GENERAL STRUCTURAL NOTES

1. ENGINEER'S SEAL APPLIES ONLY TO STRUCTURAL COMPONENTS. ENGINEER'S SEAL DOES NOT CERTIFY DIMENSIONAL ACCURACY OR ARCHITECTURAL LAYOUT INCLUDING ROOF SYSTEM. ENGINEER'S SEAL DOES NOT APPLY TO I-JOIST OR FLOOR/ROOF TRUSS LAYOUT DESIGN AND ACCURACY.

2. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NORTH CAROLINA RESIDENTIAL CODE (NCRC), 2018 EDITION AND ALL LOCAL CODES AND REGULATIONS. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR, AND WILL NOT HAVE CONTROL OF, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE CONSTRUCTION WORK.

3. DESIGN LOADS (R301)

	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (LL)
ROOMS OTHER THAN SLEEPING ROOMS	40	10	L/360
SLEEPING ROOMS	30	10	L/360
ATTIC WITH LIMITED STORAGE	20	10	L/240
ATTIC WITHOUT STORAGE	10	10	L/360
STAIRS	40	10	L/360
DECKS	40	10	L/360
HANDRAILS 200 LB OR 50 PLF		10	L/360
PASSENGER VEHICLE GARAGES	50	10	L/360
GROUND SNOW LOAD	20		

WIND LOAD PER SECTION R301.2. (MEAN ROOF HEIGHT <35 FEET, EXPOSURE B)

– I-JOIST FLR. SYSTEMS DESIGNED WITH 12 PSF DL AND L/480 DEFLECTION.

4. THE STRUCTURE IS DESIGNED FOR 120 MPH ULTIMATE DESIGN WIND SPEEDS.

5. WALL CLADDING DESIGNED FOR +15.5 PSF AND –20 PSF (+/– INDICATE POSITIVE / NEGATIVE PRESSURE (TYP).

6. ROOF CLADDING DESIGNED FOR +14.2 PSF AND –18 PSF FOR ROOF PITCHES 7/12 TO 12/12 AND +10 PSF AND –36 PSF FOR ROOF PITCHED 2.25/12 TO 7/12.

7. THE POSITIVE AND NEGATIVE DESIGN PRESSURE FOR DOORS AND WINDOWS FOR A MEAN ROOF HEIGHT OF 35 FEET OR LESS IS 25 PSF.

8. FOUNDATION DESIGN BASED ON A MINIMUM ALLOWABLE BEARING CAPACITY OF 2000 PSF. CONTACT ENGINEER IF ALLOWABLE BEARING CAPACITY CAN NOT BE ACHIEVED.

9. FOUNDATION ANCHORAGE TO COMPLY WITH SECTION R403.1.6 OF THE 2018 NCRC.

10. FOR ALL CONCRETE SLABS AND FOOTINGS, THE AREA WITHIN THE PERIMETER OF THE BUILDING ENVELOPE SHALL HAVE ALL VEGETATION, TOP SOIL AND FOREIGN MATERIAL REMOVED. FILL MATERIAL SHALL BE FREE OF VEGETATION AND FOREIGN MATERIAL. THE FILL SHALL BE COMPACTED TO 95% TO ASSURE UNIFORM SUPPORT OF THE SLAB, AND EXCEPT WHERE APPROVED, THE FILL DEPTHS SHALL NOT EXCEED 24" FOR CLEAN SAND OR GRAVEL. A 4" THICK BASED COURSE CONSISTING OF CLEAN GRADED SAND OR GRAVEL SHALL BE PLACED. A BASE COURSE IS NOT REQUIRED WHERE A CONCRETE SLAB IS INSTALLED ON WELL-DRAINED OR SAND-GRAVEL MIXTURE SOILS CLASSIFIED AS GROUP 1, ACCORDING TO THE UNITED SOIL CLASSIFICATION SYSTEM IN ACCORDANCE WITH TABLE R405.1 OF THE NCRC, 2018 EDITION.

11. CONCRETE SHALL CONFORM TO SECTION R402.2 OF THE NCRC, 2018 EDITION. CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 3000 PSI. CONCRETE REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. WELDED WIRE FABRIC SHALL BE ASTM A185. MAINTAIN A MINIMUM CONCRETE COVER AROUND REINFORCING STEEL OF 3" IN FOOTINGS AND 1 1/2" IN SLABS.

12. MASONRY UNITS TO CONFORM TO ACE 530/ASCE 5/TMS 402. MORTAR SHALL CONFORM TO ASTM C270.

13. THE UNSUPPORTED HEIGHT OF MASONRY PIERS SHALL NOT EXCEED FOUR TIMES THEIR LEAST DIMENSION FOR UNFILLED HOLLOW CONCRETE MASONRY UNITS AND TEN TIMES THEIR LEAST DIMENSION FOR SOLID OR SOLID FILLED PIERS. PIERS MAY BE FILLED SOLID WITH CONCRETE OR TYPE M OR S MORTAR. PIERS AND WALLS SHALL BE CAPPED WITH 8" OF SOLID MASONRY.

14. THE CENTER OF EACH PIER SHALL BEAR IN THE MIDDLE THIRD OF ITS RESPECTIVE FOOTING. EACH GIRDER SHALL BEAR IN THE MIDDLE THIRD OF EA. PIER.

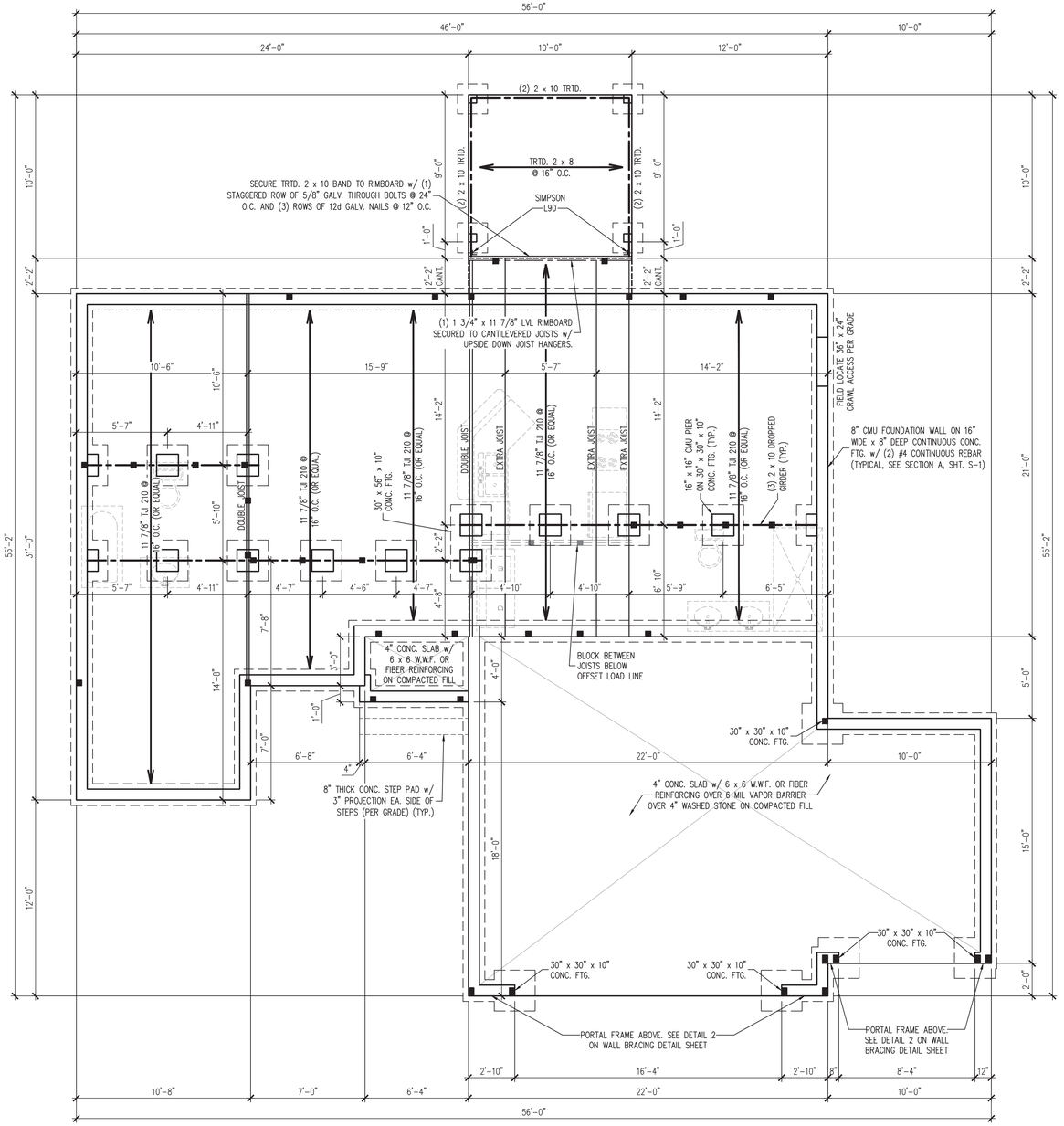
15. ALL CONCRETE AND MASONRY FOUNDATION WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R404 OF THE 2018 NCRC, OR IN ACCORDANCE WITH ACI 318, ACI 332, NCMA TR68-A OR ACE 530/ASCE 5/TMS 402. MASONRY FOUNDATION WALLS SHALL BE REINFORCED PER TABLE R404.1.1(1), R404.1.1(2), R404.1.1(3), OR R404.1.1(4) OF THE 2018 NCRC. CONCRETE FOUNDATION WALLS SHALL BE REINFORCED PER TABLE R404.1.1(5) OF THE NCRC, 2018 EDITION. STEP FOUNDATION WALLS TO 2 x 6 FRAMED WALLS AT 16" O.C. WHERE GRADE PERMITS (UNO).

16. ALL FRAMING LUMBER SHALL BE SPF #2 AND ALL TREATED LUMBER SHALL BE SYP #2 (UNO).

17. LAMINATED VENEER LUMBER (LVL) SHALL HAVE THE FOLLOWING MIN. PROPERTIES: Fb = 2600 PSI, Fv = 285 PSI, E = 1900000 PSI. INSTALL ALL CONNECTIONS PER MANUFACTURER'S SPECIFICATIONS.

