

PAVEMENT MARKINGS

1.0 GENERAL

1.1 DESCRIPTION

- 1.1.1 Materials and installation for marking crosswalks, stop lines, and center lines.

1.2 RELATED SECTIONS

- 1.2.1 Section 32 12 16: Asphalt Paving

1.3 REFERENCES

- 1.3.1 CAN/CGSB – 1.5 – M91, Low Flash Petroleum Spirits Thinner.
- 1.3.2 CGSB 1-GP-12c-68, Standard Paint Colours.
- 1.3.3 CGSB 1-GP-71-83, Method, of Testing Paints and Pigments.
- 1.3.4 CGSB 1-GP-74M-79, Paint, Traffic, Alkyd.

1.4 SUBMITTALS

- 1.4.1 Proof of Non-Toxic Composition: Product data confirming chemical composition for traffic paint conforms to the latest health and environmental standards of the local jurisdiction.

1.5 SAMPLES

- 1.5.1 Submit samples as requested by the Owner's Representative.
- 1.5.2 Submit to Contract Administrator the following material sample quantities at least two (2) weeks prior to commencing work.
 - .1 One painted sample of each type of paint.
 - .2 Sampling to CSG 1-GP-71.
- 1.5.3 Clearly mark samples with name of project and its location, paint manufacturer's name and address, name of paint, CGSB specification number and formulation number and batch number.

2.0 PRODUCTS

2.1 MATERIALS

- 1.5.1 Paint shall conform to City of Winnipeg specifications for reflectorized traffic paint or suitable equivalent for application to asphalt and/or concrete surface.
 - .1 CGSB 1-GP-74M + Amdt-May-81, alkyd traffic paint
 - .2 High Gloss Traffic Paint (IBIS Products Limited)
- 2.1.1 Paint colours shall be to CGSB 1-GP-12C
 - .1 White: Code #10-3100, PolyMight International or approved equal.

PAVEMENT MARKINGS

- .2 Traffic Yellow: To CGSB1-GP-12C
- .3 Thinner: To CAN/CGSB-1.5M91

3.0 EXECUTION

3.1 EQUIPMENT REQUIREMENTS

- 3.1.1 Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.

3.2 CONDITION OF SURFACES

- 3.2.1 Pavement surface to be dry, free from ponding water, frost, ice, dust, oil, grease and other foreign materials. Clean paved areas as necessary to achieve acceptable surface preparation.

3.3 TRAFFIC CONTROL

- 3.3.1 Barricade areas to be painted to all vehicular traffic during installation and for 6 hours after installation.

3.4 APPLICATION

- 3.4.1 Layout pavement, zones and symbols as indicated on the Drawings. Obtain Owner's Representative approval prior to painting.
- 3.4.2 Unless otherwise approved by the Owner's Representative, apply paint only when air temperature is above 10°C, wind speed is less than 50 km/h and no rain is forecast within the next eight (8) hours.
- 3.4.3 Apply traffic paint evenly at rate of 3 sq.m. per litre. Do not thin paint unless approved by the Owner's Representative.
- 3.4.4 Paint lines to be 100mm wide, of uniform colour and density with sharply defined edges.
- 3.4.5 Paint crosswalk markings white and center lines yellow.
- 3.4.6 Thoroughly clean distributor tank before refilling with paint of a different colour.

3.5 TOLERANCE

- 3.5.1 Paint markings to be within plus or minus 6mm of dimensions indicated, straight and true and aligned with fixed features such as curbs, sidewalks and walls.
- 3.5.2 Remove incorrect markings and re-apply at no extra cost to the Owner.

3.6 PROTECTION OF COMPLETED WORK

- 3.6.1 Protect pavement markings until dry.

END OF SECTION

EXTERIOR SITE FURNISHINGS

1.0 GENERAL

1.1 DESCRIPTION

- 1.1.1 This section includes the supply and installation of benches, bike racks, waste receptacles, and detectable warning strips.

1.2 PRODUCT DATA

- 1.2.1 Product data to be submitted to the Owner's Representative.

1.3 SHOP DRAWINGS

- 1.3.1 Shop drawings to be submitted to the Owner's Representative.
- 1.3.2 Indicate dimensions, sizes, assembly, anchorage, and installation details for each furnishing specified.

1.4 CLOSEOUT SUBMITTALS

- 1.4.1 Provide maintenance data for care and cleaning of all site furnishings.
- 1.4.2 Provide replacement part information for Owner.
- 1.4.3 Submit manufacturer's installation instructions.

1.5 DELIVERY AND STORAGE

- 1.5.1 Store units in a protected location, immediately upon arrival on the Site. Remove from Site any units which have been damaged during transportation and replace.

