SECTION 07 42 13
INSULATED METAL WALL PANELS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Insulated metal faced panels with polyurethane (polyisocyanurate) core.
B. Accessories including fasteners and perimeter trim.

1.2 RELATED SECTIONS

A. Section 05 40 00 - Cold-Formed Metal Framing.
B. Section 07 27 15.13 - Non-Bituminous Self-Adhering Sheet Air Barriers.
C. Section 07 62 00 - Sheet Metal Flashing and Trim.
D. Section 07 92 00 - Joint Sealants.
E. Section 08 91 19 - Fixed Louvers.

1.3 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
   1. AAMA 501.1 - Standard Test Method for Metal Curtain Walls for water penetration using Dynamic Pressure.
   2. AMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
B. American Society of Civil Engineers (ASCE):
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
C. ASTM International (ASTM):
   1. ASTM A480 - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
   2. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM A755 - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Pre-Painted by the Coil-Coating Process for Exterior Exposed Building Products.
4. ASTM A792 - Standard Specification for Steel Sheet, 55 percent Aluminum-Zinc Alloy-Coated by the Hot- Dip Process.
5. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
6. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
7. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
8. ASTM C209 - Standard Test Methods for Cellulosic Fiber Insulating Board.
9. ASTM C273 - Standard Test Method for Shear Properties of Sandwich Core Materials.
10. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
11. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
12. ASTM D224 - Standard Specification for Smooth-Surfaced Asphalt Roll.
13. ASTM D522 - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
14. ASTM D523 - Standard Test Method for Specular Gloss.
15. ASTM D714 - Standard Test Method for Evaluating Degree of Blistering of Paints.
16. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
17. ASTM D1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
18. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
19. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
20. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
21. ASTM D1654 - Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
22. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
23. ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
24. ASTM D2244 - Standard practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
25. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100 percent Relative Humidity.
26. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
27. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
28. ASTM D3359 - Standard Test Methods for Measuring Adhesion by Tape Test.
29. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test.
30. ASTM D4145 - Standard Test Method for Coating Flexibility of Pre-Painted Sheet.
31. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
32. ASTM D5894 - Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV Condensation Cabinet).
33. ASTM D6226 - Standard Test Method for Open Cell Content of Rigid Cellular Plastics.
34. ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
35. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
36. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
37. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
38. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
39. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
40. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials.
41. ASTM G154 - Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.

D. FM Global (FM):
   1. FM 4880 - Approval Standard for Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings, and Exterior Wall Systems.
   2. FM 4881 - Approval Standard for Class 1 Exterior Wall Systems.
E. International Building Code (IBC) - Current edition.
F. National Fire Protection Agency (NFPA):
   1. NFPA 259 - Standard Test Method for Potential Heat of Building Materials.
   2. NFPA 268 - Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source.
   3. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
G. International Organization for Standardization (ISO):
   1. ISO 14025: Environmental Labels and Declarations.
H. Underwriters Laboratory, USA (UL):
   1. UL 263 - Standard for Fire Tests of Building Construction and Materials.
I. Underwriters Laboratory of Canada (ULC):
   1. ULC-S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
   2. ULC-S102 - Standard Method of Test for Surface Building Characteristics of Building Materials and Assemblies.
   3. ULC-S127 - Standard Corner Wall Method of Test for Flammability Characteristics of Non-Melting Building Materials.
   4. ULC-S134 - Fire Test of Exterior Wall Assemblies.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 23 - Submittals.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with requirements.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods.
C. Shop Drawings: Submit detailed drawings and panel analysis showing: Profile, gauge of both exterior and interior sheet, location, layout and dimensions of panels, location and type of fasteners, Shape and method of attachment of all trim, locations and type of sealants, and Installation sequence.
   1. Coordination Drawings: Provide elevation drawings and building sections which show panels in relationship to required locations for structural support. Include panel details and details showing attachment to structural support.
   2. Other details as may be required for a weathertight installation.
D. Panel Analysis: Verify panels will withstand design loads indicated without detrimental effects or deflection. Include thermal differential effects between exterior and interior panel facings and resistance to fastener pullout.
E. Verification Samples: For each finish product specified, two samples, representing actual product, color, and patterns.
G. Miscellaneous Certifications:
   1. Submit documentation that products have been certified in accordance with ISO 14025.
H. Quality Assurance Submittals
   1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with requirements.
   2. Manufacturer Erection Instructions: Provide manufacturer's written installation instructions including proper material storage, material handling, installation sequence, panel location(s), and attachment methods, details and required trim and accessories.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Manufacturer shall have a minimum of five (5) years experience in the production of insulated wall panels. Manufacturer shall demonstrate past experience with examples of projects of similar type and exposure.
2. Manufacturer to be registered with a Program Operator with a Certified, Environmental Product Declaration, in conformance with ISO 14025, for Insulated Metal Panels.

