

PART 1 – GENERAL

DESCRIPTION

General Requirements

Division 1, General Requirements, is part of this specification and shall apply as if repeated here

Work furnished and included:

Underlayment

Roof panel clip system.

Roof panel.

Accessories including associated flashings, closures, sealants.

Related work not included:

Solid substrate support for Metal Roofing System.

Mechanical equipment and/or ductwork as well as their supporting framing.

Flashings associated with other trades.

STANDARDS

Design of cladding system in accordance to the latest edition of:

CSA-S136 for the design of Cold Formed Steel Structural Members

Canadian Sheet Steel Building Institute Standards 10M and 20M.

National Building Code of Canada

QUALITY ASSURANCE

Manufacturer of roof system, and installer shall demonstrate at least five years experience in projects similar in scope.

This section establishes the standard of quality required for the complete metal roof system. Proposed substitutions must meet this standard, and will be considered as follows:

A written request for approval of a substitution is received at least ten (10) days prior to tender closing.

The request includes a complete item-by-item description comparing the proposed substitution to the specified system, together with manufacturer's literature, samples, test data, engineering standards and performance evaluation indicating comparable standards to those specified.

DESIGN REQUIREMENTS

Design roof system to resist

{Snow loads and snow build-up and rain load, expected in this geographical region NBCC climatic data, 50 year probability} {### kPa}

{Wind loads, positive and negative, expected in this geographical region NBCC climatic data, 50 year probability} {### kPa}

Dead load of roof system.

If the roof system is to be designed as a shear diaphragm, then the factored shear design loads "Q" and the flexibility factors "F" must be shown on the structural drawings.

Deflection of the roof system is not to exceed $\{1/240^{th}\}$ $\{1/180^{th}\}$ of the span for the specified live loading.

Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, overstressing of components, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

Temperature Change (Range): 20 deg C, ambient; 40 deg C, material surfaces

SAMPLES

Submit samples of standard coloured metal roof sheet for review by the consultant, prior to fabrication.

SHOP DRAWINGS

Submit shop drawings in accordance with Section [01 33 23].

Indicate arrangement of pre-finished Roof Sheet, including joints, types and locations of supports, fasteners, flashing, gutters, mitres, and all metal components related to the roof installation. Include for underlayment as part of the roof system.

Drawings shall be signed and sealed by a Professional Engineer, attesting to the ability of the metal panels assembly to withstand the specified loads.

MAINTENANCE DATA

Provide maintenance data for cleaning and maintenance of panel finishes for incorporation into manual specified in Section [## ## ##].

PRODUCT DELIVERY, HANDLING AND STORAGE

Store components and materials in accordance with panel manufacturer's recommendations and protect from elements.

Protect prefinished steel during fabrication, transportation, site storage and erection, in accordance with CSSBI Standards.

GUARANTEE

For work in this section, warranty by installer against defects or deficiencies in materials or workmanship shall be for a period of one year from date of substantial completion.

WARRANTY

Provide a manufacturer's written warranty: Furnish panel manufacturer's written warranty covering failure of factory-applied exterior finish within the warranty period. Warranty

period for finish: {20 years} {35 years} {40 years} after the date of Substantial Completion. The values below are based on normal environments and exclude any aggressive atmospheric conditions.

{Barrier Series (Polyvinyl Chloride – PVC) will not change colour more than ten (10.0) Hunter ΔE units as determined by ASTM method D-2244-02 at any time for twenty (20) years from date of installation (20.5 yrs from application).}

{10000 Series (Polyvinylidene Fluoride - PVDF) will not visibly (within 10 metres to the unaided naked eye) crack, chip, or peel (lose adhesion) for thirty-five (35) years from date of application. This does not include minute fracturing that may occur during the normal fabrication process. 10000 Series (Polyvinylidene Fluoride - PVDF) will not chalk in excess of a number eight (8) rating, in accordance with ASTM D-4214-98 method D659 at any time for thirty-five (35) years from date of installation (35.5 yrs from application); will not change colour more than five (5.0) Hunter ΔE units as determined by ASTM method D-2244-02.}

{WeatherX™ (Siliconized Polyester - SMP) will not crack, chip, or peel (lose adhesion) for forty (40) years from date of installation (40.5 yrs from application). This does not include minute fracturing that may occur during the normal fabrication process. WeatherX™ (Siliconized Polyester - SMP) will not chalk in excess of a number six (6) rating, in accordance with ASTM D-4214-98 method D659 at any time for thirty (30) years from date of installation (30.5 yrs from application); will not change colour more than eight (8.0) Hunter ΔE units as determined by ASTM method D-2244-02.}

PART 2 – PRODUCTS

ROOF SYSTEM COMPONENTS:

Roof System: Tradition100-4 on Solid Substrate by Vicwest.

Underlayment: Membrane shall be {Lastobond by Soprema} {Ice and Water Shield by W.R. Grace} or an approved type to meet performance specified in Section [07 13 00].

Clip System:

Thermally responsive clips to be fabricated from a minimum of 0.91 mm (.036") steel, with minimum Z275 galvanized coating designed to accommodate expansion and contraction of the roof sheet.

Roof Fasteners: As specified by manufacturer, to resist wind uplift and sliding snow forces.

Prefinished Roof Sheet, exposed to exterior.

Profile: Tradition 100-4, with I-style ribs at 400 mm spacing.

Panel: Z275 galvanized (zinc coated) sheet steel conforming to ASTM A653M structural quality Grade 230 having a nominal core thickness 0.76mm (0.030").

Snap Cap

Provide 25 mm high snap caps for full length of the roof panel and retained by panel clips, fabricated from Z275 galvanized (zinc coated) sheet steel conforming to ASTM A653M structural quality Grade 230 having a minimum

nominal core thickness 0.61mm (0.024"). Finish and colour to match roof sheet.

PANEL FINISHES:

Coating: {Prepainted with WeatherX™ on interior face} {Prepainted with 10,000 Series on interior face} {Prepainted with Barrier Series}

COLOUR

Colour to be QC _____ {Barrier coating thickness shall be {4} {6} {8} mils on exterior exposed surface of the finished profile and {4} {6} {8} mils on the reverse.} selected from the manufacturer's standard colour range.

Specifier Note: Colour selection can affect cost and delivery largely due to supplier stock patterns.

ACCESSORIES

Flashing: In accordance with Section [07 62 00]. Formed from same materials as the roof sheet. Custom fabricated to suit architectural details, as required.

Closures: Foam and metal closures to suit profiles selected, to manufacturer's recommendations.

Sealants: In accordance with manufacturer's recommendation and Section [07 92 00].

FABRICATION

Fabricate roof components to comply with dimensions, profiles, gauges and details as shown on the shop drawings, including fascia and soffit panels and all companion flashing.

Fabricate all components of the system in the factory, ready for field installation.

Provide roof sheet and all accessories in longest practicable length to minimize field lapping of joints.

PART 3 — EXECUTION

EXAMINATION

Examine work of other Sections upon which work of this Section depends.

Report all discrepancies to consultant before beginning work on the roof system.

INSTALLATION

Roof Materials:

Underlayment: Install underlayment fully adhered to solid substrate according to manufacturer's recommendations. Ensure all joints are properly lapped and sealed. Tie in with barriers on adjacent surfaces to ensure airtight construction. Provide a continuous

seal around all openings in the insulated metal roof system.

Clip: Attach Tradition clips using fasteners as recommended by the manufacturer, to suit the substrate.

Roof Panel Installation

Install exterior prefinished roof panels on panel support clips, using manufacturer's proper construction procedure. Ensure metal roofing sheet side-lap is positively retained by clips, and proper sheet coverage is maintained.

Install the snap-cap at all side laps as shown on the approved shop drawings. Mitre snap-cap as required to resist water entry.

Where indicated on approved shop drawings, secure the end-lap of metal roofing sheets in accordance with the manufacturers specifications and details to provide a weather-tight seal. Exposed fasteners to match colour of the roof sheet.

Provide notched and formed closures, sealed against weather penetration, at changes in pitch, and at ridges and eaves, where required.

Install all companion flashing {gutters}, {ventilators} as shown on the shop drawings. Use concealed fasteners when possible. Exposed fasteners to match colour of roof sheet.

CLEAN-UP

Clean exposed panel surfaces in accordance with manufacturer's instructions.

Repair and touch up with colour matching high grade enamel minor surface damage, only where permitted by the Architect and only where appearance after touch-up is acceptable to Architect.

Replace damaged panels and components that, in opinion of the Architect, cannot be satisfactorily repaired.

<p style="text-align: center;">[Project Name]</p> <p style="text-align: center;">Section 07 42 13</p>	<p style="text-align: center;">Metal Roofing System</p>
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This specification was created by Vicwest to assist designers. It should be reviewed and modified as required to suit individual project conditions.

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Solid substrate may be plywood (minimum ½" thick), tongue and groove wood deck, steel deck covered by a moisture resistant sheathing board or other suitable solid surface.

Deflection is a serviceability issue. It is not a structural issue. 1/240 is quite standard for roof systems, but can be reduced to 1/180.

20 year warranty is typically associated with Barrier Series, 35 year warranty is typically associated 10,000 Series, whereas 40 year warranty is associated with WeatherX™

#14AB x 3/4" or 1/4-14 x 3/4", #3PT is typically recommend by Vicwest when attaching to structural steel. Other types of fasteners can also be used.

WeatherX™ is a Silicone Modified Polyester (SMP) paint system

10,000 Series is a polyvinylidene fluoride (PVDF) paint system. Kynar® or Hynar® are other tradenames typically associated with this paint system. Not standard stock. Minimum quantities required.

Barrier Series is a thick-film PVC plastisol system. The thickness of the film can vary. Not standard stock. Minimum quantities required.

Colour should be selected before issuing project for tender