

# ***Channel Systems, Inc.: PIR Core Ceiling/Wall Panel Specifications Features, Benefits, and Sustainable Characteristics***

Pre-Insulated Metal Panels  
Division 7, Section 07400



## **Part 1 – General**

### 1.01 Description

Furnish and install all steel faced factory insulated wall, ceiling, and roof panels forming the exterior cladding and the related accessories and trims required for a complete weathertight wall, ceiling, and roof installation.

### 1.02 Design

The metal faced foam core roof panels shall be produced on a continuous process manufacturing line under strict quality control and must be independently audited quarterly by a recognized audit facility/testing lab. Panel thickness, gauges, spans between supports and overall lengths shall be as required to contribute to the combined action of the roof in resisting the specified design loads with a deflection not to exceed L/240.

### 1.03 Shop Drawings

Contractor shall furnish detailed drawings showing location and profile of insulated panels, as well as location and shape of formed metal flashings, and the location and type of sealants and fasteners.

### 1.04 Acceptable Manufacturers

Insulated wall panels shall be supplied by Channel Systems, Inc. (CSI) 74 98th Ave. Oakland, CA. 94603  
Tel. (510) 568-7170 Fax (510) 568-4619CA

### 1.05 Substitutions

This specification is written with the SR2/3 wall, ceiling, and roof panel as the basis of acceptable design, quality and performance. Requests for substitutions must be submitted in writing no less than 14 days prior to bid.

## **Part 2 – Products**

### 2.01 Material

A. The insulated metal wall, ceiling, or roof panel shall be \_\_\_\_\_” thick and 40 inch wide as detailed on the design drawings. As follows:

joint shall be a 2” high trapezoidal standing seam rib design utilizing a continuous non-skinning butyloid sealant bead. ¼-14 hex head fasteners shall be installed through the pre-punched hidden SR series joint clip. The clip assembly shall positively lock the face and liner sheet of the panel to the structural supports and provide positive resistance to negative wind loads. An additional minimum 1/4 inch continuous bead of approved non-skinning butyloid gun grade sealant equivalent to Schnee-Morehead 5430 may be applied at the liner side grooved joint of the roof panel joint prior to engagement as shown on the panel shop/erection drawings .

B. The panel exterior shall be *select one of the following* (SR2= 2 rib, SR3= 3 rib). The exterior metal substrate shall be 26ga G90 Galvanized or AZ50 Galvalume Steel coated with a 30 year ceramic polyester finish with a total dry film thickness of 1.0 mil including primer. The exterior color shall be selected from manufacturer’s six in-stock standards. The panel interior shall have shallow vee groove striations on 2.48 inch centers. The interior metal substrate shall be 26ga G90 Galvanized or AZ50 Galvalume Steel coated with a 20 year polyester finish with a dry film thickness of 1.0 mil including primer. Interior color shall be Imperial White.

C. The continuously foamed in-place panel core shall be Class 1 rigid polyisocyanurate (PIR) foam meeting the physical properties listed under section 2.02 G



D. The insulated panel manufacturer shall furnish either the formed metal flashings or the flat stock in the same gauge, color and paint finish system as the panel facings.

#### 2.02 Performance Tests

- A. The panels ability to withstand positive and negative design loads shall be verified by testing in accordance with the ASTM E 72 Vacuum Chamber Method with the standard deflection criteria to be L/240.
- B. The panel thermal properties shall be verified by actual tested values in accordance with the ASTM C 518 steady state thermal transmission test method. Aged K Factor shall not exceed .14 @ 75° F mean temperature or .13 @ 40° F mean temperature.
- C. The panel core shall have a flame spread maximum of 25 and smoke developed maximum of 450 as tested in accordance with the ASTM E 84 test method.
- D. The panel shall have Factory Mutual Class 1 Approval for wall and roof/ceiling construction in accordance with the full scale FM 4880 test program with no height restriction.
- E. The panels shall have Factory Mutual Approval for wind uplift, hailstorm, foot traffic, and spread of flame (ASTM E 108- Class A rated). in accordance with FM 4771.
- F. The polyisocyanurate foam core shall meet or exceed the following physical properties:
- i. Compressive Strength: 25 psi
  - ii. Density (in-place): 2.1-2.5 pcf
  - iii. Shear Strength: 28-32 psi
  - iv. Closed Cell Content: 95%
  - v. Dimensional Stability: 14 day aged (ASTM D 2126) -20 degree F < f1% chg, dry heat 158 degree F < 1% chg, Humid Heat 158 degree F
- H. Panels not meeting these testing and performance criteria are not permitted to be used for this exterior roof application.

