

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 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.1.3 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:

<u>Drawing No.</u>	<u>Drawing</u>
LD-3029	Cover Sheet and Location Plan
LD-3030	Plan of Existing Conditions and Miscellaneous Site Works
LD-3030	Dike Location and Details

E2. SOILS INVESTIGATION REPORT

- E2.1 Geotechnical information obtained from test holes drilled in the vicinity of the project is described on the test hole logs.
- E2.2 The test holes logs are provided to supplement the Bidders evaluation of the Site conditions in the Work area. The information is considered accurate at the locations and time of the test drilling. However, variations in subsurface conditions may exist between test holes and groundwater levels can vary seasonally.

E3. TRUCK WEIGHT LIMITS

- E3.1 The City shall not pay for any portion of Material which results in the vehicle exceeding the maximum gross vehicle weight allowed under *The City of Winnipeg Traffic By-Law*, unless such vehicle is operating under special permit.

E4. SITE ACCESS AND RESTORATION OF GRAVEL SUFACES

- E4.1 Description
- E4.1.1 This Specification covers the following:
- (a) access to the Work area from Scotia Street, and
 - (b) restoration of the driveway and parking pad.
- E4.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E4.2 Materials

E4.2.1 Surfacing gravel to restore driveway at 275 Scotia Street and parking pad at 265 Scotia shall be in accordance with CW-3110-R6, 2.2 Base Coarse Material

E4.2.2 The Contractor shall be responsible for supplying of all other materials required for construction and maintenance of the access points.

E4.3 Construction Methods

E4.4 Access to the Site

E4.4.1 Permission has been obtained from the owner of 275 Scotia St. to access the Site using the driveway and yard at this residence.

E4.4.2 The Contractor shall assess the retaining walls on the driveway and be satisfied that construction equipment can use the driveway with out damage to the retaining wall. The Contractor shall repair any damage to retaining wall or driveway, or other property caused by access to the Site.

E4.4.3 No other access points to the Work area Site shall be permitted.

E4.4.4 The Contractor shall take necessary precautions to prevent access by equipment and delivery vehicles from using the paved driveways at 265 and 275 Scotia Street. The Contractor shall repair damage to these driveways as a result of his Work.

E4.4.5 The parking pad at 265 Scotia Street and the driveway at 275 Scotia Street shall be restored to existing grades and surfaced with a minimum of 50 mm of Base Coarse Material.

E4.5 Method of Measurement and Basis of Payment

No separate measurement and payment shall be made for Site access or restoration of the driveway and parking pad. This Work shall be incidental to the Work performed under this Contract.

E5. SEDIMENT CONTROL MEASURES

E5.1 Description

E5.1.1 This Specification covers the supply, implementation and maintenance of erosion control measures to control the release of sediments into the river during and following construction.

E5.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E5.2 Materials

E5.2.1 The Contractor shall maintain a supply of erosion control products such as erosion control blankets, silt fencing, straw bales, booms or mulch on Site at all times suitable for trapping and preventing sediments from entering the river.

E5.3 Construction Methods

(a) Contractor shall be responsible for maintaining sediment control measures at the Site to prevent sediment releases into the river from areas disturbed as a result of his Work during and following construction

- (b) The Contractor shall monitor his Work and implement appropriate sediment control measures as Site conditions warrant. Such measures may include installation of silt fences, straw bales or other measures as required in the event that there is runoff from the Site.
- (c) As a minimum, silt fences or straw booms shall be installed along the river side edges of all areas where the vegetation has been disturbed in the vicinity of the river.
- (d) The silt fences and booms shall be attached to secure stakes and trenched in to the ground such that there are no gaps and the fencing will not be undermined.
- (e) The silt fences shall be inspected, maintained and repaired as required.
- (f) During rain storms the Contractor shall inspect the silt fences and booms at least daily and more frequently if required. Trapped sediments shall be removed as required, during or immediately following each rainstorm. All trapped sediments shall be removed from the Site.
- (g) Upon completion of the construction Work, all surplus or waste materials, and materials containing fine-grained sediments shall be removed from the Site.
- (h) The contractor shall monitor, maintain, repair, etc. the sediment control measures until vegetation has established in restored areas and there no longer is a potential for sediment releases due to construction.
- (i) Silt fencing and other erosion control measures shall be removed after Site restoration has been accepted by the Contract Administrator.

