OAK TREE TOWNHOMES

FRONT ELEVATION - ELEV. A
3/16" = 1'-0"

FRONT ELEVATION - ELEV. C
3/16" = 1'-0"

FRONT ELEVATION - ELEV. A
3/16" = 1'-0"

FRONT ELEVATION - ELEV. C
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FRONT ELEVATION - ELEV. A
3/16" = 1'-0"

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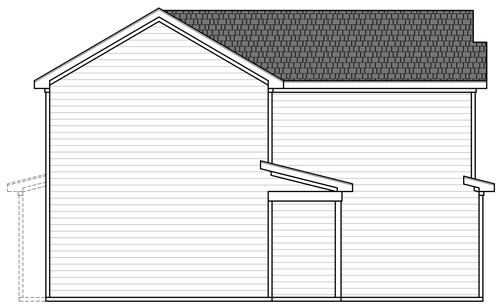

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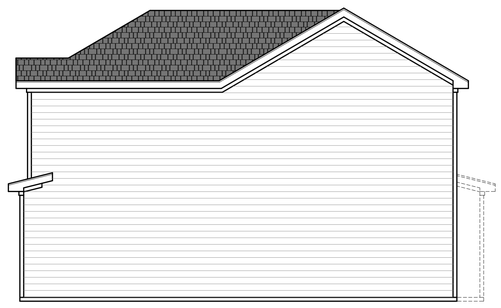

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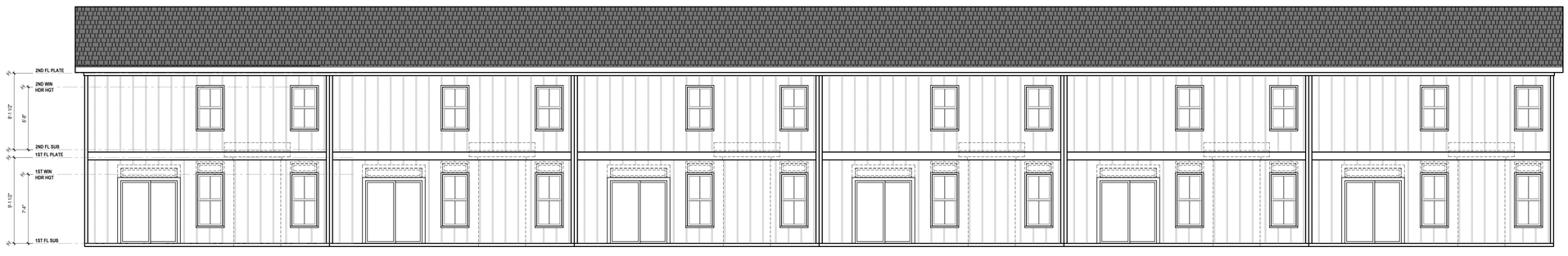
3/16" = 1'-0"



REAR ELEVATION
3/16" = 1'-0"

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MMB
CHECKED BY
DRB
SCALE
3/16"=1'-0"

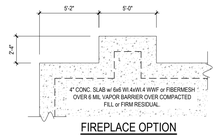
WEBSITE
drbhomedesign.com

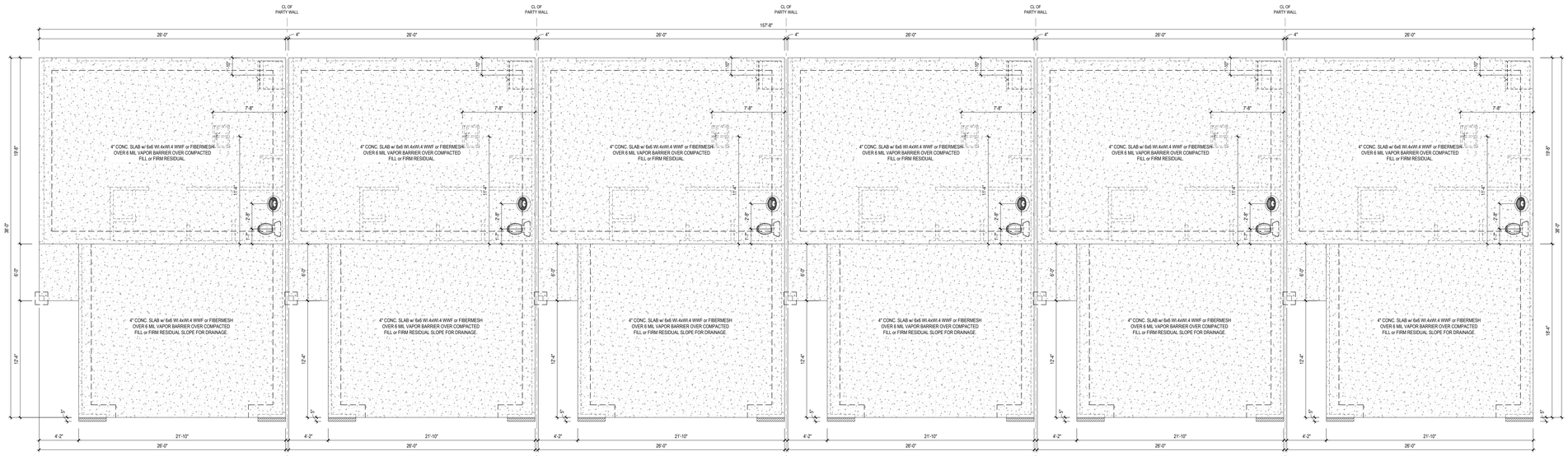
PROJECT NAME
OAK TREE TOWNHOMES

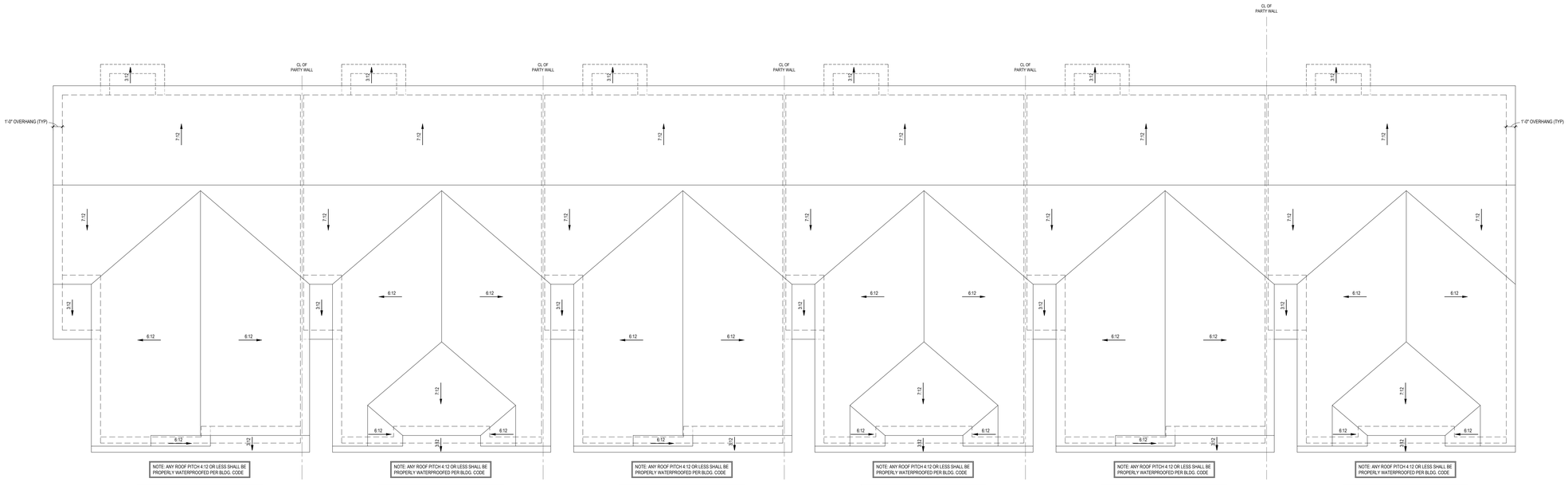
DRB DESIGN
drbdesign@drbhomedesign.com 919.631.5979
250 Shipwash Dr Suite 105 Garner, NC 27529

CLIENT NAME
S&B Real Estate Ventures, LLC
P.O. Box 188
Four Oaks, NC 27524
sbrealestateventures@gmail.com
910-551-9533

SHEET NAME
ELEVATIONS
SHEET #
1 of 3







FIREPLACE OPTION

NOTE: SEE STRUCTURAL PLANS
FOR ENGINEERING INFORMATION

FOUNDATION PLAN
3/16" = 1'-0"

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FOUNDATION PLAN
3/16" = 1'-0"

NOTE: ANY ROOF PITCH 4:12 OR LESS SHALL BE
PROPERLY WATERPROOFED PER BLDG. CODE

NOTE: SEE STRUCTURAL PLANS FOR
ATTIC VENTILATION CALCULATIONS

ROOF PLAN - ELEV. A
3/16" = 1'-0"

NOTE: ANY ROOF PITCH 4:12 OR LESS SHALL BE
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ATTIC VENTILATION CALCULATIONS

ROOF PLAN - ELEV. C
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SHEET NAME
FOUND_ROOF
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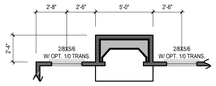
2 of 3



FIREPLACE OPTION

HEATED SQUARE FOOTAGE	
First Floor	511
Second Floor	803
TOTAL HEATED	1314
UNHTD SQUARE FOOTAGE	
Garage	403
Front Porch	24
TOTAL UNHEATED	427
TOTAL SQ FT	1741

NOTE:
SEE ELEVATIONS FOR WINDOW HDR HGTS

NOTE:
ALL EXTERIOR WALLS ARE NOMINAL 4" UNO

NOTE:
ALL INTERIOR WALLS ARE NOMINAL 4" UNO

NOTE:
ALL DIMENSIONS ARE FRAME TO FRAME

NOTE: VERIFY WINDOW SILL HEIGHT CLEARANCE ABOVE TUBS AND COUNTERTOPS TO ALLOW FOR TRIM AND/OR BACKSPLASH

FIRST FLOOR PLAN - ELEV. A
3/16" = 1'-0" CEILING HGT. = 9'-0"

NOTE: VERIFY WINDOW SILL HEIGHT CLEARANCE ABOVE TUBS AND COUNTERTOPS TO ALLOW FOR TRIM AND/OR BACKSPLASH

FIRST FLOOR PLAN - ELEV. C
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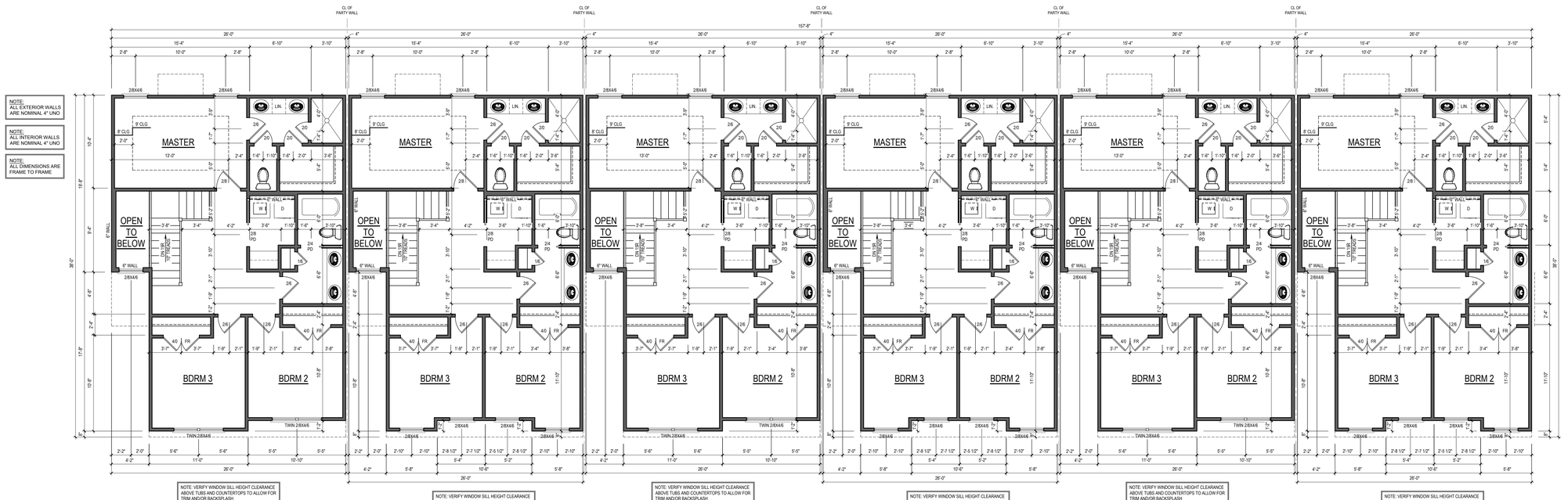

