

# **PART E**

# **SPECIFICATIONS**

## PART E - SPECIFICATIONS

### E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

E1.1 *The City of Winnipeg Works and Operations Division 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 - Standard Provisions, Provision CW 1100 of The City of Winnipeg Works and Operations Division 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.

E1.2 The following Drawings are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing</u>
03-0107-13-01	South Half Dock Rehabilitation – Existing Structure and Demolition Work
03-0107-13-02	South Half Dock Rehabilitation – Remedial Work Details
03-0107-13-03	South Half Dock Rehabilitation – Existing and New Piling Plan and Details

### E2. MOBILIZATION AND DEMOBILIZATION

E2.1 Description

This Specification shall cover the mobilization and demobilization required for the Work of this project.

The Work to be done by the Contractor 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 Work associated with the mobilization and demobilization.

E2.2 Method of Measurement

Mobilization and demobilization will be measured on a lump sum basis as accepted by the Contract Administrator. The Work shall include assembly, transportation, and setting up of the Contractor's equipment, tools, supplies, and living facilities for the construction of the project or incidental thereto; and for the removal of all items when the project is complete. No measurement will be made for this Work.

E2.3 Basis of Payment

Mobilization and demobilization shall be paid for at the Contract Lump Sum Price for "Mobilization and Demobilization", measured as specified herein, 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.

Mobilization and demobilization will be paid at the completion of the Contract, as a Lump Sum Price.

### E3. DEMOLITION

E3.1 Description

This Specification shall cover demolition Works, including all necessary staging, removal, salvaging, dismantlement, and disposal of applicable materials.

The Work to be done by the Contractor 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 Work as hereinafter specified.

## E3.2 Equipment

### E3.2.1 General

All equipment shall be a type acceptable to the Contract Administrator and shall be kept in good working order.

## E3.3 Construction Methods

### E3.3.1 Scope of Work

The Work under this Specification shall include the following items, to the limits as shown on the Contract Drawings or as otherwise directed by the Contract Administrator.

- (a) Deck Planking Removals - Removal and disposal of the asphalt and timber deck planking to the extent shown on the Contract Drawings.
- (b) Sub-deck Removals – Removal and disposal of all 2" x 4" rough timber sub-deck to the extent shown on the Contract Drawings.
- (c) 4" x 10" Stringers Removals – Removal and disposal of all 4" x 10" timber stringers to the extent shown on the Contract Drawings.
- (d) Slipway Sidewall Removals – Removal and disposal of timber sidewall planking as shown on the Contract Drawings for the South dock.
- (e) Waterside Skirting Removals – Removal and disposal of all waterside skirting planks to the magnitude shown on the Contract Drawings or as directed by the Contract Administrator.
- (f) 12" x 12" Timber Pile-Cap Beams – Removal and salvage of timber pile-caps at selected locations, as shown on the Contract Drawings or as directed by the Contract Administrator.
- (g) Piling Bracing – Removal and re-installation of the diagonal pile bracing to accommodate new pile installation.
- (h) Riverbank Excavation – Removal and disposal of the upper riverbank material below the dock structure.

## E3.4 Construction Methods

### E3.4.1 Fees and Permits

The Contractor shall obtain and pay for all licenses and permits necessary for the removal Work.

The Contractor shall comply with the Environmental Protection Plan and all Municipal, Provincial, and Federal Government regulations relating to the demolition of structures.

### E3.4.2 Protection of Existing Structures and Services

The Contractor shall prevent movement, settlement, or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades, or parts of existing structures to remain. The Contractor shall provide bracing, shoring, and underpinning as required and shall have this Work certified by a Professional Engineer registered to practice in the Province of Manitoba employed by the Contractor. If safety of the structure being demolition, adjacent structures, or services appears to be endangered, the Contractor shall cease operations and notify the Contract Administrator immediately.

#### E3.4.3 Demolition Schedule and Procedures

At least three (3) Working days prior to the scheduled commencement of any demolition and removal Works, the Contractor shall submit to the Contract Administrator details of the proposed equipment, schedule, sequence, methods for each type of demolition or removal for review and acceptance. No demolition shall commence without prior written acceptance of the Contract Administrator.

The Contractor shall initiate the Work at the north limit of the dock area (south-half) and work in a southerly direction to minimize disruption to the Riverboat Operations. The Contractor shall provide clear access to the north half of the dock at all times to accommodate Riverboat Operations.

All removed material shall become the responsibility of the Contractor except as otherwise indicated herein.

The Contractor shall promptly haul all removed materials off and away from site. No storage of any materials on-site will be allowed without written acceptance of the Contract Administrator.

It shall be the Contractor's responsibility to find suitable disposal areas away from the site.

Removal and disposal of the demolition Work and riverbank excavation shall be conducted in a manner that satisfies the requirements of the agencies having jurisdiction over this Work.

The Contractor shall take all necessary precautions to ensure that materials do not fall into the Red River during demolition operations. The Contractor shall erect and maintain deck edge and other platforms as required to catch and retain all removed materials, preventing it from dropping off the structure.

Any debris that falls off the structure shall be immediately cleaned up by the Contractor at his own expense.

#### E3.5 Demolition Methods

##### E3.5.1 General

In no case will the Contractor be permitted to use demolition equipment or other equipment or methods which may cause damage to the remaining structural elements or to any new construction. In the event that any element is damaged, the Contractor shall repair such element at his own expense to the satisfaction of the Contract Administrator.

##### E3.5.2 Access/Work Platforms

The Contractor shall provide all necessary access/work platforms to facilitate demolition and subsequent inspection of all the Works by the Contract Administrator.

#### E3.5.3 Details of Existing Structures

The details and dimensions of the existing structures are shown on the Contract Drawings for the information of the Contractor to assist him in establishing methods and limits of demolition and for determining the cost of the Work. The information shown has been obtained from existing drawings, measurements, and observations at the site. The accuracy of this information is not guaranteed and the Contractor must verify all information before commencing Work.

#### E3.5.4 Timber Removals

The Contractor shall remove and dispose of all components of the timber deck, stringers and skirting.

When cutting through the timber removals, the Contractor shall ensure that no damage is effected to the supporting structure. Any damage shall be repaired to the satisfaction of the Contract Administrator at the Contractor's expense.

#### E3.6 Method of Measurement

##### E3.6.1 Demolition of Existing Deck

Demolition, as defined in this Specification, will be measured on a per square foot basis as accepted by the Contract Administrator.

##### E3.6.2 Demolition of Waterside Skirting

Demolition, as defined in this Specification, will be measured on a per square foot basis according the area of Waterside Skirting replaced, as directed by the Contractor Administrator.

##### E3.6.3 Removal of Existing Timber Pile-cap Beams

Removal will be measured on a per timber basis, as directed by the Contractor Administrator.

#### E3.7 Basis of Payment

##### E3.7.1 Demolition of Existing Deck

Demolition will be paid for at Contract Unit Price for the "Removal and Disposal of Existing Deck", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in the Specification.

##### E3.7.2 Demolition of Waterside Skirting

Demolition will be paid for at Contract Unit Price for the "Replacement of Damaged Waterside Skirting", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in the Specification.

##### E3.7.3 Removal of Existing Timber Pile-cap Beams and Diagonal Pile Bracing.

Removal payment will be incidental to either "Removal and Reinstallation of Timber Pilecap Beams" or "Removal of Timber Pilecap Beams, Supply and Reinstallation of W200x27 " or "Supply and Installation of Timber Piles", as approved by the Contract Administrator.

#### **E4. TIMBER WORK**

##### **E4.1 Description**

This Specification shall cover the construction of the timber deck, support replacements, skirting replacement, deck appurtenances and related Works. The deck appurtenances shall include slipway repair, curb installation and bollard re-anchoring.

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

##### **E4.2 Materials**

All timber shall be No. 2 or better Douglas-Fir preservative treated with chromated copper arsenate (CCA). Members to be dimensioned as shown on the drawings. All hardware to be hot-dipped galvanized. Nails and spikes shall meet the requirements of CSA B111. End cut preservative shall match the preservative in the wood.

##### **E4.3 Construction Methods**

###### **E4.3.1 Timber Decking**

The 3" x 12" timber decking shall be spiked to the 4"x10" stringers securely with 2– 8" long spikes at every support.

###### **E4.3.2 Timber Stringer Replacement**

The 4" x 10" stringers will be replaced entirely by new 4" x 10" stringers, each section being 16'-0" long. The stringers sections will be fastened to the 12"x12" timbers pilecap below with ½" diameter x 1'-3" long lag bolts at each support. The stringers will be fastened to the new steel beams as shown on the Drawings.

###### **E4.3.3 Waterside Skirting Replacement**

The damaged waterside skirting will be replaced with 6"x6", each section being approximately 6'-0" long. The skirting will be fastened to the existing walers with ½" diameter x 10" long lag bolts at each support.

###### **E4.3.4 Removal and Reinstallation of Existing Timber Pilecap Beams**

Selected timber pilecap beams will be removed and re-installed after the new timber piles are installed. In location where the timber beams are replaced with new W200x27 steel beams, the existing timber beams will be disposed.

###### **E4.3.5 Timber Dock Appurtenances**

Other dock appurtenances shall be fastened as shown on the Contract Drawings. Items that are bolted shall be spiked together securely with spikes measuring nominally 1" less than the combination of fastened materials, or 8", whichever is less.

#### E4.4 Quality Control

##### E4.4.1 Lumber

Lumber shall be identified by official grade mark containing symbol of grading agency, mill, number or name, grade of lumber, species or species grouping or combination, designation, rules under which grade conditions of seasoning at manufacture.

#### E4.5 Method of Measurement

##### E4.5.1 Timber Deck

The supply and installation of timber deck will be measured on a per square foot basis, in accordance with this Specification and accepted by the Contract Administrator.

##### E4.5.2 Deck Stringer Replacement

The supply and installation of replacement deck stringers be measured on 16' long span basis, in accordance with this Specification and accepted by the Contract Administrator.

##### E4.5.3 Timber Pilecap Beam

The re-installation of timber pilecap beams be measured on 22' long span basis, in accordance with this Specification and accepted by the Contract Administrator.

##### E4.5.4 Waterside Skirting

The supply and installation of waterside skirting will be measured on a per square foot basis, in accordance with this Specification and accepted by the Contract Administrator.

##### E4.5.5 Dock Appurtenances

The supply and installation of timber dock appurtenances will be measured on a unit price basis, in accordance with this Specification and accepted by the Contract Administrator. No measurement will be made for this Work.

#### E4.6 Basis of Payment

##### E4.6.1 Timber Deck

The timber deck will be paid for at the Contract Unit Price per square foot (SF), which price shall be payment in full for supply and installation of all materials and performing all operations herein described and all other items of Work incidental to the Work included in this Specification.

##### E4.6.2 Deck Stringer Replacement

The deck stringer replacement will be paid for at the Contract Unit Price per 16' long span, which price shall be payment in full for supply and installation of all materials and performing all operations herein described and all other items of Work incidental to the Work included in this Specification.

##### E4.6.3 Timber Pilecap Beam

The pile-cap beam re-installation will be paid for at the Contract Unit Price per 22' long span, which price shall be payment in full for supply and installation of all materials and performing all operations herein described and all other items of Work incidental to the Work included in this Specification.

**E4.6.4 Waterside Skirting**

The waterside skirting will be paid for at the Contract Unit Price per square foot (SF), which price shall be payment in full for supply and installation of all materials and performing all operations herein described and all other items of Work incidental to the Work included in this Specification.

**E5. DRIVING TREATED TIMBER PILES****E5.1 DESCRIPTION**

The Work will consist of hauling, locating, aligning, handling and driving treated timber piles, cutting off piles at the required elevations and treating cut surfaces with timber preservative.

**E5.2 SUPPLY OF MATERIALS**

Material to be supplied by the Contractor

Treated Timber Piling  
Timber Preservative  
Metal bands not less than 19 mm wide and 1.0 mm thick.

**E5.3 PILE DRIVING EQUIPMENT**

- E5.3.1** Pile driving equipment to be used by the Contractor shall be of such capacity that the required penetration shall be obtained without damage being done to the pile.
- E5.3.2** If the Contractor can demonstrate conclusively that special methods, other than providing a higher capacity hammer, are necessary to advance the pile to the required penetration, such supplementary methods will be subject to the Contract Administrator approval and will be paid for on an Extra Work basis.
- E5.3.3** Pile driver leads shall be used to support the piles while they are being driven. Leads shall be of sufficient length to be firmly supported on the ground. The use of hanging or swinging leads will not be allowed unless they can be held in a fixed position during the driving operations. Batter piles shall be driven with inclined leads.
- E5.3.4** The Contractor shall furnish the Contract Administrator with the manufacturer's Specifications and catalogue for all mechanical hammers used, showing the data necessary for computing the bearing value of piles driven.
- E5.3.5** Gravity or drop hammers shall be weighed in the presence of the Contract Administrator, or a certificate of mass shall be furnished to the Contract Administrator. Hammers so weighed shall have the exact mass marked on them. Gravity hammers shall weigh at least 1 t, but in no case shall the mass of the hammer be less than the combined mass of the pile and pilecap.
- E5.3.6** The heads of all piles shall be protected from brooming or splitting by means of a pile cap of a design approved by the Contract Administrator.

**E5.4 CONSTRUCTION METHODS****E5.4.1 Handling and Storage of Piling**

The handling and storing of treated timber piles shall be done in a careful manner to avoid damaging the piles. Special care shall be taken to prevent breaking of the treated surfaces.



If piles are damaged due to the Contractor's handling operations, the Contractor shall, at his own expense, replace all damaged piles with treated timber piles meeting the Department's Specifications in this Section.

#### E5.4.2 Banding, Location and Alignment of Piles

Piles shall be driven in the positions shown on the plans or as directed by the Contract Administrator. Piles shall be driven vertically unless shown otherwise on the plans. Batter piles shall be driven to the batter specified and shall not be jacked or pulled into their final positions.

The Contractor shall band the tips and butts of the piles prior to driving. The banding shall be done by means of a banding tool designed for curved surfaces. A minimum of 2 tightly fastened bands will be required at both the tip and the butt of each pile.

Additional banding may be required by the Contract Administrator in the field.

The Contractor shall cut 150 mm off the top of each pile prior to driving of the piles.

#### E5.4.3 Driving Timber Piles

Piles shall be driven to the depths indicated on the plans unless otherwise authorized by the Contract Administrator in writing. If piles are split, broomed, or broken through the Contractor's negligence or carelessness in pile driving operations all damaged piles shall be replaced by the Contractor with treated timber piles meeting the Department's Specifications.

If during the driving of the piles there is an indication of splitting, the Contractor shall band the piles in the area of splitting before any further driving is resumed.

The Contractor shall drive the piles in the sequence specified by the Contract Administrator in order to minimize pile upheaval. If upheaval does occur, the Contractor shall re-drive the lifted piles to the required elevations. The Contractor shall excavate material which has boiled up during pile driving operations.

Pre-boring will not be allowed unless it is approved in writing by the Contract Administrator in the field.

#### E5.4.4 Cut-off Piles

The piles shall be cut off at the elevations shown on the plans or as marked on the piles by the Contract Administrator. In cutting off piles, the saw shall rest on straight edges firmly attached to both sides of the bent so that the tops of the piles shall afford an even true bearing for the caps after the cutoffs have been made. Cut surfaces of treated piles shall be given one coat of timber preservative.

If the cap does not have full bearing on all the piles, the Contractor shall, at his own expense, supply and place steel plate shims to provide full bearing between the cap and all the piles. Every steel shim shall be secured to the pile by a 150 mm nail.

The Contractor shall store at the site, all lengths of piling cutoff before and after driving and shall produce such lengths of piling for measurement by the Contract Administrator. After measurement the pile cut off will become the property of the Contractor and shall be removed by him from and out of sight of the right-of-way.

#### E5.4.5 Diagonal Brace Re-installation

The timber diagonal braces shall be re-installed with new hardware as shown on the Drawings.

**E5.5 METHOD OF MEASUREMENT**

Treated timber piles will be measured on a lineal foot basis. The length to be paid for will be the total number of lineal feet of piling shown on the plans, or authorized by the Contract Administrator, less 50% of the total number of lineal feet of piling cut off after driving. Cutoffs will be measured by the Contract Administrator in the presence of the Contractor.

**E5.6 BASIS OF PAYMENT**

Supply and Installation of treated timber piles will be paid for at the Contract Unit Price per lineal foot basis measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. If additional banding is required by the Contract Administrator in the field it shall be paid for on the basis of extra Work. The removal and re-installation of the timber diagonal braces including hardware shall be incidental to this work.

**E6. SUPPLY AND FABRICATION OF STRUCTURAL STEEL****E6.1 DESCRIPTION**

The Work will consist of the supply, fabrication and galvanizing of structural steel and miscellaneous metal as shown or described by, or reasonably inferable from, the plans and Specifications.

**E6.2 Specifications**

Materials called for under these Specifications and on the plans shall satisfy the testing procedures and be in strict accordance with the requirements set out in the latest edition of the following standards:

- |   |  |
|---|--|
| (a) Structural steel and miscellaneous metals     | - CSA G40.20-M<br>CSA G40.21-M<br>ASTM A36 |
| (b) Welded Steel Construction (Metal Arc Welding) | - CSA W59                                  |

**E6.3 FABRICATION METHODS****E6.3.1 General**

Fabrication shall be carried out in accordance with these Specifications and plans which form a part of this Contract.

**E6.3.2 Clean Material**

The material shall be clean, free from rust, mill scale, and other foreign matter before being worked in the shop. Material shall be cleaned by wheelabrating, sandblasting or other methods subject to the Contract Administrator approval.

**E6.3.3 Finish**

All portions of the Work shall be neatly finished. Shearing, cutting, chipping and machining shall be done neatly and accurately. Finished members shall be true to line, free from twists, bends, open joints, and sharp corners and edges.

**E6.3.4 Welding**

Specifications - Welding shall conform to the requirements of CSA W59 Welded

**Steel Construction.****E6.3.5 Hot-Dip Galvanizing**

Galvanizing shall be done in accordance with CSA G164.

All metal surfaces to be galvanized shall be cleaned thoroughly of rust, rust scale, mill scale, dirt, paint and other foreign material by commercial sand, grit or shop blasting or pickling prior to galvanizing. Heavy deposits of oil and grease shall be removed with solvents prior to blasting or pickling.

**E6.4 METHOD OF MEASUREMENT****E6.4.1 Removal of Existing Timber Pilecap Beams, Supply and Installation of W200x27**

The re-installation of steel pilecap beams be measured on 22' long span basis, in accordance with this Specification and accepted by the Contract Administrator.

**E6.4.2 Fabrication of Structural Steel Supplied by the Minister**

The fabrication of structural steel supplied by the Minister will be measured on a mass basis. The total number of kilograms to be paid for will be computed on the basis of the net finished dimensions on the plans. The mass of all paint, galvanizing material or other protective coatings, and all deposited weld metal used for either shop or field welding will not be included in the mass of material to be paid for.

**E6.5 BASIS FOR PAYMENT****E6.5.1 Removal of Existing Timber Pilecap Beams, Supply and Installation of W200x27**

The pile-cap beam re-installation as steel will be paid for at the Contract Unit Price per 22' long span, which price shall be payment in full for supply and installation of all materials and performing all operations herein described and all other items of Work incidental to the Work included in this Specification.