Dri-Design May, 2023

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Specifier Note: This product guide specification is written according to the Construction Specifications Institute (CSI) current versions of MasterFormat, SectionFormat and PageFormat and as described in various Practice Guides.

Use this specification as the basis for developing a project specification.

Layout of Header/Footer is based on PageFormat, edit as necessary in compliance with project requirements.

Section must be carefully reviewed and edited by Architect/Design Professional to meet requirements of project and local building code.

Coordinate this section with Drawings and other specification sections; coordinate these numbers and titles with sections included for specific project.

Brackets **[\_\_\_\_\_]**, **and/or**, [**<\_\_\_\_\_>]** and “or” are used to indicate when a selection is required.

Windows 2010 - Upon completion of section editing, you may turn-off “Specifier Notes” as follows; click on “File” then on “Options” then “Display” and remove check mark for “Hidden text” in two locations.

HIDDEN TEXT: Specifier Notes may be turned on throughout section as follows; click on “File” then on “Options” then “Display” and add check mark for “Hidden text” in two locations.

SECTION 07 4263

FABRICATED WALL PANEL ASSEMBLIES

Specifier Note: This section covers Fabricated Wall Panel Assemblies consisting of various components and having either aluminum or stainless steel metal wall panels on the exposed exterior surface. These wall panels are provided by Dri-Design, and the other components consisting of air and moisture barrier, continuous insulation board, and horizontal girt support system are provided by other manufacturers as indicated in this guide specification. Consult with Dri-Design for technical assistance in editing this section for the specific project requirements.

# - GENERAL

## SECTION INCLUDES

### Fabricated **[aluminum] [weathering steel]** or **[stainless steel]** metal plate wall panel assembly including panel attachment/support framing system, continuous **[phenolic]** or **[mineral fiber]** insulation, and air barrier coating.

Specifier Note: Edit the following list of related requirements for the project, and coordinate for consistent use of section numbers and titles. List any other sections with work directly related to work of this section.

## RELATED REQUIREMENTS

### Section 03 3000 – Cast-in-Place Concrete: Poured concrete wall support framing.

### Section 04 2000 – Unit Masonry: Concrete block support framing.

### Section 05 4000 – Cold-Formed Metal Framing: Wall panel substrates support framing.

### Section 06 1000 – Rough Carpentry: **[Plywood]** or **[Oriented strand board (OSB)]** substrate wall sheathing.

### Section 07 2700 – Air Barriers: Fluid applied membrane air barriers over wall sheathing.

### Section 07 6200 – Sheet Metal Flashing and Trim: Field formed flashings and other sheet metal work.

### Section 07 9200 – Joint Sealants: Perimeter sealant.

### Section 09 2116 – Gypsum Board Assemblies: Exterior glass mat faced gypsum substrate wall sheathing.

## DEFINITIONS

### Metal Plate Wall Panel Assembly: Metal plate wall panels, attachment system components, miscellaneous metal framing, and accessories necessary for a complete weather tight wall system based on AAMA CW-RS-1.

### IBC – International Building Code (www.iccsafe.org).

### IRC – International Residential Code (www.iccsafe.org).

Specifier Note: Edit the following list of reference standards to only those being used for project.

## REFERENCE STANDARDS

### AAMA - American Architectural Manufacturers Association (www.aamanet.org).

#### AAMA CW-RS-1 – The Rain Screen Principle and Pressure-Equalized Wall Design; 2012.

#### AAMA 501.1 – Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure; 2017.

#### AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.

#### AAMA 508 – Voluntary Test Method and Specification for Pressure Equalized Rainscreen Wall Cladding Systems; 2021.

#### AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.

#### AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

### ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers (www.ashrae.org).

#### ASHRAE 90.1 (I-P) – Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings (I-P Edition, Inch-Pound Units); 2022.

### ASTM International - American Society for Testing and Materials (www.astm.org).

#### ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.

#### ASTM A1046/A1046M - Standard Specification for Steel Sheet, Zinc-Aluminum-Magnesium Alloy-Coated by the Hot-Dip Process; 2022.

#### ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2019.

#### ASTM C165 - Standard Test Method for Measuring Compressive Properties of Thermal Insulations; 2007(Reapproved 2017).

#### ASTM C297/C297M - Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions; 2016.

#### ASTM C303 - Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation; 2021.

#### ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

#### ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014(Reapproved 2019).

#### ASTM C754 - [Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products](http://www.astm.org/Standards/C754.htm); 2020.

#### ASTM C920 - Standard Specification for Elastomeric Joint Sealant; 2018.

#### ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

#### ASTM D523 - Standard Test Method for Specular Gloss; 2014(2018).

#### ASTM D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2016.

#### ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics; 2020.

#### ASTM D2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates; 2022.

#### ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2015(2020).

#### ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films; 2007(2015).

#### ASTM D6226 - Standard Test Method for Open Cell Content of Rigid Cellular Plastics; 2021.

#### ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

#### ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.

#### ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen; 2019.

#### ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014(2021).

#### ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000(2016).

#### ASTM E1233/E1233M – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential; 2014(2021).

#### ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies; 2018.

### ISO – International Organization for Standardization (www.iso.org).

#### ISO 527 - Plastics-Determination of tensile properties -- Part 1: General principles; 2019.

#### ISO 3146 - Plastics-Determination of melting behavior (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods; 2022.

### NAAMM – National Association of Architectural Metal Manufacturers ([www.naamm.org](http://www.naamm.org)).

#### AMP 500 - Metal Finishes Manual; 2006.

### NFPA – National Fire Protection Association ([www.nfpa.org](http://www.nfpa.org)).

#### NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2023(Tested to 2012 edition).

### SMACNA – Sheet Metal and Air Conditioning Contractors’ National Association, Inc. ([www.smacna.org](http://www.smacna.org)).

#### Architectural Sheet Metal Manual; 2012.

### Voluntary Product Standard; Department of Commerce (DOC) and National Institute of Standards and Technology (NIST) (www.apawood.org).

#### PS 1 – Structural Plywood; 2019(Revised 2020).

## ADMINISTRATIVE REQUIREMENTS

### Coordination: Coordinate panel assemblies with rain drainage, flashing, trim, stud back-up, soffits, and other adjoining work.

Specifier Note: Review Preinstallation meeting information and confirm that this Work is extensive enough to justify this meeting and for project specific meeting requirements.

### Preinstallation Meeting:

#### Attendees:

##### Owner.

##### Architect.

##### Installer.

##### Panel manufacturer's representative.

##### Structural support installer’s.

##### Installer’s whose work interfaces with or affects wall panels including installers of doors, windows, and louvers.

#### Review and finalize construction schedule.

#### Verify availability of materials, installer's personnel, equipment, and facilities needed to maintain schedule.

#### Review means and methods related to installation, including manufacturer's written instructions.

#### Examine support conditions for compliance with requirements, including alignment and attachment to structural members.

#### Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affects this Work.

#### Review temporary protection requirements for during and after installation of this Work.

Specifier Note: Edit the following list of submittal requirements and provide only those required for project, and verify section number and title for project submittal procedure requirements.

## SUBMITTALS

### See Section 01 3000 – Administrative Requirements, for submittal procedures.

### Product Data: Submit for each type of product indicated, include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal plate wall panel and accessory.

### Shop Drawings: Submit fabrication and installation layouts of metal plate wall panels; including details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, accessories, and special details.

#### Provide distinction between factory-assembled, shop-assembled, and field-assembled work.

#### Provide details of following items at full scale.

##### Manufacturer’s standard sheet metal trims.

##### Components of wall panel construction, anchorage methods, and hardware.

### Coordination Drawings: Submit exterior elevations, drawn to scale, that have the following items shown and coordinated with each other, using input from installers of the following items:

Specifier Note: Revise following paragraphs to suit Project.

#### Metal plate wall panels and attachments.

#### Girts.

#### Wall-mounted items including doors, windows, louvers, and lighting fixtures.

#### Penetrations of wall by pipes and utilities.

### Samples: Submit for each type of exposed finish required, and prepared on samples of size as follows:

#### Metal Plate Wall Panels: At least 2 inches by 3 inches.

### Test and Inspection Reports: Submit test and inspection reports on each type of wall panel system provided for project based on evaluation of comprehensive tests performed by qualified testing agency.

### Maintenance Data: Submit maintenance data for metal plate wall panels.

Specifier Note: Submit copy of warranty to provide Architect and/or Owner the opportunity to verify warranty coverage complies with necessary requirements.

### Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

## QUALITY ASSURANCE

### Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least five years of documented experience.

### Installer: Company specializing in performing work of this section and approved by manufacturer.

#### Install system in strict compliance with manufacturer’s installation instructions.

### Anodized Finish Applicator: Provide either caustic (traditional) or eco-friendly (acid) etching technologies.

#### Use fully automated, computer-controlled process lines for consistency of finish throughout project.

#### Use documented production line quality control protocols in accordance with AAMA 611 test procedures.

### Source Limitations: Obtain each type of metal plate wall panel from single source and from single manufacturer.

Specifier Note: Review Mock-Ups information and coordinate that it is in compliance with project requirements.

## MOCK-UPS

### Mock-ups: Provide mock-ups to verify selections made under sample submittals and to demonstrate aesthetic effects and to establish quality standards for fabrication and installation.

Specifier Note: Edit following sub-paragraph for large scale mock-ups, indicate portion of building to represent mock-up on Drawings, or indicate mock-ups as separate element on Drawings in compliance with project requirements.

#### Build mock-up of typical wall panel assembly **[as shown on Drawings]** or **[insert size]**, including **[corner,]** **[soffits,]** supports, attachments, and accessories.

##### Include at least four panels to represent a four-way panel joint and showing full thickness.

Specifier Note: Edit following sub-paragraph as required for water spray test and coordinate with PART 3 Field Quality Control requirements in compliance with project requirements.

#### Water Spray Test: Conduct water-spray test of mock-up metal panel assembly, test water penetration in accordance with AAMA 501.2.

#### Approval of mock-ups does not constitute approval of deviation from Contract Documents within mock-ups unless these deviations are approved by Architect in writing.

#### Subject to compliance with requirements, approved mock-ups **[may]** or **[may not]** become part of completed Work if undisturbed upon Date of Substantial Completion.

## DELIVERY, STORAGE, AND HANDLING

### Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

### Storage and Handling: Store materials in clean, dry, interior area in accordance with manufacturer’s instructions.

### Deliver panels, components, and other manufactured items without damage or deformation.

### Protect panels during transportation, handling, and installation from weather, excessive temperatures and construction operations.

### Handle panels in strict compliance with manufacturer’s instructions and recommendations, and in a manner to prevent bending, warping, twisting, and surface damage.

#### Store panels vertically with top of panel down, storage of panels horizontally is not permitted.

### Store panels covered with suitable weather tight and ventilated covering.

### Provide storage of panels to ensure dryness, with positive slope for drainage of moisture.

### Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

### Remove strippable protective covering from aluminum panel prior to installation.

## SITE CONDITIONS

### Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of this Work to be performed according to manufacturer's installation instructions and warranty requirements.

### Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before panel fabrication and indicate measurements on Shop Drawings.

#### Coordinate with construction schedule.

## WARRANTY

### See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

### Wall System Warranty: Provide wall panel manufacturer warranty, agreeing to correct defects in manufacturing of materials within a one year period after Date of Substantial Completion.

#### Failures include, but are not limited to, the following:

##### Structural failures, including rupturing, cracking, or puncturing.

##### Deterioration: Beyond normal weathering of wall system metals and other materials.

Specifier Note: Review available warranty and warranty periods for aluminum and stainless steel panel units and components.

Aluminum Finishes:

70 percent flouropolymer PVDF type paint finish; 20 years – Standard, AAMA 2605.

Class 1 natural anodized type paint finish; 5 years – Standard, 10 years available; AAMA 611.

### Panel Material Warranty: Provide panel material manufacturer warranty, agreeing to repair finish of metal plate wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

#### Finish Warranty Period: **[\_\_\_\_\_]** years from Date of Substantial Completion.

Specifier Note: Edit the following, PVDF or anodized aluminum finish warranty coverage, in compliance with project finish requirements.

#### Warranty Coverage: In accordance with AAMA 2605 for 70 percent PVDF resin on aluminum finish requirements.

##### Fading, Loss of Color Retention: Loss of 5 Delta E units (Hunter) or less, in accordance with ASTM D2244.

##### Chalking, Chalky White Powder on Panel Surface: Chalking at No. 8 or less for colors, or No. 6 for white, in accordance with ASTM D4214.

##### Loss of Adhesion: Loss of 10 percent due to cracking, checking or peeling, or failure to adhere to bare metal.

##### Gloss Retention: 50 percent or less in accordance with ASTM D523.

##### Salt Spray, Accelerated: At least 4,000 hours in accordance with ASTM B117.

##### Humidity Testing, Accelerated: At least 4,000 hours in accordance with ASTM D2247.

#### Warranty Coverage: In accordance with AAMA 611 Class 1 anodized aluminum finish requirements.

##### Loss of Adhesion: Resists cracking, crazing, flaking, and blistering when forming and welding completed prior to finishing; post forming or welding voids warranty.

##### Fading - Loss of Color Retention: Loss of 5 Delta E units (Hunter) or less, in accordance with ASTM D2244.

##### Chalking, Chalky White Powder on Panel Surface: Chalking at No. 8 or less in accordance with ASTM D4214.

##### Salt Spray, Accelerated: At least 3,000 hours in accordance with ASTM B117.

# - PRODUCTS

## MANUFACTURERS

### Dri-Design – Fabricated Wall Panel Assemblies.

#### Address: 12480 Superior Court, Holland, Michigan 49424.

#### Mailing Address: P.O. Box 1286, Holland, Michigan 49422.

#### Phone: (616) 355-2970; Website: www.dri-design.com.

Specifier Note: Edit the following Performance Requirements in compliance with project requirements.

## PERFORMANCE REQUIREMENTS

### Metal Plate Wall Panel Assemblies: Comply with performance requirements without failure due to defective manufacturing, fabrication, installation, or other construction defects.

### Design, fabricate, and erect a dry joint, pressure equalized rainscreen aluminum wall panel system without use of sealants, gaskets, or butyl tape, tested as installed in compliance with AAMA 508, and as follows:

#### Cyclic Static Air Pressure Differential: Pass cycled pressure loading at 25 psf in 100 three-second cycles in accordance with ASTM E1233/E1233M.