E5.4 Method of Measurement and Basis of Payment

No measurement or payment shall be made for sediment control measures during or after construction. This Work shall be incidental to the Work performed under this Contract and no separate measurement or payment will be made.

E6. SITE PREPARATION AND ASSOCIATED WORKS

E6.1 Description

E6.1.1 The Work performed under this specification shall include:

- (a) Demolition and removal of sheds, retaining walls, and rubble at 275 Scotia Street
- (b) Tree removal within the area of the dike
- (c) Relocation of the play structure
- (d) Removal of the existing sand bag dike

E6.1.2 The Work done under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E6.2 Materials

Material furnished under this Specification shall be same or equal quality to existing materials. All materials furnished by the Contractor for the Work covered by this specification shall be meet the approval of the Contract Administrator prior to its use.

E6.3 Construction Methods

E6.3.1 Demolition and removal of sheds, retaining walls, and rubble

- (a) The retaining wall, rubble and other materials at 275 Scotia St. unusable for the project shall be removed from the Site and disposed of by the Contractor.

- (b) The sheds at 275 Scotia St, as indicated on the drawings, shall be removed from the Site and disposed of by the Contractor.
- (c) Other sheds not indicated for removal on the drawings shall not be removed.
- (d) The Contractor shall take care in the removal and handling of these materials to not cause damage to adjacent structures or other property.

E6.3.2 Relocation of Play Structure

- (a) The existing play structure at 265 Scotia Street shall be relocated to a location on the property as agreed by the home owner.

E6.3.3 Tree Removal

- (a) The Contractor shall be responsible for the removal of all trees and shrubs necessary for construction of the dike and other Works.
- (b) The trees on the drawing shown as to be removed are approximate and the Contractor shall confirm with the Contract Administrator which trees to removed prior to removal.
- (c) Trees shall be cut and felled and not bulldozed or pushed down by heavy equipment.
- (d) All felled trees shall be removed and disposed of by the Contractor.
- (e) The tree roots shall be excavated and removed.
- (f) American Elms shall be removed and disposed of in accordance with the Dutch Elm Disease Act and regulations.

E6.3.4 Sand Bag Removal

- (a) The existing sand bag dike shall be removed and disposed of off site.
- (b) Sand bags exposed below existing grade shall be removed, disposed and paid for in accordance with E8.

E6.4 Method of Measurement and Basis of Payment

E6.4.1 Demolitions, Sand Bag Removal, Play Structure Relocation, Tree Removal

- (a) All Work performed under this specification and other Work necessary to prepare the Site for construction shall be measured and paid for on a lump sum basis.
- (b) Payment shall be at the Contract Lump Sum Price for "Site Preparation", which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E7. STOCKPILING AND STORAGE OF MATERIALS

E7.1 Description

E7.1.1 This specification covers the procedures for establishing and maintaining stockpiles and staging areas for materials handled on Site.

E7.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E7.2 Construction Methods

E7.2.1 Stockpiling

- (a) The Contractor shall review and obtain approval for stock piling of fill or excavated material on Site.

- (b) No stockpiling of fill material shall be permitted between the dike and the river unless approved by the Contract Administrator.
- (c) The quantities of material to be stockpiled will be limited to ensure that riverbank stability is not compromised, as determined by the Contract Administrator. The Contractor shall immediately remove any materials if instructed to do so by the Contract Administrator.
- (d) Stripped material shall be removed immediately from the Site to keep the quantities of stripped material to a minimum.
- (e) The rate at which fill materials are delivered to the Site shall be controlled to minimize stockpiling and handling.
- (f) Stockpiled material shall be handled and maintained in a manner that prevents contamination with other materials, soils, debris, or excess moisture.
- (g) Contaminated material shall be removed and replaced at the Contractor's expense.
- (h) Stockpiles shall be maintained to prevent released of fine grain sediments or other contaminates into the sewers or the river.
- (i) Storage and stockpiling and storage of materials on the street shall meet the requirements of the Manual of Temporary Traffic Control in Work Areas on City Streets.

E7.3 Method of Measurement and Basis of Payment

No separate measurement or payment shall be made for stockpiling of materials.

E8. EARTH WORKS

E8.1 Description

E8.1.1 The Work performed under this specification shall cover all earth Works, including:

- (a) Stripping of topsoil and other materials unsuitable for dike construction
- (b) Foundation preparation for the clay dike and segmental block wall
- (c) Clay dike construction and placing clay fills
- (d) This Specification shall amend and supplement the City of Winnipeg Standard Specifications CW 3170-R3.

E8.1.2 The Work done under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E8.2 Materials

E8.2.1 Clay Fill

- (a) Fill for the clay dike shall be medium to highly plastic inorganic clay with plasticity index of between 35 and 60 percent.
- (b) Clay fill shall not contain materials such as debris, organic material, or other materials considered unsuitable by the Contract Administrator.
- (c) The Contractor shall identify his source of clay fill to the Contract Administrator and supply representative samples of the clay fill to the Contract Administrator at least ten business days prior to commencement of construction.
- (d) The Contract Administrator shall perform the necessary testing to determine compliance with this Specification.

E8.3 Construction Methods

E8.3.1 Stripping, Dike Sub-Grade Preparation and Cutoff

- (a) All topsoil in areas below the dike shall be stripped in accordance with clauses 9.2 (a) and (b) of CW 3170-R3.
- (b) Reuse of stripped and excavated soils shall be subject to approval by the Contract Administrator and all unsuitable materials shall be removed from the Site and disposed of by the Contractor.
- (c) Material to be reused shall be stockpiled in accordance with E7 and as agreed by the Contract Administrator.
- (d) A clay cutoff trench shall be excavated into the dike sub grade along the length of dike at the locations shown on the drawings.
- (e) All exposed subgrade soils below the dike and in the cutoff trench shall be prepared in accordance with clause 9.5 of CW 3170-R3 and compacted to 95 percent of standard Proctor maximum dry density.
- (f) The cutoff trench shall not be backfilled until it has been inspected by the Contract Administrator to confirm dimensions, suitability of sub grade soils and base preparation.

E8.3.2 Unsuitable Dike Foundation Conditions

- (a) Further to E8.3.1 any materials that are unsuitable for the dike foundations shall be removed at the direction of the Contract Administrator and replaced with clay compacted in accordance with E8.3.3.
- (b) The clay cutoff shall extend through any sand bags or other unsuitable materials encountered below the dike at the direction of the Contract Administrator.

E8.3.3 Placement and Compaction of Clay Fills

- (a) Clay fills for the cutoff trench and clay dike shall be placed, in layers not exceeding 150 mm in accordance with clauses 9.6 to 10.5 of CW 3170-R3.
- (b) Compaction shall be to 95 percent of standard Proctor maximum dry density.

E8.3.4 Equipment

- (a) Equipment for utilized for construction of the dike shall be of a size suitable to Site conditions and the proximity of homes and other private property.
- (b) Equipment that could damage homes due excessive vibrations shall not be permitted.

E8.4 Method of Measurement and Basis of Payment

E8.4.1 Stripping and Dike Sub Grade Excavation

- (a) Stripping of topsoil, excavation of the dike subgrade and the clay cutoff trench shall be measured on a volume basis. The volume paid for shall be the total number of cubic meters of material excavated in accordance with this Specification, as computed by the Contract Administrator.
- (b) Payment for stripping and excavation shall be paid at the Contract Unit Price for the "Stripping and Excavating" which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E8.4.2 Clay Fill

- (a) Clay fills used in the cutoff trench and as common dike fill shall be measured on a volume basis. The volume paid for shall be the total number of cubic meters of clay fill

placed in accordance with this Specification, as computed in by the Contract Administrator.

- (b) Payment for clay fill shall be paid at the Contract Unit Price for the "Clay Fill" which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E9. SEGMENTAL BLOCK RETAINING WALL

E9.1 Description

- (a) The Work performed under this specification shall include supply of materials and construction of the segmental block retaining wall
- (b) Construction of tree wells retaining wall blocks, if required.

E9.2 The Work done under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E9.3 Materials

E9.3.1 Pre cast concrete segmental blocks, cap stones, and other pre caste block products required shall be Corner Stone 100 Series or Allan Block Stone or equivalent meeting the following dimensions and properties:

- (a) Nominal block dimensions:
 - (i) Height - 200 mm
 - (ii) Width - 450 mm;
 - (iii) Depth - 300 mm from face of wall
- (b) Meet all requirements of ASTM C1372-01a, the freeze thaw requirements of ASTM C1262-98.
- (c) Have a straight split face
- (d) Set back of between 4 and 12 degrees.
- (e) Color:
 - (i) Cornerstone - Dessert Buff
 - (ii) Allan Block - Sandstone

E9.3.2 Crushed Limestone Wall Backfill shall be crushed limestone meeting all physical and properties of Base Course Material in accordance with CW 3110-R6.

E9.3.3 Clean Crushed Limestone Around Perforated Drain Pipe shall be 20 mm crushed limestone meeting all physical and properties of Base Course Material in accordance with CW 3110-R6. with the exception that less than 5 percent by weight shall be finer than 0.080 mm.

E9.3.4 Perforated Drain Pipe shall be 100 mm diameter flexible perforated polyethylene pipe with a factory installed geotextile filter fabric wrapping. Big 'O' XTF0425 is an approved product.

E9.3.5 Geogrid

- (a) The geogrid shall be a uniaxial grid with a minimum Long Term Design Strength of 16 kN/m, manufactured from high strength, high tenacity, high molecular weight polyester.
- (b) MacGrid WG04 and Mirgrid 3XT are approved geogrid products.

E9.3.6 Adhesive- Concrete adhesive shall be PL Landscape Block Adhesive or equivalent.

E9.4 Construction Methods

E9.5 General

Construction and assembly shall conform to the block manufacturers installation specifications and guidelines.

E9.5.1 Retaining Wall Foundation

- (a) The subgrade for retaining walls shall be excavated, prepared and accepted by the Contract Administrator in accordance E8.3.1 to E8.3.4, prior to proceeding with preparation of the retaining wall foundation.
- (b) A minimum thickness of 150 mm crushed limestone wall backfill shall be placed below all segmental block retaining walls. The layer of crushed limestone wall backfill shall be trimmed level prior to placing of the first row of blocks.

E9.5.2 Block Placement

- (a) The first row of blocks shall be placed on a level base.
- (b) All units shall be in full contact with the base. Voids below the blocks shall be filled with granular material.
- (c) Crushed limestone backfill shall be placed and compacted, in around the blocks to secure them in place.
- (d) Loose crushed limestone shall be cleaned from the tops of the blocks and the alignment and level of the blocks shall be checked.
- (e) Each successive row of blocks shall be offset a minimum of 1/3 of the block length from the row below.
- (f) Backfilling and compaction, behind the wall, and in block cavities shall be completed prior to laying of the next coarse of blocks.

E9.5.3 Compaction

- (a) Crushed limestone used for the retaining wall foundation and backfill shall be compacted in 150 mm thick layers to a minimum density of 100 percent of standard Proctor maximum dry density using suitably sized vibratory compaction equipment.
- (b) Compaction of the backfill shall begin at the wall and proceed away from the wall.
- (c) Only hand held compaction plate equipment shall be used within 1.0 m of the back of the block.
- (d) Vibratory compaction shall be applied to the blocks to consolidate the granular fill placed in the block voids.

E9.5.4 Geogrid Installation

- (a) Geogrids shall be installed at the elevations and to the dimensions on the drawings.
- (b) The backfill beneath each layer of geogrid shall be placed to the correct elevation and compacted to prior to placing of the geogrid.
- (c) The geogrid shall extend to the full depth of the block to develop full bond between blocks and be properly oriented for maximum strength perpendicular to the wall.
- (d) Geogrid shall be neatly trimmed as required and shall not be overlapped between blocks.
- (e) The next row of blocks above the geogrid shall be installed and the block cavities shall be filled with crushed limestone backfill.

- (f) The geogrid shall be pulled taught and staked to maintain tension. Wrinkles or folds in the geogrid shall be corrected prior to placing and compacting the next layer of crushed limestone.
- (g) The operation of construction equipment on the geogrid shall not be permitted and any damaged geogrid shall be removed and replaced.
- (h) Backfilling shall be conducted such that the geogrid is protected from construction equipment by a cover of backfill at all times.

E9.5.5 Tolerances and Curves

- (a) Segmental block walls shall be constructed to the following minimum tolerances:
 - (i) Vertical 67 mm over 3 m horizontal distance
 - (ii) Horizontal 613 mm over 3 m horizontal distance
 - (iii) Rotation 62 mm over 0.6 m height
- (b) Cut Blocks and Block Spacing
 - (i) The maximum spacing between installed blocks shall be 3 mm.
 - (ii) Where required, partial blocks shall be cut to fit with a maximum 3 mm gap.
 - (iii) Capstones shall be installed with maximum 3 mm spacing and shall be cut on a bevel meet the gap tolerances along curved wall.
- (c) Wall Curves
 - (i) The minimum wall radius of curvature shall be 2.4 m unless accepted by the Contract Administrator.
 - (ii) Right angle corners shall be formed using corner blocks.
- (d) The alignment and level of the blocks shall be checked regularly to determine that back filling and compaction has not displaced the blocks.

E9.5.6 Capstones

Capstones shall be placed along the top of all terraces and walls and shall be affixed with the concrete adhesive specified in E9.3.6.

E9.5.7 Perforated Drains

- (a) Perforated drains shall be installed, as shown on the drawings, in the crushed granular backfill behind all retaining wall and terraces, have a minimum grade of one percent, and drain into the valve chamber.
- (b) Crushed limestone backfill shall be carefully compacted, so as not to collapse or deform of the perforated pipe, with small plate compactor or by hand tamping if required.
- (c) Perforated pipes shall not be installed through the clay core.

E9.5.8 Tree Wells

- (a) Tree wells shall be installed at locations identified by the Contractor to protect trees from adjacent fills.
- (b) Tree wells shall be segmental block retaining walls constructed to a maximum height of 600 mm with the materials and methods in this Specification.

E9.6 Method of Measurement and Basis of Payment

E9.6.1 Segmental Block Retaining Wall

- (a) Construction of the segmental block retaining wall, including tree wells, shall be measured on an area basis, as measured along the vertical face of the retaining walls. The area paid for shall be the total number of square meters of segmental blocks

installed, above and below finished grade, in accordance with this Specification, as computed in by the Contract Administrator.

- (b) Payment for segmental block wall construction shall be paid at the Contract Unit Price for the "Segmental Block Wall" which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- (c) No separate measurement or payment shall be made for the following Work, which shall be considered incidental to segmental block wall construction:
 - (i) supply and installation of geogrid.
 - (ii) supply and installation of crushed limestone backfill and fine crushed limestone used for retaining walls, ramps, paths, and other locations required in accordance with this specification and the drawings,
 - (iii) supply and installation of other materials for segmental block wall construction, including but not limited to: corner blocks, cap blocks, other specialty blocks, and adhesive.
 - (iv) supply and installation of perforated drain pipes.

E10. LOT DRAIN

E10.1 Description

E10.1.1 This Specification shall amend and supplement Standard Specifications CW 2110-R6, CW2130-R6.

E10.1.2 This specification cover:

- (a) Supply and installation of the pipe for the lot drain.
- (b) Supply and installation of the gate valve for the lot drain.
- (c) Supply and installation of the valve chamber manhole.

E10.2 Qualification - Only Contractors licensed by The City of Winnipeg under the Sewer Bylaw shall conduct the Work in this Specification.

E10.3 Materials

E10.3.1 Drain Pipe

- (a) Drain pipe shall be Polyvinyl Chloride (PVC) water pipe approved for use in The City of Winnipeg in accordance with clause 2.2 of CW 2110-R6, and 4.2.1.10 of Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.
- (b) The discharge end of the drain pipe shall be 300 mm diameter corrugated steel pipe (CSP), 2.0 mm wall thickness, aluminized steel type 2, meeting CSA G401.
- (c) PVC and CSP pipe shall be connected with a prefabricated corrugated coupler sealed with gaskets all suitable for land drainage sewer pipe. A shop drawing showing the fabrication and installation shall be submitted to the Contract Administrator for review.
- (d) Where practical, pipe lengths used shall be the longest size manufactured to minimize the number of joints in each section of sewer.

E10.3.2 Valve

- (a) The gate valve installed on the lot drain pipe shall be in accordance with CW 2110-R6, and 4.1.1.80 of Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.
- (b) The valve shall be left opening, i.e. turn counter clock wise to open.

- (c) The valve shall be flanged and supplied with an acceptable PVC pipe flange adaptor.
- (d) Valve box, valve box extensions and, valve stem extension shall be in accordance with CW 2110-R6, SD-016, and 4.1, 1.81, 4.1.82, and 4.1.1.83 of Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.
- (e) Valve box cover shall be marked with "S".

E10.3.3 Valve Chamber Manhole

- (a) The valve chamber manhole, base, flat top reducer, cover frame, cover, rungs, shall be in accordance with CW 2130-R6 and Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.
- (b) The valve chamber shall be 1500 mm diameter, with depth and height shown on the drawings, complete with base and flat top reducer to fit cover frame.

E10.4 Construction Methods

E10.4.1 Lot drainage pipe shall be installed in accordance with CW- 2130-R6 and in accordance with the following:

- (a) Trenching for installation of lot drainage pipes shall be to the lines and grades shown on the drawings. The Contractor shall not install pipes or the manhole until the excavations have been inspected and accepted by the Contract Administrator.
- (b) Backfill around the valve chamber shall be with compacted clay in accordance with E8.3.3.

E10.4.2 Backfill around the pipe shall be as follows:

- (a) Backfill shall be clay in accordance with E8.2.
- (b) The water content of the clay shall be adjusted so that it has a soft consistency and compacts readily to fill voids around pipe.
- (c) Water shall be added to the clay if required to achieve the property constancy.
- (d) The clay shall be compacted by hand or with hand operated equipment, such as a jumping jack, as required around the pipe.

E10.4.3 The pipe shall not be backfilled with bedding sand or any other granular material

- (a) The pipe shall be connected to the valve chamber in accordance with Clause 9.6 of Standard Specification CW 2130-R6 and as per the details on the Construction Drawings.
- (b) The gate valve shall be installed in accordance with CW 2110-R6 and SD-016, and shall be securely supported on a pipe support to the valve chamber base.
- (c) The valve box cover shall be securely grouted into a hole drilled into the manhole cover.

E10.4.4 Unauthorized Excavation - Unauthorized excavation during construction shall be refilled with stabilized fill or concrete at the Contractor's expense.

E10.5 Method of Measurement and Basis of Payment

E10.5.1 Lot Drainage Pipe

- (a) Lot drainage pipe shall be measured on a length basis. The number of lineal meters paid for shall be the total number of lineal meters of pipe (PVC pipe plus CSP) installed in accordance with this specification as computed and accepted by the Contract Administrator.

- (b) No separate measurement or payment shall be made for, excavation, backfilling with compacted clay, and supply and installation of CSP to PVC pipe collars. This Work shall be incidental to the Work performed under this specification.
- (c) Payment shall be made at the Contract Unit Price for "300 mm diameter Lot Drain Pipe" which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E10.5.2 Valve Chamber and Valve

- (a) The valve chamber manhole, base, flat top reducer, cover frame, cover, rungs, 300 mm diameter gate valve and all other required associated components, will be measured on a lump sum basis.
- (b) The valve chamber manhole and valve shall be paid for at the Contract Lump Sum Price for "Valve Chamber c/w Gate Valve" which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E11. RESIDENTIAL SEWER ISOLATION VALVES

E11.1 Description

E11.1.1 This Specification shall amend and supplement Standard Specifications CW 2030-R5, CW 2110-R6, and CW 2130-R6.

E11.1.2 This specification cover:

- (a) All Work related to modifications to residential wastewater sewer service connections for the purpose of isolating the homes at 265, 271 and 275 Scotia, inclusive, during extreme floods.
- (b) Supply and installation of all pipe and fittings including: gate valves, valve stem extensions, valve cover boxes, pipe, and couplers.

E11.2 Qualification - Only Contractors licensed by The City of Winnipeg under the Sewer Bylaw shall conduct the Work in this Specification.

E11.3 Materials

E11.3.1 Pipe

- (a) Pipe shall be Polyvinyl Chloride (PVC) water pipe of the same nominal diameter as the waste water service connection, approved for use in The City of Winnipeg in accordance with 4.2.1.10 of Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.

E11.3.2 Valves

- (a) Gate valves installed on waste water service connection pipes shall be in accordance with CW 2110-R6, and 4.1.1.80 of Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.
- (b) Valves shall be left opening, i.e. turn counter clock wise to open.
- (c) Valve boxes, valve box extensions and, valve stem extensions shall be in accordance with CW 2110-R6, SD-016, and 4.1,1.81, 4.1.82, and 4.1.1.83 of Approved Products at <http://www.city.winnipeg.mb.ca/matmgt/info.stm>.
- (d) Valve box covers shall be marked with "S".

E11.3.3 Sewer Couplers

- (a) PVC sewer couplers shall be approved for use on non-pressurized wastewater sewers to connect sewers of the same or different materials and in accordance with 4.2.1.66 of Approved Products at [http: www.city.winnipeg.mb.ca/matmgt/info.stm](http://www.city.winnipeg.mb.ca/matmgt/info.stm).

E11.4 Construction Methods

E11.4.1 Location

- (a) The residential sewer isolation valves shall be located near the property line at the approximate locations shown on the drawing.
- (b) The residential service records in Part C are provided for the Contractor's information.
- (c) The Contractor shall locate the wastewater sewer service lines and trace the lines to confirm the locations for the isolation valves.
- (d) The contractor shall be responsible to locate the wastewater service connection prior to Work on the wastewater sewer.
- (e) The location of the isolation valves to be installed shall be confirmed by the Contract Administrator prior to installation.
- (f) The installed locations of the isolation valves, and locations of other underground services exposed during construction, shall be recorded in accordance with the City of Winnipeg service records.

E11.4.2 Excavation, backfilling and installation of new pipe shall be in accordance with CW 2030-R5. Backfill shall be Class 4 with a minimum of 100 mm of bedding sand below the new pipe and 200 mm above the new pipe. Above the bedding sand the backfill shall be compacted to a density equal to or greater than surrounding soil.

E11.4.3 Valves, valve stems, extensions, and covers shall be installed in accordance with CW 2110-R6 and SD-016.

E11.5 Method of Measurement and Basis of Payment

- (a) Supply and installation of sewer isolation valves shall be measured on a unit basis. The number of units paid for shall be the total number of houses isolated with isolation valves installed in accordance with this Specification, as computed in by the Contract Administrator.
- (b) Supply and installation of sewer isolation valves shall be paid for at the Contract Unit Price for "Residential Sewer Isolation Valves", measured as specified herein, which price shall be payment in full for supplying all materials including valves, couplers, pipe, valve boxes, extensions, and covers and for performing all operations herein described and all other items incidental to the Work included in this Specification.
- (c) Surface restoration shall be measured and paid for separately in accordance with E12.5.
- (d) The cost of surface restoration other than sod and topsoil shall be approved by the Contract Administrator prior to undertaking the Work.

E12. SODDING

E12.1 Description

E12.2 Sod shall be supplied, placed, maintained and measured for payment in accordance with City of Winnipeg Standard Specification CW3510-R7, with the following amendments.

- E12.3 No payment shall be made for sod placed beyond the limits of sod shown on the drawings or to restore areas disturbed by the Contractor in material storage areas or as a result of his operations outside of the Work area.
- E12.4 The provisions set out in paragraphs 9 and 10 of clause 9.5, CW3510-R7 shall not apply to this Contract and the Contractor shall be held responsible for repairing or replacing sod damaged due to winter kill, flood water, or any other reason prior to final acceptance, whether or not the sod is placed before or after the end of the 2004 growing season.
- E12.5 Method of Measurement and Basis of Payment
- (a) Sodding shall be measured in accordance with CW 3210-R7 and shall be paid for at the Contract Unit Price per square metres for "Topsoil and Sod" which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.
 - (b) Payment shall be as follows:
 - (i) Seventy-five percent (75%) of the Contract Unit Price shall be paid upon completion of the satisfactory installation of the sod.
 - (ii) The balance of twenty-five (25%) of the Contract Unit Price shall be paid upon the satisfactory completion of the Maintenance Period.