

STRUCTURAL DESIGN REQUIREMENTS:

DESIGN STANDARDS:

ASCE 7-22 MINIMUM DESIGN LOADS FOR BUILDINGS

2018 INTERNATIONAL RESIDENTIAL CODE

2018 NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION

ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

ANSI/AISC 360-16 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS

DESIGN CRITERIA:

DEAD LOAD

-ROOF 20 PSF (INCLINED)
-FLOORS 15 PSF

SNOW LOAD

-GROUND SNOW 48 PSF
-EXPOSURE FACTOR, Ce 1.0
-IMPORTANCE FACTOR 1.0 (CATEGORY "II" BUILDING)
-THERMAL FACTOR, Ct 1.1
-ROOF SLOPE FACTOR, Cs 1.0

LIVE LOAD

-ROOF 20 PSF (PROJECTED)
-FLOORS 40 PSF

WIND

-3-SEC GUST WIND SPEED 125 MPH (ASCE 7-22 ULTIMATE)
-EXPOSURE B
-RISK CATEGORY II
-INT. PRESSURE COEFF. ±0.18

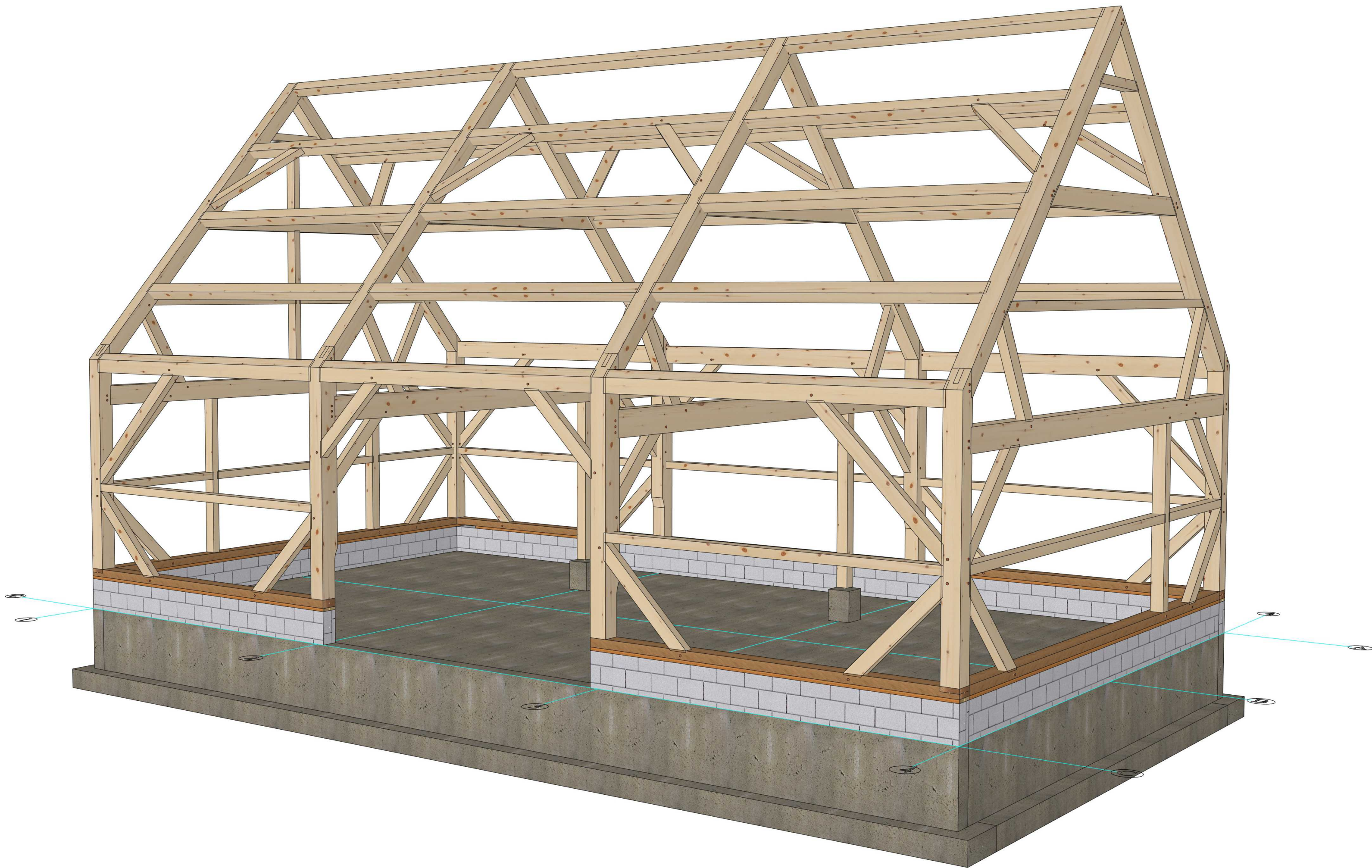
SEISMIC

-RISK CATEGORY II
-IMPORTANCE FACTOR, Ie 1.0 (CATEGORY "II" BUILDING)
-SITE CLASS D (ASSUMED)

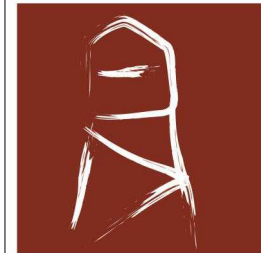
SOIL

MINIMUM ALLOWABLE BEARING CAPACITY: 2000 PSF (ASSUMED)

MINIMUM FROST PROTECTION DEPTH BELOW GRADE: 42 INCHES



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Engineer:

BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By: DMK Date: 3/19/25

Review:

Rev 3/26/25
Rev 4/2/25
Rev 4/24/25
Rev 4/30/25

Scale: Not to Scale

Sheet TF1

GENERAL NOTES:

TIMBER FRAME ELEMENTS HAVE BEEN DESIGNED TO RESIST GRAVITY LOAD ONLY.

IT IS THE RESPONSIBILITY OF THE TIMBER FRAME SYSTEM PURCHASER (OWNER AND/OR CONTRACTOR) TO VERIFY ALL DIMENSIONS INDICATED ON THE TIMBER FRAME SYSTEM DRAWINGS.

SHRINKAGE OF TIMBERS MAY RESULT IN THE "LOOSENING" OF BOLTS AND ALL-THREAD CONNECTORS. PERIODIC TIGHTENING OF THESE CONNECTIONS DURING THE FIRST SEVERAL YEARS OF THE STRUCTURE'S SERVICE LIFE IS REQUIRED.

SUB-SLAB PREPARATION, DAMP PROOFING OR WATERPROOFING, ANY SUB-SLAB ELECTRICAL, PLUMBING OR RADON PIPING, AND ALL FOOTINGS AND FLOOR DRAINS TO BE COORDINATED BY GENERAL CONTRACTOR.

DO NOT SCALE ANY DRAWINGS.

EARTHWORK:

COMPLIANCE OF SOIL COMPACTION AND OTHER MEASURES TAKEN TO ACHIEVE THE ALLOWABLE BEARING PRESSURE AND SUFFICIENT DRAINAGE IN AREAS OF BACKFILL SHALL BE FIELD VERIFIED BY A QUALIFIED SOILS ENGINEER AND IS NOT THE RESPONSIBILITY OF FIRE TOWER ENGINEERED TIMBER. FOUNDATION DRAINS MUST BE PROVIDED AROUND THE PERIMETER OF THE STRUCTURE AND MUST DRAIN TO DAYLIGHT.

CONCRETE:

UNLESS NOTED OTHERWISE, CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF f'c = 3,000 PSI. CONCRETE SLABS SHALL HAVE f'c = 3,5000 PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL CONTAIN 6% AIR ENTRAINMENT OR SHOW EQUIVALENT FREEZE-THAW PROTECTION.

CONCRETE SHALL HAVE A MINIMUM COVER ACCORDING TO:

- FOOTINGS (TO SOIL) 3"
- PIERS 2"
- PILASTERS 1 ½"
- SLABS 1 ¼" FROM TOP
- WALLS 1 ½"

REINFORCING STEEL SHALL HAVE THE FOLLOWING YIELD STRENGTHS:

- 40,000psi FOR #5 & SMALLER REBAR
- 60,000psi FOR #6 & LARGER REBAR

UNLESS NOTED OTHERWISE ON THESE STRUCTURAL DRAWINGS, ALL REBAR ARRANGEMENT AND BENDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI DETAILING MANUAL (ACI SP-66). HORIZONTAL REBAR SHALL BE CONTINUOUS AROUND ALL CORNERS. REINFORCING INDICATED TO BE WELDED SHALL BE IN ACCORDANCE WITH ASTM A706, 'LOW ALLOY STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT'.

ALL SLABS, POST PADS, AND FOOTINGS ARE TO BE PLACED ON UNDISTURBED SOIL OR WELL-COMPACTED FILL, OR PINNED TO CLEANED LEDGE. FOUNDATION WALLS ARE TO BE PLUMB, SQUARE, AND SIZED TO WITHIN A 1/4" OF RELATIVE ELEVATIONS SHOWN ON PLANS. ALL FOOTINGS EXPOSED TO FROST CONDITIONS IN THE SOIL MUST BE PLACED BELOW LOCAL FROST DEPTH.

PROVIDE A 15-MIL POLYETHYLENE VAPOR RETARDER WITH JOINTS LAPPED NOT LESS THAN 6" BETWEEN THE SUBGRADE AND CONCRETE FLOOR SLABS PER GEOTECHNICAL REPORT RECOMMENDATIONS.

SLAB ON GRADE CONCRETE SHALL BE 4" THICK WITH #4 REBAR RUNNING AT 16" O.C. EACH WAY, CENTERED IN THE SLAB. CONFIRM WITH BUILDING DESIGNER BEFORE USING FIBERS OR OTHER REINFORCEMENT ADDITIONS SINCE SLAB IS FINISHED FLOOR SURFACE.

SUPPLY CONTROL JOINTS IN SLABS TO CREATE APPROXIMATELY SQUARE SHAPED SECTIONS WITH NO RE-ENTRANT CORNERS. JOINTS MAY BE CONSTRUCTION JOINTS, SAWN JOINTS, OR PREMOLDED JOINT STRIPS AT THE CONTRACTORS OPTION. MAXIMUM JOINT SPACING SHALL NOT EXCEED 15'. REINFORCING STEEL SHALL BE CONTINUOUS THROUGH ALL COLD JOINTS.

IN THE EVENT THE AVERAGE DAILY TEMPERATURE IS EXPECTED TO BE BELOW 40°F FOR THREE CONSECUTIVE DAYS, COLD WEATHER CONCRETING REQUIREMENTS SHALL BE FOLLOWED. WHEN THE AMBIENT OR CONCRETE TEMPERATURES ARE EXPECTED TO BE ABOVE 90°F OR STEEL AND FORMING MATERIAL ABOVE 120°F, HOT WEATHER CONCRETING REQUIREMENTS SHALL BE FOLLOWED.

COLD WEATHER CONCRETING

CONCRETE SHALL NOT BE PLACED ON FROZEN SUBGRADE

SNOW, ICE, AND FROST SHALL BE REMOVED FROM ALL REINFORCING, FORMS, AND OTHER SURFACES WHICH WILL BE IN CONTACT WITH THE CONCRETE.

CONCRETE SHALL BE PROTECTED AGAINST DAMAGE FROM FREEZING FOR A MINIMUM OF 3 DAYS AFTER PLACEMENT.

WHEN FREEZING TEMPERATURES MAY OCCUR, BUT IN SHORT ENOUGH DURATION TO NOT BE CLASSIFIED AS COLD WEATHER, PROTECT CONCRETE FROM FREEZING FOR AT LEAST 24 HOURS AFTER CONCRETE PLACEMENT.

TEMPERATURES OF CONCRETE SHALL BE MEASURED AT THE CONCRETE SURFACE, AND RECORDED FOR THE FIRST 3 DAYS AFTER PLACEMENT AT THE BEGINNING, MIDDLE, AND END OF EACH WORK DAY.

THE TEMPERATURE OF THE CONCRETE SHALL NOT FALL BELOW:

LEAST DIMENSION	TEMP.
>72"	40°F
36-72"	45°F
12-36"	50°F
<12"	55°F

IF TEMPERATURE REQUIREMENTS ARE NOT MAINTAINED DURING THE REQUIRED PROTECTION PERIOD, CONTACT ENGINEER OF RECORD TO DETERMINE AMOUNT OF TIME REQUIRED TO EXTEND PROTECTION PERIOD.

HOT WEATHER CONCRETING

IF CONDITIONS DUE TO HEAT OR WIND INCREASE THE RISK OF ACCELERATED CURING, CONCRETE SHALL BE MODIFIED WITH THE ADDITION OF RETARDING ADMIXTURES. APPROVAL BY THE ENGINEER OF RECORD IS REQUIRED.

WATER SHALL NOT BE ADDED TO THE CONCRETE MIXES TO INCREASE WORKABILITY. ANY WATER REDUCTION AGENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD BEFORE ADDING TO THE MIX.

CONCRETE SHALL NOT EXCEED 90°F AT TIME OF PLACEMENT. CHILLED WATER, ICE, OR COOLED AGGREGATE MAY BE USED, PROVIDED THAT THE PROPER W/C RATIO IS MAINTAINED.

CAST IN PLACE TOLERANCES

CONCRETE COVERED AS MEASURED PERPENDICULAR FROM THE SURFACE IN THE DIRECTION OF MEASUREMENT SHALL NOT EXCEED 3/8".

