SECTION 01 81 13 – OHCS SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This project requires compliance with Oregon Housing and Community Services (OHCS) Green Building Path criteria.

B. The General Contractor and subcontractors have essential roles in the credits related to products and procedures used for construction which are the responsibility of the contractor to implement and document. The full cooperation of the Contractor and subcontractors is essential to achieving the final certification.

C. The General Contractor shall be familiar with the relevant OHCS requirements and standards and provide the necessary information and instruction to all subcontractors and installers.

D. Remove and provide all appliance and product efficiency labels as required.

1.3 OHCS PATH WORKSHEET

A. Mandatory Green Measures

1. Rehabilitation of existing structures.
2. Provide an energy audit performed by a qualified energy consultant and which was completed prior to finalizing scope of work.
3. Select native trees and plants that are appropriate to the site and climate when landscape improvements are in the scope of work.
4. Replace ~~all~~ existing toilets in all <u>first floor</u> units that use 1.6 gallons or more water per flush.
5. <u>At areas of Work, i</u>nsulate ~~100% of the~~ attic and crawlspace to meet or exceed the locality's current code requirements for new construction.
6. Either replace showerheads, kitchen and bathroom faucets or install flow restrictors to meet a maximum flow of 2.0 gallons per minute.
7. Install Energy-Star labeled appliances in all units when appliances are replaced.
8. Install Energy-Star labeled lighting fixtures or high-efficiency commercial grade fixtures in common areas when fixtures are replaced. Install compact fluorescent lamps (CFL) in the balance of all existing units and common areas.

9. Provide a guide for renters that explains the intent, benefits, use and maintenance of green building features and encourages additional green activities such as recycling, gardening and use of healthy cleaning materials.

10. Provide architect's or energy consultants verification (on OHCS form) that work was completed as stated.

~~11. Install blown in fibrous insulation or sprayed in place foam (SPF). Insulation must fill cavity and touch all six surfaces.~~

12. Water heater replacements for tanks under 60 gallons: Electric = 0.93 EF and Gas = 0.61 EF.

13. When installing or replacing zonal heating systems, digital temperature controls shall be installed.

B. Optional Green Measures (as selected)

1. Locate projects within ¼ mile of a least two, or ½ mile of at least four community and retail facilities, such as schools, parks, grocers, libraries and other services.

2. Roof materials with 40 year or higher warranty.

3. Specify that all interior paints, primers and adhesives and sealants must contain low or no Volatile Organic Compounds (VOC).

4. When replaced, install energy-efficient windows which exceed minimal local code requirements by 10%. (Use minimum standards indicated on the Low Income Weatherization Program Energy Efficiency Plan Worksheets.)

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 81 13

SECTION 07 31 13 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes but is not limited to:

1. Asphalt shingle roofing.
2. Underlayment.
3. Roof vents.
4. Roof duct terminations
5. Metal flashing and trim.
6. Accessories

B. Related Requirements:

1. Division 06, Section "Sheathing" for roof sheathing.
2. Division 07, Section "Sheet Metal Flashing and Trim" for flashings integral with roof system.

1.3 DEFINITION

A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 SUBMITTALS

A. Product Data: For each type of product:

B. Samples: For each exposed product and for each color and texture specified.

1. Asphalt Shingles: Full size.
2. Ridge Vent: 12-inch- (300-mm-) long Sample.
3. Stealth Vent: 12 inch

C. Qualification Data: For Installer.

D. Sample Warranty: For manufacturer's warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For asphalt shingles to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Asphalt Shingles: 100 sq. ft. (9.3 sq. m) of each type, in unbroken bundles.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture according to manufacturer's written instructions.

B. Store underlayment rolls on end on pallets or other raised surfaces. Do not double stack rolls.

C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

1.10 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Manufacturing defects.

2. Material Warranty Period: 40 years from date of Substantial Completion, prorated, with first 10 years nonprorated.
3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 110 mph (49 m/s) for 10 years from date of Substantial Completion.

4. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 10 years from date of Substantial Completion.
5. Workmanship Warranty Period: 10 years from date of Substantial Completion.

B. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace components of asphalt-shingle roofing that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance according to ASTM E 108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

A. Laminated Architectural Asphalt Shingles: ASTM D 3462/D 3462M, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. CertainTeed Corporation; Landmark Series.

2. Strip Size: Manufacturer's standard.
3. Algae Resistance: Granules resist algae discoloration.
4. Color and Blends: As selected by Architect from manufacturer's full range.

B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles or site-fabricated units cut from asphalt-shingle strips. Trim each side of lapped portion of unit to taper approximately 1 inch (25 mm).

2.3 UNDERLAYMENT MATERIALS

A. Glass Reinforced Felt: ASTM D 6757, glass reinforced, asphalt-saturated organic felts, nonperforated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. CertainTeed Corporation; Roofer’s Select, High Performance Underlayment.

B. Self-Adhering Sheet Underlayment, Polyethylene Faced: ASTM D 1970/D 1970M, minimum of 40-mil- (1.0-mm-) thick, slip-resisting, polyethylene-film-reinforced top surface laminated to

SBS-modified asphalt adhesive, with release backing; cold applied. Provide primer for adjoining concrete or masonry surfaces to receive underlayment.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. CertainTeed Corporation.
    b. GAF Materials Corporation.
    c. Owens Corning.

C. Self-Adhering Sheet Underlayment, High Temperature: Minimum of 40-mil- (1.0-mm-) thick; with slip-resisting, polymer-film-reinforced or glass-reinforced top surface laminated to layer of butyl or SBS-modified asphalt adhesive; with release backing; cold applied; and evaluated and documented to be suitable for use for intended purpose under applicable codes by a testing and inspecting agency acceptable to authorities having jurisdiction.Provide primer for adjoining concrete or masonry surfaces to receive underlayment.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. GAF Materials Corporation.
    b. Grace, W. R. & Co. - Conn.
    c. Owens Corning.

2. Thermal Stability: Stable after testing at 240 deg F (116 deg C) according to ASTM D 1970/D 1970M.
3. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C) according to ASTM D 1970/D 1970M.

2.4 RIDGE VENTS

A. Rigid Ridge Vent: Manufacturer's standard, rigid section high-density polypropylene or other UV-stabilized plastic ridge vent for use under ridge shingles.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Air Vent, Inc.; a Gibraltar Industries company; Shingle Vent IIA
    b. Cor-A-Vent, Inc.: V-600
    c. GAF Materials Corporation.; Cobra Ridge Vent (Snow Country)
    d. Owens Corning; VentSure with WeatherProtector

2. Minimum Net Free Area: manufacturer’s standard.
3. Width: manufacturer’s standard.
4. Thickness: manufacturer’s standard.
5. Features:

    a. Nonwoven geotextile filter strips.
    b. External deflector baffles.

2.5 LOW PROFILE CAP VENTS

A. Low Profile Cap Vent - Passive: Aluminum, 'Stonecoat' textured finish, low profile, 'Stealth Vent', for passive venting.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Award Metals, Vancouver, Washington

2. Minimum Net Free Area: manufacture's standard.
3. Width: Manufacturer's standard.
4. Thickness: Manufacturer's standard.

2.6 CAP VENTS

A. Cap Vent - Static: Galvanized sheet steel, with bird screen for passive venting. Minimum net free area: 38 square inches. Sanded to match roofing system, color as selected by Architect. Number as required by attic ventilation requirements or as shown on Drawings, whichever is greater.

B. Cap Vent - Duct Termination: Formed from galvanized sheet steel, with backflow damper, removable bird screen and duct attachment collar. Free area sized to accommodate duct and attached appliance capacity. Sanded to match roofing system, in color as selected by Architect.

2.7 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, sharp-pointed, with a minimum 3/8-inch- (9.5-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through OSB or plywood sheathing.

1. Shank: as recommended by shingle manufacturer.
2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

C. Felt-Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with low-profile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

2.8 METAL FLASHING AND TRIM

A. General: Comply with requirements in Division 07, Section "Sheet Metal Flashing and Trim."

1. Sheet Metal: Zinc-tin alloy-coated steel.

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item and as indicated in Division 01, Section "Sheet Metal Flashing and Trim."

1. Apron Flashings: Fabricate with lower flange a minimum of 4 inches and vertical flange 6 inches up the vertical surface.
2. Step Flashings: Fabricate with a headlap of 2 inches (50 mm) and a minimum extension of 4 inches (100 mm) over the underlying asphalt shingle and 6 inches up the vertical surface.
3. Cricket or Backer Flashings: Fabricate with concealed flange extending a minimum of 18 inches (450 mm) beneath upslope asphalt shingles and 6 inches (150 mm) beyond each side of skylight or other item and 6 inches (150 mm) above the roof plane.
4. Open-Valley Flashings: Fabricate in lengths not exceeding 10 feet (3 m) with 1-inch-(25-mm-) high, inverted-V profile at center of valley and equal flange widths of 12 inches (300 mm).
5. Drip Edges: Fabricate in lengths not exceeding 10 feet (3 m) with 4-inch (50-mm) roof-deck flange and 1-1/2-inch (38-mm) fascia flange with 1/2-inch (12.5-mm) drip at lower edge. ‘L’ type at gutters.
6. Drip Edges: Fabricate in lengths not exceeding 10 feet (3 m) with 4-inch (50-mm) roof-deck flange and 1-1/2-inch (38-mm) fascia flange with 1/2-inch (12.5-mm) drip at lower edge. ‘T’ type at rakes and at non-guttered edges.
7. Kick-Out Flashing: provide kick out flashings at the termination of roof/wall intersections as detailed in Drawings. Kick-Out flashings shall be shop fabricated as indicated on Drawings.

C. Vent Pipe Flashings: Galvanized steel sheet base plate with flexible rubber collar sized to fit vent.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provisions have been made for flashings and penetrations through asphalt shingles.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

B. Single-Layer Felt Underlayment: Install on roofs sloped 4:12 and greater. ~~than 4:12.~~ Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches (50 mm) over underlying course. Lap ends a minimum of 4 inches (100 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with felt-underlayment nails.

1. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 3 inches (75 mm) in direction that sheds water. Lap ends of felt not less than 6 inches (150 mm) over self-adhering sheet underlayment.
2. Install fasteners at no more than 36 inches (914 mm) o.c.

~~C. Double-Layer Felt Underlayment: Install on roof decks 4:12 and under. Install on roof deck parallel with and starting at the eaves. Install a 19-inch- (485-mm-) wide starter course at eaves and completely cover with full-width second course. Install succeeding courses lapping previous courses 19 inches (485 mm) in shingle fashion. Lap ends a minimum of 6 inches (150 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with felt-underlayment nails.~~

~~1. Apply a continuous layer of asphalt roofing cement over starter course and on felt-underlayment surface to be concealed by succeeding courses as each felt course is installed. Apply at locations indicated on Drawings.~~
~~2. Install felt underlayment on roof sheathing not covered by self-adhering sheet underlayment. Lap edges over self-adhering sheet underlayment not less than 3 inches (75 mm) in direction that sheds water.~~
~~3. Terminate felt underlayment extended up not less than 4 inches (100 mm) against sidewalls, curbs, chimneys, and other roof projections.~~
~~4. Install fasteners at no more than 36 inch (914 mm) o.c.~~

D. Self-Adhering Sheet Underlayment: Install, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install lapped in direction that sheds water. Lap sides not less than 3-1/2 inches (89 mm). Lap ends not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Roll laps with roller. Cover underlayment within seven days.

1. Valleys: Extend from lowest to highest point 18 inches (450 mm) on each side.

E. Metal-Flashed, Open-Valley Underlayment: Install two layers of minimum 36-inch- (914-mm-) wide underlayment centered in valley. Stagger end laps between layers at least 72 inches (1830 mm). Lap ends of each layer at least 12 inches (300 mm) in direction to shed water, and seal with asphalt roofing cement. Fasten each layer to roof deck.

1. Lap roof-deck underlayment over first layer of valley underlayment at least 6 inches (150 mm).

3.3 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Division 07, Section "Sheet Metal Flashing and Trim."

1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.

C. Step Flashings: Install with a headlap of 2 inches (50 mm) and extend over the underlying asphalt shingle and up the vertical surface. Fasten to roof deck only.

D. Cricket or Backer Flashings: Install against the roof-penetrating element extending concealed flange beneath upslope asphalt shingles and beyond each side.

E. Open-Valley Flashings: Install centered in valleys, lapping ends at least 8 inches (200 mm) in direction to shed water. Fasten upper end of each length to roof deck beneath overlap.

1. Secure hemmed flange edges into metal cleats spaced 12 inches (300 mm) apart and fastened to roof deck.
2. Adhere 9-inch- (225-mm-) wide strip of self-adhering sheet to metal flanges and to self-adhering sheet underlayment.

F. Rake Drip Edges: Install rake drip-edge flashings over underlayment and fasten to roof deck.

G. Eave Drip Edges: Install eave drip-edge flashings below underlayment and fasten to roof sheathing.

H. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.4 ASPHALT-SHINGLE INSTALLATION

A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

B. Install starter strip along lowest roof edge, consisting of an asphalt-shingle strip with tabs removed at least 7 inches (175 mm) wide with self-sealing strip face up at roof edge.

1. Extend asphalt shingles 1/2 inch (13 mm) over fasciae at eaves and rakes.
2. Install starter strip along rake edge.

C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

E. Install asphalt shingles by single-strip column or racking method, maintaining uniform exposure. Install full-length first course followed by cut second course, repeating alternating pattern in succeeding courses.

F. Fasten asphalt-shingle strips with a minimum of six roofing nails located according to manufacturer's written instructions.

1. Where roof slope exceeds 21:12, seal asphalt shingles with asphalt roofing cement spots after fastening with additional roofing nails.
2. Where roof slope is less than 4:12, seal asphalt shingles with asphalt roofing cement spots.
3. When ambient temperature during installation is below 50 deg F (10 deg C), seal asphalt shingles with asphalt roofing cement spots.

4. Do not nail asphalt shingles within 6 inches (150 mm) of valley center.

G. Open Valleys: Cut and fit asphalt shingles at open valleys, trimming upper concealed corners of shingle strips. Maintain uniform width of exposed open valley from highest to lowest point.

1. Set valley edge of asphalt shingles in a 3-inch- (75-mm-) wide bed of asphalt roofing cement.
2. Do not nail asphalt shingles to metal open-valley flashings.

H. Cap Vents – Static: Install as indicated on Drawings.

I. Cap Vents – Duct Termination: Install at all through the roof duct penetrations. Securely attach duct to cap vent with air tight connection.

J. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

K. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

L. Location of Vents: Do not locate any attic roof sheathing cut-outs within 4 feet of either side of a two-hour area separation wall.

END OF SECTION 07 31 13

SECTION 07 46 46 – FIBER CEMENT SIDING and TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes but is not limited to:
1. Fiber-cement siding.
2. Fiber-cement siding panels
3. Fiber-cement soffit.
4. Fiber-cement exterior trim.
5. Rainscreen furring and venting.
6. Fasteners.

B. Related Sections:

1. Division 01, Section "Air Barrier System Coordination" for administrative requirements for responsibilities of the Contractor to accomplish an airtight building enclosure.
2. Division 06, Section "Rough Carpentry" for wood furring, grounds, nailers, and blocking.
3. Division 07, Section "Weather Resistive Barriers" for weather resistive barriers and accessories integral with the building enclosure system.
4. Division 07, Section "Sheet Metal Flashing and Trim" for flashings integral with the building enclosure system.
5. Division 07, Section "Joint Sealants" for sealants used in conjunction with siding.
6. Division 09, Section "Painting" for finish painting of factory primed siding.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Selection: For siding including related accessories.
1. 12-inch- long-by-actual-width Sample for each type, color, texture and pattern required.

C. Warranty: Sample of special warranty.

1.4 CLOSE OUT SUBMITTALS

A. Maintenance Data: For each type of siding, soffit and rainscreen and related accessories to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with a protective covering for storage and identified with labels describing contents.
   1. Furnish full lengths of siding and soffit including related accessories, in a quantity equal to 2 percent of amount installed.

1.6 QUALITY ASSURANCE

A. 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.

B. Source Limitations: Obtain each type, color, texture, and pattern of siding and soffit, including related accessories, from single source from single manufacturer.

C. Mockups: Coordinate requirements for siding mockups with requirements for wall assembly mockup described in Division 07, Section "Weather Resistive Barriers."
   1. Construction of mockup will require out of sequence work for various trades.
   2. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
   3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

D. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials in a dry, well-ventilated, weathertight place.

1.8 WARRANTY

A. Product Warranty: Standard form in which manufacturer agrees to repair or replace siding, soffit and trim products that fail(s) in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following: Structural failures including cracking, deforming.
   2. Lap and Vertical Siding and Soffit Product Warranty Period: 30 years from date of Substantial Completion.
   3. Trim Product Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FIBER-CEMENT SIDING AND TRIM

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. Manufacturer's: Subject to compliance with requirements, provide products by one of the following:
      a. James Hardie Building Products, Inc., HZ 10.

B. Horizontal Lap Board Siding:
   1. Texture: Select Cedarmill at exposed face.
   2. Size: 5/16 inch thick, 12 ft. long boards.
   3. Exposure: as noted on Drawings.

C. Panel Siding:
   1. Groove Pattern: None
   2. Texture: Stucco at exposed face.
   3. Size: 5/16 inch thick, 4 x 8 ft., 4 x 9 ft. or 4 x 10 ft. sheets as required.

D. Soffit Panels:
   1. Groove Pattern: None
   2. Texture: Vented Cedarmill at exposed face.
   3. Size: 1/4 inch thick, 12 inch x 12 ft., 16 inch x 12 ft., 24 inch x 12 ft., or 4 x 8 ft. sheets as required.
   4. Ventilation: Provide un-perforated soffit unless otherwise indicated.

E. Exterior Trim 5/4 (1 inch) cement fiber boards:
   1. Texture: Rustic Grain at exposed face.
   2. Size: 1 inch actual thickness, width as noted on Drawings, 10 ft. long boards.
   3. Back: No grooves at exposed fascia edges.

F. Exterior Trim Batten Strips:
   1. Product: Manufactured batten strips
   2. Texture: Rustic Grain at exposed face.
   3. Size: 3/4 inch x 2-1/2 inches actual dimensions, 12 ft. long boards.

G. Finish:
   1. Factory Primer: Manufacturer's standard acrylic primer.
   2. Topcoats: As specified in Division 09, Section "Painting".

2.2 RAINSCREEN FURRING

A. Rain Screen Furring Strips: Exterior grade plywood, wood preservative treated, 1/2 inch thick by 2-inches wide.

B. Borate (SBX) Preservative Treatment: Disodium octoborate tetrahydrate (DOT) treatment for insect and decay protective pressure treatment of wood, producing material meeting the following minimum standards:
   1. Treatment Standard: AWPA 3B.
   2. Treatment Level: Borate preservative treatment minimum retention level of 0.42 pcf.
   3. Edge Treatment: Fully treated by cutting furring strips to width prior to preservative treatment process.

C. Rainscreen Furring Fasteners: Stainless steel, size as specified on Drawings.

2.3 ACCESSORIES

A. Joint Flashing at Lap Siding Field Butt Joints:
   1. Material: Zinc-Coated (Galvanized) Steel Sheet; ASTM A 653/A 653M, G90 coating designation.
   2. Thickness: 0.0179 inch, 29 ga.
   3. Width: 6 inches.
   4. Finish: Pre-painted by coil-coating process to comply with ASTM A 755/ A 755M.
   5. Color: As selected by Architect from manufacturer's full range.

B. Outside Corners at Lap Siding:
   1. Product: Simplicity Tool; "Siding Corners."
   2. Material: Aluminum
   3. Thickness: 0.015 inch.
   4. Size: To match lap siding thickness and width.
   5. Finish: Factory-sprayed, baked-on primer suitable for field painting, 0.3 mil dry film thickness.
   6. Finish:
      a. Prepainted by coil-coating process with two coat fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat to comply with AAMA 620 and coating manufacturer's written instructions.
      b. Color: As selected by Architect from manufacturer's full range.

C. Trim at Panel Siding:
   1. Extrusions: Extruded aluminum, alloy 6063 T5 with factory sprayed, baked-on primer suitable for field painting; 0.3 mil dry film thickness
   2.
      a. Vertical Reveals: Fry Reglet; FCP - Vertical.
      b. Inside Corner Reveals: Fry Reglet; FCP - Inside Corner
      c. Outside Corner Reveals: Fry Reglet; FCP - Outside Corner
   3. Break Shape: 24 ga.steel galvanized and primed.
      a. Horizontal: ‘Z’ profile as indicated on Drawings.

D. Insect Screen: 18 x 16 mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D 3656.

E. Concealed Vents: Corrugated plastic; Cor-A-Vent Siding vent with insect screen as noted on Drawings.

F. Separator Material: Self adhered membrane per Division 07, Section "Weather Resistive Barriers".

2.4 FASTENERS

A. To wood framing or furring: fiber cement plank siding.
1. Minimum: Fastener with minimum embedment in wood substrate as indicated in manufacturer's fastener schedule. Increase fastener length as required to accommodate non-wood materials. Obtain written confirmation fastener selection is appropriate for substrate from manufacturer's representative.
2. Refer to manufacturer's applicable building code compliance reports for specific framing and fastener requirements as determined by maximum basic wind speed and exposure category.
3. Material: ~~Stainless steel nails~~ Hot-dip galvanized.

B. To wood framing and furring: fiber cement panels.
1. Minimum: Fastener with minimum embedment in wood substrate as indicated in manufacturer's fastener schedule. Increase fastener length as required to accommodate non-wood materials. Obtain written confirmation fastener selection is appropriate for substrate from manufacturer's representative.
2. Refer to manufacturer's applicable building code compliance reports for specific framing and fastener requirements as determined by maximum basic wind speed and exposure category.
3. Material: ~~Stainless steel~~ Hot-dip galvanized.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of siding and soffit and related accessories. Notify Architect of unsatisfactory substrate conditions in writing. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION - GENERAL

A. Install blocking as required to attach trim, siding and rainscreen materials and accessories.

B. Coordinate installation of weather barriers, flashings and adjoining construction to ensure proper sequencing.

C. Cuts: Provide cut edges that are smooth, clean and straight. Make all cross cuts square to the material being cut unless otherwise indicated. Make all longitudinal cuts parallel to the edge of the siding unless otherwise indicated. Make all angled cuts parallel to adjacent sufaces unless otherwise indicated. Use squares, straight edges or guides as required to produce straight cut edges. Cuts shall not deviate from a straight line more than 1/16 inch over 96 inches. Do not overcut inside corners. Replace work that does not meet cut requirements.

3.3 INSTALLATION – WOOD STRIP RAINSCREEN FURRING

A. General: Provide rain screen furring under all siding. Install over weather resistive barrier and opening flashings.

B. Install furring strips vertically. Other than at wall openings, do not install horizontal furring that would impede the flow of moisture in the siding cavity.

C. Locate furring strips directly over wall studs.

D. Provide additional furring at jambs of wall openings.

E. Provide air gap of ½ inch minimum between window trim furring and window frame at head and jambs.

F. Provide a minimum of ½ inch minimum space between adjacent furring strips.

3.4 INSTALLATION - LAP SIDING

A. General: Comply with siding manufacturer's written installation instructions applicable to products and applications indicated, unless more stringent requirements apply.

B. Install board siding lapped for natural watershed.

C. Install siding using manufacturer’s approved blind nailing techniques.
1. Drive fasteners perpendicular to siding and framing.
2. Fastener heads should fit snug against siding (no air space)
3. Do not overdrive fasteners or drive at an angle.
4. If nail is countersunk, fill nail hole and add another nail.
5. Do not use aluminum fasteners, staples or clipped head nails.
6. Nail along provided nail line or ¾ inch to 1 inch below top of plank.
7. Nail 3/8 inch from end of plank.

D. Install in full length pieces where possible. Make every effort to minimize butt joints. Do not install any length under 4 feet, unless length of wall is less than 4 feet.

E. Butt joints:
1. Stagger butt joints. Alternate board lengths to avoid butt joint alignment within four (4) courses of siding.
2. Do not ‘stair step’ butt joint offset, aim for random alignment.
3. Position cut ends over stud locations or solid blocking.
4. Install joint flashing material behind all butt joints.
5. Install factory cut edges together at butt joints
6. Install planks in moderate contact at butt joints
7. Do not install sealant at field butt joints.
8. Nail per manufacturer recommendations.

F. Fasten siding in place with blind nailing, level and plumb. Nail into wood studs or solid blocking. Do not nail siding to sheathing.

G. Kick Out Flashings: As detailed in Drawings.

H. Clearances:
1. Provide 1/8 inch gap between siding and corner, window and door trim. Seal weather tight per Division 07, Section "Joint Sealants" with properly dimensioned fillet joint.
2. Maintain a minimum ¼” clearance between the bottom of siding and horizontal flashing – do not caulk gap.
3. Maintain a minimum of 6” between the bottom of siding and finished adjacent grade.
4. Maintain a minimum of 1” gap between gutter end caps and siding and trim.
5. Maintain a minimum of 2” vertical clearance between siding and decking, roofing, patios surfaces and sidewalks.
6. Other clearances as required by manufacturer’s installation instructions.

3.5 INSTALLATION, SOFFIT PANELS

A. General: Comply with siding and soffit manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
1. Do not install damaged components.

B. Install fiber-cement siding and soffit and related accessories.
1. Install fasteners no more than 24 inches o.c.

C. Install joint sealants as specified in Division 07, Section "Joint Sealants" and to produce a weathertight installation.

