

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. The General Conditions, any Supplementary General Conditions and Division 1, General Requirements, are hereby made a part of this Section as fully as if repeated herein.

1.2 SUMMARY

- A. Blocking and nailers; plates, sills and curbs
- B. Blocking and nailers for LCD brackets, projection systems and screens, and other Section 27 equipment
- C. Blocking for Owner-furnished –lockers –to cover reused lockers from salvage
- D. Wood grounds
- E. Mounting panels
- F. Interior Partition Framing including bulkheads and soffits
- G. Ceiling, and Roof Framing
- H. Roof sheathing of softwood plywood

1.3 RELATED WORK

- A. Section 033000, Cast-In-Place Concrete
- B. Section 064023, Interior Architectural Woodwork
- C. Division 23, Mechanical
- D. Division 26, Electrical

1.4 QUALITY ASSURANCE

- A. Lumber Grading Rules and Wood Species: Agencies, Bureaus and Lumber Associations certified by Board of Review, American Lumber Standards Committee or Canadian Lumber Standards Administrative Board.
- B. Grade Marks: Identify lumber and plywood by official grade mark.
- C. Optional Framing: Certain requirements of bracing, notching, lapping or nailing may be waived in lieu of engineered connectors. Code approval and performance of connectors must be submitted to the engineer for approval.

- D. Manufacturer of Sheathing: Member of American Plywood Association (APA).

1.5 REFERENCES

- A. American Plywood Association (APA)
 - 1. APA PS-1, Construction and Industrial Plywood (ANSI A199.1)
 - 2. APA E30A, Design/Construction Guide - Residential and Commercial
- B. American Forest and Paper Association
 - 1. AFPA T03: Span Tables for Joists and Rafters
 - 2. AFPA T05: Wood Structural Design Data
 - 3. AFPA T11: Manual for Wood Frame Construction
 - 4. AFPA T901: National Design Specifications for Wood Construction
- C. National Bureau of Standards (NBS): NBS PS-20 American Softwood Lumber Standard
- D. Wood Associations:
 - 1. Southern Pine Inspection Bureau (SPIB)
 - 2. Western Wood Products Association (WWPA)
 - 3. West Coast Lumber Inspection Bureau (WCLIB)
 - 4. National Lumber Grades Authority (NLGA)
 - 5. Northeastern Lumber Manufacturers Association (NELMA)
 - 6. Redwood Inspection Service (RIS)
- E. American Wood Preservers Association
 - 1. AWP A U1: Use Category System
 - 2. AWP A C9-85: Pressure Treatment - Plywood
 - 3. AWP A P5-86: Water Borne Preservative
 - 4. AWP A C1-86: Pressure Treatment (General Requirements)

1.6 SUBMITTALS

- A. Material Lists: Indicate selected wood species, stress ratings, grades and locations in the work.
- B. Manufacturers Literature: Types of rough hardware indicating size and material.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect materials from weather, humidity and moisture.
- B. Store materials 6-inches above ground on framework or blocking.
- C. Cover with waterproof covering, providing adequate air circulation.
- D. Protect sheet materials from broken and damaged surfaces and edges.

PART 2 - PRODUCTS

2.1 MATERIALS - SOFTWOOD LUMBER

- A. Lumber dimensions indicated are nominal, actual dimensions per PS20.
- B. Surface four sizes (S4S), unless specified otherwise.
- C. Provide dry lumber with 19% maximum moisture content at time of dressing for 2" nominal thickness or less, unless otherwise indicated.

2.2 MATERIALS - SOFTWOOD BOARD LUMBER: PS-20, 1" to 1-1/2" thick; 2" to 12" wide

- A. Specie/Grade: WWPA, No. 4 Common; IWP, Utility; SPIB, No. 4; S-Dry or MC-15
 - 1. Locations: Concealed blocking and nailers; wood furring; wood grounds.

2.3 MATERIALS - SOFTWOOD DIMENSION LUMBER: PS-20

- A. Structural Joists and Studs: S-Dry or MC-15
 - 1. Specie Group
 - a. Specie Group - Hem-Fir (WWPA, WCLIB); Grade, No. 2 KD
 - i. Design Values - (psi) Fb=850; E=1,300,000 modulus; Fc = 1300 parallel to grain
 - b. Specie Group - Spruce-Pine-Fir (NLGA); Grade, No.1/No.2 KD
 - i. Design Values - (psi) Fb=875; E=1400,000 modulus; Fc = 1150 parallel to grain

2.4 MATERIALS - SOFTWOOD DIMENSION LUMBER: MISCELLANEOUS

- A. Specie/Grade: Any commercial softwood; Construction or No. 3 grade; S-Dry or MC-15.
 - 1. Locations: Miscellaneous framing; blocking and nailers; plates; sills and curbs.

