

SPECIAL PROVISIONS – CONTRACT ITEMS SUPPLEMENTARY

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A2. PRECONSTRUCTION SURVEY

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall also apply:

The Contractor will provide the City with a complete copy of the precondition survey including all CDs/DVDs and field reports together with any subsequent inspection report related to claims investigation forthwith.

The precondition survey must, upon the approval of the property owner and any tenants, include the taking of high resolution video or still photos of all properties inspected.

Upon written request of the property owner, the Contractor shall provide, at no additional costs, a copy of the Field Notes relating to their property only.

The Contractor shall submit to the City, for review and approval, a draft copy of the Notice to Residents for the precondition survey. Once approved by the City, the precondition survey Contractor shall submit on letterhead the final version of this notice. The City will arrange delivery of the initial letter as an attachment to the City's Notice of Construction. All additional notices for the precondition survey shall be delivered by the Contractor.

The complete precondition survey must include an entry for each property within the survey limits. An entry shall be:

- i. A completed inspection;
- ii. A letter or record of refusal by property owner and/or tenants who refuse a precondition inspection; or
- iii. A record of the precondition survey company's attempts to schedule an inspection if neither an inspection nor refusal are received.
 - As a minimum, the precondition survey company shall make three (3) attempts to inspect a property after the initial letter has been delivered by the City, specifically two (2) additional notices and a visit to the residence or business.
 - Each attempted contact shall be on a different day of the week and at a different time of day.
 - With the recorded attempts to schedule an inspection (dates and times), the precondition survey company must also include copies of the additional notices delivered to the properties.

The precondition survey shall be considered incomplete and payment for this item withheld until an entry for each property is included in the final survey package delivered to the City.

The limits of the properties to be included in the survey shall extend a minimum of 30 metres along each street beyond the limit of construction as noted on the contract drawings.

The precondition survey must be completed prior to the commencement of construction.

Basis for Payment

The lump sum price bid will be deemed to include any allowance to satisfy these provisions. Full payment will be made under this item in the first progress payment provided that a satisfactory survey is filed with the City.

A4. CONSTRUCTION LAYOUT

This line item shall include construction layout, photo records and record survey and drawings as described herein.

a) Construction Layout

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS.MUNI 100 GC 7.02, the following shall also apply:

The Contractor shall include in the lump sum cost for this item; the checking of all grades and alignment with the use of batter boards and boning rods or digital survey equipment to ensure proper adherence to design; re-staking of layout lost due to destruction or removals; any additional layout within the intent of the contract for minor revisions to the road, sidewalk, sewer design, etc.

An absolute minimum of 3 layout stakes shall be provided for any single line of layout. Maximum spacing of grade stakes shall be 15 metres for all layout and at all changes of grade and/or direction.

Layout for curb and gutter shall include offset stakes placed a maximum of 2 metres behind the proposed lip of gutter. Layout for curb shall also include the drop locations for all curb depressions, the bottom of slope shall be marked out, on site, prior to curb pour.

Catchbasin layout shall consist of 3 grade stakes installed in line with the inside back wall of the catchbasin (front face of curb) a center stake representing center of catchbasin and a 3 metre offset stake to the left and right of the center line stake.

Failure to comply with the above conditions will result in a reduction in payment to this item at the Contract administrator's sole discretion

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document.

b) Progress and Final Record Photography

The lump sum price bid shall include all labour, material and equipment required to complete the following:

On commencement of work and at monthly intervals thereafter, supply the Contract Administrator with clearly labeled and dated digital progress photographs on CD or memory stick.

Progress photographs are to be taken **daily** to detail construction progress and must be submitted with the Contractor's monthly payment draw request. The digital photographs must have been taken with at least eight (8) megapixels of resolution. Processing of progress payments will be contingent on satisfactory receipt of the required Progress Photographs.

On completion of the works, or at a time designated by the Contract Administrator, the Contractor is to undertake a "post-construction" photographic survey of the project site and submit a digital and printed copy of same to the Contract Administrator for review and acceptance. This photographic survey will form part of the Construction Record submission, as detailed below, and subject to the same provisions regarding acceptance.

Basis for Payment

The lump sum price bid will be deemed to include any allowance to satisfy these provisions, including any revisions and resubmission of information in order to satisfy the City's requirements. For progress payment, ten percent (10%) of the lump sum bid price will be paid upon satisfactory receipt of the daily photos from the payment period. The balance will be paid upon receipt and approval of the final "post-construction" photographic survey of the project site in both digital and hard copy format.

c) Record Survey and Drawings

The lump sum price bid shall include all labour, material and equipment required to complete the following:

Keep and maintain in good condition on site a minimum of one set of construction drawings identified as the "Project Record Copy". Upon request, this drawing set is to be made available for review on-site by the Contract Administrator at any time during the project.

Record neatly and accurately, in red ink, any deviations from the contract documents as follows:

- Significant deviations from the contract documents caused by site conditions and changes ordered by the Contract Administrator;
- Horizontal and vertical location of piping, underground utilities and appurtenances referenced to permanent surface features or improvements;
- Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the structure;
- Location and elevation of all crossed utilities during piping installation;
- Field changes of dimension and detail; and

- Changes made by Change Work Order and/or field directions.

The Contractor must provide the City of Niagara Falls with a Civil 3D drawing based on a Construction record topographic survey depicting the location and elevation of all new infrastructure and other proposed (built) works in accordance with the City's new CAD Standards Manual. A copy of the CAD Standards Manual is available on the City of Niagara Falls website:

<https://www.niagarafalls.ca/pdf/municipal-works/cad-manual/cad-standards-manual.pdf>

The Construction Record drawing must be in UTM, NAD 83 for the horizontal coordinates and the vertical elevations referenced to City of Niagara Falls benchmarks. The original Issued for Construction (or Issued for Tender) CAD file will be provided by the Contract Administrator for this purpose.

One set of the marked up Construction Record drawings and a CD (or memory stick) with the digital copy of the record survey drawing files are to be submitted to the Contract Administrator for review and acceptance as a requirement of Substantial Performance or Completion of the contract. The Construction Record submission will be certified as to its completeness by the City.

Failure to complete a certified Construction Record submission will result in the delay of substantial performance and/or contract completion.

Basis for Payment

The lump sum price bid will be deemed to include any allowance to satisfy these provisions, including any revisions and resubmission of information in order to satisfy the City's requirements. Payment of the lump sum price bid will be made upon approval of the final Construction Record drawing and marked-up hard copy plans.

A5. CLEARING AND GRUBBING

This line item shall include removal of existing trees, stumps, brush, shrubs & vegetation, as described herein.

a) Remove Existing Trees

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 201, the following shall also apply:

This item shall include the complete removal and disposal of all existing trees, as specified on the contract drawings, or as directed by the Contract Administrator. All trunks shall be removed to 300 mm below the finished boulevard grade or, in the case where existing tree roots may interfere with the installation of works in the contract, remove the entire root system and dispose offsite. The Contractor shall restore all disturbed areas at no additional cost to the contract.

Basis for Payment

Payment shall be as per the units indicated in the Schedule of Quantities and Unit Prices for each item noted.

b) Remove Existing Stumps

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 201, the following shall also apply:

This item shall include the complete removal and disposal of all existing tree stumps, as specified on the contract drawings, or as directed by the Contract Administrator. All stumps shall be removed to 300 mm below the finished boulevard grade or, in the case where existing tree roots may interfere with the installation of works in the contract, remove the entire root system and dispose offsite. The Contractor shall restore all disturbed areas at no additional cost to the contract.

Basis for Payment

Payment shall be as per the units indicated in the Schedule of Quantities and Unit Prices for each item noted.

c) Remove Existing Brush, Shrubs & Vegetation

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 201, the following shall also apply:

This item shall include the complete removal and disposal of all existing brush, shrubs and vegetation, as specified on the contract drawings, or as directed by the Contract Administrator. This item shall include the removal of the entire root system and offsite disposal. The Contractor shall restore all disturbed areas at no additional cost to the contract.

Basis for Payment

Payment shall be as per the units indicated in the Schedule of Quantities and Unit Prices for each item noted.

A7. INSTALL, MAINTAIN AND REMOVE SILT CONTROL DEVICES

This line item shall include catchbasin silt bags, light duty silt fence barriers, straw bale check dams and rock check dams, as described herein.

The Contractor shall place additional erosion protection as directed by the Contract Administrator or the Niagara Peninsula Conservation Authority.

a) Catchbasin Silt Bags

Prior to the start of construction, the Contractor shall place Silt Bags *(such as the Layfield's Catch Basin Sediment Traps (CBST's) or approved equal)* on all existing catchbasins that may be affected by the proposed construction.

Silt Bags shall be checked daily, maintained over the course of the construction and removed only once hydro seed or sod restoration has minimized the risk of erosion related to the construction activities; the Contract Administrator must approve the removal. All reasonable care must be taken to avoid any sediment from entering the catchbasin as the traps are removed.

Sediment that collects within the temporary sediment control facilities shall be removed when the facility is half full.

Basis for Payment

For progress payment, fifty (50) percent of the lump sum price will be paid upon installation with the balance to be paid upon removal of all silt control devices.

b) Light Duty Silt Fence Barrier

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 805, the following shall also apply:

Prior to the start of construction, the Contractor shall place Temporary Silt Fence so as to prevent sediment carried by sheet flow from leaving the site and entering natural drainage ways and/or the storm sewer system. The Contractor shall install silt fences as indicated on the contract drawings, deemed appropriate in the field and as directed by the Contract Administrator.

During construction, the Contractor shall place Temporary Silt Fence at the base of stockpiled native and imported materials.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document.

c) Straw Bale Check Dam

In addition to the conditions stipulated in OPSS 805, the following shall also apply:

The Contractor shall install straw bale check dams where indicated on the contract drawings. The Contractor shall conduct daily inspections on all check dams and shall conduct additional inspections after each significant rainfall. Repairs shall be made promptly and sediment shall be removed when it reaches one half the dam height or sooner. Silt removal is to be undertaken with care to minimize downstream sedimentation.

The check dams shall be removed only once hydro seed or sod restoration has minimized the risk of erosion related to the construction activities; the Contract

Administrator must approve the removal. All reasonable care must be taken to avoid downstream sedimentation during removal of the straw bale check dams.

Basis for Payment

For progress payment, fifty (50) percent of the lump sum price will be paid upon installation with the balance to be paid upon removal of all silt control devices.

A8. CONSTRUCTION SIGNS, TRAFFIC CONTROL & TRAFFIC MANAGEMENT PLAN

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, GC7.06 and OPSS 706, the following shall also apply:

Interference with normal flow of traffic shall be kept to a minimum. The Contractor shall be prepared to supply and erect any barricades and signs which may be required for complete control of both pedestrians and vehicular traffic including competent flag persons in accordance with Ontario Manual of Uniform Traffic Control Devices. The Contractor shall further provide a Traffic Control and Management Plan in accordance with the most recent amendments to the Occupational Health and Safety Act. The Traffic Control and Management Plan shall include drawings, plans, sketches, etc., illustrating the layout of typical signage. The lump sum price shall be deemed to have included this provision.

The Contractor shall also be responsible for supplying their hired help with any necessary safety and/or protective equipment required to perform the work safely.

A minimum of one lane of traffic shall be maintained at all times during construction. Two lanes of traffic shall be maintained at all other times. The Contractor's proposed sequencing and staging of works and operations is to make due allowance for this requirement. Work within intersections shall also be staged such that a minimum of one lane of traffic is maintained on the cross streets.

On **Blackburn Parkway**, one lane of traffic may be closed to traffic during construction, in accordance with the "Traffic Control Manual for Roadway Work Operations". At all other times, all lanes of traffic shall be maintained. Road closures of any kind will only be allowed on an exception basis, and only upon approval of the Project Manager. The Contractor must submit potential road closure requests to the City, in writing, at least one (1) week prior to implementation, for review and approval. Allowances for such operations must be made in the Contractor's Traffic Control and Management Plan; all associated costs will be the Contractor's responsibility.

It is of critical importance that all planned construction activities be coordinated with the City's Operational, Traffic, Parking and Transit Departments. Notification on at least a weekly basis of planned works (schedule) will be required to ensure that the necessary detour signage, parking accommodations, bus routing and maintenance activities account for the active work zones within the project area. The Contractor must also work closely

with the City's Construction Inspector and Contract Administrator to keep affected property owners informed of potential impacts to their businesses and residences and to minimize disruption to access and servicing of properties by planned construction activities.

Winter Maintenance

The successful Contractor will be responsible for winter control maintenance in compliance with Provincial minimum maintenance standards for snow clearing, storage and removal, salting and sanding activities within the construction work zones during the course of the contract, including maintaining the sidewalks within the project area. All unit prices bid will be deemed to have included allowance for these provisions.

Property Access

Pedestrian access to all businesses and residences is to be maintained at all times whenever possible. Access closures are to be scheduled at least two (2) business days in advance between the City, the Contractor and the Business owner and/or Residents, including the type and form of any temporary access provisions. Any disruption to pedestrian access is to be kept to a minimum duration.

On **all Regional roads**, the Contractor will be required to backfill all their trench cut and install temporary restoration in accordance with the Regional Municipality of Niagara specifications at the end of the day's operations so that all lanes of two-way traffic can be maintained at night. All hazards and obstructions shall be properly barricaded and delineated with flashers in accordance with the Ontario Manual of Uniform Traffic Control Devices.

Communications

It will be the Contractor's responsibility to inform the various businesses and residences of, and/or the placement of no parking signs the day before, in order to reduce/eliminate any problems with parked vehicles that may interfere with their operations. Access to the abutting businesses and residences must be maintained at all times.

The Contractor shall advise the Police Department, Fire Department and Niagara Emergency Medical Service on a daily basis, with current status of the construction as it pertains to the passage of traffic within the contract limits.

The Contractor shall co-ordinate with Niagara Falls Transit to ensure minimum interruption to their bus schedules on **Blackburn Parkway**. Niagara Transit, school buses and garbage service vehicles will be given priority to maintain their schedule.

The Contractor shall also maintain/provide existing pedestrian access at all times to the businesses and residents during all phases of construction in an acceptable manner.

The traffic control signage requirements shall include the following:

Supply, locate, erect, operate, maintain, relocate as necessary and remove all necessary traffic signs, construction signs, including delineators, barricades and flashing lights, in accordance with the Ontario Traffic Manual (OTM) Book 7 and the latest edition of the "Traffic Control Manual for Roadway Work Operations - Field Edition".

The Contractor is responsible for the installation, daily maintenance and removal of all construction signage throughout the contract.

Regulatory signs and street name signs cannot be removed without approval from the City.

Any existing signs removed by the Contractor to accommodate construction shall be kept operational by placement on a temporary support.

All regulatory signs and street name signs will be replaced permanently by City forces.

Contract Signs

In addition to the requirements noted in the Special Provisions - General, Item G29, Project Sign Board, the following shall also apply to this item:

Prior to the start of construction the City will furnish to the Contractor two (2) Contract Signs for the project, prepared in accordance with Dwg No. NFS-A01. The Contractor will install the signs in locations as directed by the Contract Administrator, and then will be responsible for daily maintenance of the signs throughout the Contract. After contract completion, the Contract Signs are to be returned to the Municipal Service Centre on Stanley Avenue. Any costs incurred by the City to restore, repair or replace the Contract Signs due to damages or losses occurring during the period while the signs are on-site, will be the Contractor's responsibility. From time to time during the contract, the Contractor may be required to move the sign locations, as directed by the Contract Administrator.

Basis for Payment

In addition to the payment provisions noted in the Niagara Peninsula Standard Contract Document, the final ten percent (10%) of the lump sum price bid for this item will be held until project completion, contingent on the return of the Contract Signs in a condition satisfactory to the Contract Administrator. The lump sum price bid shall be deemed to include full compensation for all the provisions noted herein.

A9. CONTINGENCY ALLOWANCE

The Contractor shall include in their tender the indicated contingency allowance in the Form of Tender.

Basis for Payment

Payment from this item will only be made for additional work approved in writing by the Contract Administrator. Work completed before receipt of written approval will not be compensated.

B1. TEST PITS (PROVISIONAL ITEM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall also apply:

Exploratory test holes shall be at locations and depths as directed by the Contract Administrator and must be witnessed by the Contract Administrator or assigned delegate.

Backfill shall be Granular 'A', compacted to 100% Standard Proctor Maximum Dry Density. Alternatively, clear stone may be used as backfill material where hydrovac excavation equipment is used. Disposal of the excavated material shall be in accordance with Special Provisions – Contract Items Supplementary, Item B2.

The purpose of these test holes shall be to verify existing underground infrastructure where a design change is required or as determined by the Contract Administrator.

Basis for Payment

Payment at the unit price bid for this item shall include all labour, materials, equipment and Granular 'A' backfill, necessary to complete the work.

This item is provisional. Prior written approval must be provided by the Contract Administrator. Compensation will not be considered if written approval is not sought in advance.

B2. EARTH EXCAVATION

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, OPSS.MUNI 206 and OPSS.MUNI 510, the following shall also apply:

Work under this item will also include the removal of asphalt, concrete, brick pavers and excavations of full road allowance widths as described herein.

The Contractor is responsible for sawcutting, excavating, separating and delivering any concrete or asphalt material to an approved recycling facility. Thickness of the concrete and asphalt will vary; however, no additional compensation will be made for the various depths. The removal of interlocking brick pavers shall also include removal of any concrete and/or granular base.

All asphalt and concrete must be sawcut. Sawcutting shall be to the limits shown on the construction drawings or as directed by the Contract Administrator.

Roadway excavation shall be inclusive of all required excavation from property line to property line on all roadways and include any additional quantities, as shown on the contract drawings. Plotted cross-sections, where not included within the Issued for Tender drawing set, shall be available upon request.

Item Phase 1 B2,f) shall be carried out in accordance with OPSS 206 and .570 with the following Special Provisions. For the unit price bid per cubic meter (m³) for this item, the Contractor shall supply all labour, materials and equipment necessary to strip topsoil from the Blackburn Parkway road allowance, +3.0m into lot area, STA 0+11 to STA 0+490, 10m wide, storm area and sanitary sewer and storm sewer outfall to Warren Creek. Lot areas Part 7, 8 (excluding earth pile), 10, 11, 16 and 17. All topsoil except for the topsoil required for reinstating the storm sewer outfall shall become property of the Contractor and disposed off-site.

Item Phase 1 B2,g) is for the hourly price bid for the Contractor to supply the labour, operators and equipment as required to separate the existing material stock pile on Parts 7 and 8 into four (4) separate stockpile locations, as shown on the soil management plan as follows:

- 1 - Excavator Cat 345 or equal minimum weight 4,400kg with operator
- 1 – Dozer D6 or equal with operator
- 2 – 30 tonne off Highway Trucks with operator
- All supervision and equipment necessary for the work to be performed

All works shall be performed with full time supervision and direction of the City and environmental/geotechnical consultants.

Payment shall be made based on daily time records provided to the Contract Administrator and the continuous operation of all specified equipment.

Item Phase 1 B2,i) is for the square metre (m²) unit price bid for the Contractor to supply and install minimum six(6) mil polyethylene sheeting or tarpaulins under separated Phase 1 pile #2 prior placement of contaminated material.

EARTHWORKS

Item Phase 1 B2h)i. shall be for the excavation of Blackburn Parkway roadway and road allowance (Property Line to Property Line) for STA 0+025 to 0+490. For the unit price bid per cubic meter (m³) the Contractor shall excavate the existing roadway to 1.8m below finished centerline of road, haul, place, grade and compact material to minimum 95% SPD on Parts 10 and 17, to pregrade elevation of 0.45m below finished grade and/or as directed by the Contract Administrator. Any reworking of material appropriate scarifying and appropriate wetting and/or drying of the material to regulate moisture content and the compaction to 95% SPD shall be included in the unit price bid for this item. Payment shall be made based on surveyed quantities.

Item Phase 1 B2,h)ii. shall be for placement and pregrade of suitable fill material - for the unit price bid per cubic metre (m³) the Contractor shall place and pregrade suitable fill material from the separated earth stockpile #1 onto Blackburn Parkway roadway and boulevard and onto Parts 10 and 17 to pregrade elevation maximum 0.45m below finished grade and/or as directed by the Contract Administrator. For the unit price bid per cubic metre (m³) shall load from the stockpile, haul, place, grade and compact to 95% SPD the suitable fill material. Any reworking of the material appropriate scarifying and appropriate wetting and/or drying of the material to regulate moisture content and the compaction to 95% SPD shall be included in the unit price. Payment shall be made based on the surveyed quantities. Proof roll of roadway subgrade shall be approved by Contract Administrator prior to placement of roadway materials and included in the unit price bid.

Item Phase 1 B2,h)iii. shall be for the disposal of unsuitable concrete, asphalt and other construction materials off-site. For the unit price bid per cubic meter (m³) the Contractor shall load, haul and dispose off-site all material from separated stockpile #4. Once the material leaves the site it shall become property of the Contractor. Payment shall be made based on surveyed quantities.

Item Phase 1 B2,h)iv. shall be for the dispose of topsoil and organics from separated stockpile #3. For the unit price bid per cubic meter (m³) the Contractor shall load, haul and dispose off-site all material in the stockpile. Once the material leaves the site it shall become the property of the Contractor. Payment shall be made based on surveyed quantities.

Item Phase 1 B2,h)v. shall be for unit price bid per square metre for the Contractor to construct a temporary Mud Mat with 4" minus Granular including temporary culvert crossing. Location of Mud Mat shall be as shown on the soil management plan or as direct by the Contract Administrator. Payment at the unit price bid shall include all labour, materials and equipment necessary to supply and install as well as removal and reinstatement of the area upon completion of the Project. Payment will be per square metre(m²) unit price bid and will be paid 50% upon installation and the remaining 50% upon removal and reinstatement of disturbed area.

Phase 2

Item Phase 2 B2,f) shall be carried out in accordance with OPSS 206 and .570 with the following Special Provisions. For the unit price bid per cubic meter (m³) for this item, the Contractor shall supply all labour, materials and equipment necessary to strip topsoil from the existing Blackburn Parkway road allowance along the existing boulevards and proposed sidewalk area, including diposal off-site. All topsoil except for the topsoil required for minor grading & filling of landscaped areas shall become property of the Contractor and disposed off-site.

Item Phase 2 B2,g) shall be for filling of roadways, boulevard and front yard area of existing industrial buildings along Blackburn Parkway Sta.0+500 to 0+740 from the existing separated stockpile in Phase 1 (Pile #1). The Contractor shall haul, place grade and compact material to 95% SPD, payment shall be made per cubic metre (m³) based on surveyed quantities.

Basis for Payment

Payment at the unit price bid for this item shall include all labour, materials and equipment including sawcutting, and disposal of surplus or unsuitable excavated materials, necessary to complete the work as noted on the contract drawings or as directed by the Contract Administrator.

B3. GRANULAR MATERIAL

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, OPSS 314, 401 and 402, the following shall also apply:

All granular materials shall conform to the requirements of OPSS.MUNI 1010.

The unit price bid shall be complete compensation for the supply, hauling, placement, grading and compaction to the specified Standard Proctor Maximum Dry Density of Granular 'A', 'B' or 'M'.

This item will be utilized for the Granular 'A' material for bedding, cover and backfill of all items for the water distribution system, sanitary sewer and storm sewer system when specified in the contract or indicated on the contract drawings. Only virgin Granular 'A' will be accepted for pipe bedding and cover.

This item will be utilized for the Granular 'A' or Granular 'B' under roads, driveways, and sidewalks and shall be placed at a depth specified in the contract or as indicated on the contract drawings. Only virgin Granular 'A' will be accepted for road base.

This item will be utilized for the Granular 'M' for shoulder restoration and shall be placed at a depth as specified in the contract or as indicated on the contract drawings.

Granular 'A' or Granular 'B' must be installed on all road and sidewalk trenches to the existing grade to provide safe access. Granular 'M' must be installed on shoulders to the existing grade to provide safe access.

The Contractor will be responsible for maintaining granular surfaces until the restoration work is carried out. The Contractor must include in this unit price bid all labour and equipment to remove the excess granular from the trenches prior to final restoration, and delivery of the granular to a location specified by the Contract Administrator. The Contractor is responsible to remove the granular in a manner that avoids contamination of the granular with asphalt, concrete or native material. Any contaminated material shall be

removed at the Contractor's expense. Any cost for these requirements must be included in the unit price bid for the granular.

The unit price bid for this item shall include the fine grading and compaction of the sub-base immediately preceding the placement of granular road base material. No roadway granular is to be placed until the subgrade elevation has been checked by the City's Inspector.

Payment for all material quantities shall be determined by net weight as recorded by a Government certified weigh scale. The supplier will be responsible for providing suitable scales for all materials to be weighed. Weigh bills (tickets), shall be provided for each load of granular in accordance with SPGS G32.

Weigh tickets received after the monthly Progress Payment has been finalized, for deliveries made within that month's Progress Payment period **will NOT be accepted.**

The onus shall be on the Contractor to ensure that the City's Inspector is furnished with all weigh tickets on a daily basis, since these will form the method of measurement.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document and priced as per the breakdown of items as indicated in the Schedule of Quantities and Unit Prices.

Recycled Material

Recycled concrete (RCM) and asphalt (RAP) will not be permitted on this project.

Under no circumstances will recycled material of any kind be permitted for use as pipe bedding, pipe cover or road base material.

Recycled Granular

Consideration may be given for the use of recycled granular for deep trench backfill.

Where recycled material is imported as a substitution for virgin granular material, the cost savings will be shared between the Contractor and the Owner.

The successful Contractor shall submit a written proposal to utilize recycled granular to the Contract Administrator at the pre-construction review meeting. The Contractor must include with the written proposal certified copies of laboratory testing results confirming that the proposed recycled granular material conforms to the provisions of OPSS.MUNI 1010 for both composition (physical properties) and gradation as specified for Granular 'A'.

The City reserves the right to undertake any additional confirmatory testing it deems necessary, prior to approving the use of recycled material on this project. Therefore,

access to the Contractor's recycled material stockpile(s) is to be made available for sampling and testing by a QA/QC testing company retained by the City to verify compliance with the above noted provision. The provisions of NPSCD General - Item G8 will apply to payment for testing in this regard.

Basis for Payment

Measurement for payment for recycled granular will be by the tonne (t).

Payment for all recycled granular quantities shall be determined by net weight as recorded by a Government certified weigh scale. The supplier will be responsible for supplying suitable scales for all recycled granular to be weighed. Triplicate numbered weigh bills shall be provided by the representative for each load of material as soon as delivery has been accepted.

Tenderers shall note that weigh bills for recycled granular materials will only be accepted for payment when delivery is made in the presence of the City's Inspector. Tenderers are advised to familiarize themselves with the Inspector's normal work hours.

All weigh tickets pertaining to all materials paid for by weight must show either "Tare and Net" or "Gross and Net" weights, if printimatic tickets are used. If printimatic tickets are not used, then the "Gross", "Net" and "Tare" must be given, otherwise the tickets will not be considered for payment.

No deliveries of recycled material to the site are to be made until written approval is received from the Contract Administrator. Approval will be subject to confirmation that the material complies with quality criteria and that cost savings will be shared between the Contractor and the Owner.

B6. SUBDRAIN

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents and OPSS 405, the following shall also apply:

The unit price bid shall include coring into all structures as required for the connection of the subdrains, regardless of the concrete thickness. The unit price bid shall also include all labour, materials and/or equipment necessary to make the subdrain connection to the outlet structure.

It is the Contractor's responsibility to satisfy themselves as to the existing conditions and make allowance in their unit price bid, accordingly.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document and priced as per the breakdown of items as indicated in the Schedule of Quantities and Unit Prices.

B8. CONCRETE CURB & GUTTER

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents and OPSS 353, the following shall also apply:

The unit prices bid shall also include required excavation to accommodate new installation, if not otherwise included in Contract Item SPCS B2 Earth Excavation.

The Contractor shall take due precaution to protect green concrete from being damaged, marred or defaced, particularly at driveway entrances. In the event that the green concrete is marred or damaged in any way, the Contractor shall breakout and replace the damaged sections. Patching or grinding of damaged, marred or defaced concrete will not be accepted. The unit price bid shall be deemed to have made due allowance for this requirement.

A total tolerance (or elevation variance) of 3mm will be accepted as a reasonable variance from the specified curb and gutter elevations. If the total tolerance is exceeded, the Contractor shall, at their own expense, remove and replace the concrete curb and gutter to the satisfaction of the Contract Administrator, at no additional cost to the contract.

The exact location of dropped curbs as shown on the construction drawings will be deemed to be included in Item A4 Construction Layout. Adjustments in the field will be conducted by the Contract Administrator or the City's representative.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document and priced as per the breakdown of items as indicated in the Schedule of Quantities and Unit Prices.

Supply and installation of steel bars as shown on Dwg. NFS-B03 at all catchbasin and curb repair sections shall be paid for under the appropriate items.

B9. CONCRETE SIDEWALKS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 351, the following shall also apply:

The unit price bid shall include all necessary equipment, materials and labour to excavate to subgrade, form, finish and cure 32 MPa concrete sidewalks to the specified thickness, on a 125mm granular base.

Commercial and industrial driveways shall also include wire mesh and an allowance to pour the drives in two (2) sections to allow access at all-time. As an alternative to two (2) separate concrete pours, the Contractor may elect to use 'High Early Strength Concrete' at no additional cost to the contract provided approval from the businesses is provided.

The unit price bid shall also include provisions for cold weather work as noted in OPSS 351.

A flat obstacle free surface is desired, therefore, do not apply a trowel finish at the joints or provide 'Dummy' joints.

Expansion joints shall be set in place prior to pouring and shall be full depth, spaced 30.0m c/c maximum. Contraction joints shall be spaced 2.5m c/c maximum and are to be saw cut to 1/4 thickness of the slab. The City will not accept any variance in the joint spacing beyond a 50mm tolerance from that specified. Panels with a greater variance will be removed and replaced at the Contractor's expense.

Private concrete sidewalks will be constructed to match the existing or minimum 125mm depth, whichever is greater, and paid for under this item.

The Contractor is to adjust the sidewalk crossfall where required to allow for positive drainage from the driveway and housewalks. Where the new sidewalk has caused ponding, the Contractor shall remove and replace the sidewalk at no additional cost to the contract. The Contractor shall include the supply and installation of a bond breaker (either plastic or tar paper) when a new sidewalk is installed adjacent to the concrete curb. An expansion joint at this location is not required.

The Contractor shall take due precaution to protect the finished surface of freshly laid concrete sidewalk from being damaged, marred or defaced. In the event that the freshly placed concrete is marred or damaged in any way, the Contractor shall break out and replace the damaged sections. Patching or grinding of damaged, marred or defaced concrete will not be accepted. The unit price bid shall be deemed to have allowed for this contingency.

The unit price bid shall include drop sidewalk ramps at driveways as per OPSD 310.050 and at crossings.

Tactile warning plates shall be supplied and installed within concrete sidewalks at all road crossings in accordance with SPCS Item B34 and NPSCD Section 7 Standard Drawings.

Basis for Payment

Excavation to accommodate a grade difference greater than 75mm between an existing sidewalk elevation and the replacement sidewalk shall be paid for separately under the appropriate item in the Schedule of Quantities and Unit Prices, specifically Item B2 Earth Excavation.

Granular 'A' for sidewalk base shall be paid for under the appropriate B3 item in the Schedule of Quantities and Unit Prices.

Tactile Warning Surfaces shall be paid for under the appropriate item in the Schedule of Quantities and Unit Prices, specifically Item B34.

B10. SAWCUTTING PAVEMENT (PROVISIONAL ITEM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents, the following shall also apply:

This item shall also apply to additional sawcutting of asphalt and/or concrete where approved by the Contract Administrator and not otherwise referenced within the contract, the Special Provisions – Contract Items Supplementary specifications or noted on the contract drawings.

Basis for Payment

Measurement for payment will be made per linear metre as measured in the field. Payment will be made at the unit price bid in the Schedule of Quantities and Unit Prices.

All other sawcutting costs shall be included in the appropriate item as specified in NPSCD General - Item G13.

This item is provisional and requires prior written approval by the Contract Administrator. Compensation will not be provided if written approval is not sought in advance.

B11. ASPHALT MILLING

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents, the following shall also apply:

Asphalt millings shall be delivered to the Municipal Works Service Centre at 3200 Stanley Ave, as directed by the Contract Administrator at no additional cost to the contract. Deliveries to the Service Centre must be made between 8:00 am - 4:00 pm, Monday to Friday.

The unit price bid shall be deemed to have made due allowance for this requirement.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document and priced as per the breakdown of items as indicated in the Schedule of Quantities and Unit Prices.

B13. ADJUSTMENT OF APPURTENANCES

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents and OPSS 408, the following shall also apply:

Payment for these works shall include the adjustment of existing (and remaining) maintenance holes, catchbasins, ditch inlets, valve chambers and/or valve boxes located within the road allowance. No payment will be made under this item for newly constructed appurtenances.

Under no circumstances shall HDPE adjustment units be used on this contract.

The unit price bid shall include all materials, equipment and labour necessary to ensure that the final elevation of each appurtenance matches the final elevation of the proposed asphalt works.

All structures are to be set to base asphalt elevation where the top lift of asphalt is to be completed under separate contract.

All costs associated, including the supply and installation of new frames, covers and grates, new valve/curb boxes, precast adjustment units, mortar or concrete, placement and compaction of Granular 'A' (as required) and Hot Mix Asphalt (as required), as well as any excavation and/or the breaking out of concrete within the road base, shall be deemed to have been included in the unit price bids under this item.

Replace Existing Valve/Curb Boxes

This item may be used where an existing valve and/or curb box cannot be successfully adjusted in the field and only upon written prior approval from the Contract Administrator.

No separate or additional payment will be made for the supply of materials and/or labour required to adjust new valve or curb boxes. Any and all costs associated with the adjustment of these valve and curb boxes shall be deemed to be included in the appropriate unit prices.

Replace Existing Maintenance Hole/Valve Chamber Frame & Cover, Catchbasin/Ditch Inlet Frame & Grate

Unless specifically identified on the contract drawings and in the Schedule of Quantities and Unit Prices any replacement of existing 'frame and covers' or 'frame and grates' must receive written prior approval from the Contract Administrator. Payment will not be entertained where the Contractor has failed to secure this approval.

Hinged catchbasin covers shall open away from the roadway.

Maintenance Hole/Valve Chamber frames and covers within the roadway shall be replaced with a **self-adjusting frame and cover** from either East Jordan Iron Works (Product No. 00302201) or Bibby-Ste-Croix (Auto Stable C-50MONT.) Follow manufacturer's installation recommendations. MH top elevation shall be set to blend with the surrounding grades.

Replacing the 'frame and cover' or 'frame and grate' of an existing (and remaining) maintenance hole/valve chamber or catchbasin/ditch inlet shall include the salvage and delivery of the existing frame and cover/grate to the City's Service Centre at no additional cost to the contract.

No separate or additional payment will be made for the supply of materials and/or labour required to adjust new frames and covers/grates on existing (and remaining) maintenance holes/valve chambers or catchbasins/ditch inlets. Any and all costs

associated with the adjustment of these frames, covers and grates shall be deemed to be included in the appropriate unit prices.

Salvaged Materials

Salvaged frames, covers and grates and valve/curb boxes shall be delivered to the City's Service Centre at 3200 Stanley Ave, as directed by the Contract Administrator at no additional cost to the contract. Deliveries to the Service Centre must be made between 8:00 am - 4:00 pm, Monday to Friday.

Basis for Payment

The unit price bid shall include all materials, equipment and labour necessary to ensure that the final elevation of each appurtenance matches the final elevation of the proposed asphalt works.

Where materials are to be salvaged and delivered to the City's Service Centre, 50% of the unit price bid shall be paid upon removal of the item and the remainder shall be paid upon receipt of the item at the Service Centre.

B14. SUPPLY AND PLACE HOT MIX ASPHALT

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents and OPSS 310, the following shall also apply:

Clause 14.09 of the NPSCD for price adjustment provisions is not applicable under this contract.

All materials shall conform to the requirements of OPSS.MUNI 1003 and OPSS 1150.

At the limits of the proposed road works, the base asphalt thickness shall be increased to match the existing top course asphalt over distance of 2 metres. This provision shall be included in the unit price bid.

No extra payments will be made for any hand work involved in spreading or compacting the hot mix asphalt around radius, intersections, trench areas, areas between the existing asphalt and new gutters, curbs.

The unit price bid for Item B14a) shall include any hand work required to form a temporary asphalt curb to match the concrete curb and gutter at catchbasin sections where the concrete curb and gutter is not installed.

The unit price bid for Item B14a) shall also include the placement of temporary ramping at all wheelchair depressions and other areas as instructed by the Contract Administrator.

Asphalt trench restoration shall be required once the granular backfill is completed. The restoration shall consist of a minimum of 130mm of HL8 HS for all trenches.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document and priced as per the breakdown of items as indicated in the Schedule of Quantities and Unit Prices.

B15. ASPHALT WALKWAYS & DRIVEWAYS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, OPSS 311, OPSS 314, and Special Provisions – Contract Items Supplementary, Item B14, the following shall also apply:

Existing asphalt driveway depths are to be matched if thickness is greater than that specified in the Niagara Peninsula Standard Contract Document, which are deemed to be the minimum requirement.

The unit price bid for this item shall be complete compensation for the preparation and additional handwork that may be required to restore driveway aprons and driveways, as necessary, and as directed by the Contract Administrator.

The Contractor is to adjust the driveway gradient where required to allow for positive drainage from the driveway and housewalks. Where the restored driveway has created or caused ponding, the Contractor shall adjust and restore the driveway and gradient at no additional cost to the contract. Driveway gradient adjustments must not negatively impact vehicle access.

The Contractor must take all due precaution not to disturb any areas outside the limits required to complete the proposed works safely. Areas disturbed outside these limits will be repaired in accordance with the specifications outlined in this contract at the Contractor's own expense and solely at the discretion of the Contract Administrator.

Winter Work

The Contractor shall make due allowance in the unit price bid for the additional effort required to maintain asphalt driveways during winter construction.

The extent of the driveway restoration will be in accordance with the initial sawcut limit as approved by the Contract Administrator, prior to the asphalt driveway removal. Any subsequent asphalt damage, maintenance and/or repair will be the Contractor's responsibility at no additional cost to the contract. Once any part of the asphalt is removed to facilitate construction, the Contractor must inspect the driveway on a daily basis to remove any broken asphalt pieces and maintain an even granular surface so as to minimize the risk of damage to pedestrians, vehicles, snowploughs and/or snow blowers.

Services

Where the installation of sanitary services, cleanouts or water services requires the excavation of existing asphalt driveway, the entire driveway bay shall be removed from edge to edge and from the back of curb or sidewalk to a neat straight sawcut line behind

the new installation. The sawcut line shall be made prior to all excavation or removals and shall be perpendicular to both edges of the driveway. The sawcut shall be made sufficiently behind the cleanout or curb stop to allow for the safe installation of the new service so as to provide a neat finished match line. Should this matchline become damaged, a new sawcut limit will be required and shall be completed at no additional cost to the contract (or Property Owner).

Curb boxes are to be set flush with the new driveway surface.

Trenches in the driveways shall be completely backfilled with Granular 'A' with all granular material compacted to 100% SPMDD.

Cleanouts in asphalt shall be installed to the finished asphalt grade complete with a flat cleanout cap flush with the finished surface.

Basis for Payment

The unit price bid shall include all necessary labour, materials and equipment to complete the work in accordance with the specifications of this contract including, but not limited to, sawcutting, removals, disposals, surface preparation, backfilling, grading, compaction, bond breaker and tack coat.

In addition to the above, the unit price bid will cover any required restoration work between the contract limits (property line) and building face, where directed by the Contract Administrator.

Payment for the supply and installation of cleanout caps, supply and placement of Granular 'A' and supply and placement of Hot Mix Asphalt shall be paid for separately under the appropriate item in the Schedule of Quantities and Unit Prices.

B18. GRANULAR DRIVEWAYS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 314, the following shall also apply:

The Contractor is to note that the granular driveway thicknesses specified in the NPSCD are minimum requirements. Existing driveway depths are to be matched if greater.

All granular driveways are to be compacted to 100% Standard Proctor Maximum Dry Density.

The Contractor is to adjust the driveway gradient where required to allow for positive drainage from the driveway and housewalks. Where the restored driveway has caused ponding, the Contractor shall adjust and restore the driveway and gradient at no additional cost to the contract. Driveway gradient adjustments must not negatively impact vehicle access.

Basis for Payment

The unit price bid for this item shall be complete compensation to restore driveway aprons and driveways, as necessary, and as directed by the Contract Administrator.

Payment shall be as stipulated in the Niagara Peninsula Standard Contract Document and priced as per the breakdown of items as indicated in the Schedule of Quantities and Unit Prices.

B19. REGRADING OF DITCHES AND SWALES

In addition to the conditions stipulated in the Niagara Peninsula Contract Document and OPSS.MUNI 206, the following shall also apply:

This item shall be used for:

a. Existing Ditches and Swales

Cut and/or fill of existing ditches/swales in accordance with the contract drawings, regardless of cut/fill depths; and

b. New Ditches and Swales

Cut of new ditches/swales in accordance with the contract drawings, regardless of cut depths.

The work shall include excavating, hauling, handling and placing in embankments, shaping, compacting, trimming of earth material and the management of excavated material.

Excess and/or unsuitable excavated material related to cut/fill of existing and new ditches/swales shall be removed from site at no additional cost to the contract.

Basis for Payment

Measurement for payment will be per linear meter, measured along the centreline of the ditch or swale.

The unit price bid for this item shall be complete compensation to complete the work and includes removal and disposal of excess or unsuitable excavated material.

B21. TOPSOIL AND SOD

In addition to the conditions stipulated in the Niagara Peninsula Contract Document, OPSS 802 and OPSS 803, the following shall also apply:

All areas to be sodded shall be graded to provide proper drainage. Any areas on private property shall also be included.

All unnecessary damage to front lawns, boulevards or grass areas caused by the Contractor's carelessness shall be reinstated at his/her own expense.

Topsoil

Topsoil shall be a PREMIUM BLEND, weed free, and naturally sterilized through composting.

The blend shall consist of:

- 50% Triple Mix (30% mixture of topsoil, sands, and shredded wood mulch/30% mixture of black organic compost and manure/30% mixture of peat loam); and
- 50% Premium Topsoil (50% mixture of topsoil, sands, and shredded wood mulch/ 25% mixture of black organic compost/ 25% mixture of composted cow manure).

In general, the resulting topsoil mix should meet the following parameters:

pH:	6.5 – 7.5
Potassium:	100 – 120 ppm
Phosphorous:	15 – 30 ppm
Magnesium:	100 – 120 ppm
Organic Matter:	≥ 3%

Unless otherwise specified, the minimum depth of applied Premium Blend Topsoil shall be 100 mm.

Basis for Payment

Measurement for payment shall be square metre of area topsoiled and sodded.

The unit price bid shall include all materials, equipment and labour necessary to complete the work and shall include grading and the supply and application of fertilizer and water necessary to ensure growth within the one year maintenance period.

B22. TOPSOIL, SEED AND MULCH

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, Special Provisions – Contract Items Supplementary, Item B21, OPSS 802 and OPSS.MUNI 804, the following shall also apply:

All areas to be seeded shall be graded to provide proper drainage. Any areas on private property shall also be included.

All unnecessary damage to front lawns, boulevards or grass areas caused by the Contractor's carelessness shall be reinstated at his/her own expense.

Topsoil

Topsoil shall be a PREMIUM BLEND, weed free, and naturally sterilized through composting.

The blend shall consist of:

- 50% Triple Mix (30% mixture of topsoil, sands, and shredded wood mulch/30% mixture of black organic compost and manure/30% mixture of peat loam); and
- 50% Premium Topsoil (50% mixture of topsoil, sands, and shredded wood mulch/ 25% mixture of black organic compost/ 25% mixture of composted cow manure).

In general, the resulting topsoil mix should meet the following parameters:

pH:	6.5 – 7.5
Potassium:	100 – 120 ppm
Phosphorous:	15 – 30 ppm
Magnesium:	100 – 120 ppm
Organic Matter:	≥ 3%

Unless otherwise specified, the minimum depth of applied Premium Blend Topsoil shall be 100mm.

Hydraulic Seed & Mulch

Hydraulic seed and mulch shall be placed in accordance with OPSS.MUNI 804.

The seed mix shall meet the requirements of the “Standard Roadside Mix” outlined in Appendix Table A-1 of OPSS.MUNI 804. Quality Assurance and specifically Performance Measures will be per OPSS.MUNI 804.08.01.

Basis for Payment

Measurement for payment shall be square metre of area topsoiled and seeded.

The unit price bid shall include all materials, equipment and labour necessary to complete the work and shall include grading and the supply and application of fertilizer and water necessary to ensure growth within the one year maintenance period.

B24. APPLICATION OF WATER FOR DUST CONTROL (PROVISIONAL ITEM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall also apply:

Filling of water application vehicles from municipal hydrants will no longer be permitted. The City has installed a smart card water filling station, located across from the Service Centre located at 3200 Stanley Avenue.

The station is equipped with new technology allowing Contractors to pre-pay for water credit on a swipe card system that can be refilled once the card has been emptied. The cost of the swipe card is \$15.00 and may be purchased at the Service Centre. To set up a water filling account please contact Environmental Services at 905-356-7521, Extension 6322.

Water shall be applied by means of approved equipment capable of uniform and controlled distribution.

Basis for Payment

Water will be measured in cubic metres.

Payment at the unit price bid in the Schedule of Quantities and Unit Prices shall be deemed full compensation for all water, carrying, application and any other costs involved with this dust control operation.

This item is provisional. Prior written approval must be provided by the Contract Administrator. Compensation will not be provided if written approval is not sought in advance.

B35. DISPOSAL OF CONTAMINATED SOILS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall also apply:

For the unit price bid the Contractor shall load, haul and dispose contaminated material from the separated stockpile #2 to Walker Industries Inc. landfill site at 3081 Taylor Road, Niagara Falls. The price bid shall exclude tipping fees, which shall be paid by the City of Niagara Falls directly to Walker Industries Inc. The Contractor shall not remove the contaminated material until remainder of Phase 1 works have been completed as the quantity of this item may vary based on availability of the City of Niagara Falls funding.

B36. REMOVE, STORE AND REINSTATE

This item shall be used for the careful removal, storage and reinstatement of items noted on the contract drawings. Any item damaged for any reason shall be replaced at the expense of the Contractor as directed by the owner. **It should be noted that the Owner may not be the City of Niagara Falls.**

Signs

This item shall be used for the careful removal, storage and reinstatement of signs, other than traffic or regulatory signs, as noted on the contract drawings. Where the sign is not the property of the City of Niagara Falls, the Contractor shall seek the Owner's permission before removal.

This item shall include all labour, materials and equipment necessary to remove the sign, store the sign for the required duration, and complete the reinstatement of the sign to existing or better condition. Reinstatement will include any underground/aboveground support and/or base requirements as directed by the Owner.

If the sign is damaged, the Contractor shall notify the Owner. The Contractor shall repair or replace the sign in accordance with the Owner's requirements at no additional cost to the contract.

Street Furniture

This item shall be used for the careful removal, storage and reinstatement of street furniture (furniture) as noted on the contract drawings. Street furniture may include benches, refuse containers, planters, bike racks, bollards, or any other object within the construction limits. Where the furniture is not the property of the City of Niagara Falls, the Contractor shall seek the Owner's permission before removal.

This item shall include all labour, materials and equipment necessary to remove the furniture, store the furniture for the required duration, and complete the reinstatement of the furniture to existing or better condition. Reinstatement will include any underground/aboveground support and/or base requirements as directed by the Owner.

If the furniture is damaged, the Contractor shall notify the Owner. The Contractor shall repair or replace the furniture in accordance with the Owner's requirements at no additional cost to the contract.

Landscape Items

This item shall be used for the careful removal, storage and reinstatement of landscape items as noted on the contract drawings. Landscape item may include bushes, hedges, fences (any material), boulders, bird baths, or any other item within the construction limits. Where the landscape item is not the property of the City of Niagara Falls, the Contractor shall seek the Owner's permission before removal.

This item shall include all labour, materials and equipment necessary to remove the landscape item, store the landscape item for the required duration, and complete the reinstatement of the landscape item to existing or better condition. Reinstatement will include any underground/aboveground support and/or base requirements as directed by the Owner.

If the landscape item is damaged, the Contractor shall notify the Owner. The Contractor shall repair or replace the landscape item in accordance with the Owner's requirements at no additional cost to the contract. In the case of living vegetation such as bushes, hedges, etc., the Contractor shall replace the item at no additional cost to the contract over the duration of the maintenance period if it does not survive transplant.

Basis for Payment

Payment shall be as per the units indicated in the Schedule of Quantities and Unit Prices for each item noted.

B38. GEOTEXTILE ON ROADWAY SUBGRADE

For the unit price bid the Contractor shall supply all labour and material and equipment necessary to place Terrifix 270R or approved equal on roadway subgrade once Contractor Administrator has approved proof roll of the subgrade OPSS 1860 shall apply.

C1. SEWERS

ITEMS C1.1 (SANITARY) & C1.2 (STORM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 410, the following shall apply:

Materials

Unless otherwise specified, sewer pipe may be PVC or concrete as follows:

- a. Polyvinyl chloride (P.V.C.) pipe - smooth wall (CSA B182.2) - 100mm - 600mm inclusive;
- b. Non-Reinforced - CAN/CSA257.1 - 100mm - 600mm; and/or
- c. Reinforced - CAN/CSA257.2

All PVC fabricated and moulded fittings shall be C.S.A. Certified.

Open Trench

It is strongly recommended that the Contractor use a trench box to install the watermain, sanitary sewer, storm sewer catchbasin leads, water services and any other pipes. The width of the trench box shall conform to OPSD 802.010 for Flexible Pipe, and OPSD 802.020 and OPSD 802.031 for Rigid Pipe. The height of the trench box shall be from 150mm below the bottom of the pipe to the level of the existing ground.

If the Contractor does not use a trench box as described above, then payment for the Granular 'A' material will be based on theoretical dimensions as follows:

Width: Follow OPSD 802.010, OPSD 802.030 and OPSD 802.031 as applicable

Height: From 150mm below the pipe to the level of the existing ground surface.

Length: Equal to the pipe length

Therefore, to calculate Granular 'A' weight (tonnes):

$$\text{Granular 'A' (tonnes)} = 2.4 \times (\text{Width} \times \text{Height} \times \text{Length} - (\pi \times D^2 \times L) / 4)$$

where,

D = Pipe OD

L = Length of Pipe

π = 3.1416

When a trench box is used to support the wall of a trench its removal shall be as per clause 404.07.03 in OPSS 404.

During sewer installations, the Contractor shall be responsible to maintain the proper functioning of each sanitary, storm and water service lateral located in the field or shown on the construction drawings, at no additional cost to the contract.

Should the Contractor choose to make temporary connections to ensure the same, these connections shall be removed in full and at no additional cost to the contract.

The Contractor is to note that full Granular 'A' will be used for backfill in shoulders, driveways, sidewalks and travelled roadways unless otherwise noted by the Contract Administrator. Native material may be used in all other areas with the written approval of the Contract Administrator. Where native material is used, the Contractor is to include in their price for all handling, hauling, stockpiling, placement and compaction.

Bedding and Cover

Bedding and cover shall always be Granular 'A' material; recycled materials will not be accepted for this purpose.

Leads/Laterals & Connections

Kor'n Seal adapters or an approved equivalent shall be used in all cases where PVC pipe is to be connected to a concrete structure (excluding catchbasins and ditchinlet catchbasins).

Where concrete pipe is used, a concrete cradle shall be required at each structure in addition to a Kor'n Seal connector.

The price bid for PVC catchbasin leads shall include connections to the sewer main using approved saddles or manufactured tees for pipe size less than 600mm diameter, all bends, proper couplings at maintenance holes and catchbasins, manufactured plug or cap at property lines, and reconnecting existing rear yard catchbasin leads using appropriate reducers and couplings.

Where the new pipe installation crosses or is adjacent to an existing pipe or structure, the Contractor shall support the existing pipe or structures. In the event the existing pipe or structure becomes disturbed, the Contractor shall replace or repair the same regardless of the material and at no additional cost to the contract.

Where the new pipe or lateral installation crosses a pipe which is abandoned, or is to be abandoned and requires removal, the abandoned pipe sections remaining shall be plugged and sealed on either side of the new pipe at no additional cost to the contract.

The unit price bid for this item shall include all sawcutting required.

Basis for Payment

The unit price bid under this item in the Schedule of Quantities and Unit Prices shall be full compensation for all labour, equipment and material to complete the work including disposal of surplus excavated material and **removal and disposal of existing pipes and sewers.**

The supply and placement of Granular 'A', sewer connections, and the removal and disposal of existing asphalt and concrete shall be paid for separately under the appropriate item in the Schedule of Quantities and Unit Prices.

C2. SEWER LATERALS

ITEMS C2.1 (SANITARY) & C2.2 (STORM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall apply:

The Contractor is advised that this item shall also be used to repair and/or relocate sanitary laterals that are conflicted with the proposed installations.

THE CONTRACTOR SHALL ALSO PAY SPECIAL ATTENTION TO AND MAKE ALL NECESSARY ALLOWANCES FOR THE FOLLOWING ITEMS:

- i. The Contractor is advised that many of the existing sewer laterals are directly adjacent to the existing water services. The Contractor shall make due allowance in the unit prices bid for the protection, maintenance, repair and supporting of such water services throughout the adjacent installation of the new sewer laterals.
- ii. The Contractor is advised that individual records of diameter, material types and number of sewer laterals is unavailable and thus the actual quantity of replacement materials cannot be determined at this time. As such, a quantity of couplings of varying diameters must be available on site and the Contractor shall make due allowance in the unit prices tendered to account for this requirement.
- iii. The Contractor is advised that not all laterals are shown on the contract drawings and those that are shown are approximate only. Furthermore, all laterals are not necessarily connected to a particular residence, used for sanitary sewer purposes and may either be used, unused or abandoned. ***The Contractor shall include in his/her unit price bid allowances for all necessary Subcontractor's, time, standby time, equipment, materials and labour to determine the exact location, purpose and usage of each and every connection, either known or otherwise, to the existing sewer.*** Where appropriate, CCTV camera inspections and dye testing may be used in verifying laterals and shall be paid for separately under the respective item within the Schedule of Quantities and Unit Prices. It is expected that a number of existing sewer laterals will be either abandoned or used for storm water connections.
- iv. It is expected that this determination will include, but shall not be limited to, careful examination of the trench, trench walls and sewer for possible connections,

notifying and meeting with the City and each homeowner and/or resident to discuss connections, arrange for flushes of water and/or dye testing to confirm possible connections, usage of in line/remote service location devices and close co-ordination and co-operation with the City.

- v. No new connections will be made until the Contract Administrator has reviewed the proposed connection with the Contractor.
- vi. It is the intention of this contract to provide one (1) new sanitary sewer service connection to each serviced residence along a new sanitary sewer, within the limits of this contract. It is suspected that some residences may have more than one active service. **Additional 'extra' connections shall not to be made until it is completely reviewed, inspected and approved by the Contract Administrator.**
- vii. Laterals which have been proven to be abandoned or otherwise unused shall be plugged at the face of the excavation with a suitable watertight cap or concrete, as required. No additional payment for this requirement shall be made and the Contractor shall make due allowance in the unit prices tendered to account for this requirement.
- viii. Missed or overlooked lateral connections and any and all damage caused by these missed or overlooked connections shall remain the sole responsibility of the Contractor and no additional payments or claims pertaining to these items shall be considered for payment.
- ix. The Contractor shall notify all affected residents or businesses of any scheduled disruption of their sanitary service at least 24 hours in advance and shall endeavour to minimize their inconvenience to a maximum four (4) hours.

Basis for Payment

As stipulated in the Niagara Peninsula Standard Contract Document.

The unit price bid for sewer lateral replacement or new sewer laterals from the sewer main to the existing lateral shall include all labour, materials and equipment necessary to complete the work.

The supply and placement of Granular 'A' shall be paid for separately under the appropriate item in the Schedule of Quantities and Unit Prices.

C5. FLUSH AND T.V. INSPECT (& TEST)

ITEMS C5.1 (SANITARY) & C5.2 (STORM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall apply:

SEWERS Flushing (Cleaning) and TV Inspection

Upon completion, all new mainline sewers shall be cleaned and flushed using a high pressure, low volume hydraulic sewer flusher truck, after which the sewers shall be video inspected.

The Contractor will be fully responsible for the materials supplied and workmanship, including the submission of a written report and digital CCTV video following the completion of the inspection. The written report shall include a photograph at every service connection.

Two copies of each report and digital video shall be supplied to the Contract Administrator for review and shall remain the property of the City. Any and all defects discovered during this inspection shall be immediately repaired, flushed clean and re-inspected, to the satisfaction of the Contract Administrator.

LATERALS TV Inspection

All laterals shall be video inspected prior to the expiration of the one (1) year maintenance period, but not sooner than eight (8) months after construction completion. The Contractor shall notify the Contract Administrator in advance of the scheduled date in order to coordinate City inspection on-site.

The Contractor will be fully responsible for the materials supplied and workmanship, including the submission of a written report and digital CCTV video following the completion of the inspection.

Two copies of each report and digital video shall be supplied to the Contract Administrator for review and shall remain the property of the City. ***Allow a minimum of thirty (30) days for City review and approval.***

Any and all defects discovered during this inspection shall be immediately repaired, flushed clean and re-inspected, to the satisfaction of the Contract Administrator. Maintenance hold back payments shall not be released until this requirement has been satisfied.

Mandrel Testing

Deflection testing is mandatory for all newly installed flexible sewer mainline and shall be performed by pulling a mandrel through each length of the pipe.

The mandrel shall have a diameter equal to 95% of the inside diameter of the pipe system being tested. Deflection tests shall first be performed not sooner than 30 days after completion of placement and densification of backfill. **The pipe shall be cleaned and inspected for offsets and obstructions prior to testing.**

The mandrel shall be:

- a. Certified by the Contract Administrator prior to use;

- b. A rigid, nonadjustable, odd number of legs (9 legs minimum), mandrel having an effective length not less than its nominal diameter; and
- c. Fabricated of steel, fitted with pulling rings at each end, stamped or engraved on some segment other than a runner indicating the pipe material specification, nominal size and be furnished in a suitable carrying case labelled with the same data as stamped or engraved on the mandrel.

The mandrel shall be pulled through the pipe by hand to ensure that maximum allowable deflections have not been exceeded. Use of an uncertified mandrel or a mandrel altered or modified after certification will invalidate the test.

If the mandrel fails to pass, the pipe will be deemed over-deflected. Over-deflected pipe shall be uncovered and, if not damaged, reinstalled. Damaged pipe shall not be reinstalled, but shall be removed from the work site. Any pipe subjected to any method or process other than removal, which attempts, even successfully, to reduce or cure over-deflection, shall be uncovered, removed from the work site and replaced with new pipe. The replaced pipe shall then be tested for deflection not sooner than 30 days after installation.

VERIFYING Lateral Connections

The Contractor is advised that not all laterals are shown on the contract drawings and those that are shown are approximate only. Furthermore, all laterals are not necessarily connected to a particular residence, used for sanitary sewer purposes and may either be used, unused or abandoned.

CCTV camera inspections and dye testing may be used to locate and/or verify use of existing laterals that cannot be located during the mainline sewer installations; and shall be paid for separately under the respective items within the Schedule of Quantities and Unit Prices.

CCTV Camera Inspections

The unit price bid to camera laterals from each house or building shall include all labour, material and equipment required to carry out the work at the direction of the Contract Administrator. **No additional payment will be made for delay.** The Contractor shall arrange to TV inspect the lateral from the building to the sewer mainline.

Dye Testing

The unit price bid to dye test each house or building shall include all labour, material and equipment required to carry out the work at the direction of the Contract Administrator. **No additional payment will be made for delay.** Different coloured dyes will be flushed into the sewer from toilets, sinks and/or laundry tubs in the house or building to determine if any existing lateral is live or abandoned.

**C6. PRECAST CONCRETE MAINTENANCE HOLES, CATCHBASINS & DITCH
INLETS**

ITEMS C6.1 (SANITARY) & C6.2 (STORM)

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document, the following shall apply:

All structures shall be founded on a 300mm (min.) thick layer of compacted Granular 'A'. All Granular material shall be placed in maximum 300mm loose lifts and compacted to 100% of Standard Proctor Maximum Dry Density (SPMDD) at optimum moisture content.

Excavation, removal and disposal of surplus excavated materials shall be included in the unit price. The removal and disposal of any existing structure shall be paid under the appropriate item.

The Contractor shall make due allowance in the unit prices tendered for any bypass pumping, dewatering, sheathing, shoring and bracing to complete the work.

Kor'n Seal adapters or an approved equivalent shall be used in all cases where PVC pipe is to be connected to concrete structures (excluding catchbasin connections). Where concrete pipe is used, a concrete cradle shall be required at each structure connection in addition to Fernco large diameter manhole connectors.

Structure rim elevation shall be set to blend with the surrounding **base** asphalt grade.

Under no circumstance shall HDPE adjustment units be used.

Maintenance Holes (MH)

Materials and installation shall be in accordance with OPSS 407 and any other specifications referenced therein and include benching, aluminium safety rungs, bulkheads, adjustment units and MH frame and covers.

A 20MPa concrete cradle shall be provided from and around the MH to the first joint of rigid inlet and outlet pipes (OPSD 708.020).

All new MHs within the travelled portion of the roadway shall be fitted with a self-adjusting frame and covers from either East Jordan Iron Works (Product No. 00302201) or Bibby-Ste-Croix (Auto Stable C-50MONT.) Follow manufacturer's installation recommendations. MH top elevation shall be set to blend with the surrounding grades.

Sanitary MH

In addition to the maintenance hole manufacturer's rubber gaskets, each section of the manhole **shall be sealed with an approved bituminous tape material, a minimum 1 mm thick and 150mm wide, wrapped around the outside of joint, 75 mm overlap on each side of the joint.**

Catchbasins (CB)

The frame and grating shall be in accordance with OPSD 400.020.

The CB shall provide for a minimum 1.5m depth to invert of CB lead unless otherwise specified and the placement of a minimum 100mm to a maximum 300mm of concrete adjustment units, per OPSD 704.010.

Item Phase 1 C6.2,A.,g) shall be for the unit price bid for the Contractor to supply all labour, equipment and material for the complete construction of the storm outfall structure and grating including chute blocks in accordance with OPSD 804.03 and 804.05. The unit price bid is to include excavating, forming, reinforcing steel, pouring, finishing and stripping. Backfilling, grading and shaping the embankment slopes with suitable native material. The backfill behind the headwall will be compacted to 95% SPD. All works is constructed to the requirements of OPSS 904 & 905.

Item Phase 1 C6.2,A.,c) shall be for the unit price bid for the Contractor to supply all labour, equipment and material for installation of the Rip Rap OPSS 511 and OPSD 810.01 shall apply.

Item Phase 1 C6.2,A.,d) shall be for the unit price bid for the Contractor to supply all labour, material and equipment necessary to install Terrifix 270R or equal filter cloth prior to placement of Rip Rap OPSS 1860 shall apply.

Basis for Payment

The unit price bid for this item shall be complete compensation for all labour, equipment and material (including frame, covers and/or grates) to do the work as specified in OPSS 407.10.01.

The supply and placement of Granular 'A' shall be made separately under the appropriate item in the Schedule of Quantities and Unit Prices.

C8. REMOVE & DISPOSE OF MAINTENANCE HOLES, CATCHBASINS AND PLUG SEWER LATERALS

ITEMS C8.1 (SANITARY) & C8.2 (STORM)

Granular 'A' backfill compacted to 100% Standard Proctor Maximum Dry Density shall be utilized to fill the resulting void, but SHALL NOT be included in the unit price bid; compensation for granular backfill shall be in accordance with the appropriate item in the Schedule of Quantities and Unit Prices.

The existing pipes shall be cut and plugged at all open ends including leads for catchbasins that are removed.

All existing frames and covers (grates) shall be salvaged and delivered to the City's Service Centre on Stanley Avenue. The unit prices bid shall be deemed to include this requirement.

The hours of operation at the Service Centre are 8:00 am to 4:00 pm Monday to Friday.

Basis for Payment

Payment for work under this item shall only apply where specifically noted on the Contract Drawings. The unit price bid shall be complete compensation for all labour, equipment and material necessary to do the work.

The supply and placement of Granular 'A' shall be made separately under the appropriate item in the Schedule of Quantities and Unit Prices.

Payment shall be made at 50% upon completion of the removal and disposal of the structure and 50% upon receipt of the salvaged frame and cover (or grate) to the City's Service Centre.

C10. SEWER AND/OR STRUCTURE CONNECTIONS
ITEMS C10.1 (SANITARY) & C10.2 (STORM)

The provisions of OPSS 407, OPSS 410 and OPSS 412 apply as amended herein.

This item shall be used for connection of a new sewer to an existing structure or sewer and the reconnection of an existing sewer or forcemain to a new structure.

Kor'n Seal adapters or an approved equivalent shall be used in all cases where PVC pipe is to be connected to concrete structures (excluding catchbasin connections). Where concrete pipe is used, a concrete cradle shall be required at each structure connection. The unit bid price shall have made due allowance for these requirements.

Basis for Payment

The unit price bid this item shall be full compensation for all labour, material and equipment required to complete the connection including excavation, backfilling, structure coring and re-benching where required.

The supply and placement of Granular 'A' shall be made separately under the appropriate item in the Schedule of Quantities and Unit Prices.

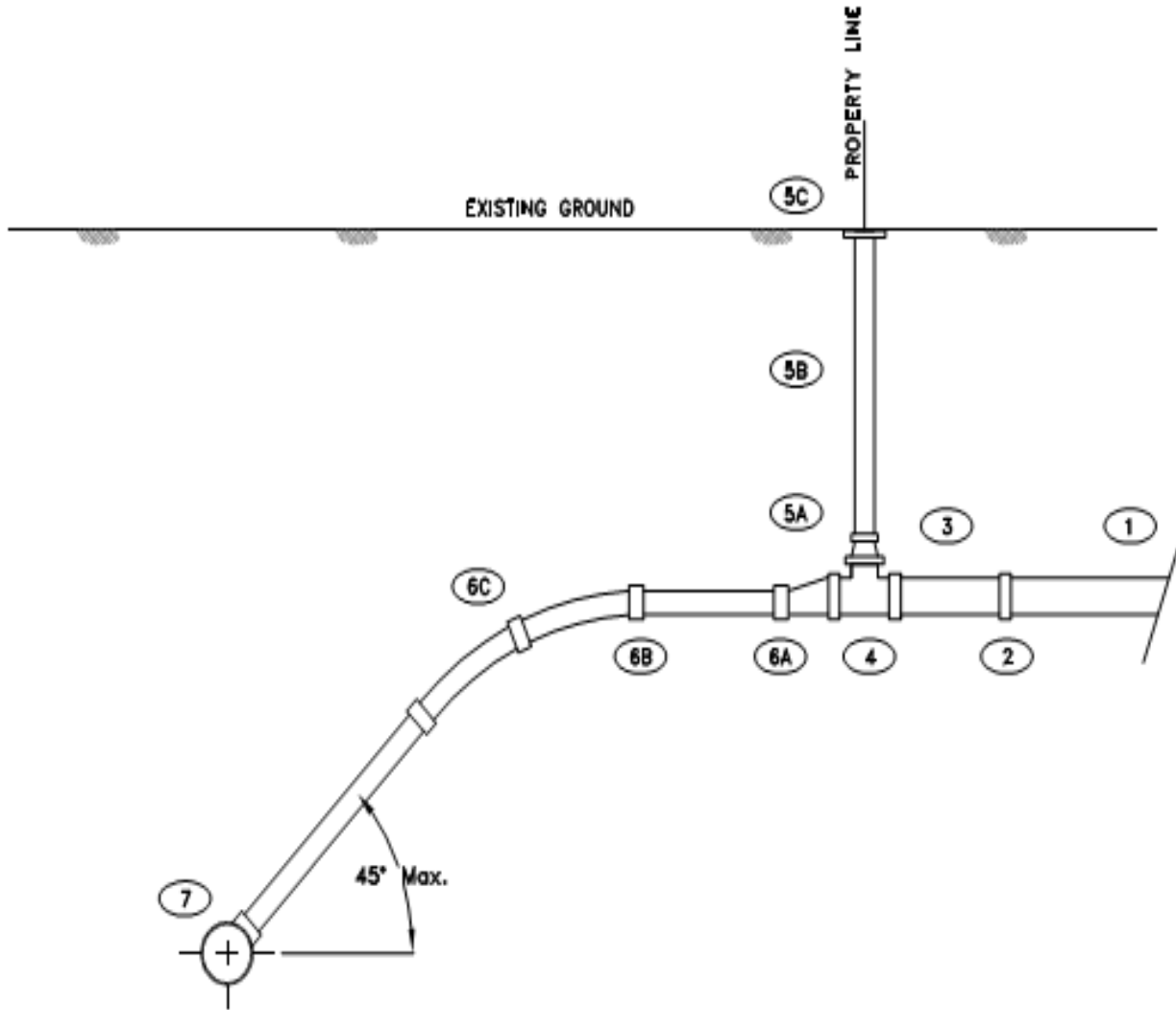


FIGURE C1 – City Approved Lateral Connections
(Read in conjunction with TABLE C1)

C11. WARREN CREEK REINSTATEMENT

In addition to the OPSD 208.010, the following shall apply:

- a) Placement of 100mm topsoil, for the unit price bid the Contractor shall provide labour and equipment to place topsoil on disturbed bank area prior to placement of hydroseed and coir mat. Topsoil shall be placed at 100mm thickness.
- b) Supply and placement of hydroseed under erosion control blankets.

This item shall include all labour, equipment and materials necessary for the placement of coir fibre 400 erosion control blankets and wetland hydroseed on the Warren Creek bank. The seed mix shall be an NPCA native aquatic/riparian mix suitable for continuous submergence.

Seed shall not be placed within 48 hours prior to a rain event forecast by Environment Canada to exceeding 1.5mm in depth.

The coir-fibre erosion control blankets shall be minimum 1.5 metre in widths from 100% biodegradable coconut (coir) fibres with a functional life exceeding 36 months. Specifications shall comply with ASTM D6818.

Mats shall overlap a minimum of 0.3 metres with the upstream mat overtop of the downstream one and staked with natural live willow stakes. The mat shall be covered with natural woven jute netting with an approximate opening size of 25mm.

Mats shall be placed a maximum of 24 hours following seeding and shall not be placed within 24 hours.

Basis for Measurement

This item shall be measured per square metre.

Basis for Payment

This item shall include all provisions for labour, materials and equipment necessary and shall be paid on a per square metre basis.

D1. WATERMAINS

In addition to the conditions stipulated in the Niagara Peninsula Standard Documents and OPSS 441, the following shall also apply:

General

Watermain and water services shall be installed to a minimum depth of 1.8m throughout.

All watermain installation shall be by open cut trench excavation method except when specified elsewhere in the contract documents and drawings.

Materials

All Waterworks materials must meet AWWA current quality criteria standards and American National Standard ANSI/NSF Standard 61.

All brass curb stops, corporation stops, service line valves, fittings and all other brass products used that come into contact with potable water must meet the requirements of ANSI/AWWA C800 Standard.

Watermain shall be DR18 PVC conforming to AWWA C900 or approved equivalent, unless otherwise specified.

Joints and fittings shall be compatible with pipe material and class and shall be in accordance with OPSS 441.

Mechanical Joint Fittings shall be ductile (cast) iron, or grey (cast) iron per AWWA C110/A21.10 with cement lining to AWWA C104/A21.4 and fastened with stainless steel nuts and bolts.

PVC Fabricated Fittings per AWWA C900 and CSA B137 Series-13.

All couplings and adaptors shall be bronze with one piece combination nut and tail, compression type stainless steel insert (heat flaring of tubing is not allowed) and conform to AWWA C800 and ANSI/NSF Standard 61.

Open Trench

It is strongly recommended that the Contractor use a trench box to install the watermain, sanitary sewer, storm sewer catchbasin leads, water services and any other pipes. The width of the trench box shall conform to OPSD 802.010 for Flexible Pipe, and OPSD 802.020 and OPSD 802.031 for Rigid Pipe. The height of the trench box shall be from 150mm below the bottom of the pipe to the level of the existing ground.

If the Contractor does not use a trench box as described above, then payment for Granular 'A' material will be based on theoretical dimensions, as follows:

Width: Follow OPSD 802.010, OPSD 802.030 and OPSD 802.031 as applicable

Height: From 150mm below the pipe to the level of the existing ground surface.

Length: Equal to the pipe length

Therefore, to calculate Granular 'A' weight (tonnes):

$$\text{Granular 'A' (tonnes)} = 2.4 \times (\text{Width} \times \text{Height} \times \text{Length} - (\pi \times D^2 \times L) / 4)$$

where,

D = Pipe OD

L = Length of Pipe

$\pi = 3.1416$

When a trench box is used to support the wall of a trench its removal shall be as per clause 404.07.03 in OPSS 404.

Bedding and Cover

Bedding and cover shall always be Granular 'A' material; recycled materials will not be accepted for this purpose.

Backfill

The Contractor is to note that full Granular 'A' will be used for backfill in shoulders, driveways, sidewalks and travelled roadways unless otherwise specified within the contract documents or as directed by the Contract Administrator.

Native material may be used in all other areas with written approval by the Contract Administrator. Where native material is used, the Contractor is to include in their price for all handling, hauling, stockpiling, placement and compaction.

General Construction

Care shall be taken during construction to minimize any contamination of the pipe from soil or water during installation; only clean pipe shall be installed. Contractors should be reminded of this prior to commencing construction.

If in the opinion of the Contract Administrator, trench water or an excessive amount of dirt or debris has entered the new pipe during construction, additional sampling may be requested in accordance with Section 5.1.2 of ANSI/AWWA C651, at the discretion of the Contract Administrator or designate.

Cathodic Protection

Cathodic protection must be provided at all metallic pipe, fittings, valves, water services and hydrants etc., installed underground in accordance with the NPSCD Contract Item D10. All costs for cathodic protection shall be included in the watermain item, specifically D1 in the Schedule of Quantities and Unit Prices.

Tracer Wire

Tracer wire will be required on all new non-metallic watermains and services installed as part of this contract. Tracer wire shall be supplied and installed in accordance with the NPSCD Contract Item D14. All costs for tracer wire shall be included in the watermain item, specifically D1 in the Schedule of Quantities and Unit Prices.

Conductivity Testing

The Contractor will be required to conduct all tracer wire conductivity testing to ensure that the tracer wire is installed correctly and intact. Testing shall be conducted by a *Certified* Damage Prevention Technician (DPT) using approved testing equipment and shall be supervised by the Contract Administrator or designate. All costs for conductivity tests shall be included in the watermain item. **Fifteen percent (15%) of the full watermain payment (Item D1 on the Schedule of Quantities and Unit Prices) will be withheld until the Conductivity Testing has been completed and passed.**

If the tracer wire is not electrically continuous from valve to valve, the Contractor shall at his/her own expense, replace or repair the wire as required.

Watermain Disinfection and Testing

Watermain Disinfection and Testing shall be at the lump sum price bid and in accordance with SPCS D13.

Existing Mains and Utilities

Known utilities shall be exposed in advance of construction in that location. A minimum of three (3) pipe lengths, and a maximum of five (5) lengths of open trench shall be maintained to allow for adjustment to grade to avoid utilities and sewer service laterals. No extra payment will be considered for removal and re-excavation to avoid obstructions.

Certified Water Operators (CWO)

All operation of the live water system shall be performed or supervised by a Certified Water Operator (holding a valid certificate) according to O. Reg. 128/04.

Operation of the water system includes disconnection of any service from a live water system, reconnecting of any service to a live water system and any works performed on a live water system (ex. maintenance, repairs, and/or connections).

Noncompliance of this requirement is a contravention of the Safe Drinking Water Act. Failure to comply with this Act will subject the Contractor to any penalties, fines or

consequences as deemed applicable by the Ministry of the Environment and Climate Change.

The City will assign a Certified Water Operator to supervise all works required which are to be completed to the live water system. The City may require the assistance of the Contractor in operating the water system at no additional cost to the contract.

The Contractor is responsible for ensuring that the Contract Administrator is given 48 hours advanced notice, in writing, as to when the operation of the live system is scheduled to take place.

Water Service Interruptions

The existing watermain and water services must remain in operation until all water services have been connected to the new main(s), except during transfer periods.

The Contractor must advise the Contract Administrator of any proposed service interruption, in writing, a minimum of 48 hours in advance.

When shutting down watermains for any reasons, all affected properties are to be notified in writing, a minimum of 24 hours in advance of the water service interruption.

The Contract Administrator or designate shall prepare the notice and the Contractor will be responsible for door-to-door delivery to the affected customers. If there is no response at the door, the notice shall be left at the premises (mailbox).

The following City departments must also be notified when watermains, services or fire hydrants are shut down or used in any way:

- Environmental Services: 905-356-1355
- Niagara Falls Fire Department: 905-356-1324

THE CONTRACTOR SHALL ALSO PAY SPECIAL ATTENTION TO AND MAKE ALL NECESSARY ALLOWANCES FOR THE FOLLOWING ITEMS:

- i. The existing watermain and water services must remain in operation until all water services have been connected to the new main(s), except during transfer periods.

In many cases the existing watermain has exceeded its expected service life. The Contractor is advised to take all precautions and provide any support necessary to protect the existing main from damage.

The Contractor may consider installing the new watermain and abandoning the existing main prior to the sewer installations. Should the Contractor elect to proceed with sewer installations before the existing watermain replacement, the City will not entertain additional costs to repair the existing watermain as a result of failure directly associated with the sewer construction activities.

If however, the existing main fails and the Contract Administrator deems it to be no fault of the Contractor, then repair costs may be compensated at the unit price bid for the Provisional 'Existing Watermain Repair' Contract Item (SPCS D22).

- ii. **During the watermain installation, the Contractor shall be responsible to maintain the proper functioning of each sanitary, storm and water service lateral located in the field or shown on the construction drawings, at no additional cost to the contract.**
- iii. The Tenderer shall note that where it is necessary to install the new watermain deeper than the depth specified to avoid elevation confliction with certain utilities, the unit price bid shall be deemed to include due allowance for this contingency. This may include deflecting a new main or service by up to 600mm.
- iv. The unit price bid shall also include the removal and disposal of all abandoned underground services/pipes (of any material and/or diameter) in conflict with the new alignment of the watermain. Any abandoned services shall be capped and sealed on both sides of the remaining sections.

Basis for Payment

Measurement for payment will be made horizontally over the centreline of the watermain as installed.

Payment will be made at the unit price bid in the Schedule of Quantities and Unit Prices and shall be full compensation for all work required including cathodic protection, tracer wire, and conductivity testing.

Fifteen percent (15%) of the final payment, at the unit price bid in the Schedule of Quantities and Unit Prices, shall be withheld until the conductivity test has been passed in accordance with this specification.

The unit price shall also include payment for supply and installation of pipe, reducers, bends, fittings, tracer wire, conductivity testing, restraints, thrust blocks and temporary and permanent support of all utilities encountered in the trench.

The supply and placement of Granular 'A' shall be paid separately under the appropriate item in the Schedule of Quantities and Unit Prices.

D2. VALVES

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 441, the following shall also apply:

Materials

All gate valves shall have stainless steel stem or cast bronze, resilient seat, interior epoxy coating and polyurethane outside coating. Gate valves shall be manufactured in

accordance with AWWA Standard C509 with protective epoxy interior coating to AWWA C550.

Live Tapping

City forces will complete all live taps and invoice the Contractor \$100.00 for taps less than 100mm and \$400.00 for taps 100mm and greater. The Contractor is to make allowance for this provision in the unit price bid.

The unit price bid for tapping sleeve and valves shall include all labour, material and equipment for the complete installation.

Installation

Gate valves and valve boxes shall be installed level and plumb and supported by concrete blocking. The anchor block shall secure the valve or tee or cross and shall be sized as for bulkhead thrust blocks.

Backfilling shall be conducted so the valve box will not be knocked off plumb. Backfill material will be the same as that used for backfilling the watermain pipe in the immediate area.

The valves shall be subjected to pressure test of 1035kPa (150 psi), at the same time as the watermain is tested.

Prior to acceptance, the Contractor must demonstrate the operation of all valves to the Contract Administrator or designate.

Basis for Payment

The unit price tendered shall include all necessary labour, materials and equipment to complete the work in accordance with the specifications referenced within this contract.

The supply and placement of Granular 'A' shall be paid separately under the appropriate item in the Schedule of Quantities and Unit Prices.

The supply of Type DZP-550-12 zinc anodes shall be included at no additional cost to the contract (See SPCS D1).

D3. HYDRANT SETS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Document and OPSS 441, the following shall also apply:

Fire hydrants shall conform to AWWA C502 for dry barrel hydrants and be ANSI/NSF Standard 61 compliant. All Hydrants containing bronze or brass material must conform to AWWA C800. Protective epoxy interior and exterior coating must conform to AWWA C550.

Materials

Hydrants shall be Canada Valve Century, McAvity M-67 Brigadier or American AVK 2780.

All hydrants shall be three-way with STORTZ quick connect nozzles, specifically one 114mm (4-1/2") pumper nozzle and two 65mm (2-1/2") hose nozzles.

Hydrants shall be the City of Niagara Falls red in colour and shall be ordered with a minimum 1.5 m riser. Hydrants shall also be supplied with both stainless steel upper and lower stems with epoxy coating, pipe, thrust blocks, grip rings, extensions etc.. Hydrant valve and valve box to conform to SPCS D3.

THE CONTRACTOR SHALL ALSO PAY SPECIAL ATTENTION TO AND MAKE ALL NECESSARY ALLOWANCES FOR THE FOLLOWING ADDITIONAL REQUIREMENTS:

- i. Existing utilities (i.e. gas mains, etc.) must be exposed to ensure hydrant can be installed in designated location. The final location of all hydrants shall be determined in the field and must be approved by the Contract Administrator or designate.
- ii. All hydrant valves must be directly connected to a mainline anchor tee unless otherwise indicated on the contract drawings or directed by the Contract Administrator.
- iii. **All hydrants shall be bagged when not in service and the Fire Department immediately notified at 905-356-1324.** Covers only to be removed upon approval from Contract Administrator.
- iv. Hydrant leads shall be installed with **minimum 1.8m cover**. Where leads cross under ditches, other obstructions are encountered, or minimum cover would be otherwise reduced the Contract Administrator must be notified. Proposed resolutions shall require Contract Administrator's written approval.
- v. Hydrants on leads less than 1.5m long shall be restrained by the use of tie rods. The tie rods including nuts shall be coated with TC Mastic.
- vi. Hydrant extensions shall be provided in 150mm or 300 mm lengths to ensure flange is a maximum 100mm above finished grade. Where more than 300mm extension is required, adjustment may be directed with 45-degree bends.

The unit price bid is to include all hydrant extensions required to properly install the hydrant to proposed grade.
- vii. Cathodic protection: Zinc Anode DZP-1100-24 anodes to be used at each hydrant. Tie rods shall be made electrically continuous with other metallic components for cathodic protection.
- viii. **Hydrants shall be tested with the watermain;** the hydrant-isolating valve must be open. The isolating valves shall also be tested at 1035 kPa (150 psi) with the

hydrants in the open position. Hydrants and valves shall be flushed and disinfected to the approval of the Contract Administrator.

- ix. Salvaged hydrants shall be delivered to the City's Service Centre at no additional cost to the contract. (Refer to SPCS D11)

Fire Flow Testing, Colour Coding & Numbering of Hydrants

All flow testing and colour coding shall be done in accordance with the Ontario Fire Code, Section 6.6.6.1.

Flow Testing Hydrants

All new or refurbished hydrants are to be fire flow tested by a qualified professional within **one (1) week** of the connection of the new/replaced watermain to the municipal water distribution system. The Contractor shall keep a written record of all testing procedures and results and this information will be immediately provided to the Contract Administrator for review and approval.

De-chlorination

An approved neutralizing chemical shall be applied to all chlorinated water used for disinfection, testing and flushing, before being discharged into the environment. Refer to Table C.1 - Appendix C of ANSI/AWWA C651 for the appropriate amount of chemicals required to neutralize chlorine.

A Certified Water Operator shall verify using an approved field test kit that the chlorine residual concentration of the water discharged to the environment shall not exceed 0.02mg/L.

Colour Coding Hydrants

Following the City's review of the fire flow testing results, and upon approval by the Contract Administrator, the Contractor shall colour code the new hydrants with an oil base, gloss finish in accordance with the National Fire Protection Association (NFPA) 291, "Fire Flow Testing and Marking of Hydrants", as summarized in the following table.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 291				
Class	Rated Capacity		Capacity Indicating Colour Scheme	Paint Colour Code Benjamin Moore (or Equivalent)
	GPM	(L/min)		
AA	≥ 1500	≥ 5680	Light Blue	2065-50
A	1000-1499	3785-5675	Green	2036-20
B	500-999	1900-3780	Orange	2015-20
C	< 500	< 1900	Red	2001-20

Hydrant Numbering

The Contractor shall be responsible for applying the hydrant identification numbers to all new hydrants at no additional cost to the contract. The Contract Administrator shall provide black, peel and stick numbers that shall be placed in the centre front of the hydrant barrel.

Basis of Payment

The unit price tendered shall include all necessary labour, materials and equipment to complete the work in accordance with the specifications of this contract including, cathodic protection, connection to the watermain, flow testing and painting and all necessary adjustments to ensure flange is a maximum 100mm above finished grade.

The supply and placement of Granular 'A' shall be paid separately under the appropriate item in the Schedule of Quantities and Unit Prices.

The supply of Type DZP-550-12 zinc anodes shall be included at no additional cost to the contract (See SPCS D1).

D13. WATERMAIN DISINFECTION AND TESTING

The provisions of ANSI/AWWA C651, OPSS 441, MOECC Watermain Disinfection Procedure and the Niagara Peninsula Contract Document shall be followed except as amended or extended herein.

Disinfection and testing of all new main shall be accordance with the 'New Watermain Commissioning Process' flowchart and checklist included at the end of this section.

Testing and Sampling Plan

Prior to the pre-construction meeting the Contractor must submit to the Contract Administrator, a chlorine residual and bacteriological test sampling plan for approval as stipulated in the Niagara Peninsula Standard Contract Document.

As a minimum, the Testing and Sampling Plan must include:

- The location for source water connection.
- The location of sampling points.
- Lengths and volume of watermain to be tested.
- Chlorination product and dosage.
- The discharge location for flushing and de-chlorination.
- Identified method of de-chlorination (neutralizing agent and physical process).
- The final connection locations.

- Provisions for hydrostatic testing and disinfection of all water services (up to and including the curb stop).
- Provisions for temporary service whips (installed after the curb stops up to the existing grade) to allow for chlorination and flushing of all water services.

Any changes to the sampling plan requested by the Contractor must be made prior to commencement of construction and will be subject to Contract Administrator approval.

The Contractor is responsible for supplying, installing and removing all necessary valves, fittings and taps required for removing air and/or draining the watermain, introducing swabs, filling, pressure testing and chlorinating.

Municipal Water Distribution System

Failure to comply with the requirements under the Safe Drinking Water Act will subject the Contractor to any penalties, fines or consequences as deemed applicable by the Ministry of the Environment and Climate Change.

All operation of the live distribution system shall be performed or supervised by a City of Niagara Falls **Certified Water Operator (CWO)** (certified according to O. Reg. 128/04).

Operation of the live distribution system includes but is not limited to:

- Operation of water valves and hydrants;
- Disconnection of any service from a length of live watermain;
- Reconnection of any service to a length of live watermain; and
- Any works performed on a live distribution system (ex. maintenance repairs, and connections to the live system).

All new watermain shall remain physically separated from the active municipal water distribution system (except as described below). Final connections to the municipal distribution system will only be permitted once the Contractor receives written Authorization for Final Connection from the Contract Administrator.

All pressure testing, disinfection and de-chlorination shall be supervised by a City of Niagara Falls CWO.

Source Water

Water for disinfection and testing of new watermain may be supplied via a temporary connection to the municipal distribution system (fire hydrant), subject to City approval and in accordance with the following:

- ONLY City of Niagara Falls Certified Water Operators will make connections/disconnections to the municipal distribution system.
- As part of the temporary connection, the City CWO will provide and install a:

- Water Meter to monitor and account for water used on the project;
 - Reduced Pressure Zone Assembly (RPZA); and
 - Secondary control valve (e.g. attached to hydrant port) to allow the Contractor access to water in the absence of a CWO.
- The rate of draw from existing watermains shall be limited so that the system pressure does not fall below 250 kPa (36 psi). Pressure gauges shall be supplied and installed by the Contractor to confirm that adequate system pressures are maintained.

The Contractor will be responsible for the security and rental fee of the water meter and backflow assemblies provided by the City (on-site), for the duration of the project.

If additional water is required as a result of failure of the initial procedures to provide acceptable results, the additional cost will be charged to the Contractor at the prevailing bulk water charge rate.

New Watermain Commissioning Process

Swabbing

Prior to disinfection, all sections of the watermain shall be swabbed in accordance with the NPSCD Special Provision Contract Item D13.

Flushing and swabbing must be carried out under the supervision of the Contract Administrator or designate.

Hydrostatic (Pressure) Testing

Hydrostatic testing shall be completed under the supervision of the Contract Administrator or designate on all newly installed pressure pipe, joints, valves and all service lines (up to and including the curb stop) and only after all trenches have been completely backfilled and compacted in accordance with appropriate specifications.

Water shall be used for carrying out hydrostatic testing; alternative liquids or air testing will not be permitted. **The temporary water supply connection must be disconnected (physically separated) from the new watermain during the hydrostatic test.**

Only pressure gauges with a testing certificate valid within one (1) year of its use will be permitted. The test pressure shall be 1035kPa (150psi) for a two (2) hour test period.

The allowable leakage within the City of Niagara Falls shall be ZERO for all new watermain. Should the measured leakage exceed the allowable, all leaks shall be located and repaired, and the watermain retested until an acceptable result is achieved.

Measured Leakage = The amount of water (L) added to the test section to maintain the specified test pressure for the test duration.

Allowable Leakage = 0.0 L/m of pipe

Disinfection

After flushing is complete, chlorination may commence as per ANSI/AWWA C651 “**Continuous Feed Method**”. Chemicals used for disinfection shall meet the requirements of ANSI/AWWA B300 or ANSI/AWWA B301. The placement of calcium hypochlorite granules in the watermain during construction will not be permitted.

Source water shall be added into the new watermain at a controlled rate and liquid chlorine added so that a minimum total chlorine level of 25mg/L is achieved throughout the new watermain. Sampling points identified in the testing and sampling plan shall be used to verify chlorine levels.

Overloading the test system with high levels of chlorine will not be permitted. Excessive chlorine loading negatively impacts test reliability and unnecessarily increases risks related to disposal, the environment and health and safety of workers. **The City of Niagara Falls will not accept chlorine levels greater than 150mg/L.**

Refer to Table B.1 - Appendix B of ANSI/AWWA C651 for the appropriate amount of chemicals required to achieve the desired level of chlorine. **The watermain shall be left charged with chlorine for a minimum period of twenty-four (24) hours.**

After the twenty-four (24) hour contact period, the chlorine level shall be measured throughout the watermain. The resulting chlorine level must be at least 60% of the initial concentration with less than a 50mg/L overall decrease. Should the chlorine level drop below 60% of the initial concentration or greater than 50mg/L, the main shall be flushed, re-chlorinated and retested under the direction of City staff.

A Certified Water Operator shall verify free chlorine levels using an approved chlorimeter; test strip readings will not be accepted.

De-chlorination

An approved neutralizing chemical shall be applied to all chlorinated water used for disinfection, testing and flushing, before being discharged into the environment. Refer to ANSI/AWWA C655 for the appropriate neutralizing chemicals.

A CWO shall verify using an approved chlorimeter that the chlorine residual concentration of the water discharged to the environment does not exceed 0.02mg/L.

Disinfection must be carried out under the supervision of a Certified Water Operator (CWO).

Recharge Watermain

After the disinfection procedure has been successfully completed, the watermain shall be flushed and recharged with source water so that the free chlorine residual throughout the

new watermain is equivalent to that of the distribution system (i.e. between 0.2mg/L and 4.0mg/L). A CWO shall verify free chlorine levels using an approved chlorimeter.

Microbiological Testing

Once the free chlorine levels within the charged main are verified, the first set of microbiological samples shall be taken.

The number of samples required (a set) shall be as follows:

- One (1) sample for every 200m (655 ft) of new watermain;
- Plus one (1) sample from each end of the new watermain;
- Plus one (1) additional sample on each branch greater than 6m (20ft);
- Watermain less than 50m (164ft) long shall have a minimum of sample sites, one at each end of the main.

After remaining charged for a minimum period of sixteen (16) hours, a second set of microbiological samples shall be taken. The watermain shall not be flushed during the sampling period.

Acceptable sample results (for both sets) must be achieved before the watermain will be considered acceptable for final connection.

Test failures will be handled as follows:

- 1st Round** - if sample results fail = flush and resample
- 2nd Round** - if sample results fail = flush, re-chlorinate and resample
- 3rd Round** - if sample results fail = flush, swab, re-chlorinate and resample

Where:

“Round” means two (2) set of samples taken a minimum sixteen (16) hours apart.

A fail is represented by test results at concentrations greater than the maximum acceptable for the following parameters as noted.

Each sample shall be tested for the following parameters and maximum acceptable concentrations:

Total Coliform 0 Counts

E. Coli 0 Counts

Heterotrophic Plate Count (HPC) ≤10 Counts

Only a Certified Water Operator will take water samples. The microbiological testing shall be completed at the City approved testing laboratory. City staff will ensure the safe delivery of the water samples to the laboratory. All laboratory test results shall be reviewed and either approved or failed by the Contract Administrator or designate.

The New Watermain Commissioning Checklist will be filled in by the Contract Administrator or designate and must be completed for each test section.

Final watermain connections must be completed within seven (7) calendar days of receiving acceptable microbiological sample results.

The approved Testing and Sampling Plan and all checklists shall be maintained on-site and available for review.

Basis for Payment

Measurement for payment will be on a lump sum basis for all associated work under this item for the entire contract.

Payment shall be full compensation for all equipment labour and material necessary to provide the required sample locations including the installation and removal of any temporary valves, blow-offs and services.

D17. WATERMAIN CONNECTIONS

In addition to the conditions stipulated in the Niagara Peninsula Standard Contract Documents, OPSS 441 and SPCS Contract Item D1, the following shall apply:

The unit price bid shall include all labour, material and equipment to make the connection to the existing watermain. The unit price bid shall include all required fittings (bends, tees, sleeves, reducers) in accordance with OPSS 441, grey iron, ductile iron or PVC, thrust restraints and appurtenances to complete the connection. **All pipe used under this item shall be paid for separately under the appropriate item.**

All piping and fittings used shall be disinfected by swabbing or spraying. The connection must be isolated from the water distribution system and immediately upon completing the connection the watermain must be flushed to the nearest hydrant.

The Contractor is to note that three (3) DZP 1110-24 zinc anodes are required at all connections to existing ductile iron watermains. The supply and installation of a Type DZP 550-12 zinc anodes on all grey iron or ductile iron fittings shall be included at no additional cost to the contract (See SPCS D1).

D21. WATER VALVE CLEANING & EXERCISE (PROVISIONAL ITEM)

The unit price bid for this provisional item shall be deemed to be full compensation for any additional cleaning and exercise of water valves performed by City forces within the project limits.

City forces will complete the required work and invoice the Contractor \$100.00 for each valve cleaned and exercised. The approval of the Contract Administrator is required for any requests or co-ordination of activities under this item.

Insert Watermain Commissioning Flowchart

Insert Watermain Commissioning Checklist

PROVISIONAL ITEMS

NOTE: Provisional items have been included within this contract in an effort to receive competitive pricing in the unlikely event that they may be required during construction. These items may be related to any infrastructure works (Roads/Sewer/Watermain) within the specific Section of the Schedule of Quantities and Unit Prices and as such have been separated within these supplementary specifications.

All Provisional Items must be approved by the Contract Administrator.

P1. 32MPA CONCRETE

This concrete shall have minimum 28 day strength of 32 MPa. The price indicated in the Schedule of Quantities and Unit Prices per cubic metre (m³) shall include supply and placement of concrete in trench at any depth for whatever purpose as directed by the Contract Administrator.

P3. ROCK EXCAVATION IN TRENCH

The provisions of OPSS 403 shall apply as amended or extended herein.

This item shall include bedrock excavation by controlled hoe ramming. Bedrock excavation by means of drilling and blasting will not be permitted. On-site crushing of rock will not be permitted.

This item shall only be applied to excavations where conditions prohibit the use of standard excavation equipment as defined below:

Broken Rock: Rock material that can be removed using standard excavation equipment equipped with rock teeth.

Bedrock: Rock material that cannot be removed using excavation equipment equipped with rock teeth and requires breaking up using a Hoe Ram or other mechanical breaking equipment.

The unit price bid for bedrock removal shall include all labour, equipment and materials necessary to complete the work. The work shall consist of breaking of bedrock by mechanical means during the trenching operation and removal to an approved disposal site.

The Contractor is required to obtain written approval from the Contract Administrator that refusal to standard excavation has occurred.

All operations shall be conducted in such a manner as to prevent undue heaving of the roadway, or damage to existing utilities, infrastructure and/or property. All related repairs shall be completed at no additional cost to the contract.

Measurement

Bedrock excavation for these installations shall be limited to a maximum depth of 300mm below the O.D. of the pipe and a maximum trench width of the pipe O.D. plus 1000mm. Rock shall be broken in the trench a minimum five (5) metres beyond the ends of the new servicing. Measurement for payment shall not exceed this maximum.

Basis for Payment

Payment of bedrock excavation in the open trench will be made by a field measurement in cubic meters (m³) calculated by average end areas. No payment will be made for over-break beyond specified limits.

P4. UNSHRINKABLE FILL

The provisions of OPSS 1359 apply as amended herein.

All unshrinkable fill materials shall conform to the requirements of OPSS.MUNI 1350.

Basis for Payment

Payment at the unit price bid for this item shall include all labour, materials and equipment necessary to supply and place unshrinkable fill for whatever purpose as directed by the Contract Administrator.

P5. 19MM CLEAR STONE

All 19mm clear stone materials shall conform to the requirements of OPSS.MUNI 1010.

Basis for Payment

Payment at the unit price bid for this item shall include all labour, materials and equipment necessary to complete the work for supplying and placing the 19mm clear stone as shown on the contract drawings or as directed by the Contract Administrator.

Payment will be by the tonne, based on submitted weigh tickets for same.

P7. TRENCH OR ROAD SUB-EXCAVATION

The provision of OPSS 314 shall apply as amended or extended herein. The unit price indicated in the Schedule of Quantities and Unit Prices shall include all sub-excavation below the required trench bottom or unsuitable sub-grade material, any additional sheathing and shoring required, disposal of excavated material as specified in SPCS B2. The supply and placement of 50mm crusher-run stone in the trench or sub-grade compacted to 100% Standard Proctor Maximum Dry Density is also included in the price indicated.

Basis for Payment

Payment will be made by a field measurement in cubic meters (m³) calculated by average end areas. No payment will be made for sub-excavation beyond specified limits.

P8. UTILITY POLE SUPPORT DURING EXCAVATION

This item shall be used for the support and protection of utility poles during excavation and all related construction activities. Pole for the purposes of this specification shall include the pole (any material), base, underground or above ground supports (such as guy wires), cables, wires, distribution boxes, arms, luminaires, traffic signals, junction boxes, transformers, meters, or any other equipment directly attached to or associated with the pole.

It is the Contractor's responsibility to confirm and coordinate with the respective utility regarding any specific requirements necessary to support and protect the pole during excavation. The unit price bid shall have made due allowance for this requirement.

If the pole is damaged, the Contractor shall immediately cease construction and notify the utility company. All costs to repair or replace the pole shall be borne by the Contractor at no additional cost to the contract. Compensation related to down time, standby time or other delay, related to the pole repair or replacement, will not be entertained.

Basis for Payment

Payment at the unit price bid for this item shall include all labour, materials and equipment necessary to support and protect the utility pole as in accordance with the respective utility requirements.