

- 1.1) THE DESIGN PROFESSIONAL WHOSE SEAL APPEARS ON THESE DRAWINGS IS THE STRUCTURAL ENGINEER OF RECORD (SER) FOR THIS PROJECT. THE SER BEARS RESPONSIBILITY FOR THE STRUCTURAL COMPONENTS INCLUDING RAFTERS, HIPs, VALLEYS, RIDGES, CEILING AND FLOOR JOISTS, LOAD-BEARING WALLS, BEAMS AND HEADERS, COLUMNS AND POSTS, CANTILEVERS, PIERS, GIRDERS, AND FOOTINGS.
- 1.2) THE SER DOES NOT CERTIFY THE DIMENSIONAL ACCURACY OF THE ARCHITECTURAL DRAWINGS, INCLUDING THE ROOF. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION AND NOTIFY THE SER OF ANY DISCREPANCIES AND/OR INCOMPLETE INFORMATION.
- 1.3) THE SER IS NOT RESPONSIBLE FOR I-JOIST AND/OR FLOOR AND ROOF TRUSS DESIGN AND LAYOUT. FLOOR AND ROOF TRUSSES ARE TO BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW FINAL TRUSS DRAWINGS PRIOR TO CONSTRUCTION AND NOTIFY THE SER OF ANY DISCREPANCIES.
- 1.4) THE SER IS NOT RESPONSIBLE FOR VERIFICATION OF ASSUMED FIELD CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ASSUMED FIELD CONDITIONS ARE MET OR EXCEEDED PRIOR TO CONSTRUCTION AND NOTIFY THE SER OF ANY DISCREPANCIES.
- 1.5) THE STRUCTURE IS ONLY STABLE IN ITS COMPLETED FORM. THE CONTRACTOR SHOULD PROVIDE ALL REQUIRED TEMPORARY BRACING DURING CONSTRUCTION TO STABILIZE THE STRUCTURE.
- 1.6) THE SER DOES NOT BEAR RESPONSIBILITY FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, NOR SAFETY PRECAUTIONS IN CONNECTION WITH THE CONSTRUCTION OF THIS STRUCTURE. THE SER WILL NOT BE HELD RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- 1.7) ANY ERRORS DUE TO FAILURE TO FOLLOW THE ABOVE PROCEDURES SHALL NOT BE THE RESPONSIBILITY OF THE SER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ANY REVISIONS ISSUED BY THE SER ARE PROMPTLY DISTRIBUTED TO THE SUBCONTRACTORS.
- 1.8) THE SER DOES NOT PERFORM FENESTRATION OR VENTING CALCULATIONS OR ANY OTHER CALCULATIONS THAT ARE NOT DIRECTLY RELATED TO THE STRUCTURAL DESIGN. IT IS THE RESPONSIBILITY OF THE ARCHITECTURAL DESIGNER AND/OR CONTRACTOR TO PROVIDE ANY REQUIRED CALCULATIONS OUTSIDE OF THE SCOPE OF THE STRUCTURAL DESIGN.

2.1)	BUILDING CODES:		
	– 2018 NORTH CAROLINA RESIDENTIAL CODE (NCRC)		
	– ASCE/SEI 7-10 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"		
2.2)	DESIGN LIVE LOADS:		
	– ROOF	20 PSF	
	– UNINHABITABLE ATTICS WITHOUT STORAGE	10 PSF	
	– UNINHABITABLE ATTICS WITH LIMITED STORAGE	20 PSF	
	– HABITABLE ATTICS AND ATTICS SERVED WITH FIXED STAIRS	30 PSF	
	– SLEEPING AREAS	30 PSF	
	– LIVING AREAS	40 PSF	
	– DECKS AND BALCONIES	40 PSF	
	– STAIRS	40 PSF	
	– PASSENGER VEHICLE GARAGE	50 PSF	
2.3)	DESIGN DEAD LOADS:		
	– ROOF TRUSSES	20 PSF (10 PSF TC, 10 PSF BC)	
	– SOLID SAWN RAFTERS AND JOISTS	10 PSF	
	– I-JOISTS	12 PSF	
	– FLOOR TRUSSES	15 PSF (10 PSF TC, 5 PSF BC)	
	– INTERIOR WALLS	8 PSF	
	– EXTERIOR WALLS	10 PSF	
	– BRICK, MASONRY, AND NATURAL STONE VENEER	40 PSF	
	– CERAMIC TILE FLOORING	10 PSF	
	– NATURAL STONE TILE FLOORING	32 PSF	
	– NORMAL WEIGHT CONCRETE	145 PCF	
2.4)	DESIGN SNOW LOADS:		
	– GROUND SNOW LOAD	20 PSF	
2.5)	DESIGN LATERAL LOADS AND CRITERIA:		
	– ULTIMATE WIND SPEED	120 MPH	
	– WIND EXPOSURE	B	
	– DESIGN WIND PRESSURE	20 PSF	
	– SEISMIC DESIGN CATEGORY	B	
2.6)	DESIGN SOIL LOADS:		
	– SOIL BEARING CAPACITY	2000 PSF (MINIMUM, ASSUMED)	
	– LATERAL SOIL PRESSURE	45 PCF (MAXIMUM, ASSUMED)	
2.7)	DESIGN DEFLECTION LIMITS:		
		LIVE LOAD	TOTAL LOAD
	– ROOF TRUSSES	L/360	L/240
	– SOLID SAWN RAFTERS	L/240	L/180
	– SOLID SAWN CEILING JOISTS	L/240	L/180
	– I-JOISTS AND FLOOR TRUSSES	L/480	L/240
	– SOLID SAWN FLOOR JOISTS	L/360	L/240
	– BEAMS AND HEADERS	L/360	L/240
	– FRAMING SUPPORTING CERAMIC TILE		L/360
	– FRAMING SUPPORTING NATURAL STONE TILE		L/720 ($\frac{2}{3}$ " MAX)
	– LINTELS AND FRAMING SUPPORTING BRICK OR MASONRY		L/600 ($\frac{3}{8}$ " MAX)

