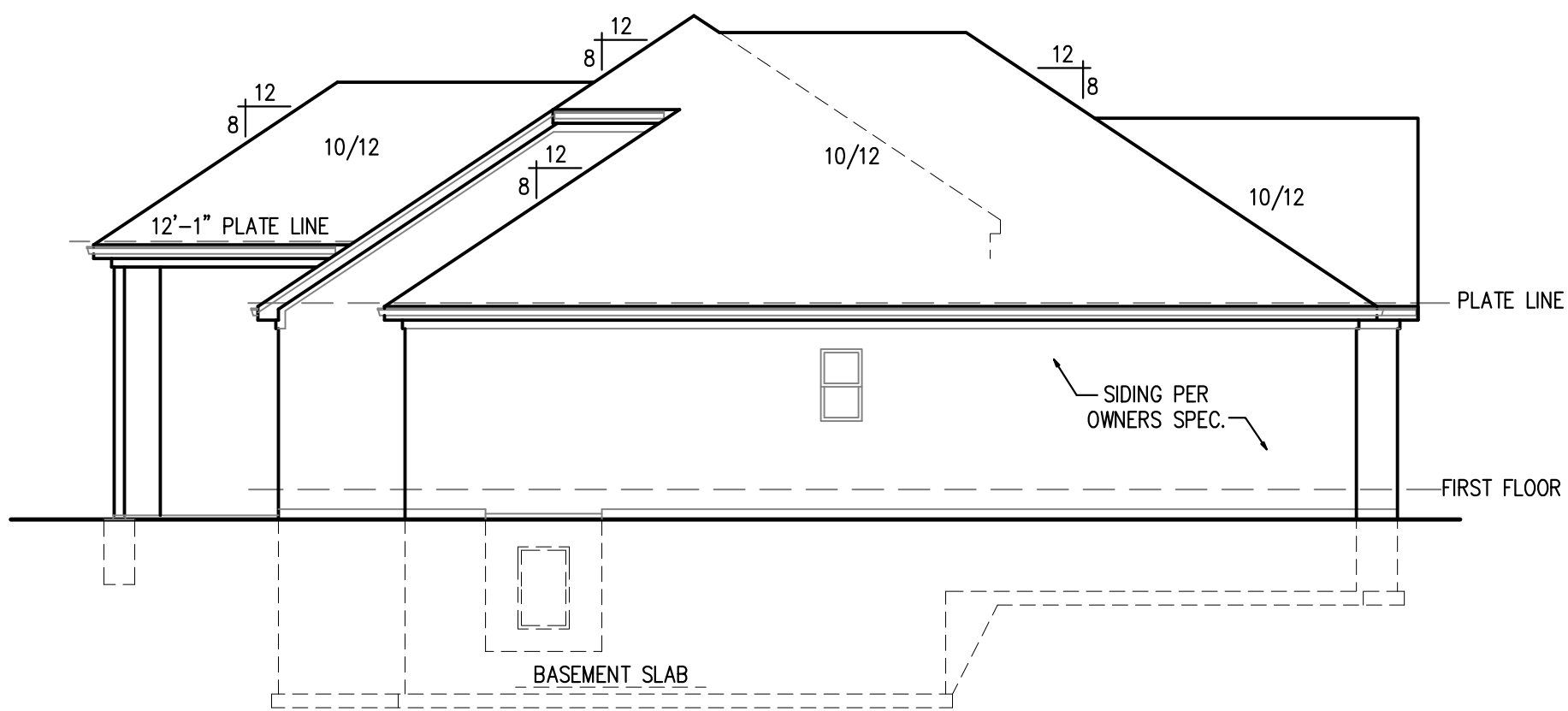
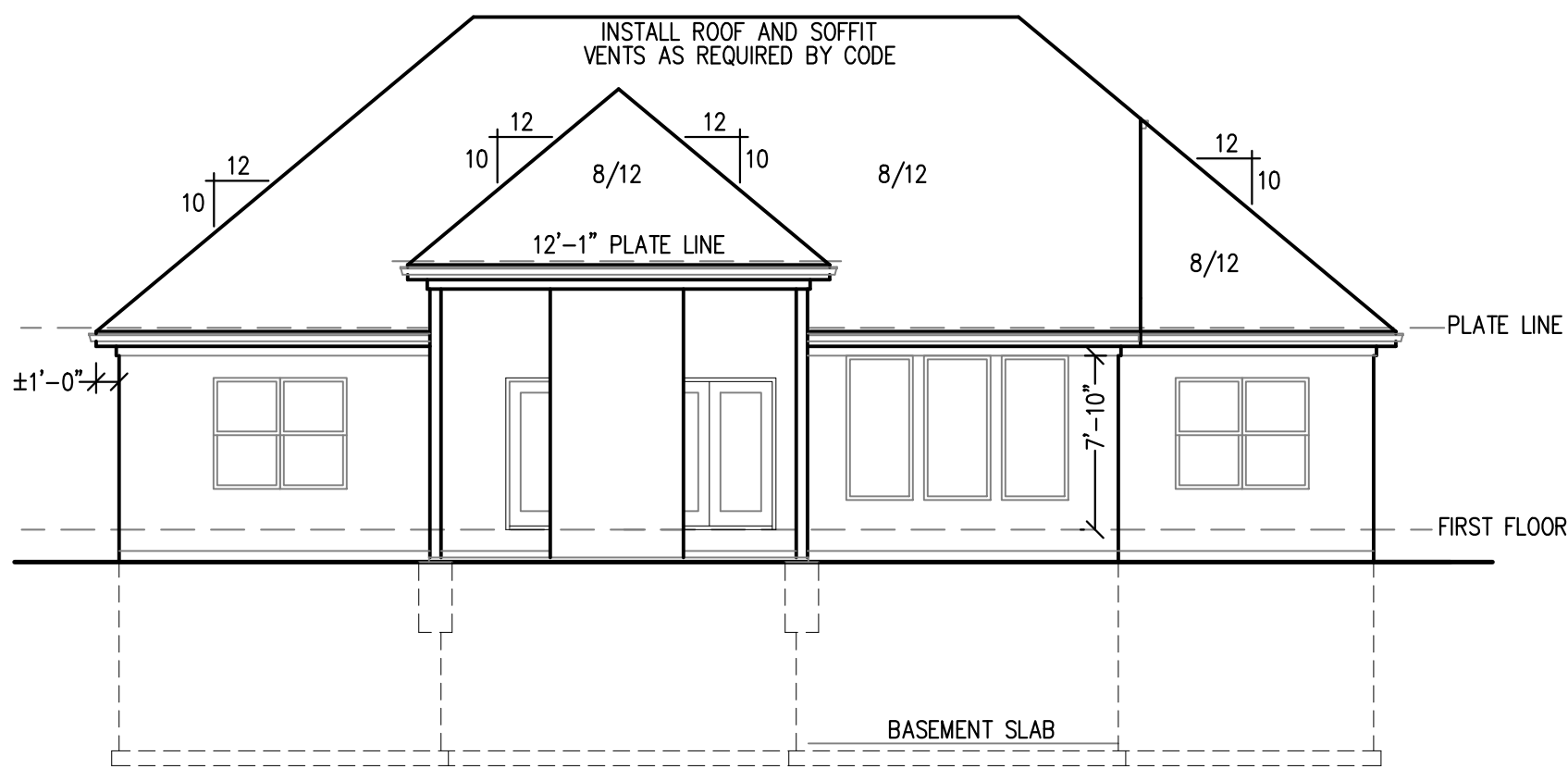


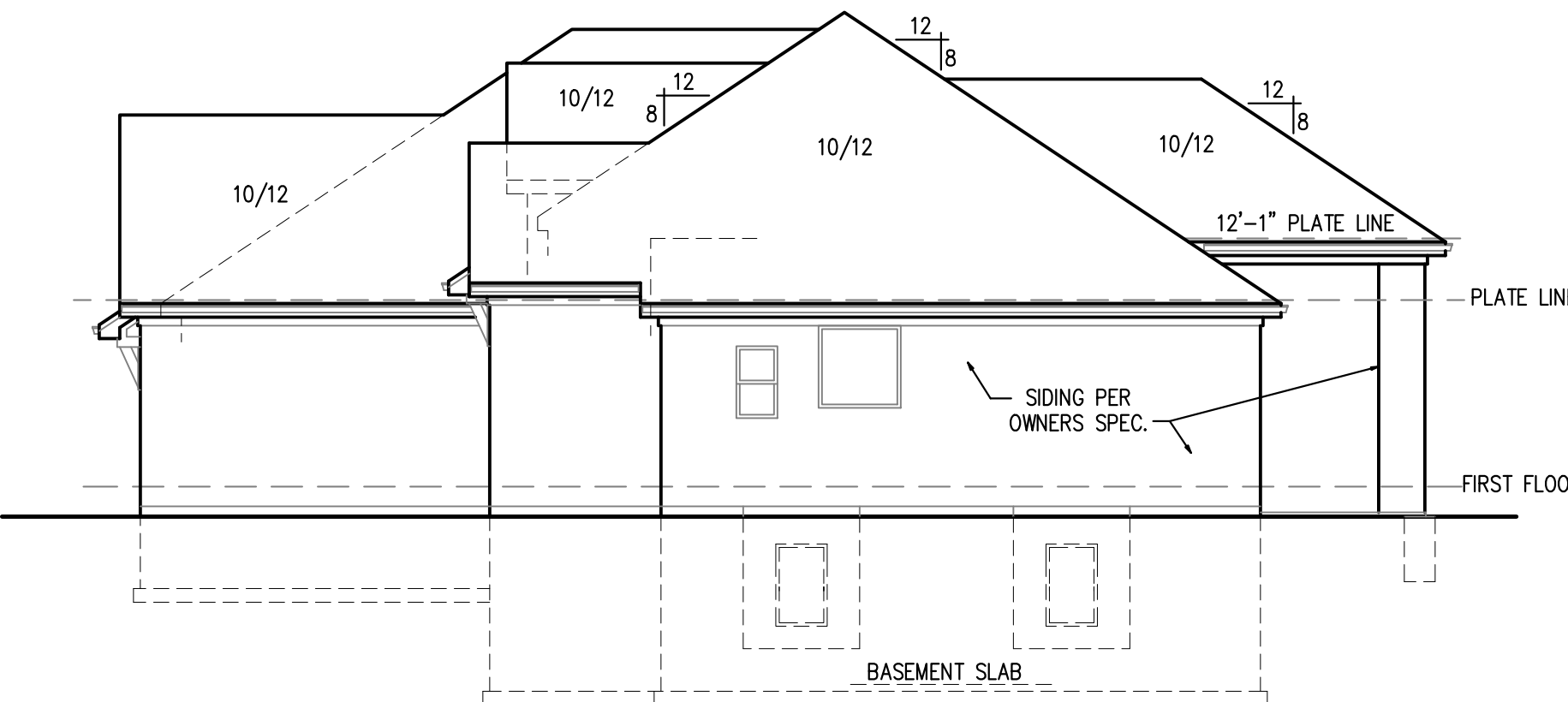
RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
06/12/2023 4:28:54



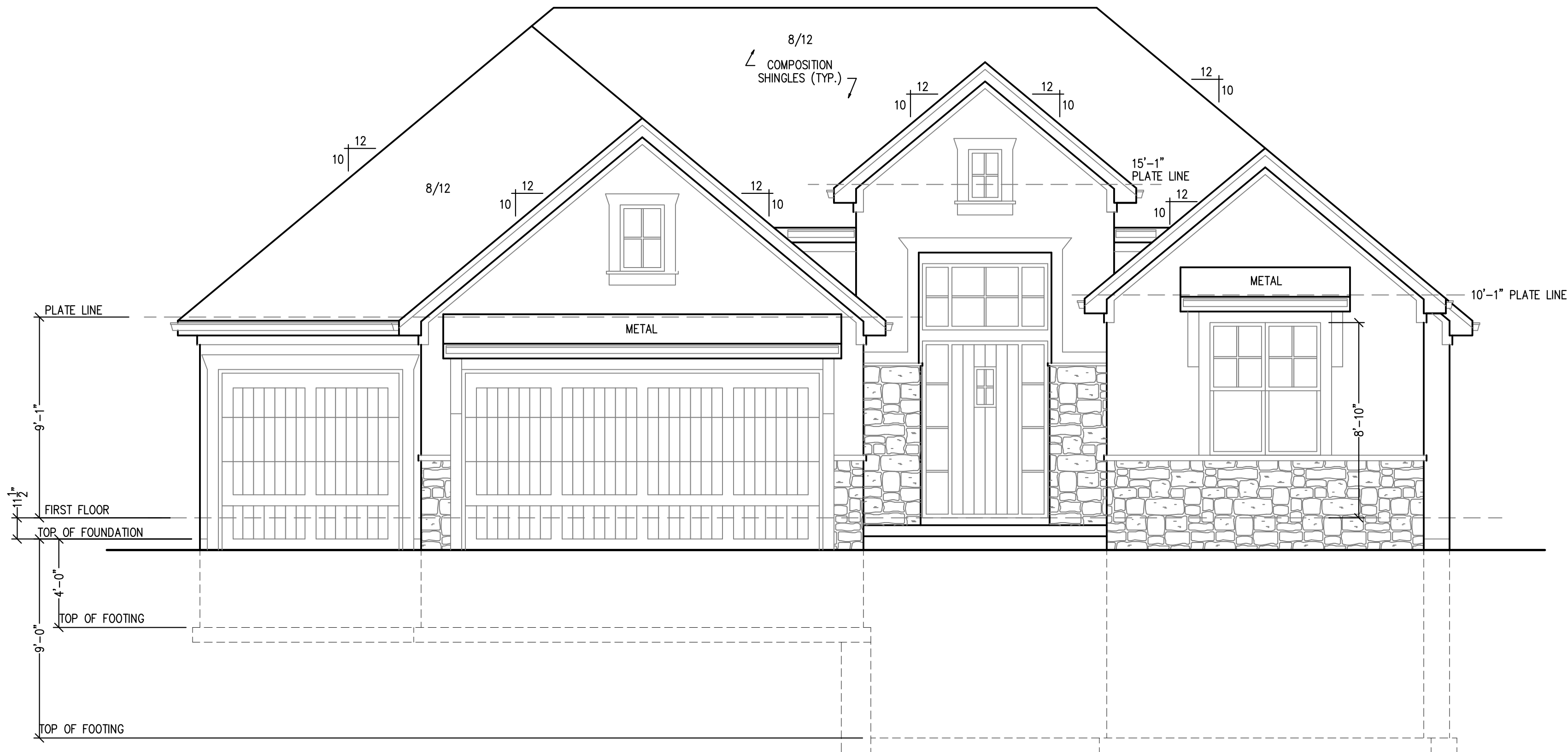
LEFT ELEVATION
SCALE: 1/8" = 1'-0"



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



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



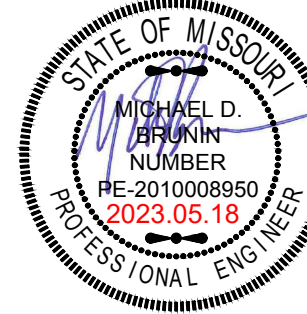
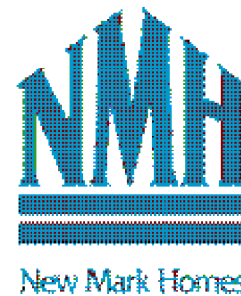
FRONT ELEVATION
SCALE: 1/4" = 1'-0"

| | |
|-------------|---------------|
| FIRST FLOOR | 1,756 SQ. FT. |
| LOWER LEVEL | 970 SQ. FT. |
| TOTAL | 2,726 SQ. FT. |
| GARAGE | 644 SQ. FT. |
| UNFINISHED | 594 SQ. FT. |
| PATIO | 200 SQ. FT. |

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

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816.421.3222

STRUCTURAL DESIGN REVIEW
KANSAS ENGINEERING LICENSE:
992
MISSOURI ENGINEERING LICENSE:
2003004673

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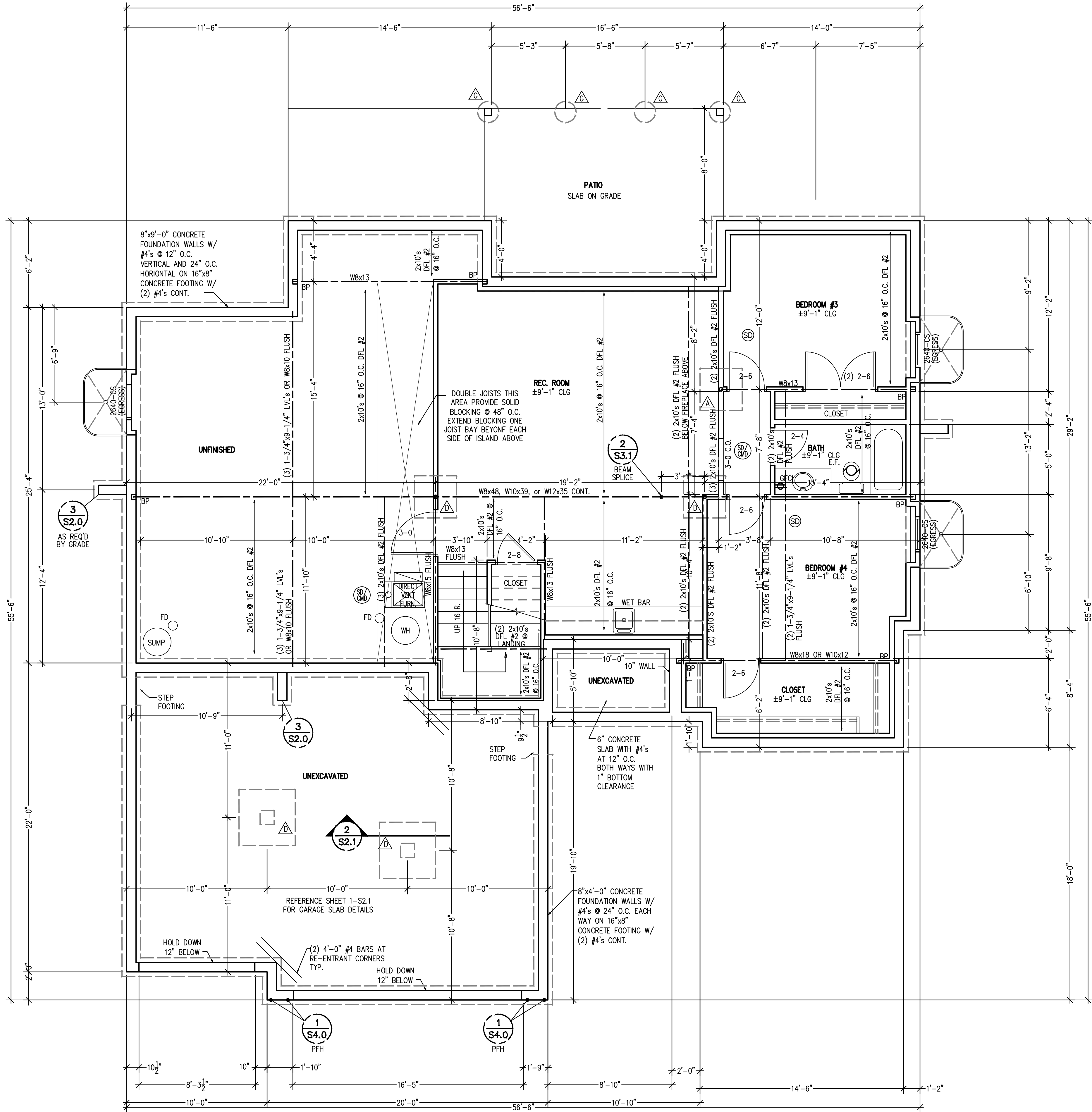
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DATE:5/18/2023

A1

PROJ. 23-330



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

STRUCTURAL NOTES:
- ALL UNMARKED HEADERS MIN (2)#2-2x10
- ALL HEADERS AND BEAMS MIN #2 GRADE DFL (OR EQ.)
- [Symbol] = BEARING WALL
- STRUCTURE NOTED AS FLUSH TO BE FLUSH WITH SUB-FLOOR ABOVE.
BRACED WALL METHODOLOGY
CONTINUOUS EXTERIOR SHEATHING PER WSP METHOD (BELOW) UNLESS OTHERWISE NOTED ON THE PLAN
XXXX EXTERIOR BRACED WALLS:
WSP METHOD: WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH MINIMUM SPAN RATING OF 24/0 FOR 16" OC STUD SPACING WITH 6d COMMON NAILS AT 6" OC EDGES AND 12" OC FIELD OR SHEATHING THICKNESS NOT LESS THAN 7/8" WITH MINIMUM SPAN RATING OF 24/6 FOR 24" OC SPACING WITH 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN FIELD.
(NOTE: FRAMING MEMBERS 16" OC MAX, UNLOCKED, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS)

//// INTERIOR BRACED WALLS (REF 2-S4.0):
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 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" O.C. STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.

| COLUMN & PIER PAD SCHEDULE (REF. 5/S2.0) | | | |
|--|-----------------|------------------|-----------------------|
| COLUMN MARK | PAD SIZE | REINFORCEMENT | COLUMN SIZE |
| [Symbol] | 30" x 30" x 12" | (4) #4 BAR E.W. | 3" SCH 40 (3.5" OD) |
| [Symbol] | 36" x 36" x 12" | (4) #4 BAR E.W. | 3" SCH 40 (3.5" OD) |
| [Symbol] | 42" x 42" x 12" | (5) #4 BAR E.W. | 3" SCH 40 (3.5" OD) |
| [Symbol] | 48" x 48" x 12" | (6) #4 BAR E.W. | 3 1/2" SCH 40 (4" OD) |
| [Symbol] | 54" x 54" x 16" | (8) #4 BAR E.W. | REF PLAN |
| [Symbol] | 60" x 60" x 16" | (10) #4 BAR E.W. | REF PLAN |

- COLUMN & PAD SIZES SHOWN ARE FOR MAXIMUM ADJUSTABLE COLUMN HEIGHT OF 9'-1". REQUIRES SEPARATE ENGR'D DESIGN IF GREATER THAN 9'-1" TALL. COLUMNS SIZED AS QWIK-ADJUST COLUMN, BY QUALITY WAY PRODUCTS, LLC. REFER TO SAFE LOADING CAPACITIES PER MANUF. SPECS, OR SUBSTITUTION TO ANOTHER PRODUCT ONLY WITH PRIOR APPROVAL BY APEX ENGINEERS.
- COLUMN & PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 2,000PSF.

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

- 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.
- PIERS SHALL EXTEND BELOW THE FROST LINE, MIN. DEPTH OF 36" BELOW GRADE.
- POST SHALL BE TREATED OR CEDAR WITH SIMPSON ABU66 POST BASE

DETAIL REFERENCES

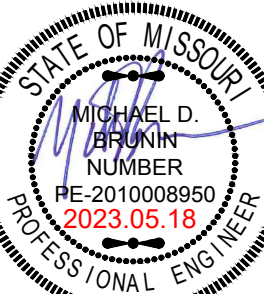
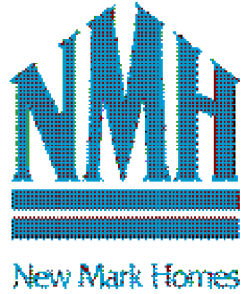
- | | | | |
|-----------------|---|-----------------|--|
| [Symbol] 1 S2.0 | TYPICAL FOUNDATION WALL DETAIL | [Symbol] 2 S2.1 | STRUCTURAL GARAGE SLAB PIER PAD DETAIL |
| [Symbol] 2 S2.0 | TYPICAL "UNRESTRAINED" FOUNDATION WALL DETAIL | [Symbol] 3 S2.1 | STRUCTURAL GARAGE SLAB / WALL SECTION |
| [Symbol] 3 S2.0 | TYPICAL DEAD MAN DETAIL | [Symbol] 6 S2.1 | TYPICAL OVERDIG DETAIL AT BASEMENT SLAB |
| [Symbol] 4 S2.0 | FOUNDATION WALL JUMP DETAIL | [Symbol] 1 S4.0 | ALTERNATE BRACED WALL PANEL DETAIL |
| [Symbol] 5 S2.0 | COLUMN PAD DETAIL | [Symbol] 1 S4.0 | APA NARROW WALL BRACING METHOD WITHOUT HOLD-DOWNS ALT. |
| [Symbol] 1 S2.1 | TYPICAL STRUCTURAL GARAGE SLAB PLAN | [Symbol] | COLUMN AND PIER PAD SCHEDULE (SHEET S2.0) |

EXPANSIVE SOILS DISCLAIMER:
THESE PLANS HAVE BEEN PREPARED BASED ON A PRESUMPTIVE ALLOWABLE BEARING CAPACITY AS ALLOWED BY IRC CODE AND THE LOCAL ENFORCING JURISDICTION.
APEX ENGINEERS, INC. (APEX) RECOMMENDS THAT ALL FOOTING EXCAVATIONS BE EVALUATED BY A LICENSED GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF ANY FOUNDATION ELEMENTS. GEOTECHNICAL INVESTIGATION AND/OR TESTING IS NOT A SERVICE PROVIDED OR OFFERED BY APEX.
APEX HAS NOT BEEN RETAINED TO DETERMINE THE EXPANSIVE SOIL CHARACTERISTICS OF THE SUBGRADE SOIL AND THEREFORE CANNOT BE HELD RESPONSIBLE FOR THE VOLUMETRIC CHANGES OF THE SOIL (INCLUDING BELOW THE BASEMENT SLAB), BY USE OF THESE PLANS WITHOUT AN ACCOMPANYING GEOTECHNICAL ENGINEERING REPORT. APEX SHALL NOT BE HELD LIABLE FOR ANY FUTURE MOVEMENT AND/OR DIFFERENTIAL MOVEMENT OF THE PROPOSED STRUCTURE AND THE POSSIBLE DAMAGE THAT MAY BE CAUSED AS A RESULT OF SUCH MOVEMENT. DAMAGE FROM EXPANSIVE SOILS AND/OR SETTLEMENT CAN RESULT IN AMONGST OTHER THINGS, THE FOLLOWING: BASEMENT SLAB HEAVE, SHEETROCK CRACKS, WINDOWS AND DOOR BECOMING OUT OF PLUMB AND STICKING AND/OR NOT OPENING, DAMAGE TO TILE, MOULDING, AND OTHER COSMETIC FINISHES.

ALL WINDOWS SIZES ARE EXPRESSED IN FEET AND INCHES TO THE UNIT SIZE. ALL ARE COMPLAINT TO FALL PROTECTION AS REQUIRE BY IRC

NOTE:
PLANS DESIGNED PER IRC AS ADOPTED BY GOVERNING JURISDICTION

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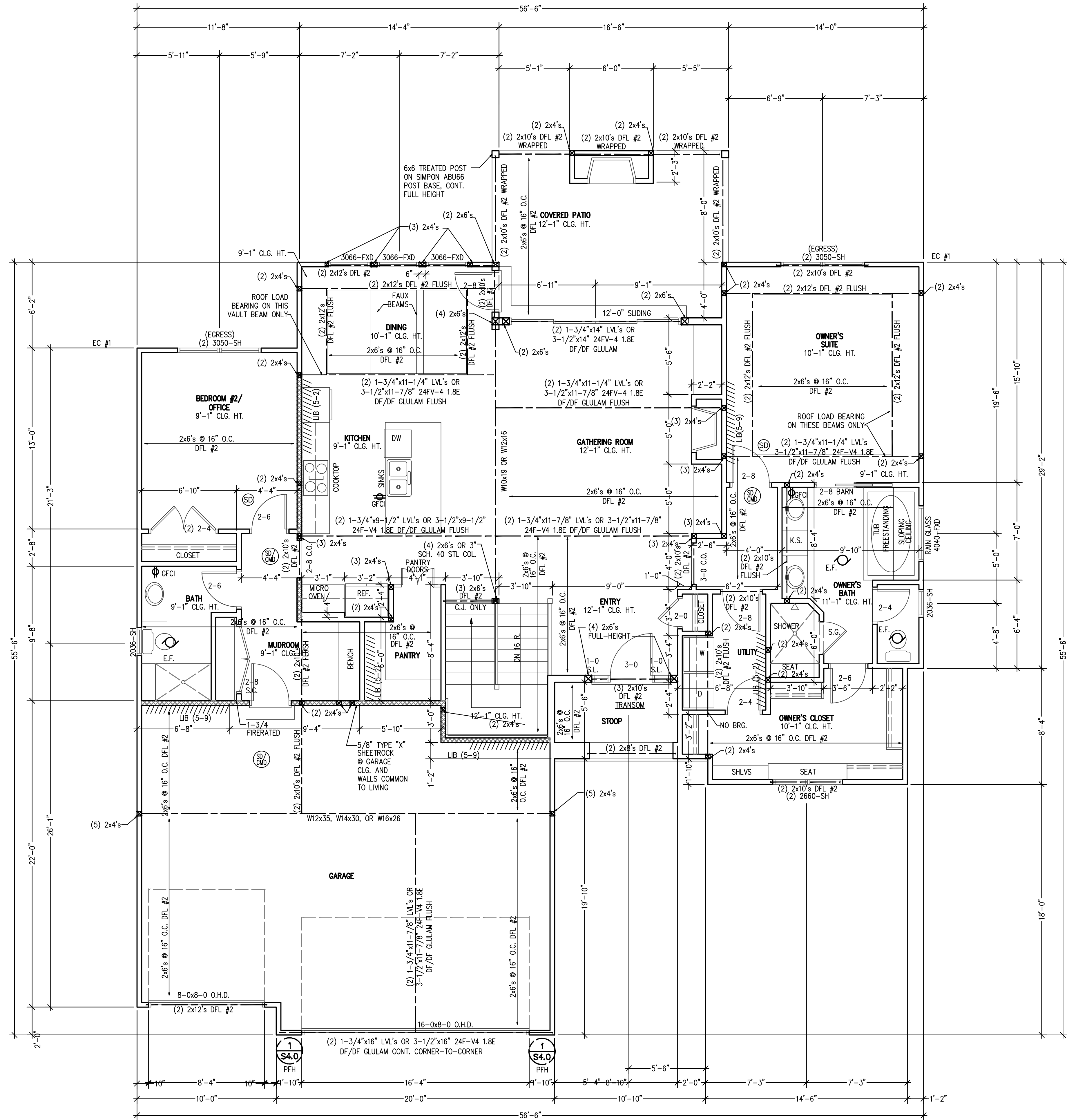
APEX ENGINEERS, INC.
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816.421.3222
STRUCTURAL DESIGN REVIEW
KANSAS ENGINEERING LICENSE: 992
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A2



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

NOTE:
PLANS DESIGNED PER IRC AS
ADOPTED BY GOVERNING JURISDICTION

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

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

XXXX EXTERIOR BRACED WALLS:

WSP METHOD: WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN
3/4" WITH MINIMUM SPAN RATING OF 24/0 FOR 16" OC STUD SPACING WITH 6d
COMMON NAILS AT 6" OC EDGES AND 12" OC FIELD OR SHEATHING
THICKNESS NOT LESS THAN 7/16" WITH MINIMUM SPAN RATING OF 24/0 FOR 24"
OC SPACING WITH 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN FIELD.
(NOTE: FRAMING MEMBERS 16" OC MAX UNBLOCKED, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING
MEMBERS)

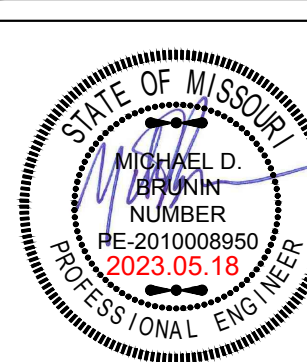
//// INTERIOR BRACED WALLS (REF 2-S4.0):

GB METHOD: 1/2" MIN. GYPSUM BOARD OVER STUDS SPACED 24" MAX. FASTENED WITH
No 6 - 1 1/2" 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"
O.C. STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.

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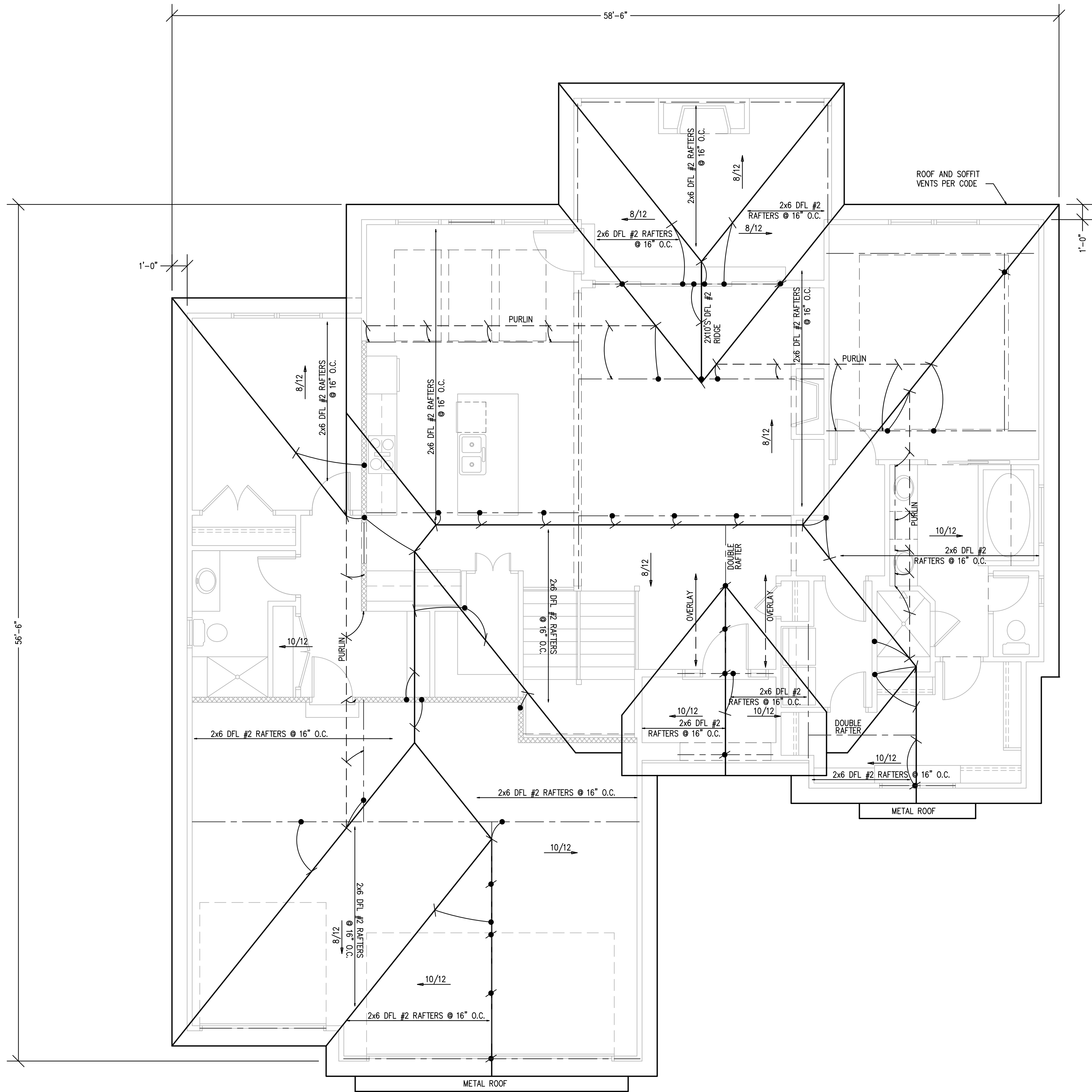
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A3

PROJ. 23-330



ROOF PLAN

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

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

ROOF FRAMING NOTES

ROOF DESIGNED FOR LIGHT ROOF COVERING
30psf 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'-9" |
| #2-2x8 | AT 24" OC | 11'-3" |
| #2-2x8 | AT 16" OC | 12'-9" |
| #2-2x10 | AT 24" OC | 14'-3" |
| #2-2x10 | AT 16" OC | 16'-3" |

APEX ENGINEERS, INC. RECOMMENDED
DEFLECTION = L/360 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

*2-2x10 HIP/VALLEY, MAX CLEAR SPAN: 11'-11"

*2-2x12 HIP VALLEY, MAX HORIZ. CLEAR SPAN: 12'-11"

*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 "T"
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 PURLINS 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

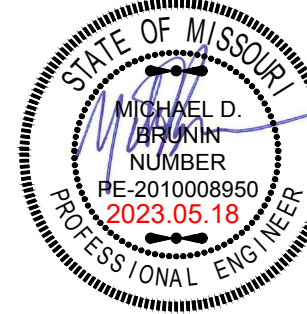
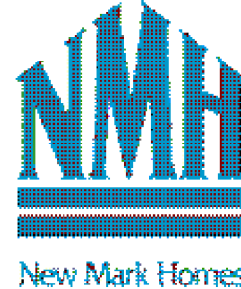
= PURLIN STRUTS AT 48" OC (PER CHART) U.N.O.
-SLASH IS TOP END OF BRACE
-ARROW IS BEARING LOCATION

XXXXXXXXXX DENOTES BEARING WALL
- - - - - DENOTES PURLIN
- - - - - DENOTES BEARING STRUCTURE

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

NOTE:
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PROJ. 23-330

| SHEATHING AND FRAMING FASTENING SCHEDULE | | | |
|---|--|---|--|
| BUILDING COMPONENT | MATERIAL | FASTENING | |
| ROOF SHEATHING¹ | 7/16" PLYWOOD 1x4 #3 FURRING | 16 GA x 1-3/4" STAPLES AT 3" OC EDGES AND 6" OC IN FIELD 1/2" CROWN STAPLES | |
| FLOOR SHEATHING¹ | 3/4" T&G YELLOW PINE PLYWOOD APPLIED PERPENDICULAR TO JOISTS AND ENDS STAGGERED | 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN THE FIELD 14 GA x 2" STAPLES AT 4" OC EDGES AND 8" OC IN THE FIELD 12.5 GA x 1-1/2" RING OR SCREW SHANK NAILS AT 6" OC EDGES AND 8" OC IN THE FIELD | |
| CEILING COVERING¹ | 1/2" GYPSUM SHEATHING | 7" OC NAILED / 12" OC SCREWED WITH 13 GA, 1-3/8" LONG, 19/64" HEAD; 0.098 DIA, 1-1/4" LONG, ANG-RINGED, 5d COOLER NAIL, 0.086 DIA, 1-5/8" LONG, 15/64" HEAD; OR GYP BD NAIL, 0.086 DIA, 1-5/8" LONG, 9/32" HEAD 8d COMMON NAILS: 1-5/8" GALVANIZED STAPLES, 1-1/4" SCREWS, TYPE W OR S- AT 4" OC EDGES AND 8" OC IN THE FIELD | |
| INTERIOR WALL COVERING¹ | 1/2" GYPSUM SHEATHING | 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN THE FIELD | |
| EXTERIOR WALL SHEATHING | MIN 3/8" APA RATED SHEATHING | 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN THE FIELD | |
| CONVENTIONAL WOOD FRAMED WALLS | *SUPPORTING 2 FLOORS, ROOF, AND CEILING OR LESS *HEIGHT: 10'-0" OR LESS SIZE: NOM 2x4 (NOM 2x6 WHEN SUPPORTING 2 FLOORS, CEILING, AND ROOF) *SPECIES: DOUG-FIR, HEM-FIR, SOUTHW PINE, SPRUCE-PINE-FIR *MAXIMUM SPACING 16" OC *STUDS 10' LENGTH OR LESS SHALL BE #3 STANDARD, OR STUD GRADE *STUDS OVER 10' LENGTH SHALL BE MIN #2 GRADE | *TOE NAIL RIM JOIST TO SILL OR TOP PLATE: 8d COMMON AT 6" OC; 3"x0.131" AT 6" OC; 3"x0.131" AT 6" OC; *END NAIL STUD TO TOP AND SOLE PLATE: 14 GA COMMON; (4) 3"x0.131" *END NAIL TOP AND SOLE PLATE TO STUD: 16d COMMON; (3) 3"x0.131" *FACE NAIL BUILT-UP CORNER STUDS: 16d AT 24" OC; 3"x0.131" AT 16" *FACE NAIL BUILT-UP CORNER STUDS (AT BRACED WALL PANELS): 16d COMMON NAILS AT 16" OC; 3"x0.131" AT 12" OC *FACE NAIL JACK STUDS/TRIMMERS SUPPORTING HEADERS WITH: 10d NAILS AT 6" OC; 16d COMMON AT 16" OC; 3"x0.131" AT 12" OC; 3"x0.128" AT 12" OC *FACE NAIL DBL TOP PLATE: (8) 16d COMMON; (12) 3"x0.131"; (12) 3"x0.128" *DBL TOP PLATES WITH MIN 48" OFFSET OF EACH FACE NAIL LAPPED AREA WITH: FACE NAIL DBL TOP PLATES AT LAPPED CORNERS AND INTERSECTIONS WITH: (2) 16d COMMON; (3) 3"x0.131"; (3) 3"x0.128" *FACE NAIL SOLE PLATE TO FRAMING SYSTEM WITH: 16d COMMON AT 16" OC; 3"x0.131" AT 12" OC *TOENAIL BRIDGING TO JOIST: EACH END: (2) 8d COMMON; (2) 3"x0.131"; (3) 3"x0.128" *FACE NAIL LEDGER STRIPS SUPPORTING JOISTS OR RAFTERS WITH: (3) 16d COMMON; (4) 3"x0.131"; (4) 3"x0.128" | |
| CONVENTIONAL WOOD HEADER FRAMING | PER PLAN | *TOE NAIL HEADERS TO WALL STUDS WITH (4) 8d NAILS AT EACH END. *FACE NAIL DOUBLE PIECE HEADERS WITH 16d NAILS AT 16" CENTERS ALONG EACH EDGE. | |
| RAFTER TIES¹ | MIN 2x4 MEMBERS AT EACH RAFTER | REF TABLE R802.5.2 | |
| COLLAR TIES | MIN 1x4 MEMBERS AT 48" OC | FACENAIL TO RAFTERS IN UPPER 1/3 OF ATTIC SPACE WITH (3) 10d NAILS AT EACH | |
| 1. NOTE: ALL SHEATHING MATERIALS TO BE APPLIED PERPENDICULAR TO JOISTS AND ENDS STAGGERED. 2. RAFTER TIES SHALL NOT BE REQUIRED WHEN A STRUCTURAL RIDGE HAS BEEN PROVIDED AND ADEQUATELY 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 ENDNAIL WITH (3) 16d | |
| | TO PLATE | TOENAIL WITH (2) 16d | |
| CEILING JOISTS | TO TOP PLATE | TOENAIL WITH (3) 8d AT EACH END | |
| | WHERE CEILING JOISTS RUN PARALLEL TO RAFTERS FACENAIL TO RAFTERS WITH (3) 10d MIN | | |
| FLOOR JOISTS | TO SILL OR GIRDER | TOENAIL WITH: (3) 8d COMMON; (3) 3"x0.131"; (4) 3"x0.128" | |
| | TO RIM JOIST | ENDNAIL WITH: (3) 16d COMMON; (4) 3"x0.131"; (4) 3"x0.128" | |
| BRACED WALL PANELS PERT TO FRAMING MEMBERS ABOVE/BELOW: PARALLEL TO FRAMING MEMBERS ABOVE/BELOW: | TO FRAMING MEMBER | SOLE PL, 16" OC WITH: (3) 16d COMMON; (4) 3"x0.131" TOP PL, 6" OC WITH: 8d COMMON; 3"x0.131" | |
| | TO FRAMING AND BLOCKING AT 16" OC | SOLE PL, 16" OC WITH: (3) 16d COMMON; (4) 3"x0.131" AND AT EACH BLOCK: (3) 16d COMMON; (4) 3"x0.131" TOP PL, 6" OC WITH: 8d COMMON; 3"x0.131" AND AT EACH BLOCK: (3) 8d COMMON; 3"x0.131" | |
| 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. | | | |

ENERGY REQUIREMENTS

- LIGHTING FIXTURES PENETRATING THE THERMAL ENVELOPE SHALL BE IC-RATED, LEAKAGE RATED, AND SEALED TO THE GYPSUM WALLBOARD AS REQUIRED PER N1102.4.5.
- PROGRAMMABLE THERMOSTATS SHALL BE INSTALLED AS REQUIRED PER N1103.1.1.
- AIR HANDLERS SHALL BE RATED FOR MAXIMUM 2% AIR LEAKAGE RATE PER N1103.3.2.1.
- BUILDING FRAMING CAVITIES SHALL NOT BE USED AS DUCTS OR PLENUMS PER N1103.3.5
- HOT WATER PIPES SHALL BE INSULATED AS REQUIRED PER N1103.4.
- ALL EXHAUST FANS SHALL TERMINATE TO THE BUILDING EXTERIOR AS REQUIRED PER M1501.1.
- MAKEUP AIR SYSTEMS SHALL BE INSTALLED FOR KITCHEN EXHAUST HOODS THAT EXCEED 400 CFM AS REQUIRED PER M1503.6.
- AN AIR HANDLING SYSTEM SHALL NOT SERVE BOTH THE LIVING SPACE AND THE GARAGE PER M1601.6.

ENERGY CONSERVATION

THE ENERGY EFFICIENCY OF THE DWELLING SHALL COMPLY WITH THE FOLLOWING TABLE(S) (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 - FRAME | R- |
| WALLS - BASEMENT | R- |
| FLOORS - UNCONDITIONED SPACE | R- |
| FLOORS - OVER OUTSIDE AIR | R- |
| FLOORS - CRAWL SPACE | R- |
| SLAB - PERIMETER | R- |
| CEILING - FLAT | R- |
| CEILING - CATHEDRAL | R- |
| DOORS - GLASS | U- |
| DOORS - SOLID | U- |
| WINDOWS - OPERABLE | U- |
| WINDOWS - FIXED | U- |
| WINDOWS - OTHER | U- |
| FURNACE | AFUE- |
| AIR CONDITIONER | SEER- |

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-38 |
| 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* | SHGF <=0.40 |

NOTE:
TABLE 2 PER IRC TABLE N1102.1.2
*DEFAULT 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.

DEFERRED SUBMITTALS

- 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 DEFERRED SUBMITTAL DOCUMENTS HAVE 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.
- DEFERRED SUBMITTAL ITEMS (WHEN APPLICABLE):

- TRUSSES
- JOISTS
- GUARDRAILS AND HANDRAILS
- STEEL FABRICATED STAIRS
- PRE-MANUFACTURED CANOPIES AND AWNINGS
- PRECAST HOLLOW CORE SLABS
- GROUND IMPROVEMENT AND/OR STRUCTURAL FOUNDATION SOLUTIONS (SUCH AS DRILLED PIERS)

CONCRETE SCHEDULE

| MINIMUM STRUCTURAL CONCRETE COVER | | | | | COVER |
|--|-----------------|-------------|--------------------------------------|-------------------|-------------------|
| FORMED SURFACES EXPOSED TO GROUND OR WEATHER | | | | | 2" |
| UNFORMED SURFACE IN CONTACT WITH THE GROUND | | | | | 3" |
| WALLS AND SLABS NOT EXPOSED TO GROUND OR WEATHER | | | | | 1" |
| INTERIOR BEAMS AND COLUMNS (TO TIES OF STIRRUPS) | | | | | 1 1/2" |
| EPOXY GROUTING APPLICATIONS | | | | | |
| THREADED ROD ANCHORS | | | HILTI HIT-HY 200 A OR SIMPONS SET XP | | |
| REINFORCING BARS | | | HILTI HIT-HY 200 R OR SIMPONS SET XP | | |
| CONCRETE USE | 28 DAY STRENGTH | CEMENT TYPE | W/C RATIO | SLUMP LIMIT (in.) | % AIR ENTRAINMENT |
| FOOTINGS/PIERS | 3000 psi | N/A | 0.55 (MAX) | 5" (+/-1") | 6% +/- 1% |
| FOUNDATION WALLS | 3500 psi | N/A | 0.50 (MAX) | 4" (+/-1") | 6% +/- 1% |
| INTERIOR SLABS | 4000 psi | N/A | 0.50 (MAX) | 3" (+/-1") | 3% MAX |
| SUSPENDED SLABS | 4000 psi | N/A | 0.50 (MAX) | 3" (+/-1") | 3% MAX |

EMERGENCY EGRESS AND RESCUE

- 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.
- BASEMENT EGRESS TO MEET THE REQUIREMENTS OF IRC SECTION 310.
- SMOKE ALARMS SHALL BE INSTALLED AS REQUIRED PER IRC 2018 SECTION R314.
- 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 IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE DWELLING.
- CARBON MONOXIDE ALARMS SHALL BE INSTALLED AS REQUIRED PER IRC 2018 SECTION R315.
- 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.

FRAMING GENERAL

- ALL LUMBER SIZES ARE FOR DOUGLAS FIR-LARCH UNLESS NOTED OTHERWISE.
- ALL HEADERS TO BE MIN (2) #2-2X10 UNLESS NOTED OTHERWISE.
- BLOCK CANTILEVERS, DOORJAMBS, AND OVER BEAMS.
- ALL HEADERS TO BEAR ON A MINIMUM OF (2) 2X4 STUD POSTS UNLESS NOTED OTHERWISE.
- INTERIOR NON-BEARING WALLS, OTHER THAN THOSE RESTING DIRECTLY ON THE FOOTING SHALL BE ISOLATED FROM THE FLOOR FRAMING ABOVE.
- 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 JOISTS AND BLOCKING TO SILL PLATE WITH 0x10d NAILS (IRC SECTION R602.3.(1)).
- 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 SLID BLOCKING, INSTALLED UPRIGHT, IN THE NEXT TWO JOIST SPACES. SECURE THE 2X4s TO THE SILL PLATE WITH (4) 10d NAILS.
- ALL SILLS AND SLEEPERS SUPPORTED ON CONCRETE OR MASONRY AND FURRING ATTACHED TO CONCRETE OR MASONRY SHALL BE OF DECAY RESISTANT MATERIALS.
- JOISTS UNDER BEARING PARTITIONS SHALL BE DOUBLED AND COMPLY WITH IRC SECTION R602.4.
- JOISTS FRAMING FROM OPPOSITE SIDES OVER BEARING SUPPORTS SHALL LAP A MINIMUM 3" AND SHALL BE NAILED TOGETHER WITH A MINIMUM 10d FACE NAILS.
- JOISTS FRAMING INTO A WOOD GIRDER OR BEAM SHALL BE SUPPORTED BY APPROVED FRAMING ANCHORS OR MINIMUM 2"x2" LEDGER STRIPS.
- 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 TRIMMER JOIST BEARING. WHEN THE HEADER SPAN EXCEEDS 4'-0", THE HEADER AND TRIMMER SHALL BE DOUBLED.
- 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 OTHERWISE PROVIDED WITH LATERAL SUPPORT TO PREVENT ROTATION.
- WATER-RESISTIVE BARRIER SHALL BE PROVIDED OVER ALL EXTERIOR WALLS. ONE LAYER OF 15 MIL THICK POLYETHYLENE OR ANY OTHER BARRIER THAT MEETS ASTM D226 TYPE 1 FELT. (R703.2)
- 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 1/3 OF THE ATTIC SPACE AND IN CONFORMANCE WITH TABLE 1-S2.1.
- COLLAR TIES SHALL BE PROVIDED IN THE UPPER 1/3 OF THE ATTIC SPACE IN ACCORDANCE WITH TABLE 1-S1.0.

GARAGE

- THE GARAGE FLOOR SHALL SLOPE TOWARDS THE GARAGE DOORWAYS.
- DOORS BETWEEN THE GARAGE AND THE DWELLING - MINIMUM 1-3/8" SOLID CORE OR HONEY COMBED STEEL DOOR OR 20-MINUTE FIRE RATED.
- THE GARAGE SHALL BE SEPARATED FROM THE RESIDENCE AND ITS ATTIC AREA BY 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 WITH 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.
- GARAGE DOOR AND FRAME- THE H-FRAME FOR THE ATTACHMENT OF THE TRACK AND COUNTER BALANCE SHALL CONSIST OF THE FOLLOWING: 2x6 VERTICAL JAMBS RUNNING FROM THE FLOOR TO CEILING ATTACHED WITH 1-3/4" x 0.120" NAILS AT 7" OC STAGGERED WITH (7) 3-1/4" x 0.120" NAILS THRU THE JAMB INTO THE HEADER, MINIMUM 2x8 HEADER FOR ATTACHMENT OF COUNTER BALANCE SYSTEM.
- SELF-CLOSING DEVICES SHALL BE INSTALLED FOR GARAGE AND/OR DWELLING SEPARATION DOORS PER R302.5.1.

STAIRWAYS

- STAIRWAYS SHALL PROVIDE A MAXIMUM 7-3/4" RISE AND MINIMUM 10" RUN.
- 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. GUARDRAIL ENCLOSURES SHALL HAVE INTERMEDIATE RAILS OR ORNAMENTAL PATTERNS THAT DO NOT ALLOW PASSAGE OF A SPHERE 4" IN DIAMETER.
- 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.
- HANDRAILS SHALL HAVE A CIRCULAR CROSS SECTION OF 1-1/4" MINIMUM TO 2" MAXIMUM OR OTHER APPROVED GRASPABLE SHAPE PER IRC SECTION 311.7.8.5.
- PROVIDE A MINIMUM 6'-8" OF HEADROOM CLEARANCE IN STAIRWAYS.
- ENCLOSED 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.
- SPIRAL STAIRS TO BE CONSTRUCTED PER IRC SECTION 311.7.10.1.
- SPACE STRINGERS AT 16" OC MAX.

GENERAL

- PLANS SHALL COMPLY WITH THE 2018 INTERNATIONAL RESIDENTIAL CODE WITH AMENDMENTS AS ADOPTED BY THE GOVERNING JURISDICTION. IF ANY CHANGES OR DEVIATIONS FROM THE PLANS 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.
- REPRODUCTION, ALTERATION, OR RE-USE BY ANY METHOD OF ALL OR PORTIONS 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.
- 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/ATTICS NO STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE 3:12 OR LESS | 5 PSF | 10 PSF |
| CEILING JOISTS/ATTICS WITHOUT STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE OVER 3:12 OR LESS | 10 PSF | 10 PSF |
| CEILING JOISTS/ATTICS WITH STORAGE - DOOR/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 CONCRETE/TILE/SLATE | 20 PSF | 20 PSF |

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.

FOUNDATIONS

- THE FOUNDATION DESIGN SHALL BE BASED ON A MINIMUM SOIL BEARING CAPACITY OF 2000 PSF, UNLESS OTHERWISE INDICATED ON THE PLANS OR IF MODIFIED BY AN ENGINEERING REPORT BASED ON ACTUAL SITE CONDITIONS.
- REFERENCE CONCRETE SCHEDULE, THIS SHEET, FOR APPLICABLE FOUNDATION CONCRETE MIX DESIGNS.
- FOOTINGS SHALL EXTEND BELOW THE FROST LINE; MINIMUM DEPTH 36 INCHES BELOW GRADE.
- 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.
- COLUMN PADS SHALL BE A MINIMUM 30"x30"x12" WITH (4) #4 BARS EACH WAY UNLESS NOTED OTHERWISE.
- 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 3-S2.0 WHERE APPLICABLE). FOUNDATION WALLS GREATER THAN 10'-0" TALL REQUIRE A SEPARATE ENGINEERED DESIGN. PROVIDE A 2'-0" LONG INTERIOR OR EXTERIOR DEAD-MAN FOR ANY STRAIGHT WALL PANELS EXCEEDING 20'-0" IN LENGTH (REF 3-S2.0).
- REINFORCEMENT SHALL BE MINIMUM GRADE 40 UNLESS NOTED OTHERWISE. REINFORCEMENT SHALL LAP A MINIMUM OF 24" AT ENDS, SPLICES, AND AROUND CORNERS.
- 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.
- FOUNDATION WALLS WILL NOT ACHIEVE FULL STRENGTH UNTIL THE EXTERIOR FLOOR 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, OR ALTERNATE ENGINEERED SOLUTION (I.E. ENGINEERED FILL) WILL BE REQUIRED.
- WHERE JUMPS OR STEPS IN ELEVATION OCCUR FOUNDATION WALLS AND FOOTINGS SHALL BE FORMED CONTINUOUS AND POURED PER DETAIL 4-S2.0.
- CONCRETE FLOOR SLABS SHALL BE A MINIMUM 4" THICK OVER A MINIMUM 4" BASE OF 1/2" OR 3/4" CLEAN GRADED ROCK, UNLESS NOTED OTHERWISE OR IF SITE CONDITIONS REQUIRE OTHERWISE.
- 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" OF THE DRAIN SHALL DAYLIGHT TO THE EXTERIOR BELOW THE FLOOR LEVEL OR TERMINATE IN A MINIMUM 24" DIAMETER OR 20" SQUARE SUMP PIT EXTENDING A MINIMUM 24" BELOW THE BOTTOM OF BASEMENT FLOOR.
- INTERIOR BEARING WALLS AND COLUMNS SHALL BE ISOLATED FROM THE BASEMENT FLOOR SLAB.
- INTERIOR NON-BEARING WALLS, OTHER THAN THOSE RESTING DIRECTLY ON THE FOOTING, SHALL BE ISOLATED FROM THE FLOOR FRAMING ABOVE.
- ALL EARTH RETAINING STRUCTURES ON THE SITE GREATER THAN 4'-0" TALL (EXCLUDING CONCRETE FOUNDATION WALLS RESTRAINED AT BOTH TOP AND BOTTOM) SHALL REQUIRE A SEPARATE ENGINEERED DESIGN (I.E. RETAINING WALLS, WING WALLS, ETC.).
- INSULATION SHALL BE INSTALLED FOR ALL BASEMENT WALLS AS REQUIRED PER N1102.2.9.
- A CONCRETE ENCASED GROUNDING ELECTRODE CONNECTION SHALL BE PROVIDED TO THE ELECTRICAL SERVICES PER E3608.1.
- ANY GEOTECHNICAL IMPROVEMENT METHODS AND/OR STRUCTURAL SOLUTIONS (SUCH AS DRILLED PIERS) EMPLOYED TO ADDRESS UNACCEPTABLE SUBGRADE CONDITIONS SHALL BE SUBMITTED TO EOR AS ENGINEERED SHOP DRAWINGS FOR REVIEW AND APPROVAL.

EXPANSIVE SOILS DISCLAIMER:

THESE PLANS HAVE BEEN PREPARED BASED ON A PRESUMPTIVE ALLOWABLE BEARING CAPACITY AS ALLOWED BY IRC CODE AND THE LOCAL ENFORCING JURISDICTION.

APEX ENGINEERS, INC. (APEX) RECOMMENDS THAT ALL FOOTING EXCAVATIONS BE EVALUATED BY A LICENSED GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF ANY FOUNDATION ELEMENTS. GEOTECHNICAL INVESTIGATION AND/OR TESTING IS NOT A SERVICE PROVIDED OR OFFERED BY APEX.

APEX HAS NOT BEEN RETAINED TO DETERMINE THE EXPANSIVE SOIL CHARACTERISTICS OF THE SUBGRADE SOIL AND THEREFORE CANNOT BE HELD RESPONSIBLE FOR THE VOLUMETRIC CHANGES OF THE SOIL (INCLUDING BELOW THE BASEMENT SLAB). BY USE OF THESE PLANS WITHOUT AN ACCOMPANYING GEOTECHNICAL ENGINEERING REPORT, APEX SHALL NOT BE HELD LIABLE FOR ANY FUTURE MOVEMENT AND/OR DIFFERENTIAL MOVEMENT OF THE PROPOSED STRUCTURE AND THE POSSIBLE DAMAGE THAT MAY BE CAUSED AS A RESULT OF SUCH MOVEMENT. DAMAGE FROM EXPANSIVE SOILS AND/OR SETTLEMENT CAN RESULT IN AMONGST OTHER THINGS, THE FOLLOWING: BASEMENT SLAB HEAVE, SKEWCRACKS, CRACKS, WINDOWS AND DOOR BECOMING OUT OF PLUMB AND STICKING AND/OR NOT OPENING, DAMAGE TO TILE, MOULDING, AND OTHER COSMETIC FINISHES.



STRUCTURAL DESIGN REVIEW
KANSAS ENGINEERING LICENSE:
E-392
MISSOURI ENGINEERING LICENSE:
200306673

PROJECT:
Lot 138 Highland Meadows
2772 SW 12th Terrace
Lee's Summit, Missouri 64081
CLIENT:
New Mark Homes

PROJECT #: 23-0730
DRAWN BY: C.J.H.
CHECKED BY: BDC
SUBMITTAL DATE: 2023.05.18

COMMENTS

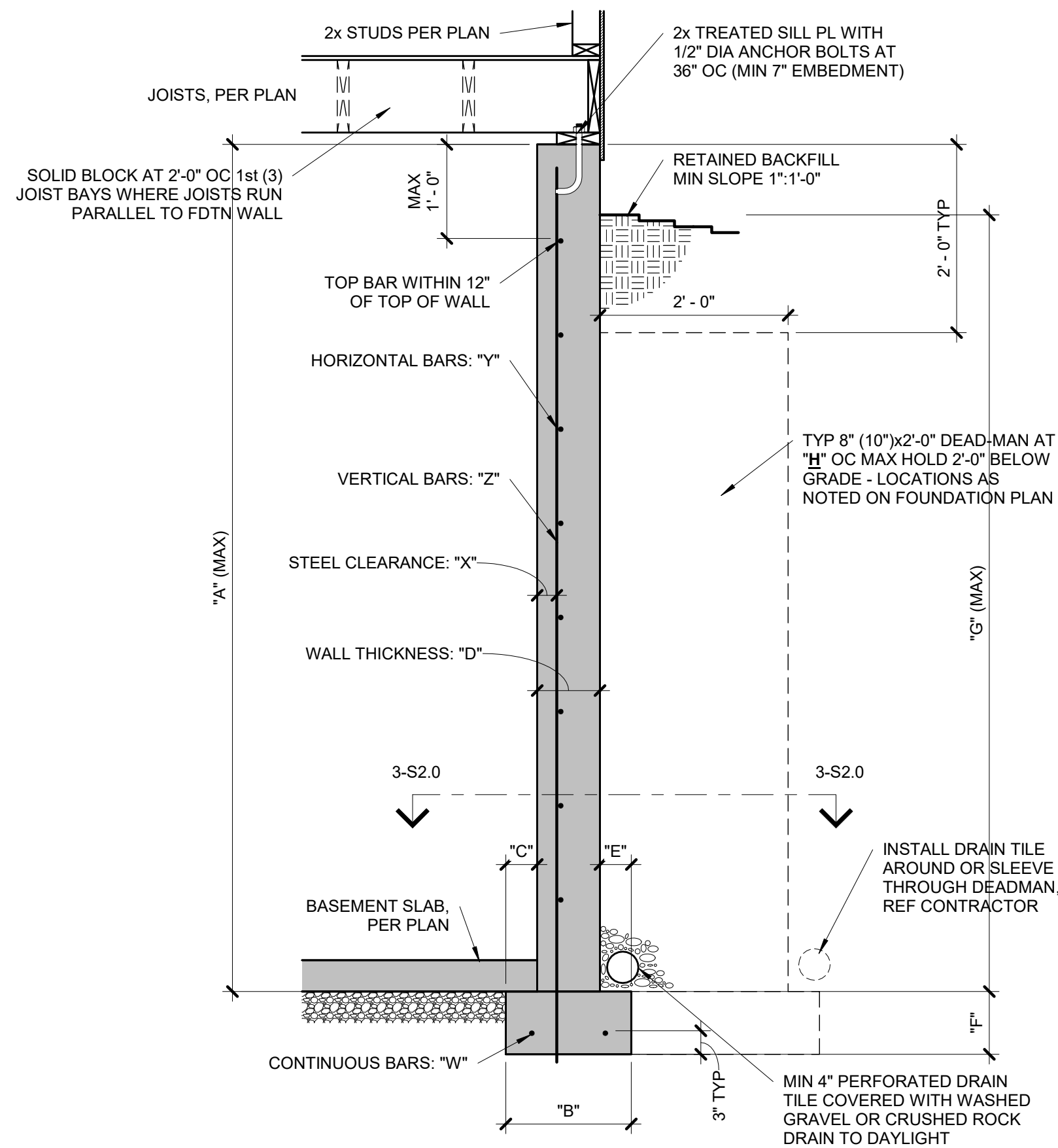
DATE

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SHEET:

GENERAL NOTES

S1.0



| 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 |

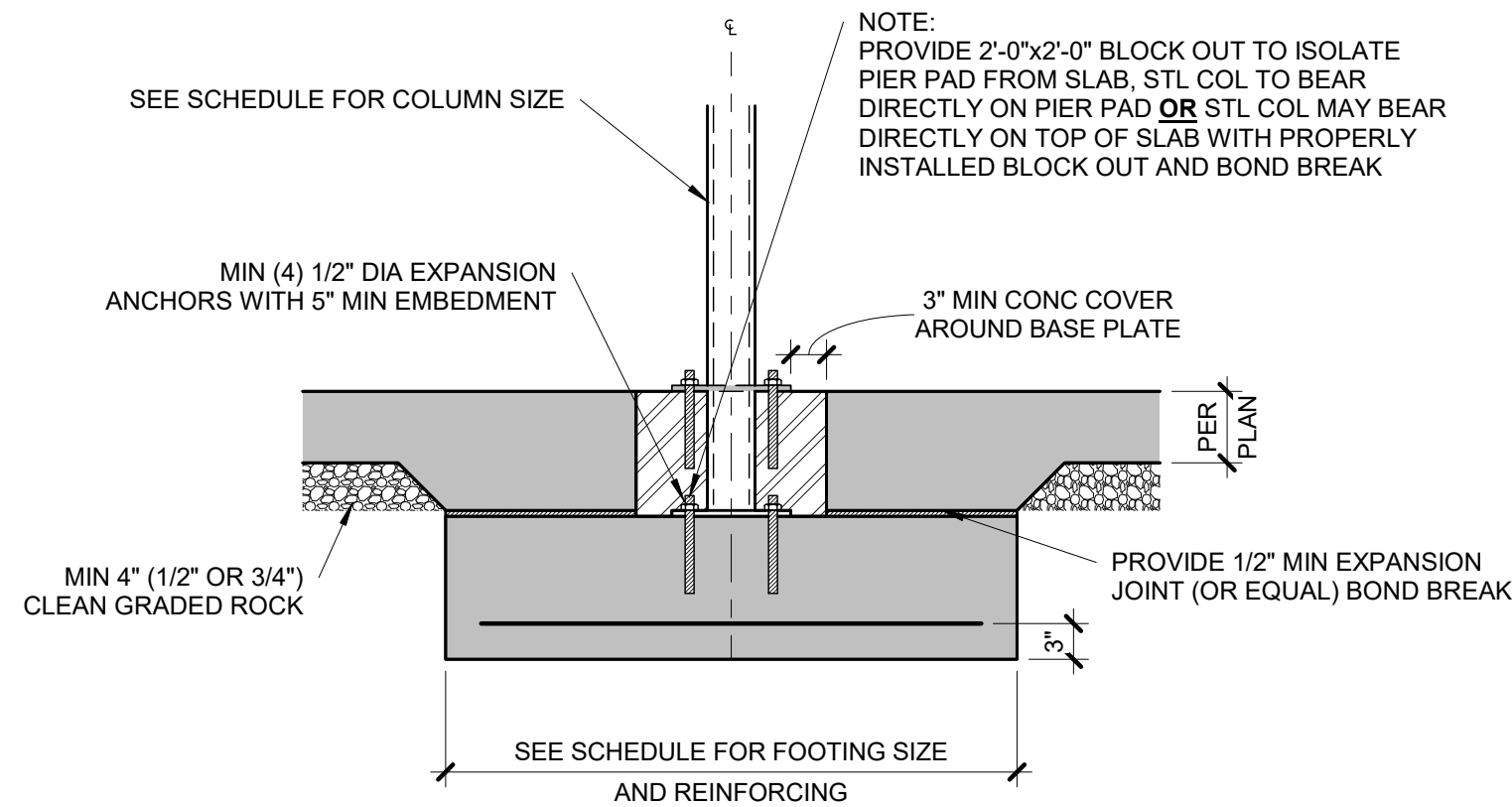
NOTES:
1. DIMENSION SHOWN IS FOR MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE A DEAD-MAN SHALL BE INSTALLED. NOTE, A MINIMUM 2'-0" RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS A DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.
2. VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 8" OF TOP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

| | |
|------|-----------------------------------|
| 1 | TYPICAL FOUNDATION WALL DETAIL |
| S2.0 | 3/4" = 1'-0" |

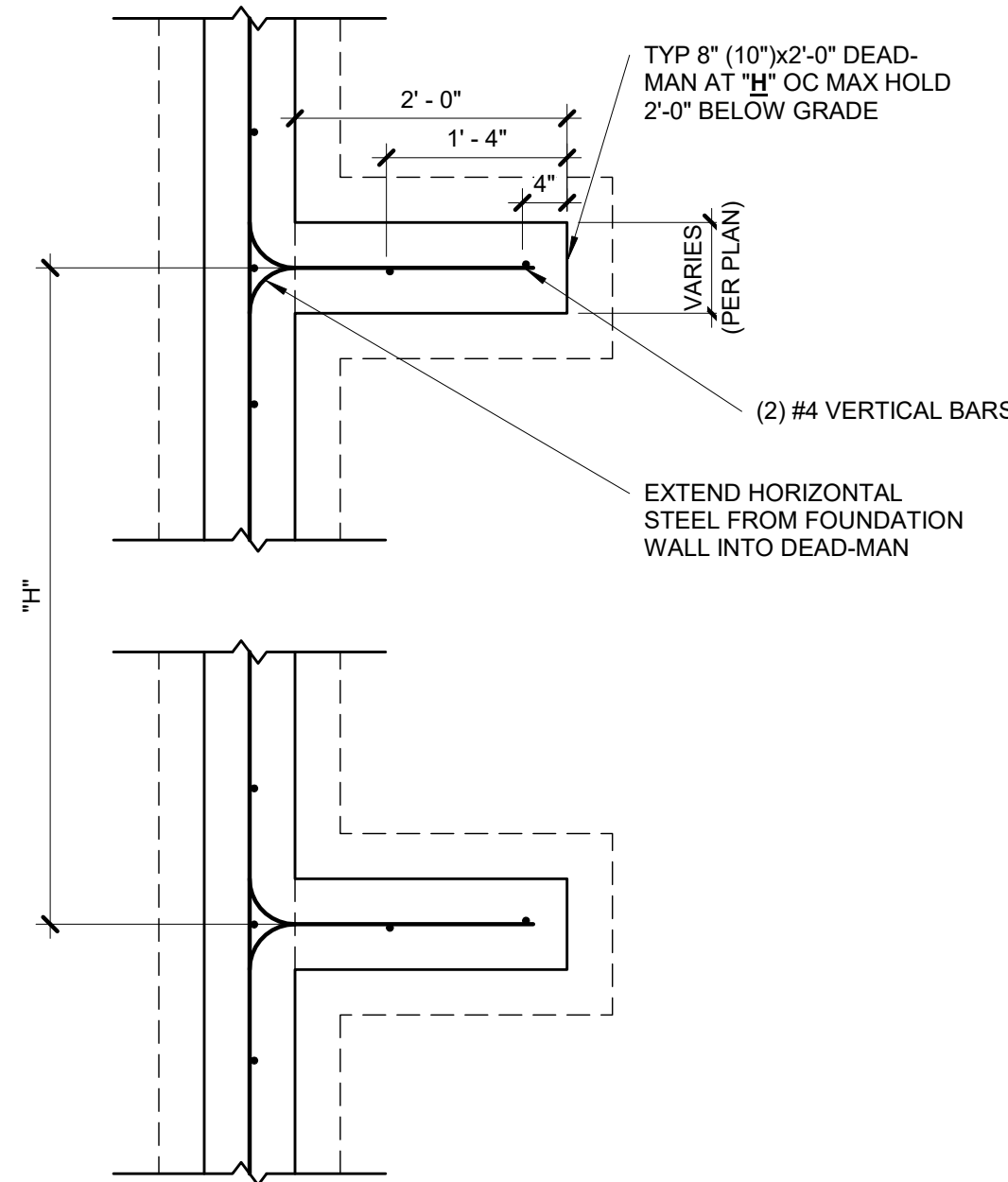
| COLUMN AND PIER PAD SCHEDULE | | | |
|------------------------------|-------------|------------------|-----------------------|
| COLUMN MARK | PAD SIZE | REINFORCING | COL SIZE |
| A | 30"x30"x12" | (4) #4 BARS E-W | 3" SCH 40 (3.5" OD) |
| B | 36"x36"x12" | (4) #4 BARS E-W | 3" SCH 40 (3.5" OD) |
| C | 42"x42"x12" | (5) #4 BARS E-W | 3" SCH 40 (3.5" OD) |
| D | 48"x48"x12" | (6) #4 BARS E-W | 3 1/2" SCH 40 (4" OD) |
| E | 54"x54"x16" | (8) #4 BARS E-W | REF PLAN |
| F | 60"x60"x16" | (10) #4 BARS E-W | REF PLAN |

NOTES

1. COLUMN AND PIER PAD SIZES SHOWN ARE FOR MAXIMUM ADJUSTABLE COLUMN HEIGHT OF 9'-1". REQUIRES SEPARATE ENGINEERED DESIGN IF GREATER THAN 9'-1" TALL. COLUMNS SIZED AS OWIK-ADJUST COLUMN, BY QUALITY WAY PRODUCTS, LLC. REFER TO SAFE LOADING CAPACITIES PER MANUF SPECS, OR SUBSTITUTION TO ANOTHER PRODUCT ONLY WITH APPROVAL BY APEX ENGINEERS.
2. COLUMN AND PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 2,000 PSF.



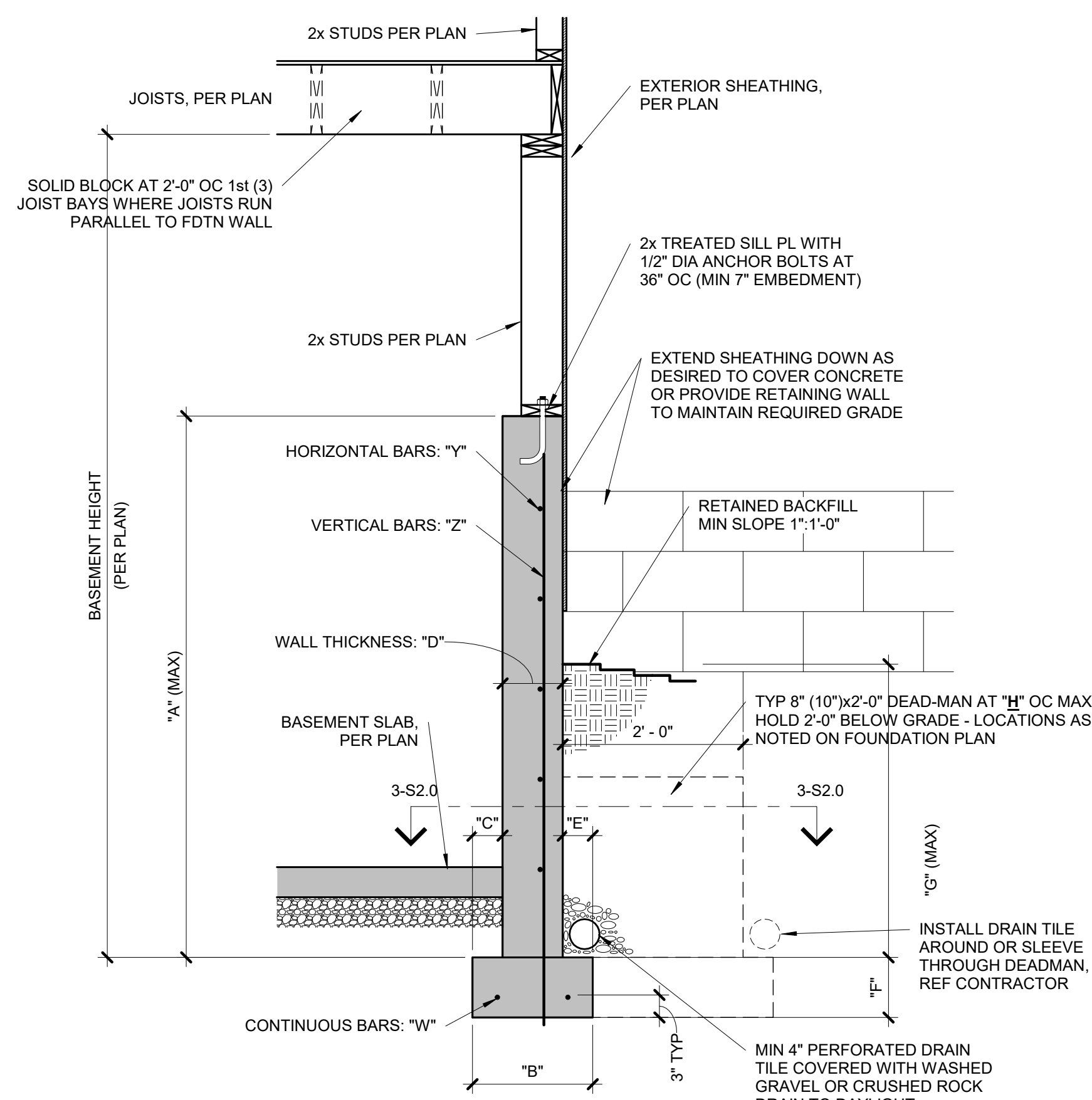
| | |
|-------------|--------------------------|
| 5 | COLUMN PAD DETAIL |
| S2.0 | 3/4" = 1'-0" |



NOTES:

1. MIN 3000 PSI FOOTING COMPRESSIVE CONCRETE STRENGTH.
2. MIN 3000 PSI WALL COMPRESSIVE CONCRETE STRENGTH.
3. AIR ENTRAINED BETWEEN 5% & 7% OF CONCRETE VOLUME.
4. GRADE 40 REINFORCING STEEL UNLESS OTHERWISE NOTED.
5. LAP SPLICES 24" MIN.
6. 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.
7. ASSUMED 2,000 PSF BEARING (TO BE VERIFIED BY GEOTECHNICAL ENGINEER)

| | |
|-------------|---------------------------------|
| 3 | TYPICAL DEAD-MAN SECTION |
| S2.0 | 3/4" = 1'-0" |



| CONCRETE DIMENSIONS | | | | | | | | REINFORCING BARS (GRADE 40 BARS) | | | |
|---------------------|-------|-----|-----|-----|-----|-------|--------|----------------------------------|-----|-------------------|-------------------|
| "A" | "B" | "C" | "D" | "E" | "F" | "G" | "H" | "W" | "X" | "Y" | "Z" |
| 4'-0" | 1'-4" | 4" | 8" | 4" | 8" | 3'-4" | 20'-0" | (2) #4 | N/A | #4 BARS AT 24" OC | #4 BARS AT 24" OC |
| 6'-0" | 1'-4" | 4" | 8" | 4" | 8" | 4'-4" | 20'-0" | (2) #4 | N/A | #4 BARS AT 24" OC | #4 BARS AT 24" OC |
| 9'-0" | 1'-8" | 5" | 8" | 4" | 8" | 4'-4" | 20'-0" | (2) #4 | N/A | #4 BARS AT 24" OC | #4 BARS AT 24" OC |

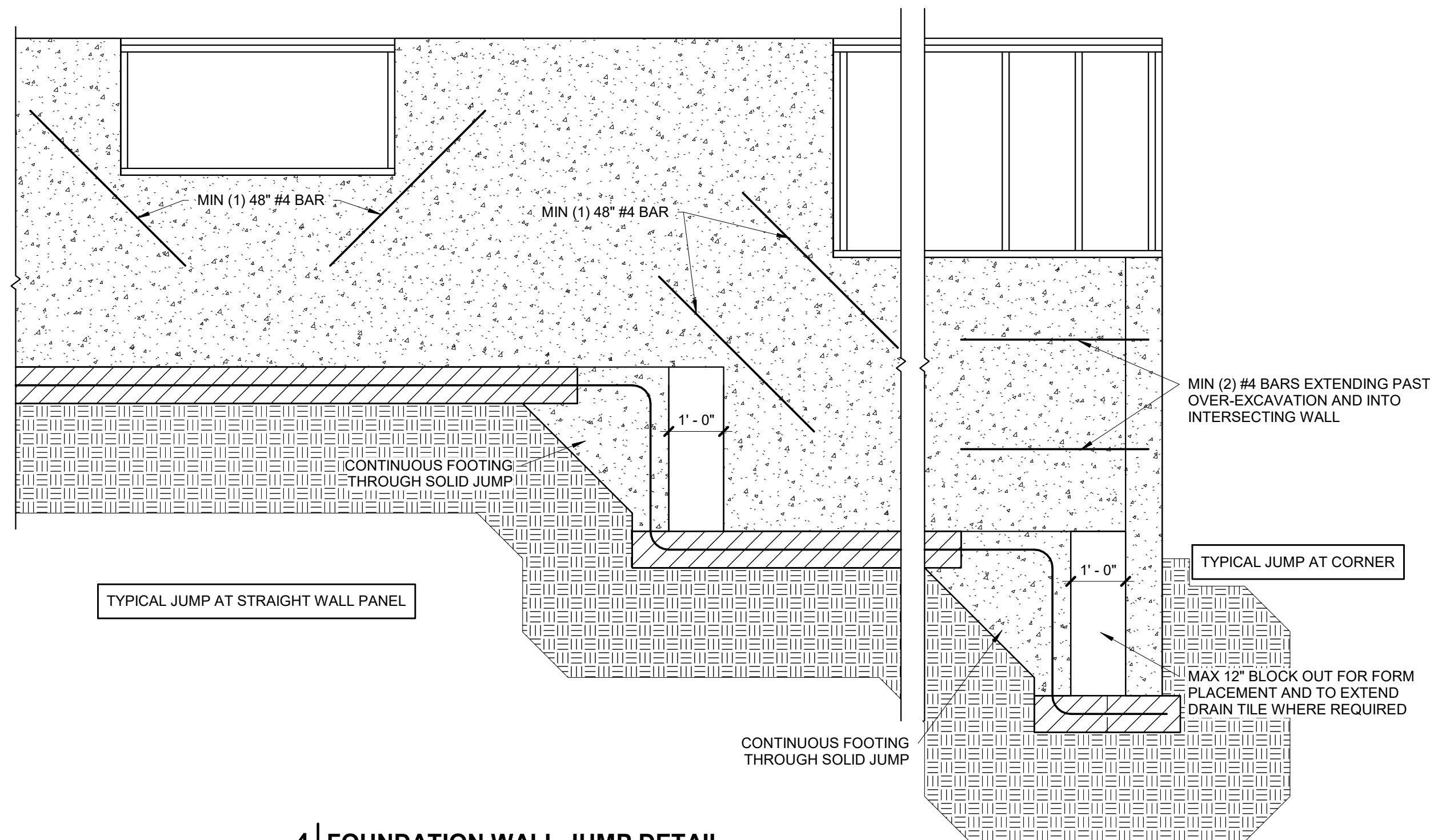
NOTES:

1. 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.

2. REINFORCING STEEL TO EXTEND TO WITHIN 6" OF TOP WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP AND BOTTOM OF WALL.

3. THE BASEMENT SLAB IS AN INTEGRAL PART OF THE 'UNREINSTRATED' 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.

| | |
|------|--|
| 2 | TYPICAL 'UNRESTRAINED' FOUNDATION WALL DETAIL |
| S2.0 | 3/4" = 1'-0" |



| | |
|-------------|------------------------------------|
| 4 | FOUNDATION WALL JUMP DETAIL |
| S2.0 | 1/2" = 1'-0" |



STRUCTURAL DESIGN REVIEW
KANSAS ENGINEERING LICENSE:
E-992
MISSOURI ENGINEERING LICENSE:
2003004673

PROJECT:
Lot 138 Highland Meadows
2772 SW 12th Terrace
Lee's Summit, Missouri 64081

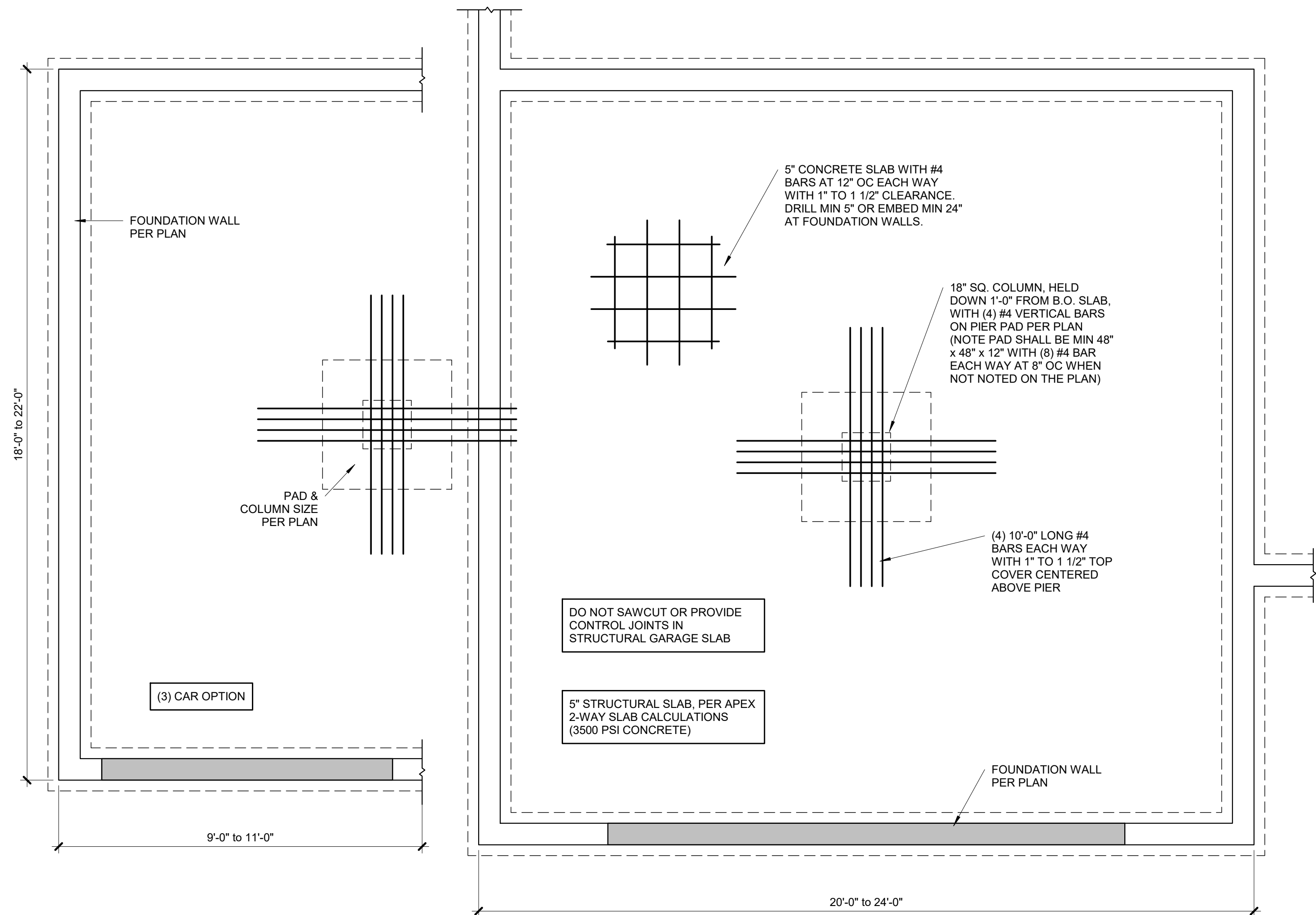
CLIENT:
New Mark Homes

| | |
|-----------------|------------|
| PROJECT #: | 23-0730 |
| DRAWN BY: | CJH |
| CHECKED BY: | BDO |
| SUBMITTAL DATE: | 2023.05.18 |

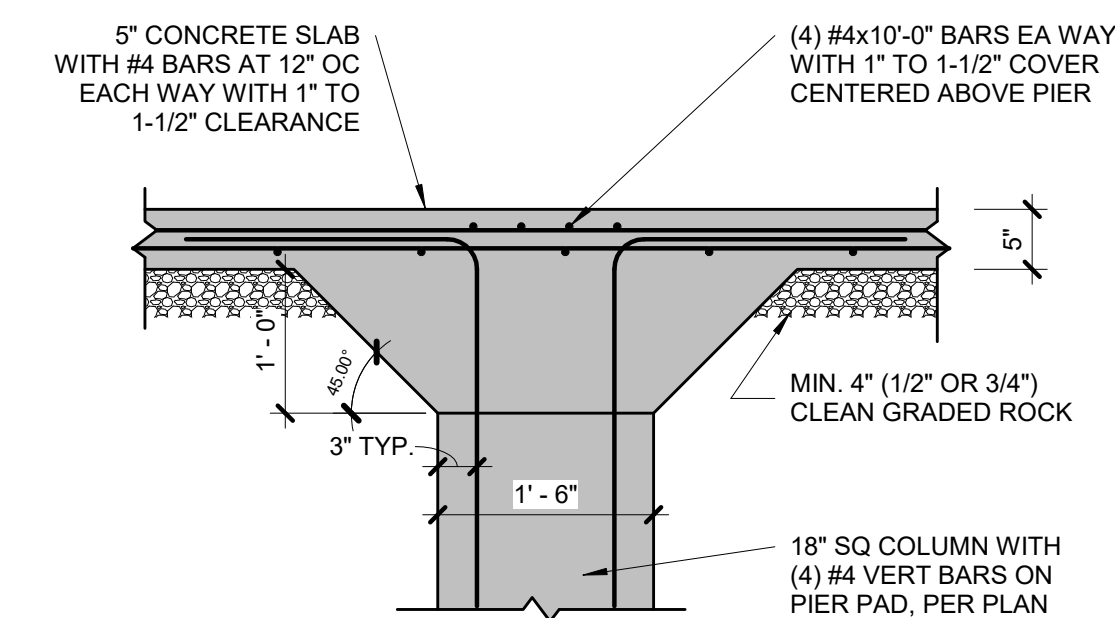
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SHEET:
FOUNDATION DETAILS

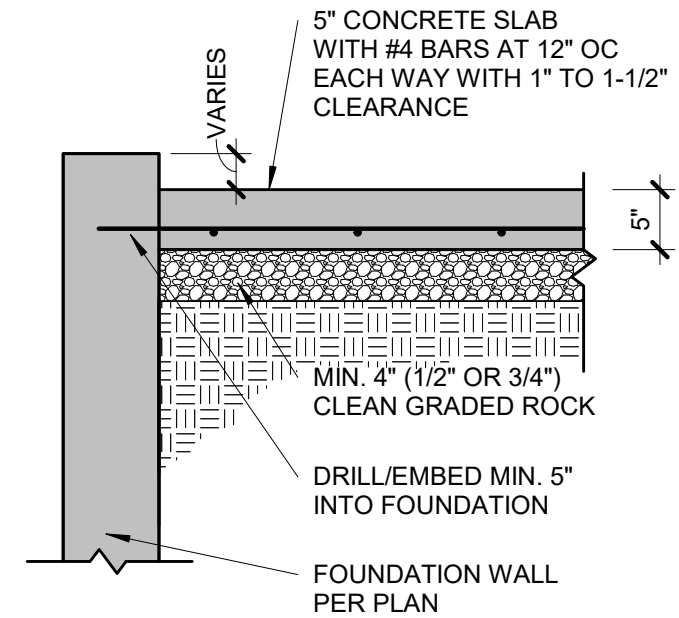
S2.0



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

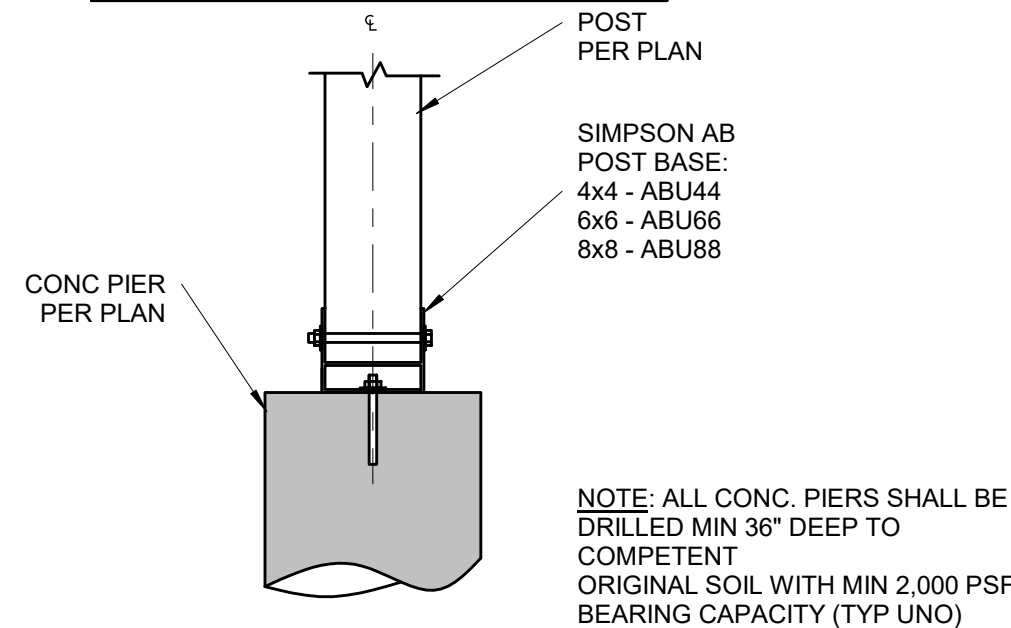


2 STRUCTURAL GARAGE SLAB PIER PAD DETAIL
S2.1 3/4" = 1'-0"

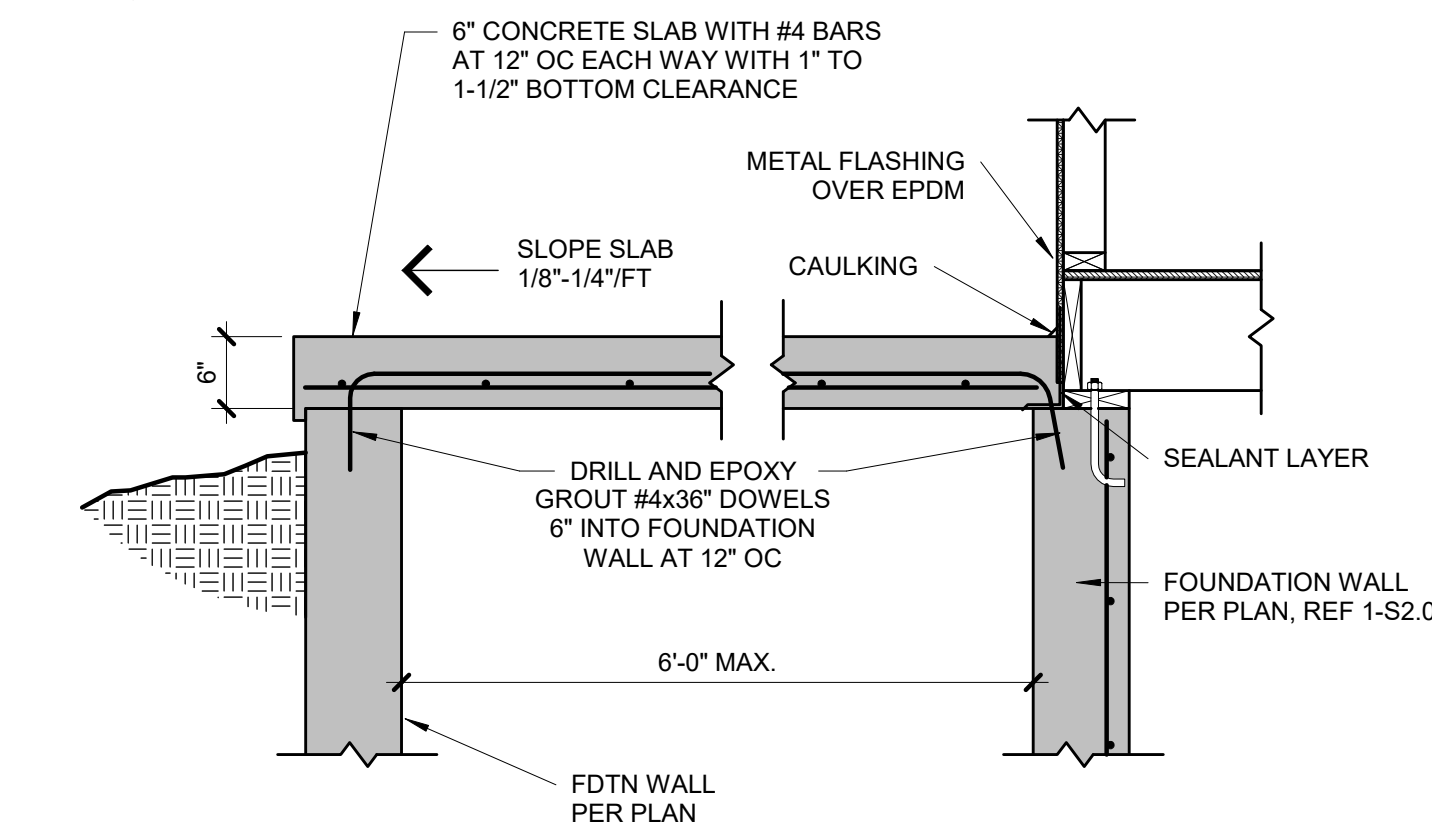


3 STRUCTURAL GARAGE SLAB/WALL SECTION
S2.1 3/4" = 1'-0"

| 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" |



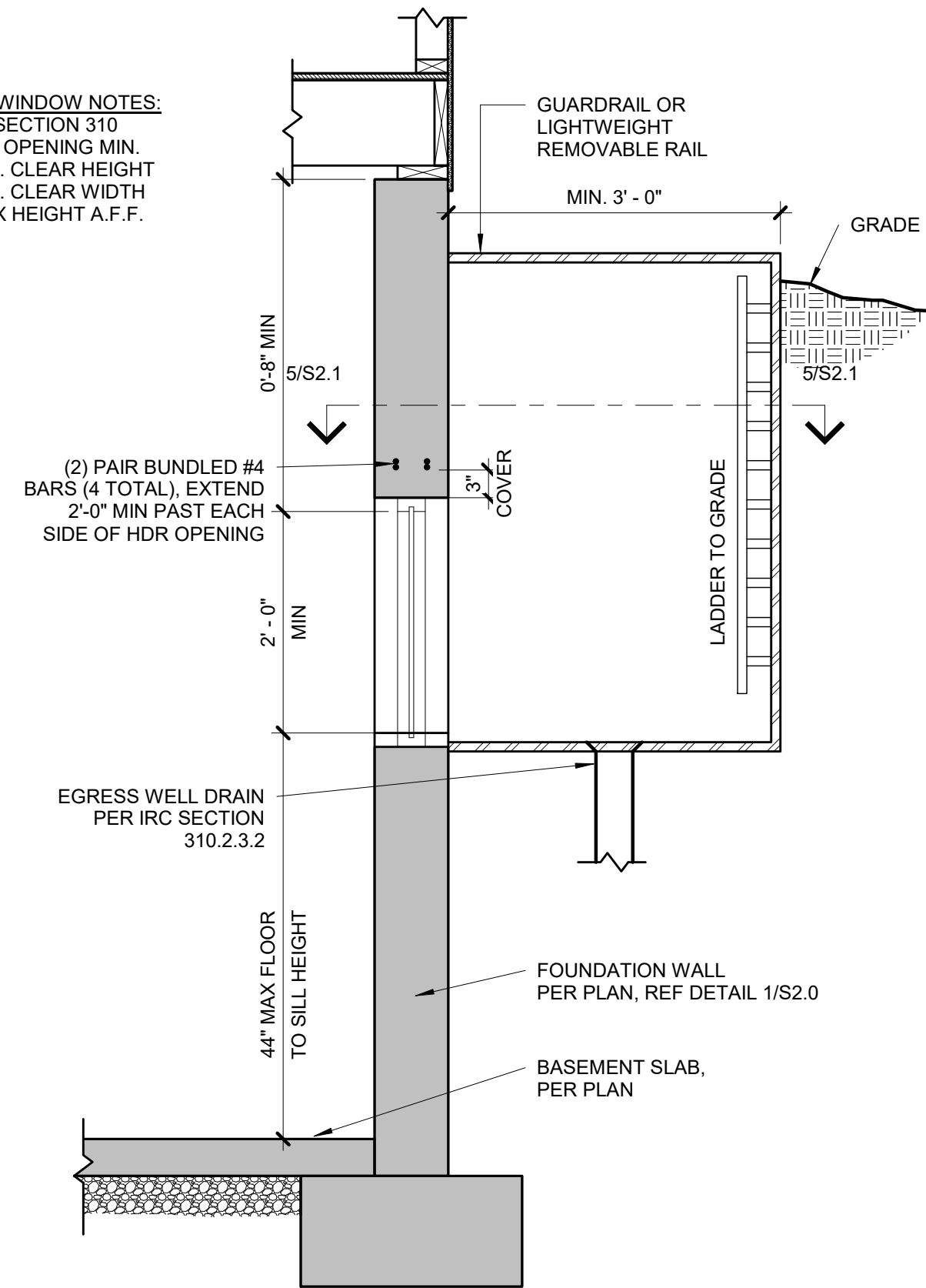
8 POST BASE DETAIL
S2.1 3/4" = 1'-0"



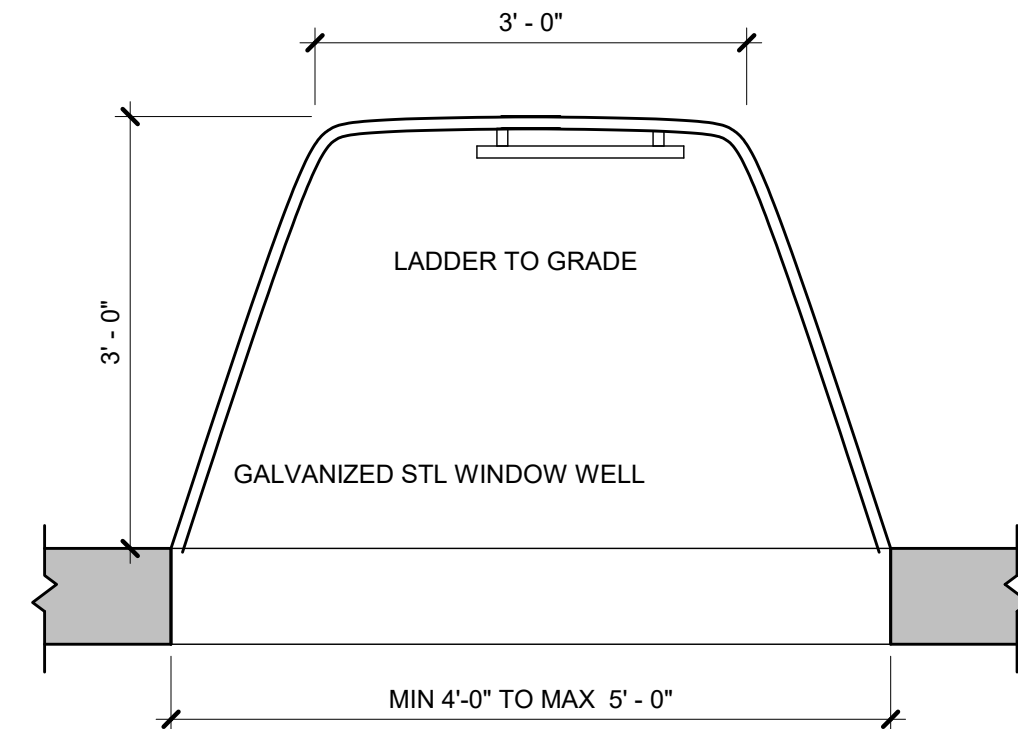
FORMWORK OPTIONS:
1. PROVIDE VULCRAFT 2VLI (OR EQUAL) CORRUGATED DECKING (SHORE AT MID-SPAN DURING CONSTRUCTION), OR
2. PLYWOOD FORMS WITH EXPANDABLE BAR JOISTS OR TEMPORARY FRAMED WALLS BY CONTRACTOR.

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

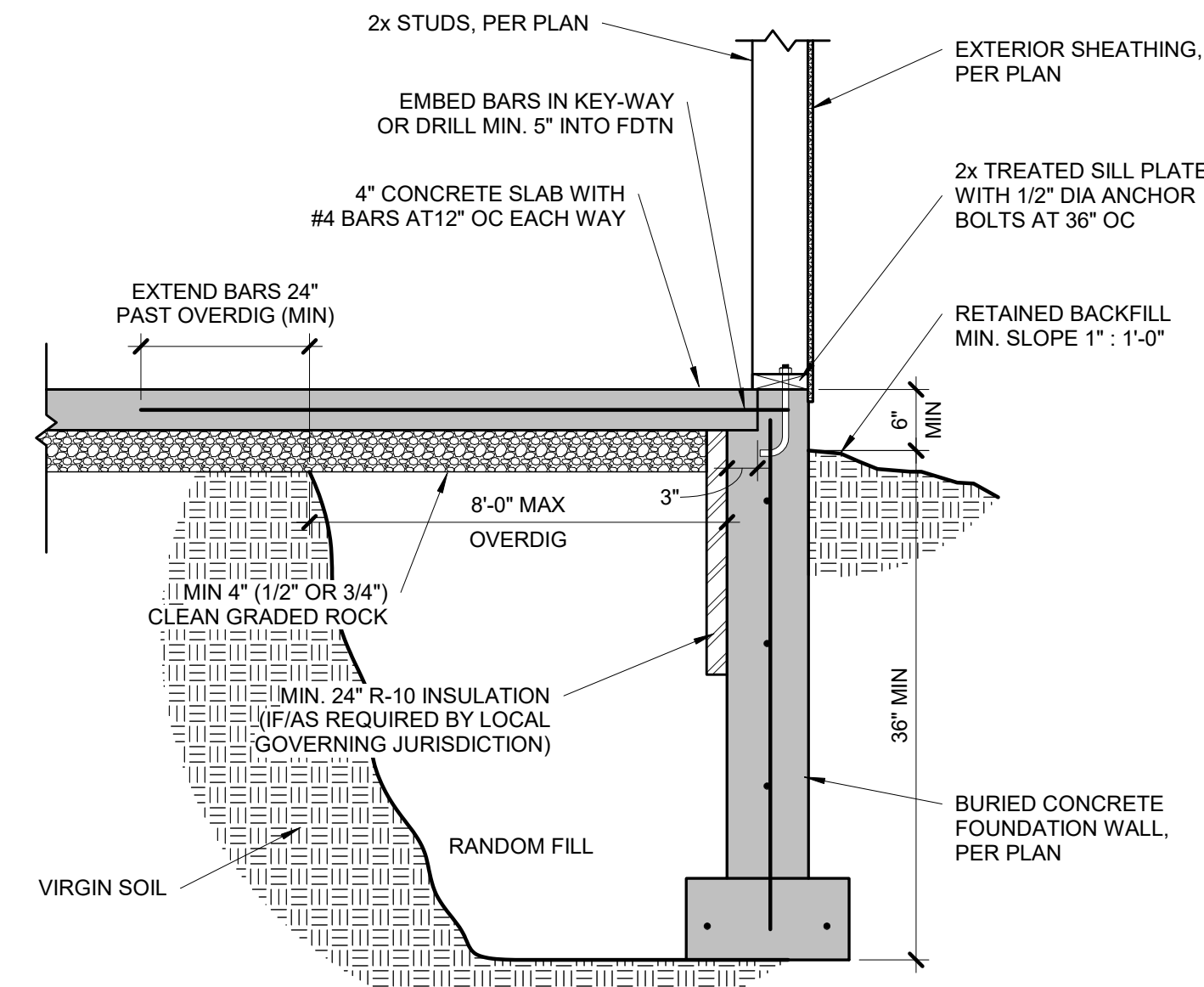
EGRESS WINDOW NOTES:
PER IRC SECTION 310
1. 5.7 S.F. OPENING MIN.
2. 24" MIN. CLEAR HEIGHT
3. 20" MIN. CLEAR WIDTH
4. 44" MAX HEIGHT A.F.F.



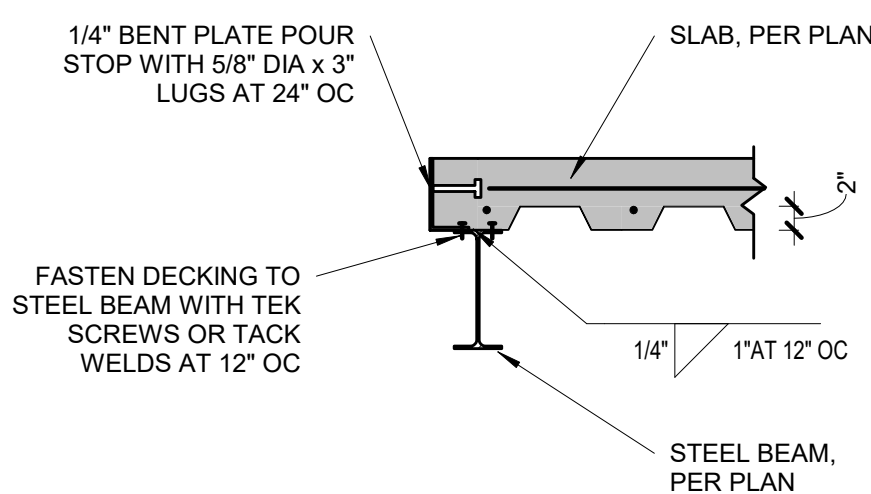
4 TYPICAL EGRESS WINDOW SECTION DETAIL
S2.1 3/4" = 1'-0"



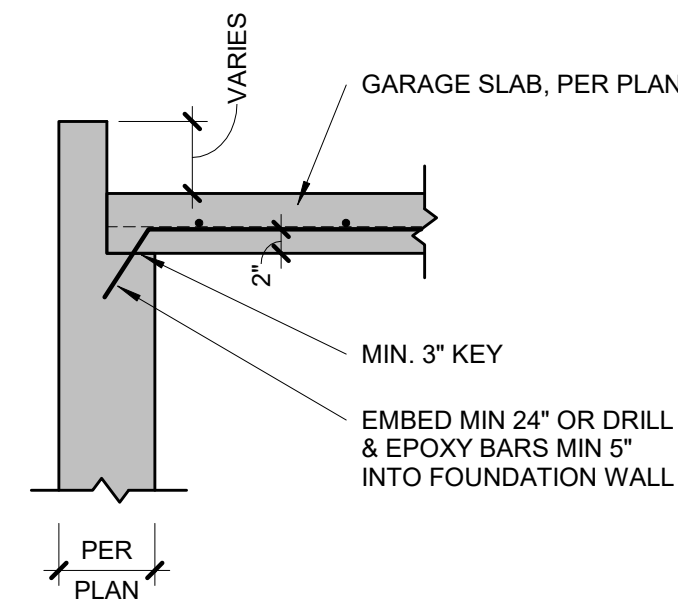
5 TYPICAL EGRESS WINDOW PLAN
S2.1 3/4" = 1'-0"



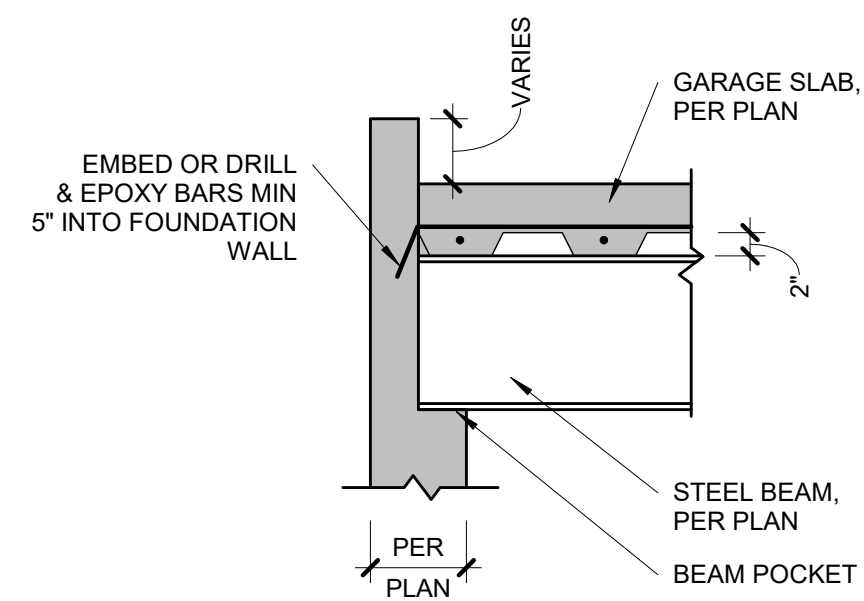
6 TYPICAL OVERDIG DETAIL AT BASEMENT SLAB
S2.1 3/4" = 1'-0"



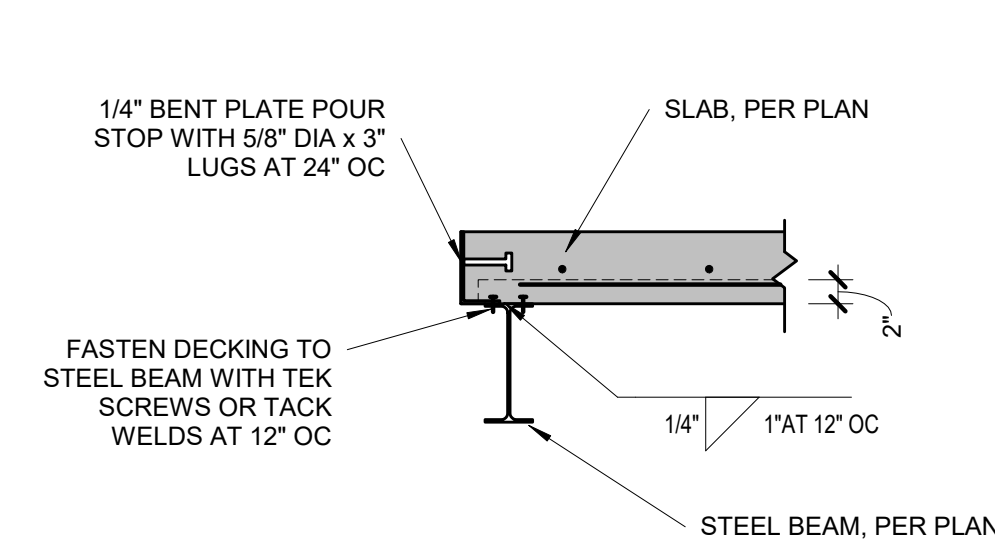
9 POUR STOP DETAIL
S2.1 3/4" = 1'-0"



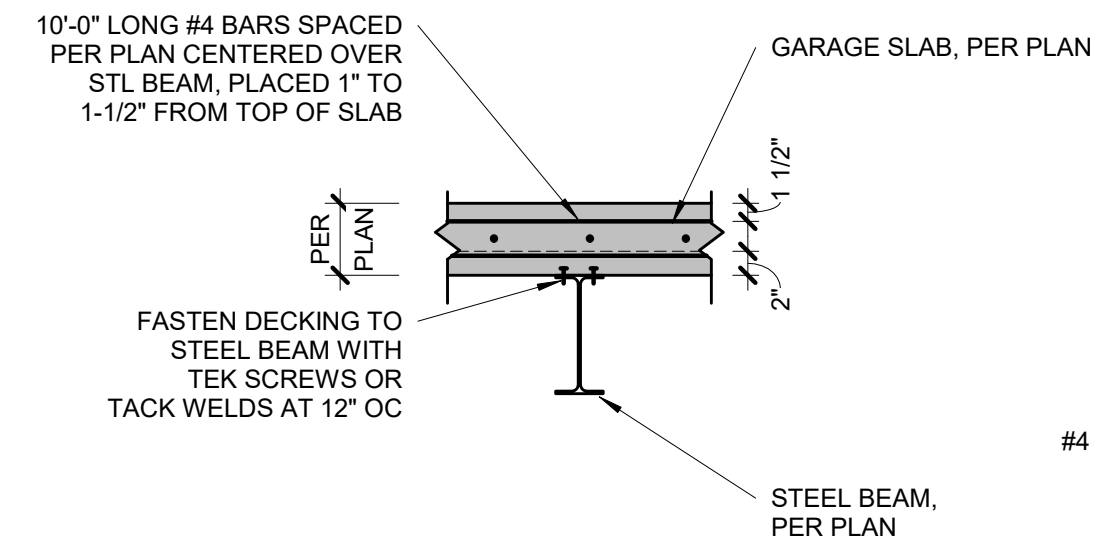
10 GARAGE SLAB BEARING
S2.1 3/4" = 1'-0"



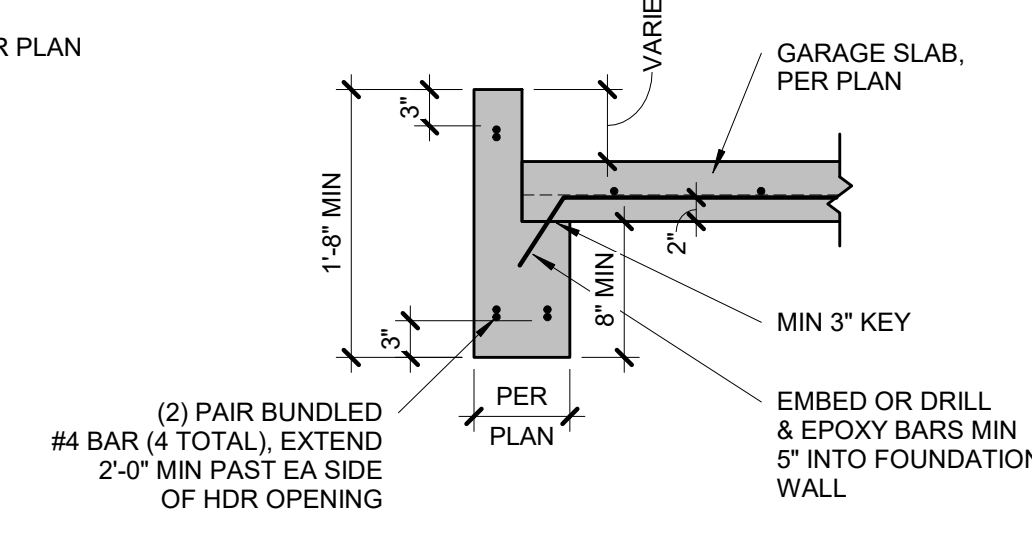
11 GARAGE SLAB BEAM BEARING
S2.1 3/4" = 1'-0"



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



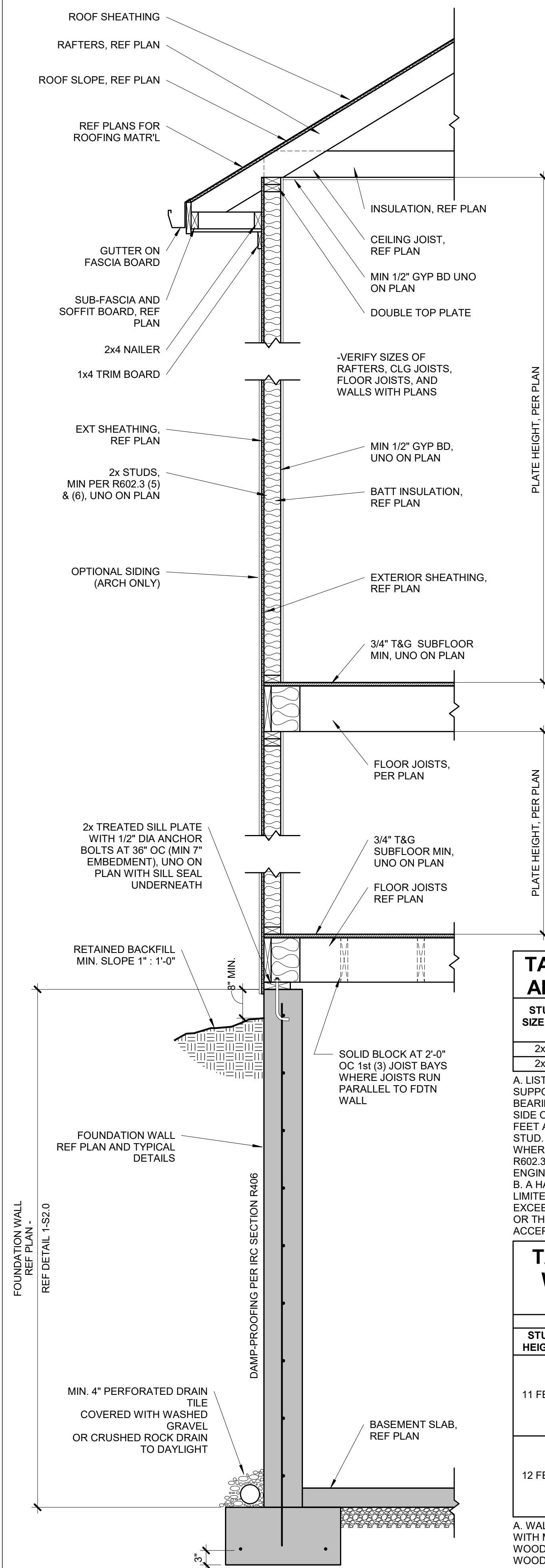
13 GARAGE SLAB BEAM BEARING
S2.1 3/4" = 1'-0"



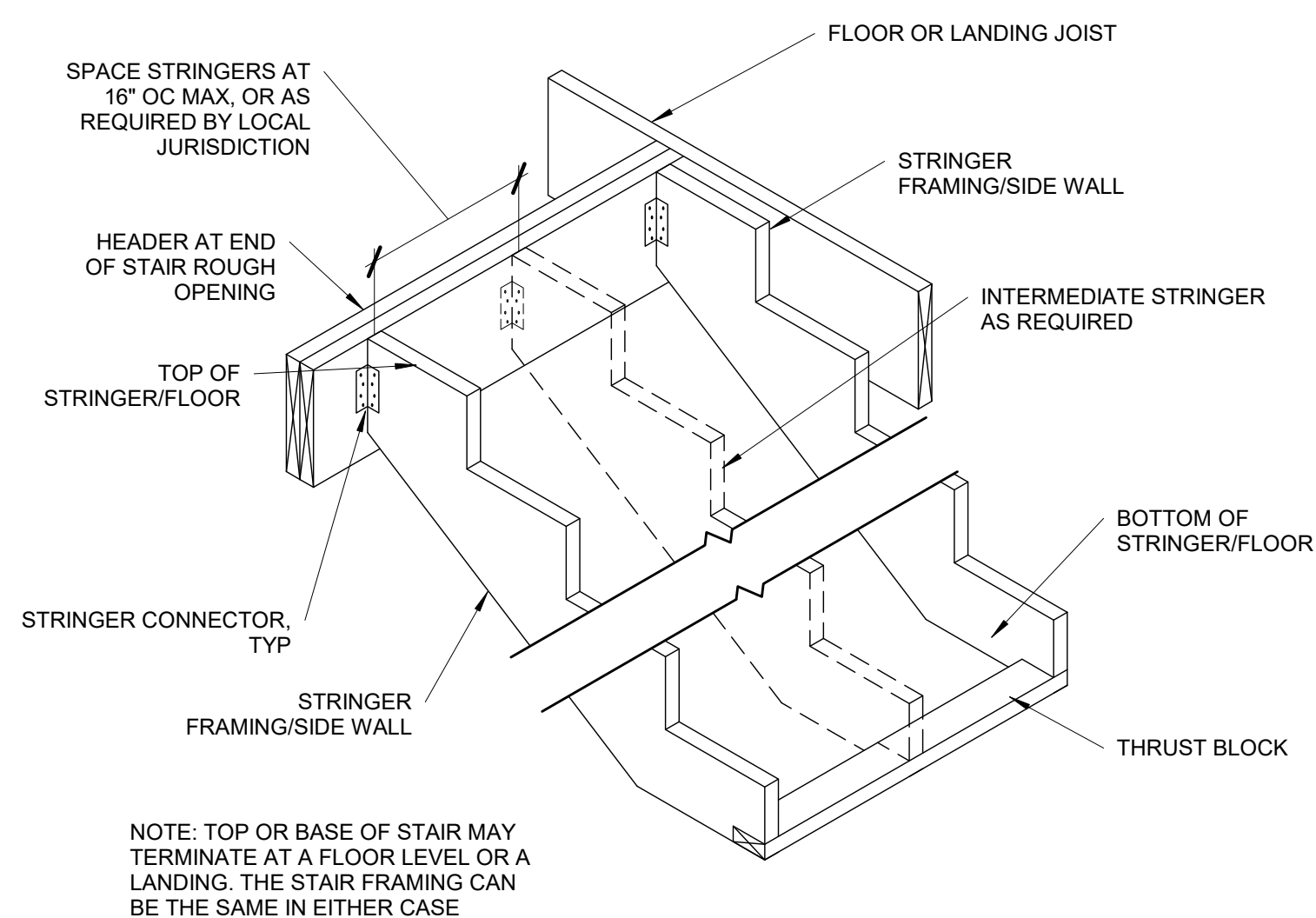
14 CONCRETE HEADER DETAIL
S2.1 3/4" = 1'-0"

TYPICAL SUSPENDED SLAB DETAIL

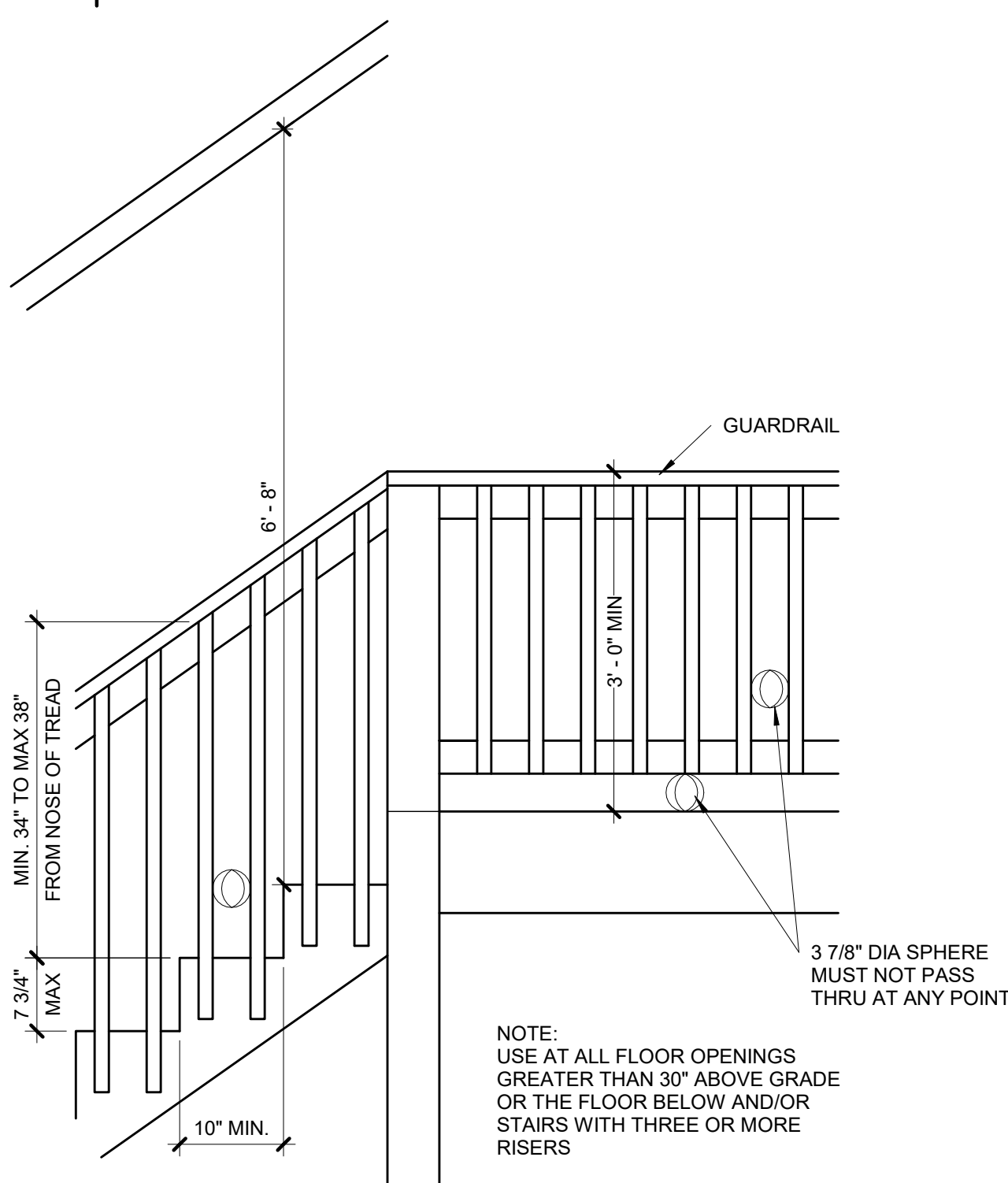
STEEL DECKING NOTES:
• MINIMUM 1-1/2" BEARING
• FASTEN TO SUPPORT STEEL WITH 5/8" VISIBLE PUDDLE WELDS AT EDGE RIBS AND 12" CENTERS ALONG END BEARING
• FASTEN SIDE LAPS AND PERIMETER EDGES AT 36" CENTERS WITH #10 TEK SCREWS OR 5/8" PUDDLE WELDS
• MAX UNSUPPORTED CONSTRUCTION SPAN 6'-0", UNO ON PLANS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



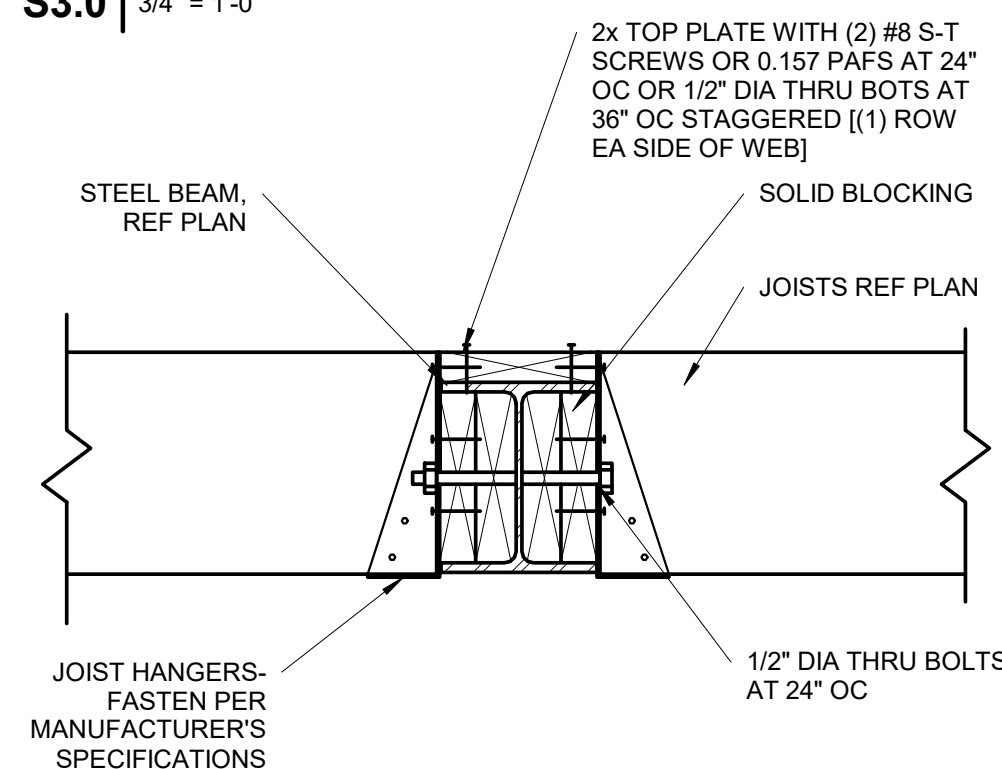
| | |
|------|----------------------------|
| 12 | TYPICAL WALL CROSS-SECTION |
| S3.0 | 3/4" = 1'-0" |



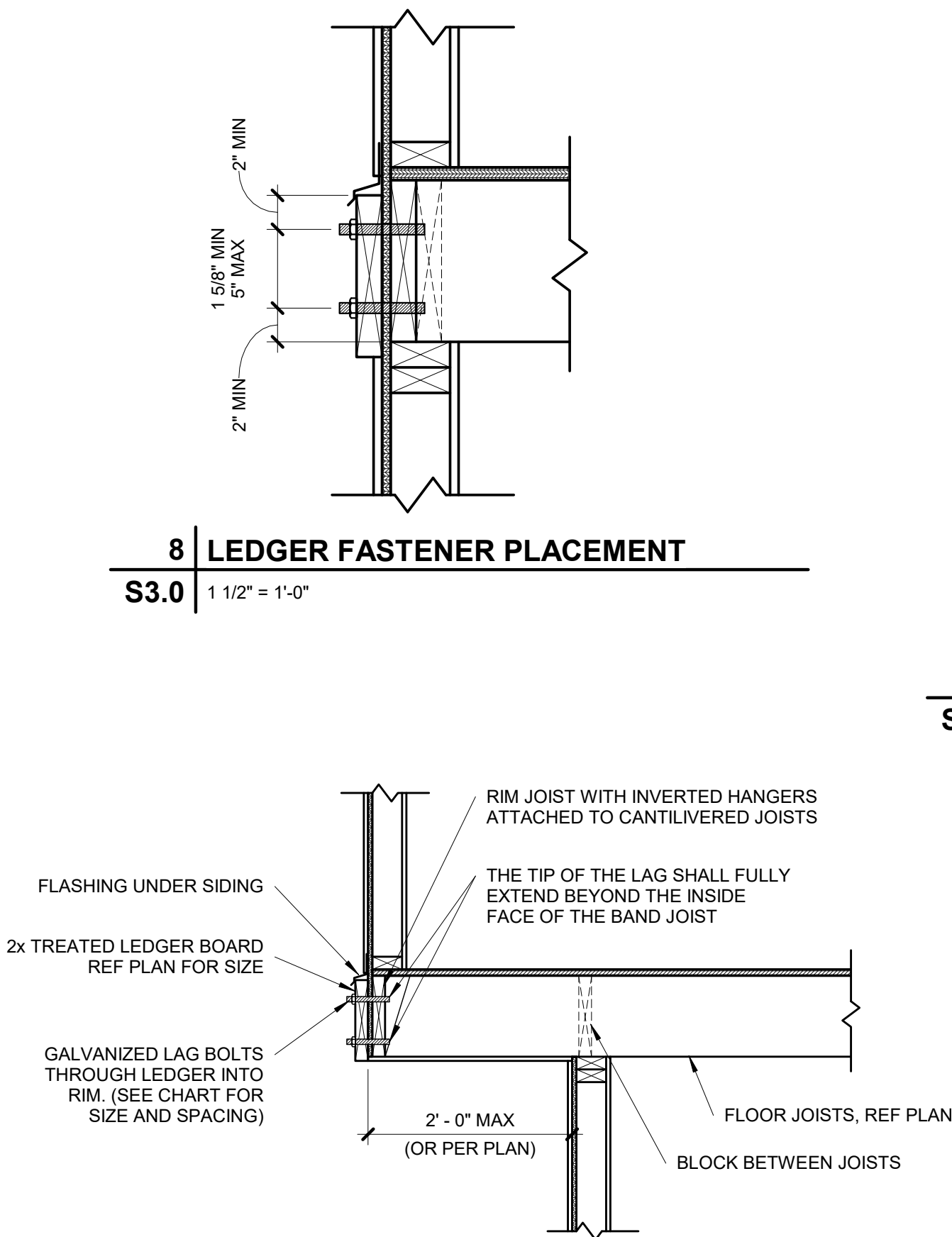
| | |
|------|-------------------------|
| 11 | TYPICAL STRINGER DETAIL |
| S3.0 | 3/4" = 1'-0" |



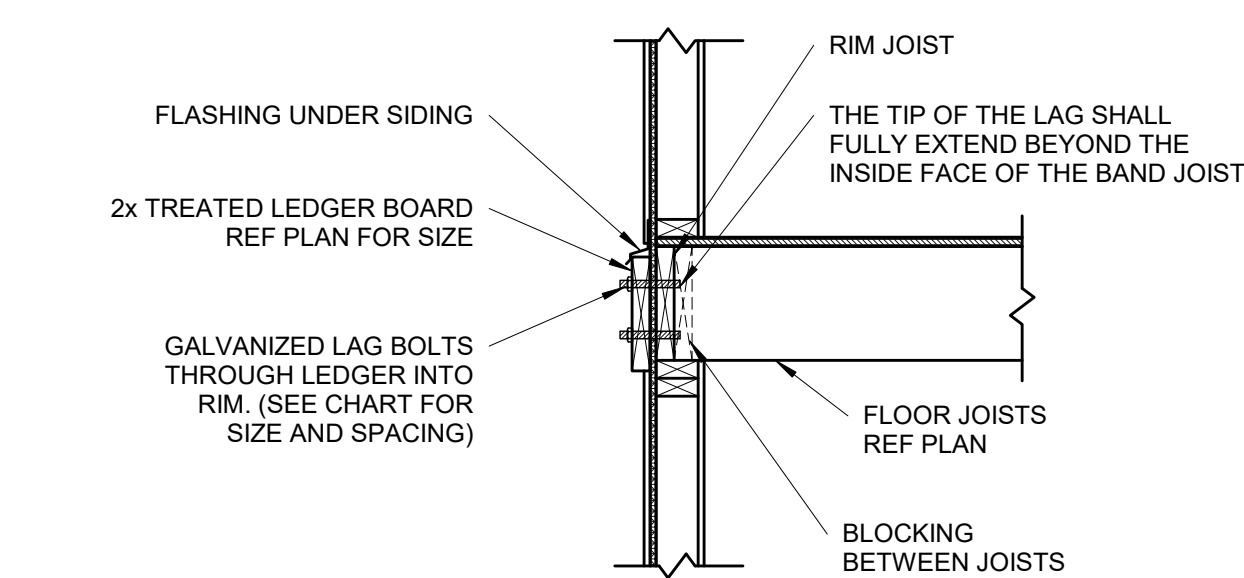
| | |
|------|---------------------------|
| 10 | TYPICAL STAIR/RAIL DETAIL |
| S3.0 | 3/4" = 1'-0" |



| | |
|------|-----------------------------------|
| 9 | UPSET STEEL BEAM/JOIST CONNECTION |
| S3.0 | 1 1/2" = 1'-0" |



| | |
|------|--|
| 7 | TYPICAL CANTILEVER FRAMING WITH DECK ATTACHMENT |
| S3.0 | 3/4" = 1'-0" |

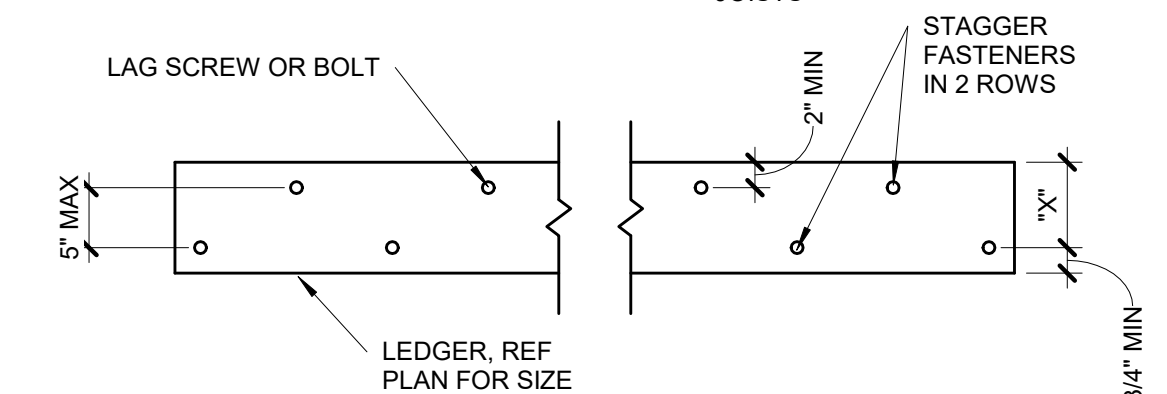


| DECK LEDGER ATTACHMENT CHART | | |
|------------------------------|----------------------|---|
| DECK JOIST SPAN | 1/2" DIA LAG SPACING | EQUIVALENT SPACING FOR 16" OC JOIST BAYS |
| UP TO 10'-0" | 16" OC | N/A |
| 10'-1" TO 12'-0" | 15" OC | 16" OC DBL EVERY OTHER |
| 12'-1" TO 14'-0" | 13" OC | 16" OC DBL EVERY OTHER |
| 14'-1" TO 16'-0" | 11" OC | 16" OC DBL EVERY JOIST BAY |
| 16'-1" TO 18'-0" | 10" OC | 16" OC DBL EVERY JOIST BAY |

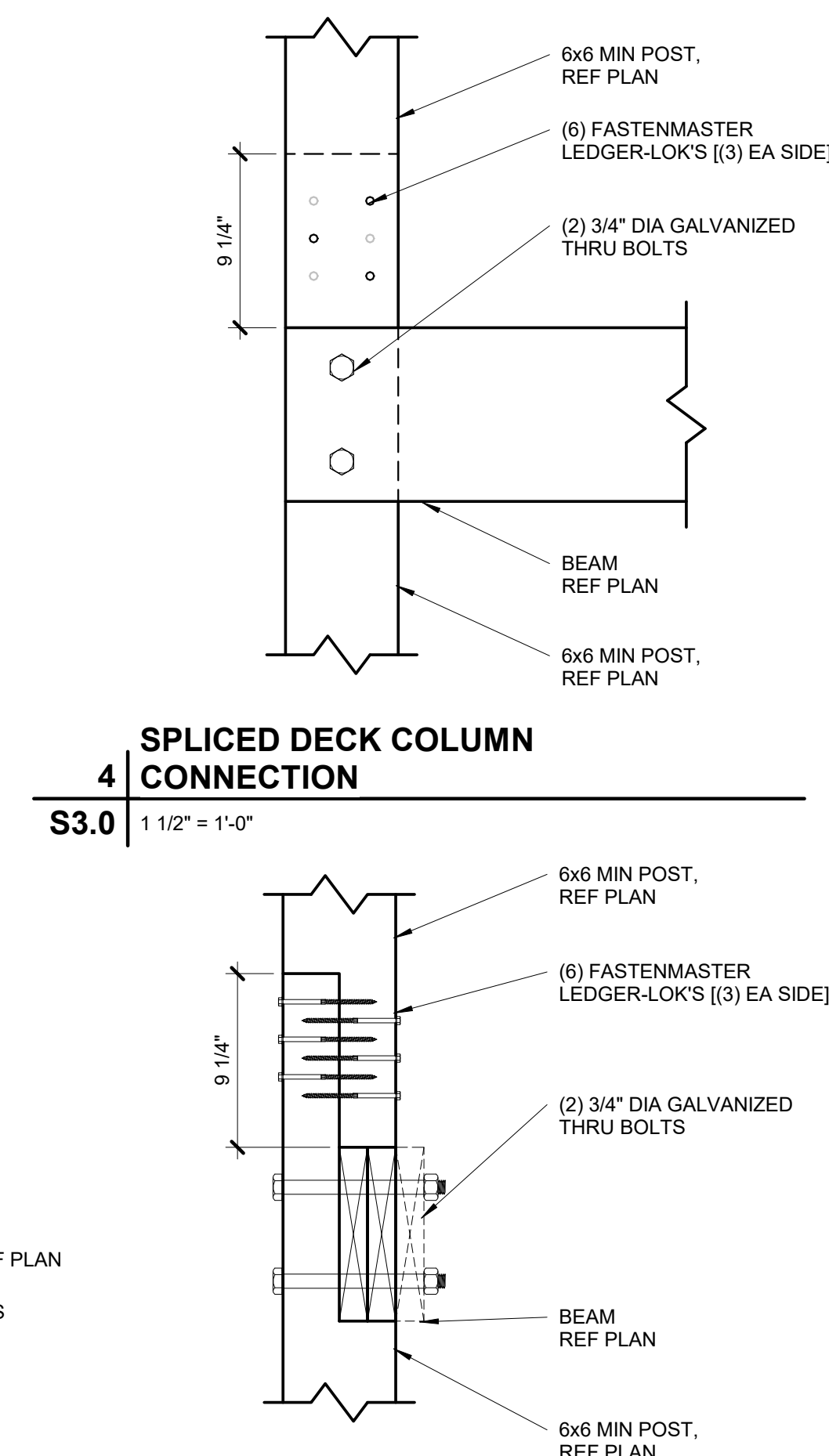
NOTE:
 CHART IS APPLICABLE ONLY WHEN DECK IS SHOWN ON APPROVED PLAN

| | |
|------|---------------------------|
| 6 | TYPICAL LEDGER ATTACHMENT |
| S3.0 | 3/4" = 1'-0" |

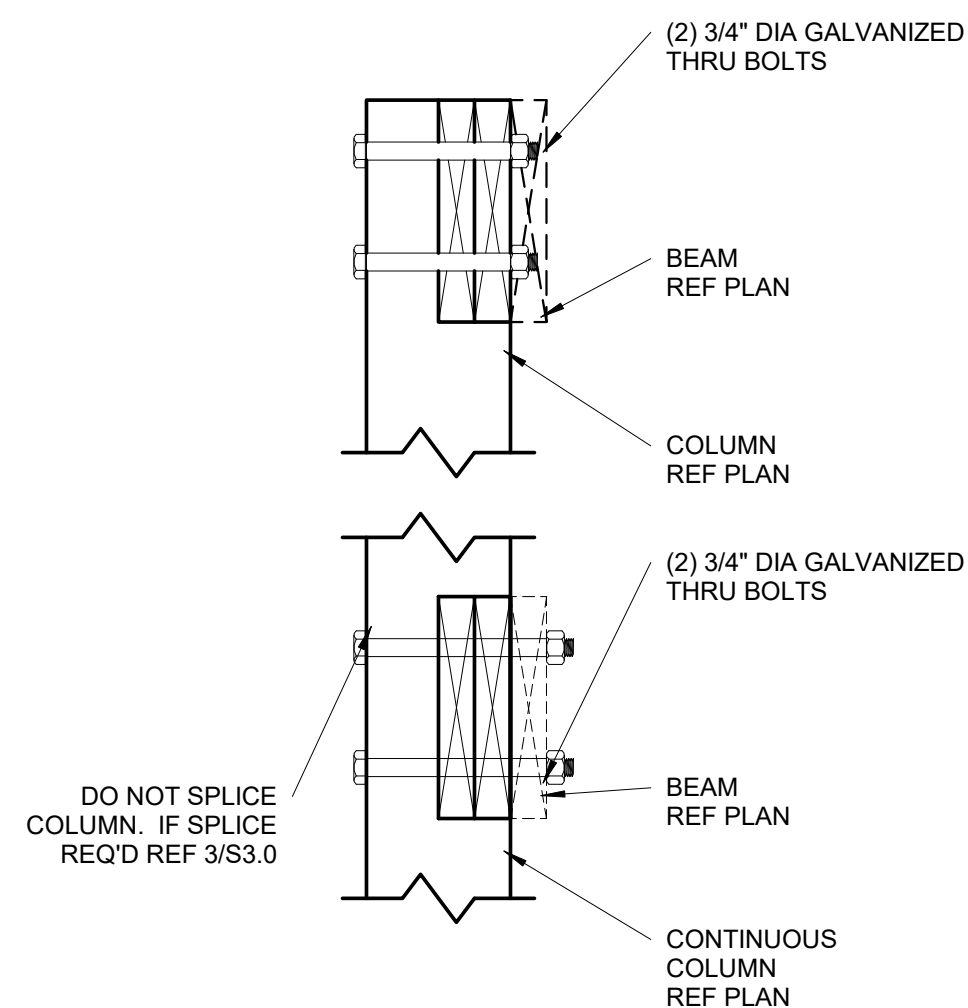
| BEAM SIZE | "X" | |
|-----------|------------|---|
| 2x8* | 5 1/2" MIN | *DISTANCE SHALL BE PERMITTED TO BE REDUCED TO 4 1/2" IF LAG SCREWS ARE USED OR BOLT SPACING IS REDUCED TO THAT OF LAG SCREWS TO ATTACH 2x8 LEDGERS TO 2x8 BAND JOISTS |
| 2x10 | 6 1/2" MIN | |
| 2x12 | 7 1/2" MIN | |



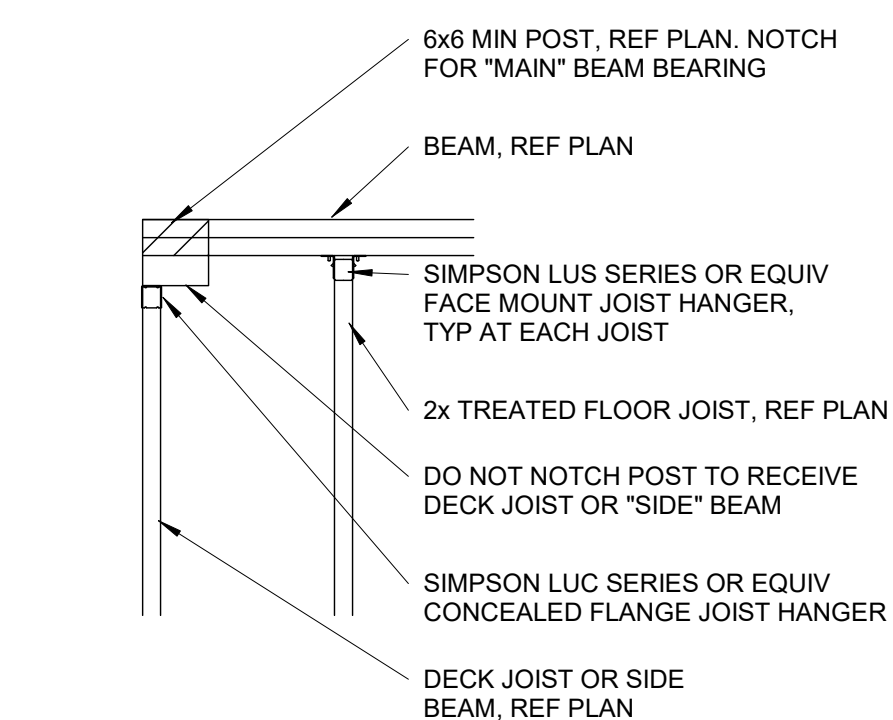
| | |
|------|-----------------------------|
| 5 | TYPICAL LEDGER BOLT SPACING |
| S3.0 | 3/4" = 1'-0" |



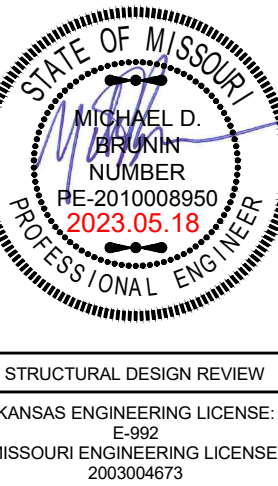
| | |
|-------------|---------------------------------------|
| | SPLICED DECK COLUMN CONNECTION |
| 3 | |
| S3.0 | 1 1/2" = 1'-0" |



| | |
|------|-----------------------------|
| 2 | DECK BEAM/COLUMN CONNECTION |
| S3.0 | 1 1/2" = 1'-0" |



| | |
|------|--------------------------------------|
| 1 | DECK BEAM/COLUMN CORNER CONDITION |
| S3.0 | 3/4" = 1'-0" |



PROJECT:
at 138 Highland Meadows
77772 SW 12th Terrace
Lee's Summit, Missouri 64081

CLIENT:
New Mark Homes

CLIENT: New Mark Homes

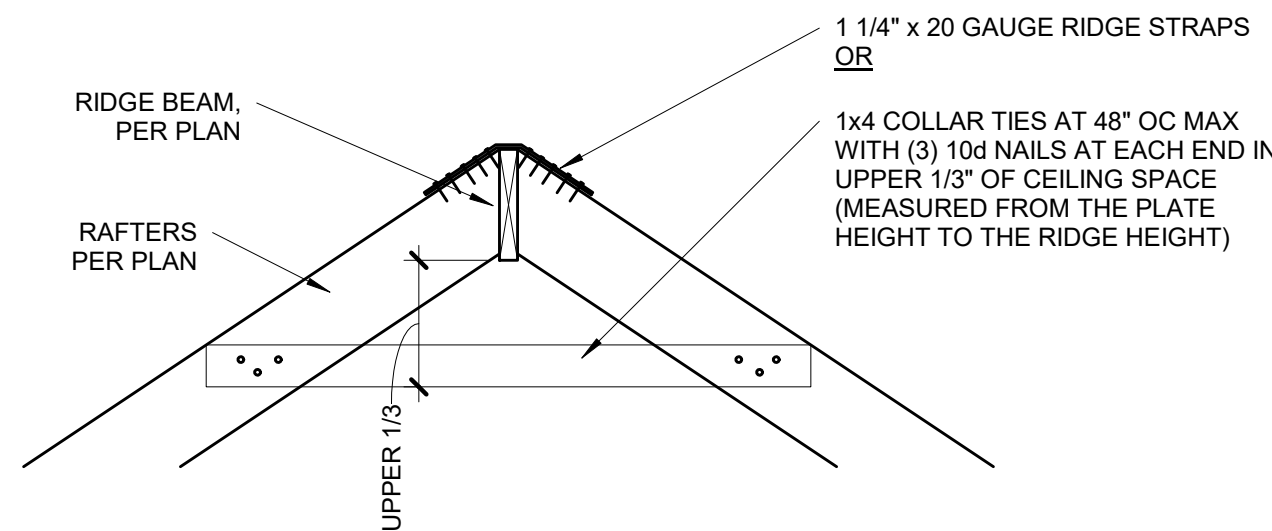
| | |
|-----------------|------------|
| PROJECT #: | 23-0730 |
| DRAWN BY: | CJH |
| CHECKED BY: | BDC |
| SUBMITTAL DATE: | 2023.05.18 |

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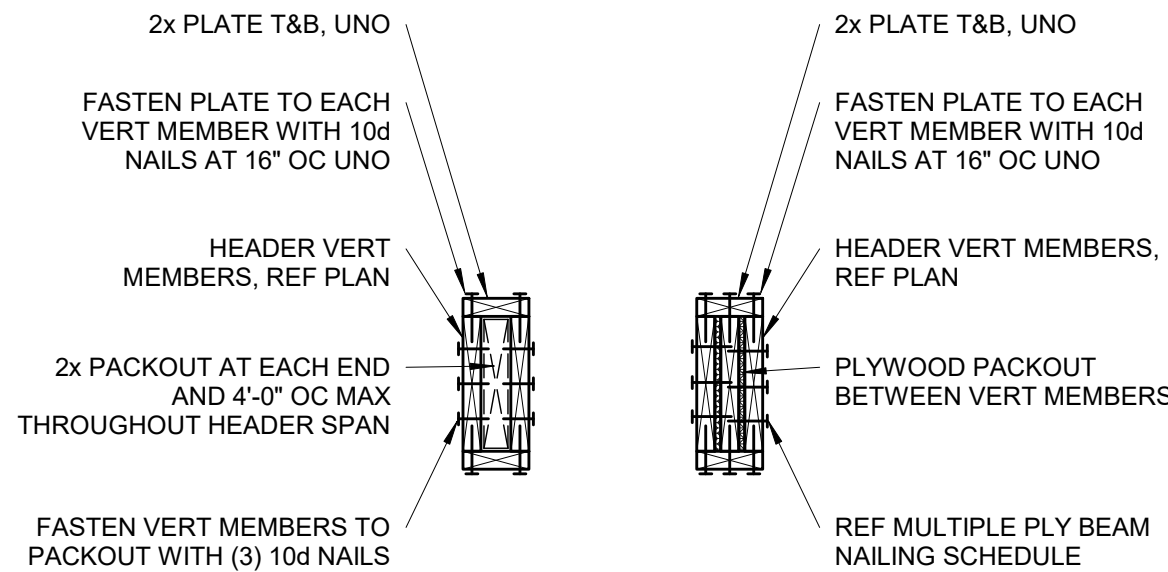
SHEET:

FRAMING DETAILS

S3.0



12 RIDGE BEAM DETAIL
S3.1 3/4" = 1'-0"

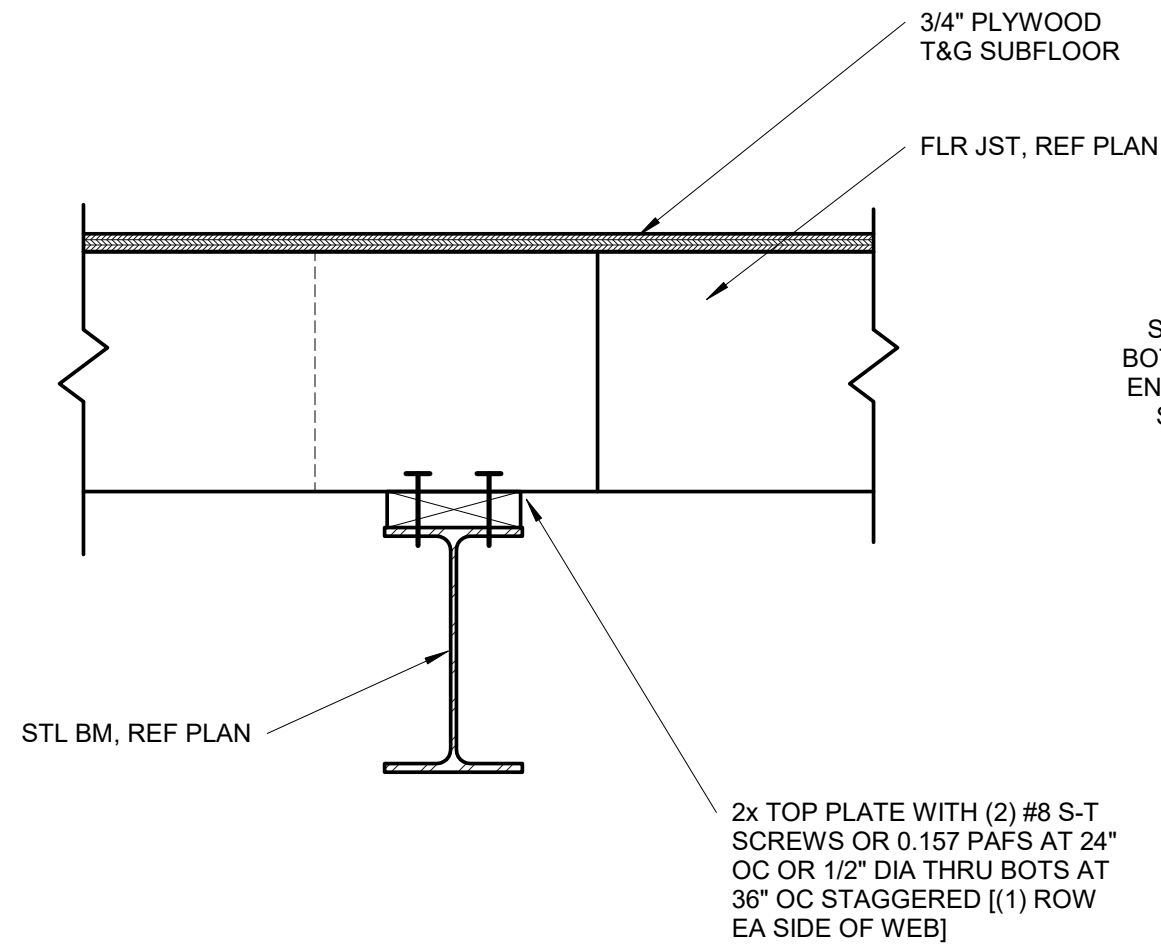


11 TYPICAL WOOD HEADER DETAIL
S3.1 NOT TO SCALE

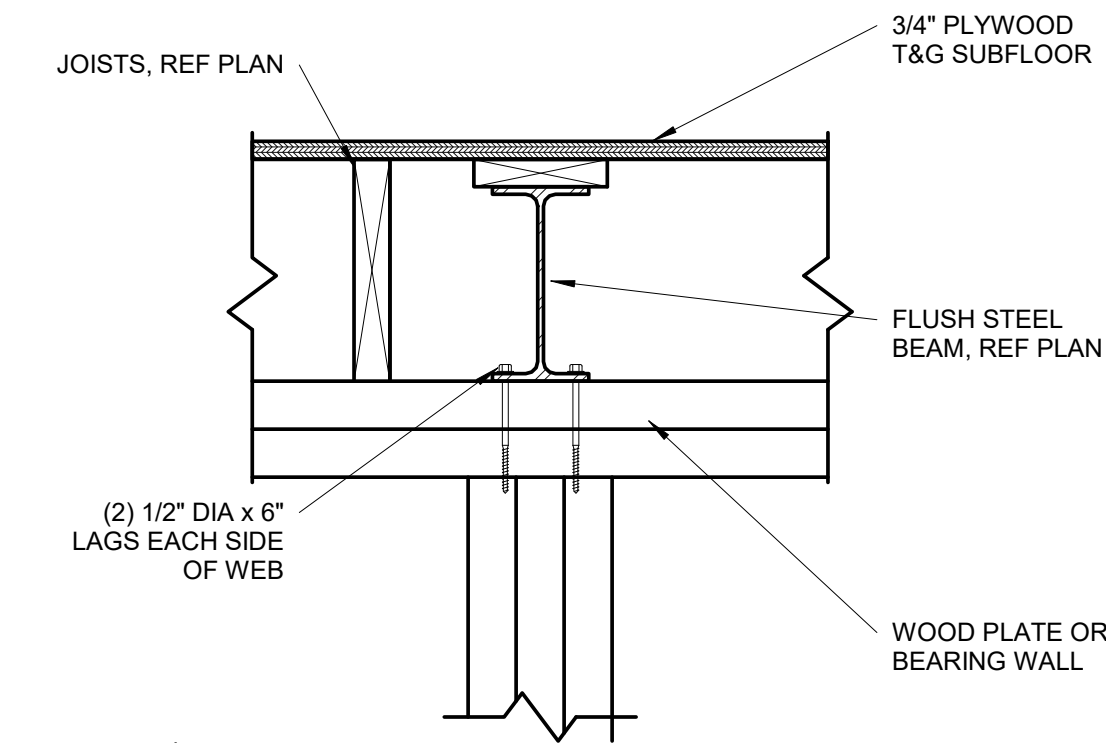
| 2 - PLY | 3 - PLY | 4 - PLY |
|---|---|---|
| | | |
| (3) ROWS OF 16d x 3-1/2" NAILS AT 6" OC | (3) ROWS OF 16d x 3-1/2" NAILS AT 4" OC | (2) ROWS OF 1/2" DIA. A307 THRU-BOLTS AT 12" OC STAGGERED |

NOTES:
1. NAILING SHOWN APPLIES UNLESS SPECIFICALLY NOTED IN DETAILS.
2. SPACE NAILS EVENLY THROUGHOUT DEPTH OF BEAM.

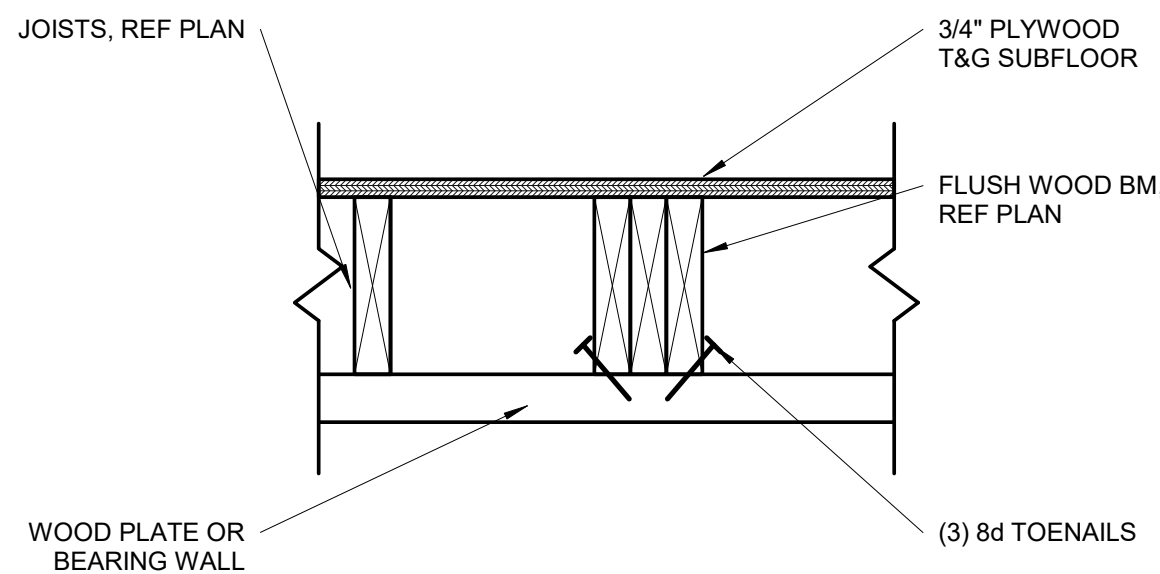
10 MULTIPLE PLY BEAM NAILING SCHEDULE
S3.1 NOT TO SCALE



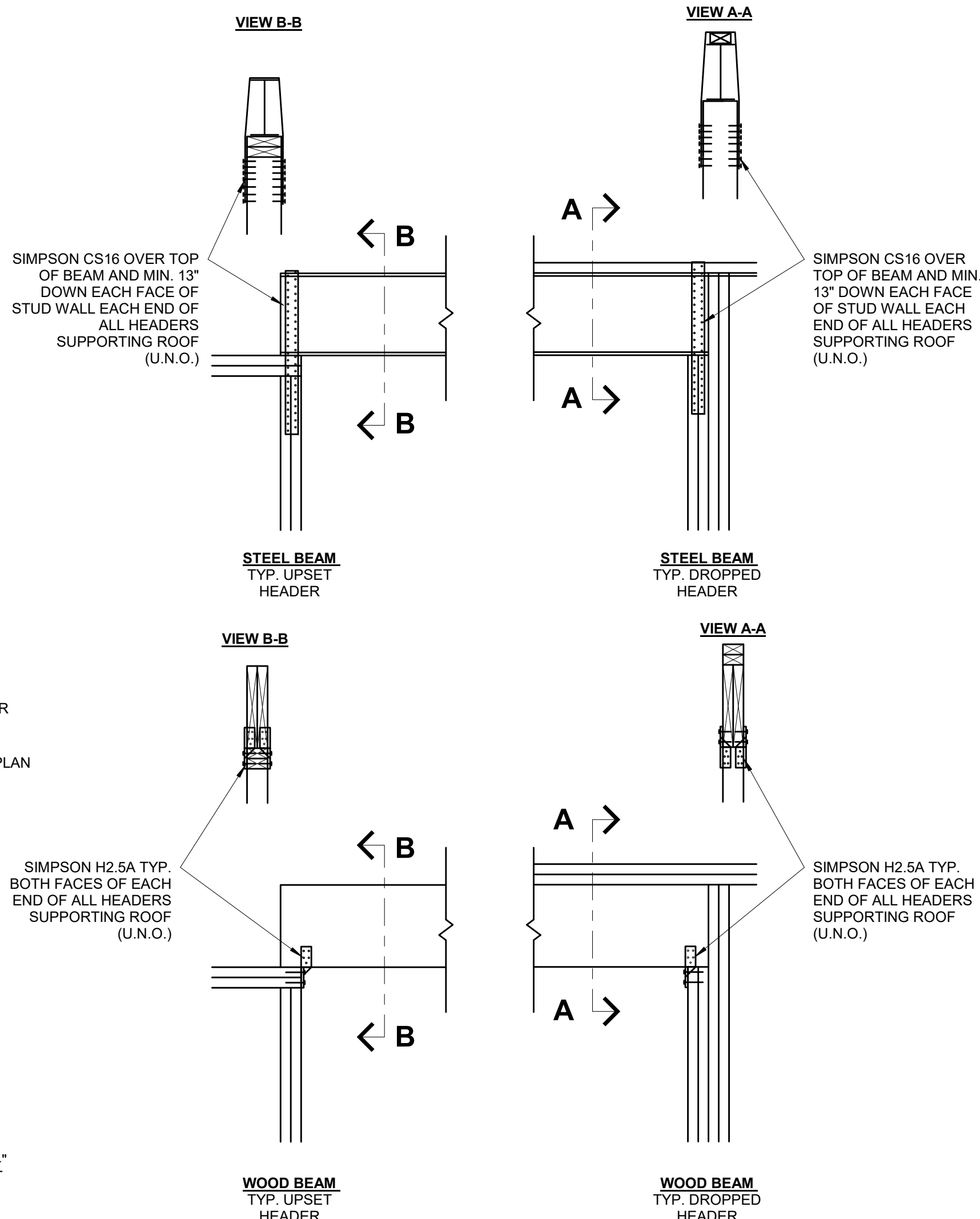
9 WOOD PLATE TO STEEL BEAM CONNECTION
S3.1 1 1/2" = 1'-0"



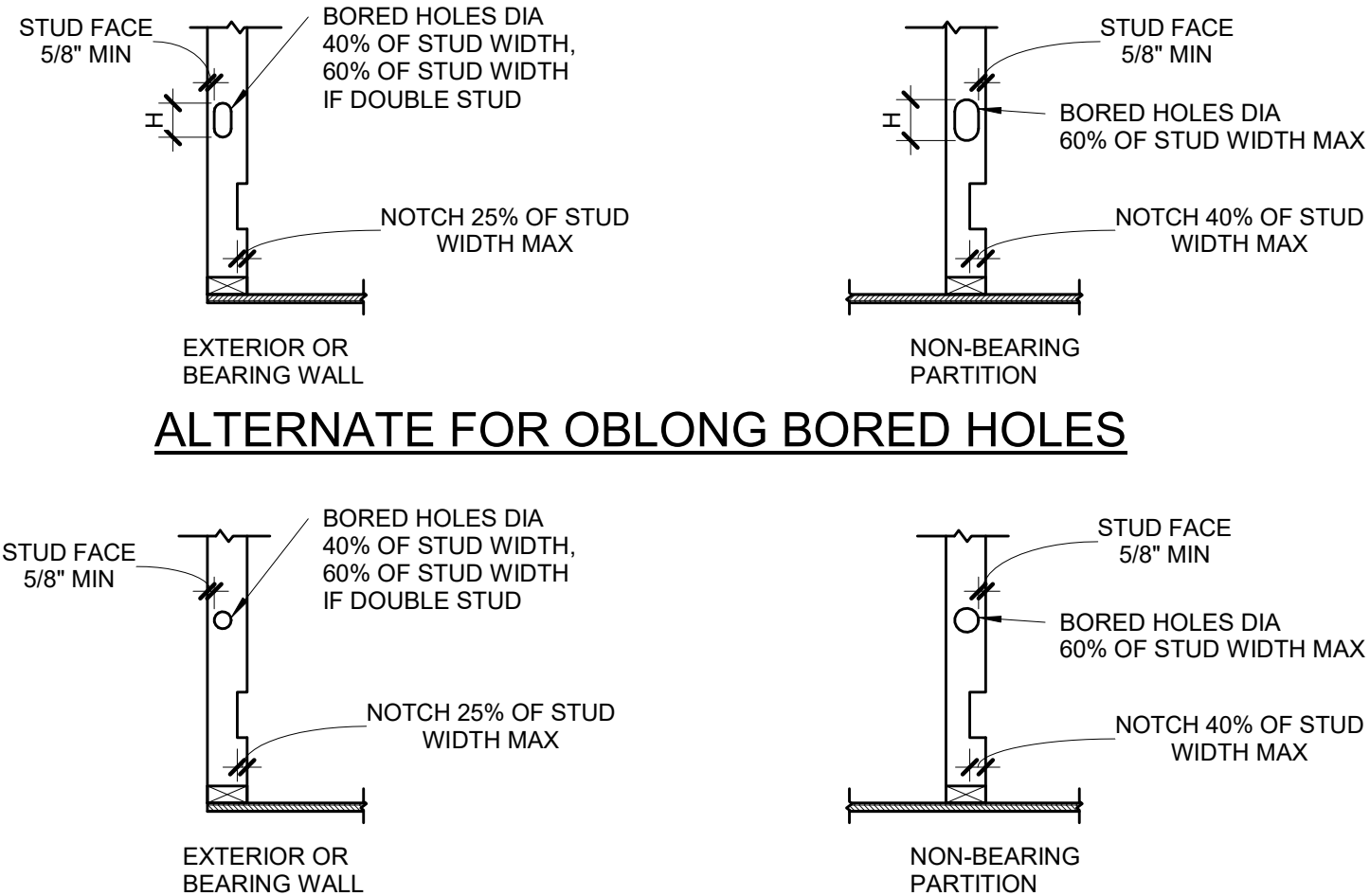
8 FLUSH STEEL BEAM CONNECTION
S3.1 1 1/2" = 1'-0"



7 FLUSH WOOD BEAM CONNECTION
S3.1 1 1/2" = 1'-0"



6 ROOF SUPPORTING BEAM HOLD DOWN
S3.1 3/4" = 1'-0" (COMPLIANCE WITH IRC R802.11)



ALTERNATE FOR OBLONG BORED HOLES

| WALL SIZE | BORED HOLE SIZE | | | | WALL NOTCH | |
|-----------|-------------------------------------|-----------------------|-------------------|-----------------------|------------|--------|
| | STUDS LOAD BEARING OR EXTERIOR WALL | NON LOAD BEARING WALL | LOAD BEARING WALL | NON LOAD BEARING WALL | 25% | 40% |
| 2x4 | 1 3/8" | - | 2 1/8" | 7/8" | 1 3/8" | 1 3/8" |
| (2) 2x4 | - | 2 1/8" | 2 1/8" | 7/8" | 1 3/8" | 1 3/8" |
| 2x6 | 2 1/4" | - | 3 15/16" | 1 3/8" | 2 1/4" | 2 1/4" |
| (2) 2x6 | - | 3 5/16" | 3 15/16" | 1 3/8" | 2 1/4" | 2 1/4" |
| 2x8 | 2 7/8" | - | 4 3/8" | 1 13/16" | 2 7/8" | 2 7/8" |
| (2) 2x8 | - | 4 3/8" | 4 3/8" | 1 13/16" | 2 7/8" | 2 7/8" |

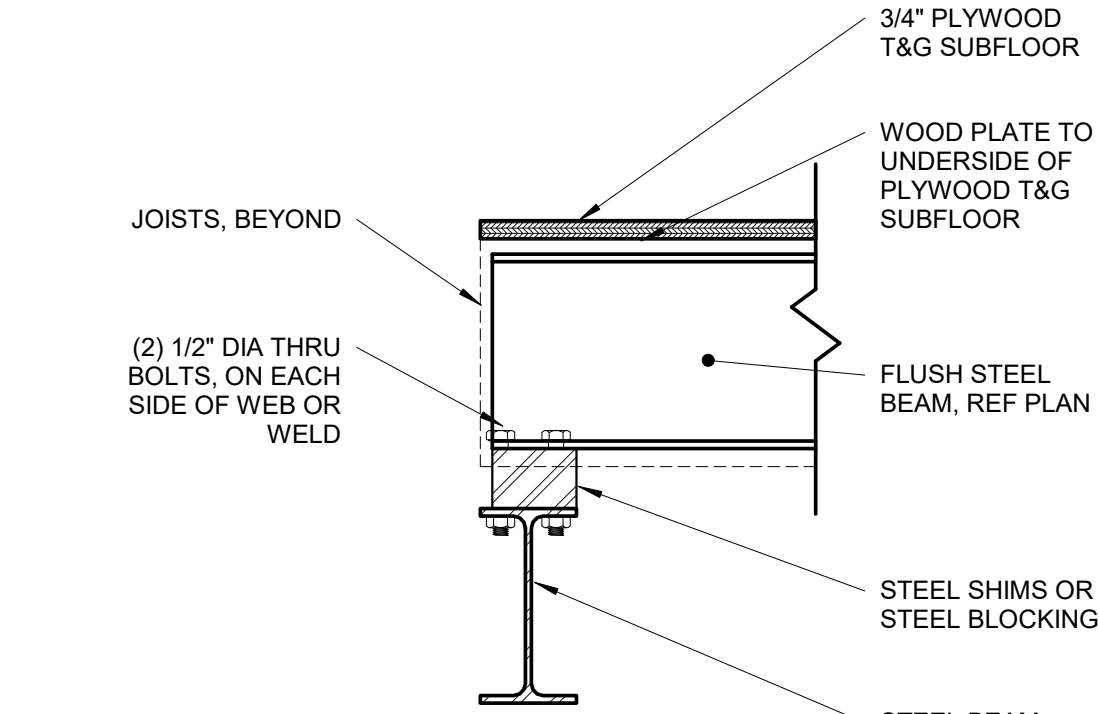
PLATES:
TOP AND BOTTOM PLATE HOLE, CUT OR NOTCH THAT IS 50% MORE OF WIDTH MUST BE REPAIRED USING 16 GA (MIN) METAL TIE THAT IS AT LEAST 1-1/2" WIDE IF WALL IS A SHEAR WALL IT MUST BE REPAIRED USING HARDY FRAME SADDLE (HFS).

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

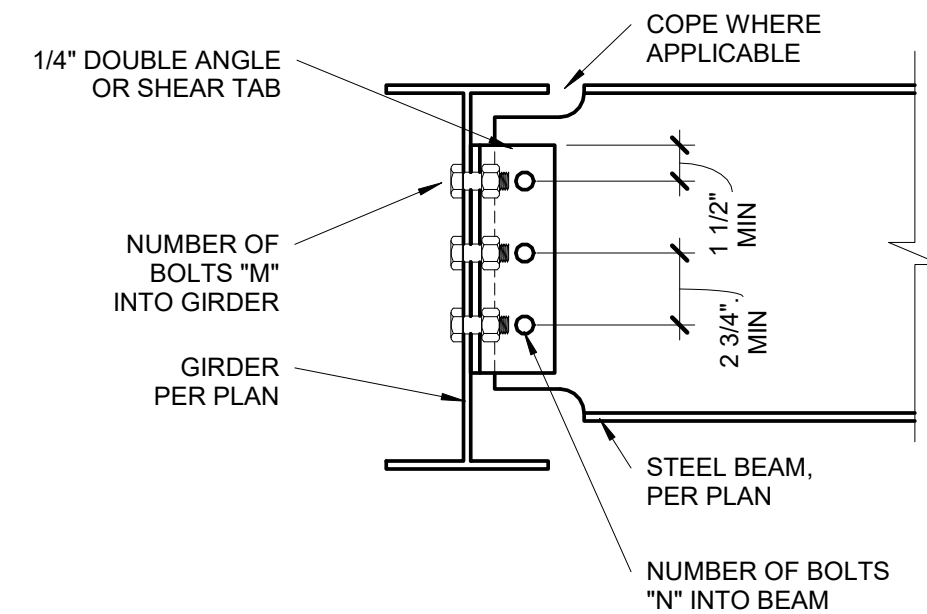
| WALL SIZE | HOLE SIZE |
|-----------|-----------|
| 2x4 | 1 3/4" |
| 2x6 | 2 3/4" |
| 2x8 | 3 5/8" |

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

5 DRILLING & NOTCHING DETAIL
S3.1 3/4" = 1'-0"



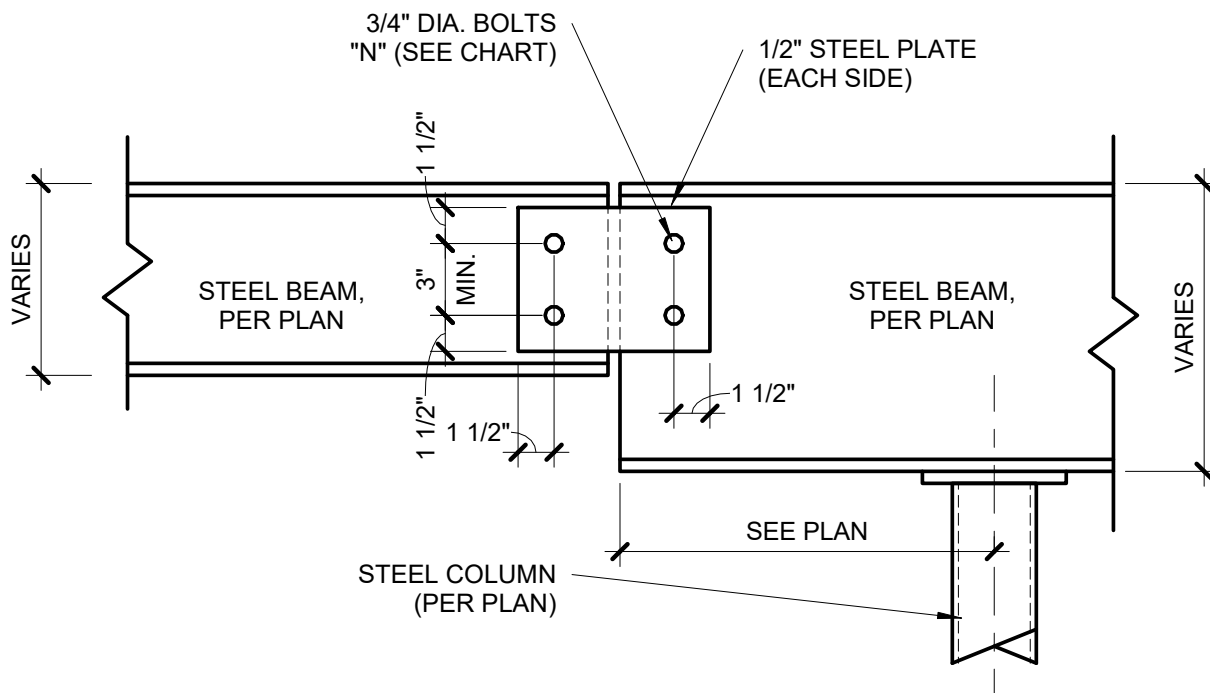
4 FLUSH STEEL BEAM TO STEEL BEAM
S3.1 1 1/2" = 1'-0"



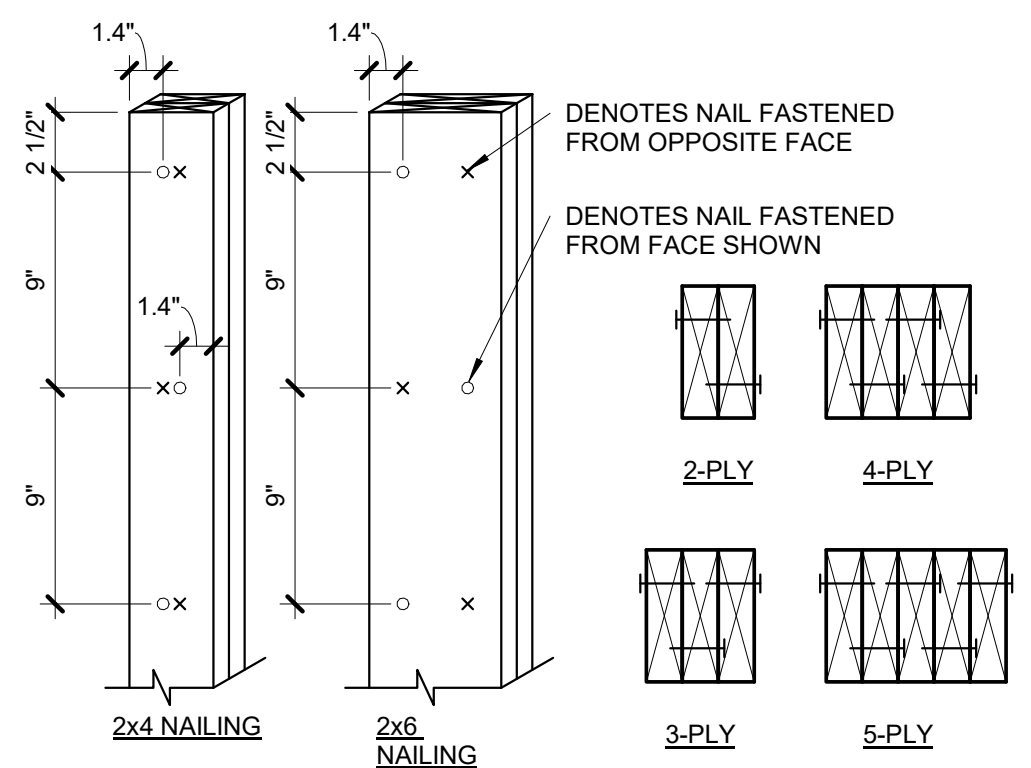
3 BEAM TO GIRDER CONNECTION
S3.1 1 1/2" = 1'-0"

| 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.

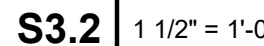
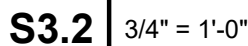
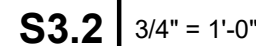


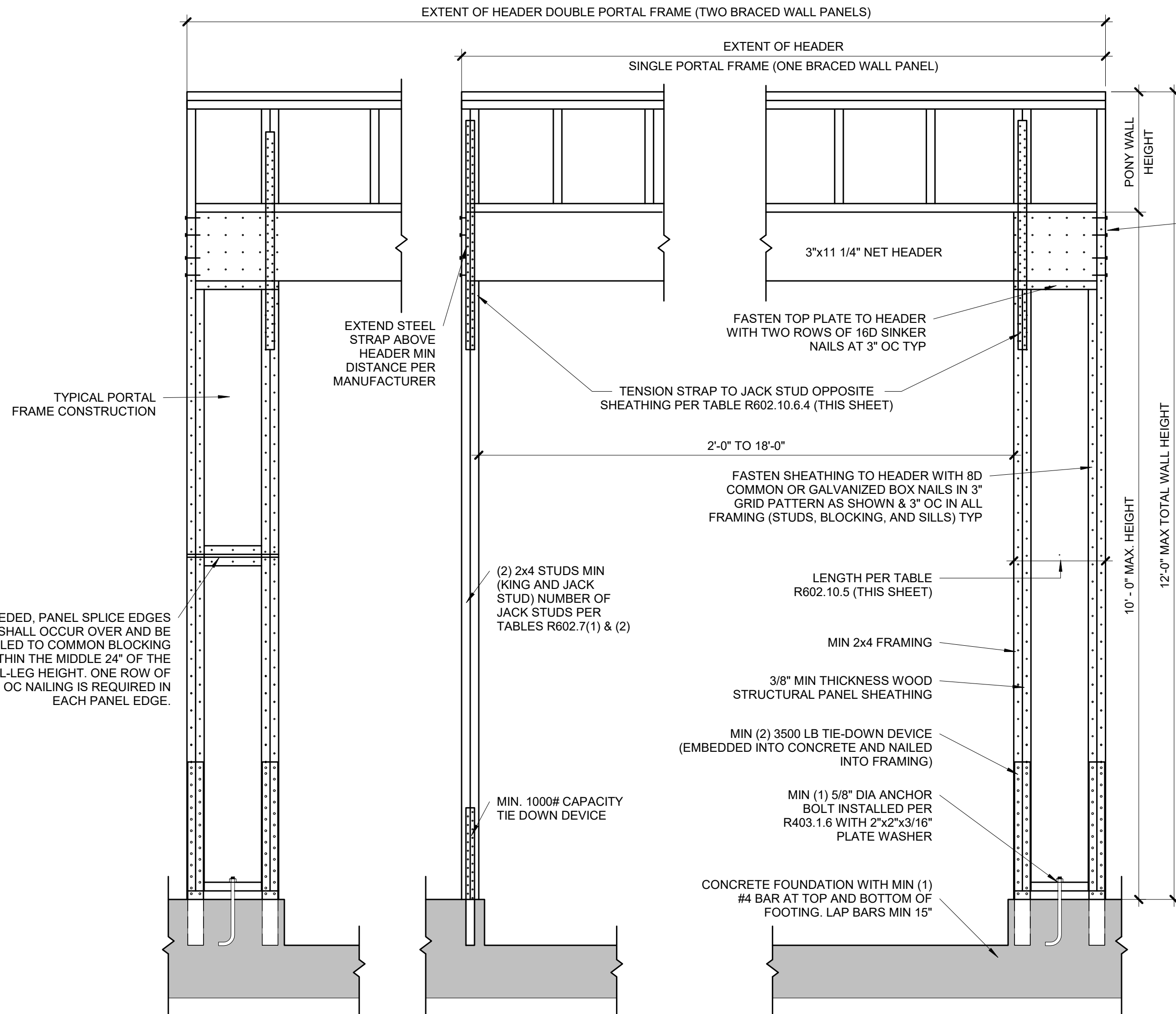
2 BEAM SPLICE DETAIL
S3.1 1 1/2" = 1'-0"



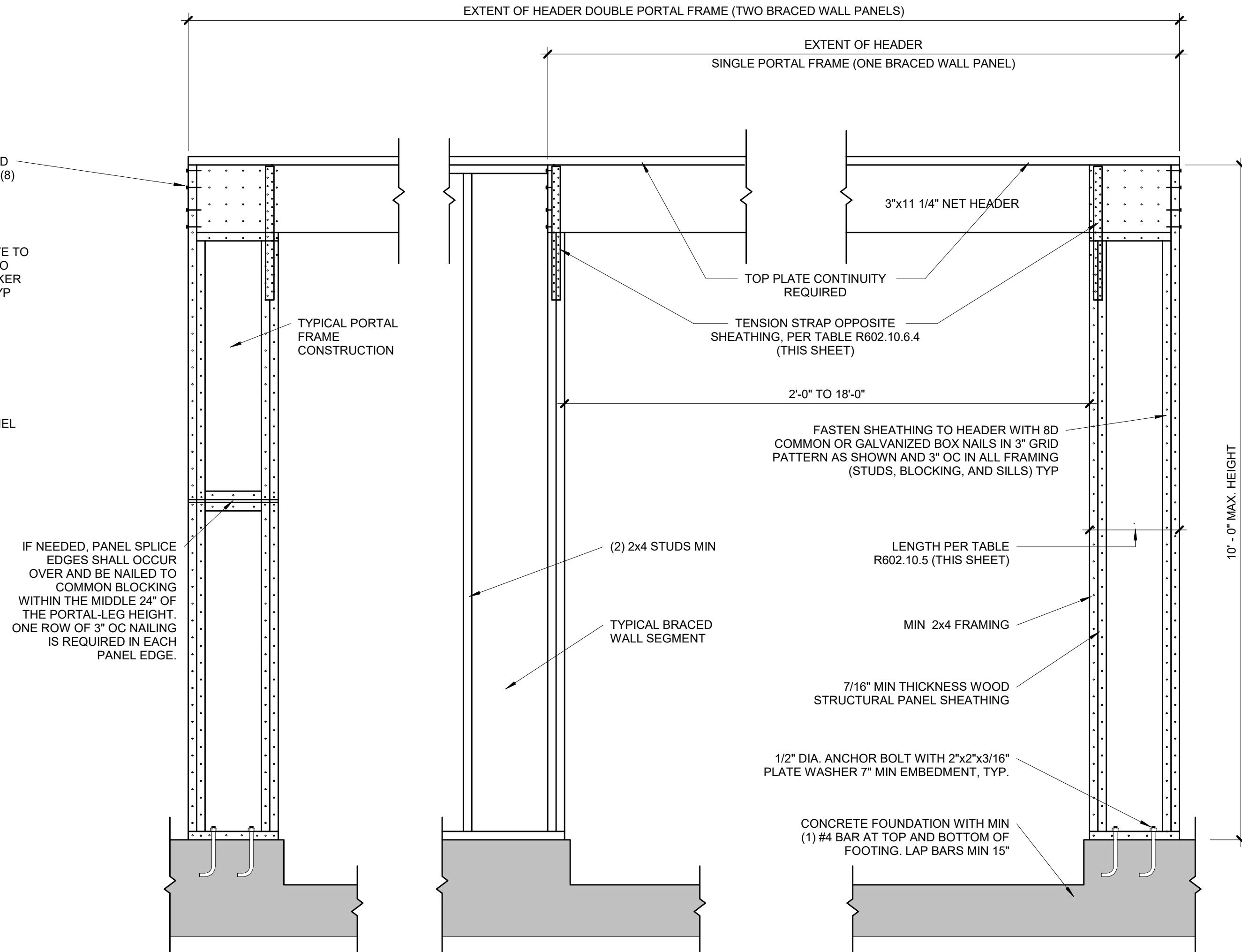
NOTES:
1. EACH 2x PLY SHALL BE FASTENED WITH (1) ROW OF 10d NAILS AT 9" OC, ALTERNATING SIDE TO SIDE.
2. 1.4" MIN EDGE DISTANCE, AND STARTING 2 1/2" FROM EACH END.
3. EXTEND FULL AREA OF COLUMN AS SOLID BLOCKING THROUGH JOIST BAYS AND WALLS TO LOAD-BEARING BEAM/WALL BELOW

1 BUILT-UP STUD COLUMN
S3.1 1 1/2" = 1'-0"





SECTION



PORTAL FRAME AT GARAGE DOOR WITHOUT HOLD DOWNS (METHOD PFG)

S4.0 1/3/4" = 1'-0" (ALT) (ALT ALLOWED AT GARAGE DOOR ONLY) (PER IRC R602.10.6.3)

| TABLE R602.10.5 (PARTIAL) | | | | | |
|--------------------------------------|---------------------|--------|---------|---------|---------|
| MINIMUM LENGTH OF BRACED WALL PANELS | | | | | |
| METHOD | MIN LENGTH (INCHES) | | | | |
| | 8 FEET | 9 FEET | 10 FEET | 11 FEET | 12 FEET |
| SUPPORTING ROOF ONLY | 16 | 16 | 16 | 16 | 16 |
| ONE STORY AND ROOF | 24 | 24 | 24 | 24 | 24 |
| PFG | 24 | 27 | 30 | 30 | 30 |

NOTE: MAX HEADER HEIGHT IS 10'-0", BUT WALL HEIGHT SHALL BE PERMITTED TO BE INCREASED TO 12'-0" WITH PONY WALL

TABLE R602.10.6.4

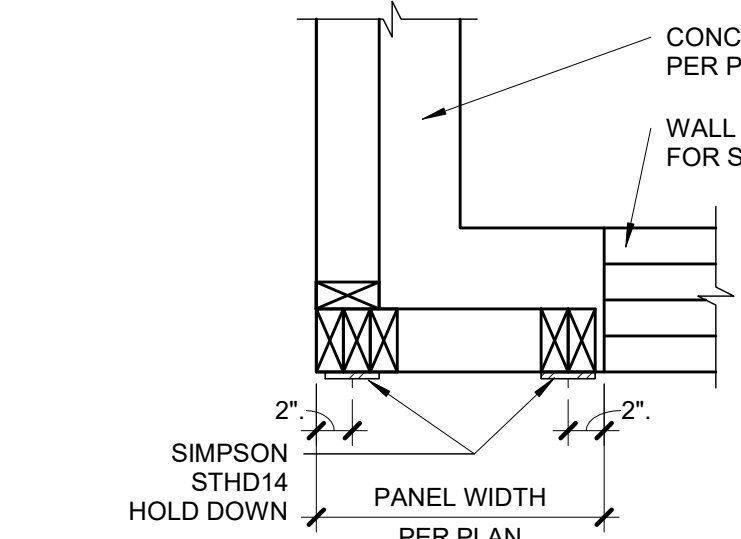
| TENSION CAPACITY STRAP TABLE | | | | |
|--|-----------------------------|------------------------------|--------------------------|----------------------------------|
| MIN WALL STUD FRAMING NOMINAL SIZE AND GRADE | MAX PONY WALL HEIGHT (FEET) | MAX TOTAL WALL HEIGHT (FEET) | MAX OPENING WIDTH (FEET) | TENSION STRAP CAPACITY REQ (LBS) |
| 2x4 #2 GRADE | 0 | 10 | 18 | 1,000 |
| | | | 9 | 1,000 |
| | | | 16 | 1,025 |
| | | | 18 | 1,275 |
| | 1 | 10 | 9 | 1,000 |
| | | | 16 | 2,175 |
| | | | 18 | 2,500 |
| | | | 9 | 1,500 |
| | 2 | 12 | 16 | 3,375 |
| | | | 18 | 3,975 |
| | | | 9 | 2,750 |
| | | | 12 | 3,775 |
| 2x6 STUD GRADE | 2 | 12 | 9 | 1,000 |
| | | | 16 | 2,150 |
| | | | 18 | 2,550 |
| | | | 9 | 1,750 |
| | 4 | 12 | 16 | 2,400 |
| | | | 18 | 3,800 |

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

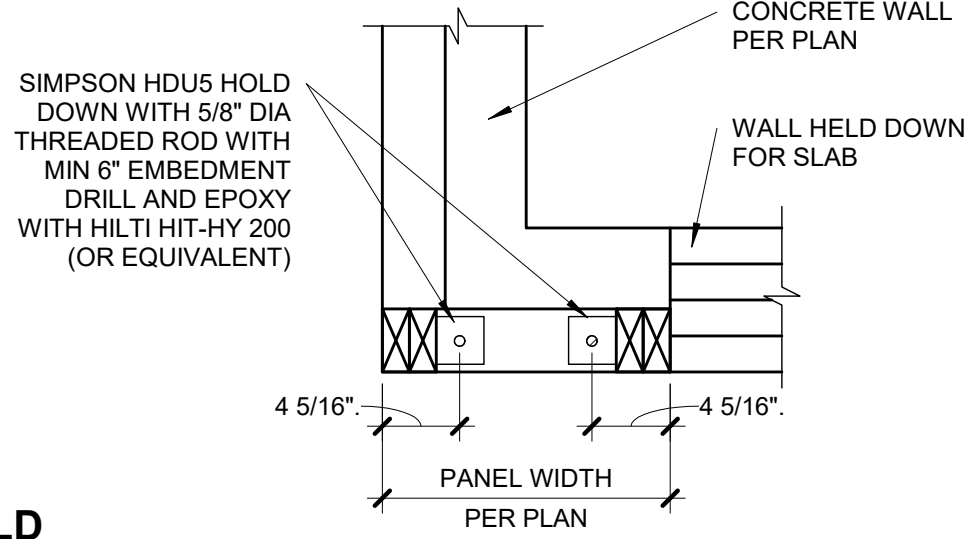
XXXX EXTERIOR BRACED WALLS:
WSP METHOD:
WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH MINIMUM SPAN RATING OF 2400 FOR 16" OC STUD. SPACING WITH 6d COMMON NAILS AT 6" OC EDGES AND 12" OC FIELD OR SHEATHING THICKNESS NOT LESS THAN 7/16" WITH MINIMUM SPAN RATING OF 24/16 FOR 24" OC SPACING WITH 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN FIELD.
(NOTE: FRAMING MEMBERS 16" OC MAX, UNBLOCKED, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS)

///// 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.)

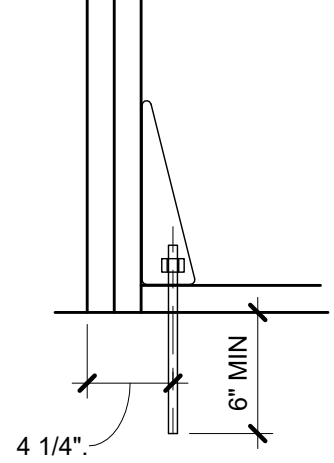
LIB METHOD:
1x4 WOOD FASTENED WITH (3) 8d COMMON NAILS OR SIMPSON / USP 16 GA TYPE WB (OR EQUAL) STL X-BRACE(S) AT 45° TO 60° ANGLES, MAXIMUM 16" OC STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.



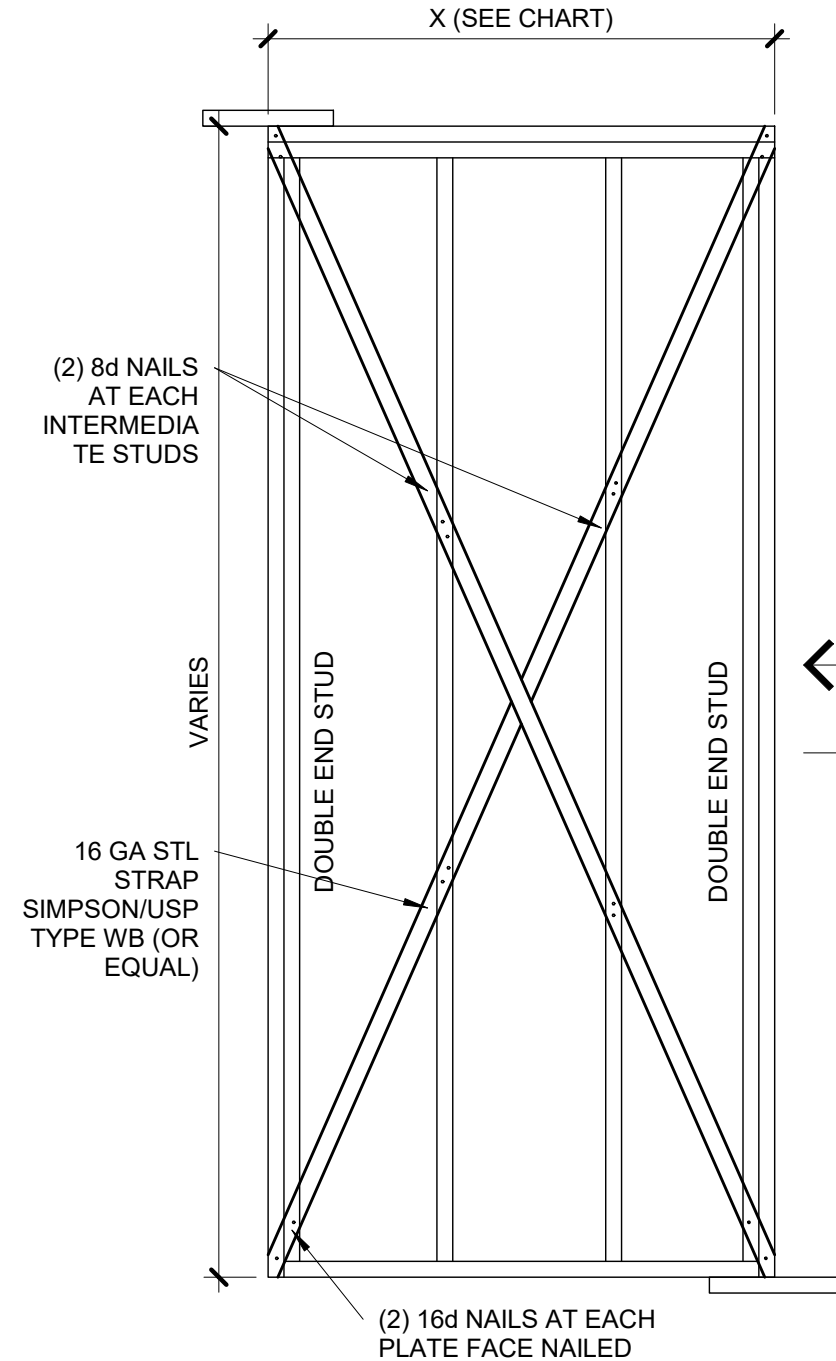
PLAN VIEW - ALTERNATE BRACED WALL PANEL



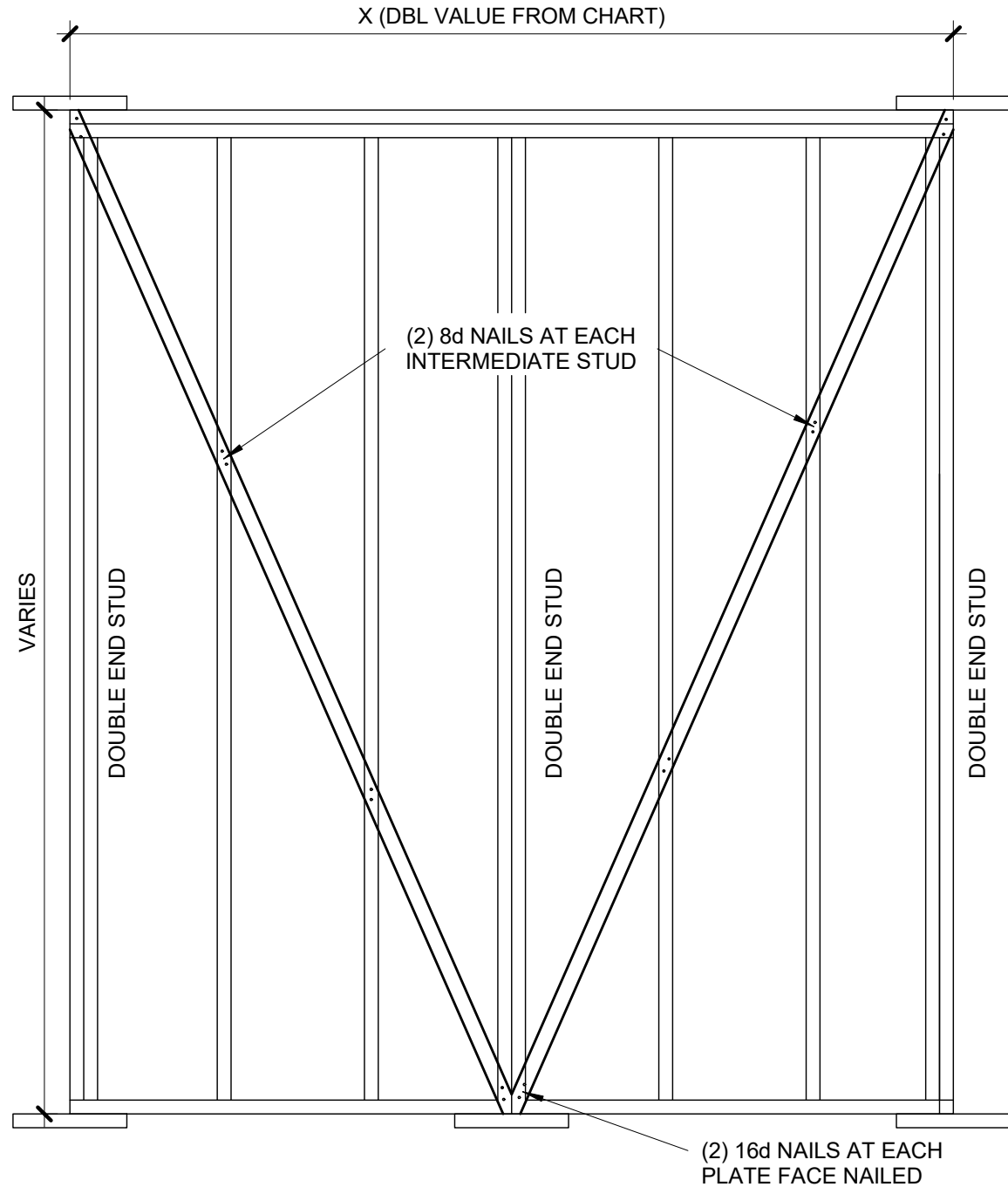
PLAN VIEW - ALTERNATE BRACED WALL PANEL DRILL AND EPOXY OPTION



PLAN VIEW - APA NARROW WALL BRACING METHOD WITHOUT HOLD-DOWNS



LIB

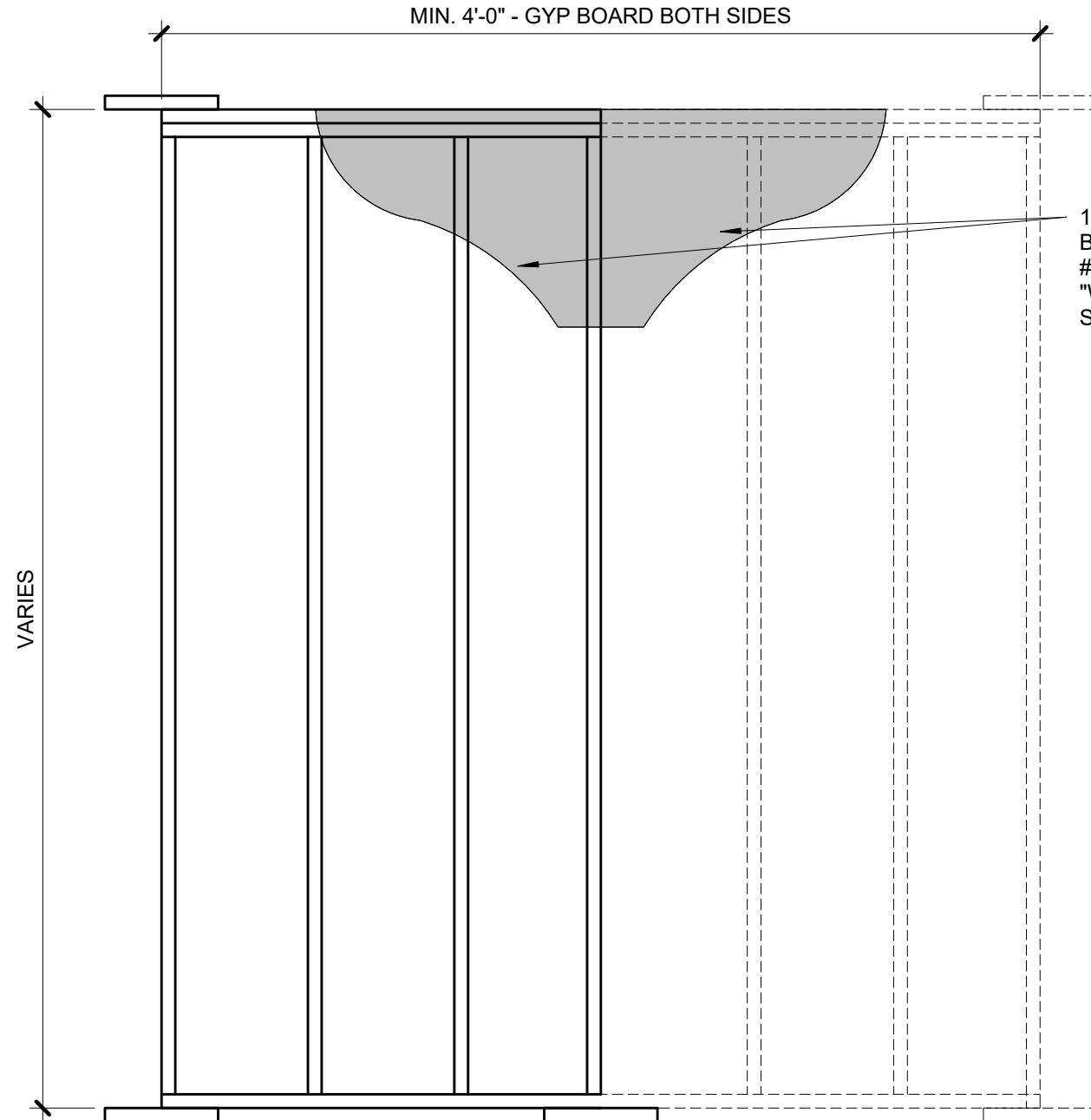


BRACED WALL PANEL-IRC
2 METHODS LIB AND GB

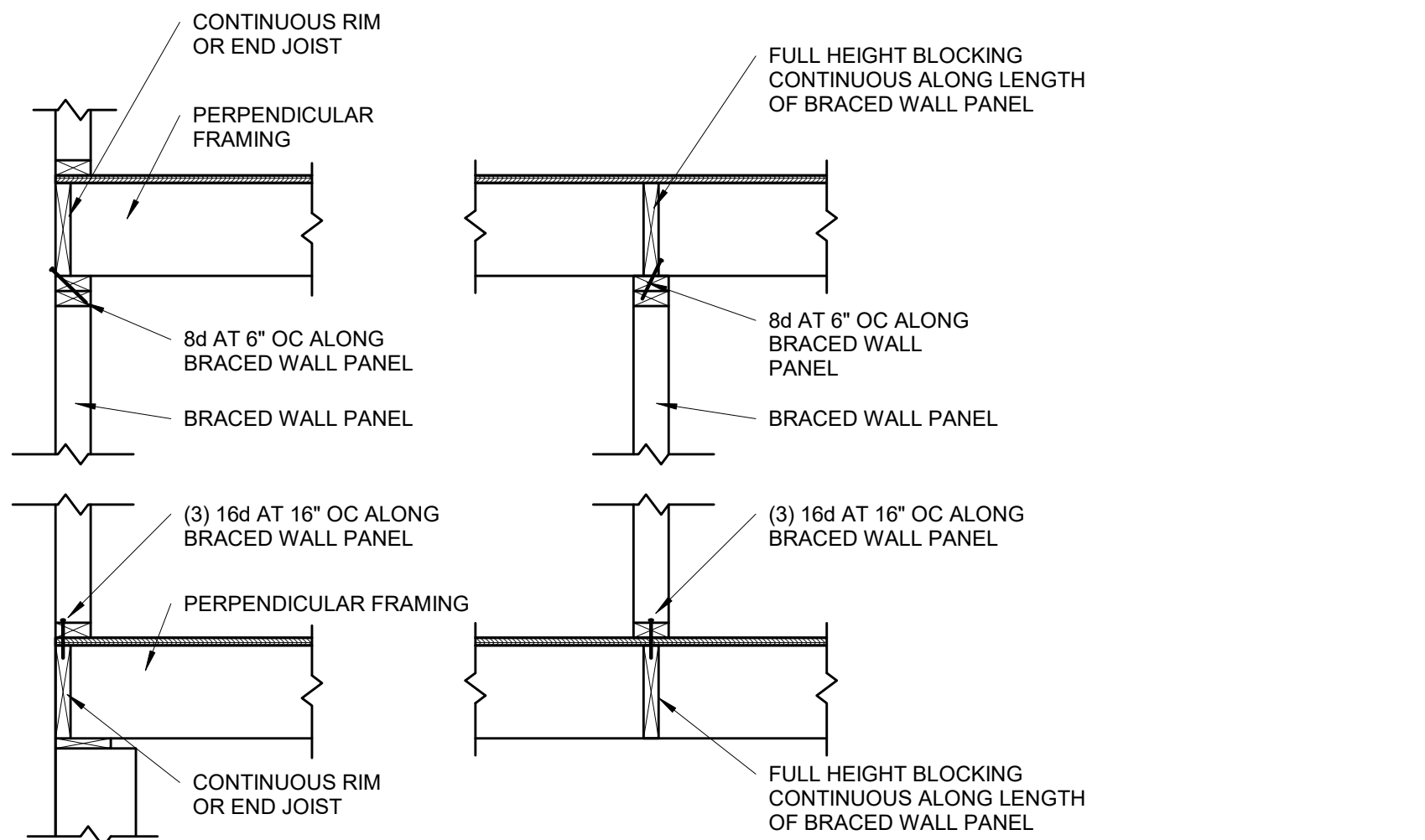
S4.0 1/3/4" = 1'-0"

| BRACED WALL PANEL SCHEDULE | | |
|----------------------------|---------------------|---------------------|
| WALL HEIGHT | MIN WALL LENGTH (X) | MAX WALL LENGTH (X) |
| 8'-0" | 4'-7" | 8'-0" |
| 9'-0" | 5'-2" | 9'-0" |
| 10'-0" | 5'-9" | 10'-0" |
| 11'-0" | NP | - |
| 12'-0" | NP | - |

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



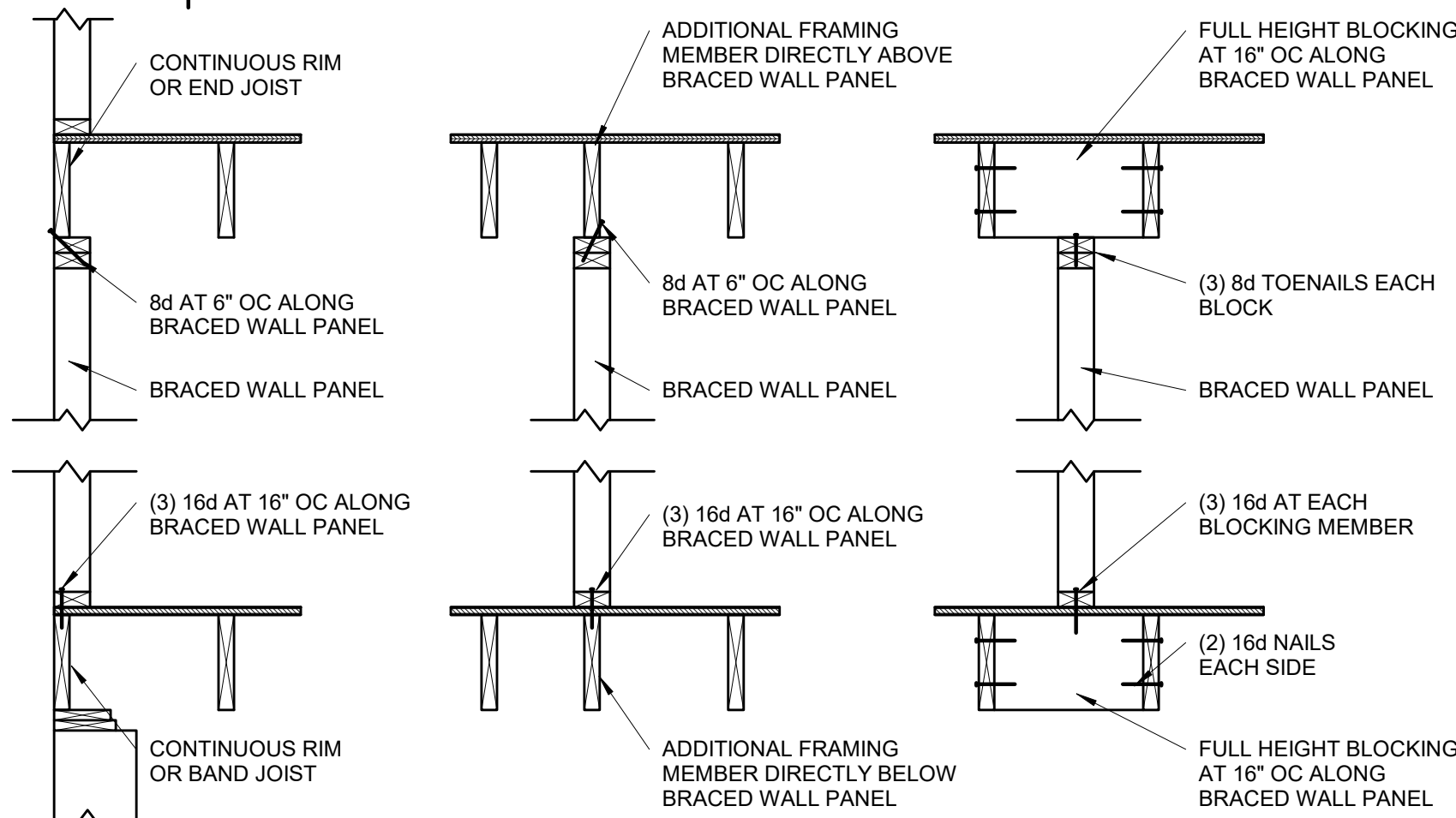
GB



**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"

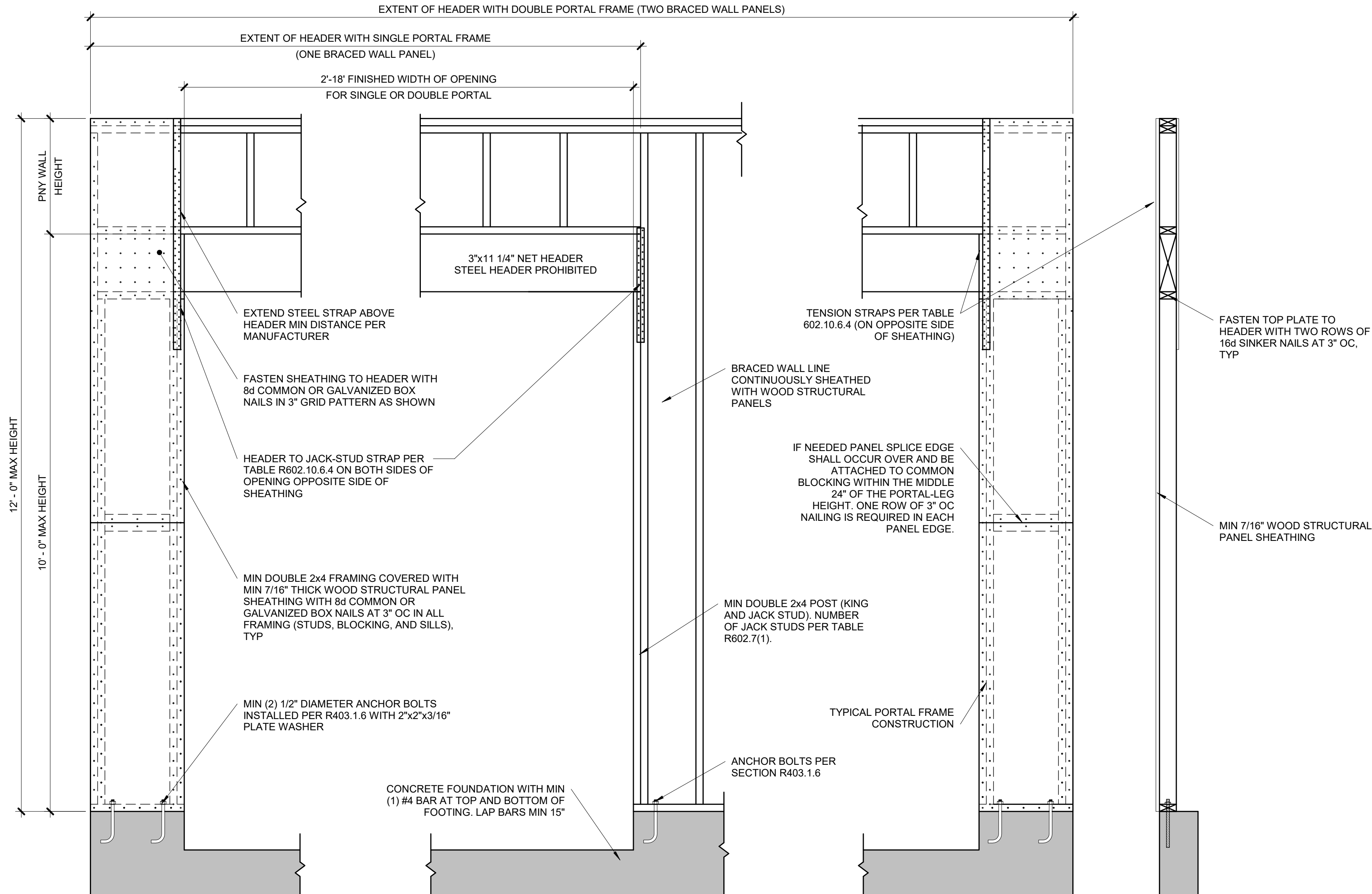
CONT. SHEATHED BRACED WALL END CONDITIONS

| END CONDITION 1 | END CONDITION 2 |
|-----------------|---|
| | |
| END CONDITION 3 | END CONDITION 4 |
| | |
| END CONDITION 5 | REQUIREMENTS |
| | <p>RETURN PANEL: 24" FOR BRACED WALL LINE SHEATHED WITH WOOD STRUCTURAL PANELS. 32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD.</p> <p>DISTANCE D: 24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS. 32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD.</p> <p>HOLD-DOWN DEVICE: 800 LBS CAPACITY FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FLOOR FRAMING BELOW.</p> |

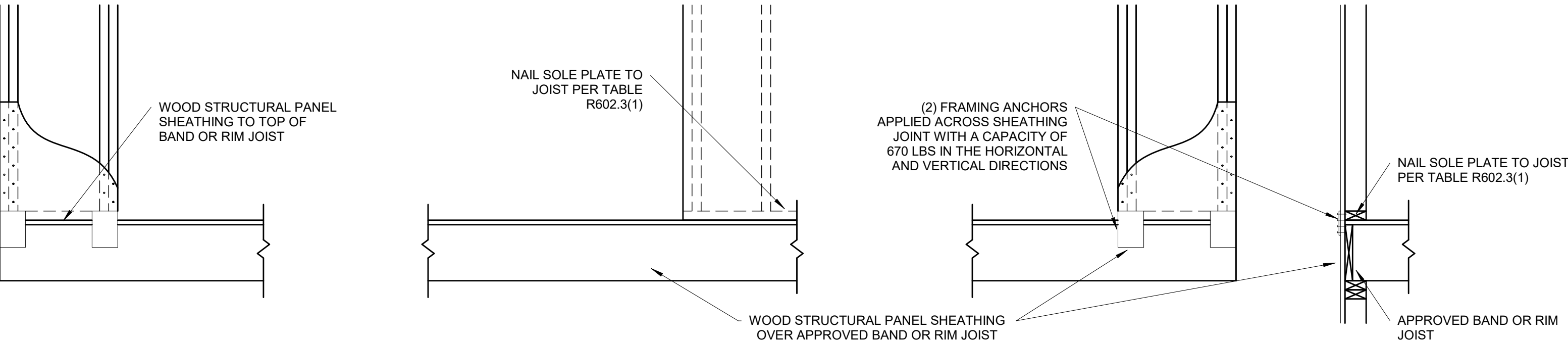
**CONTINUOUS SHEATHED BRACED
WALL END CONDITIONS**

S4.1

NOT TO SCALE. (COMPLIANCE WITH IRC R602.10.7)

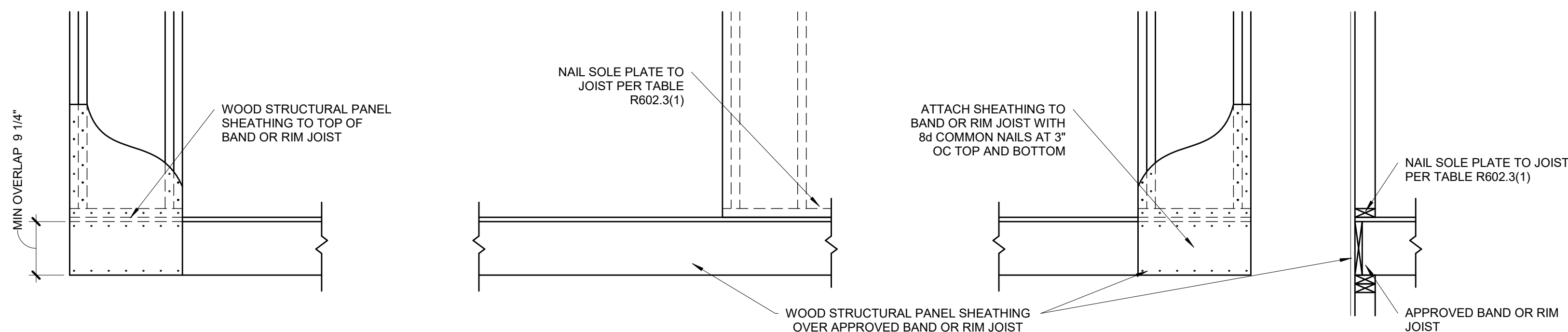


OVER CONCRETE OR MASONRY BLOCK FOUNDATION



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
1 PANEL CONSTRUCTION**

S4.1

3/4" = 1'-0"

(PER IRC R602.10.6.4)