SECTION 07 42 43

COMPOSITE WALL PANEL

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\*\* NOTE TO SPECIFIER \*\* ALPOLIC Materials; ALPOLIC Metal composite panel products.  
.  
This section is based on the products of ALPOLIC Materials, which is located at:  
401 Volvo Pkwy.  
Chesapeake, VA 23320  
Toll Free Tel: 800-422-7270  
Email: [request info (info@alpolic.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=ALPOLIC+Materials&coid=44082&rep=&fax=&message=RE:%20Spec%20Question%20(07430apl):%20%20&mf=)  
Web: <http://www.alpolic-americas.com>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos44/arc44082.html) ] for additional information.  
We're one of the world's leading manufacturers of aluminum and metal composite materials. Our light, rigid ACM and MCM panels have inspired new aesthetics and enabled new design possibilities over more than forty years of use. ALPOLIC materials make a visible difference - from corner stations to city skylines.  
ALPOLIC materials are high-quality aluminum and metal composite panels manufactured in Japan, Germany and the United States. Our Chesapeake, Virginia facility began production in 1991 and continues to set the North American standard for innovation and quality. Our selection of colors and finishes is unmatched. Our manufacturing, distribution and support capabilities extend worldwide. Our commitment to you means success.  
Skyscraper or schoolhouse, Office space or retail space, Dealership or gas station. Whatever you're building, build it better with ALPOLIC® composite materials. Let's Build.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Exterior composite aluminum panels
    2. Interior composite aluminum panels
    3. Metal Roof and Wall Panels.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 05 10 00 - Structural Steel.
    2. Section 05 40 00 - Cold-Formed Metal Framing.
    3. Section 07 60 00 Sheet Metal Flashing and Trim.
    4. Section 07 90 00 - Joint Sealers.
    5. Section 08 50 00 - Windows.
    6. Section 08 80 00 - Glazing.
    7. Section 08 44 00 - Curtain Wall.
    8. Section 09 00 00 - Finishes.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM B 32 - Standard Specification for Solder Metal soldering~ tin-antimony alloys~ tin-copper alloys~ tin-silver alloys
    2. ASTM B 69 - Standard Specification for Rolled Zinc
    3. ASTM C 393 - Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure Active.
    4. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
    5. ASTM D 732 - Standard Test Method for Shear Strength of Plastics by Punch Tool
    6. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
    7. ASTM D 1781 - Standard Test Method for Climbing Drum Peel for Adhesives.
    8. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics
    9. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
    10. ASTM E 8 - Standard Test Methods for Tension Testing of Metallic Materials Products and Services
    11. ASTM E 108 - (Modified) Standard Test Methods for Fire Tests of Roof Coverings.
    12. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.
    13. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors By Uniform Static Air Pressure Difference.
    14. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors By Uniform Static Air Pressure Difference.
    15. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
    16. AAMA 508 Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
    17. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Component
    18. UL 94 - Standard for Flammability of Plastic Materials for Parts in Devices and Appliances.
    19. ISO 9001-2000 Quality Management Systems - Requirements.
  1. DESIGN / PERFORMANCE REQUIREMENTS
     1. Performance Requirements: Provide composite metal panels which have been manufactured, fabricated and installed to withstand loads from deflection and thermal movement and to maintain performance criteria stated by manufacturer without defects, damage or failure.

\*\* NOTE TO SPECIFIER \*\* The following three subparagraphs are generally applicable only to curtain wall systems and large wall areas. Delete this Article altogether, or modify it as appropriate for simple composite panel installations. Alternatively, refer to system manufacturer's technical data for additional details. Edit text to suit project requirements; add text for performance criteria as applicable below.

* + 1. Deflection and Thermal Movement: Provide systems that have been tested and certified to conform to the following criteria under wind loading of [Specify test loading] psf ( \_\_ kPa) inward and [Specify test loading] psf (\_\_ kPa) outward.
       1. Normal Deflection: Deflection of perimeter framing member not to exceed L/175 normal to plane of the wall; deflection of individual panels not to exceed L/60.
       2. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
       3. Thermal Movements: Allow for free horizontal and vertical thermal movement, due to expansion and contraction of components over a temperature range from \_\_\_ to \_\_\_ degrees F (\_\_\_ - \_\_\_ degrees C).
          1. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
          2. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.

