

| DIVISION 13 - LANDSCAPING | | |
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13050-1 **DESCRIPTION**

The work shall consist of the removal and disposal of selected trees and hedges, including stumps and roots. **Urban Forestry must be consulted during the planning phase to establish what trees can be retained and what tree protection measures must take place to ensure their survival. Council Policy C09-011, *Trees on Public Property* must be referenced for tree protection measures**

This Specification applies only to those planted groves, shelter belts, hedges, ornamental or shade trees, and isolated native trees.

13050-2 **CONSTRUCTION**

Selected trees and hedges, including stumps and roots, shall be cleared from the surface within the construction limits of the Contract as designated by the Engineer.

No selected trees and hedges shall be cleared unless authorization is received from **the Urban Forestry Program of the Parks Branch.**

Selected trees and hedges shall be cleared in a manner to prevent any damage to trees and hedges **designated to be retained within and** outside the construction limits, within the right-of-way or on private property.

Removal of trees and hedges shall be completed at least one (1) block ahead of construction.

Trees, hedges, stumps and roots shall not be used in the construction embankments.

All non-elm tree stumps, roots, branches and hedges shall be directed to one of the two compost depots located on 11th Street West or McOrmond Drive. All elm stumps, roots, branches and hedges must be hauled to the City of Saskatoon Sanitary Landfill located north of the Queen Elizabeth Power Plant. The Contractor shall be responsible to pay Landfill Disposal charges.

Burning will not be permitted within or adjacent to a built-up area.

The Contractor shall remove the trees in a manner to prevent any damage to fences, telephone or power lines or cables, trolley wires, traffic lights, street and traffic signs. Tree roots shall be removed in such a manner to prevent any damage to structures, underground services and utilities.

13050-3 MEASUREMENT

The circumference of the tree will be measured to the nearest one centimetre, at breast height. The diameter will be calculated, to the nearest centimetre, from the measured circumference of the tree.

Trees 100 millimetres or more in diameter will be classified as selected trees.

Hedges will be measured to the nearest lineal metre determined from horizontal measurements.

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13055-1 **DESCRIPTION**

The work shall consist of supplying of all labour and equipment necessary to carry out the excavation and backfilling of the boulevards with topsoil.

13055-2 **MATERIALS**

The City of Saskatoon will supply topsoil located in stockpiles throughout the City.

13055-3 **CONSTRUCTION**

3.1 **Scheduling**

The boulevard shall be completed within the time period of 2 weeks after the curb or sidewalk is completed. Boulevard construction will not be permitted when street improvements are being carried out.

3.2 **Boulevard Preparation**

Boulevard preparation shall include the excavation or filling of the boulevard area to proper grade. Boulevard preparation shall be to an elevation of 100 mm below the top of sidewalk or curb and slope 30 mm per metre towards the sidewalk or curb. Where boulevard improvements are carried out adjacent to improved lawns, the boulevard shall be excavated 100 mm below the lawn at the property line. Boulevard preparation shall be carried out prior to sidewalk or curb construction and be within 25 mm prior to the placing of topsoil. Material used for boulevard preparation shall be of quality which will be conducive to the growth of grass.

Excavated material shall be used as far as practicable for the formatting of fill. Excess material shall be disposed of as directed by the Engineer.

Boulevard width will be staked or designated by the Engineer.

In locations where there are existing driveways across the boulevard, the Contractor will be responsible to preserve the driveways in their original condition. No topsoil shall be placed where driveways are to be constructed.

3.3 Inspection

After the boulevard excavation is completed, the Contractor shall request inspection. Approval must be obtained before any topsoil is placed.

3.4 Placement of Topsoil

Depth of topsoil placed on the boulevard shall be 100 mm.

The topsoil shall be level with the top of sidewalk or curb. For center boulevard construction, the boulevard shall be crowned a minimum of 3%. For median construction the median shall be crowned a minimum of 5%.

The Contractor shall accommodate the City of Saskatoon Electric System Branch or SaskPower to install underground electrical wiring and street light bases before placing topsoil on the boulevard.

Prior to placing of topsoil, the Contractor shall remove all concrete rubble, granular and other inferior materials placed on the boulevard during sidewalk and curb construction.

3.5 Existing Boulevard Improvements

Where boulevard construction is carried out along improved lawns, care shall be taken by the Contractor to prevent damaging existing shrubs, trees, plants or lawns. No trees or shrubs shall be removed unless authorized.

3.6 Cleaning Sidewalks and Streets

Sidewalks, streets, private walks and driveways shall be maintained free from dirt and debris.

At all times, they shall be maintained safe for their designated use and shall be thoroughly cleaned when the topsoil placement has been completed.

13055-4 RESPONSIBILITY REGARDING EXISTING UTILITIES, STRUCTURES AND PRIVATE PROPERTY

Water turnoffs, (curb boxes) are located in the boulevard area to every developed property. Before any excavation is carried out, it is important that all curb boxes are located and marked.

When a Contractor damages any curb boxes, he shall immediately notify the Engineer and such shall be repaired at the expense of the Contractor.

All repair work associated with valves and valve casings, of any nature, will be carried out by the Contractor and inspected and approved by the Engineer. Valves damaged by the Contractor will be repaired at the expense of the Contractor.

Any damage done by the Contractor to buildings, building entrances, driveways, sidewalks, curb or boulevard shall be repaired or restored by the Contractor to the satisfaction of the Owner and the Engineer within 2 weeks after the damage has occurred.

