

SCALE NOTE:
 1/4" = 1'-0" PRINTS ARE ONE HALF THE NOTED SCALE
 LARGE FORMAT PRINTS ARE TO SCALE AS NOTED



7/24/19

STRUCTURAL NOTES

SHEET

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DRAWN BY: ST
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STANDARD STRUCTURAL NOTES

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FRAMING NOTES

1. ALL FRAMING LUMBER SHALL BE #2 GYP MINIMUM (F) = 875 PSI, F_v = 375 PSI, E = 1,600,000 PSI UNLESS NOTED OTHERWISE (UNO). TREATED LUMBER SHALL BE #2 GYP MINIMUM (F) = 975 PSI, F_v = 475 PSI, E = 1,600,000 PSI UNLESS NOTED OTHERWISE (UNO).
2. LAMINATED VENEER LUMBER (LVL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F_b = 2,600 PSI, F_v = 285 PSI, E = 1,900,000 PSI. LAMINATED STRAND LUMBER (LSL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F_b = 2,325 PSI, F_v = 310 PSI, E = 1,550,000 PSI. PARALLEL STRAND LUMBER (PSL) UP TO 7" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F_b = 2,500 PSI, E = 1,800,000 PSI. PARALLEL STRAND LUMBER (PSL) MORE THAN 7" DEPTH SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F_b = 2,300 PSI, E = 1,200,000 PSI. PERMISSIBLE LUMBER (PL) HOLE SIZE SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: F_b = 2,500 PSI, E = 1,800,000 PSI.
3. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING AISC SPECIFICATIONS:
 - A. W AND WT SHAPES: A57M A992
 - B. CHANNELS AND ANGLES: A57M A36
 - C. PLATES AND BARS: A57M A36
 - D. HOLLOW STRUCTURAL SECTIONS: A57M A500 GRADE B
 - E. STEEL PIPE: A57M A53, GRADE B, TYPE E OR S
4. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3 W_t AND FULL FLANGE WIDTH (UNO). PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED AT THE BOTTOM FLANGE TO EACH SUPPORT AS FOLLOWS (UNO):
 - A. WOOD FRAMING: (2) 1/2" DIA x 4" LONG LAG SCREWS
 - B. CONCRETE: (2) 1/2" DIA x 4" WEDGE ANCHORS
 - C. MASONRY (FULLY GRAOUTED): (2) 1/2" DIA x 4" LONG SIMPSON TITEN HD ANCHORS
5. SQUARES DENOTE POINT LOADS WHICH REQUIRE SOLID BLOCKING TO SUPPORTING MEMBER BELOW. SQUARES DENOTE POINT LOADS WHICH REQUIRE SOLID BLOCKING TO SUPPORTING MEMBER BELOW.
 - 1. ALL BEAMS, HEADERS, OR GIRDER TRUSSES PARALLEL TO 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) (3) STUDS OR OTHER NOTED COLUMN ARE TO BEAR FULLY ON SUPPORT COLUMN FOR ENTIRE WALL DEPTH (UNO). BEAM ENDS THAT BUTT INTO ONE 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).
 - 2. BEAMS SHALL BE BOLTED TOGETHER USING 1/2" DIAMETER BOLTS (A57M A307) WITH WASHERS PLACED AT HEAD/END OF BOLT. BOLTS SHALL BE SPACED AT 24" CENTERS (MAXIMUM) AND STAGGERED AT TOP AND BOTTOM OF BEAM (7" EDGE DISTANCE) WITH (2) BOLTS LOCATED AT 6" FROM EACH END (UNO).
 - 3. 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.
 - 4. BRACING WALL PANELS SHALL BE CONSTRUCTED ACCORDING TO THE NORTH CAROLINA RESIDENTIAL CODE 2018 EDITION WALL BRACING CRITERIA. THE AMOUNT, LENGTH, AND LOCATION OF BRACING SHALL CORRELATE WITH ALL APPLICABLE TABLES IN SECTION R602.10.
 - 5. PROVIDE DOUBLE JOIST UNDER ALL WALLS PARALLEL TO FLOOR JOISTS. 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.
 - 6. 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 6" MINIMUM 5/16" STEEL ANGLE PER MANUFACTURER'S SPECIFICATIONS. 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 AT ROOF LINES. BOLT A 6" x 4" x 5/16" STEEL ANGLE TO (2) 2" x 10" BLOCKING INSTALLED W/ (4) 1/2" DIA NAILS EA. FLY BETWEEN WALL STUDS WITH (2) ROUS OF 1/2" LAG SCREWS AT 12" O.C. STAGGERED AND IN ACCORDANCE WITH SECTION R102.21 OF THE NCRC, 2018 EDITION.
 - 7. FOR 6" STICK FRAMED ROOFS, CIRCLES DENOTE (3) 2" x 4" POSTS FOR ROOF MEMBER SUPPORT. HIP SPICES ARE TO BE SPACED A MINIMUM OF 8'-0". FASTEN MEMBERS WITH THREE ROUS OF 1/2" DIA NAILS AT 16" O.C. FRAME DOORER WALLS ON TOP OF DOUBLE OR TRIPLE RAFTERS AS SHOWN (UNO).
 - 8. FOR TRUSSED ROOFS, FRAME DOORER WALLS ON TOP OF 2" x 4" LADDER FRAMING AT 24" O.C. BETWEEN ADJACENT ROOF TRUSSES. STICK FRAME OVER-RAISED ROOF SECTIONS WITH 2" x 8" RIDGES, 2" x 6" RAFTERS AT 16" O.C. AND FLAT 2" x 10" VALLEYS (UNO).
 - 9. ALL 4" x 4" AND 6" x 6" POSTS TO BE INSTALLED WITH 100 LB CAPACITY UPLIFT CONNECTORS TOP AND BOTTOM (UNO). POSTS MAY BE SECURED USING ONE SIMPSON H6 OR L750 UPLIFT CONNECTOR FASTENED TO THE BAND AT THE BOTTOM AND THE BEAM AT THE TOP OF EACH POST. ONE 1/2" SECTION OF SIMPSON C66 COIL STRAPPING WITH (8) 8D HDG NAILS AT EACH END MAY BE USED IN LIEU OF EACH TRUSS STRAP IF DESIRED. FOR MASONRY OR CONCRETE FOUNDATION USE SIMPSON POST BASE.

GENERAL NOTES

1. ENGINEERS SEAL APPLIES ONLY TO STRUCTURAL COMPONENTS INCLUDING ROOF RAFTERS, HIPS, VALLEYS, RIDGES, FLOORS, WALLS, BEAMS, HEADERS, COLUMNS, GABLETYPERS, OFFSET BEARING WALLS, PIERS, GIRDER SYSTEM AND FOOTING. ENGINEERS SEAL DOES NOT CERTIFY DIMENSIONAL ACCURACY OF ARCHITECTURAL LAYOUT INCLUDING ROOF. ENGINEERS SEAL DOES NOT APPLY TO I-JOIST OR FLOOR/ROOF TRUSS LAYOUT DESIGN AND ACCURACY.
2. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NORTH CAROLINA RESIDENTIAL CODE (NCRC), 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, 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.
3. STRUCTURAL DESIGN BASED ON THE PROVISIONS OF THE NCRC, 2018 EDITION (R301.4 - R301.7)

DESIGN CRITERIA:	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (IN)
ATTIC WITH LIMITED STORAGE	20	0	L/240 (L/360 w/ BRITTLE FINISHES)
DECKS	40	0	L/360
EXTERIOR BALCONIES	40	0	L/360
FIRE ESCAPES	40	0	L/360
HANDRAILS/GUARDRAILS	200 LB OR 50 (PLF)	0	L/360
PASSENGER VEHICLE GARAGE	50	0	L/360
ROOMS OTHER THAN SLEEPING ROOM	40	0	L/360
SLEEPING ROOMS	30	0	L/360
STAIRS	40	0	L/360
WIND LOAD	(BASED ON TABLE R301.4) WIND ZONE AND EXPOSURE	0	0
GROUND SNOW LOAD: Pg	20 (PSF)	0	0
4. FOR 15 AND 20 MPH WIND ZONES, FOUNDATION ANCHORAGE IS TO COMPLY WITH SECTION R401.6 OF THE NCRC, 2018 EDITION. FOR 30 MPH, 40 MPH, AND 50 MPH WIND ZONES, FOUNDATION ANCHORAGE IS TO COMPLY WITH SECTION 4504 OF THE NCRC, 2018 EDITION.
5. ENERGY EFFICIENCY COMPLIANCE AND INSULATION VALUES OF THE BUILDING TO BE IN ACCORDANCE WITH CHAPTER 11 OF THE NCRC, 2018 EDITION.

FOOTING AND FOUNDATION NOTES

1. FOUNDATION DESIGN BASED ON A MINIMUM ALLOWABLE BEARING CAPACITY OF 2000 PSF. CONTACT GEOTECHNICAL ENGINEER IF BEARING CAPACITY IS NOT ACHIEVED.
2. 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. A 4" THICK BASED COURSE CONSISTING OF CLEAN GRAVEL OR SAND OR GRAVEL SHALL BE PLACED. A BASE COURSE IS NOT REQUIRED WHERE 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 R401.1 OF THE NCRC, 2018 EDITION.
3. PROPERLY DEWATER EXCAVATION PRIOR TO POURING CONCRETE WHEN BOTTOM OF CONCRETE SLAB IS AT OR BELOW WATER TABLE IF APPLICABLE. 3/4" - 1" DEEP CONTROL JOINTS ARE TO BE SALED WITHIN 4 TO 12 HOURS OF CONCRETE FINISHING AND WALL LOCATIONS HAVE BEEN MARKED. ADJUST WHERE NECESSARY.
4. CONCRETE SHALL CONFORM TO SECTION R402.2 OF THE NCRC, 2018 EDITION. CONCRETE REINFORCING STEEL TO BE A57M A63 GRADE 60. WELDED WIRE FABRIC TO BE A57M A95. 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.
5. MASONRY UNITS TO CONFORM TO ACE 530/ASCE 5/115 402. MORTAR SHALL CONFORM TO ASTM C770.
6. THE UNSUPPORTED HEIGHT OF MASONRY PIERS SHALL NOT EXCEED FOUR TIMES THEIR LEAST DIMENSION FOR UNFILLED HOLLOW CONCRETE MASONRY UNITS AND TEN TIMES THEIR LEAST DIMENSION FOR SOLID OR SOLID FILLED PIERS. PIERS MAY BE FILLED SOLID WITH CONCRETE OR TYPE M OR S MORTAR. PIERS AND WALLS SHALL BE CAPPED WITH 8" OF SOLID MASONRY.
7. THE CENTER OF EACH OF THE PIERS SHALL BEAR IN THE MIDDLE THIRD OF ITS RESPECTIVE FOOTING. EACH GIRDER SHALL BEAR IN THE MIDDLE THIRD OF THE PIERS.
8. ALL CONCRETE AND MASONRY FOUNDATION WALLS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R401 OF THE NCRC, 2018 EDITION OR IN ACCORDANCE WITH ACI 318, ACI 302.1, ACI 308.4 OR ACE 530/ASCE 5/115 402. MASONRY FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R401.1(1), R401.1(2), R401.1(3), R401.1(4) OR R401.1(5) OF THE NCRC, 2018 EDITION. CONCRETE FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R401.1(1), R401.1(2), R401.1(3), R401.1(4) OR R401.1(5) OF THE NCRC, 2018 EDITION. STEEL CONCRETE FOUNDATION WALLS ARE TO BE REINFORCED PER TABLE R401.1(1), R401.1(2), R401.1(3), R401.1(4) OR R401.1(5) OF THE NCRC, 2018 EDITION. WALLS AT 16" O.C. WHERE GRADE PERMITS (UNO).

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