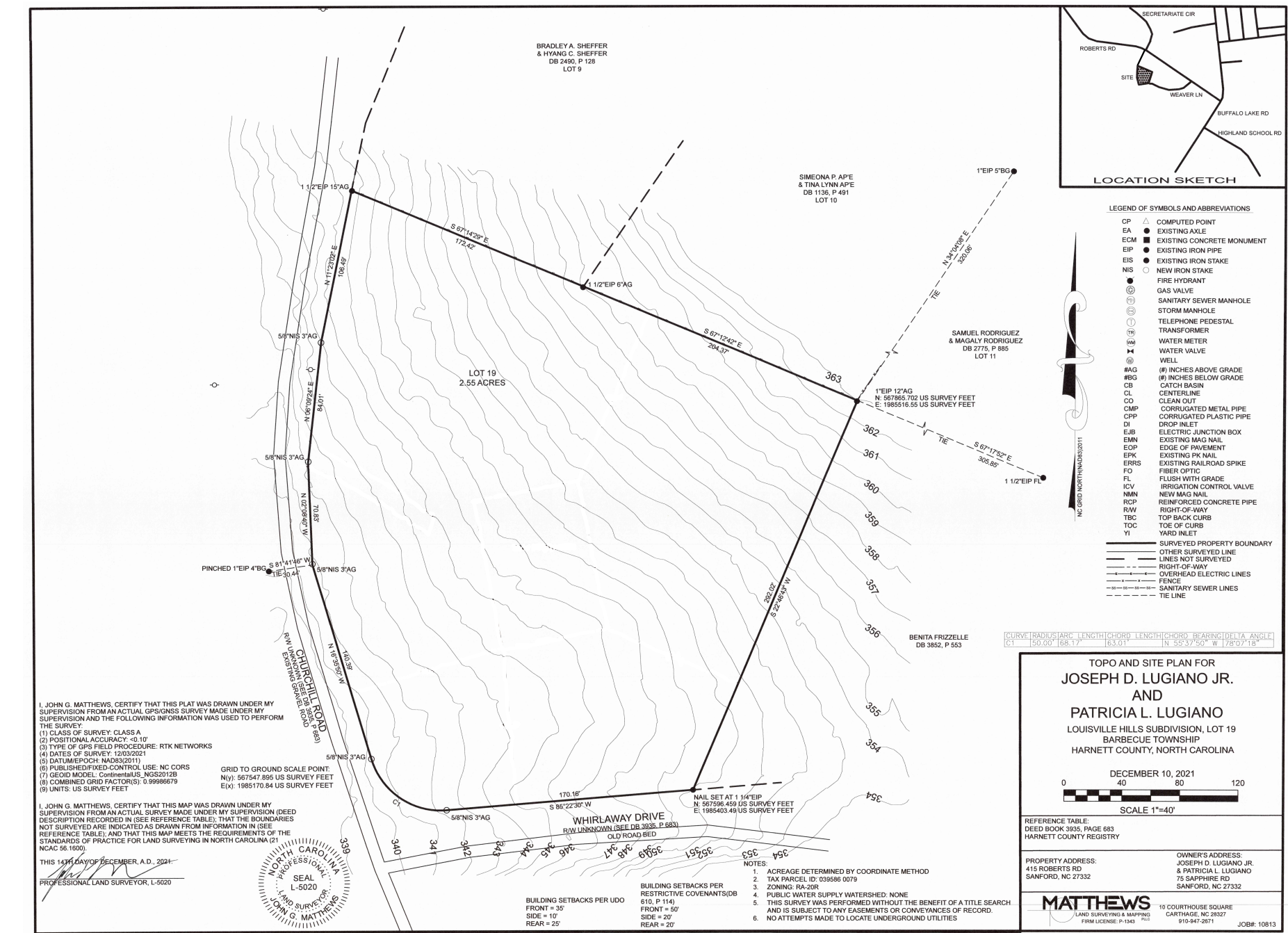


# LUGIANO RESIDENCE

## 415 ROBERTS ROAD

## SANFORD, NC 27332

OWNER CONTACT:  
 JOE LUGIANO  
 202.438.5369



### SHEET INDEX

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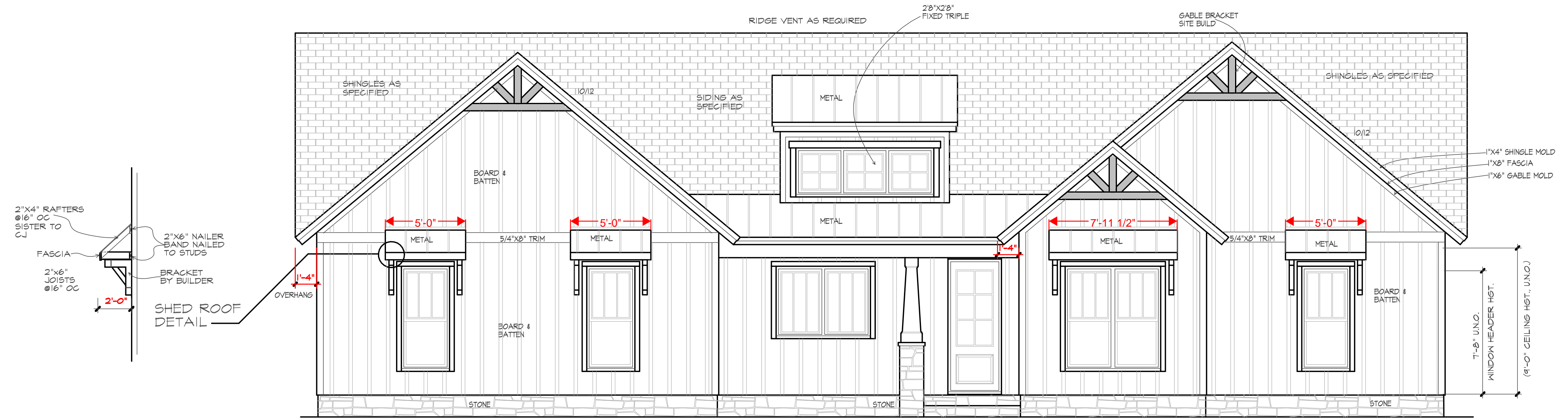
THIS PLAN DESIGNED UNDER NORTH CAROLINA  
 RESIDENTIAL CODE 2018 EDITION (2018 IRC)

**Lugiano Residence**  
 415 Roberts Road, Sanford NC 27332

DATE: 5/2/2023

PROJECT #: 230401

MidTown Designs Inc. 1732 Deacon Falls Way, Wendell NC 27591 Phone: 919-783-8626 www.midtowndesigns.com



**FRONT ELEVATION**

SCALE 1/4" = 1'-0"

**ATTIC VENTILATION:**

THE NET FREE VENTILATING AREA SHALL BE NOT LESS THAN 1 TO 150 OF THE AREA OF THE SPACE VENTILATED EXCEPT THAT THE AREA MAY BE 1 TO 300 PROVIDED AT LEAST 50 PERCENT OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTILATORS LOCATED IN THE UPPER PORTION OF THE SPACE TO BE VENTILATED AT LEAST 3 FEET ABOVE EAVE OR CORNICE VENTS WITH THE BALANCE OF THE REQUIRED VENTILATION TO BE PROVIDED BY EAVE OR CORNICE VENTS.

GROSS ATTIC AREA TO BE VENTILATED 8705 SQ.FT.

2314/300 = 12.35 SQ.FT. NET FREE AREA

50% OF VENTING MUST BE 3FT. ABOVE EAVE OR SOFFIT VENTS.



**REAR ELEVATION**



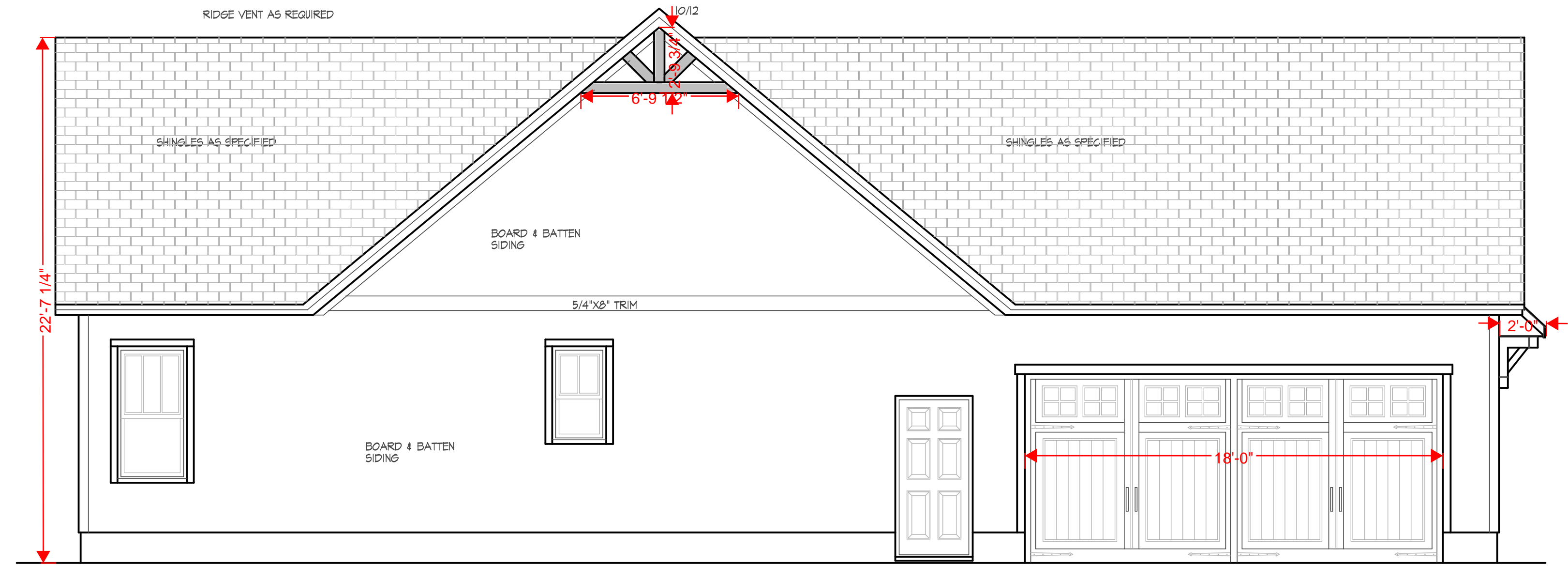
Purchaser must verify all dimensions and conditions before beginning construction.

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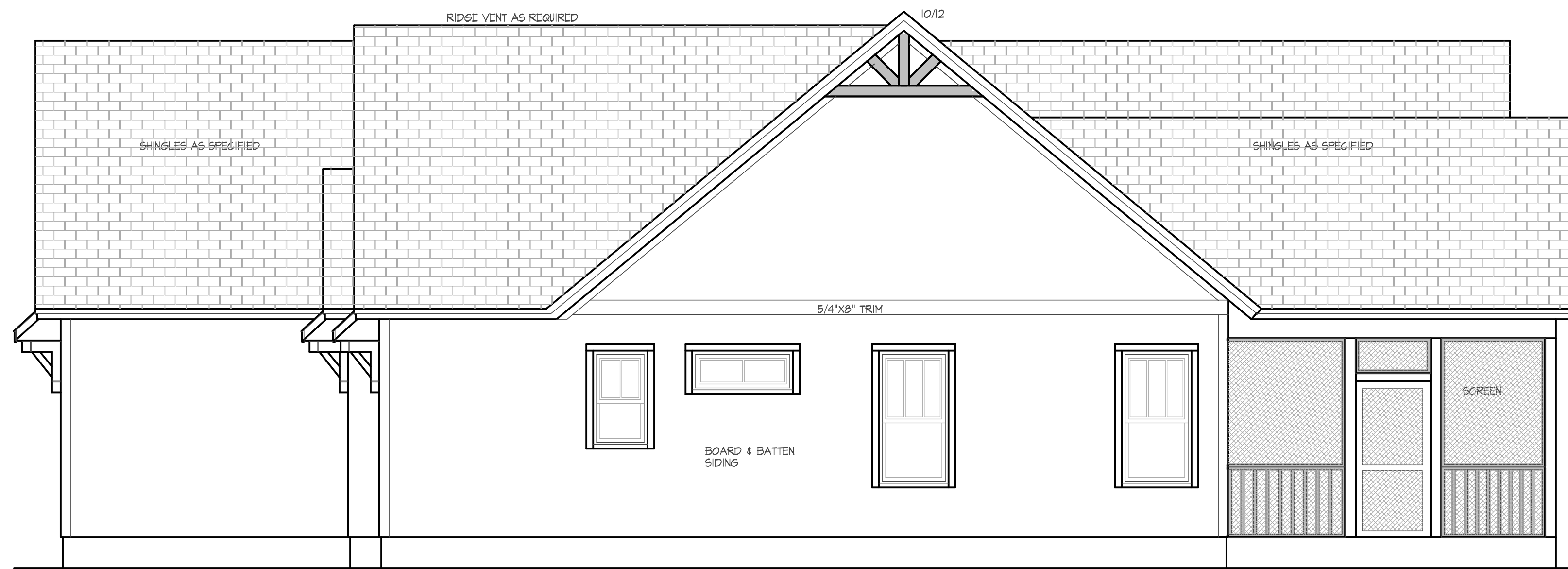
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LEFT SIDE ELEVATION



RIGHT SIDE ELEVATION

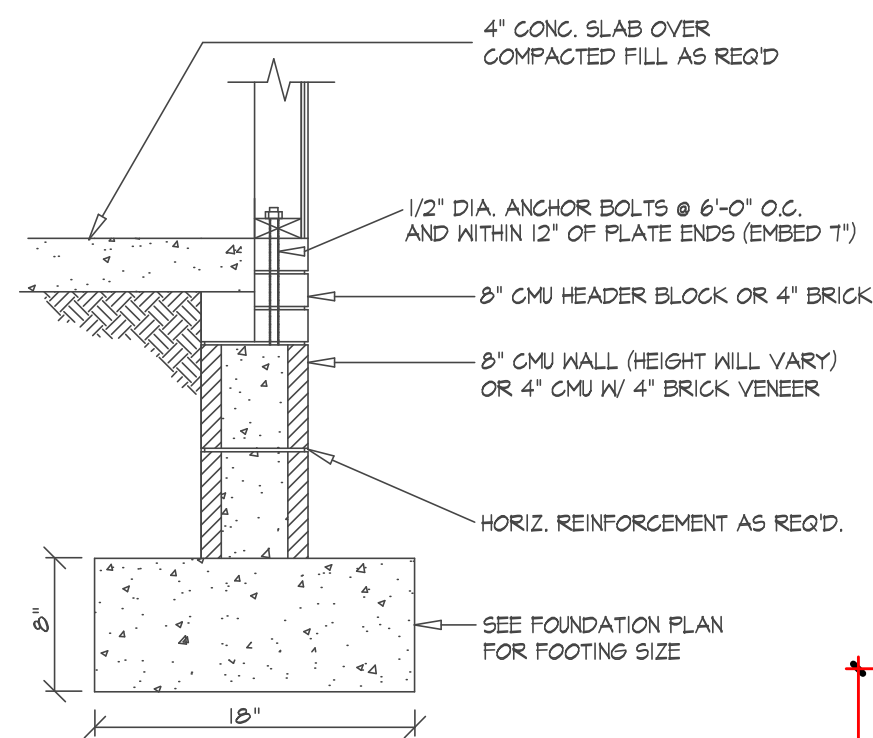
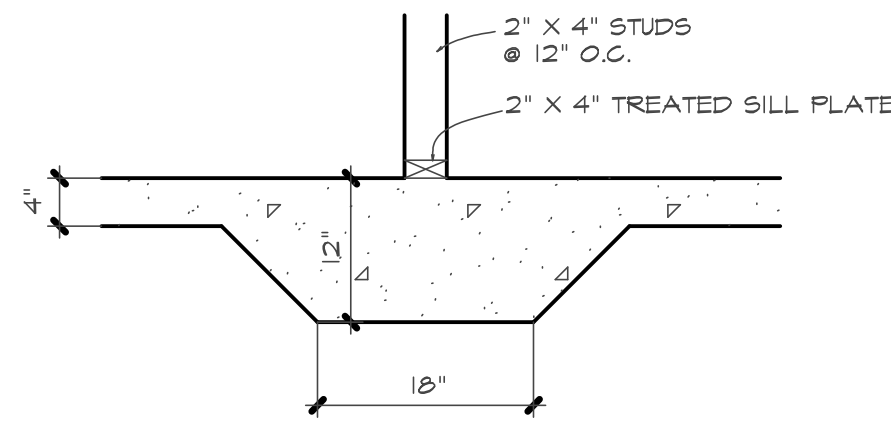
THIS PLAN DESIGNED UNDER NORTH CAROLINA RESIDENTIAL CODE 2018 EDITION (2018 IRC) NC (2018 NRC) / Prod. 118 - 120 mph

Lugiano Residence  
4115 Roberts Road, Sanford NC 27332

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DATE  
5/2/2023

PROJECT #  
230401



**FOUNDATION STRUCTURAL NOTES:**

**FOUNDATION NOTES:**

1. Duct posts min. 1'-0" above grade are to be knee or diagonally braced per Appendix M, fastening to house wall by nailer with 5/8" galvanized bolts @ 20" o.c. and 12x hot dipped galv. @ 42" o.c.
2. Covers shall be braced with one of the approved methods as outlined in R602.10.3.
3. Structural members fastening to conform to Table R602.1(1) and (2).
4. Girders and piers shall bear on center 1/3 of pier and footing, respectively.
5. 2018 NC State Residential Building Code apply to the construction of footings.
6. Typical lag footing to be 18" x 8" deep, (UND)
7. Pressure treated wood shall be installed for exterior use.
8. Hanger Schedule (Simpson hangers) for beam to beam connections (UNK)
  - a. (S2115) LUS2-0-2
  - b. (S2115) LUS2-0-3
  - c. (S2115) LUS2-0-4
9. Concrete shall have min. 28 day strength of 3000 psi and max. slump of 5 inches unless noted otherwise (UNO) air entrained per Table 4022. All concrete shall be proportioned, mixed, handled, sampled, tested, and placed in accordance with A.C.I. current standards. All samples for pumping shall be taken from the exit pump.
10. Allowable soil bearing pressure assumed to be 2000 psf. The contractor must contact Geotechnical Engineer & the Structural Engineer if unsatisfactory subsurface conditions are encountered. The surface area adjacent to the foundation wall shall be provided adequate drainage, and shall be graded so as to drain surface water away from foundation walls.

