# GENERAL STRUCTURAL SPECIFICATIONS

APPLICABLE DESIGN CODES:

2018 NORTH CAROLINA STATE RESIDENTIAL BUILDING CODE

FOUNDATIONS AND SOIL CONDITIONS

- ALLOWABLE BEARING CAPACITY FOR SHALLOW PAD FOUNDATIONS: 2000 PSF (ASSUMED VALUE BASED ON CODE RECOMMENDATIONS)
- EXCAVATIONS TO BE FREE OF LOOSE SOIL MATERIAL, DEBRI, AND EXCESS WATER.

EXCAVATIONS

- CONTRACTOR SHALL FOLLOW ALL OSHA STANDARDS AND RECOMMENDATIONS FOR EXCAVATIONS. THIS INCLUDES BUT NOT NOT LIMITED TO SLOPES OF CUTS AND SHORING OF EXCAVATIONS.
- CONTRACTOR IS RESPONSIBLE FOR VERIFYING ANY EXISTING UTILITIES ON THE PROJECT SITE PRIOR TO ANY EXCAVATION. THE ENGINEERS OF RECORD SHALL BE NOTIFIED OF ANY CONFLICT DUE TO ANY EXISTING UTILITIES OR CONDITIONS.

CONCRETE

- COMPRESSIVE STRENGTH (F'C) = 3000 PSI
- ENTRAINED AIR = 6% ±1% BY VOLUME
- ALL CONCRETE TO BE DESIGNED AND CONSTRUCTION USING THE SPECIFICATIONS STATED IN ACI 318 (LATEST CODE ADOPTED EDITION).
- MINIMUM CONCRETE COVER AND EDGE DISTANCES TO FOLLOW ACI 318 (LATEST CODE ADOPTED EDITION).
- CONSTRUCTION JOINTS REQUIRE APPROVAL BY THE STRUCTURAL ENGINEER.
- CONCRETE SHALL BE THROUGHLY VIBRATED IN FORMS.
- WHEN MULTIPLE POURS ARE REQUIRED, EXISTING CONCRETE SURFACES SHALL BE ROUGHENED. CONCRETE BONDING AGENT SHALL THEN BE APPLIED TO ALL ROUGHENED SURFACES. BONDING AGENT MUST CONFORM TO ASTM C1059, TYPE II.
- CONCRETE SLABS ON GRADE MUST SATISFY THE FOLLOWING
  - -- MIN. 4" THICK.
  - -- CONTAIN WELDED WIRE FABRIC OR SYNTHETIC MICROFIBERS. MICROFIBERS MUST BE 1.5" LONG, HAVE A MINIMUM COMPRESSION STRESS OF 3400 PSI, AND APPLIED AT A RATE OF 1-15 LBS PER CUBIC YARD OF CONCRETE.
  - -- 6 MIL VAPOR BARRIER BELOW SLAB (CAN BE OMITTED FOR NON-HEATED SPACES)
  - -- PLACED ON 4" OF GRANULAR FILL THAT RESTS ON SOIL ACHIEVING 90% COMPACTION (OR GEOTECH APPROVED FILL)
- CONCRETE MUST CURE FOR A MINIMUM OF 28 DAYS PRIOR TO INSTALLING ANY STRUCTURE UNLESS GIVEN APPROVAL FROM ENGINEER OF RECORD.

REINFORCEMENT

- REINFORCEMENT SHALL BE GRADE 60 AND CONFORM TO ASTM A615. SEE THE "MANUAL OF STEEL PRACTICE", LATEST EDITION, FOR DETAILING, FABRICATION, AND PLACEMENT PRACTICES
- REINFORCEMENT LAP SPLICES SHALL BE CLASS B AS DEFINED BY ACI 318, TYP UNO

MINIMUM LAP SPLICES

| REBAR SIZE | MIN. LAP SPLICE (IN) |
|---|---|
| #4 | 18" |

- MINIMUM CONCRETE COVER FOR REINFORCEMENT (UNO)
  - -- EXPOSED TO EARTH = 2" MIN.
  - -- ALL OTHER = 1.5" MIN.

POST - INSTALLED ANCHORS

- POST INSTALLED ANCHORS INDICATED ON PLANS CAN BE SUBSTITUTED WITH AN ENGINEER APPROVED EQUIVALENT PRODUCT.
- IF ANCHOR NOT LISTED ON PLANS, THE FOLLOWING PRODUCTS CAN BE USED
  - -- ADHESIVE ANCHOR: HILTI HIT-RE 500 V3 EPOXY (USE MANUFACTURED APPROVED ANCHOR WITH EPOXY)
  - -- MECHANICAL ANCHOR: HILTI KWIK BOLT TZ, HILTI KWIK HUS-EZ
- SUBSTITUTIONS FOR ANCHORING PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.
- FOLLOW MANUFACTURE'S GUIDELINES FOR INSTALLATION.
- CONCRETE MUST CURE FOR A MINIMUM OF 7 DAYS PRIOR TO INSTALLING ANY POST - INSTALLED ANCHORS UNLESS GIVEN APPROVAL FROM ENGINEER OF RECORD.

