GENERAL STRUCTURAL NOTES

1. GENERAL

A. ALL CONSTRUCTION SHALL CONFORM WITH THE PROVISIONS OF THE 2018 INTERNATIONAL RESIDENTIAL CODE FOR ONE AND TWO FAMILY DWELLINGS.

B. DESIGN LIVE LOADS:
ROOF. . . . . 30 PSF
FLOORS. . . . . 40 PSF
SLEEPING AREAS. . . . . 30 PSF
WIND LOADS. . . . . 120 MPH

C. THE CONTRACTOR SHALL PROVIDE ALL SHORING AND BRACING AS REQUIRED TO SUPPORT THE EXISTING STRUCTURE. THE CONTRACTOR SHALL EXAMINE THE EXISTING STRUCTURE TO DETERMINE THE EXTENT OF NECESSARY SHORING AND BRACING. THE CAPACITY AND METHOD USED FOR SHORING AND BRACING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

2. FOUNDATIONS

A. FOOTINGS ARE DESIGNED FOR AN ALLOWABLE SOIL BEARING CAPACITY OF 2000 PSF. FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED SOIL, 1'-0" BELOW ORIGINAL GRADE. THE BOTTOM OF EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-0" BELOW FINISHED GRADE. CONTRACTOR TO VERIFY THE ALLOWABLE SOIL PRESSURE IN THE FIELD. IF FOUND TO BE LESS THAN 2000 PSF, THE FOOTINGS WILL HAVE TO BE REDESIGNED.

3. CAST IN PLACE CONCRETE

A. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST APPROVED (BY LOCAL GOVERNMENT) EDITIONS OF THE FOLLOWING A.C.I. AND A.S.T.M. DOCUMENTS:

ACI-301 SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
ACI-318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE

B. ALL CONCRETE, EXCEPT AS NOTED, SHALL BE (f'c=3,000 PSI) STONE AGGREGATE CONCRETE AT 28 DAYS. ALL CONCRETE EXPOSED TO THE WEATHER SHALL BE AIR ENTRAINED.

C. SLABS ON GROUND SHALL BE 4" THICK CONCRETE REINFORCED WITH 6"X6" (W1.4XW1.4 WWF OVER 6 MIL POLYETHYLENE VAPOR BARRIER AND 4" WASHED GRAVEL UNLESS OTHERWISE NOTED.

4. MASONRY

A. ALL MASONRY CONSTRUCTION AND MATERIALS USED THEREIN (CONCRETE MASONRY, CLAY MASONRY, MORTAR, GROUT AND STEEL REINFORCEMENT) SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" (ACI 530-92/ASCE 5-92/TMS 402-92) AND "SPECIFICATIONS FOR MASONRY STRUCTURES" (ACI 530.1-92/ASCE 6-92/TMS 602-92) IN ALL RESPECTS.

B. MASONRY BEARING WALLS SHALL CONSIST OF STANDARD HOLLOW UNITS CONFORMING TO ASTM C 90 UNLESS OTHERWISE NOTED. WHERE SOLID UNITS ARE REQUIRED, PROVIDE UNITS CONFORMING TO ASTM C 145.

C. ALL MORTAR SHALL CONFORM TO THE REQUIREMENTS FOR PROPORTIONS, MIXING, STRENGTH AND APPLICATION FOR PORTLAND CEMENT/LIME TYPE "S" MORTAR AS DESCRIBED IN ACI 530-92.

D. ALL GROUT FILL IN MASONRY WALLS SHALL CONFORM TO ASTM C 476. SLUMP RANGE 8-11". PLACE GROUT IN 5'-0" MAXIMUM POUR HEIGHTS AND CONSOLIDATE BY MECHANICAL VIBRATION.

E. PROVIDE 8" DEPTH OF 140 % SOLID MASONRY BELOW ALL JOIST OR SLAB BEARING LINES. PROVIDE 16" HIGH X 16" LONG 100 % SOLID MASONRY BELOW ALL LINTELS AND BEAMS UNLESS NOTED OTHERWISE.

F. ALL MASONRY WALLS SHALL BE REINFORCED WITH NO. 9 GAGE TRUSS TYPE GALVANIZED DUR-O-WALL SPACED VERTICALLY AT 16" O.C. U.N.O. LAY ALL DUR-O-WALL 8" MINIMUM. PROVIDE CORNER AND TEE PIECES AT ALL INTERSECTIONS.

G. LOOSE LINTELS FOR MASONRY WALLS SHALL BE FOR EACH 4" WIDTH OF MASONRY ONE STEEL ANGLE AS FOLLOWS:

0'-0" TO 3'-0" 3-1/2" X 3-1/2" X 5/16"
3'-1" TO 5'-0" 4" X 3-1/2" X 5/16"
5'-1" TO 6'-6" 5" X 3-1/2" X 3/8"
6'-7" TO 8'-0" 6" X 3-1/2" X 3/8"A

ALL ANGLES SHALL HAVE THEIR SHORT LEG OUTSTANDING AND 6" MINIMUM BEARING.

5. STRUCTURAL STEEL

A. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM SPECIFICATION A992 (LATEST LOCAL APPROVED). ALL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE AISC MANUAL, AISC SPECIFICATION AND AISC CODE OF STANDARD PRACTICE.

B. ALL WELDED CONNECTIONS SHALL BE DONE WITH E70XX ELECTRODES. SHOP AND FIELD WELDS SHALL BE MADE BY APPROVED CERTIFIED WELDERS AND SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE FOR BUILDINGS AWS D1.1. WELDS SHALL DEVELOP THE FULL STRENGTH OF MATERIALS BEING WELDED UNLESS OTHERWISE NOTED.

6. WOOD

A. STRUCTURAL SOLID WOOD RAFTERS, JOISTS, BEAMS AND STUDS SHALL BE HEM FIR #2 OR SPRUCE PINE FIR #2 SURFACED DRY AT A MAXIMUM OF 19
ALL LUMBER EXPOSED TO WEATHER SHALL BE PRESSURE TREATED SOUTHERN PINE #2.
ALL FABRICATION, ERECTION, OTHER PROCEDURES, AND MINIMUM UNIT STRESSES SHALL CONFORM TO THE CURRENT "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION".

B. WOOD TRUSSES SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION (ANSI/TPI 1) AND COMMENTARY AND RECOMMENDATIONS FOR HANDLING, INSTALLING AND BRACING (PER BCSI) METAL PLATE CONNECTED WOOD TRUSSES (HIB-91) AS PUBLISHED BY THE TRUSS PLATE INSTITUTE AND IN ACCORDANCE WITH THE 1991 EDITION OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION.

C. WOOD TRUSSES AND ENGINEERED FLOOR JOISTS ARE TO BE DESIGNED BY THE SUPPLIER. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER/ARCHITECT FOR REVIEW. ALL TRUSSES AND JOISTS SHALL BE DESIGNED TO LIMIT THE BEARING STRESS TO 425 psi WHEN MEMBERS BEAR ON STUD WALLS. PROVIDE MEMBERS OF ADEQUATE WIDTH OR METAL CONNECTIONS TO LIMIT STRESSES TO THE SPECIFIED VALUE.

D. ALL LAMINATED VENEER LUMBER (LVL) OR PARALLEL STRAND LUMBER (PSL) SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fb=2600psi, Fv=285psi, E=1,900,000psi, Fc=2510psi(PARALLEL), Fc=750psi(PERPENDICULAR).

E. ALL DOUBLE MEMBERS SHALL BE NAILED TOGETHER WITH 2 ROWS OF 16d NAILS SPACED AT 12" O.C. ALL TRIPLE MEMBERS SHALL BE NAILED TOGETHER WITH 3 ROWS OF 16d NAILS SPACED AT 12" O.C. NAILED FROM EACH SIDE.

F. PROVIDE DOUBLE JOISTS AT PARALLEL PARTITIONS WHERE PARTITION LENGTH EXCEEDS 1/3 JOIST SPAN.

G. ALL NAILS ARE TO BE COMMON WIRE NAILS. NAILING OF ALL FRAMING SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS BUT IN NO CASE SHALL BE LESS THAN THE RECOMMENDED NAILING SCHEDULE CONTAINED IN THE 2018 INTERNATIONAL RESIDENTIAL CODE. ALL MULTIPLE STUD POSTS ARE TO BE NAILED TOGETHER WITH 12d NAILS @ 6" O.C. STAGGERED.

H. PROVIDE BRIDGING SPACED AT 48" O.C. IN FIRST TWO JOIST, RAFTER OR TRUSS SPACES WHEN FRAMING IS PARALLEL TO EXTERIOR WALL. NAIL SHEATHING (FLOOR, CEILING OR ROOF) TO BRIDGING AND NAIL BRIDGING TO EXTERIOR WALL PLATE. PROVIDE ONE ROW OF BRIDGING BETWEEN ALL FLOOR AND ROOF JOISTS FOR EACH 8'-0" OF SPAN. PROVIDE SOLID BLOCKING OR A CONTINUOUS RIM JOIST AT THE BEARING OF JOISTS, RAFTERS OR TRUSSES ON WOOD PLATES.

I. ALL POSTS (MULTIPLE STUDS OR SOLID POST) SUPPORTING BEAMS, WALL HEADERS OR GIRDER TRUSSES, SHALL BE BLOCKED SOLID FOR THE FULL LENGTH AND WIDTH OF POSTS AT ALL INTERSECTIONS WITH FLOORS AS REQUIRED TO PROVIDE CONTINUOUS SUPPORT TO TOP OF FOUNDATION WALLS OR BEAMS. POSTS SHOWN ON UPPER LEVELS FLOORS SHALL ALSO BE INSTALLED ON THE LOWER LEVELS IN LINE WITH THE POST ABOVE DOWN TO FOUNDATION WALLS OR BEAMS.

J. ALL FLUSH JOIST TO BEAM OR BEAM TO BEAM CONNECTIONS SHALL BE MADE WITH JOIST OR BEAM HANGERS TO SUPPORT THE LOAD CAPACITY INDICATED ON THE PLANS OR THE FULL CAPACITY OF THE JOIST OR BEAM. HANGERS SHALL BE PROVIDED BY SIMPSON STRONG TIE OR USP LUMBER CONNECTORS. THE SUPPLIER SHALL DESIGN ALL HANGERS FOR THE CAPACITY STATED. INSTALL ALL HANGERS IN STRICT CONFORMANCE TO THE MANUFACTURES INSTRUCTIONS. FILL ALL NAIL OR BOLT HOLES USING THE SPECIFIED NAILS AND BOLTS ONLY.

MAGNOLIA ACRES LOT 1

THE ROANOKE

CARUSO HOMES

VERSION
1.5

2018 NORTH CAROLINA STATE BUILDING CODE/ RESIDENTIAL CODE:
"REFERENCE TO INTERNATIONAL CODES SHALL MEAN THE NORTH CAROLINA CODES."

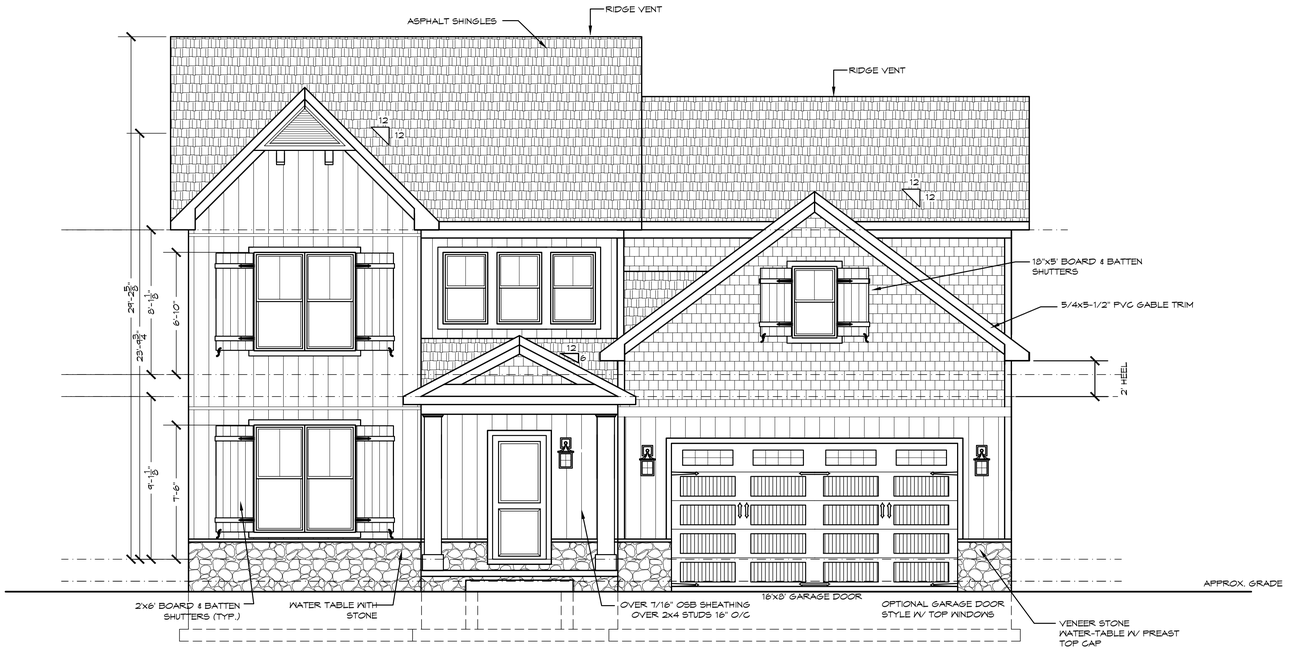
SEE PAGE 9 FOR HEADER & GIRDER SPANS/ JACK STUDS & FULL HEIGHT STUDS.
(REFERENCES 2018 IRC)
USE PAGE UNLESS NOTED DIFFERENTLY ON PLANS

INDEX

CONTENTS PAGE #

HEATED SQFT- 1	
DESCRIPTION	AREA
FIRST FLOOR LIVABLE	1728 SQ.FT.
SECOND FLOOR LIVABLE	964 SQ.FT.
FINISHED BASEMENT LIVABLE	968 SQ.FT.
GRAND TOTAL	3660 SQ.FT.

UNHEATED SQFT- 1	
DESCRIPTION	AREA
FRONT PORCH	121 SQ.FT.
2 CAR GARAGE	477 SQ.FT.
MOTOR COURT GARAGE	228 SQ.FT.



FRONT ELEVATION 3

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

REAR ELEVATION

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

THE ROANOKE

CARUSO HOMES

ELEVATION

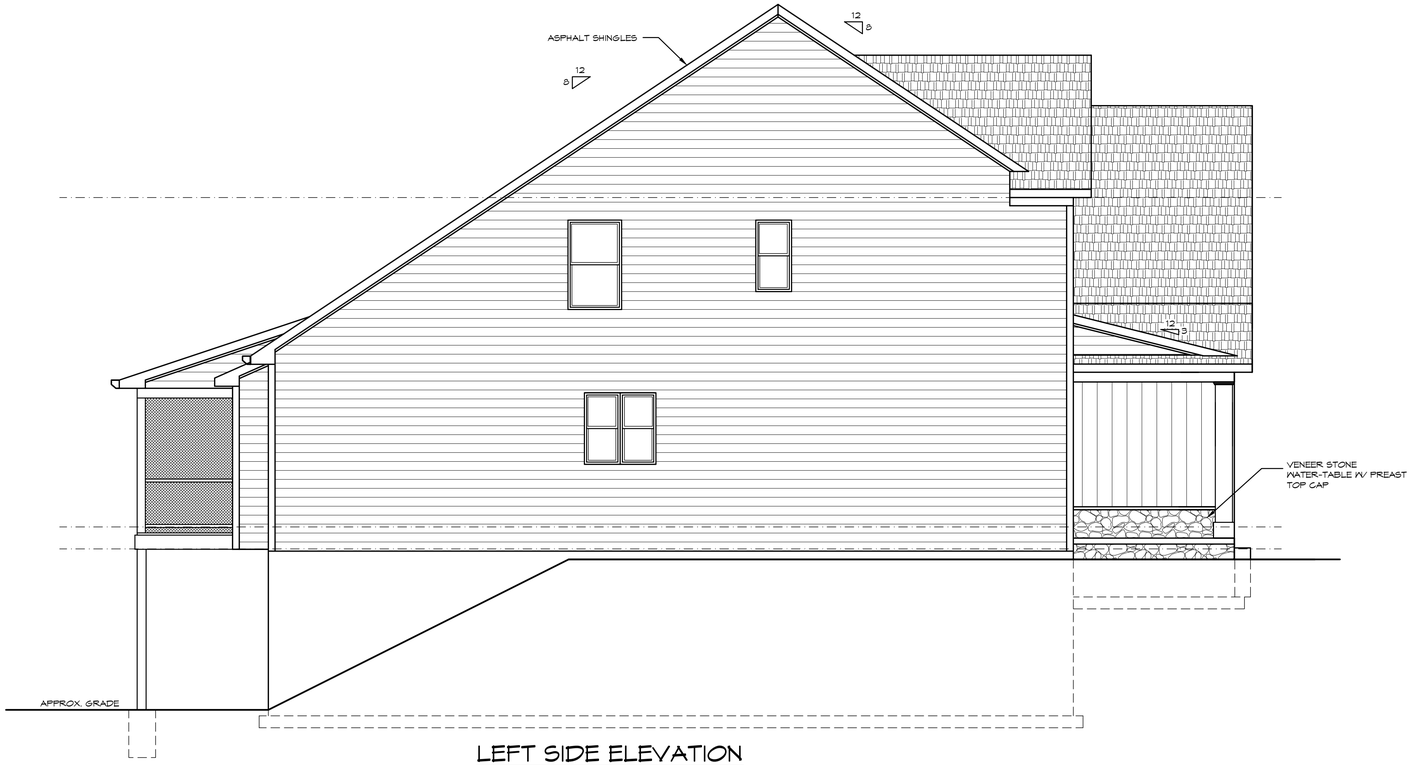
VERSION 1.9

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

DATE:

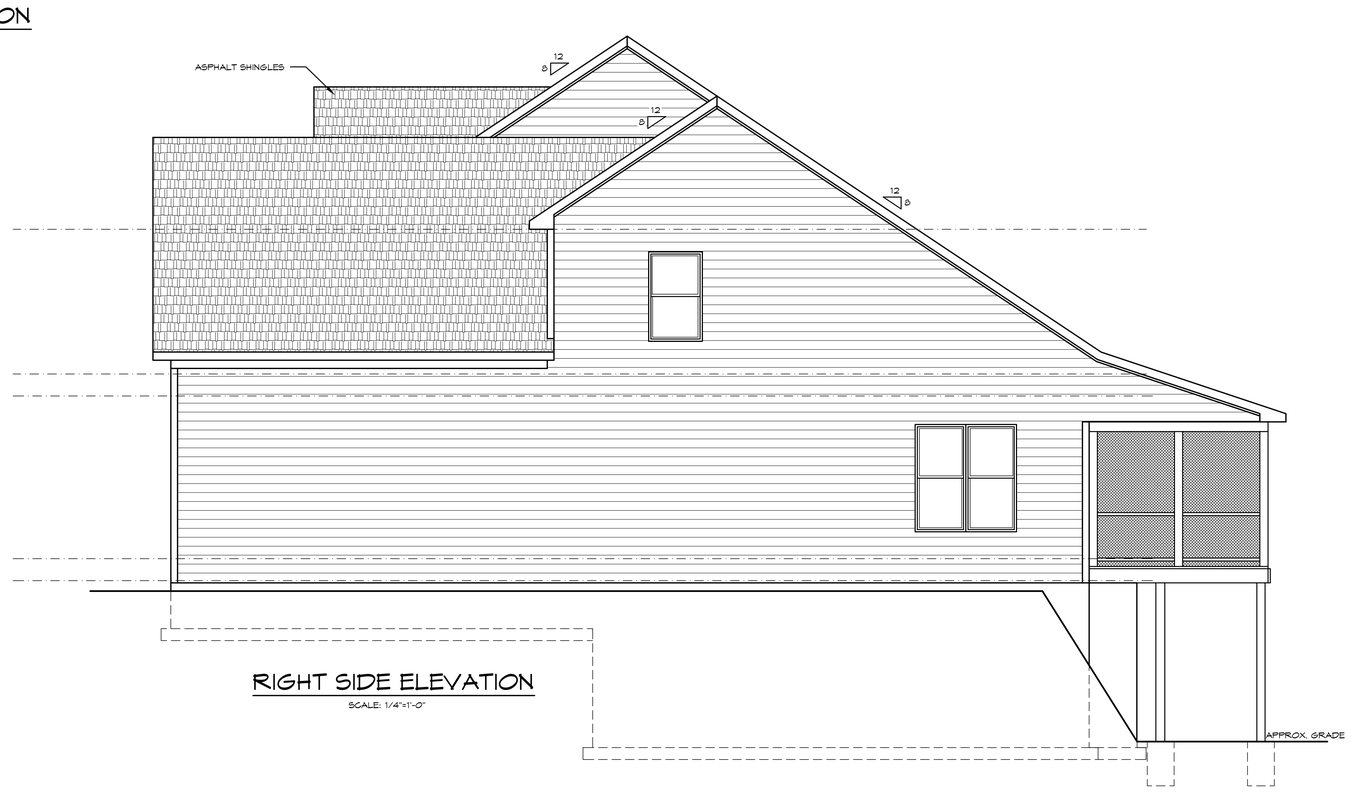
SHEET NO.: 1

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320



LEFT SIDE ELEVATION

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



RIGHT SIDE ELEVATION

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

THE ROANOKE

CARUSO HOMES

ELEVATIONS

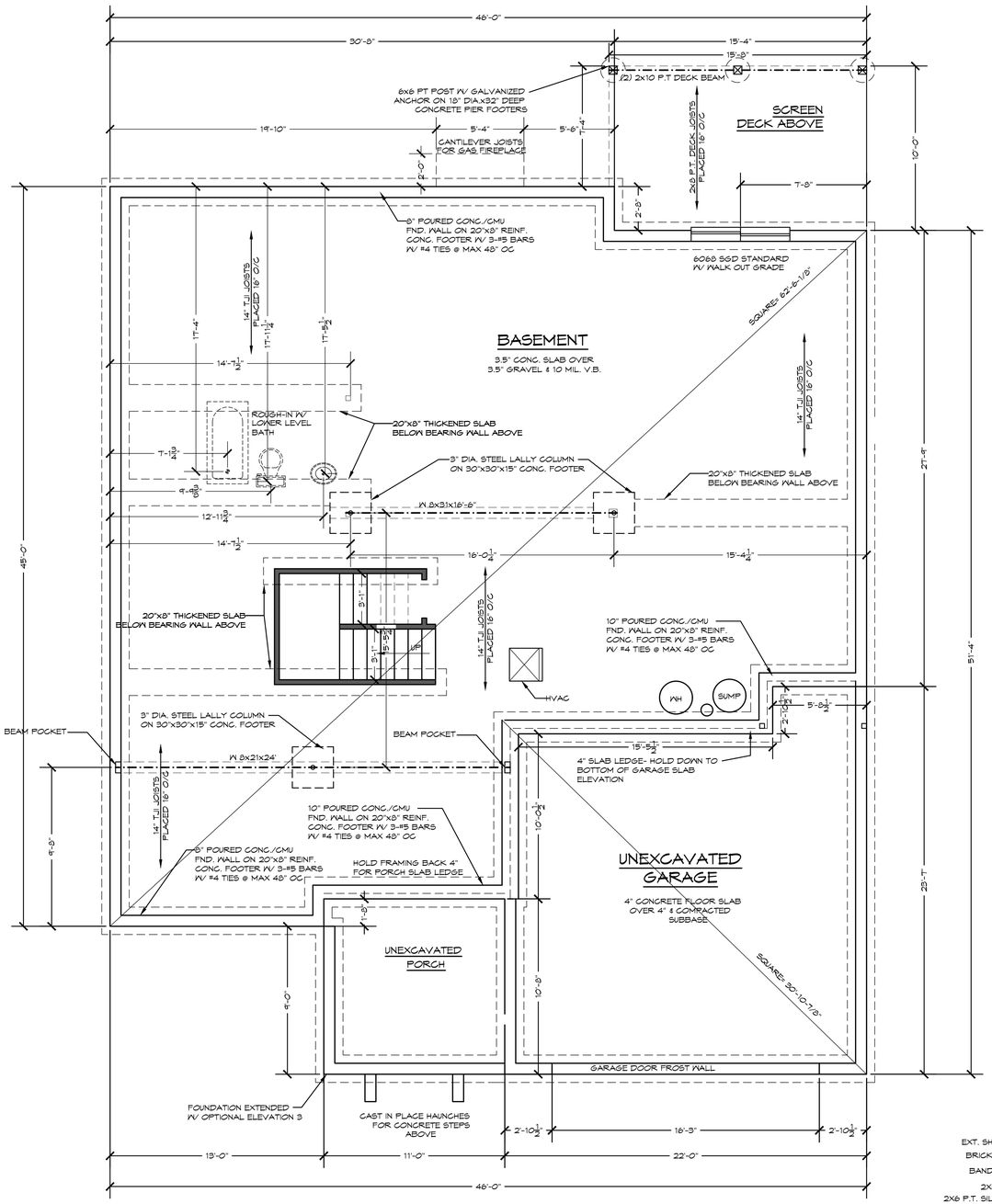
VERSION
1.9

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

DATE:

SHEET NO.: 2

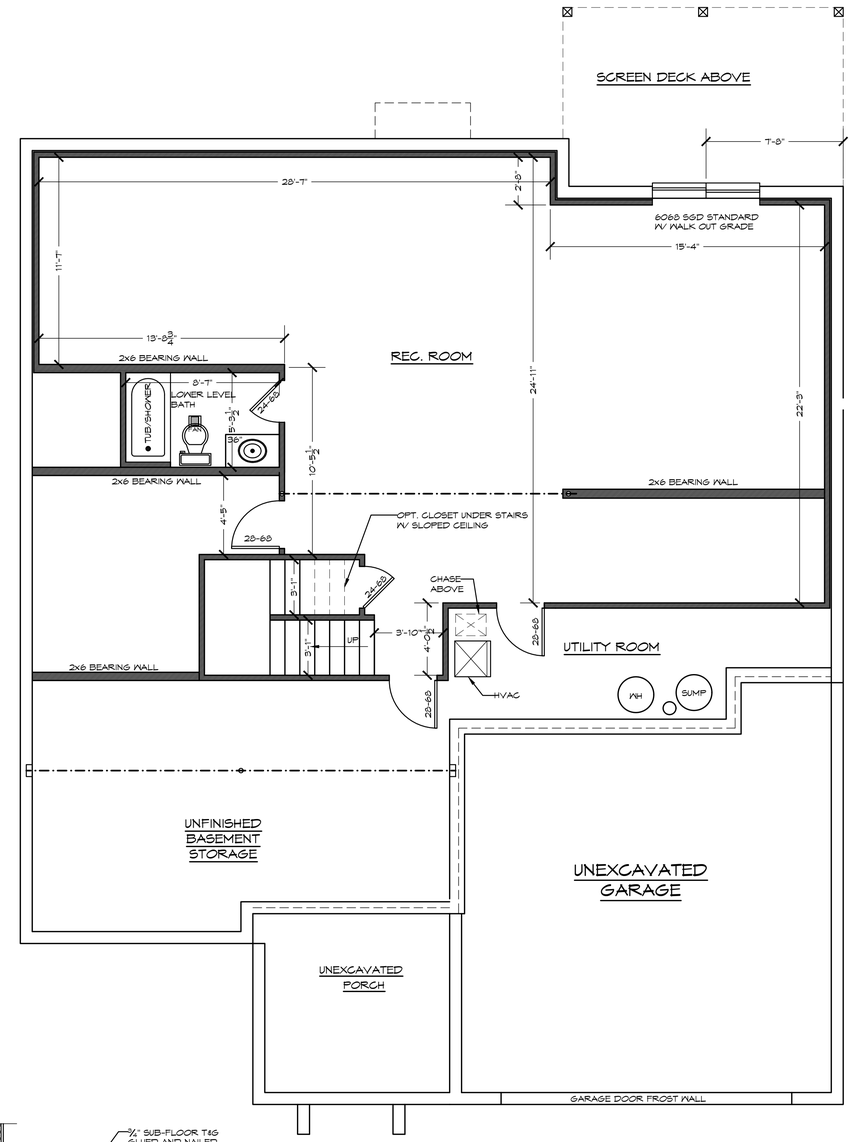
GBL CUSTOM HOME
DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320



BASEMENT FOUNDATION PLAN

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

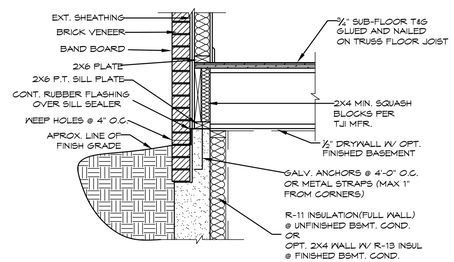
9' BASEMENT CEILING HEIGHT



FINISHED BASEMENT PLAN

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

9' BASEMENT CEILING HEIGHT



BRICK LEDGE W/ BASEMENT FOUND.

SCALE: 3/4"=1'-0"

THE ROANOKE

CARUSO HOMES

BASEMENT FOUNDATION PLAN

VERSION 1.9

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

DATE: 10/2021

SHEET NO.: 3

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

GENERAL NOTES:

-WINDOWS SHOWN ARE STANDARD VINYL SIZES. VERIFY WITH MANUFACTURE THAT SHOWN SIZES MEET OR EXCEED EGRESS CLEAR OPENING AREA OF 5.7 SQ.FT., CLEAR OPENING WIDTH OF 20" & CLEAR OPENING HEIGHT OF 24"
-FINAL GRADE SHOWN HEREON IS STRICTLY APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
-PROVIDE SMOKE DETECTORS TO BE HARD WIRED W/ BATTERY BACKUP.
1 PER BEDROOM & 1 IN CENTRAL LOCATION PER LEVEL
-PROVIDE CARBON MONOXIDE DETECTORS TO BE HARD WIRED W/ BATTERY BACKUP.
1 IN CENTRAL LOCATION PER LEVEL
-THIS HOME IS TO BE FULLY SPRINKLED PER COUNTY CODE

ALL EXTERIOR STEPS TO BE FIELD VERIFIED
PROVIDE HANDRAILS AS GRADE REQUIRES

9' FIRST FLOOR CEILING HEIGHT

FLOOR JOIST- DATA: LP BRAND OR EQUAL- W 80 SERIES L/480

ALL BEAMS AND HEADERS SHALL HAVE (1)2x JACK STUD & (1)2x KING STUD UNLESS OTHERWISE NOTED. THE NUMBER OF STUDS INDICATED ON PLANS ARE THE TOTAL NUMBER OF JACK STUDS REQUIRED, UNLESS OTHERWISE NOTED

PROVIDE KING STUDS AT EACH END OF HEADERS AS NOTED BELOW.

(1) STUD UP TO 6' OPENING

(2) STUDS UP TO 8' OPENING

(3) STUDS UP TO 9' OPENING

HEADERS (MINIMUM SIZE) SHALL BE AS SHOWN UNLESS NOTED DIFFERENTLY ON PLANS:

(a) INTERIOR

(1) SPANS UP TO 2'-6" - 2-2x6's

(2) SPANS 2'-6" TO 3'-6" - 2-2x8's

(3) SPANS 3'-6" TO 6'-6" - 2-2x10's

(4) SPANS 6'-6" OR MORE SEE PLAN

(b) EXTERIOR

(1) SPANS UP TO 2'-0" - 2-2x6's

(2) SPANS 2'-0" TO 3'-0" - 2-2x8's

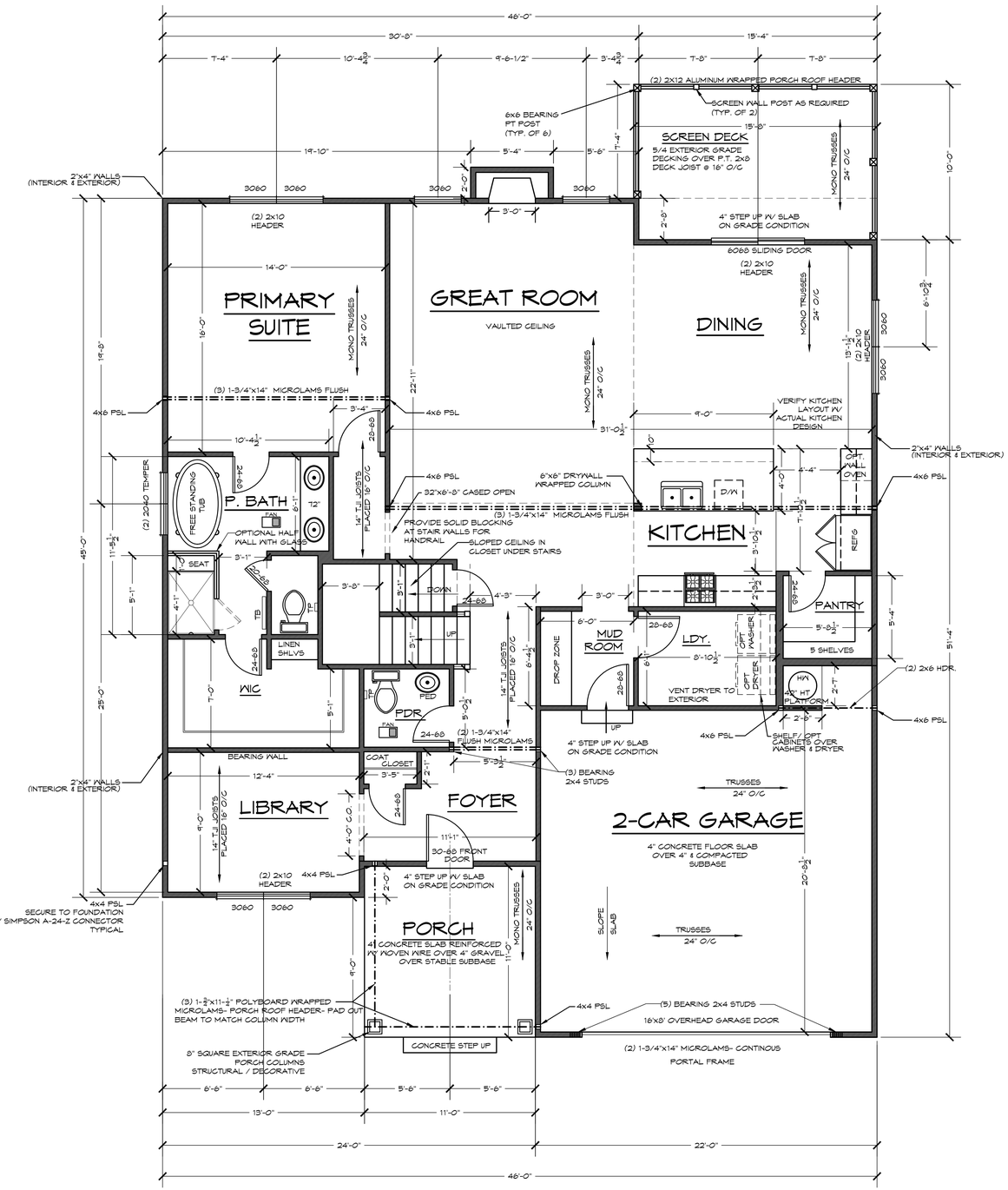
(3) SPANS 3'-0" TO 5'-0" - 2-2x10's

(4) SPANS 5'-0" OR MORE SEE PLAN

TABLE R301.5 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS (In pounds per square foot)

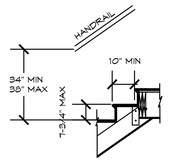
USE	LIVE LOAD
UNINHABITABLE ATTICA W/O STORAGE. b	10
UNINHABITABLE ATTICS W/ LIMITED STORAGE. b, g	20
HABITABLE ATTICS & ATTICS SERVED W/ FIXED STAIRS.	30
BALCONIES (EXTERIOR) & DECKS. e	40
FIRE ESCAPES.	40
GUARDRAILS & HANDRAILS. d	200h
GUARDRAIL INFILL COMPONENTS. f	50h
PASSENGER VEHICLE GARAGES. a	50a
ROOMS OTHER THAN SLEEPING ROOMS.	40
SLEEPING ROOMS.	30
STAIRS.	40c

For SI: 1 pound per square foot = 0.0479 kPa, 1 square inch = 645 mm2, 1 pound = 4.45 N.
a. Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.
b. Uninhabitable attics without storage are those where the maximum clear height between joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches high by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.
c. Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.
d. A single concentrated load applied in any direction at any point along the top.
e. See Section R502.2.2 for decks attached to exterior walls.
f. Guard In-Fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.
g. Uninhabitable attics with limited storage are those where the maximum clear height between joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. The live load need only be applied to those portions of the joists or truss bottom chords where all of the following conditions are met:
1. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is a minimum of 30 inches.
2. The slopes of the joists or truss bottom chords are no greater than 2 inches vertical to 12 units horizontal.
3. Required insulation depth is less than the joist or truss bottom chord member depth. The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 lb/ft2. h. Glazing used in handrail assemblies and guards shall be designed with a safety factor of
4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.



FIRST FLOOR FRAMING PLAN- 1728 SQ FT
PORCH SHOWN W/ ELEVATION 1

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



TYPICAL STAIR SECTION

NOT TO SCALE

NOTE: ALL STAIRS SHALL BE CONSTRUCTED IN ACCORDANCE WITH IRC 2018 SECTION R314

THE ROANOKE

CARUSO HOMES

FIRST FLOOR FRAMING PLAN

VERSION 1.9

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

DATE: 8/2021

SHEET NO.: 4

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

ALL BEAMS AND HEADERS SHALL HAVE (1)2x JACK STUD & (1)2x KING STUD UNLESS OTHERWISE NOTED. THE NUMBER OF STUDS INDICATED ON PLANS ARE THE TOTAL NUMBER OF JACK STUDS REQUIRED, UNLESS OTHERWISE NOTED

PROVIDE KING STUDS AT EACH END OF HEADERS AS NOTED BELOW.

(1) STUD UP TO 6' OPENING

(2) STUDS UP TO 8' OPENING

(3) STUDS UP TO 9' OPENING

HEADERS (MINIMUM SIZE) SHALL BE AS SHOWN UNLESS NOTED DIFFERENTLY ON PLANS:

(a) INTERIOR

(1) SPANS UP TO 2'-6" - 2-2x6's

(2) SPANS 2'-6" TO 3'-6" - 2-2x8's

(3) SPANS 3'-6" TO 6'-6" - 2-2x10's

(4) SPANS 6'-6" OR MORE SEE PLAN

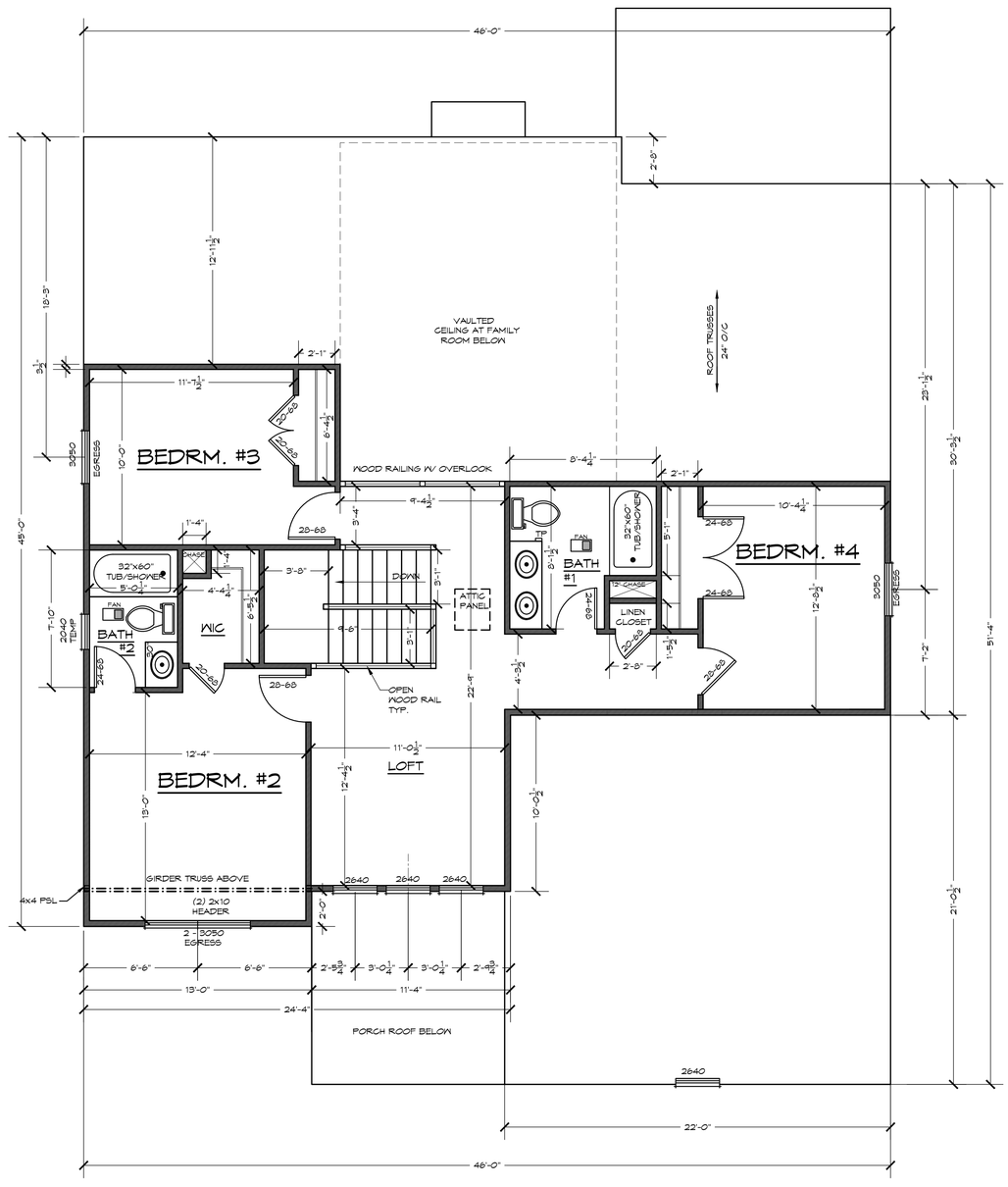
(b) EXTERIOR

(1) SPANS UP TO 2'-0" - 2-2x6's

(2) SPANS 2'-0" TO 3'-0" - 2-2x8's

(3) SPANS 3'-0" TO 5'-0" - 2-2x10's

(4) SPANS 5'-0" OR MORE SEE PLAN



SECOND FLOOR FRAMING PLAN- 964 SQ. FT.

SCALE: 3/16"=1'-0"

8' SECOND FLOOR CEILING HEIGHT

R613.2 WINDOW SILLS
ALL WINDOWS WHERE THE OPERABLE OPENING IS LOCATED MORE THAN 72" ABOVE FINISHED GRADE OR SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING SHALL BE A MIN. OF 24" ABOVE THE FINISHED FLOOR OF THE ROOM IN WHICH THE WINDOW IS LOCATED. GLAZING BETWEEN THE FLOOR AND 24" SHALL BE FIXED OR HAVE OPENINGS THROUGH WHICH A 4" DIA. SPHERE CANNOT PASS.

EXCEPTIONS:
1. WINDOWS WHOSE OPENINGS WILL NOT ALLOW A 4"DIA. SPHERE TO PASS THROUGH THE OPENING WHEN THE OPENING IS IN ITS LARGEST OPENED POSITION.
2. OPENINGS THAT ARE PROVIDED WITH WINDOW GUARDS THAT COMPLY WITH ASTM F 2090 OF F 2090

THE ROANOKE

CARUSO HOMES

SECOND FLOOR FRAMING PLAN

VERSION 1.9

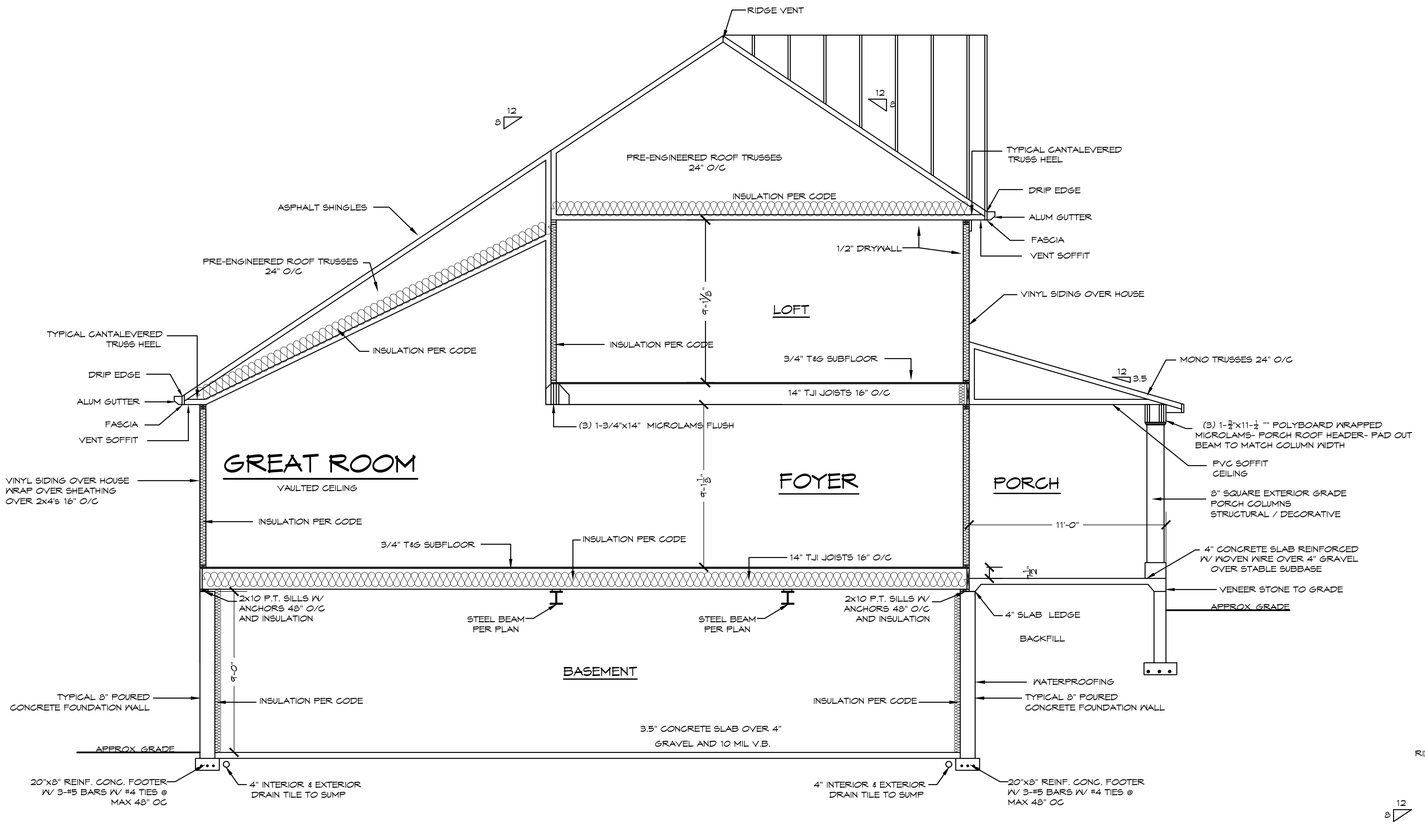
SCALE: 1/4" = 1'-0"

DATE: 10/2021

SHEET NO.: 5

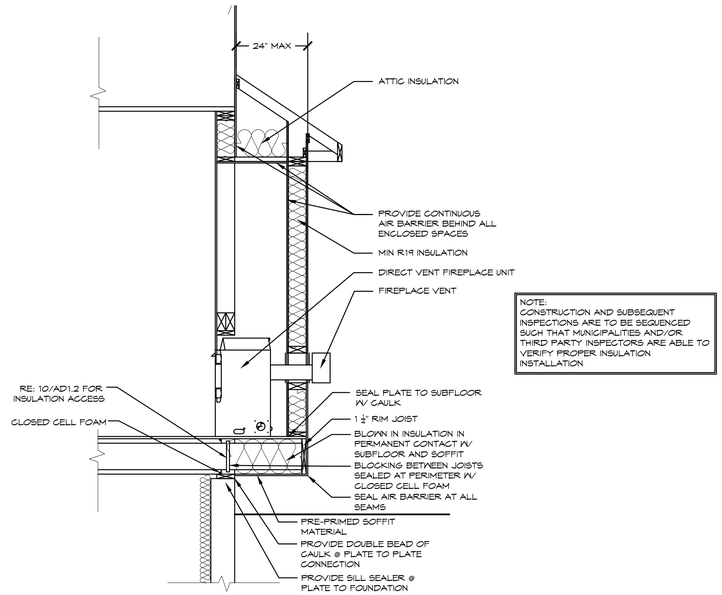
GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

TRUSS DESIGN SHOWN HEREON IS STRICTLY APPROXIMATE. TRUSSES ARE TO BE PRE-ENGINEERED AND CARRY TPI SEAL. ACTUAL TRUSS DESIGN MAY VARY.



SECTION

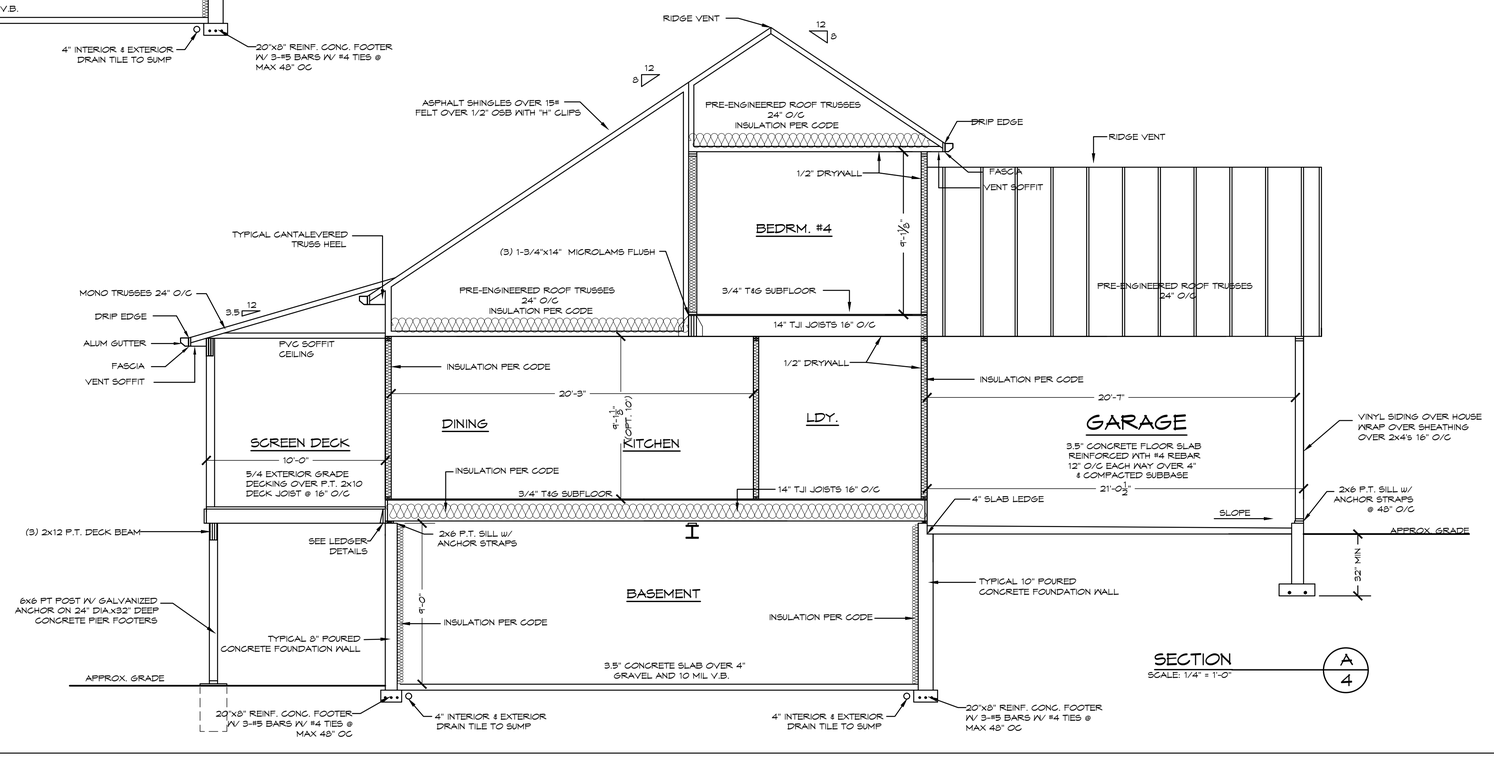
SCALE: 1/4"=1'-0"



NOTE:
CONSTRUCTION AND SUBSEQUENT INSPECTIONS ARE TO BE SEQUENCED SUCH THAT MUNICIPALITIES AND/OR THIRD PARTY INSPECTORS ARE ABLE TO VERIFY PROPER INSULATION INSTALLATION

CANTILEVERED FIREPLACE W/ CRAWL SPACE

NOT TO SCALE



SECTION

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

A 4

THE ROANOKE

CARUSO HOMES

SECTIONS

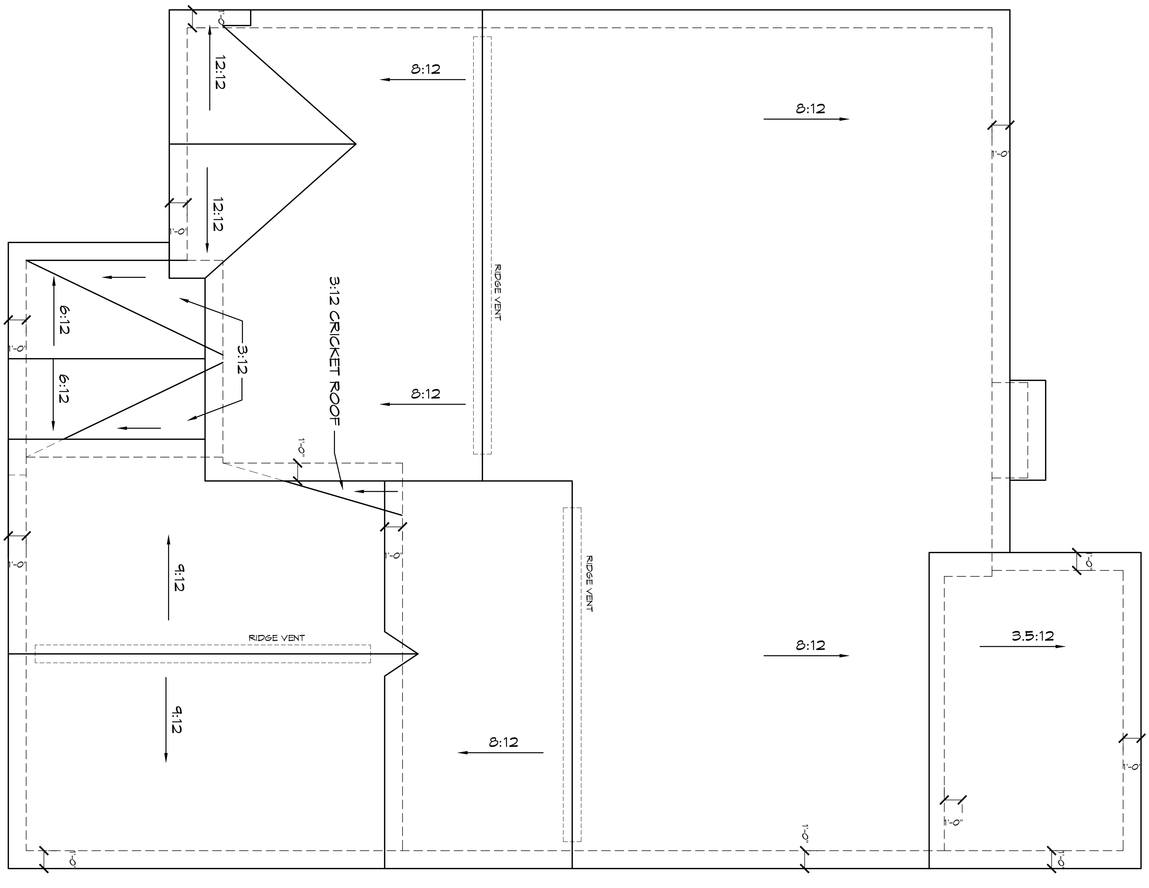
VERSION 1.9

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

DATE: 8/2021

SHEET NO.: 6

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD. 21048
PHONE 410-833-8320



ROOF PLAN

SCALE 1/4" = 1'-0"

SCALE: 1/4" =1'-0"	VERSION 1.9
DATE:	
SHEET NO.: 7	

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

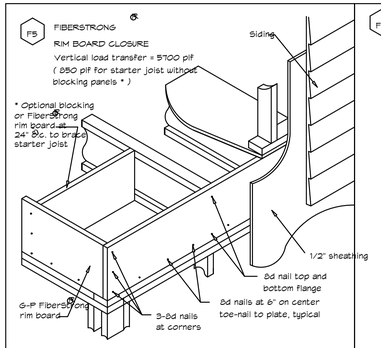
THE ROANOKE

CARUSO HOMES

ROOF PLAN

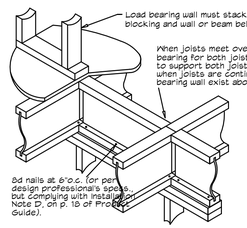
F5 FIBERSTRONG RIM BOARD CLOSURE

Vertical load transfer = 5700 plf
(850 plf for starter joist without blocking panels *)



F9 BLOCKING PANEL, INTERIOR

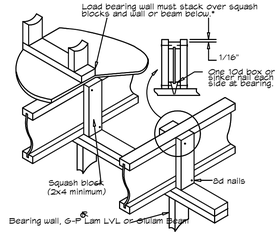
Vertical load transfer = 2000 plf max. along bearing wall
Required on interior walls:
- for lateral support when joists meet over wall, or
- for vertical load transfer when load bearing wall stacks directly over wall or beam below



* Non-stacking walls require additional consideration.

F10 SQUASH BLOCKS AT INTERIOR BEARING

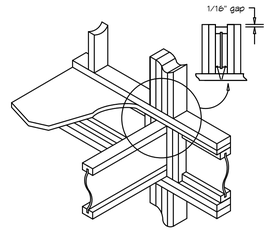
Vertical load transfer = 2000 plf max along load bearing wall.



* Non-stacking walls require additional consideration.

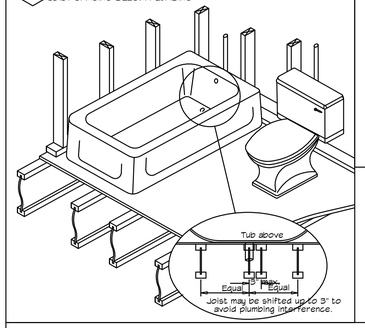
Check local building code for appropriate details in areas of high lateral load.

F19 SQUASH BLOCKS AT CONCENTRATED LOADS



Solid block all posts from above to bearing below with equal number of squash blocks

F2 JOIST SPACING BELOW PLUMBING



LVL FASTENING SCHEDULE

Maximum Uniform Load Applied to Either or Both Outside Plies (Pounds per lineal foot)

Plies in Member	16d NAILS		1/2" BOLTS		SCREWS (Note 9)	
	A	B	C	D	E	F
	2 ROWS 12" o.c.	3 ROWS 12" o.c.	2 ROWS 24" o.c.	2 ROWS 12" o.c.	2 ROWS 24" o.c.	2 ROWS 12" o.c.
2	505	760	505	1015	500	985
3	380	570	380	760	375	745
4	Not Permitted		340	675	330	665

NOTES:

1. Confirm adequacy of the beam (depth and number of pieces) for carrying the designated load.
2. Stress level for nail and bolt values is 100%. Increases of 15% for snow loaded or 25% for non-snow loaded roof conditions are permitted.
3. Top and bottom row of connectors should be 2" from edge.
4. Bolt holes are to be the same diameter as the bolt. Every bolt must extend through the full thickness of the member. Use washers under head and nut.
5. For three-piece member, specified nailing is from the each side.
6. To minimize rotation, four-piece members should only be used when loads are applied to both sides, or completely across the top of the member.
7. Four-piece members must be bolted or attached with 6" screws from both sides.
8. Floor joists must be attached with approved metal hangers.
9. Screws are USP WS series or Simpson Strong-Tie SDS installed per manufacturer instructions.
10. Screws for 3-ply and 4-ply members must be from both sides of beam.

1 3/4" Multiple Plies

2 PLY (2A Connection) | 3 PLY (3B Connection) | 4 PLY (4C Connection) | 4 PLY (4E Connection)

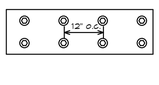
1 3/4" + 3 1/2"

2 PLY (2A Connection) | 3 PLY (3C Connection)

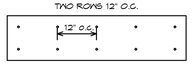
3 1/2"

2 PLY (4E Connection)

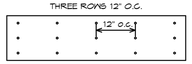
D (Bolts) & F (Screws) TWO ROWS 12" O.C.



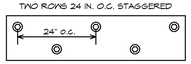
A (Nails) & F (Screws) TWO ROWS 12" O.C.



B (Nails) THREE ROWS 12" O.C.



C (Bolts) & E (Screws) TWO ROWS 24 IN. O.C. STAGGERED



2018 IECC CODE COMPLIANCE

R301.1 CLIMATE ZONE 3

R401.2 COMPLIANCE METHOD:
MANDATORY AND PRESCRIPTIVE PROVISIONS

R402.1.1 VAPOR RETARDER
WALL ASSEMBLIES IN THE THERMAL BUILDING ENVELOPE SHALL COMPLY WITH THE VAPOR RETARDER REQUIREMENTS OF SECTION R702.7 OF THE IRC CODE, 2018 EDITION

R402.1.2 ATTIC INSULATION: R-49
RAISED HEEL TRUSSES: R-38

R402.1.2 WOOD FRAME WALL:
R-20 OR R13+R5 CONTINUOUS INSULATION

R402.1.2 BASEMENT WALL INSULATION:
R-13/R-10 FOIL FACED CONTINUOUS, UNINTERRUPTED BATTS
FULL HEIGHT.

R402.1.2 CRAWL SPACE WALL INSULATION:
R-13/R-10 FOIL FACED CONTINUOUS BATTS FULL HEIGHT EXTENDING FROM FLOOR ABOVE TO FINISH GRADE LEVEL AND THEN VERTICALLY OR HORIZONTALLY AN ADDITIONAL 2'-0".

R402.1.2 FLOOR INSULATION OVER UNCONDITIONED SPACE:
R-19 BATT INSULATION

R402.1.2 WINDOW U-VALUE / SHGC
.35 (U-VALUE)
.40 (SHGC)

R402.2.10 SLAB ON GRADE FLOORS LESS THAN 12" BELOW GRADE:
R-10 RIGID FOAM BOARD UNDER SLAB EXTENDING EITHER 2'-0" HORIZONTALLY OR 2'-0" VERTICALLY.

R402.2.4 ATTIC ACCESS:
ATTIC ACCESS SCUTTLE WILL BE WEATHERSTRIPPED AND INSULATED R-49.

R402.4 BUILDING THERMAL ENVELOPE (AIR LEAKAGE):
EXTERIOR WALLS AND PENETRATIONS WILL BE SEALED PER THIS SECTION OF THE 2018 IECC WITH CAULK, GASKETS, WEATHERSTRIPPING OR AN AIR BARRIER OF SUITABLE MATERIAL.

R402.4.12 BUILDING THERMAL ENVELOPE TIGHTNESS TEST:
BUILDING ENVELOPE SHALL BE TESTED AND VERIFIED AS HAVING AN AIR LEAKAGE RATE OF NOT EXCEEDING 3 AIR CHANGES PER HOUR. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM E 779 OR ASTM E 1827 WITH (BLOWER DOOR) AS A PRESSURE OF 0.2 INCHES W.G. (50 PASCALS). TESTING SHALL BE SIGNED BY THE PARTY CONDUCTING THE TEST AND PROVIDED TO THE BUILDING INSPECTOR.

R402.4.2 FIREPLACES:
NEW WOOD BURNING MASONRY FIREPLACES WILL HAVE TIGHT-FITTING FLUE DAMPERS AND OUTDOOR COMBUSTION AIR.
FIRE PLACE DOORS SHALL BE LISTED AND LABLED IN ACCORDANCE WITH UL 127 (FACTORY BUILT FIREPLACE) AND UL 907 (MASONRY FIREPLACE)

R402.4.4 ROOMS CONTAINING FUEL BURNING APPLIANCES WHERE OPEN COMBUSTION AIR DUCTS PROVIDE COMBUSITON AIR TO OPEN COMBUSTION FUEL BURNING APPLICANCES, THE APPLIANCES AND COMBUSITON AIR SHALL BE LOCATED OUTSIDE THE BUILDING THERMAL ENVELOPE TO ENCLOSED IN A ROOM ISOLATED FROM THE THERMAL ENVELOPE.
EXCEPTION: DIRECT VENT APPLIANCES WITH BOTH INTAKE AND EXHAUST PIPES INSTALLED CONTINOUS THE OUTSIDE. FIREPLACES AND STOVES COMPLYING WITH SECTION R402.4.2 AND SECTION R1006 OF THE IRC.

R402.4.5 RECESSED LIGHTING:
RECESSED LUMINARIES INSTALLED IN THE BUILDING THERMAL ENVELOPE SHALL BE SEALED TO LIMIT AIR LEAKAGE.

R403.1.1 THERMOSTAT:
ALL DWELLING UNITS WILL HAVE AT LEAST (1) PROGRAMMABLE THERMOSTAT FOR EACH SEPARATE HEATING AND COOLING SYSTEM PER 2018 IECC SECTION 403.1.1

R403.1.2 WHERE A HEAT PUMP SYSTEM HAVING SUPPLEMENTARY ELECTRIC RESISTANCE HEAT IS USED THE THERMOSTAT SHALL PREVENT THE SUPPLEMENTARY HEAT FROM COMING ON WHEN HEAT PUMP CAN MEET HEATING LOAD.

R403.3.1 MECHANICAL DUCT INSULATION:
SUPPLY AND RETURN DUCTS IN ATTIC R-8 MINIMUM, R-6 WHEN LESS THAN 3'
SUPPLY AND RETURN DUCTS OUTSIDE OF CONDITIONED SPACE R-8 MINIMUM
ALL OTHER DUCTS EXCEPT THOSE LOCATED COMPLETELY INSIDE THE BUILDING THERMAL ENVELOPE R-6 MINIMUM. DUCTS LOCATED UNDER CONCRETE SLABS MUST BE R-6 MINIMUM.

R403.3.2 DUCT SEALING:
ALL DUCTS, AIR HANDLERS, FILTER BOXES WILL BE SEALED. JOINTS AND SEAMS WILL COMPLY WITH SECTION M1601.4.1 OF THE IRC.

A DUCT TIGHTNESS TEST ("DUCT BLASTER" DUCT TOTAL LEAKAGE TEST) WILL BE PERFORMED ON ALL HOMES AND SHALL BE VERIFIED BY EITHER A POST CONSTRUCTION TEST OR A ROUGH-IN TEST.
DUCT TIGHTNESS IS NOT REQUIRED IF THE AIR HANDLER AND ALL DUCTS ARE LOCATED WITHIN THE CONDITIONED SPACE.

R403.6 MECHANICAL VENTILATION:
OUTDOOR (MAKE UP AND EXHAUSTS) AIR DUCTS TO BE PROVIDED WITH AUTOMATIC OR GRAVITY DAMPER THAT CLOSE WHEN THE VENTILATION SYSTEM IS NOT OPERATING.

R403.6.1 WHOLE HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICIENCY TO COMPLY WITH TABLE R403.6.1

R403.7 EQUIPMENT SIZING SHALL COMPLY WITH R403.7.

R404.1 LIGHTING EQUIPMENT:
A MINIMUM OF 75 % OF ALL LAMPS (LIGHTS) MUST BE HIGH-EFFICACY LAMPS.

THE CONTRACTOR ALSO RESPONSIBLE FOR GENERATING CERTIFICATE OF COMPLIANCE AND AFFIXING TO ELECTRICAL PANEL OR WITHIN 6' OF THE PANEL AND BE READILY VISABLE.

THE ROANOKE

CARUSO HOMES

NOTES PAGE 2

VERSION 1.9

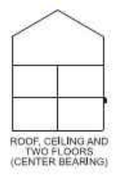
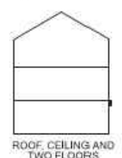
SCALE: NOT TO SCALE

DATE:

SHEET NO.: 8

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

TABLE R602.7(1)GIRDER SPANS[a]AND HEADER SPANS[a]FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, Southern pine and spruce-pine-fir[b]and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[e]																	
		30						50						70					
		Building width[c] (feet)																	
		12		24		36		12		24		36		12		24		36	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof and ceiling 	1-2 × 6	4-0	1	3-1	2	2-7	2	3-5	1	2-8	2	2-3	2	3-0	2	2-4	2	2-0	2
	1-2 × 8	5-1	2	3-11	2	3-3	2	4-4	2	3-4	2	2-10	2	3-10	2	3-0	2	2-6	3
	1-2 × 10	6-0	2	4-8	2	3-11	2	5-2	2	4-0	2	3-4	3	4-7	2	3-6	3	3-0	3
	1-2 × 12	7-1	2	5-5	2	4-7	3	6-1	2	4-8	3	3-11	3	5-5	2	4-2	3	3-6	3
	2-2 × 4	4-0	1	3-1	1	2-7	1	3-5	1	2-7	1	2-2	1	3-0	1	2-4	1	2-0	1
	2-2 × 6	6-0	1	4-7	1	3-10	1	5-1	1	3-11	1	3-3	2	4-6	1	3-6	2	2-11	2
	2-2 × 8	7-7	1	5-9	1	4-10	2	6-5	1	5-0	2	4-2	2	5-9	1	4-5	2	3-9	2
	2-2 × 10	9-0	1	6-10	2	5-9	2	7-8	2	5-11	2	4-11	2	6-9	2	5-3	2	4-5	2
	2-2 × 12	10-7	2	8-1	2	6-10	2	9-0	2	6-11	2	5-10	2	8-0	2	6-2	2	5-2	3
	3-2 × 8	9-5	1	7-3	1	6-1	1	8-1	1	6-3	1	5-3	2	7-2	1	5-6	2	4-8	2
	3-2 × 10	11-3	1	8-7	1	7-3	2	9-7	1	7-4	2	6-2	2	8-6	1	6-7	2	5-6	2
	3-2 × 12	13-2	1	10-1	2	8-6	2	11-3	2	8-8	2	7-4	2	10-0	2	7-9	2	6-6	2
	4-2 × 8	10-11	1	8-4	1	7-0	1	9-4	1	7-2	1	6-0	1	8-3	1	6-4	1	5-4	2
	4-2 × 10	12-11	1	9-11	1	8-4	1	11-1	1	8-6	1	7-2	2	9-10	1	7-7	2	6-4	2
	4-2 × 12	15-3	1	11-8	1	9-10	2	13-0	1	10-0	2	8-5	2	11-7	1	8-11	2	7-6	2
Roof, ceiling and one center-bearing floor 	1-2 × 6	3-3	1	2-7	2	2-2	2	3-0	2	2-4	2	2-0	2	2-9	2	2-2	2	1-10	2
	1-2 × 8	4-1	2	3-3	2	2-9	2	3-9	2	3-0	2	2-6	3	3-6	2	2-9	2	2-4	3
	1-2 × 10	4-11	2	3-10	2	3-3	3	4-6	2	3-6	3	3-0	3	4-1	2	3-3	3	2-9	3
	1-2 × 12	5-9	2	4-6	3	3-10	3	5-3	2	4-2	3	3-6	3	4-10	3	3-10	3	3-3	4
	2-2 × 4	3-3	1	2-6	1	2-2	1	3-0	1	2-4	1	2-0	1	2-8	1	2-2	1	1-10	1
	2-2 × 6	4-10	1	3-9	1	3-3	2	4-5	1	3-6	2	3-0	2	4-1	1	3-3	2	2-9	2
	2-2 × 8	6-1	1	4-10	2	4-1	2	5-7	2	4-5	2	3-9	2	5-2	2	4-1	2	3-6	2
	2-2 × 10	7-3	2	5-8	2	4-10	2	6-8	2	5-3	2	4-5	2	6-1	2	4-10	2	4-1	2
	2-2 × 12	8-6	2	6-8	2	5-8	2	7-10	2	6-2	2	5-3	3	7-2	2	5-8	2	4-10	3
	3-2 × 8	7-8	1	6-0	1	5-1	2	7-0	1	5-6	2	4-8	2	6-5	1	5-1	2	4-4	2
	3-2 × 10	9-1	1	7-2	2	6-1	2	8-4	1	6-7	2	5-7	2	7-8	2	6-1	2	5-2	2
	3-2 × 12	10-8	2	8-5	2	7-2	2	9-10	2	7-8	2	6-7	2	9-0	2	7-1	2	6-1	2
	4-2 × 8	8-10	1	6-11	1	5-11	1	8-1	1	6-4	1	5-5	2	7-5	1	5-11	1	5-0	2
	4-2 × 10	10-6	1	8-3	2	7-0	2	9-8	1	7-7	2	6-5	2	8-10	1	7-0	2	6-0	2
	4-2 × 12	12-4	1	9-8	2	8-3	2	11-4	2	8-11	2	7-7	2	10-4	2	8-3	2	7-0	2
Roof, ceiling and one clear-span floor 	1-2 × 6	2-11	2	2-3	2	1-11	2	2-9	2	2-1	2	1-9	2	2-7	2	2-0	2	1-8	2
	1-2 × 8	3-9	2	2-10	2	2-5	3	3-6	2	2-8	2	2-3	3	3-3	2	2-6	3	2 -2	3
	1-2 × 10	4-5	2	3-5	3	2-10	3	4-2	2	3-2	3	2-8	3	3-11	2	3-0	3	2-6	3
	1-2 × 12	5-2	2	4-0	3	3-4	3	4-10	3	3-9	3	3-2	4	4-7	3	3-6	3	3-0	4
	2-2 × 4	2-11	1	2-3	1	1-10	1	2-9	1	2-1	1	1-9	1	2-7	1	2-0	1	1-8	1
	2-2 × 6	4-4	1	3-4	2	2-10	2	4-1	1	3-2	2	2-8	2	3-10	1	3-0	2	2-6	2
	2-2 × 8	5-6	2	4-3	2	3-7	2	5-2	2	4-0	2	3-4	2	4-10	2	3-9	2	3-2	2
	2-2 × 10	6-7	2	5-0	2	4-2	2	6-1	2	4-9	2	4-0	2	5-9	2	4-5	2	3-9	3
	2-2 × 12	7-9	2	5-11	2	4-11	3	7-2	2	5-7	2	4-8	3	6-9	2	5-3	3	4-5	3
	3-2 × 8	6-11	1	5-3	2	4-5	2	6-5	1	5-0	2	4-2	2	6-1	1	4-8	2	4-0	2
	3-2 × 10	8-3	2	6-3	2	5-3	2	7-8	2	5-11	2	5-0	2	7-3	2	5-7	2	4-8	2
	3-2 × 12	9-8	2	7-5	2	6-2	2	9-0	2	7-0	2	5-10	2	8-6	2	6-7	2	5-6	3
	4-2 × 8	8-0	1	6-1	1	5-1	2	7-5	1	5-9	2	4-10	2	7-0	1	5-5	2	4-7	2
	4-2 × 10	9-6	1	7-3	2	6-1	2	8-10	1	6-10	2	5-9	2	8-4	1	6-5	2	5-5	2
	4-2 × 12	11-2	2	8-6	2	7-2	2	10-5	2	8-0	2	6-9	2	9-10	2	7-7	2	6-5	2
Roof, ceiling and two center-bearing floors 	1-2 × 6	2-8	2	2-1	2	1-10	2	2-7	2	2-0	2	1-9	2	2-5	2	1-11	2	1-8	2
	1-2 × 8	3-5	2	2-8	2	2-4	3	3-3	2	2-7	2	2-2	3	3-1	2	2-5	3	2-1	3
	1-2 × 10	4-0	2	3-2	3	2-9	3	3-10	2	3-1	3	2-7	3	3-8	2	2-11	3	2-5	3
	1-2 × 12	4-9	3	3-9	3	3-2	4	4-6	3	3-7	3	3-1	4	4-3	3	3-5	3	2-11	4
	2-2 × 4	2-8	1	2-1	1	1-9	1	2-6	1	2-0	1	1-8	1	2-5	1	1-11	1	1-7	1
	2-2 × 6	4-0	1	3-2	2	2-8	2	3-9	1	3-0	2	2-7	2	3-7	1	2-10	2	2-5	2
	2-2 × 8	5-0	2	4-0	2	3-5	2	4-10	2	3-10	2	3-3	2	4-7	2	3-7	2	3-1	2
	2-2 × 10	6-0	2	4-9	2	4-0	2	5-8	2	4-6	2	3-10	3	5-5	2	4-3	2	3-8	3
	2-2 × 12	7-0	2	5-7	2	4-9	3	6-8	2	5-4	3	4-6	3	6-4	2	5-0	3	4-3	3
	3-2 × 8	6-4	1	5-0	2	4-3	2	6-0	1	4-9	2	4-1	2	5-8	2	4-6	2	3-10	2
	3-2 × 10	7-6	2	5-11	2	5-1	2	7-1	2	5-8	2	4-10	2	6-9	2	5-4	2	4-7	2
	3-2 × 12	8-10	2	7-0	2	5-11	2	8-5	2	6-8	2	5-8	3	8-0	2	6-4	2	5-4	3
	4-2 × 8	7-3	1	5-9	1	4-11	2	6-11	1	5-6	2	4-8	2	6-7	1	5-2	2	4-5	2
	4-2 × 10	8-8	1	6-10	2	5-10	2	8-3	2	6-6	2	5-7	2	7-10	2	6-2	2	5-3	2
	4-2 × 12	10-2	2	8-1	2	6-10	2	9-8	2	7-8	2	6-7	2	9-2	2	7-3	2	6-2	2
Roof, ceiling, and two clear-span floors 	1-2 × 6	2-3	2	1-9	2	1-5	2	2-3	2	1-9	2	1-5	3	2-2	2	1-8	2	1-5	3
	1-2 × 8	2-10	2	2-2	3	1-10	3	2-10	2	2-2	3	1-10	3	2-9	2	2-1	3	1-10	3
	1-2 × 10	3-4	2	2-7	3	2-2	3	3-4	3	2-7	3	2-2	4	3-3	3	2-6	3	2-2	4
	1-2 × 12	4-0	3	3-0	3	2-7	4	4-0	3	3-0	4	2-7	4	3-10	3	3-0	4	2-6	4
	2-2 × 4	2-3	1	1-8	1	1-4	1	2-3	1	1-8	1	1-4	1	2-2	1	1-8	1	1-4	2
	2-2 × 6	3-4	1	2-6	2	2-2	2	3-4	2	2-6	2	2-2	2	3-3	2	2-6	2	2-1	2
	2-2 × 8	4-3	2	3-3	2	2-8	2	4-3	2	3-3	2	2-8	2	4-1	2	3-2	2	2-8	3
	2-2 × 10	5-0	2	3-10	2	3-2	3	5-0	2	3-10	2	3-2	3	4-10	2	3-9	3	3-2	3
	2-2 × 12	5-11	2	4-6	3	3-9	3	5-11	2	4-6	3	3-9	3	5-8	2	4-5	3	3-9	3
	3-2 × 8	5-3	1	4-0	2	3-5	2	5-3	2	4-0	2	3-5	2	5-1	2	3-11	2	3-4	2
	3-2 × 10	6-3	2	4-9	2	4-0	2	6-3	2	4-9	2	4-0	2	6-1	2	4-8	2	4-0	3
	3-2 × 12	7-5	2	5-8	2	4-9	3	7-5	2	5-8	2	4-9	3	7-2	2	5-6	3	4-8	3
	4-2 × 8	6-1	1	4-8	2	3-11	2	6-1	1	4-8	2	3-11	2	5-11	1	4-7	2	3-10	2
	4-2 × 10	7-3	2	5-6	2	4-8	2	7-3	2	5-6	2	4-8	2	7-0	2	5-5	2	4-7	2
	4-2 × 12	8-6	2	6-6	2	5-6	2	8-6	2	6-6	2	5-6	2	8-3	2	6-4	2	5-4	3

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas fir-larch, hem-fir, Southern pine, and spruce-pine-fir.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (for example, cripple studs bearing on the header), tabulated spans for headers consisting of 2 × 8, 2 × 10, or 2 × 12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

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

DATE: 3/2022

SHEET NO.: 9

VERSION 1.5

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

THE ROANOKE

CARUSO HOMES

2018 IRC HEADER & GIRDER SPANS / JACK STUDS & FULL HEIGHT STUDS

TABLE R602.7(2)GIRDER SPANS[a]AND HEADER SPANS[a]FOR INTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b]and required number of jack studs)

HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING Width[c] (feet)					
		12		24		36	
		Span[e]	NJ[d]	Span[e]	NJ[d]	Span[e]	NJ[d]
One floor only	2-2 × 4	4-1	1	2-10	1	2-4	1
	2-2 × 6	6-1	1	4-4	1	3-6	1
	2-2 × 8	7-9	1	5-5	1	4-5	2
	2-2 × 10	9-2	1	6-6	2	5-3	2
	2-2 × 12	10-9	1	7-7	2	6-3	2
	3-2 × 8	9-8	1	6-10	1	5-7	1
	3-2 × 10	11-5	1	8-1	1	6-7	2
	3-2 × 12	13-6	1	9-6	2	7-9	2
	4-2 × 8	11-2	1	7-11	1	6-5	1
	4-2 × 10	13-3	1	9-4	1	7-8	1
	4-2 × 12	15-7	1	11-0	1	9-0	2
Two floors	2-2 × 4	2-7	1	1-11	1	1-7	1
	2-2 × 6	3-11	1	2-11	2	2-5	2
	2-2 × 8	5-0	1	3-8	2	3-1	2
	2-2 × 10	5-11	2	4-4	2	3-7	2
	2-2 × 12	6-11	2	5-2	2	4-3	3
	3-2 × 8	6-3	1	4-7	2	3-10	2
	3-2 × 10	7-5	1	5-6	2	4-6	2
	3-2 × 12	8-8	2	6-5	2	5-4	2
	4-2 × 8	7-2	1	5-4	1	4-5	2
	4-2 × 10	8-6	1	6-4	2	5-3	2
	4-2 × 12	10-1	1	7-5	2	6-2	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Spans are given in feet and inches.
b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas fir-larch, hem-fir, Southern pine, and spruce-pine-fir.
c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
d. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (for example, cripple studs bearing on the header), tabulated spans for headers consisting of 2 × 8, 2 × 10, or 2 × 12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

R602.7.5 Supports for headers. INSIGHTS

Headers shall be supported on each end with one or more jack studs or with approved framing anchors in accordance with Table R602.7(1) or R602.7(2). The full-height stud adjacent to each end of the header shall be end nailed to each end of the header with four-16d nails (3.5 inches × 0.135 inches). The minimum number of full-height studs at each end of a header shall be in accordance with Table R602.7.5.

> INSIGHTS (1)

TABLE R602.7.5MINIMUM NUMBER OF FULL-HEIGHT STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS[a]

MAXIMUM HEADER SPAN (feet)	ULTIMATE DESIGN WIND SPEED AND EXPOSURE CATEGORY	
	< 140 mph, Exposure B or < 130 mph, Exposure C	≤ 115 mph, Exposure B[b]
4	1	1
6	2	1
8	2	1
10	3	2
12	3	2
14	3	2
16	4	2
18	4	2

For SI: 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.

a. For header spans between those given, use the minimum number of fullheight studs associated with the larger header span.
b. The tabulated minimum number of full-height studs is applicable where jack studs are provided to support the header at each end in accordance with Table R602.7(1). Where a framing anchor is used to support the header in lieu of a jack stud in accordance with Note d of Table R602.7(1), the minimum number of full-height studs at each end of a header shall be in accordance with requirements for wind speed < 140 mph, Exposure B.

SCALE: 1/4" =1'-0"
DATE: 3/2022
SHEET NO.: 10
VERSION 1.5

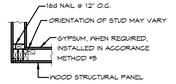
GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

THE ROANOKE

CARUSO HOMES

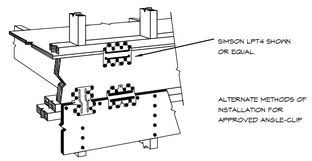
2018 IRC HEADER & GIRDER SPANS / JACK STUDS & FULL HEIGHT STUDS

AT CORNERS, CONNECT THE TWO WALLS TOGETHER AS OUTLINED IN THIS DETAIL TO PROVIDE OVERTURNING RESTRAINT.

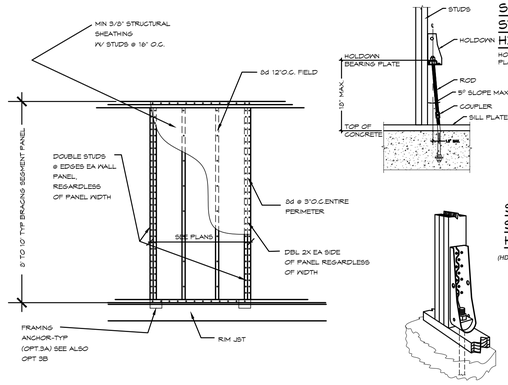


OUTSIDE CORNER DETAIL

SCALE: NOT TO SCALE



BRACED PANEL CONSTRUCTION
RAISED WOOD FLOOR OR
SECOND FLOOR INSTALLATION



SIMPSON STRONG-TIE HDU11-SDS2.5

HOLDOWN RAISED OFF SILL PLATE

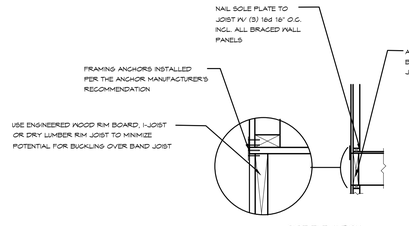
SIMPSON STRONG-TIE HDU11-SDS2.5

(HDU2, HDU8, HDU11, and HDU14 similar)

1 BRACED PANEL CONSTRUCTION(APA METHOD)

RAISED WOOD FLOOR OR 2ND FLOOR

SCALE: NOT TO SCALE

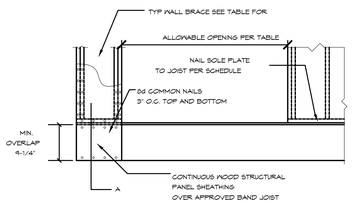


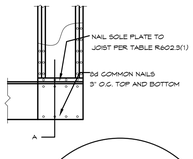
SIDE ELEVATION

3A NARROW WALL OVER RAISED WOOD FLOOR

FRAMING ANCHOR OPTION (a)

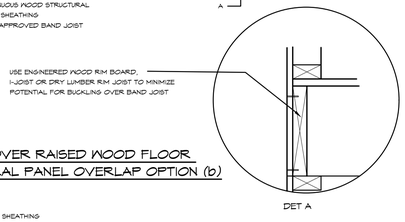
SCALE: NOT TO SCALE





TYP. CORNER FRAMING DETAIL W/ FASTENERS

NOT TO SCALE

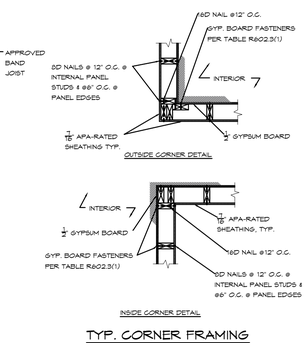


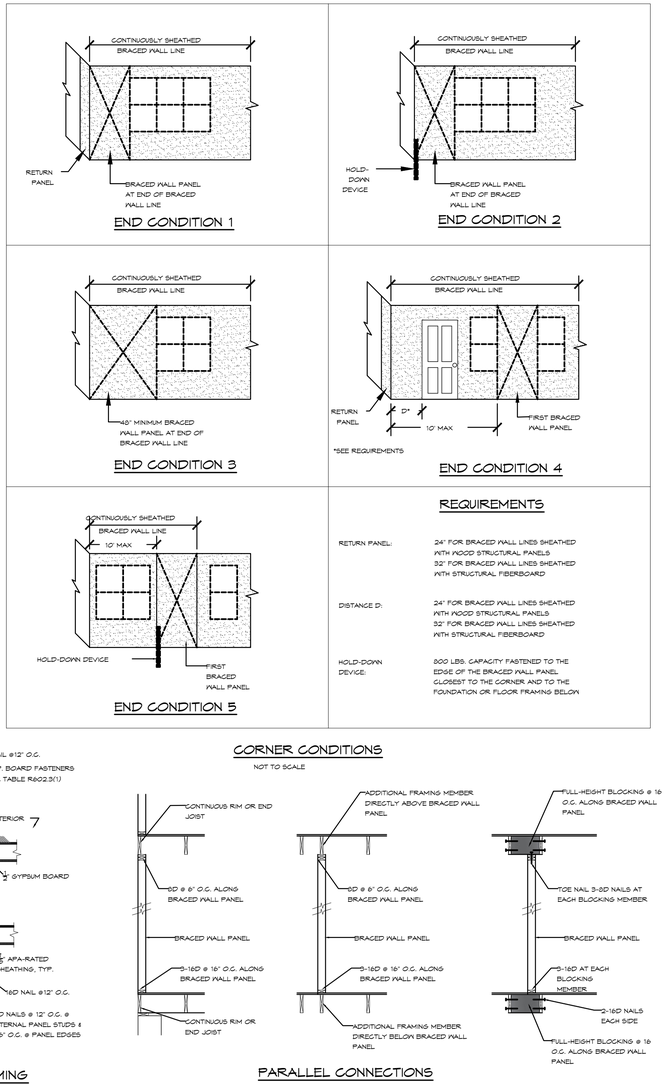
3B NARROW WALL OVER RAISED WOOD FLOOR

WOOD STRUCTURAL PANEL OVERLAP OPTION (b)

SCALE: NOT TO SCALE

GENERAL NOTE: ALL VERTICAL JOINTS OF PANEL SHEATHING SHALL OCCUR OVER AND BE FASTENED TO COMMON STUDS. BLOCKING IS NOT REQUIRED BEHIND HORIZONTAL JOINTS IN SEISMIC CATEGORIES A + B WHEN METHOD 3 IS USED.





REQUIREMENTS

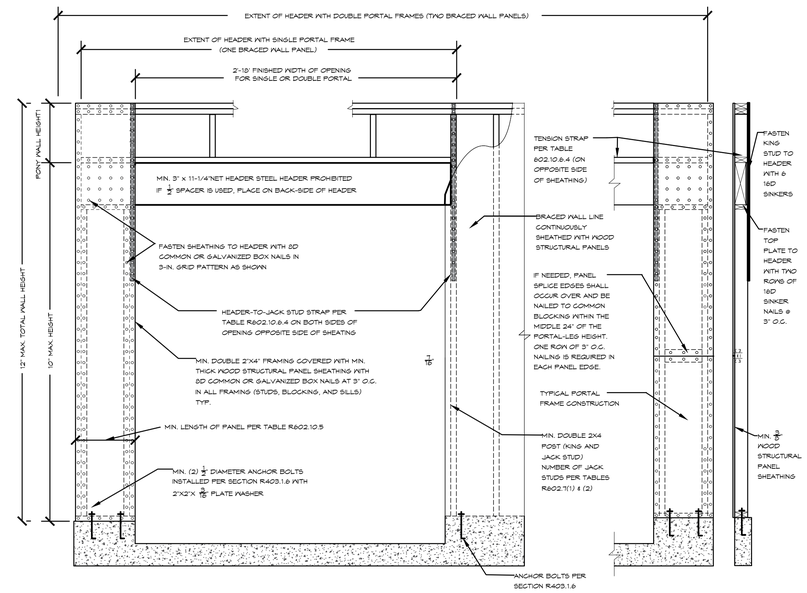
RETURN PANEL:	24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS 32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD
DISTANCE D:	24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS 32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD
HOLD-DOWN DEVICE:	800 LBS. CAPACITY FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FLOOR FRAMING BELOW

CORNER CONDITIONS

NOT TO SCALE

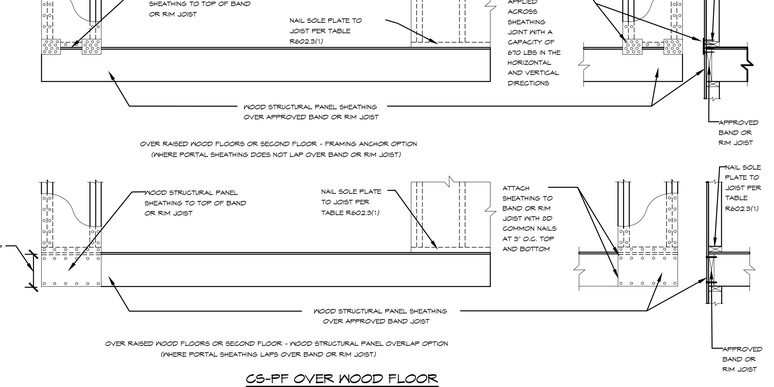
PARALLEL CONNECTIONS

NOT TO SCALE



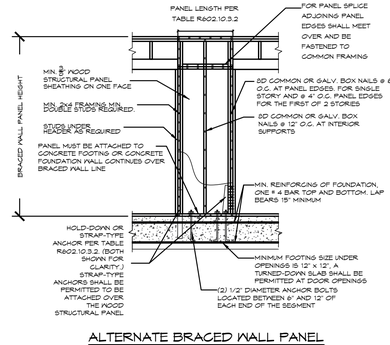
CS-PF OVER CONCRETE OR MASONRY FOUNDATION

NOT TO SCALE



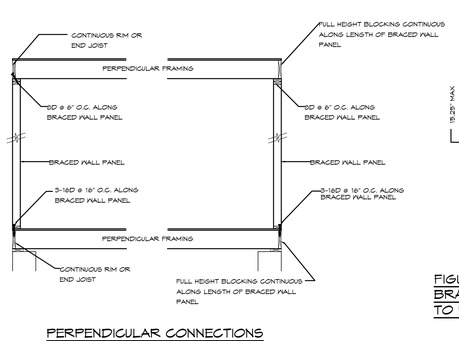
CS-PF OVER WOOD FLOOR

NOT TO SCALE



ALTERNATE BRACED WALL PANEL

NOT TO SCALE



PERPENDICULAR CONNECTIONS

NOT TO SCALE

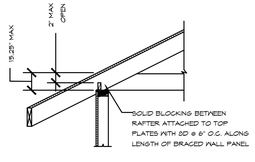


FIGURE R602.10.8.2(1)
BRACED WALL PANEL CONNECTION
TO PERPENDICULAR RAFTERS

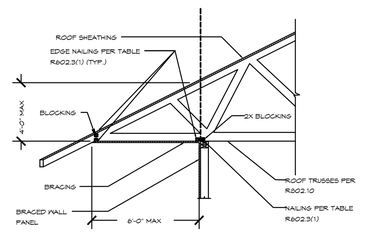


FIGURE R602.10.8.2(2)
BRACED WALL PANEL CONNECTION OPTION TO
PERPENDICULAR RAFTERS OR ROOF TRUSSES

ROOF CONNECTIONS

NOT TO SCALE

THE ROANOKE
CARUSO HOMES
WALL BRACING NOTES

VERSION 1.9

SCALE: NOT TO SCALE
DATE: 10/2021
SHEET NO.: 11

GBL CUSTOM HOME DESIGN INC.
PO BOX 237 FINKSBURG, MD 21048
PHONE 410-833-8320

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
www.kse-eng.com (215) 804-4449

ROANOKE

VERSION 1.5

MAGNOLIA ACRES LOT 1
RALEIGH, NORTH CAROLINA

DESIGN SPECIFICATIONS:

DESIGN BUILDING CODE (REFERRED TO HEREIN AS 'THE BUILDING CODE'):
- 2024 NORTH CAROLINA RESIDENTIAL CODE

DESIGN LIVE LOADS:
- ROOF = 20 PSF (LOAD DURATION FACTOR=1.25)
- UNINHABITABLE ATTICS WITH LIMITED STORAGE = 20 PSF (WHERE SPECIFIED ON PLANS)
- HABITABLE ATTICS AND ATTICS SERVED WITH FIXED STAIRS = 30 PSF
- FLOOR = 40 PSF
- FLOOR (SLEEPING AREAS) = 30 PSF
- DECK = 40 PSF
- BALCONY = 40 PSF
- STAIRS = 40 PSF

DESIGN DEAD LOADS:
- ROOF TRUSS = 17 PSF (TC=7, BC=10)
- FLOOR TRUSS = 15 PSF (TC=10, BC=5)
- FLOOR JOIST = 10 PSF
- STANDARD BRICK = 40 PSF
- QUEEN ANNE BRICK = 25 PSF
- TILE = 10 PSF (WHERE NOTED ON PLANS)

NOTE: STRUCTURAL FRAMING HAS NOT BEEN DESIGNED FOR GRANITE, MARBLE OR OTHER MATERIALS HEAVIER THAN THE ABOVE LOADING UNLESS SPECIFICALLY NOTED ON PLANS..

DESIGN WIND LOADS:
- ULTIMATE WIND SPEED = 120 MPH
- EXPOSURE CATEGORY = B

ASSUMED SOIL BEARING CAPACITY = 2000 PSF

ASSUMED LATERAL SOIL PRESSURE = 60 PCF

FROST DEPTH = 12"

SEISMIC DESIGN CATEGORY = B

ENGINEERED LUMBER SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:
- TJI 210 SERIES (SERIES AND SPACING PER PLANS)
- LSL: E=1,550,000 PSI, F_B=2,325 PSI, F_V=310 PSI, F_C=900 PSI
- LVL: E=2,000,000 PSI, F_B=2,600 PSI, F_V=285 PSI, F_C=750 PSI
- PSL: E=2,000,000 PSI, F_B=2,900 PSI, F_V=290 PSI, F_C=625 PSI

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046986 ENGINEER ANDREW A. MOORE
6/2/25

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
www.kse-eng.com (215) 804-4449

CARUSO HOMES

Cover Sheet
Magnolia Acres Lot 1
Roanoke Version 1.5
120 M.P.H.
Raleigh, North Carolina

Project #:	108-24001
Designed By:	AAM
Checked By:	KRK
Issue Date:	4/8/25
Re-Issue:	6/2/25
Scale:	

S-0

GENERAL STRUCTURAL NOTES:

1. THE DESIGN PROFESSIONAL WHOSE SEAL APPEARS ON THESE DRAWINGS IS THE STRUCTURAL ENGINEER OF RECORD (SER) FOR THIS PROJECT. THE SER BEARS THE RESPONSIBILITY OF THE PRIMARY STRUCTURAL ELEMENTS AND THE PERFORMANCE OF THIS STRUCTURE. NO OTHER PARTY MAY REVISE, ALTER, OR DELETE ANY STRUCTURAL ASPECTS OF THESE CONSTRUCTION DOCUMENTS WITHOUT WRITTEN CONSENT OF KSE ENGINEERING, P.C. OR THE SER. FOR THE PURPOSES OF THESE CONSTRUCTION DOCUMENTS, THE SER AND KSE ENGINEERING SHALL BE CONSIDERED THE SAME ENTITY.
2. THE STRUCTURE IS ONLY STABLE IN ITS COMPLETED FORM. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEMPORARY BRACING DURING CONSTRUCTION TO STABILIZE THE STRUCTURE.
3. THE SER IS NOT RESPONSIBLE FOR CONSTRUCTION SEQUENCES, METHODS, OR TECHNIQUES IN CONNECTION WITH THE CONSTRUCTION OF THIS STRUCTURE. THE SER WILL NOT BE HELD RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CONFORM TO THE CONTRACT DOCUMENTS, SHOULD ANY NON-CONFORMITIES OCCUR.
4. THE SER DOES NOT CERTIFY DIMENSIONAL ACCURACY OR ARCHITECTURAL LAYOUT INCLUDING ROOF GEOMETRY. THE SER ASSUMES NO LIABILITY FOR CHANGES MADE TO THESE PLANS BY OTHERS, OR FOR CONSTRUCTION METHODS, OR FOR ANY DEVIATION FROM THE PLANS. THE SER SHALL BE NOTIFIED PRIOR TO CONSTRUCTION IF ANY DISCREPANCIES ARE NOTED ON THE PLANS.
5. ANY STRUCTURAL ELEMENTS OR DETAILS NOT FULLY DEVELOPED ON THE CONSTRUCTION DRAWINGS SHALL BE COMPLETED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. THESE SHOP DRAWINGS SHALL BE SUBMITTED TO KSE ENGINEERING FOR REVIEW BEFORE ANY CONSTRUCTION BEGINS. THE SHOP DRAWINGS WILL BE REVIEWED FOR OVERALL COMPLIANCE AS IT RELATES TO THE STRUCTURAL DESIGN OF THIS PROJECT. VERIFICATION OF THE SHOP DRAWINGS FOR DIMENSIONS, OR FOR ACTUAL FIELD CONDITIONS, IS NOT THE RESPONSIBILITY OF THE SER OR KSE ENGINEERING, P.C.
6. VERIFICATION OF ASSUMED FIELD CONDITIONS IS NOT THE RESPONSIBILITY OF THE SER. THE CONTRACTOR SHALL VERIFY THE FIELD CONDITIONS FOR ACCURACY AND REPORT ANY DISCREPANCIES TO KSE ENGINEERING, P.C. BEFORE CONSTRUCTION BEGINS.
7. THE SER IS NOT RESPONSIBLE FOR ANY SECONDARY STRUCTURAL ELEMENTS OR NON-STRUCTURAL ELEMENTS, EXCEPT FOR THE ELEMENTS SPECIFICALLY NOTED ON THE STRUCTURAL DRAWINGS.
8. THIS STRUCTURE AND ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE BUILDING CODE AND ANY LOCAL CODES OR RESTRICTIONS.
9. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. ALL DIMENSIONS ARE TO FACE OF STUD OR TO FACE OF FRAMING UNLESS OTHERWISE NOTED.
10. PROVIDE MOISTURE PROTECTION AND FLASHING PER ARCHITECTURAL DETAILS.

FOUNDATIONS:

1. FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 4 OF THE BUILDING CODE.
2. CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING THE SUITABILITY OF THE SITE SOIL CONDITIONS AT THE TIME OF CONSTRUCTION. THE BUILDER SHALL FURNISH ANY AND ALL REPORTS RECEIVED FROM THE GEOTECHNICAL ENGINEER ON THE STUDY OF THE PROPOSED SITE TO THE DESIGNER, STRUCTURAL ENGINEER, AND GENERAL CONTRACTOR.
3. MAXIMUM DEPTH OF UNBALANCED FILL AGAINST MASONRY WALLS TO BE AS SPECIFIED IN THE BUILDING CODE.
4. THE SER HAS NOT PERFORMED A SUBSURFACE INVESTIGATION. VERIFICATION OF THE ASSUMED VALUE IS THE RESPONSIBILITY OF THE OWNER OR THE CONTRACTOR. SHOULD ANY ADVERSE SOIL CONDITION BE ENCOUNTERED, THE SER MUST BE CONTACTED BEFORE PROCEEDING.
5. THE BOTTOM OF ALL FOOTINGS SHALL EXTEND BELOW THE FROST LINE FOR THE REGION IN WHICH THE STRUCTURE IS TO BE CONSTRUCTED, BUT NOT LESS THAN A MINIMUM OF 12" BELOW GRADE. ALL FOOTINGS TO HAVE A MINIMUM PROJECTION OF 2" ON EACH SIDE OF FOUNDATION WALLS. MAXIMUM FOOTING PROJECTION SHALL NOT EXCEED THE THICKNESS OF THE FOOTING.
6. WOOD SILL PLATES SHALL BE ANCHORED TO THE FOUNDATION WITH ½" ANCHOR BOLTS WITH MINIMUM 7" EMBEDMENT, SPACED A MAXIMUM OF 6'-0" O.C. INSTALL MINIMUM 2 ANCHOR BOLTS PER SECTION, 12" MAXIMUM FROM CORNERS. ½" DIAMETER x 8" LONG SIMPSON TITEN HD OR USP SCREW-BOLT+ SCREWS MAY BE SUBSTITUTED ON A 1 FOR 1 BASIS.
7. ANY FILL SHALL BE PLACED UNDER THE DIRECTION OR RECOMMENDATION OF A LICENSED PROFESSIONAL ENGINEER. THE RESULTING SOIL SHALL BE COMPACTED TO A MINIMUM OF 95% MAXIMUM DRY DENSITY.
8. EXCAVATIONS OF FOOTINGS SHALL BE LINED TEMPORARILY WITH A 6 MIL POLYETHYLENE MEMBRANE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF EXCAVATION.
9. NO CONCRETE SHALL BE PLACED AGAINST ANY SUBGRADE CONTAINING WATER, ICE, FROST, OR LOOSE MATERIAL.
10. PROVIDE FOUNDATION WATERPROOFING AND DRAIN WITH POSITIVE SLOPE TO OUTLET AS REQUIRED BY SITE CONDITIONS (SEE ARCHITECTURAL PLANS AND DETAILS).
11. NONE OF THE FOUNDATION DESIGNS IN THESE DOCUMENTS ARE SUITABLE FOR INSTALLATION IN SHRINK/SWELL CONDITIONS. REFER TO GEOTECHNICAL ENGINEER FOR APPROPRIATE DESIGN.
12. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES WITHIN THE FIRST TEN FEET.
13. CRAWL SPACE TO BE GRADED LEVEL AND CLEAR OF ALL DEBRIS.
14. PROVIDE MINIMUM 6 MIL APPROVED VAPOR BARRIER. ALL JOINTS TO BE LAPPED MINIMUM 12" AND SEALED.

CONCRETE & REINFORCING

1. CONCRETE DESIGN BASED ON ACI 318 AND ACI 318.1 OR ACI 332. CONCRETE SHALL HAVE A NORMAL WEIGHT AGGREGATE AND A MINIMUM COMPRESSIVE STRENGTH (f'c) = 3,000 PSI MINIMUM AT 28 DAYS PER CODE (VARIES W/ WEATHER), UNLESS OTHERWISE NOTED ON THE PLAN.
2. CONCRETE SHALL BE PROPORTIONED, MIXED, AND PLACED IN ACCORDANCE WITH THE LATEST EDITIONS OF ACI 318: "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" AND ACI 301: "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
3. AIR ENTRAINED CONCRETE MUST BE USED FOR ALL STRUCTURAL ELEMENTS EXPOSED TO FREEZE/THAW CYCLES AND DEICING CHEMICALS. AIR ENTRAINMENT AMOUNTS (IN PERCENT) SHALL BE WITHIN -1% TO +2% OF 5% FOR FOOTINGS AND EXTERIOR SLABS.
4. NO ADMIXTURES SHALL BE ADDED TO ANY STRUCTURAL CONCRETE WITHOUT WRITTEN PERMISSION OF THE SER. WATER ADDED TO CONCRETE ON SITE SHALL NOT EXCEED THAT ALLOWED BY THE MIX DESIGN.
5. CONCRETE SLABS-ON-GRADE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 302.1R: "GUIDE FOR CONCRETE SLAB AND SLAB CONSTRUCTION".
6. CONTROL OR SAW CUT JOINTS (CUT OR TOOLED) SHALL BE SPACED IN INTERIOR SLABS-ON-GRADE AT A MAXIMUM OF 15'-0" O.C. AND IN EXTERIOR SLABS-ON-GRADE AT A MAXIMUM OF 10'-0" UNLESS OTHERWISE NOTED. CARE SHALL BE TAKEN TO AVOID RE-ENTRANT CORNERS.
7. CONTROL OR SAW CUT JOINTS SHALL BE PRODUCED USING CONVENTIONAL CUT OR TOOLED PROCESSES WITHIN 4 TO 12 HOURS AFTER THE SLAB HAS BEEN FINISHED.
8. ALL WELDED WIRE FABRIC (W.W.F.) FOR CONCRETE SLABS-ON-GRADE SHALL BE PLACED AT MID-DEPTH OF SLAB. THE W.W.F. SHALL BE SECURELY SUPPORTED DURING THE CONCRETE POUR. FIBROUS CONCRETE REINFORCEMENT, OR POLYPROPYLENE FIBERS MAY BE USED IN LIEU OF W.W.F. APPLICATION OF POLYPROPYLENE FIBERS PER CUBIC YARD OF CONCRETE SHALL BE PER MANUFACTURER AND COMPLY WITH ASTM C1116, ANY LOCAL BUILDING CODE REQUIREMENTS AND SHALL MEET OR EXCEED CURRENT INDUSTRY STANDARD.
9. POLYPROPYLENE REINFORCING TO BE 100% VIRGIN, CONTAINING NO REPROCESSED OLEFIN MATERIALS AND SPECIFICALLY MANUFACTURED FOR USE AS CONCRETE SECONDARY REINFORCEMENT.
10. STEEL REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60.
11. DETAILING, FABRICATION, AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 315: "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES".
12. HORIZONTAL FOOTING AND WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90° BENDS, OR CORNER BARS WITH THE SAME SIZE/SPACING AS THE HORIZONTAL REINFORCEMENT.
13. PROVIDE REINFORCEMENT LAP AS NOTED BELOW, UNLESS NOTED OTHERWISE:
    #4 BARS – 30" LENGTH
    #5 BARS – 38" LENGTH
    #6 BARS – 45" LENGTH
14. WHERE REINFORCING DOWELS ARE REQUIRED, THEY SHALL BE EQUIVALENT IN SIZE AND SPACING TO THE VERTICAL REINFORCEMENT. THE DOWEL SHALL EXTEND 48 BAR DIAMETERS VERTICALLY AND 20 BAR DIAMETERS INTO THE FOOTING. SEE KSE FOUNDATION DETAILS.
15. WHERE FOOTING BOTTOMS ARE TO BE STEPPED AT SLOPING GRADE CONDITIONS, PROVIDE CONTINUOUS REINFORCING WITH Z BARS (TO MATCH FOOTING REINFORCING) AS REQUIRED.
16. BAR SUPPORT ACCESSORIES SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, EXCEPT THAT REINFORCING SHALL BE CHAIRED ON THE BOTTOM AND/OR THE SIDES ON BOLSTERS SPACED NOT MORE THAN 4 FEET ON CENTER. NO ROCKS, CMU, CLAY TILE, OR BRICK SHALL BE USED TO SUPPORT REINFORCING.
17. FOR GRADE SUPPORTED SLABS, SLAB REINFORCING SHALL BE HELD IN PLACE BY BAR SUPPORTS AND ACCESSORIES AS DESCRIBED IN THE CRSI MANUAL OF STANDARD PRACTICE. BAR SUPPORTS SHALL BE SPACED A MAXIMUM OF 4'-0" O.C. BOTH WAYS IN STRAIGHT LINES ON THE MESH GRID.

MASONRY

1. ALL MASONRY SHALL CONFORM TO ASTM C-90, F'_m=1500 PSI. ALL BRICK SHALL CONFORM TO ASTM C-216, F'_m=1500 PSI. ALL MORTAR SHALL BE TYPE 'S' (TYPE 'M' BELOW GRADE) AND CONFORM TO ASTM C-270. COARSE GROUT SHALL CONFORM TO ASTM C-476 WITH A MAXIMUM AGGREGATE SIZE OF ⅜" AND A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI.
2. ALL MASONRY WORK SHALL BE IN ACCORDANCE WITH "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" ACI 530/ASCE 5/TMS 402 AND "SPECIFICATIONS FOR MASONRY STRUCTURES" ACI 530.1/ ASCE 6/TMS 602.
3. THE UNSUPPORTED HEIGHT OF SOLID MASONRY PIERS SHALL NOT EXCEED TEN TIMES THEIR LEAST DIMENSION. UNFILLED HOLLOW PIERS MAY BE USED IF THE UNSUPPORTED HEIGHT IS NOT MORE THAN FOUR TIMES THEIR LEAST DIMENSION.
4. EACH CRAWL SPACE PIER SHALL BEAR IN THE MIDDLE THIRD OF ITS RESPECTIVE FOOTING AND EACH GIRDER SHALL BEAR IN THE MIDDLE THIRD OF THE PIERS. PILASTERS TO BE BONDED TO PERIMETER FOUNDATION WALL.
5. TOP COURSE OF MASONRY SHALL BE GROUTED SOLID.
6. HORIZONTAL WALL JOINT REINFORCEMENT SHALL BE STANDARD 9 GAGE GALVANIZED LADDER OR TRUSS TYPE SPACED AT 16" O.C., UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
7. SPLICED WIRE REINFORCEMENT SHALL BE LAPPED AT LEAST 6" AND CONTAIN AT LEAST ONE CROSS WIRE OF EACH PIECE OF REINFORCEMENT WITHIN THE 6". LAP WITH STANDARD 'T' AND 'L' SHAPED PIECES AT INTERSECTIONS AND CORNERS.

WOOD FRAMING:

1. SOLID SAWN WOOD FRAMING MEMBERS SHALL CONFORM TO THE SPECIFICATIONS LISTED IN THE LATEST EDITION OF THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION": (NDS). UNLESS OTHERWISE NOTED, ALL WOOD FRAMING MEMBERS ARE DESIGNED TO BE:
   SPRUCE-PINE-FIR (SPF) WITH THE FOLLOWING MINIMUM DESIGN VALUES:
   E=1,400,000 PSI, F_b=875 PSI, F_v=135 PSI
   1.1. FRAMING: SPF #2.
   1.2. PLATES: SPF #2.
   1.3. STUDS: SPF STUD GRADE.
2. WALL STUD SPACING, (MAXIMUM 10' NOMINAL PLATE HEIGHT):
   1 & 2 STORY EXTERIOR AND INTERIOR BEARING:
   2x4 @ 16" O.C. OR 2x6 @ 24" O.C., U.N.O.
   BOTTOM OF 3 STORIES EXTERIOR AND INTERIOR BEARING:
   2x6 @ 16" O.C., U.N.O.
   INTERIOR NON-BEARING:
   2x @ 24" O.C., U.N.O.
3. ALL LUMBER EXPOSED TO WEATHER OR IN CONTACT WITH CONCRETE SHALL BE PRESERVATIVE TREATED SOUTHERN YELLOW PINE #2 OR BETTER.
4. ANCHOR SILL PLATES IN ACCORDANCE W/ GENERAL STRUCTURAL NOTES.
5. ALL BEAMS SPECIFIED ARE MINIMUM SIZES ONLY. LARGER MEMBERS MAY BE SUBSTITUTED AS NEEDED FOR EASE OF CONSTRUCTION.
6. NAILS SHALL BE COMMON WIRE NAILS UNLESS OTHERWISE NOTED.
7. BOLT HOLES AND LEAD HOLES FOR LAG SCREWS SHALL BE IN ACCORDANCE WITH NDS SPECIFICATIONS.
8. INDIVIDUAL STUDS FORMING A COLUMN SHALL BE ATTACHED WITH (2) ROWS 10d NAILS @ 6" O.C. STAGGERED. THE STUD COLUMN SHALL BE FULLY BLOCKED AT ALL FLOOR LEVELS TO ENSURE PROPER LOAD TRANSFER. WALL SHEATHING SHALL BE NAILED TO EDGE OF EACH STUD.
9. FACE NAIL ALL MULTI-PLY BEAMS AND HEADERS WITH (2) ROWS 16d COMMON NAILS @ 16" O.C., STAGGERED, OR PER MANUFACTURER'S SPECIFICATIONS FOR ENGINEERED LUMBER. APPLY NAILING FROM BOTH FACES FOR (3) OR MORE PLIES.
10. FASTEN 4-PLY BEAMS WITH (1) ½" DIAMETER THROUGH BOLT W/ NUTS AND WASHERS AT 12" O.C. STAGGERED TOP AND BOTTOM, 1½" MINIMUM EDGE DISTANCE. (UNLESS OTHERWISE NOTED)
11. ALL BEAMS AND HEADERS SHALL HAVE (1)2x JACK STUD & (1)2x KING STUD UNLESS OTHERWISE NOTED. THE NUMBER OF STUDS INDICATED ON PLANS ARE THE TOTAL NUMBER OF JACK STUDS REQUIRED, UNLESS OTHERWISE NOTED.
12. PROVIDE KING STUDS AT EACH END OF HEADERS AS NOTED BELOW.
    (1) STUD UP TO 6' OPENING
    (2) STUDS UP TO 8' OPENING
    (3) STUDS UP TO 9' OPENING
13. ALL BEAMS TO BE CONTINUOUSLY SUPPORTED LATERALLY AND SHALL BEAR FULL WIDTH ON THE SUPPORTING WALLS OR COLUMNS INDICATED WITH A MINIMUM OF TWO STUDS, UNLESS OTHERWISE NOTED. ALL BEAM SPLICES SHALL OCCUR OVER SUPPORTS.
14. SOLID BLOCKING TO BE PROVIDED AT ALL POINT LOADS THROUGH FLOOR LEVELS TO THE FOUNDATION OR TO OTHER STRUCTURAL COMPONENTS.
15. ALL LUMBER SPECIFIED ON DRAWINGS IS INTENDED FOR DRY USE ONLY (MOISTURE CONTENT <19%) UNLESS OTHERWISE NOTED.
16. ALL WATERPROOFING AND FIRE SAFETY SYSTEMS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND ARE TO BE DESIGNED AND DETAILED BY OTHERS.
17. ANY WOOD FRAME INTERIOR BEARING WALL STUDS THAT HAVE HOLES IN THE CENTER OF THE STUD UP TO 1" DIAMETER SHALL HAVE STUD PROTECTION SHIELDS. ALL HOLES OVER 1" IN DIAMETER FOR PLUMBING LINES, ETC. SHALL BE REPAIRED WITH SIMPSON HSS2 OR USP STS1 STUD SHOES, TYPICAL, UNLESS OTHERWISE NOTED.
18. BEARING WALLS SHALL BE SHEATHED ON NOT LESS THAN ONE SIDE WITH OSB OR GYPSUM BOARD. BRIDGING SHALL BE INSTALLED NOT GREATER THAN 4 FEET APART MEASURED VERTICALLY FROM EITHER END OF THE STUD IN LIEU OF SHEATHING.
19. DIAGONAL BRACING SHALL BE INSTALLED AT EACH END OF BASEMENT BEARING WALLS AND NOT MORE THAN 20' ON CENTER.

EXTERIOR WOOD FRAMED DECKS:

1. DECKS ARE TO BE FRAMED IN ACCORDANCE WITH APPLICABLE BUILDING CODES AND AS REFERENCED ON THE STRUCTURAL PLANS, EITHER THROUGH CODE REFERENCES OR CONSTRUCTION DETAILS.
2. PRESERVATIVE TREATED WOOD FRAMING TO BE SOUTHERN YELLOW PINE #2 OR BETTER.
3. GUARD RAILS REQUIRED AT DECKS. DESIGN BY OTHERS TO MEET MINIMUM CODE REQUIREMENTS.
4. PROVIDE DECK LATERAL LOAD AND BRACING CONNECTIONS PER BUILDING CODE.

RAFTER FRAMED ROOF CONSTRUCTION:

1. PROVIDE 2x4x4'-0" RAFTER TIES AT 48" O.C.
2. RAFTERS SHALL BE SUPPORTED BY PURLINS AND PURLIN BRACES AS SHOWN ON THE PLAN. PURLIN BRACES SHALL NOT BEAR ON ANY CEILING JOIST, STRONGBACK OR HEADER UNLESS SPECIFICALLY SHOWN ON PLAN. RAFTERS MAY BE SPLICED AT PURLIN LOCATIONS.
3. CEILING JOISTS SHALL HAVE LATERAL SUPPORT W/ 1x4 FLAT BRACING ON TOP EDGE OF JOIST AT LOOSE JOIST ENDS (WHERE JOISTS NOT FASTENED TO RAFTERS) OR FULL DEPTH BLOCKING. FASTEN END OF BRACING TO RAFTER OR GABLE END FRAMING.
4. FASTEN RAFTER AND CEILING JOIST WITH (6) 12d NAILS UNLESS OTHERWISE NOTED.
5. PROVIDE VERTICAL 2x6 STRONGBACKS AT CEILING JOISTS @ 8'-0" O.C. TIE STRONGBACK ENDS TO GABLE STUDS OR RAFTERS WHERE POSSIBLE. PROVIDE BLOCKING BETWEEN TOP PLATES AND STRONGBACKS. PROVIDE 2x4 FLAT FASTENED TO EACH JOIST WITH (2) 12d NAILS. FASTEN STRONGBACK TO 2x4 FLAT WITH 12d NAILS @ 12" O.C. AND FASTENED TO EACH JOIST WITH (1) 12d TOENAIL.

WOOD TRUSSES (FLOOR & ROOF):

1. THE WOOD TRUSS MANUFACTURER/FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF THE WOOD TRUSSES. SUBMIT SEALED SHOP DRAWINGS AND SUPPORTING CALCULATIONS TO THE SER FOR REVIEW PRIOR TO FABRICATION. THE SER SHALL HAVE A MINIMUM OF (5) DAYS FOR REVIEW. THE REVIEW BY THE SER SHALL BE FOR OVERALL COMPLIANCE OF THE DESIGN DOCUMENTS. THE SER SHALL ASSUME NO RESPONSIBILITY FOR THE CORRECTNESS OF THE STRUCTURAL DESIGN FOR THE WOOD TRUSSES.
2. THE WOOD TRUSSES SHALL BE DESIGNED FOR ALL REQUIRED LOADINGS AS SPECIFIED IN THE LOCAL BUILDING CODE, THE ASCE STANDARD "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES." (ASCE 7), AND THE LOADING REQUIREMENTS SHOWN ON THESE SPECIFICATIONS. THE TRUSS DRAWINGS SHALL BE COORDINATED WITH ALL OTHER CONSTRUCTION DOCUMENTS AND PROVISIONS PROVIDED FOR LOADS SHOWN ON THESE DRAWINGS INCLUDING BUT NOT LIMITED TO HVAC EQUIPMENT, PIPING, AND ARCHITECTURAL FIXTURES ATTACHED TO THE TRUSSES.
3. THE TRUSSES SHALL BE DESIGNED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE ANSI/TPI 1: "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION".
4. THE TRUSS MANUFACTURER SHALL PROVIDE ADEQUATE BRACING INFORMATION IN ACCORDANCE WITH "BUILDING COMPONENT SAFETY INFORMATION GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING, RESTRAINING & BRACING OF METAL PLATE CONNECTED WOOD TRUSSES" (BCSI). THIS BRACING, BOTH TEMPORARY AND PERMANENT, SHALL BE SHOWN ON THE SHOP DRAWINGS. ALSO, THE SHOP DRAWINGS SHALL SHOW THE REQUIRED ATTACHMENTS FOR THE TRUSSES.
5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING TEMPORARY BRACING AND SHORING FOR THE FLOOR AND ROOF TRUSSES AS REQUIRED DURING CONSTRUCTION. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF THE LATEST BCSI. THE CONTRACTOR SHALL KEEP A COPY OF THE BCSI SUMMARY SHEETS ON SITE.
6. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL PERMANENT TRUSS BRACING SHOWN IN THE STRUCTURAL DRAWINGS AND IN THE TRUSS DESIGNS. ALL CONTINUOUS LATERAL BRACING OF WEBS REQUIRES BRACES. REFER TO BCSI SUMMARY SHEET B3 FOR TYPES OF DIAGONAL BRACES TO PROVIDE AT EACH CONTINUOUS LATERAL BRACE LINE. SUCH DIAGONAL BRACES SHALL NOT BE SPACED MORE THAN 20 FEET O.C. DIAGONAL BRACES SHALL BE FASTENED TO EACH TRUSS WEB WITH A MINIMUM OF TWO 10d FACE NAILS. WHERE CONTINUOUS LATERAL BRACING CANNOT BE INSTALLED, DUE TO A MINIMUM OF THREE ADJACENT TRUSSES NOT BEING IDENTICAL, THE CONTRACTOR SHALL COORDINATE WITH THE TRUSS SPECIALTY ENGINEER/MANUFACTURER TO DETERMINE WHAT TYPE OF ALTERNATE BRACE (I.E., T OR L BRACE, ETC.) IS REQUIRED.
7. ANY CHORDS OR TRUSS WEBS SHOWN ON THESE DRAWINGS HAVE BEEN SHOWN AS A REFERENCE ONLY. THE FINAL DESIGN OF THE TRUSSES SHALL BE PER THE MANUFACTURER.
8. TRUSS LAYOUT AND PLACEMENT BY MANUFACTURER TO COINCIDE WITH THE SUPPORT LOCATIONS SHOWN ON THE SEALED STRUCTURAL DRAWINGS. TRUSS PROFILES TO BE SEALED BY THE TRUSS MANUFACTURER. TRUSS PLANS TO BE COORDINATED WITH THE SEALED STRUCTURAL DRAWINGS.
9. TRUSS MANUFACTURER TO PROVIDE REQUIRED UPLIFT CONNECTORS FOR ALL TRUSSES.
10. PROVIDE SIMPSON H2.5A, USP RT7 OR EQUIVALENT AT EACH TRUSS TO TOP PLATE CONNECTION, UNLESS OTHERWISE NOTED.

WOOD STRUCTURAL PANELS:

1. FABRICATION AND PLACEMENT OF STRUCTURAL WOOD SHEATHING SHALL BE IN ACCORDANCE WITH THE APA DESIGN/CONSTRUCTION GUIDE "RESIDENTIAL AND COMMERCIAL," AND ALL OTHER APPLICABLE APA STANDARDS.
2. ALL REQUIRED WOOD SHEATHING SHALL BEAR THE MARK OF THE APA.
3. WOOD WALL SHEATHING SHALL COMPLY WITH THE REQUIREMENTS OF LOCAL BUILDING CODES FOR THE APPROPRIATE STATE AS INDICATED ON THESE DRAWINGS. REFER TO WALL BRACING NOTES IN PLAN SET FOR MORE INFORMATION. EXTERIOR WALLS TO BE FULLY SHEATHED USING 7/16" OSB OR PLYWOOD MINIMUM. AT BRACED WALL PANELS, PROVIDE BLOCKING AT ALL SHEET EDGES NOT FALLING ON STUDS OR PLATES.
4. ROOF SHEATHING SHALL BE APA RATED SHEATHING EXPOSURE 1 OR 2. ROOF SHEATHING SHALL BE CONTINUOUS OVER TWO SUPPORTS MINIMUM AND ATTACHED TO ITS SUPPORTING ROOF FRAMING WITH 8d NAILS AT 6" O.C. AT PANEL EDGES AND AT 6" O.C. IN PANEL FIELD UNLESS OTHERWISE NOTED ON THE PLANS. SHEATHING SHALL BE APPLIED WITH THE LONG DIRECTION PERPENDICULAR TO FRAMING. SHEATHING SHALL HAVE A SPAN RATING CONSISTENT WITH THE FRAMING SPACING. PROVIDE SUITABLE EDGE SUPPORT BY USE OF PLYWOOD CLIPS OR LUMBER BLOCKING UNLESS OTHERWISE NOTED. PANEL END JOINTS SHALL OCCUR OVER FRAMING. ROOF SHEATHING TO BE 7/16" OSB MINIMUM.
5. WOOD FLOOR SHEATHING SHALL BE APA RATED SHEATHING EXPOSURE 1 OR 2. ATTACH SHEATHING TO ITS SUPPORTING FRAMING WITH (1) 10d NAIL AT 6" O.C. AT PANEL EDGES AND AT 12" O.C. IN PANEL FIELD UNLESS OTHERWISE NOTED ON THE PLANS. SHEATHING SHALL BE APPLIED PERPENDICULAR TO FRAMING. SHEATHING SHALL HAVE A SPAN RATING CONSISTENT WITH THE FRAMING SPACING. PROVIDE SUITABLE EDGE SUPPORT BY USE OF T&G PLYWOOD OR LUMBER BLOCKING UNLESS OTHERWISE NOTED. PANEL END JOINTS SHALL OCCUR OVER FRAMING.
6. SHEATHING SHALL HAVE A ⅛" GAP AT PANEL ENDS AND EDGES AS RECOMMENDED IN ACCORDANCE WITH THE APA.

STRUCTURAL FIBERBOARD PANELS:

1. STRUCTURAL FIBERBOARD SHEATHING SHALL ONLY BE USED WHERE SPECIFICALLY NOTED ON THE STRUCTURAL PLANS.
2. FABRICATION AND PLACEMENT OF STRUCTURAL FIBERBOARD SHEATHING SHALL BE IN ACCORDANCE WITH THE APPLICABLE AFA STANDARDS.
3. FIBERBOARD WALL SHEATHING SHALL COMPLY WITH THE REQUIREMENTS OF LOCAL BUILDING CODES FOR THE APPROPRIATE STATE AS INDICATED ON THESE DRAWINGS. REFER TO WALL BRACING NOTES IN PLAN SET FOR MORE INFORMATION.
4. SHEATHING SHALL HAVE A ⅛" GAP AT PANEL ENDS AND EDGES AS RECOMMENDED IN ACCORDANCE WITH THE AFA.

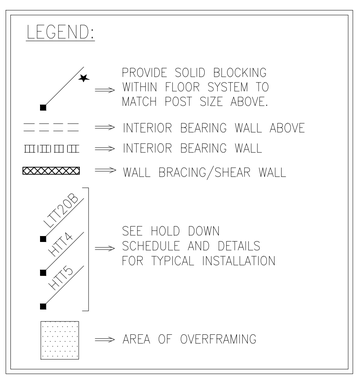
STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" AND OF THE MANUAL OF STEEL CONSTRUCTION "LOAD RESISTANCE FACTOR DESIGN" LATEST EDITIONS.
2. ALL STEEL SHALL HAVE A MINIMUM YIELD STRESS (F_y) OF 50 KSI UNLESS OTHERWISE NOTED.
3. WELDING SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY'S STRUCTURAL WELDING CODE AWA D1.1. ELECTRODES FOR SHOP AND FIELDING WELDING SHALL BE CLASS E70XX. ALL WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER PER THE ABOVE STANDARDS.
4. ALL STEEL BEAMS TO BE SUPPORTED AT EACH END WITH A MINIMUM BEARING LENGTH OF 3½" AND FULL FLANGE WIDTH UNLESS OTHERWISE NOTED. BEAMS MUST BE ATTACHED AT EACH END WITH A MINIMUM OF FOUR 16d NAILS OR (2) ½" x 4" LAG SCREWS UNLESS OTHERWISE NOTED.
5. INSTALL 2x WOOD PLATE ON TOP OF STEEL BEAMS, RIPPED TO MATCH BEAM WIDTH. FASTEN PLATE TO BEAM W/ HILTI X-DNI 52 P8 PINS AT 12" O.C. STAGGERED OR ½" DIAMETER BOLTS AT 24" O.C.

MECHANICAL FASTENERS:

1. ALL METAL HARDWARE AND FASTENERS TO BE SIMPSON STRONG-TIE OR APPROVED EQUIVALENT.
2. ALL HARDWARE AND FASTENERS IN CONTACT WITH PRESERVATIVE PRESSURE TREATED LUMBER SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A 153, G-185.
3. MANY OF THE NEW PRESSURE TREATED WOODS USE CHEMICALS THAT ARE CORROSIVE TO STEEL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE TYPE OF WOOD TREATMENT AND SELECT APPROPRIATE CONNECTORS THAT WILL RESIST THE APPLICABLE CORROSIVE CHEMICALS.

LEGEND:



BRICK VENEER LINTEL SCHEDULE

SPAN	LINTEL SIZE	END BEARING
UP TO 3'-0"	3½"x3½"x¼"	4"
UP TO 6'-3"	5"x3½"x5/16" L.L.V.	8"
UP TO 9'-6"	6"x3½"x5/16" L.L.V.	12"

LINTELS ARE NOT DESIGNED TO BE BOLTED TO HEADERS UNLESS SPECIFIED ON UNIT PLANS.
SPANS OVER 4'-0" SHALL BE SHORED UP UNTIL CURED.

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046096 ENGINEER ANDREW A. MOORE
6/2/25

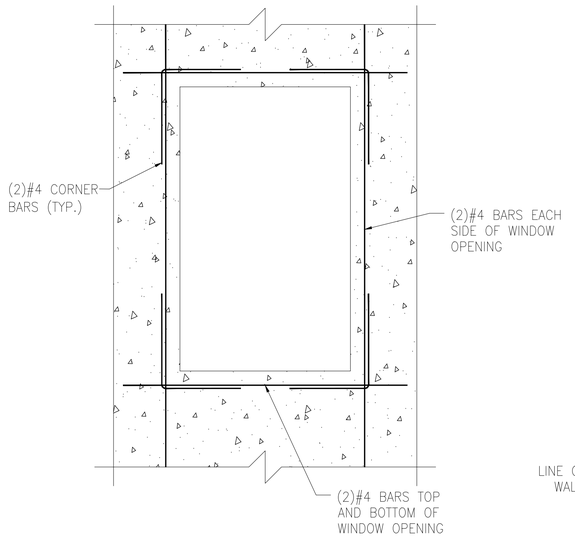
KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

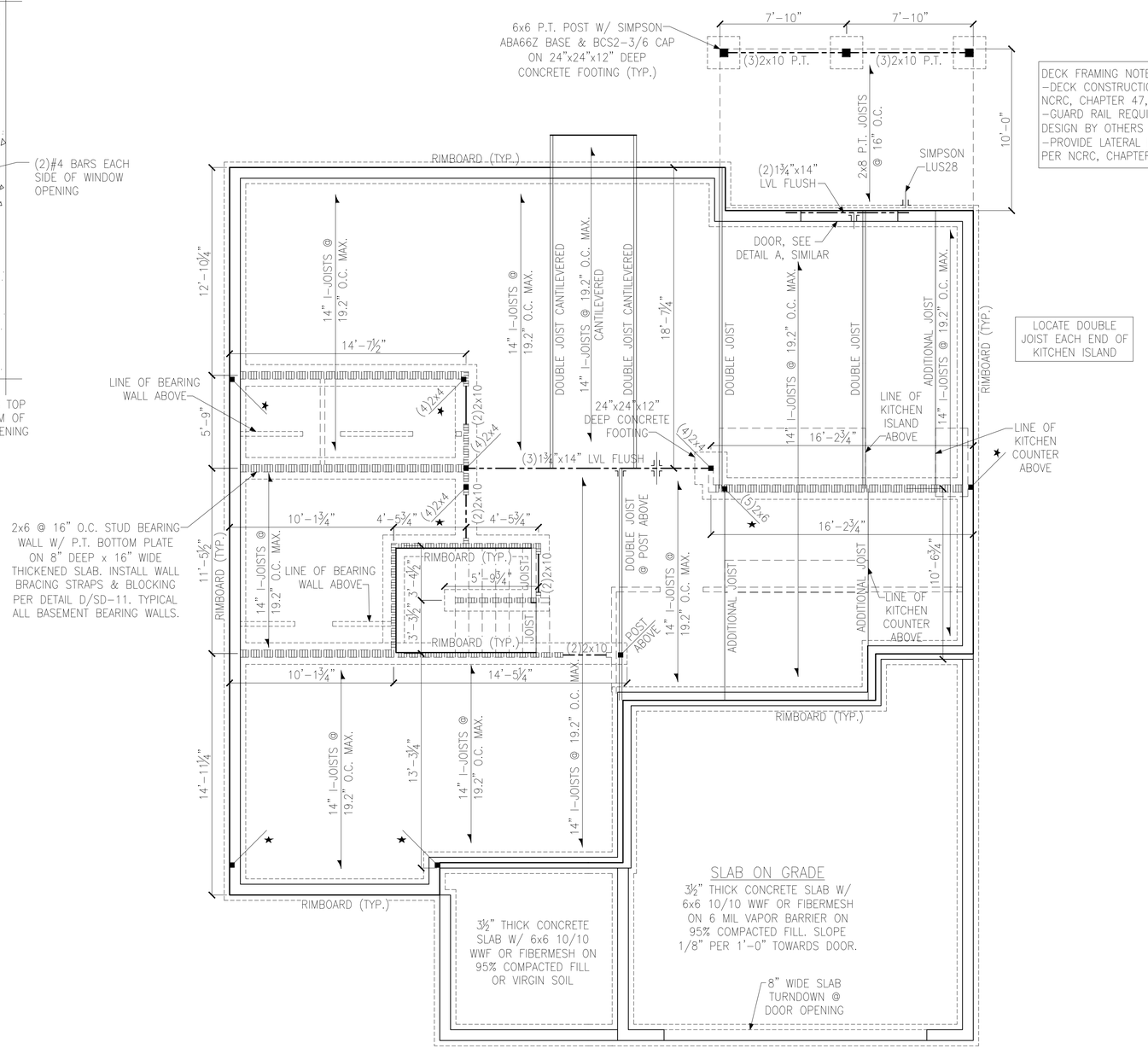
General Structural Notes
120 M.P.H.
Charlotte, North Carolina

Project #: 108-20000
Designed By: KRK
Checked By:
Issue Date: 1/1/20
Re-Issue:
Scale: 1/8"=1'-0" @ 11x17
1/4"=1'-0" @ 22x34

S-0.1



A WINDOW OPENING DETAIL
BASEMENT FOUNDATION



BASEMENT FOUNDATION PLAN

DECK FRAMING NOTES:
-DECK CONSTRUCTION PER NCRC, CHAPTER 47, U.N.O.
-GUARD RAIL REQUIRED, DESIGN BY OTHERS (TYP.)
-PROVIDE LATERAL BRACING PER NCRC, CHAPTER 47

LEGEND

- ★ ⟹ PROVIDE SOLID BLOCKING WITHIN FLOOR SYSTEM TO MATCH POST SIZE ABOVE.
- ⟹ BEARING WALL ABOVE
- ⟹ INTERIOR BEARING WALL
- 48" WSP ⟹ BRACED WALL PANEL (SEE KSE STRUCTURAL DETAILS SET FOR BRACED WALL PANEL SHEATHING FASTENING & BLOCKING DETAILS)

REFER TO KSE STRUCTURAL DETAILS SET FOR GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

FLOOR FRAMING TO BE 14" DEEP TJI 210 I-JOISTS @ 19.2" O.C. MAXIMUM OR EQUAL

BASEMENT WALLS DESIGNED FOR MAXIMUM UNSUPPORTED WALL HEIGHT OF 10 FEET WITH MAXIMUM OF 9 FEET OF UNBALANCED FILL. 45 PCF ASSUMED SOIL PRESSURE.

WALLS
BASEMENT FOUNDATION WALLS TO BE 10" POURED CONCRETE WALLS W/ #4 VERTICAL BARS @ 16" O.C. & (4) #4 HORIZONTAL BARS ON 8" DEEP x 20" WIDE CONTINUOUS CONCRETE FOOTING, 10" CONCRETE WALL W/ 4" BRICK LEDGE ON 8" DEEP x 24" WIDE CONTINUOUS CONCRETE FOOTING @ BRICK VENEER. VERTICAL REINFORCEMENT SHALL BE LOCATED TO PROVIDE A COVER OF 1.25" MEASURED FROM THE INSIDE FACE OF THE WALL.

EXTERIOR GARAGE WALLS AND PORCH WALLS WITH FILL ON BOTH FACES TO BE 8" UN-REINFORCED POURED CONCRETE

FOOTING:
8" DEEP x 20" WIDE CONTINUOUS CONCRETE FOOTING OR
8" DEEP x 24" WIDE CONTINUOUS CONCRETE FOOTING @ BRICK VENEER.

REINFORCING STEEL NOT REQUIRED IN FOOTING UNLESS NOTED OTHERWISE. BUILDER MAY EXCEED THE CODE REQUIREMENTS AT THEIR OWN DISCRETION.

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046496 ENGINEER ANDREW A. MOORE
6/2/25

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

Basement Foundation Plan
Magnolia Acres Lot 1
Roanoke Version 1.5
120 M.P.H.
Raleigh, North Carolina

Project #:	108-24001
Designed By:	AAM
Checked By:	KRK
Issue Date:	4/8/25
Re-Issue:	6/2/25
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

S-1

SECOND FLOOR FRAMING PLAN

NOTE 1:
5¼"x5¼" 1.8E PARALLAM PSL COLUMN W/ BC6 CAP. SCREW TO SOLID BLOCKING IN FLOOR W/ (8)¼"x6" SIMPSON SDS SCREWS

LEGEND

- ★ ⟹ PROVIDE SOLID BLOCKING WITHIN FLOOR SYSTEM TO MATCH POST SIZE ABOVE.
- ⟹ BEARING WALL ABOVE
- ⟹ INTERIOR BEARING WALL
- 48" WSP ⟹ BRACED WALL PANEL (SEE KSE STRUCTURAL DETAILS SET FOR BRACED WALL PANEL SHEATHING FASTENING & BLOCKING DETAILS)

REFER TO KSE STRUCTURAL DETAILS SET FOR GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

PLAN DESIGNED WITH 10' WALL PLATES

FLOOR FRAMING TO BE 14" DEEP TJI 210 SERIES OR EQUAL I-JOISTS @ 19.2" O.C. MAXIMUM OR EQUAL (U.N.O).

KEYNOTES:

(5) INSTALL TWO PANEL CS-PF PORTAL FRAME PER DETAIL A OR B/SD-4.

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 045996 ENGINEER ANDREW A. MOORE
6/2/25

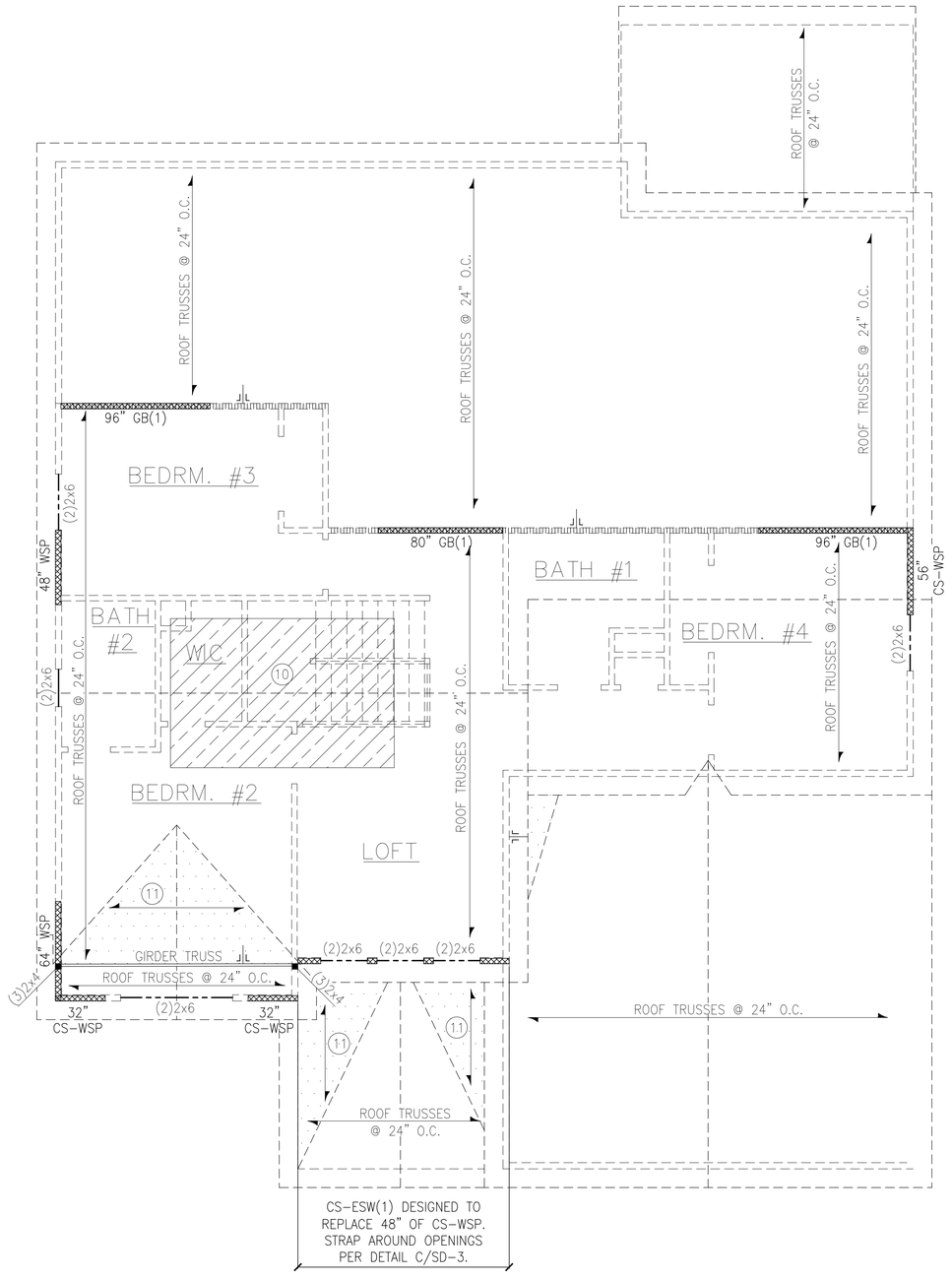
KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

Second Floor Framing Plan
Magnolia Acres Lot 1
Roanoke Version 1.5
120 M.P.H.
Raleigh, North Carolina

Project #:	108-24001
Designed By:	AAM
Checked By:	KRK
Issue Date:	4/8/25
Re-Issue:	6/2/25
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

S-2



ROOF FRAMING PLAN

LEGEND

- ★ ⟹ PROVIDE SOLID BLOCKING WITHIN FLOOR SYSTEM TO MATCH POST SIZE ABOVE.
- ⟹ BEARING WALL ABOVE
- ⟹ INTERIOR BEARING WALL
- 48" WSP ⟹ BRACED WALL PANEL (SEE KSE STRUCTURAL DETAILS SET FOR BRACED WALL PANEL SHEATHING FASTENING & BLOCKING DETAILS)

REFER TO KSE STRUCTURAL DETAILS SET FOR GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

PLAN DESIGNED WITH 9' WALL PLATES

KEYNOTES:

(10) 8'x8' HVAC PLATFORM TRUSSES DESIGNED TO SUPPORT HVAC UNITS.

(11) VALLEY SET TRUSSES @ 24" O.C. (TYP.) OR 2x6 OVERFRAMING @ 24" O.C. W/ 2x8 RIDGE & VALLEY PLATES

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL
SEAL 046496
ENGINEER
ANDREW A. MOORE
6/2/25

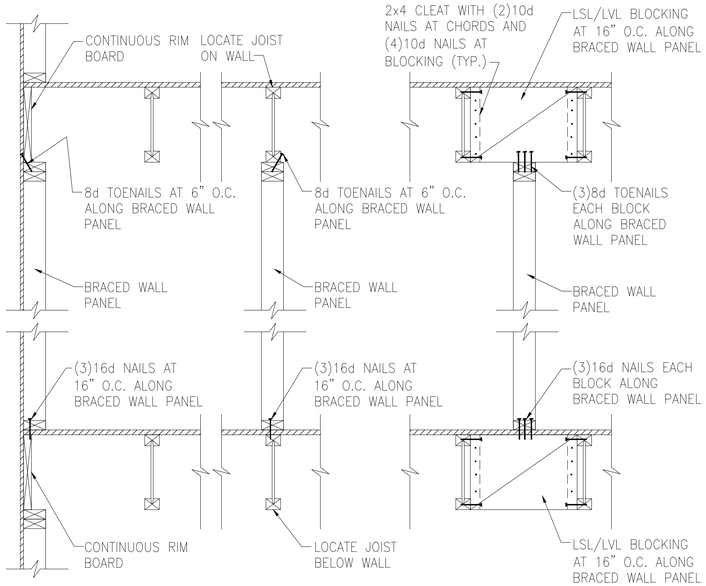
KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804 - 4449
www.kse-eng.com

CARUSO HOMES

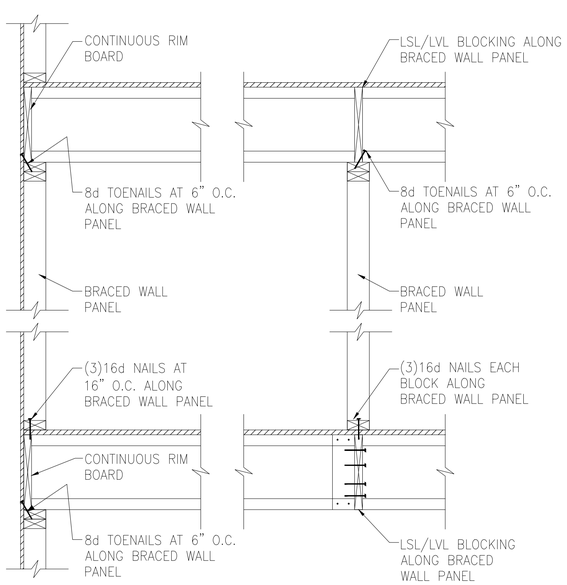
Roof Framing Plan
Magnolia Acres Lot 1
Roanoke Version 1.5
120 M.P.H.
Raleigh, North Carolina

Project #:	108-24001
Designed By:	AAM
Checked By:	KRK
Issue Date:	4/8/25
Re-Issue:	6/2/25
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

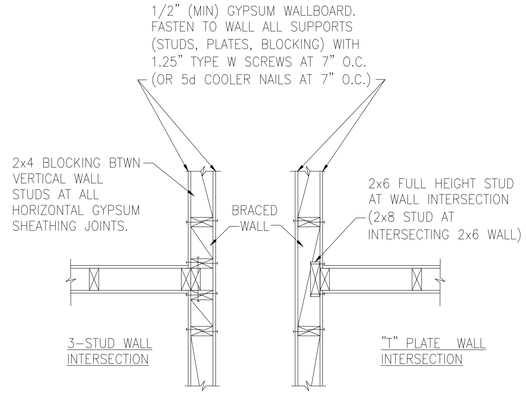
S-3



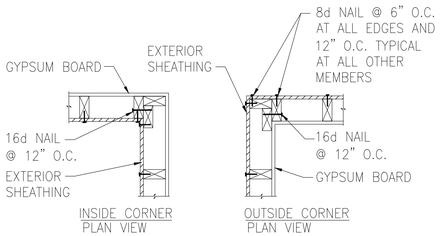
A TYPICAL BRACED WALL PANEL TO FLOOR/CEILING CONNECTION
BRACED WALL PANELS PARALLEL TO I-JOISTS



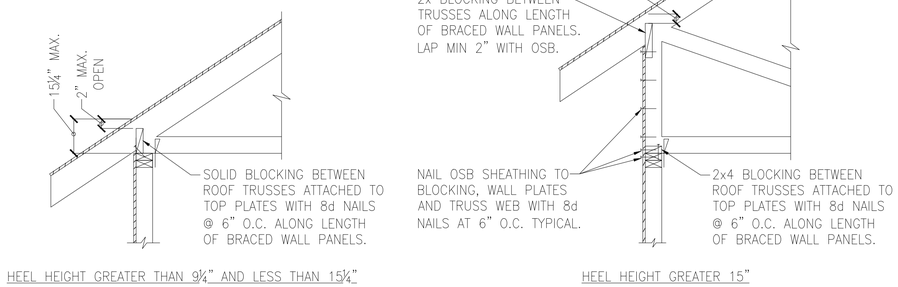
B TYPICAL BRACED WALL PANEL TO FLOOR/CEILING CONNECTION
BRACED WALL PANELS PERPENDICULAR TO I-JOISTS



C METHOD GB(1) AND GB(2) INTERSECTION DETAILS



D TYPICAL EXTERIOR CORNER WALL FRAMING



E ROOF TRUSS BEARING/BLOCKING AT BRACED WALL PANELS
ONLY REQUIRED AT BRACED WALL PANELS

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

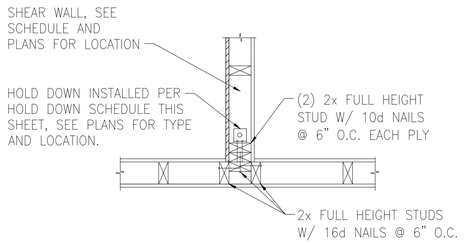
Braced Wall Details

120 M.P.H.
Charlotte, North Carolina

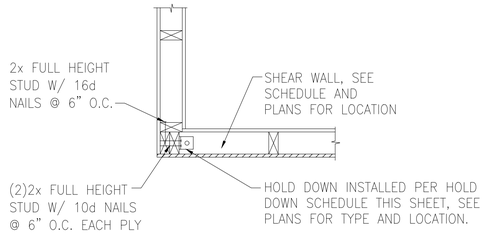
Project #:	108-20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re-Issue:	
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

SD-1

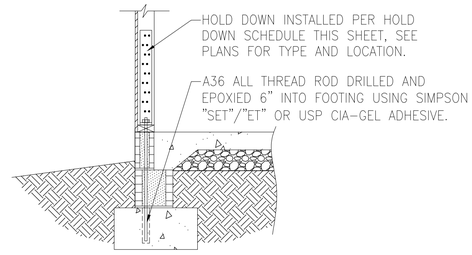
NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046496 ENGINEER ANDREW A. MOORE
6/2/25



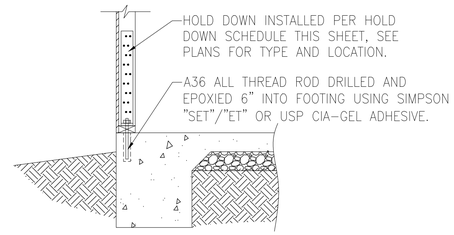
A TYPICAL HOLD DOWN DETAIL



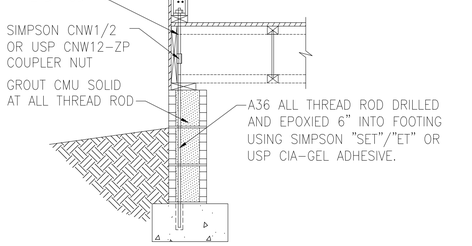
B TYPICAL HOLD DOWN DETAIL



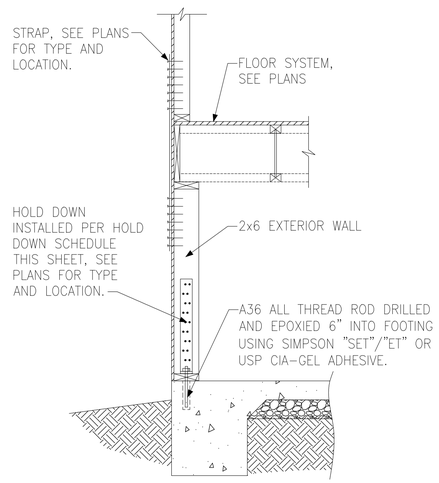
C HOLD DOWN AT STEMWALL SLAB FOUNDATION



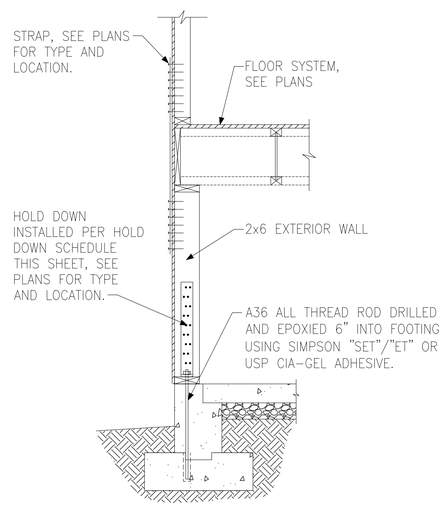
D HOLD DOWN AT MONOLITHIC SLAB FOUNDATION



E HOLD DOWN AT CRAWL SPACE FOUNDATION



F HOLD DOWN AT BASEMENT FOUNDATION
MONOLITHIC TURN-DOWN



G HOLD DOWN AT BASEMENT FOUNDATION
STEM WALL

HOLD DOWN SCHEDULE			
HOLD DOWN		ALL THREAD ROD	FASTENERS
SIMPSON	USP		
LTT20B	LTS20B	½" DIA.	(10)10d NAILS
HTT4	HTT16	⅝" DIA.	(18)16dx2½" LONG NAILS
HTT5	HTT45	⅝" DIA.	(26)16dx2½" LONG NAILS

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046496 ENGINEER ANDREW A. MOORE
6/2/25

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

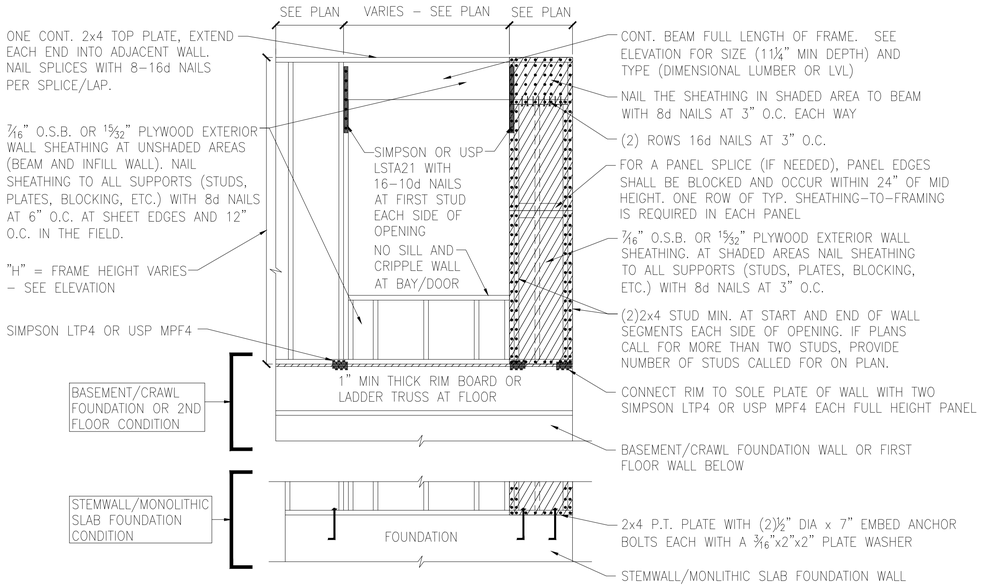
CARUSO HOMES

Hold Down Details

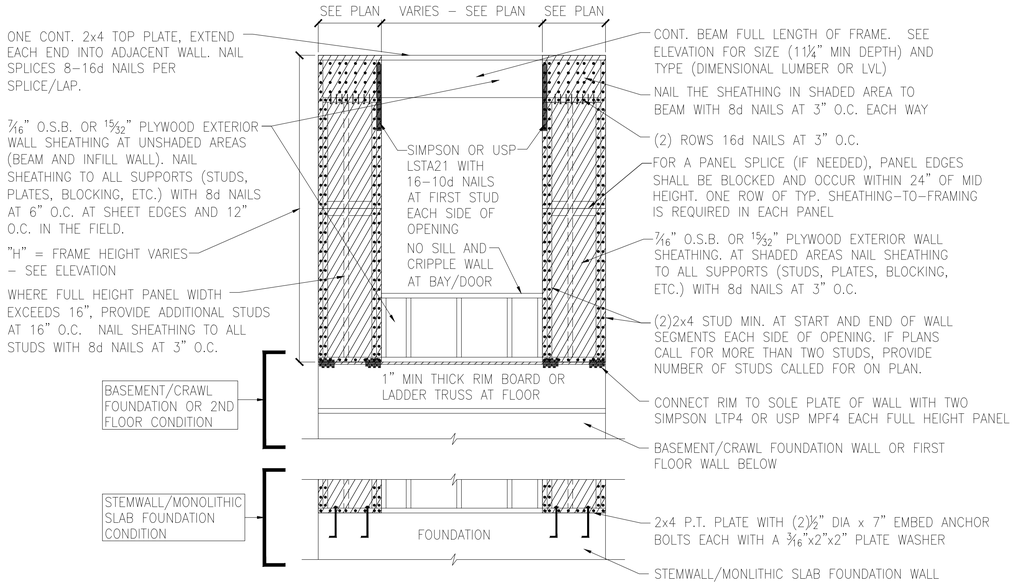
120 M.P.H.
Charlotte, North Carolina

Project #: 108-20000
Designed By: KRK
Checked By:
Issue Date: 1/1/20
Re-Issue:
Scale: 1/8"=1'-0" @ 11x17
1/4"=1'-0" @ 22x34

SD-2



A METHOD CS–PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION
ONE BRACED WALL SEGMENT



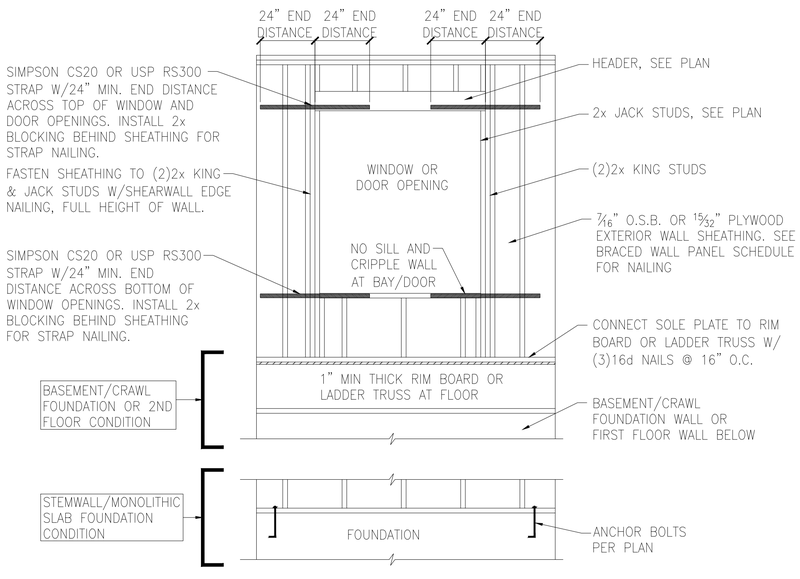
B METHOD CS–PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION
TWO BRACED WALL SEGMENTS

BRACED WALL PANEL AND ENGINEERED SHEAR WALL SCHEDULE

PANEL TYPES	PANEL TYPE	MATERIAL	FASTENERS
WSP	INTERMITTENT WOOD STRUCTURAL PANEL	7/16" OSB	6D OR 8D COMMON NAILS AT 6" O.C. AT SHEET EDGES AND 12" O.C. (6" O.C. AT INTERIOR WALL LOCATIONS) AT INTERMEDIATE SUPPORTS. ENGINEERED ALTERNATIVE: 16 GAGE BY 1.75" LONG STAPLES AT 3" O.C. AT SHEET EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS
GB(1)	INTERMITTENT GYPSUM BOARD (SHEATHING ONE FACE OF WALL)	1/2" GYPSUM	1.5" LONG GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1.25" LONG TYPE W DRYWALL SCREWS AT 7" O.C. AT SHEET EDGES AND INTERMEDIATE SUPPORTS.
GB(1)–4	INTERMITTENT GYPSUM BOARD (SHEATHING ONE FACE OF WALL)	1/2" GYPSUM	1.5" LONG GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1.25" LONG TYPE W DRYWALL SCREWS AT 4" O.C. AT SHEET EDGES AND INTERMEDIATE SUPPORTS.
GB(2)	INTERMITTENT GYPSUM BOARD (SHEATHING BOTH FACES OF WALL)	1/2" GYPSUM	1.5" LONG GALV. ROOFING NAILS, 6d COMMON NAILS, OR 1.25" LONG TYPE W DRYWALL SCREWS AT 7" O.C. AT SHEET EDGES AND INTERMEDIATE SUPPORTS.
CS–WSP	CONTINUOUS SHEATHED WOOD STRUCTURAL PANEL	7/16" OSB	6D OR 8D COMMON NAILS AT 6" O.C. AT SHEET EDGES AND 12" O.C. (6" O.C. AT INTERIOR WALL LOCATIONS) AT INTERMEDIATE SUPPORTS. ENGINEERED ALTERNATIVE: 16 GAGE BY 1.75" LONG STAPLES AT 3" O.C. AT SHEET EDGES AND 6" O.C. AT INTERMEDIATE SUPPORTS
CS–PF	CONTINUOUS SHEATHED PORTAL FRAME	7/16" OSB	NAILING PER DETAIL
PFH	PORTAL FRAME WITH HOLD DOWNS	7/16" OSB	NAILING PER DETAIL
CS–ESW(1)	ENGINEERED SHEAR WALL, TYPE 1	7/16" OSB	8D COMMON NAILS AT 6" O.C. AT SHEET EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS. CONTINUOUS OSB AROUND DOOR/WINDOW OPENINGS
CS–ESW(2)	ENGINEERED SHEAR WALL, TYPE 2	7/16" OSB	8D COMMON NAILS AT 4" O.C. AT SHEET EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS. CONTINUOUS OSB AROUND DOOR/WINDOW OPENINGS
CS–ESW(3)	ENGINEERED SHEAR WALL, TYPE 3	7/16" OSB	8D COMMON NAILS AT 3" O.C. AT SHEET EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS. CONTINUOUS OSB AROUND DOOR/WINDOW OPENINGS

BRACED WALL PANEL NOTES:

1. ALL BRACED WALL PANELS, EXCEPT GB(1) & GB(2), SHALL HAVE 2x BLOCKING BETWEEN WALL STUDS AT ALL HORIZONTAL SHEET EDGES.
2. PROVIDE NAILING/BLOCKING ABOVE AND BELOW ALL BRACED WALL PANELS PER KSE BRACED WALL DETAILS.
3. SHEATH ALL EXTERIOR WALLS OF THE HOUSE WITH 7/16" O.S.B., OR 15/32" PLYWOOD, FASTENED PER IRC. AT EXTERIOR CORNERS, SHEATHING SHALL BE FASTENED PER KSE BRACED WALL DETAILS. AT INTERIOR WALL INTERSECTIONS, FASTEN STUDS & WALL BRACING PER KSE BRACED WALL DETAILS.
4. BRACED WALL PANELS AND ENGINEERED SHEAR WALLS ARE PROVIDED PER IRC. PANEL LENGTHS SHOWN ON PLANS ARE THE MINIMUM LENGTH REQUIRED.



C WINDOW OR DOOR REINFORCEMENT IN ENGINEERED SHEAR WALL
ONLY REQUIRED WHERE SPECIFED ON PLANS

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046496 ENGINEER ANDREW A. MOORE
6/2/25

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

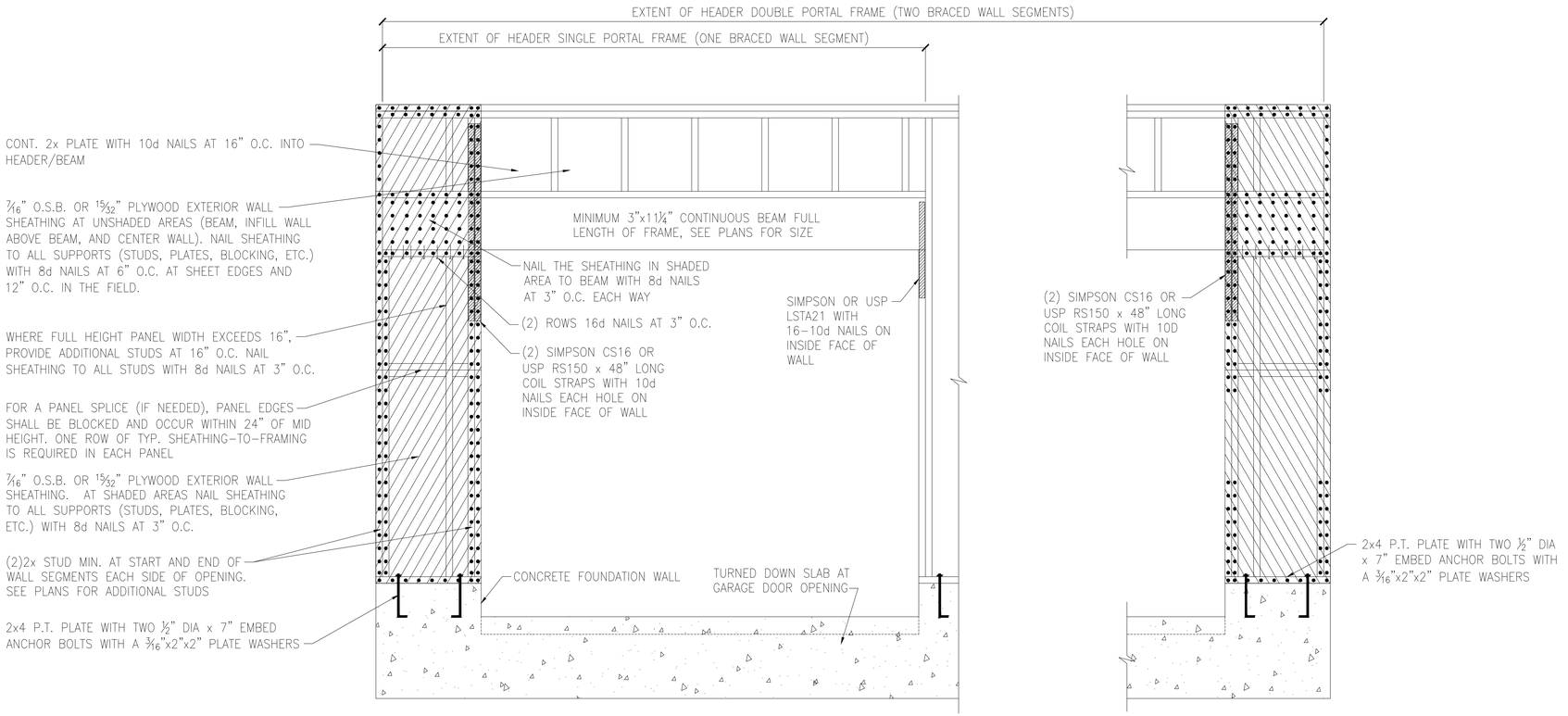
CARUSO HOMES

Braced Wall Notes & Details

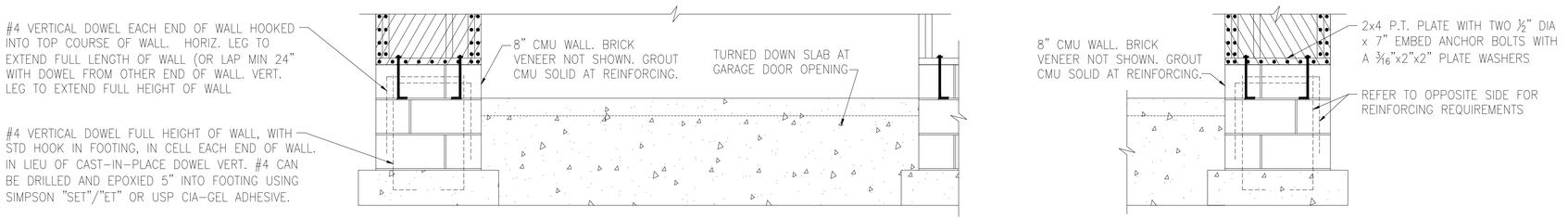
120 M.P.H.
Charlotte, North Carolina

Project #:	108–20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re–Issue:	
Scale:	1/8"=1'–0" @ 11x17 1/4"=1'–0" @ 22x34

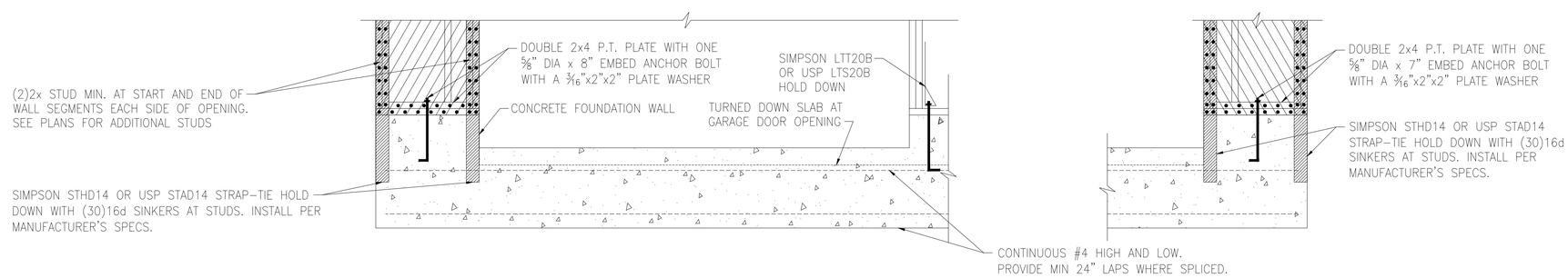
SD–3



A METHOD CS-PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION
MONOLITHIC SLAB OR BASEMENT FOUNDATION



B METHOD CS-PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION
STEMWALL SLAB OR CRAWL SPACE FOUNDATION



C METHOD PFH: PORTAL FRAME WITH HOLD-DOWNS
MONOLITHIC SLAB OR BASEMENT FOUNDATION

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

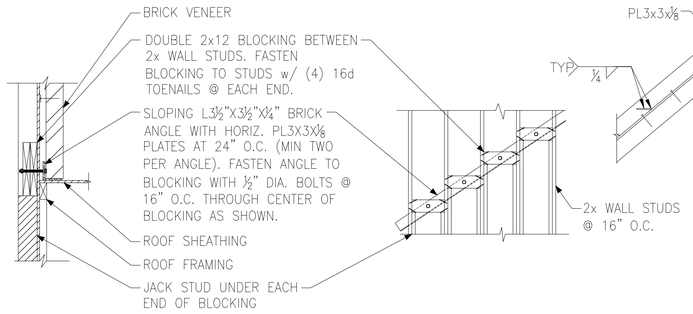
Portal Frame Details

120 M.P.H.
Charlotte, North Carolina

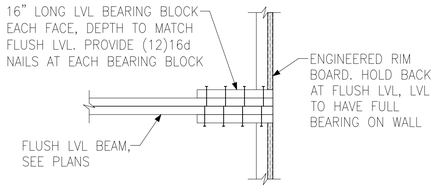
Project #:	108-20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re-Issue:	
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046496 ENGINEER ANDREW A. MOORE
6/2/25

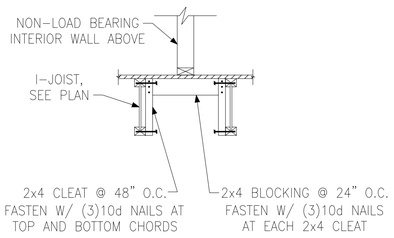
SD-4



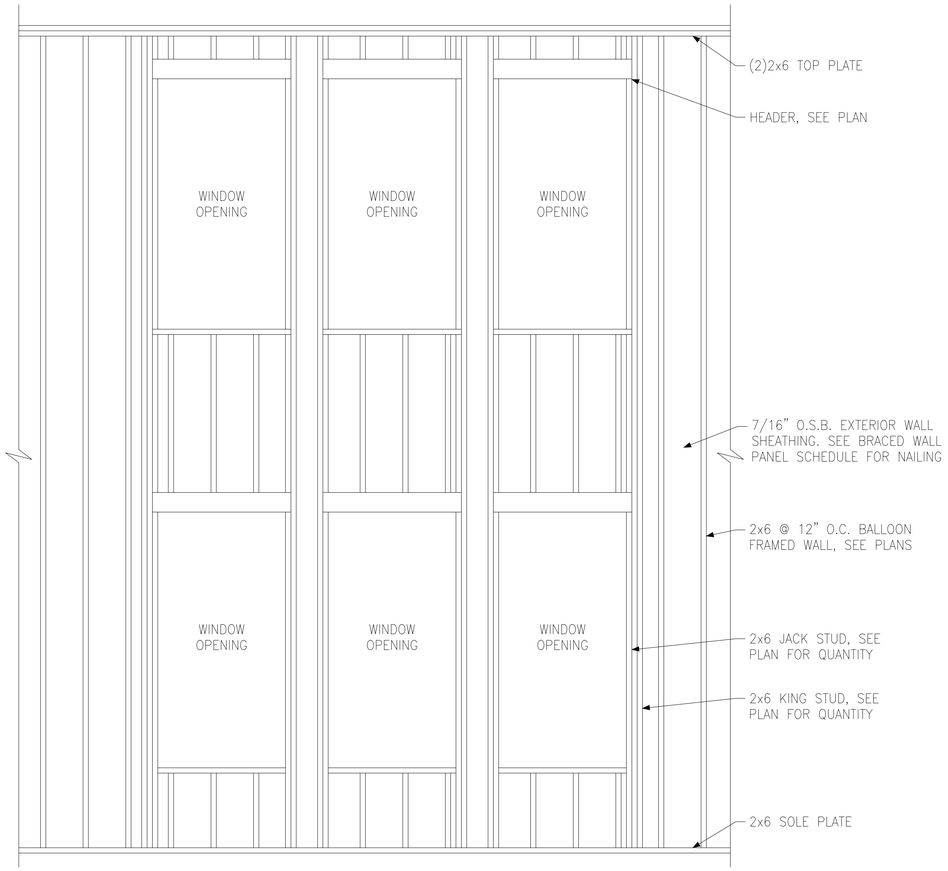
A BRICK LEDGER CONNECTION DETAIL



B BEARING ENHANCER
FLUSH LVL



C I-JOIST LADDER BLOCKING
AS REQUIRED @ PARALLEL WALLS



D BALLOON FRAMED WALL DETAIL
N.T.S.

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

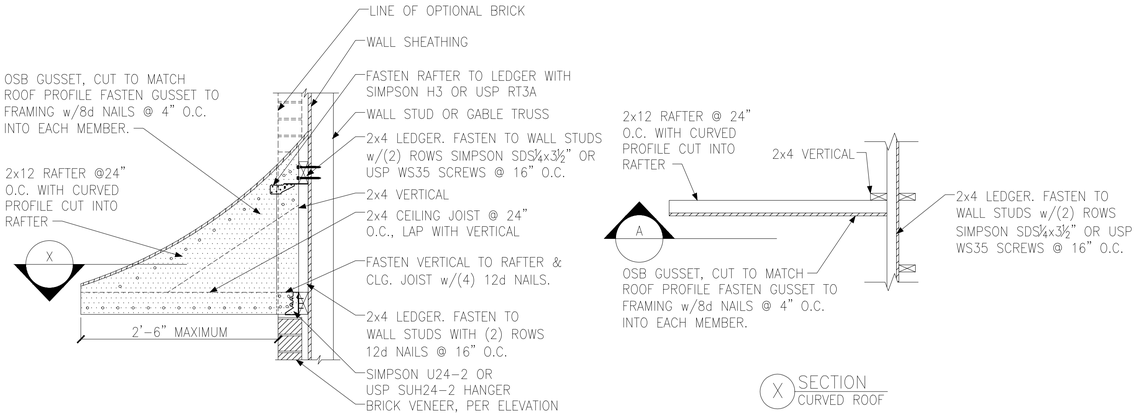
Miscellaneous Framing Details

120 M.P.H.
Charlotte, North Carolina

Project #:	108-20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re-Issue:	
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

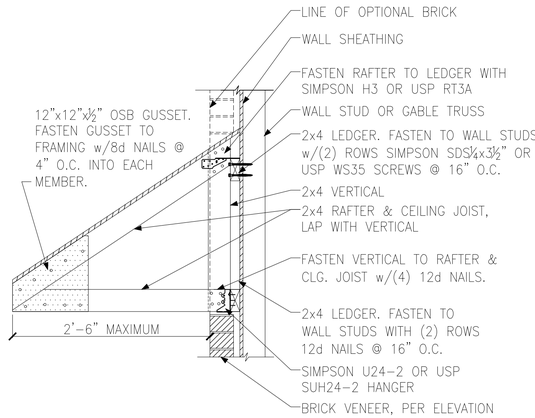
NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL
SEAL 046496 ENGINEER ANDREW A. MOORE
6/2/25

SD-5

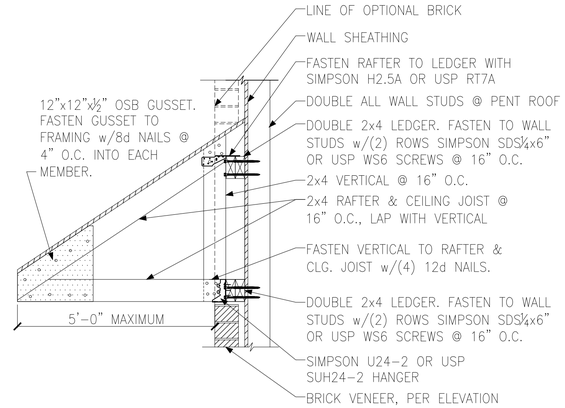


A PENT ROOF DETAIL
CURVED ROOF

X SECTION
CURVED ROOF



B PENT ROOF DETAIL
STRAIGHT ROOF



B PENT ROOF DETAIL
STRAIGHT ROOF 5'-0" MAXIMUM SPAN

C EYEBROW ROOF DETAIL
STRAIGHT ROOF

D TRUSS DETAIL

E GABLE END WALL DETAIL

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

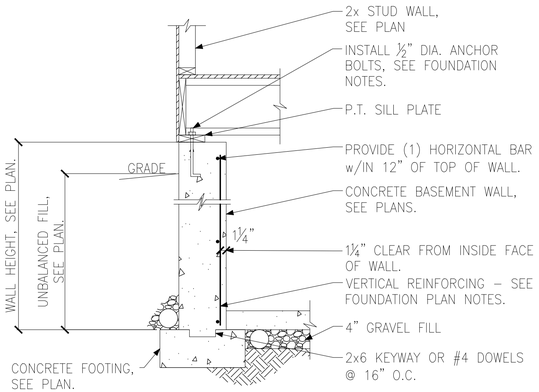
Miscellaneous Framing Details

120 M.P.H.
Charlotte, North Carolina

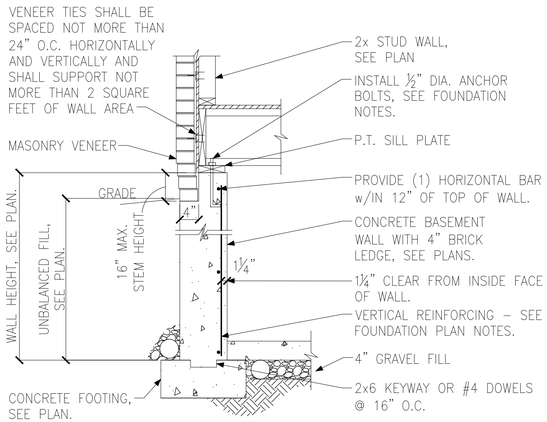
Project #:	108-20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re-Issue:	
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046986 ENGINEER ANDREW A. MOORE
6/2/25

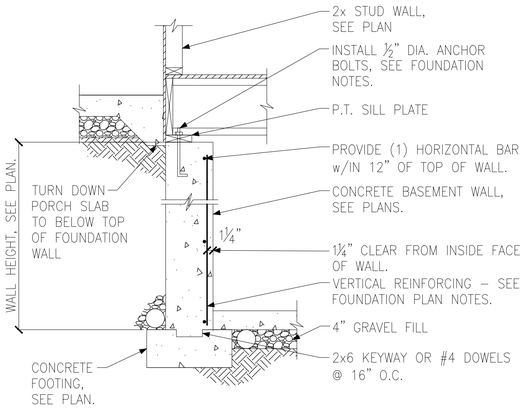
SD-6



A FOUNDATION SECTION
EXTERIOR WALL

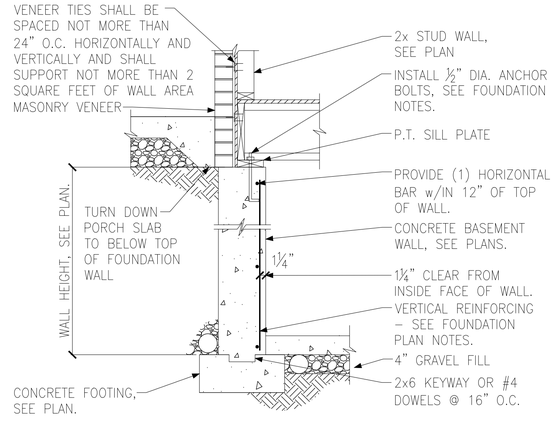


B FOUNDATION SECTION
EXTERIOR WALL @ MASONRY VENEER

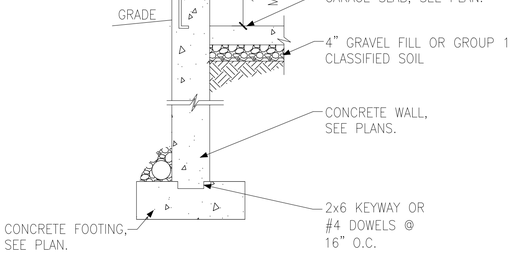


C FOUNDATION SECTION
EXTERIOR WALL AT PORCH

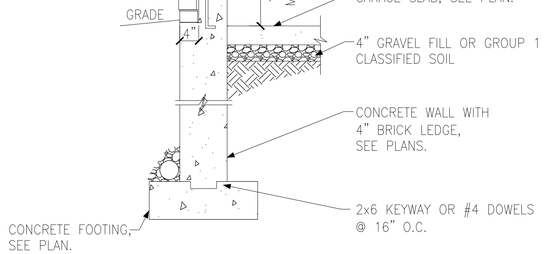
SEE ARCHITECTURAL DETAILS FOR WATERPROOFING AT PORCH SLAB/WOOD FRAMING.



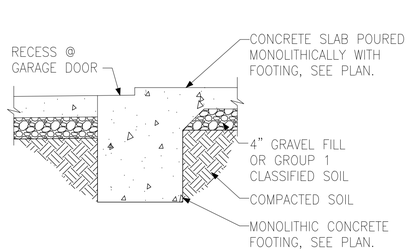
D FOUNDATION SECTION
EXTERIOR WALL AT PORCH W/ MASONRY VENEER



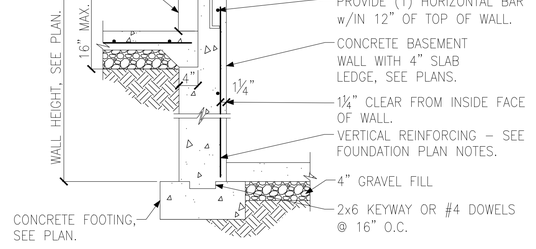
E FOUNDATION SECTION
EXTERIOR GARAGE WALL



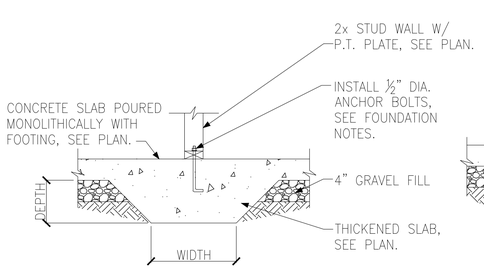
F FOUNDATION SECTION
EXTERIOR GARAGE WALL @ MASONRY VENEER



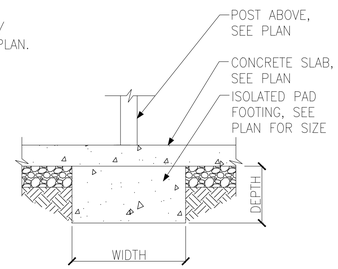
G FOUNDATION SECTION
GARAGE DOOR



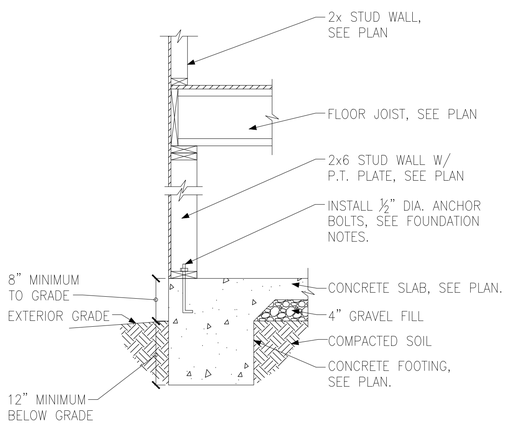
H FOUNDATION SECTION
INTERIOR GARAGE WALL



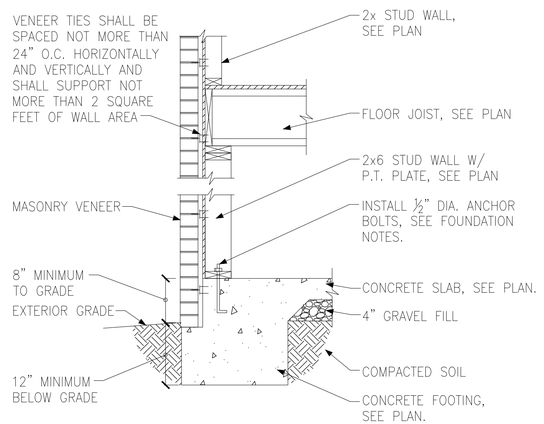
J FOUNDATION SECTION
THICKENED SLAB



K FOUNDATION SECTION
ISOLATED PAD FOOTING



L FOUNDATION SECTION
WALKOUT BASEMENT



M FOUNDATION SECTION
WALKOUT BASEMENT

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046986 ENGINEER ANDREW A. MOORE
6/2/25

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

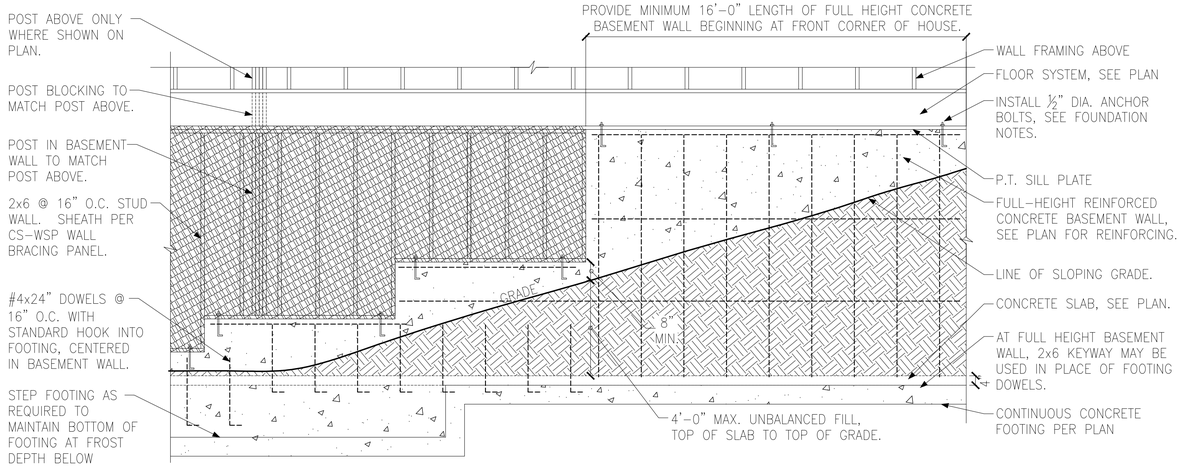
CARUSO HOMES

Basement Foundation Details

120 M.P.H.
Charlotte, North Carolina

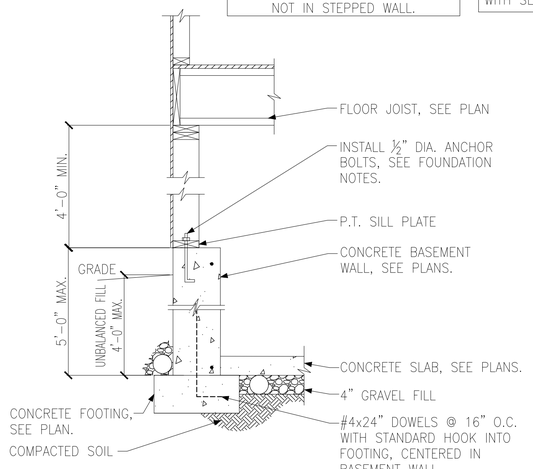
Project #:	108-20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re-Issue:	
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

SD-10



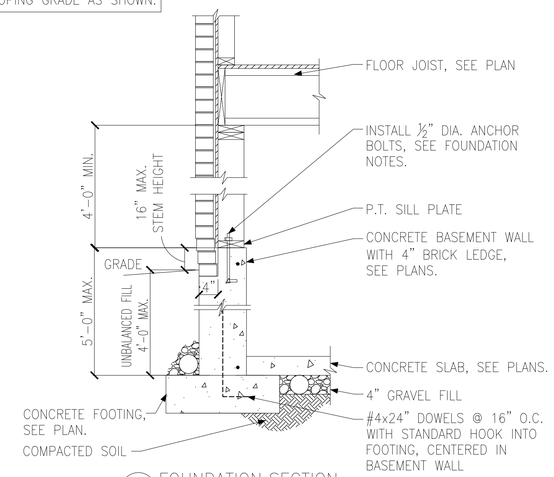
A FOUNDATION ELEVATION
STEPPED SIDEWALL

NOTE: BASEMENT WALL VERTICAL REINFORCING STEEL ONLY REQUIRED IN FULL-HEIGHT BASEMENT WALL, NOT IN STEPPED WALL.

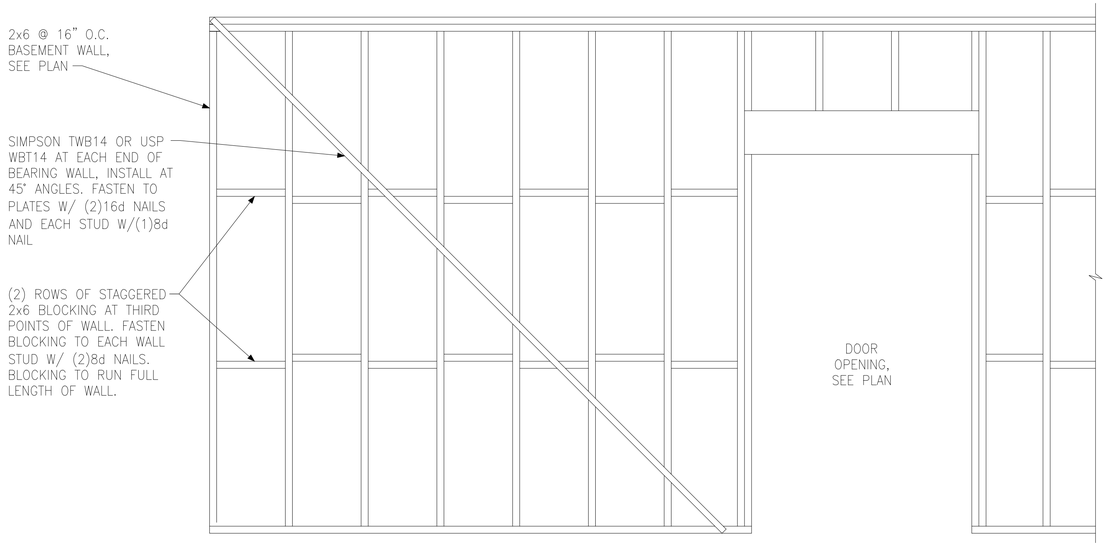


B FOUNDATION SECTION
STEPPED SIDEWALL

THESE DETAILS ONLY APPLY TO WALKOUT BASEMENT SIDE-WALLS WITH SLOPING GRADE AS SHOWN.



C FOUNDATION SECTION
STEPPED SIDEWALL @ MASONRY VENEER



D BASEMENT BEARING WALL BRACING DETAIL

KSE ENGINEERING
1900 AM DRIVE, SUITE 201, QUAKERTOWN, PA 18951
(215) 804-4449
www.kse-eng.com

CARUSO HOMES

Basement Foundation Wall Details

120 M.P.H.
Charlotte, North Carolina

Project #:	108-20000
Designed By:	KRK
Checked By:	
Issue Date:	1/1/20
Re-Issue:	
Scale:	1/8"=1'-0" @ 11x17 1/4"=1'-0" @ 22x34

NC Firm #C-2101
NORTH CAROLINA PROFESSIONAL SEAL 046986 ENGINEER ANDREW A. MOORE
6/2/25

SD-11