Code Compliance Research Report
CCRR-0349

Issue Date: 06-30-2020
Revision Date: 10-21-2025
Renewal Due: 06-30-2026

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Section: 07 42 13.19 – Insulated Metal Wall Panels

REPORT HOLDER:
Metl-Span, A Nucor Company
700 State Highway 121 Bypass, Suite 200
Lewisville, TX 75067
972-221-6656
www.metlspan.com

REPORT SUBJECT:
CF Wall Panels
CF-24, CF-30, CF-36 and CF-42
Insulated Metal Panels

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2024, 2021 and 2018 *International Building Code®* (IBC)
- 2022 *California Building Code* (CBC) (See Section 9.0)
- 2023 *City of Los Angeles Building Code* (LABC) (See Section 9.1)

NOTE: This report references the most recent Code editions noted. Section numbers in earlier editions may differ.

1.2 CF Wall Panels have been evaluated for the following properties (see Table 1):

- Structural (Wind Resistance)
- Weather Resistance
- Fire Performance

1.3 CF Wall Panels have been evaluated for the following uses (see Table 1):

- Exterior wall cladding on non-fire-resistance-rated wall assemblies
- Type V construction
- Type I, II, III or IV construction when installed in accordance wth the conditions specified in Section 6.4

2.0 STATEMENT OF COMPLIANCE

CF Wall Panels comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

2.1 2024 IBC and IRC Evaluation Reports

The Intertek CCRR is an *Evaluation Report* for approval of an alternate material, design, or method of construction in accordance with Section 104.2.3.6.1 of the 2024 IBC and Section R104.2.2.6.1 of the 2024 IRC

3.0 DESCRIPTION

3.1 General: The CF Wall Panel is a composite metal sandwich panel consisting of a continuously foamed-in-place foam plastic insulation core between galvanized steel facings. When installed in accordance with the manufacturer's instructions and this report, CF Wall Panels form a weather-resistant exterior wall envelope in accordance with IBC section 1402.2.

The panels are available in thicknesses of 2, 2½, 3, 4, 5, 6 and 8 inches. The panels are available in standard widths of 24, 30, 36 and 42 inches. The panel model numbers correspond to the widths: CF-24, CF-30, CF-36 and CF-42. The panels are available in five shallow exterior face profiles: Architectural Flat, Flute, Mesa, Light Mesa and Striated.

3.2 Panel Core: The CF Wall Panel core is a continuously foamed-in-place foam plastic with a minimum density of 2.1 pcf.

3.3 Exterior Panel Facings: The CF Wall Panel exterior panel facing is formed from steel conforming to ASTM A792 SS Grade 33 AZ50 galvalume steel or ASTM A653 SS Grade 33 G90 galvanized steel. Panel facings can be 22-gauge, 24-gauge or 26-gauge thickness. Panel facings can come in five different shallow profiles:

A: “Architectural Flat” profile
F: “Flute” profile
M: “Mesa” profile
L: “Light Mesa” profile
S: “Striated” profile

3.4 Interior Liner: The CF Wall Panel interior liner is formed from steel conforming to ASTM A792 SS Grade 33 AZ50 galvalume steel or ASTM A653 SS Grade 33 G90 galvanized steel. Panel facings can be 22-gauge, 24-gauge or 26-gauge thickness.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Structural (Wind Resistance): Maximum allowable moment, shear, end clip reactions, intermediate clip reactions and stiffness values for use in design with allowable stress design wind speeds (V_{asd}) in accordance with IBC Section 1609.3.1 are presented in Table 2 for FP1, FP2 and FP3 fastener patterns and Table 3 for V6 X-Span clips.

4.2 Fire Performance:

4.2.1 The foam plastic core and all panel finishes have a flame spread index (FSI) not exceeding 25 and a smoke developed index (SDI) not exceeding 450 when tested in accordance with ASTM E84.

4.2.2 CF Wall Panel assemblies constructed in accordance with Intertek Design Number MSN/CWP 30-01 meet the conditions of acceptance of NFPA 285 and NFPA 286.

4.2.3 CF Wall Panel assemblies constructed with two layers of 5/8-inch Type X Gypsum Sheathing are rated for a 1-hour nonload-bearing fire rating per ASTM E119.

4.3 Weather Resistance: CF Wall Panels, when installed in accordance with this report, provide a weather-resistant exterior wall envelope based on testing in accordance with ASTM E331 and IBC Section 1402.2.

5.0 INSTALLATION

5.1 General:

CF Wall Panels must be installed in accordance with the manufacturer’s published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer’s instructions must be available on the jobsite during installation.

5.2 Application:

CF Wall Panels may be installed in either a vertical or horizontal orientation. Panels are fastened to structural steel supports by U-clip brackets, or V6 X-Span clips and fasteners placed in the tongue and groove portion of the panel.

5.3 Sealant:

CF Wall Panels are sealed along edges by factory-applied, non-curing butyl gasket beads located within the double tongue and groove connection.

Additional sealant (optional) - a nominal 3/16-inch bead of one-component urethane or butyl sealant may be applied in the field to the female edge of the panel on either the exterior side, interior side or both sides prior to joining the panels.

5.4 Flashings and Trim:

Flashing and trim must be installed in accordance with Section 1405.4 of the IBC including, but not limited to, panel ends, openings and corners.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer’s published installation instructions, and the applicable Code. In the event of a conflict, this report governs.

6.2 Design loads determined from allowable stress design wind speeds (V_{asd}) in accordance with IBC Section 1609.3.1 shall be used to calculate the panel bending moment, shear force and panel anchor reaction loads and shall not exceed the corresponding maximum allowable design values given in Table 2. Panel deflection calculations at design load shall include bending deflection and shear deflection using the panel stiffness properties in Table 2 and shall not exceed L/120, where (L) is the panel span.

6.3 The calculations for connections from the CF Wall Panels to the supporting structure must be performed by a qualified engineer and are not part of this report.

6.4 Types I, II, III or IV Construction: CF panels may be installed on buildings of Type I, II, III or IV construction under the following conditions:

Buildings of any height with the wall assembly constructed in accordance with Intertek Design Number MSN/CWP 30-01.

6.5 CF Wall Panels may be installed without an approved thermal barrier based on testing in accordance with NFPA 286 per IBC Section 2603.9.

6.6 CF Wall Panels are manufactured in Las Vegas, Nevada and Lewisville, Texas under an approved quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM E84, ASTM E119, NFPA 285 and NFPA 286.

7.2 Reports of test in accordance with ASTM E331 and IBC Section 1402.2.

7.3 Data in accordance with the ICC-ES Acceptance Criteria AC04 Acceptance Criteria for Sandwich Panels.

7.4 Intertek Listing Report "Metl-Span – CF (Wall), CFR & IBL (Roof) and LS-36 (Wall/Roof) Insulated Metal Panels Listing Information" on the Intertek Directory of Building Products.

8.0 IDENTIFICATION

CF Wall Panels are identified with the manufacturer's name (Metl-Span), address and telephone number, the product name (CF Wall Panels), the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-0349).

CODE COMPLIANCE
ETL US
Intertek

9.0 CALIFORNIA BUILDING CODE

The Formawall Insulated Metal Panels, described in Sections 2.0 through 7.0 of this Research Report, comply with the *California Building Code*, and *California Residential Code* for the editions indicated in Section 1.1 of this report, subject to the following conditions:

- Use of the Formawall Insulated Metal Panels for compliance with the Wildland-Urban Interface (WUI) provisions of CBC Chapter 7A and CRC Section R337 has not been evaluated, and is outside the scope of this Research Report.

9.1 CITY OF LOS ANGELES BUILDING CODE

The Formawall Insulated Metal Panels, described in Sections 2.0 through 7.0 of this Research Report, comply with the *City of Los Angeles Building Code*, and *City of Los Angeles Residential Code,* , for the editions indicated in Section 1.1 of this report, subject to the following conditions:

- Use of the Formawall Insulated Metal Panels for compliance with the Wildland-Urban Interface (WUI) provisions of LABC Chapter 7A and LARC Section R337 has not been evaluated, and is outside the scope of this Research Report.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

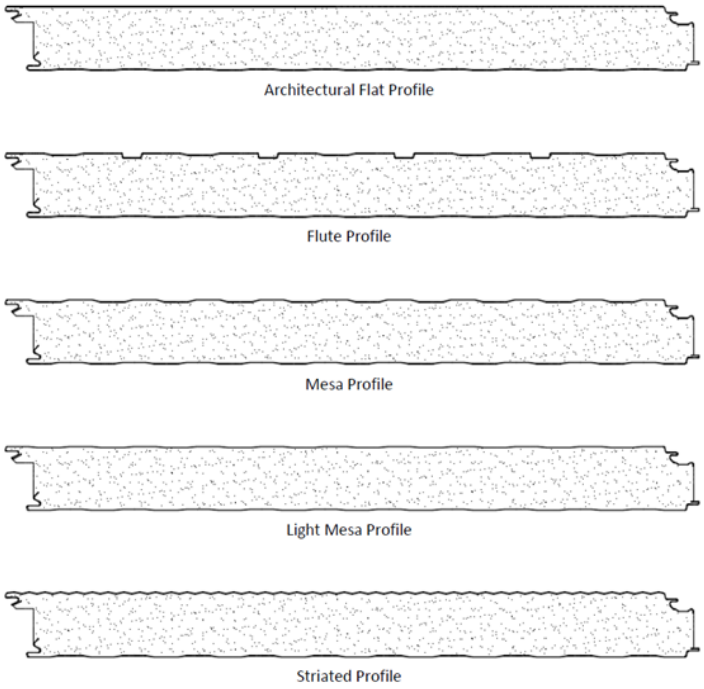


Figure 1 – CF Wall Panel Profiles

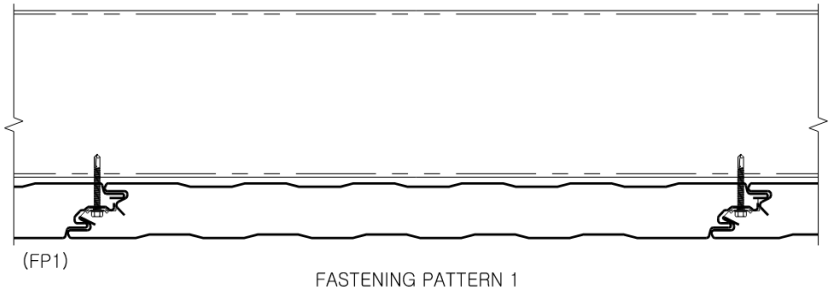
TABLE 1 - PROPERTIES EVALUATED

PROPERTY	2024 IBC	2021 and 2018 IBC SECTION	2022 CBC SECTION	2023 LABC SECTION
Insulated Metal Panel (IMP)	1409		N.A.	N.A.
Structural (Wind Resistance)	1609	1609	1609	1609
Weather Resistance	1402.2	1402.2	1402.2	1402.2
Surface Burning	1409.7.1	2603.3 and 2603.5	2603.3 and 2603.5	2603.3 and 2603.5
Use on exterior walls of Types I, II, III and IV construction	1409.7.3	2603.5	2603.5	2603.5
Thermal Barriers	1409.7.2.1 and 1409.7.2.2	2603.4 and 2603.9	2603.4 and2603.9	2603.4 and2603.9

TABLE 2 – ALLOWABLE DESIGN VALUES
Metl-Span CF Wall Panel Allowable Design Values
42" Width Panel - Light Mesa Profile – 26-Gauge Exterior/26-Gauge Interior

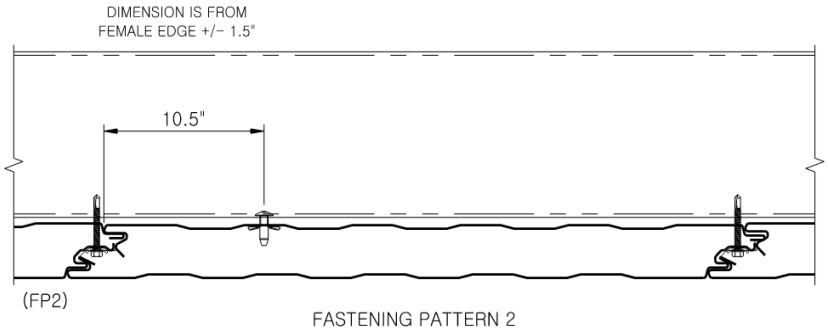
Panel Thickness (in)	Stiffness		Moment (ft-lb/ft)	Shear (lb/ft)	Reactions		
	EI (lb-in2/ft)	AG (lb/ft)			Fastener Pattern	End Clip Reaction (lb)	Intermediate Clip Reaction (lb)
2"	1.25E+07	1.59E+04	370	230	FP1	350	1,050
					FP2	460	1,130
					FP3	570	1,210
2.5"	1.96E+07	1.98E+04	470	260	FP1	360	1,050
					FP2	490	1,130
					FP3	570	1,210
3"	2.83E+07	2.39E+04	570	280	FP1	370	1,050
					FP2	520	1,130
					FP3	580	1,210
4"	5.04E+07	3.05E+04	760	340	FP1	460	1,050
					FP2	590	1,130
					FP3	720	1,210
5"	7.89E+07	3.57E+04	950	400	FP1	460	1,050
					FP2	590	1,130
					FP3	720	1,210
6"	1.14E+08	4.01E+04	1,140	450	FP1	460	1,050
					FP2	590	1,130
					FP3	720	1,210
8"	2.03E+08	5.00E+04	1,530	530	FP1	460	1,050
					FP2	590	1,130
					FP3	720	1,210

Notes:
1. Allowable design loads were calculated using Allowable Strength Design for the following limit states: panel bending (failure of face or liner skin), panel core shear (failure of foam core), disengagement (at panel end connections or intermediate connections), and specified deflection limit as required (no greater than L/120).
2. Safety factors for panels were calculated based on AISI S100 to be 2.15 for Moment, End Clip Reaction, and Intermediate Clip Reaction and 3.0 for Shear.
3. See Figure 2 below for details of Metl-Span fastening patterns (FP1, FP2, FP3).
4. Values for panel shear and bending strength are unit values per 12” unit width of panel.
5. Core shear stiffness values (AG) are effective values derived from full-profile panel tests and shall not be taken as a core material properties. They are limited to use in calculating the deflection for the specific panel configuration to which they are assigned.
6. Allowable design values address panel failure modes only. Fastener failure must be determined separately based on panel, span, and fastening substrate.



(FP1)

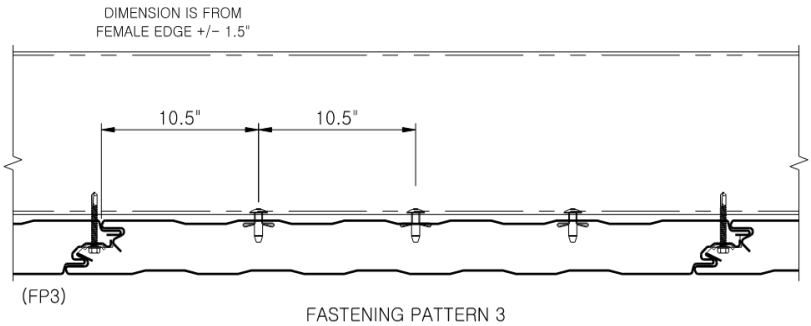
FASTENING PATTERN 1
SIDE JOINT FASTENING



(FP2)

FASTENING PATTERN 2
SIDE JOINT FASTENING
AND ONE DOME HEAD
BULB-TITE® RIVET

INSTALL RIVET THROUGH GIRT FLANGE
INTO MESA WHERE THE SKIN MAKES
CONTACT WITH THE STEEL



(FP3)

FASTENING PATTERN 3
SIDE JOINT FASTENING
AND TWO DOME HEAD
BULB-TITE® RIVETS

INSTALL RIVET THROUGH GIRT FLANGE
INTO MESA WHERE THE SKIN MAKES
CONTACT WITH THE STEEL

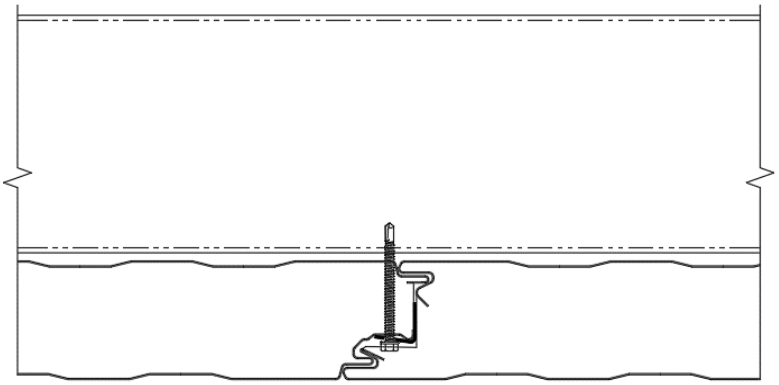
Figure 2 – Fastening Patterns FP1, FP2, FP3

TABLE 3 – ALLOWABLE DESIGN VALUES
Metl-Span CF Wall Panel Allowable Design Values with V6 X-Span Clip
42" Module Panel - Light Mesa Profile – 26-Gauge Exterior/26-Gauge Interior

Panel Thickness (in)	Stiffness		Moment (ft-lb/ft)	Shear (lb/ft)	Reactions		
	EI (lb-in2/ft)	AG (lb/ft)			Clip/ Fastening	End Clip Reaction (lb)	Intermediate Clip Reaction (lb)
3”	2.83E+07	2.39E+04	570	280	V6	480	1,390
					V6+	820	
4”	5.04E+07	3.05E+04	760	340	V6	580	1,460
					V6+	760	
5”	7.89E+07	3.57E+04	950	400	V6	580	1,460
					V6+	760	
6”	1.14E+08	4.01E+04	1,140	450	V6	630	1,810
					V6+	850	
8”	2.03E+08	5.00E+04	1,530	530	V6	630	1,810
					V6+	850	

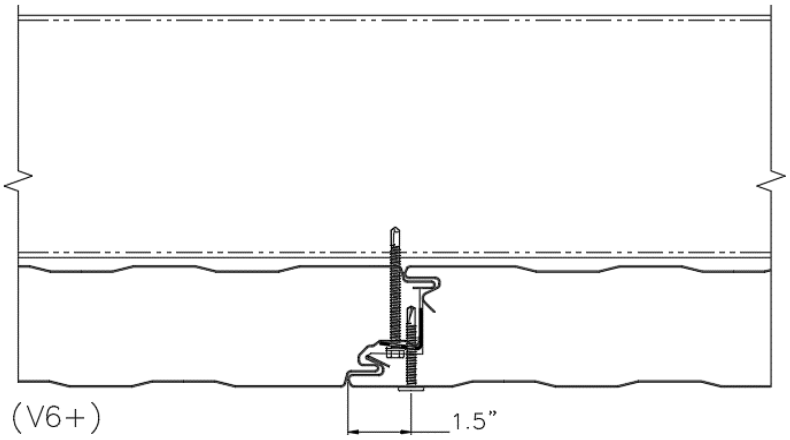
Notes:

1. Allowable design loads were calculated using Allowable Strength Design for the following limit states: panel bending (failure of face or liner skin), panel core shear (failure of foam core), disengagement (at panel end connections or intermediate connections), and specified deflection limit as required (no greater than L/120).
2. Safety factors for panels were calculated based on AISI S100 to be 2.15 for Moment, 2.14-2.36 forEnd Clip Reaction, 2.14 for Intermediate Clip Reaction and 3.0 for Shear.
3. See Figure 3 below for details fastening with V6 X-Span clip.
4. Values for panel shear and bending strength are unit values per 12” unit width of panel.
5. Core shear stiffness values (AG) are effective values derived from full-profile panel tests and shall not be taken as a core material properties. They are limited to use in calculating the deflection for the specific panel configuration to which they are assigned.
6. Allowable design values address panel failure modes only. Fastener failure must be determined separately based on panel, span, and fastening substrate.



ONE V6 X–SPAN CLIP AT EACH SUPPORT

MINIMUM 3"–THICK PANEL



ONE V6 X–SPAN CLIP AT EACH SUPPORT
WITH ONE FACE–TO–CLIP FASTENER AT
PANEL ENDS ONLY

INSTALL 2"–LONG FACE–TO–CLIP FASTENER
THROUGH PANEL FACE TONGUE AND
ADJACENT PANEL CLIP, 1.5" FROM PANEL
JOINT

MINIMUM 3"–THICK PANEL

Figure 3 – Fastening Patterns V6 and V6+