PART E

SPECIFICATIONS

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

- E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.1.1 *The City of Winnipeg Standard Construction Specifications* is available in Adobe Acrobat (.pdf) format on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at http://www.winnipeg.ca/matmgt.
- E1.1.2 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.2 The following Drawings are applicable to the Work.

Drawing Title	File Name	Size
Cut Permit Areas & Zones	161-2004 Drawing 00.pdf	Letter
Backflow Protection Arrangement for Water Supply form Hydrant	161-2004 Drawing 01.pdf	Letter

E2. PROTECTION OF EXISTING TREES

- E2.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
 - a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
 - b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
 - c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
 - d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
 - e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

- E2.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.
- E2.3 No separate measurement or payment will be made for the protection of trees.
- E2.4 Elm trees cannot be trimmed between April 1 and July 31, inclusive.

E3. TRAFFIC CONTROL

- E3.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:
 - (a) In accordance with the Manual of Temporary Traffic Control, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Section of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Section of the City of Winnipeg in connection with the works undertaken by the Contractor.

E4. WATER USED BY CONTRACTOR

E4.1 Further to clause 3.7 of CW 1120-R1, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

E5. AUTHORIZED WORK ON PRIVATE PROPERTY

E5.1 Further to clause 3.11 of CW 1130 – R1, the Contractor shall limit his operations to the minimum area necessary for undertaking restorations that extend on to private property and he shall be responsible for all damages outside the limits of the authorized work, resulting from his work on private property. Particular care shall be taken to prevent damage to buildings, sidewalks, trees and plants.

E6. BOULEVARD RESTORATIONS

E6.1 GENERAL

Notwithstanding CW 3510-R7 "Sodding".

Italicised text is used to assist in identify areas where this specification differs from CW 3510-R7.

E6.2 DESCRIPTION

This Specification shall cover the preparation of the boulevard cuts, the supply and placing of cultivated sod, and seeding.

- E6.3 MATERIALS
- E6.3.1 General

Sod will be subject to tests for nitrate, phosphate, potassium, sulphate, pH, E.C. (salinity), mineral soil layer thickness and its organic matter content by a testing laboratory designated by the Contract Administrator.

Tests conducted to determine the thickness of the mineral soil layer of the sod and it's percent of organic matter shall be done in accordance with standard operating procedures approved by the Contract Administrator for both receiving, and analysing sod samples.

Any sod placed on the Work Site that in the opinion of the Contract Administrator, does not conform to the Specification detailed herein, shall be rejected by the Contract Administrator and replaced by and at the expense of the Contractor.

E6.3.2 Topsoil

Topsoil shall be supplied in accordance with Section 5.2 of Specification CW 3540-R2.

E6.3.3 Backfill

Suitable site material as approved by the Contract Administrator or imported fill material supplied in accordance with Section 2.5 of CW 3110-R7, shall be used for backfill material. The material used as backfill shall be free of wood, vegetation, concrete or asphalt rubble and all stones larger than 25 mm in diameter.

E6.3.4 Turfgrass Sod

The Contractor shall supply turfgrass sod with a mineral soil layer containing a minimum of 70% inorganic soil. Salinity rating shall be less than 2.5 mmhos/cm. The pH range shall be between 6.0 - 8.0. Sod supplied shall have been sown in nursery fields with Canada Certified No. 1 or Canada Certified No. 2 grass seed meeting the following certified seed blends or mixtures:

For general park areas, boulevards, medians and interchange areas, sod shall contain:

- (a) a blend composed of one hundred percent (100%) Kentucky Bluegrass (100% Class 2 cultivars as specified in Clause 5.3.3, 3 cultivars in equal proportion); or
- (b) a mixture of ninety five percent (95%) Kentucky Bluegrass (100% Class 2 cultivars as specified in Clause 5.3.5, 3 cultivars in equal proportion) and five percent (5%) Creeping Red fescue.
- E6.3.5 Wherever Kentucky Bluegrass is specified, the proportion of the cultivars to be included in the blend shall adhere to the following:

<u>Class 2 Cultivars</u> - specified blend of Class 2 cultivars shall consist of equal proportions of any three of the following:

Absolute	Allure	Apollo	Arcadia	Ascot
Award	Baronie	Bartitia	Baruzo	Blacksburg
Caliber	Cardiff	Challenger	Champagne	Chateau
Chicago	Classic	Compact	Conni	Coventry
Dragon	Eclipse	Estate	Fortina	Glade
Haga	Huntsville	Impact	Jefferson	Kenblue
Liberator	Lipoa	Livingston	Limousine	Marquis
Moonlight	North Star	Nustar	Odyssey	Park
Pepaya	Platini	Rambo	Raven	Rugby
Rugby II	Seabring	Sidekick	SR 2100	SR 2109
Touchdowr	n Washington	Wildwood		