PLACEMENT OF FOOTINGS SHALL BE WITHIN THE FOLLOWING:

LEVEL ALIGNMENT	- 2" to + 1/2"
LATERAL ALIGNMENT	± 2"

DIMENSIONS OF FOOTINGS SHALL BE WITHIN THE FOLLOWING:

FORMED	- 1/2" to + 2"
EARTHCAST	< 2' W - 1/2" to + 3"
	> 2' W - 1/2" to + 6"
THICKNESS	± 1/2"

THE TOP OF FOOTINGS SLOPE SHALL NOT EXCEED 1 IN 10.

MASONRY:

ALL CMU SHALL HAVE A SPECIFIED MINIMUM COMPRESSIVE STRENGTH OF 1900 PSI ON A NET AREA AT 28 DAYS (f'm = 1500psi). 3-CELL BLOCKS SHALL NOT BE USED.

MORTAR SHALL CONFORM TO ASTM C270 TYPE "S" UNLESS OTHERWISE NOTED.

ALL CELLS SHALL BE GROUTED WITH 2000 PSI CONCRETE GROUT.

BLOCKS SHALL BE PLACED IN A RUNNING BOND PATTERN WITH CORNER BLOCKS INTERWOVEN BETWEEN INTERSECTING WALLS.

CONTINUOUS KNOCK-OUT BOND BEAMS SHALL BE PROVIDED AT THE TOP COURSE OF CMU WALLS W/ (2) #5 HORIZ REINFORCEMENT CONTINUOUS AROUND CORNERS. PROVIDE BOND BEAM WITH (2) #5 HORIZ. REINFORCEMENT IMMEDIATELY ABOVE AND BELOW ALL WALL OPENINGS, EXTENDING 24" EACH WAY PAST OPENING.

UNLESS OTHERWISE NOTED, FOR 8" CMU WALLS, FULL HEIGHT VERTICAL REINFORCING SHALL CONSIST OF (1) #5 BAR SPACED 16" HORIZONTALLY AND PLACED 5" FROM THE BACKFILL FACE IN FULLY GROUTED CELLS, AND HORIZONTAL REINFORCING SHALL CONSIST OF (2) W1.7 WIRES (LADDER MESH OR TRUSS MESH) SPACED 16" VERTICALLY.

WOOD:

TIMBERS

UNLESS OTHERWISE NOTED, SOLID SAWN TIMBER SHALL BE EASTERN WHITE PINE , SIZED TO THE FULL INCH. TIMBERS MAY NOT BEAR A GRADE STAMP, BUT SHALL OTHERWISE MEET THE REQUIREMENTS OF #1 OR BETTER MATERIAL. SOME WARPING, TWISTING, AND CHECKING OF TIMBERS IS ANTICIPATED AS THEY REACH EQUILIBRIUM MOISTURE CONTENT.

TIMBER SCREWS

UNLESS NOTED OTHERWISE, ALL SCREWS SHALL BE BY GRK RSS OR ROTHOBLAAS TBS OR OTHER APPROVED SCREW, WITH A SHANK DIAMETER OF AT LEAST 0.2", AND A THREAD DIAMETER OF AT LEAST 0.30". SCREWS HOLES SHALL NOT BE PRE-DRILLED UNLESS OTHERWISE NOTED, AND HAVE AT LEAST 3" OF THREAD PENETRATION INTO THE CONNECTING MEMBER.

TIMBER FRAME JOINERY

UNLESS OTHERWISE CALLED OUT IN JOINERY DETAILS ON THE STRUCTURAL AND TIMBER FRAME DRAWINGS, THE JOINERY SHOULD MEET THE FOLLOWING REQUIREMENTS, AND BE DETAILED IN ACCORDANCE WITH TFEC 1-19.

ALL PEGS SHALL BE 1" IN DIAMETER, AND MEET THE REQUIREMENTS OF TFEC 1-19.

TENONS CONNECTING MEMBERS IN 8X MATERIAL AND LARGER (SMALLEST DIRECTION), SHALL BE 2" THICK AND 5" IN LENGTH, WITH 3" OF RELISH. IN 6X MATERIAL, 1 ½" THICK, 4" LONG TENONS WITH 2 ½" RELISH SHALL BE USED. 4X AND SMALLER MATERIAL, INCLUDING BRACES (UNLESS OTHERWISE CALLED OUT) AND STRUTS, SHALL HAVE A 1 ½" THICK TENON, AT LEAST 3 ½" IN LENGTH, AND 2 ½" OF RELISH.

WHERE TENON INTERFERENCE OCCURS, TENONS SHALL BE AS LONG AS POSSIBLE, AND OFFSET (HIGH/LOW) WHERE POSSIBLE. IN THREE-WAY AND FOUR-WAY CONNECTIONS, 1 ½" THICK HARDWOOD (SPECIFIC GRAVITY EQUAL TO OR GREATER THAN THE CONNECTING TIMBERS) OR 1 ¾" LVL SPLINES ARE STRONGLY ENCOURAGED.

HOUSINGS FOR 6X AND LARGER STOCK SHALL BE 1", UNLESS SPECIFIED OTHERWISE. WHERE 6X FRAMING IS NOT DIRECTLY SUPPORTING ROOF OR FLOOR LOADS, 1/2" STUB TENONS MAY BE USED IN PLACE OF FULL 1" HOUSINGS. 4X MATERIAL, INCLUDING BRACES, SHALL BE HOUSED ¾". BIRDSMOUTHS, REDUCTIONS, AND COPES NOT SUPPORTED BY A BEARING SURFACE SHALL NOT EXCEED MORE THAN ¼ THE MEMBER DEPTH WITHOUT REQUIRING FURTHER REINFORCEMENT.

UNLESS OTHERWISE SPECIFIED, RAFTERS AND PURLINS SHALL BE SECURED INTO THEIR HOUSINGS AND SUPPORTS WITH LOG SCREWS, (1) SCREW AT EACH END FOR 6X AND SMALLER MATERIAL, (2) SCREWS AT EACH END FOR 8X AND LARGER MATERIAL.

DIMENSIONAL LUMBER

ALL 2x DIMENSIONAL LUMBER SHALL BE SPRUCE-PINE-FIR NO.1/NO.2 OR OTHER SPECIES WITH EQUIVALENT ALLOWABLE DESIGN STRENGTHS. 2x MATERIAL SHALL BE PLANED ¼" TO ¾" UNDER STATED DIMENSION.

ALL SILL PLATES AND DIMENSIONAL WOOD FRAMING IN CONTACT WITH CONCRETE AND MASONRY SHALL BE PRESERVATIVE TREATED WOOD IN COMPLIANCE WITH AWP-A-U1 OR A NATURALLY DECAY RESISTANT SPECIES.

STRUCTURAL SHEATHING

STRUCTURAL SHEATHING SHALL BE APA RATED AND NOT EXCEED THE SPAN RATING FOR ITS INTENDED USE, WITH A MINIMUM THICKNESS OF 15/32" FOR WALLS, 19/32" FOR ROOFS, AND 23/32" FOR FLOORS.

NAILS

UNLESS OTHERWISE CALLED OUT IN THE PLANS FOR MORE STRINGENT NAILING, NAILING SHALL MEET OR EXCEED THE NAILING IN "TABLE R602.3(1) FASTENER SCHEDULE FOR STRUCTURAL MEMBERS" IN THE REFERENCED BUILDING CODE. ALL NAILS SPECIFIED ARE COMMON.

WHEN AIR GUN NAILING IS USED, CARE SHALL BE TAKEN TO USE TRUE COMMON NAIL EQUIVALENTS REGARDING DIAMETER. (8d = 0.131"Ø, 10D = 0.148"Ø, 16d = 0.162"Ø).

WOOD CONNECTORS

ALL STEEL FASTENERS OR CONNECTIONS IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE ZINC COATED IN ACCORDANCE WITH ASTM A 153, MADE OF STAINLESS STEEL, OR SHOW A SIMILAR LEVEL OF CORROSION PROTECTION.

STRAPS AND HOLD-DOWNS

ALL STRAPS AND HOLD-DOWNS ARE BY SIMPSON STRONG-TIE OR EQUIVALENT.

ANCHOR BOLTS

UNLESS OTHERWISE NOTED, ANCHOR BOLTS SHALL BE ASTM F1554 GR.36 OR BETTER 5/8" DIA., HAVE 7" OF EMBEDMENT INTO CONCRETE, AND EXTEND AT LEAST 4" FROM TOP OF THE FOUNDATION WALLS. ANCHOR BOLTS SHALL BE SPACED PER THE STRUCTURAL DRAWINGS, BUT NO MORE THAN 4'-0" O.C. EACH SILL PLATE SHALL HAVE AT LEAST TWO ANCHOR BOLTS. THERE SHALL BE ANCHOR BOLTS A MAX OF 12" FROM EACH WALL OR SHEAR WALL END.

POST INSTALLED ANCHORS SHALL BE MANUFACTURED BY HILTI, INC. INTERNATIONAL CODE COUNCIL (ICC). BLOW AND CLEAR OUT ALL LOOSE PARTICLES FROM DRILLED HOLE PRIOR TO INSERTING ROD AND EPOXY. USE HILTI HIT-HY 200 ADHESIVE. CONSULT ENGINEER FOR USE OF ALTERNATE GRADE OR MANUFACTURER EPOXY.

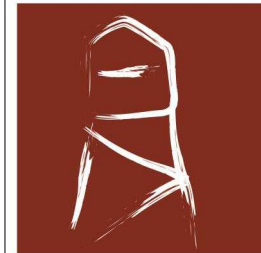
ERECTION AND BRACING:

THE STRUCTURAL DRAWINGS ARE INTENDED TO ILLUSTRATE THE COMPLETED STRUCTURE, WITH ALL MEMBERS IN THEIR FINAL SUPPORTED POSITION, AND ARE NOT INTENDED TO DESCRIBE THE METHOD OF CONSTRUCTION.

THE SEQUENCE FOR INSTALLING STRUCTURAL MEMBERS, AND ENSURING THE SAFETY OF THE STRUCTURE, WORKERS, AND OTHERS DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS INCLUDES SHORING, TEMPORARY BRACING, RIGGING, SCAFFOLDING, AND ERECTION (CRANE, FORKLIFT, ETC) EQUIPMENT.

TEMPORARY BRACING, GUYS, AND OTHER LATERAL SUPPORT SHALL BE PROVIDED UNTIL THE BUILDING FRAME IS COMPLETELY INSTALLED.

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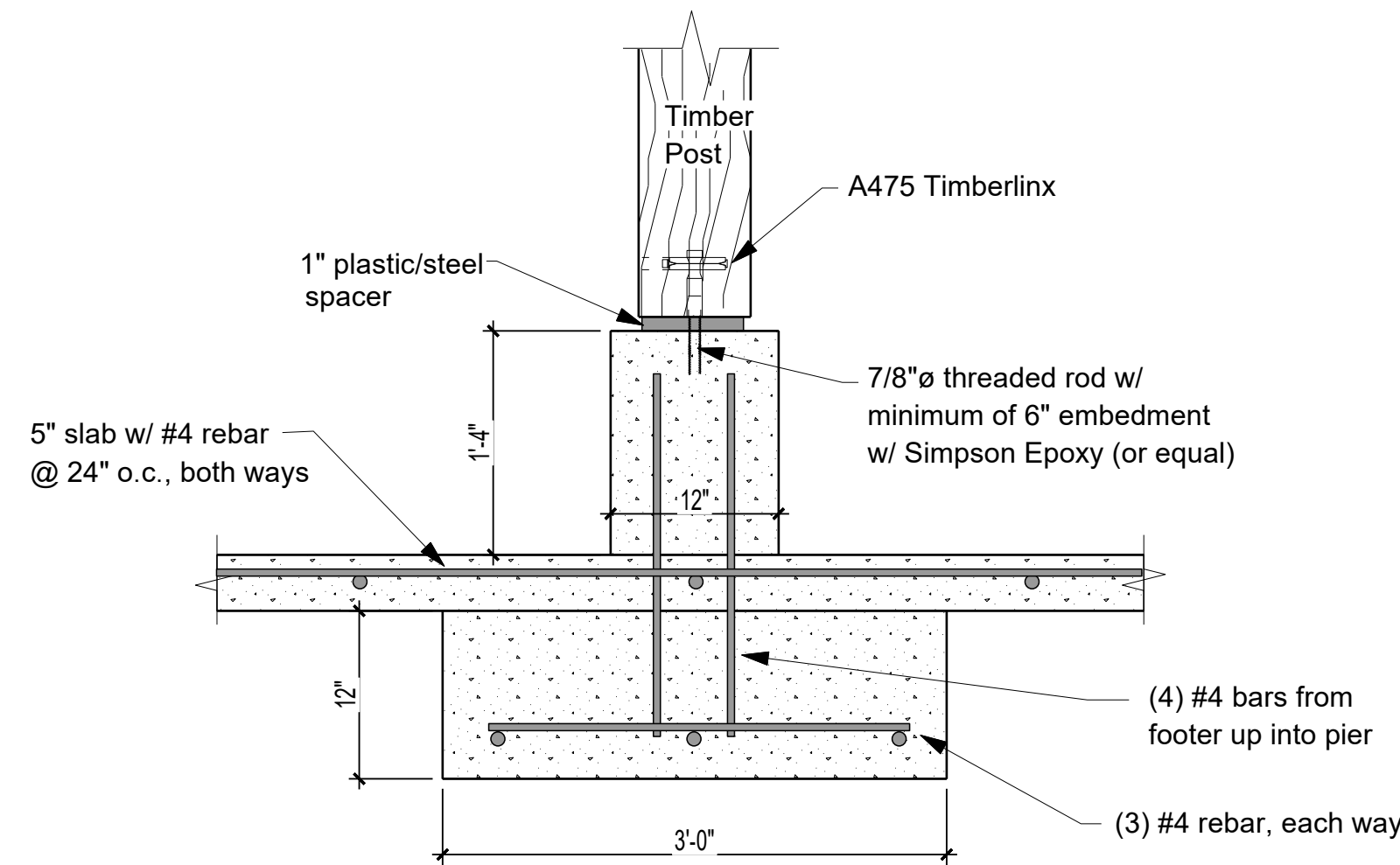
BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By:	DMK	Date:	3/19/25
Review:			
Rev			3/26/25
Rev			4/2/25
Rev			4/24/25
Rev			4/30/25

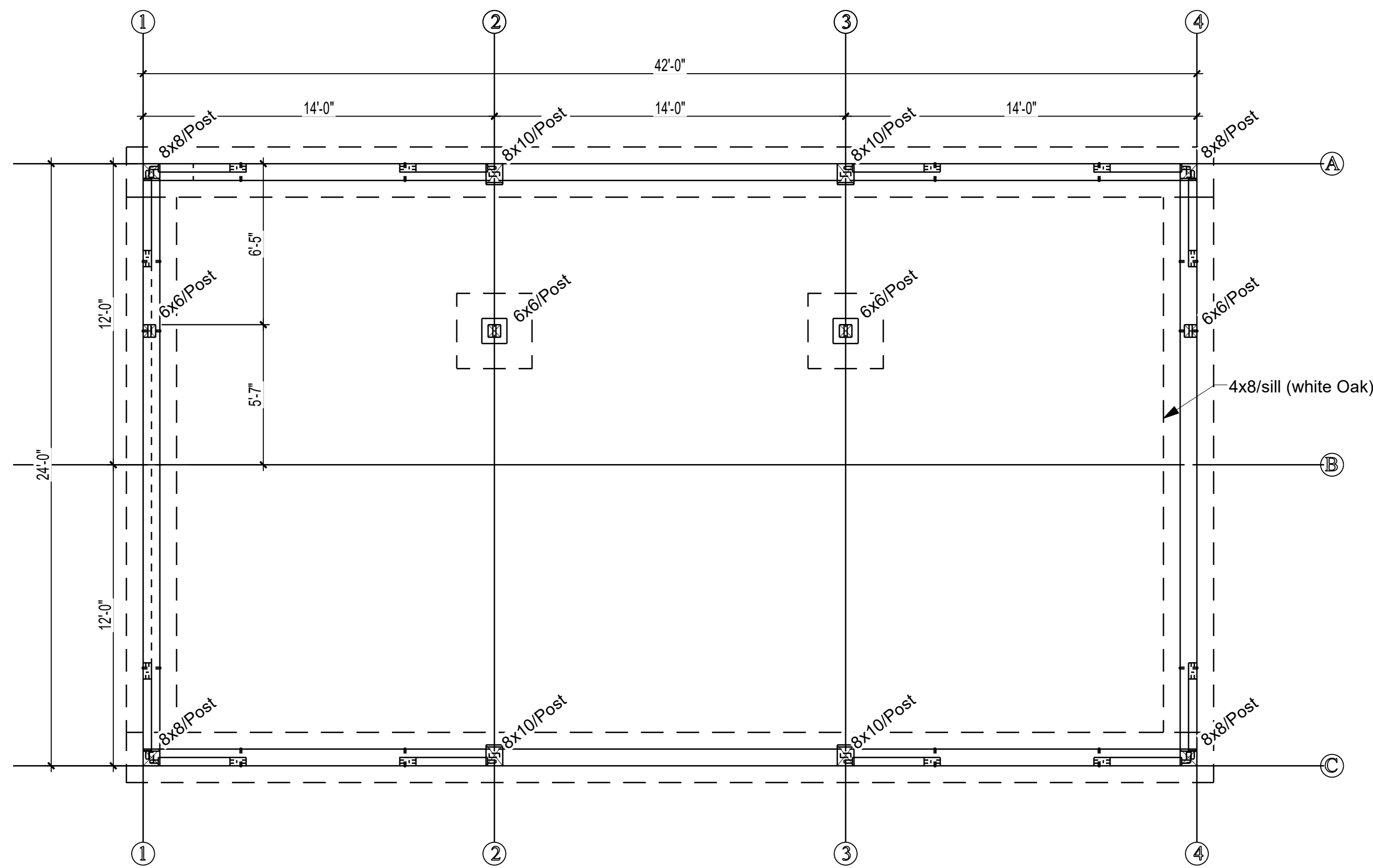
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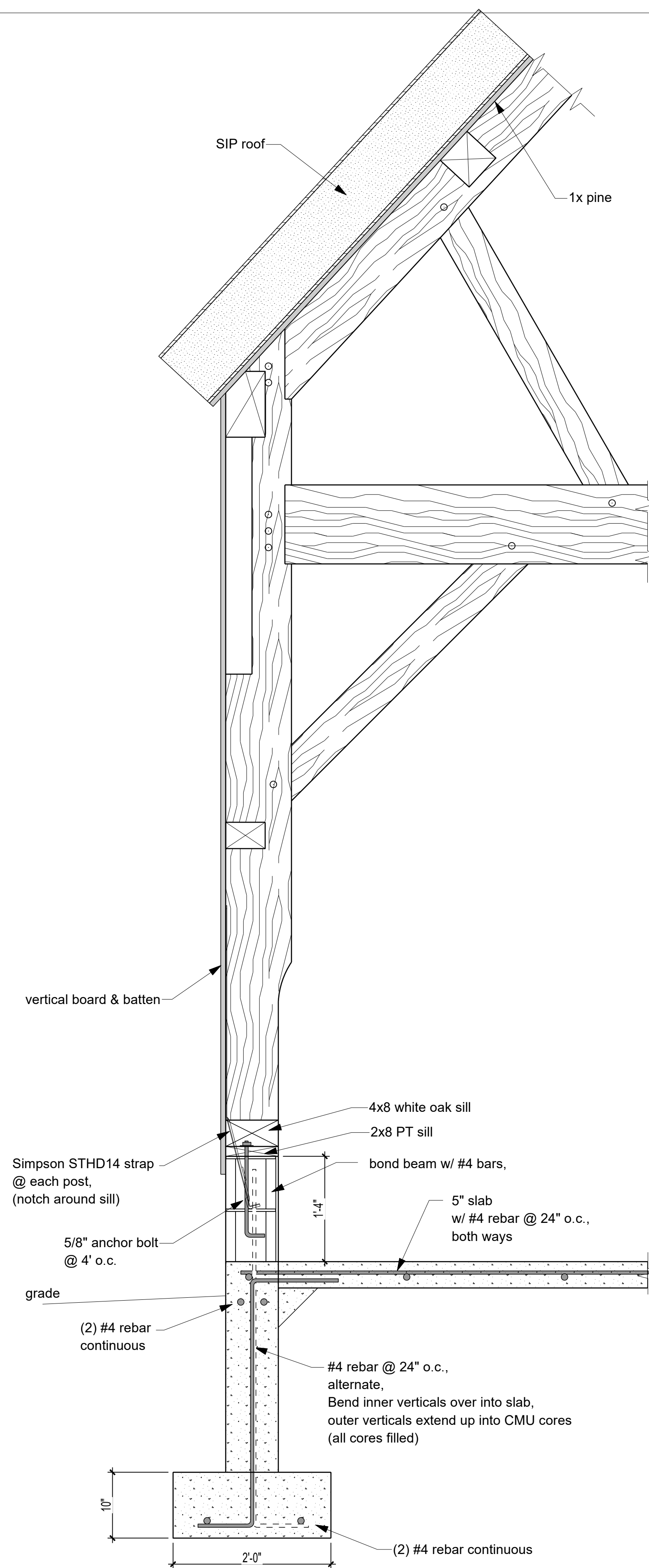


**FOUNDATION DETAIL
@ INTERIOR POSTS**

1" = 1'-0"

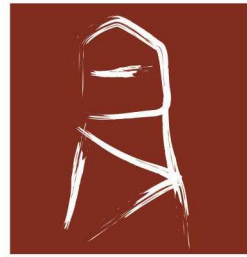


**FOUNDATION PLAN &
TIMBER POST LAYOUT**



**FOUNDATION DETAIL
@ PERIMETER WALL SECTION**

1" = 1'-0"



Engineer:

BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By: DMK Date: 3/19/25
Review:
Rev 3/26/25
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Scale: AS NOTED

Sheet **TF2**

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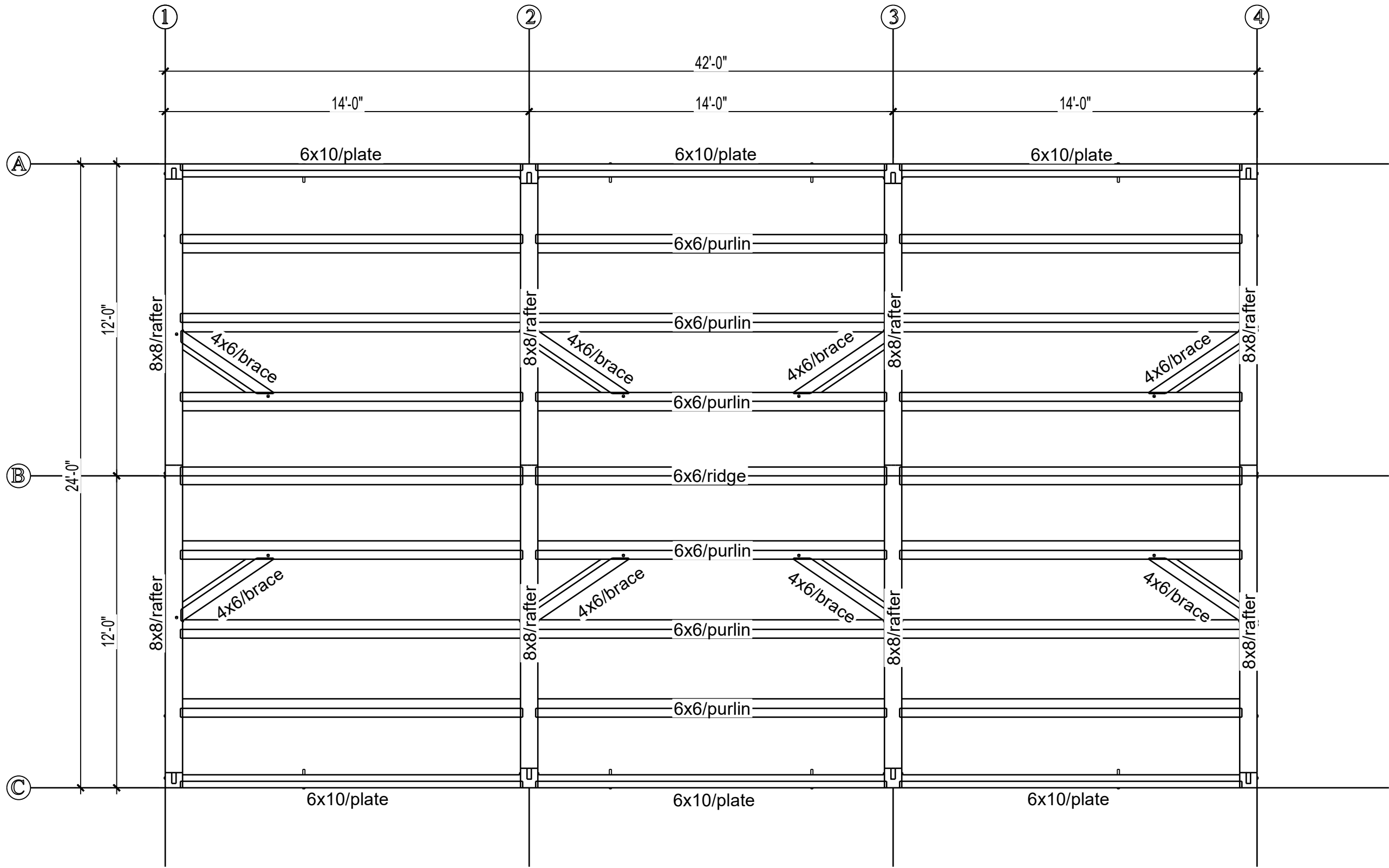
BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By:	DMK	Date:	3/19/25
Review:			
Rev			3/26/25
Rev			4/2/25
Rev			4/24/25
Rev			4/30/25

Scale: 1/4" = 1'-0

Sheet TF3



TIMBER ROOF PLAN



Location: Flanders Lane Chilmark, MA	BISKIS BARN
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Sheet **TF4**



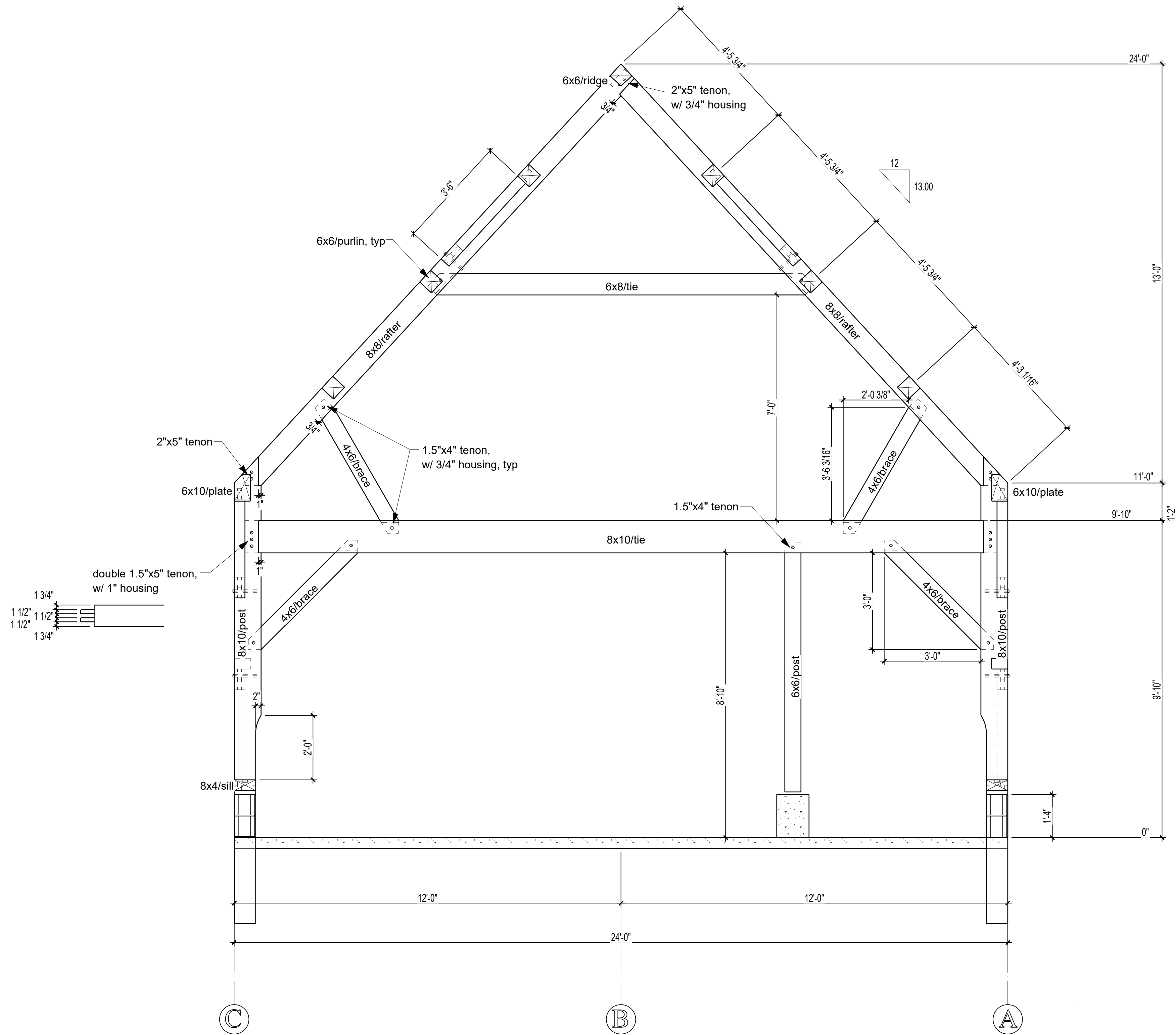
Location: Flanders Lane Chilmark, MA	BISKIS BARN
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Drawn By: DMK Date: 3/19/25

Review:

Rev	3/26/25
Rev	4/2/25
Rev	4/24/25
Rev	4/30/25

Scale: 1/2" = 1'-0"

Sheet **TF5**

SECTION @ LINE 2 (LINE 3 SIMILAR)

AS SEEN FROM 3



Engineer:

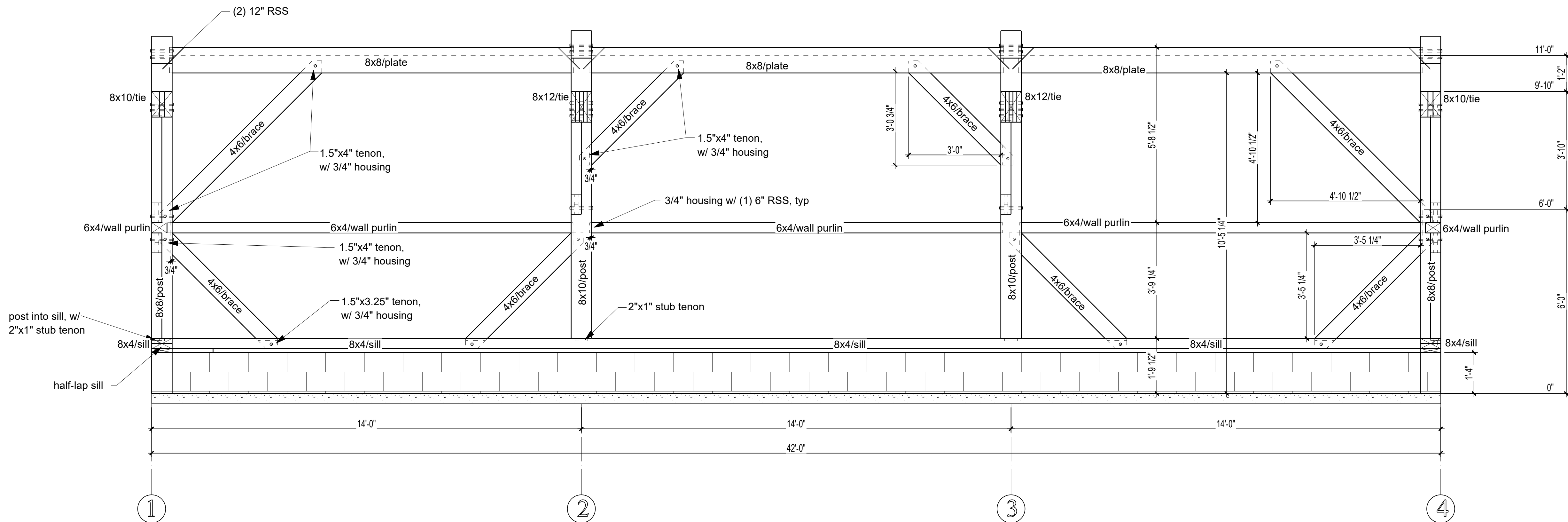
BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By:	DMK	Date:	3/19/25
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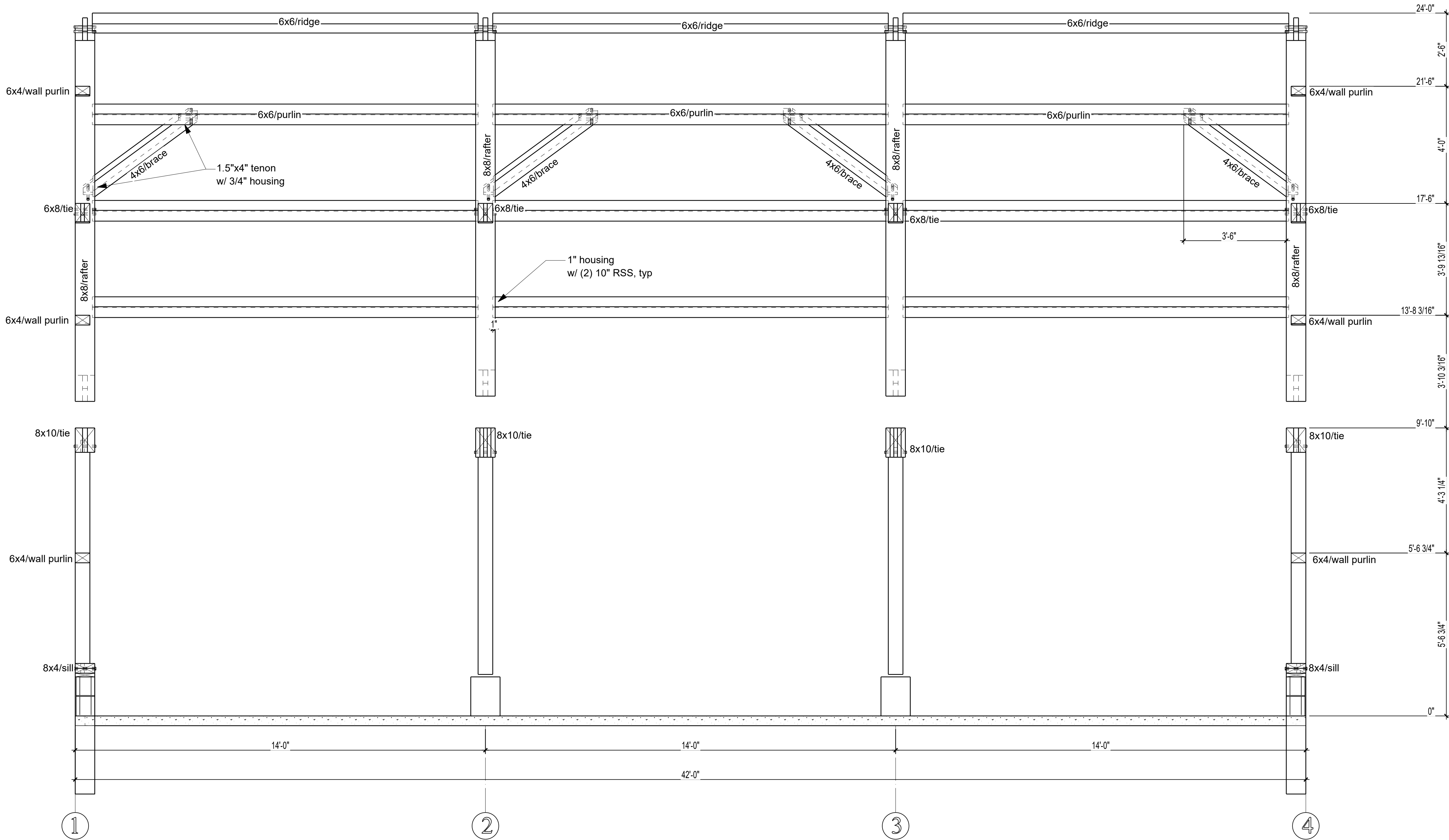
Scale: 1/2" = 1'-0"

Sheet TF6



SECTION @ LINE A

AS SEEN FROM B



SECTION @ LINE B

AS SEEN FROM C



Engineer:

BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By:	DMK	Date:	3/19/25
Review:			
Rev		3/26/25	
Rev		4/2/25	
Rev		4/24/25	
Rev		4/30/25	

Scale: 1/2" = 1'-0

Sheet **TF7**

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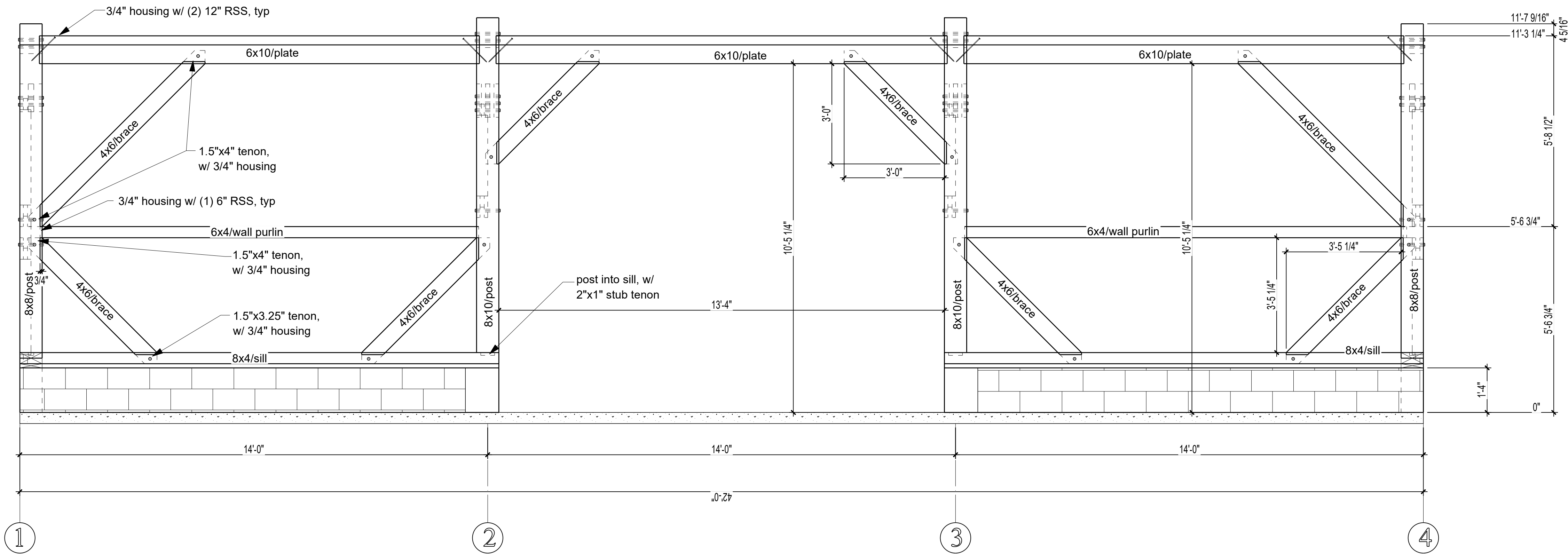
BISKIS BARN

Location: Flanders Lane
Chilmark, MA

Drawn By:	DMK	Date:	3/19/25
Review:			
Rev			3/26/25
Rev			4/2/25
Rev			4/24/25
Rev			4/30/25

Scale: 1/2" = 1'-0

Sheet TF8



SECTION @ LINE C

AS SEEN FROM OUTSIDE