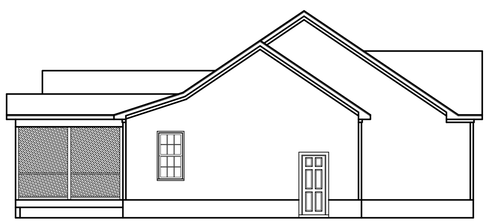
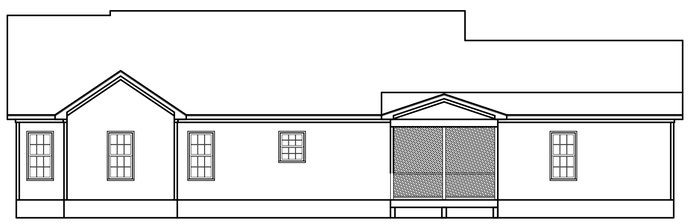
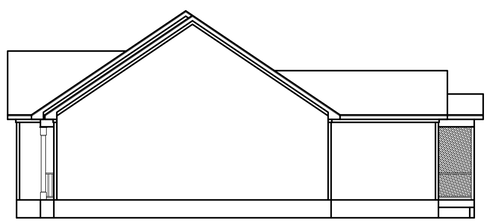
FRONT ELEVATION
1/4" = 1'-0"



LEFT ELEVATION
1/8" = 1'-0"



REAR ELEVATION
1/8" = 1'-0"



RIGHT ELEVATION
1/8" = 1'-0"

REVIEWER'S SEAL

Project #:
25-219
Date:
6-9-25
Drawn/Design By:
KBB
Scale:
REFER TO ELEV.

K&A DESIGNS, INC. CORPORATE Kent Butters 2007 NORTH CAROLINA

9101 Ten-Ten Rd.
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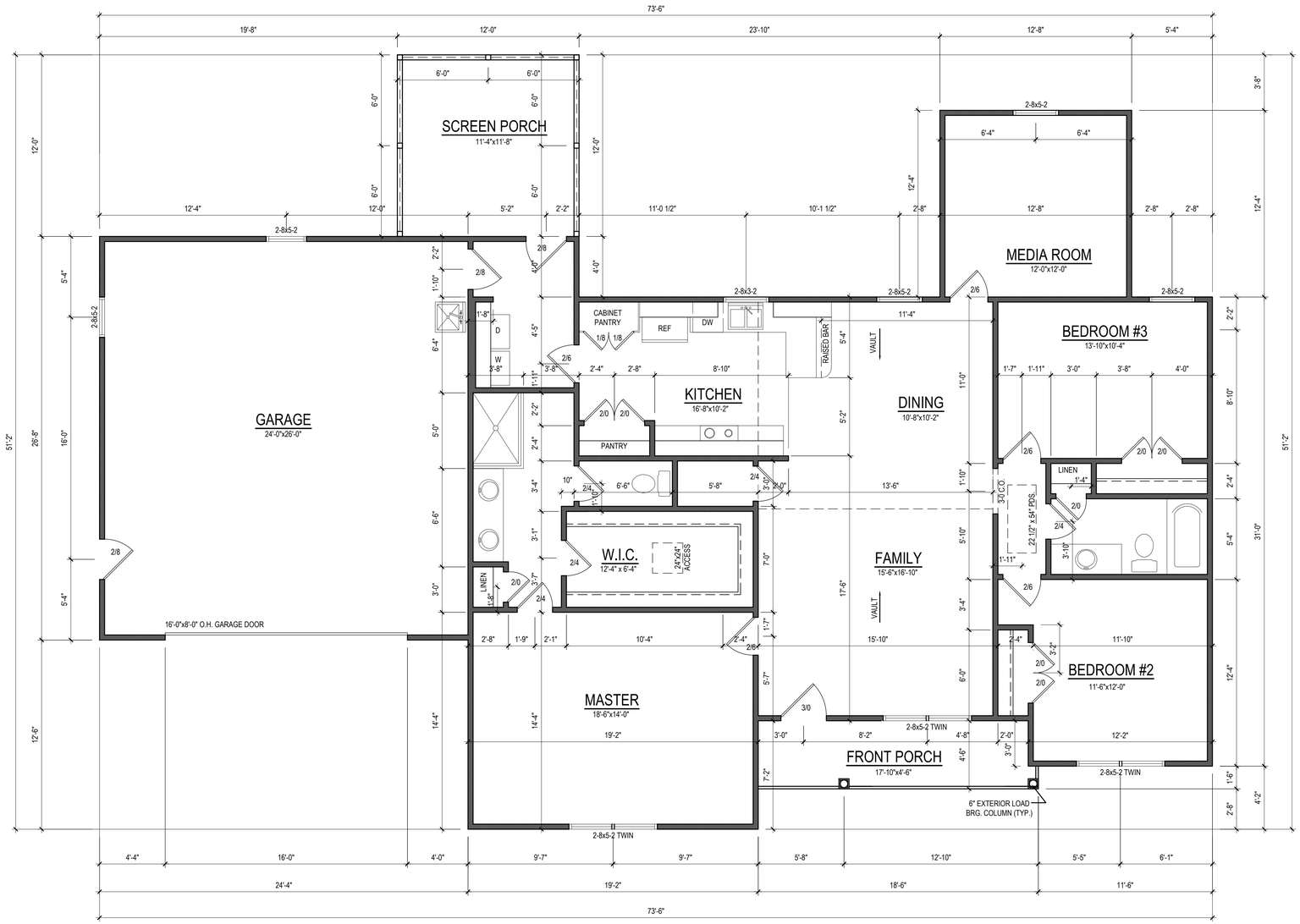
K&A HOME DESIGN Inc.

Project Name:
Willow Tree

Client Name:
KMB Building, LLC
5609 Stewart Rd.
Raleigh, NC 27603

ELEVATIONS

Sheet Number
1
of 2



FIRST FLOOR PLAN

1/4" = 1'-0"

REVIEWER'S SEAL

Project #:
25-219

Date:
6-9-25

Drawn/Design By:
KBB

Scale:
1/4" = 1'-0"

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5609 Stewart Rd.
Raleigh, NC 27603

FIRST FLOOR

Sheet Number
2
of 2

GENERAL NOTES:

1. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT ALL DIMENSIONS, ROOF PITCHES, AND SQUARE FOOTAGE ARE CORRECT PRIOR TO CONSTRUCTION. K&A HOME DESIGNS, INC. IS NOT RESPONSIBLE FOR ANY DIMENSIONING, ROOF PITCH, OR SQUARE FOOTAGE ERRORS ONCE CONSTRUCTION BEGINS.
2. ALL WALLS SHOWN ON THE FLOOR PLANS ARE DRAWN AT 4" UNLESS NOTED OTHERWISE.
3. ALL ANGLED WALL SHOWN ON THE PLANS ARE 45 DEGREES UNLESS NOTED OTHERWISE.
4. STUD WALL DESIGN SHALL CONFORM TO ALL NORTH CAROLINA STATE BUILDING CODE REQUIREMENTS.
5. DO NOT SCALE PLANS. DRAWING SCALE MAY BE DISTORTED DUE TO COPIER IMPERFECTIONS.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NORTH CAROLINA RESIDENTIAL STATE BUILDING CODE, 2018 EDITION.

SQUARE FOOTAGE

HEATED SQUARE FOOTAGE		UNHEATED SQUARE FOOTAGE	
FIRST FLOOR=	1736	GARAGE=	649
SECOND FLOOR=	N/A	FRONT PORCH=	81
THIRD FLOOR=	N/A	SCREEN PORCH=	N/A
BASEMENT=	N/A	DECK=	144
		STORAGE=	N/A

TOTAL HEATED= 1736 **TOTAL UNHEATED= 874**

CRAWL SPACE VENTILATION CALCULATIONS

-VENT LOCATIONS MAY VARY FROM THOSE SHOWN ON THE PLAN BUT SHOULD BE PLACED TO PROVIDE ADEQUATE VENTILATION AT ALL POINTS TO PREVENT DEAD AIR POCKETS.

-100% VAPOR BARRIER MUST BE PROVIDED WITH 12" MIN. LAP JOINTS.

-THE TOTAL AREA OF VENTILATION OPENINGS MAY BE REDUCED TO 1/1500 AS LONG AS REQUIRED OPENINGS ARE PLACED SO AS TO PROVIDE CROSS-VENTILATION OF THE SPACE. THE INSTALLATION OF OPERABLE LOUVERS SHALL NOT BE PROHIBITED. (COMPLY WITH NC CODE MIN. WITH REGARD TO VENT PLACEMENT FROM CORNERS)

1736 SQ. FT. OF CRAWL SPACE/1500

1.16 SQ. FT. OF REQUIRED VENTILATION

PROVIDED BY: 3 VENTS AT 0.45 SQ. FT. NET FREE

VENTILATION EACH= 1.35 SQ. FT. OF VENTILATION

*****FOUNDATION DRAINAGE- WATERPROOFING PER SECTIONS 405 & 406.***

ATTIC VENTILATION CALCULATIONS

- CALCULATIONS SHOWN BELOW ARE BASED ON VENTILATORS USED AT LEAST 3 FT. ABOVE THE CORNICE VENTS WITH THE BALANCE OF VENTIALTION PROVIDED BE EAVE VENTS.

- CATHEDRAL CEILINGS SHALL HAVE A MIN. 1" CLEARANCE BETWEEN THE BOTTOM OF THE ROOF DECK AND THE INSULATION.

2610 SQ. FT. OF ATTIC/300= 8.7

EACH OF INLET AND OUTLET REQUIRED.

****WALL AND ROOF CLADDING DESIGN VALUES***

- WALL CLADDING IS DESIGNED FOR A 24.1 SQ. FT. OR GREATER POSITIVE AND NEGATIVE PRESSURE.

- ROOF VALUES BOTH POSITVE AND NEGATIVE SHALL BE AS FOLLOWS:

45.5 LBS. PER SQ. FT. FOR ROOF PITCHES OF 0/12 TO 2.25/12

34.8 LBS. PER SQ. FT. FOR ROOF PITCHES OF 2.25/12 TO 7/12

21 LBS. PER SQ. FT. FOR ROOF PITCHES OF 7/12 TO 12/12

***** MEAN ROOF HEIGHT 30' OR LESS***

STRUCTURAL NOTES

1) ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.

2) DESIGN LOADS:

	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (DL & LL)
ALL FLOORS	40	10	L/360
ATTIC (pull down access)	20	10	L/240
ATTIC (no access)	10	5	L/240
EXTERNAL BALCONY	60	10	L/360
ROOF	20	10	L/180
ROOF TRUSS	20	20	L/240
WIND LOAD	[BASED ON 120 MPH (3-second gusts)]		

3) MINIMUM ALLOWABLE SOIL BEARING PRESSURE = 2000 PSF

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

5) MAXIMUM DEPTH OF UNBALANCED FILL AGAINST FOUNDATION WALLS TO BE LESS THAN 4'-0" WITHOUT USING SUFFICIENT WALL BRACING. REFER TO SECTION R404 OF 2018 NC RESIDENTIAL BUILDING CODE FOR BACKFILL LIMITATIONS BASED ON WALL HEIGHT, WALL THICKNESS, SOIL TYPE, AND UNBALANCED BACKFILL HEIGHT

6) ALL FRAMING LUMBER SHALL BE SYP #2 (Fb = 800 PSI) UNO.
ALL FRAMING LUMBER EXPOSED TO THE ELEMENTS SHALL BE TREATED MATERIAL.

7) ALL LOAD BEARING HEADERS SHALL BE (2)2x10 (UNO). ALL WINDOW AND DOOR HEADERS SHALL BE SUPPORTED BY (1) JACK STUD AND (1) KING STUD AT EACH END UNLESS NOTED. ALL OTHER BEAMS SHALL BE SUPPORTED BY 2 STUDS OR THE AMOUNT OF STUDS REQUIRED FOR FULL BEARING AT EACH END UNLESS NOTED. POINT LOADS (STIFF KNEES, ETC.) SHALL CONSIST OF 2 STUDS UNLESS NOTED. ALL SUPPORTS OF 2 STUDS OR MORE SHALL BE TRANSFERRED THROUGH EACH FLOOR TO THE FOUNDATION.

8) ALL EXTERIOR WALLS TO BE SHEATHED WITH MIN. 7/16" WOOD STRUCTURAL PANELS FASTNED WITH 8D NAILS 6" O.C. AT EDGES AND 12" O.C. AT INT. SUPPORTS. BLOCKING SHALL BE INSTALLED IF LESS THAN 50 PERCENT OF THE WALL LENGTH IS SHEATHED. WHERE BLOCKING IS REQ'D, ALL PANELS SHALL BE FASTENED AT 3" O.C AT EDGES AND 6" O.C. AT INT. SUPPORTS.

9) ALL STRUCTURAL STEEL SHALL ASTM A-36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3-1\2" INCHES AND FULL FLANGE WIDTH. PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (1/2 DIAMETER AND 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDING THE JOISTS ARE TOE NAILED TO THE SOLE PLATES, AND THE SOLE PLATES ARE NAILED OR BOLTED TO THE BEAM FLANGES @ 48" O.C.

10) ANCHOR BOLT PLACEMENT PER SECTION R403.1.6. 1/2" DIAMETER ANCHOR BOLTS SPACED AT 6'-0" O/C AND PLACED 12" FROM THE END OF EACH PLATE SECTION

11) FOUNDATION DRAINAGE-DAMP PROOFING OR WATERPROOFING PER SECTION 405 AND 406 OF 2018 NC RESIDENTIAL BUILDING CODE

12) WALL AND ROOF CLADDING VALUES:
WALL CLADDING SHALL BE DESIGNED FOR A 24.1 SQ.FT. OR GREATER POSITIVE AND NEGATIVE PRESSURE
ROOF VALUES BOTH POSITIVE AND NEGATIVE SHALL BE AS FOLLOWS:
45.5 LBS/SQFT FOR ROOF PITCHES OF 0/12 TO 2.25/12
34.8 LBS/SQFT FOR ROOF PITCHES OF 2.25/12 TO 7/12
21.0 LBS/SQFT FOR ROOF PITCHES OF 7/12 TO 12/12
** MEAN ROOF HEIGHT 30' OR LESS

13) FOR ROOF SLOPES FROM 2:12 THROUGH 4:12, BUILDER TO INSTALL 2 LAYERS OF 15# FELT PAPER

14) IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND SQ. FTG. ARE CORRECT PRIOR TO CONSTRUCTION. DESIGNER IS NOT RESPONSIBLE FOR DIMENSIONING OR SQ. FTG. ERRORS ONCE CONSTRUCTION BEGINS

R308.4.5 GLAZING & WET SURFACES:
GLAZING IN WALLS, ENCLOSURES OR FENCES CONTAINING or FACING HOT TUBS, SPAS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS, SHOWERS AND INDOOR or OUTDOOR SWIMMING POOLS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES, MEASURED VERTICALLY ABOVE ANY STANDING or WALKING SURFACE SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION. THIS SHALL APPLY TO SINGLE GLAZING AND EACH PANE IN MULTIPLE GLAZING.

EXCEPTION: GLAZING THAT IS MORE THAN 60 INCHES, MEASURED HORIZONTALLY AND IN A STRAIGHT LINE, FROM THE WATER'S EDGE OF A BATHTUB, HOT TUB, SPA, WHIRLPOOL or SWIMMING POOL or FROM THE EDGE OF A SHOWER, SAUNA or STEAM ROOM

R807.1 ATTIC ACCESS:
AN ATTIC ACCESS OPENING SHALL BE PROVIDED TO ATTIC AREAS THAT EXCEED 400 SQUARE FEET (37.16 M^2) AND HAVE A VERTICAL HEIGHT OF 60 INCHES (1524 MM) OR GREATER. THE NET CLEAR OPENING SHALL NOT BE LESS THAN 20 INCHES (508 MM BY 762 MM) AND SHALL BE LOCATED IN A HALLWAY or OTHER READILY ACCESSIBLE LOCATION. A 30-INCH (762 MM) MINIMUM UNOBSTRUCTED HEADROOM IN THE ATTIC SPACE SHALL BE PROVIDED AT SOME POINT ABOVE THE ACCESS OPENING. SEE SECTION M1305.1.3 FOR ACCESS REQUIREMENTS WHERE MECHANICAL EQUIPMENT IS LOCATED IN ATTICS.

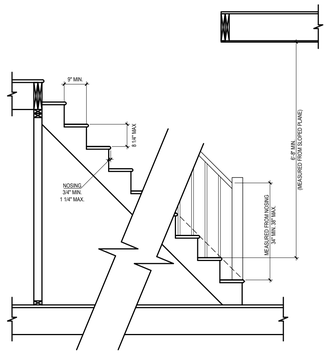
EXCEPTION:
1) CONCEALED AREAS NOT LOCATED OVER THE MAIN STRUCTURE INCLUDING PORCHES, AREAS BEHIND KNEE WALLS, DORMERS, BAY WINDOWS, ETC. ARE NOT REQUIRED TO HAVE ACCESS.
2) PULL DOWN STAIR TREADS, STRINGERS, HANDRAILS, AND HARDWARE MAY PROTRUDE INTO THE NET CLEAR OPENING.

DWELLING / GARAGE SEPARATION (SECTION R302.5, R302.6 and R302.7):
WALLS - A MINIMUM ½" GYPSUM BOARD MUST BE INSTALLED ON ALL WALLS SUPPORTING FLOOR/CEILING ASSEMBLIES USED FOR SEPARATION REQUIRED BY THIS SECTION.
OPENING PROTECTION - OPENINGS FROM A PRIVATE GARAGE DIRECTLY INTO A ROOM USED FOR SLEEPING PURPOSES SHALL NOT BE PERMITTED. OTHER OPENINGS BETWEEN THE GARAGE AND RESIDENCE SHALL BE EQUIPPED WITH SOLID WOOD DOORS NOT LESS THAT 1 ⅜ INCHES (35MM) IN THICKNESS, SOLID or HONEYCOMB-CORE STEEL DOORS NOT LESS THAN 1 ⅜ INCHES (35MM) THICK, or 20-MINUTE FIRE-RATED DOORS.
DUCT PENETRATION - DUCTS IN THE GARAGE AND DUCTS PENETRATING THE WALLS or CEILINGS SEPARATING THE DWELLING FROM THE GARAGE SHALL BE CONSTRUCTED OF A MINIMUM NO. 26 GAUGE (0.48MM) SHEET STEEL or OTHER APPROVED MATERIAL AND SHALL NOT HAVE OPENINGS INTO THE GARAGE.
CEILINGS - GARAGE TO BE SEPARATED FROM HABITABLE ROOMS ABOVE BY NOT LESS THAN 5/8-INCH TYPE X GYPSUM BOARD OR EQUIVALENT PER NCRC SECTION R302.6N
STAIRS - ENCLOSED ACCESSIBLE SPACE UNDER STAIRS SHALL HAVE WALLS, UNDER-STAIR SURFACE AND ANY SOFFITS PROTECTED ON THE ENCLOSED SIDE WITH ½ INCH (12.7MM) GYPSUM BOARD.
OTHER PENETRATIONS - PENETRATIONS THROUGH THE SEPARATION REQUIRED IN SECTION R302.6 SHALL BE PROTECTED AS REQUIRED BY SECTION R302.11, ITEM 4.

R609.1 EXTERIOR WINDOWS & DOORS:
THIS SECTION PRESCRIBES PERFORMANCE AND CONSTRUCTION REQUIREMENTS FOR EXTERIOR WINDOWS AND DOORS INSTALLED IN WALLS. WINDOWS AND DOORS SHALL BE INSTALLED AND FLASHED IN ACCORDANCE WITH THE FENESTRATION MANUFACTURER'S WRITTEN INSTRUCTIONS. WINDOW AND DOOR OPENINGS SHALL BE FLASHED IN ACCORDANCE WITH SECTION R703.4. WRITTEN INSTALLATION INSTRUCTIONS SHALL BE PROVIDED BY THE FENESTRATION MANUFACTURER FOR EACH WINDOW OR DOOR.

TABLE N1102.1 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT

CLIMATE ZONE	MAXIMUM GLAZING U-FACTOR	MINIMUM INSULATION R-VALUE					
		CEILINGS	WALLS	FLOORS	BASEMENT WALLS	SLAB PERIMETER	CRAWL SPACE WALLS
3	.35	R-38 or R-30	R-15	R-19	R-5/13	R-0	R-5/13
4	.35	R-38 or R-30	R-15	R-19	R-10/15	R-10	R-10/15



STAIRWAYS & GAURDS REQUIREMENTS PER 311.7 & R312
EACH TREAD AND RISER MUST BE UNIFORM.
THE GREATEST RISER HEIGHT SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8".
THE GREATEST TREAD DEPTH SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8".
THE TOP AND BOTTOM RISER OF INTERIOR STAIRS SHALL NOT EXCEED THE SMALLEST RISER BY MORE THAN 3/4".

SUMMARY OF REQUIREMENTS FOR MASONRY FIREPLACES AND CHIMNEYS

ITEM	LETTER	REQUIREMENTS
HEARTH SLAB THICKNESS	A	4"
HEARTH EXTENSION (EACH SIDE OF OPENING)	B	8" FIREPLACE OPENING < 6 SQUARE FOOT 12" FIREPLACE OPENING < 6 SQUARE FOOT
HEARTH EXTENSION (FRONT OF OPENING)	C	16" FIREPLACE OPENING < 6 SQUARE FOOT 20" FIREPLACE OPENING < 6 SQUARE FOOT
HEARTH REINFORCING	D	REINFORCED TO CARRY ITS OWN WEIGHT AND ALL IMPOSED LOADS
THICKNESS OF WALL OF FIREBOX	E	10" SOLID BRICK or 8" WHERE A FIREBRICK LINING IS USED JOINTS IN FIREBRICK 1/4" MAXIMUM
DISTANCE FROM TOP OF OPENING TO THROAT	F	8"
SMOKE CHAMBER WALL THICKNESS UNLINED WALLS	G	6" 8"
CHIMNEY VERTICAL REINFORCING	H	FOUR NO. 4 FULL-LENGTH BARS FOR CHIMNEY UP TO 40" WIDE ADD TWO NO. 4 BARS FOR EACH ADDITIONAL 40" or FRACTION OF WIDTH or EACH ADDITIONAL FLUE.
HORIZONTAL REINFORCING	J	1/4" TIES AT 18" AND TWO TIES AT EACH BEND IN VERTICAL STEEL
BOND BEAMS	K	NO SPECIFIED REQUIREMENTS
FIREPLACE LINTEL	L	NONCOMBUSTIBLE MATERIAL
CHIMNEY WALLS WITH FLUE LINING	M	SOLID MASONRY UNITS or HOLLOW MASONRY UNITS GROUTED SOLID WITH NOT LESS THAN 4-INCH NOMINAL THICKNESS
DISTANCE BETWEEN ADJACENT FLUES	--	SEE SECTION R1003.13
EFFECTIVE FLUE AREA (BASED ON AREA OF FIREPLACE OPENING)	P	SEE SECTION R1003.15
CLEARANCES COMBUSTIBLE MATERIAL MANTEL AND TRIM ABOVE ROOF	R	SEE SECTION R1001.11 AND R1003.18 SEE SECTION R1001.11, EXCEPTION 4 3' AT ROOFLINE AND 2' AT 10'
ANCHORAGE STRAP NUMBER EMBEDMENT INTO CHIMNEY FASTEN TO BOLTS	S	3/16" x 1" TWO 12" HOOKED AROUND OUTER BAR WITH 6" EXTENSION 4 JOISTS THREE 1/2" DIAMETER
FOOTING THICKNESS WIDTH	T	12" MIN 12" EACH SIDE OF FIREPLACE WALL

NOTE: THIS TABLE PROVIDES A SUMMARY OF MAJOR REQUIREMENTS FOR THE CONSTRUCTION OF MASONARY CHIMNEYS AND FIREPLACES. LETTER REFERENCES ARE TO FIGURE R1001.1(NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE), WHICH SHOWS EXAMPLES OF TYPICAL CONSTRUCTION. THIS TABLE DOES NOT COVER ALL REQUIREMENTS, NOR DOES IT COVER ALL ASPECTS OF THE INDICATED REQUIREMENTS. FOR THE ACTUAL MANDATORY REQUIREMENTS OF THE CODE, SEE THE INDICATED SECTION OF TEXT.

1) THE LETTERS REFER TO FIGURE R1001.1 OF THE NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE
2) NOT REQUIRED IN SEISMIC DESIGN CATEGORY A, B, or C

R905.2 references TABLE R905.1.1(2) which states that "For roof slopes from two units vertical in 12 units horizontal (2:12), up to four units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied in the following manner: apply a 19-inch strip of underlayment felt parallel to and starting at the eves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.

R301.5 is a table titled "MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS (in pounds per square foot)". It states that the LIVE LOAD for Stairs is 40, with a note that states "Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greatest stress".

ALL DOORS LEADING TO DWELLING FROM THE GARAGE TO BE 20-MINUTE FIRE RATED DOOR PER NCRC R302.5.1

GARAGE TO BE SEPARATED FROM HABITABLE ROOMS ABOVE BY NOT LESS THAN 5/8-INCH TYPE X GYPSUM BOARD OR EQUIVALENT PER NCRC SECTION R302.6N

WINDOW FALL PROTECTION, PER NCRC SECTION R312.2

CARBON MONOXIDE ALARMS ARE REQUIRED TO BE INSTALLED OUTSIDE ***ALL*** SLEEPING AREAS PER NCRC SECTION R315

EMERGENCY ESCAPE AND RESCUE OPENINGS AS PER NCRC SECTION R310

PENETRATION SEALING:
SEAL ***ALL*** PENETRATIONS IN FIRE-RATED WALLS, CEILINGS, OR FLOORS WITH UL-RATED FIRESTOP MATERIALS.

UL FIRESTOP SYSTEMS:
W-L-1001: FOR SMALL PIPE PENETRATIONS IN WOOD-STUD WALLS.
C-AJ-1202: FOR PENETRATIONS THROUGH CEILINGS AND FLOOR ASSEMBLIES.

EXTERIOR WALL CAVITY INSULATION SHALL BE ENCLOSED ON ALL SIDES WITH RIGID OR AN AIR BARRIER MATERIAL: BEHIND TUBS, SHOWERS, STAIRS, FIRE PLACES AND KNEE WALLS. PER NCRC SECTION N1102.2.12

CRAWLSPACE ACCESS NEEDS TO BE A MINIMUM OPENING MEASURING 18 INCHES BY 24 INCHES PER NCRC SECTION R408.8

REVIEWER'S SEAL

Project #:
25-219
Date:
6-9-25
Scale:
NTS

K&A DESIGNS, INC. CORPORATE Kent Butters 2007 NORTH CAROLINA

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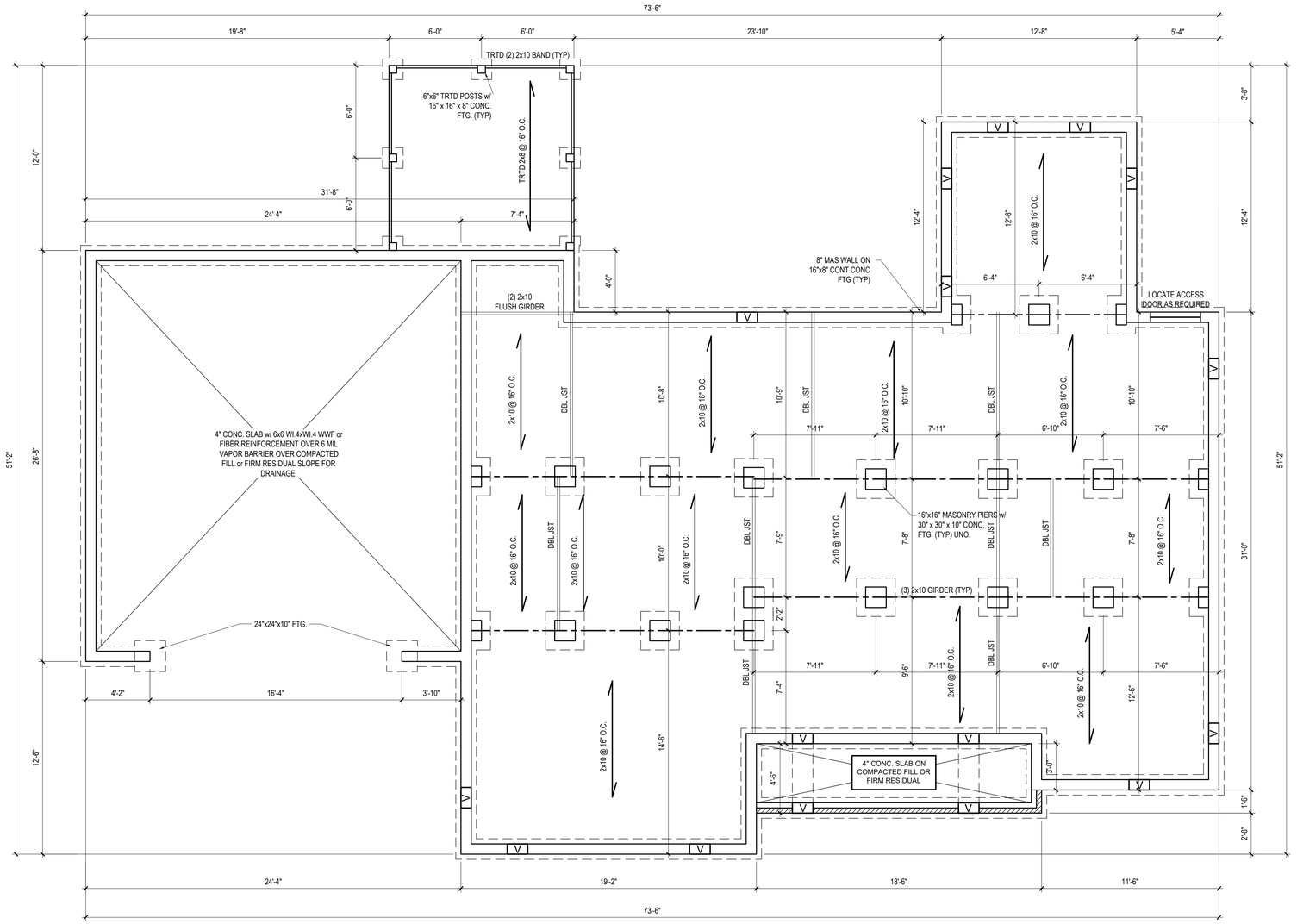
GENERAL NOTES

Sheet Number
1
of 1



FOUNDATION PLAN

1/4" = 1'-0"

* Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
* Any deviations or discrepancies on plans are to be brought to the immediate attention of Mark E. Jones, PE. Failure to do so will void Mark E. Jones, PE liability.
* Please review these documents carefully. Mark E. Jones, PE will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.

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Raleigh, NC 27603

Project #:	25-113
Date:	6/12/25
Drawn/Design By:	MEJ
DWG. Checked By:	MEJ
Scale:	1/4"=1'-0"

REVISIONS

No.	Date:	Remarks
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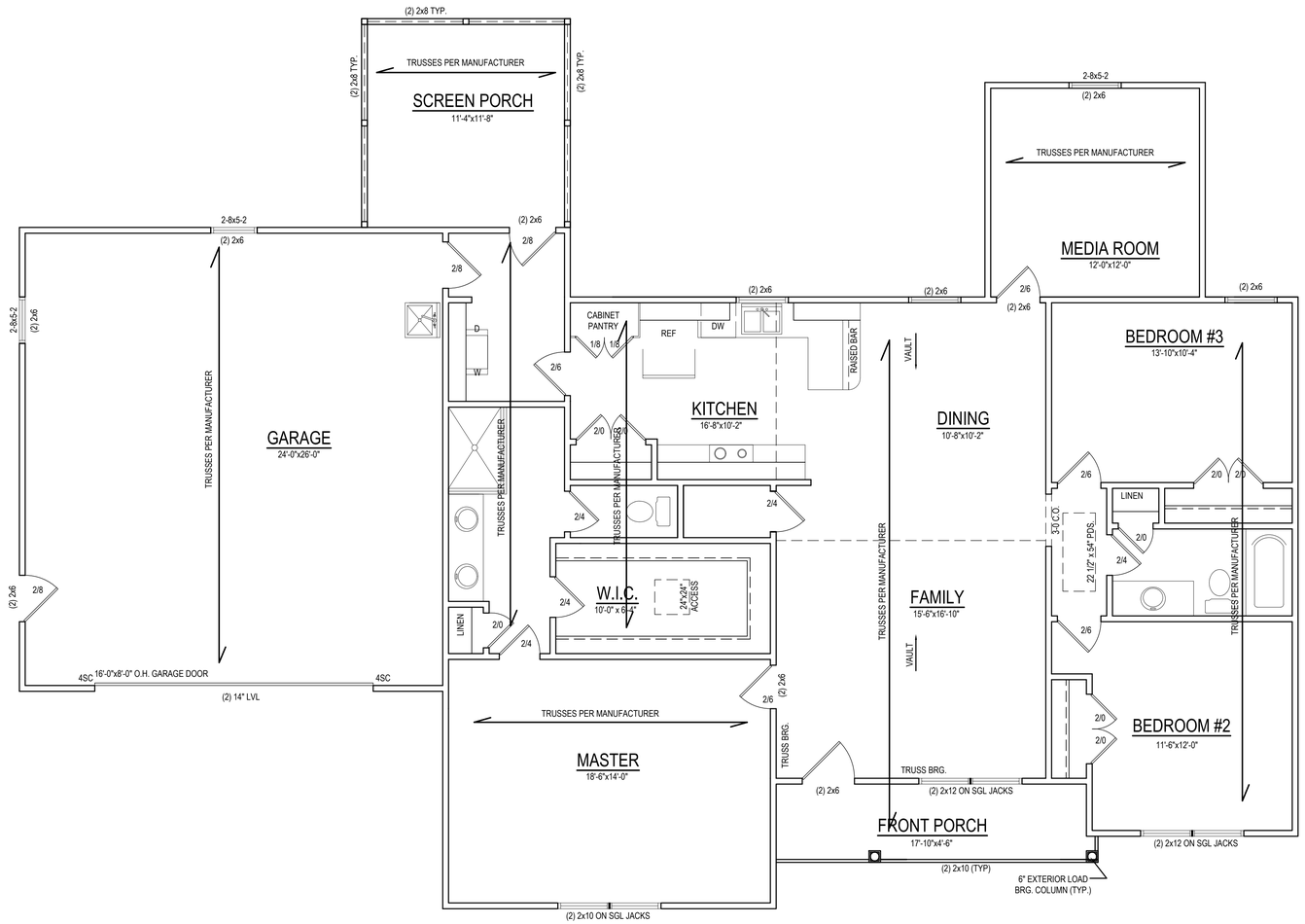
FOUNDATION

Sheet Number
S1
of 4



FIRST FLOOR SRTRUCTURAL PLAN

1/4" = 1'-0" ***CEILING HT. = 9'-0"***

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DWG. Checked By:	MEJ
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REVISIONS

No.	Date:	Remarks
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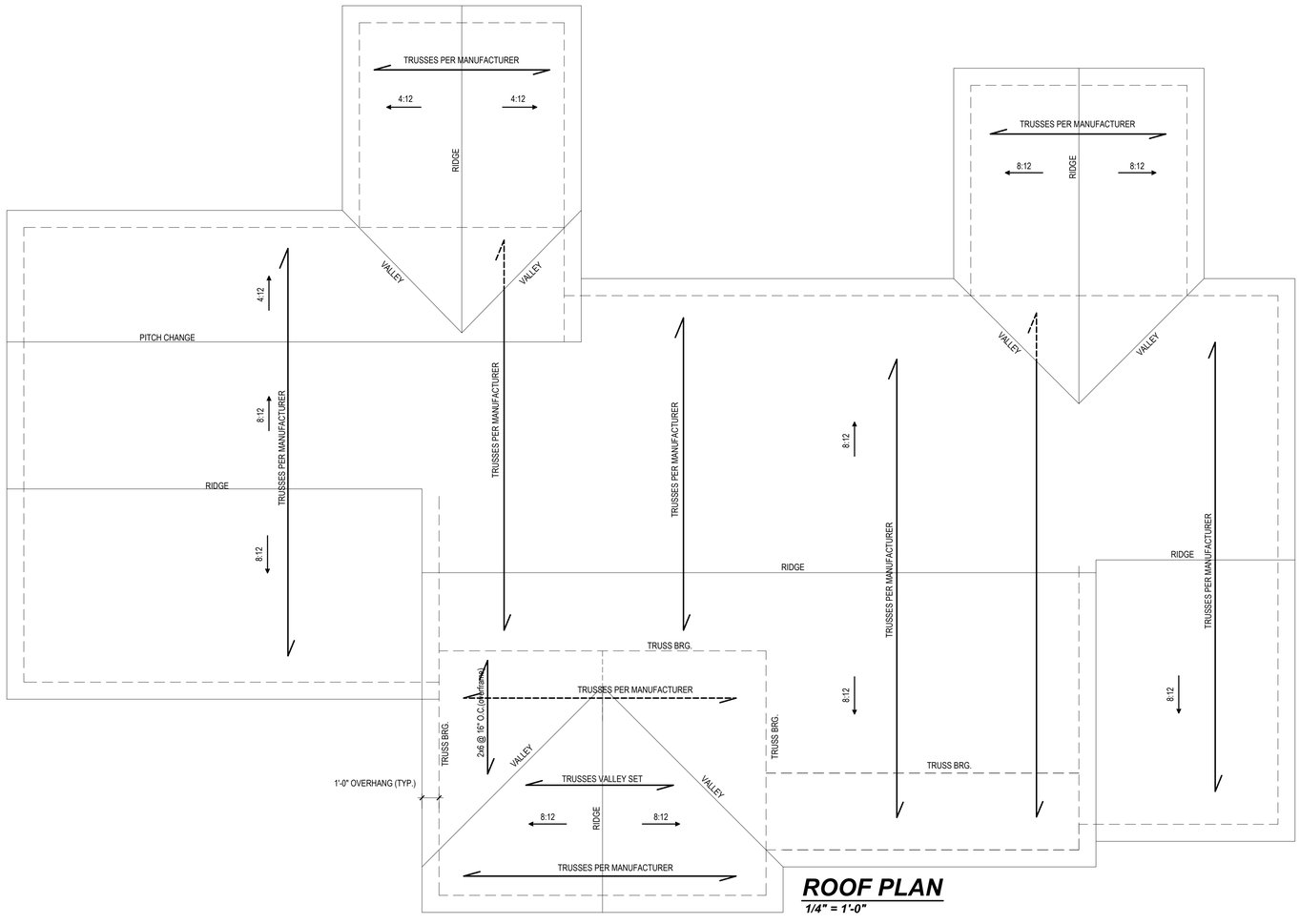
STRUCTURAL

Sheet Number

S2

of 4



ROOF PLAN

1/4" = 1'-0"

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Scale:	1/4"=1'-0"

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

ROOF

Sheet Number
S3
of 4

STRUCTURAL NOTES

1) ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.

2) DESIGN LOADS:

	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (DL & LL)
ALL FLOORS	40	10	L/360
ATTIC (pull down access)	20	10	L/240
ATTIC (no access)	10	5	L/240
EXTERNAL BALCONY	60	10	L/360
ROOF	20	10	L/180
ROOF TRUSS	20	20	L/240
WIND LOAD	[BASED ON 115 MPH (3-second gusts)]		

3) MINIMUM ALLOWABLE SOIL BEARING PRESSURE = 2000 PSF

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

5) MAXIMUM DEPTH OF UNBALANCED FILL AGAINST FOUNDATION WALLS TO BE LESS THAN 4'-0" WITHOUT USING SUFFICIENT WALL BRACING. REFER TO SECTION R404 OF 2018 NC BUILDING CODE FOR BACKFILL LIMITATIONS BASED ON WALL HEIGHT, WALL THICKNESS, SOIL TYPE, AND UNBALANCED BACKFILL HEIGHT

6) ALL FRAMING LUMBER SHALL BE SYP #2 (Fb = 800 PSI) UNO.
ALL FRAMING LUMBER EXPOSED TO THE ELEMENTS SHALL BE TREATED MATERIAL.

7) ALL LOAD BEARING HEADERS SHALL BE (2)2x10 (UNO). ALL WINDOW AND DOOR HEADERS SHALL BE SUPPORTED BY (1) JACK STUD AND (1) KING STUD AT EACH END UNLESS NOTED. ALL OTHER BEAMS SHALL BE SUPPORTED BY 2 STUDS OR THE AMOUNT OF STUDS REQUIRED FOR FULL BEARING AT EACH END UNLESS NOTED. POINT LOADS (STIFF KNEES, ETC.) SHALL CONSIST OF 2 STUDS UNLESS NOTED. ALL SUPPORTS OF 2 STUDS OR MORE SHALL BE TRANSFERRED THROUGH EACH FLOOR TO THE FOUNDATION.

8) ALL EXTERIOR WALLS TO BE SHEATHED WITH MIN. 7/16" WOOD STRUCTURAL PANELS FASTNED WITH 8D NAILS 6" O.C. AT EDGES AND 12" O.C. AT INT. SUPPORTS. BLOCKING SHALL BE INSTALLED IF LESS THAN 50 PERCENT OF THE WALL LENGTH IS SHEATHED. WHERE BLOCKING IS REQ'D, ALL PANELS SHALL BE FASTENED AT 3" O.C AT EDGES AND 6" O.C. AT INT. SUPPORTS.

9) ALL STRUCTURAL STEEL SHALL ASTM A-36. STEEL BEAMS SHALL BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3-1/2" INCHES AND FULL FLANGE WIDTH. PROVIDE SOLID BEARING FROM BEAM SUPPORT TO FOUNDATION. BEAMS SHALL BE ATTACHED TO EACH SUPPORT WITH TWO LAG SCREWS (1/2 DIAMETER AND 4" LONG). LATERAL SUPPORT IS CONSIDERED ADEQUATE PROVIDING THE JOISTS ARE TOE NAILED TO THE SOLE PLATES, AND THE SOLE PLATES ARE NAILED OR BOLTED TO THE BEAM FLANGES @ 48" O.C.

10) ANCHOR BOLT PLACEMENT PER SECTION R403.1.6. 1/2" DIAMETER ANCHOR BOLTS SPACED AT 6'-0" O/C AND PLACED 12" FROM THE END OF EACH PLATE SECTION

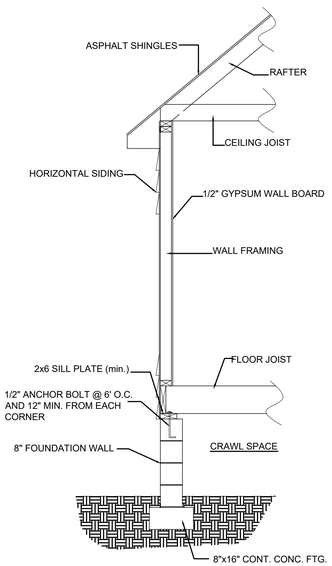
11) FOUNDATION DRAINAGE-DAMP PROOFING OR WATERPROOFING PER SECTION 405 AND 406 OF 2018 NC BUILDING CODE

12) WALL AND ROOF CLADDING VALUES:
WALL CLADDING SHALL BE DESIGNED FOR A 24.1 SQ.FT. OR GREATER POSITIVE AND NEGATIVE PRESSURE
ROOF VALUES BOTH POSITIVE AND NEGATIVE SHALL BE AS FOLLOWS:
45.5 LBS/SQFT FOR ROOF PITCHES OF 0/12 TO 2.25/12
34.8 LBS/SQFT FOR ROOF PITCHES OF 2.25/12 TO 7/12
21.0 LBS/SQFT FOR ROOF PITCHES OF 7/12 TO 12/12
** MEAN ROOF HEIGHT 30' OR LESS

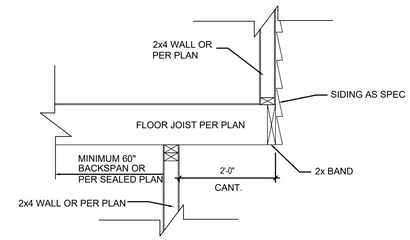
13) FOR ROOF SLOPES FROM 2:12 THROUGH 4:12, BUILDER TO INSTALL 2 LAYERS OF 15# FELT PAPER

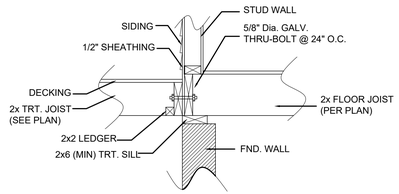
14) IT IS THE CONTRACTOR'S RESPONSIBLITY TO VERIFY ALL DIMENSIONS AND SQ. FTG. ARE CORRECT PRIOR TO CONSTRUCTION. DESIGNER IS NOT RESPONSIBLE FOR DIMENSIONING OR SQ. FTG. ERRORS ONCE CONSTRUCTION BEGINS

CLIMATE ZONE	MAXIMUM GLAZING U-FACTOR	MINIMUM INSULATION R-VALUE					
		CEILINGS	WALLS	FLOORS	BASEMENT WALLS	SLAB PERIMETER	CRAWL SPACE WALLS
3	.35	R-38 or R-30	R-15	R-19	R-5/13	R-0	R-5/13
4	.35	R-38 or R-30	R-15	R-19	R-10/15	R-10	R-10/15



TYPICAL WALL DETAIL





1. MAXIMUM HEIGHT OF DECK SUPPORT POSTS AS FOLLOWS:

POST SIZE *	MAX POST HEIGHT **
4 X 4	8'-0"
6 X 6	20'-0"
***	OVER 20'-0"

* THIS TABLE IS BASED ON NO. 2 TREATED SOUTHERN PINE POSTS.
** FROM TOP OF FOOTING TO BOTTOM OF GIRDER
*** DECKS WITH POST HEIGHTS OVER 20'-0" SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT.

2. DECKS SHALL BE BRACED TO PROVIDE LATERAL STABILITY BY ONE OF THE METHODS:

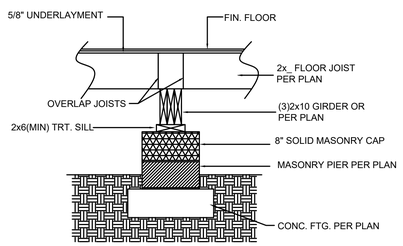
A. WHEN THE DECK FLOOR HEIGHT IS LESS THAN 4' AND THE DECK IS ATTACHED TO THE STRUCTURE IN ACCORDANCE WITH SECTION AM104, LATERAL BRACING IS NOT REQUIRED.

B. 4X4 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 $\frac{1}{4}$ 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 NAILED TO THE POST AND THE GIRDER OR BOLTED WITH ONE 5/8" HOT DIPPED GALVANIZED BOLT AT EACH END OF THE BRACE.

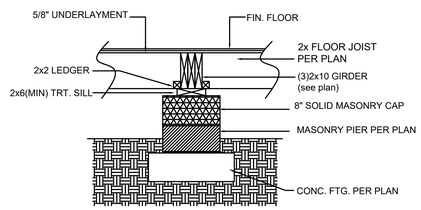
C. FOR FREESTANDING DECKS WITHOUT KNEE BRACES OR DIAGONAL BRACING, LATERAL STABILITY MAY BE PROVIDED BY EMBEDDING THE POSTS IN ACCORDANCE WITH THE FOLLOWING:

POST SIZE	MAX TRIBUTARY AREA	MAX POST HEIGHT	EMBEDMENT DEPTH	CONCRETE DIAMETER
4 X 4	48 SF	4'-0"	2'-6"	1'-0"
6 X 6	120 SF	6'-0"	3'-6"	1'-8"

D. 2x6 DIAGONAL VERTICAL ROSS-BRACING MAY BE PROVIDED IN TWO PERPIINDICULAR DIRECTIONS FOR FREESTANDING DECKS OR PARALLEL TO THE STRUCTURE AT THE EXTERIOR COLUMN LINE FOR ATTACHED DECKS.



DROPPED GIRDER DETAIL



FLUSH GIRDER DETAIL

* Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
* Any deviations or discrepancies on plans are to be brought to the immediate attention of Mark E. Jones, PE. Failure to do so will void Mark E. Jones, PE liability.
* Please review these documents carefully. Mark E. Jones, PE will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.

NORTH CAROLINA PROFESSIONAL 032702 6-12-25 ENGINEER MARK E. JONES

Mark E. Jones, PE
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Raleigh, NC 27603
(919) 395-5618

Project Name:
Willow Tree

Client Name:
KMB Building, LLC
5609 Stewart Rd.
Raleigh, NC 27603

Project #:
25-113

Date:
6/12/25

Drawn/Design By:
MEJ

DWG. Checked By:
MEJ

Scale:
1/4"=1'-0"

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

DETAILS

Sheet Number

S4

of 4