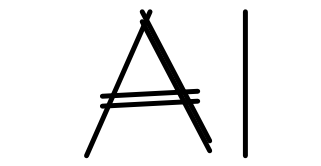


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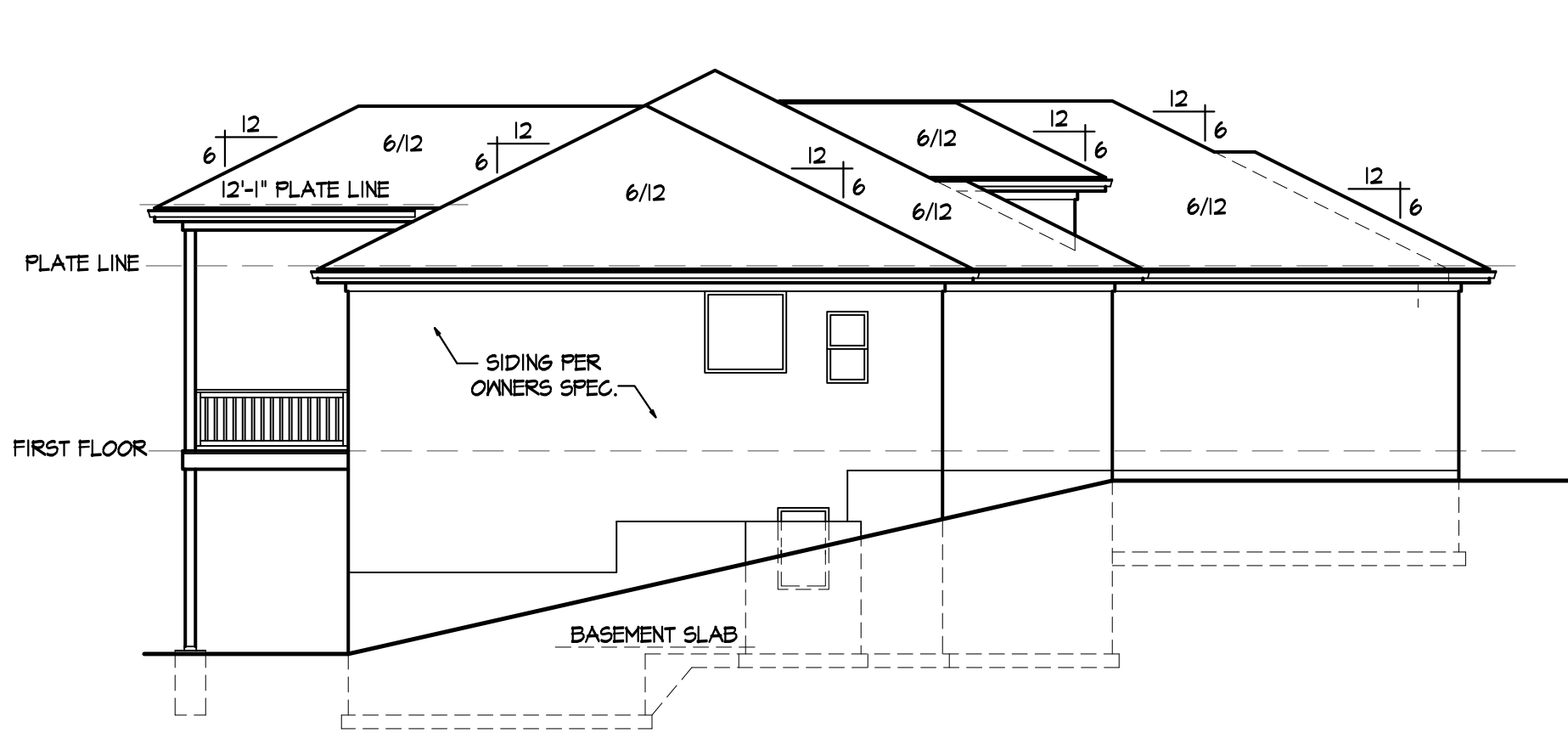
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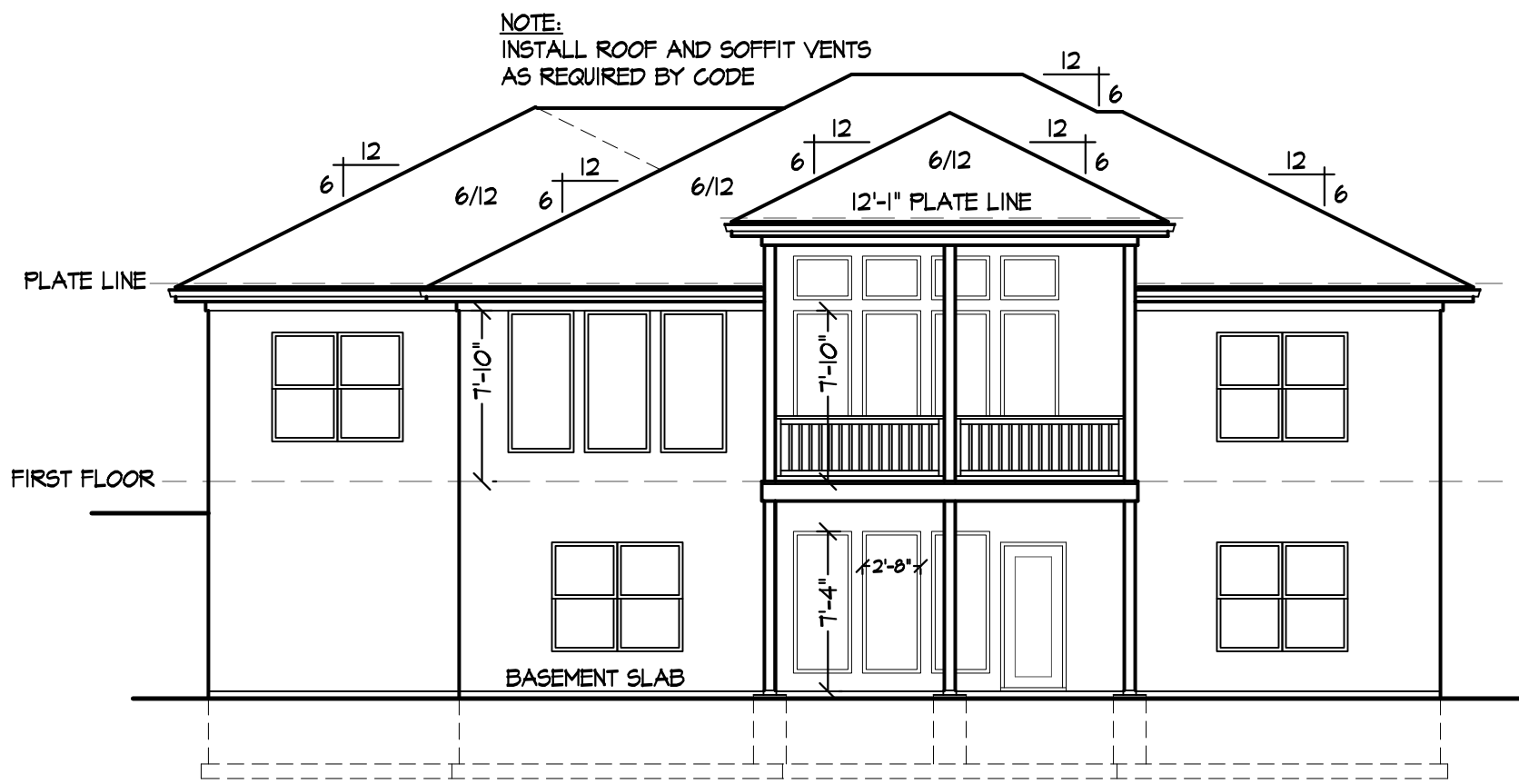
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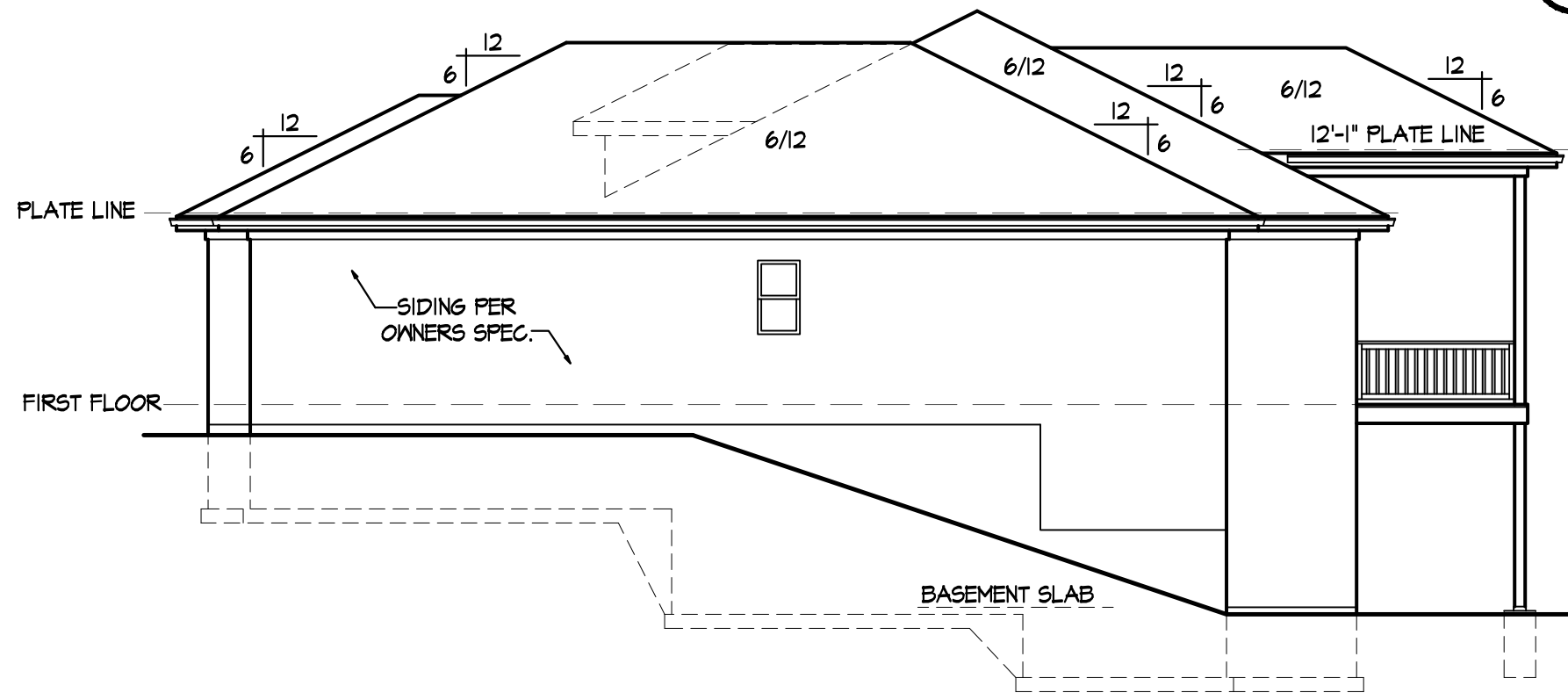
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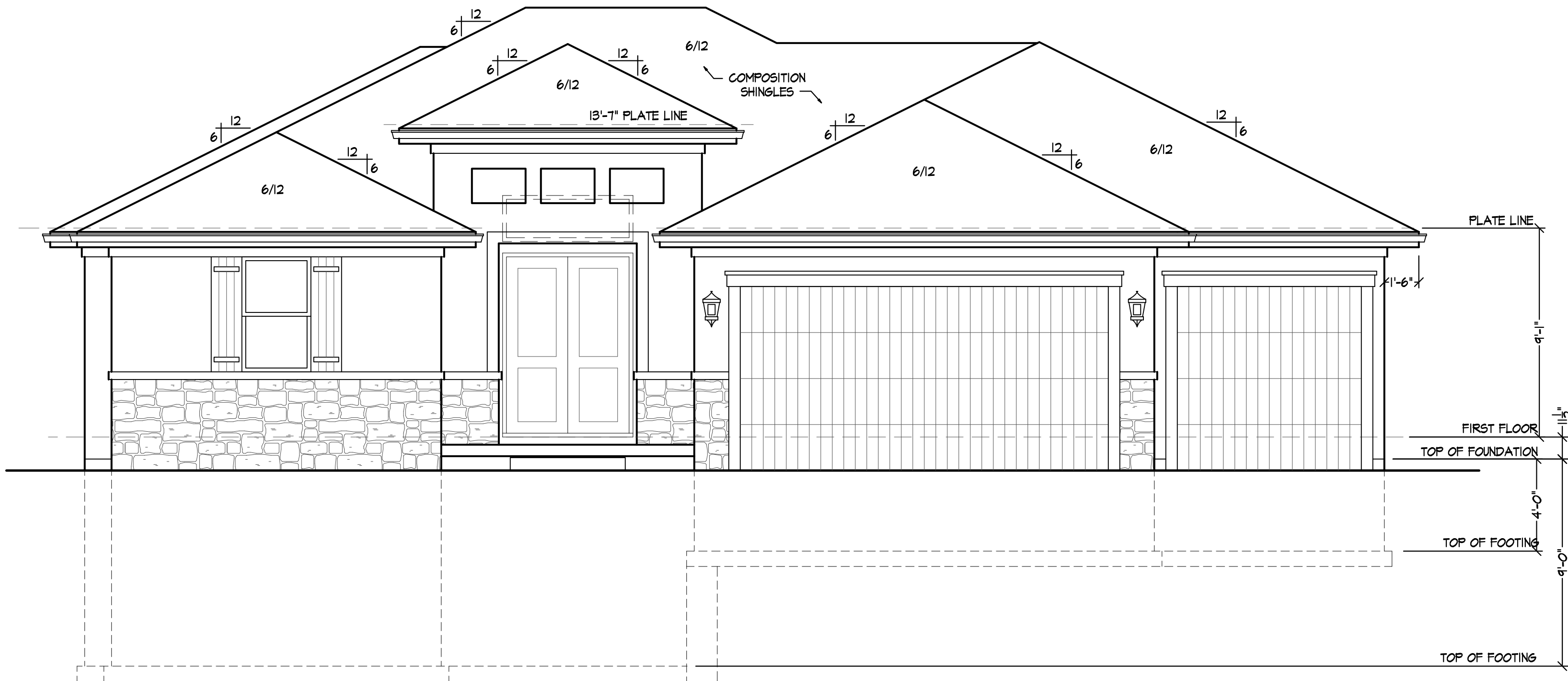
LEFT ELEVATION  
SCALE: 1/8" = 1'-0"



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



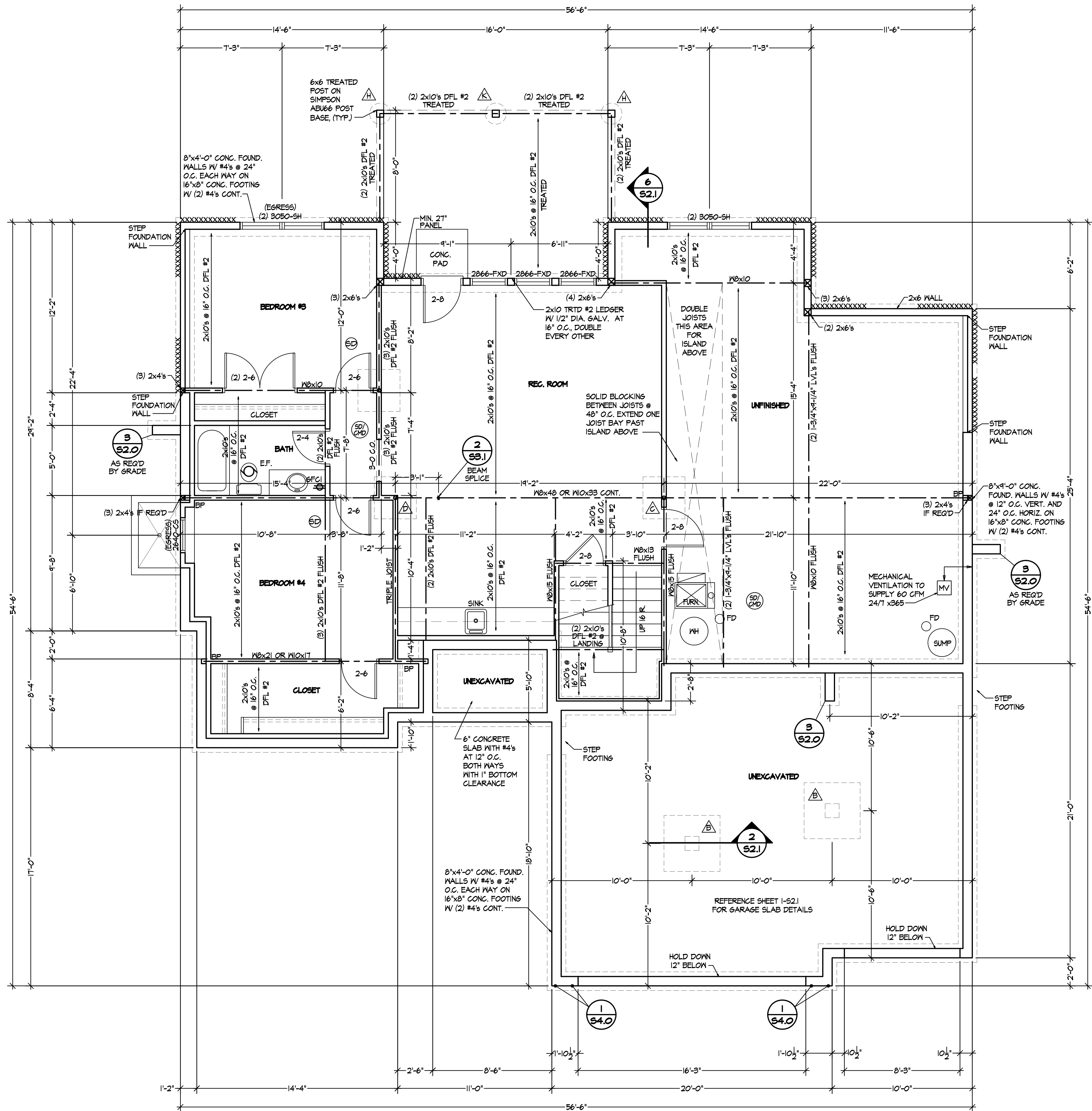
RIGHT ELEVATION  
SCALE: 1/8" = 1'-0"



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

DISCLAIMER  
ACTUAL PLANS AND ELEVATIONS MAY VARY  
FROM ARCHITECTURAL DRAWINGS.  
DUE TO TERRAIN/BACKFILL PROCESS.  
FRONT ELEVATIONS ARE ARCHITECTURAL  
DRAWINGS AND MAY VARY DUE TO  
MATERIAL AVAILABILITY.

NOTE:  
PLANS DESIGNED PER IRC AS  
ADOPTED BY GOVERNING JURISDICTION



LOWER LEVEL PLAN  
SCALE: 1/4" = 1'-0"

BRACED WALL METHODOLOGY  
CONTINUOUS EXTERIOR SHEATHING PER MSP METHOD (BELOW)  
UNLESS OTHERWISE NOTED ON THE PLAN

XXXX EXTERIOR BRACED WALLS:

MSP METHOD: WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH MINIMUM SPAN RATINGS OF 24/0 FOR 16" O.C. STUD SPACING WITH 8d COMMON NAILS AT 6" O.C. EDGES AND 12" O.C. FIELD OR SHEATHING THICKNESS NOT LESS THAN 1/4" WITH MINIMUM SPAN RATINGS OF 24/0 FOR 24" O.C. SPACING WITH 8d COMMON NAILS AT 6" O.C. EDGES AND 12" O.C. IN FIELD.  
(NOTE: FRAMING MEMBERS 16" O.C. MAXIMUM, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS)

////// INTERIOR BRACED WALLS (REF. 2-54.0).

GB METHOD: 1/2" MIN. GYPSUM BOARD OVER STUDS SPACED 24" MAX. FASTENED WITH NO. 6 - 1/2" TYPE 'W' OR 'S' DRYWALL SCREWS AT 1" O.C. EDGES AND FIELD (MIN. 4'-0" SECTION FOR BOTH SIDES.)

OR

LIB METHOD: 1x4 WOOD FASTENED WITH (3) 8d COMMON NAILS OR SIMPSON / USP 16 GA. TYPE WB (OR EQUAL) STL. X-BRACE(S) AT 45° TO 60° ANGLES, MAXIMUM 16" O.C. STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.

XXXX = EXTERIOR BRACED WALLS  
////// = INTERIOR BRACED WALLS (REF. 2/54.0)  
EC = END CONDITION (REF. 2/54.1) FOR CONTINUOUS SHEATHED BRACED WALL END CONDITIONS

STRUCTURAL NOTES:

- ALL UNMARKED HEADERS MIN (2) #2-2x10
- ALL HEADERS AND BEAMS MIN #2 GRADE DFL (OR EQ.)
- [Symbol] = BEARING WALL

COLUMN & PIER PAD SCHEDULE (REF. 5/52.0)				
COLUMN MARK	PAD SIZE	REINFORCEMENT	COLUMN SIZE	COLUMN TYPE
[Symbol]	30" x 30" x 12"	(4) #4 BAR E.W.	9" NOMINAL	SCHEDULE 40 STEEL PIPE (1/2" = 36 LBS/MIN)
[Symbol]	36" x 36" x 12"	(4) #4 BAR E.W.	9" NOMINAL	
[Symbol]	42" x 42" x 12"	(5) #4 BAR E.W.	9" NOMINAL	
[Symbol]	48" x 48" x 12"	(6) #4 BAR E.W.	9" NOMINAL	
[Symbol]	54" x 54" x 16"	(8) #4 BAR E.W.	3 1/2" NOMINAL	
[Symbol]	60" x 60" x 16"	(10) #4 BAR E.W.	3 1/2" NOMINAL	

1. COLUMN & PAD SIZES SHOWN ARE FOR MAXIMUM COLUMN HEIGHT OF 10'-0", REQUIRES SEPARATE ENG'D DESIGN IF GREATER THAN 10'-0" TALL.
2. COLUMN & PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 2,000 PSF.

COLUMN & PIER SCHEDULE		
MARK	COLUMN SIZE	PIER DIA.
[Symbol]	6x6	12"
[Symbol]	6x6	16"
[Symbol]	6x6	18"
[Symbol]	6x6	24"
[Symbol]	6x6	28"

1. ALL PIERS TO BEAR ON ORIGINAL UNDISTURBED SOIL OF 2,000 PSF BEARING CAPACITY OR FILL COMPACTED AND TESTED TO CONFORM TO THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER.
2. PIERS SHALL EXTEND BELOW THE FROST LINE, MIN. DEPTH OF 36" BELOW GRADE.
3. POST SHALL BE TREATED OR CEDAR WITH SIMPSON ABL66 POST BASE

DETAIL REFERENCES

- [1] 52.0 TYPICAL FOUNDATION WALL DETAIL

[2] 52.0 TYPICAL 'UNRESTRAINED' FOUNDATION WALL DETAIL

[3] 52.0 TYPICAL DEAD MAN DETAIL

[4] 52.0 FOUNDATION WALL JUMP DETAIL

[5] 52.0 COLUMN PAD DETAIL

[1] 52.1 TYPICAL STRUCTURAL GARAGE SLAB PLAN
- [2] 52.1 STRUCTURAL GARAGE SLAB PIER PAD DETAIL

[3] 52.1 STRUCTURAL GARAGE SLAB / WALL SECTION

[6] 52.1 TYPICAL OVERDIG DETAIL AT BASEMENT SLAB

[1] 54.0 ALTERNATE BRACED WALL PANEL DETAIL

[1] 54.0 APA NARROW WALL BRACING METHOD WITHOUT HOLD-DOWNS ALT.

[Symbol] COLUMN AND PIER PAD SCHEDULE (SHEET 52.0)

ALL WINDOWS SIZES ARE EXPRESSED IN FEET AND INCHES TO THE UNIT SIZE.

NOTE:  
PLANS DESIGNED PER IRC AS ADOPTED BY GOVERNING JURISDICTION

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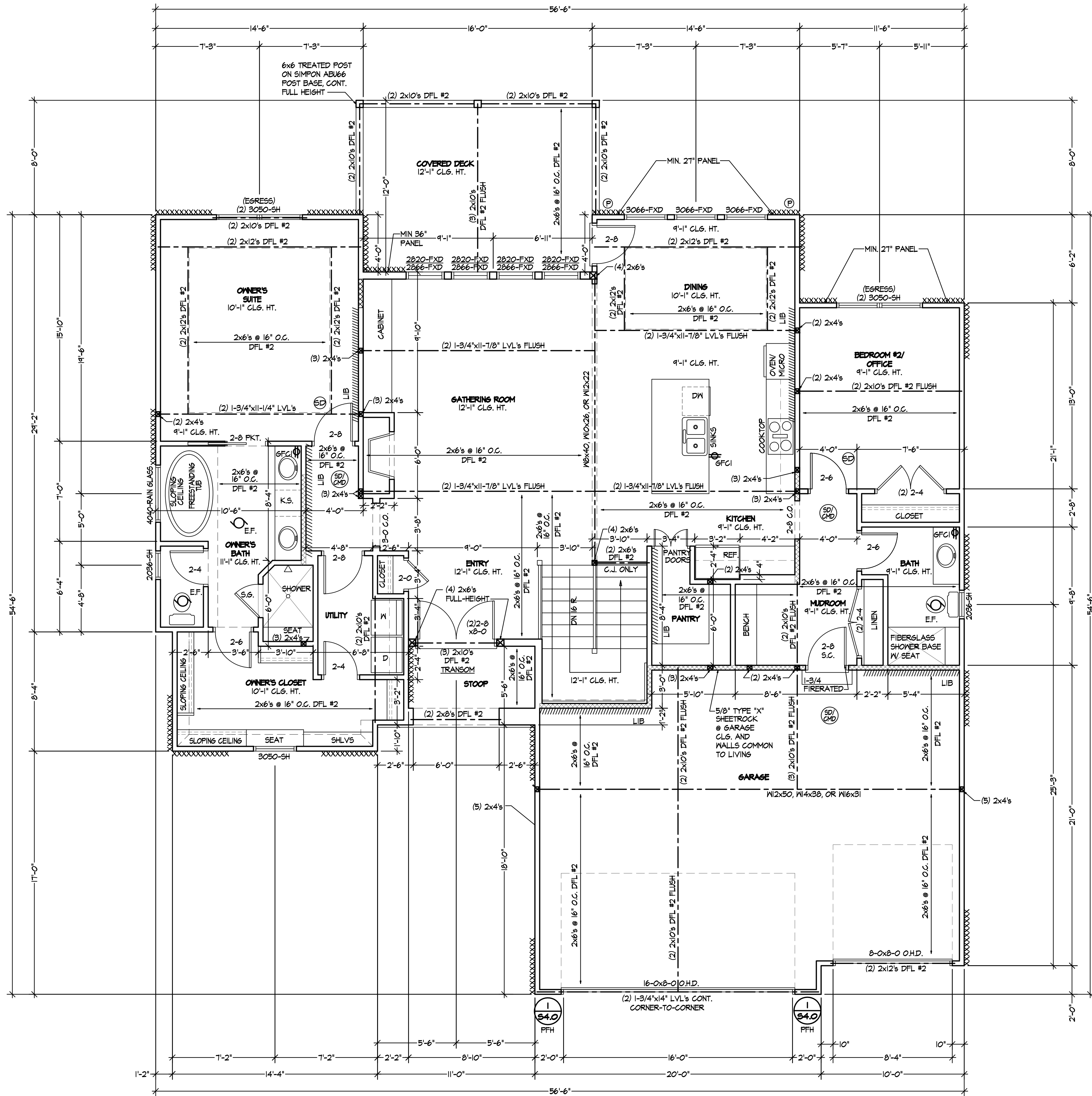
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FIRST FLOOR PLAN  
SCALE: 1/4" = 1'-0"

FIRST FLOOR	1,751 SQ. FT.
LOWER LEVEL	1,003 SQ. FT.
TOTAL	2,760 SQ. FT.

\*ALL WINDOWS TO HAVE U = 0.35 OR LESS.

ALL WINDOWS SIZES ARE EXPRESSED  
IN FEET AND INCHES TO THE UNIT  
SIZE.

NOTE:  
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BRACED WALL METHODOLOGY  
CONTINUOUS EXTERIOR SHEATHING PER MEP METHOD (BELOW)  
UNLESS OTHERWISE NOTED ON THE PLAN

XXXX EXTERIOR BRACED WALLS:

MEP METHOD: WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH  
MINIMUM SPAN RATINGS OF 24/0 FOR 16" OC STUD SPACINGS WITH 6d COMMON  
NAILS AT 6" OC EDGES AND 12" OC FIELD OR SHEATHING THICKNESS NOT LESS  
THAN 3/4" WITH MINIMUM SPAN RATINGS OF 24/0 FOR 24" OC SPACINGS WITH 8d  
COMMON NAILS AT 6" OC EDGES AND 12" OC IN FIELD.  
(NOTE: FRAMING MEMBERS 16" OC HAVE NO GAPS, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS)

//// INTERIOR BRACED WALLS (REF 2-54.0):

6B METHOD: 1/2" MIN. GYPSUM BOARD OVER STUDS SPACED 24" MAX. FASTENED WITH  
No 6 - 1/4" TYPE W OR S DRYWALL SCREWS AT 1" OC EDGES AND FIELD  
(MIN. 4'-0" SECTION FOR BOTH SIDES)

OR

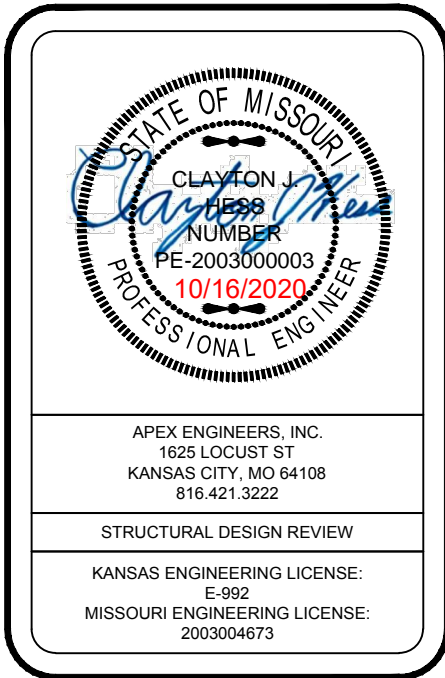
LIB METHOD: 1x4 WOOD FASTENED WITH (3) 8d COMMON NAILS OR SIMPSON / USP 16 GA. TYPE  
MB (OR EQUAL) STL. X-BRACE(S) AT 45° TO 60° ANGLES, MAXIMUM 16" OC. STUD  
FASTENED PER MANUFACTURER'S SPECIFICATIONS.

XXXX = EXTERIOR BRACED WALLS

//// = INTERIOR BRACED WALLS (REF 2-54.0)

EC = END CONDITION (REF 2-54.1) FOR CONTINUOUS SHEATHED BRACED WALL END CONDITIONS

STRUCTURAL NOTES:  
- ALL UNMARKED HEADERS MIN (2) 2x10  
- ALL HEADERS AND BEAMS MIN #2  
GRADE DFL (OR EQ.)  
- [XXXXXX] = BEARING WALL



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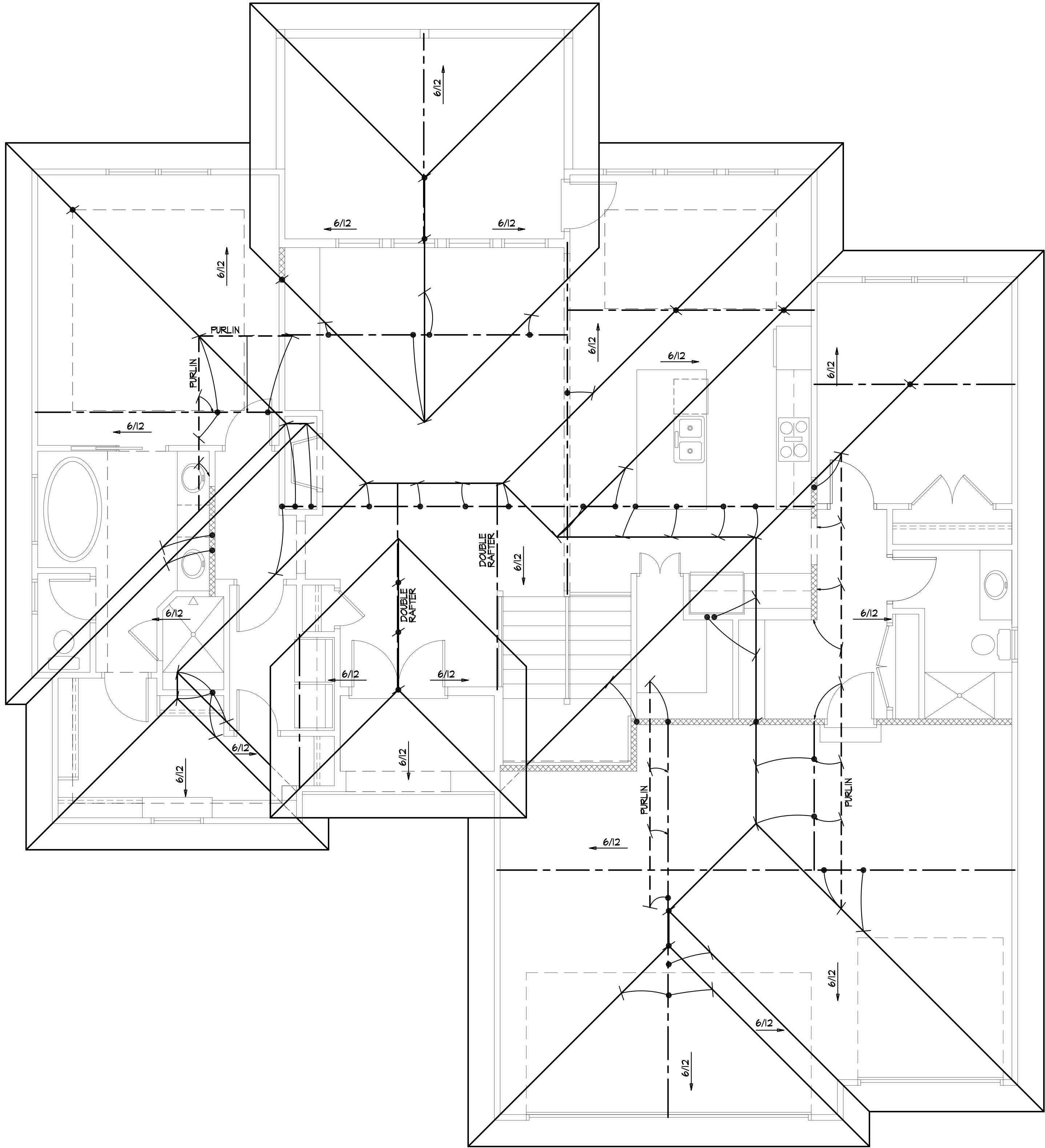
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ROOF PLAN

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

ROOF FRAMING NOTES

ROOF DESIGNED FOR LIGHT ROOF COVERING  
50psf TOTAL LOAD (10psf DL, 20psf LL (SL))

ROOF SYSTEM IS DESIGNED TO MEET REQUIREMENTS OF  
IRC 802

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

CODE MINIMUM

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	AT 24" OC	11'-7"
#2-2x6	AT 16" OC	14'-2"
#2-2x8	AT 24" OC	14'-8"
#2-2x8	AT 16" OC	17'-11"
#2-2x10	AT 24" OC	17'-10"
#2-2x10	AT 16" OC	21'-11"

NOTE: CODE MINIMUM ALLOWS FOR A RAFTER DEFLECTION OF L/180 TOTAL LOAD

HIGHER PERFORMANCE

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	AT 24" OC	8'-6"
#2-2x6	AT 16" OC	9'-4"
#2-2x8	AT 24" OC	11'-3"
#2-2x8	AT 16" OC	12'-4"
#2-2x10	AT 24" OC	14'-3"
#2-2x10	AT 16" OC	16'-3"

APEX ENGINEERS, INC. RECOMMENDED DEFLECTION =  
L/960 LIVE LOAD, L/240 TOTAL LOAD

\*RIDGE BOARDS ARE (UNLESS OTHERWISE NOTED)

#2-2x10 UP TO 9/12 PITCH

#2-2x12 OVER 9/12 PITCH

\*ALL HIP AND VALLEYS ARE (UNLESS OTHERWISE NOTED)

#2-2x10 UP TO 9/12 PITCH

#2-2x12 OVER 9/12 PITCH

\*PURLINS ARE 2x6 MIN

- PURLIN STRUTS ARE AT 4'-0" OC

- PURLIN STRUTS SHALL BE INSTALLED AT NOT LESS THAN A

45 DEGREE ANGLE WITH THE HORIZONTAL

- ALL PURLIN STRUTS SHALL HAVE A MAX UNBRACED

LENGTH OF 8'-0"

- PURLIN STRUTS SHALL BE CONSTRUCTED IN A "I"

CONFIGURATION AND PER THE FOLLOWING CHART:

PURLIN STRUT	MAX PURLIN STRUT LENGTH
(2)2x4	8'-0"
(1)2x4 AND (1)2x6	12'-0"
(1)2x6 AND (1)2x8	20'-0"
(2)2x6 AND (1)2x8	30'-0"
CONSULT ARCH ENGR	>30'-0"

\*EACH END OF STRUT SHALL BE FASTENED WITH MIN (3)8d OR  
(2)16d NAILS

\*RIDGE BRACERS ARE SAME AS PURLIN BRACES-SPACING,  
SIZE, CONFIGURATION, AND INSTALLATION (SEE PURLIN  
BRACE NOTES ABOVE)

\*HIP AND VALLEY BRACES ARE THE SAME AS PURLIN SIZE,  
CONFIGURATION, AND INSTALLATION (SEE PURLIN BRACE  
NOTES ABOVE)

~ = ROOF BRACE/STRUT (PER CHART)  
- SLASH IS TOP END OF BRACE  
- CIRCLE IS BOTTOM END OF BRACE

~ = PURLIN STRUTS AT 48" OC (PER CHART) U.N.O.  
- SLASH IS TOP END OF BRACE  
- ARROW IS BEARING LOCATION

~~~~~ DENOTES BEARING WALL  
----- DENOTES PURLIN  
----- DENOTES BEARING STRUCTURE

STRUCTURAL NOTES:

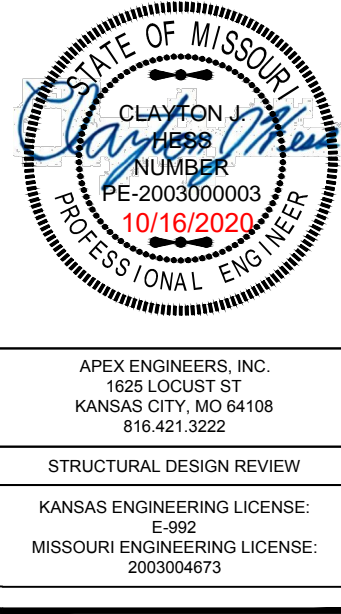
- ALL UNMARKED HEADERS MIN (2)#2-2x10

- ALL HEADERS AND BEAMS MIN #2

GRADE DF/L (OR EQ.)

- [Hatched Box] = BEARING WALL

1. THIS IS AN ENGINEERED ROOF STRUCTURE DESIGNED FOR COMPLIANCE WITH IRC 802.3, BUILD AS SHOWN WITH NO DEVIATIONS.
2. ALL HIP AND VALLEY BRACES ARE DESIGNED TO BE CONTROLLED BY BENDING.
3. SHEAR AT BEARING WITH MIN 5 1/2" DEPTH DOES NOT CONTROL DESIGN. FOR VALLEYS REF 4/S3.2



APEX ENGINEERS, INC.  
1625 LOCUST ST  
KANSAS CITY, MO 64108  
816.421.3222

STRUCTURAL DESIGN REVIEW  
KANSAS ENGINEERING LICENSE:  
E-692  
MISSOURI ENGINEERING LICENSE:  
2003004673

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NOTE:  
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| SHEATHING AND FRAMING FASTENING SCHEDULE                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BUILDING COMPONENT                                                                                                                                                                                                                                                                     | MATERIAL                                                                                                                                                                                                                                                                                                                                                                        | FASTENING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ROOF SHEATHING¹                                                                                                                                                                                                                                                                        | 7/16" PLYWOOD<br>1x4 #3 FURRING                                                                                                                                                                                                                                                                                                                                                 | 16 GA x 1-3/4" STAPLES AT 3" OC EDGES AND 6" OC IN FIELD<br>1/2" CROWN STAPLES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FLOOR SHEATHING¹                                                                                                                                                                                                                                                                       | 3/4" T&G YELLOW PINE PLYWOOD<br>TO JOISTS AND ENDS STAGGERED                                                                                                                                                                                                                                                                                                                    | 8d COMMON NAILS AT 6" OC EDGES<br>AND 12" OC IN THE FIELD<br>14 GA x 2" STAPLES AT 4" OC EDGES AND 8" OC IN THE FIELD<br>12.5 GA x 1-1/2" RING OR SCREW SHANK NAILS AT 6" OC EDGES<br>AND 8" OC IN THE FIELD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CEILING COVERING¹                                                                                                                                                                                                                                                                      | 1/2" GYPSUM SHEATHING                                                                                                                                                                                                                                                                                                                                                           | 7" OC NAILED / 12" OC SCREWED WITH<br>13 GA, 1-3/8" LONG, 19/64" HEAD; 0.098<br>DIA, 1-1/4" LONG, 3/64" RINGED; 5d<br>COOLER NAIL, 0.086 DIA, 1-5/8" LONG,<br>15/64" HEAD; OR GYP BD NAIL, 0.086 DIA,<br>1-5/8" LONG, 9/32" HEAD<br>8d COMMON NAILS; 1-5/8"<br>GALVANIZED STAPLES; 1-1/4"<br>SCREWS, TYPE W OR S; AT 4" OC<br>EDGES AND 8" OC IN THE FIELD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| INTERIOR WALL COVERING¹                                                                                                                                                                                                                                                                | 1/2" GYPSUM SHEATHING                                                                                                                                                                                                                                                                                                                                                           | 8d COMMON NAILS AT 6" OC EDGES<br>AND 12" OC IN THE FIELD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| EXTERIOR WALL SHEATHING                                                                                                                                                                                                                                                                | MIN 3/8" APA RATED SHEATHING                                                                                                                                                                                                                                                                                                                                                    | 8d COMMON NAILS AT 6" OC EDGES<br>AND 12" OC IN THE FIELD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CONVENTIONAL WOOD FRAMED WALLS                                                                                                                                                                                                                                                         | *SUPPORTING 2 FLOORS, ROOF,<br>AND CEILING OR LESS.<br>*HEIGHT: 10'-0" OR LESS<br>SIZE: NOM 2x4 (NOM 2x6 WHEN<br>SUPPORTING 2 FLOORS, CEILING,<br>AND ROOF)<br>*SPECIES: DOUG-FIR, HEM-FIR,<br>SOUTH PINE, SPRUCE-PIKE-FIR<br>*MAXIMUM SPACING 16" OC<br>*STUDS 10' LENGTH OR LESS<br>SHALL BE #3 STANDARD, OR STUD<br>GRADE<br>*STUDS OVER 10' LENGTH SHALL<br>BE MIN #2 GRADE | *TOE NAIL RIM JOIST TO SILL OR TOP<br>PLATE<br>*TOE NAIL STUD TO TOP AND SOLE PLATE<br>*END NAIL TOP AND SOLE PLATE TO STUD<br>*FACE NAIL BUILT-UP CORNER STUDS<br>*FACE NAIL BUILT-UP CORNER STUDS<br>(AT BRACED WALL PANELS)<br>*FACE NAIL JOCK STUDS/FRAMERS<br>SUPPORTING HEADERS WITH:<br>*FACE NAIL DBL TOP PLATE:<br>*END TOP PLATES WITH 48" OFFSET<br>OF EACH FACE NAIL LAPPED AREA WITH<br>*FACE NAIL DBL TOP PLATES AT LAPPED<br>CORNERS AND INTERSECTIONS WITH<br>*FACE NAIL SOLE PLATE TO FRAMING<br>SYSTEM WITH:<br>*GENERAL BRIDGING TO JOIST: EACH END<br>FACE NAIL LEDGER STRIPS SUPPORTING<br>JOISTS OR RAFTERS WITH:<br>8d COMMON AT 6" OC; 3"x6; 3"x12 AT 6" OC; 3"x6; 3"x12 AT 6" OC;<br>(4) 3"x6; 13"x1;<br>16s AT 24" OC; 3"x6; 3"x12 AT 16"<br>16d COMMON NAILS AT 16" OC; 3"x6; 3"x12 AT 12" OC;<br>3"x6; 128" AT 12" OC<br>(8) 16d COMMON; (12) 3"x6; 13"x1; (12) 3"x6; 128"<br>(2) 16d COMMON; (3) 3"x6; 13"x1; (3) 3"x6; 128"<br>16d COMMON AT 16" OC; 3"x6; 13"x1 AT 12" OC<br>(2) 8d COMMON; (2) 3"x6; 13"x1; (3) 3"x6; 128"<br>(3) 16d COMMON; (4) 3"x6; 13"x1; (4) 3"x6; 128" |
| CONVENTIONAL WOOD HEADER FRAMING                                                                                                                                                                                                                                                       | PER PLAN                                                                                                                                                                                                                                                                                                                                                                        | *TOE NAIL HEADERS TO WALL STUDS WITH (4) 8d<br>NAILS AT EACH END.<br>*FACE NAIL DOUBLE PIECE HEADERS WITH 16d<br>NAILS AT 16" CENTERS ALONG EACH EDGE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| RAFTER TIES²                                                                                                                                                                                                                                                                           | MIN 2x4 MEMBERS AT EACH RAFTER                                                                                                                                                                                                                                                                                                                                                  | REF TABLE R802.5.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| COLLAR TIES                                                                                                                                                                                                                                                                            | MIN 1x4 MEMBERS AT 48" OC                                                                                                                                                                                                                                                                                                                                                       | FACE NAIL TO RAFTERS IN UPPER 1/3 OF<br>ATTIC SPACE WITH (3) 10d NAILS AT EACH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1. NOTE: ALL SHEATHING MATERIALS TO BE APPLIED PERPENDICULAR TO JOISTS AND ENDS STAGGERED.<br>2. RAFTER TIES SHALL NOT BE REQUIRED WHEN A STRUCTURAL RIDGE HAS BEEN PROVIDED AND ADEQUATELY<br>DESIGNED (AS IN A FULLY VAULTED ROOM). SUCH SHALL BE NOTED AS "STRUCTURAL" ON THE PLAN. |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| BUILDING COMPONENT                                                                                                                                                                                                                                                                     | FASTEN TO                                                                                                                                                                                                                                                                                                                                                                       | FASTEN WITH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| RAFTERS                                                                                                                                                                                                                                                                                | TO RIDGE/VALLEY/HIP RAFTERS                                                                                                                                                                                                                                                                                                                                                     | TOENAIL WITH (4) 16d<br>ENDNAIL WITH (3) 16d                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                        | TO PLATE                                                                                                                                                                                                                                                                                                                                                                        | TOENAIL WITH (2) 16d                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| CEILING JOISTS                                                                                                                                                                                                                                                                         | TO TOP PLATE                                                                                                                                                                                                                                                                                                                                                                    | TOENAIL WITH (3) 8d AT EACH END                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| FLOOR JOISTS                                                                                                                                                                                                                                                                           | WHERE CEILING JOISTS RUN PARALLEL TO RAFTERS<br>FACE NAIL TO RAFTERS WITH (3) 10d MIN                                                                                                                                                                                                                                                                                           | TOENAIL WITH: (3) 8d COMMON; (3) 3"x6; 13"x1; (4) 3"x6; 128"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                        | TO SILL OR GIRDER                                                                                                                                                                                                                                                                                                                                                               | TOENAIL WITH: (3) 8d COMMON; (3) 3"x6; 13"x1; (4) 3"x6; 128"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BRACED WALL PANELS<br>PERP TO FRAMING<br>MEMBERS ABOVE/BELOW:<br>PARALLEL TO FRAMING<br>MEMBERS ABOVE/BELOW:                                                                                                                                                                           | TO RIM JOIST                                                                                                                                                                                                                                                                                                                                                                    | ENDNAIL WITH: (3) 16d COMMON; (4) 3"x6; 13"x1; (4) 3"x6; 128"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                        | TO FRAMING AND<br>BLOCKING AT 16" OC                                                                                                                                                                                                                                                                                                                                            | SOLE PL, 16" OC WITH: (3) 16d COMMON; (4) 3"x6; 13"x1<br>TOP PL, 6" OC WITH: 8d COMMON; (3) 3"x6; 13"x1<br>SOLE PL, 16" OC WITH: (3) 16d COMMON; (4) 3"x6; 13"x1<br>AND AT EACH BLOCK: (3) 16d COMMON; (4) 3"x6; 13"x1<br>TOP PL, 6" OC WITH: 8d COMMON; (3) 3"x6; 13"x1<br>AND AT EACH BLOCK: (3) 8d COMMON; (3) 3"x6; 13"x1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

NOTE: MEMBER THICKNESS AND FASTENING LISTED IN THIS SCHEDULE ARE MINIMUM IRC REQUIREMENTS. SPECIFIC PROJECT REQUIREMENTS NOTED WITHIN THE STRUCTURAL OR ARCHITECTURAL DRAWINGS, IF REQUIRED BY APEX ENGINEERS DESIGN NEEDING TO BE MORE STRINGENT, SHALL BE FOLLOWED.

1. LIGHTING FIXTURES PENETRATING THE THERMAL ENVELOPE SHALL BE IC-RATED, LEAKAGE RATED, AND SEALED TO THE GYPSUM WALLBOARD AS REQUIRED PER N1103.4.5
2. PROGRAMMABLE THERMOSTATS SHALL BE INSTALLED AS REQUIRED PER N1103.1
3. AIR HANDLERS SHALL BE RATED FOR MAXIMUM 2% AIR LEAKAGE RATE PER N1103.3.2.1
4. BUILDING FRAMING CAVITIES SHALL NOT BE USED AS DUCTS OR PLENUMS PER N1103.3.5
5. HOT WATER PIPES SHALL BE INSULATED AS REQUIRED PER N1103.4
6. ALL EXHAUST FANS SHALL TERMINATE TO THE BUILDING EXTERIOR AS REQUIRED PER N1103.1
7. MAKEUP AIR SYSTEMS SHALL BE INSTALLED FOR KITCHEN EXHAUST HOODS THAT EXCEED 400 CFM AS REQUIRED PER M1503.6
8. AN AIR HANDLING SYSTEM SHALL NOT SERVE BOTH THE LIVING SPACE AND THE GARAGE PER M1601.6

# ENERGY CONSERVATION

THE ENERGY EFFICIENCY OF THE DWELLING SHALL COMPLY WITH ONE OF THE FOLLOWING TABLES (WHERE THERE ARE DISCREPANCIES BETWEEN THIS TABLE AND THE PLANS, THE MOST RESTRICTIVE SHALL APPLY). IF TABLE 1 IS NOT COMPLETED AND ACCOMPANIED BY RESCHECK CALCULATIONS, THEN TABLE 2 SHALL BE APPLIED.

**TABLE 1 - ResCheck COMPLIANCE SOFTWARE (FILL IN APPLICABLE VALUES FROM Rescheck CALCS.)**

| BUILDING ELEMENT             | MIN VALUE           |
|------------------------------|---------------------|
| WALLS - FRAMED               | R- <sub>5</sub>     |
| WALLS - BASEMENT             | R- <sub>5</sub>     |
| FLOORS - UNCONDITIONED SPACE | R- <sub>10</sub>    |
| FLOORS - OVER OUTSIDE AIR    | R- <sub>10</sub>    |
| FLOORS - CRAWL SPACE         | R- <sub>10</sub>    |
| SLAB - PERIMETER             | R- <sub>5</sub>     |
| CEILING - FLAT               | R- <sub>10</sub>    |
| CEILING - CATHEDRAL          | R- <sub>10</sub>    |
| DOORS - GLASS                | U- <sub>0.35</sub>  |
| DOORS - SOLID                | U- <sub>0.35</sub>  |
| WINDOWS - OPERABLE           | U- <sub>0.35</sub>  |
| WINDOWS - FIXED              | U- <sub>0.35</sub>  |
| WINDOWS - OTHER              | U- <sub>0.35</sub>  |
| FURNACE                      | AFUE- <sub>80</sub> |
| AIR CONDITIONER              | SEER- <sub>10</sub> |

NOTE: FOR USE OF TABLE 1 A ResCheck COMPLIANCE FORM MUST BE SUBMITTED WITH PLANS.

**TABLE 2 - PRESCRIPTIVE ENVELOPE (MIN PRESCRIPTIVE APPROACH ACCEPTABLE FOR ANY DWELLING.)**

| BUILDING ELEMENT              | MIN VALUE                    |
|-------------------------------|------------------------------|
| CEILING - FLAT                | R-49                         |
| CEILING - CATHEDRAL**         | R-30                         |
| CEILING - CATHEDRAL           | R-30                         |
| FLOORS - UNCONDITIONED SPACED | R-19                         |
| FLOORS - OVER OUTSIDE AIR     | R-30                         |
| WALLS - BASEMENT              | R-10 (CONT) OR R-13 (CAVITY) |
| CONCRETE SLAB ON GRADE        | R-10 (FOR 2FT)               |
| SKYLIGHTS                     | U-0.55                       |
| WALLS - EXTERIOR (2x4)        | R-13 (CAVITY) + R-5 (CONT)   |
| WALLS - EXTERIOR (2x6)        | R-20                         |
| WALLS - CRAWL SPACE           | R-19                         |
| GLAZING*                      | U<=0.32                      |
| GLAZING*                      | SHGC<=0.40                   |

NOTE:  
 TABLE 2 PER IRC TABLE N1102.1.2  
 \*FACTOR U-FACTOR FOR DOUBLE PANE, ARGON FILLED LOW-E TREATMENT IS U=0.35  
 \*\*LIMITED TO AREAS LESS THAN 500 SQ-FT OR 20% OF CEILING AREA.

1. THE ARCHITECT OR ENGINEER OF RECORD SHALL LIST THE DEFERRED SUBMITTALS ON THE PLANS FOR REVIEW BY THE BUILDING OFFICIAL. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT OR ENGINEER OF RECORD WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN THE GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE BUILDING OFFICIAL HAS REVIEWED THEM AND BEEN APPROVED BY THE BUILDING OFFICIAL. DEFERRED SUBMITTALS ARE DEFINED AS THOSE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF THE APPLICATION AND THAT ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL WITH A SPECIFIED PERIOD. DEFERRAL OF ANY SUBMITTAL ITEMS SHALL HAVE THE PRIOR APPROVAL OF THE BUILDING OFFICIAL.

2. DEFERRED SUBMITTAL ITEMS (WHEN APPLICABLE):

- A. TRUSSES
- B. I-JOISTS
- C. GUARDRAILS AND HANDRAILS
- D. STEEL FABRICATED STAIRS
- E. PRE-CAST CONCRETE CANOPIES AND AWNINGS
- F. PRECAST HOLLOW CORE SLABS
- G. GROUND IMPROVEMENT AND/OR STRUCTURAL FOUNDATION SOLUTIONS (SUCH AS DRILLED PIERS)

CONCRETE SHALL BE AIR ENTRAINED WITH A MINIMUM COMPRESSIVE STRENGTH OF 28 DAYS OF 2,500 PSI FOR BASEMENT AND INTERIOR FLOOR SLABS, 3,000 PSI FOR BASEMENT AND FOUNDATION WALLS, AND 3,500 FOR PORCHES, CARPORTS, AND GARAGE FLOOR SLABS.

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 OPENABLE 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 WHIRLPOOLS; GLAZING IN FIXED OR OPENABLE PANELS EXCEEDING 9 SQUARE FEET AND WHOSE BOTTOM EDGE IS LESS THAN 18" ABOVE THE FLOOR OR WALKING SURFACE WITHIN 36".

1. PROVIDE ONE WINDOW FROM EACH BEDROOM THAT HAS A MINIMUM OPENABLE AREA OF 5.7 SQUARE FEET WITH A MINIMUM OPENABLE HEIGHT OF 24 INCHES AND WIDTH OF 20 INCHES.
2. BASEMENTS SHALL BE REQUIRED TO MEET THE REQUIREMENTS OF IRC SECTION 310.
3. SMOKE ALARMS SHALL BE INSTALLED AS REQUIRED PER IRC SECTION 310. R314.
4. PROVIDE SMOKE ALARMS IN EACH SLEEPING ROOM, OUTSIDE OF EACH SLEEPING AREA, ON EACH FLOOR INCLUDING BASEMENTS AND HABITABLE ATTICS, AND NOT LESS THAN 3'-0" HORIZONTALLY FROM DOOR OR OPENING OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER. ALARMS SHALL BE INTERCONNECTED SUCH THAT SUCH A FAILURE OF ONE ALARM, THE OPERATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS THAT ARE DWELLING.
5. CARBON MONOXIDE ALARMS SHALL BE INSTALLED AS REQUIRED PER IRC 2018 SECTION R315.
6. CARBON MONOXIDE ALARMS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA, WHERE A FUEL-BURNING APPLIANCE IS LOCATED WITHIN A BEDROOM OR ITS ATTACHED BATHROOM, A CARBON MONOXIDE ALARM SHALL BE INSTALLED WITHIN THE BEDROOM.

1. ALL LUMBER SIZES ARE FOR DOUGLAS FIR-LARCH UNLESS NOTED OTHERWISE.
2. ALL HEADERS TO BE MIN (2) #2-x10 UNLESS NOTED OTHERWISE.
3. BLOCK CANTILEVERS, DOORJAMBS, AND OVER BEAMS.
4. ALL HEADERS TO BEAR ON A MINIMUM OF (2) 2x4 STUD POSTS UNLESS NOTED OTHERWISE.
5. ALL NON-BEARING WALLS, OTHER THAN THOSE RESTING DIRECTLY ON THE FOOTING SHALL BE ISOLATED FROM THE FLOOR FRAMING ABOVE.
6. WHERE JOISTS RUN PARALLEL TO FOUNDATION WALLS, SOLID BLOCKING FOR A MINIMUM OF (2) JOIST SPACES BE PROVIDED TO A MAXIMUM OF 2'-0" CENTERS TO TRANSFER LATERAL LOADS ON THE WALL TO THE FLOOR DIAPHRAGM. THE BLOCKING SHALL BE SECURELY NAILED TO THE JOISTS AND FLOORING. NAIL TO JOIST END JOINTS TO SILL PLATE OR TO STUDS PER SECTION R602.3. (11)
7. IF DUCTS ARE INSTALLED IN THE FIRST JOIST SPACE(S), NAIL 2x4s FLAT AT 2'-0" CENTERS WITHIN THE JOIST SPACE(S) AND THEN PROVIDE SOLID BLOCKING, INSTALLED UPRIGHT, IN THE NEXT TWO JOIST SPACES. SECURE THE 2x4s TO THE SILL PLATE WITH (4) 10d Nails.
8. ALL SILL PLATES AND SLEEPERS SUPPORTED ON CONCRETE OR MASONRY AND FURRING ATTACHED TO CONCRETE OR MASONRY SHALL BE OF DECAY RESISTANT MATERIALS.
9. JOISTS UNDER BEARING PARTITIONS SHALL BE DOUBLED AND COMPLY WITH IRC SECTION R502.4.
10. JOISTS FRAMING FROM OPPOSITE SIDES OVER BEARING SUPPORTS SHALL LAP A MINIMUM OF 1'-0" AND BE NAILED TOGETHER WITH A MINIMUM OF 10d NAILS.
11. JOISTS FRAMING INTO A WOOD GIRDER OR BEAM SHALL BE SUPPORTED BY APPROVED FRAMING ANCHORS OR MINIMUM 2"x2" LEDGER STRIPS.
12. FRAMING OF OPENINGS - HEADERS AND TRIMMERS SHALL BE OF SUFFICIENT CROSS SECTION TO SUPPORT THE FLOOR FRAMING. TRIMMER JOISTS SHALL BE DOUBLED WHEN THE HEADER IS SUPPORTED MORE THAN 3'-0" FROM THE END OF THE FRAMING. WHEN THE CLEAR SPAN EXCEEDS 4'-0", THE HEADER AND TRIMMER SHALL BE DOUBLED.
13. JOISTS AT SUPPORTS SHALL BE SUPPORTED Laterally AT THE ENDS BY FULL-DEPTH SOLID BLOCKING NOT LESS THAN 2" NOMINAL THICKNESS OR BY ATTACHMENT TO A HEADER, BAND OR RIM JOIST OR TO AN ADJOINING STUD OR OTHER MEMBER PROVIDED WITH LATERAL SUPPORT TO PREVENT ROTATION.
14. ALL EXTERIOR BARRIER SHALL BE FULLY COVERED OVER ALL EXTERIOR WALLS. ONE LAYER OF No 15 ASPHALT FELT OR ANY OTHER BARRIER THAT MEETS ASTM D226 type 1 FELT. (R703.2)
15. WHERE CEILING JOISTS ARE NOT INSTALLED CONNECTED TO THE RAFTERS AT THE TOP PLATE AND/OR WHERE CEILING JOISTS ARE NOT INSTALLED PARALLEL TO THE RAFTERS, RAFTER TIES SHALL BE INSTALLED IN THE LOWER HALF OF THE ATTIC SPACE AT 12" ON CENTER WITHIN THE ATTIC SPACE.
16. COLLAR TIES SHALL BE PROVIDED IN THE UPPER 1/3 OF THE ATTIC SPACE IN ACCORDANCE WITH TABLE 1-S1.0.

1. THE GARAGE FLOOR SHALL SLOPE TOWARDS THE GARAGE DOORWAYS.
2. DOORS BETWEEN THE GARAGE AND THE DWELLING - MINIMUM 1-3/8" SOLID CORE OR HONEY COMBED STEEL DOOR OR 20-MINUTE FIRE RATED.
3. THE GARAGE SHALL BE SEPARATED FROM THE RESIDENCE AND ITS ATTIC BY A 5/8" TYPE X GYPSUM BOARD, OR EQUIVALENT MATERIALS APPROVED FOR ONE-HOUR FIRE-RESISTIVE CONSTRUCTION, APPLIED TO GARAGE SIDE. WHERE THE SEPARATION IS A FLOOR-CEILING ASSEMBLY, THE STRUCTURE SUPPORTING THE SEPARATION SHALL ALSO BE PROTECTED BY 5/8" TYPE X GYPSUM BOARD, OR MATERIALS APPROVED FOR ONE-HOUR FIRE-RESISTIVE CONSTRUCTION OR EQUIVALENT, APPLIED TO THE GARAGE SIDE. PULL DOWN STAIRS LOCATED WITHIN GARAGE SHALL BE RATED TO BE ADEQUATELY PROTECTED BY THE MATERIALS APPROVED FOR ONE-HOUR FIRE-RESISTIVE CONSTRUCTION. ATTIC ACCESS PANELS LOCATED WITHIN GARAGE SHALL BE OF 5/8" TYPE X GYPSUM BOARD, OR MATERIALS FOR ONE-HOUR FIRE-RESISTIVE CONSTRUCTION.
4. GARAGE DOOR AND FRAME- THE H-FRAME FOR THE ATTACHMENT OF THE TRACK AND COUNTER BALANCE SHALL CONSIST OF THE FOLLOWING: 2x6 JOIST OR TRACK RUNNING FROM THE FLOOR TO CEILING ATTACHED WITH 1-3/4" x 0.120" NAILS AT OC STAGGERED WITH (7) 3/4" x 0.120" NAILS THRU THE JAMB INTO THE HEADER, MINIMUM 2x8 HEADER FOR ATTACHMENT OF COUNTER BALANCE SYSTEM.

1. STAIRWAYS SHALL PROVIDE A MAXIMUM 7'-3/4" RISE AND MINIMUM 10' RUN.
2. PROVIDE MINIMUM 36" GUARDRAILS ON THE OPEN SIDES OF RAISED FLOORS, PORCHES, AND BALCONIES; MINIMUM 34" GUARDRAILS ON THE OPEN SIDES OF STAIRWAYS LOCATED MORE THAN 30" ABOVE THE FLOOR OR GRADE BELOW.
3. GUARDRAIL ENCLOSURES SHALL HAVE INTERMEDIATE RAILS OR ORNAMENTAL TREATMENT THAT DO NOT ALLOW PASSAGE OF A SPHERE 4" IN DIAMETER.
3. EACH STAIRWAY OF THREE OR MORE RISERS SHALL PROVIDE A CONTINUOUS HANDRAIL ON AT LEAST ONE SIDE BETWEEN 34" AND 38" ABOVE THE NOSING OF THE TREADS.
4. HANDRAILS SHALL HAVE A CIRCULAR CROSS SECTION OF 1-1/4" MINIMUM TO 2" MAXIMUM OR OTHER APPROVED GRASPABLE SHAPE PER IRC SECTION 310.1.1.1 & 5.
5. PROVIDE A MINIMUM 6'-8" OF HEADROOM CLEARANCE IN STAIRWAYS.
6. ENCLOSE ACCESSIBLE SPACE UNDER STAIRWAYS SHALL HAVE WALLS AND THE UNDERSIDE OF THE STAIR AND LANDING PROTECTED WITH 1/2" GYPSUM BOARD ON ENCLOSURE SIDE PER IRC SECTION 302.7.
7. SPIRAL STAIRS TO BE CONSTRUCTED PER IRC SECTION 311.7.1.10.1.
8. SPACE STRINGERS AT 16" OC MAX.

1. PLANS SHALL COMPLY WITH THE 2018 INTERNATIONAL RESIDENTIAL CODE WITH AMENDMENTS AS ADOPTED BY THE GOVERNING JURISDICTION. IF ANY CHANGES OR DEVIATIONS FROM THESE STANDARDS ARE MADE DURING CONSTRUCTION, CONTRACTOR SHALL NOTIFY THE APPROPRIATE AUTHORITY AND ENGINEER OF RECORD, EITHER (OR BOTH) OF WHOM MAY REQUIRE REVISED DRAWINGS OR CALCULATIONS AT ITS DISCRETION.

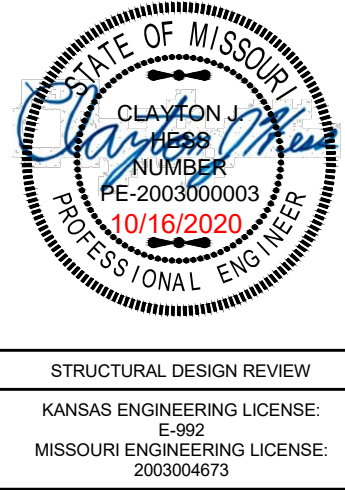
2. REPRODUCTION, ALTERATION, OR RE-USE BY ANY METHOD OF ALL OR ANY PARTS OF THESE STRUCTURAL PLANS OR VARIATIONS THEREOF WITHOUT WRITTEN PERMISSION FROM APEX ENGINEERS, INC. IS STRICTLY PROHIBITED. THE DRAWINGS AND DETAILS OF THIS SHEET SET, BEING INSTRUMENTS OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF APEX ENGINEERS, INC. AN UNSEALED VERSION, OR A VERSION VOID OF APEX ENGINEERS LOGO AND/OR TITLE BLOCK, SHALL BE CONSIDERED AN UNAUTHORIZED REPRODUCTION.

3. WHERE DISCREPANCIES EXIST BETWEEN THE STANDARD COMMENTS, NOTES FROM THE DESIGN PROFESSIONAL, OR THE CODE, THE MOST RESTRICTIVE SHALL APPLY. THE DWELLING SHALL COMPLY WITH THE FOLLOWING LOAD CONDITIONS:

| AREA                                                                                     | MIN DEAD LOAD | MIN LIVE LOAD |
|------------------------------------------------------------------------------------------|---------------|---------------|
| EXTERIOR BALCONIES                                                                       | 10 PSF        | 60 PSF        |
| DECKS                                                                                    | 10 PSF        | 40 PSF        |
| CEILING JOISTS/STIFFS NO STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE 3:12 OR LESS           | 5 PSF         | 10 PSF        |
| CEILING JOISTS/STIFFS WITHOUT STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE OVER 3:12 OR LESS | 10 PSF        | 10 PSF        |
| CEILING JOISTS/STIFFS WITH STORAGE - DO NOT PULL DOWN LADDER ACCESS                      | 10 PSF        | 20 PSF        |
| ROOMS - NON-SLEEPING                                                                     | 10 PSF        | 40 PSF        |
| ROOMS - SLEEPING                                                                         | 10 PSF        | 30 PSF        |
| ROOF - LIGHT ROOF COVERING                                                               | 10 PSF        | 20 PSF        |
| ROOF - HEAVY ROOF COVERING                                                               | 20 PSF        | 20 PSF        |
| CONCRETE TILT/SLATE                                                                      |               |               |

NOTE: HEAVY ROOF COVERING WILL NOT BE INSTALLED OR USED IN THE DESIGN CALCULATIONS UNLESS IT IS SPECIFICALLY NOTED ON THE PLANS THAT THE DESIGN IS FOR HEAVY ROOF COVERINGS.

1. THE FOUNDATION DESIGN SHALL BE BASED ON A MINIMUM SOIL BEARING CAPACITY OF 2000 PSF. UNLESS OTHERWISE INDICATED ON THE PLANS OR IF OTHERWISE SPECIFIED BY ENGINEERING RULES AND REGULATIONS, FOUNDATIONS, CRITERIA: 2. CONCRETE SHALL MEET THE FOLLOWING SPECIFIED DESIGN STRENGTH CRITERIA:
  - 2500 PSI FOR BASEMENT FLOOR SLABS ON UNDISTURBED SOIL
  - 3000 PSI FOR FOOTINGS AND FOUNDATION WALLS
  - 3500 PSI FOR GARAGE FLOOR SLABS
3. FOOTINGS SHALL EXTEND BELOW THE FROST LINE; MINIMUM DEPTH 36 INCHES BELOW GRADE.
4. UNLESS OTHERWISE NOTED ON THE PLANS OR IF SITE CONDITIONS REQUIRE OTHERWISE, FOOTINGS SHALL BE A MINIMUM OF 16" WIDE AND 8" DEEP WITH (2) #4 BARS CONTINUOUS.
5. COLUMNS SHALL BE A MINIMUM 30"x30"x12" WITH (4) #4 BARS EACH WAY. UNLESS OTHERWISE NOTED, THEREV SHALL BE 12" LONG.
6. UNLESS NOTED OTHERWISE ON THE PLANS, FOUNDATION WALLS SHALL BE MINIMUM 8" THICK X 8'-0" (OR 9'-0") TALL AND REINFORCED PER DETAIL 1-S2.0 (AND 2-S2.0 WHERE APPLICABLE). FOUNDATION WALLS GREATER THAN 10'-0" HIGH SHALL BE REINFORCED EITHER BY DESIGN OR PROVIDE 2'-0" LONG INTERIOR OR EXTERIOR DEAD-MAN FOR ANY STRAIGHT WALL PANELS EXCEEDING 20'-0" IN LENGTH (REF 3-S2.0).
7. REINFORCEMENT SHALL BE MINIMUM GRADE 40 UNLESS NOTED OTHERWISE. REINFORCEMENT SHALL LAP A MINIMUM OF 24" AT ENDS, SPLICES, AND AROUND CORNERS.
8. FOUNDATION WALLS SHALL BE BACKFILLED WITH A CLEAN LEAN CLAY (OR BETTER) LOW VOLUME CHANGE MATERIAL. ON-SITE MATERIAL MAY BE USED IF DEEMED ACCEPTABLE BY THE GEOTECHNICAL ENGINEER OF RECORD.
9. FOUNDATION WALLS WILL NOT ACHIEVE FULL STRENGTH UNTIL THE UNIFORM SLAB AND THE FIRST FLOOR DECK HAVE BEEN PROPERLY PLACED. IF BACKFILLING THE INTERIOR OF THE FOUNDATION WALL WITH GREATER THAN 8" OF EARTHEN FILL OR 24" OF GRANULAR FILL, A STRUCTURAL BASEMENT SLAB TO BE DESIGNED OR DESIGN REVIEWED BY APEX ENGINEERS), OR ALTERNATE ENGINEERED SOLUTION (I.E. ENGINEERED FLL) WILL BE REQUIRED.
10. FOUNDATION WALLS AND FOOTINGS SHALL BE FORMED CONTINUOUS AND POURED PER DETAIL 4-S2.0.
11. CONCRETE FLOOR SLABS SHALL BE A MINIMUM 4" THICK OVER A MINIMUM 4" BASE OF 1/2" OR 3/4" CLEAN GRADED SOIL, UNLESS NOTED OTHERWISE OR IF SITE CONDITIONS REQUIRE OTHERWISE.
12. PROVIDE A 6 MIL THICK (2) LAYERS OF ETHYLENE MOISTURE BARRIER OVER POUR CONCRETE. PROVIDE A MINIMUM BASEMENT FLOOR SLAB PER R406.2. LAP JOINTS MINIMUM 6" (NOT REQUIRED FOR GARAGE SLABS OR DETACHED ACCESSORY BUILDINGS).
13. PROVIDE A STRUCTURAL REINFORCED CONCRETE FLOOR OVER A USABLE AREA, SUCH AS A GARAGE FLOOR LOCATED OVER A STORAGE AREA, SUBMIT SEALED ENGINEERING DETAILS AND CALCULATIONS.
14. GARAGE SLABS AND BASEMENT FLOORS SHALL BE SUPPORTED BY FILL CONSISTING OF MORE THAN 24" OF GRANULAR FILL OR 8" OF EARTH SHALL BE REINFORCED PER DETAILS 1-S2.1 AND 6-S2.1 RESPECTIVELY. WHERE THE LIMITATIONS OF DETAILS 1-S2.1 AND 6-S2.1 ARE NOTE MET, A SEPARATE ENGINEERED DESIGN SHALL BE REQUIRED.
15. BASEMENT FOUNDATION SLABS SHALL BE BOLTED TO THE FOUNDATION WITH A MINIMUM OF 12" ANCHOR BOLTS EMBEDDED AT LEAST 7" INTO THE CONCRETE AND SPACED NOT MORE THAN 3'-0" ON CENTER AND WITHIN 12" OF EACH END PIECE.
16. FOUNDATION SLABS SHALL BE DAMP-PROOFED PER IRC SECTION R406.1.
17. PROVIDE A MINIMUM 4" PERFORATED DRAIN AROUND USABLE SPACE BELOW GRADE OR OTHER EQUIVALENT MATERIALS PER IRC SECTION 405.1. THE PIPE SHALL BE PLACED ON A MINIMUM OF 2" OF WASHED GRAVEL OR CRUSHED ROCK AND COVERED WITH NOT LESS THAN 6". THE DRAIN SHALL DAYLIGHT TO THE EXTERIOR BELOW THE FLOOR LEVEL OR TERMINATE IN A MINIMUM 20 GALLON PER MINUTE DRAIN.
18. INTERIOR BEARING WALLS AND COLUMNS SHALL BE ISOLATED FROM THE BASEMENT FLOOR SLAB.
19. INTERIOR NON-BEARING WALLS, OTHER THAN THOSE RESTING DIRECTLY ON FOOTINGS, SHALL BE ISOLATED FROM THE FLOOR FRAMING ABOVE.
20. ALL EARTH RETAINING STRUCTURES ON SITE GREATER THAN 4'-0" TALL (EXCLUDING CONCRETE FOUNDATION WALLS RESTRAINED AT BOTH THEIR TOP AND BOTTOM) SHALL REQUIRE A SEPARATE ENGINEERED DESIGN AS REQUIRED BY THE CODE AUTHORITY.
21. ANY GEOTECHNICAL IMPROVEMENT METHODS AND/OR STRUCTURAL FOUNDATIONS (SUCH AS DRILLED PILES) FROM THE FLOOR FRAMING ABOVE UNACCEPTABLE SUBGRADE CONDITIONS SHALL BE SUBMITTED TO EOR AS ENGINEERED SHOP DRAWINGS FOR REVIEW AND APPROVAL.



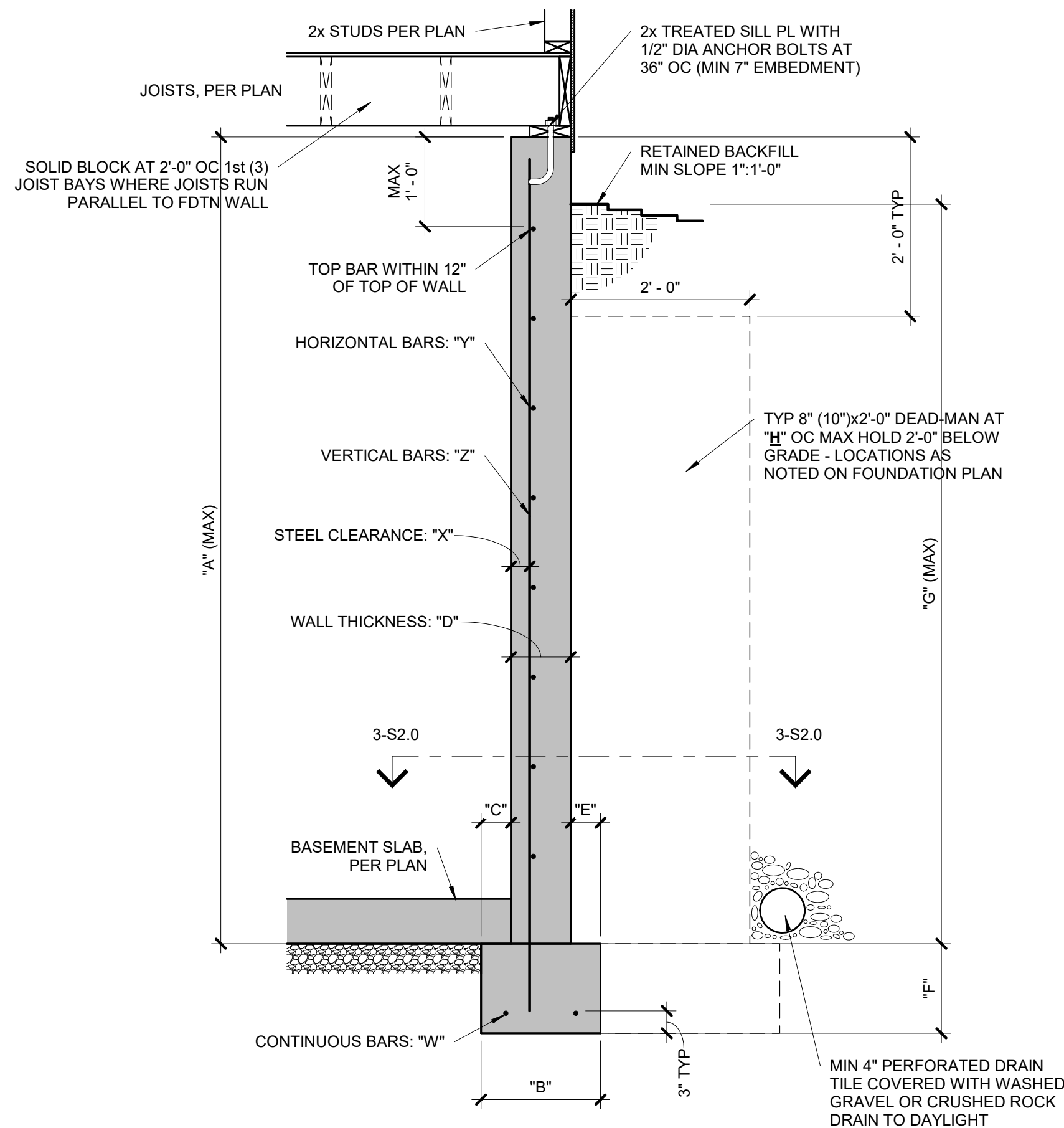
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| PROJECT #:      | 39471      |
| DRAWN BY:       | XXX        |
| CHECKED BY:     | BDC        |
| SUBMITTAL DATE: | 2020.10.16 |

HEET:

GENERAL NOTES

# \$1.0





#### CONCRETE DIMENSIONS

| "A"    | "B"   | "C" | "D" | "E" | "F" | "G"   | "H"    |
|--------|-------|-----|-----|-----|-----|-------|--------|
| 8'-0"  | 1'-4" | 4"  | 8"  | 4"  | 8"  | 7'-6" | 20'-0" |
| 9'-0"  | 1'-4" | 4"  | 8"  | 4"  | 8"  | 8'-6" | 20'-0" |
| 10'-0" | 1'-8" | 5"  | 10" | 5"  | 10" | 9'-6" | 20'-0" |

#### REINFORCING BARS(GRADE 40 BARS)

| "W"    | "X"    | "Y"               | "Z"               |
|--------|--------|-------------------|-------------------|
| (2) #4 | 2 1/2" | #4 BARS AT 24" OC | #4 BARS AT 24" OC |
| (2) #4 | 2 1/2" | #4 BARS AT 24" OC | #4 BARS AT 24" OC |
| (2) #4 | 2 1/2" | #4 BARS AT 18" OC | #4 BARS AT 18" OC |

- NOTES:
- DIMENSION SHOWN IS FOR MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE A DEAD-MAN SHALL BE INSTALLED. NOTE, A MINIMUM 2'-0" RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS A DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.
  - VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 8" OF TOP WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP AND BOTTOM OF WALL.
  - BURIED CONCRETE FOUNDATION WALLS UP TO 9'-0" TALL MAY BE 8" NOMINAL THICKNESS WITH #4 BARS AT 24" OC BOTH WAYS OVER 16"x8" CONCRETE FOOTINGS WITH (2) #4 BARS CONTINUOUS, UNLESS OTHERWISE REQUIRED BY ENGINEERING REPORT BASED ON ACTUAL SITE CONDITIONS.
  - WALL WILL NOT ACHIEVE FULL STRENGTH UNTIL FIRST FLOOR DECK AND BASEMENT SLAB HAVE BEEN PLACED.

#### TYPICAL FOUNDATION WALL

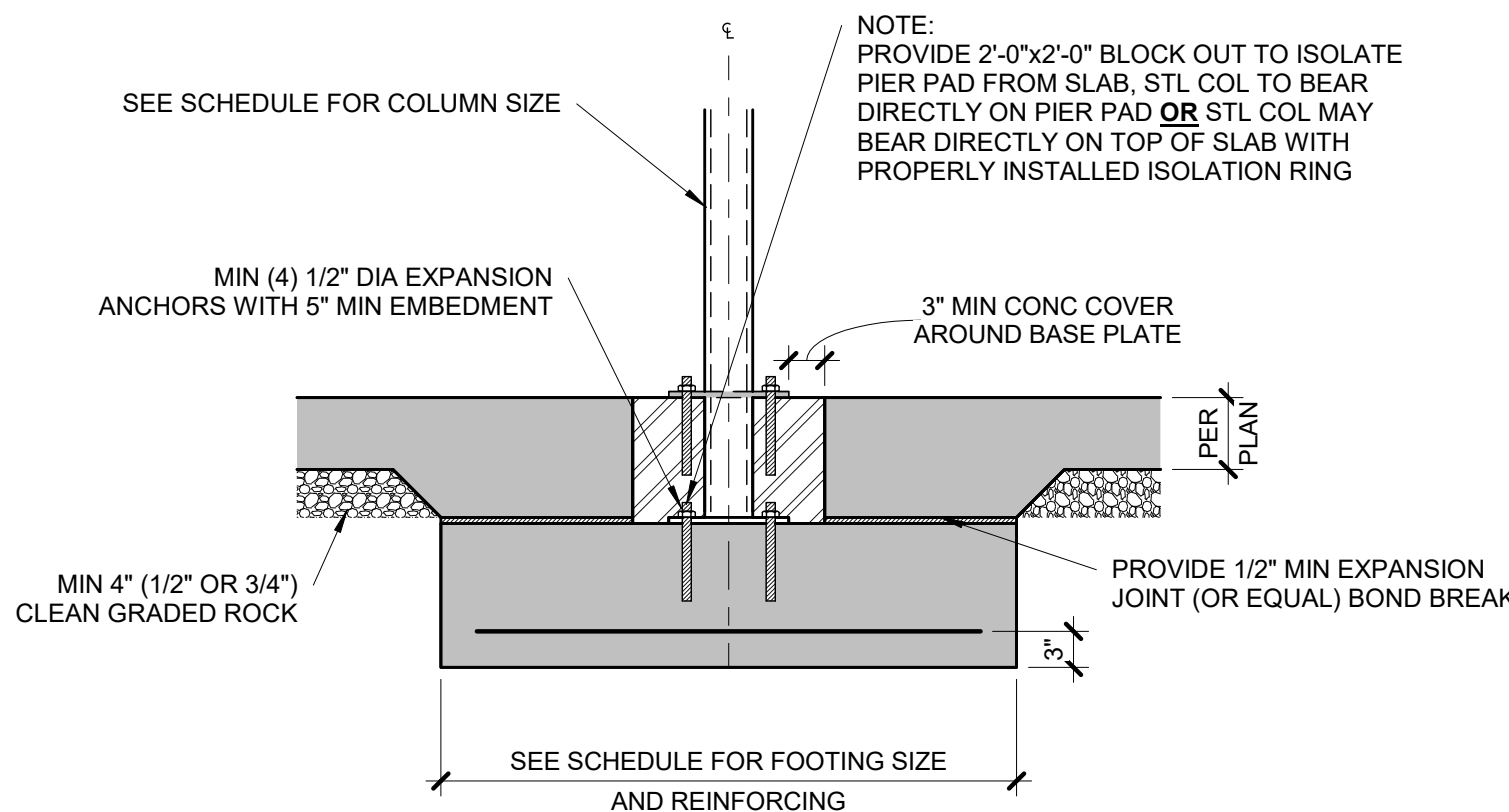
1  
DETAIL

S2.0 3/4" = 1'-0"

#### COLUMN AND PIER PAD SCHEDULE

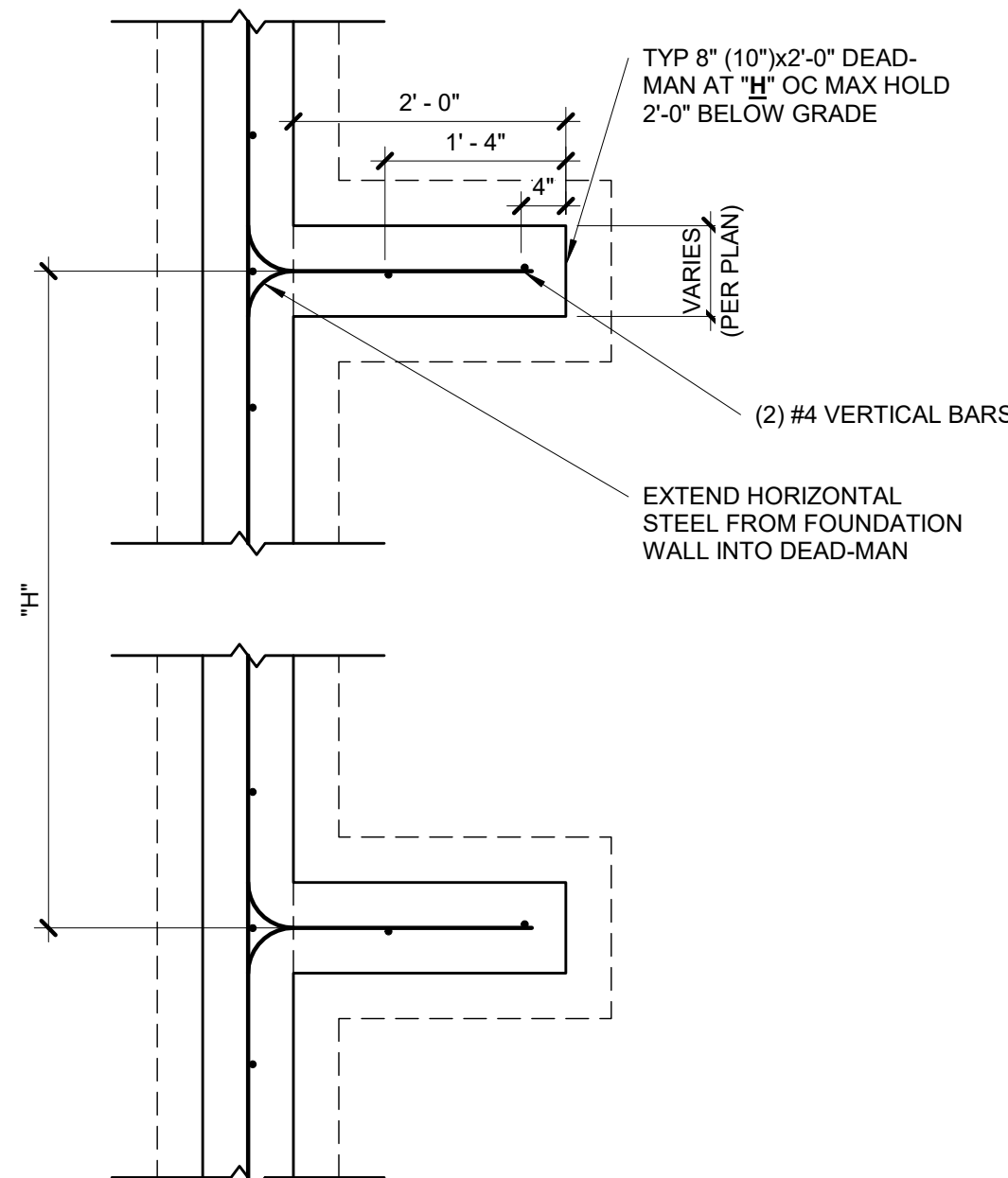
| COLUMN MARK | PAD SIZE    | REINFORCING      | COL SIZE                  | COL TYPE                                                     |
|-------------|-------------|------------------|---------------------------|--------------------------------------------------------------|
| A           | 30"x30"x12" | (4) #4 BARS E-W  | 3" NOMINAL                | SCHEDULE 40<br>STEEL COLUMN<br>(F <sub>y</sub> = 58 ksi MIN) |
| B           | 36"x36"x12" | (4) #4 BARS E-W  | 3" NOMINAL                |                                                              |
| C           | 42"x42"x12" | (5) #4 BARS E-W  | 3" NOMINAL                |                                                              |
| D           | 48"x48"x12" | (6) #4 BARS E-W  | 3" NOMINAL                |                                                              |
| E           | 54"x54"x16" | (8) #4 BARS E-W  | 3 1/2" NOMINAL<br>(4" OD) |                                                              |
| F           | 60"x60"x16" | (10) #4 BARS E-W | 3 1/2" NOMINAL<br>(4" OD) |                                                              |

- NOTES:
- COLUMN AND PIER PAD SIZES SHOWN ARE FOR MAXIMUM COLUMN HEIGHT OF 10'-0". REQUIRES SEPERATE ENGINEERED DESIGN IF GREATER THAN 10'-0"
  - COLUMN AND PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 2,000 PSF.



#### COLUMN PAD DETAIL

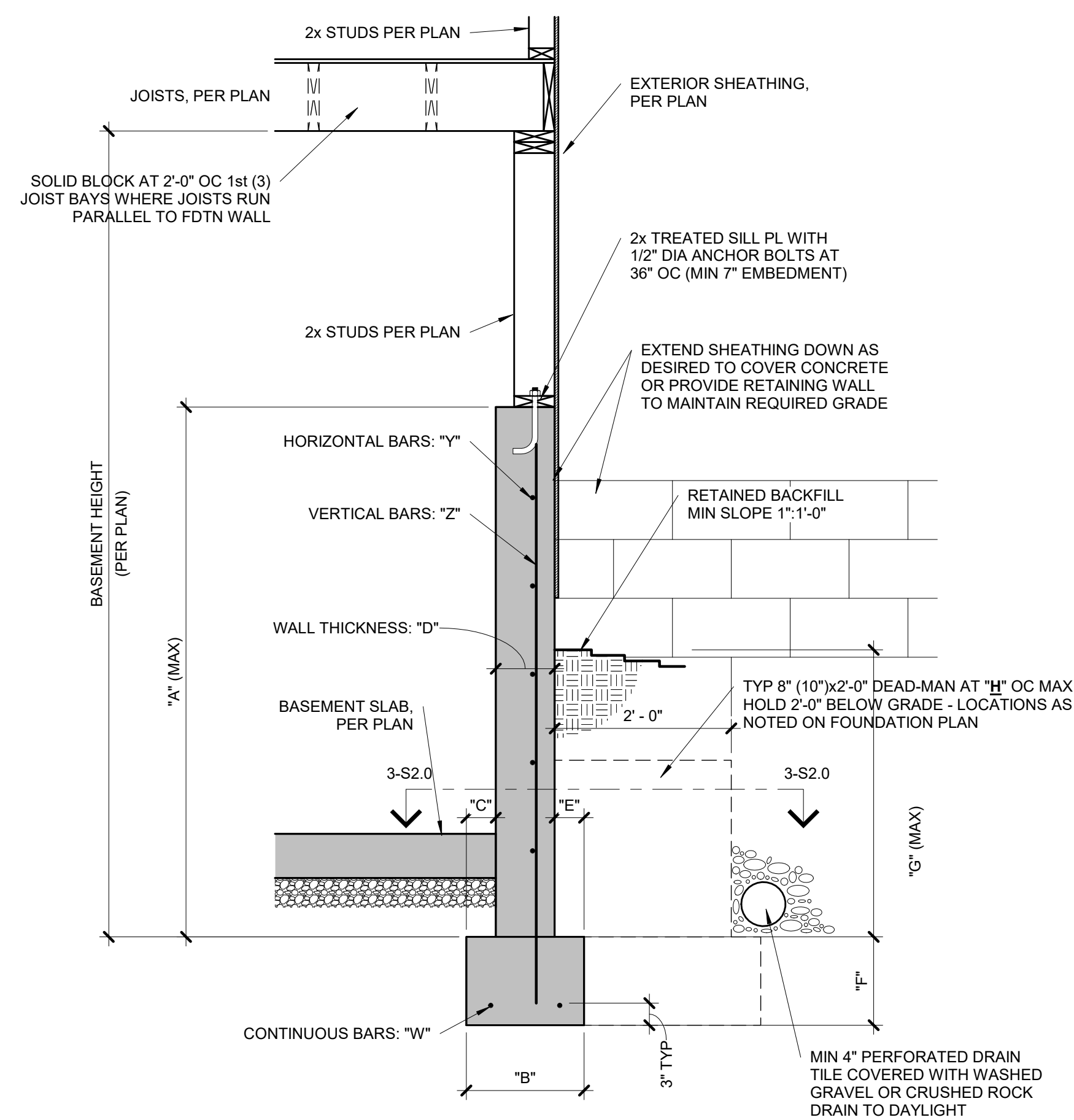
S2.0 3/4" = 1'-0"



- NOTES:
- MIN 3000 PSI FOOTING COMPRESSIVE CONCRETE STRENGTH.
  - MIN 3000 PSI WALL COMPRESSIVE CONCRETE STRENGTH.
  - AIR ENTRAINED BETWEEN 5% & 7% OF CONCRETE VOLUME.
  - GRADE 40 REINFORCING STEEL UNLESS OTHERWISE NOTED.
  - LAP SPLICES 24" MIN.
  - WALL SHALL BE BACK-FILLED WITH CLEAN, LEAN CLAY (OR BETTER) LOW VOLUME CHANGE MATERIAL. ON-SITE MATERIAL MAY BE USED IF DEEMED ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.
  - ASSUMED 2,000 PSF BEARING (TO BE VERIFIED BY GEOTECHNICAL ENGINEER).

#### TYPICAL DEAD-MAN SECTION

S2.0 3/4" = 1'-0"



#### CONCRETE DIMENSIONS

| "A"   | "B"   | "C" | "D" | "E" | "F" | "G"   | "H"    |
|-------|-------|-----|-----|-----|-----|-------|--------|
| 4'-0" | 1'-4" | 4"  | 8"  | 4"  | 8"  | 3'-4" | 20'-0" |
| 6'-0" | 1'-4" | 4"  | 8"  | 4"  | 8"  | 4'-4" | 20'-0" |
| 9'-0" | 1'-8" | 5"  | 8"  | 4"  | 8"  | 4'-4" | 20'-0" |

#### REINFORCING BARS(GRADE 40 BARS)

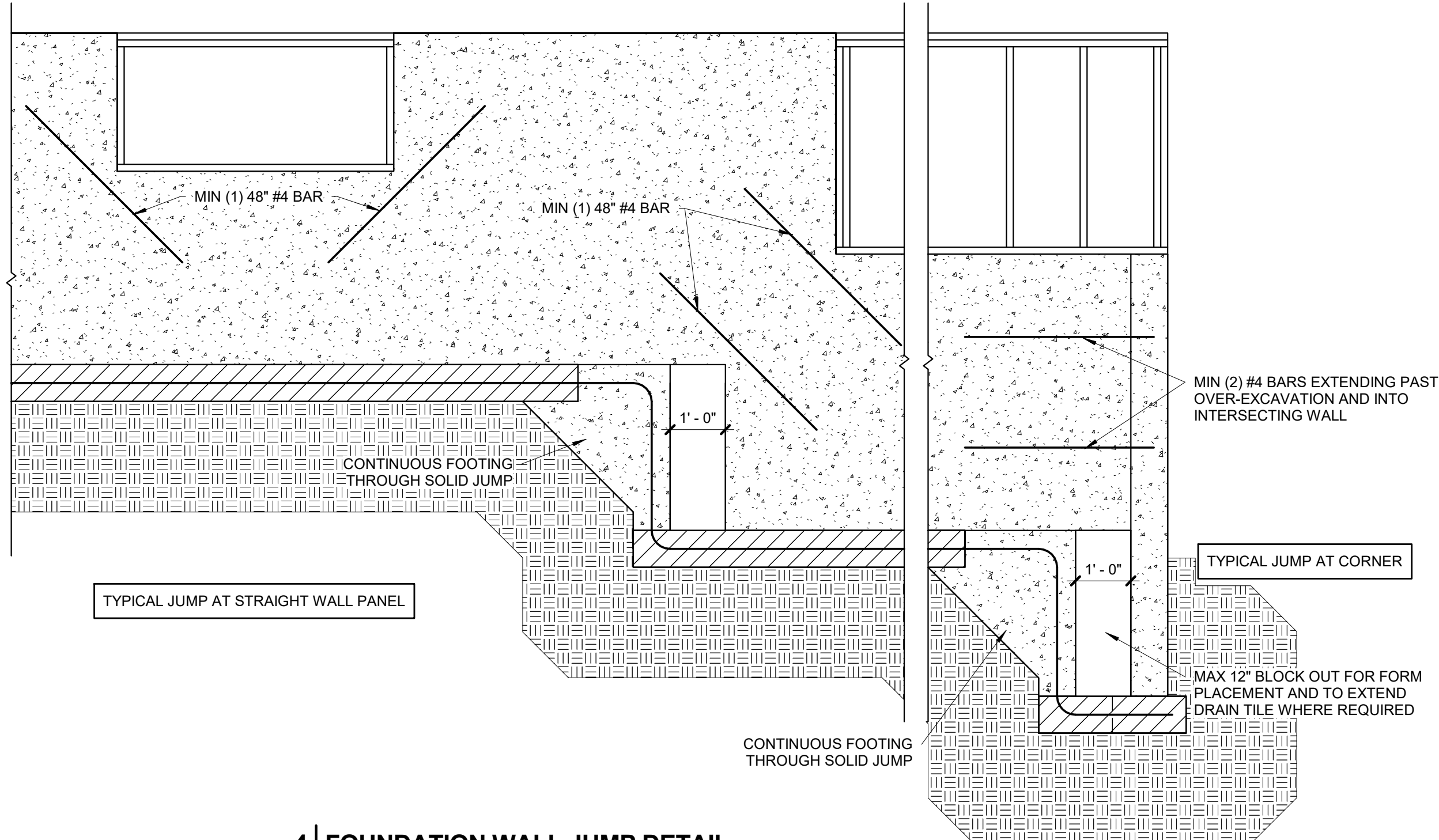
| "W"    | "X" | "Y"               | "Z"               |
|--------|-----|-------------------|-------------------|
| (2) #4 | N/A | #4 BARS AT 24" OC | #4 BARS AT 24" OC |
| (2) #4 | N/A | #4 BARS AT 24" OC | #4 BARS AT 24" OC |
| (2) #4 | N/A | #4 BARS AT 24" OC | #4 BARS AT 24" OC |

- NOTES:
- DIMENSION SHOWN IS FOR MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE A DEAD-MAN SHALL BE INSTALLED. NOTE, A MINIMUM 2'-0" RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS A DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.
  - VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 8" OF TOP WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP AND BOTTOM OF WALL.
  - THE BASEMENT SLAB IS AN INTEGRAL PART OF THE 'UNRESTRAINED' FOUNDATION WALL DESIGN THEREFORE, IF THE WALL IS BACKFILLED PRIOR TO PLACEMENT OF THE BASEMENT SLAB, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BRACING THE WALL UNTIL THE BASEMENT SLAB HAS BEEN PLACED.

#### TYPICAL 'UNRESTRAINED'

2  
FOUNDATION WALL DETAIL

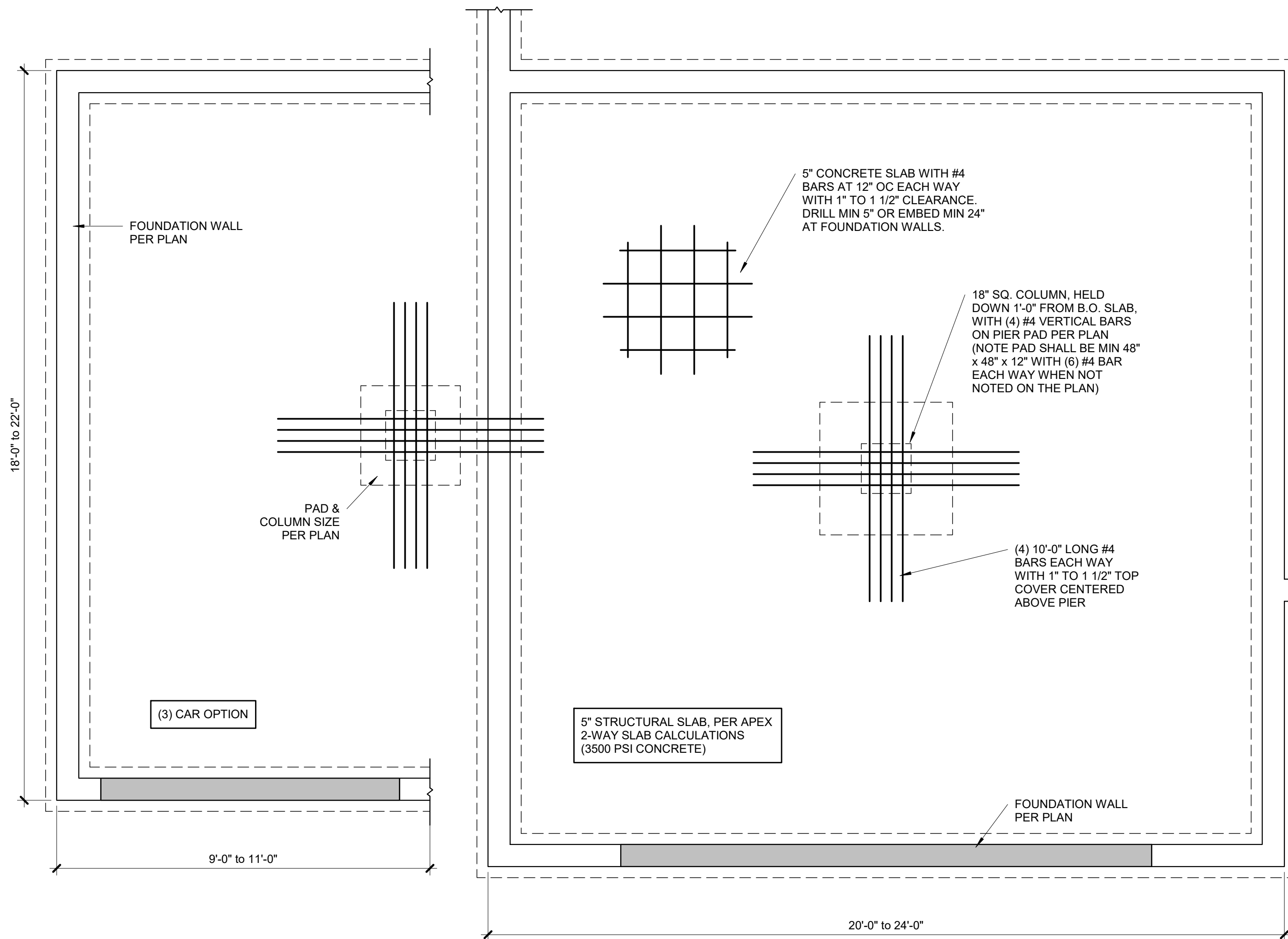
S2.0 3/4" = 1'-0"



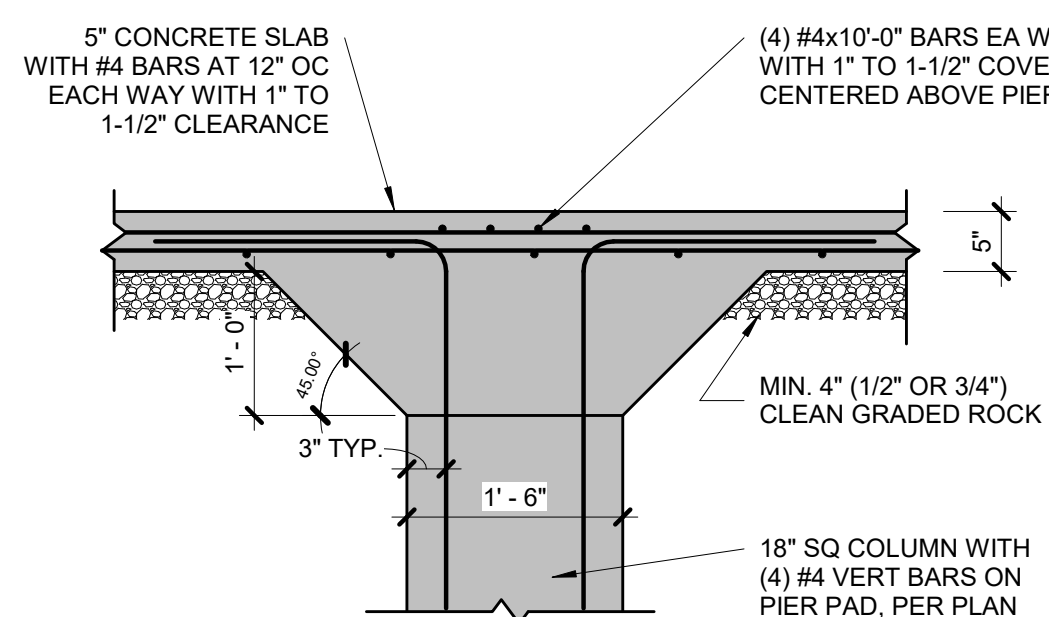
#### FOUNDATION WALL JUMP DETAIL

S2.0 1/2" = 1'-0"

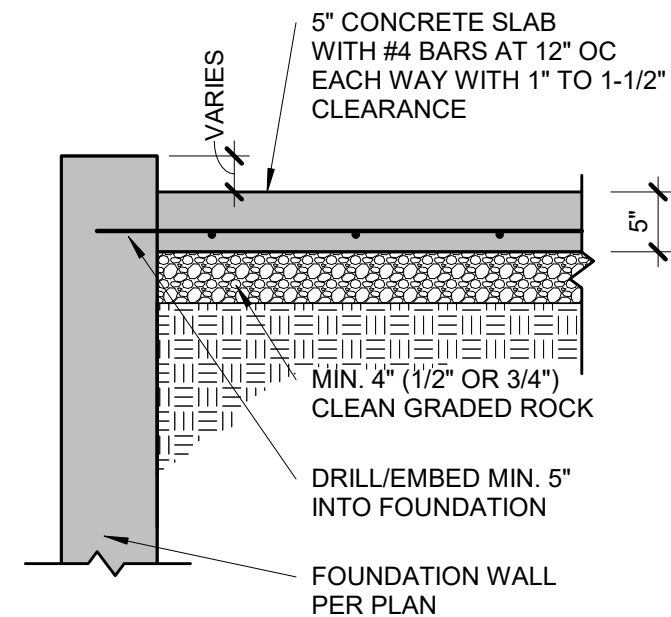




**1 TYPICAL STRUCTURAL GARAGE SLAB PLAN**  
S2.1 3/4" = 1'-0"

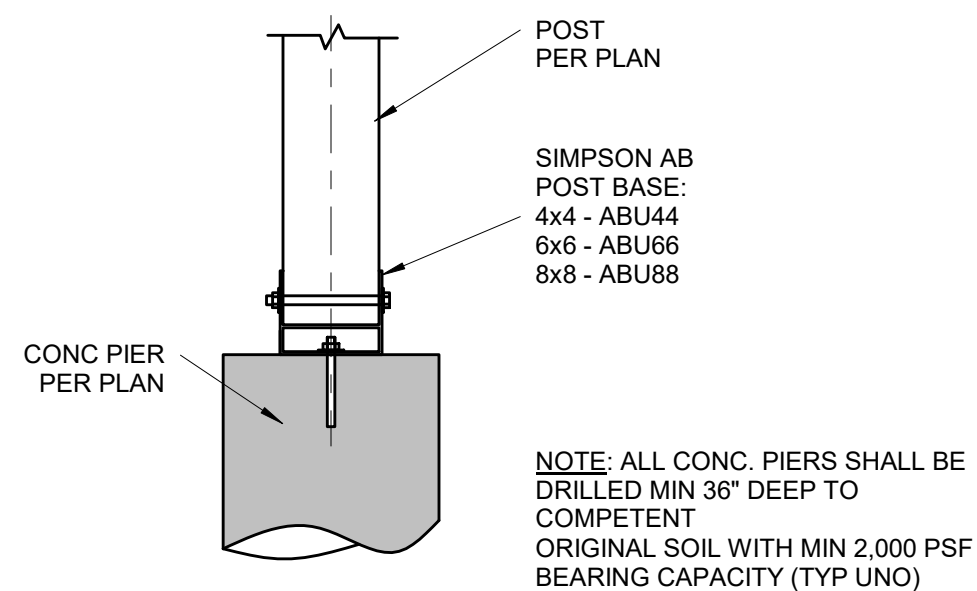


**2 STRUCTURAL GARAGE SLAB PIER PAD DETAIL**  
S2.1 3/4" = 1'-0"

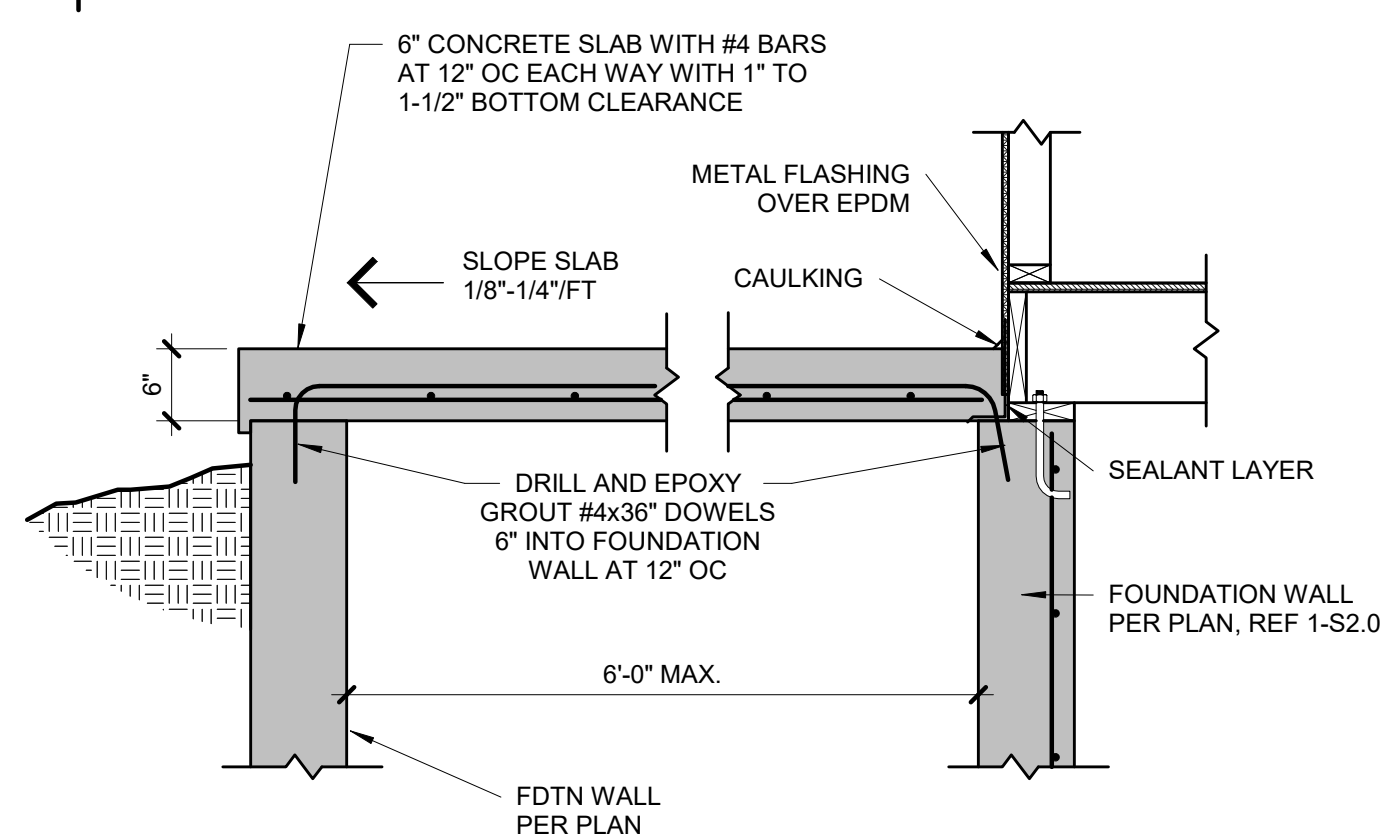


**3 STRUCTURAL GARAGE SLAB/WALL SECTION**  
S2.1 3/4" = 1'-0"

| PIER SCHEDULE |          |               |
|---------------|----------|---------------|
| COLUMN MARK   | COL SIZE | PIER DIAMETER |
| G             | PER PLAN | 12"           |
| H             | PER PLAN | 16"           |
| J             | PER PLAN | 18"           |
| K             | PER PLAN | 24"           |
| L             | PER PLAN | 28"           |



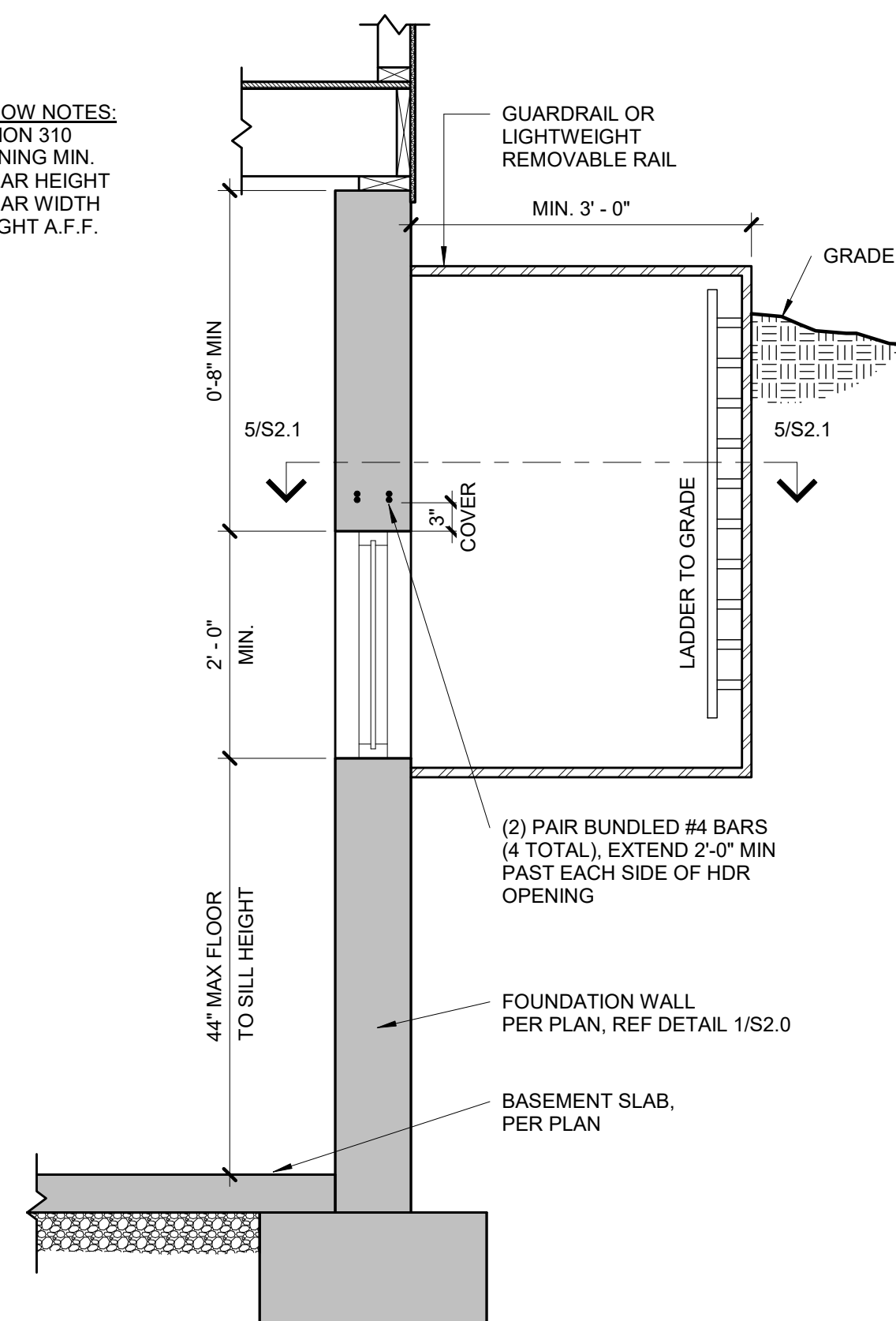
**8 POST BASE DETAIL**  
S2.1 3/4" = 1'-0"



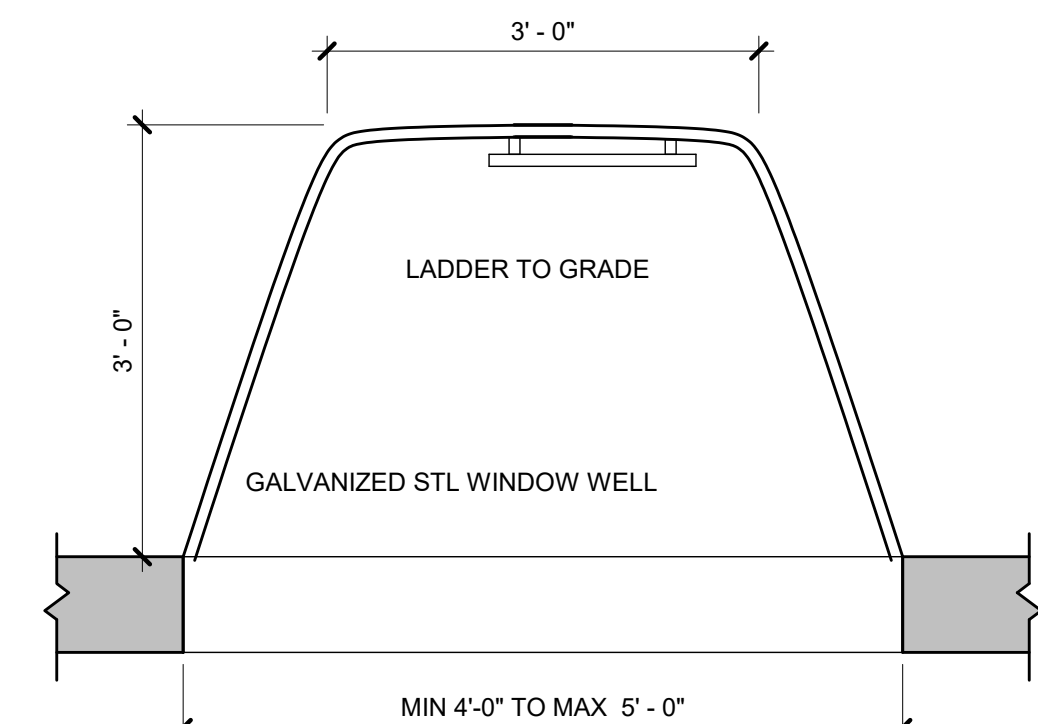
FORMWORK OPTIONS:  
1. PROVIDE VULCRAFT 2VLI (OR EQUAL) CORRUGATED DECKING (SHORE AT MID-SPAN DURING CONSTRUCTION), OR  
2. PLYWOOD FORMS WITH EXPANDABLE BAR JOISTS OR TEMPORARY FRAMED WALLS BY CONTRACTOR.

**7 SUSPENDED PORCH STOOP DETAIL**  
S2.1 3/4" = 1'-0"

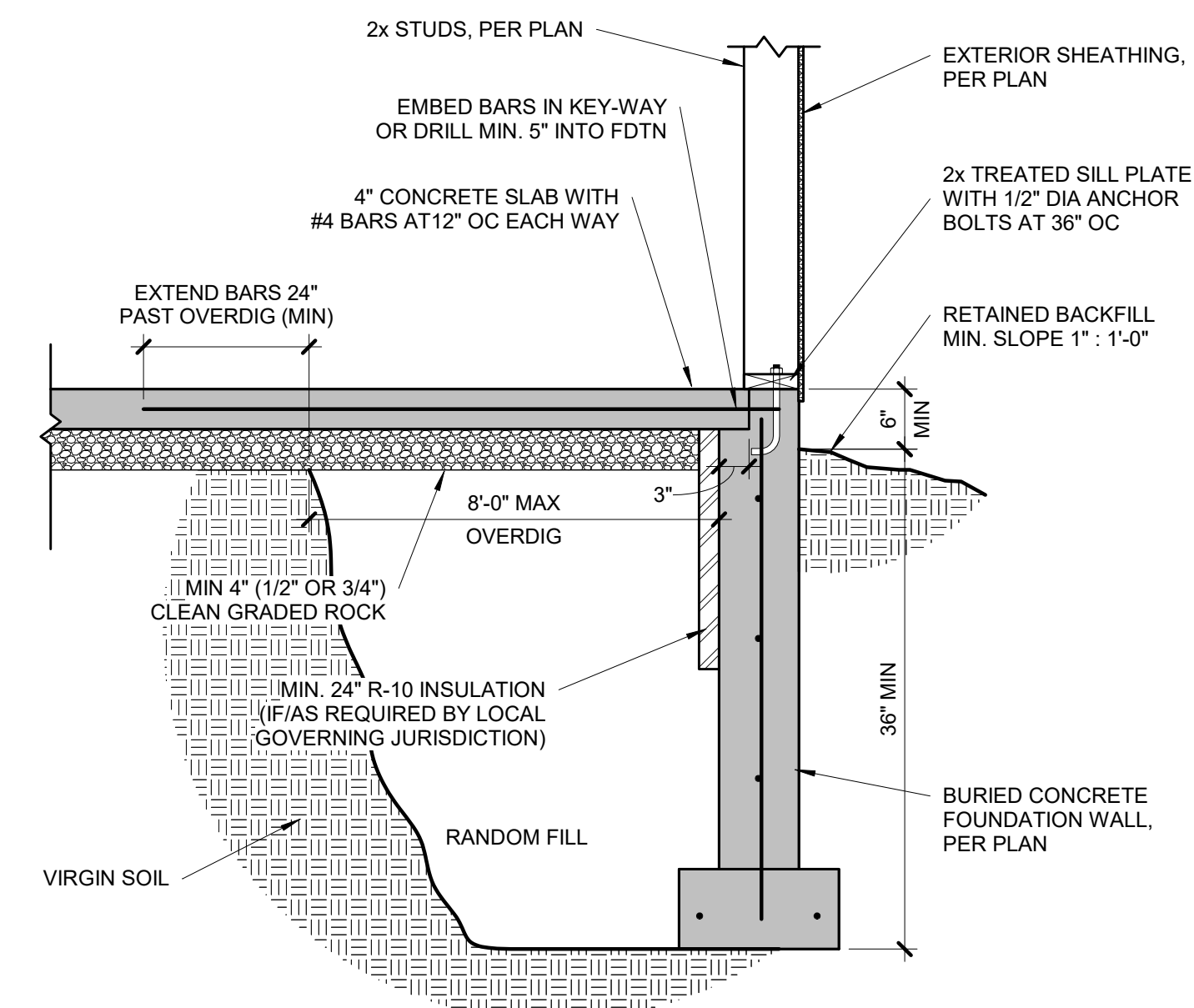
EGRESS WINDOW NOTES:  
PER IRC SECTION 310  
1. 5.7 S.F. OPENING MIN.  
2. 24" MIN. CLEAR HEIGHT  
3. 20" MIN. CLEAR WIDTH  
4. 44" MAX HEIGHT A.F.F.



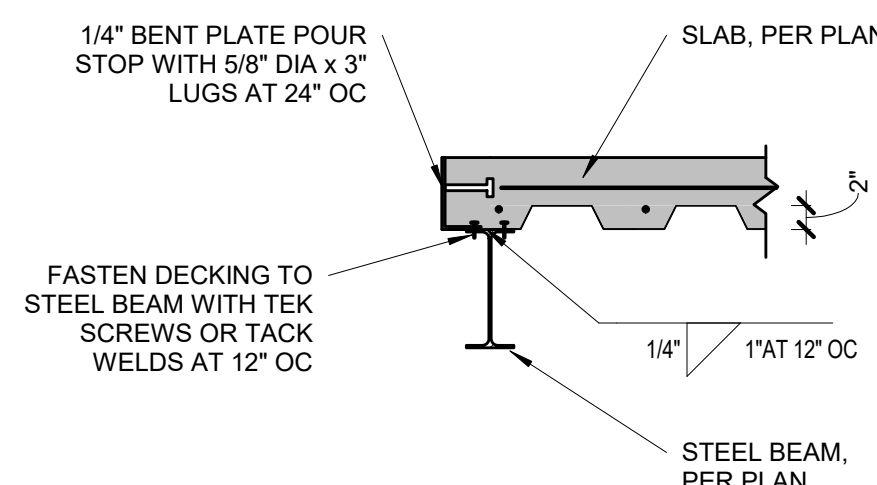
**4 TYPICAL EGRESS WINDOW SECTION DETAIL**  
S2.1 3/4" = 1'-0"



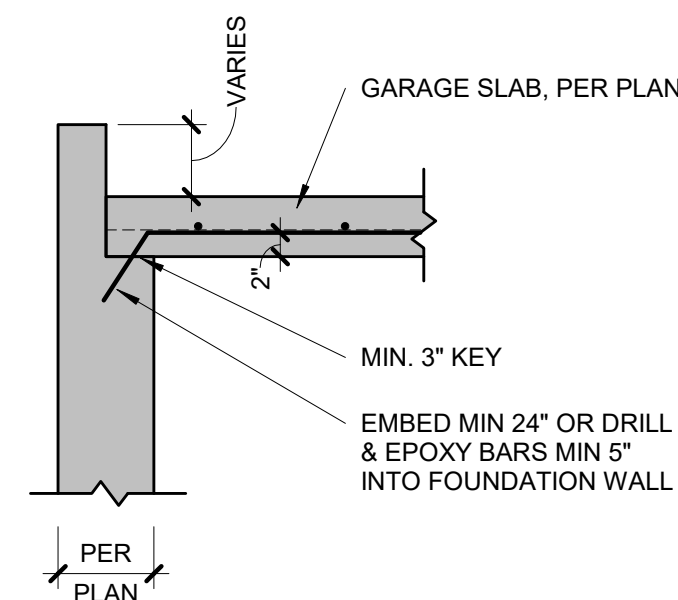
**5 TYPICAL EGRESS WINDOW PLAN**  
S2.1 3/4" = 1'-0"



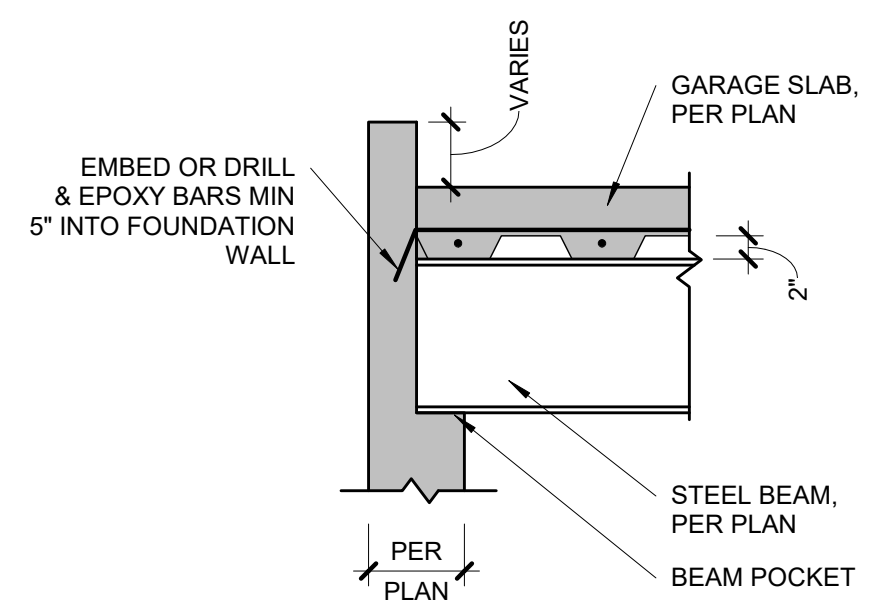
**6 TYPICAL OVERDIG DETAIL AT BASEMENT SLAB**  
S2.1 3/4" = 1'-0"



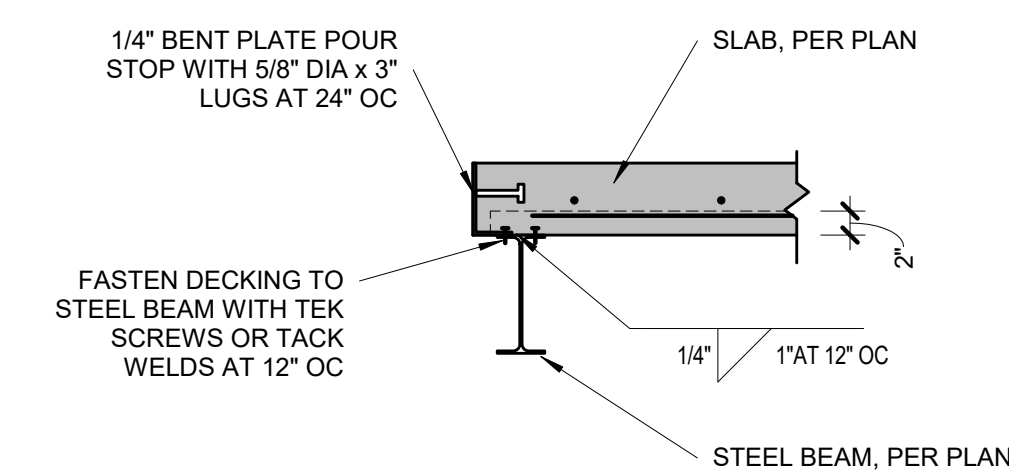
**9 POUR STOP DETAIL**  
S2.1 3/4" = 1'-0"



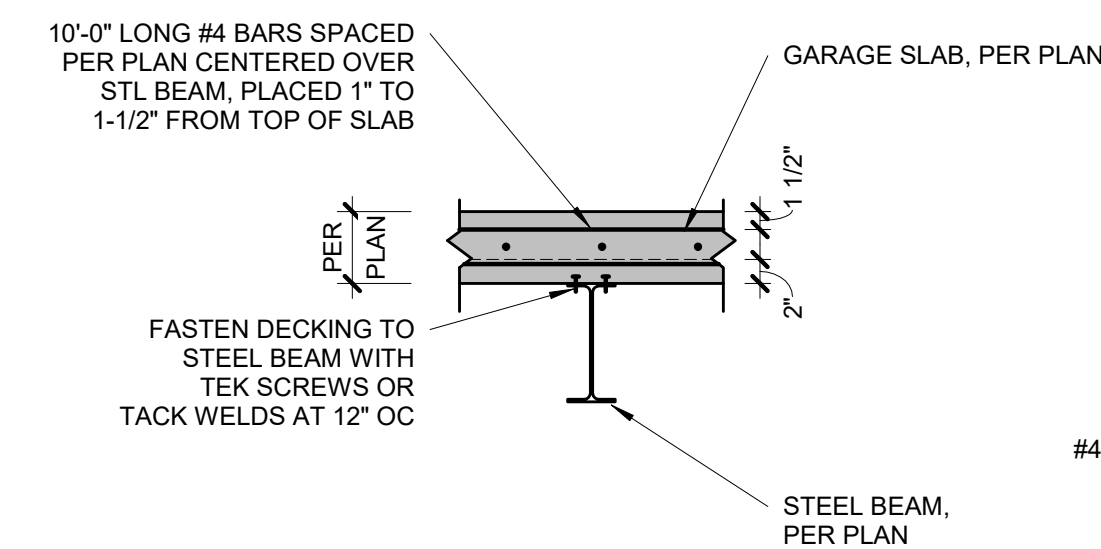
**10 GARAGE SLAB BEARING**  
S2.1 3/4" = 1'-0"



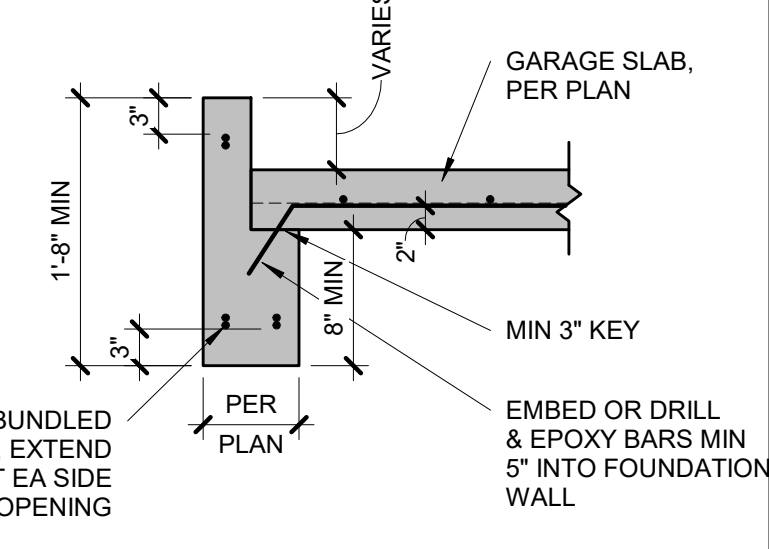
**11 GARAGE SLAB BEAM BEARING**  
S2.1 3/4" = 1'-0"



**12 POUR STOP DETAIL**  
S2.1 3/4" = 1'-0"



**13 GARAGE SLAB BEAM BEARING**  
S2.1 3/4" = 1'-0"

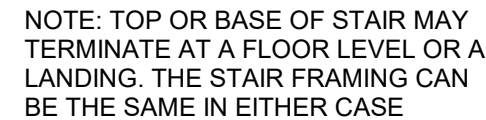
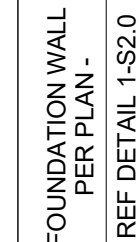


**14 CONCRETE HEADER DETAIL**  
S2.1 3/4" = 1'-0"

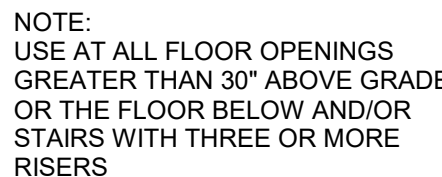
STEEL DECKING NOTES:  
• MINIMUM 1-1/2" BEARING  
• FASTEN TO SUPPORT STEEL WITH 5/8" VISIBLE PUDDLE WELDS AT EDGE RIBS AND 12" CENTERS ALONG END BEARING  
• FASTEN SIDE LAPS AND PERIMETER EDGES AT 36" CENTERS WITH #10 TEK SCREWS OR 5/8" PUDDLE WELDS  
• MAX UNSUPPORTED CONSTRUCTION SPAN 6'-0", UNO ON PLANS BY APEX

**TYPICAL SUSPENDED SLAB DETAIL**





|             |              |
|-------------|--------------|
| <b>S3.0</b> | 3/4" = 1'-0' |
|-------------|--------------|



|             |                |
|-------------|----------------|
| <b>S3.0</b> | $3/4" = 1'-0"$ |
|-------------|----------------|

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 THE COMPLIANCE WITH EXCEPTION 2 OF SECTION R602.3.1 OR DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

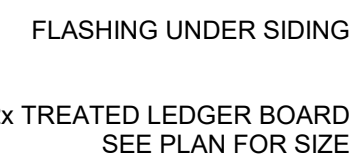
A. WALL STUDS NOT EXCEEDING 16" OC SHALL BE SHEATHED WITH MINIMUM 1/2" GYPSUM BOARD ON THE INTERIOR AND 3/8" WOOD STRUCTURAL PANEL SHEATHING ON THE EXTERIOR. WOOD STRUCTURAL PANEL SHEATHING SHALL BE ATTACHED WITH 8d (2.5" x 0.131") NAILS NOT GREATER THAN 6" OC ALONG PANEL EDGES AND 12" OC AT INTERMEDIATE SUPPORTS, AND ALL PANEL JOINTS SHALL OCCUR OVER STUDS OR BLOCKING.

B. THE MAXIMUM SPAN IS APPLICABLE TO BOTH SINGLE AND MULTIPLE SPAN ROOF AND FLOOR CONDITIONS. THE ROOF ASSEMBLY SHALL NOT CONTAIN A HABITABLE ATTIC.

|             |                |
|-------------|----------------|
| <b>S3.0</b> | $3/4" = 1'-0"$ |
|-------------|----------------|

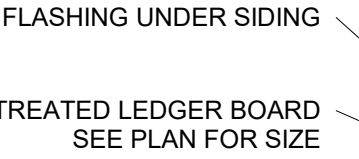


|             |                |
|-------------|----------------|
| <b>S3.0</b> | 1 1/2" = 1'-0" |
|-------------|----------------|



## 7 | WITH DECK ATTACHMENT

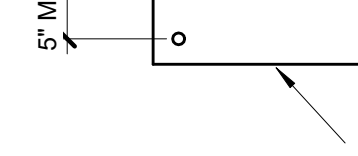
|             |                |
|-------------|----------------|
| <b>S3.0</b> | $3/4" = 1'-0"$ |
|-------------|----------------|



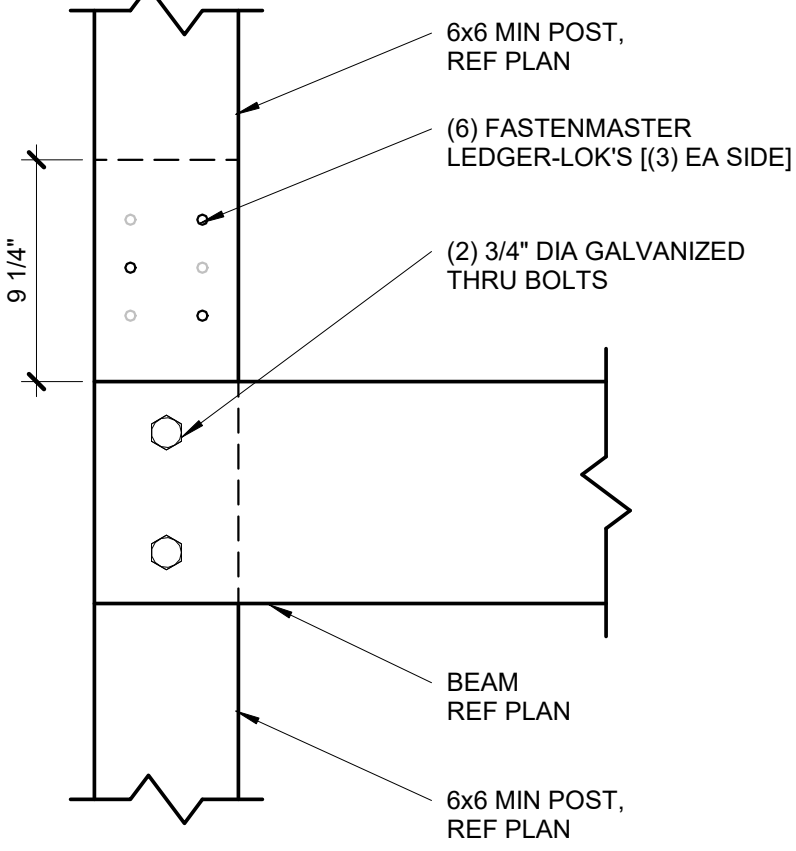
NOTE:  
CHART IS APPLICABLE ONLY WHEN DECK IS SHOWN ON APPROVED PLAN

|             |              |
|-------------|--------------|
| <b>S3.0</b> | 3/4" = 1'-0" |
|-------------|--------------|

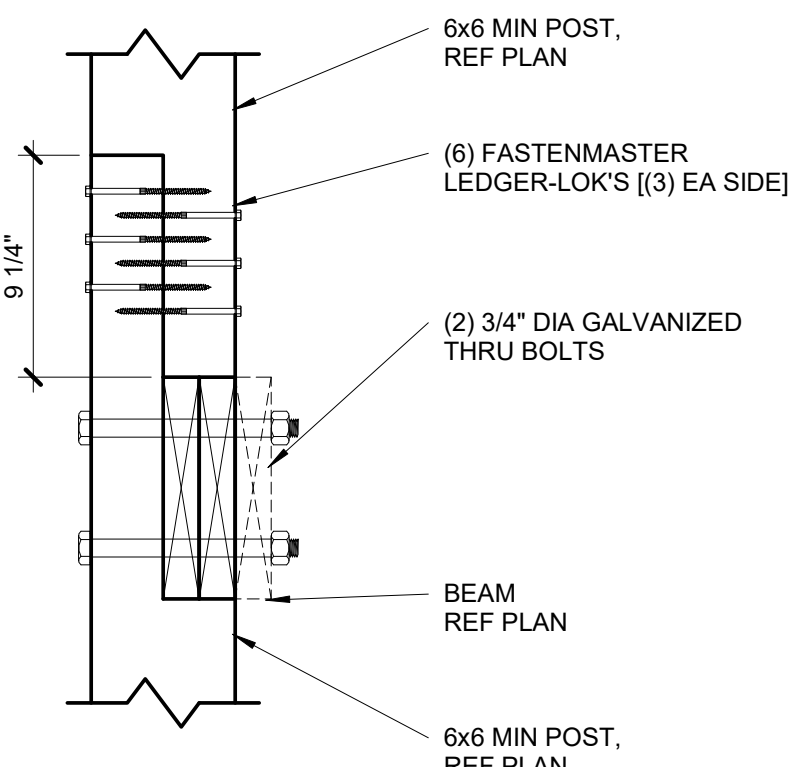
\*DISTANCE SHALL BE PERMITTED TO BE REDUCED TO 4 1/2" IF LAG SCREWS ARE USED OR BOLT SPACING IS REDUCED TO THAT OF LAG SCREWS TO ATTACH 2x8 LEDGERS TO 2x8 BAND JOISTS



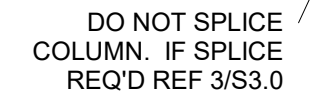
|             |                |
|-------------|----------------|
| <b>S3.0</b> | $3/4" = 1'-0"$ |
|-------------|----------------|



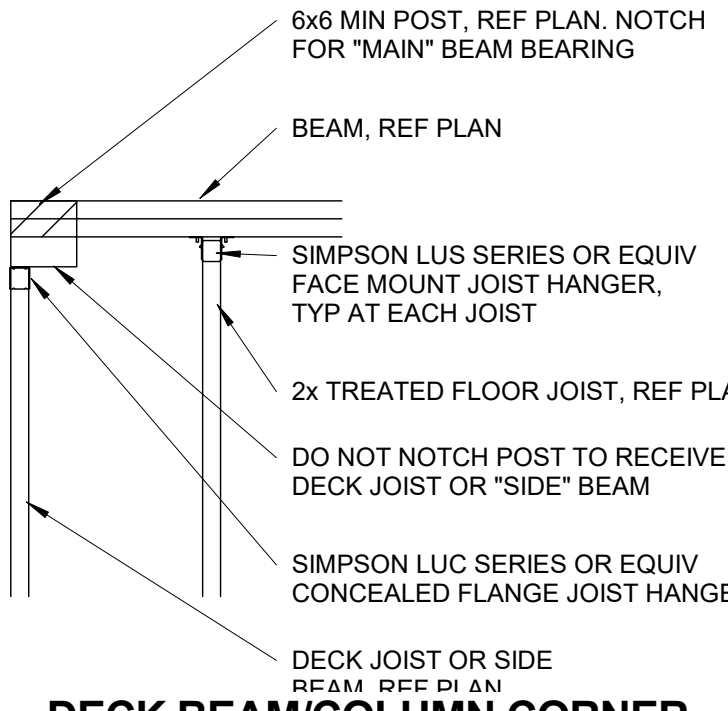
|             |                |
|-------------|----------------|
| <b>S3.0</b> | 1 1/2" = 1'-0' |
|-------------|----------------|



|             |                |
|-------------|----------------|
| <b>S3.0</b> | 1 1/2" = 1'-0" |
|-------------|----------------|

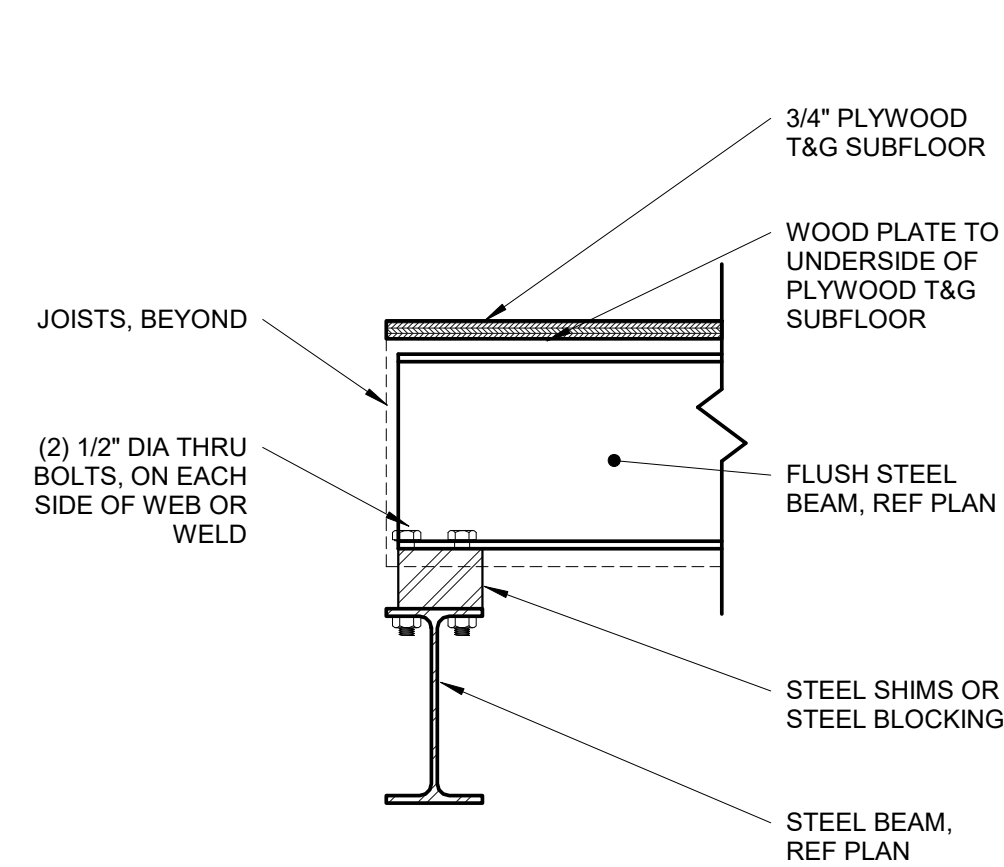


|             |                |
|-------------|----------------|
| <b>S3.0</b> | 1 1/2" = 1'-0" |
|-------------|----------------|



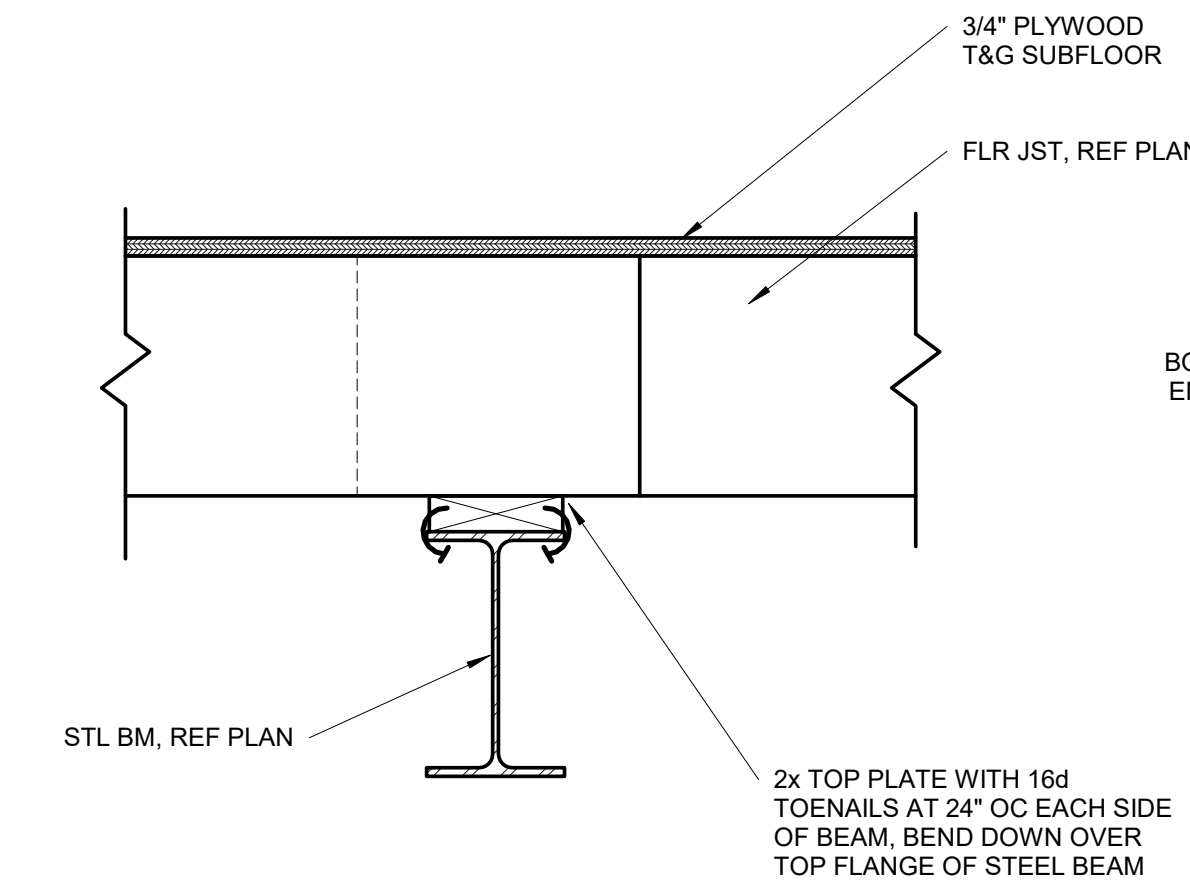
|             |              |
|-------------|--------------|
| <b>S3.0</b> | 3/4" = 1'-0" |
|-------------|--------------|





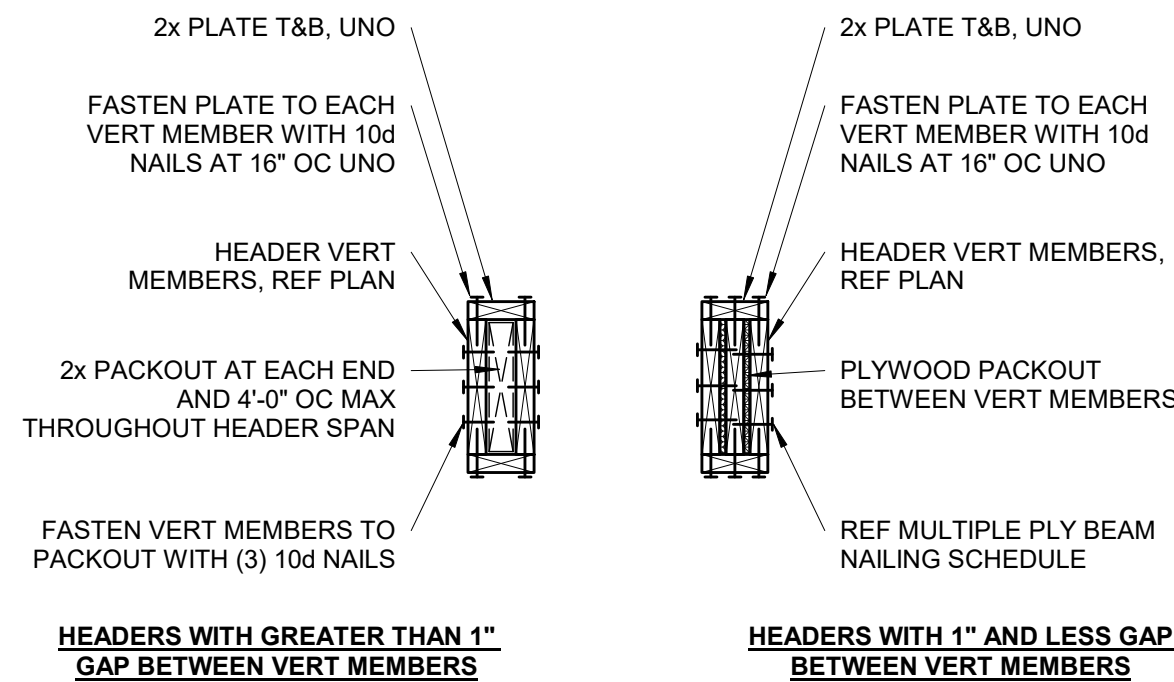
9 FLUSH STEEL BEAM TO STEEL BEAM

S3.1 1 1/2" = 1'-0"



8 WOOD PLATE TO STEEL BEAM CONNECTION

S3.1 1 1/2" = 1'-0"



11 TYPICAL WOOD HEADER DETAIL

S3.1 NOT TO SCALE

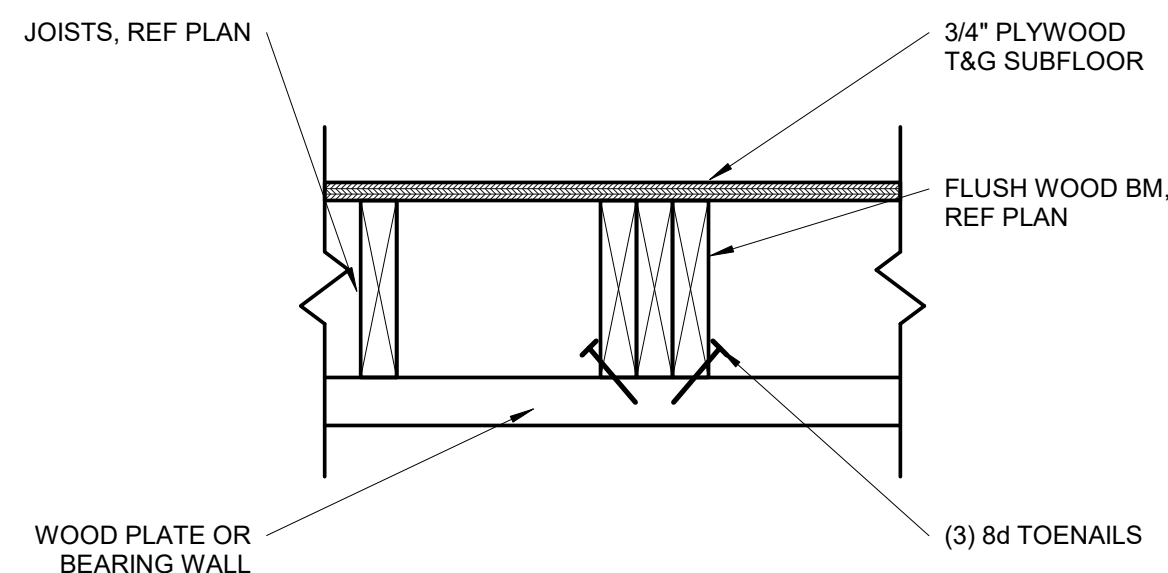
| 2 - PLY                                                                                                                            | 3 - PLY                                 | 4 - PLY                                                   |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------|
|                                                                                                                                    |                                         |                                                           |
| (3) ROWS OF 16d x 3-1/2" NAILS AT 6" OC                                                                                            | (3) ROWS OF 16d x 3-1/2" NAILS AT 4" OC | (2) ROWS OF 1/2" DIA. A307 THRU-BOLTS AT 12" OC STAGGERED |
| <b>NOTES:</b><br>1. NAILING SHOWN APPLIES UNLESS SPECIFICALLY NOTED IN DETAILS.<br>2. SPACE NAILS EVENLY THROUGHOUT DEPTH OF BEAM. |                                         |                                                           |

10 MULTIPLE PLY BEAM NAILING SCHEDULE

S3.1 NOT TO SCALE

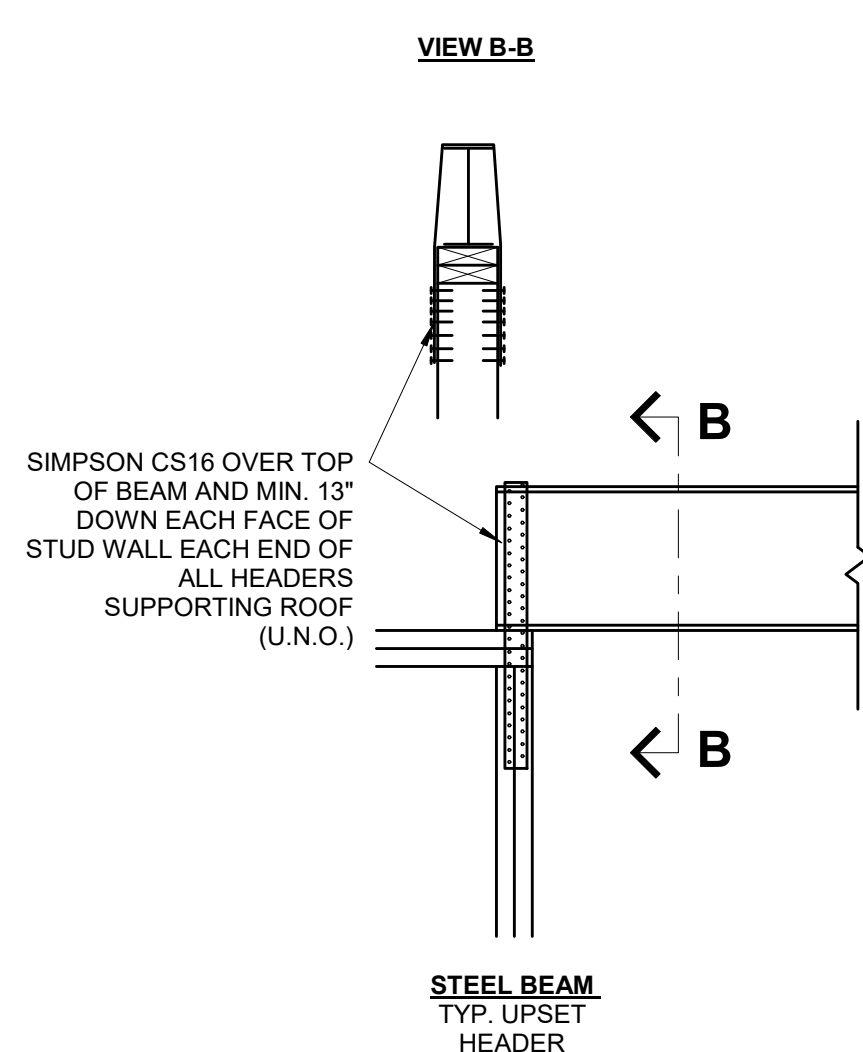
7 FLUSH STEEL BEAM CONNECTION

S3.1 1 1/2" = 1'-0"



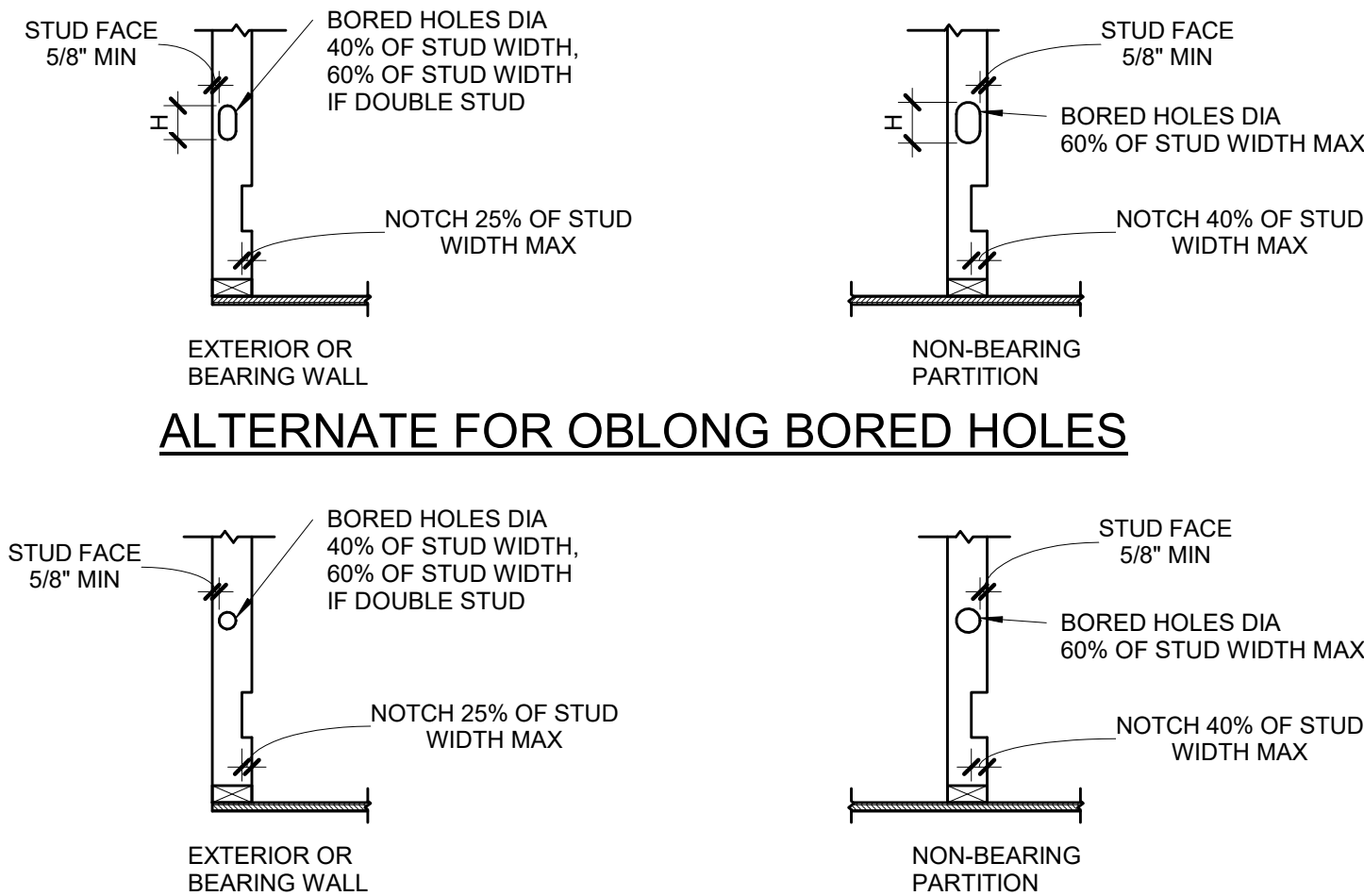
6 FLUSH WOOD BEAM CONNECTION

S3.1 1 1/2" = 1'-0"



5 ROOF SUPPORTING BEAM HOLD DOWN

S3.1 3/4" = 1'-0" (COMPLIANCE WITH IRC R802.11)



PENETRATIONS THRU STUDS

| WALL SIZE | BORED HOLE SIZE                     |                       | WALL NOTCH        |                       |
|-----------|-------------------------------------|-----------------------|-------------------|-----------------------|
|           | STUDS LOAD BEARING OR EXTERIOR WALL | NON LOAD BEARING WALL | LOAD BEARING WALL | NON LOAD BEARING WALL |
| 2x4       | 1 3/8"                              | 2 1/8"                | 7/8"              | 1 3/8"                |
| (2) 2x4   | -                                   | 2 1/8"                | 7/8"              | 1 3/8"                |
| 2x6       | 2 1/4"                              | 3 15/16"              | 1 3/8"            | 2 1/4"                |
| (2) 2x6   | -                                   | 3 5/16"               | 1 3/8"            | 2 1/4"                |
| 2x8       | 2 7/8"                              | 4 3/8"                | 1 13/16"          | 2 7/8"                |
| (2) 2x8   | -                                   | 4 3/8"                | 1 13/16"          | 2 7/8"                |

PLATES:  
TOP AND BOTTOM PLATE HOLE, CUT OR NOTCH THAT IS 50% MORE OF WIDTH MUST BE REPAIRED USING 16 GA (MIN) METAL TIE THAT IS AT LEAST 1-1/2" WIDE IF WALL IS A SHEAR WALL IT MUST BE REPAIRED USING HARDY FRAME SADDLE (HFS).

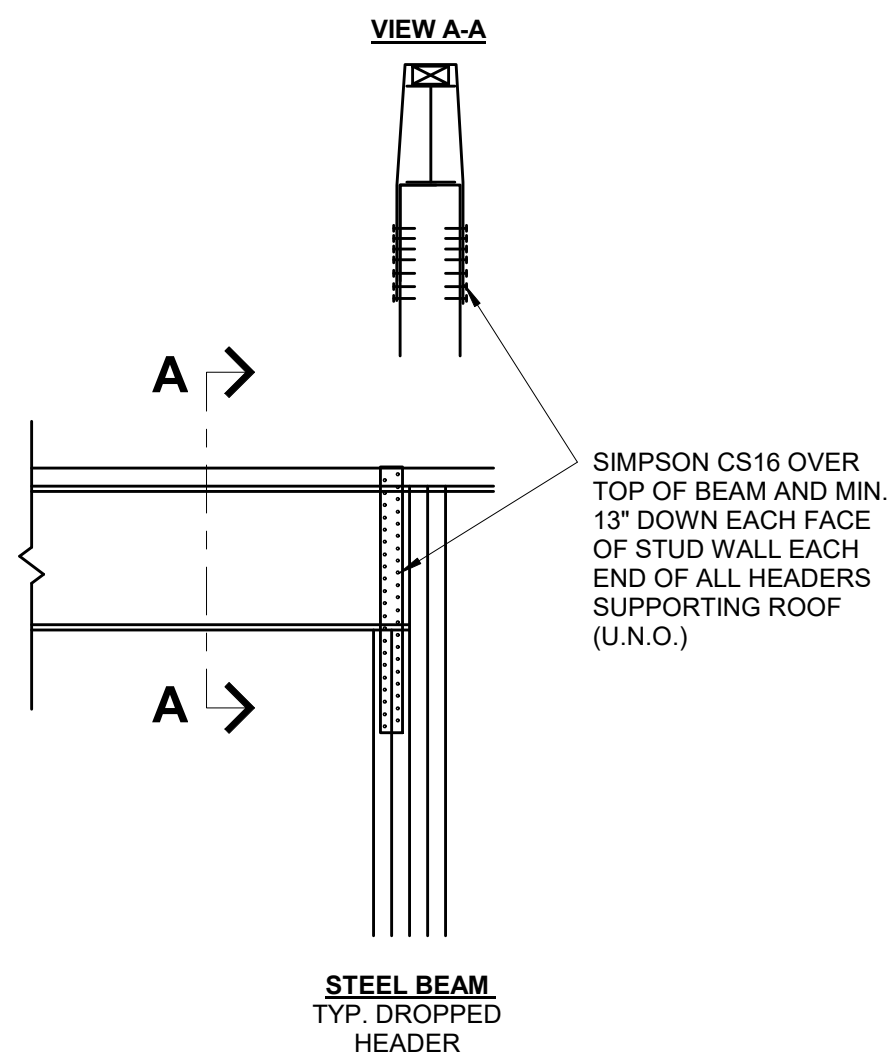
| WALL SIZE | HOLE SIZE |
|-----------|-----------|
| 2x4       | 1 3/4"    |
| 2x6       | 2 3/4"    |
| 2x8       | 3 5/8"    |

| VERTICAL HOLE SIZE (H) |
|------------------------|
| D+1/2" AT Lvl's 1&2    |
| D+1" AT Lvl 3          |
| D+1 1/4" AT Lvl 4      |
| D+1 1/2" AT Lvl 5      |

NOTE:  
SEE SECTION R602.6 AND FIGURES R602.6.1 AND R602.6.2

4 DRILLING & NOTCHING DETAIL

S3.1 3/4" = 1'-0"

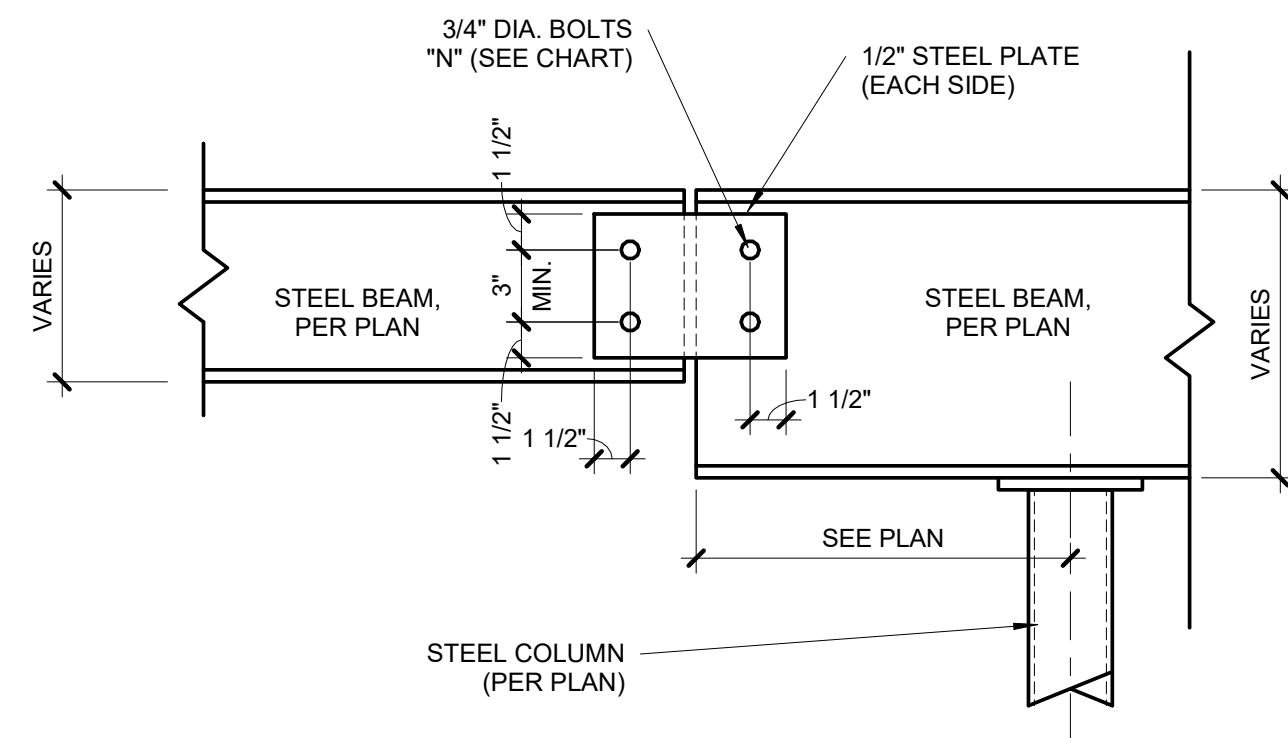


3 BEAM TO GIRDER CONNECTION

S3.1 1 1/2" = 1'-0"

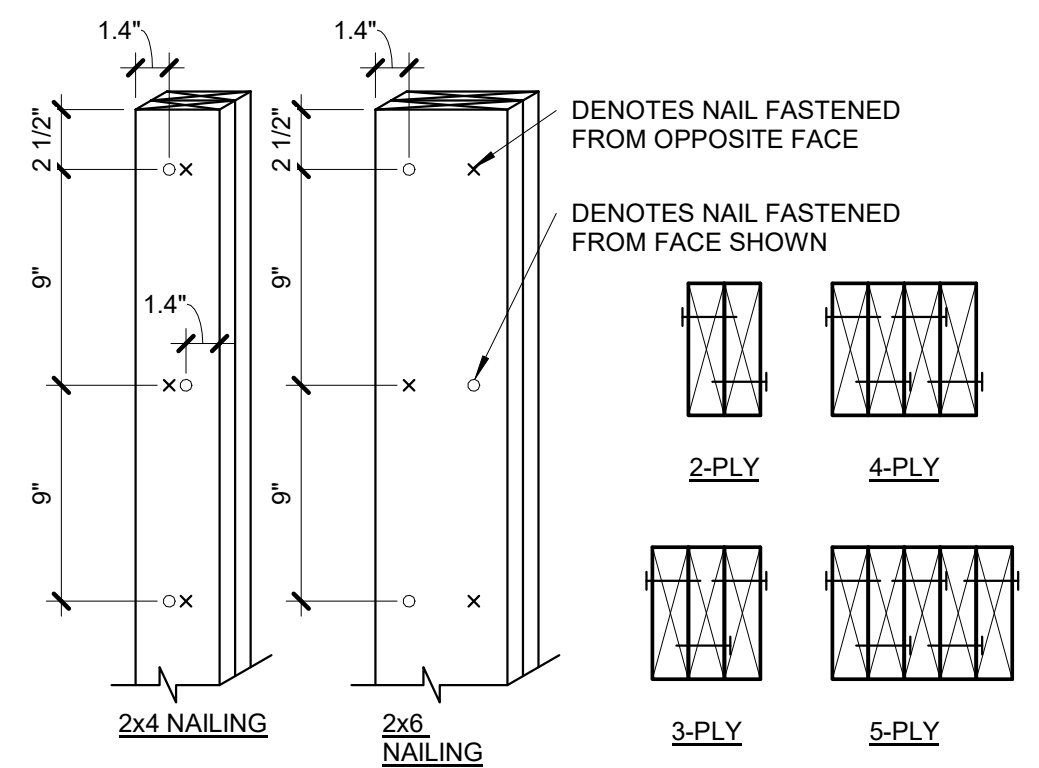
| BEAM CONNECTION SCHEDULE |                |                |
|--------------------------|----------------|----------------|
| BEAM SIZE                | # OF BOLTS "N" | # OF BOLTS "M" |
| W8, W10                  | 2              | 4              |
| W12, W14                 | 3              | 6              |
| W16, W18                 | 4              | 8              |

NOTES:  
1. THESE CONNECTIONS ARE TYPICAL, UNO.  
2. NUMBER OF BOLTS IN UPSET BEAM CONNECTIONS DETERMINED BY SMALLER OF TWO BEAMS AT CONNECTION.  
3. ALL AROUND 1/4" FILLET WELD MAY BE SUBSTITUTED FOR EITHER BOLTED CONNECTION.  
4. ALL BOLTS, 3/4" DIAMETER, A325-N, UNO.



2 BEAM SPLICE DETAIL

S3.1 1 1/2" = 1'-0"

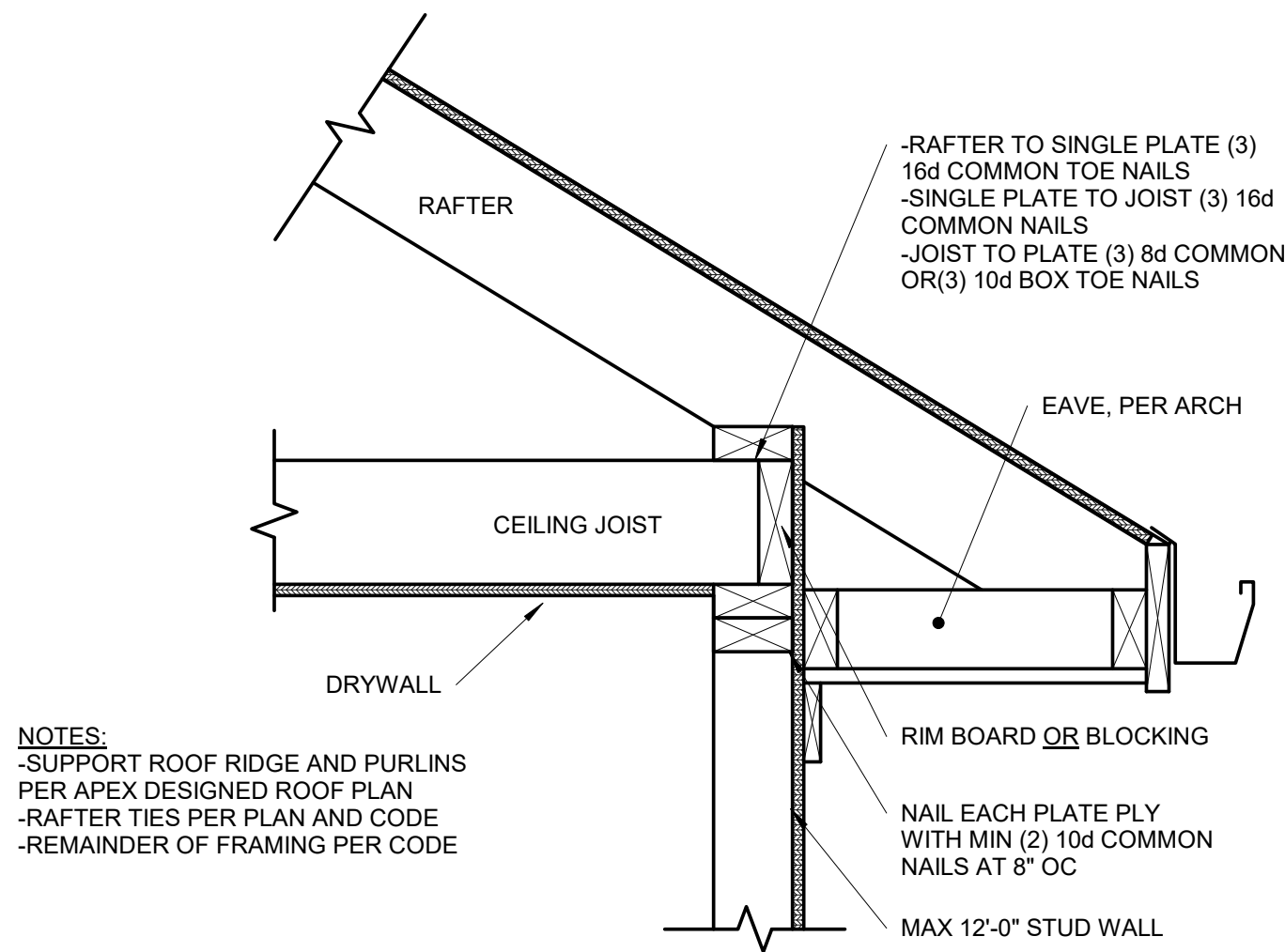


NOTES:  
1. EACH 2x PLY SHALL BE FASTENED WITH (1) ROW OF 10d NAILS AT 9" OC, ALTERNATING SIDE TO SIDE.  
2. 1.4" MIN EDGE DISTANCE, AND STARTING 2 1/2" FROM EACH END. EXTEND FULL AREA OF COLUMN AS SOLID BLOCKING THROUGH JOIST BAYS AND WALLS TO LOAD-BEARING BEAM/WALL BELOW.

1 BUILT-UP STUD COLUMN

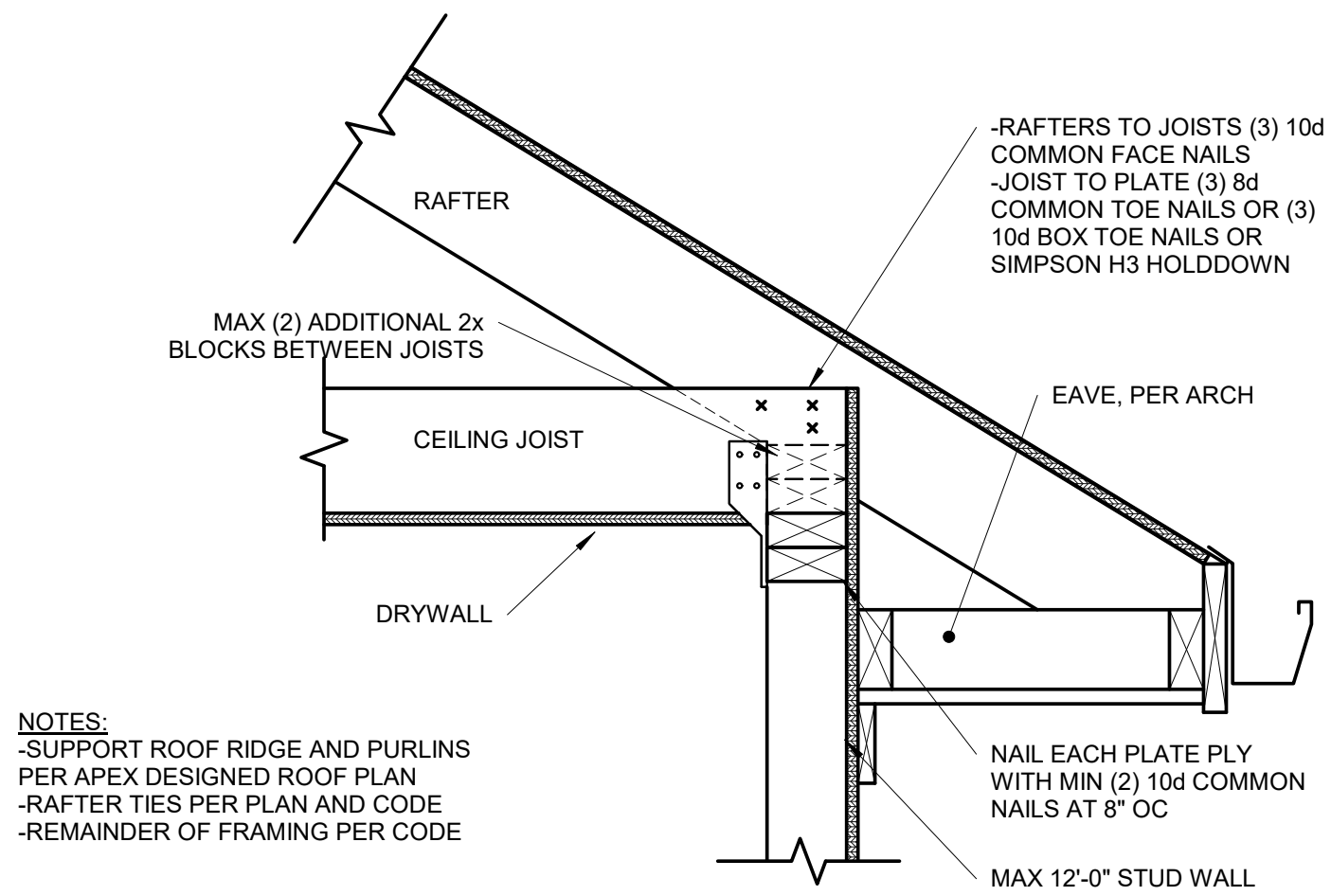
S3.1 1 1/2" = 1'-0"





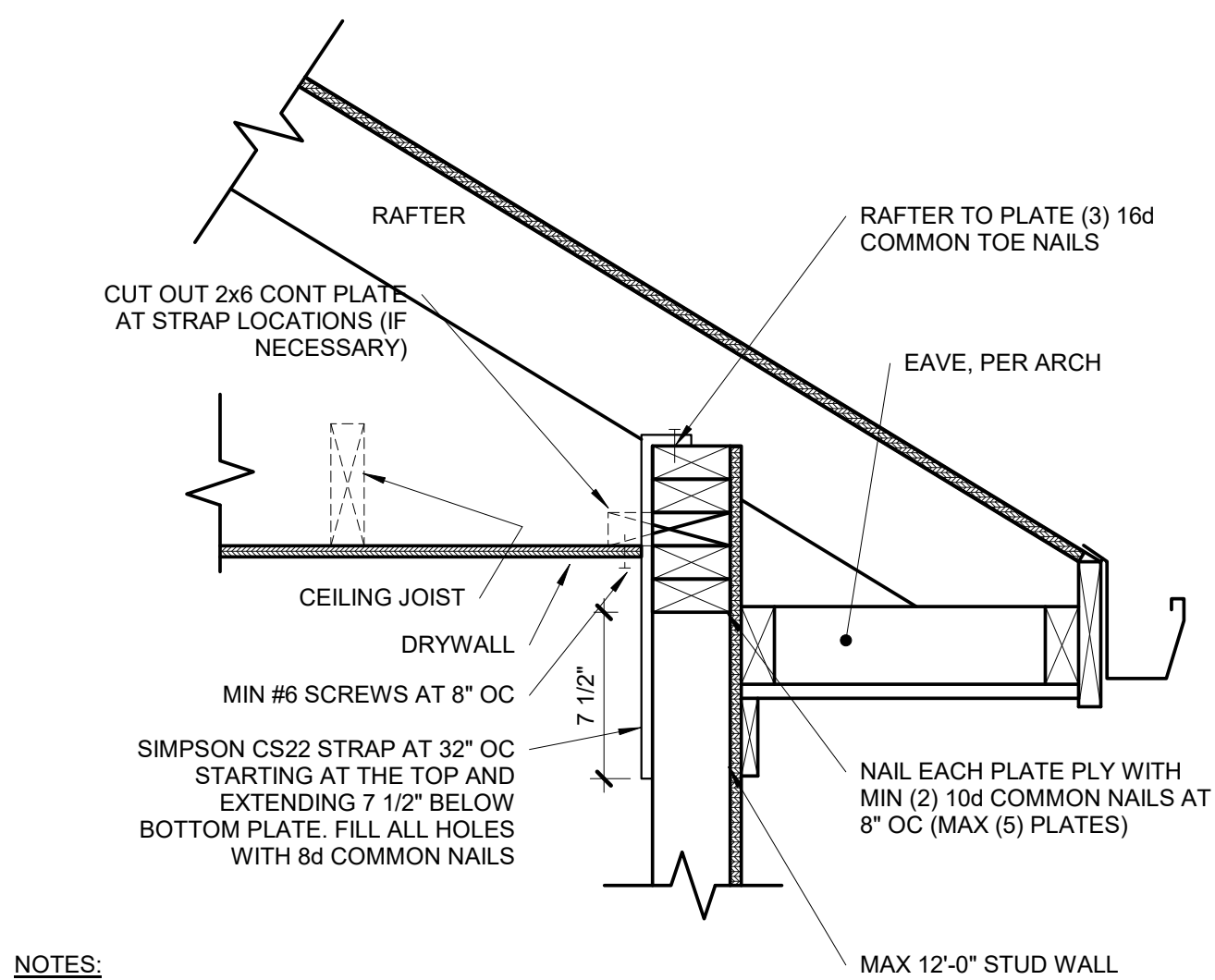
### 8 | OPTIONAL RAFTER BEARING

**S3.2** 1 1/2" = 1'-0"



### 7 | OPTIONAL RAFTER BEARING

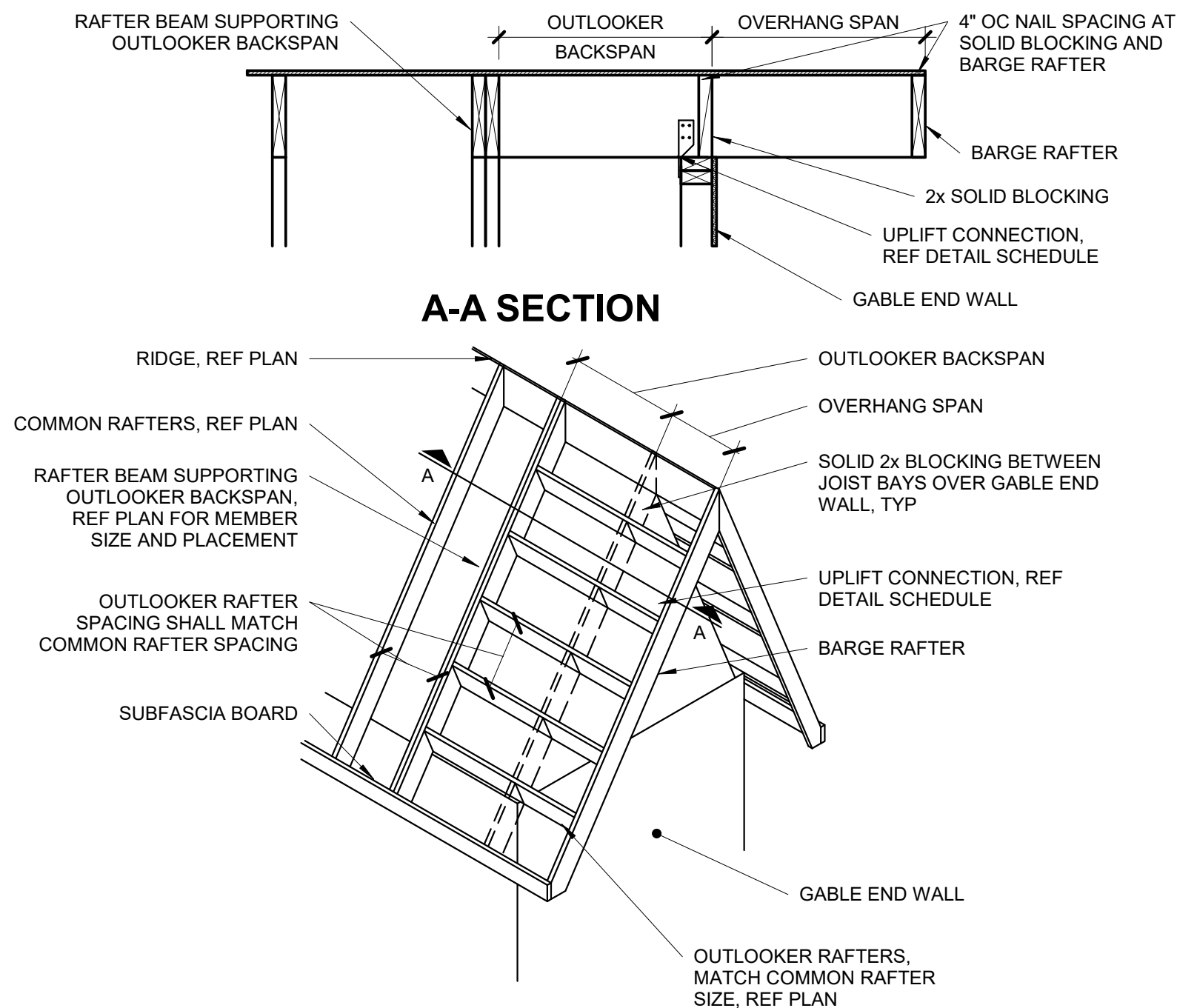
**S3.2** 1 1/2" = 1'-0"



### 6 | OPTIONAL RAFTER BEARING

**S3.2** 1 1/2" = 1'-0"

| UPLIFT CONNECTION SCHEDULE     |                  |               |               |
|--------------------------------|------------------|---------------|---------------|
| OVERHANG SPAN: 1'-1" TO 1'-9"  |                  |               |               |
| RAFTER SPACING                 | UPLIFT CONNECTOR | EXPOSURE B    | EXPOSURE C    |
| 12" OC                         | SIMPSON H2.5A    | (1) AT 24" OC | (1) AT 24" OC |
| 16" OC                         | SIMPSON H2.5A    | (1) AT 32" OC | (1) AT 16" OC |
| 24" OC                         | SIMPSON H2.5A    | (1) AT 24" OC | (1) AT 24" OC |
| OVERHANG SPAN: 1'-10" TO 2'-6" |                  |               |               |
| RAFTER SPACING                 | UPLIFT CONNECTOR | EXPOSURE B    | EXPOSURE C    |
| 12" OC                         | SIMPSON H2.5A    | (1) AT 12" OC | (1) AT 12" OC |
| 16" OC                         | SIMPSON H2.5A    | (1) AT 16" OC | (2) AT 16" OC |
| 24" OC                         | SIMPSON H2.5A    | (2) AT 24" OC | (2) AT 24" OC |
| OVERHANG SPAN: 2'-7" TO 3'-9"  |                  |               |               |
| RAFTER SPACING                 | UPLIFT CONNECTOR | EXPOSURE B    | EXPOSURE C    |
| 12" OC                         | SIMPSON H2.5A    | (2) AT 12" OC | (2) AT 12" OC |
| 16" OC                         | SIMPSON H2.5A    | (2) AT 16" OC | (2) AT 16" OC |
| 24" OC                         | SIMPSON H2.5A    | (2) AT 24" OC | N/A           |

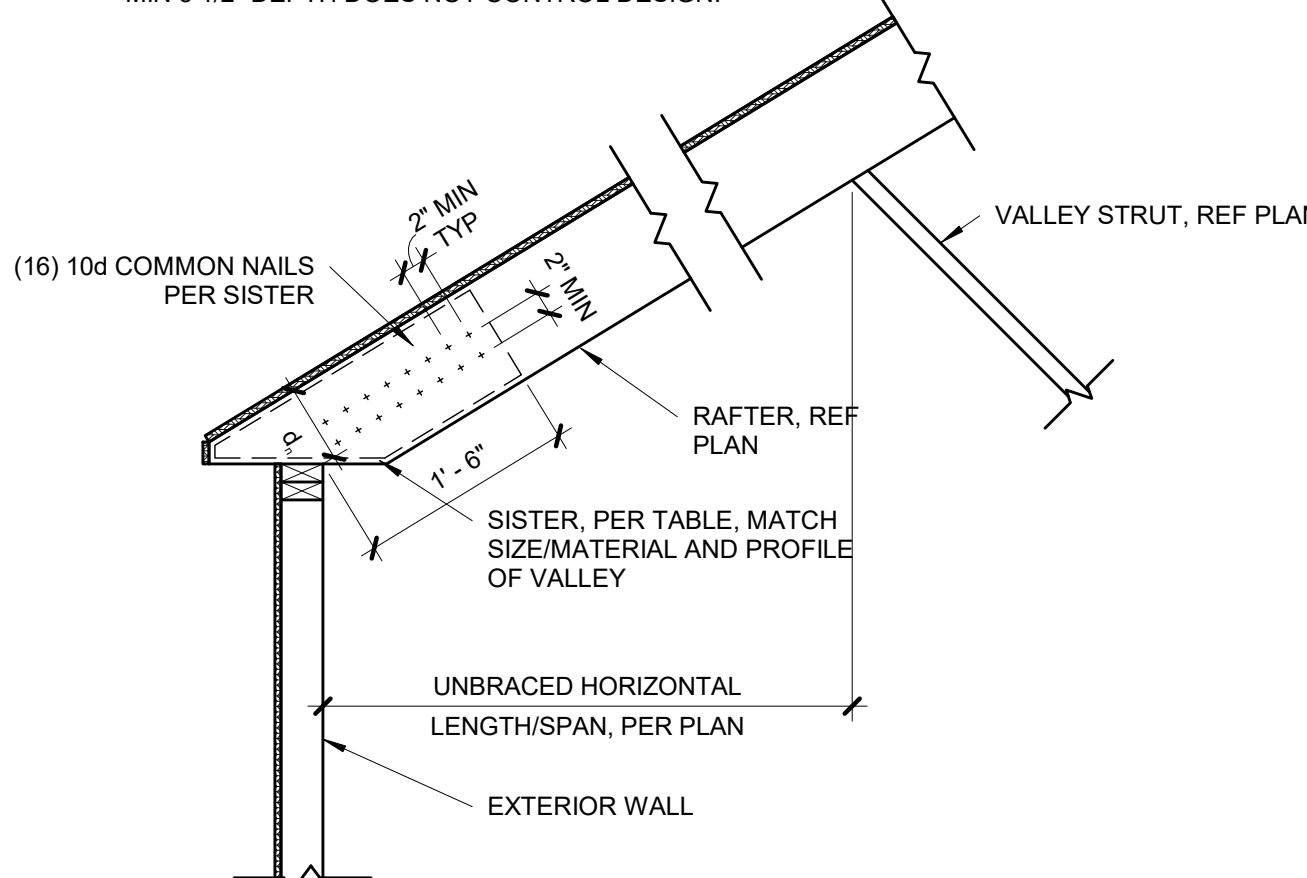


### 5 | OUTLOOKER RAFTERS ROOF FRAMING

**S3.2** NOT TO SCALE

| REQUIRED NUMBER OF SISTER PLIES |           |       |        |                   |            |        |
|---------------------------------|-----------|-------|--------|-------------------|------------|--------|
| LIGHT ROOF                      |           |       |        |                   |            |        |
| # OF SISTER PLIES               | 2x VALLEY |       |        | # OF SISTER PLIES | LVL VALLEY |        |
|                                 | 2x6       | 2x8   | 2x10   |                   | 2x6        | 2x8    |
| 0                               | 4'-8"     | 6'-2" | 7'-11" | 0                 | 8'-8"      | 11'-5" |
| 1                               | 9'-5"     | *     | *      | 1                 | *          | *      |
| 2                               | *         | N/A   | N/A    | 2                 | N/A        | N/A    |
| HEAVY ROOF                      |           |       |        |                   |            |        |
| # OF SISTER PLIES               | 2x VALLEY |       |        | # OF SISTER PLIES | LVL VALLEY |        |
|                                 | 2x6       | 2x8   | 2x10   |                   | 2x6        | 2x8    |
| 0                               | 3'-6"     | 4'-7" | 5'-11" | 0                 | 6'-8"      | 8'-7"  |
| 1                               | 7'-1"     | 9'-3" | *      | 1                 | 13'-1"     | *      |
| 2                               | *         | N/A   | N/A    | 2                 | *          | N/A    |

- \*VALLEYS OF A LENGTH GREATER THAN THAT FOUND IN THE CELL ABOVE ARE CONTROLLED BY BENDING. APPLY THE NUMBER OF SISTER PLIES CORRESPONDING TO THIS ROW.
- THIS TABLE IS INTENDED TO BE USED IN CONJUNCTION WITH THE STAMPED, ENGINEERED PLANS AS THEY ARE DRAWN BY APEX. BRACING LOCATIONS SHALL DETERMINE HORIZONTAL UNSUPPORTED SPAN FROM VALLEY BEARING AND BE USED TO DETERMINE THE NUMBER OF SISTERS REQUIRED. BRACING LOCATIONS ARE **NOT** TO BE INFERRED USING THIS TABLE.
  - TABLE VALUES ARE BASED ON A DEPTH OF MEMBER REMAINING, *d*, EQUAL TO THE DEPTH OF THE RAFTERS. IF *d* IS OBSERVED TO BE LESS THAN THE DEPTH OF THE RAFTER, THE VALLEY WILL NEED TO BE EITHER REPLACED OR ANALYZED BY APEX.
  - TABLE VALUES ARE VALID FOR TAPERED CUTS ONLY, REF DETAIL 4/53.2
  - IF MULTI-PLY VALLEY IS SPECIFIED ON PLAN TREAT EACH ADDITIONAL PLY AS A SISTER PLY WHEN LOOKING UP MAX SPAN.
  - MAX 14'-0" HORIZONTAL RAFTER SPAN IN BOTH DIRECTIONS FROM VALLEY.
  - ALL HIPs ARE DESIGNED TO BE CONTROLLED BY BENDING. SHEAR AT BEARING WITH MIN 5 1/2" DEPTH DOES NOT CONTROL DESIGN.

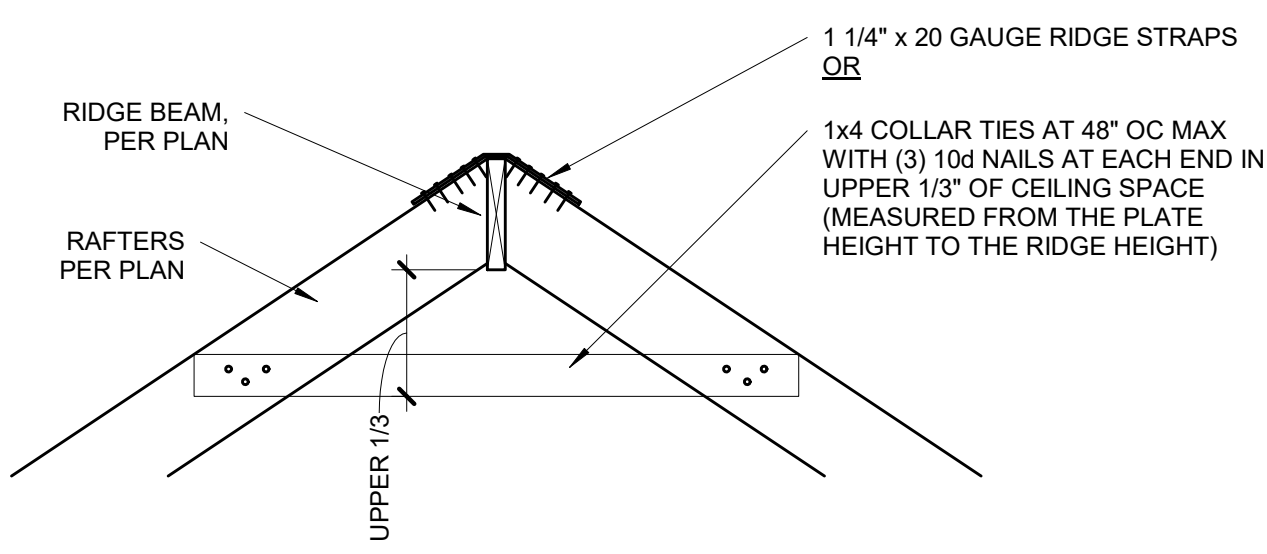


### 4 | TAPERED VALLEY

**S3.2** 3/4" = 1'-0"

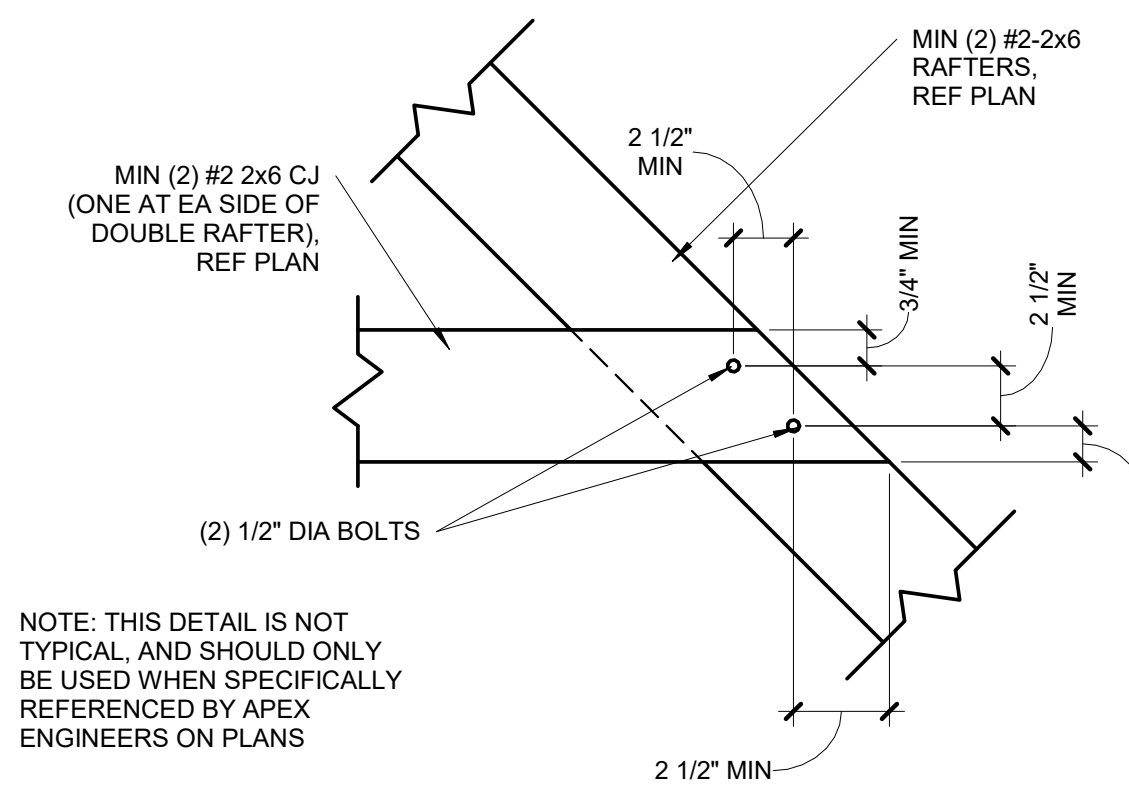
| OVERHANG SPAN  | MIN BACKSPAN LENGTH  |
|----------------|----------------------|
| ≤1'-0"         | 1'-0"                |
| 1'-1" to 2'-0" | EQUALS OVERHANG SPAN |
| ≥2'-1"         | OVERHANG SPAN x2     |

**NOTES:**  
 -CHART IS ONLY APPLICABLE IF NO RAFTER BEAM SHOWN ON PLAN.  
 -CONTACT EOR IF OVERHANG LENGTH EXCEEDS CHART OPTIONS.



### 3 | RIDGE BEAM DETAIL

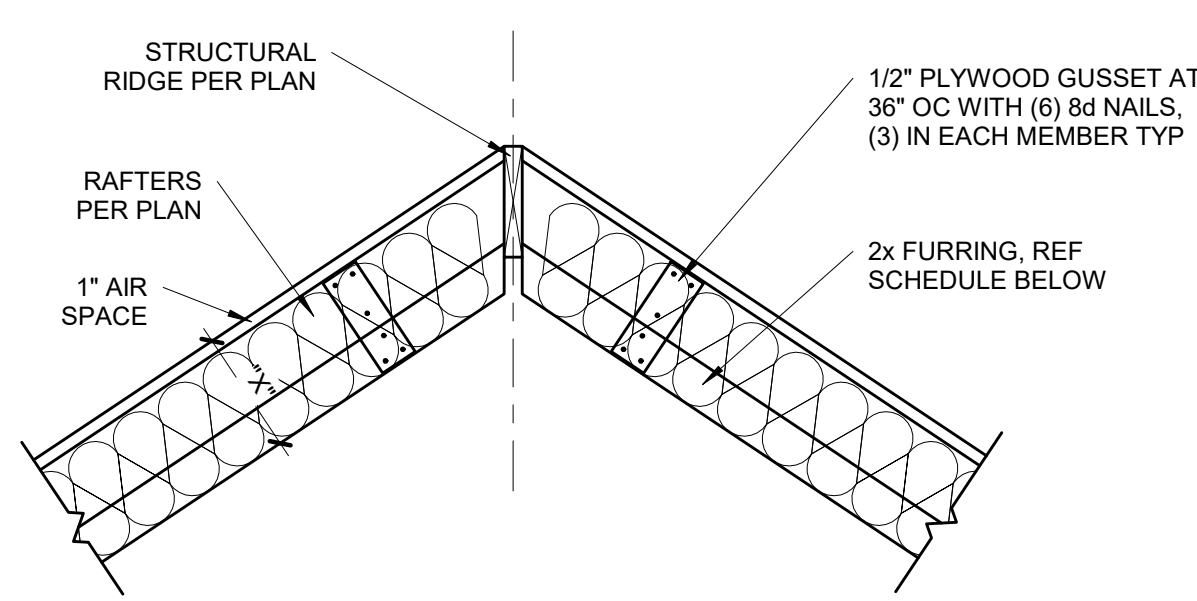
**S3.2** 3/4" = 1'-0"



**NOTE:** THIS DETAIL IS NOT TYPICAL, AND SHOULD ONLY BE USED WHEN SPECIFICALLY REFERENCED BY APEX ENGINEERS ON PLANS

### 2 | BOLTED RAFTER HIP CONNECTION

**S3.2** 1 1/2" = 1'-0"

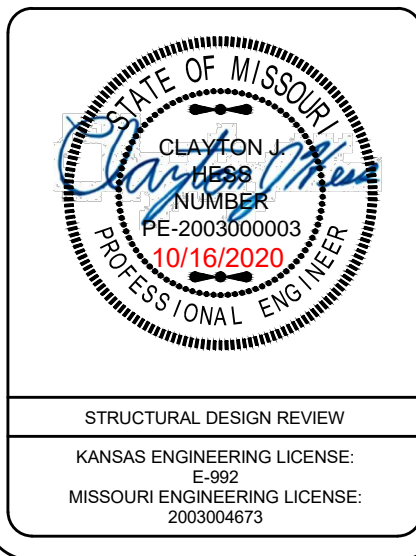


| FURR OUT SCHEDULE |                             |                              |
|-------------------|-----------------------------|------------------------------|
| RAFTER SIZE       | R-30C INSULATION (X=9 1/4") | R-38C INSULATION (X=11 1/4") |
| 2x6               | 2x6                         |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

**NOTES:**  
 1. ALL VAULTED RAFTERS SHALL BE #2-2x6 DF-L, MINIMUM, AT 16" OC, PER SPAN CHART, UNLESS NOTED OTHERWISE.  
 2. ALL VAULTS SHALL BE FURRED DOWN WITH 2x FRAMING TO THE REQUIRED DEPTH OF INSULATION, PLUS 1" AIR SPACE.  
 3. R-30C INSULATION = 8 1/4" THICK  
 4. R-38C INSULATION = 10 1/4" THICK  
 5. INSULATION REQUIREMENTS MAY BE REDUCED TO R30 IF ROOF/CEILING ASSEMBLY DOES NOT ALLOW SUFFICIENT SPACE BUT IS LIMITED TO VAULTED CEILING AREAS THAT ARE LESS THAN 500 SQUARE FEET OR 20 PERCENT OF THE TOTAL INSULATED CEILING AREA, WHICHEVER IS LESS. (PER N1102.2.2)

### 1 | VAULTED RAFTER INSULATION FURR OUT

**S3.2** 3/4" = 1'-0"

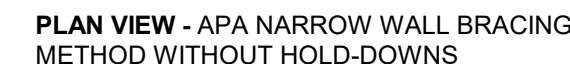
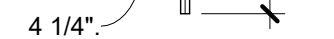


PROJECT: LOT 4 WHISPERING WOODS  
 LEE'S SUMMIT, MO  
 CLIENT: NEW MARK HOMES LLC

|                 |  |            |  |  |  |  |  |  |  |
|-----------------|--|------------|--|--|--|--|--|--|--|
| PROJECT #:      |  | 39471      |  |  |  |  |  |  |  |
| DRAWN BY:       |  | XXX        |  |  |  |  |  |  |  |
| CHECKED BY:     |  | BDC        |  |  |  |  |  |  |  |
| SUBMITTAL DATE: |  | 2020.10.16 |  |  |  |  |  |  |  |
| COMMENTS        |  |            |  |  |  |  |  |  |  |
|                 |  |            |  |  |  |  |  |  |  |
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|                 |  |            |  |  |  |  |  |  |  |
| DATE            |  |            |  |  |  |  |  |  |  |
| #               |  |            |  |  |  |  |  |  |  |

SHEET: FRAMING DETAILS  
**S3.2**





**S4.0**  
ALT

**||||| INTERIOR BRACED WALLS (REF 2/S4.0):**  
GB METHOD:  
1/2" MIN GYPSUM BOARD OVER STUDS SPACED 24" MAX FASTENED WITH #6 - 1 1/4" TYPE "W" OR "S" DRYWALL SCREWS AT 7" OC EDGES AND FIELD (MIN. 4'-0" SECTION FOR BOTH SIDES.)  
OR  
LIB METHOD:  
1x4 WOOD FASTENED WITH (3) 8d COMMON NAILS OR SIMPSON / USP 16 GA TYPE WB (OR EQUAL) STL X-BRACE(S) AT 45° TO 60° ANGLES, MAXIMUM 16" OC STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.



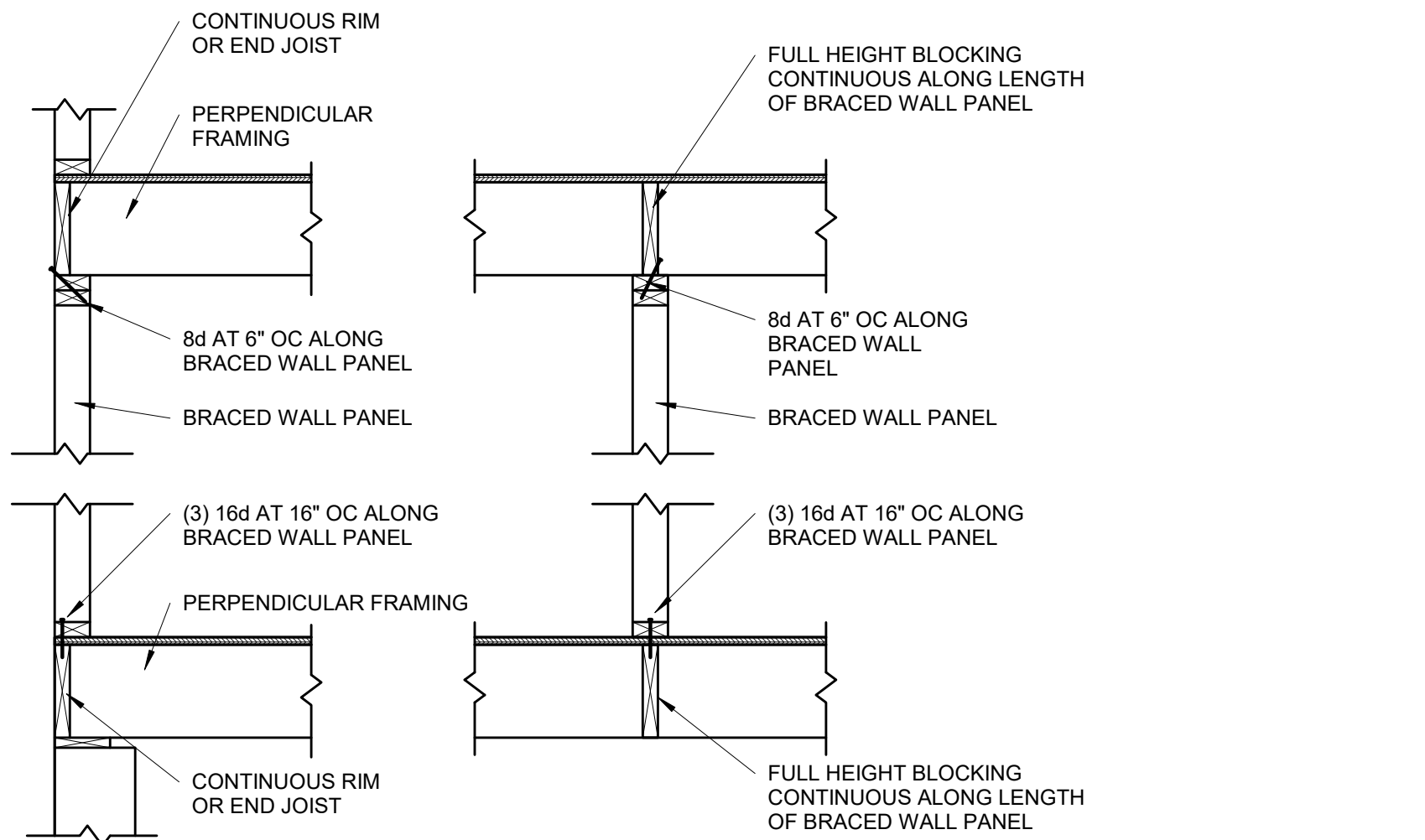
GB

NOTE: BRACED WALL PANEL LENGTHS BASED ON WALL HEIGHT FOR IRC, LIB



|             |                |
|-------------|----------------|
| <b>S4.0</b> | $3/4" = 1'-0"$ |
|-------------|----------------|

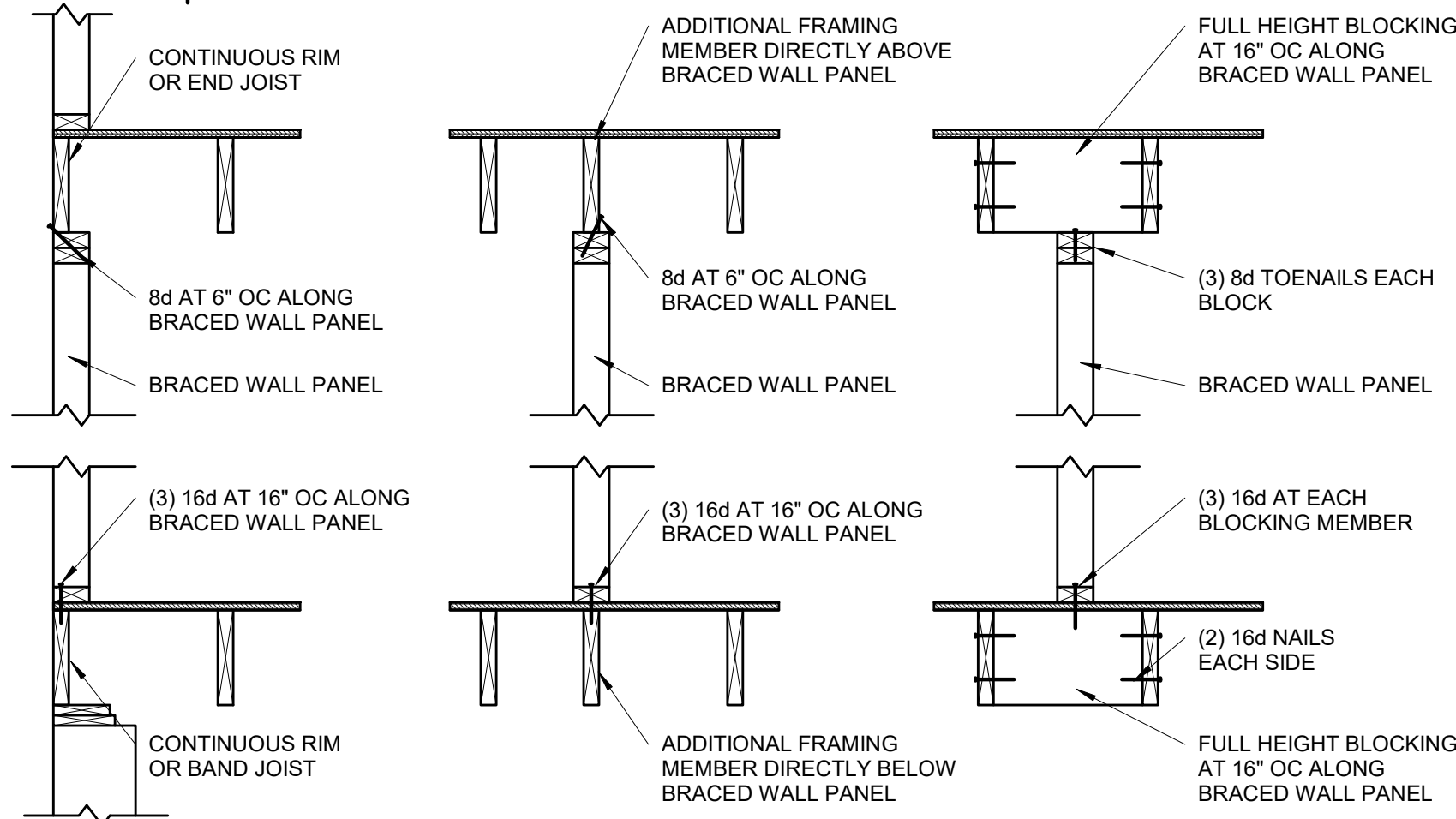




**BRACED WALL PANEL  
CONNECTION WHEN  
PERPENDICULAR TO  
FLOOR/CEILING FRAMING**

**S4.1**

3/4" = 1'-0"

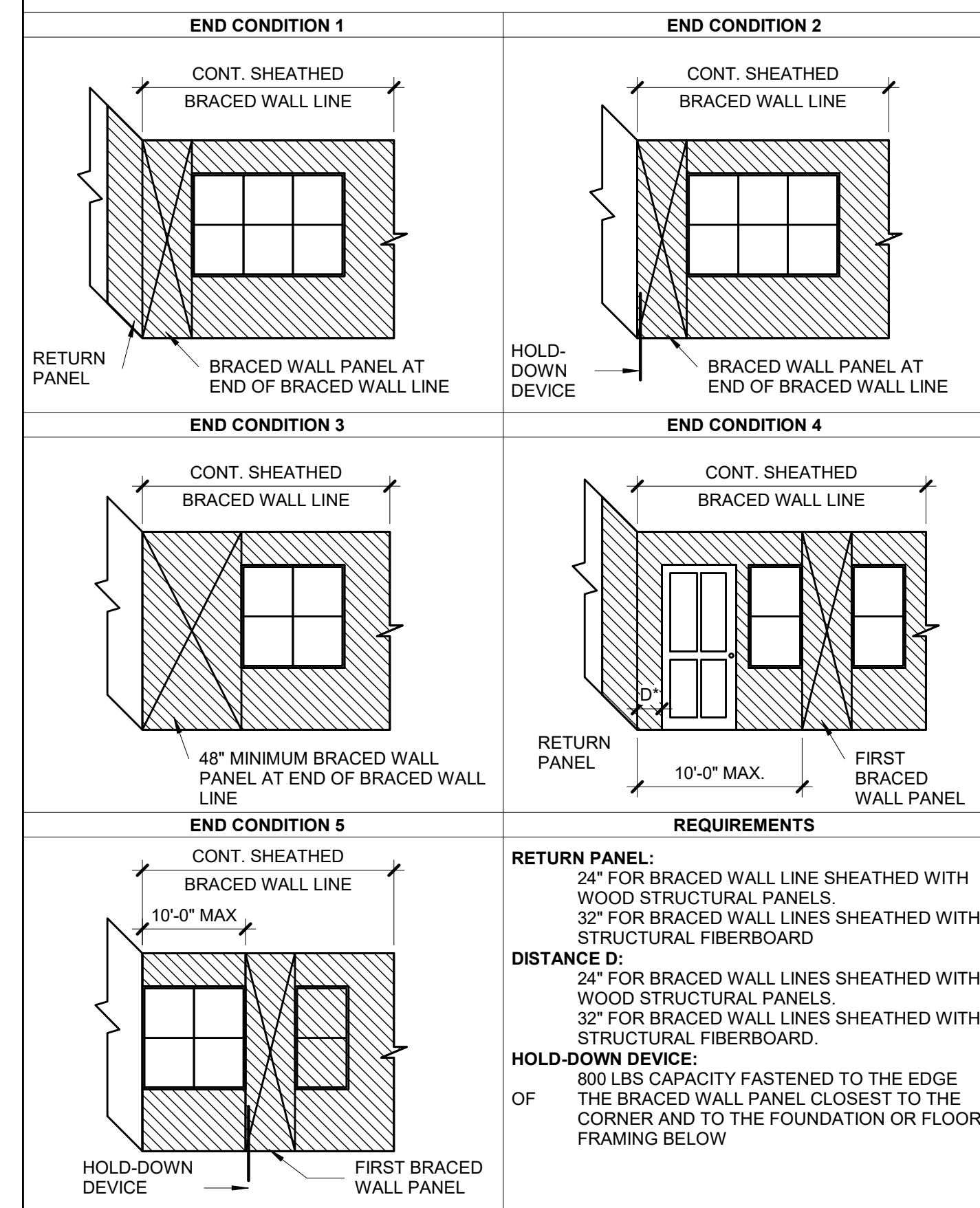


**BRACED WALL PANEL  
CONNECTION WHEN PARALLEL  
TO FLOOR/CEILING FRAMING**

**S4.1**

3/4" = 1'-0"

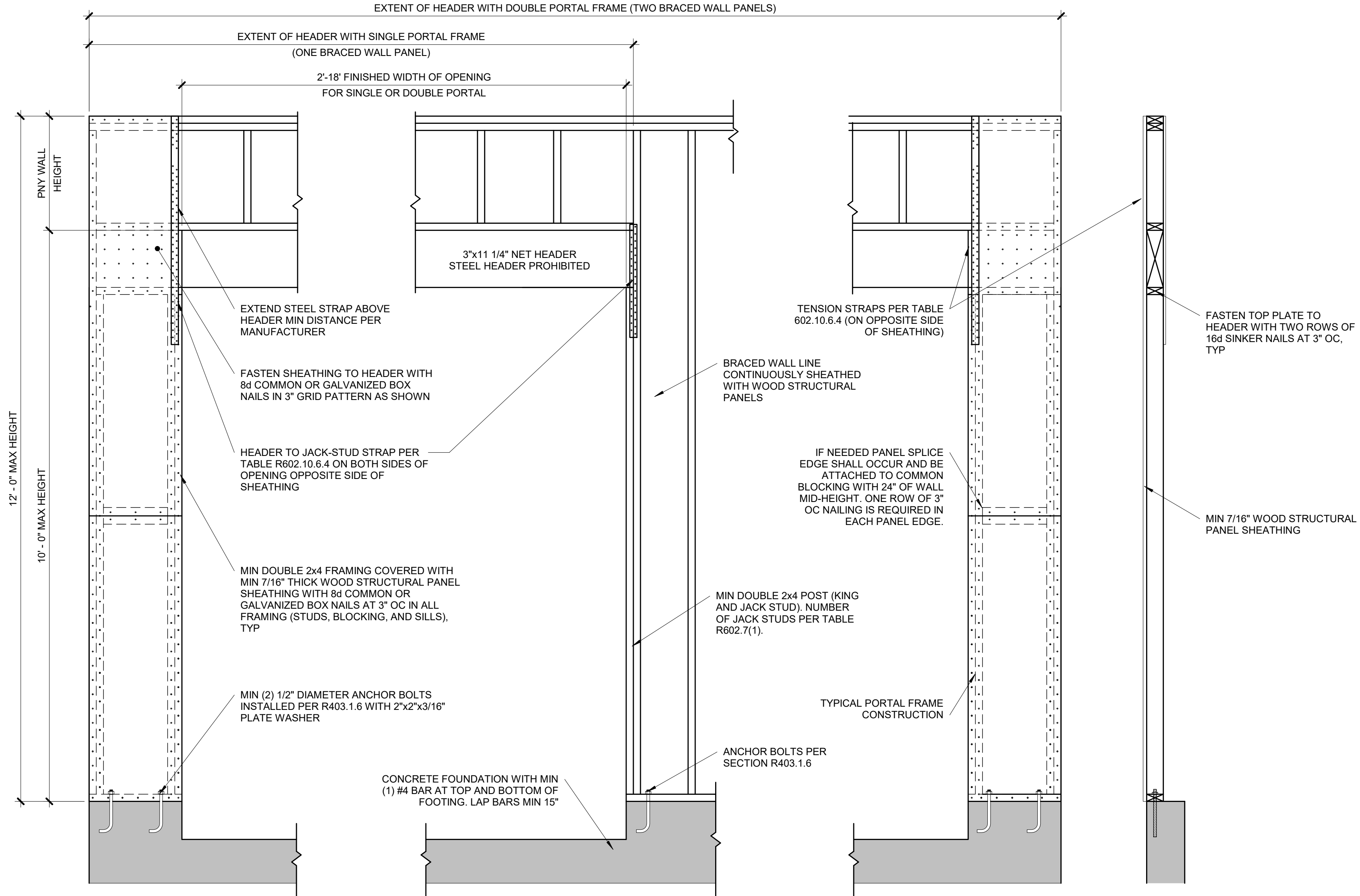
**CONT. SHEATHED BRACED WALL END CONDITIONS**



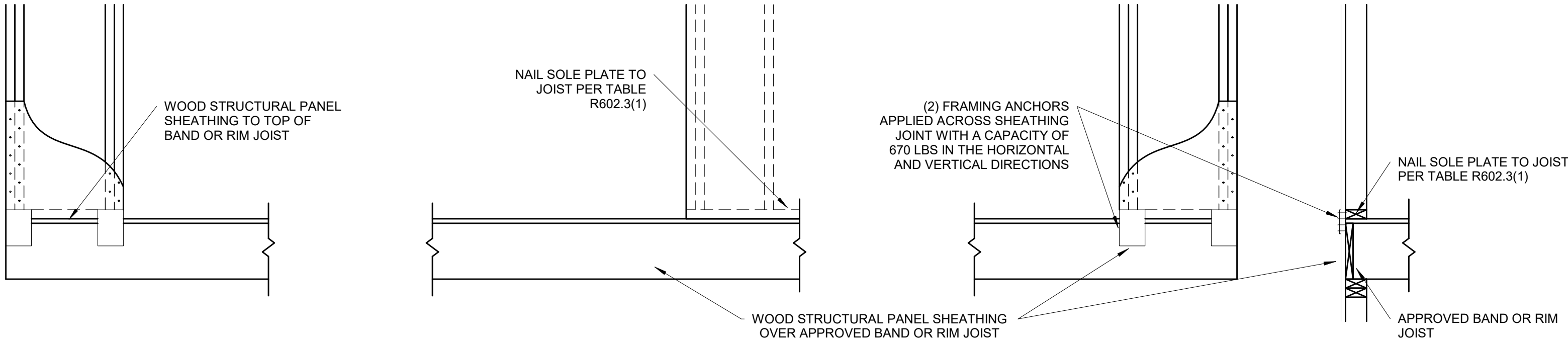
**CONTINUOUS SHEATHED BRACED  
WALL END CONDITIONS**

**S4.1**

NOT TO SCALE (COMPLIANCE WITH IRC R602.10.7)

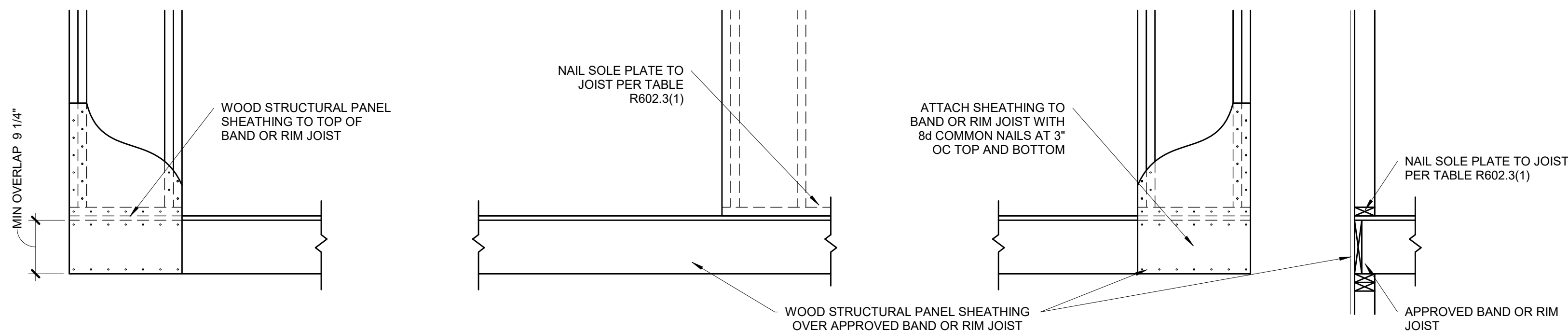


**OVER CONCRETE OR MASONRY BLOCK FOUNDATION**



**OVER RAISE WOOD FLOOR - FRAMING ANCHOR OPTION**

(WHEN PORTAL SHEATHING DOES NOT LAP OVER BAND OR RIM JOIST)



**OVER RAISE WOOD FLOOR - OVERLAP OPTION**

(WHEN PORTAL SHEATHING LAPS OVER BAND OR RIMBOARD)

**BRACED WALL PANEL-IRC  
METHOD CS-PF CONTINUOUSLY  
SHEATHED PORTAL FRAME  
PANEL CONSTRUCTION**

**S4.1**

3/4" = 1'-0"

(PER IRC R602.10.6.4)