PART 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Materials and installation of steel building systems including structure, walls and roofs.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM A307-03, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

.2 ASTM A325M-04, Standard Specification for Structural Bolts, Steel, Heat Treated 830 Mpa Minimum Tensile Strength Metric.

.3 ASTM A490M-04, Standard Specification for High Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints Metric.

.4 ASTM A653/A653M-04a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.5 ASTM A792/A792M-03, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.6 ASTM D523-89(1999), Standard Test Method for Specular Gloss.

.7 ASTM D822-01, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB 41-GP-6M-83, Sheets, Thermosetting Polyester Plastics, Glass Fiber Reinforced.

.3 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-S16-01, Limit States Design of Steel Structures.

.4 CSA W59-03, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Sheet Steel Building Institute (CSSBI).

.1 CSSBI 30M-95, Standard for Steel Building Systems.

.2 CSSBI, Design in Cold Formed Steel-2003.

.3 CSSBI Bulletin B15-1993, Snow, Wind and Earthquake Load Design Criteria.

.4 CSSBI Sheet Steel Fact Sheet # 3-April 1994, Care and Maintenance of Prefinished Sheet Steel Building Products.

.5 CSSBI S8-2001: Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products.

.5 Department of Justice Canada (Jus).

.1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.

.2 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

.6 Health Canada/Workplace Hazardous Materials Information System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.7 The Master Painters Institute (MPI) / Architectural Painting Specification Manual - February 2004.

.1 MPI # 23, Oil Alkyd Primer.

.8 Sheet Metal and Air Conditioning Contractor's National Association (SMACNA).

.1 SMACNA - IAQ Guideline for Occupied Buildings under Construction, 1st Edition, 1995.

1.3 SYSTEM DESCRIPTION

.1 Type: rigid frame.

.2 Roof slope: 1:10.

.3 Wall system: single skin panels.

.4 Roof system: standing seam single skin

panels.

1.4 DESIGN REQUIREMENTS

.1 Design steel building system to withstand dead loads, wind loads, snow loads and live loads including, mechanical and electrical systems, 5 ton overhead crane, material handling systems, impact loads, as indicated.

.2 Maximum deflection:

.1 Roof cladding under full design load: 1/180 of clear span.

.2 Wall cladding under specified wind effects: 1/90 of clear span.

.3 Thermal resistance: minimum 3.5 RSI for walls and minimum 3.5 RSI for roof.

.4 Design building walls and roof to allow for thermal movement of component materials caused by ambient temperature range of 50 degrees C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.5 Ensure total absence of condensation on interior surfaces under following minimum condition:

.1 Interior: 22 degrees C, 30 % relative humidity (RH), still air.

.2 Exterior: -20 degrees C, 25 km/h wind.

.6 Ensure building is weathertight.

.7 Provide for positive drainage to exterior of condensation occurring within wall construction and water entering at joints.

.8 Design building enclosure elements to accommodate, by means of expansion joints, any movement in element itself and between element and building structure caused by structural movements without permanent distortion, damage to infills, racking of joints, breakage of seals, water penetration or glass breakage.

1.5 SUBMITTALS

.1 Submit design and shop drawings and product in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit WHMIS MSDS in accordance with

Section 01 10 10 - General Instructions.

.2 Include application instructions for caulking sealant and primers.

.3 Submit shop drawings bearing stamps and signature of qualified professional Structural Engineer and Architect registered or licensed in Province of Newfoundland and Labrador, Canada.

.4 Submit following documents in accordance with CSSBI 30M:

.1 Erection drawings showing foundation loads, anchor bolt setting details part numbers, connections and assembly details.

.5 Indicate plans and grid lines, structural members and connection details, bearing and anchorage details, roof cladding wall cladding, framed openings, roof/wall, wall/slab, wall/cavity details, flashing and closure details, window and door openings details, full wall sections, accessories, schedule of materials and finishes, camber, loads and reaction forces, fasteners and welds, sealant locations and details.

.6 Indicate shop and erection details including cuts, copes, connections, holes, threaded fasteners, rivets and welds. Indicate welds by CSA welding symbols.

.7 Submit description of methods and sequence of erection and type of equipment proposed for use in erecting structural frame.

.8 Indicate on shop drawings related provisions required for mechanical, electrical and other work.

.9 Certificates.

.1 Submit complete calculated thermal design analysis based on ASHRAE zone method or tests certified by independent analysis signed and sealed by qualified professional mechanical engineer registered or licensed in Province of Newfoundland, Canada.

.2 Provide certification that building is in accordance with contract requirements.

.3 Provide structural analysis

certification of building system.

.4 Provide certification stating design criteria used and loads assumed in design, which places sole responsibility for design of building components with steel building systems manufacturer.

.10 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.

.11 Colours of building shall match the existing sir terminal building.

1.6 QUALITY ASSURANCE

.1 Provide certification from steel building systems manufacturer that erector is qualified to erect system.

.2 Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.

.1 After delivery and storage of products, and when preparatory work is complete but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

.3 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Protect prefinished steel sheet during fabrication, transportation, site storage and installation in accordance with CSSBI Sheet Steel Facts #3.

.2 Handle and protect galvanized materials from damage to zinc coating.

.1 During storage space surfaces of galvanized materials to permit free circulation of air.

.3 Waste Management and Disposal:

.1 Separate waste materials for reuse and

recycling in accordance with Section01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities where available.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal, regulations.

.6 Ensure emptied containers are sealed and stored safely.

.7 Fold up metal and plastic banding, flatten and place in designated area for recycling.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Structural steel: to CSA-G40.21, shop primed.

.2 Bolts: to ASTM A307, ASTM A325M, or ASTM A490M as required, complete with nuts and washers.

.3 Welding materials: to CSA W59.

.4 Shop primer paint: to CAN/CGSB-1.40 MPI #23.

.5 Steel sheet, zinc-coated: to ASTM A653/A653M, structural quality grade A with Z275 coating, regular spangle extra smooth surface, passivated for unpainted finish and unpassivated for paint finish.

.6 Screws: corrosion resistant purpose made, head colour to match attached sheet.

.7 Plastic sealants and adhesives as recommended by plastics manufacturer.

.8 Insulation vinyl coated glass fibre rolls RSI 3.5. Vinyl coated reinforced, vapour barrier type.

.9 Insulation adhesive: purposely made for insulation type and fiberglass liner sheet, incombustible after initial set.

.10 Vapour barrier and sealing tape: as recommended by steel building systems manufacturer.

.11 Sealants: in accordance with Section 07 92 00 - Joint Sealing as recommended by sealant manufacturer.

2.2 COMPONENTS .1 Wall System:

.1 Exterior sheet-wall: factory preformed steel sheet, zinc coated prefinished from manufacturer's standard profiles. Include closures, gaskets, caulking, flashing and fasteners to effect weathertight installation. Cut ends of sheets square and clean.

.2 Exterior corners-wall: preformed and prefinished painted galvanized steel minimum 1.0mm thickness steel angle style 300 x 300mm x 1500mm height screw fixed to cladding to match finish and profile of adjacent cladding material, shop cut and brake formed to correct angle.

.3 Accessories to exterior wall cladding, brake or bend to shape, of material and finish to match wall cladding, comprising cap flashings drip flashings internal corner flashings copings and closures for head jamb sill corners.

.4 Interior liner sheet-wall: factory preformed fiberglass reinforced plastic sheet, 19 mm thickness of manufacturer's standard profile. Install sealant material in interlocking lap. Cut ends of sheets square and clean. Provide support framing at 400 mm O.C. and around all sheet edges and all around building.

.5 Sub-girts and clips: factory preformed steel sheet minimum 0.91 mm base metal thickness, zinc coated aluminum-zinc alloy coated.

.2 Roof System:

.1 Exterior sheet-roof: factory preformed steel sheet zinc coated, unpainted from

manufacturer's standard profiles. Include closures, gaskets, caulking, flashing and fasteners to effect weathertight installation. Cut ends of sheets square and clean.

.2 Accessories to roof cladding: brake or bend to shape, of material and finish to match roof cladding or wall cladding where applicable, comprising cap flashings drip flashings coping and closures for corners fascia.

.3 Sub-purlins and clips: factory preformed steel sheet minimum 1.2 mm base metal thickness, zinc coated.

.4 Interior sheet-ceiling: factory preformed steel sheet minimum 0.91 mm base metal thickness, zinc coated or prefinished of manufacturer's standard profile indicated, with interlocking side lap. Install sealant material in interlocking lap. Cut ends of sheets square and clean.

.5 Gussets, lateral spacers: factory preformed steel sheet, minimum 1.2 mm base metal thickness, zinc coated or shop cut and formed to profile from manufacturer's standard.

.6 Gutter and downspout system: manufacturers standard factory preformed of factory painted galvanized steel minimum 0.80mm base metal thickness, minimum 125 x 125mm ogee shape with matching downspouts, fittings, fasteners and clips and 600 x 600 x 50mm factory precast patio slab splashpads.

2.3 FABRICATION .1 Fabricate structural members in accordance with shop drawings and to CAN/CSA-S16.

.1 Tolerance not to exceed those specified in CSSBI 30M.

.2 Provide holes for attachment of other work, as indicated.

.3 Reinforce openings to maintain design strength.

2.4 FINISHES .1 Clean, prepare surfaces and shop prime structural steel to CAN/CSA-S16 except where members are zinc coated, alloy coated or are to be encased in concrete .

PART 3 EXECUTION

3.1 ERECTION

.1 Do work in accordance with CSSBI 30M except where specified otherwise.

.2 Erect structural frame in accordance with shop drawings and to CAN/CSA-S16.

.1 Erection tolerances not to exceed those specified in CSSBI 30M.

.3 Prepare galvanized structural steel surfaces for field welding by removing zinc before welding.

.1 After welding, chip away flux and prime with CAN/CGSB 1.40 MPI #23.

.4 Obtain written permission from Departmental Representative prior to field cutting or altering of structural members.

.5 Touch up with shop primer bolts, rivets, welds and burned or scratched surfaces where exposed at completion of erection.

.6 Install structure.

.7 Install crane rail and stops.

.8 Install overhead crane.

.9 Install wall cladding assemblies ensuring completed installation.

.10 Secure sub-girts to structural wall supports.

.11 Secure roof cladding sheets to structural purlins.

.1 Terminate sheet ends over structural supports.

.12 Secure side laps.

.13 Continuously seal end and side laps.

.14 Install roof assemblies ensuring completed installation.

.15 Install interior wall liner panels.

.16 Install necessary closures, gaskets, caulking sealants and flashings.

.17 Install insulation and vapour retarder to maintain continuity of thermal and moisture protection to building elements and spaces.

.18 Fit insulation closely around and behind electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.19 Keep insulation away from hot surfaces chimneys and gas vents.

.20 Do not compress insulation to fit into spaces.

.21 For roof system, apply insulation to form continuous thermal barrier.

.22 For roof system, ensure continuous vapour air dust-proof barrier seal by pre-caulking joints.

3.2 FIELD QUALITY CONTROL

.1 Manufacturer's Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - 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 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.