

SECTION 06 16 00 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gypsum sheathing, for exterior walls and soffits; for interior walls.
 - a. Glass-mat faced.
 - b. Metal-faced, shear panels (sure-board), for exterior and interior.
2. Plywood sheathing.
 - a. Roof parapets.
 - b. Exterior ceilings.
 - c. Interior storage walls.

~~3. Joint treatment for plywood sheathed exterior ceilings.~~

B. Products furnished but not installed under this Section:

1. Plywood sheathing as backers, for exterior wood panel soffits.

C. Requirements specified but not installed under this Section:

1. Joint treatment for plywood sheathed exterior ceilings and interior storage walls, installed under Section 07 92 00 "Joint Sealants".

~~C.D.~~ See Section 09 29 00 "Gypsum Board" for option at interior in lieu of exterior gypsum sheathing.

~~D.E.~~ Related Requirements:

1. Section 05 40 00 "Cold-Formed Metal Framing" for blocking and framing backup.
2. Section 06 10 53 "Miscellaneous Rough Carpentry" for plywood backing panels at electrical-mechanical backing; for separator flashing used between treated wood materials and steel studs.
3. Section 07 27 00 "Air Barriers" for air- and water-resistive barriers applied over exterior wall and soffit sheathing.
4. Section 07 54 23 "TPO Roofing" for roofing materials applied to roof and parapet sheathing.
5. Section 09 22 16 "Non-Structural Metal Framing" for interior framing backup.
6. Section 09 54 26 "Suspended Wood Ceilings" for installing plywood backer for exterior wood soffits panels (WD-1).

1.2 COORDINATION

- A. Coordinate backup support framing required for sheathing and shear panel installation.
- B. Coordinate joint and panel edge requirements and building joints and openings in framed construction telegraphing through sheathing.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 1. Review shear panel installation.

2. Review panel edge blocking, joint and opening requirements.
3. Review sequencing of sheathing with steel framing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, for process and factory-fabricated products. Indicate component materials and dimensions and include construction and application details.
 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
 2. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency in accordance with ASTM D5516.
- B. Shop Drawings: For shear panels.
 1. Show elevations including locations and extent of sheathing, panel joints, and accessories.
 - a. Show penetrations and items specific to Project conditions.
 2. Include details for joints, penetrations, inside and outside corners, terminations, and tie-ins with adjoining and supporting construction.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each listed product, indicating compliance with specified requirements, for tests performed by a qualified testing agency.
 1. Shear panels.
 2. Mechanical fasteners.
- B. Evaluation Reports: For the following, from ICC-ES:
 1. Shear panels.
 2. Fire-retardant-treated plywood.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 1. For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide air circulation around stacks and under coverings.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of other construction by field measurements before cutting edges and openings. Indicate measurements on Shop Drawings for approval.
 1. Coordinate schedule with construction progress to avoid delaying the Work.

2. Locate supporting framing and blocking by field measurements; indicate measurements on Shop Drawings.
 3. Coordinate framing to ensure that actual dimensions correspond to established dimensions.
- B. Protect fire-retardant treated plywood from moisture where scheduled to receive self-adhered membranes or other coatings, including paint. Maintain cover of stored plywood and cover installed plywood to maintain moisture content below 19-percent.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

- A. Emissions: Products are to meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Thickness: As needed to comply with specified requirements, but not less than thickness indicated.
- C. Factory mark panels to indicate compliance with applicable standard.

2.2 FIRE-RETARDANT-TREATED (FRT) PLYWOOD

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested in accordance with ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 1. Use treatment that does not promote corrosion of metal fasteners.
 2. Exterior Type: Treated materials are to comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering in accordance with ASTM D2898. Use for exterior locations and where indicated.
- C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.
- E. Application: Treat all plywood unless otherwise indicated.

2.3 EXTERIOR GYPSUM SHEATHING

- A. Glass-Mat Gypsum Sheathing, Walls and Soffits: ASTM C1177/C1177M.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed; SAINT-GOBAIN; GlasRoc.
 - b. Georgia-Pacific Gypsum LLC; DensGlass Sheathing.

- c. USG Corporation; Securock Brand UltraLight Glass-Mat Sheathing.
2. Type and Thickness: Regular, 1/2 inch thick.
3. Size: 48 inches by 96 to 120 inches long; for vertical installation on walls, horizontal on fascia and soffits.

2.4 SHEAR-PANELS

B.A. Shear Panels (Sure-board): Metal-faced ~~glass-mat faced~~ gypsum board panels.

1. Facing Substrate:

- a. Exterior: Glass-mat faced gypsum sheathing.
- b. Interior: Gypsum board in Section 09 29 00 "Gypsum Board", 5/8-inch.

4.2. General: See Structural Drawings for requirements.

- a. Panels shall be manufactured and installed according to the evaluation report and as indicated.
- b. Factory mark panels with applicable standards.

2.3. Metal Facing: ASTM A1003 Structural Grade 33 Type H; minimum G40, hot-dip galvanized coating designation; laminated to backer with manufacturer's standard adhesive.

- a. Thickness: Minimum 0.027-inch, 22-gauge.
- b. Backer Panel: 1/2-inch glass-mat gypsum sheathing.
- c. Size: 48 inches wide (nominal) by 96 to 144 inches long.

3.4. Openings: As required for penetrations, to be approved in Submittals.

2.42.5 PLYWOOD SHEATHING

A. Plywood Sheathing, Parapets: Either DOC PS1 or PS2, Exterior Structural I.

1. Treatment: FRT and untreated, by application.
2. Thickness: 1/2-inch.
3. Span Rating: 32/16.

B. Plywood Sheathing, Exterior Ceilings and Soffits: Match material for roofs, 1/2-inch thick, ADX. FRT at ceiling; untreated at soffits.

1. Provide long edges with tongue and groove. Coordinate ceiling framing and blocking for square edges.
2. Finish: Primed and painted prior to installation, including openings for fixtures and exposed edges.
 - a. Where field painted, ensure sealant at sealant-set edges are not on faces scheduled for painting.

C. Plywood Panels, Interior Walls at Storage: Plywood, DOC PS 1, Exterior, A-C.

1. Thickness: 3/4-inch unless otherwise indicated.
2. Edges: Tongue and groove.
3. Flame-Spread: Class C, ASTM E84 or UL 723.
4. Apply on coat of primer to back of plywood prior to installation. See Section 09 91 23 "Interior Painting."
5. Coordinate blocking at top edge, transition to adjacent gypsum board, corner layout, and penetrations.

2-52.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. For treated-wood sheathing, provide fasteners with a mechanical deposited zinc-coated with coating weights in accordance with ASTM B695, Class 55 minimum or hot-dip zinc coating complying with ASTM A153/A153M or of Type 304 stainless steel.
 - a. Other corrosion-protective coatings are acceptable where coating has been tested by a qualified testing agency showing equivalence in coating protection.
 - 2. For exterior gypsum sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 1,000 hours in accordance with ASTM B117.
- B. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- C. Screws for Fastening Gypsum Sheathing, and Shear Panels, to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.
 - 1. For steel framing less than 0.0329 inch thick, use screws that comply with ASTM C1002.
 - 2. For steel framing from 0.033 to 0.112 inch thick, use screws that comply with ASTM C954.
 - 3. For Fastening Shear Panels: As indicated and recommended by panel manufacturer.

2-62.7 MISCELLANEOUS MATERIALS

- ~~A. Sealant for Plywood Ceiling and Soffit Joints: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing and recommended by sheathing manufacturers for use and for covering exposed fasteners.~~
- A. Sealant: See Section 07 92 00 "Joint Sealants":
 - 1. For Interior Plywood Walls at Storage: Latex.
 - 2. Exterior Plywood Ceiling and Soffit Joints: Silicone, exterior type, black.
 - a. Edges: Use silicone at sealant set edges.
- B. Separator Flashing: See flexible flashing in Section 06 10 53 "Miscellaneous Rough Carpentry".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supports, areas, conditions, and structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Verify blocking for openings and edge supports required for shear panels are complete.
 - 2. Verify location of building joints.
 - 3. Verify stud cavities requiring insulation fill are complete that are otherwise inaccessible once sheathing is complete.
 - 4. Verify separation requirements of materials in contact one another, for treated plywood products and galvanized steel studs.
 - 5. Verify framing and blocking for exterior plywood ceiling is complete. All plywood ceilings shall be tongue and groove or with continuous support; pyclips are not acceptable.

6. Verify blocking for interior plywood walls is complete. Top of plywood shall be blocked for at transition to gypsum board.

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

3.2 PREPARATION

- A. Install separator flashing as required to prevent galvanic reaction or corrosion between treated plywood panels and galvanized steel framing where required or recommended by treated wood manufacturer.

B. Provide preservative- and fire-retardant blocking or furring strips where installed against concrete.

1. Where panels are supported and directly attached to or in direct contact with concrete, back prime plywood panels with two coats interior primer for wood in Section 09 91 23 "Interior Painting" or provide separator strip over concrete.

3.3 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Do not bridge building expansion and deflection joints; cut and space edges of panels to match spacing of structural support elements.
- C. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.
- D. Coordinate sheathing installation with air barrier flashing and detail sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- F. Securely attach to substrate by fastening as indicated, complying with the following:
1. Plywood: Table 2304.10.2, "Fastening Schedule," in the Oregon Structural Specialty Code.
 2. ICC-ES evaluation report for shear panel; for fastener.
 3. Gypsum Sheathing: ASTM C1280 and manufacturer's fastening requirements for wind exposure.

3.4 INSTALLATION OF WOOD STRUCTURAL PANEL

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Install with face grain or strength axis perpendicular to supports.
1. Ends shall be blocked or supported by stud.
- C. Fastening Methods: Fasten panels as indicated below:
1. Roof Parapet Sheathing:
 - a. Screw to cold-formed metal framing.
 - b. Space panels 1/8 inch apart at edges and ends.

3.5 INSTALLATION OF EXTERIOR PLYWOOD CEILINGS AND SOFFITS, AND INTERIOR WALLS

- A. Plywood ceilings to have joints with sealant and perimeter sealant set or with sealant joint.
- B. General: Comply with installation for wood structural panels. A- or B-face exposed.
 - 1. Provide separator between wood and framing where required or recommended by plywood manufacturer.
 - 2. Orientation:
 - a. Interior Storage Walls: Vertical.
 - b. Exterior Ceilings and Soffits: Long grain running parallel to supports and to linear grille ceilings.
 - 1) Offset panels half in running bond layout.
- C. Fastening Methods: Fasten plywood panels as indicated below:
 - 1. Screw to metal framing.
 - 2. Spacing, Fasteners: 6 inches on center edges, 12 inches on center in field.
 - 3. Predrill for countersink fasteners flush with surface where exposed, at interior storage.
 - a. Align screws horizontally with no more variation between screws vertically of more than 1/8-inch where located 16-inches or more away and 1/16-inch at panel joints.
 - b. Align fasteners vertically straight and plumb with no more than 1/16-inch offset from straight.
 - 4. Countersink exterior fasteners sufficient for application of sealant over heads, 1/16-inch.
- D. Joints and Edges: Ends shall be blocked or supported by studs.
 - 1. Exterior Ceilings:
 - ~~2-a.~~ Space panels minimum 1/8 inch and maximum 1/4-inch apart at all edges and ends for sealant.
 - b. Set edges in continuous sealant at perimeter where indicated.
 - 2. Interior Walls, Storage:
 - a. Plywood walls to have tongue and groove joints located over framing with sealant joints at perimeter.
 - b. Hold panels 1/2-inch from concrete floor, measured from lowest elevation of floor.
 - c. Space panels minimum 1/8 inch at tongue and groove edges and 1/4-inch gap at corner ends for sealant.
 - 3. Install panels with a minimum 4/43/8-inch maximum 1/2-inch gap where abutting or around items penetrating plywood.
 - 4. ~~Set edges in continuous sealant at perimeter where indicated.~~
- ~~C.E.~~ Sealant: ~~Comply with manufacturer's written installation instructions and~~ Installed under Section 07 92 00 "Joint Sealants-" to comply with manufacturer's written installation instructions:
 - 1. Apply ~~elastomeric~~ sealant to exterior sheathing joints in accordance with sheathing and sealant manufacturer's written instructions.
 - 2. Apply primer at exterior ceilings and soffits to ensure adhesion.
 - ~~2-3.~~ Apply sealant to fasteners and joints at soffits and ceilings after painting.
 - ~~3-4.~~ Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
 - ~~4-5.~~ Trowel sealant flat.

3.6 INSTALLATION OF GYPSUM SHEATHING

- A. Comply with ASTM C1280 and with manufacturer's written instructions.
 - 1. Fasten gypsum sheathing to cold-formed metal framing with screws.
 - 2. Install panels at deflection slotted and nested tracks with a deflection gap of size indicated or sized to specified requirements for movement indicated.
 - 3. Install panels with a 3/8-inch gap where non-load-bearing construction abuts structural elements or around items penetrating sheathing.
 - 4. Install panels with a minimum 1/4-inch gap and maximum 1/2-inch gap where they abut concrete, masonry or similar materials that might retain moisture, to prevent wicking.
- B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.
- C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing. Abut ends over centers of studs, and stagger end joints of adjacent panels not less than one stud spacing. Attach at perimeter and within field of panel to each stud.
 - 1. Space fasteners on center for requirements specified, and set back a minimum of 3/8 inch from edges and ends of panels.
- D. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.
 - 1. Space fasteners on center for requirements specified and set back a minimum of 3/8 inch from edges and ends of panels.

3.7 INSTALLATION OF SHEAR PANELS – SURE-BOARD

- A. General:
 - 1. Verify stud spacing and strapping for joints is installed.
 - 2. Install according to manufacturer's written instructions and evaluation report.
 - 3. Layout according to approved Shop Drawings.
 - 4. Metal facing shall be in contact with framing.
- B. Install panels with a 1/4-inch gap where they abut concrete or similar materials that might retain moisture, to prevent wicking.
 - 1. Space fasteners according to Structural drawings and set back a minimum of 3/8 inch from edges and ends of panels.
 - 2. Screw to metal framing.
 - 3. Drive fasteners so heads are recessed from the face of gypsum paper facing, without damaging facing and to allow for membrane installation in Division 07 Sections.

3.8 PROTECTION

- A. Seal sheathing surfaces marred or damaged during construction activities including during installation.
- B. Remove and replace panels that are saturated, moisture damaged, with visible damage to the core, mold damaged, and as recommended by sheathing manufacturer.

END OF SECTION