WOOD FRAMING

REFERENCE STANDARDS: Conform to:
(1) IBC Chapter 23 "WOOD"
(2) NDS - "2005 National Design Specification (NDS) for Wood Construction"
(3) APA PDS—97 Plywood Design Specification (revised 1998)
(4) ANSI/TPI 1 "National Design Standard for Metal-Plate-Connected Wood Truss Construction"
(5) BCSI "Guide to Good Practice for Handling, Installing & Bracing of Metal Plated Connected Wood Trusses"
(6) TPI DSB "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses"
(7) APA Report TT-045B "Minimum Nail Penetration for Wood Structural Panel Connections Subject to Lateral Loads"

SUBMITTALS: Submit shop drawings to the Architect/Engineer for review. Shop drawings shall include member size, spacing, camber, material type, grade, shop and field assembly details and connections, types and location of bolts and other fasteners. Supply shop drawings for the following:
(1) Glued laminated members
(2) PSL members
(3) LVL members
(4) LSL members
(5) Tapered & Parallel Wood I Joists (Solid web-wood joists)
(6) Panelized wood walls & connection details
(7) Wood Tie-Down Systems

IDENTIFICATION: All sawn lumber and pre-manufactured wood products shall be identified by the grade mark or a certificate of inspection issued by the certifying agency.

MATERIALS:

- Sawn Lumber: Conform to grading rules of WWPA, WCLIB or NLGA and Table below. Finger jointed studs acceptable at interior walls only.

TABLE of SOLID SAWN LUMBER

Member Use	Size	Species	Grade
Wall Stud	2x4, 3x4, 2x6, 3x6	Doug Fir Larch	No. 2
Sill Plate	2x4, 3x4, 2x6, 3x6	Doug Fir Larch	No. 2
Floor or Roof Joist	2x6 through 2x12	Doug Fir Larch	No. 2

- Wood Structural Sheathing (Plywood): Wood APA-rated structural sheathing includes: all veneer plywood, oriented strand board, waferboard, particleboard, T1-11 siding, and composites of veneer and wood based material with T&G joint. **Architect** may disallow OSB. Confirm with **Architect**. Conform to "Construction and Industrial Plywood" based on Product Standard PS 1-07 by the U.S. Dept. of Commerce, and "Performance Standard for Wood-Based Structural-Use Panels" based on Product Standard PS 2-04 by the U.S. Dept. of Commerce and "Plywood Design Specification" based on APA PDS—04 by the American Plywood Association. Unless noted otherwise, sheathing shall comply with the following table:

TABLE of SHEATHING - Use, Minimum Thickness and Minimum APA Rating

Location	Thickness	Span Rating	Plywood Grade	Exposure
Roof	15/32"	32/16	C-D	1
Floor	5/8" T&G	24 OC	STURD-I-FLOOR	1
Walls	15/32"	32/16	C-D	1

Unless noted otherwise on drawings, install roof and floor panels with long dimension across supports and with panel continuous over two or more spans. End joints shall occur over supports.

- Timber Connectors: Shall be "Strong Tie" by Simpson Company as specified in their latest catalog. Alternate connectors by other manufacturers may be substituted provided they have current ICC approval for equivalent or greater load capacities and are reviewed and approved by the SER prior to ordering. Connectors shall be installed per the manufacturer's instructions. Where connector straps connect two members, place one-half of the nails or bolts in each member. Where straps are used as hold-downs, nail straps to wood framing just prior to drywall application, as late as possible in the framing process to allow the wood to shrink and the building to settle. Premature nailing of the strap may lead to strap buckling and potential finish damage.

  Where connectors are in exposed exterior applications in contact with preservative treated wood (PT) other than CCA, connectors shall be either batch hot-dipped galvanized (HDG), mechanically galvanized (ASTM B695, Class 40 or greater) stainless steel, or provided with 1.85 oz/sf of zinc galvanizing equal to or better than Simpson ZMAX finish.

- Fasteners (nails, bolts, screws, etc) attaching timber connectors (joist hangers, post caps and bases, etc) to PT wood shall have similar corrosion resistance properties (matching protective treatments) as the protected connector. Fasteners (nails, bolts, screws, etc) attaching sawn timber members or sheathing (shear walls) to PT wood be corrosion resistant; nails and lag bolts shall be either HDG (ASTM A153) or stainless steel. Verify the suitability of the fastener protection/coating with the wood treatment chemical manufacturer/supplier.

  Provide washers under the heads and nuts of all bolts and lag screws bearing on wood. All nails 12d and smaller shall be full length common unless noted otherwise. 16d nails may be 16d sinkers unless noted otherwise. Nail straps to wood framing as late as possible in the framing process to allow the wood to shrink and the building to settle. Premature nailing of the strap may lead to strap buckling and potential finish damage.