18. ALL LOAD BEARING HEADERS SHALL CONFORM TO TABLES R602.7(1) AND R602.7(2) OF THE 2018 NCRC UNLESS NOTED OTHERWISE ON THE PLANS. ALL HEADERS SHALL BE SUPPORTED WITH (1) JACK STUD AND (1) KING STUD EACH END (UNO). SECURE THE FIRST KING STUD EACH SIDE OF THE HEADER TO THE HEADER WITH (4) 16d END-NAILS. INSTALL KING STUDS PER SECTION R602.7.5 OF THE 2018 NCRC (UNO).

19. ALL I-JOIST LAYOUTS SHALL BE IN COMPLIANCE WITH THE OVERALL DESIGN SPECIFIED ON THE PLANS. IF ALTERNATE I-JOISTS ARE USED, THE JOISTS MUST HAVE EQUIVALENT STRUCTURAL PROPERTIES TO THOSE SPECIFIED ON THE PLANS. ALL DEVIATIONS TO I-JOIST LAYOUTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION.



CRAWL SPACE VENTILATION CALCULATION

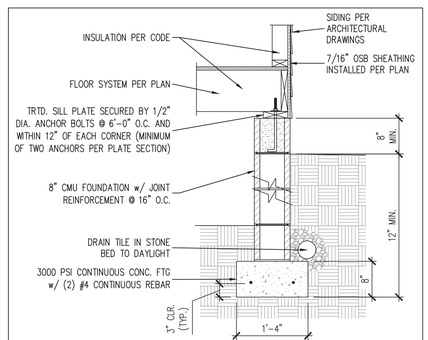
1094 SQ. FT. OF CRAWL SPACE DIVIDED BY 150 EQUALS 7.3 SQ. FT. OF NET FREE AREA REQUIRED. SEE SECTION R408.1 OF THE 2018 NCRC (2015 IRC).

FREE VENT AREA MAY BE REDUCED TO 1/1500 IF AN APPROVED VAPOR BARRIER IS INSTALLED OVER 100% OF THE CRAWL FLOOR AND VENTS ARE INSTALLED TO PERMIT CROSS-VENTILATION OF CRAWL SPACE.

SEE SECTION R408.1.1 OF THE 2018 NCRC.

CRAWL SPACE STRUCTURAL NOTES

1. ALL FRAMING LUMBER TO BE #2 SPF (UNO). ALL TREATED LUMBER TO BE #2 SYP (UNO).
2. INSTALL AN EXTRA OR DOUBLE JOIST UNDER WALLS PARALLEL TO THE FLOOR JOISTS WHERE NOTED ON THE PLANS.
3. SHADED PIERS TO BE FILLED SOLID.
4. INSTALL 1/2" ANCHOR BOLTS 6'-0" O.C. AND WITHIN 1'-0" FROM END OF EACH CORNER. (MIN (2) ANCHORS PER PLATE SECTION.) ANCHOR BOLTS MUST EXTEND A MINIMUM OF 7" INTO MASONRY OR CONCRETE. LOCATE BOLT WITHIN MIDDLE THIRD OF PLATE WIDTH.
5. INSTALL JOINT REINFORCEMENT @ 16" O.C. TO SECURE MULTIPLE WYTHE FOUNDATION WALLS TOGETHER.
6. REFER TO NOTES AND DETAIL PAGES FOR ADDITIONAL INFORMATION.



SECTION A S-1
SCALE: 3/4" = 1'-0"

TYPICAL CRAWL SPACE FOUNDATION

LEGEND	
■	STUD COLUMN ON FLOOR ABOVE THAT REQUIRE SOLID BLOCKING TO GIRDER OR FOUNDATION.
	PLUMBING OR APPLIANCES ON THE FLOOR ABOVE TO HELP ELIMINATE FRAMING CONFLICTS WITH UTILITIES. (FOR REFERENCE ONLY, SEE ARCHITECTURAL DRAWINGS)
———	NEW BEAM OR GIRDER AS NOTED
(UNO)	UNLESS NOTED OTHERWISE

PREPARED UNDER THE SUPERVISION OF:

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038485 12/5/2023 JACOB ERNEST SMITH

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N.C. CERTIFICATE NUMBER: P-2212

620 ROLLINS MILL ROAD
HOLLY SPRINGS, NORTH CAROLINA
TRIANGLE HOME PROS

REVISIONS:

DRAWN BY: AMERICAN DESIGN GALLERY, INC.

ENGINEERED BY: J. SMITH

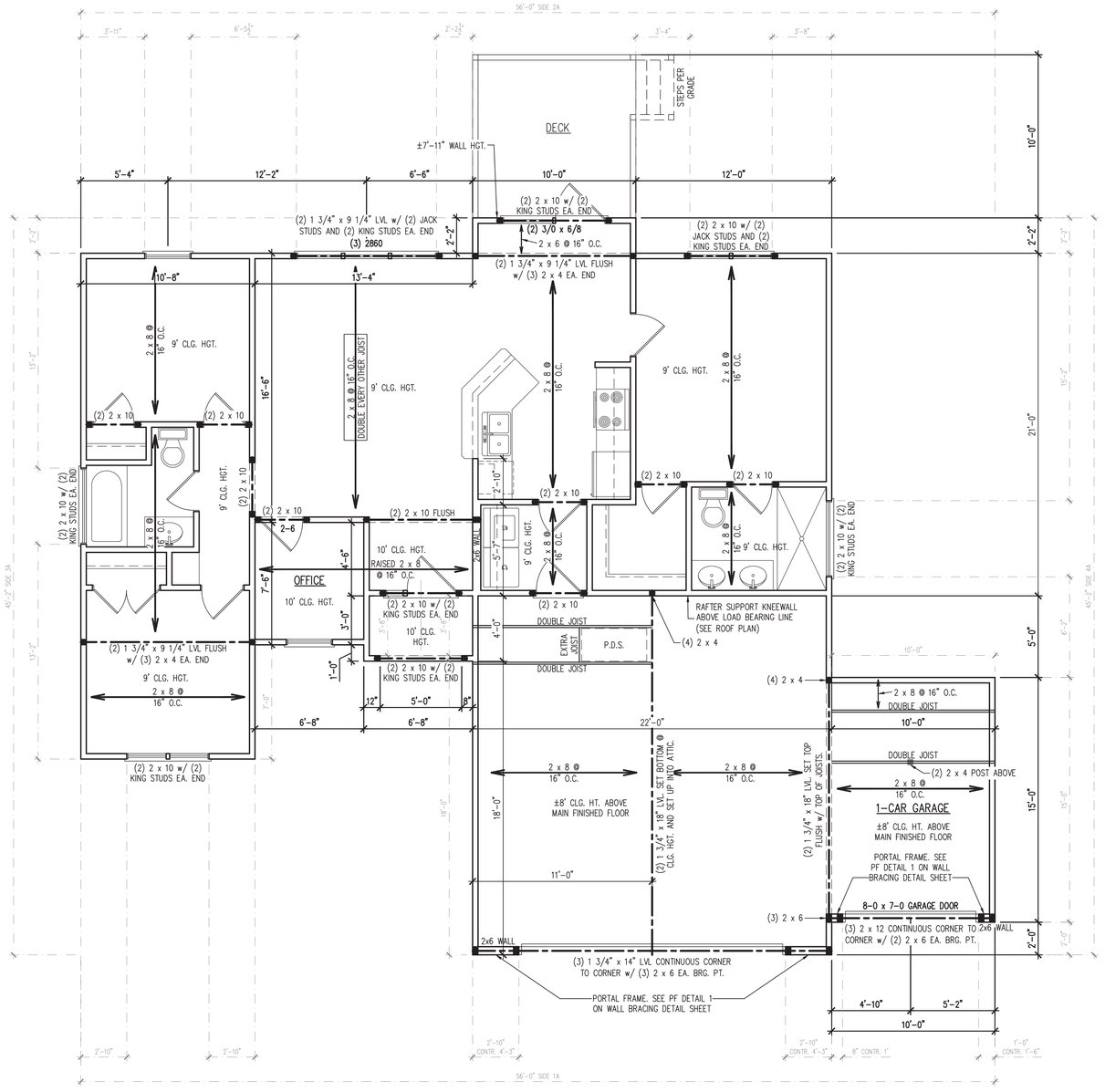
SCALE: 1/4" = 1'-0" (UNO)

DATE: 12-5-2023

SHEET: 1 OF: 4

S-1

CRAWL SPACE FOUNDATION PLAN



NOTES:

1. PLANS DESIGNED UNDER 2018 NORTH CAROLINA RESIDENTIAL CODE.
2. **BOLD DIMENSIONS AND NOTES** REPRESENT CHANGES TO THE ORIGINAL ARCHITECTURAL DRAWINGS. REFERENCE ORIGINAL ARCHITECTURAL DRAWINGS BY AMERICAN DESIGN GALLERY, INC. FOR ALL OTHER ARCHITECTURAL INFORMATION.
3. ALL EXTERIOR AND INTERIOR WALLS ARE 2x4 @ 16" O.C. (UNO)
4. 2x6 WALLS ARE DRAWN AT 6" WIDE AND 2x4 WALLS ARE DRAWN AT 4" WIDE.
5. 9'-0" CEILING HGT. (TYP.) (UNO)
6. SET WINDOWS @ 7'-0" A.F.F. (UNO ON ARCHITECTURAL DRAWINGS)
7. MINIMUM VALUES FOR ENERGY COMPLIANCE:
   ZONE 4
   MAX GLAZING U-FACTOR = 0.35
   CEILING R-38 WALLS R-15 FLOORS R-19

SQUARE FOOTAGE:

FIRST FLOOR HTD.:	1115
2-CAR GARAGE:	484
1-CAR GARAGE:	150
REAR DECK:	100
FRONT PORCH:	26
TOTAL UNHTD.:	760
TOTAL HTD. AND UNHTD.:	1875

BRACED WALL DESIGN NOTES:

1. BRACED WALL DESIGN PER SECTION R602.10 OF THE NCRC 2018 EDITION.
2. CS-WSP REFERS TO THE "CONTINUOUS SHEATHING - WOOD STRUCTURAL PANELS" WALL BRACING METHOD. 7/16" OSB SHEATHING SHALL BE INSTALLED ON ALL SHEATHABLE SURFACES OF ALL EXTERIOR WALLS ATTACHED w/ 6d COMMON NAILS OR 8d (2 1/2" LONG x 0.113" DIA.) NAILS SPACED 6" O.C. ALONG PANEL EDGES AND 12" O.C. IN THE FIELD (UNO).
3. SEE NOTES AND DETAIL SHEETS FOR ADDITIONAL BRACED WALL INFORMATION.

BRACED WALL DESIGN SUMMARY:

SIDE 1A
METHOD: CS-WSP/PF
REQUIRED LENGTH: 5.52'
PROVIDED LENGTH: 26.66'

SIDE 2A
METHOD: CS-WSP
REQUIRED LENGTH: 5.52'
PROVIDED LENGTH: 19.58'

SIDE 3A
METHOD: CS-WSP
REQUIRED LENGTH: 6.6'
PROVIDED LENGTH: 60.83'

SIDE 4A
METHOD: CS-WSP
REQUIRED LENGTH: 6.6'
PROVIDED LENGTH: 40.5'

FIRST FLOOR CEILING FRAMING STRUCTURAL NOTES:

1. ALL FRAMING LUMBER TO BE SPF #2 (UNO). ALL TREATED LUMBER TO BE SYP #2 (UNO.)
2. ALL LOAD BEARING HEADERS TO BE (2) 2 x 10 (UNO).
3. WINDOW AND DOOR HEADERS TO BE SUPPORTED w/ (1) JACK STUD AND (1) KING STUD EA. END (UNO.)
4. REFER TO NOTES AND DETAIL SHEETS FOR ADDITIONAL STRUCTURAL INFORMATION.

LEGEND

■	STUD COLUMN AT POINT LOADS THAT REQUIRE SOLID BLOCKING TO GIRDER OR FOUNDATION. AT DROPPED HEADERS: (1) JACK STUD AND (1) KING STUD (UNO). AT FLUSH BEAMS AND (UNO): (2) STUDS (UNO)
■	OFFSET POINT LOAD FROM FLOOR ABOVE. MUST BE SUPPORTED BY BEAM, JOIST, OR BLOCKING AS NOTED ON THE PLANS.
———	BEAM OR HEADER AS NOTED
X'-X"	BRACED WALL DIMENSIONS (FOR REFERENCE ONLY)
(UNO)	UNLESS NOTED OTHERWISE

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620 ROLLINS MILL ROAD
HOLLY SPRINGS, NORTH CAROLINA
TRIANGLE HOME PROS

REVISIONS:

DRAWN BY: AMERICAN DESIGN GALLERY, INC.

ENGINEERED BY: J. SMITH

SCALE: 1/4" = 1'-0" (UNO)

DATE: 12-5-2023

SHEET: 2 OF: 4

S-2

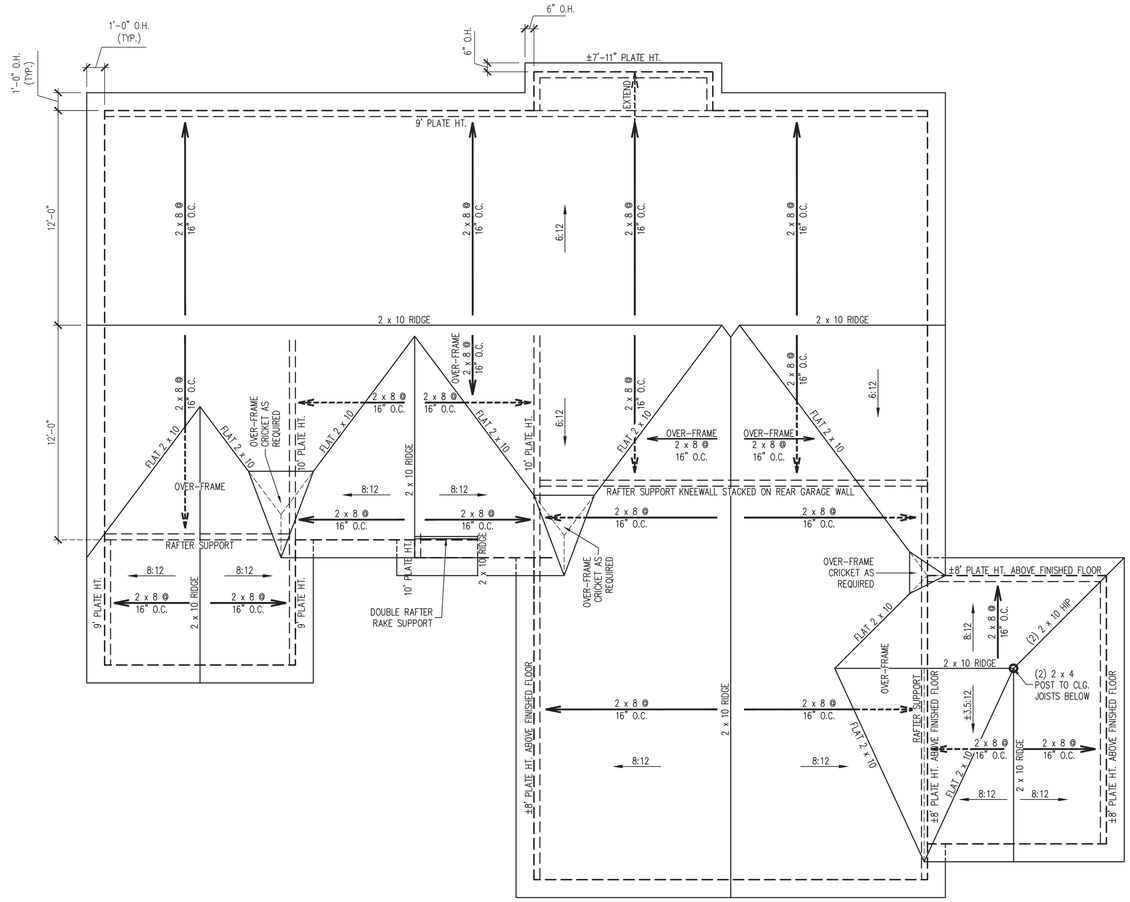
FIRST FLOOR CEILING FRAMING PLAN

REQUIRED ATTIC VENTILATION:

1770 SQ. FT. OF ATTIC DIVIDED BY 150 REQUIRES 11.8 SQ. FT. OF NET FREE VENTILATING AREA (MIN.).

ROOF FRAMING STRUCTURAL NOTES:

1. ALL FRAMING LUMBER TO BE #2 SPF (UNO).
2. SHEATH ROOF w/ 7/16" OSB SHEATHING SECURED w/ 8d NAILS @ 6" O.C. ALONG EDGES AND 12" O.C. IN THE FIELD.
3. CIRCLES DENOTE POSTS FOR ROOF SUPPORT AS NOTED.
4. STICK FRAME OVER-FRAMED ROOF SECTIONS W/ 2 x 8 RIDGES, 2 x 6 RAFTERS @ 16" O.C. AND FLAT 2 x 10 VALLEYS.
5. FASTEN FLAT VALLEYS TO RAFTERS WITH SIMPSON H2.5A HURRICANE TIES @ 32" O.C. MAX. PASS HURRICANE TIES THROUGH NOTCH IN ROOF SHEATHING IF REQUIRED. SECURE RAFTERS TO FLAT VALLEYS WITH A MIN. OF (6) 12d TOE NAILS.
6. INSTALL (1) SIMPSON H2.5A HURRICANE TIE (OR EQUAL) @ EA. RAFTER BEARING.
7. REFER TO NOTES AND DETAIL SHEETS FOR ADDITIONAL STRUCTURAL INFORMATION.



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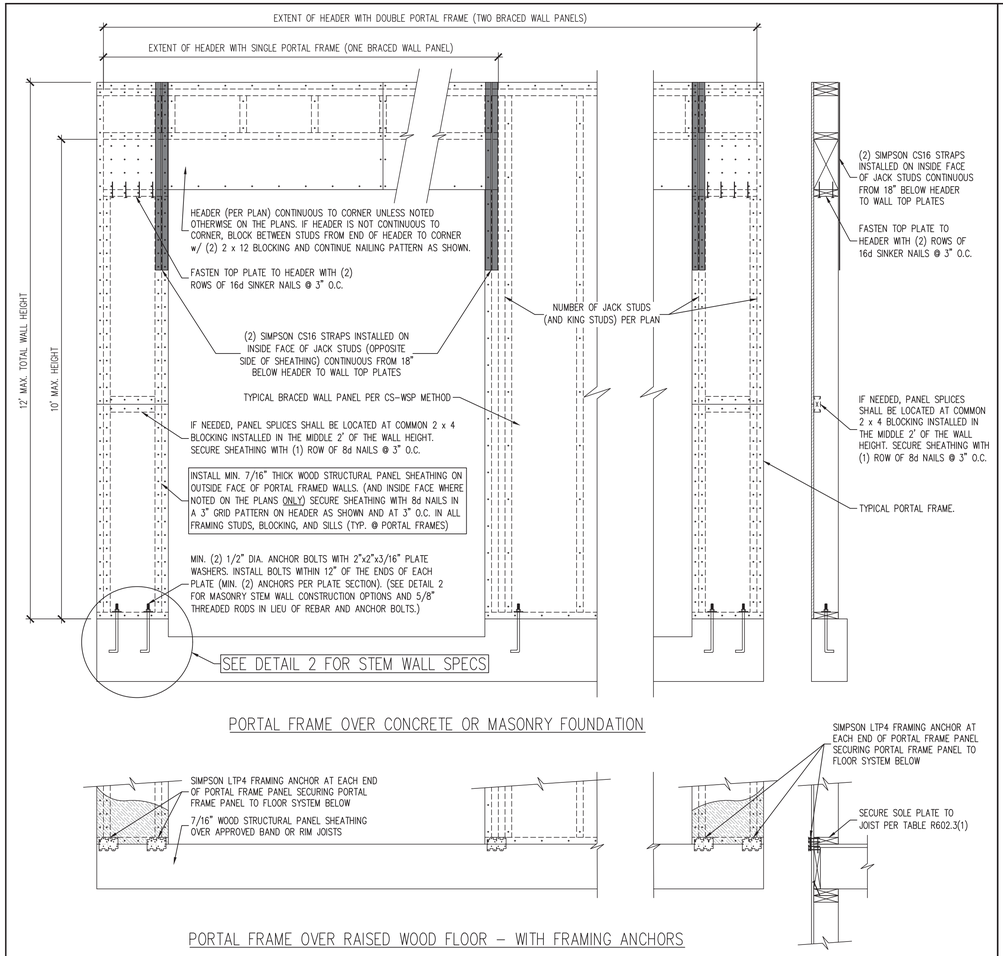
DATE: 12-5-2023

SHEET: 3 OF: 4

S-3
ROOF FRAMING PLAN

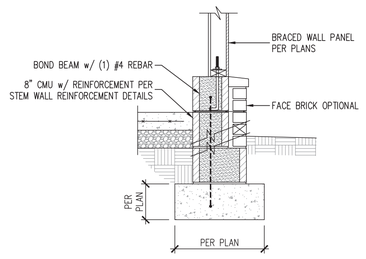


PORTAL FRAME OVER CONCRETE OR MASONRY FOUNDATION

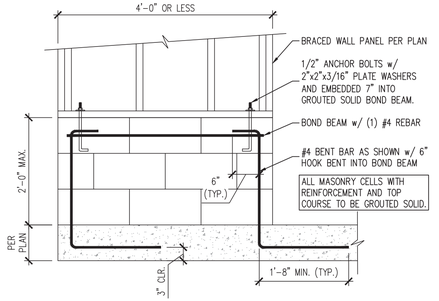
PORTAL FRAME OVER RAISED WOOD FLOOR – WITH FRAMING ANCHORS

1 PF PORTAL FRAME DETAIL

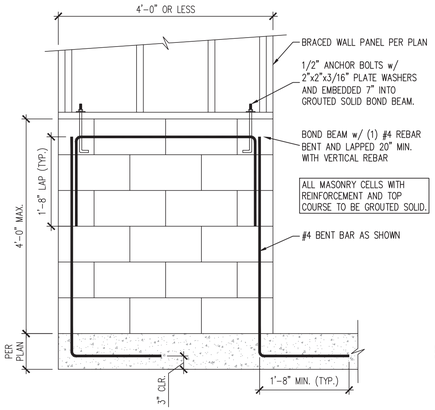
SCALE: 3/4" = 1'-0" (REFERENCE FIGURE R602.10.1)



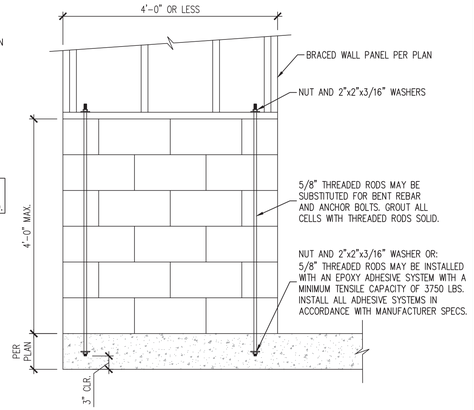
TYPICAL STEM WALL SECTION



SHORT STEM WALL REINFORCEMENT



TALL STEM WALL REINFORCEMENT



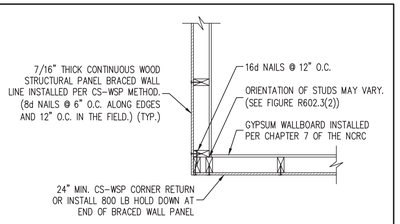
OPTIONAL STEM WALL REINFORCEMENT IN LIEU OF BENT REBAR AND ANCHOR BOLTS

2 MASONRY STEM WALL DETAILS FOR WALLS 48" LONG OR LESS

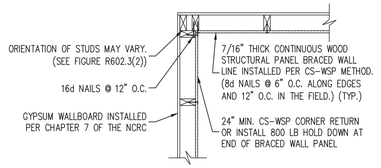
SCALE: 3/4" = 1'-0" (REFERENCE FIGURE R602.10.4.3)

GENERAL WALL BRACING NOTES:

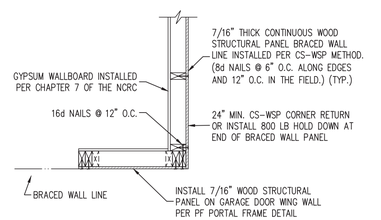
1. WALL BRACING DESIGNED IN ACCORDANCE WITH CHAPTER 6 OF THE 2018 NORTH CAROLINA RESIDENTIAL BUILDING CODE (NCRC). TABLES AND FIGURES REFERENCED ARE FROM THE 2018 NCRC. REFER TO THE 2018 NCRC FOR ADDITIONAL INFORMATION AS NEEDED.
2. SEE STRUCTURAL SHEETS FOR THE BRACED WALL DESIGN SUMMARY WHICH SPECIFIES THE TOTAL AMOUNT OF BRACING REQUIRED AND PROVIDED ALONG EACH BRACED WALL LINE ON EACH FLOOR (WHERE REQUIRED). THE LENGTH AND LOCATION OF BRACED WALLS, HOLD DOWN(S) TYPE AND LOCATIONS, AND ANY SPECIAL NOTES OR REQUIREMENTS DETERMINED BY ENGINEERED DESIGN ARE INCLUDED ON EACH STRUCTURAL FLOOR PLAN (WHERE REQUIRED).
3. ALL EXTERIOR WALLS ARE TO BE SHEATHED ON THE EXTERIOR FACE WITH 7/16" OSB WOOD STRUCTURAL PANELS IN ACCORDANCE WITH THE CS-WSP METHOD AS SPECIFIED IN SECTION R602.10.3 OF THE 2018 NCRC UNLESS NOTED OTHERWISE (UNO).
4. CS-WSP REFERS TO THE "CONTINUOUS SHEATHING – WOOD STRUCTURAL PANELS" WALL BRACING METHOD. 7/16" OSB SHEATHING SHALL BE INSTALLED ON ALL SHEATHABLE SURFACES OF ALL EXTERIOR WALLS ATTACHED w/ 6d COMMON NAILS OR 8d (2 1/2" LONG x 0.113" DIAMETER) NAILS SPACED 6" O.C. ALONG PANEL EDGES AND 12" O.C. IN THE FIELD (UNO).
5. THE INTERIOR SIDE OF ALL EXTERIOR WALLS AND BOTH SIDES OF INTERIOR WALLS SHALL BE SHEATHED WITH 1/2" GYPSUM WALL BOARD. WHEN NOT USING BRACING METHOD "GB", GYPSUM WALL BOARD SHALL BE FASTENED PER TABLE R702.3.5. BRACING METHOD "GB" WALL BOARD SHALL BE FASTENED PER TABLE R602.10.1
6. "GB" REFERS TO THE "GYPSUM BOARD" WALL BRACING METHOD. WHERE NOTED ON THE PLANS, 1/2" (MIN.) GYPSUM WALL BOARD SHALL BE INSTALLED ON BOTH SIDES OF THE BRACED WALL FASTENED WITH 1 1/4" #6 SCREWS OR 1 5/8" 5d COOLER NAILS SPACED 7" O.C. ALONG PANEL EDGES AND 7" O.C. ALONG INTERMEDIATE SUPPORTS (UNO).
7. THE REQUIRED BRACED WALL LENGTHS FOR EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE ARE INTERPOLATED PER TABLE R602.10.3. METHOD CS-WSP CONTRIBUTES ITS ACTUAL LENGTH, METHOD GB CONTRIBUTES .5 ITS ACTUAL LENGTH, AND METHOD PF CONTRIBUTES 1.5 TIMES ITS ACTUAL LENGTH.



CS-WSP OUTSIDE CORNER DETAIL



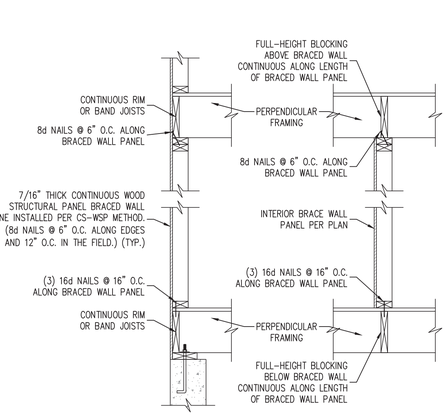
CS-WSP INSIDE CORNER DETAIL



CS-WSP GARAGE DOOR CORNER DETAIL

6 TYPICAL EXTERIOR CORNER FRAMING DETAILS

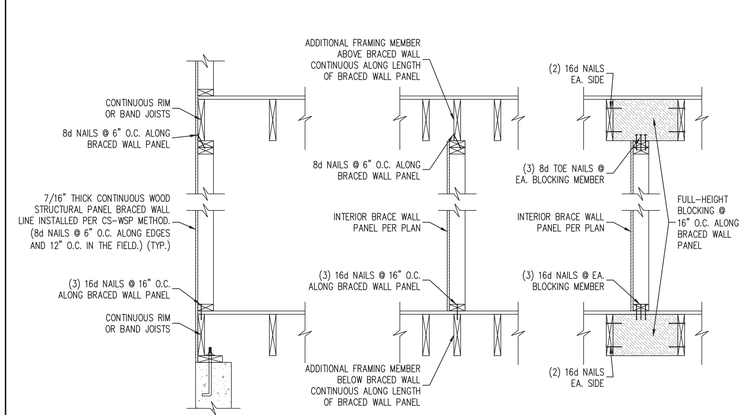
SCALE: 3/4" = 1'-0" (REFERENCE FIGURES R602.10.3(4) AND (5))



BRACED WALL PANEL CONNECTION WHEN PERPENDICULAR TO FLOOR/CEILING FRAMING

3

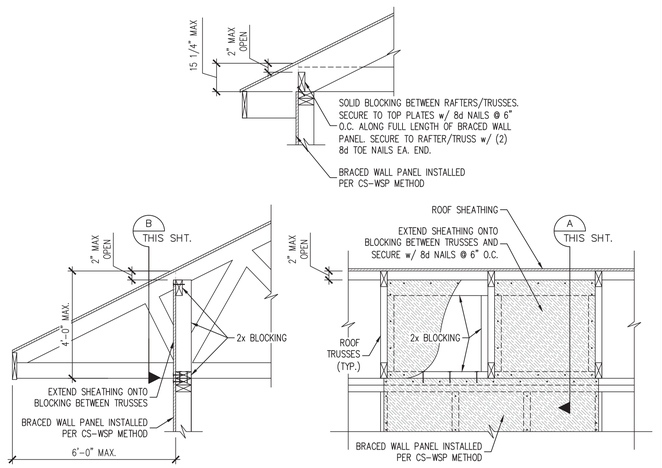
SCALE: NTS (REFERENCE FIGURE R602.10.4.4(1))



BRACED WALL PANEL CONNECTION WHEN PARALLEL TO FLOOR/CEILING FRAMING

4

SCALE: NTS (REFERENCE FIGURE R602.10.4.4(2))



SECTION A ELEVATION B

BRACED WALL PANEL CONNECTION TO PERPENDICULAR RAFTERS OR TRUSSES

5

SCALE: NTS (REFERENCE FIGURES R602.10.4.5(1) AND (3))

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DATE: 12-5-2023

SHEET: 4 OF: 4

S-4
WALL BRACING DETAILS AND NOTES