FRONT ELEVATION

SCALE: 24x36 PAPER = 1/4" = 1'-0" 11x17 PAPER = 1/8" = 1'-0"

LEFT ELEVATION

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = NTS

DATE

9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

KEEN RESIDENTIAL DESIGN

2117 COMMONWEALTH AVE
CHARLOTTE, NC 28205
(828)750-5440

BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY

2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

1

REAR ELEVATION

SCALE: 24x36 PAPER = 1/4" = 1'-0" 11x17 PAPER = 1/8" = 1'-0"

RIGHT ELEVATION

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = NTS

DATE

9/23/2022

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UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

2

FOUNDATION NOTES:

1. 8" CMU WALL W/ 4" BRICK BAND AND CONC. FOOTING PER ENGINEER, TYP. (U.N.O.)

2. ALL MEASUREMENTS ARE TO EDGE OF 8" 10" OR 12" CONC. WALL BELOW. THICKENED SLAB MEASUREMENTS ARE TO CENTER OF WALL ABOVE.

3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2018 NORTH CAROLINA RESIDENTIAL BUILDING CODE

4. FOOTINGS TO BE PLACED ON UNDISTURBED EARTH, BEARING A MINIMUM OF 12" BELOW ADJACENT FINISHED GRADE, OR AS OTHERWISE DIRECTED BE THE CODE ENFORCEMENT OFFICIAL.

7. FOOTING SIZES BASED ON A PRESUMPTIVE SOIL BEARING CAPACITY OF 2000 PSF. CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING THE SUITABILITY OF THE SITE SOIL CONDITIONS AT THE TIME OF CONSTRUCTION.

8. FOOTINGS & PIERS SHALL BE CENTERED UNDER THEIR RESPECTIVE ELEMENTS. PROVIDE 2" MINIMUM FOOTING PROJECTION FROM THE FACE OF MASONRY.

9. PROVIDE FOUNDATION WATERPROOFING AND DRAIN WITH POSITIVE SLOPE TO OUTLET AS REQUIRED BY SITE CONDITIONS.

10. CORBEL FOUNDATION WALL AS REQUIRED TO ACCOMMODATE BRICK VENEERS.

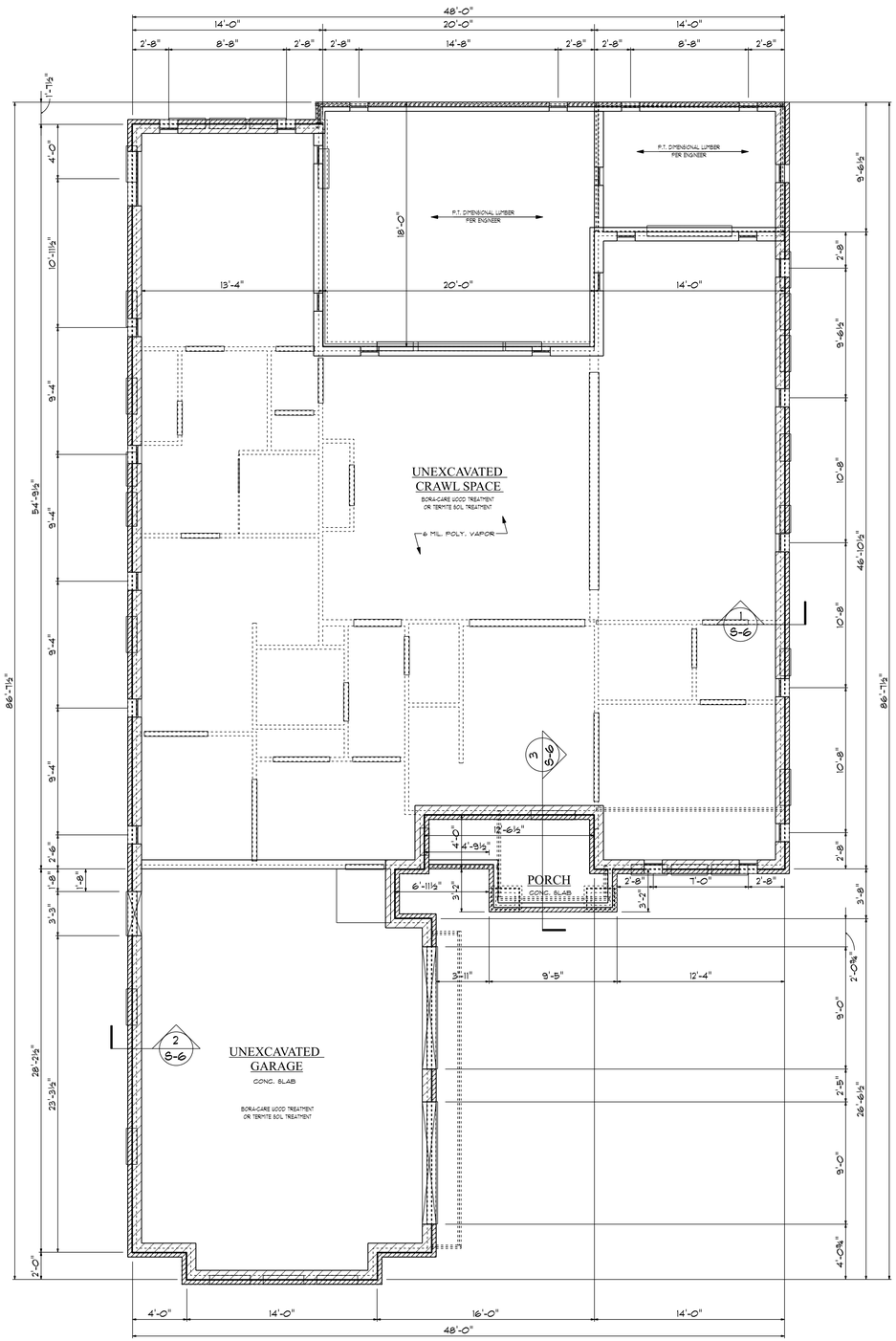
11. CRAWL SPACE TO BE GRADED LEVEL, AND CLEARED OF ALL DEBRIS.

12. FOUNDATION ANCHORAGE SHALL BE A MIN. OF 1/2" DIA. ANCHOR BOLTS AND SHALL EXTEND A MIN. OF 7" INTO MASONRY OR CONCRETE. BOLTS SHALL BE 6'-0" O.C. AND WITH IN 12" OF ALL PLATE SPLICES. MIN. (2) ANCHOR BOLTS PER PLATE SECTION.

13. FIELD TO VERIFY ALL PLUMBING LOCATIONS

14. SEE STRUCTURAL PAGES FOR ALL STRUCTURAL MEMBERS

ALL STRUCTURAL ITEMS TO BE PER ENGINEER. SEE PAGES S-1 THRU S-6



CRAWL SPACE FOUNDATION PLAN

SCALE: 24x36 PAPER • 3/16" = 1'-0" 11x17 PAPER • 3/32" = 1'-0"

DATE

9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

KEEN RESIDENTIAL DESIGN

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(828)750-5440

BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY

2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

3

GENERAL NOTES:

1. 1ST FLOOR CEILING HEIGHT TO BE 10'-1 1/2"

2. WINDOW & EXTERIOR DOOR HEADER HEIGHT TO BE 8'-0" U.N.O.

3. INSTALL EXTRA BLOCKING UNDER ALL PARTITION WALLS GREATER THAN 5' IN LENGTH

4. TRANSFER ALL POINT LOADS FROM ABOVE THROUGH THE CEILING & WALLS OF THIS LEVEL W/ AN EQUAL AMOUNT OF STUD MATERIAL, U.N.O.

5. LOAD BEARING WALLS EX:

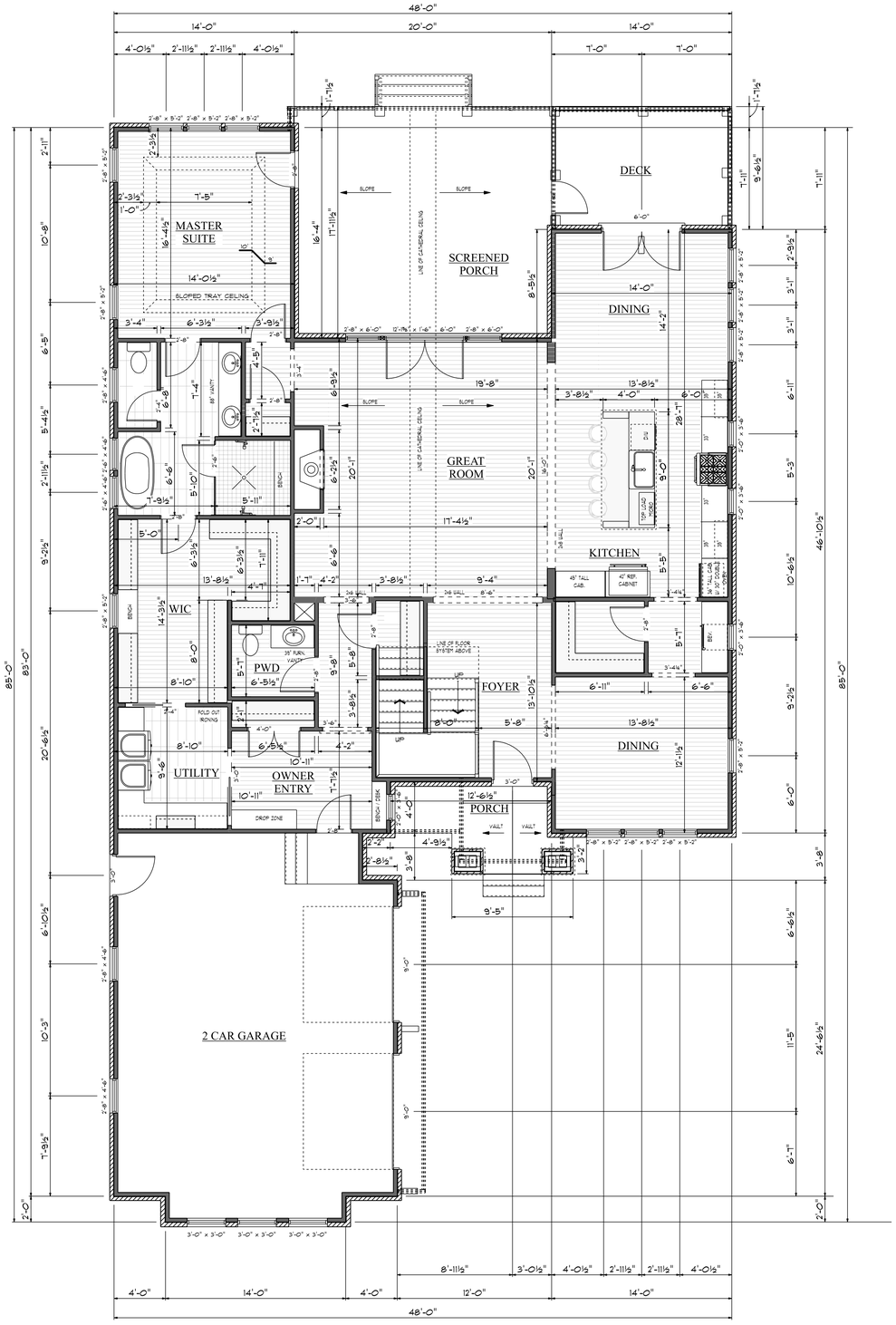
6. PARTIAL HEIGHT WALLS (HEIGHT OF WALL TO BE PER PLAN):

7. ALL FLOORING TO BE PER CLIENT, DRAWING IS REPRESENTATIONAL ONLY

8. ALL WALLS, CEILINGS AND FLOORS TO MEET NCRC 2018 ENERGY CODE REQUIREMENTS:

MIN FLOORS:	R19 INSULATION
MIN WALLS	R15 INSULATION
MIN CEILINGS:	R38 INSULATION

ALL STRUCTURAL ITEMS TO BE PER ENGINEER. SEE PAGES S-1 THRU S-6



FIRST FLOOR PLAN

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = NTS

DATE

9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

KEEN RESIDENTIAL DESIGN

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BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY

2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

4

GENERAL NOTES:

1. 2ND FLOOR CEILING HEIGHT TO BE 9'-1 1/2" U.N.O.

2. WINDOW & EXTERIOR DOOR HEADER HEIGHT TO BE 8'-0" U.N.O.

3. TRANSFER ALL POINT LOADS FROM ABOVE THROUGH THE CEILING & WALLS OF THIS LEVEL W/ AN EQUAL AMOUNT OF STUD MATERIAL, U.N.O.

4. LOAD BEARING WALLS EX:

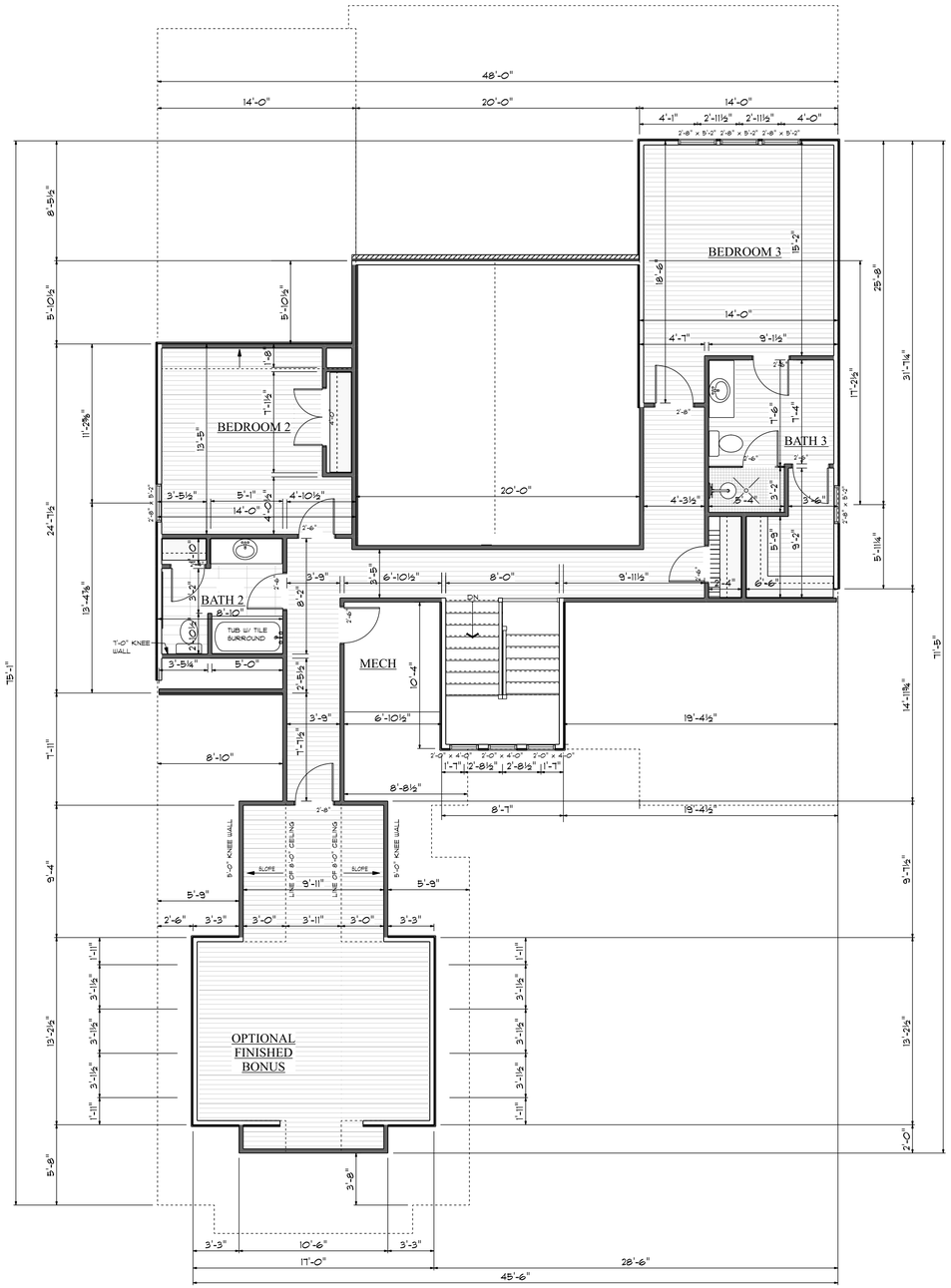
5. PARTIAL HEIGHT WALLS (HEIGHT OF WALL TO BE PER PLAN):

6. ALL FLOORING TO BE PER CLIENT, DRAWING IS REPRESENTATIONAL ONLY

7. ALL WALLS, CEILINGS AND FLOORS TO MEET NCRC 2018 ENERGY CODE REQUIREMENTS:

MIN FLOORS:	R19 INSULATION
MIN WALLS	R15 INSULATION
MIN CEILINGS:	R38 INSULATION

ALL STRUCTURAL ITEMS TO BE PER ENGINEER. SEE PAGES S-1 THRU S-6



SECOND FLOOR PLAN

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = NTS

DATE

9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

KEEN RESIDENTIAL DESIGN

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(828)750-5440

BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY

2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

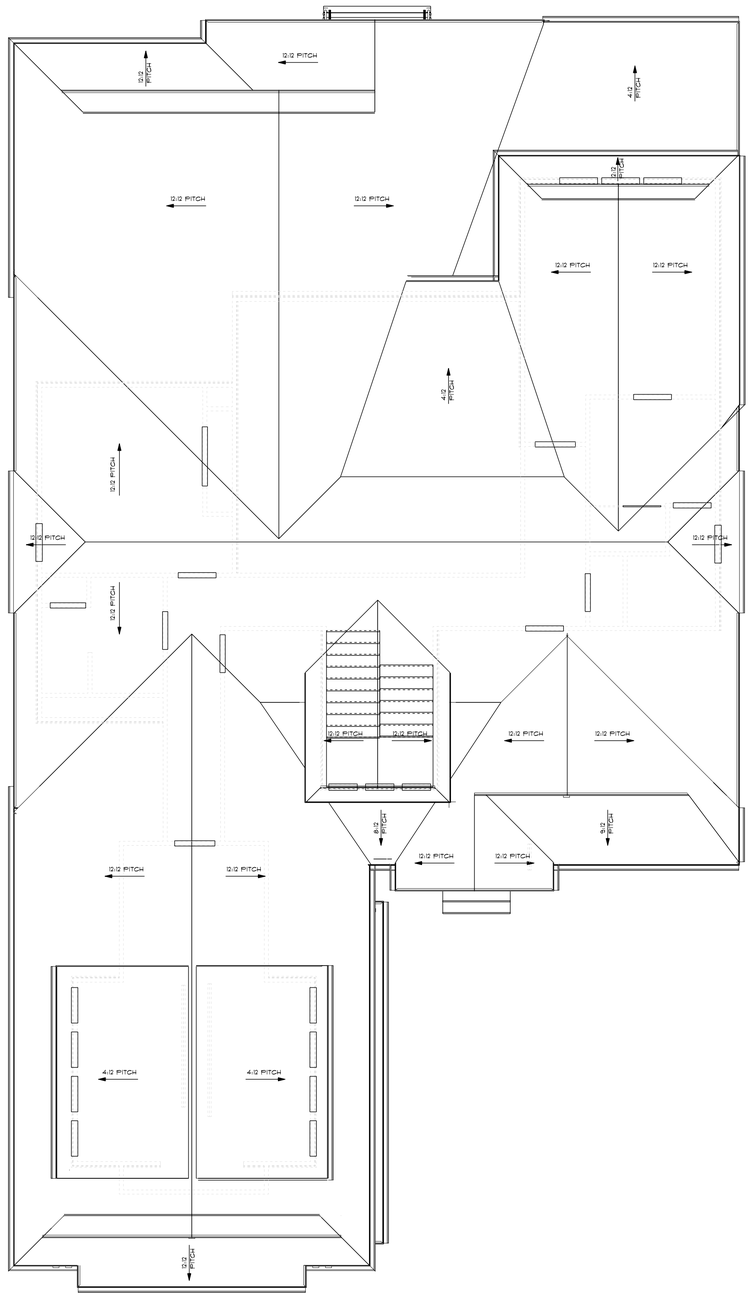
SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

5

ALL STRUCTURAL ITEMS TO BE PER ENGINEER. SEE PAGES S-1 THRU S-6



ROOF PLAN

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = NTS

DATE

9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

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BUILD & DEVELOPMENT

KEEN BUILDING COMPANY

2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

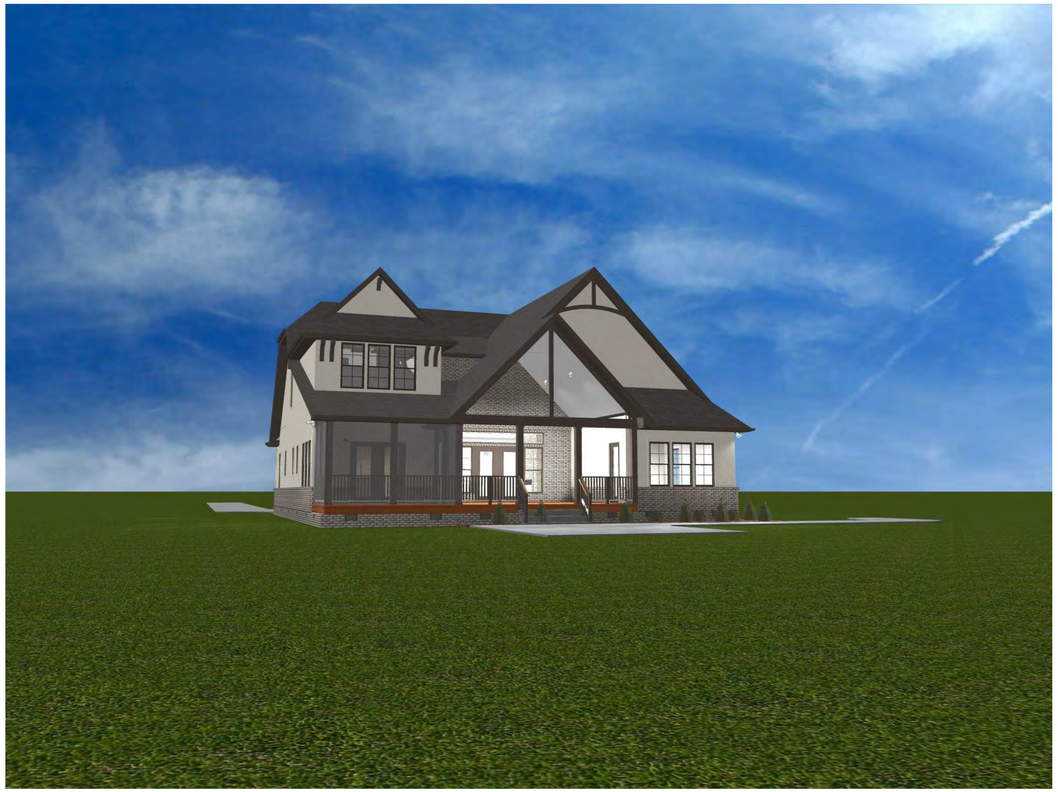
KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

6



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4 BED / 3½ BATH

FIRST FLOOR:	2156
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GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

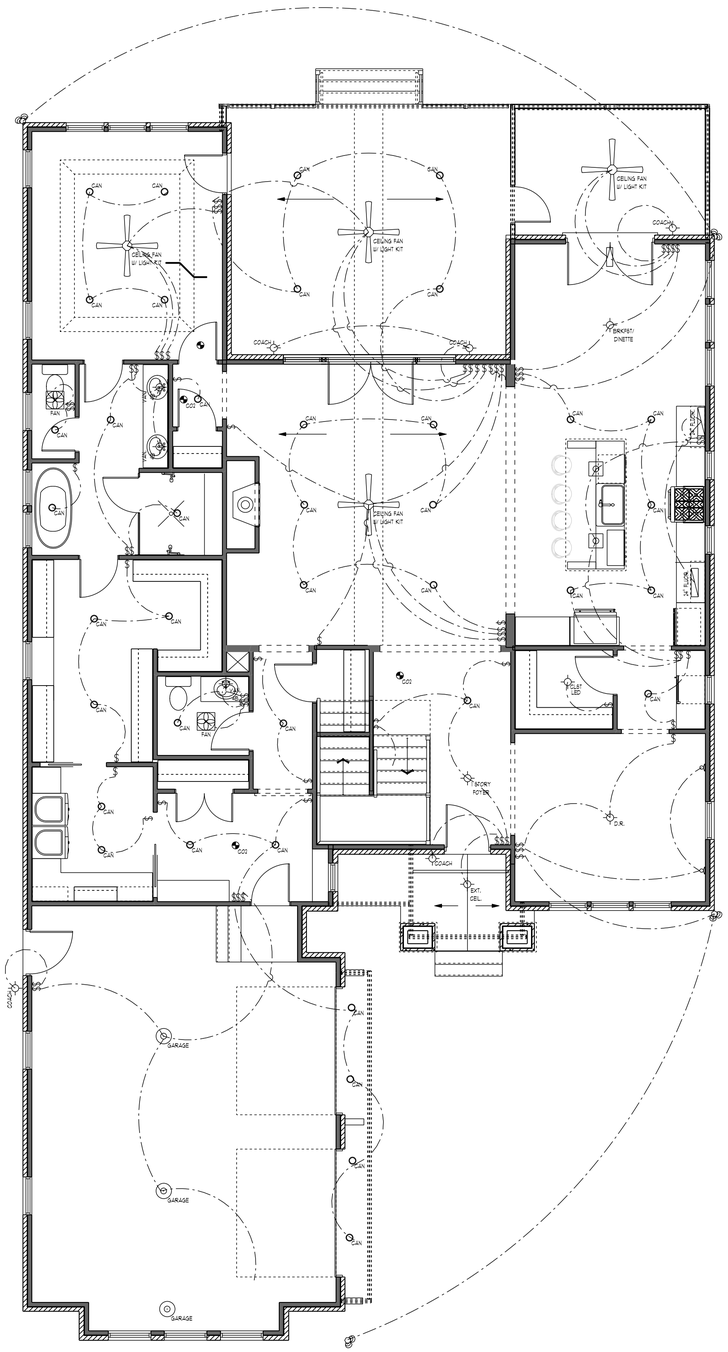
SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

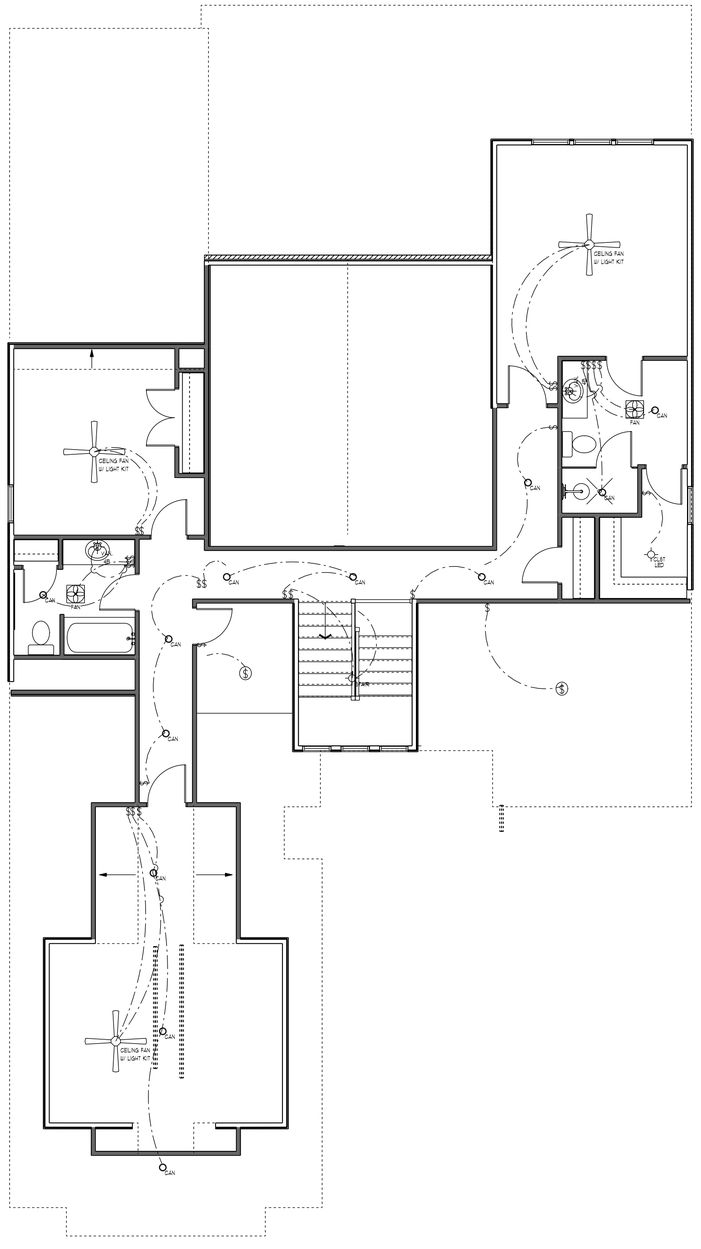
7

ELECTRICAL LEGEND		
ELECTRICAL	SYMBOL	COUNT
Island Pendant		2
Flood Light		4
Bath Fan	FAN	4
Ceiling Fan with Light Kit	CEILING FAN W/ LIGHT KIT	7
1 Story Foyer	1 STORY FOYER	1
Breakfast Light	BRKFST/ DINETTE	1
Can Light	CAN	51
Closet LED	CLSET LED	2
Dining Light	D.R.	1
LED		
Exterior Ceiling Light	EXT. CEIL.	1
Exterior Coach Light	COACH	5
Garage Light	GARAGE	3
Vanity 4 Bulb	VAN. 48	5
Smoke Detector		1
Smoke Detector CO2	CO2	3
Dining Room Sconce		2
switch	$	80
Under Cabinet Lighting	24" FLUOR.	2
Stair Light	STAIR	1
Keyless	$	2



FIRST FLOOR PLAN ELECTRICAL PLAN

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = 3/32" = 1'-0"



SECOND FLOOR PLAN ELECTRICAL PLAN

SCALE: 24x36 PAPER = 3/16" = 1'-0" 11x17 PAPER = 3/32" = 1'-0"

DATE

9/23/2022

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4 BED / 3½ BATH

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OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY

REFLECTION POINT

SHEET NUMBER

7

FOUNDATION NOTES:

1. 8" CMU WALL W/ 16" CONC. FOOTING, TYP. (U.N.O.)

2. ALL MEASUREMENTS ARE TO EDGE OF 8" 10" OR 12" CONC. WALL BELOW. THICKENED SLAB MEASUREMENTS ARE TO CENTER OF WALL ABOVE.

3. ALL WALL REINFORCEMENT TO MATCH TABLE BELOW.

4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2018 NORTH CAROLINA RESIDENTIAL BUILDING CODE

5. STRUCTURAL CONCRETE TO BE Fc = 3000 PSI PREPARED & PLACED IN ACCORDANCE WITH ACI STANDARD 318.

6. FOOTINGS TO BE PLACED ON UNDISTURBED EARTH, BEARING A MINIMUM OF 12" BELOW ADJACENT FINISHED GRADE, OR AS OTHERWISE DIRECTED BE THE CODE ENFORCEMENT OFFICIAL.

7. FOOTING SIZES BASED ON A PRESUMPTIVE SOIL BEARING CAPACITY OF 2000 PSF. CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING THE SUITABILITY OF THE SITE SOIL CONDITIONS AT THE TIME OF CONSTRUCTION.

8. FOOTINGS & PIERS SHALL BE CENTERED UNDER THEIR RESPECTIVE ELEMENTS. PROVIDE 2" MINIMUM FOOTING PROJECTION FROM THE FACE OF MASONRY.

9. PILASTERS TO BE BONDED TO PERIMETER FOUNDATION WALL.

10. PROVIDE FOUNDATION WATERPROOFING AND DRAIN WITH POSITIVE SLOPE TO OUTLET AS REQUIRED BY SITE CONDITIONS.

11. CORBEL FOUNDATION WALL AS REQUIRED TO ACCOMMODATE BRICK VENEERS.

12. CRAWL SPACE TO BE GRADED LEVEL, AND CLEARED OF ALL DEBRIS.

13. FOUNDATION ANCHORAGE SHALL BE A MIN. OF 1/2" DIA. ANCHOR BOLTS AND SHALL EXTEND A MIN. OF 7" INTO MASONRY OR CONCRETE. BOLTS SHALL BE 6'-0" O.C. AND WITH IN 12" OF ALL PLATE SPLICES. MIN. (2) ANCHOR BOLTS PER PLATE SECTION.

14. ALL PIERS TO BE 16"x16" MASONRY AND ALL PILASTERS TO BE 8"x16" MASONRY, TYP. (U.N.O.)

15. FIELD TO VERIFY ALL PLUMBING LOCATIONS

4" Concrete Slab (3000 PSI)
w/ 6x6 – 10/10 w.w.m or Fibermesh reinforcement over 6mil P.V.B.
(termite treated)
Min Soil Bearing Capacity (2000 psf)

SEE 'S5' PAGE FOR FOUNDATIN DETAILS

CONCRETE PAD FTG SCHEDULE

1 — 24"x24"x12" Conc. Ftg.
2 — 30"x30"x12" Conc. Ftg. w/ (4) #4's each way
3 — 36"x36"x12" Conc. Ftg. w/ (4) #4's each way
4 — 42"x42"x12" Conc. Ftg. w/#4's @ 8"oc each way
5 — 48"x48"x12" Conc. Ftg. w/#4's @ 8"oc each way

FOUNDATION NOTES:

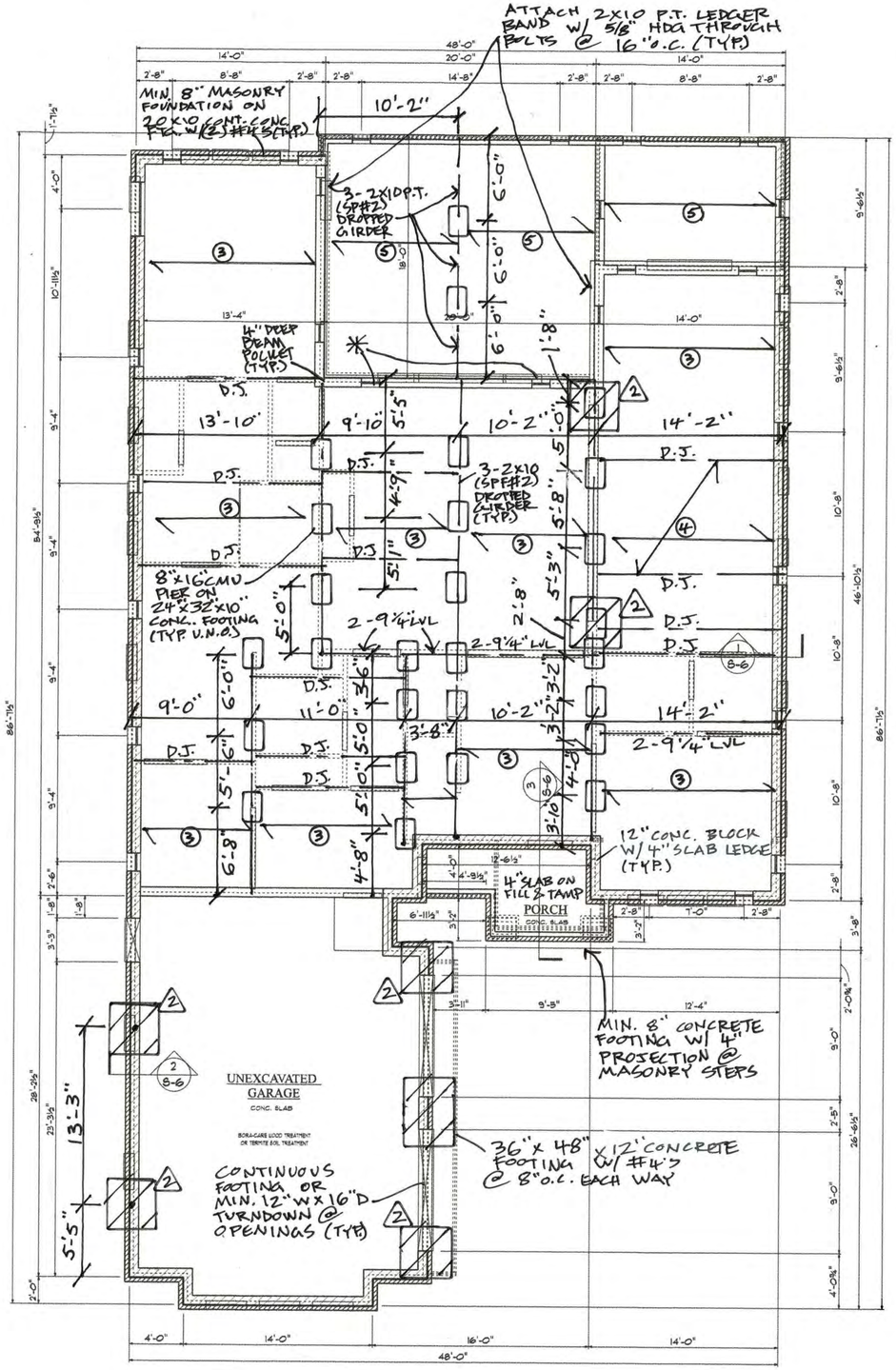
1. ALL DIMENSIONS SHALL BE VERIFIED AGAINST ARCHITECTURAL PLANS.
2. ALL PIERS AND FOOTINGS TO BE 8X16 CMU PIERS ON 24X32X10 CONC. FOOTING U.N.O.
3. TRANSFER ALL POINT LOADS ABOVE TO FOUNDATION WITH AN EQUAL NUMBER OF STUDS
4. ALL CONCRETE TO BE 3000 PSI (MIN).
5. ALL SOIL TO HAVE 2000 PSF BEARING CAPACITY (MIN.)

1st FLOOR FRAMING NOTES:

1. ALL GIRDERS TO BE 3–2X10 (#2 SPF/SYP) DROP GIRDERS U.N.O.
2. INSTALL EXTRA JOIST DIRECTLY UNDER ALL PARALLEL PARTITION WALLS.
3. TRANSFER ALL POINT LOADS ABOVE THROUGH FIRST FLOOR WITH AN EQUAL NUMBER OF STUDS.

EJ = EXTRA JOIST
DJ = DOUBLE JOIST
③ = 2X10 (SPF#2) @ 16" O.C.
④ = DOUBLE/2–2X10 (SPF#2) @ 16" O.C.
⑤ = 2X10 P.T. (SP#2) @ 16" O.C.

* = PROVIDE SOLID CMU FOUNDATION SUPPORT DIRECTLY BELOW 3-16" LVL HDR POINT LOADS ABOVE. RELOCATE VENTS AS NEEDED.



CRAWL SPACE FOUNDATION PLAN - STRUCTURAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037999 9/27/22 ENGINEER MEGAN C. PRIETO

NORTH CAROLINA RESIDENTIAL STRUCTURES, P.C. No. C3295 CERTIFICATE OF AUTHORIZATION

RESIDENTIAL STRUCTURES, P.C.
3410 N. Davidson Street
Charlotte, NC 28205
Seal for Structural Only

DATE
9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

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CHARLOTTE, NC 28205
(828)750-5440

BUILD & DEVELOPMENT

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4 BED / 3½ BATH

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GARAGE:	616
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REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY
REFLECTION POINT

SHEET NUMBER
S-1

FRAMING NOTES:

1. 1ST FLOOR CEILING HEIGHT TO BE 10'-1 1/2"

2. WINDOW & EXTERIOR DOOR HEADER HEIGHT TO BE 8'-0" U.N.O.

3. ALL FIRST FLOOR INT/EXT. LOAD BEARING HEADERS TO BE (2) 2x10 W/ (2) JACK & (1) KING STUD AT EACH END, U.N.O.

4. INSTALL EXTRA BLOCKING UNDER ALL PARTITION WALLS GREATER THAN 5' IN LENGTH

5. TRANSFER ALL POINT LOADS FROM ABOVE THROUGH THE CEILING & WALLS OF THIS LEVEL W/ AN EQUAL AMOUNT OF STUD MATERIAL, U.N.O.

6. ALL HEADERS WHERE BRICK IS USED, TO BE L3x3"x1/4" U.N.O.

7. ALL LINTELS TO HAVE MIN. 4" BEARING ONTO BRICK AT EACH END, U.N.O.

8. ALL JOIST & BEAM SIZES SHOWN ARE MINIMUMS. BUILDER MAY INCREASE DEPTH FOR EASE OF CONSTRUCTION.

9. ALL HEADER SIZES SHOWN ARE MINIMUMS. BUILDER MAY INCREASE DEPTH FOR EASE OF CONSTRUCTION. ALL HEADERS TO BE DROPPED UNLESS NOTED OTHERWISE

10. ALL MULTI-PLY LVLS OR BEAMS TO BE ATTACHED TOGETHER UTILIZING (2) ROWS OF 16D COMMON NAILS AT 16" O.C. STAGGERED, EACH SIDE. OR (2) ROWS OF SDS ½" x 6" SCREWS @ 16" O.C. STAGGERED OR ½" CARRIAGE THROUGH BOLT @ 24" O.C. STAGGERED

STRUCTURAL NOTES:

1. CONSTRUCTION SHALL CONFORM TO 2018 NORTH CAROLINA RESIDENTIAL CODE WITH ALL AMENDMENTS.

2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS. CONTRACTOR SHALL COMPLY WITH THE CONTENTS OF THE DRAWING FOR THIS SPECIFIC PROJECT. BUILDING DESIGNER / ENGINEER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THIS PLAN

3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY BRACING REQUIRED TO RESIST ALL FORCES ENCOUNTERED DURING ERECTION.

4. THE FOLLOWING DESIGN LOADS ARE USED:

ROOF LOAD	20 PSF LL	20 PSF DL
FLOOR LOAD	40 PSF LL	15 PSF DL
ATTIC LOAD	20 PSF LL	10 PSF DL
WIND LOAD	115 MPH	

5. PROPERTIES USED IN THE DESIGN ARE AS FOLLOWS:

MICROLLAM (LVL):
Fb = 2600 PSI, Fv = 285 PSI, E = 1.9x10^6 PSI

PARALLAM (PSL):
Fb = 2900 PSI, Fv = 290 PSI, E = 1.25x10^6 PSI

6. ALL WOOD MEMBERS SHALL BE SPF#2 UNLESS NOTED ON PLAN. ALL STUD COLUMNS AND JOIST SHALL BE SPF #2 UNLESS NOTED ON PLAN.

7. ALL BEAMS SHALL BE SUPPORTED WITH A (2) 2X4 #2 SPF STUD COLUMN AT EACH END UNLESS NOTED OTHERWISE.

LVL PLY TO PLY CONNECTIONS:

(2) PLY = 2 ROWS OF 16D (3.5") NAILS AT 12" OC STAGGERED (9-1/4" TO 11-7/8" LVLS)
(2) PLY = 3 ROWS OF 16D (3.5") NAILS AT 12" OC STAGGERED (14" TO 24" LVLS)
(3) PLY = PER 2 PLY FROM BOTH FACES UNO
(4) PLY = (2) ROWS OF ¼" X 6-3/4" TRUSSLOK SCREWS AT 24" OC STAGGERED.

2" EDGE DISTANCE @ TOP/BOTTOM w/ 4" END DISTANCE FOR ALL FASTENERS

NOTE: THIS STRUCTURE HAS BEEN ANALYZED BY A PROFESSIONAL ENGINEER FOR LATERAL LOADING. IT HAS BEEN DESIGNED USING CONTINUOUS SHEATHED 7/16" OSB SHEATHING. FASTENED AT 6" O.C. ALONG THE EDGES AND 12" O.C. ALONG THE INTERIOR (W/ 6d COMMON NAILS OR 8d–2½"LONG X 0.113" DIAMETER NAILS) TO MEET OR EXCEED THE INTENT OF THE 2018 NORTH CAROLINA RESIDENTIAL BUILDING CODE. BLOCKING SHALL BE PROVIDED AT ALL PANEL EDGES. ALL INTERIOR WALLS (WHERE NOTED) SHOULD BE METHOD "GB" AND FASTENED W/ 5d COOLER NAILS OR #6 SCREWS AT 7" ALONG THE EDGES AND 7" FIELD. ANY METHOD THAT DEVIATES FROM THE ABOVE ARE NOTED ON THE PLAN SET, THE INTERIOR OF ALL EXTERIOR WALLS SHOULD HAVE GYPSUM BOARD INSTALLED PER CODE. WHERE WALL LINES REQUIRE FURTHER REINFORCEMENT, ADDITIONAL BRACING METHODS, ENGINEERED WALL SECTIONS, AND HOLD DOWNS HAVE BEEN INCLUDED TO RESIST THE LATERAL LOADS.

2nd FLOOR FRAMING NOTES:

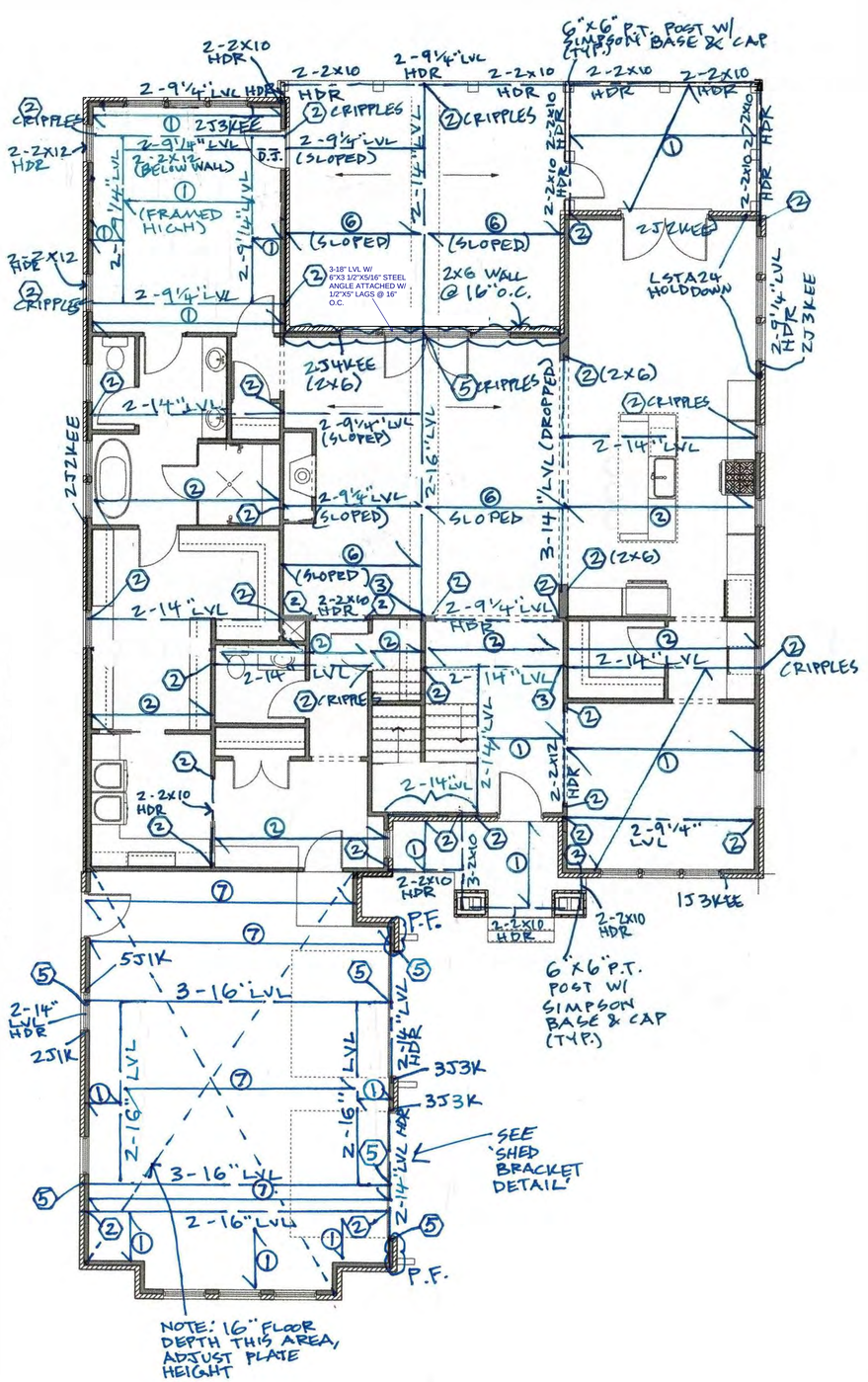
1. ALL EXTERIOR WALLS TO BE SHEATHED w/ 7/16"OSB ATTACHED TO FRAMING w/ 8d NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. PROVIDE BLOCKING AT ALL PANEL SPLICES.
2. ALL EXTERIOR WALL HEADERS TO BE 2–2X10 (SPF#2) w/ (1)JACK @ EACH END AND (1)KING STUD PER EVERY 3'–0" WIDTH OF TOTAL HEADER SPAN @ EACH END U.N.O,
3. ALL INTERIOR LOAD BEARING WALL HEADERS TO BE 2–2X8's (SPF#2) U.N.O. w/ (1)JACK @ EACH END U.N.O.
4. ADD AND EXTRA JOIST/TRUSS UNDER ALL PARALLEL PARTITION WALLS
5. TRANSFER ALL POINT LOADS FROM ABOVE THROUGH THE FIRST FLOOR w/ AN EQUAL AMOUNT OF STUD MATERIAL
6. ALL WALLS NOTED TO BE SHEATHED PER METHOD "GB" SHALL BE SHEATHED ON BOTH SIDES W/ MIN. ½" GYP BOARD ATTACHED TO FRAMING W/ 5d COOLER NAILS OR #6 SCREWS @ 7" O.C. ALONG THE EDGES AND IN THE FIELD.

① = 2X8 (SPF#2) @ 16" O.C.
② = 14" PRI-40 (I-JOISTS) @ 16" O.C.
(#) = NUMBER OF STUDS. STUDS TO BE SAME SIZE AS ASSOCIATED WALL FRAMING STUDS U.N.O. NOTE: STUD COUNTS DO NOT ACCOUNT FOR KING STUDS. SEE FRAMING NOTES ABOVE FOR KING STUD REQUIREMENTS.

#J#KEE = NUMBER OF JACKS AND NUMBER OF KINGS AT EACH END

⑥ = 2X10 (SPF#2) SLOPED CEILING/RAFTERS @ 16" O.C. (U.N.O.)
⑦ = 16" PRI-60 (I-JOISTS) @ 16" O.C. (U.N.O.)

P.F. = EXTEND HDR TO CORNERS PER PORTAL FRAMING DETAIL



TYPICAL HANGERS

MEMBER	HANGER
2X8	LUS28
2X10	LUS210
2X12	LUS210
(2) 2X8	HUS28–2
(2) 2X10	HUS210–2
(2) 2X12	HUS212–2
(3) 2X8	LUS28–3
(3) 2X10	LUS210–3
(3) 2X12	LUS210–3
(2) 9¼" / (2) 11⅞" LVL	HGUS410
(2) 14" / (2) 16" / (2) 18" LVL	HGUS414
(3) 9¼" LVL	HGUS5.50/10
(3) 11⅞" LVL	HGUS5.50/12
(3) 14" / (3) 16" / (3) 18" LVL	HGUS5.50/14
(4) 9¼" LVL	HGUS7.25/10
(4) 11⅞" LVL	HGUS7.25/12
(4) 14" / (4) 16" / (4) 18" LVL	HGUS7.25/14

WALL STUD REQUIREMENTS

EXT. WALL HT. (h)	STUD SIZE AND SPACING
h < 10'–0"	2X4 @ 16" (O.C.)
10'–0" < h < 11'–0"	2X4 @ 12" (O.C.)
11'–0" < h < 18'–0"	2X6 @ 16" (O.C.)
h > 18'–0"	CONSULT ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037998 9/27/22 MEGAN G. PRIETO

NORTH CAROLINA RESIDENTIAL STRUCTURES, P.C. No. C3295 CERTIFICATE OF AUTHORIZATION

RESIDENTIAL STRUCTURES, P.C.
3410 N. Davidson Street
Charlotte, NC 28205
Seal for Structural Only

FIRST FLOOR PLAN - STRUCTURAL

DATE
9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

2117 COMMONWEALTH AVE
CHARLOTTE, NC 28205
(828)750-5440

BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY
2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY
REFLECTION POINT

SHEET NUMBER
S-2

FRAMING NOTES:

1. 2ND FLOOR CEILING HEIGHT TO BE 9'-1 1/2"

2. WINDOW & EXTERIOR DOOR HEADER HEIGHT TO BE 8'-0" U.N.O.

3. ALL FIRST FLOOR INT/EXT. LOAD BEARING HEADERS TO BE (2) 2x10 W/ (2) JACK & (1) KING STUD AT EACH END, U.N.O.

4. INSTALL EXTRA BLOCKING UNDER ALL PARTITION WALLS GREATER THAN 5' IN LENGTH

5. TRANSFER ALL POINT LOADS FROM ABOVE THROUGH THE CEILING & WALLS OF THIS LEVEL W/ AN EQUAL AMOUNT OF STUD MATERIAL, U.N.O.

6. ALL HEADERS WHERE BRICK IS USED, TO BE L3x3"x1/4" U.N.O.

7. ALL LINTELS TO HAVE MIN. 4" BEARING ONTO BRICK AT EACH END, U.N.O.

8. ALL JOIST & BEAM SIZES SHOWN ARE MINIMUMS. BUILDER MAY INCREASE DEPTH FOR EASE OF CONSTRUCTION.

9. ALL HEADER SIZES SHOWN ARE MINIMUMS. BUILDER MAY INCREASE DEPTH FOR EASE OF CONSTRUCTION. ALL HEADERS TO BE DROPPED UNLESS NOTED OTHERWISE

10. ALL MULTI-PLY LVLS OR BEAMS TO BE ATTACHED TOGETHER UTILIZING (2) ROWS OF 16D COMMON NAILS AT 16" O.C. STAGGERED, EACH SIDE. OR (2) ROWS OF SDS ¼" x 6" SCREWS @ 16" O.C. STAGGERED OR ½" CARRIAGE THROUGH BOLT @ 24" O.C. STAGGERED

STRUCTURAL NOTES:

1. CONSTRUCTION SHALL CONFORM TO 2018 NORTH CAROLINA RESIDENTIAL CODE WITH ALL AMENDMENTS.

2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS. CONTRACTOR SHALL COMPLY WITH THE CONTENTS OF THE DRAWING FOR THIS SPECIFIC PROJECT. BUILDING DESIGNER / ENGINEER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THIS PLAN

3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY BRACING REQUIRED TO RESIST ALL FORCES ENCOUNTERED DURING ERECTION.

4. THE FOLLOWING DESIGN LOADS ARE USED:

ROOF LOAD	20 PSF LL	20 PSF DL
FLOOR LOAD	40 PSF LL	15 PSF DL
ATTIC LOAD	20 PSF LL	10 PSF DL
WIND LOAD	115 MPH	

5. PROPERTIES USED IN THE DESIGN ARE AS FOLLOWS:

MICROLLAM (LVL):
Fb = 2600 PSI, Fv = 285 PSI, E = 1.9x10^6 PSI

PARALLAM (PSL):
Fb = 2900 PSI, Fv = 290 PSI, E = 1.25x10^6 PSI

6. ALL WOOD MEMBERS SHALL BE SPF#2 UNLESS NOTED ON PLAN. ALL STUD COLUMNS AND JOIST SHALL BE SPF #2 UNLESS NOTED ON PLAN.

7. ALL BE SHALL BE SUPPORTED WITH A (2) 2X4 #2 SPF STUD COLUMN AT EACH END UNLESS NOTED OTHERWISE.

LVL PLY TO PLY CONNECTIONS:

(2) PLY = 2 ROWS OF 16D (3.5") NAILS AT 12" OC STAGGERED (9-1/4" TO 11-7/8" LVLS)
(2) PLY = 3 ROWS OF 16D (3.5") NAILS AT 12" OC STAGGERED (14" TO 24" LVLS)
(3) PLY = PER 2 PLY FROM BOTH FACES UNO
(4) PLY = (2) ROWS OF ¼" X 6-3/4" TRUSSLOK SCREWS AT 24" OC STAGGERED.

2" EDGE DISTANCE @ TOP/BOTTOM w/ 4" END DISTANCE FOR ALL FASTENERS

NOTE: THIS STRUCTURE HAS BEEN ANALYZED BY A PROFESSIONAL ENGINEER FOR LATERAL LOADING. IT HAS BEEN DESIGNED USING CONTINUOUS SHEATHED 7/16" OSB SHEATHING. FASTENED AT 6" O.C. ALONG THE EDGES AND 12" O.C. ALONG THE INTERIOR (W/ 6d COMMON NAILS OR 8d-2½"LONG X 0.113" DIAMETER NAILS) TO MEET OR EXCEED THE INTENT OF THE 2018 NORTH CAROLINA RESIDENTIAL BUILDING CODE. BLOCKING SHALL BE PROVIDED AT ALL PANEL EDGES. ALL INTERIOR WALLS (WHERE NOTED) SHOULD BE METHOD "GB" AND FASTENED W/ 5d COOLER NAILS OR #6 SCREWS AT 7" ALONG THE EDGES AND 7" FIELD. ANY METHOD THAT DEVIATES FROM THE ABOVE ARE NOTED ON THE PLAN SET. THE INTERIOR OF ALL EXTERIOR WALLS SHOULD HAVE GYPSUM BOARD INSTALLED PER CODE. WHERE WALL LINES REQUIRE FURTHER REINFORCEMENT, ADDITIONAL BRACING METHODS, ENGINEERED WALL SECTIONS, AND HOLD DOWNS HAVE BEEN INCLUDED TO RESIST THE LATERAL LOADS.

CEILING FRAMING NOTES:

1. ALL EXTERIOR WALLS TO BE SHEATHED w/ 7/16"OSB ATTACHED TO FRAMING w/ 8d NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. PROVIDE BLOCKING AT ALL PANEL SPLICES.
2. ALL EXTERIOR WALL HEADERS TO BE 2-2X8 (SPF#2) w/ (1)JACK @ EACH END AND (1)KING STUD PER EVERY 3'-0" WIDTH OF TOTAL HEADER SPAN @ EACH END U.N.O,
3. ALL INTERIOR LOAD BEARING WALL HEADERS TO BE 2-2X8's (SPF#2) U.N.O. w/ (1)JACK @ EACH END U.N.O.
4. AT CLIP LINES, CEILING JOISTS TO BE NAILED TO RAFTERS w/ (5)16d NAILS U.N.O.

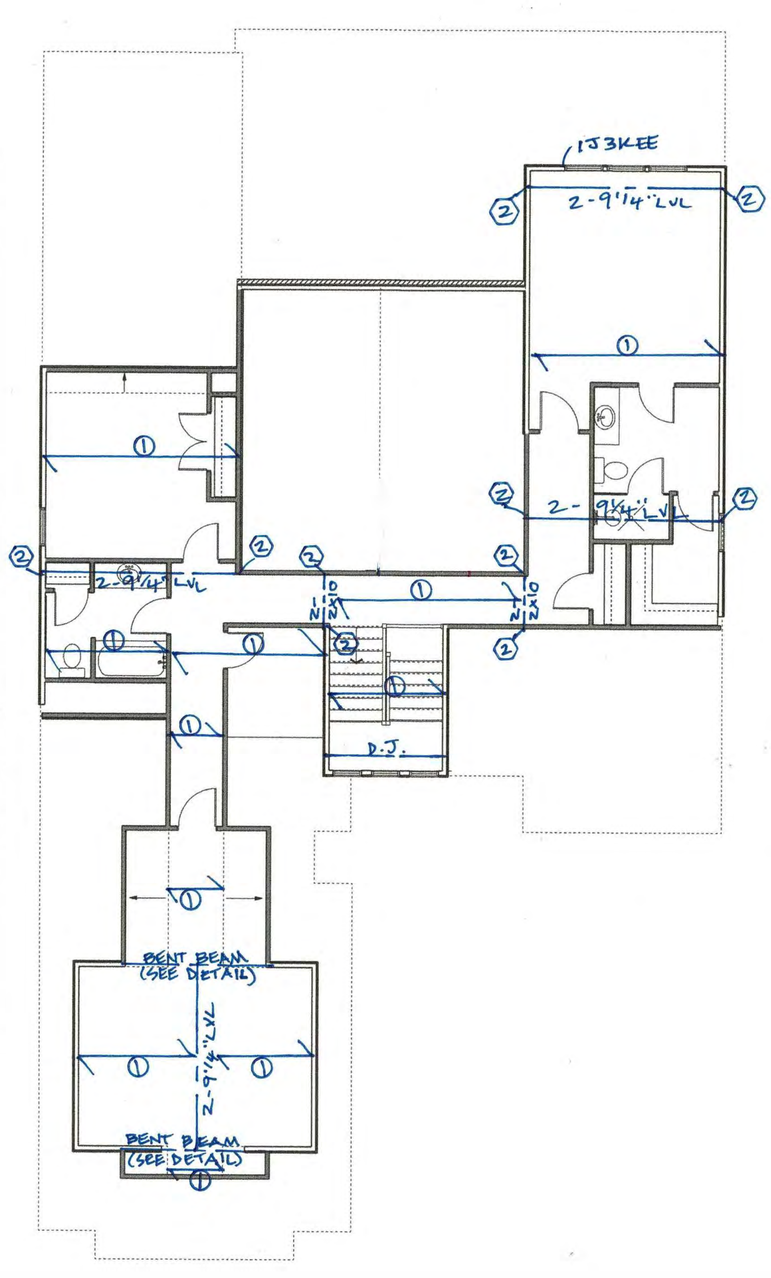
① = 2X8 (SPF#2) @ 16" O.C.

⟨#⟩ = NUMBER OF STUDS. STUDS TO BE SAME SIZE AS ASSOCIATED WALL FRAMING STUDS U.N.O. NOTE: STUD COUNTS DO NOT ACCOUNT FOR KING STUDS. SEE FRAMING NOTES ABOVE FOR KING STUD REQUIREMENTS.

#J#KEE = NUMBER OF JACKS AND NUMBER OF KINGS AT EACH END

T.R. = TRIPLE RAFTER

NOTE: RAFTER CUT BEAM ENDS AS NEEDED W/ MIN. 8" HEEL HEIGHT



NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037989 9/27/22 MEGAN C. PRIETO

NORTH CAROLINA RESIDENTIAL STRUCTURES, P.C. No. C3295 CERTIFICATE OF AUTHORIZATION

RESIDENTIAL STRUCTURES, P.C.
3410 N. Davidson Street
Charlotte, NC 28205
Seal for Structural Only

TYPICAL HANGERS

MEMBER	HANGER
2X8	LUS28
2X10	LUS210
2X12	LUS210
(2) 2X8	HUS28-2
(2) 2X10	HUS210-2
(2) 2X12	HUS212-2
(3) 2X8	LUS28-3
(3) 2X10	LUS210-3
(3) 2X12	LUS210-3
(2) 9¼" / (2) 11⅞" LVL	HGUS410
(2) 14" / (2) 16" / (2) 18" LVL	HGUS414
(3) 9¼" LVL	HGUS5.50/10
(3) 11⅞" LVL	HGUS5.50/12
(3) 14" / (3) 16" / (3) 18" LVL	HGUS5.50/14
(4) 9¼" LVL	HGUS7.25/10
(4) 11⅞" LVL	HGUS7.25/12
(4) 14" / (4) 16" / (4) 18" LVL	HGUS7.25/14

WALL STUD REQUIREMENTS

EXT. WALL HT. (h)	STUD SIZE AND SPACING
h < 10'-0"	2X4 @ 16" (O.C.)
10'-0" < h < 11'-0"	2X4 @ 12" (O.C.)
11'-0" < h < 18'-0"	2X6 @ 16" (O.C.)
h > 18'-0"	CONSULT ENGINEER

SECOND FLOOR PLAN - STRUCTURAL

SCALE: 24x36 PAPER = 3/8" = 1'-0" 11x17 PAPER = NTS

DATE
9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

2117 COMMONWEALTH AVE
CHARLOTTE, NC 28205
(828)750-5440

BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY
2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY
REFLECTION POINT

SHEET NUMBER
S-3

ROOFING FRAMING NOTES:

1. THE FOLLOWING LOADS WERE ASSUMED FOR THIS DESIGN:
   - ROOF LIVE LOAD = 20 PSF
   - ROOF DEAD LOAD = 10 PSF
   - FLOOR LIVE LOAD = 40 PSF
   - FLOOR DEAD LOAD = 15 PSF

2. HATCHED AREAS INDICATE ROOF OVERFRAMING

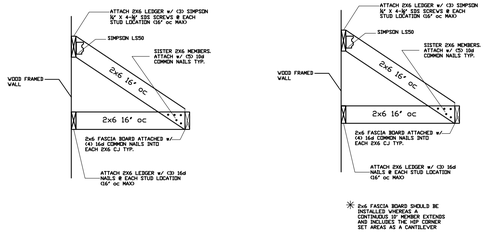
ROOF NOTES

1. ALL RAFTERS TO BE 2X6's (SPF #2) @ 16" O.C. U.N.O
2. ALL RIDGES TO BE 2X8's (SPF #2) U.N.O.
3. ALL HIPS AND VALLEYS TO BE 2X10's (SPF #2) U.N.O

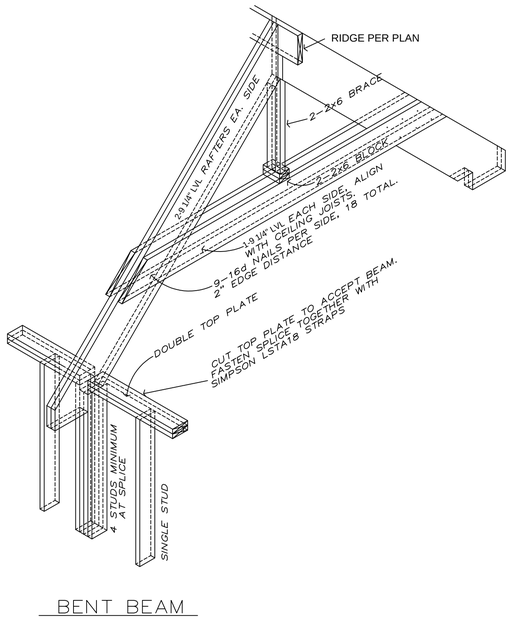
⊗ = ROOF BRACE POINT AND BRACE TO POINT (MAX. 4'-0" O.C. SPACING)

B.B. = BEAM BELOW
R.B. = 2-2X6 RAFTER BRACE
T.R. = TRIPLE RAFTER
B.R.O.W. = BRACE RAFTERS ON WALL

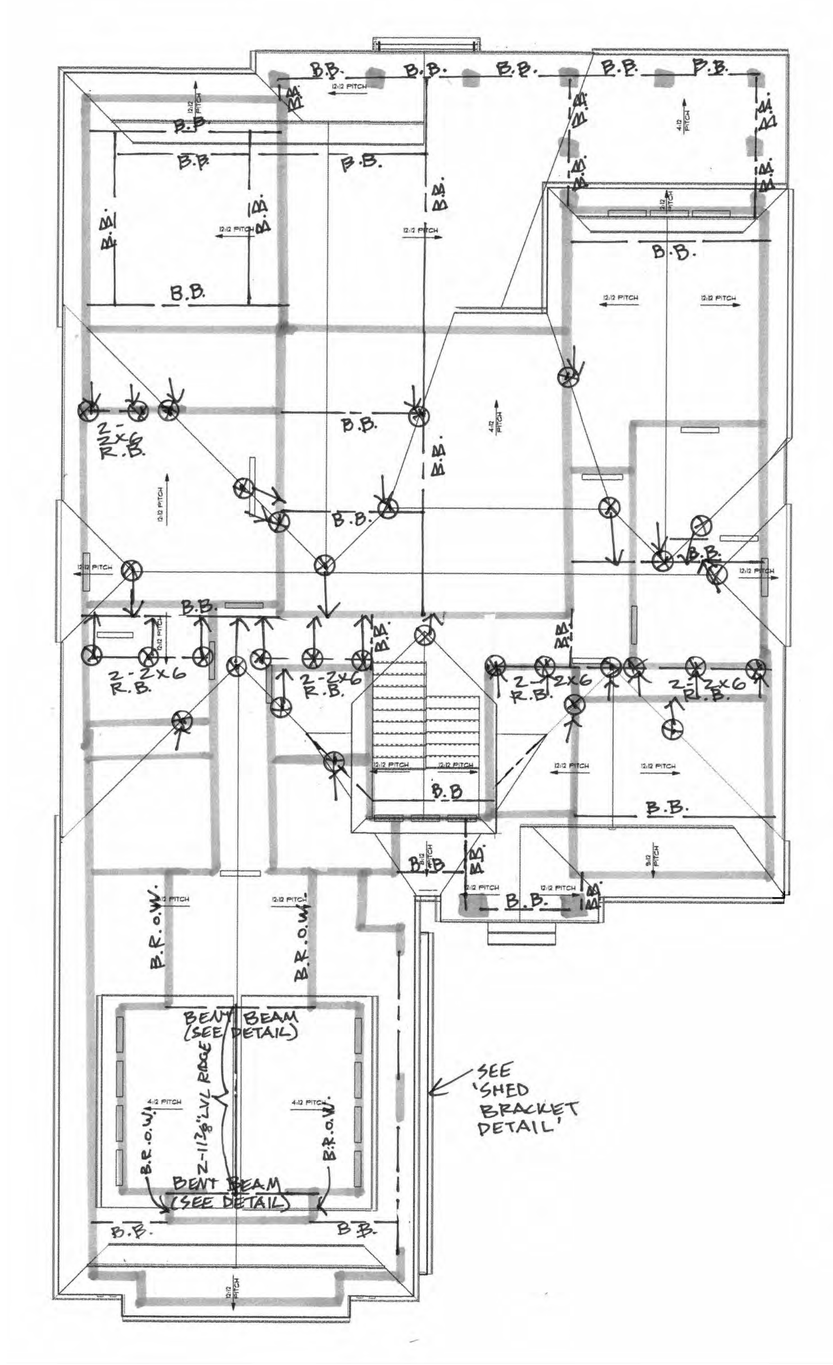
WITH HIP



SHED BRACKET DETAIL



BENT BEAM



ROOF PLAN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037999 9/23/22 MEGAN C. PRIETO

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RESIDENTIAL STRUCTURES, P.C.
3410 N. Davidson Street
Charlotte, NC 28205
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DATE
9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN

2117 COMMONWEALTH AVE
CHARLOTTE, NC 28205
(828)750-5440

BUILD & DEVELOPMENT

KEEN Building Co.

KEEN BUILDING COMPANY
2205A DISTRIBUTION CENTER DR., CHARLOTTE, NC 28269

4 BED / 3½ BATH

FIRST FLOOR:	2156
SECOND FLOOR:	882
TOTAL HEATED:	3038
OPT. BONUS:	357
GARAGE:	616
FRONT PORCH:	83
REAR DECK:	351
SCREENED:	133
UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY
REFLECTION POINT

SHEET NUMBER
S-4

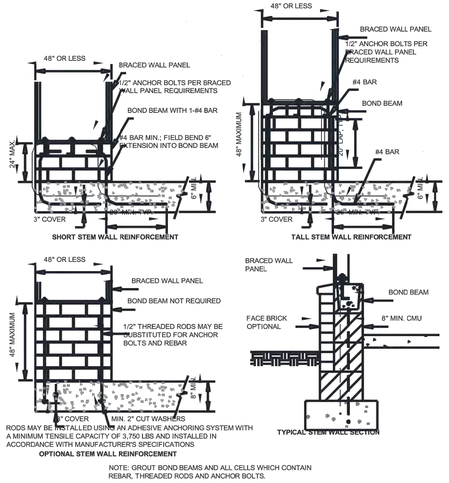

FIGURE R602.10.5.3 - MASONRY STEM WALLS SUPPORTING BRACED WALL PANELS

TABLE R703.8.3.1
ALLOWABLE SPANS FOR LINTELS SUPPORTING MASONRY VENEER

SIZE OF STEEL ANGLE a,b,c (inches)	NO STORY ABOVE	ONE STORY ABOVE	TWO STORIES ABOVE
3X3X$\frac{1}{4}$	6'-0"	4'-6"	3'-0"
4X3X$\frac{1}{4}$	8'-0"	6'-0"	4'-6"
5X3$\frac{1}{2}$X$\frac{5}{16}$	10'-0"	8'-0"	6'-0"
6X3$\frac{1}{2}$X$\frac{5}{16}$	14'-0"	9'-6"	7'-0"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm
a. Long leg of the angle shall be placed in a vertical position.
b. Steel members indicated are adequate typical examples; other steel members meeting structural design requirements shall be permitted to be used.
c. Steel angle shall span opening and have min 4" bearing on each end.

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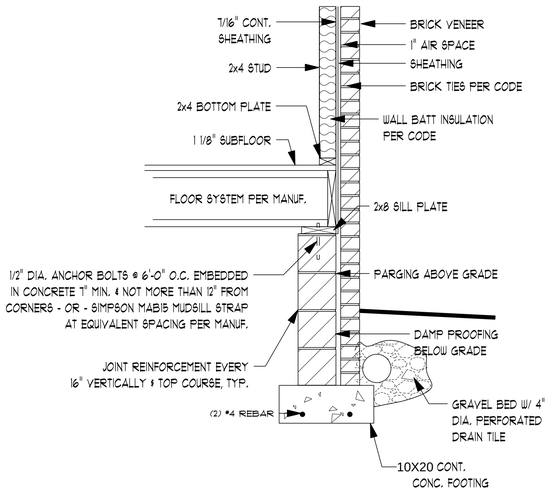
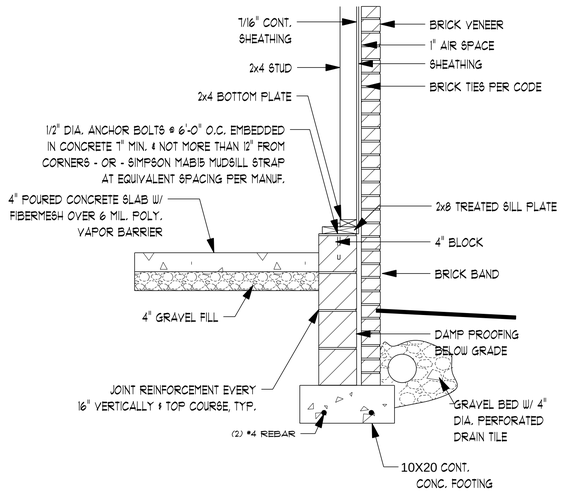
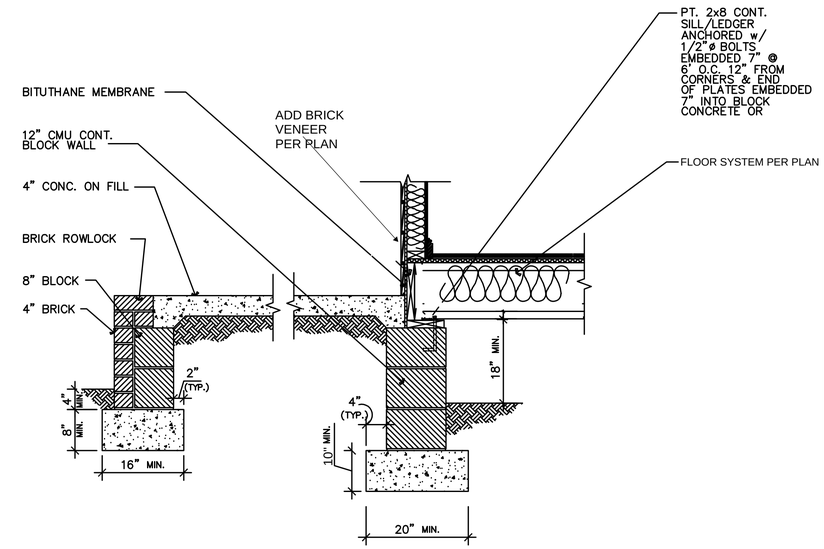


1 S-5 8" BLOCK W/ 4" BRICK & 4" BLOCK
SCALE: 3/4"=1'-0"



2 S-5 CRAWL & GARAGE COMMON WALL
SCALE: 3/4"=1'-0"



3 S-5 CONCRETE PORCH DETAIL
SCALE: 3/4"=1'-0"

DATE
9/23/2022

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CHARLOTTE, NC 28205
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4 BED / 3½ BATH

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SCREENED:	133
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KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY
REFLECTION POINT

SHEET NUMBER
S-5

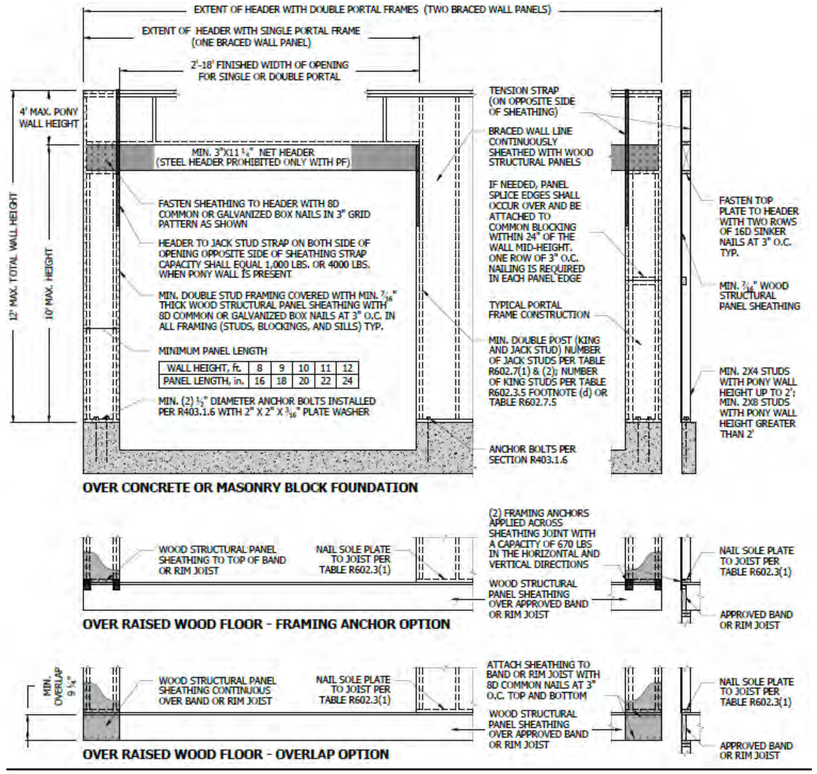
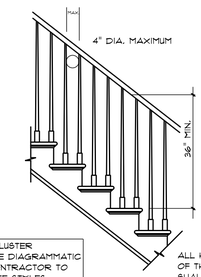


FIGURE R602.10.1
METHOD PF – PORTAL FRAME CONSTRUCTION

1 S-6 PORTAL FRAMING DETAIL
SCALE: 1/2"=1'-0"

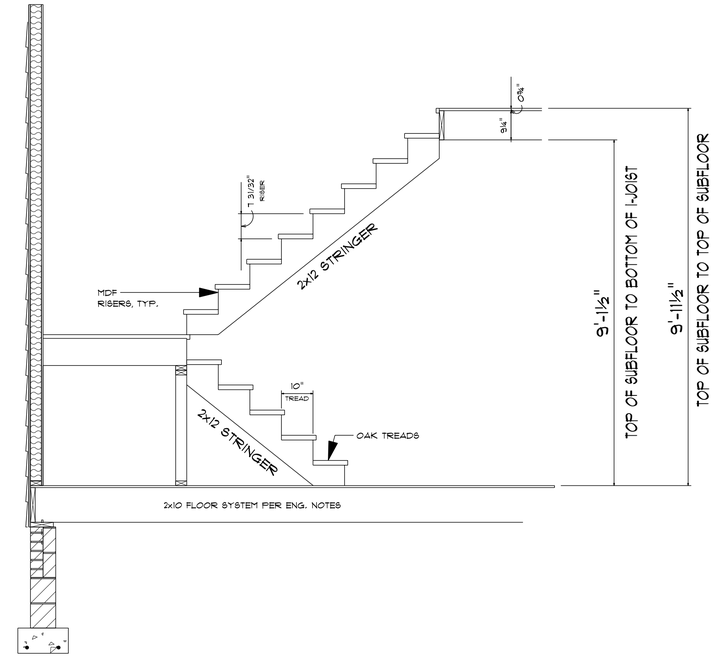
OPEN BALUSTRADE BALCONY / STAIR RAILINGS NOT LESS THAN 36" IN HEIGHT WITH PATTERN / SPACING SUCH THAT A SPHERE 4" IN DIA. CANNOT PASS THROUGH



STAIR / BALUSTER STYLES ARE DIAGRAMMATIC ONLY -- CONTRACTOR TO COORDINATE STYLES WITH OWNER / FINISHES

STAIR RAILING

ALL HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE STAIRS. HANDGRIP PORTION OF ALL HANDRAILS SHALL NOT BE LESS THAN 1-1/4" NOR MORE THAN 2" IN CROSS SECTIONAL DIMENSION, OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRIPPING SURFACE



2 S-6 STAIR DETAIL
SCALE: 1/2"=1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 037989 9/27/22 ENGINEER MEGAN C. PRIETO

NORTH CAROLINA RESIDENTIAL STRUCTURES, P.C. No. C3298 CERTIFICATE OF AUTHORIZATION

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3410 N. Davidson Street
Charlotte, NC 28205
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DATE
9/23/2022

DESIGN & DRAFTING

KEEN RESIDENTIAL DESIGN
KEEN RESIDENTIAL DESIGN
2117 COMMONWEALTH AVE
CHARLOTTE, NC 28205
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BUILD & DEVELOPMENT

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4 BED / 3½ BATH

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UNDER ROOF:	**4578**

KEEN RESIDENTIAL DESIGN PROUDLY PRESENTS A CUSTOM HOME FOR:

SCOTT BAILEY
REFLECTION POINT

SHEET NUMBER
S-6

GENERAL NOTES

RESIDENTIAL STANDARD NOTES

DESIGN LOADS:

1) Design loads are all dead loads plus:
   - A) Sleeping rooms ..... 30 PSF
   - B) All other floors ..... 40 PSF
   - C) Balconies ..... 60 PSF
   - D) Attic floor live loading with the following:
     - i) Area accessible by stairs ..... 30 PSF
     - ii) Roof slopes > 3:12 ..... 20 PSF
     - iii) Roof slopes < 3:12 ..... 10 PSF
   - E) Roof live load ..... 20 PSF, or as required by code
   - F) Wind load ..... 115 MPH, or as required by code
   - G) Snow load ..... 20 PSF, or as required by code
2) All designs are in accordance with the 2018 North Carolina Residential Code. Refer to the relevant Code for any additional information not covered in these notes or the designs.
3) Engineering design is for structural information only. The Engineer of Record does not accept responsibility for dimension errors, architectural errors, detailing of waterproofing, plumbing, electrical, or mechanical information or any part of the plan not relevant to the structural information.

RESIDENTIAL FOUNDATIONS:

1) All continuous wall footings are 8" x 16" for one- and two-story houses and footings for three-story walls shall be 12" x 24" unless otherwise noted. Reinforcing is to be as noted on plans. Footings on original soil do not need rebar. Rebar is required on any compacted fill regardless of compaction.
2) All interior piers are 8" x 16" CMU up to a maximum height of 32". All piers over 32" high must be filled with Type S mortar. Maximum height for 8" x 16" filled pier is 6'-8". Piers larger than 8" x 16" are noted on plans and must be filled with Type S mortar. For one-story structures, pier caps are to be 4" solid masonry. For two-story structures, pier caps are to be 8" of solid masonry.
3) Footings for 8" x 16" piers are 24" x 36" x 10" unless noted otherwise. Reinforcing is to be as noted on plans.
4) Interior thickened slab footings which occur in basements and "slab on grade" floors are 10" deep by 16" wide with 2-#4 reinforcing bars running continuously unless noted otherwise. Thickened footings are required under all bearing walls.
5) All rebar splices shall be a minimum of 2'-0" unless otherwise noted.
6) Shallow foundations are designed for an assumed soil bearing capacity of 2,000 psf. The contractor is responsible for notifying the Engineer of Record if any soils are found to be unsuitable for this bearing capacity. Thee contractor is responsible for obtaining soil testing to ensure that the bearing capacity of the soil meets or exceeds this value. All fill is to be compacted to 95% density as measured by the Standard Proctor Test (ASTM D-698).
7) All soils and fill under floors and/or within or under buildings shall have preconstruction soil treatment for protection against termites. Certification of Compliance shall be issued to the Building Department by a licensed pest control company.
8) All footing excavations shall be neat, straight, and level in the proper elevations to receive the concrete. Excessive variations in the dimensions of footings or slabs will not be permitted. Reinforcing steel and mesh shall be accurately placed and supported to maintain their position during the concrete pouring. Edge forms shall be used for concrete that will be exposed.
9) All slab penetrations are to be the responsibility of the contractor. Penetrations interfering with reinforcing shall be approved by the Engineer of Record prior to the placement of concrete.
10) Elevations differences between the bottom of adjacent footings shall be less than their horizontal distance less one foot. Differential heights between footings can become excessive usually where a pier footing in a crawlspace or garage footing is next to a basement wall footing.

SPECIAL FOUNDATION CONSIDERATIONS:

1) Waffle slabs are self-supporting slabs reinforced according to details and do not require firm soil for support. Soil must only be capable of supporting concrete until it hardens and develops strength.
2) Caisson foundations shall be a minimum of 12" diameter drilled unreinforced concrete caissons. Caissons shall extend to a minimum depth providing 2' penetrations into good original ground. Depth of drilling is limited to 15'. Therefore, no poor material more than 13' deep is suitable for a caisson foundation. A caisson cannot be used if water rises immediately into a drilled hole. Piles will have to be used in such cases.
3) Treated wood piles with a minimum diameter or 6" and a minimum design load of six tons are used for all foundations with unsuitable soil deeper than 13' or with water in drilled caisson holes. Drive per North Carolina or South Carolina Code.
4) Sizes and reinforcing for footing caps over caissons or piles shall be as shown on plans.
5) Chimney footings are to be 12" larger than the chimney footprint by 12" thick.
6) Foundation walls backfilled with dirt which support structural framing shall be constructed as follows:
   - A) For earth fill up to a maximum height of 4': Use 8" CMU or 8" brick with Bituthene membrane waterproofing on exterior. Footings are to be 8" x 16" or 8" x 24" as noted on the plan.
   - B) For earth fill 4' to a maximum height of 9': Use 8" x 24" footing with #4 at 16" dowels hooked in footing and projecting 18" above footings. Use 12" CMU walls with #4 at 16" vertical bars located 4" from non-dirt fill face, lap all splices 12" and use Dur-o-wall horizontal reinforcing every 8" in CMU joints. Install 1-#3 L-bar with 24" legs in every other joint horizontally at all corners; i.e., #3 corner bars at 16" o.c. vertically. Fill all open cells of CMU with either type S or M mortar or fill with 2,500 psi concrete. Install waterproof Bituthene membrane or equal.
   - C) In lieu of the preceding design, basement walls may be constructed in accordance with R404.1 of the Code. However, 24" x 24", #3 corner bars shall be installed at 16" o/c vertically regardless of the wall height.

   ERECT ALL FRAMING BEFORE BACKFILLING.
7) For retaining walls without framing see special designs on drawings.

FRAMING CONSTRUCTION – OTHER THAN ROOF:

1) See Table R602.3(1) of the Code for a fastener schedule for structural members.
2) Wood beams shall be supported by metal hangers of adequate capacity where framing into beams or ledgers. The allowable load capacity of the hanger shall be equal to or greater than the load specified on the plan. Where no load is specified, the "lightest" available hanger for the application is acceptable.
3) Crawl girders and band with 4" curtain wall and pier construction shall be 2-2 x 10 Southern Yellow Pine #2 unless noted otherwise. Maximum clear spans are to be 4'-8" (6'-0" o/c spacing of piers).

   To avoid objectionable cracking in finished hardwood floors over any girders, use the following procedure:
   - A) Nailing
     - i) All floor joists must be toenailed to their support girders with a minimum of 3-8d nails at each end. Larger nails will split and render the toenail ineffective. No end nailing through the girder or band is permitted.
     - ii) If dropped girders are used, end lap all joists and side nail each with a minimum of 3-16d nails at each end of each joist. Ledger strips should be spaced 3" apart and nailed with 3-16d nails at each joist end.
     - iii) Nail multiple member built-up girders with two rows of 16d nails staggered at 32" o/c, 2" down from the top and 2" up from the bottom with 3-16d nails at each end of each piece in the joist through the members making up the multiple girder.
     - iv) This nailing pattern will ensure a tight floor from the outside of the house to the outside so that when the framing shrinks during the first heating season, the shrinkage will be uniformly distributed over the entire floor. If the girder nailing pattern is omitted, then the shrinkage will accumulate over the girders and an objectionable crack will develop in the finished hardwood floor over the girder line.
   - B) At all girders where the joists change direction, install bridging at 6' o/c for a minimum of six joist spacings beyond any joist direction change. This will insure shrinkage distribution over the floor and not let it accumulate at the girder.
   - C) There must be wood blocking thru bolted to the steel beam with joists toenailed or attached to the beam with metal hangers under any hardwood floors that pass over a steel beam supporting floor joists. This condition often exists over basement areas.
4) All other lumber may be Spruce #2 unless noted otherwise.
5) Steel beams must have 5-2x 4 stud jacks under each end support unless noted otherwise.
6) "Lam" beams must have 3-2x4 stud jacks under each end support unless noted otherwise.
7) Masonry lintels:
   - A) For spans up to 6': Use 3 ½" x 3 ½" x ¼" steel angles.
   - B) For spans from 6' to 10': Use 5" x 3 ½" x 5/16" steel angles.
   - C) For spans from 9' to 18': Use a pair of 9-gauge wires in each of the first 3 courses of brick on a 5" x 3 ½" x 5/16" steel angle. Lap all 9-gauge wire splices a minimum of 12" and extend wires a minimum of 12" into jambs. Temporarily support the steel angles before laying masonry. The shoring may be removed five days following the installation of masonry.
   - D) When structural steel beams with bottom plates are used to support masonry, the bottom plate must extend the full length of the steel beam. This provides support to the ends of the plate by bearing on the adjacent masonry jambs. The beam should be temporarily shored prior to laying the masonry. The shoring may be removed five days after laying the masonry.
8) All brick veneer over lower roofs (brick climbs) must have a structural angle lag screwed to an adjacent stud wall in accordance with detail, with steel brick stops to prevent sliding of brick.
9) All rafter braces must have two studs from plate through all floors to the foundation or supporting beam below. No braces shall be attached to top wall plate without studs directly under them.
10) Where partitions fall between floor joists or trusses, 2 x 4 ladders at 16" o/c must be placed perpendicular to the trusses to support the plywood decking. The ladders shall be supported with Simpson "Z" clip or similar device.
11) All wood I-joists and open joists must be braced in accordance with the manufacturer's directions plus details shown on plans. Load-bearing partitions, jacks, beams and column supports must be solid blocked through floor. Trusses and plywood shall not carry concentrated point loads. I-joist material should not be used as blocking under concentrated point loads. All point loads must be carried to foundations with adequate blocking and/or beams.
12) All steel columns Where steel columns bear on concrete or masonry, unless otherwise noted, a 5/8" x 6 ½" x 6 ½" or 5/8" x 3 ½" x 8" base plate shall be used to spread the column load across the bearing surface. Base plates shall be bolted with at least two ½" diameter anchor bolts or expansion bolts to concrete or masonry.
13) Unless noted otherwise on plans, all exterior facing wall studs taller than 10' shall be constructed as follows:
   - A) Walls 10' to 12' high: Balloon frame 2 x 4 studs at 12" o/c with ½" OSB sheathing and 3 king studs on each side of each opening nailed securely to the header.
   - B) Walls 12' to 20' high: Balloon frame 2 x 6 studs at 16" o/c (½" OSB sheathing required for wall heights > 17'). Provide 2-1 ¾" x 5 ¼" LVL king studs on each side of openings 3' to 6' wide and 2-2 x 6 king studs for openings less than 3' wide. Fasten king studs securely to all headers with a minimum of 12-16d nails or 4-3/8" diameter lag screws embedded a minimum of 4" into the header.
   - C) Gable end walls or rooms with vaulted ceiling joists: Balloon frame wall and provide triple king stud on each side of openings, nailed securely to the header.
   - D) Two-story high foyer walls less than 9' wide: Extend 3 ½" x 9 ¼" PSL member with 3-2 x 4 flat plates across the entire wall. Locate the beam near mid-height of the wall at or near first floor top plate.

NOTE: SEE SPECIAL DESIGN OR ENGINEER FOR WALLS TALLER THAN 20', WHEN OPENINGS IN HIGH WALLS EXCEED 6' IN WIDTH, OR IF THE WALL CANNOT BE CONSTRUCTED USING ANY OF THE METHODS MENTIONED.

14) Continuous 2 x 6 bridging shall be nailed to diagonal or vertical web members of all open-web floors trusses over 10' long. They shall be installed near mid-span as a load distribution member. If the 2 x 6 bridging is not continuous, lab ends of bridging one truss space.
15) Lower stud walls for buildings over two stories, but not more than three stories'
   - A) Interior walls
     - i) Load bearing ..... 2 x 4 @ 12" o/c
     - ii) Non load bearing ..... 2 x 4 @ 12" o/c
   - B) Exterior walls

     Use 2 x 6 at 16" o/c with ½" x 4' x 8' plywood sheathing at all corners and every 25'; OR use 2 x 4 at 12" o/c with ½" plywood sheathing solid on walls.
16) Headers shall be as shown unless noted differently on plans:
   - A) Interior and exterior
     - i) Spans up to 2'-6" ..... 2-2 x 6's
     - ii) Spans 2'-6" to 3'-6" ..... 2-2 x 8's
     - iii) Spans 3'-6" to 6'-6" ..... 2-2 x 10's
     - iv) Spans 6'6" or more ..... See Plan
   - B) Headers wider than 5' shall have a minimum of three king studs on each side unless noted otherwise.
17) When ceiling joists are parallel to an exterior wall, tie the rafters near the top plate to ceiling joists with a 2 x 6 strongback a minimum of 6' long at 4 feet on center across the top of the ceiling joists. 2 x 4 rafter ties shall be fastened to the side of the rafter and the strongback.
18) At all exterior diagonal wall panels, each panel shall be nailed to each adjacent panel with 5-16d nails or tied together with metal stripping nailed at four locations between floors with a minimum of 2-16d nails into each panel at each strap. This will avoid vertical cracking in panel joints due to horizontal oscillating panels.
19) At all stairs, every stud at each stringer must be nailed to each stringer with a minimum of 2-16d nails. This will avoid cracking between wallboard and top of base molding due to vertical oscillation of stair stringers.
20) Roof trusses that have non-bearing partitions passing under them should be nailed to the partition plates to avoid ceiling-wall cracking.
21) Roof trusses close to side walls framing and used as dead wood for sheetrock boards should be nailed to the wall framing to prevent ceiling-wall cracking.
22) All structural framing lumber exposed directly to the weather or bearing directly on exterior masonry piers or concrete shall be treated. All wood in contact with the ground is to be ground-contact approved. All wood exposed directly to the weather shall be protected to prevent the occurrence of rot.
23) Unless otherwise detailed, all stick-built "false chimneys" shall be constructed with 2 x 4 studs at 12" o/c, balloon-framed from attic ceiling or floor. Fasten 15/32" CDX plywood on all sides of the chimney along the full length of the studs. Fasten each stud to the supporting beam or ceiling joist with a 1 ½" x 24", 18-gauge metal strap, or a similar connector.
24) Item unchanged, but moved from under #14 on old Page 2:

NOTE: ALL POINT LOADS FROM ROOF BRACES, JACK STUDS, BEAM SUPPORTS – WHETHER WOOD OR STEEL – CANNOT BEAR ON SHEATHING ALONE. BLOCKING EQUAL TO OR BETTER THAN THE POINT LOAD SUPPORTS ABOVE MUST BE CARRIED THROUGH ALL CONSTRUCTION TO THE FOUNDATION.

25) Note to apply to all hard coat stucco exterior finishes:
   - A) Joints are necessary at the following locations:
     - i) Horizontally at each floor line.
     - ii) No areas larger than 144 S.F. surface exposed.
     - iii) No dimension longer than 18'.
     - iv) No dimension longer than 2 ½ times the shortest dimension.
   - B) Drip screed required at the bottom of all walls 2" above paved areas and 4" above grade.
   - C) See ASTM 926 and 1063 for further information.
   - D) Application of an approved chemical curing compound.

   The curing shall continue until the cumulative number or days when the ambient temperature above 50°F has totaled seven. During curing, the concrete shall be protected from any mechanical injury, load stresses, shock, vibration, or damage to finished surfaces.

ROOF CONSTRUCTION:

1) All roof trusses must be built in accordance with truss manufacturers' requirements. Tie-down connections to resist uplift shall be installed where required. When roof truss manufacturers do not provide the required connectors, it is the responsibility of the contractor to notify the roof truss engineer or the Engineer of Record to provide an adequate connector.
2) In addition to the Code's fastener schedule, unless noted otherwise on the plan, roof members shall be tied down with additional metal connectors as follows:
   - A) Stick-framed rafter members exceeding 10' in length, as measured from their horizontal projection, and all roofs over unenclosed areas such as porches use Simpson H2.5 connectors every 4' or at every third rafter to fasten the lower end of the rafter to the top plate.
   - B) All lower ends of valley and hip members which bear on a top plate use a Simpson HCP or equivalent connector.
3) Rafters shall be 2 x 6 at 16" o/c spruce-pine-fur #2 for shingles except as noted. They are to be cut into hips, ridges, etc., unless noted otherwise. Tile, slate and other heavy roof coverings shall use 2 x 8 at 16" o/c spruce-pine-fur #2 rafters unless noted otherwise.
4) Collar ties shall be 2 x 6 at 48" o/c at all ridges unless noted otherwise and located a nominal 3' below the ridge. Vaulted ceilings require special collar tie or ridge beam details. See the end of Table R802.5.1. in the Code unless otherwise detailed on the plan.
5) A minimum of three collar ties shall be used at all ridges even if two ties must be put on one set of rafters.
6) All hips and ridges are a size larger than rafters unless noted otherwise.
7) All hogs on ceiling joists or rafters are 12' long and 2 x 6's unless noted otherwise. Rafters may be spliced over hogs. Splice rafter hogs only at a roof brace.
8) Gable end framing must be braced parallel to ridges with a minimum of 2 x 6 diagonal braces at 6' o/c along the gable wall to interior ceiling joists. Braces to bear on 2 x 6 hogs and to the gable wall at approximately mid-height of gable walls. Braces shall be at an angle of approximately 45°. Other bracing may be used with the design engineer's approval.
9) Gable end framing must be braced parallel to ridges with a minimum of 2 x 6 diagonal braces at 6' o/c along the gable wall to interior ceiling joists. Braces to bear on 2 x 6 hogs and to the gable wall at approximately mid-height of gable walls. Braces shall be at an angle of approximately 45°. Other bracing may be used with the design engineer's approval.
10) Ceiling joists when erected parallel to rafters must be sistered to rafters and nailed with 3-16d nails at each rafter. If a kneewall is used and ceiling joists cannot touch rafters, then rafters must be tied to the ceiling joists using 2 x 4 or 1 x 6 rafter ties spaced no more than 4' on center.
11) Roof Plan Legend:
   - A) ⊙ Indicates location of roof brace point at rafter level
   - B) ⊙→ Arrow away from the brace point indicates direction of roof brace to partition, beam, or other brace point below.
   - C) ⊙← Arrow into brace point indicates a vertical or almost vertical roof brace to partition, beam, or other brace point below.
   - D) All roof braces are 2-2 x 4 nailed with 16 penny nails at 9' o/c vertically from top to bottom. Braces longer than 10' must be braced horizontally in two directions at mid-height.
   - E) Maximum spacing of roof braces is to be as follows:
     - i) For 2 x 6 Hog ..... 6'-0" o/c
     - ii) For 2 x 8 Hog ..... 7'-6" o/c

METERIALS SPECIFICATIONS:

CONCRETE GENERAL NOTES:

1) Except where otherwise noted, for all concrete, the proportions of cement, aggregate, and water to attain required plasticity and compressive strength shall be in accordance with ACI 318 Code. Concrete shall be 2,500 psi in 28 days for footings and 3,000 psi for walls, beams, and columns, unless noted otherwise.
2) Before placing concrete, all debris, water and other deleterious material shall be removed from the places to be occupied by the concrete. The placing of all concrete shall be in accordance with ACI 318 and ASTM C94 requirements. Pumping of concrete will be permitted only with the Engineer of Record's approval of proposed concrete mix and method of pumping. Concrete shall be rapidly handled from the mixer to forms and deposited as nearly as possible to its final position to avoid segregation due to rehandling. Concrete to be spaded and worked by hand and vibrated to assure close contact with all surfaces of forms and reinforcing steel and leveled off at proper grade to receive finish. All concrete shall be placed upon clean, damp surfaces. Vibration shall be applied directly to the concrete and shall be sufficient to cause flow of settlement but not long enough to cause segregation of the mix.
3) Construction joints shall be located in accordance with ACI 301. All reinforcing steel shall be continuous across joints. In slabs on grade, saw contraction joints shall not be over 20 feet center to center each way. Joints shall be sawn a depth of one-third of the slab thickness. Sawing of the joints shall commence as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling. Fill the saw cuts with approved joint filler after the concrete has cured.
4) Concrete, when deposited, shall have a temperature not below 50°F and not above 90°F. The methods and recommended practices as described in ACI 306 shall be followed for cold weather concreting and ACI 305 for hot weather concreting.
5) Freshly placed concrete shall be protected from premature drying by one of the following methods:
   - A) Ponding or continuous sprinkling.
   - B) Absorptive mat or fabric kept continuously wet.
   - C) Waterproof paper conforming to ASTM C171
   - D) Application of an approved chemical curing compound.

   The curing shall continue until the cumulative number or days when the ambient temperature above 50°F has totaled seven. During curing, the concrete shall be protected from any mechanical injury, load stresses, shock, vibration, or damage to finished surfaces.
6) Reinforcing steel bars shall be deformed in accordance with ASTM A305 and or A408 and formed of ASTM A615-78 Grade 60 steel. Welded wire fabric reinforcing to be ASTM A185 steel wire. Accessories shall conform to the CRSI "Manual of Standard Practice." The following minimum concrete cover shall be provided over reinforcing bars:
   - A) Exposed to Earth ..... 3"
   - B) Exposed to Weather ..... 1 ½"
   - C) Slabs not Exposed to Weather ..... ¾"
   - D) Beams and Columns ..... 1 ½"

MASONRY GENERAL NOTES:

1) Masonry walls are to be of the sizes and in the locations shown on the plans and shall be constructed in accordance with the provisions of ACI 530.
2) Hollow Load Bearing Units: ASTM C90 made with lightweight or normal weight aggregates. Grade N-I units shall be provided for exterior and foundation walls. Grade N-I or S-I units shall be provided for other load-bearing walls or partitions.
3) Concrete Building Brick: ASTM C55 made with lightweight or normal aggregates, Grade N-I or S-I except that brick exposed to weather shall be N-I.
4) Mortar: ASTM C270-95, Type S prepackaged mortar mix which shall not contain any non-cementitious fillers combined with not more than three parts sand per on part mix.
5) Reinforcing Steel: ASTM A615 Grade 60 steel deformed bars where indicated on the plans. Where reinforcing bars are installed in the cells of concrete masonry units, they shall be secured with wire ties at intervals not exceeding 24" o/c to maintain the bars location in the cell. The tolerance for spacing of vertical bars is ± 2 inches along the length of the wall. The tolerance for the distance between the face of the concrete masonry unit and the center of the bar shall not exceed ± ½".
6) Mortar protrusion shall be less than ½". A protrusion of ½" or greater must be removed before grouting.
7) Horizontal Joint Reinforcement: ASTM A82 fabricated from cold drawn steel wire and hot dip zinc coated (ASTM A153). It shall consist of two or more parallel, longitudinal wires 0.1875" in diameter with weld-connected cross wires 0.1483" in diameter at a minimum of 16" o/c. Joint reinforcement is to be installed in every other course and in the first two courses at the bottom and top of wall openings and shall extend not less than 24" past the opening. Splices shall overlap not less than 12".
8) Execution: Masonry units shall be laid in a running bond pattern unless noted otherwise. The walls shall be carried up level and plumb within the tolerances specified in ACI 530.1-88, Section 2.3.3.2. If nonstandard dimensions are encountered, block shall be cut with a masonry saw to fit, not by stretching or shrinking joints. Unfinished work shall be stepped back for joining with new work. Toothing will not be permitted except where specifically approved. Damaged units are to be cut out and new units set in place.
9) The filled cells and bond beam blocks of reinforced masonry walls are to be filled with ASTM C476-91, Grout for Masonry with minimum compressive stress of 2,000 psi and slump range or 8" to 11". The outside face of the bottom block of each cell is to be broken out for inspection of reinforcing and clean out of mortar droppings in cell. The grout is to be pumped into the cell in maximum five foot lifts and immediately vibrated to minimize any voiding of the grout. Reconsolidate each lift by vibrating several inches into the preceding lift before plasticity is lost. Reconsolidate the top lift and fill with grout any space left by settlement shrinkage.

LUMBER GENERAL NOTES:

1) All common framing lumber is to meet the following minimum specifications at 19% moisture content:

MATERIAL	Fb (psi)	Ft (psi)	Fc (psi)(Perp)	E (psi)
# 2 Spruce Pine Fur	875	450	425	1,400,000
Southern Yellow Pine	750	450	565	1,400,000

2) All Structural Composite Lumber (LVL, LSL, PSL) is to meet the following minimum specifications:

APPLICATION	Fb (psi)	Fc (psi)(Parallel)	Fc (psi)(Perp.)	E (psi)
Girders & Beams (LVL,PSL)	2,600	2,310	650	1,900,000
Columns (LSL) & Rimboards	1,700	1,400	400	1,300,000

3) All Glue Laminated Timber (Glu-lam) is to meet the following minimum specifications:

APPLICATION	Fb (psi)	Fc (psi)(Parallel)	Fc (psi)(Perp.)	E (psi)
Girders & Beams	2,400	1,700	740	1,700,000
Columns	1,600	1,550	560	1,500,000

4) Open Web Floor Trusses:

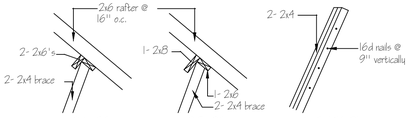
APPLICATION	fb	
Top & Bottom Chords	2,500	1.9E MSR Lumber
Columns (LSL) & Rimboards	950	1.4E Lumber

5) Where three or four-ply "Lam" beams are side-loaded (joists frame into the side at the outside plies), fasten all plies together with two rows of ½" diameter bolts at 16" o/c. The bolts shall be located a minimum of 2 ½" and a maximum of 3 ½" from the top or bottom of the beam.
6) Built-up wood columns consisting of multiple studs shall have each lamination nailed with 16d nails at 9" o/c.

STEEL GENERAL NOTES:

1) All steel wide flange beams shall conform to ASTM A572 having a minimum yield stress of 50,000 psi.
2) All steel pipes shall be Schedule 40 or better with a minimum yield stress of 35,000 psi.
3) All steel tubes shall conform to ASTM A500, Grade B, having a minimum yield stress of 46,000 psi.
4) All other shapes not listed above shall conform to ASTM A36 having a minimum yield stress of 36,000 psi.
5) Unless otherwise noted, all welds shall be fillet type with a minimum 3/16" leg. Welding electrodes shall be E70xx type having a minimum yield strength of 70,000 psi. Welding work and materials shall conform to the American Welding Society Code (AWS D.1).
6) Bolted connections shall include high strength bolts conforming to ASTM A325. Foundation anchor bolts or tie rods shall conform to ASTM A36 having a minimum yield strength of 36,000 psi.

II. Details:

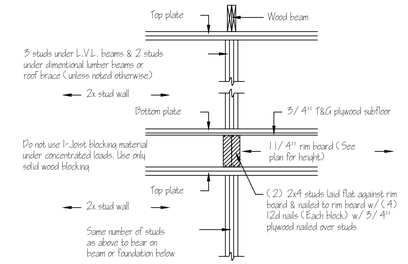


Stucco Code Requirements

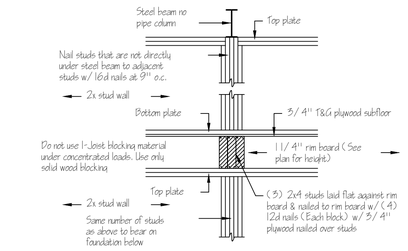
A. Joints are necessary at the following locations:
   - I) Horizontally at each floor line
   - II) No areas larger than 144 sq.ft. exposed
   - III) No dimension longer than 18'-0"
   - IV) No dimension shorter than 2 1/2 times the shortest dimension

B. Drip screed required at the bottom of all walls 2" above paved areas and 4" above grade.

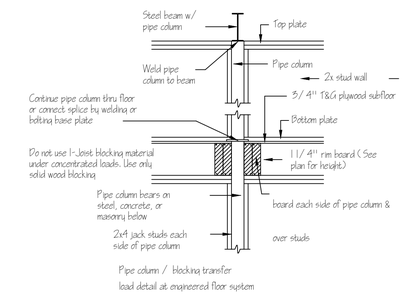
C. See ASTM 926 and 1063 for further information.



Number of studs / blocking transfer load detail at engineered floor system



Number of studs / blocking transfer load detail at engineered floor system



Pipe column / blocking transfer load detail at engineered floor system

Residential Structures, P.C.
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NORTH CAROLINA RESIDENTIAL STRUCTURES, P.C. No. C3295 CERTIFICATE OF AUTHORIZATION

RESIDENTIAL STRUCTURES, P.C.
3410 N. Davidson Street
Charlotte, NC 28205

Seal for Structural Only

SCOTT BAILEY
REFLECTION POINT

REV.	DATE	DESCRIPTION

DESIGNER: MCP

SCALE:

DATE: 03/01/2018

GENERAL NOTES

SHEET: GN1