

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section - 08 80 50 Glazing
- .2 Section - 07 92 10 Sealants and Caulking
- .3 Section - 09 03 61 Historic Repainting

### **1.02 REFERENCES**

- .1 Water penetration test: ASTM E547-86
- .2 Air infiltration test: ASTM E283-84
- .3 Resistance to forced entry test: ASTM F588-85
- .4 Hot-Dipped Galvanizing: for irregular sections, zinc coating to meet specified requirements of CAN/CSA-G164-M

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit the following samples for the Departmental Representative review for conformance with drawn details and specifications:
  - .1 Typical projected vent window corner including glazing for new windows with each type of glazing method and glass type.
  - .2 Typical muntin section for new windows with each type of glazing method and glass type.
  - .3 Hardware for windows and doors.
  - .4 Colour sample of finish, applied to a typical muntin section.
- .3 Shop Drawings and Manufacturer's literature:
  - .1 Submit for approval shop drawings showing projected vent and installation details, including anchorage, fastening and sealing methods.
  - .2 The manufacturer shall not commence any work until shop drawings have been approved and sizes guaranteed.
  - .3 Colour charts of standard finishes

### **1.04 QUALITY ASSURANCE**

- .1 Contractor must be competent to meet all performance criteria associated with reproduction steel window fabrication. All work shall include, but not be limited to the following:
  - .1 Steel weather-stripped projected vent windows.
  - .2 Mullions, covers and trim.

- .3 Factory applied finishes.
- .2 Allowable tolerances: Size dimensions  $\pm 1.6\text{mm}$ .
- .3 Source quality control:
  - .1 Air infiltration test:  
ASTM E283-84  
Maximum air infiltration .05 CFM/Ft. of crack length for windows with operable ventilators.
  - .2 Water penetration test:  
ASTM E547-86  
  
No water penetration using successively higher pressure differentials of 3.13, 4.16, 5.2, 8.35 psf to determine the level attainable without leakage. Each completed test period consisting of four cycles each having 5 minutes with pressure applied and 1 minute with the pressure released, during which water spray is maintained.
  - .3 Resistance to forced entry test:  
ASTM F588-85  
No entry gained using hand manipulation test, tool manipulation test, static load test and locking device strength resistance test at maximum 136kg.
  - .4 Upon request, the window manufacturer shall provide a test report from a qualified independent testing laboratory regularly engaged in window testing to verify that his products conform to these test requirements.

## 1.05 DELIVERY, STORAGE AND HANDLING

- .1 The General Contractor shall be responsible for the protection and storage of the windows after delivery to the site.
- .2 Store in designated areas as close as possible to the point of installation.

## 2 PART

### 2.01 MATERIALS

- .1 Heavy intermediate weather-stripped steel sections.  
Manufactured from solid hot rolled steel shapes.
- .2 Steel window frame sections design based on the following:
  - .1 New single glazed steel windows:
  - .2 Sections made from new billet steel with flanges rolled integral at the mill.

- .3` Perimeter frames sections shall have glazing rebates providing an unobstructed glazing surface of at least 13 mm in height.
- .4 Provide new ventilator unit types as required on the Window Schedule.
- .5 Combined weight of frame and ventilator sections shall be a minimum of 5.9 kg/m. Frame sections alone shall not weigh less than 2.3 kg/m.
- .6 Custom profiles as shown on drawn details, to match archival records.
- .3 Muntins:
  - .1 Steel Tee Muntins
  - .2 Muntins shall be solid hot rolled from new billet steel with flanges rolled integral at the mill.
  - .3 29 mm tee shall weigh 1.4kg/m.
  - .4 Steel stops for windows: solid galvanized steel angles, pre-drilled for fasteners and prefinished.
  - .5 Weather-stripping shall be extruded PVC.
  - .6 Galvanized steel mounting angle: manufactured from solid hot rolled stock.
  - .7 Fasteners: stainless steel counter sunk machined screws to provided security complying with the requirements of ASTM F588-85
- .4 Hardware shall be as follows:
  - .1 Pivot Hinges: Oil rubbed bronze, (US 10B).
  - .2 Handles: Oil rubbed bronze (US 10B), with spring and catch pulley and chain to extend for operation from nearest floor level.
  - .3 Weather-stripping: PVC

## 2.02 FABRICATION

- .1 Fabricate steel windows in accordance with approved shop drawings.
- .2 Corners of frame and ventilators shall be mitred then flash welded. Exposed and contact surfaces shall be finished smooth flush with adjacent surfaces. Provide vent holes in sections and glazing beads as indicated in the drawings.
- .3 Steel tee muntins shall be tenoned and welded to the perimeter frame. Muntin intersections shall be slotted and cross-notched and shall extend continuous from jamb to jamb and head to sill. All joints shall all be welded and exposed surfaces shall be finished smooth flush with adjacent surfaces.
- .4 Glazing:
  - .1 All projected vent shall be designed for inside glazing

- .2 Provide continuous oversized, secured glazing beads to suit glass assemblies as called for in the Window Schedule and as specified in Section 08 80 50 Glazing.
- .3 Continuous PVC weather-stripping shall be applied to the integral weather-strip groove of the ventilator sections, and shall be on the same plane around the interior perimeter of the ventilated area. Weather-stripping that is surface applied or requires an additional retainer or requires screws for application shall not be acceptable.
- .5 Operable Hardware:
  - .1 Provide all hardware required to make windows operable.
  - .2 Cam handles or spring catches shall be shipped loose for field installation.

## 2.03 FACTORY FINISHING

- .1 After fabrication, steel windows, mullions, covers, mounting angles and trim shall receive both of the following finishes:
  - .1 Hot-Dipped Galvanizing: for irregular sections, zinc coating to meet specified requirements of CAN/CSA-G164-M. Use air-cooling method (no chromate dipping permitted).
  - .2 PT8 - Duranar (Kynar) baked on enamel. Colour shall be custom colour as selected by the Departmental Representative.

## PART 3 EXECUTION

### 3.01 INSPECTION

- .1 Window openings shall conform to details, dimensions and tolerances shown on the window manufacturer's approved shop drawings.
- .2 Conditions, which may adversely affect the window installation, must be corrected before installation commences.

### 3.02 INSTALLATION

- .1 Windows specified under this section shall be installed by experienced personnel.
- .2 Install windows in openings in strict accordance with approved shop drawings.
- .3 Set galvanized mounting angles into existing glazing pocket in enough sections to permit installation without

removing existing concrete. Site weld frame, grind smooth and finish with zinc rich primer (Galvafroid).

- .4 Set units plumb, level and true to line, without warp or rack of frames.
- .5 Anchor units securely to surrounding construction with approved fasteners.
- .6 The exterior joints between the projected vent, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.
- .7 Repair any abraded areas of the factory finish with supplied touch-up paint.

### **3.03 CLEANING**

- .1 This Section shall leave window surfaces clean after installation and ready to receive glass and glazing.
- .2 Final cleaning of the exposed window surfaces is to be completed after all dust generating work is complete and prior to scaffolding removal.

### **3.04 WINDOW SCHEDULE**

- .1 Window Schedule is shown on drawing Ab100.

**END OF SECTION**