

NOTES:

All building code section references are from the North Carolina State Building Code: Residential Code 2018 Edition. For construction in other states please consult your local building code.

1. EXTERIOR WALLS

-Exterior walls with a fire separation distance less than 3ft. Shall have not less than a one hour fire resistive rating with exposure from both sides. Projections shall not extend to a point closer than 2ft. from the line used to determine the fire separation distance.
 -Openings shall not be permitted in exterior walls of dwellings with a fire separation distance of less than 3ft. from the property line, measured perpendicular to the vertical plane of the wall.

2. GLAZING FOR HAZARDOUS LOCATIONS

-Tempered glass shall be permanently identified with a non-removable label visible when the unit is glazed. Heat strengthened and tempered spandrel glasses are exempt from permanent labeling but shall be labeled with a removable paper label by the manufacturer.
 -All glazing for hazardous areas shall pass the test requirements of CPSC 16 – CFR, Part 1201. See section 308.3 for exceptions.

-The following areas are considered hazardous locations for the purposes of glazing:

1. Glazing in side hinged doors except jalousies.
2. Glazing in fixed and sliding panels of sliding door assemblies and panels in sliding and bi-fold closet door assemblies.
3. Glazing in storm doors.
4. Glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing enclosing these compartments where the bottom exposed edge of the glazing is less than 60 inches measured vertically above any standing or walking surface.
5. Glazing, in an individual fixed or operable panel within the same plane as a door where the nearest vertical edge is within a 24 inch arc of the door in a closed position and the bottom edge is less than 60 inches above the floor or walking surface.
6. Glazing in an individual fixed or operable panel, other than those locations described in items 4 and 5 above, that meets all of the following conditions:
 -Exposed area of an individual pane greater than 9 square feet.
 -Bottom edge less than 18 inches above the floor. -Top edge greater than 36 inches above the floor.
 -One or more walking surfaces within 36 inches horizontally of the glazing.
7. All glazing in railings regardless of an area or height above a walking surface. Included are structural baluster panels and nonstructural in-fill panels.
8. Glazing in walls and fences enclosing indoor and outdoor swimming pools, hot tubs and spas where the bottom edge of the pool or spa side is less than 60 inches above a walking surface and within 60 inches horizontally of the water's edge. This shall apply to single glazing and all panes in multiple glazing.

9. Glazing in walls enclosing stairway landings or within 60 inches of the top and bottom stairways in the direction of travel within 60 inches above the walking surface.

See section 308.4 for exceptions.

3. ATTACHED GARAGES

-Openings and penetrations through the walls or ceilings separating the dwelling from the garage shall be in accordance with Sections R302.5.1 through R302.5.3
 -Openings from a private garage directly into a room used for sleeping purposes shall not be permitted.
 -Other openings between the garage and residence shall be equipped with solid wood doors not less than 1-3/8 inches thick or 20 minute fire-rated doors.
 -The garage shall be separated as required by table R302.6. Openings in garage walls shall comply with section R302.5. This provision does not apply to garage walls that are perpendicular to the adjacent dwelling unit wall.

Table R302.6 Dwelling/Garage Separation		
Separation	Material	
From the residence and attics	Not less than ½-inch gypsum board or equivalent applied to the garage side	
From all habitable rooms above the garage	Not less than 5/8-inch Type X gypsum board or equivalent	
Structure(s) supporting assemblies used for separation required by this section	Not less than ½-inch gypsum board or equivalent	
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than ½-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area	

-The area of the floor used for parking of vehicles shall be sloped toward the main vehicle entry doorway or to a drain for the movement of liquids.

4. UNDER STAIR PROTECTION

-Enclosed accessible space under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with ½ inch gypsum board.

5. HANDRAILS

-Min. height: 34 inches. Max. height: 38 inches
 -Handrails to be provided on at least one side of stairways of four or more risers. Handrails shall be continuous the full length of stairs. (See section R311.7.8.2 2018 NCRC for exceptions)
 -Spiral stairs to have handrails on outside radius.

6. GUARDRAILS

-Porches, balconies or raised floor surfaces located more than 30 inches above the floor or finished grade below shall have guardrails not less than 36 inches in height.
 -Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guardrails not less than 30 inches in height measured vertically from the nosing of the treads.
 -Required guardrails shall have intermediate rails or ornamental closures that do not allow passage of an object 4 inches or

more in diameter.
 -Horizontal spacing between the vertical members in required guardrails shall be a maximum of 4 inches between members.

7. SMOKE DETECTORS

-Smoke detectors shall be installed in accordance with Section R314

8. CARBON MONOXIDE ALARMS

-Carbon monoxide alarms shall be installed in accordance with Section R315

9. FOUNDATIONS

-Provide a crawl space access of minimum 22in height x 30in width, located at best place due to grade.
 -The surface area adjacent to the foundation should provide adequate drainage to drain surface water from foundation walls.
 -Foundation walls should be drained and damp proofed in accordance with Sections 405 and 406
 -A minimum 6-mil (0.15 mm) polyethylene vapor retarder or equivalent shall be installed to nominally cover all exposed earth in the crawl space with joints lapped not less than 12 inches (305 mm). Where there is no evidence that the ground water table can rise to within 6 inches (152 mm) of the floor of the crawl space it is acceptable to puncture the ground vapor retarder at low spots to prevent water puddles from forming on top of the vapor retarder due to condensation. Install a drain to daylight or sump pump at each low spot. Crawl space drains shall be kept separate from roof gutter drain systems and foundation perimeter drains.
 -Foundation Anchorage: In all cases at minimum, the wood sole plate at exterior walls on monolithic slabs and wood sill plates shall be anchored to the foundation with 1/2" anchor bolts at 6'-0" O.C. max. and within 12" of the ends of each plate section. Minimum embedment is 7".

10. HEADERS

-Refer to table R602.7(1) and (2) for header sizes not specified on plan.

11. FLASHING

-Approved corrosion resistant flashing shall be provided in the following areas:
 • At the top of all exterior window and door openings.
 • At the intersection of masonry construction with frame or stucco walls.
 • Under and at the ends of masonry, wood or metal copings and sills
 • Continuously above all projecting wood trim
 • Where exterior porches, decks, or stairs attach to a wall or floor assembly of wood frame construction
 • Under built in gutters
 • At junction of chimneys and roofs.
 • In all roof valleys and around all roof openings.

12. ROOF DRAINAGE

-All gutters and downspouts shall discharge at least 6 feet away from foundation walls or into an approved drainage system.

13. ROOF FRAMING

-Rafters shall be nailed to ceiling joists where joists are parallel to rafters.
 -When joists are perpendicular to rafters, provide a rafter tie located as near the plate as possible, spaced not more than 48" O.C.

-Rafters shall be framed to ridge board or to each other with a gusset plate as a tie. Ridge board shall be at least 1-inch (25.4 mm) nominal thickness and not less in depth than the cut end of the rafter. Opposing rafters at the ridge must align within the thickness of the ridge member. Regularly spaced hip and valley rafters need not align. At all valleys and hips there shall be a valley or hip rafter not less than 2-inch (51 mm) nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Where the roof pitch is less than three units vertical in 12 units horizontal (25-percent slope), structural members that support rafters and ceiling joists, such as ridge beams, hips and valleys, shall be designed as beams.
 -If using roof trusses, truss design, layout and engineering to be supplied by truss manufacturer.

14. ATTIC ACCESS

-Minimum 22" X 30" attic access to be provided to any attic with a clear height over 30".
 -Exceptions: concealed areas not located over main structure including porches, knee walls less than 5ft. In height, dormers, bay windows, etc.

15. ENERGY CONSERVATION REQUIREMENTS

-Refer to Chapter 11 of the NC Residential Building Code for all energy conservation requirements.

16. WALL AND ROOF CLADDING

-Wall cladding to be designed for a 25lb per sq. ft. or greater positive or negative pressure for houses with a mean roof height of 35ft. or less.

17. HIGH WIND ZONES and WIND BORNE DEBRIS REGIONS

-Unless noted otherwise, this plan is not designed for construction in High Wind Zone or Wind Borne Debris regions. Please consult applicable building codes for additional structural requirements for building in High Wind Zones and Wind Borne Debris regions.

18. ROOF SLOPES FROM 2:12 – 4:12

-Install 2 layers of 15# felt paper.

19. RETAINING WALL

-An engineered design is required for retaining walls that are subject to hydrostatic pressure from ground water, and that support more than 48" of unbalanced backfill and do not have permanent lateral support at the top and bottom.

20. MANUFACTURED FIREPLACES

-Refer to manufacturer's specifications and details for installation.

Revision Table			
Number	Date	Revised By	Description

It is the sole responsibility of the contractor and or builder to determine whether these plans conform to all standards, provisions, requirements, methods of construction, and structures provided by applicable building codes, any other local agencies, and in accordance with good engineering and construction practice. The contractor and or builder must check all dimensions and other details prior to construction and be solely responsible thereafter.

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SHEET INDEX	
G-1	GENERAL NOTES
A-1	ELEVATIONS
A-2	FLOOR PLAN

This plan conforms to North Carolina State Building Code: Residential Code, 2018 Edition

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PENDRY-SALGADO FLIPPED
DL1865-R-PSB

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DATE:
 07/11/2022

SHEET:

GENERAL NOTES
G-1

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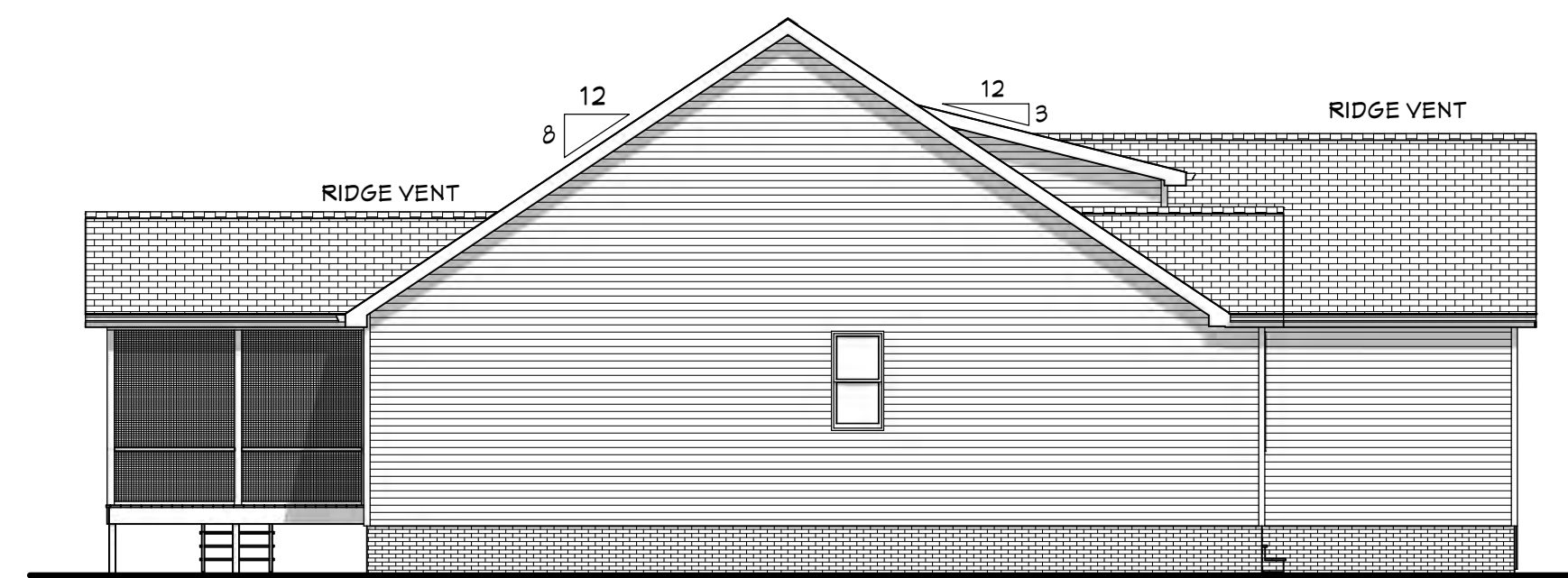
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DATE:
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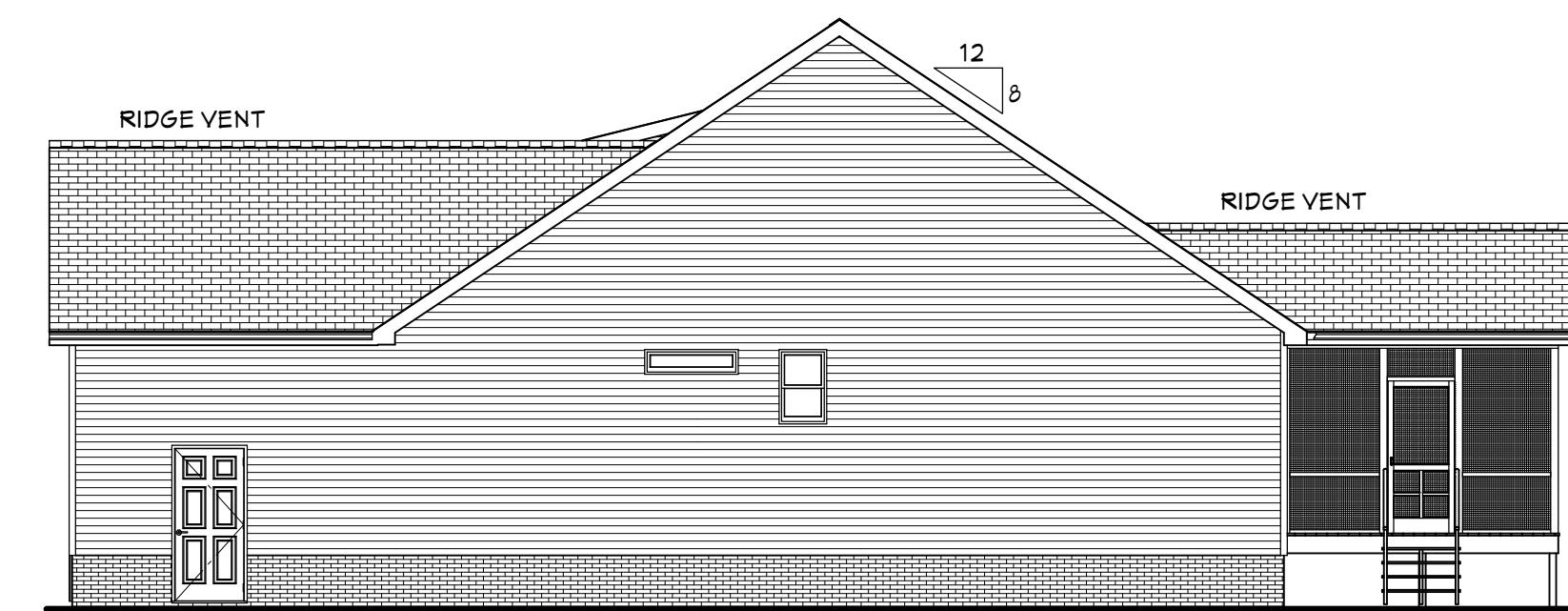
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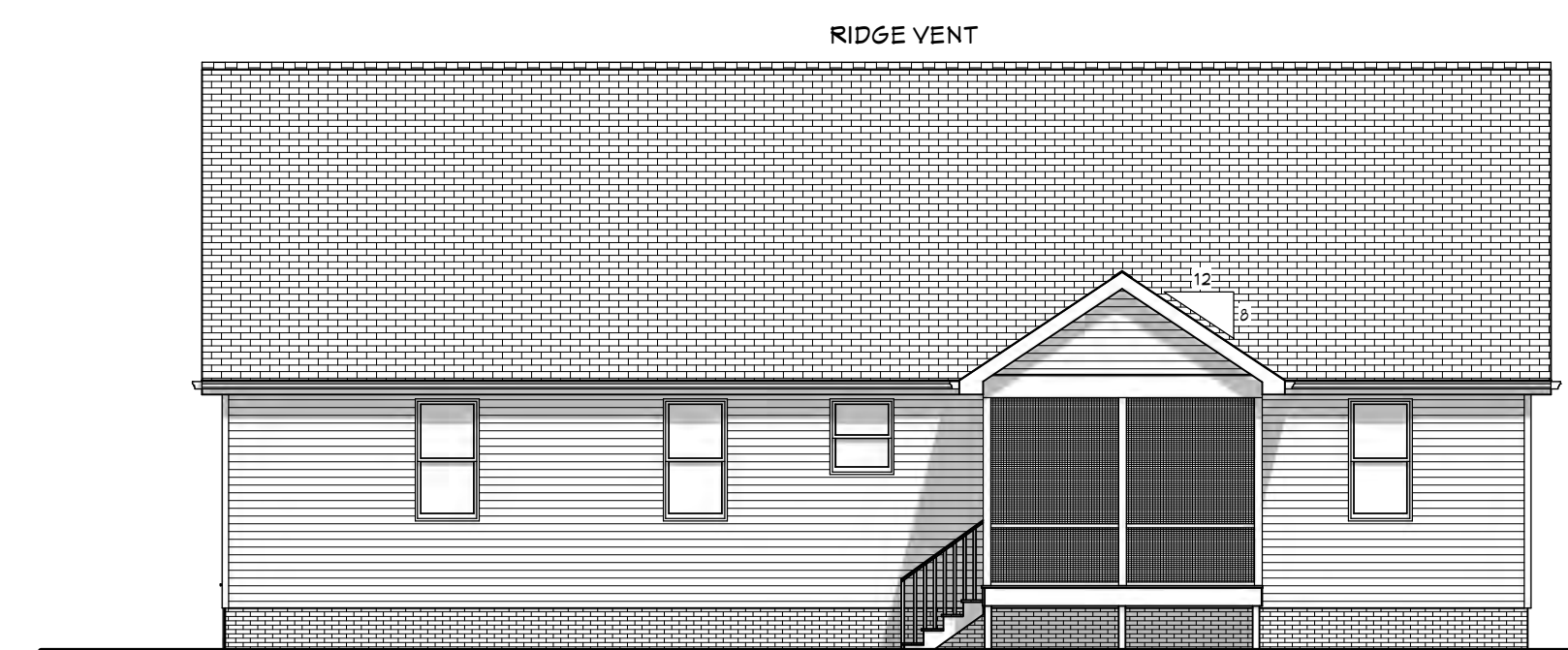
FRONT ELEVATION
SCALE: 1/4" = 1'-0"



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



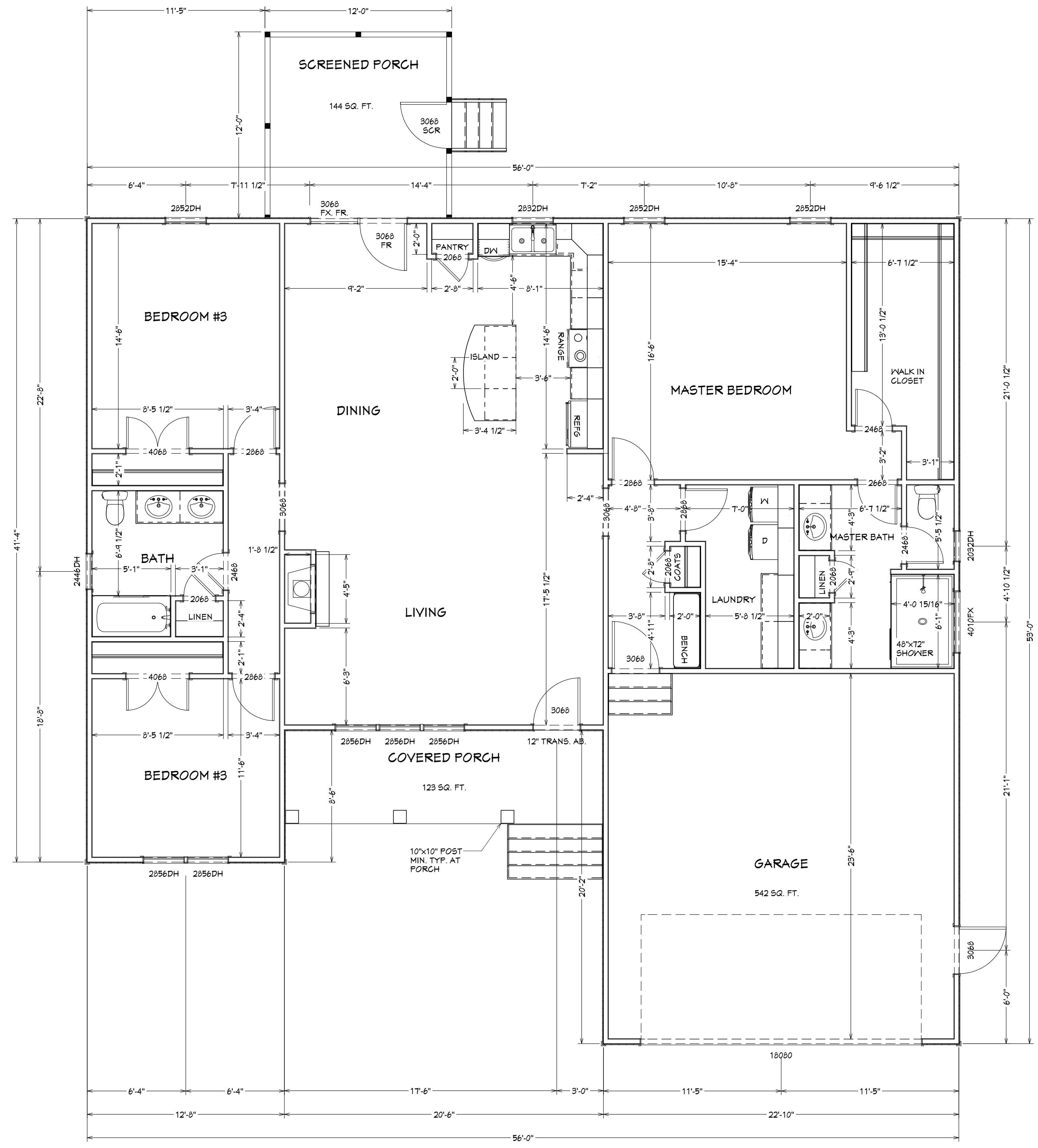
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SCALE: 1/8" = 1'-0"



REAR ELEVATION
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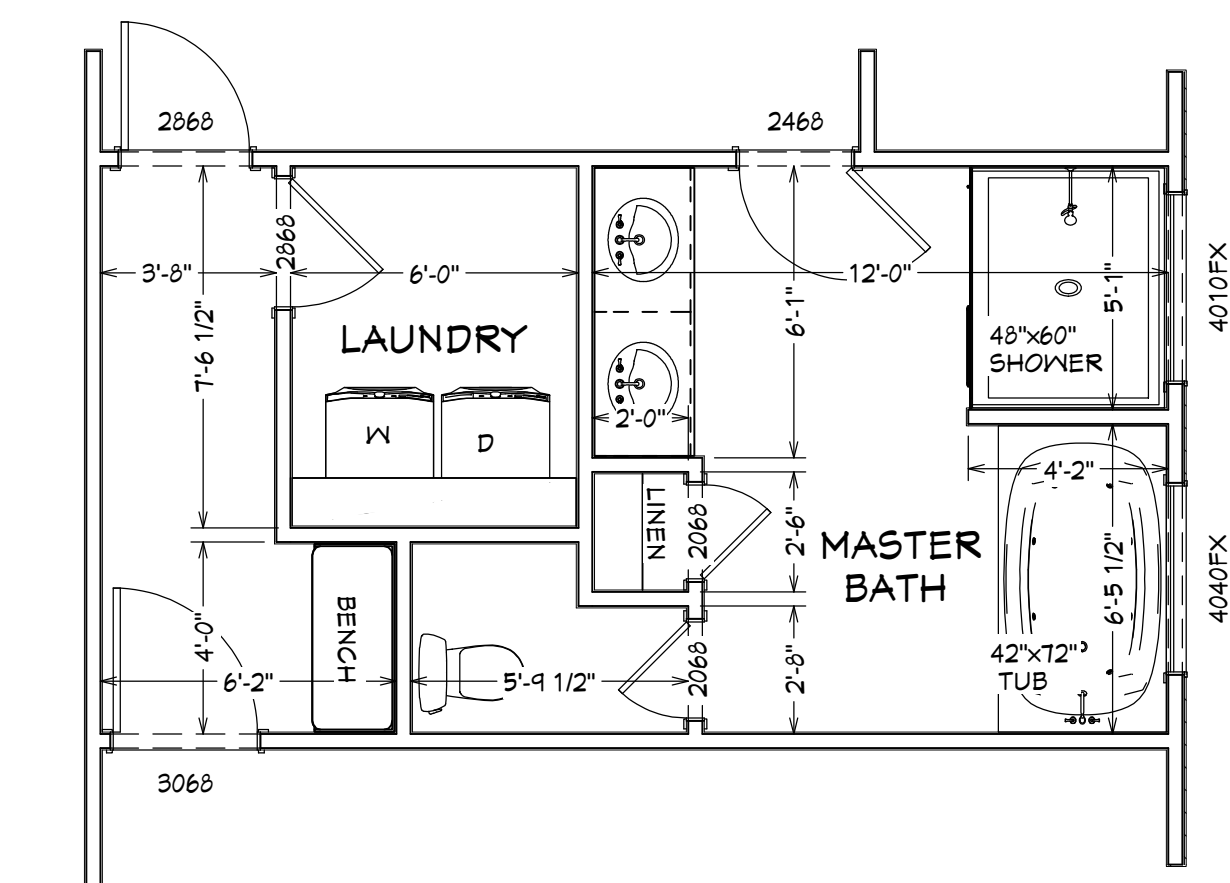
ELEVATIONS

A-1



FLOOR PLAN

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



ALTERNATE MASTER BATH/LAUNDRY

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

- NOTES:
1. 2x4 EXTERIOR WALLS
 2. 2x4 INTERIOR WALLS
 3. 9' FINISHED CEILING MAIN LEVEL

SQUARE FOOTAGE

TOTAL HEATED: 1865 SQ. FT.

UNHEATED:

GARAGE: 542 SQ. FT.

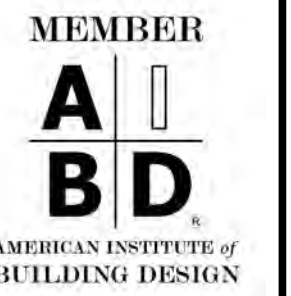
FRONT PORCH: 123 SQ. FT.

SCREENED PORCH: 144 SQ. FT.

TOTAL UNHEATED UNDER ROOF: 814 SQ. FT.

TOTAL UNDER ROOF: 2679 SQ. FT.

This plan conforms to North Carolina State Building Code: Residential Code, 2018 Edition



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PENDRY-SALGADO FLIPPED
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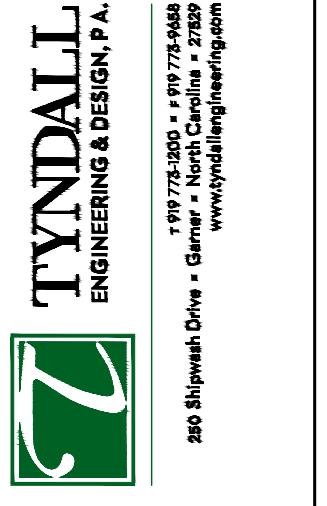
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SHEET:

FLOOR PLAN

A-2

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 390 Blinnwood Drive • Garner • North Carolina • 27838

Client: **GLENN STRICKLAND**
 Project: **1846 PLAN GARAGE RIGHT**

Project #: **2101-010386B**
 Date: **07/13/22**
 Engineer: **AM**
 DWG. Checked By: **PAT**
 Scale: **SEE PLAN**

REVISIONS		
No.	Date	Remarks

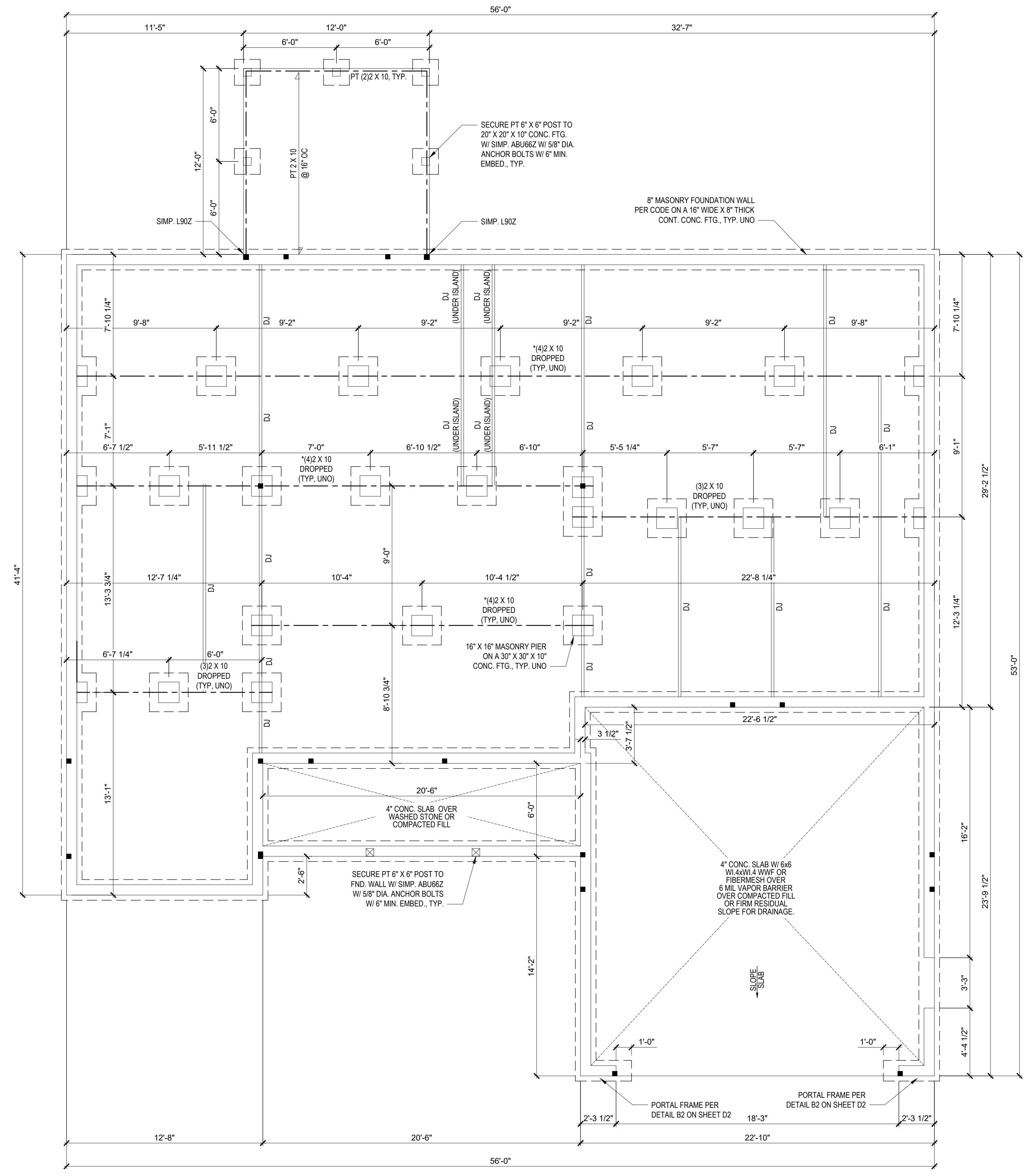
Sheet Number
S1
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DESIGN LOADS

	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION	
			LL	TL
FLOOR (primary)	40	10	L/360	L/240
FLOOR (secondary)	40	10	L/360	L/240
ATTIC (w/ storage)	20	10	L/240	L/180
ATTIC (no access)	5	5	L/240	L/180
EXTERNAL BALCONY	40	10	L/360	L/240
ROOF	20	10	L/240	L/180
ROOF TRUSS	20	20	L/240	L/180
WIND LOAD	BASED ON 120 MPH (EXPOSURE B)			
SEISMIC	BASED ON SEISMIC ZONES A, B & C			

STRUCTURAL NOTES:

- ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND SQUARE FOOTAGE PRIOR TO CONSTRUCTION. TYNDALL ENGINEERING & DESIGN, PA IS NOT RESPONSIBLE FOR DIMENSIONS AND SQUARE FOOTAGE ERRORS ONCE CONSTRUCTION BEGINS.
- ALL LUMBER SHALL BE SYP #2 (UNO)
 ALL LVL LUMBER TO BE 1.75" WIDE NOMINAL EACH SINGLE MEMBER AND Fb = 2600 PSI, E = 1.9M PSI
 (I.E. LEVEL MICRO LAM)
 ALL LSL LUMBER IS TO BE 1.55E (Fb = 2325 PSI)
- ALL LOAD BEARING EXTERIOR WINDOW HEADERS ARE TO BE (2) 2x10 w/ (1) 2x4 JACK STUD (U.N.O.) AND KING STUDS PER TABLE R602.7.5, AND TOGETHER w/ (2) 10d NAILS @ 8" O.C., PROVIDED THAT THE TOP OF THE WINDOW HEIGHT IS 6'-8", MINIMUM BOTTOM OF THE WINDOW HEIGHT IS 1'-5", OTHERWISE REFER TO TABLES R602.7(1) AND R602.7(2).
- ALL INTERIOR LOAD BEARING HEADERS TO BE (2) 2x10 (U.N.O.) REFER TO TABLES R602.7(1) AND R602.7(2) FOR JACK STUD REQUIREMENTS FOR HEADER SPANS FOR INTERIOR AND EXTERIOR LOAD CONDITIONS (UNO)
- REFER TO 2018 NC BUILDING CODE SECTION R602 FOR CONSTRUCTION OF ALL WALLS OVER 10'-0" IN HEIGHT.
- ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50
 Fy = 50 KSI MIN. (UNO)
- ALL EXTERIOR LUMBER TO BE #2 SYP PT
- ALL CONCRETE, fc = 3000 PSI MIN.
- PRESUMPTIVE BEARING CAPACITY = 2000 PSF
- 1/2" Ø ANCHOR BOLTS SPACED AT MAXIMUM OF 6'-0" O.C. AND NOT MORE THAN 12" FROM THE CORNER. THERE SHALL BE A MINIMUM OF (2) BOLTS PER PLATE SECTION. ANCHOR BOLTS SHALL BE SPACED AT 3'-0" O.C. FOR BASEMENTS. ANCHOR BOLT SHALL EXTEND 7" INTO CONCRETE OR MASONRY.
- PSL COLUMNS DESIGNED WITH MAX. HEIGHT OF 9'-0" (UNO)
- PROVIDE A MINIMUM OF 500# UPLIFT & LATERAL CONNECTION AT TOP AND BOTTOM OF PORCH COLUMNS. (U.N.O.)
- PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.4 OF THE 2018 IRC.
- MAXIMUM MASONRY PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.
- UPLIFT LOADS GREATER THAN 500# SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.
- METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.

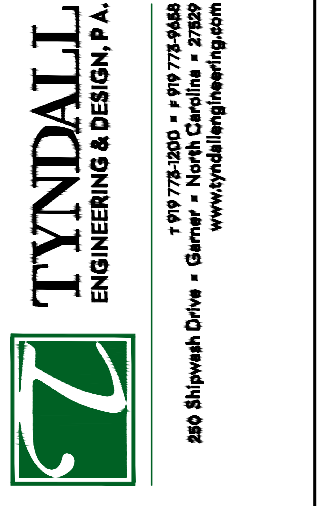


*NOTE: SECURE 4-PLY W/ 1/2" Ø THRU-BOLTS @ 24" O.C. (OR EQUIV. STRUCTURAL SCREWS)

FOUNDATION PLAN
 1/4" = 1'-0"

FILENAME: Z:_RESIDENTIAL_ENR\2021_STRUCTURAL_PROJECTS\2101-010386B_1846 PLAN\2101-010386B_1846 PLAN.rvt DATE: 7/13/2022 1:43 PM

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CLIENT: **GLENN STRICKLAND**
 PROJECT: **1846 PLAN GARAGE RIGHT**

**1ST FLOOR HEADER
 2ND FLOOR FRAMING**

Project #: **2101-010386B**
 Date: **07/13/22**
 Engineered By: **AM**
 DWG. Checked By: **PAT**
 Scale: **SEE PLAN**

REVISIONS		
No.	Date	Remarks

Sheet Number
S2
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DESIGN LOADS

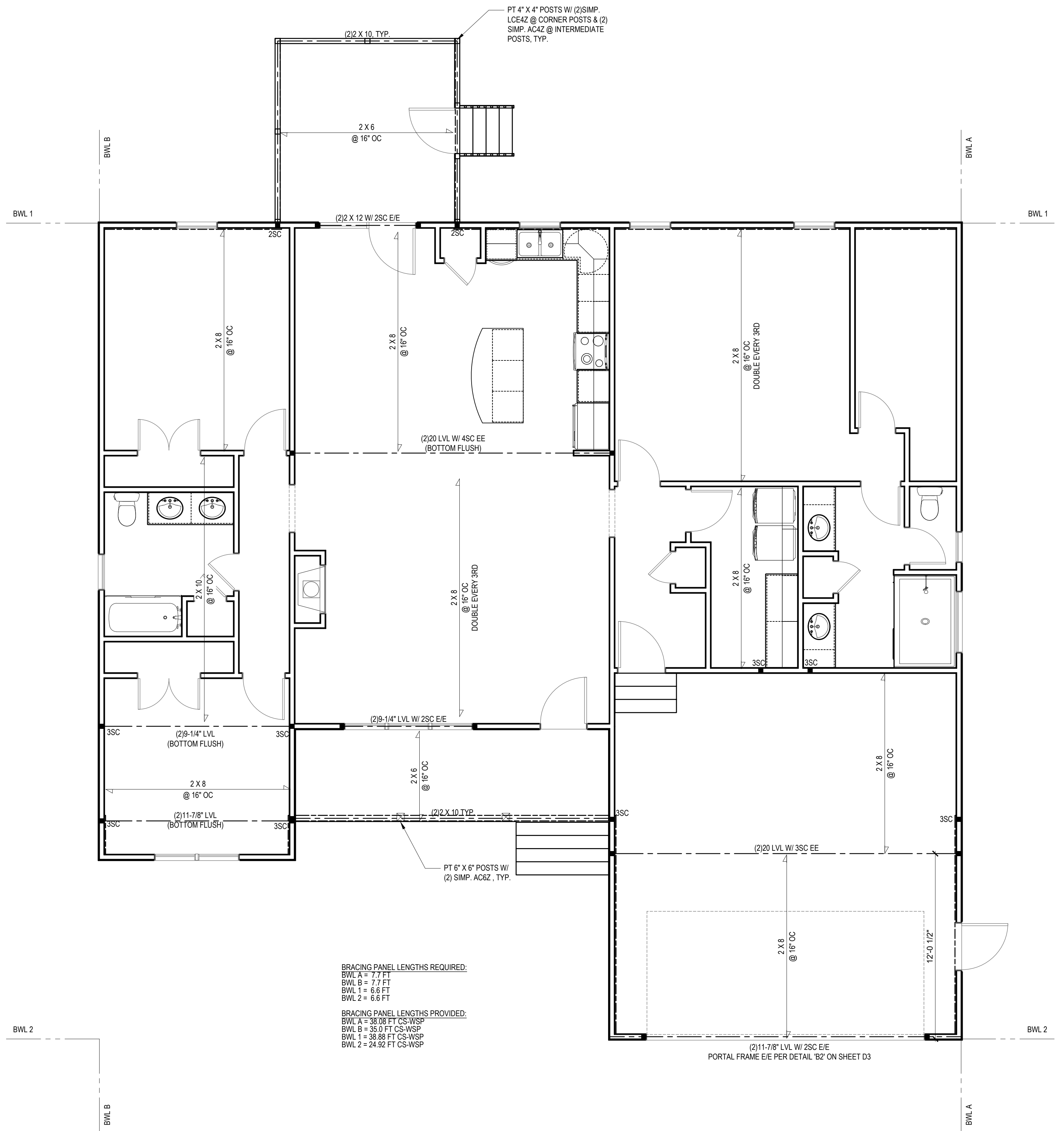
	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION	
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- METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.

STRUCTURAL SHEATHING NOTES

- DESIGNED FOR SEISMIC ZONE A-C AND WIND SPEEDS OF 120 MPH OR LESS.
- WALLS SHALL BE BRACED IN ACCORDANCE WITH SECTION R602.10 OF THE 2018 NCR.
- BRACING REQUIREMENTS SHALL BE PER TABLE R602.10.3. REFER TO SECTION R602.10.4 FOR LOAD PATH DETAILS INCLUDING CONNECTIONS & SUPPORT OF BRACED WALL PANELS.
 - ① REFERENCE FIGURE R602.10.4.3 OF THE 2018 NCR.
- INTERIOR BRACED WALL PANELS (BWP) INDICATED SHALL BE SHEATHED IN ACCORDANCE WITH THE GB METHOD OR WSP METHOD AS PRESCRIBED IN SECTION R602.10.1 (UNO)
 - ② 1/2" GYPSUM BOARD (GB) MINIMUM LENGTH OF 6'-0" (ISOLATED PANELS) OR 4'-0" (CONTINUOUS SHEATHING). SECURE w/ 5d COOLER NAILS (OR EQUAL PER TABLE R702.3.5) SPACED @ 7" O.C. AT PANEL EDGES, INCLUDING TOP AND BOTTOM PLATES & 7" O.C. AT INTERMEDIATE SUPPORTS
 - ③ 3/8" WOOD STRUCTURAL PANEL (WSP) SECURE w/ 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS
- EXTERIOR BRACED WALL PANELS (BWP) SHALL BE CONSTRUCTED IN ACCORDANCE WITH CS-WSP METHOD AS PRESCRIBED IN SECTION R602.10.3 (UNO)
- ALL SHEATHABLE SURFACES OF EXTERIOR WALLS (INCLUDING AREAS ABOVE AND BELOW OPENINGS AND GABLE END WALLS) SHALL BE CONTINUOUSLY SHEATHED WITH WOOD STRUCTURAL PANEL (WSP) SHEATHING WITH A MINIMUM THICKNESS OF 3/8". SHEATHING SHALL BE SECURED WITH MINIMUM 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND SPACED AT 12" O.C. AT INTERMEDIATE SUPPORTS.
- MINIMUM BRACED WALL PANEL LENGTHS WITH CS-WSP METHOD SHALL BE AS FOLLOWS:
 - 24" ADJACENT TO OPENINGS NOT MORE THAN 67% OF WALL HEIGHT.
 - 30" ADJACENT TO OPENINGS GREATER THAN 67% AND LESS THAN 85% OF WALL HEIGHT.
 - 48" FOR OPENINGS GREATER THAN 85% OF WALL HEIGHT
- SHEATH INTERIOR & EXTERIOR
- FOR CS-WSP METHOD, A MINIMUM 24" BRACED WALL PANEL CORNER RETURN SHALL BE PROVIDED AT BOTH ENDS OF A BRACED WALL LINE IN ACCORDANCE WITH FIGURE R602.10.3(4). IN LIEU OF A CORNER RETURN, EITHER A MIN. 48" BRACED WALL PANEL SHALL BE PROVIDED AT THE CORNER OR A HOLD-DOWN DEVICE WITH A MINIMUM UPLIFT DESIGN VALUE OF 800# SHALL BE FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FRAMING BELOW.
 - ⑤ MINIMUM 800# HOLD-DOWN DEVICE



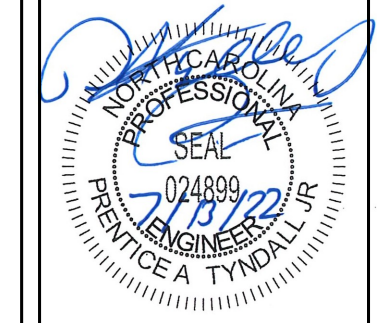
BRACING PANEL LENGTHS REQUIRED:
 BWL A = 7.7 FT
 BWL B = 7.7 FT
 BWL 1 = 6.6 FT
 BWL 2 = 6.6 FT

BRACING PANEL LENGTHS PROVIDED:
 BWL A = 38.08 FT CS-WSP
 BWL B = 35.0 FT CS-WSP
 BWL 1 = 38.88 FT CS-WSP
 BWL 2 = 24.92 FT CS-WSP

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

FILENAME: Z:\RESIDENTIAL ENR\2021 STRUCTURAL PROJECTS\2101-010386B\1846 PLAN\2101-010386B_1846 PLAN\2101-010386B_1846 PLAN.rvt DATE: 7/13/2022 1:43 PM

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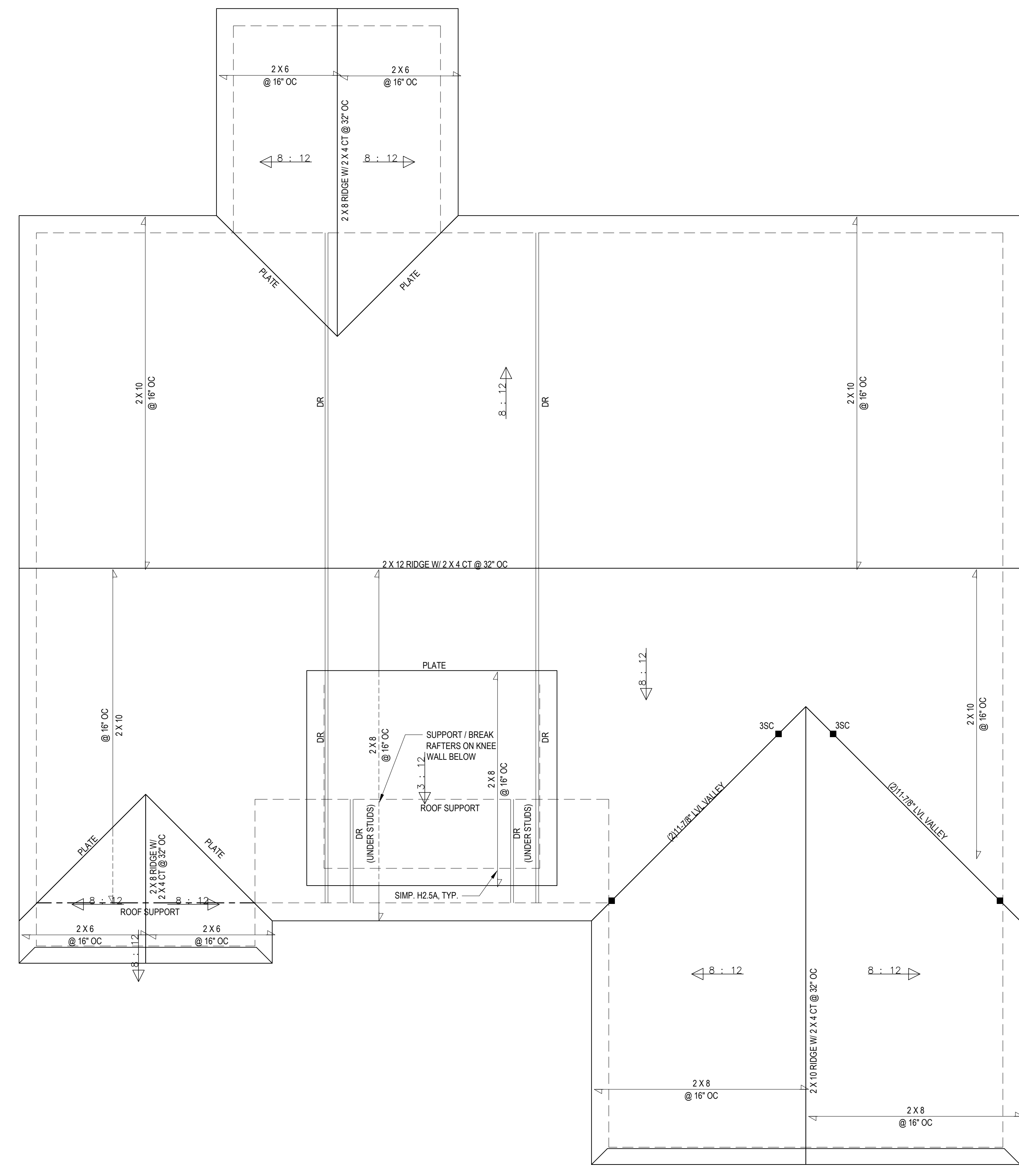
Client: **GLENN STRICKLAND**
 Project: **1846 PLAN GARAGE RIGHT**

ROOF PLAN

Project #: 2101-010386B
 Date: 07/13/22
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 DWG. Checked By: PAT
 Scale: SEE PLAN

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ROOF PLAN
 1/4" = 1'-0"

STRUCTURAL NOTES

1) ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.

2) DESIGN LOADS:

	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION	
			LL	TL
ALL FLOORS	40	10	L/360	L/240
ATTIC (w/ walk up stairs)	30	10	L/360	L/240
ATTIC (pull down access)	20	10	L/240	L/180
ATTIC (no access)	10	5	L/240	L/180
EXTERNAL BALCONY	40	10	L/360	L/240
ROOF	20	10	L/240	L/180
ROOF TRUSS	20	20	L/240	L/180
WIND LOAD	BASED ON 120 MPH (EXPOSURE B)			
SEISMIC	SEISMIC ZONES A, B & C			

3) MINIMUM ALLOWABLE SOIL BEARING PRESSURE = 2000 PSF
 4) CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND A MAXIMUM SLUMP OF FIVE INCHES UNLESS NOTED OTHERWISE. (U.N.O.)

5) MAXIMUM DEPTH OF UNBALANCED FILL AGAINST FOUNDATION WALLS TO BE LESS THAN 4'-0" WITHOUT USING SUFFICIENT WALL BRACING. REFER TO SECTION R404 OF 2018 NC BUILDING CODE FOR BACKFILL LIMITATIONS BASED ON WALL HEIGHT, WALL THICKNESS, SOIL TYPE, AND UNBALANCED BACKFILL HEIGHT.

6) ALL FRAMING LUMBER SHALL BE SYP #2 (Fb = 800 PSI, BASED ON 2x10) UNO. ALL FRAMING LUMBER EXPOSED TO THE ELEMENTS SHALL BE TREATED MATERIAL. ALL LVL LUMBER TO BE 1.75" WIDE NOMINAL EACH SINGLE MEMBER AND Fb = 2600 PSI, E = 1.8M PSI (U.N.O.) ALL LSL LUMBER TO BE 3.5" WIDE NOMINAL EACH SINGLE MEMBER AND Fb = 2325 PSI, E = 1.8M PSI (U.N.O.) ALL PSL LUMBER TO BE 3.5" WIDE NOMINAL EACH SINGLE MEMBER AND Fb = 2400 PSI, E = 1.8M PSI (U.N.O.)

7) ALL LOAD BEARING EXTERIOR HEADERS SHALL BE AT (2) 2x10. (U.N.O.) REFER TO TABLE R602.7(1) & (2) FOR JACK STUD REQUIREMENTS FOR HEADER SPANS FOR INTERIOR AND EXTERIOR LOAD CONDITIONS UNLESS SPECIFICALLY NOTED ON PLANS.

8) ALL STRUCTURAL STEEL W-SHAPES (I-BEAMS) SHALL BE ASTM A992 GRADE 50. ALL STEEL ANGLES, PLATES, AND C-CHANNELS SHALL BE ASTM A36. ALL STEEL PIPE SHALL BE ASTM A53 GRADE B.

9) STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3'-12" AND FULL FLANGE WIDTH. PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO (2) LAG SCREWS (1/2" x 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDED THE JOISTS ARE TOE NAILED TO THE SOLE PLATES, AND THE SOLE PLATES ARE NAILED OR BOLTED TO THE BEAM FLANGES @ 48" O.C.

10) PROVIDE ANCHOR BOLT PLACEMENT PER SECTION 403.1.6. 1/2" Ø ANCHOR BOLTS SPACED AT 6'-0" O.C. AND PLACED 12" FROM THE END OF EACH PLATE SECTION. ANCHOR BOLTS SHALL BE SPACED AT 3'-0" O.C. FOR BASEMENTS. ANCHOR BOLT SHALL EXTEND 7" INTO CONCRETE OR MASONRY. THE BOLTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE WIDTH OF THE PLATE. THERE SHALL BE A MINIMUM TWO ANCHOR BOLTS PER PLATE SECTION.

11) FOUNDATION DRAINAGE-DAMP PROOFING OR WATERPROOFING PER SECTION 405 AND 406 OF NC BUILDING CODE.

12) WALL AND ROOF CLADDING VALUES:
 WALL CLADDING SHALL BE DESIGNED FOR 28.0 POUNDS PER SQUARE FOOT (LBS/SQFT) OR GREATER POSITIVE AND NEGATIVE PRESSURE. ROOF VALUES BOTH POSITIVE AND NEGATIVE SHALL BE AS FOLLOWS:
 39.0 LBS/SQFT FOR ROOF PITCHES 1/12 TO 1/12
 36.0 LBS/SQFT FOR ROOF PITCHES 1/12 TO 6/12
 18.0 LBS/SQFT FOR ROOF PITCHES 6/12 TO 12/12
 **MEAN ROOF HEIGHT 30'-0" OR LESS

13) FOR ROOF SLOPES FROM 2/12 THROUGH 4/12, BUILDER TO INSTALL 2 LAYERS OF 15# FELT PAPER.
 14) REFER TO SECTION R602.3 FOR FRAMING OF ALL WALLS OVER 10'-0" IN HEIGHT.

15) PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.3 OF THE 2018 NCRC.

16) UPLIFT LOADS GREATER THAN 500# SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.

17) REFER TO TABLE N1102.1 FOR PRESCRIPTIVE BUILDING ENVELOPE THERMAL COMPONENT CRITERIA.

18) PSL COLUMNS DESIGNED WITH MAXIMUM HEIGHT OF 9'-0" (U.N.O.)

19) PROVIDE A MINIMUM OF 500# UPLIFT & LATERAL CONNECTION AT TOP AND BOTTOM OF PORCH COLUMNS. (U.N.O.)

20) MAXIMUM MASONRY PER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.

21) IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND SQUARE FOOTAGE PRIOR TO CONSTRUCTION. TYNDALL ENGINEERING & DESIGN, PA IS NOT RESPONSIBLE FOR DIMENSION OR SQUARE FOOTAGE ERRORS ONCE CONSTRUCTION BEGINS.

