

**SECTION 06 1000
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

1.02 WORK INCLUDED

- A. Rough Carpentry work includes all labor, materials, and equipment necessary and required to provide all rough carpentry and wood frame construction shown on Drawings, including:
 - 1. Structural floor, wall, and roof framing with dimension lumber
 - 2. Structural floor, wall, and roof framing with engineered wood products
 - 3. Backing panels
 - 4. Floor, wall and roof sheathing

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 3 Setting anchors in concrete
- B. Division 5 Metal Fabrications: miscellaneous steel connectors and support angles for wood framing.
- C. Division 6 Heavy Timber Framing
- D. Division 6 Pre-manufactured Wood Trusses
- E. Division 6 Pre-fabricated wood joists
- F. Division 6 Glue Laminated Structural Members

1.04 REFERENCES

- A. All references are latest edition U.N.O.
- B. ANSI A208.1 - American National Standard for Particleboard.
- C. AFPA WCD No.1 - Manual for Wood Frame Construction; American Forest and Paper Association.
- D. APA Plywood Design Specification PDS.
- E. APA PRP-108 - Performance Standard and Policies for Structural Use Panels
- F. ASTM C 79/C 79M - Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board.
- G. ASTM C 208 - Standard Specification for Cellulosic Fiber Insulating Board.
- H. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- I. AWWPA Standard U1 – Use Category System: User Specification for Treated Wood; American Wood Protection Association.

- J. NDS - National Design Specification for Wood Construction as published by the American Forest and Paper Association.
- K. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce).
- L. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce).
- M. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; Redwood Inspection Service.
- N. SPIB (GR) - Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau, Inc.
- O. WCLB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau; Supplements VII & VIII.
- P. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association.
- Q. IBC - International Building Code, latest edition, International Code Council (ICC).

1.05 QUALITY CONTROL

- A. Contractor is responsible for, and shall control quality of all materials and workmanship, including workmanship and materials furnished by subcontractors and suppliers.
 - 1. Include procedures, means and methods, etc., that will result in rough carpentry meeting requirements of these specifications and referenced codes and standards.
 - 2. Correct work which does not conform to specified requirements in a manner, and with materials, approved by Architect/Engineer.
 - 3. Cost of extra work by Architect/Engineer to approve corrective work shall be borne by Contractor.
- B. Comply with governing codes and regulations. Provide products from acceptable manufacturers which have been in satisfactory use in similar service for at least three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- C. Lumber: For each use, provide lumber complying with Product Standard PS 20.
 - 1. Acceptable Lumber Inspection Agencies:
 - a. Any agency with rules approved by American Lumber Standards Committee
 - b. NLGA - National Lumber Grades Authority
 - c. SPIB - Southern Pine Inspection Bureau
 - d. WCLIB - West Coast Lumber Inspection Bureau
 - e. WWPA - Western Wood Products Association
 - 2. Lumber of other species or grades, or graded by other agencies, is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
 - 3. Nominal sizes are indicated. Provide actual sizes complying with the minimum size requirements of PS 20 for the moisture content specified for each use.
- D. Plywood: Comply with PS 1 and APA PRP-108 except as otherwise indicated for each use.
- E. Factory mark: Factory mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to be exposed to view. If piece cannot be marked on a concealed surface, submit mill certificate that material has been inspected and graded in accordance with requirements.

- F. Certificate of inspection: Certificate of inspection and grading by a recognized agency may be submitted with each shipment, in lieu of factory-marking, at Contractor's option.
- G. Obtain each type of fire-retardant treated wood product from one source for both treatment and formulation.