\*\* NOTE TO SPECIFIER \*\* Include the following paragraph for Apolic PE and RF panels only. Delete this Article if not applicable

* + 1. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:
       1. Air Leakage ASTM E 283: Not more than 0.06 (cfm)/sf of wall area (0.003 (L/s) m2), when tested at 1.57 psf (0.075 kPa).
       2. Water Penetration ASTM E 331: No water infiltration under static pressure at a differential of 10% of inward acting design load, 6.24 psf (0.299 kPa) minimum, after 15 minutes.
          1. Water penetration is defined as the appearance of uncontrolled water in the wall.
          2. Wall design shall feature provisions to drain to the exterior face of the wall any leakage of water at joints and any condensation that may occur within the construction

\*\* NOTE TO SPECIFIER \*\* Include the following paragraph for Apolic PE and RF Rainscreen applications only. Delete this Article if Rainscreen is not applicable

* + 1. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:
       1. Pressure Equalized Rain Screen Systems: Conform to the requirements of AAMA 508, Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
       2. Air Leakage ASTM E 283: Not more than 0.06 (cfm)/sf of wall area (0.003 (L/s) m2), when tested at 1.57 psf (0.075 kPa).
       3. Water Penetration ASTM E 331: No water infiltration under static pressure at a differential of 10% of inward acting design load, 6.24 psf (0.299 kPa) minimum, after 15 minutes.
          1. Water penetration is defined as the appearance of uncontrolled water in the wall.
          2. Wall design shall feature provisions to drain to the exterior face of the wall any leakage of water at joints and any condensation that may occur within the construction

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs to suit project performance requirements.

* + 1. Structural: Provide systems that have been tested in accordance with ASTM E 330 at a design pressure of \_\_\_ psf ( \_\_ kPa) and have been certified to be without permanent deformation or failures of structural members
    2. Fire Performance: Provide composite fire rated panels that have been evaluated and are in compliance with regulatory code agency requirements
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements [01 33 00].
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Preparation instructions and recommendations.
        2. Storage and handling requirements and recommendations.
        3. Installation methods.
     3. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage and accessories. Include details showing thickness and dimensions of the various system parts, fastening and anchoring methods, locations of joints and gaskets and location and configuration of joints necessary to accommodate thermal movement.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
    2. Verification Samples:
       1. Panel: 12 inch by 12 inch (305 mm by 305 mm) sample composite panels in thickness specified from an available stock color, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval. Include panel assembly samples not less than 24 inches by 24 inches (610 mm by 610 mm) showing 4-way.
       2. Color: Drawdown samples on aluminum substrate, not less than 3 inches by 5 inches (76 by 127 mm), of each color and finish selected for color approval. Larger samples of standard colors are available with production-applied coatings.
    3. Manufacturer's Certificates:.
       1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties, or a third party listing documenting compliance to a comparable code section.
       2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
       3. Manufacturer's Instructions: Manufacturer's installation instructions,
    4. Closeout Submittals:
       1. Manufacturer's cleaning and maintenance instructions.
       2. Warranty documents specified
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company with a minimum of 5 years of continuous documented experience manufacturing panel material of the type specified and able to provide certificate of registration of ISO 9001-2000.
        1. Provide a list of 5 other projects of similar size, including approximate date of installation and name of Architect for each
        2. Able to produce the composite material without outsourcing of the coating or laminating process.
     2. Fabricator Qualifications: Company with at least 3 years documented experience on similar sized metal panel projects and qualified by the panel material manufacturer. Capable of providing field service representation during construction.
     3. Installer Qualifications: Installer with documented experienced in performing work of this section who has specialized in the installation of work similar to that required for this project.
     4. Preinstallation Meeting: Conduct preinstallation meeting to verify project requirements, substrate conditions, installation instructions and warranty requirements.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
       1. Finish areas designated by Architect.
       2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
       3. Refinish mock-up area as required to produce acceptable work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. General: Comply with Section 01 60 00 - Product Requirements [01 60 00] Product Requirements Sections.
     2. Deliver and store products with identification labels intact in manufacturer's unopened, undamaged packaging until ready for installation.
     3. Handling: Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.
     4. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
        1. Protect panels from moisture and condensation with tarpaulins or other suitable weather tight covering installed to provide ventilation.
        2. Slope panels to ensure positive drainage of any accumulated water.
        3. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).
        4. Damage: Avoid contact with any other materials that might cause staining, denting or other surface damage.
  2. SEQUENCING
     1. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
     2. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  3. PROJECT CONDITIONS
     1. Substrate Tolerances: Provide a substrate with a tolerance of 1/4 inch in 20.0 feet (6 mm in 6 m), on level, plumb, and location control lines as indicated and within 1/8 inch (3 mm) offset of adjoining faces of alignment of matching profiles tolerances are noncumulative
     2. Field Measurements: Verify locations of wall framing members and wall opening dimensions by field measurements prior to fabrication of Composite Panel System. Indicate measurements on the "As Built Shop Drawings". Field measurements to be taken once all substrate materials and adjacent materials are installed
     3. 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 absolute limits.
  4. WARRANTY
     1. Panel Integrity: Submit Manufacturer's standard 10 year limited panel integrity warranty commencing on Date of Substantial Completion.

\*\* NOTE TO SPECIFIER \*\* Specify number of years. Contact the Manufacturer for more information on finish Warranty periods.

* + 1. Finish: \_\_\_ years commencing on Date of Substantial Completion

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: ALPOLIC Materials, which is located at: 401 Volvo Pkwy.; Chesapeake, VA 23320; Toll Free Tel: 800-422-7270; Email: [request info (info@alpolic.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=ALPOLIC+Materials&coid=44082&rep=&fax=&message=RE:%20Spec%20Question%20(07430apl):%20%20&mf=); Web: <http://www.alpolic-americas.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements [01 60 00].
  1. SOURCE QUALITY CONTROL
     1. Obtain composite panel products from a single manufacturer.
  2. ALUMINUM FACED COMPOSITE PANELS
     1. ALPOLIC/PE Aluminum Faced Composite Panel: Aluminum faced lightweight, rigid, bendable composite panels with a thermo-plastic core.
        1. Construction:
           1. Face Sheets:

Aluminum sheet of 3105-H14 alloy, 0.020 inch (0.51 mm) thick and finished as specified.

Sheets thermally bonded in continuous process to core material.

* + - * 1. Core: Polyethylene core material that meets performance characteristics specified when fabricated into composite assembly.
      1. Panel Size:

\*\* NOTE TO SPECIFIER \*\* Note Standard stock widths are 50 inches (1270 mm) and 62 inches (1575 mm) and lengths of 146 inches (3708 mm) and 196 inches (4978 mm). Custom sizes are available. Contact the manufacturer for additional information.

* + - * 1. Provide the sizes and configurations indicated on the Drawings.
        2. Panel Thickness.

\*\* NOTE TO SPECIFIER \*\* Select required panel thickness from the following paragraphs.

4 mm.

6 mm.

* + - 1. Bond Integrity: Tested for resistance to delamination as follows:
         1. Peel strength ASTM D 1781 - 22.5 in-lb/in (100 N-m/m) minimum.
      2. Fire Performance:
         1. Flame Spread, ASTM E 84 - Class A.
         2. Smoke developed, ASTM E 84 - Class A.
         3. Surface Flammability (Modified ASTM E108): Pass
         4. V-O Rating (4 mm): Comply with UL 94.I
      3. Product Transparency:
         1. Provide a Product Transparency Declaration (PTD) for the Composite Metal Panels.
      4. Production Tolerances:
         1. Width: +/- 2 mm.
         2. Length: +/- .012 inch per ft (1 mm/meter).
         3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
         4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
         5. Bow: Maximum 0.5% length or width.
         6. Squareness: Maximum 0.2 inch (5 mm).
         7. Edges of sheets shall be square and trimmed with no displacement of aluminum sheets or protrusion of core material.
    1. ALPOLIC/HD Aluminum Faced Composite Panel: Aluminum faced lightweight, rigid, bendable composite panels with a thermo-plastic core.
       1. Construction:
          1. Face Sheets:

Aluminum sheet of 3105-H14 alloy, 0.032 inch (0.81 mm) thick and finished as specified.

Sheets thermally bonded in continuous process to core material.

* + - * 1. Core:

Thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly.

Polyethylene core material that meets performance characteristics specified when fabricated into composite assembly.

* + - 1. Panel Size:

\*\* NOTE TO SPECIFIER \*\* Note Standard stock widths are 50 inches (1270 mm) and 62 inches (1575 mm) and lengths of 146 inches (3708 mm) and 196 inches (4978 mm). Custom sizes are available. Contact the manufacturer for additional information.