13055-5 TOPSOIL STOCKPILES

The source of topsoil for each project will be designated by the Engineer.

During the removal of the topsoil from a designated stockpile, a safe slope shall be maintained by the Contractor at all times. A maximum slope of 3 to 1 shall be maintained for safety requirements.

All topsoil shall be removed from the bottom of the stockpile. When boulevard work is completed, the stockpile and surrounding area shall be levelled to the satisfaction of the Engineer.

A letter of authorization will be provided to the Contractor to remove topsoil from stockpiles, and will state equipment and operators.

Gates on fenced stockpiles shall be locked by the Contractor daily after completing loading.

13055-6 MEASUREMENT

6.1 Boulevard Construction will be measured in square metres. Areas left for crossings or constructed by property owners will be excluded.

- 6.2** Extra excavation will be measured by cross section and calculated in cubic metres for the volume of material above the adjacent concrete sidewalk or curb or for unsuitable material removed below the bottom of the proposed topsoil.
- 6.3** Extra embankment will be measured by cross section and calculated in cubic metres for only material required for embankment below the bottom of the sidewalk (below proposed topsoil), or for material used to backfill excavations of unsuitable material. This quantity will not be measured if the material used for embankment will be paid as excavation on the project.
- 6.4** Sodding boulevards will be measured in square metres.
- 6.5** Topsoil backfill will be measured in square metres of area backfilled with imported topsoil to a depth of not less than 125 mm.

13055-7 **PAYMENT**

- 7.1** Boulevard construction will be paid for at the contract unit price which will be full compensation for excavation to a point 100 mm below the top of the concrete sidewalk and/or curb preparing area to design elevations and cross section, loading, hauling, placing and levelling topsoil, and all incidental related work.
- 7.2** Extra Excavation will be paid for at the contract unit price per cubic metre which will be full compensation for excavating, loading, hauling and disposing of material, and all incidental related work.

- 7.3** Extra Embankment Construction will be paid for at the contract unit price which will be full compensation for placing, compacting, trimming and incidental related work. It shall also include excavating, loading, dumping of earth material when not available from surplus excavated material.
- 7.4** Sodding Boulevards will be paid for at the contract unit price which will be full compensation for the supply of grass sod (or salvaging existing sod prior to excavation), final trimming of existing topsoil, placing sod, watering sufficiently to establish growth, and related incidental work.
- 7.5** Topsoil Backfill will be paid for at the contract unit price which will be full compensation for the loading, hauling, placing and levelling of topsoil from City stockpiles, and related incidental work.

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13060-1 GENERAL

1.1 Instructions

The General Conditions and Instructions of the contract, the Drawings, Specifications and Addenda shall be read with this part as if printed in full herein.

1.2 General

The Contractor shall furnish all labour, materials, equipment and services, necessary to complete the Work as specified herein and as shown on the Drawings.

1.3 Examination

Examine the work of other Sections upon which the work of this Section depends and correct any defects.

1.4 Laying Out Work

The Contractor shall stake locations of heads and valves and receive approval from the Owner prior to excavation and installation.

1.5 Testing

Upon completion of the irrigation system, the entire system shall be tested. The air shall be flushed from the pipes and all components shall be checked for proper operation. The system shall not be accepted by the Owner until all portions are operating as intended and until all deficiencies have been corrected.

1.6 Balancing and Adjustments

The Contractor shall balance and adjust the various components of the sprinkler system so the overall operation is most efficient and coverage is uniform.

1.7 As Built Plan/Maintenance Manual

Upon completion of the Work, the Contractor shall supply the Owner with an as-built plan showing the exact location of all components of the system, and a manual outlining operating and maintenance instructions.

1.8 Maintenance

1.8.1 The Contractor shall test and adjust all equipment for a smooth trouble-free irrigation system.

1.8.2 Defects or misalignment of any part of the Work caused by settlement of bedding or backfill material within the warranty period shall be corrected by the Contractor at his expense. Depressions caused by such settlement in excess of specified depths shall be repaired by the Contractor at his expense.

1.8.3 Further to Section 00700-18, maintenance not of an emergency nature shall be brought to the attention of the Contractor in writing and he shall take the necessary action to correct the faulty work.

1.8.4 The Contractor shall blow-out all irrigation water lines prior to freeze up in the fall of the year of completion, and reconnect the irrigation system in the spring of the following year.

1.8.5 The Contractor shall familiarize City of Saskatoon parks Department personnel with the operation of the irrigation system and locations of equipment.

1.9 Warranty

All irrigation system equipment and installation shall be guaranteed for a full one year following completion of approved irrigation installation. Exempt is equipment and installation damaged by accidental causes or vandalism.

1.10 Basis of Payment

1.10.1 Water Lines shall be paid for on the basis of price per lineal metre of pipe in place including the supply and installation of the pipe and fittings, excavation, backfilling and testing.

1.10.2 Spray heads shall be paid for on the basis of price bid per unit and shall include the supply and installation of the sprinkler, and the connection to the water line, fittings, and swing joint.

1.10.3 Quick Coupling Valves shall be paid for on the basis of price bid per unit and shall include supply and installation of the valve, connection to the water line, fittings and swing joint.

1.10.4 Valves shall be paid for on the basis of the price bid per unit which shall include supply and installation of the valve and valve box and 50 mm depth of pea gravel at the base of the valve box.

