0

I (We).....,

having carefully examined the locality and site of the proposed works, and all contract documents relating thereto, including the Drawings, Form of Tender, Information for Tenderers, Specifications, General Conditions, Form of Agreement, and Addendum/Addenda No.(s) to* inclusive hereby tender and offer in accordance therewith to enter into a contract within the prescribed time to construct the said works in strict accordance with the Contract Documents and such further detail drawings as may be supplied from time to time and to furnish all materials, labour, tools, plant, matters and things necessary therefore complete and ready for use within the time specified for the sum of

.....
..... Dollars (\$.....)

or such other sum as may be ascertained in accordance with the Contract.

NOTE:

Unit Prices tendered shall include all applicable Provincial Taxes.

* The Tenderer will insert here the numbers of the addenda received by him during the tendering period and taken into account by him in preparing his tender.

In accordance with the first paragraph of this tender, the Contractor hereby offers to complete the work specified for the following prices.

SECTION 1 - WATERMAINS					
Item No.	Description of Work	Unit	Estimated Quantity	Unit Price	Total
1	Install supplied watermain 150mm SERIES 160 SDR26 Watermain Pipe, including Type 1 bedding, backfill, fittings (tees, bends, etc.) tracer wire, restoration of trench with existing topsoil a) 150mm PVC Class 150 DR18	m	1724	\$	\$
2	Supply and install 150mm Drilling PVC watermain including tracer wire via trenchless methods (directional drilling)	ea	390	\$	\$
3	Install supplied poly 200 psi series tubing service by open cut or drilling methods (Note: All 'long' water services to be installed by drilling methods) a) 25mm poly 200 psi series tubing b) 25mm poly 200 psi series tubing (Drilling) c) 50mm poly 200 psi series tubing	m m m	20 26 6	\$ \$ \$	\$ \$ \$
4	Install supplied curb stops and main stops, complete. Incl. tracer wire, saddles, and required fittings to connect to existing services a) 25mm dia. a) 50mm dia.	each each	5 1	\$ \$	\$ \$
5	Connect prop. watermain to existing watermain, incl. all fittings, restraints, and sleeves as required a) Sta. 0+000 b) Sta. 2+114	L.S. L.S.			\$ \$
6	Install supplied gate valves (150mm) and box including all necessary restraints and cathodic protection a) Sta. 0+000 a) Sta. 1+450	L.S. L.S.			\$ \$
7	Cut and cap existing watermain including full trench restoration of areas outside the general const. limits a) +/-Sta 0+006 a) +/-Sta 2+108	L.S. L.S.			\$ \$
8	Pressure testing, swabbing, flushing, chlorination, de-chlorination and laboratory water sample testing of proposed watermain and water services, complete	L.S.			\$
TOTAL COST FOR SECTION 1 - WATERMAINS					\$

ITEMIZED BID

SHACKLETON LINE WATERMAIN 2024

CONTRACT NO. 223068

In accordance with the first paragraph of this tender, the Contractor hereby offers to complete the work specified for the following prices.

SECTION 2 - MISCELLANEOUS					
Item No.	Description of Work	Unit	Quantity	Unit Price	Total
1	Restoration of all laneways including granulars and installation of supplied pipe where required as shown on drawings	L.S.			\$
2	Installation of the following 375mm H.D.P.E. dia. lane culverts. Culverts to be supplied by Municipality Sta.0+010 - 10m, Sta.0+350 - 8m, Sta.1+500 - 12m	L.S.			\$
2	Restore existing asphalt driveways with hot-mix asphalt: HL3 (75mm depth)	tonnes	25	\$	\$
3	Restoration of boulevard with hydroseed (Approx. 6,000m ²)	L.S.			\$
4	Exposing existing utilities (Vac-Truck)	L.S.			\$
5	Remove and replace existing signs and mailboxes (as req'd.	L.S.			\$
6	Support of all hydro poles, guy wires, utilities, as required, in accordance with utility direction	L.S.			\$
7	Traffic Control as per MTO Book 7	L.S.			\$
8	50% Performance Bond	L.S.			\$
9	50% Labour and Material Bond	L.S.			\$
10	Preparation and delivery of: a) Contractor's notice to residents (Item 27, Page IT-8) b) Water shutdown notices to all affected residents as/when required	L.S. L.S.			\$ \$
TOTAL COST FOR SECTION 2 - MISCELLANEOUS					\$

ITEMIZED BID

SHACKLETON LINE WATERMAIN 2024

CONTRACT NO. 223068

In accordance with the first paragraph of this tender, the Contractor hereby offers to complete the work specified for the following prices.

SUMMARY OF TENDER
SHACKLETON LINE WATERMAIN 2024

SECTION 1 - WATERMAINS	\$	_____
SECTION 2 - MISCELLANEOUS	\$	_____
CONTINGENCY ALLOWANCE	\$	<u>15,000.00</u>
SUB-TOTAL CONTRACT PRICE	\$	_____
H.S.T. (13%)	\$	_____
TOTAL CONTRACT PRICE	\$	<u><u> </u></u>

AGREEMENTS REGARDING EXTRA WORK AND PAYMENTS

The Tenderer agrees that, if this Tender is accepted by the Owner,

- (1) He 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 Engineer in accordance with the Contract.
- (2) The carrying out of any work referred to in paragraph (1) above or the issuance by the 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 Engineer or any of the rights of the Owner or of the Engineer under the Contract.
- (3) He will pay to the Owner (in addition to amounts payable by the Owner in respect of site supervision of the work) the sum specified in the contract as liquidated damages for each working day that the work under the Contract, as expressly modified by all Contract Change Orders issued by the Engineer, remains uncompleted after the expiry of the Time for Completion specified in the Contract or the extended time for completion allowed in writing by the 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) In the Schedule of Items and Prices is not applicable, the Schedule of Additional Unit Prices shall apply, where applicable;
 - (c) If, in the opinion of the Engineer, both of the above Schedules are not applicable, the Contractor and the Engineer may agree on a price for extra work to be done, or for work to be omitted prior to its being performed, in which case the price shall be comparable to prices quoted on work of a similar nature;
 - (d) If the methods of evaluating extras described in (a), (b) and (c) above are, in the opinion of the Engineer, clearly not applicable, then the Engineer may direct that such extra work shall be done on a cost plus basis, in accordance with Clause 18 of the Information to Tenderers.

The amount of \$15,000.00 is referred to in this Tender as the Contingency Allowance. The Tenderer agrees that he is not entitled to payment of any part of the Contingency Allowance except for additional work carried out by him in accordance with the Contract and only to the extent of such additional work.

The Provisional Quantities in the Schedule of Additional Unit Prices in no way indicate any anticipated or proposed changes in the Contract. If this Schedule is used for any purpose under the provisions of the Contract, then the unit price shall govern, regardless of the quantities involved, whether they be more or less than the Provisional Quantity indicated.



AGREEMENTS REGARDING EXTRA WORK AND PAYMENTS (cont'd)

The Tenderer agrees that he is not entitled to payment of any part of the Contingency Allowance except for additional work carried out by him in accordance with the Contract and only to the extent of such additional work.

TERMS AND CONDITIONS

- a) The Tenderer agrees that this Tender is to continue open for acceptance and irrevocable until 45 days have elapsed from the closing date of the Tender or a formal contract is executed based on a Tender other than this one.
- b) The Tenderer also agrees that if the Tenderer withdraws his Tender before 45 days have elapsed from the closing date of Tender before the said Council shall have considered the Tender, the amount of the Tender Deposit shall be forfeited to the Corporation.
- c) The Tenderer also agrees that the awarding of the Contract, based on this Tender by the said Council, shall constitute and be an acceptance of this Tender without communication with or any notice thereof to the Tenderer.
- d) If this Tender is accepted, the Tenderer also agrees that, as aforesaid, the Tenderer will forthwith furnish an approved surety for the proper fulfilment of the Contract as required under the terms of Clause 23 of the General Conditions and will execute an Agreement, Bond, and Statutory Declaration, in triplicate, in form satisfactory to the said Corporation within seven (7) days after being notified so to do by, or by anyone acting on behalf of the Corporation.
- e) The Tenderer also agrees, that, should the Tenderer for any reason default or fail in any matter or thing hereinbefore contained, the said Corporation shall be at liberty to retain the money deposited by the Tenderer to the use of the said Corporation as liquidated damages, and to accept any other Tender or advertise for new Tenders or carry out the work in any other way as the said Corporation may in its sole discretion deem best; and also agrees to pay to the said Corporation the difference between the price or prices set out in this Tender and any greater sum or sums which the said Corporation may expend or for which it may become liable by reason of such default or failure, including the cost of any advertisement for new Tenders, and fully to indemnify and save harmless the said Corporation and/or its officers, agents, or servants from all loss, damage, liability, cost charges, or expense whatever which it, they or any of them may suffer, incur or be put to by reason of any such default or failure.
- f) The Tenderer agrees to complete the works within a time, to be known as the "Time for Completion". The "Time for Completion" shall be March 1, 2024 – November 30, 2024.
- g) The Tenderer agrees that he will furnish the Engineer with a copy of his latest financial statement within 4 days after being required so to do by the Engineer.
- h) The Tenderer agrees that this Tender is subject to a formal contract being prepared and executed.



DECLARATIONS

The Tenderer declares that no person, firm or corporation other than the Tenderer has any interest in this Tender or in the proposed contract for which this Tender is made.

The Tenderer further declares that this Tender is made without any connection, comparison of figures or arrangements with, or knowledge of, any other corporation, firm or person making a tender for the same work and is in all respects fair and without collusion or fraud.

The Tenderer further declares that no member of the Council and no officer or employee of the Corporation and no officer or employee will become interested directly or indirectly as a contracting party, partner, shareholder, surety or otherwise in or in the performance of the Contract or in the supplies, work or business to which it relates, or in any portion of the profits thereof, or in any of the monies to be derived therefrom.

Enclosed herewith is a certified cheque or signed and sealed Bid Bond in the amount of ten (10) percent of the Total Tender Price payable to the Owner as Tender Deposit.

SURETY MUST BE A SATISFACTORY GUARANTEE COMPANY AUTHORIZED BY LAW TO CARRY ON BUSINESS IN THE PROVINCE OF ONTARIO.

NOTE:

If tender is submitted by or on behalf of any Corporation it must be signed in the name of such Corporation by some duly authorized officer or agent thereof who shall also subscribe his own name and office. The seal of the Corporation shall also be affixed

Tenderer's
Signature

(_____
(_____
(_____
(_____
(_____
(_____
(_____
(_____
(_____

Witness _____

Dated at _____

This _____ day of _____, 2024



STATEMENT 'A' Stating the Tenderer's experience in similar work which he has successfully completed.

<u>Year</u>	<u>Description of Contract</u>	<u>Owners Name and Consulting Engineer</u>	<u>Dollar Value</u>

STATEMENT 'B' Giving a list of the Tenderer's senior supervisory staff with a summary of the experience of each.

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

STATEMENT 'C' Giving the location and description of the construction plant which the Tenderer proposes to use, the plant he has available or under his control, the plant to be rented, and the plant to be purchased.

PROPOSED CONSTRUCTION PLANT

<u>Description of Equipment</u>	<u>Location</u>	<u>Owned, Rented or to be Purchased</u>	<u>Availability</u>

STATEMENT 'D' List of Proposed Sub-Contractors

<u>SUB-TRADE</u>	<u>PROPOSED SUB-CONTRACTOR/ SUPPLIER</u>	<u>SUB-CONTRACTOR ADDRESS</u>



DOMINION OF CANADA
MUNICIPALITY OF
DUTTON DUNWICH

)IN THE MATTER of a proposed contract
)for the Construction of Shackleton Line Watermain 2024
)Municipality of Dutton Dunwich, Province of Ontario

TO WIT

I _____ Do Solemnly Swear that the several matters stated in the foregoing Tender are in all respects true.

AND _____ make this solemn declaration, conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath, and by virtue of "The Canada Evidence Act."

DECLARED before me at

_____)

of _____)

in the County of _____)

this _____)

day of _____ 20 _____)

A Commissioner, Etc. (or Notary Public)

Failure of the Tenderer to include the properly completed statutory declaration with his Tender may result in the Tender being ruled invalid by the Owner.



THIS AGREEMENT made in triplicate this day of, 2024

BETWEEN:

THE CORPORATION OF THE MUNICIPALITY OF DUTTON DUNWICH

(hereinafter called "the Owner")

OF THE FIRST PART

and

(hereinafter called "the Contractor")

OF THE SECOND PART

WITNESSETH

That the owner and the contractor in consideration of the fulfilment of their respective promises and obligations herein set forth covenant and agree with each other as follows:

ARTICLE 1

- (a) A general description of the work is:
Construction of Shackleton Line Watermain 2024, including installation of approximately 2,144 meters of 150mm diameter watermain and miscellaneous appurtenant works.
- (b) The Contractor shall, for the prices set out in the Form of Tender and except as otherwise specifically provided, provide at no additional cost to the Owner all and every kind of labour, machinery, plant, structures, roads, ways, materials, appliances, articles and things necessary for the due execution and completion of all the work set out in this Contract and shall forthwith according to the instructions of the Engineer, commence the works and diligently execute the respective portions thereof, and deliver the works complete in every particular to the Owner within the time specified in the Contract.

ARTICLE 2

In the event that the Tender provides for and contains a Contingency Allowance, it is understood and agreed that such Contingency Allowance is merely for the convenience of accounting by the Owner, and the Contractor is not entitled to payment thereof except for extra or additional work carried out by him as directed by the Engineer and in accordance with the Contract and only to the extent of such extra or additional work.



ARTICLE 3

In case of any inconsistency or conflict between the provisions of this Agreement and the Plans or Specifications or General Conditions or Tender or any other document or writing, the provisions of such documents shall take precedence and govern in the following order, namely:

- (1) This Agreement,
- (2) Special Provisions if any,
- (3) Contract Drawings,
- (4) General Conditions,
- (5) Information for Tenderers,
- (6) Contract Specifications,
- (7) Construction Details,
- (8) Form of Tender

ARTICLE 4

The Contractor shall not without the consent in writing of the Owner and without restricting in any way the provisions of the Section of the General Conditions headed "Sub-Contracts", make any assignment of any part or the whole of any monies due or to be come due under the provisions of this Contract.

ARTICLE 5

The Owner covenants with the Contractor that the Contractor having in all respects complied with the provisions of this Contract will be paid for and in respect of the works the sum of

.....
/100 Dollars (\$.....)

subject to Article 2 hereof and subject to such additions and deductions as may properly be made under the terms hereof, subject to the provision that the Owner may make payments on account monthly or otherwise as may be provided in the General Conditions attached hereto.

ARTICLE 6

Where any notice, direction or other communication is required to be or may be given or made by one of the parties hereto to the other or to the Engineer, it shall be deemed sufficiently given or made if mailed or delivered in writing to such party or to the Engineer at the following addresses:

THE OWNER: The Corporation of the Municipality of Dutton Dunwich
 199 Currie Road
 Dutton, Ontario
 N0L 1J0

ARTICLE 6 (cont'd)

THE CONTRACTOR:

THE ENGINEER:

Spriet Associates London Limited
Consulting Engineers
155 York Street
London, Ontario
N6A 1A8

ARTICLE 7

A copy of each of the Contract Specifications, General Conditions, Supplementary General Conditions if any, Tender, and Information for Tenderers is hereto annexed and together with the Drawings relating thereto and listed in the Specifications are made part of this Contract as fully to all intents and purposes as though recited in full herein.