* + - * 1. Provide the sizes and configurations indicated on the Drawings.
        2. Panel Thickness.

\*\* NOTE TO SPECIFIER \*\* Select required panel thickness from the following paragraphs.

4 mm.

6 mm.

* + - 1. Bond Integrity: Tested for resistance to delamination as follows:
         1. Peel strength ASTM D 1781 - 22.5 in-lb/in (100 N-m/m) minimum.
      2. Fire Performance:
         1. Flame Spread, ASTM E 84 - Class A.
         2. Smoke developed, ASTM E 84 - Class A.
         3. Surface Flammability (Modified ASTM E108): Pass
         4. V-O Rating (4 mm): Comply with UL 94.I
      3. Product Transparency:
         1. Provide a Product Transparency Declaration (PTD) for the Composite Metal Panels.
      4. Production Tolerances:
         1. Width: +/- 2 mm.
         2. Length: +/- .012 inch per ft (1 mm/meter).
         3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
         4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
         5. Bow: Maximum 0.5% length or width.
         6. Squareness: Maximum 0.2 inch (5 mm).
         7. Edges of sheets shall be square and trimmed with no displacement of aluminum sheets or protrusion of core material.
    1. ALPOLIC/FR Aluminum Faced Fire Retardant Composite Panel: Aluminum faced lightweight, rigid, bendable composite panels with a thermo-plastic core.
       1. Construction:
          1. Face Sheets:

Aluminum sheet of 3105-H14 alloy, 0.020 inch (0.51 mm) thick and finished as specified.

Sheets thermally bonded in continuous process to core material.

* + - * 1. Core: Thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly.
      1. Panel Size:

\*\* NOTE TO SPECIFIER \*\* Note Standard stock widths are 50 inches (1270 mm) and 62 inches (1575 mm) and lengths of 146 inches (3708 mm) and 196 inches (4978 mm). Custom sizes are available. Contact the manufacturer for additional information.

* + - * 1. Provide the sizes and configurations indicated on the Drawings.
        2. Panel Thickness.

\*\* NOTE TO SPECIFIER \*\* Select required panel thickness from the following paragraphs.

4 mm.

6 mm.

* + - 1. Bond Integrity: Tested for resistance to delamination as follows:
         1. Peel strength ASTM D 1781 - 22.5 in-lb/in (100 N-m/m) minimum.
      2. Fire Performance:
         1. Flame Spread, ASTM E 84 - Class A.
         2. Smoke developed, ASTM E 84 - Class A.
         3. Surface Flammability (Modified ASTM E108): Pass
         4. Ignition Temperature:

Flash, ASTM D1929: 716 degrees F (380 degrees C)

Ignition: 752 degrees F (400 degrees C)

* + - * 1. Flammability, Exterior, Non-load-bearing wall assemblies and panels, NFPA 285: Pass.
      1. Product Transparency:
         1. Provide a Product Transparency Declaration (PTD) for the Composite Metal Panels.
      2. Production Tolerances:
         1. Width: +/- 2.0 mm.
         2. Length: +/- .012 inches per ft (1 mm/meter).
         3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
         4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
         5. Bow: Maximum 0.5% length or width.
         6. Squareness: Maximum 0.2 inch (5.1 mm).
         7. Edges of sheets shall be square and trimmed with no displacement of aluminum sheets or protrusion of core material.
    1. ACCESSORIES
       1. Provide fabricator's standard accessories, including fasteners, clips, anchorage devices and attachments for specific applications indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Include the following paragraph as required and applicable to project requirements. Delete the paragraph that is not applicable.

* 1. ALPOLIC ALUMINUM BRAKE METAL
     1. Description: Aluminum Sheet: Aluminum sheet finished to match panels. For use in forming roof caps, flashing, fascia trim, accents and other complex forms using a sheet metal brake.
        1. Construction:
           1. Face Sheets: Aluminum sheet of 3105-H14 alloy, 0.032 inch (0.81 mm) thick and finished as specified.
           2. Optional polyethylene core material that meets performance characteristics specified where indicated.

\*\* NOTE TO SPECIFIER \*\* Note Standard stock flat panel are 48 inches (1219 mm) wide by 120 inched (3048 mm) long. Contact the manufacturer for additional information.

* + - 1. Panel Size: Provide the sizes and configurations indicated on the Drawing

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required and applicable to project requirements. Delete the paragraphs that are not applicable.

* 1. ALUMINUM PANEL FINISH

\*\* NOTE TO SPECIFIER \*\* The following two paragraphs include Fluorocarbon Panel Finishes and Anodized Finishes available. Select the finish(s) material(s) required and delete those that are not applicable. If multiple finishes are required indicate the location of each on the Drawings.

* + 1. Panel Finish:
       1. Material: FEVE LUMIFLON finish, fluorocarbon paint system meets performance requirements of AAMA 2605 (standard).
       2. Material: Kynar PVDF resin based fluoropolymer coil coat meets performance requirements of AAMA 2605 (custom).

\*\* NOTE TO SPECIFIER \*\* Select the fluorocarbon color required from the following paragraphs and delete the those not applicable. Contact ALPOLIC Customer Service for current available stock colors and additional information.

* + - * 1. Color:

Stock color as selected from Manufacturer's standard colors.

Custom color as selected from Manufacturer's custom colors.

* + - * 1. Tolerance:

Color: DE 2.5 max from standard

Gloss: Nominal plus or minus 10 units

* + - 1. Warranty:
         1. Standard panel warranty: 10 Year
         2. Finish warranty: Standard Manufacturer's warranty.
    1. Anodized Finish:

\*\* NOTE TO SPECIFIER \*\* Select the Anodized Finish required and delete those not required.

* + - 1. Finish: AA-C22-A41 Architectural Class I, clear.
      2. Finish: AA-C22-A44 Architectural Class I, black.
      3. Finish: AA-C22-A44 Architectural Class I, light bronze.
      4. Finish: AA-C22-A44 Architectural Class I, medium bronze.
      5. Finish: AA-C22-A44 Architectural Class I, dark bronze.
  1. COMPOSITE NATURAL METAL PANELS
     1. ALPOLIC Stainless Steel Faced Composite Panel.
        1. Construction:
           1. Face Sheets:

Stainless steel thermally bonded to a fire resistant mineral faced core material.

Finish:

\*\* NOTE TO SPECIFIER \*\* Select the Finish required and delete those not required.

Polished finish

Dull finish

Hairline finish

* + - * 1. Core: Thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly.
      1. Panel Size/Tolerance:

\*\* NOTE TO SPECIFIER \*\* Note Standard stock width is 1000 mm and 7200 mm long. Custom sizes are available. Contact the manufacturer for additional information.

* + - * 1. Provide the sizes and configurations indicated on the Drawings.
        2. Panel Thickness. 4 mm.
        3. Tolerance, Width: +/- 2.0 mm.
        4. Tolerance, Length: +/- 0.012" per ft (1 mm/meter).
        5. Tolerance, Thickness: +/- 0.2 mm.
        6. Tolerance, Bow: Maximum 0.5% of length or width.
        7. Tolerance, Squareness: Maximum 5.0 mm.
      1. Physical Properties: Tested for resistance to delamination as follows:
         1. Tensile Strength ASTM E 8: 8.6 kg/mm2.
         2. Yield Strength ASTM E 8: 7.0 kg/mm2.
         3. Elongation ASTM E 8: 12.6%.
         4. Flexural Elasticity ASTM C 393: 7200 kg/mm2.
         5. Flexural Rigidity ASTM C 393: 38 x 103 kg x mm2/mm.
         6. Punching Shear Resistance, Maximum Load, 50 mm diameter ASTM D 732: 3517 kg.
         7. Punching Shear Resistance ASTM D 73: 5.6 kg/mm2.
      2. Fire Performance:
         1. Surface Burning Characteristics, Flamespread Index ASTM E 84: Passed.
         2. Surface Burning Characteristics, Smoke Developed Index ASTM E 84: Passed.
         3. Surface Flammability Modified ASTM E 108: Pass.
    1. ALPOLIC Titanium Faced Composite Panel.
       1. Construction:
          1. Face Sheets:

Titanium face sheet and 0.3 mm stainless steel back sheet thermally bonded to a fire resistant mineral faced core material.

Finish:

Dull finish

* + - * 1. Core: Thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly.
      1. Panel Size/Tolerance:

\*\* NOTE TO SPECIFIER \*\* Note Standard stock width is 1219 mm and 3708 mm long. Custom sizes are available. Contact the manufacturer for additional information.

* + - * 1. Provide the sizes and configurations indicated on the Drawings.
        2. Panel Thickness. 4 mm.
        3. Tolerance, Width: +/- 2.0 mm.
        4. Tolerance, Length: +/- 0.012" per ft (1 mm/meter).
        5. Tolerance, Thickness: +/- 0.2 mm.
        6. Tolerance, Bow: Maximum 0.5% of length or width.
        7. Tolerance, Squareness: Maximum 5.0 mm.
      1. Physical Properties: Tested for resistance to delamination as follows:
         1. Tensile Strength ASTM E 8: 7.0 kg/mm2.
         2. Yield Strength ASTM E 8: 6.1 kg/mm2.
         3. Elongation ASTM E 8: 111.1%.
         4. Flexural Elasticity ASTM C 393: 5000 kg/mm2.
         5. Flexural Rigidity ASTM C 393: 27 x 103 kg x mm2/mm.
         6. Punching Shear Resistance, Maximum Load, 50 mm diameter ASTM D 732: 3080 kg.
         7. Punching Shear Resistance ASTM D 732: 4.9 kg/mm2.
      2. Fire Performance:
         1. Surface Burning Characteristics, Flamespread Index ASTM E 84: Passed.
         2. Surface Burning Characteristics, Smoke Developed Index ASTM E 84: Passed.
         3. Surface Flammability Modified ASTM E 108: Pass.
    1. ALPOLIC Zinc Faced Composite Panel.
       1. Construction:
          1. Face Sheets: Architectural rolled zinc alloy, ASTM B 69.

Top outer layer of VM ZINC Quartz Zinc "skin" with dark gray aspect and luminance "Y" from 22 and 25 on exposed side as measured to CIELAB 0/45 values.

Core: Thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly.

Bottom outer layer of VM ZINC Quartz Zinc "skin" with dark gray aspect and luminance "Y" from 22 and 25 on exposed side as measured to CIELAB 0/45 values.

Stock panel thickness is 4 mm. Glazed systems are provided in 6 mm thickness.

Finish: VM ZINC Quartz Zinc finish.

* + - 1. Product Performance:
         1. Bond Integrity: No adhesive failure when tested to ASTM D 1781.

Peel Strength: 22 in-lb/in as manufactured.

Peel Strength: 22 in-lb/in after 8 hours in water at 200 degrees F (93 degrees C).

Peel Strength: 22 in-lb/in after 21 days soaking in water at 70 degrees F (21 degrees C).

* + - * 1. Product Tolerances:

Width: +/- 0.08 inch (2 mm).

Length: +/- 0.012 inch per ft (1 mm/meter).

Thickness: 4 mm: +/- 0.008 inch (0.2 mm) 6 mm: +/- 0.008 inch (0.2mm)].

Bow: Maximum 0.5% of length and/or width.

Squareness: 0.2 inch (5 mm), maximum.

* + - * 1. Surface Burning Characteristics of Exposed Exterior Surfaces:

Flamespread Index, ASTM E 84: 25 or less.

Smoke Developed Index, ASTM E 84: 450 or less.

* + - * 1. Fire Performance: Meets requirements of NFPA 285.
    1. ACCESSORlES
       1. Flashing and Trim:
          1. Shop or field-fabricated from zinc-alloy sheets or ZCM material.

\*\* NOTE TO SPECIFIER \*\* Specify flashing and trim thickness. Specify thicker products where trim with level surface may be required for aesthetic reasons.

* + - * 1. Minimum Thickness: 0.031 inch (0.80 mm).
        2. Seal against weather.
        3. Provide finished appearance.
        4. Provide pull-out resistance and flatness.
        5. Match surface aspect of adjacent metal wall panels.
        6. Flashing Backside Coating:

Coating Thickness: 60 microns.

Abrasion Resistance, ASTM D 968, Method B: 140 liters, minimum.

* + - * 1. Backer plates: Provide metal backing plates at panel edges, terminations, openings, splices, and where recommended by manufacturer, consisting of Zinc Plus or stainless steel sheet goods formed in configuration and thickness recommended by manufacturer.
        2. Cleats: Continuous G90 galvanized cleats, formed in configuration, and thickness as recommended by the manufacturer, minimum 0.0239 inch (0.60 mm)
        3. Ventilation Screen: 51% open perforated zinc, 0.039 inch (1.00 mm) thickness, by metal wall panel manufacturer.
      1. Exposed Fasteners:
         1. Self tapping screws, bolts, self locking rivets and other suitable fasteners designed to withstand design loads.
         2. Material: 300 series stainless steel.
         3. Heads: Factory applied coating to match color of metal.
      2. Solder and Stripping for Accessories:
      3. Solder for Zinc-Alloy: ASTM B 32, 60 percent lead and 40 percent tin with low antimony, as recommended by manufacturer.
      4. Stripping:
         1. "Stay-Clean" soldering flux for removal of zinc-alloy pre-weathering layer.
         2. Abrasive disc for removal of backside coating.
  1. METAL ROOF AND WALL PANELS
     1. ALPOLIC Copper Composite Panel CCM.
        1. Construction:
           1. Face Sheets:

Copper face sheets thermally bonded to a fire resistant mineral faced core material.

Finish:

Natural Copper

* + - * 1. Core: Thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly.
      1. Panel Size/Tolerance:

\*\* NOTE TO SPECIFIER \*\* Note Standard stock width is 965 mm and 4978 mm long. Custom sizes are available. Contact the manufacturer for additional information.

* + - * 1. Provide the sizes and configurations indicated on the Drawings.
        2. Panel Thickness. 4 mm.
        3. Tolerance, Width: +/- 2.0 mm.
        4. Tolerance, Length: +/- 0.012 inch per ft (1 mm/meter).
        5. Tolerance, Thickness: +/- 0.2 mm.
        6. Tolerance, Bow: Maximum 0.5% of length or width.
        7. Tolerance, Squareness: Maximum 5.0 mm.
      1. Physical Properties: Tested for resistance to delamination as follows:
         1. Tensile Strength ASTM E 8: 9999 psi machine direction /9435 psi cross direction.
         2. Yield Strength ASTM E 8: 7920 psi..
         3. Elongation ASTM E 8: 22.1% machine direction / 26.2% cross direction.
         4. Punching Shear Resistance (ASTM D732): 5446 psi..
      2. Fire Performance:
         1. Surface Burning Characteristics, Flamespread Index ASTM E 84: Passed.
         2. Surface Burning Characteristics, Smoke Developed Index ASTM E 84: Passed.
  1. FABRlCATlON
     1. General: Shop fabricate to sizes and joint configurations indicated on Drawings.
        1. Where final dimensions cannot be established by field measurements, provide allowance for field adjustment as recommended by the fabricator.
        2. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.
        3. Fabricate with sharply cut edges and no displacement of aluminum sheet or protrusion of core

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
      3. Substrate shall have a tolerance of 1/4 inch in 20.0 feet (6mm in 6m), on level, plumb, and location control lines as indicated and within 1/8 inch (3mm) offset of adjoining faces of alignment of matching profiles tolerances are noncumulative
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. General: Install in accordance with manufacturer's product data and instructions, including product technical bulletins, product catalog installation instructions and product carton instructions..
         1. Install panels plumb, level and true in compliance with fabricator's recommendations.
         2. Anchor panels securely in place in accordance with fabricator's approved shop drawings.
         3. Comply with fabricator's instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
         4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch in 20 feet (6.4 mm in 6.1 m), noncumulative.
      2. Coordinate with adjacent construction and related products.
   4. FIELD QUALITY
      1. Field Quality Control: Comply with panel system fabricator's recommendations and guidelines for field forming of panels.
      2. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator's instructions.

\*\* NOTE TO SPECIFIER \*\* Specify number and duration of periodic site visits

* + - 1. Site Visits:
  1. ADJUSTING AND CLEANING
     1. Adjusting:
        1. Repair panels with minor damage such that repairs are not discernible at a distance of 10 feet (3 m).
        2. Remove and replace panels damaged beyond repair.
        3. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.
        4. Remove from project site damaged panels, protective film and other debris attributable to work of this section.
     2. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris
  2. FIELD QUALITY
     1. Field Quality Control: Comply with panel system fabricator's recommendations and guidelines for field forming of panels.
     2. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator's instructions.
  3. PROTECTION
     1. Protect installed products until completion of project.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION