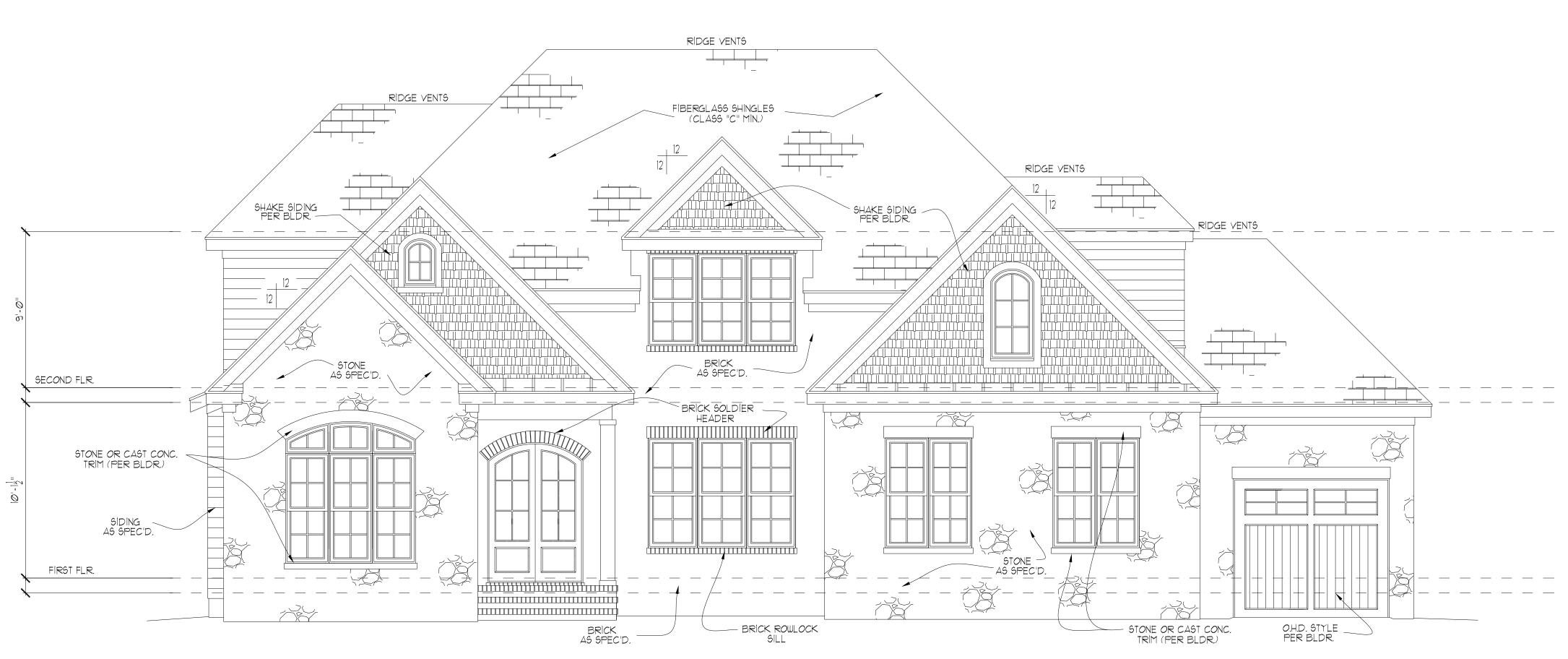


SCALE: -----1/4" = 1'-0"



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

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ATTIC VENTILATION

```
3892 = 12.97 sq. ft. REQD.
300
*() - BASE, / VENTS =
* ( ) =
          BASE, / VENTS =
* (144') - RIDGE VENT @ 9 sq.in./ft. = 9.0 SQ. FT.
                TOTAL' = 9.0 SQ. FT.
```

** PROVIDE CONTINUOUS SOFFIT VENT SUUROUND TO EQUAL OR EXCEED <u>6.48 SQ. FT.</u> *** (OPT.) PROVIDE THEMOSTATICALLY CONTROLLED POWER VENT TO EQUAL OR EXCEED 6.48 SQ. FT.

CODE INFORMATION

```
* ZONE: (CHECK ONE)
   ZONE 7
   ZONE 8
   ZONE
* GLAZÍNG U-FACTOR
* R-VALUES
   CEILING
                  R-38
   FLOOR
                  R-19
    BSMNT, WALL
    SLAB PERIMETER
   CRAWL SPACE WALL
* MEAN ROOF HEIGHT 21'-5"
* WALL AND ROOF CLADDING DESIGN VALUE:
(MEAN ROOF HGT. 30 ft. OR LESS)
   CRAWL SPACE WALL
   WALLS
                        +18.0, -24.1
    ROOF PITCH 0/12 TO 2.25/12 +10.0, -45.4
    ROOF PITCH 2.25/12 TO 7/12 +10.4,-34.8
    ROOF PITCH 7/12 TO 12/12 +16.5,-21.0
   EXPOSURE ADJUSTMENT
```

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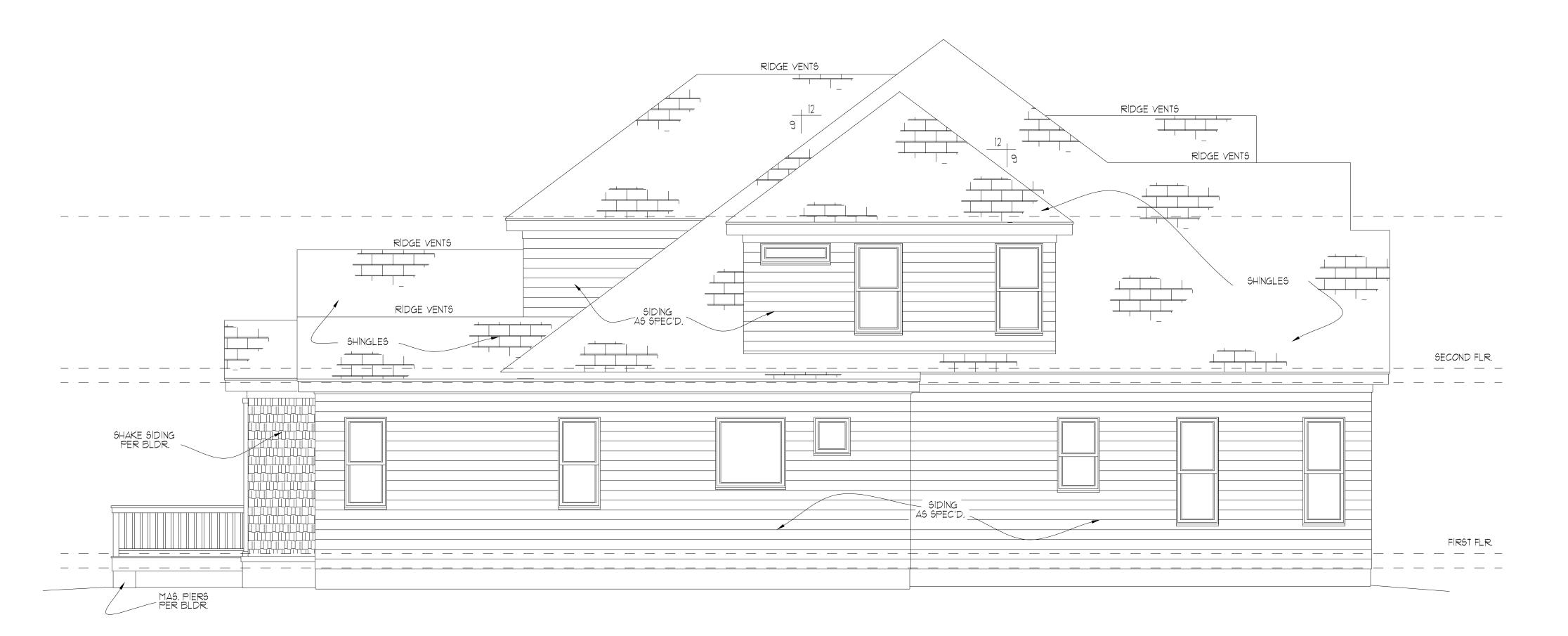
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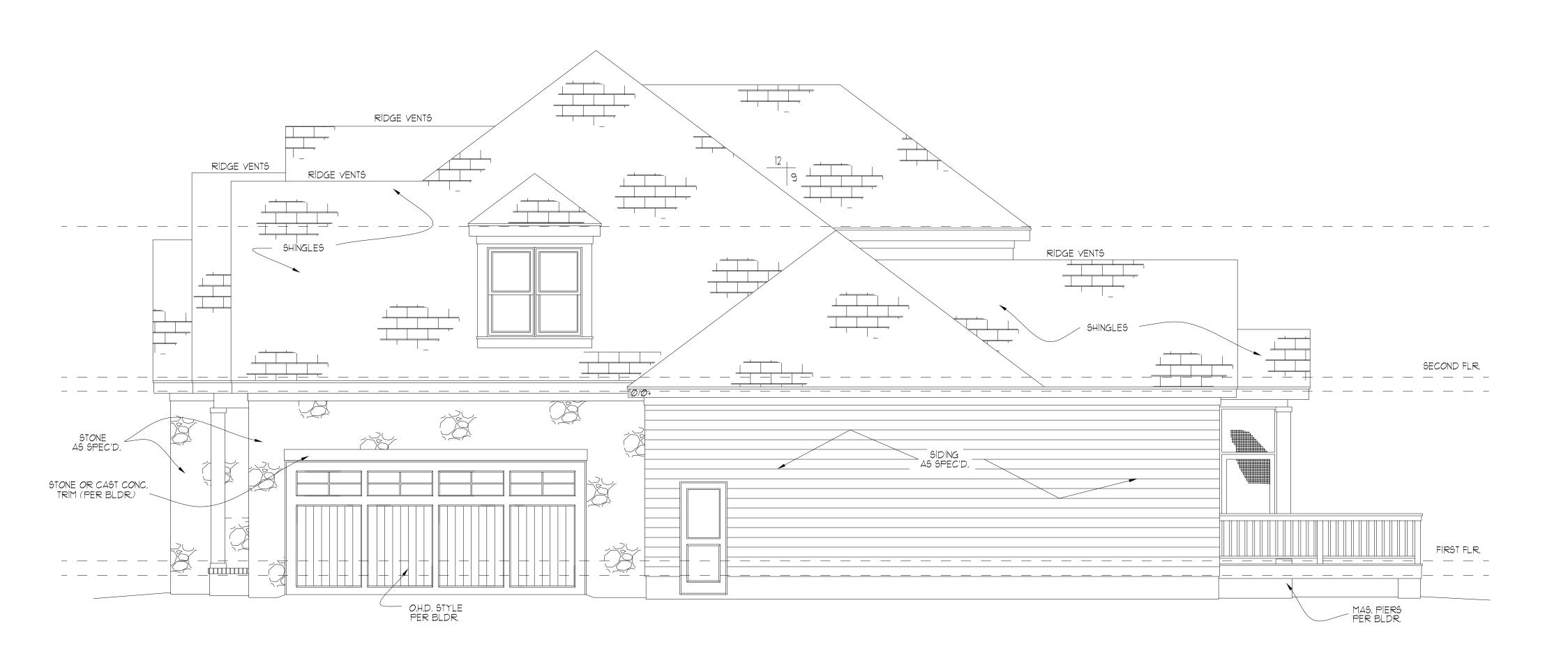
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SCALE: ------1/4" = 1'-0"