1.06 SUBMITTALS

- A. Product Data: Provide two copies of technical data on wood preservative materials, and application instructions.
- B. Samples: For rough carpentry members that will be exposed to view, submit two samples illustrating wood grain, color, and general appearance.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.07 DELIVERY STORAGE AND HANDLING

- A. As soon as materials are delivered to site, place under cover and protect properly from weather. Do not store or erect material in wet or damp portions of building or in areas where plastering or similar work is to be executed until such work has been completed and has become reasonably dry.
- B. Support stacked and pressure treated products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Dimension Lumber:
 - 1. Structural Framing: No. 2 grade.
 - 2. Species: Douglas Fir Larch.
 - 3. Exposed Framing: Appearance grade.
- B. Boards:
 - 1. Exposed Boards: 19 percent moisture content.
 - 2. Concealed Boards: 19 percent moisture content.
- C. Miscellaneous Lumber:
 - 1. Moisture Content: 19 percent.
 - 2. Grade: Standard grade light framing.
- D. Construction Panels:
 - 1. Combination Subfloor-Underlayment: APA Sturd-I-Floor
 - 2. Wall Sheathing: APA Sheathing, Exterior.
 - 3. Roof Sheathing: APA Sheathing, Exterior.
 - 4. Plywood Backing Panels: APA C-D Plugged Exposure 1 with exterior glue, fire-retardant treated.
 - 5. Plywood Underlayment for Resilient Flooring: APA Underlayment Exterior.
 - 6. Construction Panel Underlayment for Resilient Flooring: APA Sturd-I-Floor, Exterior.
 - 7. Construction Panel Underlayment for Ceramic Tile: APA Sturd-I-Floor, Exposure 1.
 - 8. Plywood Underlayment for Carpet: APA Underlayment Exposure 1.

- E. Gypsum Sheathing:
 - 1. Material: Gypsum sheathing board with water-resistant core.
 - 2. Material: Glass-fiber-surfaced gypsum sheathing board.
 - 3. Type: Regular ASTM C 79.

- F. Plastic Board Sheathing:
 - 1. Material: Extruded polystyrene, ASTM C 578, Type IV.
 - 2. Material: Polyisocyanurate, FS HH-I-1972/1 for Class 2.

- G. Auxiliary Materials:
 - 1. Air Infiltration Barrier: Asphalt-saturated organic felt, ASTM D 226, Type I, No. 15 felt, unperforated.
 - 2. Air Infiltration Barrier: High density polyethylene.
 - 3. Air Infiltration Barrier: Woven polyolefin sheet.
 - 4. Sill Sealer Gaskets: Glass fiber strip resilient insulation.
 - 5. Framing Anchors and Fasteners: Non-corrosive, suitable for load and exposure. Drywall screws are not acceptable.

2.02 TREATED WOOD PRODUCTS

- A. All preservative-treated wood products shall be treated with waterborne preservatives in accordance with AWP Standard U1. All wood blocking, framing, or wood material which is exposed to weather or dampness, or which is in contact with soil, concrete, masonry, roofing, flashing, damp proofing and waterproofing shall be pressure-treated.

- B. Fire-treated wood products shall be treated in accordance with AWP Standard U1 to the requirements of Use Category UCFA for interior members or Use Category UCFB for exterior members.

- C. Moisture Content: Materials shall be dried after treatment to an average moisture content of 19%.

- D. Edge Treatment: Brush-coat surfaces of lumber sawed or cut after treatment with same preservative used at plant.

2.03 CONNECTIONS AND ACCESSORIES

- A. Bolts: Bolts, nuts, studs, and rivets shall conform to ASTM A307.

- B. Expansion shields shall conform to Federal Specification FF-S-325. Shields shall be accurately recessed and, unless otherwise indicated, shall be not less than 2 1/2" into concrete or masonry. Devices of groups IV, V, VI, and VII shall not be used in sizes greater than 3/8" unless otherwise indicated.

- C. Lag screws or lag bolts: Federal Specification FF-B-561b.

- D. Toggle bolts: Federal Specification FF-B-588b.

- E. Screws: Federal Specification FF-S-111b.

- F. Nails and Staples: Federal Specification FF-N-105a.

- G. Ground Anchorage: Wood plugs or nailing blocks are not acceptable for fastening grounds, furring,

or blocking to concrete or masonry. Hardened steel nails, expansion screws, toggle bolts, metal plugs, or metal inserts, as most appropriate for each type of masonry or concrete construction shall be used.

- H. Explosive Driven Fastenings: Explosive or powder-driven fastenings may be used only when approved by Architect.
- I. Subfloor Glue: Waterproof, water base, air cure type, cartridge dispensed.

