

Section 06010

ROUGH CARPENTRY

PART 1 GENERAL

1.1 WORK

- A. Provide wood framing and finish carpentry as shown on the Drawings and as specified herein.
- B. Where additional instruction is required, work shall be as directed by the Engineer.
- C. Work includes all lumber, connectors, hurricane ties, and related hardware and materials.

1.2 SUBMITTALS

- A. Provide all tests, certificates, and affidavits necessary to verify materials are as specified in:
 - 1. Species and grades
 - 2. Water content
 - 3. Wood preservative

1.3 QUALITY STANDARDS AND TOLERANCES

- A. Provide a work force that is:
 - 1. Sufficient in number for the work load and time schedule.
 - 2. Capable of handling any special heavy-duty or high-lift operations.
 - 3. Skilled, trained, experienced and competent to do the work as specified.
- B. Unless otherwise direct by the Engineer, all work shall be as per the 2003 International Building Code (IBC) and:
 - 1. Manual for Wood Frame Construction, American Forest and Paper Association (NFPA)
 - 2. National Design Specifications for Wood Construction of the NFPA
 - 3. Plywood Specifications and Grade guide of the American Plywood Association.

C. Tolerances:

1. Vertical framing shall be plumb within 1/4" per 10 linear feet.
2. Horizontal framing shall be level within 1/4" per 10 linear feet.

D. Moisture contents and tests:

1. Moisture content of framing lumber shall be 19% or less by weight.
2. Tests will be conducted on all newly shipped lumber to confirm moisture content.
3. Kiln-dried or other lumber requiring lower moisture content shall be as specified.

E. Grading

1. Follow applicable lumber grading agency standards in accepting or rejecting delivered lumber.
2. Reject special, required lumber that is not marked and certified as preservative-treated or kiln-dried.
3. Do not accept or use wood panels that deviated from grade standards or have excessive: Marred surfaces, cracks, defective patches, loose knots, split edges, and delaminations.

1.4 MATERIAL HANDLING AND STORAGE

A. Delivery and inspection:

1. Reject any delivered framing lumber that is not grade-stamped.
2. Verify that delivered lumber is grade certified by a bona fide grading agency.
3. Identify framing lumber by grade, and store each grade separately.
4. Do not accept or use lumber that deviates from grade standards or has excessive: Moisture content, loose knots, decay streaks, rot, insect damage, splits, pitch pockets, waness, crooks, warps, twists, and bends.
5. Reject special, required lumber that is not marked and certified as: Preservative-treated or kiln-dried.
6. Do not accept or use wood panels that deviate from grade standards or have excessive: Marred surfaces, cracks, defective patches, loose knots, split edges, delaminations.
7. Remove unstamped or defective lumber from the job site.

B. Handling

1. Handle lumber to avoid damage during transport, unloading, and moving on

- the job site.
 - 2. Reject and replace lumber that is damaged and made unusable in off-loading during delivery.
 - 3. Handle chemically treated lumber and panels strictly according to manufacturer's instructions.
- C. Storage
- 1. Store framing lumber and wood panels to prevent damage and moisture absorption by keeping lumber to be:
 - a. Well supported off the ground
 - b. Protected from weather
 - c. Stored away from traffic
 - d. Protected from all sources of water
 - e. Neatly stacked to prevent warping
 - f. Stacked with cross pieces for ventilation
 - g. Shored and with level support to prevent leaning or toppling
 - 2. Store metal connectors that are subject to damage:
 - a. In safe locations away from traffic or other sources of damage
 - b. In weather-tight wrapping
 - c. Store chemically treated lumber and wood panels outdoors until installation
 - d. Keep chemically treated lumber and wood panels well ventilated if stored indoors

PART 2 MATERIALS

2.1 FASTENERS, CONNECTORS, AND SUPPORTS

- A. Hot-dip galvanized steel for exterior, high humidity, and treated wood locations.
- B. Nails:
 - 1. Common wire or spike nails as shown on nailing schedule.
 - 2. Follow all nail size requirements and nail spacings required by the governing building code.
 - 3. Use hot-dip galvanized steel nails at exterior work, areas of high humidity or at treated wood.

4. Plain finish materials may be used at interior and dry locations.
 5. Electro-galvanized nails shall not be used on exterior surfaces.
 6. Electro-galvanized nails shall not be used where corrosive staining might mar wood surfaces.
 7. Nails into redwood or cedar shall be of stainless steel.
- C. Power-driven nailing: Comply with standards of the International Staple, Nail and Tool Association.
- D. Bolts
1. Machine bolts to comply with ASTM A307
 2. Lag bolts to comply with Federal Spec FF-N-1
 3. Drill holes 1/16" larger than bolt diameter
 4. Drill straight through from only one side.
 5. Use washers under all nuts.
 6. Do not bear bolt heads on wood: use washers.
- E. Hangers, connectors, and crossbridging by Teco, Simpson, or approved equal.
1. Joist hangers
 2. Metal framing connectors
 3. Metal crossbridging
 4. Galvanized steel, sized to suit framing.
- F. Anchors to adjacent construction
1. Hollow masonry: Use toggle bolt
 2. Solid masonry or concrete: Use expansion shield and lag bolt.
 3. Steel: Use bolt or ballistic fastener.

2.2 LUMBER

- A. S4S, S-Dry unless otherwise indicated, grade marked complying with the following:
1. Ceiling joist - Southern Pine Grade No. 2
 2. Wall Studs - Southern Pine Grade No. 2
 3. Sill Boards - :Pressure treated Southern Yellow Pine Grade No. 2
 4. Lumber for miscellaneous applications shall be Standard grade unless noted otherwise for: Bucks, nailers, grounds, stripping, and blocking furring.

2.3 SHEATHING AND UNDERLAYMENT - MATERIALS

- A. Sheathing and underlayment where required in the Drawings:
1. Plywood sheathing: Use APA rates, PS-1 or APA PRP-108.
 2. Particleboard: Exterior Type 2-M
 3. Hardboard: ANSI/AHA A135.6
 4. Oriented Strand Board (OSB)
 5. Subflooring: APA rated plywood sheathing, Exterior Grade
 6. Roof sheathing: APA rated plywood, Exterior Grade
 7. Underlayment: APA rated underlayment, Exterior or OSB with waterproof resin binder
- B. Related construction and materials
1. Sill gasket atop foundation wall: Glass fiber strip with width equal to plate.
 2. Sill flashing: Galvanized steel or aluminum.
 3. Subfloor glue: APA AFG-01, solvent base, waterproof.
 4. Building paper: No. 15 or 30 asphalt felt
 5. Vapor barrier: 6 mil polyethylene.
 6. Termite shield: Galvanized sheet steel or aluminum.

2.4 WOOD TREATMENT

- A. Wood preservative
1. Provide wood preservative as follows:
 - a. Pressure treatment: AWPA Treatment C.
 - b. Waterborne preservative with 0.25 percent retainage, rated for specific uses noted on Drawings.

PART 3 INSTALLATION

3.1 WOOD FRAMING - PREPARATION AND PRECONSTRUCTION

- A. Examine and verify that job conditions are satisfactory for speedy and acceptable work
- B. Coordination
1. Maintain complete files of up-to-date design documents at the job site including Architectural, structural framing, wood fabrication shop drawings, consultant engineer

- drawings that may affect framing such as plumbing and HVAC.
2. Maintain and refer to the latest trade standards.
 3. Coordinate and complete rough plumbing before starting framing.
 4. Cross-coordinate plumbing requirements with framing plan.
 5. Cross-coordinate HVAC requirements with framing plan.
 6. Cross-coordinate electrical requirements with framing plan.
 7. Identify actual dimensions of all required rough openings in framing with regards to doors, windows, and other framed openings.

C. Operations:

1. Provide framing and shoring plan and schedule.
2. Provide lifts or cranes to assist high-level framing.
3. Verify that materials are stored so as to not overload or interfere with construction in terms of quantities and weights, locations, and traffic.

3.2 ROUGH CARPENTRY, WOOD FRAMING - AT GRADE AND FOUNDATIONS

A. Preservation, termite treatment, and ventilation.

1. Apply termite prevention where untreated wood will be within 8" or finish grade of soil.
2. Use foundation grade or preservative-treated lumber near soil, in contact with concrete, in contact with masonry, in spaces subject to concentrated moisture, for all mudsills and precast concrete pier caps.
3. Do not use untreated wood wedges or shims in any location subject to moisture and decay.
4. Provide ventilation space for girders that will be set in foundation wall pockets.

B. Installation

1. Install foundation wall sills and cripples as per Drawings and according to building code.
2. Plumb framing
3. Square corners
4. Top-of-plate elevations correct and consistent.
5. Level plates.
6. Plates and cripples aligned vertically and horizontally.
7. Position foundation anchor bolts so that none are underneath any studs.
8. Shims for mudsills shall be wood shims equal to foundation grade or preservative-treated lumber.
9. Use steel shims for multistory construction.

10. Completed mudsills shall be straight with a side variation tolerance of 1/4" per 10 linear feet and level within 1/4" per 10 linear feet.

