PART E

SPECIFICATIONS

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

E12.1 *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 Division 2 – General Requirements of The City of Winnipeg Standard Construction Specifications shall apply to the Work.

E1.1.2 Further to GC:2.4(d), Specifications included in the Tender Package shall govern over The City of Winnipeg Works and Operations Division Standard Construction Specifications.

E12.1 The City of Winnipeg Standard Construction Specifications and the General Requirements are available in Adobe Acrobat (.PDF) format at the City of Winnipeg, Corporate Finance, Materials Management internet site http://www.city.winnipeg.mb.ca/matmgt/info.stm.

E12.1 The following Drawings are applicable to the Work:

Drawing No.	Drawing
LD-2879	Site Plan (June 2003)
LD-2880	Limits of Slope Regrading and Rockfill Berm
LD-2881	Sections

E2. SOILS INVESTIGATION REPORT

E2.1 Further to GC:3.1, geotechnical information from the testhole located in the work area is detailed on the testhole log in Appendix A.

E2.2 The testhole log is provided to supplement the Bidders evaluation of the site conditions in the work area. The information is considered accurate at the location indicated and at the time of the investigation. However, variation in the subsurface conditions may exist between the testhole location and fluctuations in groundwater levels can be expected.

E3. VERIFICATION OF WEIGHTS

E3.1 All Material which is paid for on a weight basis shall be weighed on a scale certified by Consumer & Corporate Affairs, Canada.

E3.1.1 All weight tickets shall have the gross weight and the time and date of weighing printed by an approved electro/mechanical printer coupled to the scale.

E3.1.2 The tare weight and net weight may either be hand written or machine printed. All weights, scales and procedures shall be subject to inspection and verification by the Contract Administrator. Such inspection and verification may include, but shall not be limited to:

(a) checking Contractor's scales for Consumer & Corporate Affairs certification seals;

(b) observing weighing procedures;

(c) random checking of either gross or tare weights by having such trucks or truck/trailer(s) combinations as the Contract Administrator shall select weighed at the nearest available certified scale;

(d) checking tare weights shown on delivery tickets against a current tare.

E3.2 The Contractor shall ensure that each truck or truck/trailer(s) combination delivering Material which is paid for on a weight basis carries a tare not more than one (1) month old.

E3.2.1 The tare shall be obtained by weighing the truck or truck/trailer(s) combination on a certified scale and shall show:

(e) upon which scale the truck or truck/trailer(s) combination was weighed;

(f) the mechanically printed tare weight;

(g) the license number(s) of the truck and trailer(s);

(h) the time and date of weighing.

E4. TRUCK WEIGHT LIMITS

E4.1 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.

E5. MOBILIZATION AND DEMOBILIZATION

E12.1 Description

This Specification shall cover all aspects of the site preparation including equipment mobilization and demobilization, general site access, and site restoration.

The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

E5.2 Construction Methods

The Contractor shall follow the Construction sequence outlined on LD-2880. All work and storage of materials shall be confined within the chain link fence surrounding the retention pond.

E5.2.1 Mobilization and Demobilization

The mobilization and demobilization of all equipment necessary to complete the work is covered under this Specification.

E5.2.2 Site Access

Site access shall be from the east side of the retention pond within the limits of the slope regrading or from the existing gate in the chain link fence along Callsbeck Avenue. The existing gate structure shall be closed and locked at the end of each work day. Upon removal of the existing chain link fence around the east and south side of the site, the Contractor shall erect and maintain a safety fence as per E5.2.6.

E5.2.3 Damage to Existing Facilities

Care shall be taken to prevent damage to existing facilities, services and roads. In the event of damage to existing site facilities or services caused by any of the Contractor's activities, the Contractor will be held liable, and shall be required to provide appropriate restoration, to return the facility or service to at least its original preconstruction condition. The Contractor will be responsible for obtaining all necessary approvals prior to commencement of work.

E5.2.4 Vegetation Removal

Prior to the rockfill berm placement all existing vegetation and debris within the limits of the rockfill berm placement above the water line shall be stripped from side slopes of the retention pond. The Contractor shall load, haul and dispose of these materials off site at dumps located by the Contractor. All material to be removed shall be disposed off site immediately upon collection, and stockpiling will not be permitted.