PART 3 EXECUTION

3.01 INSTALLATION (GENERAL)

- A. Install framing, sheathing, and metal framing anchors in accordance with the IBC. See General Notes on the Structural Drawings.
- B. Set carpentry work accurately to required levels and lines with members plumb and true.
- C. Fit carpentry work to other work. Scribe and cope as required for accurate fit.
- D. Provide nailers and blocking where required.
- E. Shim with metal for bearing on concrete and masonry substrates. Where indicated, grout with 1:3 Portland Cement-Sand grout for full-bearing.
- F. Securely attach carpentry work to substrates by anchoring and fastening as shown and as required by recognized standards.
- G. Provide washers under bolt heads and nuts in contact with wood.
- H. Nail plywood to comply with the recommendations of the American Plywood Association.
- I. Countersink nail heads on exposed carpentry work and fill holes.
- J. Fasteners: Use common wire nails, except as otherwise shown or specified herein. Use finishing nails for exposed work. Do not wax or lubricate fasteners that depend on friction for holding power. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. Do not drive threaded friction type fasteners; turn into place. Tighten bolts and lag screws at installation and retighten as required for tight connections prior to closing in or at completion of work
- K. Install manufactured materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with other work.
- L. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.
- M. Restore damaged components. Protect work from damage.
- N. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate the work with a minimum of joints or the optimum jointing arrangement.

3.02 INSTALLATION (STRUCTURAL FRAMING)

A. General

1. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
2. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
3. Install structural members full length without splices unless otherwise specifically detailed.
4. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA WCD No.1.
5. Provide miscellaneous members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. Stud Framing:

1. General: Provide stud framing where shown. Erect on lines shown, to true planes, plumb, level and rigidly secured. Unless otherwise shown, use 2x6 wood studs spaced 16" o.c. and placed with wide faces at right angles to direction of wall or partition.
2. Plates: Provide single bottom plate and double-top plates, 2" thick. Face nail upper top plate to lower plate. Nail bottom plates to wood construction. If bottom plate bears on concrete, fasten with 5/8" diameter anchor bolts, at 48" o.c. (max.) and 16" o.c. for shear walls. As a minimum, provide two bolts, each within 12" of the ends of each piece of sill plate. Overlap top plates at corners and intersections.
3. Construct corners and intersections of partitions and walls with not less than 3 studs 2" thick, to provide bearing surface for wall finishes.
4. Secure ends of partitions abutting masonry or concrete with 1/2" diameter expansion bolts or power-driven studs located near end and not more than 4' o.c. between ends.
5. Provide blocking in continuous horizontal row at mid-height of single story partitions over 8' high, and at midpoint between floors of multi-story partitions, using 2" thick members of same width as studs.
6. Frame openings with double studs (triple for openings wider than 6') and headers of single or double members of thickness equal to width of studs. Set headers on edge and support on jamb studs. Provide headers of depth shown, or if not shown, provide headers for exterior openings and bearing partitions as required by Table II of N.F.P.A. "Manual for House Framing", and for non-bearing partitions, provide a depth of not less than 4" for openings 3' and less in width and not less than 6" deep for wider openings.
7. Gables: Frame gable end walls as shown. Cut studs to fit and toe nail to top plates of wall framing. If roof framing overhangs at gable end, provide top plate for gable end wall framing. If roof framing is flush with gable end wall, notch studs to fit and nail to end rafter.

C. Columns

1. For built-up wood columns: laminate 2x members with continuous exterior glue and stitch nailed with staggered 16d nails at 4" o.c. Laminations shall be dry (less than 16% moisture content) when glued. Longitudinal splices not allowed.

D. Joist Framing:

1. Provide joist sizes and spacings indicated on the drawings.
2. Install with crown edge up and support ends of each member with not less than 1 1/2" of bearing on wood or metal and not less than 3" of bearing on masonry.
3. Provide solid blocking:
 - a. At bottom bearing member ends unless nailed to a continuous header, nailer, or rim board.
 - b. Between members crossing over a bearing point.
 - c. Use blocking 2" thick by depth of joists.