2.0 PRODUCTS

2.1 BENCH

- 2.1.1 '1900 Curved Backed Ogden Seat' (OGM1900-66972), as supplied by Maglin Site Furniture. Contact Jackie Nielsen at 1-800-716-5506 ext.6020.

- .1 Quantity: 14
- .2 Accessories: Center Arm 1 - Trapezoid shape, arm rests – Trapezoid shape, and skate deterrent 'Skate Deterrent 1'.
- .3 Radius: 'R6' 101" – 106" Radius (22.5°)
- .4 Slat Orientation: Left to right
- .5 Material: Thermally Modified Oak Wood
- .6 Colour: Powder coat 'Black Fine Texture'
- .7 Mounting: Surface mount as per Manufacturer's written specifications.

2.2 DETECTABLE WARNING STRIP

EXTERIOR SITE FURNISHINGS

2.2.1 Amor-Tile Cast-in-Place warning surface, as supplied by Armor-Tile Tactile Systems. Contact Brad Graham at 1-425-766-6234.

- .1 Quantity: 16
- .2 Colour: Yellow
- .3 Size: 609 x 914mm, product code: ADA-2436

3.0 EXECUTION

3.1 INSTALLATION

- 3.1.1 Do not install site furnishings until all hard landscape components have been installed and accepted.
- 3.1.2 Stake out or mark locations (non-permanent markings) for all site furnishings and fitness equipment and obtain approval from Owner's Representative prior to installation.
- 3.1.3 Assemble site furnishings in accordance with manufacturer's written instructions.
- 3.1.4 Install true, plumb, anchored firmly supported to manufacturer's written specifications.
- 3.1.5 Touch-up damaged finishes to approval of Owner's Representative.
- 3.1.6 For delivery and installation of exterior site furnishings, tree grates, and frames, use motorized equipment that will not disturb trees or areas designated for preservation. Manually place items as required. Do not store items in preservation areas.
- 3.1.7 Obtain review and approval of all site furnishings and fitness equipment from Owner's Representative prior to demobilizing off site.
- 3.1.8 Where shimming is required to level, use stainless steel washers or approved alternate.
- 3.1.9 Turn over spare parts, touch up paint, and user's manuals to the Owner at project closeout.

END OF SECTION

PLANTING MEDIUM AND FINISH GRADING

1.0 GENERAL

1.1 DESCRIPTION

- 1.1.1 Supply and installation of planting medium in tree trenches and planting beds. All planting medium to be imported to site. There is no stockpiled “topsoil” available on site.

1.2 RELATED SECTIONS

- 1.2.1 Section 32 93 10: Tree, Shrub, and Groundcovers

1.3 PROTECTION OF EXISTING FACILITIES

- 1.3.1 Protect elements surrounding the work of this section from damage or disfiguration. Protect landscaping and other features remaining as final work. Protect existing structures, fences, roads, sidewalks, paving and curbs.

1.4 SCHEDULING OF WORK

- 1.4.1 Schedule placing of planting medium to permit immediate planting operations.

1.5 SAMPLES

- 1.5.1 Provide three (3), 1 litre samples of planting medium proposed for use on this project for testing, a minimum of four (4) weeks prior to construction. Do not move planting medium to site prior to confirmation of test results. Samples must be representative of planting medium to be used on site.

1.6 DELIVERY AND STORAGE

- 1.6.1 Deliver and store fertilizer in waterproof bags accompanied in writing by weight, analysis, and name of manufacturer.

1.7 WASTE MANAGEMENT AND DISPOSAL

- 1.7.1 Do not dispose of unused soil or soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

2.0 PRODUCTS

2.1 PLANTING MEDIUM

- 2.1.1 Planting medium for use in tree trenches and shrub beds: mixture of particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth.
- .1 Dark brown to black, loam textured, imported topsoil, free of living plants and branches.
- .2 pH value: 6.0 to 7.5

PLANTING MEDIUM AND FINISH GRADING

- .3 Contain no toxic elements or growth inhibiting materials.
- .4 Conductivity: maximum 2.5dS/m
- .5 Free of Couchgrass or Canadian Thistle rhizomes
- .6 Finished surface free from:
 - .1 Debris and stones over 50mm in diameter.
 - .2 Coarse vegetative material, 10mm diameter and 100mm length, occupying more than 2% of soil volume.
- .7 Consistence: friable when moist.
- .8 Contractor is responsible for supplying materials necessary to amend planting medium to specified characteristics.

2.2 SOIL AMENDMENTS

2.2.1 Peatmoss:

- .1 Derived from partially decomposed species of Sphagnum Mosses.
- .2 Elastic and homogeneous, brown in colour.
- .3 Free of wood and deleterious material which could prohibit growth.
- .4 Shredded particle minimum size: 5mm.

2.2.2 Sand: washed sand, medium to coarse texture.

2.2.3 Organic matter: compost Category A, screened organic matter, such as a composition of poultry litter, hay, mushroom compost, straw, bark residue or sawdust, meeting the organic matter, stability, and contaminant requirements. Cow manure is not acceptable.

2.2.4 Fertilizer: complete commercial synthetic slow-release fertilizer with maximum 35% water soluble nitrogen. Rate and ratio as recommended by soil test results.

2.3 SOIL MIXES

2.3.1 All Purpose, Four-Way, Light Mix for sodded areas, shrub beds, and tree pits. As supplied by Reimer Soils or approved equal. Well mixed and screened combination of: 40% Black Topsoil, 40% Peat Moss, 10% Sand and 10% Compost by volume.

2.3.2 Prepare sub-grade surface as per Drawings and Details.

2.4 SOURCE QUALITY CONTROL

- .2 Advise Owner's Representative of sources of planting medium mix and amendments to be utilized in preparing manufactured planting medium with sufficient lead-time for testing.

PLANTING MEDIUM AND FINISH GRADING

- .3 Contractor is responsible for amendments to supply planting medium mix as specified.
- .4 Soil testing to be completed by recognized testing facility for pH, N, P and K, electro-conductivity, and organic matter.
- .5 Testing of topsoil will be carried out by testing laboratory designated or approved by the Owner's Representative.
 - .1 Soil sampling, testing, and analysis to be in accordance with Provincial standards.
- .6 If soils are deemed deficient from testing, ensure that testing lab provides soil amendment and fertilizer recommendations.

3.0 EXECUTION

3.1 PREPARATION OF EXISTING GRADE

- 3.1.1 Verify that grades are correct. If discrepancies occur, notify Owner's Representative and do not commence work until instructed by Owner's Representative.
- 3.1.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- 3.1.3 Remove debris, roots, branches, stones more than 50mm in diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials, limestone, and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material off site.
- 3.1.4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.2 PLACING AND SPREADING OF PLANTING MEDIUM

- 3.2.1 Place planting medium after Owner's Representative has accepted subgrade.
- 3.2.2 Spread planting medium in uniform layers not exceeding 150mm over approved, dry, unfrozen subgrade, where sodding, shrub beds, and tree pits are indicated on the Drawings.
- 3.2.3 Spread planting medium as indicated on the Drawings for shrub beds, and tree pits, allowing for the following minimum depths after settlement:
 - .1 300mm for shrub beds
 - .2 900mm for tree trenches (or as indicated on the Drawings)
- 3.2.4 Manually spread planting medium around trees, shrubs, and obstacles.

3.3 SOIL AMENDMENTS

PLANTING MEDIUM AND FINISH GRADING

- 3.3.1 For shrub beds, and tree trenches, apply and thoroughly mix soil amendments into full specified depth of planting medium at the applicable rates determined from soil testing.
- 3.4 APPLICATION OF FERTILIZER
 - 3.4.1 Spread fertilizer over entire area of planting medium at rate and ratio determined by soil testing.
 - 3.4.2 Mix fertilizer thoroughly into upper 50mm of planting medium mix.
- 3.5 FINISH GRADING
 - .6 Grade to eliminate rough spots and low areas to ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
 - .7 Consolidate planting medium mix to required bulk density using equipment approved by Owner's Representative. Leave surfaces smooth, uniform, and firm against deep footprinting.
- 3.6 ACCEPTANCE
 - 3.6.1 The Owner's Representative will review and test planting medium in place and determine acceptance of material, depth of planting medium, and finish grading.
- 3.7 CLEANING
 - 3.7.1 Dispose of materials not required off site, as approved by Owner's Representative
 - 3.7.2 Upon completion of installation, remove surplus materials, rubbish, tools, and equipment barriers.

END OF SECTION

TREE, SHRUB, AND GROUNDCOVERS

1.0 GENERAL

1.1 DESCRIPTION

- 1.1.1 This section shall cover all labour, methods, equipment, and accessories for the supply and installation of trees, shrubs, and groundcover plantings.