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

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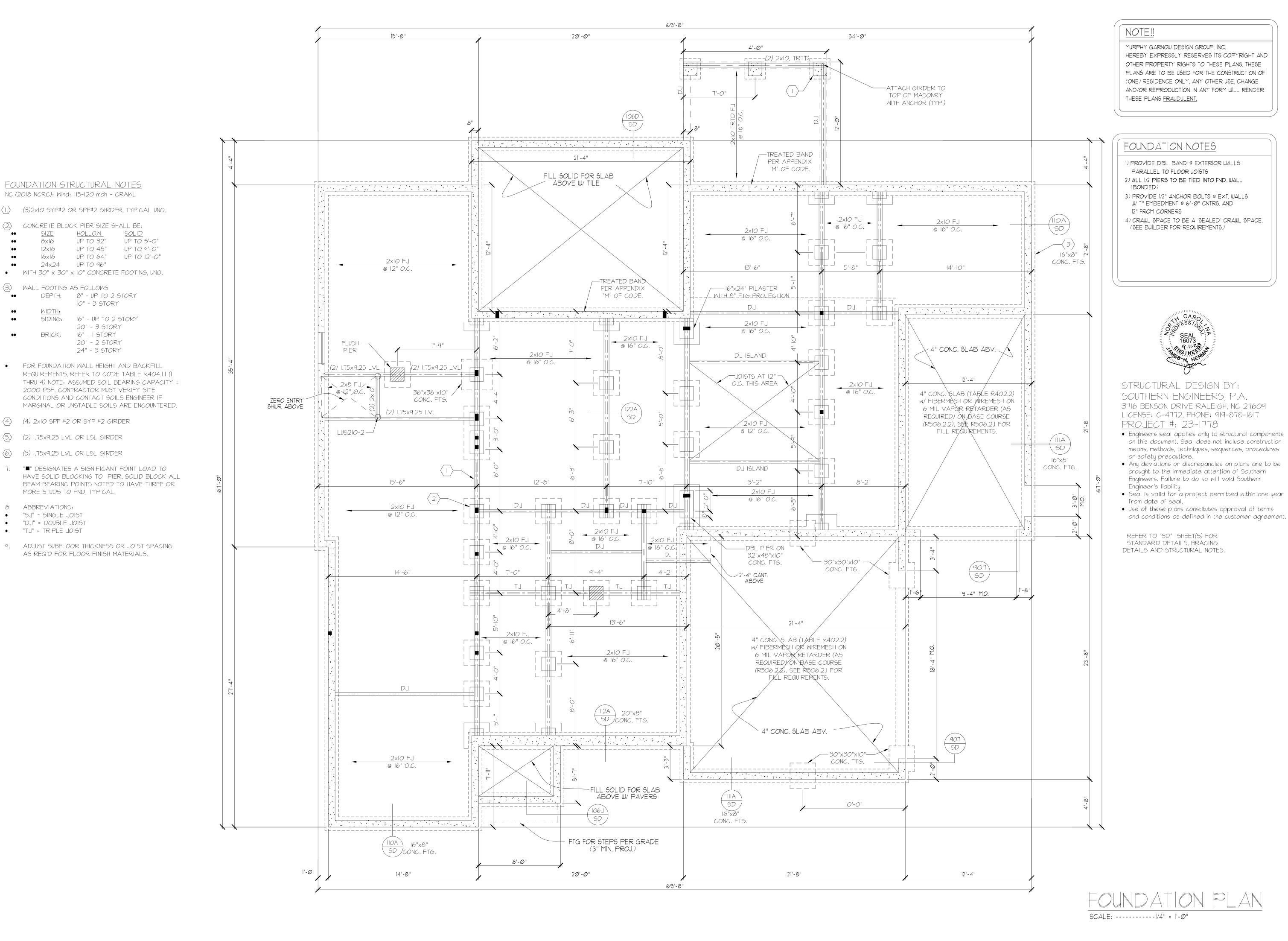
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THE REQUIREMENTS OF THE



FOUNDATION STRUCTURAL NOTES

CONCRETE BLOCK PIER SIZE SHALL BE:

UP TO 32"

UP TO 48"

UP TO 64"

UP TO 96"

DEPTH: 8" - UP TO 2 STORY

10" - 3 STORY

20" - 3 STORY

20" - 2 STORY

24" - 3 STORY

FOR FOUNDATION WALL HEIGHT AND BACKFILL

(4) 2x10 SPF #2 OR SYP #2 GIRDER

(5) (2) 1.75x9.25 LVL OR LSL GIRDER

(6) (3) 1.75×9.25 LVL OR LSL GIRDER

MORE STUDS TO FND, TYPICAL.

AS REQ'D FOR FLOOR FINISH MATERIALS.

8. ABBREVIATIONS:

• "SJ" = SINGLE JOIST

• "DJ" = DOUBLE JOIST • "TJ" = TRIPLE JOIST

2000 PSF. CONTRACTOR MUST VERIFY SITE

CONDITIONS AND CONTACT SOILS ENGINEER IF

16" - I STORY

16" - UP TO 2 STORY

WITH 30" x 30" x 10" CONCRETE FOOTING, UNO.

UP TO 5'-0" UP TO 9'-0"

UP TO 12'-0"

NC (2018 NCRC): Wind: 115-120 mph - CRAWL

WALL FOOTING AS FOLLOWS

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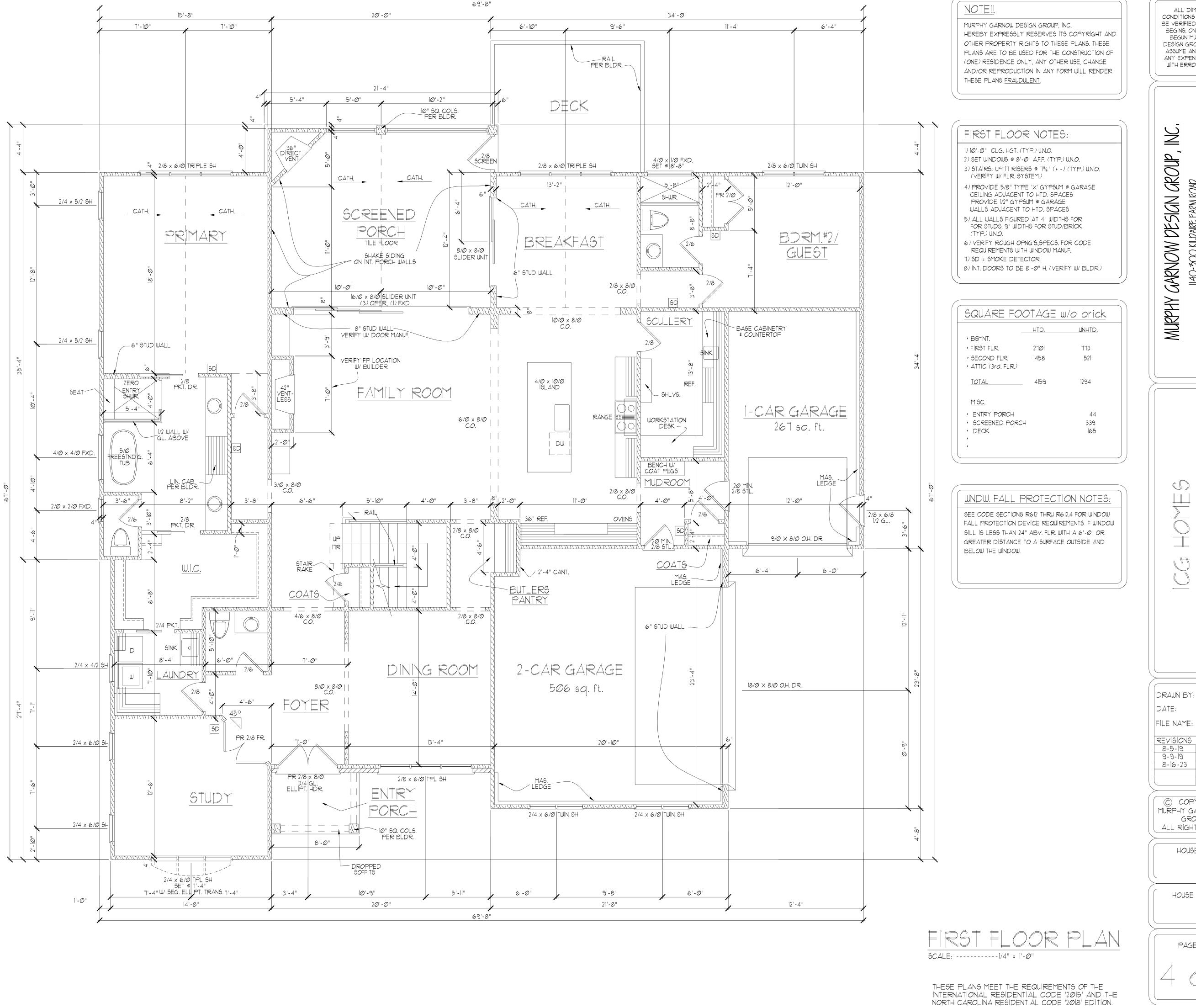
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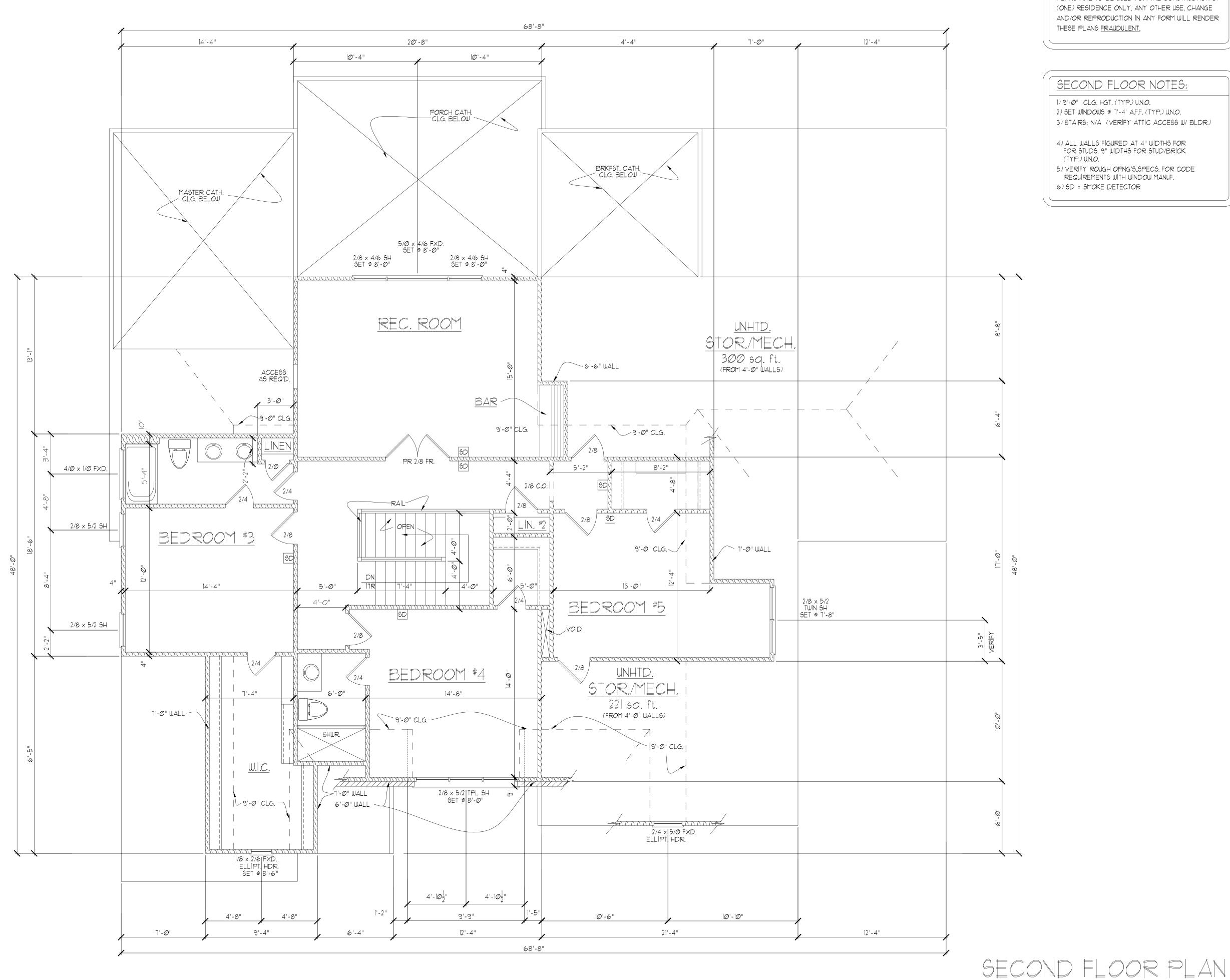
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SECOND FLOOR NOTES:

1) 9'-0" CLG. HGT. (TYP.) U.N.O. 2) SET WINDOWS @ 1'-4' A.F.F. (TYP.) U.N.O.

3) STAIRS: N/A (VERIFY ATTIC ACCESS W/ BLDR.)

4) ALL WALLS FIGURED AT 4" WIDTHS FOR FOR STUDS, 9" WIDTHS FOR STUD/BRICK (TYP.) U.N.O.