4. Use metal joist hangers unless otherwise detailed.
5. Lap members framing from opposite sides of beams, girders, or partitions not less than 4" or securely tie opposing members together.
6. Anchor masonry bearing members with 1/4" x 1 1/4" metal strap or "T" anchors with wall ends bent 4" into masonry joint at every second joist. Extend anchors not less than 1'-4" along bottom of joist end and nail.
7. Anchor members paralleling masonry with 1/4" x 1 1/4" metal strap anchors spaced not more than 8' o.c. Extend anchors at least 4" into masonry, turn up 4" and extend over and fasten to 3 joists.
8. Frame openings with headers and trimmers. Use double headers and trimmers where span of header exceeds 4'. Support with metal joist hangers countersink top and bottom.
9. Under jamb studs at openings, provide solid blocking between joists.
10. Under non-load bearing partitions, provide double joists separated by solid blocking equal to width of studs above.
11. Do not notch in middle third of joists, and do not exceed 1/6 of depth of member for depth of notches in top or bottom of joists. Limit end notches to 1/3 of depth of member.
12. Do not bore holes closer than 2" from top or bottom of joists, and limit diameter to 1/3 of depth of member.
13. Bridge between joists where nominal depth-to-thickness ratio exceeds 4, with bevel cut 1x4 or 2x3 double-crossed wood bracing, or with solid bridging 2" thick by depth of joist. End nail solid bridging to joists, and nail both ends of cross-bridging. Provide bridging as required by code, but not less than one line of center bridging for spans over 10', and bridging spaced 8' o.c. for spans over 16'.

E. Rafter and Ceiling Joist Framing:

1. Ceiling joists: Provide member size and spacing shown, and as previously specified
2. Rafters: Provide member size and spacing shown. Notch to fit exterior wall plates and toe nail or use special metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing (if any), and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
3. At valleys, provide valley rafter of size shown, or if not shown, provide rafter twice as thick as regular rafters and 2" deeper. Bevel ends of jack rafters for full bearing against valley rafter.
4. At hips, provide hip rafters of size shown, or if not shown, provide of same thickness as regular rafters and 2" deeper. Bevel ends of jack rafters for full bearing against hip rafters.
5. Collar tie-beams: Where roof rafters are concealed above ceiling framing, provide 1x6 boards between every third pair of rafters. Locate below ridge member, one-third of distance to ceiling joists. Cut ends to fit slope and nail to rafters.
6. Provide special framing as shown on drawings for eaves and overhangs.

F. Plywood Sheathing at Roof:

1. Provide plywood roof sheathing where shown. Install with face grain across supports, using panels continuous over two or more spans with end joints between panels staggered and located over center of supports.
2. Stagger ends of adjacent sheets 4'-0" where possible.
3. See Structural drawings for roof plywood nailing requirements, nail size and spacing.
4. Panel edge clips: Install at sheathing joints without tongue-and-groove joints.

G. Plywood Sheathing at Subfloor:

1. Provide plywood subflooring where shown. Install with face grain across supports with end joints between panels located over center of supports.
2. Stagger ends of adjacent sheets 4'-0" where possible.
3. Apply 1/4" continuous bead of glue at each joist (2 beads at butt joints) immediately before

- laying panel. Set and nail sheet leaving 1/16" space at ends and edges.
4. See Structural drawings for subfloor nailing requirements, nail size and spacing.

H. Plywood Wall Sheathing:

1. Provide plywood wall sheathing where shown. Install horizontally or vertically using panels continuous over 2 or more spans.
2. Unless noted otherwise on the drawings, nail edges and ends over supports at 4" o.c. and at 12" o.c. over intermediate studs. Solid block all edges per shear wall schedule. See shear wall schedule for additional nailing information and nail sizes.

I. Fiberboard Sheathing:

1. Provide fiberboard wall sheathing where shown. Fasten each unit to intermediate supports and then at edges and ends.
2. Drive fasteners at least 3/8" from edges and ends. Use 11 gauge galvanized roofing nails with 7/16" or 3/8" heads a minimum length of 1 1/2", 6d common nails, or 16 gauge galvanized staples with 7/16" crown and a minimum length of 1 1/8".

END OF SECTION

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wall sheathing.
 - 2. Roof sheathing
 - 3. Sheathing joint and penetration treatment.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.3 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For following products, from ICC-ES:

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.2 SHEATHING

- A. Plywood Wall Sheathing: Exposure 1, sheathing.
 - 1. Span Rating: Not less than 24/16 or 24/0
 - 2. Type and Thickness: 7/16 inches.

- B. Plywood Roof Sheathing: Exposure 1, sheathing, APA rated.
 - 1. Span Rating: Not less than 32/16
 - 2. Type and Thickness: 15/32 inches.
- C. Glass-Mat Gypsum Sheathing: ASTM C 1177/1177M.
 - 1. Basis of Design Products: Subject to compliance with requirements, provide Dens-Glass Gold as manufactured by G-P Gypsum Corporation or approved equal.
 - 2. Type and Thickness: 5/8 inches unless indicated otherwise.

2.3 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
- B. For wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- C. Power-Driven Fasteners: NES NER-272.
- D. Screws for Fastening Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

2.4 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.
 - 1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads/inch (390 by 390 or 390 by 780 threads/m), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
- D. NES NER-272 for power-driven fasteners.
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- E. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.
- H. Verify that framing members do not vary more than 1/8 inch from plane of faces adjacent to framing.

3.2 GYPSUM SHEATHING INSTALLATION

- A. Comply with GA-253, ASTM C 1280 and with manufacturer's written instructions.
 - 1. Fasten gypsum sheathing to cold-formed metal framing with screws.
 - 2. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
 - 3. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.
- B. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.
 - 1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.
- C. Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.
 - 1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.
 - 2. Sheathing panels shall not be less than 7 inches from finish grade in fully weather and water protected siding systems.
- D. Seal joints according to manufacturers recommendations.

END OF SECTION 061600

SECTION 06 1753
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

1.02 WORK INCLUDED

- A. This work includes the complete furnishings and installation of all open-web trusses, as shown on the drawings herein specified and necessary to complete the work.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 5 Metal Fabrications: miscellaneous steel connectors and support angles for wood framing.
- B. Division 6 Rough Carpentry

1.04 REFERENCES

- A. All references latest edition u.n.o.
- B. NDS - National Design Specification for Wood Construction as published by the American Forest and Paper Association.
- C. IBC - International Building Code, latest edition.
- D. These products shall be designed and manufactured to the standards set forth in the ICC ES Report No. ESR – 1774 or in the ICBO report PFC-3246. Note that these two reports cover RedBuilt Corporation's Joists and Web Joist Rocky Mountain's Joists. Other manufacturers are acceptable as long as they submit similar reports with their shop drawings.

1.05 DESIGN

- A. Design of the joists is the responsibility of the joist manufacturer and shall be designed to fit the dimensions and the loads indicated on the plans. .
- B. Design calculations shall be submitted by the joist manufacturer. These calculations shall be stamped and signed by a professional engineer registered in the state where the project is to be completed.

1.06 QUALITY CONTROL

- A. Contractor/Manufacturer is responsible for, and shall control quality of all materials and workmanship, including workmanship and materials furnished by subcontractors and suppliers.
 - 1. Include procedures, means and methods, etc., that will result in installed prefabricated joist meeting requirements of these specifications and referenced codes and standards.
 - 2. Correct work which does not conform to specified requirements in a manner, and with materials, approved by Architect/Engineer.
 - 3. Cost of extra work by Architect/Engineer to approve corrective work shall be borne by Contractor.

- B. Comply with governing codes and regulations. Use experienced installers.

1.06 SUBMITTALS

- A. See Division One - Administrative Requirements, for submittal procedures.
- B. Shop drawings shall be submitted to Architect and Structural Engineer for approval of joists. Details showing all necessary hangers, connections, fastening and bearing conditions shall be included in the shop drawings.
- C. ICBO / ICC reports for manufacturers other than those listed in 1.04 D above.
- D. Stamped and signed (by a registered P.E. in the state of the project) calculations shall be submitted with the shop drawings.
- E. Fabrication shall not proceed until the architect / structural engineer have approved the submittal package.