B. Installer Qualifications: Authorized by the manufacturer and the work shall be supervised by a person having a minimum of five (5) years experience installing insulated wall panels on similar type and size projects.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Install one complete, operable unit including accessories, then test operation and make adjustments required for proper operation.
3. Do not proceed with remaining work until workmanship is approved by Architect.
4. Rebuild mock-up area as required to produce acceptable work.

1.6 PRE-INSTALLATION MEETINGS

A. Pre-installation meeting: Conduct a pre-installation meeting at the job site attended by Owner, Architect, Manufacturer's Technical Representative, Panel Installer, and Contractors of related trades. Coordinate structural support requirements in relation to insulated wall panel system, installation of any separate air/water barriers, treatment of fenestration, and other requirements specific to the project.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Store wall panel materials on dry, level, firm, and clean surface. Stack no more than two bundles high. Elevate one end of bundle to allow moisture run-off, cover and ventilate to allow air to circulate and moisture to escape.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

A. Limited Warranty: Standard form in which manufacturer agrees to repair or replace items that fail in materials or workmanship within specified warranty period. The items covered by the warranty include structural performance including bond integrity, deflection and buckling.
1. Warranty Period: Two years from date of Substantial Completion, or 2 years and 6 months from the date of shipment from manufacturer's plant, whichever occurs first.

B. Finish Warranty: Standard form in which manufacturer agrees to repair or replace metal panels that evidence deterioration of fluoropolymer finish, including flaking or peeling from approved primed metal substrate, chalk in excess of 8 when tested in accordance with ASTM D4214, Method A, and /or color fading in excess of 5 ΔE Hunter units on panels when tested in accordance with ASTM D2244.

C. Warranty Period: Twenty years from date of Substantial Completion, or 20 years and 3 months from the date of shipment from manufacturer's plant, whichever occurs first.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Kingspan, which is located at: 726 Summerhill Dr.; Deland, FL 32724; Toll Free Tel: 877-638-3266; Tel: 386-626-6789; Email: request info (info.na@kingspanpanels.com); Web: https://www.kingspan.com/us/en-us/about-kingspan/kingspan-insulated-panels.

B. Or approved equal. Requests for substitutions will be considered in accordance with provisions of Section 01 25 13 - Product Substitution Procedures.

2.3 INSULATED METAL PANELS

A. Basis of Design: Designwall 2000 Flat Panel.

D. Benchmark by Kingspan; a division of Kingspan Insulated Panels, Inc. (www.kingspanpanels.us)

1. East: 720 Marion Road, Columbus, Ohio 43207; 1-877-638-3266 (Toll Free) or 614-444-0110
2. West: 2000 Morgan Road, Modesto, California 95358; 1-800-377-5110 (Toll Free) or 209-531-9091

E. Or approved equal. Requests for substitutions will be considered in accordance with provisions of Section 01 25 13 - Product Substitution Procedures.

G. Design Criteria:

1. Wind Loads: As indicated on Drawings.
3. Deflection Criteria: L/180.

H. Performance Criteria:

1. Structural Test:
   a. Static: Structural performance shall be verifiable by witnessed structural testing for simulated wind loads in accordance with ASTM E72 or ASTM E330.
   b. Cyclic: Tested constructions meet the approval criteria of FM 4881 when installed as specified in the listing.
4. Fatigue Test: There shall be no evidence of metal/insulation interface delamination when the panel is tested by simulated wind loads of 20 psf (positive and negative loads), when applied for two million alternate cycles.
5. Bond Strength: No metal primer interface corrosion and/or delamination shall occur after 1000 hours at 135-degree F (57 degrees C) and 100 percent relative humidity. No delamination shall occur after 2-1/2 hours in a 2 psi 217-degree F (103 degrees C) autoclave.
6. Pressure Equalization: The typical horizontal and vertical joint system shall exhibit rapid pressure equalization when subjected to cyclic external pressure fluctuations applied in accordance with ASTM E1233. Panels shall be successfully tested using procedure similar to AAMA 508; modified as appropriate for insulated foam core panels with an integral vapor barrier. The liner sheet of the panel shall be considered as the imperfect air barrier during the test procedure.
7. Water Penetration:
   a. Dynamic: There shall be no uncontrolled water leakage when tested in accordance with AAMA 501.1 at a pressure differential of 15 psf.
   c. Static - 2-hour duration: Panel system shall demonstrate no water penetration when tested in accordance with ASTM E331 at 6.24 psf pressure differential for a two (2) hour duration to satisfy International Building Code, Section 1403.2.
8. Air Infiltration: Air infiltration through the panel shall not exceed 0.01 cfm/sf at 6.24 psf air pressure differential when tested in accordance with ASTM E283.
10. Water Absorption: There shall be no more than 0.127 percent water absorption by volume when a 12 x 12 inches (305 mm x 305 mm) laminated insulated metal wall panel sample is subjected to a 24-hour full water submersion in accordance with ASTM C209.
11. Thermal Performance: Polyisocyanurate (ISO) core panels shall provide the following R-Values as tested in accordance with ASTM C1363 or as determined from thermal modeling using Therm 5.2 software developed by Lawrence Berkley Laboratories:
    a. 2 inches (51 mm) thick Flat: R-14.
    b. 2.5 inches (64 mm) thick Flat: R-17.
    c. 3 inches (76 mm) thick Flat: R-21.
    d. 4 inches (102 mm) thick Flat: R-28.
    e. 2.5 inches (64 mm) thick Ribbed: R-11.
    f. 3 inches (76 mm) thick Ribbed: R-14.
    g. 4 inches (102 mm) thick Ribbed: R-22.

13. Fire Test Response Characteristics: Steel-faced panels with polyisocyanurate (ISO) core shall fully comply with Chapter 26 of International Building Code regarding the use of Foam Plastic. The following tests shall be available upon request for submission to the Authority Having Jurisdiction:
    a. FM 4880: Class I rated per FM Global, panels are approved for use without a thermal barrier and do not create a requirement for automatic sprinkler protection.
    b. ASTM E84 Surface Burning Characteristics; Finished panel shall have a Flame Spread equal to 0, and Smoke Developed equal to 35.
    c. NFPA 285 Intermediate Scale Multi-story Fire Evaluation; successfully passed acceptance criteria.
    d. UL 263 Fire Resistive Rating; classified as a component of a fire-rated wall assembly for 1-hour, 2-hour, or 3-hour rating with fire applied to either side, Design No. U053 (rated assemblies include appropriate layers of fire-rated Type X Gypsum board).
    e. ASTM D1929 Minimum Flash and Self-Ignition; established for foam core.
    f. NFPA 259 Potential Heat Content; established for foam core.
    g. NFPA 268 Exposure to a Radiant Heat Energy Source; successfully passed acceptance criteria.
    h. S102, S127, S134, S138 UL Canada fire test standards; successfully passed.
15. Insulating Core: Polyisocyanurate (ISO) core, ASTM C591 Type IV, CFC and HCFC free, compliant with Montreal Protocol and Clean Air Act, with the following minimum physical properties:
    a. Density Nominal: 2.0 pcf.
    b. Shear Strength: 21 psi.
    c. Compressive Strength: 25 psi.
    d. Tensile Strength: 36 psi.
    e. Closed Cell Content: 95 percent minimum.
    f. FM Global approvals: Class 1 per FM 4880.
    g. Surface burning characteristics of unfaced foam core when tested in accordance with ASTM E84:
        i. Flame Spread: less than 25.
        ii. Smoke Developed: less than 250.
    h. Ignition characteristics when tested in accordance with ASTM D1929:
        i. Self-Ignition: 915 degrees F (490 degrees C), minimum.
        ii. Flash Ignition: 839 degrees F (448 degrees C), minimum.
    i. Potential Heat Content per NFPA 259: 12,448 BTU/lb.

I. Exterior Paint Finish Characteristics for Panels:
1. Meeting the requirements of AAMA 621 for G90 galvanized steel or AZ50 Galvalume:
2. Meeting the requirements of AAMA 620 for coil-coated aluminum:
3. Gloss: 15 plus or minus 5 measured at 60-degree angle tested in accordance with ASTM D523.
4. Pencil Hardness: HB-H minimum tested in accordance with ASTM D3363.
5. Flexibility, T-Bend: 1-2T bend with no adhesion loss when tested in accordance with ASTM D4145.
6. Flexibility, Mandrel: No cracking when bent 180 degrees around a 1/8 mandrel as tested in accordance with ASTM D522.
7. Adhesion: No adhesion loss tested in accordance with ASTM D3359.
8. Reverse Impact: No cracking or adhesion loss when impacted 3000 x inches of metal thickness (lb-in), tested in accordance with ASTM D2794.
9. Abrasion Resistance: Nominal 65 liters of falling sand to expose 5/32 inch diameter of metal substrate when tested in accordance with ASTM D968.
10. Graffiti Resistance: Minimal effect.
11. Acid Pollutant Resistance: No effect when subjected to 30 percent sulfuric acid for 18 hours, or 10 percent muriatic acid for 15 minutes when tested in accordance with ASTM D1308.
12. Salt Fog Resistance: Passes 1000 hours, when tested in accordance with ASTM B117 (5 percent salt fog at 95 degrees F).
13. Cyclic Salt Fog and UV Exposure: Passes 2016 hours when tested in accordance with ASTM D5894.
14. Humidity Resistance: Passes 1500 hours at 100 percent relative humidity and 95 degrees F, with a test rating of 10 when tested in accordance with ASTM D2247 and D714.
15. Color Retention: Passes 5000 hours when tested in accordance with ASTM G153 and G154.
16. Chalk Resistance: Maximum chalk is a rating of 8 when tested in accordance with ASTM D4214, Method A.
17. Color Tolerances: Maximum of 5ΔE Hunter units on panels when tested in accordance with ASTM D2244.

K. Panel Assembly:
1. Panel thickness: As indicated.

6. Panel Width Flat Panels:
   e. As indicated on drawings.
9. Panel joint shall consist of fasteners and attachment clip completely concealed within the joint. Panel joint shall have two distinct lines of defense against water infiltration using continuous finned rubber gasket seal on both face and liner sheet. Horizontal panels shall have a nominal gutter height of 3-1/4 inches (83 mm).
10. Exterior Face of Panel:
    a. Material:
       iii. Coil material shall be in accordance with ASTM B209, 3003-H14 aluminum.
       vii. Gauge: 0.040 (aluminum).
    b. Profile: Flat, with no flutes, planking, or mild profiling of any type. Reveal width shall be as indicated on the Drawings.
    e. Exterior Texture: Smooth.
    g. Exterior Paint Finish Color:
       ii. Custom color as selected by Architect.
       iv. Finish System:
          a) c) 1.5 mil. Fluropolymer (PVDF) Three Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70 percent) METALLIC color coat and .5 mil clear coat.
          d) Interior Face of Panel:
    a. Material:
       vii. Gauge: 0.040 inch (1.0 mm) (aluminum).
    b. Profile: Standard flat, non-profiled.
    c. Texture: Smooth.
    d. Interior Finish: Modified polyester finish with a total minimum dry film thickness of 0.9 to 1.1 mil including primer.
       ii. Color: Selected from the current Kingspan Insulated Panels stock color chart.
12. Insulating Core: Precured, profiled, sanded flat, and fully inspected prior to lamination. Core material shall be polyisocyanurate (ISO).
13. Structural Adhesive: Type II Class 2 Structural Urethane Adhesive, 100 percent solids and 100 percent solvent free, evaluated and listed for sandwich panel construction by ICC Evaluation Service or other recognized agency.

