



DATE: JULY 01, 2022
 SCALE: 1/4" = 1'-0"
 DRAWN BY: T5Z
 ENGINEERED BY: T5Z
 REVIEWED BY: JBW

**SPECTRA ENGINEERING
 AND DESIGN, PLLC**
 P.O. BOX 31625
 RALEIGH, NORTH CAROLINA 27621
 TEL: (919) 728-2841
 LICENSE NO. NC: P-09346 VA: 000462

OSBORN RESIDENCE ADDITION/RENOVATION
139 CLEARVIEW COURT
SANFORD, NORTH CAROLINA



REAR ELEVATION

A-1
 SHEET 1 OF 6



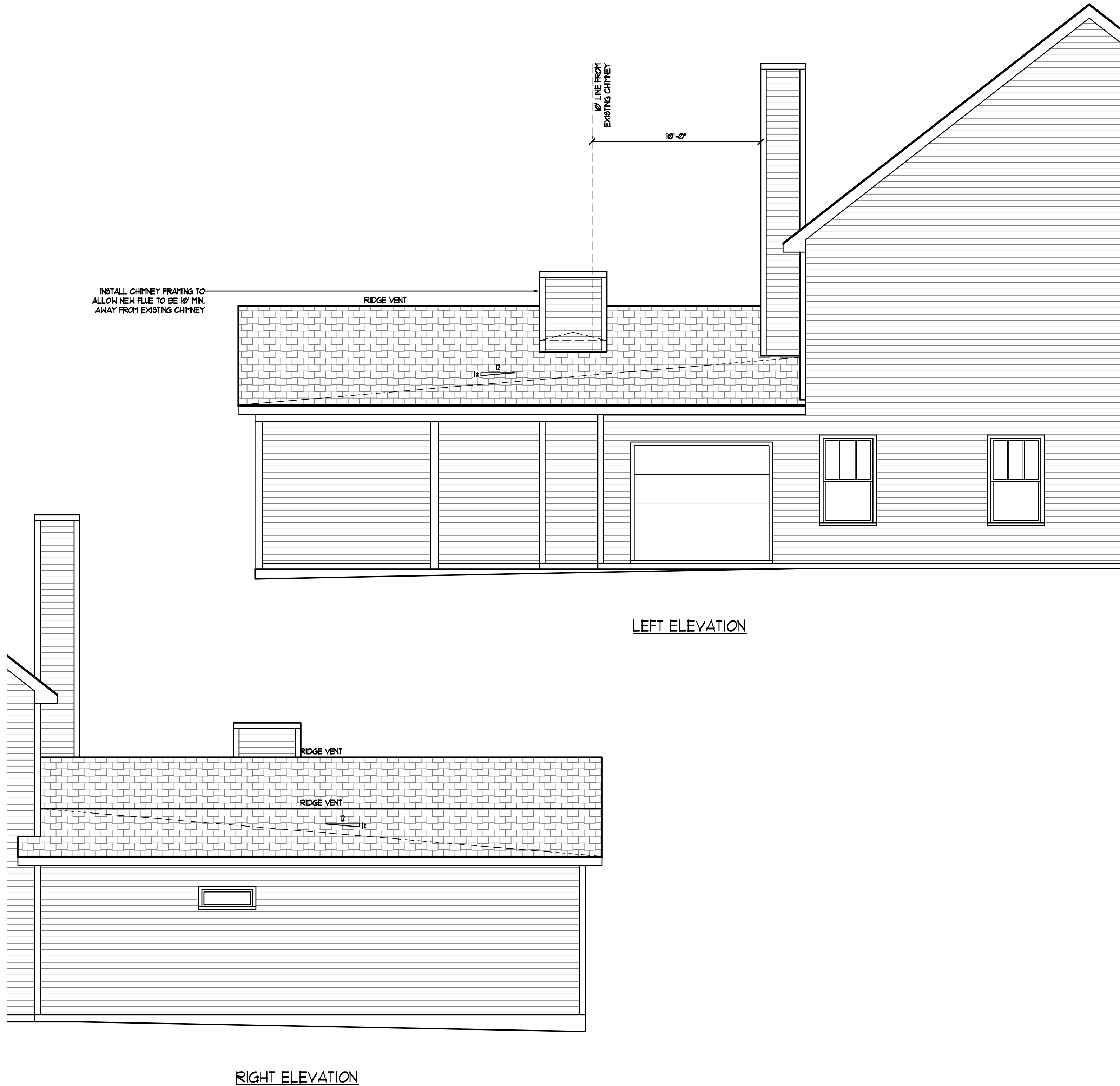
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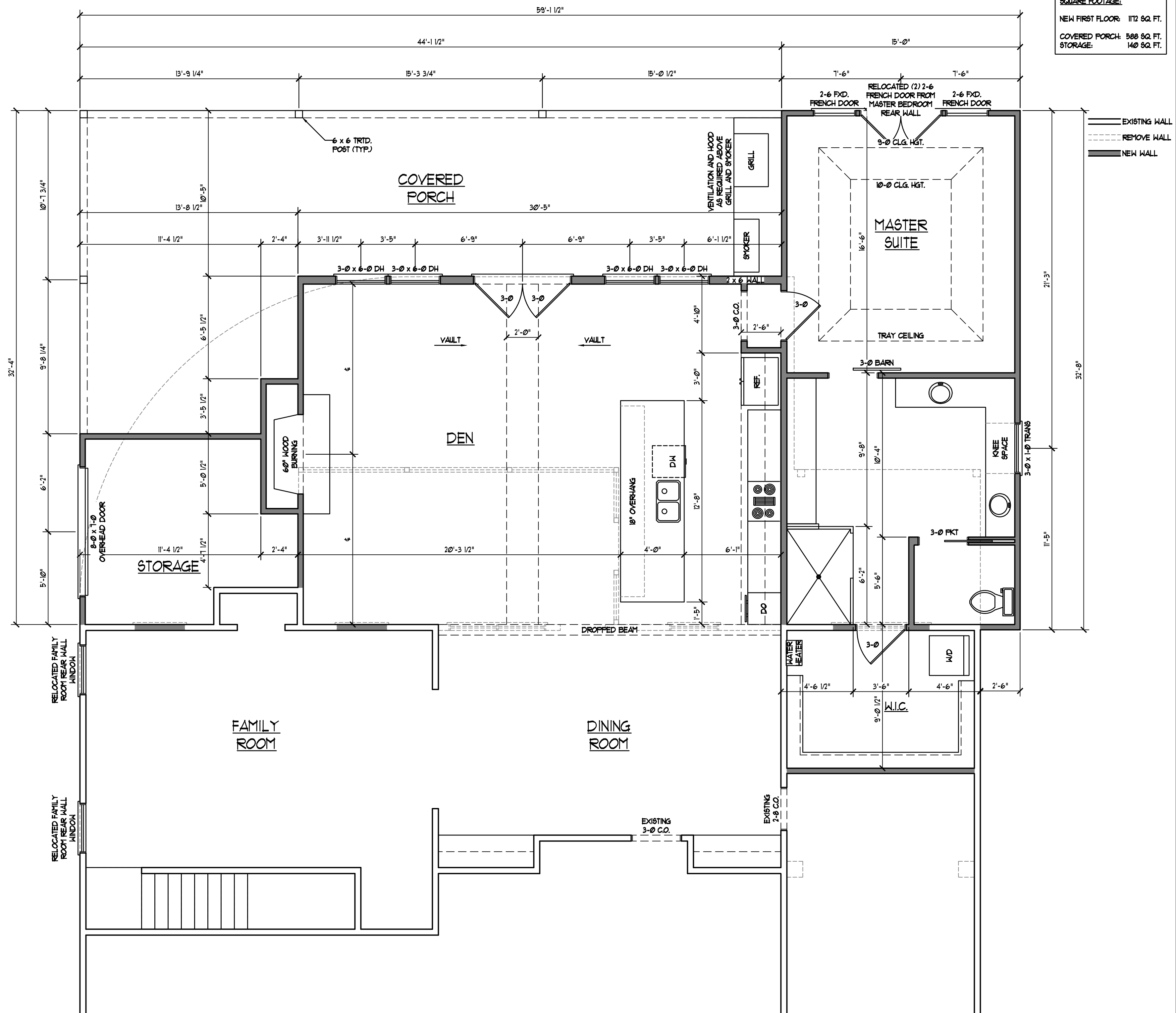
SIDE ELEVATIONS

A-2
SHEET 2 OF 6





SQUARE FOOTAGE:
 NEW FIRST FLOOR: 1172 SQ. FT.
 COVERED PORCH: 500 SQ. FT.
 STORAGE: 140 SQ. FT.



— EXISTING WALL
 - - - REMOVE WALL
 = NEW WALL

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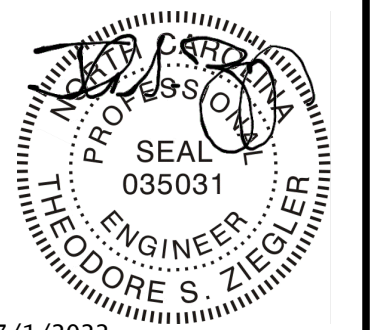
FIRST FLOOR PLAN
A-3
 SHEET 3 OF 6



