

Smith Beach Creek Channel Repair

Gatineau Park
DC3060-14-10

CONTRACT DOCUMENTS

August 2013

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SITE DEVELOPMENT

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**National Capital Commission
Smith Beach Creek Channel Repair**

TENDER FORM

Lac Philippe, Quebec

Project No. DC 3060-14-10

13-Aug

| <i>Item</i> | <i>Description</i> | <i>Quantity</i> | <i>Unit</i> | <i>Unit price</i> | <i>Total</i> |
|-------------|---|-----------------|----------------|-------------------|--------------|
| 1 | Mobilization, overall general requirements | 1 | lump sum | | \$ |
| 2 | Erosion and sediment control and dewatering | 1 | lump sum | | \$ |
| 3 | Demolition, removals and salvaging | 1 | lump sum | | \$ |
| 4 | Earthwork | 1 | lump sum | | \$ |
| 5 | Imported Clay Fill | 170 | m3 | \$ | |
| 6 | Rockfill - angular stone (riprap) | 1 | lump sum | | \$ |
| 7 | Rockfill - rounded riverstone | 1 | lump sum | | \$ |
| 8 | Rockfill - angular keystone boulders - 0.50 m | 1 | lump sum | | \$ |
| 9 | Rockfill - angular keystone boulders - 0.75 m | 1 | lump sum | | \$ |
| 10 | Topsoil and finish grading | 1 | lump sum | | \$ |
| 11 | Seeding (Type I Riparian Seed Mix) | 1 | lump sum | | \$ |
| 12 | Seeding (Type II Upland Seed Mix) & straw mulch | 1 | lump sum | | \$ |
| 13 | Coir erosion control mat | 600 | m ² | \$ | \$ |
| 14 | Re-planting of salvaged shrubs | | | | |
| | 14.1 potted stock | 200 | each | \$ | \$ |
| | 14.2 plug stock | 750 | each | \$ | \$ |
| 15 | Salvage & re-install temporary fencing | 1 | lump sum | | \$ |
| 16 | Plant material maintenance & warranty | 1 | lump sum | | \$ |
| 17 | Sodding | 90 | m ² | \$ | \$ |
| 18 | Remove existing boulders and relocate on site as specified | 1 | lump sum | | \$ |
| 19 | Repair and reinstate eroded and slumped areas in upstream creek | 1 | lump sum | | \$ |
| 20 | Pathway Hinged Bollard | 1 | each | \$ | \$ |

| | |
|--------------|-----------|
| Sub-Total | \$ |
| GST 5% | \$ |
| QST 9.5% | \$ |
| TOTAL | \$ |

Basis of Payments

- .1 Payment at the price per item listed in the Tender Form shall be full compensation for all labour, services and equipment as well as the supply, delivery and installation of all materials required for the proper execution of this contract.

ITEM NO. 01 - MOBILIZATION, OVERALL GENERAL REQUIREMENTS

- .1 This item includes all general requirements to complete the project including general instructions, shop drawings, safety measures, environmental protection, installation of temporary protective fencing, temporary facilities, maintenance of access roads where required including water for dust control as directed, cleaning, removals, tree and shrub preservation and reinstatement at completion of the project.
- .2 Included in this lump sum price are all the general requirements identified on the drawings and specifications and all those required to complete the work of this contract not covered under specific items.
- .3 Included in this lump sum price are the completion of record drawings at the end of the Contract for provision to the Contract Administrator
- .4 This item shall not be measured but shall be paid on a lump sum basis upon the following schedule.
 - .1 70% for substantial completion of this item
 - .2 30% for completion and supply of Contract record drawings

ITEM NO. 02 – EROSION AND SEDIMENT CONTROL AND DEWATERING

- .1 Payment at the Contract price for the item erosion and sediment control and dewatering shall be full compensation for the preparation and implementation of the Erosion and Sediment Control Plan, and shall include all labour, equipment and supply of materials, construct, monitor and maintain all erosion and sediment control measures detailed therein.
- .2 This item also includes implementation of creek diversion, settling pond and sediment control structures. The Contractor is fully and solely responsible for visiting the site and making their own assessment as to the water levels and flow conditions they are likely to encounter through the course of the work and for bidding accordingly.
- .2 This item shall not be measured but shall be paid on a lump sum basis based upon the following schedule.
 - 25% upon satisfactory submission of the ESC Plan and installation of the control and dewatering measures;
 - 50% pro-rated into equal payments over the term of the contract; and,
 - 25% upon successful completion and removal of the ESC Plan protection and dewatering measures.

ITEM NO. 03 – DEMOLITION, REMOVALS AND SALVAGING

- .1 This item consists of the demolition and removals as indicated.
- .2 This item also included salvaging existing rounded riverstone that meets the Contract specification for this item.

- .3 This item also included salvaging, potting, storing and maintaining existing shrub material within the area to be disturbed.
- .4 This item shall not be measured but shall be paid on a lump sum basis.

ITEM NO. 04 – EARTHWORK

- .1 This item consists of the stripping, common excavation, backfilling and rough grading allowing for finished ground elevations and specified surface treatments.
- .2 This item includes the hauling, handling and placing, shaping, compacting and trimming of earth and excess material and the management of excess material.
- .3 This item includes the proof rolling of the exposed surface, and the sub-excavation as required of any soft areas encountered during proof rolling.
- .4 This item includes the stripping and reuse of approved native fill material including compaction.
- .5 This item includes the stockpiling of acceptable and reusable topsoil material.
- .6 This item also includes the removal of all excavated non reusable or surplus material from the site.
- .7 This item shall not be measured but shall be paid on a lump sum basis.

ITEM NO. 05 – IMPORTED CLAY FILL

- .1 This item consists of supply, installation, compaction and fine grading imported clay fill to the extent indicated and specified in the Contract documents.
- .2 This item shall be measured in cubic meters.

ITEM NO. 06 - ROCKFILL – ANGULAR STONE (RIPRAP)

- .1 This item consists of supply, installation and compaction of angular stone (riprap) to the extent indicated and specified in the Contract documents.
- .2 Submitted price shall also include all necessary work to ensure their stability after their installation.
- .3 Rockfill made of angular stone shall be paid on a lump sum basis.

ITEM NO. 07 - ROCKFILL – ROUNDED RIVERSTONE

- .1 This item consists of installation and compaction of salvaged rounded riverstone to the extent indicated and specified in the Contract documents.
- .2 Submitted price shall also include all necessary work to ensure their stability after their installation.

- .3 Rockfill made of rounded riverstone shall be paid on a lump sum basis.

ITEM NO. 08 - ROCKFILL – ANGULAR KEYSTONE BOULDERS (0.50 m)

- .1 This item consists of supply, installation and compaction of imported or salvaged angular keystone boulders (0.50 m) to the extent indicated and specified in the Contract documents.
- .2 Submitted price shall also include all necessary work to ensure their stability after their installation.
- .3 This item will be measured for payment by each.

ITEM NO. 09 - ROCKFILL – ANGULAR KEYSTONE BOULDERS (0.75 m)

- .1 This item consists of supply, installation and compaction of imported or salvaged angular keystone boulders (0.75 m) to the extent indicated and specified in the Contract documents.
- .2 Submitted price shall also include all necessary work to ensure their stability after their installation.
- .3 This item will be measured for payment by each.

ITEM NO. 10 – TOPSOIL AND FINISH GRADING

- .1 This item consists of supply, installation, compaction and fine grading of stockpiled and imported topsoil to the extent indicated and specified in the Contract documents.
- .2 This item shall be measured but shall be paid on a lump sum basis.

ITEM NO. 11 – SEEDING (TYPE I RIPARIAN SEED MIX)

- .1 This item relates to seeding under coir erosion control mats on creek slopes.
- .2 Submitted price shall also include watering and maintenance as described in the Contract documents.
- .3 This item shall not be measured but shall be paid on a lump sum basis based upon the following schedule:
- .1 60% for supply and installation
 - .2 40% for satisfactory maintenance and establishment of seeded areas.

ITEM NO. 12 – SEEDING (TYPE II UPLAND SEED MIX) AND STRAW MULCH

- .1 This item relates to seeding and straw mulch of disturbed upland areas.
- .2 Submitted price shall also include watering and maintenance as described in the Contract documents.
- .3 This item shall not be measured but shall be paid on a lump sum basis based upon the following schedule:
- .1 60% for supply and installation
 - .2 40% for satisfactory maintenance and establishment of seeded areas.

ITEM NO. 13 – COIR EROSION CONTROL MAT

- .1 This item consists of the supply and installation of coir erosion control mats to the extent indicated and specified in the Contract documents.
- .2 Submitted unit price shall also include supply and installation of anchoring stakes.
- .3 This item shall be measured in square meters of area covered. No payment shall be given for overlaps.

ITEM NO. 14.1 & 14.2 – RE-PLANTING OF SALVAGED SHRUBS

- .1 These items consist of the re-planting of existing salvaged shrubs (potted and plug stock) as directed by the Contract Administrator.
- .2 These items shall be measured for payment by the number of shrubs re-planted.

ITEM NO. 15 – SALVAGE AND RE-INSTALL TEMPORARY FENCING

- .1 This item consists of salvaging and re-installation of temporary fencing to the extent indicated and specified in the Contract documents.
- .2 This item includes rolling and stockpiling any extra temporary fencing for pick up by others.
- .3 This item shall not be measured but shall be paid on a lump sum basis.

ITEM NO. 16 – PLANT MATERIAL MAINTENANCE AND WARRANTY

- .1 This item consists of the maintenance and warranty of all plant material during a 1-year period, including watering, removal and replacement of dead plants, pruning and other incidental maintenance deemed necessary to ensure healthy plant material.
- .2 This item shall not be measured but shall be paid on a lump sum basis and divided in two payments during the maintenance period and during the two-year warranty period. The progressive payments of the amount specified in the Contract documents shall be done upon the following schedule:

| | |
|---|------------|
| 30 th of June 2014 | 40% |
| 31th of October 2014 – final approval | 60% |

ITEM NO. 17 – SODDING

- .1 This item relates to sod installation.
- .2 Submitted price shall also include watering and maintenance as described in the Contract documents.
- .3 This item shall be measured per square metre of sod supplied and installed but shall be paid on a lump sum basis based upon the following schedule:
 - .1 60% for supply and installation
 - .2 40% for satisfactory maintenance and establishment of sodded areas.

ITEM NO. 18 – REMOVE EXISTING BOULDERS AND RELOCATE ON SITE AS SPECIFIED

- .1 This item consist of the removal of two large boulders as indicated and their relocation to an upland location as specified by the Contract Administrator.
- .2 Submitted price shall also include all necessary work to ensure their stability after their installation.
- .3 This item shall not be measured and shall be paid on a lump sum basis.

ITEM NO. 19 – REPAIR AND REINSTATE ERODED AND SLUMPED AREAS IN UPSTREAM CREEK

- .1 This item relates to repairs and reinstatement of eroded and slumped areas in upstream creek locations and the supply of additional angular rock fill as required to achieve a stable slope. Exact locations to be confirmed on site by Contract Administrator.
- .2 This item shall not be measured and shall be paid on a lump sum basis.

ITEM NO. 20 – PATHWAY HINGED BOLLARD

- .1 This item relates to the supply and installation of a new pathway hinged bollard.
- .2 Submitted price shall include work, material & equipment necessary to complete work as specified in the contract documents and shall include the supply, the installation, the base excavation and the concrete anchoring base.
- .3 This item shall be measured and shall be paid per unit installed.