5) VERIFY ROUGH OPNG'S,SPECS, FOR CODE REQUIREMENTS WITH WINDOW MANUF, 6)SD = SMOKE DETECTOR

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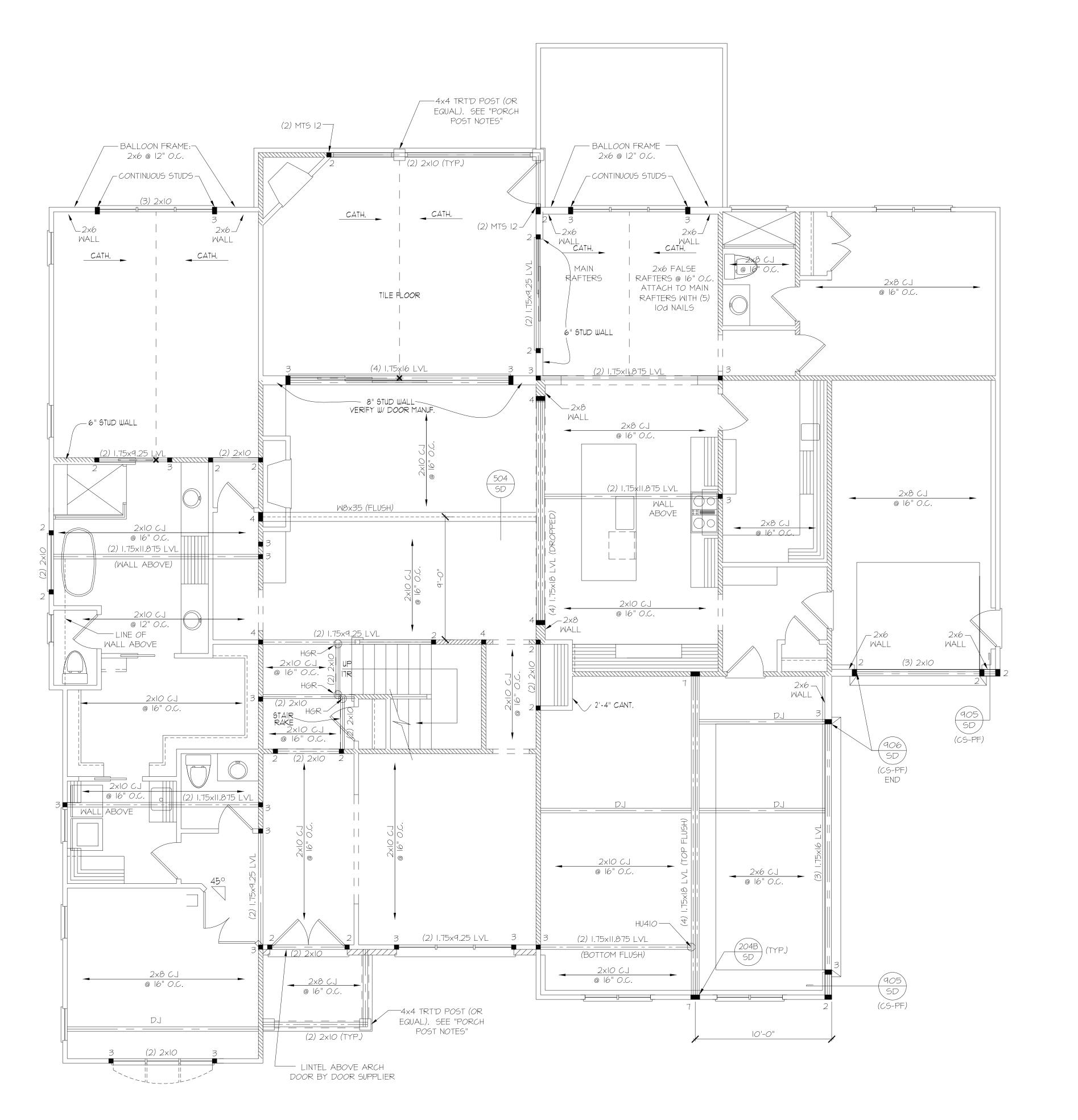
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STRUCTURAL DESIGN BY:
SOUTHERN ENGINEERS, P.A.
3716 BENSON DRIVE RALEIGH, NC 27609
LICENSE: C-4772, PHONE: 919-878-1617
PROJECT #: 23-1778

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 Any deviations or discrepancies on plans are to be
- Any deviations or discrepancies on plans are to be brought to the immediate attention of Southern Engineers. Failure to do so will void Southern Engineer's liability.
- Seal is valid for a project permitted within one year from date of seal.
- Use of these plans constitutes approval of terms and conditions as defined in the customer agreement.

REFER TO "SD" SHEET(S) FOR STANDARD DETAILS, BRACING

DETAILS AND STRUCTURAL NOTES.

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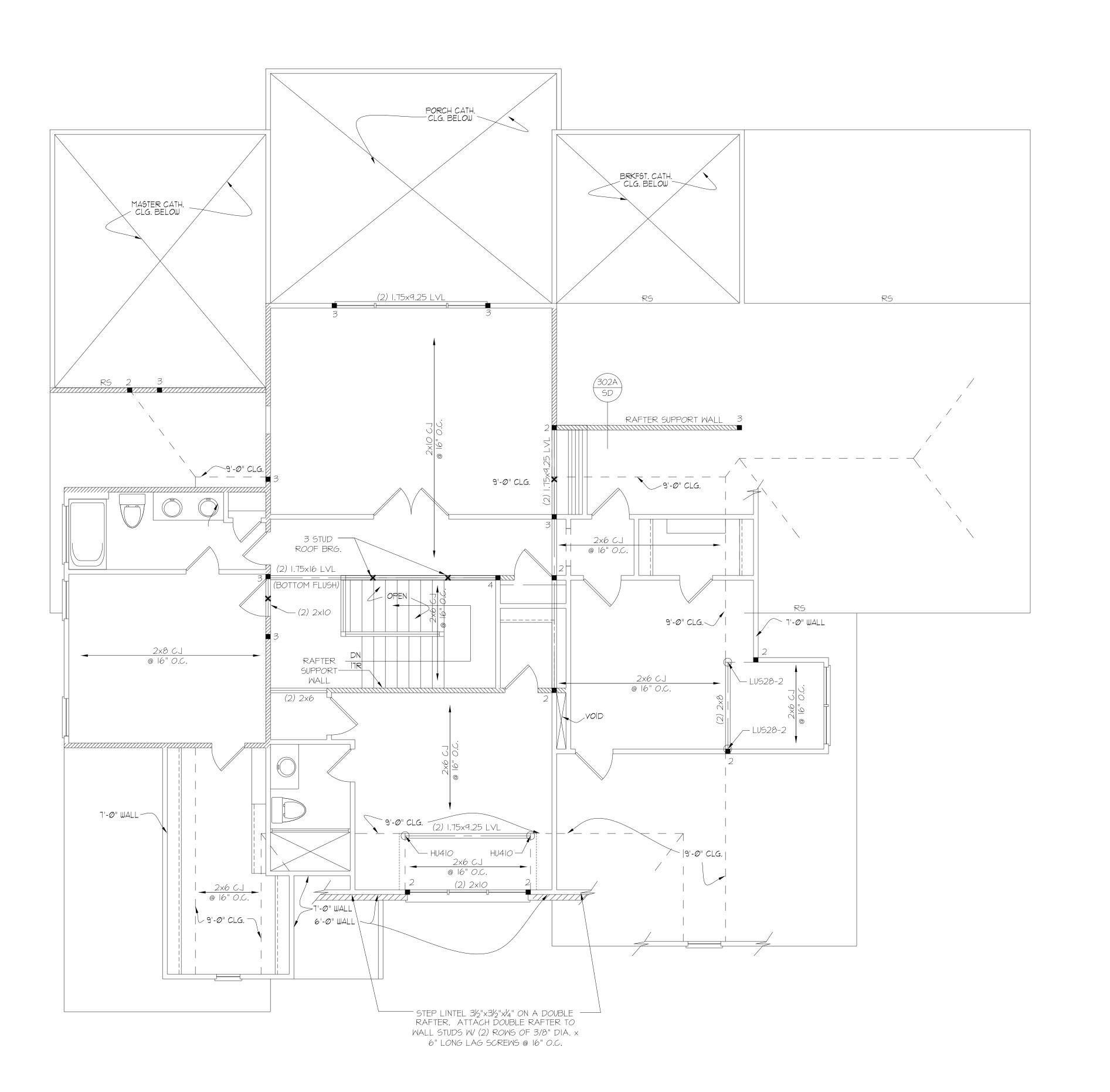
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REFER TO "SD" SHEET(S) FOR STANDARD DETAILS, BRACING DETAILS AND STRUCTURAL NOTES.

FIRST FLOOR CEILING STRUCTURAL PLAN
SCALE: ----- 1/4" = 1'-0"

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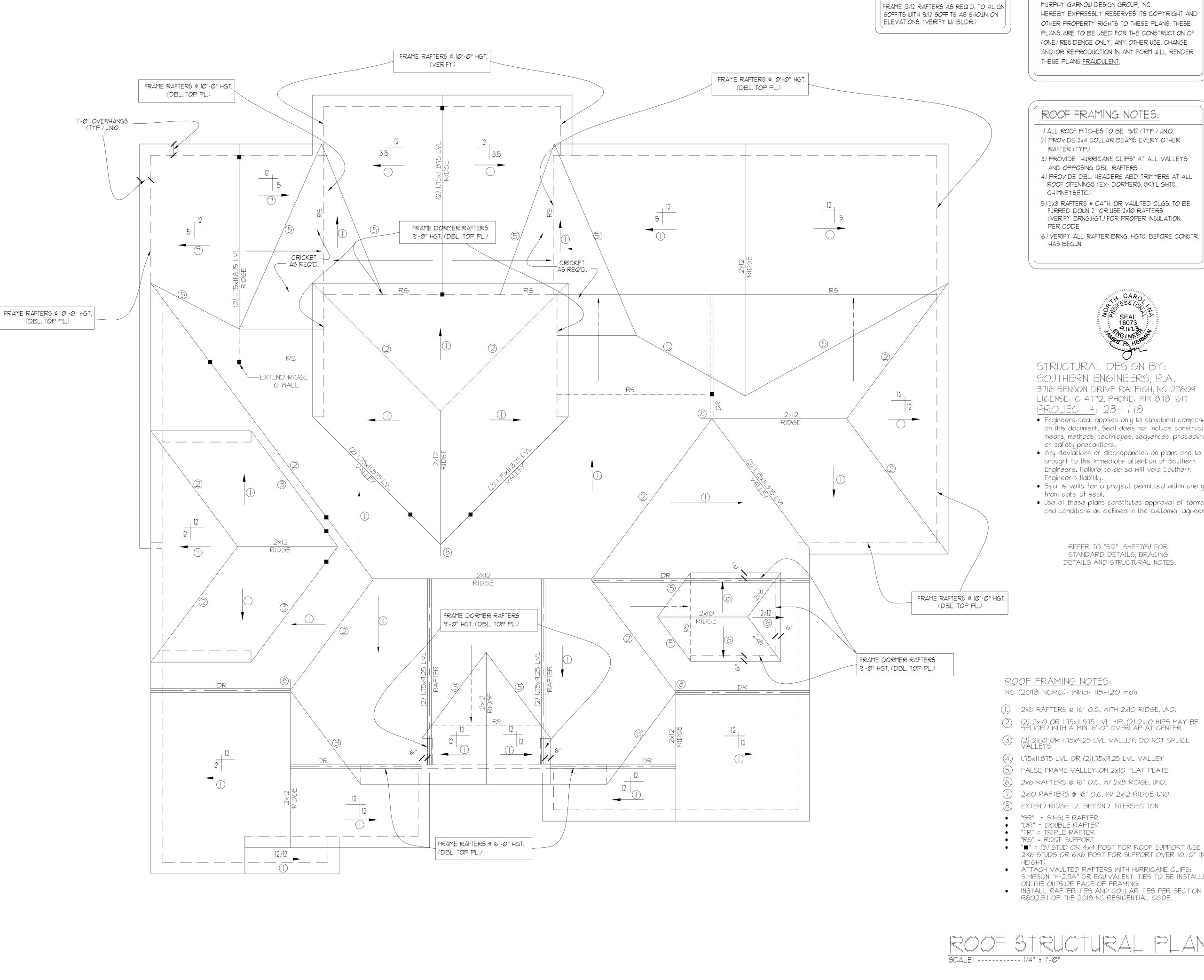
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SECOND FLOOR CEILING STRUCTURAL PLAN
SCALE: ------ 1/4" = 1'-0"

9'-0" CLG. HGT.



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MURPHY GARNOW DESIGN GROUP,

||40-300 K||LDA||RE FARM ROAD | CARY, NORTH CAROL ||NA 275|| |(9|9)48|-9||5 FAX; (9|9)48|-697

ROOF FRAMING NOTES:

- 1) ALL ROOF PITCHES TO BE 9/12 (TYP.) UN.O. 2) PROVIDE 2x4 COLLAR BEAMS EVERY OTHER RAFTER (TYP.)
- 3) PROVIDE "HURRICANE CLIPS" AT ALL VALLEYS AND OPPOSING DBL, RAFTERS
- 4) PROVIDE DBL. HEADERS ABD TRIMMERS AT ALL ROOF OPENINGS (EX: DORMERS, SKYLIGHTS, CHIMNEYS,ETC.)
- 5) 2x8 RAFTERS @ CATH, OR VAULTED CLGS, TO BE FURRED DOWN 2" OR USE 2x10 RAFTERS (VERIFY BRNG.HGT.) FOR PROPER INSULATION PER CODE
- 6) VERIFY ALL RAFTER BRNG. HGTS. BEFORE CONSTR.



STRUCTURAL DESIGN BY: SOUTHERN ENGINEERS, P.A. 3716 BENSON DRIVE RALEIGH, NC 27609 LICENSE: C-4772, PHONE: 919-878-1617 PROJECT #: 23-1778

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REFER TO "SD" SHEET(S) FOR STANDARD DETAILS, BRACING DETAILS AND STRUCTURAL NOTES.

- (I.) 2x8 RAFTERS @ 16" O.C. WITH 2x10 RIDGE, UNO.
- (2) 2xIO OR I.75xII.875 LVL HIP. (2) 2xIO HIPS MAY BE SPLICED WITH A MIN. 6'-O" OVERLAP AT CENTER
- 3) (2) 2xIO OR 1.75x9.25 LVL VALLEY. DO NOT SPLICE VALLEYS
- (4) 1.75x11.875 LVL OR (2)1.75x9.25 LVL VALLEY
- (5.) FALSE FRAME VALLEY ON 2XIO FLAT PLATE
- (6.) 2x6 RAFTERS @ 16" O.C. W/ 2x8 RIDGE, UNO.
- (8) EXTEND RIDGE 12" BEYOND INTERSECTION
- "DR" = DOUBLE RAFTER
- "TR" = TRIPLE RAFTER
- "RS" = ROOF SUPPORT
- 2X6 STUDS OR 6X6 POST FOR SUPPORT OVER 10'-0" IN
- ATTACH VAULTED RAFTERS WITH HURRICANE CLIPS: SIMPSON "H-2.5A" OR EQUIVALENT. TIES TO BE INSTALLED ON THE OUTSIDE FACE OF FRAMING.
- INSTALL RAFTER TIES AND COLLAR TIES PER SECTION

ROOF STRUCTURAL PLAN

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

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STRUCTURAL NOTES

NC (2018 NCRC): Wind: 115-120 mph

- I. ENGINEER'S SEAL APPLIES ONLY TO STRUCTURAL COMPONENTS INCLUDING ROOF RAFTERS, HIPS, VALLEYS, RIDGES, FLOORS, WALLS, BEAMS AND HEADERS, COLUMNS, CANTILEVERS, OFFSET LOAD BEARING WALLS, PIER & GIRDER SYSTEM, FOOTING, AND PILING SYSTEM. ENGINEER'S SEAL DOES NOT CERTIFY DIMENSIONAL ACCURACY OR ARCHITECTURAL LAYOUT INCLUDING ROOF SYSTEM. ALL REQUIREMENTS FOR PROFESSIONAL CERTIFICATION SHALL BE PROVIDED BY THE APPROPRIATE PROFESSIONAL. SOUTHERN ENGINEERS, P.A. CERTIFIES ONLY THE STRUCTURAL COMPONENTS AS SPECIFICALLY STATED.
- 2. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF RESIDENTIAL CODE, 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 FOR 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. "CONSTRUCTION REVIEW" SERVICES ARE NOT PART OF OUR CONTRACT. ALL MEMBERS SHALL BE FRAMED ANCHORED, TIED AND BRACED IN ACCORDANCE WITH GOOD CONSTRUCTION PRACTICE AND THE BUILDING CODE.
- 3. DESIGN LOADS (LISTED AS: LIVE LOAD, DEAD LOAD, DEFLECTION)
- ROOMS OTHER THAN SLEEPING ROOMS: (40 PSF, IO PSF, L/360)
- SLEEPING ROOMS: (30 PSF, I0 PSF, L/360)
- ATTIC WITH PERMANENT STAIR: (40 PSF, 10 PSF, L/360)
- ATTIC WITHOUT PERMANENT STAIR: (20 PSF, IO PSF, L/360)
- ATTIC WITHOUT STORAGE: (IO PSF, IO PSF, L/240)
- STAIRS: (40 PSF, 10 PSF, L/360)
- EXTERIOR BALCONIES: (60 PSF, I0 PSF, L/360)
 DECKS: (40 PSF, I0 PSF, L/360)
- GUARDRAILS AND HANDRAILS: (200 LBS)
- PASSSENGER VEHICLE GARAGES: (50 PSF, 10 PSF, L/360)
- FIRE ESCAPES: (40 PSF, IO PSF, L/360)
- SNOW: (20 PSF)
- 4. WALLS SHALL BE BRACED BY SHEATHING WALLS ON ALL STORIES WITH WOOD STRUCTURAL PANELS. SEE FRAMING NOTES FOR THICKNESS AND NAILING REQUIREMENTS.
- 5. SEE APPENDIX M (DCA6) FOR EXTERIOR DECK REQUIREMENTS INCLUDING ATTACHMENTS FOR LATERAL LOADS.
- 6. CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 3000 PSI AND A MAXIMUM SLUMP OF 5 INCHES UNLESS NOTED OTHERWISE (UNO). AIR ENTRAINED PER TABLE 402.2. ALL CONCRETE SHALL BE PROPORTIONED, MIXED, HANDLED, SAMPLED, TESTED, AND PLACED IN ACCORDANCE WITH ACI STANDARDS. ALL SAMPLES FOR PUMPING SHALL BE TAKEN FROM THE EXIT END OF THE PUMP. CONTROL JOINTS IN SLABS SHALL BE SPACED ON A GRID OF +-30 TIMES THE DEPTH (D). CONTROL JOINTS SHALL BE SAWCUT TO A DEPTH OF I/D. (I.E. 4" CONCRETE SLABS SHALL HAVE 1/4" DEEP CONTROL JOINTS SAWCUT IN SLAB ON A +-10'-0" x +-10'-0" GRID).
- 7. ALLOWABLE SOIL BEARING PRESSURE ASSUMED TO BE 2000 PSF. THE CONTRACTOR MUST CONTACT A GEOTECHNICAL ENGINEER AND THE STRUCTUAL ENGINEER IF UNSATISFACTORY SUBSURFACE CONDITIONS ARE ENCOUNTERED. THE SURFACE AREA ADJACENT TO THE FOUNDATION WALL SHALL BE PROVIDED WITH ADEQUATE DRAINAGE, AND SHALL BE GRADED SO AS TO DRAINSURFACE WATER AWAY FROM FOUNDATION WALLS.
- 8. ALL FRAMING LUMBER SHALL BE SPF #2 (Fb = 875 PSI) UNLESS NOTED OTHERWISE (UNO). ALL TREATED LUMBER SHALL BE SYP # 2. PLATE MATERIAL MAY BE SPF # 3 OR SYP #3 (Fc(perp) = 425 PSI MIN).
- 9. L.V.L. SHALL BE LAMINATED VENEER LUMBER: Fb=2600 PSI, Fv=285 PSI, E=1.9xI0 PSI.
 9.I. P.S.L. SHALL BE PARALLEL STRAND LUMBER: Fb=2900 PSI, Fv=290 PSI, E=2.0xI0 PSI.
 9.2. L.S.L. SHALL BE LAMINATED STRAND LUMBER: Fb=2250 PSI, Fv=400 PSI, E=1.55xI0 PSI. INSTALL ALL CONNECTIONS PER MANUFACTURERS INSTRUCTIONS.
- IO. ALL ROOF TRUSS AND I-JOIST LAYOUTS SHALL BE PREPARED IN ACCORDANCE WITH THE SEALED STRUCTURAL DRAWINGS. TRUSSES AND I-JOISTS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURE'S SPECIFICATIONS. ANY CHANGE IN TRUSS OR I-JOIST LAYOUT SHALL BE COORDINATED WITH SOUTHERN ENGINEERS.
- II. ALL STRUCTURAL STEEL SHALL BE ASTM A-36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3 I/2" INCHES AND FULL FLANGE WIDTH. PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (I/2" DIAMETER x 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDING THE JOIST ARE TOE NAILED TO THE SOLE PLATE, AND SOLE PLATE IS NAILED OR BOLTED TO THE BEAM FLANGE @ 48" O.C. ALL STEEL TUBING SHALL BE ASTM A500. LAP ALL REBAR SPLICES 30 BAR DIAMETERS.
- 12. REBAR SHALL BE DEFORMED STEEL, ASTM615, GRADE 60.
- 13. FLITCH BEAMS SHALL BE BOLTED TOGETHER USING (2) ROWS OF 1/2" DIAMETER BOLTS (ASTM A325) WITH WASHERS PLACED UNDER THE THREADED END OF BOLT. BOLTS SHALL BE SPACED AT 24" O.C. (MAX), AND STAGGERED AT THE TOP AND BOTTOM OF BEAM (2" EDGE DISTANCE), WITH 2 BOLTS LOCATED AT 6" FROM EACH END.
- 14. BRICK LINTELS (WHEN REQUIRED) SHALL BE 3 1/2"x3 1/2"x1/4" STEEL ANGLE FOR UP TO 6'-O" SPAN AND 6"x4"x5/16" STEEL ANGLE WITH 6" LEG VERTICAL FOR SPANS UP TO 9'-O". SEE PLANS FOR SPANS OVER 9'-O". SEE ALSO SECTION R703.7.3 LINTELS.