STRUCTURAL STEEL

- STEEL MEMBERS AND MINIMUM GRADE:
  - -- W-SHAPES = A992 (50 KSI)
  - -- SQ/RECT. HSS = A500 GRADE B (48 KSI)
  - -- ROUND HSS = A500 GRADE B (42 KSI)
  - -- PIPE = A53 GRADE B. (35 KSI)
  - -- OTHER SHAPES = A36 (36 KSI)
  - -- BOLTS = A325 (90 KSI)
  - -- THREADED RODS = A36 (36 KSI)
- STRUCTURAL STEEL CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
- STRUCTURAL MEMBERS SHOULD BE HOT-DIP GALVANIZED PER ASTM A123, UNLESS NOTED OTHERWISE
- FENCE POSTS SHALL BE ASTM F1083 (SCH. 40) OR ASTM F1043 UNLESS NOTED OTHERWISE ON THE PLANS

WELDING

- WELDING ELECTRODES = E70XX
- WELDING MUST PER PERFORMED BY AN AWS CERTIFIED WELDER

BOLTS AND LAG SCREWS

- BOLTS SHALL CONFORM TO ASTM A307 MINIMUM GRADE TYP UNO.
- BOLTS, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE TO ASTM A153 IF EXPOSED TO ELEMENTS.
- LAG SCREWS SHALL CONFORM TO ANSI/ASME STANDARD B18.2.1-1981.D
- CAST IN PLACE CONCRETE ANCHORS TO BE PROTECTED FROM DAMAGE DURING CONCRETE INSTALL, INCLUDING THREAD CONTACT WITH WET CONCRETE.

ADDITIONAL NOTES

- THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING PLANS PRIOR TO CONSTRUCTION. THE ENGINEER OF RECORD SHOULD BE CONTACTED PRIOR TO CONSTRUCTION IF:
  - -- THE PLANS CONTAINS INACCURATE INFORMATION
  - -- PLANS ARE INCOMPLETE OR LACK NECESSARY INFORMATION FOR CONSTRUCTION
- THE CONTRACTOR SHALL REVIEW ALL DIMENSION. ANY DISCREPANCY SHOULD BE REPORTED TO ENGINEER OF RECORD PRIOR TO CONSTRUCTION OR PROCEEDING.
- FOUNDATION CONTRACTOR SHALL COMPLY WITH ALL OSHA STANDARDS.

DOCUMENTS AND LIMITATIONS

- THIS DOCUMENT SERVES TO PROVIDE A TOOL FOR THE SPECIFIC NEEDS OF THE PARTICULAR JOB SITE AND INFORMATION GIVEN. ENDURE ENGINEERING PLLC DOES NOT ACCEPT LIABILITY FOR REUSE OR IMPROPER USE OF THIS DOCUMENT UNLESS GIVEN PRIOR WRITTEN AUTHORIZATION.
- THE DESIGNS IN THIS DOCUMENT ARE BASED ON THE STATED ADOPTED CODE TO BE USED AND CURRENT GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRACTICES. THE STRUCTURAL ENGINEER OF RECORD GIVES NO WARRANTY FOR ANY FINDINGS, DESIGNS, RECOMMENDATIONS, SPECIFICATIONS, OPINION, OR PROFESSIONAL ADVICE.
- ALL FIELD MODIFICATIONS REQUIRE WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER OF RECORD. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR ANY WORK THAT HE/SHE DID NOT REVIEW OR WAS NOT COMPLETED IN ACCORDANCE WITH THE SEALED RELEASED PLANS.

| ABBREVIATION | TERM |
|---|---|
| ABV | ABOVE |
| BE | BOTH ENDS |
| BTWN | BETWEEN |
| BW | BOTH WAYS |
| CLR | CLR |
| CONC | CONCRETE |
| DIA | DIAMETER |
| DBL | DOUBLE |
| EQ | EQUAL |
| EA | EACH |
| FLG | FLANGE |
| FND | FOUNDATION |
| HDG | HOT-DIPPED GALVANIZED |
| MSN | MASONRY |
| NTS | NOT TO SCALE |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| PL | PLATE |
| STD | STANDARD |
| SQ | SQUARE |
| THK | THICK |
| TYP | TYPICAL |
| UNO | UNLESS NOTED OTHERWISE |
| XJ | EXTRA JOIST |
| XS | EXTRA STRONG |



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NORTH CAROLINA PROFESSIONAL SEAL 055064 ENGINEER ASTON L. HUDSON 01/23/22

PROJECT DETAILS

CLIENT: WHITTENTON BUILDERS
CLIENT EMAIL: craig@whittentonbuilders.com
SCOPE OF WORK: STRUCTURAL PLANS
ADDRESS: 61 ROCK RIDGE PLACE, COATS NC 27521
NOTES: MILLER RESIDENCE

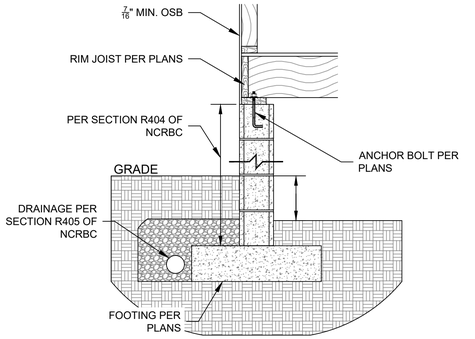
| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |

SPECIFICATIONS

SCALE:

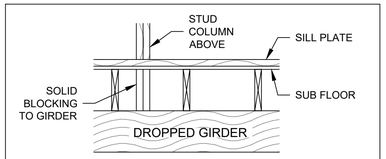
PROJECT #
22-7-1-1

SHEET #
S100



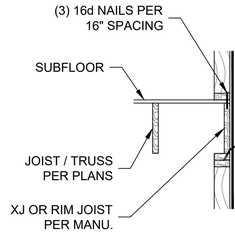

1 / S300 SECTION: CRAWLSPACE FND WALL

3/4" = 1'-0"



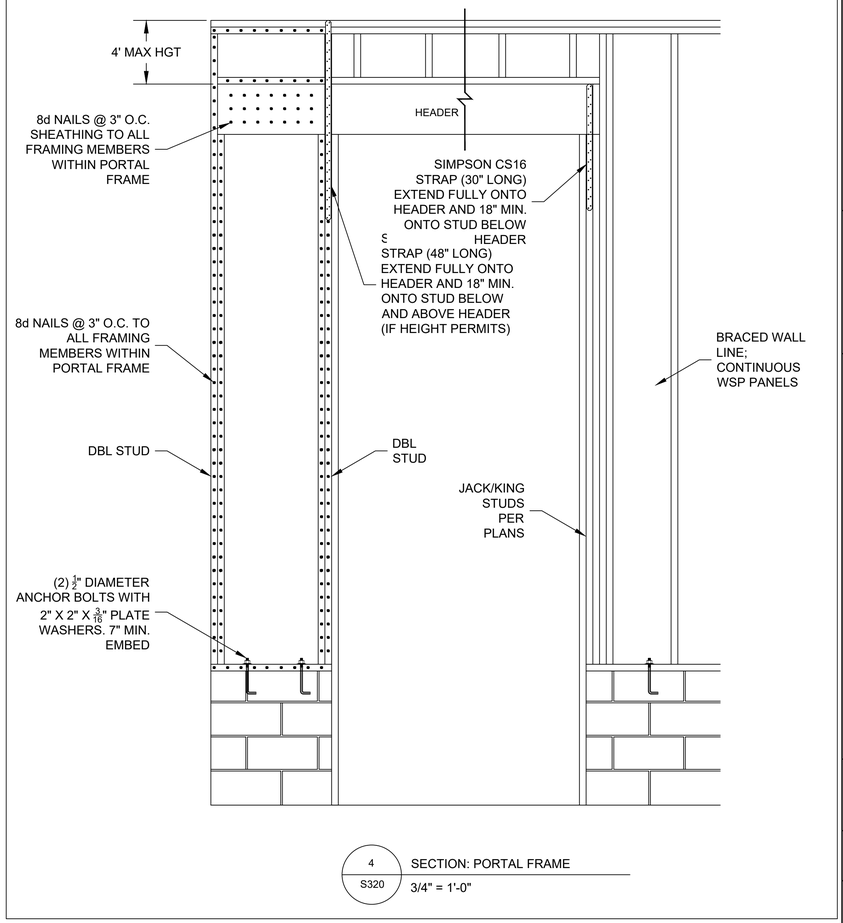

2 / S310 SECTION: DROPPED GIRDER

3/4" = 1'-0"




3 / S320 SECTION: TYP EXTERIOR BRACED WALL PANEL

3/4" = 1'-0"




4 / S320 SECTION: PORTAL FRAME

3/4" = 1'-0"

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PROJECT DETAILS

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CLIENT EMAIL: craig@whittentonbuilders.com

SCOPE OF WORK: STRUCTURAL PLANS

ADDRESS: 61 ROCK RIDGE PLACE, COATS NC 27521

NOTES: MILLER RESIDENCE

| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |

DETAILS

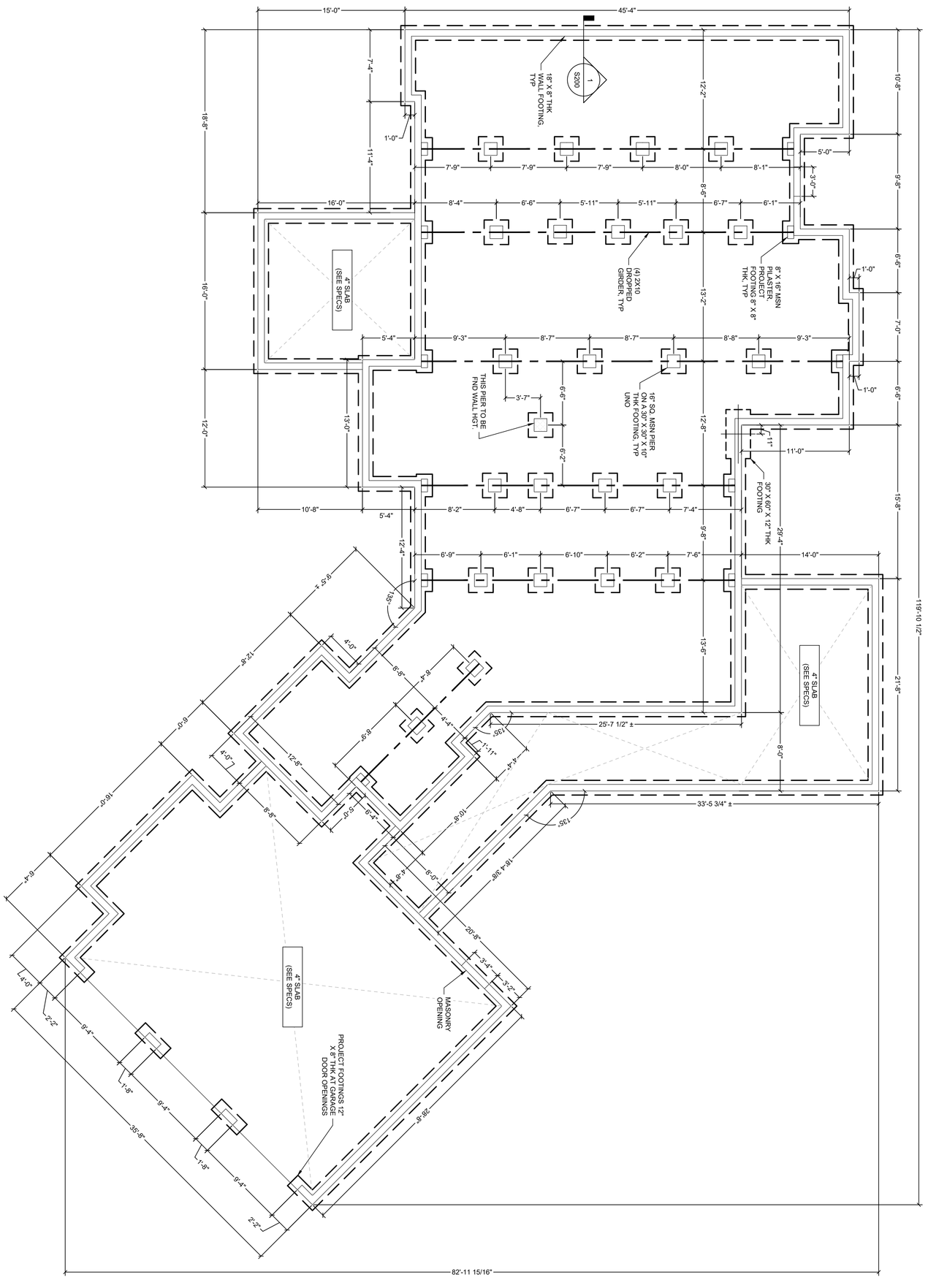
SCALE:

PROJECT #

22-7-1-1

SHEET #

S200




S300

SHEET #

PROJECT # 22-7-1-1

# FOUNDATION PLAN

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

| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |
| | | | |
| | | | |
| | | | |
| | | | |

PROJECT DETAILS

CLIENT: WHITTENTON BUILDERS

CLIENT EMAIL: craig@whittentonbuilders.com

SCOPE OF WORK: STRUCTURAL PLANS

ADDRESS: 61 ROCK RIDGE PLACE, COATS NC 27521

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NORTH CAROLINA PROFESSIONAL ENGINEER CLAYTON L. HOUSE 055641 01/23/22