- 1.10.5** Control Lines shall be paid for on the basis of the unit price per metre and shall include supply of wire, connectors, placement in trench and connection to the valves and the controller.
- 1.10.6** Automatic Controller shall be paid for on the basis of the price bid per unit which shall include complete supply and installation of the controller, metal controller housing and concrete controller base. The City will supply the 115 volt service to the controller base.
- 1.10.7** Miscellaneous Trenching shall be paid for on the basis of the price bid per lineal metre and shall include trenching required for placement of control wires not placed in irrigation line trenches.
- 1.10.8** Sleeves shall be paid for on the basis of unit price bid per lineal metre and shall include supply and placing of sleeves in an augered hole below existing and proposed pathways and retaining walls.
- 1.10.9** Common Trench: Where pipe in common trench is shown on the Tender Form, the price shall include supply and placing of that pipe in a trench which has been provided and paid for in the price of another pipe or sleeve. The trench shall be of sufficient width to accommodate 1-25 mm diameter and 1-13 mm diameter polyethylene pipe.
- 1.10.10** Water Connections shall be paid for on the basis of the unit price bid which shall include excavation, supply and installation of all piping, valves, and fittings from the City water main to the point where the pipe enters the meter box. The water line from the water main to a point behind the walk shall be installed using a shaft and auger

method. Insulation shall be installed over a portion of the water line as shown on detail drawings.

1.10.11 Meter Box shall be paid for on the basis of the unit price bid which shall include excavation, supply and installation of all pipes, valves, and fittings, bedding, backflow prevention device and meters within the meter box, including the supply and installation of the meter box.

1.10.12 Drinking Fountain shall be paid for on the basis of the unit price bid which shall include excavation, supply and installation of all piping, granular material, concrete culvert, fountain head and any miscellaneous material that may be indicated on the detailed drawing or required to complete the installation.

13060-2 **PRODUCTS**

2.1 **Pipe**

All pipe shall be Series 100 CSA approved low density polyethylene (P.E.) pipe with insert fittings at joints except for series 160 high density P.E. where indicated. Surge pressure for this polyethylene (P.E.) pipe shall be 200 psi and 320 psi respectively.

2.2 **Fittings**

P.E. pipe fittings shall be galvanized insert fittings with double clamping at pipe joints and approved saddle fittings at head connections or PVC insert fittings with double clamping at pipe joints and approved saddle fittings at sprinkler head connections.

2.3 Swing Joints

2.3.1 Swing joints shall be unplasticized PVC, schedule 80 threaded pipe and schedule 40 fittings or CSA schedule 40, galvanized mild steel pipe and galvanized screwed malleable, mild iron fittings.

2.3.2 All underground steel pipe and iron fittings shall be wrapped using:

- a) Prime coat
- b) Asphalt coat
- c) 15 pound asbestos coat

2.3.3 Swing joint construction shall be as shown on detail drawings.

2.4 Electrical Control Lines

2.4.1 Control lines shall be direct burial UF-UL listed TWU #14 wire of a different color than the 115 volt service to the controller.

2.4.2 The 24 volt grounds, shall be one of a different color than other 24 volt lines and the 115 volt service.

2.4.3 Provide a separate ground for shrub beds and turf areas.

2.5 Sprinkler Heads

2.5.1 Pop-up spray heads shall be Toro Series 300 with nozzles as specified in the irrigation distribution table, or approved equal.

2.5.2 Pop-up sprinkler heads shall be Toro Series 570 or approved equal.

2.5.3 Shrub spray heads shall be Toro Series 550 or approved equal.

2.5.4 Quick coupling valves shall be Royal Coach #25000 or approved equal.

2.6 Automatic Controller

Automatic controller shall be Toro Model No. 176-06-01, 11 station, pedestal, 24 volt electric c/w weather proof locking metal cabinet or approved equal.

2.7 Water Main Connection/Meter Box

2.7.1 Materials for water main connection and meter box shall be as specified on drawings or as otherwise approved.

2.7.2 Water meter shall be obtained from the City of Saskatoon and paid for and installed by the Contractor.

2.8 Valves

Automatic valves shall be Toro Series 232 or approved equals. Locations and sizes of valves are as noted on the irrigation drawing and/or in the specification.

2.9 Valve Boxes

Valve boxes for zone control valves shall be Owner approved prefabricated plastic boxes complete with locking cover.

2.10 Sleeves

Sleeves shall be PVC pipe of sufficient diameter to allow clear passage of all water lines and control wires required for that portion of the system. Sleeves shall extend a minimum of 300 mm beyond the edge of surfaces.

2.11 Drinking Fountain

2.11.1 Fittings and swing joint shall be according to specification 13060-2.2, 2.3.

2.11.2 Granular material shall be 6 mm (1/4") pea gravel in the concrete culvert and crushed rock in the drainage pit.

2.11.3 Concrete culvert shall be 600 mm diameter C-14 unreinforced.

2.11.4 Stand pipe shall be 13 mm P.E. Series 100 to a point 300 mm from the bubbler where the use of 300 mm x 13 m heavy duty galvanized steel stand pipe shall connect to the bubbler.

2.11.5 Drinking fountain bubbler shall be Hawes Model 5060 or equivalent and shall conform to all Public Health Standards and Codes.

13060-3 EXECUTION

3.1 Excavation

3.1.1 All excavation shall be unclassified and shall include all materials encountered except materials which cannot be excavated by normal mechanical excavation means. Such exceptions shall be brought to

the attention of the Owner or his representative and an adjustment in price shall be agreed upon before excavation of these areas proceeds. Such price adjustments and agreements shall include responsibility for disposal of the unsuitable materials removed from the trench and the acquiring of additional backfill material.

3.1.2 The minimum depth of cover over main line pipes shall be 450 mm. The minimum depth of cover over the lateral pipes and control lines shall be 300 mm.

3.1.3 Backfill material shall be free from rocks, large stones, and other unsuitable substances which could damage the pipe or create unusual settling problems. Backfilling shall be done in 150 mm layers and tamped after each layer is put in to prevent excessive settling.

3.1.4 Backfilling of trenches containing plastic pipe shall be done when pipe is cool to avoid excessive contraction in cold weather. Such backfilling can be done in early morning hours or the pipe may be water cooled prior to backfilling procedures.

3.1.5 Sleeves shall be installed where pipes will pass under all roads, walks and retaining walls. Sleeves under walls and retaining walls shall be installed in an augered hole provided by the Contractor. Sleeve under Spadina Crescent shall be installed in an open trench to be supplied and repaired by the Owner. Give minimum 24 hours notice for work to be undertaken by the Owner.

3.2 Installation of Pipes

3.2.1 Installation of pipes and fittings shall be in accordance with the manufacturer's instructions and shall proceed from the point of connection of supply.

Concrete thrust blocks shall be installed at all directional changes in the pipelines in accordance with pipe manufacturer's instructions. See the detail drawing for thrust block details.

3.2.2 Connections to the pipe for all sprinkler heads shall be made by using approved saddle fittings for polyethylene pipe.

3.2.3 Polyethylene pipe may be installed by standard trenching techniques or by "pulling in" pipe. If the pull-in method is used, the pipe "plow" shall be a vibratory type. The "Mole or Bullet" which precedes the pipe and is used to form the opening for the pipe, shall not be less than 25 mm larger in diameter than the outside diameter of the pipe.

3.3 Sprinkler Heads

3.3.1 All sprinklers shall be installed on swing joints as shown on the detail drawing.

3.3.2 Sprinkler heads in sodded areas shall be installed so that the top is slightly above the finished grade level and marked with a stake to prevent damage by equipment.

3.3.3 Shrub sprinkler heads shall be installed so that top of heads will be approximately 50 mm above the 100 mm mulch level.

3.3.4 Backfill around the swing joint and sprinkler shall be as shown on the detail drawing.

3.4 Valves

3.4.1 Valves shall be installed according to manufacturer's instructions.

3.4.2 The valve shall be installed in a valve box set plumb and flush with the surface.

3.4.3 The valve box shall have 50 mm depth of pea gravel below the valve.

3.4.4 The valve box location shall be marked with a stake to prevent damage by equipment.

3.5 Control Lines

3.5.1 Control lines shall be installed in a neat and orderly fashion and may be installed in the pipe trenches or in separate trenches. The wires shall be bundled together and taped every 2 m. Provide separate ground for shrub bed and turf areas.

3.5.2 Splicing shall be minimized.

3.5.3 Splices where required, shall be made in meter pits or valve boxes and shall be made waterproof with the use of waterproof or scotch-lock or pen-tite kits.

3.5.4 All wiring shall be installed in accordance with existing codes.

3.6 Automatic Controller

Automatic controllers shall be installed according to the manufacturer's recommendations, and as indicated on the drawings or as directed in the field by the Owner. The 115 volt connection shall be made by the Contractor.

3.7 Water Service Connection

3.7.1 Water service connection shall be made at the location shown on the plans.

3.7.2 Water connections shall be installed as detailed and in accordance with City of Saskatoon specifications.

3.8 Meter Boxes

3.8.1 Boxes containing the meter, gate valve and double back flow preventer shall be constructed as detailed on construction drawings or as otherwise approved. The box shall be set flush with finished grade.

3.8.2 The Contractor shall perform the work in a neat and workmanlike manner, and in accordance with City of Saskatoon standards.

3.9 Drinking Fountain

3.9.1 Drinking fountains shall be installed at the location shown on the plans.

3.9.2 Drinking fountains shall be installed as shown on detail drawings.

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13080-1 GENERAL

Where possible within the construction area, Urban Forestry will take the lead in replacement planting and watering of trees. All costs associated with the purchase of trees and labour and equipment will be covered through claims made to the capital project as a result of tree loss.

City of Saskatoon Horticulture Program at the Parks Branch shall be consulted to determine what their preferences are for relandscaping these locations.

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13095-1 **DESCRIPTION**

The work shall consist of supplying all labour, equipment and materials required to prepare the sites for the installation of wire mesh benches. The installation of the wire mesh benches is excluded from the contract.

13095-2 **MATERIALS**

1.2 **Base Material**

All material used to level the base for the poured in place concrete pads shall be clean, well graded, granular aggregate of 20 mm maximum top size.

2.2 **Ready Mixed Concrete**

Concrete shall meet CSA specifications unless otherwise specified. Concrete mix properties shall conform to exposure classification C-2 and air content category.

1. This is summarized as follows:
 - 1) Minimum specified 28 day compressive strength: 32 MPa
 - 2) Maximum W/C ratio: 0.45
 - 3) Air content: 5 to 8 (20 mm aggregate)

Further to the CSA requirements, the minimum air content for extruded flatwork shall be 5% and the minimum for hand placed flatwork shall be 6%. The minimum portland cement content shall be 285 kgs/m³ with a total minimum cementitious content of 330 kgs/m³. Slump shall not exceed 80 mm.

2.3 Sand Laying Course

The sand laying course shall be a well graded clean washed sharp sand with 100% passing a 10 mm sieve size and a maximum of 3% passing a No. 200 sieve size. This is commonly known as manufactured concrete sand, limestone screening, or similar. DO NOT USE MASON SAND.

13095-3 CONSTRUCTION

3.1 Site Inspection and Survey

3.1.1 It shall be the Contractor's responsibility to inspect each bench site to ensure there are no severe grade differentials or obstacles that would cause installation problems.

3.1.2 The Contractor is responsible to verify locations of the benches in the field. It is further the Contractor's responsibility to lay out the location of the concrete slabs and pads as per the Engineer's drawings and have the said layout approved by the Engineer prior to commencing of the installation or pouring of the slabs and pads.

3.2 Installation of Poured in Place Concrete Slabs

The installation of concrete slabs shall include:

3.2.1 Trimming, forming, shaping and compaction of existing level course, supplying and placing of any additional levelling course.

Supplying, placing, vibrating, jointing and finishing of concrete, supplying and applying curing compounds as may be specified by the Engineer and backfilling. Care is to be taken in forming and finishing that will ensure no heavy cantilever-like extrusion will project from the slab structure.

- 3.2.2** Restoration of the boulevard including sprinkler systems, supply and placement of topsoil, back sloping, and supply and installation of sod or seed depending upon nature of existing grass.

3.3 Installation of Bench Pads

The bench pads to be located in the concrete paver areas are to be precast and the exposed edges trowelled to match the pavers. Sufficient pavers are to be removed to allow the installation of the pads. The pavers are then to be cut and replaced as necessary to form a uniform surface. The pads and replaced pavers are then to be vibrated with an appropriate mechanical compactor such that the pads and surrounding pavers form a smooth level surface. Sand is then to be spread over the surface and brushed into the cracks to lock the pads and pavers in place. Excess sand and any excess construction material is to be removed.

3.4 Finish and Site Cleaning

- 3.4.1** Upon completion of the installations all excessive materials and debris shall be cleaned from the sites and disposed of by the Contractor.

3.5 Warranty

The Contractor shall remedy all defects in the work due to faulty materials or workmanship or failure of the work itself for a period of two (2) years from the time of completion.

13095-4 MEASUREMENT

Measurement shall be based on the dimensions shown on the "Site" drawings and "Detail" drawings.

13095-5 PAYMENT

Payment is to be made in one lump sum upon completion of the contract. The price shall include the complete cost of supplying and installing all materials except the benches and include all other associated on site labour.

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13100-1 **DESCRIPTION**

This section specifies requirements for finish grading, the supply and installation of topsoil, sod, trees, shrubs, vines and mulch and landscape maintenance.

Refer to the “Standard Construction Specifications and Drawings: Parks” on the City of Saskatoon’s Internet web site at <http://www.saskatoon.ca>. Under the “Find City Services” menu, click on the letter ‘P’. Scroll down and click on the title “Parks Open Space Design Section”.

13100-2 **BASIS FOR PAYMENT**

2.1 **Finish Grading**

2.1.1 The bid price for finish grading shall include the following:

- a) Scarification of existing subsoil, rough graded by others.
- b) Supply and installation of topsoil as specified to sodded areas and planting beds, including raking smooth.

2.1.2 The finish grading price shall not include backfill mix in planting pits.

2.2 **Sodding**

2.2.1 The bid price for sodding shall include the supply and installation of sod only, in accordance with the specifications.

2.2.2 The sodding price shall not include topsoil and finish grading.

2.3 Planting

Planting will be done by Urban Forestry and associated costs charged back to the Capital Project as per 13080-1 General.

2.4 Maintenance

The bid price for maintenance shall include all work to undertake maintenance as specified **by the City of Saskatoon Horticulture Program.**

13100-3 WARRANTY

- 1) The Contractor hereby warrants the work of this section for a full one year from the recognized completion date to the entire project.
- 2) Sod which is not green at the end of the warranty period shall be replaced at the Contractor's expense.
- 3) Required replacements shall be plants of the same species and size as originally specified, and shall be supplied and planted in accordance with the drawings and specifications. Such replacement material shall also be subject to a full one-year warranty period.

13100-4 PRODUCTS

4.1 Topsoil

4.1.1 Topsoil for finish grading and backfill mix shall be black topsoil, friable natural loam consisting of not less than 4% organic matter for

clay loams and not less than 2% for sandy loams, with an acidity value ranging from pH 6.0 to 7.5 and capable of sustaining vigorous plant growth. It shall be free of any mixture of subsoil, clay lumps, and free of stones and roots over 50 mm in diameter and other extraneous matter. It shall not contain couch grass rhizomes.

- 4.1.2** The Contractor shall supply test results to verify that the topsoil supplied meets the requirements stated. The cost of these tests shall be the responsibility of the Contractor.

4.2 Fertilizer

Fertilizer to be complete commercial fertilizer with 50% of elements derived from organic sources.

4.3 Sod

- 4.3.1** Sod shall be Grade No. 1 cultured turf composed of a minimum of 60% Kentucky Bluegrass (*Poa Pratensis*).

Turf shall be reasonably free from weeds and disease and the thickness of the soil portion of the sod shall be of such density that no surface soil is visible when mowed to a height of 40 mm. Sod grass shall not be longer than 50 mm upon delivery. The thickness of the soil portion of the sod shall be 20 - 25 mm.

- 4.3.2** Sod shall be mowed to a height of 40 mm prior to cutting and delivery.

13100-5 EXECUTION

5.1 Finish Grading

5.1.1 Scarify existing rough graded subsoil to a minimum depth of 100 mm before topsoil is placed. Remove debris, vegetation and stones greater than 50 mm in diameter from the subsoil before topsoil is spread.

5.1.2 Fine grade and shape the subsoil so that by spreading a uniform depth of topsoil the final elevations, contours, and positive drainage may be achieved, making allowance for finish landscaping.

5.1.3 Evenly place topsoil to a minimum depth of 100 mm for sodded areas and planting beds.

Fine grade by raking or other acceptable means, and ensure positive drainage is achieved.

5.1.4 The Owner or his representative shall be notified for inspection of the fine grading before sodding or planting commences.

5.2 Sodding

5.2.1 **Fertilizer**

1) Fertilize as required, in accordance with good horticultural practice and as dictated by site conditions.

2) Apply fertilizer uniformly and incorporate into soil.

5.2.2 Sodding Procedure - Immediately or as soon after as possible after delivery to the site lay the sod.

Do not allow to dry before laying. Lay sod evenly and closely packed together, using an alternate pattern. Roll and pack the entire sodded area to form an even surface flush with adjoining curbs, sidewalks and existing grades. Peg down sod on slopes of 4 to 1 or greater with 150 mm splinters. Complete sodded areas including patching, watering, and rolling within 48 hours of laying.

5.2.3 Edging - Edge sod to form neat 1000 mm diameter circular openings at the base of all trees. Place a full row of sod, not less than 300 mm in width, along the perimeter of sodded areas adjacent to the edges to shrub beds.

5.2.4 Watering and Rolling - Thoroughly water sodded areas within 24 hours of laying sod. After watering, roll edges (pounded if necessary) to form an even surface and to adjoin level with existing grades, sidewalks and curbs.

5.2.5 Unfavourable Conditions - Do not lay sod when in a frozen state or of such condition not favourable for transplanting or for growth.

5.3 Mulching

Install mulch to a minimum uniform depth of 100 mm and as detailed on the drawings.

5.3.1 Mulch shall be untreated wood chips produced from post sharpening at plants in Northern Saskatchewan, or other approved product.

5.3.2 Submit a sample of mulch to the Owner or his representative for approval prior to installation.

5.4 Landscape Maintenance

5.4.1 All plant material shall be maintained by the Contractor from the start of the work until freeze-up.

5.4.2 Maintenance shall include measures necessary to establish and maintain all plants in an acceptable, vigorous and healthy growing condition, including, but not necessarily limited to, the following:

- 1) Cultivating and weeding of planting beds and tree pits. When herbicides are used for weed control, they shall be applied in accordance with manufacturer's recommendations. Damage resulting from Contractor's use of herbicides shall be remedied at his own expense.
- 2) Watering as necessary to ensure sufficient supply of water for good plant growth.
- 3) Pruning, including the removal of dead or broken branches.

- 4) Disease and insect control when required. **Chemicals shall not be used for such control. Pest Management of the Parks Branch can be consulted if there are any potential concerns.**
- 5) Mowing of turf to a maximum of 50 mm height. The final mowing shall be completed near the end of the maintenance period.
- 6) Debris removal, resulting from landscape maintenance, to a location approved by local officials.
- 7) It shall be the responsibility of the Landscape Contractor to ensure that the Owner is familiar with the standard practice of maintenance and is prepared to continue the maintenance from the end of the Contract maintenance period.
- 8) If at any time during the guarantee period the Landscape Contractor considers that the Owner is not providing proper maintenance, the Landscape Contractor shall notify the Owner in writing.

END OF SPECIFICATION 13100

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13200-1 **DESCRIPTION**

This Contract is used for landscaping repairs of a sewer and water excavation. The average excavation size to be repaired is 16.3 m².

The items of work shall include the following:

1. Supply or removal, levelling and preparation of topsoil.
2. Supply and placement of seed and/or supply and installation of sod.
3. Repair to existing underground sprinkler systems (at the discretion of the Engineer).
4. Installation of small trees, shrubs, and plants.
5. Installation of precast concrete paving blocks.

The Contractor shall supply all materials, equipment, tools, labour and transportation necessary to perform the required repairs.

13200-2 **TOPSOIL**

2.1 **General**

1. Topsoil shall be uniformly distributed over the repair surface with a minimum depth of 100 mm.

2. The area shall be levelled to match the existing contours.
3. Topsoil shall be added or removed to ensure a level surface.
4. Topsoil shall not be placed while in a frozen or muddy condition, or in conditions that may otherwise be detrimental to proper grading.
5. After the topsoil has been spread to final grades, it shall be cleared of all foreign material and other objects that would hinder maintenance of the seeding and/or sodded areas.
6. All sidewalks, streets, private walks and driveways shall be maintained free from dirt and debris. At all times, they shall be maintained safe for their designated use and shall be thoroughly cleaned when the topsoil placement has been completed.

2.2 Basis for Payment

1. Removal of soil - The bid price for removal of soil shall include the removal and disposal of excess material to facilitate final raking and preparation of topsoil.
2. Supply of topsoil - The bid price for supply of topsoil shall include the supply and installation of topsoil to facilitate final raking and preparation of topsoil.
3. The supply or removal of soil bid prices shall not include final raking and preparation of topsoil.

13200-3 SODDING

3.1 General

1. Sod shall be of a recognized mixture of grasses suitable for the Saskatchewan climate and shall be free of weeds and undesirable plants and materials. It shall match as closely as possible the existing sod.
2. Sod shall be placed in accordance with recognized practices and shall be placed so as to match the existing lawn surface.

3.2 Basis for Payment

The bid price for sodding shall include the following:

- a) Levelling, preparation and final raking of topsoil.
- b) Supply and installation of sod.

13200-4 SEEDING

4.1 General

The seed for irrigated boulevard areas shall be a mixture of one pound Kentucky Bluegrass, Canada No. 1 and three pounds Creeping Red Fescue, Canada No. 1.

The seed for non-irrigated boulevard areas shall be a mixture of one pound Creeping Red Fescue, Canada No. 1 and three pounds Russian Wild Rye, Canada No. 1.

Seed shall be sown at the rate of 4 kg per 100 m² of lawn area. Seed shall be evenly distributed with an approved mechanical seeder. Seeding shall be done in two operations: one half the seed to be sown across the lawn area in one direction and the other half in the opposite direction. After the seed is sown, it shall be incorporated into the top half inch of soil, but not deeper.

4.1 Basis of Payment

The bid price for seeding shall include the following:

- a) Leveling, preparation and final raking of topsoil.
- b) Supply and installation of seed.

13200-5 UNDERGROUND SPRINKLER SYSTEMS

5.1 General

1. The Contractor shall ascertain the type and make of material required for repairs such that the replacement sprinkler system is compatible with the existing system.
2. Following completion of the repair, that portion of the pipe repaired shall be checked to ensure that all connections are watertight.

5.2 Basis for Payment

1. Materials

Payment will be based on cost of material plus 15%.

2. Installation

- a) Damaged sprinkler head - the bid price shall include the acquisition and installation of the sprinkler head.
- b) Damaged sprinkler line - the bid price shall include the acquisition and installation of the sprinkler line.

13200-6 PLACEMENT OF PRECAST CONCRETE PAVING BLOCKS

6.1 General

1. The Contractor will be required to lift and regrade existing paving blocks or supply and reinstall new blocks where old blocks have been damaged. In the case where pavement blocks have been damaged the Contractor shall ascertain the type and size of concrete paving block(s) so that the replacement(s) is compatible with the existing pavement blocks.
2. All precast concrete blocks shall be placed in a level manner and close to their original positions.

6.2 Basis of Payment

1. Supply and Installation

a) Materials

Payment will be based on cost of precast concrete paving blocks plus 15%.

b) Installation

The bid price shall include the acquisition and installation of precast paving blocks.

2. Lift and Regrade

For settled blocks the bid price shall include removing, regrading and re-installation of the paving blocks.

13200-7 PLANTING OF SMALL TREES, SHRUBS AND PLANTS

7.1 General

Refer to the “Standard Construction Specifications and Drawings: Parks” on the City of Saskatoon’s Internet web site at <http://www.saskatoon.ca>. Under the “*Find City Services*” menu, click on the letter ‘P’. Scroll down and click on the title “Parks Open Space Design Section”.

7.2 Basis of Payment

1. Material

Payment shall be based on cost of material plus 15%.

2. Installation

- a) The bid price shall include installations of small trees and shrubs.
- b) The bid price shall include a separate price for installation of bedding plants, (per 1/2 dozen).

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13400-1 **DESCRIPTION**

The work consists of the placement and/or supply of topsoil on the designated areas prior to placement of grass seed or sod.

Related specifications Fine Grading and Seeding 13500.

13400-2 **MATERIALS**

Topsoil supplied by the Contractor shall be:

- ◆ Maintained with adequate moisture.
- ◆ Friable.
- ◆ Neither heavy clay nor very light and sandy.
- ◆ Comprised of a minimum of 5% to a maximum 20% organic matter by volume.
- ◆ Free from subsoil, roots, grass, weeds, toxic materials, stones and foreign objects.
- ◆ Within an Acidity Range (pH) of 5.5 to 7.5.

A sample shall be submitted to the Engineer for approval prior to placement.

13400-3 **SUBGRADE PREPARATION**

Scarify existing rough graded subsoil to a minimum depth of 100 mm before topsoil is placed. Remove debris, vegetation and stones greater than 50 mm diameter from the subsoil before topsoil is spread. Apply topsoil to a minimum depth of 100 mm to the approval of the Engineer. Removal and disposal of debris, vegetation, and stones greater than 50 mm shall be included in the unit price for topsoil placement, spreading and levelling.

13400-4 TOPSOIL PLACEMENT

Topsoil shall be placed to a minimum depth of 100 mm over surfaces not previously covered. The final depth shall be within 15 mm of design depth but not uniformly high or low. Any roots, stones, or other debris shall be removed from the finished surface and disposed of at the City Landfill.

13400-5 MEASUREMENTS AND PAYMENT

Measurement and payment for topsoil supply and placement shall on a unit price basis per square metre of horizontal area and include all materials, equipment and labour to prepare the existing subgrade, supply, load, haul, place and spread the topsoil.

Measurement and payment for topsoil placement shall on a unit price basis per square metre of horizontal area and include all materials, equipment and labour to prepare the existing subgrade, load, haul, place and spread the topsoil.

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13500-1 GENERAL

The general intent of this section is to supply and place seed in those areas which have been disturbed by construction. Areas of established prairie grassland shall not be seeded.

The work related to this section is that of Topsoil, Section 13500.

13500-2 PRODUCTS

Grass seed shall be Canada No. 1 Grade to Federal and Provincial seed laws and having minimum germination of 75% and minimum purity of 97%. The water used shall be potable, free of impurities that would inhibit germination.

