

DIVISION 06

CARPENTRY

SECTION 06100
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural roof framing.
- B. Built-up structural beams.
- C. Roof sheathing.
- D. Preservative treatment of wood.
- E. Fire retardant treatment of wood.
- F. Miscellaneous framing and sheathing.
- G. Electrical panel boards.
- H. Wood nailers, curbs, and cant strips for roofing and items installed on roof.
- I. Miscellaneous wood nailers and furring strips.

1.02 RELATED SECTIONS

- A. Section 05120 - Miscellaneous Metal Work.
- B. Section 06150 - Wood Decking.
- C. Section 06173 - Plate Connected Wood Trusses.

1.03 REFERENCES

- A. ANSI A208.1 - American National Standard for Wood Particle Board.
- B. AFPA WCD 1 T11 - Manual for Wood Frame Construction; American Forest and Paper Association.
- C. ASTM C 79/C 79M - Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board.
- D. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.
- E. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce).
- F. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce).
- G. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; Redwood Inspection Service.
- H. WCLB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau.

- I. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association.
- J. Use the latest issue of the above reference standards as of the date of the Project.

1.04 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.
- C. Shop Drawings: For site fabricated truss frames, indicate dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, details, and sequence of erection.
- D. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
 - 1. Acceptable Lumber Inspection Agencies: Any agency with rules approved by American Lumber Standards Committee.
 - 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.
- B. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.

1.06 QUALIFICATIONS

- A. Design structural site fabricated trusses under direct supervision of a Professional Structural Engineer experienced in design of such trusses and licensed in Utah.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Protect site fabricated trusses from warping or other distortion by stacking in vertical position, braced to resist movement.

PART 2 PRODUCTS

2.01 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Western Wood Products Association (WWPA).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Stud Framing (2 x 2 through 2 x 6):
 - 1. Species: Douglas Fir-Larch.
 - 2. Grade: No. 2.

- E. Joist, Rafter, and Small Beam Framing (2 x 6 through 4 x 16):
 - 1. Machine stress-rated (MSR) as follows:
 - a. Fb-single (minimum extreme fiber stress in bending): 1350 psi.
 - b. E (minimum modulus of elasticity): 1,300,000 psi.
 - 2. Species: Douglas Fir-Larch.
- F. Miscellaneous Blocking, Furring, and Nailers:
 - 1. Lumber: S4S, No. 2 or Standard Grade.

2.02 EXPOSED DIMENSION LUMBER

- A. Grading Agency: Western Wood Products Association (WWPA).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Stud Framing (2 x 2 through 2 x 6):
 - 1. Species: Douglas Fir.
 - 2. Grade: Clear.
- E. Joist, Rafter, and Small Beam Framing (2 x 6 through 4 x 16):
 - 1. Species: Douglas Fir.
 - 2. Grade: Clear Structural.
- F. Posts, Joist and Small Beam Framing (2 x 6 through 4 x 16):
 - 1. Species: Redwood.
 - 2. Grade: Select Heart.

2.03 TIMBERS FOR CONCEALED APPLICATIONS

- A. Grading Agency: Western Wood Products Association (WWPA).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry (23 percent maximum).
- D. Beams and Posts 5 inches and over in thickness:
 - 1. Species: Douglas Fir-Larch.
 - 2. Grade: Select Structural.

2.04 EXPOSED TIMBERS

- A. Moisture Content: Kiln-dry (20 percent maximum).
- B. Surfacing: S4S.
- C. Species: Douglas Fir.
- D. Grade: No. 2 Dense.

2.05 EXPOSED BOARDS

- A. Moisture Content: Kiln-dry (15 percent maximum).
- B. Surfacing: S4S.
- C. Species: Douglas Fir.
- D. Grade: No. 2, 2 Common, or Construction.

2.06 CONSTRUCTION PANELS

- A. APA Rated Roof Sheathing: Exterior Exposure Class, and as follows:
 - 1. Structural I.
 - 2. Span Rating: 24/0.
- B. Particle Board Roof Sheathing: ANSI A208.1, Grade M-3 EXTERIOR GLUE; square edges, with panel clips.
- C. Gypsum Sheathing: ASTM C 79/C 79M, water-resistant core, V-shaped long edges, 5/8 inch thick.
- D. Miscellaneous Panels:
 - 1. Concealed Plywood: PS 1, C-C Plugged, exterior grade.
 - 2. Exposed Plywood: PS 1, A-D, interior grade.
 - 3. Electrical Component Mounting: APA rated sheathing, fire retardant treated.

2.07 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Fasteners: Hot-dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
 - 3. Anchors: Toggle bolt type for anchorage to hollow masonry.
- B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
- C. Building Paper: No. 15 asphalt felt.

2.08 FACTORY WOOD TREATMENT

- A. Pressure Treatment of Lumber Above Grade: AWPA Treatment C2 using waterborne preservative to 0.25 pound/cubic foot retention.
 - 1. Kiln dry after treatment to maximum moisture content of 19 percent.
 - 2. Treat wood in contact with roofing, flashing, or waterproofing.
 - 3. Treat wood in contact with masonry or concrete.

PART 3 EXECUTION

3.01 FRAMING INSTALLATION

- A. 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.
- B. 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.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. 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 1 T11.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.
- H. Frame openings with two or more studs at each jamb; support headers on cripple studs.
- I. Provide miscellaneous members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.02 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

- A. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joints 4 inches and seal.
- B. Coordinate installation of wood decking, wood chord metal joists, glue laminated structural units, prefabricated wood trusses, and plywood web joists.
- C. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- D. Coordinate curb installation with installation of decking and support of deck openings.

3.03 INSTALLATION OF CONSTRUCTION PANELS

- A. Roof Sheathing: Secure panels perpendicular to framing members, with ends staggered and sheet ends over firm bearing.
 - 1. Use sheathing clips between roof framing members.
 - 2. Provide solid edge blocking between sheets.
 - 3. Nail panels to framing; staples are not permitted.
- B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
 - 1. Use plywood or other acceptable structural panels at building corners, for not less than 96 inches, measured horizontally.
 - 2. Provide inlet diagonal bracing at corners.
 - 3. Place building paper horizontally over wall sheathing, weather lapping edges and ends.

3.04 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION

SECTION 06173

PLATE CONNECTED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated wood trusses for roof framing.
- B. Bridging, bracing, and anchorage.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry.

1.03 REFERENCES

- A. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. TPI 1 - National Design Standard for Metal Plate Connected Wood Truss Construction; Truss Plate Institute; (ANSI/TPI 1).
- C. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses; Truss Plate Institute.
- D. TPI HIB-91 - Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses; Truss Plate Institute.
- E. WCLB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau.
- F. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association.
- G. Use the latest issue of the above reference standards as of the date of the Project.

1.04 SYSTEM DESCRIPTION

- A. Design roof live and dead load:
 - 1. Live Load: 30 lbs./sq. ft.
 - 2. Dead Load: Top Chord - 10 lbs/sq. ft.; Bottom Chord - 10 lbs./sq. ft.
 - 3. Deflection limited to $l/240$.
- B. Minimum pitch shall be 4:1.

1.05 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate sizes and spacing of trusses, loads and truss cambers, framed openings, and appurtenant items. Submit design calculations.
- C. Product Data: Provide truss configurations, bearing and anchor details, bridging and bracing, and appurtenant items.

1.06 QUALITY ASSURANCE

- A. Truss Design, Fabrication, and Installation: In accordance with TPI 1, TPI DSB-89, and HIB-91.
 - 1. Maintain one copy of each document on site.
- B. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- C. Truss design and layout shall be done under the direct supervision of a Professional Structural Engineer, experienced in design of trusses and roof systems, and licensed in the State of Utah. Shop drawings shall be stamped and signed by the Professional Engineer; and submitted as described herein.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for loads, seismic zoning, other governing load criteria and fire retardant requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Handle and erect trusses in accordance with TPI HIB-91.
- B. Store trusses in vertical position resting on bearing ends.

1.09 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Wood Members: Single top and bottom chord, 19 percent maximum and 7 percent minimum moisture content.
- B. Steel Connectors: ASTM A 653/A 653M Structural Steel (SS) Grade 33 (230), G90/Z275 galvanized; die stamped with integral teeth; thickness as recommended by manufacturer.
 - 1. Connectors for fastening trusses to wall plates shall be Simpson H-10 Hurricane Ties, or acceptable equal.
- C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.02 ACCESSORIES

- A. Wood Blocking and Framing for Openings: In accordance with Section 06100 softwood lumber, S/P/F species, construction grade, 19 percent maximum and 7 percent minimum moisture content.
- B. Fasteners: Electro-galvanized unfinished steel, type to suit application.
- C. Bearing Plates: Electro-galvanized, plain steel.

2.03 FABRICATION

- A. Fabricate trusses to achieve structural requirements specified.
- B. Brace wood trusses in accordance with TPI DSB-89 and TPI HIB-91.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that supports and openings are ready to receive trusses.

3.02 PREPARATION

- A. Coordinate placement of bearing items.

3.03 ERECTION

- A. Install trusses in accordance with manufacturer's instructions.
- B. Set members level and plumb, in correct position.
- C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
- D. Do not field cut or alter structural members without approval of City Engineer.
- E. Place permanent bridging and bracing.
- F. Place headers and supports to frame openings required.
- G. Frame openings between trusses with lumber in accordance with Section 06100.
- H. Coordinate placement of decking with work of this section.
- I. After erection, touch-up primed surfaces with primer consistent with shop coat.
- J. Frame openings as indicated on the drawings and as recommended by the truss manufacturer.

3.04 TOLERANCES

- A. Framing Members: $\frac{1}{2}$ inch maximum, from true position.

END OF SECTION