#### Air Infiltration: Pass when tested at 1.57 psf in accordance with ASTM E283.

#### Water Penetration:

##### Static: Pass water penetration test under 6.24 psf positive static air pressure difference for at least 15 minutes with 5 gallons/sf/hour of water applied in accordance with ASTM E331.

##### Dynamic: Pass water penetration test under 6.24 psf dynamic pressure difference for at least 15 minutes with 5 gallons/sf/hour of water applied in accordance with AAMA 501.1.

#### Structural: Provide systems tested in accordance with ASTM E330/E330M and certified to be without permanent deformation or failure of structural members.

### Fire Performance: Complying with acceptance criteria and tested in accordance with NFPA 285.

Specifier Note: Edit the following list of assembly components; provide information in compliance with project requirements.

## METAL WALL PANELS

### Manufacturer: Dri-Design (www.dri-design.com).

#### Product: **[Aluminum]** or **[Stainless Steel]** Metal Plate Wall Panels.

#### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

### Aluminum Plate: Alloy and temper as recommended by manufacturer for application and in compliance with manufacturers performance requirements.

#### Aluminum Material: Tension-leveled, **[flouropolymer PVDF painted finish, 3003-H14 manganese alloy]** or **[anodized finish, 5005-AQ manganese alloy**].

#### Thickness: 12 gauge, 0.080 inch, minimum.

#### Weight: Less than 2 psf.

#### Finish: **[Two-Coat Fluoropolymer] [Three-Coat Fluoropolymer] [Four-Coat Fluoropolymer] [Two-Coat Mica Fluoropolymer] [Clear Anodized Finish]** or **[Color Anodized Finish]**.

### Stainless Steel Plate: Temper as recommended by manufacturer for application and in compliance with manufacturers performance requirements.

#### Stainless Steel Alloy: **[Type 304]** or **[Type 316]**.

#### Thickness: **[16 gauge, 0.0625 inch]** of **[18 gauge, 0.050 inch]**, minimum.

#### Finish: No. 4 Bright Polished.

### Weathering Steel Plate: Alloy and temper as recommended by manufacturer for application and in compliance with manufacturers performance requirements.

#### Steel Material: Type 4, in accordance with ASTM A606/A606M.

#### Thickness: **[16 gauge, 0.0598 inch]** or **[18 gauge, 0.0478 inch]** thick, minimum.

#### Finish: Mill.

### Panel Depth: 1-1/4 inches, nominal.

Specifier Note: Contact Dri-Design and refer to Design Guide on website for available aluminum, stainless steel and weathering steel panel sizes.

### Panel Size: As indicated on Drawings.

Specifier Note: Panel joints are typically 1/2 inch wide for horizontal joints and 5/8 inch wide for vertical joints; 1 inch maximum for each.

### Panel Joints: As indicated on Drawings.

## PANEL ATTACHMENT/SUPPORT FRAMING SYSTEM

### Manufacturer: Knight Wall Systems ([www.knightwallsystems.com](http://www.knightwallsystems.com)).

#### Product: HCITM System Rainscreen Attachment.

#### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

### Horizontal Girt: Stiffened horizontal girt with pre-punched drainage holes, attached directly to top of rigid continuous insulation at regular spacing, with engineered thermally isolated washer assembly and fasteners.

#### Steel Classification: Structural steel (SS), Grade 50 with 50 ksi yield strength, in accordance with ASTM A1008/A1008M.

#### Coating Material: Zinc-aluminum-magnesium, with ZM40 coating designation in accordance with ASTM A1046/A1046M.

#### Steel Thickness: 0.046 inch, 18 gauge, minimum.

#### Depth: 3/4 inch.

#### Fastening Face Width: 2 inches, minimum.

#### Overall Width of Girt: 5-1/8 inches.

#### Provide required metal terminations for system horizontal girts at openings such as window heads and sills, and base of walls.

Specifier Note: Horizontal girts may be spaced up to 36 inches on center vertically, depending on cladding weight and design wind pressures, and support cladding that weighs less than 9 lbs/sq ft.

Maximum allowable spacing and dead load is determined on a project basis. This is a function of the live load plus dead load being equal to less than the allowable load per wall anchor. Spacing and maximum loads are typically determined by the manufacturer.

#### Spacing: Comply with manufacturer’s requirements.

### Fasteners: Provide sufficient length as required for solid attachment through rigid insulation to substrate structure.

### Thermal Isolating Washers: Polyoxymethylene copolymer (POM) washers with integral centering lip to act as thermal break between wall anchor fasteners and girt.

#### Thickness: 1/8 inch, minimum.

#### Tensile Yield Strength: 9.57 ksi in accordance with ISO 527.

#### Melting Temperature: 329 degrees F in accordance with ISO 3146.

#### Product: ThermoStopTM Isolator by Knight Wall Systems ([www.knightwallsystems.com](http://www.knightwallsystems.com)).

##### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

Specifier Note: Select the following for steel stud framing substrates for fabricated wall panel assembly.

### Substrate Fastener, Steel Stud Framing: Stainless steel, with hex washer head, self-drilling, with thousand hour salt-spray rated thermoset polyester coating.

#### Embedment Depth: At least 5/8 inch from face of stud.

#### Pull-Out Capacity: Minimum pull-out of 450 lbs from 18 gauge steel.

Specifier Note: Select the following for concrete or concrete masonry unit (CMU) substrates for fabricated wall panel assembly.

### Substrate Fastener, **[Concrete]** and/or **[Concrete Masonry Units (CMU)]** Framing:

#### Embedment Depth: At least 1-1/8 inches from face of substrate.

#### Pull-Out Capacity: Minimum pull-out of 450 lbs.

#### Diameter: 1/4 inch, minimum.

#### Product:

##### KWIK-CON II+ Fastening System by Hilti (www.hilti.com).

##### Original Blue TAPCON Screw Anchors by Tapcon (www.tapcon.com).

##### UltraCon Carbon Steel Threaded Anchors by Elco Construction Products (www.elcoconstruction.com).

##### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

Specifier Note: Following paragraph is insulation board placed directly behind the metal wall panels with panel attachment and support framing system fasteners placed through it for fabricated wall panel assembly.

## CONTINUOUS PHENOLIC INSULATION BOARD

### Manufacturer: Kingspan Insulation LLC (www.kingspan.com).

#### Product: Kooltherm K15 Rainscreen Board.

#### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

### Continuous Insulation Board: Core of fiber-free rigid thermoset phenolic insulation, faced on both sides with a low emissivity composite foil facing, and blowing agent having zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

#### Thickness: **[1.18 inches] [1.97 inches] [2.95 inches]** or **[<\_\_\_> inches]**, nominal.

#### Width: 47-1/4 inches.

#### Length: 96 inches.

#### Thermal Resistance, R-Value: **[8.0 at 1.18 inches thick] [13.3 at 1.97 inches thick]** or **[20 at 2.95 inches thick]** in accordance with ASTM C518.

#### Fire Rating: Flame spread index (FSI) of 25 and smoke developed index (SDI) of 20 in accordance with ASTM E84.

#### Compressive Strength: 16 psi, minimum, in accordance with ASTM D1621.

#### Density: 2 lbs/cubic ft, minimum, in accordance with ASTM D1622.

#### Closed Cell Content: 94.67 percent in accordance with ASTM D6226.

### Fasteners: Provide 2 inches in diameter solid plastic cap washer with ceramic coated screws for attaching insulation boards to wall studs.

#### Product: Thermal-Grip ci Prong Washer and Grip-Deck ci Screws by Rodenhouse Inc. (www.rodenhouse-inc.com).

#### Substitutions: [See Section 01 6000 - Product Requirements] or [Not permitted].

## CONTINUOUS MINERAL FIBER INSULATION BOARD

### Manufacturer: ROOKWOOL (www.rockwool.com).

#### Product: COMFORTBOARD 110 Continuous Insulation.

#### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

### Continuous Insulation Board: Non-combustible, rigid, water repellent, mineral wool insulation board complying with ASTM C612, Type IVB.

#### Thickness: **[1 inch] [1-1/4 inches] [2 inches] [2-1/2 inches] [3 inches]** or **[<\_\_\_ inches>]**, nominal.

#### Size: **[24 by 48 inches] [48 by 72 inches]** or **[<\_\_\_\_\_>]**, nominal.

#### Thermal Resistance, R-Value per Inch: 4.0 at 75 degrees F in accordance with ASTM C518.

#### Fire Rating: Flame spread index (FSI) of 0 and smoke developed index (SDI) of 0 in accordance with ASTM E84.

#### Compressive Strength: 584 psf, minimum, at 10 percent compression, and 1566 psf, minimum, at 25 percent compression in accordance with ASTM C165.

#### Density: 11 lbs/cubic ft, minimum, in accordance with ASTM C303.

### Fasteners: Provide mechanical fasteners in accordance with insulation manufacturer’s written recommendations for attaching insulation boards to wall studs.

## AIR BARRIER COATING

### Manufacturer: Sto Corporation (www.stocorp.com).

#### Product: Sto Gold Coat - 81636.

#### Substitutions: **[See Section 01 6000 - Product Requirements]** or **[Not permitted]**.

### Air Barrier Coating: Fluid-applied vapor permeable air barrier in compliance with ASHRAE 90.1 (I-P).

#### Air Leakage: Less than 0.04 cfm/sq ft at 1.57 psf in accordance with ASTM E2357.

#### Water Vapor Permeance: Greater than 5 US perms, Method B (Water Method), in accordance with E96/E96M.

#### Tensile Adhesion: Greater than 15 psi over glass mat gypsum sheathing in accordance with ASTM C297/C297M.

#### Volatile Organic Content (VOC): Less than 50 g/L.

#### Fire Rating: Flame spread index (FSI) of 0 and smoke developed index (SDI) of 5 in accordance with ASTM E84.

#### Provide joint and rough opening treatment in accordance with manufacturer’s instructions at sheathing joints, inside and outside corners, and rough openings.

## FABRICATION

### Fabricate and finish wall panels within manufacturer’s facilities and fulfill indicated performance requirements demonstrated by laboratory testing.

#### Comply with indicated profiles and with dimensional and structural requirements.

### Provide post-finishing of panels, paint aluminum wall panels only after completion of panel fabrication and ensure exposed edges are coated.

### Provide post anodizing of panels, anodize aluminum wall panels only after completion of panel fabrication and ensure exposed edges are anodic coated without crazing of surface at formed edges.

## FINISHES

### Comply with NAAMM's AMP 500 - Metal Finishes Manual for architectural and metal products, for recommendations of designating finishes.

Specifier Note: Edit the following types of AAMA 2605 – PVDF aluminum finishes in compliance with project requirements.

### Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride (PVDF) resin system.

#### Two-Coat Fluoropolymer: AAMA 2605, fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' installation instructions.

#### Three-Coat Fluoropolymer: AAMA 2605, fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' installation instructions.

#### Two-Coat Mica Fluoropolymer: AAMA 2605, fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' installation instructions.

#### Four-Coat Fluoropolymer: AAMA 2605, fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat and clear coats. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' installation instructions.

Specifier Note: Edit the following types of AAMA 611 color or clear anodized finishes in compliance with project requirements.

### Color Anodized Finish: AAMA 611, Architectural Class I, color anodized coating of 0.0007 inch (0.7 mils) minimum thickness.

#### Color: **[Champagne] [Bordeaux] [Light bronze] [Medium bronze] [Dark bronze] [Extra dark bronze] [Black]** or **[Copper]**.

### Clear Anodized Finish: AAMA 611, Architectural Class I, clear anodized coating of 0.0007 inch (0.7 mils) minimum thickness.

### Field Touch-Up Materials: As recommended by coating manufacturer for field application.

## ACCESSORIES

### Metal Plate Wall Panel Accessories: Provide components required for a complete metal plate wall panel assembly including trim, copings, fascia, mullions, sills, corner units, flashings, and similar items. Match material and finish of panels unless otherwise indicated.

### Provide integral drainage system and manufactures standard extrusions at termination of dissimilar materials.

### Galvanic Protection: Provide tapes and other acceptable methods to separate and prevent contact between dissimilar metal as required.

Specifier Note: Match flashing material with metal panel; select either aluminum or stainless steel.

### Flashing and Trim: Match material, finish, and color of adjacent wall panels.

#### Aluminum Thickness: 16 gauge, 0.050 inch, minimum.

#### Stainless Steel Thickness: 18 gauge, 0.050 inch, minimum.

#### See Section 07 6200 for additional information.

### Panel Fasteners: Designed to withstand design loads, with at least 7/16 inch diameter head and neoprene washer.

#### Aluminum Wall Panel Material: Provide stainless steel fasteners, or coated fastener approved by panel manufacturer or project wall consultant.

Specifier Note: Verify that panel substrates are at least 5/8 inch thick exterior plywood, or glass mat faced gypsum board.

### Plywood Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, and at least 5/8 inch thick.

#### See Section 06 1000 for additional information.

### Glass Mat Faced Gypsum Wall Sheathing: Glass mat faced gypsum substrate in accordance with ASTM C1177/C1177M, Type X, and at least 5/8 inch.

#### See Section 09 2116 for additional information.

Specifier Note: Dri-Design’s wall panels do not use sealants as part of rainscreen system, but when sealants are required adjacent to panel materials as specified within this section, comply with the following:

• Provide sealants in compliance with metal panel manufacturer’s recommendations for physical properties such as: *Adhesion, Flexibility, Weather-Ability and Water-Resistance, Chemical Resistance, Non-Corrosive, Non-Staining, and Non-Sagging*.

Edit following paragraph as necessary.

### Sealants: As recommended by metal panel manufacturer for openings within wall panels and perimeter conditions.

#### See Section 07 9200 for additional information.

# - EXECUTION

## EXAMINATION

### Examine substrates, and Work areas and conditions with Installer present for compliance with requirements for installation tolerances, wall panel supports, and other conditions affecting performance of this Work.

### Examine wall framing to verify that girts, angles, channels, studs, and other structural wall panel support members and anchorage have been installed within alignment tolerances required by wall panel manufacturer.

### Verify that weather barrier has been installed over sheathing or substrate to prevent air infiltration or water penetration.