- 3.1) FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 4 OF THE 2018 NCR.
- 3.1) VERIFICATION OF THE ASSUMED SOIL BEARING CAPACITY IS THE RESPONSIBILITY OF THE CONTRACTOR.
- CONCRETE FOOTINGS SHALL NOT BE PLACED UNTIL THE SOIL BEARING CAPACITY HAS BEEN VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER OR BUILDING INSPECTOR. CONSULT THE SER SHOULD THE SOIL BEARING CAPACITY NOT BE MET OR IF ANY OTHER ADVERSE SOIL CONDITION IS ENCOUNTERED.
- 3.2) THE BOTTOM OF ALL FOOTINGS SHALL EXTEND A MINIMUM OF 12" BELOW GRADE OR BELOW THE FROST LINE FOR THE CONSTRUCTION LOCATION, WHICHEVER IS GREATER.
- 3.3) ANY COMPACTED FILL SHALL BE PLACED UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTING SOIL SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY.
- 3.4) FOOTINGS SHALL BE FREE OF VEGETATION, TOPSOIL, AND FOREIGN MATERIAL. NO CONCRETE SHALL BE PLACED AGAINST ANY SUBGRADE CONTAINING WATER, ICE, FROST, OR LOOSE MATERIAL.

- 3.5) FOOTINGS SUPPORTING FOUNDATION WALLS SHALL HAVE A MINIMUM PROJECTION OF 2" AT ALL SIDES. MAXIMUM FOOTING PROJECTION AT FOUNDATION WALLS SHALL NOT EXCEED THE THICKNESS OF THE FOOTING.
- 3.6) WOOD SILL PLATES SHALL BE ANCHORED TO THE FOUNDATION WITH 1/2" DIA ANCHOR BOLTS WITH MINIMUM 7" EMBEDMENT INTO CONCRETE OR SOLID-GROUTED MASONRY SPACED A MAXIMUM OF 6'-0" O.C. UNLESS NOTED OTHERWISE. PROVIDE A MINIMUM OF TWO ANCHOR BOLTS PER PLATE SECTION AND ONE ANCHOR BOLT WITHIN 12" OF EACH CORNER UNLESS NOTED OTHERWISE. ANCHOR BOLTS SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF THE SILL PLATE.
- 3.7) FOUNDATION WALLS MAY BE STEPPED AND FRAMED WITH CRIPPLE WALLS WHERE GRADE PERMITS (SEE NOTE 7.14 FOR WALL FRAMING REQUIREMENTS).
- 3.8) PROVIDE FOUNDATION WATERPROOFING AND DRAIN WITH POSITIVE SLOPE TO DAYLIGHT AS REQUIRED BY SITE CONDITIONS.
- 3.9) THE SITE SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6" WITHIN THE FIRST TEN FEET.
- 3.10) CRAWL SPACES SHALL BE GRADED LEVEL AND CLEAR OF ALL DEBRIS. CRAWL SPACE GRADE SHALL BE LINED WITH MINIMUM 6 MIL APPROVED VAPOR BARRIER WITH ALL JOINTS LAPPED MINIMUM 12" AND SEALED. PROVIDE A MINIMUM ACCESS OPENING MEASURING 18" BY 24".

- 4.1) INTERIOR SLABS ON GRADE, EXCEPT FOR GARAGE FLOORS, AND FOOTINGS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. FOUNDATION WALLS, GARAGE SLABS ON GRADE, AND EXTERIOR SLABS ON GRADE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. ALL CONCRETE SHALL BE CAST IN PLACE.
- 4.2) CONCRETE SHALL BE PROPORTIONED, MIXED, AND PLACED IN ACCORDANCE WITH THE LATEST EDITIONS OF ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
- 4.3) ALL CONCRETE EXPOSED TO FREEZE/THAW CYCLES SHALL BE AIR ENTRAINED WITH TOTAL AIR VOLUME NOT LESS THAN 5% OR MORE THAN 7%.
- 4.4) CONCRETE SLABS ON GRADE SHALL BE MINIMUM 4" THICK AND REINFORCED WITH POLYPROPYLENE FIBERS OR 6x6 WELDED WIRE FABRIC (WWF). POLYPROPYLENE FIBERS SHALL BE APPLIED AT A MINIMUM RATE OF 1.5 LBS PER CUBIC YARD. WWF SHALL BE PLACED AT THE MID-DEPTH OF THE SLAB.
- 4.5) CONCRETE SLABS ON GRADE SHALL BE PLACED ON MINIMUM 4" THICK GRANULAR FILL COMPACTED TO MINIMUM 95% OF THE MAXIMUM DRY DENSITY. INTERIOR SLABS ARE TO BE PLACED ON A MINIMUM 6 MIL VAPOR BARRIER PLACED ON TOP OF THE GRANULAR FILL.
- 4.6) $\frac{3}{8}$ " TO 1" DEEP CONTROL JOINTS (SAW-CUT OR TOOLED) ARE TO BE PLACED IN SLABS ON GRADE WITHIN 4 TO 12 HOURS OF CONCRETE FINISHING. CONTROL JOINTS ARE TO BE SPACED 8'-0" TO 12'-0" O.C.
- 4.7) ALL CAST-IN-PLACE CONCRETE WALLS SHALL CONFORM TO SECTIONS R404 AND/OR R608 OF THE 2018 NRCR, ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", AND/OR ACI 332 "CODE REQUIREMENTS FOR RESIDENTIAL CONCRETE".

