PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 03 30 00 - Cast-in-Place Concrete

1.2 REFERENCES

.1 ASTM A307-04e1, Specification for Carbon Steel Bolts and Studs, 60 000 psi Tensile.

.2 CSA-G40.21-13, Structural Quality Steels.

.3 CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 CSA-S16-14, Design of Steel Structures.

.5 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.

.6 CSA W55.3-08 (R2013) Certification of companies for resistance welding of steel and aluminum.

.7 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.8 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.

1.3 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.

.3 Shop drawings shall be stamped by an Engineer licensed to practice in the Province of Nova Scotia.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Steel angles and plates: to CSA-G40.21-M, Grade 300W.

.2 Welding procedures: to CSA W59-13. Welding materials: to CSA W48-14.

.3 Bolts, washers, nuts and anchor bolts: to ASTM A307.

.4 Hot dip Galvanizing: galvanize steel, where indicated to CSA-G164, minimum zinc coating of 600g/m^2.

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.

.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.

PART 3 - EXECUTION

3.1 ERECTION

.1 Welding:
- .1 Do welding work in accordance with CSA W59-13 unless specified otherwise.
- .2 Companies doing welding shall be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding, CSA W55.3 for resistance welding.
- .3 Provide certification that all welded joints are certified by Canadian Welding Bureau.
- .4 Welds exposed to view shall be continuous and ground smooth.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant 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 Touch-up field welds, bolts and burnt or scratched surfaces after completion of erection with zinc-rich cold galvanizing compound.

3.2 MISCELLANEOUS STEEL SECTIONS

.1 Supply and install miscellaneous steel sections for inclusion in the completed works where noted.

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 Submittal Procedures.
.2 Section 03 10 00 - Concrete Formwork.
.3 Section 03 20 00 - Concrete Reinforcement.
.4 Section 03 30 00 - Cast-in-Place Concrete.
.5 Section 05 50 00 - Metal Fabrications.
.6 Section 31 23 10 - Excavation, Trenching and Backfilling.

1.2 SCOPE

.1 These specifications are for a fully engineered clear span bridge of aluminum construction and shall be regarded as minimum standards for construction.

1.3 REFERENCES

.1 CSA-S6-14, Canadian Highway Bridge Design Code.
.2 CSA-S157-05 (R2010), Strength Design in Aluminum.
.3 CSA W47.2-11 (R2003), Certification of Companies for Fusion Welding of Aluminum.
.4 CSA W55.3-08 (R2013), Certification of Companies for resistance welding of steel and aluminum.
.5 CSA W59.2-M1991 (R203), Welded Aluminum Construction.
.6 ANSI/AWS A5.10, Specification for Bare Aluminum and Aluminum Alloy Welding Electrodes and Rods.
.7 ANSI/AWS D1.5 - 2002, Bridge Welding Code.

1.4 SUBMITTALS

.1 Shop Drawings
  .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  .2 Indicate materials, member sizes, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, bridge reactions, reinforcement, details requested in other sections of this specifications, and accessories. Drawings shall have cross-referenced details and sheet numbers. All drawings shall be signed and sealed by a Professional Engineer who is licensed in accordance with Section 3.1.
.2 Welder Certifications and Procedures

.1 Submit proof of company and welder certification, as required in the pertinent sub-section of section 5.0.
.2 Submit certified welding procedures for all non pre-qualified joints.
.3 Quality Control
.1 Submit details of quality control program and/or shop certifications held.

1.6 MEASUREMENT FOR PAYMENT

.1 The complete costs for the fabrication, delivery and erection of all materials, labour and equipment to provide the pedestrian bridge identified under this section are to be captured in the lump sum pricing identified for this item.

PART 2 - MATERIALS

2.0 MATERIALS

.1 Bridge is to be constructed of aluminum. Materials of construction shall meet the requirements of the following sections.

2.1 ALUMINUM

.1 Bridges fabricated from structural aluminum shall use structural shapes, tubing, angles, plates and bars of CSA aluminum alloy number GS11N (Alcan alloy 6061-T6) or equivalent having a minimum yield strength of 240 MPa in the pre-welded condition and 110 Mpa in the heat affected zone. Bridge design shall compensate for all effects on mechanical properties produced by the welding process. The minimum thickness of all structural members shall be 6.4 mm for chords and 3.2 mm for diagonals and bracing.

2.3 ALUMINUM GRATING

.1 All decking shall be formed from Aluminum grating, designed to withstand the specified pedestrian loads.
.2 Decking shall be welded to the underlying structure.

PART 3 - FABRICATION

3.1 ALUMINUM WELDING

.1 Do aluminum welding work in accordance with

CSA W59.2-M1991 (R2013) unless specified otherwise.

.2 Companies and individuals doing welding shall be certified under CSA W47.2-05 (R2011).

.3 Provide documentation showing that all welded joints and procedures are certified by the Canadian Welding Bureau (CWB) or the American Welding Society (AWS).

.4 Welds exposed to view shall be continuous and ground smooth. Neat, uniform, fillet welds do not require grinding.

.5 Welding electrodes shall be in conformance with ANSI/AWS Standard A5.10, alloy type 5556 and shall be certified by the Canadian Welding Bureau (CWB).

.6 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

3.2 QUALITY CERTIFICATION

.1 Aluminum fabricator shall be currently certified by the Canadian Welding Bureau and shall have the personnel, organization, experience, capability, and equipment to produce fabricated aluminum structures. Quality control shall be in accordance with procedures outlined for CSA W47.2-05 (R2011) certification. Fabricator shall provide details to engineer upon request.

PART 4 - BEARINGS

4.1 BEARING DEVICES

.1 Bridge bearings shall consist of a steel setting or slide plate placed on the abutment or grout pad. The bridge bearing plate which is welded to the bridge structure shall bear on this setting plate. One end of the bridge will be fixed by fully tightening the nuts on the anchor bolts at that end. The opposite end will have finger tight only nuts to allow movement under thermal expansion or contraction.

.2 Bridge shall have Teflon on Teflon or stainless steel on Teflon slide bearings placed between the bridge bearing plate and the setting plate. The top slide plate shall be large enough to cover the lower Teflon slide surface at both temperature extremes.

PART 5 - SIGNAGE

5.1 SIGNAGE

.1 Work under this section includes supply and installation of an aluminum sign at each end of the bridge complete with reflective sheeting with the following specified message: ''MAX LOAD 1 TONNE (1000KG)''.

.2 Signage to be installed as noted on Construction Drawings, adjacent to bridge.

PART 6 - WARRANTY

6.1 WARRANTY

.1 For the work of this Section 05 50 10, the 12 month warranty period is extended to 10 years from the date of delivery. At the end of this warranty period, the bridge shall be free of corrosion, design, material and workmanship defects and wood attachments shall be free of rot, insect damage, or fungal decay.