PART 1 - GENERAL

1.1 REFERENCES

.1 ASTM International Inc.
.1 ASTM A 36/A 36M-14, Standard Specification for Carbon Structural Steel.
.2 ASTM A 193/A 193M-16, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature or High-Pressure Service and Other Special Purpose Applications.
.3 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
.4 ASTM F3125/3125M Rev A-15, Standard Specification for High Strength Structural Bolts, Steel And Alloy Steel, Heat Treated, 120 KSI (830 mPa) and 150 KSI (1040 mPa) minimum tensile strength, inch and metric designations.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-85.10-99, Protective Coatings for Metals.

.3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturers Association (CPMA).
.1 Handbook of the Canadian Institute of Steel Construction.
.2 CISC/CPMA Standard 2-75, Quick-Drying Primer for use on Structural Steel.

.4 Canadian Standards Association (CSA International)
.1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
.3 CAN/CSA-S16-01-14, Limit States Design of Steel Structures.
.4 CSA W47.1-09(R2014), Certification of Companies for Fusion Welding of Steel.
.5 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.
.6 CSA W55.3-08,Certification of Companies for Resistance Welding of Steel and Aluminum.

1.1 REFERENCES (Cont'd)

.4 (Cont'd)
.7 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.5 The Society for Protective Coatings (SSPC) and National Association of Corrosion Engineers (NACE) International
.1 SSPC-SP-1 Solvent Cleaning.
.2 NACE No. 4/SSPC SP-7 Brush-Off Blast Cleaning.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:
.1 Provide drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.

.3 Erection drawings:
.1 Submit erection drawings indicating details and information necessary for assembly and erection purposes including:
.1 Description of methods.
.2 Sequence of erection.
.3 Type of equipment used in erection.
.4 Temporary bracings.

.4 Fabrication drawings:
.1 Submit fabrication drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the Province of Newfoundland and Labrador, Canada.

.5 Source Quality Control Submittals:
.1 Submit 2 copies of mill test reports 4 weeks prior to fabrication of structural steel.
.1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.
.2 Provide mill test reports certified by metallurgists qualified to practice in the Province of Newfoundland and Labrador.

1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.6 Fabricator Reports:
.1 Provide structural steel fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver materials in manufacturer's original, undamaged containers with identification labels intact.

.3 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

PART 2 - PRODUCTS

2.1 DESIGN REQUIREMENTS

.1 Design details and connections in accordance with requirements of CAN/CSA-S16 and CAN/CSA-S136 to resist forces, moments, shears and allow for movements indicated.

.2 Shear connections:
.1 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction" when connection for shear only (standard connection) is required.
.2 Select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, provided no point loads act on beam, when shears are not indicated.

.3 Submit sketches and design calculations stamped and signed by qualified professional

2.1 DESIGN REQUIREMENTS (Cont'd)

.3 (Cont'd) engineer licensed in the Province of Newfoundland and Labrador, Canada for non standard connections.

2.2 MATERIALS

.1 Structural steel: to CSA-G40.20/G40.21 Grade 350W for W shapes, channels and HSS. 300W for Angles and plates.

.2 Anchor bolts: to ASTM F1554 GRADE 36.

.3 Bolts, nuts and washers: to ASTM F3125, Grade A325.

.4 Welding materials: to CSA W48 Series and CSA W59 and certified by Canadian Welding Bureau.

.5 Shop paint primer: to CISC/CPMA 2-75, grey.

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

2.3 FABRICATION

.1 Fabricate structural steel in accordance with CAN/CSA-S16 and in accordance with reviewed shop drawings.

.2 Continuously seal members by continuous welds or intermittent welds where indicated. Grind smooth.

2.4 SHOP PAINTING

.1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16.

.2 Clean members, remove loose mill scale, rust, oil, dirt and foreign matter. Prepare surfaces according to SSPC SP1, followed by Brush Off Blast Cleaning to SSPC SP7.

2.4 SHOP PAINTING (Cont'd)

.3 Apply one coat of primer in shop to steel surfaces to achieve minimum dry film thickness of 0.065 mm to 0.080 mm, except:
.1 Surfaces to be encased in concrete.
.2 Surfaces to receive field installed stud shear connections.
.3 Surfaces and edges to be field welded.
.4 Faying surfaces of slip-critical connections.
.5 Below grade surfaces in contact with soil.

.4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5 degrees C.

.5 Maintain dry condition and 5 degrees C minimum temperature until paint is thoroughly dry.

.6 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

PART 3 - EXECUTION

3.1 APPLICATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 GENERAL

.1 Structural steel work: in accordance with CAN/CSA-S16.

.2 Welding: in accordance with CSA W59.

.3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

3.3 CONNECTION TO EXISTING WORK

.1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Departmental Representative for direction before commencing fabrication.

3.4 MARKING

.1 Mark materials in accordance with CSA G40.20/G40.21. Do not use die stamping. When steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.

.2 Match marking: shop mark bearing assemblies and splices for fit and match.

3.5 ERECTION

.1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16 and in accordance with reviewed erection drawings.

.2 Field cutting or altering structural members: to approval of Departmental Representative.

.3 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.

.4 Continuously seal members by continuous welds where indicated. Grind smooth.

3.6 FIELD QUALITY CONTROL

.1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by Departmental Representative.

.2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Departmental Representative.

.3 Submit test reports to Departmental Representative within 2 weeks of completion of inspection.

3.6 FIELD QUALITY CONTROL (Cont'd)

.4 Contractor will pay costs of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.

3.7 FIELD PAINTING

.1 Paint in accordance with Section 09 91 00 - Painting.

.1 Touch up damaged surfaces and surfaces without shop coat with primer to CISC/CPMA 2-75 except as specified otherwise. Apply in accordance with CAN/CSA-S16.

3.8 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

END