1.07 DELIVERY STORAGE AND HANDLING

- A. Handle and store joists in a vertical position.
- B. Storage: Store well above the ground and cover with waterproof covering.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials shall comply with reports listed in number 1.04D above. Chord members, web members, connecting pins and bearing hardware/attachments shall be of material and size as required by design:
- B. Joists: Depths and Layout are shown on plan.
- C. Accessories: Provide bridging, accessories and attachment hardware as required by manufacturer's standard installation procedures and as indicated.

2.02 FABRICATION

- A. Open web joists shall be manufactured by an approved manufacturer and an approved plant as listed in the reports listed in number 1.04 D above. Manufacturing shall occur under the supervision of a third – party inspection agency.
- B. Joists: Depths and Layout are shown on plan.
- C. Accessories: Provide bridging, accessories and attachment hardware as required by manufacturer's standard installation procedures and as indicated

2.03 TOLERANCES

- A. Length – Bearing to Bearing
 - 1. Trusses up to 30'-0" = +/- 1/8"
 - 2. Trusses greater than 30'-0" = +/- 1/4"

- B. Depth = +/- 1/8".
- C. Camber

Span	Variation from Design	Variation between trusses of same type
0'-0" to 30'-0"	+/- 1/8"	1/4"
30'-0" to 60'-0"	+/- 3/8"	1/4"
60'-0" to 120'-0"	+/- 1/2"	1/2"

2.04 IDENTIFICATION

- A. Each of the trusses shall be identified by a stamp indicating the truss series, ICC / ICBO evaluation report number, manufacturer's name, plant number, date of fabrication, and the independent inspection agency's logo.

PART 3 EXECUTION

3.01 INSTALLATION

- A. The open-web trusses, if stored prior to installation, shall be stored in a vertical position and protected from the weather. They shall be handled with care so they are not damaged. They are to be installed in accordance with the plans, and any manufacturer's drawings and installation suggestions. Temporary construction loads that cause stresses beyond design limits are not permitted. Installation bracing is to be provided by the joist manufacturer to keep the trusses straight and plumb as required, and to assure adequate lateral support for the individual trusses and the entire system until the sheathing material has been applied.
- B. Prior to enclosing the trusses, the Contractor shall give notification to the manufacturer to provide an opportunity for review of the installation.
- C. M&L shall also review the installation prior to closing in the system.

3.02 WARRANTY

- A. The products shall be manufactured, delivered, stored, handled and installed per the manufacturer's recommendations to be warranted. See manufacturer's specific warranty for information regarding their procedures, products, and warranty items.

END OF SECTION

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Interior standing and running trim, including window sills.
 - 2. Closet shelving.
 - 3. Wood cabinets (at common spaces)
 - 4. Shop finishing of woodwork.
 - 5. Window sills
 - 6. Wood paneling
 - 7. Wood shelving
- B. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips unless concealed within other construction before woodwork installation.
- C. Related Sections:
 - 1. Division 12 Section "Residential Casework" for premanufactured cabinets.
 - 2. Division 12 Section for countertops.

1.2 SUBMITTALS

- A. Product Data: For solid-surfacing material, cabinet hardware and accessories, handrail brackets and finishing materials and processes.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
- C. Samples:
 - 1. Lumber and panel products for transparent finish, for each species and cut, finished on one side and one edge.
 - 2. Lumber and panel products with shop-applied opaque finish, for each finish system and color, with exposed surface finished.
 - 3. Thermoset decorative panels, for each type, color, pattern, and surface finish.
- D. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of woodwork.
- B. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards."
 - 1. Provide AWI Quality Certification Program labels and certificates for woodwork, including installation.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 WOODWORK FABRICATORS

- A. Fabricators: Subject to compliance with requirements, provide interior architectural woodwork by one of the following:

2.2 MATERIALS

- A. Wood Species and Cut for Transparent Finish: As indicated.
- B. Wood Species for Opaque Finish: As indicated.
- C. Wood Products:
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
 - 3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 - 4. Softwood Plywood: DOC PS 1, Medium Density Overlay.
 - 5. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.
- D. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- E. Softwood Plywood: DOC PS 1.
- F. Hardboard: AHA A135.4.
- G. MDF: ANSI A208.2, Grade 130, made with binder containing no urea-formaldehyde resin.
- H. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
- I. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
- J. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.

