

# DONNEGAN PRIVATE TIMBER BARN

## HALL COUNTY, GEORGIA

### PROJECT DATA:

#### GEORGIA BUILDING CODES:

2018 INTERNATIONAL BUILDING CODE (IBC) WITH AMENDMENTS

#### OCCUPANCY CLASSIFICATION

INTERNATIONAL BUILDING CODE (IBC)  
IBC 311: GROUP S-1, STORAGE

#### BUILDING CONSTRUCTION CLASSIFICATION

PRIMARY CODE - IBC 602.2: TYPE IV - TYPE IV CONSTRUCTION IN WHICH THE BUILDING ELEMENTS LISTED IN TABLE 601 ARE OF TIMBER MATERIALS.

#### ALLOWABLE HEIGHT IN FEET ABOVE GRADE

CODE: IBC TABLE 504.3, ALLOWABLE HEIGHT IN FEET ABOVE GRADE PLANE.  
GROUP S-1 32 FEET ALLOWED

#### ALLOWABLE NUMBER STORIES ABOVE GRADE

CODE: IBC TABLE 504.4, ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE.  
GROUP S-1 1 STORIES ALLOWED

#### ALLOWABLE AREA IN SQUARE FEET

CODE: IBC TABLE 506.2, ALLOWABLE AREA FACTOR IN SQUARE FEET.  
GROUP S-1 8000 S.F. 12,000 SQUARE FEET ALLOWED

#### NUMBER OF OCCUPANTS

BUILDING TOTAL: 8 OCCUPANTS

#### FIRE PROTECTION SYSTEMS

MODIFICATION NUMBER: IBC 2018 09.  
SECTION: IBC 903.2.9, GROUP A-3  
NO SPRINKLER SYSTEM REQUIRED

#### SMOKE AND HEAT VENTS

IBC 910.2.1 GROUP A-3 GROUP A-3 OCCUPANCY LESS THAN 15,000SF - SMOKE VENTS ARE NOT REQUIRED.

#### FOUNDATION DRAIN

CODE: IBC CHAPTER 18

**IBC 1805.4.2 FOUNDATION DRAIN.** A DRAIN SHALL BE PLACED AROUND THE PERIMETER OF A FOUNDATION THAT CONSISTS OF GRAVEL OR CRUSHED STONE CONTAINING NOT MORE THAN 10-PERCENT MATERIAL PASSED THROUGH A NO. 4 SIEVE. THE DRAIN SHALL EXTEND A MINIMUM OF 12 INCHES BEYOND THE OUTSIDE EDGE OF THE FOOTING. THE THICKNESS SHALL BE SUCH THAT THE BOTTOM OF THE DRAIN IS NOT HIGHER THAN THE BOTTOM OF THE BASE UNDER THE FLOOR, AND THAT THE TOP OF THE DRAIN IS NOT LESS THAN 6 INCHES ABOVE THE TOP OF THE FOOTING. THE TOP OF THE DRAIN SHALL BE COVERED WITH AN APPROVED FILTER MEMBRANE MATERIAL. WHERE A DRAIN TILE OR PERFORATED PIPE IS USED, THE INVERT OF THE PIPE OR TILE SHALL NOT BE HIGHER THAN THE FLOOR ELEVATION. THE TOP OF JOINTS OR THE TOP OF PERFORATIONS SHALL BE PROTECTED WITH AN APPROVED FILTER MEMBRANE MATERIAL. THE PIPE OR TILE SHALL BE PLACED ON NOT LESS THAN 2 INCHES OF GRAVEL OF CRUSHED STONE COMPLYING WITH SECTION 1805.4.1, AND SHALL BE COVERED WITH NOT LESS THAN 6 INCHES OF THE SAME MATERIAL.

**1805.4.3 DRAINAGE DISCHARGE.** THE FLOOR BASE AND FOUNDATION PERIMETER DRAIN SHALL DISCHARGE BY GRAVITY OR MECHANICAL MEANS INTO AN APPROVED DRAINAGE SYSTEM THAT COMPLIES WITH THE INTERNATIONAL PLUMBING CODE.

**PROJECT:** PROJECT COMPLIES WITH THE CODE CRITERIA.

### GENERAL NOTES

1. MAXIMUM TRAVEL DISTANCE TO EXIT - 70FT. (IBC TABLE 1017.2)
2. MINIMUM CLEAR OPENING OF EXITS DOORS - 36 INCHES (ADA)
3. EGRESS WITH PER PERSON SERVED - 0.20 LEVEL (TABLE 1005.3.2)
4. FIRE BARRIERS NOT REQUIRED: IBC 903.2.9,
5. PROJECT DOES NOT HAVE AN ATTIC, UNDER-FLOOR OR OTHER CONCEALED SPACES.
7. ALL INTERIOR AND EXTERIOR COLORS AND FINISHES PER OWNER



FRAMING PERSPECTIVE

### SCOPE OF WORK SUMMARY

THIS PROJECT IS TO CONSTRUCT A TIMBER-FRAMED BARN FOR EVENTS.

THERE IS NO EXISTING RESIDENCE ON THE PROPERTY. THE NEW BARN STRUCTURE WILL NOT INCLUDE BATHROOM.

### PROJECT DIRECTORY

**STRUCTURAL ENGINEER:**  
DUNLAP ASSOCIATES CONSULTING  
ENGINEERS  
48 BERKELEY ROAD  
AVONDALE ESTATES  
678-581-1000  
WWW.DA-ENGINEERS.COM  
CONTACT: STEVE DUNLAP, P.E.

**CONTRACTOR:**  
WOODSTAR TIMBER PRODUCTS, INC.  
EMAIL: woodstartimber@gmail.com  
706-768-5025  
CONTACT: DARRYL SIMMS

### LIST OF DRAWINGS

DWG #	DRAWING NAME
T1	COVER SHEET

STRUCTURAL	
S0.1	NOTES
S1.0	FOUNDATION PLAN
S1.1	ROOF FRAMING PLAN
S1.2	FRAMING ELEVATIONS
S	

### EGRESS BASED UPON OCCUPANT LOAD AND COMMON PATH OF EGRESS TRAVEL DISTANCE

IBC TABLE 1006.2.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

GROUP S-1	8 OCCUPANTS	100 FT. EGRESS TRAVEL WITHOUT SPRINKLER
PROJECT: GROUP S-1 EGRESS TRAVEL DISTANCE COMPLIES WITH THE CODE.		

PROJECT: GROUP S-1 EGRESS TRAVEL DISTANCE COMPLIES WITH THE CODE.

### MEANS OF EGRESS ILLUMINATION

IBC 1006.2.1 TWO EXITS OR EXIT ACCESS DOORWAYS FROM ANY SPACE SHALL BE PROVIDED WHERE THE DESIGN OCCUPANT LOAD OR COMMON PATH OF EGRESS TRAVEL DISTANCE EXCEEDS THE VALUES LISTED IN TABLE 1006.2.1. THE CUMULATIVE OCCUPANT LOAD FROM ADJACENT ROOMS, AREAS, OR SPACES SHALL BE DETERMINED IN ACCORDANCE WITH SECTION 1004.2.

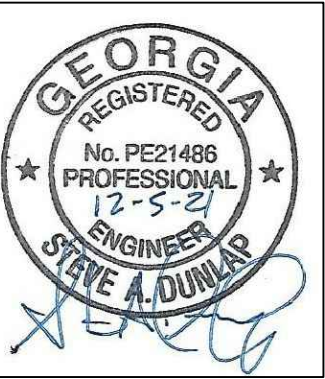
IBC TABLE 1006.2.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAX OCCUPANT LOAD	MAX. COMMON PATH OF EGRESS TRAVEL WITHOUT SPRINKLER SYSTEM
GROUP S-1	8	OL < 30 = 100 FEET

GROUP S-1 8 OL < 30 = 100 FEET

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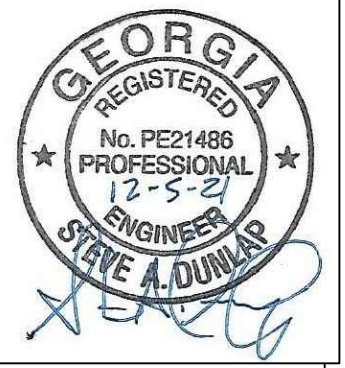
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Date: Released for Construction

Project Title: DONNEGAN PRIVATE BARN  
HALL COUNTY, GEORGIA  
for WOODSTAR TIMBER

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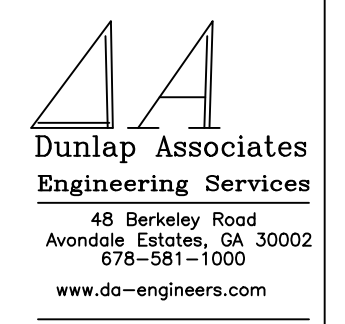
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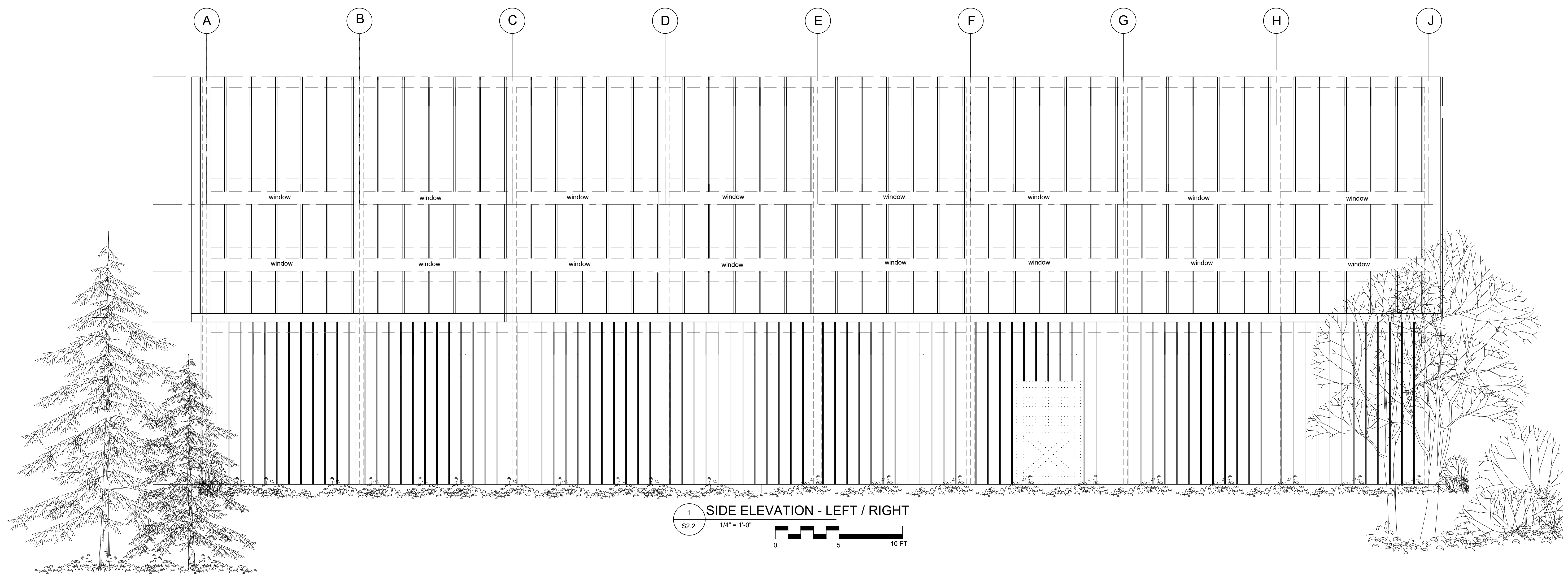
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Project Title: **DONNEGAN PRIVATE BARN**  
**HALL COUNTY, GEORGIA**  
 for WOODSTAR TIMBER

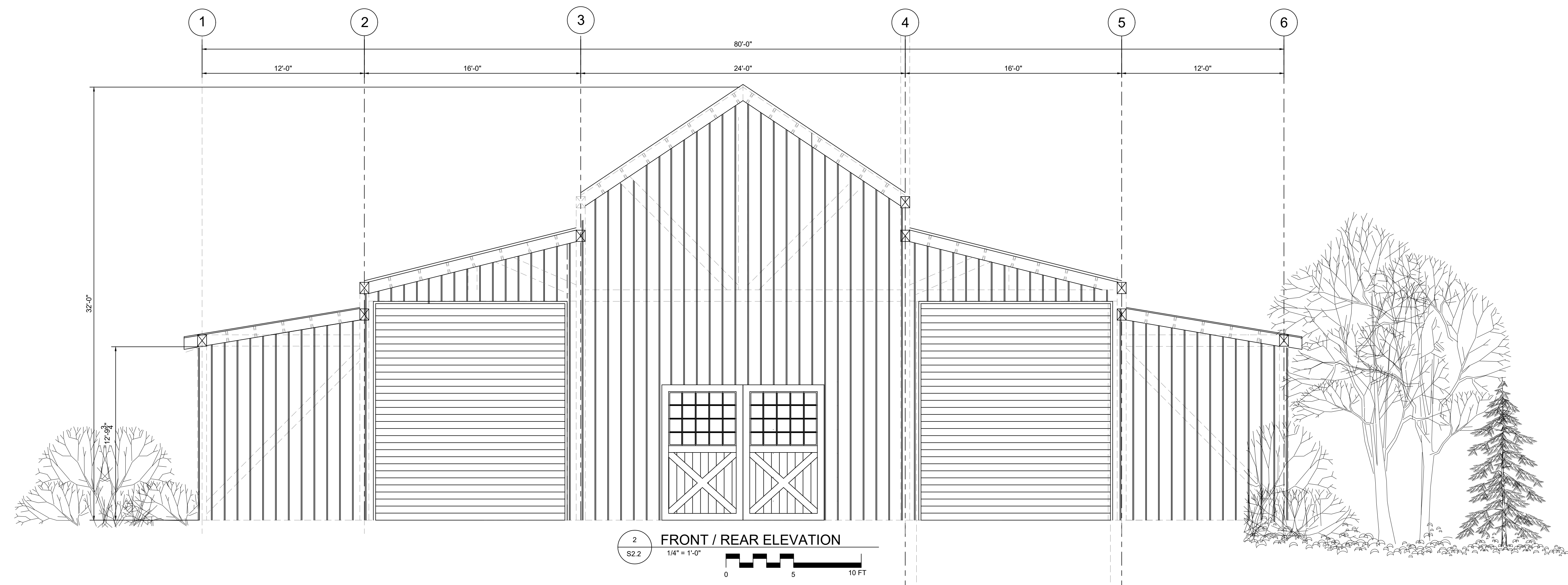
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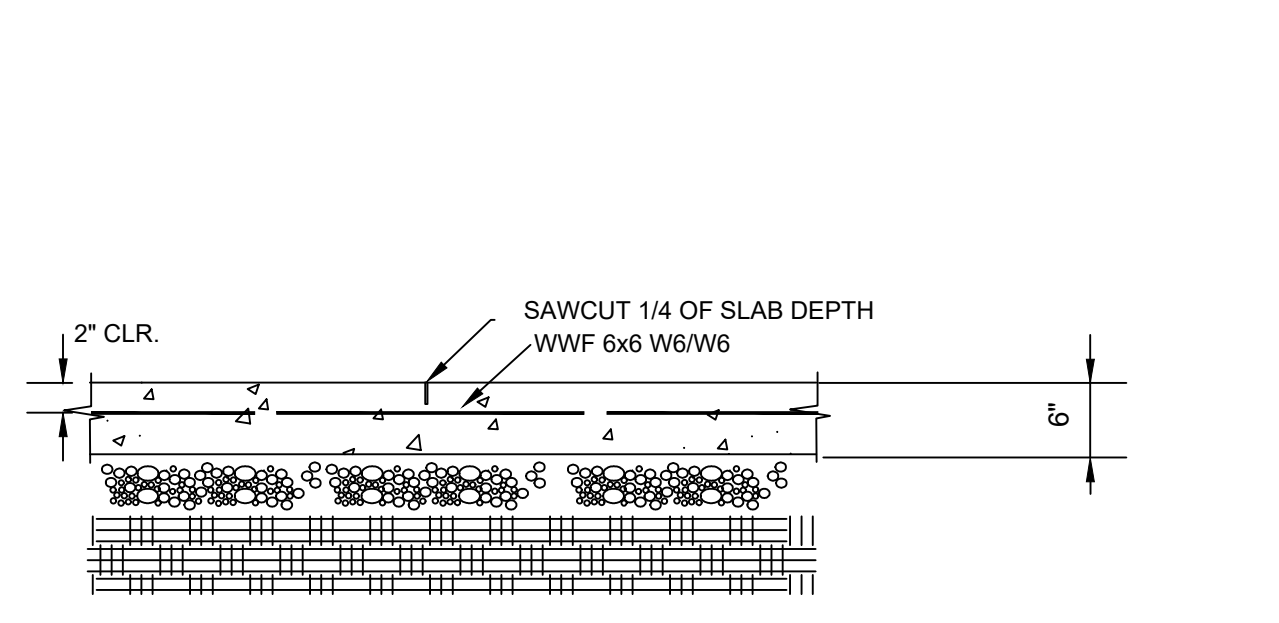
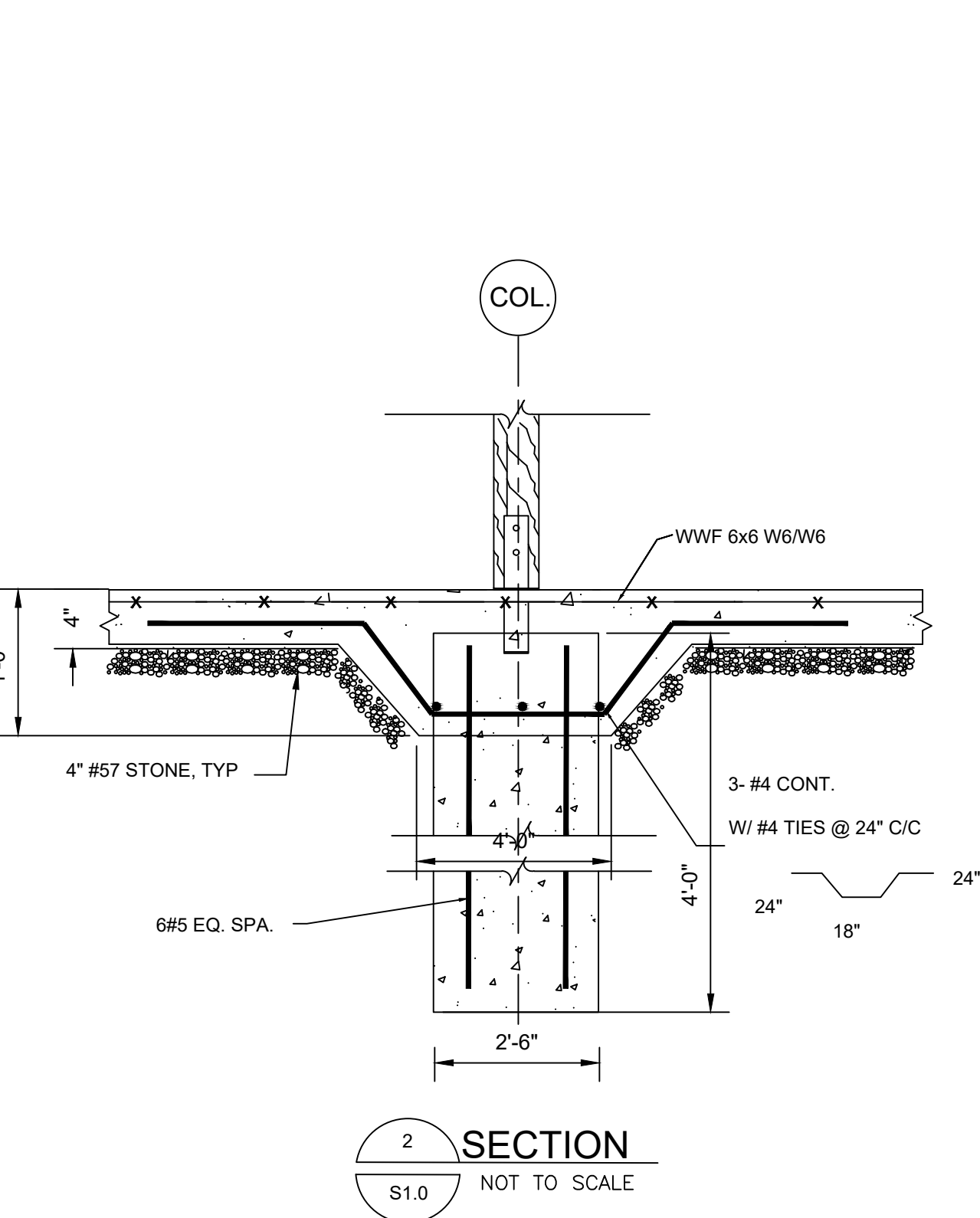
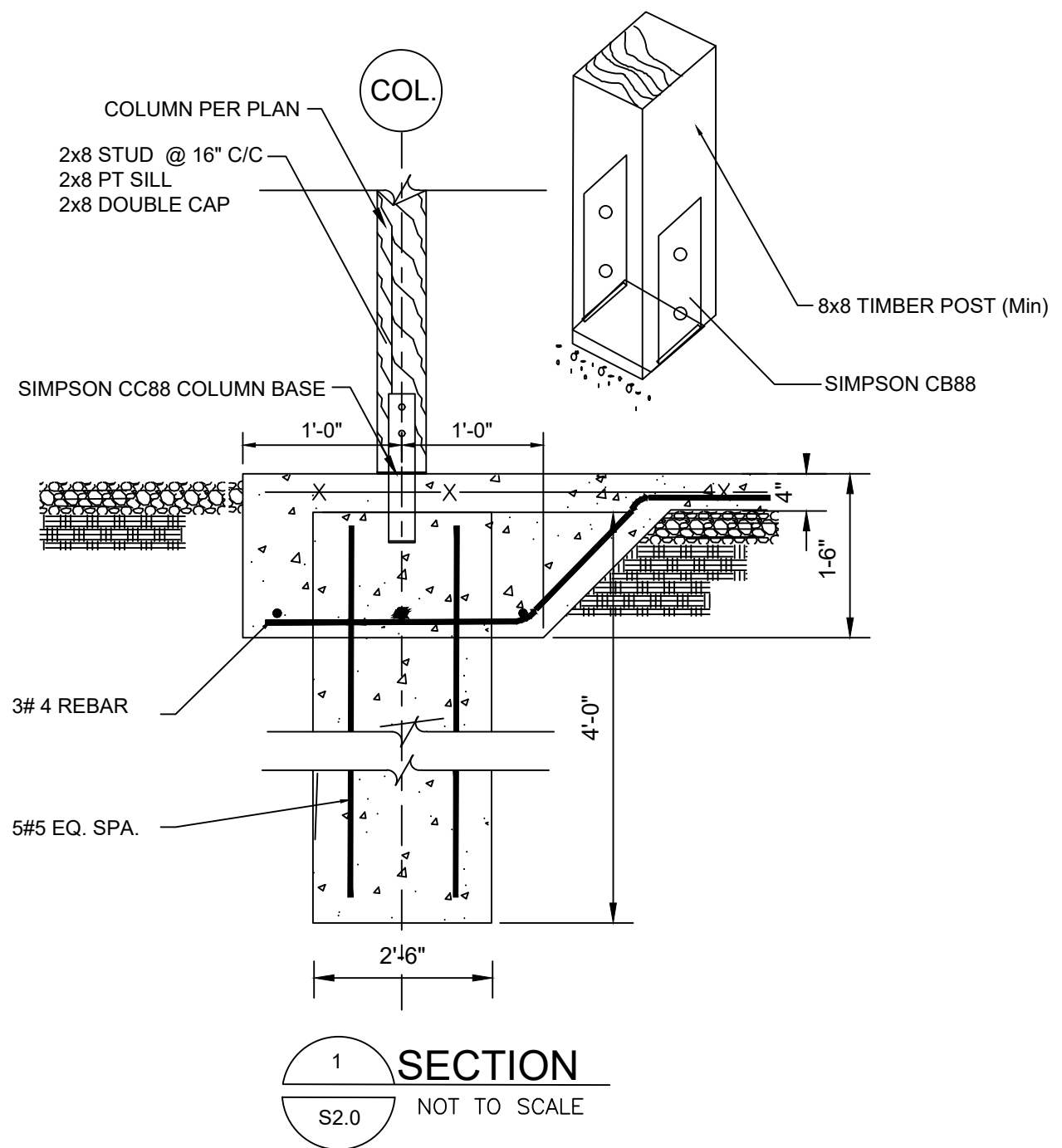
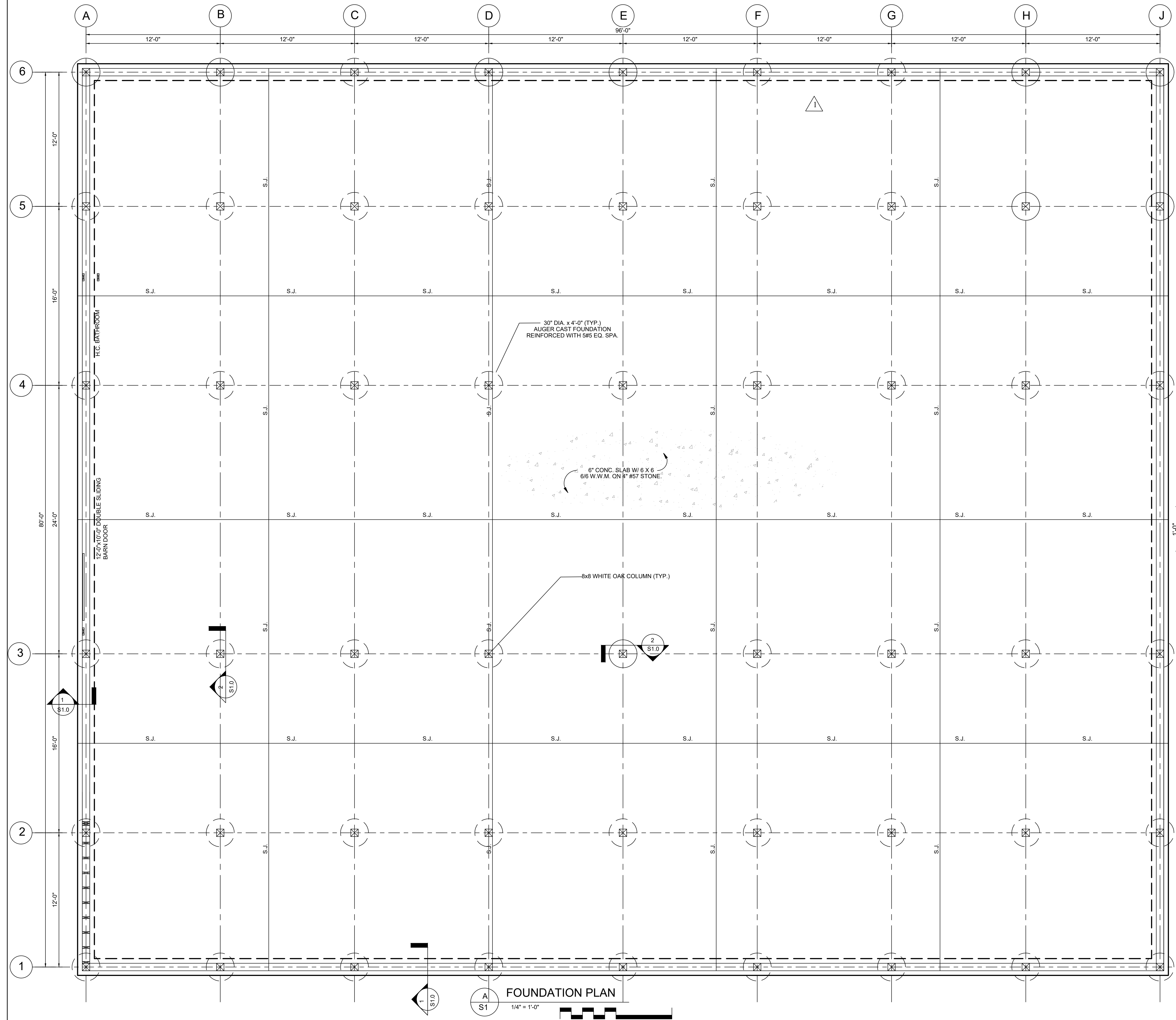
S0.1



1 SIDE ELEVATION - LEFT / RIGHT  
 S2.2 1/4" = 1'-0"  
 0 5 10 FT



2 FRONT / REAR ELEVATION  
 S2.2 1/4" = 1'-0"  
 0 5 10 FT



**FOUNDATION PLAN**  
 1/4" = 1'-0"  
 0 5 10 FT

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Drawing Title: **FOUNDATION PLAN / SECTIONS**  
 Released for Construction Date: \_\_\_\_\_

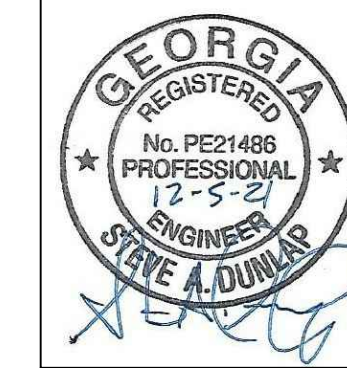
Project Title: **DONNEGAN PRIVATE BARN**  
**HALL COUNTY, GEORGIA**  
 for WOODSTAR TIMBER

**Dunlap Associates**  
 Engineering Services  
 48 Berkeley Road  
 Avondale Estates, GA 30002  
 678-581-1000  
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**S1.0**

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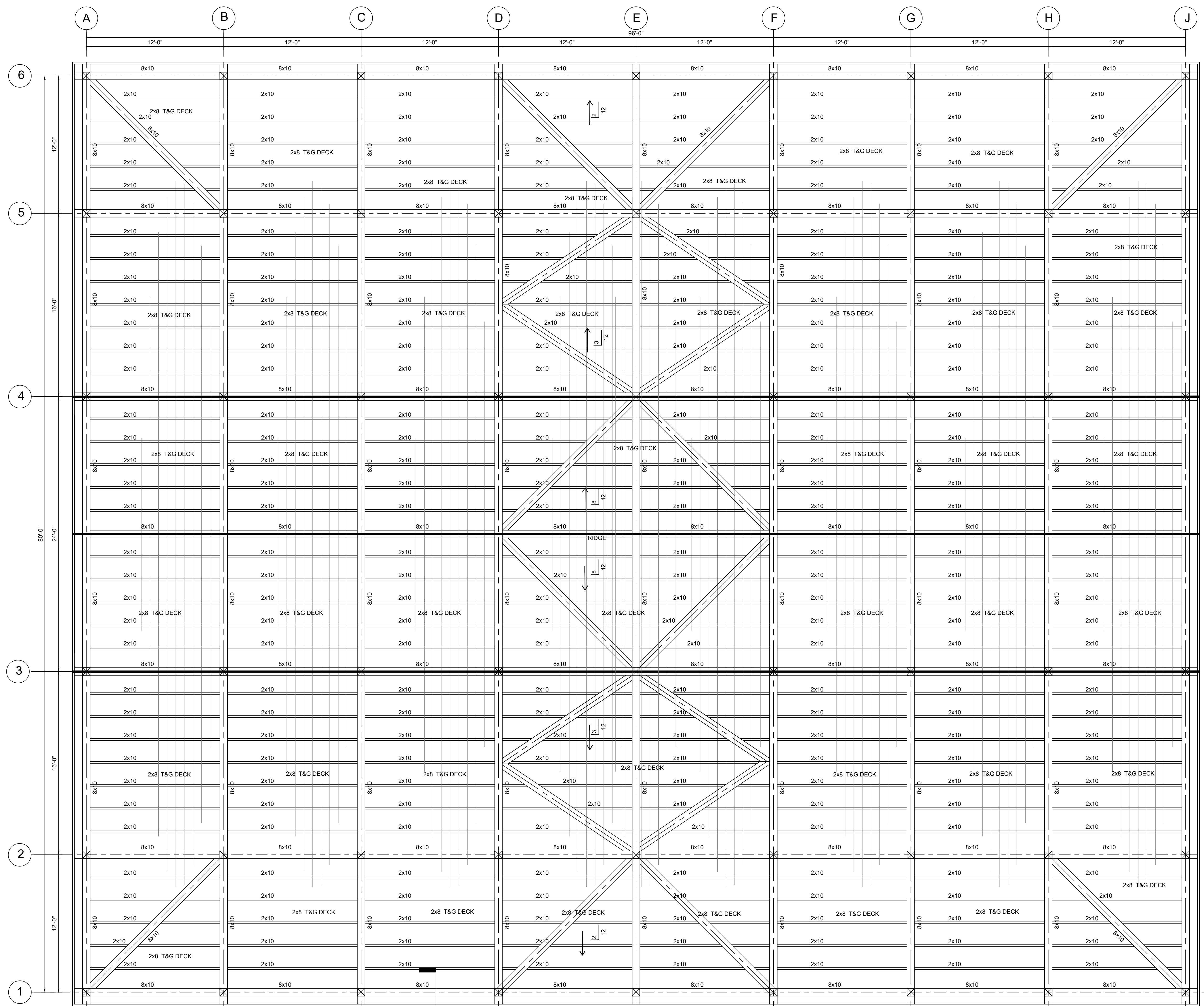
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Drawing Title: **ROOF FRAMING PLAN**  
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Project Title: **DONNEGAN PRIVATE BARN  
 HALL COUNTY, GEORGIA  
 for WOODSTAR TIMBER**

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**1**  
**S3**  
**ROOF FRAMING PLAN**  
 1/4" = 1'-0"  
 0 5 10 FT

COLUMNS - WHITE OAK  
 BEAMS - YELLOW PINE  
 PLANKS / DECK - YELLOW PINE  
 CONCRETE - 4,000 psi @ 28 days  
 REINFORCING - A615-50 #5 @ 8" C/C WITH TIES #4



TABLE 2304.8.1 FASTENING SCHEDULE		
CONNECTION	FASTENING <sup>a,m</sup>	LOCATION
1. Joist to sill or girder	3- 8d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	toenail
2. Bridging to joist	2- 8d common 2- 3" x 0.131" nails 2- 3" 14 gage staples	toenail each end
3. 1" x 6" subfloor or less to each joist	2- 8d common	face nail
4. Wider than 1" x 6" subfloor to each joist	3- 8d common	face nail
5. 2" subfloor to joist or girder	2- 16d common	blind and face nail
6. Sole plate to joist or blocking	16d at 16" o.c. 3" x 0.131" nails at 8" o.c. 3" 14 gage staples at 12" o.c.	typical face nail
Sole plate to joist or blocking at braced wall panel	3- 16d at 16" 4- 3" x 0.131" nails at 16" 4- 3" 14 gage staples per 16"	braced wall panels
7. Top plate to stud	2- 16d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	end nail
8. Stud to sole plate	4- 8d common 4- 3" x 0.131" nails 3- 3" 14 gage staples 2- 16d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	toenail end nail
9. Double studs	16d at 24" o.c. 3" x 0.131" nail at 8" o.c. 3" 14 gage staple at 8" o.c.	face nail
10. Double top plates	16d at 16" o.c. 3" x 0.131" nail at 12" o.c. 3" 14 gage staple at 12" o.c.	typical face nail
Double top plates	8- 16d common 12- 3" x 0.131" nails 12- 3" 14 gage staples	lap splice
11. Blocking between joists or rafters to top plate	3- 8d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	toenail
12. Rim joist to top plate	8d at 6" (152 mm) o.c. 3" x 0.131" nail at 6" o.c. 3" 14 gage staple at 6" o.c.	toenail
13. Top plates, laps and intersections	2- 16d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	face nail
14. Continuous header, two pieces	16d common	16" o.c. along edge
15. Ceiling joists to plate	3- 8d common 5- 3" x 0.131" nails 5- 3" 14 gage staples	toenail
16. Continuous header to stud	4- 8d common	toenail

TABLE 2304.8.1—continued FASTENING SCHEDULE		
CONNECTION	FASTENING <sup>a,m</sup>	LOCATION
17. Ceiling joists, laps over partitions (see Section 2308.10.4.1, Table 2308.10.4.1)	3- 16d common minimum, Table 2308.10.4.1 4- 3" x 0.131" nails 4- 3" 14 gage staples	face nail
18. Ceiling joists to parallel rafters (see Section 2308.10.4.1, Table 2308.10.4.1)	3- 16d common minimum, Table 2308.10.4.1 4- 3" x 0.131" nails 4- 3" 14 gage staples	face nail
19. Rafter to plate (see Section 2308.10.1, Table 2308.10.1)	3- 8d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	toenail
20. 1" diagonal brace to each stud and plate	2- 8d common 2- 3" x 0.131" nails 2- 3" 14 gage staples	face nail
21. 1" x 8" sheathing to each bearing wall	2- 8d common	face nail
22. Wider than 1" x 8" sheathing to each bearing	3- 8d common	face nail
23. Built-up corner studs	16d common 3" x 0.131" nails 3" 14 gage staples	24" o.c. 16" o.c. 16" o.c.
24. Built-up girder and beams	20d common 32" o.c. 3" x 0.131" nail at 24" o.c. 3" 14 gage staple at 24" o.c. 2- 20d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	face nail at top and bottom staves on opposite sides face nail at ends and at each splice
25. 2" planks	16d common	at each bearing
26. Collar tie to rafter	3- 10d common 4- 3" x 0.131" nails 4- 3" 14 gage staples	face nail
27. Jack rafter to hip	3- 10d common 4- 3" x 0.131" nails 4- 3" 14 gage staples 2- 16d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	toenail face nail
28. Roof rafter to 2-by ridge beam	2- 16d common 3- 3" x 0.131" nails 3- 3" 14 gage staples 2- 16d common 3- 3" x 0.131" nails 3- 3" 14 gage staples	toenail face nail
29. Joist to band joist	3- 16d common 5- 3" x 0.131" nails 5- 3" 14 gage staples	face nail

TABLE 2304.8.1—continued FASTENING SCHEDULE		
CONNECTION	FASTENING <sup>a,m</sup>	LOCATION
30. Ledger strip	3- 16d common 4- 3" x 0.131" nails 4- 3" 14 gage staples	face nail
31. Wood structural panels and particleboard <sup>b</sup> Subfloor, roof and wall sheathing (to framing):	1/2" and less 2 3/4" x 0.113" nail <sup>c</sup> 1 1/2" 16 gage <sup>d</sup> 8d <sup>e</sup> or 6d <sup>e</sup> 2 1/2" x 0.113" nail <sup>f</sup> 2" 16 gage <sup>g</sup> 1/2" to 1" 8d <sup>e</sup>	6d <sup>h</sup> 2 3/4" x 0.113" nail <sup>c</sup> 1 1/2" 16 gage <sup>d</sup> 8d <sup>e</sup> or 6d <sup>e</sup> 2 1/2" x 0.113" nail <sup>f</sup> 2" 16 gage <sup>g</sup> 8d <sup>e</sup>
Single Floor (combination subfloor-underlayment to framing):	1 1/2" to 1 1/4" 1/2" and less 8d <sup>e</sup> 1 1/2" to 1 1/4" 10d <sup>h</sup> or 8d <sup>h</sup>	10d <sup>h</sup> or 8d <sup>h</sup> 6d <sup>h</sup> 8d <sup>h</sup> 10d <sup>h</sup> or 8d <sup>h</sup>
32. Panel siding (to framing)	1/2" or less 1/2"	6d <sup>f</sup> 8d <sup>f</sup>
33. Fiberboard sheathing <sup>h</sup>	1/2"	No. 11 gage roofing nail <sup>h</sup> 6d common nail No. 16 gage staple <sup>i</sup> No. 11 gage roofing nail <sup>h</sup> 8d common nail No. 16 gage staple <sup>i</sup>
34. Interior paneling	1/2" 3/4"	4d <sup>j</sup> 6d <sup>k</sup>

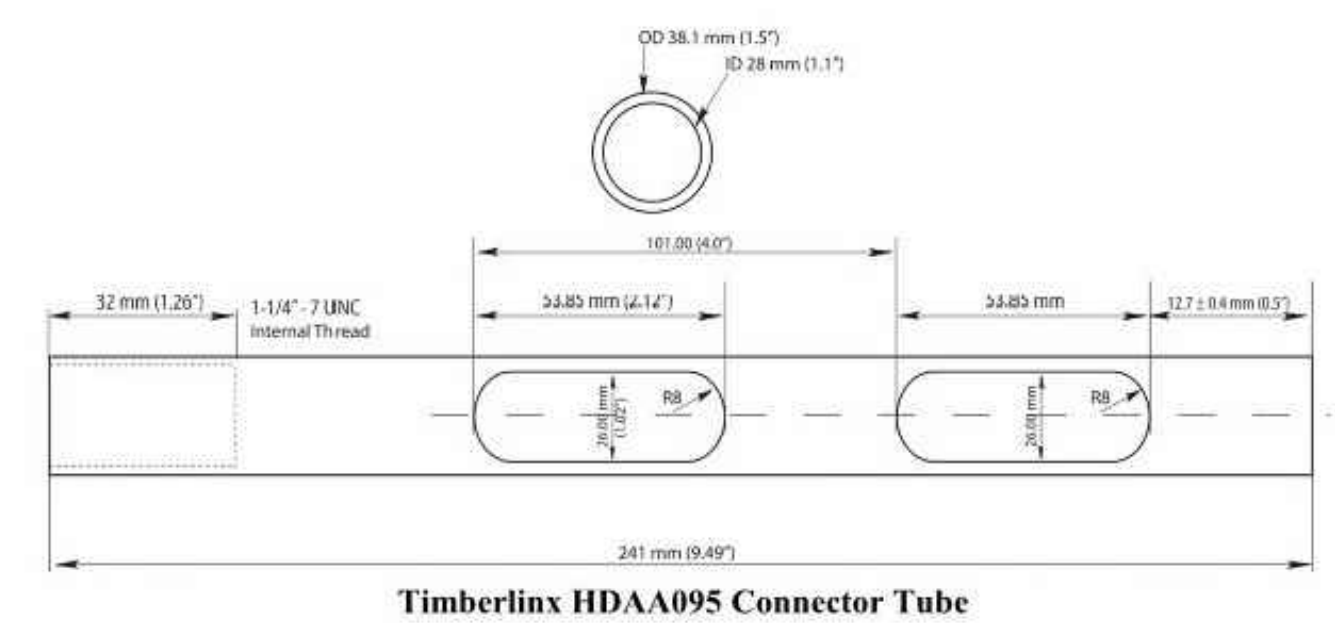
For SI: 1 inch = 25.4 mm.  
a. Common or box nails are permitted to be used except where otherwise stated.  
b. Nails spaced at 6 inches on center at edges, 12 inches at intermediate supports except 6 inches at supports where spans are 48 inches or more. For nailing of wood structural panels and particleboard sheathing and sheathing, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.  
c. Common or deformed shank.  
d. