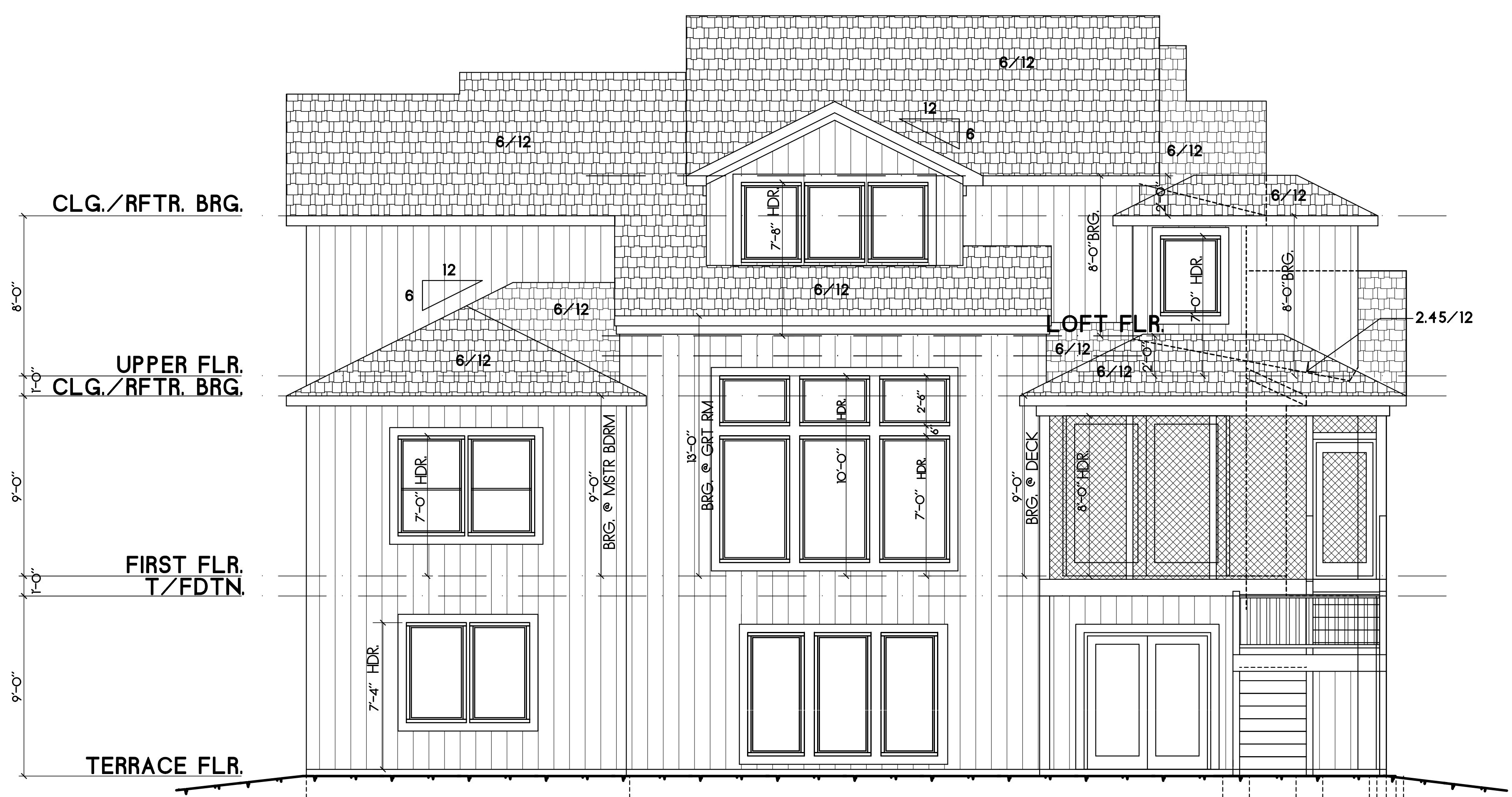
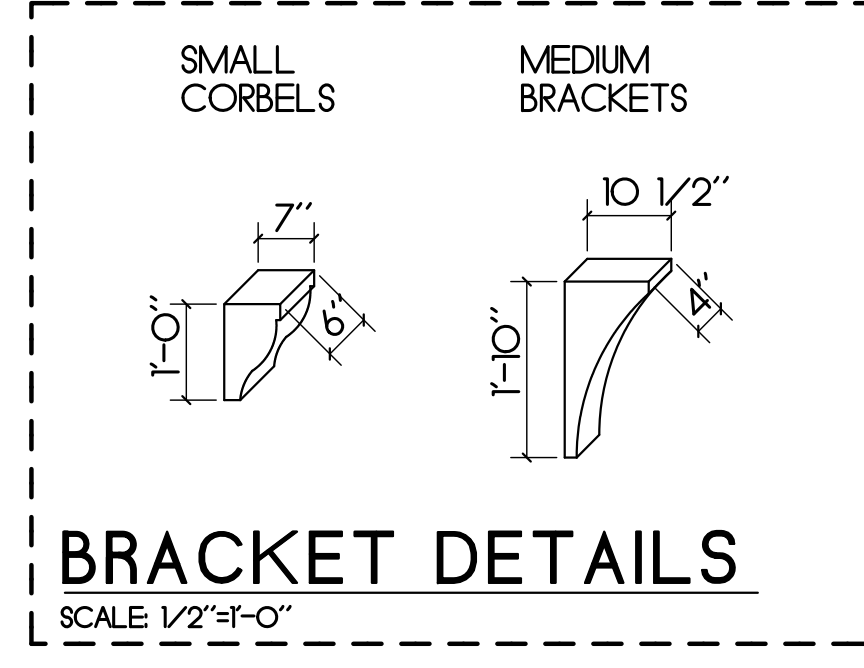
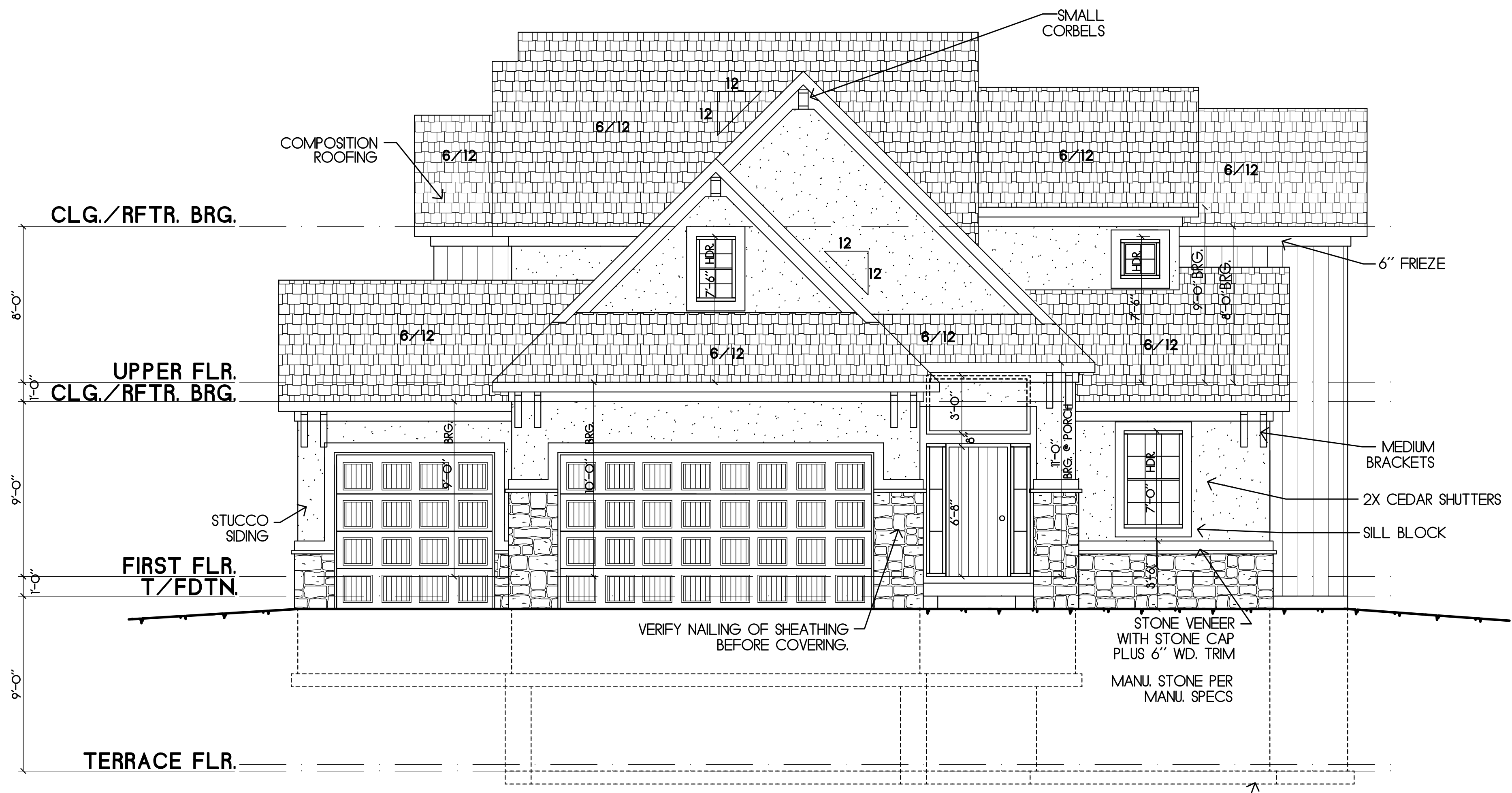


SQUARE FOOTAGE SUMMARY:	
MAIN FLOOR FINISH	1770 SF
UPPER FLOOR FINISH	1340 SF
LOWER FUTURE FINISH	600 SF
LOWER FLOOR SLAB	1700 SF
GARAGE AREA	720 SF
GARAGE SLAB	660 SF
FRONT PORCH	28 SF
REAR DECK	175 SF
LOWER FLOOR FINISH	690 SF



REAR ELEVATION
SCALE: 1/8"=1'-0"



FRONT ELEVATION (D)
SCALE: 1/4"=1'-0"

NOTE FOR S.A.B. BUILD-JOBS:

- * FINAL DETAILS INCLUDING FINIALS, SHUTTERS BRACKETS AND OTHER EXTERIOR ACCESSORIES MUST BE SELECTED AND ADDED TO THE CONTRACT OR CHANGE ORDER.

CONTRACTOR TO COORDINATE THE FOLLOWING:

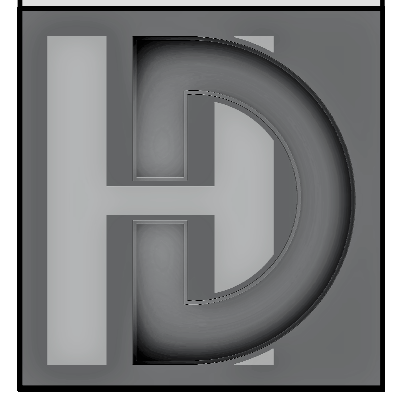
- * VERIFY EACH WALL BRG HEIGHT & WINDOW HDR HEIGHT
- * STEP DOWNS @ T/FDTN PER GRADE
- * RETAINING WALL TRANSITIONS PER GRADE
- * ROOF AND SOFFIT VENTS PER CODE
- * SEE ROOF PLAN TO CONFIRM OVERHANGS PER LOCATION
- * CONTRACTOR TO VERIFY ALL DIMENSIONS
- * MINI-CANS / EAVE LIGHTS TYP AT ALL HORIZ SOFFITS ON FRONT CONSULT ARCHITECT IF LOC. IS IN QUESTION

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
08/31/2023



STRUCTURAL REVIEW
HDR: 46305

HD ENGINEERING & DESIGN, INC
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HF100 - EXP. STRATOGA II
2107 SW HOOK FARM DRIVE, LSMO 64082

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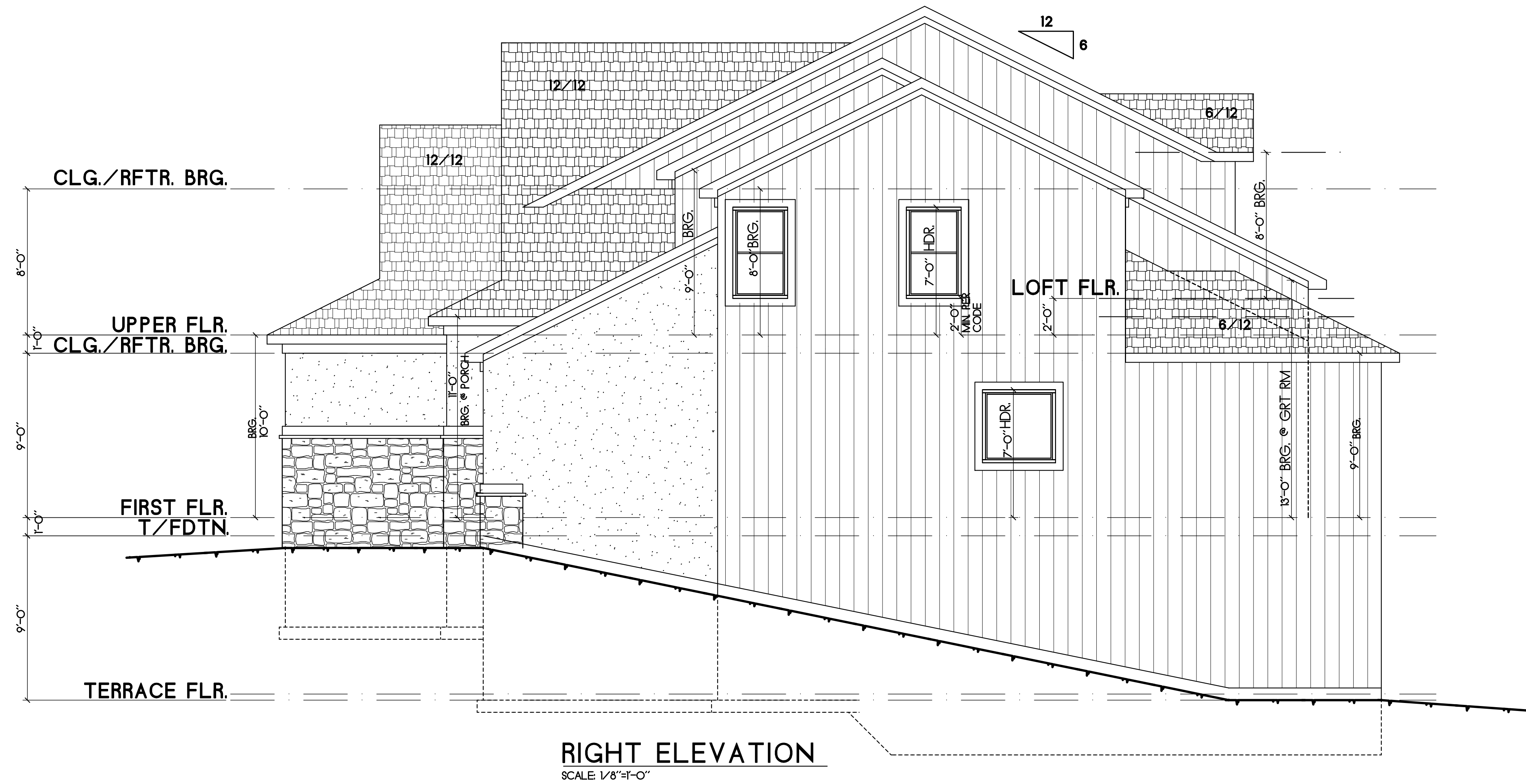
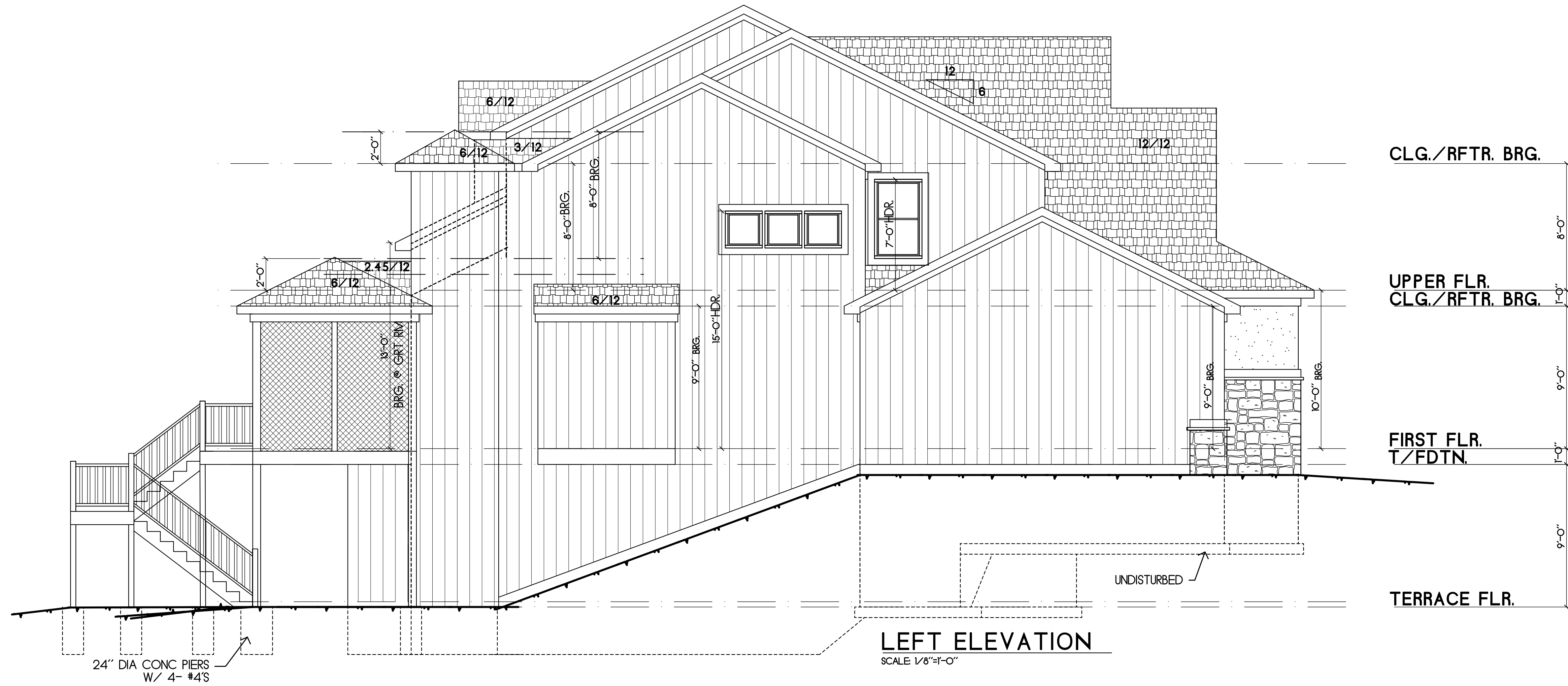
A1

STATE OF MISSOURI
 CHRIS SAATHOFF
 NUMBER 2008001865
 EXPIRES 07/17/2023
 REGISTERED PROFESSIONAL ENGINEER

STRUCTURAL REVIEW
 HD#: 46305

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 ARCHITECTURAL PLAN REVIEW
 CALL US FOR SERVICES
 LEE'S SUMMIT, MISSOURI
 08/31/2023

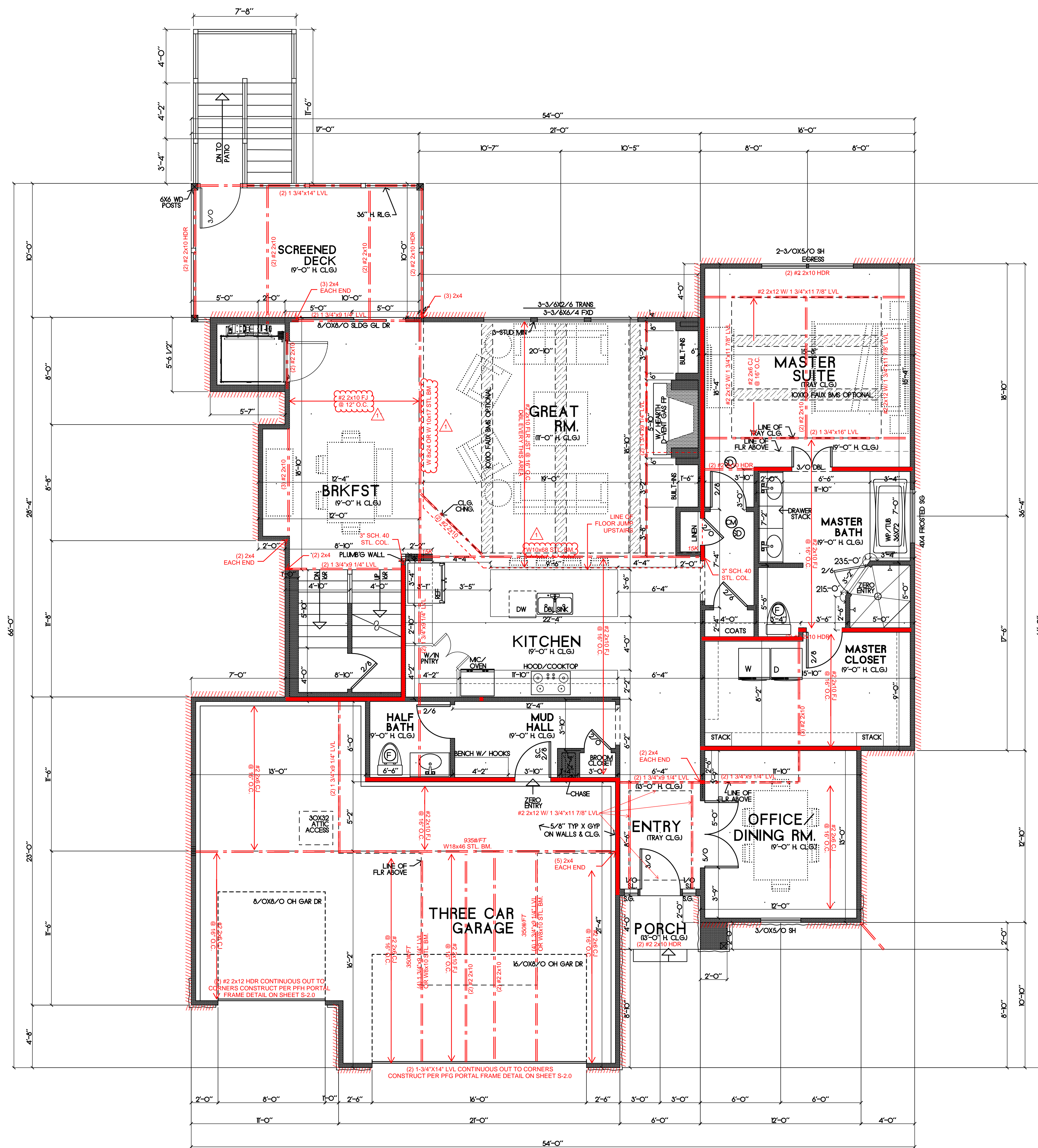


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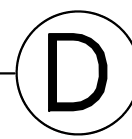
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08/28/2023 FRAMING ALTERNATES



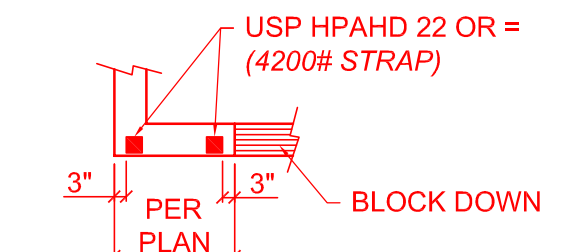
MAIN FLOOR PLAN
SCALE: 1/4"=1'-0" AREA= 1,880 SF



- LOAD BEARING WALL
- LOAD BEARING BEAM
- SD - SMOKE DETECTOR
- CO - CARBON MONOXIDE SENSOR

GENERAL NOTES:
 - WINDOW SHALL HAVE FALL PROTECTION PER IRC 312.2.4
 - HOUSE WILL BE PROVIDED WITH A "UFER" GROUND PER IRC SECTION 308.1.5
 - OVERHEAD GARAGE DOORS MUST MEET DASHA REQUIREMENTS SEE DETAIL SHEET S-1.0
 - ALL HEADERS NOT LABELED SHALL BE MIN (2) #2X10 DFL
 - DBL ALL JST UNDER ISLAND
 - SOILS IN THIS AREA COMMONLY HAVE A VERY HIGH SHRINK SWELL CAPACITY. OUR FIRM RECOMMENDS ALL SITES BE EVALUATED BY A GEOTECHNICAL FIRM PRIOR TO PLACEMENT OF FOUNDATIONS
 - PROVIDE CARBON MONOXIDE AND SMOKE DETECTORS PER IRC REQUIREMENTS
 - ANY PORTION OF THESE PRINTS ISSUED WITHOUT A MIN. OF S-1.0 - S-4.0 SHALL NOT BE CONSIDERED A COMPLETE SET OF CONSTRUCTION DOCUMENTS
 - INSTALL W8X15 STEEL BEAM MIN. UNDER ALL F.P. WALLS/SHEARWALLS (THAT WILL RECEIVE ROCK) UNLESS NOTED AS A LARGER BEAM. ANY STONE OVER 2" DEEP, NOTIFY ENG. TO VERIFY LOADS
 - FOUNDATION SHALL BE CONSTRUCTED PER JOHNSON COUNTY RESIDENTIAL FOUNDATION GUIDELINE. SEE ATTACHED ICE AND WATER SHIELD AS REQUIRED PER IRC

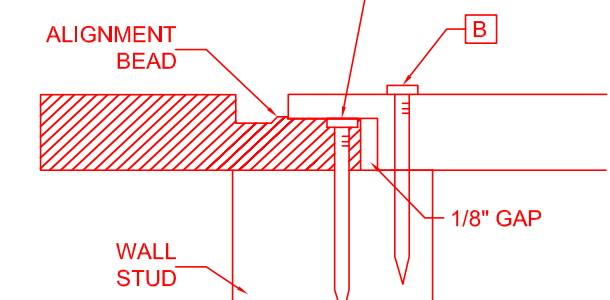
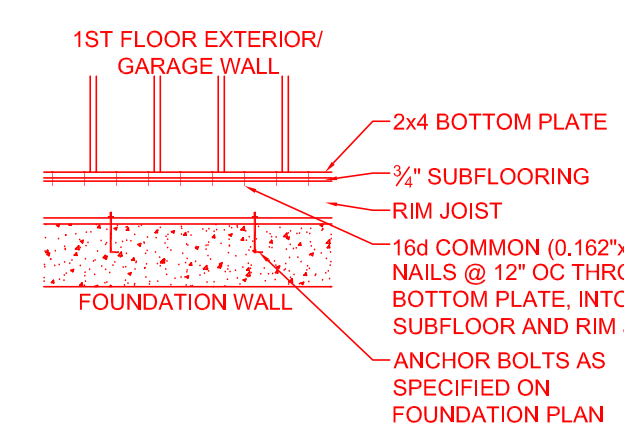
TYPICAL TIE DOWN AT NARROW WALL



BRACED WALLS:
SEE CALCULATIONS ON SHEET S-2.0, PER ASCET-10 REQUIREMENTS AS ALLOWED BY IRC 2018 R301.2.1

ALL EXTERIOR WALLS SHALL BE SHEATHED PER ANY ONE OF THE FOLLOWING OPTIONS:
 - 7/16" APA-RATED PLYWOOD/OSB WITH 8d NAILS @ 6" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
 - 7/16" SHIPLAP PANEL SHEATHING (I.E. LP SMARTSIDE OR EQUIVALENT) WITH 8d NAILS @ 6" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
 - 3/8" SHIPLAP PANEL SHEATHING (I.E. LP SMARTSIDE OR EQUIVALENT) WITH 6d NAILS @ 4" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD

INTERIOR BRACED WALL LOCATIONS ONLY SHOWN WHEN REQUIRED BY ADDITIONAL BRACING SECTION OF CALCULATIONS ON SHEET S-2.0



NAILING WITH SPACING AS SPECIFIED PER PLAN. FOR EXAMPLE, IF REQUIRED SPACING IS 4" O.C. BOTTOM LAP SHALL FIRST BE NAILED AT 4" O.C. (NAIL "A"), THEN FULL DEPTH SECTION OF OVERLAP PANEL SHALL BE NAILED @ 4" O.C. (NAIL "B")

ARCHITECTURAL NOTES:

- WALL NOTE:
SEE ELEVATIONS FOR EXTERIOR BRG. HEIGHTS
- DOOR NOTE:
8/0 DOORS @ MAIN LEVEL & 6/8 DOORS @ UPPER & LOWER LEVEL
- WINDOW NOTE:
SEE ELEVATIONS FOR HDR. HTS
- ALL TRADES TO REFER TO STRUCTURAL SHEETS IN THIS SET FOR ALL STRUCTURAL ITEMS ON THIS PROJECT.
- IF THERE IS ANY CONFLICT BETWEEN ARCH SHEETS & ENG SHEETS, FOLLOW ENGINEERING SHEETS FOR ENGINEERING ITEMS, AND/OR CONTACT ARCHITECT FOR CLARIFICATION.

REVISIONS:

HF100 - EXP. STRATOGA II
2107 SW HOOK FARM DRIVE, LSMO 64082

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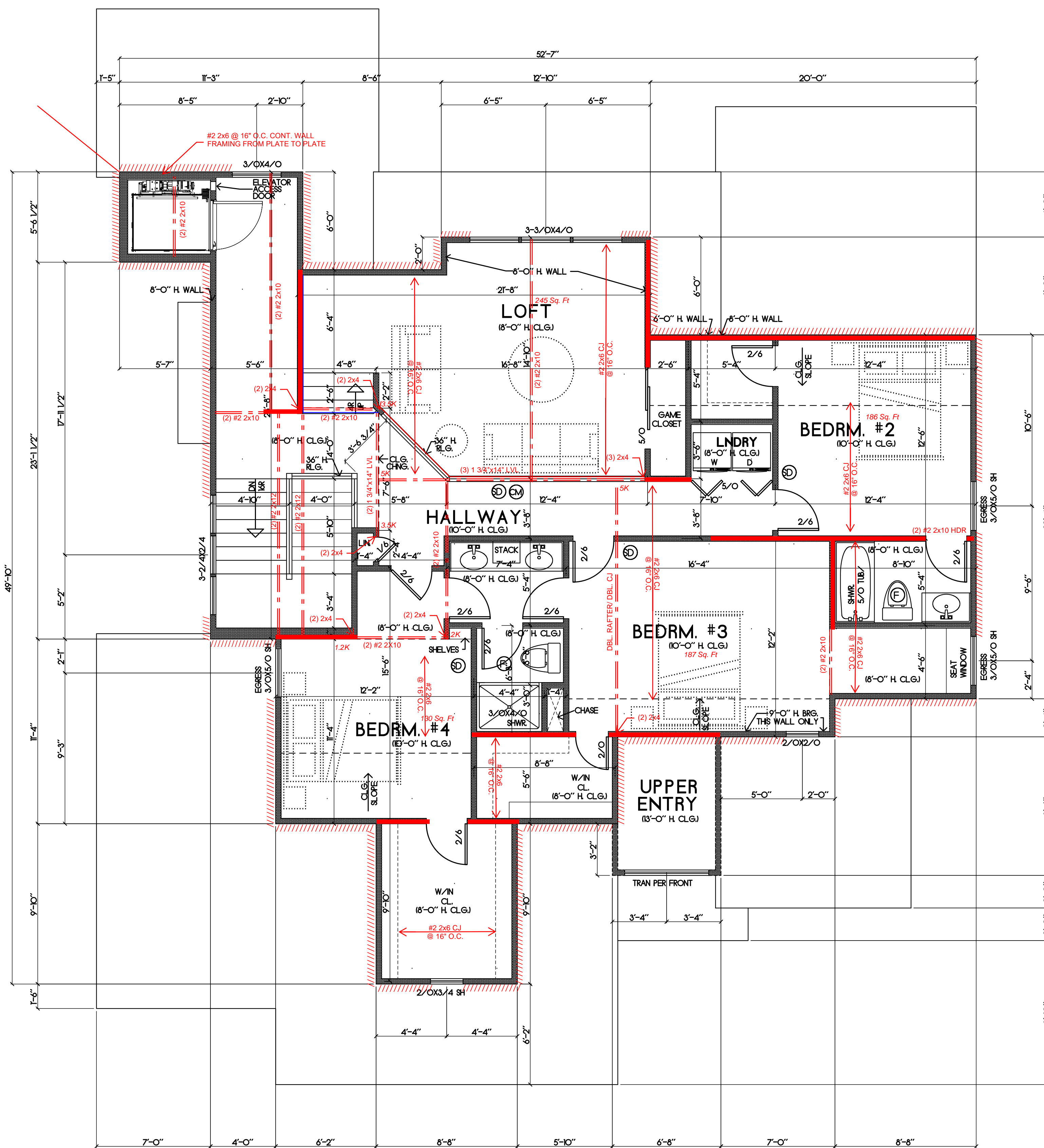


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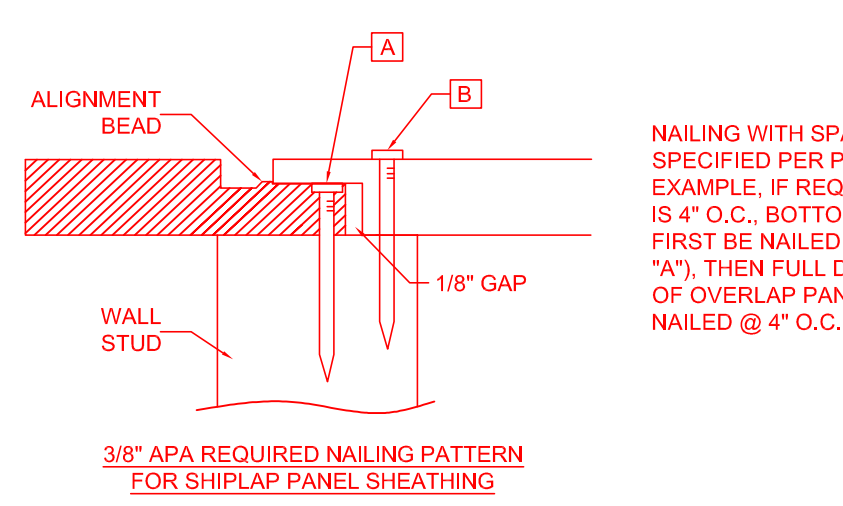
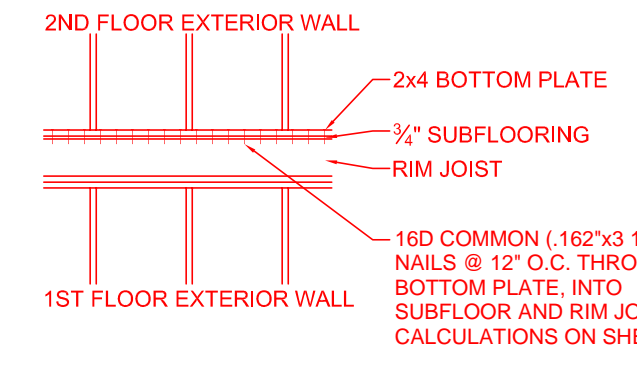
- - LOAD BEARING WALL
- - - - - - LOAD BEARING BEAM
- SD - SMOKE DETECTOR
- CO - CARBON MONOXIDE SENSOR

GENERAL NOTES:
 - WINDOW SHALL HAVE FALL PROTECTION PER IRC 312.2.4
 - HOUSE WILL BE PROVIDED WITH A "UFER" GROUND PER IRC SECTION 308.1.5
 - OVERHEAD GARAGE DOORS MUST MEET DASMA REQUIREMENTS SEE DETAIL SHEET S-1.0
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 - SOILS IN THIS AREA COMMONLY HAVE A VERY HIGH SHRINK SWELL CAPACITY. OUR FIRM RECOMMENDS ALL SITES BE EVALUATED BY A GEOTECHNICAL FIRM PRIOR TO PLACEMENT OF FOUNDATIONS.
 - PROVIDE CARBON MONOXIDE AND SMOKE DETECTORS PER IRC REQUIREMENTS
 - ANY PORTION OF THESE PRINTS ISSUED WITHOUT A MIN. OF S-1.0 - S-4.0 SHALL NOT BE CONSIDERED A COMPLETE SET OF CONSTRUCTION DOCUMENTS
 - ICE AND WATER SHIELD AS REQUIRED PER IRC

BRACED WALLS:
 SEE CALCULATIONS ON SHEET S-2.0, PER ASCET-10 REQUIREMENTS AS ALLOWED BY IRC 2018 R301.2.1

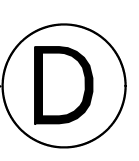
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 - 7/16" APA-RATED PLYWOOD/OSB WITH 8d NAILS @ 6" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
 - 7/16" SHIPLAP PANEL SHEATHING (I.E. LP SMARTSIDE OR EQUIVALENT) WITH 8d NAILS @ 6" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
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INTERIOR BRACED WALL LOCATIONS ONLY SHOWN WHEN REQUIRED BY ADDITIONAL BRACING SECTION OF CALCULATIONS ON SHEET S-2.0



- ARCHITECTURAL NOTES:**
- WALL NOTE:
SEE ELEVATIONS FOR EXTERIOR BRG. HEIGHTS
 - DOOR NOTE:
8'-0" DOORS @ MAIN LEVEL & 6'-8" DOORS @ UPPER & LOWER LEVEL
 - WINDOW NOTES:
SEE ELEVATIONS FOR HDR. HTS
 - ALL TRADES TO REFER TO STRUCTURAL SHEETS IN THIS SET FOR ALL STRUCTURAL ITEMS ON THIS PROJECT.
 - IF THERE IS ANY CONFLICT BETWEEN ARCH SHEETS & ENG SHEETS, FOLLOW ENGINEERING SHEETS FOR ENGINEERING ITEMS, AND/OR CONTACT ARCHITECT FOR CLARIFICATION.

UPPER FLOOR PLAN
 SCALE: 1/4"=1'-0"
 AREA= 1,398 SF



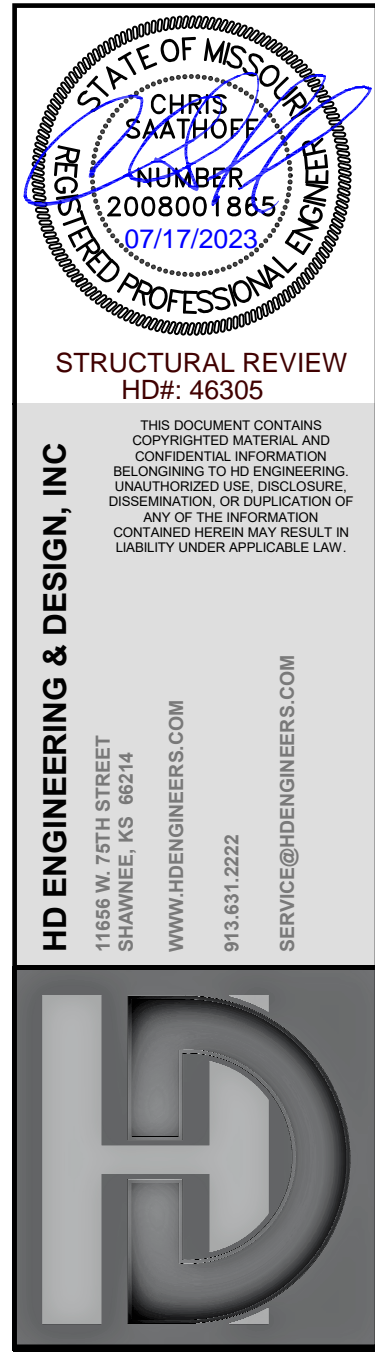
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 2107 SW HOOK FARM DRIVE, LSMO 64082

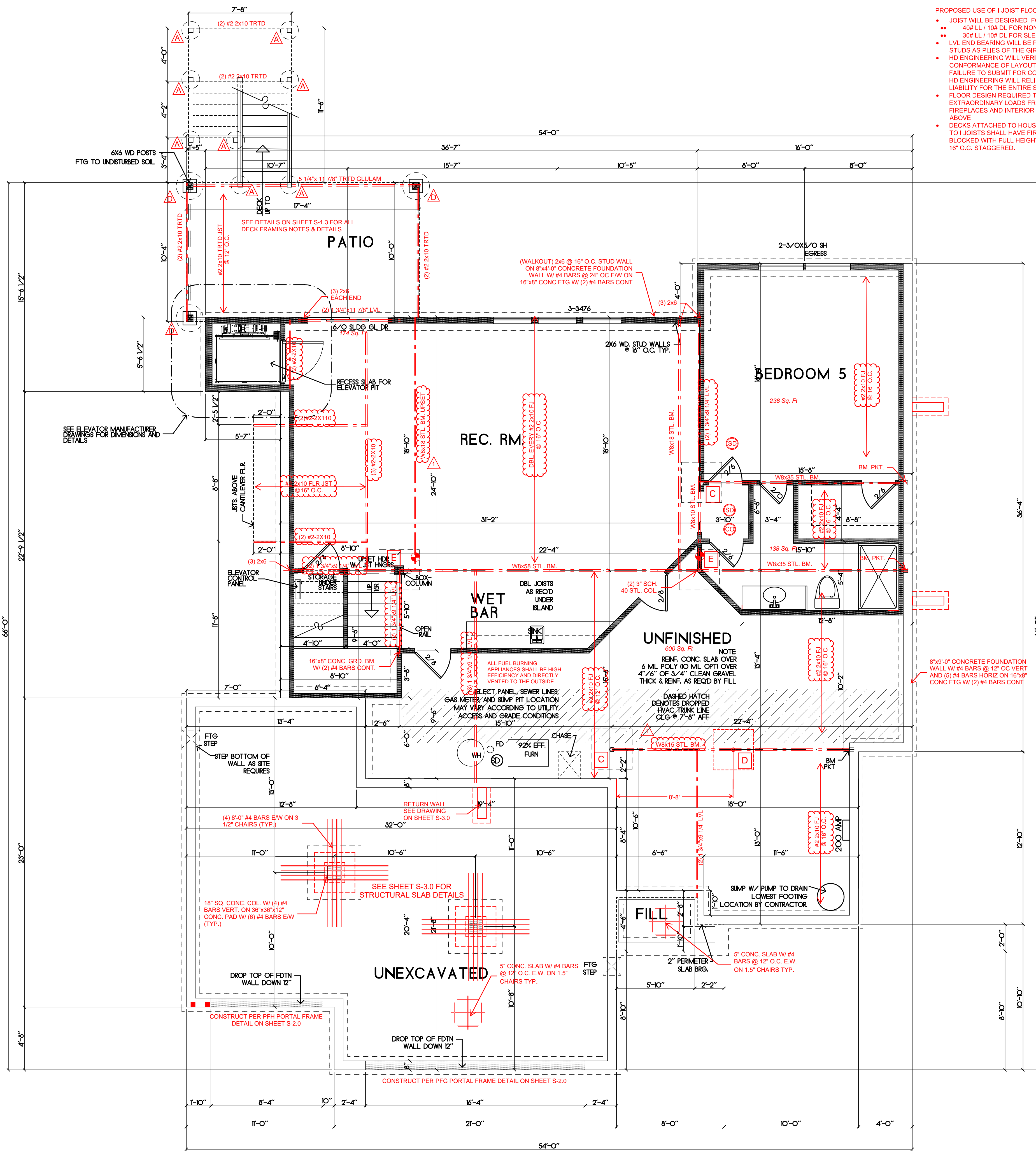
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08/28/2023 FRAMING ALTERNATES



- PROPOSED USE OF JOIST FLOOR SYSTEM**
- JOIST WILL BE DESIGNED FOR:
 - 40# LL / 10# DL FOR NON SLEEPING AREAS
 - 30# LL / 10# DL FOR SLEEPING AREAS
 - LVL END BEARING WILL BE PROVIDED WITH TWICE THE STUDS AS FLIES OF THE GIRDER.
 - HD ENGINEERING WILL VERIFY GENERAL CONFORMANCE OF LAYOUT PRIOR TO SUBMISSION. FAILURE TO SUBMIT FOR CONFORMANCE REVIEW BY HD ENGINEERING WILL RELIEVE HD ENGINEERING OF LIABILITY FOR THE ENTIRE STRUCTURE.
 - FLOOR DESIGN REQUIRED TO ACCOUNT FOR EXTRAORDINARY LOADS FROM COUNTERTOPS, FIREPLACES AND INTERIOR FINISH LOADS FROM ABOVE.
 - DECKS ATTACHED TO HOUSE RIM RUNNING PARALLEL TO JOISTS SHALL HAVE FIRST 4 JOIST SPACES BLOCKED WITH FULL HEIGHT 2X OR I-JOIST BLOCKS AT 16" O.C. STAGGERED.

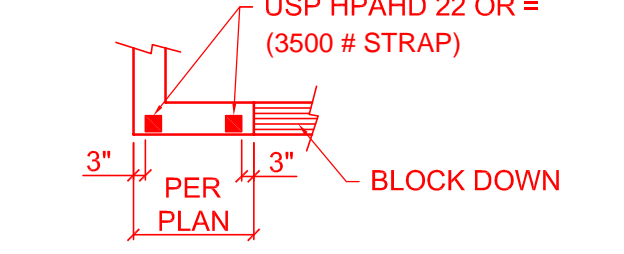
- DECK PIER SCHEDULE**
- MIN. 6X6 TRTD/CDR POST ON 12" CONC. PIER WITH USP PAU 66 BASE OR = (117# MAX)
 - MIN. 6X6 TRTD/CDR POST ON 16" CONC. PIER WITH USP PAU 66 BASE OR = (2050# MAX)
 - MIN. 6X6 TRTD/CDR POST ON 18" CONC. PIER WITH USP PAU 66 BASE OR = (2649# MAX)
 - MIN. 6X6 TRTD/CDR POST ON 24" CONC. PIER WITH USP PAU 66 BASE OR = (4710# MAX)
- PIERS TO TERMINATE ON ORIGINAL SOIL OF 1500 PSF MINIMUM BEARING.
PIERS TO TERMINATE AT A POINT 36" MINIMUM BELOW FINISH GRADE.
POST ARE NOT TO EXCEED AN UNBRACED LENGTH OF 12' WITHOUT CONTACTING HD ENGINEERING FOR GUIDANCE.

- COLUMN PAD SCHEDULE**
- A 3" SCH. 40 STL. COL. ON 30"x30"x12" CONC. PAD W/ (5) #4 BARS E.W. (9.4K MAX.)
 - B 3" SCH. 40 STL. COL. ON 36"x36"x12" CONC. PAD W/ (6) #4 BARS E.W. (13.5K MAX.)
 - C 3 1/2" SCH. 40 STL. COL. ON 42"x42"x14" CONC. PAD W/ (7) #4 BARS E.W. (18.4K MAX.)
 - D 3 1/2" SCH. 40 STL. COL. ON 48"x48"x16" CONC. PAD W/ (8) #4 BARS E.W. (24K MAX.)
 - E 3 1/2" SCH. 40 STL. COL. ON 54"x54"x18" CONC. PAD W/ (9) #4 BARS E.W. (30.4K MAX.)
 - F 3 1/2" SCH. 40 STL. COL. ON 60"x60"x18" CONC. PAD W/ (10) #4 BARS E.W. (37.5K MAX.)

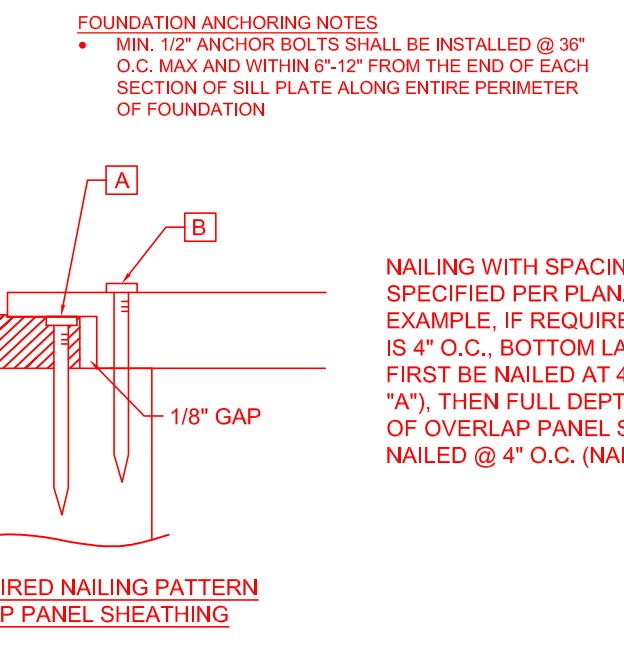
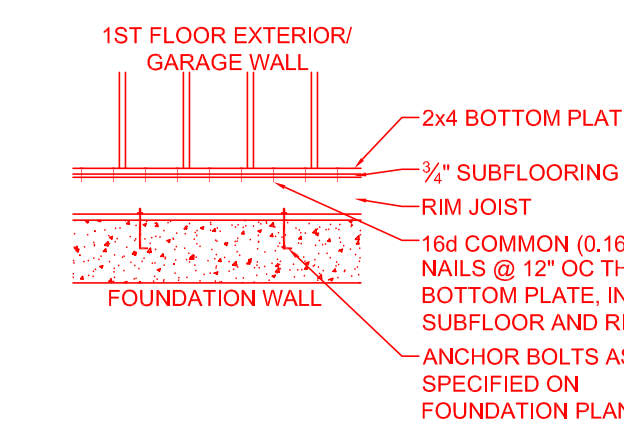
- NOTES**
- COLUMN AND PIER PAD SIZES SHOWN ARE FOR MAX. COLUMN HEIGHT OF 10'-0" TALL.
 - COLUMN AND PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED 1500 PSF. THIS IS THE CAPACITY REQUIRED BY AHJ. UNDERLINED GENERAL NOTES ON S-1.0 FOR MORE DETAILS.
 - ALL STEEL COLUMNS SHALL BE ISOLATED FROM SLABS WITH APPROVED ISOLATION DEVICE OR JOINT.

- GENERAL NOTES:**
- WINDOW SHALL HAVE FALL PROTECTION PER IRC 312.2.4
 - HOUSE WILL BE PROVIDED WITH A "UFER" GROUND PER IRC SECTION 3608.1.5
 - OVERHEAD GARAGE DOORS MUST MEET DASMA REQUIREMENTS SEE DETAIL SHEET S-1.0
 - ALL HEADERS NOT LABELED SHALL BE MIN (2) #2-2X10 DFL
 - DBL ALL JST UNDER ISLAND
 - SOILS IN THIS AREA COMMONLY HAVE A VERY HIGH SHRINK SWELL CAPACITY. OUR FIRM RECOMMENDS ALL SITES BE EVALUATED BY A GEOTECHNICAL FIRM PRIOR TO PLACEMENT OF FOUNDATIONS
 - PROVIDE GARBON MONOXIDE AND SMOKE DETECTORS PER IRC REQUIREMENTS
 - ANY PORTION OF THESE PRINTS ISSUED WITHOUT A MIN. OF S-1.0 - S-4.0 SHALL NOT BE CONSIDERED A COMPLETE SET OF CONSTRUCTION DOCUMENTS
 - ICE AND WATER SHIELD AS REQUIRED PER IRC

TYPICAL TIE DOWN AT NARROW WALL



- BRACED WALLS:**
- SEE CALCULATIONS ON SHEET S-2.0. PER ASC7-10 REQUIREMENTS AS ALLOWED BY IRC 2018 R301.2.1
- ALL EXTERIOR WALLS SHALL BE SHEATHED PER ANY ONE OF THE FOLLOWING OPTIONS:**
- 7/16" APA-RATED PLYWOOD/OSB WITH 8d NAILS @ 6" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
 - 7/16" SHIPLAP PANEL SHEATHING (I.E. LP SMARTSIDE OR EQUIVALENT) WITH 8d NAILS @ 6" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
 - 3/8" SHIPLAP PANEL SHEATHING (I.E. LP SMARTSIDE OR EQUIVALENT) WITH 8d NAILS @ 4" O.C. AT EDGES AND @ 12" O.C. IN THE FIELD
- INTERIOR BRACED WALL LOCATIONS ONLY SHOWN WHEN REQUIRED BY ADDITIONAL BRACING SECTION OF CALCULATIONS ON SHEET S-2.0**



- ARCHITECTURAL NOTES:**
- WALL NOTE: SEE ELEVATIONS FOR EXTERIOR BRG. HEIGHTS
 - DOOR NOTE: 8'/0 DOORS @ MAIN LEVEL & 6'/8 DOORS @ UPPER & LOWER LEVEL
 - WINDOW NOTES: SEE ELEVATIONS FOR HDR. HTS
 - ALL TRADES TO REFER TO STRUCTURAL SHEETS IN THIS SET FOR ALL STRUCTURAL ITEMS ON THIS PROJECT.
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LOWER FLOOR PLAN
SCALE: 1/4"=1'-0" FINISHED AREA=690 SF
ADAPT FDTN WALL HTS FOR SITE TOPO

REVISIONS:

HF100 - EXP. STRATOGA II
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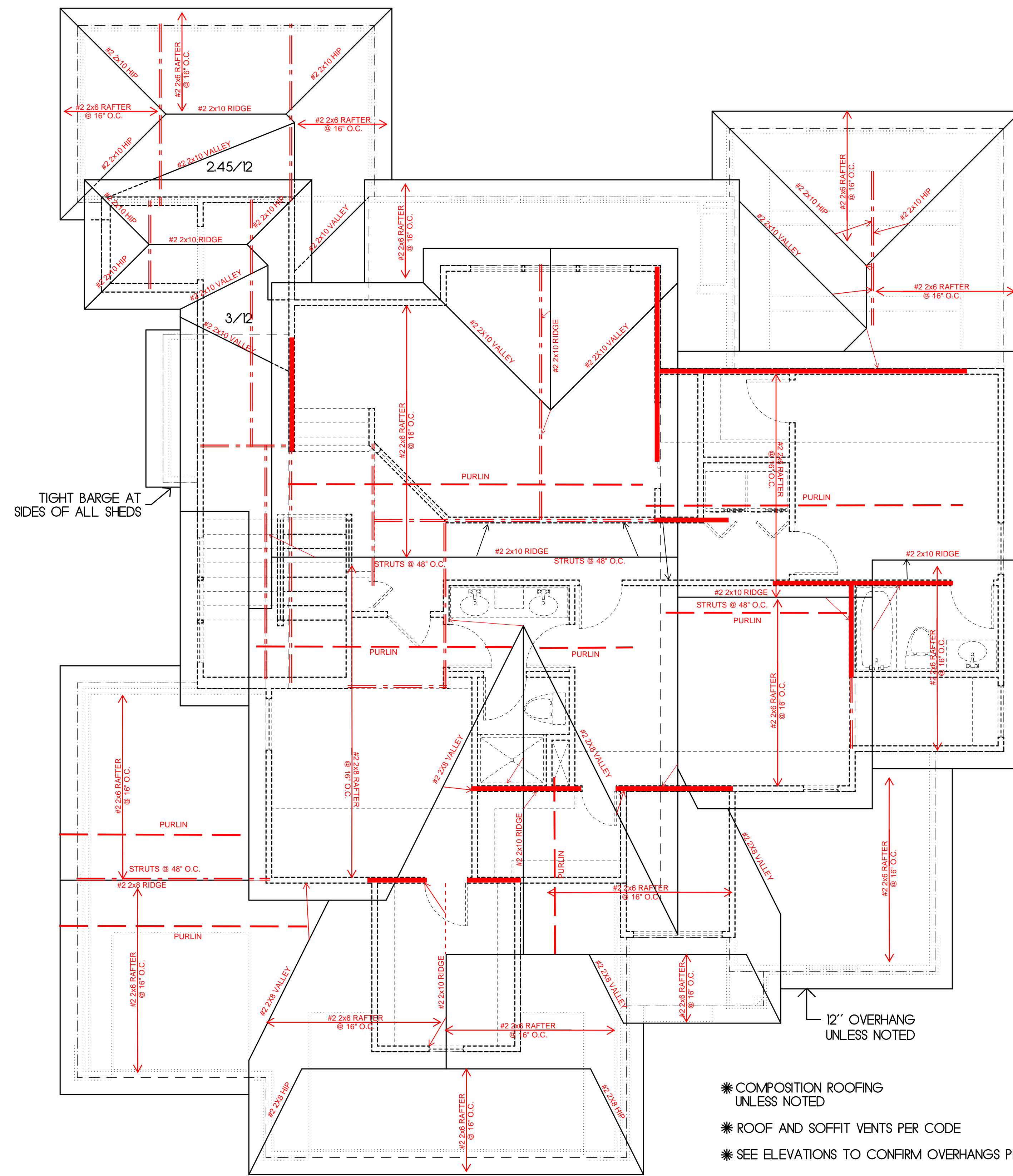
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08/31/2023



STRUCTURAL REVIEW
HD# 46305

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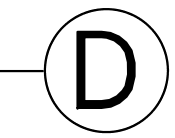
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SHAWNEE, KS 66214
WWW.HDENGINEERS.COM
913.671.2222
SERVICE@HDENGINEERS.COM



- * COMPOSITION ROOFING UNLESS NOTED
- * ROOF AND SOFFIT VENTS PER CODE
- * SEE ELEVATIONS TO CONFIRM OVERHANGS PER LOCATION

ROOF FRAMING PLAN

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



12/12 PITCH ONLY @ BOTH FRONT GABLES
6/12 PITCH TYP. U.N.O.

NOTES

ROOF DESIGNED FOR LIGHT ROOF COVERING 30PSF
TOTAL LOAD (10PSF DL, 20PSF LL (SL))

RAFTERS (DOUG-FIR, OR EQUAL):
SEE SPAN CHARTS BELOW

CODE MINIMUM

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	@24" O.C.	11'-11"
#2-2x6	@18" O.C.	14'-1"
#2-2x6	@24" O.C.	15'-1"
#2-2x6	@18" O.C.	18'-5"
#2-2x10	@24" O.C.	18'-5"
#2-2x10	@18" O.C.	22'-6"

NOTE: CODE MINIMUM L/240 DEFLECTION

GREATER THAN CODE

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	@24" O.C.	9'-0"
#2-2x6	@18" O.C.	9'-0"
#2-2x6	@24" O.C.	11'-3"
#2-2x6	@18" O.C.	12'-6"
#2-2x10	@24" O.C.	14'-3"
#2-2x10	@18" O.C.	16'-3"

DEFLECTION = L/360 LIVE LOAD, L/240 TOTAL LOAD
VAULTS TO BE 2x10 DEPTH

ALL RIDGES, HIPs, AND VALLEYS NOT MARKED SHALL BE (1)
NOMINAL SIZE LARGER THAN THE INTERSECTING RAFTERS

PURLINS ARE 2x6 MIN.
PURLIN STRUTS ARE AT 4'-0" O.C.
PURLIN STRUTS SHALL BE INSTALLED AT NOT LESS
THAN A 45 DEGREE ANGLE WITH THE HORIZONTAL
ALL PURLIN STRUTS SHALL HAVE A MAXIMUM UNBRACED
LENGTH OF 8'-0"
PURLIN STRUTS SHALL BE CONSTRUCTED IN A "T"
CONFIGURATION AND PER THE FOLLOWING CHART

PURLIN STRUT	MAX PURLIN STRUT LENGTH
(2) 2x4	8'-0"
(1) 2x4 & (1) 2x6	12'-0"
(1) 2x6 & (1) 2x6	20'-0"
(2) 2x6 & (1) 2x6	30'-0"
CONSULT ARCH/ENGR	>30'-0"

-EACH END OF STRUT SHALL BE FASTENED WITH MIN.
(3) 8d OR (2) 16d NAILS
-RIDGE BRACES ARE SAME AS PURLIN BRACES:
SPACING, SIZE, CONFIGURATION, AND INSTALLATION
(SEE PURLIN BRACE NOTE ABOVE)
-HIP AND VALLEY BRACES ARE THE SAME AS PURLIN
SIZE, CONFIGURATION, AND INSTALLATION (SEE PURLIN
BRACE NOTES ABOVE)

SEE DETAILS 1, 5, 6, 7, 11, 12, 13, & 14 ON S-1.2
FOR ROOF FRAMING AND INSULATION OPTIONS

- PURLIN
- LOAD BEARING WALL
- LOAD BEARING BEAM/
GIRDER PER PLAN

SEE DETAIL 12/S-1.2 FOR RAFTER TIE CONNECTION FOR
CLG JOISTS PERPENDICULAR TO HIP RAFTERS

ALL RIDGES, HIPs, & VALLEYS SHALL BE FASTENED TO
EXTERIOR WALLS, BEAMS, OR LOAD BEARING WALL TOP
PLATE PER FRAME FASTENING SCHEDULE ON S-1.0, AND
PER R802.11. ALL UPLIFT OVER 200# SHALL BE FASTENED
AS SHOWN ON THIS PLAN SHEET

ALL RAFTERS SHALL BE FASTENED TO TOP PLATE WITH (8)
16d COMMON NAILS

↑ IF ADDITIONAL HOLD DOWN STRAP REQUIRED: X=UPLIFT
FORCE (POUNDS), REQUIRED SIMPSON HOLD-DOWN

□ SIMPSON STRAP FASTENED TO STRUCTURAL HIP, VALLEY,
OR RIDGE AND STRUT SUPPORT. MUST ALSO STRAP
BOTTOM END OF STRUT TO BEAM/WALL BELOW WITH
SAME SIZE STRAP

REVISIONS:

HF100 - EXP. STRATOGA II
2107 SW HOOK FARM DRIVE, LSMO 64082

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TABLE R602.3(1) FASTENING SCHEDULE

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" x 0.113"); OR 3-8D COMMON (2 1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 0.131" NAILS	TOE NAIL
2	CEILING JOISTS TO PLATE		PER JOIST, TOE NAIL
3	CEILING JOISTS NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS (SEE SECTION R802.5.2 AND TABLE R802.5.2)	4-10D BOX (3" x 0.128"); OR 3-16D COMMON (3 1/2" x 0.162"); OR 4-3" x 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 1 1/2" x 20 GA. RIDGE STRAP TO RAFTER	4-10D BOX (3" x 0.128"); OR 3-10D COMMON (3" x 0.148"); OR 4-3" x 0.131" NAILS	FACE NAIL EACH RAFTER
6	RAFTER OR ROOF TRUSS TO PLATE	3-16D BOX NAILS (3 1/2" x 0.135"); OR 3-10D COMMON NAILS (3" x 0.148"); OR 4-10D BOX (3" x 0.128"); OR 4-3" x 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" x 0.135"); OR 3-10D COMMON (3" x 0.148"); OR 4-10D BOX (3" x 0.128"); OR 4-3" x 0.131" NAILS 3-16D BOX (3 1/2" x 0.135"); OR 2-16D COMMON (3 1/2" x 0.162"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 0.131" NAILS	TOE NAIL END NAIL
WALL			
8	STUD TO STUD (NOT BRACED WALL PANELS)	16D COMMON (3 1/2" x 0.162") 10D BOX (3" x 0.128"); OR 3" x 0.131" NAILS	24" O.C. FACE NAIL 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" x 0.135"); OR 3" x 0.131" NAILS	12" O.C. FACE NAIL
10	BUILT-UP HEADER (2" TO 2" HEADER WITH 1/2" SPACER)	16D COMMON (3 1/2" x 0.162") 16D BOX (3 1/2" x 0.135")	16" O.C. EACH EDGE FACE NAIL 12" O.C. EACH EDGE FACE NAIL
11	CONTINUOUS HEADER TO STUD	5-8D BOX (2 1/2" x 0.113"); OR 4-8D COMMON (2 1/2" x 0.131"); OR 4-10D BOX (3" x 0.128")	TOE NAIL
12	TOP PLATE TO TOP PLATE	16D COMMON (3 1/2" x 0.162") 10D BOX (3" x 0.128"); OR 3" x 0.131" NAILS	16" O.C. FACE NAIL 12" O.C. FACE NAIL
13	DOUBLE TOP PLATE SPLICE	8-16D COMMON (3 1/2" x 0.162"); OR 12-16D BOX (3 1/2" x 0.135"); OR 12-10D BOX (3" x 0.128"); OR 12-3" x 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" x 0.162") 16D BOX (3 1/2" x 0.135"); OR 3" x 0.131" NAILS	16" O.C. FACE NAIL 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" x 0.135"); OR 2-16D COMMON (3 1/2" x 0.162"); OR 4-3" x 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" x 0.113"); OR 3-16D BOX (3 1/2" x 0.135"); OR 4-8D COMMON (2 1/2" x 0.131"); OR 4-10D BOX (3" x 0.128"); OR 4-3" x 0.131" NAILS 3-16D BOX (3 1/2" x 0.135"); OR 2-16D COMMON (3 1/2" x 0.162"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 0.131" NAILS	TOE NAIL END NAIL
17	TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS	3-10D BOX (3" x 0.128"); OR 2-16D COMMON (3 1/2" x 0.162"); OR 3-3" x 0.131" NAILS	FACE NAIL
18	1" BRACE TO EACH STUD AND PLATE	3-8D BOX (2 1/2" x 0.113"); OR 2-8D COMMON (2 1/2" x 0.131"); OR 2-10D BOX (3" x 0.128"); OR 2 STAPLES, 1 1/2"	FACE NAIL
19	1" x 6" SHEATHING TO EACH BEARING	3-8D BOX (2 1/2" x 0.113"); OR 2-8D COMMON (2 1/2" x 0.131"); OR 2-10D BOX (3" x 0.128"); OR 2 STAPLES, 1" CROWN, 16 GA., 1 3/4" LONG	FACE NAIL
20	1" x 8" AND WIDER SHEATHING TO EACH BEARING	3-8D BOX (2 1/2" x 0.113"); OR 3-8D COMMON (2 1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 3 STAPLES, 1" CROWN, 16 GA., 1 3/4" LONG WIDER THAN 1" x 8" 4-8D BOX (2 1/2" x 0.113"); OR 3-8D COMMON (2 1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 4 STAPLES, 1" CROWN, 16 GA., 1 3/4" LONG	FACE NAIL
FLOOR			
21	JOIST TO SILL, TOP PLATE OR GIRDER	4-8D BOX (2 1/2" x 0.113"); OR 3-8D COMMON (2 1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 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" x 0.113") 8D COMMON (2 1/2" x 0.131"); OR 10D BOX (3" x 0.128"); OR 3" x 0.131" NAILS	4" O.C. TOE NAIL 6" O.C. TOE NAIL
23	1" x 6" SUBFLOOR OR LESS TO EACH JOIST	3-8D BOX (2 1/2" x 0.113"); OR 2-8D COMMON (2 1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 2 STAPLES, 1" CROWN, 16 GA., 1 3/4" LONG	FACE NAIL
FLOOR			
24	2" SUBFLOOR TO JOIST OR GIRDER	3-16D BOX (3 1/2" x 0.135"); OR 2-16D COMMON (3 1/2" x 0.162")	BLIND AND FACE NAIL
25	2" PLANKS (PLANK & BEAM-FLOOR AND ROOF)	3-16D BOX (3 1/2" x 0.135"); OR 2-16D COMMON (3 1/2" x 0.162")	AT EACH BEARING, FACE NAIL
26	BAND OR RIM JOIST TO JOIST	3-16D COMMON (3 1/2" x 0.162"); OR 4-10D BOX (3" x 0.128"); OR 4-3" x 0.131" NAILS; OR 4-3" x 14 GA. STAPLES, 7/16" CROWN	END NAIL
27	BUILT-UP GIRDERS AND BEAMS, 2-INCH LUMBER LAYERS	20D COMMON (4" x 0.192"); OR 10D BOX (3" x 0.128"); OR 3" x 0.131" NAILS AND: 2-20D COMMON (4" x 0.192"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 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" x 0.135"); OR 3-16D COMMON (3 1/2" x 0.162"); OR 4-10D BOX (3" x 0.128"); OR 4-3" x 0.131" NAILS	AT EACH JOIST OR RAFTER, FACE NAIL
29	BRIDGING OR BLOCKING TO JOIST	2-10D BOX (3" x 0.128"); OR 2-8D COMMON (2 1/2" x 0.131"); OR 2-3" x 0.131" NAILS	EACH END, TOE NAIL

For Sill: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 ksi = 6.895 MPa.

- NAILS ARE SMOOTH-CROWN, 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 1/16 INCH (20D COMMON NAIL), 90 KSI FOR SHANK DIAMETERS LARGER THAN 1/16 INCH BUT NOT LARGER THAN 1/4 INCH, AND 100 KSI FOR SHANK DIAMETERS OF 1/4 INCH OR LESS.
- STAPLES ARE 16 GAGE WIRE AND HAVE A MINIMUM 7/16 INCH ON DIAMETER CROWN WIDTH.
- NAILS SHALL BE SPACED AT NOT MORE THAN 12 INCHES ON CENTER AT ALL SUPPORTS WHERE SPANS ARE 48 INCHES OR GREATER.
- FOUR-FOOT BY 8-FOOT OR 4-FOOT BY 8-FOOT PANELS SHALL BE APPLIED VERTICALLY.
- SPACING OF FASTENERS NOT INCLUDED IN THIS TABLE SHALL BE BASED ON TABLE R602.3(2).
- 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.
- GYPSUM SHEATHING SHALL CONFORM TO ASTM C1396 AND SHALL BE INSTALLED IN ACCORDANCE WITH SECTION R602.3(3).
- 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 OR ROOF OR FLOOR PERIMETER 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.
- 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.
- RRSR-01 IS A ROOF SHEATHING RING SHANK NAIL MEETING THE SPECIFICATIONS IN ASTM F1687.

CONTINUED TABLE R602.3(1) FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER ^{a, b, c}	SPACING OF FASTENERS	
			EDGES (INCHES)	INTERMEDIATE SUPPORTS ^d (INCHES)
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]				
30		6D COMMON (2" x 0.113") NAIL (SUBFLOOR, WALL) OR 8D COMMON (2 1/2" x 0.131") NAIL (ROOF); OR RRSR-01 (2 3/8" x 0.113") NAIL (ROOF)	6	12'
31		8D COMMON NAIL (2 1/2" x 0.131"); OR RRSR-01 (2 3/8" x 0.113") NAIL (ROOF)	6	12'
32		10D COMMON (3" x 0.148") NAIL; OR 8D (2 1/2" x 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 3/8" LONG, 1 3/8" SCREWS, TYPE W OR S	7	7
WOOD STRUCTURAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRAMING				
37		6D DEFORMED (2" x 0.120") NAIL; OR 8D COMMON (2 1/2" x 0.131") NAIL	6	12
38		8D COMMON (2 1/2" x 0.131") NAIL; OR 8D DEFORMED (2 1/2" x 0.120") NAIL	6	12
39		10D COMMON (3" x 0.148") NAIL; OR 8D DEFORMED (2 1/2" x 0.120") NAIL	6	12

TABLE R602.3(2) ALTERNATE ATTACHMENTS TO TABLE R602.3(1)

NOMINAL MATERIAL THICKNESS (INCHES)	DESCRIPTION ^{a, b} OF FASTENER AND LENGTH (INCHES)	SPACING ^c OF FASTENERS	
		EDGES (INCHES)	INTERMEDIATE SUPPORTS (INCHES)
WOOD STRUCTURAL PANELS SUBFLOOR, ROOF^g AND WALL SHEATHING TO FRAMING AND PARTICLEBOARD WALL SHEATHING TO FRAMING^g			
UP TO 1/2	STAPLE 15 GA, 1 3/4"	4	8
	0.097 - 0.099 NAIL 2 1/4"	3	6
19/32 AND 3/8	STAPLE 16 GA, 1 3/4"	3	6
	0.113 NAIL 2"	3	6
21/32 AND 3/4	STAPLE 15 AND 16 GA, 2"	4	8
	0.097 - 0.099 NAIL 2 1/4"	4	8
1	STAPLE 14 GA, 2"	4	8
	0.097 - 0.099 NAIL 2 1/4"	4	8
1	STAPLE 16 GA, 2"	4	8
	0.113 NAIL 2 1/4"	3	6
1	STAPLE 14 GA, 2 1/4"	4	8
	0.113 NAIL 2 1/4"	3	6
1	STAPLE 15 GA, 2 1/4"	4	8
	0.097 - 0.099 NAIL 2 1/2"	4	8
NOMINAL MATERIAL THICKNESS (INCHES)			
DESCRIPTION^{a, b} OF FASTENER AND LENGTH (INCHES)			
		SPACING^c OF FASTENERS	
		EDGES (INCHES)	BODY OF PANEL^d (INCHES)
FLOOR UNDERLAYMENT; PLYWOOD-HARDBOARD-PARTICLEBOARD-FIBER-CEMENT^g			
FIBER-CEMENT			
1/4	3D, CORROSION-RESISTANT, RING SHANK NAILS (FINISHED FLOORING OTHER THAN TILE)	3	6
	STAPLE 18 GA, 7/16" LONG, 3/4" CROWN (FINISHED FLOORING OTHER THAN TILE)	3	6
	1 1/4" LONG x .121 SHANK x .375 HEAD DIAMETER CORROSION-RESISTANT (GALVANIZED OR STAINLESS STEEL) ROOFING NAILS (FOR TILE FINISH)	8	8
	1 1/4" LONG, NO. 8 x .375 HEAD DIAMETER, RIBBED WAFER-HEAD SCREWS (FOR TILE FINISH)	8	8
PLYWOOD			
1/4 AND 5/16	1 1/4" RING OR SCREW SHANK NAIL-MINIMUM 12 1/2 GA. (0.099) SHANK DIAMETER	3	6
	STAPLE 18 GA., 7/16" CROWN WIDTH	2	5
11/32, 3/16, 19/32 AND 1/2	1 1/4" RING OR SCREW SHANK NAIL-MINIMUM 12 1/2 GA. (0.099) SHANK DIAMETER	6	8
	1 1/2" RING OR SCREW SHANK NAIL-MINIMUM 12 1/2 GA. (0.099) SHANK DIAMETER	6	8
19/32, 5/16, 23/32 AND 3/4	1 1/2" RING OR SCREW SHANK NAIL-MINIMUM 12 1/2 GA. (0.099) SHANK DIAMETER	6	8
	STAPLE 16 GA. 1 1/2"	6	8
HARDBOARD^d			
0.200	1 1/2" LONG RING-GROOVED UNDERLAYMENT NAIL	6	6
	4D CEMENT-COATED SINKER NAIL	6	6
0.200	STAPLE 18 GA., 7/16" LONG (PLASTIC COATED)	3	6
	PARTICLEBOARD		
1/4	4D RING-GROOVED UNDERLAYMENT NAIL	3	6
	STAPLE 18 GA., 7/16" LONG, 3/16" CROWN	3	6
3/8	6D RING-GROOVED UNDERLAYMENT NAIL	6	10
	STAPLE 16 GA., 1 1/8" LONG, 3/8" CROWN	3	6
1/2, 5/8	6D RING-GROOVED UNDERLAYMENT NAIL	6	10
	STAPLE 16 GA., 1 1/8" LONG, 3/8" CROWN	3	6

For Sill: 1 inch = 25.4 mm.

- NAIL IS A GENERAL DESCRIPTION AND SHALL BE PERMITTED TO BE T-HEAD, MODIFIED ROUND HEAD OR ROUND HEAD.
- STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH ON DIAMETER EXCEPT AS NOTED.
- NAILS OR STAPLES SHALL BE SPACED AT NOT MORE THAN 12 INCHES ON CENTER AT ALL SUPPORTS WHERE SPANS ARE 48 INCHES OR GREATER. NAILS OR STAPLES SHALL BE SPACED AT NOT MORE THAN 12 INCHES ON CENTER AT INTERMEDIATE SUPPORTS FOR FLOORS.
- FASTENERS SHALL BE PLACED IN A GRID PATTERN THROUGHOUT THE BODY OF THE PANEL.
- FOR 5-PLY PANELS, INTERMEDIATE NAILS SHALL BE SPACED NOT MORE THAN 12 INCHES ON CENTER EACH WAY.
- HARDBOARD UNDERLAYMENT SHALL CONFORM TO CANADIAN A1934.
- SPECIFIED ALTERNATE ATTACHMENTS FOR ROOF SHEATHING SHALL BE PERMITTED WHERE THE ULTIMATE DESIGN WIND SPEED IS LESS THAN 130 MPH. FASTENERS ATTACHING WOOD STRUCTURAL PANEL ROOF SHEATHING TO GABLE END WALL FRAMING SHALL BE INSTALLED USING THE SPACING LISTED FOR PANEL EDGES.
- FIBER-CEMENT UNDERLAYMENT SHALL CONFORM TO ASTM C1396 OR ISO 9506, CATEGORY C.

DESIGN LOADS (PSF)

THE DWELLING SHALL COMPLY WITH THE FOLLOWING LOAD CONDITIONS

AREA	MIN. DEAD LOAD	MIN. LIVE LOAD
EXTERIOR BALCONIES	10	60
DECKS, STAIRS	10	40
CEILING JOISTS / ATTICS NO STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE 3:12 OR LESS	10	10
CEILING JOISTS / ATTICS NO STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE OVER 3:12	10	10
CEILING JOISTS / ATTICS WITH STORAGE - DOOR PULL DOWN LADDER ACCESS	10	20
ROOMS: NON-SLEEPING	10	40
ROOMS: SLEEPING	10	30
ROOF: LIGHT ROOF COVERING	10	20
ROOF: HEAVY ROOF COVERING / CONCRETE / TILE / SLATE	20	20
GUARDRAILS, HANDRAILS	200# LL NORMAL	

HEAVY ROOF COVERING MATERIAL (TILE, CONCRETE, SLATE, ETC.) SHALL NOT BE USED UNLESS 20 PSF DEAD LOAD AND HEAVY ROOF IS NOTED ON THE ROOF PLAN. IF HEAVY ROOFING IS TO BE USED AND IS NOT NOTED ON THE ROOF PLAN, NOTIFY ENGINEER PRIOR TO ANY CONSTRUCTION, INCLUDING FOUNDATION AND SITE WORK. IF THE PLAN HAS BEEN DESIGNED FOR HEAVY ROOF LOADS IT WILL BE NOTED IN THE ROOF NOTES ON THE ROOF PLAN.

COLUMN SCHEDULE

BASED ON FOOTING SIZE (ASSUME 1500 PSF SOIL)

PAD SIZE	REINFORCEMENT	COL. MIN.	COL. TYPE	MAX. LOAD
24"x24"x12"	(4) #4 BARS E/W	3"	SCH40	6K
30"x30"x12"	(5) #4 BARS E/W	3"	SCH40	9.4K
36"x36"x12"	(6) #4 BARS E/W	3"	SCH40	13.5K
42"x42"x14"	(7) #4 BARS E/W	3 1/2"	SCH40	18.4K
48"x48"x16"	(8) #4 BARS E/W	3 1/2"	SCH40	24.0K
54"x54"x16"	(9) #4 BARS E/W	3 1/2"	SCH40	30.4K
60"x60"x18"	(10) #4 BARS E/W	3 1/2"	SCH40	37.5K

COLUMN CONNECTION TO STEEL BEAMS SHALL BE WITH A CLIP POST CAP WITH ALL FOUR TAB EARS BENT AROUND THE BOTTOM FLANGE OF THE BEAM. FOR A BEARING PLATE, FOUR HOLES SHALL BE DRILLED IN THE BOTTOM FLANGE OF THE STEEL BEAM TO MATCH THE HOLE PATTERN OF THE PLATE. 1/2" x 2" BOLTS SHOULD THEN BE INSTALLED WITH A FLAT WASHER, LOCK WASHER, AND A NUT IN EACH OF THE HOLES. THE POST CAP MAY BE WELDED TO THE STEEL BEAM IN ACCORDANCE WITH AWS D1.1-92 AS AN ALTERNATIVE, AND WOULD NEED TO BE INSPECTED BY AN AWS-CERTIFIED INSPECTOR.

ENGINEERED LUMBER

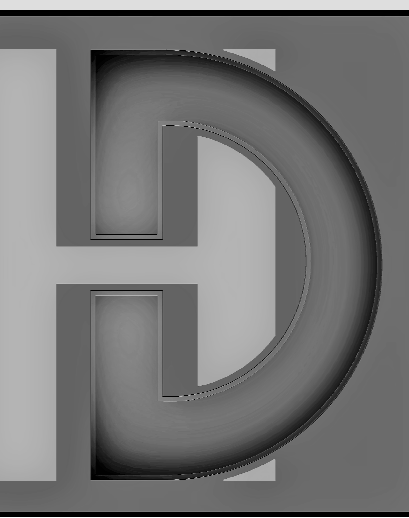
MIN. DESIGN REQUIREMENTS

	F _t (psi)	E (psi)	F _v (psi)
LVL	2600	1.8x10	285
GLULAM	2400	1.8x10	190
PARALAM	2600	2.0x10	290

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 HD ENGINEERING & DESIGN THAT THEY 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 SOPHISTICATED. ALTHOUGH HD ENGINEERING & DESIGN 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 HD ENGINEERING. 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 HD ENGINEERING & DESIGN 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, HD ENGINEERING & DESIGN OR A QUALIFIED ENGINEER SHALL IMMEDIATELY BE RETAINED. FAILURE TO NOTIFY US OF THESE NEEDS OR OF CHANGES TO THE PLANS SHALL RELIEVE HD ENGINEERING & DESIGN OF ALL RESPONSIBILITIES OF THE CONSEQUENCES.

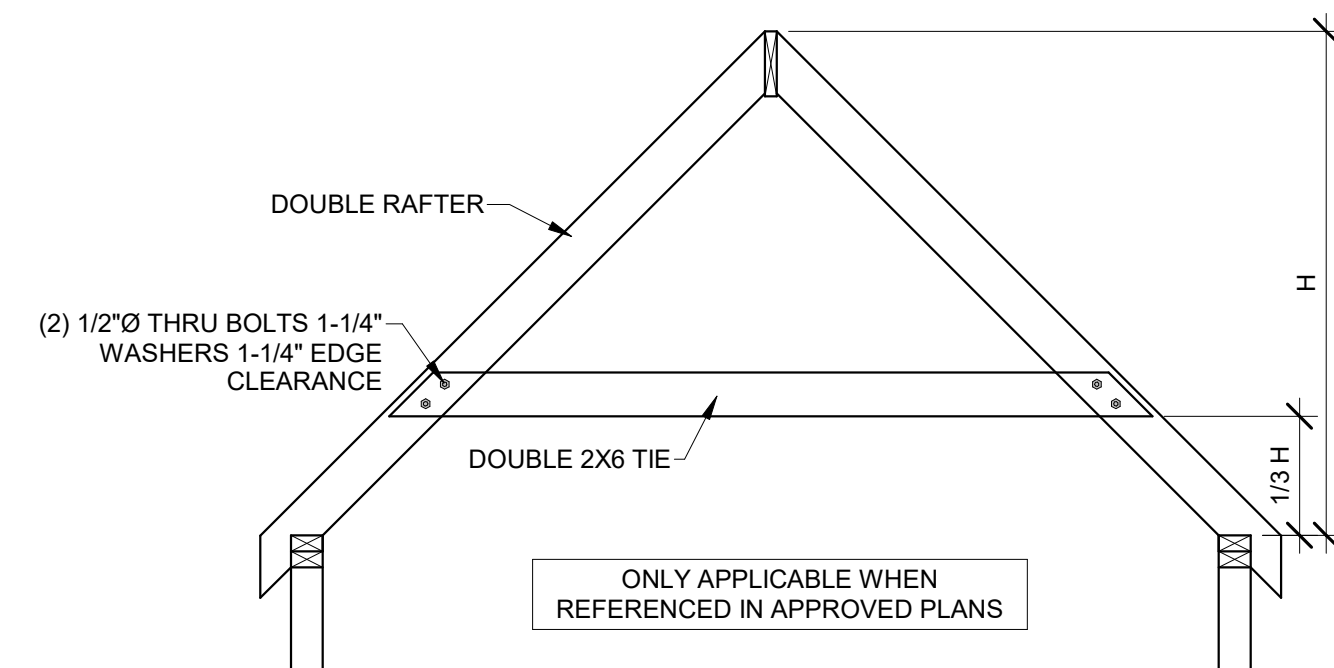
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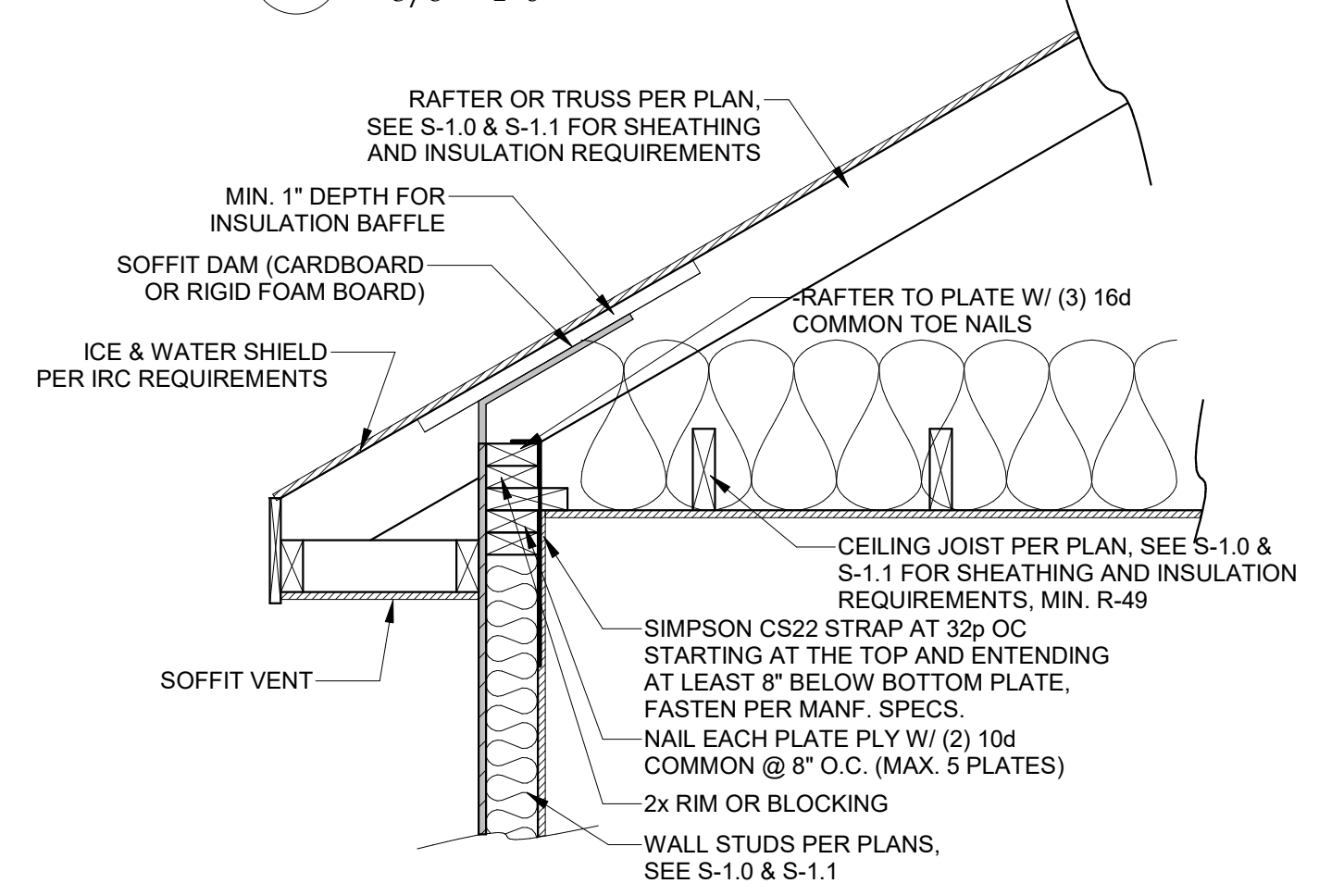


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STRUCTURAL DETAILS & NOTES

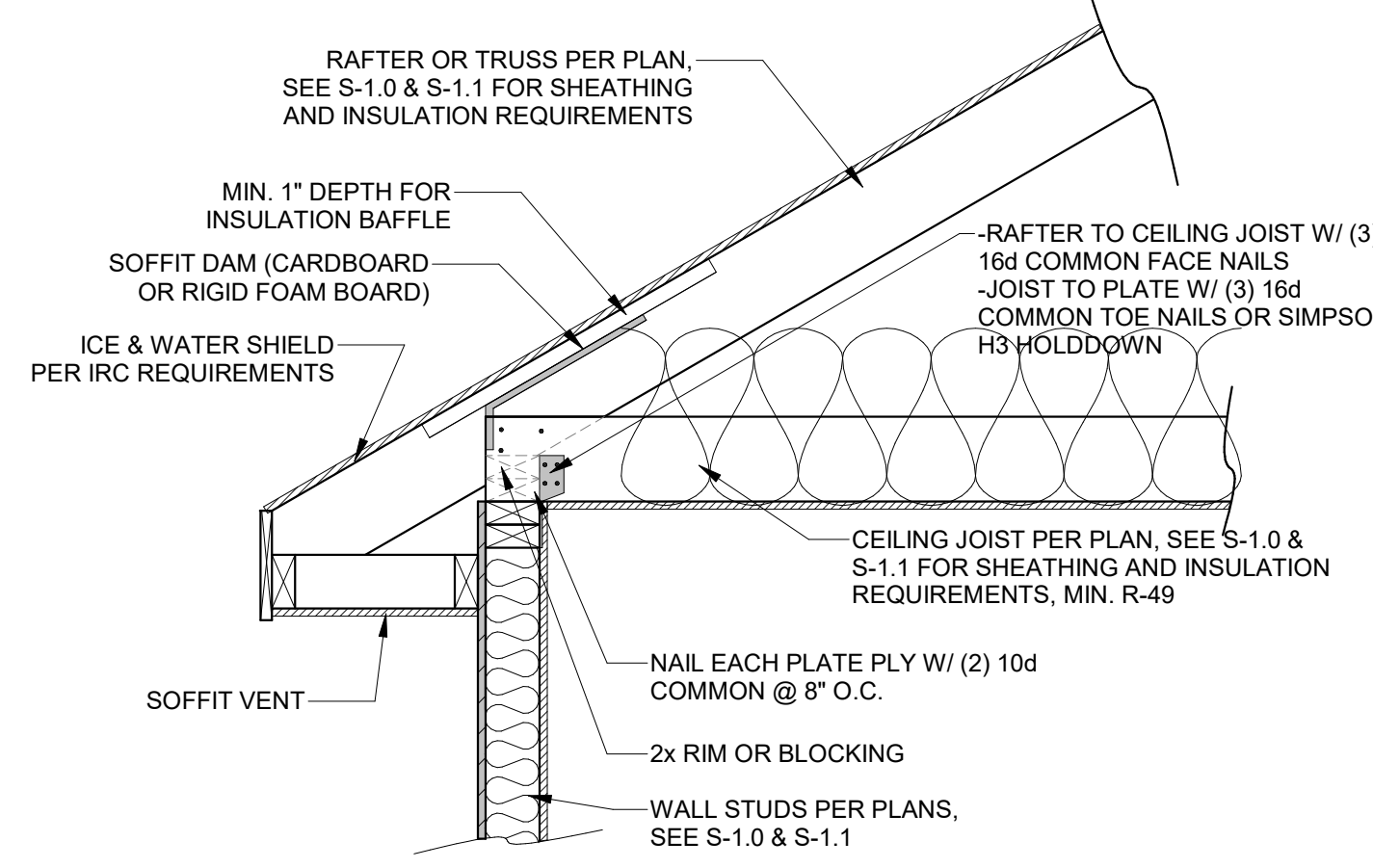
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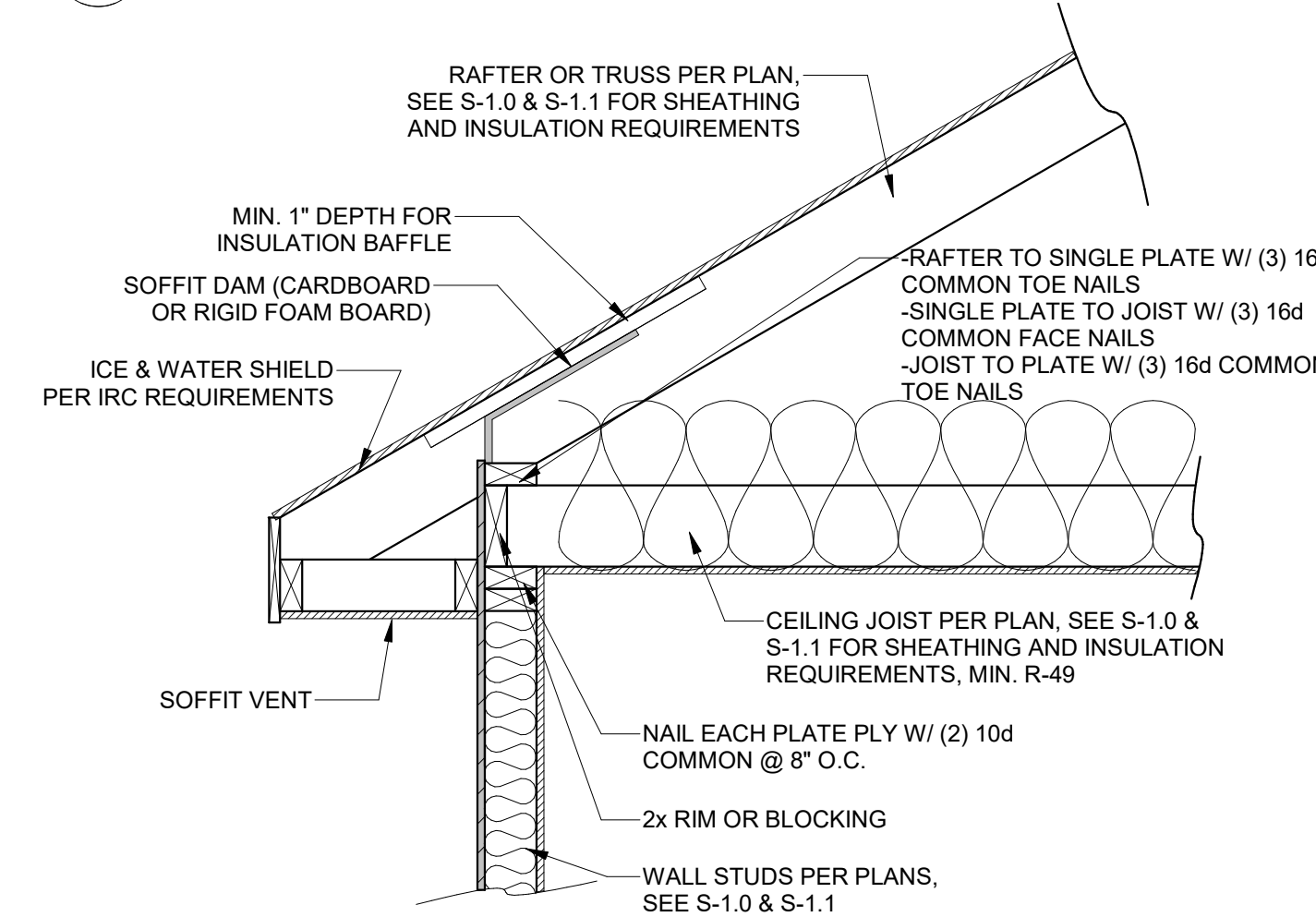
11 HIP SUPPORT FRAME
3/8" = 1'-0"



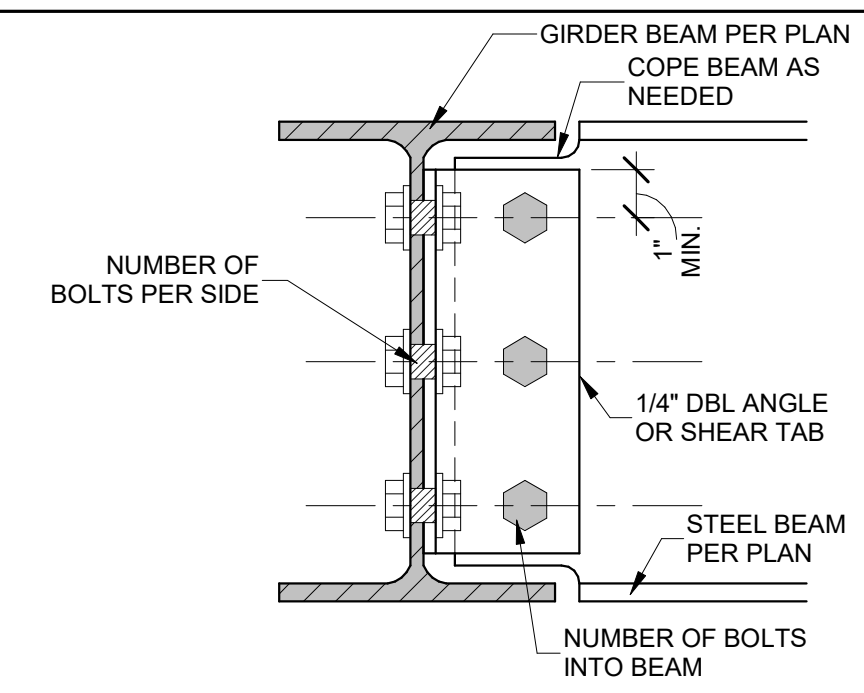
7 OPTION 4 RAFTER BEARING
1" = 1'-0"



6 OPTION 3 RAFTER BEARING
1" = 1'-0"

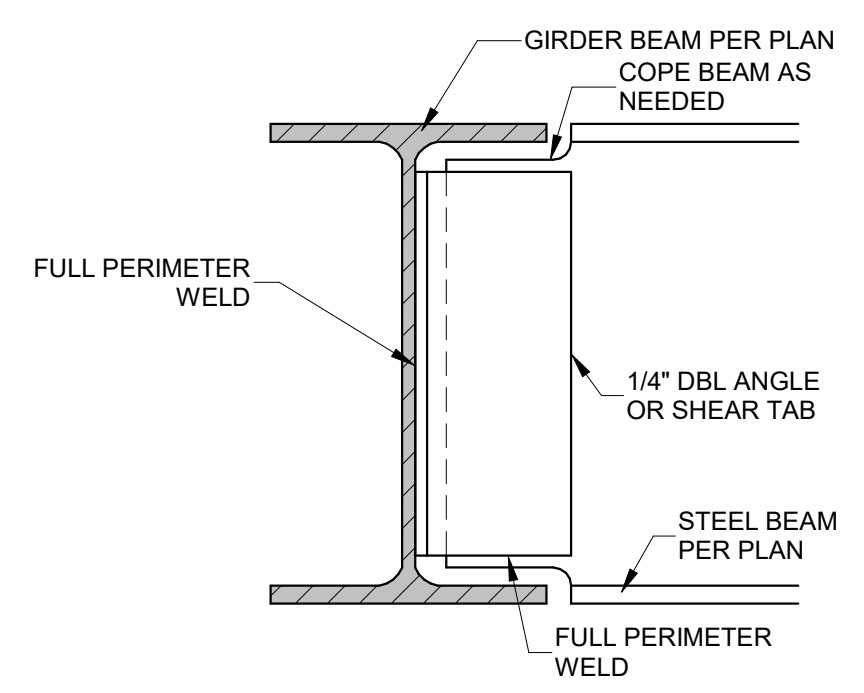


5 OPTION 2 RAFTER BEARING
1" = 1'-0"
THIS OPTION NOT AVAILABLE IN KC, MO



BEAM CONNECTION SCHEDULE		
BEAM SIZE	# OF BOLTS PER SIDE	ANGLE
W8, W10	2	(4" LONG)
W12, W14	3	(8" LONG)
W16, W18	4	(10" LONG)

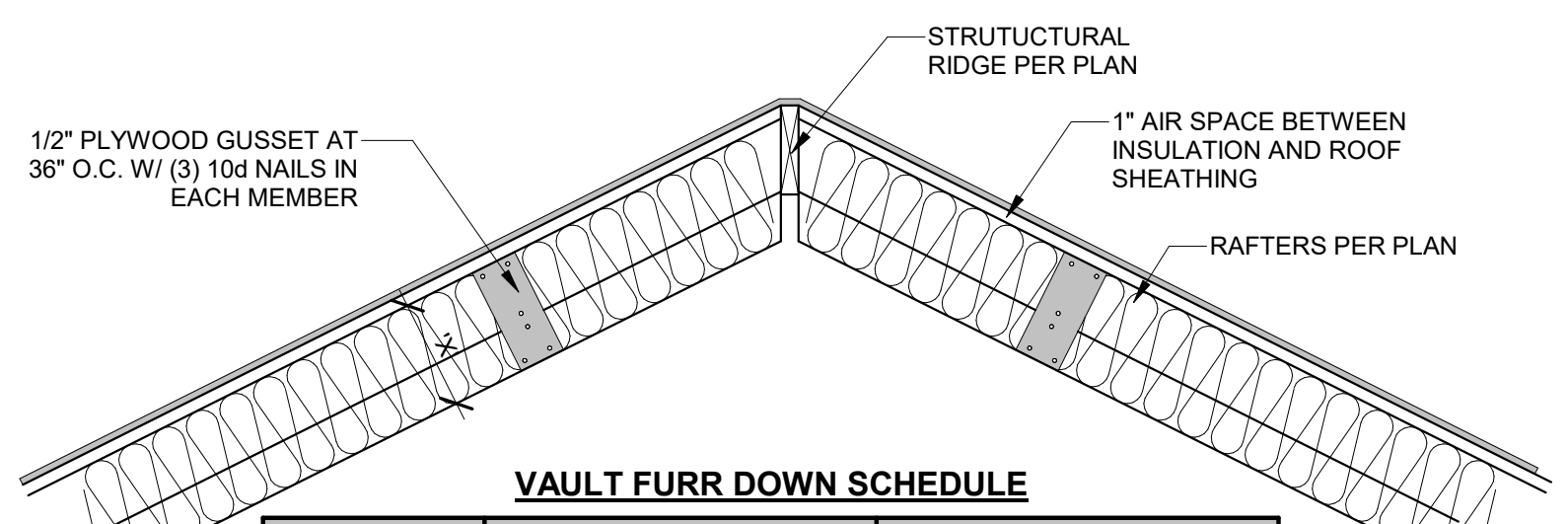
NOTES:
1. NUMBER OF BOLTS DETERMINED BY SMALLER OF TWO BEAMS BEING CONNECTED
2. ALL BOLTS, 3/4" DIAMETER A325-N, UNO
3. BOLTS SHALL BE EVENLY SPACED TOP TO BOTTOM



EITHER METHOD ACCEPTABLE

BEAM CONNECTION SCHEDULE	
BEAM SIZE	ANGLE
W8, W10	1.5x1.5x1/4 (4" LONG)
W12, W14	3x3x3/8 (8" LONG)
W16, W18	3.5x3.5x3/8 (10" LONG)

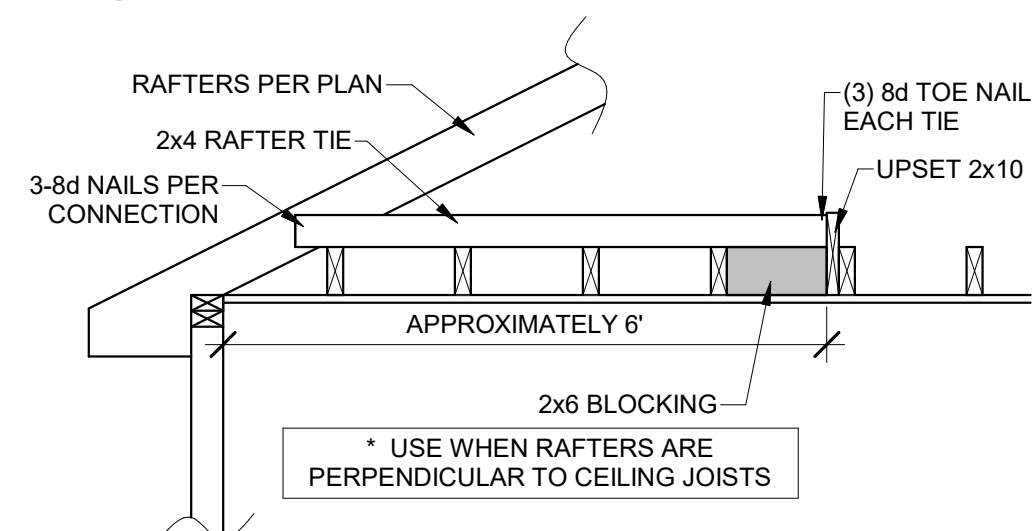
10 BEAM TO GIRDER CONNECTION
3" = 1'-0"



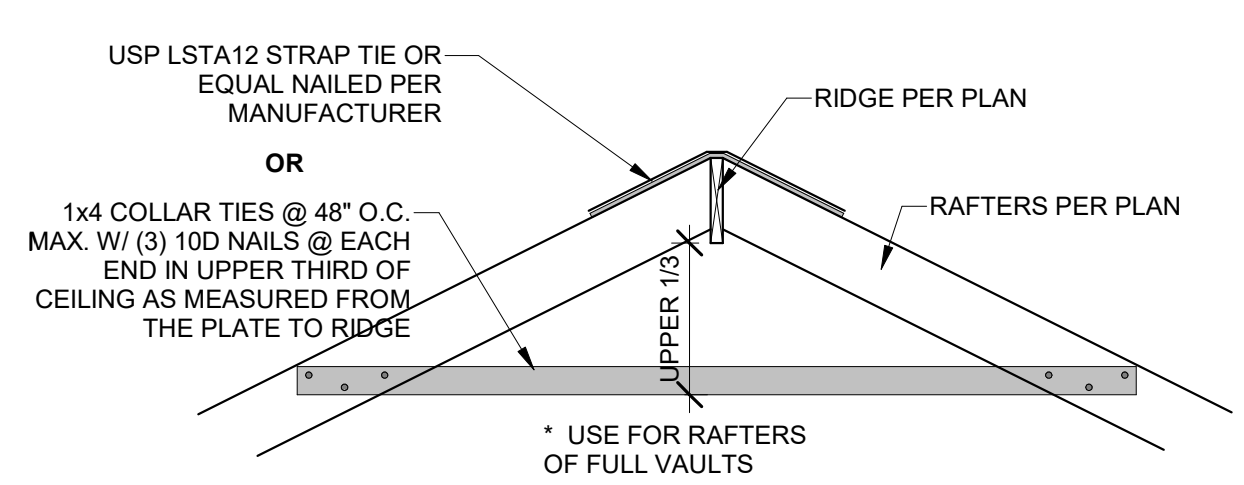
VAULT FURR DOWN SCHEDULE		
RAFTER SIZE	R-30C INSULATION (X = 9 1/4")	R-38C INSULATION (X = 11 1/4")
2x6	2x6	2x8
2x8	2x4	2x6
2x10	NOT REQUIRED	2x4
2x12	NOT REQUIRED	2x2

NOTES:
1. ALL VAULTS SHALL BE FURRED DOWN WITH 2x FRAMING TO THE REQUIRED DEPTH OF INSULATION, PLUS 1" AIR SPACE.
2. R-38C REQUIRED = 11" WITH AIR SPACE.
3. ALL VAULTED RAFTERS SHALL BE MIN. #2 2x6 DFL @ 16" O.C. OR PER ROOF PLAN.

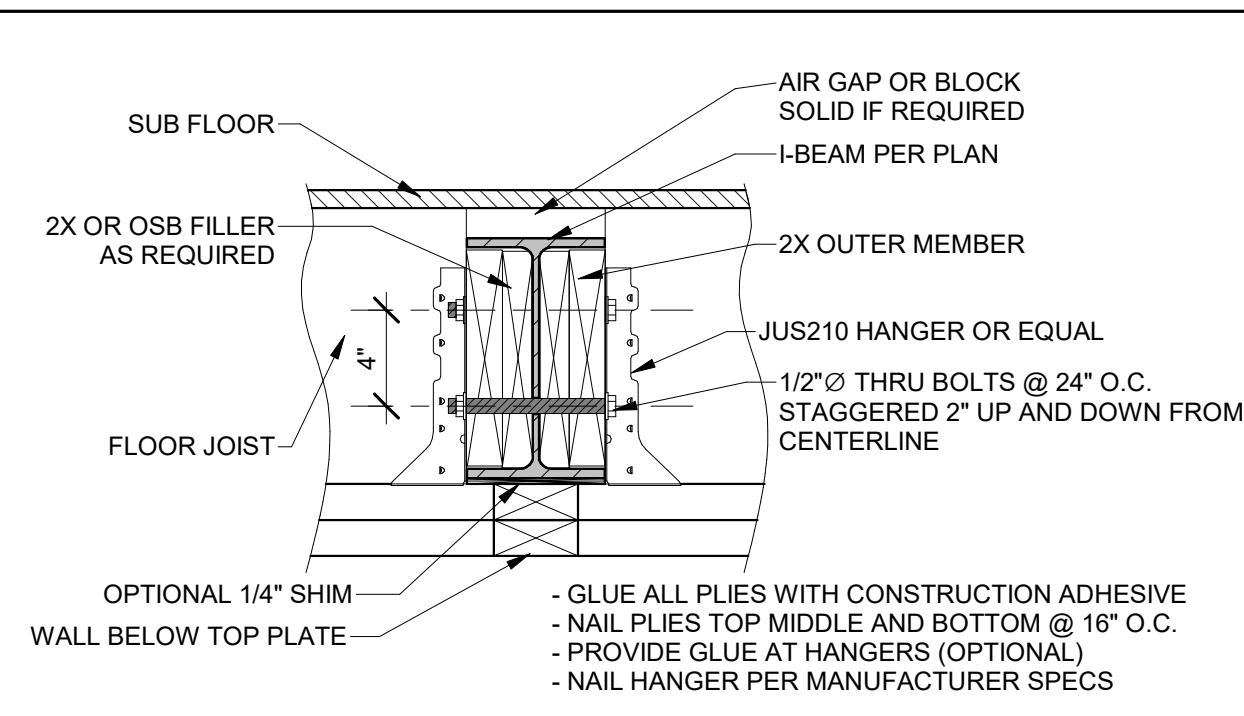
14 VAULTED RAFTER INSULATION
3/4" = 1'-0"



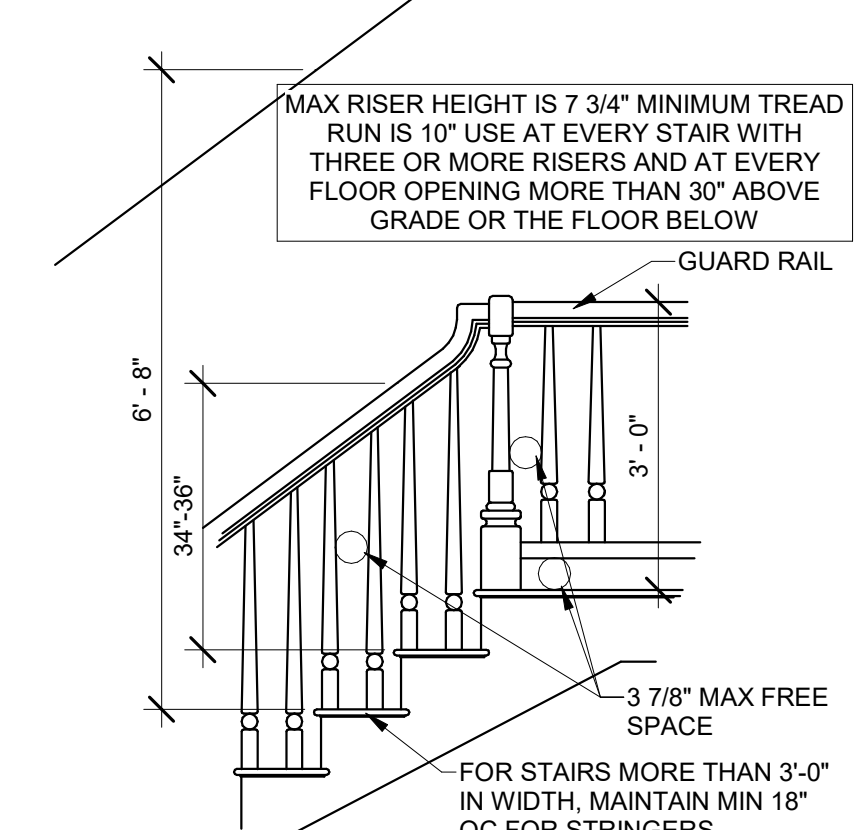
12 RAFTER TIE CONNECTION
1/2" = 1'-0"



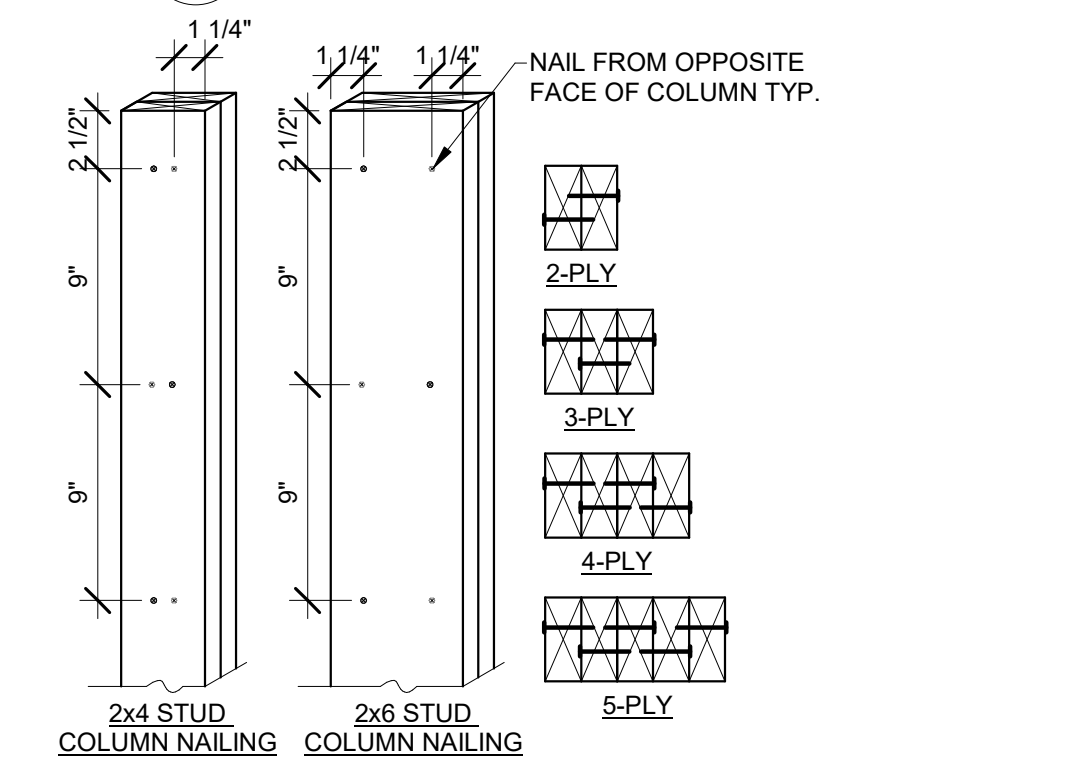
13 RIDGE SUPPORT
1/2" = 1'-0"



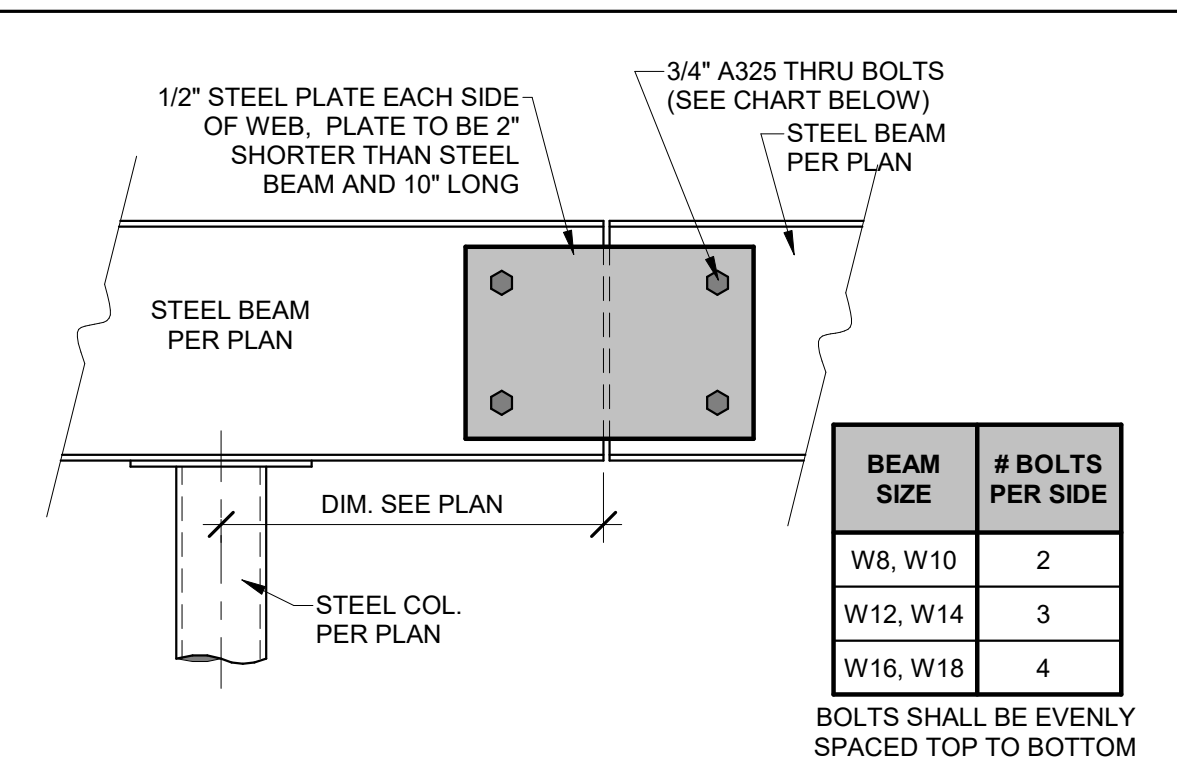
8 UPSET STEEL BEAM DETAIL
1 1/2" = 1'-0"



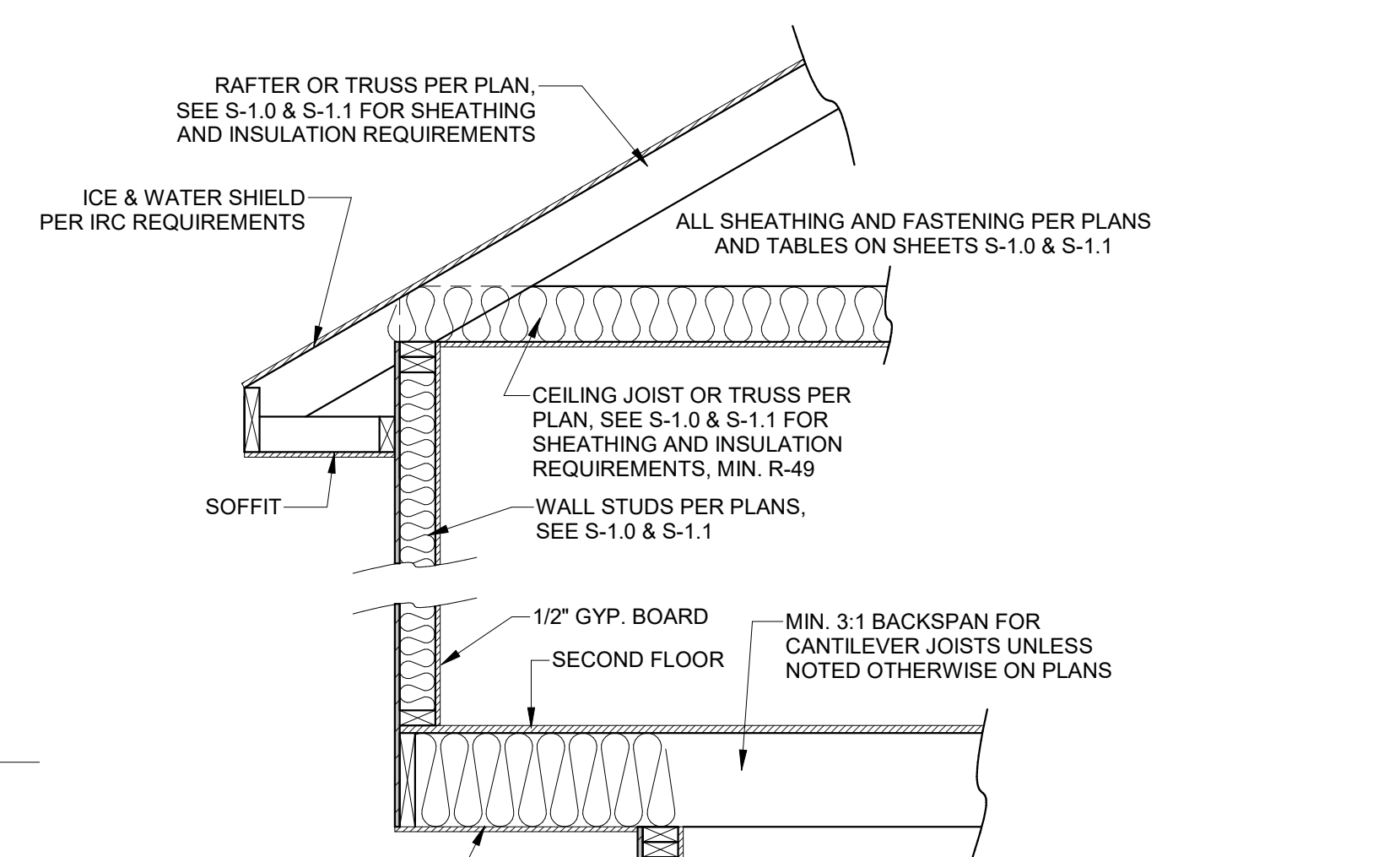
4 STAIR/ RAIL DETAIL
1/2" = 1'-0"



3 BUILT-UP STUD COLUMN
1 1/2" = 1'-0"



9 STEEL BEAM SPLICE DETAIL
1 1/2" = 1'-0"



1 TYPICAL WALL SECTION
3/4" = 1'-0"

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DATE: 07/17/2023
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FRAMING SECTIONS

S-1.2

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RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
08/31/2023

DUE TO THE WIDE VARIETY OF SOIL CONDITIONS IN OUR AREA AND THE WIDE VARIETY OF PLASTICITY INDEX AND SOIL BEARING CAPACITIES OUR FIRM RECOMMENDS ALL SITES BE EVALUATED BY HD ENGINEERING OR AN HD ENGINEERING REFERRED GEOTECHNICAL FIRM PRIOR TO PLACEMENT OF ANY "STANDARD" FOUNDATIONS.



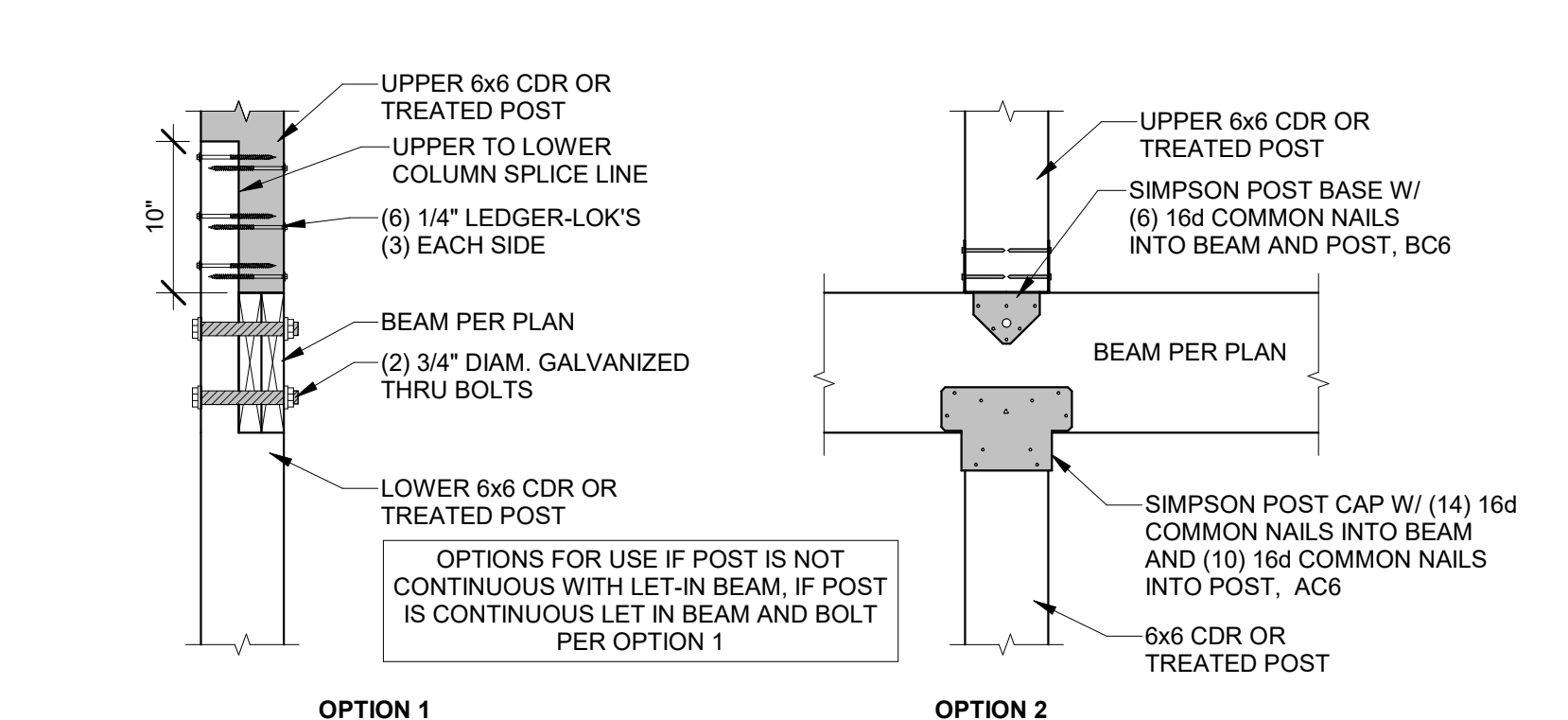
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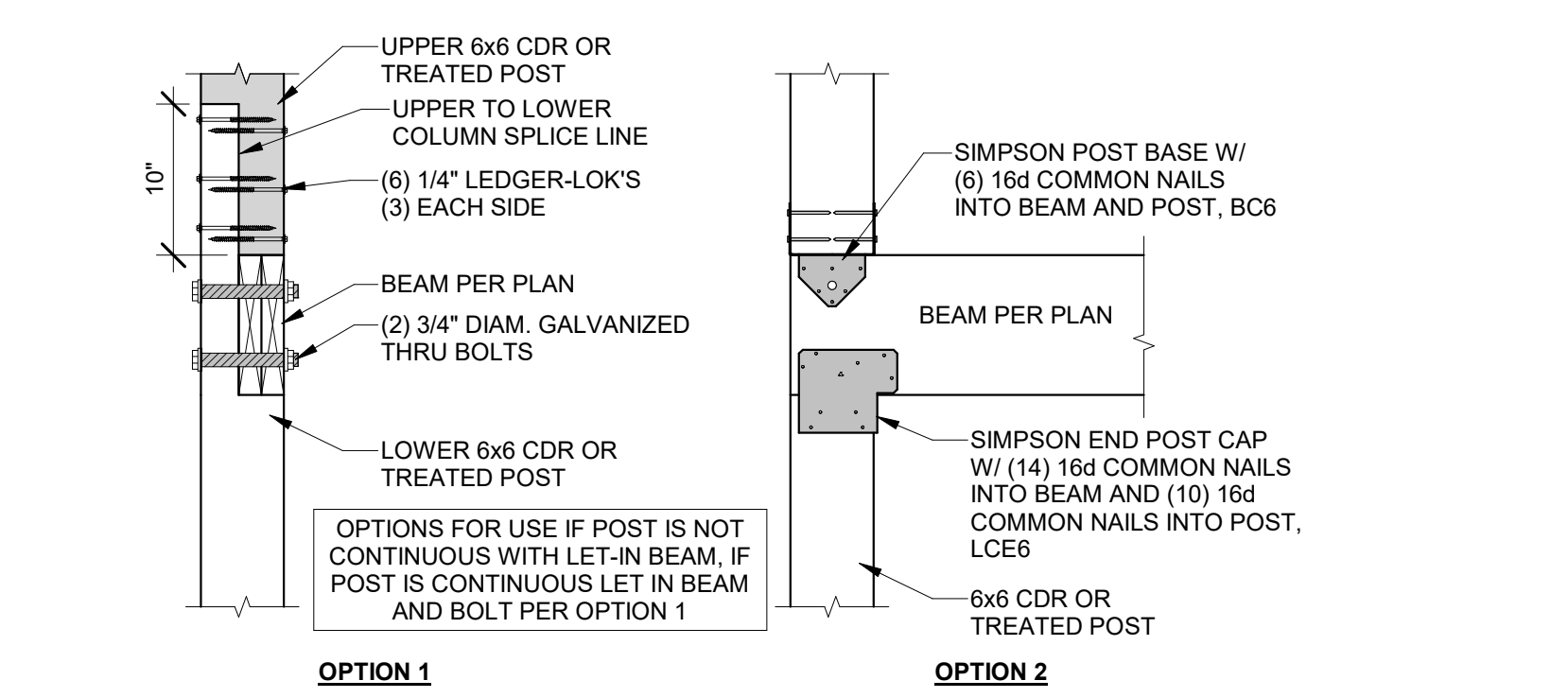
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DECK DETAILS

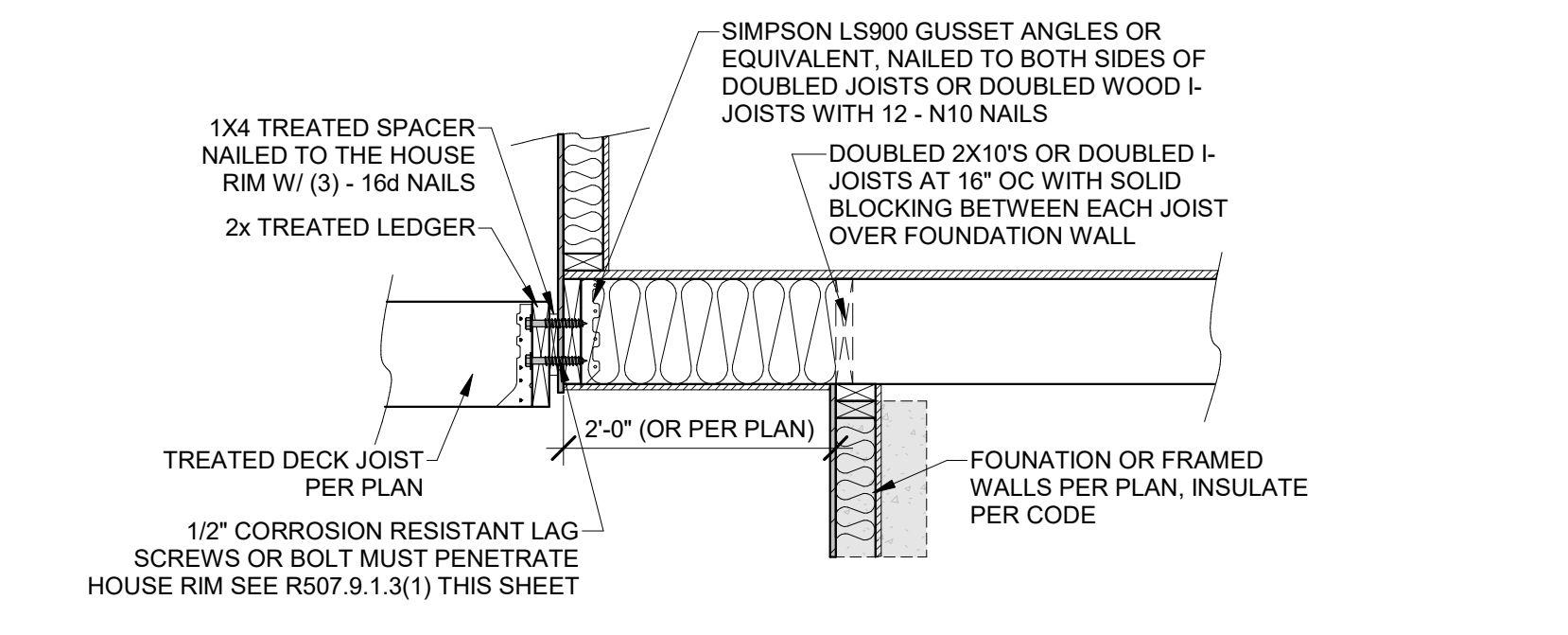
S-1.3



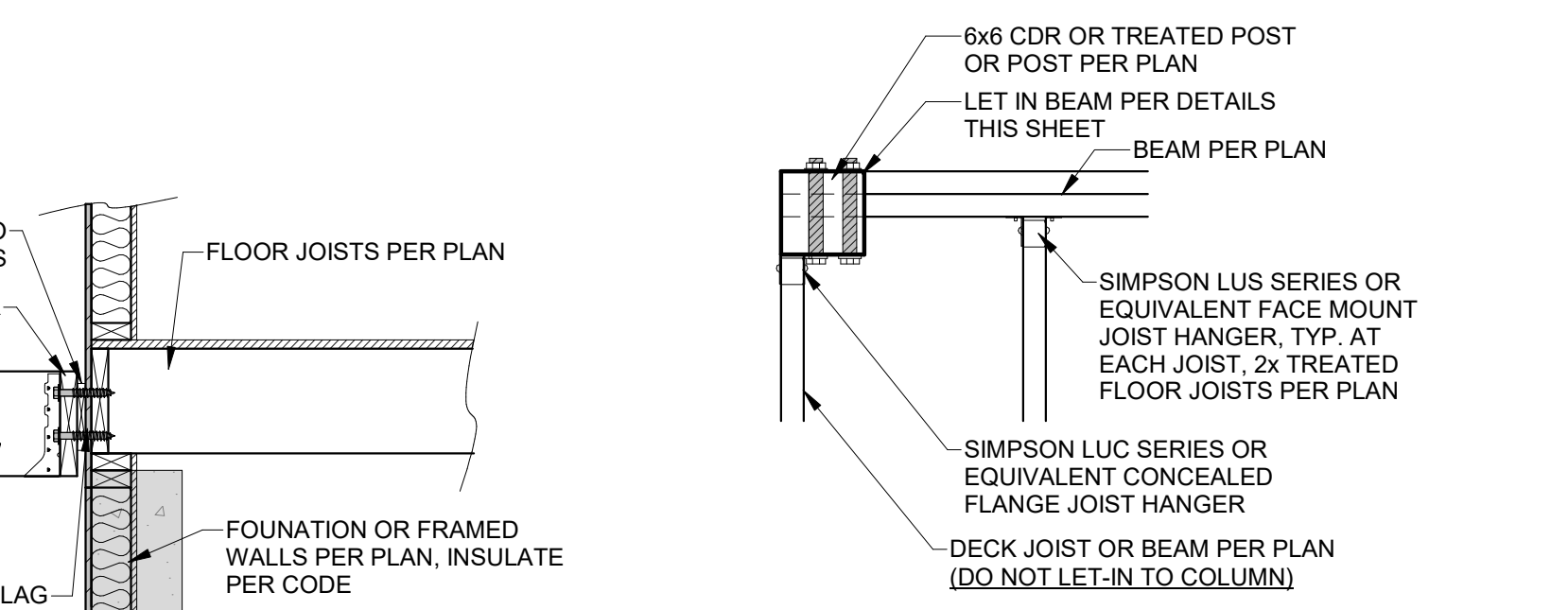
6 DECK LEVEL INTERIOR BEAM TO COLUMN
1" = 1'-0"



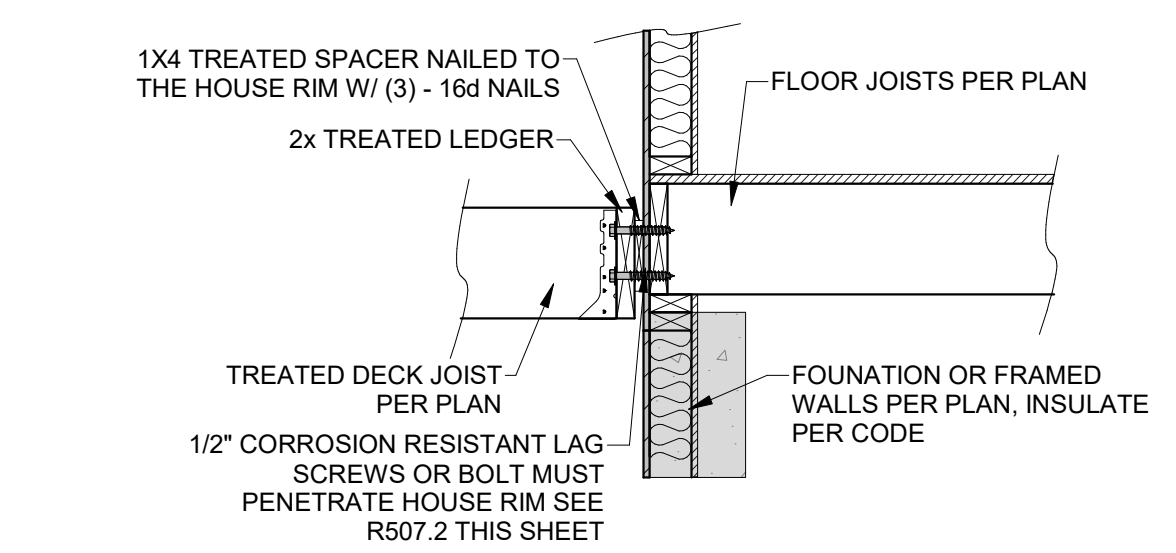
5 DECK LEVEL EXTERIOR BEAM TO COLUMN
1" = 1'-0"



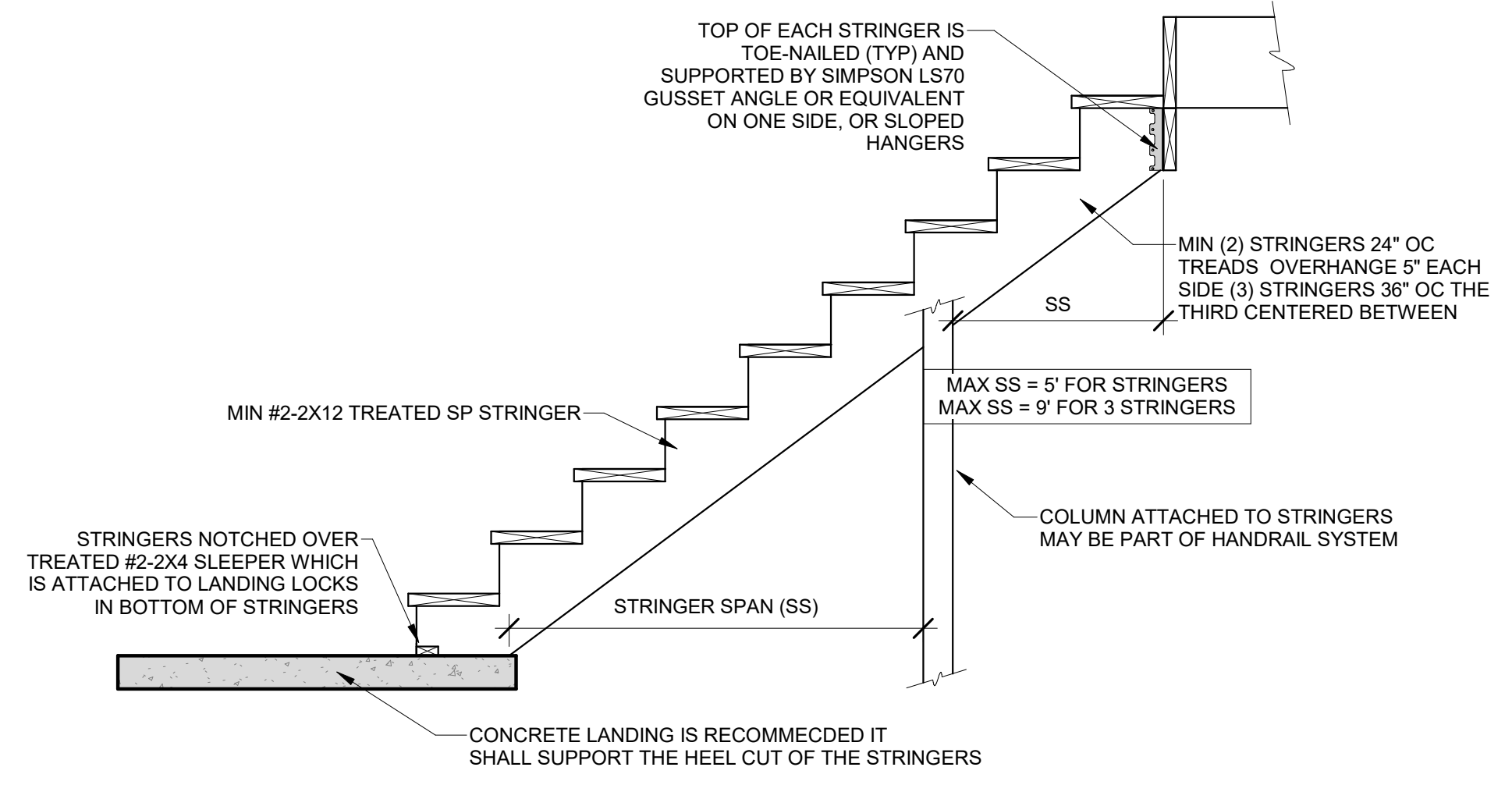
4 DECK LEDGER TO CANTILEVER
3/4" = 1'-0"



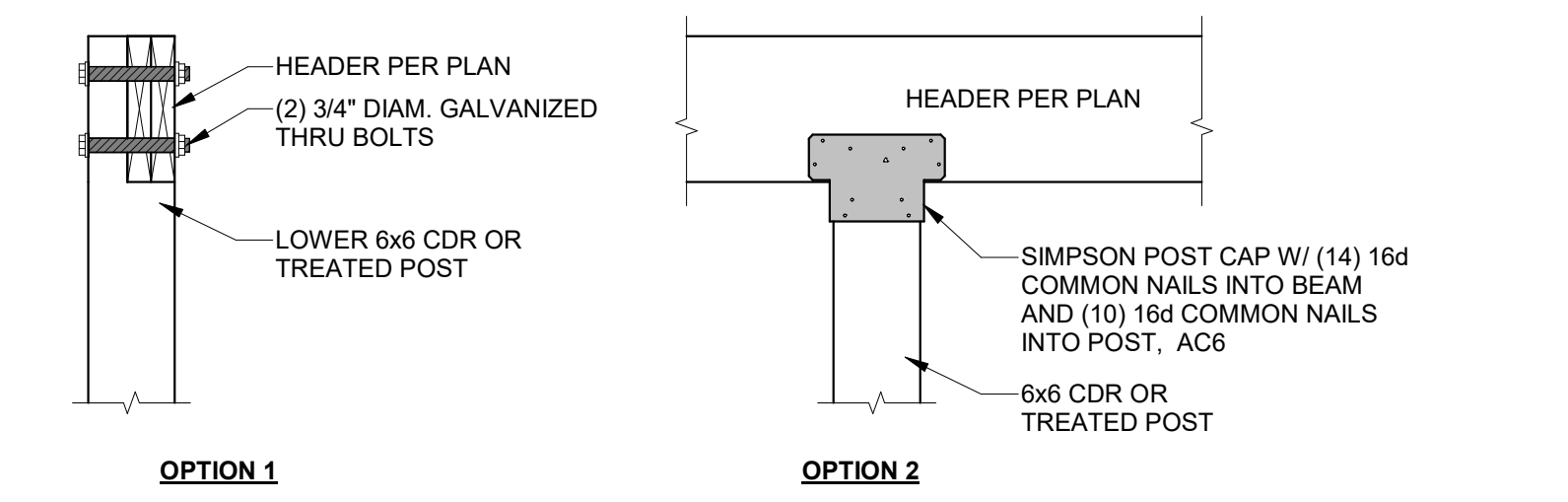
1 DECK CORNER COLUMN
1" = 1'-0"



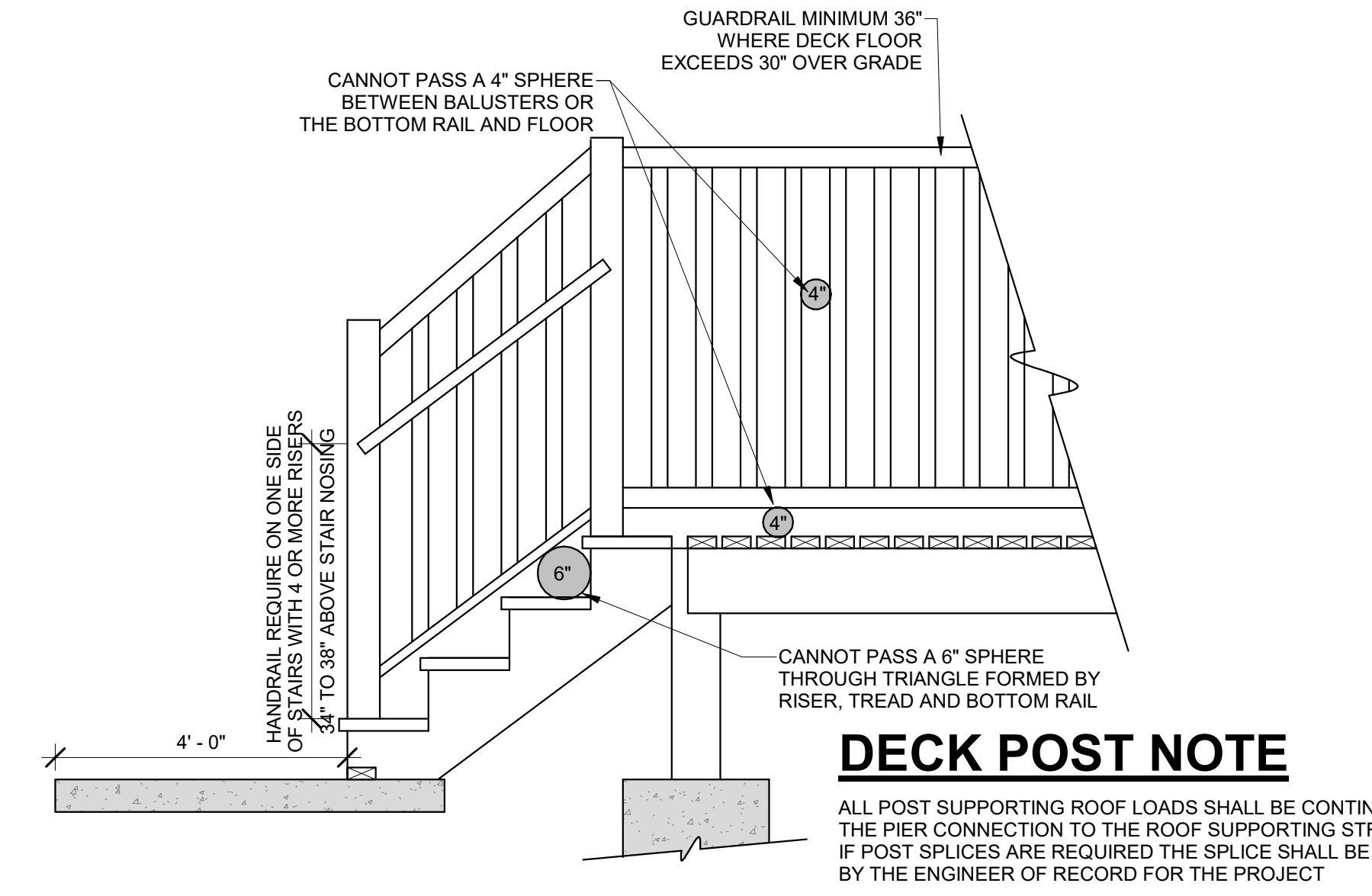
2 DECK LEDGER ATTACHMENT
3/4" = 1'-0"



9 STAIR STRINGER DETAIL
1/2" = 1'-0"



7 ROOF LEVEL INTERIOR BEAM TO COLUMN
1" = 1'-0"



8 GUARD RAIL
1/2" = 1'-0"

TABLE IRC2018 R507.9.1.3(1) DECK LEDGER CONNECTION TO BAND JOIST
(DECK LIVE LOAD = 40 PSF, DECK HEAD LOAD = 10 PSF, SNOW LOAD ≤ 40 PSF)

JOIST SPAN	6' AND LESS	6'-1" TO 8'	8'-1" TO 10'	10'-1" TO 12'	12'-1" TO 14'	14'-1" TO 16'	16'-1" TO 18'
CONNECTION DETAILS	ON-CENTER SPACING OF FASTENERS ^{a, b}						
1/2" LAG SCREW WITH 15/32" MAX. SHEATHING ^{c, d}	30	23	18	15	13	11	10
1/2" DIAM. BOLT WITH 15/32" MAX. SHEATHING ^d	36	36	34	29	24	21	19
1/2" DIAM. BOLT WITH 15/32" MAX. SHEATHING & 1/2" STACKED WASHERS ^e	36	36	29	24	21	18	16

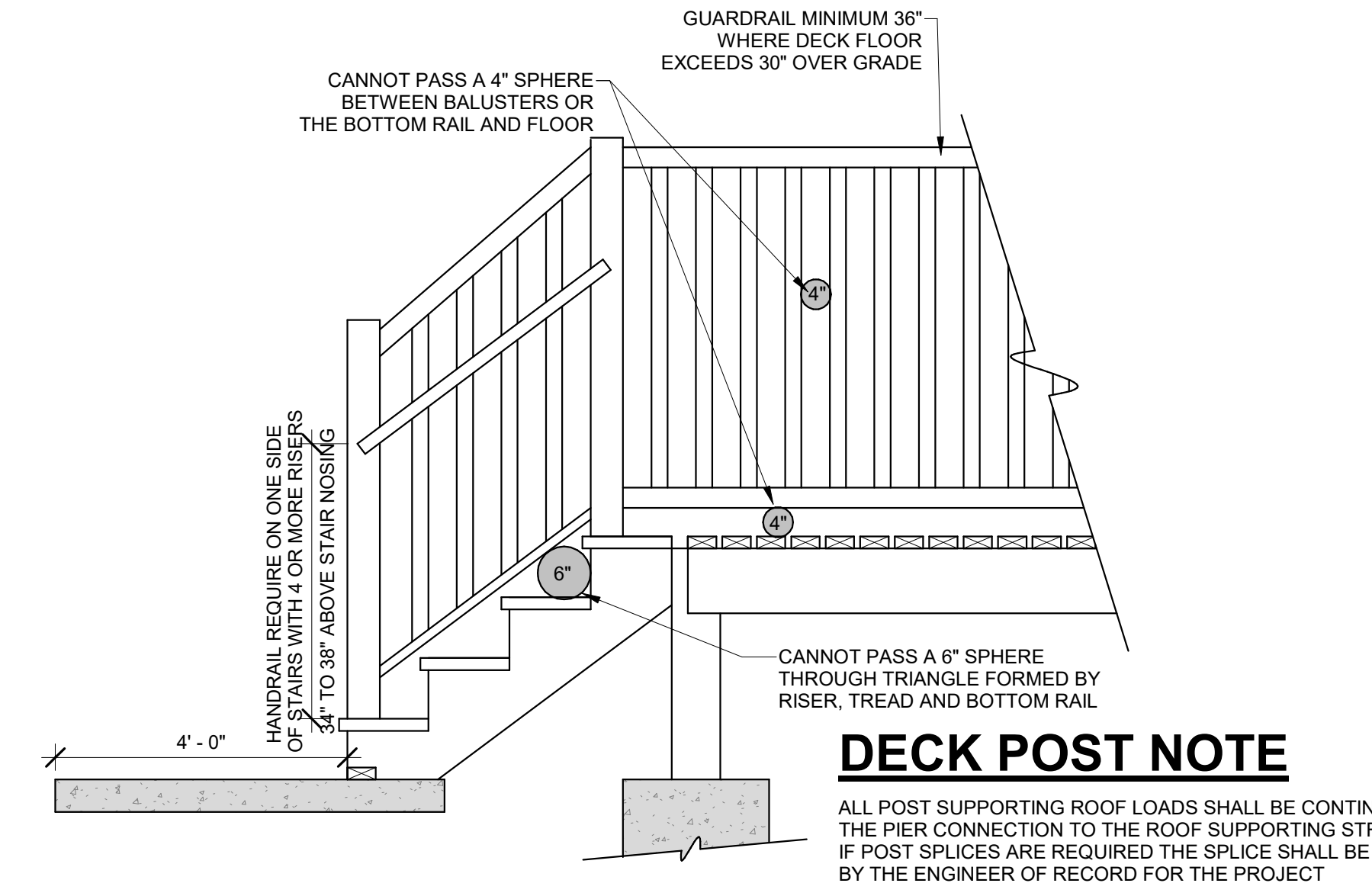
For SI: 1 inch = 25.4mm, 1 foot = 304.8mm, 1 pound per square foot = 0.0479 kPa
a. Ledges shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
b. Snow load shall not be assumed to act concurrently with live load.
c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
d. Sheathing shall be wood structural panel or solid sawn lumber.
e. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard lumber or foam sheathing. Up to 1/2" thickness of stacked washers shall be permitted to substitute for you to 1/2" of allowable sheathing thickness where combined with wood structural panel or lumbers sheathing.

TABLE IRC2018 R507.9.1.3(2) PLACEMENT OF LAG SCREWS AND BOLT IN DECK LEDGERS AND BAND JOISTS

	MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS			
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
LEDGER ^a	2 inches ^d	3/4 inches	2 inches ^b	1 5/8 inches ^b
BAND JOIST ^c	3/4 inches	2 inches	2 inches	1 5/8 inches ^b

For SI: 1 inch = 25.4mm.
a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.9.1.3(1)
b. Maximum 5 inches
c. For engineered rim joists, the manufacturer's recommendations shall govern.
d. The minimum distances from bottom row of lag screws or bolts to the top of the ledger shall be in accordance with Figure R507.9.1.3(1)

8 GUARD RAIL
1/2" = 1'-0"



8 GUARD RAIL
1/2" = 1'-0"

TABLE R602.3(5) SIZE, HEIGHT AND SPACING OF WOOD STUDS^a

STUD SIZE (INCHES)	BEARING WALLS					NON-BEARING WALLS	
	LATERALLY UNSUPPORTED STUD HEIGHT ^b (FEET)	MAXIMUM SPACING WHERE SUPPORTING A ROOF-CEILING ASSEMBLY OR A HABITABLE ATTIC ASSEMBLY, ONLY (INCHES)	MAXIMUM SPACING WHERE SUPPORTING ONE FLOOR, PLUS A ROOF-CEILING ASSEMBLY OR A HABITABLE ATTIC ASSEMBLY (INCHES)	MAXIMUM SPACING WHERE SUPPORTING TWO FLOORS, PLUS A ROOF-CEILING ASSEMBLY OR A HABITABLE ATTIC ASSEMBLY (INCHES)	MAXIMUM SPACING WHERE SUPPORTING ONE FLOOR HEIGHT ^c (INCHES)	LATERALLY UNSUPPORTED STUD HEIGHT ^b (FEET)	MAXIMUM SPACING (INCHES)
2 x 3 ^d	---	---	---	---	---	10	16
2 x 4	10	24 ^e	16 ^e	---	24	14	24
3 x 4	10	24	24	16	24	14	24
2 x 5	10	24	24	---	24	16	24
2 x 6	10	24	24	16	24	20	24

For S1: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
^a LISTED HEIGHTS ARE DISTANCES BETWEEN POINTS OF LATERAL SUPPORT PLACED PERPENDICULAR TO THE PLANE OF THE WALL. BEARING WALLS SHALL BE SHEATHED ON NOT LESS THAN ONE SIDE OR BRIDGING SHALL BE INSTALLED NOT GREATER THAN 4 FEET APART MEASURED VERTICALLY FROM EITHER END OF THE STUD. INCREASES IN UNSUPPORTED HEIGHT ARE PERMITTED WHERE IN COMPLIANCE WITH EXCEPTION 2 OF SECTION R602.3.1 OR DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.
^b SHALL NOT BE USED IN EXTERIOR WALLS.
^c A HABITABLE ATTIC ASSEMBLY SUPPORTED BY 2 x 4 STUDS IS LIMITED TO A ROOF SPAN OF 32 FEET. WHERE THE ROOF SPAN EXCEEDS 32 FEET, THE WALL STUDS SHALL BE INCREASED TO 2 x 6 OR THE STUDS SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

RESIDENTIAL SEISMIC & WIND ANALYSIS

LOCATION	DEAD LOAD (psf)	AREA (ft ²)	WEIGHT (lbs)
ROOF	10	4135	41350
CEILING	10	4033	40330
SECOND FLOOR	10	1340	13400
FIRST FLOOR	10	1770	17700
SECOND FLOOR EXT. WALL DL	185	10	18500
FIRST FLOOR EXT. WALL DL	229	10	22900
SECOND FLOOR INT. PARTITION WALL DL	6	1340	8040
FIRST FLOOR INT. PARTITION WALL DL	6	1770	10620

AREA	LOAD	AREA	LOAD
SLOPED ROOF	579	4626	269
VERT. ROOF	237	296	440
2ND	583	7261	550
1ST	594	7365	557
BSMT	0	0	100

SEISMIC	WIND
2ND FLOOR TRIBUTARY WEIGHT	90930
1ST FLOOR TRIBUTARY WEIGHT	133020
BASEMENT TRIBUTARY WEIGHT	133020
S ₁ (SITE GROUND MOTION - S _g - FROM ASCE7 SEISMIC MAP)	10.0%
F _a (FROM ASCE7 TABLE 11.4-1)	1.1
R (FROM ASCE7 TABLE 12.2-1)	0.073

LOCATION	From ASCE7 (Eq. 12.8-1)	V (= 1.25 * S _g * W / R) (lbs.)
2ND FLOOR		1282
1ST FLOOR		1876
BASEMENT		1876

SEISMIC	WIND
2ND FLOOR FRONT-TO-BACK	0
2ND FLOOR SIDE-TO-SIDE	0
1ST FLOOR FRONT-TO-BACK	0
1ST FLOOR SIDE-TO-SIDE	0
BASEMENT FRONT-TO-BACK	0
BASEMENT SIDE-TO-SIDE	0

SEISMIC	WIND
2ND FLOOR	75
1ST FLOOR	89
BASEMENT	0

SEISMIC	WIND
2ND FLOOR FRONT-TO-BACK	0
2ND FLOOR SIDE-TO-SIDE	0
1ST FLOOR FRONT-TO-BACK	0
1ST FLOOR SIDE-TO-SIDE	0
BASEMENT FRONT-TO-BACK	0
BASEMENT SIDE-TO-SIDE	0

ADDITIONAL RESISTANCE REQUIRED (POUNDS)	PORTAL FRAMES OR PERF. SHEAR WALL RESISTANCE	INTERIOR X-BRACES (30W/BRACE)	INT. WALL LENGTH SHEATHED W/ OSB (TOTAL LENGTH IN ONE SIDE, FT.)	INT. WALL LENGTH SHEATHED W/ OSB (TOTAL LENGTH IN ONE SIDE, FT.)	RESISTANCE PROVIDED BY ADDITIONAL METHODS (POUNDS)	OK?
2ND FLOOR FRONT-TO-BACK	0	0	0	0	0	YES
2ND FLOOR SIDE-TO-SIDE	0	0	0	0	0	YES
1ST FLOOR FRONT-TO-BACK	0	0	0	0	0	YES
1ST FLOOR SIDE-TO-SIDE	0	0	0	0	0	YES
BASEMENT FRONT-TO-BACK	0	0	0	0	0	YES
BASEMENT SIDE-TO-SIDE	0	0	0	0	0	YES

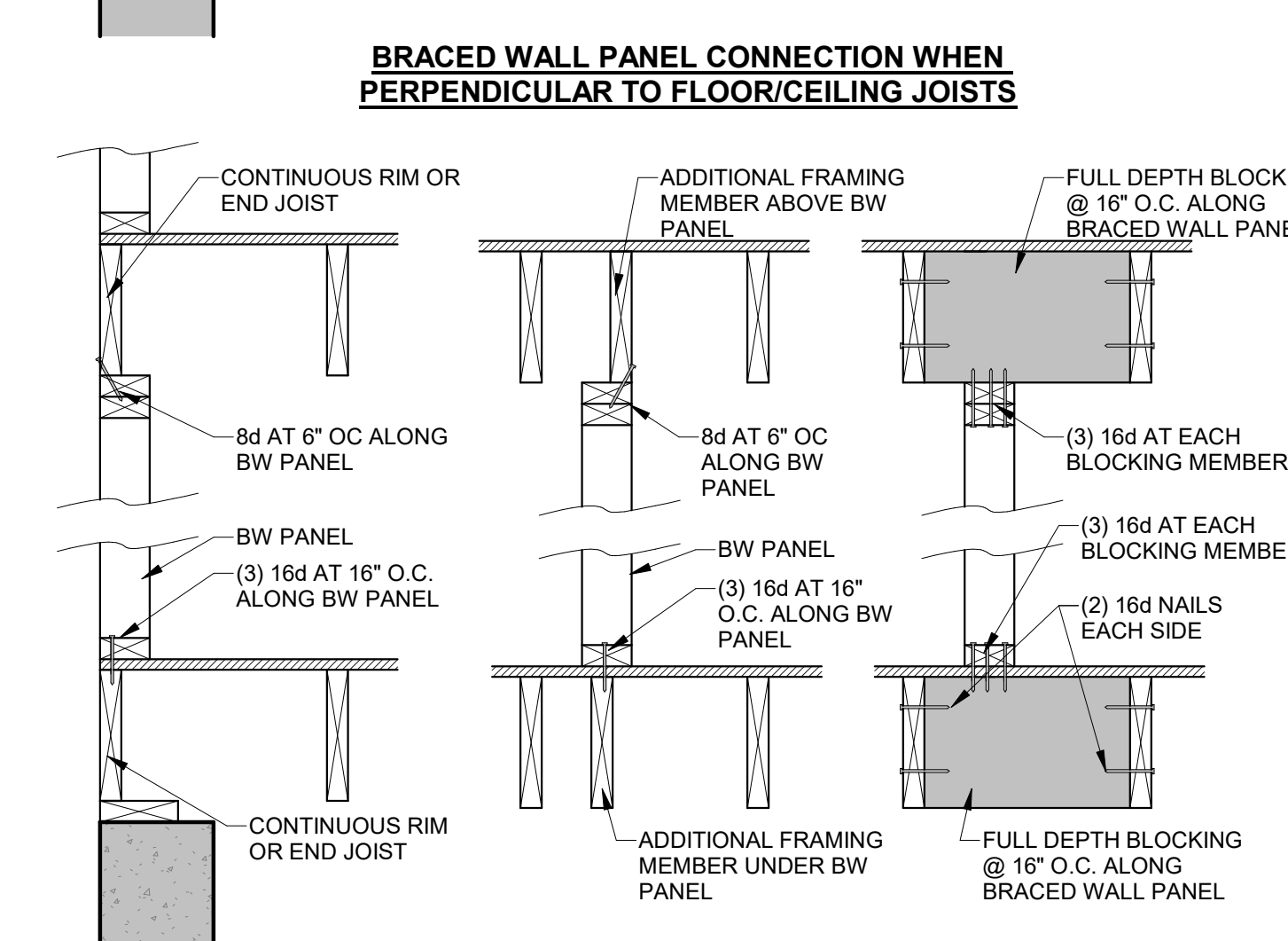
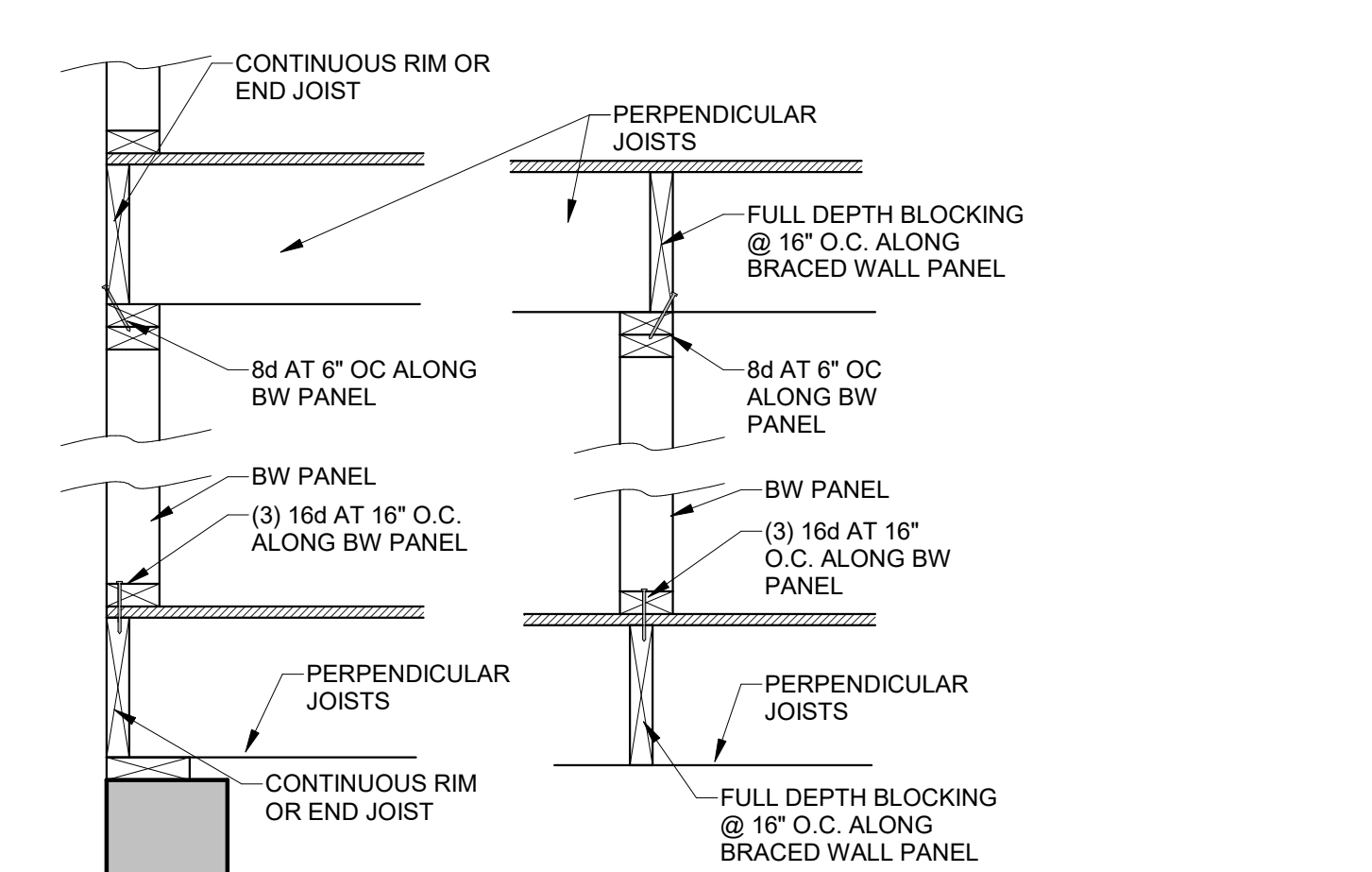
¹ WINDS: 1) SEE ANY APPLICABLE CALCULATIONS FOR PORTAL FRAME OR PERFORATED SHEAR WALL RESISTANCE CAPACITIES (IF APPLICABLE).
² SEE SHEET S1 FOR INTERIOR STEEL X-BRACE INSTALLATION. 3) INTERIOR WALLS SHEATHED WITH OSB SHALL BE ATTACHED WITH SAME STAPLE/NAILING PATTERN AS EXTERIOR OSB ON SAME FLOOR (SEE TABLE ABOVE) AND ARE ONLY APPLICABLE FOR FULL-HEIGHT SECTIONS OF 2'-0" OR LONGER.

WIND UPLIFT ANALYSIS			
ROOF PITCH (MAX)	X/12	DEGREES	45.0
PITCH OF 6 OR LESS EOH-13.3, E-7.2, G-3.2	ASCE 7	LINEAL FT. OF OH	UPLIFT PER FT. (LBS)
OVERHANG	1	1.08	-1.08
MAIN ROOF ¹	TOTAL AREA (FT ²)	ZONE E AREA (FT ²)	ZONE G AREA (FT ²)
	3564	1708.24	1805.76
ALONG PERIMETER	TOTAL UPLIFT PER LINEAL FOOT ALONG EXTERIOR (POUNDS)		-11.7
INSIDE EXTERIOR WALLS	RESISTANCE DUE TO DEAD WEIGHT (LBS) PER TRIM LINE		291.6
			UPLIFT OK

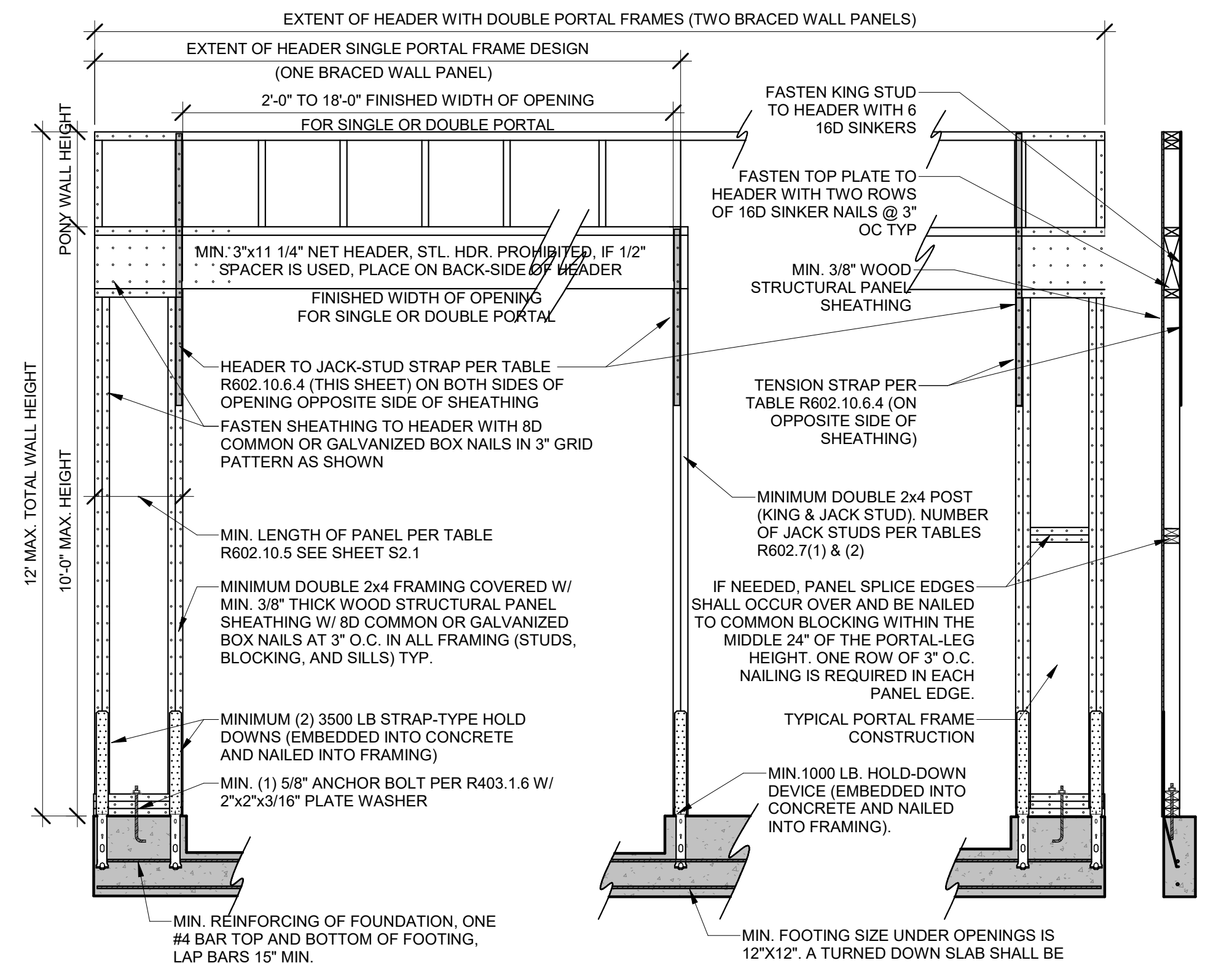
NOTE FOR CONSTRUCTION: THE CONTINUOUS STRUCTURAL PANEL SHEATHING BRACING METHOD REQUIRES USE OF THE ABOVE TABLE FOR SHEATHING OF THE ENTIRE STRUCTURE. IN ADDITION, FRAMING MEMBERS SHALL BE @ 16" O.C. MAX., UNBLOCKED, AND W/ SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS.

NOTE FOR DESIGN: ALL WALLS USED IN THE CALCULATION OF THE RESISTANCE FOR THIS STRUCTURE SHALL HAVE A MINIMUM UNINTERRUPTED HEIGHT OF 6'-0" AND LENGTH OF 2'-0". ALLOWABLE RESISTANCES HAVE BEEN RIFT AND INCREASED BY 40% FOR WIND LOADS. PER VALUES IN 2018 IBC SECTION 2306 AND AF&PA SDPWS TABLE 4.3A. FOR EXAMPLE, 7/16" APA-RATED SHEATHING WITH 8d @ 6" & 12" HAS A SEISMIC SHEAR VALUE OF 220 A WIND SHEAR VALUE OF 355WFT - 40% GREATER THAN THAT OF CONSTRUCTION.

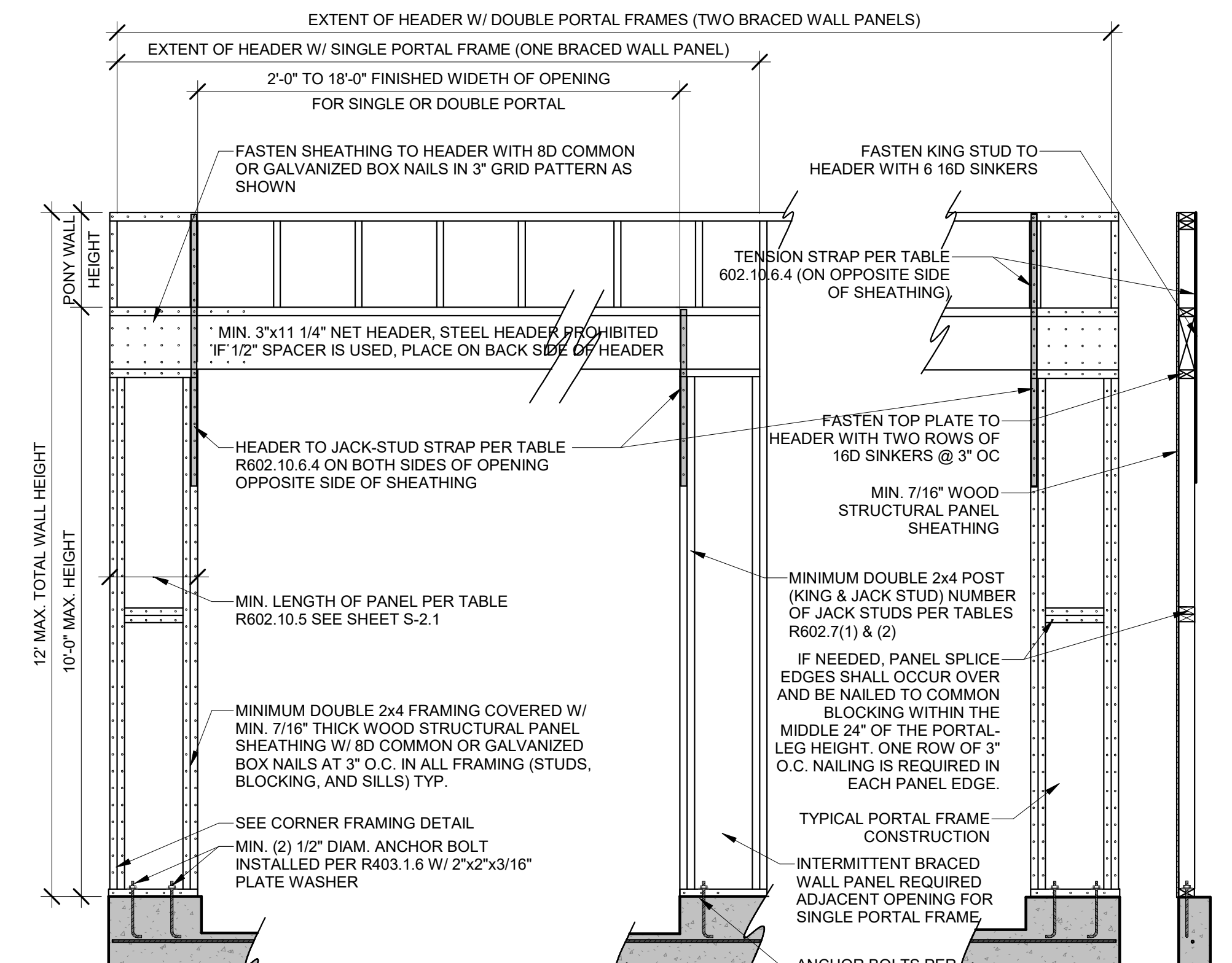
NOTE: SOIL SITE CLASS ASSUMED TO BE CLASS D. IF SITE CONDITIONS ARE DETERMINED TO BE CLASS E OR F, CONSULT ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.



BRACED WALL PANEL CONNECTIONS
 1" = 1'-0"

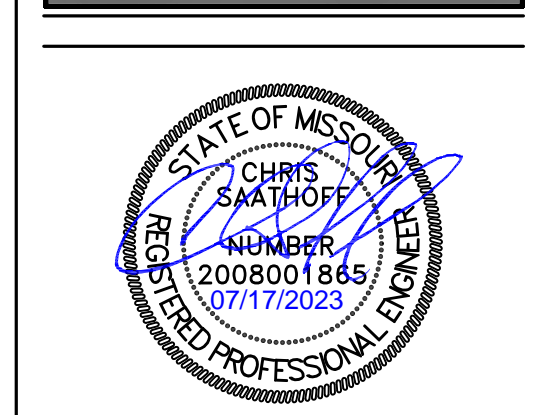
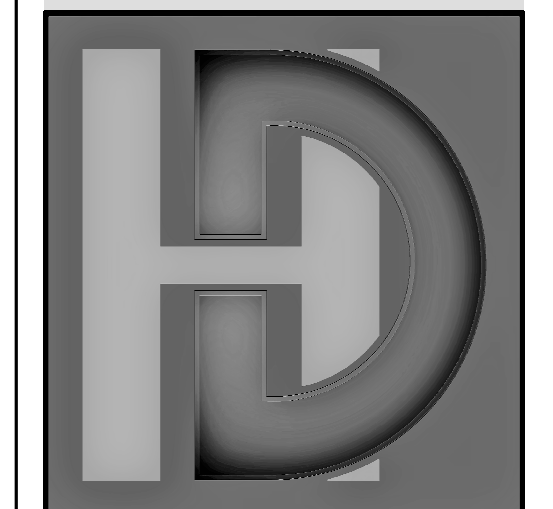


1 PFH PORTAL FRAME W/ HOLD DOWNS (R602.10.6.2)
 1/2" = 1'-0"



2 PFG PORTAL FRAME W/OUT HOLD DOWNS (R602.10.6.3)
 1/2" = 1'-0"

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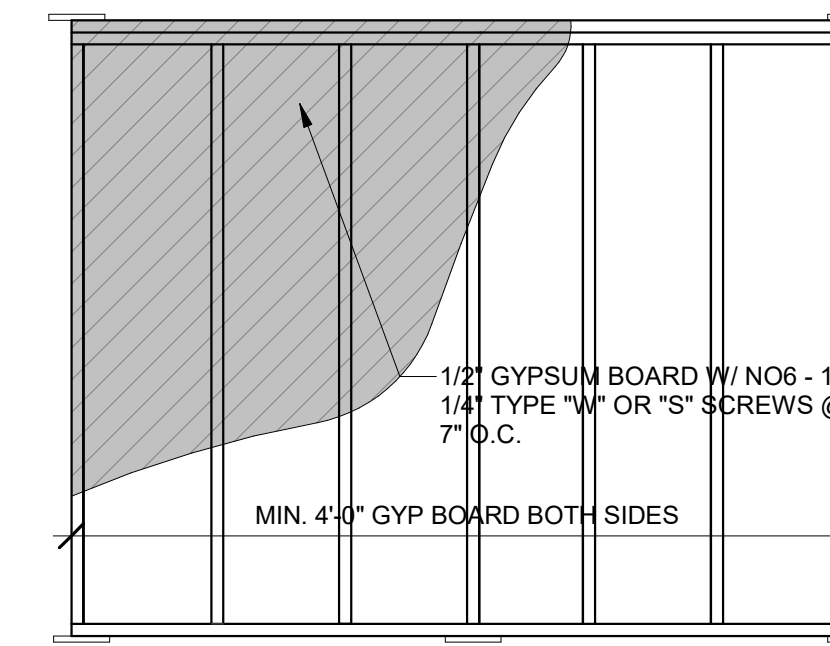
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BRACED WALL NOTES & DETAILS

S-2.0

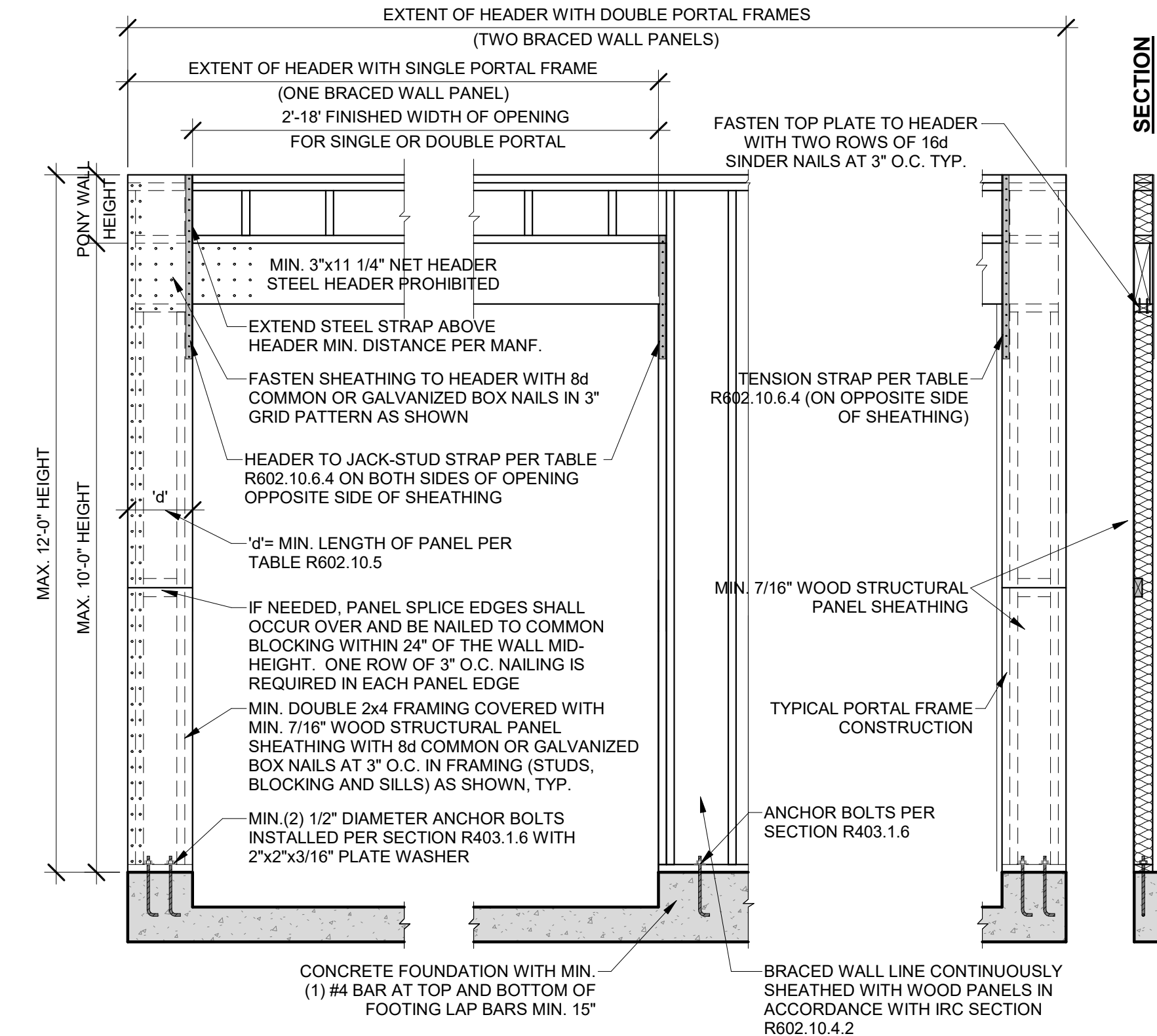
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 DEVELOPMENT SERVICES
 LEE'S SUMMIT, MISSOURI
 08/31/2023

TENSION STRAP CAPACITY REQUIRED FOR RESISTING WIND PRESSURES PERPENDICULAR TO METHOD PFH, PFG AND CS-PF BRACED WALL PANELS IRC2018 TABLE R602.10.6.4

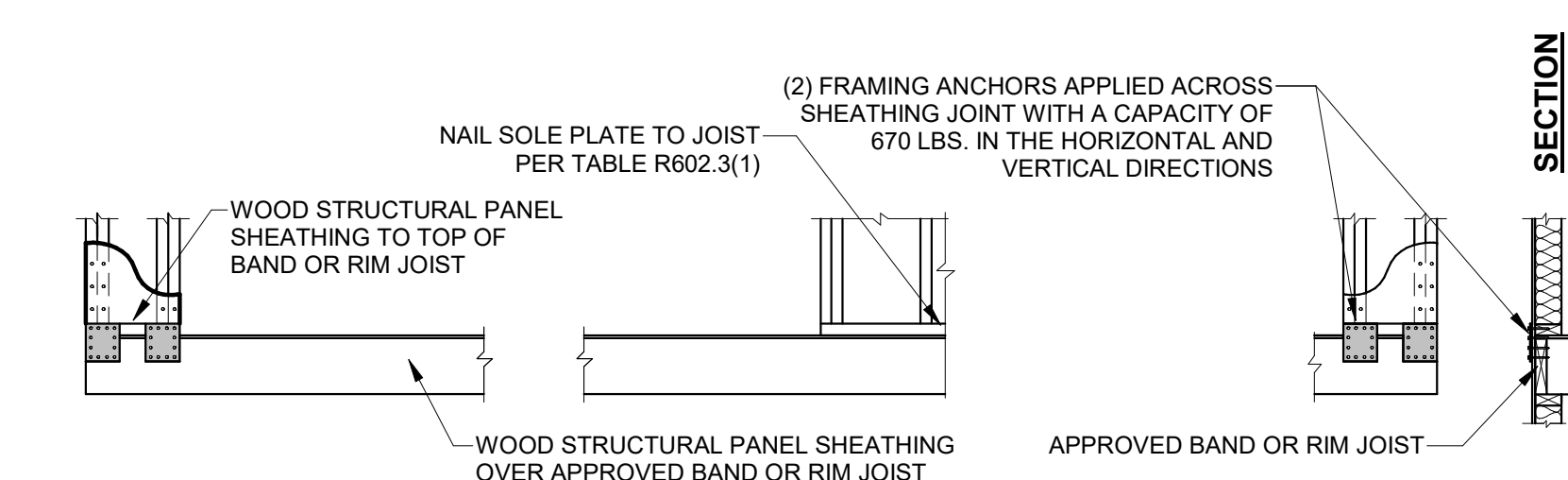


5 GB BRACING
1/2" = 1'-0"

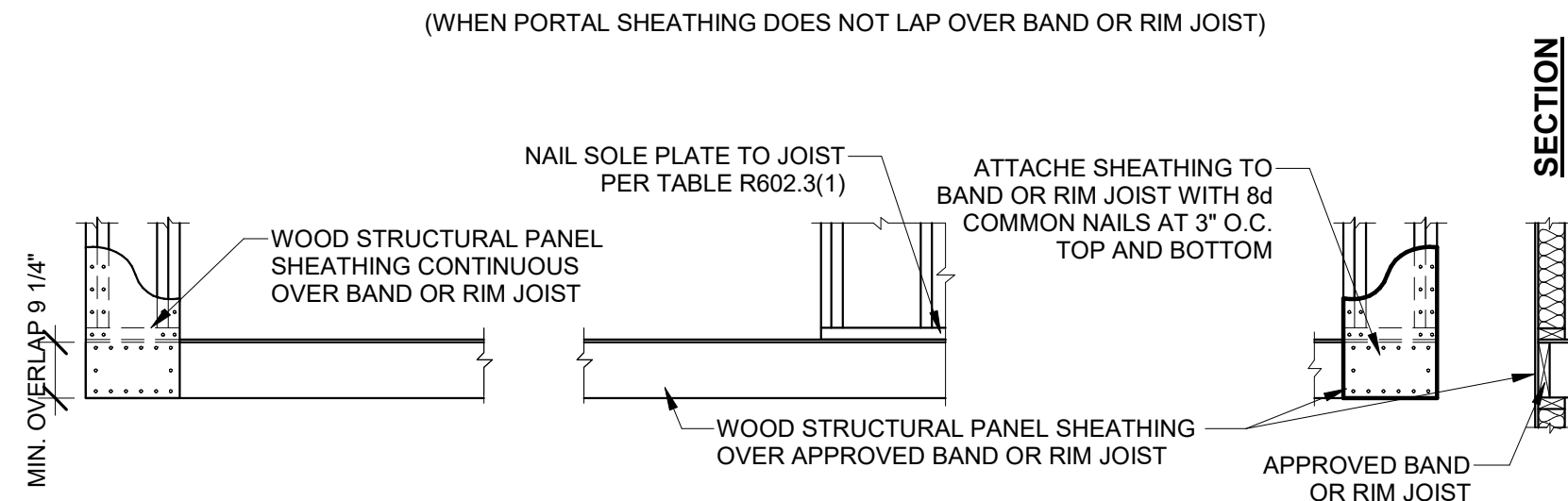
FRONT ELEVATION



OVER CONCRETE OR MASONRY BLOCK FOUNDATION



OVER RAISED WOOD FLOOR - FRAMING ANCHOR OPTION

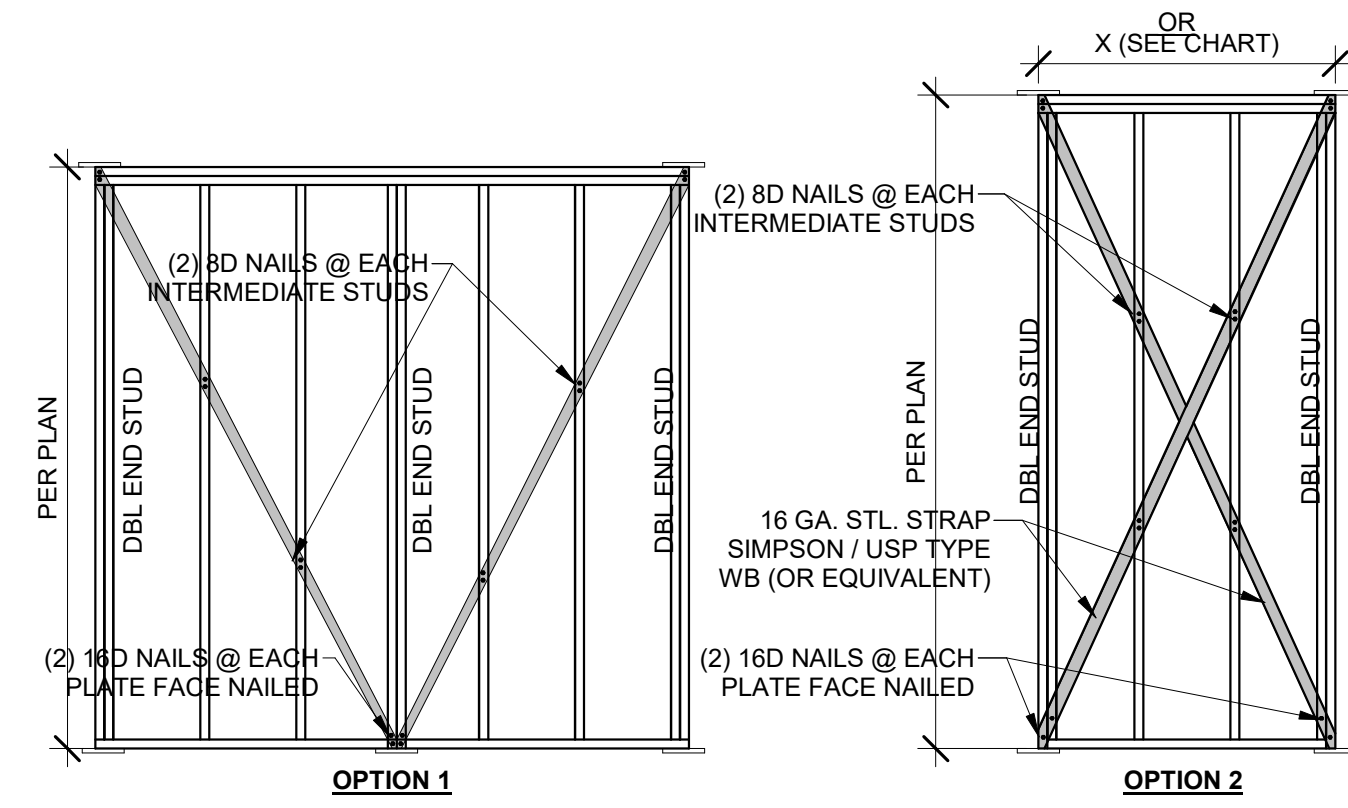


OVER RAISED WOOD FLOOR - OVERLAP OPTION

(WHEN PORTAL SHEATHING LAPS OVER BAND OR RIM JOIST)



4 CS-PF
1/2" = 1'-0"



6 LIB BRACING
3/8" = 1'-0"

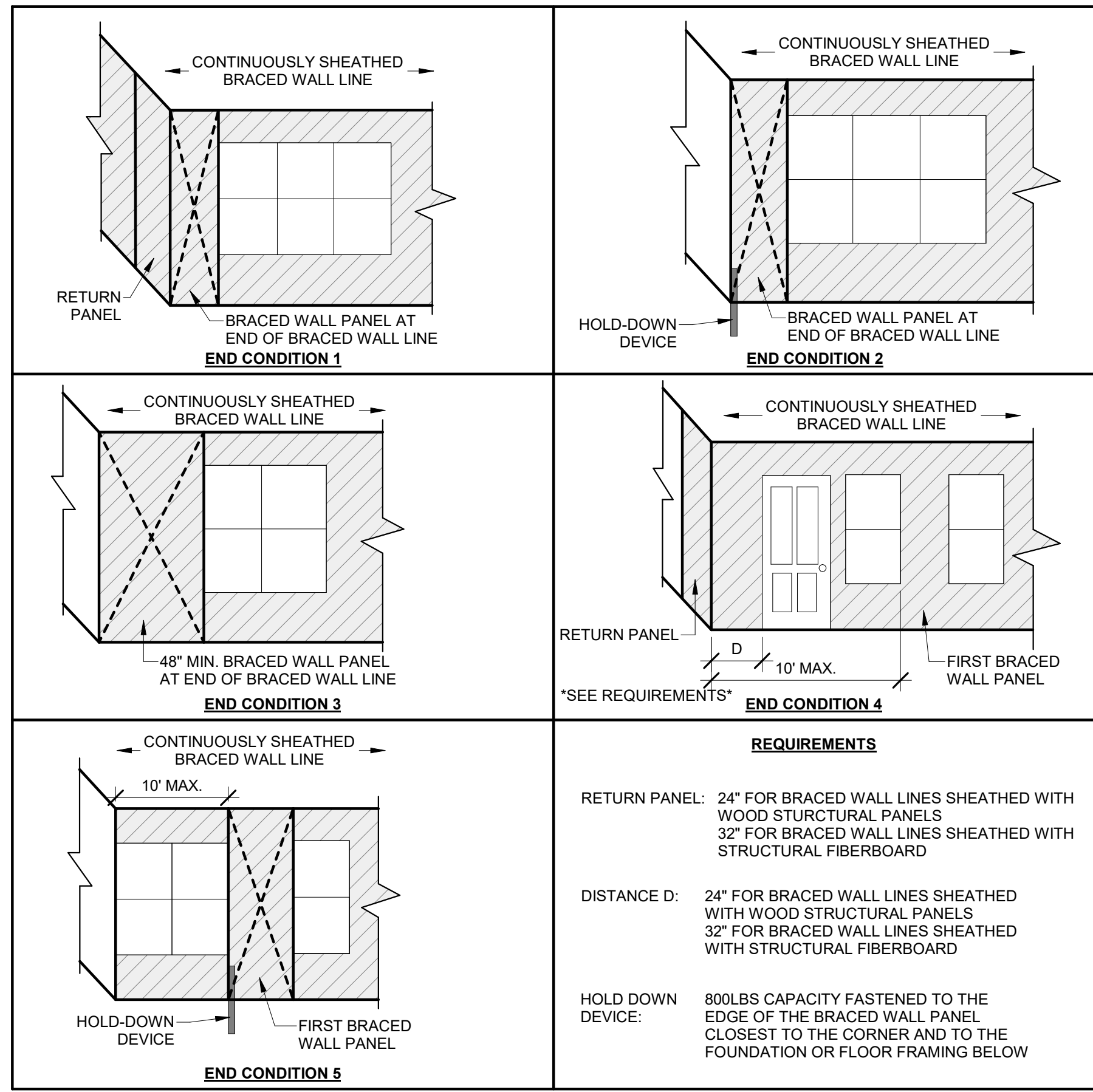
BRACED WALL PANEL LENGTH BASED ON WALL HEIGHT FOR IRC, LIB		
WALL HEIGHT	MIN. WALL LENGTH (X)	MAX. WALL LENGTH (X)
8'-0"	4'-7"	8'-0"
9'-0"	5'-2"	9'-0"
10'-0"	5'-9"	10'-0"
11'-0"	NP	---
12'-0"	NP	---

MINIMUM WALL STUD FRAMING NOMINAL SIZE & GRADE	MAX. PONY WALL HEIGHT (FEET)	MAX. TOTAL WALL HEIGHT (FEET)	MAX. OPENING WIDTH (FEET)	TENSION STRAP CAPACITY REQUIRED (POUNDS) ^a	
				ULTIMATE DESIGN WIND SPEED V (MPH)	
				115	115
				EXPOSURE B	EXPOSURE C
2X4 NO. 2 GRADE	0	10	18	1,000	1,000
			9	1,000	1,000
			16	1,025	2,500
	1	10	18	1,275	2,850
			9	1,000	1,875
			16	2,175	4,125
	2	10	18	2,500	DR
			9	1,500	3,175
			16	3,375	DR
	2	12	18	3,975	DR
			9	2,750	DR
			12	3,775	DR
2X6 STUD GRADE	2	12	9	1,000	2,025
			16	2,150	3,675
			18	2,550	DR
	4	12	9	1,750	3,125
			16	2,400	DR
			18	3,800	DR

a. DR = DESIGN REQUIRED
b. STRAP SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

END WALL CONDITIONS

FOR CONTINUOUSLY SHEATHED BRACED WALL LINES

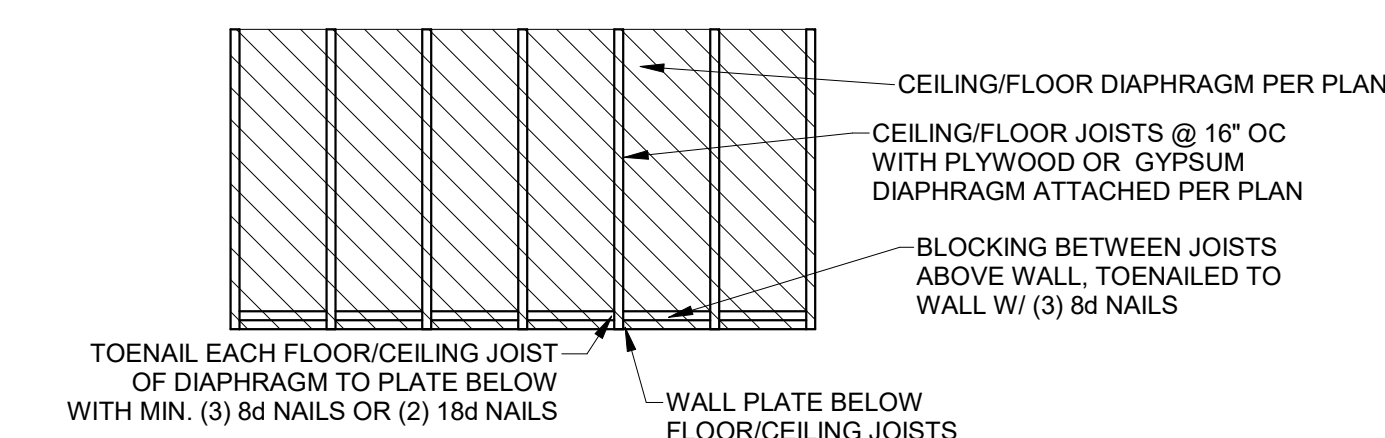


REQUIREMENTS

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: 800LBS CAPACITY FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FLOOR FRAMING BELOW



1 DIAPHRAGM CONNECTION TO INTERIOR WALL
3/8" = 1'-0"

TABLE R602.10.5 MINIMUM LENGTH OF BRACED WALL PANELS

METHOD (SEE TABLE R602.10.4)	MINIMUM LENGTH (INCHES) ^a					CONTRIBUTING LENGTH (INCHES)	
	WALL HEIGHT						
	8 FEET	9 FEET	10 FEET	11 FEET	12 FEET		
DWB,WSP,SFB,PBS,PCP,HPS,BV-WSP	48	48	48	53	58	ACTUAL ^b	
GB	48	48	48	53	58	DOUBLE SIDED = ACTUAL SINGLE SIDED = .5xACTUAL	
LIB	55	62	69	NP	NP	ACTUAL ^b	
ABW	SDC A, B, AND C ULTIMATE DESIGN WIND SPEED < 140	28	32	34	38	42	48
	SDC D, D, D ULTIMATE DESIGN WIND SPEED < 140	32	32	34	NP	NP	
PFH	SUPPORTING ROOF ONLY	16	16	16	NOTE C	NOTE C	48
	SPTNG. ONE STORY & ROOF	24	24	24	NOTE C	NOTE C	
PFG	24	27	30	NOTE D	NOTE D	1.5 x ACTUAL ^b	
CS-G	24	27	30	33	36	ACTUAL ^b	
CS-PF	16	18	20	NOTE E	NOTE E	ACTUAL ^b	
CS-WSP CS-SFB	ADJACENT CLEAR OPENING HEIGHT (INCHES)					ACTUAL ^b	
	≤64	24	27	30	33		36
	68	26	27	30	33		36
	72	27	27	30	33		36
	76	30	29	30	33		36
	80	32	30	30	33		36
	84	35	32	32	33		36
	88	38	35	33	33		36
	92	43	37	35	35		36
	96	48	41	38	36		36
	100	-	44	40	38		38
	104	-	49	43	40		39
	108	-	54	46	43		41
	112	-	-	50	45		43
	116	-	-	55	48		45
	120	-	-	60	52		48
124	-	-	-	56	51		
128	-	-	-	61	54		
132	-	-	-	66	58		
136	-	-	-	-	62		
140	-	-	-	-	66		
144	-	-	-	-	72		

a. LINEAR INTERPOLATION SHALL BE PERMITTED
b. USE THE ACTUAL LENGTH WHEN IT IS GREATER THAN OR EQUAL TO THE MINIMUM LENGTH
c. MAX. HEADER HEIGHT FOR PFH IS 10' IN ACCORDANCE WITH R602.10.2. WALL HEIGHT MAY BE INCREASED TO 12' WITH PONY WALL
d. MAX. OPENING HEIGHT FOR PFG IS 10' IN ACCORDANCE WITH R602.10.3. WALL HEIGHT MAY BE INCREASED TO 12' WITH PONY WALL
e. MAX. OPENING HEIGHT FOR CS-PF IS 10' IN ACCORDANCE WITH R602.10.4. WALL HEIGHT MAY BE INCREASED TO 12' WITH PONY WALL

BRACED WALL PRESRIPTIVE METHOD:
CONTINUOUS EXTERIOR SHEATHING (CS-WSP) PER WSP METHOD (BELOW) UNLESS OTHERWISE NOTED ON THE PLAN

EXTERIOR BRACED WALL METHOD: (SEE ON THIS SHEET)
WSP METHOD:
WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH MINIMUM SPAN RATING OF 24/0 FOR 16" O.C. STUD SPACING WITH 6d NAILS COMMON NAILS @ 6" O.C. EDGES AND 12" O.C. FIELD OR SHEATHING THICKNESS NOT LESS THAN 7/16" WITH MINIMUM SPAN RATING OF 24/16 FOR 24" O.C. SPACING WITH 8d COMMON NAILS @ 6" O.C. EDGES AND 12" O.C. IN FIELD
(NOTE: FRAMING MEMBERS 16" O.C. MAX. UNBLOCKED, AND W/ SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS).

INTERIOR BRACED WALLS (SEE ON THIS SHEET)
GB METHOD:
1/2" MINIMUM GYPSUM BOARD OVER STUDS SPACED @ 24" MAXIMUM FASTENED W/ #6 - 1 1/4" TYPE "W" OR "S" DRYWALL SCREWS @ 7" O.C. EDGES AND FIELD (MIN. 4'-0" SECTION FOR BOTH SIDES)
OR
LIB METHOD:
1X4 WOOD FASTENED W/ (3) 8d COMMON NAILS OR SIMPSON / USP 16 GA. TYPE WB (OR EQUIVALENT) STL. X-BRACE(S) @ 45° TO 60° ANGLES, MAXIMUM 16" O.C. STUDS FASTENED PER MANUF. SPECS.

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 EXP. STRATOGA II - HF100
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 STRUCTURAL DETAILS & NOTES

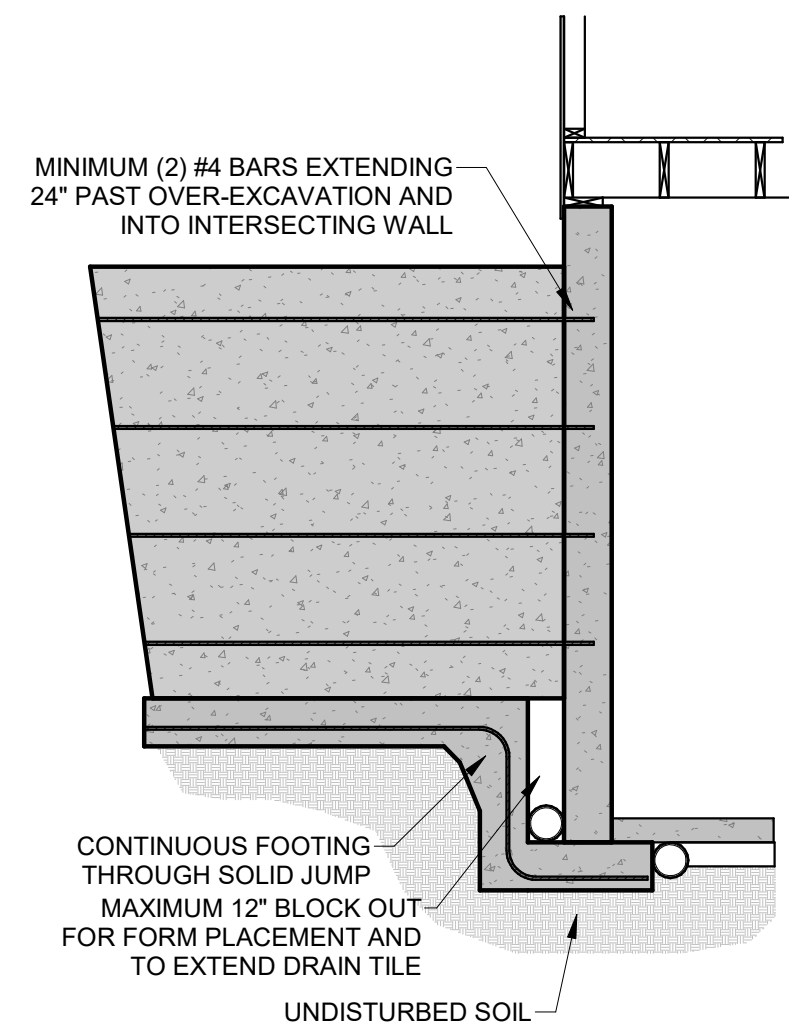
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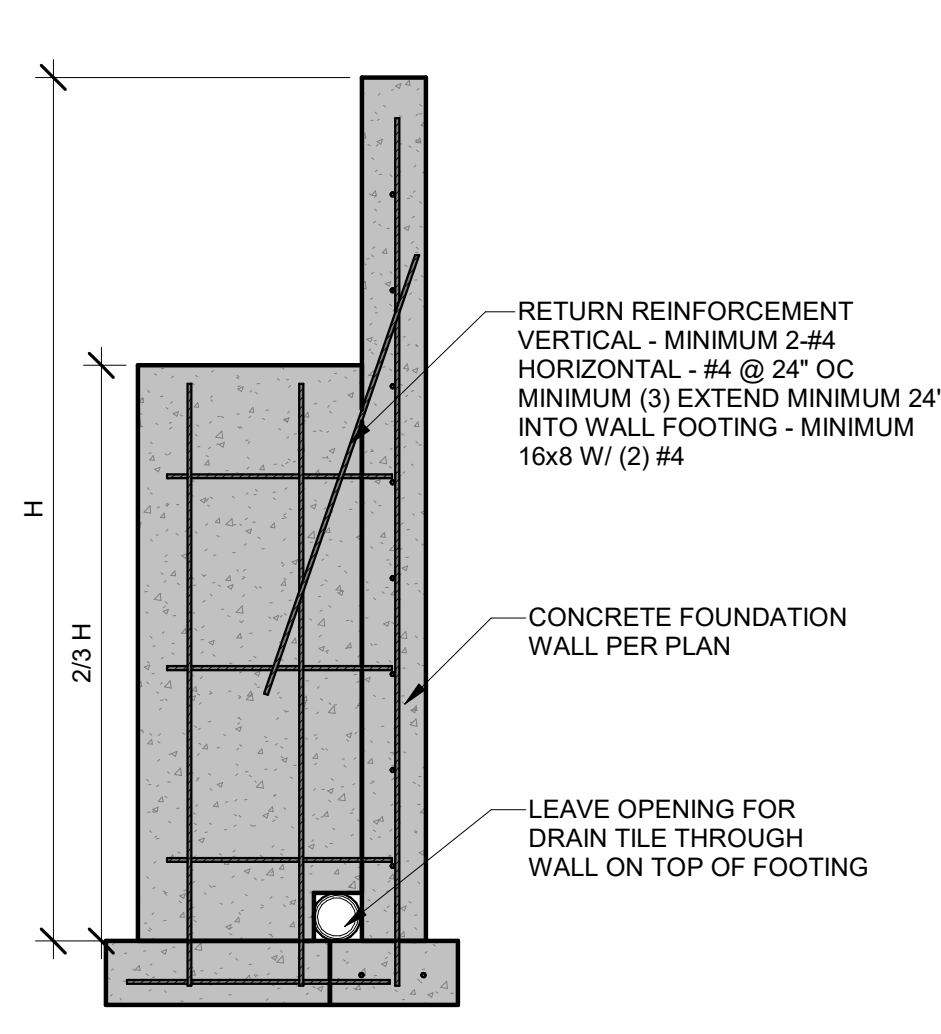
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BRACED WALLS NOTES & DETAILS

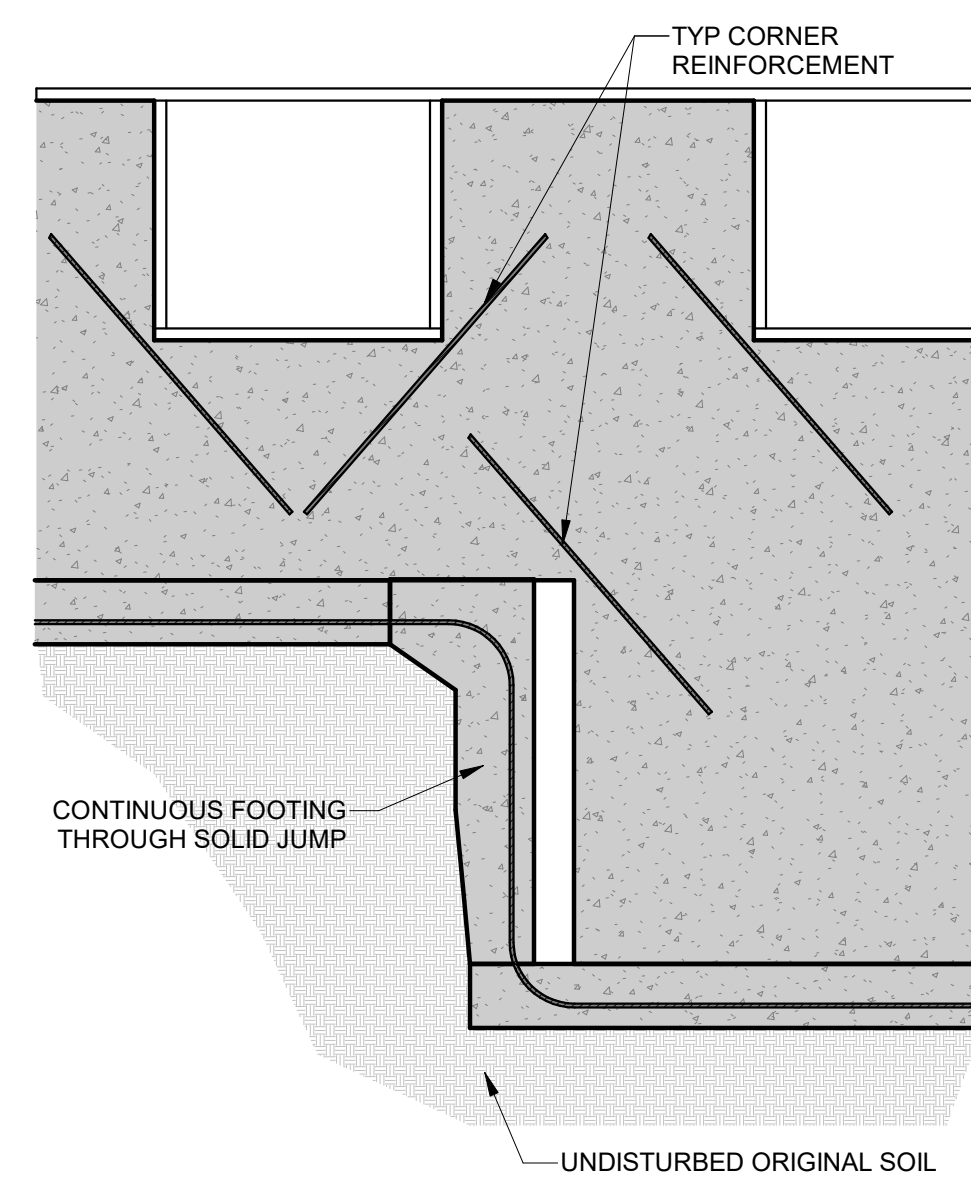
S-2.1



1 SOLID FOOTING JUMP DETAIL
3/8" = 1'-0"

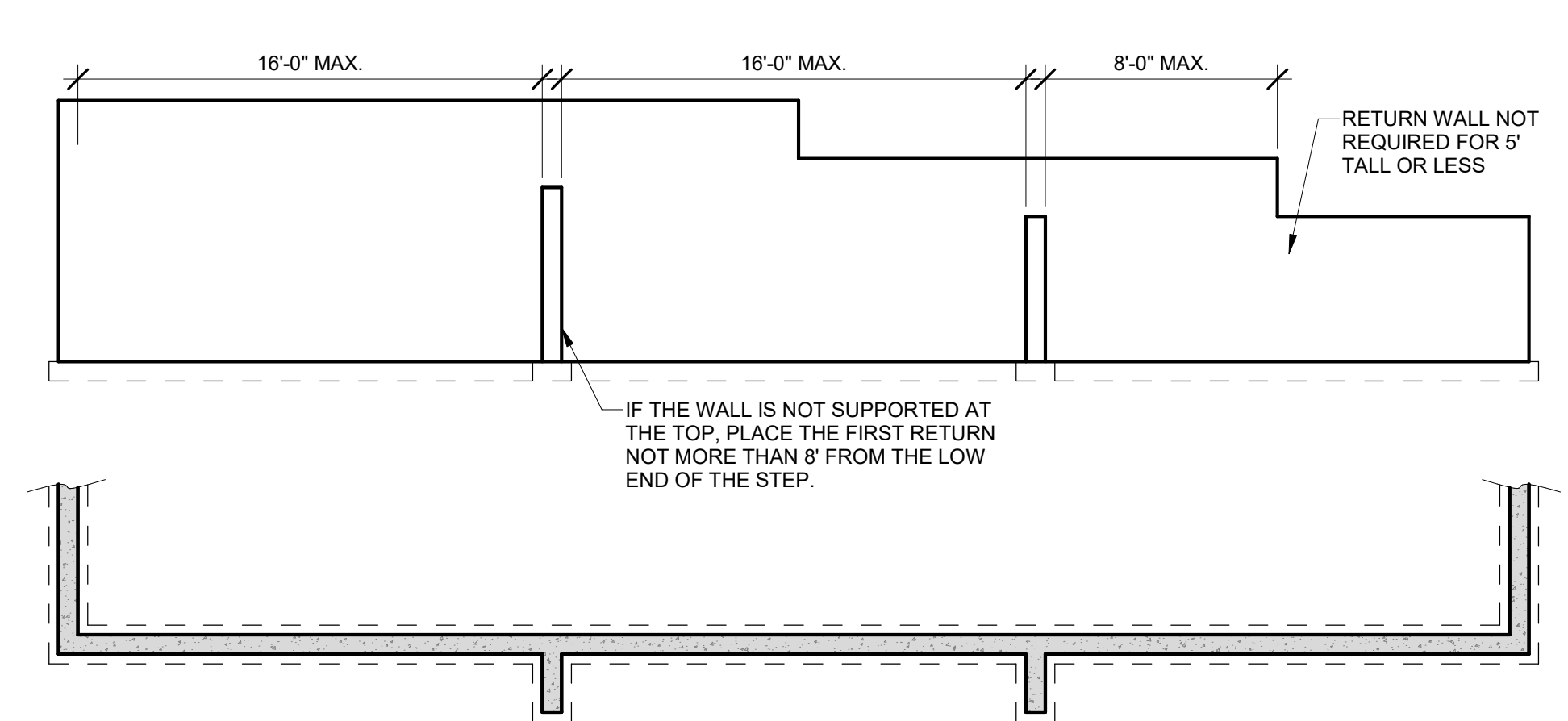


2 RETURN WALL DETAIL
1/2" = 1'-0"

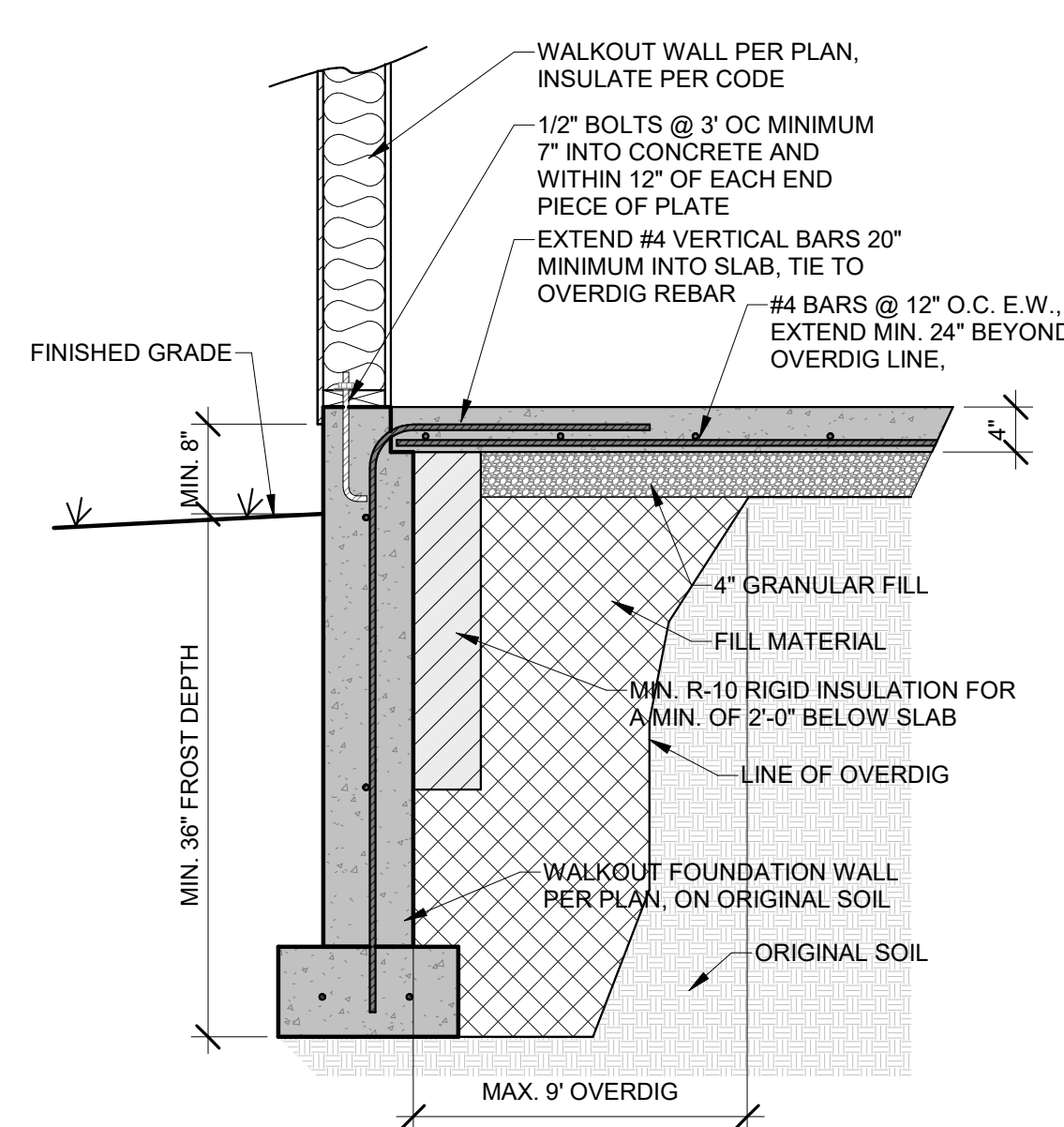


WHERE OPENINGS OR ABRUPT ELEVATION CHANGES OCCUR IN THE TOP OR BOTTOM OF THE WALL AT LEAST ONE #4 BAR 48" LONG SHALL BE DIAGONALLY AS CLOSE A PRACTICAL TO THE CORNER

9 REINFORCEMENT AT CORNERS AND STEPS
1/2" = 1'-0"



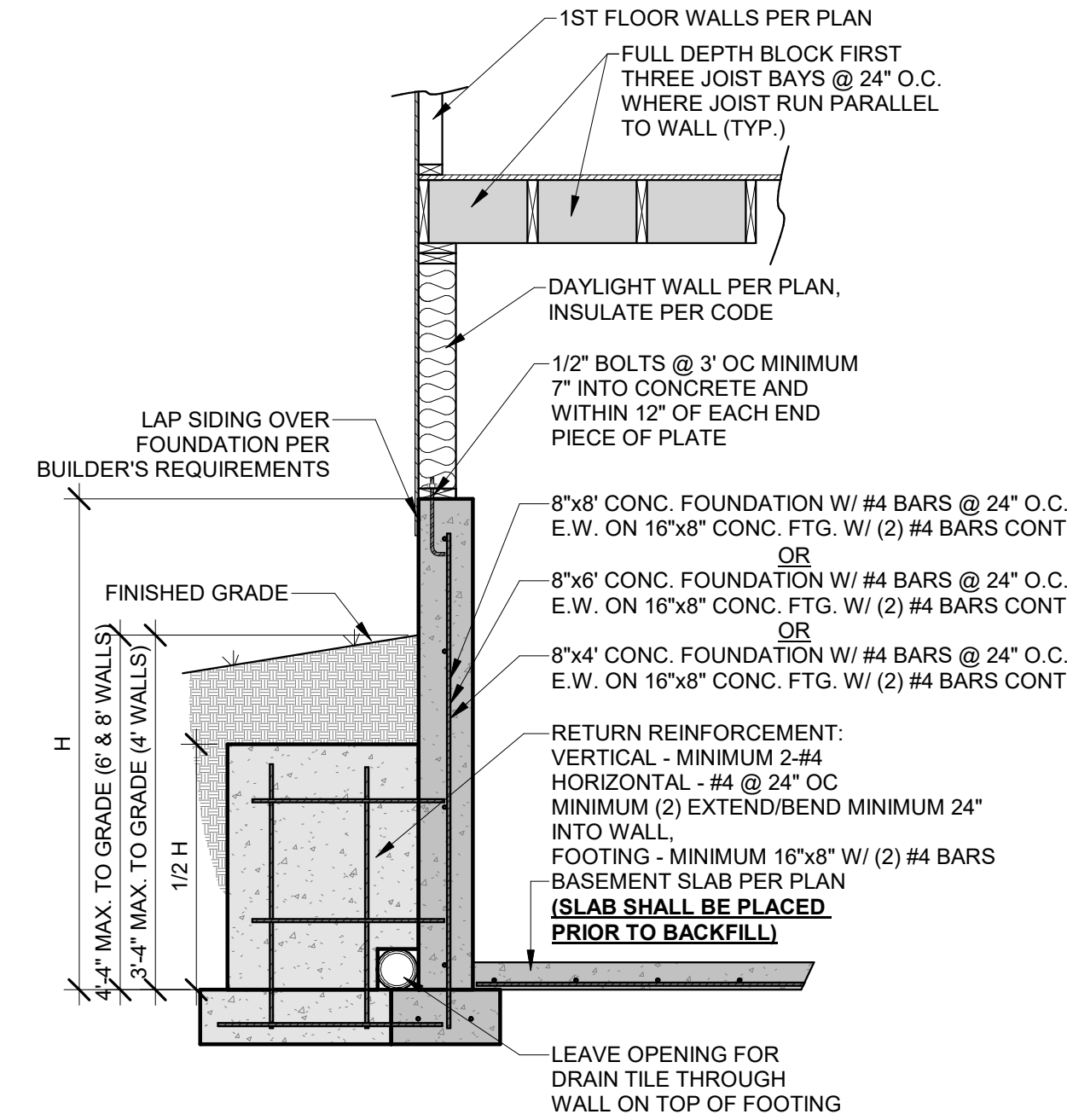
4 RETURN WALL PLACEMENT
3/16" = 1'-0"



IF OVER 9' OVERDIG SEE HD ENGINEERING FOR STRUCTURAL BASEMENT SLAB DESIGN

IMPORTANT NOTE:
ANY SLAB WITH GREATER THAN 2' OF GRADED ROCK OR 8" OF FILL SOIL BELOW SHALL BE DESIGNED AS STRUCTURAL PER PLAN. OUR FIRM SHOULD BE CONTACTED IMMEDIATELY FOR DESIGN RECOMMENDATIONS. DESIGN MUST BE COMPLETED PRIOR TO PLACEMENT OF PIERS OR FOOTINGS.

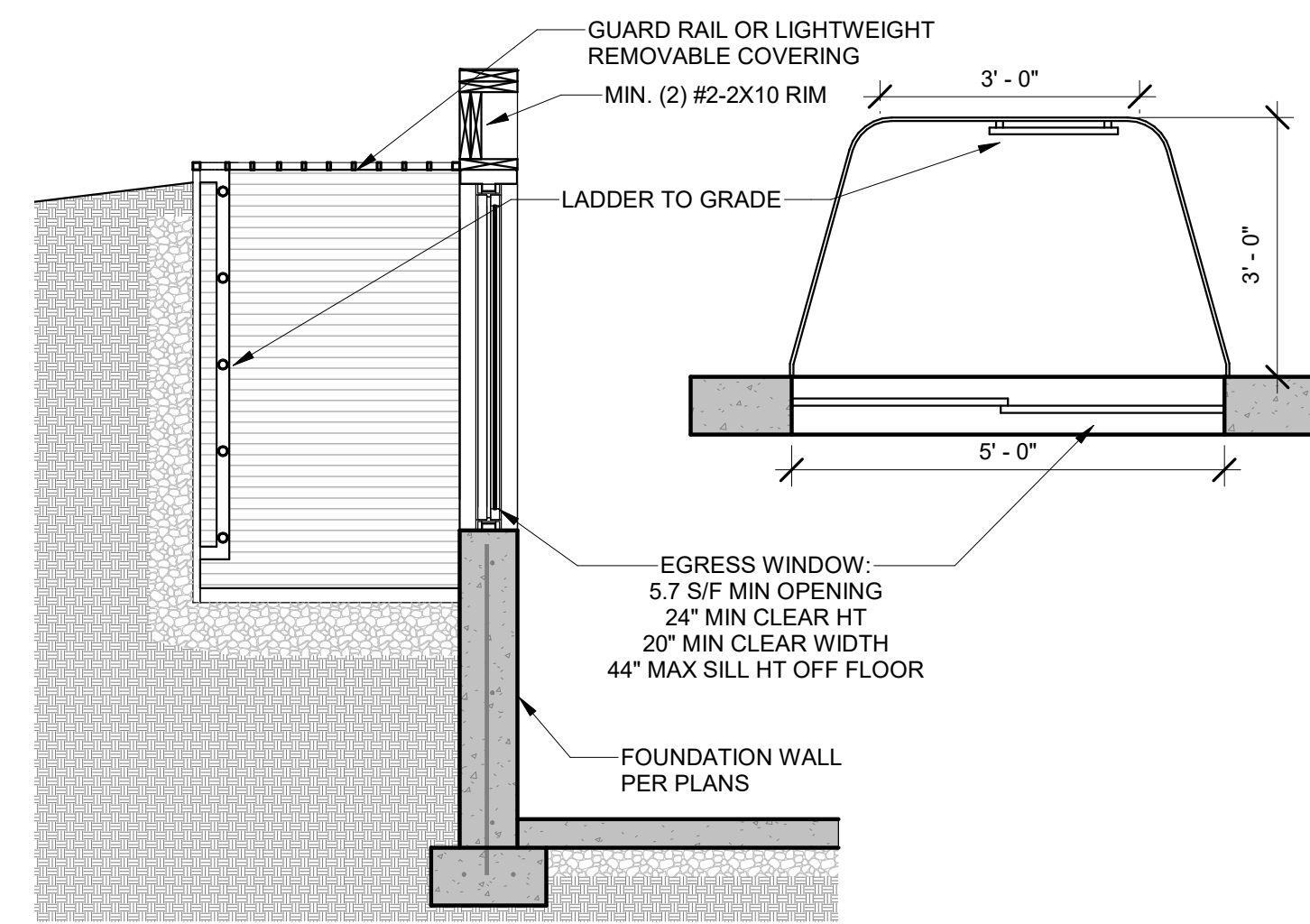
10 WALKOUT DETAIL
3/4" = 1'-0"



8"x4', 8"x6', AND 8"x8' DAYLIGHT FOUNDATION

IF SLAB IS NOT PLACED PRIOR TO BACKFILL CONTRACTOR IS RESPONSIBLE FOR BRACING THE FOUNDATION AS REQUIRED

7 UNRESTRAINED FOUNDATION WALL
1/2" = 1'-0"



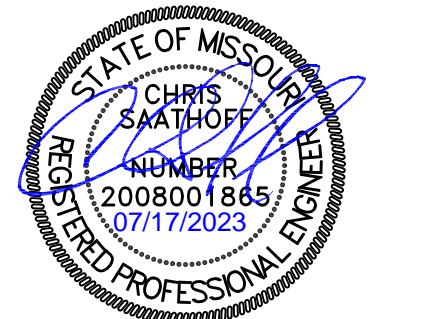
11 EGRESS WINDOW SECTION
1/2" = 1'-0"

VERTICAL REINFORCEMENT SPACING*						
60 PSF SOIL; 40 & 60 KSI STEEL						
CONCRETE STRENGTH	8" THICK WALL			10" THICK WALL		
	8'	9'	8'	9'	10'	10'
3000 PSI/ 40 KSI	16	12	24	16	12	12
3500 PSI/ 40 KSI	16	12	24	24	12	12
3000 PSI/ 60 KSI	24	16	24	20	16	16
3500 PSI/ 60 KSI	24	16	24	24	16	16

HORIZONTAL REINFORCEMENT**						
ONE BAR 12" FROM TOP OF WALL; MAX. SPACING 24" O.C.	4-#4		5-#4		6-#4	
	4-#4	5-#4	4-#4	5-#4	6-#4	6-#4

* CONCRETE SHALL HAVE AIR ENTRAINMENT OF 5-7%.
* MINIMUM REQUIREMENT FOR VERTICAL REBAR IN PLAIN CONCRETE WALLS IS #4 @ 36" ON CENTER (ACI 332).
* VERTICAL BARS SHALL BE CONTINUED UP TO WITHIN 8" 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 INCHES AT ENDS, SPLICES, AND AROUND CORNERS.

** #4 BARS @ 24" ON CENTER.
** #4 BAR WITHIN 12 OF TOP AND BOTTOM OF WALL.
** MINIMUM GRADE 40 (40ksi) STEEL (PER ACI 332).
** HORIZONTAL REINFORCEMENT SHALL BE INSTALLED ON THE COMPRESSION SIDE (SOIL SIDE) OF THE VERTICAL REINFORCEMENT



HD#: 48900

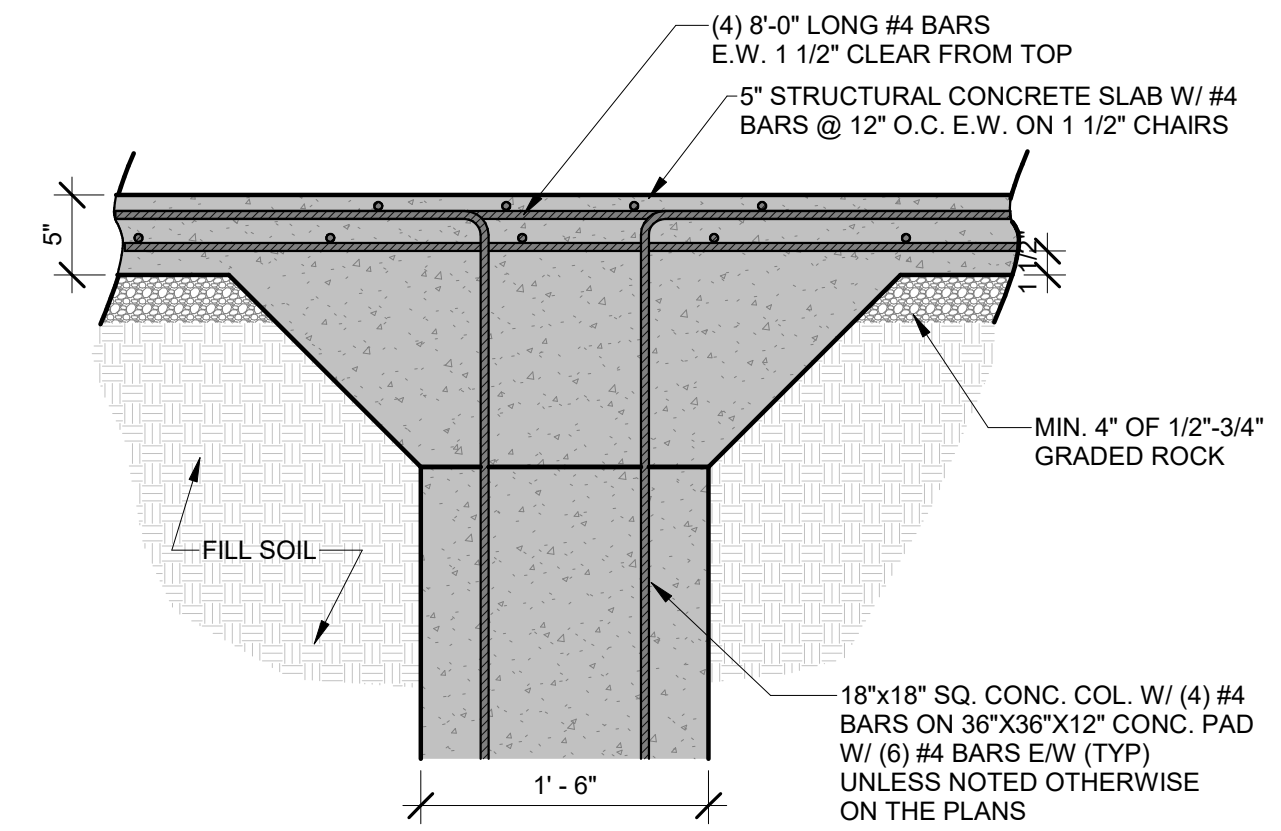
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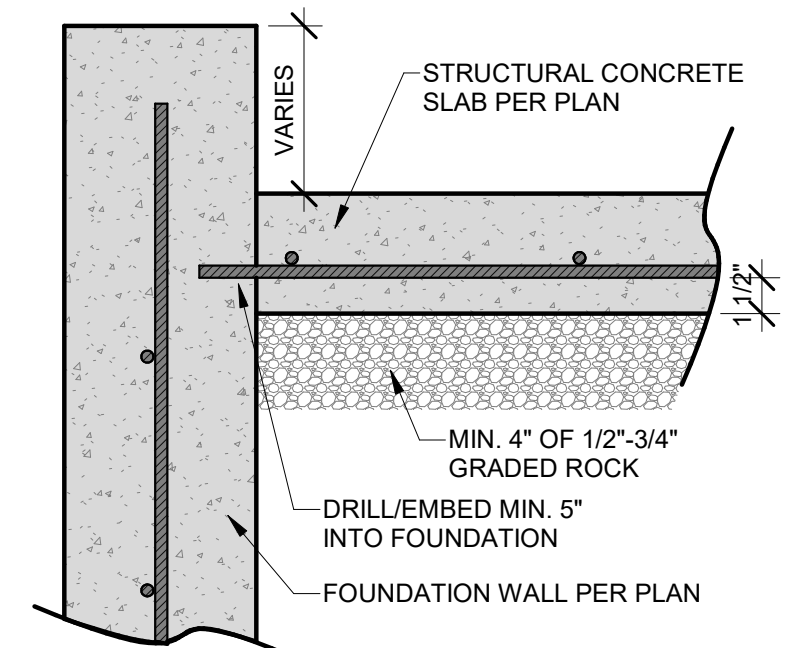
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CONCRETE DETAILS

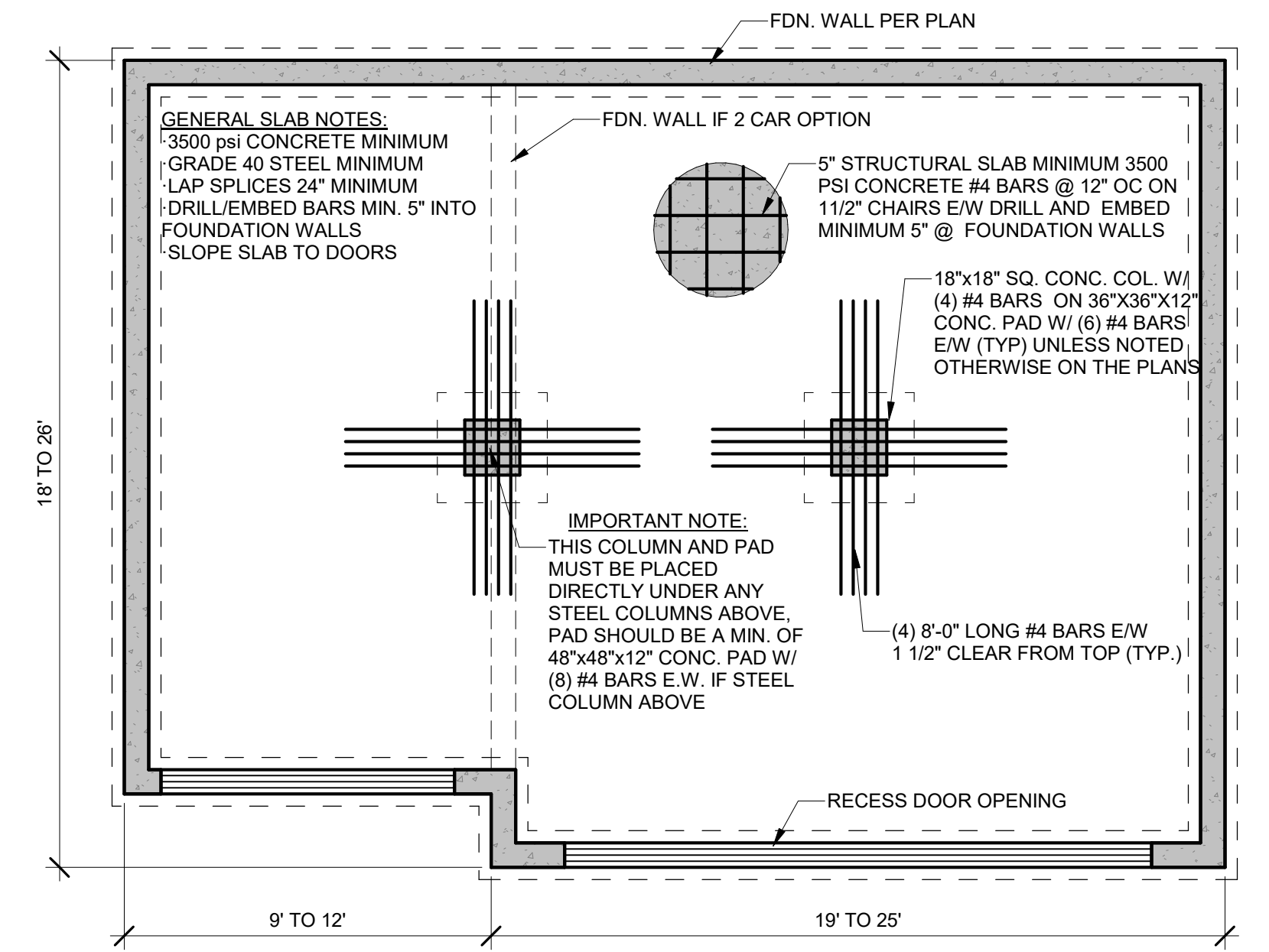
S-3.0



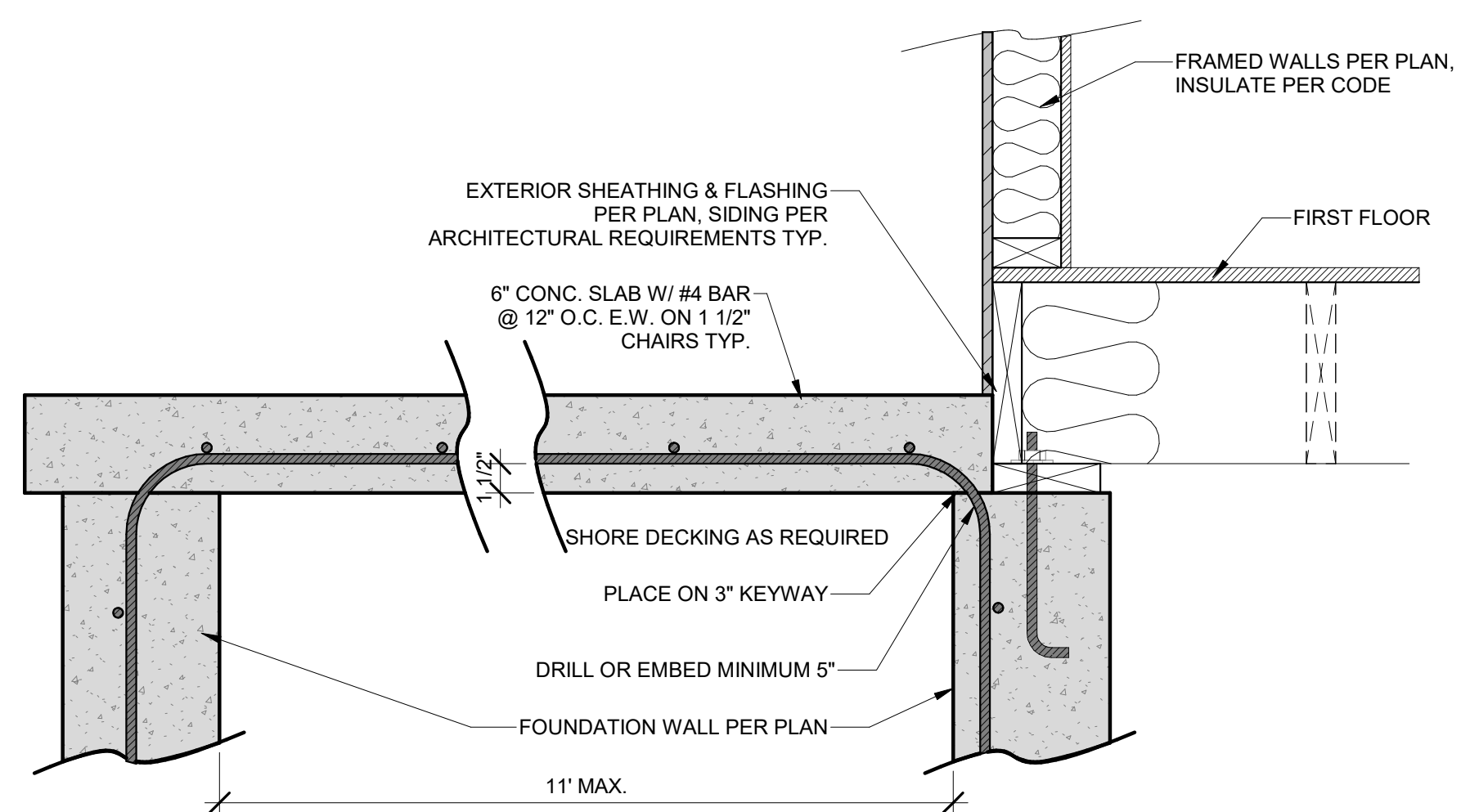
8 GARAGE SLAB COLUMN DETAIL
1" = 1'-0"



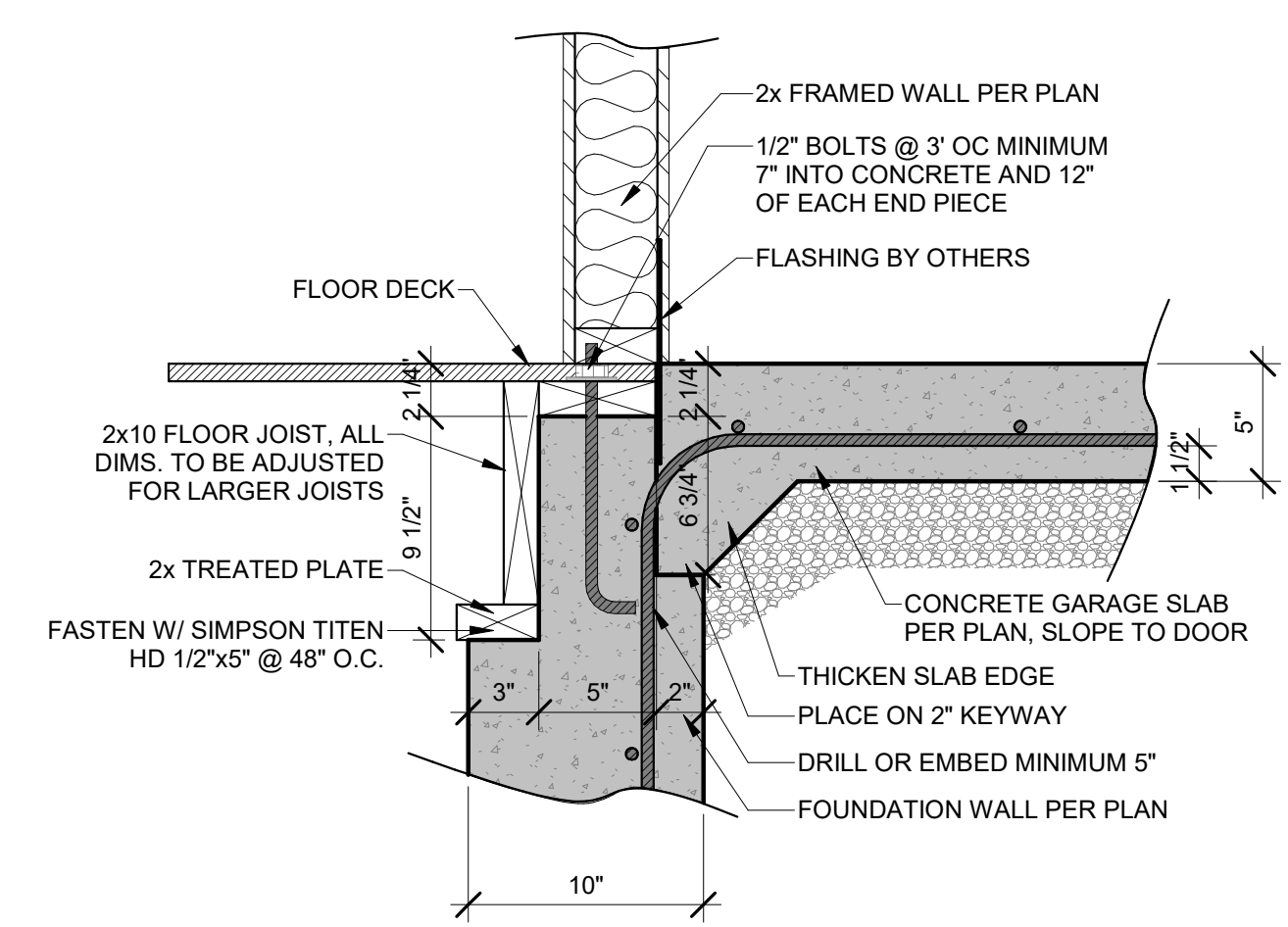
9 STRUCTURAL SLAB/ WALL
1 1/2" = 1'-0"



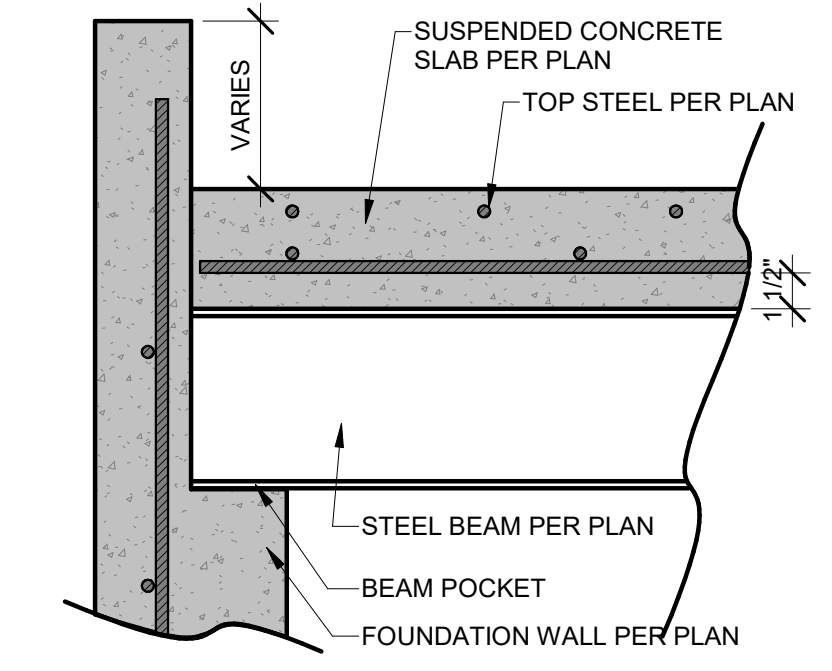
10 TYPICAL GARAGE SLAB
1/4" = 1'-0"



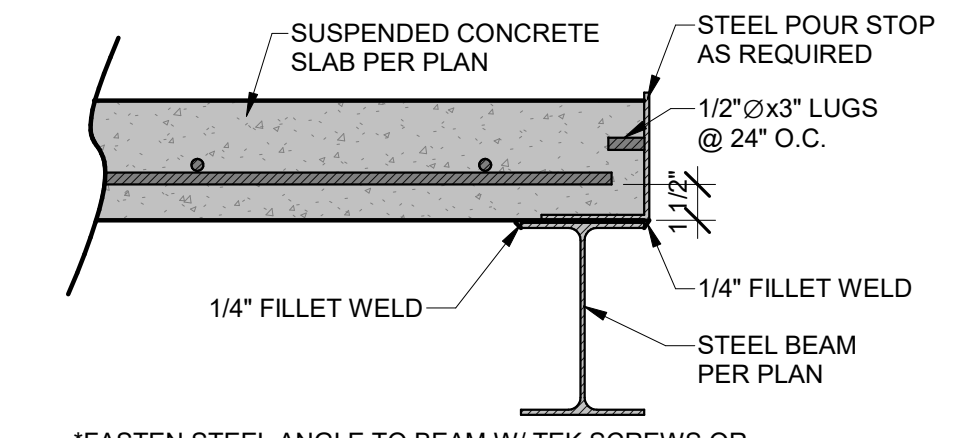
6 SUSPENDED PORCH STOOP SLAB
1 1/2" = 1'-0"



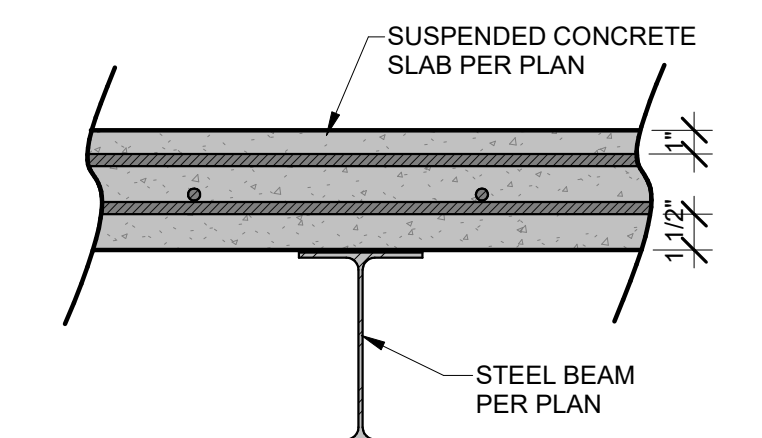
7 ZERO ENTRY GARAGE DETAIL
1 1/2" = 1'-0"



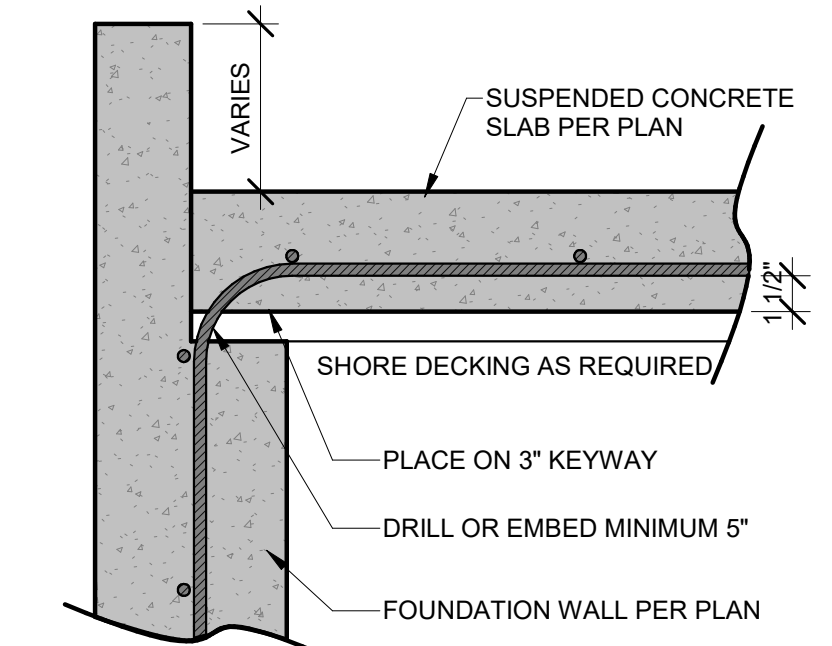
1 SUSPENDED SLAB BEAM/WALL CONNECTION
1 1/2" = 1'-0"



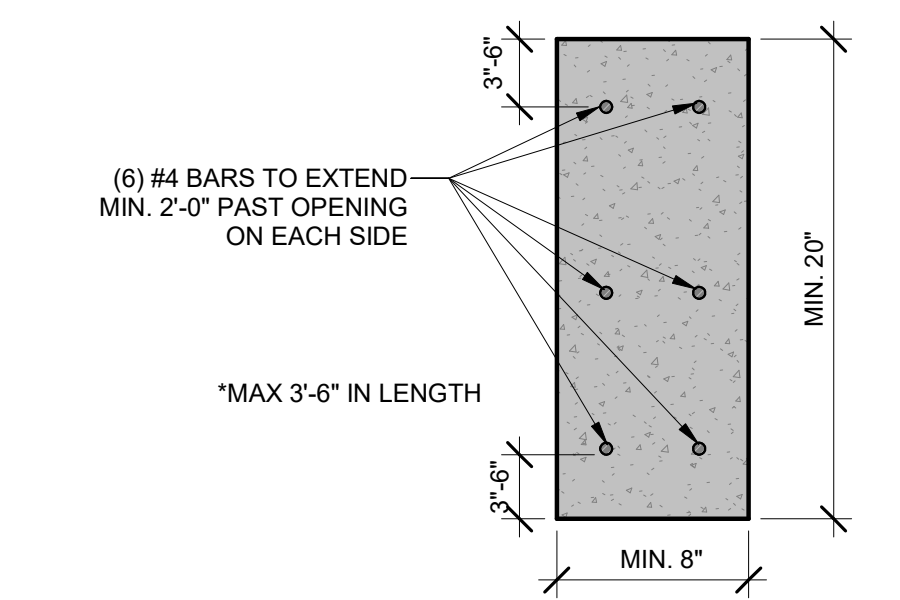
2 SUSPENDED SLAB POUR STOP
1 1/2" = 1'-0"



3 SUSPENDED SLAB/STEELBEAM CROSS SECTION
1 1/2" = 1'-0"



4 SUSPENDED SLAB/WALL CONNECTION
1 1/2" = 1'-0"



5 CONCRETE HEADER DETAIL
1 1/2" = 1'-0"

IMPORTANT NOTE:
FOR SUSPENDED SLABS A MAXIMUM OF 10' ABOVE FLOOR BELOW: TEMPORARY SHORING WALLS SHALL BE PLACED AT A MAXIMUM OF 4' O.C. / #2-2X4 STUDS AT 16" O.C. W/ TOP AND BOTTOM PLATE. WALL TO HAVE CONTINUOUS DIAGONAL BRACING. LATERAL BRACING TO BE RUN FROM WALL TO WALL AT MID HEIGHT 4' ON CENTER. SHORING TO REMAIN IN PLACE FOR AT LEAST 21 DAYS.
ANY CAST IN PLACE SLABS FORMED MORE THAN 10' ABOVE THE FLOOR BELOW SHALL HAVE A SITE SPECIFIC SHORING DESIGN DONE. OUR FIRM SHOULD BE CONSULTED FOR THIS DESIGN ONCE FOUNDATION WALLS ARE IN PLACE TO EVALUATE ALL FIELD CONDITIONS. IT SHOULD BE NOTED THAT FAILURE TO HAVE AN ADEQUATE SHORING DESIGN CAN RESULT IN FORM COLAPSE AND/OR CATASTROPHIC FAILURE.

HD ENGINEERING STRUCTURAL GARAGE SLAB DETAILS

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STRUCTURAL DETAILS & NOTES

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SUSPENDED SLAB DETAILS

S-3.1

MINIMUM INSULATION & FENSTRATION VALUES BY COMPONENT, PER IRC2018 N1102.1.2

VALUES BELOW ARE PER 2018 IECC. ACTUAL VALUES MAY VARY BASED ON ALTERNATE ENERGY COMPLIANCE PATH CHOSEN (IN JURISDICTIONS WHERE ALTERNATIVE PATHS ARE AVAILABLE)

CLIMATE ZONE	FENSTRATION U-FACTOR	SKYLIGHT U-FACTOR	GLAZED SHGC FENSTRATION	INSULATED METAL DOOR U-VALUE	INSULATED WOOD DOOR U-VALUE	CEILING R-VALUE	WOOD FRAMED WALL R-VALUE	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB R-VALUE & DEPTH	CRAWL SPACE WALL R-VALUE	DUCTWORK OVER OUTSIDE R-VALUE	DUCTWORK (ALL OTHER) R-VALUE
4 EXCEPT MARINE	0.32	0.55	0.40	0.60	0.50	49	20 OR 13 CAV. +5	19	10 CONTINUOUS OR 13 CAVITY	R-10, 2 FT.	10 CONTINUOUS OR 13 CAVITY	8	6

NOTES: 1) BUILDING THERMAL ENVELOPE IS REQUIRED TO BE SEALED WITH AN AIR BARRIER AS PER N1102.4.1 OF THE 2018 IRC
 2) RECESSED LIGHTING SHALL BE SEALED TO PREVENT LEAKAGE BETWEEN THE CONDITIONED SPACE AND UNCONDITIONED SPACE
 3) ALL DUCTS, AIR HANDLERS, FILTER BOXES, AND BUILDING CAVITIES USED AS DUCTS SHALL BE SEALED AS PER N1103.2 OF THE 2018 IRC

CATHEDRAL / VAULTED CEILING FRAMING AND INSULATION

MINIMUM R-38 INSULATION REQUIRED, SEE DETAIL 14/S-1.2

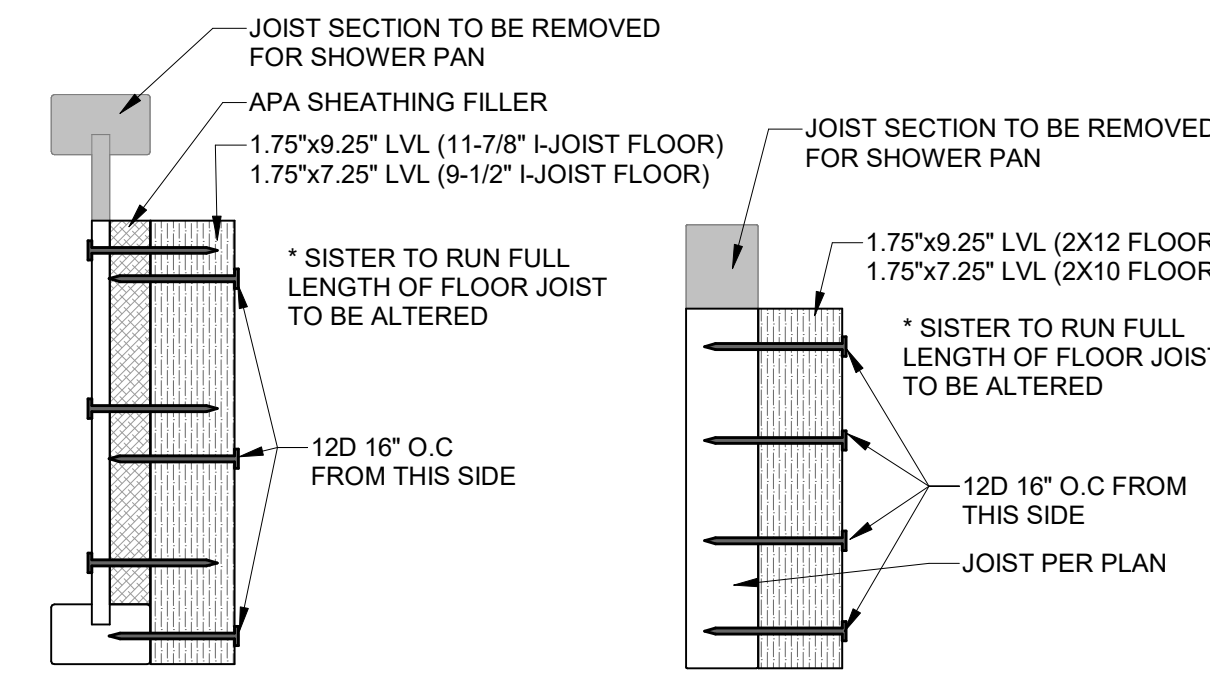
WHERE THE CEILING IS APPLIED DIRECTLY TO THE BOTTOM OF THE RAFTERS, A MINIMUM 1" AIR SPACE SHALL BE PROVIDED BETWEEN THE TOP OF THE INSULATION AND THE SHEATHING FOR VENTILATION (R806.3)
 NOTE: RAFTER SIZES SPECIFIED ON PLANS ARE THE MINIMUM REQUIRED FOR STRUCTURAL PURPOSES ONLY. BUILDER TO VERIFY.
 IF FULL RAFTER DEPTH IS NOT ADEQUATE FOR MINIMUM INSULATION VALUE, RAFTER SIZES WILL NEED TO BE INCREASED, OR ADEQUATE FURRING SHALL BE USED TO OBTAIN THE MINIMUM JOIST DEPTH FOR THE REQUIRED INSULATION. IN ADDITION, IF THE RAFTER SIZE IS INCREASED IT SHALL BE VERIFIED THAT THE RIDGE BE A MINIMUM OF ONE NOMINAL SIZE LARGER THAN THE RAFTERS BEING RECEIVED. (SEE CHART BELOW)

MAXIMUM INSULATION VALUE 1" AIR SPACE (FIBERGLASS)	2x6	2x8	2x10	2x12
	R-13, 3 1/2"	R-19, 6 1/4"	CONDENSED R-38, 8 1/4"	R-38, 10 1/4"

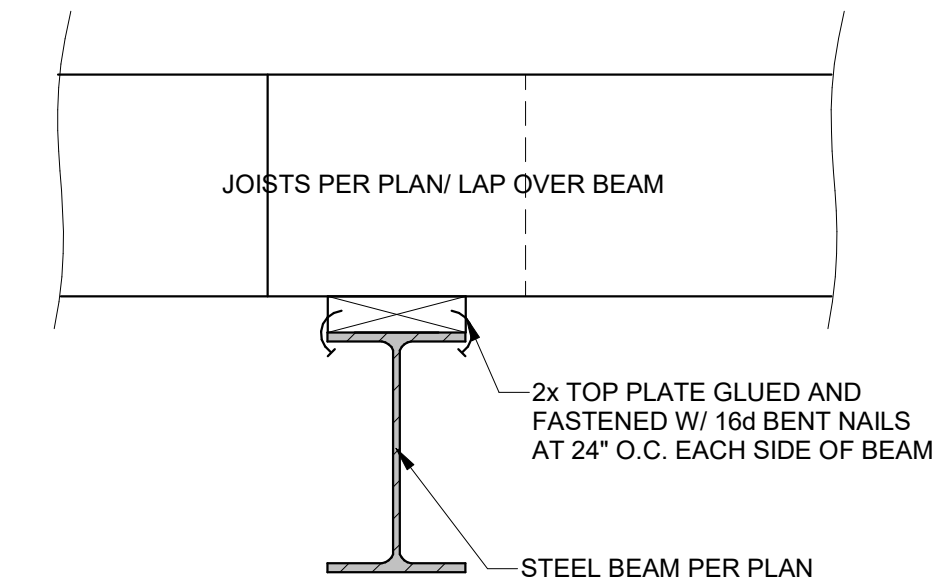
TABLE N1103.6.1 (R403.6.1) WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY^a

FAN LOCATION	AIR FLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY (CFM/WATT)	AIR FLOW RATE MAXIMUM (CFM)
HRV OR ERV	ANY	1.2 CFM/WATT	ANY
RANGE HOODS	ANY	2.8 CFM/WATT	ANY
IN-LINE FAN	ANY	2.8 CFM/WATT	ANY
BATHROOM, UTILITY ROOM	10	1.4 CFM/WATT	< 90
BATHROOM, UTILITY ROOM	90	2.8 CFM/WATT	ANY

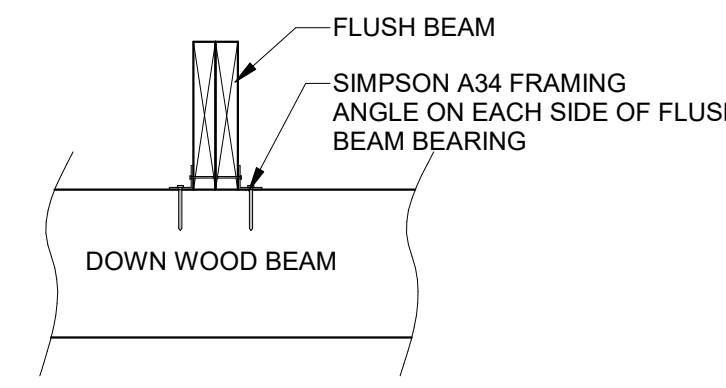
For SI: 1 cubic foot per minute = 28.3 L/min.
^a WHEN TESTED IN ACCORDANCE WITH THE STANDARD ONE



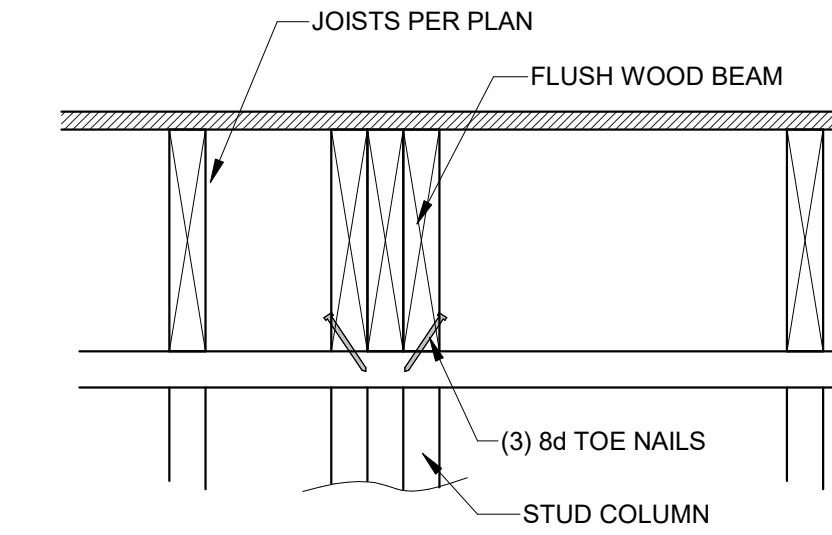
10 ZERO ENTRY SHOWER DETAIL
1/4" = 1'-0"



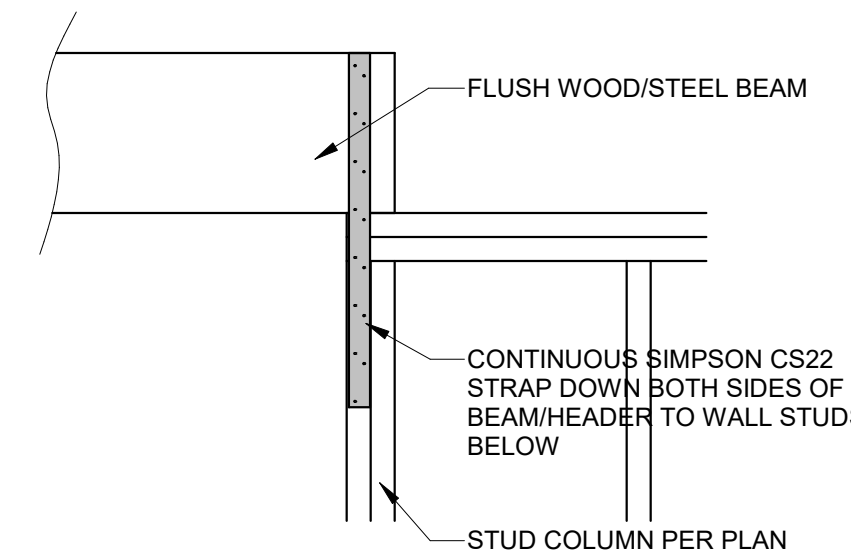
5 STEEL BEAM TO WOOD PLATE
1 1/2" = 1'-0"



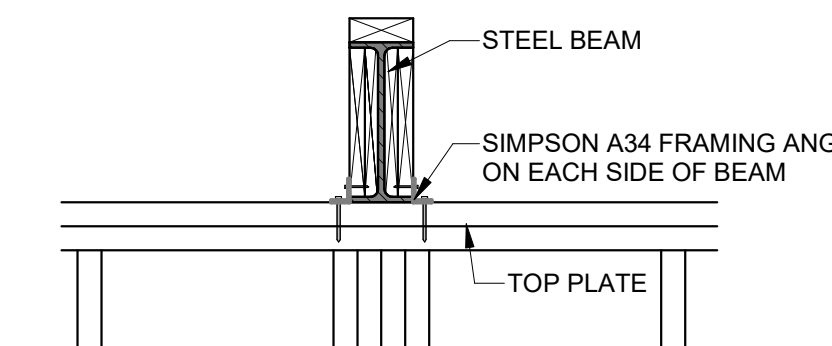
9 WOOD TO WOOD STACKED CONNECTION
1" = 1'-0"



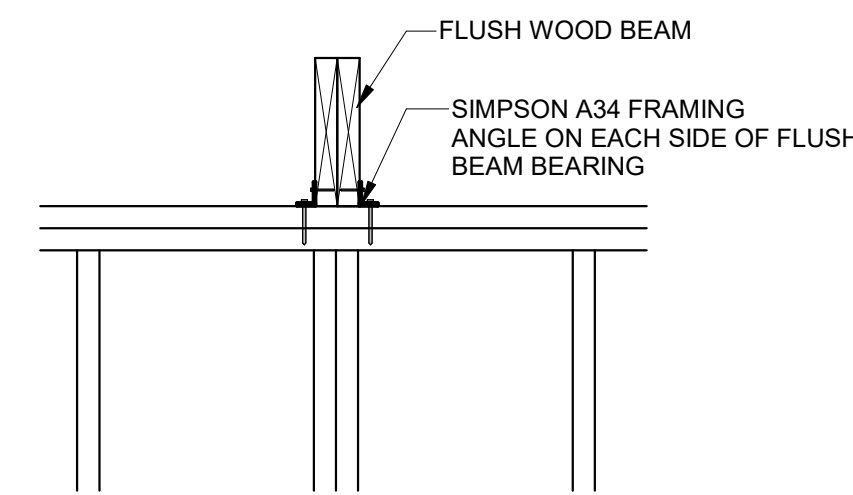
4 FLUSH WOOD BEAM CONNECTION
1 1/2" = 1'-0"



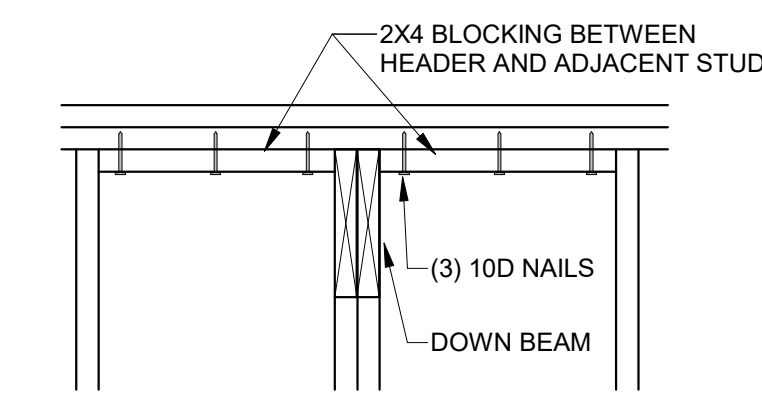
8 UPSET WOOD/STEEL PARALLEL TO WALL
1" = 1'-0"



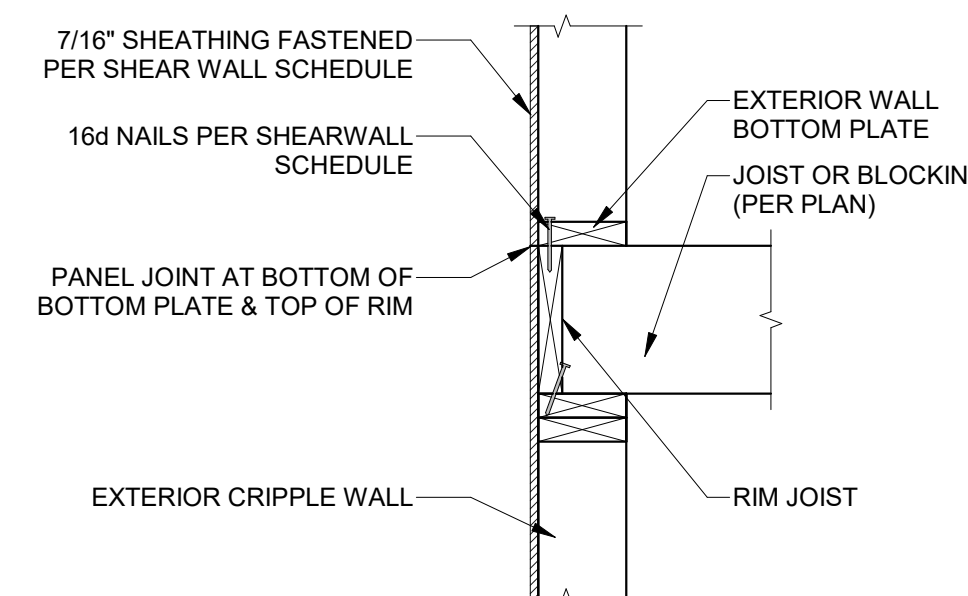
3 EXTERIOR WALL STEEL BEAM BEARING
1" = 1'-0"



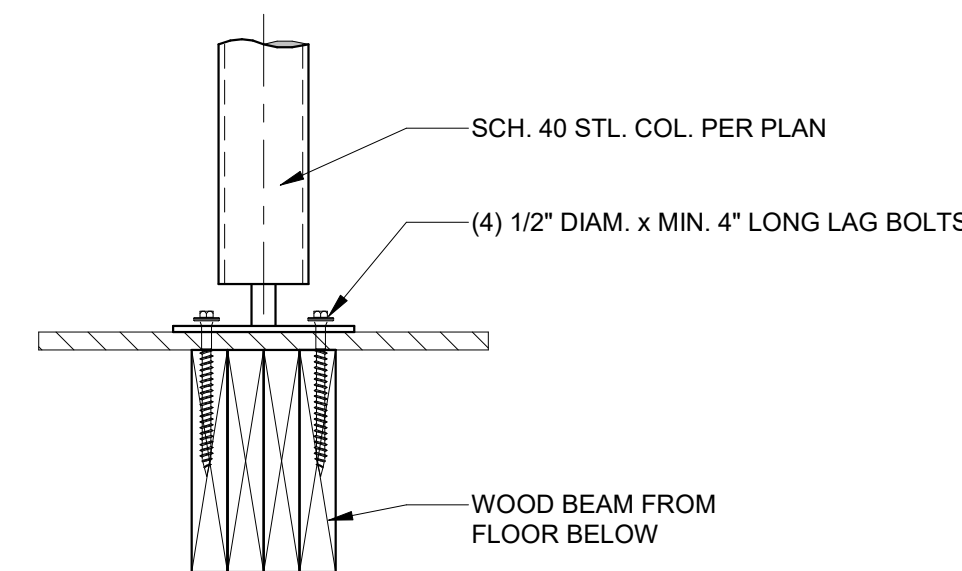
7 UPSET WOOD PERPENDICULAR TO WALL
1" = 1'-0"



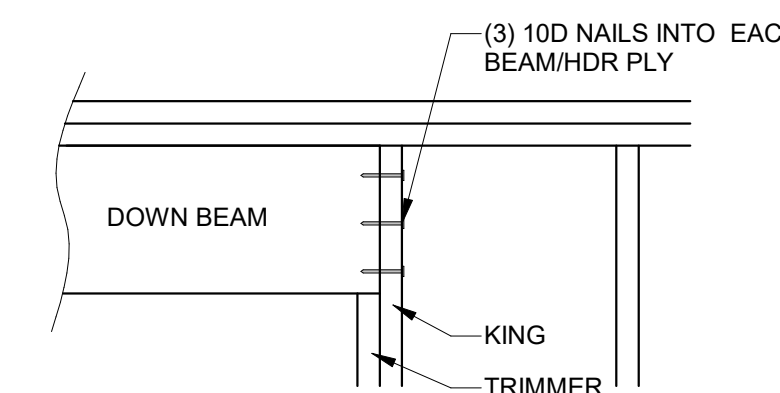
2 DOWN WOOD BEAM PERPENDICULAR
1" = 1'-0"



11 SHEATHING JOINT LOCATION
1" = 1'-0"



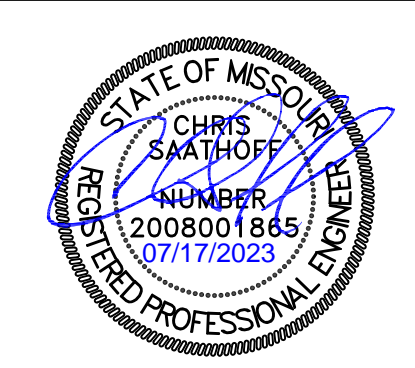
6 STEEL COLUMN TO WOOD FLOOR
1 1/2" = 1'-0"



1 DOWN WOOD BEAM PARALLEL
1" = 1'-0"

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SAB CONSTRUCTION, LLC.
 EXP. STRATOGA II - HF100
 2107 SW HOOK FARM DR., LEE'S SUMMIT, MO.
 STRUCTURAL DETAILS & NOTES

HD#: 46305
 DATE: 07/17/2023
 CHECKED BY: CLS

NO.	ISSUE/REVISION	Revision Date

GENERAL DETAILS

S-4.0