ARTICLE 8

No implied contract of any kind whatsoever by or on behalf of the Owner shall arise or be implied by or inferred from anything in this Contract contained, nor from any position or situation of the parties at any time, it being clearly understood that the express covenants and agreements herein contained made by the Owner shall be the only covenants and agreements upon which any rights against the Owner may be founded.

ARTICLE 9

Time shall be deemed of the essence of this Contract.

ARTICLE 10

The Contractor declares that in tendering for the works and in entering into this Contract he has either investigated for himself the character of the work and all local conditions that might affect his tender or his acceptance or performance of the work, or that not having so investigated, he acknowledges that his responsibility under the Contract is in no way reduced or limited thereby and, in either case, he is willing to assume and does hereby assume all risk of conditions arising, developing, or being revealed in the course of the work which might or could make the work, or any items thereof, more expensive in character, or more onerous to fulfil, than was contemplated or known when the tender was made or the contract signed. The contractor also declares that he did not and does not rely upon information furnished by any methods whatsoever by the Owner or its officers, employees or agents, being aware that any information from such sources was and is approximate and speculative only, and was not in any manner warranted or guaranteed by the Owner.



ARTICLE 11

The Contract shall apply to and be binding on the parties hereto and their successors, administrators, executors and assigns and each of them.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals the day and year first above written or caused their corporate seals to be affixed, attested by the signature of their proper officers, as the case may be.

Witness as to Signature of Contractor *

Contractor

Address:

Signing Officer

Occupation:

* Not necessary if corporate seal is affixed

The Corporation of the
Municipality of Dutton Dunwich

Mayor

Clerk

(Seal)



LIST OF DRAWINGS

<u>DRAWING NO.</u>	<u>DESCRIPTION</u>	
	Cover Sheet	
1	Shackleton Line	STA. 0+000 TO STA. 0+375
2	Shackleton Line	STA. 0+375 TO STA. 0+765
3	Shackleton Line	STA. 0+765 TO STA. 1+155
4	Shackleton Line	STA. 1+155 TO STA. 1+545
5	Shackleton Line	STA. 1+545 TO STA. 1+940
6	Shackleton Line	STA. 1+940 TO STA. 2+114 DETAILS & NOTES



SECTION 1

GENERAL PROVISIONS

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101. WORK TO BE DONE

The Contractor shall perform all items of work covered and stipulated in the Specifications, Tender and Contracts, together with any authorized alterations, special provisions, extra work and supplemental agreements, all in accordance with the lines, grades, cross sections and dimensions shown on the Contract Drawings. The Contractor shall furnish all materials, implements, machinery, equipment, tools, supplies, transportation and labour necessary to the prosecution and completion of the work.

On the completion of construction, the Contractor shall leave the entire work in a clean and orderly condition to the satisfaction of the Engineer.

102. CONTRACT DRAWINGS

The location, general characteristics and principal details of work are shown on the Contract Drawings. (A list of Contract Drawings is included elsewhere in the Contract Documents).

Additional drawings may be furnished from time to time by the Engineer and such additional drawings shall form a part of this Contract. The Contractor shall be governed by figures and dimensions as given on the drawings. Where essential dimensions are not shown, the Contractor shall obtain the required dimensions from the Engineer before proceeding with the construction of the portion of work to which they refer. In every case, detail drawings shall take preference over general drawings. In the event that any conflict should exist between the specifications and drawings, the specifications shall prevail.

103. ACCESS TO WORK

The Engineer may at any time, enter upon the site of the work and the premises used by the Contractor. The Contractor shall provide proper and safe facilities for the inspection of and convenient access to all parts of the work as may be required by the Engineer.

104. TEMPORARY BUILDINGS

Temporary construction buildings may be erected by the Contractor at the site of the work, but the location of all temporary buildings used for construction purposes must be submitted to the Engineer for approval prior to the commencement of the work. In the event that there is inadequate space for the contractor's office space, storage yard, etc. the Contractor shall obtain same at his own cost and payment will be on the basis that such costs are included in the Lump Sum for other Requirements in the Form of Tender.

Adequate fire extinguishers must be provided at the site of any temporary building to be used in case of fire and all temporary buildings shall comply in all respects with the requirements of any local, national or provincial legislation pertaining thereto.

The Contractor shall pay for all permits and fees in connection with the erection, movement or placing of any temporary building used by him.

Should any of the Contractor's structures be placed on private property, two (2) copies of a Form of Release signed by each property owner affected shall be provided by the Contractor.



105. PERMITS, INSPECTIONS AND ORDINANCES

The Contractor shall obtain and pay for all permits and inspections, except charges for power contracts with the Owner relative to the completed work and the building permits for any permanent structures. The Contractor shall obtain and deliver to the Owner, all certificates of inspection and approval that may be required by Provincial or local laws, rules, codes, regulations or ordinances. Fees for building permits will be paid for by the Owner.

The drawings accompanying these specifications are intended to show the general design and arrangement of the installation and in some details may be diagrammatic only.

Should more detailed drawings be required for obtaining permits or for installation, the Contractor shall prepare and submit them to the Engineer for approval.

The Contractor shall notify in writing the Police Department, Fire Department, Ambulance Services, School Boards and the Road Authority at least 48 hours prior to commencing construction on any roadways. No road closures will be allowed under this Contract. A copy should be provided to the Engineer.

106. LAWS, CODES, ETC.

If any Federal, Provincial or local laws, codes, regulations or ordinances impose a higher standard than is required by the Drawings and Specifications, the Contractor shall execute the work in accordance with those laws, codes, regulations or ordinances rather than as shown on the Drawings and Specifications.

Should any changes in the Drawings and Specifications be required to conform to the aforementioned laws, codes, regulations or ordinances, the Contractor shall notify the Owner at the time of submission of his Tender. After entering into a Contract, the Contractor will be held to complete all work necessary to meet these requirements without extra expense to the Owner. The entire installation shall be made in full accordance with the latest regulations issued by the Ontario Hydro governing electrical installations and also all rules, regulations and ordinances of the Provincial and Municipal Departments which apply.

107. OCCUPATIONAL HEALTH AND SAFETY ACT

The Contractor shall execute all construction under this Contract in strict conformance with the current requirements of the Occupational Health and Safety Act and Regulations for Construction Projects.

108. PROGRESS SCHEDULE AND SCHEDULING OF WORK

Within two weeks after receipt by him of his instructions to commence work, the Contractor shall prepare and submit to the Engineer four (4) copies of a Construction Progress Schedule, showing clearly the proposed rate of progress of construction in weekly stages. When approved by the Engineer, the sequence of work shall be strictly adhered to by the Contractor.



109. MATERIALS TO BE SUPPLIED BY THE CONTRACTOR

The Contractor shall supply all materials necessary for the completion of the work. The Contractor shall assume complete responsibility for ordering, deliveries, checking, rejecting, breakage, theft, unloading and storage for all materials, in a manner satisfactory to the Engineer.

All granular/asphaltic materials must be from sources that are either on the Designated Sources List, the Aggregate Sources List, or approved by the Ministry of Transportation.

Copies of geotechnical sampling reports must be submitted for review and approval prior to delivery of any granular or asphaltic materials to the site. Random testing will be performed to ensure compliance. Failed tests will result in removal of the material and rejection of the relevant work.

110. ALTERATIONS

The Owner or the Engineer reserves the right to make such alterations to the design, length, grade, location, depth and other features of the work as it deems necessary prior to or during the progress of the work.

111. TRAFFIC

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. Traffic may not be prevented from entering roads on which the work is proceeding. One-way traffic must be maintained at all times during construction and two-way traffic must be maintained every evening and weekend.

112. NOISE ABATEMENT

The Contractor shall at all times, attempt to keep the noise level caused by his operations to a minimum. The contractor will not be permitted to carry out any work where excessive noise is created at any time except with the approval of the Engineer, and the Contractor will not be able to carry out any work at night or Sundays, or Holidays without the consent of the Engineer.

The Contractor shall take all reasonable precautions to minimize the noise from his construction operations by providing effective mufflers, or other devices for his equipment and silencers on his compressors, so that the noise level is kept to a tolerable minimum.

113. CONSTRUCTION EQUIPMENT

If, in the opinion of the Engineer, the contractor is not using suitable equipment for the work, he may direct the Contractor to suspend operations forthwith and such suspension shall remain in effect until the Contractor has provided satisfactory equipment.

If the Contractor does not have sufficient equipment on the job in the opinion of the Engineer to carry out the work satisfactorily, the Engineer may direct that the Contractor supply additional equipment immediately or the Engineer may suspend the work forthwith.



113. CONSTRUCTION EQUIPMENT (cont'd)

Any suspension of the work by the Engineer on account of improper equipment or lack of equipment to carry out the work satisfactorily, shall not entitle the Contractor to an extension of Time for Completion and he shall remain liable for any liquidating damages caused by his failure to complete the Contract within the time specified.

114. WORKING AREAS

The Contractor's working areas shall be within the public rights-of-way, acquired easements as designated, and the property of the Owner as shown on the Drawings, unless other satisfactory arrangements are made by the Contractor and approved by the Engineer. The area utilized for the construction shall be the minimum possible consistent with efficient operation.

Working areas used by the Contractor shall be restored to their original condition and all excavated or stockpiled materials shall be removed completely from the site, as stipulated in Item 129.

All shafts, sites and working areas shall be enclosed by temporary fences as required by the appropriate local authority or as required by the Engineer.

Due to the nature of this project site, the Contractor and Engineer must work together to co-ordinate any efforts required on private property, including discussions with affected residents. Care must be taken when working within these areas, to limit any disturbance to existing structures. All disturbed structures must be restored to a condition at least as good as the original existing pre-construction condition.

115. QUALITY OF WORK

The work shall be executed in the best and most workmanlike manner by qualified, careful and efficient mechanics. Unless otherwise specified, all materials to be incorporated in the work shall be new, unused and of recent manufacture.

116. APPROVALS AND TESTING

Samples, drawings and other data shall be submitted for approval of the Engineer as required by the various sections of these specifications. Only materials that have been approved in writing shall be used in the work. No compensation or allowance resulting from delays due to testing will be allowed the Contractor. The cost of carrying out all testing shall be borne by the contractor unless specified otherwise in these specifications.

All material testing shall be done by an inspection laboratory designated by the Engineer. The supply, handling, checking and shipping of test specimens and the replacing of rejected materials shall be done by the Contractor at his expense. Satisfactory proof of compliance with the specifications shall be submitted as directed by the Engineer in one or more of the following ways:



116. APPROVALS AND TESTING (cont'd)(a) Manufacturer's Certificate of Compliance

In case of standard labelled stock products of Standard manufacture which have a record of a period of not less than two years, the Engineer may accept a notarized statement from the manufacturer certifying that the product conforms to the applicable specifications.

(b) Mill Certificates

For materials where such practice is the usual standard, the Engineer may accept the manufacturer's certified mill and laboratory certificate.

(c) Testing Laboratory Certificates

The Engineer may accept a certificate from a commercial testing laboratory satisfactory to him certifying that the product has been tested within a period acceptable to the Engineer and that it conforms to the Specifications.

(d) Report of Actual Laboratory Test

The Engineer may require that the Contractor make actual tests of any product and submit a report of the specified test. Such tests shall be made by a commercial testing laboratory designated by the Engineer.

Construction Control Tests

The Engineer will carry out construction control tests to verify the quality of construction. The cost of such initial tests will be borne by the Owner. Subsequent tests on account of failure of the initial tests to meet the specified requirements will be borne by the Contractor.

117. STANDARD SPECIFICATIONS

In all cases where standard specifications, such as the American Society for Testing Materials, Ontario Ministry of the Environment and Ontario Provincial Standard Specifications, are referred to in this Contract, the latest revision of the pertinent specification, in effect as of the date of the bid opening shall be considered effective. Special care shall be exercised to refer to the standard specifications and to any modification thereof in requests for quotations, purchase orders and subcontracts.

118. LINES AND GRADES

The Engineer will provide the Contractor, in writing, with Bench Marks and points of reference to be used by him in setting out the work. The Engineer will be responsible only for the correctness of the information so supplied.

The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the works and for the provision of all necessary instruments and labour in connection



118. LINES AND GRADES (cont'd)

therewith. If at any time during the progress of the works any error shall appear or arise in the position, levels, dimensions, or alignment of any parts of the works, the Contractor shall at his own expense rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer. The checking of the setting out of any lines or levels by the Engineer shall not in any way release the Contractor of his responsibility for the correctness thereof, and the Contractor shall carefully protect and preserve all Bench Mark stakes and other items used in setting out the works.

119. CLEANING OF PIPES

During the progress of the work, and until the entire completion and acceptance thereof, all pipes shall be kept clean throughout. Following the completion of construction, the pipes shall be thoroughly cleaned. The pipes shall be cleaned of all material and debris, either by flushing or by other approved methods, to the satisfaction of the Engineer.

The cost of all pipe cleaning operations shall be included in the Contract Price. Swabbing of watermain will not be paid separately but will be deemed to have been included in the payment for "Supply and install watermain pipe".

120. DEFECTS TO BE MADE GOOD

If, in the final inspection of the work, any broken or crushed pipes or specials or any defects are found in connections or in any equipment and appurtenances, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship, without extra compensation for labour and materials required.

121. CONDITION OF STREETS, SIDEWALKS AND BRIDGES

The Contractor shall include in his Total Contract Price the cost of removing all materials, earth or debris which falls out of his vehicles; his sub-contractor's vehicles; and his supplier's vehicles on to streets, sidewalks and bridges used as a route between sources of material and the site and dumping of materials and the site. The Contractor shall employ workmen sufficient in number or shall use some other means necessary to keep such streets, sidewalks and bridges in a clean condition free from material, earth or debris.

Should the Contractor be negligent in his duties in maintaining the proper cleanliness in the opinion of the Engineer, the Owner will take the necessary steps to perform such cleaning and shall charge the Contractor all costs therefor.

The Contractor shall familiarize himself with any and all load limits in force and also on those portions of the works to be constructed outside the limits of the works and should such load limits exist, he shall comply with the requirements.

122. MAINTENANCE WORK

Prior to commencement of the one year maintenance period the Contractor shall provide the Consulting Engineer and the Owner with a letter supplying a telephone number and address to which the Engineer or the Owner may refer in the event that deficiencies in the work occur and maintenance is required.



122. MAINTENANCE WORK (cont'd)

If the Contractor's headquarters are not local or close to the site of the works, he shall make arrangements satisfactory to the Engineer to have a local Contractor available to carry out this type of work, and this information should be forwarded to the Engineer and the Owner.

123. SUPPLY OF WORKING DRAWINGS

The Contractor shall supply working drawings or shop drawings showing the dimensions and layout of all and every part of the equipment and structures which have not been supplied in the contract Documents. The Engineer may reject any drawing which does not conform to the Drawings and Specifications and instruct the Contractor to revise and resubmit same.

Any discrepancies or errors in these Drawings shall be the entire responsibility of the Contractor and any works necessitated by such errors or omissions or discrepancies shall be paid for by the Contractor. Such drawings shall be supplied when called for by the Engineer or prior to the commencement of manufacture of any item included in this Contract.

In the event of such Drawings not being supplied to the Engineer in adequate time, the Engineer shall have the right to order such Drawings to be prepared at the source of manufacture and the cost of any such preparation shall be paid for by the contractor. The contractor is to ensure that access to equipment for maintenance and repair purposes shall be easily obtainable in the space provided.

Working drawings for any falsework, shoring, forms or other incidental details of construction, shall be prepared and stamped by a Professional Engineer experienced in structural design of falsework and registered in the Province of Ontario. The Engineer whose stamp appears on the working drawings of such falsework or formwork shall inspect and approve, in writing, that all work has been carried out in accordance with the Drawings and to his own satisfaction.

The Contractor shall allow in his Tender for the provision of not less than six (6) copies of all drawings for approval and eight (8) copies of all working or shop drawings and one clear transparency after the final approval.

Only working drawings which are to scale and incorporate all the scaled dimensions and arrangements of details will be accepted as working drawings.

124. CERTIFIED EQUIPMENT OUTLINES

After entering into Contract, the Contractor shall furnish to the Engineer for his approval not less than four (4) copies of the manufacturer's catalogue description of all equipment he proposes to supply on the project. Approval of equipment shall be based on manufacturer's published ratings. Any items not in accordance with these Specifications shall be rejected. It shall be the responsibility of the Contractor to check shop drawings prior to submitting them for the Engineer's approval to ensure that the equipment he proposes to furnish fulfils the specified requirements and is suitable for the particular application.



125. LITERATURE DESCRIBING FULLY ALL EQUIPMENT

Complete literature describing all materials and equipment to be used on the works is to be submitted for the information of the Engineer and they shall receive his approval before any equipment or materials are used on the works.

Notwithstanding any equipment or materials having been approved by the Engineer if at any time any equipment or materials used on the works purporting to be equivalent to those submitted, do not meet the standard quality of such submitted details or the requirements of this Specification, then the Engineer may cancel such approval at any time and have such material removed from the site and replaced by an approved material at the Contractor's expense.

The equipment or materials furnished by the Contractor may be inspected by the Engineer at the time of delivery and at such times as the Engineer may elect. Any equipment or materials rejected by the Engineer after delivery shall be replaced by the Contractor at the Contractor's own expense.

All work done and equipment or materials furnished by the Contractor shall be subject to inspection by the Engineer and defective equipment or materials shall be removed from the site of the work and faulty workmanship be repaired notwithstanding prior inspection and acceptance thereof by the Engineer. The Contractor shall provide facilities for the handling, inspection and storing of all equipment and materials at his own expense.

126. PROTECTION AND RELOCATION OF STRUCTURES AND UTILITIES

All structures and utilities known to the Owner to be in existence above ground (ie. hydro/bell poles, transformers, pedestals) and below ground are shown on the Drawings. The Contractor shall examine the location of the work and shall make such enquiries necessary to determine the existence and location of structures and utilities which may be encountered in the line of work. The Owner will assume no responsibility for structures and utilities inaccurately shown on, or omitted from, the Drawings.

The Contractor shall, at his own expense, and in a manner approved by the Engineer, sustain in their places and protect from injury and damage any and all poles, posts, water or gas mains, public or private sewers or drains, conduit, cables, service pipes, ducts, culverts, sidewalks, curbs and gutters, and all other services, structures or property in the vicinity of the work, whether above or below ground, or which appear in the excavation. The Contractor shall assume all costs and expenses for damage which may be occasioned by injury to any structure or utility, and for any temporary relocation, replacement or adjustment required to facilitate the proper execution of the work. If damage to any structure, utility or service occurs by reason of the contractor's operations, even though special precautions have been employed, the Contractor shall be entirely responsible for such damage, whether such operations and the work resulting therefrom have received the approval of the Engineer, or not, and all such damage shall be satisfactorily rectified at the Contractor's expense.

It shall be the Contractor's responsibility to inform the utility companies, or owners, involved, of his intention to work in the vicinity of their services. The Contractor shall request that an inspector be on the site at the time to protect the interests of the company or owner involved. Should any costs arise from this inspection, they shall be borne by the Contractor.



126. PROTECTION AND RELOCATION OF STRUCTURES AND UTILITIES (cont'd)

Before commencing any excavations the Contractor shall have the location of all utility lines, conduits, pipes, cables, etc. located by a representative of the appropriate utility company, or municipality. Should the exact location of the utilities not be known, then it will be the Contractor's responsibility to search for and uncover them. Excavation will be commenced only after sufficient precautions have been taken to protect all utilities.

The cost of exploratory excavation shall be borne by the Contractor and no claim shall be made for any necessary excavation, sheeting, shoring, bracing, equipment, labour, standby time, traffic control, detours, barricades, etc. The Contractor shall provide the Engineer with all the necessary assistance to enable the Engineer to make the necessary measurements and take the necessary levels. In addition, the Contractor shall take note that the Engineer may vary the grade of the watermain to suit conditions which are encountered or he may require additional work to be carried out in order to solve any problem which may occur. Extra work, if required, will be carried out and will be paid for in accordance with the Provisions of the Contract for extra work.

127. MAINTAINING FLOW OF SEWERS, DRAINS AND DITCHES

The Contractor shall, at his expense, permanently and temporarily provide for and maintain the flow, where required, of all sewers, drains, ditches, house or inlet connections, and all watercourses that may be encountered during the progress of the work, and shall maintain the site of the work free from surface and ground water so that construction can proceed "in the dry". He shall not allow the contents of any sewer, drain, ditch or house inlet connection to flow into the trench to be constructed under this contract, unless he has written permission from the Engineer and shall at his own cost and expense, immediately remove from the proximity of the work all offensive matter, using such precautions in so doing, as may be directed by the Engineer.

Drainage ditches shall be kept open at all times for surface drainage. Damming or impounding of water in ditches or other waterways will not be permitted, except where the Engineer considers it necessary. The Contractor shall not direct any flow of water across or over pavements, except through approved pipes or properly constructed troughs, and he shall, when required by the Engineer, provide pipes or troughs of such sizes and lengths as may be required, and place the same as may be directed, at his own cost and expense.

128. RELOCATION OF THE WORK

The Engineer may relocate the work at any time to suit the interest of the Owner. The relocation of such work shall not invalidate the Contract and the Contractor shall be required to carry out all of the terms and conditions of the Contract despite such relocation. However, the Contractor will be entitled to payment for any extra work caused on account of such relocation in accordance with the unit prices quoted in the Form of Tender or as calculated by such other means as provided in the Contract. Relocation of any work will only be carried out with the written instructions of the Engineer and the Contractor may not relocate any work for his own purpose except with such written approval of the Engineer.



128. RELOCATION OF THE WORK (cont'd)

Should the relocation of any work result in a lesser amount of work required to be done, the cost of such reduction will be deducted from the Contractor's final contract price in accordance with the Unit Prices shown on the Schedule or such other sum as agreed between the Engineer and the Contractor.

129. GENERAL RESTORATION AND SITE CLEAN-UP

Following the completion of the work, the Contractor shall clean up the site, remove all materials and restore the site to at least its original condition, to the satisfaction of the Engineer. The cost of general restoration and site clean-up shall be deemed to have been included in the Total Contract Price. ie. asphalt, tar and chip, and granular removal and replacement, curb and gutter removal and replacement, open ditch, access culvert and headwall salvage, removal and replacement, driveway removal and replacement, will not be paid for separately but shall be deemed to have been included in the payment for "Supply and install watermain pipe". Since there are several types of restoration work involved in the project, the various types of restoration work shall be as specified herein.

Note that topsoil removal, stockpiling and replacement and seeding of all disturbed grass and topsoil areas, in accordance with O.P.S.S.572 will be required along the entire length of the project.

(i) Tar and Chip Roads (N/A)

In these areas a 100mm compacted layer of Granular 'A' compacted to 100% Standard Proctor Density shall be placed over a 300mm compacted layer of Granular 'B' compacted to 100% Standard Proctor Density. The finished grade of the Granular 'A' shall conform with the original granular grade of the road. The surface shall then be restored with 40mm HL4 Hot-Mix Asphalt (OPSS 310) to conform with the existing grade of the road.

(ii) Hot-Mixed Paved Roads (N/A)

In these areas a 150mm compacted layer of Granular 'A' compacted to 100% Standard Proctor Density shall be placed over a 300mm compacted layer of Granular 'B' compacted to 100% Standard Proctor Density. The finished grade of the Granular 'A' shall be such to allow placement of Hot-Mix Asphalt (OPSS 310) (50mm of HL4 surface course or to such greater thickness as may be required to match the existing). The top of the asphaltic concrete surface shall conform to the original road grade.

Before the restoration work is carried out, the Contractor shall carefully cut any broken or irregular pavement edges, to a neat, straight vertical face. These edges will then be thoroughly coated with SS-1 emulsion, or other approved sealer, so as to ensure a continuous bond between the old and new asphaltic concrete pavements.

Asphalt side streets shall be restored with 50mm HL4 surface course, 150mm of Granular "A" and 300mm of Granular "B".



129. GENERAL RESTORATION AND SITE CLEAN-UP (cont'd)(iii) Gravel Roads

In these areas a 150mm compacted layer of Granular 'A' compacted to 100% Standard Proctor Density shall be placed over a 300mm compacted layer of Granular 'B' compacted to 100% Standard Proctor Density. The finished grade of the Granular 'A' shall conform with the original grade of the road.

(iv) Concrete Roads (N/A)

In these areas a 150mm compacted layer of Granular 'A' compacted to 100% Standard Proctor Density shall be placed over a 300mm compacted layer of Granular 'B' compacted to 100% Standard Proctor Density. The finished grade of the Granular 'A' shall be such to allow the placement of concrete of thickness equal to the existing.

Before restoration work begins, broken or irregular pavement edges will be cut back to a straight and vertical face. The edges shall be treated as an expansion joint by placing 15mm Flexcell or other approved material between the new pour and the prepared edge.

(v) Paved Drives

Where the trench crosses areas, other than public roadways, that are paved, the Contractor shall place a 150mm layer of Granular 'A' compacted to 100% Standard Proctor Density over a 200mm layer of Granular 'B' compacted to 100% Standard Proctor Density. A 75mm minimum course of Hot-Mix Asphalt (HL3) or a 127mm minimum thickness of concrete shall be placed over the Granular 'A'. The finished grade and material shall conform to the original. Before restoration work begins, broken or irregular pavement edges will be cut back to a straight and vertical face. The asphalt edges shall be treated as in (ii) above. The concrete edges shall be treated as an expansion joint by placing 15mm Flexcell or other approved material between the new pour and the prepared edge.

(vi) Gravel Drives

In these areas the Contractor will place a 150mm layer of Granular 'A' compacted to 100% Standard Proctor Density over a 200mm layer of Granular 'B' compacted to 100% Standard Proctor Density. The finished grade of the Granular 'A' shall conform with the original grade of the drive.

(vii) Concrete Sidewalks (N/A)

In these areas the Contractor will place a 150mm layer of Granular 'A' compacted to 100% Standard Proctor Density on the prepared sub-grade.

The finished grade of the Granular 'A' shall be such to allow the placement of 125mm of concrete. The grade and width of the sidewalk shall match the original. Before restoration work begins, broken or irregular concrete edges will be cut back to a straight and vertical face.



129. GENERAL RESTORATION AND SITE CLEAN-UP (cont'd)(viii) Curbs, Gutters, etc. (N/A)

Where the Contractor's operations damage any of the existing curbs, gutters, catchbasins, sewers, and other roadside appurtenances, these shall be replaced and/or restored to at least the original condition prior to construction or as described below.

The current OPSS Form 353 - "Specifications for Concrete Curb and Gutter Systems" shall apply. Expansion joints shall be provided in conformity with the original or as directed by the Engineer.

Damaged sewer pipes shall be replaced by pipes of the same materials, class and size as were the original pipes. Replaced portions of pipe shall be properly bedded and backfilled to the satisfaction of the Engineer.

(ix) Roadside Ditches

Where the Contractor's excavations appear within the limits of an existing roadside ditch or Municipal open drain, the Contractor will, after backfilling, regrade the ditch to its original grade. Should there be any culverts along the line of the trench, these should be carefully removed prior to excavation, and then replaced at their original inverts upon restoration. Generally, the contractor will be required to regrade and reinstall existing (salvaged) topsoil and apply seed to the slopes of the re-graded ditches.

(x) Boulevards and Private Lawns

Where the Contractor's operations have damaged these areas he will be required to re-grade and reinstall existing salvaged topsoil and apply seed to the complete satisfaction of the Engineer and/or property owner affected.

130. STANDARD ABBREVIATIONS

The following standard abbreviations may be used in the Contract Documents and the meaning thereof is given herewith:

N.B.C.	-	National Building Code of Canada
C.S.A.	-	Canadian Standards Association
A.S.A.	-	American Standards Association
A.W.W.A.	-	American Water Works Association
A.S.T.M.	-	American Society for Testing Materials
A.I.S.C.	-	American Institute of Steel Construction
C.I.S.C.	-	Canadian institute of Steel Construction
A.C.I.	-	American Concrete Institute
P.C.I.	-	Pre-stressed Concrete Institute
P.C.A.	-	Portland Cement Association
M.T.O.	-	Ministry of Transportation of Ontario
M.O.E.	-	Ontario Ministry of the Environment
O.P.S.S.	-	Ontario Provincial Standard Specification
O.P.S.D.	-	Ontario Provincial Standard Drawing



131. DUST CONTROL

The Contractor shall be responsible for the control of all dust nuisances resulting from his operations and shall at his expense supply water to areas where, in the opinion of the Engineer, it is required to control dust caused by or as a result of the Contractor's operations. If in the opinion of the Engineer the application of water is not sufficient to control the dust, the Engineer may order the Contractor to apply calcium chloride to selected areas of the operations.

132. FREEZING WEATHER

During freezing weather, all work shall be adequately protected with straw, tarpaulins or wet steam, or any combination of these methods, as considered necessary by the Engineer. The cost of all such special precautions during freezing weather shall be the Contractor's expense. No payment will be made for frost-ripping regardless of the depth.

133. CONTRACTOR'S STANDING WITH WORKPLACE SAFETY AND INSURANCE BOARD

Prior to construction, and prior to the Final Payment Certificate submission, the Contractor shall supply the Engineer with a letter from the Workplace Safety and Insurance Board stating that his firm is in good standing with the Workplace Safety and Insurance Board. This letter shall be in the form of a declaration as provided by the Workplace Safety and Insurance Board.

134. FIRST AID EQUIPMENT

The Contractor shall provide and maintain on the site, in a clean orderly condition, completely equipped first aid facilities which shall be readily accessible at all times to all his employees and the Engineer and his staff. The Contractor shall designate certain employees who are appropriately instructed to be in charge of first aid. At least one such employee shall always be available on the site while work is being carried on. A telephone call list for summoning aid, such as doctors, ambulances, and rescue squads from outside sources shall be conspicuously posted.

135. IRON BAR MONUMENTS

The Contractor shall take every precaution not to disturb any iron bars or witness posts. The contractor shall provide an Ontario Land surveyor at no expense to the Owner to replace all iron bars and witness posts that have been disturbed by the contractor's operations. This includes all survey bars, etc. shown or not shown on the Contract Drawings.

136. COMPLAINTS AND CLAIMS FROM THE PUBLIC

The Contractor shall assign an employee to investigate all complaints from the public resulting from his work during the course of the project and to immediately rectify any situation from which the public has just cause for complaint. This employee shall keep a diary listing all complaints, the time and date that they were received, and the action taken by the Contractor to rectify the situation. One copy of this diary will be submitted to the Engineer every week. The employee designated by the Contractor to investigate these complaints will be on-site on a full-time basis and will co-operate fully with the Engineer's staff.



136. COMPLAINTS AND CLAIMS FROM THE PUBLIC (cont'd)

The Contractor shall immediately investigate all claims from the public regarding damage to private property. The Contractor shall also notify the Engineer and the property owner in writing if their claim is submitted to the Contractor's Insurance Agent by the Contractor for investigation.

137. MAINTENANCE OF EXISTING POTABLE WATER SUPPLY (N/A)

Subject to the conditions set out below, the Contractor shall provide a temporary supply of potable water to users in the area affected by the Contractor's dewatering operations during the time period where such users have their normal supply of potable water interrupted by the Contractor's dewatering operations.

- (i) The area affected by the Contractor's dewatering operations for the purposes of this clause is defined as that area within a radius of 300 meters of the Contractor's dewatering operations.
- (ii) The Contractor shall notify users of surface water or ground water in the area defined in (i) above of his intention to commence dewatering operations and of the address at which users can apply for a temporary water supply if the users' normal source of water supply is interrupted.
- (iii) The time period during which the Contractor is required to provide a temporary supply of potable water shall be that time from when the Contractor starts his dewatering operation to that time one week after he completes his dewatering operation.
- (iv) A temporary supply of potable water is herein defined as either of the following:
 - (a) Delivery daily in hygienic containers to individual users an amount of potable water not less than 100 litres per person per day. This method of supply shall be limited to a maximum period of 5 days.
 - (b) Delivery, via a system of pipes which have been adequately disinfected, of a pressurized potable water supply to individual users at a minimum pressure of 275×10^{-3} MPa (40 psi).
 - (c) Delivery of a potable water supply to individual users by means of maintaining, deepening or renewing existing supply facilities. This method of supply shall be agreed by the individual user in writing.
- (v) Payment to the Contractor or others for an alternative supply of potable water as described herein will not be made. The cost of this alternative water supply is deemed to be included under the items for watermain construction in the Schedule of Items and Prices.



138. PERMIT TO TAKE WATER (N/A)

The Contractor is required to conform with Section 37 of the Ontario Water Resources Act whereby a person taking more than 45.46m³ (10,000 gallons) of water in a day from any ground or surface source of water supply, or a combination thereof, shall obtain a permit from the Ministry of the Environment.

Applications on Form MOE 07-095-74 shall be made to the Director of the Ministry of the Environment region in which the taking of water occurs.

139. SITE OFFICE (N/A)

A Site Engineer's Office will be required for this project. The Contractor shall provide on the site a weathertight office (200ft² min. floor space) for the Contractor's use and that of the Engineer's Inspector, the cost of which shall be included in Form of Tender Item No. 4, Section B. As a minimum, the office shall be provided with internal lighting, a table (1.2m x 2.4m minimum), eight (8) chairs, lockable 2-drawer filing cabinet, and air conditioning/heating. Adequate road access, parking facilities, and temporary sanitary facilities shall be provided adjacent to the office. Included in this item shall be cost for the Contractor to supply a cellular phone, including voice message system, for the sole use of the Engineer's Site Inspector during construction. All costs associated with the supply and use of the cellular phone shall be included in this item, excluding long distance calls, which will be paid by the Engineer.



SECTION 2

WATERMANS AND APPURTENANCES

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201. GENERAL

The work to be done under this Section shall consist of supplying all materials, labour, equipment and transportation necessary to complete the watermain installation, including various fittings and appurtenances, of the sizes, to the lines, and at the depths shown on the Contract Drawings, as specified herein or as designated by the Engineer.

202. MATERIALS202.1 DUCTILE IRON PIPE

Ductile iron is not acceptable to the Owner.

202.2 ASBESTOS CEMENT PIPE

Asbestos Cement Pipe is not acceptable to the Owner.

202.3 POLYVINYL CHLORIDE (PVC) PIPE

(N/A– To be supplied by the Municipality of Dutton Dunwich)

The Polyvinyl Chloride (PVC) plastic pipe shall be constructed of rigid polyvinyl chloride compound and shall conform to the current AWWA C900 or CSA B-137.3 specifications. PVC Series 160 (SDR 26) watermain pipe is required for this project in the open-cut installation locations.

Tracer wire shall be 12-gauge TWU solid copper and shall be installed along all PVC watermains at the 12 o'clock position strapped to the pipe at 6-meter intervals. The tracer wire shall be brought to the surface at all fire hydrants, looped twice around the hydrant barrel 100mm below finished grade and fastened by means of a washer to a breakaway flange bolt.

The tracer wire shall be supplied in 300-meter-long rolls. The Contractor shall use Burndy connectors to connect the ends of the solid copper tracer wire.

Pipes shall be supplied in standard lengths of not less than 6 meters nor more than 11.6 meters except that short lengths and special adaptors shall be provided as required for completing connections or where ground conditions are such that shorter lengths are necessary. Pipes shall be jointed by means of a "Tyton" type rubber ring bell joint which shall be an integral and homogeneous part of the pipe barrel. Rubber rings shall conform to ASTM Specifications D1869. The supplier of the PVC pipe must be approved by the Engineer before the material can be ordered by the Contractor. The class and type of pipe shall be stencilled on each length of pipe.

202.4 HIGH DENSITY POLYETHYLENE (H.D.P.E.) PIPE (N/A)

Watermain pipe material shall be high density polyethylene (H.D.P.E.) pipe and shall be in conformance with AWWA Standard C906-99 for PE Pressure Pipe and Fittings 100mm through 1575mm for Water Distribution and Transmission. HD.P.E. pipe shall be manufactured with resin conforming to Standard PE Code PE3406. H.D.P.E. pipe shall be DR17 Iron pipe size.



202. MATERIALS (cont'd)202.4 HIGH DENSITY POLYETHYLENE (H.D.P.E.) PIPE (N/A) (cont'd)

NOTE: The Contractor shall connect to all ends of the H.D.P.E. DR17 IPS watermain with the proposed P.V.C. watermain by fused mechanical joint connection methods approved by both the Engineer and the Municipality of Dutton/Dunwich. See Appendix C. Mechanical joint restraint shall be provided for a minimum length of 18m (60 feet) along the PVC watermain at all PVC/HDPE connection locations. Joints and restraints to be supplied by Contractor.

202.5 CONSTRUCTION

The Contractor shall install the PVC watermain pipe at the locations shown on the drawings and to the specified grade.

If the Contractor wishes to install certain sections of proposed open-cut PVC Series 160 watermain by directional drilling methods using H.D.P.E. DR17 watermain a request must be made for review and approval from the Engineer during construction. The costs attributed to performing this work shall be deemed included in the open-cut PVC Series 160 watermain installation item in the Form of Tender.

For clarification, the Contractor will be allowed to side cast excavated materials on the roadside along gravel roadways and gravel shoulders during construction. All disturbed gravel roadways and shoulders used for side casting material placement shall be fully restored to better than pre-construction conditions, the cost of which shall be included in the supply and install watermain price.

202.6 FITTINGS (N/A– To be supplied by the Municipality of Dutton Dunwich)

Watermain fittings to be used with the various pipe materials shall be as follows:

(a) Ductile Iron Pipe (N/A)

Ductile iron or cast iron with either mechanical or push-on ends in accordance with AWWA C110 and C111. All fittings shall be cement lined in accordance with AWWA C104.

(b) PVC Pipe

Fittings shall be ductile iron.

Ductile iron fittings with mechanical joint adapted for use in making connection with PVC pipe and in accordance with AWWA C153.

(b) Watermain Fittings

(N/A– To be supplied by the Municipality of Dutton Dunwich)

Watermain fittings to be used with the various pipe materials shall be as follows:

- (N/A)(i) PVC injection moulded fittings rated for 1.39 MPa (200 psi) in sizes up to and including 200mm with push-on joints shall conform to AWWA Standard C907, shall be UL listed and FM approved and shall be certified to CSA Standard B137.2.



202. MATERIALS (cont'd)202.6 FITTINGS (cont'd)

(N/A– To be supplied by the Municipality of Dutton Dunwich)

- (N/A)**(ii) PVC fabricated fittings rated for 1.10 MPa (160 psi) in sizes 250mm to 750mm with push-on joints shall be UL listed and FM approved and shall be certified to CSA Standard B137.3.
- (iii) All metallic fittings including rods and nuts, as defined by OPSS 702.03 shall be protected with "denso" paste, profiling mastic and LT tape. All water valves including fittings, rods, and nuts shall be protected with "denso" paste, profiling mastic and LT tape. (See Denso North America Inc. information in Appendix A.)
- (iv) Only installation of 1300 "S" Series mechanical joint restraint will be allowed in this project along the proposed PVC watermain.

202.7 WATERMAIN VALVES

(N/A– To be supplied by the Municipality of Dutton Dunwich)

All watermain valves shall be Mueller resilient gate valves.

Gate valves shall be iron body, epoxy coated, 50mm operating nut, non-rising stem with mechanical joints. MJXMJ, AWWA, UL/FM. Gate valves to be resilient wedge only. Minimum design working water pressure shall be 1.21 MPa (175 psi). "O" rings shall be used for valve stem stuffing box packing.

Valves to open to the LEFT ie. counter-clockwise and stems fitted with 50mm square operating nut with arrow showing opening direction.

Length of valve box riser shall be determined by the Contractor based on the proposed watermain depth at each valve location.

202.8 VALVE CHAMBERS

(N/A– To be supplied by the Municipality of Dutton Dunwich)

A valve box shall be supplied and installed on every watermain valve and hydrant shut-off valve.

202.9 FIRE HYDRANTS **(N/A)**

Fire hydrants shall be Canada Valve "Century" manufactured in accordance with AWWA C502. Hydrants shall be post type with compression valve control designed for a working pressure of 1.03 MPa (150 psi) and to close with water pressure. Hydrants shall be suitable for a minimum 1830mm trench and shall be supplied with two Standard 64mm hose nozzles and a 100mm "Storz" pumper nozzle with caps. Nozzle threads shall be Ontario Provincial Standards threads. Barrel to have ground line flange and designed so that all internal parts can be removed through the top of hydrant. Hydrant barrel to be non-draining, plugged. Base connection shall be 150mm. Hydrant must open LEFT i.e., counterclockwise.



202. MATERIALS (cont'd)202.9 FIRE HYDRANTS (N/A) (cont'd)

Hydrants shall be shop painted YELLOW epoxy all over. All field painting shall be carried out in accordance with the AWWA Standards for fire-hydrant designations as indicated in the Hydrant Paint Code. All scratched or dirty hydrants disturbed during construction shall be re-painted YELLOW epoxy.

Hydrants to be Canada Valve "Century". Hydrant installation including mechanical joint restraint as per Detail Drawing.

202.10 SERVICE PIPE

Copper Type 'K' copper tube of not less than 25mm nominal size in conformance with A.S.T.M. B88.62. No solder joints permitted. Solid stainless-steel appurtenances. No split stainless-steel sleeves will be accepted.

Polyethylene Plastic of not less than 25mm nominal size in conformance with ASTM C1248 or CSA B137.1 with a working pressure of 1.38 MPa (160 psi).

Bedding to be Granular 'B' Type 1 (clean sand) conforming to OPSS 200.

Proposed water services may be polyethylene plastic of not less than 25mm nominal size unless otherwise specified on the drawings. Should the Contractor elect to install polyethylene plastic water service pipe, it shall be installed with 12-gauge AWG solid Copperhead reinforced tracer wire, to be included in the water service item in the Form of Tender.

202.11 SERVICE MAIN STOP

(N/A– To be supplied by the Municipality of Dutton Dunwich)

Main stop for plastic and copper tube shall be inlet AWWA thread and outlet compression. Approved main stops are:

- Compression - Mueller H-15008, or approved equal to meet AWWA criteria under NSF61 guidelines.

Main stop for plastic tube shall have solid stainless-steel insert. No split stainless-steel sleeves will be accepted.

Main stop shall open LEFT i.e., counterclockwise.

202.12 SERVICE CURB STOP

(N/A– To be supplied by the Municipality of Dutton Dunwich)

Curb stop shall open LEFT i.e., counterclockwise.

All curb stops shall meet AWWA criteria under NSF61 guidelines, ORISEAL - compression joint.



202. MATERIALS (cont'd)202.12 SERVICE CURB STOP (cont'd)

(N/A– To be supplied by the Municipality of Dutton Dunwich)

Approved curb stops shall be manufactured by Mueller, H15209, or approved equal, non-draining.

All curb stops shall be placed on a minimum 200mmx200mmx50mm thick prefabricated concrete block.

202.13 SERVICE CURB BOX

(N/A– To be supplied by the Municipality of Dutton Dunwich)

All curb stops shall have adjustable service boxes with stainless steel rods, 0.90m (35") length, stainless steel cotter pin of sufficient length to suit bury of valve. Base shall be cast iron. Cover shall be cast iron A726 or equivalent. Service boxes for valves up to 50mm shall be similar to Mueller A726 or approved equal. Rods and related hardware will be stainless steel including cotter pin. Marker post to be 38mm x 89mm by 1.2m long and 0.6m exposed above grade. Exposed wood to be painted blue.

12-gauge TWU solid copper tracer wire shall be raised along the outside of the curb box to within 100mm of ground surface.

202.14 SERVICE SADDLE

(N/A– To be supplied by the Municipality of Dutton Dunwich)

Service saddles shall be used where specified. On installation of saddle, neoprene gasket shall be soap lubricated.

Service clamps shall be used on:

- All Series 160 plastic pipe shall have double bolt stainless steel service saddle to suit AWWA thread of corporation.

202.15 HANDLING OF MATERIALS

Pipe, fittings, valves, hydrants and all accessories shall be loaded and unloaded by lifting with a hoist or skidding, so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe previously unloaded.

203. TRENCH EXCAVATION203.1 UNCLASSIFIED EXCAVATION

All excavation shall be unclassified and shall consist of and include all necessary excavation, clearing and grubbing, removal of pavements, structures and obstructions and the satisfactory disposal of all material and covers all classes of excavation. Excavated material shall not be stockpiled along any roadway surface or shoulder and shall be cast away from any travelled road surface.



203. TRENCH EXCAVATION (cont'd)203.2 LENGTH OF OPEN TRENCH

No greater length of trench in any location shall be left open, in advance of the completed structure placed therein, than shall be authorized or directed. The Engineer shall be empowered, at any time to require the refilling of open trenches over completed pipe lines, if in his judgement, such action is necessary, and the Contractor shall thereby have no claim for extra compensation, even though to accomplish said refilling he is compelled temporarily to stop excavation of other work at any place.

If work is stopped on any trench, for any reason except by order of the Engineer, and the excavation is left open for an unreasonable length of time in advance of construction, the Contractor shall, if so directed, refill such trench at his own cost, and shall not again open said trench until he is ready to complete the structure therein.

The excavation of all trenches shall be fully completed at least seven (7) meters in advance of pipe laying, unless otherwise authorized.

203.3 WIDTH AND DEPTH OF TRENCHES

All trench and boring pit excavation shall be carried out in conformance with the requirements of the Occupational Health and Safety Act.

Trenches shall be excavated to the necessary width and depth as may be shown on the drawings, or as directed. The bottom of the trench shall be solid undisturbed ground. Any part of the bottom of the trench sub-excavated below the specified sub-grade shall be backfilled with approved material, thoroughly compacted.

Where the bottom of the trench at sub-grade is in unstable or unsuitable material, excavation shall be carried to such depth as ordered by the Engineer. The trench bottom shall be restored to sub-grade with approved granular stabilizing material. All excavation in excess of 300mm below sub-grade will be paid for as sub-excavation, where ordered.

