METL SPAN®

INSULATED METAL PANELS

Metl-Span BW Systems Insulated Backup Wall System

BW Systems are designed to work with a variety of other cladding materials as the backup system, making it an excellent choice when multiple cladding materials are used on a project. The unique composite design of a BW Systems panel provides an air barrier, vapor barrier, moisture barrier, and thermal insulation with total wall values that exceed code requirements in a single, easy-to-install component. The BW Systems panel design also eliminates the need for separate batt or board insulation, exterior gypsum board sheathing, air barriers, vapor retarders, and building wraps, while providing the ultimate thermal and moisture control. This can expedite close-in/dry-in building times and reduce the likelihood of improper installation.

BW Systems panels come in a foam composite panel constructed of two roll formed steel faces surrounding and entirely bonded to a closed cell poured in place polyisocyanurate foam core. The exterior steel face is isolated from the interior liner by the foam core, which provides superior thermal performance. The facings and sealants create a vapor, air and moisture barrier and with the foam core provide long-term thermal stability. IMPs are able to span greater distances than single skin panels. As well as, offer better in-place building efficiency than typical cavity or field assembled wall products.

IMPs offer many advantages for building owners, designers and contractors. Some of these benefits include reduced building operational expenses, accelerated construction schedules, earlier business starts and much more. Metl-Span insulated metal panels are ideal for many applications, including architectural, commercial, industrial and institutional markets.

Metl-Span manufactures insulated metal panels with the most technologically advanced manufacturing plants across North America. Metl-Span's insulated metal panels are available in several different wall and roof profiles. Our insulated metal panel color and applied finish offerings allow for a multitude of design opportunities. Whether you're looking for design options, easy to install efficient materials, or to save money on energy and maintenance costs, our panels make the difference. Consult your local Metl-Span sales representative for design assistance or visit metlspan.com for more information.

INSULATED-COMPOSITE BACKUP PANEL SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal wall backup panel system consisting of foamed-insulation-core metal wall panels and accessories.

1.2 RELATED REQUIREMENTS

Specifier: Edit list below to correspond to Project.

A. Division 05 Section "Cold-Formed Metal Framing" for support framing for metal wall backup panels.

B. Division 07 Section "Air Barriers" for transition components to building air barrier at perimeter of metal wall backup panels.

C. Division 07 Section "Sheet Metal Flashing and Trim" for metal flashing components at openings and perimeter.

D. Division 13 Section "Metal Building Systems" for support framing for metal wall backup panels.

1.3 REFERENCES

A. Reference Standard Editions: Comply with requirements of specified standards edition cited in applicable building code, or if not cited in code, with requirements of edition current at time of issuing of specifications

Specifier: If retaining this optional article, edit list below to correspond to Project.

B. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:

1. AAMA 809.2 - Voluntary Specification Non-Drying Sealants

C. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures

D. ASTM International (ASTM): www.astm.org:

1. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
2. ASTM A 755 – Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
4. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants
5. ASTM C 1363 - Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

6. ASTM D 1929 - Test Method for Determining Ignition Temperature of Plastics
7. ASTM E 72 - Test Methods of Conducting Strength Tests of Panels for Building Construction
8. ASTM E 84 - Test Methods for Surface Burning Characteristics of Building Materials
9. ASTM E 2357 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen
10. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference

E. National Fire Protection Association (NFPA): www.nfpa.org:

1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

F. Underwriters Laboratories, Inc. (UL): www.ul.com:

1. UL 263 - Fire Tests of Building Construction and Materials

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide metal wall backup panel system meeting the following performance requirements as determined by a qualified testing agency's application of specified tests on manufacturer's standard assemblies.

Specifier: Retain "Recycled Content of Steel Sheet" paragraph when required for general sustainable design requirements of project.

B. **Recycled Content of Steel Sheet**: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Structural Performance: Provide metal wall backup panel system fabricated to withstand effects of indicated loads and stresses within limits and under conditions indicated, when tested per ASTM E 72.

Specifier: Consult structural engineer and edit below as required by local codes.

1. Wind Load Test: Determine loads based on uniform pressure indicated on the drawings.
2. Seismic Performance Test: Comply with ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Sections 11 - 23, "Seismic".

D. Air Infiltration Test: Maximum 0.004 cfm/sq. ft. (0.05 L/s per sq. m) per ASTM E 283 at a static-air-pressure difference of 1.57 lb./sq. ft. (75 Pa).

E. Water Penetration Test: No uncontrolled water penetration at a static pressure of 15 lb./sq. ft. (0.7 kPa) per ASTM E 331 and 6.24 psf for 2 hours per International Building Code – Chapter 14.

F. Thermal Performance Test: Thermal Resistance (R-value) indicated, per ASTM C 1363, corrected to 15 mph (24.1 k/h) outside and still air inside, as-installed condition including fastening and joints.

Specifier: Metal cladding on Metl-Span BW Systems panels meets requirements for thermal protection of foam plastics in IBC Chapter 26.

G. Fire-Test-Response Characteristics: Provide metal wall backup panel system with the following fire-test-response characteristics determined by the indicated test standard as applied by UL or other testing and inspection agency acceptable to authorities having jurisdiction.

1. Surface Burning Characteristics: Not greater than the following, per ASTM E 84 or UL 723, for foam core and interior surface:

a. Flame spread index: 25 or less.
b. Smoke developed index: 450 or less.

Specifier: Retain "Intermediate Scale Multistory Fire Test" Paragraph when required by authorities having jurisdiction.

2. **Intermediate Scale Multistory Fire Test**: Representative mockup tested per NFPA 285.

1.5 QUALITY ASSURANCE

Specifier: If project procurement procedures allow retaining manufacturer and product name in Part 2, retain paragraph and subparagraphs below to establish project procedures for evaluation of substitution requests.

A. Manufacturer Qualifications: Manufacturer listed in this Section or approved for Project with a minimum 5 years of experience in manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time period allowed for substitution review:

a. Product data, including certified independent test data indicating compliance with requirements.
b. Samples of each component.
c. Sample submittal from similar project.
d. Project references: Minimum of 5 installations not less than 5 years old, with owner contact information.
e. Sample warranty.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
3. Approved manufacturers must meet separate requirements of Submittals Article.

B. Installer Qualifications: Experienced Installer with minimum of 5 successful completed projects of similar materials and scope and employing workers trained by manufacturer to install products of this section. Installer must provide proof of training at the time of submittal. See section 1.11 for further verification and warranty requirements.

Specifier: Retain "Buy American Act Certification" when required by project; coordinate with requirements in Submittals article.

C. **Buy American Act Certification**: Comply with provisions of the Buy American Act 41 U.S.C 10a – 10d.

1.6 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of metal wall backup panel system structural support and exterior wall cladding panels.

B. Pre-installation Meeting: Conduct pre-installation meeting at site attended by Owner, Architect, manufacturer's technical representative, and other trade contractors.

1. Coordinate building framing in relation to metal wall backup panels.
2. Coordinate window, door, and other openings and penetrations of metal wall backup panels.

1.7 ACTION SUBMITTALS

A. Product Data: Manufacturer’s data sheets for metal wall backup panels and accessories.

B. Shop Drawings: Prepared by manufacturer or manufacturer's authorized dealer. Installation drawings for metal wall backup panels, flashing, accessories, and anchorage systems must indicate completely dimensioned structural frame and erection layouts, openings in the wall, special framing details, and construction details at corners, building intersections and flashing, location and type of mastic and metal filler strips.

1. Indicate coordination dimensions related to structural support system elements provided by others.
2. Include structural data indicating compliance with performance requirements.

Specifier: Retain and edit below to comply with Project requirements for sustainable design requirements.

1.8 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.

B. Qualification Information: For Installer firm, Installer’s field supervisor.

Specifier: Retain "Buy American Act Certification" paragraph when required by project; coordinate with requirements in Submittals article.

C. **Buy American Act certification**.

1.9 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Protect metal wall backup panels during shipping, handling, and storage to prevent staining, denting, or other visible damage. Deliver, unload, store, and erect metal wall backup panels and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations. Protect from exposure to sunlight.

1.11 WARRANTY

Specifier: Warranty terms below are available from Metl-Span. Verify that other allowable manufacturers furnish warranty meeting requirements.

A. **Special Manufacturer's Warranty**: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal wall backup panel assemblies that fail in materials and workmanship within [2] years from the date of substantial completion.

B. **Weathertight Wall Warranty**: Provide manufacturer's standard limited weathertight wall warranty in which manufacturer will warrant against leakage under the specified project design criteria or normal weather and atmospheric conditions for a period of ten years based on a review of final installation drawings and verification of installation by a manufacturer trained installer. Project installation inspection is at the sole discretion of the manufacturer.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Insulated-Core Metal Wall Backup Panel System: Metal wall backup panel installation consisting of foamed-insulation-core metal-skinned wall panels and accessories, attached to metal framing with specified clips or rails, serving as combined thermal, air, and moisture barrier and support for [metal wall panel rainscreen cladding] [brick veneer] [terra cotta veneer] specified in another section.

Specifier: If project procurement procedures allow retaining manufacturer and product name, retain paragraph and subparagraphs below and modify as required.

2.2 MANUFACTURERS

A. Basis of Design: **Metl-Span, BW System**. Provide basis of design product [or comparable products of other manufacturer approved by Architect in accordance with Instructions to Bidders and Division 01 General Requirements].

1. Metl-Span, a Division of Cornerstone Building Brands; Lewisville, Texas Tel: 972.221.6656; Email: info@metlspan.com; Web: metlspan.com.

B. Provide basis of design product [, or comparable product approved by Architect prior to bid].

Specifier: **Metl-Span BW Systems Insulated Backup Wall Panels** are available in 12 foot (3658 mm) and 20 foot (6096 mm) lengths. BW Universal System™ with tongue and groove joinery comes in two widths, in two thicknesses and is installed horizontally over steel studs up to 24" OC. BW Stretch System™ comes in two widths and three thicknesses and can be installed vertically for applications over steel girts up to 6' OC. Panels are configured and shipped to accommodate application for backup panels for vertical or horizontal cladding or as masonry veneer backup.

2.3 METAL WALL BACKUP PANELS

A. Insulated Composite Backup Panels: Foamed-insulation-core metal-skinned panels with interlocking side joinery and butted end joints. Fabricate in factory with metal facings bonded to

foamed-in-place core. Fabricate interior metal face with planking ribs. Form interlocking joinery to accept concealed fasteners for attachment to supports.

1. Basis of Design Product: **Metl-Span BW Systems Insulated Backup Wall Panel**.

Specifier: Retain one "Panel Faces" paragraph below as required for project. 29-ga panel is typical for BW Universal System™; 22-ga panel is required for BW Stretch System™ panel applications.

B. **BW Universal System™ Panel Faces**: [(0.014-inch/29-ga. (0.360-mm)] thick aluminum-zinc alloy coated steel sheet: ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality, with smooth surface. [optional: (0.019-inch/26-ga. (0.480-mm), (0.025-inch/24-ga. (0.635-mm), (0.031-inch/22-ga. (0.794-mm)]

C. **BW Stretch System™ Panel Faces**: [(0.031-inch/22-ga. (0.794-mm)] thick metallic-coated steel sheet: ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality, with smooth surface. [optional: (0.0375-inch/20-ga. (0.953-mm)]

Specifier: First option in "Panel Face Finish" paragraph is standard; second option is available for louver blank-off panels.

D. Panel Face Finish: [0.2-mil (0.051-mm) thick primer coat and 0.2-mil (0.051-mm) thick primer coat on interior face.] [Add for louver blank-off panels: 0.8-mil (0.203-mm) thick black silicon polyester color coat on exterior face].

E. Panel Core: Foamed-in-place modified polyisocyanurate, closed-cell, CFC and HCFC free, with minimum density of 2.4 lb./cu. ft. (39 kg/cu. m) and minimum compressive strength of 15 lb./sq. in. (103 kPa).

F. Panel Sealant/Vapor Seal: Factory-applied non-curing butyl.

Specifier: Retain "BW Universal System Horizontal Panel" or "BW Stretch System Vertical Panel" paragraph below as required for project.

Retain one of options based upon project thermal performance requirements.

G. **BW Universal System™ Horizontal Backup Panel Thickness and Thermal Resistance (75° mean core temperature)**: [2 inches (51 mm); R-13.6, U-.074] [3 inches (76 mm); R-20.4, U-.051].

Specifier: Select one of two options based upon project thermal performance requirements.

H. **BW Stretch System™ Vertical Backup Panel Thickness and Thermal Resistance (75° mean core temperature)**: [2 inches (51 mm); R-13.6, U-.076] [2.75 inches (69 mm); R-18.7, U-.056] [4 inches (101 mm); R-27.2, U-.041].

Specifier: Retain second option in "Panel Width" subparagraph when required to align ties in panel joints with masonry course spacing or for Long Span over steel girts.

I. Panel Width: BW Universal System [36 inches (914 mm)] [32 inches (813 mm)]. BW Stretch System [36 inches (914 mm)] [30 inches (762 mm)]

J. Panel Configuration: Provide metal wall backup panels configured for the following application system:

Specifier: Retain one or more of the following backup panel configurations as required for project.

System in subparagraph below corresponds to **BW Universal System Type 1 System** with BW Universal Horizontal Rainscreen Rail (BWUH Rail) utilizing vertical subgirts.

1. Horizontal metal wall backup panels with integral pre-punched thermally isolated Z-girt (BWUH Rail) attachment system configured to serve as attachment points for manufacturer-furnished vertical sub-girts to receive horizontal cladding.

System in subparagraph below corresponds to **BW Universal System Type 2 System** with BW Universal Vertical Rainscreen Rail (BWUV Rail).

2. Horizontal metal wall backup panels with integral pre-punched thermally isolated hat channel (BWUV Rail) sub-girt attachment system configured to serve for the direct attachment of vertical cladding.

System in subparagraph below corresponds to **BW Universal System Type 3 System**. Utilize BWU panel clips for the attachment of vertical sub-girts. System requires min. 16 ga. steel stud framing.

5. Horizontal metal wall backup panel with manufacturer-furnished panel clip attachment to serve as attachment points for vertical subgirts to receive horizontal cladding.

System in subparagraph below corresponds to **BW Universal System Type 4 System** utilizing Hohmann and Barnard Joint Anchors and Surface Mount Anchors.

6. Horizontal metal wall backup panel for masonry veneer, with manufacturer-furnished Hohmann and Barnard Joint Anchors and Surface Mount Anchors in panel joints and attached at panel midpoints.

System in subparagraph below utilizes **BW Stretch System Type 5 System** oriented vertically using panel attachment clips. Horizontal manufacturer supplied sub-girts attached to panel joinery. System may be utilized for wall construction framed with horizontal purlins.

7. Vertical installation metal wall backup panel with manufacturer-furnished panel attachment clips and horizontal sub-girts attached to panel joinery to receive vertical cladding.

System in subparagraph below utilizes **BW Stretch System Type 6 System** oriented vertically using panel attachment clips. System may be utilized for wall construction framed with horizontal purlins.

8. Vertical installation metal wall backup panel with manufacturer-furnished panel attachment clips and vertical sub-girts attached to panel joinery to receive horizontal cladding.

2.4 METAL WALL BACKUP PANEL ACCESSORIES

A. Sub-girts: Metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality, 0.054-inch/16-gage (1.37-mm) thick.

B. Panel Attachment Clips: Metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275) coating designation, of thickness indicated, configured to serve as attachment points for secondary metal framing where indicated, manufacturer-furnished.

C. Self-Adhering Flashing Tape recommended by panel manufacturer for application.

D. Joint Sealants:

1. Concealed: Non-skinning butyl sealant, AAMA 809.2.
2. Exposed: Elastomeric silicone sealant, ASTM C 920, as recommended by panel manufacturer.

E. Fasteners: Corrosion-resistant, self-tapping and self-drilling screws, bolts, nuts, and other fasteners as recommended by panel manufacturer for application.

1. Size fasteners to prevent penetration of interior panel facing where required.

2.5 FABRICATION

A. General: Fabricate metal wall backup panels at the factory, using manufacturer's standard procedures and processes identical to tested units and as necessary to meet performance requirements.

1. Fabricate metal wall backup panels with joints between panels designed to form weathertight seals.
2. Factory form metal wall backup panels in a continuous process with no glues or adhesives between dissimilar materials. Trim and square edges of sheets with no displacement of face sheets or protrusion of core material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine building structure with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation.

B. Wall Substrate: Confirm that wall substrate is within tolerances acceptable to metal wall panel system manufacturer.

1. Maximum deviations acceptable:

a. 3/8 inch (9.5 mm) in any 20-foot (6.1 m) length vertically or horizontally from the framing face plane.
b. 3/4 inch (19 mm) maximum deviation from the framing face plane on any building elevation.

C. Framing: Inspect framing that will support metal wall backup panel system to determine if support components are installed as indicated on approved shop drawings.

D. Advise G.C, in writing, of out-of-tolerance work and other deficient conditions prior to proceeding with metal wall panel system installation.

E. Correct out of tolerance work and other deficient conditions prior to proceeding with insulated composite backup panel installation.

3.2 METAL WALL BACKUP PANEL SYSTEM INSTALLATION

A. General: Install metal wall backup panel system in accordance with approved shop drawings and manufacturer's recommendations.

B. Installation: Attach backup panels to supports at each panel connection point indicated on approved shop drawings.

1. Install with drain plane of panel facing weather side of installation.
2. Fasten insulated metal wall backup panels to building framing with [continuous integral attachment sub-girts] or [manufacturer provided panel attachment clips and anchors] provided by manufacturer utilizing recommended fasteners.
3. Horizontal Joinery: Working from base to top of metal wall backup panel system installation, engage upper panel over lower panel to form a weather tight joint oriented to allow gravity drainage.
4. Vertical Joinery:

a. Install vertical butt joints tight with no gap, set against continuous supports.
b. Set panel ends in continuous bead of non-curing butyl sealant as indicated in manufacturer's installation details.
c. Seal butt joints between adjacent panels with a continuous strip of self-adhering flashing at bottom row of panels and where additionally recommended by manufacturer or architect.

3.3 ERECTION TOLERANCES

A. Installation Tolerances: Align metal wall backup panel system within installed tolerance of 1/4 inch in 20 feet (6 mm in 6.1 m), noncumulative, on level and plumb and location lines as indicated and within 1/8 inch (3 mm) offset of adjoining faces and of alignment of matching profiles.

END OF SECTION