2.3 CLOSET SHELVING

- A. Shelving: Painted MDF.
 - 1. Accessories: Chrome rods and mounting hardware.
 - 2. Sizes and configurations refer to Drawings.

2.4 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of cabinets indicated for construction, finishes, installation, and other requirements.
- B. Grade: Premium.
- C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.

1. HGS

D. Style/finish: Refer to Drawings.

E. Edges: Square.

F. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

2.5 WOOD CABINETS FOR TRANSPARENT FINISH

A. Architectural Woodwork Standards Grade: Premium

B. Type of Construction: Frameless.

C. Door and Drawer-Front Style: Flush overlay.

D. Wood for Exposed Surfaces: As indicated on Drawings

E. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

2.6 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural woodwork, except for items specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)."

1. Refer to Finish Schedules for additional information.

B. Butt Hinges: 2-3/4-inch, 5-knuckle steel hinges made from 0.095-inch-thick metal, and as follows:

1. Semiconcealed Hinges for Flush Doors: BHMA A156.9, B01361.

2. Semiconcealed Hinges for Overlay Doors: BHMA A156.9, B01521.

C. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 100 135 170 degrees of opening, self-closing (For Cabinet Doors).

D. Back-Mounted Pulls: BHMA A156.9, B02011.

E. Pulls: Refer to Drawings.

F. Catches: Push-in magnetic catches, BHMA A156.9, B03131.

G. Drawer Slides: BHMA A156.9, B05091.

1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides, soft close.

2. Box Drawer Slides: Grade 1HD-100; for drawers not more than 6 inches high and 24 inches wide.

3. File Drawer Slides: Grade 1HD-200; for drawers more than 6 inches high or 24 inches wide.

4. Pencil Drawer Slides: Grade 1; for drawers not more than 3 inches high and 24 inches wide.

H. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063.

I. Door Locks: BHMA A156.11, E07121.

- J. Drawer Locks: BHMA A156.11, E07041.
- K. Grommets at Trash and Recycling Centers: Stainless steel.
 - 1. Basis of Design: Doug Mockett & Company Inc
 - 2. Size: 10 inches
- L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - 1. Satin Stainless Steel: BHMA 630.

2.7 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, fire-retardant-treated, kiln-dried to less than 15 percent moisture content.
- B. Metal reveals at locations indicated on Drawings;
 - 1. Basis of Design: Fry-reglet Architectural Metals
- C. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

2.8 FABRICATION

- A. General: Complete fabrication to maximum extent possible before shipment to Project site. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
 - 1. Interior Woodwork Grade: Custom.
 - 2. Shop cut openings to maximum extent possible. Sand edges of cutouts to remove splinters and burrs. Seal edges of openings in countertops with a coat of varnish.
 - 3. Install glass to comply with applicable requirements in Division 08 Section "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- D. Interior Standing and Running Trim:
 - 1. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
 - 2. Assemble casings in plant except where limitations of access to place of installation require field assembly.
 - 3. Interior wood trim base per Drawings.

2.9 SHOP FINISHING

- A. Finish architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
- B. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling.
- C. Transparent Finish:

1. Grade: Premium.
2. AWI Finish System: Conversion varnish.
3. Color: As selected from manufacturer's full range.
4. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

D. Opaque Finish:

1. Grade: Custom.
2. AWI Finish System: Conversion varnish.
3. Color: As selected from manufacturer's full range.
4. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas. Examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.
- B. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- C. Install woodwork level, plumb, true, and straight to a tolerance of 1/8 inch in 96 inches. Shim as required with concealed shims.
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Scarf running joints and stagger in adjacent and related members. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
- G. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.
 1. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish toggle bolts through metal backing or metal framing behind wall finish.

END OF SECTION 064023

