

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Provision of all lumber framing, rough hardware and blocking as indicated in the contract drawings.

1.3 REFERENCES

- A. Published Specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work in this Section where cited by abbreviations noted below (latest editions apply).

1. 2013 California Building Code (CBC)
2. 2013 San Francisco Building Code
3. (APA) - The Engineered Wood Association
4. (ALSC) - American Lumber Standards Committee: Softwood Lumber Standards.
5. (ANSI/NFoPA NDS-91) - National Design Specifications for Wood Construction
6. (PS) - United States Product Standard, PS-1 "Construction and Industrial Plywood".
7. (UL) - Underwriters' Laboratories, Inc., "Fire Hazard Classification, FR-S".
8. (WCLIB) - West Coast Lumber Inspection Bureau, "Standard Grading Rules No. 16".
9. (WWPA) - Western Wood Products Association, "Grading Rules for Lumber".
10. (AWPA) - American Wood Preservers Association: Book of Standards.
11. (ASTM) - American Society of Testing and Materials.

1.4 SUBMITTALS

- A. Shop Drawings of all specially fabricated rough hardware.
- B. Certificates of compliance with standards specified.
- C. Product Data: Submit wood treatment certifications and instructions for proper use of each type of treated material.
- D. Wood Product Certification: Furnish certification indicating wood products are from "well-managed" forests.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Provide proper facilities for handling and storage of materials to prevent damage to edges, ends, and surfaces.
- B. Keep materials dry. Where necessary, stack materials off ground on level flat forms, fully protected from weather.

1.6 JOB CONDITIONS

- A. Environmental Requirements: Maintain uniform moisture content of lumber at not more than 19-percent before, during, and after installation for new construction and 15-percent to existing construction modifications or additions.
- B. Sequencing, Scheduling: Coordinate details with other Work supporting, adjoining or fastening to rough carpentry Work.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Rough Carpentry:

- 1. Sills on Concrete: Foundation or Pressure treated Douglas Fir.
- 2. Lumber (Wood Framing): Meet requirements of following minimum grades.

<u>Item</u>	
Studs	D.F. No. 1
Plates	D.F. No. 2
Beams	D.F. No. 1
Joists	D.F. No. 1
Posts	D.F. No. 1
Blocking	D.F. No. 2

- B. Plywood: Provide thickness, grade, and panel identification index shown on drawings.
 - 1. Wall and Roof Sheathing: APA Structural I, exterior Grade C-D, Exposure 1 minimum 5-ply construction, meeting product Standard PS 1-83.
- B. Rough Hardware: All exterior hardware and hardware at sills shall be hot-dipped galvanized.
 - 1. Nails: Common wire, typical.
 - 2. Powder Driven Fasteners: Tempered steel pins with special corrosion-resistant finish. Provide guide washers to accurately control penetration, maximum 3/4-inch. Accomplish fastening by low-velocity piston-driven powder-actuated tool. Pins and tool: Hilti Fastening Systems; Impex Tool Corporation; or equal product substituted per Section 01630.
 - 3. Expansion Bolts: Reverse cone, self-wedging, expansion type, Tightening of nut or increased tension on bolt shank shall act to force wedges outward to create positive increased resistance to withdrawal, Ramset/Read Head "Tru-Bolt", Hilti Kwik - Bolt II or equal product substituted per Section 01630.

4. Metal Timber Framing Connectors: Fabricate from hot-dipped galvanized steel. Connectors shall be at least 16-gauge material, 1/8-inch plate materials where welded, unless otherwise shown or specified, punched for nailing. Nails and nailing shall conform to the manufacturer's instructions, with a nail provided for each punched hole. Manufactured by Simpson Company or equal product substituted per Section 01630.
5. Miscellaneous Hardware: Provide all common screws, bolts, fastenings, washers and nuts required to complete rough carpentry Work.

2.2 TREATMENTS

- A. Wood Preservation: Treat lumber and plywood exposed to weather to comply with applicable requirements of American Wood Preservers Association.
 1. Decay Resistance Treatment: Pressure treat following items with water-borne preservatives for above ground use with AWPA C-2 for lumber and AWPC C-9 for plywood.
 - a. Treat wood members in connection with roofing, flashing, vapor barriers and waterproofing.
 - b. Treat wood members in contact with concrete and below grade.
 - c. Kiln-dry wood to maximum moisture content of 19% after treatment with water-borne preservation.
 2. Fire Retardant Treatment: Comply with AWPA standards for pressure impregnation with fire-retardant chemicals to achieve flame-spread rating of not more than 25 in accordance with ASTM E84 or UL Test 723.
 - a. Treat interior wood and plywood complying with AWPA C20 and C27, Interior Type A, and identify with FRTW.
 - b. Exterior Type: Where indicated for exterior applications, provide fire treated wood passing ASTM D2898 rain test.
 3. Complete fabrication of treated items prior to treatment, wherever possible; if cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment.

2.3 FABRICATION

- A. Preparation (Finish Carpentry):
 1. Verify measurements at job site.
 2. Verify details and dimensions of equipment and fixtures integral with finish carpentry for proper fit and accurate alignment.
 3. Coordinate details with other work supporting, adjoining, or fastening to casework.
- B. Lumber:
 1. Air or kiln-dry to maximum 19-percent moisture content prior to shipment and prior to installation for new building construction and 15-percent to existing building construction additions or modifications.
 2. Furnish surfaced four sides, S4S, unless otherwise noted.
 3. Size to conform to rules of governing standard. Sizes shown are nominal unless otherwise noted.

2.4 QUALITY CONTROL

- A. Lumber Grades: Provide visible grade stamp of an agency certified by FPS.
- B. Lumber Standard: Comply with US Product Standard PS20 for each indicated use, including moisture content and actual sizes related to indicated nominal sizes.
- C. Plywood Standard: Comply with PS1 (ANSI A 199.1)
- D. Plywood shall bear APA grade-trademark.
- E. Air-dry all framing lumber to a maximum of 15 percent moisture content prior to installing.
- F. Inspect each piece after drying and discard damaged and defective pieces.
- F. Certified Wood Products: Wood products to be from forests certified "well-managed" by an agency accredited by Forest Stewardship Council (FSC) including SmartWood Program and Forest Conservation Program.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive rough carpentry Work and verify following:
 - 1. Completion of installation of building components to receive rough carpentry Work.
 - 2. That surfaces are satisfactory to receive Work.
 - 3. That spacing, direction, and details of supports are correct to accommodate installation of blocking, backing, stripping, furring and nailers.
 - 4. That all anchor bolts and hold-down bolts are properly installed.

3.2 INSTALLATION

- A. Cutting: Perform all cutting, boring, and similar Work required.
- B. Studs, Joists, Beams, and Posts: Install all members true to line. No wood shingle shims are permitted. Place joists with crown up; maximum 1/4-inch crown permitted.
- C. Nail joints in accordance with applicable requirements of the CBC Table 23A-II-B-I unless otherwise shown or specified. Pre-drill where nails tend to split wood.
- D. Bolt holes to be 1/16-inch oversize. Threads shall not bear on wood. Use standard malleable iron washers against wood. Carriage bolts require washers under the nut only.
- E. Provide blocking, grounds, nailers, stripping, and backing as shown and as required to secure other Work.
- F. Maintain 1/8-inch gap between all plywood panel edges.
- G. Do not utilize plywood sheets having a width smaller than 2-feet 0-inches.
- I. Where wood is cut, sawed, planed, bored or marred after preservative or fire-retardant treatment, apply two heavy brush coats of same material used in treatment.

- J. Nail heads shall be driven flush with plywood surface. Overdriven nails (nails which fracture the outer ply layer) shall be replaced one for one.
- K. Screws (Wood or Lag): Screws shall be screwed and not driven into place. Screw holes shall be predrilled to the same diameter and depth of shank. Holes for threaded portion shall be predrilled less than or equal to the diameter of the root of the thread. Provide standard cut washers under head of lag screws.
- L. Sills under bearing, exterior and shear walls shall be bedded on 1/2 inch minimum drypack or grout to obtain continuous bearing.

3.3 CLEANING AND ADJUSTING (Finish Carpentry)

- A. Remove damaged or otherwise disfigured portions and replace with new prior to the Owner's acceptance.
- B. Wash finished Work in strict accordance with product manufacturer's directions and ensure that washed surfaces do not differ from clean unwashed surfaces. Any difference will be considered unsatisfactory work.

3.4 FIELD QUALITY CONTROL

- A. The Owner's Testing Agency shall:
 - 1. Inspect erected timber framing as required to establish conformity of work with Drawings.
 - 2. Inspect all bolted connections.
 - 3. Inspect all timber connectors per CBC Section 2337.2.
 - 4. Inspect roof diaphragm nailing for nail size, spacing and penetration at plywood panel edges, and special nailing at collector and drag members.
 - 5. Inspect shear wall nailing for nail size, spacing and penetration at plywood panel edges, and nailing at hold-down posts.

END OF SECTION - 06 10 00