SECTION 07 42 13.23 – ALUMINUM COMPOSITE MATERIAL WALL PANELS

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PART 1 – GENERAL

1.01 RELATED DOCUMENTS

1. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

1. Definitions:
   1. An Aluminum Composite Material (ACM) panel consists of a thermoplastic core bonded on both sides to a sheet of aluminum.
   2. An ACM panel system consists of shop-fabricated ACM panels with aluminum panel components, panel attachment components, joint components, and miscellaneous materials to provide a weather-resisting, exterior wall covering.
2. Section Includes:
   1. Exterior installation and performance of panels and panel system components.
3. Related Sections:

Delete any of the following divisions that do not apply.

* 1. Division 03 – Concrete: Cast-In-Place Concrete
  2. Division 04 – Masonry: Unit Masonry
  3. Division 05 – Metals: Cold-Formed Metal Framing
  4. Division 05 – Metals: Structural Aluminum Framing
  5. Division 06 – Wood, Plastics, and Composites: Sheathing
  6. Division 07 – Thermal and Moisture Protection: Thermal Insulation
  7. Division 07 – Thermal and Moisture Protection: Weather Barriers
  8. Division 07 – Thermal and Moisture Protection: Fluid-Applied Membrane Air Barriers
  9. Division 07 – Thermal and Moisture Protection: Sheet Metal Flashing and Trim
  10. Division 08 – Openings: Aluminum Windows
  11. Division 08 – Openings: Glazing
  12. Division 08 – Openings: Glazed Aluminum Curtain Walls

1.03 REFERENCES

1. General: Referenced Standards, including revisions by issuing authority, form a part of this Section to the extent indicated. Standards listed have either been identified by the 2018 International Building Code (IBC) or local building code or are specific requirements for this building construction type.
2. Aluminum Association (AA):
3. ADM: Aluminum Design Manual: Part 1 – A Specification for Aluminum Structures
4. AA-M12C23A31: Anodized – Clear Coating

AA – Aluminum Association Designation

M12 – Mechanical finish (M) / As Fabricated (1) / Nonspecular as fabricated (2)

C23 – Chemical finish (C) / Etched (2) / Coarse matte (3)

A31 – Anodic Coatings (A) / Architectural Class II 0.4 to 0.7 mil (3) / Clear (1)

1. AA-M12C23A34: Anodized – Color Coating

AA – Aluminum Association Designation

M12 – Mechanical finish (M) / As Fabricated (1) / Nonspecular as fabricated (2)

C23 – Chemical finish (C) / Etched (2) / Coarse matte (3)

A34 – Anodic Coatings (A) / Architectural Class II 0.4 to 0.7 mil (3) / Electrolytically deposited color (4)

1. American Architectural Manufacturers Association (AAMA):
2. AAMA 501.1 Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure

Retain AAMA 501.2 reference if jobsite mock-ups are required.

1. AAMA 501.2 Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems
2. AAMA 509 Voluntary Test and Classification Method for Drained and Back Ventilated Rain Screen Wall Cladding Systems
3. AAMA 609 & 610 Cleaning and Maintenance Guide for Architecturally Finished Aluminum
4. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels
5. American Concrete Institute (ACI):
6. ACI 318: Building Code Requirements for Structural Concrete
7. American Iron and Steel Institute (AISI):
8. AISI S100: North American Specification for the Design of Cold-formed Steel Structural Members, 2016
9. American Society of Civil Engineers (ASCE):
10. ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
11. American Wood Council (AWC):
12. ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction – with 2018 NDS Supplement
13. ASTM International (ASTM):
14. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
15. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
16. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
17. ASTM C645 Standard Specification for Nonstructural Steel Framing Members

Retain ASTM D635 reference for IBC 2012 & 2015 applications with ACM installations up to 75 feet in height. Delete for IBC 2009 applications.

1. ASTM D635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position

Retain ASTM D1929 reference for IBC 2009 applications with ACM installations up to 50 feet in height and for IBC 2012 & 2015 applications with ACM installations up to 50 & 75 feet in height.

1. ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics
2. ASTM D2244 Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
3. ASTM D4214 Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
4. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
5. 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
6. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
7. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
8. ASTM E529 Standard Guide for Conducting Flexural Tests on Beams and Girders for Building Construction
9. National Fire Protection Association (NFPA):
10. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components
11. The Masonry Society (TMS):
12. TMS 402/602: Building Code Requirements and Specification for Masonry Structures

1.04 SYSTEM DESCRIPTION

1. Performance Requirements:
2. General: Provide installed panel system designed to withstand project-specific design wind loads while maintaining Installation Requirements, Testing Requirements, and Deflection and Thermal Movement Requirements without defects, damage, or failure as defined by Manufacturer and required by this Section.
3. Installation Requirements:
4. Types I, II, III, and IV Construction:
5. To any height above grade in accordance with provisions of IBC Section 1406.10, or
6. Up to 40 feet above grade in accordance with provisions of IBC Section 1406.11.1, or
7. Up to 50 feet above grade in accordance with provisions of IBC Section 1406.11.2, or
8. Up to 75 feet above grade (Option 1) in accordance with provisions of IBC Section 1406.11.3, or
9. Up to 75 feet above grade (Option 2) in accordance with provisions of IBC Section 1406.11.4
10. Type V Construction: To any height above grade in accordance with provisions of IBC Section 1406.12
11. Testing Requirements:
12. AAMA 509:
13. ASTM E283: At a pressure of 1.57 psf, air flow measurement across panel system (excluding jamb conditions) shall be measured to determine V-axis classification on Chart 1b from AAMA 509.
14. ASTM E331 and AAMA 501.1: At pressures of 6.24 psf and 12.0 psf for both, average water from four (4) tests shall be collected, measured, and averaged to determine W-axis classification on Chart 1b from AAMA 509:
    1. Panel system shall have a classification where V-axis classification number is greater than or equal to W-axis classification number (e.g., V2/W2 is acceptable; V1/W2 is not acceptable).
15. ASTM E283: Air flow measurement across panel system (excluding jamb conditions) shall not exceed 0.06 cfm per sf of wall area when tested to a pressure difference of 1.57 psf and 6.24 psf.
16. ASTM E330: Panel system must be engineered to meet project-specific design wind loads for strength and serviceability requirements. In addition, panel system must meet or exceed Deflection and Thermal Movement Requirements when tested to a minimum pressure of +/-40.0 psf.
17. ASTM E331: Water penetration across panel system shall not occur when tested to a pressure difference of 12.0 psf.
18. NFPA 285: Exterior wall assemblies including panel system shall meet Conditions of Acceptance where required by code based on design of this project.
19. Deflection and Thermal Movement Requirements: Provide installed panel system that has been designed to resist project-specific wind loads, acting both inward and outward:
20. Perimeter Framing Deflection: Deflection of panel perimeter framing member shall not exceed L/175 normal to plane of wall, where L is unsupported span of perimeter framing member between fastener locations.
21. Panel Deflection: Deflection of panel face shall not exceed L/60 normal to plane of wall, where L is unsupported span of panel between load transfer locations.
22. At 150% wind load pressure, no permanent deformation exceeding L/1000 or failure of structural members is permitted.
23. Thermal Movement: Allow for free and noiseless horizontal and vertical thermal movement due to expansion and contraction of component parts over temperature range of -20°F to +180°F at panel surface:
    1. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement are not permitted.
    2. Shop-fabrication and installation procedures shall consider ambient temperature range at time of respective operation.

1.05 SUBMITTALS

1. General: Provide submittals in accordance with Conditions of Contract and Division 01 Submittal Procedures Section as follows:
2. Product Data: Submit material descriptions, dimensions of individual components and profiles, and finishes for panel system.
3. Panel system:
4. Submit system-specific design details including, but not limited to, panels and insert strips, perimeter extrusions, panel stiffeners, and starter, joint, and end clips.
5. Submit design data including, but not limited to, material properties, section properties, and capacities for each panel system component. Design data shall be supported by a qualified Design Professional licensed in the state of primary research and development, design, and manufacturing of the panel system.
6. Submit panel system guide information.
7. Submit Shop Drawings indicating, but not limited to, elevations and reflected ceiling plans with joint locations and panel sizes; sections with relevant dimensions; edge conditions; interfaces with dissimilar materials; corners and transitions; flashings, venting, fasteners, caulks, accessories; and/or colors.
8. Samples:
9. Selected Samples: Submit Manufacturer’s color charts or chips illustrating full range of colors, finishes, patterns, and textures available for panels with factory-applied finishes. Custom color selection requires color sample to be submitted for approval. Approval signature(s) are required by [**Owner**] [**Architect**].
10. Verification Samples:
11. Panel system assembly: Submit 11-1/2 inches x 11-1/2 inches, or size as required, demonstrating panel system assembly. Samples to be provided in thickness specified, including panels, insert strips, perimeter extrusions, panel stiffeners, and/or starter, joint, and end clips. Panel system sample need not be provided in specified color.
12. Submit two samples of each color or finish selected that measure approximately 3 inches x 4 inches, minimum.
13. Custom color samples may contain drawdown lines. Sizes for custom color samples may vary.
14. Quality Assurance Submittals:
15. ACM Material Certification: Submit official written statement from Manufacturer documenting product raw materials meet specified, applicable Referenced Standards. Certification shall be backed by test reports and/or material certificates.
16. ACM Panel Certification: Submit official written statement from Manufacturer documenting panels comply with specified Composition and Testing Requirements. Certification shall be backed by test reports.
17. ACM Panel System Certification: Submit official written statement from Manufacturer/Fabricator documenting panel system complies with specified Installation Requirements, Testing Requirements, and Deflection and Thermal Movement Requirements. Certification shall be backed by test reports.
18. Closeout Submittals:
19. Warranty: Submit Manufacturer and Installer warranty documents as specified within Warranty Section.
20. Maintenance: Submit Manufacturer’s recommendations document for Cleaning and Maintenance of panel system.

1.06 QUALITY ASSURANCE

1. Qualifications:
2. Manufacturer Qualifications: A company with a minimum of 20 years of continuous experience manufacturing ACM panels in United States of America of type specified:
3. Able to provide specified warranty on finish.
4. Able to provide list of other projects of similar size including approximate date of installation for each.
5. Fabricator Qualifications: Possess MCM Fabricator Certification through Metal Construction Association (MCA), or meet the following requirements and provide supporting documentation at least ten (10) days prior to Bid:
6. Submit official written statement from at least one (1) specified ACM Panel Manufacturer demonstrating shop fabrication of a minimum of 150,000 square feet of MCM per year at least 0.157 inch (4 mm) in thickness and used on architectural walls as part of the exterior wall envelope.
7. Panels and panel system components shall be shop fabricated.
8. Fabrication of other panel types or fabricator’s goods does not qualify.
9. Shall have:
   1. Been in business under present company name for at least five (5) years prior to start of project.
   2. Not have filed for protection from creditors under state or federal insolvency or debtor relief statues or codes.
10. Submit official written statement from at least one (1) specified ACM Panel Manufacturer, demonstrating a working relationship with the Fabricator/Installer for at least three (3) consecutive years and at a scale of operations cited above.
11. Installer Qualifications:
12. Installer shall have:
    1. Been in business of similar trade and under present company name for at least five (5) years prior to start of project.
    2. Experience with similar-sized ACM panel system projects.
    3. Installed at least three (3) successful projects of specified or similar ACM panel system within last five (5) years:
    4. Acceptable, varying combinations of successful projects and/or years of experience shall be determined at discretion of Manufacturer.
13. Installer must be capable of providing field service representation during installation.
14. Regulatory Code Agencies Requirements: Where required, provide panel system that has been evaluated and/or is in compliance with the following:
15. International Code Council (ICC)

Retain the following section if jobsite mock-ups are required.

1. Mock-Ups: Install panel system mock-up at project jobsite using acceptable products and Manufacturer-approved details. Obtain [**Owner’s**] [**Architect’s**] acceptance of finish color (drawdown samples to be used for color approval of nonstandard coil coated colors), texture and pattern, and workmanship standard. Comply with Division 01 Quality Control, Mock-Up Requirements Section:
2. Size: Provide as detailed in construction documents if stand-alone mock-up is required.
3. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of when no longer required.
4. Incorporation: Mock-up may be incorporated into final construction upon Owner’s approval.
5. Additional Cost: Material required for custom color mock-ups may require special small quantity runs that increase cost and require additional time to obtain material.
6. Pre-installation Meeting: Conduct pre-installation meeting to verify project-specific requirements, substrate conditions, and Manufacturer’s installation details.

1.07 DELIVERY AND STORAGE

1. Upon receipt, perform visual inspection of panels and inventory to identify any damages that may have occurred during shipping or any missing panels.
2. Storage:
3. Store panels horizontally on pallets in dry, well-ventilated environment under protection of temporary or permanent structure. If required to be stored in exterior area, panels must be placed under well-ventilated, waterproof covering.
4. Store panels minimum of 4 inches above ground level to avoid contact with standing moisture (e.g., water, snow, etc.).
5. Store panels in an area protected from construction activities and associated debris.
6. Storage temperatures are not to exceed 120°F. Protect panels from moisture and direct sunlight while on jobsite.
7. Do not stack more than 1500 pounds of panels on one pallet. Other materials shall not be stacked on, or placed in contact with, panels to prevent staining, denting, or other damage.

1.08 PROJECT CONDITIONS

1. Substrate Tolerances: General Contractor is responsible for providing acceptable substrate per Manufacturer’s requirements including:
2. Adjacent substrate surface out-of-plane offset: +/- 1/8 inch
3. Level, plumb, and location control line deviation: 1/4 inch in any 20 feet
4. Building elevation direction deviation: +/- 1/2 inch
5. Field Measurements: Verify locations of wall framing members and wall opening dimensions by field measurements prior to shop-fabrication of panel system. Field measurements shall be taken once all substrate materials and adjacent materials are installed.

1.09 WARRANTY

1. Project Warranty: Refer to Conditions of Contract for project warranty provisions.
2. ACM Manufacturer’s Material Warranty: Manufacturer shall submit to Owner standard warranty document executed by authorized company official. Warranty shall be in addition to, and not a limitation of, other rights Owner may have under Contract Documents:
3. Warranty Period:
4. Material and Product Integrity: Five (5) years against delamination at any manufactured bond line.
5. Coil-Coated PVDF/Kynar 500 Painted Finish: Thirty (30) years against:
6. Chalking in excess of numerical rating of eight (8) when measured in accordance with ASTM D4214, Method A.
7. Fading or color change in excess of five (5) E units (NBS) when calculated in accordance with ASTM D2244, paragraph 6.3.
8. Cracking, chipping, splitting, blistering, peeling, or loss of adhesion. Minute fracturing (i.e., crazing or cracking) as a result of routing and bending of panels shall be excluded.
9. Spray-Applied PVDF/Kynar 500 Painted Finish: Five to Twenty (5-20) years against:
10. Chalking in excess of numerical rating of eight (8) when measured in accordance with ASTM D4214, Method A.
11. Fading or color change in excess of five (5) E units (NBS) when calculated in accordance with ASTM D2244, paragraph 6.3.
12. Cracking, chipping, splitting, blistering, peeling, or loss of adhesion. Minute fracturing (i.e., crazing or cracking) as a result of routing and bending of panels shall be excluded.
13. Polyester Painted Finish: Ten (10) years against:
14. Chalking in excess of numerical rating of eight (8) when measured in accordance with ASTM D4214, Method A.
15. Fading or color change in excess of five (5) E units (NBS) when calculated in accordance with ASTM D2244, paragraph 6.3.
16. Cracking, chipping, splitting, blistering, peeling, or loss of adhesion. Minute fracturing (i.e., crazing or cracking) as a result of routing and bending of panels shall be excluded.
17. Anodized Aluminum Finish:
18. Ten (10) years against fading or color change in excess of six (6) E units (NBS) when calculated in accordance with ASTM D2244, paragraph 6.3.
19. Twenty (20) years against cracking, chipping, splitting, blistering, peeling, or loss of adhesion. Minute fracturing (i.e., crazing or cracking) as a result of routing and bending of panels shall be excluded.
20. Installation Warranty: Installer shall submit to Owner standard warranty document executed by authorized company official. Warranty shall be in addition to, and not a limitation of, other rights Owner may have under Contract Documents:
21. Warranty Period:
22. Workmanship: **[One (1) year]** **[Other]** warranty period commencing on Date of Substantial Completion.

PART 2 – PRODUCTS

2.01 ACM PANEL MANUFACTURERS AND SHOP-FABRICATED ACM PANEL SYSTEM SUPPLIERS

1. ACM Panel Manufacturers:
2. Omega-Lite® FR ACM panels manufactured by Laminators Incorporated – [www.laminatorsinc.com](http://www.laminatorsinc.com)

Contact a local Laminators Inc. Architectural Sales Representative for assistance with additional listings.

1. [**Other ACM panel manufacturer meeting requirements as specified within Manufacturer Qualifications Section**]
2. [**Other ACM panel manufacturer meeting requirements as specified within Manufacturer Qualifications Section**]
3. ACM Panel System Fabricators:
4. AdaptaClad® RS panel system shop-fabricated by Laminators Incorporated – [www.laminatorsinc.com](http://www.laminatorsinc.com)

Contact a local Laminators Inc. Architectural Sales Representative for assistance with additional listings.

1. [**Other ACM Panel System fabricator meeting requirements as specified within Fabricator Qualifications Section**]
2. [**Other ACM Panel System fabricator meeting requirements as specified within Fabricator Qualifications Section**]

2.02 PANEL DESCRIPTION

1. Composition:
2. Two sheets of aluminum bonded to a core of extruded thermoplastic manufactured in a laminated batch (i.e., discontinuous) process using adhesive(s) between dissimilar materials. Core material shall not contain foam plastic insulation.
3. Thickness: 0.236 inch (6 mm)
4. Sheets:
5. Face Thickness: 0.020 inch nominal or thicker
6. Backer Thickness: 0.012 inch nominal or thicker
7. Combined Minimum Thickness: 0.032 inch nominal
8. Testing Requirements:
9. ASTM D635: Panels shall meet Class CC1 or Class CC2 combustibility classification criteria as established by IBC Section 1406.11.3.3.
10. ASTM D1781: Panels shall have a Climbing Drum Peel Strength of at least 22.5 in-lb/in as intended for use. Bond integrity is based on chemical-bonding of sheets to core material in a laminated batch process.
11. ASTM D1929: Panels shall have a self-ignition temperature of at least 650°F as established by IBC Section 1406.11.3.3.
12. ASTM E84: Panels shall meet Class A classification criteria as established by IBC Section 803.1.2:
13. Flame Spread Index (FSI) shall not exceed 25 as intended for use.
14. Smoke-Developed Index (SDI) shall not exceed 450 as intended for use.

2.03 FINISH

1. Exterior Finish: Finish shall meet performance criteria of AAMA 2605:

Choose one – If multiple finishes are needed, be sure to properly label each color and the locations on all applicable drawings.

Referred to as Laminators “PVDF/Kynar 500”.

1. Standard and Standard Metallic Finishes:
2. Selected from Manufacturer’s standard color chart.

Referred to as Laminators “Polyester”.

1. Custom Finish:
2. Selected by [**Owner**] [**Architect**] and coordinated Manufacturer.

Referred to as Laminators “Designer Series”.

1. Standard Specialty Finish:
2. Selected from Manufacturer’s standard color chart.
3. Exterior Finish: Finish shall meet performance criteria of AA:

Referred to as Laminators “Natural Series”.

1. Anodized:

Choose one – If multiple coatings are needed, be sure to properly label each color and the locations on all applicable drawings.

1. Clear Coating: AA-M12C23A31 Architectural Class

AA – Aluminum Association Designation

M12 – Mechanical finish (M) / As Fabricated (1) / Nonspecular as fabricated (2)

C23 – Chemical finish (C) / Etched (2) / Coarse matte (3)

A31 – Anodic Coatings (A) / Architectural Class II 0.4 to 0.7 mil (3) / Clear (1)

1. Color Coating: AA-M12C23A34 Architectural Class

AA – Aluminum Association Designation

M12 – Mechanical finish (M) / As Fabricated (1) / Nonspecular as fabricated (2)

C23 – Chemical finish (C) / Etched (2) / Coarse matte (3)

A34 – Anodic Coatings (A) / Architectural Class II 0.4 to 0.7 mil (3) / Electrolytically deposited color (4)

2.04 FABRICATION

1. Prior to panel system fabrication, coordinate field measurements of site conditions with approved Shop Drawings for locations of exterior wall framing and panel system joints, edges, openings, transitions, and penetrations.
2. Fabricate panels and insert strips to sizes and joint configurations indicated on approved Shop Drawings.
3. Fabricate panels based on an assumed design temperature of 80°F. Allow for ambient temperature range at time of fabrication.
4. Fabricate panels with sharply cut edges, no displacement of face or backer sheets, and no protrusion of core. Form angles, breaks, corners, lines, and returns to be sharp, true, consistent, and free of buckle and/or warp.
5. Fabrication Tolerances:
6. Length: +/- 1/16 inch
7. Width: +/- 1/16 inch
8. Squareness: +/- 1/16 inch

2.05 ACCESSORIES

1. General: Provide Fabricator’s standard panel system accessories, including anchor components, clips, fasteners, and other attachments for specific applications indicated on contract documents.

2.06 RELATED MATERIALS

1. General: Refer to Related Sections specified herein for other materials, including concrete, masonry, metal framing, sheathing, insulation, barriers, flashing and trim, windows, glazing, and/or curtain walls.

PART 3 – EXECUTION

3.01 INSTALLER INSTRUCTIONS

1. General: Comply with Manufacturer’s product information, system guides, technical bulletins, technical data sheets, CAD details, and any other product packaging instructions.

3.02 PREPARATION

1. General: Verify site conditions of substrate previously installed under other Sections are acceptable for panel system installation. Documentation should be provided to General Contractor indicating any conditions detrimental to performance of panel system.

3.03 INSTALLATION

1. Panel Installation:
2. Handling:
3. Protective masking should be left on each panel during installation to prevent damage. Protective masking should be removed from each insert strip and aluminum component prior to installation. All masking shall be removed within two weeks of installation.
4. Handle materials with clean work gloves to avoid hand injury from any sharp edges and to prevent staining of material surfaces from contaminants.
5. When transferring panels from shipping containers or storage conditions, always handle each panel individually to prevent damage.
6. Install panel system level, plumb, and true in accordance with Manufacturer’s Installation Requirements and approved Shop Drawings.
7. Comply with Manufacturer’s instructions for installation of fasteners.
8. Installation Tolerances:
9. Panel joint width deviation: +/- 1/16 inch
10. Adjacent panel out-of-plane offset: +/- 1/16 inch
11. Adjacent panel out-of-plane edge alignment: +/- 1/16 inch
12. In-line panel joint intersection deviation: +/- 1/16 inch
13. Plumb/level panel joint deviation: 1/4 inch in any 20 feet
14. Do not cut, trim, weld, or braze panel system components during installation in a manner which would damage finish, decrease strength, or result in visual imperfection or failure in performance.
15. Separate contact of dissimilar metals with approved methods as defined by Manufacturer in order to eliminate possibility of corrosive or electrolytic action between metals.
16. Related Materials Installation: Refer to Related Sections specified herein for installation of other materials.

3.04 FIELD QUALITY REQUIREMENTS

1. Field Quality Control: When required, mock-up of panel system shall be constructed and tested at direction of [**Owner**] [**Architect**] [**General Contractor**]. Water-spray testing on mock-up shall be in accordance with AAMA 501.2.
2. Testing Agency: If required, [**Owner**] [**Architect**] [**General Contractor**] shall engage a qualified testing agency to perform tests and inspections.

3.05 REMEDIATION AND CLEANING

1. Remediation:
2. Remove and replace panel system components damaged as a direct result of activities in Panel Installation Section.
3. Remove protective masking immediately after panel installation. Masking intentionally left in place after panel installation on an elevation at direction of General Contractor shall become responsibility of General Contractor.
4. Panel installation completion shall be agreed-upon between Installer and General Contractor.
5. Following completion of panel installation, any determination of repair or replacement of panel system components is at discretion of Architect. Such repair or replacement shall become responsibility of General Contractor:
6. At discretion of Architect, repair damaged panel system components such that repairs are not discernible at a distance of 10 feet from surface at a 90° angle per AAMA 2605.
7. Removal and replacement of panel system components damaged by other trades shall be responsibility of General Contractor.
8. If required after panel installation, any additional protection of panel system shall be responsibility of General Contractor.
9. Remove from project site damaged panel system components, protective masking, and other debris attributable to work of this Section.
10. Cleaning:
11. Final Cleaning shall not be part of work of this Section.
12. Cleaning and Maintenance of panels shall be performed at regular intervals in accordance with AAMA 609 & 610.

END OF SECTION