

**SECTION 06 10 00
ROUGH CARPENTRY**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between // _____// if not applicable to project.
3. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section specifies wood blocking, sheathing, furring, nailers, and rough hardware.

1.2 RELATED WORK

- A. Milled Woodwork: Section 06 20 00, FINISH CARPENTRY.

1.3 PERFORMANCE REQUIREMENTS

- A. Sustainably Harvested Wood: Comply with requirements of Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS.
- B. Engineered Wood Products:
1. Provide products with no added urea formaldehyde; determine formaldehyde concentrations in air from wood products under test conditions of temperature and relative humidity in accordance with ASTM D6007 or E1333.
 2. Bio-based Content:
 - a. Interior Panels: Engineered products designed specifically for interior applications and providing a surface that is impact-, scratch-, and wear-resistant and that does not absorb or retain moisture; provide minimum 55 percent bio-based content.
 - b. Structural Interior Panels: Engineered products designed for use in structural construction applications; provide minimum 89 percent bio-based content.
 - c. Structural Wall Panels: Engineered products designed for use in structural walls, curtain walls, floors and roofs; provide minimum 94 percent bio-based content.
 3. VOC Emissions:
 - a. Provide low VOC products with Green Seal Certification to GS-36 and description of the basis for certification //; or // . //

SPEC WRITER NOTES:

1. Select the paragraph a. or b. or both.

- b. // Submit manufacturer's certification that products comply with SCAQMD Rule 1168 in areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur. In areas where freeze/thaw conditions do exist or direct exposure to moisture can occur, submit manufacturer's certification that products comply with Bay Area AQMD Reg. 8, Rule 51 for containers larger than 16 oz. and with California Air Resources Board (CARB) for containers 16 oz. or less. //

1.4 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // certified wood // _____// requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Provide documentation of conformance with performance requirements of this section.
- C. Prepare shop drawings showing framing connection details, fasteners, connections and dimensions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protect lumber and other products from dampness both during and after delivery at site.
- B. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
- C. Stack plywood and other board products so as to prevent warping.
- D. Locate stacks on well drained areas, supported at least 150 mm (6 inches) above grade and cover with well-ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.7 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Forest and Paper Association (AF&PA):

Wood Structural Design Data

C. American Lumber Standard Committee, Incorporated (ALSC):

ALSC Board of Review

D. American National Standards Institute (ANSI):

ANSI A190.1-2022 Structural Glued Laminated Timber

E. American Plywood Association (APA):

E30-2019 Engineered Wood Construction Guide

F. American Society of Mechanical Engineers (ASME):

B18.2.1-(R2021) Square, Hex, Heavy Hex and Askew Head Bolts and
Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag
Screws

B18.2.2-2010 Hex Nuts for General Applications

B18.6.1-81 (R2008) Wood Screws

B18.6.4-98 (R2005) Thread Forming and Thread Cutting Tapping
Screws and Metallic Drive Screws

G. American Society for Testing and Materials (ASTM):

A307-21 Carbon Steel Bolts and Studs, 60,000 PSI
Tensile Strength

C954-18 Steel Drill Screws for the Application of
Gypsum Panel Products or Metal Plaster Bases to
Steel Studs from 0.033 in. (0.84 mm) to 0.112
in. (2.84 mm) in Thickness

C1002-22 Steel Self-Piercing Tapping Screws for the
Application of Gypsum Panel Products or Metal
Plaster Bases to Wood Studs or Steel Studs

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| D6007-22 | Determining Formaldehyde Concentration in Air from Wood Products Using a Small-Scale Chamber |
| E1333-22 | Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber |
| F844-19 | Washers, Steel, Plan (Flat) Unhardened for General Use |
| F1667-11ael | Nails, Spikes, and Staples |
| H. American Wood Protection Association (AWPA) | |
| I. FM Global Group (FM): | |
| FM 4435(2014) | Approval Standard for Edge Systems Used with Low Slope Roofing Systems |
| J. Green Seal (GS): | |
| GS-36 | (2013) Commercial Adhesives |
| K. South Coast Air Quality Management District (SCAQMD): | |
| SCAQMD Rule 1168 | (1989; R2005) Adhesive and Sealant Applications |
| L. U.S. Department of Commerce/National Institute of Science and Technology: | |
| PS 1-09 | Structural Plywood |
| PS 20-10 | American Softwood Lumber Standard |

PART 2 - PRODUCTS

SPEC WRITER NOTES:

1. Review USDA Biopreferred Categories for listed materials within the scope of the following paragraph and include additional requirements, unless justification for non-use exists.

2.1 LUMBER

A. Unless otherwise specified, each piece of lumber to bear a grade mark, stamp, or other identifying marks indicating grades of material, and rules or standards under which produced.

1. Identifying marks in accordance with rule or standard under which material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
2. Inspection agency for lumber approved by the Board of Review, American Lumber Standards Committee, to grade species used.

SPEC WRITER NOTES:

1. Lumber grades specified are for general use.

2. If appearance and use is a factor, then appropriate grades and species must be selected and specified.
 3. Design members and fastenings to conform to AITC Timber Construction Manual.
 4. Coordinate to show structural properties on drawings of load bearing structural members.
- B. Structural Members: Species and grade as listed in the AF&PA, National Design Specification for Wood Construction having design stresses as shown.
- C. Lumber Other Than Structural:
1. Unless otherwise specified, species graded under the grading rules of an inspection agency approved by Board of Review, American Lumber Standards Committee.
 2. Framing lumber: Minimum extreme fiber stress in bending of 1100.
 3. Furring, blocking, nailers and similar items 100 mm (4 inches) and narrower Standard Grade; and members 150 mm (6 inches) and wider, Number 2 Grade.
- D. Sizes:
1. Conforming to Prod. Std. PS20.
 2. Size references are nominal sizes, unless otherwise specified, actual sizes within manufacturing tolerances allowed by standard under which produced.
- E. Moisture Content:
1. At time of delivery and maintained at the site.
 2. Boards and lumber 50 mm (2 inches) and less in thickness: 19 percent or less.
 3. Lumber over 50 mm (2 inches) thick: 25 percent or less.
- F. Preservative Treatment:
1. Do not treat Heart Redwood and Western Red Cedar.
 2. Products containing chromium or arsenic will not be permitted.
 3. Provide products with waterborne or boron-based preservatives.

SPEC WRITER NOTES:

1. Some preservatives are not recommended for use of wood in direct contact with ground because of the potential for leaching out of the preservative. For example, AWPA standards prohibit wood treated with borates for use in direct contact with the ground or exposed direct precipitation or continuous exposure to liquid water.

G. Waterborne Wood Preservatives:

1. Treat wood products with waterborne wood preservatives listed in Section 4 of AWPA Standards U1, excluding those which contain arsenic and/or chromium.
2. Pressure treatment of wood products must conform to the requirements of AWPA Standards U1 and T1.
3. Retention of preservatives as prescribed in AWPA Standard U1 for the following Use Categories (material conforming to a higher AWPA Use Category may be specified):
 - a. UC1: Interior construction - above ground, dry conditions.
 - b. UC2: Interior construction - above ground, damp conditions.
 - c. UC3A: Exterior construction - above ground, coated and with rapid water runoff.
 - d. UC3B: Exterior construction - above ground, uncoated or poor water runoff.
 - e. UC4A: General purpose soil or freshwater contact - heavy duty above ground.
 - f. UC4B: Heavy duty soil or freshwater contact - critical or difficult to replace components.
 - g. UC4C: Extreme duty soil or freshwater contact - critical structural components.

H. Boron-based Preservatives: Impregnate lumber with preservative treatment conforming to AWPA Standard U1.

I. Fire-retardant Treatment:

1. Fire-retardant-treated wood products to be free of halogens, sulfates, ammonium phosphate and formaldehyde.
2. Fire retardant treatment of wood products to conform to the requirements of AWPA Standard U1, Commodity Specification H and AWPA Standard T1, Section H.

SPEC WRITER NOTES:

1. Plywood grades and thickness listed are for conventional light framing and light loading.
2. Where appearance, high humidity, loading, or permanently exposed to the weather and other end uses are a consideration, specify grades, type, glue line and thickness required.
3. Consider treatment for resistance to fire, rot, and vermin.

2.2 PLYWOOD

- A. Comply with Prod. Std. PS 1 and APA E30.
- B. Bear the mark of a recognized association or independent inspection agency that maintains continuing control over quality of plywood which identifies compliance by veneer grade, group number, span rating where applicable, and glue type.
- C. Sheathing:
 - 1. APA rated Exposure 1 or Exterior; panel grade CD or better.
 - 2. Wall Sheathing:
 - a. Minimum 9 mm (11/32 inch) thick with supports 400 mm (16 inches) on center and 12 mm (15/32 inch) thick with supports 600 mm (24 inches) on center unless specified otherwise.
 - b. Minimum 1200 mm (48 inches) wide at corners without corner bracing of framing.

SPEC WRITER NOTES:

- 1. Verify with Structural Engineer for additional dead load requirements.

- 3. Roof Sheathing:
 - a. Minimum 9 mm (11/32 inch) thick with span rating 24/0 or 12 mm (15/32 inch) thick with span rating for supports 400 mm (16 inches) on center unless specified otherwise.
 - b. Minimum 15 mm (19/32 inch) thick or span rating of 40/20 or 18 mm (23/32 inch) thick or span rating of 48/24 for supports 600 mm (24 inches) on center.

SPEC WRITER NOTES:

- 1. Specify other manufactured lumber if used. Allow options where possible.

2.3 ROUGH HARDWARE

- A. Anchor Bolts: ASTM A307, size as indicated, complete with nuts and washers.
- B. Washers:
 - 1. ASTM F844.
 - 2. Use zinc or cadmium coated steel or cast iron for washers exposed to weather.
- C. Screws:
 - 1. Wood to Wood: ANSI B18.6.1 or ASTM C1002.
 - 2. Wood to Steel: ASTM C954, or ASTM C1002.
- D. Nails:
 - 1. ASTM F1667:

- a. Common: Type I, Style 10.
- b. Concrete: Type I, Style 11.
- c. Barbed: Type I, Style 26.
- d. Underlayment: Type I, Style 25.
- e. Masonry: Type I, Style 27.

2.4 BLOCKING

A. General: Provide miscellaneous lumber as indicated and lumber support or attachment for other construction, including the following:

- 1. Blocking.
- 2. Nailers.
- 3. Furring.

B. Provide Standard or No. 2 Grade lumber.

2.5 Rough Carpentry Products shall comply with following standards for biobased materials:

| Material Type | Percent by Weight |
|---------------|------------------------------|
| Lumber | 25 percent biobased material |
| plywood | 55 percent biobased material |

The minimum-content standards are based on the weight (not the volume) of the material in the insulating core only.

PART 3 - EXECUTION

3.1 INSTALLATION OF FRAMING AND MISCELLANEOUS WOOD MEMBERS

A. Conform to applicable requirements of the following:

- 1. Comply with APA standards for installation of plywood.

B. Anchors in Masonry: // Except were indicated otherwise, embed // Embed // anchor bolts not less than 400 mm (15 inches) in masonry unit walls and provide each with a nut and a 50 mm (2 inch) diameter washer at bottom end. Fully grout bolts with mortar.

C. Anchors in Concrete:

- 1. //Except where indicated otherwise, embed // Embed // anchor bolts not less than 200 mm (8 inches) in poured concrete walls and provide each with a nut and a 50 mm (2 inch) diameter washer at bottom end.
- 2. A bent end may be substituted for the nut and washer; bend to be not less than 90 degrees.
- 3. Powder-actuated fasteners spaced 900 mm (3 feet) o.c. may be provided instead of bolts for single thickness plates on concrete.

D. Sheathing:

1. Lay panels with joints staggered, with edge and ends 3 mm (1/8 inch) apart and nailed over bearings as specified.
 2. Set nails not less than 9 mm (3/8 inch) from edges.
 3. Install 50 mm by 100 mm (2 inch by 4 inch) blocking spiked between studs to support edge or end joints of panels.
- E. Wood Roof Nailers, Edge Strips, Crickets, Curbs, and Cants: Provide sizes and configurations indicated or specified and anchored securely to continuous construction.
1. Roof Edge Strips and Nailers: Provide at perimeter of roof, around openings through roof, and where roofs abut walls, curbs, and other vertical surfaces.
 2. Except where indicated otherwise, nailers to be 150 mm (6 inches) wide and the same thickness as the insulation. Anchor nailers securely to underlying construction.
 3. Anchor perimeter nailers in accordance with FM 4435. // Provide strips grooved //as indicated// for edge venting; install at walls, curbs, and other vertical surfaces with a 6 to 12 mm (1/4 to 1/2 inch) air space. //
 4. Crickets, Cants, and Curbs: Provide wood saddles or crickets, cant strips, // curbs for scuttles and ventilators, // and wood nailers bolted to tops of concrete or masonry curbs // and at expansion joints, // as indicated, specified, or necessary and of // lumber // or // _____ // mm (_____inch) thick exterior plywood //.
- F. Wood Blocking: Provide proper sizes and shapes at proper locations for the installation and attachment of wood and other finish materials, fixtures, equipment, and items indicated or specified.
- G. Wood Grounds: Provide for fastening wood trim, finish materials, and other items to plastered walls and ceilings. Install grounds in proper alignment and true with a 2400 mm (8 foot) straightedge.
- H. Wood Furring:
1. Provide where shown and as necessary for facing materials specified.
 2. Except as shown otherwise, furring strips to be nominal one by 3, continuous, and spaced 400 mm (16 inches) o.c. Erect furring vertically or horizontally as necessary.
 3. Nail furring strips to masonry.
 4. Do not use wood plugs.
 5. Provide furring strips around openings, behind bases, and at angles and corners.

6. Furring to be plumb, rigid, and level and shimmed as necessary to provide a true, even plane with surfaces suitable to receive the finish required.

3.2 PROTECTION

- A. Protect rough carpentry from weather.
- B. If rough carpentry becomes wet, apply EPA-registered borate treatment complying with EPA registered label.

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