Part 1 General

1.1 REFERENCES

.1 ASTM International Inc.

.1 ASTM A36/A36M-14, Standard Specification for Carbon Structural Steel.

.2 ASTM A193/A193M-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 A307-14e1, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.4 ASTM A325-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.5 ASTM A325M-14, Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric).

.6 ASTM A490M-14a, Standard Specification for High-Strength Steel Structural Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric).

.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 Manufacturer's Association (CPMA)

.1 CISC/CPMA 2-75, Quick-Drying, Primer for Use on Structural Steel.

.2 CISC/CPMA 1-73a, Quick-Drying, One-Coat Paint for Use on Structural Steel.

.4 Canadian Standards Association (CSA International)

.1 CSA G40.20/G40.21-04, 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-S16-09, 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(R2013), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.

.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-2, SP-7.

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 Province of Manitoba, 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 Manitoba, Canada.

.5 Samples :

.1 Upon request, prepare sample of typical exposed structural connections in accordance with AISC Specifications of Architecturally exposed structural steel for approval of Departmental Representative. Samples to be judged upon alignment of surfaces, uniform contact between surfaces, smoothness and uniformity of finished welds. When approved, sample units will serve as a standard for workmanship, appearance and material acceptable for entire project.

.6 Source Quality Control Submittals:

.1 Upon request, 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 Province of Manitoba, Canada.

.7 Fabricator Reports:

.1 Upon request, 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.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 Design details and connections in accordance with requirements of CAN/CSA-S16 and CAN/CSA-S136 with CSA-S136.1 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 For composite construction select or design minimum end connection to resist reaction resulting from factored movement resistance as tabulated in the "Handbook of the Canadian Institute of Steel Construction" assuming 100% shear connection with depth of steel deck and/or slab shown on drawings.

.4 Upon request, submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Manitoba, Canada for non standard connections.

2.2 MATERIALS

.1 Structural steel: All rolled or steel structural sections shall be G40.21-350W. All Hollow structural sections to be G40.21-350W class C. All angles, channels and plates shall be G40.21-300W.

.2 Anchor bolts: to CSA-G40.20/G40.21, Grade 300W.

.3 Bolts, nuts and washers: to ASTM A307, ASTM A325M, and ASTM A490/A490M as required.

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

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

.6 Shear studs: to CSA W59, Appendix H.

2.3 FABRICATION

.1 Fabricate structural steel in accordance with CAN/CSA-S16, CAN/CSA-S136, and in accordance with reviewed shop drawings.

.2 Install shear studs in accordance with CSA W59.

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

2.4 SHOP PAINTING

.1 Clean, prepare surfaces and shop prime structural steel as follows:

.1 Structural steel: All structural steel shall be hot-dipped galvanized unless noted.

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, CAN/CSA-S136.

.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, CAN/CSA-S136, 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 CLEANING

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

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 CSA International
.1 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
.3 CSA S16, Design of Steel Structures.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:
.1 Submit product data for expanded metal mesh.
.1 Indicate material, width of mesh, length of mesh, strand thickness, weight.
.2 Submit product data for stainless steel checkerplate.
.1 Indicate material type, thickness and properties.
.3 Submit product data for stainless steel plate.
.1 Indicate material type, thickness and properties.

.3 Shop Drawings:
.1 Ramp at exterior of Walk-in Freezer No.1 and No.2 boxes:
.1 Indicate materials, core thicknesses, finishes, dimensioned layout drawing, connections, joints, method of anchorage, number of anchors, support.
.2 Security screen above Walk-in Freezer No.2:
.1 Indicate materials, core thicknesses, finishes, dimensioned layout drawing, connections, joints, method of anchorage, number of anchors, support.
.3 Insulated wall sleeve:
.1 Indicate materials, core thicknesses, finishes, dimensioned layout drawing, connections, joints, method of anchorage, number of anchors, support.

1.3 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Where possible, fit and shop assemble work, ready for erection.

2.2 ISOLATION COATING

.1 Isolate components, by means of bituminous paint:

2.3 FLOOR PLATE AT INTERIOR OF WALK-IN FREEZER BOXES

.1 Interior floor protection plate overlay: (over Walk-in Freezer No.1 and No.2 floor panels)
.1 Diamond tread panels: 3mm (11 gauge) thick Grade 304 stainless steel, polished finish, panels to sizes indicated.

2.4 RAMP AT EXTERIOR OF WALK-IN FREEZER BOXES

.1 Materials and construction:
.1 Steel sections and plate: to CSA G40.20/G40.21, Grade 300W.
.2 Frame:
.1 Fully welded steel construction, hot dipped galvanized.
.2 Sides: 75mm steel angle.
.3 Intermediate supports: 75mm steel angle frame, number and spacing as indicated.
.4 Epoxy steel anchor bolts, 12mm diameter x 120mm long.
.3 Top plate: 6mm thick steel floor plate, diamond tread with welded 12mm continuous steel rod at exposed edges, hot dipped galvanized.
.1 Machine screws countersunk into frame, levelling shims.

.2 Hot dipped galvanizing finish: with zinc coating 600 g/mý to CAN/CSA-G164.

.3 Details as indicated.

2.5 SECURITY SCREEN

.1 Materials and construction:
.1 Steel sections: to CSA G40.20/G40.21, Grade 300W.
.2 Frame:
.1 Continuous 51mm steel angle at full perimeter, mitred, fully welded and hot dipped galvanized.
.3 Infill: woven wire mesh of 4.88 mm (6 gauge) 50 mm x 50 mm,

galvanized steel.
.1 Welded to perimeter frame.
.4 Back brace: 51mm steel angle, hot dipped galvanized.
.5 Fastening: by bolts.

.2 Hot dipped galvanizing finish: with zinc coating 600 g/mý to CAN/CSA-G164.

.3 Details as indicated.

2.6 INSULATED SLEEVE

.1 Materials and construction:
.1 Stainless steel plate Grade 316L, 1.2mm (18 gauge) thickness, mill finish.
.2 Formed as indicated and fully welded.

.2 Details as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

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

.3 Provide suitable means of anchorage acceptable to Departmental Representative.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Supply components for work by other trades in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CSA S16. Touch-up bolts and scratched surfaces with primer after completion of:

.1 Primer: maximum VOC limit 250 g/L to GS-11.

3.3 FLOOR PLATE AT INTERIOR OF WALK-IN FREEZER BOXES

.1 Installed by Section 11 41 10 – Walk-in Freezers.

3.4 RAMP AT EXTERIOR OF WALK-IN FREEZER BOXES

.1 Locate and install ramps at exterior of Walk-in Freezer boxes as indicated.

.2 Install by this Section 05 50 00 – Metal Fabrications.

.3 Coordinate with Section 11 41 10 – Walk-in Freezers.

3.5 SECURITY SCREEN

.1 Locate and install security screen as indicated.

.2 Install by this Section 05 50 00 – Metal Fabrications.

.3 Coordinate with Section 11 41 10 – Walk-in Freezers.

3.6 INSULATED SLEEVES

.1 Locate and install as indicated.

.2 Installed by Section 04 05 00 – Common Results for Masonry.

.3 For insulation, refer to Section 07 21 13 – Board Insulation.

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.8 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by metal fabrications installation.