The trench shall be drained or pumped to avoid the making of joints under water and to prevent water from entering the pipe. Tendered prices shall include the cost of dewatering of the trench wherever required and by whatever method.

Sheeting and shoring of the trench, as required, shall be included in the tendered unit prices under the appropriate items in the Form of Tender for watermain and water service construction.

Depth - In general, all watermain pipe shall have not less than 1700mm and not greater than 1850mm of cover when final grade is established unless otherwise shown on the Contract Drawings. The correct depth of main and service pipe shall be maintained regardless of ground and other site conditions. Caution shall be exercised in this



203. TRENCH EXCAVATION (cont'd)203.3 WIDTH AND DEPTH OF TRENCHES (cont'd)

respect where mains, services and hydrant laterals cross drainage ditches or other low areas. A minimum 500mm vertical clearance shall be provided between the proposed watermain and existing culverts, tiles or municipal drains.

The trench shall be excavated to the depth required so as to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes, except that it will be permissible to disturb and otherwise damage the finished surface over a maximum length of 0.5 meters near the middle of each length of pipe by a withdrawal of pipe slings or other lifting tackle.

Width - The width of the trench shall be sufficient to permit the pipe to be laid and jointed properly and to permit trench backfill to be placed and compacted as specified. Trenches shall be of such extra width, when required, as will permit the convenient placing of timber supports, sheeting and bracing and handling of materials.

204. INSTALLATION OF PIPE AND APPURTENANCES204.1 GENERAL

Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the efficient laying of the pipe and the setting of the required fittings. All materials shall be lowered into the trench by suitable means. Under no circumstances shall these materials be dropped or dumped into the trench.

The inside of the bell and the outside of the spigot shall be wire brushed and wiped clean and free from oil and grease before the pipe is laid. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line.

Where it is required that the new watermain shall cross under existing utilities, the Engineer may order the installation of concrete support beams and columns to support the utilities.

Watermain pipe shall not be laid on blocks. The pipe shall be placed on a prepared granular bedding and shall bear uniformly and continuously along its full length, except for that portion of the bell hole. Bell holes shall be made at all pipe joints.

204.2 PIPE DEFLECTION

Wherever it is necessary to deflect the pipe from a straight line either in the vertical or horizontal plane, the amount of deflection shall not exceed that required for satisfactory making up of the joint and shall not exceed that recommended by the manufacturer. If in the opinion of the Engineer, the deflection is excessive, the Engineer will order the use of specials in order to provide the necessary deflection.



204. INSTALLATION OF PIPE AND APPURTENANCES (cont'd)

204.3 CUTTING PIPE

The field cutting of pipe for the insertion of valves, fittings or closure pieces shall be done in a neat and workmanlike manner, using the proper tools.

204.4 PIPE JOINT

Lubricants used shall be PVC pipe lube supplied by the pipe supplier or manufacturer.

204.5 SHUT-DOWN PRECAUTIONS

At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the Engineer. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry. Every precaution shall be taken to prevent foreign material from entering the pipe.

204.6 SETTING VALVES AND FITTINGS

Valves, fittings and other accessories shall be fitted and jointed to the pipe in the manner heretofore specified for the cleaning, laying and jointing of pipe.

Valves shall be located on the street property lines extended, unless shown otherwise on the approved plans. A PVC MVB composite valve box riser shall be provided for every valve. The chamber shall be plumb and centred on the extension rod. The top of the valve chamber shall be set flush with the finished grade of the road or boulevard.

204.7 HYDRANT INSTALLATION

Hydrants shall be set at a grade whereby the final grading of the street or boulevard area shall be 100mm-150mm below the breakaway flange. A hydrant installation will not be accepted where any portion of the hose nozzle cap is less than 300mm from the finished grade.

Hydrants will be set as shown or as directed by the Engineer, and in a manner so as to provide complete accessibility and so that the possibility of damage by vehicles and injury to pedestrians are minimized.

All hydrants shall stand plumb and shall have their nozzles parallel with the road and be set so that the breakaway flange is 100mm-150mm above the existing grade.

Hydrants will be mechanically restrained.

In order to provide barrel drainage, the hydrant shall be set into a pocket of Granular "A". This pocket shall measure not less than 1000mm by 1000mm by 500mm. The gravel shall extend to at least 150mm above the waste opening in the hydrant. The cost of the porous material around the hydrant and the bracing shall be included in the Contractor's price for setting the hydrants.



204. INSTALLATION OF PIPE AND APPURTENANCES (cont'd)204.7 HYDRANT INSTALLATION (cont'd)

Hydrants shall be installed with appropriate barrel length to be determined by the Contractor based on the proposed watermain depth at each hydrant location. Each hydrant shall be connected to the main with a 150mm lateral, controlled by an independent gate valve. P.V.C. pipe from valve to hydrant.

Hydrants shall be placed on a 600mmx600mmx50mm thick prefabricated concrete slab. Boot of hydrants to be protected with "denso" paste, profiling mastic and LT tape.

204.8 ANCHORAGE FOR PLUGS, CAPS, TEES, BENDS AND OTHER FITTINGS

No concrete thrust blocks will be permitted. All plugs, caps, fittings, etc. must be installed with mechanically restrained joints.

204.9 ELECTRICAL CONDUCTIVITY

It shall be the responsibility of the Contractor to use such materials and methods in making joints as to ensure continuity of electrical conductivity in any IRON watermain piping. Such materials and methods shall be in accordance with the manufacturer's specifications and shall meet with the approval of the Engineer.

205. PIPE BEDDING

Watermain pipe shall be placed on a prepared granular bedding. Granular material shall be coarse sand conforming to the current O.P.S.S. material specifications.

Bedding shall extend to a minimum depth of 150mm below the pipe barrel and shall be brought up around the pipe to a minimum depth of 300mm above the top of pipe and shall be compacted to 98% modified Proctor Density. The width of granular bedding shall be the width of the trench.

206. TRENCH BACKFILL

The Contractor shall carefully study and familiarize himself with the locations of the proposed watermain as indicated on the Contract Drawings so as to establish the backfill requirements to be used as specified.

Where watermains are constructed in the boulevard or grass areas the contractor shall use selected native material to backfill trenches above the pipe bedding. The native material shall be placed in layers of not more than 300mm thick and compacted to 95% Standard Proctor Density. The native backfill shall be terminated 150mm below grade to allow placement of topsoil and seed, as per O.P.S.S.572. All topsoil within the limits of the project shall be stripped and stockpiled for re-use. Upon watermain and native backfill installation, all stockpiled topsoil shall be graded to pre-construction elevations.



206. TRENCH BACKFILL (cont'd)

Where watermains are constructed within the limits of roadways and shoulders in the locations shown on the Contract Drawings, the Contractor shall use selected native material to backfill trenches above the pipe bedding. The native material shall be placed in layers of not more than 150mm thick and compacted to 95% Standard Proctor Density. Where selected native material is not suitable, the Engineer will authorize the substitution of Granular 'B' at an agreed upon price. The amounts shall be calculated using the dimensions and the elevations shown on the drawing and the width of trench which will have a theoretical dimension of the outside diameter of the watermain plus 750mm.

Above the upper limit of the native backfill the travelled portion of the roadway structure for each type shall be restored in accordance with the requirements as set out in Sub-Section 129 - "General Restoration and Site Clean Up" of the General Provisions.

All equipment used in backfilling of the trenches shall be approved by the Engineer. No work shall be allowed until the Contractor has satisfied the Engineer that equipment on the site is in good working order and suitable to carry out the specific function.

The Granular 'A' and Granular 'B' backfill materials shall be compacted in the trench in maximum 150mm thick layers. The material shall have sufficient moisture to achieve maximum density specified. If needed, the Contractor shall supply at his expense, all water needed for the proper compaction of materials.

The compaction tests when required by the Engineer, shall be carried out by an approved Soil Testing Company selected and paid by the Owner. The Contractor shall note that upon his request to have the backfill material tested and the densities obtained are below the specified, then the Contractor shall carry out further compaction under the Engineer's supervision. The Engineer may order the Contractor to remove all or part of the material in the trench and same to be placed back and compacted to the satisfaction of the Engineer, all at the Contractor's expense. Density tests taken following the remedial work on trench backfill shall be charged to the Contractor.

The Contractor shall save all the selected excavated native material and shall incorporate same in the proposed works. Surplus shall be disposed of at the Contractor's expense.

In general, selected native materials shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, or any other material which in the opinion of the Engineer is unsuitable. However, from 300mm above the top of the pipe, material containing stones up to 75mm in their greatest dimension may be used, unless specified otherwise.

Stones or boulders larger than 75mm in any dimension shall have at least a 300mm clearance from all mains, valves and fittings.



206. TRENCH BACKFILL (cont'd)

No frozen material shall be used as backfill in the trench.

No excavated material shall be cast or deposited on the travelled portion or shoulders of roads or streets even as a temporary measure unless approved by the Engineer. Where circumstances do not permit the casting of excavated material clear of roads and shoulder the excavated material shall be loaded onto trucks or other approved equipment and transported for use as trench backfill or transported to an approved disposal site.

A disposal site for any removed asphalt or concrete shall be at a location determined by the Contractor, at his expense.

The Contractor shall load, haul, dump, and level the excess material and shall return the stockpiled material to the site at the direction and to the satisfaction of the Engineer. Payment for this work shall be included in the Unit Price quoted in the Form of Tender for supplying and installing the pipe, complete with restoration.

The Contractor shall provide for all the labour necessary to continuously maintain the condition of the trench in a satisfactory manner and to provide for all necessary grading, levelling, water, dust control, etc.

The Contractor shall quickly fill the trench wherever any settlement occurs and if it is impossible to make speedy repairs to any area requiring treatment, the Contractor shall immediately place all necessary lights, barricades or watchmen as may be required to provide for the safety of the traffic and pedestrians alike until the necessary restoration or repair has been made.

The Contractor shall not be paid for any materials, plant, labour or equipment required to carry out the backfilling operations to meet with the requirements of this sub-section and he shall provide for all such times in his Total Tender Price for the work.

The Contractor shall not backfill around any concrete structure or any concrete thrust block for a period of at least 24 hours after the concrete has been placed and he shall then take special care to backfill very carefully around such structure or thrust block so as not to disturb the fresh concrete or to cause any damage to same.

The granular backfill material supplied shall conform to the current O.P.S.S. material specifications.

207. PRESSURE TEST AND ALLOWABLE LEAKAGE

Before the installation is turned into service, a pressure and leakage test shall be made. All materials, including the cost of water, tools and labour required for the test shall be supplied by the Contractor. This test shall be undertaken after all stubs, water services, sample stations, and hydrants are installed in the area to be tested. The leakage test and pressure test will be carried out at a pressure of 1.03



207. PRESSURE TEST AND ALLOWABLE LEAKAGE (cont'd)

MPa (150 psi) or such other pressure as the Engineer may require, in accordance with AWWA Specification C600 for cast iron, steel, ductile and PVC. The Contractor shall take note that he will be fully responsible for acquainting himself with the various requirements of AWWA Specification C600 as they relate to the test conditions to be imposed upon the pipelines. The duration of the pressure test shall be one hour and the leakage test two hours.

Each valved section of pipe shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a satisfactory manner by the Engineer. The pump and pipe connection and all necessary apparatus shall be furnished by the Contractor, who will make necessary apparatus connections into the pipe. The Contractor shall furnish all necessary assistance for conducting the test.

Before applying the specified test pressure, all air shall be expelled from the pipe by means of insertion of a minimum three (3) swabs through the watermain length. Swabs to be installed immediately upstream of the water source.

A leakage test shall be conducted after the pressure test has been satisfactorily completed.

Leakage will be measured through a meter installed by the Contractor at his own expense.

Pressure and leakage tests shall be carried out at the same time and after all private service connections have been completed on the section under test. The first test is to be carried out as soon as the first 300 meters is installed and the Contractor will not be permitted to continue installation of the watermain until this first section has been successfully tested. Further test sections shall not exceed 400 meters. No installation will be accepted if the leakage is greater than 2.22 litres per mm of pipe diameter per km of pipe per day.

In the event that valves are not readily available for installation, the Contractor shall furnish and install make-up pieces and necessary blind flanges or caps with temporary thrust blocks as may be required to seal off any fittings, make-up pieces, flanges, caps or thrust blocks shall be borne by the Contractor and included in the unit price quoted in the Tender for supply and installation of watermain.

The London Regional Office Engineer of the Ministry of the Environment shall be notified 48 hours before testing is undertaken.

If defects are found during the pressure test, the Contractor shall immediately make the necessary repairs at his own expense. The Engineer will then repeat the pressure test until the results are found satisfactory to the Engineer.

The system shall be tested in complete isolation of the existing system and be witnessed by a Licensed Water Operator employed by the Municipality of Dutton Dunwich. At no time shall a pressure test be conducted against a closed valve.



208. DISINFECTION OF WATERMAIN

When the Contractor has completed the installation of the watermain and has carried out satisfactorily the specified pressure and leakage test thereon, he shall thoroughly flush the whole system so as to remove completely from the system all unwanted matter.

When the required flushing has been completed satisfactorily, the Contractor shall proceed with disinfection of the system as specified below, in accordance with O.P.S.S. 701.

Before being placed in service, all new mains shall be chlorinated. Unless otherwise specified, the Contractor shall be responsible for disinfecting the watermain. The procedure for carrying out the disinfection shall conform to the A.W.W.A. Specification C601-54.

Chlorination shall be accomplished by the application of a recommended chlorine compound approved by the Engineer. A minimum residual of 25 p.p.m. shall remain in the water after 24 hours standing in the pipe and samples of the water taken after the main has been flushed and refilled. The chlorination and residual tests will be carried out by the Contractor to the approval of the Ministry of the Environment. In the event that samples are not approved by the Ministry of the Environment, the Contractor shall repeat the disinfection procedure until such time as sample meet with approval. After the system has been recharged and tested it shall not be put into use until clearance is given by the Manager, Municipal and Private Abatement, Southwestern Region, Ministry of the Environment.

All chlorinated water used for testing, flushing or disinfecting watermain shall be disposed of safely. The acceptable chlorine residual of water discharged into a storm sewer or water course is 0.5 mg/L maximum. If the chlorinated discharge is greater than 0.5 mg/L, then a neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water in accordance with AWWA-C651 "Disinfecting Watermain".

The Contractor shall note that the Municipality of Dutton Dunwich will take two (2) water samples from each section of watermain to be tested, and deliver the samples to the laboratory for analysis, at no cost to the Contractor. The timing for obtaining the water samples shall be co-ordinated by the Contractor with the Municipality of Dutton Dunwich.

209. INSTALLATION OF WATER SERVICES**209.1 GENERAL**

This specification covers the installation of water services up to 50mm in diameter. Services of larger diameter shall be installed in accordance with the preceding specifications governing watermain construction.

The Contractor shall furnish all materials and lay all services as shown on the Contract Drawings and as specified herein.



209. INSTALLATION OF WATER SERVICES (cont'd)

209.1 GENERAL (cont'd)

Prior to the start of service installation, a qualified representative of the pipe manufacturer shall demonstrate to the contractor and the Engineer the proper tools and method of tapping the pipe. The Contractor shall follow this recommended procedure.

The Engineer will not allow the service installation to proceed until stakes are set to indicate boundaries of the lot and the exact location of the service.

Where water is to be taken into a building lot from a watermain located upon or under an adjacent thoroughfare, the stub service shall be installed in a straight line from and measured at right angles to the watermain. The curb stop shall be located 300mm from the street line on the Municipal side of the line, unless otherwise noted on the drawings. Water services to contain "tails" to extend beyond curb stop to ground surface.