- 5.1) CONCRETE MASONRY SHALL CONFORM TO ASTM C90. ALL BRICK SHALL CONFORM TO ASTM C62. ALL MASONRY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.
- 5.2) ALL MORTAR SHALL BE TYPE "S". GROUT AND MORTAR SHALL CONFORM TO ASTM C270 AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
- 5.3) ALL MASONRY WALLS SHALL CONFORM TO SECTION SECTIONS R404 AND/OR R606 OF THE 2018 NRCR, NCM 1868-A "CONSTRUCTION USING CONCRETE MASONRY", AND/OR ACE 530/ASCE 5/TMS 402 "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES".
- 5.4) THE UNSUPPORTED HEIGHT OF UNGROUTED HOLLOW MASONRY PIERS SHALL NOT EXCEED FOUR TIMES THEIR LEAST DIMENSION. THE UNSUPPORTED HEIGHT OF SOLID OR SOLID-GROUTED MASONRY PIERS SHALL NOT EXCEED TEN TIMES THEIR LEAST DIMENSION.
- 5.5) EACH CRAWL SPACE PIER SHALL BEAR WITHIN THE MIDDLE THIRD OF ITS RESPECTIVE FOOTING AND EACH GIRDER SHALL BEAR WITHIN THE MIDDLE THIRD OF THE PIERS. PILASTERS SHALL BE BONDED TO THE PERIMETER FOUNDATION WALL.
- 5.6) THE TOP COURSE OF MASONRY SHALL BE GROUTED SOLID. ALL CELLS CONTAINING REINFORCING STEEL OR EMBEDDED ITEMS SHALL BE GROUTED SOLID.
- 5.7) HORIZONTAL WALL JOINT REINFORCEMENT SHALL BE STANDARD 9 GAUGE GALVANIZED LADDER OR TRUSS TYPE SPACED AT 16" O.C. MAXIMUM, UNLESS NOTED OTHERWISE ON THE DRAWINGS, AND SHALL CONFORM TO ASTM A951. LAP HORIZONTAL REINFORCEMENT MINIMUM 6" FOR CONTINUOUS WALL APPLICATIONS.

6.1) WELDED WIRE FABRIC SHALL CONFORM TO ASTM 185. CONCRETE REINFORCING STEEL SHALL CONFORM TO ASTM 615, GRADE 60. REINFORCING STEEL WITHIN FOOTINGS SHALL MAINTAIN MINIMUM 3" CONCRETE COVER AND REINFORCING STEEL WITHIN SLABS SHALL MAINTAIN MINIMUM 1 3/4" CONCRETE COVER. CONCRETE COVER FOR #5 AND SMALLER REINFORCING BARS WITHIN CONCRETE WALLS SHALL BE MINIMUM 1 3/4" AND CONCRETE COVER FOR #6 AND LARGER REINFORCING BARS WITHIN CONCRETE WALLS SHALL BE MINIMUM 2".

6.2) LAP REINFORCING, AS REQUIRED, A MINIMUM OF 48 TIMES THE BAR DIAMETER (18" FOR #3 BARS, 24" FOR #4 BARS, 30" FOR #5 BARS, 36" FOR #6 BARS, ETC.).

- 7.1) SOLID SAWN FRAMING MEMBERS SHALL BE SPRUCE-PINE-FIR (SPF) #2 OR SOUTHERN YELLOW PINE (SYP) #2 WITH THE FOLLOWING MINIMUM DESIGN VALUES:
 - SPF #2: Fb=875 PSI, Fv=135 PSI, E=1,400,000 PSI
 - SYP #2: Fb=750 PSI, Fv=175 PSI, E=1,400,000 PSI
- 7.2) ENGINEERED LUMBER BEAMS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:
 - LAMINATED STRAND LUMBER (LSL): Fb=2,325 PSI, Fv=310 PSI, E=1,550,000 PSI
 - LAMINATED VENEER LUMBER (LVL): Fb=2,600 PSI, Fv=285 PSI, E=2,000,000 PSI
 - PARALLEL STRAND LUMBER (PSL): Fb=2,900 PSI, Fv=290 PSI, E=2,000,000 PSI
- 7.3) ENGINEERED LUMBER COLUMNS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:
 - LAMINATED STRAND LUMBER (LSL): Fb=1,700 PSI, Fc=710 PSI, E=1,300,000 PSI
 - LAMINATED VENEER LUMBER (LVL): Fb=2,600 PSI, Fc=750 PSI, E=2,000,000 PSI
 - PARALLEL STRAND LUMBER (PSL): Fb=2,400 PSI, Fc=545 PSI, E=1,800,000 PSI
- 7.4) WOOD IN CONTACT WITH THE GROUND, CONCRETE, OR MASONRY SHALL BE PRESSURE TREATED IN ACCORDANCE WITH ANPA STANDARD C-15. ALL OTHER MOISTURE EXPOSED LUMBER SHALL BE TREATED IN ACCORDANCE WITH ANPA STANDARD C-2 OR SHALL BE A NATURALLY DURABLE DECAY RESISTANT WOOD AS DEFINED IN SECTION 9.02 OF THE 2018 NRC.
- 7.5) NAILS SHALL BE COMMON WIRE NAILS UNLESS NOTED OTHERWISE AND SHALL CONFORM TO ASTM F1667-05.

- 7.6) BOLTS SHALL CONFORM TO ASTM A307 UNLESS NOTED OTHERWISE. INSTALL STANDARD STEEL WASHERS FOR THE NUT AND BOLT HEAD WHEN BOLTING WOOD MEMBERS. HOLES FOR BOLTS SHALL BE $\frac{1}{8}"$ LARGER THAN THE BOLT DIAMETER UNLESS NOTED OTHERWISE.
- 7.7) LAG SCREWS SHALL CONFORM TO ANSI/ASME B18.2.1. INSTALL STANDARD STEEL WASHERS FOR THE SCREW HEAD. PILOT HOLES SHALL BE USED FOR LAG SCREW INSTALLATION AND SHALL BE BORED ACCORDING TO NDS SPECIFICATIONS.
- 7.8) INDIVIDUAL STUDS BUILT UP TO FORM A COLUMN SHALL BE FASTENED WITH (2) ROWS OF 10d NAILS @ 6" O.C. STAGGERED. BLOCKING MATCHING OR EXCEEDING THE WIDTH OF THE STUD COLUMN SHALL BE INSTALLED AT ALL FLOOR LEVELS TO ENSURE PROPER LOAD TRANSFER THROUGH THE STRUCTURE.
- 7.9) MULTI-PLY SOLID SAWN BEAMS AND HEADERS SHALL BE FASTENED WITH (2) ROWS OF 10d NAILS @ 16" O.C. STAGGERED FOR 2x8 AND SMALLER OR (3) ROWS OF 10d NAILS @ 16" O.C. STAGGERED FOR 2x10 AND LARGER. APPLY NAILING FROM BOTH FACES FOR (3) OR MORE PILES.
- 7.10) MULTI-PLY ENGINEERED LUMBER BEAMS AND HEADERS SHALL BE FASTENED PER THE MANUFACTURER SPECIFICATIONS UNLESS NOTED OTHERWISE.
- 7.11) BEAMS PERPENDICULAR TO THE SUPPORTING WALL SHALL BEAR THE FULL WIDTH OF THE WALL UNLESS NOTED OTHERWISE AND SHALL BE SUPPORTED BY A COLUMN OF BUILT UP STUDS THAT MATCHES OR EXCEEDS THE WIDTH OF THE BEAM (NOT LESS THAN TWO STUDS).
- 7.12) BEAMS PARALLEL TO THE SUPPORTING WALL SHALL BEAR THE WIDTH OF THE SPECIFIED STUD COLUMN ON THE END OF THE WALL (BEARING SHALL NOT BE LESS THAN 3" TO BEAR OVER TWO STUDS UNLESS NOTED OTHERWISE).
- 7.13) HEADERS SHALL BE SUPPORTED BY JACK STUDS AND KING STUDS BASED ON THE FOLLOWING CONDITIONS UNLESS NOTED OTHERWISE:

CLEAR SPAN:	# OF JACK STUDS:	# OF KING STUDS (EXTERIOR):	# OF KING STUDS (INTERIOR):
UP TO 3'-0"	(1)	(1)	(1)
>3'-0" TO 6'-0"	(2)	(2)	(1)
>6'-0" TO 9'-0"	(2)	(3)	(2)
>9'-0" TO 12'-0"	(3)	(4)	(2)
>12'-0" TO 15'-0"	(3)	(5)	(3)
>15'-0" TO 18'-0"	(4)	(6)	(3)

- 7.14) STUD SPACING FOR EXTERIOR AND INTERIOR BEARING WALLS SHALL BE BASED ON THE FOLLOWING CONDITIONS UNLESS NOTED OTHERWISE:
 - SUPPORTING UP TO ONE STORY ABOVE:
 UP TO 10'-1 1/2" IN HEIGHT 2x4 @ 16" O.C. OR 2x6 @ 24" O.C.
 >10'-1 1/2" UP TO 12'-1 1/2" 2x4 @ 12" O.C. OR 2x6 @ 16" O.C.
 - SUPPORTING UP TO TWO STORIES ABOVE:
 UP TO 10'-1 1/2" IN HEIGHT 2x4 @ 12" O.C. OR 2x6 @ 16" O.C.
 > 10'-1 1/2" UP TO 12'-1 1/2" 2x6 @ 12" O.C.
- 7.15) ALL EXTERIOR WALLS TO BE FULLY SHEATHED WITH 7/8" APA RATED OSB EXPOSURE 1 ATTACHED WITH 8d NAILS @ 6" O.C. ALONG PANEL EDGES AND 12" O.C. IN PANEL FIELD UNLESS NOTED OTHERWISE.
- 7.16) ROOF SHEATHING SHALL BE MINIMUM 7/8" APA RATED OSB EXPOSURE 1 ATTACHED TO ROOF FRAMING WITH 8d NAILS @ 6" O.C. ALONG PANEL EDGES AND 12" O.C. IN PANEL FIELD UNLESS NOTED OTHERWISE. SHEATHING SHALL HAVE A SPAN RATING THAT MATCHES OR EXCEEDS THE FRAMING SPACING.
- 7.17) FLOOR SHEATHING SHALL BE MINIMUM 3/4" APA RATED TONGUE AND GROOVE OSB EXPOSURE 1 ATTACHED TO FLOOR FRAMING WITH 8d NAILS @ 6" O.C. ALONG PANEL EDGES AND 12" O.C. IN PANEL FIELD UNLESS NOTED OTHERWISE. SHEATHING SHALL HAVE A SPAN RATING THAT MATCHES OR EXCEEDS THE FRAMING SPACING.
- 7.18) EXTERIOR WOOD DECKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPENDIX M OF THE 2018 NRC UNLESS NOTED OTHERWISE.
- 7.19) EXTERIOR WOOD POSTS SHALL BE SECURED TO THE BAND AT THE BOTTOM AND BEAM AT THE TOP WITH (1) SIMPSON STRONG-TIE H6 HURRICANE TIE, (2) H2.5A HURRICANE TIES, OR (1) SECTION OF C516 COIL STRAPPING WITH MINIMUM 9' END LENGTHS. FOR MASONRY OR CONCRETE FOUNDATIONS, SECURE POSTS AT THE BOTTOM WITH A SIMPSON STRONG-TIE ABU POST BASE FOR THE SPECIFIED POST SIZE.

8.1) STEEL FRAMING SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

- W SHAPES ASTM A992
- CHANNELS AND ANGLES ASTM A36
- PLATES AND BARS ASTM A36
- HOLLOW STRUCTURAL SECTIONS (HSS) ASTM A500, GRADE B
- PIPES ASTM A53, GRADE B, TYPE E OR S

8.2) STEEL BEAMS SHALL BE ANCHORED AT THE BOTTOM FLANGE TO EACH SUPPORT AS FOLLOWS UNLESS NOTED OTHERWISE:

- WOOD FRAMING (2) $\frac{1}{2}$ " DIAMETER x 4" LONG LAG SCREWS
- CONCRETE (2) $\frac{1}{2}$ " DIAMETER x 4" LONG SST TITEN HD (OR EQUAL) SCREW ANCHORS
- MASONRY (GROUTED SOLID) (2) $\frac{1}{2}$ " DIAMETER x 4" LONG SST TITEN HD (OR EQUAL) SCREW ANCHORS
- STEEL COLUMN (2) $\frac{1}{2}$ " DIAMETER BOLTS OR $\frac{3}{8}$ " CONTINUOUS FILLET WELD

8.3) ATTACH A 2x NAILER TO THE TOP FLANGE OF STEEL BEAMS w/ (2) ROWS OF $\frac{1}{2}$ " DIAMETER CARRIAGE BOLTS @ 48" O.C. STAGGERED UNLESS NOTED OTHERWISE.

8.4) FLITCH BEAMS SHALL BE BOLTED WITH (2) ROWS OF $\frac{1}{2}$ " DIAMETER BOLTS @ 16" O.C. STAGGERED.

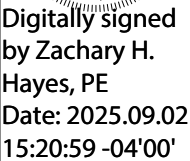
9.1) VENEER ABOVE OPENINGS SHALL BE SUPPORTED BY STEEL ANGLES AS FOLLOWS UNLESS NOTED OTHERWISE:

- | | |
|---|--|
| <p> CLEAR SPAN:
 UP TO 3'-0"
 >3'-0" UP TO 6'-0"
 >6'-0" UP TO 8'-0" </p> | <p> SIZE OF STEEL ANGLE:
 L3x3$\frac{1}{2}$
 L5x3 $\frac{1}{2}$x$\frac{3}{8}$ (LONG LEG VERTICAL)
 L6x4x$\frac{3}{8}$ (LONG LEG VERTICAL) </p> |
|---|--|
- 9.2) VENEER ABOVE OPENINGS WITH A CLEAR SPAN EXCEEDING 8'-0" SHALL BE SUPPORTED BY A 6x4x $\frac{3}{8}$ STEEL ANGLE FASTENED TO THE HEADER WITH (2) ROWS OF $\frac{1}{2}$ " DIAMETER x 3" LONG LAG SCREWS @ 16" O.C. UNLESS NOTED OTHERWISE.
- 9.3) STEEL ANGLE SHALL BE EMBEDDED MINIMUM 4" INTO THE VENEER AT EACH SIDE OF THE OPENING.
- 9.4) VENEER ABOVE ROOF LINES SHALL BE SUPPORTED BY AN L6x4x $\frac{3}{8}$ STEEL ANGLE FASTENED TO (2) 2x10 BLOCKING w/ (2) ROWS OF $\frac{1}{2}$ " DIAMETER x 3" LONG LAG SCREWS @ 16" O.C. BLOCKING TO BE FASTENED TO WALL STUDS AT EACH END WITH (4) 10d TOE NAILS PER PLY. FOR ROOF SLOPES EXCEEDING 7:12, WELD 3"x3"x $\frac{1}{2}$ " STEEL PLATE STOPS @ 24" O.C. TO STEEL ANGLE.

ABF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
ALT	ALTERNATE	MFR	MANUFACTURER
ARCH	ARCHITECTURAL	MIN	MINIMUM
BRG	BEARING	NTS	NOT TO SCALE
BTM	BOTTOM	O.C.	ON CENTER
CIP	CAST-IN-PLACE	PCF	POUNDS PER CUBIC FOOT
CLR	CLEAR	PLF	POUNDS PER LINEAR FOOT
CMU	CONCRETE MASONRY UNIT	PSF	POUNDS PER SQUARE FOOT
CONC	CONCRETE	PSI	POUNDS PER SQUARE INCH
CONN	CONNECTION	PSL	PARALLEL STRAND LUMBER
CONT	CONTINUOUS	PJ	PRESSURE TREATED
DBL	DOUBLE	QJ	QUADRUPLE JOIST
DIA	DIAMETER	REINF	REINFORCE
DJ	DOUBLE JOIST	SER	STRUCTURAL ENGINEER OF RECORD
DSP	DOUBLE STUD POCKET	SF	SQUARE FEET
EA	EACH	SJ	SINGLE JOIST
EQ	EQUAL	SP	SPACE (SPACING)
FLR	FLOOR	SPEC(S)	SPECIFICATION(S)
FND	FOUNDATION	SF	SPRUCE-PINE-FIR
FTG	FOOTING	SST	SIMPSON STRONG-TIE
GA	GAUGE	SY	SOUTHERN YELLOW PINE
HDG	HOT-DIPPED GALVANIZED	TJ	TRIPLE JOIST
HDR	HEADER	TRPL	TRIPLE
HGR	HANGER	TSP	TRIPLE STUD POCKET
HORIZ	HORIZONTAL	TY	TYPICAL
ICF	INSULATED CONCRETE FORMS	UNO	UNLESS NOTED OTHERWISE
INFO	INFORMATION	VERT	VERTICAL
LBS	POUNDS	W/	WITH
LSL	LAMINATED STRAND LUMBER	WWF	WELDED WIRE FABRIC
LVL	LAMINATED VENEER LUMBER	XJ	EXTRA JOIST

(#)	STUD COLUMN AT POINT LOADS THAT REQUIRES SOLID BLOCKING TO GIRDER OR FOUNDATION (#) DENOTES NUMBER OF STUDS. (2) STUDS REQUIRED IF NOT SPECIFIED
	OFFSET POINT LOAD FROM ABOVE TO BE SUPPORTED BY GIRDER, BEAM, HEADER, JOIST, OR BLOCKING AS SPECIFIED
	BEARING WALL
	OFFSET BEARING WALL ABOVE
	BEAM, GIRDER, OR HEADER AS SPECIFIED
	JOIST, RAFTER, OR TRUSS AS SPECIFIED
	MECHANICAL FASTENER (REFER TO SCHEDULE BELOW)
	FULL HEIGHT MASONRY OR NATURAL STONE VENEER
	MASONRY OR NATURAL STONE VENEER WATERTABLE BELOW
	PLUMBING OR APPLIANCES ABOVE (FOR REFERENCE ONLY, REFER TO ARCHITECTURAL PLANS)
	SOLID GROUTED MASONRY
	ROOF SUPPORT BELOW
	FULL HEIGHT BRICK VENEER BELOW ROOF

MECHANICAL FASTENERS		ALLOWABLE 1-JOIST SUBSTITUTIONS	
BEAM SIZE:	FASTENER:	SPECIFIED SERIES:	EQUIVALENT SERIES:
(2)-2x6 OR (2)-2x8	LUS26-2	TJI 110	BCI 4500s 1.8
(2)-2x10 OR (2)-2x12	LUS210-2	TJI 210	BCI 5000s 1.8, BU 40, LPI 20PLUS, NI-40x
(1)-PLY LSL OR LVL	HUS1.81/10	TJI 230	BCI 6000s 1.8, LPI 32PLUS
(2)-PLY LSL OR LVL	HHUS410	TJI 360	BCI 60s 2.0, BU 60, LPI 36, NI-60
(3)-PLY LSL OR LVL	HHUS5.50/10	TJI 560	BCI 90s 2.0, BU 80, LPI 56, NI-80
(4)-PLY LSL OR LVL	HHUS7.25/10		
NOTES:		NOTES:	
-	MECHANICAL FASTENERS TO BE INSTALLED BASED ON THIS SCHEDULE UNLESS NOTED OTHERWISE.	-	MAINTAIN SPECIFIED JOIST DEPTH, DIRECTION, AND SPACING.
-	ALL SPECIFIED MECHANICAL FASTENERS ARE SIMPSON STRONG-TIE BRAND. OTHER BRAND FASTENERS WITH EQUIVALENT OR BETTER CAPACITY MAY BE SUBSTITUTED.	-	JOISTS NOT LISTED IN THIS SCHEDULE MAY BE SUBSTITUTED PROVIDED THEY MEET OR EXCEED THE PROPERTIES OF THOSE LISTED.
-	ALL MECHANICAL FASTENERS IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE HOT-DIPPED GALVANIZED OR EQUIVALENT CORROSIVE RESISTANT COATING.		



AYES STRUCTURAL
Consulting & Design, PLLC

VILLAGE LN. #103 | FUUQUAY-VARINA, NC 27706
VILLAGE@AYESSTRUCTURAL.COM | (919) 210-3480
NC FIRM LICENSE NO.: P-2854

MARCUS ASHLEY BUILDERS, LLC
DECK ADDITION

178 GOLDEN LEAF FARMS RD.
ANGIER, NC 27501

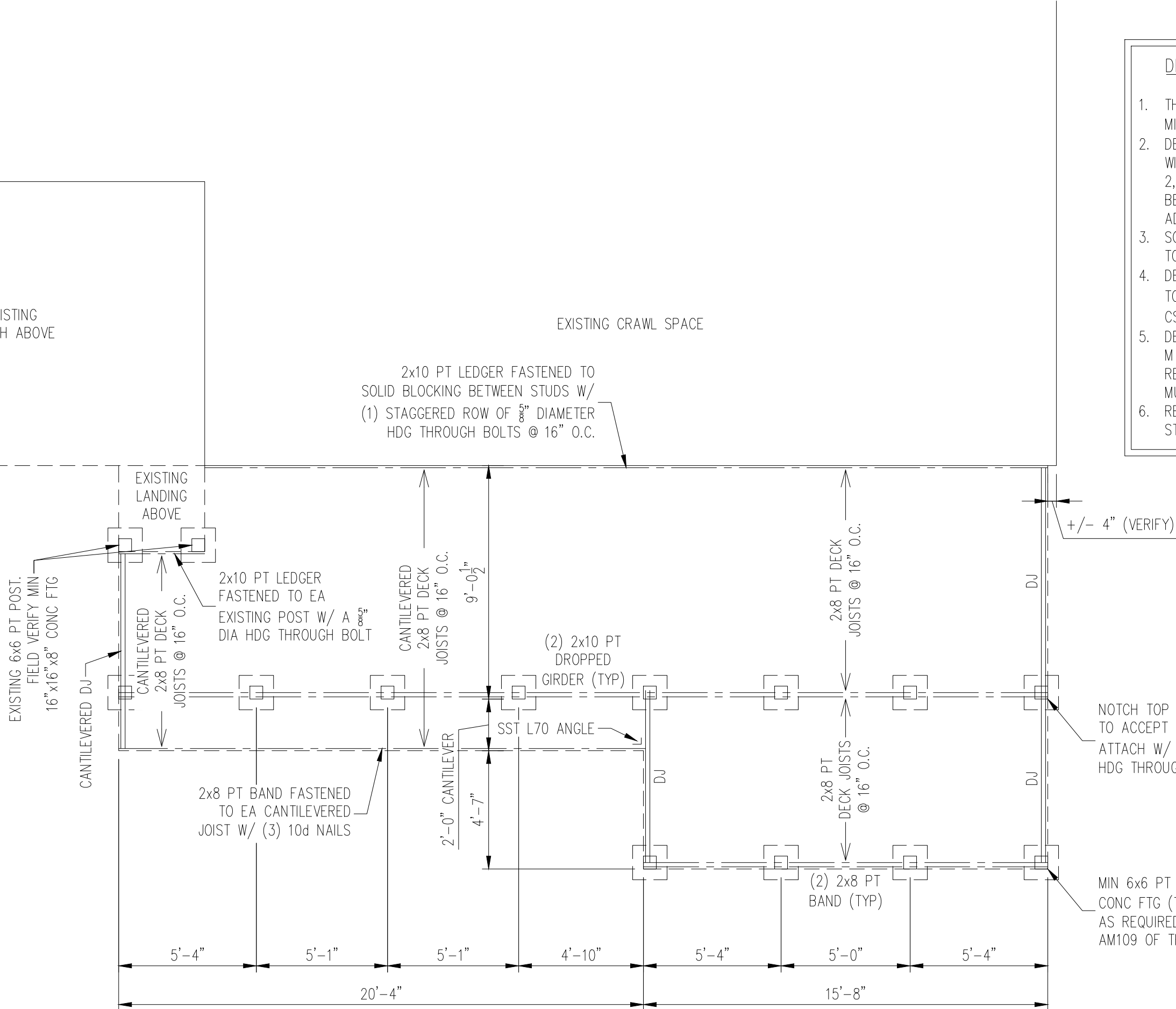
PROJECT NO.: 25-MISC-028

DATE: SEPTEMBER 2, 2025

SCALE: NOT TO SCALE

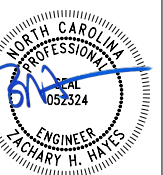
SHEET: STANDARD
STRUCTURAL NOTES

S-0



DECK FOUNDATION AND FRAMING NOTES:

1. THE BOTTOM OF DECK FOOTINGS SHALL EXTEND A MINIMUM OF 12" BELOW FINISHED GRADE.
2. DECK FOOTINGS TO BE EXCAVATED TO FIRM SOIL WITH A MINIMUM REQUIRED BEARING CAPACITY OF 2,000 PSF. CONSULT THE SER SHOULD THE SOIL BEARING CAPACITY NOT BE MET OR IF ANY OTHER ADVERSE SOIL CONDITION IS ENCOUNTERED.
3. SOLID SAWN PRESSURE TREATED FRAMING LUMBER TO BE SYP #2.
4. DECK POSTS TO BE SECURED TO BAND/GIRDER AT TOP WITH (1) SST H6, (2) SST H2.5A, OR (1) SST CS16 STRAP WITH MIN 9" END LENGTHS (UNO).
5. DECK CONSTRUCTION SHALL CONFORM TO APPENDIX M WOOD DECKS OF THE 2018 NORTH CAROLINA RESIDENTIAL CODE AND IS TO BE VERIFIED BY A MUNICIPAL INSPECTOR.
6. REFER TO NOTES SHEET FOR ADDITIONAL STRUCTURAL INFORMATION.



Digitally signed
by Zachary H.
Hayes, PE
Date: 2025.09.02
15:21:13 -04'00'



3

ZACH@HAYESSTRUCTURAL.COM | (919) 210-3480
NC FIRM LICENSE NO.: P-2854

MARCUS ASHLEY BUILDERS, LLC
DECK ADDITION

ANGIER, NC 27501

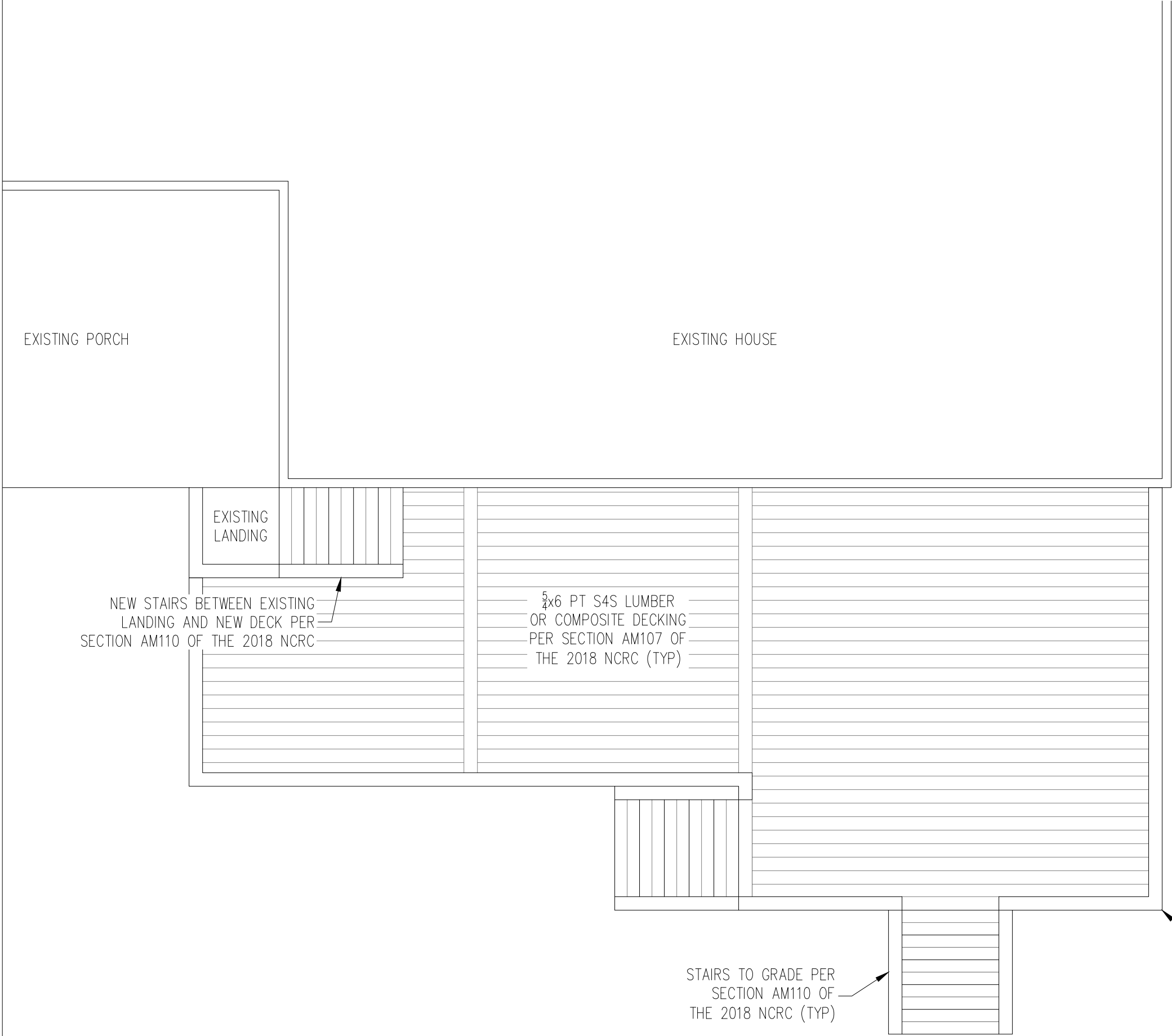
PROJECT NO.: 25-MISC-028

DATE: SEPTEMBER 2, 2025

x17 PRINT SCALE: $\frac{1}{4}" = 1'-0"$ (UNO)
x36 PRINT SCALE: $\frac{1}{2}" = 1'-0"$ (UNO)

SHEET: DECK FOUNDATION
AND FLOOR FRAMING PLAN

S-1



DECK FOUNDATION AND FRAMING NOTES:

1. THE BOTTOM OF DECK FOOTINGS SHALL EXTEND A MINIMUM OF 12” BELOW FINISHED GRADE.
2. DECK FOOTINGS TO BE EXCAVATED TO FIRM SOIL WITH A MINIMUM REQUIRED BEARING CAPACITY OF 2,000 PSF. CONSULT THE SER SHOULD THE SOIL BEARING CAPACITY NOT BE MET OR IF ANY OTHER ADVERSE SOIL CONDITION IS ENCOUNTERED.
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6. REFER TO NOTES SHEET FOR ADDITIONAL STRUCTURAL INFORMATION.



Digitally signed
by Zachary H.
Hayes, PE
Date: 2025.09.02
15:21:28 -04'00'

HAYES STRUCTURAL
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1501 LAKESTONE VILLAGE LN. #103 | FUQUAY-VARINA, NC 27526
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MARCUS ASHLEY BUILDERS, LLC
DECK ADDITION

178 GOLDEN LEAF FARMS RD.
ANGIER, NC 27501

PROJECT NO.: 25-MISC-028

DATE: SEPTEMBER 2, 2025

11x17 PRINT SCALE: $\frac{1}{2}" = 1'-0"$ (UNO)
24x36 PRINT SCALE: $\frac{1}{2}" = 1'-0"$ (UNO)

SHEET: DECK FRAMING PLAN