

PART 1 - GENERAL

1.1

Included works

Non-exhaustive list:

1. Provide and install all materials for **metal and aluminum structures** indicated in the drawings, specified in the current section and needed to complete the structure; provide the equipment, tools and all labour required for its design, fabrication, delivery and installation.
 1. **Stainless steel elements:**
 - a. Tubes, rods, profiles, stainless steel plates shown in the drawings.
 2. **Galvanized steel elements:**
 - a. Tubes, rods, profiles, galvanized plates shown in the drawings.
 3. **Primed steel elements:**
 - a. Tubes, rods, profiles, plates primed shown in the drawings.
 4. **Aluminium elements :**
 - a. Tubes, rods, profiles, aluminum plates shown in the drawings.

1.2

Related works

Non-exhaustive list:

1. Demolition and refurbishing Section 02 41 17E
2. Paint Section 09 91 26E

1.3

References

Conform to current, applicable standards (latest version). When submitting documents, specify the reference standard or standards and their edition.

Non-exhaustive list:

1. American Society for Testing and Materials International, (ASTM)
 - 1.1 ASTM A53/A53M, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - 1.2 ASTM A269, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - 1.3 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - 1.4 ASTM B209M, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 1.5 ASTM B210M, Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless tubes.
 - 1.6 ASTM B211M, Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire.
 - 1.7 ASTM F593, Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.

2. Canadian General Standards Board (CGSB)
 - 2.1 CAN/CGSB-1.40, Anticorrosive Structural Steel Alkyd Primer.
 - 2.2 CAN/CGSB-1.181, Ready-mixed Organic Zinc-Rich Coating.
3. Canadian Standards Association (CSA)
 - 3.1 CAN/CSA-G40.20 and G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - 3.2 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - 3.3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
 - 3.4 CAN/CSA-S157, Strength Design in Aluminum.
 - 3.5 CAN/CSA W47.1, Certification of Companies for Fusion Welding of Steel.
 - 3.6 CAN/CSA W47.2, Certification of Companies for Fusion Welding of Aluminum.
 - 3.7 CAN/CSA W48, Filler Metals and Allied Materials for Metal Arc Welding (written in collaboration with the Canadian Welding Bureau).
 - 3.8 CAN/CSA W59, Welded Steel Construction (Metal Arc Welding) (metric).
 - 3.9 CAN/CSA W59.2, Welded Aluminum Construction.
4. Other:
 1. Aluminum Association Inc. (AA), Designation System for Aluminium Finishes.
 2. Aluminum Welding Society (AWS), A5.10 and A5.10M, Specification for Bare Aluminum and Aluminum Alloy Welding Electrodes and Rods.

1.4 Calculation criteria

1. Metal and aluminum structures and all fastening components must be designed and calculated to withstand overloads in the vertical and horizontal directions, as per the requirements of the NBC of Canada, 2010, latest version.

1.5 Documents and samples to be submitted

1. Data sheets: submit data sheets as per section 01 33 00E – Submittal procedures.
2. Shop drawings: submit required shop drawings as per section 01 33 00E – Submittal procedures. Shop drawings must indicate or show the materials, core thickness, finish, assemblies, joints, anchoring method and number of anchors, supports, reinforcements, details and accessories.
3. Certificates: submit documents as per section 01 33 00E – Submittal procedures, signed by the manufacturer, certifying that the products, materials and equipment satisfy the prescriptions regarding physical characteristics and performance criteria.

1.6 Transport, storage and handling

1. Packaging, shipping, handling and unloading
 - 1.1 The equipment and materials must be transported, stored, handled and protected adequately.

2. Storage and protection
 - 2.1 Visible surfaces of metal and/or aluminum elements must be covered with self-adhesive building paper or plastic film before the elements are shipped to the building site.
 - 2.2 Surfaces must only have their protective lining removed during the building's final cleaning. Provide the necessary instructions for the removal of this protection.

1.7
Scheduling

1. Work carried out in two phases, see drawings limits.
2. Scheduling, see section 01 32 18E and directive Ministerial representative.
3. The place of work is within an occupied building.

1.8
Guarantee

1. Provide a certificate of guarantee, signed and issued on behalf of the Ministerial representative, stating that all the works in this section are warranted against defects for a period of five (5) years from the date of signature of the certificate of provisional acceptance work. Comply with section 01 78 00E.

PART 2 - PRODUCTS

2.1
Materials and equipment

1. Steel plates and sections: grade 300W or 350W as per CAN/CSA-G40.20 and G40.21 standards.
2. Steel pipes: as per ASTM A53/A53M standard, extra-strong series.
3. Steel plates and sheets: as per ASTM-A 36 standard.
4. Welding materials: as per CAN/CSA W59 standard.
5. Welding electrodes: as per standards in the CAN/CSA W48 series.
6. Galvanization (when asked in drawings): as per CAN/CSA G164 standard.
7. Stainless Steel Tubing: as per ASTM A269, nuance 304, commercial grade, welding, seamless longitudinal, AISI No. 4 finish
8. Steel bolts and anchor bolts: as per ASTM A307 standard (if required).
7. Aluminum welding bars: as per AWS A5.10 and A5.10M standards.
8. Aluminum and aluminum alloy bars, rods, wires, profiles and extruded tubes: as per ASTM B211M standard, **throughout unless otherwise indicated.**
9. Aluminum tubes made by drawing: as per ASTM B210M standard.
10. Aluminum plates and sheets: as per ASTM B209M standard.
11. Aluminum profiles: the aluminum must be of AA.6063-T5 alloy and temper. All the profiles shall conform to the details shown in the drawings. They shall have square, well defined edges and be free of any defect affecting appearance or strength, (enamelled finish and colour, see article 2.3 Finish).
12. Aluminum plates: with registered trademark, for general use, smooth, at least 3.2 mm

thick, (enamelled finish and colour, see article 2.3 Finish).

13. Thin aluminum sheet: with registered trademark, for general use, smooth, at least 1.3-mm thick, (enamelled finish and colour, see article 2.3 Finish).
14. Finishing paint: system quality and color, see article 2.3 Finish.
15. Other accessory products, when applicable:
 - 15.1 Mouldings and corners shall be of aluminum profiles: clips shall be stainless or cadmium-plated steel and shall be of the appropriate dimensions and sufficient in quantity to perform the required functions.
 - 15.2 Extruded polyvinyl chloride products, hardness of 80 (\pm) 5.
 - 15.3 Various double density vinyl fittings.
 - 15.4 Preformed macro-polyisobutylene tape with continuous 3 mm integral shim, in the "Polyshim" line by Tremco, or approved equivalent.
 - 15.5 Other products and materials needed to complete the structure.

2.2 General

1. Structures must be right, square, well aligned and in accordance with prescribed dimensions; the joints must be tight and well secured.
2. Unless otherwise indicated, stainless steel, flathead, self-tapping, loosening-resistant screws must be used for threaded assemblies.
3. Inasmuch as possible, structures must be adjusted and assembled in shop, and delivered ready to install.
4. Visible welds must be continuous along the joint's entire length; they must be filed or ground so as to present a smooth, even surface.

2.3 Finish

1. **Stainless steel:** Nuance 304, AISI no 4 finish.
2. **Galvanised steel:** Hot dip galvanizing, producing a uniform layer of zinc having a basis weight of at least 610 g/m², according to standard CAN/CSA-G164.
 - a. Retouching on site: Painting printing layer for zinc, ready to apply, according to standard CAN / CGSB 1181.
3. **Primed steel:** Paint layer applied in printing workshop, according to standard CAN / CGSB 1.40.
 - a. Retouching on site: Paint layer printing, ready to apply, according to standard CAN / CGSB 1.40.
 - b. Paint finish: by Contractor Section **09 91 26E**
4. **Visible aluminum:** primer and finishing paint applied in shop, DURANAR XL by PPG or approved equivalent, (3) three colours of the Ministerial representative's choice.

2.4 Insulating coating

1. Plan on using tape and/or neoprene as a separator wherever indicated and/or required:
 - 1.1 metals of a different kinds, with the exception of stainless steel, zinc and

white bronze of reduced surface area;

1.2 concrete, mortar and other masonry materials;

1.3 wood.

2.5
Paint applied in shop

1. Steel components (other than stainless steel and galvanized steel) must be primed in workshop. See article 2.3.
2. Exposed and visible aluminum components must, without exception, receive the specified system of finishing paint, see article 2.3. The paint system must be carried out in shop by an accredited company specializing in this type of work and by qualified, experienced staff. The methods and products used must conform to the specified manufacturer's process. The paint must be applied to dry surfaces, free of rust, grease and deposits.

2.6
**Retrieving and editing items,
manufacturing**

1. Take and verify all dimensions and levels on site and submit shop drawings based on actual verified dimensions.
2. Manufacture elements in workshop in accordance with approved shop drawings.
3. If required, first submit a sample of the work before proceeding on a global basis.
4. Examine existing elements to change. Dismantle, recuperate and transport them to change them according to the instructions in the workshop.
5. In the workshop, sawing, cutting and / or extend the room for change.
6. All cutting part must be removed.
7. Use materials identical to existing (stainless steel, galvanized steel, primed steel, aluminum as applicable) and equal or greater strength.
8. Add new parts as needed.
9. Modified products must be unmarked and without default.
10. Surfaces must be perfectly smooth and clean, as if new.

PART 3 - WORK

3.1
Installation

1. Reinstall existing elements retrieved, modified in the workshop. Place them back according to the new layout, see drawings. Provide all funds anchor necessary. Secure each piece, as the existing. Also install new elements according to the indications in approved shop drawings. Respect accepted tolerances without combining them. Components shall be installed in precise positions, adjusted, square, and plumb with parallel, uniform joints.
2. Unless otherwise indicated, assemble all the elements **by bolting**. Provide and install all anchors in stainless steel, including bolts, lock washers, nuts, half-round tongues, locks, expansion parts, etc., and if possible, eliminate on-site welding. Do not secure support plates in sliding joints to allow the structural system to expand.

Tighten bolted assemblies evenly with the required torque. Inspect and correct deficiencies.

3. If welding is required on site, attach shop drawings and patterns for approval and wait for authorization from the consultant before beginning work. As needed, proceed with welding work on site in accordance with the applicable standard and protect finished surfaces to avoid burning them. Touch up welds, grind them, polish them, clean them and touch up the galvanized finish with the consultant-prescribed zinc-rich primer. Units deemed substandard by the Ministerial representative, damaged units or defective units will be rejected and will have to be replaced with new ones.

3.2 Cleaning

1. Clean structures after installation in order to rid them of the dust generated by construction work or by the premises themselves.
2. Once the installation is complete, rid the site of excess materials, waste, tools and barriers used to protect the equipment.

*****END*****