

STRUCTURAL NOTES

GOVERNING CODES AND STANDARDS:

- 2021 International Building Code (and local amendments)
- 2021 International Residential Code (and local amendments)
- "Minimum Design Loads for Buildings and Other Structures" - ASCE 7-16
- "Steel Construction Manual" - AISC Fourteenth Edition
- "National Design Specification for Wood Construction" - ANSI/AF&PA-NDS 2018
- "Building Code Requirements for Structural Concrete" - ACI318-19
- 2023 Solar Ready Code

Design Loads

Building Risk Category:

A. II

Floor Load:

- | | |
|------------------------------|---------|
| A. Live Load (Residential) | 40 psf |
| B. Live Load (Light Storage) | 125 psf |
| C. Dead Load | 12 psf |

PROJECT GENERAL NOTES

- Material and design specifications cited herein shall be those conforming with the version of the applicable specification or code most recently adopted by the permitting authorities. These structural notes are to be used as a supplement to the specifications, unless noted otherwise.
- Refer to the architectural documents for all dimensions not shown on the structural contract documents. Do not scale the structural contract documents.
- The general contractor shall verify all dimensions, elevations, and conditions with architectural, mechanical, electrical, plumbing, and civil drawings and notify the architect/engineer of any discrepancies or inconsistencies.
- The size, weights and locations of all equipment pads, roof mounted mechanical units, and penetrations required for mechanical, electrical, and plumbing work shall be verified by the contractor. All penetrations are subject to approval by the architect/engineer.
- Any contractor inducing loads on the structure not specified on the contract documents must obtain approval from the architect/engineer prior to erection. Field alterations for any structural member shall not be executed without approval from the architect/engineer.
- Architect/engineer's approval shall be secured for all substitutions.
- The structure and all of its parts must be adequately braced against wind, lateral earth, and seismic forces until the permanent lateral-force resisting systems have been constructed and all of its parts have been installed.
- Shop drawings, vendor drawings, or any material prepared and submitted by the contractor or subcontractor are not considered part of the structural contract documents. Any engineering design provided by others and submitted for review shall bear the seal of an engineer registered in the state where the project is being built.
- During construction the contractor may encounter existing conditions which were not known during design or are at variance with the project documentation. Such conditions may interfere with new construction, require protection and/or support of existing work, or may consist of damaged or deterioration of structural materials/components which could jeopardize the structural integrity of the building. The contractor shall notify the engineer of record of all discoveries he believes may interfere with proper execution of the work or jeopardize the integrity of the building prior to proceeding with work related to such discoveries.
- The structural engineer shall not have control or charge of and shall not be responsible for construction means, methods, techniques, sequences, procedures, nor site safety.
- The structural drawings have been prepared using available information regarding the existing conditions. No attempt has been made to verify any existing conditions against information provided by others. The contractor shall compare the existing documents and notify the architect of any differences before proceeding with work.
- Items, in the opinion of the contractor, that appear to be deficiencies, omissions, contradictions, or ambiguities in the plans and / or specifications shall be brought to the attention of the structural engineer. Plans and / or specifications will be corrected or written interpretations of the alleged deficiency, omission, contradiction or ambiguity will be made by the structural engineer. Work shall not proceed in these areas before a response is received from the structural engineer.
- All products and materials used by the contractor shall be installed in strict accordance with the manufacturer's instructions.
- The general contractor shall determine from the local building official when the permit is obtained whether any letters of construction compliance will be requested from the structural engineer, if so, the contractor shall notify the engineer in writing before the start of construction.
- Exterior roofs, flashing, ledges, concrete, & other surfaces shall slope min. 1/4"12 to prevent water ponding. Landings shall also slope max. 1/4"12 to prevent slipping. Covered garages or carports floor surface shall slope min. 1/8"12 to provide positive drainage to drain, unless surfaced with asphalt.
- Provide passive radon gas control system per IRC AFI03 on new single family homes - Install passive submembrane depressurization system during construction.
- All work connected with this project by any trade involved shall be of the highest quality attainable in accordance with the professional practice of the trade.

STRUCTURAL WOOD FRAMING

- Unless noted otherwise, all 2" lumber shall be Douglas-Fir S4S No. 2 and better. All solid timber beams and posts shall be DF-1 No. 1 or better.
- Unless noted otherwise, minimum nailing shall be provided as specified in table No. 2304.10.2, "Fastening Schedule", of the IBC or table No. R602.3(1), "Fastener Schedule for Structural Members".
- Wall and floor sheathing shall be APA rated with exterior glue and graded in accordance with APA standards. Panel identification and thickness shall be as noted on the drawings.
- Where light gauge framing anchors are shown or required, they shall be Simpson "Strong Tie" (or equal approved by ICBO). they shall be installed with the number and type of fasteners recommended by the manufacturer to develop the rated capacity.
- All members 3x or less (least dimensions) shall be kiln-dry with 19% moisture content, maximum.
- Floor joists shall be plant fabricated I series with LVL or solid wood flanges and plywood or OSB webs, and shall carry ICBO approval for a complete section. Joists shall be designed to carry full live and dead loads of the roof(s), floor(s), and any superimposed loads.

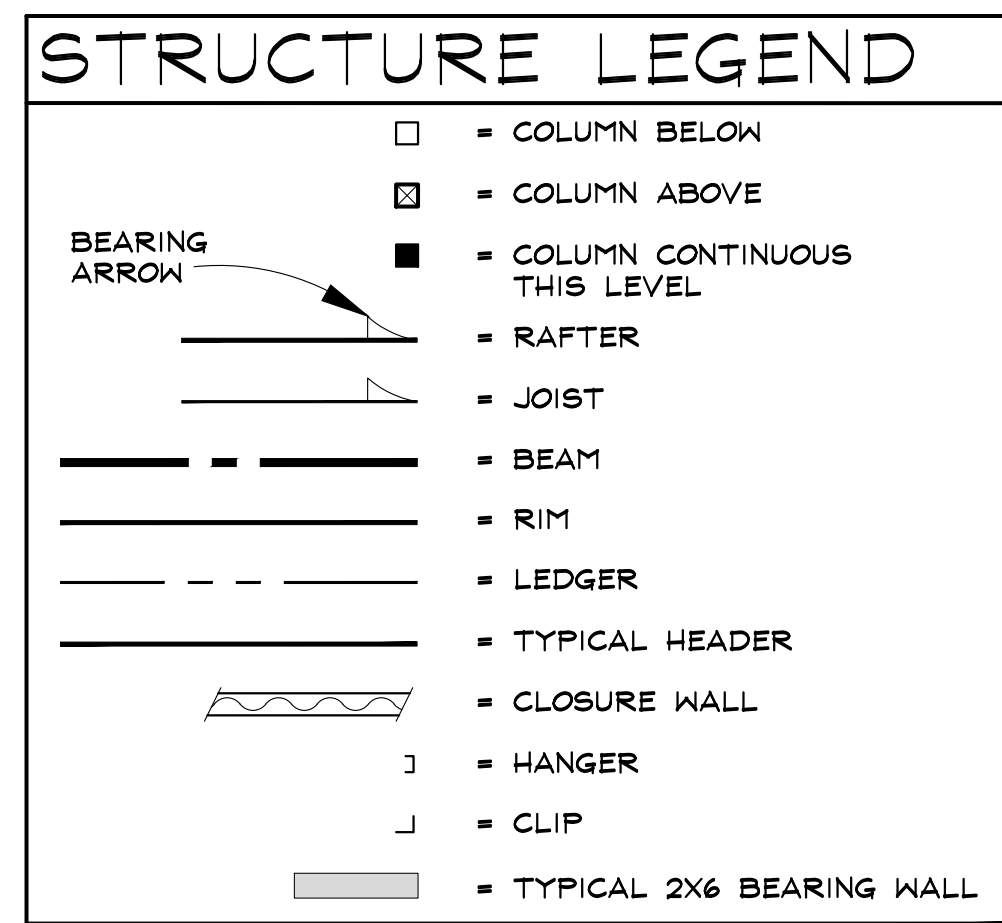
STRUCTURAL WOOD FRAMING CONTINUED

- Provide solid blocking (same depth of member) at all points of bearing.
- All plates and ledgers in contact with concrete or masonry shall be pressure treated in accordance with ANPA standard C-2. Pressure-treated lumber shall bear the AWPB (American Wood Preservers Bureau) quality mark.
- Plywood sheathing shall be laid with end joints staggered. Minimum width of plywood shall be 1'-0", or 2'-0" for floor sheathing, unless all undersized sheets are supported by blocking.
- Block all shear wall sheathing with 2x6 flat blocking at all edges. Block walls @ max. 8ft. o.c. for fireblocking. Block interior bearing walls @ max. 4'-0" o.c., u.o.a.
- Nailing indicated on plans and details are "common" nails as defined by the National Design Specification for Wood Construction (NDS), unless noted otherwise. The minimum nail sizes are as follows:
 - 8d = 0.131" dia x 2 1/2" long
 - 10d = 0.148" dia x 3" long
 - 16d = 0.162" dia x 3 1/2" long
- Nails shall be driven with the head flush with the sheathing. Nail spacing in sheathing less than 4" o.c. shall be staggered. Nail spacing @ 2" o.c. requires nominal 3" framing member or blocking @ panel edges.
- Oriented strand board conforming with IBC and manufactured with exterior glue may be substituted for plywood provided it has equal load/span rating index and bears the APA trademark of the American Plywood Association.
- Solid bridging at maximum of 8'-0" on center shall be required where joists have a five-to-one or greater depth-to-thickness ratio and where one edge is not held in line by sheathing, wallboard, bracing, etc.
- Double up studs at corners of bearing walls, unless noted otherwise, see plans for bearing wall locations.
- Provide (3) 2x studs nailed together under all bearing points of roof girder trusses, concentrated loads and beam bearings, unless noted otherwise. Studs shall extend from top of foundation to bottom of members.
- Contractor is to protect floor and roof sheathing from extreme wet conditions to limit movements due to expansion caused by moisture. Additionally, provide proper panel spacing per the American Plywood Association recommendations.
- Where pressure-treated plywood is indicated on the drawings, it shall conform with ANPA standard C-9 and shall exceed the AWPB (American Wood Preservers Bureau) quality mark.
- Joists shall be treated if w/in 18" & beams shall be treated if w/in 12" above grade
- All lumber exposed to weather shall be naturally durable, preservative treated or pressure treated if not covered by a roof overhang or covering to prevent moisture or water accumulation on the surface.
- All fasteners (nails, screws, anchor bolts, etc.) in contact with pressure treated or FRT lumber shall be corrosion resistant in accordance with IBC 2304.10.5.
- All connectors used with pressure treated material or exposed to weather shall be stainless steel or have a Simpson Z-Max/HDG coating or equal. All connectors exposed to the exterior shall be G185 galvanized or approved equal.
- Provide solid blocking under all columns from top of foundation or beam bearing to the bottom of column or post.
- Provide one 1/4"x3"x3" minimum galvanized plate washer (conforming to the 2018 National Design Specification Special Design Provisions for Wind and Seismic) under all shear wall anchor bolts. Plate washers shall extend to within 1/2" of the edge of the bottom plate on the side with shear wall sheathing. Where sheathing occurs on both sides of wall, stagger plate washers.
- All floor decking shall be glued and nailed to joists. All floor decking shall be tongue and groove with glued joints.
- Engineered wood beams shall be as manufactured by I-level, or approved equal.
- Glue laminated beams shall be as manufactured by Weyerhaeuser, or approved equal.
- Do not drill vertical holes in beams without consent from Engineer of Record
- All rim joists shall be as noted on plans and details. Rim material shall be ICC approved for rim joist applications.
- Provide min. 1/2" drywall on the underside of all TJI joists to protect the engineered webs in the event of a fire per IRC Sec. R302.13. If the floor is located over a crawl space not used for storage or fuel-fired or electric powered heating appliances, the drywall is not required.

ABBREVIATIONS LIST			
ABV	ABOVE	MECH	MECHANICAL
ALT	ALTERNATE/ALTERNATING	MIN	MINIMUM
ARCH	ARCHITECT/ARCHITECTURAL	OC	ON CENTER
BO	BOTTOM OF	OH	OVERHANG
BOT	BOTTOM	OSB	ORIENTED STRAND LUMBER
CL	CENTER LINE	PERP	PERPENDICULAR
CMU	CONCRETE MASONRY UNIT	P	PLATE
COL	COLUMN	PLUM	PLUMBING
CONC	CONCRETE	PLYWD	PLYWOOD
CONT	CONTINUOUS	PSL	PARALLEL STRAND LUMBER
DBL	DOUBLE	REINF	REINFORCEMENT/REINFORCING
DF	DOUGLAS FIR	REQ	REQUIRED
DIA	DIAMETER	SCH	SCHEDULE
Ø	DIAMETER	SCHED	SCHEDULE
DWG	DRAWING	SIM	SIMILAR
EA	EACH	SPF	SPRUCE-PINE-FIR
ELEV	ELEVATION	STRUCT	STRUCTURE/STRUCTURAL
EOR	ENGINEER OF RECORD	T&B	TOP AND BOTTOM
EW	EACH WAY	T&G	TONGUE AND GROOVE
FTG	FOOTING	THRU	THROUGH
GL	GLUE-LAMINATED BEAM	TRTD	PRESERVATIVE TREATED
GT	GIRDER TRUSS	TYP	TYPICAL
IBC	INTERNATIONAL BUILDING CODE	UNO	UNLESS NOTED OTHERWISE
IRC	INTERNATIONAL RESIDENTIAL CODE	VIF	VERIFY IN FIELD
LSL	LAMINATED STRAND LUMBER	w/	WITH
LVL	LAMINATED VENEER LUMBER	WD	WOOD
MAX	MAXIMUM	WWF	WELDED WIRE FABRIC

STRUCTURAL STEEL AND MISCELLANEOUS IRON

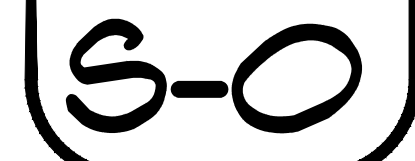
- Structural steel shall be detailed and fabricated in accordance with the latest version of the AISC manual of steel construction.
- All bolts, other than anchor bolts, shall conform to ASTM spec. A325, Gr. A.
- Structural steel shall conform to the ASTM standards below:
 - Rolled shapes, including plates and angles, shall be ASTM spec. A36, 36ksi.
 - Rect. HSS shapes shall be ASTM spec. A500, Gr. C, 50 ksi.
 - W-shapes shall be ASTM spec. A992, 50 ksi
- Field welded connections must be inspected by the engineer of record.
- Fillet welds indicated on the plans shall be of E70xx electrodes and shall be the minimum size specified in the AISC manual of steel construction, table J2.4. All other welds shall be made with E70xx electrodes.
- All welding shall conform to AWS specifications and shall be performed by a certified welder under AWS specifications.
- Steel shall be thoroughly cleaned of mill scale prior to application of the primer in accordance with SSPC SP-3.
- All steel plates and angles in contact with concrete and exposed to weather shall have a protective coating
- Shop and erection drawings shall be submitted for engineers review prior to fabrication. Fabricator proceeds at his own risk without receipt of above review.
- The contractor shall coordinate with the mechanical location of all openings - no holes shall be drilled in steel without EOR's approval
- All fabrication, erection, identification and painting of structural steel shall conform to AISC specifications.
- Anchor rods are to be located by means of a template. Do not hand set or wet set.
- Anchor rods and embedded items shall be set in accordance with the code of standard, practice section 7.5.
- All bolts shall be snug tight, unless noted otherwise on the plans.
- Anchor bolts shall conform with F1554 and shall be provided with plate washers and heavy hex nuts. Bolts in contact w/ pressure treated material or are exterior bolts shall be galvanized in accordance with ASTM A153, class C. Nuts shall be over-tapped to class 2A fit before galvanizing, in accordance with ASTM A563. Bolt heads or nuts bearing on sloping flanges shall be equipped with beveled washers.



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 1920 BRIDGE LANE - UNIT 12A & 12B
 STEAMBOAT SPRINGS, COLORADO
 A TENANT FINISH FOR:
 LANI CLEVERLY

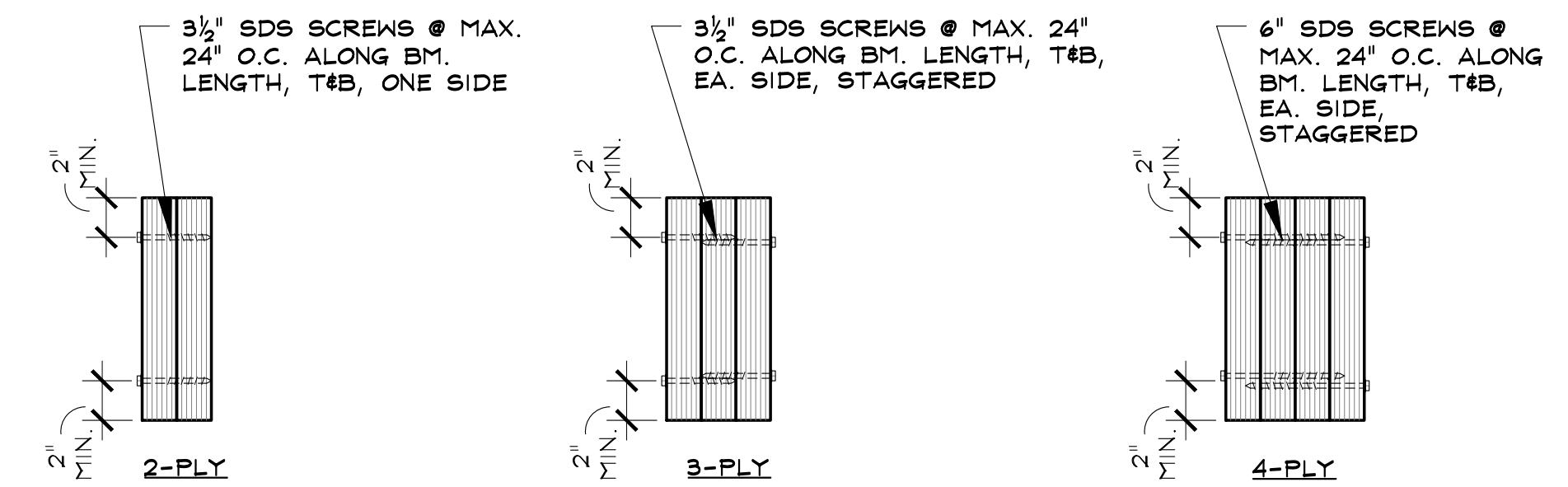
ISSUE DATES
 11 . 21 . 24 PERMIT

DRAWN BY: JEM
 REVIEWED BY: GJM
 PROJECT # 24049
STRUCTURAL NOTES



NOTE: ADHESIVE SHALL BE APPLIED BETWEEN EA. PLY

NOTE: ADD A ROW OF FASTENERS IF BEAM IS DEEPER THAN 14"



1 TYPICAL MULTI PLY BEAM FASTENING
 PER WEYERHAEUSER MARCH 2021 SPECIFIER'S GUIDE #TJ-4500
 ADHESIVE SHALL BE APPLIED BETWEEN EA. PLY

SCALE: 1/2" = 1'-0"



Allowable Holes in Versa-Lam LVL Beams

NOTES

- The horizontal distance between adjacent holes must be at least two times the diameter of the larger hole. This restriction also applies to the location of holes relative to cut holes in multiple ply beams. Holes shall not be stacked vertically.
- Round holes may be drilled or cut with a hole saw anywhere within the bearing area of the beam.
- Square and rectangular holes are not permitted.
- Do not drill more than three access holes in any four foot long section of beam.
- These limitations apply to holes drilled for plumbing or wiring access only. The size and location of holes drilled for fasteners are governed by the provisions of the National Design Specification® for Wood Construction.
- Beams deflect under load. Size holes to provide clearance where required.
- Allowable Round Holes table at left is valid for beams supporting uniform load only. For beams supporting concentrated loads or beams with larger holes, use BCI Caec® software or contact Boise Cascade BWP Engineering.

Allowable Round Holes
 Table valid only for beams supporting uniform load.

Beam Depth	Max. Hole Diameter
5" to less than 7 1/2"	1"
7 1/2" to less than 9 1/2"	2"
9 1/2" to less than 14"	3"
14" to less than 24"	4"

2 ALLOWABLE HOLES IN LVL BEAMS
 PER "WESTERN BCI AND VERSA-LAM INSTALL GUIDE"
 FOLLOW ALL OF MANUFACTURE'S INSTRUCTIONS

SCALE: N.T.S.

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BCI® Joist Hole Location & Sizing

BCI® joists are manufactured with 1 1/2" round perforated knotholes in the web at approximately 12" on center. Maintaining the minimum distance shown in the table below is required for all holes greater than 1 1/2".

HOW TO USE THIS TABLE

- Select a table row based on joist depth and the actual joist span rounded up to the nearest span shown in the table.
- Scan across the row to the column for the appropriate round hole diameter or rectangular hole side, use the longest side of a rectangular hole.
- The table value shown is the closest that the centerline of the hole may be to the edge or face of the nearest support.

NOTES

- DO NOT cut joist flanges.
- Holes apply to either single or multiple joists in repetitive member conditions.
- For multiple holes, the amount of horizontal uncut web between holes must equal or exceed the diameter of the largest hole.
- Table assumes one hole per horizontal location. Holes located above or below another should be considered as a single hole that encompasses all the holes.
- 1 1/2" round knotholes in the web may be removed by using a short piece of metal side hammer.
- Single holes may be positioned anywhere vertically in the web, provided they do not extend into other flange.
- This table was designed to apply only to the design conditions covered by tables presented in this publication (maximum uniform PLF loads).
- Use the BCI Caec® software to check other hole sizes or holes in other design conditions. It may be possible to exceed the limitations of this table by analyzing a specific application with the BCI Caec® software.

Round Hole Diameter / Rectangular Hole Side	Minimum Distance (D) From Any Support to the Centerline of the Hole														
	2'	3'	4'	5'	6'	7'	8'	8 1/2"	10'	11'	12'	13'	14'	15'	
Any	8"	1'-0"	1'-1"	1'-4"	2'-4"	2'-11"	3'-7"	-	-	-	-	-	-	-	
8 1/2" Span	12"	1'-0"	1'-7"	2'-3"	3'-6"	4'-5"	5'-4"	-	-	-	-	-	-	-	
16" Joist	16"	1'-0"	2'-2"	3'-2"	4'-0"	5'-11"	7'-2"	-	-	-	-	-	-	-	
Round Hole Diameter / Rectangular Hole Side	2'	3'	4'	5'	6'	7'	8'	8 1/2"	10'	11'	12'	13'	14'	15'	
Any	8"	1'-0"	1'-1"	1'-4"	2'-0"	2'-5"	2'-11"	3'-5"	3'-10"	-	-	-	-	-	
12" Span	12"	1'-0"	1'-7"	2'-3"	3'-0"	3'-8"	4'-5"	5'-1"	5'-9"	-	-	-	-	-	
16" Joist	16"	1'-0"	2'-1"	3'-0"	4'-0"	4'-11"	5'-10"	6'-10"	7'-8"	-	-	-	-	-	
20" Joist	20"	1'-5"	2'-7"	3'-10"	5'-0"	6'-2"	7'-4"	8'-6"	9'-7"	-	-	-	-	-	
Round Hole Diameter / Rectangular Hole Side	2'	3'	4'	5'	6'	7'	8'	8 1/2"	10'	11'	12'	13'	14'	15'	
Any	8"	1'-0"	1'-1"	1'-4"	1'-9"	1'-11"	2'-4"	2'-9"	3'-3"	3'-8"	-	-	-	-	
12" Span	12"	1'-0"	1'-7"	2'-3"	3'-0"	3'-8"	4'-5"	5'-1"	5'-9"	-	-	-	-	-	
16" Joist	16"	1'-0"	1'-11"	2'-1"	2'-11"	3'-9"	4'-11"	5'-10"	6'-11"	7'-2"	-	-	-	-	
20" Joist	20"	1'-0"	1'-11"	2'-11"	3'-10"	4'-9"	5'-7"	6'-7"	7'-8"	8'-5"	9'-4"	10'-3"	11'-2"	-	
24" Joist	24"	1'-0"	1'-11"	2'-11"	3'-11"	4'-10"	5'-10"	6'-10"	7'-11"	8'-11"	10'-0"	11'-0"	12'-0"	-	
Round Hole Diameter / Rectangular Hole Side	2'	3'	4'	5'	6'	7'	8'	8 1/2"	10'	11'	12'	13'	14'	15'	
Any	8"	1'-0"	1'-1"	1'-4"	1'-9"	1'-11"	2'-4"	2'-9"	3'-3"	3'-8"	-	-	-	-	
12" Span	12"	1'-0"	1'-7"	2'-3"	3'-0"	3'-8"	4'-5"	5'-1"	5'-9"	-	-	-	-	-	
16" Joist	16"	1'-0"	1'-11"	2'-1"	2'-11"	3'-9"	4'-11"	5'-10"	6'-11"	7'-2"	-	-	-	-	
20" Joist	20"	1'-0"	1'-11"	2'-11"	3'-10"	4'-9"	5'-7"	6'-7"	7'-8"	8'-5"	9'-4"	10'-3"	11'-2"	-	
24" Joist	24"	1'-0"	1'-11"	2'-11"	3'-11"	4'-10"	5'-10"	6'-10"	7'-11"	8'-11"	10'-0"	11'-0"	12'-0"	-	
Round Hole Diameter / Rectangular Hole Side	2'	3'	4'	5'	6'	7'	8'	8 1/2"	10'	11'	12'	13'	14'	15'	
Any	8"	1'-0"	1'-1"	1'-4"	1'-9"	1'-11"	2'-4"	2'-9"	3'-3"	3'-8"	-	-	-	-	
12" Span	12"	1'-0"	1'-7"	2'-3"	3'-0"	3'-8"	4'-5"	5'-1"	5'-9"	-	-	-	-	-	
16" Joist	16"	1'-0"	1'-11"	2'-1"	2'-11"	3'-9"	4'-11"	5'-10"	6'-11"	7'-2"	-	-	-	-	
20" Joist	20"	1'-0"	1'-11"	2'-11"	3'-10"	4'-9"	5'-7"	6'-7"	7'-8"	8'-5"	9'-4"	10'-3"	11'-2"	-	
24" Joist	24"	1'-0"	1'-11"	2'-11"	3'-11"	4'-10"	5'-10"	6'-10"	7'-11"	8'-11"	10'-0"	11'-0"	12'-0"	-	

3 ALLOWABLE HOLES IN BCI JOISTS
 PER "WESTERN BCI AND VERSA-LAM INSTALL GUIDE"
 FOLLOW ALL OF MANUFACTURE'S INSTRUCTIONS

SCALE: N.T.S.

ISSUE DATES
 11.21.24 PERMIT

DRAWN BY: JEM
 REVIEWED BY: GJM
 PROJECT # 24049
 GENERAL WOOD FRAMING DETAILS

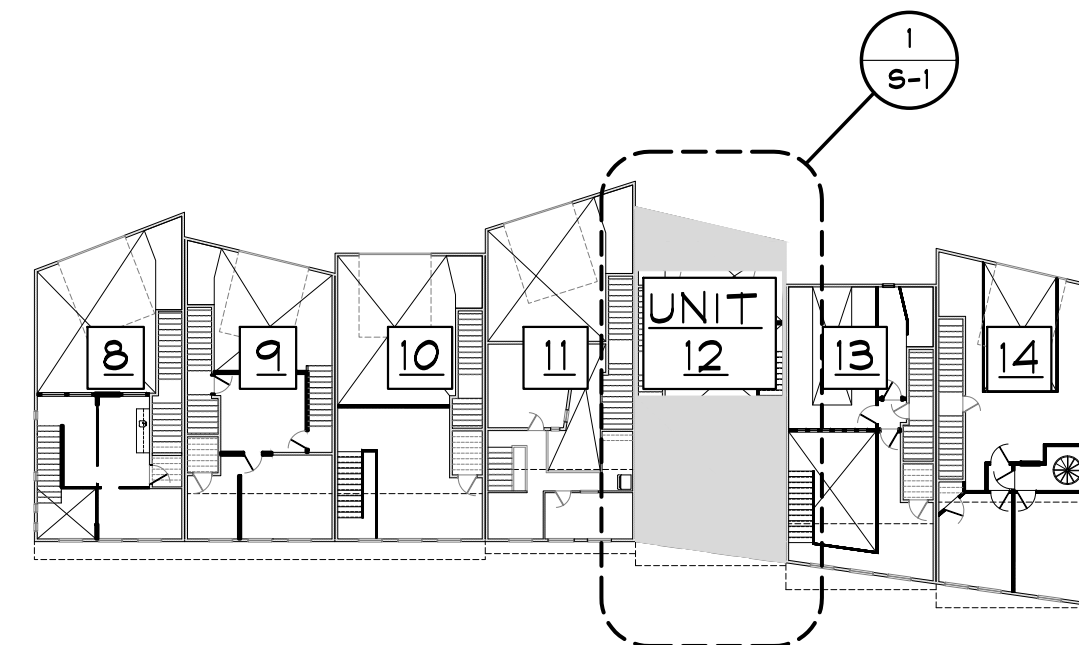
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LEGEND

▭ = EXISTING EXTERIOR & PARTITION WOOD FRAMED WALLS TO REMAIN

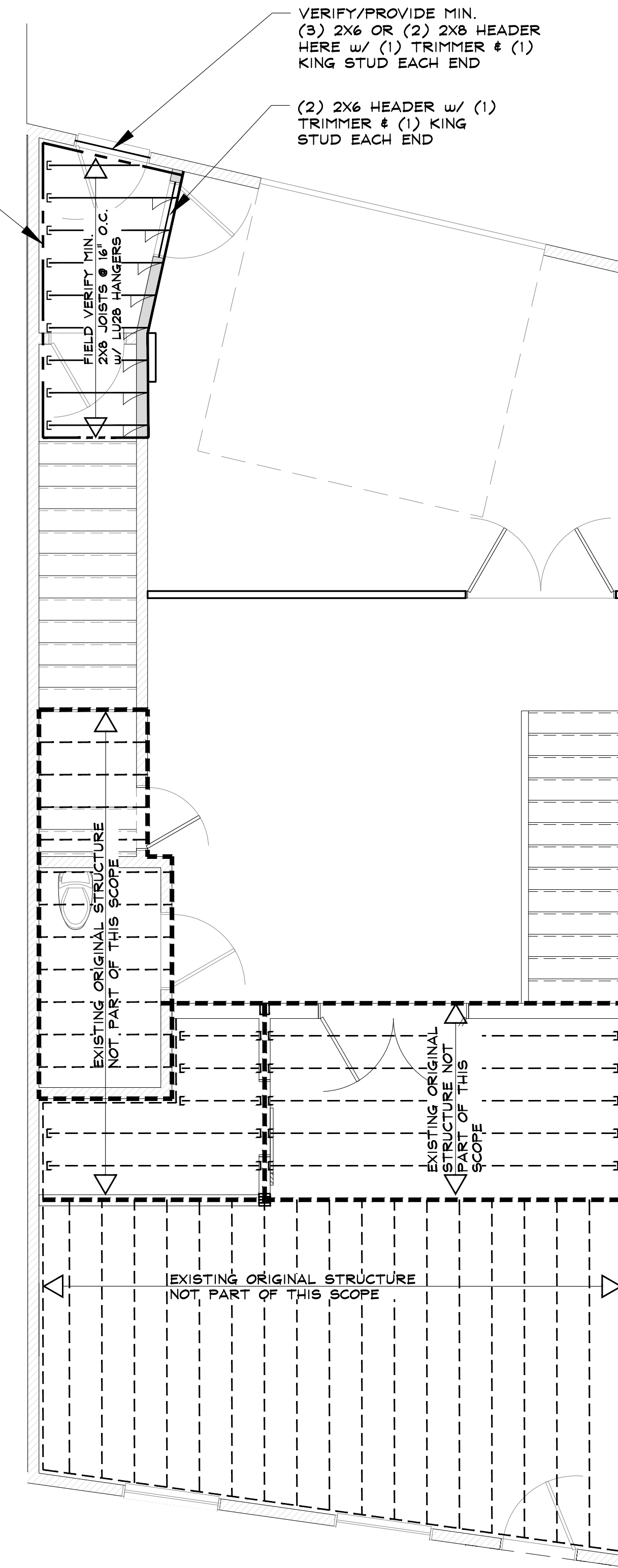
STRUCTURE LEGEND

- = COLUMN BELOW
- ▣ = COLUMN ABOVE
- = COLUMN CONTINUOUS THIS LEVEL
- ▬ = RAFTER
- ▬ = JOIST
- ▬ = BEAM
- ▬ = RIM
- ▬ = LEDGER
- ▬ = TYPICAL HEADER
- ▬ = CLOSURE WALL
- ┌ = HANGER
- └ = CLIP
- ▬ = TYPICAL 2X6 BEARING WALL



2 BUILDING KEY

SCALE: 1/32" = 1'-0"



1 LEVEL TWO FRAMING PLAN

SCALE: 1/4" = 1'-0"



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LEVEL TWO
 FLOOR FRAMING
 PLAN

S-1