3.6 INSTALLATION, PANEL SIDING

A. General: Comply with siding manufacturer's written installation instructions applicable to products and applications indicated, unless more stringent requirements apply.

B. Coordination:
1. Coordinate spacing of studs and rainscreen strips with panel reveals / battens.
2. Center batten patterns and panel reveals on areas to be sided unless otherwise indicated on Drawings.

C. Arrange joints as shown on Drawings. Align joints in adjacent panels to provide consistent joint lines around entire building.

D. Locate edge joints centered over furring.

E. Provide cut edges that are smooth and clean

F. Reveal Trim: Install reveal trim per manufacturer’s fastening and installation instructions. Install vertical trim plumb and horizontal trim level.

G. Dissimilar Reveal Materials: When reveal materials are dissimilar provide self-adhered membrane separator material between dissimilar materials.

H. Pre-Finished Panel Filler: Fill nail holes in pre-finished panels with colored matched filler recommended by pre-finished panel manufacturer. When using color matched filler at pre-finished panels completely wipe filler from area surrounding nail head or nail hole.

3.7 INSTALLATION - STANDING AND RUNNING TRIM

A. Install trim level, plumb, true, and aligned with adjacent materials.
1. Scribe and cut exterior trim to fit adjoining work.
2. Use concealed shims where necessary for alignment.
3. Install to tolerance of 1/8 inch in 96 inches for level and plumb.
4. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
5. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
6. Coordinate exterior trim with materials and systems in or adjacent to it.
7. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.
8. Rabbet vertical edges at corner trim and blind caulk vertical trim to trim joints.
9. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available.
10. Do not use pieces less than 48 inches long except where necessary.
11. Use scarf joints for end-to-end joints.
12. Stagger end joints in adjacent and related members.
13. Fit exterior joints to exclude water with angled ‘weather cut’.
14. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint.

B. Unless otherwise indicated, countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.

C. Trim Filler: Fill nail holes in trim with filler recommended by manufacturer. Strike smooth.

3.8 FIELD PRIMING OF SIDING AND TRIM

A. Prime paint field cut ends of siding and trim using siding manufacturer’s recommended primer.

B. Allow primer to cure prior to installing materials.

C. Prime siding and trim areas to receive sealant with sealant manufacturer’s recommended primer when a primer is required to achieve satisfactory pull test results as indicated in Division 07, Section "Joint Sealants".

3.9 ADJUSTING AND CLEANING

A. Touch-up exposed fasteners and field cuts with manufacturer approved finish.

B. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.

C. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 07 46 46

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes but is not limited to:

1. Mechanical door hardware for the following:

a. Swinging doors.
b. Sliding doors.
c. Folding doors.

B. Related Sections:

1. Division 08, Section "Flush Wood Doors" for hardware.
2. Division 08, Section "Fiberglass faced Doors" for hardware.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.

1. Sample Size: Full-size units.

a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

2. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
c. Content: Include the following information:

1) Identification number, location, hand, fire rating, size, and material of each door and frame.
2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
4) Fastenings and other pertinent information.
5) Explanation of abbreviations, symbols, and codes contained in schedule.
6) Mounting locations for door hardware.
7) List of related door devices specified in other Sections for each door and frame.

3. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

C. Qualification Data: For Installer and Architectural Hardware Consultant.

D. Product Certificates: For electrified door hardware, from the manufacturer.

1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

E. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

F. Warranty: Special warranty specified in this Section.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design and extent to that indicated for this project.

C. Source Limitations: Obtain each type of door hardware from a single manufacturer.

D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

E. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.

F. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

G. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1, HUD's "Fair Housing Accessibility Guidelines", Uniform Federal Accessibility Standards (UFAS), ANSI A1117.1 2003, NFPA 101 and Oregon Structural Specialty Code (Current Edition).

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
2. Comply with the following maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
    b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
    c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high and 3/4 inch (19 mm) high for exterior sliding doors.
4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

H. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01, Section "Project Management and Coordination." In addition to Owner Contractor,

and Architect, conference participants shall also include Installer's Architectural Hardware Consultant and Owner's security consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Requirements for access control.
5. Address for delivery of keys.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys and permanent cores to Owner.

1.7 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

C. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

   a. Exit Devices: Two years from date of Substantial Completion.
   b. Manual Closers: 10 years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.

   1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products and products complying with BHMA designations referenced.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:

   1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
   2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.
   3. When only one manufacturer is listed, provide the product indicated in the Hardware Schedule.

2.2 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

      a. IVES Hardware; an Ingersoll-Rand company.
      b. Bommer Industries, Inc.
      c. Stanley Commercial Hardware; Div. of The Stanley Works.

2.3 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
3. Deadbolts: Minimum 1-inch (25-mm) bolt throw.

C. Lock Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

D. Lock Trim:

1. Operating Device: Lever with escutcheons (roses).

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch. Dust proof.

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.

F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Falcon Lock; An Ingersoll-Rand Company.
b. Corbin Russwin Architectural Hardware; n ASSA ABLOY Group Company.
c. Schlage Commercial Lock Division; an Ingersoll-Rand company.
d. Dorma

G. Mortise Locks: BHMA A156.13; Security Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Falcon Lock; an Ingersoll-Rand company.
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
c. Schlage Commercial Lock Division; an Ingersoll-Rand company.
d. Dorma Architectural Hardware.

2.4 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Falcon Lock; an Ingersoll-Rand company.
    b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company..
    c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    d. Von Duprin; an Ingersoll-Rand company.
    e. DORMA Architectural Hardware

2.5 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Manufacturer: Same manufacturer as for locking devices.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Falcon Lock; an Ingersoll-Rand company.*
    b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
    c. DORMA Architectural Hardware
    d. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    e. Schlage Commercial Lock Division; an Ingersoll-Rand company.

B. Standard Lock Cylinders: BHMA A156.5; Grade 1; permanent cores that are interchangeable; face finished to match lockset.

C. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

D. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.6 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.

1. No Master Key System: Only change keys operate cylinder.
2. Master Key System: Change keys and a master key operate cylinders.
3. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.
4. Great-Grand Master Key System: Change keys, a master key, a grand master key, and a great-grand master key operate cylinders.
5. Existing System:
    a. Master key or grand master key locks to Owner's existing system.
    b. Re-key Owner's existing master key system into new keying system.

6. Keyed Alike: Key all cylinders to same change key.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE" or as required by Owner.

2. Quantity: In addition to one extra key blank for each lock, provide the following:

a. Cylinder Change Keys: Three.
b. Master Keys: Five.
c. Grand Master Keys: Five.
d. Great-Grand Master Keys: Five.

2.7 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.5; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of number of doors on project plus 10 percent of the number of locks.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Key Boxes and Cabinets.
b. GE Security, Inc.
c. Lund Equipment Co., Inc.
d. MMF Industries.

2. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

B. Key Lock Boxes: Designed for storage of two keys, with tamper switches to connect to intrusion detection system.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. GE Security, Inc.
b. HPC, Inc.
c. Knox Company.

~~C. Key Control System Software: BHMA A156.5, Grade 1; multiple-index system for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.~~

~~1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:~~

~~a. Best Access Systems; Div. of Stanley Security Solutions, Inc.~~
~~b. GE Security, Inc.~~

~~c. HPC, Inc.~~

2.8 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Falcon Lock; an Ingersoll-Rand company.*
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
c. DORMA Architectural Hardware; Member of The DORMA Group North America.
d. LCN Closers; an Ingersoll-Rand company.
e. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

2.9 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. IVES Hardware; an Ingersoll-Rand company.*
b. Architectural Builders Hardware Mfg., Inc.
c. Stanley Commercial Hardware; Div. of The Stanley Works.
d. Trimco.

2.10 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. National Guard Products.
b. Pemko Manufacturing Co.; an ASSA ABLOY Group company.
c. Reese Enterprises, Inc.

2.11 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. National Guard Products.
b. Pemko Manufacturing Co.; an ASSA ABLOY Group company.
c. Reese Enterprises, Inc.

2.12 BI-PASSING / BI-FOLDING DOOR HARDWARE / POCKET DOOR

A. General: BHMA A156.14; complete sets including overhead rails, hangers, supports, bumpers, floor guides, and accessories indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Stanley Commercial Hardware; Div. of The Stanley Works.
b. Hager Companies.
c. Johnson, L. E., Products, Inc.

2.13 KICK PLATES

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick; with manufacturer's standard machine or self-tapping screw fasteners.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. IVES Hardware; an Ingersoll-Rand company.
b. Tice
c. Trimco.

2.14 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:

    a. Wood or Machine Screws: For the following:

        1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
        2) Strike plates to frames.
        3) Closers to doors and frames.

    b. Steel Through Bolts: For the following unless door blocking is provided:

        1) Surface hinges to doors.
        2) Closers to doors and frames.
        3) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.15 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Fiberglass and Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

E. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

1. Configuration: Provide one power supply for each door opening with electrified door hardware.

F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Section 01 79 00 "Demonstration and Training."

3.8 FINISH

A. Finish: All hardware to have BHMA 626 (US 26D) satin chrome, finish or as noted.

3.9 DOOR HARDWARE SCHEDULE

HW SET: 01

Unit Entry

EACH TO HAVE

3	EA	HINGE	5BB1 4.5 X 4.5	626	IVE
1	EA	DEADLOCK	D241P	626	FAL
1	EA	PASSAGE SET	W101S QUANTUM	626	FAL
1	EA	DOOR STOP	WS 407 CCV	626	IVE
1	SET	SEALS	2525B (HEAD & JAMBS)	BRN	NG
1	EA	THRESHOLD	158 (offset saddle – accessible)	AL	PEM
1	EA	VIEWER	U698 (PROVIDE 2 AT ADA ACCESSIBLE UNITS, OMIT AT DOORS WITH LIGHT)	626	IVE

NOTE: OMIT STOP WHERE THERE IS NO WALL OR DOOR TO MAKE CONTACT.

HW SET: 02

Unit Interior Door – Bedroom or Storage

EACH TO HAVE

3	EA	HINGE	5BB1RC 3.5 X 3.5	626	IVE
1	EA	PASSAGE SET	W101S QUANTUM	626	FAL
1	EA	DOOR STOP	WS 407 CCV	626	IVE
3	EA	SILENCER	SR65	GRY	IVE

NOTE: OMIT STOP WHERE THERE IS NO WALL OR DOOR TO MAKE CONTACT.

HW SET: 03

Unit Interior Door- Bathroom

EACH TO HAVE:

3	EA	HINGE	5BB1RC 3.5 X 3.5	626	IVE
1	EA	PRIVACY LOCK	W301S QUANTUM	626	FAL
1	EA	DOOR STOP	WS 407 CCV	626	IVE
3	EA	SILENCER	SR65	GRY	IVE

NOTE: OMIT STOP WHERE THERE IS NO WALL OR DOOR TO MAKE CONTACT.

HW SET: 04

Bypass Doors

EACH TO HAVE:

1	SET	BYPASS HARDWARE	BPC150N		STA
2	EA	FLUSH PULL	242	626	TR
2	EA	ADHESIVE NEOPRENE STOP			

HW SET: 05

Bifold Doors

EACH TO HAVE:

1	SET	BIFOLD HARDWARE	BFC125N Heavy Duty – 150 lb. capacity, double roller.		STA
2	EA	WIRE PULL	562-4	626	TR

HW SET: 06

Exterior Storage Closets, Fire Sprinkler Riser Closets

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	626	IVE
1	EA	STOREROOM	W581S QUANTUM	626	FAL
1	SET	SEALS	2525B (HEAD & JAMBS)	BRN	NGP
1	EA	DR BTM RAIN DRIP	17	AL	NGP
1	EA	THRESHOLD	158 (offset saddle – accessible)	AL	PEM

HW SET: 07

Office Entry, Laundry Entry

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	626	IVE
1	EA	STOREROOM	W581S QUANTUM	626	FAL
1	EA	DOOR STOP	WS407CCV	626	IVE
1	SET	SEALS	2525B (HEAD & JAMBS)	BRN	NGP
1	EA	DR BTM RAIN DRIP	17	AL	NGP
1	EA	THRESHOLD	158 (offset saddle – accessible)	AL	PEM

END OF SECTION 08 71 00

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes but is not limited to:

1. Interior gypsum board.
2. Texture finishes.

B. Related Sections:

1. Division 06, Section "Rough Framing" for wood framing and furring supporting gypsum board assemblies.
2. Division 07, Section "Thermal Insulation" for insulation and vapor retarders installed in assemblies that incorporate gypsum board.
3. Division 09, Section "Painting" for primers applied to gypsum board.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.
2. Textured Finishes: 12”x12” for each textured finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install mockups for the following:

a. Each level of gypsum board finish indicated for use in exposed locations.
b. Each texture finish indicated.

2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

D. WARRANTY

1. Gypsum Board: 1 year materials
2. Batt: 1 year materials.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 GYPSUM BOARD, GENERAL

A. Recycled Content of Gypsum Panel Products:
1. Paper Facing: 100% post consumer recycled content.
2. Core: 19 % recycled or synthetic content.

B. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Georgia-Pacific Gypsum LLC.
2. National Gypsum Company.
3. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

C. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch (15.9 mm), Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

D. Glass Mat Interior Gypsum Board: ASTM C 1658/C 1658M, with manufacturer's standard edges. With fiberglass mat laminated to both sides, for interior use.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Georgia-Pacific Gypsum LLC.
   b. USG Corporation.

2. Core: 5/8 inch (15.9 mm), Type X as required by fire-resistance-rated assembly indicated on Drawings.

3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material:
   a. Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

2. Shapes:
   a. Cornerbead.
   b. LC-Bead: J-shaped; exposed long flange receives joint compound.
   c. L-Bead: L-shaped; exposed long flange receives joint compound.
   d. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
3. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
   a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
2. Recycled Content of Blankets: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 35 percent by weight.

E. Acoustical Joint Sealant: As specified in Division 07, Section "Joint Sealants."

F. Thermal Insulation: As specified in Division 07, Section "Thermal Insulation."

G. Vapor Retarder: As specified in Division 07, Section "Thermal Insulation."

H. L-Shaped Soffit Framing Angles: 2-1/2 inch x 2-1/2”x 20 ga galvanized sheet steel angles for soffit and corner framing.

2.7 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

B. Non-Aggregate Finish: Pre-mixed, vinyl texture finish for spray application.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. National Gypsum Company; Perfect Spray EM Texture.
   b. USG Corporation; BEADEX FasTex Wall and Ceiling Spray Texture.

2. Texture: Orange Peel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. All gypsum board to be screw applied.

C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

F. Form control and expansion joints with space between edges of adjoining gypsum panels.

G. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

H. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

I. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

J. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

K. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

L. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

M. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

N. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

O. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

P. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch- (300-mm-) long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches (400 mm) o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches (300 mm) o.c.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.

3.4 MOISTURE AND MOLD RESISTANT GYPSUM BOARD

A. Install at all wet locations and walls scheduled to receive plumbing fixtures.

3.5 GLASS-MAT INTERIOR GYPSUM BOARD

A. Install at selective areas requiring repair in all attic and crawl space demising walls.

3.6 INSTALLING SOFFIT ANGLES

A. General: Install metal soffit angles at soffit conditions as shown on Drawings. Use metal angle to reinforce inside and outside corners.

3.7 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Division 09, Section "Painting."

3.8 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.9 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00