2.5 ACCESSORIES

A. Fasteners:
   1. Self-drilling fasteners shall be corrosion resistant plated steel with neoprene washer, as recommended by manufacturer.
   2. Material: Hex-head type with steel and neoprene washer and 12-gauge stainless steel clip supplied by the manufacturer.
   3. Size: As recommended by manufacturer.
B. Perimeter Trim:
   1. Fabricated perimeter trim and metal flashing: Shall be same gauge, material and coating color as exterior face of insulated metal wall panel.
   2. Extruded perimeter trim: Shall be extruded aluminum 6063-T5 alloy with spray applied PVF coating in same color as exterior face of insulated metal wall panel.
C. Sealants: Butyl, non-skinning/curing type as recommended by manufacturer.
D. Butyl Tape: As recommended by manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Provide field measurements to manufacturer as required to achieve proper fit of the preformed wall panel envelope. Measurements shall be provided in a timely manner so that there is no impact to construction or manufacturing schedule.

B. Supporting Steel: All structural supports required for installation of panels shall be by others. Support members shall be installed within the following tolerances:
   1. Plus or minus 1/8 inch in 5 feet (3 mm in 1524 mm) in any direction along plane of framing.
   2. Plus or minus 1/4 inch (6 mm) cumulative in 20 feet (6096 mm) in any direction along plane of framing.
   3. Plus or minus 1/2 inch (13 mm) from framing plane on any elevation.
   4. Plumb or level within 1/8 inch (3 mm) at all changes of transverse for pre-formed corner panel applications.
   5. Verify that bearing support has been provided behind vertical joints of horizontal panel systems and horizontal joints of vertical panel systems. Width of support shall be as recommended by manufacturer.

C. Examine individual panels upon removing from the bundle; notify manufacturer of panel defects. Do not install defective panels.

3.2 PANEL INSTALLATION

A. Installation shall be in accordance with manufacturer's installation guidelines and recommendations.

B. Install panels plumb, level, and true-to-line to dimensions and layout indicated on approved shop drawings.

C. Cut panels prior to installing, where indicated on shop drawings, using a power circular saw with fine tooth carbide tip blade per manufacturer's instructions. Personnel should wear respiratory and eye protection devices.

D. Butyl Weather Barrier Sealant:
   1. Apply non-skinning butyl sealant as shown on shop drawings and manufacturer's installation instructions as necessary to establish the vapor barrier for the panels.
   2. Use non-skinning butyl tube sealant only for tight metal-to-metal contact.
   3. Do not use non-skinning butyl tube sealant to bridge gaps.

E. Place panel fasteners through pre-punched holes in attachment clips, concealed within the joint of the panel. Secure units to the structural supports. Space clips as recommended by manufacturer or otherwise indicated on the approved shop drawings.

3.3 TRIM INSTALLATION

A. Place trim and trim fasteners only as indicated per details on the approved shop drawings.

B. Field drill weep holes where appropriate in horizontal trim; minimum 1/4-inch (6 mm) diameter at 24 inches (610 mm) on center.

C. Place a continuous strip of butyl tube sealant between the inside back face of closure trims and interior panel faces for proper vapor seal.

3.4 SEALANT INSTALLATION FOR EXPOSED JOINTS

A. Clean and prime surfaces to receive exterior exposed sealants in accordance with sealant manufacturer's recommendations.

B. Follow sealant manufacturer's recommendations for joint width-to-depth ratio, application temperature range, size and type of backer rod, and compatibility of materials for adhesion.

C. Direct contact between butyl and silicone sealants shall not be permitted.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: General Contractor shall engage an independent testing and inspection agency acceptable to the architect to perform field tests and inspections and to prepare reports of findings.

B. Field Water Test: After completing portion of metal wall panel assembly including accessories and trim, test a 2-bay area selected by the architect for water penetration in accordance with AAMA 501.2.

3.6 CLEANING AND PROTECTION

A. Remove protective film immediately after installation.

B. Touch-up, repair or replace metal panels and trim that have been damaged.

C. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

1 **END OF SECTION**