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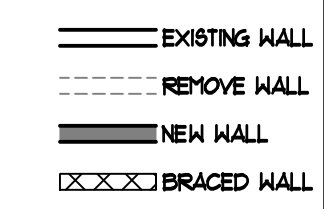
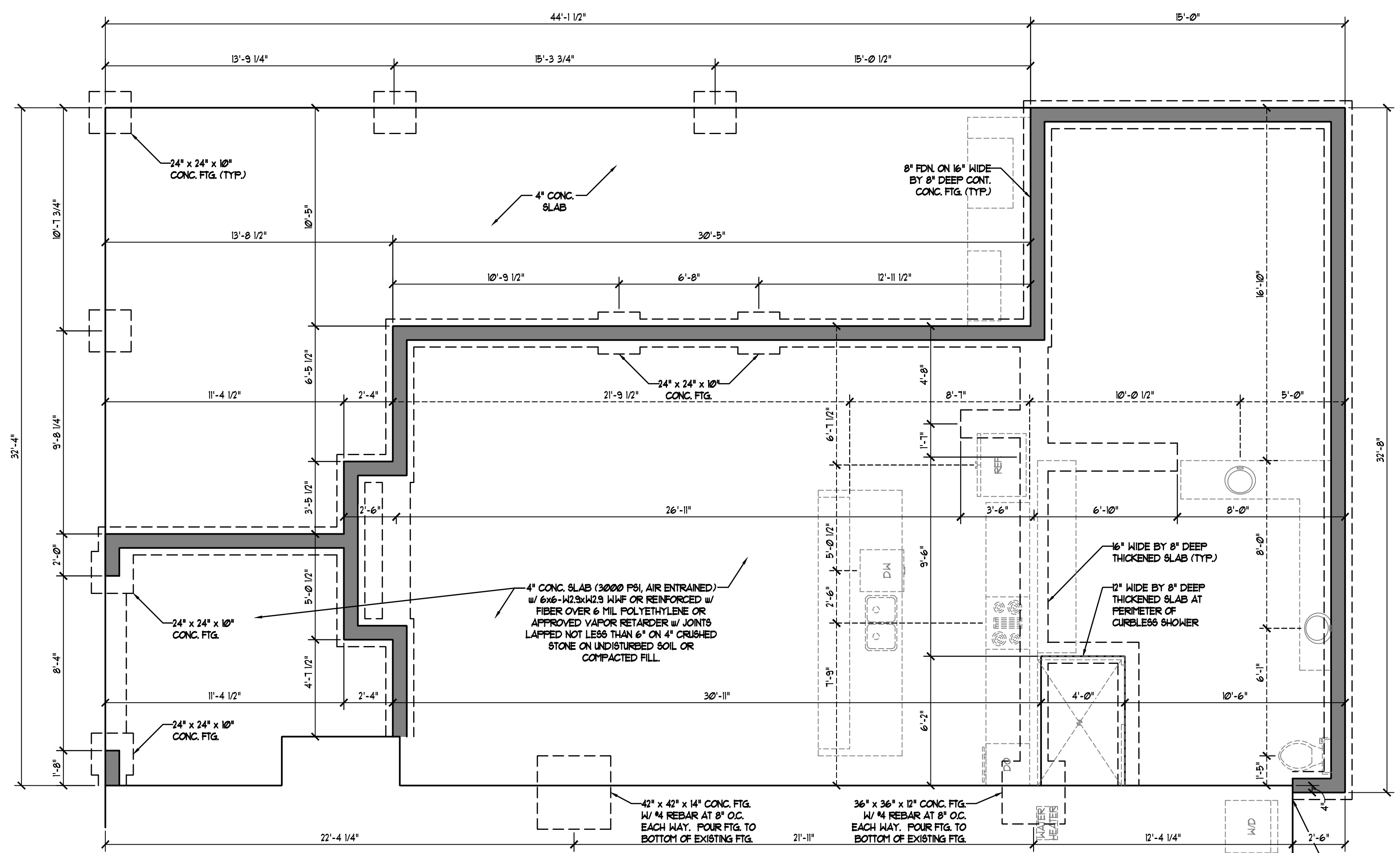
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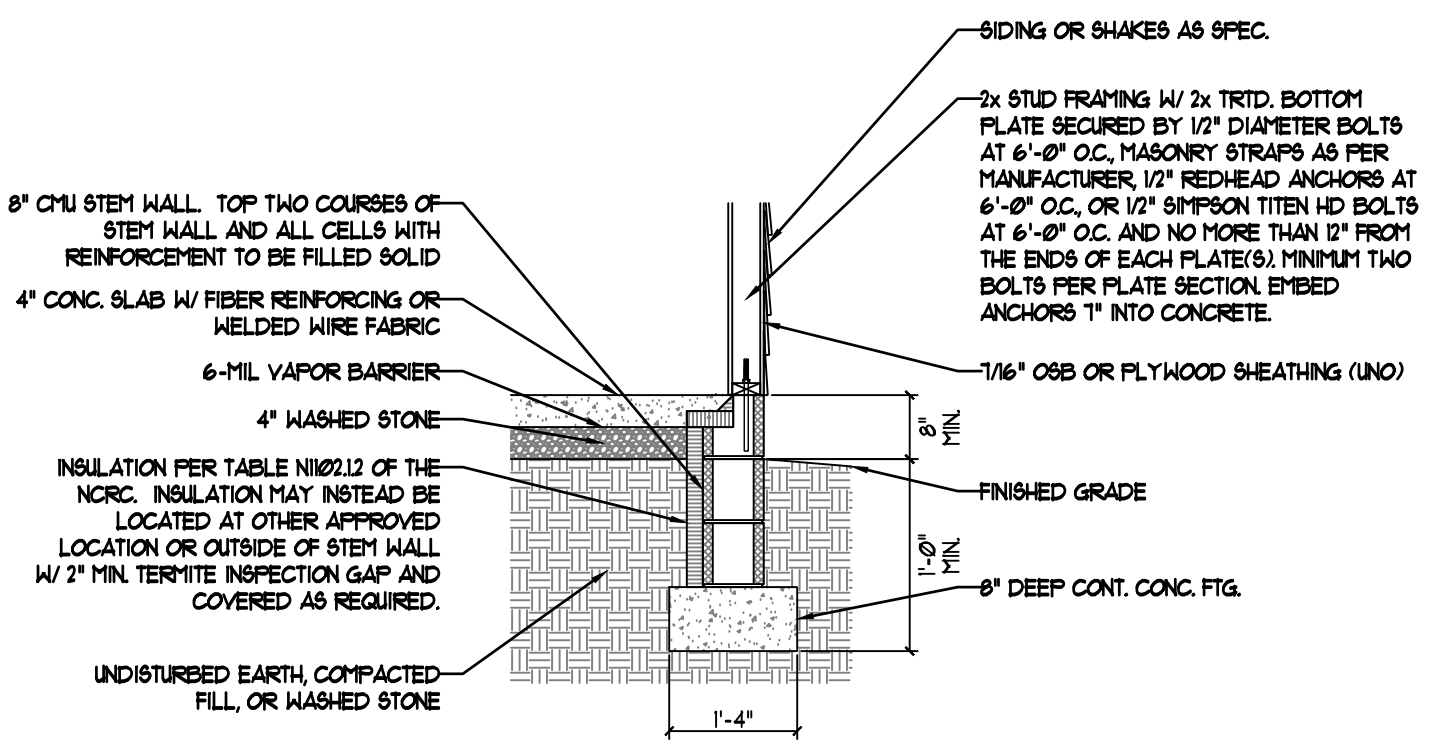


7/1/2022

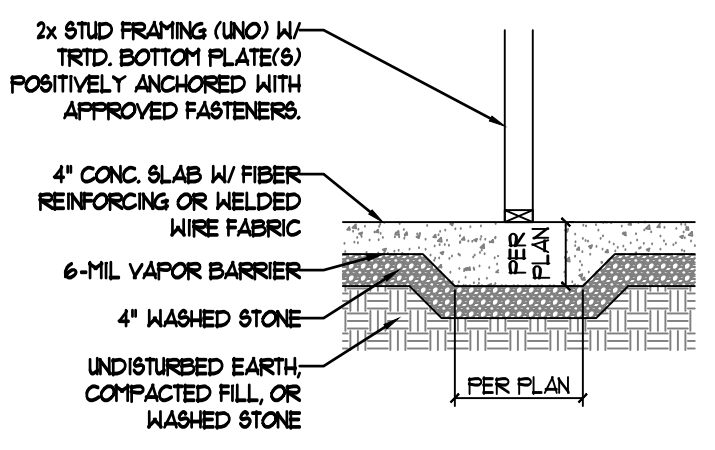
STEM WALL FOUNDATION PLAN
 S-1
 SHEET 4 OF 6



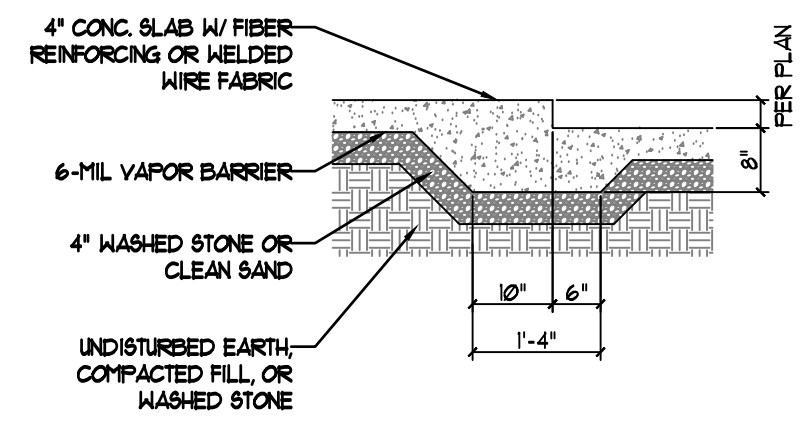
NOTE - IF THE OBSERVED EXISTING FRAMING CONFIGURATION DOES NOT MATCH THE ASSUMED CONFIGURATION SPECIFIED ON THE PLAN, STOP CONSTRUCTION IMMEDIATELY AND CONTACT SPECTRA ENGINEERING AND DESIGN, PLLC FOR FURTHER INSTRUCTION.



TYPICAL STEM WALL FOUNDATION DETAIL
 W/ SIDING OR SHAKE SIDING AND
 NO BRICK AT FOUNDATION



THICKENED SLAB DETAIL



SLAB FLOOR
 ELEVATION CHANGE

STRUCTURAL NOTES:
 1) REFER TO STANDARD STRUCTURAL NOTES AND WALL BRACING DETAILS PAGES FOR ADDITIONAL STRUCTURAL INFORMATION.
 2) IN LIEU OF NOTE 5 ON PG. BW-1, WALL BRACING DESIGN AS PER THE NORTH CAROLINA RESIDENTIAL CODE, 2018 EDITION. SPECIFIED BRACED WALL PANELS ARE ONLY SHOWN TO SHOW WALL BRACING MEETS OR EXCEEDS MINIMUM REQUIRED. ALL EXTERIOR WALLS SHALL BE SHEATHED ON ALL SHEATHABLE SURFACES INCLUDING INFILL AREAS BETWEEN BRACED WALL PANELS, ABOVE AND BELOW WALL OPENINGS, AND ON GABLE END WALLS.

* DIMENSIONS SUBJECT TO CHANGE ±2" TO MATCH EXISTING STRUCTURE.

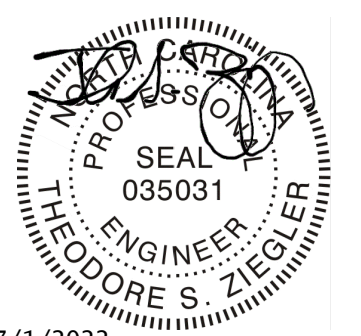
ENGINEER'S SEAL IS VALID UP TO ONE YEAR OF SEAL DATE.



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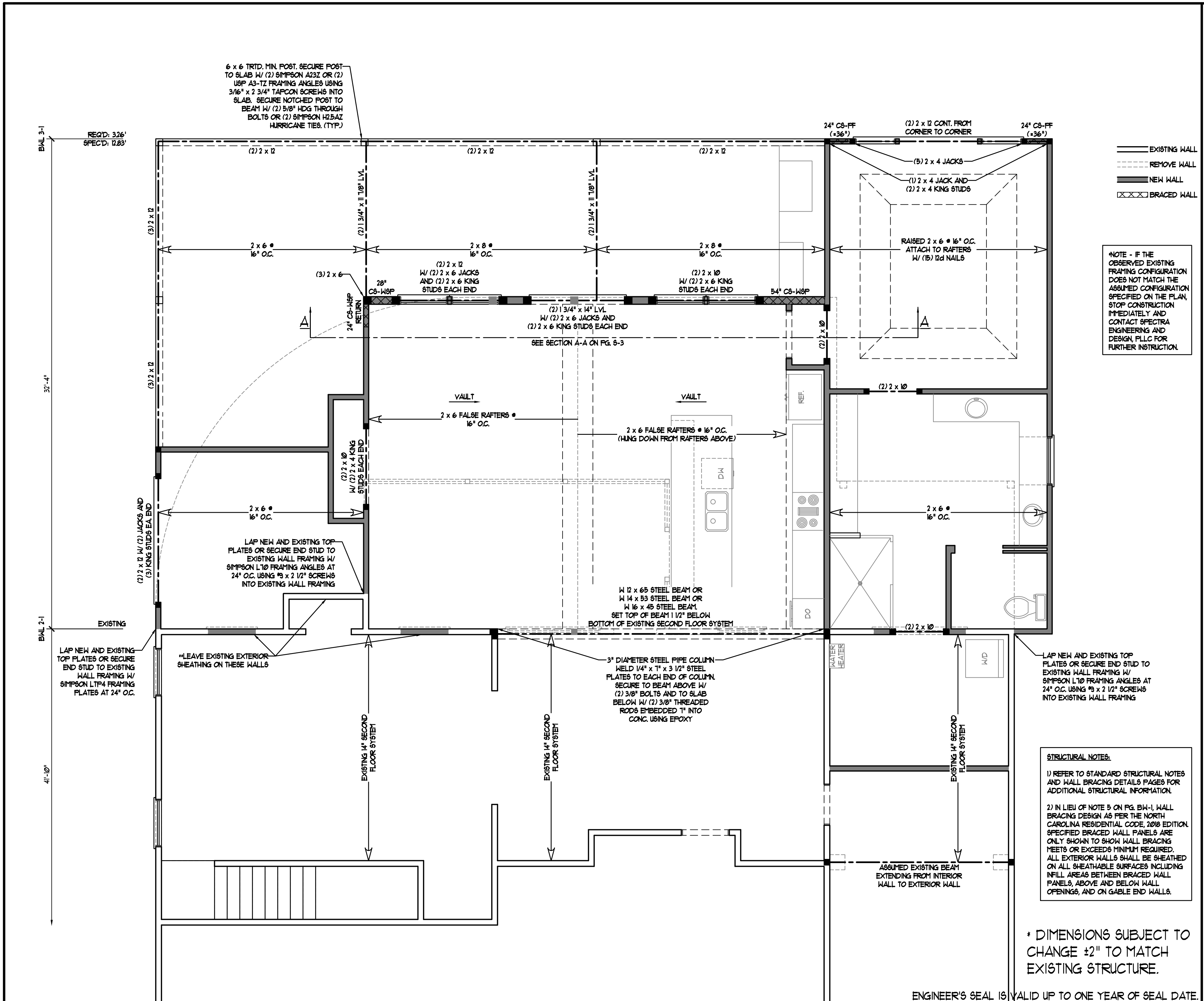
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CEILING FRAMING PLAN
S-2
 SHEET 5 OF 6

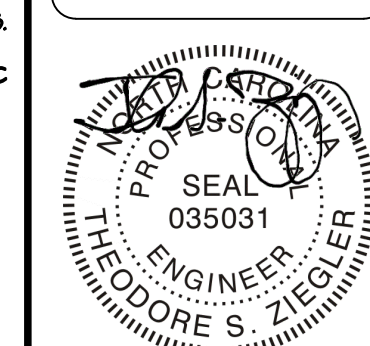




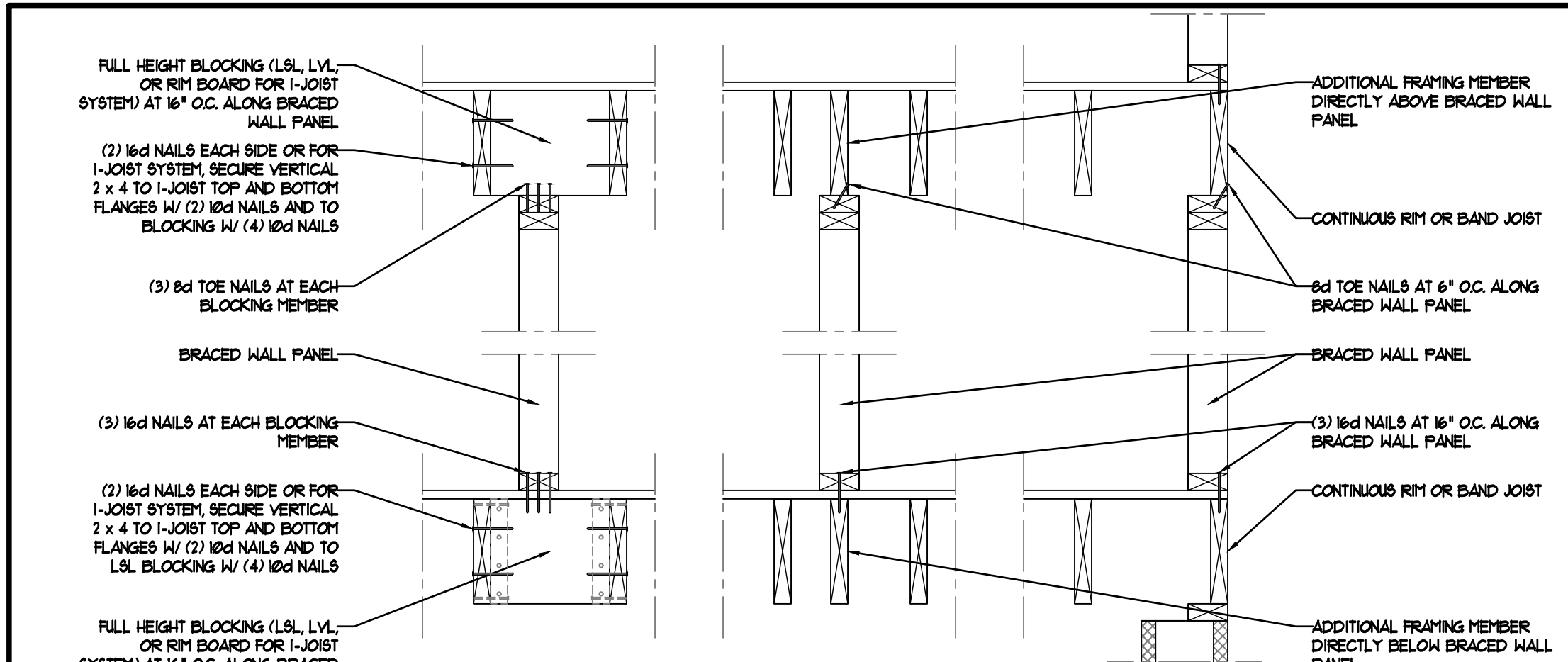
DATE: APRIL 04, 2022
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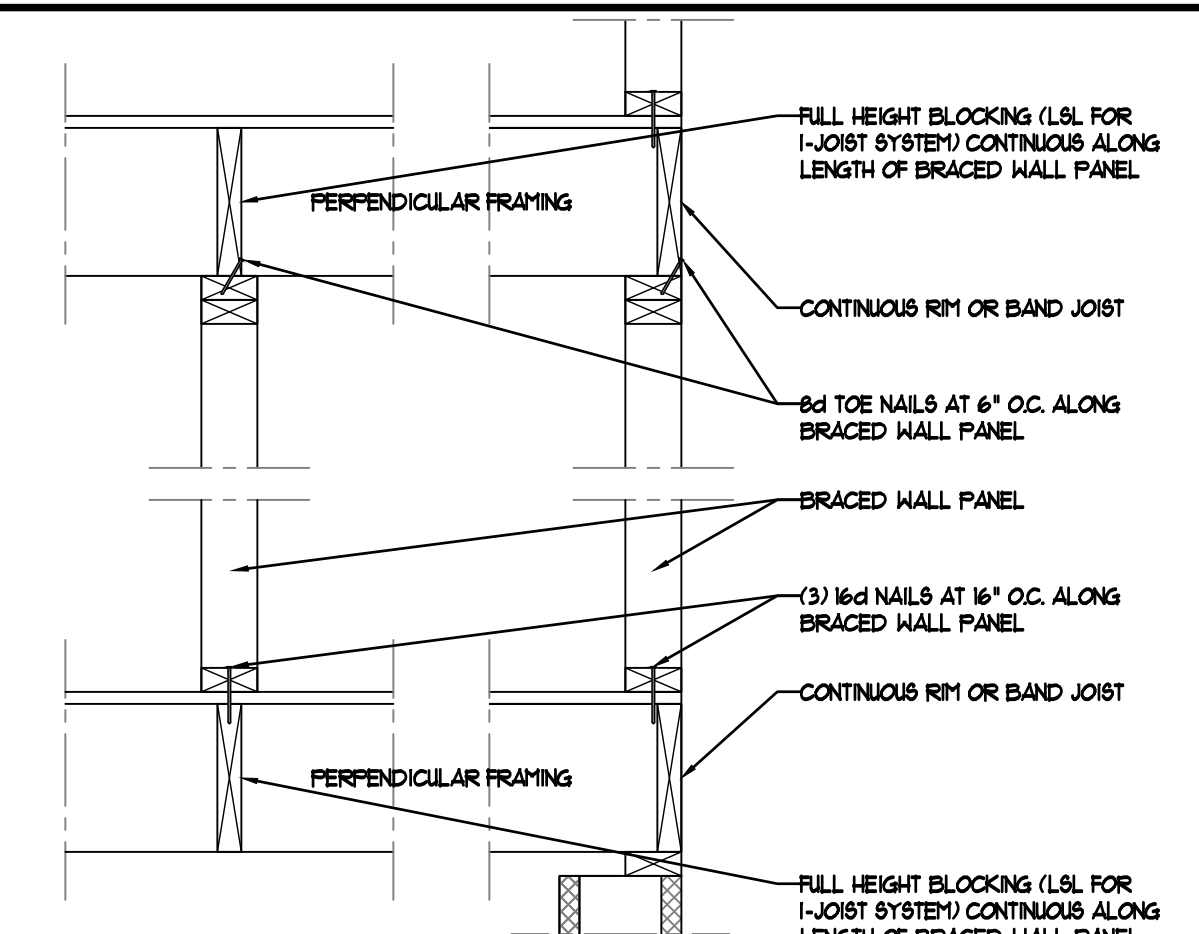
WALL BRACING DETAILS



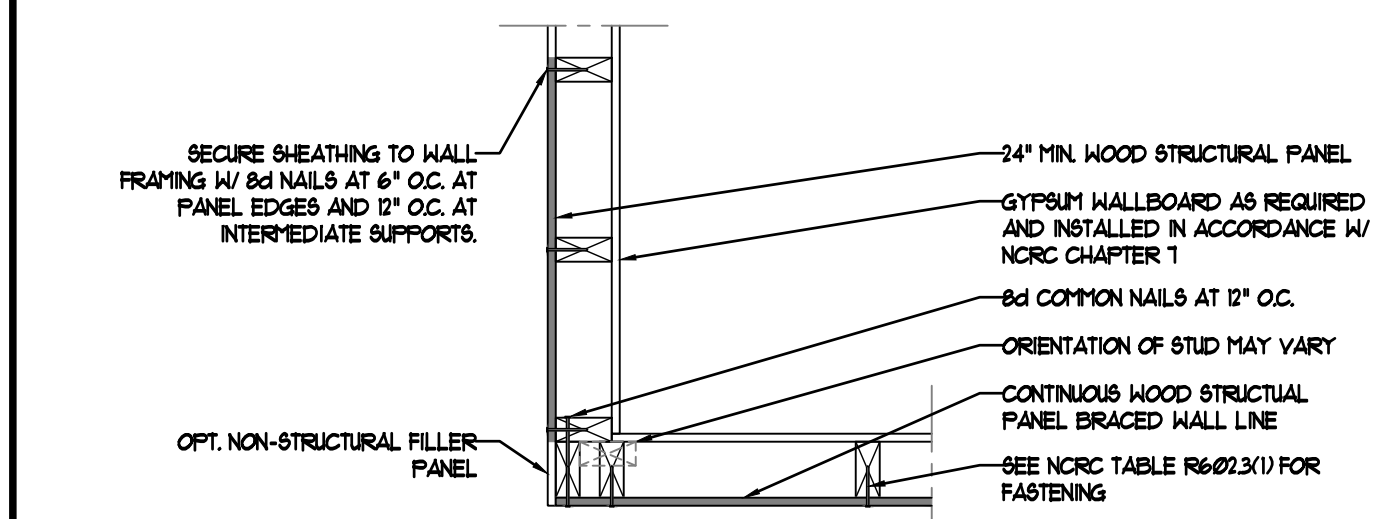
7/1/2022
 DETAILS
 BW-1
 SHEET X OF X



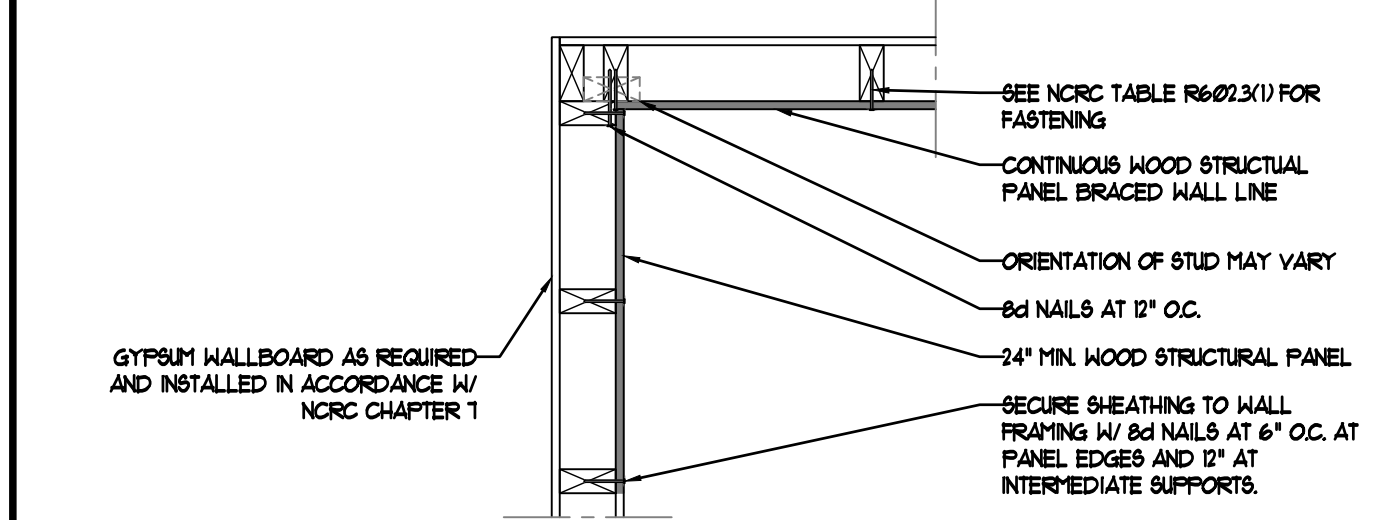
1 BRACED WALL PANEL CONNECTION WHEN PARALLEL TO FLOOR/CEILING FRAMING



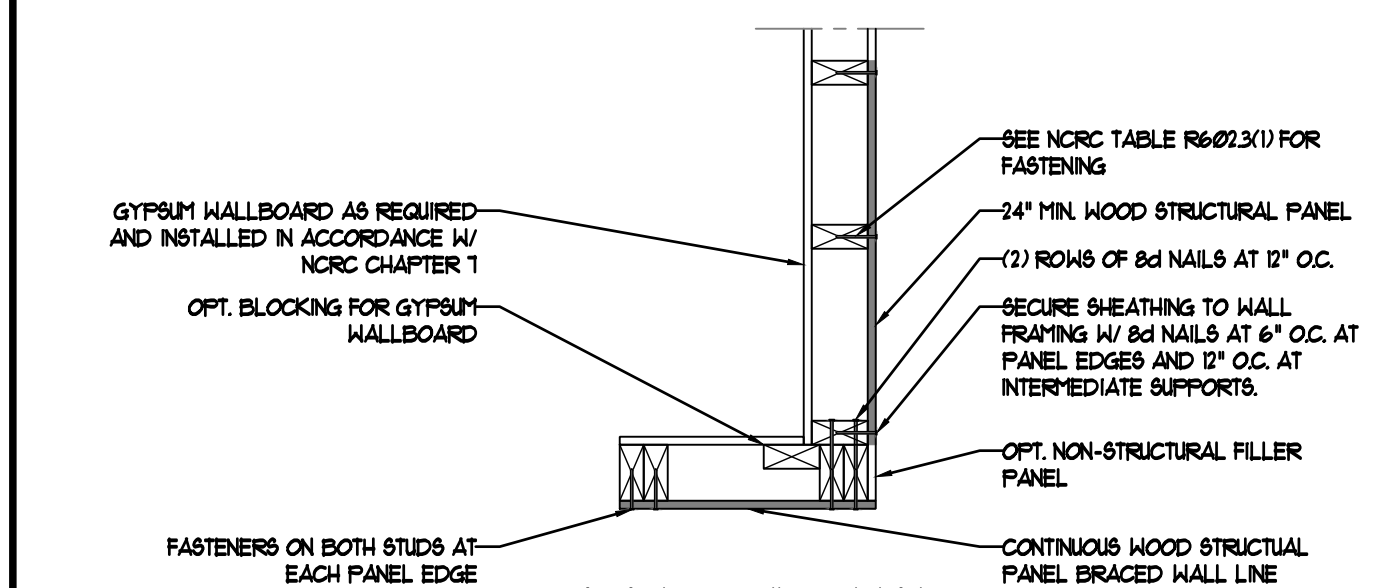
2 BRACED WALL PANEL CONNECTION WHEN PERPENDICULAR TO FLOOR/CEILING FRAMING



OUTSIDE CORNER DETAIL

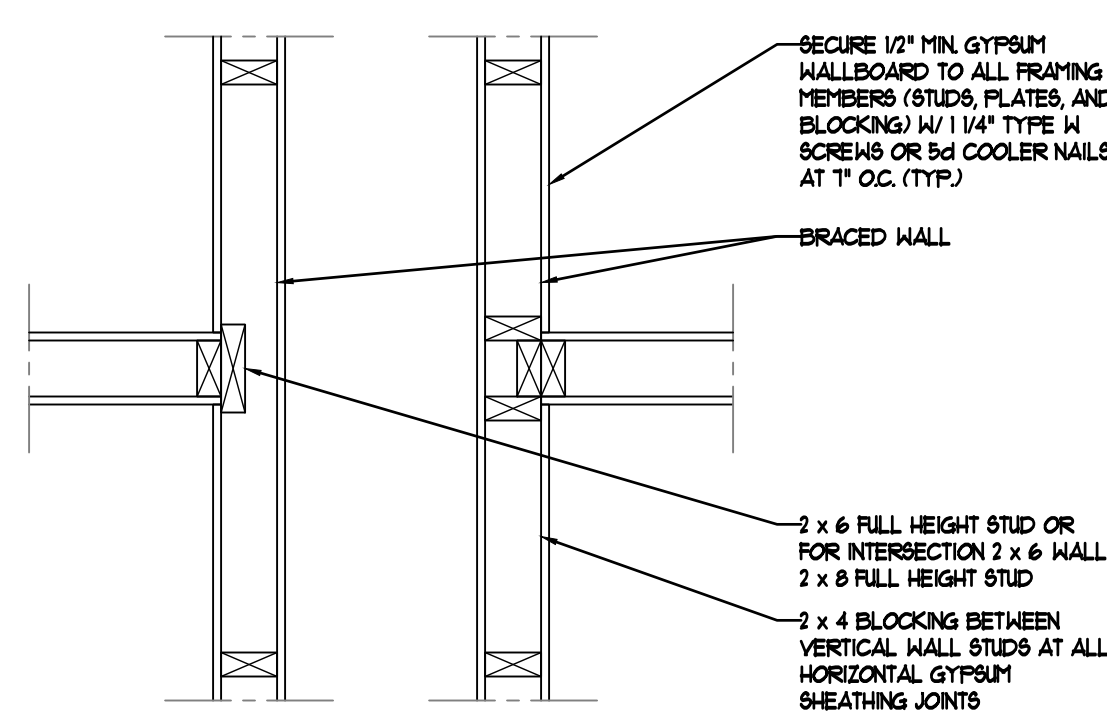


INSIDE CORNER DETAIL



GARAGE CORNER DETAIL

3 TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING



T-PLATE WALL INTERSECTION

3-STUD WALL INTERSECTION

4 METHOD GB (1) AND GB (2) INTERSECTION DETAILS

BRACED WALL PANEL SCHEDULE			
ABBREVIATIONS	PANEL TYPE	MATERIAL	FASTENERS
WSP	INTERMITTENT WOOD STRUCTURAL PANEL	1/16" OSB/ FLYWOOD (UNO)	6d OR 8d COMMON NAILS AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS
GB (1)	INTERMITTENT GYPSUM BOARD (SHEATHING ON ONE FACE OF WALL)	1/2" GYPSUM	1 1/2" GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1 1/4" TYPE W DRYWALL SCREWS AT 1" O.C. AT PANEL EDGES INCLUDING TOP AND BOTTOM PLATES AND INTERMEDIATE SUPPORTS
GB (2)	INTERMITTENT GYPSUM BOARD (SHEATHING ON BOTH FACES OF WALL)	1/2" GYPSUM	1 1/2" GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1 1/4" TYPE W DRYWALL SCREWS AT 1" O.C. AT PANEL EDGES INCLUDING TOP AND BOTTOM PLATES AND INTERMEDIATE SUPPORTS
GB (3)	INTERMITTENT GYPSUM BOARD (SHEATHING ON BOTH FACES OF WALL)	1/2" GYPSUM	1 1/2" GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1 1/4" TYPE W DRYWALL SCREWS AT 4" O.C. AT PANEL EDGES INCLUDING TOP AND BOTTOM PLATES AND INTERMEDIATE SUPPORTS
LIB	LET-IN-BRACING	1 x 4 WOOD OR SIMPSON CS16 STRAP	WOOD: (2) 8d NAILS PER STUD INCLUDING TOP AND BOTTOM PLATE. METAL: (1) STRAP EACH DIRECTION, (2) 16d NAILS PER STUD INCLUDING TOP AND BOTTOM PLATE, (20) 16d NAILS MIN. PER STRAP
CS-WSP	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	1/16" OSB/ FLYWOOD (UNO)	6d OR 8d COMMON NAILS AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS
CS-G	CONT. SHEATHED WOOD STRUCTURAL PANEL ADJACENT TO GARAGE	1/16" OSB/ FLYWOOD (UNO)	6d OR 8d COMMON NAILS AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS
CS-FF	CONTINUOUS PORTAL FRAME	1/16" OSB/ FLYWOOD (UNO)	SEE METHOD CS-FF ON PAGE BW-3
CS-EBW1	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	1/16" OSB/ FLYWOOD (UNO)	6d OR 8d COMMON NAILS AT 4" O.C. AT PANEL EDGES AND 8" O.C. AT INTERMEDIATE SUPPORTS
CS-EBW2	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	1/16" OSB/ FLYWOOD (UNO)	6d OR 8d COMMON NAILS AT 3" O.C. AT PANEL EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS

NOTES:
 1) ALL BRACED WALL PANELS SHALL HAVE 2x BLOCKING BETWEEN WALL STUDS AT ALL HORIZONTAL SHEET EDGES.
 2) PROVIDE NAILING/BLOCKING ABOVE AND BELOW ALL BRACED WALL PANELS PER DETAIL 1/BW-1 AND 2/BW-1.
 3) ALL EXTERIOR WALLS OF THE HOUSE ARE TO BE SHEATHED W/ 1/16" OSB OR 1/32" PLYWOOD SECURED PER IRC TABLE R602.3(1) (NRCR TABLE R602.3(1)). WALL CORNER SHEATHING IS TO BE SECURED AS PER DETAIL 3/BW-1.
 4) GB (1) AND GB (2) WALL PANELS SHALL BE SECURED AS PER DETAIL 4/BW-1.
 5) BRACED WALL PANELS ARE PROVIDED AS PER THE INTERNATIONAL RESIDENTIAL CODE, 2015 EDITION, SECTION R602.10. PANEL LENGTHS SHOWN ON PLANS ARE THE MIN LENGTH REQUIRED.
 6) ALL METHODS SHALL HAVE A GYPSUM BOARD FINISH (OR EQUIVALENT) APPLIED TO THE INSIDE FACE OF THE BRACED WALL PANEL.

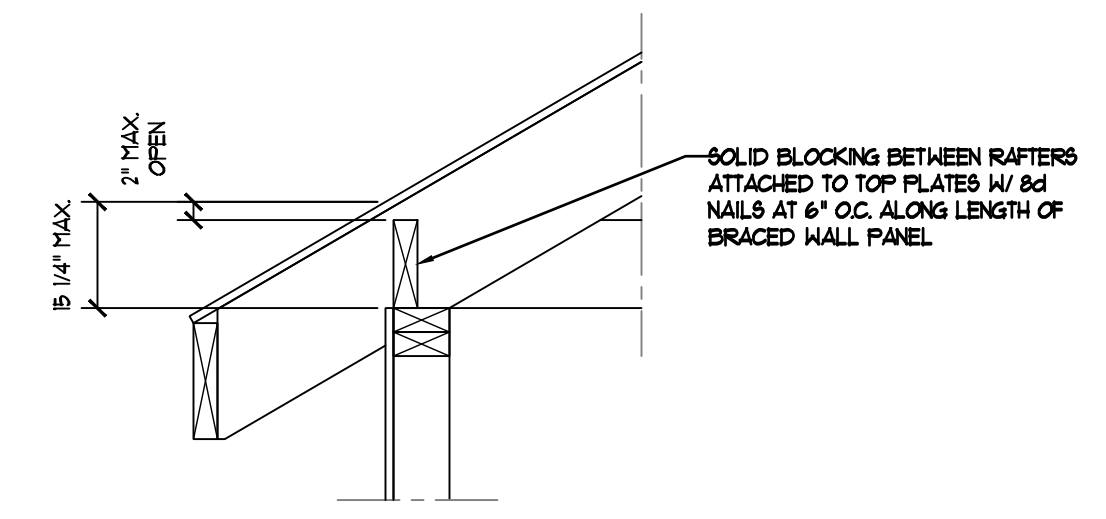
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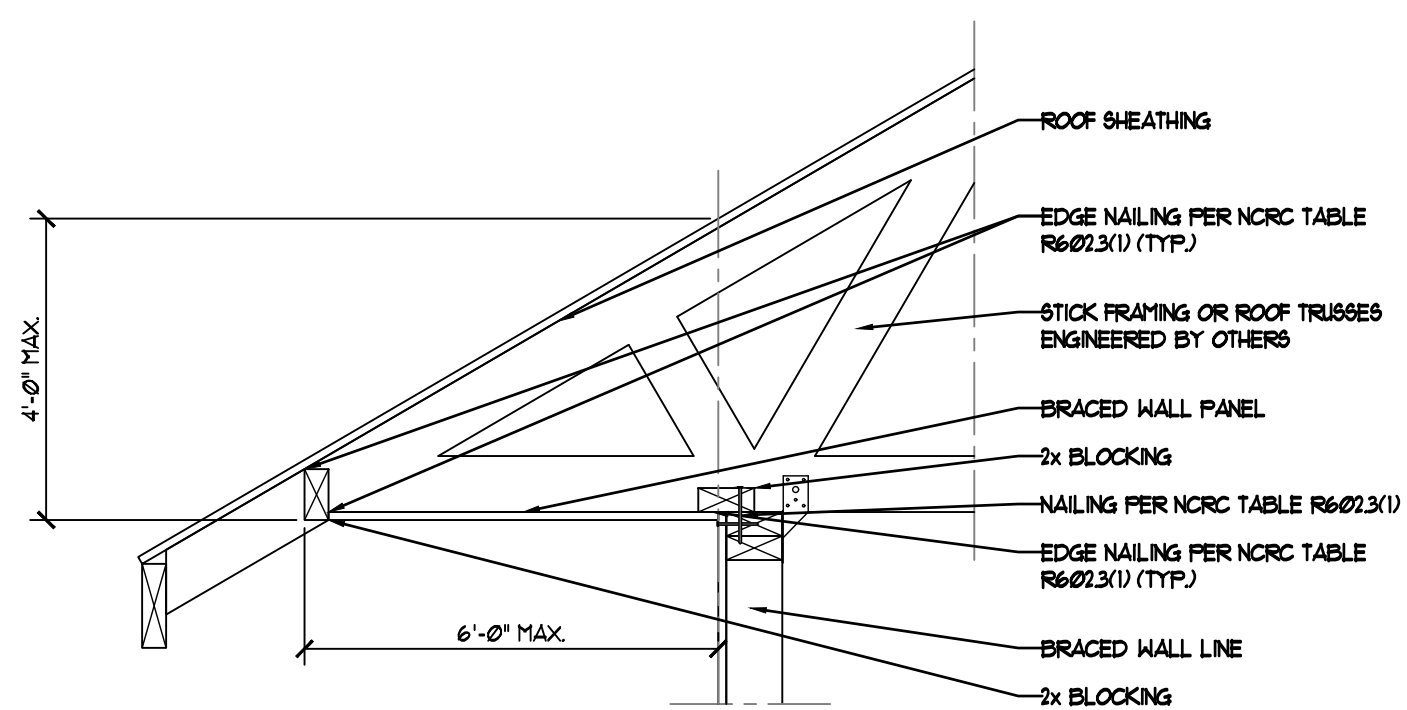
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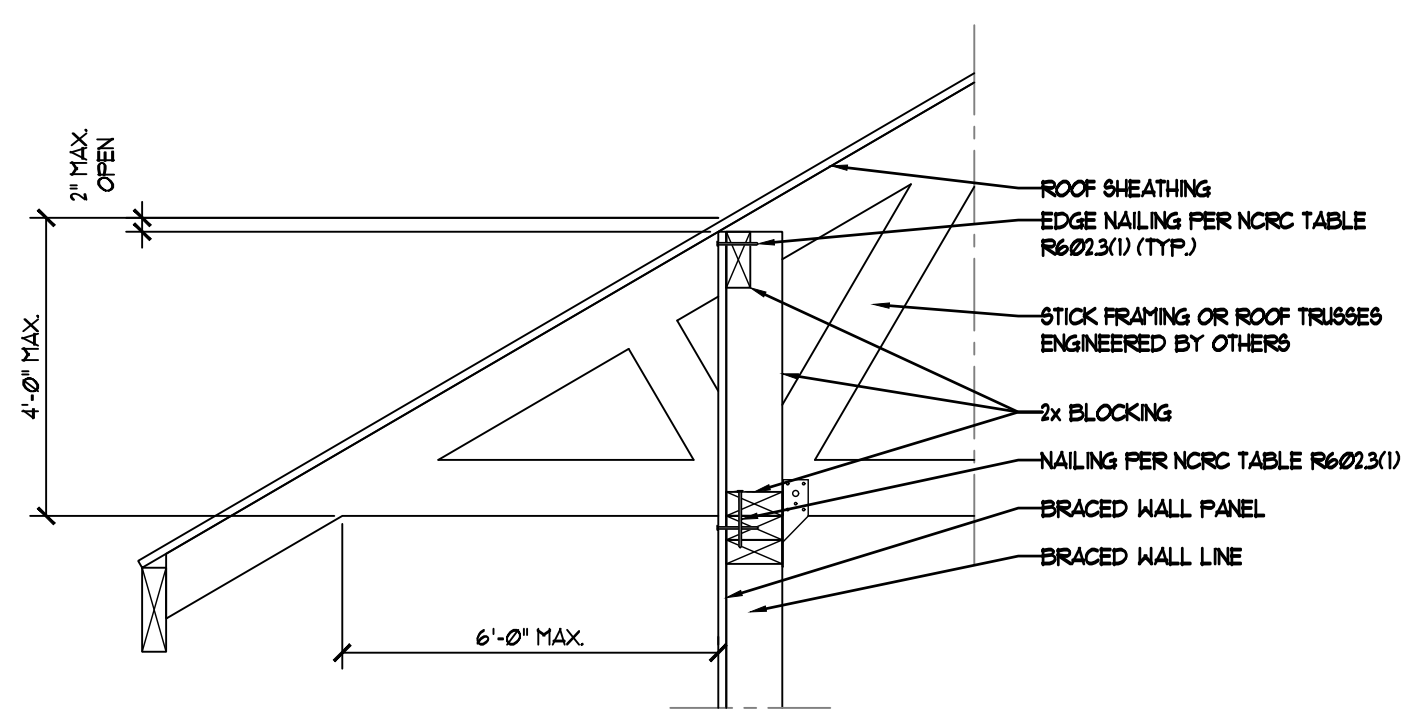
WALL BRACING DETAILS



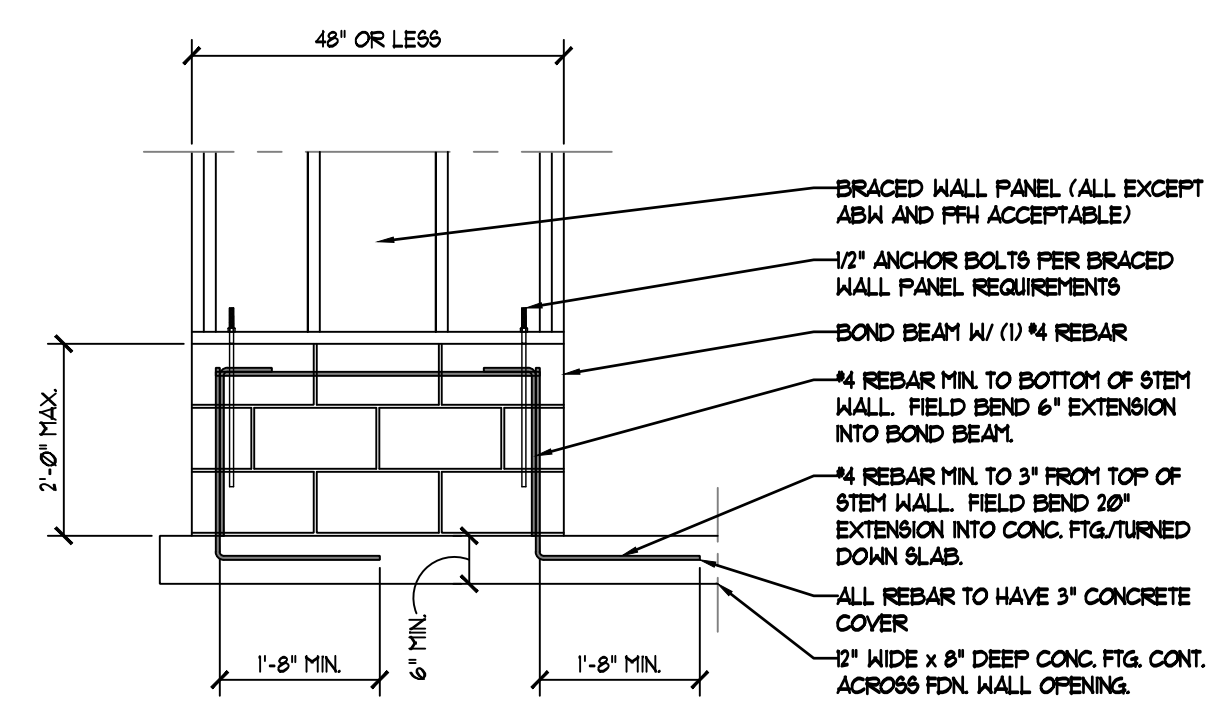
1 BRACED WALL PANEL CONNECTION TO PERPENDICULAR RAFTERS



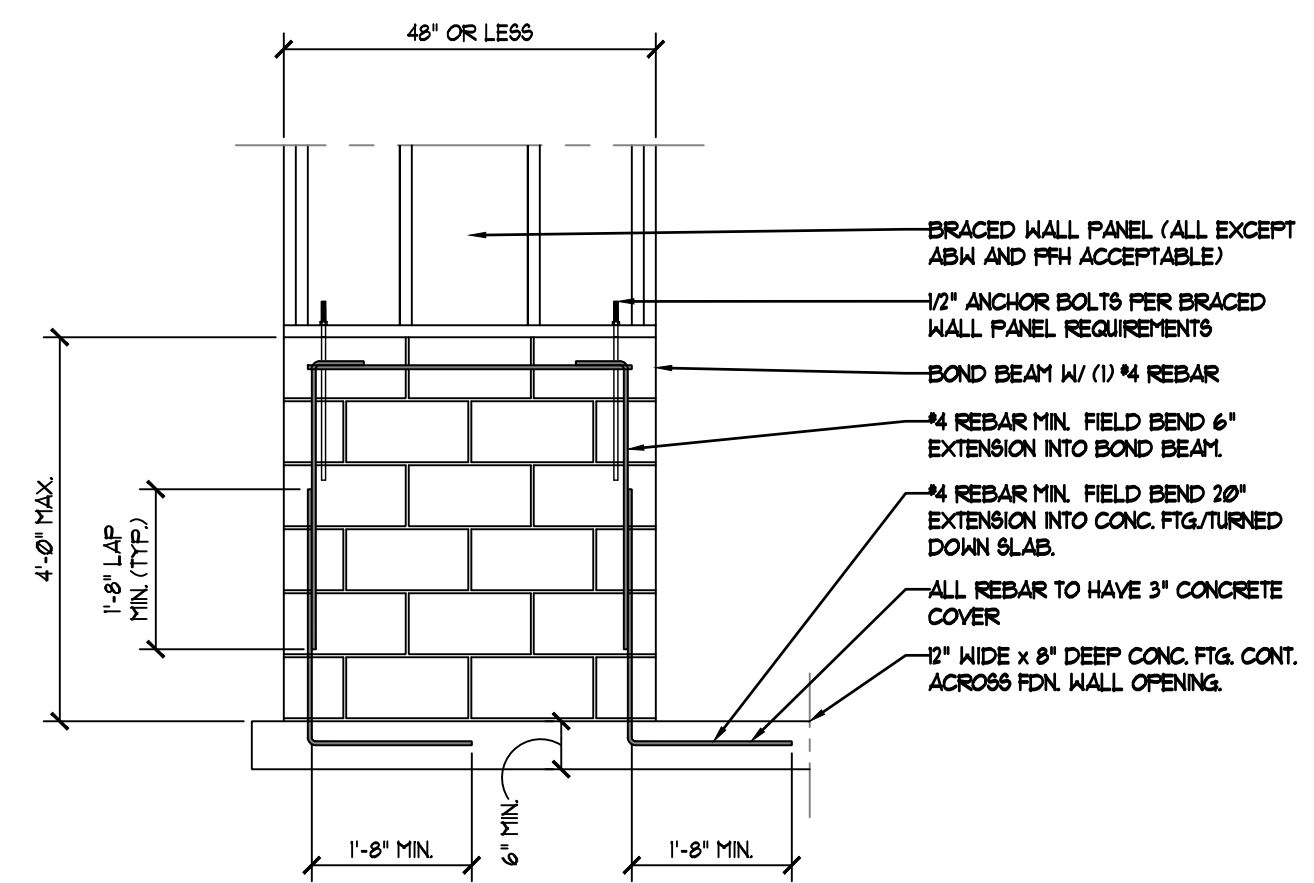
2 BRACED WALL PANEL CONNECTION OPTION TO PERPENDICULAR RAFTERS OR ROOF TRUSSES
 PROVIDE VENTING PER NCRC SECTION R806 (NOT SHOWN)



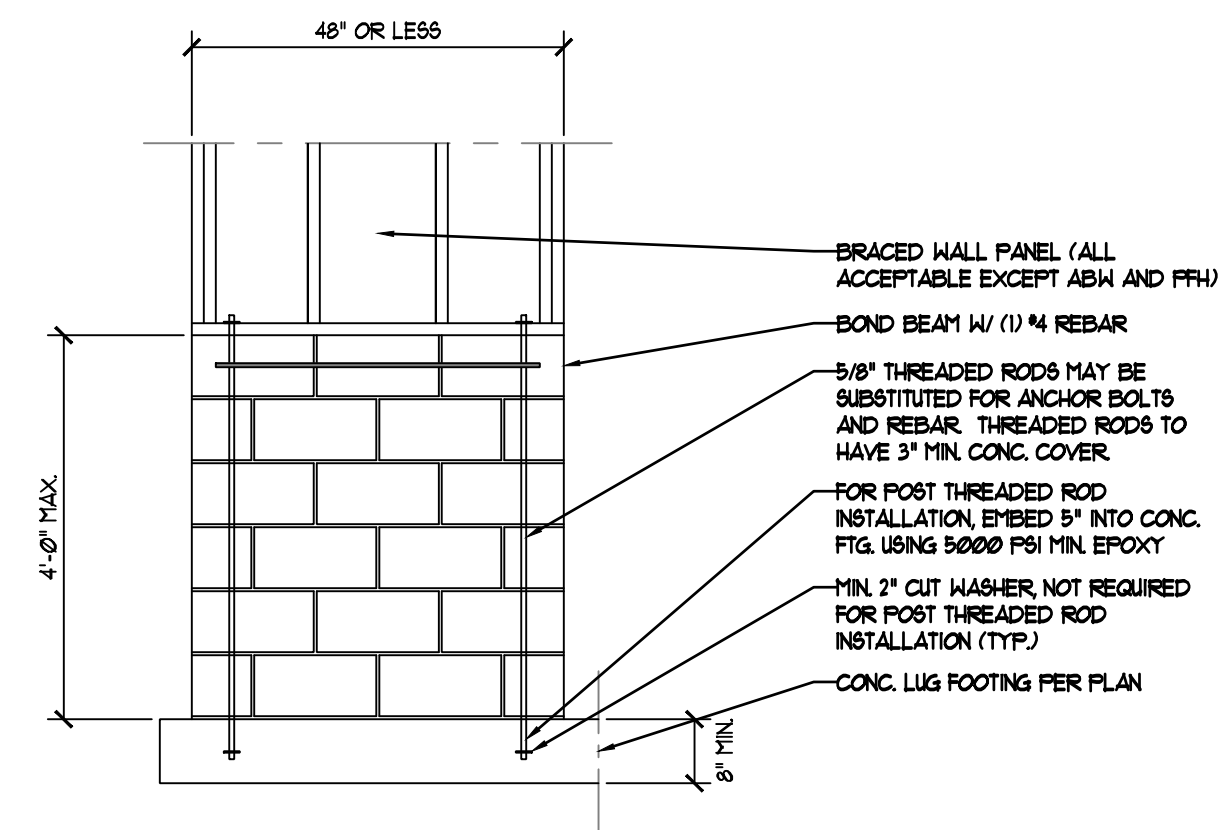
3 BRACED WALL PANEL CONNECTION OPTION TO PERPENDICULAR RAFTERS OR ROOF TRUSSES
 PROVIDE VENTING PER NCRC SECTION R806 (NOT SHOWN)



SHORT STEM WALL REINFORCEMENT



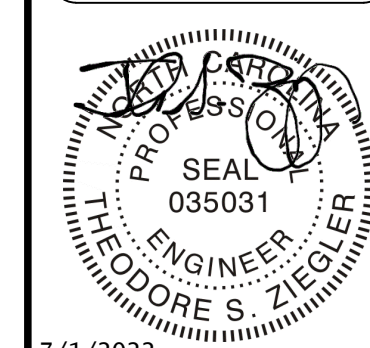
TALL STEM WALL REINFORCEMENT



OPT. STEM WALL REINFORCEMENT CONFIGURATION

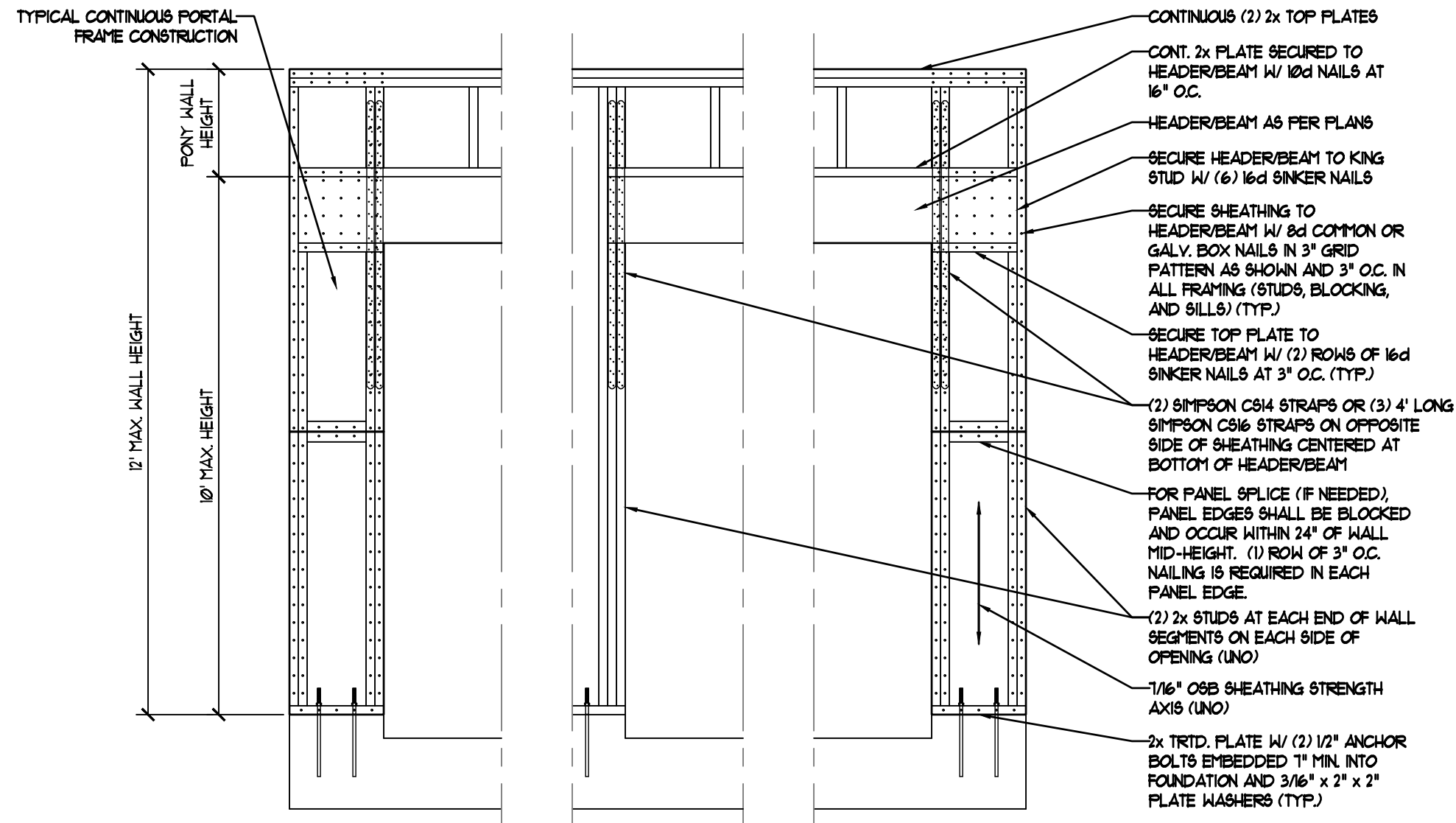
4 MASONRY STEM WALLS SUPPORTING BRACED WALL PANELS

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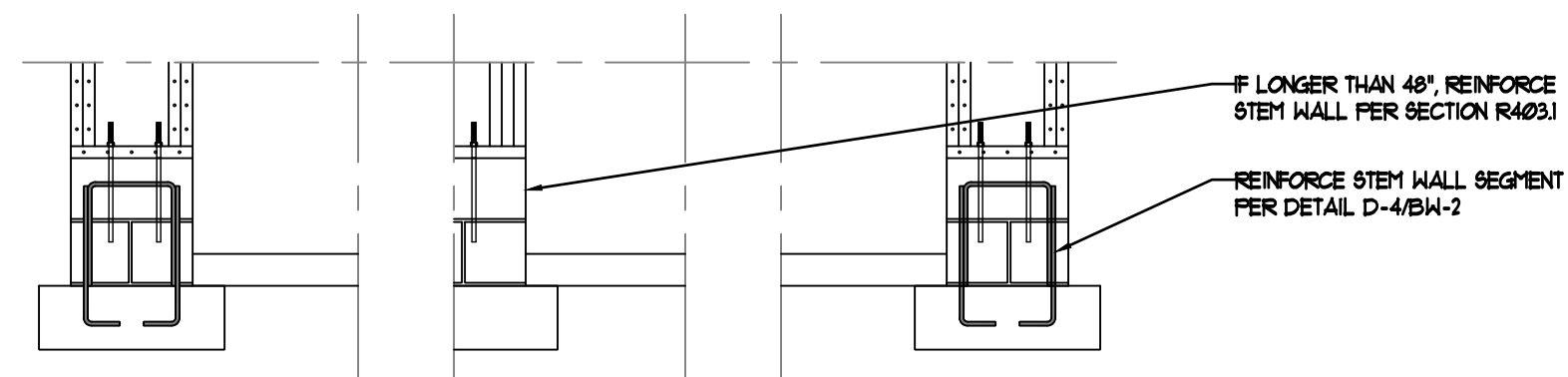


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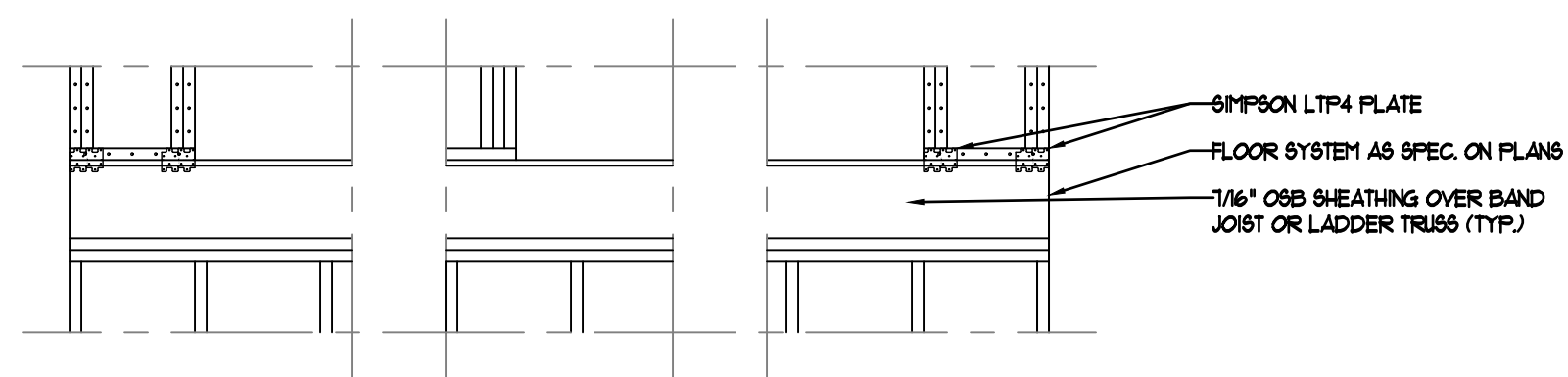
DETAILS
 BW-2
 SHEET X OF X



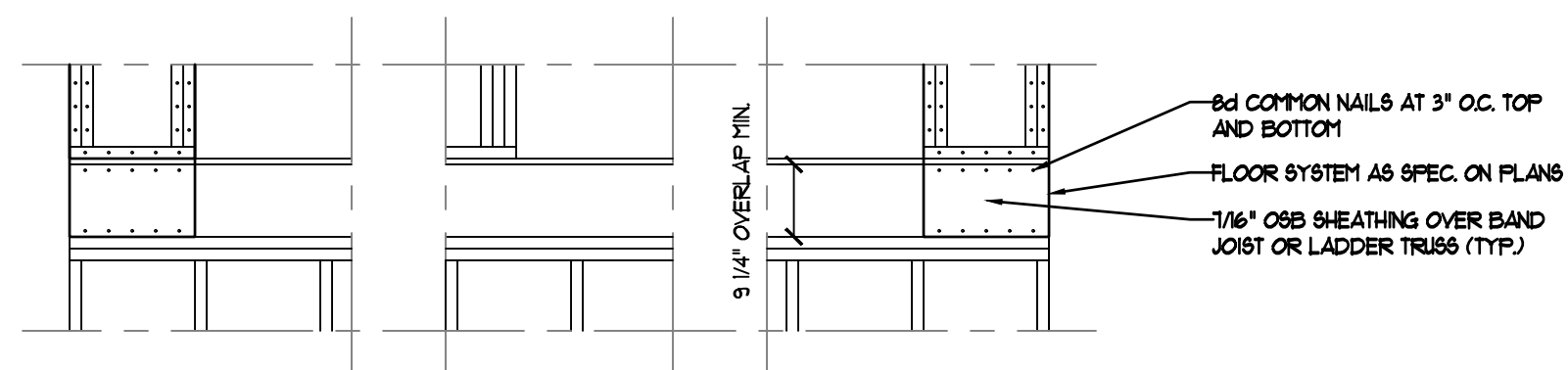
WITH MONOLITHIC SLAB FOUNDATION



ON STEM WALL OR CRAWL SPACE FOUNDATION



OVER RAISED WOOD FLOOR OR SECOND FLOOR - FRAMING ANCHOR OPTION



OVER RAISED WOOD FLOOR OR SECOND FLOOR - WOOD STRUCTURAL PANEL OPTION

1 METHOD CS-PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION

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WALL BRACING DETAILS



7/1/2022

DETAILS

BW-3
SHEET X OF X

DISCLAIMER - ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NORTH CAROLINA RESIDENTIAL CODE (NCR.C) 2018 EDITION, PLUS 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 SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE CONSTRUCTION WORK NOR WILL THE ENGINEER BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE CONSTRUCTION WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ENGINEER'S SEAL APPLIES ONLY TO STRUCTURAL COMPONENTS INCLUDING ROOF RAFTERS, HIPs, VALLEYS, RIDGES, FLOORS, WALLS, BEAMS, HEADERS, COLUMNS, CANTILEVERS, OFFSET LOAD BEARING WALLS, PIERS, GIRDER SYSTEM AND FOOTING. ENGINEER'S SEAL DOES NOT CERTIFY DIMENSIONAL ACCURACY OR ARCHITECTURAL LAYOUT INCLUDING ROOF. ENGINEER'S SEAL DOES NOT APPLY TO I-JOIST OR FLOOR/ROOF TRUSS LAYOUT DESIGN AND ACCURACY.

STRUCTURAL DESIGN - STRUCTURAL DESIGN AS PER NCR.C, INCLUDING CHAPTER 45 FOR CONSTRUCTION IN 130, 140, AND 150 MPH WIND ZONES. DESIGN LOADS ARE AS FOLLOWS:

Table with 2 columns: LIVE LOAD (PSF) and DEFLECTION (LL). Rows include ATTIC WITH LIMITED STORAGE, DECKs, EXTERIOR BALCONIES, FIRE ESCAPES, GUARDRAILS AND HANDRAILS, PASSENGER VEHICLE GARAGES, ROOMS OTHER THAN SLEEPING ROOMS, SLEEPING ROOMS, STAIRS, SNOW, WIND LOAD, and TABLE, WIND ZONE, MEAN ROOF HEIGHT AND EXPOSURE.

- STICK FRAMED SYSTEMS ARE DESIGNED WITH 10 PSF DEAD LOAD.
- I-JOIST SYSTEMS ARE DESIGNED WITH 12 PSF DEAD LOAD.
- FLOOR TRUSS SYSTEMS ARE DESIGNED WITH 15 PSF DEAD LOAD.

HIGH WIND ZONES - CONSTRUCTION IN 130, 140, AND 150 MPH WIND ZONES SHALL BE IN ACCORDANCE WITH CHAPTER 45 OF THE NCR.C. CONSTRUCTION IN THE COASTAL AND FLOOD PLAINS SHALL BE IN ACCORDANCE WITH CHAPTER 46 OF THE NCR.C.

CONCRETE FOOTING AND SLAB PREPARATION - 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 ASSURE UNIFORM SUPPORT OF THE SLAB, AND EXCEPT WHERE APPROVED, THE FILL DEPTHS SHALL NOT EXCEED 24" FOR CLEAN SAND OR GRAVEL AND 8" FOR EARTH. A 4" THICK BASE COURSE CONSISTING OF CLEAN GRADED SAND, GRAVEL, OR CRUSHED BLAST-FURNACE SLAG PASSING A 2" SIEVE SHALL BE PLACED ON THE PREPARED SUBGRADE WHEN THE SLAB IS BELOW GRADE. A BASE COURSE IS NOT REQUIRED WHEN A CONCRETE SLAB IS INSTALLED ON WELL-DRAINED OR SAND-GRAVEL MIXTURE SOILS CLASSIFIED AS GROUP I ACCORDING TO THE UNITED SOIL CLASSIFICATION SYSTEM IN ACCORDANCE WITH TABLE R402.5 OF THE NCR.C. PROPERLY DEWATER EXCAVATION PRIOR TO POURING CONCRETE WHEN BOTTOM OF CONCRETE SLAB IS AT OR BELOW WATER TABLE.

SOIL BEARING CAPACITY - THE ALLOWABLE MINIMUM BEARING CAPACITY FOR SOIL IS ASSUMED TO BE 2000 PSF. CONTACT GEOTECHNICAL ENGINEER IF BEARING CAPACITY IS NOT ACHIEVED.

CONCRETE - CONCRETE SHALL CONFORM TO SECTION R402.2 OF THE NCR.C. CONCRETE REINFORCING STEEL TO BE ASTM A615 GRADE 60. WELDED WIRE FABRIC TO BE ASTM A185. MAINTAIN A MINIMUM CONCRETE COVER AROUND REINFORCING STEEL OF 3" IN FOOTINGS AND 1 1/2" IN SLABS. FOR Poured CONCRETE WALLS, CONCRETE COVER FOR REINFORCING STEEL MEASURED FROM THE INSIDE FACE OF THE WALL SHALL NOT BE LESS THAN 3/4". CONCRETE COVER FOR REINFORCING STEEL MEASURED FROM THE OUTSIDE FACE OF THE WALL SHALL NOT BE LESS THAN 1 1/2" FOR #5 BARS OR SMALLER, AND NOT LESS THAN 2" FOR #6 BARS OR LARGER.

CONCRETE CONTROL JOINTS - IF APPLICABLE, CONTROL JOINTS ARE TO BE SAWED TO A DEPTH OF 25% OF SLAB THICKNESS WITHIN 4 TO 12 HOURS OF CONCRETE FINISHING. CONTROL JOINTS SHOULD BE SPACED NO MORE THAN 12'-0" APART AND SECTIONS SHOULD BE RECTANGULAR WITH SIDE RATIOS NO GREATER THAN 15 LONG TO 1 WIDE.

MASONRY - MASONRY UNITS TO CONFORM TO ACE 530/ASCE 5/TMS 402. MORTAR SHALL CONFORM TO ASTM C210. REINFORCING STEEL TO BE ASTM A615 GRADE 60.

REBAR LAP SPICES - REINFORCEMENT SHALL BE THE LONGEST LENGTHS PRACTICAL OR BE LAP SPICED 30" MINIMUM FOR #4 REBAR, 38" MINIMUM FOR #5 REBAR, 45" MINIMUM FOR #6 REBAR, OR THE MINIMUM REQUIRED LAP SPICE LENGTH OF THE SMALLER BAR AS PER FIGURE R602.5.4(1) OF THE NCR.C.

CONCRETE AND MASONRY FOUNDATION WALLS - ALL CONCRETE AND MASONRY FOUNDATION WALLS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R404 OF THE NCR.C OR IN ACCORDANCE WITH ACI 318, ACI 332, NCM TR68-A OR ACE 530/ASCE 5/TMS 402. MASONRY FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R404.1(1) THROUGH R404.1(4) OF THE NCR.C. CONCRETE FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R404.1(1) THROUGH R404.1(2) OF THE NCR.C. PRECAST CONCRETE FOUNDATION WALLS ARE TO CONFORM TO SECTION R404.5 OF THE NCR.C. STEP CONCRETE FOUNDATION WALLS TO 2 x 6 FRAMED WALLS AT 16" O.C. WHERE GRADE PERMITS (UNO).

PIERS - THE UNSUPPORTED HEIGHT OF MASONRY PIERS SHALL NOT EXCEED 10 TIMES THEIR LEAST DIMENSION. WHEN STRUCTURAL CLAY TILE HOLLOW CONCRETE MASONRY UNITS ARE USED FOR ISOLATED PIERS TO SUPPORT BEAMS AND GIRDERS, THE CELLULAR SPACES SHALL BE FILLED SOLIDLY WITH CONCRETE OR TYPE M OR S MORTAR, EXCEPT UNFILLED HOLLOW PIERS MAY BE USED IF THEIR UNSUPPORTED HEIGHT IS NOT MORE THAN FOUR TIMES THEIR LEAST DIMENSION. HOLLOW PIERS SHALL BE CAPPED WITH 4" OF SOLID MASONRY OR CONCRETE FOR ONE STORY AND 8" OF SOLID MASONRY OR CONCRETE FOR TWO STORY AND TWO AND ONE-HALF STORY OR SHALL HAVE CAVITIES OF THE TOP COURSE FILLED WITH CONCRETE OR GROUT OR OTHER APPROVED METHODS. SHADED OR NOTED PIERS ARE TO BE FILLED SOLID WITH CONCRETE OR GROUT OR OTHER APPROVED METHOD.

PIER/GIRDER LOCATION - THE CENTER OF EACH PIER SHALL BEAR IN THE MIDDLE THIRD OF ITS RESPECTIVE FOOTING. EACH GIRDER SHALL BEAR IN THE MIDDLE THIRD OF EACH PIER.

FOUNDATION ANCHORAGE - FOR 15, 120, AND 130 MPH WIND ZONES, THE WOOD SOLE PLATE AT EXTERIOR WALLS ON MONOLITHIC SLABS, WOOD SOLE PLATES OF BRACED WALL PANELS AT BUILDING INTERIORS ON MONOLITHIC SLAB, AND ALL WOOD SILL PLATES SHALL BE ANCHORED TO THE FOUNDATION WITH ANCHOR BOLTS SPACED A MAXIMUM OF 6'-0" O.C. (4'-0" O.C. FOR 130 MPH WIND ZONE) AND NOT MORE THAN 12" FROM THE CORNER. THERE SHALL BE A MINIMUM OF TWO BOLTS PER PLATE SECTION. BOLTS SHALL BE AT LEAST 1/2" IN DIAMETER AND SHALL EXTEND A MINIMUM OF 1" INTO MASONRY OR CONCRETE (5" INTO MASONRY FOR 130 MPH WIND ZONE). BOLTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE WIDTH OF THE PLATE. INTERIOR BEARING WALL SOLE PLATES ON MONOLITHIC SLAB FOUNDATIONS NOT PART OF A BRACED WALL PANEL SHALL BE POSITIVELY ANCHORED WITH APPROVED FASTENERS. FOR 140 MPH AND 150 MPH WIND ZONES, FOUNDATION ANCHORAGE IS TO COMPLY WITH SECTION 4504 OF THE NCR.C.

FRAMING LUMBER - ALL FRAMING LUMBER SHALL BE #2 GYP MINIMUM (Fb = 150 PSI, Fv = 115 PSI, E = 1400000 PSI) UNLESS NOTED OTHERWISE (UNO). ALL TREATED LUMBER SHALL BE #2 GYP MINIMUM (Fb = 150 PSI, Fv = 115 PSI, E = 1400000 PSI) UNLESS NOTED OTHERWISE (UNO).

ENGINEERED LUMBER - LAMINATED VENEER LUMBER (LVL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fb = 2600 PSI, Fv = 285 PSI, E = 1900000 PSI. LAMINATED STRAND LUMBER (LSL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fb = 2325 PSI, Fv = 525 PSI, E = 1550000 PSI. PARALLEL STRAND LUMBER (PSL) UP TO 1" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fc = 2500 PSI, E = 1800000 PSI. PARALLEL STRAND LUMBER (PSL) MORE THAN 1" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fc = 2900 PSI, E = 2000000 PSI. INSTALL ALL CONNECTIONS PER MANUFACTURER'S SPECIFICATIONS.

STEEL BEAMS - ALL STRUCTURAL STEEL SHALL BE ASTM A36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3 1/2" AND FULL FLANGE WIDTH (UNO). PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (1/2" DIAMETER x 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDED THE JOISTS ARE TOE NAILED TO THE 2x NAILER ON TOP OF THE STEEL BEAM, AND THE 2x NAILER IS SECURED TO THE BEAM FLANGE OR THE TOP OF THE STEEL BEAM IS INSTALLED WITHIN 1 1/2" OF THE TOP OF THE JOISTS.

PONT LOADS - SQUARES DENOTE POINT LOADS WHICH REQUIRE SOLID BLOCKING TO GIRDER OR FOUNDATION. SHADED SQUARES DENOTE POINT LOADS FROM ABOVE WHICH REQUIRE SOLID BLOCKING TO SUPPORTING MEMBER BELOW.

LOAD BEARING HEADERS - ALL LOAD BEARING HEADERS ARE TO CONFORM TO TABLES R602.1(1), R602.1(2) AND R602.1(3) OR BE (2) 2 x 10 WITH (1) JACK AND (1) KING STUD EACH END (UNO), WHICHEVER IS GREATER. ALL HEADERS ARE TO BE SECURED TO EACH JACK STUD WITH (4) 8d NAILS. ALL BEAMS ARE TO BE SUPPORTED WITH (2) STUDS AT EACH BEARING POINT (UNO).

BEAM BEARING - ALL BEAMS, HEADERS, OR GIRDER TRUSSES PARALLEL TO BEARING WALL ARE TO BEAR FULLY ON (1) JACK OR (2) STUDS MINIMUM OR THE NUMBER OF JACKS OR STUDS NOTED. ALL BEAMS OR GIRDER TRUSSES PERPENDICULAR TO WALL AND SUPPORTED BY (3) STUDS OR LESS ARE TO HAVE 1 1/2" MINIMUM BEARING (UNO). ALL BEAMS OR GIRDER TRUSSES PERPENDICULAR TO WALL AND SUPPORTED BY MORE THAN (3) STUDS OR OTHER NOTED COLUMN ARE TO BEAR FULLY ON SUPPORT COLUMN FOR ENTIRE WALL DEPTH (UNO). BEAM ENDS THAT BUTT INTO ONE ANOTHER ARE TO EACH BEAR EQUAL LENGTHS (UNO).

STEEL FLITCH PLATE BEAM - STEEL FLITCH PLATE BEAMS SHALL BE BOLTED TOGETHER USING 1/2" DIAMETER BOLTS (ASTM A307) WITH WASHERS PLACED AT THREADED END OF BOLT. BOLTS SHALL BE SPACED AT 24" CENTERS (MAXIMUM), AND STAGGERED AT TOP AND BOTTOM OF BEAM (2" EDGE DISTANCE), WITH (2) BOLTS LOCATED 6" FROM EACH END (UNO).

I-JOIST/TRUSS LAYOUTS - ALL I-JOIST OR TRUSS LAYOUTS ARE TO BE IN COMPLIANCE WITH THE OVERALL DESIGN SPECIFIED ON THE PLANS. ALL DEVIATIONS ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO INSTALLATION.

WALL BRACING - BRACED WALL PANELS SHALL BE CONSTRUCTED ACCORDING TO SECTION R602.10 OF THE INTERNATIONAL RESIDENTIAL CODE, 2018 EDITION. THE LENGTH OF BRACING IN EACH BRACED WALL LINE SHALL COMPLY WITH TABLE R602.10.3(1) OR R602.10.3(3) OF THE INTERNATIONAL RESIDENTIAL CODE, 2018 EDITION, WHICHEVER IS GREATER. REFER TO WALL BRACING DETAILS WHEN PROVIDED.

UPLIFT CONNECTIONS - SECURE ALL RAFTERS TO EXTERIOR WALL OR SUPPORTING BEAM WITH SIMPSON H25A HURRICANE TIE, EQUIVALENT CONNECTOR OR ALTERNATE CONNECTION CONFORMING TO THE NCR.C. SECURE EACH ROOF TRUSS TO EXTERIOR WALL OR SUPPORTING BEAM WITH UPLIFT CONNECTOR RATED AT OR ABOVE UPLIFT LOAD SHOWN ON TRUSS PROFILE. INSTALL ALL RAFTER/ROOF TRUSS-TO-WALL CONNECTORS DIRECTLY TO WALL FRAMING THROUGH EXTERIOR SHEATHING. WHERE CONNECTORS ARE INSTALLED TO INSIDE FACE OF TOP PLATES, INSTALL UPLIFT CONNECTOR SECURING RAFTER/ROOF TRUSS DIRECTLY TO WALL STUD BELOW OR INSTALL ADDITIONAL EQUIVALENT CONNECTOR SECURING THE TOP PLATE TO THE WALL STUD.

SECURE ALL BEAMS SUPPORTING ROOF TRUSSES OR RAFTERS TO THEIR RESPECTIVE BEARING SUPPORT MEMBERS WITH (1) SIMPSON CS16 STRAP PER CONNECTION LAPPING 14" MIN. ONTO EACH FRAMING MEMBER OR (2) SIMPSON MT92 TWIST STRAPS (TYP. UNLESS NOTED OTHERWISE).

BRACED WALL PANELS LOCATED AT EXTERIOR WALLS SUPPORTING RAFTERS OR ROOF TRUSSES, INCLUDING STORIES BELOW TOP STORY, SHALL BE CONSTRUCTED TO RESIST UPLIFT FORCES CONTINUOUS FROM ROOF TO FOUNDATION. EXTERIOR SHEATHING SHALL SECURE STORY ABOVE AND BELOW FLOOR BAND BY LAPPING ONTO OR ACROSS BAND. WHERE EXTERIOR SHEATHING IS INSTALLED WITH HORIZONTAL JOINT SPLICE AT THE TOP AND/OR BOTTOM OF THE FLOOR BANDS, SECURE EXTERIOR SHEATHING AND/OR BAND ACROSS SPLICE AT THE BRACED WALL PANELS WITH SIMPSON LTP4 FRAMING PLATES AT 24" O.C. MAX. OR SIMPSON CS16 COIL STRAPS AT 48" O.C. MAX. (TWO STRAPS MIN. PER BRACED WALL PANEL.) LAPPING THE WALL FRAMING 14" MIN.

WALLS PARALLEL TO JOISTS - PROVIDE DOUBLE JOIST UNDER ALL WALLS PARALLEL TO FLOOR JOISTS. DOUBLE JOISTS SEPARATED TO PERMIT THE INSTALLATION OF PIPING OR VENTS SHALL BE FULL DEPTH SOLID BLOCKED WITH LUMBER NOT LESS THAN 2" SPACED NOT MORE THAN 4'-0" O.C. PROVIDE SUPPORT UNDER ALL WALLS PARALLEL TO FLOOR TRUSSES OR I-JOISTS PER MANUFACTURER'S SPECIFICATIONS. INSTALL BLOCKING BETWEEN JOISTS OR TRUSSES FOR POINT LOAD SUPPORT FOR ALL POINT LOADS ALONG OFFSET LOAD LINES.

BRICK SUPPORT - FOR ALL HEADERS SUPPORTING BRICK VENEER THAT ARE LESS THAN 8'-0" IN LENGTH, REST A 6" x 4" x 5/16" STEEL ANGLE WITH 4" MINIMUM EMBEDMENT AT SIDES FOR BRICK SUPPORT. FOR ALL HEADERS 8'-0" AND GREATER IN LENGTH, BOLT A 6" x 4" x 5/16" STEEL ANGLE TO HEADER WITH 1/2" LAG SCREWS AT 12" O.C. STAGGERED FOR BRICK SUPPORT. FOR ALL BRICK SUPPORT AT ROOF LINES, BOLT A 6" x 4" x 5/16" STEEL ANGLE TO 2 x 10 BLOCKING INSTALLED BETWEEN WALL STUDS WITH 1/2" LAG SCREWS AT 12" O.C. STAGGERED AND IN ACCORDANCE WITH SECTION R103.8.2.2 OF THE 2018 NCR.C.

ROOF MEMBER SUPPORT - FOR STICK FRAMED ROOFS, CIRCLES DENOTE (3) 2 x 4 POSTS FOR ROOF MEMBER SUPPORT.

HIP SPICES - HIP SPICES ARE TO BE SPACED A MINIMUM OF 8'-0". FASTEN MEMBERS WITH THREE ROWS OF 12d NAILS AT 16" O.C.

DORMER FRAMING - FRAME DORMER WALLS ON TOP OF DOUBLE OR TRIPLE RAFTERS AS SHOWN (UNO). FRAME DORMER WALLS ON TOP OF 2 x 4 LADDER FRAMING AT 24" O.C. BETWEEN ADJACENT ROOF TRUSSES. STICK FRAME OVER-FRAMED ROOF SECTIONS WITH 2 x 8 RIDGES, 2 x 6 RAFTERS AT 16" O.C. AND FLAT 2 x 10 VALLEYS (UNO).

DECKS - ALL DECK FRAMING, LATERAL BRACING, GUARDRAIL CONSTRUCTION ATTACHMENT TO THE HOUSE STRUCTURE AND THE CONNECTIONS WITHIN THE DECK FRAMING ARE TO COMPLY WITH APPENDIX M OF THE NCR.C.

ENERGY EFFICIENCY - ENERGY EFFICIENCY COMPLIANCE TO BE IN ACCORDANCE WITH CHAPTER 11 OF THE NCR.C. THE BUILDING THERMAL ENVELOPE SHALL MEET THE REQUIREMENTS OF TABLE N102.12 BASED ON THE CLIMATE ZONE SPECIFIED.

WIND ZONE AND CLIMATE ZONE BY COUNTY

Table with 4 columns: COUNTY, WIND ZONE (MPH), CLIMATE ZONE, and COUNTY, WIND ZONE (MPH), CLIMATE ZONE. Lists counties like ALAMANCE, ALEXANDER, ALLEGHANY, ANSON, ASHE, AVERY, BEAUFORT, BERTIE, BLADEN, BRUNSWICK, BUNCOMBE, BURKE, CABARRUS, CALDWELL, CAMDEN, CARTERET, CASHWELL, CATAWBA, CHATHAM, CHEROKEE, CHOWAN, CLAY, CLEVELAND, COLUMBIUS, CRAVEN, CUMBERLAND, CURRITUCK, DARE, DAVIDSON, DAVIE, DUPLIN, DURHAM, EDGEcombe, FORSYTH, FRANKLIN, GASTON, GATES, GRAHAM, GRANVILLE, GREENE, GUILFORD, HALIFAX, HARNETT, HAYWOOD, HENDERSON, HERTFORD, HOKE, HYDE, IREDELL, JACKSON.

- SMR DESIGNATES "SPECIAL MOUNTAIN REGION"
-WHC DESIGNATES "WARM-HUMID COUNTY"
a. 120 MPH ZONE WEST OF HWY 11, 130 MPH ZONE EAST OF HWY 11.
b. 130 MPH ZONE WEST OF HWY 101, 130 MPH ZONE EAST OF HWY 101.
c. 140 MPH ZONE WEST OF HWY 11, 150 MPH ZONE EAST OF HWY 11, 150 MPH ZONE ON BALD HEAD ISLAND.
d. 120 MPH ZONE WEST OF I-95, 130 MPH ZONE EAST OF I-95.
e. 130 MPH ZONE WEST OF US ROUTE 264, 140 MPH ZONE EAST OF US ROUTE 264.
f. 130 MPH ZONE WEST OF US ROUTE 264, 140 MPH ZONE EAST OF US ROUTE 264.
g. 120 MPH ZONE WEST OF HWY 11, 130 MPH ZONE EAST OF HWY 11.
h. 140 MPH ZONE WEST OF HWY 11, 150 MPH ZONE EAST OF HWY 11.
i. 130 MPH ZONE WEST OF HWY 11, 140 MPH ZONE EAST OF HWY 11 TO THE INTRACOASTAL WATERWAY, 150 MPH ZONE EAST OF THE INTRACOASTAL WATERWAY.
j. 140 MPH ZONE IN THE TOWNSHIP OF TOPSAIL WEST OF THE INTRACOASTAL WATERWAY, 150 MPH ZONE EAST OF THE INTRACOASTAL WATERWAY, 150 MPH ZONE IN THE REMAINDER OF THE COUNTY.

WALL AND ROOF CLADDING DESIGN LOADS (POSITIVE AND NEGATIVE PSF)

Table with 4 columns: WIND ZONE (MPH), MEAN ROOF HEIGHT (FT), ROOF CLADDING (PSF) BY ROOF PITCH, and WALL CLADDING (PSF). Rows are categorized by wind zone (15, 120, 130, 140, 150) and roof pitch (0 < x < 25, 25 < x < 1, 1 < x < 12).



DATE: APRIL 04, 2022
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STANDARD STRUCTURAL NOTES

TABLE N102.12 INSULATION AND PENETRATION REQUIREMENTS BY COMPONENT

Table with 10 columns: CLIMATE ZONE, FENESTRATION U-FACTOR, SKYLIGHT U-FACTOR, GLAZED FENESTRATION SHGC, CEILING R-VALUE, WOOD FRAME WALL R-VALUE, MASS WALL R-VALUE, FLOOR R-VALUE, BASEMENT WALL R-VALUE, SLAB R-VALUE AND DEPTH, CRAWL SPACE WALL R-VALUE. Rows for climate zones 3, 4, and 5.

- a. R-VALUES ARE MINIMUMS. U-FACTORS AND SHGC ARE MAXIMUMS. WHEN INSULATION IS INSTALLED IN A CAVITY WHICH IS LESS THAN THE LABEL OR DESIGN THICKNESS OF THE INSULATION, THE INSTALLED R-VALUE OF THE INSULATION SHALL NOT BE LESS THAN THE R-VALUE SPECIFIED IN THE TABLE.
b. THE FENESTRATION U-FACTOR COLUMN EXCLUDES SKYLIGHTS. THE 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. R-5 SHALL BE ADDED TO THE REQUIRED SLAB EDGE R-VALUES FOR HEATED SLABS. 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. (SEE APPENDIX O)
e. DELETED
f. BASEMENT WALL INSULATION IS NOT REQUIRED IN WARM-HUMID LOCATIONS AS DEFINED BY FIGURE N101.1 AND TABLE N101.1.
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 CONTINUOUS INSULATION. IF STRUCTURAL SHEATHING COVERS 25% OR LESS OF THE EXTERIOR INSULATING SHEATHING IS NOT REQUIRED WHERE STRUCTURAL SHEATHING IS USED. IF STRUCTURAL SHEATHING COVERS MORE THAN 25% OF EXTERIOR STRUCTURAL SHEATHING SHALL BE SUPPLEMENTED WITH INSULATED SHEATHING OF AT LEAST R-2.
i. THE SECOND R-VALUE APPLIES WHEN MORE THAN HALF THE INSULATION IS ON THE INTERIOR OF THE MASS WALL.
j. IN ADDITION TO THE EXEMPTION IN SECTION N102.3.3, 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 N102.3.3, A MAXIMUM OF TWO GLAZED FENESTRATION PRODUCT ASSEMBLIES HAVING A SHGC NO GREATER THAN 0.10 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' 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 2x6 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.



7/1/2022
STANDARD STRUCTURAL NOTES
SN-1
SHEET --- OF ---