GENERAL NOTES:

1) THESE PLANS HAVE BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE NCBC 2018 RESIDENTIAL CODE
2) THESE PLANS ARE DESIGNED TO BE USED BY A LICENSED GENERAL CONTRACTOR
3) DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS
4) ALL PM&E PLANS ARE TO BE HANDLED BY THE GENERAL CONTRACTOR UNLESS NOTED OTHERWISE
5) ENGINEER'S INFORMATION AND NOTES TAKE PRECEDENCE OVER TRD PLAN

GENERAL CONTRACTOR:

1) PRIOR TO CONSTRUCTION, REVIEW ALL PLANS VERIFYING DIMENSIONS, LOCAL CODES, ENERGY TYPES AND SITE CONDITIONS
2) ANY DISCREPANCY IN THE PLANS IS TO BROUGHT TO THE ATTENTION OF TRD FOR CORRECTION PRIOR TO CONSTRUCTION. OTHERWISE IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR
3) INSURE ALL PHASES OF CONSTRUCTION COMPLY WITH BUILDING CODES IN THE AREA THE HOME IS TO BE BUILT
4) CONSULT WITH LOCAL ENGINEER FOR STRUCTURAL DESIGN
5) ONCE CONSTRUCTION BEGINS, CONTRACTOR ASSUMES ALL RESPONSIBILITY

TRIANGLE RESIDENTIAL DESIGNS:

1) THESE PLANS ARE THE COPYRIGHTED PROPERTY OF TRD. THEY ARE NOT TO BE REPRODUCED WHOLE OR IN PART, WITHOUT WRITTEN CONSENT FROM TRD.
2) THE LIABILITY OF TRD IN CONNECTION WITH THIS PLAN AND THE HOME BUILT THEREFROM IS LIMITED TO THE TOTAL FEES PAID BY THE PURCHASER OF THE PLAN.
3) TRD ASSUMES NO LIABILITY FOR ALTERATIONS TO THE PLANS, FIELD MODIFICATIONS OF THE PLANS OR STRUCTURAL COMPONENTS.
THEY ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR

NON-EXCLUSIVE LICENSE:

THE PURCHASER OF THIS PLAN HAS BEEN GRANTED A NON-EXCLUSIVE, NON-TRANSFERABLE LICENSE TO USE THIS COPYRIGHTED PLAN TO BUILD ONE HOME. THE PLANS ARE NOT TO BE REPRODUCED, WHOLE OR IN PART, OR RESOLD, WITHOUT WRITTEN CONSENT FROM TRD. ANY BREACH OF THESE TERMS ENTITLE TRD TO PURSUE ALL REMEDIES BY LAW.

MEAN ROOF HEIGHT

14'-6" EAVE HT. + 24'-5" OVERALL HT. = 38'-11" TOTAL
38'-11" TOTAL/2 = 19'-5.5" MEAN ROOF HT.

NOTES:
• DISTANCES INDICATED ARE FROM FINISHED GRADE AND ASSUME A FLAT LOT WITH MINIMUM GRADE REQUIREMENTS.
• DESIGN PRESSURE = 35 PSF

DESIGN LOADS

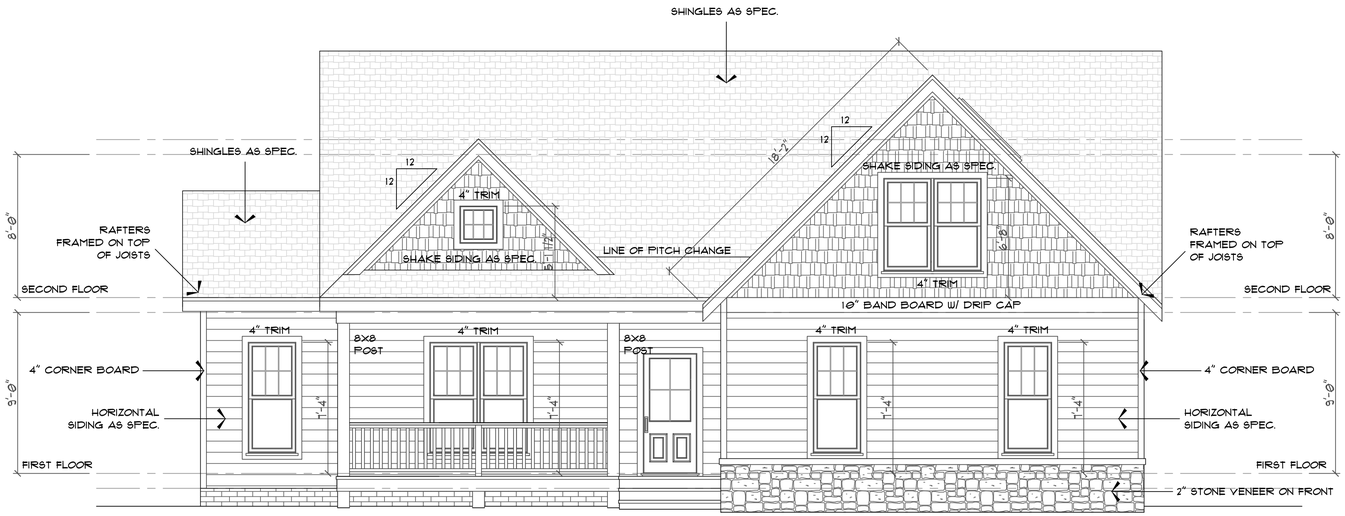
FLOOR LIVE LOAD (SLEEPING) 30 PSF
FLOOR LIVE LOAD (ALL OTHERS) 40 PSF
DECKS: 40PSF
BALCONIES: 60PSF
ATTIC DEAD LOAD (NO STOR.) 10 PSF
ATTIC LIVE LOAD (STORAGE) 20 PSF
ATTIC W/STAIRS (DEVELOPABLE) 40 PSF

MIN. VALUES FOR ENERGY COMPLIANCE

CEILINGS: R-38
WALLS: R-15
FLOORS: R-19
BASEMENT WALLS: R-7
CRAWL SPACE WALLS: R-8
SLAB PERIMETER @ 24" DEEP: R-4
MAX. GLAZING U-FACTOR = 0.35
ZONE 4

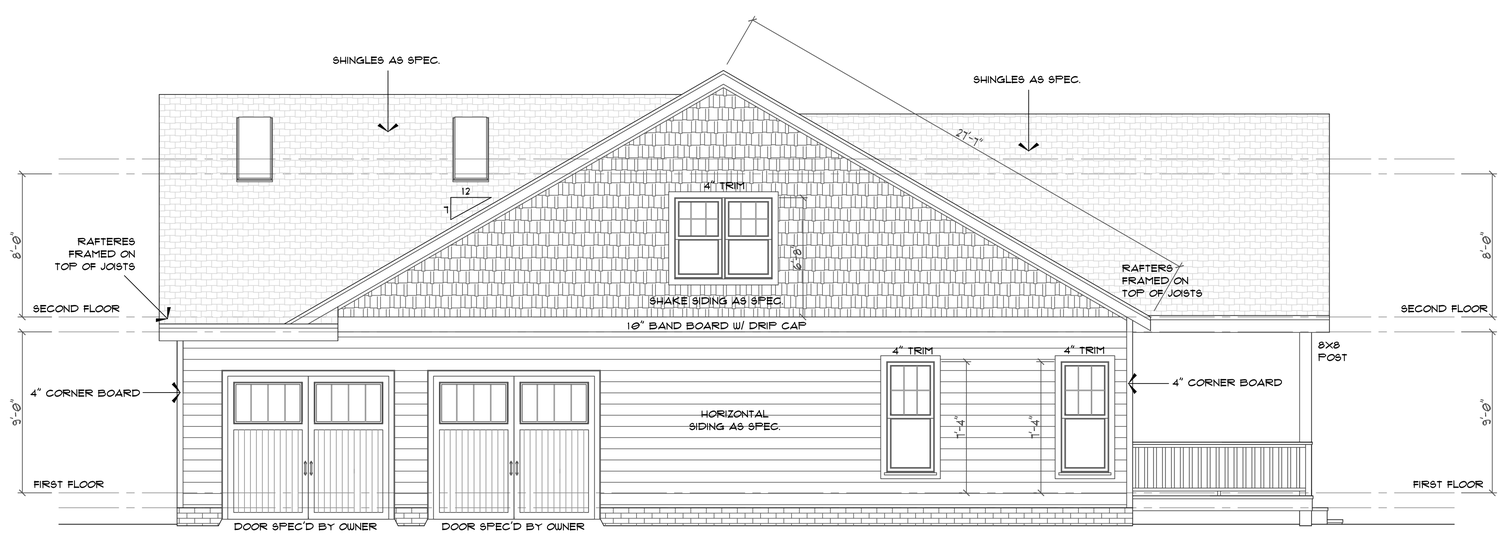
EXTERIOR MATERIALS

- ROOF SHINGLES
- METAL ROOF
- HORIZONTAL SIDING
- BOARD & BATTEN SIDING
- VERTICAL SIDING
- SHAKE SIDING
- BRICK
- STONE
- STUCCO OR PARGING
- SCREEN
- BRICK ROWLOCK OR SOLDIER



FRONT ELEVATION

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



RIGHT ELEVATION

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

INDEX TO SHEETS

SHEET	NAME
1	FRONT & RIGHT SIDE ELEVATIONS
2	REAR & LEFT SIDE ELEVATIONS
3	FOUNDATION PLAN
4	FIRST FLOOR PLAN
5	SECOND FLOOR PLAN
E1-4	ENGINEERING SHEETS
D1	DETAIL SHEET

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
12/07/2021
Harnett COUNTY NORTH CAROLINA

N·C·B·D·C NATIONAL COUNCIL OF BUILDING DESIGN CERTIFICATION
DAVID E. BENNETT
CERTIFICATION NO. NA-116
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5163 SOUTH RIVER ROAD
LILLINGTON, NC 27546
HARNETT COUNTY

CLIENT: FRANK BOUDREAU
PROJECT: RESIDENCE
DATE: NOVEMBER 2, 2021
SHEET 1 OF 5
SHEET NAME: FRONT AND RIGHT ELEVATIONS

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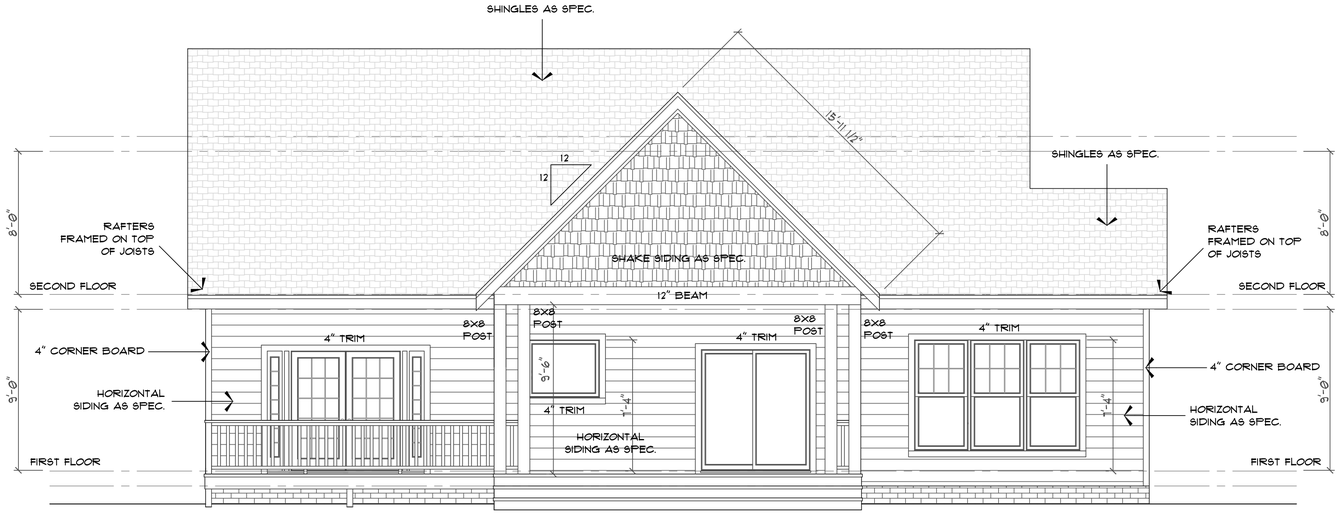
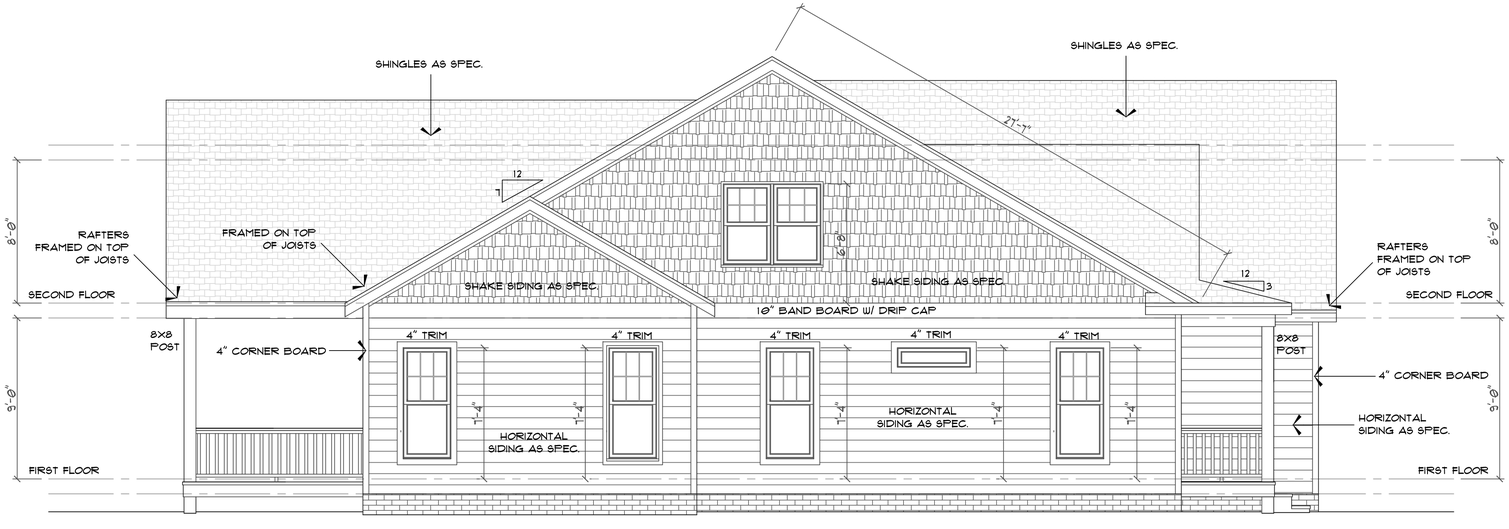


REAR ELEVATION

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



LEFT ELEVATION

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

EXTERIOR MATERIALS

- ROOF SHINGLES
- METAL ROOF
- HORIZONTAL SIDING
- BOARD & BATTEN SIDING
- VERTICAL SIDING
- SHAKE SIDING
- BRICK
- STONE
- STUCCO OR PARGING
- SCREEN
- BRICK ROWLOCK OR SOLDIER

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CLIENT: FRANK BOUDREAU

PROJECT: RESIDENCE

SHEET: 2 OF 5

DATE: NOVEMBER 2, 2021

SHEET NAME: REAR AND LEFT ELEVATIONS

FOUNDATION NOTES

1) CRAWL SPACE IS TO BE LEVEL & CLEAN OF CONSTRUCTION DEBRIS, VEGETATION AND ANY ORGANIC MATERIAL.
2) ONE VENT MUST BE WITHIN 3' OF EACH CORNER OF THE BUILDING
3) POSSIBLE VENT LOCATIONS INDICATED ON THE FOUNDATION PLAN.
4) APPROVED VAPOR RETARDER TO COVER 100% OF CRAWL SPACE.

FOOTINGS

1) FOOTING PROJECTIONS SHALL BE AT LEAST 2" AND SHALL NOT EXCEED THE THICKNESS OF THE FOOTING.
2) THE TOP SURFACE OF FOOTINGS SHALL BE LEVEL W/MASONRY UNITS WITH FULL MORTAR JOINTS. BOTTOM SURFACE OF FOOTINGS MAY SLOPE NO MORE THAN 10%. FOOTINGS SHALL BE STEPPED TO CHANGE THE ELEVATION OF THE TOP SURFACE OR WHERE THE SLOPE OF THE BOTTOM OF THE FOOTING WILL EXCEED 10%.
3) FINISHED GRADE OF THE UNDER FLOOR SURFACE MAY BE LOCATED AT THE BOTTOM OF THE FOOTINGS.
4) MINIMUM 8" WALL FOOTING TO BE NO LESS THAN 16" X 8"
5) MINIMUM CONCRETE FOOTING STRENGTH = 3000 PSI

DRAINAGE

1) INSTALL AROUND FOUNDATION, DRAIN TILES, GRAVEL OR CRUSHED STONE DRAINS, PERFORATED PIPES OR OTHER APPROVED SYSTEM AS REQUIRED BY GRADE.
2) FOUNDATION DRAINAGE MAY BE OMITTED WHEN THE INTERIOR GRADE IS LESS THAN 12" BELOW THE EXTERIOR GRADE.
3) GRADE LOT SO AS TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS AT A MINIMUM OF 6" WITHIN THE FIRST 10'.

WATERPROOFING:

1) FOUNDATION WALLS, WHERE THE OUTSIDE GRADE IS HIGHER THAN THE INSIDE GRADE, SHALL BE DAMPROOFED FROM THE TOP OF THE FOOTING TO THE FINISHED GRADE. USE CODE APPROVED METHOD

ANCHORAGE

1) THE WOOD SOLE PLATE AT EXTERIOR WALLS ON MONOLITHIC SLABS AND WOOD SILL PLATE SHALL BE ANCHORED TO THE FOUNDATION W/ANCHOR BOLTS SPACED A MAXIMUM OF 6'-0" ON CENTER AND LOCATED WITHIN 12" FROM THE ENDS OF EACH PLATE SECTION. BOLTS SHALL BE AT LEAST 1/2" IN DIAMETER AND SHALL EXTEND A MINIMUM OF 7" INTO MASONRY OR CONCRETE.
2) BOLTS MAY BE REPLACED BY ANCHOR STRAPS, SPACED AS REQUIRED TO PROVIDE EQUIVALENT ANCHORAGE.
3) INTERIOR BEARING WALL SOLE PLATES ON MONOLITHIC SLABS SHALL BE ANCHORED W/APPROVED FASTENERS.

FOUNDATION WALLS

1) VERTICAL REINFORCEMENT OF MASONRY WALLS SHALL BE TIED TO THE HORIZONTAL REINFORCEMENT OF THE FOOTINGS.
2) FOUNDATION WALL IS TO BE 8" CONC. BLOCK OR 8" BRICK & BLOCK ON CONTINUOUS CONCRETE FOOTING.
3) FOUNDATION WALL IS TO HAVE A SOLID 8" MASONRY CAP.
4) WALL HEIGHT ABOVE FINISHED SHALL BE 4" WHERE MASONRY VENEER IS USED AND 6" ELSEWHERE.
5) WALL SUPPORTING OVER 4' OF UNBALANCED BACKFILL MUST BE BRACED TO PREVENT DAMAGE BY THE BACKFILL.
6) CAVITY WALL OR MASONRY VENEER CONSTRUCTION MAY BE SUPPORTED ON AN 8" FOUNDATION WALL, PROVIDED THE WALL IS CORBELED WITH SOLID MASONRY TO THE WIDTH OF THE WALL SYSTEM ABOVE. THE TOTAL HORIZONTAL PROJECTION OF THE CORBEL SHALL NOT EXCEED 2" WITH INDIVIDUAL CORBELS PROJECTING NOT MORE THAN 1/3 THE THICKNESS OF THE UNIT OR 1/2 THE HEIGHT OF THE UNIT. THE TOP COURSE OF ALL CORBELS SHALL BE A HEADER COURSE.
7) VENTS ARE INTENDED TO BE 16" X 8" ALUMINUM.

PIERS

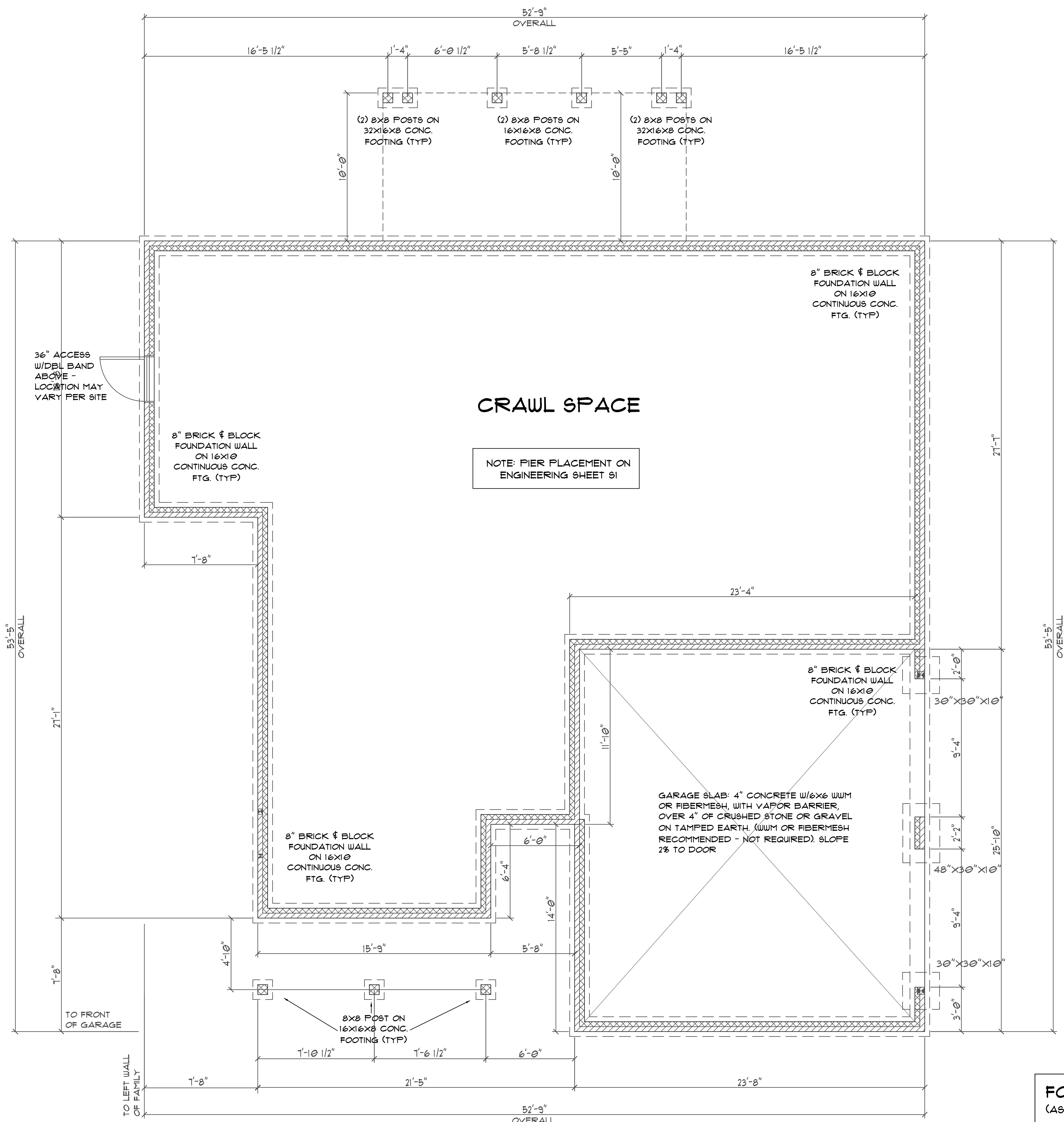
1) MASONRY PIERS HEIGHT SHALL NOT EXCEED 10 TIMES THEIR LEAST DIMENSION.
2) WHEN STRUCTURAL CLAY OR HOLLOW CONCRETE MASONRY UNITS ARE USED TO SUPPORT BEAMS & GIRDERS, THE CELLULAR SPACES MUST BE FILLED SOLIDLY WITH CONCRETE OR TYPE "M" OR "S" MORTAR.
3) UNFILLED UNITS MAY BE USED IF THE HEIGHT IS NOT MORE THAN 4 TIMES THE LEAST DIMENSION.
4) HOLLOW PIERS SHALL BE CAPPED WITH 4" OF SOLID MASONRY OR CONCRETE, OR SHALL HAVE CAVITITES OF THE TOP COURSE FILLED WITH CONCRETE.
5) PIERS INDICATED ON PLAN ARE TYPICALLY 16"X 16" ON 24"X 24"X 8" FOOTINGS.
6) TIE ALL HALF PIERS INTO WALLS

CAVITY ACCESS

1) MIN. CRAWL SPACE ACCESS IS 18"(W) X 24"(H) W/DBL. BAND ABOVE. PLACE AT BEST LOCATION WITH REFERENCE TO GRADE.
2) ACCESS MAKE BE INCREASED IF MECHANICAL EQUIPMENT IS LOCATED UNDER FLOORS - SEE NC MECHANICAL CODE FOR REQUIREMENTS.
3) ATTIC ACCESS SHALL BE 22"X 30" MINIMUM.

FOUNDATION MATERIALS LEGEND

- BRICK
- CONCRETE BLOCK
- CONCRETE FOOTING
- CONCRETE



FOUNDATION PLAN

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

FOUNDATION VENT CALCULATION

(AS PER 2018 NORTH CAROLINA RESIDENTIAL CODE)

MINIMUM REQUIRED:
1743 SQFT OF CRAWL SPACE DIVIDED BY 300 EQUALS 5.8 SQFT OF AREA

NOTES:
- ONE VENT MUST BE WITHIN 3' OF EACH CORNER OF THE BUILDING
- POSSIBLE VENT LOCATIONS INDICATED ON THE FOUNDATION PLAN.
- ACCESS DOORS MAY BE VENTED FOR ADDITIONAL REQUIRED VENTILATION.
- CRAWL SPACE MUST BE CROSS-VENTILATED AND AN APPROVED VAPOR RETARDER COVERS 100% OF THE CRAWL SPACE.

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DAVID E. BENNETT

Triangle Residential Designs Inc
405 S. Lakeside Dr, Raleigh, NC 27606 Tel: (919) 852-3500 www.trd-chp.com

AIBD AMERICAN INSTITUTE OF BUILDING DESIGN

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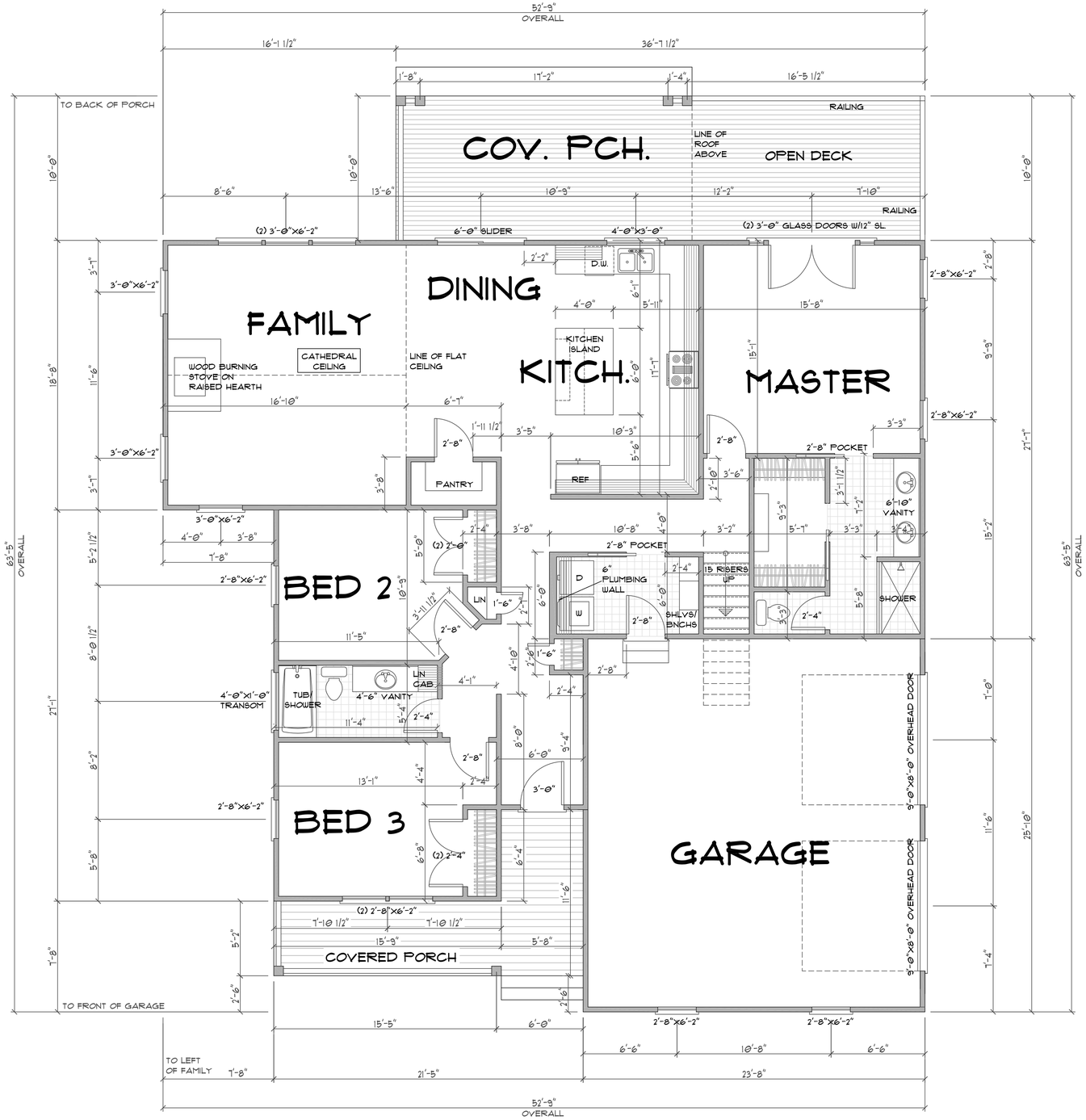
PROJECT: RESIDENCE
ADDRESS/LOCATION: 5163 SOUTH RIVER ROAD LILLINGTON, NC 27546 HARNETT COUNTY
DRAWN BY:
REVISED:
SHEET 3 OF 5
DATE: NOVEMBER 2, 2021
SHEET NAME: FOUNDATION PLAN



FIRST FLOOR PLAN

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

9'-0" CEILING ON THIS FLOOR

NOTES:

- 9'-0" CEILING ON THIS FLOOR UNLESS NOTED OTHERWISE (UNO)
- STAIRS ARE DESIGNED TO COVER A 126" MAX. RISE:
  15 RISERS @ 7.86"+/- EACH OR
  16 RISERS @ 7.3" +/- EACH
  14 OR 15 TREADS @ 9" EACH (ROUGH CUT)
  (FIELD VERIFY ALL STAIRS DIMENSIONS)
- ALL ANGLES 45° UNLESS OTHERWISE NOTED
- ALL DOOR HEIGHTS 6'-8" UNLESS OTHERWISE NOTED
- ALL DOOR JAMBS ARE 4" UNLESS OTHERWISE NOTED
- SEE CHAPTER 6 OF THE 2018 NC RESIDENTIAL BUILDING CODE FOR WALL CONSTRUCTION
- GARAGE WALLS ADJACENT TO HEATED SPACE SHALL BE COVERED WITH FIRE RATED SHEETROCK PER CODE
- ALL HABITABLE ROOMS SHALL MEET LIGHT, VENTILATION & EGRESS CODES AS REQUIRED
- ALL WINDOW SIZES & DETAILS TO BE VERIFIED WITH CHOSEN MANUFACTURER
- PROVIDE SMOKE DETECTORS AS REQUIRED BY CODE

FLOOR PLAN NOTES

1) ALL JOIST SPANS ARE CALCULATED USING #2 GRADE SPRUCE PINE FIR.
2) JOIST SIZES ARE SHOWN AT MINIMUM TO MEET STRUCTURAL REQUIREMENTS. SIZES MAY BE INCREASED TO PROVIDE MINIMUM INSULATION VALUES OR AIR PASSAGES.
3) PROVIDE DOUBLE FLOOR JOISTS AT ALL NON LOAD BEARING PARTITION WALLS RUNNING PARALLEL TO FLOOR JOISTS. ALSO UNDER ALL BOOKCASES, CABINETS, TUBS AND WASHING MACHINES (RECOMMENDED - NOT REQUIRED)
4) FLOOR JOISTS MUST BEAR 1.5" MIN. ON WOOD OR METAL AND 3" MIN. ON MASONRY OR CONCRETE.
5) PROVIDE 1"X4" CROSS-BRACING OR SOLID BLOCKING BETWEEN FLOOR JOISTS AT 6'-0" O.C. MAX. (RECOMMENDED BUT NOT REQUIRED.)
6) ALL EXTERIOR AND LOAD BEARING HEADERS ARE TO BE (2)-2X10
7) MINIMUM LVL DESIGN STRENGTH: E=2.0 X 2 MILLION PSI, FB=2800 PSI, FX=285 PSI
8) ALL LVL BEAMS TO HAVE 3 STUDS EACH END.
9) LOAD BEARING HEADER JACKS MUST REST ON DOUBLE JOISTS - SUPPLY EXTRA JOISTS AS REQUIRED
10) DRAFTSTOPPING AND FIREBLOCKING AS REQUIRED PER CODE.
11) DESIGNS FOR WOOD FLOOR TRUSSES MUST BE PREPARED BY A REGISTERED DESIGN PROFESSIONAL

AREA CALCULATION

FIRST FLOOR:	1743 SQFT
REC ROOM:	262 SQFT
TOTAL LIVING:	2005 SQFT
GARAGE:	691 SQFT
FRONT PORCH:	146 SQFT
REAR PORCH:	200 SQFT
TOTAL NON-LIVING:	953 SQFT

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DAVID E. BENNETT CERTIFICATION NO. NC-119
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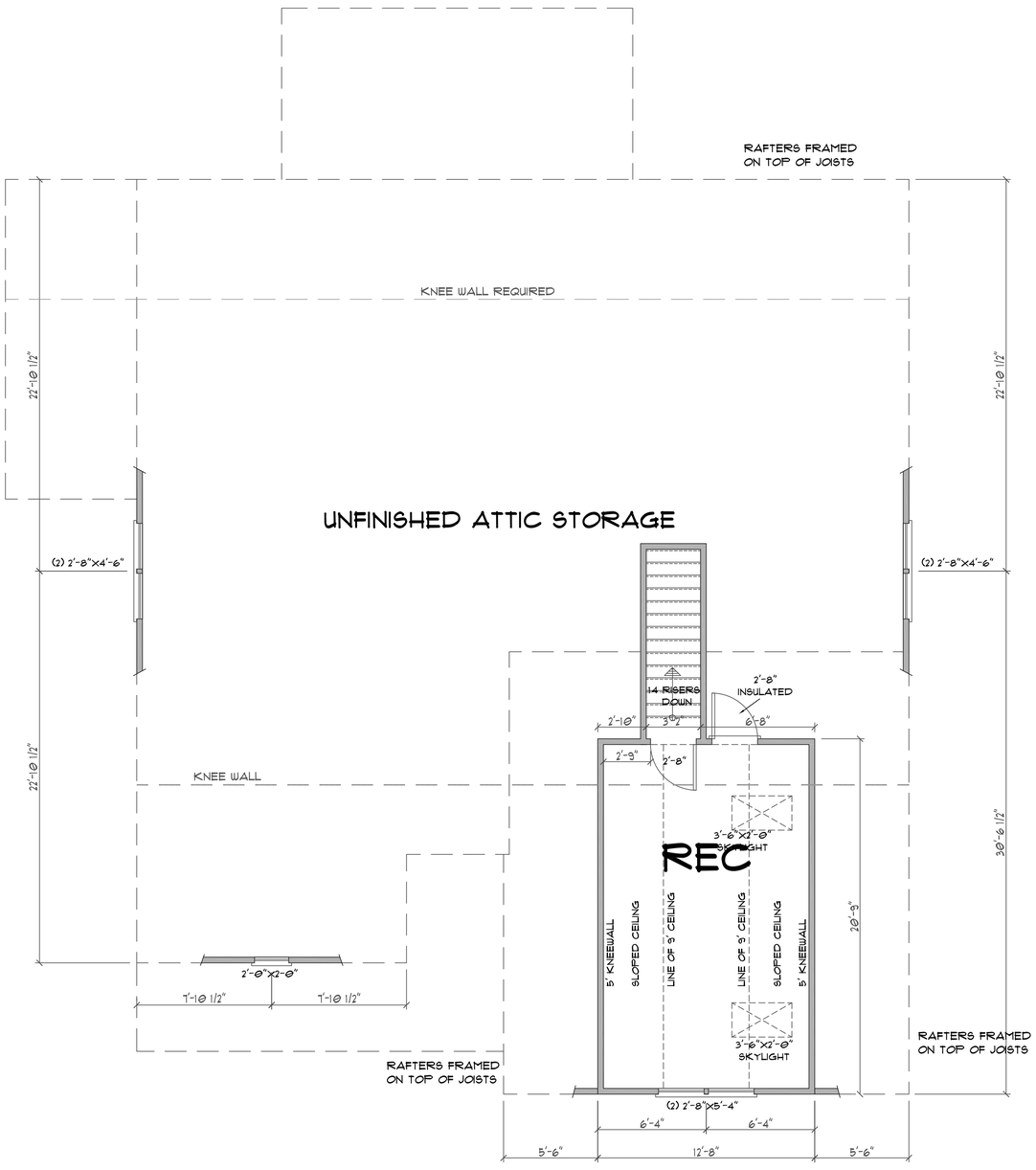
DRAWN BY:
REVISED:
ADDRESS/LOCATION: 5163 SOUTH RIVER ROAD LILLINGTON, NC 27546 HARNETT COUNTY
CLIENT: FRANK BOUDREAU
PROJECT: RESIDENCE
SHEET: 4 OF 5
DATE: NOVEMBER 2, 2021
SHEET NAME: FIRST FLOOR PLAN



SECOND FLOOR PLAN

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

8'-0" CEILING ON THIS FLOOR

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DAVID E. BENNETT
CERTIFICATION NO. 3A-119

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AIBD
AMERICAN INSTITUTE OF BUILDING DESIGN

CLIENT:
FRANK BOUDREAU

PROJECT:
RESIDENCE

SHEET:
5 OF 5

DATE:
NOVEMBER 2, 2021

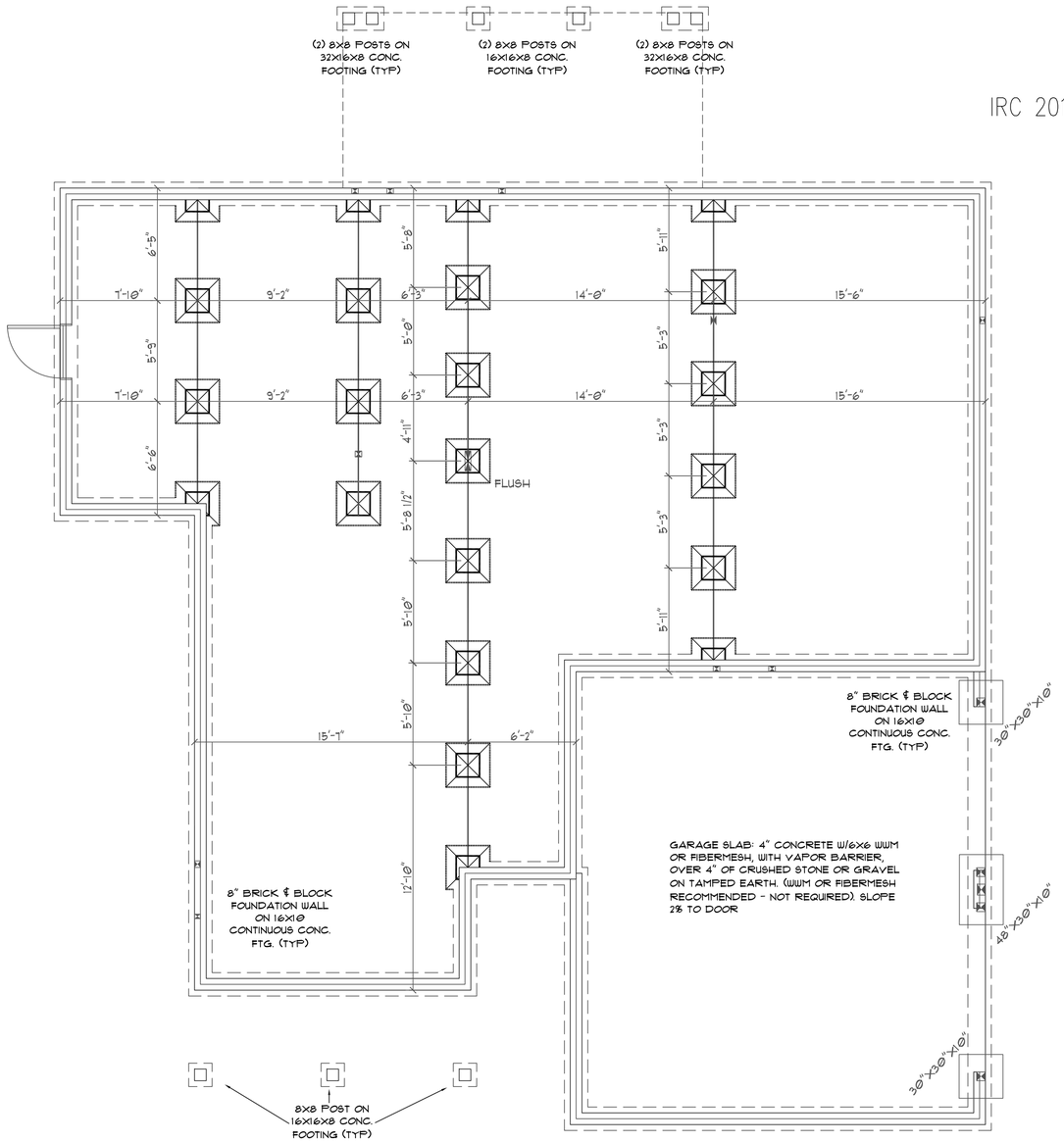
SHEET NAME:
SECOND FLOOR PLAN

ADDRESS/LOCATION:
5163 SOUTH RIVER ROAD
LILLINGTON, NC 27546
HARNETT COUNTY

DRAWN BY:

REVISED:

NOTE TO BUILDER:
It is the sole responsibility of the builder to review and verify these plans according to the north carolina building code (IRC) and to understand every part of these plans herein.



DESIGN TO IRC 2015 NCBC 2018
IRC 2015 NCBC 2018 REQUIRES VAPOR BARRIER
OVER 100 PERCENT OF CRAWL AREA
ALL FLOOR JOISTS
11 7/8 BCI 5000 @ 19.2
11 7/8 LPI 20 @ 19.2
or 2 x 10 @ 16 # 2 SPF or Better

ORIENTED Left to Right

DENOTES 12"x16" -or- 16"x16" CMU PIER WITH 8" SOLID CAP ON 30"x30"x10" CONC. FTR.

CONCRETE PIER SIZES

Size	Hollow Masonry	Solid Masonry
12"x16"	Up to 48" High	Up to 9'-0" High
16"x16"	Up to 64" High	Up to 12'-0" High

FOUNDATION WALLS
ALL FOUNDATION WALLS 8" BLOCK
PARGED -or- 4" BRICK w/ 4" BLOCK
w/ 8" SOLID CAP ON 18"x10" CONTINUOUS CONCRETE FOOTER
20" x 10" in areas of brick veneer

GIRDERS
(3) 2"x10" #2 SYP -or-
NEW SFPA SYP Values Used
(4) 2x 10 # 2 SPF or Better
Anchor bolts required ALL foundation walls
provide 1/2" x 10" with 7 inch embedment
6' on center and 12 inches from ends / corners

NORTH CAROLINA PROFESSIONAL SEAL 20081 ENGINEER JOHN ALEXANDER MCRAE
29 Nov 2021

Structural Design By:
John Alexander McRae, PE, Inc
218 Coley Farm Road
Fuquay-Varina North Carolina 27526
jampe@nc.rr.com (919) 210-5749
P O Box 1466 Apex, NC 27502
Report deficiencies immediately
2111-13
(NC C-2298)

FLOOR FRAMING PLAN W/PIER PLACEMENT

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

DESIGN TO IRC 2015 NCBC 2018 BUILDING CODE

JAMPE, INC. does not assume liability for any deviation of these plans or construction methods. All information must be confirmed by contractor prior to commencement of construction.

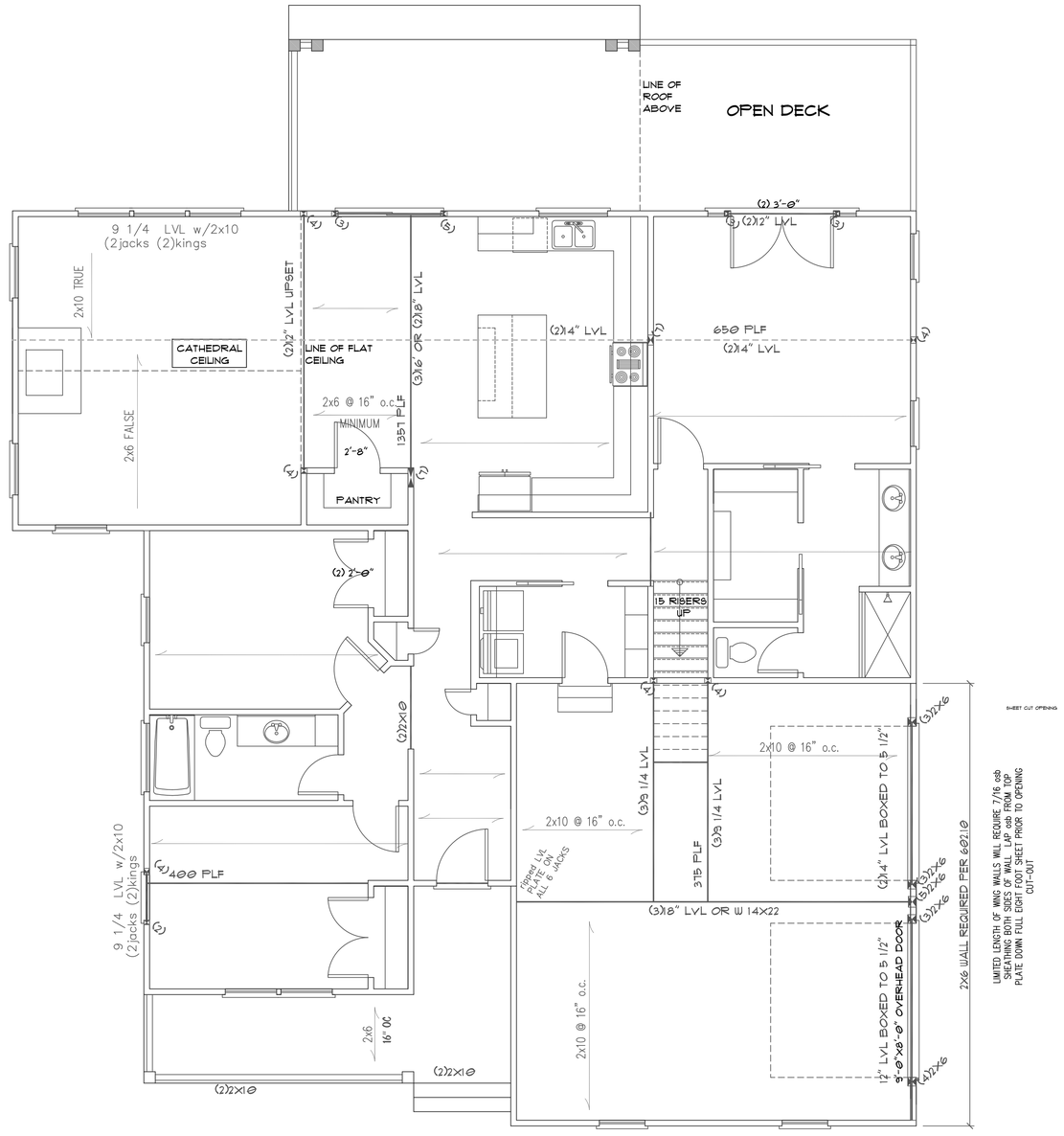
date: 19 October, 2021
drawn by: J A McRae

John Alexander McRae, P.E., Inc.
RESIDENTIAL AND COMMERCIAL ENGINEERING
(NC C-2298)
218 Coley Farm Rd Fuquay-Varina, N.C. 27526
voice 919.662.5531 fax 919.662.8599

BOUDREAU RESIDENCE
5163 SOUTH RIVER ROAD, LILLINGTON, NC 27546
HARNETT COUNTY

sheet no. S1 of S4
plan no.

NOTE TO BUILDER:
It is the sole responsibility of the builder to review and verify these plans according to the north carolina building code (IRC) and to understand every part of these plans herein.



FIRST FLOOR STRUCTURAL PLAN

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

9'-0" CEILING ON THIS FLOOR

ALL FLOOR JOISTS 2 X 10 @16
#2 SPF OR BETTER
Or 11 7/8 I Joists at 16" or 19.2" By MFR
ALL CEILING JOIST 2 X 8 @ 16 Up To 15'
2 X 6 @ 16 Up To 11'

ALL EXTERIOR AND BEARING HEADER (2) 2"x10" u.n.o.
ALL LVL BEAMS/HEADERS 3 STUD COLUMNS EACH END u.n.o.
ALL FRAMING #2 SPF OR BETTER u.n.o.

All stories to be sheathed with 7/16" OSB nailed @ six inches on center edges and ends with additional nailing of "braced" panels as noted below:

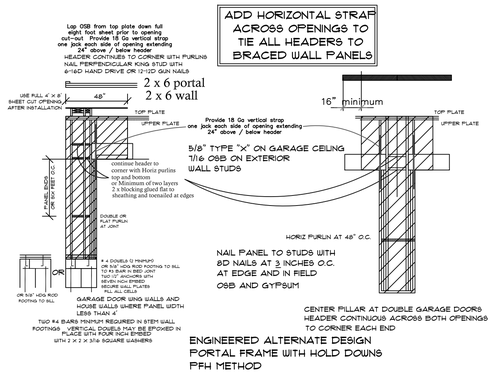
ALL EXTERIOR BEARING AND NON LOAD BEARING WALLS FOUR FOOT PANEL AT CORNERS AND MAXIMUM 12' O.C.

Wall Bracing 7/16" OSB Lap OSB from top plate down full eight foot sheet prior to opening cut-out. Nail with 8d nails at THREE inches on center edges/ends six inches in field. Purlins at panel

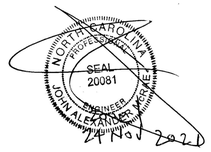
MINIMUM PANEL WIDTH 48" U.N.O.

The number of kings shall equal half the cripple studs above or below the opening.

DESIGN TO IRC 2015 / NCBC 2018



ENGINEERED ALTERNATE DESIGN
PORTAL FRAME WITH HOLD DOWNS
PFH METHOD



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jampe@nc.rr.com (919) 210-5749
P O Box 1466 Apex, NC 27502
Report deficiencies immediately
2111–13
(NC C–2298)

DESIGN TO IRC 2015 NCBC 2018 BUILDING CODE

JAMPE, INC. does not assume liability for any deviation of these plans or construction methods. All information must be confirmed by contractor prior to commencement of construction.

date:
19 October, 2021

drawn by:
J A McRae

John Alexander McRae, P.E., Inc.
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BOUDREAU RESIDENCE

5163 SOUTH RIVER ROAD, LILLINGTON, NC 27546
HARNETT COUNTY

sheet no.
S2 of S4

plan no.

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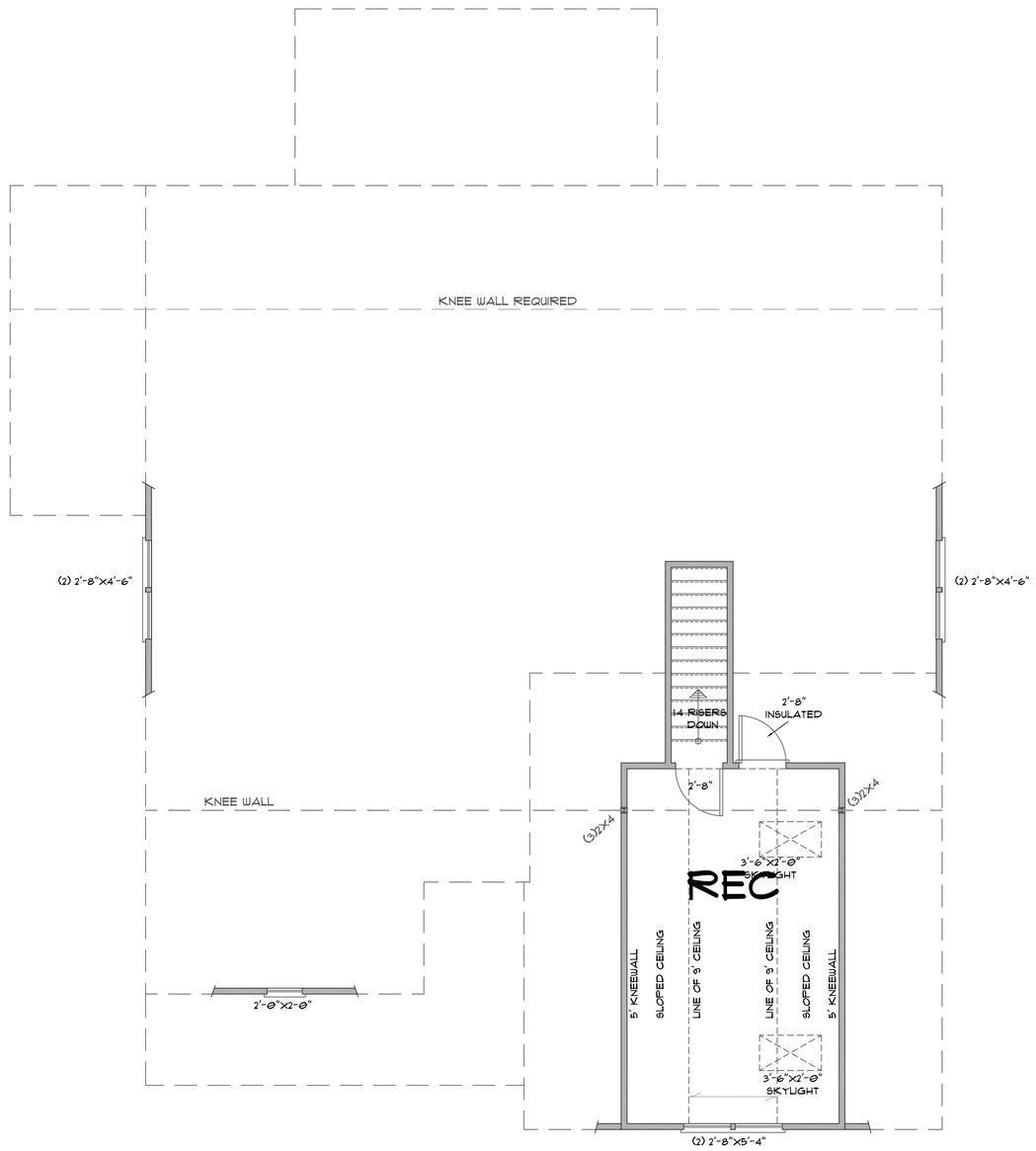


ALL FLOOR JOISTS 2 X 10 @16
#2 SPF OR BETTER
Or 11 7/8 I Joists at 16" or 19.2" By MFR
ALL CEILING JOIST 2 X 8 @ 16 Up To 15'
2 X 6 @ 16 Up To 11'

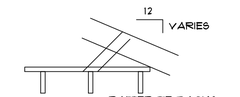
ALL EXTERIOR AND BEARING HEADER (2) 2"x10" u.n.o.
ALL LVL BEAMS/HEADERS 3 STUD COLUMNS EACH END u.n.o.
ALL FRAMING #2 SPF OR BETTER u.n.o.

All stories to be sheathed with 7/16" OSB nailed @ six inches on center edges and ends with additional nailing of "braced" panels as noted below:

ALL EXTERIOR BEARING AND
NON LOAD BEARING WALLS
FOUR FOOT PANEL AT CORNERS
AND MAXIMUM 12' O.C.

Wall Bracing 7/16" OSB Lap OSB from top plate down full eight foot sheet prior to opening cut-out. Nail with 8d nails at THREE inches on center edges/ends six inches in field. Purlins at panel

MINIMUM PANEL WIDTH 48" U.N.O.



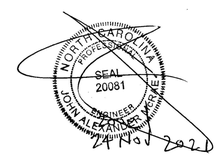
RAFTER TIE BACKS
2 X 4 @ 32 KICKER
TO FLAT PLATE OVER
MINIMUM 3 JOISTS

The number of kings shall equal half the cripple studs above or below the opening.

SECOND FLOOR STRUCTURAL PLAN

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

8'-0" CEILING ON THIS FLOOR



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P O Box 1466 Apex, NC 27502
Report deficiencies immediately
2111-13
(NC C-2298)

DESIGN TO IRC 2015 NCBC 2018 BUILDING CODE

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date:
19 October, 2021

drawn by:
J A McRae

John Alexander McRae, P.E., Inc.
RESIDENTIAL AND COMMERCIAL ENGINEERING
(NC C-2298)
218 Coley Farm Rd Fuquay-Varina, N.C. 27526
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BOUDREAU RESIDENCE
5163 SOUTH RIVER ROAD, LILLINGTON, NC 27546
HARNETT COUNTY

sheet no.
S3 of S4

plan no.

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ROOF NOTES

1) RAFTER SIZES ARE SHOWN AT MINIMUM STRUCTURAL REQUIREMENTS. SIZES MAY BE INCREASED TO PROVIDE MINIMUM INSULATION VALUES OR AIR PASSAGES.
2) RAFTER SPANS ARE CALCULATED ON #2 GRADE SPRUCE PINE FIR.
3) RAFTERS SHALL BE FRAMED TO RIDGE BOARD OR TO EACH OTHER WITH A GUSSET PLATE.
4) RIDGE BOARDS SHALL BE AT LEAST 1" NOMINAL THICKNESS AND LOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER.
5) OPPOSING RAFTERS AT THE RIDGE MUST ALIGN WITHIN THE THICKNESS OF THE RIDGE.
6) IF CLG JSTS ARE NOT PARALLEL TO RAFTERS, SUBFLOORING OR METAL TIES SHALL BE ATTACHED TO RAFTERS ENDS TO SUPPLY A CONTINUOUS TIE ACROSS THE BUILDING OR RAFTERS SHALL BE ATTACHED TO 1"X 4" CROSSTIES.
7) ATTACH 1"X6" OR 2"X4" COLLAR TIES IN THE UPPER THIRD OF THE ROOF TO EVERY THIRD PAIR OF RAFTERS, NOT TO EXCEED 4'-0" O.C.
8) ALL DORMERS SHALL HAVE DOUBLE HEADERS AND TRIMMERS.
9) TRUSS ROOF DRAWINGS SHALL BE PREPARED BY A REGISTERED DESIGN PROFESSIONAL.
10) SHINGLED ROOFS WITH PITCHES 2/12 TO 4/12 SHALL HAVE DOUBLE UNDERLAYMENT.
11) A CRICKET OR SADDLE IS REQUIRED FOR CHIMNEYS OVER 30" WIDE. THE COVERING SHALL BE METAL OR THE SAME MATERIAL AS THE ROOF COVERING.

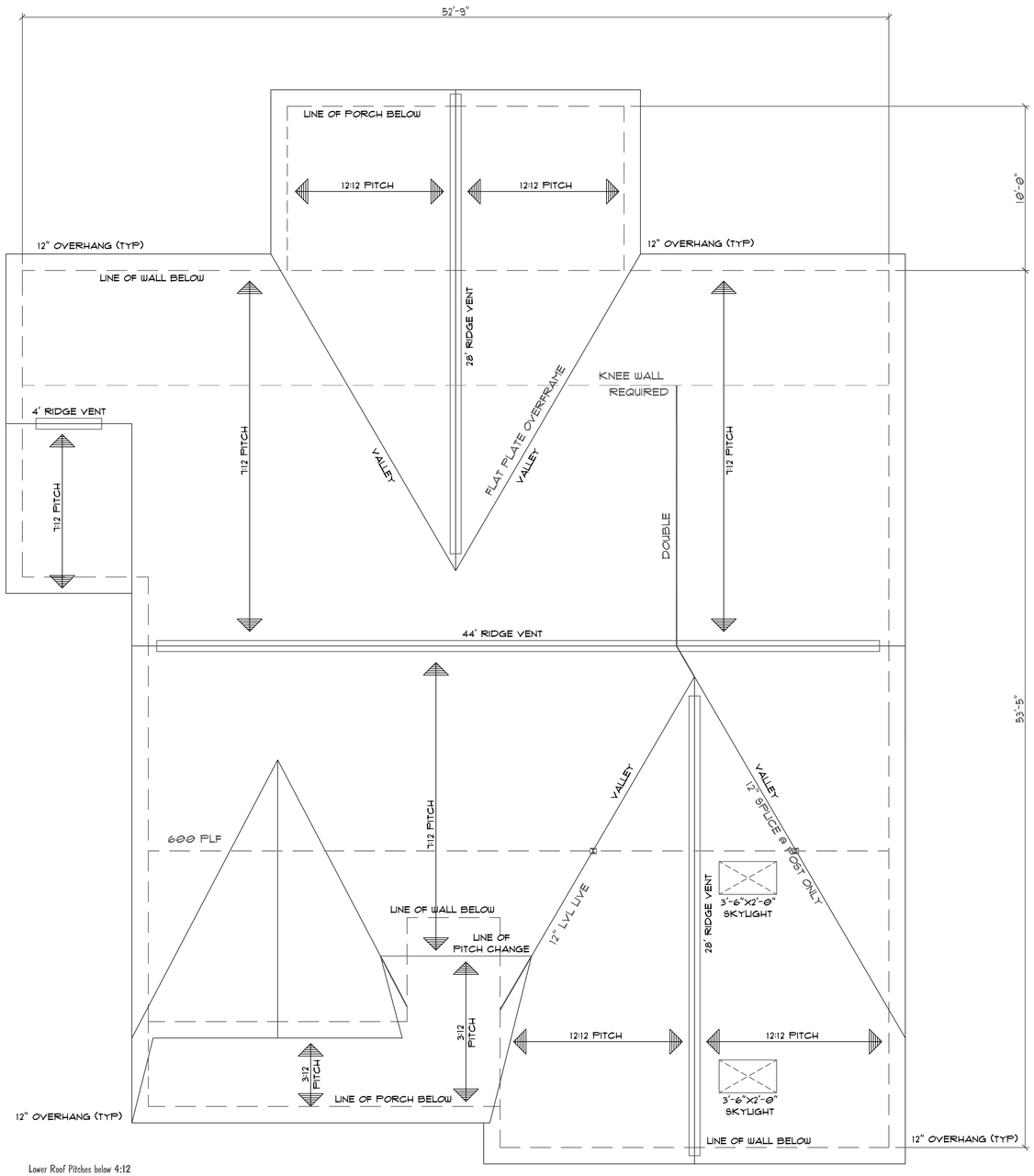
ATTIC VENTILATION CALCULATION
(AS PER 2018 NORTH CAROLINA RESIDENTIAL CODE)

2556 SQFT. OF ATTIC/150 REQUIRES = 17 SQFT. OF FREE VENT = 8.5 SQFT. IN/8.5 SQFT. OUT.

104 LINEAR FT. OF RIDGE VENT AT 18 SQ. IN./FT. DIVIDED BY 144 SQ. IN./SQ. FT. EQUALS 13 SQ. FT. OF FREE AREA.

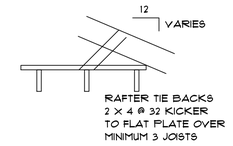
- EAVES TO HAVE 2" CONTINUOUS EAVE/SOFFIT VENT
- IF ROOF VENTING IS INADEQUATE, SUPPLEMENT WITH POWER ROOF VENTILATORS.
- VENTILATION REQUIREMENT MAY BE REDUCED TO 1 SF/300 SF PROVIDED AT LEAST 50% AND NOT MORE THAN 80% OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTILATORS LOCATED IN THE UPPER PORTION OF THE SPACE TO BE VENTILATED, ATLEAST THREE (3) FEET ABOVE THE EAVE OR CORNICE VENTS, AND WITH THE BALANCE OF THE VENTILATION TO BE PROVIDED BY THE EAVE AND CORNICE VENTS.

NOTE: REFER TO SECTION 806 (ROOF VENTILATION) OF THE NC STATE RESIDENTIAL CODE



Lower Roof Pitches below 4:12 require alternate underlayment 30 # felt half lapped or EPDM or Ice Dam and increase in live load to 30 psf

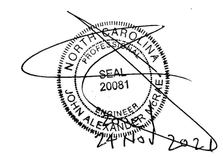
ROOF PLAN
SCALE: 1/4"=1'-0"



all rafters
2 x 8 @ 16 #2
spf or better
all ridges **2 x 10** u.n.o.
fur ridge as required to
provide full rafter contact
fur rafters as required to
meet insulation code
lap all rafters at kneewall splices
18" minimum nail with 5-12d
nails from each side
IRC 2015 / NCBC 2018 INCREASES
ATTIC / CEILING INSULATION TO R-38

NO Valley Splices

Hips May Be Spliced with six feet
between opposing splices



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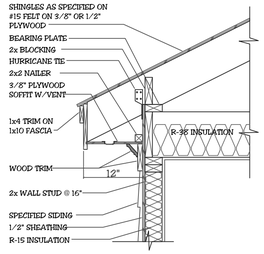
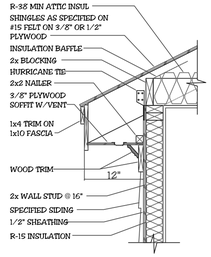
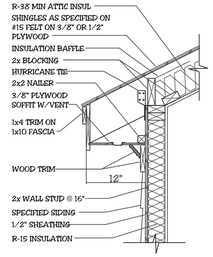


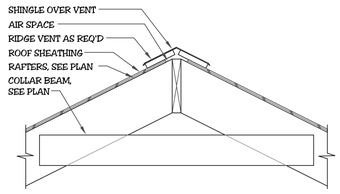
RAFTERS ON TOP OF JOISTS



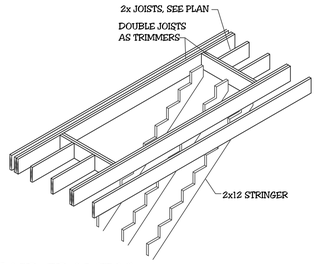
RAFTERS ON DBL TOP PLATE



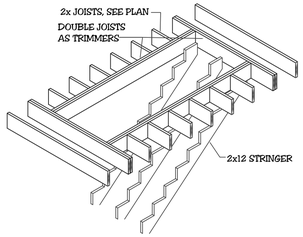
RAFTERS w/SLOPED CLG



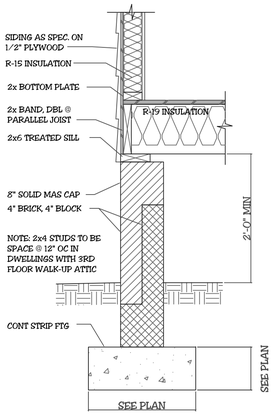
COLLAR BEAM DETAIL



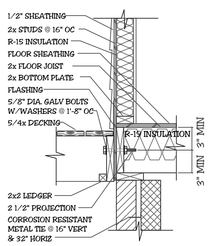
STAIR FRAMING w/PARALLEL JOISTS



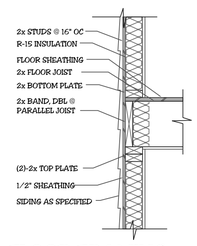
STAIR FRAMING w/PERPENDICULAR JOISTS



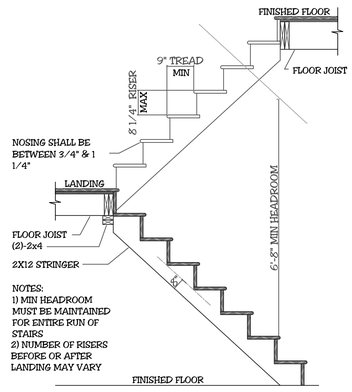
CRAWL SPACE w/SIDING



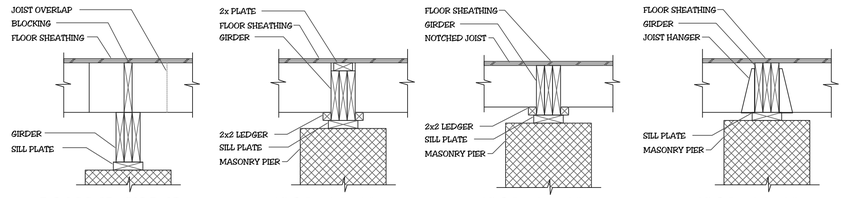
DECK ATTACHMENT



FLOOR FRAMING

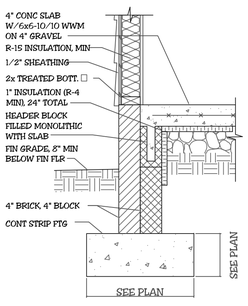


STAIR SECTION

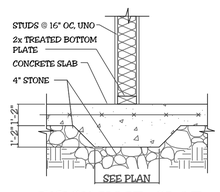


DROPPED GIRDER | FLUSH BEARING W/CAP | FLUSH BEARING W/LEDGER | FLUSH BEARING W/HANGER

GIRDER DETAILS



SLAB w/SIDING



THICKENED SLAB

GLAZING

1) ALL HABITABLE ROOMS SHALL HAVE A GLAZING AREA OF NOT LESS THAN 8% OF THE FLOOR AREA.
2) WINDOWS SHALL HAVE A MINIMUM DESIGN REQUIREMENT OF 25+DP1 AND U=.40
3) VERIFY WINDOW EGRESS WITH WINDOW MANUFACTURER.

EMERGENCY ESCAPE

1) OPENINGS PROVIDED AS MEANS OF ESCAPE CANNOT HAVE A SILL HEIGHT OF MORE THAN 44" ABOVE THE FLOOR.
2) ESCAPE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 4 SQ. FT. THE MINIMUM CLEAR OPENING HEIGHT IS 22" AND THE WIDTH IS 20".
3) ESCAPE OPENING SHALL HAVE A TOTAL GLASS AREA OF NOT LESS THAN 5 SQ. FT. FOR A GROUND WINDOW AND 5.7 SQ. FT. FOR AN UPPER STORY WINDOW.
4) REQUIRED EXIT DOORS SHALL BE NO LESS THAN 3'-0" x 6'-8".

STAIRWAYS

1) STAIRWAYS SHALL BE A MINIMUM 3'-0" WIDE.
2) HANDRAILS SHALL NOT PROJECT MORE THAN 4.5" ON EITHER SIDE.
3) MINIMUM CLEAR WIDTH OF THE STAIRWAY AT AND BELOW THE HANDRAIL SHALL NOT BE LESS THAN 31.5" WHERE THE HANDRAIL IS INSTALLED ON ONE SIDE AND 27" WHERE HANDRAILS ARE ON BOTH SIDES.
4) STAIRS NOT REQUIRED FOR EGRESS MAY BE AS NARROW AS 26"
5) MAXIMUM RISER HEIGHT SHALL BE 8-1/4" AND THE MINIMUM TREAD DEPTH SHALL BE 9".
6) NOSING SHALL BE 3/4" MINIMUM AND 1-1/4" MAXIMUM.
7) MINIMUM HEADROOM IN ALL PARTS OF THE STAIR SHALL NOT BE LESS THAN 6'-8".
8) WINDERS MUST, AT A POINT NOT MORE THAN 12" FROM THE SIDE WHERE THE TREADS ARE NARROWER, BE LESS THAN 9" AND THE MINIMUM WIDTH OF ANY TREAD IS NOT LESS THAN 4".
9) SPIRAL STAIRS MUST BE 26" WIDE MINIMUM AND TREADS MUST BE 7-1/2" at 12" FROM THE NARROW EDGE. ALL TREADS MUST BE IDENTICAL WITH A MAXIMUM RISE OF 9-1/2". MINIMUM HEADROOM OF 6'-8" REQUIRED.
10) CIRCULAR STAIRS MUST, AT A POINT NOT MORE THAN 12" FROM THE SIDE WHERE THE TREADS ARE NARROWER, BE LESS THAN 9" AND THE MINIMUM WIDTH OF ANY TREAD IS NOT LESS THAN 6".

NOTES:

* THESE PLANS, NOTES AND DETAILS ARE DESIGNED TO MEET THE REQUIREMENTS OF THE 2018 NC BUILDING CODE.
* ALL NOTES ARE APPLICABLE UNLESS NOTED OTHERWISE (UNO)
* THIS DETAIL SHEET IS TO BE USED ONLY IN CONJUNCTION WITH PLANS CREATED BY TRIANGLE RESIDENTIAL DESIGNS, INC.

NOTE: SEALED ENGINEER'S DRAWINGS TAKE PRECEDENCE OVER TRD'S STANDARD DETAILS AND NOTES

ANCHOR BOLT NOTE

1/2" DIA X 10" ANCHOR BOLTS W/ 7" MIN EMBEDMENT @ 6'-0" OC AND 12" FROM EACH PLATE SPLICE AND CORNER.

WOOD WALL CONSTRUCTION

1) ALL STUDS ARE TO BE #3 GRADE STANDARD OR STUD GRADE LUMBER. - #2 GRADE RECOMMENDED BUT NOT REQUIRED.
2) ALL INTERIOR LOAD-BEARING WALLS SHALL BE CONSTRUCTED, FRAMED & FIREBLOCKED AS SPECIFIED FOR EXTERIOR WALLS.
3) WALLS ARE 2x4 STUDS @ 16" O.C.
4) ALL OPEN AREA, TWO STORY WALLS ARE TO BE BALLOON FRAMED, 2"X 6" STUDS AT 12" O.C.
5) DRAFTSTOPPING AND FIREBLOCKING REQUIRED AS PER CODE.
6) ALL OPEN AREA, TWO STORY WALLS ARE TO BE BALLOON FRAMED, 2"X 6" STUDS AT 12" O.C.
7) WINDOWS SHOULD BE RATED FOR 25PSI.

GARAGE DOOR WALL CONSTRUCTION

ONLY FOR GARAGE DOOR WALLS THAT DO NOT MEET BRACING REQUIREMENTS OF THE NC 2002 RESIDENTIAL BUILDING CODE:
1) PLACE (2)-1/2" DIAM. ANCHOR BOLTS AT OUTSIDE QUARTER OF THESE PANLES. EXTEND #4 STEEL REINFORCING VERTICALLY, LAPPING THE ANCHOR BOLT A MINIMUM OF 6" AND EXTENDING TO THE FOOTING WITH A 4" MINIMUM HORIZONTAL LEG INTO THE FOOTING. THE FOOTING MUST BE REINFORCED WITH (1) #4 BAR TOP AND BOTTOM IN THIS AREA. SECURE WALL TO ANCHOR BOLTS WITH SIMPSON "STRONG TIE" LTT51, HTT16, HTT22, MTT2SB OR TENSION TIE WITH 1800# MINIMUM CAPACITY.
2) FULLY FACE GARAGE WALL WITH 7/16" OSB OR 1/2" CDX, NAILED PER TABLE R602.3(1) AND BLOCKED AT ALL WOOD STRUCTURAL PANEL SHEATHING EDGES.

CONCRETE SLAB FLOORS

1) CONCRETE SLAB ON GROUND FLOORS SHALL BE A MINIMUM OF 3-1/2" THICK.
2) FILL MATERIAL SHALL BE COMACTED TO ASSURE UNIFORM SUPPORT OF SLAB.
3) FILL SHALL NOT EXCEED 24" FOR CLEAN SAND OR GRAVEL AND 8" FOR EARTH.
4) GARAGE SLABS SHALL BE 4" CONC. W/6x6 WWM OR FIBERMESH, WITH VAPOR BARRIER, OVER 4" OF CRUSHED STONE OR GRAVEL ON TAMPED EARTH. (WWM OR FIBERMESH RECOMMENDED - NOT REQ'D)
5) GARAGE SLAB SHALL BE SLOPED TO FACILITATE THE MOVEMENT OF LIQUIDS TO A DRAIN OR TOWARD THE MAIN VEHICLE ENTRYWAY.
6) BASEMENT SLABS: SAME AS GARAGE SLABS BUT WITH PERIMETER INSULATION PER CODE.
7) ELEVATED GARAGE FLOOR SHALL BE CAPABLE OF SUPPORTING A 2,000# LOAD OVER A 20-SQARE-INCH AREA WITH A LIVE LOAD OF 50 PSF
8) EXPANSION JOINT REQUIRED WHERE ENCLOSED SLAB MEETS FOUNDATION WALL.

DECK NOTES

1) WHEN THE DECK IS ATTACHED TO THE STRUCTURE, THE STRUCTURE SHALL HAVE A TREATED WOOD BAND FOR THE LENGTH OF THE DECK, OR CORROSION RESISITANT FLASHING SHALL BE USED TO PREVENT MOISTURE FROM COMING IN CONTACT WITH THE UNTREATED FRAMING FO THE STRUCTURE.
2) THE DECK AND STRUCTURE BANDS SHALL BE CONSTRUCTED IN CONTACT WITH EACH OTHER, EXCEPT ON BRICK VENEER STRUCTURES AND WHERE PLYWOOD SHEATHING IS REQUIRED AND PROPERLY FLASHED.
3) SIDING SHALL NOT BE INSTALLED BETWEEN THE STRUCTURE AND THE DECK BAND.
4) IF ATTACHED TO A BRICK STRUCTURE, NEITHER THE FLASHING NOR A TREATED BAND FOR THE STRUCTURE IS REQUIRED. THE TREATED DECK BAND SHALL BE CONSTRUCTED IN CONTACT WITH THE BRICK VENEER.
5) GIRDERS SHALL BEAR DIRECTLY ON POSTS OR BE CONNECTED TO THE SIDES OF THE POSTS WITH 2-5/8" HOT DIPPED GALVANIZED BOLTS.
6) FLOOR DECKING SHALL BE #2 GRADE TREATED SOUTHERN PINE OR EQUIVALENT. MINIMUM FLOOR DECKING THICKNESS FOR JOISTS AT 16" O.C. IS 1" T&G.
7) DECKS MAY NOT BE ATTACHED TO CANTILEVERED FLOOR SYSTEMS.
8) ALL JOIST SPANS ARE CALCULATED USING #2 GRADE SPRUCE PINE FIR.
9) JOIST SIZES ARE SHOWN AT MINIMUM TO MEET STRUCTURAL REQUIREMENTS. SIZES MAY BE INCREASED.
10) DECKS OVER 4'-0" ABOVE GRADE SHALL BE BRACED AS PER CODE APPENDIX M.

HANDRAIL AND GUARDS

1) HANDRAILS SHALL HAVE A MINIMUM HEIGHT OF 34" AND A MAXIMUM HEIGHT OF 38".
2) PORCHES, BALCONIES OR RAISED FLOORS OVER 30" ABOVE FLOOR OR GRADE SHALL HAVE GUARD RAILS NO LESS THAN 36" HIGH.
3) STAIRS THAT HAVE A RISE OF 30" ABOVE THE FLOOR SHALL HAVE HANDRAILS OF 30" HIGH.
4) GUARDS ON OPEN SIDES OF STAIRWAYS, RAISED FLOORS, BALCONIES AND PORCHES SHALL HAVE INTERMEDIATE RAILS OR ORNAMENTAL CLOSURES OF LESS THAN 4" TO REJECT A 4" SPHERE.

GARAGE

1) DOOR FROM GARAGE TO HOUSE MUST BE 1-3/8" THICK SOLID WOOD OR SOLID OR HONEYCOMBED CORE STEEL DOORS OR 20 MIN. FIRE RATED.
2) GARAGE SHALL BE SEPARATED FROM THE RESIDENCE AND ITS ATTIC AREA BY NOT LESS THAN 1/2" GYPSUM BOARD APPLIED TO THE GARAGE SIDE.

COMPONENT & CLADDING DESIGNED FOR THE FOLLOWING LOADS

	MEAN ROOF HEIGHT			
	UP TO 30'	30'-1" TO 35'	35'-1" TO 40'	40'-1" TO 45'
ZONE 1	16.5, -18.0	17.3, -18.9	18.0, -19.6	18.5, -20.2
ZONE 2	16.5, -21.0	17.3, -22.1	18.0, -22.9	18.5, -23.5
ZONE 3	16.5, -21.0	17.3, -22.1	18.0, -22.9	18.5, -23.5
ZONE 4	18.0, -19.5	18.9, -20.5	19.6, -21.3	20.2, -21.8
ZONE 5	18.0, -24.1	18.9, -25.3	19.6, -26.3	20.2, -27.0

SEE NC BUILDING CODE FOR LOCATION OF ZONES

PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARDS AND AWAY FROM THE BUILDING SURFACES

STANDARD CONSTRUCTION DETAILS & NOTES

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N·C·B·D·C NATIONAL COUNCIL OF BUILDING DESIGNERS CERTIFICATION
DAVID E. BENNETT CERTIFICATION NO. NC-119

Triangle Residential Designs Inc
405 S. Lakeside Dr, Raleigh, NC 27606 Tel: (919) 852-3500 www.trd-dkp.com

AIBD AMERICAN INSTITUTE OF BUILDING DESIGN

Drawn by: DEB
Revised:

Address/Lot #: 5163 SOUTH RIVER ROAD LILLINGTON, NC 27546 HARNETT COUNTY

Client: FRANK BOUDREAU
Project: RESIDENCE
Sht. D1 of 1
Date: NOVEMBER 2, 2021