

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 10 00 – Concrete Forming and Accessories
- .2 Section 03 20 00 – Concrete Reinforcing
- .3 Section 03 30 00 – Cast-in-Place Concrete
- .4 Section 31 66 15 – Helical Foundation Piles

1.2 REFERENCE STANDARDS

- .1 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)
 - .1 ASHRAE 90.1, Energy Standard for Buildings.
- .2 Canadian Sheet Steel Building Institute (CSSBI)
 - .1 CSSBI 30M, Standard for Steel Building Systems.
- .3 National Building Code of Canada 2015.

1.3 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 building installation and assembly including information relative to sealants, insulation, and building material. Include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 43- Environmental Procedures, for the following.
 - .1 Sealants.
 - .2 Tape.
 - .3 Proprietary joints.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Saskatchewan, Canada, responsible for each building system.
 - .1 Submit drawings for fabricator designed assemblies, components and connections.

- .4 Delegated Design Submittals:
 - .1 Indicate plans and grid lines, structural members and connection details, bearing and anchorage details, roof cladding, wall cladding, framed openings, doors and hardware, accessories, schedule of materials and finishes, camber and loadings, fasteners and welds.
 - .2 Indicate detailed description of mechanical, electrical and other systems in Work.
 - .3 Describe requirements of other systems or components related to this Work but provided by others.
 - .1 Obtain necessary information required to detail this Work including methods of integration and securing.
 - .4 Indicate specified loading reactions at anchor points to concrete pad.
- .5 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.4 WARRANTY

- .1 Contractor warrants Work of this section is in accordance with General Conditions (GC) but for 5 years.

Part 2 Products

2.1 SYSTEM DESCRIPTION

- .1 Provide E-House building structure and enclosure to physical dimensions as indicated. *Physical dimensions to be verified prior to ordering.*
- .2 Building occupancy as defined by National Building Code of Canada (NBC) is Group F Division 3.
- .3 Generally, building is intended to enclose electrical distribution equipment.
- .4 Buildings are to be factory fabricated modular construction complete in every way including heating and ventilating equipment and all electrical services, lighting and life safety systems as indicated here-in and on the drawings.
- .5 E-House buildings shall be provided with a skid base and suitable for transportation and mounting onto a concrete pad foundation.
- .6 E-houses are to be clad with pre-finished metal low profile cladding to both interior and exterior surfaces, including underside of floor system.

- .7 Provide galvanized steel stair as required for entry to building complete with handrail.
- .8 Floor finish to be slip resistant, maintenance free, product.

2.2 DESIGN CRITERIA

- .1 Building watertight and vermin proof construction.
- .2 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.
- .3 Vapour seal building enclosure to withstand, without failure, design RH at design ambient temperature condition, maintained against interior atmospheric pressure of 250 Pa.
- .4 Design for hourly velocity pressure of 1150 probability as per NBC 2015.
- .5 Design members to withstand, within acceptable deflection limitations:
 - .1 Snow load of $L/360$.
 - .2 Lateral load of $H/500$.
- .6 Design building enclosure elements to accommodate, by means of expansion joints, movement in wall and structural movements without permanent distortion, damage to infills, racking of joints, breakage of seals, water penetration or glass breakage.
- .7 Design building assembly to permit easy replacement and disassembly of components.
 - .1 Use non-welded construction.
- .8 Allow for ceiling, piping, conduit and other interior dead loads imposed on this structure.
- .9 Access units and doors, to sizes and locations indicated weather resistant insulated, weatherstripped.

.10 Mechanical Design Criteria

Minimum Envelope Performance

Walls: $U_{si} = 0.28$ (maximum)

Roof: $U_{si} = 0.28$ (maximum)

Floor: $U_{si} = 0.28$ (maximum)

Door: $U_{si} = 0.63$ (maximum)

Interior vapour barrier – Sealed construction

Exterior moisture barrier – Rain screen to shed to exterior

HVAC Design Parameters

Winter exterior design temperature: -40°C
Summer exterior design temperature: +30°C 36% RH
Winter interior design temperature: +15°C non-condensing
Summer interior design temperature: +30°C 36% RH
Exterior wind velocity – winter: 50 kph (maximum)
Exterior wind velocity – summer: 50 kph (maximum)
Interior air motion: Minimum 1.5 m/min at all locations
Ventilation exchange with outdoors: Ø (no exchange required)

External HVAC Components

Louvres - 2 mm heavy extruded aluminum with internal (concealed) fasteners to wall structure, drainable blades on intakes, internal bird screen. 150 mm deep.

Equipment - No external mounted equipment. Any equipment requiring exchange to/from outdoors shall be interior mounted and ducted.

- Condensate pumped to exterior to exterior louvers.

.11 Electrical Design Criteria

- .1 Building lighting: maintain measured lighting level of 500 lx at 1500 mm above finished floor, after building finishes and painting complete.
- .2 Provide building lighting to meet the requirements of Section 26 50 00.
- .3 Provide emergency lighting to meet the requirements of Section 26 52 00.
- .4 Provide exit signs to meet the requirements of Section 26 53 00.
- .5 Provide minimum two 120V, 20A duplex receptacles on a dedicated circuit.
- .6 Provide electrical connection to all building mechanical equipment.
- .7 Provide a 600-120/208V, 3 phase transformer and a 120/208V, 3 phase, 4 wire panelboard for E-House power. Equipment to meet the requirements of Sections 26 12 16.01. and 26 24 16.01.

2.3 PERFORMANCE CRITERIA

- .1 Maximum deflection for roofing under full specified live load: 1/360 of clear span.
- .2 Maximum deflection for exterior cladding under full specified exterior wind induced loads: 1/180 of clear span.

- .3 Maintain following tolerances for building structure and enclosure elements.
 - .1 Maximum variation from plane or location shown on shop drawings: 1 mm/1 m of length and up to 1 mm/5 m maximum.
 - .2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.

2.4 FABRICATION

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

Part 3 Execution

3.1 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer's verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Ensure manufacturer's representative is present before and during testing, critical periods of installation and construction of field joints.

3.2 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.

3.3 COMMISSIONING

- .1 *E-House building and all components shall be fully commissioned by factory or electrical contractor prior to being delivered to site.*
- .2 *Commissioning results to be sent to departmental representative for review.*

END OF SECTION