

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00.01 – Cast-in-place Concrete Short Form.
- .2 Section 26 05 00 – Common Work Results - Electrical.

1.2 REFERENCES

- .1 CSA International.
 - .1 CSA-G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA-S16-14, Design of Steel Structures.
 - .4 CSA-S136-12, North American Specification for the Design of Cold-formed Steel Structural Members.
 - .5 CSA-O80-15, Wood Preservation.
 - .6 CSA-O121-08 (R2013), Douglas Fir Plywood.
 - .7 CSA-O141-05 (R2014), Softwood Lumber.
 - .8 CSA-O325-07 (R2012), Construction Sheathing.
 - .9 AAMA/WDMA/CSA-101/I.S.2/A440-11, North American Fenestration Standard/Specification for windows, doors, and skylights.
 - .10 CSA A440S1-09, Canadian supplement to AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard (NAFS)/ Specification for windows, doors, and skylights.
 - .11 CSA-A440.4-07 (R2012) - Window, Door, and Skylight Installation
- .2 ASTM International.
 - .1 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A 194/A194M-15a, Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
 - .3 ASTM A325-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - .4 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM A792/A792M-10 (2015), Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - .6 ASTM C635-13a, Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - .7 ASTM C920-14a, Standard Specification for Elastomeric Joint Sealants.
 - .8 ASTM C1248-08 (2012), Standard Test Method for Staining of Porous Substrate by Joint Sealants.
 - .9 ASTM D2842-12, Standard Test Method for Water Absorption of Rigid Cellular Plastics.
 - .10 ASTM E96-15, Standard Test Methods for Water Vapor Transmission of Materials.
 - .11 ASTM E1264-14, Standard Classification for Acoustical Ceiling Products.
 - .12 ASTM F436-11, Standard Specification for Hardened Steel Washers.
 - .13 ASTM F1859-14, Standard Specification for Rubber Sheet Floor Covering Without Backing.
 - .14 CSA W48-14, Filler metals and allied materials for metal arc welding.
- .3 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.

- .4 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-12.1-M90, Glass and Glazing General Requirements.
 - .2 CAN/CGSB-12.8-97, Insulating Glass Units.
 - .3 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.
 - .4 CAN/CGSB-19.17-M90, One Component, Acrylic Emulsion Base Sealing Compound.
 - .5 CAN/CGSB-37.50-M89, Hot-applied, Rubberized Asphalt for Roofing and Waterproofing.
 - .6 CAN/CGSB-51.34-M86, Vapor Barrier, Polyethylene Sheet for Use in Building Construction.
- .5 Aluminum Association (AA), Designation System for Aluminum Finishes (2003).
- .6 National Lumber Grades Authority (NLGA).
 - .1 2012 Standard Grading Rules for Canadian Lumber, 2012.
- .7 National electrical manufacturers association (NEMA).
 - .1 NEMA LD 3-2005, High-Pressure Decorative Laminates (HPDL).
- .8 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).
 - .1 ASHRAE 90.1-13, Energy Standard for Buildings Except Low-Rise Residential Buildings.

1.3 CALCULATION CRITERIA

- .1 Wind and snow loads for wall, floor and roof systems must be calculated by engineer who is a member of the Ordre des ingénieurs du Québec.
- .2 Calculations must be based on limit states using factored loads and resistances.
- .3 Calculations must be based on Code de construction du Québec.
- .4 Components and assemblies must be calculated to meet structural limits.
- .5 Use bolts, welds and metal screws. Metal screw resistance to CSA S136.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for sealants, insulation, and building materials and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.
 - .2 Indicate plans and grid lines, structural members and connection details, bearing and anchorage details, systems (roof, floor, wall), and detailed description of mechanical, electrical and other systems in Work.
 - .3 Describe requirements of other systems of components related to this Work but provided by others. Obtain necessary information required to detail this Work including methods of integration and securing.
 - .4 Submit erection drawings to Departmental Representative for approval, before construction.
 - .5 Indicate erection dimensions and methods.

1.5 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 and protect components and equipment from nicks, scratches, and blemishes.
 - .2 Replace defective or damaged materials with new.

1.6 EXTENDED WARRANTY

- .1 The 12-month warranty set forth in General Requirements is extended to 24 month for work under Section 13 34 25.

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Floor:
 - .1 Steel plates and sections: to CSA-G40.20/G40.21, grade 350W.
 - .2 Bolts and anchor bolts: to ASTM A325, medium carbon Type 1 steel, galvanized finish; ASTM A 194, Grade 2H nuts, galvanized finish; ASTM F436, Type 1 nuts.
 - .3 Welding electrodes: to CSA W48 series.
 - .4 Steel joists: metal coated steel joists, to CSA S136. Minimum thickness: 1.37 mm.
- .2 Roof:
 - .1 Lumber: S4S softwood unless otherwise indicated, maximum moisture content 19% (R-SEC), to following: CSA-O141 and NLGA.
 - .2 Exterior plywood: marine grade Douglas Fir plywood to CSA-O121 and CSA-O80.
 - .3 Interior plywood: Douglas Fir plywood to CSA O121 and CSA-O325, standard construction grade, appropriate thickness, 8% moisture content at fabrication, G2S for carpentry and interior work. Plywood for interior use must not contain added urea-formaldehyde resin.
- .3 Insulation and watertightness:
 - .1 Closed-cell rigid board, CFC free, integrated high density skin, tongue and groove.
 - .1 Extruded polystyrene: to CAN/ULC-S701.
 - .2 Type: 4.
 - .3 RSI: 0.88 m²K/W / 25 mm.
 - .4 Dimensions: 610 mm x 2440 mm. Thickness as indicated.
 - .5 Compressive resistance: minimum 210 kPa.
 - .6 Water absorption: ASTM D2842, maximum 0.7% by volume.
 - .7 Water vapour permeance: ASTM E96, maximum 50ng/Pa s m².
 - .8 Recycled content: 20% minimum.
 - .9 Thickness: as indicated.
 - .2 Blanket insulation: Batt and blanket mineral insulation.
 - .1 To CAN/ULC-S702, type 1.
 - .2 RSI: 0.62 m² °C/W / 25 mm.
 - .3 Recycled content: 40% minimum.
 - .4 Thickness: as indicated.
 - .3 Vapour barrier sheet:
 - .1 Polyethylene film: to CAN/CGSB-51.34, 0.15 mm thick.
 - .4 Waterproof membrane:
 - .1 Waterproofing system: modified bitumen SBS membranes with self-adhesive heavy duty reinforced cap sheet and self-adhesive fibreglass base sheet, self-adhesive base and torch applied finish sheet. Heat-welded underface marked with three lines to facilitate rolling. Heat-welded underface and upper face protected with white granules. Membranes to CAN/CGSB 37.56M.

.2 Strain energy (kJ/m) (L/T):	9.4	9.2
.3 Breaking strength (kJ/m) (L/T):	19.2	16.3
.4 Ultimate elongation (%) (L/T):	54	62
.5 Cold bending at - 30 °C:	no cracking	
.6 Softening point:	≥ 110 °C	
.7 Static puncture resistance (N):	380	
.8 Weight:	2.9 kg/m ² (base sheet)	
	4.2 kg/m ² (cap)	
.9 Thickness:	2.5 mm (base sheet) and 3.7mm (finish)	
 - .2
 - .3
 - .4
 - .5
 - .6
 - .7
 - .8
 - .9

- .4 Aluminum framing, doors and windows:
 - .1 Extruded aluminum framing, designed to integrate insulated in-fill panels, aluminum sheeting, doors and windows. Include anchors, fasteners, waterproofing components and other hardware required to make elements waterproof and functional:
 - .1 Material: to AAMA/WDMA/CSA-101/I.S.2/A440, CSA A440S1 and the following.
 - .2 All windows from same manufacturer.
 - .3 Profiles: 6063 T5 tempered aluminum alloy.
 - .4 Bended aluminum profiles: tempered aluminum sheet to use and finish.
 - .5 Fasteners: stainless steel 300 series or cadmium plate stainless steel 400 series, required sizes and quantity for intended use.
 - .6 Weatherstripping and window trim: extruded high density non-porous grey butyl, hardness suited to use.
 - .7 Aluminum sheet: AA-5005 alloy, 1 mm minimum thickness for bending; 3 mm for cladding panels.
 - .2 Glass: tempered insulating glass unit: to CAN/CGSB-12.8, double glazed, 25 mm total thickness:
 - .1 Glass: to CAN/CGSB-12.1.
 - .2 Thickness: clear tempered 6 mm exterior pane; clear tempered 6 mm interior pane.
 - .3 Air space thickness: 12 mm between interior and exterior panes with black low conductivity spacers.
 - .4 Coating: low-e coating, applied to surface number 2 by vacuum deposition.
 - .5 Inert gas filler: argon.
 - .6 Technical characteristics:

