

NATIONAL CAPITAL COMMISSION
CAPITAL PLANNING BRANCH

Asphalting and Resurfacing

DC 1110-22

July 2018

INDEX - SPECIFICATIONS

<u>DIVISION</u>	<u>SECTION</u>	<u>NO. OF PAGES</u>
Division 32	EXTERIOR IMPROVEMENTS	
	32 01 90.33 Tree and Shrub Preservation	1
	32 14 10 Granite Cobblestone Paving	1
	32 92 23 Sodding	2
	32 93 10 Tree, Shrub & Groundcover Planting	3
	32 93 12 Plant Maintenance and Warranty	3

END OF SECTION

PART 1 GENERAL

PART 2 PRODUCTS

2.1 TREE PROTECTION FENCING

- .1 Plastic snow fencing or approved equivalent.

PART 3 EXECUTION

3.1 TREE AND SHRUBS TO BE RETAINED

- .1 Retain and protect all existing trees and shrubs on site. Do not remove any plant without the express authorization of the NCC Representative.

3.2 PROTECTION OF EXISTING TREES

- .1 Do not disturb or compact grade within drip line of trees or shrubs to remain.
- .2 Protect tree trunks as required with wooden protective cladding installed vertically around the trunk. Install cladding with straps or other device which will not damage the tree.
- .3 Installation of all tree protection shall be completed prior to beginning of any site work.
- .4 Erect fencing at dripline of trees as directed by NCC Representative.

3.3 ROOT PRUNNING

- .1 If any roots are exposed during construction, they should be immediately reburied with soil or covered with filter cloth or wood chips and kept moist until they can be buried permanently.
- .2 Notify the NCC representative if roots need to be pruned. Root pruning is to be carried out by a qualified arborist.

3.4 WATERING

- .1 Ensure the ongoing maintenance and irrigation of the site vegetation during the construction period.

3.5 DAMAGES

- .1 Replace or compensate the client for any trees damaged during construction. Damages include: Any physical damage on tree bark, branches and roots.

END OF SECTION

PART 1 GENERAL

1.1 PROTECTION

- .1 Prevent damage to landscaping, curbs, sidewalks, trees, fences, roads and adjacent property. Make good any damage.

1.2 SAMPLES

- .1 Install a mock-up of pavers layout for NCC Representative's approval before commencement of work. Mock-up to be at minimum 1m x 1m.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Granite cobblestone pavers: Supplied by NCC. To be picked up from the NCC storage yard.
- .2 Granular base: OPSD Granular 'A'.
- .3 Laying course: Dry clean masonry sand, 25-40mm thickness.
- .4 Joint materials: Polymeric Sand, submit colour samples to NCC Representative for approval.

PART 3 EXECUTION

3.1 SUBGRADE

- .1 Ensure that subgrade preparation conforms to levels and compaction required to allow for installation of granular base.

3.2 GRANULAR BASE

- .1 Place base to compacted thicknesses as indicated on drawings.
- .2 Compact to a density of not less than 95% Standard Density in accordance with ASTM D698.
- .3 Shape and roll alternately to obtain a smooth, even and uniformly compacted granular base and ensure conformity of grades with finish surface.
- .4 Apply water as necessary during compaction to obtain specified density. If granular base is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.
- .5 In areas not accessible to rolling equipment, compact to specified density with approved mechanical tampers.
- .6 Ensure top of granular base does not exceed plus or minus 10 mm of finished grade, less combined thickness of sand laying course plus granite cobblestone pavers.

3.3 LAYING COURSE

- .1 Place masonry sand laying course to compacted thickness as indicated on drawings.
- .2 Ensure laying course is dry (4-8% moisture content) prior to placement of pavers.

3.4 SURFACE COURSE

- .1 Install pavers true to grade, in location, layout and pattern as indicated on drawings.
- .2 Tamp down and level pavers with mechanical plate vibrator on minimum 19 mm thick plywood until pavers are true to grade and free of movement.
- .3 Fill spaces between pavers by sweeping polymeric sand into joints, vibrating, wetting and cleaning as per manufacturer's instructions. Completely fill joints.
- .4 Surface of finished paving: free from depressions exceeding 10 mm as measured with 3 m straight edge.
- .5 Sweep surface course clean.

END OF SECTION

PART 1 GENERAL

1.1 SCHEDULING

- .1 Schedule sod laying to coincide with preparation of soil surface.
- .2 Schedule sod installation when frost is not present in ground.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Number One Turfgrass Nursery Sod: Sod that has been especially sown and cultivated in nursery fields as a turfgrass crop.
 - .1 Number One Kentucky Bluegrass Sod – Fescue Sod: Nursery Sod grown solely from seed mixture of cultivars of Kentucky bluegrass and chewing fescue or creeping red fescue, containing not less than 40% Kentucky bluegrass cultivars and 30% chewing fescue or Creeping Red Fescue cultivars.
- .2 Water: Potable.
- .3 Fertilizer:
 - .1 To Canada "Fertilizers Act" and "Fertilizers Regulations".
 - .2 Complete, synthetic, slow release with 65% of nitrogen content in water-insoluble form.
- .4 Pegs: 19 x 19 x 200 mm wooden pegs.

PART 3 EXECUTION

3.1 PREPARATION

- .1 Verify that grades are correct. If discrepancies occur, notify NCC Representative and do not commence work until instructed by NCC Representative.
- .2 Do not perform work under adverse field conditions such as frozen soil, excessively wet or dry soil or soil covered with snow, ice, or standing water.
- .3 Fine grade surfaces free of humps and hollows to smooth, even grade, 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; off site.
- .5 Cultivate fine grade approved by Contract Administrator to 25 mm depth immediately prior to sodding.

3.2 SOD PLACEMENT

- .1 Lay sod within 24 h of being lifted.
- .2 Lay sod sections in rows, longitudinally, along contours of slopes, 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 Contract Administrator. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

3.3 FERTILIZING PROGRAM

- .1 Fertilize during establishment and warranty periods to following program:
One (1) month after sodding apply 2:1:1 at a rate of 0.5kg/100m².

3.4 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform the following maintenance operations from the time of sod installation until final acceptance of the project by the NCC Representative
 - .1 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.

- .2 Cut grass to 50 mm when it reaches height of 75 mm. Remove clippings which will smother grassed areas as directed by Contract Administrator.
- .3 Maintain sodded areas weed free 95%.
- .4 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles.

3.5 ACCEPTANCE

- .1 Turfgrass Nursery Sod areas will be accepted by NCC Representative provided that:
 - .1 Sodded areas are properly established.
 - .2 Sod is free of bare and dead spots and without weeds.
 - .3 No surface soil is visible from height of 1200 mm when grass has been cut to height of 50 mm.
 - .4 Sodded areas have been cut minimum 2 times, and within 24 h prior to acceptance.
- .2 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 32 93 12 - Plant Maintenance and Warranty

1.2 SOURCE QUALITY CONTROL

- .1 The Contractor shall commence sourcing the specified material immediately upon award of the Contract.
- .2 No substitutions will be considered unless the Contractor can demonstrate to the NCC Representative's satisfaction that a prolonged and widespread search for the specified cultivars has been undertaken.
- .3 Obtain approval of source of plant material. Acceptance of plant at its source does not prevent rejection on site prior to or after planting operations.

1.3 SHIPMENT AND PRE-PLANTING CARE

- .1 Protect plant materials against abrasion, exposure and extreme temperature change during transit.
- .2 Keep roots moist and protected from sun and wind.

1.4 STORAGE AND PROTECTION

- .1 Protect plant materials from frost, excessive heat, wind and sun during delivery.
- .2 Immediately store and protect plant material which will not be installed within 1 hour after their arrival on site, in storage locations approved by NCC Representative.
- .3 Protect plant material from damage during transportation:
 - .1 When delivery distance is less than 30 km, and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.
 - .2 When delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle where practical.
 - .3 Protect foliage and root balls using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
- .4 Protect stored plant material from frost, wind and sun and as follows:
 - .1 For bare root plant material, preserve moisture around roots by heeling-in or burying roots in topsoil, and watering to full depth of root zone.
 - .2 For pots and containers, maintain moisture level in containers.
 - .3 For balled and burlapped, and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.

PART 2 PRODUCTS

2.1 PLANT MATERIALS

- .1 Comply with Guide Specification for Nursery Stock, latest edition, of Canadian Nursery Trades Association referring to size and development of plant material and root ball.
- .2 All plant material will be sourced from commercial from a commercial nursery. All plant material will be grown in zones 4b or 5a according to the Plant Hardiness Zones in Canada as defined by Agriculture and Agri-Food Canada.
- .3 Use plants with strong fibrous root systems free of disease, insects, defects or injuries and structurally sound. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
- .4 Substitution to plant material as indicated on planting plan are not permitted unless written approval has been obtained as to type, variety and size.
- .5 Size indicated are the minimum allowable after pruning.

2.2 BONEMEAL

- .1 Raw bonemeal finely ground with a minimum analysis of 4% nitrogen and 20% phosphoric acid.

2.3 WATER

- .1 Free of impurities that would inhibit plant growth.

2.4 STAKES

- .1 Two (2) metal t-bar stakes, 40 x 40 x 2440 mm.

2.5 GUYING COLLAR

- .1 Galvanized 3 mm wire encased in 2 ply rubber hose.

2.7 TRUNK PROTECTION

- .1 Plastic; perforated spiraled strip.
- .2 Burlap: clean, minimum 2.5 kg/m² mass and 150mm wide, and twice fastener.

2.8 MULCH

- .1 Mulch will be composed of fragments of Cedars type 'Shredded Cedar mulch' as manufactured by 'Lanark Cedar' or equivalent approved by the NCC. It will be free from seeds, gravel, rod or other foreign matter. A sample must be supplied to the engineer for approval prior to the commencement of the planting.

2.9 ANTI-DESICCANT

- .1 Wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration

PART 3 EXECUTION

3.1 PRE-PLANTING PREPARATION

- .1 Ensure plant material is found acceptable by the NCC Representative.
- .2 Remove damaged roots and branches from plant material.
- .3 Apply anti-desiccant to deciduous trees leaves, in accordance with manufacturer's instructions.

3.2 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 NCC Representative
- .2 The contractor shall arrange for all plant species recommended for spring only digging, to be dug and containerized in the spring, immediately upon award of the Contract. Affected genus species include, but are not limited to : *Quercus* and *Salix*
- .3 The foliage of deciduous trees which have broken buds shall be sprayed with anti-desiccant to slow down transpiration prior to transplanting.

3.3 EXCAVATION

- .1 Excavate planting holes to width and depth as indicated on drawings.
- .2 The sides of the planting hole shall be scarified so that water and roots can readily penetrate.
- .3 Place one generous handful of bonemeal in the bottom of each shrub planting hole and two generous handfuls in the bottom of each tree hole. Mix bonemeal thoroughly with soil.

3.4 PLANTING

- .1 Plant trees and shrubs vertically at the places indicated, oriented to produce the best possible effect with the surrounding structures such as buildings, roads and sidewalks.
- .2 For burlapped root balls, ensure rootball is thoroughly wetted to ensure rootmass stays in-intact. Cut away wrapping and wire basket without damaging root ball.
- .3 For container stocks or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.
- .4 For trees and shrubs:
 - .1 Backfill soil in 150 mm layers. Tamp each layer to eliminate air pockets. When two thirds of depth of planting pit has been backfilled, fill remaining space with water. After water has penetrated into soil, backfill to finish grade.
 - .2 Form watering recipient (saucer) as indicated.

- .5 Spread 75mm of mulch over all areas of bare soil. Mulch heavily contaminated with soil is not acceptable.
- .6 Water plant material thoroughly.
- .7 After soil settlement has occurred, fill with soil to finish grade.
- .8 Remove dead and injured branches and branches that rub causing damage to bark.
- .9 Dispose of burlap, wire and container material off site.

3.5 TRUNK PROTECTION

- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection prior to installation of tree supports.

3.6 TREE SUPPORTS

- .1 Install stakes as specified.
 - .1 Place stake on prevailing wind side, at a 150 mm distance from trunk.
 - .2 Drive stake minimum 300 mm into undisturbed soil beneath roots. Ensure stake is secure, vertical and not split.
 - .3 Install 150 mm long guying collar 1500 mm above grade.
 - .4 Thread Type 1 guying wire through guying collar tube. Twist wire to form collar and secure firmly to stake. Cut off excess wire.
- .2 After tree supports have been installed, remove broken branches with clean, sharp tools.

3.7 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following maintenance operations from time of planting until the project has been approved by the NCC Representative.
 - .1 Water to maintain soil moisture conditions, for optimum establishment, growth and health of plant material without causing erosion.
 - .2 Remove weeds.
 - .3 Replace or re-spread damaged, missing or disturbed mulch.
 - .4 Remove dead or broken branches from plant material.
 - .5 Keep trunk protection and guy wires in proper repair and adjustment.
 - .6 Remove and replace dead and unhealthy plants. Make replacements in same manner, as specified for original planting.

3.8 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 Section 32 93 10 - Tree, shrub and ground cover planting

1.2 WARRANTY

- .1 All plant material shall be warranted for a period of two years from the date of substantial performance.
- .2 The warranty shall cover any defects in materials and workmanship.
- .3 A warranty inspection will be carried out at the end of the warranty period.
- .4 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 NCC Representative.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Water: shall be free from any contaminants which could adversely affect plant growth.
- .2 Mulch: according to section 32 93 10
- .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.

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.
- .3 All debris, waste and other extraneous material resulting from the maintenance operation shall be removed from the site daily upon completion of maintenance.
- .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 NCC Representative immediately of damage incurred by pest, disease, mechanical or vandalism.

3.2 INTERIM REPLACEMENT OF PLANT MATERIAL

- .1 Throughout the maintenance and warranty period, units of plant material that are found to be unacceptable will be replaced by the Contractor.
- .2 At the discretion of the NCC Representative, plant material that is identified as dead or in a poor or diseased condition shall be immediately removed from the site.

3.3 WATERING

- .1 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.
- .2 During the warranty period, thoroughly water plant material 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.

3.4 WEEDING

- .1 All weeds, dead plants, leaves, branches, paper and other refuse within planting beds shall be removed by hand and disposed of off the Contract site.

- .2 At a minimum, weeding shall occur:
 - .1 Twice from June 1 to August 15;
 - .2 A final weeding shall be completed immediately prior to the final warranty inspection
- .3 The application of herbicides or mechanical weed removers is prohibited.
- 3.5 PRUNING**
 - .1 Prune off dead and injured branches in accordance with accepted arboricultural practices.
- 3.6 PEST MANAGEMENT**
 - .1 Monitor plant materials throughout the warranty period for any sign of disease or insect problems. Practice IPM.
 - .2 The use of pesticides shall not be permitted.
- 3.7 WINTER PREPARATION**
 - .1 In the fall, the Contractor is responsible for completion of the following:
 - .1 Ensure all plant material is watered before freeze-up.
- 3.8 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.
- 3.9 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 NCC Representative. The cost of such reinstatement or repair shall be solely at the Contractor's expense.
- 3.10 MAINTENANCE INTERVALS FOR PAYMENT**
 - .1 Maintenance period shall commence immediately following installation and continue for a period of two years from the date of substantial completion.
 - .2 Completion of maintenance will be assessed for payment on a bi-annual interval, and will be paid in 4 equal instalments over the duration of the 2 year period. Maintenance shall be deemed acceptable when it meets all the requirements of this section.
 - .3 Biannual intervals will include the following seasonally specific requirements:
 - .1 **Spring Interval** : Finishing June 30th. Ongoing maintenance from beginning of growing season to June 30th. Must include pruning and repair of all winter damages, top dressing of mulch layer, removal of weeds and debris from plant beds and spring cutting of Ornamental Grasses, and dead heading of over wintered perennials.
 - .2 **Fall Interval**: Finishing Oct. 30th. Ongoing maintenance form July 1st to end of growing season. Must include fall pruning of diseased and damaged plant material, winter preparation, plant material protection as required, and removal of leaf litter and debris.
 - .4 If maintenance during a bi-annual interval is deemed unacceptable, as determined by the NCC Representative, payment for that interval will be forfeit.
- 3.11 FINAL WARRANTY INSPECTION**
 - .1 A one-time inspection of all plant material shall be carried out by the NCC Representative upon completion of the maintenance and warranty period.
 - .2 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 beds and tree pits shall be free of weeds, litter and in good order, including the removal of all tree supports.
 - .3 Plant material shall be unacceptable when it does not meet this quality standard.
 - .4 Units of plant material that are found to be unacceptable will be replaced by the Contractor at the earliest opportunity. The NCC Representative reserves the right to extend the Contractor's maintenance and warranty responsibilities for an additional one-year for replacement plant material.

- .5 In the event that this inspection is satisfactory to the NCC Representative, and that there are no outstanding commitments to the contracted works, the Contractor will be given final approval of the maintenance and warranty requirements.
- .6 Where, in the opinion of the NCC Representative, 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 NCC Representative, 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