209.2 LOCATION OF SERVICE

The Contractor is responsible for verifying the exact location of all proposed individual water services and curb stops in the field prior to construction in consultation with the Engineer and the Municipality of Dutton Dunwich. All water service locations both shown and not shown on the drawings are not guaranteed.

The property owner may, with the written permission of the Engineer, install the stub service at any point on the lot frontage, provided that the finished service shall be at right angles to the main, in a straight line from the main to the street line.

209.3 INSTALLATION OF SERVICES

Main cocks shall not be spaced closer than 450mm and shall be tapped at the 2:00 o'clock or 10:00 o'clock position only, and left fully open by the Contractor. Service pipe shall be at a depth of not less than 1700mm and not more than 2000mm below the final grade.

Service connections passing under roadside ditches shall have a minimum of 1700mm cover at all times and shall be installed at a depth of not less than 1850mm at the property line.

A "Goose Neck" shall be formed into the service pipe, "laid over" into a horizontal position. Service pipe shall be continued to the curb stop, which shall be located 300mm from the street line, and on the street side of the property line. The curb stop shall be securely positioned on a standard bottom board and left fully closed. No other method of positioning the curb stop will be accepted. The curb box shall sit squarely over the curb stop and the bottom board. The top section of the box shall be adjusted to grade.



210. MEASUREMENT AND PAYMENT

210.1 MEASUREMENT

Measurements for payment for the watermain will be made horizontally along the centreline of the trench through all fittings and valves except between vertical bends where measurement will be made along the centre of the pipe including all fittings. Water services will be measured along the centreline of the pipe and through the fittings.

Separate measurements will not be made for watermain pipe fittings.

Measurements for payment of service fittings if paid for under a separate item in the Schedule of Items and Prices will be made for each of the type and size used as specified herein. Service boxes for curb stops will not be measured.

Gate valves, including hydrant shut-off valves, will be measured for each of the size supplied, complete with valve box.

Hydrants will be measured for each supplied, complete, including hydrant laterals between the main and hydrant.

210.2 PAYMENT

Payment will be made in accordance with the following methods:

- (a) Watermain - The unit price tendered per linear meter of watermain installation appearing in the Form of Tender shall be compensation in full for the installation of the pipe conforming to specifications described herein, including equipment to satisfactorily complete the work in all respects as specified herein and as shown on the Contract Drawings. Swabbing, pressure testing, leakage tests, chlorination, and pipe disinfection, including recapping of swab tee(s) will not be paid for separately but shall be deemed to have been included in the payment for "Install Watermain Pipe".
- (b) Pipe Fittings - Installation of all required fittings, including tees, bends, and reducers, will not be paid for separately but shall be deemed to have been included in the payment for "Install Watermain Pipe".
- (c) Gate Valves - The unit price tendered per valve installed, complete with extensions of valve box to satisfaction of the Engineer.
- (d) Fire Hydrants - The unit price tendered per fire hydrant installed, complete, including all excavation and backfill, stone or gravel fill, the section of P.V.C. lateral pipe between the main and hydrant, 300mm riser section, hydrant shut-off valve and box, and the concrete backing as specified herein.
- (e) Service Connection - The unit price tendered per linear meter of service pipe laid to include for the supply of all labour, materials, and equipment to satisfactorily complete the work in every respect as specified herein and as shown on the work in every respect as specified herein and as shown on the Contract Drawings.



210. MEASUREMENT AND PAYMENT (cont'd)210.2 PAYMENT (cont'd)

- (f) Payment for the main stop and curb stop including service shut-off box will be made in accordance with the tendered unit prices for these items appearing in the Form of Tender for the sizes specified and shall be deemed to be compensation in full for the supply of all labour and equipment.

Measurement and payment for watermain and service connections installed by boring or auguring methods shall be as specified elsewhere in these specifications.

- (g) 50mm Blow-off - The unit price tendered per blow-off to include for the supply of all labour and equipment to satisfactorily complete the work in every respect. Blow-offs not installed at watermain dead ends shall be connected to the watermain using service clamps and saddles as specified herein.



SECTION 3

SPECIAL PROVISIONS

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301. DIRECTIONAL BORING WATERMAIN

301.1 GENERAL

The work to be done under these Items shall consist of the supply of all labour, equipment, and materials and performance of all work necessary to completely supply and install DR18 Cobraloc or Terrabrute watermain by approved directional boring methods at the locations indicated on the Contract Drawings. All work performed under this Item shall be carried out in strict conformance with the applicable sections of the Occupational Health and Safety Act.

The Contractor shall provide or require of any sub-contractor responsible for the installation of the watermain utilizing the directional boring method, insurance against public liability and property damage. Such insurance shall be described in Clause 15 - Insurance in the Information to Tenderers. Proof of insurance, in a form satisfactory to the Engineer, must be submitted before construction begins.

The Contractor shall schedule, commence and complete all work under these Items as expeditiously as possible.

301.2 PIPE MATERIAL

Watermain pipe material shall be PVC pipe and shall be in conformance with AWWA Standard C900-16 for PVC Pressure Pipe and Fittings 100mm through 1575mm for Water Distribution and Transmission.

301.3 CONSTRUCTION

No directional drilling under or across municipal open drains or ditches will be allowed between March 15th through to June 30th. If the Contractor wishes to perform directional drilling within that time frame, he will need to get in contact with the Ministry of Natural Resources outlining the sites he wants to work on within the timing window to have the M.N.R. undertake a site by site timing guideline for those areas. They will also have information on species present within the drains/watercourses.

The Contractor shall install the PVC watermain pipe at the locations shown on the drawings and to the specified grade.

The PVC watermain pipe shall be installed to true line and grade. Shipped lengths of pipe shall be assembled into suitable installation lengths by the thermal butt fusion process. The Contractor shall use portable, field-proven equipment to hold the pipe or fittings in close alignment while the opposing butt-ends are faced, cleaned, melted and fused together and then ends are faced, cleaned, melted and fused together and then cooled under fusion parameters recommended by the pipe and fusion equipment supplier. The PVC watermain pipe shall commence and terminate at the locations shown on the drawings. The length of the PVC watermain pipe shall not be less than indicated on the drawings.



301. DIRECTIONAL BORING WATERMAIN (cont'd)

301.3 CONSTRUCTION (cont'd)

Directional boring of the PVC watermain pipe shall be carried out under the supervision of a Project Engineer or Superintendent with previous proven experience who shall be in continuous charge of the directional boring operation. Approved joints to the PVC watermain shall be provided at each end of the PVC watermain pipe.

The location and dimensions of all proposed boring pits (sending and receiving) shall be provided to the Engineer for approval prior to commencing construction. Such drawings shall also outline direction of the boring operation.

A portion of the proposed PVC watermain is to be installed by horizontal directional drilling (HDD). The Contractor must ensure that no construction materials, debris, etc. are allowed to enter any open or closed municipal drains, rivers or streams, including the required HDD fluids, both during construction and post construction for a period of 24 months.

Please refer to Appendix A regarding Department of Fisheries and Oceans Canada - Ontario Operational Statement.

All directional drilled PVC watermain sections shall have Copperhead Reinforced Tracer Wire (12 gauge AWG - solid). See Appendix C.

For clarification, at each connection from proposed PVC Series 160 to PVC drilled watermain, the Contractor shall mechanically restrain the watermain at each end along the PVC watermain for a minimum length of 18 meters, the cost of which shall be included in the "supply and install watermain" price in the Form of Tender. The Contractor may restrain the PVC pipe, as determined based on the 3-page Performance Pipe Specification in Appendix C and the manufacturer's recommendations.

The elevation and depth of the proposed watermain to be installed in this project shall be in accordance with the proposed elevations shown on the design drawings.

301.4 MEASUREMENT AND PAYMENT

Measurement for payment for supply and installation of PVC watermain pipe will be made horizontally of the actual amount of pipe installed for each watermain crossing as itemized in the Form of Tender and shall not exceed the length shown. Payment shall be at the lump sum price tendered and such payment shall be compensation for material and labour supplied for the completion of these Items as specified herein and as indicated on the drawings.

Dewatering of the excavation, as required, shall be deemed to have been included in the price tendered for the H.D.D. Items.

301. DIRECTIONAL BORING WATERMAIN (cont'd)

301.4 MEASUREMENT AND PAYMENT (cont'd)

The measurement and payment for the supply and installation of the PVC watermain pipe shall be in accordance with the appropriate lump sum items in the Form of Tender. No additional payments will be made for unsuccessful attempts requiring the watermain to be installed by directional boring. Should the Contractor install H.D.D. pipe to a length longer than that shown on the plans or listed in the Form of Tender, no additional payment will be made for the additional PVC installed length.

302. BORING WATER SERVICE PIPE (N/A)

Under these Items, the Contractor shall supply all labour, equipment and materials and perform all work necessary to completely install the small diameter water services (up to 50mm diameter) across the travelled portion of the roadways by approved augering or boring methods.

In general, the installation of all water services under or across existing roadways (gravel, asphalt, etc.) shall be performed using trenchless techniques, i.e. boring methods. All required water service installation not crossing under roadways shall be performed using open cut techniques.

In general, the length of augering or boring shall extend a minimum of three (3) meters beyond the edge of the travelled portion of the roadway on either side, or one (1) meter beyond the edge of shoulder, whichever is greater, unless existing site conditions dictate otherwise and approved by the Engineer.

In the event that the Contractor is unsuccessful after numerous attempts to install the water service pipe at a location requiring it to be installed by boring or augering, then the Engineer may decide on allowing the installation by open cut trench method and such decision will be given only after first obtaining approval of the road authority having jurisdiction over the roadway.

Measurement and Payment: Measurement for payment will be in linear meters measured from the watermain, through all fittings, to the curb stop. Payment will be made in accordance with the appropriate tendered unit price per linear meter appearing in the Form of Tender and such payment will be compensation in full for the supply and installation of water service pipes by augering or boring, complete in every respect as specified herein and as shown on the drawings.

No separate measurement or payment will be made if the water service pipe specified to be installed by boring or augering method, is installed, partially or completely, by open cut trench method on account of site conditions and authorized by the Engineer. In such instances, measurement and payment will be as for water service pipe installed by boring or augering method. No measurement or payment will be made for abandoned bores.

303. WATER SERVICE CONNECTIONS

In addition to the requirements specified herein, the provisions of Sub-Section 209 - "Installation of Water Services" shall apply.



303. WATER SERVICE CONNECTIONS (cont'd)

The Contractor will be given the exact size of individual private water service connections by the Engineer in the field during construction.

The Contractor is responsible for verifying the exact location of all proposed individual water services and curb stops in the field prior to construction in consultation with the Engineer and the Municipality of Dutton Dunwich. All water service locations both shown and not shown on the drawings are not guaranteed.

The Contractor shall note that the Form of Tender lists an amount of proposed water services greater than that shown on the plans. The location of the remainder of the water services not shown on the drawings will be co-ordinated by the Municipality of Dutton Dunwich and clearly marked for the Contractor.

All water service fittings shall be as specified elsewhere in these specifications. The Contractor shall include in the tendered unit price for fittings the cost for the supplying and installation of adaptors as required.

The Contractor will supply copper service pipe fittings of the sizes specified and as indicated in the Form of Tender.

304. REMOVAL OF TREES

It is the intent of this Contract to preserve as many trees as possible along the line of the work. Where a tree appears along or adjacent to the line of the work, the Contractor shall either re-route the line or bore under the tree as ordered by the Engineer. There shall be no extra payment for re-routing. The Contractor shall not remove any trees unless ordered to do so by the Engineer in which case payment shall be considered an extra to the Contract.

The installation of pipe sleeve, measurement and payment if required by the Engineer under a tree, shall be as specified in OPSS.

305. RESTORATION OF TILE DRAINS

The Contractor may encounter tile drains in the process of installing the watermain and appurtenances as specified herein. The Municipality of Dutton Dunwich will provide personnel to supervise the replacement or correction of tile drains encountered during construction. The Contractor will be required to co-operate fully with the Municipality of Dutton Dunwich and under the provisional item in the Form of Tender, locate, preserve, remove, repair and/or replace all tile drainage encountered during the course of the work. Except as provided for herein, Sub-Section 126 Protection and Relocation of Structures and Utilities of the General Provisions shall apply in all respects.

Any damaged corrugated steel pipe (CSP) or plastic pipe must be replaced with the same size and type of material with the appropriate manufacturer supplied clamp or coupler. Filter cloth shall be wrapped around each repair location. Backfill with approved native material.



306. POTABLE WATER SUPPLY (N/A)

The Contractor shall make his own arrangements for the supply of potable water for the purposes of flushing and testing of completed watermain. The cost of obtaining and supplying potable water shall be deemed to have been included in the "Supply and Install Watermain" Price.

307. WORKING DAY

A Working Day is as defined in OPSS GC1.04 DEFINITIONS.

The Engineer will furnish the Contractor with a weekly statement showing the number of working days charged to the Contract for the preceding week, the number of working days specified for completion of the Contract, and the number of working days remaining to complete the Contract. The Contractor will be allowed one week in which to file a written protest setting forth in what respects the said weekly statement is incorrect, otherwise, the statement shall be deemed to have been accepted by the Contractor as correct.

308. WORK PERFORMED WITHIN ROAD RIGHT-OF-WAY

The Contractor will be required to notify the Municipality of Dutton Dunwich, the County of Elgin, and Engineer at least 7 days prior to the commencement of work within the road rights-of-way.

The Contractor will be required to obtain a Road Opening Permit from the County of Elgin for work to be undertaken within their roadway.

At locations where "open cut" trench excavation method is employed, the existing asphaltic concrete pavement is to be neatly saw cut and the surface trench width is not to exceed the width to conform with the requirements of the Occupational Health and Safety Act and approved by the Municipality of Dutton Dunwich Engineer. The trench shall be backfilled with granular material compacted to 100% Standard Proctor Density for the full depth. The use of native material will not be permitted. Granular 'B' shall extend from the top of pipe bedding to the underside of the Granular 'A' compacted in layers to achieve the required result. Granular 'A' shall not be less than 150mm compacted depth. The finished grade of the Granular 'A' shall be such to allow three courses of hot-mix asphalt (HL4-150mm). The top of the asphaltic concrete surface shall conform to the original road grade. No settlement of the pavement structure will be acceptable when the work is completed and if settlement occurs and is evident during the final inspection at the end of the warranty period the Contractor shall repair the pavement structure to the satisfaction of the Engineer and the Municipality of Dutton Dunwich. Such repair may require and not be limited to re-excavation of the trench and supply and place non-shrinking cement grout mixed with the granular materials.

Tar and chip Municipality Roads, where "open cut" is permitted, shall be backfilled with granular materials as described herein for asphaltic concrete pavement. The surface shall then be restored by placing prime and double surface treatment with tar and chips (OPSS 303).

No additional measurement and payment will be made for the special provisions described herein or required by the Municipality of Dutton Dunwich or County of Elgin. The cost shall be deemed to have been included in the unit prices tendered for Supply and Install Watermain and Appurtenances appearing in the Form of Tender.



309. CONNECTION TO EXISTING WATERMAIN

Under this Item, the Contractor shall supply all labour to connect to the existing tapping sleeve and valve at the locations indicated on the Contract Drawings and described in the Form of Tender.

