

1 General

1.1 **SECTION INCLUDES**

- .1 Design, labour, Products, tool, equipment and services necessary for glazed decorative metal railing work in accordance with the Contract Documents.

1.2 **REFERENCES**

- .1 AAMA CW-10, Care and Handling of Architectural Aluminum from Shop to Site.
- .2 ANSI H35.1/H35.1M, American National Standard Alloy and Temper Designation Systems for Aluminum.
- .3 ***ASTM A276, Specification for Stainless and Heat-Resisting Steel Bars and Shapes.***
- .4 ***ASTM A480/A480M, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.***
- .5 ASTM B209M, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .6 ASTM B221M, Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles and Tubes.
- .7 ASTM C920, Specification for Elastomeric Joint Sealants.
- .8 ASTM F738M, Specification for Stainless Steel Metric Bolts, Screws, and Studs.
- .9 CAN/CGSB 12.20-M, Structural Design of Glass for Buildings.
- .10 CSA-A500, Building Guards.
- .11 CSA S157/S157.1, Strength Design in Aluminum.

1.3 **DESIGN REQUIREMENTS**

- .1 Design glass balustrade systems to CSA-A500, CAN/CGSB-12.20-M and CSA-S157/S157.1. Perform stress analysis. Design units to accommodate live, dead, lateral, wind, seismic, handling, transportation, and erection loads.
- .2 Design glazed balustrade system incorporating a protection rail along the top edge of the glass consisting of stainless steel trim secured in place with structural silicone sealant as indicated on Drawings.

1.4 SUBMITTALS

- .1 Shop Drawings:
 - .1 Submit Shop Drawings in accordance with Section 01 33 00 indicating:
 - .1 Plans, sections, details, type of extrusions, profiles, thicknesses, finishes, closures, fillers, and end caps, and sealants.
 - .2 Products and glazing types.
 - .3 Anchorage inserts, system installation tolerances.
 - .4 Detailing, locations, and allowances for movement, expansion, contraction.
- .2 Samples:
 - .1 Submit two samples of following in accordance with Section 01 33 00.
 - .1 250 mm long samples of each type of extrusion and finish.
 - .2 250 x 200 mm samples of glass.
- .3 Close-out submittals: Submit data for incorporated into the Operations and Maintenance Manual as part of Section 01 78 00.

1.5 QUALITY ASSURANCE

- .1 Retain a licensed Professional Engineer, registered in Province of Ontario, to perform following services for decorative metal railings work:
 - .1 Design of glazed decorative metal railings.
 - .2 Review, stamp, and sign Shop Drawings.
 - .3 Conduct on-Site inspections and prepare and submit inspection reports.
 - .4 Upon completion of Work provide certification bearing Engineers seal confirming all work was performed in accordance with Engineered Drawings and in compliance with the OBC.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Handle glazed partition work in accordance with AAMA CW-10.
- .2 Protect surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Do not remove before final cleaning of building.

2 Products

2.1 ACCEPTABLE MANUFACTURER(S) AND SYSTEM(S)

- ~~.1 GRS Glass Railing Dry Glaze Taper-Locx System (GG):~~
 - ~~.1 Aluminum shoe: rectangular base shoe, 120 mm high x 72 mm wide with satin anodized cladding, 'Posiglaze' by Stella Custom Glass Hardware, Inc or approved alternate.~~
 - ~~.2 Square cap: Extruded aluminum with satin anodized finish, crisp corner cap rail, 3.2 mm thick x 19 mm high x 25 mm outside width with square edges, U-channel rail cap. 'Cap Series' by Stella Custom Glass Hardware, Inc or approved alternative.~~

~~.3 Provide end closure caps in matching finish.~~

.1 Glazed balustrade system (standoffs):

- .1 Point supported fasteners: 'Point Supported Standoff Base and Cap' by C.R. Laurence or approved alternative by Inkan Limited. Provide sizing as required to suit glass sizing and weight.**
- .2 Posts , supports and standoff brackets: Custom fabricated components, sizes as detailed. Additional details for all components to be as manufactured by C. R. Laurence or approved alternative.**
- .3 Provide caps to match finish.**
- .4 Hardware: Complete with all manufacturer hardware components.**
- .5 Finish: Type 316 stainless steel with #4 brushed finish.**

- .2 Glazed balustrade aluminum shoe system: Aluminum glazing shoe bolted through to support angle and secured to stringer as shown on Contract Drawings. 'CRL B5L' by C.R. Laurence or approved alternative by Inkan Limited.**

2.2 MATERIALS

- .1 General: All materials under work of this Section, including but not limited to, sealants and coatings are to have low VOC content limits.**
- .2 Stainless steel sheet and channels: ASTM A480/A480M, Type 316. Size as shown.**
- .3 Stainless steel shapes: ASTM A276, Type 316. Sizes and shapes as shown.**
- .4 Aluminum extrusions and channels: ASTM B221 and ANSI H35.1/H35.1M, AA6063 alloy, T6 temper.**
 - .1 Profile and dimensions: Refer to Contract Drawings.**
 - .2 Thermal breaks in frame members: Vertically aligned with glazing.**
- .5 Aluminum sheet: ASTM B209 and ANSI H35.1/H35.1M, AA110 aluminum alloy, H14 temper, minimum 1.29 mm for sheets less than 610 mm wide and minimum 2.05 mm for sheets of a greater dimension.**
- .6 Reinforcements and anchors: ASTM A480/A480M, Type 316. Size as shown.**
- .7 Glazing: The choice of glazing for this project shall conform to specified Design Requirements, reviewed Shop Drawings, and Authorities having Jurisdiction:**
 - .1 Laminated Glass Balustrade**
 - .1 (LGL-1): Laminated glass for interior glass guards (GG), 16.8 mm thick as per Section 08 80 00.**
 - .2 (LGL-2): Laminated exterior glass guards, 16.8 mm thick as per Section 08 80 00.**
- .8 Glazing gasket: Black EPDM roll-in glazing gasket; 'LBSG100' by CRL Canada or approved alternative.**

- .9 Sealant: ASTM C920; Single-Component, silicone sealant; 'Spectrem 1' by Tremco or '790 Silicone Building Sealant' by Dow Corning Corporation. Colour as selected by Consultant.
- .10 Anchors, clips, and angles: Stainless steel.
- .11 Screws, bolts and other fasteners: ASTM F738M; Stainless Steel Type 316.
- .12 Provide series safety seals by CRL Canada or approve alternative, SMBSG Series at drop side of glass and MBSG series at inside side of glass.

2.3 **FABRICATION**

- .1 Fabricate sections true to detail, free from defects impairing appearance, strength and durability. Fabricate extrusions with sharp, well defined corners.
- .2 Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints.
- .3 Conceal anchors, reinforcement and attachments from view *in areas where necessary. All stainless steel welds to be ground smooth and complete with #4 brush finish.* Fabricate reinforcement in accordance with design requirements.
- .4 Do not expose manufacturer's identification labels on assemblies.
- .5 ***Fabricate glazed balustrade closures and trim from stainless steel sheet..***

3 Execution

3.1 **EXAMINATION**

- .1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **INSTALLATION**

- .1 Install glazed decorative metal railings work in accordance with reviewed Shop Drawings, manufacturer's written instructions.
- .2 Install work of this Section securely, in correct location, level, square, plumb, at proper elevations, free of warp or twist.
- .3 Install closures, and trim pieces.
- .4 Refer to Contract Drawings for glazing type locations. Install glazing in accordance with Section 08 80 00.

- .5 Install glass in balustrades properly centred with uniform bite and face and edge clearance, free from twist, warp or other distortion likely to develop stress.
- .6 Remove damaged or unacceptable Products and assemblies from Site and replace to Engineer's acceptance.

3.3 **CLEANING**

- .1 Clean surfaces of grime and dirt using acceptable and recommended means and methods.
- .2 Clean dust and drilling debris from under the base railing shoes prior to their installation.
- .3 Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up shop primer damaged during transit and installation, with primer to match shop primer.

END OF SECTION