- E6.3.6 Any variations to the above referenced seed blends or mixtures, shall be approved by the Contract Administrator prior to placement of sod.
- E6.3.7 Turfgrass sod shall be free of disease, turf damaging insects and any grass species, strains or cultivars other than specified herein.
- E6.3.8 At the time of delivery, the turfgrass sod shall:
 - (a) not contain more than 10 broadleaf weeds per 50 square metres;

- (b) have been mowed to a height of 50 mm prior to delivery and be of sufficient density that no surface soil will be visible;
- (c) have a uniform inorganic soil layer thickness of not less than 12 mm and not greater than 19 mm and shall be consistent throughout all loads delivered to the work site;
- (d) have the organic thatch layer within the sod not exceed an uncompressed thickness of 12 mm and in all cases, the final rolled and compacted topsoil/sod growing medium shall be maintained at not less than 100 mm in depth.

E6.3.9 Herbicides

Herbicides shall be standard commercial products registered for sale and use in Canada under the Pest Control Products Act.

E6.3.10 Insecticides

Insecticides shall be standard commercial products registered for sale and use in Canada under the Pest Control Products Act.

E6.4 CONSTRUCTION METHODS

SITE PREPARATION

E6.4.1 Compaction

The existing material and any placed backfill material shall be mechanically compacted to the satisfaction of the Contract Administrator.

Compaction of the backfill shall be accomplished by mechanical means. Acceptable methods shall include tamping with a back hoe bucket, using a machine mounted pneumatic plate compactor or using a drum compactor.

E6.4.2 Grading

Grading of the boulevards to receive sod/seed shall be understood to mean the required backfilling or excavation so that the boulevards, after compaction, are at a uniform depth of 100 mm below finished boulevard grade.

Grading of boulevards shall include the removal of existing material up to 450 mm above the finished boulevard grade and excavation to achieve a uniform grade 100 mm below finished boulevard grade.

Grading of boulevards shall include all backfilling up to a vertical height of 300 mm to reach a uniform grade 100 mm below finished boulevard grade.

Backfill material shall be compacted to a minimum of 90% Standard Proctor Density.

Grading of boulevards to receive sod shall be incidental to the cost of sodding. Grading of boulevards to receive seed shall be paid for at the unit price bid for boulevard grading.

Where the existing elevation of the backfill material is such that it would be necessary to exceed the limits specified herein for backfilling or excavating to restore a boulevard cut, the Contractor shall immediately notify the Contract Administrator who will make arrangements to have the backfill material adjusted to the specified limits by others.

The Contractor shall not deposit or stockpile excavated material in the right-of-way.

E6.4.3 Trimming

Trimming of the boulevards and medians to receive sod shall be understood to mean the excavation of existing material to provide a uniform shape for sod placement. Trimming includes the cutting of the edges to form straight or uniform curved edges and the removal

of surrounding damaged sod. Where the Contractor is unable to trim the cut to obtain a uniform shape within the limits marked, he shall notify the Contract Administrator to have the limits of the cut marked prior to trimming.

E6.4.4 Disposal of Material

Disposal of unused excavated or trimmed material shall comply with Section 3.4 of CW 1130-R1 of the Standard Construction Specifications

E6.4.5 Topsoil and Finish Grading

Preparation, placing and finish grading of the topsoil shall be completed in accordance with Specification CW 3540-R2.

The Contractor shall not deposit or stockpile topsoil on a paved surface.

E6.4.6 General

The Contractor shall not commence sodding or seeding until the finished topsoil surface has been inspected and approved by the Contract Administrator.

E6.4.7 Placement of Sod

The sod shall be placed evenly and closely packed together, leaving no open joints and no overlap on adjacent pieces of sod. Joints in adjacent rows shall be staggered, as shown in Standard Detail SD-243. A full row of sod, not less than 450 mm in width shall be placed along the perimeter of the sodded area, parallel to planting, walk areas or curb.

Where "Big Roll" sod is to be placed, the Contractor shall ensure that any reinforcement netting that may be used to assist with the harvesting and/or placement of the sod roll is removed before final placement of the sod.

On embankments, sod shall be placed lengthwise across the face of the slope. On slopes of 1 vertical to 3 horizontal (18 degrees) or steeper, in every second row on the slope and at the foot of the slope, each piece of sod shall be pegged with two minimum 250 mm long wooden pegs driven into the soil layer of the sod.

For slopes of 1 vertical to 2 horizontal (26 degrees) or steeper, each piece of sod in every row shall be pegged as indicated above.

Small, broken or irregular pieces of sod will be rejected.

All visible joints, low, bare or dead spots shall be repaired to the satisfaction of the Contract Administrator prior to the commencement of the Thirty (30) Day Maintenance Period described in Clause E6.4.13.

Sodding operations shall be completed within two days (48 hours) after placing the sod. This shall be deemed to include watering, rolling, and repairing any visible joints and low, bare or dead spots within the sodded area.

Sod shall not be placed in a frozen state, or when any other conditions unfavourable to the successful transplanting of sod exist.

Where the Contractor places sod prior to September 15, and termination of the sod maintenance period is not achieved in accordance with Clause E6.4.16 in that same year, the Contractor shall be responsible for replacement of any sod/seed damaged over the winter or from spring clean up equipment.

Where sod is placed after September 15, in accordance with the schedule provided by the Contract Administrator, and termination of the sod maintenance period is not achieved in accordance with Clause E6.4.16 in that same year, the Contractor will not be held responsible for sod damage over the winter due to winter-kill, ice damage, sand/salt

applications on adjacent streets or from snow removal or spring clean up equipment. Provided that the termination of the sod maintenance period is not achieved in accordance with Clause E6.4.16 in that same year due only to the weather and not due to defective sod or maintenance not conforming to this specification. Otherwise the Contractor shall be held responsible for sod damage over the winter due to winter-kill, ice damage, sand/salt applications on adjacent streets or from snow removal or spring clean up equipment as determined by the Contract Administrator.

E6.4.8 Watering and Rolling

Immediately after placement of sod, the Contractor shall water the area in sufficient quantities to saturate sod and underlying topsoil to a minimum depth of 100 mm.

After the sod and topsoil has dried sufficiently to prevent damage, the areas shall be rolled (the edges pounded if necessary) to form a uniform even surface and level with adjoining existing grades, sidewalks and curbs. Heavy rolling to correct irregularities in grade will not be permitted. Sodded areas near existing fixtures that are unable to be rolled shall be thoroughly tamped to ensure a good bond between topsoil and sod.

E6.4.9 Seeding

As directed by the Contract Administrator damaged boulevard areas in the vicinity of boulevard cuts or boulevard cuts in areas where the existing surrounding boulevard has little or no turf, will be corrected by seeding as follows.

Topsoil shall be spread to a depth of not less than 50 mm for boulevard damages and not less than 100 mm for cut restorations. Grass seed shall be sown at a rate of 100 grams per 10 square metres (1 kg per 100 sq.m.). The Contractor shall sow the seed into the approved seed bed by using seeding equipment suitable for the area involved and to the satisfaction of the Contract Administrator. All seeded areas shall be rolled to a uniform even surface, level with adjoining curbs, sidewalks or sod.

The seeded area shall be watered in a sufficient manner to saturate the full depth of the topsoil.

No seeding shall be done on frozen soils, or when any other conditions unfavourable to the successful germination exist.

Where the Contractor sows seed, and termination of the sod maintenance period is not achieved in accordance with Clause E6.4.16 in that same year, the Contractor shall be responsible for replacement of any seeded areas damaged over the winter or from spring clean up equipment.

E6.4.10 Short Notice Restorations

The Contract Administrator may direct the Contract to have a specific location in the Area sodded/seeded on short notice. Upon receipt of such notice the Contractor is to have the identified location sodded/seeded in accordance with this specification within forty-eight (48) hours of the notification.

Where the Contractor fails to complete a short notice restoration within the period specified, the Contract Administrator may arrange to have the restoration completed by others and deduct the costs thereof from any payment to be made to the Contractor.

E6.4.11 Restricted Access Sodding

The access to some of the locations identified to be sodded may be restricted to smaller manual equipment, such as wheelbarrows and shovels. The Contractor shall use the size and type of equipment that permits the restoration to be done without causing any damage to the surrounding surfaces or structures at the site. All damages caused by the

Contractor's negligence or failure to use the appropriate equipment shall be repaired to the satisfaction of the Contract Administrator at the Contractor's expense.

E6.4.12 Restoration of Gas Service Inspection Holes

Where new communication plant is installed in developed residential areas, it is sometimes a practise to bore holes where the new plant crosses existing gas services to inspect for damages. The diameter of these holes is normally less than 300mm. Sand or other granular material is sometimes used to backfill the holes. Restoration of these holes with sod includes the replacement of sand or granular backfill with topsoil to a minimum depth of 350mm below finished grade.

E6.4.13 Commencement of Thirty (30) Day Maintenance Period

The Contract Administrator will not allow the Thirty (30) Day Maintenance Period to commence until the following requirements are met:

- (a) The nursery sod supplied shall meet the seed mixture requirements specified in Clause E6.3.4.
- (b) The sod shall be free of bare and dead spots.
- (c) The nursery sod shall not contain more than 10 broadleaf weeds per 50 square metres.
- (d) Sodded/seeded areas shall be rolled to form a firm, uniform even surface.
- (e) The sod shall have sufficient shoot density that no surface soil is visible within sod.
- (f) The height of the top growth of the sod shall be 50 60 mm.
- (g) The sodded/seeded area shall be free of any visual obstructions such as leaves.
- (h) Sodded area shall be free of any turf damaging insects.

Any deficient, damaged or vandalized areas may have to be resodded or reseeded by the Contractor within three (3) working days after receiving notification from the Contract Administrator and the area so resodded or reseeded , shall be further maintained until it meets the criteria specified in Clause E6.4.16.

In situations where the *commencement* of the Thirty (30) Day Maintenance Period is not granted by the Contract Administrator before the end of a growing season, the Thirty (30) Day Maintenance Period will commence on May 15 of the following year or such date as is mutually agreed upon by all parties, at which time all sodded/seeded areas must meet the requirements listed above.

E6.4.14 Maintenance of Sodded and Seeded Areas

Immediately after the sod/seed have been placed to the satisfaction of the Contract Administrator, the Contractor shall provide and pay for continuous maintenance of the sodded/seeded area until the criteria specified for termination of the maintenance period in Clause E6.4.16 has been met.

The Contractor shall mow at regular intervals to a height of between 50 - 60 mm. No more than thirty percent (30%) of the grass height shall be cut at any one mowing. Clippings which will smother grassed areas shall be removed.

The Contractor shall water sodded areas in sufficient quantities and at frequency required to maintain soil under sod continuously moist to a minimum depth of 100 mm.

The Contractor shall water all seeded areas in sufficient quantities and at a frequency required to maintain soil under seeded area continuously moist. Any damage which may occur through washout of the soil during the maintenance period shall be repaired and maintained until it meets the criteria specified in clause E6.4.16.

All costs to provide water for sodded and seeded areas shall be borne by the Contractor.

The Contractor shall clean and remove all dead vegetation, leaves, debris and snowmold from sodded and seeded areas to encourage healthy and uniform grass growth.

The Contractor shall apply herbicide when broadleaf weeds start developing in competition with grass. Apply herbicide in accordance with the manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection and Herbicide Recommendations for Landscape Applicators, latest editions and the following criteria:

- (a) Use 2,4-D Amine or MCPA Amine herbicide for susceptible broadleaf weeds.
- (b) Use a mixture containing 2,4-D Amine or MCPA Amine, Mecoprop and Dicamba for 2,4-D resistant plants.
- (c) Do not apply to newly seeded areas until after the second or third mowing.
- (d) Do not water within 24 hours after application.
- (e) Apply when winds are less than 20 km/h and air temperature is above 10 degrees Celsius.
- (f) Avoid use of pure Dicamba solutions near trees and shrubs.

Given the need for insect control, the Contractor shall have in his possession a Pesticide Applicator's License and a Pesticide Use Permit for pesticide applications related to this specification. Use standard commercial products in accordance with the manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection (latest edition) for the particular insect/insects involved.

Copies of the Pesticide Applicator's License and the Pesticide Use Permit must be submitted to the Contract Administrator prior to commencement of pesticide application.

All persons handling insecticides shall be fully aware of toxicological rules and regulations governing their use.

The Contractor shall inform the Contract Administrator immediately of any dangerous occurrence.

E6.4.15 Spring Clean Up

Where termination of the sod maintenance period has not been achieved in accordance with Clause E6.4.16 prior to the end of a growing season, the Contractor shall complete all operations related to the clean up of the work area in the following spring. This shall include the cleaning and removal of all dead vegetation, leaves, debris, snowmold and any sand or gravel resulting from winter sanding/deicing operations from turf areas to encourage healthy and uniform grass growth. All costs for spring clean up operations shall be incidental to the costs for sodding and seeding.

E6.4.16 Termination of Maintenance Period

The Contract Administrator will terminate the maintenance period for sodded *and seeded* areas after the following criteria has been met:

- (a) The work site is clean and the sodded *and seeded areas are* free of any visual obstructions such as leaves.
- (b) The sod *and seeded areas are* free of bare and dead spots and without more than 10 broadleaf weeds per 50 square metres.
- (c) Grass roots are well anchored into the underlying topsoil and the sodded *and seeded* areas have established into a healthy, vigorously growing condition.
- (d) Sodded areas are free of visible joints.

- (e) The sod *and seeded* areas have sufficient shoot density that no surface soil is visible when the grass has been cut to a height of 50 60 mm.
- (f) Sodded *and seeded* area has been cut to a height of 50 60 mm within 48 hours before the final inspection.
- (g) Sodded and seeded area is free of any turf damaging insects.

If the sodded *and seeded* areas do not meet the above criteria, the deficient area may have to be resodded or reseeded as applicable within three (3) working days after receiving notification from the Contract Administrator and maintained by and at the expense of the Contractor in accordance with Clauses E6.4.13 and E6.4.14 herein.

In situations where the termination of the maintenance period is not granted by the Contract Administrator before the end of a growing season, the maintenance period will commence as described in Clause E6.4.13.

E6.4.17 Site Clean-Up

During both the placement and maintenance of sod/seed, all sidewalks, streets, approaches, driveways and properties near the sodding *and seeding* operations shall be kept clean at all times by the Contractor.

Upon completion of the project, the Contractor shall immediately remove all excess material, debris and equipment from the work site.

E6.5 METHOD OF MEASUREMENT

E6.5.1 Sodding

Sodding will be measured on an area basis and classified into one of the following categories:

Items of work:

Sodding *

i.area greater than or equal to 4, and less than or equal to 6

ii.area greater than 6, and less than or equal to 15

iii.area greater than 15, and less than or equal to 40

iv.area greater than 40

Short Notice Sodding *

Restricted Access Sodding *

Embankment Sodding *

Sodding Gas Service Inspection Holes **

* The minimum area for each location will be four (4) square metres.

** The minimum area for each location will be a half of one (0.5) square metres and the maximum area will be four (4) square meters. If more than four (4) square meters of sod is required to complete a restoration, the area greater than one (1) square meter will be measured and paid for in the appropriate category for "Sodding" and one square meter will be paid for as Sodding Gas Service Inspection Holes.

The area to be paid for shall be the total number of square metres placed and maintained in accordance with this Specification and accepted by the Contract Administrator, as

computed from measurements made by the Contract Administrator. No *measurement* will be made for sod placed outside the limits of placement directed by the Contract Administrator, or for sod placed that does not meet the requirements for the commencement of the thirty (30) day maintenance period.

E6.5.2 Seeding

Supply, placement and maintenance of seed will be measured on an area basis. The area to be paid for shall be the total number of square metres seeded and maintained in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator. No measurement will be made for seeding placed outside the limits of placement directed by the Contract Administrator, or for seeding placed that does not meet the requirements for the commencement of the thirty (30) day maintenance period.

E6.5.3 Grading

Grading of boulevards will be measured on an area basis. The area to be paid for shall be the total number of square metres graded in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

E6.6 BASIS OF PAYMENT

E6.6.1 Sodding

Supply, placement and maintenance of sod will be paid for at the Contract Unit Price per square metre for "Sodding" of each category, measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification.

Items of work: (a) Sodding

- *i)* area greater than or equal to 4 and less than or equal to 6
- *ii)* area greater than 6 and less than or equal to 15
- *iii)* area greater than 15 and less than or equal to 40
- iv) area greater than 40
- (b) Short Notice Sodding
- (c) Restricted Access Sodding
- (d) Embankment Sodding
- (e) Sodding Gas Service Inspection Holes
- E6.6.2 Seeding

Supply, placement and maintenance of seed will be paid for at the Contract Unit Price per square metre for "Seeding", of each category, measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification.

Items of work: (a) Seeding

i) damages

ii) cuts

E6.6.3 Hold Back During Maintenance

Twenty-five (25%) percent of each payment to be made for sodding and seeding will be deducted and retained until the thirty (30) day maintenance period for the sodded and seeded areas have been terminated.

E6.6.4 Grading

Grading will be paid for at the Contract Unit Price per square metre for "Boulevard Grading" measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification.