

STRUCTURAL GENERAL NOTES

DESIGN LOADS: International Building Code; IBC 2009 Edition, except as noted

Occupancy Category, Table 1604.5 II Standard

Roofs: Ground Snow, Pg 50 psf (used for drifting calculations)
 Snow Exposure Factor, Ce Table 1608.3.1 1.0
 Snow importance Factor, Is Table 1604.5 1.0
 Snow Thermal Factor, Ct Table 1608.3.2 1.1

Floors: Residential 40 psf
 Corridors/Stairs Occupancy Served
 Assembly Space 100 psf

Lateral: Wind IBC 1603.1.4, ASCE 7-05 Analytic Method
 3 Second Gust Velocity 90 mph
 Importance Factor 1.0
 Building Category and Internal Pressure Coefficient IBC 1609.2, ASCE Figure 6-5 Enclosed
 Exposure B
 Components and Cladding Pressures DP 35 uno. Also see arch.

Seismic: Use Group II
 Importance Factor 1.0
 Spectral Response Acceleration Coefficient
 Short Period Ss 0.270 g SDS 0.285 g
 One Second S1 0.080 g SD1 0.128 g

Soils Site Class Table 1615.1.1 D
 Design Category Table 1616.3 B
 Basic Force Resisting System, Table 1617.6.2
 Dual System, etc
 Seismic Response Coefficient Cs 0.044
 Response Modification Coefficient R 6.5
 Analysis Procedure Equivalent Lateral Force

FOUNDATION DESIGN:
 Refer to soils report prepared #15170 by Summit GeoEngineering Services; dated September 2015.
 Soils engineer shall verify soil conditions and types during excavation and prior to concrete placement.

--Footings--
 Design of footings is based on
 Maximum allowable bearing pressure 3,000 psf
 Bear on crushed stone blanket on the natural undisturbed soil, bedrock, or compacted structural fill, below frost depth. Refer to Geotechnical Report, and Civil plans for details.

--Retaining Structures--
 Earth Equivalent Fluid Lateral Pressure:
 Restrained Walls (at rest) 45 pcf
 Passive Resisting 250 pcf
 Coefficient of Friction 0.40

CONCRETE AND REINFORCEMENT:
 Concrete shall conform to applicable provisions of ACI 301 and 318.
 Minimum 28 day compressive strength (F'c) as follows:
 Footings and Walls: 3,000 w/ 4-6% air entrainment.
 Interior Slabs: 4,000 psi w/ fibermesh
 Cement Type: I/II
 Deformed reinforcement: ASTM A615 grade 60, except bars specified to be field_bent, stirrups, and ties which shall be grade 40.
 Fibermesh: 100% virgin polypropylene, fibrillated fibers as manufactured by Fibermesh Co. per ASTM C-1116 type 111 4.1.3 and ASTM C-1116 performance level one, 1.5 lb. per cubic yard.
 Welded Wire Fabric (WWF): ASTM A185. See also plan.
 Typical minimum foundation reinforcing: 2 #5 top and bottom, (except as noted) continuous at corners and steps.
 Reinforcement shall be fabricated and placed per ACI Manual of Standard Practice (ACI_315). At splices, lap bars 50 diameters unless noted otherwise.
 Minimum 2 #5 around all four sides of all openings, extend min. 2'-0" beyond openings.
 Concrete cover over reinforcing: 1 1/2" for concrete placed against forms; 3" for concrete placed against earth. See also drawings.
 In continuous members, splice top bars at mid span and bottom bars over supports.
 Keep reinforcement clean and free of dirt, oil, and scale. Oil forms prior to placing reinforcement.

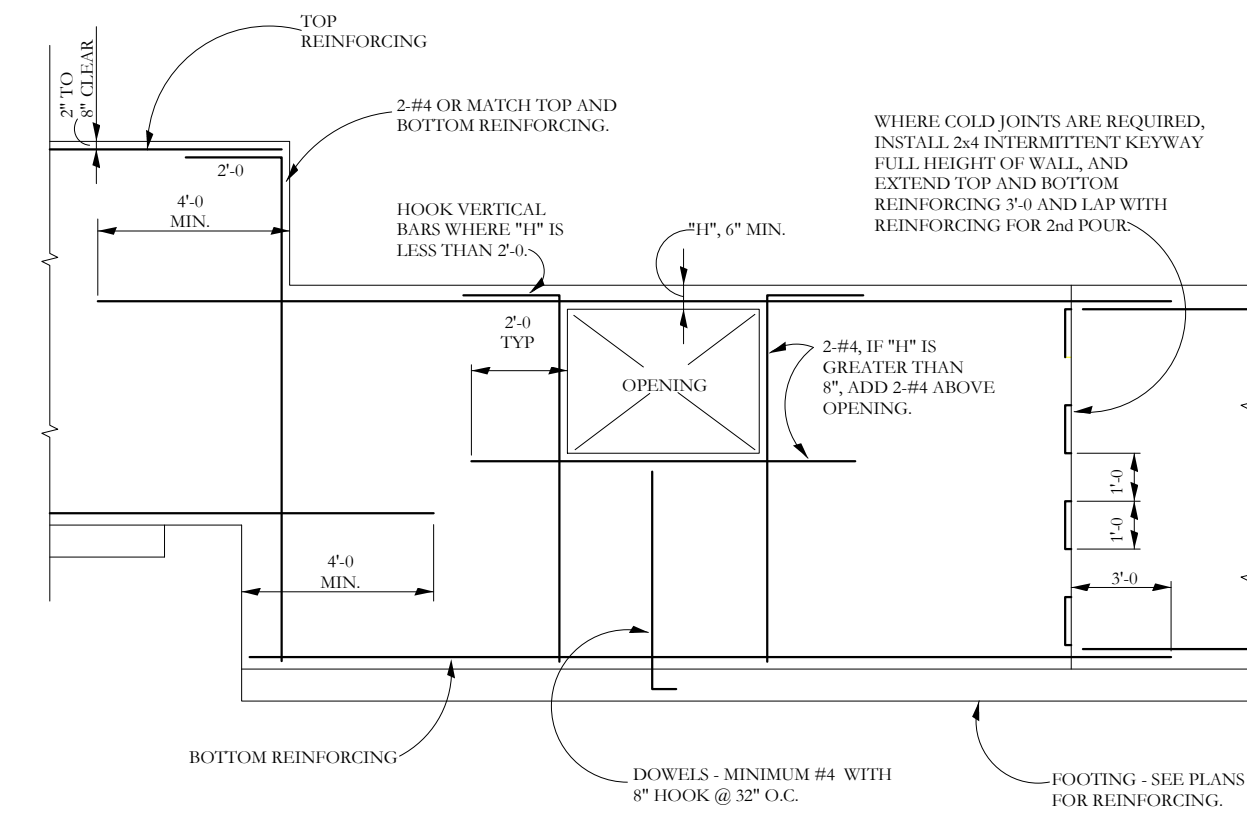
STRUCTURAL STEEL:
 Structural steel shall be detailed, fabricated, and erected in accordance with latest AISC Specifications, and Code of Standard Practice.
 Structural steel wide flange beams shall conform to ASTM A992.
 Except as noted, framed beam connections shall be bearing-type with 3/4" diameter, snug tight, A490-N bolts, detailed in conformance with Part 4, Tables II and III, for 0.6 times the allowable uniform loads tabulated in Part 2 of the AISC Manual, 9th Edition. Install bolts in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".
 All beams shall have full depth web stiffeners each side of webs above and below columns.
 Anchor rods shall conform to ASTM F1554, Grade 55, with weldability supplement S1.
 Headed anchor studs (HAS) shall be attached to structural steel with equipment approved by the stud manufacturer according to the stud manufacturer's recommendations.
 Welding shall be done by a certified welder in accordance with AISC and AWS specifications and recommendations using E70-electrodes. Where not specifically noted, minimum weld shall be 3/16" fillet by length of contact edge.
 All post-installed anchors shall have current ICC evaluation, and shall be installed in accordance with the manufacturer's requirements.
 Expansion anchors shall be approved "wedge" type unless specifically noted to be "sleeve" type.
 Chemical anchors shall be approved epoxy or similar adhesive type and shall have current ICC evaluation Report. Where base material is not solid, approved screen tubes shall be used.
 Grout beneath column base and beam-bearing plates shall be minimum 28-day compressive strength of 7,500 psi, approved pre-bagged, non-metallic, non-gaseous, bleed free, non-shrink, when tested in accordance with ASTM C1107 Grade B or C at a flow cone fluid consistency of 20 to 30 seconds

STRUCTURAL WOOD FRAMING:
 In-Grade Base Values have been used for design.
 2x framing shall be Spruce-Pine-Fir S4S No. 2 and better unless noted.
 All lumber shall be 19% maximum moisture content, unless noted.
 Solid timber beams and posts shall be Douglas Fir-Larch No. 1.
 Studs shall be Spruce-Pine-Fir S4S No. 2 and better.
 Top and bottom plates shall be Spruce-Pine-Fir S4S No. 2 and better.
 Wood in contact with concrete shall be pressure-treated Spruce-Pine-Fir S4S No. 2 or Southern Yellow Pine.
 Conventional light framing shall comply with IBC Section 2308.
 Except as noted otherwise, minimum nailing shall be provided as specified in IBC Table 2304.9.1 "Fastening Schedule."
ALL PLYWOOD SHEATHING SHALL BE OSB SHEATHING AND SHALL BE APA GRADED WITH PANEL IDENTIFICATION INDEX, THICKNESS, AND NAILING AS NOTED ON THE DRAWINGS.
 Nail wall sheathing with 8d commons at 6" o.c. at panel edges, and 12" o.c. at intermediate framing except as noted.
 SHEATH ALL EXTERIOR WALLS. SHEATH INTERIOR WALLS AS SHOWN ON THE DRAWINGS. BLOCK AND NAIL ALL EDGES BETWEEN STUDS.
 Sheathing shall be continuous from bottom plate to top plate. Cut in "L" and "I" shapes around openings. Lap sheathing over rim joists min. 4" at all floors to tie upper and lower stud walls together.
 Minimum height of sheathing panels shall be 16" to assure that plates are tied to studs.
 Minimum 3-8d per stud and nail plates with "edge nail" spacing.
 Sole plate at all perimeter walls and at designated shear walls shall be nailed as for braced panels with 3-16d x 3 1/2" long box nails (coated or deformed shank) per 16". 12d nails are not acceptable.
 Provide solid blocking between joists under jamb studs of openings.
 Pre-engineered, prefabricated trusses shall be designed for the fabricator by a Professional Engineer Registered in the State of construction, and shall comply with Code Requirements.
 Truss to truss connections specified shall be by truss supplier, unless specifically noted on the drawings.
 Lower chord of gable end trusses shall be anchored to wall plate with framing anchors at 4'-0" spacing and laterally braced to roof framing at 8'-0" spacing.
 Truss supplier shall specify all floor and roof truss bracing and bridging.
 All roof rafters, joists, trusses, and beams shall be anchored to supports with metal framing anchors.
 Light gage framing anchors shown or required, shall be Simpson "Strong Tie" or equal Code approved connectors and installed with the number and type of nails recommended by the manufacturer to develop the rated capacity.
 Note that heavy-duty hangers and skewed hangers may not be stocked locally and require special order from the factory.
 All beams and trusses shall be braced against rotation at points of bearing.
 Unless otherwise indicated, install two lengths of solid blocking x joist depth x 12 inches long in floor framing under column loads.
 Columns must have a continuous load path to foundation.
 Lead holes for lag screws shall be drilled in accordance with Table 6.23 of the ATC Timber Construction Manual, 3rd edition.

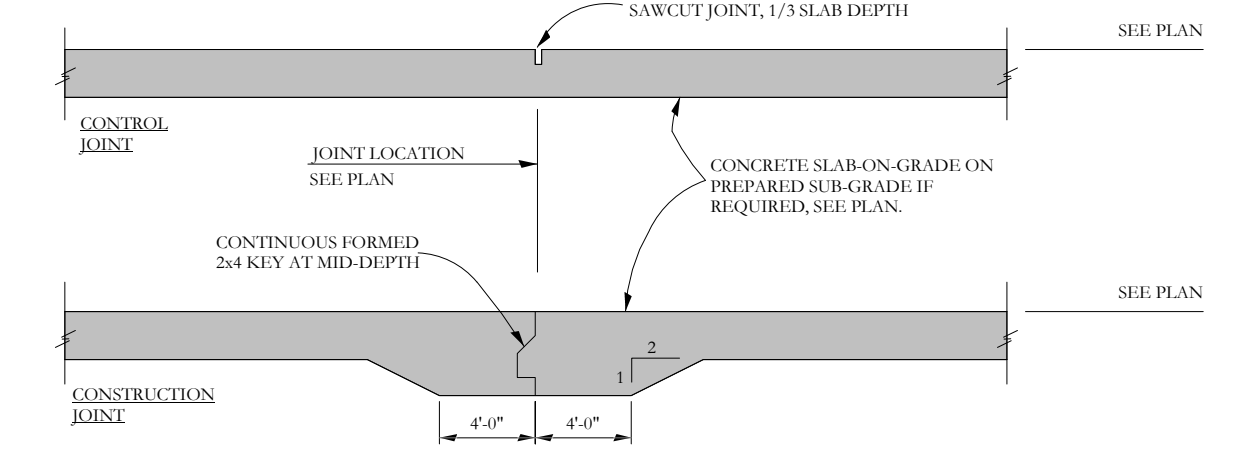
PLANT FABRICATED / PRE-ENGINEERED WOOD FRAMING:
 Trussed floor joists and roof joists shall be designed and stamped by a registered engineer to support the full dead loads and the superimposed design loads noted on the drawings.
 Stresses shall not exceed those listed in the current NDS. 15% stress increase may not be used.
 Web arrangement and member forces shall be determined by the fabricator.
 Manufacture and installation of trusses shall comply with ANSII/TPI 1 "National Design Standard for Metal-Plate-Connected Wood Truss Construction", TPI H1B "Commentary and Recommendations for Handling Installing and Bracing Metal Plate Connected Wood Trusses", TPI DSB "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses".
 Calculations and shop drawings, including member sizes, lumber species and grades, and substantiating data for connector capacities, shall be submitted to the Architect and Engineer for review prior to fabrication.
 Manufactured "T"-series roof and floor joists shall be by TJI/L-lev, LPI, BCI, NJI, OJ with structural wood flanges and webs, and carry Code approval for the composite section.
 Bridging and blocking shall be installed according to the fabricator's requirements.
 Shop drawings shall be submitted to the Architect for review prior to fabrication.
 Beams noted as LVL on plan shall be 1-3/4" wide Laminated Veneer Lumber beams of the depth noted on plan.
 Shall be plant-fabricated and manufactured by I Level.
 Shall have the following minimum allowable design stresses:
 Fb = 2600 psi Fv = 285 psi Fc (||) = 2460 psi Fc(°) = 750 psi E = 1900 ksi
 Beams noted as PSL on plan shall be plant-fabricated.
 Manufactured by I Level, and have the following minimum allowable design stresses:
 Fb = 2900 psi Fv = 290 psi Fc (||) = 2900 psi Fc(°) = 750 psi E = 2000 ksi

SHOP DRAWINGS:
 Construction Documents are copyrighted and shall not be copied for use as erection plans or shop details.
 Use of SI Inc.'s electronic files as base for shop drawings requires prior approval by SI Inc, signed release of liability by subcontractor, payment of an administration fee of \$100 per drawing sheet to SI Inc, and deletion of SI Inc's name and Logo from all sheets so used.
 The General Contractor and his subcontractors shall submit in writing any requests to modify the plans or specifications.
 All shop and erection drawings shall be checked and stamped by the General Contractor prior to submission for Engineer's review.
 Unchecked submittals will be returned without review.
 Furnish one (1) reproducible and two (2) prints of shop and erection drawings to the Structural Engineer for review prior to fabrication for reinforcing steel, structural steel, and wood trusses.
 Submit in a timely manner to permit ten (10) working days for review.
 Shop drawings submitted for review do not constitute "in writing" unless specific suggested changes are clearly marked.
 In any event, such changes by means of the shop drawing submittal process become the responsibility of the one initiating such change.

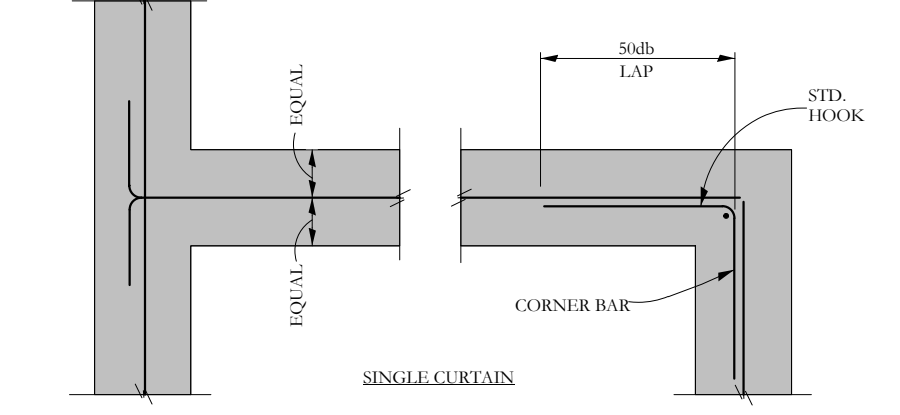
STRUCTURAL ERECTION AND BRACING REQUIREMENTS:
 The structural drawings illustrate the completed structure with elements in their final positions, properly supported and braced.
 These construction documents contain typical and representative details to assist the contractor.
 Details shown apply at all similar conditions unless otherwise indicated.
 Although due diligence has been applied to make the drawings as complete as possible, not every detail is illustrated, nor is every exceptional condition addressed.
 All proprietary connections shall be installed in accordance with the manufacturers' recommendations.
 All work shall be accomplished in a workmanlike manner and in accordance with the applicable code and local ordinances.
 The general contractor is responsible for coordination of all work, including layout and dimension verification, materials coordination, shop drawing review, and the work of subcontractors.
 Any discrepancies or omissions discovered in the course of the work shall be immediately reported to the architect for resolution.
 Continuation of work without notification of discrepancies relieves the architect and engineer from all consequences.
 Unless otherwise specifically indicated, the drawings do not describe methods of construction.
 The contractor, in the proper sequence, shall perform or supervise all work necessary to achieve the final completed structure, and to protect the structure, workmen, and others during construction.
 Such work shall include, but not be limited to, bracing, shoring for construction equipment, shoring for excavation, formwork, scaffolding, safety devices and programs of all kinds, support and bracing for cranes and other erection equipment.
 Do not backfill against basement or retaining walls until supporting slabs and floor framing are in place and securely anchored, unless adequate bracing is provided.
 Temporary bracing shall remain in place until all floors, walls, roofs and any other supporting elements are in place.
 The architect and engineer bear no responsibility for the above items, and observation visits to the site do not in any way include inspection of them.



TYPICAL REINFORCING AT STEPS AND OPENINGS
 N.T.S.



TYPICAL JOINTS AT INTERIOR SLAB-ON-GRADE
 N.T.S.



TYPICAL CONCRETE WALL INTERSECTIONS
 N.T.S.

Anchor Rod		ABBREVIATIONS KEY					
AB (Bolt)	EF Each Face	MACH	Machine	SC	Slip Critical		
ADDL. Additional	EJ Expansion Joint	MASY	Masonry	SCH	Schedule		
ADJ. Adjustable	ELEV Elevation	MATL	Material	SDST	Self Drilling Self Tapping		
AFI Above Finished Floor	ELEC Electric (Electrical)	MAX	Maximum	SECT	Section		
ALT. Alternate	ENGR Engineer	MB	Machine bolt	SF	Square Feet		
AMT. Amount	EQ Equal	MECH	Mechanical	SHT	Sheet		
ANCH. Anchor, Anchorage	EQUIP Equipment	MEZZ	Mezzanine	SHTG	Sheathing		
APPROX. Approximate	EQUIV Equivalent	MFR	Masonry, -er, -ed	SIM	Similar		
ARCH. Architect, -ural	ES Each Side	MIN	Minimum	SLH	Short Leg Horizontal		
ATR. All Thread Rod	EST Estimate	ML	Microfilm (Trus-joist brand LVL)	SLV	Short Leg Vertical		
AVG. Average	E-W East to West	MO	Masonry Opening	SOG	Slab on Grade		
BC. Bottom of Concrete	EXC Excavate	MTL	Metal	SP	Spaces		
BL. Brick Ledge	EXP Expansion	NF	Near Face	SPEC	Specifications		
BLK. Block	EXT Exterior	NS	Near Side	SQ	Square		
BLKG. Blocking	FND Foundation	NTS	Not In Contact	ST	Snug Tight		
BM. Beam	FP Far Face, Finished Floor	N-S	North to South	STD	Standard		
BOT. Bottom	F-F Face to Face	NTS	Not to Scale	STIFF	Stiffener		
BRG. Bearing	FIG Figure	OCJ	OSHA Column Joist	STL	Steel		
BW. Bottom of Wall	FL Flush	OD	Outside Diameter	STRUCT	Structure, -al		
CB. Counterbase	FLG Flange	OF	Outside Face	SUPT	Support		
CF. Cubic Foot	FLR Floor	OH	Opposite Hand	SY	Square Yard		
CG. Center of Gravity	FO Face of	OPP	Opposite	SYM	Symmetrical		
CIP. Cast in Place	FP Full Penetration	OSB	Oriented Strand Board	T&B	Top and Bottom		
CJ. Construction Joint (Control Joint)	FS Far Side	OPF	Opposite Face of	T&G	Tongue and Groove		
CLG. Ceiling	FTG Footing	OSB	Oriented Strand Board	TB	Top of Beam		
CLR. Clear	GA Gage (Gauge)	PAF	Powder Actuated Fastener	TC	Top of Concrete		
CM. Construction Manager (Management)	GALV Galvanized	PC	Precast	TD	Top of Deck		
CMU. Concrete Masonry Unit	GC General Contractor	PCF	Pounds Per Cubic Foot	THD	Thread		
COL. Column	GEN General	PEN	Penetration	THK	Thick, -ness		
COM. Common	GL Glue laminated (Glulam)	PERP	Perpendicular	TJ	Top of Joist		
COMB. Combination	GND Ground	PL	Property Line	TL	Total Load		
CONN. Concrete	GR Grade	PLF	Pounds per Linear Foot	TPG	Topping		
CONN. Connection	GTR Girder Truss	PNL	Panel	TRANS	Transverse		
COAT. Coating (Continuous)	BD Gypsum Board	PP	Panel Point	TW	Top of Wall		
COORD. Coordinate, -tion	HAS Headed Anchor Stud	PS	Prestressed	TYP	Typical		
CS. Countersink	HORIZ Horizontal	PSF	Pounds per Square Foot	ULT	Ultimate		
CTR. Center	HT Height	PSI	Pounds per square inch	UNO	Unless Noted Otherwise		
CY. Cubic Yard	ID Inside Diameter	PSL	Parallel Strand Lumber (generic term)	VERT	Vertical		
DAB. Deformed Anchor Bar	IF Inside Face	PT	Post Tensioned	VIE	Verify in Field		
DET. Detail	INT Interior (Intermediate)	PT	Post Tensioned	WA	Wedge Anchor		
DEV. Develop	JB Joist Bearing	(2)	Pressure Treated	WP	Work Point		
DIAG. Diagonal	JST Joist	PTN	Partition	WT	Weight		
DIM. Dimension	JT Joint	PWD	Physwood	WWF	Welded Wire Fabric		
DL. Dead Load	K Kip (1,000 lbs.)	QTY	Quantity	XS	Extra Strong		
DN. Down	LD Load	R	Radius	XSECT	Cross-section		
DP. Drilled Pier	LL Live Load	RE	Reference (refer to)	XXS	Double Extra Strong		
DT. Double Tee	LLH Long Leg Horizontal	RECT	Rectangle	(E)	Existing		
DWG. Drawing	LLV Long Leg Vertical	REINF	Reinforce, -ed, -ing	(N)	New		
DWL. Dowel	LOC Location	REQ	Required	(R)	Remove		
EA. Each	LSL Laminated Strand Lumber (generic term)	RQMNT	Requirement	RET	Retaining		
ECC. Eccentric	LT Light	RM	Room	RMO	Rough Masonry Opening		
E-E. End to End	LVL Laminated Veneer Lumber (generic term)	RO	Rough Opening				

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GENERAL NOTES

S1.0

