

## SECTION 074646a – FIBER CEMENT VERTICAL PANEL SIDING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes fiber cement vertical panel siding.
- B. Trim, flashing and accessories.

## 1.2 REFERENCES

- A. American Society of Civil Engineers (ASCE) ([www.asce.org](http://www.asce.org)) 7 - Minimum Design Loads for Buildings and Other Structures.
- B. ASTM International (ASTM) ([www.astm.org](http://www.astm.org)):
  - 1. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 2. C1186 - Standard Specification for Flat, Non-Asbestos, Fiber-Cement Sheets.
  - 3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 4. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
  - 5. E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
  - 6. E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

## 1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Design and install panel system to withstand minimum wind pressures in accordance with the current edition of the OSCC tested to ASTM E330.

## 1.4 SUBMITALS

- A. Submittals for Review:
  - 1. Product Data: Indicate panel profiles, sizes, fastening methods, surface texture, and finish.

2. Samples:
    - a. 4 x 6 inch (100 x 150 mm) panel samples.
    - b. 3 inch (75 mm) long trim samples.
  3. Warranty: Sample warranty form.
- B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that panel system meets fire hazard classification requirements.
- C. Qualification Data: For qualified Installer.
- D. Maintenance data.

## 1.5 QUALITY ASSURANCE

- A. Single Source Responsibility: Panels, metal trim, and fasteners furnished by single manufacturer.
- B. Installer Qualifications: Minimum 2 years documented experience in work of this Section.

## 1.6 WARRANTIES

- A. Provide manufacturer's non-pro-rated 30 year warranty providing coverage against hail and termite damage and defects in materials and workmanship.
- B. Provide manufacturer's 15 year warranty providing coverage against peeling, cracking, and chipping of panel finish.
- C. Provide installer's 2 year warranty providing coverage against defects in installation.
- D. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C 1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- E. Source Limitations: Obtain siding and trim, including related accessories, from single manufacturer.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design Product: HZ10 Hardi Reveal 2.0 Panel System by James Hardie Building Products, Inc. which is located at: 26300 La Alameda Suite 400; Mission Viejo, CA 92691.

## 2.2 MATERIALS

- A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide the following:
    - a. Fiber Cement Vertical Panel System:
    - b. Source: Hardie Reveal Panel HZ10.
    - c. Meet ASTM C1186, Grade A, Type II..
    - d. Formulated from Portland cement, ground sand, cellulose fibers, additives, and water; formed under pressure to required profile.
    - e. Size: 47-1/2 inches (1207 mm) wide x 95-1/2 inches (2426 mm) long; accommodate 1/2 inch (13 mm) gap between panels.
    - f. Thickness: 7/16 inch (11.1 mm).
    - g. Surface texture: Smooth.
    - h. Fire hazard classification: Maximum flame spread/smoke developed rating of 0/5, tested to ASTM E84.
    - i. Combustibility; Noncombustible, tested to ASTM E136.
    - j. Finish: Factory prime painted, for field-applied paint finish.

## 2.3 ACCESSORIES

- A. Metal Trim:
  - 1. Material: Extruded aluminum, ASTM B221, 6063-T5 alloy and temper, clear anodized finish.
  - 2. Shapes:
    - a. Vertical Trim.
    - b. Horizontal Trim.
    - c. Drip Cap Trim.
    - d. Inside Corner Trim.
    - e. Outside Corner Trim.
    - f. J-Channel Trim.
- B. Sheet Metal Flashings and Trim: Specified in Section 076200.
- C. Fasteners: Stainless steel, Tor pan head type as recommended by panel manufacturer, of equal or greater holding power than required by manufacturer's Code compliance reports.
- D. Edge Sealer: Type recommended by panel manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of siding and related accessories.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 Installation

- A. Install panel system in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Provide minimum 6 inch (150 mm) clearance between panel system and finished grade.
- C. Maintain 2 inch (50 mm) clearance between panel system and horizontal surfaces other than at grade.
- D. Install metal trim:
  - 1. Vertical panel-to-panel joints: Install Vertical Trim per Drawing layout.
  - 2. Horizontal panel-to-panel joints: Install Horizontal Trim per Drawing Layout.
  - 3. Inside corners: Install inside corner trim.
  - 4. Outside corners: Install outside corner trim.
  - 5. Over openings in walls and at bottom of walls: Install drip cap trim.
- E. Fasten trim at maximum 24 inches (600 mm) on center.
- F. Leave ½ inch (13 mm) gap between horizontal drainage flashings and bottom of panel above. Do not seal this space.
- G. Allow minimum vertical clearance between edge of panel system and adjacent materials in accordance with manufacturer's instructions.
- H. Cut panels to fit around penetrations with maximum ¼ inch (6mm) gaps. Smooth and seal cut edges.
- I. Fasten panel system at maximum spacing per manufacturer's Code compliance reports. Place fasteners exposed, minimum 3/8" (10 mm) from panel edges and 2 inches (50 mm) from top and bottom edges at panel corners, in orderly fastening pattern.
- J. Apply joint sealer between panel system and adjacent surfaces as specified in Section 079200.

### 3.3 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 074600a

## SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
1. **Exterior** storefront framing.
  2. Storefront framing for punched openings.

## 1.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
  2. Dimensional tolerances of building frame and other adjacent construction.
  3. Failure includes the following:
    - a. Deflection exceeding specified limits.
    - b. Thermal stresses transferring to building structure.
    - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
    - d. Noise or vibration created by wind and by thermal and structural movements.
    - e. Loosening or weakening of fasteners, attachments, and other components.
    - f. Failure of operating units.
- B. Delegated Design: Design aluminum-framed systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Wind Loads: As indicated on structural drawings for project location.
- D. Deflection of Framing Members:
1. Deflection Normal to Wall Plane: Limited to **edge of glass in a direction perpendicular to glass plane shall not exceed L/175 of the glass edge length for each individual glazing lite** or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.
  2. Deflection Parallel to Glazing Plane: Limited to **L/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.**
- E. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at **150** percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding **0.2** percent of span.
  2. Test Durations: **10** seconds.
- F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of **0.06 cfm/sq. ft. (0.03 L/s per sq. m)** of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of **1.57 lbf/sq. ft. (75 Pa)**.
- G. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than **6.24 lbf/sq. ft. (300 Pa)**.

### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.
1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
- C. Delegated-Design Submittal: For aluminum-framed systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Product test reports.
- E. Field quality-control reports.
- F. Maintenance data.
- G. Warranties: Sample of special warranties.

### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.
- C. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.
- D. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by

dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

## 1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Warranty Period: **Five** years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**

1. Arcadia, Inc.
2. Arch Aluminum & Glass Co., Inc.
3. CMI Architectural.
4. Commercial Architectural Products, Inc.
5. EFCO Corporation.
6. Kawneer North America; an Alcoa company.
7. Leed Himmel Industries, Inc.
8. Pittco Architectural Metals, Inc.
9. TRACO.
10. Tubelite.
11. United States Aluminum.
12. Vistawall Architectural Products; The Vistawall Group; a Bluescope Steel company.
13. YKK AP America Inc.

### 2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209 (ASTM B 209M).
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.
5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.



- B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
  - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
  - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
  - 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

## 2.3 FRAMING SYSTEMS

- A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
  - 1. Construction: **Thermally broken.**
  - 2. Glazing System: **Retained mechanically with gaskets on four sides.**
  - 3. Glazing Plane: **Center.**
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
  - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
  - 2. Reinforce members as required to receive fastener threads.
  - 3. Use exposed fasteners with countersunk Phillips screw heads, **finished to match framing system.**
- D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.
- E. Concealed Flashing: **Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.**
- F. Framing System Gaskets and Sealants: Provide ethylene propylene diene monomer (EPDM).

## 2.4 GLAZING SYSTEMS

- A. Glazing: As specified in Division 08 Section "Glazing."
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

## 2.5 ACCESSORY MATERIALS

- A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil (0.762-mm) thickness per coat.

## 2.6 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints with ends coped or mitered.
  - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
  - 4. Physical and thermal isolation of glazing from framing members.
  - 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
  - 6. Provisions for field replacement of glazing from **exterior**.
  - 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, **AA-M12C22A41, Class I, 0.018 mm** or thicker.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

## A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight unless otherwise indicated.

## B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

## C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

## D. Set continuous sill members and flashing in full sealant bed as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

## E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

## F. Install glazing as specified in Division 08 Section "Glazing."

## 3.2 FIELD QUALITY CONTROL

A. Testing Agency: **Owner will engage** a qualified independent testing and inspecting agency to perform field tests and inspections.

## B. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.

1. Water Spray Test: Provide field water penetration test in accordance with AAMA 503 before project punch list review.

## C. Repair or remove work if test results and inspections indicate that it does not comply with specified requirements.

- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- E. Aluminum-framed assemblies will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports.

END OF SECTION 084113