

1 GENERAL

1.01 SUMMARY

- .1 Section Includes:
 - .1 Materials and installation for fertilizing and preserving root systems of plants affected by changing grades or excavation.

1.02 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CSA G30.5-M1983(R1998), Welded Steel Wire Fabric for Concrete Reinforcement.
- .2 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .2 Fertilizers Act (R.S. 1985, c. F-10).
 - .3 Fertilizers Regulations (C.R.C., c. 666).
 - .4 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .3 Health Canada - Pest Management Regulatory Agency (PMRA).
 - .1 National Standard for Pesticide Education, Training and Certification in Canada (1995).
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).

1.03 DEFINITIONS

- .1 Mycorrhiza : association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit monthly written reports on maintenance during warranty period, to Departmental Representative identifying:
 - .1 Maintenance work carried out.
 - .2 Development and condition of plant material.
 - .3 Preventative or corrective measures required which are outside Contractor's responsibility.
- .3 Submit WHMIS MSDS in accordance with Section 02 81 01 - Hazardous Materials.

1.05 QUALITY ASSURANCE

- .1 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
 - .4 Separate for reuse and recycling and place in designated containers Steel Metal, Plastic waste in accordance with Waste Management Plan.
 - .5 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative.
 - .6 Divert unused wood materials from landfill by alternative disposal approved by Departmental Representative.
 - .7 Divert unused stone and aggregate materials from landfill to local facility approved by Departmental Representative.
 - .8 Divert unused plastic materials from landfill to local recycling facility approved by Departmental Representative.
 - .9 Place materials defined as hazardous or toxic in designated containers.
 - .10 Dispose of unused fertilizer material at official hazardous material collections site approved by Departmental Representative.
 - .11 Handle and dispose of hazardous materials in accordance with Regional and Municipal regulations.
 - .12 Do not dispose of unused fertilizer material into sewer system, into streams, lakes, onto ground or in any other location where they will pose health or environmental hazard.
 - .13 Ensure emptied containers are sealed and stored safely.
 - .14 Fold up metal banding, flatten and place in designated area for recycling.

1.07 SCHEDULING

- .1 Obtain approval from Departmental Representative of schedule indicating beginning of Work.

1.08 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by Departmental Representative to end of warranty period, perform following maintenance operations.
 - .1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.

- .2 Apply pesticides in accordance with National Standard for Pesticide Education, Training and Certification in Canada, Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Departmental Representative prior to application.
- .3 Apply fertilizer in early spring at manufacturer's suggested rate.
- .4 Remove dead, broken or hazardous branches from plant material. Dispose of debris through alternative disposal.

2 PRODUCTS

2.01 MATERIALS

- .1 Fill:
 - .1 Type (A): clean, natural river sand and gravel material, free from silt, clay, loam, friable or soluble materials and organic matter.
 - .2 Type (B): excavated pervious soil, free from roots, rocks larger than 75 mm, building debris, and toxic ingredients (salt, oil, etc). Excavated material shall be approved by Departmental Representative before use as fill.
- .2 Coarse washed stones: 35-75 mm diameter clean round hard stone.
- .3 Draintile: 100 mm diameter corrugated plastic perforated tubing complete with snap couplings. Fill vents with 20 mm clear stone.
- .4 Peatmoss:
 - .1 Derived from partially decomposed species of Sphagnum Mosses.
 - .2 Elastic and homogeneous.
 - .3 Free of wood and deleterious material which could prohibit growth.
 - .4 Shredded minimum particle size: 5 mm.
- .5 Fertilizer:
 - .1 To Canada Fertilizer Act and Fertilizers Regulations.
 - .2 Complete, commercial, slow release with 35 % of nitrogen content in water-insoluble form.
- .6 Anti-desiccant: commercial, wax-like emulsion.
- .7 Filter Cloth:
 - .1 Type 1: 100 % non-woven needle punched polyester, 2.75 mm thick, 240 g/m² mass.
 - .2 Type 2: biodegradable burlap.
- .8 Wood posts: 38 x 89 x 2400 mm length, untreated wood.
- .9 Welded wire fabric (WWF): 100 x 100mm, to CSA G30.5.

3 EXECUTION

3.01 IDENTIFICATION AND PROTECTION

- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Identify plants and limits of root systems to be preserved as approved by Departmental Representative.
- .3 Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Departmental Representative.
- .4 Ensure no pruning is done inside drip line. If pruning inside drip line is required consult an arborist or Canadian Certified Horticultural Technician (CCHT) as approved by Departmental Representative.

3.02 ROOT CURTAIN SYSTEM

- .1 Identify limits for required construction excavation as approved by Departmental Representative.
- .2 Prior to construction excavation, hand dig trench minimum 500 mm wide x 1500 mm deep, along perimeter of excavation limits.
- .3 Prune exposed roots cleanly at side of trench nearest plants to be preserved. Pruned ends to point obliquely downwards.
- .4 Install wooden posts and welded wire fabric against construction edge of trench.
- .5 Securely attach Type 2 filter fabric on plant side of wire mesh.
- .6 Prepare homogeneous mixture of fertilizer, parent material and organic matter.
 - .1 Add organic matter to mixture to achieve 7-9% organic matter content by weight.
 - .2 Incorporate with mixture grade 2:12:8 ratio fertilizer (dry) at rate of 1.5kg/m².
- .7 Backfill with homogeneous mixture between curtain wall and plants to be preserved in layers not exceeding 150 mm in depth. Compact each layer to 85% Standard Proctor Density.
- .8 Protect root curtain from damage during construction operations.
- .9 Water plants and root curtain sufficiently during construction to maintain optimum soil moisture condition until backfill operations are complete.
- .10 Protect root curtain during backfill operations. Ensure root curtain is cut down to 300 mm below finished grade and remove cut material.

3.03 AIR LAYERING SYSTEM

- .1 Using manual methods, carefully remove turf, plants, leaves and organic matter in area of root system, dispose of plant matter through compost site and slightly loosen topsoil surface. Avoid damage to root system.
- .2 Lay horizontal system of perforated drain pipe on surface of existing grade.
 - .1 Slope drain tile minimum 3% for drainage away from trunk of tree.
 - .2 Connect system with general site drainage system or drain to low point on site.
- .3 Install plastic "vent" pipes vertically over joints in horizontal pipe system or where indicated. Top of vent pipe to be 20 mm above finished grade of fill. Keep top of vent pipe covered during construction.
- .4 Cover joints with Type 1 filter fabric and place coarse washed stone around joints and vertical pipes to secure their position.
- .5 Construct drywell around trunk of tree.
 - .1 Ensure open ends of pipe system are left exposed for air circulation to root system.
 - .2 Protect openings from blockage during construction.
 - .3 Install protective caps on exposed horizontal openings.
- .6 Place 200 mm depth of coarse washed stone on surface of original ground and horizontal pipe system to limits.
- .7 Place Type 1 filter fabric over surface of granular layer.
- .8 Place Type A fill over filter fabric to required depth without disturbing or damaging drain pipe system. Avoid damage to filter fabric.
- .9 Complete topsoil and sodding over area of sub-surface system within one week of placing fill.
- .10 Remove temporary protective covering from vent pipe openings. Install protective caps flush with finished grade.

3.04 TRENCHING AND TUNNELING FOR UNDERGROUND SERVICES

- .1 Centre line location and limits of trench/tunnel excavation to be approved by Departmental Representative prior to excavation. Tunnel excavation to extend 2000 mm from edge of trunk on either side.
- .2 Excavate manually within zone of root system. Do not sever roots greater than 40 mm diameter except at greater than 500 mm below existing grade. Protect roots, and cut roots cleanly with sharp disinfected tools.
- .3 Excavate tunnel under centre of tree trunk using methods and equipment approved by Departmental Representative.

- .4 Minimum acceptable depth to top of tunnel: 1000 mm.
- .5 Backfill for tunnel and trench to 85% Standard Proctor Density. Avoid damage to trunk and roots of tree.
- .6 Complete tunnelling and backfilling at tree within 2 weeks of beginning Work.

3.05 LOWERING GRADE AROUND EXISTING TREE

- .1 Begin Work in accordance with schedule approved by Departmental Representative.
- .2 Cut slope not less than 500 mm from tree trunk to new grade level.
- .3 Excavate to depths as indicated. Protect from damage root zone which is to remain.
- .4 When severing roots at excavation level, cut roots with sharp tools.
- .5 Cultivate excavated surface manually to 15 mm depth.
- .6 Prepare homogeneous soil mixture consisting by volume of:
 - .1 60 % excavated soil cleaned of roots, plant matter, stones, debris.
 - .2 25 % coarse, clean sterile sand.
 - .3 15 % organic matter.
 - .4 Grade 2:12:8 fertilizer at rate of 1.5 kg/m².
- .7 Place soil mixture over area of excavation to finished grade level. Compact to 85% Standard Proctor Density.
- .8 Water entire root zone to optimum soil moisture level.
- .9 Install surface cover of sodding in accordance with Section 92 23 - Sodding.

3.06 PRUNING

- .1 Prune crown to compensate for root loss while maintaining general form and character of plant. Dispose of debris through alternative disposal.

3.07 ANTI-DESICCANT

- .1 Apply anti-desiccant to foliage where applicable and as directed by Departmental Representative.

END OF SECTION