074213: RAIN SCREEN INTERLOCKING PLANK WALL CLADDING

PART 1: GENERAL

1.01 SCOPE

A. SECTION INCLUDES:

1. The extent of Prefinished interlocking plank panel system work is indicated on the drawings and in these specifications.
2. Panel system requirements include the following components:
   a. Metal wall panels applied on a vertical plane with vertical and horizontal mounting system to permit vertical and horizontal wall alignment. Panel mounting system includes shims, furring, fasteners, flashing and seals to air/water barrier and protective film (as required) for a complete installation.
   b. Additionally, panels formed from matching materials to sizes and shapes indicated including for enclosing parapet coping, column or beam wraps, cornices, soffit, sills, border, and filler items indicated as integral components of the panel system or as designed.
      1) Joints located on horizontal surfaces or to dissimilar products to receive silicone caulk in lieu of open joint system.

B. RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections, and Technical Specification Divisions 2 through 16 apply to this Section.

C. RELATED WORK SPECIFIED ELSEWHERE:

1. Division 5: Structural Steel, Cold Formed Metal Framing. ***Note: 16 gage minimum is required to resist fastener pullout for exterior metal framing***. All exterior wall supports design shall comply with ASCE 7-02.
2. Division 6: Back Up Walls, Exterior Sheathing
3. Division 7: Insulation, Air Water Barriers, Sheet Metal Flashings, Caulking and Sealants

1.02 QUALITY ASSURANCE

1. Metal Panel System Fabricator shall have a minimum of 10 years experience in the manufacturing of this type of solid prefinished metal panel product.
2. Installer: Shall have experience installing metal cladding system similar to that required for a period of not less than 10 documented years.
3. Maximum deviation from vertical and horizontal alignment of erected panels: 1/4” in 20' non-accumulative.
4. **Source Limitations:** Panel fabricator/installer shall assume undivided responsibility for all components of the exterior panel system from face of air/water barrier out.
5. Shop Drawings shall be prepared by the Fabricator of the systems.
6. Certified Coating Applicators: Only coatings applied by applicators capable of complying with AAMA 2605 Voluntary Specification for High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels will be acceptable where painted aluminum systems finishes are specified.

7. Coordination: Panel system shop drawings shall be coordinated with references to benchmark elevations and horizontal controls provided by GC/CM with all the other adjacent exterior wall trades drawings to including but not limited to:

   a. Exterior Studs and sheathing: 16 ga min to avoid fastener pullover.

   b. Other Wall Cladding systems: Brick, Precast, Stone or other metal systems etc

   c. Fenestration: Windows, storefront and curtain walls, louvers including rough opening and finished framed.

   d. Air/water barriers and flashing to openings, roofing and adjacent materials.

   e. Release into production: identify how areas of work are best suited to be released for fabrication to avoid unnecessary production delays:

      1) Approved as noted: From approved or approved as noted shop drawings

      2) Verify prior to fabrication: after verifying the construction of the substrate is compliant with contract drawings and coordinated shop drawings.

1.03 SUBSTITUTIONS:

A. The parameters specified herein establish the minimum level of quality required. Substitutions must meet or exceed the performance requirements, testing, materials, fabrication methods, tolerances and aesthetics noted.

B. Panel systems fabricated from composite materials comprised of formed metal skins and core material using lamination, glues, injection molding or foamed in place fabrication techniques are not acceptable substitutes for a solid prefinished metal product.

C. Substitution requests will include:

1. Comprehensive description of system panel system including all accessories required to meet specified performance.
2. Panel details and coordination details of joint designs and all interfaces with dissimilar products.
3. Test of certified results conducted by an ASTM certified testing facility.
4. Panel samples including a 4 way joint.

1.04 REFERENCES

A. ALUMINUM ASSOCIATION - AA.

1. Aluminum Standards and Data.

B. AMERICAN ARCHITECTURAL MANUFACTURER'S ASSOCIATION - AAMA.

C. AMERICAN SOCIETY FOR TESTING OF MATERIALS – ASTM –

1.05 SUBMITTALS

1. Product Data Sheet describing properties and standards for the product selected.
2. Samples:

   a. Lab Color Samples: Two samples of each color or finish selected, 3" x 4" minimum of color chips

   b. Production Color Samples: 2 ea 12" x 12" production samples from actual paint produced for the order.

   c. Panel system Sample: One 4-way corner assembly of typical wall system components 48" x 48".

3. Shop Drawings: Submit shop drawings showing project layout plans and elevations; fastening and anchoring methods; detail and location of joints, sealants including joints necessary to

accommodate thermal movement; trim; flashing; expansion joints and accessories. Show products and details of adjacent trades with references to GC/CM's benchmarks or controls including but not limited to curtain walls/storefronts, structural steel, cold formed metal framing, pre-cast concrete, masonry, roofing, louvers and flashings to air/water barrier.

4. As Built Drawings: Show final in- place work as it relates to as built conditions.

B. CALCULATIONS:

Provide calculations or wind load charts prepared by a professional engineer certifying the system's compliance with design pressures for panel deflection and fastener loads.

C. SECONDARY SUPPORTS DESIGN:

Design, fabricate, and install secondary structural components of the metal cladding system (which may be required in conditions of beam or column enclosures, cornices or other three dimensional shapes) with a factor of safety not less than 1.5 (basis for design calculations shall be 1.5 times the maximum design wind pressure), such that failure of any panel component shall not occur at less than 1.5 times the maximum design wind pressure. Failure is defined as breakage, component disengagement, or permanent distortion.

D. LEED INFORMATION:

1. Local/Regional Materials: Supply products manufactured within a 300 mile radius of project site.
2. Recycled Content: system shall be produced with 100% solid metal materials comprised of a minimum 50% recycled content including both post consumer and post-industrial content and 100% recyclable without separation.

1.06 WARRANTY

A. SUBMIT IN ACCORDANCE WITH DIVISION 1 – CLOSEOUT SUBMITTALS.

B. WORKMANSHIP WARRANTY:

1. Written warranty signed by manufacturer (and installer if a separate entity) warranting that portions of the work involving metal panels are of good quality, free from defects, and in conformance with the requirements of the Contract Documents. Further guarantee to repair or replace defective work during a (**One, Two**, or **FIVE)** year period following substantial completion of the work.
2. Defective is defined to include failure of the system to meet structural performance requirements and/or permanent deformation resulting from pressures within the design criteria.

C. FINISH WARRANTY:

1. (Prefinished aluminum only) Written warranty signed by paint manufacturer and/or applicator warranting that the painted finish will not develop excessive fading or excessive non-uniformity of color or shade, and will not crack, pit, peel, corrode, or otherwise fail as a result of defect in materials and workmanship. Warrantor will further guarantee to repair or replace defective work during a **(ten OR twenty)** year period following substantial completion of the work. Upon notification of defects within the warranty period, make necessary repairs or replacement at the convenience of the owner.
2. Zinc or Stainless steel: Finish of materials will not pit, corrode, rupture or crack for a period of 10 years after substantial completion.

1.07 DELIVERY, STORAGE AND HANDLING:

A. Deliver units and other components so they will not be subject to damage or deformation. Deliver panel units in crates designated for specific locations on the building as coordinated between GC and

installer. Crates shall be able to withstand hoisting loads necessary for the safe placement of the materials on the building prior to installation.

B. Storage: Stack components off the ground/floor on suitable skids in fully enclosed space. Protect against warping, scratches, damage from moisture, exposure to direct sunlight and other surface contamination.

C. Handling: Exercise care in loading, unloading, storing, and installing units so as to preclude bending, warping, twisting, and surface damage.

D. Protective films or packaging: protect exposed surfaces of each panel by applying strippable film or foam inter-layers.

PART 2: PRODUCTS

2.01 PANEL SYSTEM

A. ARCHITECTURAL METAL PANEL SYSTEM:

1. Manufacturers offering products which may be incorporated in the work, but are not limited to, the following:
    a. Basis of Design is **Metalwërks® - "Interlok Plank"** prefinished solid metal panel cladding system by Metal Sales & Service Inc. of Kennett Square, PA 19348 (800-321-7816 or website: www.metalwerksusa.com).
    b. Other panel systems will be acceptable if they comply with all performance and design criteria indicated on details and herein:
        1) Pohl USA: Europlate or Europanel.
        2) Baker Metal Products: Solid aluminum panel systems which comply with the performance criteria specified.
2. Cladding Panels: Form panels to a min. 1 1/2" depth with formed corners on all four corners.
    a. Horizontal Joints: Formed interlocking horizontal joint for vertical stacking of panels; joint designed to deflect and channel moisture to exterior. Joint reveal sizes can vary from a 1/8" nominal up to 1-1/2" in 1/8" increments. Consult with manufacturer for other reveal design options.
3. Vertical Joints: Open vertical joints will have will have formed double offset return legs for enhanced rigidity and to permit back sealing where required. Nominal joint size will be 5/8" wide x 1-1/2" deep or as shown on contract documents. Reveal backup will be filled with the same material as the panel face.
4. Panel sizes: Panels can be formed up to 13'4" (4M) optimal lengths and modules from 10" up to 30" tall. Other lengths are available, consult Sales for size limitations. Total system depth equals the sum of:
        1) 1½" panel,
        2) plus furring depth to create a space for exterior insulation and
        3) nominal shim space to allow for construction tolerances.
5. Furring: formed galvanized steel, stainless steel or aluminum shapes will be 16 gage minimum and will be designed and supplied by panel system fabricator to resist project design loads.
6. Sealants: Exposed sealants will be permitted only at horizontal skyward facing surfaces, perimeter of panels at adjacent materials and openings in the wall system. Where necessary a minimum 5/8" wide joint filled with closed cell foam backer rod and appropriate silicone sealants will be used. See separate Div 7 specifications for appropriate sealants.
7. Intermediate panel stiffeners, where required by design loads, shall be factory secured to the panel edges using mechanical fasteners and at rear face of the panel with silicone of

sufficient size and strength to maintain panel flatness. Stiffener material and/or finish shall be compatible with the silicone.

8. Panel fasteners shall be stainless steel or other corrosion resistant coated fastener for panel attachment in size and spacing as dictated by structural review.

2.02 MATERIALS

A. SHEET MATERIALS SELECTIONS: SELECT MATERIALS FOR SURFACE FLATNESS, SMOOTHNESS, AND FREEDOM FROM SURFACE BLEMISHES WHERE EXPOSED TO VIEW IN THE FINISHED SYSTEM.

1. Aluminum Sheet: ASTM B 209 for 3003H-14.
   a. 10” up to 16” modules will be formed from .063” material thickness
   b. up to 24” will be formed from .080” material thickness
   c. up to 30” modules will be formed from .090” material thickness.
2. Zinc Sheet: 1mm VM or Rheinzinc as selected by architect for finish preference.
   a. 10” up to 16” modules will be formed from 1mm material thickness
   b. up to 30” modules will be formed from 1.5mm material thickness.
3. Stainless steel: Type 304 or Type 316 materials (specify one)
   a. 10” up to 16” modules will be formed from 20 ga
   b. up to 24” will be formed from 18 gage.
   c. up to 30” modules will be formed from 16 gage.

B. OTHER MATERIALS: CONSULT METALWËRKS® SALES TEAM MEMBER.

2.03 FINISH OPTIONS

A. Prefinished Aluminum: Fluoropolymer (Two), (Three) or (Four) ***(Architect must Specify)*** Coat Coating System: Manufacturer’s standard two or three coat, thermo-cured system composed of specially formulated inhibitive primer, fluorocarbon color coat, and a clear fluorocarbon topcoat (If Three or Four Coat is specified). Both color coat and clear topcoat shall contain not less than 70% polyvinylidene resin by weight in compliance with AAMA 2605-05 for testing, performance, and application procedures.

1. Panels shall be chemically etched by an appropriate cleaner in accordance with manufacturer’s written instructions.
2. Apply acid resistant primer to cleaned aluminum. Thickness range; 0.20 to 0.30 mils.
3. Apply polyvinylidene fluoride (PVF2) resin color coat. Thickness range; 0.8 to 1.2 mils.
   a. Kynar® 500. Must be applied by certified Kynar® coater.
   b. Hylar® 5000. Must be applied by certified Hylar® coater.
4. Apply clear top coat finish as extra protection, no less then 0.8 mils thick. Comply with AAMA 2605-05 standards.
5. Note: Some exotic colors require a fourth barrier coat to protect the aluminum from UV penetration. Consult **Metalwërks®** for proper coating formulations on custom colors.
6. Color: Match owner’s representatives' sample, or if none, from manufacturer’s standard selection.
7. Properties: Meet or exceed requirements of AAMA 2605-05

B. ZINC: 99%+ PURE ZINC ALLOYED WITH COPPER, AND TITANIUM.

1. VM Zinc: Natural VMZINC®; QUARTZ-ZINC®; ANTHRA-ZINC® or PIGMENTO® by VMZINC
2. Rheinzink: “Bright rolled” (mill finish); "Pre-weathered Blue-Gray” or "Pre-weathered pro Graphite-Gray".

C. STAINLESS STEEL:

1. Smooth Polished: Select one or more: #4 Satin; #6 Long-grain satin; #8 Mirror; non-directional satin or “angel hair”; OR match architect’s sample; OTHER.
2. Embossed: Match Architect’s sample: a variety of machine embossed patterns are available from our key vendors; consult for options.
3. Consult **Metalwërks®** for other material finishes available.

2.04 PERFORMANCE CRITERIA

A. Architectural Metal panels shall be capable of withstanding building movements and weather exposures based on the following test standards required by the Architect and/or the local building code.

B. Wind Load Panels shall be designed to withstand the Design Wind Load specified herein as Positive ____ PSF & Negative ____ PSF at typical zones and Positive ____ PSF & Negative ____ PSF at corner zones. Wind load testing shall be conducted in accordance with ASTM E 330 or verified through PE certified calculations to obtain the following results.

1. Deflection: Normal to the plane of the wall between supports, deflection of the secured perimeter panel flanges shall not exceed L/175.
2. Normal to the plane of the wall, the maximum panel face deflection shall not exceed L/60 of the full span. No permanent deformation of the panel system will be allowed.

2.05 ACCESSORIES

1. Sealants within the panel system shall be as per manufacturer's standards to meet performance requirements.
2. Internal Flashing: sheet metal flashing which may be required at base or penetration conditions will be produced in the same material finish as the adjacent panels but will be provided in minimum .040” thickness or 24 ga 304 2B Stainless steel.
3. Coping: Wall copings will be produced with the same material as the wall panel system unless otherwise noted. Sheet metal flashing extensions will be acceptable in non- viewing areas in accordance with Manufacturer’s recommended details.
4. Furring: Wall panels will be attached to minimum 16 gage galvanized steel furring.
5. Fasteners: Panel fasteners shall be stainless steel or other corrosion resistant coated fastener for panel attachment in size and spacing as dictated by structural review.
6. Insulation: Exterior insulation for use in behind the panel air cavity and in front of the air/water barrier where required by Contract Documents.

PART 3: EXECUTION

3.01 INSPECTION

1. Surfaces to receive panels shall be even, smooth, sound, clean and free from defects detrimental to work. The air water barrier will be fully installed prior to panel system installation and will be free of tears, penetrations and continuous. All adjacent systems will be fully integrated with the air water barrier including but not limited to roofing membranes, masonry backup flashings, curtain wall/window and other penetration flashings. Notify contractor in writing of conditions detrimental to proper and timely completion of the work. Do not proceed with erection until unsatisfactory conditions have been corrected.

2. Surfaces to receive panels shall be structurally sound as designed by the project Architect/Engineer. Note: 16 ga min. thickness spaced at 16” o.c. use of exterior wall studs necessary to resist fastener pullover.

   a. Insert Technical performance requirements for CFMF here.

3.02 INSTALLATION

1. Lay out wall grids from horizontal and vertical controls provided by Contractor/CM. Coordinate layout with adjacent trades' shop drawings.
2. Inspect air water barrier for penetrations, tears or inadequate lapping into adjacent materials and report any defects to CM/GC.
3. Erect panel furring plumb, level, and true using adjustable furring.
4. Seal any punctures created by furring installation through air water barrier using compatible tapes or sealants recommended by air water barrier manufacturer.
5. Panel attachment shall allow for the free vertical and horizontal thermal movement due to expansion and contraction for a material temperature range of -20°F to +180°F (-29°C to +82°C). Buckling of panels, opening of joints, undue stress on fasteners, failure of seals or any other detrimental effects due to thermal movement will not be permitted.
6. Flashing will be installed behind panel system and furring to marry the air water barrier to the flashing backup at openings and panel perimeters. Use a compatible sealant or tape to seal between flashing, furring fastener penetrations and air water barrier.
7. Panels shall be erected in accordance with an approved set of shop drawings.
8. Anchor panels securely and in accordance with approved shop drawings to allow for necessary thermal movement, compartmentalization and structural support.
9. Conform to panel fabricator's instructions and/or approved shop drawings for installation of concealed fasteners.
10. Do not install panels that are observed to be defective, including warped, bowed, dented, abraded, and cracked panels. Contact manufacturer for replacement and/or repairs.
11. Do not cut, trim, weld, or braze panels in a manner which would damage the finish, decrease strength, or result in visual imperfection or a failure in performance. Return panels which require alteration to shop for re-fabrication, if possible, or for replacement with new parts.
12. Separate dissimilar metals where needed to eliminate the possibility of corrosive or electrolytic action between materials.
13. Installation Tolerances: Shim and align panel units within installed tolerances of 1/4 inch in 20 feet, non-cumulative, on level/plumb/slope and location/line as indicated, and within 1/16 inch offset of adjoining faces and of alignment of matching profiles.

3.03 ADJUSTING AND CLEANING

1. Remove and replace panels damaged beyond repair as a direct result of the panel installation. After installation, panel repair and replacement shall become the responsibility of the General Contractor/CM.
2. Repair panels with minor damage.
3. Remove protective film as soon as possible after installation.
4. Any additional protection, after installation, shall be the responsibility of the General Contractor/CM.
5. Final cleaning shall not be part of the work of this section.