END OF SECTION

1.1 TIME OF COMPLETION

- .1 The work of this contract shall start after October 1st and must be completed in fall of 2013 prior to Spring 2014 run off.
- .2 On-site work shall be limited from Monday to Friday, unless approved by the Contract Administrator.

1.2 SCOPE OF WORK

- .1 Work covered by this contract consists mainly in the rehabilitation of a portion of the creek at the Smith Beach of Lac Philippe, in Gatineau Park, located near Ste-Cécile de Masham, Quebec and includes, but is not limited to, the following:
 - .1 Erosion and sediment control, including creek diversion and settling pond
 - .2 Salvage and adjust existing temporary fencing
 - .3 Salvage, pot, store and water existing plant material for re-use
 - .4 Excavation, backfilling and site grading of new channel (salvaged and new fill material)
 - .5 Supply and installation of angular stone (riprap) and key stone boulders
 - .6 Salvage and re-installation of rounded riverstone
 - .7 Topsoil and finish grading
 - .8 Seeding (broadcast and/or hydroseeding)
 - .9 Supply and installation of coir erosion control mat
 - .10 Recover, stockpile and re-plant plant material
 - .11 Maintenance of re-plant plant material (1 year)
 - .12 Rehabilitation of disturbed areas

1.3 PRE-CONTRACT AWARD CONDITIONS

- .1 **Prior to award of the Contract, the Contractor must submit a detailed Sediment and Erosion Control Plan (see Sections 01560 – Environmental Protection and 02379 – Preservation of Watercourses) and a Work Methodology Plan acceptable to the Contract Administrator no later than 10 business days of receipt of the letter of notification.**
 - .1 **A work Methodology Plan shall at a minimum identify the Contractors plans for site access and stockpiling, type and size of equipment, and other site preservation or protection methods.**
 - .2 **If acceptable Plans are not received within 10 business days, the NCC reserves the right to proceed on to the next lowest compliant bidder.**
 - .3 **The Contractor may be considered in default of the Contract if execution of the accepted Sediment and Erosion Control Plan and/or a Work Methodology Plan is not being executed as approved and/or the work methods being used are determined by the Contract Administrator to be causing unnecessary damage to the project site.**

1.4 SPECIAL CONSTRUCTION REQUIREMENTS

- .1 The Contractor will be responsible to protect the subgrade at all times during construction and in particular following moderate to heavy rainfall. Construction traffic on exposed subgrade should be prohibited or limited to equipment which will not damage subgrade.

- .2 The Contractor will be responsible to ensure that the equipment utilized in the clearing and grubbing operations, site preparation, excavation and stripping of topsoil and pathway construction does not cause any damage or disturbance to the subgrade.
- .3 Any damaged subgrade areas caused as a result of construction traffic or construction techniques must be repaired by the Contractor as part of this contract and at no additional cost to the National Capital Commission.
- .4 The Contractor shall be responsible as part of the tender price for the stripping and reuse of topsoil and approved fill material, or the removal from the site of all excavated non reusable or excess material as well as the supply and placement of all required imported fill material required to execute the work of this contract.
- .5 The Contractor shall not strip additional topsoil material, beyond the actual topsoil layer existing on site, without the prior authorization and approval of the Contract Administrator if deemed essential by the latter. The Contractor will not be compensated for any additional stripping and/or additional earth or granular backfill materials required as a result of over-excavations not approved and authorized by the Contract Administrator prior to undertaking work.

1.5 CODES, PERMITS AND STANDARDS

- .1 Standards referred to in this Specification (CGSB, CSA, ASTM, OPSD, CHBDC etc.) may be examined at the following location:
 - Public Works and Government Services Canada
 - Standards and Specifications Branch
 - Place du Portage - Phase 3, 11 Laurier Street
 - Gatineau, Quebec
 - K1A 0S5
- .2 Perform work in accordance with the National Building Code of Canada 1995 and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .3 Work to meet or exceed requirements of:
 - .1 contract documents
 - .2 specified standards, codes and referenced documents
- .4 Obtain and pay for permits, inspector approvals, and other licenses required for this project and also pay any charges incidental to such permits. Provide copy of permits to the Contract Administrator.
- .5 **Contractor is to obtain an entry permit from the National Capital Commission, Catherine Verreault (819 827-6012).**

1.6 DEFINITIONS

- .1 Wherever the term "Contract Administrator" appears throughout this specification, it shall be construed to mean an Inspector representing the National Capital Commission and including a duly named consultant on their behalf.
- .2 Wherever the terms "or equal", "or approved equal" appear after specific types of materials and items throughout this specification, they shall be construed to mean as being equal in the opinion of the Contract Administrator, in material content, workmanship and quality to that designated as being the minimum acceptable standard, and that the Contract Administrator's written approval must be obtained prior to submitting an alternative, 7 days before close of tender.

1.7 TAXES

- .1 Include in the tender amount, all sales and other taxes levied by the Federal, Provincial and Municipal government or other authority. There will be no refunds made by the National Capital Commission to the Contractor for taxes paid by the Contractor.

1.8 PROTECTION

- .1 Provide and maintain guardrails, fences, barricades, lights and other devices required for protection of workmen and public in accordance with the requirements of Provincial and Local by-laws and the Canadian Construction Safety Code.
- .2 Protect existing structures against damage until completion of work.
- .3 Take all precautions to protect vegetated areas and specimen trees from any damage.

1.9 DAMAGES

- .1 Damages caused to existing plant material, landscaping, lawns, roadways, pathways, structures, finishes and public utilities due to work of this contract, will be restored to their original condition, replaced or adequate compensation made to affected parties by the Contractor.
- .2 It is understood that restored or replaced work includes, labour, equipment and material costs.
- .3 The restored or replaced work shall be completed within 7 days of notification by the Contract Administrator.

1.10 CUTTING, FITTING AND PATCHING

- .1 Execute cutting, fitting and patching of work that may be a requirement to make work fit properly together, to receive or be received by other work.
- .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- .3 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.11 SITE VISIT

- .1 Parties intending to submit tenders on the work must visit the site and obtain for themselves all information pertaining to existing conditions affecting the proper execution and completion of the work. The submission of a tender shall be deemed as proof that the tenderer and his sub-trades have complied with this requirement. After claims for additional compensation will not be entertained for any items of labour, equipment or materials required to complete the work that could have been reasonably ascertained by a Site Examination.

1.12 WORKMANSHIP

- .1 It is a requirement of this contract that qualified tradesmen execute each type of work specified.
- .2 Example: Landscape contractor for landscape work, mason for stonework, carpenter for carpentry work, etc.
- .3 Work unsatisfactorily completed by unqualified tradesmen will be redone and paid for by the Contractor.

1.13 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each of following:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change orders.

- .5 Other modifications to Contract.
- .6 Field test reports.
- .7 Manufacturer's installation and application instructions.
- .8 Copy of current and approved work schedule.

1.14 WORK SCHEDULE

- .1 Provide within 10 working days after Contract award, in form acceptable to Contract Administrator, detailed schedule showing anticipated progress stages and final completion of work within time period specified in Contract documents.
- .2 Interim reviews of work progress based on work schedule will be conducted as decided by Contract Administrator and schedule updated by Contractor in conjunction with and to approval of Contract Administrator.

1.15 CONTRACTOR'S USE OF SITE

- .1 Limited to area immediately surrounding work and areas designated by the Contract Administrator for material stockpiling and work equipment parking.
- .2 Do not unreasonably encumber site with materials or equipment during construction.
- .3 Move stored products or equipment interfering with operations of N.C.C., other contractors or agencies and the general public.
- .4 Obtain and pay for use of additional storage or work areas needed for operations.
- .5 Where security is reduced by work, provide temporary means to maintain security of area at all times.

1.16 SETTING-OUT OF WORK

- .1 The Commission shall furnish the Contractor with the reference co-ordinates necessary for laying out the work of this contract (see attached). **The Contractor shall employ survey personnel with experience in the use of coordinates to physically lay out work utilizing a total station survey system.**
- .2 Contractor shall assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .3 Provide devices needed to lay out and construct work. Supply such devices as required to facilitate Contract Administrator's inspection of work.
- .4 Supply stakes and other survey markers required for laying out work.
- .5 **Contractor must obtain Contract Administrator's approval of pathway and creek centre-line prior to commencing work.**

1.17 PROJECT MEETINGS

- .1 Contract Administrator will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.18 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of work and notify Contract Administrator of findings.
- .2 Where unknown services are encountered, immediately advise Contract Administrator and confirm findings in writing.
- .3 Where work involves adjusting of existing services, carry out work as directed by the Contract Administrator.
- .4 Make good and pay for damage to existing utility lines resulting from work.

1.19 TRAFFIC CONTROL

- .1 Do not infringe on adjacent roads, sidewalks, ramps, loading zones or interfere with normal traffic flow in carrying out the work. If it is necessary to disrupt traffic or occupy those

throughfares for purposes of unloading materials, etc., obtain permission from the Contract Administrator and abide by his instructions regarding the manner, time and delays necessary to carry out these operations. Incidental costs (e.g. for permits, signage, public notification of lane closures, etc) conforming to these requirements will be paid by Contractor.

- .2 Provide a suitable system of protective barricades, lane markings, signs, lights and other such devices to warn and channel traffic and wherever necessary, the services of a flagman to direct and control traffic. Carry out protection in accordance with the requirements of the Provincial and Local by-laws having jurisdiction over this type of work.
- .3 Where appropriate, provide pathway closed signage.
- .4 Printed signage must be provided in both English and French
- .5 The proposed methods and systems of traffic control and maintenance provisions together with supporting sketches must be submitted to the Contract Administrator upon request following tender closing.

1.20 ADDENDA

- .1 Answers to questions directed to the Contract Administrator, and any amendments to the drawings and specifications during the tender period will be communicated in the form of addenda to all general contractors tendering. Such addenda to be considered as and read as part of the specifications and thereby included in the contract documents.

1.21 ADDITIONAL DRAWINGS

- .1 The Commission may furnish additional drawings to the Contractor to assist in the proper execution of the work. These additional drawings will be issued for clarification purposes only. Such drawings shall have the same meaning and intent as if they were included with the plans referred to in Contract Documents.

1.22 CONTRACT DOCUMENTS

- .1 Drawings and specifications are complementary. Items shown or mentioned in one and not in the other are deemed to be included in the contract work.
- .2 If the drawings and specifications differ, the Contract Administrator shall give preference to the Contract document thereof, that best insures the attainment of this contract's objectives.

1.23 PAYMENT

- .1 This is a unit price contract. Any minor or miscellaneous items indicated on the drawings as being part of the work of this contract must be included by the Contractor in his overhead and indirect charges and incorporated into the unit price bid.
- .2 No separate payment will be made for work performed in respect to any of the special provisions where there is no specific pay item on the schedule of prices. The cost of these works must be appropriated among, and included in, the lump sum bid price.

1.24 ADVERTISING

- .1 No advertising will be permitted on this project.

1.25 COMPACTION OF MATERIALS

- .1 The thickness of granular and crushed stone materials shown on the drawings shall be the real thickness after the materials have been compacted as specified.

1.26 RECORD DRAWINGS

- .1 As work progress, maintain, accurate record to show deviations from contract documents.
- .2 Just prior to Contract Administrator's inspection for issuance of final certificate of completion, supply one (1) set of white prints with all major and minor deviations neatly

inked in. The Contract Administrator will provide two (2) sets of clean white prints for this purpose.

1.27 GUARANTEES AND WARRANTIES

- .1 Before completion of work, collect all manufacturer's guarantees and warranties, and deposit to Contract Administrator.
- .2 All plant material shall be warranted for a period of two years from the date of final completion. A warranty inspection will be carried out at the end of the warranty period.
- .3 Extend warranty on all replacement plant material.

END OF SECTION

PART 1 - GENERAL

- 1.1 Submit to Contract Administrator for review, shop drawings, product data and samples specified.
- 1.2 Until submission is reviewed, work involving relevant product may not proceed.
- 1.3 Shop Drawings
 - .1 Drawings to be originals supplied by contractor, subcontractor, supplier or distributor, illustrating appropriate portion of work:
 - .1 Showing fabrication, layout, setting or erection details as specified in appropriate sections.
 - .2 Identify details by reference to sheet or detail number shown on contract documents.
 - .3 Maximum sheet size 610 x 915 mm.
 - .4 Reproductions for submissions opaque diazo prints.
- 1.4 Product Data
 - .1 Manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data may be accepted in lieu of shop drawings.
 - .2 Above will only be accepted if they conform to following:
 - .1 Delete information not applicable to project;
 - .2 Supplement standard information to provide additional information applicable to project;
 - .3 Show dimensions and clearances required;
 - .4 Show performances characteristics and capacities.
- 1.5 Samples and Mock-ups
 - .1 Submit samples in sizes and quantities specified.
 - .2 Where colour, pattern or texture is criterion, submit full range of samples.
 - .3 Reviewed samples will become standards of workmanship and material against which installed work will be checked on project.
- 1.6 Co-ordination of Submissions
 - .1 Review shop drawings, product data and samples prior to submission.
 - .2 Verify:
 - .1 Field measurements;
 - .2 Field construction;
 - .3 Catalogue numbers and similar data.
 - .4 Co-ordinate each submission with requirements of work and contract documents. Individual shop drawings will not be reviewed until all related drawings are available.
 - .5 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
 - .6 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
 - .7 Notify Contract Administrator in writing at time of submission, of deviations from requirements of Contract documents.
 - .8 After Contract Administrator's review, distribute copies.
- 1.7 Submission Requirements
 - .1 Schedule submissions at least 10 days before dates reviewed submissions will be needed.
 - .2 Submit number of paper or electronic copies of shop drawings and product data Contractor requires for distribution, plus 2 copies to be retained by Contract Administrator.
 - .3 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date;
 - .2 Project title and number;
 - .3 Contractor's name and address;
 - .4 Number of each shop drawings, product data and sample submitted;
 - .5 Other pertinent data.
- 1.8 Submissions shall include:
- .1 Date and revisions dates;
 - .2 Project title and number;
 - .3 Name of:
 - .1 Contractor;
 - .2 Subcontractor;
 - .3 Supplier;
 - .4 Manufacturer;
 - .5 Separate detailer when pertinent.
 - .4 Identification of product or material;
 - .5 Relation to adjacent structure or materials;
 - .6 Field dimensions, clearly identified as such;
 - .7 Specification Section number;
 - .8 Applicable standards, such as CSA or CGSB numbers;
 - .9 Contractor's stamp, initialed or signed, verifying review of sub-mission, verification of field measurements and compliance with Contract documents.

END OF SECTION

PART 1 - GENERAL

1.1 Access

- .1 With Contract Administrator present, prepare photographic inventory of the original condition of all locations where temporary facilities are to be built by the Contractor. Submit a bound record copy of the photographic inventory with locations, labels and descriptions of existing features to the Contract Administrator prior to commencing any work on the temporary facilities.
- .2 Provide and maintain adequate access to the project site.
- .3 Build and maintain temporary roads and temporary watercourse crossings where required or indicated subject to approval of the Contract Administrator. Remove temporary facilities and reinstate site following completion of work.
- .4 If authorized to use existing roads or pathways for access to project site, maintain such roads for duration of contract and make good damages resulting from the Contractor's use of roads or pathways.

1.2 Sanitary Facilities

- .1 Provide sanitary facilities for work force in accordance with governing regulations and by-laws.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.3 Water Supply

- .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

1.4 Removal of Temporary Facilities

- .1 Remove temporary facilities from site unless directed otherwise by Contract Administrator.
- .2 All areas disturbed shall be reinstated by the Contractor to its original condition at the contractor's expense and to the Contract Administrator's satisfaction.

1.5 Temporary Fencing

- .1 Temporary fencing shall be made of 1.2m high snow fencing wired to rolled steel T-bar posts installed at 2.4m centre.
- .2 When work is completed, install temporary fencing to protect newly planted and seeded areas. If fence is damaged, repair or replace as directed by the Contract Administrator. The temporary fence must remain in place for the entire year warranty period of plant material, and until the Contract Administrator's approval for the seeded areas.
- .3 Ensure temporary fencing to protect planting along the creek channel is re-installed continuously around the uppermost edge of planting. Restrict access to creek.

END OF SECTION

PART 1 - GENERAL

- | | | | |
|-----|--------------|---|--|
| 1.1 | Related Work | .1 Site Work Demolition and Removals .2 Earthwork .3 Preservation of Watercourses .4 Tree and Shrub Preservation | Section 02070 Section 02300 Section 02379 Section 02901 |
|-----|--------------|---|--|
- 1.2 Fires
- .1 Fires and burning of rubbish on site not permitted.
- 1.3 Disposal of Wastes
- .1 Burying of rubbish and waste materials on site not permitted.
 - .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
 - .3 Waste will be managed in accordance with OPSS 180 and Ontario regulation 558.
- 1.4 Site Clearing and Plant Protection
- .1 Protect trees and plants on site and adjacent properties where indicated.
 - .2 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
 - .3 Minimize stripping of soil.
 - .4 Where heavy equipment is used around trees, protect trees with temporary fencing.
 - .5 Restrict tree removal to areas indicated or designated by Contract Administrator.
- 1.5 Protection of Bird Nesting Sites
- .1 No clearing or close cut clearing shall take place during the avoidance time period for nesting habitat removal from May 1 to July 23.
 - .2 In the event such clearing is unavoidable during this time period, vegetation to be removed shall be inspected by an avian biologist to determine whether there are any active nesting sites. If clearance is received from the avian biologist, clearing may proceed.
 - .3 The NCC will be responsible for retaining the avian biologist. The Contractor shall provide at least 1 week advanced notice of the need for such an inspection.
- 1.6 Shrub and Tree Preservation
- .1 Shrub and tree preservation per Section 02901
- 1.7 Drainage
- .1 Provide temporary drainage and pumping as necessary to keep excavation and site free from water.
 - .2 Do not pump water containing suspended materials into adjacent waterway.
 - .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with the requirements of applicable authorities.
- 1.8 Work Adjacent to Waterways
- .1 Do not operate construction equipment in watercourses.
 - .2 Do not dump excavated fill, waste material or debris in watercourses.
 - .3 Design and construct temporary crossings to minimize erosion to watercourses in accordance with Section 02641.
 - .4 Do not skid logs or construction materials across watercourses.

1.9 Pollution Control

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .4 At the end of each workday, tarpaulins will be used to cover surplus granular and excavated materials in order to limit dust and sediment emissions.

1.10 Watercourse Protection

- .1 The Contractor shall ensure that no contamination, waste or other substances which may be detrimental to marine life or quality of water shall enter the watercourse as either direct or indirect result of construction and the Contractor shall meet all requirements of Government authorities or agencies with respect to environmental protection.
- .2 The Contractor shall be prepared to immediately clean up any spills of contamination, waste or other substances which may be either detrimental to marine life or quality of water. In the event of a spill, the Contractor shall immediately commence a clean-up operation. The Contractor shall be liable for all damages and/or charges laid which result, either directly or indirectly, from the spill, or contamination of any kind which results from their construction operations.
- .3 The Contractor shall not make any claim for extra compensation for the cost of fulfilling the obligations set out herein.
- .4 No in-water works shall take place within the spawning and nursery period from March 15th to July 15th.

1.11 Erosion and Sediment Control Plan

- .1 The Contractor shall submit an Erosion and Sediment Control Plan. The plan shall indicate how the Contractor intends to provide for securing the site against erosion and siltation problems for the full duration of the construction period, i.e. from start of construction to final completion. The Contractor shall not proceed with excavation in or near waterways, drainage channels or wetland areas until approval of the erosion and sediment control plan is received from the Contract Administrator.
- .2 A copy of the Erosion and Sediment Control Plan shall be present on-site at all times. The Contractor shall ensure that all workers, including sub-contractors, are aware of the importance of the erosion and sediment control measures and are informed of the consequences of the failure to comply with the requirements of all Regulatory Agencies.
- .3 The Contractor shall exercise reasonable care to ensure that sediment run-off does not enter the watercourse. Berms, silt fences and other best management practices, as determined by the Contractors site work methods, shall be constructed at appropriate locations to ensure that turbidity shall be kept to a minimum as determined by the Government authorities and agencies.
- .4 The minimum erosion and sediment controls shall be:
 - .1 Limit the extent of exposed soils at any given time.
 - .2 Revegetate exposed areas as soon as possible.
 - .3 Provide temporary protection of exposed slopes 3H:1V or steeper and more than 3 meters height with plastic or mulch material approved by Contract Administrator.
 - .4 Install filter cloth between frame and cover on all catchbasins and manholes that will be affected by run-off from the site.
 - .5 A silt fence shall be installed around the perimeter of all stockpiles of any soil to be used or removed from the site. Stockpiles shall be located outside of the floodplain and in locations approved by Contract Administrator.
 - .6 Erosion and sediment control measures shall be inspected, maintained and repaired weekly

- and after every rainfall event.
- .7 All water from trench excavations shall be pumped into an approved sedimentation pond for settlement prior to discharge into the river.
- .5 Erosion and sediment control will be reviewed as an item during the weekly site meeting. The status of the work will be recorded by the Contract Administrator in the meeting minutes.
- 1.12 Review Agencies
- .1 Various concerned Government agencies may be on site during construction and the Contractor shall provide easy access and meet the requirements of those agencies without delay.
- 1.13 Accidental Spills
- .1 The Contractor shall take the following precautions when using hydrocarbons (fuel...) in order to prevent significant environmental impacts due to accidental spills:
1. The Contractor is required to have an Environmental Emergency Plan approved by the Contract Administrator;
 2. The storage of hydrocarbons is prohibited within 30 meters from a watercourse or wetland and refuelling with hydrocarbons is prohibited within 60 meters;
 3. Equipment shall be washed before using and entering the Park in order to prevent any oil and grease spills within the work area;
 4. Inspections shall be performed before work and frequently after in order to detect any leaks (oil, fuel, grease, etc.) If a leak is detected, all necessary measures will immediately be taken and any maintenance that shall be done will be within 60 meters from a watercourse or a wetland;
 5. An emergency petroleum product clean-up kit shall always be available on site. The kit will include at least 30 meters of sorbent socks, one (1) box of sorbent pads, shovels, one (1) empty 45-gallon barrel, rope and solid sorbent (powder or pellets). The kit shall be stored near the equipment and the work area and will be easily accessible at all time for a quick response;
 6. If a hydrocarbon spill occurs, the Contractor will contain it and immediately inform URGENCE-ENVIRONNEMENT QUÉBEC at 1 866-694-5454 and call the NCC emergency line at 613-239-5353. The contained hydrocarbons and contaminated soils shall be removed by a company specialized in that field. The company providing the truck will be selected by the NCC.

END OF SECTION

PART 1 - GENERAL

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|-----|--------------------|----|--|
| 1.1 | General Conditions | .1 | The requirements of this specification take precedence over the requirements of any other specification for the management and disposal of excess material. |
| 1.2 | Related Work | .1 | Section 02070 – Site Work Demolition and Removal |
| | | .2 | Section 02300 – Earthwork |
| | | .3 | Section 02911 – Topsoil and Finished Grading |
| 1.3 | Definitions | .1 | Bituminous pavement: any combination of asphaltic material and aggregate, excluding asbestos modified asphaltic material. |
| | | .2 | Concrete: concrete mixtures produced with Portland cement, which may include blended hydraulic cement, supplementary cement materials, spent debris and silica sand abrasive blasting media from abrasive cleaning of concrete and reinforcing steel, concrete brick, block and associated mortar. Can include embedded steel, and excludes asbestos modified Portland cement concrete mixtures. |
| | | .3 | Disposable fill: excess material, other than that disposed of at a certified disposal site, that is managed in berms and mounds, and as fill, other than in road embankments. |
| | | .4 | Earth: all soils except those defined as rock, and excludes stone masonry, concrete and other manufactured materials. |
| | | .5 | Excess material: Material removed as a result of Work outlined in the Contract, for which management is not specified. Includes surplus and unsuitable materials. |
| | | .6 | Fabricated metal and plastic products: metal and plastic products such as culverts, fence materials, and guide rails. Does not include containers, other packing materials, storage tanks, septic tanks, and ancillary equipment associated with sanitary sewage systems, septic systems, and fuel/lubricant dispensing and storage systems. |
| | | .7 | Groundwater: subsurface water and water that occurs beneath the water table in soils and rock |

formations that are fully saturated.

- .8 Masonry: clay brick, stone and associated mortar.
- .9 Natural wood: stumps, trunks, branches, and debris, from tree and shrub removal, and wood products that are not treated, coated or glued.
- .10 Re-use: utilization, processing, re-processing or recycling of excess material into a construction material or other useful product, and management by these means for the Contract and other work.
- .11 Rock: natural beds or massive fragments, of the hard, stable, cemented part of the earth's crust, igneous, metamorphic, or sedimentary in origin, which may or may not be weathered, and includes boulders having a volume of 1 m or greater.
- .12 Swamp material: materials within the swamp excavation limits, except those defined as rock, and excludes stone masonry, natural wood and manufactured materials.
- .13 Waste: excess material managed by re-use or as disposable fill.
- .14 Waterbody: any body of water or watercourse or wetland, or a portion thereof, and excludes ditches other than those functioning as natural watercourses.

PART 2 - PRODUCTS

Not applicable

PART 3 - EXECUTION

- 3.1 Construction
 - .1 Management of excess material shall be as described below:
 - .1 Earth, aggregate, swamp material, rock and natural wood: Manage by re-use or disposal off-site.
 - .2 Bituminous pavement: Manage by disposal off-site.
 - .3 Concrete, masonry, fabricated metal and plastic products: Manage by disposal off site.
 - .4 Where excess materials are suspected of being contaminated or if types of materials are encountered which are not addressed in this specification, direction on

- management shall be obtained from Contract Administrator.
- .5 Excess material that is a mixture of materials shall be disposed of according to most stringent conditions associated with any one of individual constituents.
 - .6 Excess materials shall be managed using methods which prevent their entry into waterbodies and other sensitive areas. These may be identified in Contract. Exceptions may be made when materials are re-used in accordance with requirements specified elsewhere in Contract.
 - .7 Notification requirements shall be complied with and approvals, releases, and agreements shall be obtained that are necessary for management of excess material.
- .2 Management of disposable fill, within Commission's property and on other property designated in Contract, shall be as specified.
 - .3 Management by open burning is not permitted.

END OF SECTION

PART 1 - GENERAL

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|-----|---|----|--|
| 1.1 | General | .1 | Use new material and equipment unless otherwise specified. |
| | | .2 | Within 7 days of written request by Contract Administrator, submit following information for materials and equipment proposed for supply: <ul style="list-style-type: none">.1 Name and address of manufacturer..2 Trade name, model and catalogue number..3 Performance, descriptive and test data..4 Manufacturer's installation or application instructions..5 Evidence of arrangements to procure. |
| | | .3 | Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified. |
| 1.2 | Manufacturers Instructions | .1 | Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods. |
| | | .2 | Notify Contract Administrator in writing of any conflict between these specifications and manufacturers instructions. Contract Administrator will designate which document is to be followed. |
| 1.3 | Delivery and Storage | .1 | Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact. |
| | | .2 | Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site. |
| | | .3 | Store material and equipment in accordance with suppliers instructions. |
| | | .4 | Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use primer or enamel to match original. Do not paint over name plates. |
| 1.4 | Contractor's Options for Selection of Materials for Tendering | .1 | Materials specified by referenced standard, select any material that meets or exceeds the specified standard. |
| | | .2 | Where materials are required to be listed on the "Canadian General Standards Board, Qualified Products List" select any manufacturer so listed. |

- .3 Materials specified by "Prescriptive" or "Performance" specification, select any material meeting or exceeding specification.
 - .4 Materials specified by naming one or more materials, select any material named. For the purpose of these specifications, the term "Acceptable Material" is deemed to be a complete and working commodity as described by a manufacturer's name, catalogue number, trade name or any combination thereof.
 - .5 When materials are specified by a Standard, Prescriptive or Performance specification, upon request of the Contract Administrator, obtain from manufacturer an independent testing laboratory report, showing that the material or equipment meets or exceeds the specified requirements.
- 1.5 Substitution
- .1 No substitutions will be permitted without prior written approval of Contract Administrator.
 - .2 Proposals for substitutions to be made in accordance with Instructions to Bidders. Such requests must include statements of respective costs of items originally specified and the proposed substitution.
 - .3 Proposals will be considered by Contract Administrator if:
 - .1 Materials selected by tenderer from those specified, are not available.
 - .2 Delivery date of materials selected from those materials specified would unduly delay completion of contract, or
 - .3 Alternative material to those specified, which are brought to the attention of and considered by Contract Administrator as equivalent to the material specified and will result in a credit to the Contract amount.
 - .4 Should proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as result of substitution.
 - .5 Amounts of all credits arising from approval of substitutions will be determined by Contract Administrator and Contract Price will be reduced accordingly.

- 1.6 Acceptability of Materials .1 All and only "acceptable" materials, as defined by Construction Materials Board Form 1 are eligible for use in this project. CMB Form 1 forms part of Contract documents.

END OF SECTON

PART 1 - GENERAL

1.1 References

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Province of Ontario Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. [1990 as amended 213/91].

1.2 Submittals

- .1 Submit site-specific Health and Safety Plan prior to award of contract. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in the scope of work.
- .2 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .3 Submit copies of incident and accident reports.
- .4 Submit Material Safety Data Sheets (MSDS) to Contract Administrator.
- .5 Names of personnel and alternates responsible for site safety and health, hazards present on site, and use of personal protective equipment.

1.3 Safety Assessment: perform site specific safety hazard assessment related to project.

1.4 General Requirements

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Contract Administrator may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.5 Responsibility

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.6 Compliance Requirements

- .1 Comply with Ontario Health and Safety Act and Regulations for Construction Projects.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

- 1.7 Unforeseen Hazards
 - .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province of Ontario having jurisdiction. Advise Contract Administrator verbally and in writing.
- 1.8 Posting of Documents
 - .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario having jurisdiction, and in consultation with Contract Administrator.
- 1.9 Correction of Non-Compliance
 - .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Contract Administrator.
 - .2 Provide Contract Administrator with written report of action taken to correct non-compliance of health and safety issues identified.
 - .3 Contract Administrator may stop Work if non-compliance of health and safety regulations is not corrected.
- 1.10 Work Stoppage:
 - .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

PART 1 - GENERAL

- 1.1 Conduct cleaning and disposal operations to comply with local ordinances and anti pollution laws.
- 1.2 Disposal of mineral spirits, oil or paint and varnish solvents in storm or sanitary drainage systems is prohibited.
- 1.3 Prevent accumulation of wastes which create hazardous conditions.
- 1.4 Cleaning During Construction
 - .1 Maintain project grounds and public properties free from accumulations of waste materials and rubbish on a daily basis.
 - .2 Remove waste materials and rubbish from site and haul to an approved dump site.
 - .3 Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not interfere with operation of roads and pathways.
- 1.5 Final Cleaning
 - .1 Remove grease, dirt, dust, stains and other foreign materials from finished surfaces.
 - .2 Broom clean paved surfaces; rake clean other surfaces of grounds, to satisfaction of Contract Administrator.
 - .3 Clean project site in preparation for substantial completion inspection and final inspection.

END OF SECTION

PART 1 - GENERAL

- 1.1 Related Work Specified Elsewhere
 - .1 Temporary Facilities Section 01500
 - .2 Environmental Protection Section 01560
 - .3 Management and Disposal of Excess Material Section 01562
 - .4 Planting Section 02906
- 1.2 Protect existing items designated to remain and materials designated for salvage and relocation. In event of damage, immediately replace such items or make repairs to approval of Contract Administrator and at no additional cost to the Commission.
- 1.3 Site Conditions
 - .1 Contractor to contact appropriate utilities to verify presence and location of all overhead and underground services and establish location for all such services in the field before commencing work. Report any discrepancies to Contract Administrator.

PART 2 - PRODUCTS - Not applicable

PART 3 - EXECUTION

- 3.1 Preparation
 - .1 Inspect site and verify with Contract Administrator items designated for removal and items to be preserved.
 - .2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.
 - .3 Notify utility companies before starting any work involving relocation, dismantling or demolition.
 - .4 Remove and adjust temporary fencing around work area as required to perform work of this Contract. Supply additional temporary fencing as needed in accordance with Section 01500 – Temporary Facilities.
 - .5 Salvage existing plant material within the project area in accordance with Section 02906 - Planting.
- 3.2 Removal
 - .1 Remove items indicated on drawings.
 - .2 Do not disturb adjacent items designated to remain in place.
- 3.3 Removal of pavements:
 - .1 Square up adjacent surfaces to remain in place by saw cutting or other approved method.
 - .2 Protect underlying granular materials where shown.
- 3.4 Salvage and Relocation
 - .1 Carefully dismantle items indicated for salvage or relocation. Stockpile salvaged materials at locations as directed by Contract Administrator.
- 3.5 Disposal of Material
 - .1 Dispose of materials not designated for salvage or re-use in work, off-site.
- 3.6 Restoration
 - .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
 - .2 Reinststate areas and existing works outside areas of demolition to match condition of adjacent,

undisturbed areas.

END OF SECTION

PART 1 - GENERAL

- 1.1 References
 - .1 Ontario Ministry of Agriculture and Food
 - .1 Pruning Ornamentals - 1992.
- 1.2 Qualifications
 - .1 Pruning shall be carried out by a certified arborist, as designated by the ISA.
- 1.3 Field Sample
 - .1 Do sample pruning acceptable to Contract Administrator to identify:
 - .1 Knowledge of target areas including branch bark ridge and branch collars.
 - .2 Technique for selection process and pruning used to establish desired form and shape for each species.
 - .2 Acceptance of work will be determined by Contract Administrator from field sample.

PART 2 - PRODUCTS

- 2.1 Pruning Equipment
 - .1 All pruning or cutting equipment shall be designed specifically for tree work and shall be clean, sharp, and in proper safe, working order. Pruning equipment shall be capable of producing clean, flush cuts without tearing or fraying the bark.
- 2.2 Disinfectant
 - .1 20% solution of sodium hypochlorite or 70% solution of ethyl alcohol.

PART 3 - EXECUTION

- 3.1 General
 - .1 Prune in accordance with Pruning Ornamentals and as directed by Contract Administrator. Where discrepancies occur between standard and specifications, specifications govern.
 - .2 Tool maintenance:
 - .1 Ensure that tools are clean and sharp throughout pruning operation. Do not use tools which crush or tear bark.
 - .2 Disinfect tools before each tree is pruned.
 - .3 On diseased plant material disinfect tools before each cut.
 - .3 Notify immediately Contract Administrator of conditions detrimental to health of plant material or operations.
 - .4 Prune during plant dormant period or after leaves have matured. Avoid pruning during leaf formation, at time of leaf fall, or when seasonal temperature drops below minus 10°C.
 - .5 Retain natural form and shape of plant species.
 - .6 Do not:
 - .1 Flush cut branches.
 - .2 Crush or tear bark.

- .3 Cut behind branch bark ridge.
 - .4 Damage branch collars.
 - .5 Damage branches to remain.
- 3.2 Pruning
- .1 Remove dead, dying, diseased and weak growth from plant material in order to promote healthy growth and the safety of pathway users.
 - .2 Remove loose branches, twigs and other debris lodged in tree.
 - .3 For branches under 50 mm in diameter:
 - .1 Locate branch bark ridge and make cuts smooth and flush with outer edge of branch collar to ensure retention of branch collar. Cut target area to bottom of branch collar at an angle equal to that formed by line opposite to branch bark ridge.
 - .2 Make cuts on dead branches smooth and flush with swollen callus collar. Do not injure or remove callus collar.
 - .3 Do not cut lead branches unless directed by Contract Administrator.
 - .4 For branches greater than 50 mm in diameter:
 - .1 Make first cut on lower side of branch 300mm from trunk, one third diameter of branch.
 - .2 Make second cut on upper side of branch 500mm from trunk until branch falls off.
 - .3 Make final cut adjacent to and outside branch collar.
 - .5 Ensure that trunk bark and branch collar are not damaged or torn during limb removal. Repair areas which are damaged, or remove damaged area back to next branch collar.
- 3.3 Care of Wounds
- .1 Shape bark around wound to an oblong configuration ensuring minimal increase in wound size. Retain peninsulas of existing live bark.
- 3.4 Clean-Up
- .1 Collect and dispose of pruned material daily and remove from site.

END OF SECTION

PART 1 - GENERAL

- 1.1 Related Work .1 Section 02070 - Site Work Demolition and Removals
.2 Section 02371 - Rock Fill
.3 Section 02379 - Preservation of Watercourses
.4 Section 02911 - Topsoil and Finish Grading
- 1.2 Regulations .1 Shore and brace excavations, protect slopes and banks, and perform all work in accordance with current federal, provincial and municipal regulations, whichever is more stringent.
- 1.3 Tests and Inspections .1 Before commencing work, conduct, with the Contract Administrator, a condition survey of structures, trees and other plants, turf, fences, service poles, wires and hard surfaces, barrier posts and existing survey marks that may be affected by work.
- 1.4 Buried Services .1 Before commencing work, verify and establish the location of all buried services on and adjacent to the site.
- 1.5 Protection .1 Protect excavations from freezing.
.2 Keep excavations clean, free of standing water and loose soil.
.3 Where soil is subject to significant volume change due to a change in moisture content, cover and protect to the Contract Administrator's satisfaction.
.4 Protect natural and man-made elements that are to remain undisturbed. Unless otherwise indicated, protect all existing trees from damage.
.5 Protect buried services that are to remain undisturbed.

PART 2 – PRODUCTS

- 2.1 Materials .1 Native Fill: Use on-site excavated material for fill material that is permeable, free of roots, stones larger than 75mm in diameter, construction debris and topsoil. All excavated material shall be approved by the Contract Administrator before use as fill material.
.2 Imported Clay Fill: shall be clay soil approved by Contract Administrator for use intended, unfrozen and permeable, free of roots, stones larger than 75mm in diameter, construction debris and topsoil.

PART 3 – EXECUTION

- 3.1 Excavation .1 Strip topsoil in accordance with Section 02070.
.2 Excavate as required to carry out earthwork as indicated. Do not disturb soil or rock below bearing surfaces. Notify the Contract Administrator when excavations are completed.
.3 Excavate to provide uniform continuous bearing and support for rock fill on solid undisturbed ground.

- 3.2 Backfilling
- .1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by the Contract Administrator.
 - .2 Harmful Material: remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
 - .3 Lateral Support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
 - .4 Compaction of subgrade: compact existing subgrade under hard covered surfaces until compacted to prescribed density (95% of modified Proctor test). Fill excavated areas with acceptable fill material, compacted to prescribed density (95% of modified Proctor test).
 - .5 Place backfill, fill and base course material in 150-mm lifts. Add water as required to achieve specified density.
 - .6 Compaction: compact each layer of material to following densities for material to ASTM D 698.
 - .1 To underside of base course: 95%.
 - .2 Base course: 98%.
- 3.3 Imported Clay Fill
- .1 Place minimum 200 mm depth of imported clay fill under the angular stone base layer of the channel and minimum 1.0 metre up the side channel slopes above the rock fill.
 - .2 Imported clay fill may also be used as fill material, but only after all existing sources of acceptable native fill have been used.
- 3.4 Grading
- .1 Grade shoreline's slope and banks to lines and elevations indicated on plans.
 - .2 Check elevations and make sure they comply with values indicated on plans. In the event of variance between observed and indicated levels, notify the Contract Administrator and do not commence work prior to the Contract Administrator's approval.
 - .3 Execute the rough grading so that water will drain away from buildings, walls and hard surfaces, and will follow the drainage direction indicated by the Contract Administrator. Grading will be done to give a progressive slope between the different required spot elevations shown on drawings.
 - .4 Grade shoreline only when soil is dry, so as to minimize soil compaction.
 - .5 Grade using scrapers, by creating natural contour lines and eliminating depressions and protrusions, so as to promote drainage.
- 3.5 Surplus Material
- .1 Dispose of surplus material off site in an authorized disposal area.

End of Section

PART 1 - GENERAL

- 1.1 Related Work .1 Section 01340 – Shop Drawings
.2 Section 02070 – Site Work Demolition and Removal
.3 Section 02300 – Earthwork
- 1.2 Samples .1 Submit samples in compliance with Section 01340 – Shop Drawings.
.2 Provide the following product samples:
.1 Angular stone (riprap)
.2 Rounded riverstone
.3 Key stone boulders
.3 Construct minimum 3 m x 3 m sample of the channel bedding of angular stone. Have sample installation approved by Contract Administrator. The approved sample shall remain on site for direct comparison purposes for both angular and rounded rock fill.
- 1.3 Source Quality Control .1 Inform the Contract Administrator of the proposed source of supply for stones and additional fill material that are not originating from the onsite excavation works. Provide the Contract Administrator access to that source for sampling, at least one (1) week prior to beginning of work.

PART 2 - PRODUCTS

- 2.1 Angular Stone (Riprap) .1 Angular Stone : clean, washed, **crushed** granite consisting of hard, durable particles free from clay lumps, organic material and other deleterious materials, which do not deteriorate when exposed to air and water and shall withstand cycles of wetting and drying and freezing and thawing.
.1 The gradation of angular stone shall be:
- | Nominal Diameter | |
|--------------------|------------|
| D ₁₀₀ | 400 mm |
| D ₅₀ | 300 mm |
| D ₃₅₋₄₀ | 100 mm |
| D ₂₀ | Granular A |
- .2 Maximum diameter of the mix is 400mm. 10% of mix to be 400 mm dia., 50% to be 300 mm dia., between 35% and 40% to be 100 mm dia., and the remaining Granular A shall amount to an additional 20%. This adds up to more than 100%.
- .3 The procedure for mixing is as follows: Mix one loader bucket of 400 mm dia. Stone, 5 buckets of 300 mm dia. Stone, 3.5 to 4 buckets of 100 mm dia. Stone and 2 buckets of Granular A in a hopper. Ensure stone is thoroughly mixed.
- 2.2 Rounded Riverstone .1 Rounded Riverstone : clean, washed, **rounded** stone consisting of hard, durable particles free from clay lumps, organic material and other deleterious materials, which do not deteriorate when exposed to air and water and shall withstand cycles of wetting and drying and freezing and thawing.
.1 The gradation of angular stone shall be:
- | Nominal Diameter | |
|--------------------|--------|
| D ₁₀₀ | 400 mm |
| D ₅₀ | 300 mm |
| D ₃₅₋₄₀ | 100 mm |

| | D ₂₀ | Granular A |
|---------------------------|-----------------|--|
| | .2 | Existing rounded riverstone may be used providing the mixture meets the sizing requirements. |
| | .3 | Maximum diameter of the mix is 400mm. 10% of mix to be 400 mm dia., 50% to be 300 mm dia., between 35% and 40% to be 100 mm dia., and the remaining Granular A shall amount to an additional 20%. This adds up to more than 100%. |
| | .4 | The procedure for mixing is as follows: Mix one loader bucket of 400 mm dia. Stone, 5 buckets of 300 mm dia. Stone, 3.5 to 4 buckets of 100 mm dia. Stone and 2 buckets of Granular A in a hopper. Ensure stone is thoroughly mixed. |
| 2.3 Key Stone Boulders | .1 | Boulders must be durable and resistant, of a density equal to or greater than 2600 kg/m ³ and free from seams, cracks or other structural defects. <i>Do not use boulders that change easily (e.g.: shale)</i> . Boulders shall be fairly rectangular so they could be assembled tightly, one against the other. They shall also meet the following size distribution requirements. .1 Type 1: 500 mm thick x 500 mm wide x 300-500 mm long. .2 Type 2: 750 mm thick x 750 mm wide x 500-750 mm long. |
| 2.4 Granular A | .1 | Ontario Provincial Standard Specification (OPSS): OPSS 1010 Material Specification for Aggregates – Granular A |
| PART 3 - EXECUTION | | |
| 3.1 General Requirements | .1 | Rock fill shall be used as the bed and banks of pools and riffles as indicated. |
| | .2 | Place rock fill so as to give a natural appearance. |
| 3.2 Angular Stone | .1 | The proposed base of the channel shall be constructed with angular stone. Install minimum 600 mm thickness of angular stone. |
| | .2 | Construct angular stone bedding in minimum two lifts. Ensure a well compacted and interlocked base layer. |
| | .3 | Use addition amounts of Granular A to fill voids between stones to ensure subsoil is well covered. |
| 3.3 Rounded Riverstone | .1 | Existing rounded riverstone shall only be used over top of the 600 mm thick angular stone channel base layer. Ensure a well compacted interlocked layer of rounded stone in riffle areas. |
| | .2 | Existing rounded riverstone may also be used as backfill material, but only as a well interlocked base layer in proposed fill areas. |
| | .3 | Use addition amounts of Granular A to fill voids between stones to ensure subsoil is well covered. |
| 3.4 Key Stone Boulders | .1 | The installation of key stone boulders as specified shall be supervised by the Contract Administrator. |
| | .2 | Place boulders so as to obtain a very secure surface and a stable mass. Position each boulder individually. In no case shall boulders be dumped in place. |

- 3.5 Washing .1 Before allowing the creek to flow in its new river bed, the Contractor shall make sure that no sediment will be carried into the lake after the removal of the sediment control structure. Therefore, the Contractor shall either wash the rock fill on site before their installation in the riverbed or wash the creek so that the sediment accumulates in a settling pond before this last item is created. The Contractor shall explain the proposed method to accomplish this to the Contract Administrator for approval.
- 3.6 Site Restoration .1 Any damage caused to the site or existing structures during the course of the work shall be repaired at Contractor's expense and to the Contract Administrator's satisfaction.

End of Section

PART 1 - GENERAL

- 1.1 Related Sections
 - .1 Section 01560 – Environmental Protection
 - .2 Section 02070 – Site Work Demolition and Removals
 - .3 Section 02300 – Earthwork

- 1.2 Environmental Conditions
 - .1 Operation of construction equipment in water is prohibited.
 - .2 Use of borrow material originating from the demolition of the channeled creek is authorized. Use of borrow material from the lake is prohibited.
 - .3 Design and construct temporary crossings to minimize environmental impacts to any existing watercourses.
 - .4 Dumping excavated fill, waste material, or debris in watercourses is prohibited.
 - .5 Sediment control methods shall be in place at all times during the work in order to catch and filter any run-off coming from the worksite before it reaches the lake. The sediment control measures shall stay in place as long as the seeded and sodded surfaces have not grown enough to prevent run-off.

PART 2 - PRODUCTS

- 2.1 Settling Pond and Sediment Control Structure
 - .1 Sediment trap: method designed to catch all the sediments coming from the worksite before it can reach a watercourse. It is composed minimally of a settling pond and a sediment control structure.
 - .2 Settling pond: a pond shall be created at the mouth of the creek. The goal is to hold run-off water before it can reach the lake and let the sediments settle at the bottom of the pond.
 - .3 Sediment control structure: structure composed of a silt fence stretched between stakes. The goal of this structure is to filtrate the surface water by trapping the fine sediments accumulated during the run-off.
 - 1. Non-woven geotextile: "Texel" type #7607 or approved equivalent, in accordance with Section 02072. The silt fence shall have manufactured seams that shall be as resistant as the geotextile material itself. The geotextile shall be in one piece and its height shall be determined by the water level at time of work.
 - .2 Natural wood stakes of 1.5 m length min., free of paint or stain.
 - .3 The "Sediment control barrier 8", distributed by Solmax-Texel, is a complete kit that meets the specifications.

PART 3 - EXECUTION

- 3.1 Existing Conditions
 - .1 An existing floating silt curtain is installed across the mouth of the creek. If additional silt protection is need, it shall be supply and installed by the Contractor. The Contractor is responsible for maintenance of the curtain, existing or supplied during the work of this Contract.

- .2 At the end of the Contract, the Contractor is responsible for removal and stockpiling of the existing floating silt curtain in the parking lot area for pick up by others.
- 3.2 Machinery
- .1 Machinery shall arrive on site in a clean, washed condition, free of fluid leaks.
- .2 Install stabilized entrances at vehicle and machinery access points.
- 3.3 Drainage
- .1 Pumping water containing suspended materials into the lake is prohibited.
- 3.4 Creek Diversion
- .1 Existing creek flows shall be dammed at the upstream side of the pathway crossing culvert and pumped around the work site to a settling pond.
- .2 The inlet and outlet of the pump and hose shall be screened to prevent aquatic creatures from entering the mechanism.
- .3 The work area shall be free of standing or flowing water.
- 3.5 Removal of Aquatic Creatures
- .1 Once flow is diverted, close off the creek at the downstream connection to the lake.
- .2 After isolation of the work area, any fish, reptiles or amphibian remaining in the work area shall be captured and moved to similar habitat outside the work area.
- .3 The Contract Administrator shall be present on site during this recovery operation.
- 3.6 Sediment Control
- .1 **Prior to start working on the creek put in place a sediment trap at the mouth of the creek as approved by the Contract Administrator.**
- .2 Install the sediment control structure along the lake.
- .3 The settling pond shall be sufficiently deep and wide to retain runoff long enough to permit suspended sediments to settle to the bottom. Settling pond shall be 1.0 metres deep and minimum 3 m x 3 m in area.
- .4 Even if the settling pond is dismantled, the sediment control structure shall remain in place as indicated in item 1.2.5 of this section.
- .5 The actual flow of the creek shall be maintained throughout the construction period.
- .6 The stakes must be firmly fixed in the ground and the bottom of the geotextile must be slightly buried in order to prevent water and sediments from moving under the geotextile.
- .7 The sediment control structure shall be removed only after approval of establishment of vegetated surface covers, i.e. when risks of run-off has been eliminated.
- .8 Do not start any demolition work until the Contract Administrator has

inspected and approved installed sediment control methods.

- 3.7 Removal of sediment
- .1 Method of removal of sediment accumulated within settling pond and behind the floating silt curtain to be submitted for approval by the Contract Administrator.
 - .2 Allow at least one day for settlement of suspended sediment before removal of sediment control structures.

End of Section

PART 1 - GENERAL

- | | | |
|----------------------|----|--|
| 1.1 Related Sections | .1 | Section 01340 – Shop Drawings |
| | .2 | Section 01560 – Environmental Protection |
| | .3 | Section 02232 – Tree Pruning |
| 1.2 Product Data | .1 | Submit required product data in accordance with Section 01340 – Shop Drawings. |

PART 2 - PRODUCT

Not used

PART 3 - EXECUTION

- | | | |
|-----------------------------------|----|---|
| 3.1 Identification and Protection | .1 | Identify plants and limits of root systems to be preserved to satisfaction of the Contract Administrator. |
| | .2 | Protect plant and root systems from damage, compaction and contamination resulting from construction to satisfaction of the Contract Administrator. |
| | .3 | During excavation and grading work, protect roots of designated trees up to projected foliage surface on the ground /dripline, so as not to disturb or damage them. Circulation will be permitted as long as a layer of shredded wood mulch of at least 300mm is in place. Dumping or storing materials over the protective roots area is prohibited. |
| 3.2 Pruning | .1 | Follow the specification of section 02232 for any pruning work required. |
| | .2 | Remove dead, broken or hazardous branches from plant materials in the project scope and identified by the Contract Administrator. Dispose of plant debris in an ecological way, as specified in section 01560. |

End of Section

PART 1 - GENERAL

1.1 Related Works

- | | | |
|----|---|---------------|
| .1 | Earthwork | Section 02300 |
| .2 | Plant Material Maintenance and Warranty | Section 02908 |
| .3 | Topsoil and Finish Grading | Section 02911 |
| .4 | Erosion Control Mat | Section 02925 |

1.2 Warranty

- .1 All plant material shall be warranted for a period of one year from the date of substantial performance. A warranty inspection shall be carried out at the end of the warranty period.
- .2 Extend warranty on replacement plant material.

PART 2 - PRODUCTS

2.1 Materials

- .1 Plant material: shall be existing plant material planted in the fall of 2012 within the project area.
- .2 Bonemeal: raw bonemeal, finely ground with a minimum analysis of 4% nitrogen and 20% phosphoric acid.
- .3 Mycorrhizal fungi: Use a natural granular fertilizer made of Endomycorrhizae fungi manufactured par Premier Tech (www.usemyke.com/mycorise/index.htm) or approved equivalent.
- .4 Mulch: natural shredded cedar mulch (sample to be provided for approval).
- .5 Water: free of minerals which may be detrimental to plant growth.

PART 3 - EXECUTION

3.1 Planting Time

- .1 Plant material shall be planted from May 15 to June 15 or from August 15 to October 1, unless otherwise approved by the Contract Administrator.

3.2 Salvage Existing Plants

- .1 Prior to the start of any site disturbance, all healthy plant material within the project area shall be carefully dug up, potted and stored on site for later replanting.
- .2 Ensure plant material is stored in a secure, shaded, non-windy location.
- .3 Water stored plant material frequently to ensure moist soil conditions.

3.3 Re-Planting

- .1 Plant material shall not be placed until all evidence of frost has left the ground site.
- .2 All plant material shall be planted so that their normal ground elevation is at existing grade. Backfill and compact topsoil mixture, if required, to the approval of the Contract Administrator.

- .3 Cut maximum 300 mm x 300 mm "X" through the erosion control mat for re-installation of plant material.
- .4 All cuts in blanket shall be made with clean, sharp knife.
- .5 Excavate soil and store temporarily on top of blanket beside hole.
- .6 Place one generous handful of bonemeal in the bottom of each shrub planting hole. Mix bonemeal thoroughly with soil.
- .7 Apply the natural granular fertilizer of Endomycorrhizae fungi into the planting hole during transplanting according to the recommendations of the manufacturer.
- .8 Install material per detail, replace all excavated soil into hole around roots and reinstate erosion control mat by folding back four triangular flaps as close to original position as possible. Ensure all soil is placed into the hole and does not remain on top of the blanket.
- .9 Spread 50 mm of mulch minimum 300 mm dia. around all plant material not planted within areas of erosion control mat. Mulch heavily contaminated with soil is not acceptable.
- .10 Remove dead and injured branches and branches that rub causing damage to bark. Do not cut leader.

3.4 Final Inspection

- .1 At final inspection, plant material shall be acceptable when it is properly installed, unbroken, shows adequate formation of buds and is free from blight of any description. All planting areas shall be free of weeds, litter and in good order.

END OF SECTION

PART 1 - GENERAL

1.1 Related Works

- .1 Tree Pruning Section 02232
- .2 Planting Section 02906

1.2 Warranty

- .1 All plant material shall be warranted for a period of one year from the date of substantial performance.
- .2 The warranty shall cover any defects in workmanship.
- .3 Extend warranty on replacement plant material.

1.3 Duration

- .1 Plant material maintenance shall begin immediately after each portion of planting has been completed and shall continue throughout the maintenance and warranty period to the satisfaction of the Contract Administrator.

PART 2 - PRODUCTS

2.1 Materials

- .1 Water: shall be free from any contaminants which could adversely affect plant growth.
- .2 Mulch: shall be in conformance with Section 02906.
- .3 Pruning Tools: shall be designed specifically for horticultural purposes and shall be clean, sharp and in proper, safe, working order. Pruning equipment shall be capable of producing clean, flush cuts without tearing or fraying the bark, as specified in Section 02232.
- .4 Pumps and Hoses: used for watering trees shall be capable of reaching the limits of the planting area. The outlet end of the hose shall be 25 mm in diameter with a suitable adjustable nozzle and a quick shut-off valve.

PART 3 - EXECUTION

3.1 Operational Constraints

- .1 Do each maintenance operation continuously and complete within a reasonable time period.
- .2 No maintenance equipment, materials or other miscellaneous items may be stored on site unless approved by the Contract Administrator.
- .3 All debris, waste and other extraneous material resulting from the maintenance operation shall be removed from the site daily upon completion of maintenance, unless otherwise directed or approved by the Contract Administrator.

- .4 The Contractor shall be fully acquainted with all relevant Provincial and Municipal By-laws and Regulatory Codes relating to the work of this contract, and will be required to comply with such by-laws and codes without extra compensation.
- .5 Notify the Contract Administrator immediately of damage incurred by pest, disease, mechanical or vandalism.

3.2 Interim Replacement of Plant Material

- .1 During the maintenance and warranty period, units of plant material that are found to be unacceptable will be removed and replaced by the Contractor.
- .2 At the discretion of the Contract Administrator, plant material that is identified as dead or in a poor or diseased condition shall be immediately removed from the site.
- .3 The maximum authorized mortality rate for trees, shrubs, perennials and aquatic plants shall be 20%. If the rate exceeds that proportion, the Contractor shall make replacements.

3.3 Watering

- .1 The Contractor is responsible for manual watering of all plant material. The Contractor shall notify the Contract Administrator by fax of the completion of all watering operations.
- .2 The Contractor may use creek water for watering provided it is done in a manner that does not affect any existing aquatic species or habitat. Do not use lake water unless requested and approved by Contract Administrator.
- .3 Water all plant material immediately after installation and on a weekly basis for the next 4 weeks. Ensure the root zone is thoroughly saturated. Repair any damage caused by watering operations.
- .4 During the warranty period, thoroughly water trees whenever natural precipitation falls below 20 mm per week (Sunday to Saturday) for 2 consecutive weeks. Precipitation data shall be as per Environment Canada from the Macdonald-Cartier Airport weather station.
- .5 Ensure all plant material is well watered before freeze-up.

3.4 Erosion Control

- .1 In the spring following the completion of work, before June 1st, ensure that the erosion control mats are in place, well staked and functioning to control erosion and sedimentation. If problems are detected, the Contractor shall proceed with appropriate measures such as re-staking the blankets which have become displaced in accordance with Section 02906.

3.5 Mulching

- .1 In the spring following the completion of work, before June 1st, re-apply mulch over all thin or bare areas to ensure good weed suppression. Maximum 75 mm mulch in any one area.

3.6 Weeding

- .1 No weeding is required during the warranty period.
- .2 The application of herbicides or mechanical weed removers is prohibited.

3.7 Pruning

- .1 Prune off dead and injured branches in accordance with Section 02232.

3.8 Pest Management

- .1 Monitor plant material throughout the warranty period for any sign of disease or insect problems. Practice Integrated Pest Management.
- .2 The use of pesticides shall not be permitted.

3.9 Incidental Maintenance

- .1 The Contractor shall in general be responsible for any incidental maintenance to ensure healthy plant growth and a satisfactory appearance of plant material.

3.10 Reinstatement

- .1 Any damage to vegetation, hard surfaces, structures or services caused as a result of the Contractor's work methods and practices for plant material maintenance shall be reinstated or repaired to the satisfaction of the Contract Administrator. The cost of such reinstatement or repair shall be solely at the Contractor's expense.

3.11 Final Warranty Inspection

- .1 A one-time inspection of all plant material shall be carried out by the Contract Administrator upon completion of the maintenance and warranty period.

Plant material shall be **acceptable** when it is undamaged, shows adequate growth and formation of buds, and is free from blight of any description. All planting shall be free of litter and in good order, including the removal of all tree supports.

Plant material shall be **unacceptable** when it does not meet this quality standard.

Units of plant material that are found to be unacceptable will be replaced by the Contractor at the earliest opportunity. The Contract Administrator reserves the right to extend the Contractor's maintenance and warranty responsibilities for an additional one-year for replacement plant material.

In the event that this inspection is satisfactory to the Contract Administrator, and that there are no outstanding commitments to the contracted works, the Contractor will be given final approval of the maintenance and warranty requirements.

- .2 Where, in the opinion of the Contract Administrator, the Contractor has failed to complete obligations as detailed in this Specification; and further, fails to rectify said deficiency within two days of written

notification from the Contract Administrator, the Contract Administrator reserves the right to retain others to complete the work and deduct incurred expenses from monies owing to the Contractor.

END OF SECTION

PART 1 - GENERAL

1.1 Related Works

- .1 Site Work Demolition and Removals Section 02070
- .2 Planting Section 02906
- .3 Seeding Section 02923
- .4 Sodding Section 02933

1.2 Testing

- .1 Obtain Contract Administrator's initial approval of imported topsoil at source.
- .2 Test existing and imported topsoil for NPK, Mg, soluble salt content, organic matter and pH value prior to delivery to site.
 - .1 Submit 0.5 kg sample of topsoil to testing laboratory and indicate intended use.
 - .2 Determine requirements for amendments to bring pH value of soil to 5.5 to 7.7 level.
 - .3 Submit two copies of soil analysis and recommendations for corrections to Contract Administrator.
 - .4 Inspection and testing of topsoil will be carried out by testing laboratory designated by Contract Administrator.
 - .5 National Capital Commission will pay cost of testing.

1.3 Scheduling of Work

- .1 Schedule placing of topsoil to permit immediate seeding operations.

1.4 Delivery and Storage

- .1 Deliver and store fertilizer in waterproof bags, showing weight, analysis and name of manufacturer.

PART 2 - PRODUCTS

2.1 Materials

- .1 Stockpiled topsoil: see Section 02070
- .2 Imported topsoil: friable loam, neither heavy clay nor of very light sandy nature containing minimum of 10% organic matter for sandy loams to maximum of 25% by volume. Free from subsoil, roots, grass, weeds, toxic materials, stones, foreign objects and an acidity range (Ph) of 5.5 to 7.5. Topsoil containing crabgrass, couch grass or other noxious weeds, not acceptable.
- .3 Organic Matter: aged mushroom or leaf compost as approved by the Contract Administrator.

PART 3 - EXECUTION

3.1 Preparation

- .1 Grade subgrade, eliminating uneven areas and low spots, ensuring positive drainage. Remove stones larger than 50 mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride. Dispose of removed materials as directed.
- .2 Cultivate entire area receiving topsoil to depth of 100 mm. Core aerate in those areas where equipment used for hauling and spreading has compacted subgrade. Do not cultivate soils around

existing trees and shrubs.

3.2 Reuse of Existing Topsoil

- .1 Unless otherwise indicated existing stockpiled topsoil shall be used for all reinstatement. Imported sources of topsoil shall only be used when all approved sources of existing topsoil have been used.

3.3 Spreading of Topsoil

- .1 Do not spread topsoil until Contract Administrator has inspected and approved subgrade.
- .2 Spread topsoil with adequate moisture in uniform layers during dry weather over approved, dry, unfrozen subgrade, where sodding or seeding is indicated.
- .3 Bring topsoil up to finished grade.
- .4 Apply topsoil to the following minimum depths:
 - .1 100 mm for seeded and sodded areas
- .5 Remove stones, roots, grass, weeds, construction materials, debris and foreign non-organic objects from topsoil.
- .6 Manually spread topsoil around trees, plants, surface utilities and other obstacles.

3.4 Soil Amendments

- .1 If required, apply organic matter at rate determined from soil sample test.
- .2 Mix soil amendment well into full depths of topsoil by cultivating.

3.5 Finish Grading

- .1 Fine grade entire topsoiled area to contours and elevations as indicated or as directed. Eliminate rough spots and low areas to ensure positive drainage.
- .2 Roll topsoil with 50 kg roller, minimum 900 mm wide, to compact and retain surface.
- .3 Leave surface smooth, uniform, firm against deep foot printing, with fine loose texture.

3.6 Surplus Material

- .1 Dispose of surplus topsoil not required for fine grading/landscaping off site.

END OF SECTION

PART 1 - GENERAL

1.1 Related Works

- .1 Site Work Demolition and Removals Section 02070
- .2 Planting Section 02906
- .3 Seeding Section 02923
- .4 Sodding Section 02933

1.2 Testing

- .1 Obtain Contract Administrator's initial approval of imported topsoil at source.
- .2 Test existing and imported topsoil for NPK, Mg, soluble salt content, organic matter and pH value prior to delivery to site.
 - .1 Submit 0.5 kg sample of topsoil to testing laboratory and indicate intended use.
 - .2 Determine requirements for amendments to bring pH value of soil to 5.5 to 7.7 level.
 - .3 Submit two copies of soil analysis and recommendations for corrections to Contract Administrator.
 - .4 Inspection and testing of topsoil will be carried out by testing laboratory designated by Contract Administrator.
 - .5 National Capital Commission will pay cost of testing.

1.3 Scheduling of Work

- .1 Schedule placing of topsoil to permit immediate seeding operations.

1.4 Delivery and Storage

- .1 Deliver and store fertilizer in waterproof bags, showing weight, analysis and name of manufacturer.

PART 2 - PRODUCTS

2.1 Materials

- .1 Stockpiled topsoil: see Section 02070
- .2 Imported topsoil: friable loam, neither heavy clay nor of very light sandy nature containing minimum of 10% organic matter for sandy loams to maximum of 25% by volume. Free from subsoil, roots, grass, weeds, toxic materials, stones, foreign objects and an acidity range (Ph) of 5.5 to 7.5. Topsoil containing crabgrass, couch grass or other noxious weeds, not acceptable.
- .3 Organic Matter: aged mushroom or leaf compost as approved by the Contract Administrator.

PART 3 - EXECUTION

3.1 Preparation

- .1 Grade subgrade, eliminating uneven areas and low spots, ensuring positive drainage. Remove stones larger than 50 mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride. Dispose of removed materials as directed.
- .2 Cultivate entire area receiving topsoil to depth of 100 mm. Core aerate in those areas where equipment used for hauling and spreading has compacted subgrade. Do not cultivate soils around

existing trees and shrubs.

3.2 Reuse of Existing Topsoil

- .1 Unless otherwise indicated existing stockpiled topsoil shall be used for all reinstatement. Imported sources of topsoil shall only be used when all approved sources of existing topsoil have been used.

3.3 Spreading of Topsoil

- .1 Do not spread topsoil until Contract Administrator has inspected and approved subgrade.
- .2 Spread topsoil with adequate moisture in uniform layers during dry weather over approved, dry, unfrozen subgrade, where sodding or seeding is indicated.
- .3 Bring topsoil up to finished grade.
- .4 Apply topsoil to the following minimum depths:
 - .1 100 mm for seeded and sodded areas
- .5 Remove stones, roots, grass, weeds, construction materials, debris and foreign non-organic objects from topsoil.
- .6 Manually spread topsoil around trees, plants, surface utilities and other obstacles.

3.4 Soil Amendments

- .1 If required, apply organic matter at rate determined from soil sample test.
- .2 Mix soil amendment well into full depths of topsoil by cultivating.

3.5 Finish Grading

- .1 Fine grade entire topsoiled area to contours and elevations as indicated or as directed. Eliminate rough spots and low areas to ensure positive drainage.
- .2 Roll topsoil with 50 kg roller, minimum 900 mm wide, to compact and retain surface.
- .3 Leave surface smooth, uniform, firm against deep foot printing, with fine loose texture.

3.6 Surplus Material

- .1 Dispose of surplus topsoil not required for fine grading/landscaping off site.

END OF SECTION

PART 1 – GENERAL

- 1.1 Related Works
 - .1 Temporary Facilities Section 01500
 - .2 Earthwork Section 02300
 - .3 Topsoil and Finish Grading Section 02911

PART 2 – PRODUCTS

- 2.1 Materials
 - .1 Type I Riparian Seed Mix. The proposed mix will be prepared by the supplier specifically for this project and must be approved by the Contract Administrator. The mix shall consist of:

| Species | % by weight |
|--------------------------|--------------------|
| Poa compressa | 28% |
| Poa palustris | 25% |
| Festuca rubra | 10% |
| Agrostis alba | 10% |
| Juncus effuses | 10% |
| Carex lurida | 10% |
| Scirpus atrovirens | 5% |
| Calamagrostis canadensis | 2% |
| | |
| SOWING RATE | 150 kg per hectare |

- .2 Type II Upland Seed Mix. The proposed mix will be prepared by the supplier specifically for this project and must be approved by the Contract Administrator. The mix shall consist of:

| Species | % by weight |
|--------------------|--------------------|
| Festuca rubra | 50% |
| Agrostis alba | 20% |
| Poa compressa | 20% |
| Phleum pretense | 10% |
| | |
| SOWING RATE | 120 kg per hectare |

- .3 Packages will be individually labeled in accordance with 'Seeds Regulations' and indicate clearly the name of the supplier, species, content, grade and mass.
- .4 Use appropriate hydraulic seeder and mulching equipment. The Contract Administrator to approve all proposed products and equipment for the work.

2.2 Water

- .1 Free of impurities that would inhibit germination and growth.
- .2 Water must be supplied from a designated source.

- 2.3 Straw Mulch
- .1 Derived from wheat, barley or native grass. Straw that has been used for stable bedding shall not be used.
- 2.4 Wood Fiber
- .1 A wood fiber mixed with other organic products like peat moss. When applied on the ground, it shall form a scattered crust or a lattice pattern that will let the light and the water go through while retaining the soil. Its weight shall be measured when dry. Spreading rate: 1800 kg/ha.
- 2.5 Fixative
- .1 Guar gum emulsion diluted in water as indicated by the manufacturer. This product shall be sufficiently diluted to be easily sprayed to form a thin film on the ground. Spreading rate is calculated depending of the slope inclination: the manufacturer's indications shall be followed. The J3000 from Rantec (www.ranteccorp.com) or approved equivalent shall be used.

PART 3 - EXECUTION

- 3.1 Workmanship
- .1 Do not perform work under adverse field conditions as determined by the Contract Administrator.
- .2 Additional care shall be taken when seeding adjacent to watercourses to ensure that seed does not spread or blown onto those areas.
- 3.2 Permanent Cover
- .1 Seeding shall not be carried out under adverse conditions, of high wind, frozen ground or ground covered with snow, ice or standing water.
- .2 Sowing shall be done during the following periods:
1. Between April 15 and June 15;
 2. Between August 15 and October 15.
 3. Dormant seeding after November 1st when daytime temperatures are consistently below 5oC.
- 3.3 Seed Bed Preparation
- .1 Remove and dispose of weeds, debris, stones 50 mm in diameter and larger, soil contaminated by oil, gasoline and other deleterious materials will be removed and disposed of off-site.
- .2 Do not carry out seed bed preparation more than 1 calendar day before the seeding operation so the Contractor shall avoid run-off potential problems.
- .3 Surface preparation will produce a soil surface that is predominantly fine in nature (particle sizes of 5 to 10 mm), with no more than five lumps measuring between 10-25 mm in diameter in any 1m² area, and no lumps larger than 25 mm.
- 3.4 Broadcast Seeding
- .1 Type I Riparian Seed Mix may be broadcast seeded under the erosion control mat. Incorporate seed 2 - 10 mm into soil within one hour after seeding operation. Mix carefully

with light chain harrow or wire rakes and roll area immediately afterward with water ballast lawn or agricultural roller.

- .2 Small upland areas disturbed during construction (as determined by the Contract Administrator) may be broadcast seeded with Type II Upland Seed Mix. A layer of long straw mulch shall also be spread over these areas, sufficient to provide runoff induced erosion.

3.5 Straw Mulch

- .1 All bare soil areas shall be stabilized with straw mulch immediately after seeding.
- .2 Apply loose straw over seed in a uniform layer by hand distribution.
- .3 Ensure entire soil surface is covered with a thin layer of straw. Do not bury seed too deep.
- .4 Blend straw into adjacent vegetated areas. Do not smother existing vegetation.
- .5 Anchor mulch in place by punching it into soil using a spade or shovel.

3.6 Hydroseeding (Hydraulic seeding)

- .1 Large upland areas disturbed during construction shall be hydroseeded with Type II Upland Seed Mix.
 - .1 The application shall be done in one operation.
 - .2 Use an appropriate hydraulic seed drill and calibrate the mulching equipment.
 - .3 Calculation of the required quantities of material shall be presented to the Contract Administrator 5 days prior to work. This document shall indicate where and when the seeding mixture will be made.
 - .4 Hydroseeding mix shall be projected in order to bond to the surfaces and to create a uniform layer.
 - .5 Hydroseeding must be done when the wind speed is less than 10 km/h.
 - .6 The seeding projection will be done in a manner to prevent circulation of vehicles over surfaces already seeded.

3.7 Maintenance During Establishment Period

- .1 Water seeded areas to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
- .2 Gully formations and washouts as a result of rain events greater than 20 mm per day shall be repaired, including regarding and re-seeding.
- .3 Seeded areas shall be accepted by the Contract Administrator provided that:
 - .1 seeded areas are properly established;
 - .2 seeded areas are free of weeds and bare or dead spots;
 - .3 no surface soil is visible when grass has been cut to a height of 50 mm;
 - .4 seeded areas have been cut minimum 2 times, the second cut within 24 hours prior to acceptance.

- .4 Areas seeded in fall will be accepted the following spring, one month after the beginning of the growing season, provided the acceptance conditions are met.
- .5 Control weeds by mechanical means utilizing acceptable integrated pest management practices.
- .6 Temporary fencing around seeded areas shall remain until the Contract Administrator's approval as described in Section 01500.
- .7 The Contractor shall maintain the seeded areas including mowing until acceptance by the Contract Administrator. Unacceptable areas shall be reseeded.

END OF SECTION

PART 1 – GENERAL

- 1.1 Related Work
 - .1 Earthwork Section 02300
 - .2 Topsoil and Finish Grading Section 02911
 - .3 Seeding Section 02923
- 1.2 Approvals and Substitutions
 - .1 Submit the sample to Contract Administrator.
 - .2 Submit shop drawing showing manufacturers recommended method of application.
 - .3 Substitutions will be accepted upon written approval of Contract Administrator before installation of material.

PART 2 – PRODUCTS

- 2.1 Erosion Control Mat
 - .1 Protective coir mat, COIR900 or denser.
- 2.2 Wood Pegs
 - .1 19 x 19 x 200mm wooden pegs. **The use of metal or plastic staples is not acceptable.**

PART 3 - EXECUTION

- 3.1 Preparation of Surface
 - .1 Ensure a smooth, even surface after seed application.
- 3.2 Installation
 - .1 Unroll the blanket vertically to the slope over seeded riparian areas.
 - .2 Bury the mat minimum 300 mm in ground and flush with the edge of rock fill.
 - .3 Construct 150 x 150 mm keys for mat installation at top of the slope. Follow manufacturer's instructions.
 - .4 The joint rolls should overlap minimum 150 mm, and be staked through the mat vertically and full length into the ground. Overlap the mat in a downstream direction.
 - .5 Each stake will anchor the fibre mesh. The stakes will be spaced at a minimum of 900 mm intervals in three rows equally spaced across each roll. Follow manufacturer's instructions.
 - .6 Six stakes will be used across the uphill end of each roll. The inner stakes will be spaced alternately to those along the edges.

END OF SECTION

PART 1 – GENERAL

1.1 Related Works

- | | | |
|----|----------------------------|---------------|
| .1 | Earthwork | Section 02300 |
| .2 | Topsoil and Finish Grading | Section 02911 |

1.2 Delivery and Storage

- .1 Schedule sod laying to coincide with preparation of soil surfaces and to minimize storage period at the site without causing work delays.
- .2 Sod sections delivered in rolls shall be transported, unloaded and stored on pallets.
- .3 Sod sections shall be delivered within 24 hours and laid within 36 ours after they have been lifted.

PART 2 – PRODUCTS

2.1 Materials

- .1 Number one sod, dense, green and 40 to 60 mm long, sown and cultivated in nursery fields as turfgrass crop. Sod shall not contain more than 2% weeds. Section thickness (soil and roots) must be 12 to 20 mm. Soil must be moist. Sod sections must not break when unrolled and held up. Before ordering sod, Contractor shall inform the Contract Administrator of suppliers' names and details on the types of sod offered. Sod through which soil surface is visible when mown to height of 50 mm will be rejected.
- .2 25 x 25 x 300 mm wooden pegs.

2.2 Water

- .1 Free of impurities that would inhibit germination and growth.

2.3 Topsoil

- .1 Topsoil for sodding (see Section 02911).

PART 3 - EXECUTION

3.1 Bed Preparation

- .1 Verify that grades are correct and prepared in accordance with Section 02911 – Topsoil and Finish Grading. Notify Contract Administrator of deviations from drawings and do not commence work until instructed by Contract Administrator.
- .2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.
- .3 Fine grade surface free of humps and hollows to smooth, even grade, to elevations indicated, surface to drain naturally.
- .4 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; and remove from site.
- .5 Cultivate surfaces covered with topsoil and levelled to a depth of 50 mm, immediately prior to sodding.

3.2 Sod Placement

- .1 Before commencement of sodding, obtain the Contract Administrator's approval for quality and depth of topsoil spread on areas.
- .2 Lay sod sections in parallel strips, flush with adjacent areas, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.
- .3 Roll sod as directed by the Contract Administrator. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted. Tamp section edges so they are flush with existing sodded areas, pavings or any other adjacent surface.
- .4 Once sod is in place, apply enough water so that moisture penetrates soil and sod to a depth of 100 mm.

3.3 Sod Placement on Slopes and Pegging

- .1 Start laying sod at toe of slopes. Lay sod sections in parallel strips, perpendicular to slopes as directed by the Contract Administrator.
- .2 Peg sod on slopes having a grade steeper than 25%, or as directed by the Contract Administrator.
- .3 Pegs shall be placed sufficiently close together so as to prevent sod sections from moving. Spacing between 2 pegs shall not be greater than 600 mm.
- .4 Drive pegs into sod until flush with sod surface.

3.4 Maintenance During Establishment Period

- .1 Water sodded areas to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
- .2 Sodded areas shall be accepted by the Contract Administrator provided that:
 - .1 sodded areas are properly established;
 - .2 sodded areas are free of weeds and bare or dead spots;
 - .3 no surface soil is visible when grass has been cut to a height of 50 mm;
 - .4 sodded areas have been cut minimum 2 times, the second cut within 24 hours prior to acceptance.
- .3 Areas sodded in fall shall be accepted the following spring, one month after the beginning of the growing season, provided the acceptance conditions are met.
- .4 Control weeds by mechanical means utilising acceptable integrated pest management practices.
- .5 The Contractor will maintain the sodded areas including mowing until acceptance by the Contract Administrator. Unacceptable areas will have to be resodded.

END OF SECTION