ADDENDUM #4

Issued: April 19, 2018
Closing Date: Wednesday April 25, 2018
@2:00:00pm Local Time

DRAWINGS

Drawings C1.12 (Rev 2)

Delete: DETAIL 7 to DETAIL 11 – " 2:1 SIDE SLOPW c/w RIP-RAP & GEOTEXTILE"
Replace With: DETAIL 7 to DETAIL 11 – " 3:1 SIDE SLOPW c/w RIP-RAP & GEOTEXTILE"

Delete: All Culvert Headwalls.

Description: All headwalls are to be removed and shallower 3:1 side slopes are to be graded along culverts for all Fire Hydrant Access Pads.

SECTION 1.0 – INSTRUCTIONS TO BIDDERS

3. TENDER TIMELINE

Delete:

Event	Anticipated Date
Request for Tender issued	27-Mar-2018
Last Day for submitting e-mail inquiries	12-Apr-2018
Tenders due from firms	18-Apr-2018 2:00pm
Municipal Council	7-MAY - 23 May 2018
Award of contract	25-May-2018

Replace With:

Event	Anticipated Date
Request for Tender issued	27-Mar-2018
Last Day for submitting e-mail inquiries	12-Apr-2018
Tenders due from firms	**25-Apr-2018 2:00pm**
Municipal Council	7-MAY - 23 May 2018
Award of contract	25-May-2018

4. SUBMISSION OF BID

Delete: Entire paragraph "Sealed Bids, one original and one copy, in a clearly marked envelope which includes the prescribed form(s) as instructed are to be delivered to City Hall, 1560 rue Laurier, Client Service Center, Rockland, Ontario, no later than 2:00 p.m. Local Time on 18-Apr-2018."

Replace With: "Sealed Bids, one original and one copy, in a clearly marked envelope which includes the prescribed form(s) as instructed are to be delivered to City Hall, 1560 rue Laurier, Client Service Center, Rockland, Ontario, no later than 2:00 p.m. Local Time on **25-Apr-2018**."

11. OPENING OF BIDS

Delete: Entire paragraph.

Time 2:00 PM on April 18-2018
Site; City Hall
1560 Laurier
Clarence-Rockland
Client Service Center
Rockland, ON
K4K1P7

Replace With:

Time 2:00 PM on **April 25-2018**
Site; City Hall
1560 Laurier
Clarence-Rockland
Client Service Center
Rockland, ON
K4K1P7

SECTION 3.0 – GENERAL REQUIREMENTS

12. INSURANCE/Indemnification

Delete: Item e. Professional Liability Insurance (Errors and Omission) in its entirety.

SECTION 6.0 – SPECIAL PROVISIONS

ITEM NO.4 – VARIOUS SIZE WATERMAIN INSTALLATION BY HORIZONTAL DIRECTIONAL DRILLING (HDD)

Delete: Item No 4. in its entirety**.**
Replace With: Revised "ITEM NO.4 – VARIOUS SIZE WATERMAIN INSTALLATION BY HORIZONTAL DIRECTIONAL DRILLING (HDD)" - *Appended*
Description: No HDPE pipe will be accepted.

APPENDIX E - COURTESY LABEL

Delete: Entire Section
Replace: Revised Appendix E - Courtesy Label - *Appended*
Description: Replace “Apr 18, 2018” with “Apr 25, 2018”

END OF ADDENDUM #4

ITEM NO. 4 – VARIOUS SIZE WATERMAIN INSTALLATION BY HORIZONTAL DIRECTIONAL DRILLING (HDD)

Spec. O.P.S.S. Form 180, 182, 201, 441, 450, 493, 501, 504, 514, 517, 518, 701, 702;

S.P. The work deemed to be included in the unit bid price for this item shall be as follows:

General

(a) Supply and install potable watermain diameter as indicated on the contract drawings. The Contractor shall furnish all labour, plant, transportation, materials, tools, equipment and appurtenances required to complete the work.

(b) This section includes installation of potable watermain by Horizontal Directional Drilling.

(c) Supply and install appurtenances such as bends, tees, crosses, reducers, service boxes, tapping saddles, wet tap connections, various diameter pipes, blow-offs, transition sleeves, mechanical restraints, cathodic protection, bedding, backfill and restoration. etc.

(d) Testing and disinfection procedures shall conform to the latest revision of American Water Works Association (AWWA) Standard C651 and Clarence-Rockland Environmental Services Division Standard Specifications. OPSS 441 and the SP provided. The more stringent procedure shall apply.

(e) When a portion of the watermain system must be isolated in order that work be performed, the staff of the City of Rockland-Clarence shall carry out all deactivating procedures on the watermain. Notification to all affected customers shall be made 24 hours in advance of the shutdown. The Contractor shall not be invoiced for this work during normal working hours. Maximum allowable time for which service may be interrupted to customers is 4 hours for any one occurrence. The Contractor should note that the City of Clarence-Rockland does not guarantee a 100% shutdown on existing valves and the Contractor shall be prepared to have additional water pumps, fittings, etc., on site as required to carry out the work. Having the least possible interruption to supply may require working outside of regular hours. The Contractor will not be allowed extra payment or compensation for work carried out under irregular hours.

(f) The Contractor shall be required to submit to the Contract Administrator two weeks in advance of construction a letter of compliance, pipe design calculations, summary of fittings, restrained length calculations, product data, shop drawings dated, signed and sealed by a Professional Engineer from the pipe manufacture, complete with mechanical joint restraint details for the material as selected by the Contract Administrator for installation.

Products

(a) Potable watermain to be fusible pipe (PVC), Fusible Brute or approved equivalent, A.W.W.A. C-900, Class 235, DR18 watermain pipe. Pipe shall be blue in colour. Pipe shall be stamped as CSA approved, UL listed, FM approved and AWWA compliant. Pipe diameters as indicated on the Contract drawings. A representative from the pipe supplier is to be onsite for the initial installation of fusible pipe.

(b) Fittings shall be the following:
   i) Joints for PVC and ductile iron shall be gasket fitted to the bell and spigot.
   ii) Fittings for PVC shall conform to AWWA-C907 “Polyvinyl Chloride (PVC) Pressure Fittings and shall be certified to CSA B 137.2. They shall be UL listed and FM approved.

iii) Fittings for ductile iron shall be in accordance with C110/A21.10 or AWWA 153. Fittings shall be cement lined and in accordance with ANSI/AWWA C104/A21.4.

(c) Each Flex Restraint installation shall consist of three (3) anchors (flex restraint devices) evenly spaced. The ductile iron reducer shall be connected to the main transmission line (PVC or ductile iron) with DIPS mechanical joint.

(d) Tracer Wire for horizontal directional drilling to be Tracer wire for directional boring installation shall be a 12 AWG solid. Conductor shall be hard-drawn, 21% IACS, copper clad steel, utilizing a AISI 1045 high carbon steel core (required to meet break load), with rated break load of 1,030 lbs (201,000 psi). Conductor shall be extruded with a 45 mil, high-density polyethylene, and meet the APWA color code of the buried utility line. Tracer wire shall be rated for direct burial use at 30 volts and RoHS compliant. Tracer wire shall be PRO-TRACE ® HDD-CCS PE45 as manufactured by Pro-Line Safety Products or approved equivalent.

(e) Pipe Bedding, Surround and Cover Material:
-Granular A as per OPSS 1010
-Granular B Type II bedding as per OPSS 1010

(f) Valve:
- Resilient-Seated Gate Valve, non-rising stem, open **counter-clockwise** to AWWA C-509

(g) Valve Box:
-shall be a 130mm diameter slide valve box complete with extension, cap and cast iron lid.

(h) Thrust Restraints:
i) Mechanical restraints on all horizontal bends, vertical bends, tees and caps, designed for use on AWWA C900 / C909 pipes
ii) Standard of acceptance: Uni-Flange Series 1350
iii) Stainless steel bolts & nuts
iv) Concrete thrust blocks not allowed

(i) Corrosion Protection:
iv) Required for all metallic appurtenances and services
v) Denso LT tape
vi) Zinc anodes to OPSS.MUNI 442 and City of Clarence – Rockland Design Guidelines Subdivions and Site Plans document.

(j) Services, pipe:
i) Type K copper (soft) to ASTM B88
ii) Crosslinked polyethylene (PEX) to AWWA C904, certified to CSA B137.5

(k) Services, other:
i) Watermain saddle: double bolt stainless steel (Ford Meter Box Company Model FS202 or approved equivalent)
ii) Main stop: plug or ball valve in accordance with AWWA C800
iii) Curb stop: ball valve to AWWA C800
iv) Service box: slide type

(l) Prior to commencing any work, the Contractor shall submit a clear and detailed statement for the execution of the trenchless pipe installation 3 weeks prior to starting work which shall include but is not limited to the following:

i. A list of personnel and their qualifications and experience.

ii. Description of the construction method, sequence of operations and type of trench supports that will be utilized,
iii. Manufacturer and type of HDD equipment and related operating system proposed,
iv. Boreplan, reaming and pull back plan,
v. Bore tracking and related equipment use,
vi. Ground monitoring equipment and methods, for example settling, heaving, fluid loss or frac-out,
vii. Specialist subcontractors that will be utilised and applicable competency training records of personnel,
viii. Environmental management plan and noise pollution mitigation, identifying potential environmental impacts and emergency containment and clean-up procedures.
ix. Quality management plan,
x. Traffic management and control plan,
xi. Calculation of size, depth and location of launching, access and exit pits required,
xii. Worksite layout plan,
xiii. Dewatering,
xiv. Field final product testing,
xv. A drilling fluid management plan, including source of fresh water and necessary permits or approvals; type of drilling fluids and potential additives and their Material Safety Data Sheets (MSDS); method of drilling fluid containment; method of recycling drilling fluid, as applicable; method of transporting drilling fluids off site; disposal of excess drill fluids; and methods to continually monitor fluid properties and pressure throughout the course of drilling and pullback operations to anticipate drilling fluid related problems before they occur; and potential environmental impacts and emergency procedures and associated contingency plans.
xvi. Fusion methods and equipment used, welder certification,
xvii. Schedule and duration for drilling operations.

Execution

(a) Refer to the St. Lawrence Testing and Inspection Co. Ltd. Geotechnical Subsurface Investigation (October 31, 2012).

(b) Make all necessary arrangements and obtain all permits and approvals as required by authorities having jurisdiction and include all cost necessary for transportation and off-site disposal of excess bentonite slurry, cuttings and pit spoil.

(c) The Contractor shall inspect the site and verify all existing levels, survey control points and set out points shown on the Drawings before commencing the earthworks. The Contractor is responsible for all layout.

(d) The Contractor shall take all care and necessary precautions to protect existing structures, utilities and services in planning and execution of the work. Any damage to adjacent properties that are not part of this work shall be repaired and restored to its original condition or better at the Contractor's expense.

Launching, Receiving and Exit Pits

(a) Pits shall be of the minimum possible size commensurate with safe working practices and located at the maintenance holes. The Contractor shall select the size and provide the details of all pits.

(b) Every face of any excavation that exceeds a depth of 1.5 meters shall be supported or contained by shoring unless the face is cut back to a safe slope of 1:1 and as required by authorities having jurisdiction. Excavation walls shall be protected to prevent erosion.

(c) All necessary measures must be taken to ensure that excavations are left in a safe condition including the erection of suitable rigid barricades, warning signs and hazard lights.

i. Excavations shall be kept free and clear of loose materials, water and rubbish. Should excavation to the nominated depth reveal unstable or unsuitable material the Contractor shall immediately notify the Contract Administrator. The Contractor shall provide ground materials as required to proceed with HDD.

(d) Prior to backfilling the launching, access and exit pits the Contractor shall ensure that the new pipe is properly supported and on the required grade. Suitable material approved by the Engineer shall be used immediately under the new pipe as support in order to avoid sagging after backfill and compaction.

Settlement, Surface and Heave Monitoring

(a) The Contractor shall be responsible for the identification and protection of services where these are crossed by construction activities.

(b) The Contract Administrator shall be notified immediately of all services encountered during progress of work. The services shall be marked on the “As-Built” drawings by the Contractor.

(c) Where crossing of roadways are involved, the Contractor shall be required to record and report any ground settlement to the satisfaction of the controlling agencies.

(d) Where utilities and pipelines are involved the Contractor shall monitor ground settlement or heave directly above and 3 meters before and after the utility or pipeline intersection.

(e) The Contractor shall cease operations when monitoring points indicate any surface disruption. The Contractor shall propose immediate action for review by the Contract Administrator to remedy the problem.

Grade and Alignment Tolerances

(a) Tolerances in the gradient and alignment of the final installation shall comply with the following:

i. Vertical: +/- 0.30 meters
ii. Horizontal: +/- 0.30 meters

(b) The Contractor shall record the exact position of the drill to ensure the pilot is within the following allowable tolerances.

i. Vertical: +/- 0.30 meters
ii. Horizontal: +/- 0.30 meters

The Contractor shall make immediate corrections to the alignment before allowable tolerances are exceeded if a misalignment is recorded.

(c) The Contract Administrator shall agree with the allowable tolerances on the pilot bore path once it has been established if it falls outside the original proposed alignment indicated in the design drawing.

(d) The Contractor shall daylight the installed pipe as directed by the Engineer at intervals of

+/-500meters to confirm alignment.

(e) If a stoppage in the forward progress of the project is encountered the cause of the stoppage shall be determined by the Contractor. When the cause has been identified the installation method shall be modified to the satisfaction of the Contract Administrator to best suit the actual conditions encountered. Should the stoppage be a result of the Contractor's equipment, material or methods, then all remedial costs will be at the Contractor's expense.

Installation of Pipe

(a) The pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign deleterious faults.

(b) The Contractor shall transport, handle and store the pipes and fittings in accordance with the manufacturers' recommendations at all times. Materials that are damaged or lost shall be repaired or replaced by the Contractor at no additional cost to the Owner.

(c) The drilling fluid plan shall be modified, when warranted, throughout the project to ensure the drilling fluid is fulfilling its function.

(d) The Contractor's drilling execution plan shall identify the equipment to be maintained onsite to check drilling fluid properties. Alternations to the mix shall be made, when warranted, to stay within the proposed boundaries of the drilling fluid plan.

(e) In the event that the pilot bore deviates from the planned bore path the Contractor shall promptly notify the Contract Administrator. The Contractor may be required to pull back and re-drill from the location along the bore path prior to the deviation occurring.

(f) In the event of a boring fluid fracture or return loss occurring during pilot hole boring operations, the Contractor shall ensure that the contingency plan for frac-out or fluid lost is implemented. The Owner and the Contractor will discuss additional options and implement as required.

(g) Upon successful completion of the pilot hole, the Contractor shall ream the borehole using the appropriate tools.

(h) Trace wire is to be installed along the entire pipe length. If the tracer wire breaks or a weak signal is identified from continuity testing the Contractor shall be responsible to locate the break or weak signal and repair per manufactures instructions at no additional cost to the owner.

(i) The Contractor shall not attempt to ream at one time more than the boring equipment and recycle system are designed to handle.

(j) The Contractor shall pull the pipe through the borehole after successfully reaming the borehole. In front of the pipe will be a swivel. Once pull back operations have commenced, the operation must continue without interruption until the pipe is completely pulled through the reamed hole.

(k) In the event that the pipe becomes stuck, the Contractor shall immediately cease the pulling operations to allow any potential hydro-lock to subside. Then if on re-commencement of the pulling operation the pipe remains stuck the Contractor shall immediately notify the Contract Administrator. The Contractor in consultation with the Owner will discuss the appropriate recovery plan to be implemented to allow the work to

continue.

(l) Prior to sealing the annulus space and backfilling the installed pipe shall be allowed the manufacturer's recommended amount of time, but not less than four hours, for cooling and relaxation. Sufficient excess length of the new pipe shall be allowed to protrude into the access chamber/pit to allow for cooling and relaxation and consequential contraction.

(m) Restraint of the pipe ends shall be achieved by means of Central Plastics Electro Fusion couplings or other methods approved by the Engineer. The electro-fusion couplings shall be slipped over the pipe ends against the access chamber wall and fused in place. Installation of electro fusion couplings shall be done in accordance with the manufacturer's recommended procedures.

(n) Pipe to be installed within 2 meters of connection point. Connection to existing main shall not be made until approved by the Owner or Engineer in writing following testing and disinfection.

Performance Requirements

(a) The Contractor shall provide proof of certification by the HDD equipment manufacturer of the energy, condition, and operational characteristics of all equipment to be used for installing the specified pipe.

(b) The Contractor shall ensure the pipes are assembled on site using butt-fusion methods to provide a leak proof joint. Threaded or solvent cement joints and connections are not permitted. Fusing shall be completed by personnel certified as a fusion technician to the satisfaction of the Contract Administrator.

(c) The Contractor shall in accordance with the manufacturer specification ensure that a butt-fused joint is constructed in true alignment with a result an uniform roll-back beads. The joint shall be allowed adequate cooling time before removal of pressure. All identified defective areas of the pipe shall be cut out and the joint fused in accordance with the procedures stated by the manufacturer and replaced at no additional cost to the Owner.

(d) The Contractor shall ensure that the terminal sections of pipe that are joined are connected with Central Plastics Electrofusion Couplings, or connectors with tensile strength equivalent to that of the pipe being joined.

(e) The Contractor shall ensure that the operator monitors the system at all times. All functions of the system shall be monitored and relayed to the operator. The minimum information available to the operator shall include thrust or pull force, roll, depth, temperature and fluid pressure.

(f) The Contractor shall include in his drilling plan the process to relieve pressure that may occur during the drilling operation for all utilities crossing identify within 600mm of the proposed pipe alignment.

(g) The Contractor is to ensure that the equipment has the capability of limiting the drilling and pulling force applied to the pipe so as not to exceed the manufacturers recommended tension load for the pipe.

Drawings and Calculations

(a) All construction drawings and design calculations used during the construction shall return to the Owner with mark ups to serve as "As-Built" record drawings. Mark-ups shall include the following but not limited to; the new pipe alignment, pipe joints, valve and

hydrant locations.

Hydrostatic Pressure Testing

(a) Contractor is to notify Contract Administrator forty eight (48) hours before the watermain is to be charged and tested. The Contractor must make required arrangements with the City of Clarence-Rockland to obtain water from an approved water supply.

(b) Install any blow offs required to remove air from watermain (if required) and to supply the water required to pressurize the main.

(c) Install temporary caps and thrust blocks on the new watermain to perform the pressure test.

(d) Install main stop and approved test gauge required to perform test. Apply pressure to the watermain until pressure reaches 1,035 kPa. Contractor is to maintain pressure for two (2) hours, after which water will be added to the watermain from a uniform diameter containment basin as required to achieve 1,035 kPa. If the watermain pressure drops to 930 kPa during the 2 hours, the pressure is to be increased to 1,035 kPa. The total volume of water used will be calculated by the Contract Administrator and the Contract Administrator in accordance with OPSS 441.

(e) If the watermain does not pass the test, the Contractor is required to locate and repair any leaks in the watermain at no cost to the Owner.

Flushing/Swabbing

(a) Flushing/Swabbing operations shall be conducted under the supervision of the Contract Administrator. The Contract Administrator shall be notified at least 24hrs business days in advance of the proposed date on which flushing/swabbing and disinfecting operations are to commence.

(b) Watermains 500mm and larger, only third party qualified firms, specializing in watermain commissioning, with documented experience and expertise in the swabbing, disinfecting and cleaning of watermains shall be permitted to conduct watermain swabbing. The firm conducting the swabbing must show proof that at least one on-site staff member is a qualified operator under O.Reg. 128/04 (min. Class 1) and be approved by the Contract Administrator in writing before work may begin.

