

NOTICE TO CONTRACTOR
 All construction must comply with current NC Building Codes and is subject to field inspection and verification.

APPROVED
 Limited building only review
 Permit holder responsible for full compliance with the code

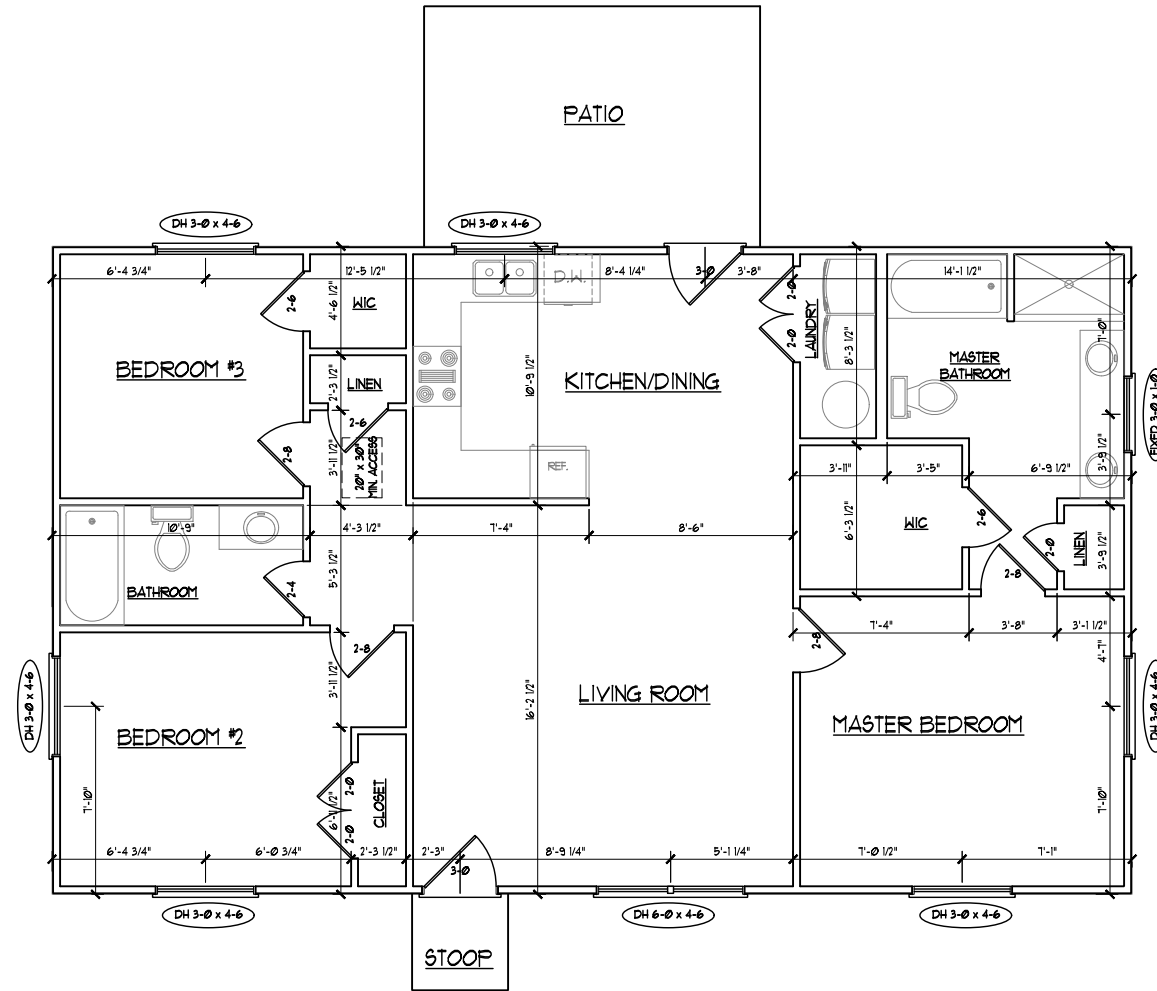
09/24/2021





SPECTRA ENGINEERING AND DESIGN, PLLC
 201 SHANNON OAKS CIRCLE, SUITE 201
 CARY, NORTH CAROLINA 27511
 TEL: (919) 228-2841
 LICENSE NO. NC: P-09346 VA: *****

DATE: APRIL 02, 2021
 SCALE: 1/8" = 1'-0"
 DRAWN BY: JBM
 ENGINEERED BY: JBM
 REVIEWED BY: T5Z



Bedroom windows shall meet minimum egress size requirements. Double hung windows this size typically will not meet the minimum height requirement.

SQUARE FOOTAGE:
 FIRST FLOOR: 125 SQ. FT.

149 DAUPHINE STREET
 ADDRESS
 FUGUAY-VARINA, NORTH CAROLINA
 BUILDER: FAMILY BUILDING COMPANY
 DESIGNER: DESIGNER COMPANY NAME

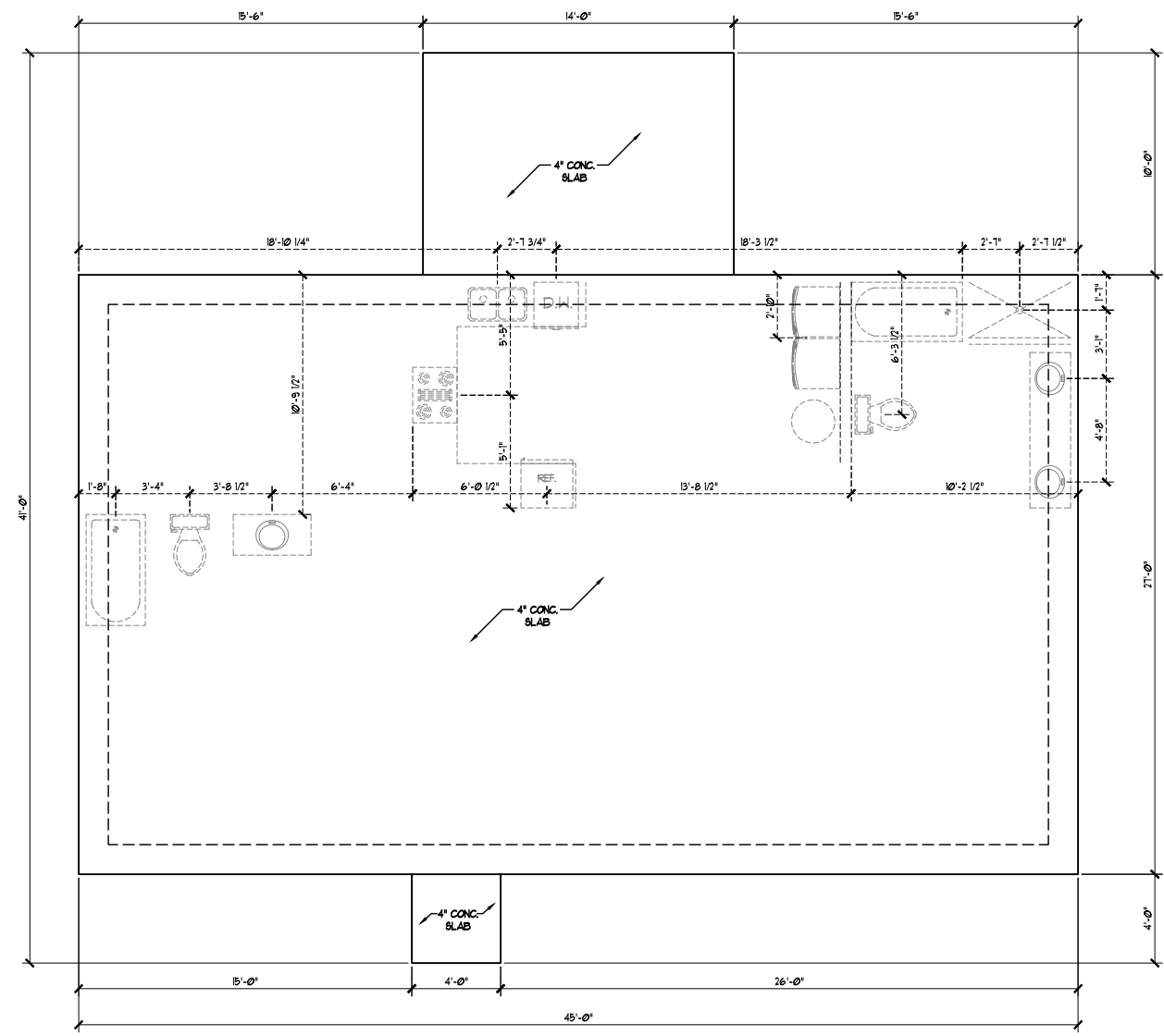
FIRST FLOOR PLAN

A=1
 SHEET 1 OF 4



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STRUCTURAL NOTES:
 1) REFER TO STANDARD STRUCTURAL NOTES, MONOLITHIC SLAB DETAILS AND WALL BRACING DETAILS PAGES FOR ADDITIONAL STRUCTURAL INFORMATION.
 2) WALL BRACING DESIGN AS PER THE INTERNATIONAL RESIDENTIAL CODE, 2006 EDITION.

