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PART 1 - GENERAL1.1 RELATED  
REQUIREMENTS

- .1 Section 05 50 00 metal fabrications
- .2 Section 07 52 00 Modified Bitumen membrane roofing

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM A 167-99, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A 500-03, Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- .2 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA-W47.1-92(R2001), Certification of Companies for Fusion Welding of Steel Structures.
  - .4 CSA-W55.3-65(R1998), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- .3 Master Painters Institute (MPI).
  - .1 Architectural Painting Specification Manual.
- .4 The Society for Protective Coatings (SSPC).
  - .1 SP -2, Hand-Tool Cleaning.

1.3 SYSTEM  
DESCRIPTION

- .1 Personal Restraint Assembly: Posts, rails, counter weights and attachments to resist lateral forces of 3 kN at any point and in all directions, without damage or permanent set.
- .2 Provide and install freestanding Roof Edge Protection System, including pipe railings, uprights, bases, counterweights, fittings and delivery to site.

1.4 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Submit control submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials and Section 01 47 17 Sustainable Requirements: Construction.
- .3 Coordinate submittal requirements and provide submittals required by Section 01 47 17 - Sustainable Requirements: Construction.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate component profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
- .3 Indicate welded connections using standard welding symbols include net weld lengths.

1.6 QUALITY  
ASSURANCE

- .1 Submit design data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Test Reports and substantiating engineering data and test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.
- .3 Design structural support framing components and site inspect the installation under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Ontario, Canada.
- .4 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .5 Co-ordinate the Work with installation of roofing

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assembly and sheet metal work.

### 1.7 WELDERS' QUALIFICATIONS

- .1 Welders Certificates: furnish welders' qualifications to Departmental Representative.
- .2 Welding qualifications to be in accordance with CSA B51.
- .3 Employ qualified and licensed welders possessing certificates for each procedure to be performed from authority having jurisdiction.
- .4 Each welder to possess identification symbol issued by authority having jurisdiction.
- .5 Certification of companies for fusion welding of steel structures to be in accordance with CSA-W47.1.
- .6 Manufacturer Qualifications: company specializing in manufacturing Products specified in this section with minimum three years documented experience.

### 1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal, and with Waste Reduction Workplan.
- .2 Place materials defined as hazardous or toxic waste in designated containers.

### 1.9 SITE CONDITIONS

- .1 Verify dimensions, tolerances, and method of attachment with other work.

### 1.10 ENVIRONMENTAL REQUIREMENTS

- .1 Storage and manage hazardous materials in accordance with Section 01 47 17 - Sustainable Requirements: Construction.

### 1.11 SUSTAINABLE

- .1 Concept Design Strategy Requirements detailed in

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CONCEPT DESIGN  
STRATEGY  
REQUIREMENTS

Section 01 47 17 - Sustainable Requirements: Concept Design form an integral part of this project including materials and products of this Section. Sustainable Design Concepts include:

- .1 Holistic green design framework.
- .2 Description of design criteria.
- .3 Setting sustainable goals based on projects design decisions.

- .2 Sustainability goals are determined with measurable performance targets.
- .3 Operational requirements are specified to transform design requirements into building requirements.
- .4 Construction:
  - .1 Construction requirements detailed in Section 01 47 17 - Sustainable Requirements: Construction form an integral part of this project including materials and products of this Section. Sustainable construction requirements include:
    - .1 Specific construction requirements for project.
    - .2 Specification text to ensure that project will comply with PWGSC green design process and sustainability requirements.
    - .3 Administrative, temporary and procedural requirements for the use of materials and methods of construction.
- .5 Verification:
  - .1 Contractor's verification established in Section 01 47 17 - Sustainable Requirements: Contractor's Verification form an integral part of this project. Verification requirements include:
    - .1 Verification of performance requirements and expected results included in Concept Design and specified in Section 01 47 15 - Sustainable Requirements: Construction.
    - .2 Compliance with sustainable requirements specific to this technical section.
- .6 Operations:
  - .1 Operation requirements specified in Section 01 47 17 - Sustainable Requirements: Operations form an integral part of this project. Operations requirements include:
    - .1 Products, materials, services, and methods used in operation and maintenance of building, consistent with procurement policy of green-purchasing that reduces volume of wastes, material costs, toxicity of products and supports recycling.

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## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Pipe: ASTM A53 38mm schedule 40, galvanized.  
Rails and Posts: 38mm diameter steel pipe, galvanized.
- .2 Pipe fittings: Elbows, Crossovers, Wall flanges, Tees, Couplings, galvanized.
- .3 Mounting Bases: Steel bases are galvanized and are supplied with a rubber pad on underside of the component.
- .4 Counterweights: Steel Counterweights are supplied with a rubber pad on the underside of the component.
- .5 Fasteners: All Fasteners shall be 304 or 305 stainless steel.
- .6 Railing shall consist of top rails, mid rails, uprights, counterweights and connections.
- .7 All pipe connections to be structural pipe fittings manufactured to the requirements of ASTM A47-77-32510.
- .8 Railing assembly shall be capable of withstanding a load of at least 90 kg applied in any direction at any point on the top rail.

### 2.2 FABRICATION

- .1 Fit and shop assemble items in largest practical sections, for delivery to site.
- .2 Fabricate items with joints tightly fitted and secured.
- .3 Continuously seal joined members by intermittent welds and plastic filler.
- .4 Grind exposed joints flush and smooth with adjacent finish surface.
  - .1 Make exposed joints butt tight, flush, and hairline.
  - .2 Ease exposed edges to small uniform radius.
- .5 Exposed Mechanical Fastenings: screws or bolts; consistent with design of component.
- .6 Furnish and install components required for anchorage of fabrications.

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- .7 Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

### 2.3 FABRICATION TOLERANCES

- .1 Squareness: 3 mm maximum difference in diagonal measurements.
- .2 Maximum Deviation From Plane: 1.5 mm from 1 m.

### 2.4 FINISHES

- .1 Prepare uncoated steel restraint post surfaces: SSPC-SP 2, no more than 4 hours before applying epoxy primer.
- .2 Concealed steel anchors, clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- .3 Do not prime surfaces in direct contact with concrete or where field welding is required.
- .4 Concealed Structural Components and Anchors: galvanize after fabrication to CAN/CSA-G164 to minimum 600 g/sq m galvanized coating.

## PART 3 - EXECUTION

### 3.1 VERIFICATION

- .1 Verification requirements in accordance with Section 01 47 17 - Sustainable Requirements: Contractor's Verification.
  - .1 Materials and resources.
  - .2 Storage and collection of recyclables.
  - .3 Construction waste management.
  - .4 Local/regional materials
  - .5 Low-emitting materials.
- .2 Operational Requirements:
  - .1 Operational requirements in accordance with Section 01 47 17 - Sustainable Requirements: Operations.
    - .1 Cleaning materials and schedules.

.2 Repair and maintenance materials and instructions.

3.2 EXAMINATION

- .1 Verification of existing conditions before starting Work.
- .2 Verify dimensions, tolerances, and method of attachment with other work.

3.3 PREPARATION

- .1 Supply and install steel items required to be cast into concrete or attached to steel framing as clean uncoated metal, with setting templates to appropriate sections.

3.4 INSTALLATION

- .1 Install items plumb and level, accurately fitted, free from distortion or defects.
- .2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- .3 Field weld components as indicated on shop drawings. Perform field welding.
- .4 Obtain approval from Departmental Representative prior to site cutting or making adjustments not scheduled.
- .5 apply shop primer in accordance with MPI Painting Manual to: welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- .6 For all connections with fittings, each set screw is to be tightened to 40 N of torque.
- .7 Placement of uprights and counterweights to meet manufacturer specifications as stated in the manufacturer Installation Instructions.
- .8 Terminate the run as stated in the manufacturer Installation Instructions.

3.5 ERECTION  
TOLERANCES

- .1 Maximum Variation from Plumb, Level: 3 mm.

3.6 PROTECTION OF  
FINISHED WORK

- .1 Protect finished Work from damage.