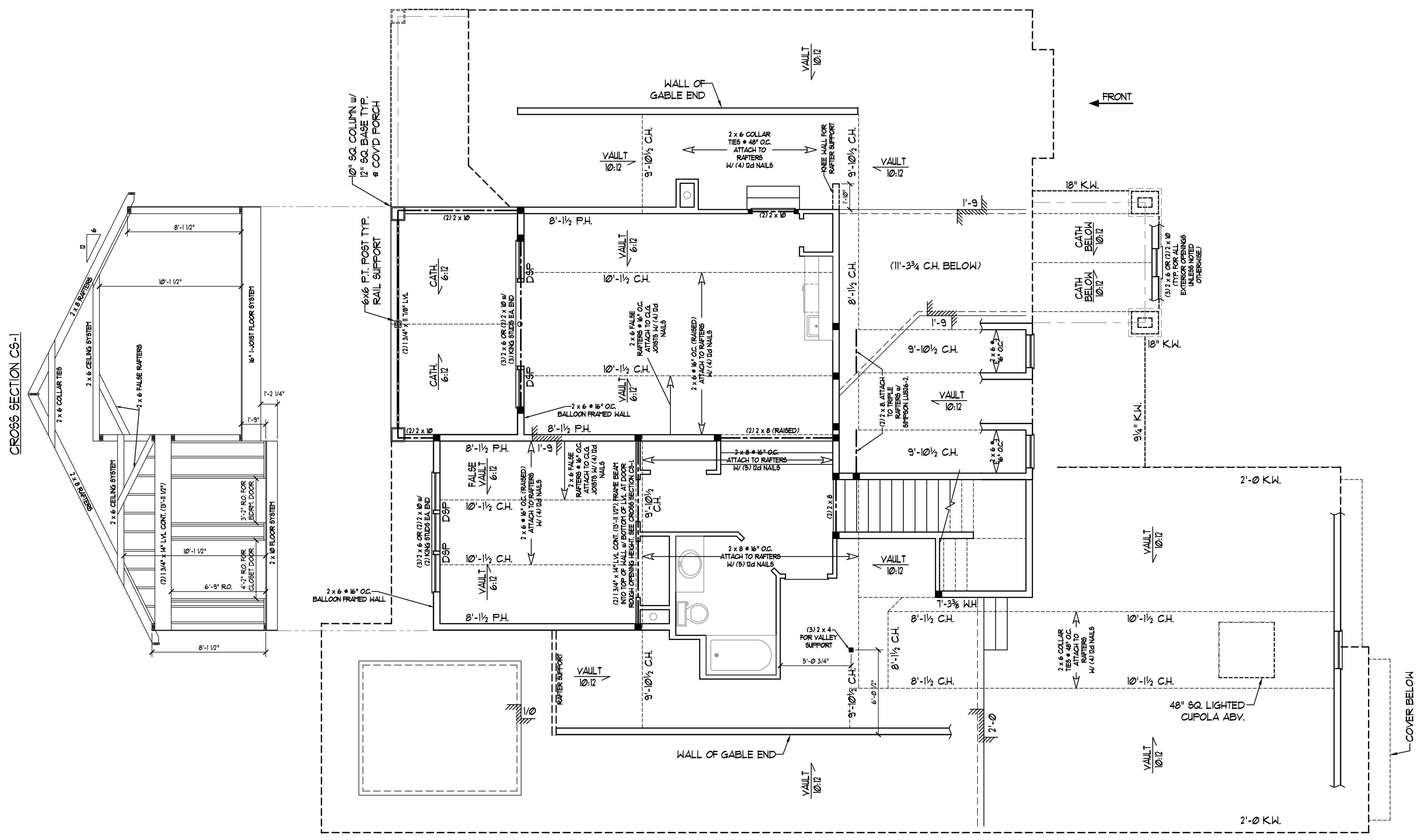


AE FLOOD ZONE. BFE 11, DFE 13, top of bottom floor 13.4, top of next higher floor 16, top of slab 13.5, machinery and equipment 13.3.  
 1. Flood vents required below the design flood elevation per R322.2.2. 2. Flood vents to be in each enclosed area. Minimum of two openings on different sides of each enclosed Area. Total net area of all openings shall be at least 1 square inch per square foot of enclosed area. Flood vents openings to be within one foot of grade. 3. Flood resistant materials / construction per R322.1.8 in areas below the design flood elevation. 4. Protection of electrical, mechanical, and plumbing systems per R322.1.  
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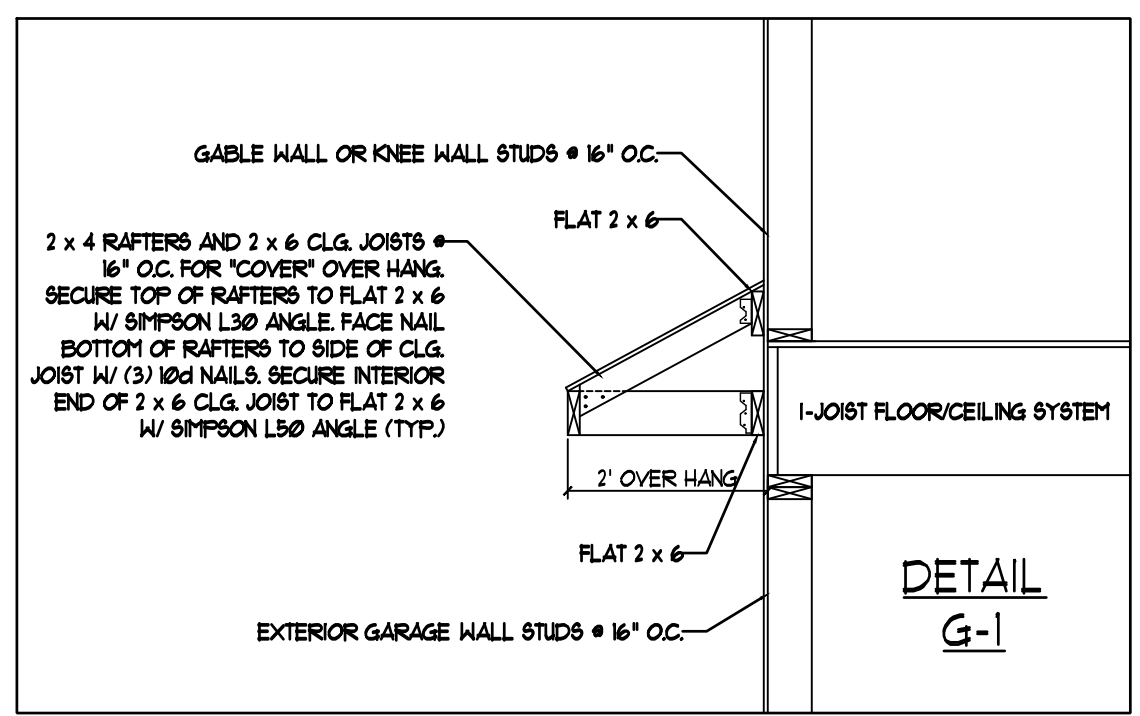
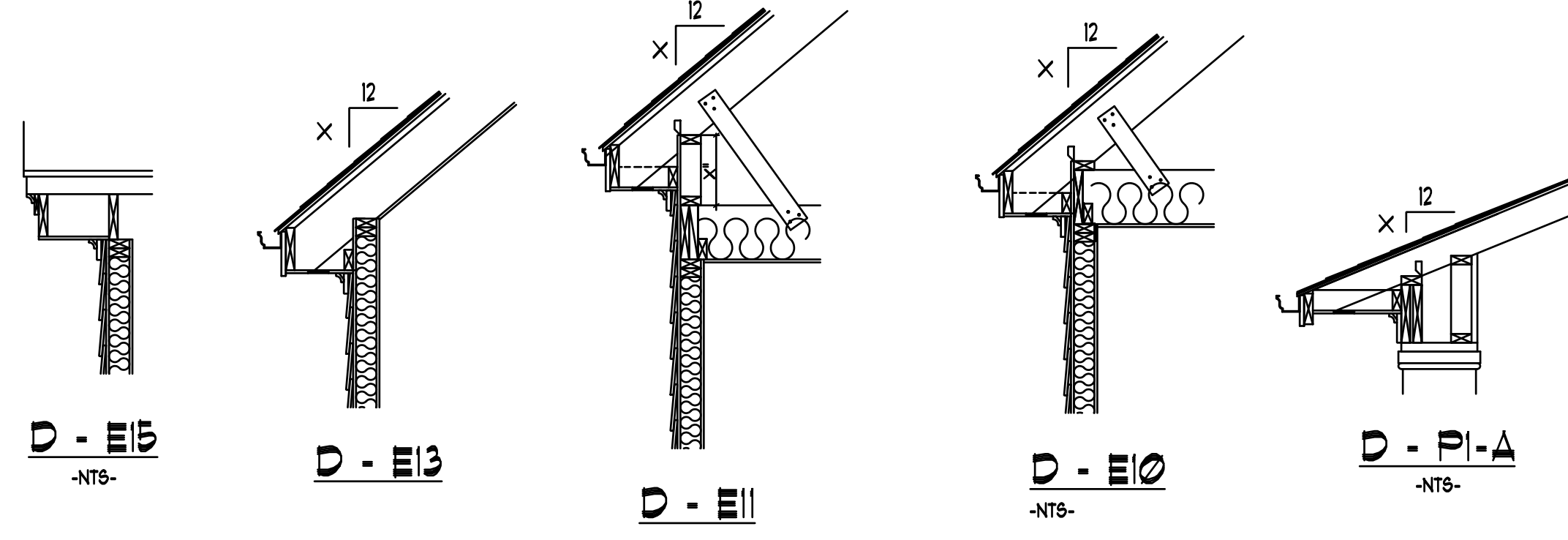




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**STRUCTURAL NOTES:**  
 1) REFER TO STANDARD STRUCTURAL NOTES AND TYPICAL WALL SECTION PAGES FOR ADDITIONAL STRUCTURAL INFORMATION.  
 2) SECURE ALL BEAMS SUPPORTING ROOF TRUSSES OR RAFTERS TO THEIR RESPECTIVE BEARING SUPPORT MEMBERS w/ (1) SIMPSON CS6 STRAP PER CONNECTION LAPPING 14" MIN. ONTO EACH BEARING MEMBER OR (2) SIMPSON M102 THIST STRAPS (TYP. UNLESS NOTED OTHERWISE)

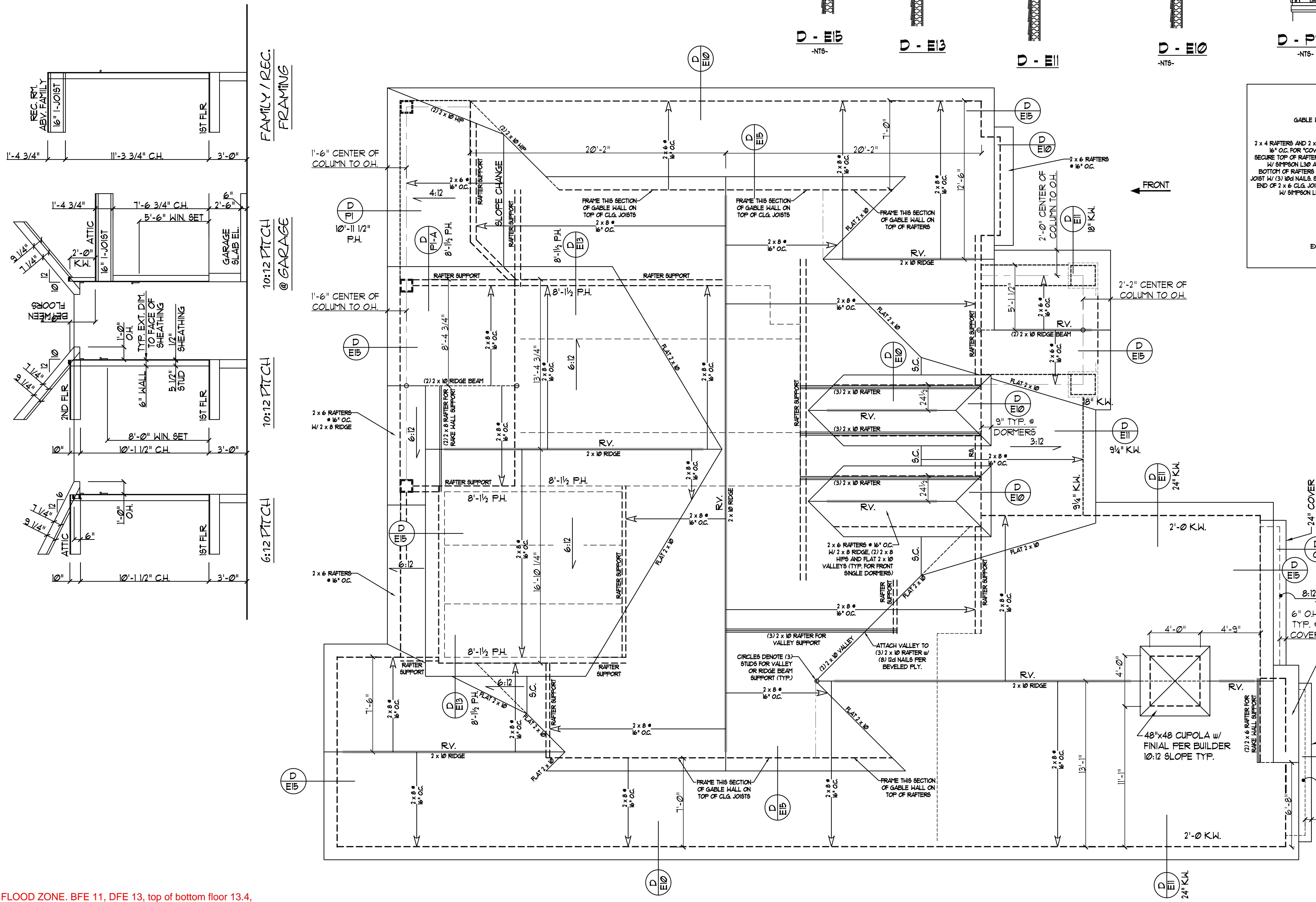
**BUILDER NOTE: (SECTION IS FOR REFERENCE ONLY)**  
IF FLOOR JOIST OR RAFTERS SIZES CONFLICT w/  
WHAT IS SHOWN IN THIS SECTION THE BUILDER IS  
RESPONSIBLE FOR ADJUSTING PLATE & K.W. HGTS.  
OR EXTEND OVERHANGS AS REQ'D TO ALIGN SOFFITS.



- NOTES:**
- 1) FRAME RAFTERS ON TOP OF CEILING JOISTS OR KNEE WALL PER ROOF FRAMING PLAN UNO.
  - 2) DIMENSIONS ARE TO FRAMING
  - 3) 10:12 ROOF PITCH (UNO.)
  - 4) 12" OVERHANGS FROM FACE OF FRAMING UNO.
  - 5) ADJUST PLATE & K.W. HGTS. OR EXTEND OVERHANGS AS REQ'D TO ALIGN SOFFITS FOR UNEQUAL ROOF PITCHES.

| ATTIC VENTILATION  |   |
|--|---|
| REQUIRED   | 3554 SQ. FT. OF ATTIC/600 = 5.92 SQ. FT. EACH OF INLET & OUTLET |
| PROVIDED   | INLET .01 SQ. FT. PER X 81 LINEAR FT. = 6.09 SQ. FT. OF VENT.   |
|  | OUTLET .11 SQ. FT. PER X 51 LINEAR FT. = 6.21 SQ. FT. OF VENT.  |
| <ul style="list-style-type: none"> <li>• CALCULATIONS SHOWN. CONSIDER VENTILATORS USED AT LEAST 3 FEET ABOVE THE CORNICE VENTS</li> <li>• CATHEDRAL CEILING SHALL HAVE A 1" MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE ROOF DECK AND THE INSULATION.</li> </ul> |   |

- STRUCTURAL NOTES:**
- 1) REFER TO STANDARD STRUCTURAL NOTES AND TYPICAL WALL SECTION PAGES FOR ADDITIONAL STRUCTURAL INFORMATION
  - 2) SECURE ALL BEAMS SUPPORTING ROOF TRUSSES OR RAFTERS TO THEIR RESPECTIVE BEARING SUPPORT MEMBERS w/ (1) SIMPSON C86 STRAP PER CONNECTION LAPPING 1/4" MIN. ONTO EACH BEARING MEMBER OR (2) SIMPSON M192 THIST STRAPS (TYP. UNLESS NOTED OTHERWISE)

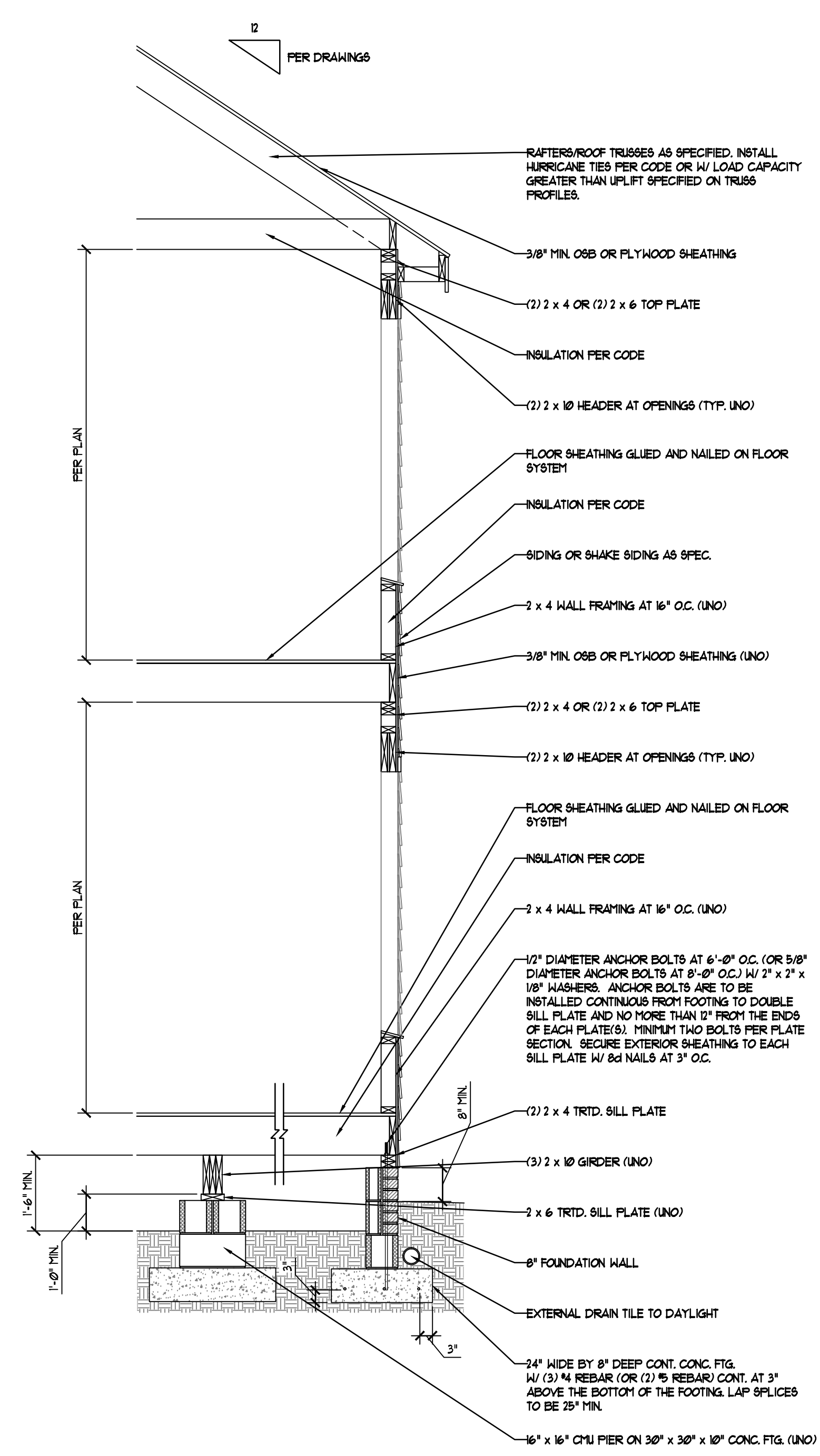


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ART 8.17.2016

DATE: MAY 23, 2014  
 SCALE: NTS  
 DRAWN BY: T5Z  
 ENGINEERED BY: T5Z  
 REVIEWED BY: T5Z

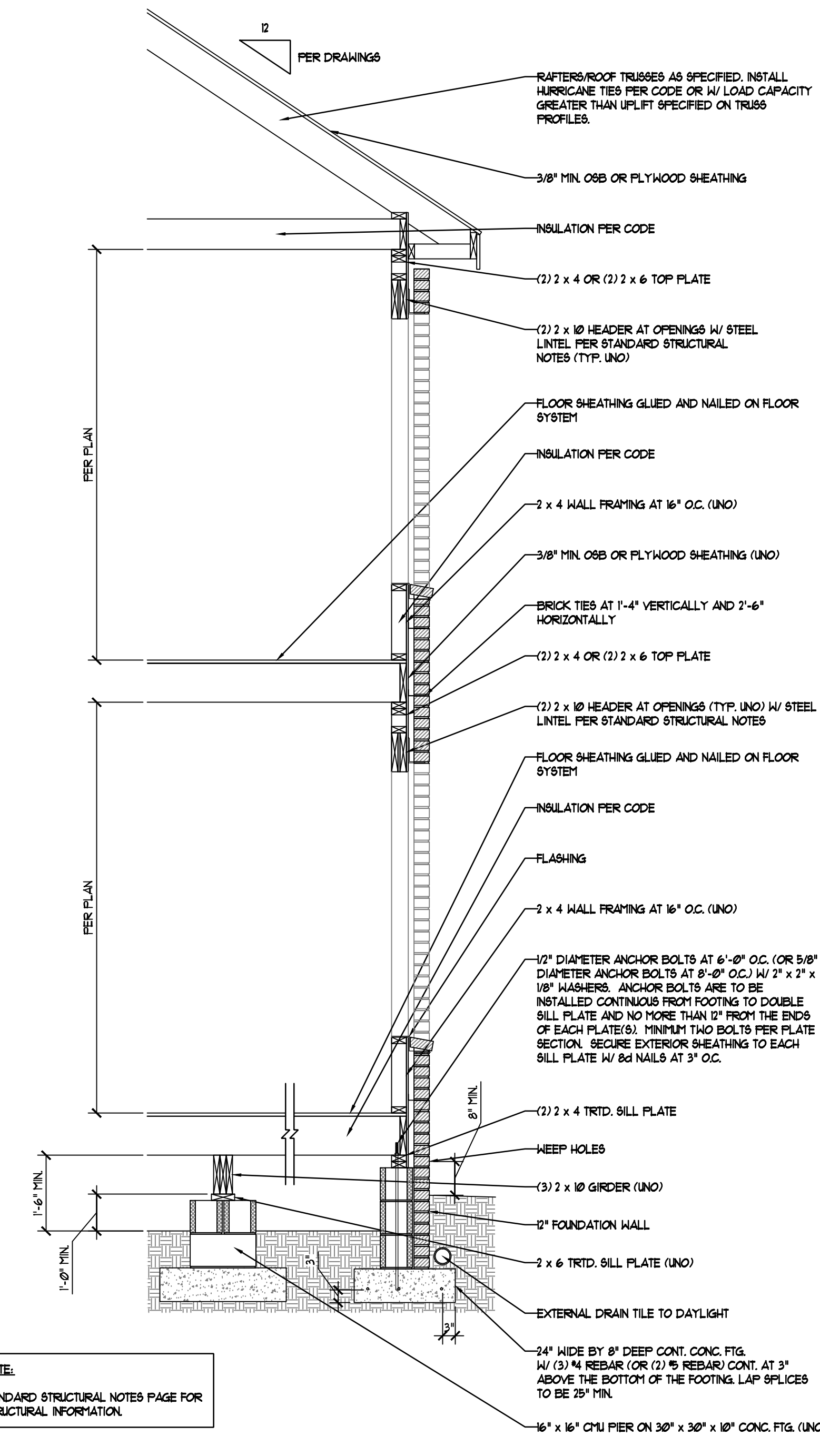
SPECTRA ENGINEERING AND DESIGN, PLLC  
 201 SHANNON OAKS CIRCLE, SUITE 200  
 CARY, NORTH CAROLINA 27511  
 TEL: (919) 218-2841 FAX: .....  
 N.C. LICENSE NO. P-09346

WALL SECTION



**CRAWL SPACE WALL SECTION WITH SIDING/SHAKE SIDING**  
 SEE MONOLITHIC SLAB DETAILS PAGE FOR MONOLITHIC FOUNDATION SPECIFICATIONS  
 SEE STEM WALL DETAILS PAGE FOR STEM WALL FOUNDATION SPECIFICATIONS

**STRUCTURAL NOTE:**  
 - REFER TO STANDARD STRUCTURAL NOTES PAGE FOR ADDITIONAL STRUCTURAL INFORMATION.



**CRAWL SPACE WALL SECTION WITH BRICK VENEER**  
 SEE MONOLITHIC SLAB DETAILS PAGE FOR MONOLITHIC FOUNDATION SPECIFICATIONS  
 SEE STEM WALL DETAILS PAGE FOR STEM WALL FOUNDATION SPECIFICATIONS

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07/01/16  
 120-140 MPH WALL  
 DETAILS  
 WSD  
 SHEET ... OF ...

**DISCLAIMER** - ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NORTH CAROLINA RESIDENTIAL CODE (NRC), 2012 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 NRC, INCLUDING CHAPTER 45 FOR CONSTRUCTION IN 110, 120, AND 130 MPH WIND ZONES. DESIGN LOADS ARE AS FOLLOWS:

|  | LIVE LOAD (PSF) | DEFLECTION (LL) |
|--|-----------------|-----------------|
| ATTIC WITH LIMITED STORAGE   | 20              | L/240           |
| ATTIC WITHOUT STORAGE  | 10              | L/360           |
| DECKS  | 40              | L/360           |
| EXTERIOR BALCONIES   | 60              | L/360           |
| FIRE ESCAPES   | 40              | L/360           |
| GUARDRAILS AND HANDRAILS   | 200             | L/360           |
| PASSENGER VEHICLE GARAGES  | 50              | L/360           |
| ROOMS OTHER THAN SLEEPING ROOMS  | 40              | L/360           |
| SLEEPING ROOMS   | 30              | L/360           |
| STAIRS   | 40              | L/360           |
| SNOW   | 20              | L/360           |
| WIND LOAD (BASED ON "WALL AND ROOF CLADDING DESIGN LOADS" 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 110, 120, AND 130 MPH WIND ZONES SHALL BE IN ACCORDANCE WITH CHAPTER 45 OF THE NRC. CONSTRUCTION IN THE COASTAL AND FLOOD PLAINS SHALL BE IN ACCORDANCE WITH CHAPTER 46 OF THE NRC.

**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 1 ACCORDING TO THE UNITED SOIL CLASSIFICATION SYSTEM IN ACCORDANCE WITH TABLE R402.1 OF THE NRC. 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 NRC. 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, 3/4" - 1" DEEP CONTROL JOINTS ARE TO BE SAWED WITHIN 4 TO 12 HOURS OF CONCRETE FINISHING AND WALL LOCATIONS HAVE BEEN MARKED. ADJUST WHERE NECESSARY.

**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 SPLICES** - REINFORCEMENT SHALL BE THE LONGEST LENGTHS PRACTICAL OR BE LAP SPLICED 30" MINIMUM FOR #4 REBAR, 38" MINIMUM FOR #5 REBAR, 45" MINIMUM FOR #6 REBAR, OR THE MINIMUM REQUIRED LAP SPLICE LENGTH OF THE SMALLER BAR AS PER FIGURE R611.3(1) OF THE NRC.

**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 NRC OR IN ACCORDANCE WITH ACI 318, ACI 332, NCMA 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 NRC. CONCRETE FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R404.1(1) THROUGH R404.1(2) OF THE NRC. PRECAST CONCRETE FOUNDATION WALLS ARE TO CONFORM TO SECTION R404.5 OF THE NRC. 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 90, 100, AND 110 MPH WIND ZONES, THE WOOD SOLE PLATE AT EXTERIOR WALLS ON MONOLITHIC SLABS AND WOOD SILL PLATE SHALL BE ANCHORED TO THE FOUNDATION WITH ANCHOR BOLTS SPACED A MAXIMUM OF 6'-0" O.C. (4'-0" O.C. FOR 110 MPH WIND ZONE) AND NOT MORE THAN 12" FROM THE CORNER. THERE SHALL BE A MINIMUM OF TWO BOLTS PER FLANGE SECTION. BOLTS SHALL BE AT LEAST 1/2" IN DIAMETER AND SHALL EXTEND A MINIMUM OF 1" INTO MASONRY OR CONCRETE (15" INTO MASONRY FOR 110 MPH WIND ZONE). INTERIOR BEARING WALL SOLE PLATES ON MONOLITHIC SLAB FOUNDATIONS SHALL BE POSITIVELY ANCHORED WITH APPROVED FASTENERS. FOR 120 MPH AND 130 MPH WIND ZONES, FOUNDATION ANCHORAGE IS TO COMPLY WITH SECTION 4504 OF THE NRC.

**FRAMING LUMBER** - ALL FRAMING LUMBER SHALL BE #2 SFF MINIMUM (F<sub>b</sub> = 875 PSI, F<sub>v</sub> = 375 PSI, E = 1600000 PSI) UNLESS NOTED OTHERWISE (UNO). ALL TREATED LUMBER SHALL BE #2 SYP MINIMUM (F<sub>b</sub> = 975 PSI, F<sub>v</sub> = 175 PSI, E = 1600000 PSI) UNLESS NOTED OTHERWISE (UNO).

**ENGINEERED LUMBER** - LAMINATED VENEER LUMBER (LVL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F<sub>b</sub> = 2600 PSI, F<sub>v</sub> = 285 PSI, E = 1900000 PSI. LAMINATED STRAND LUMBER (LSL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F<sub>b</sub> = 2500 PSI, F<sub>v</sub> = 410 PSI, E = 1750000 PSI. PARALLEL STRAND LUMBER (PSL) UP TO 1" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F<sub>c</sub> = 2500 PSI, E = 1800000 PSI. PARALLEL STRAND LUMBER (PSL) MORE THAN 1" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F<sub>c</sub> = 2300 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 PROVIDING 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.

**POINT 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 TABLE R502.5(1) AND R502.5(2) 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 1/2" 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 AT 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, 2012 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, 2012 EDITION, WHICHEVER IS GREATER. REFER TO WALL BRACING DETAILS WHEN PROVIDED.

**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 R103.122 OF THE NRC.

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

**HIP SPLICES** - HIP SPLICES 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 NRC.

**ENERGY EFFICIENCY** - ENERGY EFFICIENCY COMPLIANCE TO BE IN ACCORDANCE WITH CHAPTER II OF THE NRC. THE BUILDING THERMAL ENVELOPE SHALL MEET THE REQUIREMENTS OF TABLE N102.1 BASED ON THE CLIMATE ZONE SPECIFIED.

**WIND ZONE AND CLIMATE ZONE BY COUNTY**

| COUNTY                 | WIND ZONE (MPH)/ CLIMATE ZONE | COUNTY                   | WIND ZONE (MPH)/ CLIMATE ZONE |
|------------------------|-------------------------------|--------------------------|-------------------------------|
| ALAMANCE               | 90 / 4                        | JOHNSTON                 | 100 / 3                       |
| ALEXANDER              | 90 / 4                        | JONES                    | 120 / 3                       |
| ALLEGHANY              | SMR / 5                       | LEE                      | 100 / 4                       |
| ANSON                  | 100 / 3                       | LENOIR                   | 110 / 3                       |
| ASHES                  | SMR / 5                       | LINCOLN                  | 90 / 4                        |
| AVERY                  | SMR / 5                       | MACON                    | 90 / 4                        |
| BEAUFORT               | 110 / 3                       | MADISON                  | SMR / 4                       |
| BERTIE                 | 110 / 4                       | MARTIN                   | 110 / 3                       |
| BRUNSWICK <sup>a</sup> | 120/130 / 3-WHC               | MCDOWELL                 | 90 / 4                        |
| BUNCOMBE               | SMR / 4                       | MECKLENBURG              | 90 / 3                        |
| BURKE                  | 90 / 4                        | MITCHELL                 | SMR / 5                       |
| CABARRUS               | 90 / 3                        | MONTGOMERY               | 90 / 3                        |
| CALDWELL               | 90 / 4                        | MOORE                    | 100 / 3                       |
| CAMDEN                 | 110 / 3                       | NASH                     | 100 / 4                       |
| CARTERET               | 130 / 3-WHC                   | NEW HANOVER <sup>c</sup> | 120/130 / 3-WHC               |
| CASWELL                | 90 / 4                        | NORTHAMPTON              | 100 / 4                       |
| CATAWBA                | 90 / 4                        | ONSLOW                   | 120/130 / 3-WHC               |
| CHATHAM                | 90 / 4                        | ORANGE                   | 90 / 4                        |
| CHEROKEE               | 90 / 4                        | FAMILICO <sup>d</sup>    | 120/130 / 3                   |
| CHOWAN                 | 110 / 3                       | FASQUOTANK               | 110 / 3                       |
| CLAY                   | 90 / 4                        | PENDER <sup>e</sup>      | 110-130 / 3-WHC               |
| CLEVELAND              | 90 / 4                        | PERQUIMANS               | 110 / 3                       |
| COLUMBUS               | 120 / 3-WHC                   | PERSON                   | 90 / 4                        |
| CRAYVEN                | 120 / 3                       | PITT                     | 110 / 3                       |
| CUMBERLAND             | 100 / 3                       | POLK                     | 90 / 4                        |
| CURRITUCK              | 120 / 3                       | RANDOLPH                 | 90 / 3                        |
| DARE                   | 130 / 3                       | RICHMOND                 | 100 / 3                       |
| DAVIDSON               | 90 / 3                        | ROBESON                  | 110 / 3                       |
| DAVIE                  | 90 / 4                        | ROCKINGHAM               | 90 / 4                        |
| DUPLIN                 | 110 / 3                       | ROWAN                    | 90 / 3                        |
| DURHAM                 | 90 / 4                        | RUTHERFORD               | 90 / 4                        |
| EDGEcombe              | 100 / 3                       | SAMPSON                  | 110 / 3                       |
| FORSYTH                | 90 / 4                        | SCOTLAND                 | 100 / 3                       |
| FRANKLIN               | 100 / 4                       | STANLY                   | 90 / 3                        |
| GASTON                 | 90 / 3                        | STOKES                   | 90 / 3                        |
| GATES                  | 100 / 4                       | SWAIN                    | SMR / 4                       |
| GRAHAM                 | SMR / 4                       | TRANSYLVANIA             | 90 / 4                        |
| GRANVILLE              | 90 / 4                        | TYRRELL                  | 120 / 3                       |
| GREENE                 | 110 / 3                       | UNION                    | 90 / 3                        |
| GUILFORD               | 90 / 4                        | VANCE                    | 90 / 4                        |
| HALIFAX                | 100 / 4                       | WAKE                     | 100 / 4                       |
| HARNETT                | 100 / 4                       | WARREN                   | 90 / 4                        |
| HAYWOOD                | SMR / 4                       | WASHINGTON               | 100 / 3                       |
| HENDERSON              | 90 / 4                        | WATAUGA                  | SMR / 5                       |
| HERTFORD               | 100 / 4                       | WAYNE                    | 110 / 3                       |
| HOKE <sup>b</sup>      | 100 / 3                       | WILKES                   | 90 / 4                        |
| HYDE <sup>b</sup>      | 120/130 / 3                   | WILSON                   | 100 / 3                       |
| IREDELL                | 90 / 4                        | YADKIN                   | 90 / 4                        |
| JACKSON                | SMR / 4                       | YANCEY                   | SMR / 5                       |

- SMR DESIGNATES "SPECIAL MOUNTAIN REGION"
- WHC DESIGNATES "WARM-HUMID COUNTY"
- a. 120 MPH ZONE WEST OF HWY 17, 130 MPH ZONE EAST OF HWY 17, 140 MPH ON BALD HEAD ISLAND.
- b. 120 MPH ZONE WEST OF US ROUTE 264, 130 MPH ZONE EAST OF US ROUTE 264.
- c. 120 MPH ZONE WEST OF HWY 17, 130 MPH ZONE EAST OF HWY 17.
- d. 130 MPH ZONE EAST OF SR 55 AND HWY 306, 120 MPH ZONE WEST OF SR 55 AND HWY 306.
- e. 130 MPH ZONE EAST OF THE INTERCOASTAL WATERWAY, 120 MPH ZONE IN THE TOWNSHIP OF TOPSAIL, AND THE REMAINDER OF THE COUNTY IS THE 110 MPH ZONE.

**TABLE N102.1**  
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>

| CLIMATE ZONE | FENESTRATION U-FACTOR <sup>b</sup> | SKYLIGHT <sup>b</sup> U-FACTOR | GLAZED FENESTRATION SHGC <sup>b,c</sup> | CEILING R-VALUE <sup>k</sup> | WOOD FRAME WALL R-VALUE <sup>e</sup> | MASS WALL R-VALUE <sup>f</sup> | FLOOR R-VALUE   | BASEMENT <sup>c</sup> WALL R-VALUE | SLAB <sup>d</sup> R-VALUE AND DEPTH | CRAWL SPACE <sup>e</sup> WALL R-VALUE |
|--------------|------------------------------------|--------------------------------|---|------------------------------|--------------------------------------|--------------------------------|-----------------|------------------------------------|-------------------------------------|---------------------------------------|
| 3            | 0.35                               | 0.65                           | 0.30                                    | 30                           | 13                                   | 5/10                           | 19              | 10/13 <sup>f</sup>                 | 0                                   | 5/13                                  |
| 4            | 0.35                               | 0.60                           | 0.30                                    | 38 OR 30 CONT. <sup>j</sup>  | 15 OR 13-15 <sup>h</sup>             | 5/10                           | 19              | 10/13                              | 10 <sup>d</sup>                     | 10/13                                 |
| 5            | 0.35                               | 0.60                           | NR                                      | 38 OR 30 CONT. <sup>j</sup>  | 19, 13-15, OR 15-15 <sup>h</sup>     | 13/11                          | 30 <sup>g</sup> | 10/13                              | 10 <sup>d</sup>                     | 10/13                                 |

- a. R-VALUES ARE MINIMUMS. U-FACTORS AND SHGC ARE MAXIMUMS.
- b. THE FENESTRATION U-FACTOR COLUMN EXCLUDES SKYLIGHTS. THE SHGC COLUMN APPLIES TO ALL GLAZED FENESTRATION.
- c. "10/13" MEANS R-10 CONTINUOUS INSULATED SHEATHING ON THE INTERIOR OR EXTERIOR OF THE HOME OR R-13 CAVITY INSULATION AT THE INTERIOR OF THE BASEMENT WALL OR CRAWL SPACE WALL.
- d. FOR MONOLITHIC SLABS, INSULATION SHALL BE APPLIED FROM THE INSPECTION GAP DOWNWARD TO THE BOTTOM OF THE FOOTING OR A MAXIMUM OF 18 INCHES BELOW GRADE, WHICHEVER IS LESS. FOR FLOATING SLABS, INSULATION SHALL EXTEND TO THE BOTTOM OF THE FOUNDATION WALL OR 24 INCHES, WHICHEVER IS LESS. (SEE APPENDIX O) R-5 SHALL BE ADDED TO THE REQUIRED SLAB EDGE R-VALUES FOR HEATED SLABS.
- e. 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.
- f. BASEMENT WALL INSULATION IS NOT REQUIRED IN WARM-HUMID LOCATIONS AS DEFINED BY FIGURE N102.1(1) AND 2) AND TABLE N102.1.
- g. OR INSULATION SUFFICIENT TO FILL THE FRAMING CAVITY, R-19 MINIMUM.
- h. "13-15" MEANS R-13 CAVITY INSULATION PLUS R-5 INSULATED SHEATHING. "15-13" MEANS R-15 CAVITY INSULATION PLUS R-3 INSULATED SHEATHING. IF STRUCTURAL SHEATHING COVERS 25% OR LESS OF THE EXTERIOR, INSULATING SHEATHING IS NOT REQUIRED WHERE 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. "13-25" MEANS R-13 CAVITY INSULATION PLUS R-25 SHEATHING.
- i. FOR MASS WALLS, THE SECOND R-VALUE APPLIES WHEN MORE THAN HALF THE INSULATION IS ON THE INTERIOR OF THE MASS WALL.
- j. 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.
- k. 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.

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

| WIND ZONE (MPH) | MEAN ROOF HEIGHT (FT) | WALL CLADDING (PSF) | ROOF CLADDING (PSF) BY ROOF FITCH |             |            |
|-----------------|-----------------------|---------------------|-----------------------------------|-------------|------------|
|                 |                       |                     | 0 < X < 2.5                       | 2.5 < X < 7 | 7 < X < 12 |
| 90              | < 30                  | 19.5                | 36.8                              | 28.2        | 17.0       |
|                 | 30 < h < 35           | 20.5                | 38.6                              | 29.6        | 17.9       |
|                 | 35 < h < 40           | 21.3                | 40.1                              | 30.7        | 18.5       |
| 100             | < 30                  | 24.1                | 45.4                              | 34.8        | 21.0       |
|                 | 30 < h < 35           | 25.3                | 47.1                              | 36.5        | 22.1       |
|                 | 35 < h < 40           | 26.3                | 49.5                              | 37.9        | 22.9       |
| 110             | < 30                  | 29.1                | 55.0                              | 42.1        | 25.5       |
|                 | 30 < h < 35           | 30.6                | 57.8                              | 44.2        | 26.8       |
|                 | 35 < h < 40           | 31.7                | 60.0                              | 45.9        | 27.8       |
| 120             | < 30                  | 34.7                | 65.4                              | 50.1        | 30.3       |
|                 | 30 < h < 35           | 36.4                | 68.7                              | 52.6        | 31.8       |
|                 | 35 < h < 40           | 37.8                | 71.3                              | 54.6        | 33.0       |
| 130             | < 30                  | 40.7                | 76.8                              | 58.7        | 35.6       |
|                 | 30 < h < 35           | 42.7                | 80.6                              | 61.6        | 37.4       |
|                 | 35 < h < 40           | 44.4                | 83.7                              | 64.0        | 38.8       |
| 140             | < 30                  | 47.2                | 89.0                              | 68.1        | 41.2       |
|                 | 30 < h < 35           | 49.6                | 93.5                              | 71.5        | 43.3       |
|                 | 35 < h < 40           | 51.4                | 97.0                              | 74.2        | 44.9       |
| 150             | < 30                  | 52.9                | 99.7                              | 76.3        | 46.1       |



DATE: DECEMBER 04, 2013  
SCALE:  
DRAWN BY: Tsz  
ENGINEERED BY: Tsz  
REVIEWED BY: Tsz

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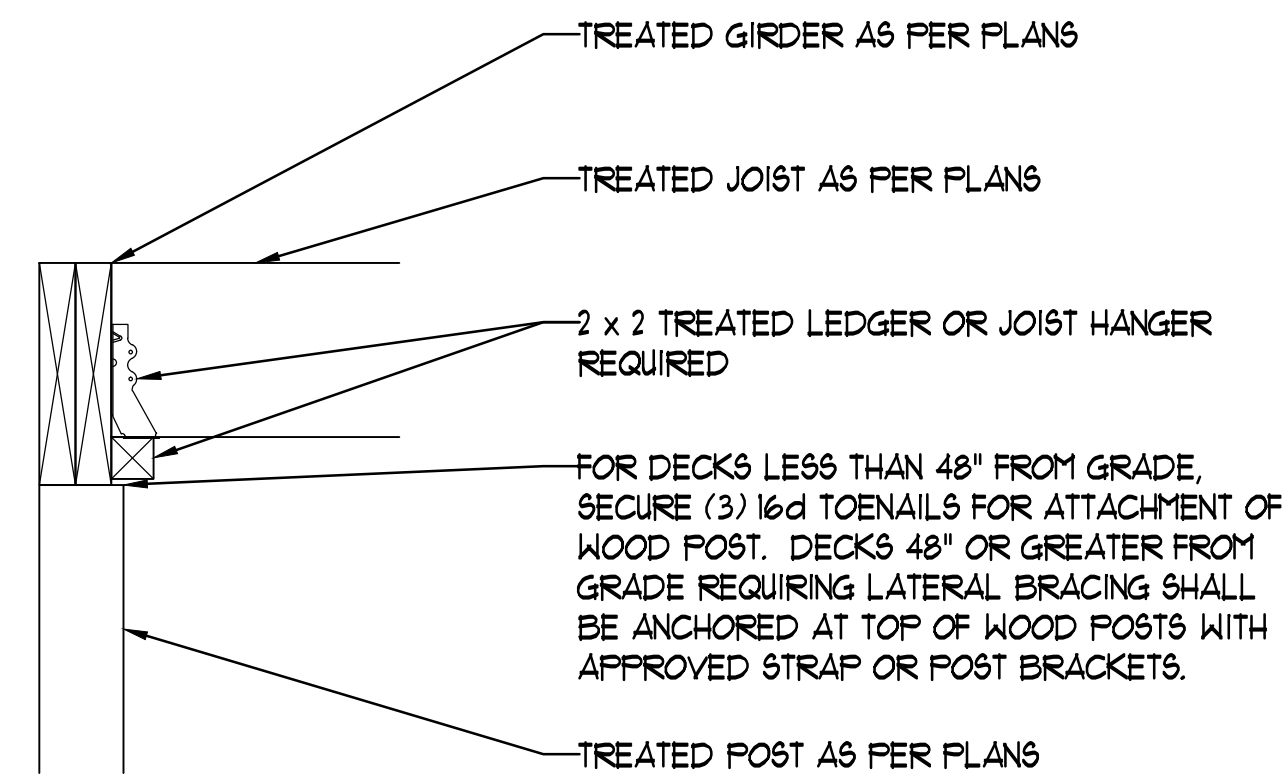
STANDARD STRUCTURAL NOTES



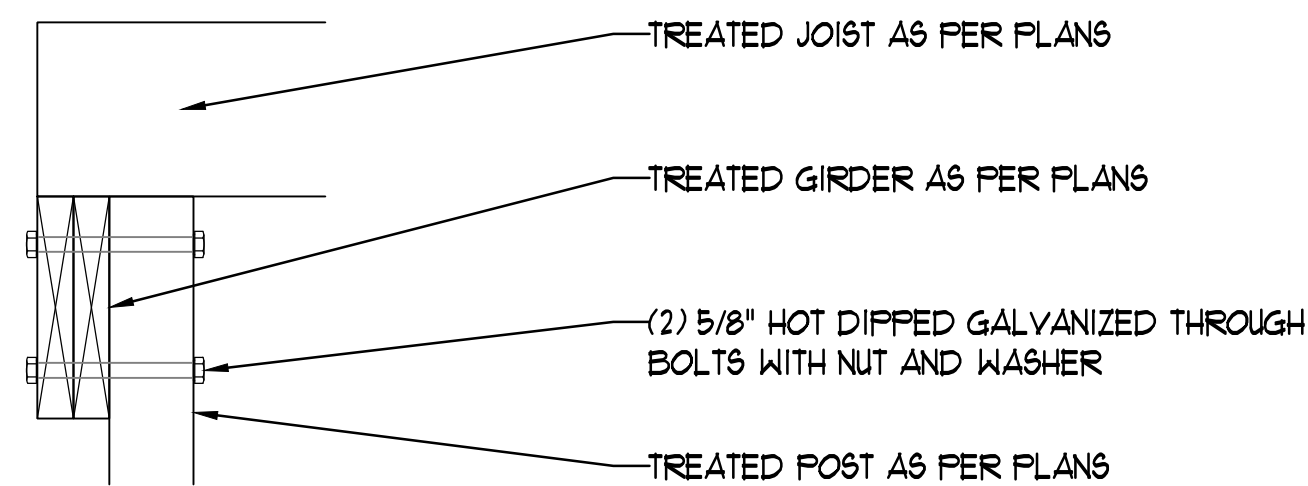
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STANDARD STRUCTURAL NOTES  
SN-1  
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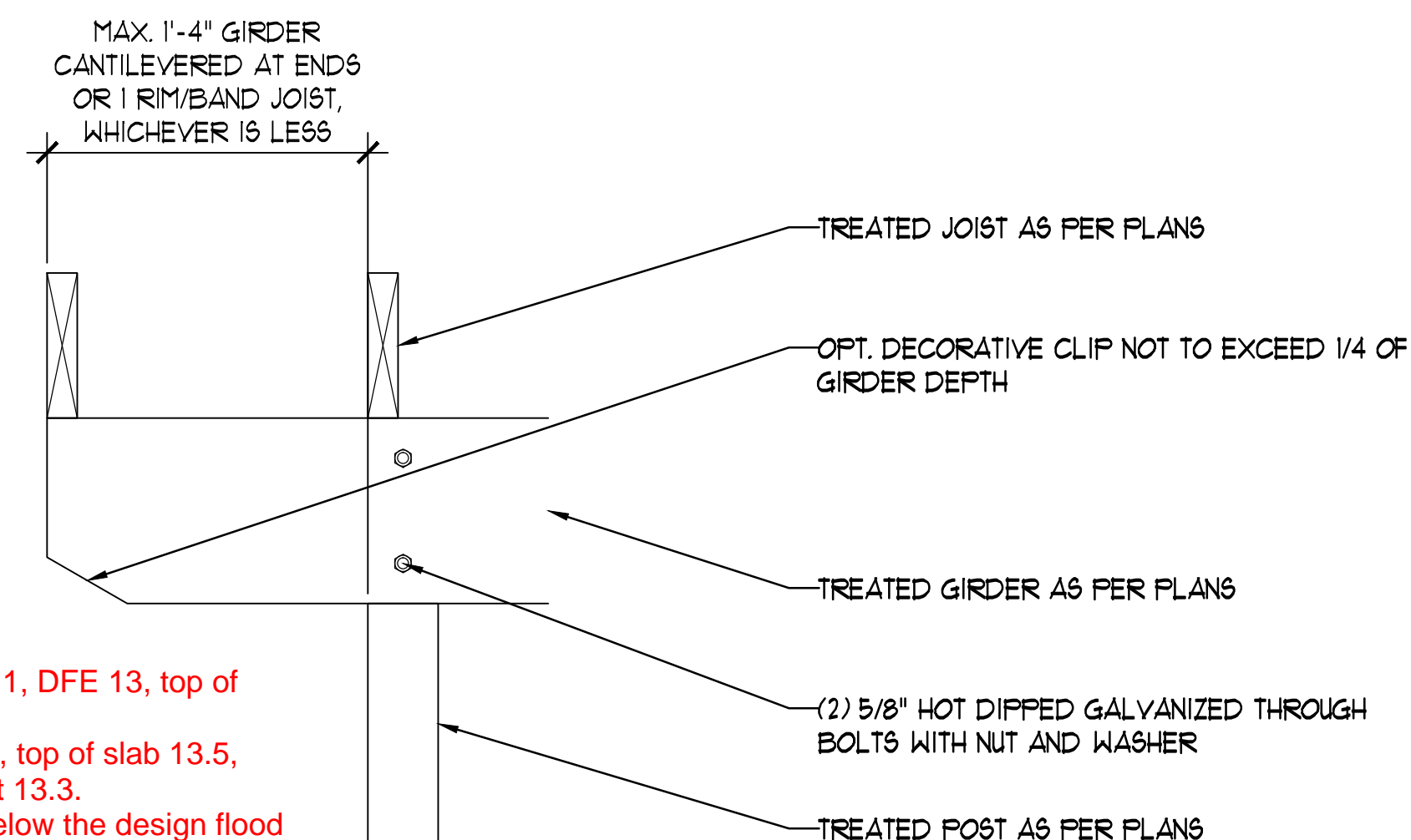
AE FLOOD ZONE. BFE 11, DFE 13, top of bottom floor 13.4, top of next higher floor 16, top of slab 13.5, machinery and equipment 13.3. 1. Flood vents required below the design flood elevation per R322.2.2. 2. Flood vents to be in each enclosed area. Minimum of two openings on different sides of each enclosed Area. Total net area of all openings shall be at least 1 square inch per square foot of enclosed area. Flood vents openings to be within one foot of grade. 3. Flood resistant materials / construction per R322.1.8 in areas below the design flood elevation. 4. Protection of electrical, mechanical, and plumbing systems per R322.1. ART 8.17.2016



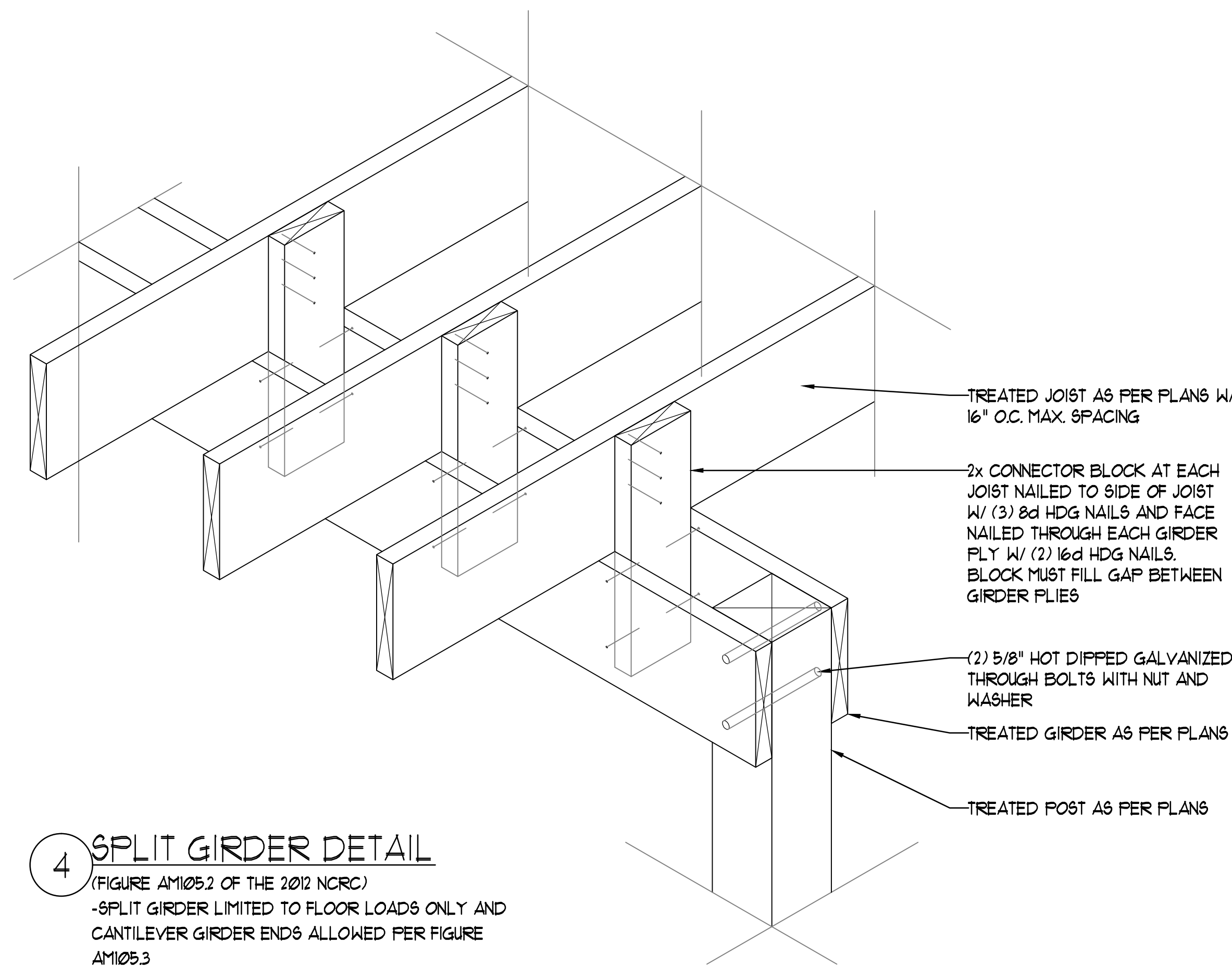
**1 TOP MOUNT/FLUSH GIRDER DETAIL**  
(FIGURE AM104.1 OF THE 2012 NCRC)



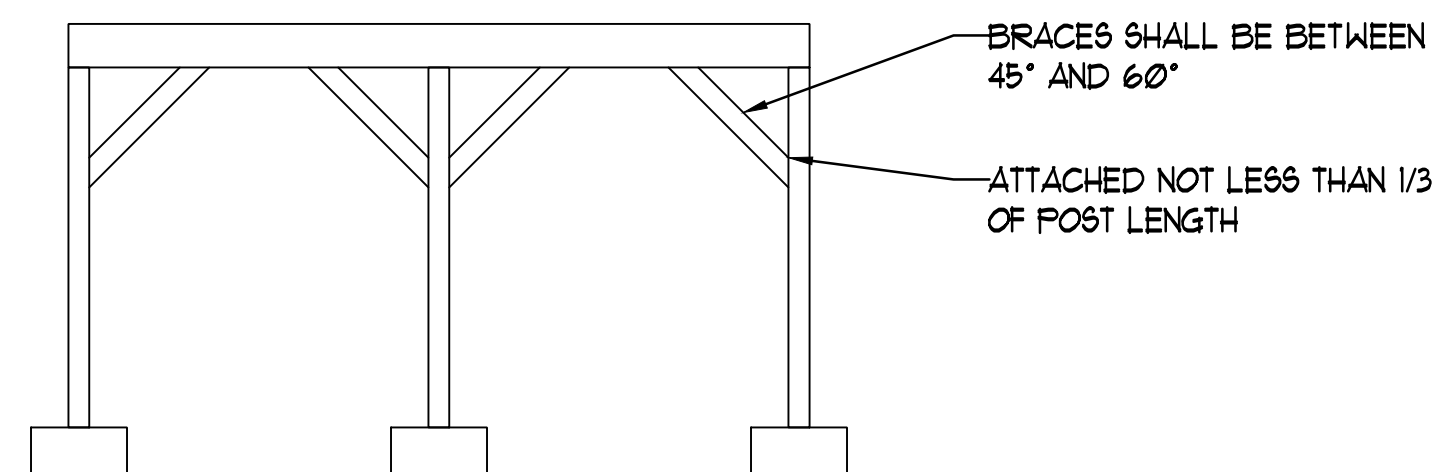
**2 SIDE MOUNT DROPPED GIRDER DETAIL**  
(FIGURE AM104.1 OF THE 2012 NCRC)



**3 CANTILEVERED DROPPED GIRDER DETAIL**  
(FIGURE AM104.3 OF THE 2012 NCRC)  
-CANTILEVERED GIRDER LIMITED TO FLOOR LOADS ONLY. ROOF LOADS PROHIBITED ON CANTILEVERED GIRDER APPLICATION

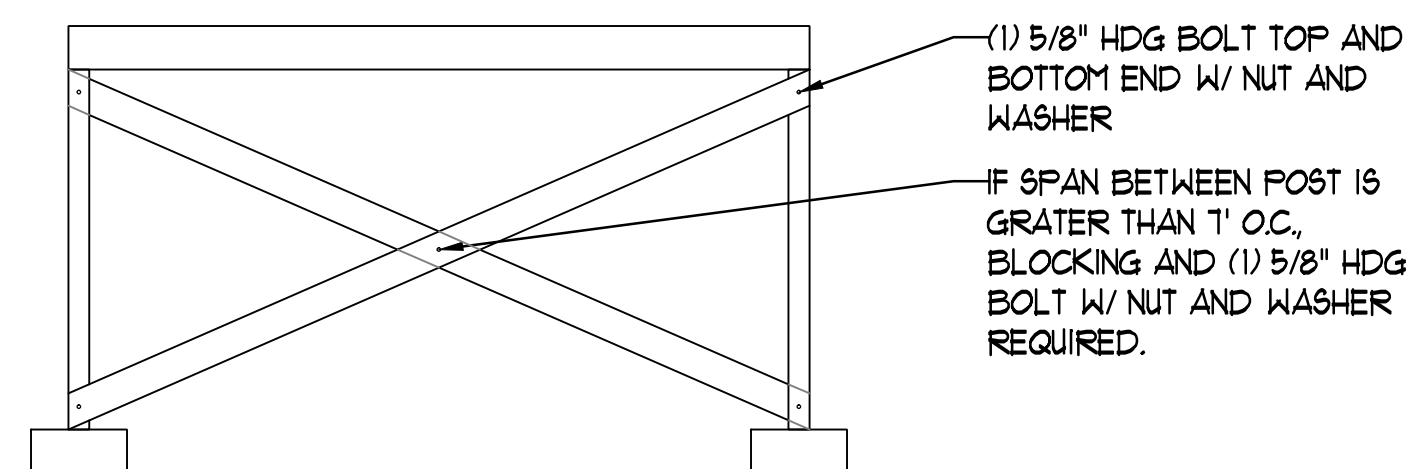


**4 SPLIT GIRDER DETAIL**  
(FIGURE AM104.2 OF THE 2012 NCRC)  
-SPLIT GIRDER LIMITED TO FLOOR LOADS ONLY AND CANTILEVER GIRDER ENDS ALLOWED PER FIGURE AM104.3



**5 WOOD KNEE BRACING DETAIL**  
(FIGURE AM104.1 OF THE 2012 NCRC)

- 1) FREESTANDING DECKS REQUIRING BRACING SHALL BE INSTALLED IN BOTH DIRECTIONS OFF EACH POST.
- 2) DECKS ATTACHED TO STRUCTURE REQUIRE DIAGONAL BRACING ONLY AT OUTSIDE GIRDER LINE PARALLEL WITH STRUCTURE.



**6 DIAGONAL VERTICAL CROSS BRACING DETAIL**  
(FIGURE AM104.3 OF THE 2012 NCRC)

DECKS ARE TO BE CONSTRUCTED AS PER APPENDIX M OF THE 2012 NORTH CAROLINA RESIDENTIAL CODE (NCRC)

**DECK ATTACHMENT** - AS PER SECTION AM104 OF THE 2012 NCRC, WHEN A DECK SHALL BE SUPPORTED AT THE STRUCTURE BY ATTACHING THE DECK TO THE STRUCTURE, SECURE DECK TO STRUCTURE AS PER TABLE AM104.11, TABLE AM104.12, METHOD 3 OR METHOD 4 BELOW:

**TABLE AM104.11**  
ALL STRUCTURES EXCEPT BRICK VENEER STRUCTURES

| FASTENERS                                     | 8' MAX. JOIST SPAN <sup>a</sup> | 16' MAX. JOIST SPAN <sup>a</sup> |
|---|---------------------------------|----------------------------------|
| 5/8" HDG BOLTS W/ NUT AND WASHER <sup>b</sup> | 1 @ 3'-6" O.C.                  | 1 @ 1'-8" O.C.                   |
| AND   | AND                             | AND                              |
| 12d COMMON HDG NAILS <sup>c</sup>             | 2 @ 8" O.C.                     | 3 @ 6" O.C.                      |

- a. ATTACHMENT INTERPOLATION BETWEEN 8' AND 16' JOISTS SPAN IS ALLOWED
- b. MIN. EDGE DISTANCE FOR BOLTS IS 2 1/2"
- c. NAILS MUST PENETRATE THE SUPPORTING STRUCTURE BAND A MIN. OF 1 1/2"

**TABLE AM104.12**  
BRICK VENEER STRUCTURES

| FASTENERS                                     | 8' MAX. JOIST SPAN <sup>a</sup> | 16' MAX. JOIST SPAN <sup>a</sup> |
|---|---------------------------------|----------------------------------|
| 5/8" HDG BOLTS W/ NUT AND WASHER <sup>b</sup> | 1 @ 2'-4" O.C.                  | 1 @ 1'-4" O.C.                   |

- a. ATTACHMENT INTERPOLATION BETWEEN 8' AND 16' JOISTS SPAN IS ALLOWED
- b. MIN. EDGE DISTANCE FOR BOLTS IS 2 1/2"

METHOD 3) IF THE DECK BAND IS SUPPORTED BY A MIN. OF 1/2" MASONRY LEDGE ALONG THE FOUNDATION WALL, SECURE DECK TO STRUCTURE W/ 5/8" HDG BOLTS W/ WASHERS SPACED AT 48" O.C.

METHOD 4) JOIST HANGERS OR OTHER MEANS OF ATTACHMENT MAY BE CONNECTED TO HOUSE BAND AND SHALL BE PROPERLY FLASHED.

**DECK BRACING** - AS PER SECTION AM104 OF THE 2012 NCRC, THE DECK SHALL BE LATERALLY BRACED AS PER ONE OF THE FOLLOWING:

1) WHEN THE DISTANCE FROM THE TOP OF THE DECK FLOOR TO THE FINISHED GRADE IS LESS THAN 4'-0" AND THE DECK IS ATTACHED TO THE STRUCTURE IN ACCORDANCE WITH SECTION AM104 LISTED ABOVE, LATERAL BRACING IS NOT REQUIRED.

2) 4 x 4 TREATED WOOD KNEE BRACES MAY BE PROVIDED ON EACH COLUMN IN BOTH DIRECTIONS. THE KNEE BRACES SHALL ATTACH TO EACH POST AT A POINT NOT LESS THAN 1/3 OF THE POST LENGTH FROM THE TOP OF THE POST, AND THE BRACES SHALL BE ANGLED BETWEEN 45° AND 60° FROM THE HORIZONTAL. KNEE BRACES SHALL BE BOLTED TO THE POST AND THE GIRDER/DOUBLE BAND W/ (1) 5/8" HDG BOLT WITH NUT AND WASHER AT BOTH ENDS OF THE BRACE PER DETAIL 5.

3) FOR FREESTANDING DECKS WITHOUT KNEE BRACES OR DIAGONAL BRACING, LATERAL STABILITY MAY BE PROVIDED BY EMBEDDING THE POST IN ACCORDANCE WITH TABLE AM104.13. DECKS ATTACHED TO STRUCTURE CAN ALSO BE BRACED ON EXTERIOR GIRDER LINE W/ EMBEDMENT OPTION.

**TABLE AM104.13**

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

a. FROM TOP OF FOOTING TO TOP OF DECKING

4) 2 x 6 DIAGONAL VERTICAL CROSS BRACING MAY BE PROVIDED IN TWO PERPENDICULAR DIRECTIONS FOR FREESTANDING DECKS OR PARALLEL TO THE STRUCTURE AT THE EXTERIOR COLUMN LINE FOR ATTACHED DECKS. THE 2 x 6'S SHALL BE ATTACHED TO THE POSTS W/ (1) 5/8" HDG BOLT W/ NUT AND WASHER AT EACH END OF EACH BRACING MEMBER PER DETAIL 6.

5) FOR EMBEDMENT OF PILES IN COASTAL REGIONS, SEE CHAPTER 45.

AE FLOOD ZONE. BFE 11, DFE 13, top of bottom floor 13.4, top of next higher floor 16, top of slab 13.5, machinery and equipment 13.3.  
1. Flood vents required below the design flood elevation per R322.2.2. 2. Flood vents to be in each enclosed area. Minimum of two openings on different sides of each enclosed Area. Total net area of all openings shall be at least 1 square inch per square foot of enclosed area. Flood vents openings to be within one foot of grade. 3. Flood resistant materials / construction per R322.1.8 in areas below the design flood elevation. 4. Protection of electrical, mechanical, and plumbing systems per R322.1.  
ART 8.17.2016