(c) All Watermains shall be wet swabbed as follows;

i. A minimum of 3 (Three) new foam swabs with a density of approximately 25 kg/m3 and a minimum diameter of 50mm larger than the watermain shall be used.
ii. Swabs shall have a minimum length of 1.5 times the diameter
iii. Swabs shall be propelled through the watermain using potable water, and shall be spaced a minimum of 1.5m meter between swabs.
iv. During the swabbing procedure the Contractor is to install spool pieces in place of all butterfly valves. These shall be supplied, installed and removed by the Contractor.
v. Gate valves must be left in the open position
vi. Swabbing shall continue until the discharge water runs clear within 10 seconds of the last swab exiting the discharge point.
vii. All fitting, taps, valves etc. required for the introduction, propelling and recovery of the swabs, as well as the swabs are to be supplied by the Contractor. The removal of all of the above at the completion of the swabbing works is the responsibility of the Contractor.

(d) All water discharged by the flushing/swabbing operations shall be at an approved outlet location. The Contractor shall be responsible for collecting and/or disposing of all such water, ensuring that all erosion and sediment control and de-chlorination requirements of all authorities having jurisdiction are met.

Disinfection

(a) After the watermain has been pressure tested and approved, flush the watermain at a flushing velocity not less than 0.76 m/s, taking all required measures to discharge the flushing water in an appropriate manner.

(b) At a point not more than 3m downstream of the beginning of the watermain, water entering the watermain shall receive a dose of chlorine fed at a constant rate such that the water will not have less than 25 mg/L and not more than 80 mg/L of free chlorine.

(c) Allow chlorinated water to stay in watermain for a period of 24 hours. After the 24 hour retention period, flush the chlorinated water from the watermain. Continue flushing the watermain until the chlorine residual of the discharge water matches that of the source water. To ensure that this concentration is provided, measure the chlorine concentration at regular intervals.

(d) After final flushing, and prior to connecting the new watermain to the distribution system two consecutive sets of acceptable samples, taken at least 24 hour apart shall be collected from the main. At least one set of samples shall be collected from every 500m of the new watermain, plus one set from the end of the line and at least one set from each branch. All samples shall be tested in accordance with Standard Methods for the examination of water and wastewater for E.Coli and total coliforms. Testing shall be completed by an accredited laboratory. The laboratory must be capable of performing the testing under proper accreditation. Costs for testing and analysis are the responsibility of the Contractor.

(e) Chlorine concentrations to be measured by a digital instrument. Instrument to be approved by the Engineer.

Closing of Pits

(a) After satisfactory completion or all testing and all equipment and excavated material for the HDD operations has been removed, the Contractor shall prepare the bottom of all pits to the same specification as required for the pipe foundation. The Contractor shall remove all loose and disturbed material below the pipe ground to the undisturbed earth level and shall re-compacted the materials to as close to the original condition as possible.

Quality Control and Assurances

(a) The Contractor shall submit a description of the method and frequency of survey control that will be utilised (e.g. drilling daily log).

(b) The Contractor shall maintain a record of as-built drawings and other data in accordance with the General Conditions of the Contract, this specification and the scope of works, throughout the duration of the contract.

(c) The Owner reserves the right to reasonable access to the Contractor`s facilities and Quality Control records for the purposes of quality assurance and inspection throughout

the contract period.

(d) The Contractor`s Quality Control procedures shall be subject to formal audits as required by the Owner.

(e) The Contractor`s Quality Control shall define the method for performing its own internal audits.

Measurement for Payment

Measurement of the plan length of the pipe installed; inclusive of access pits, all reinstatement, granular, excavation and testing etc. as indicated.

Basis for Payment

Payment at the contract price shall be full compensation for all the labour, equipment and material required to complete the work as outlined.

Appendix E – COURTESY LABEL

From:

BID SUBMISSION

Tender Number F18-INF-2018-000

(WATERMAIN LOOPING)

TO: THE CORPORATION OF THE CITY OF CLARENCE-ROCKLAND

1560 Laurier

Client Service Center

Rockland, ON

K4K1P7

CLOSING DEADLINE – no later than 2:00 P.M., Apr 25, 2018