LVL CONNECTION LEGEND

• (3) ROWS OF IOD NAILS @ 12" O.C. OR

• (2) ROWS OF SIMPSON SDW22338 (OR EQUAL)

SCREWS @ 16" O.C. FOR BEAMS UP TO 18"

(3) ROWS OF SIMPSON SDW22338 (OR EQUAL)

• (2) ROWS OF SIMPSON SDW22500 (OR EQUAL)

SCREWS @ 16" O.C. FOR BEAMS UP TO 18"

• (3) ROWS OF SIMPSON SDW22500 (OR EQUAL

• (2) ROWS OF SIMPSON SDW22634 (OR EQUAL)

SCREWS @ 16" O.C. FOR BEAMS UP TO 18"

(3) ROWS OF SIMPSON SDW22634 (OR EQUAL

SCREWS @ 16" O.C. FOR BEAMS GREATER THAN 18".

• (3) ROWS OF IOD NAILS @ 8" O.C. ON EACH SIDE OR

SCREWS @ 16" O.C. FOR BEAMS GREATER THAN 18".

SCREWS @ 16" O.C. FOR BEAMS GREATER THAN 18".

I. (2) PLY 1.75" LVL BEAMS:

2. *(*3*)* PLY 1.75" LVL BEAMS:

3. (4) PLY 1.75" LVL BEAMS:

HEADER/BEAM & COLUMN NOTES

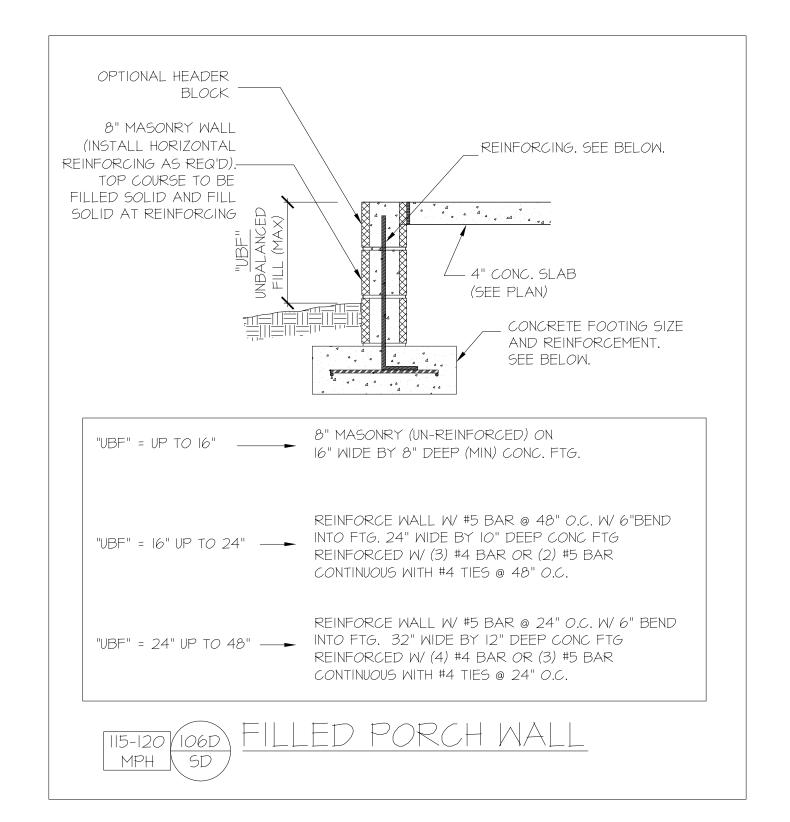
- I. ALL EXTERIOR AND LOAD BEARING HEADERS SHALL BE MIN. (2)2×10 (4" WALL) OR (3)2×10 (6" WALL) WITH (I) SUPPORT STUD, UNLESS NOTED OTHERWISE.
- 2. THE NUMBER SHOWN AT BEAM AND HEADER SUPPORTS INDICATES THE NUMBER OF SUPPORT STUDS REQUIRED IN STUD POCKET OR COLUMN. THE NUMBER OF KING STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS SHALL BE ACCORDING TO ITEM "d" IN TABLE R602.3(5) OR AS BELOW PER NCDOI COMMENTARY "KING STUDS AT WALL OPENINGS" REVISED 1-9-2020:
- •• UP TO 3' SPAN: (1) KING STUD
 •• OVER 3' UP TO 6' SPAN: (2) KING S
- OVER 3' UP TO 6' SPAN: (2) KING STUDS
 OVER 6' UP TO 9' SPAN: (3) KING STUDS
- OVER 6' UP TO 9' SPAN: (3) KING STUDS
- OVER 9' UP TO 12' SPAN: (4) KING STUDS
 OVER 12' UP TO 15' SPAN: (5) KING STUDS

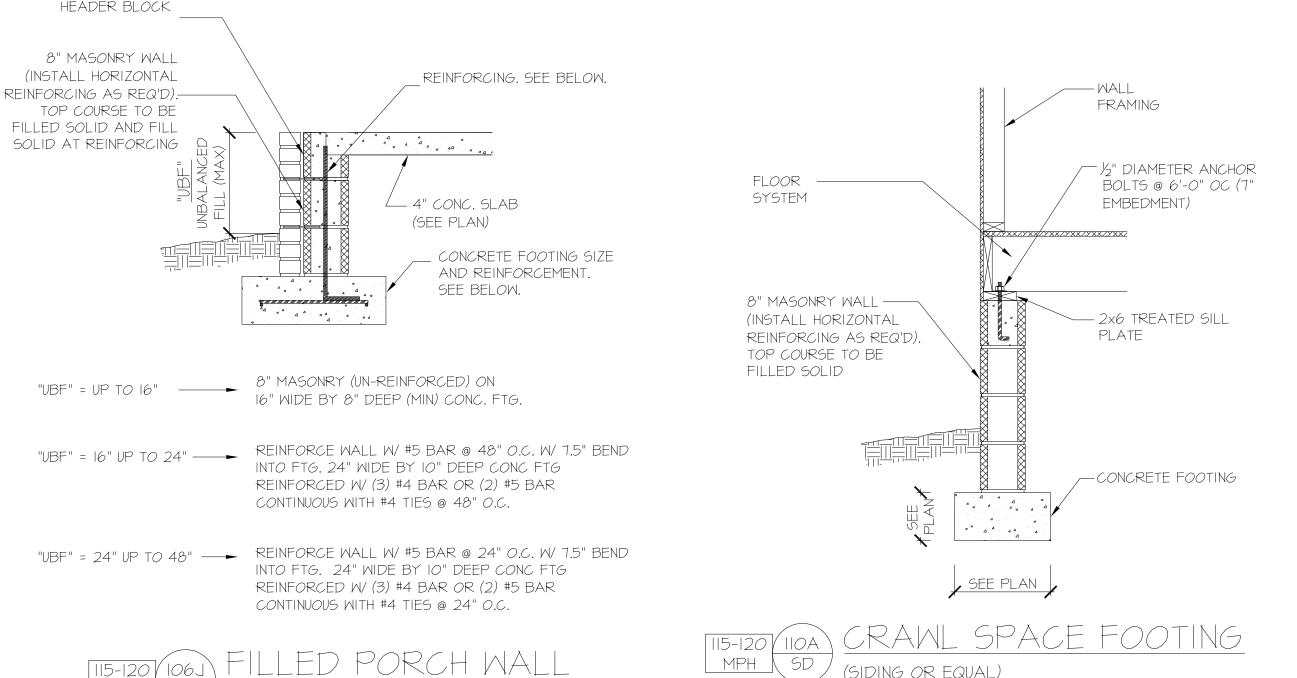
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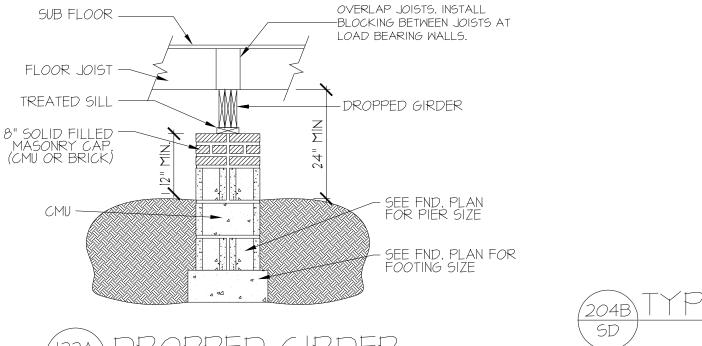
- FRAMING NOTES

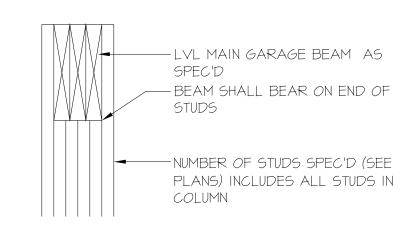
 NC (2018 NCRC): Wind: 115-120 mph
- I. BRACING METHOD AND TYPE: CONTINUOUSLY SHEATHED WSP: CS-WSP. NOTE THAT THE WALL BRACING AMOUNT PROVIDED ON THE PLANS (DETAILS AND SPECIFICATIONS) IS GREATER THAN THE AMOUNT OF WALL BRACING REQUIRED BY SECTION R602.10 OF THE CODE. SEE NOTES BELOW FOR DETAILS AND SPECIFICATIONS FOR WALL BRACING AND WALL FRAMING.
- 2. EXTERIOR WALL SHEATHING: WALLS SHALL BE BRACED BY SHEATHING WALLS ON ALL STORIES WITH WOOD STRUCTURAL PANEL SHEATHING (WSP) (EXPOSURE B: 7/16". EXPOSURE C: 15/32"). SHEATHING SHALL BE ATTACHED WITH 8d NAILS AT A 6"/12" NAILING PATTERN (6" OC AT PANEL EDGES AND 12" OC AT INTERMEDIATE SUPPORTS). INSTALL BLOCKING AT ALL PANEL EDGES.
- 3. WSP SHEATHING SHALL EXTEND TO THE UPPERMOST DOUBLE BEARING PLATE. BLOCK AT ROOF PER SECTION R602.IO.4.5 AND ATTACH BRACED WALLS PER CODE. WSP SHEATHING BETWEEN FLOORS SHALL BE SPLICED ALONG CONTINUOUS BAND OR THE WSP SHEATHING MAY BE SPLICED ACROSS STUDS (CONTINUOUS ACROSS FLOOR SYSTEM) WITH BLOCKING AT PANEL EDGES. (MINIMUM 12" BEYOND FLOOR BREAK) OR OTHER APPROVED METHOD.
- 4. "HD" = HOLDOWN: HOLD-DOWN DEVICE (NOTED AS "HD" ON PLANS)
 SHALL BE AN 800 POUND CAPACITY ASSEMBLY AS NOTED ON PLANS.
 SEE DETAILS FOR HD ASSEMBLY.
- **GROUND/FIRST FLOOR: USE "HD HOLD-DOWN DETAIL" ON SD SHEET
 (OR EQUIV.)
- **UPPER FLOORS: ATTACH BASE OF KING STUD WITH A SIMPSON
 CS20 OR CSHP20 STRAP DOWN ACROSS THE BAND AND DOWN TO A
 STUD BELOW OR HEADER BELOW. EXTEND STRAP 7" MIN ALONG EACH
 STUD (OR HEADER) AND ATTACH EACH END W/ (7) 8d NAILS.
- 5. INTERIOR BRACED WALL: (NOTED AS "IBW" ON PLANS) ATTACH I/2" GYPSUM BOARD (GB) ON EACH SIDE OF WALL WITH A MIN. OF 5d COOLER NAILS OR #6 SCREWS @ 7" O.C. ALONG THE EDGES AND AT INTERMEDIATE SUPPORTS. SEE SECTION R602.10.4.4 OF THE CODE.
- 6. INTERIOR BRACED WALL-WOOD STRUCTURAL PANEL: (NOTED AS "IBW-WSP" ON PLANS). ATTACH ONE SIDE WITH 1/6" WSP SHEATHING WITH 8d NAILS AT A 6"/12" NAILING PATTERN (6" OC AT PANEL EDGES AND 12" OC AT INTERMEDIATE SUPPORTS). INSTALL BLOCKING AT ALL PANEL EDGES. ATTACH GB OVER WSP AS REQUIRED. ATTACH OPPOSITE SIDE WITH 1/2" GB WITH A MIN. OF 5d COOLER NAILS OR #6 SCREWS @ 7" OC ALONG THE EDGES AND AT INTERMEDIATE SUPPORTS. SEE SECTION R602.10.4.4 OF THE CODE.

MPH SD / (BRICK SKIRT)







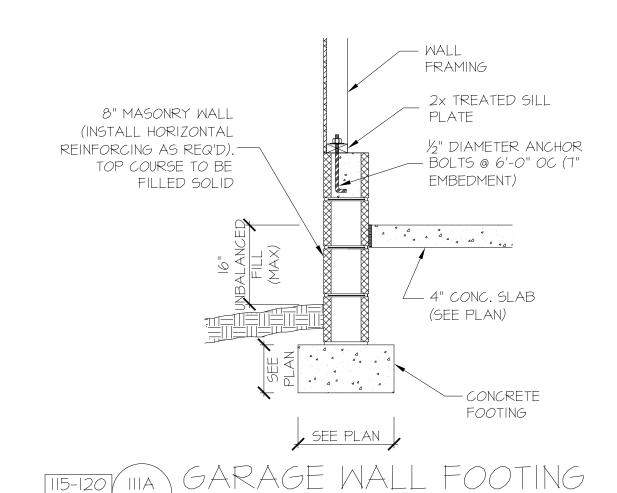


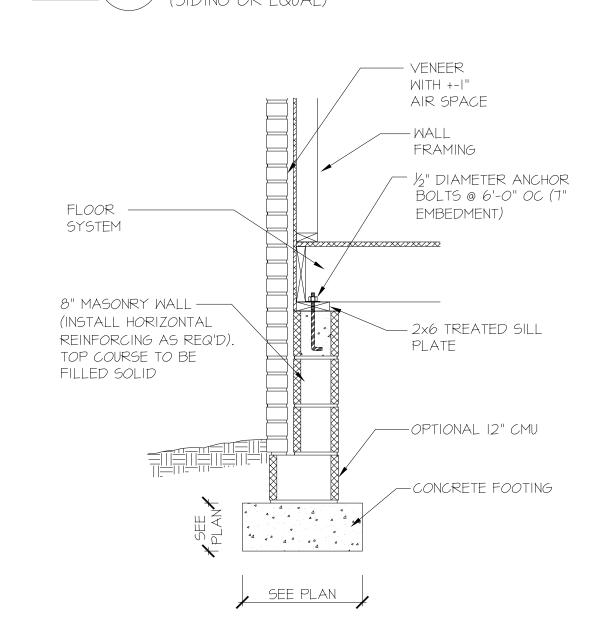




STRUCTURAL DESIGN BY:
SOUTHERN ENGINEERS, P.A.
3716 BENSON DRIVE RALEIGH, NC 27609
LICENSE: C-4772, PHONE: 919-878-1617
PROJECT #: 23-1778

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TI5-120 (112A CRANL SPACE FOOTING MPH SD) (VENEER)

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DATE: 4-11-19

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8-16-23 TWG PLAN

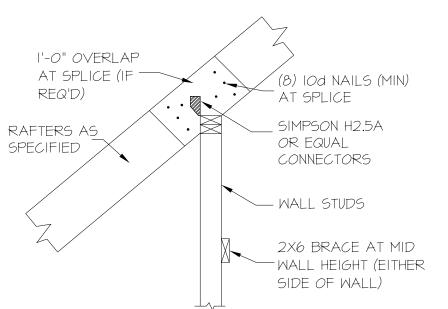
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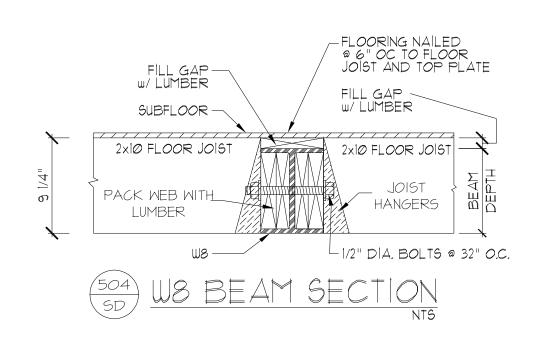
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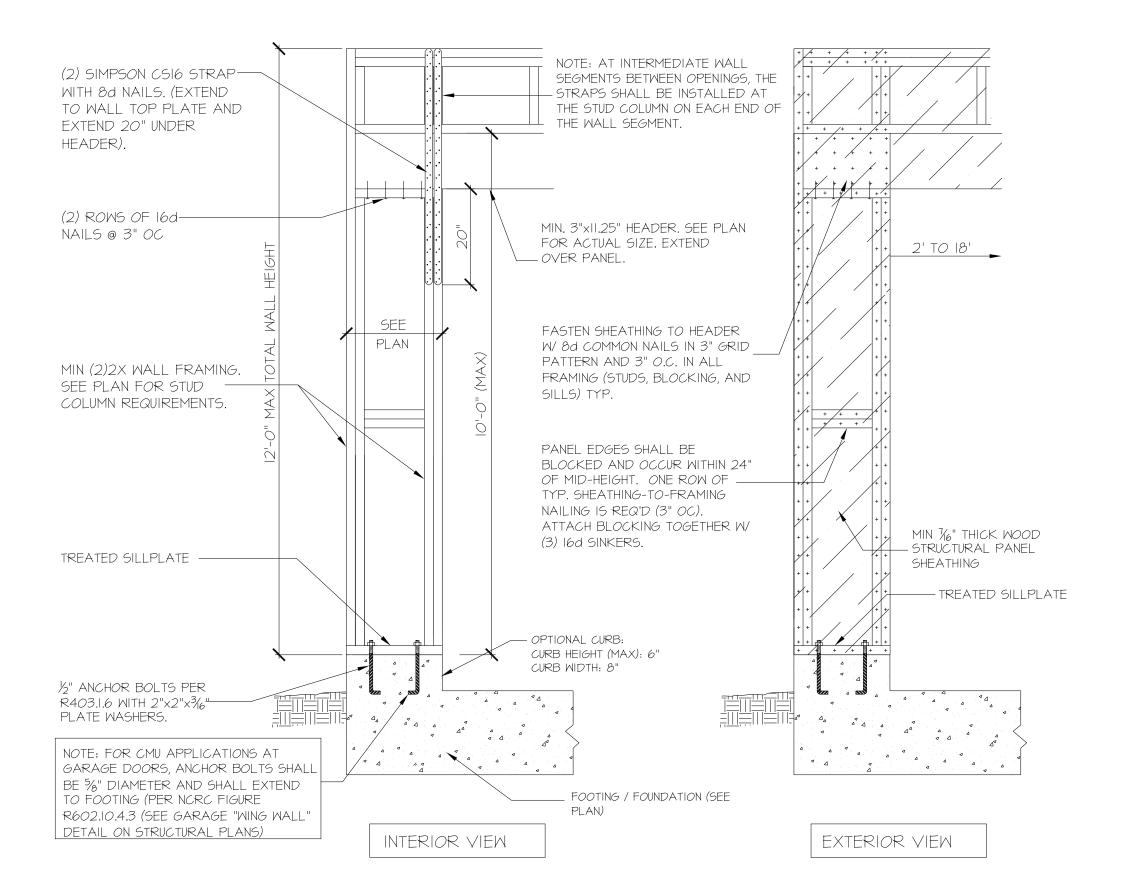
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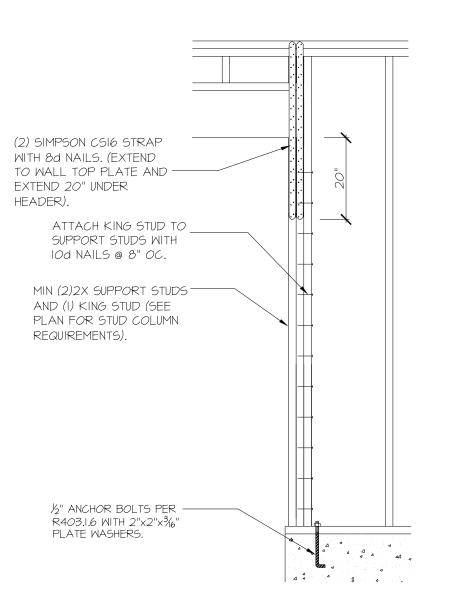




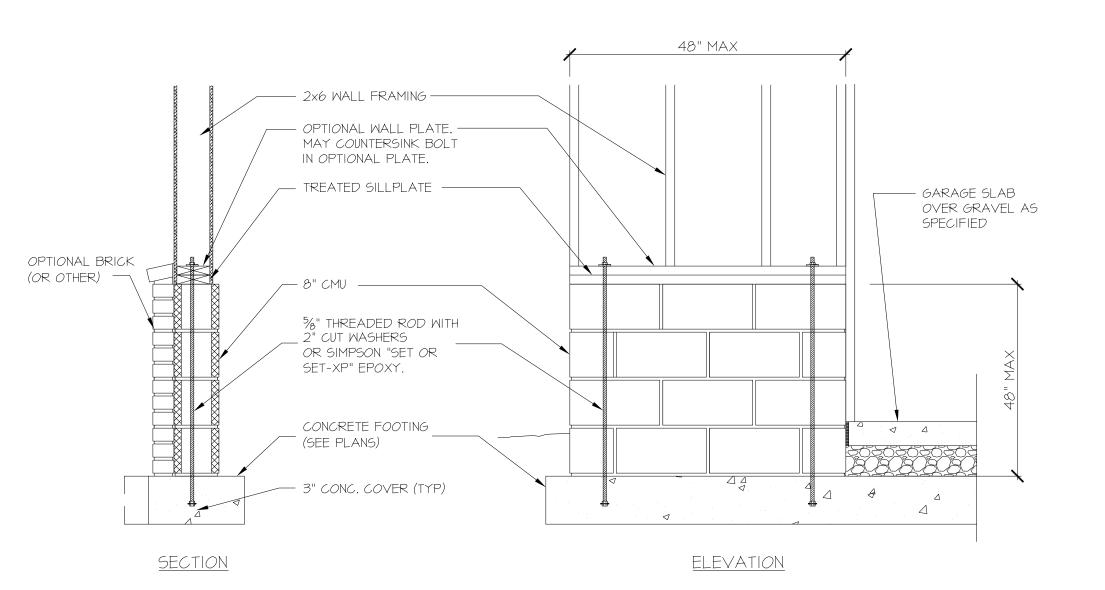




GS-PF: CONTINUOUS PORTAL FRAME CONSTRUCTION
DETAIL AND APPLICATION BASED ON NCRC FIGURE
R602.10.1 - PORTAL FRAME CONSTRUCTION



(FOR USE WITH SINGLE CS-PF CONDITION)
DETAIL AND APPLICATION BASED ON NCRC FIGURE
R602.10.1 - PORTAL FRAME CONSTRUCTION



GARAGE 'MING WALL' REINFORCING
PER IRC FIGURE R602.10.4.3

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CARY, NORTH CAROLINA 27511

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