SECTION 06100
ROUGH CARPENTRY

PART I - GENERAL

1.01 DESCRIPTION

A. Scope: Work of this Section shall include all materials and installation necessary to provide Rough Carpentry as shown and detailed on the Drawings and specified herein.

1.02 QUALITY ASSURANCE

A. References:

1. American Forest and Paper Association (AFPA): National Design Specification for Wood Construction.

2. American Lumber Standards Committee (ALSC): Grading Standards.

3. American National Standards Institute (ANSI):

a. Mat-Formed Wood Particleboard: ANSI A208.1.

b. Basic Hardboard: ANSI/AHA A135.4.

4. American Plywood Association (APA): Standard Grading Rules.

5. American Wood Preservers Association (AWPA): Preservative and fire retardant treatment.

6. Redwood Inspection Service (RIS): Standard Specifications for Grades of California Redwood Lumber.

7. West Coast Lumber Inspection Bureau (WCLIB): Standard Grading Rules No. 16.

8. Western Wood Products Association (WWPA): Western Lumber Grading Rules.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, data and installation instructions for review.

B. Certificates:

1. Pressure Treatment: Submit mill certificate verifying compliance as specified, for each shipment received, in addition to a stamp on each piece of lumber, from an approved independent inspecting agency operating under the overview of the ALSC.

2. Lumber Grades: Where lumber and plywood is exposed to view and clear finished, provide Certificates in lieu of grade stamping and trade marks.

1.04 SITE CONDITIONS

A. Protection:

1. Temporary Supports: Provide adequate centering, bracing, and shoring for protection of structure during construction.

PART II - PRODUCTS

2.01 MATERIALS

A. Grading:

1. General: NBS PS-20 and applicable Lumberman's Association rules, under which each lumber species is produced.

2. Grade Marking:

a. Lumber: UBC Standard 23-1; each piece of lumber, factory marked with official grade mark of grading agency.

b. Plywood: UBC Standard 23-2 and PS 1-83; each panel legibly identified for type, grade and species by APA grade.

B. Lumber:

1. General: Sizes dressed as shown, surfaced four (4) sides; 19% maximum moisture content; air or kiln dried. Boxed heart will not be permitted in lumber 3x or thicker.

2. Lumber Grades:

a. General: Douglas fir-larch; to 4” thickness - No. 1; 6” thickness and larger - Select Structural.

b. Sills:

1) General: Pressure treated douglas fir-larch – No. 2 or better; AWPB marked or branded.

2) Non-bearing Stud Walls: Redwood, where specifically shown.

c. Posts, Beams and Stringers: Douglas fir-larch - Select Structural.

d. Miscellaneous Framing:

1) Douglas Fir-Larch: Blocking, nailers, furring, bridging and stripping; Construction or No. 2 grade.

2) Redwood: Where specifically shown; Foundation Grade, unless otherwise noted.

C. Plywood: APA Structural I, with exterior glue; [tongue and groove at unblocked floor sheathing only]; sizes as shown.

D. Wood Treatment:

1. Western Wood Treating; factory applied treatment, unless otherwise noted, J. H. Baxter Co., or equal.

2. Fire Retardant: AWPA Treatment C20, Exterior Type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25.

3. Wood Preservative

a. Pressure Treatment: AWPA Treatment C1 using water borne preservative.

b. Surface Application: Clear type.

E. Sheathing:

1. Insulation Sheathing: ASTM D2277, nail base type, tongue and groove; thermal conductivity as shown.

2. Gypsum Sheathing: ASTM C79, size as shown.

F. Rough Hardware:

1. Hangers, Clamps, Straps and Anchors:

a. Simpson Strong Tie Co., Inc.; types as shown.

b. Comparable products with current ICBO approval and equal or greater rated load capacity, TECO/LUMBERLOCK, TECO Products, or equal.

c. Special Fabrications: Per Division 5 – STRUCTURAL STEEL.

2. Fasteners:

a. Nails: FS FF-N-105, common wire; hot-dipped galvanized for pressure preservative treated and exterior work; electro galvanized for other work. Box and sinker nails not permitted.

b. Bolts and Nuts:

1) General: ASTM A307, Grade A, including Supplementary Requirement 51.

2) Expansion Bolts:

a) Metal anchored to concrete: products with current ICBO approval and equal or greater rated load capacity, Hilti, Inc., or equal.

b) Press treated wood anchored to concrete: stainless steel with current ICBO approval and equal or greater rated load capacity, Hilti, Inc., or equal.

c. Screws: Wood and lag screws per NFPA National Design Specification for Wood Construction; galvanized for exterior work.

d. Washers: Malleable iron or standard cut steel.

e. Powder Actuated Fasteners:

1) Hilti, Inc.; type as shown, comparable products with current ICBO approval and equal or greater rated load capacity, Ramset, or equal.

G. Adhesive: Per APA-AFG-01 for Plywood Floor Sheathing.

H. Building Paper: ASTM D226, 15 lb. asphalt saturated felt.

I. Caulking: Provided under Division 7 – CALKING AND SEALANTS.

PART III - EXECUTION

3.01 PREPARATION

A. Temporary Bracing: Provide bracing adequate to keep structure stable, plumb and in line; keep in place until permanent framing is completed. Provide bracing capable of supporting loads imposed by stockpiled material, erection equipment and other loads, during construction.

3.02 ERECTION

A. General:

1. Coordination: Coordinate placement of anchors, inserts, etc., in concrete and masonry. Establish locations, lines, levels and provide cutting, patching and fitting as required to accommodate built-in Work specified in other Sections.

2. Lumber: Use new lumber; re-use not permitted unless authorized in writing by the University's Representative. Select lumber in a manner that allowable knots and obvious minor defects do not interfere with placement of bolts, nailing or structural connections.

3. Layout: As shown; set plates, nailing blocks, anchors, grounds, etc., as required.

4. Site Applied Wood Treatment: Brush apply two (2) coats of preservative treatment on wood in contact with cementitious materials and roofing and related metal flashings. Treat site-sawn cuts. Allow preservative to dry prior to erecting members.

5. Fasteners:

a. Nails: Per CBC Table 23-11-B-1, unless otherwise noted. Space groups of nails no closer together than ½ nail length and not closer than ¼ nail length from cut ends of lumber. Prevent splitting due to nailing; drill holes for nails where required to prevent splitting. Where nails of normal length may penetrate through exposed work, use nail of specified diameter and shorter length. Use of nailing gun is subject to written approval of the University's Representative.

b. Bolts and Nuts: Use steel pieces as templates for location of holes; drill holes $^{1}/_{16}$" larger than diameter of bolts; tighten nuts or rods and bolts at time of installation. Re-tighten before covering up and just before final acceptance of the work; at exposed work, cut protruding bolt ends off to within ⅛" of bolt head and file off all burrs.

c. Washers: Install at bolts, nuts or lag screws bearing on wood; not required under heads of carriage bolts.

d. Screws:

1) General: Hammering or driving in place not permitted. Use soap to lubricate screw threads, if required.

2) Lag Screws: Drill holes of same diameter and depth as shank; drill holes for threaded portion of screw no larger than ¾ shank diameter.

3) Wood Screws: Drill lead holes for shank and threaded portions ⅞ shank or thread root diameter.

e. Powder Actuated Fasteners:

1) General: Install where shown or required; DO NOT install in structural connections required to carry computed stresses.

B. Installation:

1. General:

a. Structural Members:

1) General: Set level and plumb, in correct position; place horizontal members flat, with crown side up.

2) Glue Laminated Beams: Provided under Division 6 – GLUE-LAMINATED BEAMS; do not erect until fabrication inspector's certificates have been reviewed by the University's Representative. Cutting is not permitted, except as shown on Drawings, or with written approval of the University's Representative.

b. Framing Members: Construct full length without splices.

c. Blocking:

1) General: Provide as shown and where necessary to obtain required lines and levels in finished surface and to provide solid nailing. Secure blocking plumb and rigid; use wood shims wherever necessary to form true and even plane for finish materials.

2) Firestopping: Provide per CBC at interior and exterior walls at intersection with floor, ceiling and roof, and at all hollow

concealed spaces. Install minimum 2x material by width of enclosed spaces within partition in continuous row to prevent vertical and horizontal draft. Maximum concealed air space of 10'-0" in any direction.

d. Recessed Fixtures: Frame openings for panel boxes and other equipment, as required for fixtures provided.

2. Floor Framing:

a. Sills: Secure with anchor bolts, [or nails,] as shown. Join solid sill at corners and with halved joints where member is not continuous.

b. Joist Framing: Support ends of each member with minimum of 1-½" bearing on structure below. Anchor joists and provide solid blocking for plywood joints, and as shown.

c. Plywood Subflooring: Set in adhesive; secure with long dimension perpendicular to joists, with joints located over joists and end joints staggered; nailing as shown.

3. Wall Framing:

a. General: Wood studs as shown; frame openings with multiple studs at sides and headers as shown.

b. Plates: Provide continuous sole plates and double top plates. Lap top plate splices 4'-0" minimum; lap at wall corners and intersections.

c. Studs: Continuous lengths without splices; provide solid blocking at plywood joints.

d. Framing for Piping: Provide proper clearances; furr partitions as required. At pipe 1-½" diameter, or less, set pipe in center of plate using neat holes; no notching allowed. Holes in plates less than 5-½" in width, not allowed.

e. Headers: Continuous members as shown.

f. Corner Bracing: Continuous members as shown.

g. Sheathing:

1) General: Secure with long dimension perpendicular to studs, with joints located over studs or solid blocking and end joints staggered; nailing as shown.

2) Plywood: Minimum $^{1}/_{16}$" space at end joints and ⅛" at edge joints. Penetration of structurally required plywood to accommodate electrical or mechanical requirements must be approved in writing by the University's Representative.

3) Gypsum Sheathing: As shown.

4) Insulating Sheathing: Apply tongue and groove sheathing with long dimension horizontal.

4. Posts and Columns: As shown, straight, plumb and level; brace as required.

5. Roof Framing:

a. General: Provide minimum 4" bearing at both ends of each member and anchor as shown. Provide solid blocking at plywood joints.

b. Beams and Girders: As shown; splices not permitted except where centered over columns.

c. Joist Framing: As shown.

d. Rafter Framing: Place rafters directly opposite each other at ridge; notch to fit exterior wall plates; bevel ends at ridge and hip. Provide double rafters at openings in roof.

e. Sheathing: Secure with long dimension perpendicular to studs, with joints located over studs or solid blocking and end joints staggered; nailing as shown. Minimum $^{1}/_{16}$" space at end joints and ⅛" at edge joints.

6. Miscellaneous Framing:

a. General: Provide nailers, backing, and stripping as necessary to obtain required lines and levels in finished surface. Secure plumb and rigid; use wood shims where required. Provide backing required for wall or ceiling hung fixtures and equipment.

b. Building Paper: Apply where shown, with 2" horizontal laps and 6" vertical laps at joints and corners. Use ⅜" head galvanized nails spaced adequately to hold paper in place, without buckling. Repair damaged paper before installation of finish material.

c. Caulking:

1) General: Per Division 7 – CALKING AND SEALANTS.

2) Energy Compliance: Apply during framing operations as required by CBC.

3) Sound-Rated Partitions: Install sole plates on double bead of acoustical sealant.

4) Thresholds: Set in full bed, where shown.

d. Ventilating Holes: Provide in indicated sizes where shown.

e. Mechanical and Electrical: Provide curbs, backing and blocking, as required for mechanical and electrical fixtures and equipment.

C. Protection: Protect exposed roof sheathing and wood decking with protective waterproof covering until roofing has been installed.

END OF SECTION 06100