1. (B) 2 x 10 SFF #2 GIRDER DROPPED, TYPICAL UND.
2. CONCRETE BLOCK PIER SIZE SHALL BE:
 

SIZE	HOLLOW MASONRY	SOLID MASONRY
8" x 16"	UP TO 32" HIGH	UP TO 5'-0" HIGH
12" x 16"	UP TO 48" HIGH	UP TO 9'-0" HIGH
16" x 16"	UP TO 64" HIGH	UP TO 12'-0" HIGH
24" x 24"	UP TO 16' HIGH	-

 WITH 50' x 50' x 10' CONCRETE FOOTING, UND.
3. WALL FOOTING AS FOLLOWS:
 

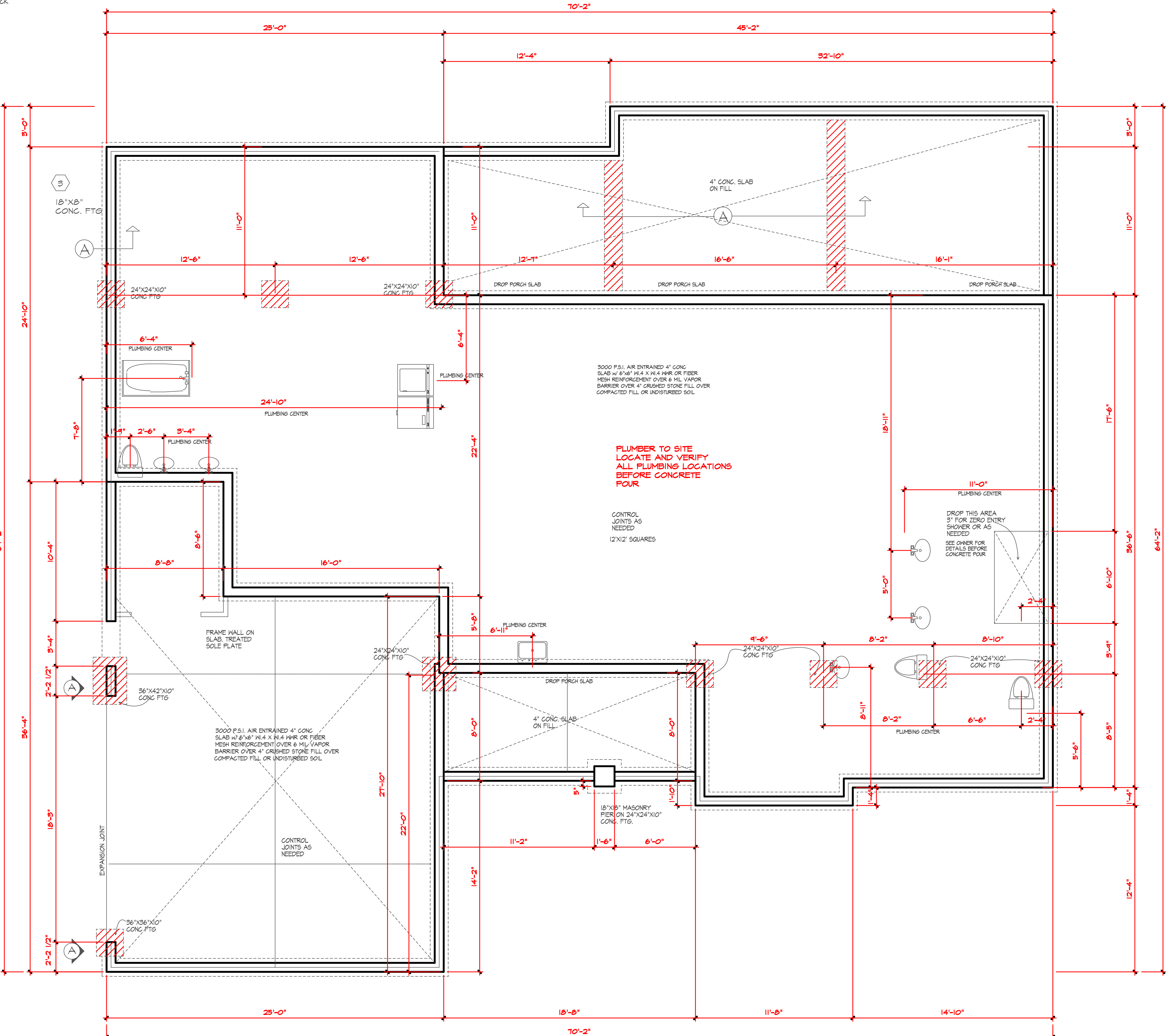
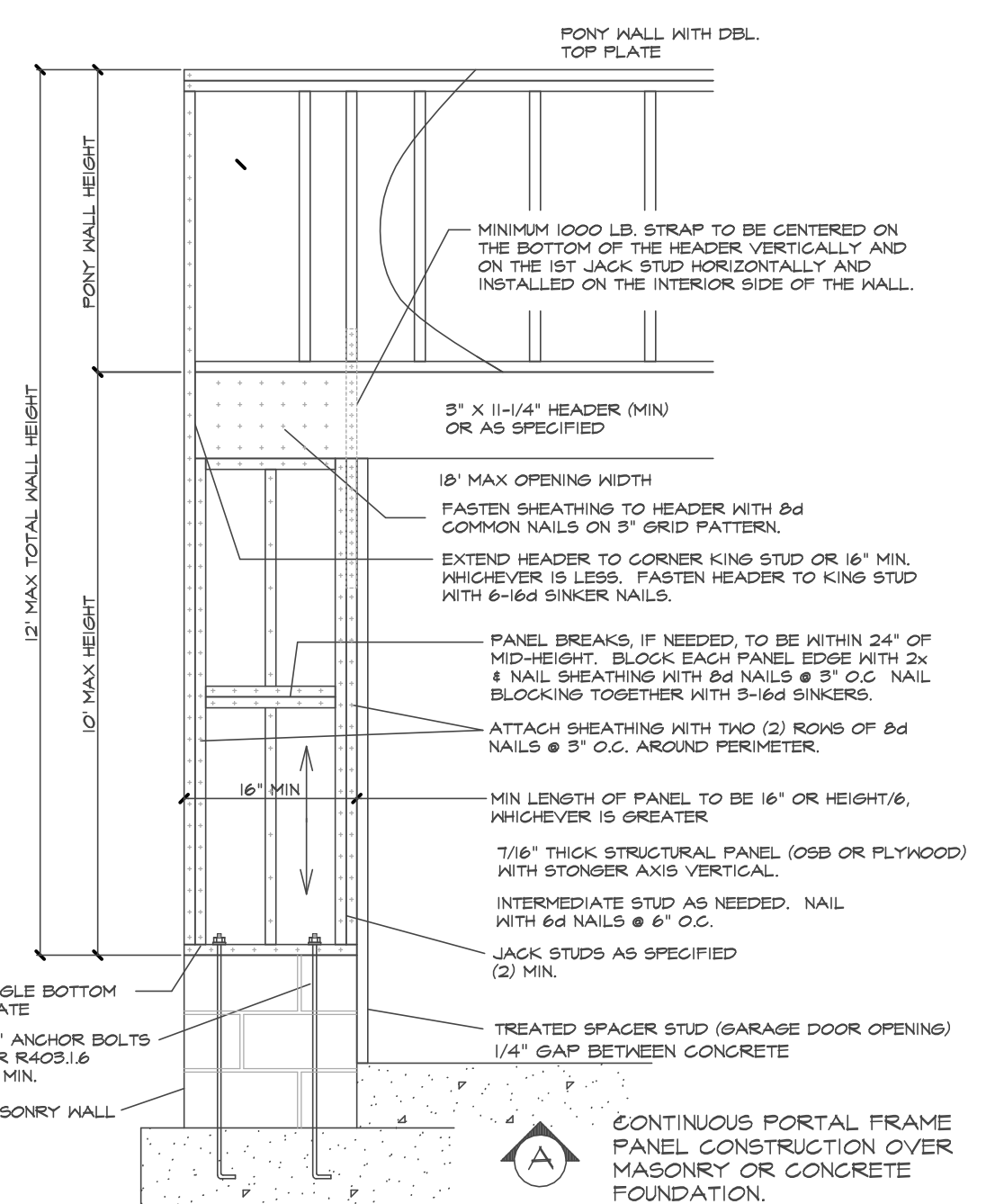
DEPTH:	BRICK VENEER
8" - UP TO 2-1/2 STORY	- 16" - UP TO 2-1/2 STORY
10" - 3 STORY	- 18" - 3 STORY
-	- 20" - 2 STORY
-	- 24" - 3 STORY

FOR FOUNDATION WALL HEIGHT AND BACKFILL REQUIREMENTS, REFER TO NORTH CAROLINA RESIDENTIAL CODE TABLE R404.1.1 (1) THRU (4) NOTE: ASSUMED SOIL BEARING CAPACITY = 2000 PSF. CONTRACTOR MUST VERIFY SITE CONDITIONS AND CONTACT SOILS ENGINEER IF MARGINAL OR UNSTABLE SOILS ARE ENCOUNTERED.

ATTACH SILL PLATE WITH 1/2" dia. ANCHOR BOLTS AT 6'-0" CENTERS (7" EMBEDMENT) AND 12" FROM EACH PLATE END. (SECTION R 403.1.6)

4. "M" DESIGNATES A SIGNIFICANT POINT LOAD TO HAVE SOLID BLOCKING TO PIER. SOLID BLOCK ALL BEAM BEARING POINTS NOTED TO HAVE THREE OR MORE STUDS TO FND, TYPICAL.

5. ABBREVIATIONS:
- "S.J." = SINGLE JOIST
  - "D.J." = DOUBLE JOIST
  - "T.J." = TRIPLE JOIST



**STEM WALL FOUNDATION**

SCALE 1/4" = 1'-0"

**BEAM SCHEDULE**

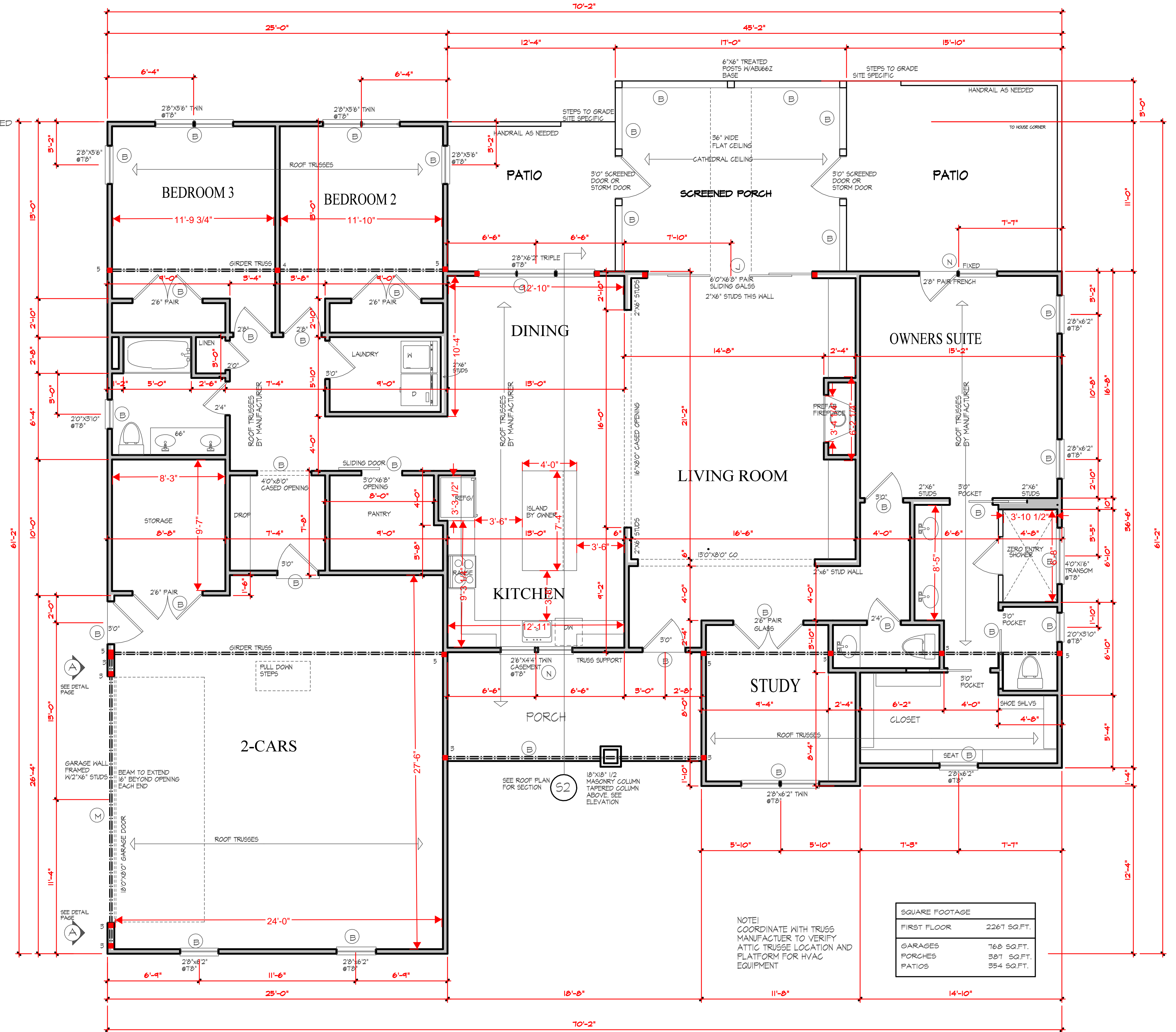
(A)	2-2"x10" FLUSH
(B)	2-2"x10" DROPPED
(C)	2-2"x8" FLUSH
(D)	2-2"x8" DROPPED
(E)	2-1.75"x9.25" LVL FLUSH
(F)	2-1.75"x9.25" DROPPED
(G)	2-1.75"x11 7/8" LVL DROPPED
(H)	2-1.75"x14" LVL FLUSH
(J)	2-1.75"x16" LVL DROPPED
(K)	3-1.75"x14" LVL FLUSH
(M)	2-1.75"x18" LVL DROPPED
(N)	2-2"x12" DROPPED

- STRUCTURAL NOTES:**
- Framing lumber shall be #2 SPF (modulus of elasticity 1,100,000 psi, E=1,600,000, fb=1100 min. Studs min #2 or stud grade).
  - Use hangers for all beam to beam connections. Structural fastening as per R502.3(1). Adequate connections is the sole responsibility of the general contractor and his subs.
  - Structural members fastening to conform to Table R502.3(1) and (2).
  - Roof Framing Notes:
    - DBHs may be spliced with a min. 6'-0" overlap at center. No valleys allowed.
    - Use 2x10 or fit down rafters for vaulted areas.
    - Attach vaulted rafters with hurricane connectors. Simpson H-2.5, H-5 or approved equal.
  - All construction shall conform to the latest requirements of the NC State Residential Building Code - 2018 Edition, plus all local codes & regulations & 2018 IRC.
  - Structural Engineer is not responsible for and will not control of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the construction work.
  - Structural Engineer is not responsible for the contractor's failure to carry out the proposed construction work in accordance with the contract document.

**FRAMING NOTES:**

1. Design Loads (R301.5)	Live Loads (PSF)	Dead Loads (PSF)
Rooms not for sleeping	40	10
Sleeping Rooms	30	10
Attic w/Permanent Stairs	40	10
Attic w/o Permanent Stairs	20	10
Attic w/o Storage	10	10
Stairs	40	-
Exterior Balconies	60	10
Decks	40	10
Guardrails & Handrails	200	-
Passenger Vehicle Garages	50	10
Fire Escapes	40	10
Snow	20	-
Wind Load: (Refer to Table R301.2.4)	Verify Zone before Construction	Wake County 115 mph

- Wall Bracing: Braced wall panels shall be constructed according to section R602.10.3. The wall structural paneling shall comply with Table R602.10.3. The length of braced panels shall be determined by section R602.10.4. Lateral bracing shall be satisfied per method 3 by continuously sheathing walls with structural sheathing per Table 601.3. Note that any specific braced wall detail shall be installed as specified.
- All framing lumber shall be SPF #2 (Fb=875 psi) unless otherwise noted (LVL). All treated lumber shall be SPF #2 (Fb=975 psi). Plate material may be SPF #3 or SYP #3 (Fc (perp.) = 425 psi min.).
- All exterior joist/corers to be (2)x10 spf. u.n.o w dbt. jacks for all openings > 4'-0".
- All interior joist/corers to be (2)x10 u.n.o. w dbt. jacks for all openings > 4'-6". use (2)x8 w dbt. jacks for all openings > 3'-0" u.n.o.
- All interior non-bearing headers to be min. (2)x6 flat u.n.o.
- Fireblock to conform with R602.8.



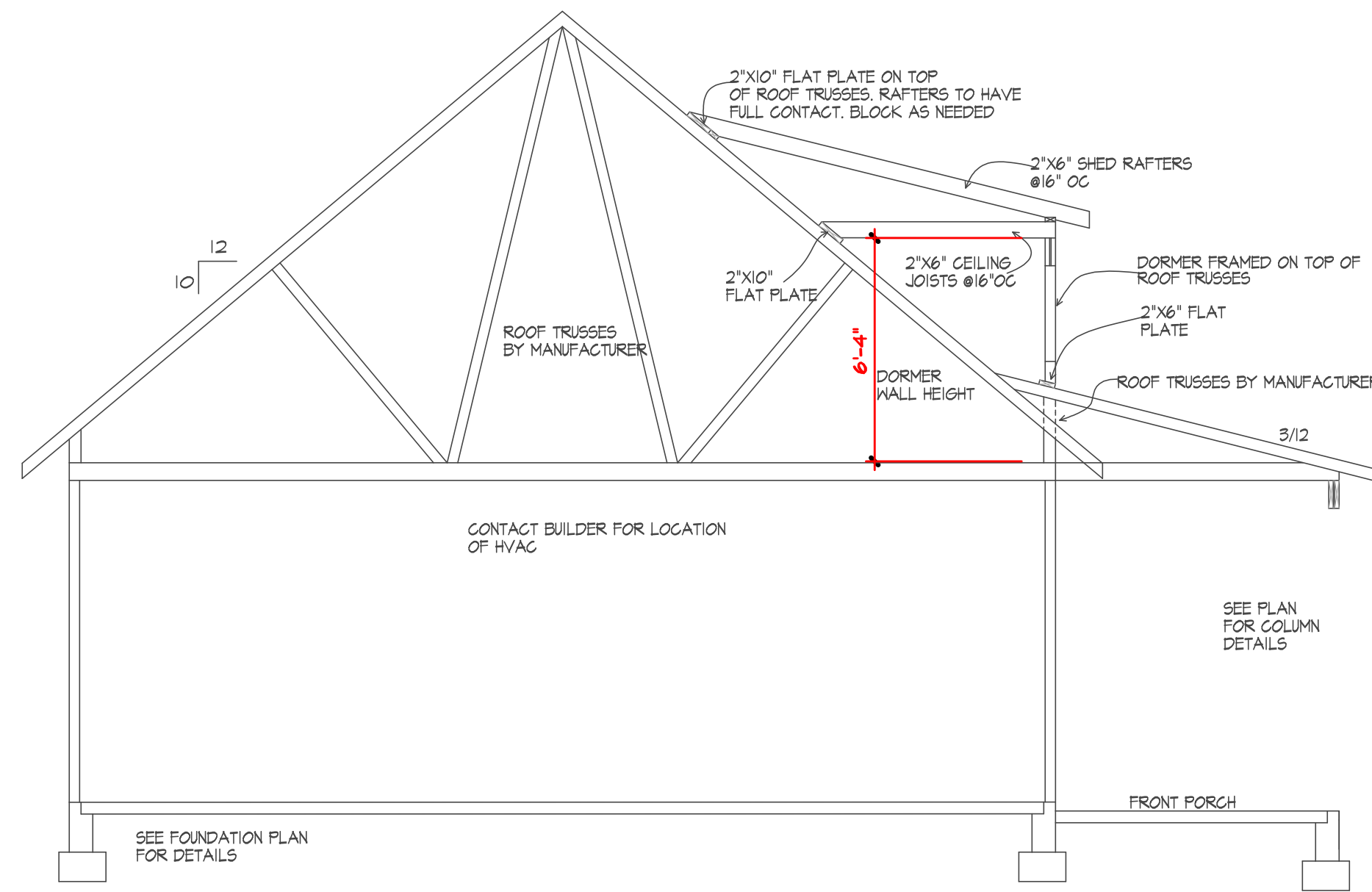
**SQUARE FOOTAGE**

FIRST FLOOR	2267 SQ.FT.
GARAGES	768 SQ.FT.
PORCHES	387 SQ.FT.
PATIOS	354 SQ.FT.

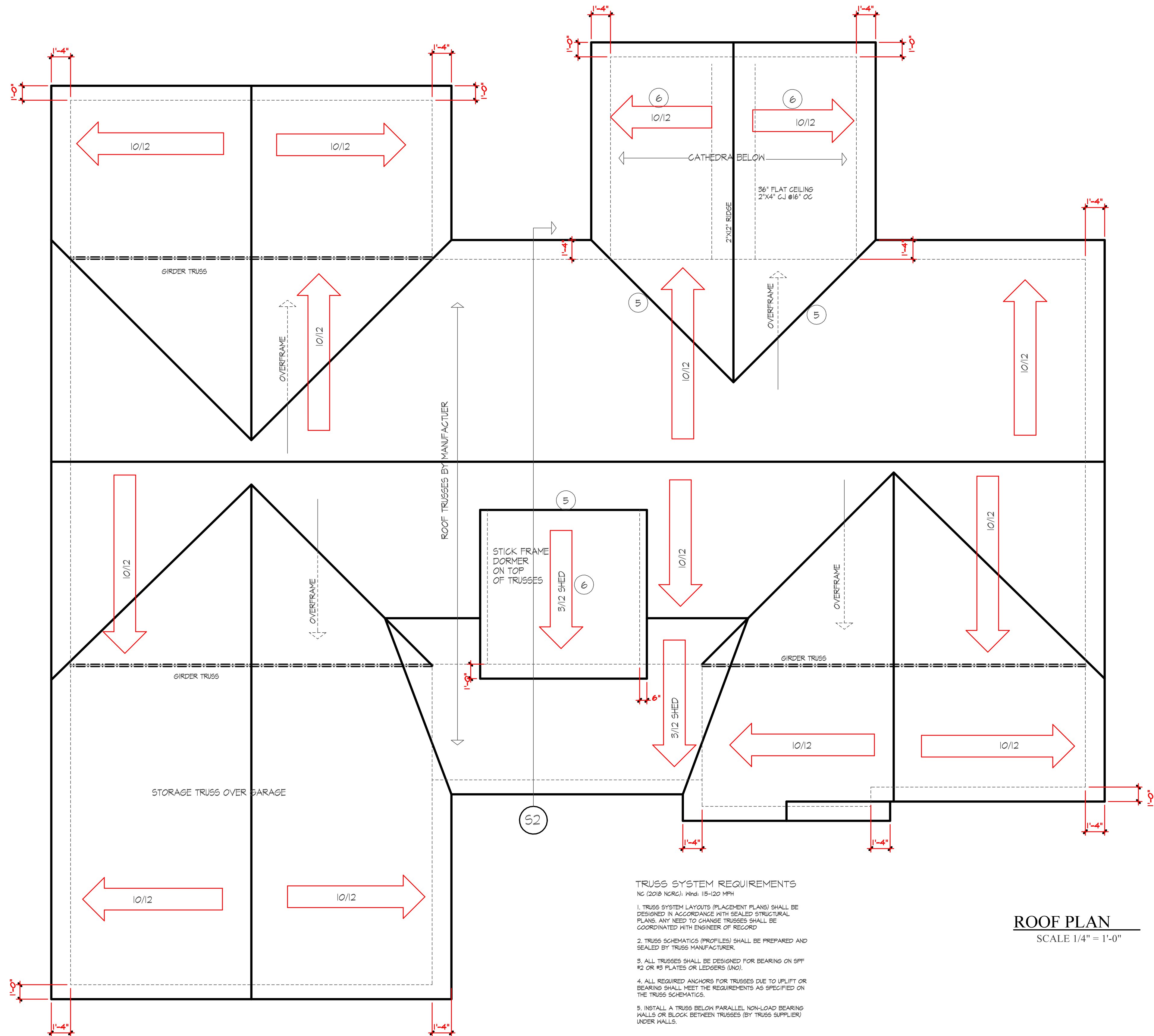
**FLOOR PLAN**  
SCALE 1/4" = 1'-0"

**ROOF FRAMING NOTES:**

- NC (2018 NRC): Wind: 115-120 MPH
- 1) 2x8 RAFTERS @ 16' O.C. WITH 2x10 RIDGE, UNO.
  - 2) 2x10 OR 1.75x11.25 LVL HIP. (2) 2x10 HIPs MAY BE SPLICED WITH A MIN. 6'-0" OVERLAP AT CENTER.
  - 3) 2x10 OR 1.75x11.25 LVL VALLEY. DO NOT SPLICE VALLEYS.
  - 4) 1.75x11.25 LVL OR (2) 1.75x9.25 LVL VALLEY.
  - 5) FALSE FRAME VALLEY ON 2x10 FLAT PLATE.
  - 6) 2x6 RAFTERS @ 16' O.C. W/ 2x8 RIDGE, UNO.
  - 7) 2x10 RAFTERS @ 16' O.C. W/ 2x12 RIDGE, UNO.
  - 8) EXTEND RIDGE 12" BEYOND INTERSECTION.
- "SR" = SINGLE RAFTER
  - "DR" = DOUBLE RAFTER
  - "TR" = TRIPLE RAFTER
  - "RS" = ROOF SUPPORT
  - "■" = (3) 2x10 STUD OR 4x4 POST FOR ROOF SUPPORT (USE 2x6 OR 6x6 FOR SUPPORT POSTS OVER 10'-0" IN HEIGHT)
- ATTACH VAULTED RAFTERS WITH HURRICANE CLIPS: SIMPSON "H2.5A" OR EQUIVALENT. TIES TO BE INSTALLED ON THE OUTSIDE FACE FRAMING.
  - INSTALL RAFTER TIES AND COLLAR TIES PER SECTION R802.3.1 OF THE 2018 NC RESIDENTIAL CODE



**CROSS SECTION** 52  
SCALE 1/4" = 1'-0"



**TRUSS SYSTEM REQUIREMENTS**

- NC (2018 NRC): Wind: 115-120 MPH
1. TRUSS SYSTEM LAYOUTS (PLACEMENT PLANS) SHALL BE DESIGNED IN ACCORDANCE WITH SEALED STRUCTURAL PLANS. ANY NEED TO CHANGE TRUSSES SHALL BE COORDINATED WITH ENGINEER OF RECORD.
  2. TRUSS SCHEMATICS (PROFILES) SHALL BE PREPARED AND SEALED BY TRUSS MANUFACTURER.
  3. ALL TRUSSES SHALL BE DESIGNED FOR BEARING ON SPP #2 OR #3 PLATES OR LEDGERS (UNO).
  4. ALL REQUIRED ANCHORS FOR TRUSSES DUE TO UPLIFT OR BEARING SHALL MEET THE REQUIREMENTS AS SPECIFIED ON THE TRUSS SCHEMATICS.
  5. INSTALL A TRUSS BELOW PARALLEL NON-LOAD BEARING WALLS OR BLOCK BETWEEN TRUSSES (BY TRUSS SUPPLIER) UNDER WALLS.

**ROOF PLAN**  
SCALE 1/4" = 1'-0"



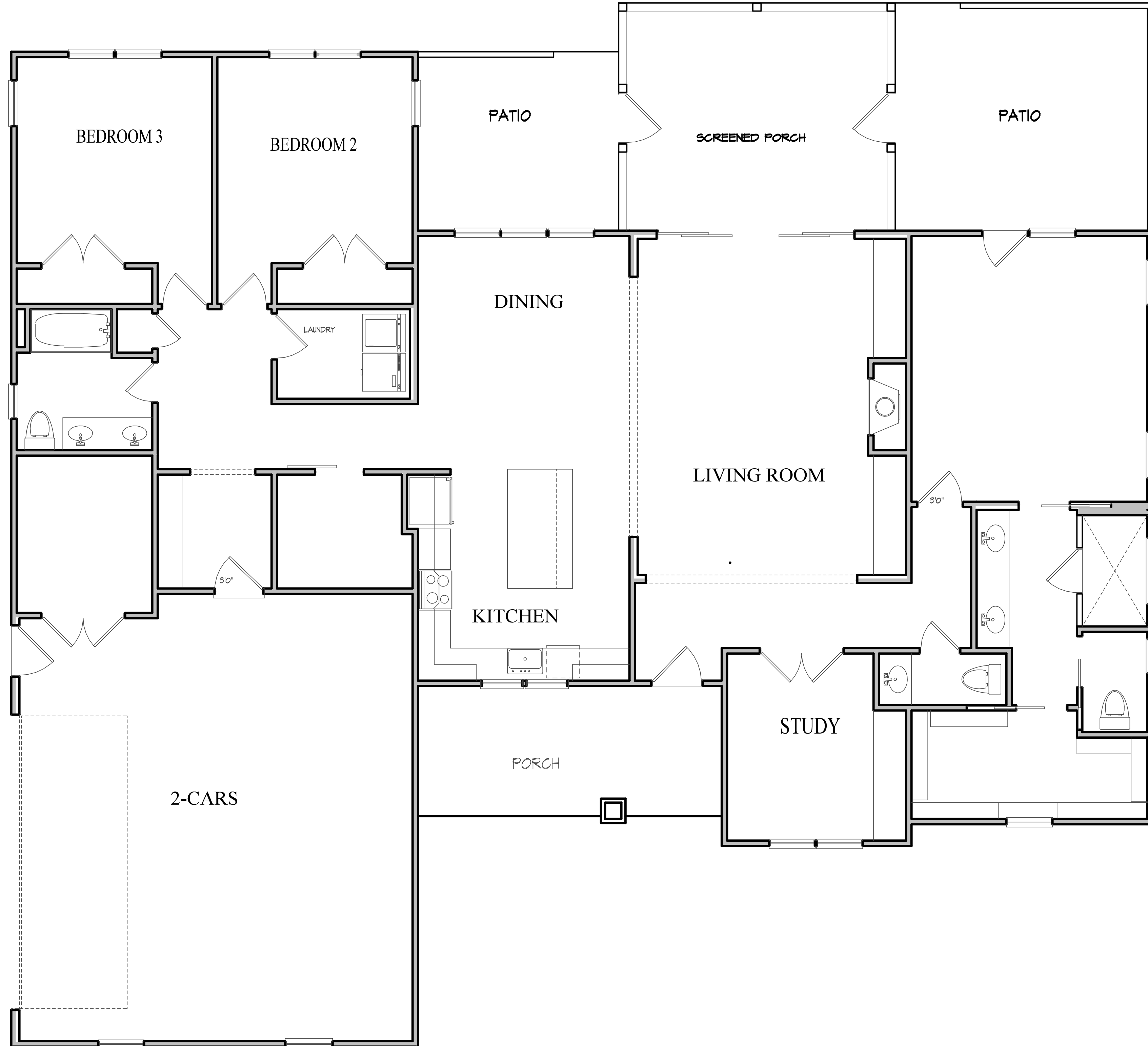
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Lugiano Residence  
415 Roberts Road, Sanford NC 27332  
MidTown Designs Inc. 1732 Deacon Falls Way, Wendell NC 27591 Phone: 919-783-8626 www.midtowndesigns.com

FLOOR PLAN  
SCALE 1/4" = 1'-0"

DATE  
5/2/2023

PROJECT #  
230401

**STRUCTURAL NOTES**

1) ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NORTH CAROLINA STATE RESIDENTIAL CODE - 2018 EDITION (2018 IRC), PLUS ALL LOCAL CODES AND REGULATIONS.  
ALL MEMBERS SHALL BE FRAMED, ANCHORED, TIED AND BRACED IN ACCORDANCE WITH GOOD CONSTRUCTION PRACTICE AND THE BUILDING CODE.

2) DESIGN LOADS SEE TABLE R301.5

WIND SPEED: (REFER TO TABLE R301.2.4)  
VERIFY ZONE BEFORE CONSTRUCTION.

3) WALL BRACING: WALLS SHALL BE BRACED ALONG BRACED WALL LINES ACCORDING TO SECTION R602.10. THE AMOUNT, LOCATION AND CONSTRUCTION OF BRACING SHALL COMPLY WITH R602.10. NOTE THAT THE BRACING SHOWN ON THE PLANS IS BASED ON THE PRESCRIPTIVE BRACING REQUIREMENTS OF THE CODE AND SHALL BE VERIFIED AND/OR APPROVED BY THE CODE OFFICIAL.

4) CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 3000 PSI AND A MAXIMUM SLUMP OF 5 INCHES UNLESS NOTED OTHERWISE (NO). AIR ENTRAINMENT 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.

5) ALLOWABLE SOIL BEARING PRESSURE ASSUMED TO BE 2000 PSF. THE CONTRACTOR MUST CONTACT A GEOTECHNICAL ENGINEER AND THE STRUCTURAL 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 DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS.

6) ALL FRAMING LUMBER SHALL BE SPF #2 (FB = 875 PSI) UNLESS NOTED OTHERWISE (NO). ALL TREATED LUMBER SHALL BE SYP #2 (FB=475 PSI). PLATE MATERIAL MAY BE SPF #3 OR SYP #3 (FC/PERP) = 425 PSI - MIN.

7) ALL WOODEN BEAMS AND HEADERS SHALL HAVE THE FOLLOWING END SUPPORTS: (1) 2X4 STUD COLUMN FOR 6'-0" MAX. BEAM SPAN (NO), (2) 2X4 STUDS FOR BEAM SPAN GREATER THAN 6'-0" (NO).

8) L.V.L. SHALL BE LAMINATED VENEER LUMBER, FB=2600 PSI, FV=285 PSI, E=1,900,000 PSI. P.S.L. SHALL BE PARALLEL STRAND LUMBER, FB=2400 PSI, FV=280 PSI, E=2,000,000 PSI. L.S.L. SHALL BE LAMINATED STRAND LUMBER, FB=2250 PSI, FV=400 PSI, E=1,950,000 PSI. INSTALL ALL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS.

9) 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 MANUFACTURER'S SPECIFICATIONS.

10) ALL STRUCTURAL STEEL SHALL BE ASTM A-36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3 1/2 INCHES AND FULL FLANGE WIDTH. PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (1/2" DIAMETER X 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDED 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.

11) REBAR SHALL BE DEFORMED STEEL, ASTM615, GRADE 60.

12) FLITCH BEAMS SHALL BE BOLTED TOGETHER USING (2) ROWS OF 1/2" DIAMETER BOLTS (ASTM A307) 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.

13) BRICK LINTELS SHALL BE 3 1/2"x3 1/2"x1/4" STEEL ANGLE FOR UP TO 6'-0" SPAN AND 6"x4"x5/16" STEEL ANGLE WITH 6" LEG VERTICAL FOR SPANS UP TO 9'-0" (NO).

14) THE POSITIVE AND NEGATIVE DESIGN PRESSURE FOR DOORS AND WINDOWS SEE R301.2(6).

**DWELLING / GARAGE SEPARATION**

REFER TO SECTIONS R302.3, R302.6, AND R302.7

**WALLS.** A minimum 1/2" gypsum board must be installed on all walls supporting floor/ceiling assemblies used for separation required by this section.

**CEILINGS.** A minimum of 1/2" gypsum must be installed on the underside and exposed sides of all stairways.

**OPENING PENETRATIONS.** Openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

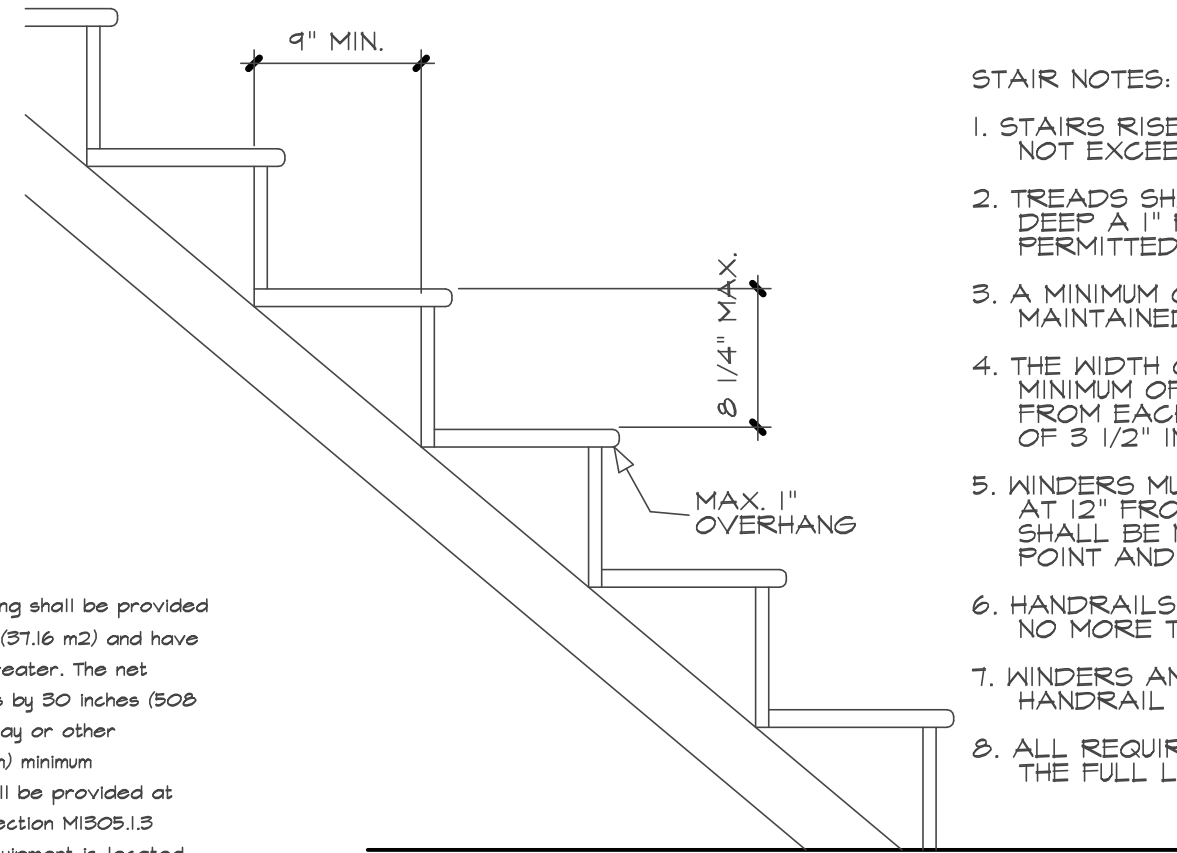
**DUCT PENETRATIONS.** Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage (0.48 mm) sheet steel or other approved material and shall have no openings into the garage.

**OTHER PENETRATIONS.** Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302.11, Item 4.

**ATTIC ACCESS**

SECTION R207  
R207.1 Attic access. An attic access opening shall be provided to attic areas that exceed 400 square feet (37.16 m<sup>2</sup>) and have a vertical height of 60 inches (1524 mm) or greater. The net clear opening shall not be less than 20 inches by 30 inches (508 mm by 762 mm) and shall be located in a hallway or other readily accessible location. A 30-inch (762 mm) minimum unobstructed headroom in the attic space shall be provided at some point above the access opening. See Section M305.1.3 for access requirements where mechanical equipment is located in attics.

Exceptions:  
1. Concealed areas not located over the main structure including porches, areas behind knee walls, dormers, bay windows, etc., are not required to have access.  
2. Pull down stair treads, stringers, handrails, and hardware may protrude into the net clear opening.

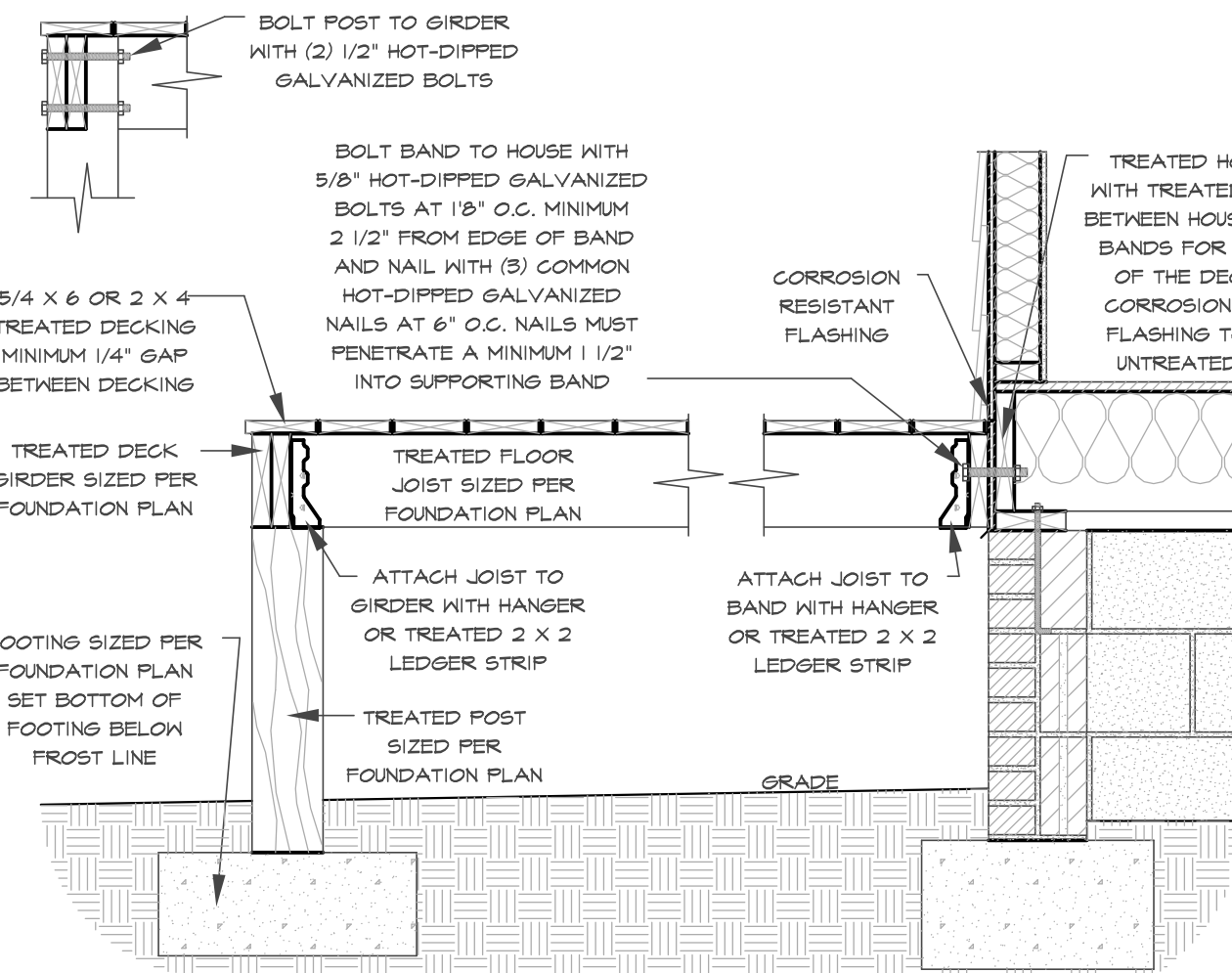


**STAIR NOTES:**

1. STAIRS RISERS MUST BE UNIFORM AND NOT EXCEED 8 1/4".
2. TREADS SHALL NOT BE LESS THAN 10" DEEP A 1" PROJECTION OVER RISER IS PERMITTED.
3. A MINIMUM OF 6'8" HEADROOM MUST BE MAINTAINED AT ALL PLACES ON STAIR.
4. THE WIDTH OF THE STAIR SHALL BE A MINIMUM OF 3'0". HANDRAIL MAY PROJECT FROM EACH SIDE OF STAIR A DISTANCE OF 3 1/2" INTO THE REQUIRED WIDTH.
5. WINDERS MUST BE A MINIMUM OF 4" IN WIDTH AT 12" FROM THE NARROWEST SIDE. TREAD SHALL BE NO NARROWER THAN 4" AT ANY POINT AND AVERAGE NO LESS THAN 9 INCHES.
6. HANDRAILS SHALL BE NO LESS THAN 34" AND NO MORE THAN 38" ABOVE TREAD NOSING.
7. WINDERS AND SPIRAL STAIRS SHALL HAVE THE HANDRAIL LOCATED ON THE OUTSIDE RADIUS.
8. ALL REQUIRED HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE STAIRS.

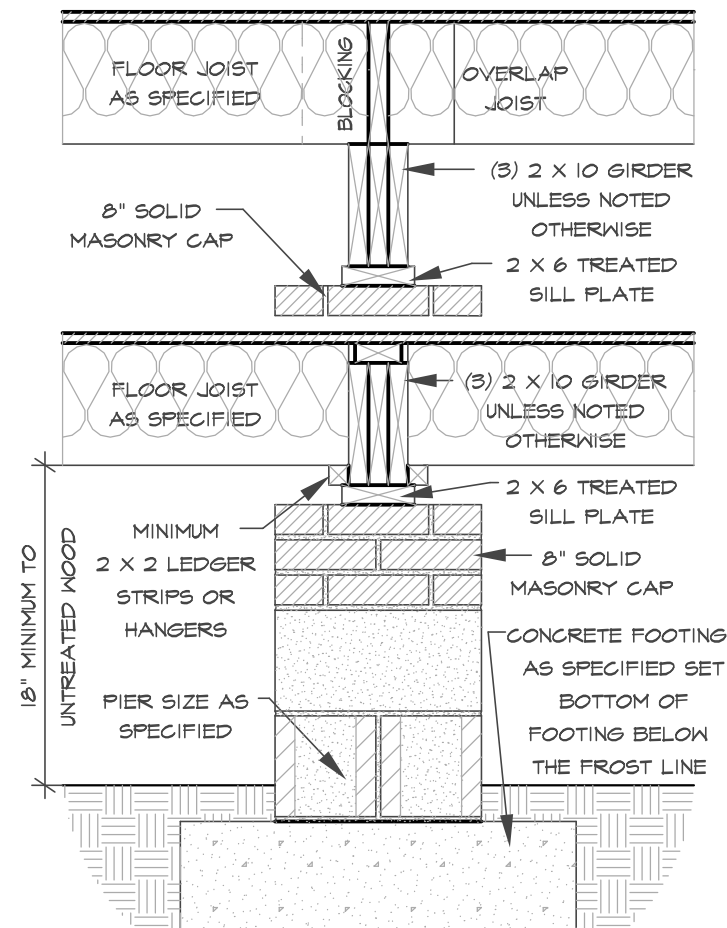
**STAIR DETAIL**

NO SCALE



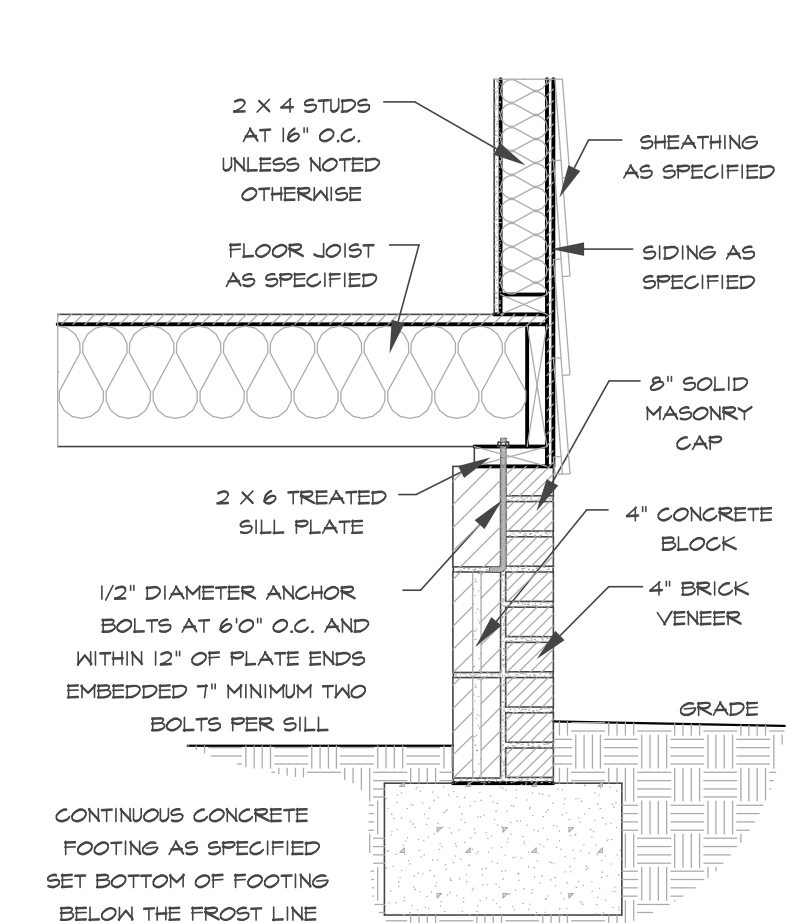
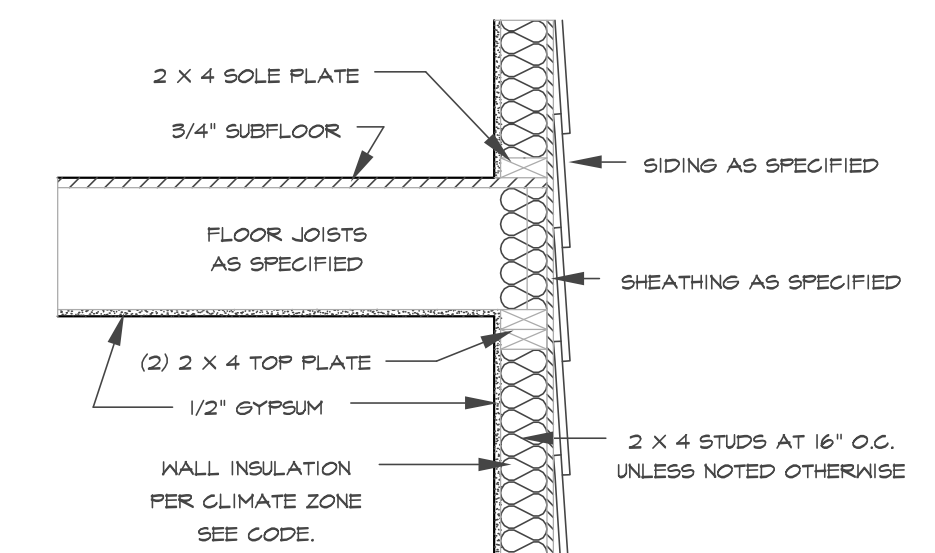
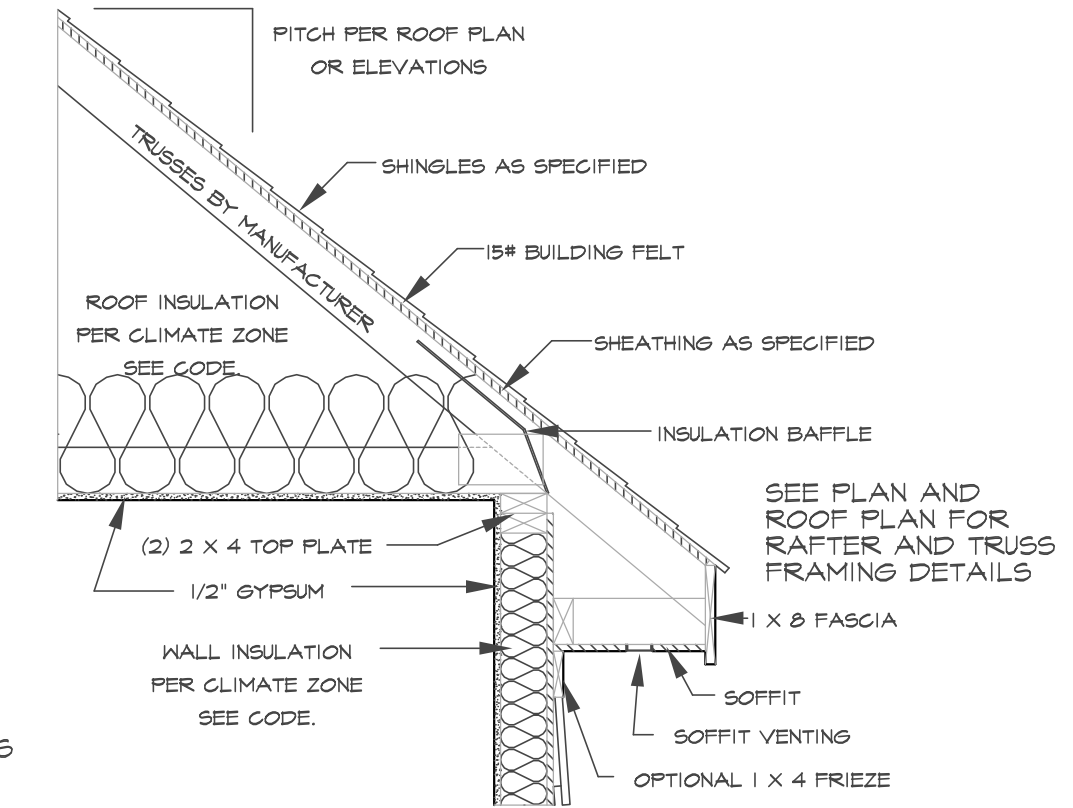
**DECK ATTACHMENT DETAIL TO FRAMED WALL**

SCALE 3/4" = 1'-0"



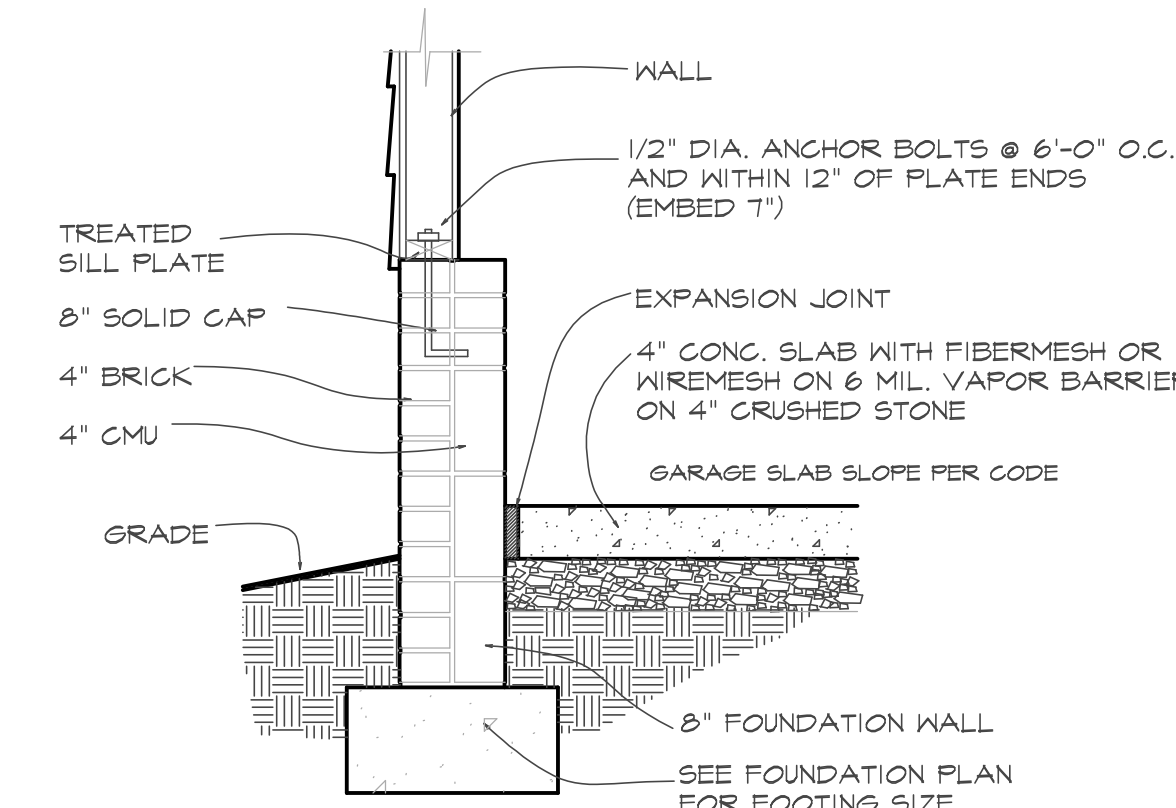
**DROPPED/ FLUSH PIER**

SCALE 3/4" = 1'-0"

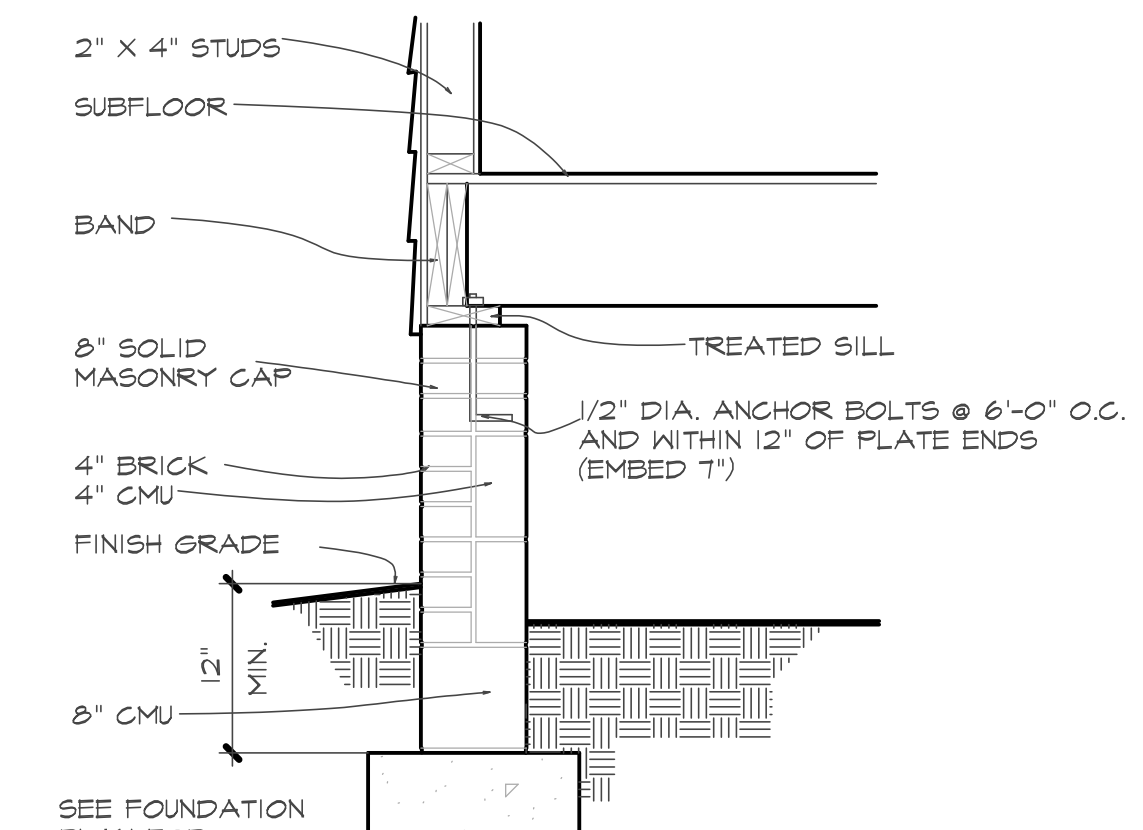


**TYPICAL WALL SECTION**

SCALE 3/4" = 1'-0"



**SECTION AT GARAGE SLAB**



**SECTION AT CRAWL**

**TABLE R602.1.2 INSULATION AND PENETRATION REQUIREMENTS BY COMPONENT<sup>a</sup>**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT U-FACTOR <sup>b</sup>	GLAZED PENETRATION U-FACTOR <sup>b</sup>	CEILING U-FACTOR <sup>b</sup>	FRAME WALL U-FACTOR <sup>b</sup>	WALL U-FACTOR <sup>b</sup>	FLOOR U-FACTOR <sup>b</sup>	BASEMENT WALL U-FACTOR <sup>b</sup>	SLAB U-FACTOR <sup>b</sup>	CRAWL SPACE WALL U-FACTOR <sup>b</sup>
3	0.35	0.55	0.30	0.08 or 0.07	0.15 or 0.12-0.15 <sup>c</sup>	0.13 or 0.10-0.13 <sup>c</sup>	0.19	0.19	0	0.13
4	0.35	0.55	0.30	0.08 or 0.07	0.15 or 0.12-0.15 <sup>c</sup>	0.13 or 0.10-0.13 <sup>c</sup>	0.19	0.19	0	0.13
5	0.35	0.55	NR	0.08 or 0.07	0.12 or 0.11-0.12 <sup>c</sup>	0.11 or 0.10-0.11 <sup>c</sup>	0.20	0.20	0	0.13

**TABLE R602.1.4 EQUIVALENT U-FACTORS<sup>a</sup>**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT U-FACTOR <sup>b</sup>	CEILING U-FACTOR <sup>b</sup>	FRAME WALL U-FACTOR <sup>b</sup>	WALL U-FACTOR <sup>b</sup>	FLOOR U-FACTOR <sup>b</sup>	BASEMENT WALL U-FACTOR <sup>b</sup>	CRAWL SPACE WALL U-FACTOR <sup>b</sup>
3	0.35	0.55	0.090	0.077	0.141	0.197	0.197	0.136
4	0.35	0.55	0.090	0.077	0.141	0.197	0.197	0.136
5	0.35	0.55	0.090	0.061	0.142	0.203	0.203	0.136

<sup>a</sup> Nonresidential U-factors shall be obtained from measurement, calculation or an approved source.  
<sup>b</sup> Where more than half the insulation is on the interior, the mean wall U-factor shall be a maximum of 0.07 in Climate Zone 3, 0.07 in Climate Zone 4 and 0.058 in Climate Zone 5.  
<sup>c</sup> Basement wall U-factor of 0.090 in warm humid locations as defined by Figures R301.1 and Table R301.1.  
<sup>d</sup> A maximum of two glazed fenestration product assemblies, having a U-factor no greater than 0.25 and a SHGC no greater than 0.30 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty. When applying this rule, using the REScheck "3A Trade-off" conditions instead of above, contained use of the software, the applicable fenestration product shall be modeled as meeting the U-factor of 0.35 and the SHGC of 0.30, as applicable, per the fenestration product actual U-factor and actual SHGC shall be added in the common section of the software for documentation of application of this rule to the applicable product. Compliance for these substitution products shall be verified compared to the above substantial maximum U-value requirement and maximum SHGC requirement, as applicable.





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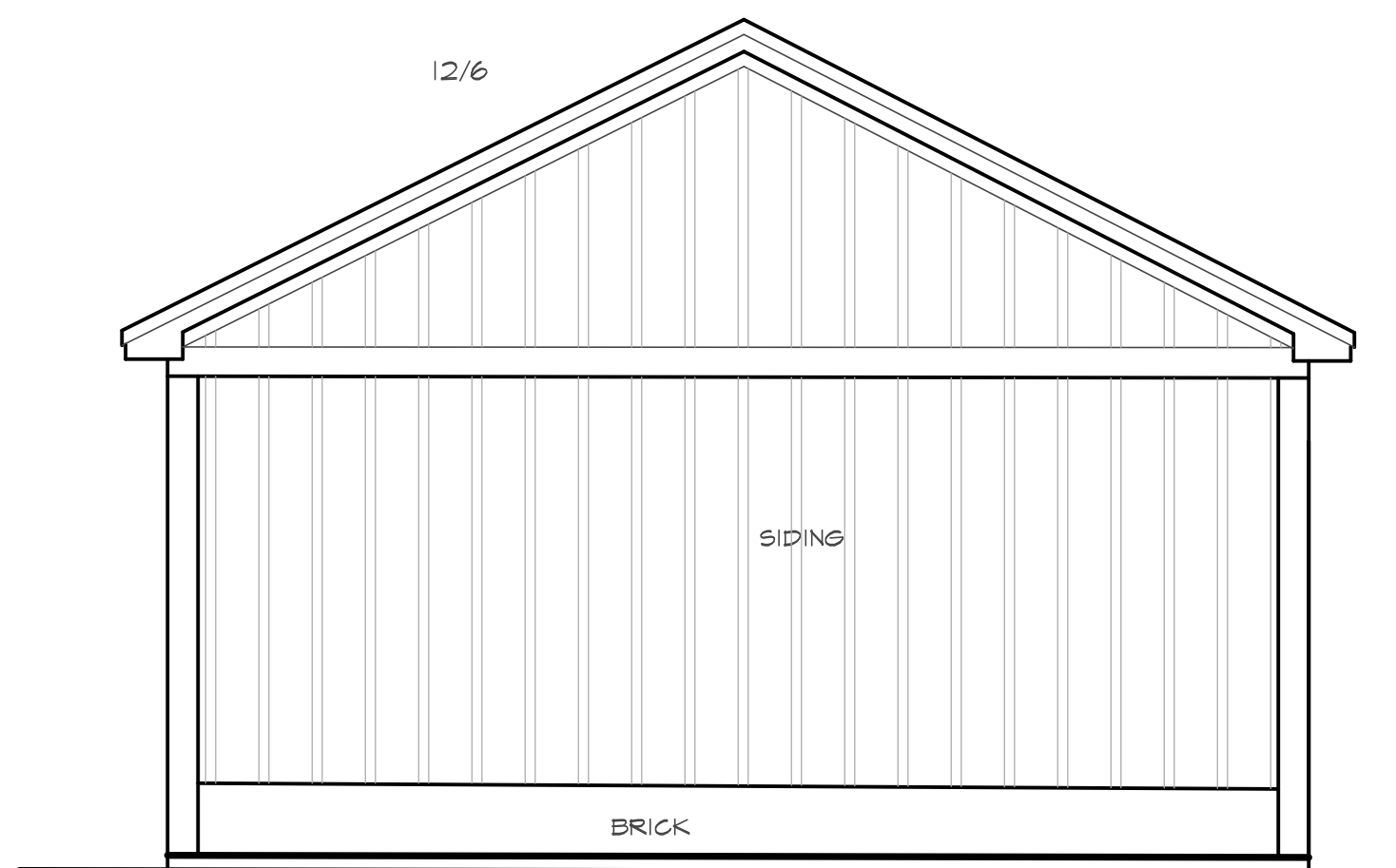
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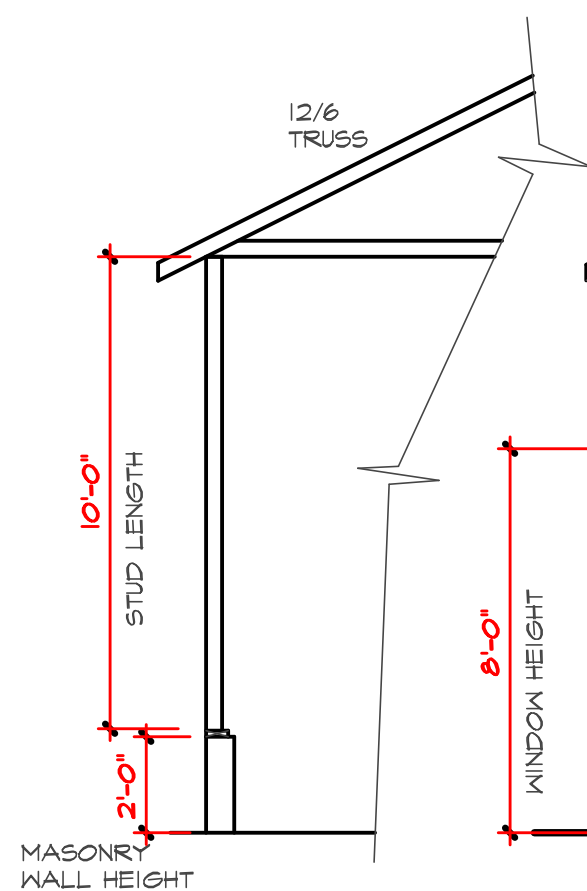
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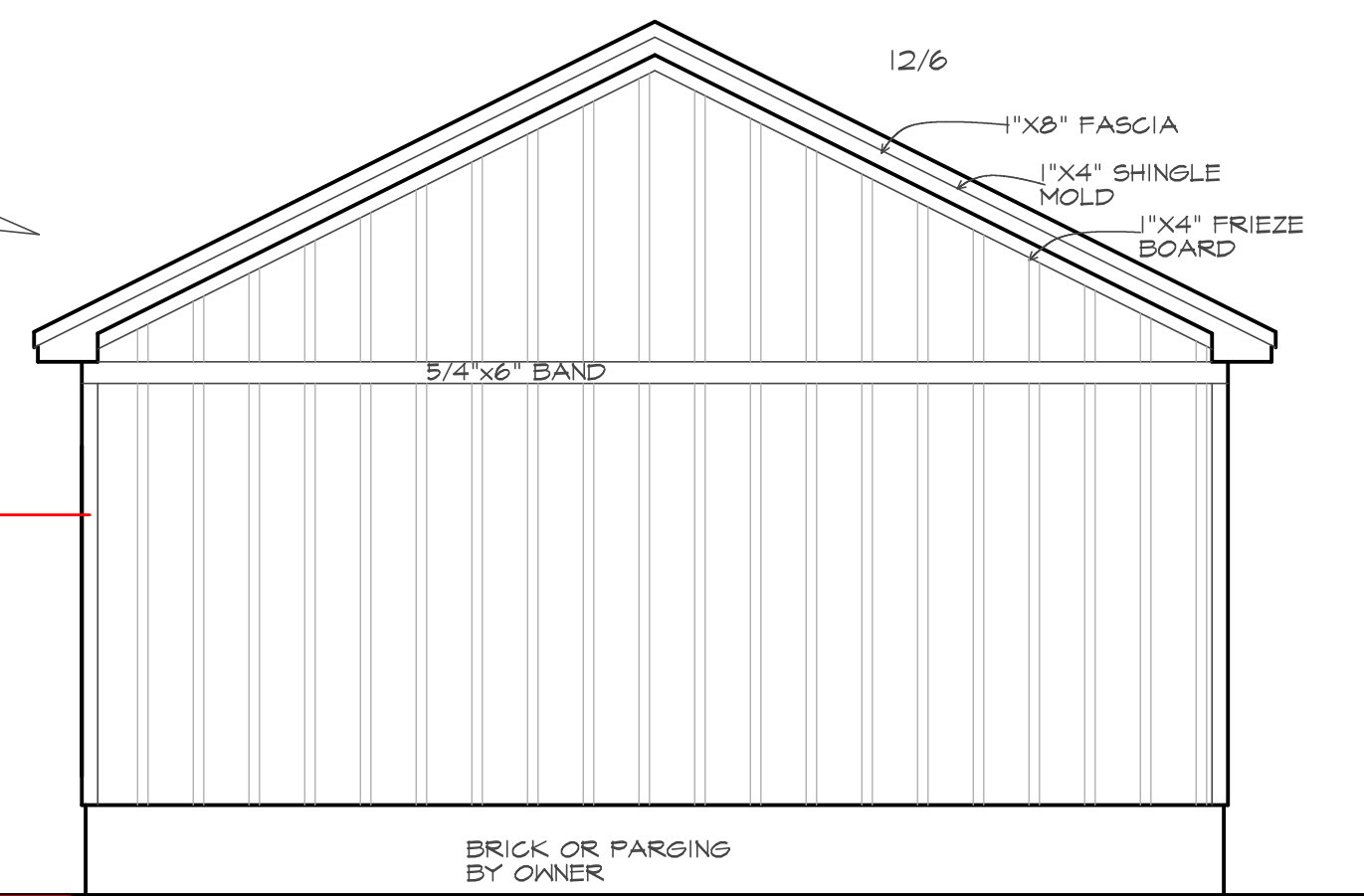
**RIGHT SIDE ELEVATION**



**REAR ELEVATION**

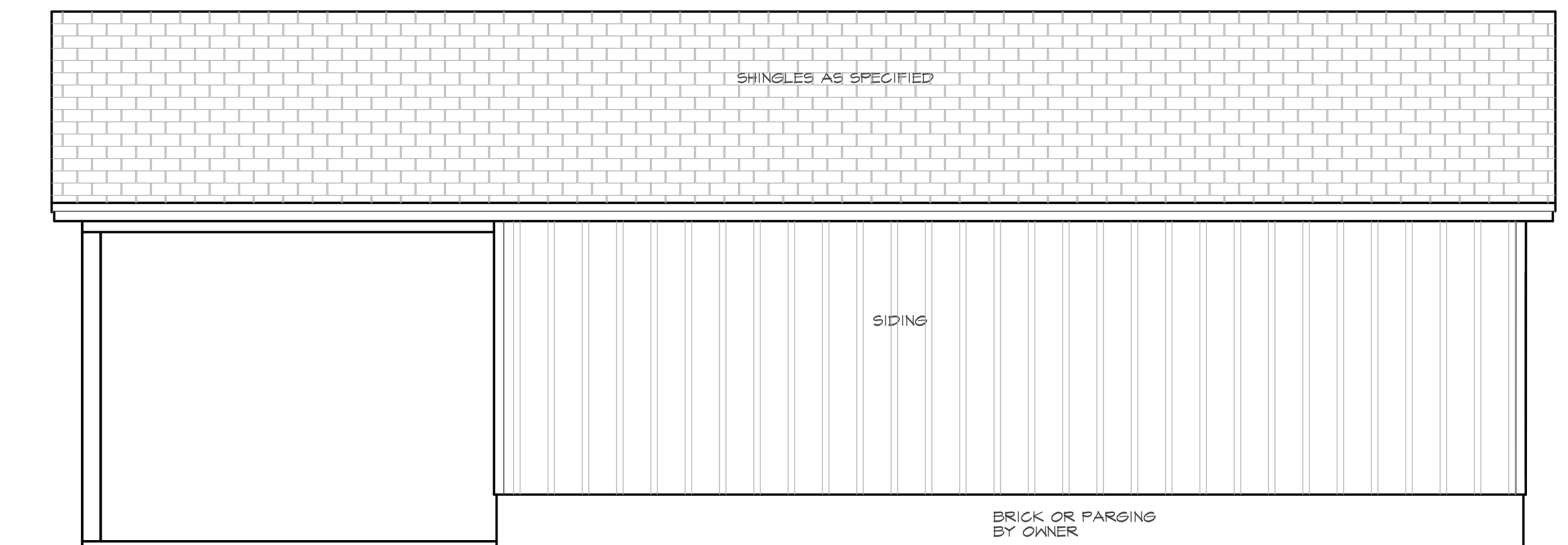


**SECTION**



**FRONT ELEVATION**

SCALE 1/4" = 1'0"



**LEFT SIDE ELEVATION**

**25'X35' SHOP**  
 Plan #

THIS PLAN DESIGNED UNDER NORTH CAROLINA  
 RESIDENTIAL CODE 2018 EDITION (2018 IRC)

DATE 6/19/2023

PROJECT # 230606

MidTown Designs Inc. 1732 Deacon Falls Way, Wendell NC 27591 Phone: 919-783-8626 www.midtowndesigns.com

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Plan # **25'X35' SHOP**

**THIS PLAN DESIGNED UNDER NORTH CAROLINA RESIDENTIAL CODE 2018 EDITION (2018 IRC)**

DATE: 6/19/2023  
 PROJECT #: 230606

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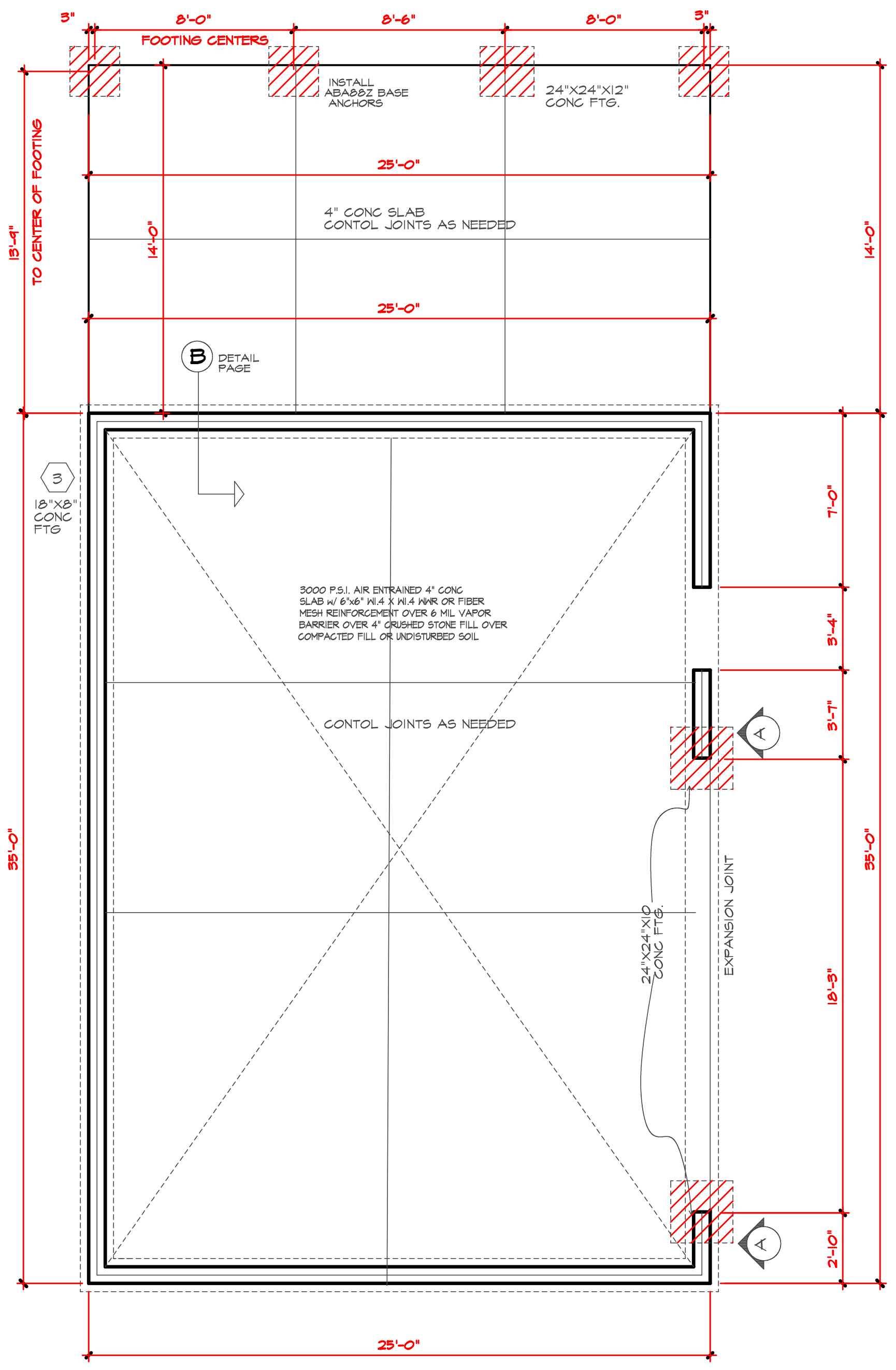
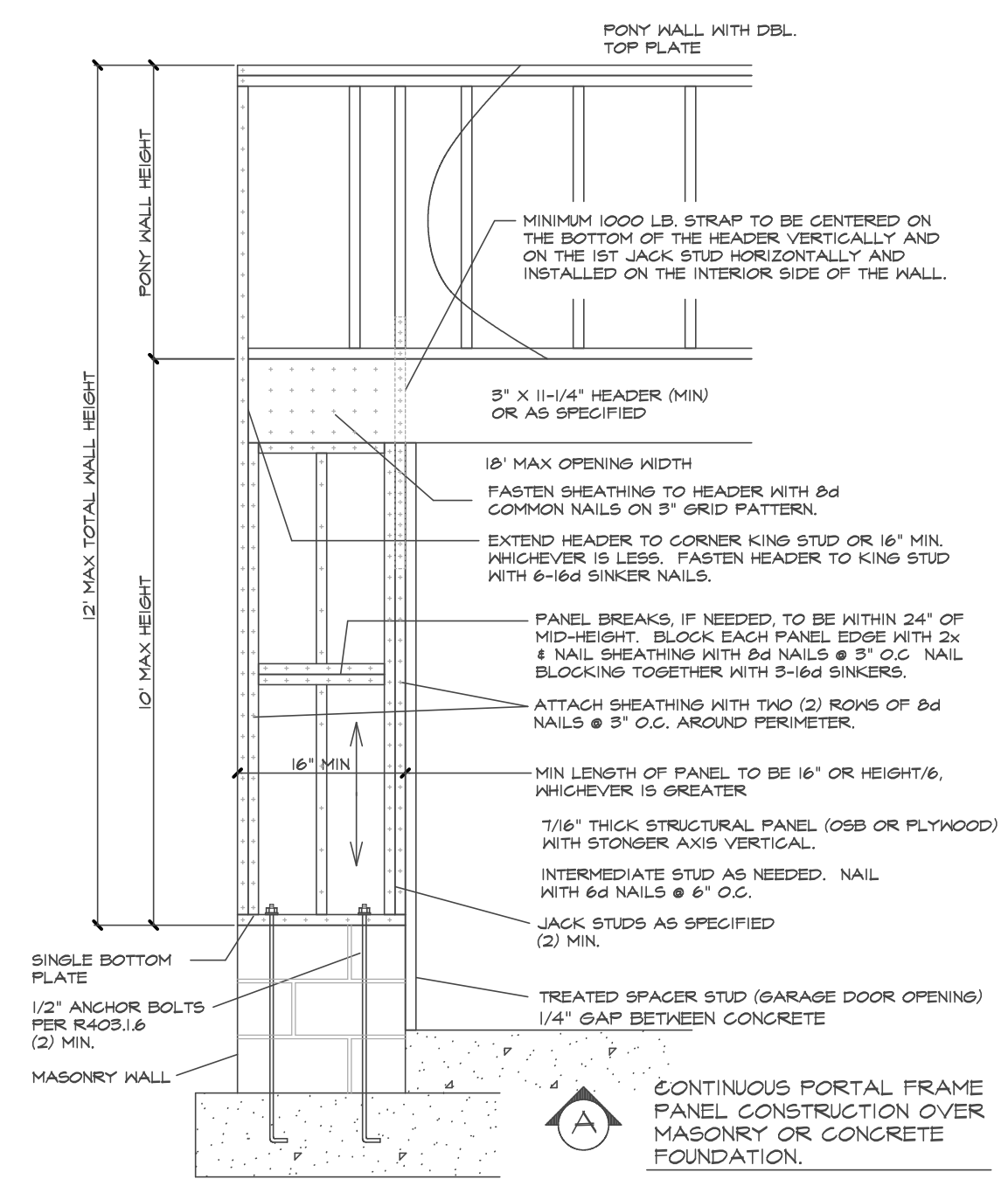
### FOUNDATION STRUCTURAL NOTES

100 MPH WIND ZONE

#### FOUNDATION NOTES:

- Deck posts min. 4'-0" above grade are to be knee or diagonally braced per Appendix M. Fastening to house will be by nailer with 5/8" galvanized bolts @ 20" o.c. and 12d hot dipped galv. @ 42" o.c.
- Corners shall be braced with one of the approved methods as outlined in R602.10.3.
- Structural members fastening to conform to Table R602.3(1) and (2).
- Girders and piers shall bear on center 1/3 of pier and footing, respectively.
- 2018 NC State Residential Building Code apply to the construction of footings.
- Typical lug footing to be 18"x8" deep, (UNO)
- Pressure treated wood shall be installed for exterior use.
- Hanger: Schedule (Simpson hangers) for beam to beam connections (UNO)
  - (2)2x10's: LUS2: 0-2
  - (3)2x10's: LUS2: 0-3
  - (2)3-1/4 LVL's: HUS410
- Concrete shall have min. 28 day strength of 3000 psi and max. Slump of 5 inches unless noted otherwise (JNO). Air entrained per Table 4022. All concrete shall be proportioned, mixed, handled, sampled, tested, and placed in accordance with ACI current standards. All samples for pumping shall be taken from the exit pump.
- Allowable soil bearing pressure assumed to be 2000 psf. The contractor must contact Geotechnical Engineer & the Structural Engineer if unsatisfactory subsurface conditions are encountered. The surface area adjacent to the foundation wall shall be provided adequate drainage, and shall be graded so as to drain surface water away from foundation walls

- (3) 2" X 10" SPF GIRDER, TYPICAL
  - CONCRETE BLOCK PIER SIZE SHALL BE:  
 SIZE            HOLLOW MASONRY    SOLID MASONRY  
 8" X 16"        UP TO 32" HIGH        UP TO 5'0" HIGH  
 12" X 16"        UP TO 48" HIGH        UP TO 9'0" HIGH  
 16" X 16"        UP TO 64" HIGH        UP TO 12'0" HIGH  
 24" X 24"        UP TO 96" HIGH  
 WITH 30" X 30" X 10" CONCRETE FOOTING, UNO.
  - WALL FOOTING AS FOLLOWS:  
 DEPTH: 8" - UP TO 2 1/2 STORY  
       10" - 3 STORY  
 WIDTH: SIDING (OR EQUAL)  
       -16" - UP TO 2-1/2 STORY  
       -18" - 3 STORY  
 BRICK VENEER  
       -16" - 1 STORY  
       -20" - 2 STORY  
       -24" - 3 STORY
- FOR FOUNDATION WALL HEIGHT AND BACKFILL REQUIREMENTS, REFER TO NORTH CAROLINA RESIDENTIAL BUILDING CODE TABLE R404.1.1 (1 THRU 4)
- NOTE: ASSUMED SOIL BEARING CAPACITY = 2000 PSF. CONTRACTOR MUST VERIFY SITE CONDITIONS AND CONTACT SOILS ENGINEER IF MARGINAL OR UNSTABLE SOILS ARE ENCOUNTERED.
- ATTACH SILL PLATE WITH 1/2" DIA. ANCHOR BOLTS AT 6'0" CENTERS (7" EMBEDMENT) AND 12" FROM EACH CORNER. (SECTION R403.1.6)
- PL DESIGNATES A SIGNIFICANT POINT LOAD TO HAVE SOLID BLOCKING TO PIER. SOLID BLOCKING ALL BEAM BEARING POINTS NOTED TO HAVE THREE OR MORE STUDS TO FOUNDATION, TYPICAL.



### FOUNDATION PLAN

SCALE 1/4" = 1'-0"



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Plan #

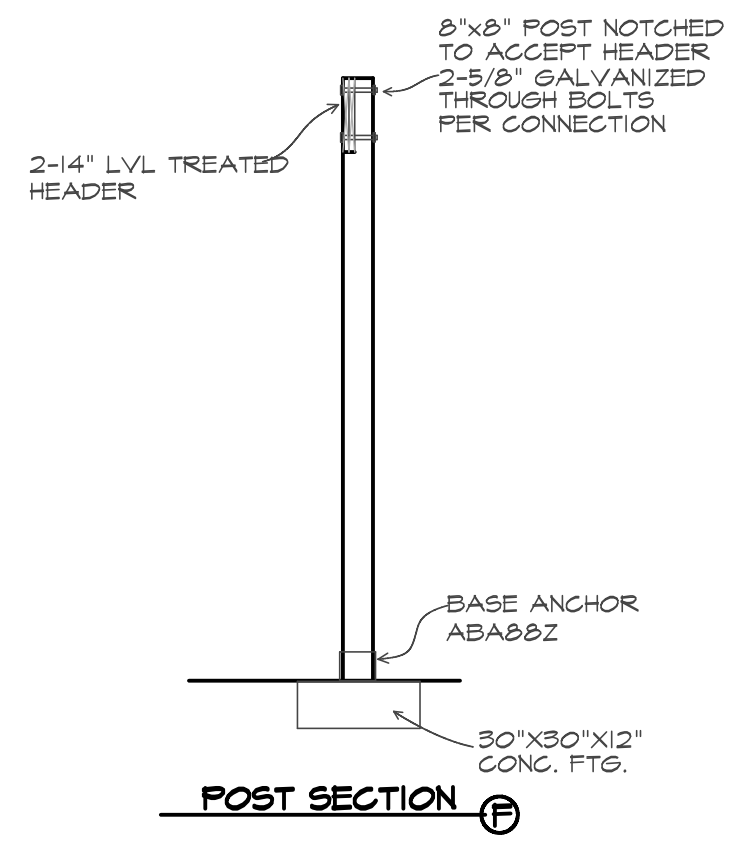
# 25'X35' SHOP

THIS PLAN DESIGNED UNDER NORTH CAROLINA RESIDENTIAL CODE 2018 EDITION (2018 IRC)

DATE 6/19/2023

PROJECT # 230606

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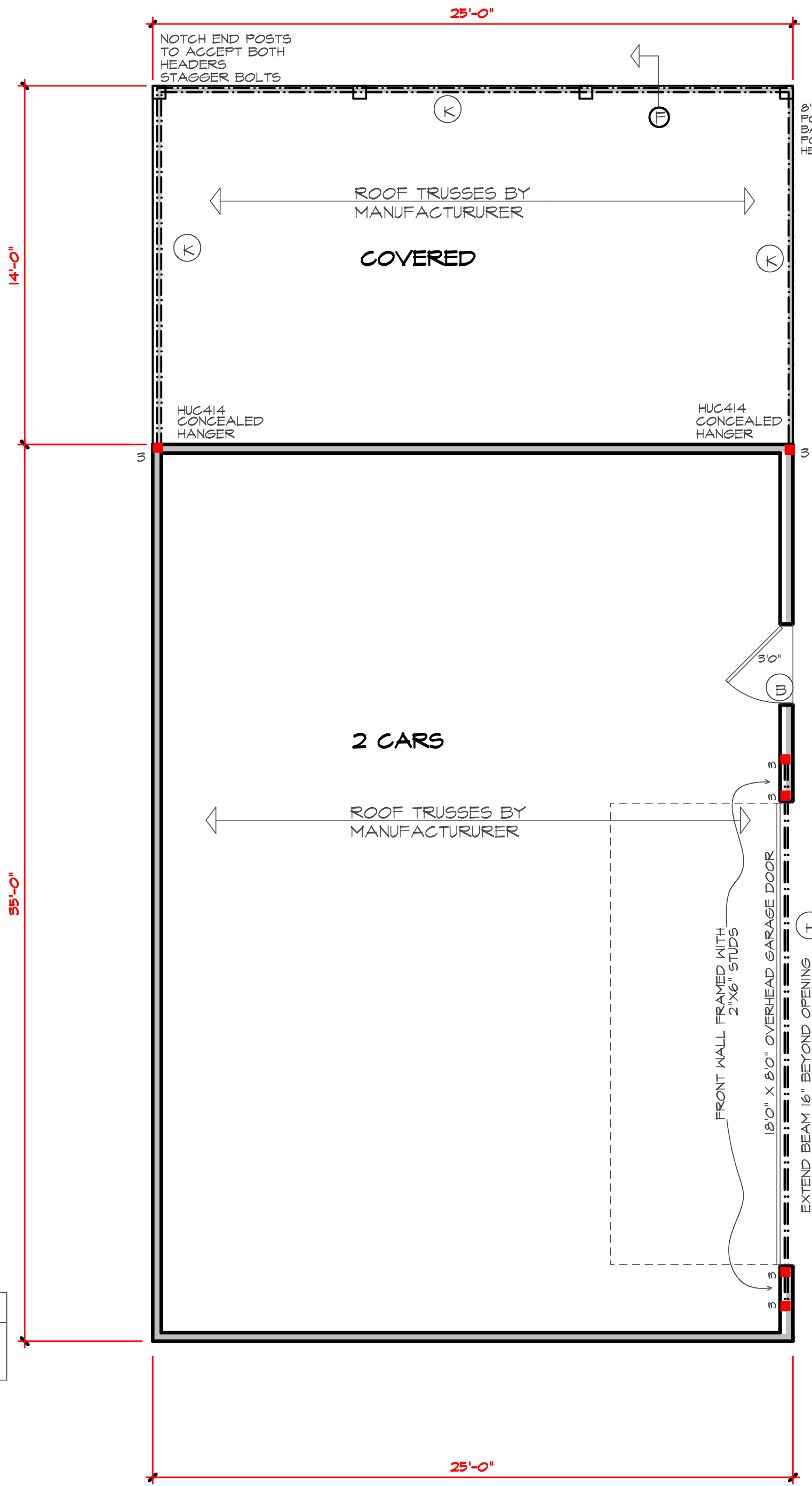


- FRAMING NOTES:**
- Design Loads (R301.5) Live Loads Dead Loads (PSF) (PSF)
 

Rooms not for Sleeping	40	10
Sleeping Rooms	30	10
Attic w/Permanent Stairs	40	10
Attic w/o Permanent Stairs	20	10
Attic w/o Storage	10	10
Stairs	40	10
Exterior Balconies	60	10
Decks	40	10
Guardrails & Handrails	200	-
Passenger Vehicle Garages	50	10
Fire Escapes	40	10
Snow	20	-
  - Wind Load: (Refer to Table R301.2.4) Vents Zone before Construction Wake County 115 mph
  - Wall Bracing: Braced wall panels shall be constructed according to section R602.10.3. The wall structural paneling shall comply with Table R602.10.5. The length of braced panels shall be determined by section R602.10.4. Lateral bracing shall be satisfied per method 3 by continuously sheathing walls with structural sheathing per Table R601.3. Note that any specific brace wall detail shall be installed as specified.
  - All framing lumber shall be SPF#2 (Fb=875 psi) unless otherwise noted (LVL). All treated lumber shall be SYP#2 (Fb=975 psi). Plate material may be SPF#3 or SYP#3 (F<sub>c</sub>(prop.) = 425 psi min.).
  - All exterior headers to be (2)2x10 n.o.s. w. dbt. jacks for all openings >4'-6". use (2)2x8 w. dbt. jacks for all openings >3'-0" n.o.s.
  - All interior non-bearing headers to be min. (2)2x4 flat n.o.s.
  - Fireblock to conform with R602.8

- BEAM SCHEDULE**
- (A) 2-2"X10" FLUSH
  - (B) 2-2"X10" DROPPED
  - (C) 2-2"X8 FLUSH
  - (D) 2-2"X8" DROPPED
  - (E) 2-1.75"X9.25" LVL FLUSH
  - (F) 2-1.75"X9.25" DROPPED
  - (G) 1-1.75"X14" LVL FLUSH
  - (H) 2-1.75"X16 LVL DROPPED
  - (K) 2-1.75"X14" LVL FLUSH
  - (L) 3-1.75"X18" LVL DROPPED

SQUARE FOOTAGE	
GARAGE	875 SQ.FT.
COVERED PORCH	348 SQ.FT.



**FIRST FLOOR PLAN**  
SCALE 1/4" = 1'-0"



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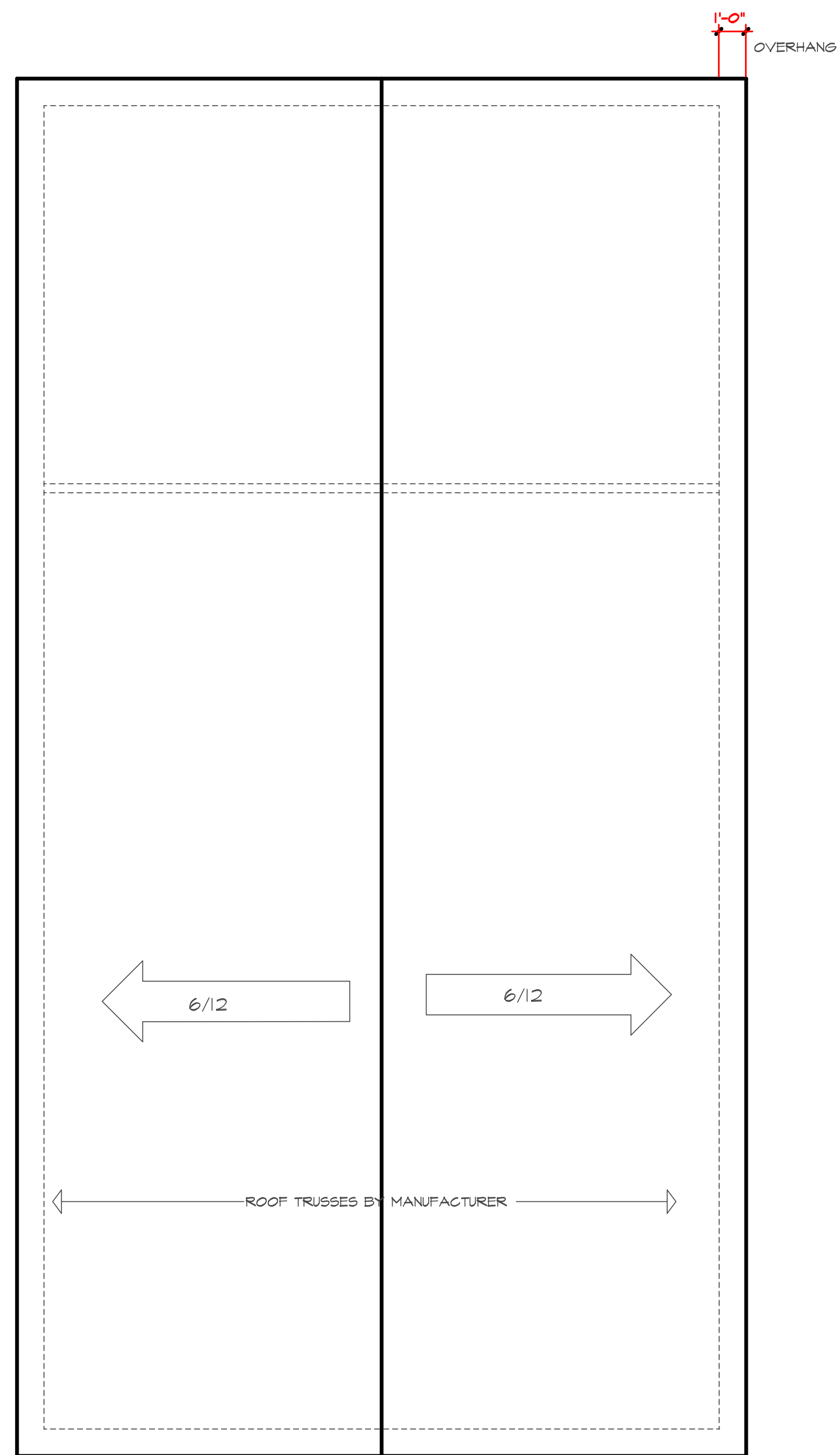
Plan #  
**25'X35' SHOP**

**THIS PLAN DESIGNED UNDER NORTH CAROLINA RESIDENTIAL CODE 2018 EDITION (2018 IRC)**

DATE  
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**ROOF PLAN**  
SCALE 1/4" = 1'-0"

**TRUSS SYSTEM REQUIREMENTS**

NC (2018 NRC): Wind: 115-120 MPH

1. TRUSS SYSTEM LAYOUTS (PLACEMENT PLANS) SHALL BE DESIGNED IN ACCORDANCE WITH SEALED STRUCTURAL PLANS. ANY NEED TO CHANGE TRUSSES SHALL BE COORDINATED WITH ENGINEER OF RECORD
2. TRUSS SCHEMATICS (PROFILES) SHALL BE PREPARED AND SEALED BY TRUSS MANUFACTURER.
3. ALL TRUSSES SHALL BE DESIGNED FOR BEARING ON SFF #2 OR #3 PLATES OR LEDGERS (UNO).
4. ALL REQUIRED ANCHORS FOR TRUSSES DUE TO UPLIFT OR BEARING SHALL MEET THE REQUIREMENTS AS SPECIFIED ON THE TRUSS SCHEMATICS.
5. INSTALL A TRUSS BELOW PARALLEL NON-LOAD BEARING WALLS OR BLOCK BETWEEN TRUSSES (BY TRUSS SUPPLIER) UNDER WALLS.

**STRUCTURAL NOTES**

1) ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NORTH CAROLINA STATE RESIDENTIAL CODE - 2018 EDITION (2018 IRC), PLUS ALL LOCAL CODES AND REGULATIONS.

ALL MEMBERS SHALL BE FRAMED, ANCHORED, TIED AND BRACED IN ACCORDANCE WITH GOOD CONSTRUCTION PRACTICE AND THE BUILDING CODE.

2) DESIGN LOADS SEE TABLE R301.5

WIND SPEED: (REFER TO TABLE R301.2.4) VERIFY ZONE BEFORE CONSTRUCTION.

3) WALL BRACING: WALLS SHALL BE BRACED ALONG BRACED WALL LINES ACCORDING TO SECTION R602.10. THE AMOUNT, LOCATION, AND CONSTRUCTION OF BRACING SHALL COMPLY WITH R602.10. NOTE THAT THE BRACING SHOWN ON THE PLANS IS BASED ON THE PRESCRIPTIVE BRACING REQUIREMENTS OF THE CODE AND SHALL BE VERIFIED AND/OR APPROVED BY THE CODE OFFICIAL.

4) CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 3000 PSI AND A MAXIMUM SLUMP OF 5 INCHES UNLESS NOTED OTHERWISE (UNO). AIR ENTRAINMENT 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.

5) ALLOWABLE SOIL BEARING PRESSURE ASSUMED TO BE 2000 PSF. THE CONTRACTOR MUST CONTACT A GEOTECHNICAL ENGINEER AND THE STRUCTURAL 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 DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS.

6) ALL FRAMING LUMBER SHALL BE SPF #2 (FB = 875 PSI) UNLESS NOTED OTHERWISE (UNO). ALL TREATED LUMBER SHALL BE SYP #2 (FB=975 PSI). PLATE MATERIAL MAY BE SPF #3 OR SYP #3 (FC/PERP = 425 PSI - MIN).

7) ALL WOODEN BEAMS AND HEADERS SHALL HAVE THE FOLLOWING END SUPPORTS: (1) 2X4 STUD COLUMN FOR 6'-0" MAX. BEAM SPAN (UNO), (2) 2X4 STUDS FOR BEAM SPAN GREATER THAN 6'-0" (UNO).

8) L.V.L. SHALL BE LAMINATED VENEER LUMBER: FB=2600 PSI, FV=285 PSI, E=1,900,000 PSI, P.S.L. SHALL BE PARALLEL STRAND LUMBER: FB=2900 PSI, FV=290 PSI, E=2,000,000 PSI, L.S.L. SHALL BE LAMINATED STRAND LUMBER: FB=2250 PSI, FV=400 PSI, E=1,850,000 PSI. INSTALL ALL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS.

9) 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 MANUFACTURER'S SPECIFICATIONS.

10) ALL STRUCTURAL STEEL SHALL BE ASTM A-36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3 1/2" INCHES AND FULL FLANGE WIDTH. PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (1/2" DIAMETER X 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDED 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.

11) REBAR SHALL BE DEFORMED STEEL, ASTM#615, GRADE 60.

12) FLITCH BEAMS SHALL BE BOLTED TOGETHER USING (2) ROWS OF 1/2" DIAMETER BOLTS (ASTM A307) 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.

13) BRICK LINTELS SHALL BE 3 1/2"x3 1/2"x1/4" STEEL ANGLE FOR UP TO 6'-0" SPAN AND 6"x4"x3/16" STEEL ANGLE WITH 6" LEG VERTICAL FOR SPANS UP TO 9'-0" (UNO).

14) THE POSITIVE AND NEGATIVE DESIGN PRESSURE FOR DOORS AND WINDOWS SEE R301.2(6)

**DWELLING / GARAGE SEPARATION**

REFER TO SECTIONS R302.3, R302.6, AND R302.7

**WALLS.** A minimum 1/2" gypsum board must be installed on all walls supporting floor/ceiling assemblies used for separation required by this section.

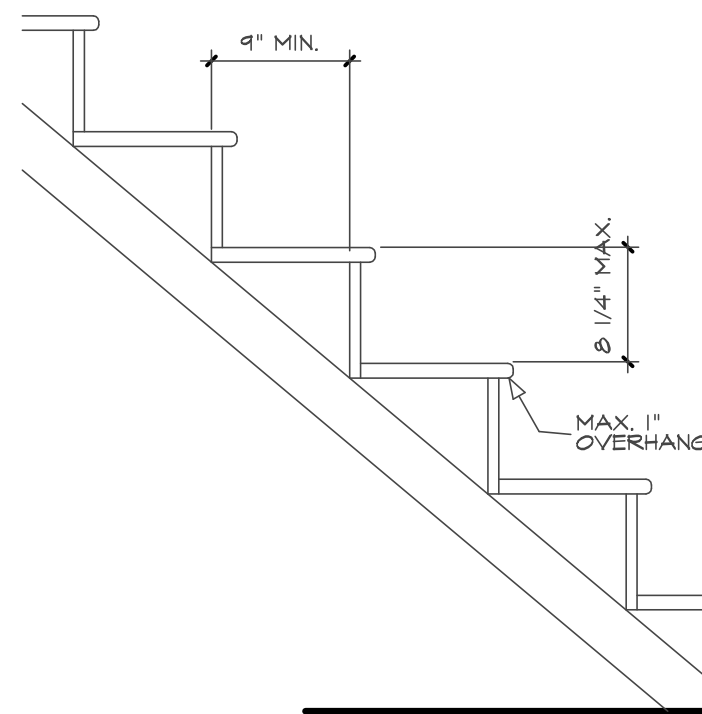
**STAIRS.** A minimum of 1/2" gypsum board must be installed on the underside and exposed sides of all stairways.

**CEILING.** A minimum of 1/2" gypsum must be installed on the garage ceiling if there are no habitable room above the garage. If there are habitable room above the garage a minimum of 5/8" type X gypsum board must be installed on the garage ceiling.

**OPENING PENETRATIONS.** Openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

**DUCT PENETRATIONS.** Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage (0.40 mm) sheet steel or other approved material and shall have no openings into the garage.

**OTHER PENETRATIONS.** Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302.11, Item 4.

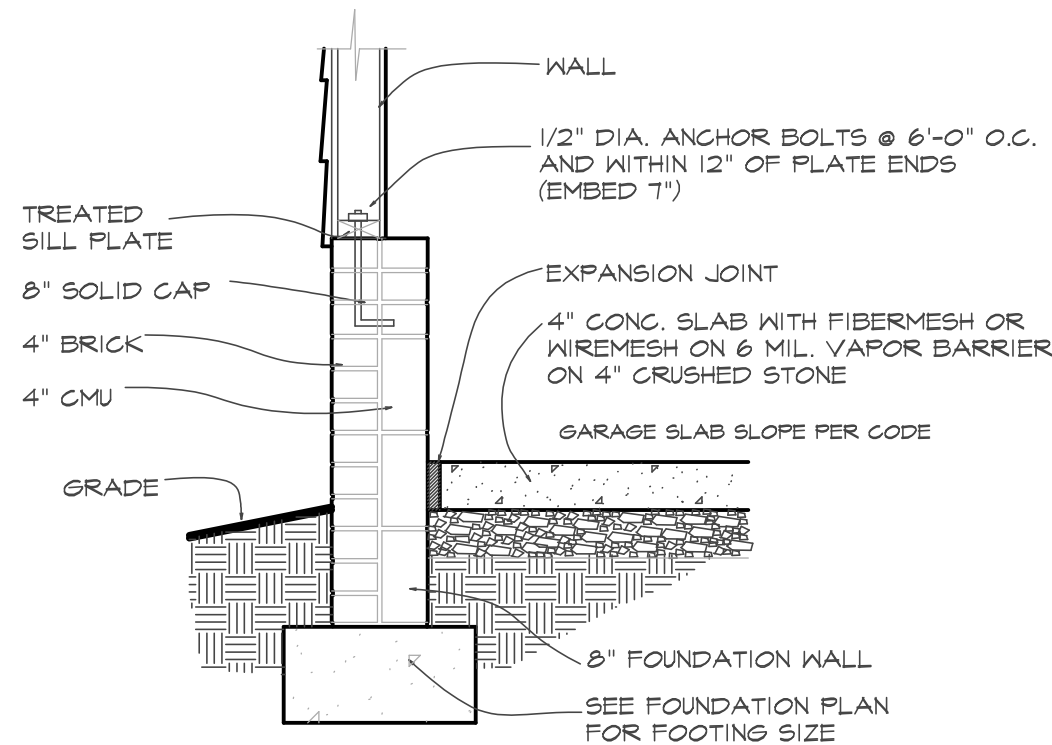


**STAIR NOTES:**

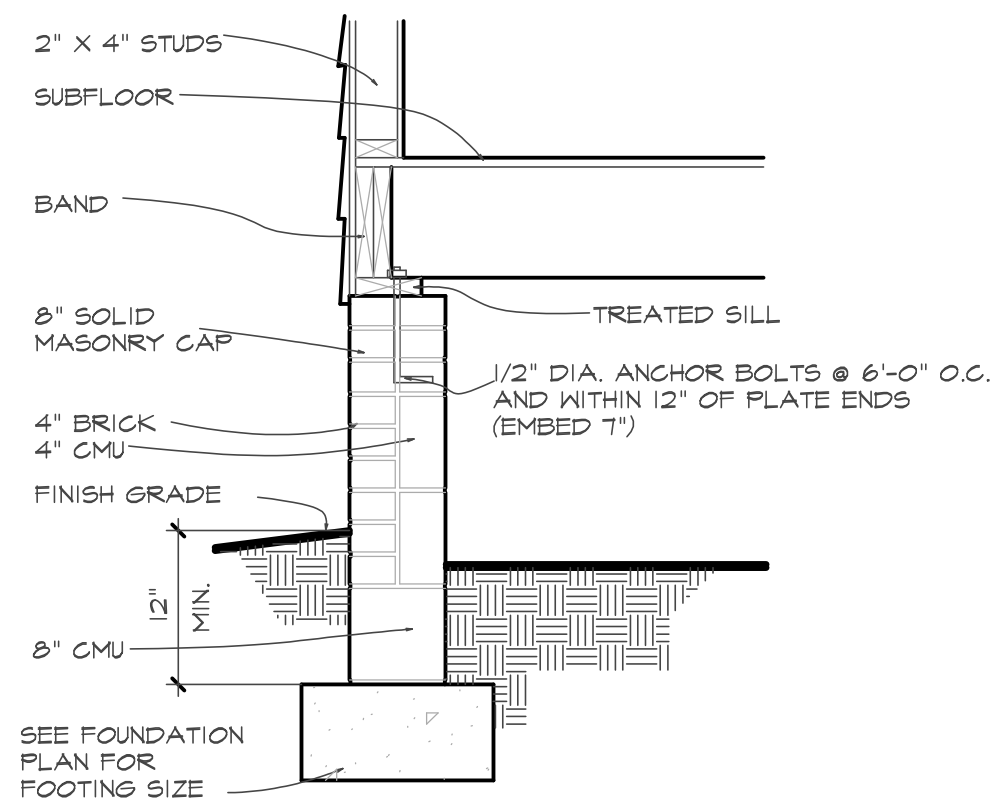
1. STAIRS RISERS MUST BE UNIFORM AND NOT EXCEED 8 1/4".
2. TREADS SHALL NOT BE LESS THAN 10" DEEP. A 1" PROJECTION OVER RISER IS PERMITTED.
3. A MINIMUM OF 6'8" HEADROOM MUST BE MAINTAINED AT ALL PLACES ON STAIR.
4. THE WIDTH OF THE STAIR SHALL BE A MINIMUM OF 3'0". HANDRAIL MAY PROJECT FROM EACH SIDE OF STAIR A DISTANCE OF 3 1/2" INTO THE REQUIRED WIDTH.
5. WINDERS MUST BE A MINIMUM OF 9" IN WIDTH AT 12" FROM THE NARROWEST SIDE. TREAD SHALL BE NO NARROWER THAN 4" AT ANY POINT AND AVERAGE NO LESS THAN 9 INCHES.
6. HANDRAILS SHALL BE NO LESS THAN 34" AND NO MORE THAN 38" ABOVE TREAD NOSING.
7. WINDERS AND SPIRAL STAIRS SHALL HAVE THE HANDRAIL LOCATED ON THE OUTSIDE RADIUS.
8. ALL REQUIRED HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE STAIRS.

**STAIR DETAIL**

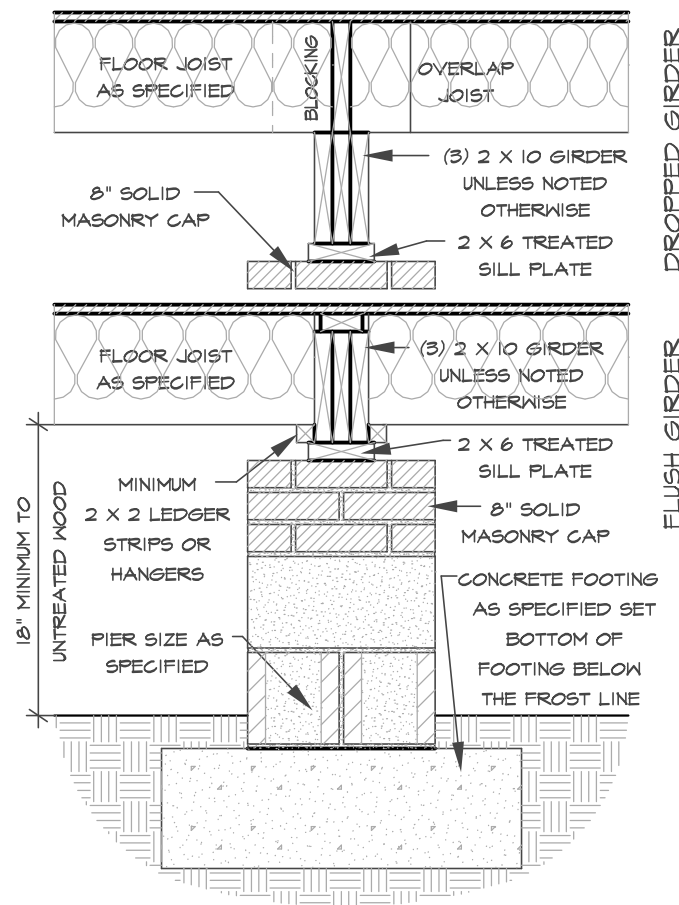
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**B SECTION AT GARAGE SLAB**



**D SECTION AT CRAWL**



**C DROPPED/ FLUSH PIER**

SCALE 3/4" = 1'-0"

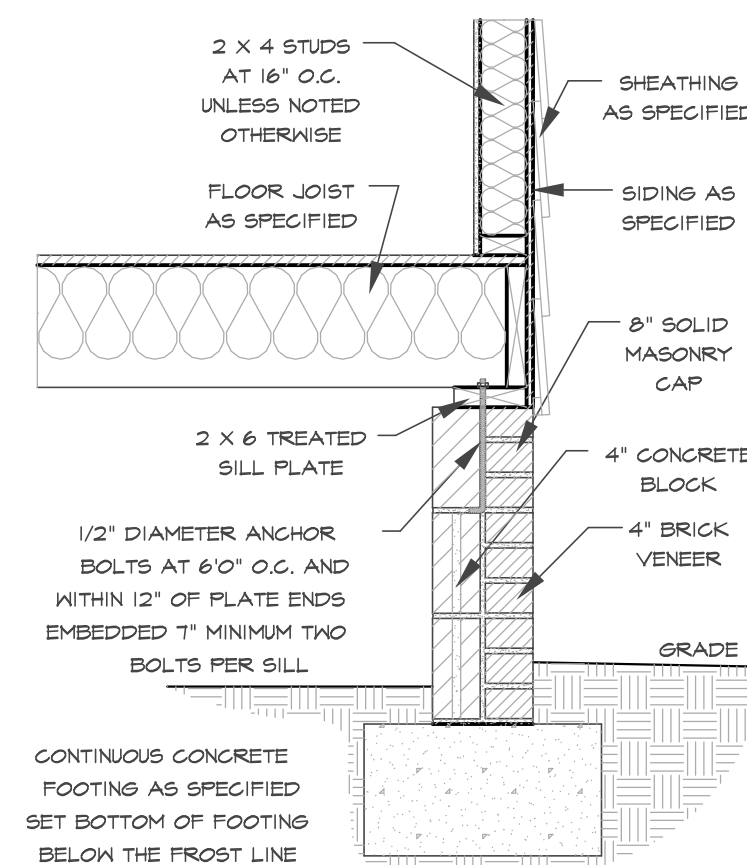
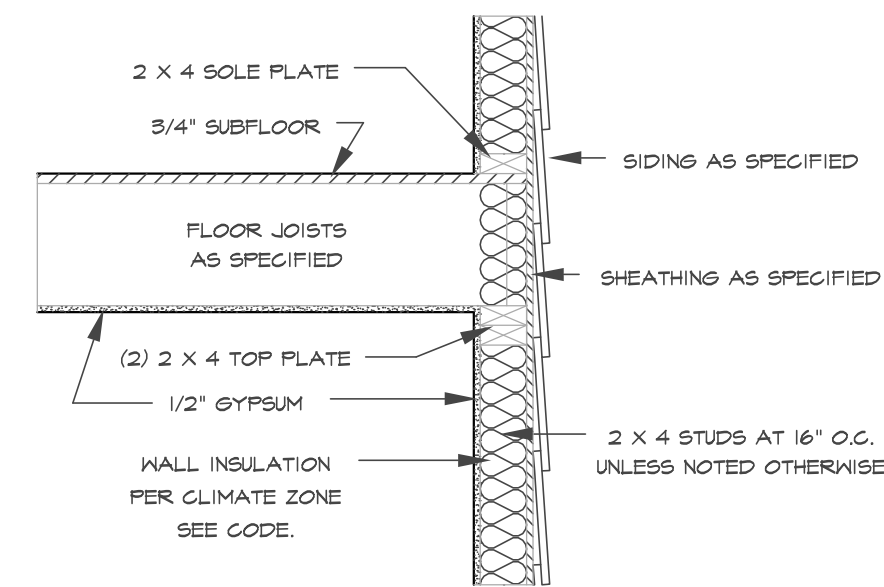
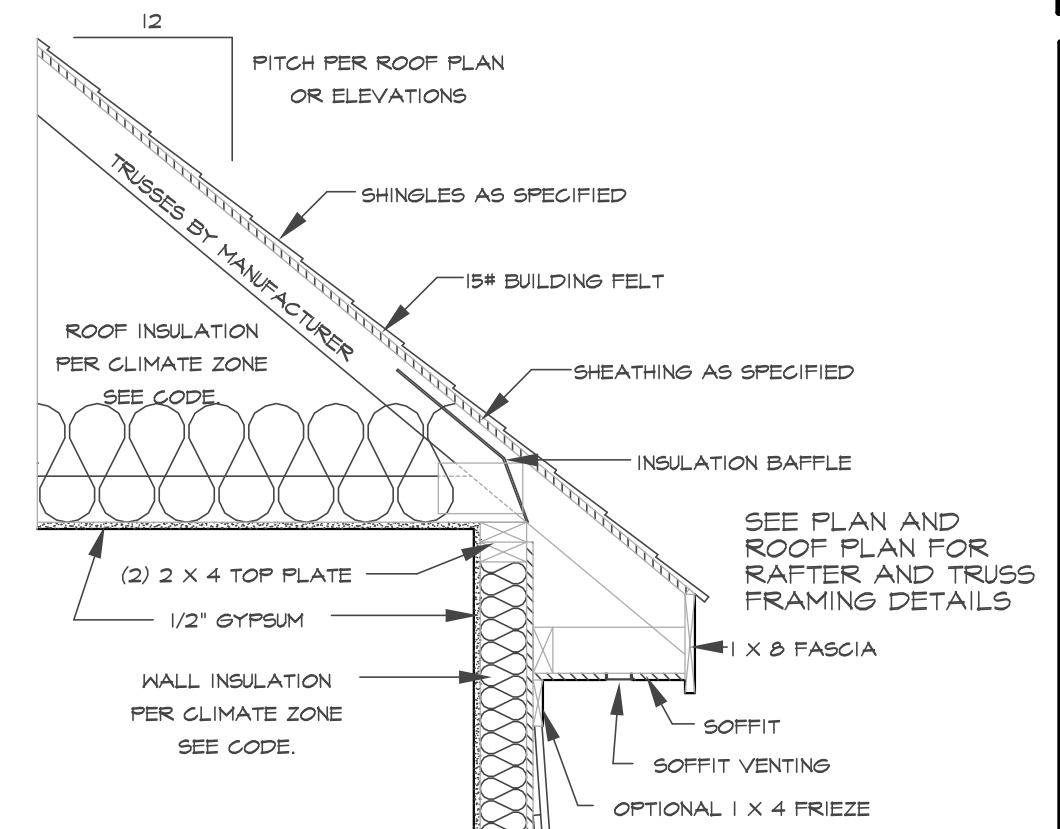
**TABLE R402.1.4 EQUIVALENT U-FACTORS\***

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>a</sup>	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR <sup>b</sup>	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
3	0.35	0.55	0.030	0.077	0.141	0.047	0.091 <sup>c</sup>	0.136
4	0.35	0.55	0.030	0.077	0.141	0.047	0.059	0.065
5	0.35	0.55	0.030	0.061	0.082	0.033	0.052	0.065

a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.  
 b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.07 in Climate Zone 3, 0.07 in Climate Zone 4 and 0.254 in Climate Zone 5.  
 c. Basement wall U-factor of 0.360 in warm-humid locations as defined by Figure R301.1 and Table R301.1.  
 d. A maximum of two glazed fenestration product assemblies having a U-factor no greater than 0.55 and a SHGC no greater than 0.70 shall be permitted to be substituted for minimum code compliant fenestration product assemblies without penalty. When applying this note and using the REScheck "U-A Trade-off" compliance method to alter continued use of the software, the applicable fenestration products shall be modeled as meeting the U-factor of 0.35 and the SHGC of 0.30, as applicable, but the fenestration products actual U-factor and actual SHGC shall be noted in the comments section of the software for documentation of application of this note to the applicable products. Compliance for these substitute products shall be verified compared to the allowed substituted maximum U-value requirement and maximum SHGC requirement, as applicable.

**TABLE R402.1.2 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT\***

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>a</sup>	SKYLIGHT U-FACTOR	GLAZED FENESTRATION SHGC <sup>a</sup>	CEILING R-VALUE <sup>b</sup>	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT <sup>c</sup> WALL R-VALUE	SLAB <sup>d</sup> R-VALUE & DEPTH	CRAWL SPACE WALL R-VALUE
3	0.35	0.55	0.30	38 or 30ci	15 or 13+2.5"	5/13 or 5/10ci	19	5/13 <sup>e</sup>	0	5/13
4	0.35	0.55	0.30	38 or 30ci	15 or 13+2.5"	5/13 or 5/10ci	19	10/15	10	10/15
5	0.35	0.55	NR	38 or 30ci	15 <sup>g</sup> or 13+5" or 15+3"	13/17 or 13/12.5ci	30 <sup>f</sup>	10/15	10	10/19



CONTINUOUS CONCRETE FOOTING AS SPECIFIED SET BOTTOM OF FOOTING BELOW THE FROST LINE

**TYPICAL WALL SECTION**  
SCALE 3/4" = 1'-0"