Connection to the proposed watermain on Shackleton Line, shall not be effected until after the completion of successful pressure testing, disinfection and sampling of the watermain constructed under this Contract. The connection shall be undertaken in such a manner so as to minimize the interruption of water service to customers to be fully co-ordinated with the Municipality of Dutton Dunwich.

No measurement for payment will be made for this Item. Payment will be made in accordance with the lump sum price tendered for the connection complete in every respect to the satisfaction of the Engineer, including all removals and restoration including granulars, asphalt, curb and gutter, topsoil, hydro-seed and landscaping.

Approved mechanical joint restraint to the PVC watermain shall be provided at the connection location.

310. SWABBING OF WATERMAINS

Swabbing operation shall be under the control of the Engineer. The Engineer shall be notified at least 48 hours in advance of the proposed date on which such operation is commenced. The Contractor shall submit his plan for the swabbing operation to the Engineer for approval.

A minimum of three (3) foam swabs shall be supplied by the Contractor. Mains shall be cleaned and flushed before hydrostatic testing and disinfection are done. All watermains shall be swabbed and flushed in a sequence and in accordance with procedure approved by the Engineer. The Engineer may permit or request the swabbing and flushing to be carried out in stages. Swabbed and flushed sections shall be protected from contamination.

All watermains up to 300mm diameter shall be cleaned by the use of a minimum of three (3) foam swabs introduced at hydrants or at special entering sections and forced by water pressure through the main to exit points approved by the Engineer. Cleaning shall be repeated until the discharge water is clear and approved by the Engineer.

At all locations where connection is to be made to the existing watermain, a swab launch of the appropriate size shall be used.

311. ENVIRONMENTAL PROTECTION

The Contractor shall include with the construction schedule required an environmental protection scheme detailing environmental protection measures proposed by the Contractor. This scheme should include but not be limited to spills response, contact numbers, location of storage of onsite materials, ie. diesel fuel tanks and containment measurements, spoil management, equipment refuelling and maintenance areas, etc.



312. ASPHALT CEMENT PAYMENT ADJUSTMENT (N/A)

The requirements of O.P.S.S. 310 shall apply except as amended or extended herein.

The Contract Administrator shall make a payment adjustment relative to price changes in asphalt cement generally in accordance with Ministry of Transportation's (MTO) policy as amended herein.

Basis for Payment

The price adjustment will be based on the MTO published price index. The MTO publishes a price index for asphalt cement, F.O.B., the Depots in the Toronto area for PG Grade 58-28 each month in its contract bulletins which may be found at the following web site: <http://www.rags.mto.gov.on.ca/>

Payment adjustment will only be made if the variation in the Asphalt Cement Price Index (ACPI) is greater than 15% compared to the ACPI in effect at the tender close. If no ACPI is available at the tender close then the May ACPI of that year will be used.

Each Asphalt Cement Payment Adjustment required after July 1st shall be made on the cut-off date for each payment certificate issued (typically at the end of each calendar month).

The payment adjustments shall be calculated based on the ACPI and the asphalt cement content as determined by testing during placement of the asphalt. If test results are unavailable then the approved mix designs will be used for calculation. For mixes containing reclaimed asphalt, the payment adjustment shall apply to new liquid asphalt only and the contractor shall show the percentage of new asphalt to be used in the mix design submission.

In all cases, the payment adjustments shall be based on the following calculation:

$$\text{Payment Adjustment} = (\text{ACPI}_{\text{asphalt placed}} - 1.05 * \text{ACPI}_{\text{tender close}}) \times \text{Weighted Average of asphalt Cement} \times \text{Quality of asphalt placed}$$

Payment adjustments may result in additional compensation to the contractor or a rebate to the Owner.

The Municipality of Dutton Dunwich will not compensate the general contractor for any mark-ups above the calculated A/C adjustment.

313. WATER REQUIRED FOR TESTING

All water required by the Contractor to perform the required flushing, swabbing, pressure testing, chlorination, de-chlorination, hydro-excavation, etc. of the proposed watermain will be supplied by the Municipality of Dutton Dunwich at no cost.

The water required for this project will be supplied at the Shackleton Line connection point. Requests for volume and timing for water to be supplied for this project must be fully coordinated with Mr. Mike Kalita, Municipality of Dutton Dunwich, to ensure the capacity of the existing water network is not compromised.



314. HALF-LOAD ROAD RESTRICTIONS

The Contractor shall contact the Municipality of Dutton Dunwich to confirm any half-load restrictions.

315. WATER SAMPLING STATION (N/A)

Water sampling stations shall be supplied and installed in accordance with Detail Drawing W-7 in Appendix B. Please note the 5.4 kg anode shown on Drawing W-7 is not required. The curb box shall be protected with "denso" tape.

316. EXISTING WATERMAIN AND GAS LINE MARKER(N/A)

As noted in Section B in the Form of Tender, the Contractor is required to expose the existing watermains and/or gas line at locations specified on the plans to determine their respective location and depth. This shall be performed by hydro-excavation. All exposed watermain and gas lines shall be "marked" by the Contractor in such a manner as to allow simple verification by both the Contractor and Engineer of its location and depth. Placement of a set length or calibrated 50mmx100mm wood board or 75mm diameter PVC DR28 pipe would be possible options. Such markers must remain in place until both proposed watermain and/or water services, including surface and ditch restoration, has been completed. The gap between the hydro-excavated hole and the marker must be filled with imported bedding sand.

317. SALVAGE, RE-INSTALL AND/OR REPLACE, LANE CULVERTS

Numerous locations exist where the proposed watermain alignment is within close proximity to existing lane culverts. In these locations, the Contractor shall either use a trench box to avoid disturbing the existing culvert, or shall carefully remove and salvage the existing culvert and re-install the culvert across the laneway after the watermain has been placed. All of the above noted work shall be included in the "supply and install watermain" price in the Form of Tender.

If the Engineer determines that existing culverts cannot be salvaged (due to poor condition), or the watermain alignment cannot be deviated to avoid damaging/removing the culvert, the Contractor will be paid as an "extra" to "supply" new culvert piping. The installation for the "newly supplied" culvert(s) will already have been included by the Contractor in the "supply and install watermain" price in the Form of Tender.

The new lane culvert material shall be High Density Polyethylene (H.D.P.E.) "Challenger" pipe or approved equal. Bedding to be full Granular 'B' up to the final 150mm of Granular 'A' surface treatment.

318. UTILITY POLE SUPPORT

Due to the proximity of the existing utility poles to the proposed watermain, the Contractor will be paid under the appropriate Form of Tender item for support of the poles, if required. The support method must be approved by the respective utilities prior to any support being carried out. In this regard the Contractor will be required to provide his method at the time of the pre-construction meeting.



319. DISPOSAL OF EXCESS MATERIAL

The Contractor shall note that all surplus excavated materials i.e. earth, asphalt, concrete, etc. from the project must be disposed of by the Contractor within the "supply and install watermain" item in the Form of Tender. No material will be allowed to be placed within any fill regulated zones as identified by Lower Thames Valley Conservation Authority Mapping.

The Municipality of Dutton Dunwich will accept all excess directional drilling fluids from this project. Please note that the disposal site is located within 15km of the project site. As the disposal site(s) may be farm land, access will be dependent on weather conditions and disposal truck size and weight. The Municipality will compensate the property owner for use of his property

320. DENSO TAPE (N/A)

For clarification, all proposed mechanical joint fittings, valves, tees, bends, hydrants, etc. shall be protected with "denso" paste, profiling mastic and LT tape as per the manufacturer's instructions. See Appendix A.

321. WHEEL MACHINE INSTALLATION

Installation of the proposed watermain by wheel, trench or chain machine installation will be accepted in this project for 100mm and 150mm diameter watermain only. Otherwise, installation must be performed using conventional open-cut methods with an excavator or backhoe. Contractors proposing watermain installation by wheel, trench or chain machine installation must provide proper/adequate documentation as to the machinery they propose to use to the Engineer for review and approval during the Tender Phase of this project. No wheel, trench or chain machine installation will be allowed unless the trench width is 450mm wide or greater.



GENERAL CONDITIONS

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1. DEFINITIONS

- (a) The Contract Documents shall consist of the Signed Agreement, the General Conditions of Contract, the Drawings, and the Specifications, including all modifications thereof incorporated in any of the documents before the execution of the Agreement.
- (b) The Owner, the Contractor and the Engineer are those named as such in the Agreement. They are treated throughout the Contractor Documents as if each were of the singular number and masculine gender.
- (c) Wherever in this Contract the word "Engineer" is used it shall be understood as referring to the Engineer of the Owner, acting personally or through any assistants duly authorized in writing for such act by the Engineer.
- (d) The term "Sub-Contractor" includes only a person, firm or corporation having a contract for the execution of a part or parts of the work included in the general contract, and a person, firm or corporation furnishing material called for in the general contract and worked to a special design according to the plans or specifications, but does not include one who merely furnishes material not so worked.
- (e) The term "other Contractor" means any person or firm or corporation employed by or having a contract directly or indirectly with the Owner otherwise than through the Contractor.
- (f) The law of the location of the work shall govern the construction under this contract.

2. DOCUMENTS

The contract documents shall be signed in triplicate by the Owner and Contractor. The contract documents are complementary, and what is called for by any one shall be as binding as if called for by all. The intention of the documents is to include all labour and materials reasonably necessary for the proper execution of the work. It is not intended, however, that materials or work not covered by or properly inferable from any heading, section or trade in the specifications shall be supplied unless distinctly so noted on the drawings. Descriptions of materials or work in words which so applied have well known technical or trade meanings shall be held to refer to such recognized standards. Should the specifications conflict with the drawings, the specifications shall govern.

In the case of discrepancies between drawings, those of larger scale, or if the scales are the same, those of later date shall govern. All drawings and specifications shall be interpreted in conformity with the Agreement and these General Conditions which shall govern.

3. DETAIL DRAWINGS AND INSTRUCTIONS

The Engineer shall furnish as necessary for the execution of the work additional instructions, by means of drawings or otherwise. All such additional instructions shall be consistent with the contract documents. The work shall be executed in conformity



3. DETAIL DRAWINGS AND INSTRUCTIONS (cont'd)

therewith and the Contractor shall do no work without such additional instructions. In giving such additional instructions, the Engineer shall have authority to make minor changes in the work, not inconsistent with the Contract. If either the Contractor or the Engineer so requests they shall jointly prepare a schedule, subject to change from time to time in accordance with the progress of the work, fixing the dates at which the various detail drawings will be required, and the Engineer shall furnish them in accordance with this schedule; and on like request, a schedule shall be prepared, fixing the dates for the submission of shop drawings, for the beginning of manufacture and installation of materials and for the completion of the various parts of the work.

4. COPIES FURNISHED

In addition to the signed triplicates of the contract documents the Engineer shall furnish to the Contractor, without charge to him, as many copies of all drawings and specifications as are reasonably necessary for the proper execution of the work.

5. SHOP DRAWINGS

The Contractor shall furnish to the Engineer, at proper times, all shop and setting drawings or diagrams which the Engineer may deem necessary in order to make clear the work intended or to show its relation to adjacent work of other trades. The Contractor shall make any changes in such drawings or diagrams which the Engineer may require consistent with the contract, and shall submit sufficient copies of the revised prints to the Engineer for approval, all but one of which shall be returned to the Contractor if approved by the Engineer. When submitting such shop and setting drawings the Contractor shall notify the Engineer in writing of changes made therein from the Engineer's drawings or specifications. The Engineer's approval of such drawings or of the revised drawings shall not relieve the Contractor from responsibility for errors made by the Contractor therein or for changes made from the Engineer's drawings or specifications not covered by the Contractor's written notification to the Engineer. All models and templates submitted shall conform to the spirit and intent of the contract documents.

6. DRAWINGS AND SPECIFICATIONS OF THE WORK

The Contractor shall keep one copy of all drawings and specifications on the construction site, in good order, available to the Engineer and his representatives.

7. OWNERSHIP OF DRAWINGS AND MODELS

All drawings, specifications and copies thereof and all models furnished by the Engineer are his property. They are not to be used on other work, and, with the exception of the signed contract set of the drawings and specifications, are to be returned to him on request on the completion of the work. Any models furnished by the Contractor or the Owner are the property of the Owner.

8. SAMPLES

The Contractor shall furnish for the Engineer's approval such samples as he may reasonably require. The work shall be in accordance with approved samples.



9. MATERIAL TESTS AND MIX DESIGNS

The Contractor shall furnish for the Engineer's approval such material tests and mix designs as he may reasonably require. The cost of providing the foregoing beyond the extent called for in the specifications shall be charged to the Owner. The work shall be in accordance with approved material tests and mix designs.

10. ENGINEER AND CONTRACTOR

The Engineer shall have general supervision and direction of the work, but the Contractor shall have complete control, subject to Section 13, of his organization. The Engineer is, in the first instance, the interpreter of the contract and the judge of its performance; he shall use his powers under the contract to enforce its faithful performance by both the parties hereto. In case of the termination of the employment of the Engineer, the Owner shall appoint a capable and reputable Engineer whose status under the Contract shall be that of the former Engineer.

11. THE ENGINEER'S DECISIONS

The Engineer shall decide on questions arising under the contract documents, whether as to the performance of the work or the interpretation of the specifications and drawings; but should the Contractor hold such decisions to be at variance with the contract documents, or to involve changes in work already built, fixed, ordered or in hand in excess of the contract, or to be given in error, he shall notify the Engineer before proceeding to carry them out. In the event of the Engineer and the Contractor failing to agree as to such change or error and the Engineer deciding to carry out such disputed work, the Contractor shall act according to such decision, any question of excess of cost due to the aforesaid cause being decided by arbitration in the manner hereinafter provided in Section 41.

12. SUB-SURFACE CONDITIONS

In the event that during the execution of the work sub-surface conditions at the location of the work are found to differ materially from those indicated in the contract documents or otherwise represented in writing by the Owner or Engineer to the Contractor then the Contractor shall promptly notify the Engineer in writing of such conditions. The Engineer shall promptly investigate such conditions and if he finds that they differ materially and will result in an increase or decrease in the cost of or time required for performance of this contract an equitable adjustment shall be made between the parties and the contract modified in writing accordingly. If the parties fail to agree, the dispute shall be determined by arbitration as provided for in Section 41 hereof.

13. SUPERINTENDENCE

The Contractor shall keep on the work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Engineer. The superintendent shall not be changed except with the consent of the Engineer, unless the superintendent proves to be unsatisfactory to the Contractor or ceases to be in his employ. The superintendent shall represent the Contractor in his absence and directions on minor matters given to him shall be given in writing to the Contractor. The Contractor shall give efficient supervision to the work, using his best skill and attention.



14. MATERIALS, APPLIANCES, EMPLOYEES

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labour, water, tools, equipment, light and power necessary for the execution of the work. Unless otherwise specified, all materials shall be new. Both workmanship and materials shall be of the quality specified. The Contractor shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

15. INSPECTION OF WORK

The Owner or the Engineer on his behalf and their representative shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and for inspection. If the specifications, the Engineer's instructions, the laws, or the ordinances of any public authority require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection, and if the inspection is by an authority other than the Engineer, of the date and time fixed for such inspection. Inspections by the Engineer shall be promptly made. If any such work should be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination and made good at the Contractor's expense. Re-examination of quoted work may be ordered by the Engineer. If such work be found in accordance with the contract, the Owner shall pay the cost of re-examination and replacement. If such work be found not in accordance with the contract, through the fault of the Contractor, the Contractor shall pay such cost.

