

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 07 62 00 – Sheet Metal Flashing and Trim

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A653/A653M-10, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM D523-89(2008), Standard Test Method for Specular Gloss.
 - .3 ASTM D822-01(R2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

1.3 QUALITY ASSURANCE

- .1 Installer shall provide proof of membership to the CRCA (Canadian Roofing Contractor's Association).

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 sheet metal roofing and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit product data sheets for accessories.
- .3 Shop Drawings:
 - .1 Submit drawings Indicate arrangements of sheets and joints, flashings, types and locations of fasteners and special shapes and relationship of panels to structural frame.
 - .2 Indicate design loads (dead, live, wind etc...) that the metal roofing is designed to withstand.
 - .3 Provide design for snow guards including mounting devices, securement to roofing and number of rows required.
 - .4 Shop drawings shall be stamped and signed by a professional engineer registered and licenced to practice in the Province of Newfoundland.

- .4 Samples:
 - .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, colour and finish.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements 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 in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect sheet metal roofing from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.6 WARRANTY

- .1 Contractor shall provide a written CRCA warranty stating that the installed roofing membrane is warranted against defects and leakage for a period of two (2) years from the date of Substantial Completion of the project.
- .2 Contractor shall deliver to the Departmental Representative, prior to Contract signing, a signed and sealed letter stating that he will provide the warranty coverage for his work in accordance with the above.
- .3 The warranty shall state that the entire cost, including labour and materials, of replacing or repairing the roofing membrane shall be borne by the contractor.
- .4 Provide a warranty and CRCA preventative maintenance manual before Final acceptance of the roofing.

Part 2 Products

2.1 SHEET METAL MATERIALS ROOFING

- .1 Pre-painted Galvanized Steel Sheet: 0.60 mm thickness, zinc coated galvanized steel sheet to ASTM A653/A653M, Coating Designation G90 (Z275), shop pre-coated;
 - .1 All exterior sheets to be of single length from the ridge to the eave.
- .2 Typical Profile: I-Style preformed standing seam with snap-on cap, 400 mm wide sheet, field bend and mitre all corners.

2.2 SHEET METAL MATERIALS GUTTERS AND DOWNSPOUTS

- .1 Pre-painted Galvanized Steel Sheet: 0.91 mm thickness, zinc coated galvanized steel sheet to ASTM A653/A653M, Coating Designation G90 (Z275), shop pre-coated.

2.3 PREFINISHED STEEL SHEET

- .1 Prefinished steel with factory applied polyvinyl chloride Barrier Series.
 - .1 Class: F2S.
 - .2 Red colour selected by Departmental Representative from manufacturer's standard range.
 - .3 Specular gloss: 30 units +/-5 to ASTM D523.
 - .4 Coating thickness: 200 micrometres minimum
 - .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 5000 hours minimum.
 - .2 Humidity resistance exposure period 5000 hours minimum.

2.4 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB-37.5.
- .3 Underlay: Self-adhering, self-sealing when punctured by mechanical fasteners, waterproof membrane for high temperature applications, certified for use under specified metal roofing, slip-resistant surface.
- .4 Flashings and Accessories: Formed from same materials as the metal roofing. Flashings to be custom fabricated to profiles indicated.
- .5 Snow Guard:
 - .1 Show guard to be non-penetrating system. Attachment to be by set screws for clamping snow guard brackets to standing seam of metal roof.
 - .2 Maximum spacing of snow guard support brackets to be nominal 812 mm. Maximum overhang of tubes beyond brackets not to exceed 300 mm.
 - .3 Snow guard system to consist of minimum two 38 mm diameter by 1.65 mm thick walled galvalume tubes, finish painted to match roof cladding. Tubes to have swaged ends.
 - .4 Support brackets to be finish of same colour as tubes, complete with crimped and welded aluminum extruded base. Base to be fastened,

- (clamped) to standing seam with 9.5 mm diameter stainless steel set screws.
- .5 Exact location of snow guards to be field confirmed with Departmental Representative at time of construction.
 - .6 Snow guard system to be designed by the manufacturer to suit roof system to which it is to be attached. Design calculations and shop drawings to bear the stamp and signature of a professional engineer registered and licenced to practice in the Province of Newfoundland. No work to proceed until shop drawing calculations have been reviewed by the Departmental Representative.
 - .7 Design to include as many rows as are required to prevent snow from sliding off roof.
- .6 Fasteners and Cleats: manufacturer's standard concealed type, designed to achieve FM I- 90 uplift rating.
 - .7 Closures: Foam and metal closures to suit profiles indicated, to provide complete watertight barrier.
 - .8 Pipe flashing: Pre-moulded EPDM flexible boot as recommended by roofing manufacturer, to suit pipe penetration outside diameter.
 - .9 Sealant: Compatible with systems materials, recommended by system manufacturer.
 - .10 Washers: Of same material as sheet metal, 1 mm thick with rubber packings.
 - .11 Ridge vent: Pre-formed ridge with ventilation louvres and filter mesh material.

2.5 DESIGN REQUIREMENTS

- .1 Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall.
- .2 Maximum Allowable Deflection of Panel: 1/90 of span.
- .3 Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.
- .4 Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
- .5 Design loads for the roofing and the snow guards to be determined in accordance with NBCC 2010.

2.6 FABRICATION

- .1 Fabricate sheet metal roofing components to comply with dimensions, profiles, gauges and details shown on reviewed shop drawings.

- .2 Form components whenever possible prior to delivery to site.
- .3 Provide roof sheet and accessories in longest practical length to minimize field lapping.
- .4 Make allowances for expansion and contraction due to solar heat gain and ambient temperatures without damaging panel system performance.
- .5 Hem exposed edges on underside 13 mm, mitre and seal.
- .6 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .7 Protect metals against oxidization by back painting with isolation coating where indicated.

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 sheet metal roofing installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

3.2 INSTALLATION

- .1 Use concealed fastenings except where approved in writing by Departmental Representative before installation.
- .2 Provide termination flashings at eaves, rake and ridge as indicated.
- .3 Install underlay membrane to all locations under metal components for a watertight system.
 - .1 Secure in place and lap joints 100 mm minimum.
 - .2 Install slip sheet over membrane as required by manufacturer.
- .4 Install sheet metal roof panels in accordance with manufacturer's written instructions.
- .5 Apply sheet metal roofing beginning at eaves.
- .6 Align transverse seams in adjacent panels.
- .7 Form seams in direction of water-flow and make watertight.
- .8 Provide metal and foam closures.

- .9 Provide expansion joints where required or recommended by manufacturer.
- .10 Flash roof penetrations with material matching roof panels, and make watertight.
- .11 Install show fence in locations shown.
- .12 Install gutters and downspouts in locations shown.

3.3 CLEANING

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

END OF SECTION