3.3 ROUGH CARPENTRY, FRAMING MEMBERS - FLOOR JOISTS.

- A. Install floor framing members as per framing as per framing plan, details, and as required by the building code in terms of grades, sizes and spacing, and bracing.
 1. Minimal notching or drilling
 2. Install floor joists set with crowns set upwards and set with full bearing on plates.
 3. Install double floor joists under parallel partitions.
 4. Install floor framing for concentrated floor loads including girder supports and blocking.
 5. Install double floor joists and blocking where framed around floor openings.
- B. Install joist hangers as per Drawings, manufacturer's instructions, and building code requirements.
 1. Set straight.
 2. Aligned
 3. Completely secured at all connection points.
 4. Secured with correct size and type fastenings.

3.4 ROUGH CARPENTRY, WOOD FRAMING - EXTERIOR AND INTERIOR WALLS.

- A. Instal stud framing as per framing drawings and building code requirements.
 1. Plumb
 2. Square
 3. Aligned
 4. Substantially braced.
 5. Secured with correct sizes and types of fastenings.
 6. Install fire stops so as to provide complete, snug blocking between studs.
 7. Install special framing as required for double walls at chases, separate plates and framing at party walls, separate plates and staggered studs at soundproof walls.
 8. Position studs at corners to provide ample nailing backing for interior and exterior panels.
 9. Provide blocking and double top plate header for wall openings.
 10. Lap top plates and set butt joints so they do not occur over openings.
 11. Install top plates to provide uninterrupted, ample nailing backing for interior and exterior panels.
 12. Install headers and lintels as per details and building code with ample bearing and

- secure connection to supports.
- 13. Provide complete and secure temporary bracing:
 - a. Nailing and stop plates at floors and slabs.
 - b. Double-sided prop bracing at walls.
 - c. Diagonal horizontal cross bracing at plates of intersecting walls.
 - d. Braced walls will not move, waver, or shake when force is applied to them.

- B. Framing for related work
 - 1. Install furring as per Drawings and manufacturer's instructions.
 - 2. Prepare stud framing for soundproofing as detailed.
 - 3. Prepare stud framing for waterproof finishes as detailed.
 - 4. Construct stud framing and blocking to support wall-mounted fixtures, cabinets, and equipment.

- 3.5 ROUGH CARPENTRY, WOOD FRAMING - CEILING AND ROOF
 - A. Install ceiling and roof framing members as per framing plans, details, and building code requirements.
 - 1. Install ample bracing and minimal notching or drilling
 - 2. Install ceiling and roof joists:
 - a. Set with crowns upward.
 - b. Set with ample bearing on plates.
 - c. Securely anchored to plates.
 - d. Provided with more tie downs than building coder requires if subject to sever winds.
 - 3. Install rafters and sloped roof joists.
 - 4. Coordinated with roof drain design.
 - 5. Sloped for positive roof drainage.
 - 6. Make angled rafter cuts that are tightly fitted and securely anchored.

 - B. Framing for related work
 - 1. Install ceiling soffits and furring as per Drawings and Engineer's instructions.
 - 2. Prepare framing for soundproofing as detailed.
 - 3. Install double roof joists and blocking where framed around roof openings.

3.6 SUBFLOORING SHEATHING

A. Installation

1. Install plywood subflooring as per framing drawings and building code requirements.
2. Staggered pattern.
3. Nailing pattern
4. Blocking with 100% support at all edges and support as required at intermediate spans.
5. Stagger subflooring butt joints.
6. Install subflooring panels so that edges have full bearing on framing members.

B. Fastening

1. Glue and secure subflooring to floor joists with screw-type fasteners.
2. Subfloor-to-joist connections must be sufficient to totally prevent any squeaking of flooring.
3. Prepare framing for soundproofing as detailed.
4. Prepare framing for floor-mounted fixtures and equipment.

C. Completed subflooring shall be

1. Level within 1/4" per 10 linear feet.
2. Free of depressions or humps.
3. Patched to repair holes, splits, construction damage.

3.7 SHEATHING, SIDING, AND FINISH-UP WORK

A. Installation

1. Stagger wall sheathing butt joints.
2. Install wall sheathing panels so that edges have full bearing on framing.
3. Install plywood shear wall construction as per the Drawings and as required by building code.
4. Comply with building code requirements for thicknesses of plywood, nail types and sizes, and nailing pattern.
5. Install siding so that joints are square and staggered in alternate pieces if so designed.
6. Include 1/8" expansion joints between sheathing panels.

B. Finishes

1. Prepare plywood surfaces for paint or stain according to manufacturer's instructions on preservatives, patching, sanding, cleaning, and priming.

3.8 WOOD FRAMING - COORDINATION

A. Coordination with other work - utilities, fixtures, equipment, finishes

1. Coordinate with electrical sub-ups with the framing plan.
2. Align floor-mounted electric outlet boxes with finish wall lines.
3. Coordinate girders, floor joists, and stud walls with plumbing supply lines, floor drains, and through-building roof drains.
4. Coordinate girders and floor joists with HVAC ducts and vents.
5. Do not allow HVAC ducts in wall framing to protrude beyond face of framing.
6. Recess floor joists to allow for underlayment, tile flooring, poured topping, recessed mats, recessed grilles, and changes in floor surfaces.
7. Supply and coordinate in-wall fixture and equipment supports for anchors, brackets, grounds, chairs, and frames.
8. Provide in-wall blocking, anchors, brackets, grounds, and other supports for wall supported plumbing fixtures, electrical fixtures, HVAC equipment, kitchen or shop equipment, bathroom accessories, handrails, guards/protective rails, shelves, storage units, and fire hose cabinets.
9. Provide curbs, anchors, brackets, pitch pockets, and other supports, to support roof-mounted for platforms, piping, plumbing vents, light fixtures, roof vents, communications equipment, and guy wires.
10. Install plaster grounds as detailed and as per trade association standards.

B. Movement joints and clearances

1. Provide joints and connectors for non-wood construction to allow for movement such as lumber shrinkage, concrete shrinkage, masonry expansion and contraction, and overall building thermal expansion and contraction.
2. Provide clearances between framing and other construction that may be subject to differential movement and noise transfer.
3. Provide clearances between framing and other construction subject to fire hazard such as for chimneys and flues, through-building expansion joint, and elevator cores.

C. Waterproofing, water barriers, and vapor barriers

1. Set and prepare framing as required for tile or other waterproof wall finishes.

2. Provide waterproofing sealing as detailed.
3. Combine water barriers with framing as shown on Drawings.
4. Water barrier, vapor barriers, and flashing must be undamaged.
5. Install water barriers, vapor barriers, and flashing as per manufacturer's instructions.
6. Combine vapor barriers as shown on Drawings.
7. All flashing must have unobstructed drainage to exterior.
8. Prepare framing for waterproof finishes where waterproofing required.

D. Insulation and sound barriers

1. Combine thermal insulation with framing as shown on Drawings.
2. Combine soundproofing with framing as shown on Drawings.
3. Install sound barrier materials, gaskets, and clips as per manufacturers' instructions.
4. Do not allow any sound transfer connections within soundproof party wall construction.

E. Coordination quality control

1. Do not allow trades to impair framing strength by cutting or drilling through members.
2. Do not change framing members without written consent of the Engineer.
3. Provide fire protection facilities and all necessary fire protection precautions during construction.
4. Install required concealed fireproofing such as under enclosed stairs.
5. Provide openings for inspection of concealed work before closing in.

3.9 WOOD FRAMING - BETWEEN PHASES AND AT CONCLUSION OF FRAMING

A. Inspection and cleanup

1. Check and verify correctness of each stage of framing before installing subsequent framing for lumber grade, sizes, and spacing; that framing is plumb; corners are square; and plates are level.
2. Plates and cripples align vertically and horizontally
3. Remove all unusable wood scraps from site weekly and between each phase of framing
4. Sweep work site clean weekly and between each phase of framing
5. Do not bury any scraps or other trash on site.
6. Call for Engineer and/or building department inspection before closing up concealed work.

3.10 FASTENERS, CONNECTORS, AND SUPPORTS - INSTALLATION

A. Nailing and penetration

1. Where not shown on nailing schedule, nails shall penetrate not less than $\frac{1}{2}$ the length of nail.
2. Exception: 16d nails may connect two pieces of 2".
3. Nail at sufficient edge distance to avoid splitting wood.
4. Predrill as required.
5. Remove and replace split framing members.
6. Check nailing at each stage of framing before installing subsequent framing with respect to quantities, spacing and patterning per code; minimal bends; predrill as required; nail heads flush/recessed as required; and bent/used nails are not reused.
7. Use nailing machines or power hammers according to manufacturer's requirements.
8. Provide correct sizes and types of nails for use in nail guns.
9. Check and tighten all bolt connections before final construction is completed.

B. Install joist hangers as per Drawings and manufacturer's instructions.

1. Spacing as per Drawings.
2. Set straight.
3. Aligned correctly.
4. Completely secured at all connection points.
5. Secured with correct size and type fastenings.

C. Install bridging as per Drawings and manufacturer's instructions.

1. Placed so as to provide full bearing.
2. Set at joist midpoints or otherwise correctly spaced.
3. Bottoms are not nailed until the roof sheathing is laid.
4. Secured with correct size and type fastenings.

END OF SECTION