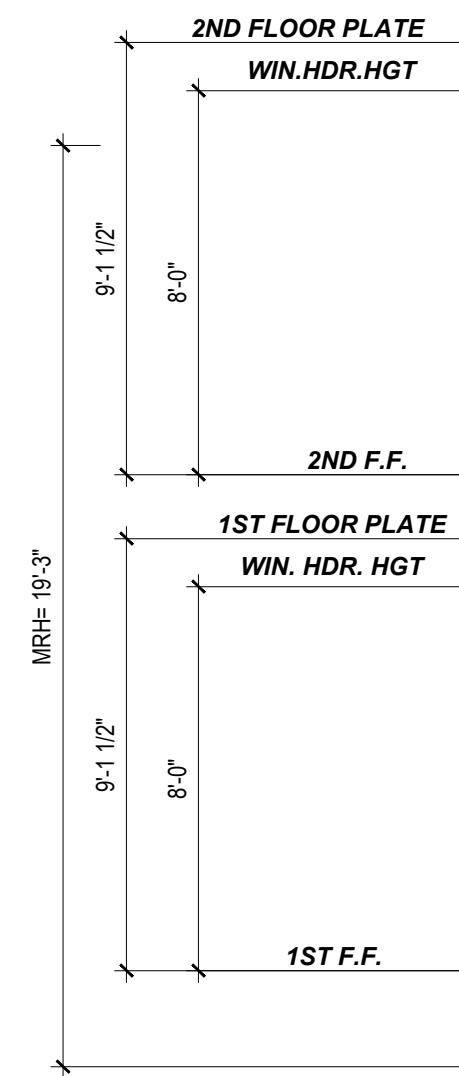




FRONT ELEVATION
1/4" = 1'-0"

Garages are required to be fire separated from habitable areas per section R302.6 of the 2018 NCRC.



CRAWL SPACE VENTILATION CALCULATIONS

-VENT LOCATIONS MAY VARY FROM THOSE SHOWN ON THE PLAN BUT SHOULD BE PLACED TO PROVIDE ADEQUATE VENTILATION AT ALL POINTS TO PREVENT DEAD AIR POCKETS.

-100% VAPOR BARRIER MUST BE PROVIDED WITH 12" MIN. LAP JOINTS.

-THE TOTAL AREA OF VENTILATION OPENINGS MAY BE REDUCED TO 1/1500 AS LONG AS REQUIRED OPENINGS ARE PLACED SO AS TO PROVIDE CROSS-VENTILATION OF THE SPACE. THE INSTALLATION OF OPERABLE LOUVERS SHALL NOT BE PROHIBITED. (COMPLY WITH NC CODE MIN. WITH REGARD TO VENT PLACEMENT FROM CORNERS)

2586 SQ. FT. OF CRAWL SPACE/1500

1.72 SQ. FT. OF REQUIRED VENTILATION

PROVIDED BY: 4 VENTS AT 0.45 SQ. FT. NET FREE

VENTILATION EACH= 1.8 SQ. FT. OF VENTILATION

****FOUNDATION DRAINAGE- WATERPROOFING PER SECTIONS 405 & 406.**

ATTIC VENTILATION CALCULATIONS

- CALCULATIONS SHOWN BELOW ARE BASED ON VENTILATORS USED AT LEAST 3 FT. ABOVE THE CORNICE VENTS WITH THE BALANCE OF VENTILATION PROVIDED BY EAVE VENTS.

- CATHEDRAL CEILINGS SHALL HAVE A MIN. 1" CLEARANCE BETWEEN THE BOTTOM OF THE ROOF DECK AND THE INSULATION.

4525 SQ. FT. OF ATTIC/300= 15.08

EACH OF INLET AND OUTLET REQUIRED.

***WALL AND ROOF CLADDING DESIGN VALUES**

- WALL CLADDING IS DESIGNED FOR A 24.1 SQ. FT. OR GREATER POSITIVE AND NEGATIVE PRESSURE.

- ROOF VALUES BOTH POSITIVE AND NEGATIVE SHALL BE AS FOLLOWS:

45.5 LBS. PER SQ. FT. FOR ROOF PITCHES OF 0/12 TO 2.25/12

34.8 LBS. PER SQ. FT. FOR ROOF PITCHES OF 2.25/12 TO 7/12

21 LBS. PER SQ. FT. FOR ROOF PITCHES OF 7/12 TO 12/12

**** MEAN ROOF HEIGHT 30' OR LESS**

GENERAL NOTES:

1. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT ALL DIMENSIONS, ROOF PITCHES, AND SQUARE FOOTAGE ARE CORRECT PRIOR TO CONSTRUCTION. K&A HOME DESIGNS, INC. IS NOT RESPONSIBLE FOR ANY DIMENSIONING, ROOF PITCH, OR SQUARE FOOTAGE ERRORS ONCE CONSTRUCTION BEGINS.
2. ALL WALLS SHOWN ON THE FLOOR PLANS ARE DRAWN AT 4" UNLESS NOTED OTHERWISE.
3. ALL ANGLED WALL SHOWN ON THE PLANS ARE 45 DEGREES UNLESS NOTED OTHERWISE.
4. STUD WALL DESIGN SHALL CONFORM TO ALL NORTH CAROLINA STATE BUILDING CODE REQUIREMENTS.
5. DO NOT SCALE PLANS. DRAWING SCALE MAY BE DISTORTED DUE TO COPIER IMPERFECTIONS.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NORTH CAROLINA RESIDENTIAL STATE BUILDING CODE, 2018 EDITION.

SQUARE FOOTAGE

HEATED SQUARE FOOTAGE

FIRST FLOOR= 2586

SECOND FLOOR= 392

THIRD FLOOR= N/A

BASEMENT= N/A

TOTAL HEATED= 2978

UNHEATED SQUARE FOOTAGE

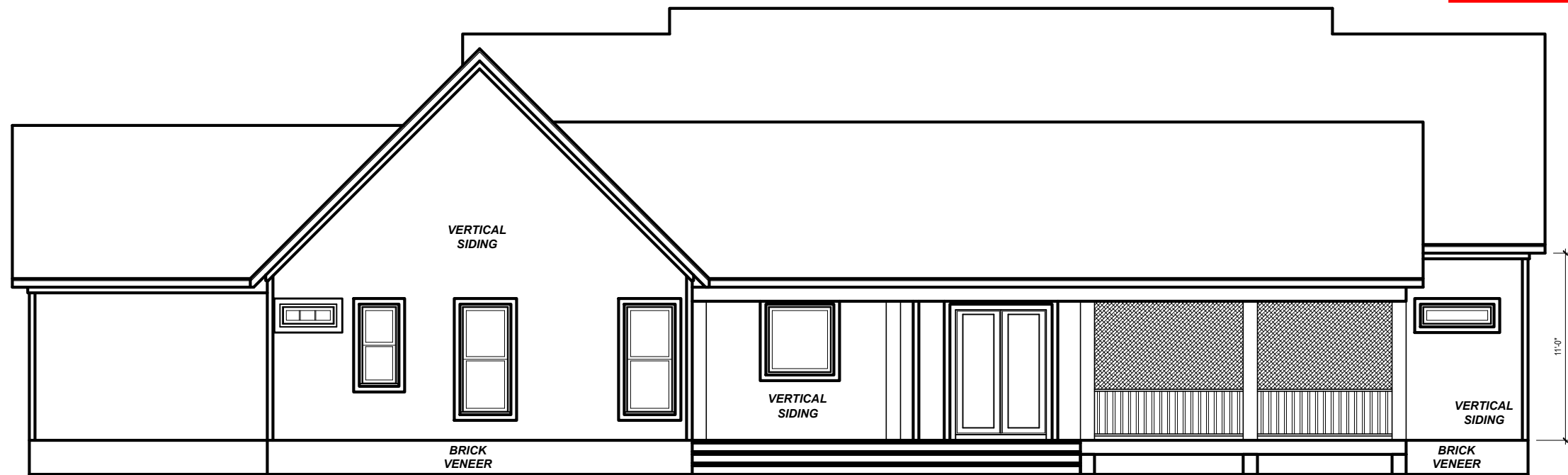
GARAGE= 1001

FRONT PORCH= 218

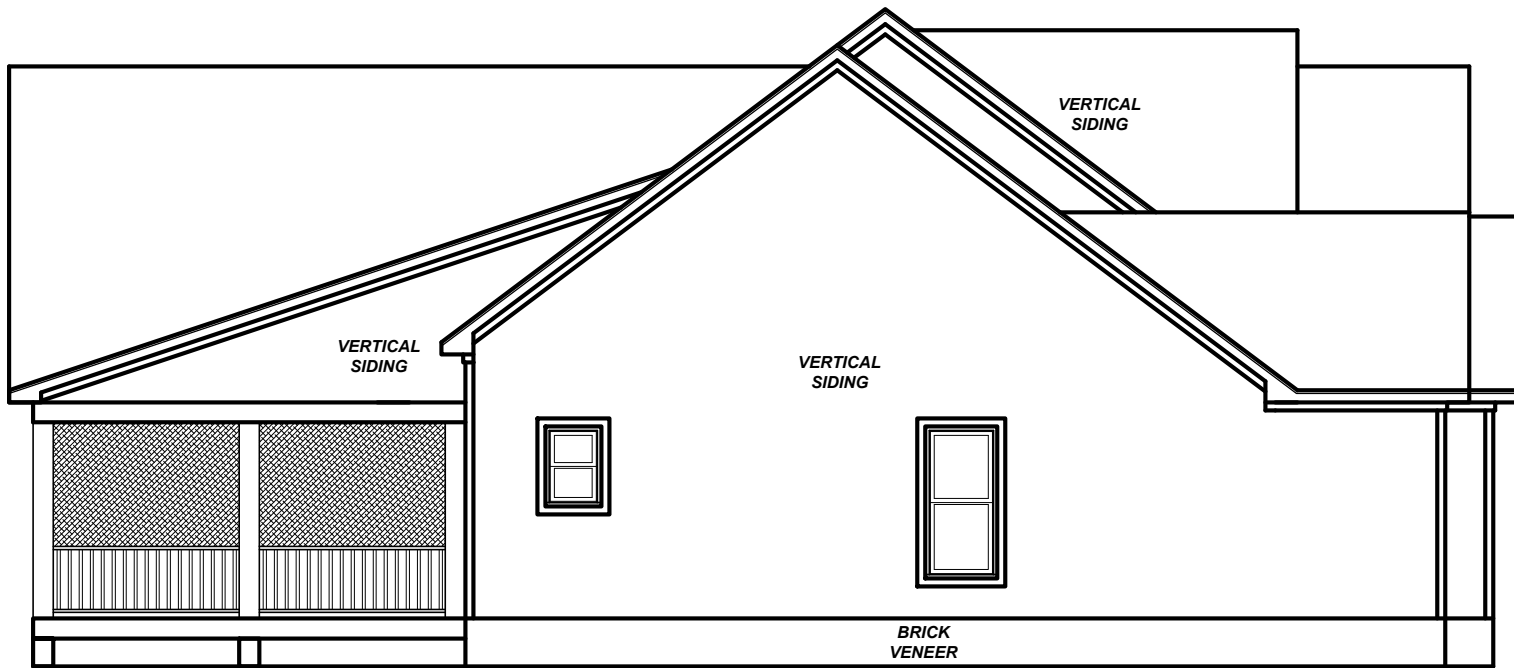
CVD. PORCH= 390

SCREEN PORCH= 330

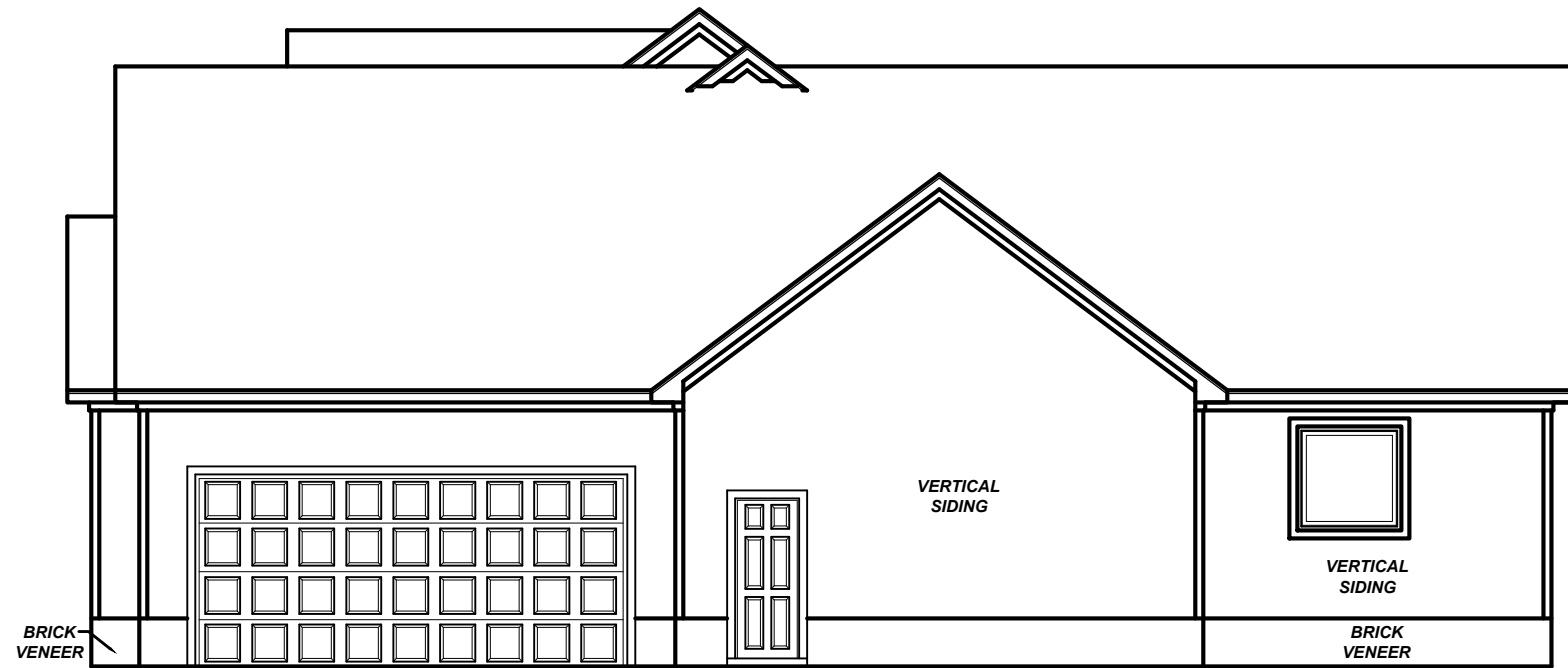
TOTAL UNHEATED= 1939



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



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

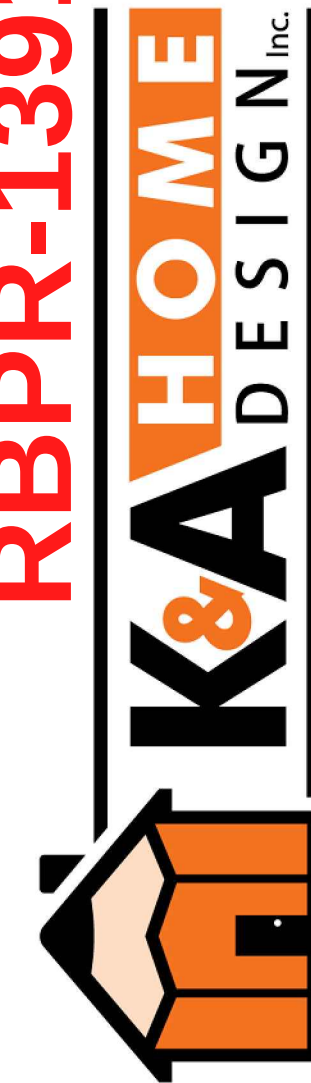


RIGHT ELEVATION
1/8" = 1'-0"

Project #:	24-072
Date:	2-29-24
Drawn/Design By:	KBB
Scale:	REFER TO ELEV.

REVISIONS		
No.	Date:	Remarks
1		
2		
3		
4		

RBPR-139151-2025
9101 Ten-Ten Rd.
Raleigh, NC 27603
Office: (919) 302-0693
H A

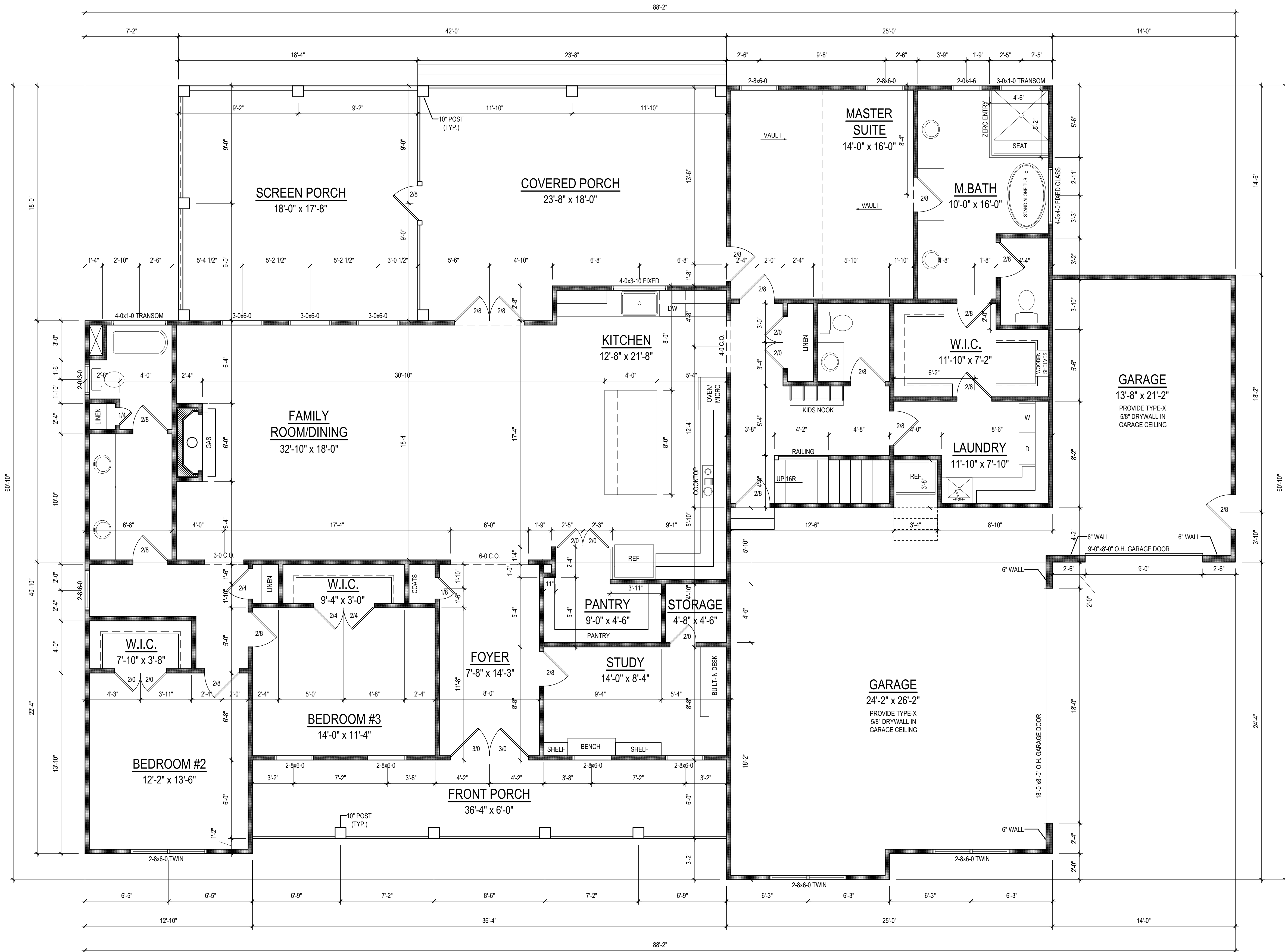


O'Connell Residence

O'Connell Developing LLC
1212 Riggins Mill Rd.
Cary, NC 27519

ELEVATIONS

Sheet Number
1
of 3



FIRST FLOOR PLAN
1/4" = 1'-0" CEILING HT. = 9'-0"

Project #:		
24-072		
Date:		
2-29-24		
Drawn/Design By:		
KBB		
Scale:		
1/4"=1'-0"		

REVISIONS		
No.	Date	Remarks
1		
2		
3		
4		

RBPR-139151-2025
9101 Ten-Ten Rd.
Raleigh, NC 27603
Office: (919) 302-0693



Project Name:
**O'Connell
Residence**

Client Name:
**O'Connell Developing
LLC**
1212 Riggins Mill Rd.
Cary, NC 27519

FIRST FLOOR

Sheet Number
2
of 3

Email: Kent@KandAHomeDesigns.com

Website: www.KandAHomeDesigns.com



Sheet Number
3
of 3

FILENAME: \\A\VAUGHN\OFFICE\RESIDENTIAL\ENGINEERING\2024\STRUCTURAL\PROJECTS\2401-010063_LEWIS SWED BY: SHANESH LAST PLOT DATE: 4/10/2024 3:39 PM

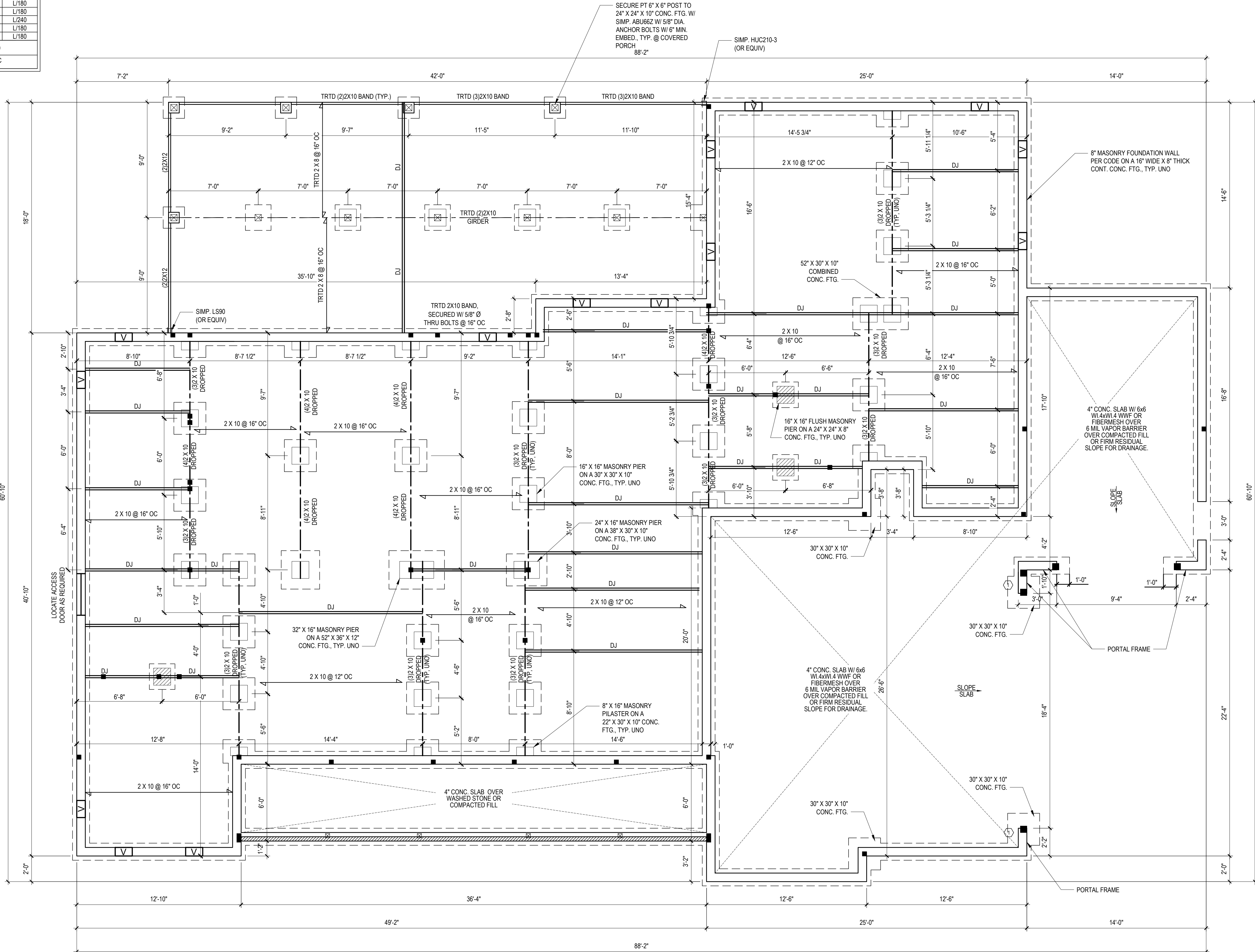
DESIGN LOADS

	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)	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	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 CONTRACTORS 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 (ACTUAL) EACH SINGLE MEMBER AND $F_b = 2600$ PSI, $E = 1.9M$ PSI (OR GREATER)
(I.E. I-LEVEL MICROLAM)
ALL LSL LUMBER IS TO BE 1.55E ($F_b = 2325$ PSI) (OR GREATER)
ALL PSL LUMBER IS TO BE 1.0E ($F_b = 2400$ PSI) (OR GREATER)
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'-6". OTHERWISE REFER TO TABLES R602.7.1(1) AND R602.7.2(2).
- ALL INTERIOR LOAD BEARING HEADERS TO BE (2) 2x10 (U.N.O.), REFER TO TABLES R602.7.1(1) AND R602.7.2(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
 $F_y = 50$ KSI MIN. (UNO)
- ALL EXTERIOR LUMBER TO BE #2 SYP PT
- ALL CONCRETE, $f_c = 3000$ 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 602.10.3 OF THE 2018 NCRC
- 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"

(1) REFERENCE FIGURE R602.10.4.3 OF THE 2018 NCRC.

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Please review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.



Client: **BRIAN O'CONNELL**
5125 HOPKINS CHAPEL ROAD,
ZEBULON

FOUNDATION PLAN

1ST FLOOR FRAMING

Project #: 2401-010063
Date: 4/10/2024
Engineered By: HJS
DWG. Checked By: PAT
Scale: SEE PLAN

REVISIONS		
No.	Date	Remarks

Sheet Number

S1

1 of 6

RBPR-139151-2025

AS

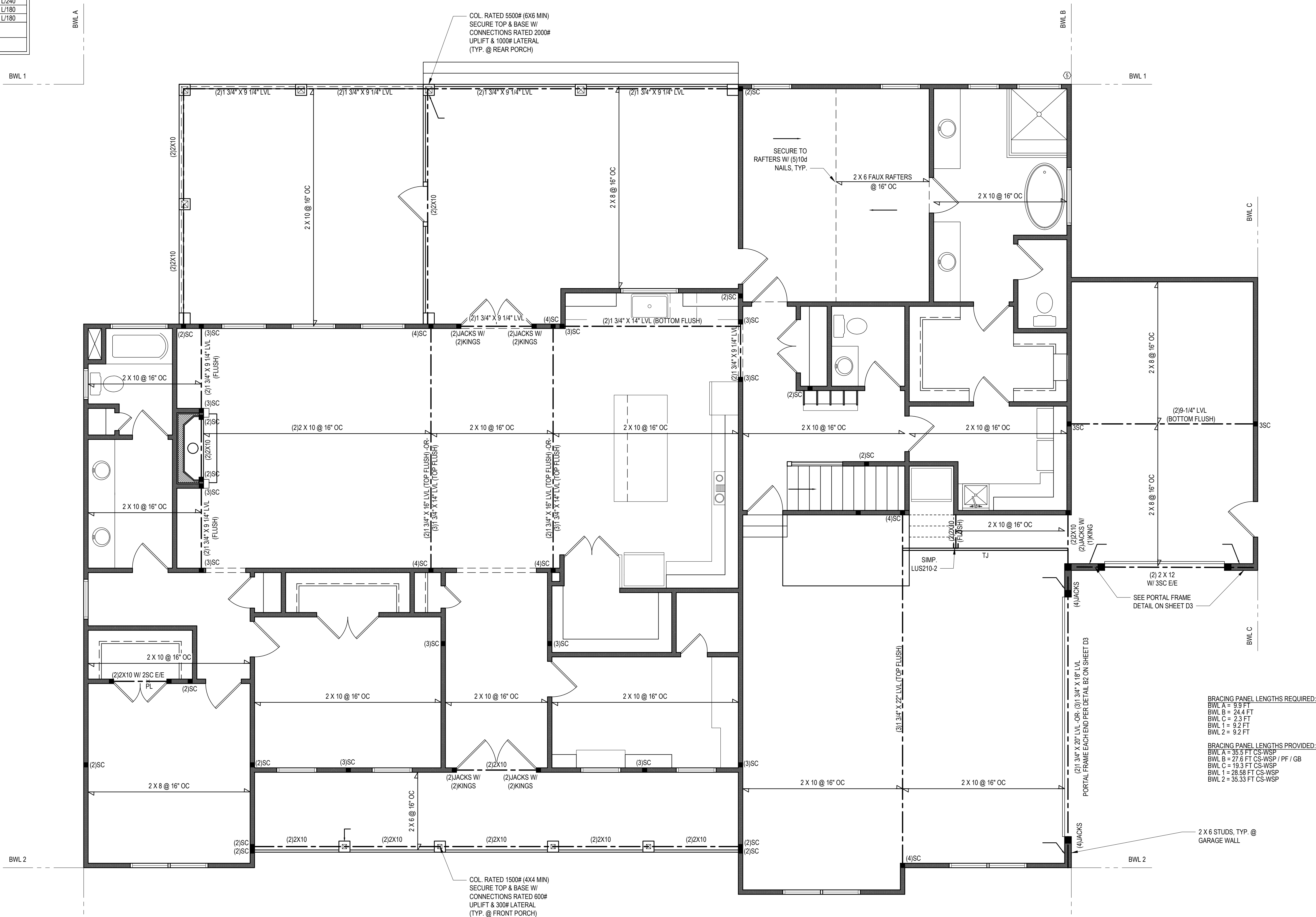
DESIGN LOADS				
	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION	
			LL	TL
FLOOR (primary)	40	10	L/360	L/240
FLOOR (secondary)	40	10	L/360	L/240
ATTIC (w/ storage)	20	10	L/240	L/180
ATTIC (no access)	10	5	L/240	L/180
EXTERNAL BALCONY	40	10	L/360	L/240
ROOF	20	10	L/240	L/180
ROOF TRUSS	20	20	L/240	L/180
WIND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

STRUCTURAL NOTES:

- 1 ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS
- 2 OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE",
- 3 IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.
- 4 IF IT IS NOT POSSIBLE TO OBTAIN THE NECESSARY PERMITS TO VERIFY ALL DIMENSIONS
- 5 AND SQUARE FOOTAGE PRIOR TO CONSTRUCTION, TYNDALL
- 6 ENGINEERING & DESIGN, P.A. IS NOT RESPONSIBLE FOR DIMENSIONS
- 7 AND SQUARE FOOTAGE ERRORS ONCE CONSTRUCTION BEGINS.
- 8 ALL LUMBER SHALL BE SYP #2 (E=1.1E)
- 9 ALL LVL LUMBER TO BE 1.75" (1 1/2") EACH SINGLE MEMBER AND
- 10 FLOOR JOIST LUMBER TO BE 1.9M PS (OR GREATER)
- 11 (I.E. LEVEL MICROLAM)
- 12 ALL LSL LUMBER TO BE 1.55E (F= 2325 PSF) (OR GREATER)
- 13 ALL PSL LUMBER IS TO BE 1.8E (F= 2400 PSF) (OR GREATER)
- 14 ALL LOAD BEARING EXTERIOR WINDOW HEADERS ARE TO BE 2 (2) x10 w/
- 15 (1) 1/4 JACK STUD (U.O.) AND KING STUDS PER TABLE R602.7.5. AND
- 16 TOGETHER W/ (2) 10d NAILS @ 8" O.C., PROVIDED THAT THE TOP OF THE
- 17 WINDOW HEIGHT IS ≤ 6"- MINIMUM BOTTOM OF THE WINDOW HEIGHT IS
- 18 1'-6" OTHERWISE REFER TO TABLES R602.7(1) AND R602.7(2).
- 19 ALL INTERIOR LOAD BEARING HEADERS TO BE 2 (2) x10 (U.O.) REFER
- 20 TO TABLE R602.7(1) U.O. AND KING STUDS PER STUD REQUIREMENTS
- 21 FOR HEADER SPANS FOR INTERIOR AND EXTERIOR LOAD CONDITIONS
- 22 (U.NO)
- 23 REFER TO 2018 NC BUILDING CODE SECTION R602 FOR CONSTRUCTION
- 24 OF ALL WALLS OVER 10'-0" IN HEIGHT.
- 25 ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50
- 26 Fy = 50 KSI MIN. (U.NO)
- 27 ALL EXTERIOR LUMBER TO BE #2 SYP PT
- 28 ALL CONCRETE, (c = 3000 PSI MIN.)
- 29 PRESUMPTIVE BEARING CAPACITY = 2000 PSF
- 30 1/2"Ø ANCHOR BOLTS SPACED AT MAXIMUM OF 6'-0" (U.O.) AND NOT MORE
- 31 THAN 4" FROM THE CORNER. THERE SHALL BE A MINIMUM OF (2) BOLTS
- 32 PER PLATE SECTION. ANCHOR BOLTS SHALL BE SPACED AT 3'-0" O.C.
- 33 FOR BASEMENTS. ANCHOR BOLT SHALL EXTEND 7" INTO CONCRETE OR
- 34 MASONRY.
- 35 PSL COLLUMS DESIGNED WITH MAX. HEIGHT OF 9'-0" (U.NO)
- 36 PROVIDE MINIMUM OF 50#UPTYP & LATERAL CONNECTION AT TOP
- 37 AND BOTTOM OF PORCH COLLUMS. (U.N.O.)
- 38 PROVIDE CONTINUOUS SHEAR/TRANSVERSE PER SECTION 602.10.3 OF THE 2018
- 39 NCRC
- 40 MAXIMUM PORCH PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS
- 41 LEAST LATERAL DIMENSION.
- 42 UPTYP LOADS EXCEEDING 7500#L SHALL BE CONTINUOUSLY
- 43 ANCHORED TO THE FOUNDATION.
- 44 METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.

STRUCTURAL SHEATHING NOTES

- 1) DESIGNED FOR SEISMIC ZONE A-C AND WIND SPEEDS OF 120 MPH OR LESS.
- 2) WALLS SHALL BE BRACED IN ACCORDANCE WITH SECTION R602.10 OF THE 2018 NRCR.
- 3) 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 NRCR.
- 4) INTERIOR BRACED WALL PANELS (BWP) INDICATED SHALL BE SHEATHED IN ACCORDANCE WITH THE CB METHOD OR WSP METHOD AS PRESCRIBED IN SECTION R602.10.1 (UNO)
- ② 1/2" GYPSUM BOARD (GB) MINIMUM LENGTH OF 8'-0" (ISOLATED PANELS) OR 4'-0" (CONTINUOUS SHEATHING).
SECURE w/ 56 COOLER NAILS (OR EQUAL PER TABLE R702.3.5) SPACED @ 7" O.C. AT PANEL EDGES, INCLUDING TOP AND BOTTOM PANELS & 7" O.C. AT INTERMEDIATE SUPPORTS
- ③ 3/8" WOOD STRUCTURAL PANEL (WSP) SECURE w/ 6d COMMON NAILS SPACED AT 8" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS
- 5) EXTERIOR BRACED WALL PANELS (BWP) SHALL BE CONSTRUCTED IN ACCORDANCE WITH CS-WSP METHOD AS PRESCRIBED IN SECTION R602.10.3 (UNO)
- 6) 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 8" O.C. AT PANEL EDGES AND SPACED AT 12" O.C. AT INTERMEDIATE SUPPORTS.
- 7) 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
- ④ SHEATH INTERIOR & EXTERIOR
- 8) 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



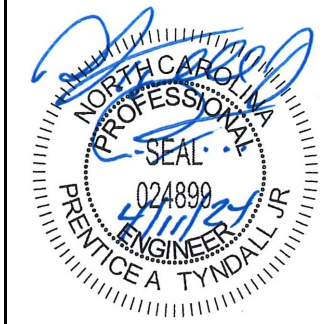
FIRST FLOOR PLAN

$$1/4'' = 1'-0''$$

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.

*Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design P.A. liability.

*Please review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.



Client:	BRIAN O'CONNELL
Phone:	5125 HOPKINS CHAPEL ROAD, ZEBULON

1ST FLOOR HEADER
2ND FLOOR FRAMING

<u>Project #:</u> 2401-010063
<u>Date:</u> 4/10/2024
<u>Engineered By:</u> HJS
<u>DWG. Checked By:</u> PAT
<u>Scale:</u> SEE PLAN

REVISIONS		
No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number

S2

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	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)	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 BASED ON SEISMIC ZONES A, B & C				

- 1) ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION ALL LOCAL ORDINANCES AND REGULATIONS.
- 2) 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.
- 3) ALL LUMBER SHALL BE SYP #2 (UNO)
ALL DIMENSIONS TO BE 1.75" (OR GREATER) EACH SINGLE MEMBER AND Fb = 2600 PSI, E = 1.9M PSI (OR GREATER)
(I.E. LUMBER, MICROLAM)
ALL LVL DIMENSIONS TO BE 1.55E (Fb = 2325 PSI) (OR GREATER)
ALL LVL SPACING EXTERIOR WINDOW HEADERS ARE TO BE (2) 2x10 W/ 1" 2x4 JACK STUD (UNO) AND KING STUDS PER TABLE R602.7.5, AND TOGETHER W/ (2) 1d4 NAILS @ 8" O.C., PROVIDED THAT THE TOP OF THE WINDOW HEIGHT IS 6"-8", MINIMUM BOTTOM OF THE WINDOW HEIGHT IS 1'-6". OTHERWISE REFER TO TABLES R602.7(1) AND R602.7(2).
- 4) ALL INTERIOR LOAD BEARING HEADERS TO BE (2) 2X10 (UNO.) REFER TO TABLE R602.7(1) FOR ALL INTERIOR LOAD BEARING REQUIREMENTS FOR HEADER SPANS FOR INTERIOR AND EXTERIOR LOAD CONDITIONS (UNO)
- 5) REFER TO 2018 NC BUILDING CODE SECTION R602 FOR CONSTRUCTION OF ALL WALLS OVER 10' 0" IN HEIGHT.
IF ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50
Fy = 50 KSI, UNO LUMBER TO BE SYP #2
ALL CONCRETE, fc = 3000 PSI MIN.
- 6) PRESUMPTIVE BEARING CAPACITY = 2000 PSF
1/2" ANCHOR BOLTS SPACED AT MAXIMUM OF 6' 0" O.C. AND NOT MORE THAN 12" FROM THE FACE OF THE WALL. THERE SHALL BE A MINIMUM OF (2) BOLTS PER PLATE SECTION. ANCHOR BOLTS SHALL BE SPACED AT 3' 0" O.C. FOR BASEMENTS. ANCHOR BOLTS SHALL EXTEND 7" INTO CONCRETE OR MASONRY.
- 7) PLS. COLUMNS DESIGNED WITH MAX. HEIGHT OF 9' 0" (UNO)
- 8) PROVIDE A MINIMUM OF 50#4 UPTO & LATERAL CONNECTION AT TOP AND BOTTOM OF PORCH COLUMNS (UNO.)
- 9) PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.3 OF THE 2018 N.C.R.C.
- 10) MAXIMUM MASONRY PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.
- 11) UPLIFT FROM THE ROOF SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.
- 12) METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.

[illegible]

1/4" = 1'-0"

Project #:
2401-010063

Date:
4/10/2024

Engineered By:
HJS

DWG. Checked By:
PAT

Scale:
SEE PLAN

REVISIONS		
No.	Date:	Remarks
1		
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4 of 6



FILENAME: \\A\VA\DRG\OFFICE\RESIDENTIAL\ENGINEERING\2024\STRUCTURAL\PROJECTS\2401-010063_LDWG_SWD.BR; SHOWNEXT LAST PLOT DATE: 4/10/2024 3:39 PM

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. (I.N.C.)
- 5) MAXIMUM DEPTH OF UNBALANCED FILL AGAINST FOUNDATION WALLS TO BE LESS THAN 4'-0" WITHOUT USING SUFFICIENT WALL BRACING. REFER TO SECTION R602.7(1) & (2) FOR JACK STUD REQUIREMENTS FOR HEADER SPANS FOR INTERIOR AND EXTERIOR LOAD CONDITIONS UNLESS SPECIFICALLY NOTED ON PLANS.
- 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 = 1.9M PSI (U.N.O.) ALL LSL LUMBER TO BE 3.5" WIDE NOMINAL EACH SINGLE MEMBER AND Fb = 2325 PSI, E = 1.6M 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 3-1/2" 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"Ø x 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDED THE JOISTS ARE TIE 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 0/12 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, BUILD 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.

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	REQD	=	REQUIRED
DBL	=	DOUBLE	RJ	=	ROOF JOIST
DA	=	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"

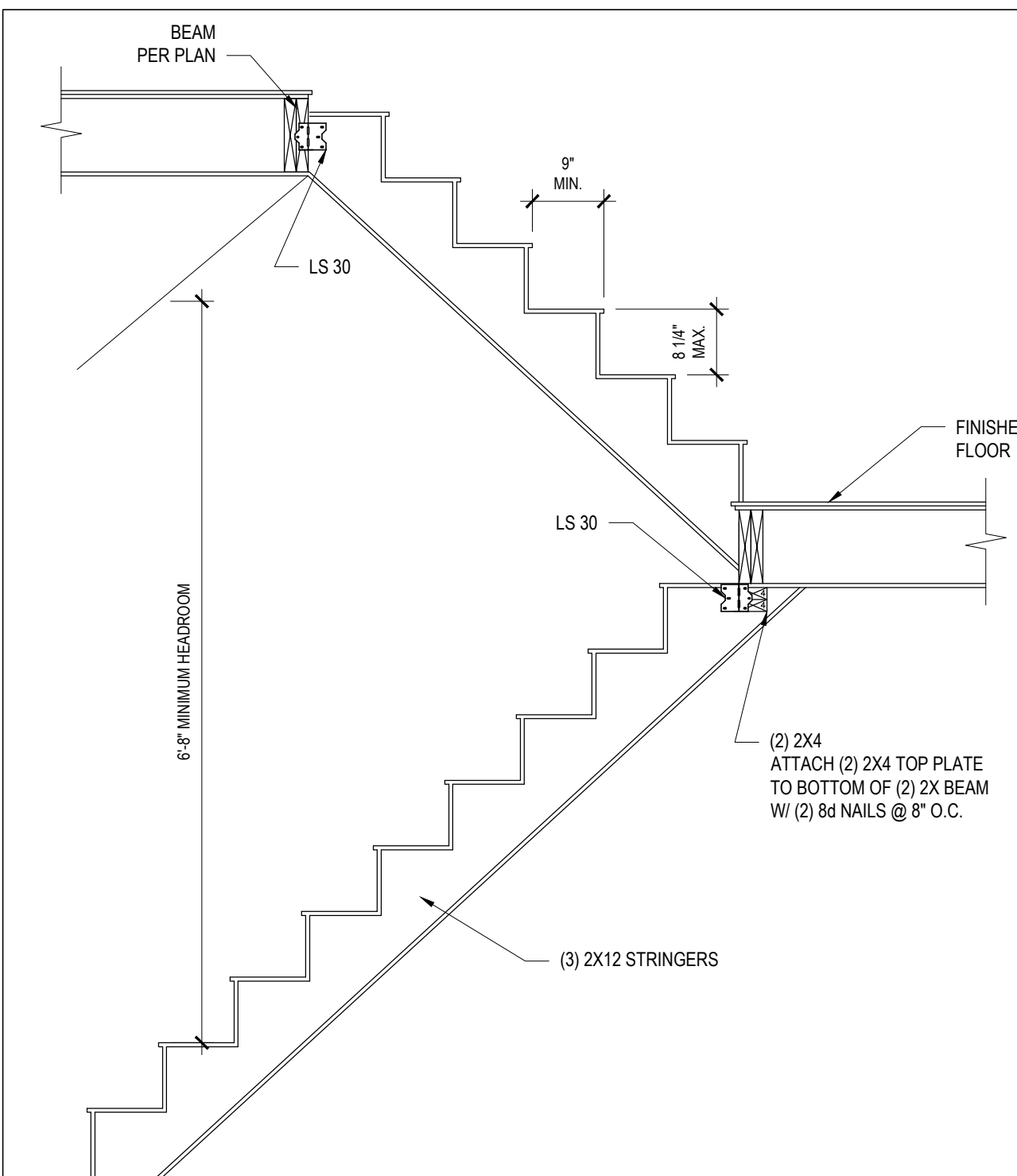
- * THIS TABLE IS BASED ON NO. 2 TREATED SOUTHERN PINE POSTS. MAXIMUM TRIBUTARY AREA IS BASED ON 128 TOTAL SQUARE FEET WHICH MAY BE LOCATED AT DIFFERENT LEVELS.
- ** FROM TOP OF FOOTING TO BOTTOM OF GIRDER.
- *** DECKS WITH POST HEIGHTS OVER 20'-0" SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER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

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

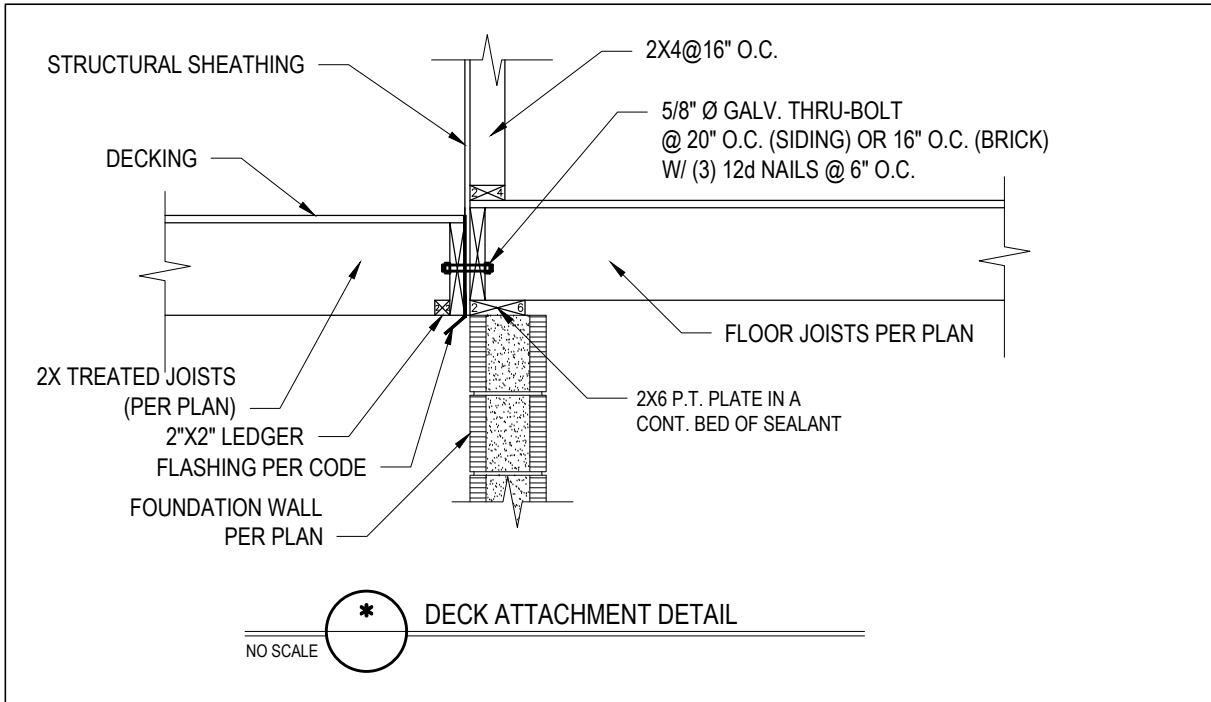
- A. THE DECK FLOOR HEIGHT IS LESS THAN 4'-0" AND THE DECK IS ATTACHED TO THE STRUCTURE IN ACCORDANCE WITH SECTION (4) ABOVE. LATERAL BRACING IS NOT REQUIRED.
- B. 4 x 4 WOOD KNEE BRACES MAY BE PROVIDED ON EACH COLUMN IN BOTH DIRECTIONS. THE KNEE BRACES SHALL ATTACH TO EACH POST AT A POINT NOT LESS THAN 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 DIPPEL 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"

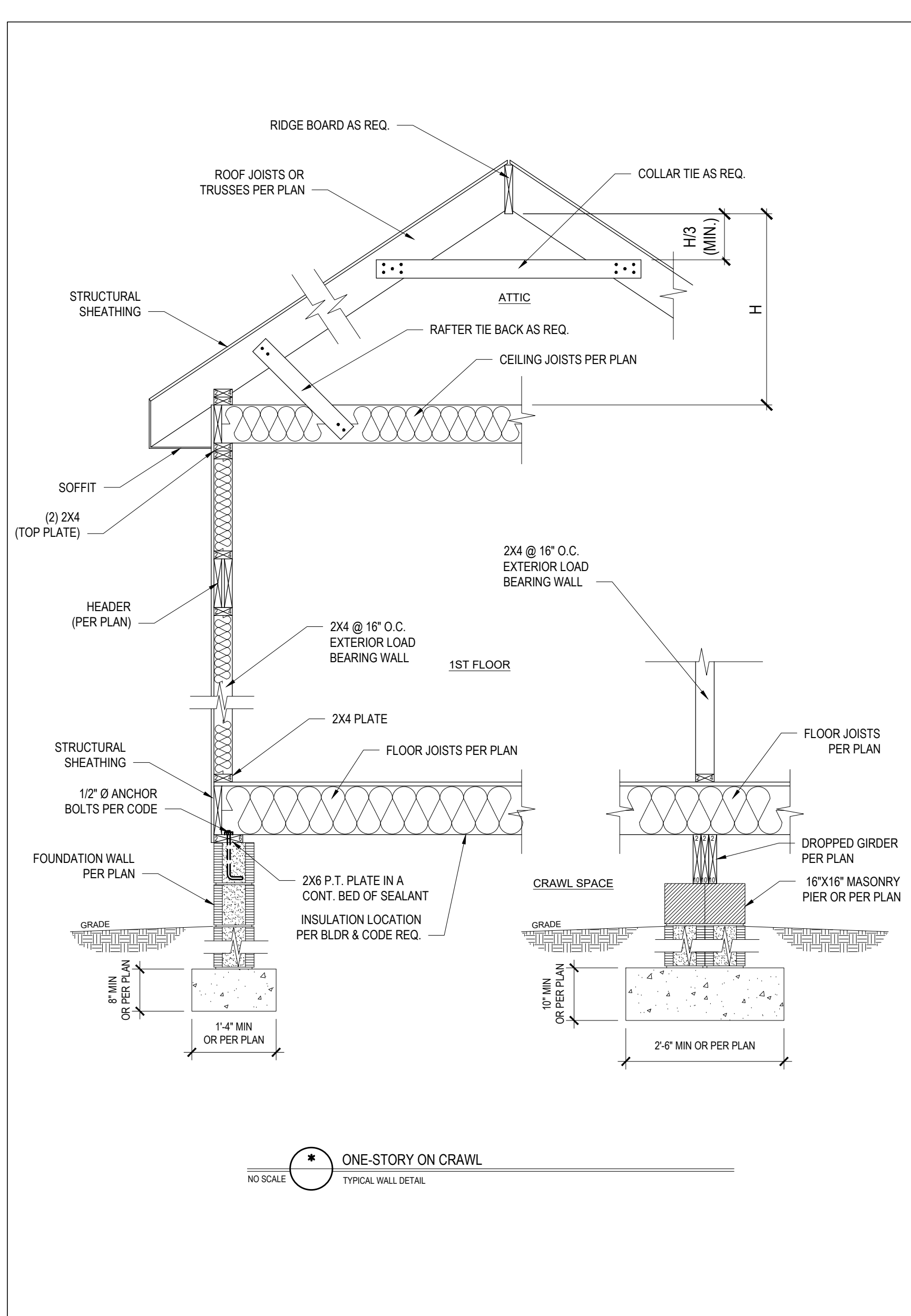
- D. 2 x 6 DIAGONAL VERTICAL CROSS BRACING MAY BE PROVIDED IN TWO (2) PERPENDICULAR DIRECTIONS FOR FREESTANDING DECKS OR PARALLEL TO THE STRUCTURE AT THE EXTERIOR COLUMN LINE FOR ATTACHED DECKS. THE 2 x 6s SHALL BE ATTACHED TO THE POSTS WITH ONE 5/8"Ø HOT DIPPEL GALVANIZED BOLT AT EACH END OF EACH BRACING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



TYPICAL STAIRWAY DETAIL
REFER TO SECTION R312 OF THE 2018 NCRC



DECK ATTACHMENT DETAIL

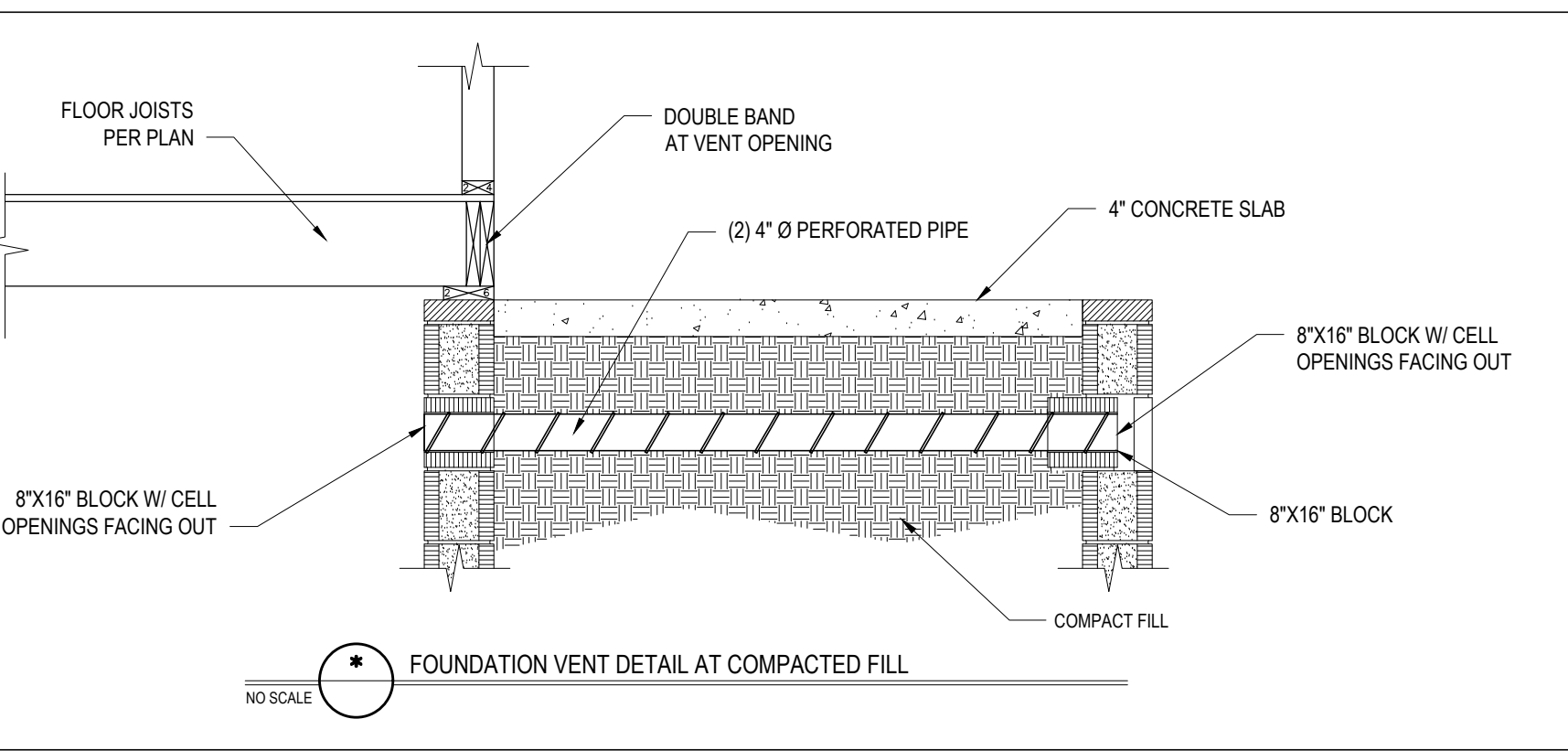


ONE-STORY ON CRAWL
TYPICAL WALL DETAIL

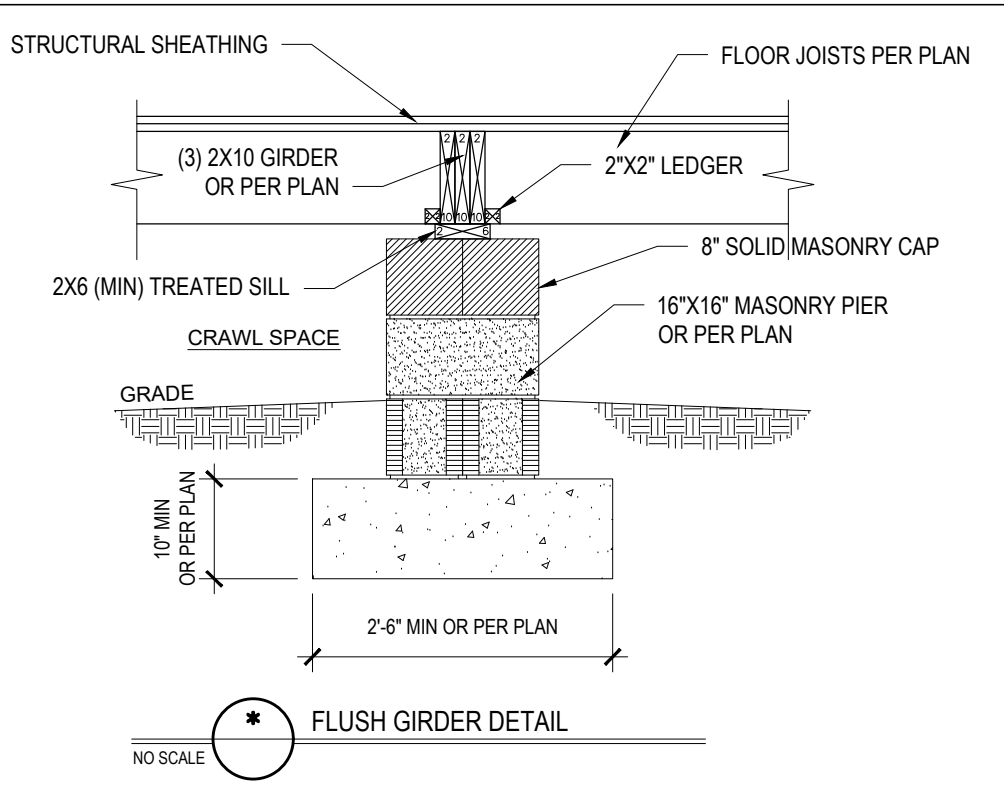
CLIMATE ZONES	FENESTRATION U-FACTOR ^{a,1}	SKYLIGHT U-FACTOR ^b	GLAZED FENESTRATION SHGC ^{c,2-5}	CEILING ^{1,6} R-VALUE	WOOD FRAMED WALL R-VALUE ^{1,7}	MASS WALL R-VALUE ^{1,8}	FLOOR R-VALUE ^{1,9}	BASEMENT WALL R-VALUE ^{1,10}	SLAB R-VALUE AND DEPTH ^d	CRAWL SPACE WALL R-VALUE ^e
3	0.35	0.55	0.30	38 or 30 cont ¹	15 or 13 + 2.5 ^h	5/13 or 5/10 cont ¹	19	5/13 ¹	0	5/13
4	0.35	0.55	0.30	38 or 30 cont ¹	15 or 13 + 2.5 ^h	5/13 or 5/10 cont ¹	19	10/15	10	10/15
5	0.35	0.55	NR	38 or 30 cont ¹	19, or 13 + 5 ^h or 15 + 3 ^h	13/17 or 13/12.5 cont ¹	30 ⁹	10/15	10	10/19

TABLE N1102.1 CLIMATE ZONES 3-5

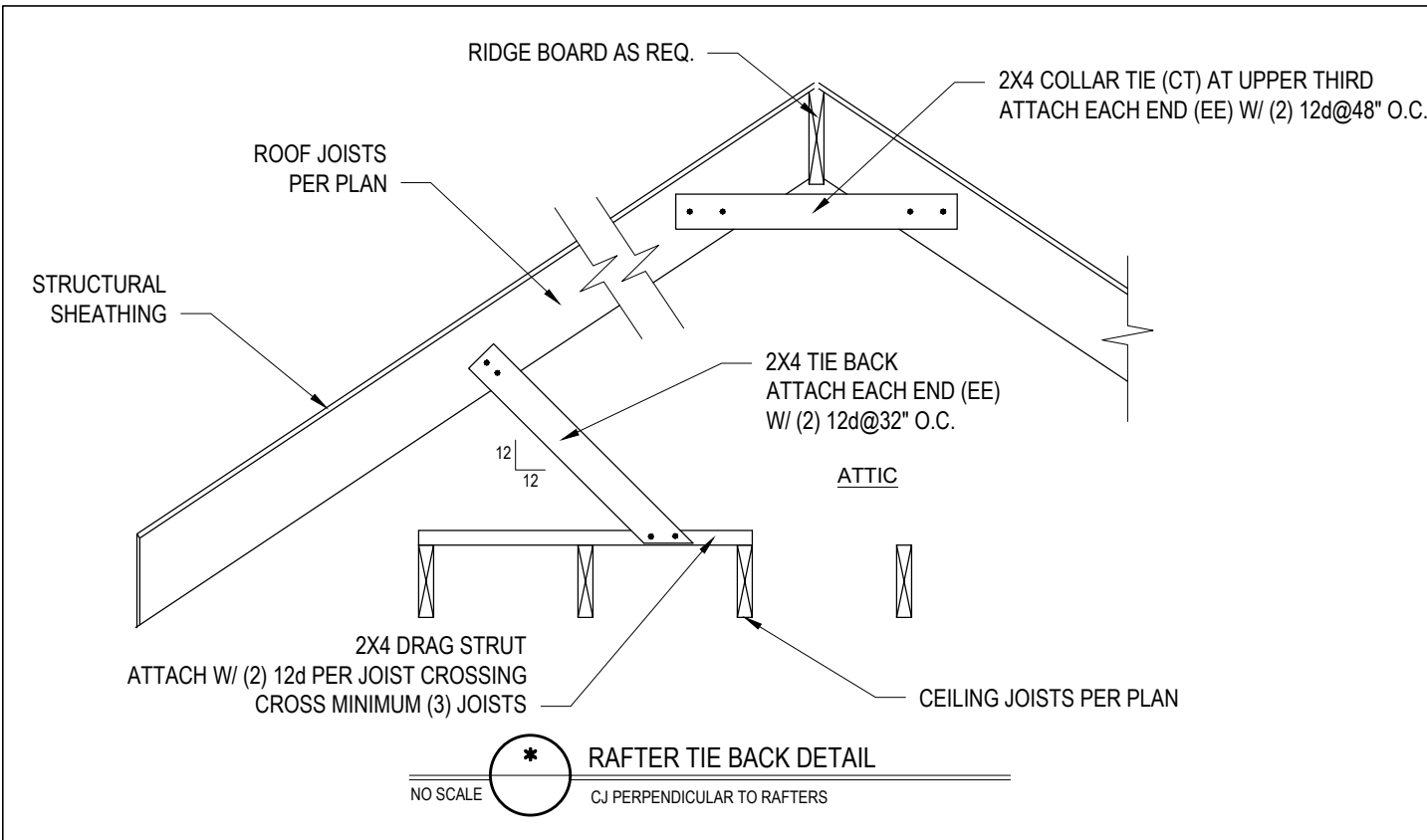
- a. R-VALUES ARE MINIMUM U-FACTORS AND SHGC ARE MAXIMUMS. WHEN INSULATION IS INSTALLED IN A CAVITY WHICH IS LESS THAN THE LABEL OR DESIGN THICKNESS OF THE INSULATION, THE INSTALLED VALUE OF THE INSULATION SHALL NOT BE LESS THAN THE R-VALUE SPECIFIED IN THE TABLE.
- b. THE FENESTRATION U-FACTOR COLUMN EXCLUDED SKYLIGHTS, THE SOLAR HEAT GAIN COEFFICIENT (SHGC) COLUMN APPLIES TO ALL GLAZED FENESTRATION.
- c. "30\"/>



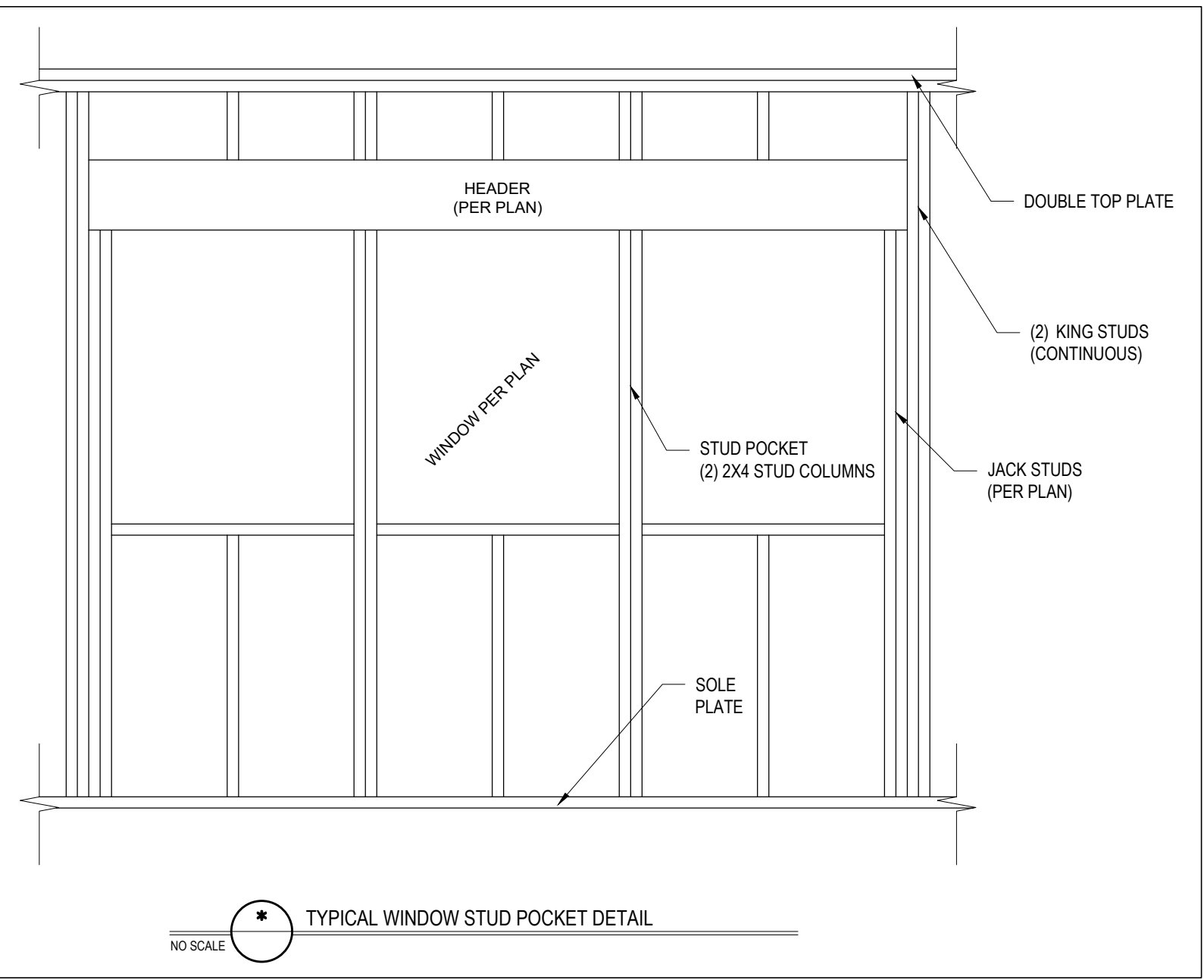
FOUNDATION VENT DETAIL AT COMPACTED FILL



FLUSH GIRDER DETAIL



RAFTER TIE BACK DETAIL
CJ PERPENDICULAR TO RAFTERS

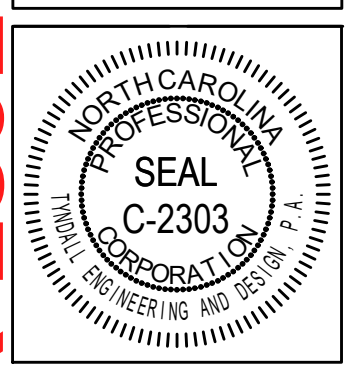


TYPICAL WINDOW STUD POCKET DETAIL

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precautions. Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability. *Please review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.



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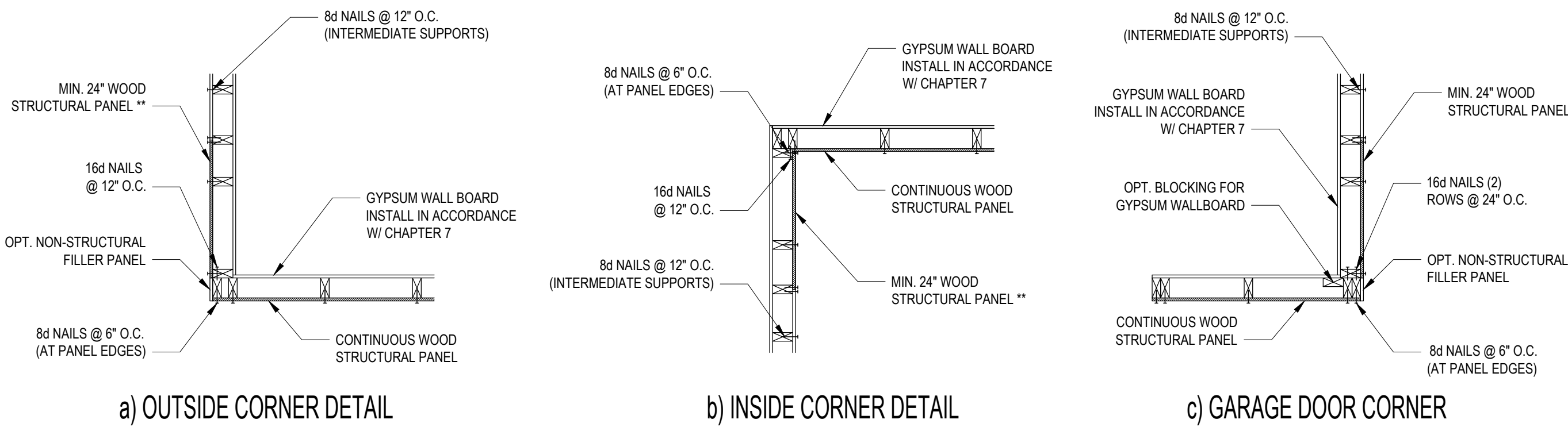


Client: **BRIAN O'CONNELL**
5125 HOPKINS CHAPEL ROAD,
ZEBULON

Project #: 2401-010063
Date: 4/10/2024
Engineered By: HJS
DWG. Checked By: PAT
Scale: SEE PLAN

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No.	Date	Remarks
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3		
4		

Sheet Number **D1**
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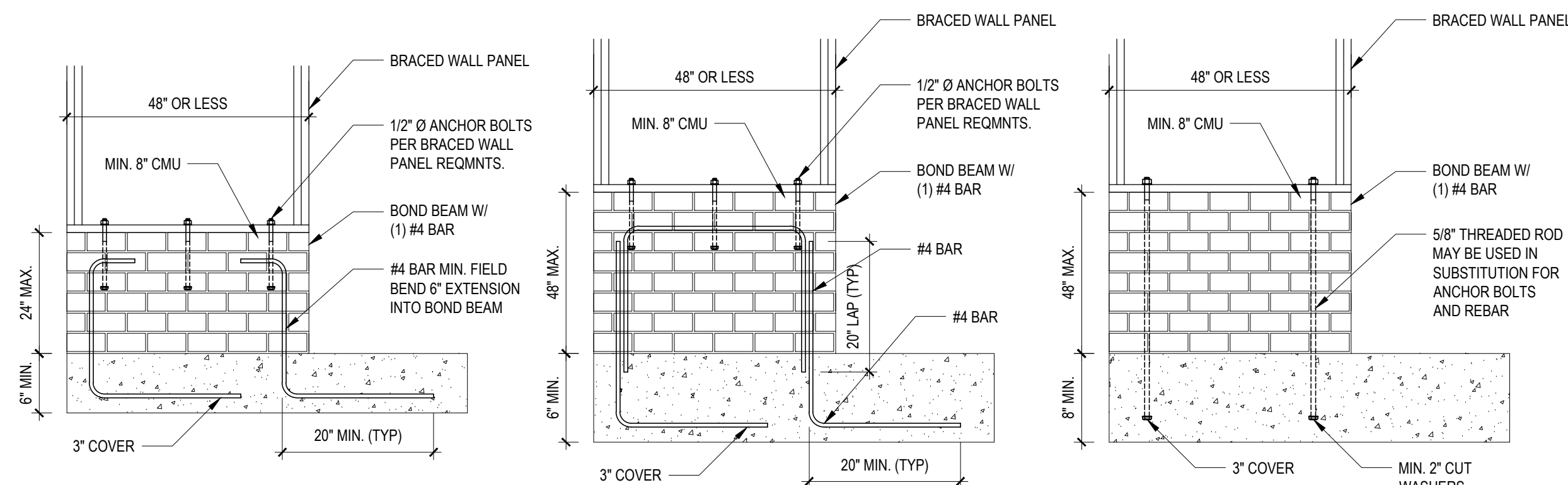
B1: TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING
NO SCALE

STRUCTURAL SHEATHING NOTES

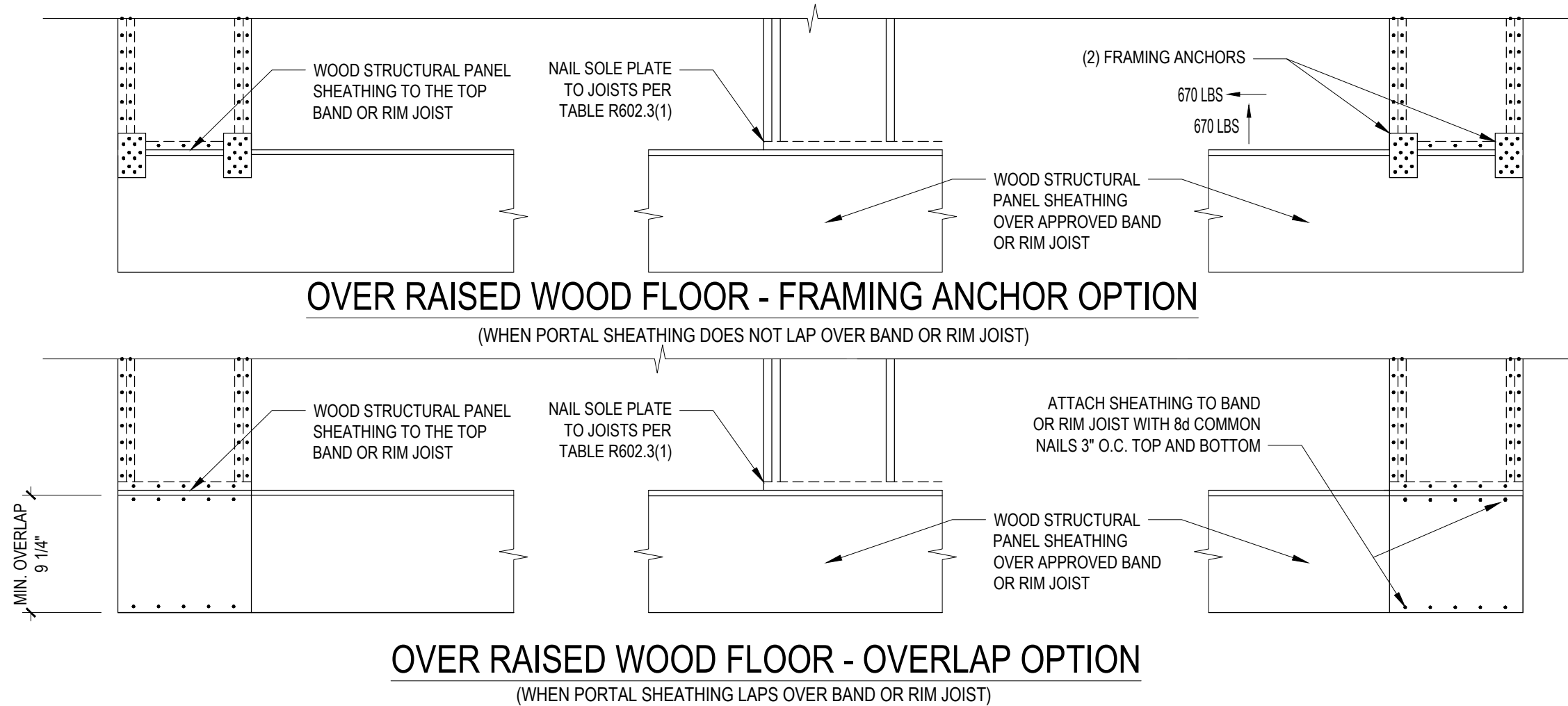
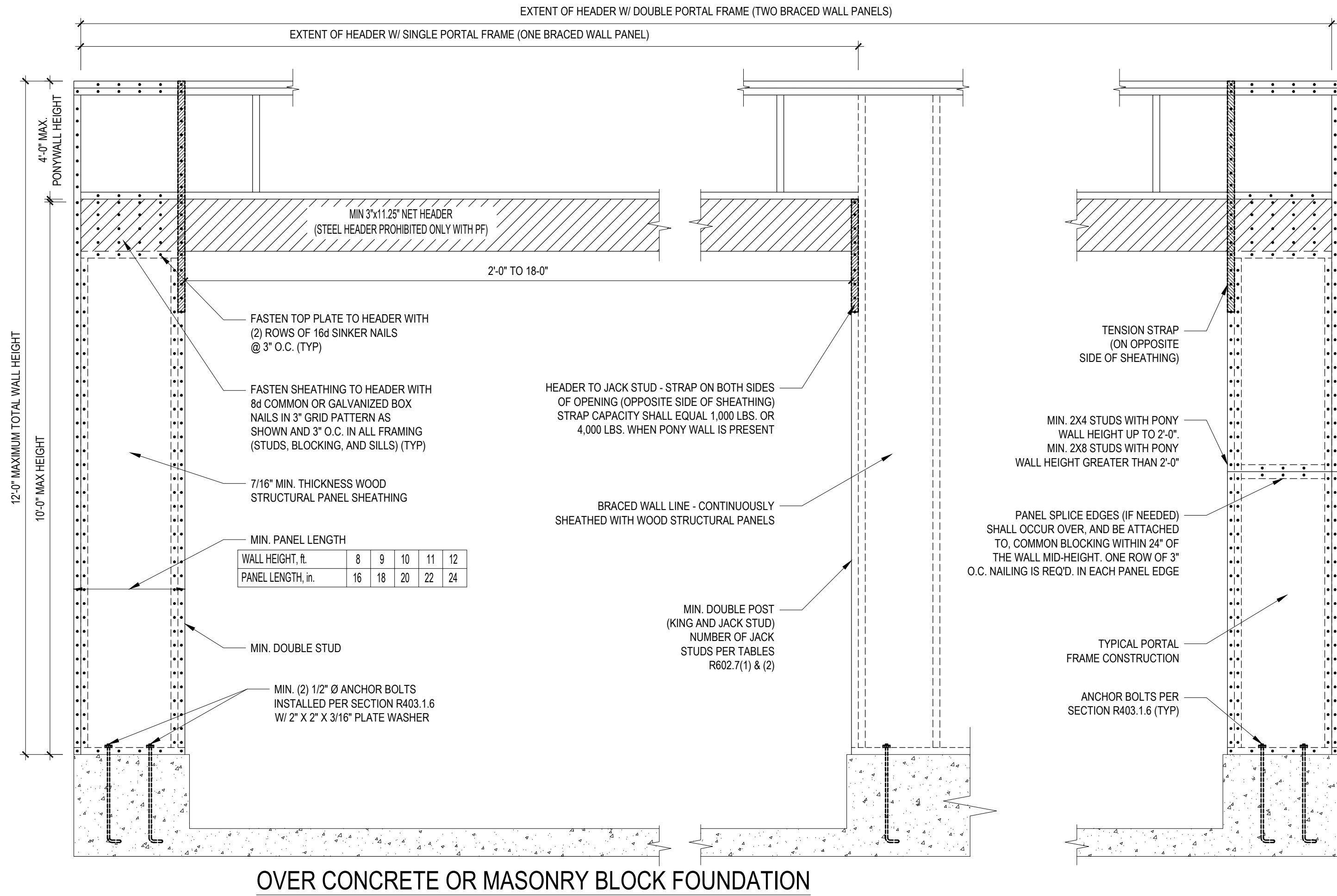
- DESIGNED FOR SEISMIC ZONE A-C AND WIND SPEEDS OF 120 MPH OR LESS.
- WALLS SHALL BE BRACED IN ACCORDANCE WITH SECTION R602.10.3 OF THE 2018 NCRC.
- BRACING REQUIREMENTS SHALL BE PER TABLE R602.10.3. REFER TO SECTION R602.10.4 FOR LOAD PATH DETAILS INCLUDING CONNECTIONS & SUPPORT OF BRACED WALL PANELS.
(1) REFERENCE FIGURE R602.10.4.3 OF THE 2018 NCRC.
- 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 8'-0" (ISOLATED PANELS) OR 4'-0" (CONTINUOUS SHEATHING)
(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
(4) 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 (4). 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
(5) 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



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



B2: METHOD PF: PORTAL FRAME CONSTRUCTION
FIGURE R602.10.1

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CORPORATION
SHEATHING AND DESIGN, P.A.

BRIAN O'CONNELL
Client: 5125 HOPKINS CHAPEL ROAD, ZEBULON

SHEATHING DETAILS

Project #: 2401-010063
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Engineered by: HJS
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Scale: SEE PLAN

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