Visible transmittance:	69%
Exterior visible light reflection:	11%
Interior visible light reflection:	11%
 - .3 Exterior doors:
 - .1 Thickness: 51 mm.
 - .2 Jamb: 130 mm.
 - .3 Top rail: 100 mm.
 - .4 Bottom rail: 300 mm.
 - .5 Interior side: heavy duty aluminum cladding.
 - .6 Main door profiles: nominal thickness 3 mm.
 - .7 Glazing vinyl in groove on interior side and snap-in vinyl glazing bead on the exterior side.
 - .8 Hardware:
 - Continuous hinge.
 - Door closer with door stop.
 - Aluminum sill.
 - Panic bar and pull handle.
 - Deadbolt with barrel lock compatible with existing key system.
 - Weatherstripping around perimeter.
 - .4 Windows:
 - .1 Sliding windows, extruded aluminum mullions, mechanically assembled, with insulating double glazing.
 - .2 Mullions and intermediate transoms must resist pressure of 1.2 kPa, deflection maximum 1/175 or 19 mm (the lower of the two), and installation meeting local load requirements (climatic data of National Building Code).
 - .3 Classification: AW-PG70-FW to AAMA/WDMA/CSA-101/I.S.2/A440.
 - .4 Air infiltration: maximum allowable infiltration 0.10 CFM/FT² at 720 Pa differential static pressure of 300 Pa. Window must meet index for fixed system under 0.25 (m³/h)/m at 75 Pa when tested to CAN/CSA-A440 for windows.
 - .5 Water infiltration: no air infiltration as defined in test method at 720 Pa differential static pressure. B7 index for maximum allowable water infiltration at 720 Pa to CSA-A440 for windows.
 - .6 Tests: test window components to procedures described in AAMA/WDMA/CSA 101/I.S.2/A440.

- .5 Interior finishes:
 - .1 Floor:
 - .1 Anti-skid rubber floor covering to ASTM F1859.
 - .2 Composition: 100% synthetic rubber.
 - .3 Thickness: 3 mm.
 - .4 Baseboard: caoutchouc en rouleau, continue, appuyée sur le revêtement de sol. Hauteur : 100 mm.
 - .2 Ceiling:
 - .1 Exposed 24 mm T-bar acoustical tile suspension system, medium resistance, to ASTM C 635. Height: 38 mm. Material: hot-dipped galvanized steel, commercial grade. Finish: baked polyester white paint.
 - .2 Acoustical tile: hydroform mineral fibre panel, factory applied acrylic latex paint finish, 610 x 610 x 16 mm, square edges, white colour, to ASTM E1264, type: III, shape: 2, texture: fine, pattern: C D, noise reduction factor (NRF) 0.55, sound transmission loss (STL) 33 and light reflectance (LR) 0.82.
 - .3 In-fill panel:
 - .1 Panel for filled surface, adjacent to windows, opaque, for vertical installation between aluminum mullions: laminated plastic, 1.15 mm to Nema LD-3, laminated 13 mm plywood.
 - .4 Work surface:
 - .1 Laminated plastic horizontal work surface, 1.15 mm, to Nema LD-3, 2 16 mm laminated plywood sheets. Colour selected by Departmental Representative from manufacturer's standard range.
 - .2 Dimensions: 1500 x 610 mm.
 - .3 Transparent plastic cable exit hole: position to be determined.
- .6 Electrical/mechanical:
 - .1 Heating appliance capacity to maintain indicated temperatures.
 - .2 Cooling appliance capacity to maintain indicated temperatures.
 - .3 Recessed lighting 500 mm x 500 mm with T8 tube.
 - .4 Wall outlet (1), duplex, 15A.
 - .5 Network phone jack (1).
 - .6 One (1) switch.
 - .7 One exterior light.
 - .8 Gate control buttons.
 - .9 Electrical panel: 120/208V, 100A.
 - .10 Pullbox: 200 mm x 200 mm.
 - .11 All components pre-wired and hooked up to electrical panel or pullbox.
- .7 Waterproofing products:
 - .1 Exterior sealant: to CAN/CGSB-19.13, ASTM C920 Type S, Grade NS, Class 50 and ASTM C1248. Single compound silicon sealant.
 - .2 Interior sealant: acrylic latex, mildew resistant, single compound, to CAN/CGSB-19.17, colourless and clear.

2.2 SYSTEM DESCRIPTION AND PERFORMANCE CRITERIA

- .1 Design, manufacture, deliver and install prefabricated booth. Deliver and install finished, plumb and level system compliant with regulations and ready to use once installation is complete and include all auxiliary systems (electrical devices and controls, heating and cooling systems).
- .2 Dimensions: 1570 mm x 2180 mm. Indoor clearance: 2,200 mm.
- .3 Minimum RSI:
 - .1 Floor: 3.52 RSI.
 - .2 Wall: 3.52 RSI.
 - .3 Panels adjacent to windows: 2.2 RSI.
 - .4 Roof: 3.52 RSI.
- .4 System to include the following components:
 - .1 Floor structure.

- .2 Exterior wall, doors and windows.
- .3 Roof.
- .4 Insulated and weathertight walls, floors and ceilings.
- .5 Interior finishes: floors, walls and ceilings.
- .6 Lighting appliances and other electrical accessories.
- .7 Heating and cooling system to maintain temperature between 20 and 25 degrees celsius.
- .5 Building structure and envelope built according to indicated sizes.
- .6 Ensure total absence of condensation on interior surfaces under following minimum condition:
Interior: 22 degrees C, 30% RH, still air.
Exterior: -23 degrees C.
- .7 Building watertight construction.
- .8 Provide for positive drainage of condensation occurring within wall construction and water entering at joints, to exterior face of wall in accordance with "Rain Screen Principles", as described by NRC/IRC.
- .9 Vapour seal building enclosure to withstand, without failure, design RH at design ambient temperature condition, maintained against interior atmospheric pressure of 250 Pa.
- .10 Design members to withstand snow and wind loads to local conditions.
- .11 Design, assemble and secure building elements to building frame to ensure stresses in sealants and seals are within sealant manufacturer's recommended maximum.
- .12 Allow for ceiling, piping, conduit and other interior dead loads imposed on this structure.

2.3 FABRICATION

- .1 Maintain air, vapour and thermal barrier throughout building enclosure elements.
- .2 Locate vapour barrier on warm side of thermal insulation.
- .3 Locate air barrier as detailed.
- .4 Complete enclosure assembly with exterior skin, glass units, access units, doors, inner air/vapour seal membrane, thermal insulation and interior finish.
- .5 Accurately fit and rigidly frame together joints, corners and mitres.
- .6 Match components carefully to produce continuity of line and design.
- .7 Make joints and connections toward exterior weathertight.
- .8 Provide hairline joints for materials in contact.
- .9 Co-ordinate location of visible joints.

2.4 FINISHES

- .1 Exterior: natural anodized aluminum finish, AA-M12C22A41 designation.

Part 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for prefabricated building erection installation in accordance with manufacturer's written instructions.

3.2 ERECTION

- .1 Erect building level and plumb and parallel to foundation.
- .2 Secure building perimeter to concrete to prevent any movement.

3.3 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.
 - .1 Remove excess sealant by moderate use of low VOC mineral spirits or other solvent as directed by sealant manufacturer.
 - .2 Clean surfaces.