Seed Mix

Canada No. 1 Grade seed of the following mixture for a 25 kg bag by seed mix (premixed):

Roadway Boulevard/Median mix (Urban cross section)

- ◆ 6.9 kg Kentucky Blue Grass (Alene)
- ◆ 1.7 kg Creeping Red Fescue (common)
- ◆ 2.1 kg Perennial Rye Grass (common)
- ◆ 6.9 kg Chewings Fescue (Proformer)
- ◆ 7.4 kg Tall Fescue (Mustang)

Roadway Ditch mix (Rural cross section)

- ◆ 1.9 kg Stream bank wheat grass
- ◆ 2.1 kg Creeping Red Fescue (common)

- ◆ 4.6 kg Perennial Rye Grass (common)
- ◆ 6.4 kg Crested Wheat Grass (common)
- ◆ 3.4 kg White Dutch Clover
- ◆ 6.6 kg Russian Wild Rye (Swift)

Fertilizer

Complete synthetic, slow release with maximum 35% water soluble nitrogen. The contractor will determine fertilizer type and amount required by soil analysis. In order to determine the type and rate of fertilizer to be incorporated with the seed mixture, topsoil samples representing the soil mixture on each job shall be analysed. Copies of the soil analysis and fertilizer recommendations shall be provided to the Engineer for final approval prior to application. Application rate to be in accordance with soil test recommendations for the purpose of bedding, assume a maximum rate of 224 kg/ha.

When surfaces have been prepared and levelled, and the appropriate type and amount of fertilizer to be applied has been determined by suitable analysis all to the approval of the Engineer, seeding operations may begin.

13500-3 FINE GRADING

Surfaces already covered with topsoil shall be tilled to a minimum depth of 50 mm. Any existing surface organic material shall be mulched during this operation. Remove surface debris, roots, vegetation, branches and stones in excess of 50 mm diameter. Eliminate low areas to ensure positive drainage. The surface shall be levelled to a uniform slope free of lumps, rough spots, and rolled to a smooth, fine loose textured surface, firm against deep foot printing. The approval of the topsoil grade and depth shall be obtained from the Engineer prior to seeding.

13500-4 SEEDING

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Application rate of the seed mix shall be uniform at a minimum of 2.2 kg per 100 m². The Contractor shall verify this rate to the satisfaction of the Engineer. The Contractor shall select the appropriate seed mix from those specified for the particular application. Sow half of the required amount of seed in one direction and the remainder at right angles. Blend applications into adjacent grass areas or sodded areas to form uniform surfaces. Embed seed into soil to a depth of 5 mm within 1 hour of sowing. Ensure that seeded areas are protected from damage.

The Contractor shall keep the site well drained and immediately clean up soil, mulch or other debris spilled onto the pavement

Mechanical Seeding

For mechanical seeding, use “Brillion” type mechanical landscape seeder which accurately places seed at specified depth and rate and rolls in single operation. Use agricultural, water balast type roller, not less than 500 mm diameter smooth steel drum, width not less than width of landscape seeder.

Hydraulic Seeding

If hydraulic method of seeding is used, apply minimum of 85 litres water/1000 m², mix proportions of seed and water to the approval of the Engineer. Measure all quantities of material by mass or mass-calibrated volume measurement to the satisfaction of the Engineer. Fertilize during or immediately prior to seeding with the approved fertilizer at the approved rate as previously indicated and water well.

All deleterious material shall be removed and reasonable care shall be taken to prevent contamination by seeding slurry of structures, signs, guardrails, fences and utilities. Where contamination occurs the seeding slurry shall be removed to the satisfaction of, and by means approved by the Engineer.

Manual Seeding

For manual seeding, use “Cyclone” type manually operated seeder. Use manually operated, water ballast, landscaping type, smooth steel drum roller.

13500-5 MAINTENANCE

The Contractor shall cut cover crop to a height of 100 mm when it reaches height of 150 mm and cut thereafter frequently enough to maintain at that height until grass uniformly reaches height of 100 mm. Areas seeded to grass shall be maintained free of pests and disease.

Areas shall be accepted by the Engineer provided that seeded areas are properly established, there has been adequate germination of seed and the establishment of healthy, vigorously growing grass, turf is free of eroded, bare or dead spots and without weeds, no surface soil is visible when grass has been cut to height of 100 mm, and seeded areas have been cut at least twice, the last cut being carried out within 24 hours of acceptance.

If 75% of the turf area reaches a height greater than 150 mm, the Engineer may request the Contractor to mow the turf within 2 days. If the Contractor fails to meet the request, the Owner will mow the turf and charge the Contractor for the work. Each

mowing operation should be continuous and completed within a reasonable period of time. The Contractor shall remove all clippings which will tend to smother the grassed areas.

Areas to be seeded that are not topsoiled have minimum acceptance requirements of germination's growth of at least 75% of the seeded area.

Areas which do not meet the previous requirements shall be reseeded at no direct cost to the owner.

13500-6 MEASUREMENT AND PAYMENT

Measurement and payment for Fine Grading and Seeding shall be on a square metre basis of horizontal surface seeded and include all preparation required to prepare the surface to be seeded, and the supply and placement of seed and fertilizer to produce adequate germination of seed and the establishment of healthy, vigorously growing grass.

Payment for Fine Grading and Seeding shall be at 75% of the unit price when the fine grading and seeding is completed with the remaining 25% paid when the seeded areas have been accepted.

Measurement and payment for Maintenance will be on a lump sum basis per each cutting and shall include maintenance until after the first cover crop cutting and the first grass cutting, and until the grass is accepted.

END OF SPECIFICATION 13500