### Part 3 – Execution

- 3.01 For quality panel installation, the contractor/installer shall examine the alignment of the structural steel before installing the metal panels. The steel shall be aligned to the tolerances established in the AISC code of standard practice, section 7, and the supplemental modification control section 7.11.3, adjustable items. The maximum deviation of steel alignment shall be limited to  $-0 = 3/16''$  from the control with a  $1/8''$  maximum change in deviation for any member of any 10'-0" run of panel. The erector shall not proceed with installation if the structural steel is not within the specified tolerances. The face of all structural members to which the panels are attached must be in the same vertical plane, flat and free of obstructions such as weld marks, bolts or rivet heads. Roof panels shall only be mechanically attached to structural or secondary roof framing that is running perpendicular the roof panel lengths.
- 3.02 The metal wall, ceiling, and roof panels shall be erected by an experienced metal panel contractor in accordance with the approved drawings, specifications, and installation instructions.
- 3.03 The applicable seaming tools, motorized or crimp style, shall be as specifically recommended by your CSI sales or technical representative. These seaming tools can be purchased or rented through an CSI approved seaming tool manufacturer/distributor.
- 3.04 Manufacturer shall provide panel contractor with written instructions for recommended product storage and handling.
- 3.05 Repair or replace any damaged or defective panels after determination of responsibility.
- 3.06 Manufacturer shall warrant the panels as free from defects in material and workmanship for 2 years from the date of production.
- 3.07 Manufacturer shall warrant that the exterior paint finish will not:



- A. Chip, crack, check, or peel for a period of (30) thirty years from date of installation (except for such crazing that may occur on tightly roll-formed edges and brake bends).
- B. Chalk in excess of a numerical rating of (8) for a period of (30) thirty years from date of installation when measured in accordance with the standard procedures outlined in ASTM D-659.
- C. Fade or change color in excess of (5) E units for a period of (30) thirty years from date of installation when calculated in accordance with ASTM D-2244. The color change is to be measured on exposed painted surface cleaned of surface soils and oxidation.

## **Features & Benefits:**

### **More Energy Efficient:**

- Superior thermal insulation capabilities compared to other insulating materials
- Closed cell polyisocyanurate insulation and self-aligning, double inter-locking tongue and groove joints with concealed fasteners create an air- and water-tight seal to stabilize interior environments

### **Single Component:**

- Factory-injected insulation is continuously foamed-in-place and integrated with dual metal facing panels to create a single high strength unit

### **Measureable Savings:**

- Fast one-pass, single component installation eliminates the inefficiencies of multi-piece, field assembled wall and roof systems saving in installation time and labor costs
- Panels have high strength-to-weight ratio that allow for longer spans and reduce structural costs

### **Versatile:**

- Hidden fastener system with multiple profiles, colors, finishes, accessories and trims integrates into any building design
- Can be used in either vertical and horizontal applications
- Design vision is not compromised when doors, windows or other construction materials are incorporated into the design

### **Sustainable:**

- Minimum of 30% Recycled steel content
- 100% recyclable and reusable at the end of its service life
- Contribute to LEED® credits and Net-Zero Energy targets

### **Durable & Economical:**

- Last as long as typical buildings
- Reduces operational costs and maintenance

### **Tested & Approved:**

- Tested for compliance with North American industry standards and codes
- Factory Mutual approved



## Sustainable Characteristics

<b>Recycled Content:</b>	The steel facings used in our panels contain a minimum total recycled content of 30%:(post-consumer approx. 23% and pre-consumer approx. 7.3%)
<b>Recyclability:</b>	The steel facings and insulation core used in our panels are 100% recyclable at the end of their service life
<b>No VOCs:</b>	Our panels and accessories do not produce measureable Volatile Organic Compounds
<b>No ODP:</b>	Our panels have zero Ozone Depleting Potential and there are no limits by the EPA or Environment Canada for its use today or in the future
<b>No GWP:</b>	Our panels meet current EPA blowing agent requirements for the reduction of Global Warming Potential
<b>NetZero Energy Targets:</b>	Insulated Metal Panels can contribute significantly toward Net Zero Energy targets by reducing a building's energy use

## IMPs & LEED®

Insulated Metal Panels are the right choice for creating sustainable buildings. Our panels can help builders accumulate points in 6 categories throughout the construction process that contribute toward LEED® certification in both Canada and the United States:

<u>Category</u>	<u>Credit Name</u>	<b>United States NC v.2.2</b>	<b>Canada NC v1.0</b>
Sustainable Sites	<i>Heat Island Effect - Roof</i>	SSc7.2	SSc7.2
Energy & Atmosphere	<i>Prerequisites 1, 2 &amp; 3 Optimize Energy Performance</i>	EAc1	EAc1
Materials & Resources	<i>Building ReUse Materials Reuse Recycled Content</i>	MRc1.1, 1.2 MRc3 MRc4	MRc1.1, 1.2 MRc3.1 MRc4.1, 4.2
Indoor Environmental Air Quality	<i>Low-Emitting Materials</i>	IEQc3.2, 7.1	IEQc4.1, 4.2
Innovation in Design		IDc1 to 1.4	IDc1 to 1.4