3.4 PROTECTION

- .1 Protect finished surfaces with strippable coatings, strippable wrappers, plywood or sheet materials as required before acceptance of Work.
- .2 Protect installed products and components from damage during construction.
- .3 Repair damage to adjacent materials caused by sealants, insulation, and building materials installation.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00.01 – Cast-in-place Concrete Short Form.
- .2 Section 08 11 00 – Metal Doors and Frames.
- .3 Section 26 05 00 – Common Work Results for Electrical.

1.2 REFERENCES

- .1 CSA International.
 - .1 CSA-A660-10 (R2014), Certification of Manufacturers of Steel Building Systems.
 - .2 CSA-S16-14, Design of Steel Structures.
 - .3 CSA-S136-12, North American Specification for the Design of Cold-formed Steel Structural Members.
 - .4 CSA-W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.
- .2 ASTM International
 - .1 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A153-16, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

1.3 CALCULATION CRITERIA

- .1 Wind loads for framing must be calculated by engineer who is a member of the Ordre des ingénieurs du Québec.
- .2 Calculations must be based on limit states using factored loads and resistances.
- .3 Calculations must be based on Code de construction du Québec.
- .4 Use bolts, welds and metal screws. Metal screw resistance to CSA S136.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.
 - .2 Indicate plans and grid lines, structural members and connection details, bearing and anchorage details, framed openings, accessories, schedule of materials and finishes, camber and loadings, fasteners and welds. Indicate detailed description of mechanical, electrical and other systems in Work.
 - .3 Describe requirements of other systems of components related to this Work but provided by others Obtain necessary information required to detail this Work including methods of integration and securing.
 - .4 Submit erection drawings to Departmental Representative for approval, before construction.
 - .5 Indicate erection dimensions and methods.

1.5 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 and protect components and equipment from nicks, scratches, and blemishes.
 - .2 Replace defective or damaged materials with new.

1.6 EXTENDED WARRANTY

- .1 The 12-month warranty set forth in General Conditions is extended to 24 month for work under Section 13 34 50.

Part 2 PRODUCTS

2.1 Structure

- .1 Arc-shaped joists, oval cold-formed steel 70 mm x 110 mm (minimum sizes). Minimum steel thickness 3.04 mm at bottom and minimum 2.28 at top. All components galvanized after assembly. The beams must be fitted at the ends of a welded anchor plate and designed to withstand the design loads
- .2 Cold-formed steel stringers, 41 mm x 110 mm, oval and galvanized. Minimum steel thickness 1.9 mm.
- .3 Steel cable bracing, 9.5 mm minimum.
- .4 Galvanization: hot-dip galvanizing, 450 g/m 2 zinc coating, to ASTM A123 and ASTM A153.

2.2 TARPAULIN

- .1 Fire resistant reinforced high density woven polyethylene sheeting, double sided low-density polyethylene white film. All components fusion welded. Minimum thickness 0.58mm and 285g/m² weight.
- .2 Include pockets in sheeting for steel framing.
- .3 Extend sheeting minimum 300 mm below base of arch to secure adequate finish at foundation junction.

2.2 SYSTEM DESCRIPTION AND PERFORMANCE CRITERIA

- .1 Design, manufacture, deliver and install long-span temporary shelter to CSA-S16 and CSA-S136. Deliver and install finished, plumb and level system compliant with regulations. Locate load-bearing elements outside shelter. Do not locate load-bearing elements in interior space.
- .2 Dimensions: 24.4 m wide x 27.5 m high.
- .3 Design shelter to include the following:
 - .1 Opening 8.01 m x 4.27 m for vehicular and pedestrian circulation.
 - .2 Provide required reinforcing for electricity, lighting and ventilation.
 - .3 Provide required reinforcing for steel door and frame pedestrian door.
- .4 Design building to withstand snow, seismic and wind loads to local conditions.
- .5 Ensure manufacturer has CSA A660 and CSA W47.1 certifications in hand.

Part 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for shelter erection installation in accordance with manufacturer's written instructions.

3.2 ERECTION

- .1 Erect building level and plumb and parallel to foundation.
- .2 Secure building perimeter to concrete to prevent any movement.

3.3 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.

END OF SECTION