

PART 1 General

1.1 SECTION INCLUDES

- .1 Handrails and Guardrails as shown on drawings.
- .2 Metal Screen Panels as shown on drawings.
- .3 Metal Fence complete with gate and hardware as shown on drawings.
- .4 Projection Screen posts and sleeves as shown on the drawings.

1.2 RELATED SECTIONS

- .1 Section 01330 - Submittal Procedures.
- .2 Section 03300 - Cast-in-Place Concrete.
- .3 Section 07910 - Concrete Joint Sealant.
- .4 Section 06101 - Site Carpentry.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269-02, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
 - .4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-1989 (R2001), Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- .4 The Environmental Choice Program
 - .1 CCD-047a-98, Paints, Surface Coatings.
 - .2 CCD-048-98, Surface Coatings - Recycled Water-borne.

1.4 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For finishes, coatings, primers and paints.

- .2 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.5 SAMPLES

- .1 Submit samples in accordance with Section 01330 - Submittal Procedures.

PART 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade as specified by Structural.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and cap screws, nylon lock nuts, and washers - stainless steel conforming to ASTM A276, Type 316.
- .5 Extruded Shapes or Drawn Tubing for Rails and Posts: shall conform to CSA Aluminum Alloy and Temper HA.5 SG 11R-T6 (ASTM B221M-83 Alloy 6351-T6), or HA.7 GA 11M-T6 (ASTM B221 M-83 Alloy 6061-T6).
- .6 Aluminum sheet, bar, support pin, angle, and plate shall conform to ASTM B221-M-83 Alloy 5083, ATM B209M-83 Alloy 6061-T6 or Alloy 6351-T6.
- .7 Bituminous Paint: alkali-resistant coating and conform to CGSB 31-GP-3M. Supply of bituminous paint shall be considered incidental to the supply of metal fabrications.
- .8 Aluminum Shims: to ASTM Standard B221, Alloy 6061-T6, supplied as required to facilitate the installation of the rail posts as shown on the Drawings. Supply of shims will be considered incidental to the supply of aluminum pedestrian handrail.
- .9 Aluminum Filler Alloys for Welded Construction: ER4043, ER5183, ER5356, ER5554, ER5556, or ER5654.
- .10 Repair: On-site repairs to damaged edging components and field-cut surfaces shall be done with Galvalloy or approved alternate cold galvanizing process. Zinc paint is not acceptable.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self tapping shake proof screws on items requiring assembly by screws or as indicated on drawings.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600g/m^2 to CAN/CSA-G164.

2.4 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of bituminous paint:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.

2.5 HANDRAILS

- .1 Fabricate from steel sections as shown on the Drawings, including all mounting holes.
- .2 Galvanize railing members after fabrication.

2.6 GUARDRAILS

- .1 Fabricate frame steel structures as shown on drawings including all mounting holes.
- .2 Galvanize railing members after fabrication.
- .3 Install stainless steel guard wire as per drawing.

2.7 METAL SCREEN PANELS

- .1 Fabricate frame and intermediate members and mounting plates from aluminum tubing as shown on drawings. Sandblasted finish.
- .2 Laser cut aluminum letters from sheet stock, as indicated on drawings. Brushed clean coat finish. Graphics to be provided by Landscape Architect.

2.8 METAL FENCE

- .1 Fabricate fence panels and gate from aluminum tubing as shown on the drawings. Sandblasted finish.
- .2 Laser cut literary graphic panels from sheet stock as indicated on drawings. Brushed clear coat finish. Graphics to be provided by Landscape Architect.
- .3 Galvanized steel Cantilevered Rolling Gate System complete with:
 - .1 84 x 92 mm medium duty roller track.
 - .2 Support roller fixing bolts.
 - .3 End stop.
 - .4 Fixing bracket to suit 81 x 51 mm aluminum gate frame.
 - .5 64 mm \emptyset heavy duty rubber castor mounting plate.
 - .6 Lockable gate latch.

2.9 PROJECTION SCREEN POSTS AND SLEEVES

- .1 150 mm \emptyset O.D. galvanized steel complete with capped end as per structural drawings.
- .2 152 mm \emptyset I.D. galvanized steel sleeve as per structural drawings.
- .3 Galvanized hardware to ensure secure erection of poles in sleeves as shown on structural drawings.

PART 3 Execution

3.1 ERECTION OF ALL METAL FABRICATIONS

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 HANDRAILS

- .1 Field measure stairs and walls to receive railings prior to shop drawing submission. Submit and obtain shop drawing approval.
- .2 Obtain approval of one railing section at the shop prior to completing railing fabrication and delivery.
- .3 Install handrails and guardrails in locations indicated on the drawings. Locate and layout mounting plates for at least 1 handrail for Contract Administrator's approval of process and location, prior to securing rails permanently.

3.3 METAL SCREEN PANELS

- .1 Field measure between existing concrete columns to confirm panel sizes prior to shop drawing submission. Submit and obtain shop drawing approval.
- .2 Fabricate frames at the shop and pre-drill letter mounting holes. Obtain Contract Administrator's approval.
- .3 Provide upper and lower case laser cut metal letter samples for approval.
- .4 Once frames and letters are approved fasten letters to frames as per proofs provided by Landscape Architect. Obtain Contract Administrator's approval in the shop prior to shipping panels to the site.
- .5 Install panels in locations indicated on the drawings.

3.4 METAL FENCE

- .1 Field measure between new concrete columns to verify fence panel sizes prior to shop drawing submission. Submit and obtain shop drawing approval.

- .2 Fabricate fence and gate panels at the shop and pre-drill for gate hardware. Obtain Contract Administrator's approval prior to shipping fence panels to the site.
- .3 Install fence, gate and hardware in locations indicated on the drawings.
- .4 Install contilevered gate hardware on site. Field test for smooth operation and make adjustments necessary to Contract Administrator's approval.
- .5 Laser cut decorative metal panels from graphic files provided by Landscape Architect. Obtain approval of panels prior to proceeding with installation.
- .6 Meet with Contract Administrator on site to determine final decorative panel locations on the fence. Install panels as directed on site and shown on the drawings.

3.5 PROJECTION SCREEN POSTS AND SLEEVES

- .1 Pre-drill and set sleeves into concrete formwork and obtain Contract Administrator's approval of location and protrusion prior to pouring concrete.
- .2 Weld CUPS on poles and obtain approval of seal prior to erection.
- .3 Erect posts as shown on structural drawings.

3.6 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION