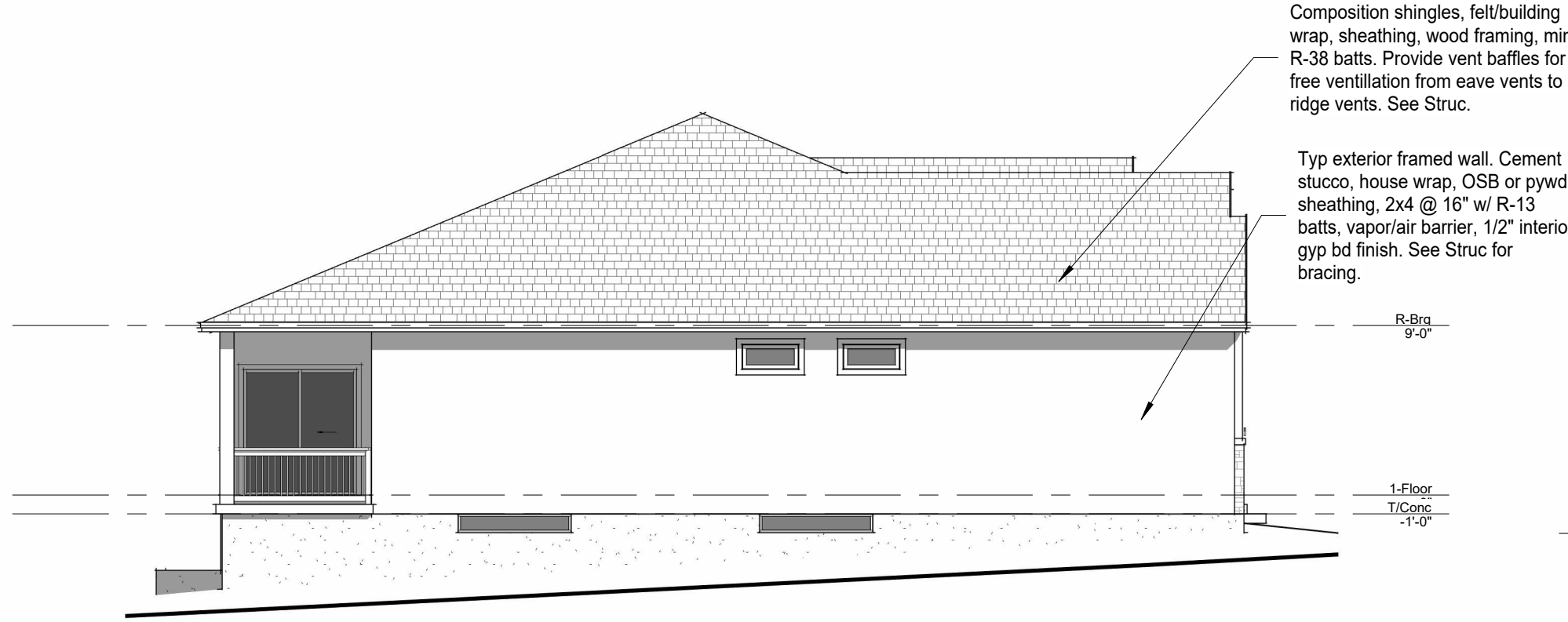


2 Left Side Elevation
1/8" = 1'-0"



1 Front Elevation
1/4" = 1'-0"



Exterior Elevation Notes

1. Hold finish grade min 6" below bottom of wood siding, trim, and framing.
2. See Floor Plans for window sizes.
3. See Roof Plan for roof slopes.

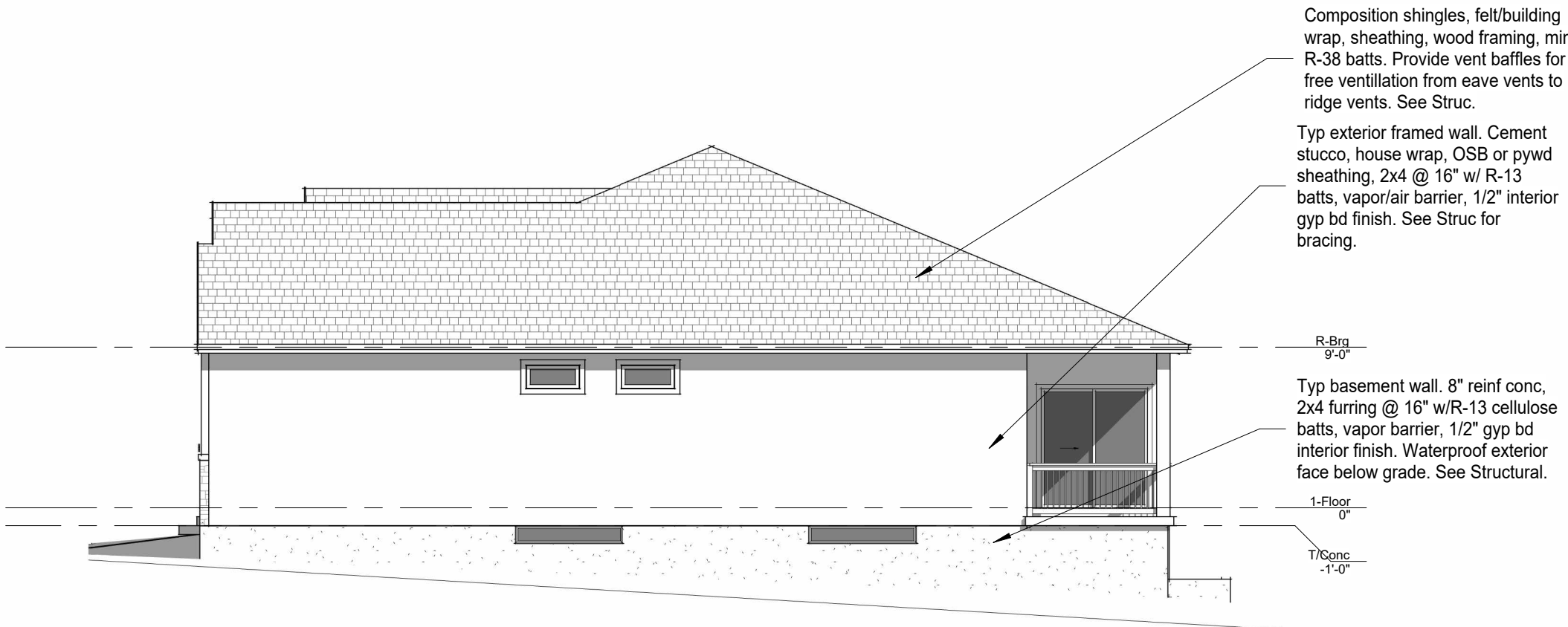
3 Rear Elevation
1/8" = 1'-0"



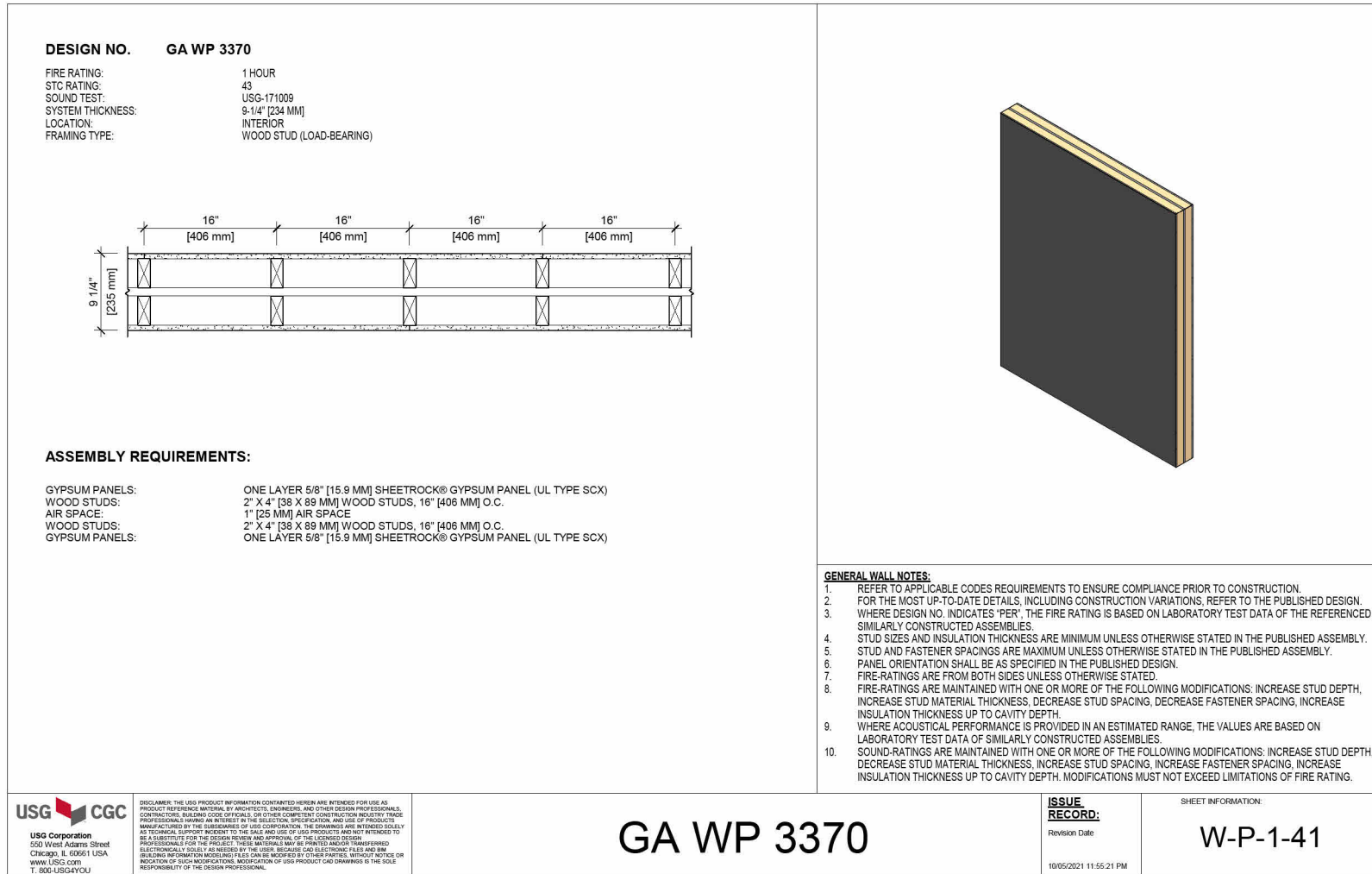
Note:

1. Hold finish grade min 6" below bottom of siding or wood framing.

4 Right Side Elevation
1/8" = 1'-0"



5 Party Wall
12" = 1'-0"



Jurisdiction Approval Stamp:

BILL FOWLER ARCHITECT

3601 W 122nd Terrace
Lewistown, MO 66029
913 908 5363
BFWFOWLER@ME.COM

N C A R B
National Council of
Architectural Registration Boards
Project:

Twin Villa

Woodland Glen Lot 52

Location:
1436-1438 SW Winthrop Ter, Lee's Summit, MO

Client Contact:
John Duggan
(913) 498-3536 / jduggan@kc-dslaw.com

Revisions

NO. DATE DESCRIPTION

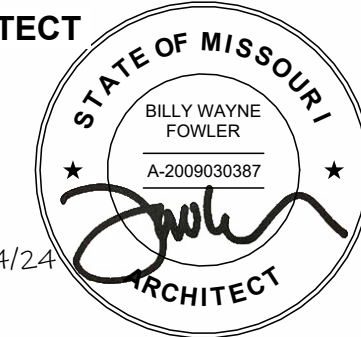
Sheet Name:

Elevations

Sheet No:

A11

PERMIT SET



6/4/24

Date:
6/4/24

BFA No:
TWIN-WG52

RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI
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Covered Patio	
64 SF	1-Floor
64 SF	
Covered Porch	
37 SF	1-Floor
37 SF	
Finished	
976 SF	0-Floor
1,311 SF	1-Floor
2,287 SF	
Garage	
452 SF	1-Floor
452 SF	
Storage	
788 SF	0-Floor
788 SF	
3,627 SF	

1. Unless noted otherwise, exterior wall dimensions are to face of stud or concrete. Interior wall dimensions are to face of finish. Wall thickness dimensions are nominal.
2. Coordinate precision with abutting elements.
3. Windows and door takeoff shall be based on the following Example: 3068 = 3' 0" x 6'-8". Tag suffix as follows: C = Casement, F = Fixed, DH = Double-Hung, SH = Single-Hung, T = Transom, E = Egress, SS = Slider. See Elevation for window and door types.
4. Field verify all existing conditions relevant to the work.
5. Loose furnishings, if shown, are by Owner.
6. Mechanical and electrical designs are by design-build contractors who are responsible for coordinating with architectural and engineering consultants.
7. All sleeping rooms shall have at least one egress window per IRC R310. See Project Notes and Window Schedule.
8. Fire resistant construction, if required, shall comply with IRC R302. See Project Notes.
9. Safety glazing, where required, shall comply with IRC R308.
10. Garage floor slab shall comply with IRC R309.
11. Emergency egress paths such as floors and landings at exterior doors, stairs, and hallways shall comply with IRC R310.
12. Where window sills are 24" or lower, provide window fall protection per IRC R312.
13. Refer to IRC R317 for preservative treated wood requirements.
14. Refer to IRC R318 for termite protection requirements.
15. Provide smoke detector, hard-wired and interconnected, in each sleeping room per IRC 314.
16. Provide combination smoke/carbon monoxide detector, hard-wired and interconnected, outside each group of sleeping rooms and inside the interior garage door per IRC 315.

BILL FOWLER ARCHITECT

CHITECT

STATE OF MISSOURI

BILLY WAYNE FOWLER

A-2009030387

6/4/24

ARCHITECT

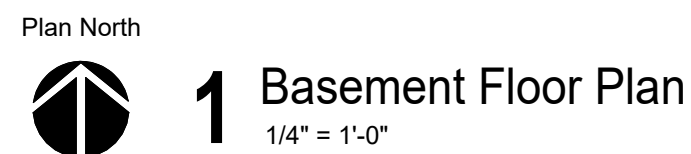
Woodland Glen Lot 52

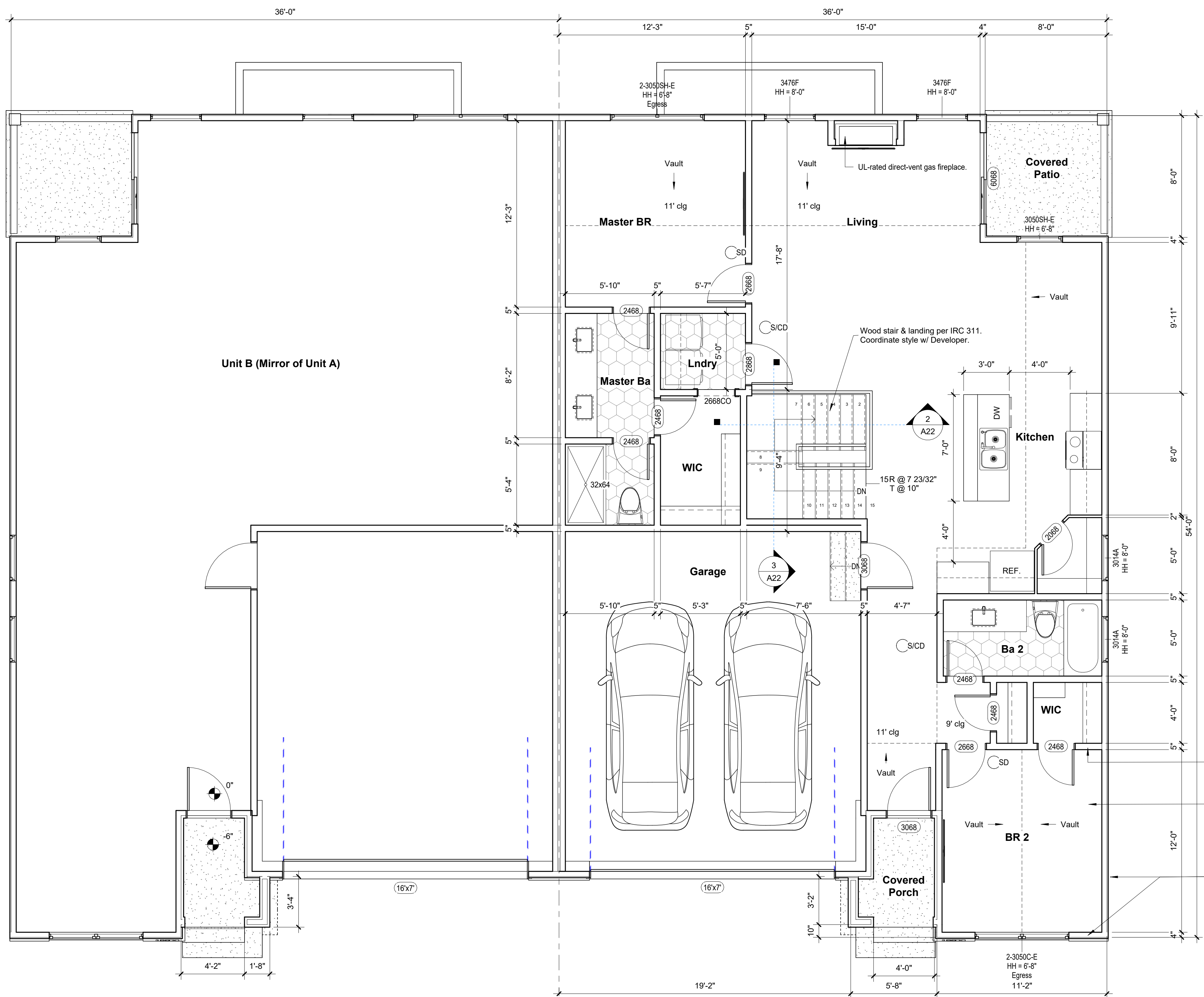
Client Contact:
John Duggan
(913) 498-3536 / jduggan@kc-dsdlaw.com

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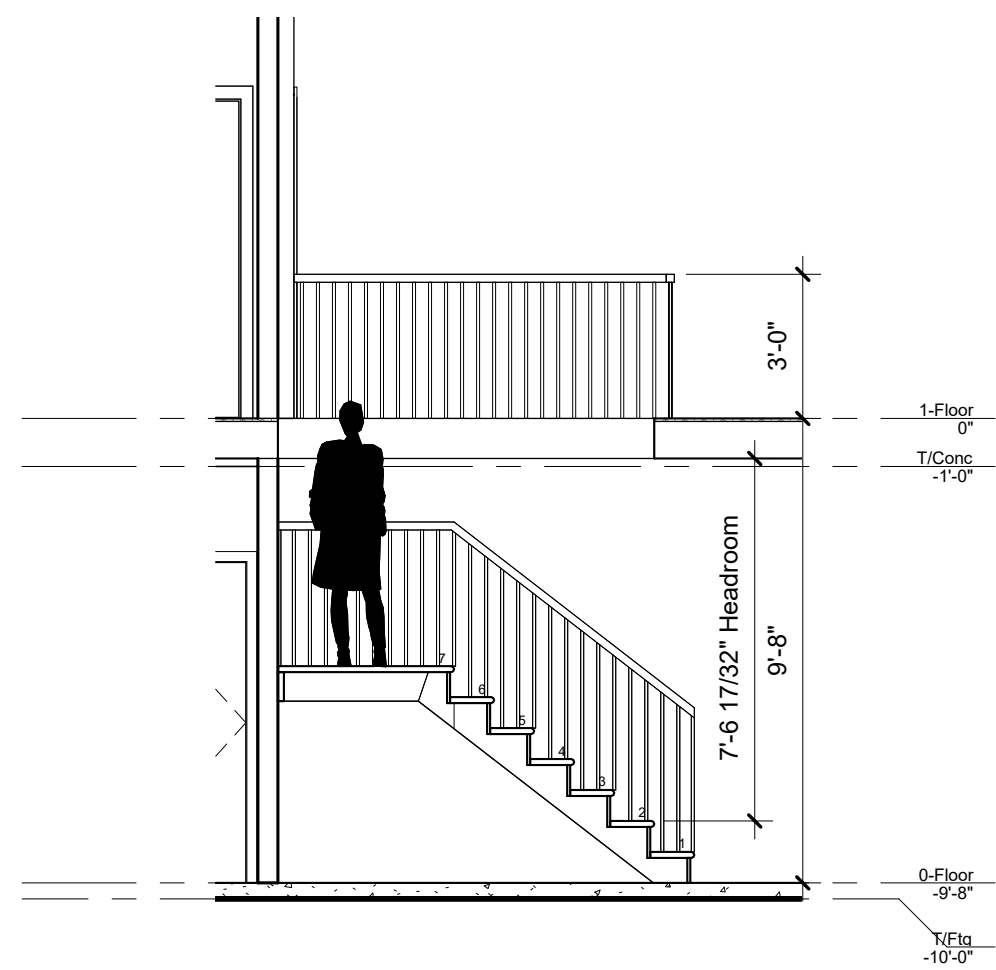
Date:
6/4/24
BFA No:
TWIN-V

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
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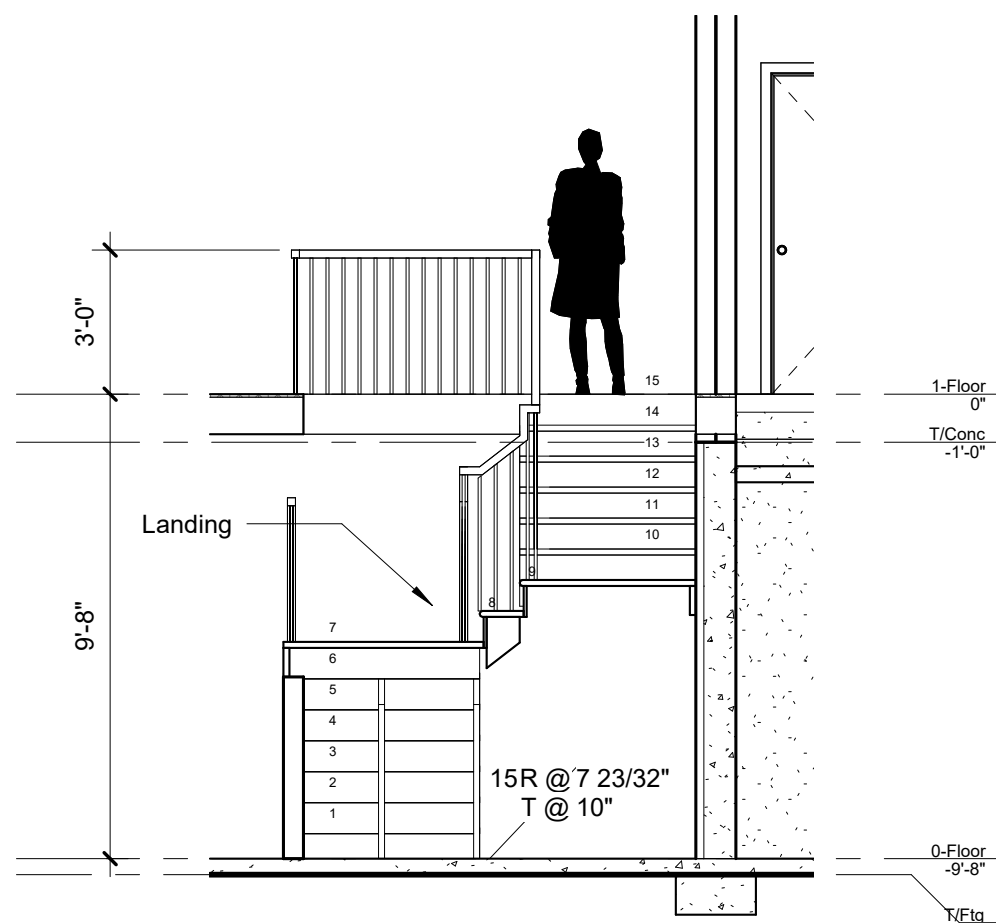




Plan North
1 First Floor Plan
1/4" = 1'-0"



2 Stair Headroom
1/4" = 1'-0"



3 Stair Landing
1/4" = 1'-0"

Area Summary per Unit

Covered Patio	
64 SF	1-Floor
64 SF	
Covered Porch	
37 SF	1-Floor
37 SF	
Finished	
976 SF	0-Floor
1,311 SF	1-Floor
2,287 SF	
Garage	
452 SF	1-Floor
452 SF	
Storage	
788 SF	0-Floor
788 SF	
3,627 SF	

Floor Plan Notes

- Unless noted otherwise, exterior wall dimensions are to face of stud or concrete. Interior wall dimensions are to face of finish. Wall thickness dimensions are nominal. Coordinate precision with abutting elements.
- Window and door tags indicate sash or leaf sizes. Example: 3068 = 3'-0" x 6'-8". Tag suffix as follows: C = Casement, F = Fixed, DH = Double-hung, SH = Single-hung, T = Transom, E = Egress, S = Slider. See Elevations for window and door types.
- Field verify all existing conditions relevant to the work.
- Loose furnishings, if shown, are by Owner.
- Mechanical and electrical designs are by design-build contractors who are responsible for coordinating with Owner's requirements and code conformance.
- All sleeping rooms shall have at least one egress window per IRC R310. See Project Notes and Window Schedule.
- Fire resistant construction, if required, shall comply with IRC R302. See Project Notes.
- Safety glazing, where required, shall comply with IRC R308.
- Garage floor slab shall comply with IRC R309.
- Emergency egress paths such as floors and landings at exterior doors, stairs, and hallways shall comply with IRC R311.
- Where window sills are 24" or lower, provide window fall protection per IRC R312.
- Refer to IRC R317 for preservative treated wood requirements.
- Refer to IRC R318 for termite protection requirements.
- Provide smoke detector, hard-wired and interconnected, in each sleeping room per IRC 314.
- Provide combination smoke/carbon monoxide detector, hard-wired and interconnected, outside each group of sleeping rooms and inside the interior garage door per IRC 315.

Jurisdiction Approval Stamp:

BILL FOWLER ARCHITECT

3601 W 122nd Terrace
Lee's Summit, MO 64089
913.908.5383
BFWFOWLER@AEE.COM



N C A R B
National Council of
Architectural Registration Boards
Project:

6/4/24

Twin Villa

Woodland Glen Lot 52

Location:
1436-1438 SW Winthrop Ter, Lee's Summit, MO

Client Contact:
John Duggan
(913) 498-3536 / jduggan@kc-dslaw.com

Revisions

NO.	DATE	DESCRIPTION
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Sheet Name:

First Floor Plan

Sheet No: 6/4/24

A22

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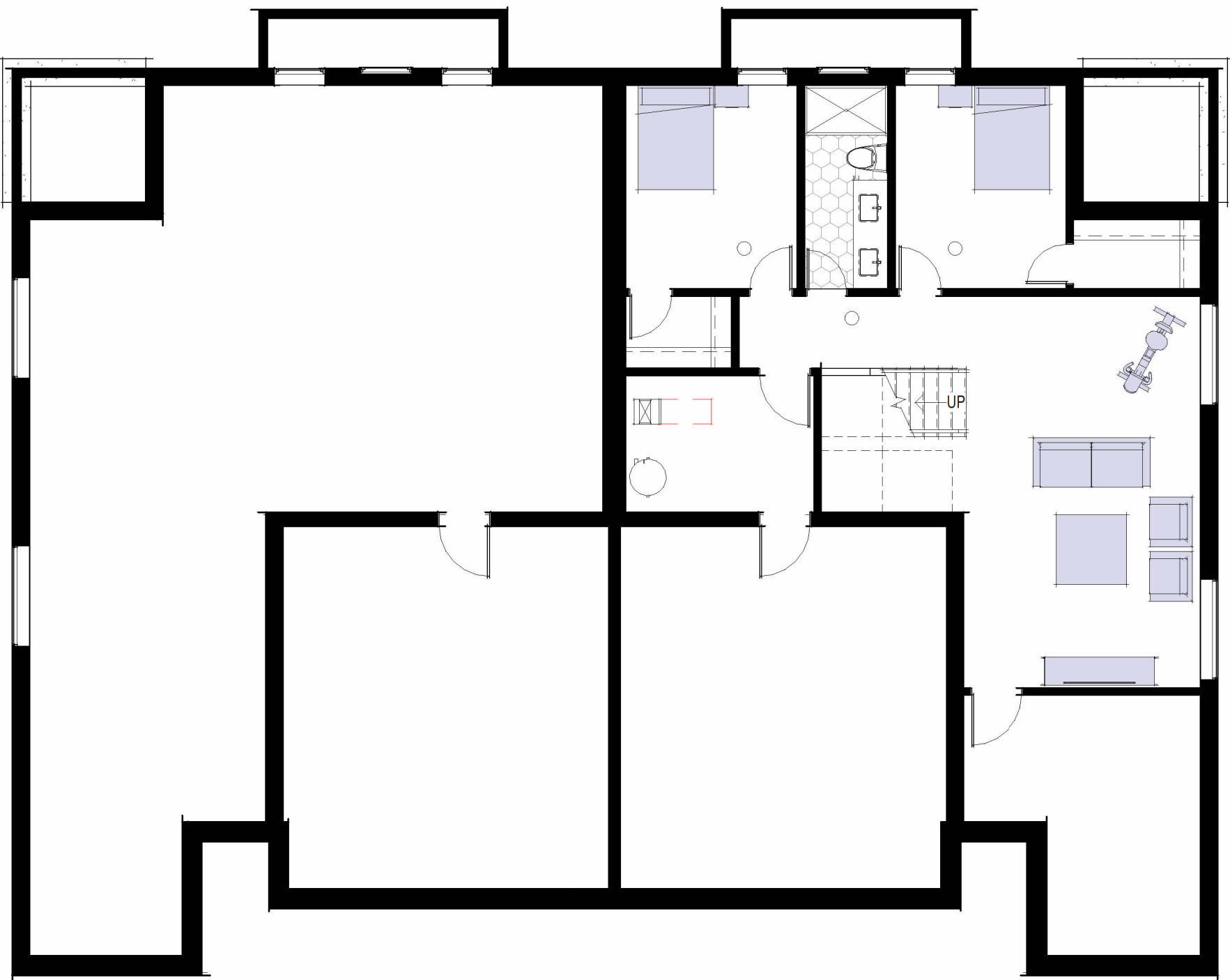
Date:

6/4/24

BFA No:

TWIN-WG52

RELEASE FOR CONSTRUCTION
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Plan North



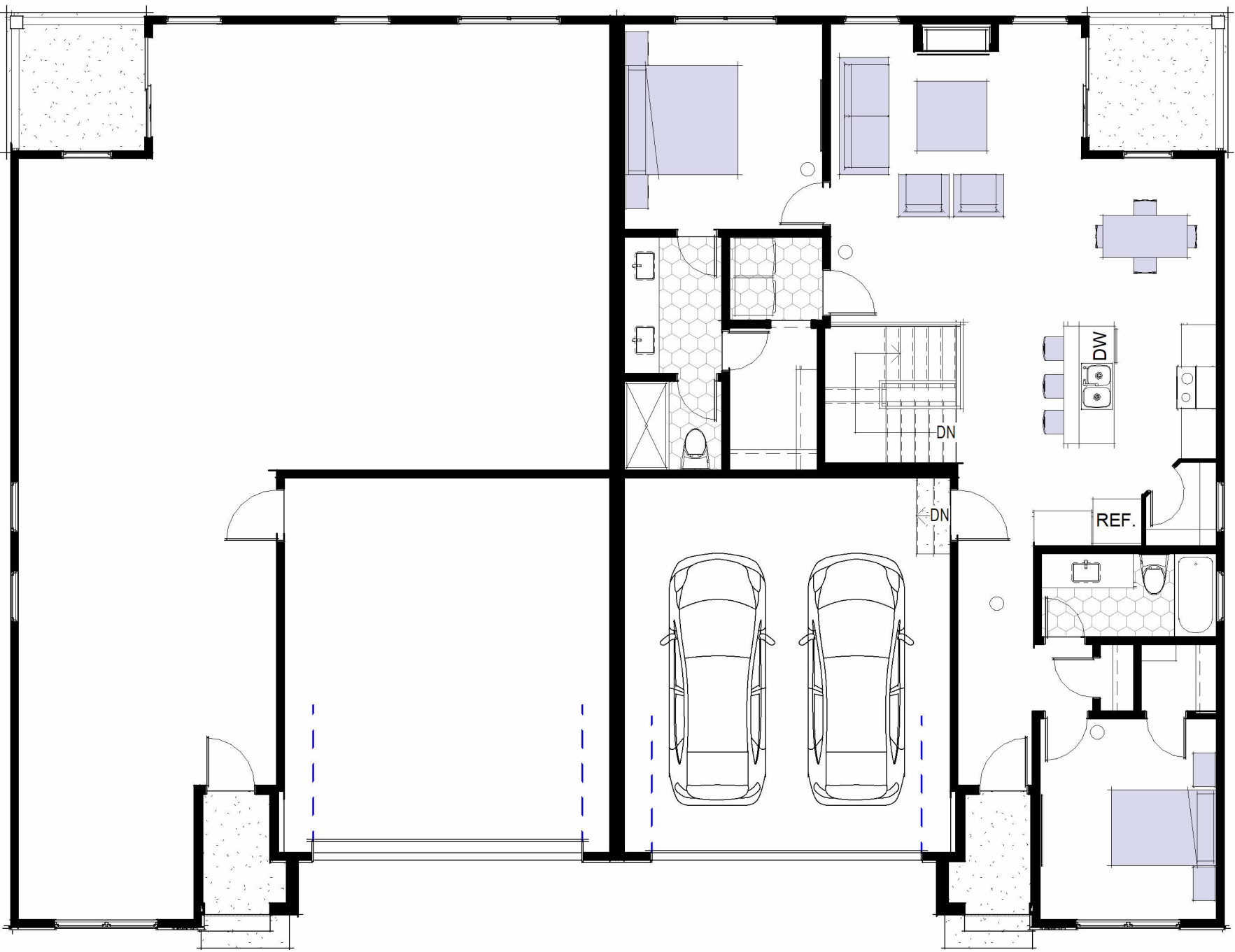
1 Basement Floor Plan

1/8" = 1'-0"

Furnishing Plan Notes

1. Loose furnishings are by others - not in contract.
2. Furnishing layout is preliminary and must be coordinated with Developer.
3. Furnishing layout is provided as a suggestion to aid in locating electrical and media outlets.

Jurisdiction Approval Stamp:



Plan North



2 First Floor Plan

1/8" = 1'-0"

BILL FOWLER ARCHITECT

3601 W 122nd Terrace
Lee's Summit, MO 64029
913.908.5383
BFWFOWLER@AECOM

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Project:



Twin Villa

Woodland Glen Lot 52

Location:
1436-1438 SW Winthrop Ter, Lee's Summit, MO

Client Contact:
John Duggan
(913) 498-3536 / jduggan@kc-dsdlaw.com

Revisions

NO.	DATE	DESCRIPTION
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Sheet Name:

Furnishing Plans

Sheet No:

A23

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Date:

6/4/24

BFA No:

TWIN-WG52

RELEASE FOR CONSTRUCTION
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GENERAL NOTES

GOVERNING BUILDING CODE:	2018 INTERNATIONAL RESIDENTIAL CODE (IRC) AND ITS APPROPRIATE SUPPLEMENTS		
DESIGN LOADS:			
ROOF DEAD LOAD:	15	psf	
ROOF LIVE LOAD:	20	psf	
FLOOR DEAD LOAD:	10	psf	
FLOOR LIVE LOAD:			
BEDROOMS:	30	psf	
ALL OTHER LIVING AREAS:	Vasd=115 MPH, EXPOSURE C		
WIND LOADS:			
SEISMIC LOADS:	SITE CLASS "B"		
ASSUMED ALLOWABLE SOIL BEARING PRESSURE:	1,500	PSF	

- GENERAL:**
- FURNISH ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN OR INFERRED BY THESE DRAWINGS.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE PLANS AND FOR COORDINATING ALL DIMENSIONS AND ELEVATIONS SHOWN WITH THE EXISTING CONDITIONS. IF ERRORS OR DISCREPANCIES IN THE DIMENSIONS OCCUR, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BRING ALL DISCREPANCIES TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
 - THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY BRACING AND SHORING AS REQUIRED DURING CONSTRUCTION TO ENSURE THE SAFETY OF ALL INDIVIDUALS INVOLVED.
 - ALL MECHANICAL, ELECTRICAL, AND PLUMBING ELEMENTS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE GOVERNING BUILDING CODE AND THE LOCAL MUNICIPALITY.
 - NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. HAS DESIGNED THE STRUCTURAL FLOOR FRAMING AND WALL BRACING SYSTEM OF THESE PLANS FOR THE CONSTRUCTION OF A RESIDENCE AT THE ADDRESS REFERENCED IN THE PLANS. NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. WILL NOT TAKE RESPONSIBILITY FOR ANY RE-USE OF ANY PORTION OF THE DESIGN, PLANS OR SPECIFICATIONS AT ANY OTHER PROPERTY OR ADDRESS WITHOUT OUR PRIOR WRITTEN CONSENT.

BUILDER'S PLANS:

THE TERM "BUILDER'S PLANS" REFERS TO A CERTAIN LEVEL OF DEVELOPMENT OF THE DRAWINGS. AS THE NAME IMPLIES, THESE PLANS REQUIRE THAT THE CONTRACTOR POSSESSES COMPETENCE IN RESIDENTIAL CONSTRUCTION AND A THOROUGH UNDERSTANDING OF THE INTERNATIONAL RESIDENTIAL CODE (IRC). THE CONTRACTOR WARRANTS TO NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C., THAT HE POSSESSES THE PARTICULAR COMPETENCE AND SKILL IN CONSTRUCTION NECESSARY TO BUILD THIS PROJECT WITHOUT FULL ENGINEERING AND DESIGN SERVICES, AND FOR THAT REASON THE CONTRACTOR OR HOME OWNER HAS RESTRICTED THE SCOPE OF PROFESSIONAL SERVICES. THE CONSTRUCTION DOCUMENTS PROVIDED BY THE LIMITED SERVICES SHALL BE TERMED "BUILDER'S PLANS" IN RECOGNITION OF THE CONTRACTOR'S SOPHISTICATION. ALTHOUGH NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. AND OUR CONSULTANTS HAVE PERFORMED THEIR SERVICES WITH DUE CARE AND DILIGENCE, WE CANNOT GUARANTEE PERFECTION. ANY AMBIGUITY OR DISCREPANCY DISCOVERED BY THE USE OF THESE PLANS SHALL BE REPORTED IMMEDIATELY TO NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. CONSTRUCTION MAY REQUIRE THAT THE CONTRACTOR ADAPT THE "BUILDER'S PLANS" TO THE FIELD CONDITIONS ENCOUNTERED AND MAKE LOGICAL ADJUSTMENTS IN FIT, FORM, DIMENSION AND QUANTITY. CHANGES MADE FROM THE PLANS WITHOUT THE CONSENT OF NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. ARE UNAUTHORIZED. IT IS ALSO UNDERSTOOD THAT THE CONTRACTOR WILL BE RESPONSIBLE FOR MEETING ALL APPLICABLE BUILDING CODES INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, AND PLUMBING CODE REQUIREMENTS (WHICH IS EXCLUDED FROM THESE PLANS). IN THE EVENT ADDITIONAL DETAIL OR GUIDANCE IS NEEDED BY THE CONTRACTOR OR HOMEOWNER FOR CONSTRUCTION OF ANY ASPECT OF THE PROJECT, NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. OR A QUALIFIED ARCHITECT/ENGINEER SHALL IMMEDIATELY BE RETAINED. FAILURE TO NOTIFY US OF THESE NEEDS OR OF CHANGES TO THE PLANS SHALL RELIEVE NORTON & SCHMIDT CONSULTING ENGINEERS, L.L.C. OF ALL RESPONSIBILITIES OF THE CONSEQUENCES.

- ARCHITECTURAL NOTES:**
- WATER RESISTIVE EXTERIOR WALL COVERING, FREE FROM HOLES AND BREAKS, SHALL BE APPLIED TO STUDS OR SHEATHING OF ALL EXTERIOR WALLS. WRAP SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SHALL BE IN COMPLIANCE WITH SECTION R703.2.
 - BUILDING SHALL COMPLY WITH IRC SECTION R802.5.2 FOR RAFTER AND CEILING JOIST CONNECTIONS.
 - "UFER" GROUND SHALL BE PROVIDED PER IRC SECTION E3608.1
 - GUTTERS, DOWNSPOUTS, AND SPLASH BLOCKS SHALL BE PROVIDED TO INSURE ALL ROOF DRAINAGE IS DIRECTED 5 FEET MINIMUM FROM HOUSE BEFORE TOUCHING SOIL.

- STAIR NOTES:**
- MAXIMUM RISER AT STAIRWAYS IS 7 3/4" AND MINIMUM TREAD IS 10" WITH A MINIMUM 6"-8" HEADROOM, PER IRC SECTION R311.7.
 - PLACE HANDRAILS ON ALL STAIRS AND/OR LEVELS THAT EXCEED 30" ABOVE THE FLOOR OR GRADE. RAILINGS TO BE MIN. 36" HIGH AND HAVE INTERMEDIATE RAILS THAT DO NOT ALLOW THE PASSAGE OF A 4" DIAMETER SPHERE AND SHALL COMPLY WITH IRC SECTIONS R311.7.8 & R312.
 - ENCLOSE ACCESSIBLE SPACE BENEATH STAIRS SHALL HAVE WALLS AND THE UNDERSIDE OF THE STAIR AND LANDING PROTECTED WITH 1/2" GYPSUM BOARD ON ENCLOSURE SIDE PER SECTION R302.7.
 - STAIRWAYS CONSISTING OF 3 OR MORE RISERS SHALL HAVE A CONTINUOUS HANDRAIL ON AT LEAST ONE SIDE BETWEEN 34" AND 38" ABOVE THE STAIR NOSINGS.
 - HANDRAILS SHALL HAVE A CIRCULAR CROSS SECTION OF 1 1/4" MINIMUM TO 2" MAXIMUM OR OTHER APPROVED GRASPABLE SHAPE PER SECTION R311.7.8.5.
 - SPIRAL STAIRS SHALL BE CONSTRUCTED PER SECTION R311.7.10.1.

- WINDOWS AND SAFETY GLAZING NOTES:**
- GLAZING IN HAZARDOUS LOCATIONS AS IDENTIFIED IN IRC SECTION R308.4 SHALL BE OF APPROVED SAFETY GLAZING MATERIALS. GLASS IN STORM DOORS; INDIVIDUAL FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE IS WITHIN A 24" ARCH OF THE DOOR IN A CLOSED POSITION AND WHOSE BOTTOM EDGE IS WITHIN 60" OF THE FLOOR; WALLS ENCLOSING STAIRWAYS AND LANDINGS WHERE THE GLAZING IS WITHIN 60" OF THE TOP OR BOTTOM OF THE STAIR, ENCLOSURES FOR SPAS, TUBS, SHOWERS AND WHIRLPOLS; GLAZING IN FIXED OR OPERABLE PANELS EXCEEDING 9 SQ. FT. AND WHOSE BOTTOM EDGE IS LESS THAN 18" ABOVE THE FLOOR OR WALKING SURFACE WITHIN 36".
 - ALL WINDOWS SHALL MEET THE FALL PROTECTION REQUIREMENTS OF SECTION R312.2.

- EMERGENCY EGRESS NOTES:**
- ALL SLEEPING ROOMS AND BASEMENT SHALL BE PROVIDED WITH PROPER EMERGENCY ESCAPE AND RESCUE OPENINGS PER IRC SECTION R310. PROVIDE (1) WINDOW IN EACH BEDROOM THAT HAS A MINIMUM OPERABLE AREA OF 5.7 SQ. FT. WITH A MINIMUM OPERABLE HEIGHT OF 24" AND WIDTH OF 20".
 - PROVIDE SMOKE ALARMS IN EACH SLEEPING ROOM, OUTSIDE OF EACH SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS AND ON EACH ADDITIONAL FLOOR, INCLUDING BASEMENTS AND STAIRWAYS. ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM ACTIVATES ALL OTHERS AND BE HARD WIRED WITH A BATTERY BACKUP. PER IRC SECTION R314 AND NFPA 72.
 - CARBON MONOXIDE DETECTORS SHALL BE PROVIDED PER R315.

- CONCRETE & REINFORCING NOTES:**
- CONCRETE STRENGTH SHALL MEET THE FOLLOWING MINIMUM 28 DAY STRENGTH REQUIREMENTS (IRC R402.2):
 - 2,500 PSI FOR BASEMENT FLOOR SLABS ON UNDISTURBED GRADE.
 - 3,000 PSI FOR FOOTINGS, FOUNDATION WALLS, AND OTHER VERTICAL CONCRETE.
 - 3,500 PSI FOR CARPORT AND GARAGE FLOOR SLABS ON UNDISTURBED GRADE.
 - 3,500 PSI FOR STRUCTURAL FLOOR SLABS
 - CONCRETE SHALL BE 6%±1% AIR ENTRAINED FOR GARAGE SLABS AND FOR ALL LOCATIONS (FOOTINGS, WALLS, FLATWORK, ETC.) EXPOSED TO WEATHER.
 - CONCRETE SHALL HAVE A SLUMP OF 4" ± 1". THE SLUMP CAN BE INCREASED THROUGH THE USE OF APPROVED ADDITIVES (NOT WATER).
 - THE REINFORCING STEEL SHALL BE ASTM A615, GRADE 40 MINIMUM UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL BARS SHALL BE LAPPED A MINIMUM OF 48 BAR DIAMETERS AND/OR CORNER BARS SHALL BE PROVIDED AT ALL FOOTING AND WALL CORNERS, AND FOOTING STEPS.
 - MINIMUM CONCRETE COVER SHALL BE AS FOLLOWS (ACI 318):
 - EARTH FORMED - 3"
 - EXPOSED TO WEATHER - 1 1/2" FOR #5 BARS & SMALLER
 - NOT EXPOSED TO WEATHER - 3/4" FOR SLABS
 - NO WATER SHALL BE ADDED TO THE CONCRETE MIX AT THE SITE.
 - ADDITION OF CALCIUM CHLORIDE TO CONCRETE IS NOT PERMITTED.
 - NO ALUMINUM SHALL BE EMBEDDED/PLACED IN CONCRETE.
 - CONCRETE PLACED IN COLD WEATHER SHALL COMPLY WITH ACI 306. CONCRETE PLACED IN HOT WEATHER SHALL COMPLY WITH ACI 305.

- STRUCTURAL STEEL:**
- ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:

STRUCTURAL STEEL	ASTM A992, Fy = 50 KSI
MISCELLANEOUS STEEL	ASTM A36
HOLLOW STRUCTURAL STEEL (HSS)	ASTM A500, GRADE B
STEEL PIPE	ASTM A53, GRADE B (SCHED 40 MIN)
 - ALL BEAM CONNECTIONS SHALL BE DESIGNED BY THE STEEL FABRICATOR UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL ENGINEER UNLESS SPECIFIC CONNECTIONS ARE SHOWN ON THE DRAWINGS. CONNECTIONS SHALL BE DESIGNED TO 50% U.D.L. OR THE REACTION PROVIDED ON THE DRAWINGS, WHICHEVER IS GREATER. ALL WELDS SHALL BE WELDED OR BOLTED PER AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION. BOLTS SHALL BE ASTM A325N.
 - ALL COLUMN ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36.
 - WELDING SHALL CONFORM TO THE LATEST PUBLICATION OF APPLICABLE CODES SET FORTH BY THE AMERICAN WELDING SOCIETY. NO UNAUTHORIZED WELDS WILL BE ACCEPTED.
 - PROVIDE 30# FELT T BOND BREAK AROUND ALL STEEL COLUMNS WHERE IN CONTACT WITH SLAB-ON-GRADE.
 - ALL EXTERIOR STEEL EXPOSED TO THE ELEMENTS SHALL BE HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE.
 - ALL STRUCTURAL STEEL SHALL HAVE ONE COAT OF RUST INHIBITIVE PRIMER CONFORMING TO SPECIFICATIONS. FIELD TOUCHUP ALL UNPAINTED AREAS AND WELD AREAS.

- WOOD FRAMING NOTES:**
- ALL STRUCTURAL LUMBER (RAFTERS, CEILING JOISTS, PURLINS AND HEADERS) SHALL BE DOUGLAS FIR LARCH #2 OR BETTER UNLESS OTHERWISE NOTED ON THE DRAWINGS. ALL LOAD BEARING WALL STUDS AND PURLIN STRUTS SHALL BE DOUGLAS FIR STUD GRADE OR BETTER.
 - GLUE LAMINATED MEMBERS MARKED "LVL" (LAMINATED VENEER LUMBER) SHALL HAVE A MINIMUM ALLOWABLE BENDING STRESS (FB) OF 2950 PSI, A MINIMUM ALLOWABLE SHEAR STRESS (FV) OF 285 PSI, AND A MINIMUM MODULUS OF ELASTICITY (E) OF 2,000 KSI. ALL MANUFACTURER'S RECOMMENDATIONS FOR NAILING AND CONNECTIONS SHALL BE FOLLOWED.
 - FLOOR JOISTS: SEE IRC TABLE R502.3.1(1) AND R502.3.1(2) FOR SPAN, SIZE, SPACING, AND GRADE OF FLOOR JOISTS.
 - FLOOR JOISTS BELOW PARTITION WALLS RUNNING PARALLEL TO THE JOIST SPAN SHALL BE DOUBLED. ALL DOUBLED MEMBERS SHALL BE NAILED TOGETHER WITH 16d NAILS 16" ON CENTER IN TWO ROWS STAGGERED OR PER MANUFACTURER SPECS.
 - SOLID BLOCKING BETWEEN FLOOR JOISTS SHALL BE INSTALLED WHERE JOISTS BEAR ON TOP OF BEAMS OR HEADERS AND BELOW POINT LOADS. ALL SOLID BLOCKING AND RIM JOIST MATERIAL SHALL BE THE SAME SIZE AND GRADE AS THE JOISTS.
 - ALL FLOOR AND CEILING JOISTS THAT BUTT INTO THE SIDE OF A HEADER OR STEEL BEAM SHALL BE ANCHORED TO THE HEADER OR STEEL BEAM WITH STANDARD JOIST HANGERS.
 - ALL SUPPORTS FOR WOOD TRUSSES, RAFTERS AND PURLINS, UNLESS SHOWN OTHERWISE ON THE DRAWINGS, SHALL BEAR ON LOAD BEARING WALLS (WALLS LOCATED DIRECTLY ABOVE A BEAM LINE OR CONTINUOUS FOOTING). ALL CONCENTRATED LOADS SHALL BE CARRIED THROUGH THE FLOOR SYSTEM THICKNESS WITH SOLID BLOCKING OR WITH 2x4 STUB COLUMNS (SQUASH BLOCKS) THAT TRANSFER THE LOAD DOWN TO THE SUPPORT WALL OR BEAM BELOW.
 - ALL NAILING NOT INDICATED ON THE DRAWINGS SHALL CONFORM TO THE NAILING SCHEDULE OF THE GOVERNING BUILDING CODE. SPACINGS AND EDGE DISTANCES OF NAILS AND SPIKES SHALL BE SUCH AS TO AVOID THE UNUSUAL SPLITTING OF THE WOOD.
 - ALL NON-LOADBEARING STUD WALLS IN THE BASEMENT SHALL BE PROVIDED WITH A 1" MINIMUM VERTICAL EXPANSION JOINT TO ALLOW FOR HEAVE IN THE FLOOR SLAB.
 - WALLS SHALL NOT BE TIGHT BETWEEN THE SLAB AND THE FRAMING ABOVE!
 - SHEATHING FOR HORIZONTAL DIAPHRAGMS SHALL BE EXTERIOR GRADE, C/D, STRUCTURAL GROUP II OR BETTER. ROOF AND WALL FRAMING SHALL BE OF DOUGLAS FIR-LARCH OR SOUTHERN PINE. PROVIDE SOLID BLOCKING AT ALL PANEL EDGES UNLESS OTHERWISE NOTED. WHERE PANELS ARE APPLIED ON BOTH FACES OF A WALL, PANEL JOISTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS.
 - ALL WOOD STRUCTURAL PANELS SHALL BE IDENTIFIED WITH THE APPROPRIATE GRADE TRADEMARK OF THE AMERICAN PLYWOOD ASSOCIATION (APA) AND SHALL MEET THE REQUIREMENTS OF PRODUCT STANDARD PS-1.
 - WOOD STRUCTURAL PANELS SHALL BE SET WITH FACE GRAIN PERPENDICULAR TO SUPPORTING MEMBERS AND STAGGER END JOINTS 4'-0".
 - STANDARD WASHERS SHALL BE USED WITH ALL BOLTS FASTENING WOOD MEMBERS.
 - ALL SAWN LUMBER EXPOSED TO WEATHER OR IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE TREATED.
 - ROOF FRAMING - RIDGE BEAMS, VALLEY AND HIP RAFTERS SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 2" AND MINIMUM DEPTH NOT LESS THAN THE END CUT OF THE RAFTERS. HIP AND VALLEY RAFTERS SHALL BE SUPPORTED AT THE RIDGE BY A 2x6 "TEE" BRACE TO A BEARING PARTITION. WHERE ROOF BRACING IS USED TO PERMIT LONGER RAFTERS SPAN, USE 2x6 "TEE" BRACES AT 4'-0" O.C. WITH CONTINUOUS 2x6 PURLIN UNDER THE RAFTERS. BRACE RAFTERS TO BEARING PARTITIONS.
 - PROVIDE CONTINUOUS STRONG BACKS FOR CEILING JOIST SPANS 12'-0" OR GREATER.
 - CEILING JOISTS: SEE IRC TABLE R802.5(1) AND R802.5(2) FOR SPAN, SIZE, SPACING, AND GRADE OF CEILING JOISTS.
 - ROOF RAFTERS: SEE IRC TABLE R802.4.1(1) THRU R802.4.1(8) FOR SPAN, SIZE, SPACING, AND GRADE OF ROOF RAFTERS.
 - BRACE THE COMPRESSION FLANGE OF ALL BEAMS UNLESS NOTED OTHERWISE.
 - ALL BEAMS OR HEADERS THAT BEAR ON WOOD FRAMING SHALL BE SUPPORTED BY ANOTHER BEAM OR HEADER OR A BUILT-UP (2) STUD MIN COLUMN THE FULL WIDTH OF THE BEAM CONTINUOUS TO THE FOUNDATION OR OTHER STRUCTURAL FRAMING MEMBER, U.N.O.
 - ALL LIGHT GAGE METAL FRAMING ACCESSORIES NOTED SHALL BE AS MANUFACTURED BY "SIMPSON STRONG TIE" OR APPROVED EQUAL. ATTACH FRAMING ACCESSORIES TO WOOD FRAMING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - PROVIDE HEADERS AS SHOWN ON PLAN, FOR HEADERS NOT MARKED REFERENCE TYPICAL BEARING WALL HEADER SCHEDULE.
 - FLOOR SHEATHING SHALL BE 3/4" TONGUE & GROOVE WOOD STRUCTURAL PANEL. GLUE & NAIL TO FLOOR JOISTS WITH 8d NAILS AT 6" O.C. AT ALL PANEL EDGES AND AT 12" O.C. AT INTERMEDIATE SUPPORTS.
 - ALL EXTERIOR WOOD WALL FRAMING SHALL BE 2x4 OR 2x6 DOUG-FIR STUD GRADE AT 16"oc, UNO.
 - ALL INTERIOR BEARING WALL FRAMING SHALL BE 2x4 OR 2x6 DOUG-FIR STUD GRADE AT 16"oc, UNO.
 - WOOD TRUSSES AND THEIR CONNECTIONS SHALL BE DESIGNED BY THE TRUSS MANUFACTURER FOR THE LOADS STIPULATED ON THE DRAWINGS. SHOP DRAWINGS AND CALCULATIONS WITH AN ENGINEER'S SEAL FOR THE STATE OF THE RESIDENCE SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION. CONNECTION PLATES SHALL MEET THE REQUIREMENTS OF THE GOVERNING BUILDING CODE. HURRICANE CLIPS, SIMPSON SDWC SCREWS OR SIMILAR SHALL BE USED TO RESIST UPLIFT PER IRC 802.11.
 - TEMPORARY STABILITY OF WOOD TRUSSES DURING ERECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IN CONJUNCTION WITH ALL RECOMMENDATIONS OF THE MANUFACTURER. FOLLOW BCOSI GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING OF METAL PLATE CONNECTED WOOD TRUSSES.
 - WOOD TRUSSES SHALL NOT BE FIELD CUT.
 - MULTIPLE STUD MEMBERS CALLED OUT FOR SUPPORT OF LVL BEAMS AND HEADERS SHALL BE CARRIED DOWN TO TOP OF FOUNDATIONS OR SUPPORT BEAM(S).

- GARAGE:**
- GARAGE FLOORS SHALL SLOPE TOWARDS THE GARAGE DOORWAYS.
 - DOORS BETWEEN THE GARAGE AND THE DWELLING SHALL BE A MINIMUM 1-3/8" SOLID CORE OR HONEY COMBED STEEL DOOR OR A 20 MINUTE FIRE RATED DOOR PER IRC SECTION R302.5.1.
 - THE GARAGE SHALL BE SEPARATED FROM THE DWELLING AND ITS UNFINISHED ATTIC AREAS BY A MINIMUM 1/2" GYPSUM BOARD APPLIED TO THE GARAGE SIDE. WHERE UNFINISHED ATTIC AREAS ARE PROVIDED ABOVE THE GARAGE, THE SUPPORTING COLUMNS AND BEAMS SHALL ALSO BE PROTECTED WITH 1/2" GYPSUM BOARD OR EQUIVALENT. WHERE HABITABLE SPACE OCCURS ABOVE THE GARAGE THE FLOOR/CEILING ASSEMBLY SHALL BE PROTECTED WITH A MINIMUM 5/8" TYPE X GYPSUM BOARD ON THE GARAGE CEILING, SHALL COMPLY WITH IRC SECTION R309.
 - GARAGE DOOR AND FRAME (H-FRAME) FOR THE ATTACHMENT OF THE TRACK AND COUNTER BALANCE SHALL CONSIST OF THE FOLLOWING: 2x6 VERTICAL JAMBS RUNNING FROM THE FLOOR TO CEILING ATTACHED WITH 1 3/4"x12" NAILS @ 7"oc STAGGERED WITH (7) 3 1/4"x12" NAILS THRU THE JAMB INTO THE HEADER, MINIMUM 2x4 WALL HEADER FOR ATTACHMENT FOR COUNTER BALANCE SYSTEM.
 - BUILDING SHALL COMPLY WITH THE REQUIREMENTS FOR A SELF CLOSING DOOR BETWEEN RESIDENCE AND GARAGE.
 - GARAGE DOORS SHALL MEET THE REQUIREMENTS OF DASHA 115 MPH.

- WOOD DECK FRAMING NOTES:**
- ALL WOOD DECK FRAMING SHALL COMPLY WITH THE LATEST EDITION OF THE "RESIDENTIAL DECKS - PERMIT AND CONSTRUCTION GUIDELINES" AS PUBLISHED BY THE JOHNSON COUNTY CONTRACTOR LICENSING PROGRAM.
 - WOOD FRAMING FOR EXTERIOR DECKS SHALL BE PRESERVATIVE TREATED SOUTHERN PINE #2 OR BETTER.

- FOUNDATION NOTES:**
- ALL FOUNDATIONS SHALL BEAR ON NATIVE, UNDISTURBED SOIL CAPABLE OF SUPPORTING THE ASSUMED ALLOWABLE SOIL BEARING PRESSURE LISTED UNDER THE DESIGN LOADS ON THIS PAGE, UNLESS NOTED OTHERWISE, WITHOUT UNDOE SETTLEMENT OR HEAVING. NORTON & SCHMIDT IS NOT RESPONSIBLE FOR REVIEW OF THE SOIL CONDITIONS AT THE SITE. THE CONTRACTOR OR EXCAVATOR, IF APPROPRIATELY QUALIFIED AND EXPERIENCED OR A QUALIFIED TESTING LAB (APPROVED BY THE OWNER) SHALL FIELD VERIFY THE ACTUAL SOIL'S SUITABILITY, SOIL BEARING CAPACITY AND OTHER SOIL CONDITIONS (SUCH AS EXPANSIVE SOILS, COMPRESSIBLE SOILS, SHIFTING SOILS OR OTHER QUESTIONABLE SOIL CHARACTERISTICS). REFERENCE IRC R401.
 - ALL EXTERIOR FOOTINGS SHALL BEAR A MIN. OF 36" BELOW FINISHED GRADE.
 - IF THE EXISTING SITE TOPOGRAPHY OR SOIL CONDITIONS VARY FROM THE CONDITIONS SHOWN ON THE DRAWINGS, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ARCHITECT/ENGINEER SO THAT A DESIGN THAT IS APPROPRIATE FOR THE SITE CAN BE GENERATED.
 - FOOTINGS SHALL BE POURED CONTINUOUS AT FOOTING STEPS (SOLID JUMPS).
 - ANY FILL THAT IS INSTALLED UNDER THE BASEMENT OR GARAGE FLOOR SLABS SHALL BE PROPERLY COMPACTED TO PREVENT SETTLEMENT OF THE FILL MATERIAL. PROPER COMPACTION IS WHERE THE SOIL IS PLACED IN 6" LIFTS AND EACH LIFT IS COMPACTED PRIOR TO INSTALLING MORE SOIL. THIS COMPACTED FILL SHALL THEN BE VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER. AT THE CONTRACTOR'S OPTION, A PROPERLY DESIGNED STRUCTURAL SLAB MAY BE INSTALLED OVER ANY FILL THAT HAS NOT BEEN PROPERLY COMPACTED. ALL EXTERIOR SLABS INSTALLED ADJACENT TO THE FOUNDATION SHALL BE DOWELED INTO THE FOUNDATION WITH #4 BARS AT 12" ON CENTER (GRADE 60 STEEL), DRILLED IN 6" MINIMUM AND EPOXIED.
 - CONTROL JOINTS IN THE FLOOR SLABS SHALL BE INSTALLED AS TO MINIMIZE THE AMOUNT OF RANDOM CRACKING (12' INTERVALS MAXIMUM). THESE JOINTS SHALL BE SAWCUT 1-1/4" DEEP WITHIN 8 HOURS OF POURING THE SLAB OR MAY BE TOOLED INTO THE SLAB WHEN POURED. SAWCUTS SHALL BE IN APPROXIMATE SQUARE PATTERN WITH MAXIMUM ASPECT RATIO OF 1-1/2 TO 1.
 - THE BUILDER SHALL BE RESPONSIBLE FOR TAKING THE APPROPRIATE STEPS TO MINIMIZE THE EFFECTS OF EXPANSIVE SOIL ON THE FOUNDATION, SLABS, AND WOOD FRAMED PORTIONS OF THE HOUSE. THIS INCLUDES ISOLATING THE FLOOR SLAB AT ALL COLUMNS, INTERIOR BEARING WALLS, AND AT THE FOUNDATION WALLS WITH TWO LAYERS OF 15# FELT. PARTITION WALLS IN THE BASEMENT SHALL NOT BE CONSTRUCTED TIGHT AGAINST THE FRAMING ABOVE.
 - INSTALL CONTINUOUS DRAIN TILE (4" DIAMETER MINIMUM) AROUND THE PERIMETER OF THE ENTIRE LOWER LEVEL AND COVER THE TILE WITH FILTER FABRIC AND COURSE, CLEAN ROCK. INSTALL VERTICAL DRAINS TO PERIMETER DRAIN TILE AT ALL WINDOW WELLS. THE DRAIN TILE SHALL BE CONNECTED TO A 40 GALLON (MINIMUM) SUMP PIT WITH SUFFICIENT DEPTH FOR PROPER PUMP OPERATION, OR SHALL BE DRAINED BY GRAVITY TO DAYLIGHT AT LEAST 10' FROM THE FOUNDATION. FOUNDATION DRAINAGE SHALL ALSO BE IN ACCORDANCE WITH IRC SECTION R-405.1.
 - CONCRETE BASEMENT SLABS SHALL BE A MIN. OF 4" THICK OVER A MIN. OF 4" OF 1/2" TO 3/4" CLEAN, GRADED ROCK, U.N.O. OR IF SITE CONDITIONS REQUIRE OTHERWISE. MIN REINFORCING SHALL BE #4'S AT 24"oc OR EQUIVALENT.
 - PROVIDE A MIN. 6-MIL POLYETHYLENE MOISTURE BARRIER OVER GRAVEL BASE UNDER BASEMENT FLOOR SLABS (NOT REQUIRED FOR GARAGE SLABS) PER SECTION R405.2.2. LAP JOINTS A MIN. OF 6".
 - ALL FOOTING AND SLAB REINFORCEMENT SHALL BE BLOCKED OFF SUBGRADE WITH CHAIRS OR CONCRETE BRICKS.

RESIDENTIAL BASEMENT WALL NOTES:

- VERTICAL REBAR SPACING FOR CONCRETE FOUNDATION WALLS SHALL BE PER THE TABLE BELOW:

WALL THICKNESS	60 KSI REINFORCING			40 KSI REINFORCING	
	8"	10"	12"	8"	10"
WALL HEIGHT	6' OR LESS	#4 @ 36" O.C.	#4 @ 36" O.C.	#4 @ 36" O.C.	#4 @ 36" O.C.
	7'	#4 @ 32" O.C.	#4 @ 36" O.C.	#4 @ 21" O.C.	#4 @ 36" O.C.
	8'	#4 @ 24" O.C.	#4 @ 36" O.C.	#4 @ 16" O.C.	#4 @ 36" O.C.
	9'	#4 @ 16" O.C.	#4 @ 20" O.C.	#4 @ 12" O.C.	#4 @ 16" O.C.
	10'	#4 @ 12" O.C.	#4 @ 16" O.C.	#4 @ 8" O.C.	#4 @ 12" O.C.
	12'		#5 @ 12" O.C. EACH FACE		
14'			#5 @ 8" O.C. EACH FACE		

- MINIMUM REQUIREMENT FOR VERTICAL REBAR IN PLAIN CONCRETE WALLS IS #4 BARS @ 36" O.C. (ACI 302).
- VERTICAL BARS SHALL BE CONTINUED TO WITHIN 4" OF THE TOP OF THE WALL.
- REBAR SHALL BE POSITIONED AT THE TENSION FACE OF THE WALL (2" FROM THE INSIDE FACE).
- REINFORCEMENT SHALL LAP A MINIMUM OF 24" AT ENDS, SPLICES, AND AROUND CORNERS.
- DESIGN BY A PROFESSIONAL ENGINEER IS REQUIRED FOR WALLS OVER 10' IN HEIGHT.
- HORIZONTAL REINFORCING SHALL MATCH THE SIZE OF THE VERTICAL REINFORCING. PROVIDE 1 -BAR WITHIN 12" OF THE TOP OF THE WALL WITH ADDITIONAL BARS SPACED AT 24" O.C. MAX.
- BARS SHALL LAP A MINIMUM OF 48 BAR DIAMETERS AT ENDS, SPLICES AND AROUND CORNERS. UNLESS OTHERWISE NOTED ON THESE DRAWINGS.
- CONTINUOUS WALL FOOTINGS SHALL BE A MINIMUM OF 16" WIDE AND 8" DEEP WITH (2) #4 BARS CONTINUOUS WITH 3" CLEARANCE FROM SOIL FOR 8" THICK WALLS. U.N.O. CONTINUOUS WALL FOOTINGS SHALL BE A MINIMUM OF 24" WIDE AND 12" DEEP WITH (2) #4 BARS CONTINUOUS WITH 3" CLEARANCE FROM SOIL FOR 12" THICK WALLS.
- INSTALL 1/2"x0 x 1'-12" LONG ANCHOR BOLTS (7" EMBEDMENT) AT 2'-0" O.C. AND WITHIN 12" OF THE END OF EACH SILL MEMBER (2-BOLTS MIN PER PLATE SECTION). MINIMUM SILL PLATE TO BE 2x6 PRESSURE TREATED.
- THE TOPS OF ALL BASEMENT (LOWER LEVEL) FOUNDATION WALLS SHALL BE CONNECTED TO THE FLOOR JOISTS. NAIL EACH FLOOR JOIST END AND END WALL BLOCKING TO THE WOOD SILL PLATE PER THE IRC NAILING SCHEDULE. WHERE FLOOR JOISTS RUN PARALLEL TO THE FOUNDATION WALLS, PROVIDE BLOCKING IN THE FIRST THREE JOIST SPACES AT 2'-0" O.C. OVER THE ENTIRE LENGTH OF THE FLOOR JOISTS.
- WALLS SHALL BE FULL HEIGHT FROM FOOTING TO FLOOR FRAMING. NO WOOD FRAMED CRIPPLE WALLS EXCEPT AS SPECIFICALLY NOTED ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- FOUNDATION WALLS SHALL BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE (EP) 60 PSF.
- PROVIDE STEEL SHIMS IN BEAM POCKETS TO LEVEL BEAMS. BEAM POCKETS SHALL BE GROUTED SOLID WITH 4,000 PSI NON-SHRINK GROUT AFTER BEAMS ARE LOADED WITH FRAMING MEMBERS.
- REINFORCE AROUND BEAM POCKETS BY BENDING TOP CONTINUOUS HORIZONTAL BAR BELOW BEAM POCKET OR INSTALL SEPARATE BENT BAR LAPPED AND TIED MINIMUM 24" EACH SIDE.
- PROVIDE TWO #4 X 4'-0" LONG DIAGONAL BARS AT THE CORNERS OF ALL OPENINGS IN CONCRETE WALLS AND AT FOOTING STEPS. ALSO PROVIDE 2 ADDITIONAL #4 ON ALL SIDES OF WALL OPENINGS. BARS SHALL BE 3'-0" LONGER THAN OPEN VERTICAL OR HORIZONTAL DIMENSION.
- FOUNDATION WALLS THAT RETAIN EARTH AND ENCLOSE INTERIOR SPACES AND FLOORS BELOW GRADE SHALL BE DAMP PROOFED FROM THE TOP OF THE FOOTING TO THE FINISHED GRADE WITH A BITUMINOUS COATING IN ACCORDANCE WITH SECTION R406.1.
- INSULATION SHALL BE INSTALLED FOR ALL BASEMENT WALLS AS REQUIRED PER SECTION N1102.1.
- ALL SITE RETAINING WALLS GREATER THAN 4'-0" IN HEIGHT SHALL REQUIRE A DESIGN BY A PROFESSIONAL ENGINEER.
- A CONCRETE ENCASED GROUNDING ELECTRODE CONNECTION SHALL BE PROVIDED TO THE ELECTRICAL SERVICE PER SECTION E3608.1.

ENERGY REQUIREMENTS

- THE BUILDING THERMAL ENVELOPE SHALL BE SEALED WITH AN AIR BARRIER PER IRC SECTION N1102.
- LIGHTING FIXTURES PENETRATING THE THERMAL ENVELOPE SHALL BE IC-RATED, LEAKAGE RATED AND SEALED TO THE GYPSUM WALLBOARD AS REQUIRED PER N1102.
- PROGRAMMABLE THERMOSTATS SHALL BE INSTALLED AS REQUIRED PER N1103.1.1.
- AIR HANDLERS SHALL BE RATED FOR MAXIMUM 2% AIR LEAKAGE RATE PER N1103.2.3.1.
- BUILDING CAVITIES USED AS RETURN AIR PLENUMS SHALL BE SEALED TO PREVENT LEAKAGE ACROSS THE THERMAL ENVELOPE AS REQUIRED PER N1103.
- BUILDING CAVITIES IN A THERMAL ENVELOPE WALL SHALL NOT BE USED AS RETURN AIR PLENUMS UNLESS THE REQUIRED INSULATION BARRIER IS MAINTAINED PER M1601.1.1.
- HOT WATER PIPES SHALL BE INSULATED AS REQUIRED PER N1103.4.1.
- ALL EXHAUST FANS SHALL TERMINATE TO THE BUILDING EXTERIOR AS REQUIRED PER M1505.2.
- MAKEUP AIR SYSTEMS SHALL BE INSTALLED FOR KITCHEN EXHAUST HOODS THAT EXCEED 400 CFM AS REQUIRED PER M1503.6.
- AN AIR HANDLING SYSTEM SHALL NOT SERVE BOTH THE LIVING SPACE AND THE GARAGE PER M1601.6.
- MINIMUM MECHANICAL EFFICIENCY RATINGS FOR AC EQUIPMENT IS 13 SEER AS REQUIRED PER IRC.
- MINIMUM MECHANICAL EFFICIENCY RATINGS FOR FORCED AIR FURNACE IS 78% AS REQUIRED PER IRC.
- CONTRACTOR SHALL PROVIDE COMPLIANCE REPORT PER N1105.4.2 AND N1105.4.3 TO THE BUILDING OFFICIAL.

ABBREVIATIONS LEGEND

AB	ANCHOR BOLT	MECH	MECHANICAL
ACI	AMERICAN CONCRETE INSTITUTE	MFR	MANUFACTURER
AFF	ABOVE FINISH FLOOR	MIN	MINIMUM
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MISC	MISCELLANEOUS
AISI	AMERICAN IRON AND STEEL INSTITUTE	MTL	METAL
ARCH	ARCHITECTURAL	NO	NUMBER
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	NS	NEAR SIDE
AWIS	AMERICAN WELDING SOCIETY	NTS	NOT TO SCALE
BFF	BELOW FINISH FLOOR	OC	ON CENTER
BFS	BOTTOM OF FOOTING STEP	OH	OPPOSITE HAND
BO	BOTTOM OF	PAF	POWDER ACTUATED FASTENERS
BOS	BOTTOM OF STEEL	PCF	POUNDS PER CUBIC FEET
BRG	BEARING	PLT	PLATE
BWP	BRACED WALL PANEL	PLF	POUNDS PER LINEAR FOOT
CIP	CAST-IN-PLACE CONCRETE	PSF	POUNDS PER SQUARE FOOT
CJ	CONTROL JOINT (WALL)	PSI	POUNDS PER SQUARE INCH
CL	CENTER LINE	QTY	QUANTITY
CLR	CLEAR	REF	REFERENCE
COL	COLUMN	REINF	REINFORCING
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	REV	REVERSE
CONT	CONTINUOUS	RO	ROUGH OPENING
DIA	DIAMETER	SIM	SIMILAR
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	T&B	TOP AND BOTTOM
EL	ELEVATION	TFS	TOP OF FOOTING STEP
ELEC	ELECTRICAL	THK	THICK
EQ	EQUAL	TO	TOP OF
EW	EACH WAY	TCC	TOP OF CONCRETE
FDN	FOUNDATION	TOP	TOP OF FOOTING
FF	FINISH FLOOR	TOF	TOP OF PAVING
FS	FAR SIDE	TOS	TOP OF STEEL
FTG	FOOTING	TRANS	TRANSVERSE
GAGE	GAGE	TYP	TYPICAL
GC	GENERAL CONTRACTOR	UNO	UNLESS NOTED OTHERWISE
GY BD	GYPSUM BOARD	VERT	VERTICAL
HORIZ	HORIZONTAL	W	WIDTH
HSA	HEADED STUD ANCHOR	WB	WALL BRACE METHOD
INFO	INFORMATION	WP	WORK POINT
JST	JOIST	WS	WALL STEP
JO	JOINT	WWS	WELDED WIRE FABRIC
KSI	KIPS PER SQUARE INCH		
LBS	POUNDS		
LONG	LONGITUDINAL		
LXG	MAXIMUM		

SYMBOLS LEGEND

	ELEVATION DESCRIPTION	ELEVATION DESIGNATION		REVISION DESIGNATION
	CUT SYMBOL			PLAN NOTE SYMBOL
	SECTION CUT			SLAB JOINT DESIGNATION
	SPOT ELEVATION			
	TYPE NO/SHEET	TYPE BLOWUP DETAIL		CONCRETE WALL
	WOOD STRUCTURAL PANEL			WOOD NON-LOAD BEARING STUD WALL
	CONTINUOUSLY SHEATHED WOOD STRUCTURAL PANEL			BRACED WALL PANEL
	PORTAL FRAME WITH HOLD-DOWNS			BRACED WALL LINE
	PORTAL FRAME AT GARAGE			WOOD STUD BEARING WALL

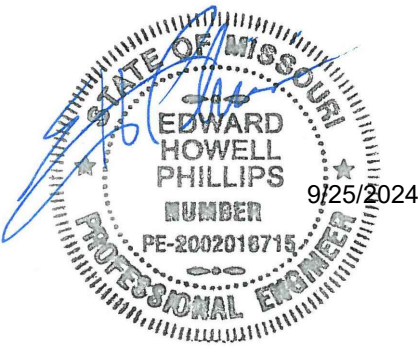
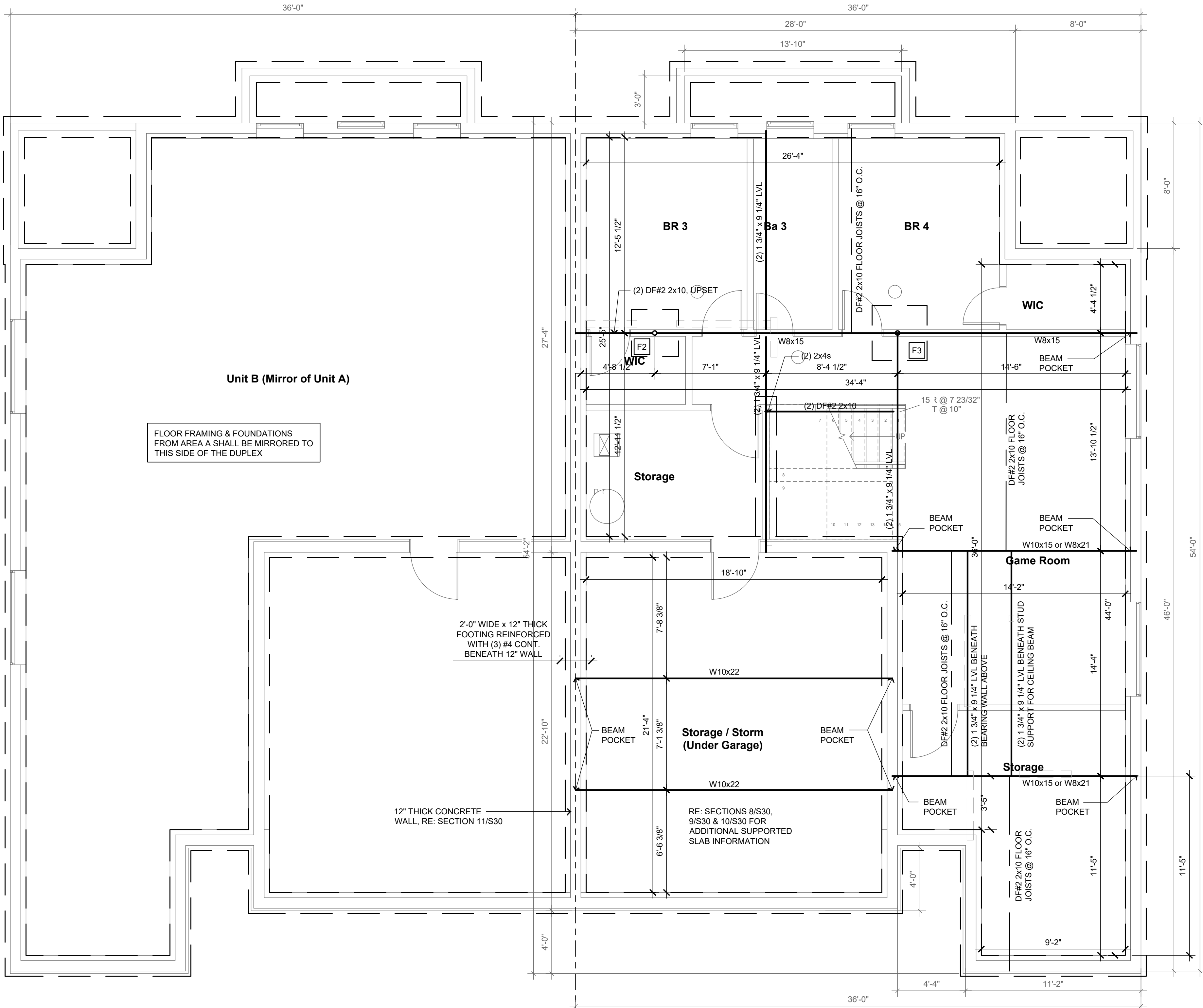
INSULATION AND FENESTRATION REQUIREMENTS - IRC TABLE N1102.1.2		
THESE VALUES ARE BASED ON CLIMATE ZONE 4 PER IRC FIGURE N1101.7 OR TABLE N1101.7. REFERENCE IRC FOR DIFFERENT CLIMATE ZONE VALUES		
COMPONENT		VALUE
FENESTRATION		U ≤ 0.32 (b)
SKYLIGHT		U ≤ 0.55 (b)
GLAZED FENESTRATION SHGC		U ≤ 0.40 (b)(e)
CEILING		R-49
CEILING WITH ATTIC SPACES (OVER 100% OF THE CEILING)		R-38
CEILING - VAULTED (500 SQ.FT. OR 20% OF THE TOTAL INSULATED CEILING AREA, WHICHEVER IS LESS)		R-30
WOOD FRAME WALL		R-20 or R-13 + 5 (h)
MASS WALL		R-8 / R-13 (i)
FLOOR		R-19
BASEMENT WALL		R-10 / R-13 (c)
SLAB (R VALUE/DEPTH)		R-10 / 2 FT (d)
CRAWLSPACE WALL		R-10 / R-13 (c)
DUCTS OUTSIDE OF THE	SUPPLY AND RETURN	R-8
CONDITIONED SPACE	IN FLOOR & CEILING ASSEMBLY	R-6

FLOOR FRAMING PLAN NOTES

- NOTES ARE TYPICAL UNLESS NOTE NUMBER IS INSIDE OF CIRCLE, THEN THE NOTE REFERS TO A SPECIFIC LOCATION(S) MARKED ON THE PLAN.
1. PROVIDE 3/4" TONGUE AND GROOVE WOOD STRUCTURAL PANEL SHEATHING FOR SUBFLOOR GLUED AND NAILED TO WOOD JOISTS WITH 8d NAILS AT 6"oc AT PANEL EDGES AND 12"oc AT NON-PANEL EDGES.
 2. ALL EXTERIOR WALL FRAMING SHALL BE 2x4 OR 2x6 DOUG-FIR STUD GRADE AT 16"oc.
 3. PROVIDE 1/2" EXTERIOR GRADE PLYWOOD SHEATHING NAILED TO WOOD STUDS WITH 8d NAILS AT 6"oc AT PANEL EDGES AND 12"oc AT NON-PANEL EDGES.
 4. ALL INTERIOR BEARING WALL FRAMING SHALL BE 2x4 OR 2x6 DOUG-FIR STUD GRADE AT 16"oc.
 5. DOUBLE FLOOR JOISTS UNDER ALL PARTITION WALLS RUNNING PARALLEL WITH JOISTS.
 6. PROVIDE PROPER WALL INSULATION AS REQUIRED BY GOVERNING BUILDING CODE.
 7. STAIRS SHALL HAVE A MAXIMUM RISE OF 7-3/4" AND MINIMUM TREAD OF 10". ALL RISERS AND TREADS TO BE EQUAL BETWEEN FLOORS.
 8. PROVIDE WALL BRACING AS SHOWN ON PLAN.
 9. PROVIDE HEADERS AS SHOWN ON PLAN, FOR HEADERS NOT MARKED REFERENCE TYPICAL BEARING WALL HEADER SCHEDULE.
 10. FLOOR JOISTS: SEE IRC TABLE R502.3.1(1) AND R502.3.1(2) FOR SPAN, SIZE, SPACING, AND GRADE OF FLOOR JOISTS.
 11. PROVIDE MIN (2) STUDS FULL WIDTH BEARING UNDER ALL WOOD BEAMS, LVL'S, AND STEEL BEAMS UNLESS NOTED OTHERWISE.
 12. INTERIOR FOOTINGS OF LOAD BEARING WALLS AND COLUMNS SHALL BE ISOLATED FROM THE BASEMENT FLOOR SLAB.

FOOTING SCHEDULE

MARK	SIZE L x W x THK	REINFORCING (NO) SIZE LOCATION	TOF EL	COLUMN
F1	2'-0" x 2'-0" x 1'-0"	(4) #4 EW BOTTOM	8" BELOW TOP OF SLAB	3"Ø STD STEEL PIPE COLUMN
F2	3'-0" x 3'-0" x 1'-0"	(6) #4 EW BOTTOM	8" BELOW TOP OF SLAB	3"Ø STD STEEL PIPE COLUMN
F3	3'-6" x 3'-6" x 1'-4"	(8) #4 EW BOTTOM	8" BELOW TOP OF SLAB	3"Ø STD STEEL PIPE COLUMN
F4	4'-6" x 4'-6" x 1'-4"	(9) #4 EW BOTTOM	8" BELOW TOP OF SLAB	3"Ø STD STEEL PIPE COLUMN



BILL FOWLER ARCHITECT

3601 W 122nd Terrace
Leawood, KS 66209
913 908 5263
BFWFOWLER@ME.COM

NCARB
National Council of
Architectural Registration Boards
Project:

Twin
Villa

Woodland Glen Lot 52

Location:
1436-1438 SW Winthrop Ter, Lee's Summit, MO

Client Contact:
John Duggan
(913) 498-3536 / jduggan@kc-dsdlaw.com

Revisions

NO.	DATE	DESCRIPTION
1	9/25/2024	CONTRACTOR QUESTIONS

Sheet Name:
Fdn. & 1st Floor Framing Plan

Sheet No.:
6/03/24

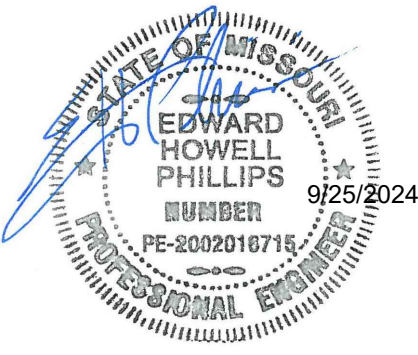
BFA No.:
S10

PERMIT SET

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
LEE'S SUMMIT, MISSOURI
09/26/2024 12:53:46

1 FOUNDATION/1ST FLOOR FRAMING PLAN

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



ROOF FRAMING PLAN NOTES

- NOTES ARE TYPICAL UNLESS NOTE NUMBER IS INSIDE OF CIRCLE, THEN THE NOTE REFERS TO A SPECIFIC LOCATION(S) MARKED ON THE PLAN.
- PROVIDE 1/2" EXTERIOR GRADE PLYWOOD SHEATHING NAILED TO ROOF RAFTERS WITH 8d NAILS AT 6"oc AT PANEL EDGES AND 12"oc AT NON-PANEL EDGES.
 - PROVIDE ADDITIONAL DEPTH TO JOISTS AS REQUIRED TO PROVIDE 1" AIR GAP TO PREVENT CONDENSATION PLUS 12" INSULATION TO PROVIDE R-38 INSULATION VALUE TO VAULTED CEILING AREA WHERE SHOWN ON PLAN WITH CROSS HATCH.
 - ALL RIDGE, VALLEY, AND HIP MEMBERS SHALL BE 2" NOMINAL THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER.
 - HIP AND VALLEY MEMBERS SHALL BE SUPPORTED AT THE RIDGE WITH A 2x6 T-BRACE TO A BEARING WALL BELOW.
 - PROVIDE SOFFIT, RIDGE, AND GABLE END VENTS AS REQUIRED TO PROVIDE ADEQUATE VENTILATION FOR ROOF.
 - PROVIDE PROPER FLASHING AND BUILDING PAPER UNDER SHINGLES AS REQUIRED TO PROVIDE WATER TIGHT SEAL AT ALL ROOF PENETRATIONS, RIDGES, VALLEYS, HIPS AND/OR OTHER SLOPE CHANGES.
 - GUTTERS, DOWNSPOUTS, AND SPLASH BLOCKS SHALL BE PROVIDED TO INSURE ALL ROOF DRAINAGE IS DIRECTED 5 FEET MINIMUM FROM HOUSE BEFORE TOUCHING SOIL.
 - ALL GABLE END WALL FRAMING SHALL BE 2x4 DOUG-FIR STUD GRADE AT 16"oc.
 - PROVIDE PROPER CEILING INSULATION AS REQUIRED BY GOVERNING BUILDING CODE.
 - PROVIDE MIN (2) STUDS FULL WIDTH BEARING UNDER ALL WOOD BEAMS, LVL'S, AND STEEL BEAMS UNLESS NOTED OTHERWISE.
 - PROVIDE OVER-BUILD FRAMING AS REQUIRED TO ACHIEVE THE DESIRED ROOF SLOPES/PROFILES.
 - LOAD BEARING WALL STUDS SHALL BE CONTINUOUS FROM THE FLOOR TO THE ROOF/CEILING DIAPHRAGM PER IRC 602.3.
 - ROOF RAFTERS DO NOT EXCEED 200 PLF OF UPLIFT. ATTACH ALL MEMBERS PER FASTENING SCHEDULE ON S33.
 - BRACE HIP/RIDGE/VALLEY DOWN TO BEARING WALL OR BEAM BELOW.
 - U.N.O. ALL HIPS/VALLEYS/RIDGES SHALL BE A MIN. OF DF#2 2x10 MEMBERS.
 - CEILING BEAM, REFERENCE CEILING FRAMING PLAN.
 - ALL ROOF RAFTER FRAMING SHALL BE DF#2 2x6 RAFTERS @ 16" O.C., UNLESS NOTED OTHERWISE. INCREASE DEPTH OF RAFTER AS REQUIRED AT VAULTED CEILING AREAS AS REQUIRED TO MEET INSULATION REQUIREMENTS.
 - SUPPORT RAFTER FRAMING/PURLIN BRACING ON CEILING BEAM.
 - WALL SHEATHING SHALL BE CONTINUOUS TO UNDERSIDE OF ROOF SHEATHING PER FIRE WALL REQUIREMENTS. ATTACH RAFTER ADJACENT TO WALL, THROUGH WALL SHEATHING, WITH (1) SIMPSON SDWS22600DB SCREW AT EACH STUD.
 - SUPPORT PURLIN BRACING OFF CEILING BEAMS AND BEARING WALLS BELOW. REFERENCE SHEET S33 FOR ADDITIONAL REQUIREMENTS.

NOTE: ROOF HAS BEEN DESIGNED WITH STRUCTURAL HIPS & VALLEYS. ALL HIPS & VALLEYS TO BE BRACED PER HIP/VALLEY RAFTER TABLE. ALL HIPS & VALLEYS TO BE 2x10 MIN UNO.

NOTE: ALL HIPS, VALLEYS, RIDGES, AND ROOF BEAMS SHALL COMPLY WITH IRC R802.3 & R802.4.3 & HAVE (1) SIMPSON H2.5A AT EACH END TO RESIST UPLIFT. WHERE THE ROOF MEMBER IS SUPPORTED BY A STRUT, IN ADDITION TO THE ROOF MEMBER TO STRUT UPLIFT CONNECTION, THE STRUT SHALL ALSO BE CONNECTED TO A BEARING WALL OR BEAM BELOW WITH A SIMPSON H2.5A.

PURLIN SPAN TABLE

PURLIN (DF #2) *	MAX SPAN			
	2x6	2x8	2x10	2x12
2x6 RAFTERS AT 24"oc	4'-3"	5'-4"	6'-4"	7'-1"
2x6 RAFTERS AT 16"oc	3'-11"	4'-10"	5'-10"	6'-6"

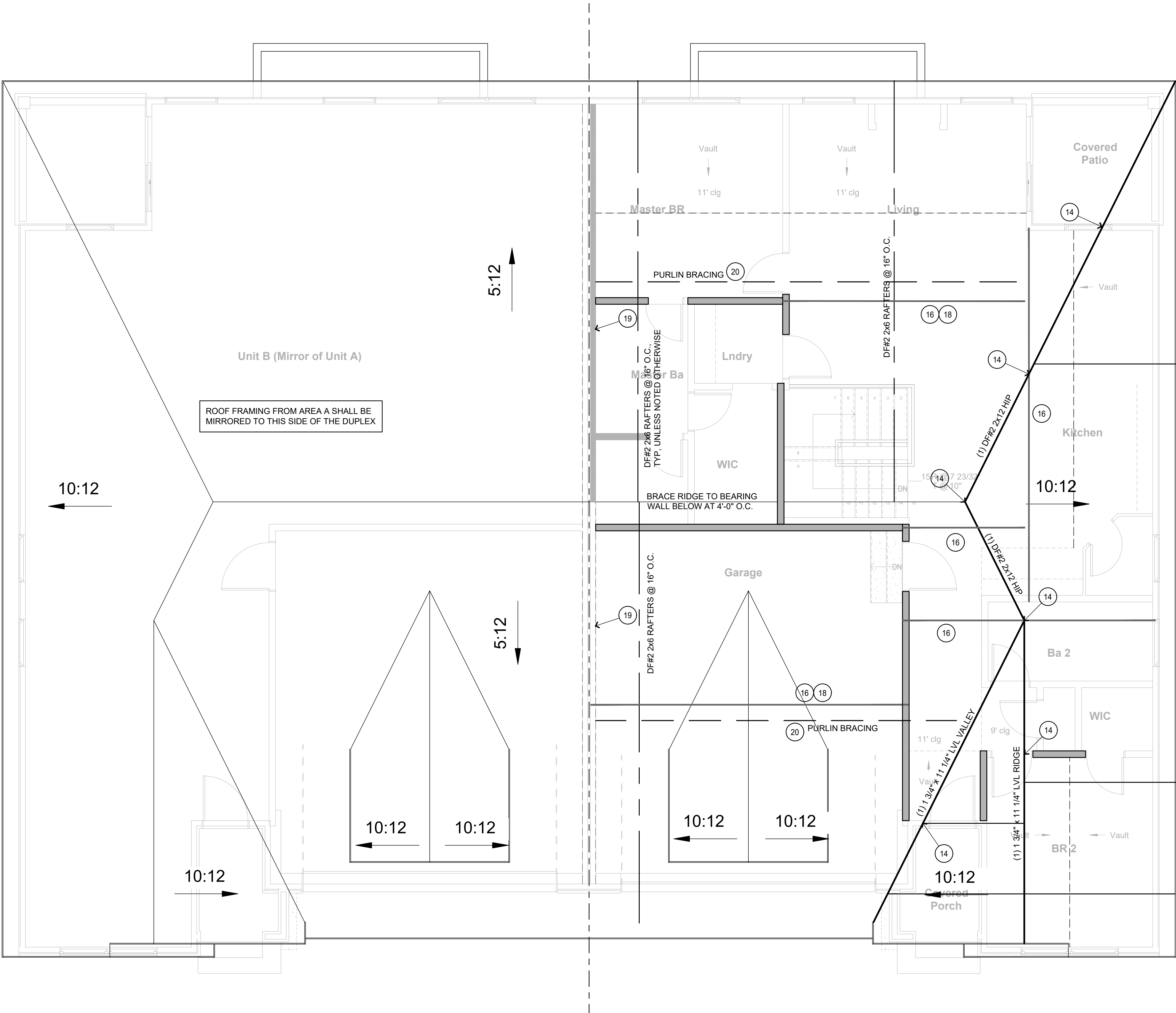
* BRACE PURLINS WITH 2x6 "T" BRACES.

FOR BRACE LENGTHS LESS THAN 6'-0", 2x4 "T" BRACES MAY BE USED.

FOR BRACE LENGTHS OVER 20', USE 2x8 "T" BRACES.

HIP/VALLEY RAFTER TABLE

TYPE	MAX UNBRACED SPAN					
	2x6	2x8	2x10	2x12	1 3/4"x9 1/2" LVL	1 3/4"x11 1/2" LVL
HIP RAFTERS	9'-6"	11'-2"	12'-9"	14'-1"	15'-8"	18'-2"
VALLEY RAFTERS	7'-7"	8'-10"	10'-1"	11'-2"	13'-2"	15'-3"



1

ROOF FRAMING PLAN

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

BILL FOWLER ARCHITECT

3601 W 122nd Terrace
Leawood, KS 66209
913 908 5263
BFWFOWLER@ME.COM

N.C.A.R.B.
National Council of
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Project:

Twin Villa

Woodland Glen Lot 52

Location:
1436-1438 SW Winthrop Ter, Lee's Summit, MO

Client Contact:
John Duggan
(913) 498-3536 / jduggan@ko-dsdlaw.com

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Roof Framing Plan

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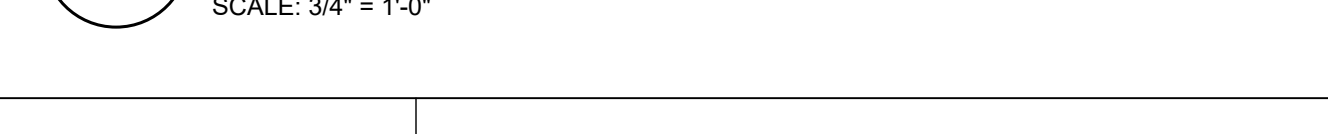
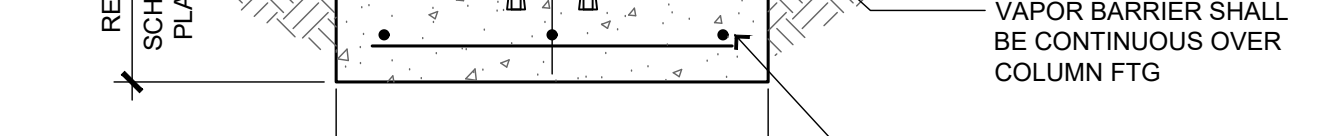
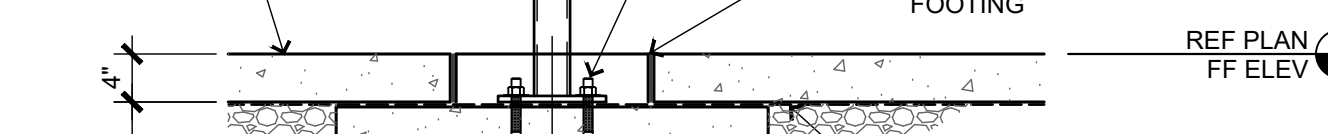
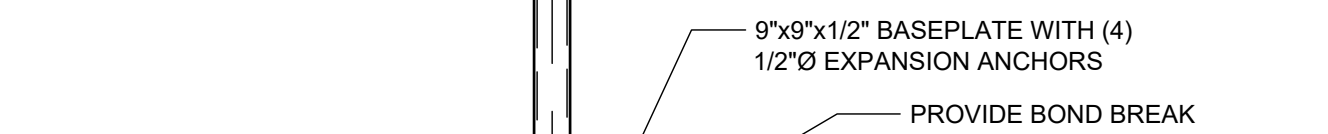
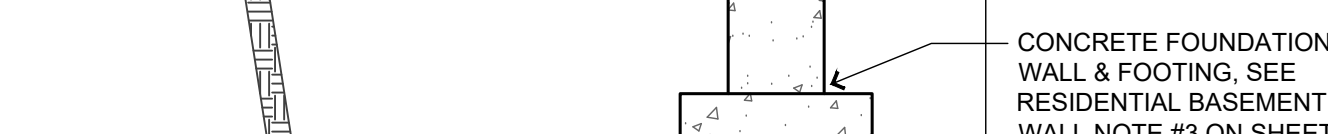
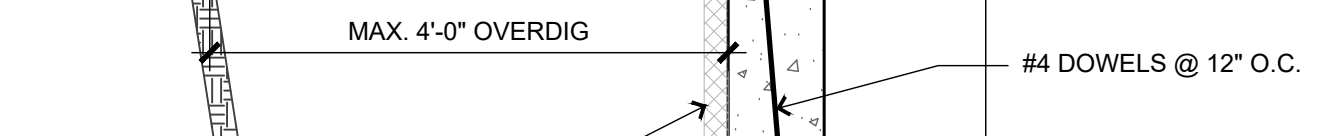
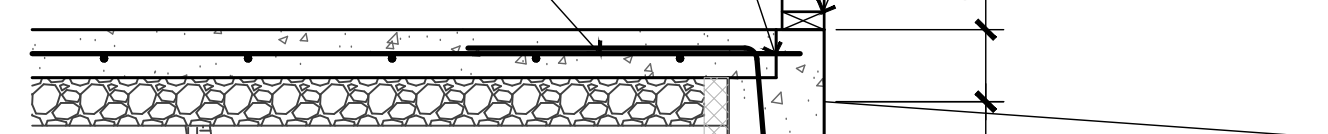
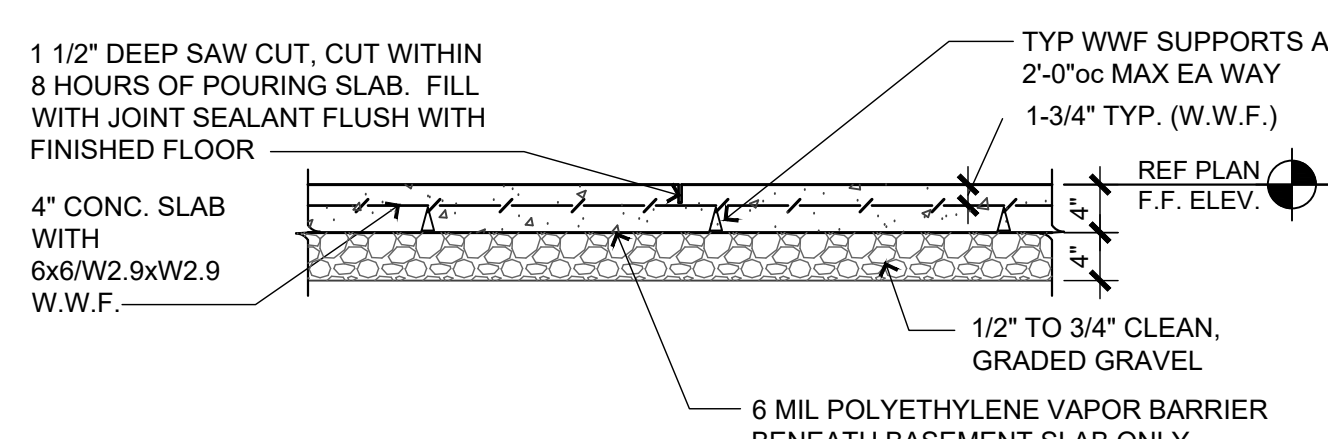
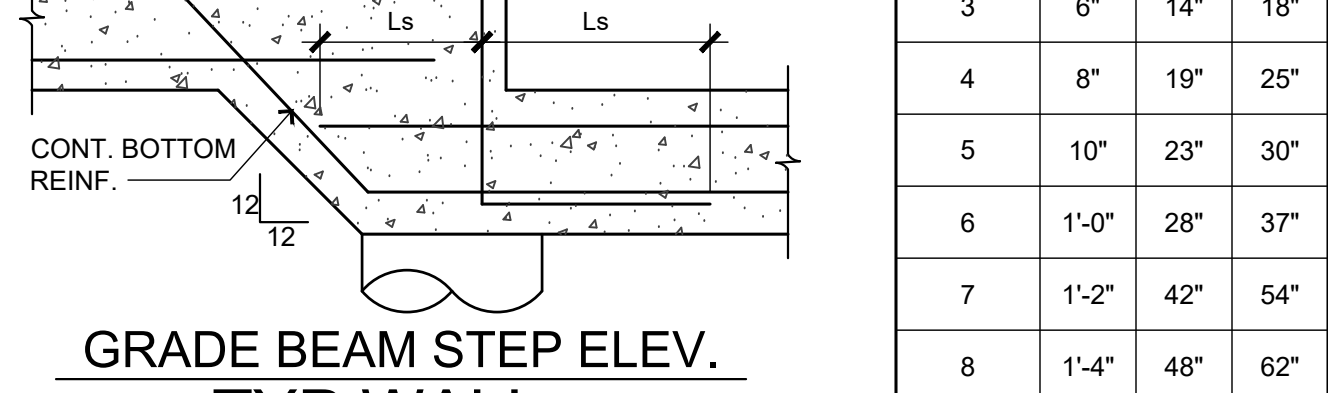
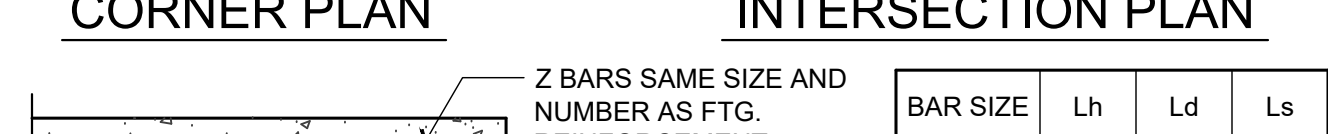
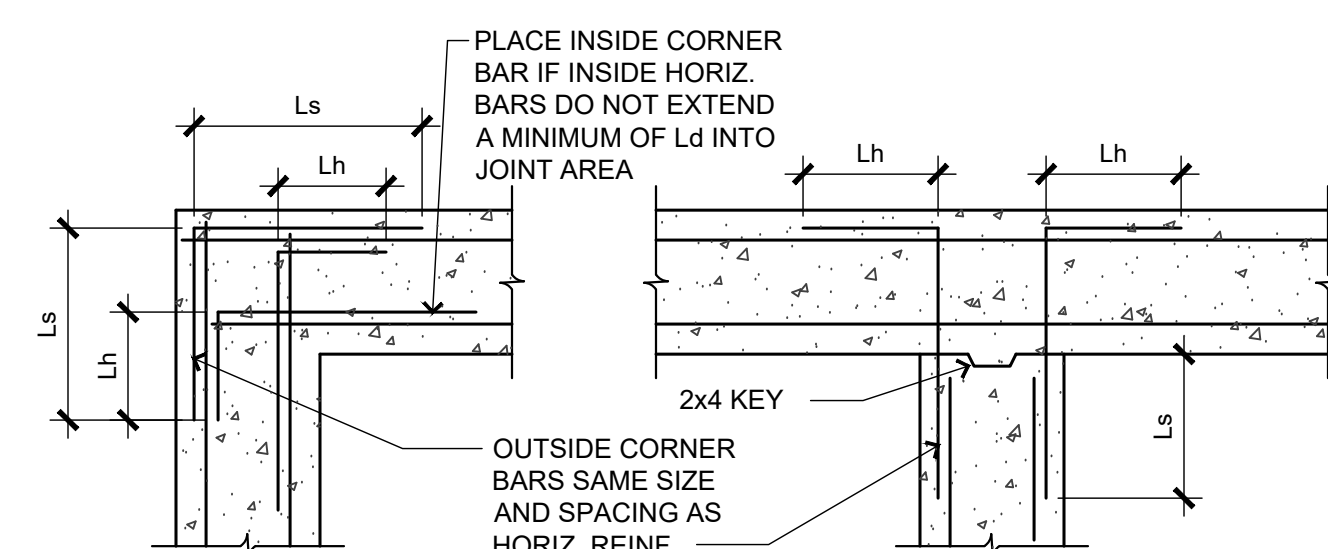
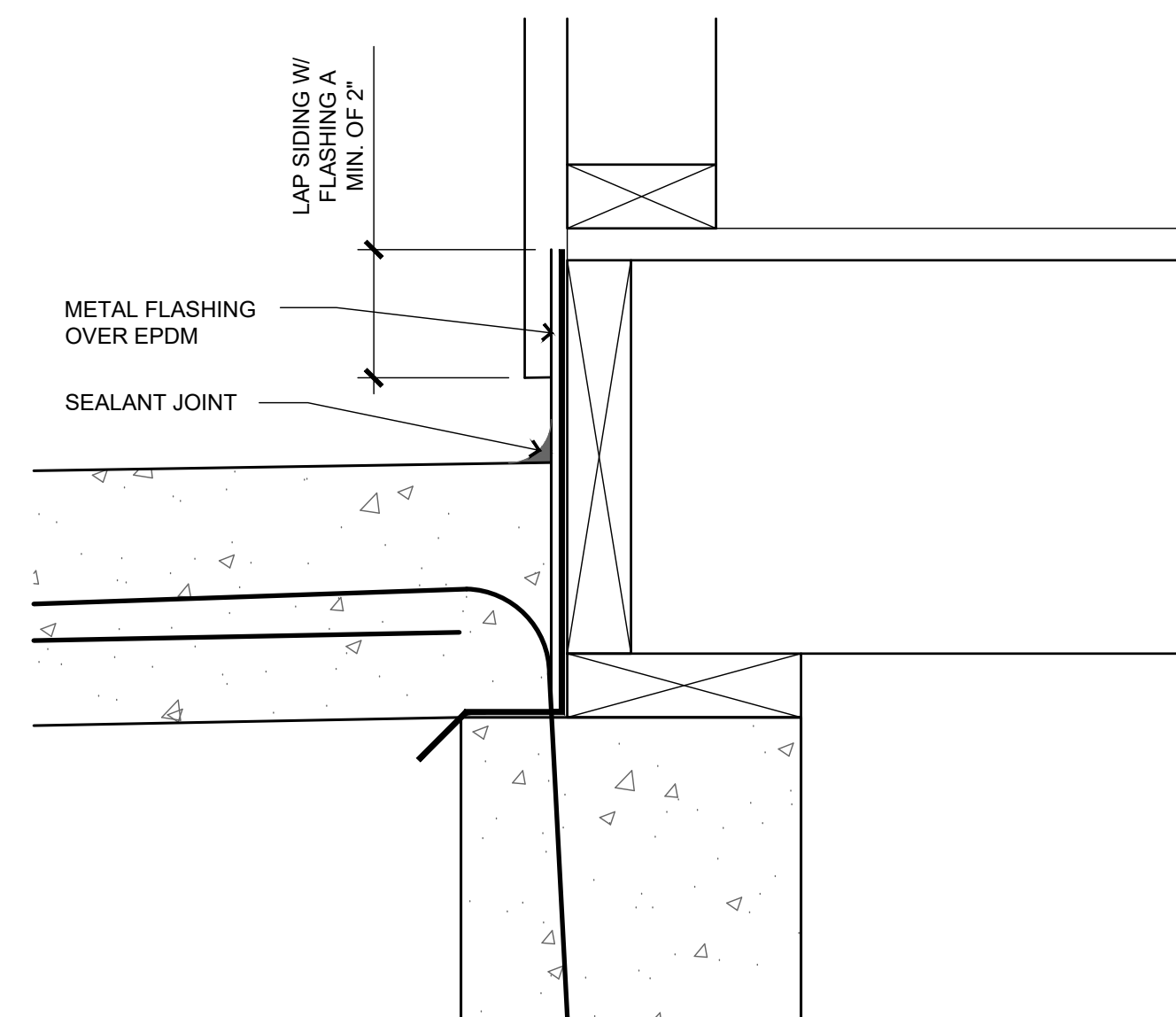
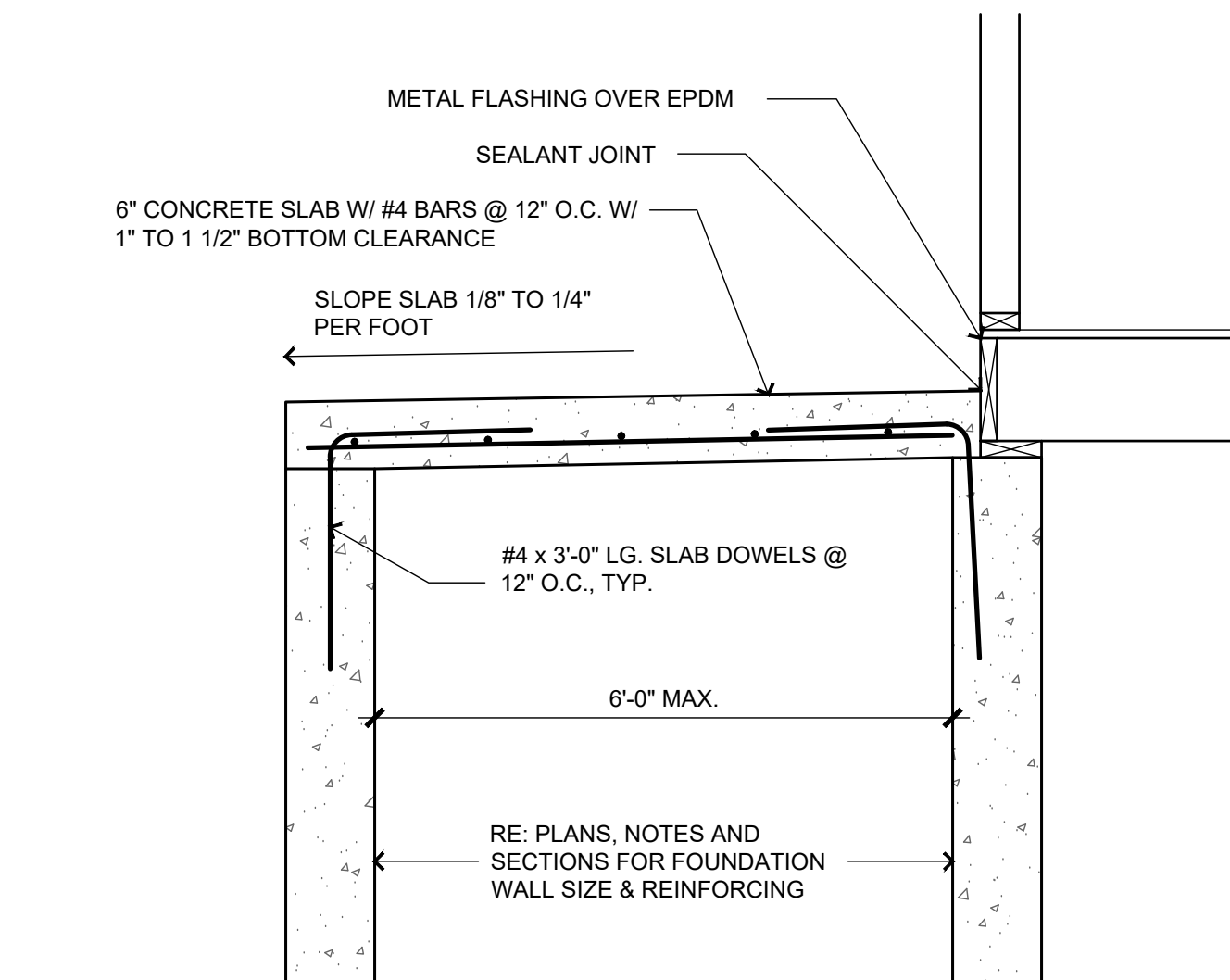
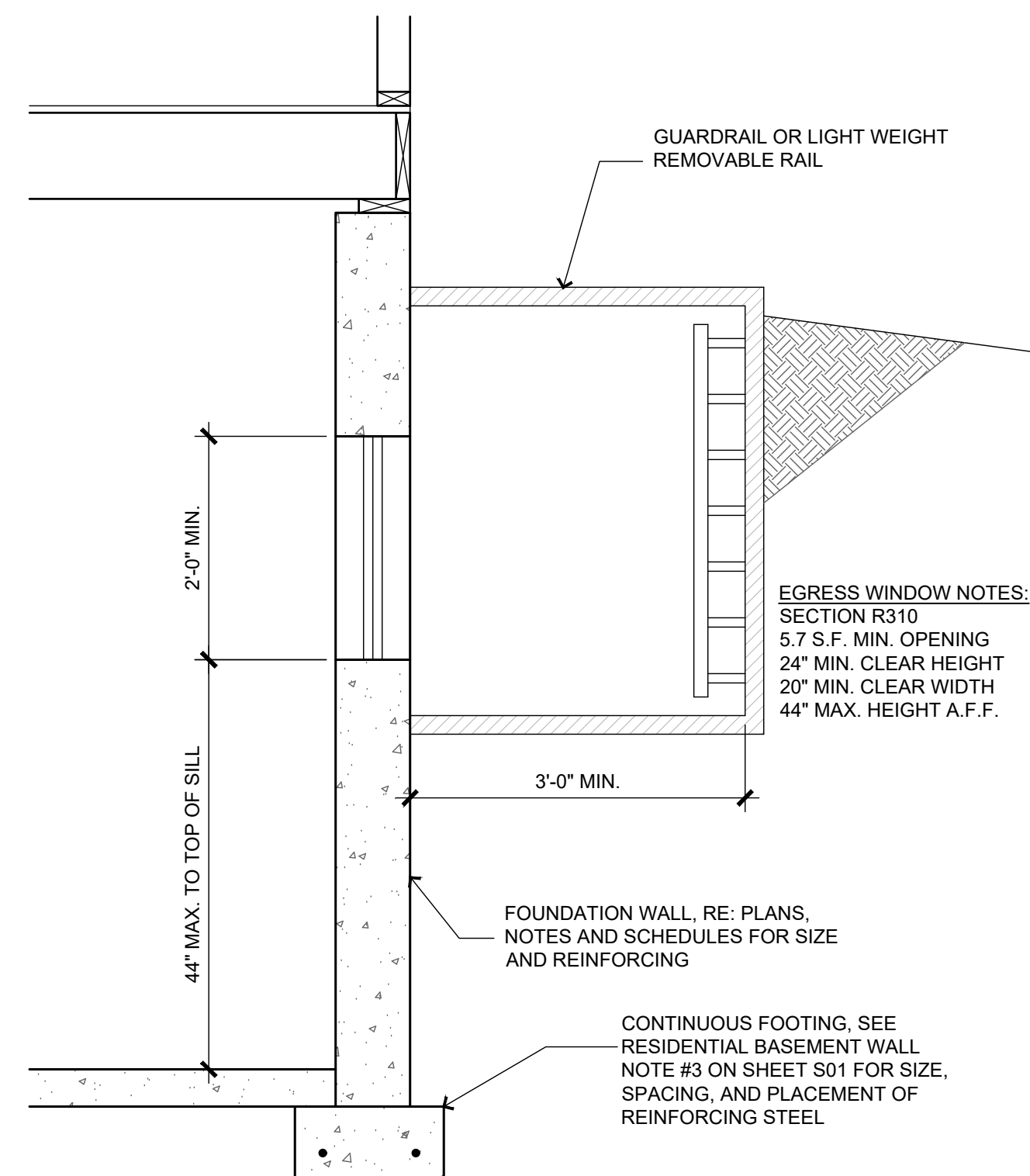
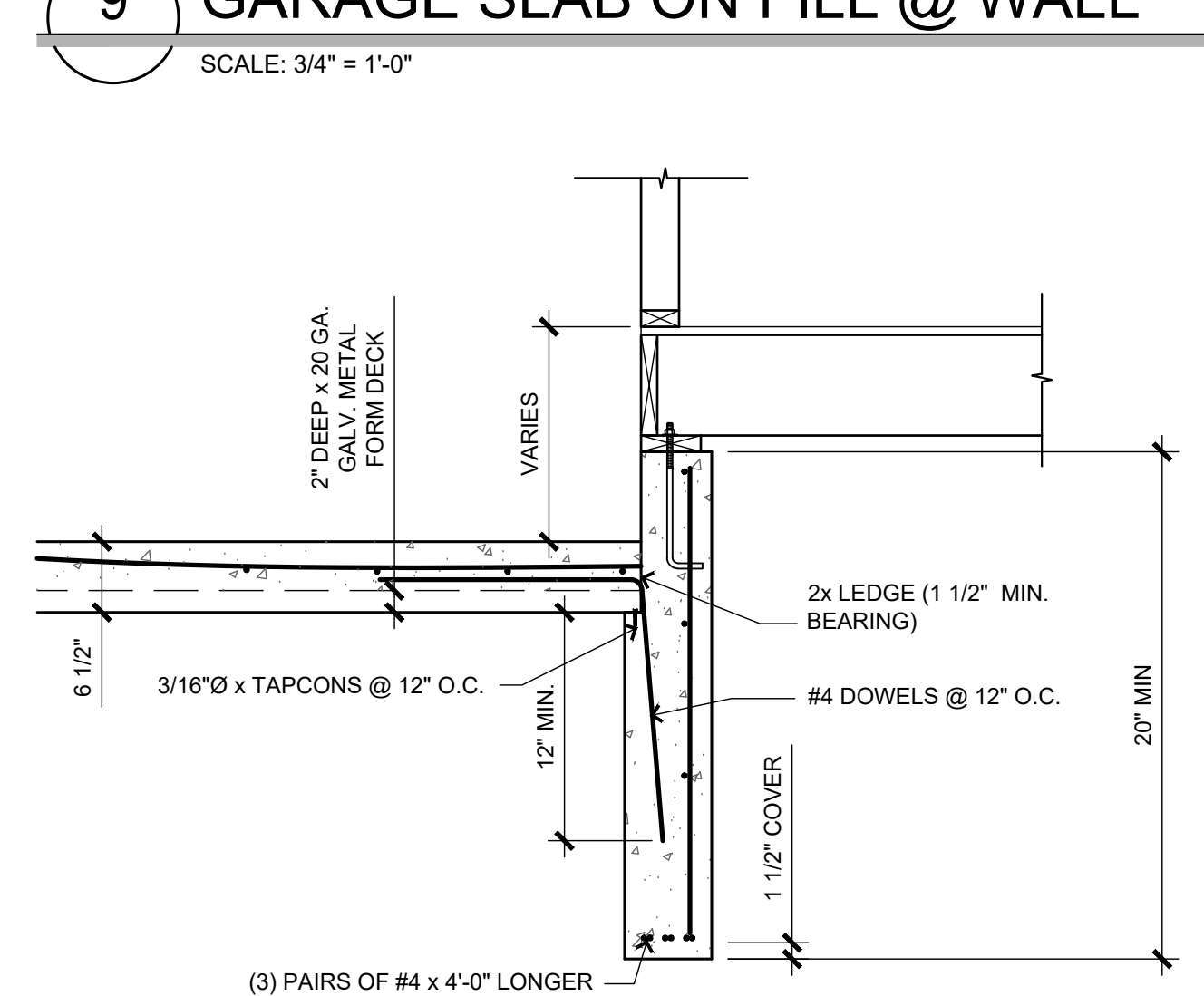
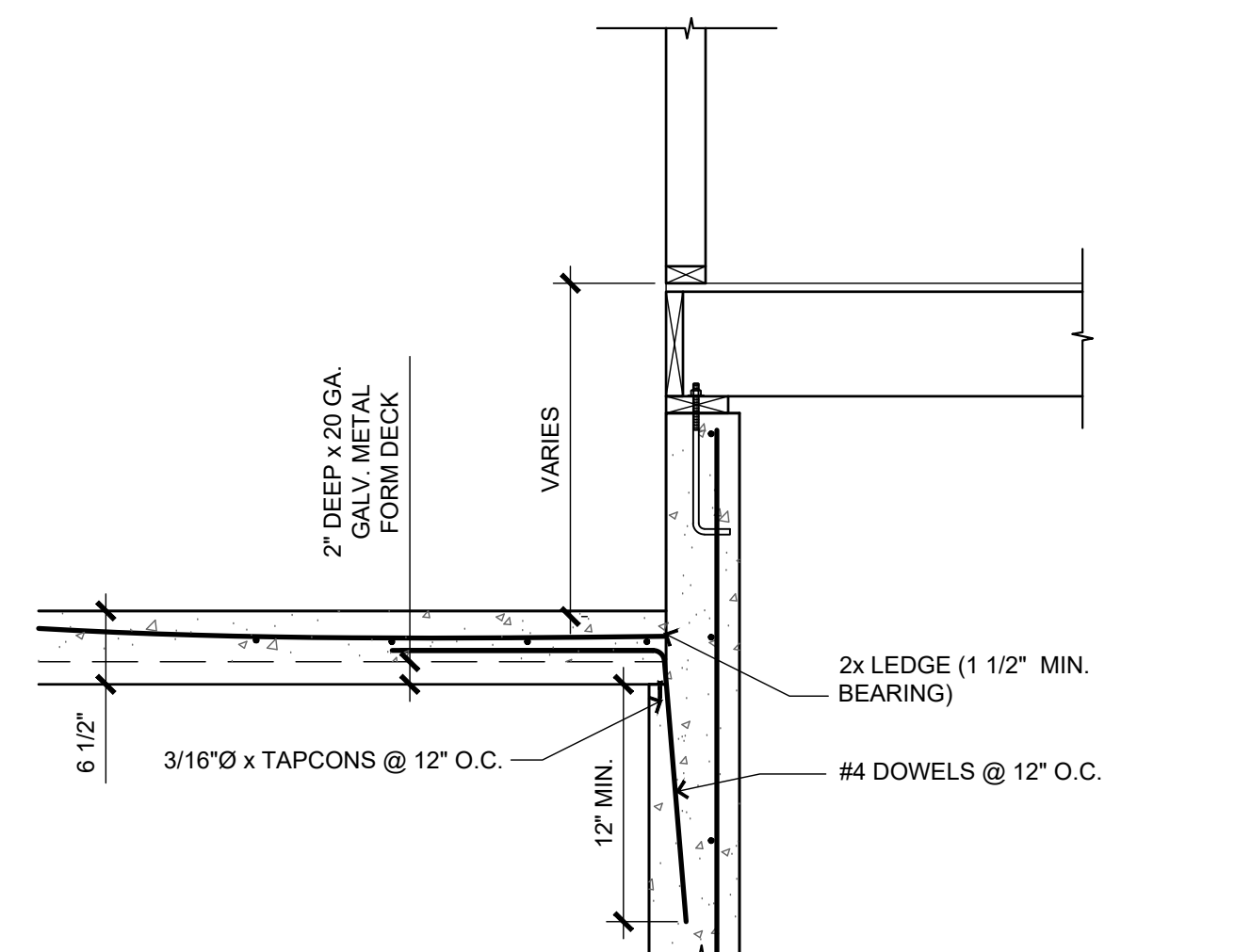
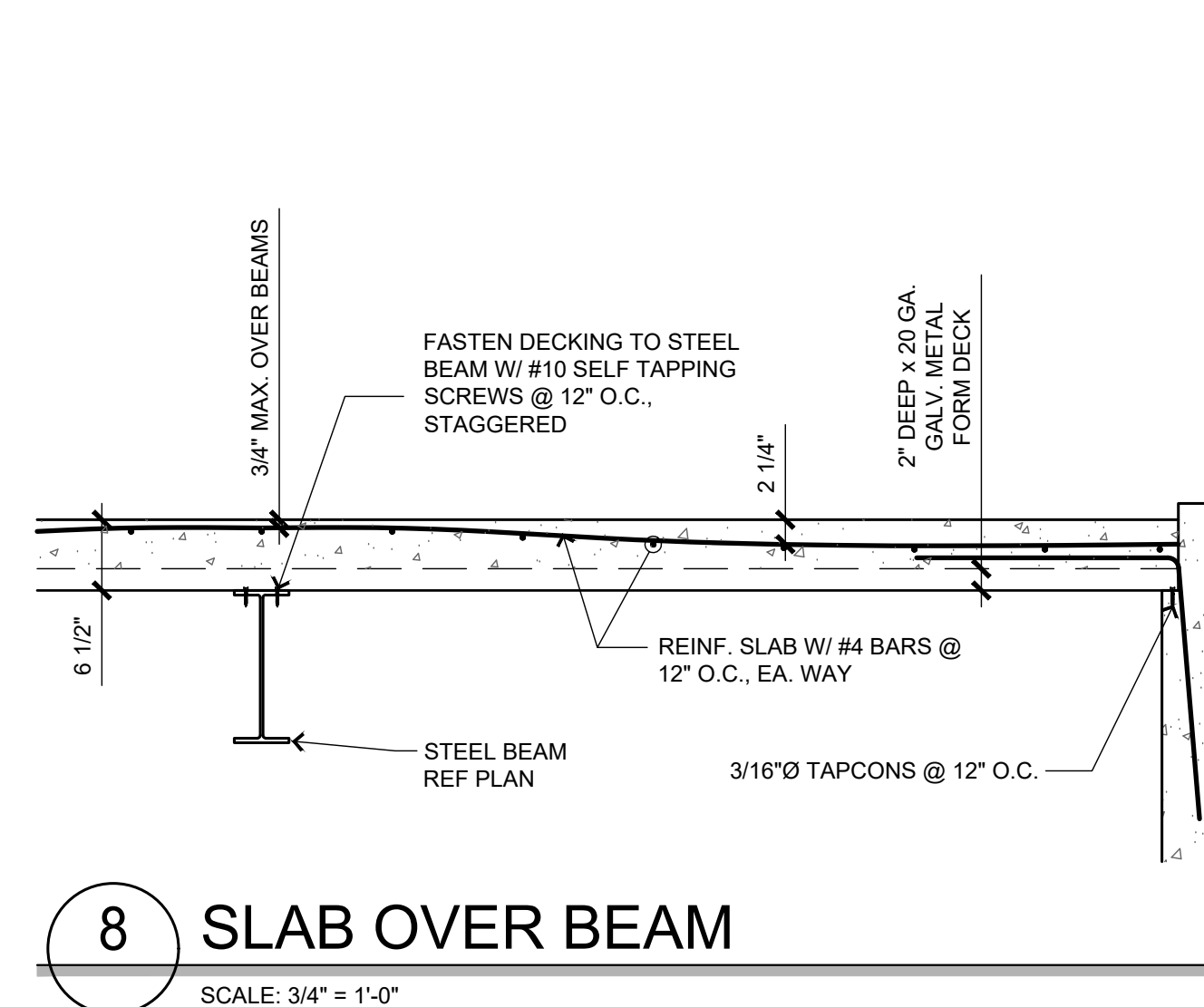
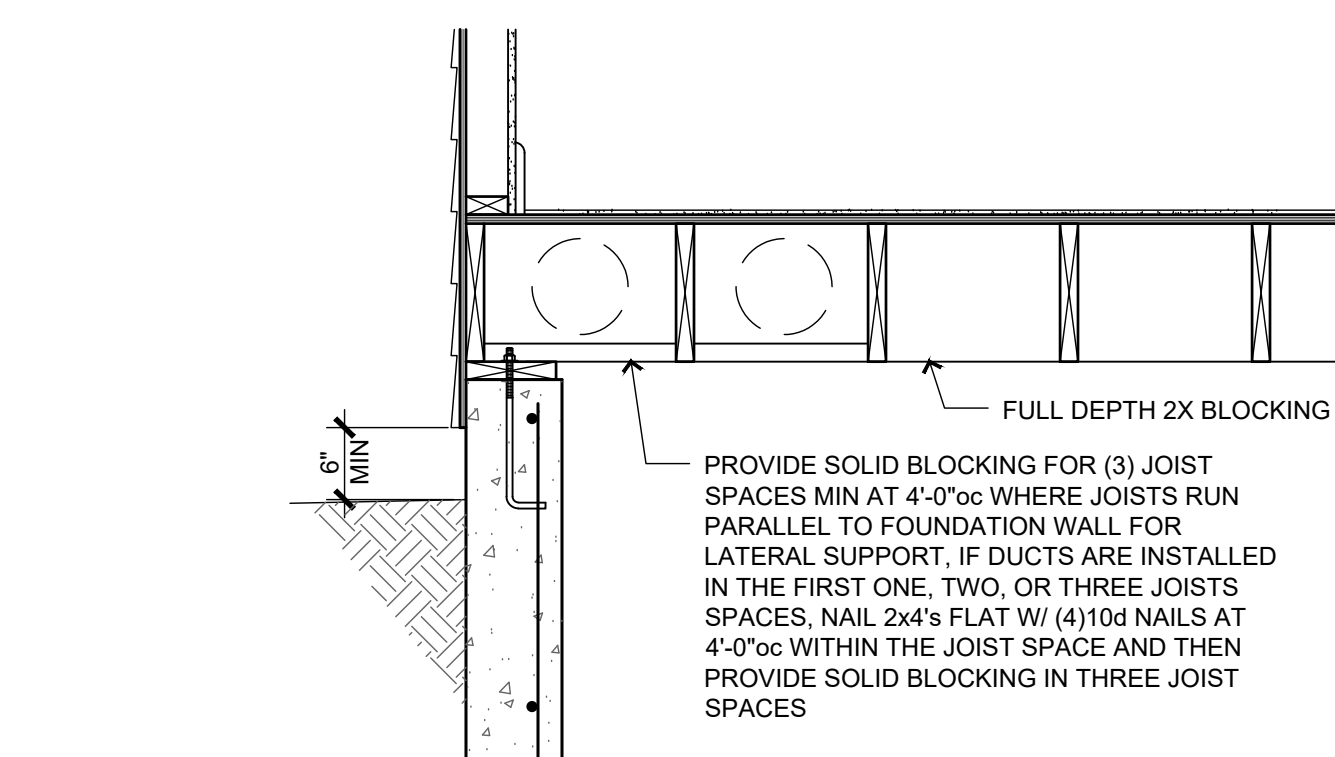
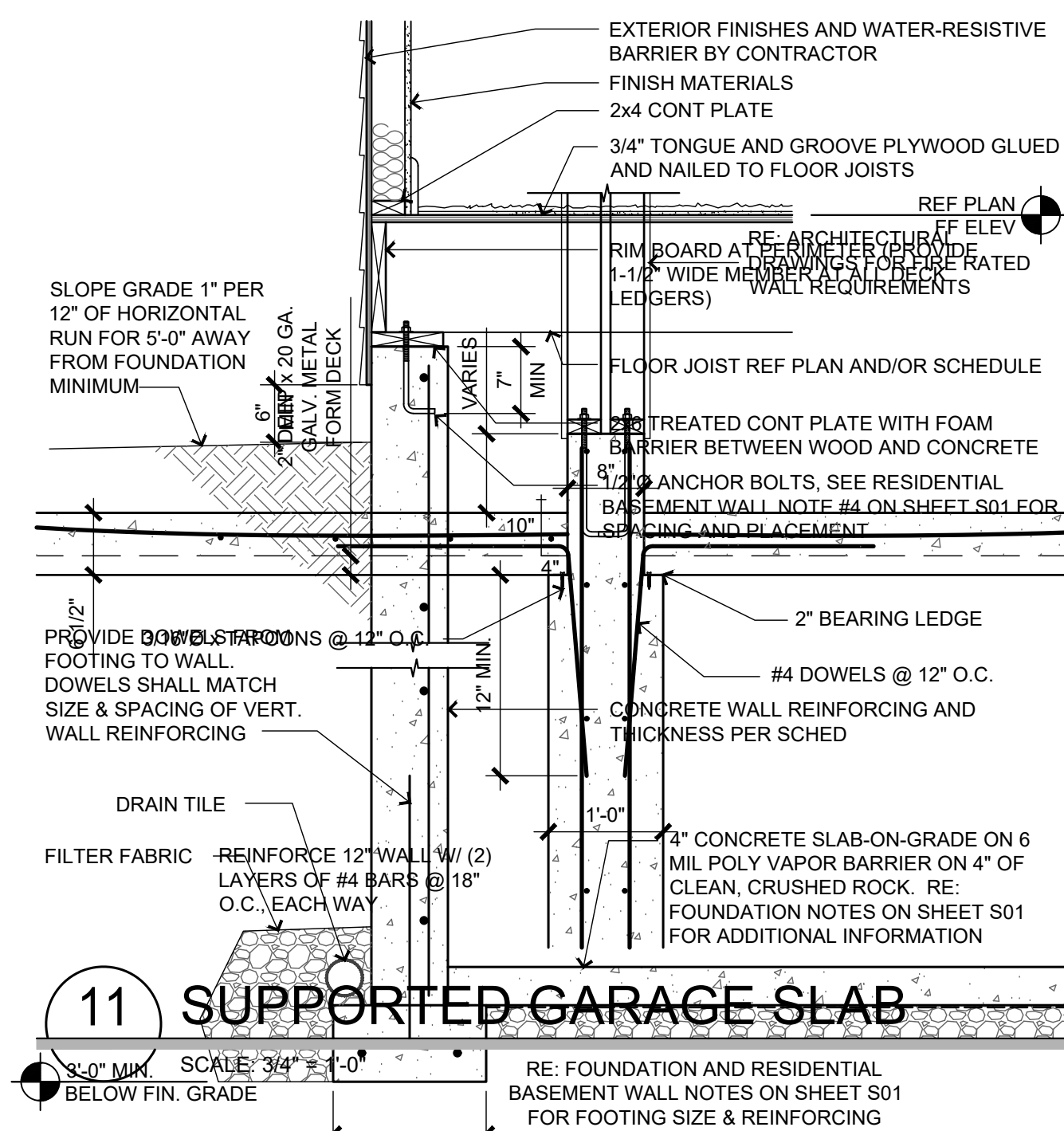
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Consulting Engineers
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North Kansas City, MO 64116
Phone: (816) 421-4232
www.nortonschmidt.com
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BILL FOWLER ARCHITECT
3601 W 122nd Terrace
Leasport, KS 66209
913 908 5263
BFWFOWLER@ME.COM

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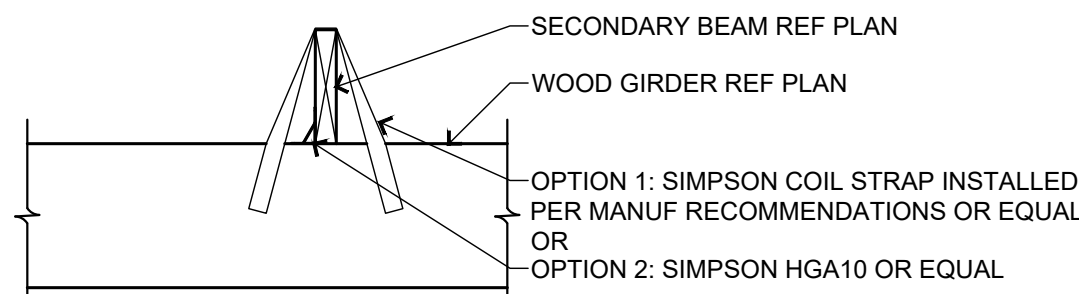
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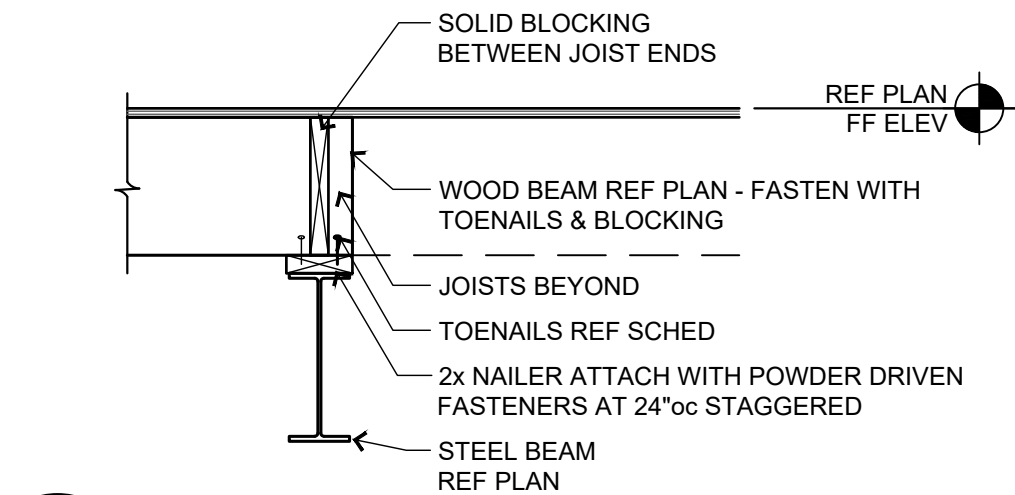
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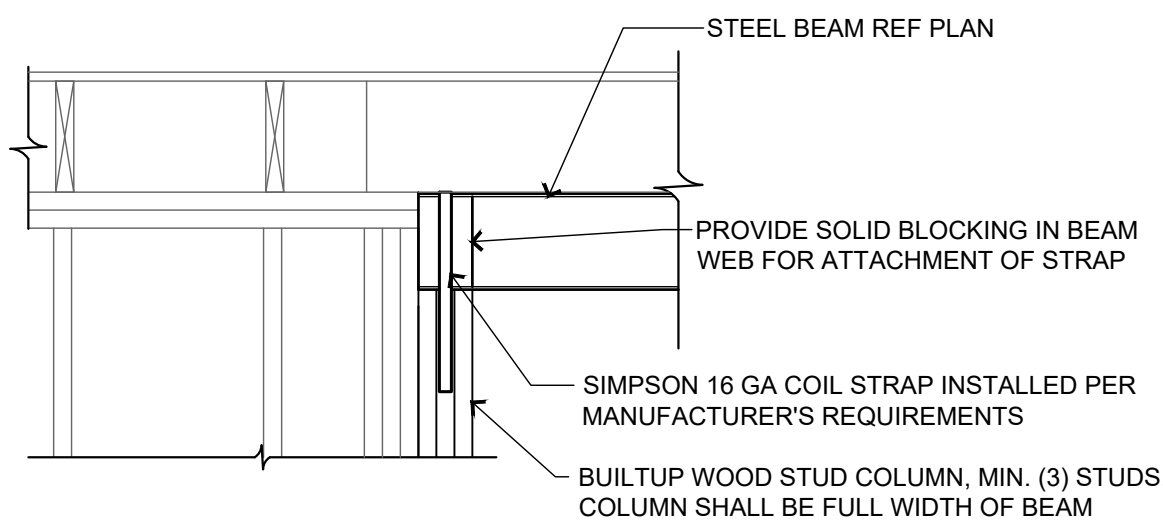
12 WD BM BEARING ON WD BM

SCALE: 3/4" = 1'-0"



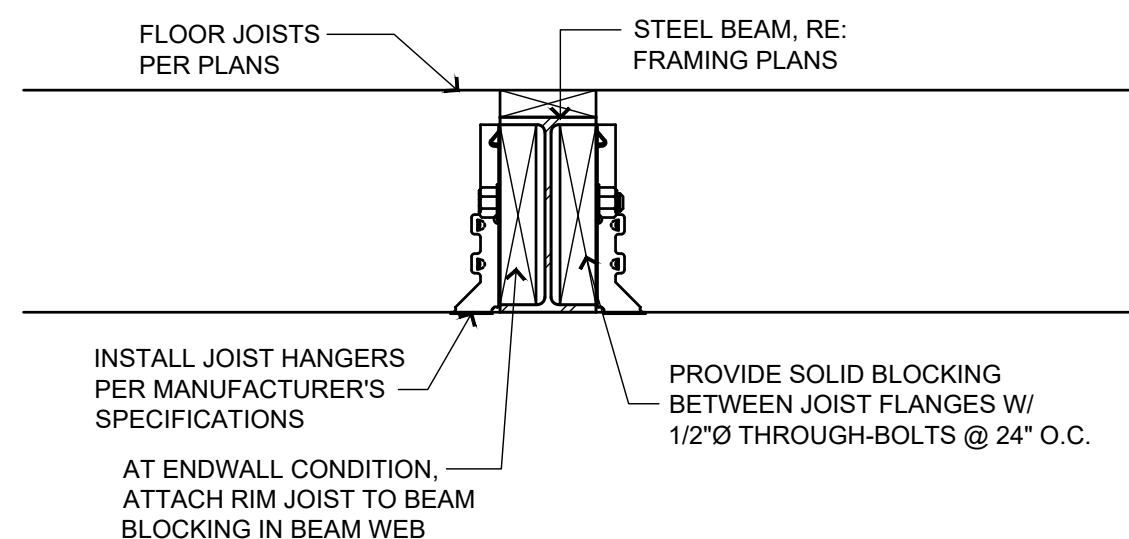
13 WD BEAM ON STEEL BEAM

SCALE: 3/4" = 1'-0"



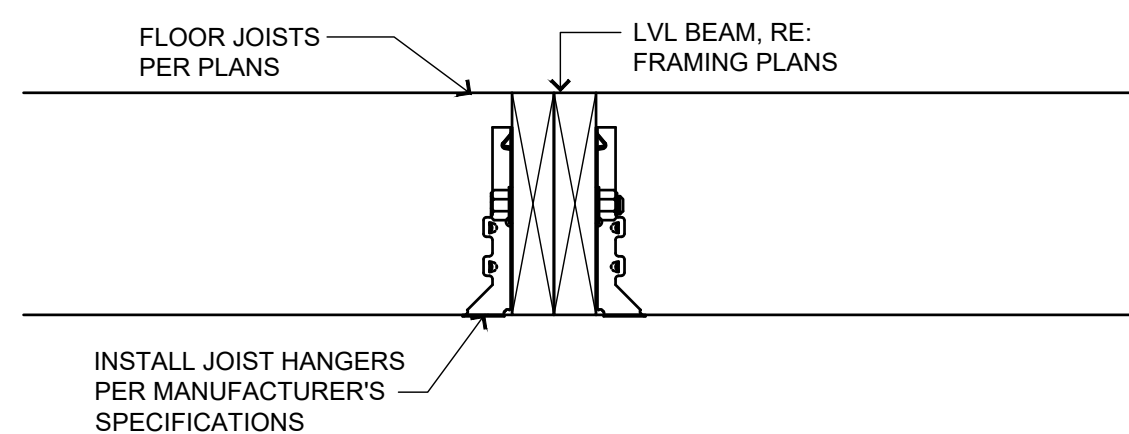
14 STL BM PARALLEL TO WALL

SCALE: 3/4" = 1'-0"



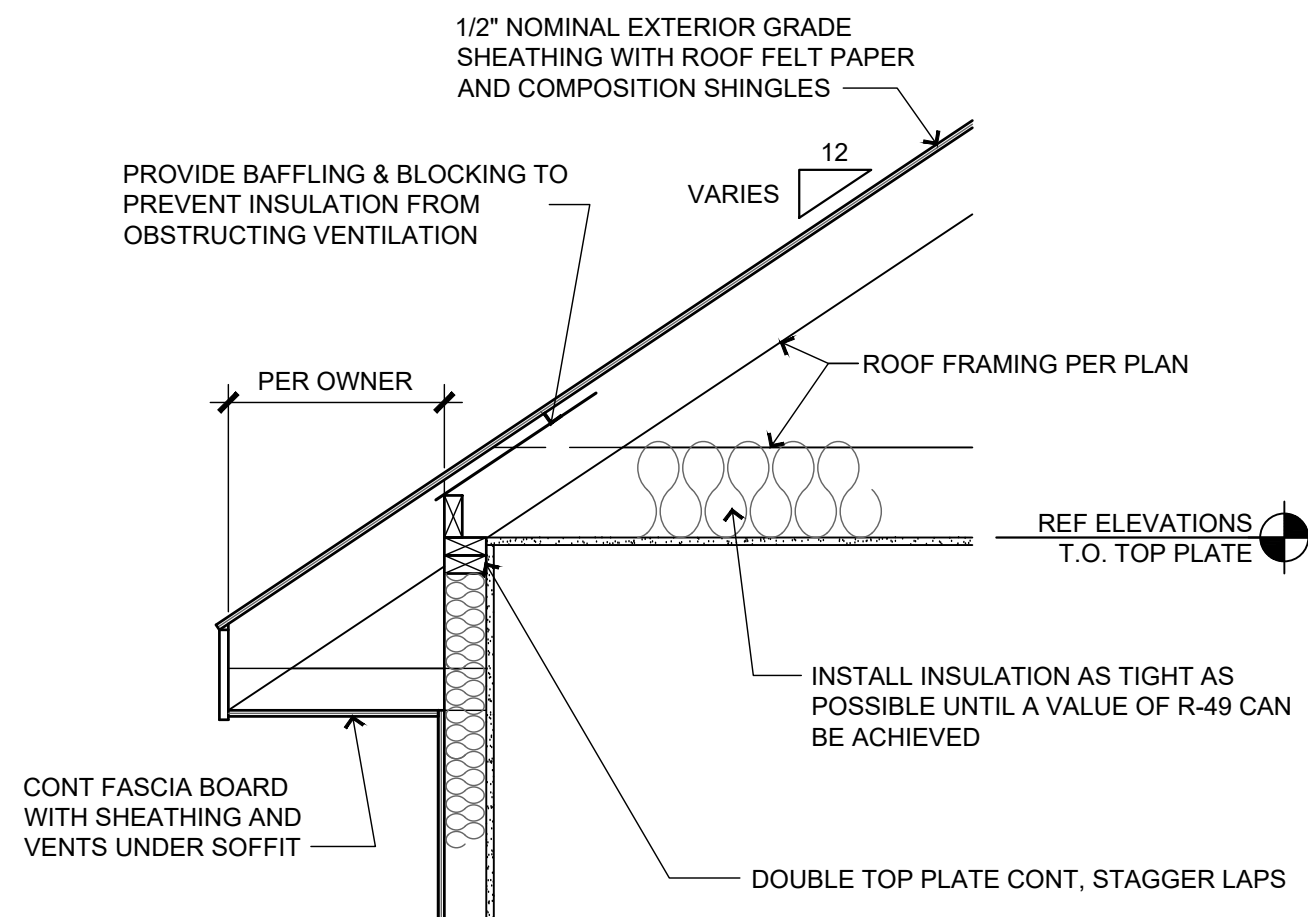
15 UPSET STEEL BEAM

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



16 UPSET LVL BEAM

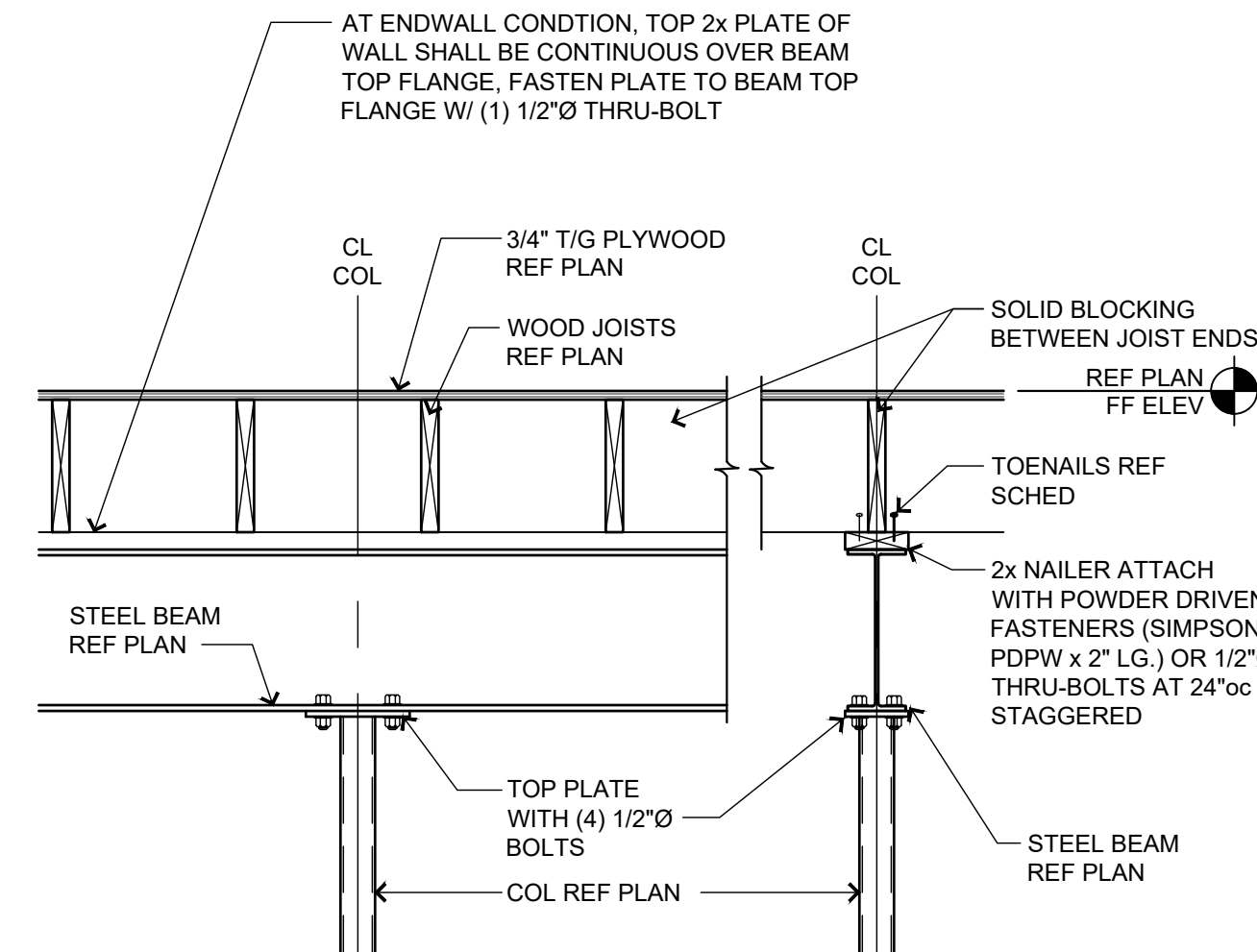
SCALE: 1 1/2" = 1'-0"



8 ROOF RAFTER BEARING

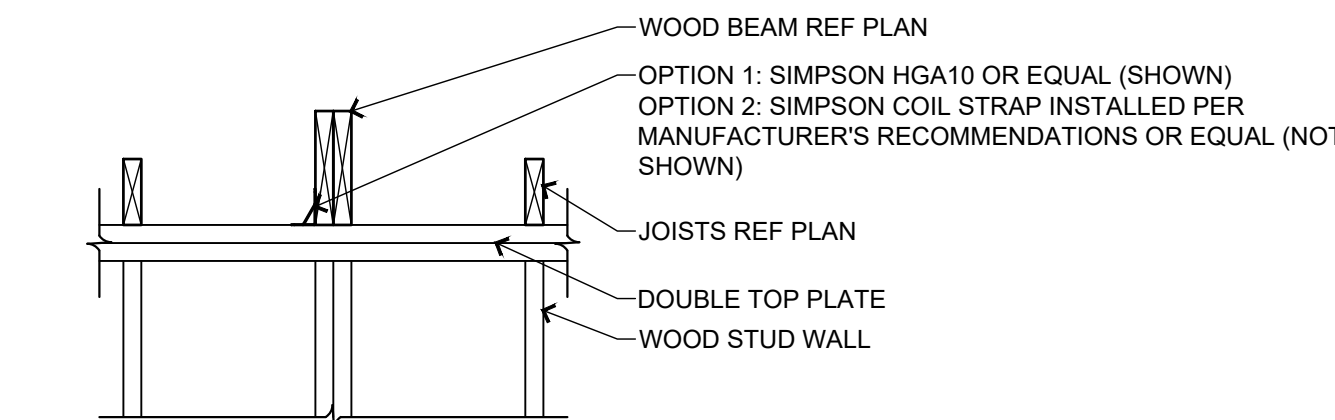
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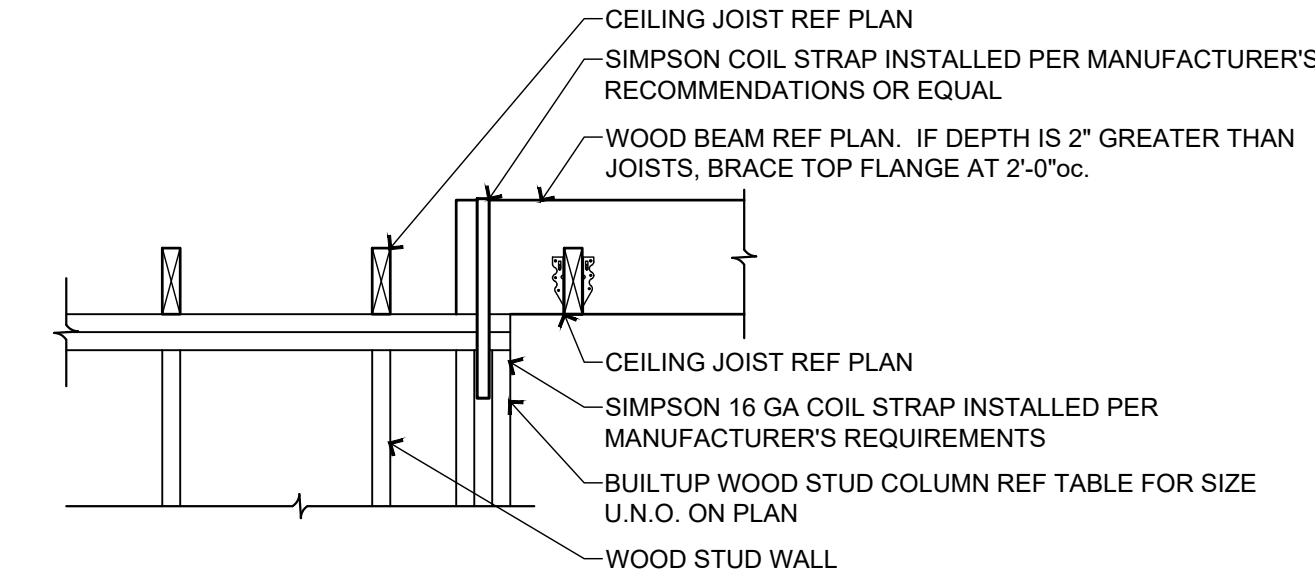
9 TYP. BEAM AT COLUMN

SCALE: 3/4" = 1'-0"



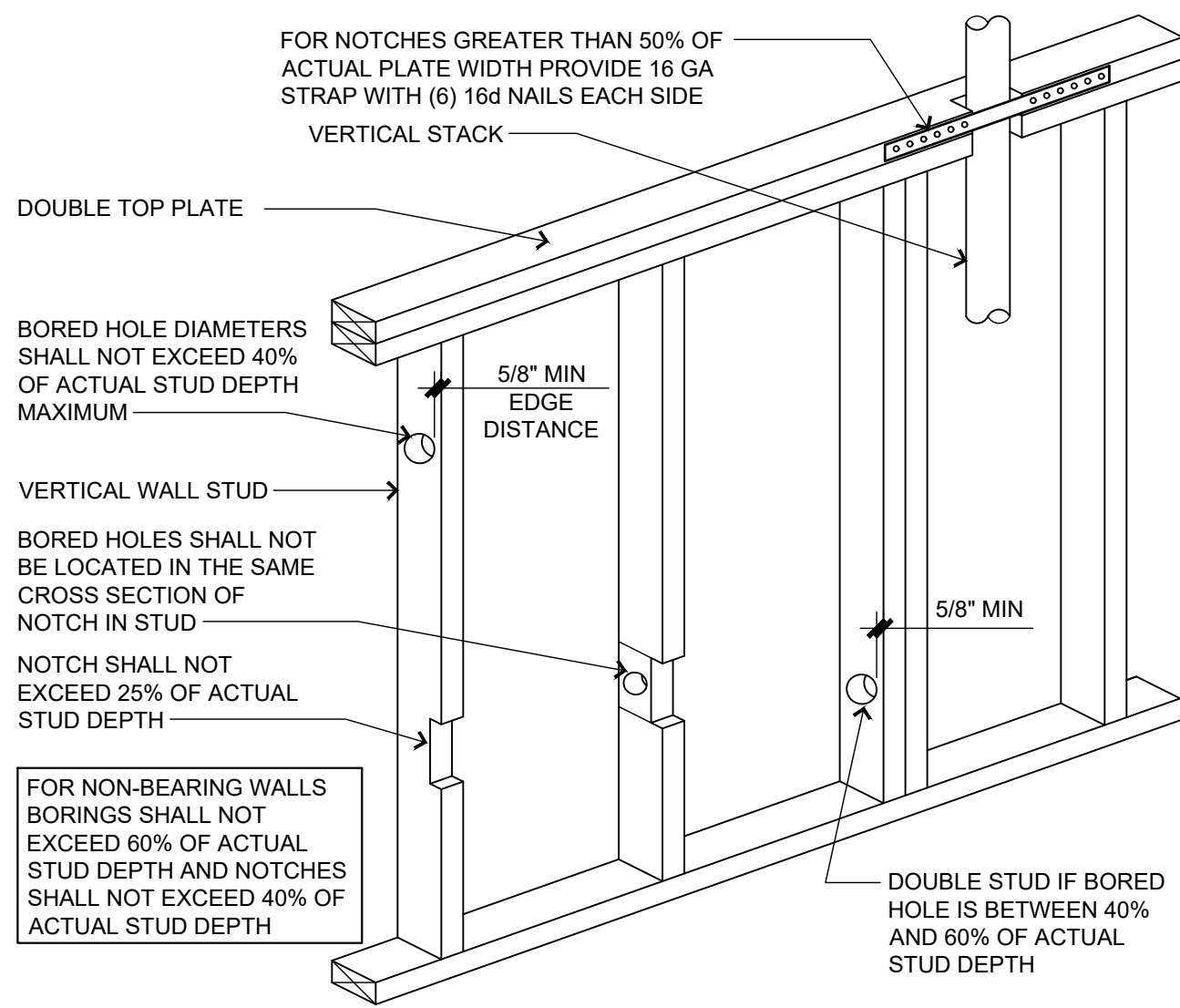
10 TYP WOOD BM PERP TO WALL

SCALE: 3/4" = 1'-0"



11 TYP WD BM PARALLEL TO WALL

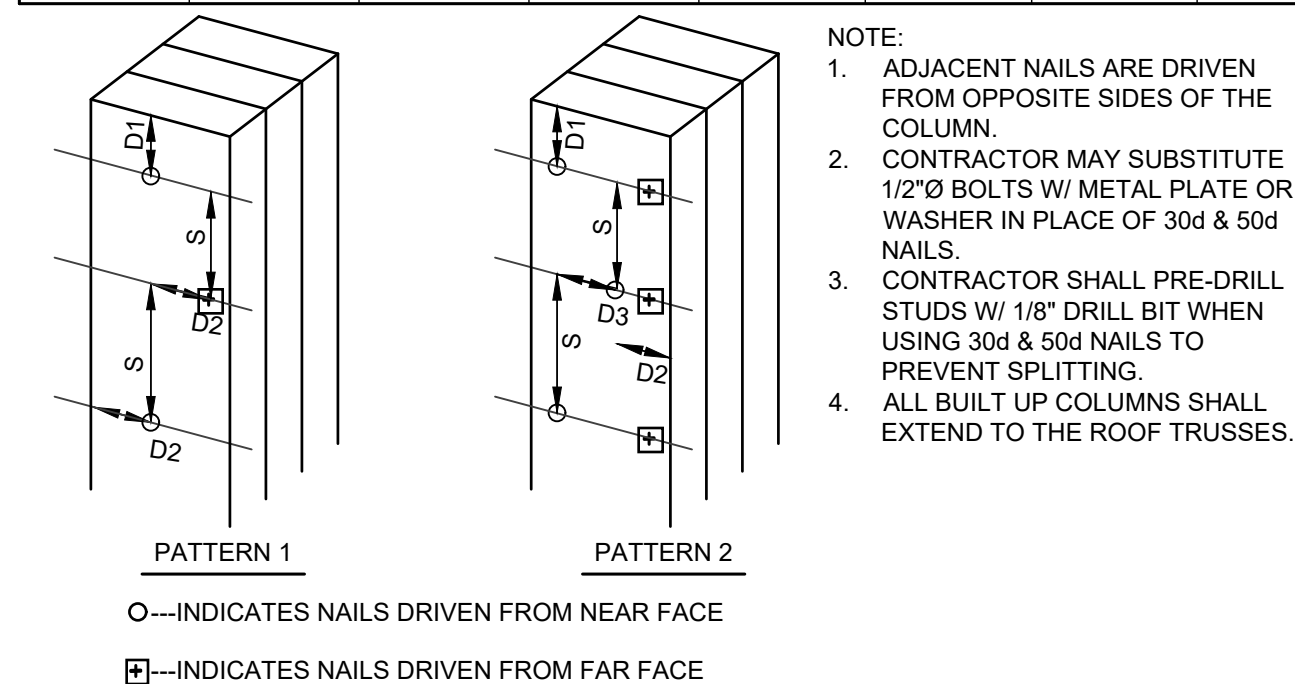
SCALE: 3/4" = 1'-0"



5 NOTCHING AND BORING WALLS

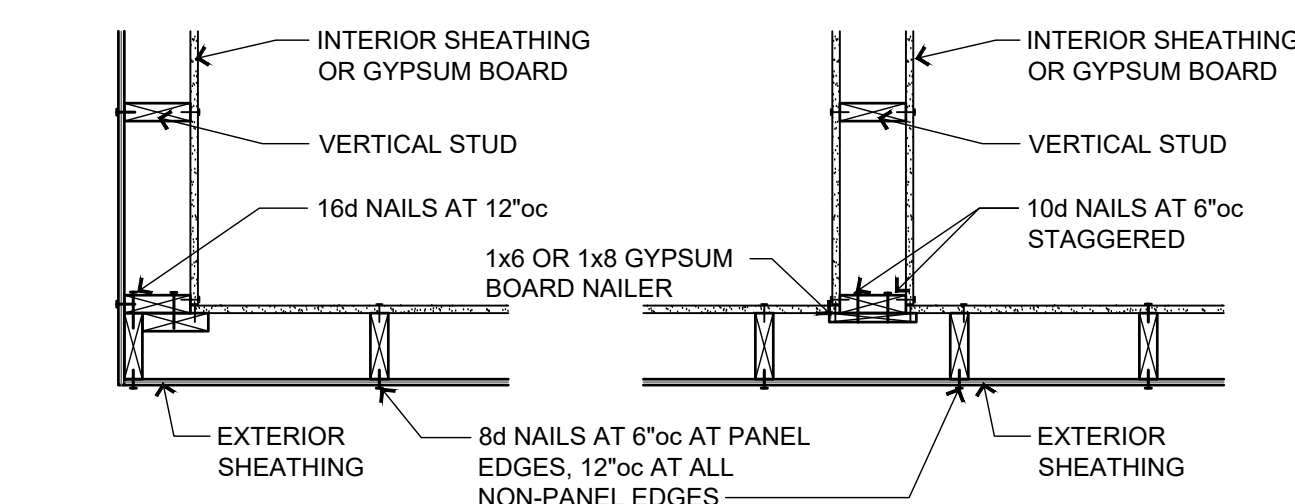
SCALE: 3/4" = 1'-0"

BUILT UP COLUMN NAILING SCHEDULE							
BUILT UP COLUMN	BUILT UP SECTION	PATTERN	END DISTANCE	EDGE DISTANCE	ROW SPACING	NAIL SPACING	NAIL SIZE
BC1	(2) 2x6	2	2 1/2"	1 1/2"	2 1/2"	9"	10d
BC2	(3) 2x6	2	3 1/2"	1 1/2"	2 1/2"	9"	30d
BC3	(4) 2x6	2	4"	1 1/2"	2 1/2"	9"	50d
BC4	(2) 2x4	1	2 1/2"	1"	---	6"	10d
BC5	(3) 2x4	1	3 1/2"	1 1/2"	---	8"	30d



6 BUILT UP COLUMN SCHEDULE

SCALE: 3/4" = 1'-0"

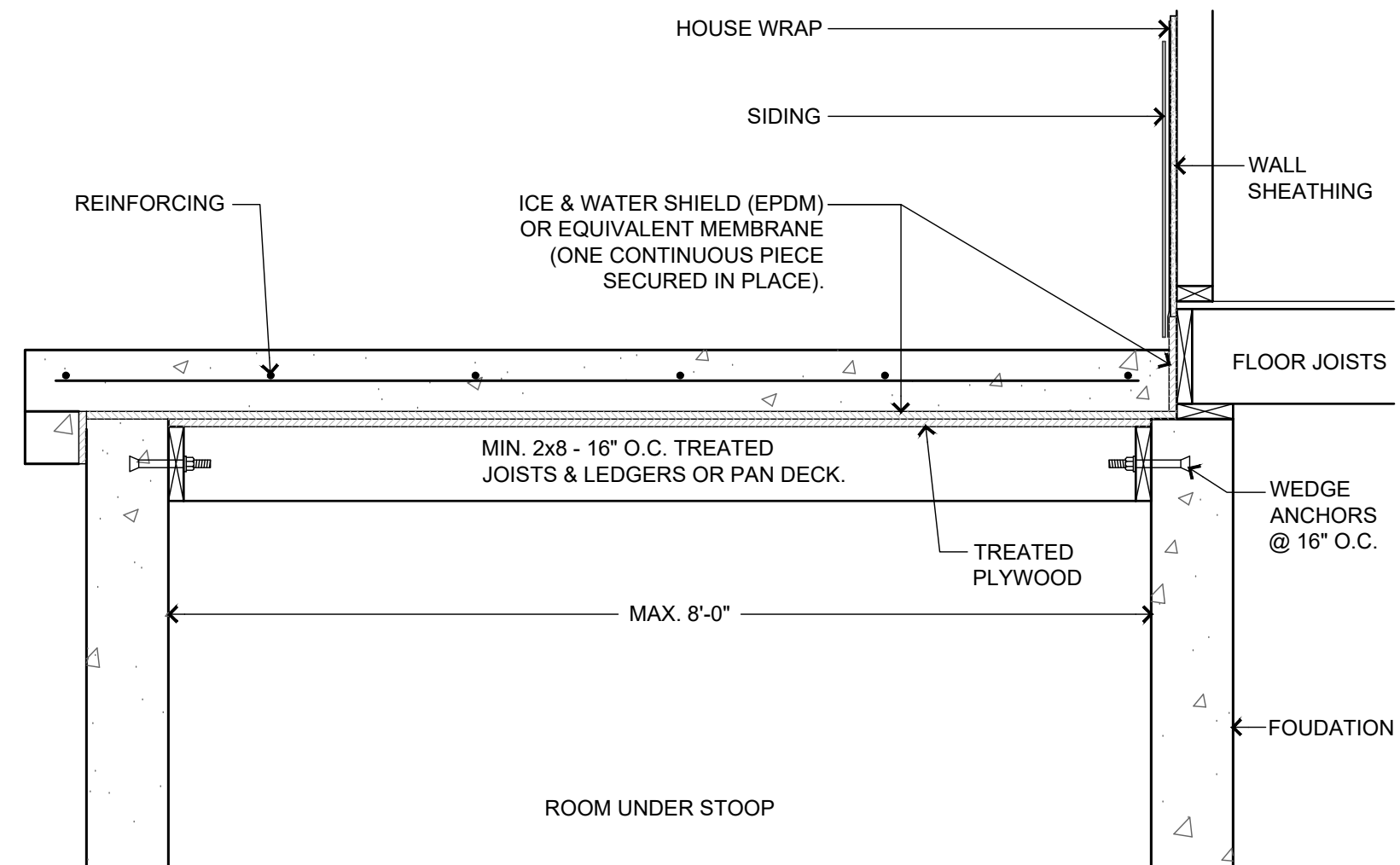


BEARING WALL HEADERS (CENTER BEARING FLOOR)							
INTERIOR WALL (1 FLOOR)				EXTERIOR WALL (ROOF ONLY)			
SPAN	SIZE	NO. J.S.		SPAN	SIZE	NO. J.S.	
0'-0" - 4'-5"	(2) 2x8	2		0'-0" - 5'-4"	(2) 2x8	2	
4'-6" - 5'-5"	(2) 2x10	2		5'-5" - 6'-6"	(2) 2x10	2	
5'-6" - 6'-3"	(2) 2x12	2		6'-7" - 7'-6"	(2) 2x12	2	
INTERIOR WALL (2 FLOORS)				EXT WALL (ROOF + FLOOR)			
0'-0" - 3'-2"	(2) 2x8	2		0'-0" - 4'-6"	(2) 2x8	2	
3'-3" - 3'-10"	(2) 2x10	3		4'-7" - 5'-6"	(2) 2x10	2	
3'-11" - 4'-5"	(2) 2x12	3		5'-7" - 6'-5"	(2) 2x12	2	
EXT WALL (ROOF + 2 FLOORS)							
0'-0" - 3'-9"	(2) 2x8	2					
3'-10" - 4'-7"	(2) 2x10	2					
4'-8" - 5'-3"	(2) 2x12	2					

NOTE: 1. NOT FOR OPEN WEB TRUSS SYSTEMS 2. MAXIMUM JOIST SPAN OF 18FT 3. HEADERS SUPPORT FLOOR LOADS ONLY, NO ROOF LOADS

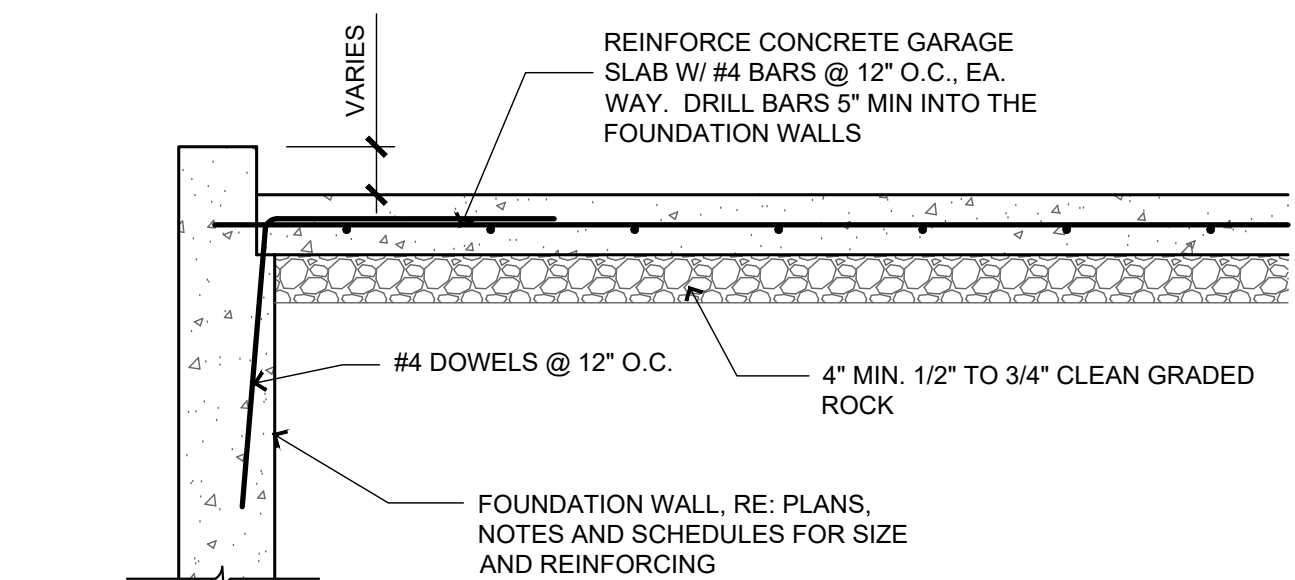
7 TYP WALL FRAMING DETAILS

SCALE: 3/4" = 1'-0"



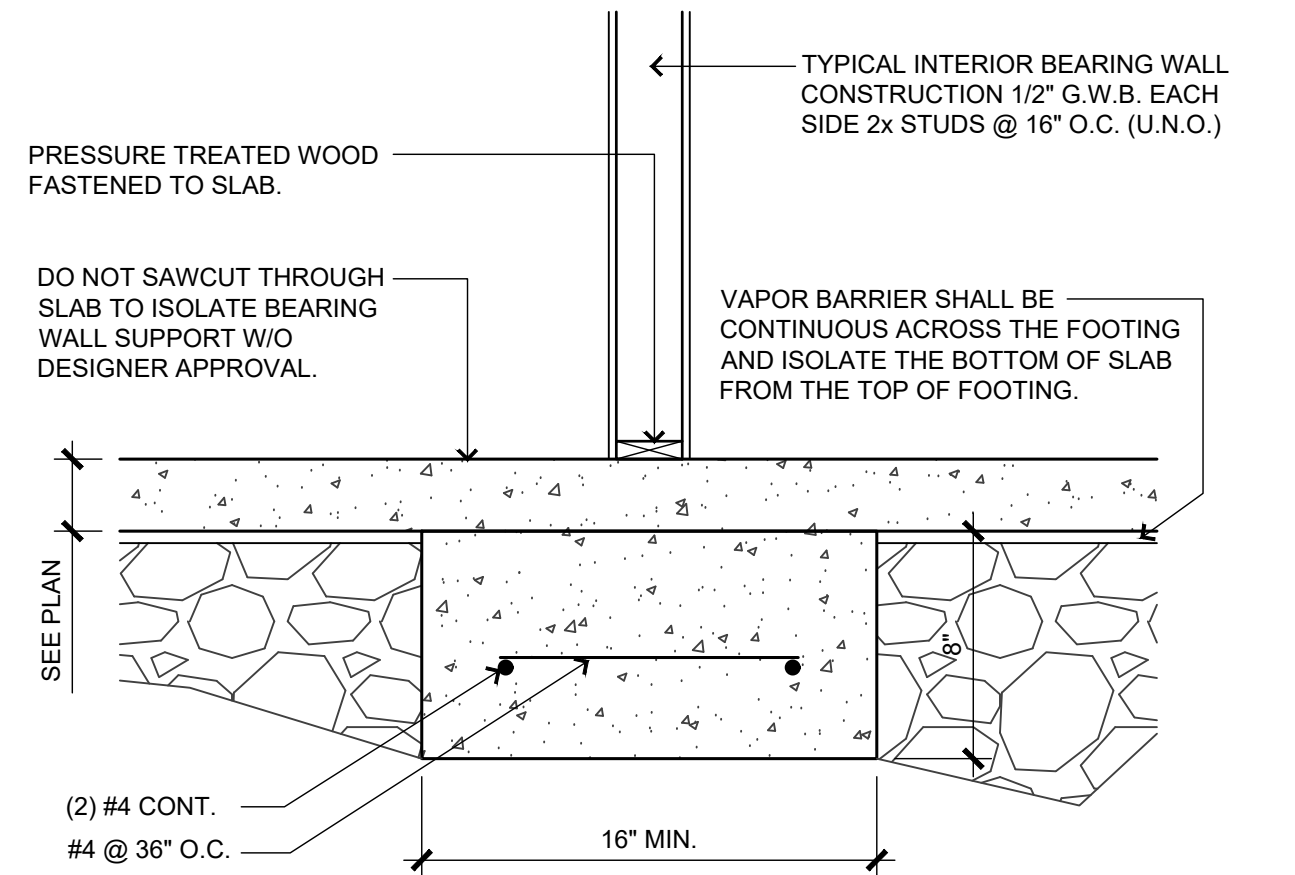
1 FLASHING DETAIL - ROOM UNDER STOOP

SCALE: 3/4" = 1'-0"



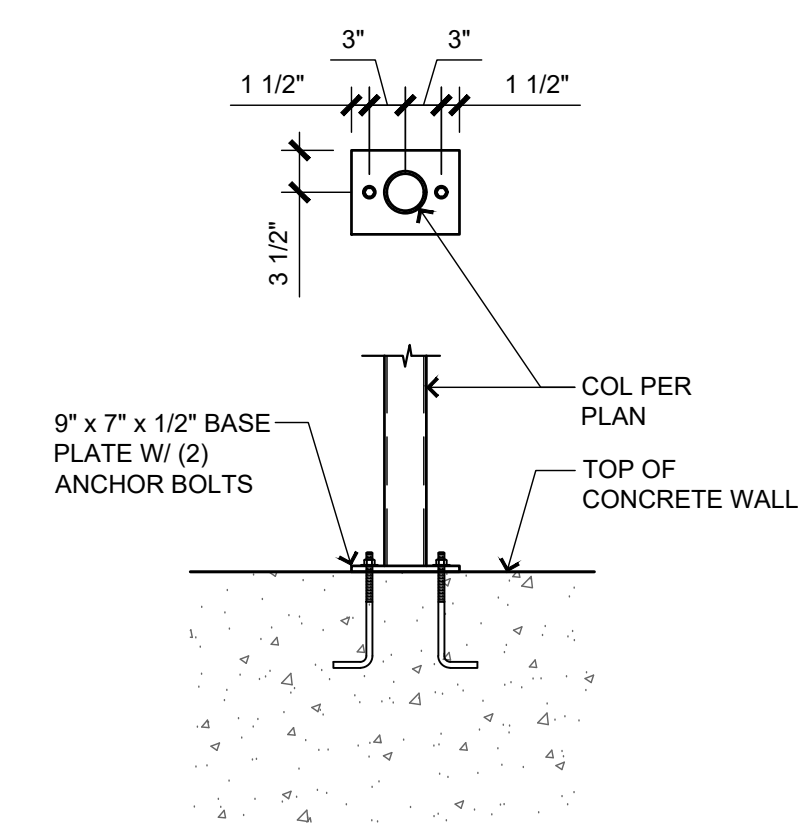
2 GARAGE SLAB/WALL SECTION

SCALE: 3/4" = 1'-0"



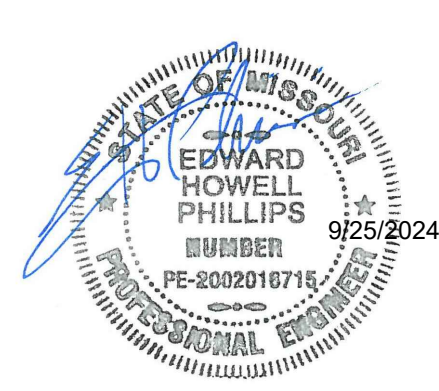
3 INTERIOR BEARING WALL

SCALE: 3/4" = 1'-0"



4 STL COL ON CONC WALL

SCALE: 3/4" = 1'-0"



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Leawood, KS 66209
913 908 5263
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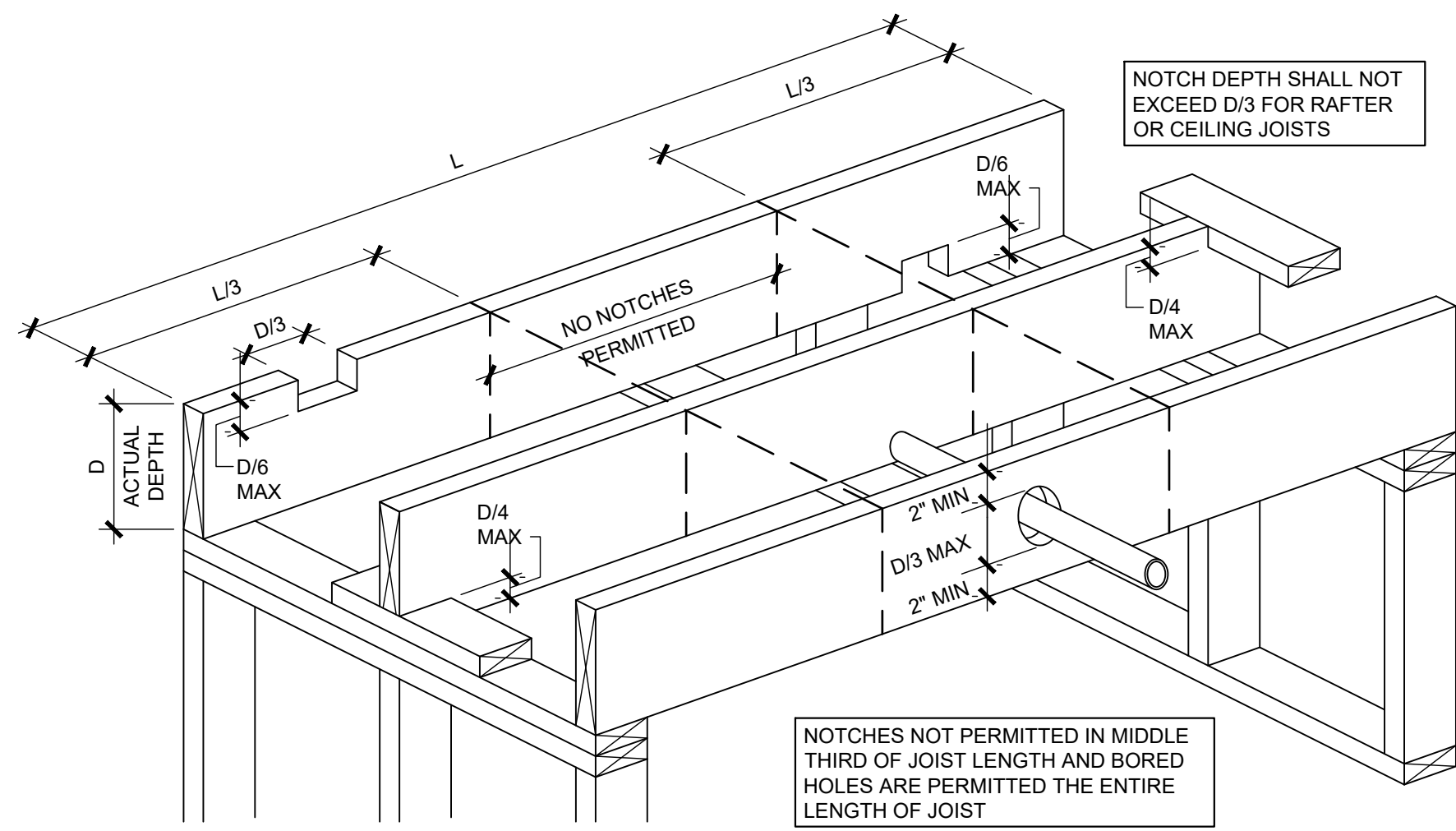
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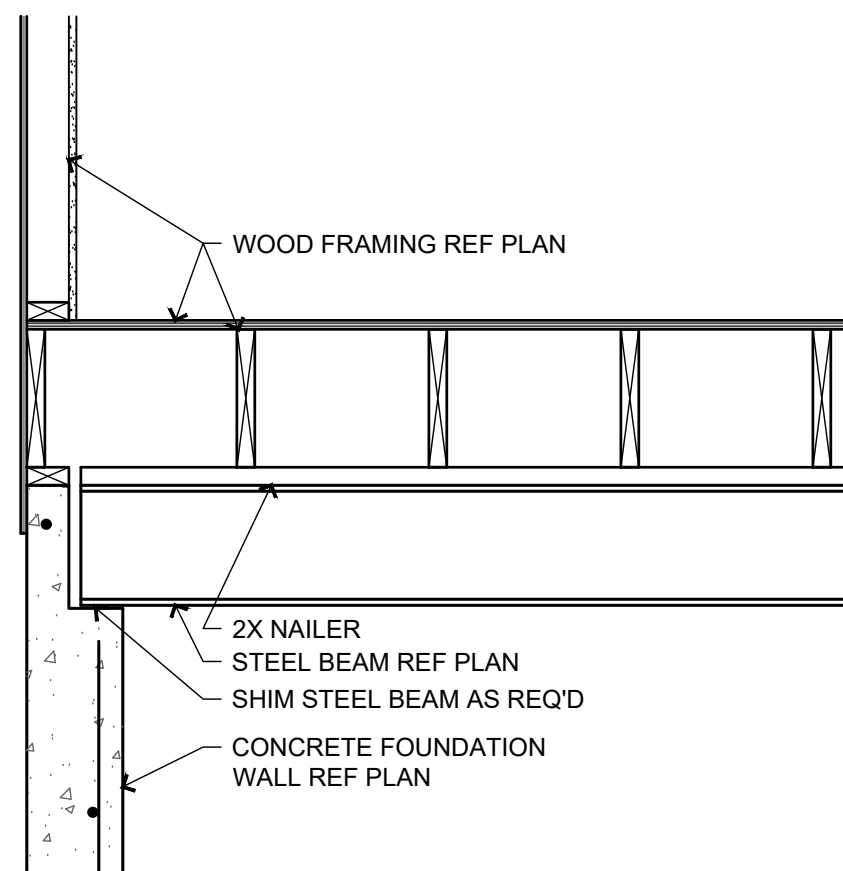
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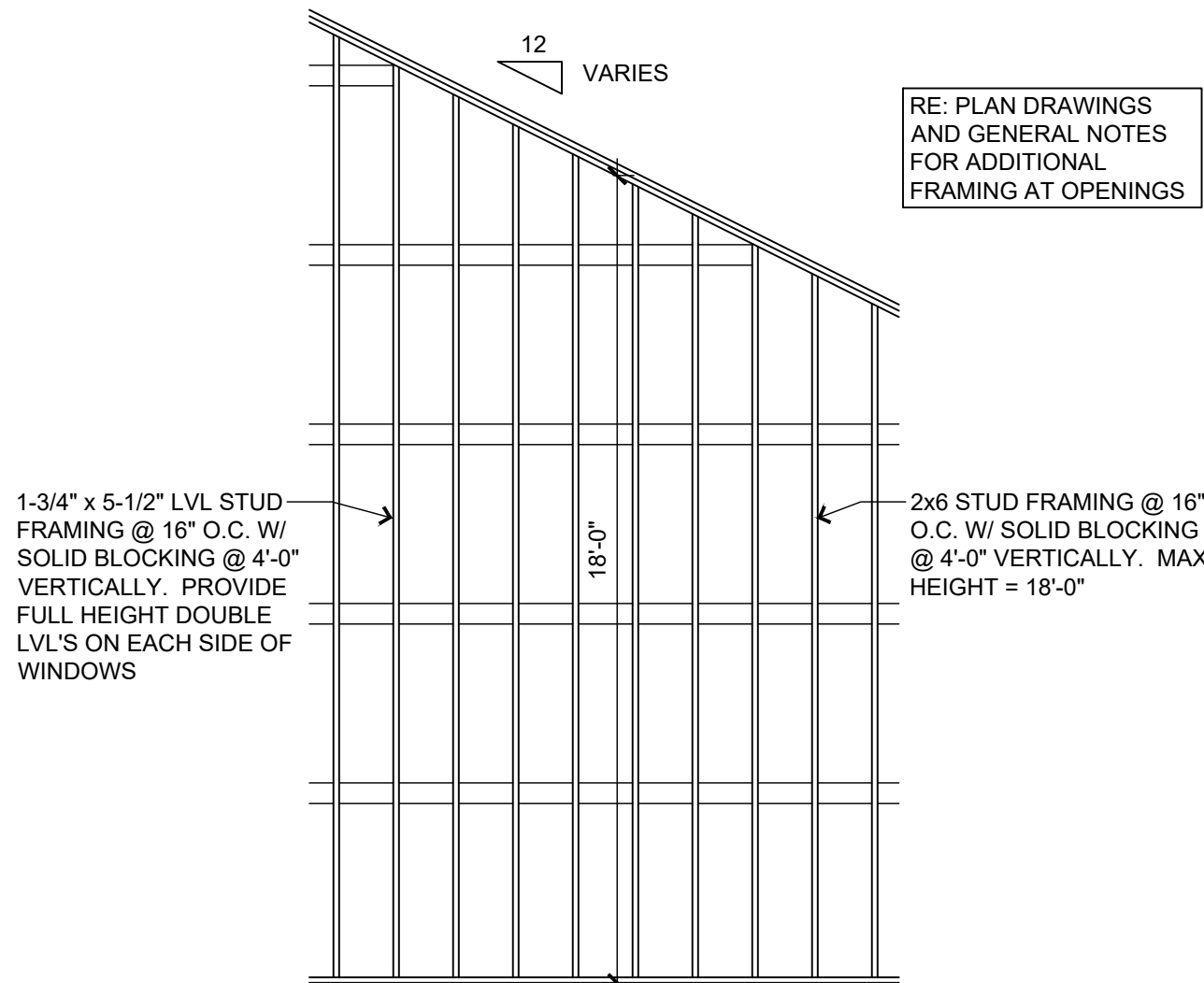
NOTCHING AND BORING CEILING OR FLOOR JOISTS

SCALE: 3/4" = 1'-0"



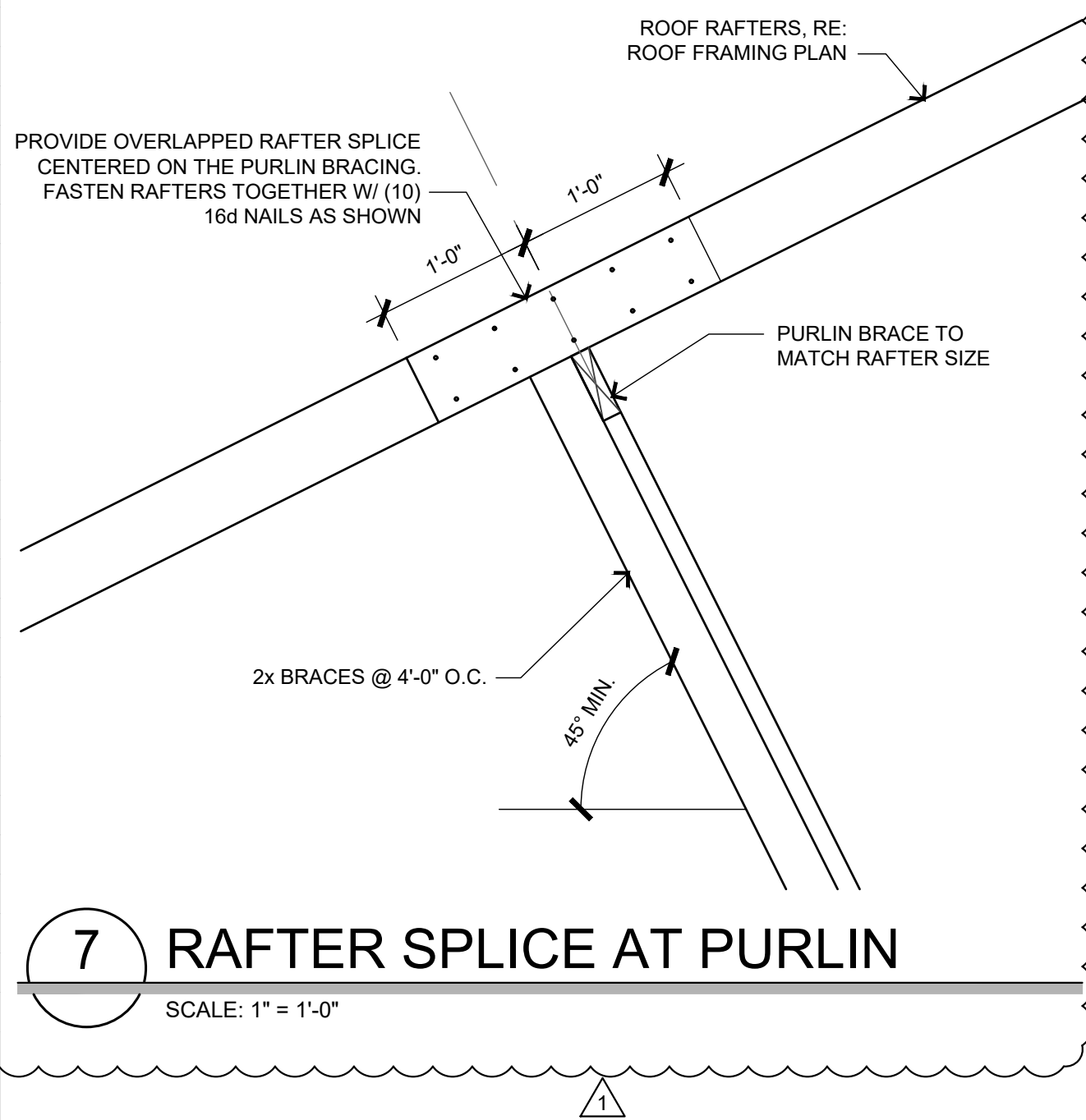
STL. BM. ON CONC. FNDN. WALL

SCALE: 3/4" = 1'-0"



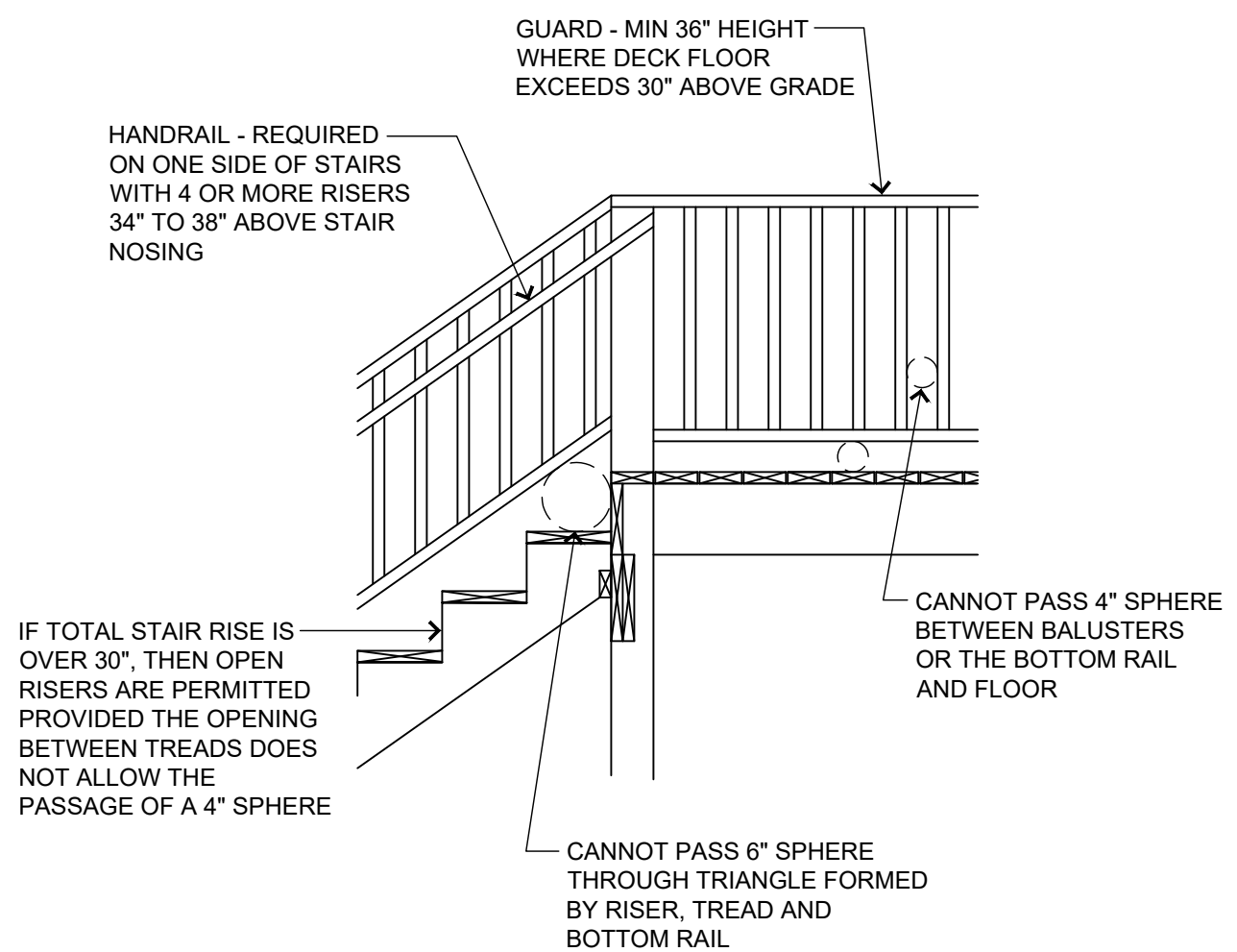
GENERIC GABLE END WALL FRAMING @ VAULTED CEILINGS

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



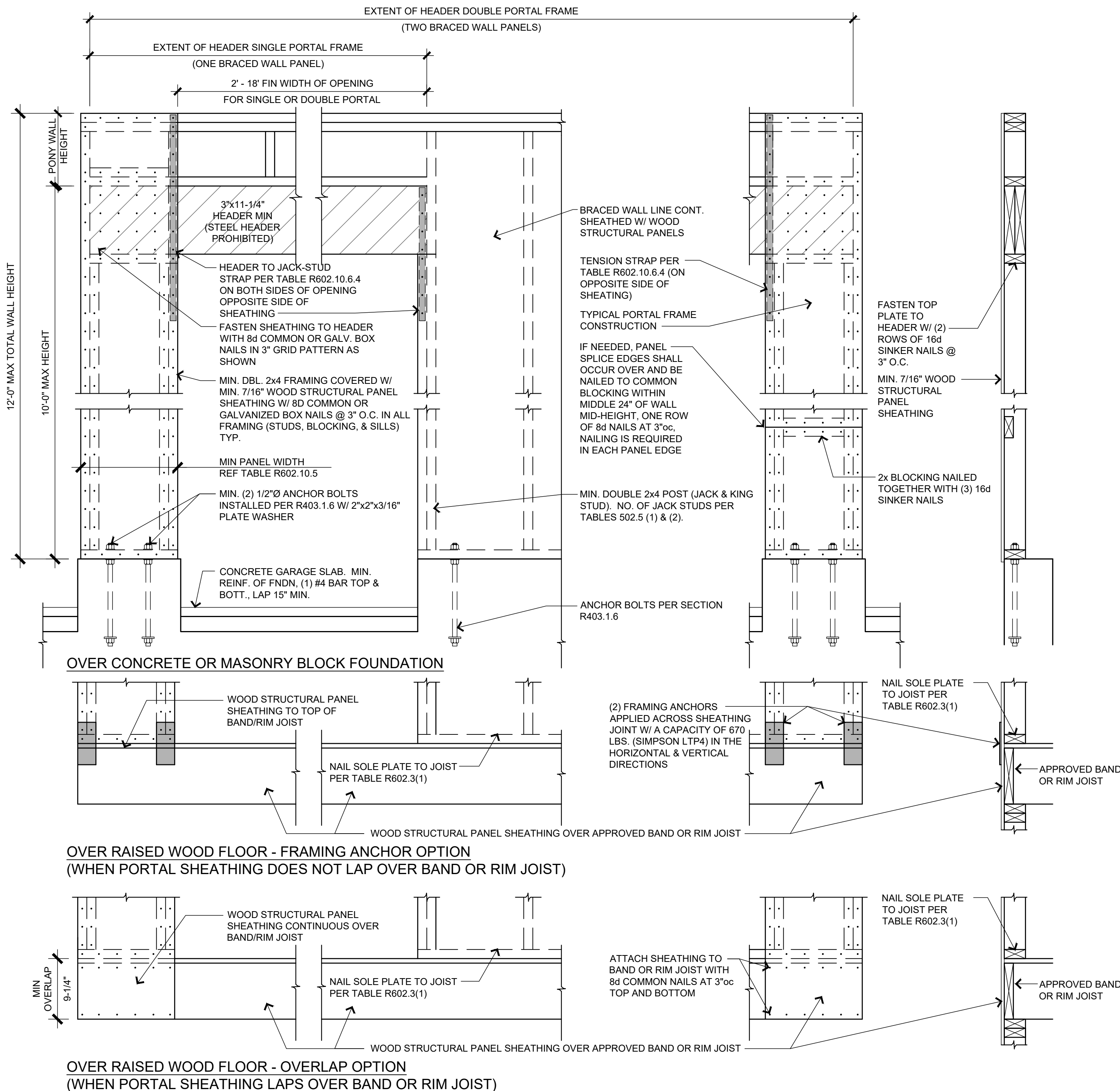
RAFTER SPLICE AT PURLIN

SCALE: 1" = 1'-0"



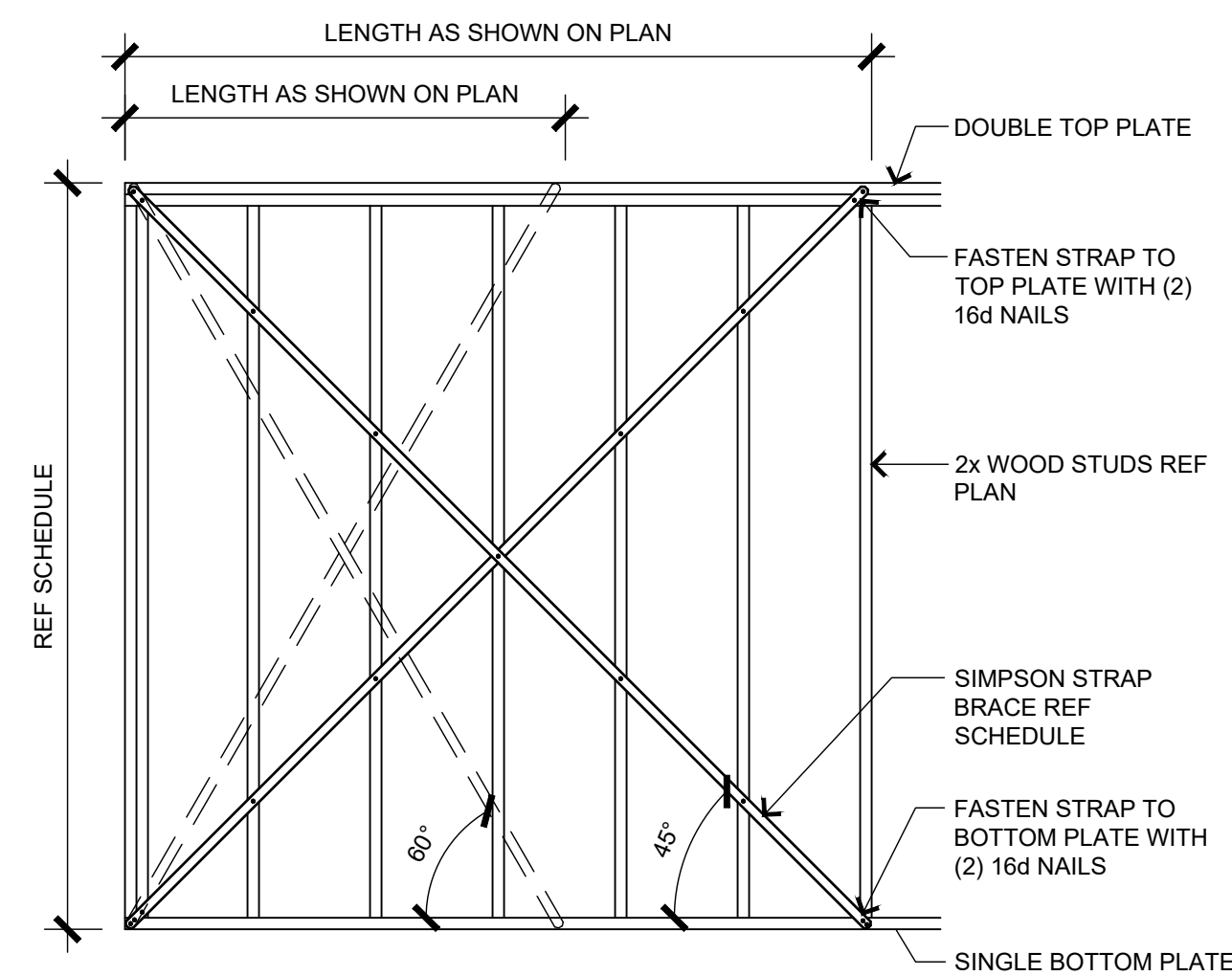
GUARD DETAIL

SCALE: 3/4" = 1'-0"



METHOD CS-PF CONT SHEATHED PORTAL FRAME PANEL (R602.10.6.4)

SCALE: 1" = 1'-0"



INTERIOR BRACED WALL (LIB)

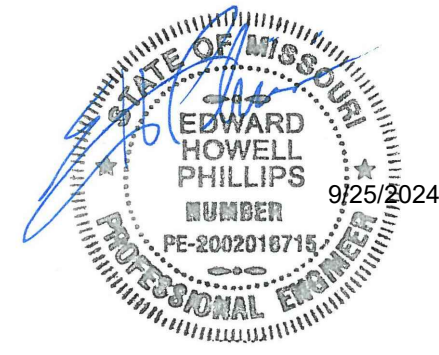
SCALE: N.T.S.

TABLE R602.10.5 - MINIMUM LENGTH OF BRACED WALL PANELS						
METHOD		WALL LENGTH PER PORTAL HEADER HEIGHT				
		8 FEET	9 FEET	10 FEET	11 FEET	12 FEET
PFH	SUPPORTING ROOF ONLY	16"	16"	16"	(c)	(c)
	SUPPORTING ONE STORY AND ROOF	24"	24"	24"	(c)	(c)
PFG		24"	27"	30"	(d)	(d)
CS-PF	SEISMIC DESIGN CATEGORY A, B, C	16"	18"	20"	(e)	(e)
	SEISMIC DESIGN CATEGORY D ₀ , D ₁ , D ₂	16"	18"	20"	(e)	(e)

(c) MAXIMUM HEADER HEIGHT FOR PFH IS 10 FEET IN ACCORDANCE WITH FIGURE R602.10.6.2, BUT WALL HEIGHT MAY BE INCREASED TO 12 FEET WITH PONY WALL.
(d) MAXIMUM HEADER HEIGHT FOR PFG IS 10 FEET IN ACCORDANCE WITH FIGURE R602.10.6.3, BUT WALL HEIGHT MAY BE INCREASED TO 12 FEET WITH PONY WALL.
(e) MAXIMUM HEADER HEIGHT FOR CS-PF IS 10 FEET IN ACCORDANCE WITH FIGURE R602.10.4, BUT WALL HEIGHT MAY BE INCREASED TO 12 FEET WITH PONY WALL.

INTERIOR BRACED WALL SCHEDULE

SIMPSON MODEL NO.	STRAP LENGTH	WALL DIM'S HEIGHT x WIDTH	ANGLE FROM HORIZONTAL	FASTENERS	
				PLATES	EA STUD
WB106	9'-5 5/8"	8'-0" x 5'-0"	60°	(2) 16d	(1) 8d
WB126	11'-4 3/8"	8'-0" x 8'-0"	45°	(2) 16d	(1) 8d
WB106C	9'-6"	8'-0" x 5'-0"	60°	(2) 16d	(1) 8d
WB126C	11'-4 13/16"	8'-0" x 8'-0"	45°	(2) 16d	(1) 8d
WB143C	14'-3"	10'-0" x 10'-0"	45°	(2) 16d	(1) 8d



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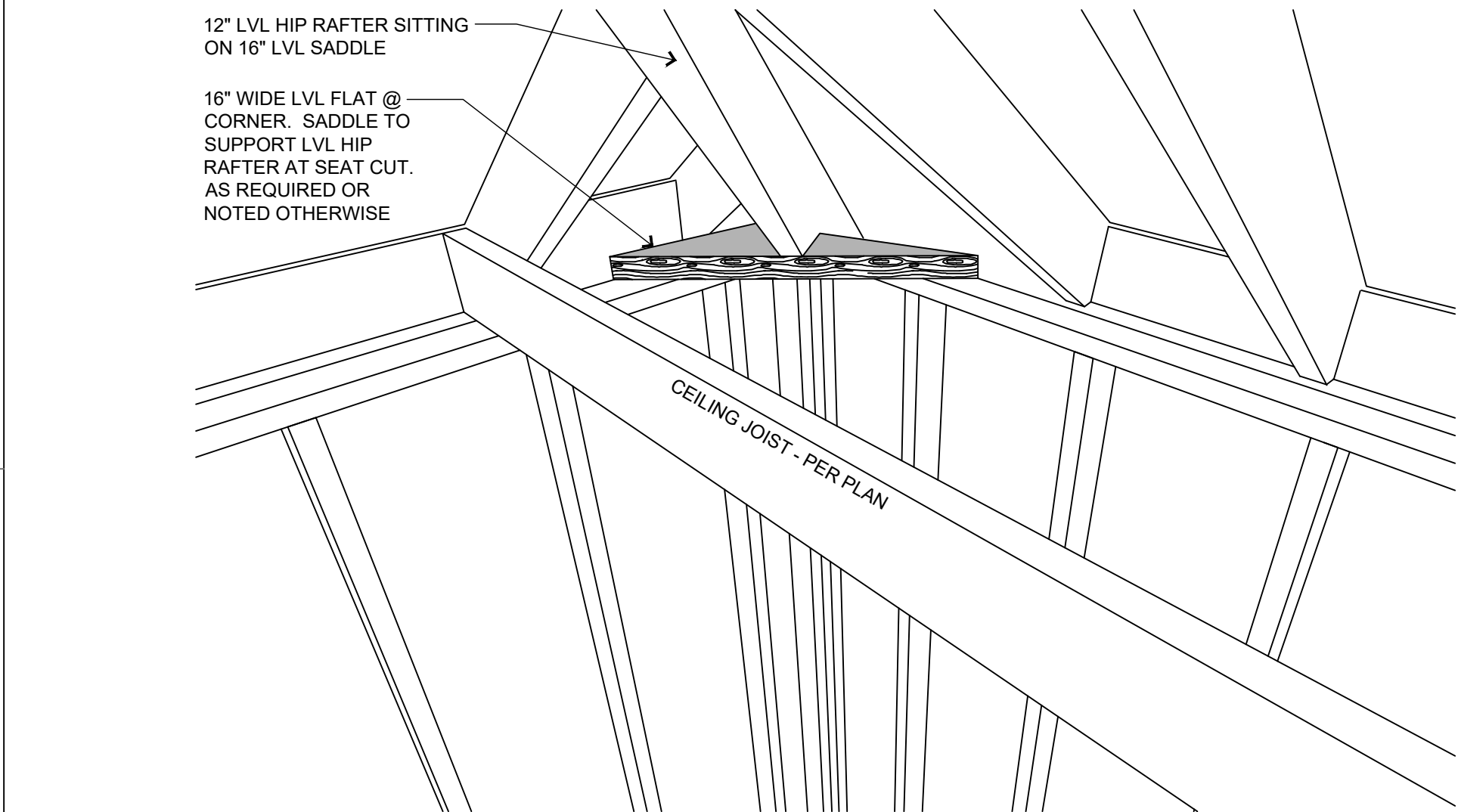
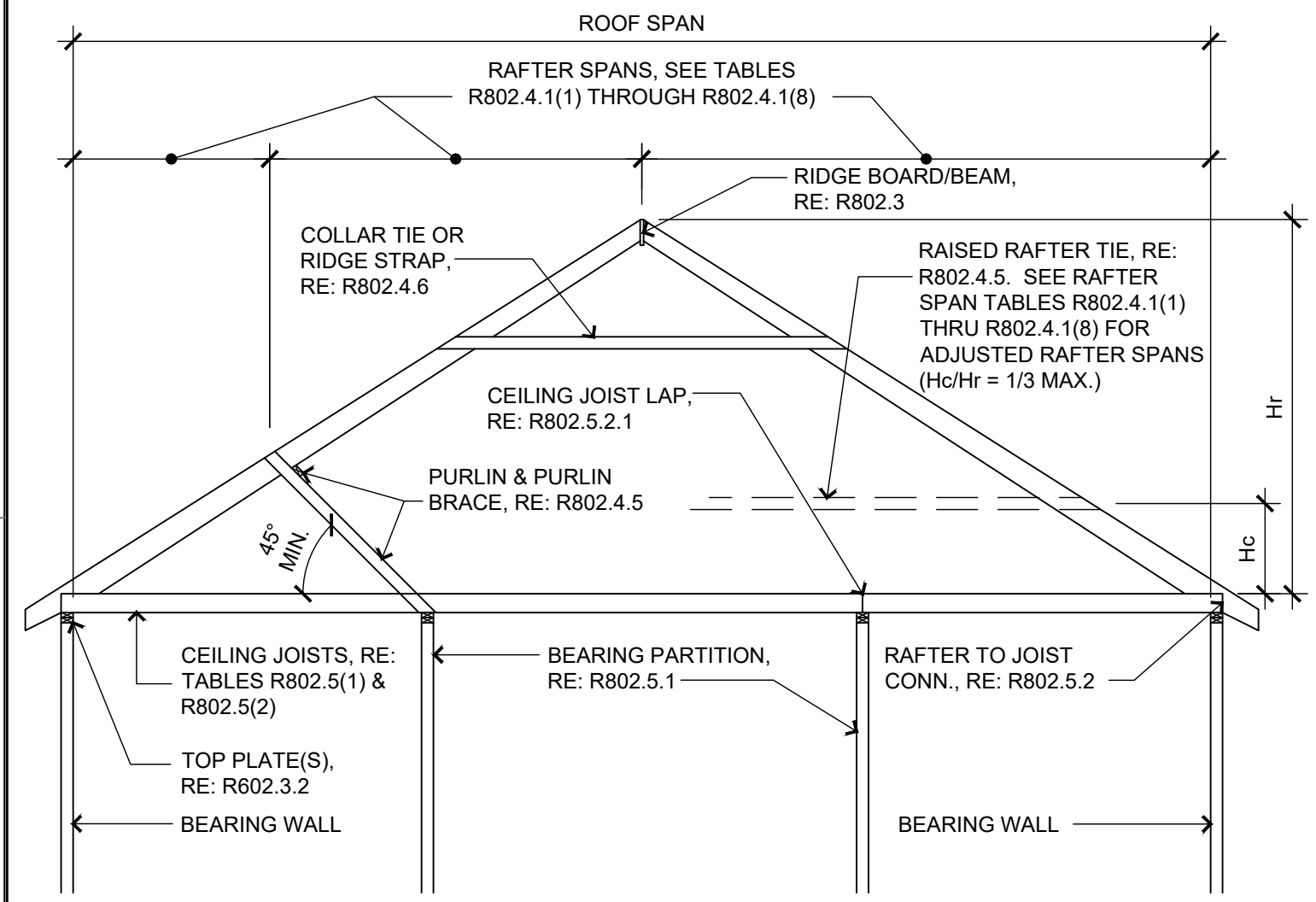
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ROOF RAFTER SCHEDULE						
GRADE	MEMBER SIZE / SPACING	MAX SPAN CEILING JSTS AT TOP PLATE	MAX SPAN H _c /H _b =0.16	MAX SPAN H _c /H _b =0.20	MAX SPAN H _c /H _b =0.25	MAX SPAN H _c /H _b =0.33
#2 DF/L	2x6 / 24"oc	11'-9"	10'-6"	9'-9"	8'-11"	7'-10"
#2 DF/L	2x6 / 16"oc	14'-1"	12'-8"	11'-8"	10'-8"	9'-5"
#2 DF/L	2x8 / 16"oc	18'-2"	16'-4"	15'-1"	13'-9"	12'-2"
#2 DF/L	2x10 / 16"oc	22'-3"	20'-0"	18'-5"	16'-10"	14'-10"
#2 DF/L	2x12 / 16"oc	25'-9"	23'-2"	21'-4"	19'-7"	17'-3"

SPANS ABOVE ARE FOR ROOF LIVE LOAD OF 20 PSF AND DEAD LOAD OF 10 PSF WITH CEILINGS ATTACHED TO RAFTERS. RE: TABLES R802.4.1(1) THROUGH R802.4.1(8) FOR ADDITIONAL RAFTER SPAN INFORMATION.

THE ROOF FRAMING ON THIS HOME UTILIZES RAFTERS SPACED AT 16" ON CENTER IN EXPOSURE B WITH A ROOF SPAN LESS THAN 42' ON IN 90 MPH WIND ZONE. THEREFORE THE UPLIFT FORCE ON THE RAFTER IS LESS THAN 200 LBS. AND CAN BE CONNECTED PER TO THE WALL FRAMING PER TABLE R602.3(1).



LVL HIP RAFTER BEARING ON 16" LVL FLAT AT CORNERS

2

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

TABLE R802.5.2 RAFTER/CEILING JOIST HEEL JOINT CONNECTIONS (a,b,c,d,e,g)																									
RAFTER SLOPE	RAFTER SPACING (inches)	GROUND SNOW LOAD (PSF)																							
		20(f)				30				50				70											
		ROOF SPAN (FEET)																							
		12	20	28	36	12	20	28	36	12	20	28	36	12	20	28	36	12	20	28	36				
		REQUIRED NUMBER OF 16d COMMON NAILS(a,b) PER HEEL JOINT SPLICES (c,d,e)																							
3:12	12	4	5	6	8	10	4	6	8	11	14	5	8	12	15	6	11	15	20	8	14	20	26		
	24	7	9	11	15	19	7	11	16	21	9	16	23	30	12	21	30	39	15	26	36	46			
4:12	12	3	5	6	8	10	4	6	8	11	14	6	9	11	5	8	12	15	6	11	15	20	26		
	24	5	8	12	15	19	5	9	12	16	21	7	12	17	22	9	16	23	30	12	21	30	39		
5:12	12	3	4	5	6	8	3	4	5	7	9	3	5	7	9	4	7	9	12	6	9	12	16		
	24	4	7	9	12	14	4	7	10	13	6	10	14	18	7	13	18	23	9	12	16	23			
7:12	12	3	4	4	5	3	3	4	5	3	4	5	7	3	5	7	9	4	6	9	11	7			
	24	3	4	5	6	3	4	5	6	3	5	7	9	4	7	10	13	5	9	13	17	11			
9:12	12	3	3	4	4	3	3	3	4	3	3	4	5	3	4	5	3	4	5	7	9	5			
	24	3	4	4	5	3	3	4	6	7	3	6	8	10	4	7	10	13	5	9	13	17			
12:12	12	3	3	3	3	3	3	3	3	3	3	3	4	3	4	3	4	3	4	5	7	5			
	24	3	3	4	4	3	3	4	6	3	4	3	6	4	5	3	4	5	7	9	10	13			

- a. 40d BOX NAILS SHALL BE PERMITTED TO BE SUBSTITUTED FOR 16D COMMON NAILS.
- b. NAILING REQUIREMENTS SHALL BE PERMITTED TO BE REDUCED 25% IF NAILS ARE CLINCHED.
- c. HEEL JOINT CONNECTIONS ARE NOT REQUIRED WHEN THE RIDGE IS SUPPORTED BY A LOAD-BEARING WALL, HEADER, OR RIDGE BEAM.
- d. WHEN INTERMEDIATE SUPPORT OF THE RAFTER IS PROVIDED BY VERTICAL STRUTS OR PURLINS TO A LOAD-BEARING WALL, THE TABULATED HEEL JOINT CONNECTION REQUIREMENTS SHALL BE PERMITTED TO BE REDUCED PROPORTIONALLY TO THE REDUCTION IN SPAN.
- e. EQUIVALENT NAILING PATTERNS ARE REQUIRED FOR CEILING JOIST TO CEILING JOIST LAP SPLICES.
- f. APPLIES TO ROOF LIVE LOAD OF 20 psf OR LESS.
- g. TABULATED HEEL JOINT CONNECTION REQUIREMENTS ASSUME THAT CEILING JOISTS OR RAFTER TIES ARE LOCATED AT THE BOTTOM OF THE ATTIC SPACE. WHEN CEILING JOISTS OR RAFTER TIES ARE LOCATED HIGHER IN THE ATTIC, HEEL JOINT CONNECTION REQUIREMENTS SHALL BE INCREASED BY THE FOLLOWING FACTORS:

H _c /H _r	HEEL JOINT CONNECTION ADJUSTMENT FACTOR
1/3	1.5
1/4	1.33
1/5	1.25
1/6	1.2
1/10 OR LESS	1.11

WHERE:

H_c= HEIGHT OF CEILING JOISTS OR RAFTER TIES MEASURED VERTICALLY ABOVE THE TOP OF THE RAFTER SUPPORT WALLS.

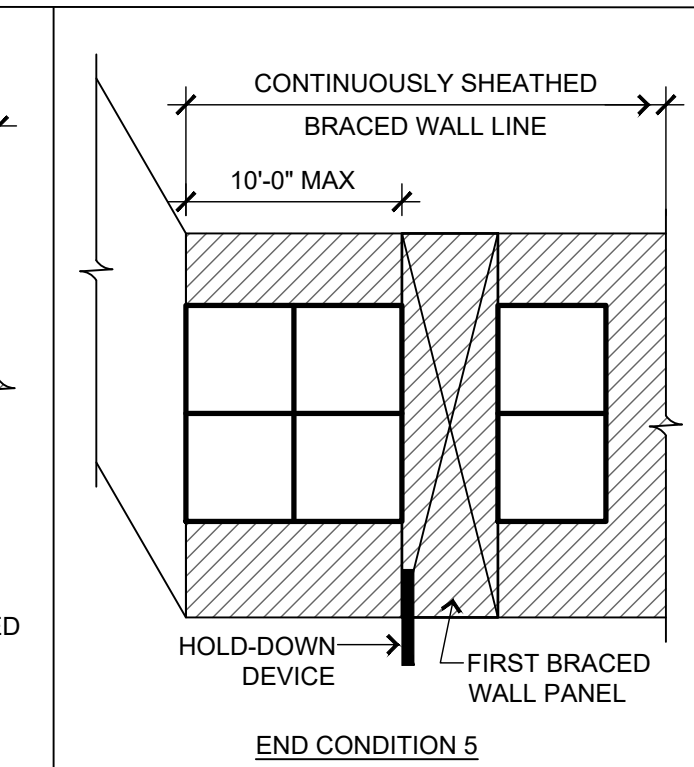
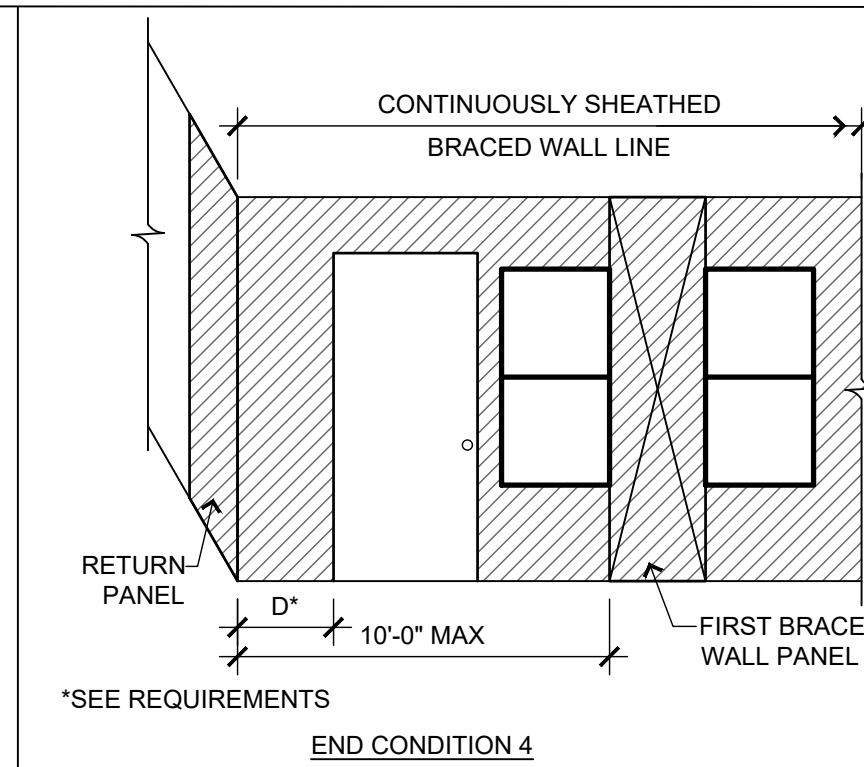
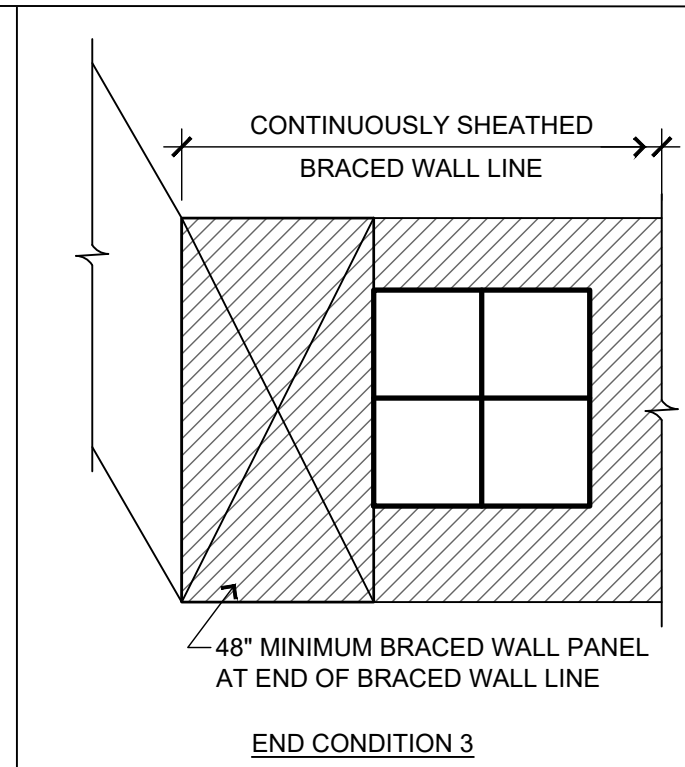
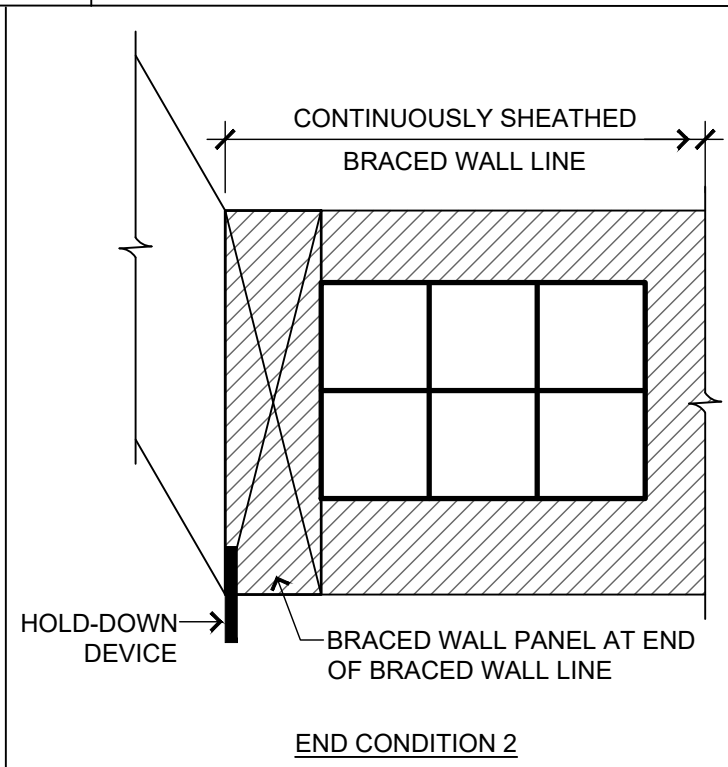
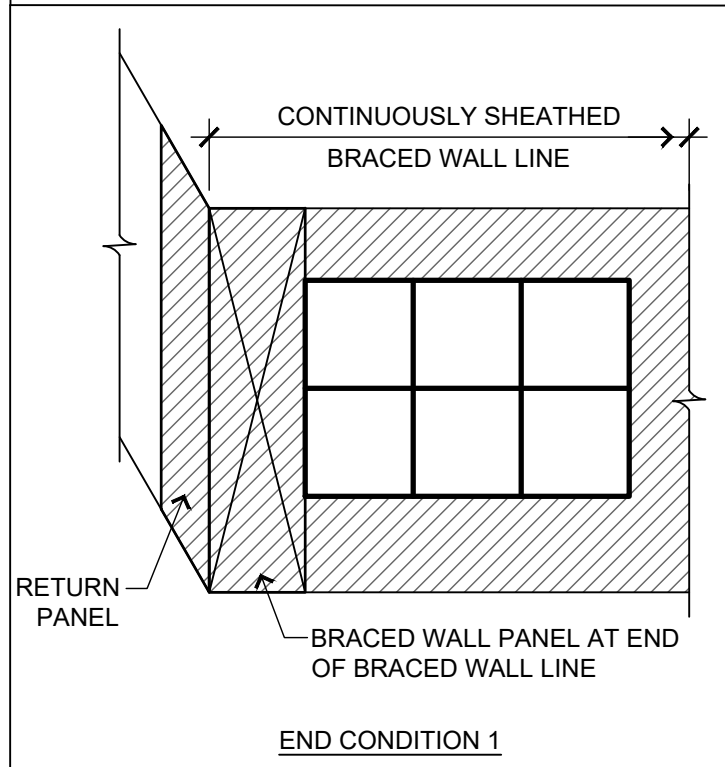
H_r=HEIGHT OF ROOF RIDGE MEASURED VERTICALLY ABOVE THE TOP OF THE RAFTER SUPPORT WALLS.

REQUIREMENTS

RETURN PANEL:
24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS
32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD

DISTANCE D:
24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS
32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD

HOLD-DOWN DEVICE:
800 lbs CAPACITY FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FLOOR FRAMING BELOW



1

END CONDITIONS FOR BRACED WALL LINES WITH CONTINUOUS SHEATHING R602.10.7

SCALE: NTS

FASTENING SCHEDULE IRC 2018 TABLE R602.3(1)				ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b)(c)	SPACING AND LOCATION
Roof							
1	Blocking between ceiling joists or rafters to top plate	4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails			Toe nail		
2	Ceiling joists to top plate	4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails			Per joist, toe nail		
3	Ceiling joist not attached to parallel rafter, laps over partitions (see Section R802.5.2 and Table R802.5.2)	4-10d box (3" × 0.128"); or 3-16d common (3-1/2" × 0.162"); or 4-3" × 0.131" nails			Face nail		
4	Ceiling joist attached to parallel rafter (heel joint) (see Section R802.5.2 and Table R802.5.2)	Table R802.5.2			Face nail		
5	Collar tie to rafter, face nail or 11/4" × 20 ga. ridge strap to rafter	4-10d box (3" × 0.128"); or 3-10d common (3" × 0.148"); or 4-3" × 0.131" nails			Face nail each rafter		
6	Rafter or roof truss to plate	3-16d box nails (3-1/2" × 0.135"); or 3-10d common nails (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss()				
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2" ridge beam	4-16d (3-1/2" × 0.135"); or 3-10d common (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails			Toe nail		
		3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails			End nail		
Wall							
8	Stud to stud (not at braced wall panels)	16d common (3-1/2" × 0.162")	24" o.c. face nail				
		10d box (3" × 0.128"); or 3" × 0.131" nails	16" o.c. face nail				
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d box (3-1/2" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail				
		16d common (3-1/2" × 0.162")	16" o.c. face nail				
10	Built-up header (2" to 2" header with 1/2" spacer)	16d common (3-1/2" × 0.162")	16" o.c. each edge face nail				
		16d box (3-1/2" × 0.135")	12" o.c. each edge face nail				
11	Continuous header to stud	5-8d box (2-1/2" × 0.113"); or 4-8d common (2-1/2" × 0.131"); or 4-10d box (3" × 0.128")	Toe nail				
		16d common (3-1/2" × 0.162")	16" o.c. face nail				
12	Top plate to top plate	10d box (3" × 0.128"); or 3" × 0.131" nails	12" o.c. face nail				
13	Double top plate splice	8-16d common (3-1/2" × 0.162"); or 12-16d box (3-1/2" × 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails	Face nail on each side of end joint (minimum 24" lap splice length each side of end joint)				
14	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3-1/2" × 0.162")	16" o.c. face nail				
		16d box (3-1/2" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail				
15	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162"); or 4-3" × 0.131" nails	3 each 16" o.c. face nail 2 each 16" o.c. face nail 4 each 16" o.c. face nail				
16	Top or bottom plate to stud	4-8d box (2-1/2" × 0.113"); or 3-16d box (3-1/2" × 0.135"); or 4-8d common (2-1/2" × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	Toe nail				
		3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	End nail				
17	Top plates, laps at corners and intersections	3-10d box (3" × 0.128"); or 2-16d common (3-1/2" × 0.162"); or 3-3" × 0.131" nails	Face nail				
18	1" brace to each stud and plate	3-8d box (2-1/2" × 0.113"); or 2-8d common (2-1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples 1-3/4"	Face nail				
19	1" × 6" sheathing to each bearing	3-8d box (2-1/2" × 0.113"); or 2-8d common (2-1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1-3/4" long	Face nail				
20	1" × 8" and wider sheathing to each bearing	3-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3 staples, 1" crown, 16 ga., 1-3/4" long	Face nail				
		Wider than 1" × 8" 4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 4 staples, 1" crown, 16 ga., 1-3/4" long	(continued)				

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b)(c)	SPACING AND LOCATION	
		Floor		
21	Joist to sill, top plate or girder	4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails		Toe nail
22	Rim joist, band joist or blocking to sill or top plate (roof applications also)	8d box (2-1/2" × 0.113") 8d common (2-1/2" × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails	4" o.c. toe nail 6" o.c. toe nail	
23	1" × 6" subfloor or less to each joist	3-8d box (2-1/2" × 0.113"); or 2-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1-3/4" long		Face nail
24	2" subfloor to joist or girder	3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162")		Blind and face nail
25	2" planks (plank & beam—floor & roof)	3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162")		At each bearing, face nail
26	Band or rim joist to joist	3-16d common (3-1/2" × 0.162") 4-10 box (3" × 0.128"), or 4-3" × 0.131" nails; or 4-3" × 14 ga. staples, 7/16" crown		End nail
27	Built-up girders and beams, 2-inch lumber layers	20d common (4" × 0.192"); or 10d box (3" × 0.128"); or 3" × 0.131" nails And: 2-20d common (4" × 0.192"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Nail each layer as follows: 32" o.c. at top and bottom and staggered. 24" o.c. face nail at top and bottom staggered on opposite sides Face nail at ends and at each splice	
28	Ledger strip supporting joists or rafters	4-16d box (3-1/2" × 0.135"); or 3-16d common (3-1/2" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails		At each joist or rafter, face nail
29	Bridging or blocking to joist	2-10d box (3" × 0.128"), or 2-8d common (2-1/2" × 0.131"); or 2-3" × 0.131" nails		Each end, toe nail
ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b)(c)	SPACING OF FASTENERS	
	Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [see Table R602.3(3) for wood structural panel exterior wall sheathing to wall framing]		Edges (inches)(h)	Intermediate supports(c)(e) (inches)
30	3/8" – 1/2"	6d common (2" × 0.113") nail (subfloor, wall)(i) 8d common (2-1/2" × 0.131") nail (roof); or RSRs-01 (2-3/8" × 0.113") nail (roof)(j)	6	12(f)
31	19/32" – 1"	8d common nail (2 1/2" × 0.131"); or RSRs-01; (2-3/8" × 0.113") nail (roof)(j)	6	12(f)
32	1-1/8" – 1-1/4"	10d common (3" × 0.148") nail; or 8d (2 1/2" × 0.131") deformed nail	6	12
Other wall sheathing(g)				
33	1/2" structural cellulosic fiberboard sheathing	1-1/2" galvanized roofing nail, 7/16" head diameter, or 1-1/4" long 16 ga. staple with 7/16" or 1" crown	3	6
34	25/32" structural cellulosic fiberboard sheathing	1-3/4" galvanized roofing nail, 7/16" head diameter, or 1-1/2" long 16 ga. staple with 7/16" or 1" crown	3	6
35	1/2" gypsum sheathing(d)	1-1/2" galvanized roofing nail; staple galvanized, 1-1/2" long; 1-1/4" screws, Type W or S	7	7
36	5/8" gypsum sheathing(d)	1-3/4" galvanized roofing nail; staple galvanized, 1-5/8" long; 1-5/8" screws, Type W or S	7	7
Wood structural panels, combination subfloor underlayment to framing				
37	3/4" and less	6d deformed (2" × 0.120") nail; or 8d common (2-1/2" × 0.131") nail	6	12
38	7/8" – 1"	8d common (2-1/2" × 0.131") nail; or 8d deformed (2-1/2" × 0.120") nail	6	12
39	1-1/8" – 1-1/4"	10d common (3" × 0.148") nail; or 8d deformed (2-1/2" × 0.120") nail	6	12
a.	Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.			
b.	Staples are 16 gauge wire and have a minimum 7/16-inch diameter crown width.			
c.	Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.			
d.	Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.			
e.	Spacing of fasteners not included in this table shall be based on Table R602.3(2).			
f.	For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 6 inches on center where the ultimate design wind speed is less than 130 mph and shall be spaced 4 inches on center where the ultimate design wind speed is 130 mph or greater but less than 140 mph.			
g.	Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C208.			
h.	Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.			
i.	Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.			
j.	RSRs-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.			