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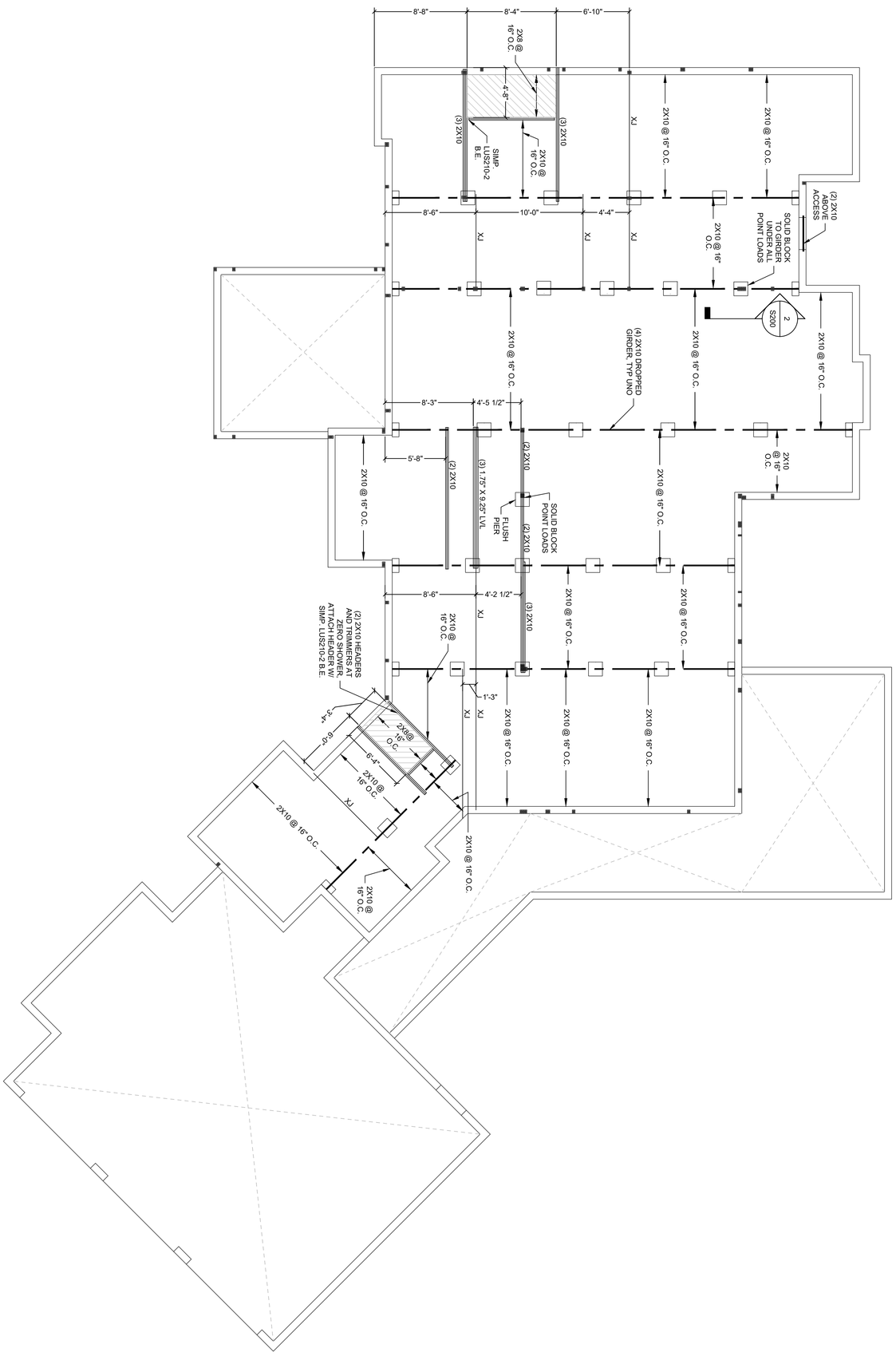


## NOTES

- ½" MIN. Ø ANCHOR BOLTS / 6'-0" O.C. SPACING / 12" MAX FROM CORNERS / 2 BOLT MIN. PER PLATE SECTION INSTALLED IN MIDDLE THIRD OF PLATE. 7" MIN. EMBED ( SECTION R403.1.6 OF NCRBC)

S310

PROJECT # 22-7-1-1

SHEET #

# CRAWLSPACE FRAMING PLAN

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

| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |
| | | | |
| | | | |
| | | | |
| | | | |

PROJECT DETAILS

CLIENT: WHITTENTON BUILDERS

CLIENT EMAIL: craig@whittentonbuilders.com

SCOPE OF WORK: STRUCTURAL PLANS

ADDRESS: 61 ROCK RIDGE PLACE, COATS NC 27521

NOTES: MILLER RESIDENCE

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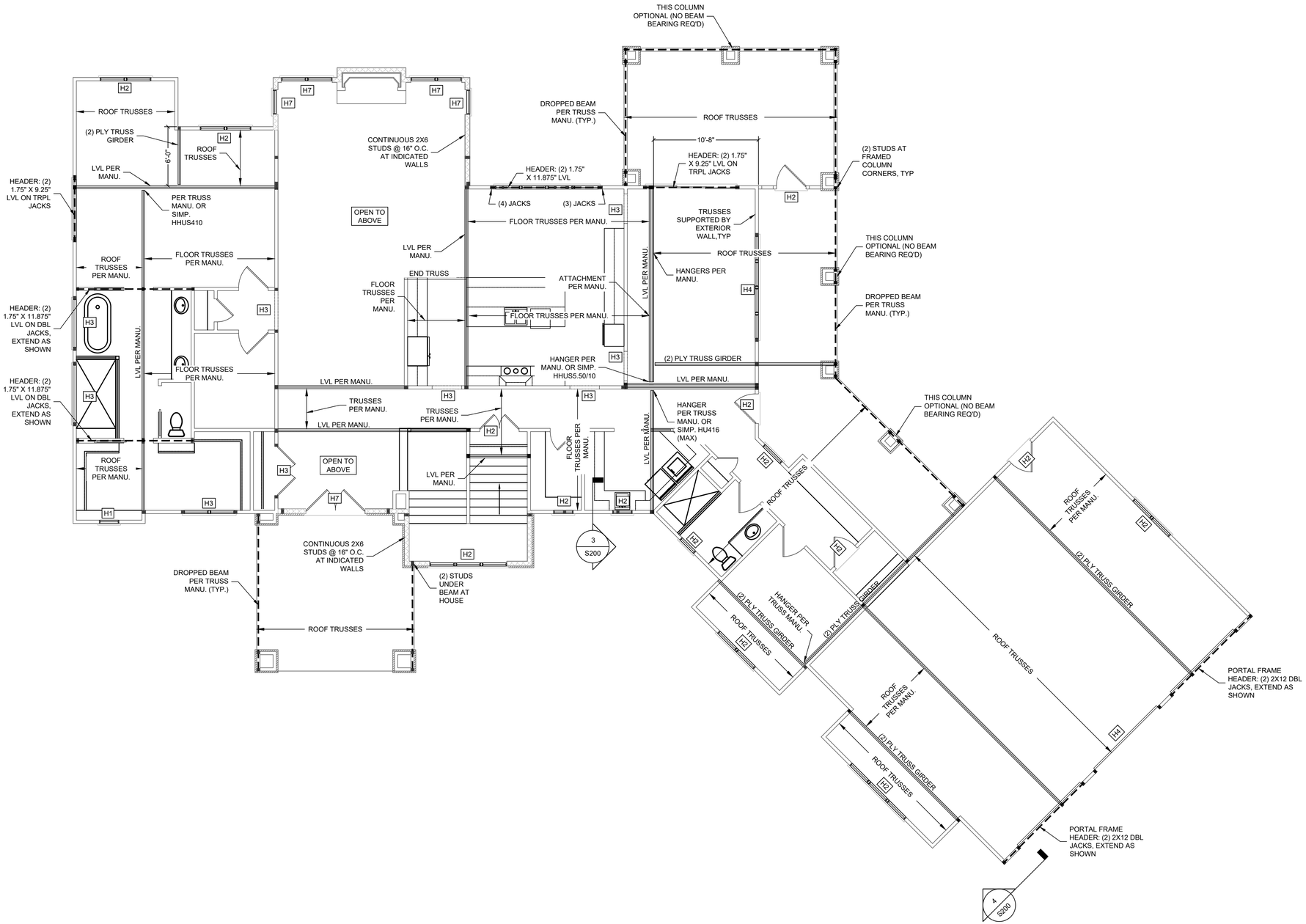


## NOTES

- MAX STUD WALL HEIGHTS UNLESS STATED OTHERWISE:
  - -- 2X4 @ 16" O.C. = 11' - 0" MAX HEIGHT
  - -- 2X4 @ 12" O.C. = 12' - 0" MAX HEIGHT
  - -- 2X6 @ 16" O.C. = 13' - 0" MAX HEIGHT
  - -- 2X6 @ 12" O.C. = 18' - 0" MAX HEIGHT
- BEAMS ARE ASSUMED TO BE SET BOTTOM FLUSH WITH FLOOR SYSTEM UNO
- BEAMS SHALL BE SUPPORTED BY A CENTERED GANGED STUD COLUMN MATCHING OR EXCEEDING THE WIDTH OF THE BEAM, UNO.
- EXTERIOR WALLS TO BE SHEATHED W/ 7/16" OSB (MIN.)
  - -- PANEL EDGE NAILING: 6d NAILS @ 6" O.C.
  - -- INTERIOR OF PANEL NAILING: 6d NAILS @ 12" O.C.

## HEADER SCHEDULE

| LOAD BEARING HEADERS (LABELED) | |
|---|---|
| TAG | DESCRIPTION |
| H1 | (2) 2X4 ON SINGLE JACKS |
| H2 | (2) 2X10 ON SINGLE JACKS |
| H3 | (2) 2X10 ON DBL JACKS |
| H4 | (2) 2X12 ON DBL JACKS |
| H5 | (2) 1.75" X 9.25" LVL ON DBL JACKS |
| H6 | (2) 1.75" X 11.25" LVL ON DBL JACKS |
| H7 | (3) 2X10 ON SINGLE JACKS |

| NON- LOAD BEARING HEADERS: |
|---|
| 0" - 38" OPENINGS: SINGLE 2X4 TURNED FLAT |
| 38" TO 72" OPENINGS: DBL 2X4 ON SINGLE JACKS |

| KING STUDS FOR BRACED WALLS (BOTH SIDES OF OPENING) | |
|---|---|
| # STUDS | MAX OPENING |
| 1 | 5'-0" |
| 2 | 8'-0" |
| 3 | 10'-0" |
| 4 | 12'-0" |
| 5 | 15'-0" |

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PROJECT DETAILS

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NOTES: MILLER RESIDENCE

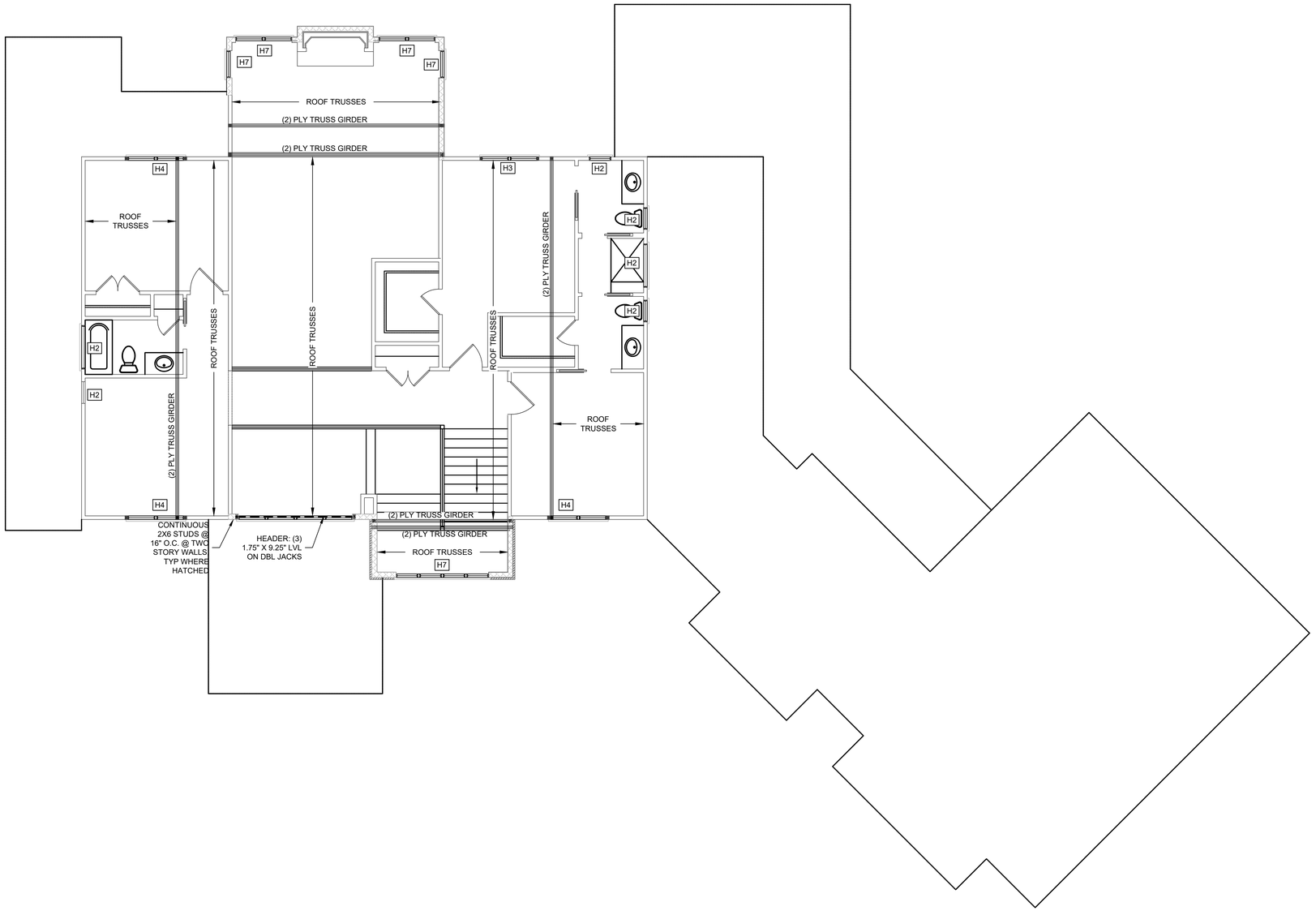
| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |

# 1ST FLOOR (CEILING) FRAMING PLAN

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

PROJECT #
22-7-1-1

SHEET #
S320




## NOTES

- MAX STUD WALL HEIGHTS UNLESS STATED OTHERWISE:
  - -- 2X4 @ 16" O.C. = 11' - 0" MAX HEIGHT
  - -- 2X4 @ 12" O.C. = 12' - 0" MAX HEIGHT
  - -- 2X6 @ 16" O.C. = 13' - 0" MAX HEIGHT
  - -- 2X6 @ 12" O.C. = 18' - 0" MAX HEIGHT
- BEAMS ARE ASSUMED TO BE SET BOTTOM FLUSH WITH FLOOR SYSTEM UNO
- BEAMS SHALL BE SUPPORTED BY A CENTERED GANGED STUD COLUMN MATCHING OR EXCEEDING THE WIDTH OF THE BEAM, UNO.
- EXTERIOR WALLS TO BE SHEATHED W/ $\frac{7}{16}$" OSB (MIN.)
  - -- PANEL EDGE NAILING: 6d NAILS @ 6" O.C.
  - -- INTERIOR OF PANEL NAILING: 6d NAILS @ 12" O.C.

## HEADER SCHEDULE

LOAD BEARING HEADERS (LABELED)

| TAG | DESCRIPTION |
|---|---|
| H1 | (2) 2X4 ON SINGLE JACKS |
| H2 | (2) 2X10 ON SINGLE JACKS |
| H3 | (2) 2X10 ON DBL JACKS |
| H4 | (2) 2X12 ON DBL JACKS |
| H5 | (2) 1.75" X 9.25" LVL ON DBL JACKS |
| H6 | (2) 1.75" X 11.25" LVL ON DBL JACKS |
| H7 | (3) 2X10 ON SINGLE JACKS |

NON- LOAD BEARING HEADERS:

| |
|---|
| 0" - 38" OPENINGS: SINGLE 2X4 TURNED FLAT |
| 38" TO 72" OPENINGS: DBL 2X4 ON SINGLE JACKS |

KING STUDS FOR BRACED WALLS (BOTH SIDES OF OPENING)

| # STUDS | MAX OPENING |
|---|---|
| 1 | 5'-0" |
| 2 | 8'-0" |
| 3 | 10'-0" |
| 4 | 12'-0" |
| 5 | 15'-0" |

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SCOPE OF WORK: STRUCTURAL PLANS
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NOTES: MILLER RESIDENCE

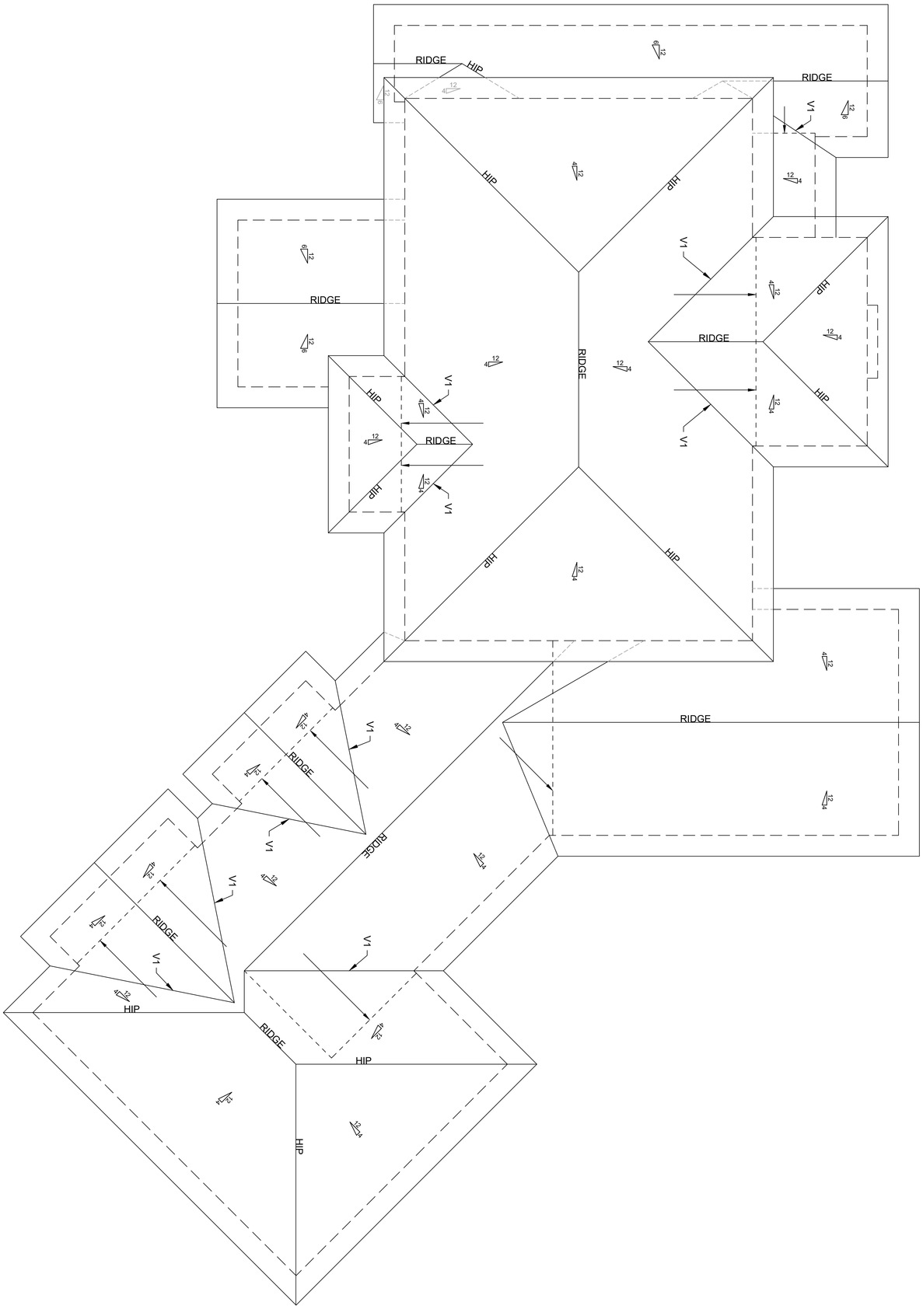
| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |

# 2ND FLOOR (CEILING) FRAMING PLAN

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

PROJECT #
22-7-1-1

SHEET #
S330




| NOTATION | DESCRIPTION |
|---|---|
| V1 | VALLEY SET TRUSSES |

NOTES

- ROOF TRUSSES DESIGNED PER MANU.
- ROOF TRUSSES, GABLE WALLS, AND OVERHANGS TO BE VERIFIED WITH ARCH. DRAWINGS

# ROOF FRAMING PLAN

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

| REV. # | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | STRUCTURAL PLANS AND FOUNDATION | CLH | 01/23/22 |

PROJECT DETAILS

CLIENT: WHITTENTON BUILDERS
CLIENT EMAIL: craig@whittentonbuilders.com
SCOPE OF WORK: STRUCTURAL PLANS
ADDRESS: 61 ROCK RIDGE PLACE, COATS NC 27521
NOTES: MILLER RESIDENCE

NORTH CAROLINA PROFESSIONAL ENGINEER 055641 CHRISTOPHER L. HOGUE 02/22/22

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PROJECT # 22-7-1-1
SHEET # S340