149 DAUPHINE STREET
 FUGUAY-YARINA, NORTH CAROLINA
 FAMILY BUILDING COMPANY
 DESIGNER COMPANY NAME



MONOSLAB
 FOUNDATION PLAN
 S = 1
 SHEET 1 OF 4

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



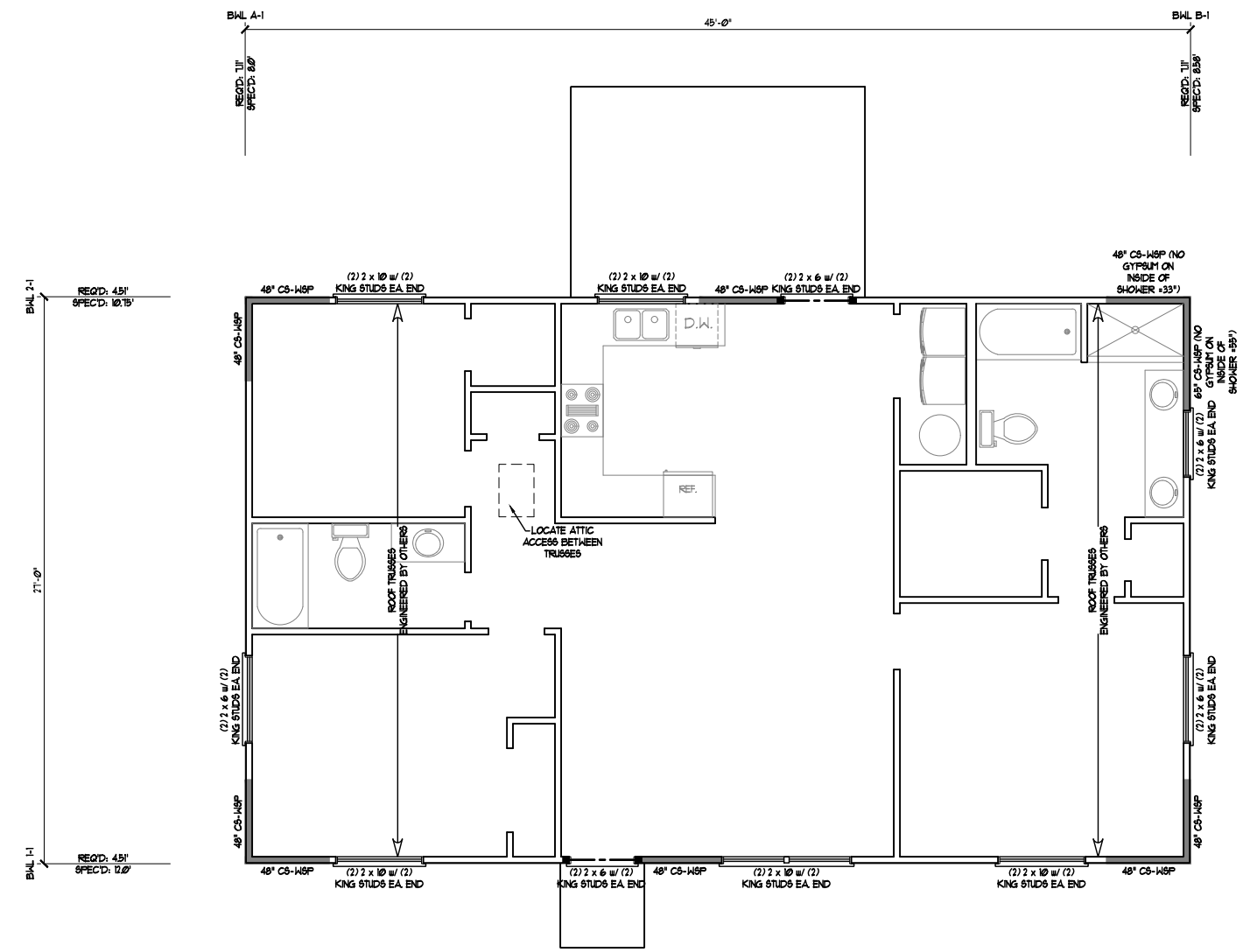
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149 DAUPHINE STREET
 FUGUAY-YARINA, NORTH CAROLINA
 FAMILY BUILDING COMPANY
 DESIGNER COMPANY NAME



CEILING FRAMING
 PLAN
 S-2
 SHEET 2 OF 4



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149 DAUPHINE STREET
 FUGUAY-YARINA, NORTH CAROLINA
 FAMILY BUILDING COMPANY
 DESIGNER COMPANY NAME

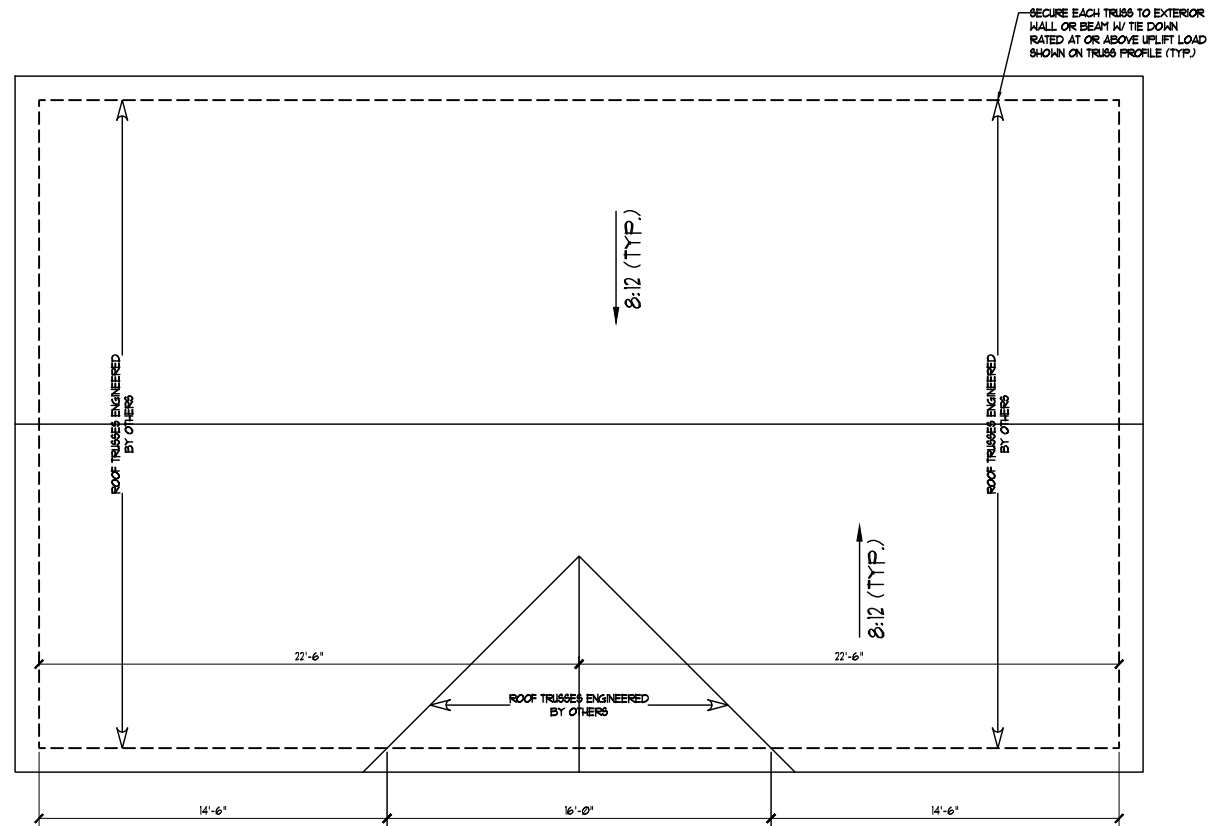


ROOF PLAN

S = 3

SHEET 3 OF 4

ATTIC VENT CALCULATION:
 125 SQ. FT. OF ATTIC DIVIDED BY 50
 REQUIRES 81 SQ. FT. MINIMUM OF TOTAL NET
 FREE VENTILATING AREA.
 SEE SECTION R806.2 OF THE NCRC, 2018
 EDITION FOR ALTERNATIVES AND
 EXCEPTIONS.



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 2) WALL BRACING DESIGN AS PER THE INTERNATIONAL RESIDENTIAL CODE, 2018 EDITION.

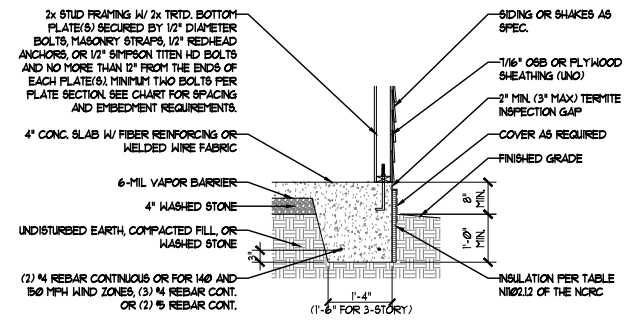
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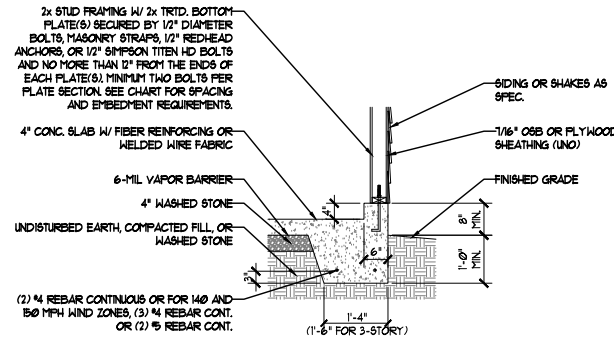
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 TEL.: (919) 228-2841 FAX: ----
 N.C. LICENSE NO. P-0946

DATE: JANUARY 29, 2019
 SCALE: NTS
 DRAIN BY: T5Z
 ENGINEERED BY: T5Z
 REVIEWED BY: T5Z

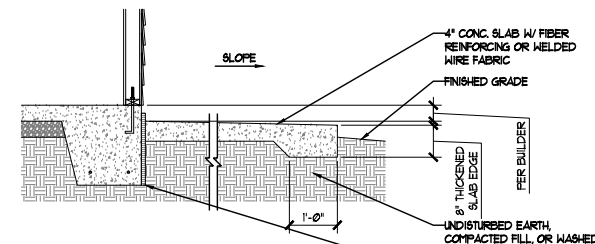
TYPICAL FOUNDATION DETAILS



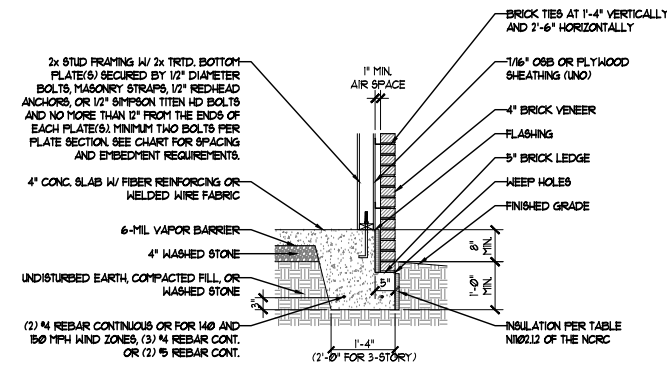
1 TYPICAL SLAB DETAIL W/ SIDING OR SHAKE SIDING



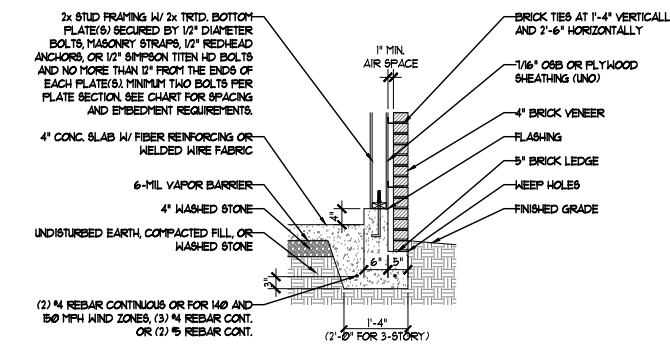
2 GARAGE CURB WALL DETAIL W/ SIDING OR SHAKE SIDING



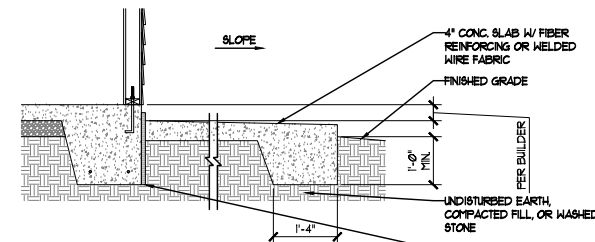
3 TYPICAL PORCH SLAB DETAIL W/ NON-LOAD BEARING EDGE



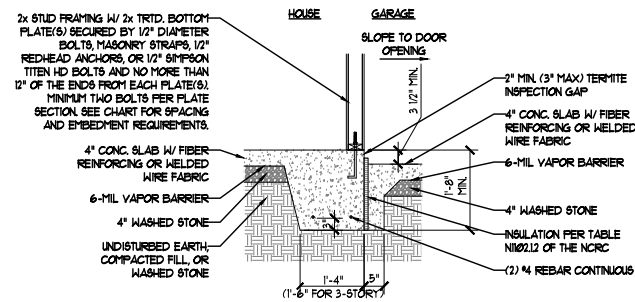
4 TYPICAL SLAB DETAIL W/ BRICK VENEER



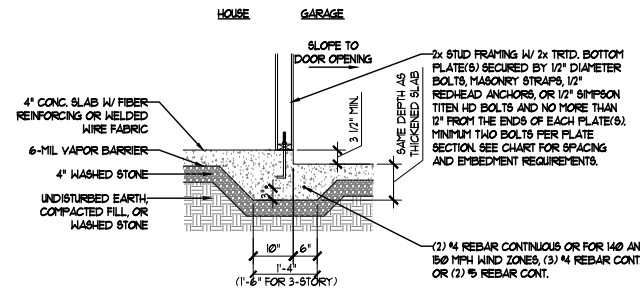
5 GARAGE CURB WALL DETAIL W/ BRICK VENEER



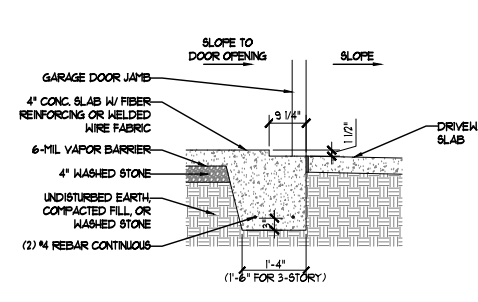
6 TYPICAL PORCH SLAB DETAIL W/ LOAD BEARING EDGE



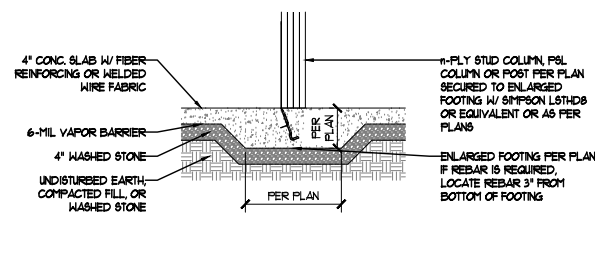
7a STEP AT GARAGE/HOUSE WALL DETAIL W/ INSULATION



7b STEP AT GARAGE/HOUSE WALL DETAIL W/O INSULATION



8 SLAB AT GARAGE DOOR OPENING DETAIL



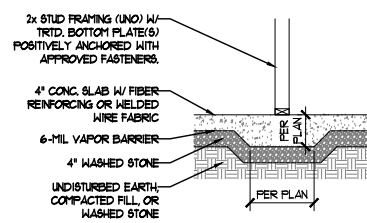
9 ENLARGED FOOTING DETAIL

NOTE: PLEASE CONTACT US FOR ADDITIONAL DETAILS IF BRICK VENEER IS TO ONLY BE INSTALLED AT THE BASEMENT LEVEL BUT NOT ON THE FIRST FLOOR LEVEL.

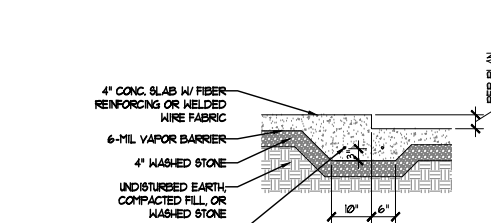
STRUCTURAL NOTE:
 - REFER TO STANDARD STRUCTURAL NOTES PAGE FOR ADDITIONAL STRUCTURAL INFORMATION.

ANCHOR SPACING AND EMBEDMENT		
WIND ZONE	ANCHOR SPACING	ANCHOR EMBEDMENT
≤ 120 MPH	6'-0" O.C.	1"
130 MPH	4'-0" O.C.	5" INTO MASONRY OR 1" INTO CONCRETE
140 MPH	6'-0" O.C. W/ DOUBLE BALL PLATE AND 2" x 2" x 1/8" WASHERS	CONTINUOUS OR LAP SPLICED TO FOOTING
150 MPH	6'-0" O.C. W/ DOUBLE BALL PLATE AND 2" x 2" x 1/8" WASHERS	CONTINUOUS OR LAP SPLICED TO FOOTING

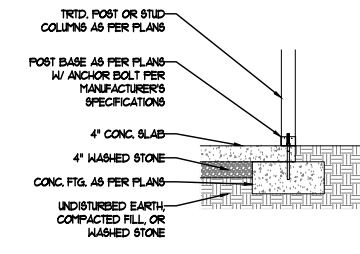
NOTE: FOR 140 AND 150 MPH WIND ZONE, 5/8" ANCHOR BOLTS AT 96" O.C. OR 3/8" ANCHOR BOLTS AT 42" O.C. MAY BE INSTALLED IN LIEU OF 1/2" ANCHOR BOLTS AT 12" O.C.



10 THICKENED SLAB DETAIL



11 SLAB FLOOR ELEVATION CHANGE DETAIL



12 PORCH SLAB POST DETAIL

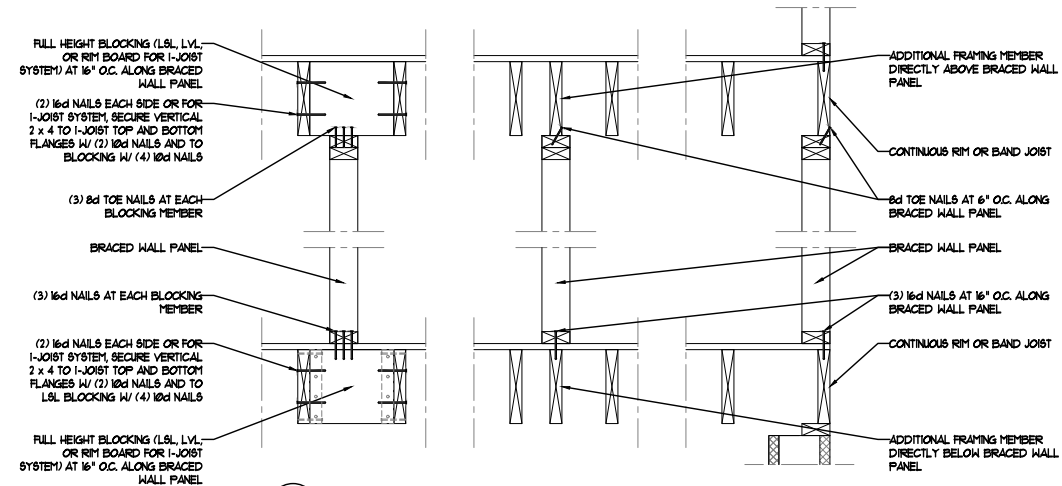
MONOLITHIC SLAB DETAILS
 MS-1
 SHEET ---- OF ----



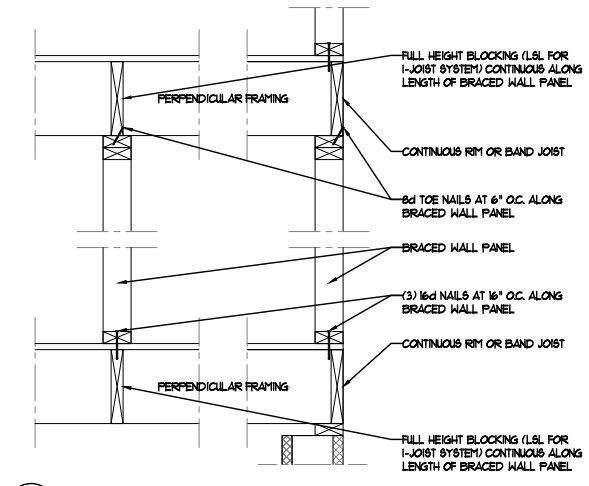


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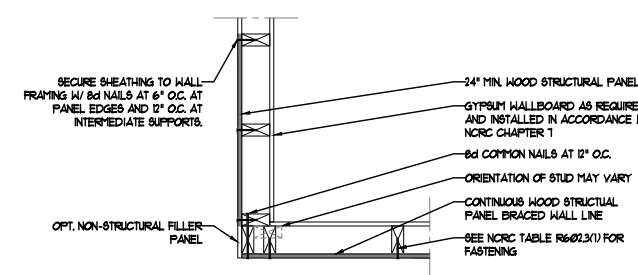
DATE: JANUARY 07, 2019
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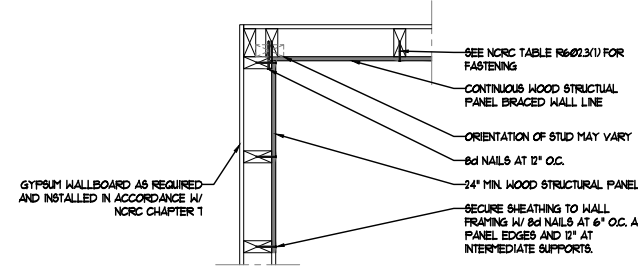
1 BRACED WALL PANEL CONNECTION WHEN PARALLEL TO FLOOR/CEILING FRAMING



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



3 TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING



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

BRACED WALL PANEL SCHEDULE			
ABBREVIATIONS	PANEL TYPE	MATERIAL	FASTENERS
HSP	INTERMITTENT WOOD STRUCTURAL PANEL	1/16" OSB/FLYHOOD (NO)	6d OR 8d COMMON NAILS AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS OR 16 GA. X 1 3/4" STAPLES AT 3" O.C. AT PANEL EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS
GB (1)	INTERMITTENT GYPSUM BOARD (SHEATHING ON ONE FACE OF WALL)	1/2" GYPSUM	1 1/2" GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1 1/4" TYPE N DRYWALL SCREWS AT 1" O.C. AT PANEL EDGES INCLUDING TOP AND BOTTOM FLATES AND INTERMEDIATE SUPPORTS
GB (2)	INTERMITTENT GYPSUM BOARD (SHEATHING ON BOTH FACES OF WALL)	1/2" GYPSUM	1 1/2" GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1 1/4" TYPE N DRYWALL SCREWS AT 1" O.C. AT PANEL EDGES INCLUDING TOP AND BOTTOM FLATES AND INTERMEDIATE SUPPORTS
GB (3)	INTERMITTENT GYPSUM BOARD (SHEATHING ON BOTH FACES OF WALL)	1/2" GYPSUM	1 1/2" GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1 1/4" TYPE N DRYWALL SCREWS AT 4" O.C. AT PANEL EDGES INCLUDING TOP AND BOTTOM FLATES AND INTERMEDIATE SUPPORTS
LIB	LET-IN-BRACING	1 x 4 WOOD OR SIMPSON C516 STRAP	WOOD: (2) 8d NAILS PER STUD INCLUDING TOP AND BOTTOM PLATE. METAL: (1) STRAP EACH DIRECTION, (2) 8d NAILS PER STUD INCLUDING TOP AND BOTTOM PLATE, (20) 16d NAILS MIN. PER STRAP
CS-HSP	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	1/16" OSB/FLYHOOD (NO)	6d OR 8d COMMON NAILS AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS OR 16 GA. X 1 3/4" STAPLES AT 3" O.C. AT PANEL EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS
CS-G	CONT. SHEATHED WOOD STRUCTURAL PANEL ADJACENT TO GARAGE	1/16" OSB/FLYHOOD (NO)	6d OR 8d COMMON NAILS AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS OR 16 GA. X 1 3/4" STAPLES AT 3" O.C. AT PANEL EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS
CS-FF	CONTINUOUS PORTAL FRAME	1/16" OSB/FLYHOOD (NO)	SEE METHOD CS-FF ON PAGE BW-3
CS-EBH1	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	1/16" OSB/FLYHOOD (NO)	6d OR 8d COMMON NAILS AT 4" O.C. AT PANEL EDGES AND 8" O.C. AT INTERMEDIATE SUPPORTS
CS-EBH2	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	1/16" OSB/FLYHOOD (NO)	6d OR 8d COMMON NAILS AT 3" O.C. AT PANEL EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS

NOTES:
 1) ALL BRACED WALL PANELS SHALL HAVE 2x BLOCKING BETWEEN WALL STUDS AT ALL HORIZONTAL SHEET EDGES.
 2) PROVIDE NAILING/BLOCKING ABOVE AND BELOW ALL BRACED WALL PANELS PER DETAIL VBW-1 AND 2/BW-1.
 3) ALL EXTERIOR WALLS OF THE HOUSE ARE TO BE SHEATHED W/ 7/16" OSB OR 5/32" FLYHOOD SECURED PER NORC TABLE R6-02.3(1). WALL CORNER SHEATHING IS TO BE SECURED AS PER DETAIL 3/BW-1.
 4) GB (1) AND GB (2) WALL PANELS SHALL BE SECURED AS PER DETAIL 4/BW-1.
 5) BRACED WALL PANELS ARE PROVIDED AS PER THE INTERNATIONAL RESIDENTIAL CODE, 2018 EDITION, SECTION R6-02.10. PANEL LENGTHS SHOWN ON PLANS ARE THE MIN. LENGTH REQUIRED.
 6) ALL METHODS SHALL HAVE A GYPSUM BOARD FINISH (OR EQUIVALENT) APPLIED TO THE INSIDE FACE OF THE BRACED WALL PANEL.

WALL BRACING DETAILS



DETAILS

BW-1

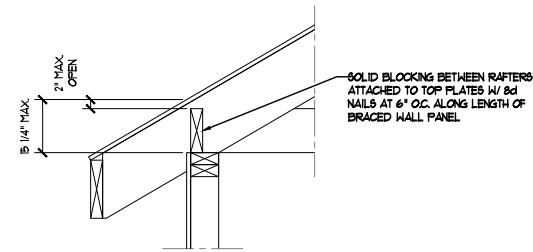
SHEET X OF X

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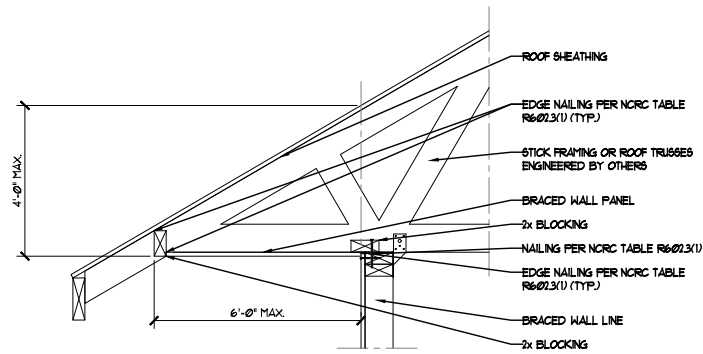


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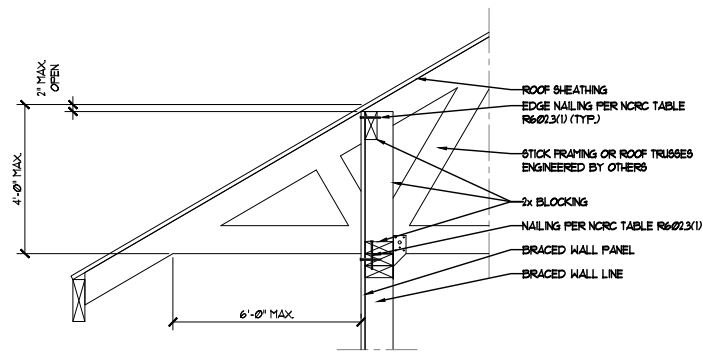
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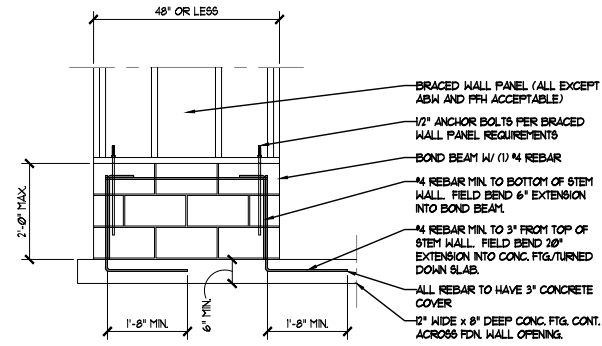
1 BRACED WALL PANEL CONNECTION TO PERPENDICULAR RAFTERS



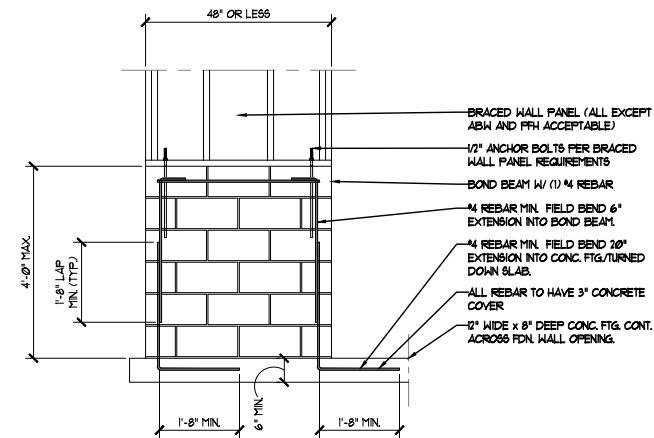
2 BRACED WALL PANEL CONNECTION OPTION TO PERPENDICULAR RAFTERS OR ROOF TRUSSES
 PROVIDE VENTING PER NRC SECTION R806 (NOT SHOWN)



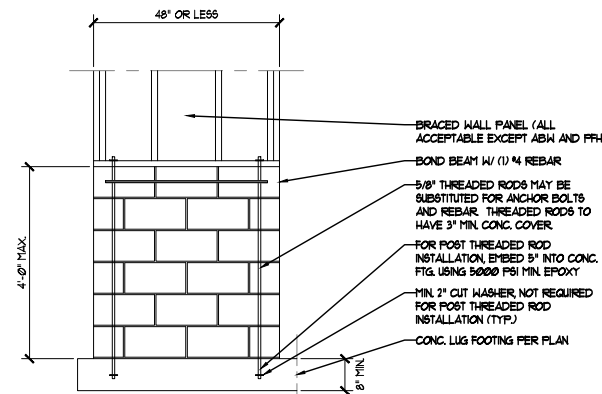
3 BRACED WALL PANEL CONNECTION OPTION TO PERPENDICULAR RAFTERS OR ROOF TRUSSES
 PROVIDE VENTING PER NRC SECTION R806 (NOT SHOWN)



SHORT STEM WALL REINFORCEMENT



TALL STEM WALL REINFORCEMENT



OPT. STEM WALL REINFORCEMENT CONFIGURATION

4 MASONRY STEM WALLS SUPPORTING BRACED WALL PANELS

WALL BRACING DETAILS



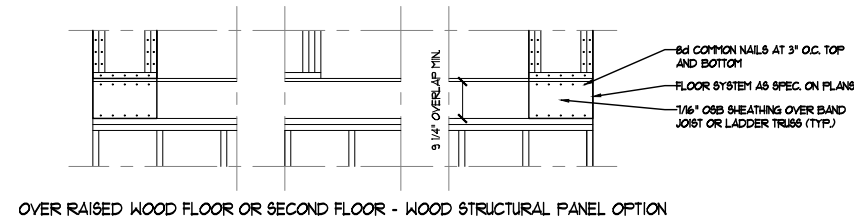
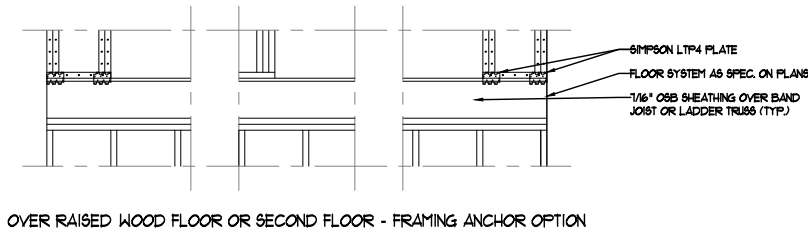
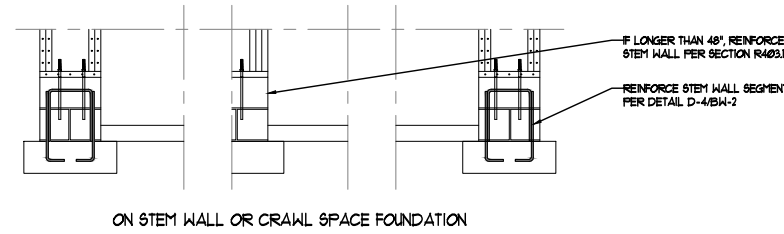
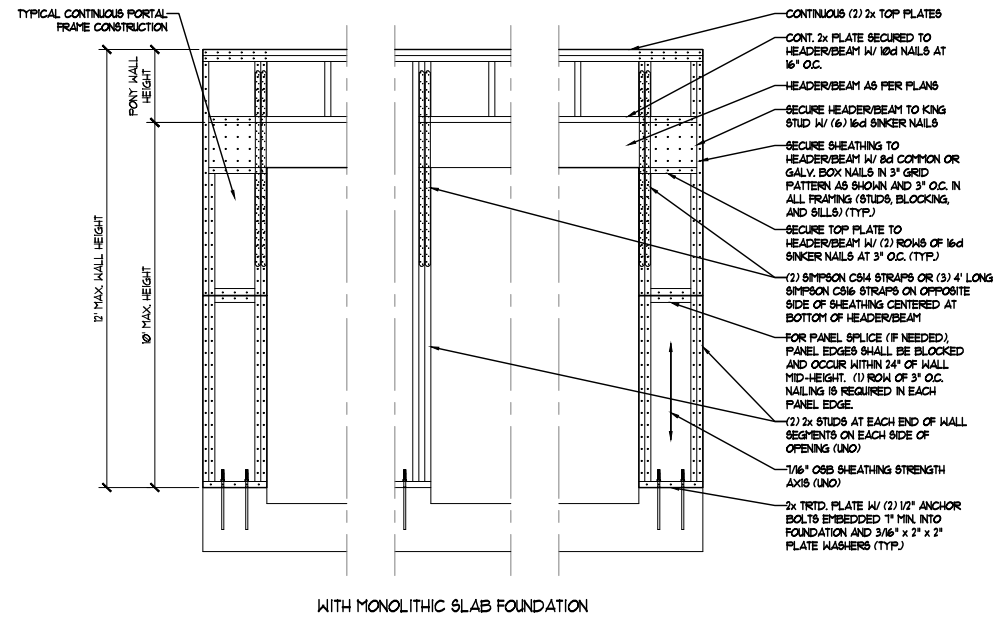
DETAILS
 BW-2
 SHEET X OF X

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1 METHOD CS-FF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION

WALL BRACING DETAILS



DETAILS
 BW-3
 SHEET X OF X

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

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

Table with columns: LIVE LOAD (PSF), DEFLECTION (LL), ATTIC WITH LIMITED STORAGE, ATTIC WITHOUT STORAGE, DECKS, EXTERIOR BALCONIES, FIRE ESCAPES, GUARDRAILS AND HANDRAILS, PASSENGER VEHICLE GARAGES, ROOMS OTHER THAN SLEEPING ROOMS, SLEEPING ROOMS, STAIRS, SNOW, 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 130, 140, AND 150 MPH WIND ZONES SHALL BE IN ACCORDANCE WITH CHAPTER 45 OF THE NCR. CONSTRUCTION IN THE COASTAL AND FLOOD PLAINS SHALL BE IN ACCORDANCE WITH CHAPTER 46 OF THE NCR.

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 R405.1 OF THE NCR. PROPERLY DEWATER EXCAVATION PRIOR TO POURING CONCRETE WHEN BOTTOM OF CONCRETE SLAB IS AT OR BELOW WATER TABLE.

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

CONCRETE - CONCRETE SHALL CONFORM TO SECTION R402.2 OF THE NCR. CONCRETE REINFORCING STEEL TO BE ASTM A615 GRADE 60. WELDED WIRE FABRIC TO BE ASTM A955. MAINTAIN A MINIMUM CONCRETE COVER AROUND REINFORCING STEEL OF 3" IN FOOTINGS AND 1 1/2" IN SLABS. FOR FORMED CONCRETE WALLS, CONCRETE COVER FOR REINFORCING STEEL MEASURED FROM THE INSIDE FACE OF THE WALL SHALL NOT BE LESS THAN 3/4". CONCRETE COVER FOR REINFORCING STEEL MEASURED FROM THE OUTSIDE FACE OF THE WALL SHALL NOT BE LESS THAN 1 1/2" FOR 5 BARS OR SMALLER, AND NOT LESS THAN 2" FOR 6 BARS OR LARGER.

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

MASONRY - MASONRY UNITS TO CONFORM TO ACE 530/ASCE 5/TMS 402. MORTAR SHALL CONFORM TO ASTM C270. 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 R608.3.4(1) OF THE NCR.

CONCRETE AND MASONRY FOUNDATION WALLS - ALL CONCRETE AND MASONRY FOUNDATION WALLS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R404 OF THE NCR OR IN ACCORDANCE WITH ACI 318, ACI 332, NCHA T868-A OR ACE 530/ASCE 5/TMS 402. MASONRY FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R404.1(1) THROUGH R404.1(4) OF THE NCR. CONCRETE FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R404.1(1) THROUGH R404.1(2) OF THE NCR. PRECAST CONCRETE FOUNDATION WALLS ARE TO CONFORM TO SECTION R404.5 OF THE NCR. STEP CONCRETE FOUNDATION WALLS TO 2 x 6 FRAMED WALLS AT 16" O.C. WHERE GRADE PERMITS (NO).

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

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

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

FRAMING LUMBER - ALL FRAMING LUMBER SHALL BE #2 SYP MINIMUM (Fb = 150 PSI, Fv = 115 PSI, E = 1400000 PSI) UNLESS NOTED OTHERWISE (NO). ALL TREATED LUMBER SHALL BE #2 SYP MINIMUM (Fb = 150 PSI, Fv = 115 PSI, E = 1400000 PSI) UNLESS NOTED OTHERWISE (NO).

ENGINEERED LUMBER - LAMINATED VENEER LUMBER (LVL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fb = 2600 PSI, Fv = 285 PSI, E = 1300000 PSI. LAMINATED STRAND LUMBER (LSL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fb = 2325 PSI, Fv = 525 PSI, E = 1550000 PSI. PARALLEL STRAND LUMBER (PSL) UP TO 1" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fc = 2500 PSI, E = 1800000 PSI. PARALLEL STRAND LUMBER (PSL) MORE THAN 1" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fc = 2900 PSI, E = 2000000 PSI. INSTALL ALL CONNECTIONS PER MANUFACTURER'S SPECIFICATIONS.

STEEL BEAMS - ALL STRUCTURAL STEEL SHALL BE ASTM A36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3 1/2" AND FULL FLANGE WIDTH (NO). PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (1/2" DIAMETER x 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDED THE JOISTS ARE TOE NAILED TO THE 2x NAILER ON TOP OF THE STEEL BEAM, AND THE 2x NAILER IS SECURED TO THE BEAM FLANGE OR THE TOP OF THE STEEL BEAM IS INSTALLED WITHIN 1 1/2" OF THE TOP OF THE JOISTS.

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 R602.1(1), R602.1(2) AND R602.1(3) OR BE (2) 2 x 10 WITH (1) JACK AND (1) KING STUD EACH END (NO). 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 (NO).

BEAM BEARING - ALL BEAMS, HEADERS, OR GIRDER TRUSSES PARALLEL TO BEARING WALL ARE TO BEAR FULLY ON (1) JACK OR (2) STUDS MINIMUM OR THE NUMBER OF JACKS OR STUDS NOTED. ALL BEAMS OR GIRDER TRUSSES PERPENDICULAR TO WALL AND SUPPORTED BY (3) STUDS OR LESS ARE TO HAVE 1 1/2" MINIMUM BEARING (NO). 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 (NO). BEAM ENDS THAT BUTT INTO ONE ANOTHER ARE TO EACH BEAR EQUAL LENGTHS (NO).

STEEL FLITCH PLATE BEAM - STEEL FLITCH PLATE BEAMS SHALL BE BOLTED TOGETHER USING 1/2" DIAMETER BOLTS (ASTM A307) WITH WASHERS PLACED AT THREADED END OF BOLT. BOLTS SHALL BE SPACED AT 24" CENTERS (MAXIMUM), AND STAGGERED AT TOP AND BOTTOM OF BEAM (2" EDGE DISTANCE), WITH (2) BOLTS LOCATED 6" FROM EACH END (NO).

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

WALL BRACING - BRACED WALL PANELS SHALL BE CONSTRUCTED ACCORDING TO SECTION R602.10 OF THE INTERNATIONAL RESIDENTIAL CODE, 2018 EDITION. THE LENGTH OF BRACING IN EACH BRACED WALL LINE SHALL COMPLY WITH TABLE R602.10(1) OR R602.10(3) OF THE INTERNATIONAL RESIDENTIAL CODE, 2018 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 R703.8.2.2 OF THE 2018 NCR.

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 (NO). 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 (NO).

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

ENERGY EFFICIENCY - ENERGY EFFICIENCY COMPLIANCE TO BE IN ACCORDANCE WITH CHAPTER 17 OF THE NCR. THE BUILDING THERMAL ENVELOPE SHALL MEET THE REQUIREMENTS OF TABLE N102.12 BASED ON THE CLIMATE ZONE SPECIFIED.

WIND ZONE AND CLIMATE ZONE BY COUNTY

Table mapping counties to wind and climate zones. Columns: COUNTY, WIND ZONE (MPH)/CLIMATE ZONE, COUNTY, WIND ZONE (MPH)/CLIMATE ZONE.

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

Table showing wall and roof cladding design loads. Columns: WIND ZONE (MPH), MEAN ROOF HEIGHT (FT), ROOF CLADDING (PSF) BY ROOF PITCH, WALL CLADDING (PSF).

-SFR DESIGNATES "SPECIAL MOUNTAIN REGION"
-WHC DESIGNATES "WARM-HUMID COUNTY"
a. 120 MPH ZONE WEST OF HWY 17, 130 MPH ZONE EAST OF HWY 17.
b. 130 MPH ZONE WEST OF HWY 101, 130 MPH ZONE EAST OF HWY 101.
c. 140 MPH ZONE WEST OF HWY 17, 150 MPH ZONE EAST OF HWY 17, 150 MPH ZONE ON BALD HEAD ISLAND.
d. 120 MPH ZONE WEST OF I-95, 130 MPH ZONE EAST OF I-95.
e. 130 MPH ZONE WEST OF US ROUTE 264, 140 MPH ZONE EAST OF US ROUTE 264.
f. 130 MPH ZONE WEST OF US ROUTE 264, 140 MPH ZONE EAST OF US ROUTE 264.
g. 120 MPH ZONE WEST OF HWY 17, 130 MPH ZONE EAST OF HWY 17.
h. 140 MPH ZONE WEST OF HWY 17, 150 MPH ZONE EAST OF HWY 17.
i. 130 MPH ZONE WEST OF HWY 17, 140 MPH ZONE EAST OF HWY 17 TO THE INTRACOASTAL WATERWAY, 150 MPH ZONE EAST OF THE INTRACOASTAL WATERWAY.
j. 140 MPH ZONE IN THE TOWNSHIP OF TOPSAIL WEST OF THE INTRACOASTAL WATERWAY, 150 MPH ZONE EAST OF THE INTRACOASTAL WATERWAY, 130 MPH ZONE IN THE REMAINDER OF THE COUNTY.

TABLE N102.12 INSULATION AND PENETRATION REQUIREMENTS BY COMPONENT

Table with columns: CLIMATE ZONE, FENESTRATION U-FACTOR, SKYLIGHT U-FACTOR, GLAZED FENESTRATION SHGC, CEILING R-VALUE, WOOD FRAME WALL R-VALUE, MASS WALL R-VALUE, FLOOR R-VALUE, BASEMENT WALL R-VALUE, SLAB R-VALUE AND DEPTH, CRAWL SPACE WALL R-VALUE.

- a. R-VALUES ARE MINIMUMS. U-FACTORS AND SHGC ARE MAXIMUMS. WHEN INSULATION IS INSTALLED IN A CAVITY WHICH IS LESS THAN THE LABEL OR DESIGN THICKNESS OF THE INSULATION, THE INSTALLED R-VALUE OF THE INSULATION SHALL NOT BE LESS THAN THE R-VALUE SPECIFIED IN THE TABLE.
b. THE FENESTRATION U-FACTOR COLUMN EXCLUDES SKYLIGHTS. THE SHGC COLUMN APPLIES TO ALL GLAZED FENESTRATION.
c. "10/15" MEANS R-10 CONTINUOUS INSULATED SHEATHING ON THE INTERIOR OR EXTERIOR OF THE HOME OR R-15 CAVITY INSULATION AT THE INTERIOR OF THE BASEMENT WALL OR CRAWL SPACE WALL.
d. R-5 SHALL BE ADDED TO THE REQUIRED SLAB EDGE R-VALUES FOR HEATED SLABS. FOR MONOLITHIC SLABS, INSULATION SHALL BE APPLIED FROM THE INSPECTION GAP DOWNWARD TO THE BOTTOM OF THE FOOTING OR A MAXIMUM OF 24" BELOW GRADE, WHICHEVER IS LESS. FOR FLOATING SLABS, INSULATION SHALL EXTEND TO THE BOTTOM OF THE FOUNDATION WALL OR 24", WHICHEVER IS LESS. (SEE APPENDIX D)
e. DELETED
f. BASEMENT WALL INSULATION IS NOT REQUIRED IN WARM-HUMID LOCATIONS AS DEFINED BY FIGURE N101.1 AND TABLE N101.1.
g. OR INSULATION SUFFICIENT TO FILL THE FRAMING CAVITY, R-19 MINIMUM.
h. THE FIRST VALUE IS CAVITY INSULATION, THE SECOND VALUE IS CONTINUOUS INSULATION, SO "13/5" MEANS R-13 CAVITY INSULATION PLUS R-5 CONTINUOUS INSULATION. IF STRUCTURAL SHEATHING COVERS 25% OR LESS OF THE EXTERIOR, INSULATING SHEATHING IS NOT REQUIRED WHERE STRUCTURAL SHEATHING IS USED. IF STRUCTURAL SHEATHING COVERS MORE THAN 25% OF EXTERIOR, STRUCTURAL SHEATHING SHALL BE SUPPLEMENTED WITH INSULATED SHEATHING OF AT LEAST R-2.
i. THE SECOND R-VALUE APPLIES WHEN MORE THAN HALF THE INSULATION IS ON THE INTERIOR OF THE MASS WALL.
j. IN ADDITION TO THE EXEMPTION IN SECTION N102.3.3, A MAXIMUM OF TWO GLAZED FENESTRATION PRODUCT ASSEMBLIES HAVING A U-FACTOR NO GREATER THAN 0.35 SHALL BE PERMITTED TO BE SUBSTITUTED FOR MINIMUM CODE COMPLIANT FENESTRATION PRODUCT ASSEMBLIES WITHOUT PENALTY.
k. IN ADDITION TO THE EXEMPTION IN SECTION N102.3.3, A MAXIMUM OF TWO GLAZED FENESTRATION PRODUCT ASSEMBLIES HAVING A SHGC NO GREATER THAN 0.70 SHALL BE PERMITTED TO BE SUBSTITUTED FOR MINIMUM CODE COMPLIANT FENESTRATION PRODUCT ASSEMBLIES WITHOUT PENALTY.



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DATE: FEBRUARY 08, 2019
SCALE:
DRAIN BY: T5Z
ENGINEERED BY: T5Z
REVIEWED BY: T5Z

STANDARD STRUCTURAL NOTES



STANDARD STRUCTURAL NOTES

SN-1

SHEET --- OF ---



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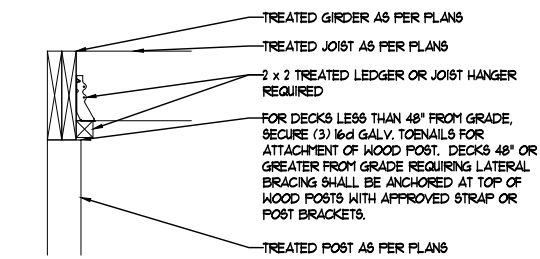
STANDARD STRUCTURAL NOTES



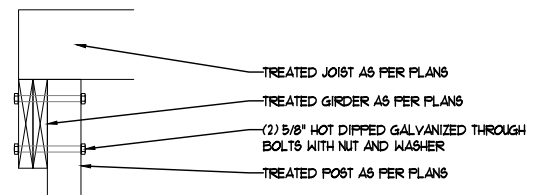
DECK DETAILS

SN-2

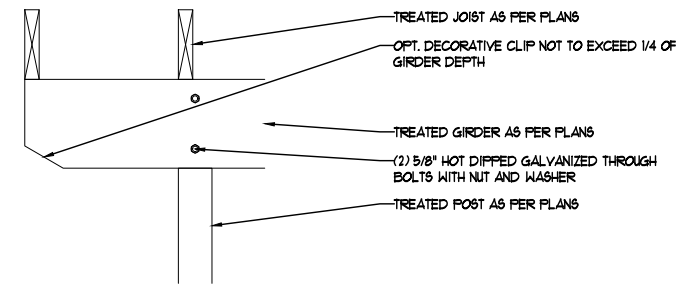
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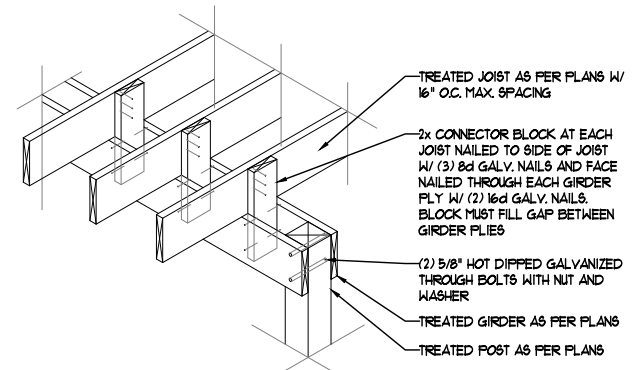
1 TOP MOUNT/FLUSH GIRDER DETAIL
 (FIGURE A1105.1(1) OF THE 2018 NCRC)



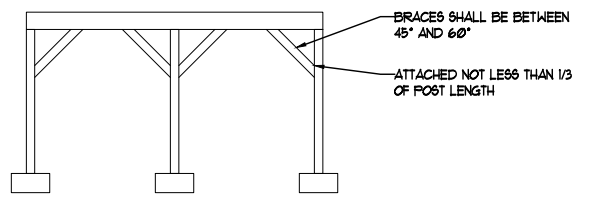
2 SIDE MOUNT DROPPED GIRDER DETAIL
 (FIGURE A1105.1(2) OF THE 2018 NCRC)



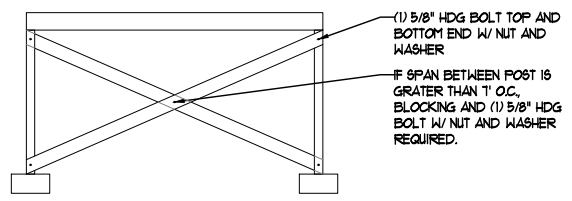
3 CANTILEVERED DROPPED GIRDER DETAIL
 (FIGURE A1105.1(4) OF THE 2018 NCRC)
 -CANTILEVERED GIRDER LIMITED TO FLOOR LOADS ONLY. ROOF LOADS PROHIBITED ON CANTILEVERED GIRDER APPLICATION



4 SPLIT GIRDER DETAIL
 (FIGURE A1105.1(3) OF THE 2018 NCRC)
 -SPLIT GIRDER LIMITED TO FLOOR LOADS ONLY AND CANTILEVER GIRDER ENDS ALLOWED PER FIGURE A1105.1(4)



5 WOOD KNEE BRACING DETAIL
 (FIGURE A1109.1(2) OF THE 2018 NCRC)
 1) FREE STANDING DECKS REQUIRING BRACING SHALL BE INSTALLED IN BOTH DIRECTIONS OF 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 A1109.1(4) OF THE 2018 NCRC)

RAIL POSTS - CANNOT EXCEED 8' O.C. SPACING AND SHALL BE ATTACHED W/ (2) 3/8" GALV. BOLTS W/ NUT AND WASHER TO OUTER BANDS.

STAIR HANDRAIL - HEIGHT BETWEEN 34"-38" IN ACCORDANCE W/ R311.1(1) AND R312.1. OPENINGS ON SIDE OF STAIRS REQUIRING GUARDS SHALL NOT ALLOW A SPHERE W/ 4 3/8" DIAMETER TO PASS IN ACCORDANCE W/ R312.13, EXCEPTION 2.

STAIR TREADS AND RISERS - PER R311.1.5(1) (3 1/4" MAX. RISER) AND R311.1.5.2 (9" MIN. TREAD DEPTH). STAIRWAYS 36" MIN. WIDTH PER R311.1(1) (RAIL PROJECTIONS ALLOWED).

RISER OPENINGS - STAIRS W/ A 30° OR MORE VERTICAL RISE MUST HAVE SOLID RISERS OR OPENING RESTRICTED TO PREVENT A 4" DIAMETER SPHERE FROM PASSING PER R311.1.5.1.

GUARDS - AT A 36" MIN. HEIGHT REQUIRED IN ACCORDANCE W/ R312.12 W/ 30° DROP AND OPENING LIMITS PER R312.13. TOP RAIL AND POST TO SUPPORT 200 LBS W/ INFILL TO MEET 50 LBS IN ACCORDANCE W/ TABLE R301.5 AND FOOTNOTES.

DECKING - PER A1101 FOR #2 GYP AND ATTACHED W/ (2) 8d GALV. NAILS AT EACH JOIST OR APPROVED SCREWS. OTHER MATERIALS PER MANUFACTURER'S INSTALLATION BASED UPON JOISTS O.C. SPACING. ALTERNATE MATERIAL ATTACHED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

DECKS ARE TO BE CONSTRUCTED AS PER APPENDIX M OF THE 2018 NORTH CAROLINA RESIDENTIAL CODE (NCRC)

DECK ATTACHMENT - AS PER SECTION A1104 OF THE 2018 NCRC, WHEN A DECK SHALL BE SUPPORTED AT THE STRUCTURE BY ATTACHING THE DECK TO THE STRUCTURE, SECURE DECK TO STRUCTURE AS PER TABLE A1104.1(1), TABLE A1104.1(2), METHOD 3 OR METHOD 4 BELOW:

TABLE A1104.1(1)
 ALL STRUCTURES EXCEPT BRICK VENEER STRUCTURES

FASTENERS	8' MAX. JOIST SPAN ^a	16' MAX. JOIST SPAN ^a
5/8" HDG BOLTS W/ NUT AND WASHER ^b	1 • 3'-6" O.C.	1 • 1'-8" O.C.
AND	AND	AND
12d COMMON HDG NAILS ^c	2 • 8" O.C.	3 • 6" O.C.
OR		
SELF-DRILLING SCREW FASTENER ^d	12" O.C. STAGGERED	6" O.C. STAGGERED

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".
 d. SELF-DRILLING SCREW FASTENER HAVING A MINIMUM SHANK DIAMETER OF 0.195" AND A LENGTH LONG ENOUGH TO PENETRATE THROUGH THE SUPPORTING STRUCTURE BAND. THE STRUCTURE BAND SHALL HAVE A MINIMUM DEPTH OF 1 1/8". SCREW SHALL BE EVALUATED BY AN APPROVED TESTING AGENCY FOR ALLOWABLE SHEAR LOAD FOR 5YP TO 5YP LUMBER OF 250 LBS. AND SHALL HAVE A CORROSION-RESISTANT FINISH EQUIVALENT TO HOT DIP GALVANIZED. MINIMUM EDGE DISTANCE FOR SCREWS IS 1 1/16". A MAXIMUM OF 1/2" THICK WOOD STRUCTURAL PANEL IS PERMITTED TO BE LOCATED BETWEEN THE DECK LEDGER AND THE STRUCTURE BAND.

TABLE A1104.1(2)
 BRICK VENEER STRUCTURES

FASTENERS	8' MAX. JOIST SPAN ^a	16' MAX. JOIST SPAN ^a
5/8" HDG BOLTS W/ NUT AND WASHER ^b	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 A1109 OF THE 2018 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 A1104 LISTED ABOVE, LATERAL BRACING IS NOT REQUIRED. LATERAL BRACING IS NOT REQUIRED FOR FREE STANDING DECKS WITH A DECK FLOOR HEIGHT OF 30" OR LESS ABOVE FINISHED GRADE.

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 FREE STANDING DECKS WITHOUT KNEE BRACES OR DIAGONAL BRACING, LATERAL STABILITY MAY BE PROVIDED BY EMBEDDING THE POST IN ACCORDANCE WITH TABLE A1109.13. DECKS ATTACHED TO STRUCTURE CAN ALSO BE BRACED ON EXTERIOR GIRDER LINE W/ EMBEDMENT OPTION.

TABLE A1109.13

POST SIZE	MAX. TRIIBUTARY AREA	MAX. POST HEIGHT ^a	EMBEDMENT DEPTH	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 FREE STANDING 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 46.