CLIMATE ZONES	FENESTRATION U-FACTOR ^a	SKYLIGHT U-FACTOR ^b	GLAZED FENESTRATION SHGC ^{c,3,5}	CEILING ^{1,2}	WOOD FRAMED WALL R-VALUE	MASS WALL R-VALUE ¹	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB ^d R-VALUE AND DEPTH	CRAWL SPACE ^e WALL R-VALUE
3	0.35	0.55	0.30	38 or 30 cont	15 or 13 + 2.5 ^h	5/13 or 5/10 cont	19	5/13 ^f	0	5/13
4	0.35	0.55	0.30	38 or 30 cont	15 or 13 + 2.5 ^h	5/13 or 5/10 cont	19	10/15	10	10/15
5	0.35	0.55	NR	38 or 30 cont	19, or 13 + 5 ^h or 15 + 3 ^h	13/17 or 13/12.5 cont	30 ^g	10/15	10	10/19

* TABLE N1102.1 CLIMATE ZONES 3-5

NO SCALE

a. R-VALUES ARE MINIMUMS. U-FACTORS AND SHGC ARE MAXIMUMS. WHEN INSULATION IS INSTALLED IN A CAVITY WHICH IS LESS THAN THE LABEL OR DESIGN THICKNESS OF THE INSULATION, THE INSTALLED R-VALUE OF THE INSULATION SHALL NOT BE LESS THAN THE R-VALUE SPECIFIED IN THE TABLE.

b. THE FENESTRATION U-FACTOR COLUMN EXCLUDES DRIGHTS. THE SOLAR HEAT GAIN COEFFICIENT (SHGC) COLUMN APPLIES TO ALL GLAZED FENESTRATION.

c. "100%" MEANS R-10 CONTINUOUS INSULATED SHEATHING ON THE INTERIOR OR EXTERIOR OF THE HOME OR R-15 CAVITY INSULATION AT THE INTERIOR OF THE BASEMENT WALL OR CRAWL SPACE WALL.

d. FOR MASS WALLS, INSULATION SHALL BE APPLIED FROM THE INSPECTION GAP DOWNWARD TO THE BOTTOM OF THE FOOTING OR A MINIMUM OF 24" ON GRADE, WHICHEVER IS LESS. FOR CAVITY MASS, INSULATION SHALL EXTEND TO THE BOTTOM OF THE FOUNDATION WALL OR 24" WHICHEVER IS LESS. R-5 SHALL BE ADDED TO THE REQUIRED SLAB EDGE R-VALUES FOR HEATED SLABS.

e. DELETED.

f. BASEMENT WALL INSULATION IS NOT REQUIRED IN WARM-HUMID LOCATIONS AS DEFINED BY FIGURE N1101.7 AND TABLE N1101.7.

g. OR INSULATION SUFFICIENT TO FILL THE FRAMING CAVITY. R-19 MINIMUM.

h. THE FIRST VALUE IS CAVITY INSULATION. THE SECOND VALUE IS CONTINUOUS INSULATION. SO "13+5" MEANS R-13 CAVITY INSULATION PLUS R-5 INSULATED SHEATHING. "15" MEANS R-15 CAVITY INSULATION. PLUS R-3 INSULATED SHEATHING. IF STRUCTURAL SHEATHING COVERS 25% OR LESS OF THE EXTERIOR, INSULATED SHEATHING IS NOT REQUIRED WHERE THE STRUCTURAL SHEATHING IS USED. IF STRUCTURAL SHEATHING COVERS MORE THAN 25 PERCENT OF THE EXTERIOR, SHALL BE SUPPLEMENTED WITH INSULATED SHEATHING OF AT LEAST R-2. "13 + 2.5" MEANS R-13 CAVITY INSULATION PLUS R-2.5 SHEATHING.

i. FOR MASS WALLS, THE SECOND R-VALUE APPLIES WHEN MORE THAN HALF THE INSULATION IS ON THE INTERIOR MASS WALL.

j. IN ADDITION TO THE EXEMPTION IN SECTION N1102.3.3, A MAXIMUM OF TWO GLAZED FENESTRATION PRODUCT ASSEMBLIES HAVING A U-FACTOR NO GREATER THAN 0.55 SHALL BE PERMITTED TO BE SUBSTITUTED FOR MINIMUM CODE COMPLIANT FENESTRATION PRODUCT ASSEMBLIES WITHOUT PENALTY.

k. IN ADDITION TO THE EXEMPTION IN SECTION N1102.3.3, A MAXIMUM OF TWO GLAZED FENESTRATION PRODUCT ASSEMBLIES HAVING A SHGC NO GREATER THAN 0.75 SHALL BE PERMITTED TO BE SUBSTITUTED FOR MINIMUM CODE COMPLIANT FENESTRATION PRODUCT ASSEMBLIES WITHOUT PENALTY.

l. R-50 SHALL BE DEEMED TO SATISFY THE CEILING INSULATION REQUIREMENT WHENEVER THE FULL HEIGHT OF UNCOMPRESSED R-30 INSULATION EXTENDS OVER THE WALL TOP PLATE AT THE EAVES. OTHERWISE R-38 INSULATION IS REQUIRED WHERE ADEQUATE CLEARANCE EXISTS OR INSULATION MUST EXTEND TO EITHER THE INSULATION Baffle OR WITHIN 1/2" OF THE ATTIC ROOF DECK.

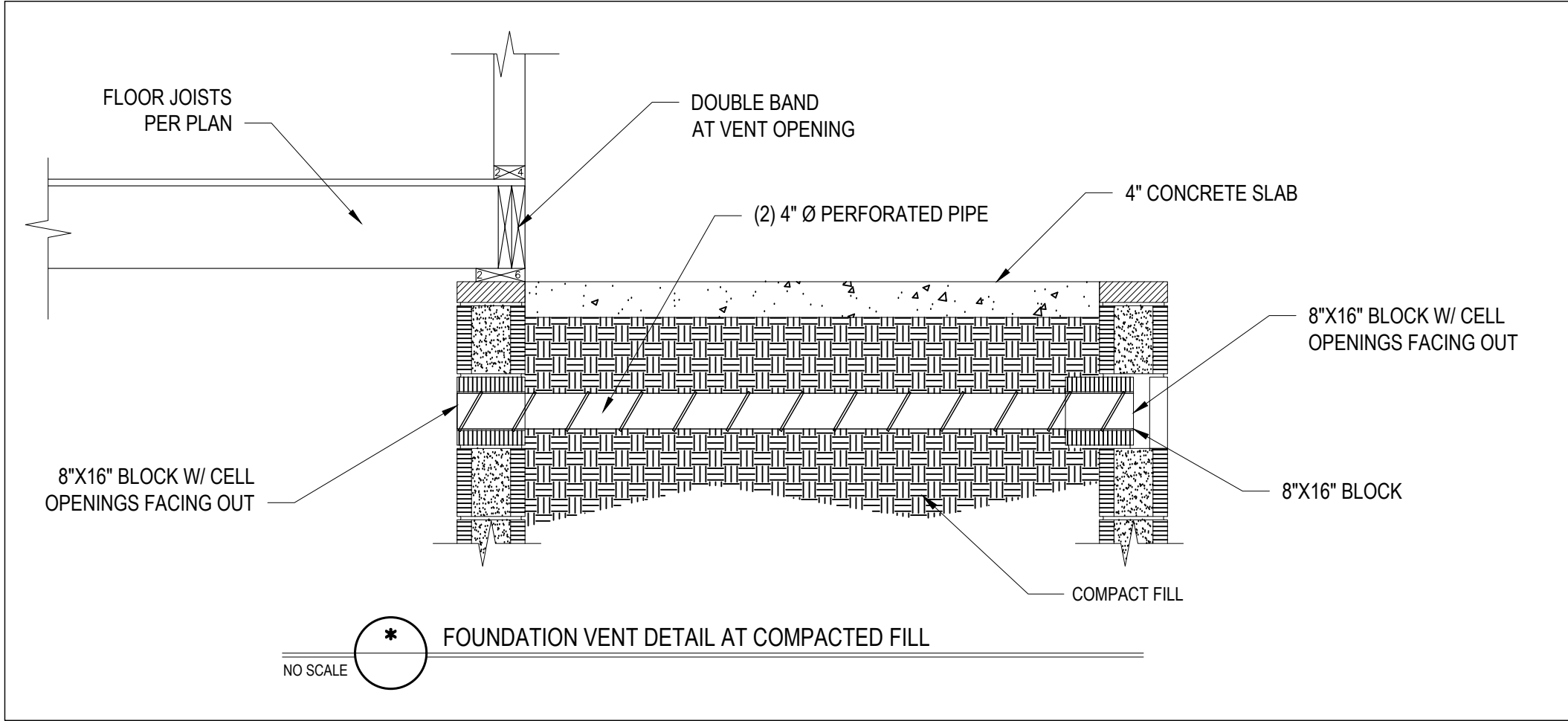
m. TABLE VALUE REQUIRED EXCEPT FOR ROOF EDGE WHERE THE SPACE IS LIMITED BY THE PITCH OF THE ROOF. THERE THE INSULATION MUST FILL THE SPACE UP TO THE AIR Baffle.

n. R-19 FIBERGLASS BATTS COMPRESSED AND INSTALLED IN A NOMINAL 2 x 6 FRAMING CAVITY IS DEEMED TO COMPLY. FIBERGLASS BATTS RATED R-19 OR HIGHER COMPRESSED AND INSTALLED IN A CAVITY SHALL NOT BE DEEMED TO COMPLY.

o. BASEMENT WALL MEETING THE MINIMUM MASS WALL SPECIFIC HEAT CONTENT REQUIREMENT MAY USE THE MASS WALL R-VALUE AS THE MINIMUM REQUIREMENT.

DEFINITIONS FOR COMMON ABBREVIATIONS

ALT = ALTERNATE	MAX = MAXIMUM
CANT = CANTILEVER	MIN = MINIMUM
CJ = CEILING JOIST	NOM = NOMINAL
CMU = CONCRETE MASONRY UNIT	O.C. = ON CENTER
COL = COLUMN	PL = POINT LOAD
CONC = CONCRETE	PT = PRESSURE TREATED
CONT = CONTINUOUS	REINF = REINFORCED
CT = COLLAR TIE	RECD = REQUIRED
DBL = DOUBLE	RJ = ROOF JOIST
DIA = DIAMETER	RS = ROOF SUPPORT
DJ = DOUBLE JOIST	SC = STUD COLUMN
DR = DOUBLE RAFTER	SCH = SCHEDULE
EA = EACH	SPEC = SPECIFIED
EE = EACH END	THK = THICK
FJ = FLOOR JOIST	TJ = TRIPLE JOIST
FND = FOUNDATION	TRTD = TREATED
FTG = FOOTING	TYP = TYPICAL
GALV = GALVANIZED	UNO = UNLESS NOTED OTHERWISE
HORIZ = HORIZONTAL	W = WIDE FLANGE BEAM
HT = HEIGHT	WWF = WELDED WIRE FABRIC
MANUF = MANUFACTURER	XJ = EXTRA JOIST



1) MAXIMUM HEIGHT OF DECK SUPPORT POSTS AS FOLLOWS:

POST SIZE	MAX. POST HEIGHT**
4 x 4	8'-0"
6 x 6	20'-0"
***	OVER 20'-0"

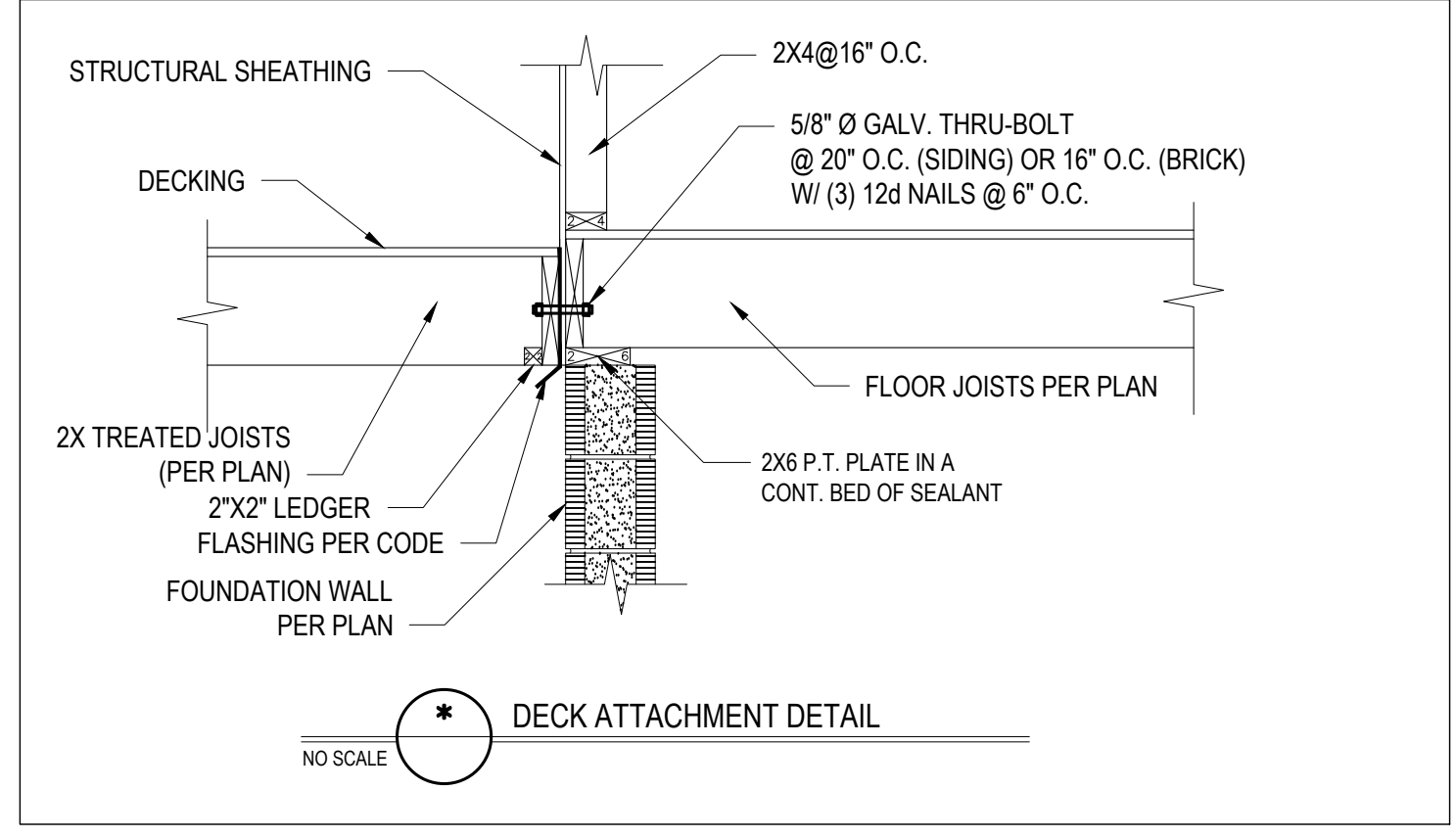
* THIS TABLE IS BASED ON NO. 2 TREATED SOUTHERN PINE POSTS. MAXIMUM TRIBUTARY AREA IS BASED ON 128 TOTAL SQUARE FEET WHICH MAY BE LOCATED AT DIFFERENT LEVELS.
 ** FROM TOP OF FOOTING TO BOTTOM OF GIRDER
 *** DECKS WITH POST HEIGHTS OVER 20'-0" SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT.

2) DECKS SHALL BE BRACED TO PROVIDE LATERAL STABILITY BY ONE OF THESE METHODS:

- A. THE DECK FLOOR HEIGHT IS LESS THAN 4'-0" AND THE DECK IS ATTACHED TO THE STRUCTURE IN ACCORDANCE WITH SECTION (4) ABOVE. LATERAL BRACING IS NOT REQUIRED.
- B. 4 x 4 WOOD KNEE BRACES MAY BE PROVIDED ON EACH COLUMN IN BOTH DIRECTIONS. THE KNEE BRACES SHALL ATTACH TO EACH POST AT A POINT NOT LESS THAN 1/3 OF THE POST LENGTH FROM THE TOP OF THE POST, AND THE BRACES SHALL BE ANGLED BETWEEN 45° AND 60° FROM THE HORIZONTAL. KNEE BRACES SHALL BE BOLTED TO THE POST AND GIRDER WITH ONE 5/8" Ø HOT DIPPED GALVANIZED BOLT AT EACH END OF THE BRACE.
- C. FOR FREESTANDING DECKS WITHOUT KNEE BRACES OR DIAGONAL BRACING, LATERAL STABILITY MAY BE PROVIDED BY EMBEDDING THE POSTS IN ACCORDANCE WITH THE FOLLOWING:

POST SIZE	MAX. TRIBUTARY AREA	MAX. POST HEIGHT	EMBEDMENT DEPTH	CONCRETE DIAMETER
4 x 4	48 SQ. FT.	4'-0"	2'-6"	1'-0"
6 x 6	120 SQ. FT.	6'-0"	3'-6"	1'-8"

- D. 2 x 6 DIAGONAL VERTICAL CROSS BRACING MAY BE PROVIDED IN TWO (2) PERPENDICULAR DIRECTIONS FOR FREESTANDING DECKS OR PARALLEL TO THE STRUCTURE AT THE EXTERIOR COLUMN LINE FOR ATTACHED DECKS. THE 2 x 6s SHALL BE ATTACHED TO THE POSTS WITH ONE 5/8" Ø HOT DIPPED GALVANIZED BOLT AT EACH END OF EACH BRACING MEMBER.
- E. FOR EMBEDMENT OF PILES IN COASTAL REGIONS, SEE CHAPTER 46.



1737 SQ. FT. OF CRAWL SPACE / 150 = 11.58 SQ. FT. OF REQ'D VENTILATION WITHOUT CROSS VENTILATION
 11.58 SQ. FT. OF VENTILATION REQ'D / 0.88 SQ.FT. PER VENT = 14 VENTS REQ'D (BASED ON 8" X 16" VENTS)

-OR-

1737 SQ. FT. OF CRAWL SPACE / 1500 = 1.16 SQ. FT. OF REQ'D VENTILATION WITH CROSS VENTILATION
 1.16 SQ. FT. OF VENTILATION REQ'D / 0.88 SQ.FT. PER VENT = 2 VENTS REQ'D (BASED ON 8" X 16" VENTS):

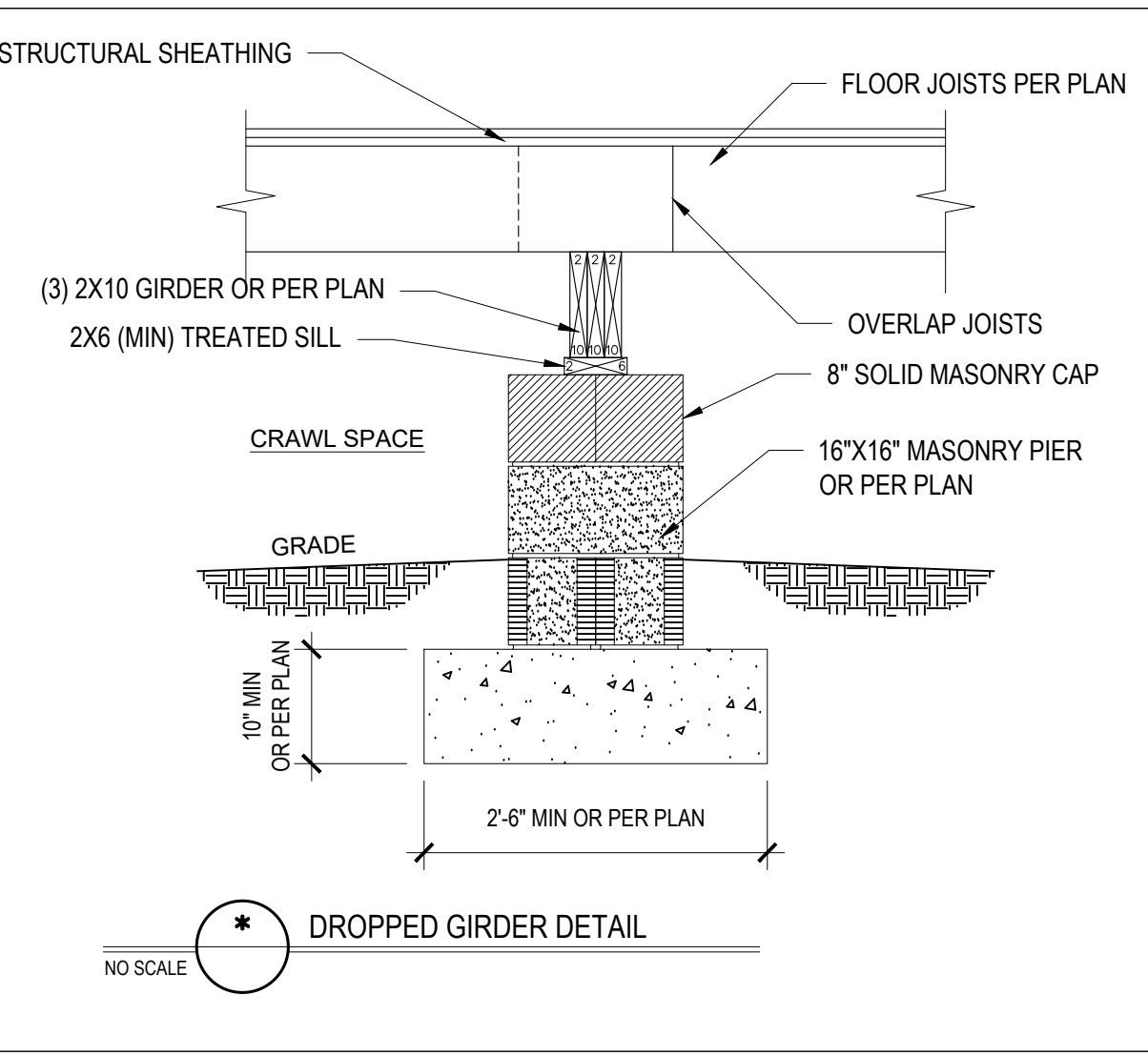
- 1) VENT LOCATIONS MAY VARY FROM THOSE SHOWN ON PLAN, HOWEVER VENTS SHALL BE PLACED TO PROVIDE ADEQUATE VENTILATION AT ALL PORTS AND TO PREVENT DEAD AIR POCKETS.
 - 2) THE TOTAL AREA OF VENTILATION OPENINGS MAY BE REDUCED TO 1/1000 OF THE CRAWL SPACE GROUND AREA WHERE THE REQUIRED OPENINGS ARE PLACED SO AS TO PROVIDE CROSS VENTILATION OF THE CRAWL SPACE. THE INSTALLATION OF OPERABLE LOUVERS SHALL NOT BE PROHIBITED. ONE FOUNDATION VENT SHALL BE WITHIN 3 FEET OF EACH CORNER OF THE BUILDING. TO PREVENT RAINWATER ENTRY WHEN THE CRAWL SPACE IS BUILT ON A SLOPED SITE, THE UPHILL FOUNDATION WALLS MAY BE CONSTRUCTED WITHOUT WALL VENT OPENINGS. VENT DAMS SHALL BE PROVIDED WHEN THE BOTTOM OF THE FOUNDATION VENT OPENINGS IS LESS THAN 4 INCHES ABOVE THE FINISHED EXTERIOR GRADE.
- WALL VENTED CRAWL SPACES REQUIRE FULL COVERAGE GROUND VAPOR RETARDERS.

* CRAWL SPACE VENTILATION CALCULATION
 NO SCALE

2530 SQ. FT. OF ATTIC / 300 = 8.43 SQ. FT. INLETS/OUTLETS REQUIRED

- 1) CALCULATION BASED ON VENTILATORS USED AT LEAST 2' ABOVE THE CORNER VENTS WITH THE BALANCE OF VENTILATION PROVIDED BY EAVE VENTS.
- 2) CATHEDRAL CEILING SHALL HAVE A 1" MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE ROOF DECK AND THE INSULATION.

* ATTIC VENTILATION CALCULATION
 NO SCALE



* DROPPED GIRDER DETAIL
 NO SCALE

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 1846 PLAN GARAGE RIGHT

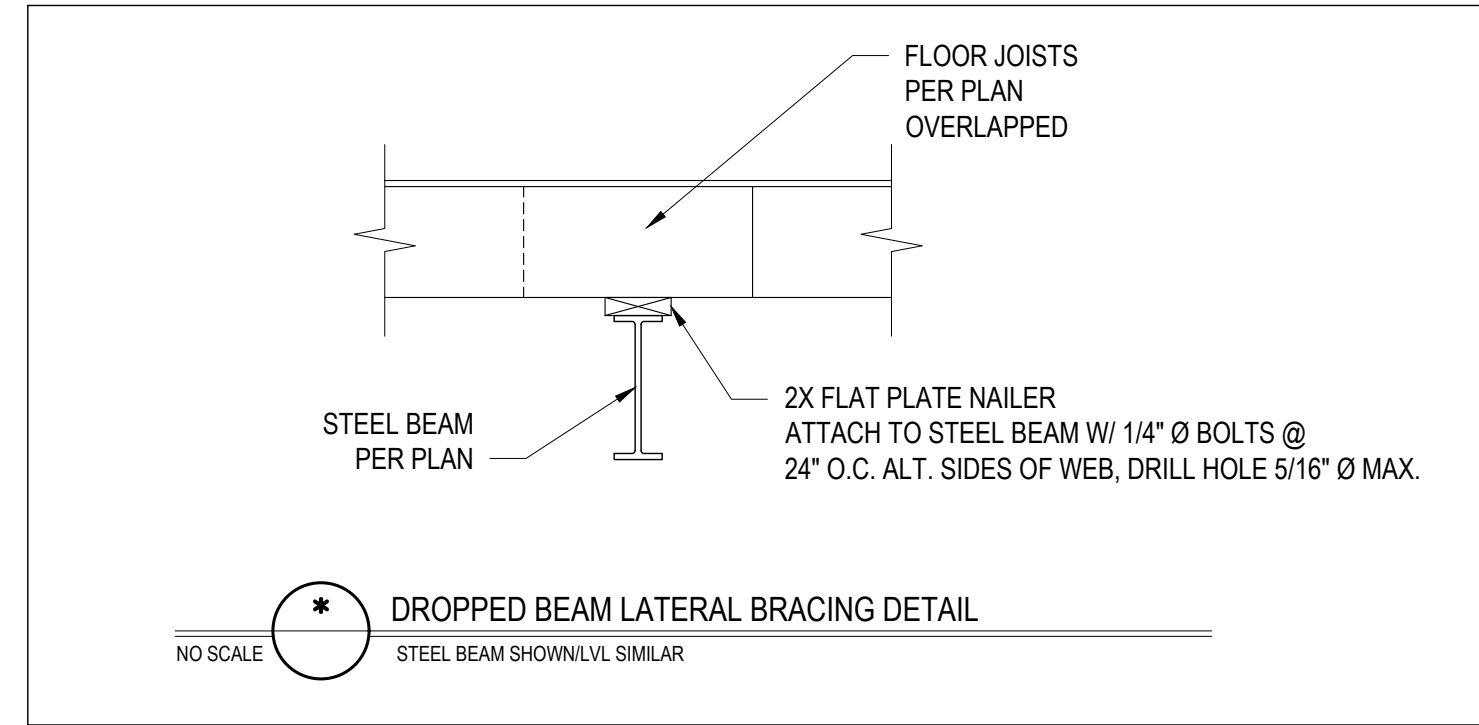
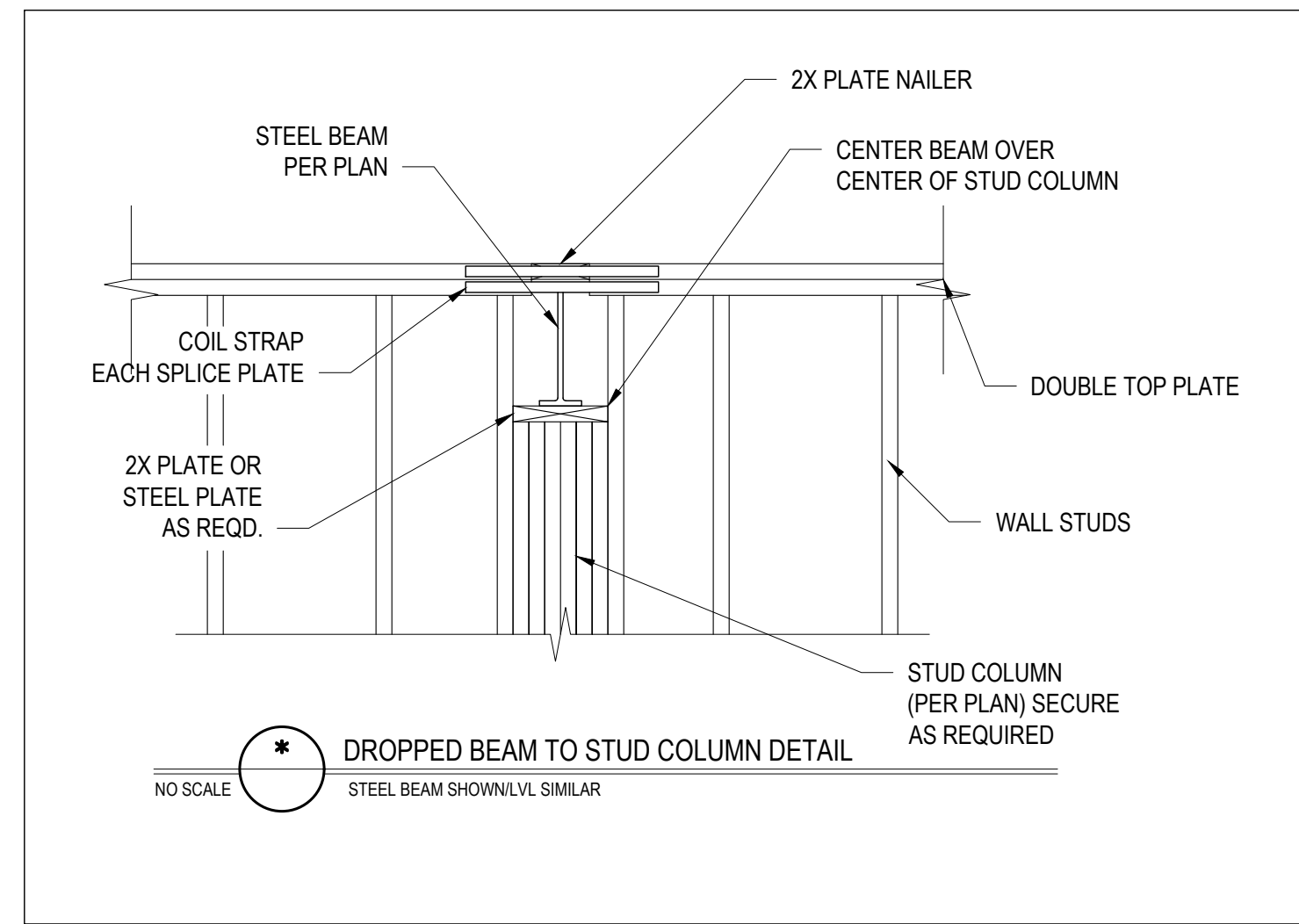
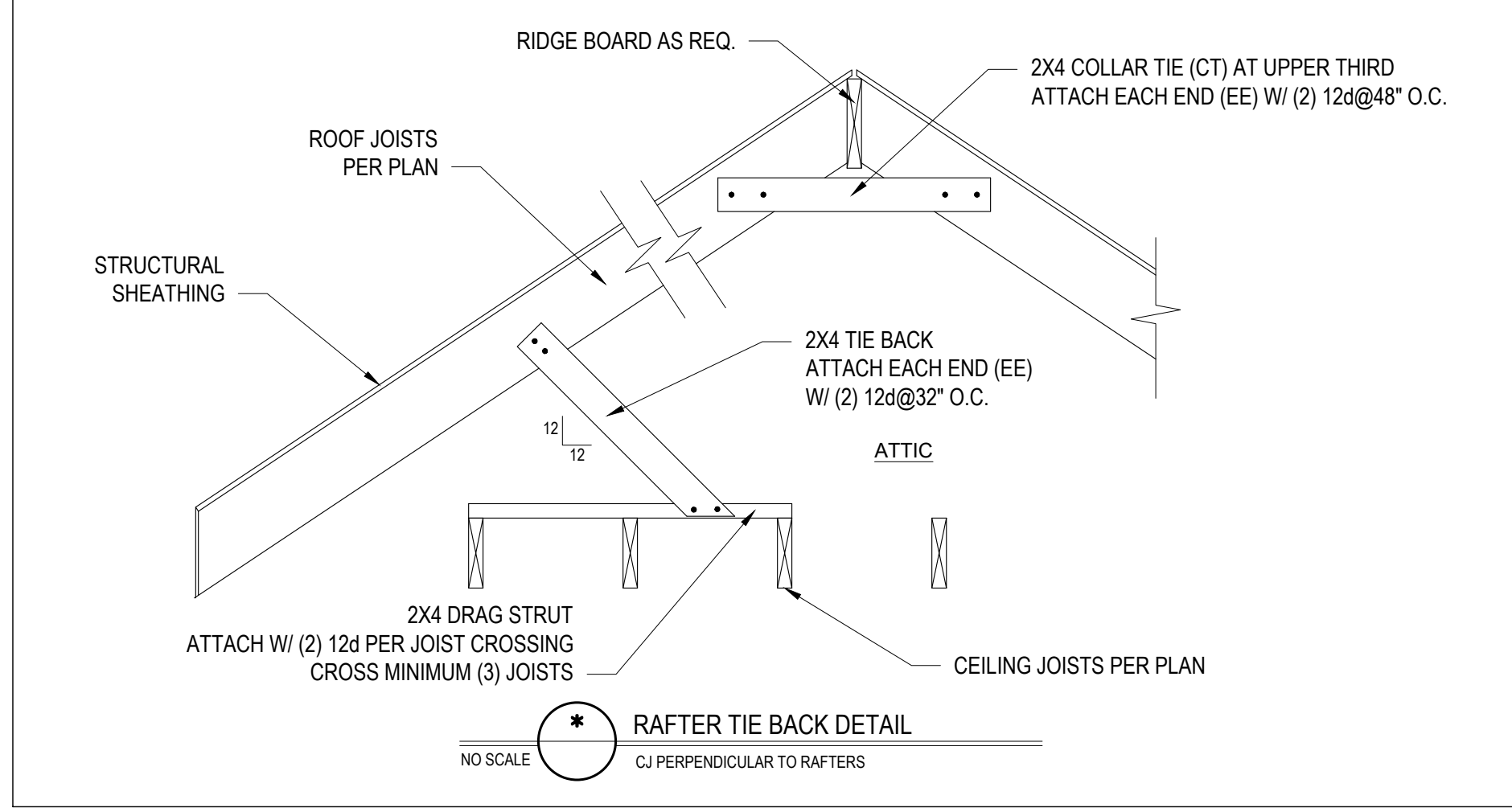
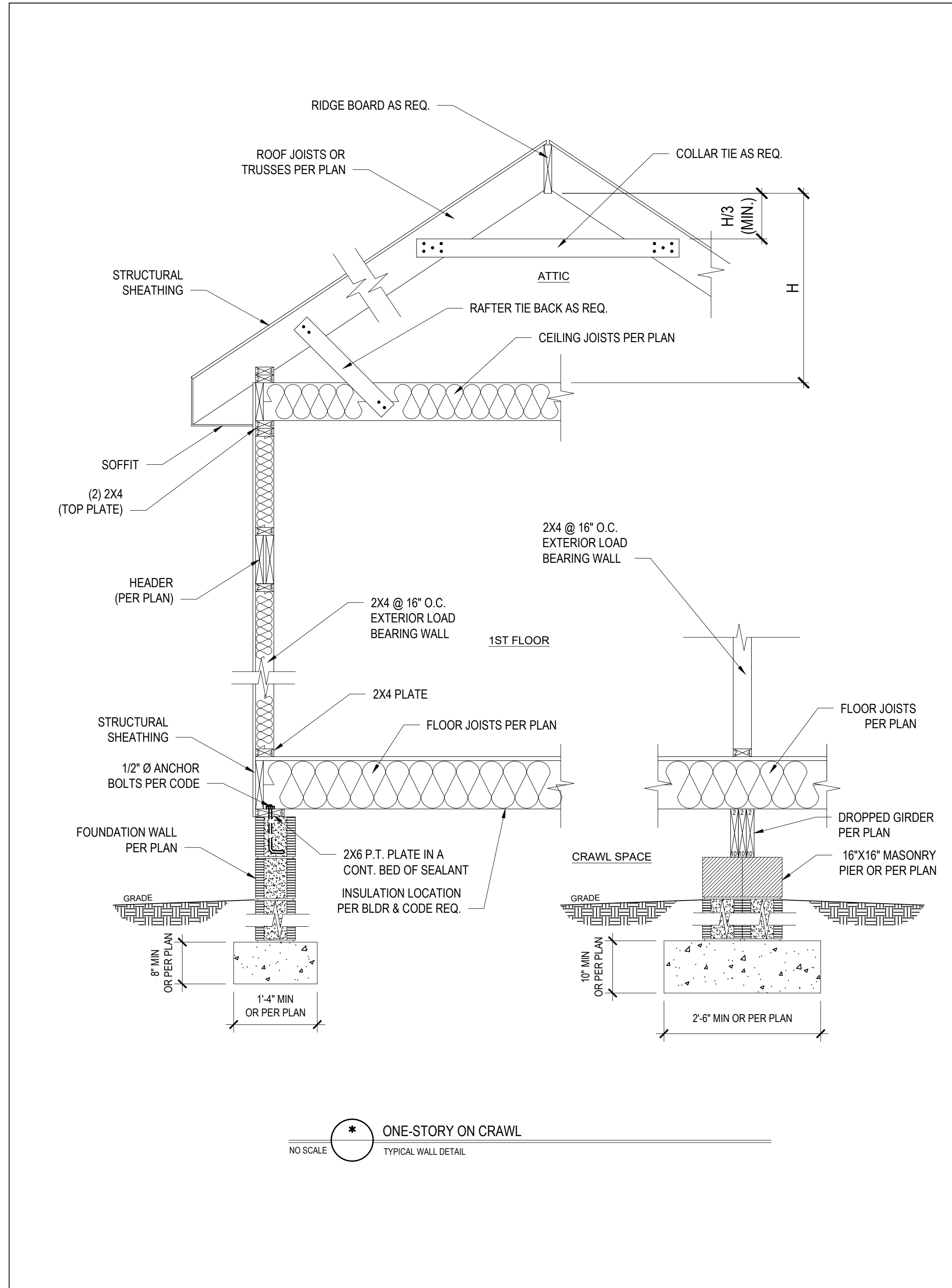
STANDARD DETAILS

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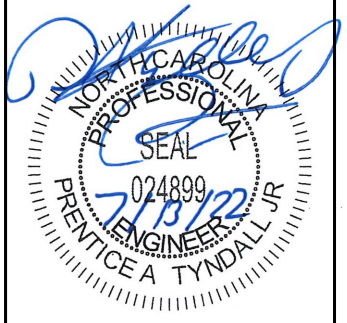
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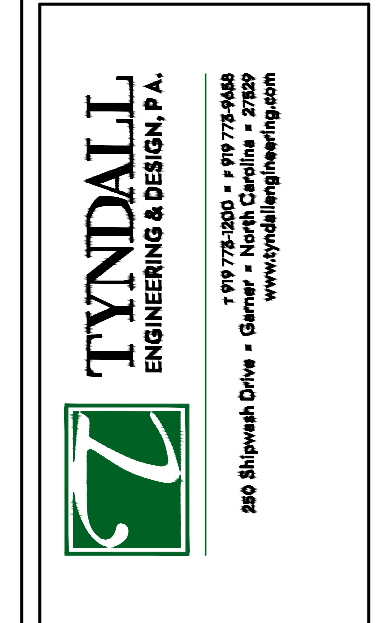
STANDARD DETAILS

Project #: 2101-010386B
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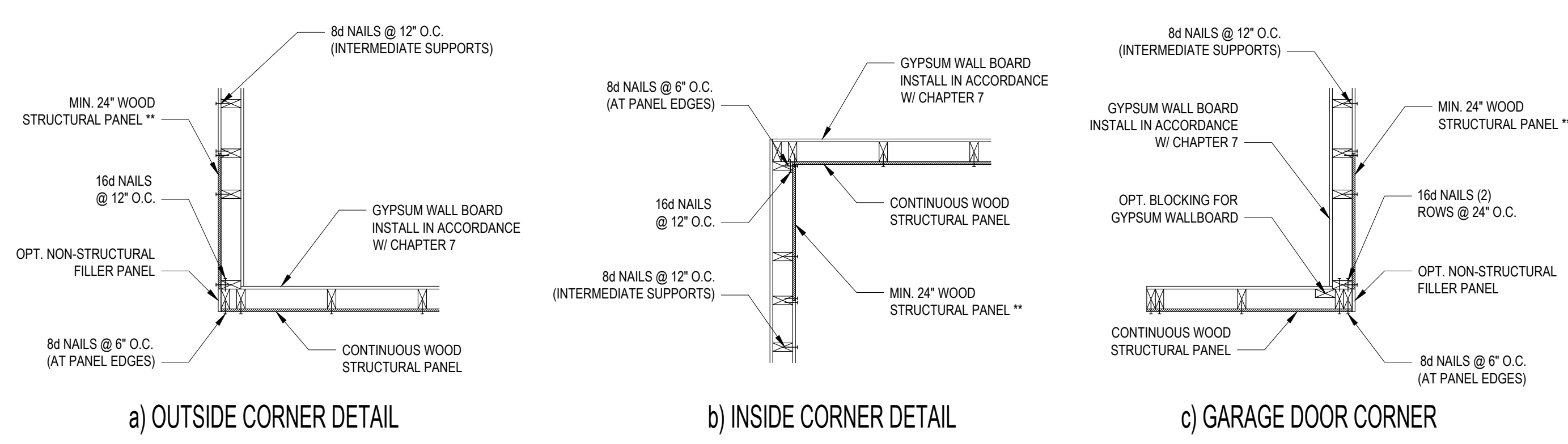
CLIENT: **GLENN STRICKLAND**
 PROJECT: **1846 PLAN GARAGE RIGHT**

SHEATHING DETAILS

Project #: 2101-010386B
 Date: 07/13/22
 Engineer: AM
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No.	Date	Remarks

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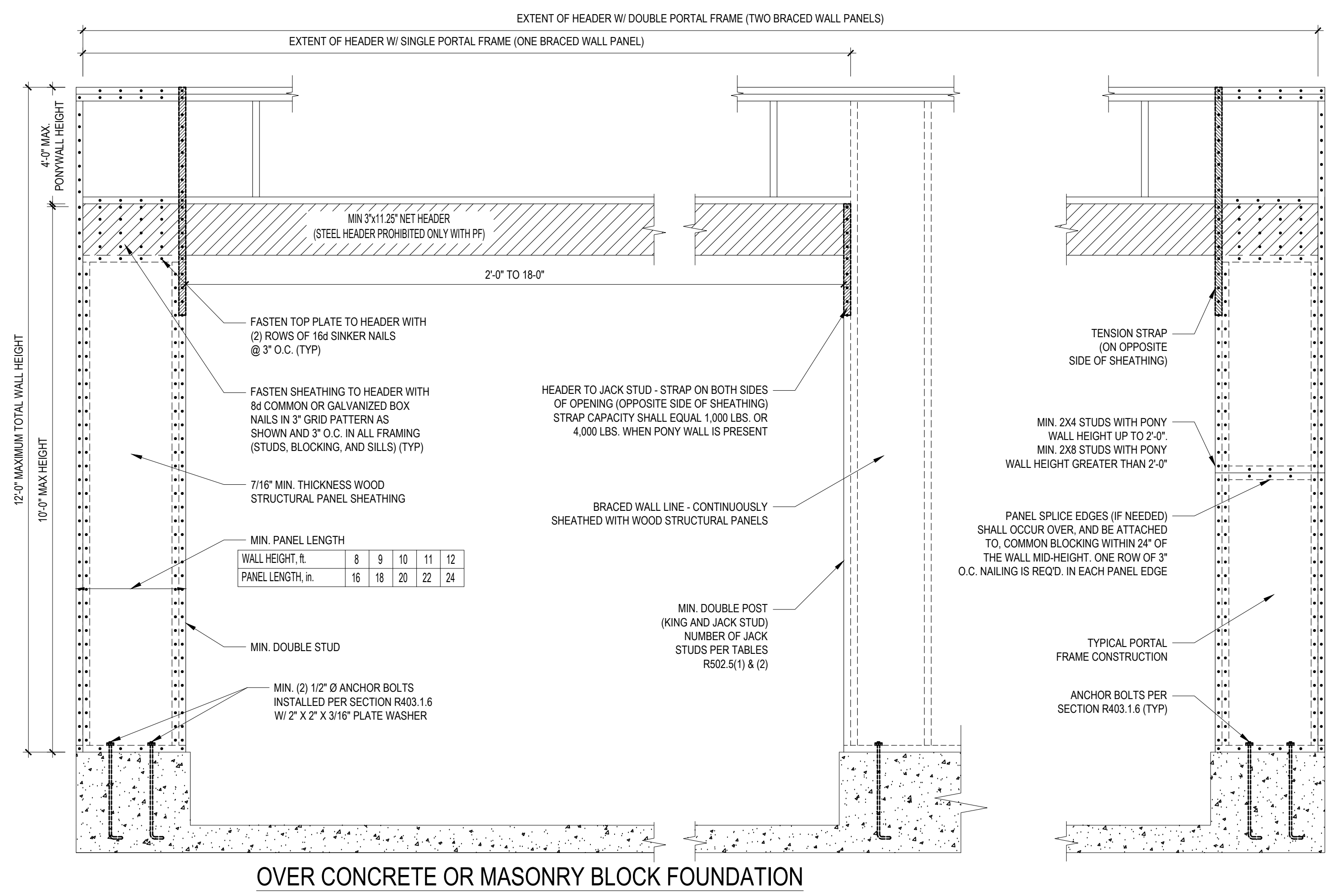


B1: TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING
 NO SCALE

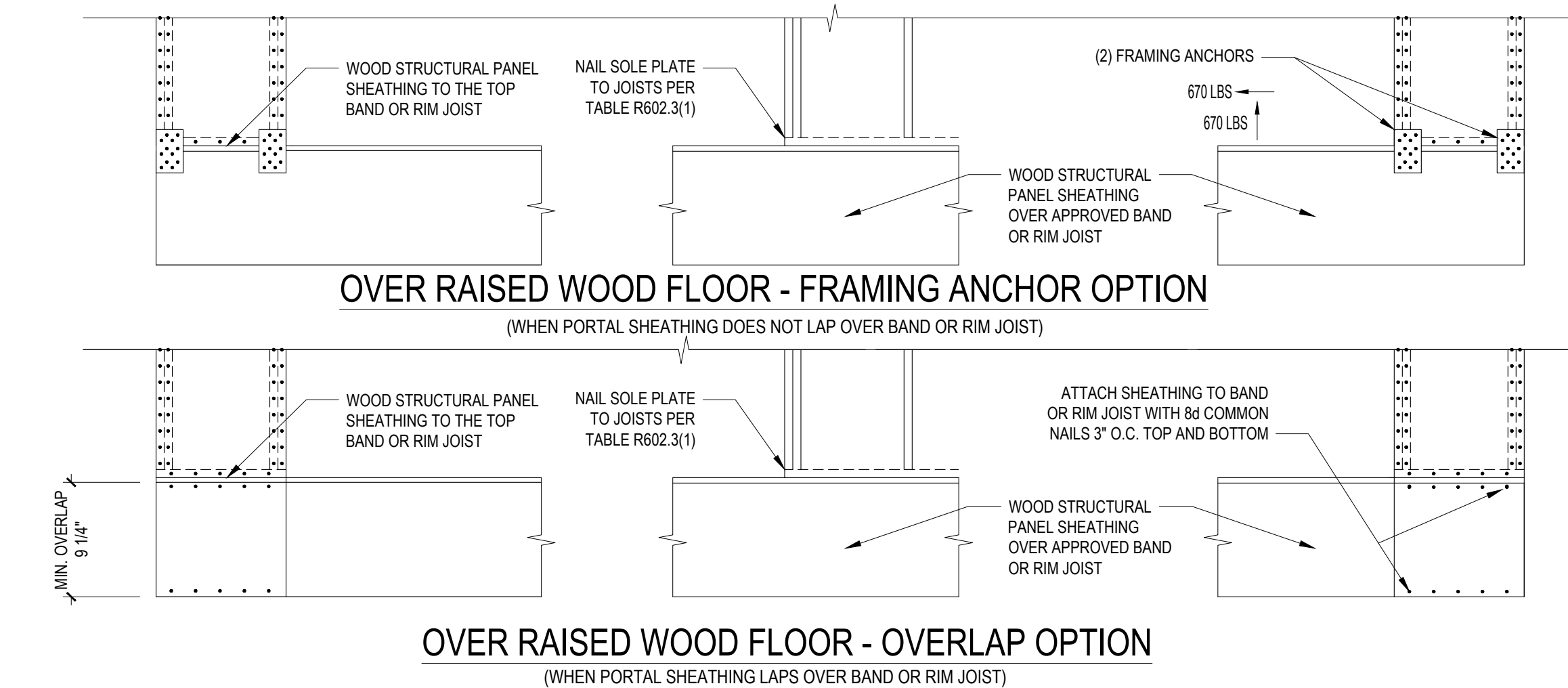
- STRUCTURAL SHEATHING NOTES**
- DESIGNED FOR SEISMIC ZONE A-C AND WIND SPEEDS OF 120 MPH OR LESS.
 - WALLS SHALL BE BRACED IN ACCORDANCE WITH SECTION R602.10.3 OF THE 2018 NCR. REFER TO SECTION R602.10.4 FOR LOAD PATH DETAILS INCLUDING CONNECTIONS & SUPPORT OF BRACED WALL PANELS.
 - REFERENCE FIGURE R602.10.4.3 OF THE 2018 NCR.
 - INTERIOR BRACED WALL PANELS (BWP) INDICATED SHALL BE SHEATHED IN ACCORDANCE WITH THE GB METHOD OR WSP METHOD AS PRESCRIBED IN SECTION R602.10.1 (UNO)
 - 12" GYPSUM BOARD (GB) MINIMUM LENGTH OF 8'-0" (ISOLATED PANELS) OR 4'-0" (CONTINUOUS SHEATHING)
 - 3/8" WOOD STRUCTURAL PANEL (WSP) SECURE W/ 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS.
 - EXTERIOR BRACED WALL PANELS (BWP) SHALL BE CONSTRUCTED IN ACCORDANCE WITH CS-WSP METHOD AS PRESCRIBED IN SECTION R602.10.3 (UNO)
 - ALL SHEATHABLE SURFACES OF EXTERIOR WALLS (INCLUDING AREAS ABOVE AND BELOW OPENINGS AND GABLE END WALLS) SHALL BE CONTINUOUSLY SHEATHED WITH WOOD STRUCTURAL PANEL (WSP) SHEATHING WITH A MINIMUM THICKNESS OF 3/8". SHEATHING SHALL BE SECURED WITH MINIMUM 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND SPACED AT 12" O.C. AT INTERMEDIATE SUPPORTS.
 - MINIMUM BRACED WALL PANEL LENGTHS WITH CS-WSP METHOD SHALL BE AS FOLLOWS:
 - 24" ADJACENT TO OPENINGS NOT MORE THAN 67% OF WALL HEIGHT
 - 30" ADJACENT TO OPENINGS GREATER THAN 67% AND LESS THAN 85% OF WALL HEIGHT
 - 48" FOR OPENINGS GREATER THAN 85% OF WALL HEIGHT
 - SHEATH INTERIOR AND EXTERIOR
 - FOR CS-WSP METHOD, A MINIMUM 24" BRACED WALL PANEL CORNER RETURN SHALL BE PROVIDED AT BOTH ENDS OF A BRACED WALL LINE IN ACCORDANCE WITH FIGURE R602.10.3.14. IN LIEU OF A CORNER RETURN EITHER A MINIMUM 48" BRACED WALL PANEL SHALL BE PROVIDED AT THE CORNER OR A HOLD-DOWN DEVICE WITH A MINIMUM UPLIFT DESIGN VALUE OF 800# SHALL BE FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FRAMING BELOW.
 - MINIMUM 800# HOLD-DOWN DEVICE

REQUIRED BRACED WALL PANEL CONNECTIONS				
METHOD	MATERIAL	MIN. THICKNESS	REQUIRED CONNECTION	
			@ PANEL EDGES	@ INTERMEDIATE SUPPORTS
CS-WSP	WOOD STRUCTURAL PANEL	3/8"	6d COMMON NAILS @ 6" O.C.	6d COMMON NAILS @ 12" O.C.
GB	GYPSUM BOARD	1/2"	5d COOLER NAIL** @ 7" O.C.	5d COOLER NAIL** @ 7" O.C.
WSP	WOOD STRUCTURAL PANEL	3/8"	6d COMMON NAILS @ 6" O.C.	6d COMMON NAILS @ 12" O.C.

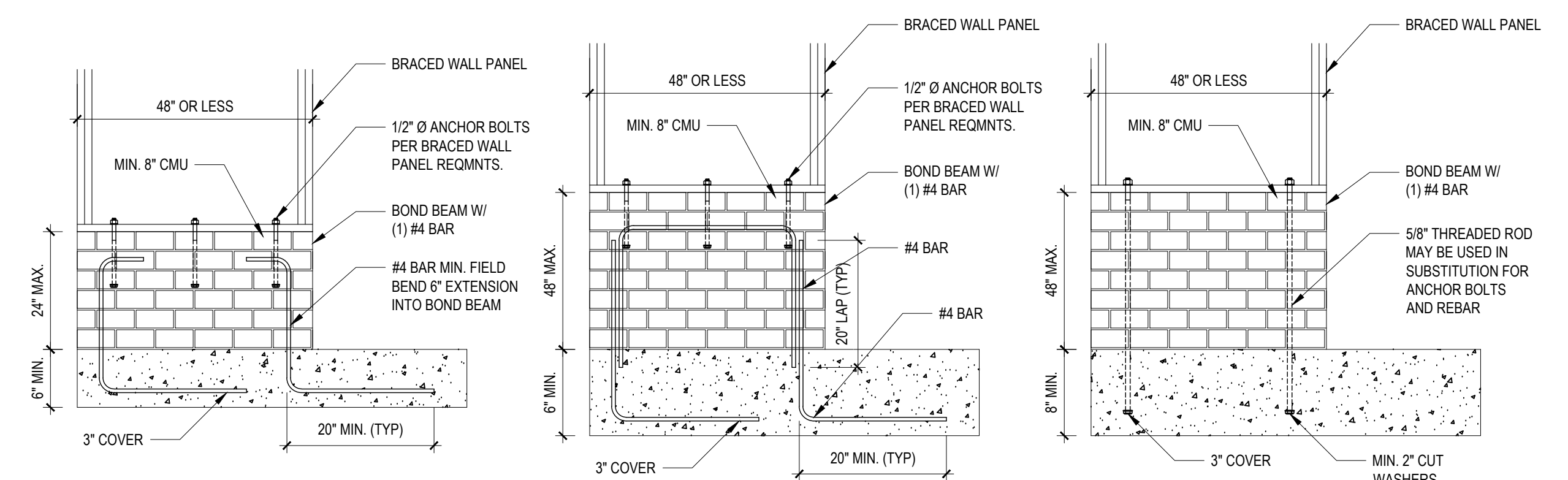
**OR EQUIVALENT PER TABLE R702.3.5
B3: BRACE WALL PANEL CONNECTIONS
 NO SCALE



B2: METHOD CS-PF: CONTINUOUSLY SHEATHED PORTAL FRAME
 FIGURE R602.10.1



B3: BRACE WALL PANEL CONNECTIONS
 NO SCALE



B4: MASONRY STEM WALL SUPPORTING BRACED WALL PANELS
 FIGURE R602.10.4.3 OF THE 2018 NCR
 NOTE: GROUT BOND BEAMS AND ALL CELLS WHICH CONTAIN REBAR, THREADED RODS AND ANCHOR BOLTS

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