16. REJECTED WORK AND MATERIALS

All materials which do not conform to the requirements of Contract Documents, or are not equal to samples approved by the Engineer, shall be rejected. Any defective work whether the result of poor workmanship, use of defective materials, damage through carelessness or by any act or omission of the Contractor shall be removed within ten (10) days after written notice is given by the Engineer, and the work shall be re-executed by the Contractor at his expense.

If the Contractor does not remove such condemned materials or work within the time fixed by written notice, the Owner may remove them and may store such materials at the expense of the Contractor. If the Contractor does not pay the expense of such removal within five (5) days thereafter, the Owner may, upon ten (10) days' written notice, sell such materials at auction or at private sale and shall account to the Contractor for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

17. DEDUCTIONS OF UNCORRECTED WORK

If in the opinion of the Engineer it is not expedient to correct defective work or work not done in accordance with the contract documents, the Owner may deduct from the contract price the difference in value between the work as done and that called for by the contract, the amount of which shall be determined in the first instance by the Engineer.



18. CORRECTION AFTER FINAL PAYMENT

Neither the final certificate nor payment thereunder, nor any provision in the contract documents shall relieve the Contractor from responsibility for faulty materials or workmanship, which appear within a period of two years from the date of substantial completion of the work, and he shall remedy any defects due thereto and pay for any damage to other work resulting therefrom which appear within such period of two years. The Owner shall give notice of observed defects promptly. Questions arising under this Section shall be decided as provided in Sections 11 and 41.

19. EMERGENCIES

The Engineer has authority to stop the progress of the work whenever in his opinion such stoppage may be necessary to ensure its proper execution. In an emergency affecting or threatening the safety of life, or of the structure, or of adjoining property, he has authority to make such changes and to order, assess and award the cost of such work extra to the contract or otherwise as may in his opinion be necessary.

20. PROTECTION OF WORK AND PROPERTY

The Contractor shall maintain continuously adequate protection of all his work from damage and shall take all reasonable precautions to protect the Owner's property from all injury arising in connection with this contract. He shall make good any damage or injury to his work and to the property of the Owner resulting from the lack of reasonable protective precautions. He shall not be responsible, however, for any damage or injury to his work and to the property of the Owner which may be directly due to errors in the contract documents or caused by the Owner, his agents or employees, provided the Contractor has taken reasonable protective precautions. He shall adequately protect adjacent property as required by law and the contract documents.

21. CONTRACTOR'S LIABILITY INSURANCE

The Contractor shall maintain such insurance or pay such assessments as will protect him and the Owner from claims under Workers' Compensation Acts and from any other claims for damages for personal injury, including death, and from claims for property damage which may arise from his operations under this contract. Certificates of such Insurance shall be filed with the Owner or the Engineer on his behalf, and shall be subject to his approval as to adequacy of protection. Such Insurance shall be maintained until the Engineer certifies that the work is complete.

22. FIRE INSURANCE

The Contractor shall maintain and pay for fire insurance, with standard supplemental risks endorsement, in the joint names of the Owner and the Contractor totalling not less than 80% of the total value of the work done and material delivered on the site, so that any loss under such policies of insurance will be payable to the Owner and the Contractor as their respective interests may appear, and he shall furnish duplicates of all such policies to the other party hereto. Should a loss be sustained, the Contractor shall act on behalf of the Owner and himself for the purpose of adjusting the amount of such loss with the insurance companies. As soon as such adjustment has been completed the Contractor shall repair



22. FIRE INSURANCE (cont'd)

the damage and complete the work and shall be entitled to receive from the Owner in addition to the contract price, the amount at which the Owner's interest has been appraised in the adjustment, to be paid to the Contractor as the work of restoration proceeds and in accordance with the Engineer's certificates.

Damage shall not affect the rights and obligations of either party under the contract except as aforesaid and except that in such event the Contractor shall be entitled to such reasonable extension of time for the performance of the work as the Engineer may decide. Ten (10) days after the Engineer has given the Owner and the Contractor notice in writing that the work is substantially complete and ready for occupancy, the obligation of the Contractor (if any) to maintain insurance shall cease and the Owner shall assume full responsibility for insuring the whole work against such loss or damage.

23. GUARANTY BONDS

The Owner shall have the right to require the Contractor to furnish a bond covering the faithful performance of the contract including the corrections after final payment provided for in Section 18 hereof, and the payment of all obligations arising under the contract, in such forms as the Engineer may prescribe and with such sureties as he may approve. If such bond is required by written instructions given previous to the receipt of bids, the premium shall be paid by the Contractor; if subsequent thereto, it shall be paid by the Owner.

24. CHANGES IN THE WORK

The Owner, or the Engineer, without invalidating the contract, may make changes by altering, adding to, or deducting from the work, the contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract except that any claim for extension or reduction of time caused thereby shall be adjusted at the time of order of such change.

25. APPLICATIONS FOR PAYMENTS

The Contractor shall submit to the Engineer an application for each payment, itemized in such form and supported by such evidence as the Engineer may direct showing this right to the payment claimed.

26. CERTIFICATES AND PAYMENTS

If and so often as the Contractor has made application for payment by submitting to the Engineer the invoice, the Engineer shall, within ten (10) working days of receipt of the application, approve the account for payment or advise the Contractor promptly in writing why the account is amended or disapproved. Such approval may provide for holdbacks sufficient to protect the Owner against all liens and may be withheld if the Engineer has received information that payments due to sub-contractors have not been made.

No payment made to the Contractor and no partial or entire use or occupancy of the work by the Owner shall be construed as an acceptance of any work or material not in



26. CERTIFICATES AND PAYMENTS (cont'd)

accordance with his contract. The issuance of the final certificate shall constitute a waiver of all claims by the Owner otherwise than under Sections 18 and 27 of these conditions and the acceptance of such final certificate by the Contractor shall constitute a waiver by him of all claims except those previously made and still unsettled if any. Should the Owner fail to pay the sum named in any certificate of the Engineer or in any award by arbitration, upon demand when due, the Contractor shall receive, in addition to the sum named in the certificate, interest thereon at the rate of 7½%.

27. LIENS

Neither the final payment nor any part thereof shall become due until the Contractor, if required, for good and sufficient reason, shall obtain and deliver to the Owner a complete release of all liens arising out of this contract (other than his own) but the contractor may, if any sub-contractor refuses to furnish a release of such a lien, furnish a bond satisfactory to the Owner to indemnify him against any claim under such lien.

28. PERMITS, NOTICES, LAWS AND RULES

The Contractor shall apply and pay for all necessary permits or licences required for the execution of the work (but this shall not include the obtaining of permanent easements or rights of servitude). The Contractor shall give all necessary notices and pay all fees required by law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public health and safety and if the specifications and drawings are at variance therewith any resulting additional expense incurred by the Contractor shall constitute an addition to the contract price.

29. PATENT FEES

The Contractor shall pay all royalties and licence fees and shall save the Owner harmless from loss on account of suits or claims which may arise by reason of the work for infringements of patents in force at the time of signing of the contract documents.

30. USE OF PREMISES

The Contractor shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the Engineer and shall not unreasonably encumber the premises with his materials. The Contractor shall not load or permit to be loaded any part of the structure with a weight that in the opinion of the Engineer will endanger its safety. The Contractor shall enforce the Engineer's instructions regarding signs, advertisements, fires and smoking.

31. CLEANING UP

The Contractor shall at all times keep the subject matter of the work free from accumulations of waste material or rubbish resulting from his operations, and at the completion of the work the Contractor shall remove all his rubbish and all his tools, equipment and surplus materials and shall leave the work "broom clean" or its equivalent, unless more exactly specified. In case of dispute the Owner may remove the rubbish and charge the cost as the Engineer shall determine to be just.



32. DELAYS

If the Contractor, through no fault or neglect on his part, is delayed in the completion of the work by any act or neglect of the Owner, Engineer or other Contractor, or any employee of any one of them, or if the Contractor is delayed in the completion of the work by changes ordered in the work, or by labour disputes, strikes, lock-outs (including lock-outs decreed or recommended by a recognized contractors' association for its members of which the Contractor is a member), fire, unusual delay by common carriers or unavoidable casualties or without limitation to any of the foregoing, by any cause of any kind whatsoever beyond the Contractor's control, then the time for completion shall be extended. All such extensions of time for performance shall be for a period of time equal to the time lost due to such delays and for such an additional period of time, if any, as may be approved by the Engineer provided that in order to obtain an extension of time for completion the Contractor shall notify the Engineer within seven (7) days of any occurrence which in the Contractor's opinion entitles him to an extension of time for completion except in the case of a continuing occurrence where one notice will be sufficient. In addition and without limit to the foregoing the time of completion shall be extended because of any cause whatsoever within the Contractor's control which the Engineer shall decide as justifying a delay for such reasonable time as the Engineer may decide.

33. OWNER'S RIGHT TO DO WORK

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this contract, the Owner after three (3) days' written notice to the Contractor, may without prejudice to any other remedy he may have, make good deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor; provided however, that the Engineer shall approve both such action and the amount charged to the Contractor.

34. OWNER'S RIGHT TO TERMINATE CONTRACT

If the Contractor should be adjudged as bankrupt, or is he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency or if he should, except in cases recited in Section 32, refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days' notice in writing from the Engineer to supply additional workmen or materials, or if he should fail to make prompt payment to sub-contractors or for material or labour, or persistently disregard laws, ordinances or the instruction of the Engineer, or otherwise be guilty of a substantial violation of the provisions of the contract, then the Owner, upon the certificate of the Engineer that sufficient case exists to justify such action, may, without prejudice to any other right or remedy, by giving the Contractor written notice, terminate the employment of the

Contractor and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method he may deem expedient, but without undue delay or expense. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work, including compensation to the Engineer for his additional services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, shall be certified by the Engineer.



35. CONTRACTOR'S RIGHT TO SUSPEND WORK OR TERMINATE CONTRACT

The Contractor may suspend work or terminate the contract upon seven (7) day's written notice to the Owner and the Engineer for any of the following reasons:

- (a) If an order of any court, or other public authority caused the work to be stopped or suspended for a period of thirty (30) days through no act or fault of the Contractor or his employees.
- (b) If the Engineer should fail to act upon any request for payment within twenty (20) days after it is presented in accordance with the General Conditions of the Contract.
- (c) If the Owner should fail to pay in full the amount of the Request for Payment approved by the Engineer within twenty (20) days after the time established in the Contract.
- (d) If the Owner should fail to pay the Contractor the amount of an award within twenty (20) days after its award by arbitrators.

Upon suspension of the work or termination of the contract by the Contractor for any of the above reasons, the Contractor shall recover payment from the Owner for the work performed, plus loss on plant and materials, plus established profit and damages, as approved by the Engineer.

36. DAMAGES AND MUTUAL RESPONSIBILITY

If either party to this contract should suffer damage in any manner because of any wrongful act or neglect of other party or of anyone employed by him then he shall be reimbursed by the other party for such damage. Claims under this paragraph shall be made in writing to the party liable within a reasonable time after the first observance of such damage and not later than the time of final payment, except as expressly stipulated otherwise in the case of faulty work or materials, and shall be adjusted by agreement or arbitration, and the party reimbursing the other party as aforesaid shall thereupon be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party. Should the Contractor cause damage to any other Contractor on the work, the Contractor agrees upon due notice to settle with such other Contractor by agreement or arbitration, if he will so settle. If such other Contractor sues the Owner on account of any damage alleged to have been so sustained the Owner shall notify the Contractor who shall defend such proceedings at the Owner's expense and if any final order or judgement against the Owner arises there from the

Contractor shall pay or satisfy it and pay all costs incurred by the Owner. Provided that if the Contractor becomes liable to pay or satisfy any final order or judgement against the Owner then the Contractor shall have the right upon undertaking to indemnify the Owner against any and all liability for costs, to appeal in the name of the Owner such final order or judgement to any and all courts of competent jurisdiction.



37. OTHER CONTRACTS

The Owner reserves the right to let other contracts in connection with the undertaking of which the work is a part and the Contractor shall connect properly and co-ordinate his work with that of other Contractors. If any part of the Contractor's work depends for its proper execution or result upon the work of any other Contractor, the Contractor shall in writing report promptly to the Engineer any defects in the work of such other Contractor as may interfere with the proper execution of the Contractor's work.

Should the Contractor fail so to inspect and report he shall have no claim against the Owner by reason of the defective or unfinished work of any other Contractor except as to latent defects not reasonably noticeable at the time of the commencement of the Contractor's work. In letting separate contracts the Owner shall take all precautions reasonably possible to avoid the possible occurrence of a labour dispute or disputes on the work.

38. ASSIGNMENT

Neither party to the Contract shall assign the Contract without the written consent of the other.

39. SUB-CONTRACTS

The Contractor shall, if required, at the time of signing the contract, notify the Engineer in writing of the name of sub-contractors proposed for the principal parts of the work and for such others as the Engineer may direct and shall not employ any to whom the Engineer may reasonably object. If the change of any name on such list is required by the Engineer, and the work has to be awarded to a higher bidder, the contract price shall be adjusted accordingly by the difference between the two bids. The Engineer, shall, on request, furnish to any sub-contractor, wherever practicable, evidence of the amounts certified to on his account. The Contractor shall be held as fully responsible to the Owner for the acts and omissions of his sub-contractors and of persons directly or indirectly employed by them, as for the acts and omissions of persons directly employed by him. In his view of this responsibility for the acts and omissions of sub-contractors, the Contractor shall not be obliged to employ as a sub-contractor any person or firm to whom he reasonably objects. Nothing contained in the contract documents shall create any contractual relation between any sub-contractor and the Owner.

40. RELATIONS OF CONTRACTOR AND SUB-CONTRACTOR

The Contractor agrees to bind every sub-contractor by the terms of the General Conditions, Drawings and Specifications, as far as applicable to his work.

41. ARBITRATION

In the case of any dispute between the Owner or the Engineer on his behalf, and the Contractor during the progress of the work, or afterwards, or after the determination or breach of the Contract as to any matter arising thereunder, either party hereto shall be entitled to give to the other notice of such dispute and to demand arbitration thereof. Such notice and demand being given, each party shall at once appoint an arbitrator and these



41. ARBITRATION (cont'd)

shall jointly select a third who shall be their chairman. The decision of any two or three arbitrators shall be final and binding upon the parties who covenant that their disputes shall be so decided by arbitration alone and not by recourse to any court by way of action at law, provided that in the event of there being no majority decision then the decision of the chairman shall be final and binding upon the parties. However, if within a reasonable delay the two arbitrators appointed by the parties do not agree upon a third or a party who has been notified of a dispute fails to appoint an arbitrator, then a third arbitrator or an arbitrator to represent the party in default, or both such arbitrators may, upon simple petition of the party not in default, be appointed by a Judge of the Supreme Court or of a Superior Court of the Province of Ontario.

When the Owner or the Contractor has applied for an arbitration, the application shall not be entertained until security to the amount of \$5,000.00 has been deposited by the applicant with the Engineer to apply to the cost of the arbitration. In case of a balance remaining to the credit of the Contractor, according to the certificates of the Engineer, the same may be received on account of the said security to apply to the cost of arbitration. Arbitration proceedings shall not take place until after the completion or alleged completion of the work except

- (a) on a question of certificate for payment, or
- (b) in a case where either party claims that the matter in dispute is of such a nature as to make immediate arbitration proceedings necessary while the evidence is available. The cost of arbitration shall be apportioned against the parties hereto or against any one of them as the arbitrators may decide.



MATERIAL SPECIFICATIONS

