PART 1 GENERAL

1.1 REFERENCES

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

.1 ASTM A653/A653M-15e1, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A792/A792M-10(2015), Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.3 ASTM D523-14, Test Method for Specular Gloss.

.2 Canadian Standards Association (CSA International)

.1 CSA S136-12, North American Specification for the Design of Cold-Formed Steel Structural Members.

.2 CSA S136.1-12, Commentary on North American Specification for the Design of Cold-Formed Steel Structural Members.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:

.1 Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor's Representative and Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other construction subtrades.

.4 Review manufacturer's written installation instructions and warranty requirements.

.2 Sequencing: sequence with other work in accordance with Section 01 32 16.07. Comply with manufacturer's written recommendations for sequencing construction operations.

.3 Scheduling: schedule with other work in accordance with Section 01 32 16.07.

1.3 SYSTEM DESCRIPTION

.1 Design Requirements

.1 Design metal panel wall system in accordance with CSA S136 and CSA S136.1.

.2 Design metal panel wall to provide for thermal movement of component materials caused by ambient temperature range for locality of building without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.3 Include expansion joints to accommodate movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.

.4 Design members to withstand dead load and wind loads calculated in accordance with NBC and applicable local regulations, to maximum allowable deflection of 1/180th of span.

.5 Provide for positive drainage of condensation occurring within wall construction and water entering at joints, to exterior face of wall in accordance with NRC "Rain Screen Principles".

.6 Provide minimum thermal resistance of 3.5 RSI calculated with design wind loads in accordance with ASHRAE procedures.

.7 Vapour seal building enclosure to withstand, without failure, design RH at design ambient temperature conditions, maintained against interior atmospheric pressure of 250 Pa.

.8 Design wall system to accommodate specified erection tolerances of structure.

.9 Design wall system to allow for movement of air between exterior and interior side of metal cladding.

.10 Provide an effective air barrier, to prevent infiltration and/or exfiltration of air through wall assembly.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 Caulking and sealant materials during application and curing.

.2 Finishing materials.

.3 Insulation adhesives.

.4 Paints.

.5 Isolation coatings.

.3 Shop Drawings:

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

.2 Indicate dimensions, wall openings, head, jamb, sill and mullion detail, materials and finish, anchor details, compliance with design criteria and requirements of related work.

.3 Ensure each shop drawing submitted has been stamped by licenced professional engineer registered in the Province of Newfoundland and Labrador, Canada.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.5 Manufacturers' Field Reports: Submit copies of manufacturers field reports.

1.5 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.

.3 Warranty Documentation: submit warranty documents specified.

1.6 QUALITY ASSURANCE

.1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.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 and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect steel siding from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.8 SITE CONDITIONS

.1 Execute work of this Section within environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

1.9 WARRANTY

.1 Manufacturer's warranty: Submit, for Departmental Representative acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Sheet steel: cladding, structural quality, grade 230 to ASTM A653, with Z275 zinc coating:

.1 Factory precoated with siliconized polyester (SMP) finish.

.2 Colour: as selected by Departmental Representative.

.3 Dry film thickness: on exposed surface 0.0279 mm thick.

.2 Sheet steel: liner sheet, structural quality, grade 230 to ASTM A653, with Z275 zinc coating:

.1 Siliconized polyester (SMP)

.2 Dry film thickness: 0.025 mm.

.3 Gloss: 25 to 35 of matt finish <10.

.4 Colour : linear white

.3 For copings and flashings provide prefinished, formed material to match cladding.

.4 Insulation: semi-ridgid glass fibre insulation to ASTM C612, Types 1A, 1B. .

.1 Thickness: as indicated on drawings.

.5 Insulation adhesive: compatible with insulation type and zinc coated steel sheet, incombustible after curing.

.6 Screws: stainless steel, head colour same as exterior sheet, dished stainless steel/neoprene.

.7 Sealants: See Section 07 92 00 – Joint Sealants.

.8 Gaskets: soft pliable arctic grade vinyl, extruded profile or closed cell polyurethane foam, adhesive on two sides, release paper protected.

.9 Touch-up paint: as recommended by panel manufacturer.

.10 Isolation coating: bituminous paint.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied silicone modified polyester.

.1 Class F1S.

.2 Colour selected by Departmental Representative from manufacturer's standard range.

.3 Specular gloss: 30 units +/-5 in accordance with ASTM D523.

.4 Coating thickness: not less than 25 micrometres.

.5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:

.1 Outdoor exposure period 1000 hours.

.2 Humidity resistance exposure period 1000 hours.

2.3 COMPONENTS

.1 Exterior sheet: factory preformed coated metal, to profile as indicated of 0.76 mm minimum base metal thickness.

.2 Exterior corners: of same profile, material and finish as adjacent cladding material, shop cut and brake formed to required angle.

.3 Exposed joint (perpendicular to profile): ends of cladding sheet shop cut clean and square, backed with tight fitting filler lapping back of joint, exposed components colour matched to cladding.

.4 Accessories: cap flashings, drip flashings, internal corner flashings, copings and closures for head, jamb, sill and corners, of same material, thickness and finish as exterior cladding, brake formed to shape.

.5 Liner sheet: factory formed steel sheet, 800 mm module, interlocking joint profile, shop installed seal material one side of interlocking joint.

.6 Sub-girts: of 1.21 mm minimum base metal thickness, structural quality steel 230 to ASTM A653, with Z275 zinc coating, profile to accept liner and with structural attachment to building frame.

.7 Expansion joints: as required by metal siding manufacturer.

.8 Prefabricated roof curbs: Fabricated of A255 galvalume steel, minimum 18 ga thickness, fully mitered and welded corners, integral water diverter. All welds continuous with one coat of aluminum coloured urethane sealer. Curbs shall be internally reinforced and factory insulated with 38 mm thick, semi-rigid fibreglass insulation. Height shall be a minimum o f300 mm above the plane of the roof panel. Top of all curbs for roof top equipment shall be level with pitch built into curbs. Curb flanges shall be pre-punched at 75 mm o.c. with 6.4 mm holes, 25 mm from outside edges of flanges.

.9 Roof pipe flashings: made of EPDM or silicone, compounded for resistance to weathering from exposure to ozone and ultraviolet light. Base of pliable aluminum designed to form a seal around roof panel profile and pitch. Provide in sizes to suit pipe penetrations. Roof pipe flashings for high temperature pipe penetrations shall be fire retardant and self extinguishing.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts acceptable in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

.1 Clean surfaces thoroughly prior to installation.

.2 Repair substrate flaws or defects before applying siding or soffits.

.3 Fur surfaces to even plane and free from obstructions.

.4 Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.

3.3 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.4 INSTALLATION

.1 Install liner sheet and sub-girts to structural wall supports. Interlock and seal side and end joints. Precaulk one side of interlocking joint to ensure continuous air barrier and vapour retarder.

.2 Install insulation using adhesive to ensure continuous thermal barrier in conjunction with air barrier and vapour retarder formed by liner sheet.

.3 Install exterior finish cladding to internal sub-girts with coloured fasteners.

.4 Provide notched and formed top closures, sealed to arrest direct weather penetration at vertical profiles for exterior cladding. Ensure continuity of "pressure equalization" of rain screen principle.

.5 Provide alignment bars, brackets, clips, inserts, shims as required to securely and permanently fasten wall system to building structure.

3.5 CONTROL/EXPANSION JOINTS

.1 Construct control and expansion joints as directed by metal siding manufacturer.

.2 Use cover sheets, of brake formed profile, of same material and finish as adjacent material.

.3 Use mechanical fasteners to secure sheet materials.

.4 Assemble and secure wall system to structural frame so stresses on sealants are within manufacturers' recommended limits.

3.6 CONSTRUCTION

.1 Site Tolerances:

.1 Maintain following installation tolerances:

.1 Maximum variation from plane or location shown on approved shop drawings: 10 mm/m of length and up to 20 mm/100 m maximum.

.2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.

3.7 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: 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 at stages listed:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends 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.

.4 Obtain reports within three days of review and submit.

3.8 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.

3.9 PROTECTION

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

.2 Repair damage to adjacent materials caused by preformed metal siding installation.

END OF SECTION