- Fasteners: Conform to IBC Section 2304.9 "Connections and fasteners." Unless noted on plans, nail per Table 2304.9.1. Unless noted otherwise all nails shall be common. Alternate nails may be used but are subject to review and approval by the Structural Engineer. Substitution of staples for the nailing of rated sheathing is subject to review by the structural engineer prior to construction.
- Lag Bolts/Bolts: Conform to ASTM A307 and IBC Section 2304.9.
- Engineered Wood Products (TrusJoist): The following materials are based on lumber manufactured by TrusJoist and were used for the design as shown on the plans. Alternate products by other manufacturers may be substituted provided they have current ICC approval for equivalent or greater load and stiffness properties and are reviewed and approved by the Structural Engineer.

  a. Laminated Veneer Lumber (LVL): Conform to **ICC ES Report No. ESR-1387** or CCMC Report No. 08675-R.
  b. Parallel Strand Lumber (PSL): Conform to **ICC ES Report No. ESR-1387** or CCMC Report No. 11161-R.
  c. Laminated Strand Lumber (LSL): Conform to **ICC ES Report No. ESR-1387** or CCMC Report No. 12627-R.
  d. Tapered and Parallel Chord I-JOISTS (Deferred Submittal): Conform to **ICC Report No. ESR-1153**. The manufacturer shall design the joists for the spans and conditions shown on the plans. Joists shall have wood chords and solid wood webs. Joists shall be tapered or parallel as shown on the plans.

TABLE of ENGINEERED WOOD Requirements

Type	Use	Widths	E(10⁶)	Fb	Fv	Fc//
			PSI	PSI	PSI	PSI
LSL Rimboard	Rimboard or Stair Stringer	1 ½",	1.3E	1,700	400	1,400
Timberstrand LSL	Header, Beam or Column < 9" depth	3 ½"	1.3E	1,700	400	1,400
Timberstrand LSL	Rimboard, Header or Beam ≥ 9" depth	1 ¾", 3 ½"	1.55E	2,325	310	2,050
Timberstrand LSL	Wall Stud 2x4 & 2x6	1 ½"	1.3E	1,700	400	1,400
	Wall Stud >2x6	1 ½"	1.5E	2,250	400	1,950
Microllam LVL	Header, Beam	1 ¾"	1.9E	2,600	285	2,510
Parallam PSL	Header, Beam	3 ½", 5 ¼", 7"	2.0E	2,900	290	2,900
Parallam PSL	Column	3 ½", 5 ¼", 7"	1.8E	2,400	190	2,500

NAILING REQUIREMENTS: Provide minimum nailing in accordance with IBC Table 2304.9.1. "Fastening Schedule" except as noted on the drawings. Nailing for roof/floor diaphragms/shear walls shall be per drawings. Nails shall be driven flush and shall not fracture the surface of sheathing.

STANDARD LIGHT-FRAME CONSTRUCTION: Unless noted on the plans, construction shall conform to IBC Section 2308 "Conventional Light-Frame Construction."

NAILERS ON STEEL COLUMNS and BEAMS: Wood 3x nailers are generally required on all HSS columns and steel beams abutting or embedded within wood framing. Unless noted otherwise, attach with 5/8" diameter bolts or welded studs at 16" on centers. Wood nailers on beams supporting joist hangers shall not overhang the beam flange by more than ¼".

MOISTURE CONTENT: Wood material used for this project shall have maximum moisture content of 19% except for the pressure-treated wood sill plate. Refer to TESTING & INSPECTIONS for the verification of these limits. The maximum moisture content required may be less than 19% when based on a particular cladding/insulation system. Refer to the Architect's drawings, and project specifications, or with cladding installer for maximum recommended moisture content.

CLADDING COMPATIBILTY: The Architect/Owner shall review the cladding and insulation systems proposed for the project with respect to their performance over wood studs with moisture contents greater than 19%. EIFS systems should be avoided on wood-framed projects due to problems with moisture proofing.

PRESERVATIVE TREATMENT (PT): Wood materials are required to be "treated wood" in accordance with IBC Section 2304.11. "Decay and Termite Protection" shall conform to the appropriate standards of the American Wood-Preservers Association (AWPA) for sawn lumber, glued laminated timber, round poles, wood piles and marine piles. Follow American Lumber Standards Committee (ALSC) quality assurance procedures. Products shall bear the appropriate mark. Fasteners or anchors in treated wood shall be of stainless steel or hot-dipped galvanized or as per IBC 2304.9.5.

Mud sill plates in normally dry interior applications may be treated with Sodium Borate (DOT - Disodium Octaborate Tetrahydrate) as recent studies have noted less connector corrosion potential than other available wood treatments or the original CCA treated sill plates. Wood treated with Sodium Borate shall be protected during shipment, storage and installation to minimize leaching of the water-soluble preservative from the lumber. Sodium borate pressure treated plates do not require hot-dipped galvanized connectors.

If using sill plates other than CCA or sodium borate, fasteners must be hot dipped galvanized or stainless steel. Fasteners (nails, bolts, screws, washers & lag screws) attaching timber connectors (joist hangers, post caps and bases, etc) to PT wood shall have similar corrosion resistance properties (matching protective treatments) as the protected connector; that is, use hot dipped galvanized or stainless steel fasteners. Fasteners (nails, bolts, screws, washers & lag screws) attaching sawn timber members or sheathing (shear walls) to Pressure Treated wood be corrosion resistant (hot dipped galvanized or stainless steel.

Always verify the suitability of the fastener protection/coating with the wood treatment chemical manufacturer/supplier.

DRAWING LEGEND

MARK	DESCRIPTION	MARK	DESCRIPTION
F2.0	FOOTING SYMBOL (REFER TO SPREAD FOOTING SCHEDULE)		INDICATES WIDE FLANGE COLUMN
P1	PILE CAP SYMBOL (REFER TO PILE CAP SCHEDULE)		INDICATES HOLLOW STRUCTURAL SECTION (HSS) COLUMN OR TUBE STEEL (TS) COLUMN
A	TILT-UP/PRECAST CONCRETE WALL CONNECTION SYMBOL (REFER TO CONNECTION DETAIL)		INDICATES HOLLOW STRUCTURAL SECTION (HSS) COLUMN OR STEEL PIPE COLUMN
W6	SHEAR WALL SYMBOL (REFER TO SHEAR WALL SCHEDULE)		INDICATES WOOD POST
1	REVISION TRIANGLE		INDICATES BUNDLED STUDS
1	TILT-UP/PRECAST CONCRETE WALL PANEL NUMBER (REFER TO TILT-UP/PRECAST CONCRETE WALL ELEVATIONS)		INDICATES CONCRETE COLUMN
1	CMU WALL REINFORCING SYMBOL (REFER TO CMU WALL REINFORCING SCHEDULE)		INDICATES PRECAST CONCRETE COLUMN
8"	CONTINUITY PLATE LENGTH (REFER TO TYPICAL DETAIL)		INDICATES MOMENT FRAME CONNECTION
DS	INDICATES DOUBLE SHEAR CONNECTION (REFER TO THE DOUBLE SHEAR PLATE CONNECTIONS DETAIL)		INDICATES DRAG CONNECTION
SR	INDICATES NUMBER OF STUD RAIL REQUIRED AT COLUMN (REFER TO STUD RAIL DETAILS)		INDICATES WOOD OR STEEL STUD WALL
1	ROOF/FLOOR DIAPHRAGM NAILING SYMBOL (REFER TO DIAPHRAGM NAILING SCHEDULE)		INDICATES MASONRY/CMU WALL
C1	STEEL COLUMN SYMBOL (REFER TO STEEL COLUMN SCHEDULE)		INDICATES CONCRETE/TILT-UP CONCRETE WALL
T/SLAB X'-X"	ELEVATION SYMBOL (T/ REFERS TO COMPONENT THAT THE ELEVATION REFERENCES)		INDICATES WOOD OR STEEL STUD SHEAR WALL
3	STUD BUBBLE (INDICATES NUMBER OF STUDS REQUIRED IF EXCEEDS NUMBER SPECIFIED IN PLAN NOTE)		INDICATES BEARING WALL BELOW
	INDICATES STEP IN FOOTING (REFER TO TYPICAL STEP IN FOOTING DETAIL)		INDICATES EXISTING WALL
X/SX.X	DETAILS OR SECTION CUT (DETAIL NUMBER/SHEET NUMBER)		POST-TENSION DEAD END (PLAN)
X SX.X	DETAILS OR SECTION CUT IN PLAN VIEW (DETAIL NUMBER/SHEET NUMBER)		POST-TENSION STRESSING END (PLAN)
X/SX.X	INDICATES LOCATION OF CONCRETE WALLS, SHEAR WALLS OR BRACED FRAME ELEVATIONS	3	POST-TENSION PROFILE (PLAN) (IN INCHES)
	SPAN INDICATOR (INDICATES EXTENTS OF FRAMING MEMBERS OR OTHER STRUCTURAL COMPONENTS)		INTERMEDIATE STRESSING (PLAN)
	INDICATES DIRECTION OF DECK SPAN		

ABBREVIATIONS

∠	Angle	FD	Floor Drain	PREFAB	Prefabricated
AB	Anchor Bolt	FDN	Foundation	PSF	Pounds per Square Foot
ADDL	Additional	FIN	Finish	PSI	Pounds Per Square Inch
ADH	Adhesive	FLR	Floor	PSL	Parallel Strand Lumber
ALT	Alternate	FRP	Fiberglass Reinforced Plastic	P-T	Post-Tensioned
ARCH	Architectural	FTG	Footing	PT	Pressure Treated
B or BOT	Bottom	F/	Face of	R	Radius
B/	Bottom Of	GA	Gage	RD	Roof Drain
BLDG	Building	GALV	Galvanized	REF	Refer/Reference
BLKG	Blocking	GEOTECH	Geotechnical	REINF	Reinforcing
BMU	Brick Masonry Unit	GL	Glue Laminated Timber	REQD	Required
BP	Baseplate	GWB	Gypsum Wall Board	RET	Retaining
BRBF	Buckling Resisting Braced Frame	HDR	Header	SCBF	Special Concentric Braced Frame
BRG	Bearing	HF	Hem-Fir	SCHED	Schedule
BTWN	Between	HGR	Hanger	SHTHG	Sheathing
℄	Centerline	HD	Hold-down	SIM	Similar
C	Camber	HORIZ	Horizontal	SMF	Special Moment Frame
CB	Castellated Beam	HP	High Point	SOG	Slab on Grade
CIP	Cast in Place	HSS	= TS (Hollow Structural Section)	SPEC	Specification
CJ	Construction or Control Joint	IBC	International Building Code	SQ	Square
CJP	Complete Joint Penetration	ID	Inside Diameter	SR	Studrail
CLG	Ceiling	IE	Invert Elevation	SF	Square Foot
CLR	Clear	IF	Inside Face	SST	Stainless Steel
CLT	Cross-Laminated Timber	INT	Interior	STAGG	Stagger/Staggered
CMU	Concrete Masonry Unit	k	Kips	STD	Standard
COL	Column	KSF	Kips Per Square Foot	STIFF	Stiffener
CONC	Concrete	LF	Lineal Foot	STL	Steel
CONN	Connection	LL	Live Load	STRUCT	Structural
CONST	Construction	LLH	Long Leg Horizontal	SWWJ	Solid Web Wood Joist
CONT	Continuous	LLV	Long Leg Vertical	SYM	Symmetrical
C'SINK	Countersink	LP	Low Point	T	Top
CTRD	Centered	LONGIT	Longitudinal	T/	Top Of
ø	Diameter	LSL	Laminated Strand Lumber	T&B	Top & Bottom
DB	Drop Beam	LVL	Laminated Veneer Lumber	TC AX LD	Top Chord Axial Load
DBA	Deformed Bar Anchor	MAS	Masonry	TCX	Top Chord Extension
DBL	Double	MAX	Maximum	TDS	Tie Down System
DEMO	Demolish	MECH	Mechanical	T&G	Tongue & Groove
DEV	Development	MEZZ	Mezzanine	THKND	Thickened
DF	Douglas Fir	MFR	Manufacturer	THRD	Threaded
DIAG	Diagonal	MIN	Minimum	THRU	Through
DIST	Distributed	MISC	Miscellaneous	TRANSV	Transverse
DL	Dead Load	NIC	Not In Contract	TYP	Typical
DN	Down	NLT	Nail-Laminated Timber	UBC	Uniform Building Code
DO	Ditto	NTS	Not To Scale	UNO	Unless Noted Otherwise
DP	Depth/Deep	OC	On Center	URM	Unreinforced Masonry Unit
DWG	Drawing	OCBF	Ordinary Concentric Braced Frame	VERT	Vertical
(E)	Existing	OD	Outside Diameter	W	Wide
EA	Each	OF	Outside Face	W/	With
EF	Each Face	OPNG	Opening	W/O	Without
EL	Elevation	OPP	Opposite	WHS	Welded Headed Stud
ELEC	Electrical	OWSJ	Open Web Steel Joist	WP	Working Point
ELEV	Elevator	OWWJ	Open Web Wood Joist	WWF	Welded Wire Fabric
EMBED	Embedment	℄	Plate	±	Plus or Minus
EQ	Equal	PAF	Powder Actuated Fastener		
EQUIP	Equipment	PC	Precast		
EW	Each Way	PERP	Perpendicular		
EXP	Expansion	PLWD	Plywood		
EXP JT	Expansion Joint	PP	Partial Penetration		
EXT	Exterior				

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Reviewed for Code Compliance
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Application Number:
Date: 04/26/17

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STRUCTURAL GENERAL NOTES, LEGEND AND ABBREVIATIONS
S-103

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