SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN FOREST AND PAPER ASSOCIATION (AFPA)

AFPA-01	(1991; Supple 1993) National Design Specification for Wood Construction
AFPA WCD No. 1	(1988) Manual for Wood Frame Construction

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1982; R 1988) Basic Hardboard
AHA A194.1	(1985) Cellulosic Fiberboard

AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC)

AITC-01	(1994) Timber Construction Manual

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A208.1	(1993) Particleboard

AMERICAN PLYWOOD ASSOCIATION (APA)

APA E445	(1991; Rev May 1991) Performance Standards and Policies for

Structural-Use
Panels

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 307	(1993a) Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
ASTM C 518	(1991) Steady-State Heat Flux Measurements and Thermal Transmission Properties By Means of the Heat Flow Meter Apparatus
ASTM C 552	(1991) Cellular Glass Thermal Insulation
ASTM C 612	(1993) Mineral Fiber Block and Board Thermal Insulation
ASTM C 665	(1991) Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
ASTM C 1136	(1992) Flexible, Low Permeance Vapor Retarders for Thermal Insulation
ASTM D 2898	(1981; R 1986) Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
ASTM E 84	(1991a) Surface Burning Characteristics of Building Materials
ASTM E 96	(1993) Water Vapor Transmission of Materials

AMERICAN WOOD PRESERVERS' ASSOCIATION (AWPA)

AWPA C2	(1993) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
AWPA C9	(1993) Plywood - Preservative

	Treatment by Pressure Processes
AWPA C20	(1993) Structural Lumber - Fire-Retardant Treatment by Pressure Processes
AWPA C27	(1993) Plywood - Fire-Retardant Treatment by Pressure Processes
AWPA C28	(1991) Standard for Preservative Treatment of Structural Glued Laminated Members and Laminations Before Gluing of Southern Pine, Coastal Douglas Fir, Hemfir and Western Hemlock by Pressure Processes
AWPA M4	(1991) Standard for the Care of Preservative-Treated Wood Products
AWPA P5	(1993) Standards for Waterborne Preservatives

DEPARTMENT OF COMMERCE (DOC)

DOC PS 1	(1983) Construction and Industrial Plywood

FEDERAL SPECIFICATIONS (FS)

FS FF-N-105	(Rev B; Am 3; Int Am 4; Notice 1) Nails, Brads, Staples and Spikes: Wire, Cut and Wrought

FS HH-I-558	(Rev C) Insulation, Blankets, Thermal (Mineral Fiber, Industrial Type) (Inch-Pound)

NATIONAL HARDWOOD LUMBER ASSOCIATION (NHLA)

NHLA-01	(1994) Rules for the Measurement & Inspection of Hardwood & Cypress

NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION (NELMA)

NELMA-01	(1993) Standard Grading Rules for Northeastern Lumber

SOUTHERN PINE INSPECTION BUREAU (SPIB)

SPIB-01	(1994) Standard Grading Rules for Southern Pine Lumber

TRUSS PLATE INSTITUTE (TPI)

TPI 85	(1985; Errata; Supple; Addenda QST-88 (Appx P) Design Specification for Metal Plate Connected Wood Trusses
TPI QST-88	(1988; Appendix P) Quality Standard for Metal Plate Connected Wood Trusses (Addendum to TPI-85)

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB Std 17	(1993) Grading Rules for West Coast Lumber

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA-01 (1991; Supple No. 3)
Western Lumber
Grading Rules 91

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL DESCRIPTIONS:

SD-01 Data\

Accessories and Nails\; *FIO*\.

Insulation\; *FIO*\

SD-13 Certificates\

Grading and Marking\; *FIO*\.

Manufacturer's certificates (audited by an American Lumber Standards approved agency) attesting that lumber and material not normally grade marked or exempt from being grade marked meet the specified requirements. Certificate of Inspection issued for grade marked material by an American Lumber Standards Committee (ALSC) recognized lumber inspection agency prior to shipment.

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.

