

**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>
A01	Site Plan & East Elevation
A02	Plan & Section
A03	Elevations

#### E2. SCOPE OF WORK

- E2.1 Construction of basement exit enclosure at east side of Chief Peguis School, 1400 Rothesay Street.
- Supply and install 2 concrete piles and columns;  
Concrete grade beam and walls;  
Concrete apron slab;  
Repair of existing concrete stair;  
Repair of existing metal handrails in stair;  
Masonry sidewalls;  
Metal roof c/w supporting metal frame and Structural Design and Engineering of roof structure;  
Supply and install new steel door into new pressed steel frame;  
Supply and install exit sign in staircase;  
Supply and install light fixture in stair.

#### E3. CONCRETE WORK: CONCRETE PILES

- E3.1 General- All field dimensions shall be checked and verified by the Contractor prior to starting construction.
- E3.2 Contractor to confirm the location of all sub grade services prior to starting any excavation.

- E3.3 All construction joint locations shall be approved by the Contract Administrator.
- E3.4 The structure shall be braced to safely withstand all forces, which may be encountered during construction.
- E3.5 The bracing shall remain in place until the permanent structural members are in place and fully operational.

#### **E4. CAST-IN-PLACE CONCRETE PILES**

- E4.1 Pile length shall be measured from top of excavation contours.
- E4.2 Friction piles are designed for a skin friction of 300 p.s.f.
- E4.3 Mechanically vibrate top 12 ft of pile.
- E4.4 Piles shall be within 3/4" per 3 ft vertical plumbness.
- E4.5 Place reinforcing & concrete within 15 minutes of drilling pile.

#### **E5. REINFORCING**

- E5.1 Perform concrete reinforcing work in accordance with CSA CAN3-A23.3.
- E5.2 All reinforcing bars shall have a minimum specified yield strength of 400 mpa (except stirrups and ties which shall have a minimum specified yield strength of 300mpa) in accordance with CSA g30.12.
- E5.3 Cover to reinforcing unless noted otherwise shall be:
  - a) Beams 1 1/2"; slabs 1 1/2" clear top and bottom;
  - b) Wall 1 1/2"; and piles 2 1/2".
  - c) Locate reinforcing splices not indicated on drawings at points of minimum stress. Locations of splices shall be approved by engineer.
  - d) Before placing concrete, ensure reinforcing is clean, free of loose scale, dirt, or other foreign coating which would reduce the bond to concrete.

#### **E6. CONCRETE**

- E6.1 All concrete work shall be in accordance with CSA CAN3-A23.1 "concrete materials and methods of concrete construction".
- E6.2 Proportion normal density concrete in accordance with CSA CAN-A23.1 to give the following properties:
  - Type 50 cement
  - 3/4" maximum coarse aggregate
  - 32 mpa minimum compressive strength at 28 days
  - 325 kg per meter minimum cement content
  - 0.40 maximum water/cement ratio
  - 3" +/- 1" maximum slump
  - 5% to 7% air content
  - Maximum 15% class c flash content
- E6.3 Construct formwork, shoring and bracing so that resultant finished concrete conforms to shapes, lines and dimensions indicated on the drawings.

- E6.4 Void forms under slabs shall be wax-coated void forms and have a minimum compressive strength of 4.8 kpa.
- E6.5 Construction joints pour scheduling and work procedures shall be discussed with the Contractor Administrator prior to starting construction.
- E6.6 For cold weather concreting all ice, snow and frost shall be removed from formwork and the temperature of all surfaces in contact with the concrete shall be at 10c for 24 hours prior to placing concrete. The concrete temperature shall be between 20c and 30c when deposited. Concrete shall be enclosed in an insulated hoarding and this area shall remain at a constant temperature of 20 C<sup>0</sup> for 3 days and not less than 5c for an additional 7 days. Exhaust from heaters shall not adversely affect the concrete.
- E6.7 Repair existing concrete steps. Apply grout in accordance with manufacturer's instructions. Grind concrete surfaces shall achieve smooth surfaces on threads and risers.

## **E7. MASONRY**

- E7.1 Masonry mortar shall be type "s" based on property and proportion specifications of CSA A179 with a 28 day strength of 12.4 Mpa.
- E7.2 Strength of 12.4Mpa.
- a) Materials used in concrete masonry shall conform to CSA A165.1.
  - b) Masonry contractor to install reinforcing in reinforced masonry walls, bond beams, tie beams, etc.
  - c) Masonry contractor to supply and install loose angle lintels.
  - d) Masonry block reinforcing to be "dur-o-wall" or "blok-lok" standard profile ladders (9 gauge side rods and cross bars), welded to ASTM A82 for cold drawn steel. Install ladder reinforcing at maximum vertical spacing of 16".
  - e) Lap reinforcing a minimum 6" at end of ladders within block mortar bed.
  - f) Masonry reinforcement and tying shall be in accordance with CSA CAN3-S304.

## **E8. MISCELLANEOUS METAL**

- E8.1 WORK INCLUDED:
- a) Manufacture and deliver to the site for installation by others the following: anchor plates and bolts embedded in concrete and masonry, Metal L frames and edge L. Metal lath soffit c/w metal channel frame.
  - b) -Design of structural steel members of roof bearing stamp of qualified Professional Contractor Administrator registered in the Province of Manitoba. Remove and straighten and repair existing handrails. Reinstall handrails. **Note:** Alternate: Replace existing handrails with new metal handrails, matching existing in size, diameter and metal strength.
  - c) -Field weld where necessary for erection only.
  - d) - Shop paint all steel not embedded in concrete or masonry.
  - e) Reference Standards: All material shall comply with C.S.A. G40, latest edition; Standard bolts and anchor bolts shall comply with ASTM Specification A307 and material comply with C.S.A. G40.4. Shop paint shall conform to Canadian Government Specification Board 1GP-40C.

**E9. SHOP DRAWINGS:**

E9.1 Submit four (4) sets of shop drawings for Contract Administrator's approval before fabrication. Drawings must clearly show size of members, size of welds, erection details, location of joint and other related information.

**E10. MATERIALS:**

E10.1 All material shall be new material, free from defects, clean straight, sharp, profiles curved to true radii and smooth surface.

E10.2 Galvanizing shall comply with ASTM A-123 (700g/square meter). The following items shall be hot dip galvanized after fabrication: masonry shelf angle

E10.3 Shop paint shall be lead or zinc chromate primer.

E10.4 Where sizes shown are not available, material of heavier gauge or strength shall be substituted.

E10.5 Anchor bolts not otherwise shown shall be 9mm in diameter, embedded at least 200mm and spaced no farther than 0.6m on centers.

E10.6 Metal lath window screen: 3/4 flattened metal laths.

**E11. FABRICATION:**

E11.1 Field fabrication shall not be permitted unless written permission is received from the Engineer. All fabrication shall be constructed from approved shop drawings.

E11.2 Work shall be shape and size, straight to line and true to curve. Exposed welds and exposed metal edges shall be ground smooth.

E11.3 Steel surfaces shall be wire brushed, scraped or otherwise prepared to remove all loose mill scale, rust, oil, dirt, etc. before priming. All exposed ironwork except galvanized surfaces shall be painted.

E11.4 Field touch up all paint damage during delivery or erection.

E11.5 Handle and store fabricated materials under cover to protect from damage and deliver to the site when directed by the Contractor.

E11.6 Cooperate with other trades during erection of steel, as some items require embedment.

E11.7 Provide temporary bracing of masonry to support construction loads.

**E12. STEEL DOOR, AND FRAME**

E12.1 WORK INCLUDED: Steel hollow metal door and pressed steel frame as shown on drawings.

E12.2 RELATED WORK      Supply of Finish Hardware Section 08710  
-                              Painting                      Section 09900

E12.3 REFERENCE STANDARDS      Fabricate steel fire doors and frames to NFPA 80-1970.

#### E12.4 SHOP DRAWINGS

- a) Submit shop drawings in accordance with Section 01000.
- b) Clearly indicate each type of door and frame, material core thickness, reinforcements, glazing, location of exposed fasteners and arrangement of hardware.

#### E12.5 MATERIALS

- a) Frames: 16-gauge core thickness commercial grade hot rolled sheet steel to ASTM A526-71(1975) with "wipe coated" zinc finish to ASTM A525-75.
- b) Frame floor anchors and channel spreaders: minimum 1.6mm core thickness steel with "wipe coated" zinc finish to ASTM A525-75.
- c) Guard boxes: minimum 0.80mm core thickness steel with "wipe coated" zinc finish conforming to ASTM A525-75.
- d) Corrugated steel frame tee anchors: thickness and design approved by ULC.
- e) Hinge, strike, etc. reinforcing: minimum 3.4mm core thickness steel, wipe coat galvanized.
- f) Primer: to CGSB 1-GP181b.

#### E12.6 FABRICATION

- a) Fabricate frame in accordance with details, approved shop drawings.
- b) Mortise, reinforce, drill and tap doors and frames and reinforcements to receive hardware using templates provided by finish hardware supplier. Refer to Section 08710 for mounting heights.
- c) Touch up galvanized finish damaged during fabrication.

#### E12.7 Frame:

- a) Mitre corners accurately and weld continuously inside of frame profile.
- b) Grind welded corners to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- c) Protect strike and hinge reinforcements using guard boxes welded to frames.
- d) Weld in two (2) channel spreaders per frame, to ensure proper frame alignment.
- e) Provide for anchorage of frames to floor slab.

#### E12.8 Door:

Assemble components using spot or arc welding.

#### E12.9 FRAME INSTALLATION

- a) Set frames plumb, square, level and at correct elevation.
- b) Secure anchorages and connections to adjacent construction.
- c) Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at mid height of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200mm wide. Remove temporary spreaders after frames are built-in.
- d) Make allowances for deflection to ensure structural loads are not transmitted to frames.

#### E12.10 DOOR INSTALLATION

- a) Install doors and hardware in accordance with templates and manufacturer's instructions.
- b) Adjust operable parts for correct function.

### **E13. FINISH HARDWARE**

#### **E13.1 WORK INCLUDED**

- a) Supply of finishing hardware.
- b) Finishing Hardware for new steel door:

E13.2	HINGE:	HG 305
	PANIC HARDWARE	22 NL
	PROTECTIVE PLATES:	K 10 A; 12 630
	CLOSER	4040 EDA
	WEATHERSTRIP	W13/W13S

E13.3 REQUIREMENTS OF REGULATORY AGENCIES Use ULC listed and labelled hardware for doors in fire separations and exit doors.

#### **E13.4 HARDWARE LIST**

- a) Submit hardware schedule.
- b) Clearly indicate hardware proposed, including make, model, material, function, finish and all other pertinent information

#### **E13.5 MAINTENANCE DATA**

Supply two sets of wrenches for door closer and lockset.

#### **E13.6 FASTENINGS**

- a) Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation.
- b) Exposed fastening devices to match finish of hardware.

#### **E13.7 KEYING**

- a) Doors to be master keyed as noted in hardware schedule or as directed by Engineer.
- b) Provide keys in duplicate for every lock required in this Contract.
- c) Provide three master keys.

#### **E13.8 INSTALLATION**

- a) Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- b) Furnish manufacturer's instructions for proper installation of each hardware component.
- c) Install hardware at following heights from finished floor to centre line of item:
  - d) Door knob 1015mm
  - d) Panic bolt 1015mm
- e) Where doorstop contacts door pulls, mount stop to strike bottom of pull.

### **E14. PAINTING**

E14.1 -WORK INCLUDED: - Galvanized metal, Touching up of primed or galvanized misc. metal items, colour to match where not indicated as having a final paint finish. Pressed steel frames and screens. HM Doors. Touching up of primed or galvanized miscellaneous metal items, colour to match where not indicated as having a final paint finish.

E14.2 -REFERENCE STANDARDS: Do painting and finishing to CGSB 85-GP series standards including Appendix A, and to material manufacturer's instructions, except where specified otherwise.

E14.3 Paint materials: To CGSB Standards listed in Finishing Formulae.

E14.4 Paint materials for each coating formulae to be products of a single manufacturer. Touch up shop paint primer on steel with CGSB 1-GP-40M to CGSB 85-GP-14M.

E14.5 - Prepare galvanized steel and zinc coated surfaces to CGSB 85-GP-16.

E14.6 INTERIOR Formula 16: for primed ferrous metal surfaces apply (New Steel Door and Frame, Existing metal handrails): One coat spot priming 1-GP-40M. one coat enamel undercoat 1-GP-38M. two coats gloss enamel 1-GP-60M.

E14.7 EXTERIOR Formula 36: for primed ferrous metal surfaces apply (New Steel Door and Frame): one coat spot priming 1-GP-40M. one coat lead primer 1-GP-140M. two coats exterior enamel 1-GP-59M.

## **E15. METAL CLADDING**

E15.1 -WORK INCLUDED: Galvanized metal roof

E15.2 REFERENCE STANDARDS: Do prefabricated metal cladding work to CCSA Specifications 136-94

E15.3 SYSTEM DESCRIPTION Metal Roof shall be Westman corrugated conveyor cover, 2000 mm diameter. Liner secured to metal frame with Tapcon bolts at spacings approved by Manufacturer. Pre-drill boltholes along seams at centers as recommended by manufacturer. Bolt holes shall be 1/8" larger in diameter than bolts to allow for metal expansion.

E15.4 DESIGN CRITERIA

- a) Design members to withstand dead load and wind loads as calculated in accordance with NBC and applicable municipal regulations.
- b) Maximum deflection:
- c) Metal Cladding under full design load: 1/180 of clear span.
- d) Design Metal Cladding elements to accommodate, by means of expansion joints any movement in element itself and between element and building structure, caused by structural movements without permanent distortion, damage to substrata, oil canning effect.
- e) Design building assembly to permit easy replacement of components.

E15.5 TOLERANCES: Maintain following tolerances for building structure and enclosure elements. Maximum variation from plane or location shown on shop drawings: 3mm/3m of length and 6mm/30m max.

E15.6 SHOP DRAWINGS:

- a) Submit shop drawings and bearing stamp of qualified Professional Engineer registered in the Province of Manitoba.
- b) Indicate plans, elevations and, connection details, bearing and anchorage details, framed openings, accessories, schedule of materials and finishes, fasteners and welds, sealant locations and details.
- c) Indicate on shop drawings related provisions required for mechanical and electrical work.

E15.7 MATERIALS:

- a) Metal roof shall be Westman corrugated conveyor cover, 2000 mm inside diameter of gauge to support Live and Dead Loads on Roof. Corrugation 2 3/3" OC, 1/2" deep in thickness to support anticipated Design and Dead Loads. Roof segments: 25 5/8" long with overlap at both ends.



- b) Metal face at West Elevation shall be 16 ga. Galvanized sheet metal, in segments as shown on Sheet A2 EAST ELEVATION.
- c) Screws: #14 x 1 ½" Hex Head, AB Point. TEK #3, c/w Nylon Washer, to match colour of flashing
- d) Bolts, Nuts and Washers: to ASTM A325M-79 or ASTM A490-79.
- e) Metal roof flashing: 22 gauge galvanized steel bent to sizes as shown on drawings.
- f) Screws: As per Manufacturer's specifications for exterior applications.

**E15.8 ERECTION:**

- a) Erect cladding in accordance with Manufacturer's recommendation. Calk with Soprema Mastic as per NABA.
- b) Fasten Flashings with Pan HD Screws @ 12" O/C
- c) Provide all flashings and caulking to seal against water and moisture at all mechanical and electrical penetrations and maintain continuity of cladding moisture tight.
- d) Caulk joints with TREMCO Sealant
- e) Seal and caulk all openings, where water may penetrate.

**E16. MECHANICAL/ELECTRICAL**

**E16.1** WORK INCLUDED: Supply and Install electrical light and Exit Sign in new stair enclosure; Lighting shall be designed to provide 80 Foot-candles in Stair Enclosure. Extend power from nearest available point in School Building.

**E16.2** All Electrical work must be performed by licensed electricians.