1.2 RELATED SECTIONS

- 1.2.1 Section 32 91 19: Planting Medium and Finish Grading
- 1.2.2 Section 32 93 11: Landscape Maintenance

1.3 REFERENCES

- 1.3.1 Agriculture and Agri-Food Canada (AAFC)
 - .1 Plant Hardiness Zones in Canada – 2010
- 1.3.2 Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Standards for Nursery Stock – 2017
- 1.3.3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c.33
 - .2 Transportation of Dangerous Goods Act (TDGA), 1992, c.34
- 1.3.4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS)

1.4 SUBMITTALS

- 1.4.1 Make submittals in accordance with Section 01 33 00: Submittals Procedures.
- 1.4.2 Submit product data for:
 - .1 Fertilizer
 - .2 Anti-desiccant
 - .3 Guying assembly including collar, guying strap, and posts
- 1.4.3 Submit samples for:
 - .1 Bark mulch

1.5 SOURCE QUALITY CONTROL

- 1.5.1 Obtain approval of plant material at source.
- 1.5.2 Notify Owner's Representative of source of material at least seven (7) days in advance of shipment. Not work under this Section is to proceed without approval.
- 1.5.3 Acceptance of plant material at source does not prevent rejection on site prior to or after planting operations.

TREE, SHRUB, AND GROUNDCOVERS

- 1.5.4 Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations. Use local nurseries and farms wherever possible.
- 1.5.5 Source of plant material: grown in Zone 3a in accordance with Agriculture Canada Plant Hardiness Zone map.
- 1.6 SHIPMENT AND CARE
 - 1.6.1 Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
 - 1.6.2 Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure, and extreme temperature change during transit. Avoid binding of planting stock with rope or wire that would damage bark, break branches, or destroy natural shape of plant. Give full support to rootball of large trees during lifting.
 - 1.6.3 Cover saw dust or other acceptable material to prevent loss of moisture during transit and storage.
 - 1.6.4 Remove broken and damaged roots with sharp pruning shears.
- 1.7 STORAGE AND PROTECTION
 - 1.7.1 Protect plant material from frost, excessive heat, wind, and sun during delivery.
 - 1.7.2 Immediately store and protect plant material which will not be installed within four (4) hours after arrival at site in storage location approved by Owner's Representative.
 - 1.7.3 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.
 - 1.7.4 Protect stored plant material from frost, wind, and sun 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 zones.
 - .2 For pots and containers, maintain moisture level in containers.
 - .3 For balled and burlapped and wire basket rootballs, place to protect branches from damage. Maintain moisture level in root zones.

TREE, SHRUB, AND GROUNDCOVERS

1.8 SCHEDULING

- 1.8.1 Obtain approval from Owner's Representative for plant substitutions / species alternatives prior to ordering plant material.
- 1.8.2 Order plant material as soon as possible after award of contract to ensure plant availability. Plants should be ordered at least one (1) full growing season prior to anticipated planting date.
- 1.8.3 Obtain approval from Owner's Representative of schedule fourteen (14) days in advance of shipment of plant material.
- 1.8.4 Schedule to include:
 - .1 Quantity and type of plant material
 - .2 Shipping dates
 - .3 Arrival dates on site
 - .4 Planting dates

1.9 WARRANTY

- 1.9.1 The Contractor hereby warrants that plant material as itemized in the plant specification list will remain free of defects, for one (1) year, after the date of Substantial Performance, providing adequate maintenance has been provided.
- 1.9.2 An end-of-warranty site review will be conducted by Owner's Representative
- 1.9.3 Owner's Representative reserves the right to extend Contractor's warranty responsibilities for an additional one (1) year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

1.10 PLANT REPLACEMENTS

- 1.10.1 During the warranty period, remove from site any plant material that has died or failed to grow satisfactorily as determined by the Owner's Representative.
- 1.10.2 Replace any plant material in the next planting season.
- 1.10.3 Extend warranty on replacement plant material for a period equal to the original warranty period.
- 1.10.4 Continue such replacement and warranty until plant material is accepted.
- 1.10.5 All required replacements shall be by plants of at least the same size and species as specified and shall be supplied and planted in accordance with the original Drawings and Specifications, and the replaced material shall carry an additional one (1) year guarantee. Should the replaced plant material not survive, the Contractor will be responsible to replace it a third time and guarantee it for one (1) year unless it is determined that unique site conditions, rodent problems, or inadequate maintenance causes the death of plants.

TREE, SHRUB, AND GROUNDCOVERS

2.0 PRODUCTS

2.1 PLANT MATERIALS

- 2.1.1 Quality and source: comply with Guide Specifications for Nursery Stock, latest edition of Canadian Nursery Trades Association (CNTA) referring to size and development of plant and root ball. Measure plant material and root ball. Measure plants when branches are in their natural position. For height and spread dimensions refer to main body of plant and not from branch tip to branch tip. Measure caliper for trees minimum 300mm (12") above grade for trees 100mm (4") caliper and larger and 150mm (6") above grade for trees up to 100mm (4") caliper.
- 2.1.2 Type of root preparation, sizing, grading, and quality: comply to Canadian Standards for Nursery Stock.
 - .1 Source of plant material: grown in Zone 3a in accordance with Plant Hardiness Zones in Canada.
- 2.1.3 Balled and burlapped: coniferous and broad leaf evergreens over 500mm (1'-8") tall and deciduous trees more than 3m (10') height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Dig and lift root ball from hole, place in wire basket lined with burlap. Secure root ball with burlap and tie basket to root ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope. For large trees wrap root ball in double layer of burlap and drum lace with minimum 10mm (1/2") diameter rope. Protect root ball against sudden changes in temperature and exposure to heavy rainfall.
- 2.1.4 Plant material: free of disease, insects, defects, or injuries and structurally sound with strong, fibrous root system.
- 2.1.5 Plant species, cultivars, and size as indicated on the Drawings. Substitutions to plant material as indicated on planting plan are not permitted unless written approval has been obtained as to type, variety, and size from the Owner's Representative. Plant substitutions must be of similar species and of equal size as those originally specified.
- 2.1.6 Trees: with straight trunks, well and characteristically branched for species except where specified otherwise.
- 2.1.7 Refer to Plant Specification List on the Drawings for species, quantities, size, and quality of plant materials.
- 2.1.8 If there are discrepancies between the number of plants listed on the Plant Specification List and plants depicted on the plan, the higher number shall prevail. Notify Owner's Representative if a discrepancy should occur.

TREE, SHRUB, AND GROUNDCOVERS

2.2 PLANTING MEDIUM

- 2.2.1 Planting medium: as specified in Section 32 91 19: Planting Medium and Finish Grading.

2.3 WATER

- 2.3.1 Potable and free of impurities or minerals that may be detrimental to plant growth.
- 2.3.2 Source: Tank / truck mounted equipment, water must be obtained by Contractor off site at their expense. Obtain approval from the Owner's Representative for the use of slow-release watering bags for individual trees. 'Treegator Tree Watering Bag' or approved equal.

2.4 TREE TIE

- 2.4.1 Biodegradable or polyethylene fabric strapping min. 25mm wide. Colour: green. Acceptable product: ArborTie. www.deeproot.com

2.5 TREE STAKES

- 2.5.1 76mm round x 2440mm ht. wooden stakes.

2.6 ANTI-DESICCANT

- 2.6.1 Wax-like emulsion

2.7 BARK MULCH

- 2.7.1 Bark mulch for use in planting beds: Natural dark brown in colour, varying in size from 25 - 75mm +/- in length, 12 - 25mm thick from bark of coniferous trees. Bark mulch shall be clean, free of debris, needles, twigs, leaves, soil, and friable material. Bark mulch to be supplied by Reimer Soils or approved equal. Natural wood mulch will not be accepted.

2.8 FERTILIZER

- 2.8.1 Organic 10-6-4 applied at rate of 40 to 50 g/mm caliper of tree. To be mixed thoroughly within top 75mm layer of planting medium and watered in well.

3.0 EXECUTION

3.1 RELATED WORK

- 3.1.1 Obtain approval of clearing and grubbing, earthwork and related work, and site grading prior to commencing work in this section.

3.2 PRE-PLANTING PREPARATION

- 3.2.1 Ensure plant material is acceptable to the Owner's Representative prior to transporting to site.
- 3.2.2 Remove damaged roots and branches from plant material.

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- 3.2.3 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.

3.3 EXCAVATION AND PREPARATION OF PLANTING BEDS

- 3.3.1 Preparation of planting beds is specified in Section 32 91 19: Planting Medium and Finish Grading. Layout plants in pots on beds for Owner's Representative approval prior to installation.

- 3.3.2 For individual planting holes:

- .1 Stake out or place pots on top of prepared beds for the locations of all trees and plants. Obtain field approval of planting layouts from Owner's Representative prior to excavating planting holes.
- .2 Excavate planting holes to depths and widths as indicated on the Drawings.
- .3 Remove rocks, roots, debris, and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material off site.
- .4 Scarify bottoms and sides of all planting holes as indicated on the Drawings.
- .5 Remove water that enters excavations prior to planting. Notify Owner's Representative if water source is groundwater.

3.4 PLANTING

- 3.4.1 Provide planting schedule. Plant only under conditions that are conducive to good health and safe physical conditions of plants. Extending planting operations over a long period using a limited crew will not be accepted.
- 3.4.2 Trees: excavate holes to depth and width to accommodate root ball as shown on the Drawings.
- 3.4.3 For burlapped root balls, cut away top one third of wrapping and wire basket without damaging root ball. Do not pull burlap or rope from under root ball.
- 3.4.4 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.
- 3.4.5 Plant vertically in locations as indicated. Orient plant material to give best appearance in relation to most viewed side of the plant.
- 3.4.6 For trees and shrubs:
- .1 Backfill soil in 150 mm (6") lifts. Tamp each lift to eliminate air pockets. When two thirds of depth of planting pit has been backfilled, fill remaining space with water. After water has penetrated soil, backfill to finish grade.
 - .2 Form watering saucer as indicated on Drawings.

TREE, SHRUB, AND GROUNDCOVERS

- 3.4.7 For groundcovers, backfill soil evenly to finish grade and tamp to eliminate air pockets.
- 3.4.8 Water plant material thoroughly. Use deep root feeders for trees.
- 3.4.9 After soil settlement has occurred, fill with soil to finish grade.
- 3.4.10 Dispose of burlap, wire, and container material off site.
- 3.5 MULCHING
 - 3.5.1 Bark Mulch:
 - .1 Obtain approval of planting before mulching material is installed.
 - .2 Ensure soil settlement has been corrected prior to mulching with bark mulch.
 - .3 Spread bark mulch as indicated on the Drawings.
 - .4 Loosen soil in planting beds and pits and remove debris and weeds. Spread bark mulch to minimum thickness of 75mm. When mulching is placed in fall, place immediately after planting. When mulch is placed in spring, wait until soil has warmed up.
 - .5 Remove bark mulch pieces not meeting specified acceptable size range.
- 3.6 TREE SUPPORTS AND TREE PROTECTION
 - 3.6.1 Install tree supports as indicated on the Drawings.
 - 3.6.2 Use double stake tree support for deciduous trees.
 - .1 Place stake on prevailing wind side and 150mm from rootball.
 - .2 Drive stake minimum 300mm into undisturbed soil beneath roots. Ensure stake is secure, vertical, and unsplit.
 - .3 Install fabric tree support guying, 1500mm above grade. Tie guying as per manufacturer's instructions.
 - 3.6.3 Once tree supports have been installed, prune as directed by Owner's Representative. Pruning to be completed by a Certified Arborist.
- 3.7 ESTABLISHMENT AND MAINTENANCE PERIODS
 - 3.7.1 Establish plant material for a period of thirty (30) days after the last plant in the project scope is installed and reviewed by the Owner's Representative to confirm the start of the thirty (30) day establishment and maintenance period. Maintenance to include:
 - .1 Watering every second day, adjust as required according to local weather patterns.
 - .2 Fertilizing, weeding, and pruning.

TREE, SHRUB, AND GROUNDCOVERS

- 3.7.2 If planting occurs too late in the fall to have one (1) full month of establishment for acceptance, the thirty (30) day establishment period prior to acceptance will commence on May 1st of the following year and last for 30 days (weather permitting).
- 3.7.3 Conduct ongoing maintenance once plant material is accepted per Section 32 93 11: Landscape Maintenance.

3.8 ACCEPTANCE

- 3.8.1 Trees, shrubs, and groundcovers will be reviewed after the thirty (30) day establishment period is complete.
- 3.8.2 The date of planting acceptance will mark the beginning of the one (1) year warranty period.
- 3.8.3 Trees, shrubs, and groundcovers will be inspected at the end of the warranty period:
 - .1 Trees will be accepted by the Owner's Representative provided that:
 - .1 Trees are showing vigorous new growth and no signs of disease or pests.
 - .2 Trees are straight and securely anchored.
 - .3 Crossing branches have been cleanly pruned.
 - .2 Shrubs and groundcovers will be accepted by the Owner's Representative provided that:
 - .1 Shrubs and groundcovers are showing vigorous, well-rounded new growth.
 - .2 Shrubs and groundcovers are free of disease or pests.
 - .3 Shrubs and groundcovers show no signs of malnutrition or stress.
- 3.8.4 The Contractor shall replace trees, shrubs, and groundcovers that do not meet the standards in 3.9.3 with new plant material as originally specified. All replacement plants shall be subject to a 30-day maintenance period and two (2) year warranty period from the date of replacement.
- 3.8.5 A Certificate of Total Performance for the plantings will be issued at the end of the one (1) year warranty inspection after the successful completion of associated replacements / adjustments.

END OF SECTION

LANDSCAPE MAINTENANCE

1.0 GENERAL

1.1 DESCRIPTION

.1 This Specification shall cover the maintenance of all tree, shrub, and groundcover plantings, which have been installed under this Contract. In general, work shall include:

- .1 Spring cleaning
- .2 Fertilizing
- .3 Watering
- .4 Weed control
- .5 Pest and disease control
- .6 Fall clean-up / Winter preparation

1.2 RELATED SECTIONS

- 1.2.1 Section 32 91 19: Planting Medium and Finish Grading
- 1.2.2 Section 32 93 10: Trees, Shrubs, and Groundcovers

1.3 MAINTENANCE PERIOD

1.3.1 Provide maintenance of project from date of planting completion and review by the Owner's Representative until the end of the thirty (30) day establishment period as defined in Section 32 93 10: Tree, Shrub, and Groundcovers. Maintenance period will be one (1) year.

1.4 WATER SUPPLY

- 1.4.1 Watering of shrub beds and tree plantings within reach of the building can be watered from exterior hose bibbs provided on the building with permission from the Owner.
- 1.4.2 If tank watering is required, arrange for, pay for, and supply potable water for use in tank watering trees and plantings, during the maintenance period.

1.5 PROTECTION

1.5.1 Prevent damage to all completed site amenities including site fencing, trees, landscaping, naturalize areas, lawns, benchmarks, buildings, pavement, site furnishings, site lighting, surface, and underground utilities. Make good any damage.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Materials to conform to the requirements of the related Specification sections.

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- 2.1.2 Herbicide (for control of weed flushes). To meet Manitoba Non-Essential Pesticide and Herbicide use regulations MR 286/2014 or latest. Go to the following site for additional resources:
<http://www.gov.mb.ca/agriculture/crops/guides-and-publications/#wclta>.

2.2 EQUIPMENT

- 2.2.1 Provide all equipment to properly execute work and maintain such equipment in a workable, safe condition during use of this project to all applicable Manitoba Health and Safety standards.
- 2.2.2 Obtain approval by Owner's Representative of equipment to be used to execute the work.
- 2.2.3 Use only approved equipment.

3.0 EXECUTION

3.1 COMMENCEMENT DATE

- 3.1.1 The maintenance period shall commence at the date that all soft landscape works are accepted including tree, shrub, and groundcover plantings as applicable.
- 3.1.2 Acceptance and maintenance periods for various portions of the site or soft landscape works will not be staggered except under special construction circumstances that are out of the control of the Contractor. All parties must agree to a staggered acceptance and maintenance schedule should there become a reasonable need for this approach.

3.2 SPRING CLEANING

- 3.2.1 Planting Beds:
 - .1 Clean shrub beds of debris and dead plant material.
 - .2 Weed as necessary and top up woodchip mulch where degraded to below the original specified depths.

3.3 FERTILIZING

- 3.3.1 To Canada "Fertilizers Act" and "Fertilizers Regulations".
- 3.3.2 Spread fertilizer evenly at frequency, ratio, and rates as recommended by soil test analysis. Use approved mechanical spreading equipment. Check calibration to ensure specified rate is spread evenly. Water immediately after fertilizing. Rectify uneven spreading as soon as it becomes apparent.

3.4 WATERING

- 3.4.1 Apply water as required to supplement rainfall and to maintain optimum growing conditions. In general, water once a week to achieve rates as indicated. Allow soil

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to adequately dry between watering to prevent over saturation without creating water stress.

3.4.2 Trees:

- .1 Water every other day for first month depending on weather conditions.
- .2 Water depending on weather conditions to ensure minimum water penetration of 800mm into soil horizon.
- .3 Apply 9 gal. (40 litres) of water per 25mm calliper per application using deep root feeder.

3.4.3 Apply water in soft spray to avoid packing of soil or damaging plant material or sodded areas. Move sprinklers or adjust irrigation system as required to avoid running of water and return to those areas until moisture penetration has been reached. Do not impede use of sidewalk and other paved areas.

3.5 WEED CONTROL

3.5.1 Maintain site free of weeds using manual weeding operations in planting beds and tree grates. Do not allow weeds to establish for a period longer than two (2) weeks.

3.5.2 Apply herbicide in keeping with provincial regulations only when it will not cause damage to new grass or other plants. Do not use dicambal and picloram solutions.

3.6 PEST AND DISEASE CONTROL

3.6.1 Control pests and disease through pruning or application of pesticides according to local regulations in place. Use species specific pesticides where possible. Use only pesticides of low mammalian toxicity. Strictly follow manufacturer's written instructions.

3.7 WINTER PREPARATION

3.7.1 Rake and assemble leaves after they have been shed by trees and shrubs. Remove from site.

3.7.2 Clean out planting beds. Remove debris from site.

3.7.3 Water planting beds and trees thoroughly during the fall season. Ensure adequate moisture in root zones of plant material prior to freeze-up.

3.7.4 Apply anti-desiccant to coniferous plantings susceptible to winter desiccation.

3.8 FINAL ACCEPTANCE

3.8.1 The Owner's Representative, Owner, and Soft Landscape Contractor will conduct a one-year plant warranty and landscape maintenance review.

3.8.2 Areas will be accepted by the Owner's Representative provided that:

- .2 Trees, shrubs, and groundcovers have had their one-year warranty review and replacements.

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- .3 Trees, shrubs, and groundcovers are growing vigorously and free of major pests and diseases to the standards in Section 32 93 10: Tree, Shrub, and Groundcovers.
 - .4 Planting beds are free of weeds and invasive plant species, and mulch provides full cover between plantings to the originally specified 75mm depth.
 - .5 Trees have all been pruned as directed during final maintenance review meeting.
- 3.8.3 Planted areas will not be considered accepted until the Owner's Representative issues a final report stipulating that the installation is complete and accepted as maintained.

END OF SECTION

DEMOLITION, REMOVAL, CLEARING AND GRUBBING

1.0 GENERAL

1.1 DESCRIPTION

- 1.1.1 Provide all labour, materials, methods, equipment, and accessories for the demolition, removal, clearing, and grubbing of trees and vegetation, pruning of vegetation, removal of concrete curbs and gutters, asphalt, and light pole and concrete base. Remove subgrade to depths as shown on the drawings.

1.2 RELATED SECTIONS

- 1.2.1 Section 31 01 91: Tree Protection
1.2.2 Section 31 23 13: Site Grading

1.3 DEFINITIONS

- 1.3.1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- 1.3.2 Close-cut clearing consists of cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.
- 1.3.3 Grubbing consists of excavation and disposal of stumps and roots, boulders and rock fragments of specified size to not less than as indicated on the Drawings to meet design grades.

1.4 STORAGE AND PROTECTION

- 1.4.1 Prevent damage to benchmarks, existing asphalt, curbs, utilities, trees, and site appurtenances which are to remain. Repair damaged items to approval of Owner's Representative, at no cost to the Owner.

1.5 WASTE MANAGEMENT AND DISPOSAL

- 1.5.1 Separate metal, plastic, wood, and corrugated cardboard packing and place in area designated for disposal and recycling.

2.0 PRODUCTS

2.1 MATERIALS

- 2.1.1 Pesticides contain persistent organic pollutants (POPs), volatile organic compounds (VOCs), biocides, endocrine disrupting chemicals and dioxins. The use of pesticides and herbicides should be used with caution and only when necessary. Workers should always follow all health and safety procedures and adhere to the most current Non-Essential Pesticide Use Regulation Act (MR 286/2014). Use only those products as listed on the "Allowable Herbicide Products

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in Manitoba under MR 286/2014". Information can be found at:
www.gov.mb.ca/conservation/envprograms/initiatives/pesticide_red/index.html

3.0 EXECUTION

3.1 PREPARATION

- 3.1.1 Inspect site and verify with Owner's Representative, items designated to remain.
- 3.1.2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
 - .1 Notify Owner's Representative immediately of damage to or when unknown existing utility lines or irrigation lines are encountered.
 - .2 When utility lines or irrigation lines to be removed are encountered within area of operations, notify Owner's Representative in ample time to minimize interruption of service.
- 3.1.3 Notify utility authorities and have all utilities clearly located on site before starting clearing and grubbing.
- 3.1.4 Coordinate work with utility installers.
- 3.1.5 Keep roads, parking lots, and walkways free of dirt and debris.

3.2 CLEARING AND GRUBBING

- 3.2.1 Clear all areas as indicated on the Drawings.
- 3.2.2 Remove and dispose of roots larger than 75mm in diameter, matted roots and designated stumps from indicated grubbing areas.
- 3.2.3 Grub out stumps and roots as indicated on the Drawings to meet design grades.
- 3.2.4 Grub out visible rock fragments and boulders, greater than 200mm in greatest dimension, but less than 0.25m³.
- 3.2.5 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.
- 3.2.6 Contact the Owner's Representative immediately if silt, unforeseen groundwater conditions or any other subsurface anomalies requiring remediation are encountered.
- 3.2.7 Remove cleared and grubbed materials off site.
- 3.2.8 Burning is not allowed on the construction site.

3.3 VEGETATION PRUNING

- 3.3.1 Prune existing vegetation minimally to accommodate new work.
- 3.3.2 Pruning to be completed by a Certified Arborist with demonstrable experience sourcing the Work.

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- 3.3.3 Prune in according to accepted horticultural practices as outlined in “The Pruning Manual”, Publication No.814A (or latest edition) by Agriculture Canada.
- 3.4 FINISHED SURFACE
 - 3.4.1 Leave ground surface in condition suitable for stripping of topsoil to approval of the Owner’s Representative.
- 3.5 CLEAN-UP
 - 3.5.1 Upon completion of demolition, clearing, and grubbing, remove accumulated environmental dirt, surplus materials, rubbish, tools, and equipment barriers from site.

END OF SECTION