PART 2 - PRODUCTS

2.1 LUMBER AND SHEATHING

2.1.1 Grading and Marking

2.1.1.1 Lumber Products

Solid sawn and finger-jointed lumber shall bear an authorized gradestamp or grademark recognized by ALSC, or an ALSC recognized certification stamp, mark, or hammerbrand. Surfaces that are to be exposed to view shall not bear grademarks, stamps, or any type of identifying mark. Hammer marking will be permitted on timbers when all surfaces will be exposed to view.

2.1.1.2 Plywood and other Sheathing Products

Materials shall bear the grademark, stamp or other identifying marks indicating grades of material and rules or standards under which produced. Such identifying marks shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification. Except for plywood, bundle marking will be permitted in lieu of marking each individual piece.

2.1.2 Sizes

Lumber and material sizes shall conform to requirements of the rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

2.1.3 Moisture Content

At the time lumber and other materials are delivered and when installed in the work their moisture content shall be as follows:

a. Treated and Untreated Lumber Except Roof Planking:

4 inches or less, nominal thickness, 19 percent maximum.

5 inches or more, nominal thickness, 23 percent maximum in a 3 inch perimeter of the timber cross-section.

b. Materials Other Than Lumber: In accordance with standard under which product is produced.

2.1.4 Treatment

2.1.4.1 Lumber and Timbers

Lumber and timbers shall be treated in accordance with AWPA C2 with waterborne preservatives listed in AWPA P5 to a retention level as follows:

a. 0.25 pcf intended for above ground use.

2.1.4.2 Plywood

Plywood shall be treated in accordance with AWPA C9 with waterborne preservatives listed in AWPA P5 to a retention level as follows:

a. 0.25 pcf intended for above ground use.

Items of all-heart material of cedar, cypress, or redwood will not require preservative treatment, except when in direct contact with soil. Unless otherwise specified for all-heart material of the previous mentioned species, the following items will always be treated:

a. Wood members in contact with or within 18 inches of soil.

b. Wood members in contact with water.

c. Wood members exposed to the weather including those used as nailing strips .

d. Wood members set into concrete regardless of location,

e. Wood members in contact with concrete that is in contact with soil or water or that is exposed to weather.

2.1.5 Miscellaneous Wood Members

2.1.5.1 Nonstress Graded Members

Members shall include furring, and nailing strips. Members shall be in accordance with TABLE I for the species used. Sizes shall be as follows unless otherwise shown:

Member	Size (inch)
Furring	1 by 2.
Nailing strips	1 by 3 or 1 by 4 when used as shingle base or interior finish, otherwise 2 inch stock.

2.1.5.2 Plywood Decking

Plywood decking shall be provided in thickness as shown on drawings and shall be Structural I or II C-C EXT APA type. Unsupported edges exceeding 36" shall be of tongue and groove configuration or shall be supported with sheet metal connectors at manufacturer's recommended spacing.

2.2 ACCESSORIES AND NAILS

Markings shall identify both the strength grade and the manufacturer. Accessories and nails shall conform to the following:

2.2.1 Anchor Bolts

ASTM A 307, 3/8-inch diameter, complete with nuts and washers.

2.2.2 Bolts: Lag, Toggle, and Miscellaneous Bolts and Screws

Type, size, and finish best suited for intended use. Finish options include zinc compounds, cadmium, and aluminum paint impregnated finishes.

2.2.3 Nails and Staples

FS FF-N-105, size and type best suited for purpose. In general, 8-penny or larger nails shall be used for nailing through 1 inch thick lumber and for toe nailing 2 inch thick lumber; 16-penny or larger nails shall be used for nailing through 2 inch thick lumber. Nails used with treated lumber shall be galvanized. Nailing shall be in accordance with the recommended nailing schedule contained in AFPA WCD No. 1. Where detailed nailing requirements are not specified, nail size and spacing shall be sufficient to develop an adequate strength for the connection. The connection's strength shall be verified against the nail capacity tables in AFPA-01. Reasonable judgement backed by experience shall ensure that the designed connection will not cause the wood to split. If a load situation exceeds a reasonable limit for nails, a specialized connector shall be used.

2.2.4 Connector Clips

Galvanized 3/16-inch thick, size best suited for intended use; commercial clips designed for the connection of plywood and/or similar decking. Use two connector clips for 48-inch or greater spans and one for lesser spans.

2.3 INSULATION

Thermal resistance of insulation shall be not less than the R-values shown. R-values shall be determined at 75 degrees F in accordance with ASTM C 518. Insulation shall contain the highest practicable percentage of recovered material which has been recovered or diverted from solid waste, but not including material reused in a manufacturing process. Where two materials have the same price and performance, the one containing the higher recovered material content shall be provided. Insulation shall be the standard product of a manufacturer and factory marked or identified with manufacturer's name or trademark and R-value. Identification shall be on individual pieces or individual packages. Materials containing more than one percent asbestos will not be allowed.

2.3.1 Batt or Blanket

2.3.1.1 Glass Fiber Batts and Rolls

Glass fiber batts and rolls shall conform to ASTM C 665, Type III at thermal applications and Type I at acoustical applications. Unfaced and faced insulation shall have a UL rating of 25 and a smoke developed rating of 150 or less when tested in accordance with ASTM E 84. Thermal insulation shall have puncture resistant, vinyl-reinforced polyester facing at the side where indicated on drawings. Width and length shall suit construction conditions.

2.3.1.2 Acoustical Batt or Blanket Insulation

ASTM C 665, Mineral fiber, Type I unfaced insulation of thickness as necessary to duplicate steel stud width. Locations where indicated on drawings.

(Authority: ENG Form 3078, "Insulation and Vapor Retarders", 14 Oct 1992.)(Oct 1992)

PART 3 - EXECUTION

NOTE: Lumber and plywood used in association with roofing shall also comply with reference Specification Section: 07531 ELASTOMERIC (EPDM) SINGLE PLY ROOFING.

3.1 INSTALLATION OF MISCELLANEOUS WOOD MEMBERS

3.1.1 Blocking

Blocking shall be provided as necessary for application of wallboard, and other materials or building items. Blocking shall be cut to fit between framing members and rigidly nailed thereto.

3.1.2 Nailers and Nailing Strips

Nailers and nailing strips shall be provided as necessary for the attachment of finish materials. Nailers used in conjunction with roof deck installation shall be installed flush with the roof deck system. Stacked nailers shall be assembled with spikes or nails spaced not more than 18 inches on center and staggered. Beginning and ending nails shall not be more than 6 inches for nailer end. Ends of stacked nailers shall be offset approximately 12 inches in long runs and alternated at corners. Anchors shall extend through the entire thickness of the nailer. Strips shall be run in lengths as long as practicable, butt jointed, cut into wood framing members when necessary, and rigidly secured in place.

3.1.3 Furring Strips

Furring strips shall be provided at the locations shown. Furring strips shall be installed at 16 inches on center unless otherwise shown, run in lengths as long as practicable, butt jointed and rigidly secured in place.

3.2 INSTALLATION OF WOOD NAILERS

Nailers shall be secured to steel decks as indicated. Locate not more than 2 feet on center. Bolt anchors shall have nuts and washers countersunk, and bolts shall be cut flush with top of nailer. Powder-actuated fasteners, sized and spaced for nailer anchorage equivalent to that specified and indicated, may be used when approved.

3.3 INSTALLATION OF INSULATION

Insulation shall be installed after construction has advanced to a point that the installed insulation will not be damaged by remaining work. For thermal insulation the actual installed thickness shall provide the R-values shown. For acoustical insulation the installed thickness shall be as shown. Insulation shall be installed on the weather side of such items as electrical boxes and water lines. Unless otherwise specified, installation shall be in accordance with the manufacturer's recommendation.

3.4 INSTALLATION OF ROOF DECKING

3.4.1 Plywood and Structural-Use Panels

Roof decking shall be applied with edges 1/8-inch apart at side and end joints, and nailed at supported edges at 6-inches on center and at intermediate supports at 12-inches on center. Nailing of edges shall be 3/8-inch from edges. Apply roof decking with long dimension at right angles to supports, end joints and made over supports, and end joints staggered.

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