### Examine rough-in for components and systems penetrating wall panels to coordinate actual penetration locations relative to wall panel joint locations prior to installation.

### Proceed with installation only after unsatisfactory conditions have been corrected.

## PREPARATION

### Miscellaneous Framing: Install sub girt, base angles, sills, furring, and other wall panel support members and provide anchorage in accordance with ASTM C754 for gypsum panel type substrates and panel manufacturer’s installation instructions.

## INSTALLATION – WALL PANELS

### Install wall panels in accordance with manufacturer's installation instructions, including pressure equalized rainscreen installation method and installation guidelines.

#### Wall panels consist of single sheets of metal formed with interlocking gutter and drainage system integral to the panel with single horizontal attachment for dry-joint rainscreen assembly.

#### Use of secondary drainage channels, brackets, support pins, joint sealants or gaskets to manage the drainage of wall panel system is not permitted.

#### Attach wall panels using progressive interlocking method, engaging bottom of panel in top of previous panel working bottom up, and left to right.

#### Install wall panels with single top attachment in pre-punched holes to allow individual panels to move due to thermal expansion.

#### Do not compromise internal gutter.

### Install wall panels for orientation, sizes, and locations as indicated on Drawings.

### Install wall panels with proper anchorage and other components for this Work securely in place.

### Install wall panels with provisions for thermal and structural movement.

### Install shims to plumb substrates as necessary for installation of wall panels.

### Install weather tight seals at perimeter of wall panel openings.

#### Test for proper adhesion on small unexposed area of solid surfacing prior to use.

#### See Section 07 9200 for additional information.

### Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA - Architectural Sheet Metal Manual.

#### Provide concealed fasteners where possible, and set units true to line and level as indicated.

#### Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

#### Install flashing and trim as wall panel Work proceeds.

### Install weather tight escutcheons for pipe and conduit penetrating exterior walls.

### Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by wall panel manufacturer.

### Install attachment system to support wall panels and with provisions to provide a complete weather tight wall system, including sub girts, extrusions, flashings and trim.

#### Include attachment to supports and trims at locations using dissimilar materials.

#### Do not apply sealants to joints, unless noted otherwise on Drawings or Shop Drawings.

#### Install starter extrusion at base course and at cut panel locations.

### Install accessories with positive anchorage to building, weather-tight mounting, provisions for thermal expansion, and coordinate installation with flashings and other components.

#### Install components required for a complete wall panel assembly including trim, copings, flashings and other accessory items.

## INSTALLATION – PANEL ATTACHMENT/SUPPORT FRAMING SYSTEM

### Verification of Conditions:

Specifier Note: Use the first sub-paragraph if system is installed over studs without sheathing.

#### Verify horizontal girt spacing and framing clearances relative to studs or other points of attachment.

#### Verify horizontal girt does not cantilever beyond outer edge of rigid insulation.

### Install system in accordance with manufacturer’s installation instructions.

#### Use laser or chalk line to mark starting height of horizontal girt.

#### Use of shims to plumb wall between horizontal girt and insulation is not permitted.

#### Minimum length of installed cut girt is 24 inches and attached with at least two fasteners.

#### Mount stiffened horizontal girts, fastened at 36 inches on center, maximum, and as determined by manufacturer's engineering calculations, for over continuous insulation board, using one self-tapping screw with thermal isolator, for each pre-punched attachment opening at spacing as indicated.

##### Verify for plumb position of horizontal girts in both parallel and perpendicular alignment to structure.

##### Tighten screws attaching horizontal girt through insulation to substructure with snug-tight fit and not stripped.

##### Do not over-torque fasteners beyond manufacturer’s recommendation.

##### If installed using hand tools, verify consistency of each installer at beginning of project using snug-tight fit criteria; do not use stripped holes.

##### Where obstructions such as window openings, are present, use laser or chalk line to restart girt properly aligned on other side of opening.

##### Use shearing instruments such as snips, nibbler, etc. for cutting metal framing components, use of saws is not recommended, as the sparks produced during cutting will damage anti-corrosion coating.

##### If sparks are generated during cutting, ensure that exposed component being installed on building are protected from sparks and that stockpiles of material near cutting area are also protected.

##### Do not cut components as they are installed on building, unless using a shearing instrument.

##### Replace thermal isolator pieces that break during installation.

##### Provide 3/8 inch to 1/2 inch gap between ends of girts to accommodate for expansion when multiple lengths of horizontal girts are installed.

Specifier Note: Retain the following sub-paragraphs if secondary vertical rails are being used.

#### Attach secondary vertical rails to horizontal girts plumb, straight and square.

##### Tighten screws to a snug-tight fit and not stripped; do not use stripped holes or screws.

##### Shims may be used between vertical rail and horizontal girt or cladding panel and vertical rail, when approved by cladding manufacturer; use of shims between horizontal girt and insulation is not permitted.

##### Attach both flanges/edges of stiffened vertical rail to horizontal girt.

## INSTALLATION – CONTINUOUS INSULATION (CI) BOARD

### Install insulation boards in accordance with manufacturer's written installation instructions, and local building code. Provide copies of these instructions on jobsite during installation.

### Provide separation of insulation boards from interior of building by thermal barrier in compliance with IBC Section 2603.4 or IRC Section R316.4 as applicable.

### Protect exterior walls with water-resistive barrier in compliance with IBC Section 1404.2 or IRC Section R703.2, and with wall coverings that provide necessary structural wind and seismic resistance between wall framing members.

### Do not use insulation boards as nailing base for wall panel supporting materials. Extend fasteners through insulation into existing wall framing or structural sheathing as required by wall panel manufacturer's instructions or local building code.

### Upon starting this work, align insulation board at outside corner of structure and ensure that bottom edge of board overlaps sill plate.

### Attach insulation boards using appropriate fasteners in accordance with type of wall framing or substrate.

### Seal gaps and penetrations, and repair damaged areas with expanding polyurethane spray foam, or silicone sealant complying with ASTM C920, Type S, Grade NS, and Class 25.

## INSTALLATION – AIR BARRIER COATING

### Install air/moisture barrier over Exterior or Exposure I wood-based sheathing, such as plywood and oriented strand board (OSB), glass mat faced gypsum sheathing, poured-in-place concrete wall, or concrete masonry unit (CMU) wall construction.

### Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.

### Install manufacturer approved additives or membranes within transition areas to maintain air barrier continuity throughout installation area.

### Install rough opening protection in compliance with manufacturer's written instructions.

### Install joint treatment material over sheathing joints in compliance with manufacturer's written instructions.

Specifier Note: Select applicable substrate type for barrier coating as required for project from the following options.

### Substrate for Air/Moisture Barrier Coating:

#### Concrete: Install one coat of barrier coating material by spray or roller in a uniform, continuous film of 10 wet mils thick to prepared concrete substrate. Do not install over working or moving joint sealants.

Specifier Note: Number of coats and thickness is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables. For “rough” CMU wall surfaces skim coat entire wall surface with leveling material to fill and level surface prior to applying air and moisture barrier coating and transition materials. When a skim coat of leveling material is installed only one coat of the air and moisture barrier coating is typically required. Use Mock-Up and Site Tests as resource to establish requirements for this work.

#### Concrete Masonry Units (CMU): Install one liberal coat of barrier coating material by spray or roller in a uniform, continuous film to prepared CMU substrate. Backroll spray applications, and allow to dry. Install a second liberal coat in a uniform, continuous film, and backroll spray applications, to achieve a void and pinhole free surface.

##### Depending on condition of surface, provide at least 10 wet mils up to maximum of 30 wet mils thick per coat is required.

##### Apply additional coats if needed to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Specifier Note: Select applicable sheathing type as required for project from the following options.

#### Sheathing:

##### Glass Mat Faced Gypsum Sheathing: Install one coat of coating material by spray or roller in a uniform, continuous film at 10 wet mils thick to prepared glass mat gypsum substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

##### Plywood Sheathing: Install one coat of coating material by spray or roller in a uniform, continuous film at 10 wet mils thick to prepared plywood sheathing substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

##### OSB Sheathing: Install one coat of coating material by spray or roller in a uniform, continuous film at 10 wet mils thick to prepared OSB sheathing substrate and allow to dry. Install a second coat in a uniform, continuous film at 10 wet mils thick to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

## TOLERANCES

### Shim and align wall panel units with installed tolerances of 1/4 inch in 20 feet, non-cumulative, on level, plumb, and location lines as indicated.

## FIELD QUALITY CONTROL

Specifier Note: Edit following paragraph to identify who shall perform tests and inspections in compliance with project requirements.

### Testing Agency: **[Owner will engage]** or **[Engage]** a qualified independent testing agency to perform field tests and inspections.

Specifier Note: Edit following paragraph to verify wall panel system's resistance to water penetration, and coordinate with MOCK-UPS Article requirements in PART 1.

### Water-Spray Test: After installation and in coordination with mock-up requirements, test area of assembly **[shown on Drawings] [as directed by Architect]** or **[<Insert area>]** for water penetration in accordance with AAMA 501.2.

Specifier Note: Edit the following four paragraphs as required for factory-authorized service representative to perform tests and inspections.

### Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

### Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

### Perform additional tests and inspections, at Contractor's expense, to verify compliance of replaced wall panels or necessary additional work with specified requirements.

### Prepare test and inspection reports.

## CLEANING

### Upon completion of wall panel installation, clean finished surfaces as recommended by panel manufacturer.

### Upon completion of wall panel installation, clear weep holes and drainage channels of obstructions and dirt.

## PROTECTION

### Protect installed products from damage during subsequent construction.

### Replace wall panels damaged or deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION