

SECTION 07 42 10  
COPPER WALL PANELS

- \*\*\*This section has been updated to IBC. Verify for specific project conditions.\*\*\*

PART 1 GENERAL

1.1 SUMMARY

\*\*\*Edit to project requirements\*\*\*

A. Section Includes:

1. Clear copper and preweathered copper wall panel system.
2. Accessories including attachments, clips, sub girts, shims, and fasteners

\*\*\*Edit related Sections to those referenced in body of specification section.\*\*

B. Related Sections:

1. Section 04220 – Concrete Masonry Units
2. Section 05400 – Cold Formed Metal Framing
3. Section 07600 – Flashing and Sheet Metal
4. Section 07900 – Joint Sealants
5. Section 08520 – Aluminum Windows
6. Section 08911 – Glazed Aluminum Curtain Wall

1.2 REFERENCES

\*\*\*Edit reference standards to those referenced in body of specification section\*\*\*

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 501.1 – Voluntary Specification Performance Requirements and Test Procedures for Dynamic Water Infiltration
2. AAMA 508-7 – Voluntary Specification Performance Requirements and Test Procedures for Pressure Equalized Rainscreen Wall Cladding Systems

B. ASTM International (ASTM):

1. ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
2. ASTM E 331 – Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
3. ASTM E 283 – Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

1.3 SYSTEM DESCRIPTION

\*\*\*Edit system description to systems required for project.\*\*\*

- A. Copper alloy sheet material mechanically attached to continuous extruded aluminum perimeter frame. Perimeter frame to be protected from dissimilar metal reaction by proprietary separation treatment by panel fabricator.

- B. System shall employ compartmentalized and pressure equalized Rainscreen technology evaluated in accordance to AAMA 508-7.
- C. Rout and return, dry joint system with hidden continuous gasket at perimeter frame. Wet sealed (caulked joint) systems will not be accepted.
- D. Free-floating and sliding mechanical attachments to allow for both vertical and horizontal panel expansion and contraction during thermal cycling and building movement.
- E. System shall employ concealed thru-wall flashing at horizontal reveals that does not affect panel joint width or appearance.

#### 1.4 DESIGN REQUIREMENTS

\*\*\*Edit to design requirements required for project.\*\*\*

- A. Components: Design and size to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of panel, conforming to IBC Chapter 16, wind speed [\_\_ mph] Exposure [\_\_\_\_]. Imp. Factor [\_\_\_\_].
- B. Wall Panel Deflection: L/60.
- C. Perimeter Framing Deflection: L/175.
- D. Thermal Movement: Design system to accommodate vertical and horizontal thermal movement of components without causing buckling, failure of joint seals, undue stress on fasteners, and oil canning when subject to seasonal temperature cycling. Systems that accommodate movement with enlarged/slotted attachment holes not accepted.
- E. Drainage: Design for positive drainage of water leakage and condensation to exterior of wall panel system, including gutter system at each horizontal joint. Systems that do not evacuate water from the cavity at every horizontal will not be accepted.
- F. Tolerance of Substructure: Design system to accommodate up to 1/4 inch in 10 foot variation out of plane. Accommodate tolerances of building structural framing.
- G. Seismic Design: Conform to IBC for Seismic Category [\_\_]. Allow for ( " ) movement in the panel joints.

#### 1.5 PERFORMANCE REQUIREMENTS

\*\*\*Edit to project requirements\*\*\*

- A. Provide the following testing documentation. Testing documentation to be a maximum of 5 years old and must meet or exceed specified design and performance requirements, documented and certified by independent testing agency acceptable to Architect and building code officials.
- B. Air Leakage: Maximum 0.02 cfm per square foot of wall area at 6.24 psf, tested to ASTM E 283.
- C. Static Water Penetration: No uncontrolled water penetration under static pressure differential of 20 percent of inward acting design load at minimum 12 lbf/sf after 15 minutes, tested to ASTM E 331.

- D. Structural Performance: No permanent deformation at 150 percent of design pressure exceeding L/100 for frame and L/60 for material, tested to ASTM E 330.
  - E. Dynamic Water Penetration: No uncontrolled water penetration under dynamic pressure differential of minimum 15 lbf/sf , tested to AAMA 501.1.
  - F. Pressure Equalized Rainscreen Performance: No streaming water or droplets/mist on more than 5% of the cavity moisture barrier, tested to AAMA 508-07.
  - G. Structural Performance: Test to 50% and 100% design load (40 PSF min pos/neg), retest to ASTM 331, no uncontrolled water penetration under static pressure differential of 20 percent of inward acting design load at minimum 12 lbf/sf after 15 minutes.
  - H. Seismic Racking (Lateral Elastic): Test to two directions for three cycles (3/4"), retest to ASTM 331, no uncontrolled water penetration under static pressure differential of 20 percent of inward acting design load at minimum 12 lbf/sf after 15 minutes.
  - I. Seismic Racking (Lateral MAX): Test to two directions for three cycles (3") with no visible damage, cracking, buckling or fastener pullout.
- 1.6 SUBMITTALS
- A. Submit under provisions of Section 01330.
  - B. Shop Drawings: Show thickness and dimensions of panels, panel profile, layout, fastening and anchoring methods, details, and locations of joints and gaskets.
  - C. Product Data: Manufacturer's panel profiles, dimensions, characteristics and structural properties.
  - D. Design and Performance Data: Fabricator's system including standard drawings, details, and design. Indicate seismic, thermal, environmental, and structural characteristics of system.
  - E. Product Samples: Minimum 4 inch by 8 inch in specified thickness.
  - F. Fabricator Instructions:
    - 1. Include installation instructions, technical bulletins, and other product data.
    - 2. Include instructions for substrate requirements, special handling criteria, installation sequence, perimeter conditions, cleaning procedures, and conditions requiring special attention.
    - 3. Test Reports: Meet or exceed specified design and performance requirements, documented and certified by independent testing agency acceptable to Architect and building code officials.
  - G. Structural Calculations for Panel System: Stamped registration seal and signed by licensed structural engineer, licensed in State of [\_\_\_\_\_].
  - H. Sample Warranty: Meet or exceed provisions specified by this Section.
- 1.7 QUALITY ASSURANCE
- A. Single Source Responsibility:
    - 1. Provide design and fabrication of wall panel system under responsibility of fabricator including copper panels, attachments, clips, girts, fasteners, and other accessories.

## 1.8 QUALIFICATIONS

- A. Manufacturer:
  - 1. Company specializing in manufacturing copper sheet specified by this Section.
  - 2. Able to document minimum 10 years experience.
- B. Fabricator:
  - 1. Company specializing in designing, engineering, and fabricating work of this Section.
  - 2. Able to document minimum 7 years experience. Submit project contact information. Owner, General Contractor, Architect names and phone numbers. Project addresses.
  - 3. Approved by panel manufacturer as qualified to perform work of this Section.
- C. Installer:
  - 1. Company specializing in installing work of this Section.
  - 2. Able to document minimum 3 years experience. Submit project contact information. Owner, General Contractor, Architect names and phone numbers. Project addresses.
  - 3. Trained and authorized by wall panel system fabricator as qualified to perform work of this Section.

## 1.9 MOCK-UP

- A. Provide under provisions of Section 01450.
- B. Construct mock-up, including outside corner condition showing complete system assembly including joint sealant.
- C. Construct size and type and locate as directed by Architect.
- D. Conduct testing by Owner's independent testing laboratory, at Owners cost, to verify performance requirements as specified this Section for air and water tightness of joints.
- E. Incorporate accepted mock-up into Work.

## 1.10 PRE-INSTALLATION CONFERENCE

- A. Arrange, in accordance with Section 01312.
- B. Attendance: GC/CM, installer, Owner, Architect, manufacturer's representative, and those requested to attend.
- C. Meeting Time: Minimum 2 weeks prior to beginning work of this Section and work of related Sections affecting work of this Section.
- D. Location: Project Site.

## 1.11 DELIVERY, STORAGE, AND HANDLING

- A. Conform to provisions of Section 01651 and manufacturer's instructions.
- B. Deliver in manufacturer's protective packaging with protective strippable film and identifying labels intact.
- C. Store in well ventilated space under cover, off ground, protected from direct sunlight, weather, moisture, soiling, and marring of surface.

- 1) Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Slope cover to shed moisture. Allow for free air flow around covered material to exchange outside air.
  2. Require all personnel to wear clean white cotton gloves when handling and installing copper panels and accessories.
  3. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.
  4. Store metal wall and roof panels so that they will not accumulate water.
- D. Handle to prevent twisting, bending, and abrasion. Prevent contact with materials which may cause discoloration or staining.

#### 1.12 PROJECT CONDITIONS

- A. Field Measurements: Verify actual conditions prior to fabrication and show on Shop Drawings.

#### 1.13 COORDINATION

\*\*\*Edit sections to include coordination and sequencing as needed for completion of work \*\*\*

- A. Conform to Section 01311 for coordination with work of other Sections.
- B. Field dimensions, Shop Drawings, and fabrication with critical path of construction Progress Schedule as necessary to meet lead time and avoid delays.
- C. Work of related Sections interfacing with work of this Section as necessary to maintain watertight integrity of building envelope, including curtain wall, masonry, and flashing systems.
1. Section 04220 for concrete masonry construction interface.
  2. Section 08911 for curtain wall interface.
- D. Section 05400 for backing and support for work of this Section.

#### 1.14 WARRANTY

- A. Conform to Warranty provisions specified Section 01778.
- B. Copper Material: Standard 5 year material Warranty against defects.
- C. Panel Manufacturer: Standard 5 year materials Warranty against structural failure of panels and defective materials.
- D. Panel System Fabricator: 2 year fabrication Warranty for conformance to design and performance and requirements.
- E. Installer: 2 year workmanship Warranty for system performance.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS/FABRICATORS

- A. Approved Copper Manufacturer:
1. KME

- B. Copper Panel System Fabricator:
  - 1. Keith Panel Systems Co. Ltd., Tel (604) 987-4499 Fax (604) 987-4742, Email: mail@keithpanel.com.
  - 2. Acceptable Panel System: KPS System A.
  
- C. Substitution Requests: No substitutions without written consent from the Prime Consultant a minimum of 10 days prior to the tender closing date.
  - 1. Other Panel Systems may be considered as alternates, not as an equals.

## 2.2 COPPER ALLOY WALL PANEL MATERIALS

### A. Copper Alloy Sheet/Coils:

- 1. Degree of purity and alloying additives to be confirmed by manufacturer prior to material selection and procurement.
- 2. Minimum Panel Thickness: 1.2 mm
- 3. Minimum Flashing Thickness: 0.7 mm

## 2.3 ACCESSORIES

- A. Attachments, Tracks, Clips, and Girts: As instructed by panel fabricator. Perimeter frame in contact with copper sheet to be protected from dissimilar metal reaction by proprietary separation treatment as provided by Keith Panel Systems Co. Ltd.
- B. Pop Rivets: Stainless steel and as instructed by manufacturer to prevent galvanic action.
- C. Screw Fasteners: Type S, self drilling, self tapping framing screws, stainless steel with carbide head, as instructed by manufacturer to suit application.
- D. Shims: As instructed by manufacturer.
- E. Joint Sealant: Non-exposed areas only. Sealant and backer rod as specified Section 07900, and as instructed by manufacturer to contact metal to metal and metal to masonry.
- F. Isolation Accessories: Isolation tape, pads, or coatings as necessary to prevent galvanic action between dissimilar metals.
- G. Vapor Barrier Tape and Building Paper: As specified Section 09253 [06100].

## 2.4 FABRICATION

- A. Shop fabricate copper wall panels in sizes and joint configurations to accommodate field installation tolerances. Reinforce with stiffeners where applicable to meet design requirements.
- B. Shop fabricate curved panels to uniform radius free of irregularities.
- C. Where final dimension cannot be established by field measurements, make allowances for field adjustment.
- D. Form panel lines, breaks, and angles with routed back-cut break form corners for sharp edges in one continuous panel return, free from warp and buckle, and with no displacement of aluminum sheet or protrusion of core.

- E. Fabricate panels with gutter system to weep moisture out of panel system at each horizontal panel joint.
  - F. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- 2.5 FINISHES
- A. To be selected from Copper manufacturer's standard range:
    - 1. KME – Tecu® Surfaces (Classic, Patina, Gold, Oxid, Bronze, Brass, Brass Brownished)

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify conditions ready to receive work of this Section before beginning installation.
- B. Verify substrate framing members suitable for installation ready to receive wall panel system.

#### 3.2 PREPARATION

- A. Shim metal framed framing members and supports as necessary to provide level and plumb substrate for fastening panels.
- B. Vapor Barrier Tape: Apply tape continuously over gypsum sheathing joints, stud lines, and wall openings as specified Section [06100] [09253].
- C. Building Wrap: Install over gypsum sheathing as specified Section 09253 [06100].

#### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and provisions of Contract Documents.
- B. Install dry set system with weeps to channel and carry internal water to exterior of system.
- C. Permanently fasten and anchor copper wall panel system to metal cold rolled wall framing system using manufacturer's anchors, clips, and girts.
- D. Install copper wall panels aligned, level, and plumb, within specified tolerances.
- E. Use concealed fasteners and clip attachments.
- F. Install backer rod and silicon joint sealant as necessary for permanent, watertight joints at interfacements with adjacent construction, as specified Section 07900.
- G. Isolate aluminum from dissimilar metal, as required to prevent galvanic action.
- H. Remove protective film immediately following installation of wall panels.

#### 3.4 TOLERANCES

- A. Maximum Offset From Alignment Between Adjacent Wall Panels: 1/16 inch.

- B. Maximum Variation from Horizontal and Vertical Plane: 1/4 inch in 20 foot, non-accumulative.

### 3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service:
  - 1. Make periodic visits and final inspection by manufacturer's authorized product representative as necessary to verify conformance to manufacturer's instructions and Warranty provisions.
  - 2. Promptly notify Architect of non-conforming work.

### 3.6 ADJUSTING

- A. Make adjustments to wall panel installations not conforming to specified tolerances.
- B. Field touch-up damaged finishes to match color and finish of factory applied panel finish.
- C. Replace work which cannot be repaired so that repairs are not discernable at distance of 10 foot.

### 3.7 CLEANING

- A. Dry-wipe panels as work progresses.
- B. Leave installation clean, free from residue and debris resulting from work of this Section.

END OF SECTION