2.5 ACCESSORIES - FASTENERS - ROUGH CARPENTRY

- A. Material and Size: Where rough carpentry is exposed to the weather, in ground contact or in areas of high relative humidity, all connection plates, angles, hangers, bolts, lag screws, nails, etc. shall be one of the following:
 - 1. Domestic steel shall be zinc plated or galvanized per ASTM A 153 or A653, class G185.
 - 2. Stainless steel shall conform to AISI Type 304.
- B. Case Hardened Cut Nails: Size 8d for 1-inch thick wood; 10d for 2-inch thick wood; toe nailing increase by two sizes.

1. Locations: Attachment of non-exposed wood to block masonry walls.
- C. Common Nails: 8d for 1-inch thick wood; 12d for 2-inch thick; 40d for 3-inch thick; toe nailing increase by two sizes.
 1. Locations: Attachment of wood to wood.
- D. Expansion Shields: "Exp. Bolts" size minimum 1/2" bolt, shield length minimum 2-1/2".
 1. Locations: Attachment into masonry or cement products and materials with density in excess of 40 pcf.
- E. Lag Bolts/Screws: Minimum 1/2" diameter, with length 2 times material passed through.
 1. Locations: Attachment of assembled units to wood framing.
- F. Wood Screws: 6" long TimberLok self-drilling screws by FastenMaster or approved equal.
 1. Locations: Attachment of assembled units to wood framing
- G. Nuts and bolts: 3/4", #20 thread, hex head, 1" longer than material penetrated. Use carriage bolts (square neck or finned) where head is later inaccessible or in hazardous location.
 1. Locations: Attachment of structural members to each other or substrate.
- H. Anchor bolts: 3/4" minimum 12" long with 2" hook end and 4" of thread.
 1. Locations: Embedment in masonry and concrete for blocking.
- I. Plate Washers: Size to accommodate fastener, minimum 3/4" outside diameter.
 1. Locations: Bolts and nuts (all types), penetrating wood or fiber board products.

2.6 ACCESSORIES – SHIMS

- A. Material: Cedar shingles, slate, lead, galvanized steel or plastic.

2.7 ACCESSORIES - METAL FRAMING ANCHORS

- A. General: Provide galvanized steel framing anchors of structural capacity, type, and size required for installation of framing. Provide joist hangers, nail plates, post caps and base, metal cross bridging, framing anchors, L-straps, T-straps, header braces, plywood clips, etc., as indicated on drawings and as follows:
 1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.
 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer that meet or exceed those indicated. Manufacturer's published values shall be

determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 (ASTM A 653M, Z180) coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated. For sheet steel fastened to preservative treated lumber, provide G185 coating.

PART 3 - EXECUTION

3.1 PREPARATION - GENERAL CARPENTRY

- A. Verify dimensions and details before proceeding with the work.
- B. Coordinate locations of supports so that attached work will be secure and stable to support design loads of applicable wood specie.
- C. Verify location and use of treated lumber. Coat all cut surfaces of treated lumber with an approved preservative.

3.2 PREPARATION – FRAMING

- A. Advise installers of other work of the required limitations on notching and boring holes through wood frame members.
- B. Notches: Do not notch in end quarter or middle quarter of joists or rafters, and do not exceed 1/6 of depth of member for depth of notches in top or bottom of joists. Limit length of notches to 1/3 of depth of member.
- C. Holes: Do not bore holes closer than 2" from top or bottom of joists or rafters, and limit diameter to 1/3 of depth of member.

3.3 INSTALLATION - GENERAL CARPENTRY

- A. Utilize materials of longest practical lengths to prevent splicing.
- B. Do not use materials with warp, twist or bow in excess.
- C. Cut, scribe and cope for accurate fit.
- D. Set work accurately to required lines with members level, plumb and true with intersections to required angles.
- E. Shim to lines and levels with full-bearing.

3.4 INSTALLATION - ANCHORING AND FASTENING

- A. Securely attach wood products, to each other and to other materials, as indicated and as recommended by published standards.

- B. Make tight connections between members.
- C. Do not allow nails and screws to penetrate opposite sides which will be exposed to view or will receive finish.
- D. Install fasteners without splitting of wood; pre-drill pilot holes for sizes larger than 1/8".
- E. Do not hammer threaded fasteners; tighten without lubrication.
- F. Install load carrying components with appropriate devices.
- G. Set fasteners flush with surface; counter bore screws, nuts and bolts.
- H. Nail or screw plywood in accord with APA publication E30A.

3.5 INSTALLATION - BLOCKING AND NAILERS, PLATES, SILLS AND CURBS

- A. Softwood lumber or plywood in appropriate strength and size for use. No piece less than 6' long, unless indicated by dimensions. Anchor: Board lumber 2' on center, dimension lumber 4' on center, not less than 2 bolts.
 - 1. Locations: Roof blocking for perimeters and penetrations. Also for secure fastening, stiffening, anchoring, hanging and attainment of various other profiles.

3.6 INSTALLATION - WOOD GROUNDS

- A. Softwood lumber or plywood, minimum 3/4" thick x 6" wide; attached between studs.
 - 1. Locations: Wall mounting in habited spaces (e.g., door stops, cabinets, shelving, rails, handicapped grab bars, toilet accessories, specialties and equipment furnished under other sections.)

3.7 INSTALLATION - WOOD FRAMING

- A. Set accurately, plumb, level, and rigidly secured. Frame openings and comply with the NFPA Manual for House Framing. Cut, join and tightly fit framing around other work. Do not splice structural members between supports unless otherwise detailed.
- B. Anchor and nails in accord with the following Publications except where modified by other portions of this specification.
 - 1. National Evaluation Report No. NER-272 for pneumatic or mechanical driven staples, P-Nails, and allied fasteners.
 - 2. Published requirements of manufacturer of metal framing anchors.
 - 3. Table 1 - Recommended Nailing Schedule of NFPA Manual for House Framing.
 - 4. "Table 2304.9.1 - Fastening Schedule" of the 2003 International Building Code.
- C. Firestop in concealed spaces: Use wood blocking in concealed spaces of nominal 2-inch thickness, unless blocked by other framing members.
 - 1. Stud walls (exterior or interior): Provide firestopping at each floor level and at top story

- ceiling level.
- 2. Floor and ceiling framing: Provide firestopping at ends of joists and over supports for full depth of joists.
- D. Sill Plates: Provide where wood framing is supported by concrete or masonry walls or piers. Anchor to embedded bolts as shown.

3.8 INSTALLATION - STUD FRAMING:

A. Studs:

1. Layout partition or wall on level deck.
2. Set wide face of stud perpendicular to face of wall or partition.
3. End nail studs through bottom and top plate.
4. Erect walls complete with headers and jamb studs.

B. Plates: Provide plates 2-inches thick and of same width as studs.

C. Bottom Plates: Fasten bottom plate to deck near each end of partition or wall and at not more than 4' on center between ends. Anchor to wood with nails or lag bolts, to masonry and concrete with anchor bolts, expansion sleeves, or power driven fasteners.

D. Single Top Plate: Permitted for non-loadbearing interior partitions.

E. Double-Top Plates: Face nail upper top plate to lower top plate, over lap top plates at corners and intersections, stagger joints between plates.

F. Corners and Intersection: Construct with minimum 3 studs 2-inches thick, providing bearing surface for wall finishes.

G. Ends of Partitions Abutting Other Walls: Secure with fasteners located near each end of stud and maximum 4-feet on center.

H. Openings: Frame with addition of jack studs (plus additional stud for openings wider than 6-feet) and double header members of thickness equal to width of studs. Set headers on edge and support on jack studs.

1. Openings in Exterior and Bearing Walls: Minimum header depth as required by AFPA T11 and the contract drawings.
2. Non-bearing partitions: Minimum header depth of 4-inches for openings 3-feet and less in width and 6-inches deep for wider openings.

I. Blocking and Struts: Provide minimum continuous horizontal row at mid-height of single story partitions over 8 feet high, and at midpoint between floors of multi-story partitions, using 2" thick members as the same width of studs.

J. Grounds: Provide blocking and framing of same width as studs for support of facing materials, fixtures, specialty items including grab bars in all tub/shower units and trim.

K. Gables: Frame gable end walls with studs cut to fit and toe nail to top plates of wall framing.

3.9 INSTALLATION - PROTECTION OF FRAMING – BRACING

- A. Temporarily brace framing to maintain alignment, sustain winds and construction loads.
- B. Leave bracing in place until lateral stability is achieved with other design elements.
- C. Remove temporarily bracing when no longer required.

3.10 INSTALLATION - ROUGH CARPENTRY HARDWARE

- A. Where edges of the roof plywood abut one another, use plywood sheathing clips at 16" on center.
- B. Where wood joists frame into beams, use 16 gauge standard joist hangers and 10d nails.
- C. All roof trusses with overhangs and all other horizontal surfaces exposed to wind uplift shall be secured to the building framing with 16 gauge hurricane anchors and 8 nails.

3.18 INSPECTION

- A. The Owner shall employ and pay for the services of an independent Inspection Agency, acceptable to the Structural Engineer, to perform a field review of the installation of the structural wood framing.
- B. Field inspection shall include but is not limited to the following:
 - 1. Size, species and spacing of all stud bearing walls and roof rafters.
 - 2. Installation of all headers, jambs, lintels and other framing at openings.
 - 3. Bridging and blocking installation between trusses, rafters and stud members.
 - 4. All connections between individual framing members including beam to beam, joist to beam, beam to column and truss to beam/wall. These connections include nailing of plywood to framing members as well as installation of hurricane anchors, steel plate connections and other framing details.
- C. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project. A discussion of all deviations from the contract documents and specifications, with their related impact on the final construction, shall be described in detail. The engineer of record shall review this final report, and recommend corrective measures (as deemed necessary) that must be made prior to final acceptance of the work. Prior to final payment, a written report certifying that the work meets the requirements of the contract documents, specifications, and all governing agencies shall be prepared, submitted, and approved by the Architect.
- D. See spec section 061700 for additional requirements.

END OF SECTION 061000