

SECTION 061000: ROUGH CARPENTRY**PART 1: GENERAL****1.1 SUMMARY**

This Section includes the following:

- A. Framing with dimension lumber
- B. Wood furring, grounds, nailers, and blocking
- C. Sheathing
- D. Subflooring
- E. Fasteners and metal framing anchors
- F. Roof curbs, cants, perimeter nailers, and blocking in roof.
- G. Built-up wood curbing and blocking to accommodate increased insulation height.

1.2 REFERENCES

- A. American Forest and Paper Association (AFPA)
Manual for Wood Frame Construction
- B. American National Standards Institute (ANSI)
A208.1 Mat-Formed Manufactured Panels
- C. Engineered Wood Association
Form E30 Engineered Wood Design/Construction Guide
- D. American Society of Mechanical Engineers (ASME)
B18.2.1 Square and Hex Bolts and Screws - Inch Series
B18.6.1 Wood Screws (Inch Series)
- E. American Society for Testing and Materials (ASTM)
A153 Specification for Zinc -Coating (Hot-Dip of Iron and Steel Hardware)
A307 Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
A563 Specification for Carbon and Alloy Steel Nuts
A653 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

- D245 Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber
- D2555 Test Method for Establishing Clear Wood Strength Values
- F. American Wood Preservers Association (AWPA)
 - C2 Lumber, Pressure Treatment
 - C9 Plywood, Pressure Treatment
 - C20 Structural Lumber, Fire-Retardant Pressure Treatment
 - C27 Plywood, Fire-Retardant Pressure Treatment
 - M4 Standard for the Care of Preservative-Treated Wood Products
- G. Federal Specification (FS)
 - FF-N-105B Nails, Brads, Staples and Spikes: Wire, Cut and Wrought
- H. International Conference of Building Officials (ICBO)
 - International Building Code (IBC) Chapter 23 Wood
- I. U.S. Department of Commerce, National Institute of Standards and Technology
 - PS 1 US Product Standard for Construction and Industrial Plywood
 - PS 2 Performance Standards for Wood-Based Structural-Use Panels
 - PS 20 American Softwood Lumber Standard (ASLS)

1.3 SUBMITTALS

- A. General: Submit the following in accordance with the conditions of Contract and Section 01330, "Submittal Procedures."
- B. Product Data: Submit manufacturer's product data for each distinct product specified
- C. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use, and design values approved by American Lumber Standards Committee's (ALSC) Board of Review
- D. Wood treatment data as follows, including chemical treatment manufacturer's warranty and instructions for handling, storing, installing, and finishing treated materials:
 - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards
 - 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site

3. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials

1. 4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product from one source and by single producer
- B. Testing Agency qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548

1. 5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood products bundled or crated to provide adequate protection during transit and job storage, with required grade marks clearly identifiable. Inspect wood products for damage upon delivery. Remove and replace damaged materials
- B. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks, and under temporary coverings

For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation

- C. Protect sheet materials during handling to prevent breaking of corners and damage to surfaces

PART 2: PRODUCTS

2. 1 LUMBER, GENERAL

- A. Lumber Standards: Comply with PS 20-99, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review. Lumber design values are to comply with ASTM D245 and ASTM D2555.
- B. Inspection Agencies: Inspection agencies and their grading rules include the following:
 1. Northeastern Lumber Manufacturers Association (NELMA)
Standard Grading Rules
 2. National Lumber Grades Authority (NLGA) (Canadian)
Standard Grading Rules
 3. Redwood Inspection Service (RIS)
Standard Specifications for Grades of California Redwood Lumber
 4. Southern Pine Inspection Bureau (SPIB)

Standard Grading Rules for Southern Pine Lumber

5. West Coast Lumber Inspection Bureau (WCLIB)

No. 17 Standard Grading Rules for West Coast Lumber

6. Western Wood Products Association (WWPA) Western Lumber Grading Rules

- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill

For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency

- D. Where nominal sizes are indicated, provide actual sizes required by PS 20-99 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber
1. Provide dressed lumber, surfaced four sides (S4S), unless otherwise indicated
 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38 mm actual) thickness or less, unless otherwise indicated

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPAC2 (lumber) and AWPAC9 (plywood). Mark each treated item with Quality Mark Requirements of inspection agency approved by ALSC's Board of Review

For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes

- B. Pressure treats aboveground items with waterborne preservatives to minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m.). After treatment, kiln-dry lumber and plywood to maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete
 3. Wood framing members less than 18 inches (460 mm) above grade
 4. Wood floor plates installed over concrete slabs directly in contact with earth
- C. Pressure treats wood members in contact with ground or freshwater with waterborne preservatives to minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m.)

- D. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWWA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective

2.3 DIMENSION LUMBER

- A. Exposed Framing: Refers to dimension lumber which is not concealed by other work, and is indicated to receive stained, painted, or natural finish

Provide material hand-selected from lumber of species and grade indicated for type of use, for uniformity of appearance, and freedom from characteristics that would impair finish appearance

- B. For light framing (2" to 4" thick, 2" to 4" wide), provide the following grade and species:

Southern Yellow Pine Select Structural No. 2 Grade

For structural light framing (2" to 4" thick, 2" to 4" wide), provide the following grade and species:

Southern Yellow Pine Fb (minimum extreme fiber stress in bending); 1200 psi
Select Structural E (minimum modulus of elasticity); 1,600,000psi
No. 2 Grade

2.4 BOARDS

- A. Moisture content: 19 Percent maximum, "S-Dry"

2.5 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated, and into shapes shown on Contract documents
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment
- D. Grade and Species: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common or Standard grade per WPA of any species
- E. For furring for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling

2.6 SHEATHING MATERIALS

- A. General: Comply with and factory mark each panel according to ANSI A208.1. Provide thickness indicated on Contract documents

- C. Plywood Subflooring: CDX (2) 1/2" layers glued and screwed
- D. Telephone and Electrical Panel Boards: APA C-D, Plugged interior plywood with exterior glue, in thickness indicated or, if not otherwise indicated, not less than 1/2" thick
- E. Wall Sheathing: As indicated in Division 6 section
- F. Roof Sheathing: 1/2" CDX Plywood

2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified

Where rough carpentry work is exposed to weather, in ground contact, or in areas of high relative humidity, provide fasteners with hot-dip, zinc-coating per ASTM A153

- B. Nails, Wire, Brads, and Staples: ASTM F1667
- C. Wood Screws: ASME B18.6.1
- D. Lag Bolts: ASME B18.2.1
- E. Bolts: Steel bolts complying with ASTM A307, Grade A with ASTM A563 hex nuts and, where indicated, flat washers

2.8 METAL FRAMING ANCHORS

- A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated, with allowable design loads as published by manufacturer, which meet or exceed those indicated
- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated

PART 3: EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction
- D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood

- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with IBC Table 2304.9.1 Fastening Schedule
- F. Use finishing nails for exposed work, unless otherwise indicated. Countersink nail heads and fill holes with wood filler

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood grounds, nailers, blocking, and sleepers where shown, and where required for screening or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement
- C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than 1-1/2 inches (38.1 mm) wide, and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required

3.3 WOOD FURRING

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finish work
- B. Firestop furred spaces of walls at each floor level, and at ceiling with wood blocking or noncombustible materials, accurately fitted to close furred spaces

3.4 WOOD FRAMING, GENERAL

- A. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated
- B. Install framing members of size and at spacing indicated
- C. Do not splice structural members between supports
- D. Firestop concealed spaces of wood-framed walls and partitions at each floor level and at ceiling line of top story. Where firestopping is not inherent in framing system used, provide closely fitted wood blocks of 2-inch nominal (38 mm actual) thickness lumber of same width as framing members
- E. Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel
 - 1. Provide single bottom plate and double top plates using members of 2-inch nominal (38 mm actual) thickness whose widths equal that of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction, unless otherwise indicated.
 - 2. For exterior walls, provide 2 by 6-inch nominal (38 by 140 mm actual) size wood studs spaced 24 inches (610 mm) o.c., except where otherwise indicated or required

3. For interior partitions and walls, provide 2 by 4-inch nominal (38 by 89 mm actual) size wood studs spaced 16 inches (406 mm) o.c., except where otherwise indicated or required
- F. Construct corners and intersections with three (3) or more studs. Provide miscellaneous blocking and framing as shown, and as required to support facing materials, fixtures, specialty items, and trim

Provide continuous horizontal blocking at midheight of single-story partitions over 96 inches (2.4 m) high and multistory partitions, using members of 2-inch nominal (38 mm actual) thickness and of same width as wall or partitions
- G. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs
 1. For non-load-bearing partitions, provide double-jamb studs with headers not less than 4-inch nominal (89 mm actual) depth for openings 36 inches (914 mm) and less in width, and not less than 6-inch nominal (140 mm actual) depth for wider openings
 2. For load-bearing walls, provide double-jamb studs for openings 72 inches (1.8 m) and less in width, and triple-jamb studs for wider openings. Provide headers of depth shown as indicated on Contract documents
- H. Provide bracing in exterior walls and at interior load-bearing walls (that are not more than 25 feet (7.6 m) from other parallel braced walls) at each end and at not more than 25 feet (7.6 m) apart, to comply with IBC Section 2308.9.3 "Bracing" and IBC Table 2308.9.3(I)

3.5 FLOOR JOIST FRAMING

- A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38.1 mm) of bearing on wood or metal, or 3 inches (76 mm) on masonry. Attach floor joists as follows:
 1. Where supported on wood members, by toe nailing or by using metal framing anchors
 2. Where framed into wood supporting members, by using wood ledgers as shown or, if not shown, by using metal joist hangers
- B. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1.2 m).
- C. Do not notch in middle third of joists; limit notches to 1/6 depth of joist, 1/3 at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches (51 mm) from top or bottom
- D. Provide solid blocking of 2-inch nominal (38 mm actual) thickness by depth of joist at ends of joists unless nailed to header or band
- E. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38 mm actual) thickness by depth of joist over supports
- F. Under jamb studs at openings, provide solid blocking between joists

- G. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above
- H. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures
- I. Provide bridging of type indicated below, at intervals of 96 inches (2.4 m) o.c., between joists
 - 1. Form diagonal wood bridging from bevel cut 1 by 3-inch nominal (19 by 64 mm actual) size lumber, double-crossed and nailed both ends to joists
 - 2. Install steel bridging to comply with manufacturer's written instructions

3.6 RAFTER AND CEILING JOIST FRAMING

- A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters
- B. Rafters: Notch to fit exterior wall plates and toe nail or use metal framing anchors. Use double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers
- C. Provide collar beams (ties) as shown or, if not shown, provide 1 by 6-inch nominal (19 by 140 mm actual) size boards between every third pair of rafters, but not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.
- D. Rafter Ties: Tie straps shall be provided from each roof framing member to exterior studs, posts or other supporting members below the roof. Opposing rafters at ridges shall be aligned and connected with straps

3.7 STAIR FRAMING

- A. Provide stair framing members of size, space, and configuration indicated or, if not otherwise indicated, to comply with the following requirements:
 - 1. Stringer Size: 2 by 12-inch nominal (38 by 286 mm actual) size minimum.
 - 2. Notching: Notch stringers to receive treads, risers, and supports; leave at least 3-1/2 inches (89 mm) of effective depth
 - 3. Stringer Spacing: At least three (3) stringers for each 36-inch (914 mm) clear width of stair
- B. Provide stair framing that does not exceed the following variations between treads and risers within each flight:
 - 1. Adjacent Treads and Risers: 3/16 inch (4.76 mm)
 - 2. Between Largest and Smallest Treads and Risers: 3/8 inch (9.53 mm)

END OF SECTION

SECTION 061600: WALL SHEATHING**PART 1: GENERAL****1.1 SUMMARY**

- A. This Section includes the following:
 - 1. Wall sheathing
 - 2. Sheathing joint-and-penetration treatment
 - 3. Flexible flashing at openings in sheathing
 - 4. Roof Sheathing

1.2 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings

PART 2: PRODUCTS**2.1 WALL SHEATHING**

- 1. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M. Type and Thickness: Type X, 1/2 inch thick

2.2 ROOF SHEATHING

- A. Plywood Roof Sheathing: See Division 6 Section "Rough Carpentry"

2.3 FASTENERS

- A. General: Provide fasteners of size and type indicated
 - 1. For wall and roof sheathing panels, provide fasteners with corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117

2.4 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing Board: Silicone emulsion sealant complying with ASTM C 834, and recommended by tape and sheathing manufacturers
- B. Sheathing Tape for Glass-Mat Gypsum Sheathing Board: Self-adhering glass-fiber tape, of type recommended by sheathing and tape manufacturers

2.5 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Self-adhesive, rubberized-asphalt compound, bonded to a high-density, polyethylene film to produce an overall thickness of not less than **0.025 inch**

PART 3: EXECUTION

3.1 INSTALLATION, GENERAL

- A. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- B. Coordinate sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that exclude exterior moisture
- C. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements

3.2 GYPSUM SHEATHING INSTALLATION

- A. Comply with GA-253 and with manufacturer's written instructions
 - 1. Fasten gypsum sheathing to cold-formed metal framing with screws
 - 2. Install boards with a 3/8-inch gap where non-load-bearing construction abuts structural elements. Install boards with a 1/4-inch gap where they abut masonry or similar materials

3.3 SHEATHING JOINT-AND-PENETRATION TREATMENT

- A. Seal sheathing joints according to sheathing manufacturer's written instructions. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing board joints, and apply and trowel silicone emulsion sealant to embed tape in sealant. Apply sealant to exposed fasteners. Seal other penetrations and openings

3.4 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturers written instructions.
 - 1. Lap seams and junctures with other materials at least 4 inches, except that at flashing flanges of other construction, laps need not exceed flange width
 - 2. After flashing has been applied, roll surfaces with a hard rubber or metal roller

END OF SECTION

SECTION 061601: ROOF SHEATHING**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes
 - 1. Roof sheathing with integral roof underlayment.

1.2 REFERENCES

- A. ASTM International (ASTM): www.astm.org
 - 1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 2. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials
 - 3. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings
 - 4. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
 - 5. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- B. US Department of Commerce (DOC): <http://gsi.nist.gov/global/index.cfm/L1-5/I2-44/A-355>
 - 1. DOC PS 2 - Performance Standard for Wood-Based Structural Panels
- C. International Code Council (ICC): www.iccsafe.org
 - 1. ICC IBC - International Building Code
 - 2. ICC IRC - International Residential Code for One- and Two-Family Dwellings
- D. ICC Evaluation Service, Inc. (ICC-ES): www.icc-es.org
 - 1. AC38 – Acceptance Criteria for Weather Resistive Barriers
 - 2. ICC-ES AC116 - Acceptance Criteria for Nails and Spikes
 - 3. ICC-ES AC148 - Acceptance Criteria For Flexible Flashing Materials
 - 4. ICC-ES AC201 - Acceptance Criteria for Staples
 - 5. ICC-ES AC266 - Acceptance Criteria for Wood Structural Panel Roof Sheathing Factory-Laminated with an Alternate Roof Underlayment
 - 6. ICC-ES AC310 - Acceptance Criteria for Water-Resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers
 - 7. ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections
 - 8. ICC-ES NER-272 - Power Driven Staples and Nails for Use in All Types of Building Construction

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of sheathing product specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: From ICC-ES, for wood sheathing and seam tape.
- B. Product Certifications: From manufacturer, indicating that sheathing products comply with ICC-ES AC266 and ICC-ES AC310.

1.5 CLOSEOUT SUBMITTALS

- A. Warranty: Executed copy of manufacturer special warranties.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide wood products from manufacturer certified by SFI, FSC, or comparable sustainable forestry program acceptable to Architect.
- B. Provide wall sheathing products meeting requirements for water-resistive barrier in accordance with ICC-ES AC310.
- C. Provide roof sheathing products meeting requirements for roof underlayments in accordance with ICC-ES AC266.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's written instructions for protection of sheathing products from weather prior to installation.

1.8 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which sheathing manufacturer agrees to repair or replace sheathing products that demonstrate deterioration or failure under normal use due to manufacturing defects within warranty period specified, when installed according to manufacturer's instructions.
 - 1. Warranty Period for Sheathing Products: [30] years following date of Substantial Completion.
 - 2. Warranty Conditions: Special warranties exclude deterioration or failure due to structural movement resulting in stresses on sheathing products exceeding manufacturer's written specifications, or due to air or moisture infiltration resulting from cladding failure or mechanical damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Provide sheathing products manufactured by Huber Engineered Woods LLC, Charlotte NC; Phone: (800) 933-9220; Website: www.zipsystem.com; www.huberwood.com or approved equal.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Exterior Fire-Test Exposure: ASTM E108, Class A, when covered with approved Class A coverings.
 - 2. Fire-Resistance Ratings: Where indicated, provide assemblies tested for fire resistance per ASTM E119.
- B. Weather Exposure: Manufacturer warranty applies for maximum allowable exposure period of 180 days.

2.3 WOOD PANEL PRODUCTS

- A. Oriented Strand Board: DOC PS 2, made with binder containing no added urea formaldehyde.

2.4 ROOF SHEATHING WITH INTEGRAL ROOF UNDERLAYMENT

- A. Oriented-Strand-Board Roof Sheathing: Exposure 1 sheathing with factory-laminated water-resistive barrier facer with printed fastener location symbols.
 - 1. Basis-of-Design Product: Provide **Huber Engineered Woods LLC; ZIP System Sheathing**.
 - 2. Span Rating, Panel Grade and Performance Category: Not less than 40/20; Structural 1; 5/8 Performance Category
 - 3. Edge Profile: Self-spacing
 - 4. Exterior Surface Facer: Medium-density, phenolic-impregnated kraft paper overlay in accordance with ICC AC266.
 - a. Provide fastener spacing symbols on facer for **16-inch (406 mm)** and **24-inch (610 mm)** on center spacing.
- B. **Panel Edge Clips:** Provide panel edge clips approved for application in accordance with code approvals and panel manufacturer's written instructions.

2.5 FASTENERS

- A. Fasteners, General: Size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
 - 1. Corrosion Resistance: **[Hot-dip zinc coating, ASTM A153/A153M] [or] [Type 304 stainless steel]**.

- B. Nails, Brads, and Staples: ICC AC116 and ICC AC201.
- C. Power-Driven Fasteners: ICC-ES-1539 or NER-272.
- D. Wood Screws: ASME B18.6.1.

2.6 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIAL

- A. Self-Adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC-ES AC148, and tested as part of an assembly meeting performance requirements.
 - 1. Basis-of-Design Product: Provide **Huber Engineered Woods; ZIP System Tape**.
 - 2. Thickness: **0.012 inch (0.3 mm)**.
- B. Liquid-Applied Flashing Membrane: Gun-grade, cold-applied, silyl-terminated polyether (STPE) liquid flashing membrane compatible with sheathing/weather barrier and self-adhering seam and flashing tape, and tested as part of an assembly meeting performance requirements. Follow manufacturer's recommendation for integration with ZIP System Tape.
 - 1. Basis-of-Design Product: Provide **Huber Engineered Woods; ZIP System Liquid Flash**.
 - 2. Hardness, Shore A, ASTM C 661: 40 to 45.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.

3.2 SHEATHING INSTALLATION

- A. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.
- B. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.
- C. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs. Support all panel edges.
 - 1. Space square-edged panels 0.125 inch (3 mm).
 - 2. Butt edges of self-spacing edge panels.
- D. **Roof Sheathing Panel Clips:** Where required under code approvals based upon panel thickness and support spacing, provide panel clips located at each unsupported panel butt joint centered between supports.
- E. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:

1. ICC-ES ESR-1539 or ICC-NES NER-272 for power-driven fasteners.
 2. IBC: Table 2304.9.1 Fastening Schedule.
- F. Apply ZIP System Tape at all panel seams, penetrations, and facer defects or cracks to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.
- G. Apply liquid-applied flashing membrane at penetrations, gaps, and cracks to form continuous weathertight surface. Apply liquid membrane according to manufacturer's written instructions. Follow manufacturer's recommendation for integration with ZIP System Tape.

END OF SECTION 066100