No other existing vegetation removal (trees, shrubs, grass, etc.) will be permitted without the prior approval from the Contract Administrator. Any damaged or destroyed vegetation shall be replaced or restored at the Contractor's expense.

E5.2.5 Material Stockpile Area

All construction materials may be stockpiled on City of Winnipeg owned land no closer than 20 m from the existing top of bank of the pond.

E5.2.6 **Safety Fence**

The Contractor shall erect and maintain for the duration of the project, a safety fence to restrict access to the site. The fencing shall enclose the entire site, with appropriate gates or openings that are closed and locked at the end of each work day. Appropriate warning signs shall be erected to warn the public that an open water hazard exists. The installed fence shall consist of a Dupont Number L70 orange plastic safety fence or approved equal with a mesh spacing of 45 mm and a minimum height of 1.2 m supported by steel posts driven into the ground. The steel posts shall be sized and capable of maintaining the safety fence upright, regardless of conditions. Upon completion of the work, the fence shall be removed and disposed off-site.

E5.3 **Site Restoration**

All areas of the construction site shall be restored to a condition at least equivalent to its original condition prior to initiation of the work. This may include, but is not necessarily limited to landscaping and grading repairs.

E5.4 **Measurement and Payment**

The mobilization and demobilization will be measured on a lump sum basis and paid for at the Contract Lump Sum Price for “Mobilization and Demobilization”. The work to be paid for shall be the total work constructed in accordance with this specification, accepted and measured by the Contract Administrator.

E6. ROCKFILL TOE BERM

E6.1 Description

This Specification shall cover the construction of the underwater rockfill toe berm.

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

E6.2 Materials

E6.2.1 General

The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

E6.2.2 Rockfill

The rockfill material for use as the toe berm shall consist of a clean free draining material, free from organics, roots, silts, sand, clay, snow, ice or any other material that would detract from the strength and drainage characteristics of clean rockfill. The rockfill material shall meet the following requirements:

a) maximum aggregate size of 450 millimetres

b) minimum bulk specific gravity of 2.6 (ASTM C127)

c) maximum Los Angeles abrasion loss of 30% (ASTM C131)

d) maximum soundness loss of 13% (ASTM C88)

e) gradation requirements as measured in the smallest dimension

Canadian Metric Sieve Size (millimeters)	Percent of Total Dry Weight Passing Each Sieve
450	100%
300	50-70%
200	25-40%
100	10-20%
50	0-5%

The rockfill shall consist of sound, hand, and durable rock. Individual particles shall be shaped such that no dimension is greater than two times the smallest dimension. Flat, elongated, or platy particle shapes shall not be accepted. Should the Contractor choose to use limestone, it shall be durable white crystalline limestone. Softer buff to yellow dolomote or dolostone will not be accepted. Rock samples shall either be submitted to the Contract Administrator for approval to a minimum of 10 (10) days prior to their use, or the Contract Administrator shall visit the quarry for inspection a minimum ten (10) days prior to use. No rockfill will be permitted without providing the source and supplier

E6.3 Construction Methods

The rockfill shall be pushed or rolled into place in such a manner that the larger rocks are uniformly distributed and the smaller rocks serve to fill the places between the larger rocks, and that excessive segregation of the various particle sizes does not occur.

Sufficient levelling shall be done to produce a neat and uniform surface, conforming to the shape and dimensions shown on the Drawings. The allowable fill tolerances shall be within 0.1 m of the grades and thicknesses as shown on the Drawings.

The existing vegetation cover above the water line shall be stripped prior to the rockfill berm placement as outlined in E5.3.4.

E6.4 Measurement and Payment

The supply and placement of rockfill shall be measured on a weight basis and paid for at the Contract Unit Price per metric tonne for the “Rockfill Toe Berm”. The weight to be paid for shall be the total number of metric tonnes of rockfill supplied and placed in accordance with this Specification, as measured by a certified weigh scale and accepted by the Contract Administrator. The Contractor shall provide the weigh tickets to the Contract Administrator for the material supplied to the site at the time of delivery. No payment will be made for any weigh tickets which are not supplied at the time of delivery, or which are lost.

E7. SLOPE REGRADING

E7.1 Description

E7.1.1 This Specification shall cover all phases of removal and / or placement of all materials necessary for the slope regrading works.

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

E7.1.2 This Specification shall supplement and amend City of Winnipeg Specification CW3170-R3 and CW3110-R6.

E7.2 Materials

E7.2.1 Granular Fill

Granular fill to be placed within the limits of the regrading along the south slope shall be in accordance with Clause E11.2.1.

E7.3 Construction Methods

E7.3.1 Stripping and Topsoil Excavation

All existing vegetation and topsoil within the limits of the slope regrading shall be stripped in accordance with clauses 9.2(a) and (b) of CW3170-R3 and disposed of off site. Reuse of stripped topsoil is acceptable provided the material is in accordance with CW3540-R2. Topsoil to be reused shall be stockpiled in accordance with E5.

E7.3.2 Common Excavation

All material encountered within the limits of the slope regrading following stripping shall be excavated to the lines and grades shown on the drawings. All excavation shall proceed from the top of slope down to minimize the potential for slope instability. All materials shall be removed off site immediately upon excavation. The allowable excavation tolerances shall be with 50 mm of the grade shown on the drawings.

E7.3.3 Preparation of existing Ground Surface

In areas where fill is to be placed on the regraded slope all exposed subgrade soil shall be prepared in accordance with clause 9.5 of CW3170-R3. This work is considered incidental to the slope regrading and no separate measurement or payment shall be made.

E7.3.4 Placement and Compaction of Granular Fills

Granular fills for the regraded slope (infill of south slope) shall be placed in layers not exceeding 150 mm in accordance with clauses 3.3 of CW 3110-R6. Compaction shall be 95% of Standard Proctor Maximum Dry Density.

E7.3.5 Crack Repair

All existing tension cracks along the pond side slopes shall be infilled and sealed as shown on the drawings to promote surface water runoff and minimize infiltration. Crack repairs is considered incidental to the slope regrading works and no separate measurement or payment shall be made.

E7.4 Measurement and Payment

E7.4.1 Stripping, Topsoil and Common Excavation

Stripping, topsoil and Common Excavation shall be measured on a volume basis and paid for at the Contract Unit Price for "Common Excavation". The volume to be paid for shall be the total number of cubic metres of material excavated in accordance with this Specification, as measured by the Contract Administrator. Excavated volumes will be computed by the average end area method.

E7.4.2 Granular Fill

Placement of Granular Fill shall be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for "Granular Fill". The volume to be paid for shall be the compacted in place total number of cubic metres supplied and placed in accordance with this specification, as measured by the Contract Administrator. Volumes will be computed by the average end area method.

E8. CHAIN LINK FENCE

E8.1 Description

This Specification shall cover the removal, storage, and reinstallation of chain link fencing and the installation of new chain link fencing.

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

E8.1.1 The Specification shall supplement and amend City of Winnipeg Specification CW3550-R2

E8.2 Materials

Shall be in accordance with CW3550-R2.

E8.3 Construction Methods

E8.3.1 Removal and Reinstallation of Existing Chain Link Fence

The existing 1.83 m high chain link fence within the limits of the slope regrading shall be removed and reinstalled. The existing fence fabric, top and bottom rails, sleeve couplings, braces, and 45° supporting arms shall be dismantled neatly to avoid damage and salvaged for reuse. Reusable materials shall be stored in a safe location determined by the Contractor and acceptable to the Contract Administrator. The existing fence posts and all other materials unsuitable for reuse, shall be removed off site and disposed of by the Contractor.

New terminal and line posts (1.83 m fence height) shall be installed within the limits of the relocated chain link fence as per CW3550-R2. The salvaged top and bottom rails, sleeve couplings, braces, and 45° supporting arms shall be reinstalled on the new posts. New tension wire, turnbuckles, fittings and accessories shall be supplied and installed to facilitate reinstallation of the fence and no separate measurement or payment will be made for those items.

The Contractor shall provide price to supply and install new fence rails in the event that a portion of the existing fence rails cannot be salvaged. This work item may not be required.

E8.3.2 New Chain Link Fencing

A 1.83 m high chain link fence including 45° supporting arms and 3 strands of smooth wire shall be installed in accordance with CW3550-R2. The new chain length fence is required to lengthen the existing fence at the site.

E8.4 Measurement and Payment

E8.4.1 Removal and Reinstallation of Chain Link Fence

Removal and reinstallation of the existing chain link fence shall be measured on a lineal measure basis and paid for at the Contract Unit Price for “Removal and Reinstallation of Existing Chain Link Fence”. The length to be paid shall be the total number of lineal metres of fence removed and reinstalled in accordance with this Specification, as measured by the Contract Administrator.

E8.4.2 **New Terminal Posts**

The supply and installation of new terminal posts shall be measured on a unit bases and paid for at the Contract Unit Price per unit for "New Terminal Posts". The amount to be paid shall be the total number of terminal posts supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E8.4.3 **New Line Posts**

The supply and installation of new line posts shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "New Line Posts". The amount to be paid shall be the total number of line posts supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E8.4.4 **New Fence Rails**

The supply and installation of new fence rails shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "New Fence Rails". The amount to be paid shall be the total number of fence rails supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E8.4.5 **New Chain Link Fencing**

New chain link fencing shall be measured on a lineal measure basis and paid for at the Contract Unit Price for "New Chain Link Fencing". The length to be paid shall be the total number of lineal metres supplied and installed in accordance with this specification, as measured by the Contract Administrator.

E9. TOPSOIL AND HYDROSEEDING

E9.1 Description

This Specification shall cover the supply and placement of the topsoil and hydroseeding on the regraded slopes.

The work to be done by the Contractor under this Specification shall include the furnishings of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

E9.2 Materials

E9.2.1 General

The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in the specification.

E9.2.2 Topsoil

The topsoil shall be in accordance with CW3540-R2.

E9.2.3 Hydroseeding

Shall be in accordance with CW3520-R5.

E9.3 Construction Methods

E9.3.1 All work related to the supply and installation of the topsoil and hydroseeding shall be in accordance with CW3540-R2 and CW3520-R5. A smooth transition from the new hydroseeding to the existing vegetated areas shall be formed.

E9.3.2 The Contractor shall not stockpile any material at the upper bank area. Potential stock pile locations shall be approved by the Contract Administrator prior to use.

E9.4 Measurement and Payment

Topsoil and hydroseeding shall be measured on an area basis and paid for at the Contract Unit Price for “Topsoil and Hydroseeding”. The area to be paid for shall be the total number of square metres placed and maintained in accordance with this specification, as measured by the Contract Administrator.

E10. SILT FENCE

E10.1 Description

This Specification shall cover the supply and installation of a silt fence.

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

E10.2 Materials

E10.2.1 General

The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

E10.2.2 Silt Fence

The silt fence shall consist of a geotextile fabric supported by stakes or rebar driven into the ground. Suitable products shall be Mirafi Silt Fence, Nilex 2130, Layfield SF 124, or approved equivalent.

E10.3 Construction Methods

Following completion of the slope regrading, the Contractor shall install a silt fence at the base of the slope. The silt fence shall be a minimum height of 0.5 m supported by stakes or rebar driven into the existing ground. The posts shall be capable of maintaining the silt fence upright, regardless of conditions. The silt fence shall remain in place until new vegetation growth has established on slope, as determined by the Contract Administrator.

All silt fences shall be inspected by the Contractor immediately after each runoff event, and at least daily during prolonged rainfall. Any required repairs shall be made immediately. The silt fence barriers shall be maintained in place, without gaps, and without undermining, so as to prevent sediment passage through or under the barrier.

Accumulated sediment shall be removed in a manner that avoids escape to the downslope side of the barrier. Sediment shall be removed to the level of the grade existing at the time of barrier installation and shall conform to the following:

(a) Accumulated sediment shall be removed off site when it reaches a depth of one-half the height of the silt fence barrier;
(b) Accumulated sediment shall be removed off site immediately prior to the removal of the silt fence.

The Contractor shall be responsible for removing the silt fence from the site when vegetation growth has established on the side slopes of the retention pond.

E10.4 Measurement and Payment

The supply and placement of a silt fence be measured on a length basis and paid for at the Contract Unit Price per lineal metere for the “Silt Fence”. The length to be paid for shall be the total number of metres supplied and placed in accordance with this Specification, as measured and accepted by the Contract Administrator.

E11. SAND DRAINS

E11.1 Description

This specification shall cover the construction of sand drains around the perimeter of the retention pond, including trench excavation, removal of excavated material, supply and placement of a granular backfill.

The work to be done under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all works as hereinafter specified.

E11.2 Materials

E11.2.1 Granular Backfill

Granular backfill material for the sand drains shall be a clean, dense and durable pit run material, free from organics, roots, clay, silt or any other material that would detract from the strength and drainage characteristics of clean granular.

The material shall meet the following gradation requirements:

Sieve Size (millimeters)	% Passing By Weight
75	100%
25	70 to 100%
4.75	50 to 85%
0.6	30 to 50%
0.3	5 to 20%
0.15	0 to 8%
0.075	0 to 5%

E11.2.2 Clay Fill

The clay fill above the horizontal sand drains shall consist of the native clay from the existing pond side slope.

E11.3 Construction Methods

The sand drains shall be constructed in accordance with plan, section, and details shown on the drawings. The trench excavation shall proceed in a timely manner and sand backfill must be placed as soon as excavation takes place. The sand backfill shall be tamped with a clean bucket to prevent voids and bridging. The maximum open length of the trench for the sand drains shall be 2 metres along the bottom of the excavation. No excavation shall remain without backfill overnight, or for a period of more than four (4) hours.

Excavated waste material shall be disposed of offsite immediately following excavation. The clay fill above the sand drains shall consist of the native clay from the pond side slope and shall be placed in layers not exceeding 200 millimeters, and compacted to a minimum of 95% Standard Proctor Maximum Dry Density.

E11.4 **Measurement and Payment**

Construction of sand drains shall be measured on a volume basis and paid for at the Contract Unit Price for "Sand Drains". The volume to be paid for shall be the total number of cubic metres of sand supplied and placed in accordance with this specification, as measured by the Contract Administrator. Volumes will be computed by the average end area method.

Excavation and removal of waste material and placement of clay fill is considered incidental to the sand drain construction and no separate measurement or payment shall be made.

E12 CSP HALF ROUND FLANGED DITCH LINER

E12.1 Description

This Specification shall cover the supply and installation of the half round flanged ditch liner including excavation, bedding, backfill, and related work.

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

This specification shall supplement and amend City of Winnipeg Specification CW 2030-R5 and CW 3610-R3.

E12.2 Materials

E12.2.1 General

The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

E12.2.2 Half Round Flanged Ditch Liner

Shall consist of half round flanged corrugated steel pipe in accordance with CW3610-R3.

E12.2.3 Bedding and Backfill

Shall be in accordance with CW 2030-R5.

E12.3 Construction Methods

A drainage ditch shall be sub-excavated below existing grade from the outlet of the existing PVC pipe to the edge of the pond in accordance with the plan, section, and details shown on the drawings. All excavated material shall be disposed of offsite.

Sand bedding material shall be placed along bottom of drainage ditch in accordance with CW 2030-R5.

Corrugated steel pipe half round ditch liner shall be laid on the prepared base with separate sections securely jointed together with fasteners supplied by the pipe manufacturer and approved the Contract Administrator. Anchor rebar or approved alternate anchors shall be mechanically fastened to the flange of the CSP and driven into the subgrade soil.

E12.4 Measurement and Payment

The supply and placement of CSP half round ditch liner shall be measured length basis and paid for at the Contract Unit Price per lineal metere for the “CSP Half Round Flanged Ditch Liner”. The length to be paid for shall be the total number of metres supplied and placed in accordance with this Specification, as measured and accepted by the Contract Administrator.

Payment for excavation, bedding, backfill, and anchors shall be included in the price per metre of CSP half round flanged ditch liner installed.