SPECIFICATION INDEX

Described herein are the Unit Price Table Items. Tenderer is to submit a unit price for each item and establish the corresponding amount and total tender price accordingly. Tenderer shall enter prices under the Provisional Item section even though they are not accounted for under the Total Tender Price.

All tender prices exclude Goods and Service Tax (GST) and Quebec Sales Tax (QST); these taxes are to be accounted for under each Payment Certificate issued during construction period.

1.0 GENERAL ITEMS

1.1 MOBILIZATION AND DEMOBILIZATION

.1 This item is to cover the Contractor's cost of mobilization at the beginning of the construction period and demobilization at the close of the construction period. The price entered for this work shall be consistent with the costs involved but shall not, in any event, exceed five percent (5%) of the total Tender price.

.2 If the Tenderer has entered against this item in his Tender at a price in excess of five percent (5%) of the total Tender price, the Owner shall, in preparing contract documents based upon the Tender, reduce the price for the said item to an amount not exceeding five percent (5%) of the total Tender price and shall spread the surplus value over the items 2.1, 2.2 and 2.3, so that the total Tender price shall not be affected.

.3 Sixty percent (60%) of the price for the Mobilization and Demobilization item shall be considered as relating to mobilization and the balance to demobilization. The payment for mobilization shall be included in the first payment certificate issued for the Contract subject to the Engineer being satisfied that full mobilization has been carried out. If the Engineer is not satisfied, he shall allow a payment, which in his opinion, reflects the degree of mobilization effected to date. The payment for demobilization shall become due following Substantial Performance of the works and subject to the Engineer being satisfied that full demobilization has been carried out. The Engineer may, in his discretion, allow partial payment for demobilization before full demobilization has been effected.

1.2 COMMISSIONING

.1 This item consists of commissioning of the entire system after testing and start-up of equipment have been validated by the equipment suppliers. Commissioning would be paid after the Contractor has demonstrated to the Engineer’s satisfaction that the entire system is operating as per plan and the specification requirements.

2.0 CIVIL WORKS

2.1 WATERWORKS

.1 This item consists of the supply, installation, testing and start-up as shown on drawings of the water distribution system, including but not limited to the following:

- Disconnection and reconnection of a watermain at two service buildings at Breton Beach and at Breton Reservoir pressure control valve assembly;
- Removal of existing watermain, drain valves, service taps and isolation valves, disposal of material off site as well as trench backfilling and surface reinstatement;
- Supply, installation, testing and commissioning of watermain, service taps, service connections, isolation valves, drain valves, as shown on drawings,
- Disposal of surplus excavation material off site as well as trench backfilling and surface reinstatement.

.2 This item is to be paid as a lump sum price and shall include all labour and equipment to excavate, load, transport, operations related to backfill, compaction of natural ground and imported granular materials, rejecting or recovering of excess materials, supply and installation of conduit, valves, elbows, caps, bedding and surrounding granular material, concrete and wooden material, geotextile membrane, and all other labour, materials and equipment necessary to complete the work as specified and any other expenses related to this item.

.3 This item to be paid as a lump sum price and shall also include all labour and equipment to supply and proceed with surface reinstatement at the Breton Beach parking lot and access road to the site. The Contractor is responsible for repairs, at their own cost, of the paved road within the limits of Gatineau Park (Lac Philippe Campground) if any damages are as a result of their equipment during the works.

2.2 ENVIRONMENTAL PROTECTION MEASURES

.1 This item consists of the supply, installation, maintenance, and removal at the end of the works of all environmental protecting measures around waterworks and particularly the silt fence, including posts and fence at the location shown on the drawings.

.2 This item is to be paid as a lump sum price and shall include all labour, equipment and materials necessary to complete the works as specified as well as removal and disposal of material at the end of the works and any other expense related to this item.

3.0 EXCAVATION, HAULING AND DISPOSAL OF CONTAMINATED MATERIAL

.1 When directed by NCC, and only if there is any contaminated soils discovered on site, the Contractor shall provide environmental consultant services from a qualified professional geotechnical engineer licensed in the province of Quebec to provide staff and specialized equipment to test the contaminated material and monitor the extent of the contaminated soils removal and disposal needs. Unit cost per hour to be negotiated with NCC includes professional fees, allocation for equipment rental, and contractor’s mark-up. Time for preparing final report would be eligible under this item.

.2 The Contractor will not be compensated for excavation, hauling and disposal of contaminated materials if no contaminated soils are found on site.

.3 Cost of laboratory tests will be reimbursed at cost by NCC to the Contractor, without mark-up, upon submittal of invoices and test results.

.4 When directed by NCC, the Contractor shall supply an excavator (235 CAT or approved equal) and operator for the excavation of contaminated soils. Haulage shall be done by a licensed transporter of hydrocarbon impacted soils. The Contractor shall segregate and haul hydrocarbon impacted soils or any other contaminated soils to a licensed waste disposal site. Unit price per cubic meter to be negotiated with NCC shall include mobilization, excavation, temporary storage on site including protective measures, hauling, landfilling disposal fees, and demobilization, including excavator and truck related labor cost plus 15% contractor’s mark-up.

.5 In addition to the above level of work, The Tenderer would have to integrate the level of work associated to each of the four categories of contaminated soils into each of the unit costs per cubic meter of contaminated material (refer to Division 3 - Section 013543, Item 1.10, Table 2) as described:

Level of Contamination < A, including cost to reuse material at NCC site for trench backfilling only.

Level of Contamination in the A – B Range, including cost for disposal of material outside NCC land, at an approved landfill site or alternate approved solution as per Table 2.

Level of Contamination in the B – C Range, including costs for disposal of material outside NCC land, at an approved landfill site or alternate approved solution as per Table 2.

Level of Contamination > C, including costs for optimal decontamination and final disposal at an authorized site or alternate approved solution as per Table 2.

.6 The Tenderer is advised that other unexpected costs related for their negligence to manage the contaminated soils properly, on site and off site, as described under Section 013543, Item 1.10, cannot be charged to NCC and cannot be integrated in the above-described costs to be negotiated with NCC.

4.0 CONTINGENCY ALLOWANCE

.1 Some items of work that may be required during the course of construction, however, the exact requirements will depend on ground conditions, available funds or other uncertain factors encountered, are shown in the Unit Price Table under the heading “Provisional Items”. Work authorized by the Owner and done under Provisional Items will be subject to a Contract Change Order. Payment of such would be taken from the Contingency Allowance.

.2 Any extra work that may need to be done due to unidentified site conditions at time of tender or new contract requirements as identified by Engineer or Client during the construction period shall be authorized in writing by the Owner under a Contract Change Order and would be paid from the Contingency Allowance.

NAME OF SUB-CONTRACTORS AND SERVICE PROVIDERS

The Tenderer shall enter the name, address and contact person of specialized sub-contractor or service provider for waterworks and provisional works to manage contaminated materials. That page shall be filled in and submitted with the quote. Some items have been identified as to be completed by “own force”, i.e. by the Contractor; at their discretion, the Tenderer may enter an alternate name under those items.

- END OF SECTION -

PART 1 - GENERAL

1.1 GENERAL CONTEXT

.1 The General Contractor, or their authorized waterworks subcontractor, is to supply, install, test and start-up watermain and appurtenances, as shown on drawings, including but is not limited to the following:

- 50 mm diameter PVC and HDPE piping in shallow trench (about 0.4 to 0.6 m deep), within grassed area and within wooden area;
- Isolation valves on watermain with concrete box, steel cover, granular material base and geotextile;
- 19 mm diameter service taps, with wooden post, concrete ring, granular material base and geotextile;
- 38 and 50 mm diameter service connections to existing buildings
- 19 mm drain valve (double valve assembly) with concrete box, steel cover, granular material base and geotextile;

.2 Works include removal of existing watermain and appurtenances, disposal of material off site as well as trench backfilling and surface reinstatement.

.3 At the end of the works, the General Contractor shall reinstate, at their own cost, the access road to the site to their original or better condition, by supplying, placing and compacting granular material plus a geotextile membrane where required. The General Contractor shall minimize damages to trees along the access road and within the wooden area. The General Contractor shall also reinstate, at their own cost, the paved road within the limits of Gatineau Park (Lac Philippe Campground site) to their original or better conditions; in the case that the paved road is damaged by the Contractor's works and/or machinery.

1.2 QUALITY CONTROL

.1 The objective of this specification is that the Contractor provides complete and functional water system to meet the requirements of this project. The Contractor will document in writing the capability of the system to support service pressure and disinfection process as per provincial standards.

.2 All materials used in this project to be conform to applicable CSA and/or BNQ standards.

1.3 CONFORMANCE

.1 At the end of the works, the Contractor shall confirm in writing to NCC that the works have been completed as per plans and specifications.

1.4 WORK SCHEDULE

.1 Waterworks must be completed between September 14th, 2015 and October 31st, 2015 at the latest, since the skiing season is a priority at the Park.

- END OF SECTION -

PART 1 - GENERAL

1.1 GENERAL

.1 Construct this project in accordance with construction and reinstatement guidelines established by:

1. the «Ministère du développement durable, de l'environnement et de la lutte aux changements climatiques du Québec » (MDDELCC),
2. the «Cahier des Charges et Devis Généraux – Infrastructures routières – Construction et réparation – Édition 2015», hereafter referred to as the CCDG;
3. the Construction Work – General Technical Specifications – Drinking Water and Sewer Lines, BNQ 1809-300/2004 (R2007), latest edition, as amended hereafter.

1.2 FIRES

.1 Fires and burning of rubbish on site not permitted.

1.3 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.4 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sanitary sewer or drainage systems.

.3 Control disposal or run-off of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.5 POLLUTION CONTROL

.1 Prepare and implement an Erosion Control Plan for the duration of construction. Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Control dust over temporary road. Provide dust control at parking lot.

1.6 PLANT PROTECTION MEASURES

.1 Protect trees and plants on site and adjacent properties where indicated.

.2 Wrap trees and shrubs in burlap adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 metres.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbances or damages. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Engineer. Obtain approval from Engineer prior to replacing or displacing trees and shrubs within contract limits.

.6 The Contractor is responsible for replacement, at their own costs, if any damages to the trees are a result of their work or equipment, by planting two trees for every tree they damage. To avoid damages to trees, the Contractor is to cut branches or pull them back where applicable.

1.7 EQUIPMENT FUELLING

.1 Construction Equipment and machinery shall be in good operating condition, free of leaks or excess oil or grease.

.2 Designate an area within the working limits to be used exclusively for fuelling construction equipment. No Construction Equipment refueling or servicing will be undertaken within thirty (30) meters of any ditch, watercourse or storm sewer system. A plan for the interception and rapid clean-up of fuel spills must be submitted for review for provision should a spill occur.

.3 The Contractor shall provide and maintain a spill containment kit on site. The spill containment kit shall be readily accessible on site in the event of a release of a deleterious substance to the environment.

.4 Storage of fuel, waste oil and other special wastes are not permitted within the boundaries of the site unless approved by the Client.

1.8 EROSION AND SEDIMENT CONTROL

.1 Silt fencing is to be supplied, installed, and maintained, between work areas (absorption field area) and nearby land as shown on drawings. Silt fencing is to be manufactured from a woven, silt film geotextile material as per drawings. Materials and installation procedure are described under Part 2 and Part 3.

1.9 DISPOSAL OF NON CONTAMINATED OBJECTS, MATERIAL, PRODUCTS OR OTHER

.1 Disposal of solid waste: any solid waste, as defined by the c. Q-2, r. 13 Regulation respecting solid waste, under R.S.Q., chapter Q-2 Environment Quality Act, shall be disposed of as per the regulation.

.2 Disposal of dry materials: any dry material, as defined by the c. Q-2, r. 13 Regulation respecting solid waste, under R.S.Q., chapter Q-2 Environment Quality Act, shall be disposed of as per the regulation.

.3 Disposal of surplus excavation material: Client has no site within Gatineau Park limits or Sainte-Cecile-de-Masham limits to dispose of surplus excavation material. The Contractor shall dispose of surplus excavation materials and cost for such disposal shall be included under the appropriate items of the form of tender. It will be possible to leave surplus excavated material from berm excavation along the berm, provided the surface of material is covered with granular material resistant to erosion. Refer to drawings and other sections of specifications for berm surface finishing.

.4 Topsoil would be temporarily stockpiled, protected with tarp and put back over reinstated areas by the Contractor at their own costs. Surplus top soil remains the property of NCC.

.5 Do not stockpile excavated material and topsoil:
- .1 In areas where there would be interference with site operation or drainage;
- .2 Above existing and future underground conduits, tanks, manholes and any other utility;
- .3 Within less than five (5) metres from any tree, scrub, ditch, and edge of creek.

.6 Stockpile excavation material and topsoil shall not be more than 2.50 m high.

1.10 DISPOSAL OF CONTAMINATED MATERIALS (EXCLUDING EXISTING GRAVITY SEWER AND SURROUNDING GRANULAR MATERIAL)

.1 During excavation works, if the Client or their representative suspect there is any contaminated material, the Contractor must interrupt temporarily works at that site for an undefined period in order to allow an independent lab to sample and analyze soils. The Contractor is to fully cooperate with the Client, NCC's Engineer, independent geotechnical Engineer hired by Contractor, and lab sampling technician in order to sample soils and manage contaminated soils appropriately.

.2 The Client has no site within Gatineau Park limits or Sainte-Cecile-de-Masham limits to dispose of contaminated excavation material. The Contractor shall dispose of surplus excavation materials, and cost for such disposal shall be included under the appropriate items of the form of tender.

.3 Excavated materials are to be stored on a tarp and surrounded with a fence prior to transfer outside NCC property.

.4 The Contractor should undertake soils and groundwater reinstatement/ remediation works as per the following guidelines, standards and regulations (available in French only):

- Politique de protection des sols et de réhabilitation des terrains contaminés du MDDELCC;
- Grille de gestion des sols contaminés excavés intérimaire du MDDELCC;
- Guide et lignes directrices du MDDELCC;

.5 The Contractor shall provide all labor, materials, equipment, tools, and management required to complete the works as described in plans and specifications or as described below:

- Preliminary works and mobilization on site;
- Contaminated soils excavation as per Engineer's instructions (Engineer to be on site full time);
- Manual segregation and temporary storage of waste from excavation materials;
- Transfer of contaminated materials to a final disposal site approved by the Engineer;
- Surveying of work areas, excavation upper and lower portion, and backfilled areas;
- Completion of any other related works.

.6 Disposal of contaminated soils

As per Engineer's instructions, contaminated soils are to be disposed of at approved sites depending of their level of contamination and as per the rules specified by the MDDELCC. Only the Client can assess, based on independent lab results, the level of soils contamination. For every truck load, a copy of the transfer registry must be submitted to the Client.

.7 Transfer to site

Transfer of contaminated materials shall be done with a water tight truck bin. Trucks are to be covered at all times with a water tight tarp, except at time of filling, to prevent rain or snow to get into the bin, or if the time to fill in the bin is less than ten (10) minutes. The Contractor is responsible for damage to the site, to public property and to the environment, while contaminated materials and residual materials are carried outside the NCC property. Costs associated with such damage, or any fine due to nonconformance to Ministry rules are at the Contractor's costs.

.8 Precipitations

Contractor shall take all possible measures to transfer piles of contaminated material off site and to protect them since:

- No extra payment would be granted to the Contractor following refusal of materials by the final disposal site because soils are too wet due to rainfall;
- Any contamination of land and watercourses at the NCC site or elsewhere is the responsibility of the Contractor and any additional cost for decontamination of such land and water is to be carried out by the Contractor.

.9 Laboratory hired by Contractor

Laboratory retained by the Contractor shall have appropriate expertise in that type of work. Laboratory shall be accepted by the Client and the Engineer.

.10 Report Submittal

All information collected on site regarding disposal of contaminated soils shall be compiled under a summary technical report, written in French, by the sampling technician. A preliminary version is to be submitted to the Client within three (3) weeks after disposal of contaminated soils and residue is completed, i.e. corresponding to removal of last pile.

The Client is to review and comment on the draft report. The final version of report is to consider those comments and is to be completed accordingly. Submit three (3) copies of the final report no later than ten (10) working days after receiving the Client's comments. Report to include at minimum the following:

- Sampling technician field notes in regards to contaminated soils;
- A table showing container reference number, date of sampling, volume of contaminated soils, date of lab tests, lab sample reference number, lab test results and final disposal site location;
- Lab reports;
- Container shipment manifest;
- Final disposal of contaminated soils manifest;
- Final disposal of residual material manifest;
- Final disposal of other material manifest;

.11 Reuse of contaminated soils

Type <A soils may only be reused for trench backfilling upon approval by the Client. All other contaminated materials must be transferred off site as per the following MDDEP table:

Table 2: Interim contaminated excavated soils management procedure

Level of contamination	Management Options
< A	1. Use without restriction.
A – B Range	1. Reuse as backfilling material on contaminated sites for residential use being under a decontamination process* or on any commercial or industrial zoning site as long as those materials do not increase the previous level of contamination** and, for residential land, soils shall not release detectable odors of hydrocarbon material. 2. Reuse as daily cover material at an approved landfill site. 3. Reuse as final cover material at an approved landfill site, provided another 15 cm of clean material is placed on top.
B – C Range	1. Optimal decontamination *** at an authorized site and management as per end result. 2. Reuse as backfilling material on site, at any commercial or industrial zoning site as long as those materials do not increase the previous level of contamination**. 3. Reuse as daily cover material at an approved landfill site.
> C	1. Optimal decontamination *** at an authorized site, and management as per end result. 2. If the above is non-feasible, dispose of material at an approved contaminated soil final disposal site.

* Contaminated land for residential use or under rehabilitation processes are the ones to be used as residential land having a contamination higher than B category and where material for outside sources would be required during rehabilitation works.

** Contamination depends on the type and concentration of contaminants.

*** Optimal treatment for any contaminant is defined as reaching Type B criteria or 80% reduction from initial concentration for all contaminant except volatiles. Regarding this, volatiles are defined as the contaminants having boiling temperature below 180 °C or having Henry's Law constant higher than 6.58×10^{-7} atm-m^3/g, including contaminants listed under Section III of list of criteria at Appendix 2 of the ''*Politique de protection des sols et de réhabilitation des terrains contaminés"*.

1.11 MANAGEMENT OF PROCESS WATER DURING CONSTRUCTION PERIOD

.1 The Contractor is to dechlorinate water used for watermain pressure testing, flushing and disinfection procedure with sodium metabisulfite or ascorbic acide or other approved dechlorinating agent prior to discharge to the Breton Beach sewage pumping station.

PART 2 - PRODUCTS

2.1 SILT BARRIER FENCE

.1 Hay or Straw Bale: wire bound or string tied and securely anchored by at least two (2) stakes or rebars driven through bale 300 mm to 450 mm into the ground, chinked (filled by wedging) with hay or straw to prevent water from escaping between bales and entrenched minimum of 100 mm into ground.

.2 Silt Fence: assembled ready to install unit consisting of geotextile attached to driveable posts. Geotextile: uniform in texture and appearance having no defects, flaws, or tears that would affect its physical properties and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.

.3 Net Backing: industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord with minimum width of 750 mm.

.4 Posts: sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment with maximum post spacing of 2.4 m. Securely fasten each post to geotextile and net backing using suitable staples.

PART 3 - EXECUTION

3.1 EROSION AND SEDIMENT CONTROL

.1 Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas, stockpiles, staging areas and other work areas. Prevent erosion and sedimentation.

.2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as possible, provided that it is practical. Strip vegetation, regrade, or otherwise develop to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems and water courses as well as repair damages caused by soil erosion and sedimentation as directed by the Engineer.

.3 Provide and maintain temporary measures which may include silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes and other construction required to prevent erosion and migration of silt, mud, sediment and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control

measures available during construction. Place silt fences and/or hay or straw bales in ditches to prevent sediments from escaping from ditch terminations.

.4 Plan construction procedures to avoid damage to work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.

.5 Installation:

.1 Do not construct bale barriers and silt fence in flowing streams or in swales.

.2 Place silt barrier fence in a manner that will intercept runoff at or close to right angles to flow. In areas where problems are severe, erect two (2) or more silt barriers parallel to each other until required degree of control is achieved.

.3 Fence layout as specified on the drawings. Fence height is 500 mm above natural ground level.

.4 Position posts in such a manner that fence structure remains naturally taut. Posts to always be positioned downstream and shall be placed in accordance with the drawings.

.5 Bury excess geotextile at bottom of silt fence minimum of 300 mm in trench located upstream such that no flow can pass under fence.

.6 Splice subsequent lengths of barrier only at support post locations. Splice by wrapping geotextile fabric completely around each of two abutting support posts, as detailed on the drawings, such that the gap between abutting posts is completely covered by both sections of fabric.

.7 Maintain integrity of silt fences as long as necessary to contain sediment runoff. Inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, take note on a daily basis of the location of silt fences in areas where construction activities have changed natural contours and drainage runoff to ensure that silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences. Should silt fences become damaged or otherwise ineffective while barrier is still necessary, repair or place promptly.

.8 Unless Engineer provides alternate instructions, remove temporary erosion and sediment control devices upon completion of work. Spread accumulated sediments to form a suitable surface for seeding or dispose and shape area to permit natural drainage to satisfaction of the Engineer. Materials once removed become property of the Contractor.

.6 Construct fill areas by selective placement to avoid erosive surface silts or clays.

.7 Do not disturb existing embankments or embankment protection.

.8 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

.9 If soil and debris from site accumulate in low areas, abandoned sanitary sewers, roadways, gutters, ditches, or other areas where the Engineer determines is undesirable, remove accumulation and restore area to original condition.

- END OF SECTION -

PART 1 - GENERAL

1.1 GOVERNING CONDITIONS

.1 The General Conditions, Supplementary Condition, Standard Specification, Standard Drawings and Tender shall be read in conjunction with Sections of this Water Work Division.

1.2 WORK INCLUDED

.1 This Section covers the clauses for the supply and installation of all water piping, valves, couplings, testing and commissioning along with other works as specified herein or indicated on the drawings and surface reinstatement works.

.2 The Contractor is to supply and install all piping, valves, concrete base, granular material, accessories and associated materials.

.3 Provide all labour and materials, obtain all necessary permits and pay all fees as may be required.

.4 Contract Drawings and Specifications are intended to set the acceptable minimum standard and shall not relieve the Contractor of his responsibility to install a trouble-free system.

.5 Unless specifically noted otherwise, specifications for pipe shall also apply to the respective fittings. Where the word “piping” is used, it shall refer to both pipe and fittings.

.6 Supports for pipe and equipment are not shown in detail. Adequately support all piping, ducts, and equipment as part of this Division.

.7 Remove and dispose of existing piping and valves, and all excavation material (top soil, trench, road structure) to a final disposal site approved by the municipality of Ste-Cécile de Masham and MDDELCC for each type of material outside NCC property at the Contractor’s cost.

1.3 CO-OPERATION

.1 Co-operate with other trades prior to installation of work under this Division. Should the Contractor fail to do so, such works, if required, shall be removed, relocated and/or modified as directed by the Engineer, without additional cost to the Owner.

.2 Should the Contractor fail to correspond with requests or should he misdirect other trades, such corrections and/or additional work, as directed by the Engineer shall be at the Contractor's expense.

.3 Coordinate works with Lagoon Operators. Lagoon shall remain in operation at all times.

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit five (5) hard copies of shop drawings and product data for review by the Engineer, as specified in Division 1, Section 013300 - Submittal Procedures. At their convenience, the Contractor can submit an initial and subsequent version of shop drawings in a PDF format that can be marked up by the Engineer during the shop drawing review process. The Contractor will print a final version and keep it on site for reference at time of delivery of material and equipment on site.

.2 Provide operation and maintenance data, in three copies, for incorporation into operation manual specified in Division 1, Section 013300 - Submittal Procedures. All booklets, drawings, instruction sheets, etc., issued by suppliers and relative to equipment being installed under this Division and necessary or desirable for the maintenance, repair or operation of the equipment, shall be neatly assembled by the Contractor and submitted in the Operation and Maintenance Manual.

1.5 PROVINCIAL STANDARDS

.1 General construction method shall conform to BNQ 1809-300/2004 (R2007), Travaux de construction – Clause techniques générales – Conduites d'eau potable et d'égout, latest edition, as amended hereafter.

.2 General construction / reinstatement method at berm shall conform to the "Cahier des Charges et Devis Généraux – Infrastructures routières – Construction et réparation – Édition 2015», hereafter referred to as «CCDG».

1.6 WATER DISTRIBUTION SYSTEM OPERATING CONDITIONS

.1 The NCC and water system operator will restrict park visitors from accessing the Breton Beach sector. The Contractor will supply, maintain, and relocate as required security barriers at Breton Beach parking lot. Therefore, no member of the public will have any access to the job location.

.2 The water system operator will run the water treatment plan in order to feed the rest of the water distribution system and the Breton Water Reservoir in order to allow the Contractor to proceed with pressure testing, watermain flushing and disinfection.

.3 It is understood that the watermain is to be installed within 0.50 to 0.60 m from the ground surface. The Operator is to drain it for winter and will refill it in May. As such the pipe may experience a temperature variation of 40 ^{o}C over the year.

PART 2 - PRODUCTS

2.1 POLYETHYLENE WATERMAIN PIPING

.1 Supply and install **50 mm (2") nominal diameter (2.375" outside diameter) IPS high density polyethylene pipe, DR11 – 160 PSI rated pipe**, with butt fused joints, conform to «NQ 3624-027/2000 Tuyaux et raccords en polyéthylène (PE) –

Tuyaux pour le transport des liquides sous pression – Caractéristiques et méthodes d'essai»

.2 Pipe bedding to be as per trench reinstatement detail shown on Figure 36 of BNQ 1809-300/2004 (R2007). Watermain shall be snaking into trench such that trench backfilling will develop friction to restrain HDPE pipe extension and contractor under temperature variations.

.3 HDPE to PVC piping transition shall conform to Section 6.2.5.5 of BNQ 1809-300/2004 (R2007) as amended by detail drawings. Concrete for the base is to be 30 MPa @ 28 days with 5-7% entrained air and 10M rebars to be casted up to the limit of the trench in all directions. Protect fitting and bolts with wax tape (refer to Item 2.9 below).

2.2 PVC SERVICE LINES

.1 At Breton Beach Sanitary Blocks #1 and #2, supply and install **50 mm (2") nominal diameter (2.375" outside diameter) IPS polychloride vinyl pipe, PVC SDR26 – 160 PSI rated pipe** with bell& spigot joints, conform to «NQ 3624-250 Unplasticized Poly(Vinyl Chloride) [PVC-U] Pipe and Fittings – Rigid Pipe for Pressurized Water Supply and Distribution – Characteristics and Test Method».

.2 At service taps (refer to Item 2.3), supply and install **19 mm (3/4") nominal diameter (1.05" outside diameter) IPS polychloride vinyl pipe, PVC SCH40 – 480 PSI rated pipe** with glued joints.

.3 At HDPE to PVC transition and at the service lines to existing service buildings and connection to existing pressure control valve box at Breton Reservoir, including the 50 mm (2") nominal diameter tee, use PVC SDR26 or PVC SCH40 piping and fittings for all of the above mentioned PVC service lines. Supply and install joint restrainers as per Section 6.2.4.4 of BNQ 1809-300/2004 (R2007), adapted to fit actual pipe diameter on site, with stainless steel bolts, and as amended by contract drawings. Protect fitting and bolts with wax tape (refer to Item 2.9 below).

.4 Concrete thrust blocks are NOT allowed.

2.3 SERVICE TAP ASSEMBLY

.1 Service tap to be 19 mm (3/4") bronze tap c/w hose bib, mounted on 19 mm diameter type K copper pipe. Copper pipe is to be connected to PVC line with compression fitting, FORD or approved equivalent. Protect fitting and bolts with wax tape (refer to Item 2.9 below).

.2 Supply and install wooden post with steel ring, concrete ring, clear stone (20 mm – ¾") bedding and filling and geotextile membrane as shown on contract drawings.

.3 Paint exposed portion of wooden post with lead free exterior latex paint.

2.4 UNDERGROUND VALVE ASSEMBLY

.1 Drain valve assembly to include two (2) 19 mm (3/4" IPS) full port stainless steel ball valves with bronze nipples for interconnection and hose connection and 50 mm (2") PVC piping connection to HDPE watermain as shown on contract drawings. PVC SCH40 fittings to be threaded at the manufacture, no pipe or fitting is to be threaded on site.

.2 Isolation valve assembly to include one (1) 50 mm (2" NPT) bronze gate valve with bronze nipples for interconnection plus 50 mm (2") PVC piping connection to HDPE watermain as shown on contract drawings. Protect valves, fitting and bolts with wax tape (refer to Item 2.9 below).

.3 Supply and install concrete chamber, steel construction cover with hidden lock hasp, clear stone bedding and filling and geotextile membrane as shown on contract drawings. Concrete for chamber base to be 30 MPa @ 28 days with 5-7% entrained air and 15M rebars.

.4 Steel cover to be fabricated by GROUPE G&G Ltée, PRETAL division, St-Léonard (Québec), Tel: (514) 325-3711, fax: (514) 325-3900, email: pretal@pretal.com or approved equal.

2.5 BUILDING SERVICE VALVES

.1 Curb stops at building service lines are to be of diameter as shown on drawings, bronze construction, and conform to ANSI/AWWA C800-14 standard, model Mueller Mark II Oriseal with threaded or compression joints (refer to item .3).

.2 Grey cast iron made slide valve box, 105 mm (4 ¼") diameter, adjusted for shallow depth with locking cover by Bibby Ste-Croix or approved equal.

.3 The Contractor shall verify at the beginning of the works, the building service line pipe material and diameter, and their depth, prior to order materials, particularly regarding type of joints, in order to match site conditions.

2.6 RESTRAINING JOINTS

.1 At tees, elbows, service tap piping, service lines, and valves, restraining joints suitable for IPS diameter PVC piping, to be Smith-Blair Gen. I Maxi-Grip™ EZ® Seal and Restraint Coupling, ASTM A-569 iron, NSF 61 listed gaskets, 304 stainless steel bolts and nuts, Steel-ASTM A513 gripping band, Hot Rolled AISI C-1010-ASTM A569 pressure ring, rated to 200 PSI for HDEP and PVC connections, or approved equal.

.2 Protect fitting and bolts with wax tape (refer to Item 2.9 below).

2.7 TRACING BAND

.1 Tracing band (refer to Typical Trench Section, drawing D-03) is to be 300 mm wide Plyage HZD band, color : blue, with stainless steel tracing wire attached to valves

and service taps, as supplied by Technoconsor or approved equal, to be installed 300 mm above the watermain to be protected.

2.8 TRENCH AND SURFACE REINSTATEMENT

.1 Pipe bedding and material above the pipe is to be as per trench reinstatement detail shown at Figure 36 of BNQ 1809-300/2004 (R2007). Balance of the trench is backfilled as follows.

.2 Within Breton Beach grassed area, reinstate trench as follows. Balance of the trench up to 150 mm from the surface to be backfilled with excavation material. Top layer of trench is to be top soil saved at time of excavation. Proceed with hydroseeding.

.3 Within wooden area, balance of the trench to be backfilled with excavation material.

.4 Proceed with water leakage test as per BNQ 1809-300/2004 (R2007) – Travaux de construction – Clauses techniques générales – Conduites d'eau potable et d'égout, but at a pressure no more than 120 PSIG.

2.9 WAX TAPE FOR CORROSION PROTECTION

.1 Petrolatum or petroleum wax tape coating and primer shall conform to the ANSI / AWWA C217-04 Petrolatum and Petroleum Wax Tape Coatings for the Exterior of Connections and Fittings for Steel Water Pipelines, to be DENSO tape or approved equal.

.2 Within Wax tape to be applied, with minimum 25% overlap, on all valves, at all joint bolts, and metal fittings.

PART 3 - EXECUTION

3.1 PIPING WORK

.1 Supply and install all CG-14 granular bases (150 mm thick) as required for the proper installation of piping and valve.

.2 General construction method shall conform to NQ 1809-300 (R2007), Travaux de construction – Clause techniques générales – Conduites d'eau potable et d'égout, latest edition.

3.2 FASTENERS

.1 Use standard commercial sizes and pattern with material and finish suitable for the service unless specifically required otherwise in these specifications.

.2 Use heavy hex heads, semi-finished unless otherwise specified. Use non-ferrous material throughout for plumbing services. Use type 304 or type 303 stainless steel for all fasteners on this project.

.3 Bolts shall not project more than one diameter beyond nuts.

3.3 ANCHOR BOLTS AND INSERTS

.1 All equipment anchor bolts and inserts specified or required under this Division shall be supplied by the equipment. The size, number, type location, thread projection shall be determined by the equipment manufacturer and approved by the Engineer.

3.4 CUTTING AND PATCHING

.1 Drill, cut, and patch as shown on the drawings and directed herein. The Contractor is responsible for coordinating the work of locating holes, recesses, chases, etc., as well as any sleeves and inserts required for the passage of system components through building surfaces.

.2 Corrective or additional work arising out of failure to comply with the foregoing shall be at the Contractor's expense and in a manner approved by the Engineer.

3.5 INSPECTION AND TESTS

.1 Arrange for all necessary inspections and tests required by all authorities having jurisdiction, perform all tests and related works in accordance with BNQ 1809-300.

.2 Test piping systems in sections (valve to valve) as approved by the Engineer. Repair all leaks and defects to the approval of the Engineer.

.3 Disinfect all water system and flush the lines as per BNQ 1809-300.

3.6 CLEAN UP AND REPAIR

.1 Leave all materials installed in new condition for final approval.

.2 Thoroughly clean all materials installed and remove all rubbish and debris from the site.

.3 Protect all work and materials during the construction. Replace, repair or refinish all damaged material at the Contractor's expense.

3.7 METRIC UNITS

.1 Notwithstanding the requirements of this Division as hereinafter specified, all new meters, indicators scales, etc. shall be calibrated in Metric Units. All Data and Performance curves submitted by Equipment Suppliers shall employ SI Units as well as Imperial/U.S. Units unless otherwise approved by the Engineer.

3.8 RE-INSTATEMENT OF DAMAGE SURFACE / MATERIAL

.1 The Contractor is to protect fences, trees, roots, landscape areas, watercourses, natural elements, concrete chambers, benchmarks, parking areas, above and underground utilities, which have not been identified as to be removed/demolished.

If trees that are to be preserved have been damaged, the Contractor would have to replace them according to NCC agent instructions; i.e. Contractor is to replace two trees for every tree they damage. Branches are to be cut or pulled back where needed. The Contractor shall re-instate (including surface finishing) all surface to their original condition or concrete chambers or utilities damaged by their work to the NCC agent's satisfaction.

3.9 TOPSOIL

.1 Topsoil over pipe trenches is to be managed as follows. Topsoil within grassed areas to be removed and carried at location specified under Division 3 – Section 013543 – Environmental Protection. Protect stockpiled topsoil from rain and contamination with tarp. Topsoil to be put back, spread and hydro seeded. Surplus top soil, if any, remains the property of NCC.

- END OF SECTION -