NOTE: VERIFY WINDOW SILL HEIGHT CLEARANCE ABOVE TUBS AND COUNTERTOPS TO ALLOW FOR TRIM AND/OR BACKSPLASH

SECOND FLOOR PLAN - ELEV. A
3/16" = 1'-0" CEILING HGT. = 8'-0"

NOTE: VERIFY WINDOW SILL HEIGHT CLEARANCE ABOVE TUBS AND COUNTERTOPS TO ALLOW FOR TRIM AND/OR BACKSPLASH

SECOND FLOOR PLAN - ELEV. C
3/16" = 1'-0" CEILING HGT. = 8'-0"

NOTE: VERIFY WINDOW SILL HEIGHT CLEARANCE ABOVE TUBS AND COUNTERTOPS TO ALLOW FOR TRIM AND/OR BACKSPLASH

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SECOND FLOOR PLAN - ELEV. C
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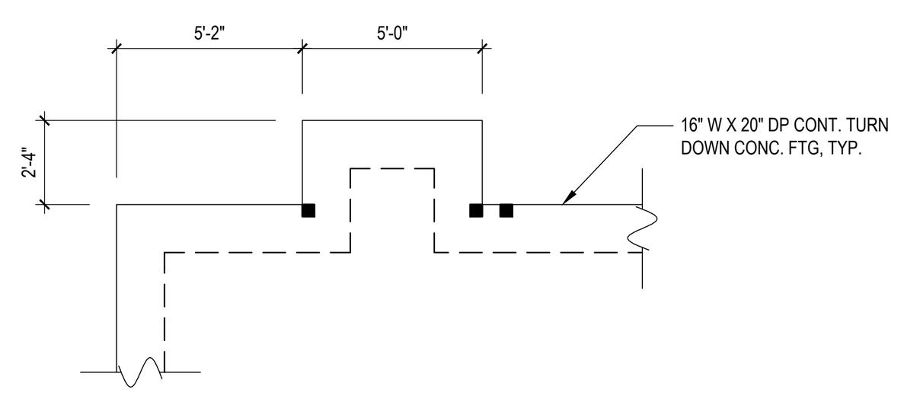
SHEET NAME
FLOOR_PLANS
SHEET #
3
of 3

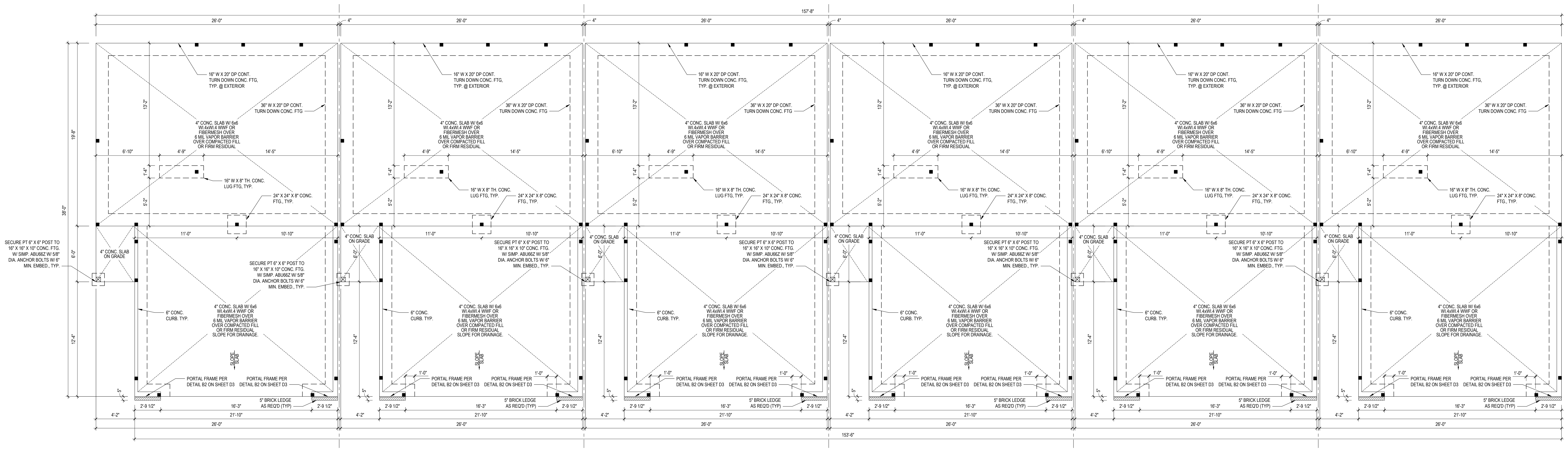
DESIGN LOADS

	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 OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.
2) 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.
3) ALL LUMBER SHALL BE SYP #2 (UNO)
ALL LVL LUMBER TO BE 1.75" WIDE (ACTUAL) EACH SINGLE MEMBER AND Fb = 2600 PSI, E = 1.9M PSI (OR GREATER)
(I.E. iLEVEL MICROLAM)
ALL LSL LUMBER IS TO BE 1.55E (Fb = 2325 PSI) (OR GREATER)
ALL PSL LUMBER IS TO BE 1.8E (Fb = 2,400 PSI) (OR GREATER)
4) 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) AND R602.7(2).
5) 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)
6) REFER TO 2018 NC BUILDING CODE SECTION R602 FOR CONSTRUCTION OF ALL WALLS OVER 10'-0" IN HEIGHT.
7) ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50
Fy = 50 KSI MIN. (UNO)
8) ALL EXTERIOR LUMBER TO BE #2 SYP PT
9) ALL CONCRETE, fc = 3000 PSI MIN.
10) PRESUMPTIVE BEARING CAPACITY = 2000 PSF
11) 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.
12) PSL COLUMNS DESIGNED WITH MAX. HEIGHT OF 9'-0" (UNO)
13) PROVIDE A MINIMUM OF 500# UPLIFT & LATERAL CONNECTION AT TOP AND BOTTOM OF PORCH COLUMNS. (U.N.O.)
14) PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.3 OF THE 2018 NCRC.
15) MAXIMUM MASONRY PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.
16) UPLIFT LOADS GREATER THAN 500# SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.
17) METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.





FOUNDATION PLAN - ELEV. A
3/16" = 1'-0"

FOUNDATION PLAN - ELEV. C
3/16" = 1'-0"

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***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.**

NORTH CAROLINA PROFESSIONAL SEAL 050140 ENGINEER ALEX MOORE 4/5/24

TYNDALL
ENGINEERING & DESIGN, P.A.
T 919 773-1200 ▪ F 919 773-9658
250 Shipwash Drive ▪ Garner ▪ North Carolina ▪ 27529
www.tyndallengineering.com

Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

FOUNDATION PLAN

Project #: DRB2301-0422
Date: 4/5/2024
Engineered By: VA
DWG. Checked By: AM
Scale: SEE PLAN

REVISIONS		
No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number
S1
1 of 7

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			

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14) PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.3 OF THE 2018 NCRC.
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16) UPLIFT LOADS GREATER THAN 500# SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.
17) 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 NCRC.
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 NCRC.

4) 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). 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

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 6" 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

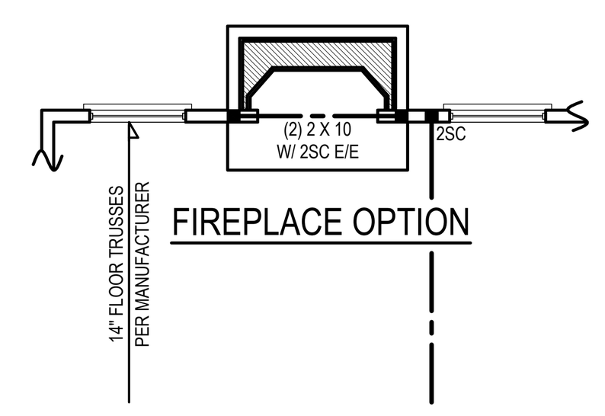
⟨4⟩ SHEATH INTERIOR & EXTERIOR

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.

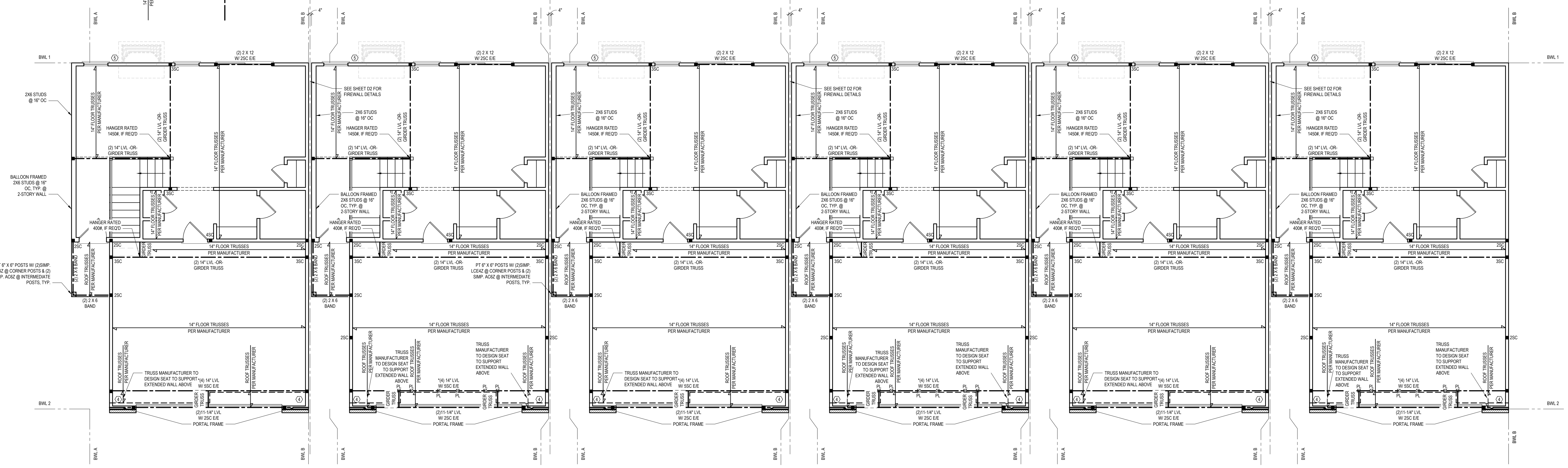
⟨5⟩ MINIMUM 800# HOLD-DOWN DEVICE

KING STUD SCHEDULE		
	MIN. # OF FULL HEIGHT STUDS (KING) E.E. OF OPENING PER WALL DEPTH	
HEADER SPAN (FT)	2 X 4 STUD WALL	2 X 6 STUD WALL
UP TO 3'-0"	1	1
3'-1" TO 6'-0"	2	1
6'-1" TO 9'-0"	3	2
9'-1" TO 12'-0"	4	2
12'-1" TO 15'-0"	5	3
15'-1" TO 18'-0"	6	3

NOTES*:
a. TABLE DENOTES REQUIRED MINIMUM NUMBER OF STUDS EE OF HEADER, TYP UNO ON PLANS
b. NUMBER OF KING STUDS LISTED ABOVE ARE BASED 10' NOMINAL WALL HEIGHT, STUD SPACING OF 16" O.C., AND ULTIMATE WIND SPEED OF 120 MPH (EXPOSURE B)
c. HEADER SPANS IN TABLE ARE BASED ON ROUGH OPENINGS. INTERPOLATION BETWEEN SPAN VALUES IS PERMITTED, ROUND UP NUMBER OF KING STUDS, EXTRAPOLATION IS PROHIBITED. CONTACT TYNDALL ENGINEERING AND DESIGN IF HEADER SPANS EXCEED TABLE VALUES



FIREPLACE OPTION



FIRST FLOOR PLAN - ELEV. A

3/16" = 1'-0" CEILING HGT. = 9'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 12.9 FT
BWL B = 12.9 FT
BWL 1 = 10.5 FT
BWL 2 = 10.5 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 27.83 FT CS-WSP/GB
BWL B = 26.0 FT CS-WSP/GB
BWL 1 = 11.5 FT CS-WSP
BWL 2 = 14.33 FT WSP/PF

FIRST FLOOR PLAN - ELEV. C

3/16" = 1'-0" CEILING HGT. = 9'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 12.9 FT
BWL B = 12.9 FT
BWL 1 = 10.5 FT
BWL 2 = 10.5 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 27.83 FT CS-WSP/GB
BWL B = 26.0 FT CS-WSP/GB
BWL 1 = 11.5 FT CS-WSP
BWL 2 = 14.33 FT WSP/PF

FIRST FLOOR PLAN - ELEV. A

3/16" = 1'-0" CEILING HGT. = 9'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 12.9 FT
BWL B = 12.9 FT
BWL 1 = 10.5 FT
BWL 2 = 10.5 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 27.83 FT CS-WSP/GB
BWL B = 26.0 FT CS-WSP/GB
BWL 1 = 11.5 FT CS-WSP
BWL 2 = 14.33 FT WSP/PF

FIRST FLOOR PLAN - ELEV. C

3/16" = 1'-0" CEILING HGT. = 9'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 12.9 FT
BWL B = 12.9 FT
BWL 1 = 10.5 FT
BWL 2 = 10.5 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 27.83 FT CS-WSP/GB
BWL B = 26.0 FT CS-WSP/GB
BWL 1 = 11.5 FT CS-WSP
BWL 2 = 14.33 FT WSP/PF

FIRST FLOOR PLAN - ELEV. A

3/16" = 1'-0" CEILING HGT. = 9'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 12.9 FT
BWL B = 12.9 FT
BWL 1 = 10.5 FT
BWL 2 = 10.5 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 27.83 FT CS-WSP/GB
BWL B = 26.0 FT CS-WSP/GB
BWL 1 = 11.5 FT CS-WSP
BWL 2 = 14.33 FT WSP/PF

FIRST FLOOR PLAN - ELEV. C

3/16" = 1'-0" CEILING HGT. = 9'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 12.9 FT
BWL B = 12.9 FT
BWL 1 = 10.5 FT
BWL 2 = 10.5 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 27.83 FT CS-WSP/GB
BWL B = 26.0 FT CS-WSP/GB
BWL 1 = 11.5 FT CS-WSP
BWL 2 = 14.33 FT WSP/PF

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Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

FIRST FLOOR HEADER SECOND FLOOR FRAMING

Project #:	DRB2301-0422
Date:	4/5/2024
Engineered By:	VA
DWG. Checked By:	AM
Scale:	SEE PLAN

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No.	Date:	Remarks
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Sheet Number

S2

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 OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.
2) 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.
3) ALL LUMBER SHALL BE SYP #2 (UNO)
   ALL LVL LUMBER TO BE 1.75" WIDE (ACTUAL) EACH SINGLE MEMBER AND Fb = 2600 PSI, E = 1.9M PSI (OR GREATER)
   (I.E. iLEVEL MICROLAM)
   ALL LSL LUMBER IS TO BE 1.55E (Fb = 2325 PSI) (OR GREATER)
   ALL PSL LUMBER IS TO BE 1.8E (Fb = 2,400 PSI) (OR GREATER)
4) 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) AND R602.7(2).
5) 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)
6) REFER TO 2018 NC BUILDING CODE SECTION R602 FOR CONSTRUCTION OF ALL WALLS OVER 10'-0" IN HEIGHT.
7) ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50 Fy = 50 KSI MIN. (UNO)
8) ALL EXTERIOR LUMBER TO BE #2 SYP PT
9) ALL CONCRETE, fc = 3000 PSI MIN.
10) PRESUMPTIVE BEARING CAPACITY = 2000 PSF
11) 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.
12) PSL COLUMNS DESIGNED WITH MAX. HEIGHT OF 9'-0" (UNO)
13) PROVIDE A MINIMUM OF 500# UPLIFT & LATERAL CONNECTION AT TOP AND BOTTOM OF PORCH COLUMNS. (U.N.O.)
14) PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.3 OF THE 2018 NCRC.
15) MAXIMUM MASONRY PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.
16) UPLIFT LOADS GREATER THAN 500# SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.
17) 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 NCRC.
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 NCRC.

4) 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). 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

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 6" 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

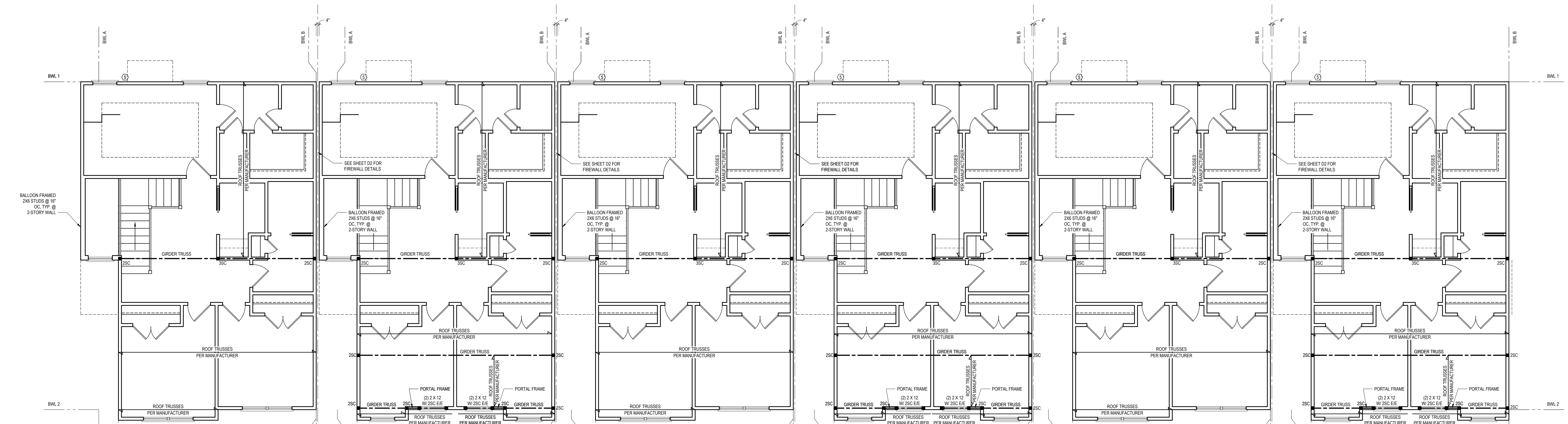
⟨4⟩ SHEATH INTERIOR & EXTERIOR

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

KING STUD SCHEDULE		
	MIN. # OF FULL HEIGHT STUDS (KING) E.E. OF OPENING PER WALL DEPTH	
HEADER SPAN (FT)	2 X 4 STUD WALL	2 X 6 STUD WALL
UP TO 3'-0"	1	1
3'-1" TO 6'-0"	2	1
6'-1" TO 9'-0"	3	2
9'-1" TO 12'-0"	4	2
12'-1" TO 15'-0"	5	3
15'-1" TO 18'-0"	6	3

NOTES*:
a. TABLE DENOTES REQUIRED MINIMUM NUMBER OF STUDS EE OF HEADER, TYP UNO ON PLANS
b. NUMBER OF KING STUDS LISTED ABOVE ARE BASED 10' NOMINAL WALL HEIGHT, STUD SPACING OF 16" O.C., AND ULTIMATE WIND SPEED OF 120 MPH (EXPOSURE B)
c. HEADER SPANS IN TABLE ARE BASED ON ROUGH OPENINGS. INTERPOLATION BETWEEN SPAN VALUES IS PERMITTED, ROUND UP NUMBER OF KING STUDS, EXTRAPOLATION IS PROHIBITED. CONTACT TYNDALL ENGINEERING AND DESIGN IF HEADER SPANS EXCEED TABLE VALUES



BRACING PANEL LENGTHS REQUIRED:
BWL A = 5.2 FT
BWL B = 5.2 FT
BWL 1 = 3.8 FT
BWL 2 = 3.8 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 36.17 FT GB
BWL B = 36.17 FT GB
BWL 1 = 19.33 FT CS-WSP
BWL 2 = 7.9 FT CS-WSP

SECOND FLOOR PLAN - ELEV. A
3/16" = 1'-0" CEILING HGT. = 8'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 5.2 FT
BWL B = 5.2 FT
BWL 1 = 3.8 FT
BWL 2 = 3.8 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 36.17 FT GB
BWL B = 36.17 FT GB
BWL 1 = 19.33 FT CS-WSP
BWL 2 = 6.54 FT CS-WSP/PF

SECOND FLOOR PLAN - ELEV. C
3/16" = 1'-0" CEILING HGT. = 8'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 5.2 FT
BWL B = 5.2 FT
BWL 1 = 3.8 FT
BWL 2 = 3.8 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 36.17 FT GB
BWL B = 36.17 FT GB
BWL 1 = 19.33 FT CS-WSP
BWL 2 = 7.9 FT CS-WSP

SECOND FLOOR PLAN - ELEV. A
3/16" = 1'-0" CEILING HGT. = 8'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 5.2 FT
BWL B = 5.2 FT
BWL 1 = 3.8 FT
BWL 2 = 3.8 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 36.17 FT GB
BWL B = 36.17 FT GB
BWL 1 = 19.33 FT CS-WSP
BWL 2 = 6.54 FT CS-WSP/PF

SECOND FLOOR PLAN - ELEV. C
3/16" = 1'-0" CEILING HGT. = 8'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 5.2 FT
BWL B = 5.2 FT
BWL 1 = 3.8 FT
BWL 2 = 3.8 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 36.17 FT GB
BWL B = 36.17 FT GB
BWL 1 = 19.33 FT CS-WSP
BWL 2 = 7.9 FT CS-WSP

SECOND FLOOR PLAN - ELEV. A
3/16" = 1'-0" CEILING HGT. = 8'-0"

BRACING PANEL LENGTHS REQUIRED:
BWL A = 5.2 FT
BWL B = 5.2 FT
BWL 1 = 3.8 FT
BWL 2 = 3.8 FT

BRACING PANEL LENGTHS PROVIDED:
BWL A = 36.17 FT GB
BWL B = 36.17 FT GB
BWL 1 = 19.33 FT CS-WSP
BWL 2 = 6.54 FT CS-WSP/PF

SECOND FLOOR PLAN - ELEV. C
3/16" = 1'-0" CEILING HGT. = 8'-0"

NORTH CAROLINA PROFESSIONAL SEAL 050140 ENGINEER ALEX MOORE
4/5/24

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Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

SECOND FLOOR HEADER
SECOND FLOOR CLG. FRAMING

Project #: DRB2301-0422
Date: 4/5/2024
Engineered By: VA
DWG. Checked By: AM
Scale: SEE PLAN

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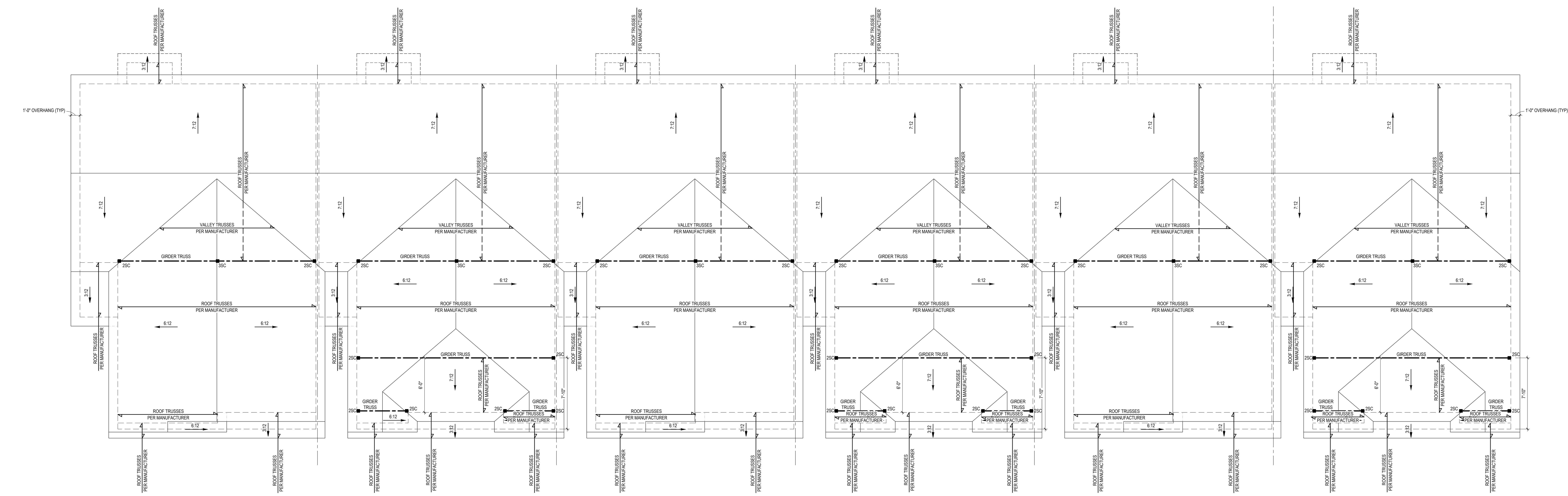
DESIGN LOADS

	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)	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			



ROOF PLAN - ELEV. A
3/16" = 1'-0"

ROOF PLAN - ELEV. C
3/16" = 1'-0"

ROOF PLAN - ELEV. A
3/16" = 1'-0"

ROOF PLAN - ELEV. C
3/16" = 1'-0"

ROOF PLAN - ELEV. A
3/16" = 1'-0"

ROOF PLAN - ELEV. C
3/16" = 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.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050140 ALEX MOORE 4/5/24

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Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

ROOF PLAN

Project #: DRB2301-0422

Date: 4/5/2024

Engineered By: VA

DWG. Checked By: AM

Scale: SEE PLAN

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S4

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 = 1.9M 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 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 0/12 TO 1.5/12
36.0 LBS/SQFT FOR ROOF PITCHES 1.5/12 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 PEIR 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 b,j	SKYLIGHT U-FACTOR b	GLAZED FENESTRATION SHGC b,k	CEILING R-VALUE m	WOOD FRAMED WALL R-VALUE	MASS WALL R-VALUE i	FLOOR R-VALUE	BASEMENT WALL R-VALUE c,o	SLAB R-VALUE AND DEPTH d	CRAWL SPACE WALL R-VALUE c
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 j	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 j	n 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 EXCLUDED SKYLIGHTS. THE SOLAR HEAT GAIN COEFFICIENT (SHGC) COLUMN APPLIES TO ALL GLAZED FENESTRATION.

c. "10/15" 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 MONOLITHIC SLABS, INSULATION SHALL BE APPLIED FROM THE INSPECTION GAP DOWNWARD TO THE BOTTOM OF THE FOOTING OR A MAXIMUM OF 24" BELOW GRADE WHICHEVER IS LESS. FOR FLOATING SLABS, 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+3" MEANS R-15 CAVITY INSULATION. PLUS R-3 INSULATED SHEATHING. IF STRUCTURAL SHEATHING COVERS 25% OR LESS OF THE EXTERIOR, INSULATING 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 0.70 SHALL BE PERMITTED TO BE SUBSTITUTED FOR MINIMUM CODE COMPLIANT FENESTRATION PRODUCT ASSEMBLIES WITHOUT PENALTY.

l. R-30 SHALL BE DEEMED TO SATISFY THE CEILING INSULATION REQUIREMENT WHEREVER 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 INCH 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 × 6 FRAMING CAVITY IS DEEMED TO COMPLY. FIBERGLASS BATTS RATED R-19 OR HIGHER COMPRESSED AND INSTALLED IN A 2X4 WALL IS NOT 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.

915 SQ. FT. OF ATTIC / 300 = 3.2 SQ. FT. INLETS/OUTLETS REQUIRED

1) CALCULATION BASED ON VENTILATORS USED AT LEAST 3'-0" ABOVE THE COMICE VENTS WITH THE BALANCE OF VENTILATION PROVIDED BY EAVE VENTS.

2) CATHEDRAL CEILINGS SHALL HAVE A 1" MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE ROOF DECK AND THE INSULATION.

* ATTIC VENTILATION CALCULATION

NO SCALE

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
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"

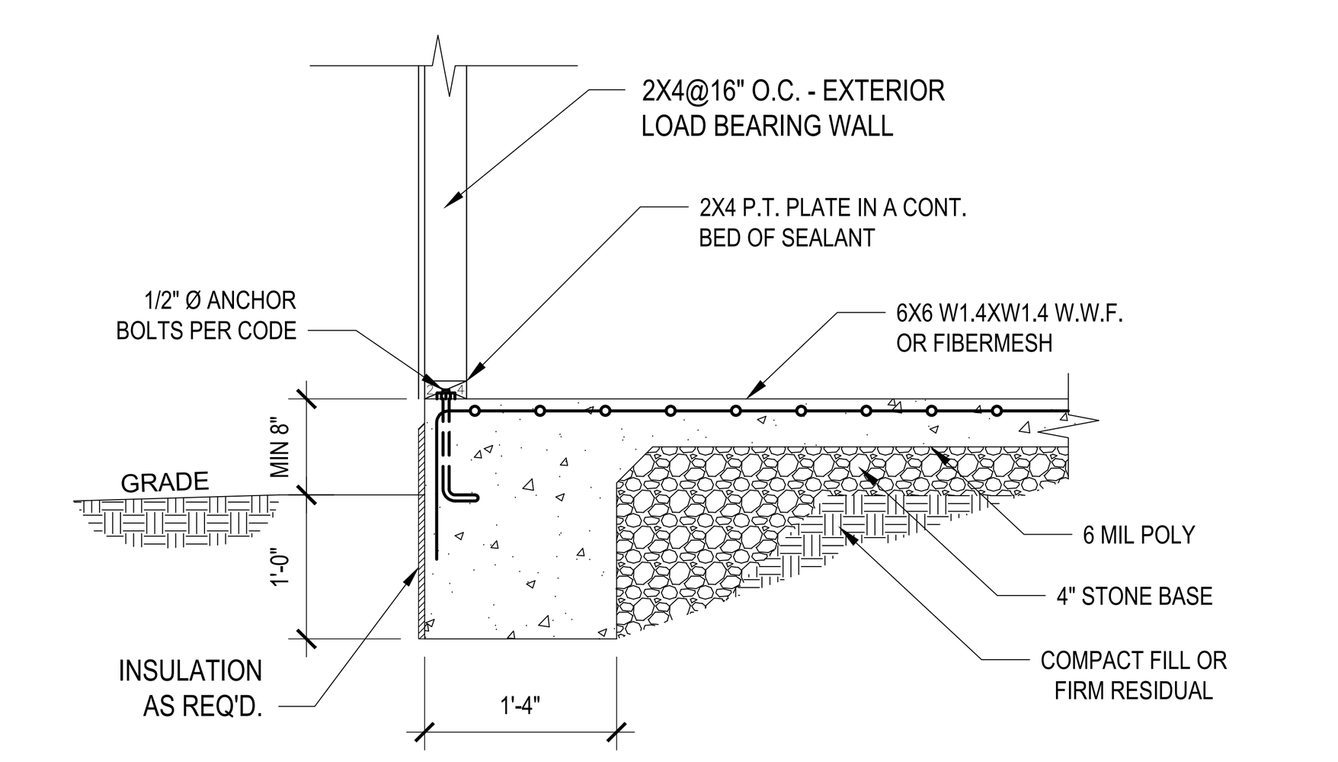
* THIS TABLE IS BASED ON NO. 2 TREATED SOUTHERN PINE POSTS. MAXIMUM TRIBUTARY AREA IS BASED ON 128 TOTAL SQUARE FEET WHICH MAY BE LOCATED AT DIFFERENT LEVELS.
** FROM TOP OF FOOTING TO BOTTOM OF GIRDER
*** DECKS WITH POST HEIGHTS OVER 20'-0" SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER OR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

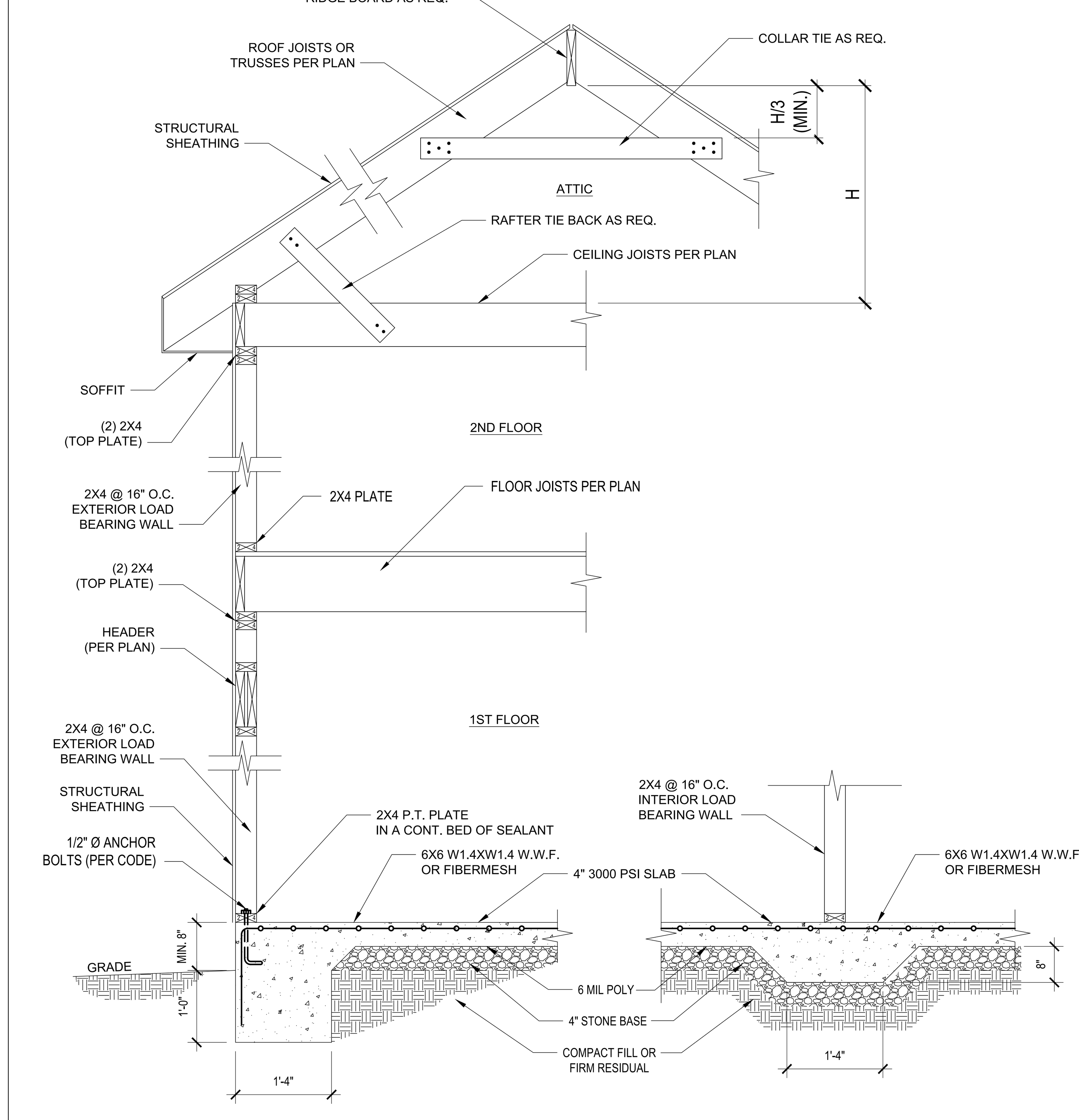
POST SIZE	MAX. TRIBUTARY AREA	MAX. POST HEIGHT	EMBEDMENT DEPTH	CONCRETE DIAMETER
4 x 4	48 SQ. FT.	4'-0"	2'-6"	1'-0"
6 x 6	120 SQ. FT.	6'-0"	3'-6"	1'-8"

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.



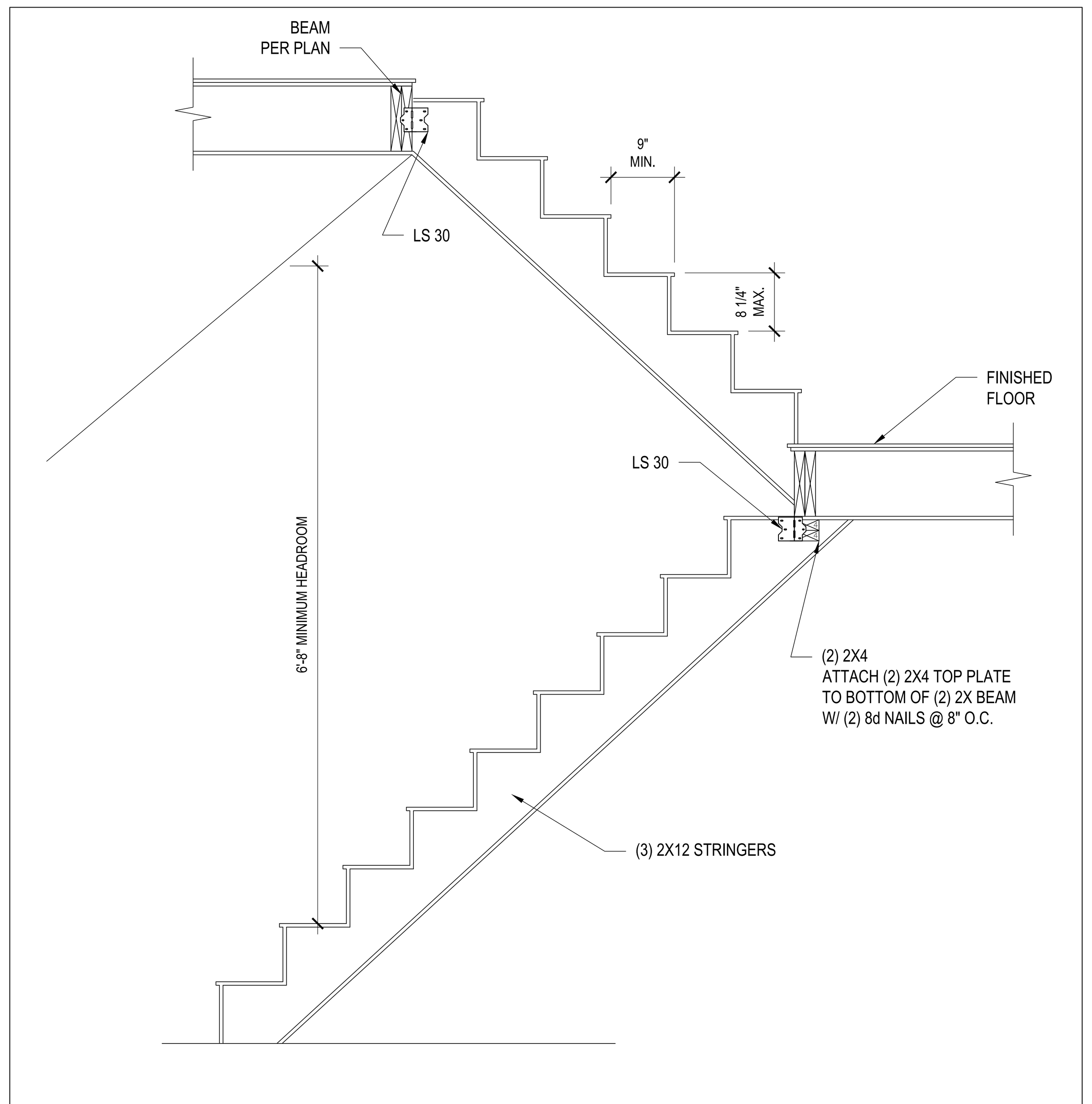
* TURN DOWN FOOTING DETAIL

NO SCALE



* TWO-STORY ON SLAB

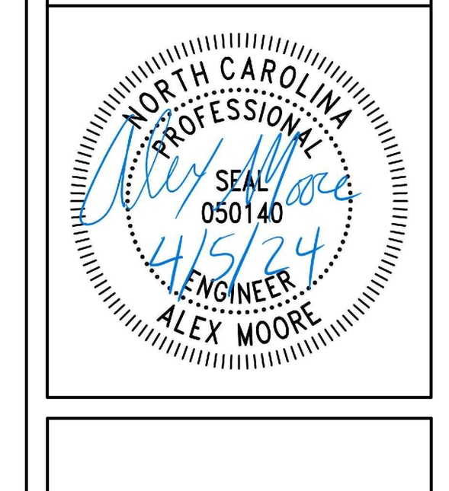
NO SCALE — TYPICAL WALL DETAIL



HANDRAILS SHALL BE PROVIDED ON AT LEAST ONE SIDE OF EACH CONTINUOUS RUN OF TREADS OR FLIGHT WITH FOUR OR MORE RISERS. HANDRAIL HEIGHT MEASURED VERTICALLY FROM THE SLOPED PLANE ADJOINING THE TREAD NOSING, OR FINISH SURFACE OF RAMP SLOPE, SHALL NOT BE LESS THAN 34 INCHES AND NOT MORE THAN 38 INCHES.

* TYPICAL STAIRWAY DETAIL

NO SCALE — REFER TO SECTION R312 OF THE 2018 NCRC



TYNDALL
ENGINEERING & DESIGN, P.A.

Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

STANDARD DETAILS

Project #:	DRB2301-0422
Date:	4/5/2024
Engineered By:	VA
DWG. Checked By:	AM
Scale:	SEE PLAN

REVISIONS

No.	Date:	Remarks
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Sheet Number

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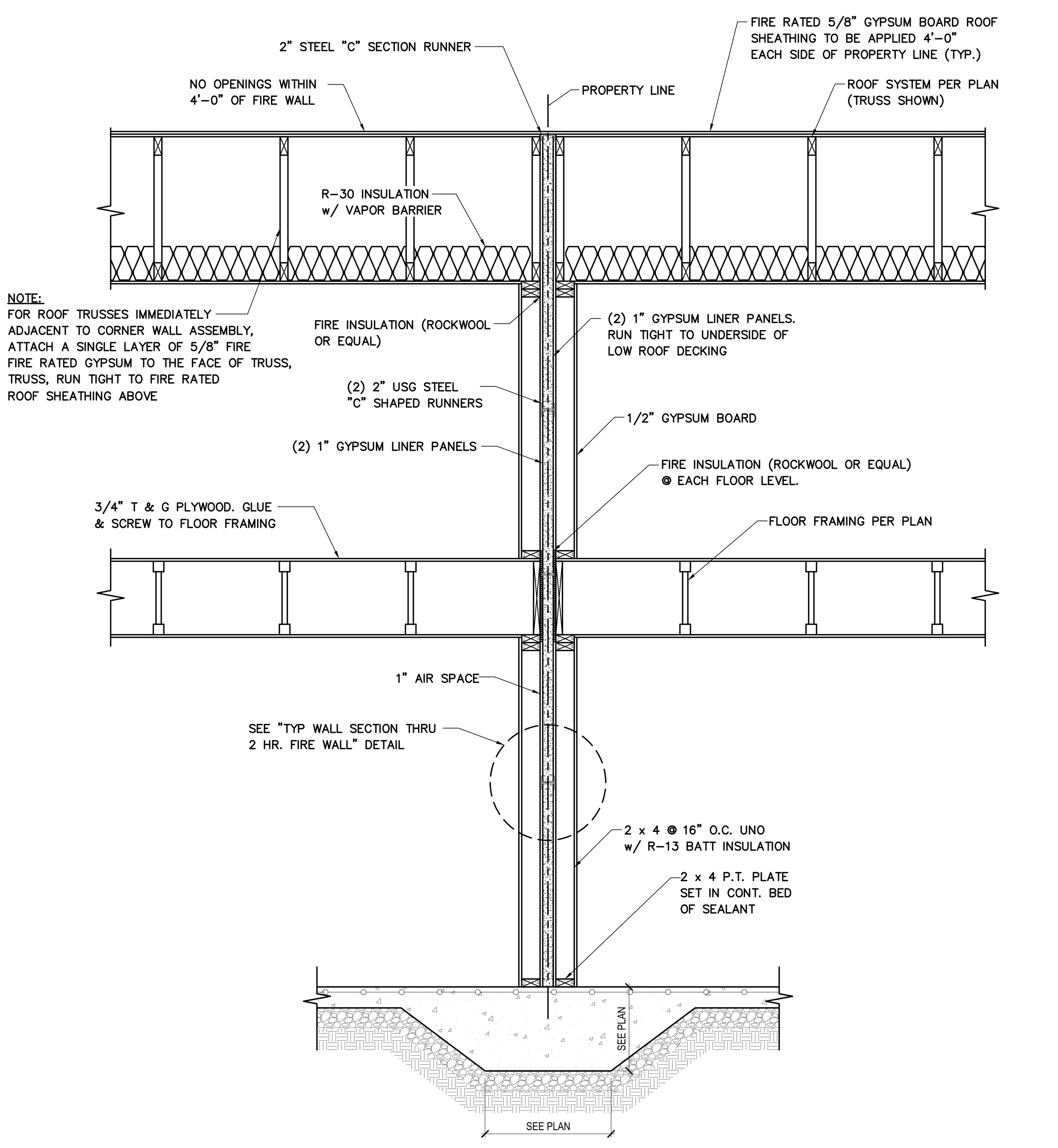
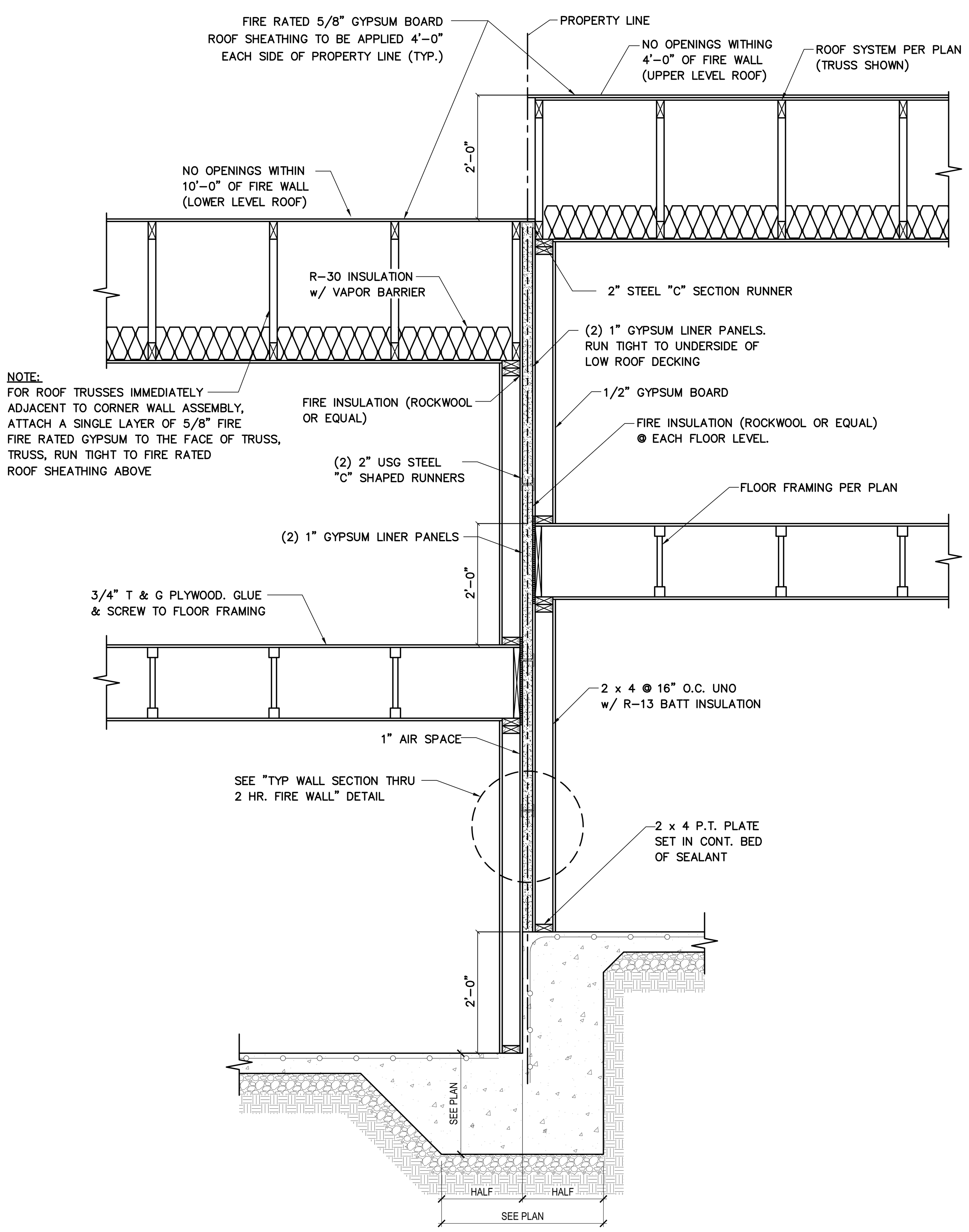


TYP WALL SECTION THRU 2 HR. FIRE WALL @ FLAT UNIT PARTITION

NO SCALE   NOTE: NO PENETRATIONS SHALL BE ALLOWED IN 2 HR. FIRE WALL



TYP WALL SECTION THRU 2 HR. FIRE WALL @ STEPPED UNIT PARTITION

NO SCALE   NOTE: NO PENETRATIONS SHALL BE ALLOWED IN 2 HR. FIRE WALL

SEPARATION WALL: (MAX HEIGHT = 44FT)

1. FLOOR, INTERMEDIATE OR TOP ALL - 2-3/16" WIDE CHANNEL SHAPED WITH 1" LONG LEGS FORMED FROM No. 25 MSG GALV. STEEL, SECURED WITH SUITABLE FASTENERS, SPACED AT 24" O.C.
2. METAL STUDS -STEEL MEMBERS FORMED FROM No. 25 MSG GALV. STEEL HAVING "H" SHAPED FLANGES SPACED AT 24" O.C.; OVERALL DEPTH 2-1/8" AND FLANGE WIDTH 1-1/2".
3. GYPSUM WALLBOARD - TWO LAYERS OF 1" THICK GYPSUM WALLBOARD LINER PANELS, SUPPLIED IN NOM. 24" WIDTHS. VERTICAL EDGES OF PANELS FRICTION FITTED INTO "H" SHAPED STUDS. GEORGIA-PACIFIC GYPSUM LLC - TYPE TRSL, DGUSL

PROTECTED WALL: (BEARING OR NON-BEARING)

4. WOOD STUDS - FOR 2 HR BEARING OR NONBEARING WALL RATING - NOM. 2x4 MAX SPACING 24" O.C. STUDS CROSS BRACED AT MID-HEIGHT WHERE NECESSARY FOR CLIP ATTACHMENT. MIN 3/4" SEPARATION BETWEEN WOOD FRAMING AND AREA SEPARATION WALL. FINISH RATING EVALUATED FOR WOOD STUDS ONLY.
5. GYPSUM WALLBOARD - CLASSIFIED OR UNCLASSIFIED - MIN 1/2" THICK, 4'-0" WIDE, APPLIED EITHER HORIZONTALLY OR VERTICALLY. WALLBOARD ATTACHED TO WOOD STUDS WITH 1-1/4" LONG STEEL DRYWALL NAILS SPACED 12" O.C. VERTICAL JOINTS LOCATED OVER STUDS. (OPTIONAL) JOINTS COVERED WITH PAPER TAPE AND JOINT COMPOUND. NAIL OR SCREW HEADS COVERED WITH JOINT COMPOUND.
5A PLYWOOD SHEATHING OR OSB - AS AN ALTERNATE TO ITEM 5, NOM. 1/2" THICK OR GREATER PLYWOOD OR OSB APPLIED HORIZONTALLY OR VERTICALLY TO WOOD STUDS. VERTICAL JOINTS LOCATED OVER STUDS. HORIZONTAL JOINTS SHALL BE BUTTED TIGHT TO FORM A CLOSED JOINT. FASTENED TO STUDS WITH NAILS OR SCREWS OF SUFFICIENT LENGTH, SPACED 12" O.C. JOINTS AND FASTENER HEADS ARE NOT REQUIRED TO BE TREATED. ALUMINUM CLIPS SHALL BE SPACED AS DESCRIBED BY ITEM 6.
6. ATTACHMENT CLIPS - ALUMINUM ANGLE, 0.062" THICK, MIN. 2" WIDE WITH MIN. 2" AND 2-1/2" LEGS. CLIPS SECURED WITH MIN. 1 TYPE S SCREW 3/8" LONG TO "H" STUDS WITH MIN 1 TYPE W SCREW 1-1/4" LONG TO WOOD FRAMING THROUGH HOLES PROVIDED IN CLIP. CLIPS SPACED A MAX OF 10'-0" O.C. VERTICALLY BETWEEN WOOD FRAMING AND "H" STUDS FOR SEPARATION WALLS UP TO 23'-0" HIGH. FOR SEPARATION WALLS UP TO 44'-0" HIGH, CLIPS SPACED AS DESCRIBED ABOVE FOR THE UPPER 24'-0" AND THE REMAINING WALL AREA BELOW REQUIRES CLIPS SPACED A MAX 5'-0" O.C. VERTICALLY BETWEEN WOOD FRAMING AND "H" STUDS.
7. BATTS AND BLANKETS - PLACED IN STUD CAVITIES, ANY GLASS FIBER OR MINERAL WOOL INSULATION, MAX 3.0 PCF DENSITY, BEARING THE UL CLASSIFICATION MARKING AS TO SURFACE BURNING CHARACTERISTICS AND/OR FIRE RESISTENCE.

UL #U373 DESIGN

DWELLING UNIT SEPARATION WALLS SHALL FOLLOW THE PROVISIONS SET FORTH IN THE 2018 RESIDENTIAL BUILDING CODE IN SECTIONS R302 AND R317.

SEPARATION WALL: (MAX HEIGHT = 66FT)

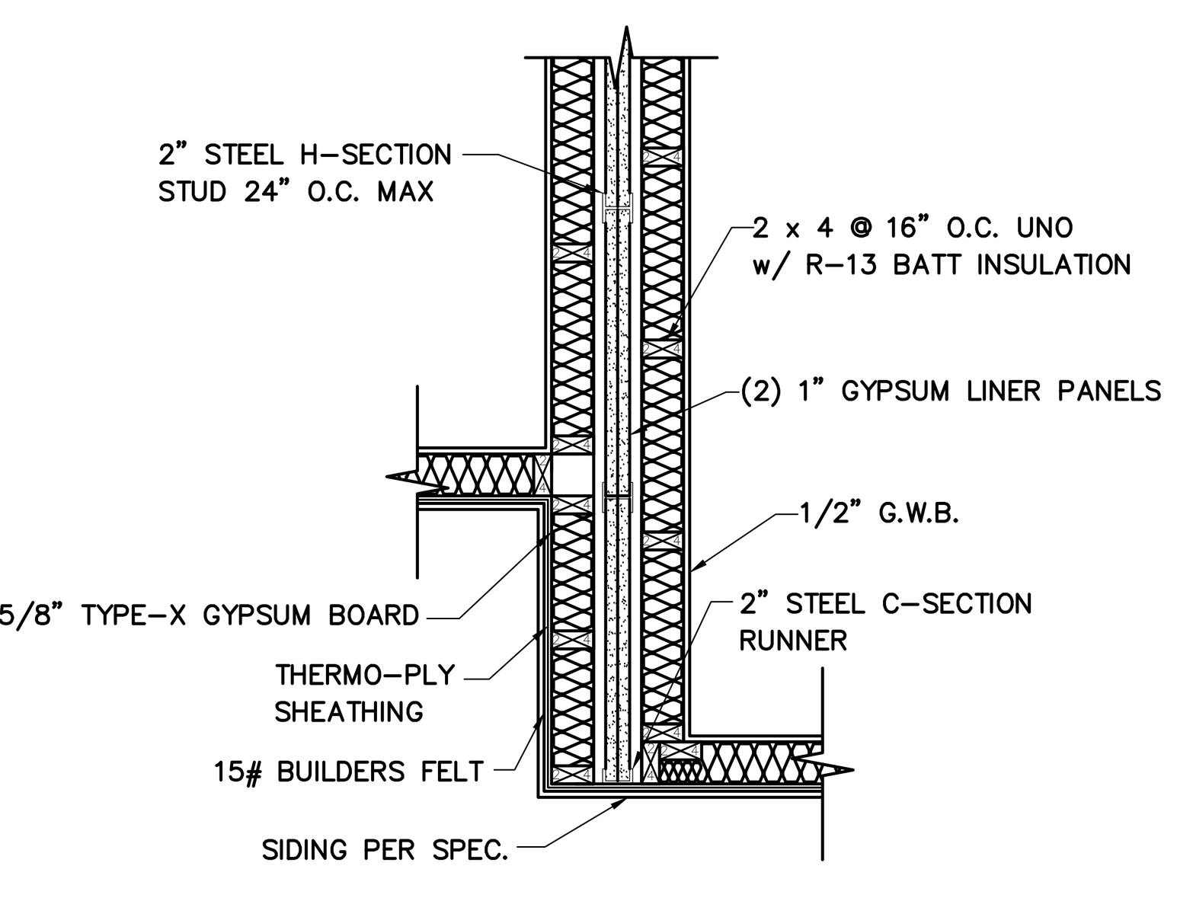
1. FLOOR, INTERMEDIATE OR TOP ALL - 2" WIDE CHANNEL SHAPED WITH 1" LONG LEGS FORMED FROM No. 25 MSG GALV. STEEL, SECURED WITH SUITABLE FASTENERS, SPACED AT 24" O.C.
2. METAL STUDS -STEEL MEMBERS FORMED FROM No. 25 MSG GALV. STEEL HAVING "H" SHAPED FLANGES SPACED AT 24" O.C.; OVERALL DEPTH 2" AND FLANGE WIDTH 1-3/8".
3. GYPSUM WALLBOARD - TWO LAYERS OF 1" THICK GYPSUM WALLBOARD LINER PANELS, SUPPLIED IN NOM. 24" WIDTHS. VERTICAL EDGES OF PANELS FRICTION FITTED INTO "H" SHAPED STUDS. UNITED STATES GYPSUM COMPANY - TYPE SLX

PROTECTED WALL: (BEARING OR NON-BEARING)

4. WOOD STUDS - NOM. 2x4 MAX SPACING 24" O.C. STUDS CROSS BRACED AT MID-HEIGHT WHERE NECESSARY FOR CLIP ATTACHMENT. MIN 3/4" SEPARATION BETWEEN WOOD FRAMING AND FIRE SEPARATION WALL.
5. GYPSUM WALLBOARD - CLASSIFIED OR UNCLASSIFIED - MIN 1/2" THICK, 4'-0" WIDE, APPLIED EITHER HORIZONTALLY OR VERTICALLY. WALLBOARD ATTACHED TO STUDS WITH 1-1/4" LONG STEEL DRYWALL NAILS SPACED 8" O.C. VERTICAL JOINTS LOCATED OVER STUDS. (OPTIONAL) JOINTS COVERED WITH PAPER TAPE AND JOINT COMPOUND. NAIL HEADS COVERED WITH JOINT COMPOUND.
6. ATTACHMENT CLIPS - ALUMINUM ANGLE, 0.063" THICK, 2" WIDE WITH 2" AND 2-1/4" LEGS. CLIPS SECURED WITH TYPE S SCREWS 3/8" LONG TO "H" STUDS WITH TYPE W SCREWS 1-1/4" LONG TO WOOD FRAMING THROUGH HOLES PROVIDED IN CLIP.
6A. CLIP PLACEMENT FOR SEPARATION WALLS UP TO 23'-0" HIGH. SPACE CLIPS A MAX OF 10'-0" O.C. VERTICALLY BETWEEN WOOD FRAMING AND "H" STUDS.
6B. CLIP PLACEMENT FOR SEPARATION WALLS UP TO 44'-0" HIGH. SPACE CLIPS AS DESCRIBED IN "6A" FOR UPPER 24'-0". REMAINING WALL AREA BELOW REQUIRES CLIPS SPACED A MAX OF 5'-0" O.C. VERTICALLY BETWEEN WOOD FRAMING AND "H" STUDS.
7. CAULKING AND SEALANTS: A BEAD OF SEALANT APPLIED AROUND THE PARTITION PERIMETER, AND AT THE INTERFACE BETWEEN WOOD OR STEEL FRAMING AND GYPSUM BOARD PANELS TO CREATE AN AIR BARRIER.

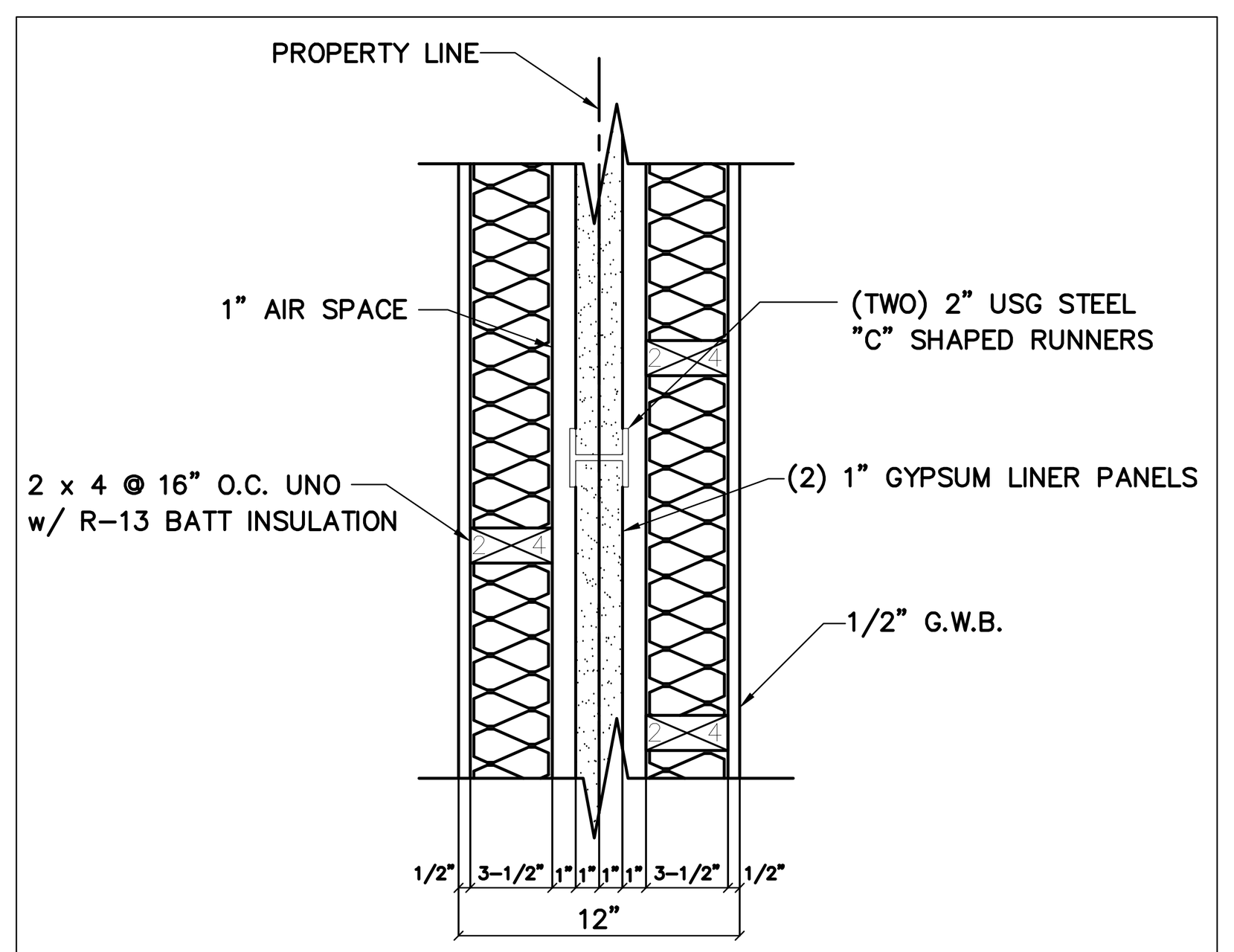
UL #U336 DESIGN

DWELLING UNIT SEPARATION WALLS SHALL FOLLOW THE PROVISIONS SET FORTH IN THE 2018 RESIDENTIAL BUILDING CODE IN SECTIONS R302 AND R317.



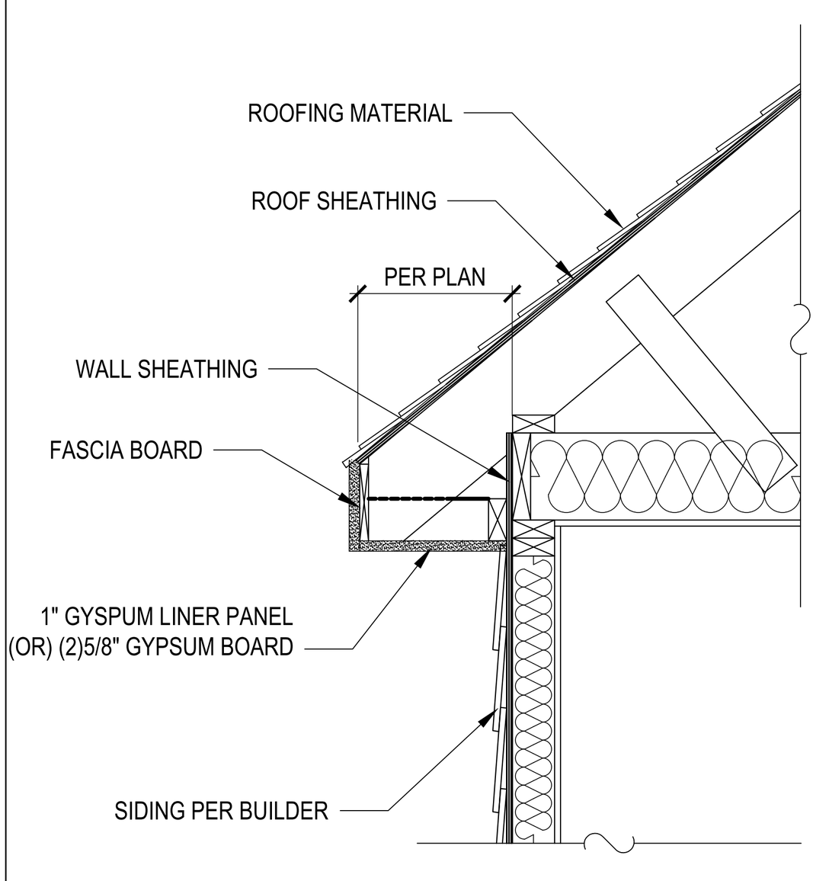
TYPICAL FLOOR SECTION @ 2 HR FIRE WALL w/ HORIZ. JOG @ FRONT

NO SCALE   REF. UL# U336



TYPICAL WALL SECTION THRU 2 HR FIRE WALL

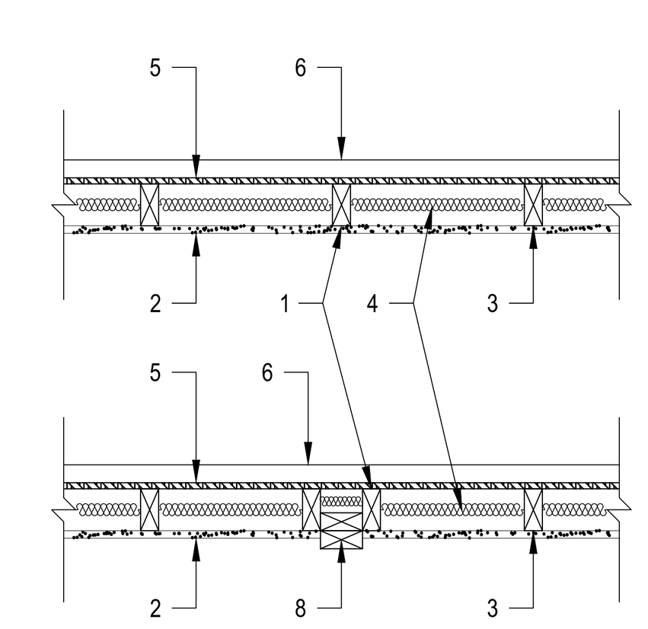
NO SCALE   UL# 373



NOTE: VENT OPENINGS SHALL NOT BE LOCATED WITHIN 5'-0" HORIZONTALLY OF ANY UNPROTECTED WALL OPENING LOCATED WITHIN 3'-0" VERTICALLY BELOW SOFFIT.

1-HR FIRE RATED SOFFIT DETAIL

SCALE: 3/4" = 1'-0"



DESIGN NO. U356

UL DESIGN NO. U356 NOTES

*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.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050140 ALEX MOORE 4/5/24

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Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

STANDARD DETAILS

Project #:	DRB2301-0422
Date:	4/5/2024
Engineered By:	VA
DWG. Checked By:	AM
Scale:	SEE PLAN

REVISIONS

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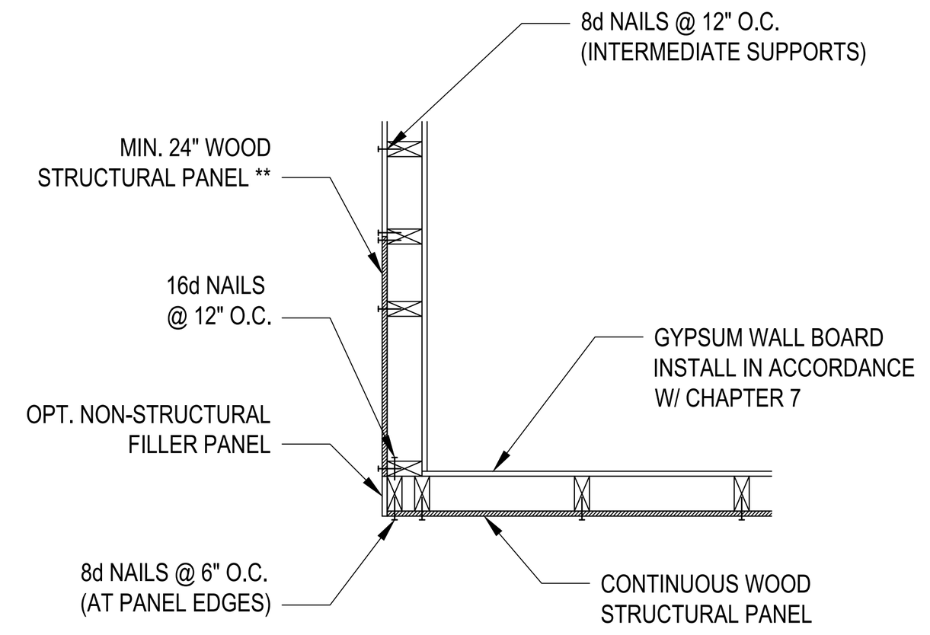
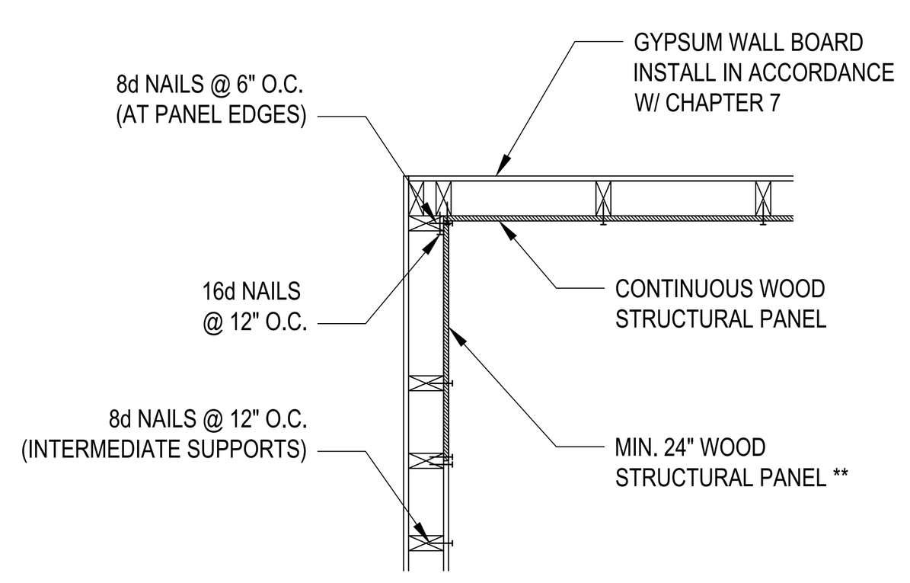
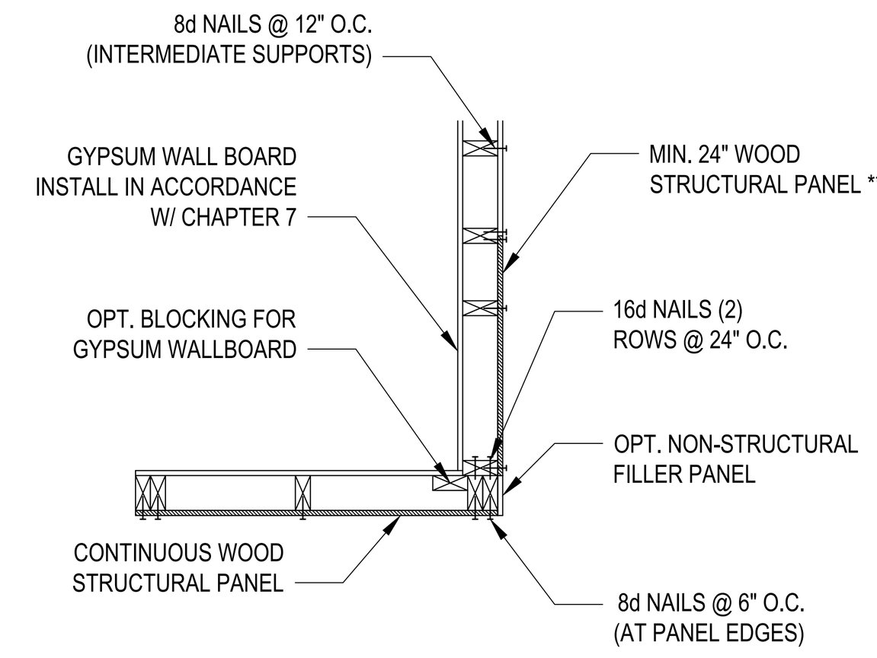


a) OUTSIDE CORNER DETAIL



b) INSIDE CORNER DETAIL



c) GARAGE DOOR CORNER

** IN LIEU OF THE 24" (MIN.) CORNER RETURN, A HOLD-DOWN DEVICE WITH A MINIMUM UPLIFT DESIGN VALUE OF 800# SHALL BE FASTENED TO THE CORNER STUD AND TO THE FOUNDATION OR FRAMING BELOW.

B1: TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING

NO SCALE

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 NCRC
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 NCRC.

4. 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

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 6" 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 AND 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 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

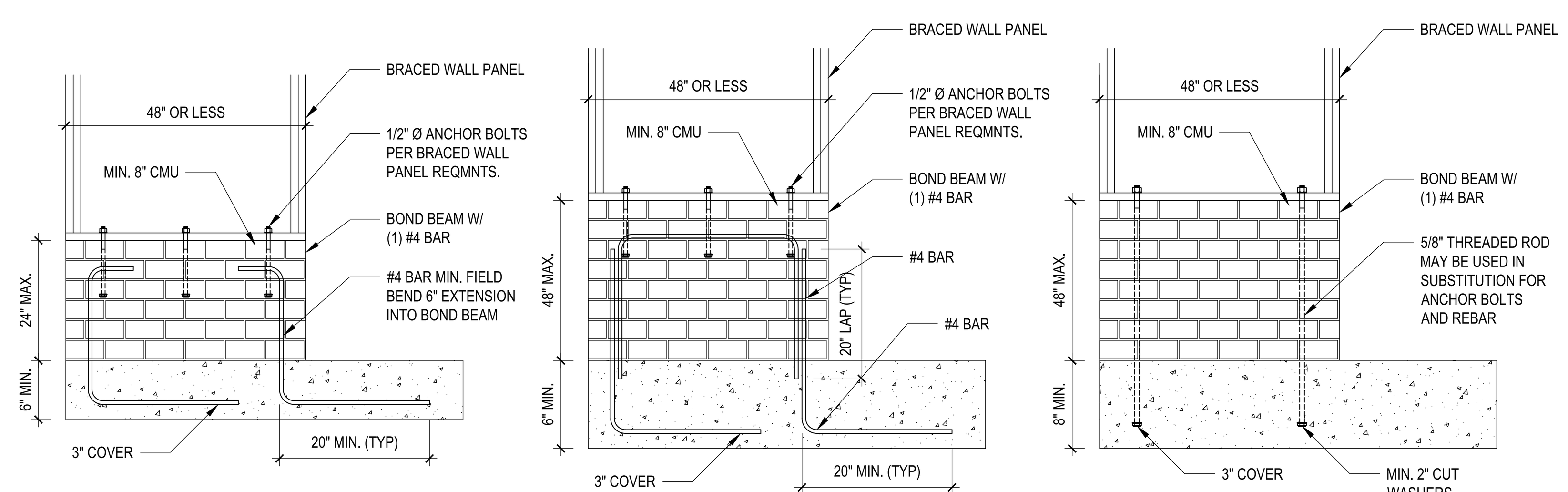
REQUIRED BRACED WALL PANEL CONNECTIONS

METHOD	MATERIAL	MIN. THICKNESS	REQUIRED CONNECTION @ PANEL EDGES	REQUIRED CONNECTION @ 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

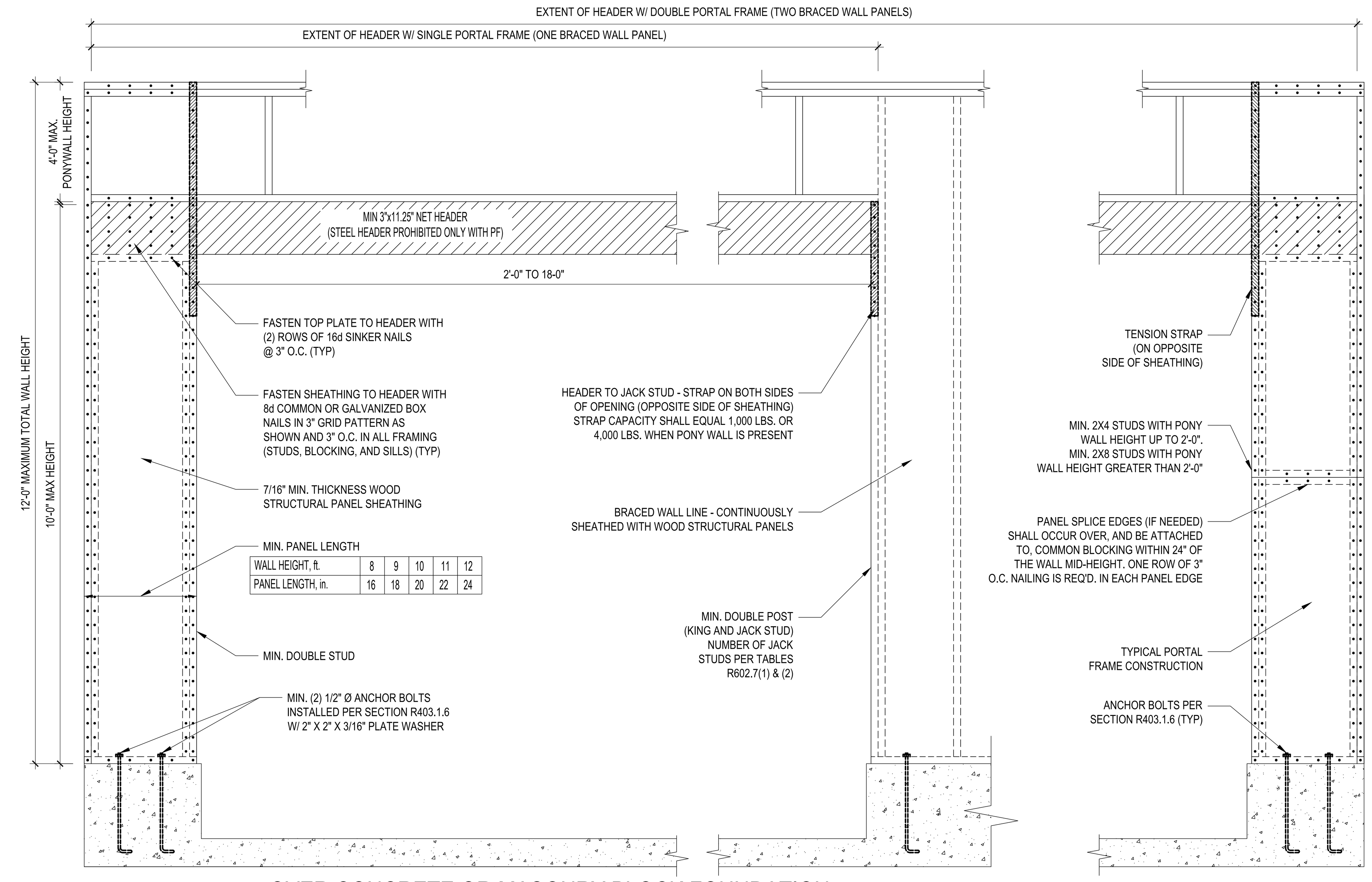
B3: BRACE WALL PANEL CONNECTIONS

NO SCALE

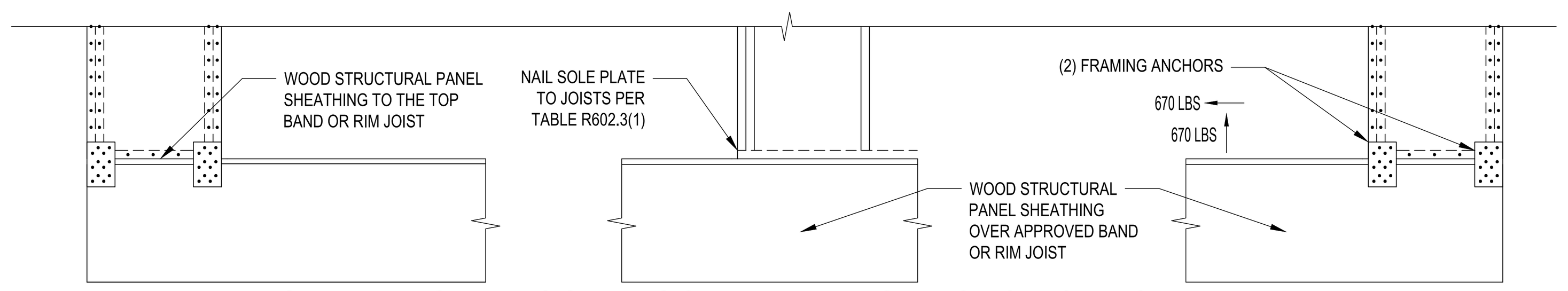


B4: MASONRY STEM WALL SUPPORTING BRACED WALL PANELS

FIGURE R602.10.4.3 OF THE 2018 NCRC
NOTE: GROUT BOND BEAMS AND ALL CELLS WHICH CONTAIN REBAR, THREADED RODS AND ANCHOR BOLTS

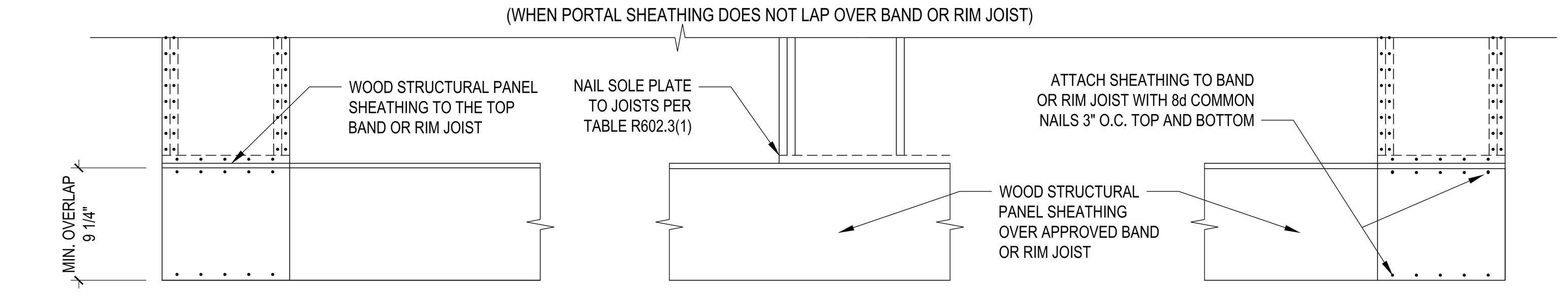


OVER CONCRETE OR MASONRY BLOCK FOUNDATION



OVER RAISED WOOD FLOOR - FRAMING ANCHOR OPTION

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

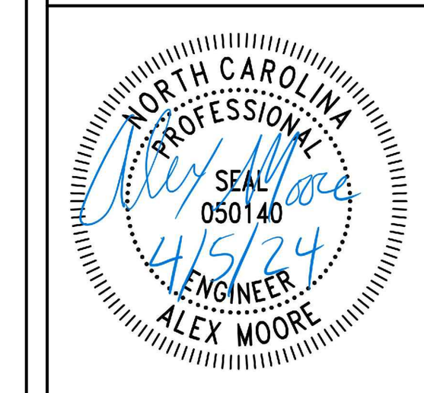


OVER RAISED WOOD FLOOR - OVERLAP OPTION

(WHEN PORTAL SHEATHING LAPS OVER BAND OR RIM JOIST)

B2: METHOD PF: PORTAL FRAME CONSTRUCTION

FIGURE R602.10.1



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Client: S&B REAL ESTATE VENTURES, LLC

Plan: OAK TREE TOWNHOMES

SHEATHING DETAILS

Project #: DRB2301-0422
Date: 4/5/2024
Engineered By: VA
DWG. Checked By: AM
Scale: SEE PLAN

REVISIONS		
No.	Date:	Remarks
1		
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Sheet Number

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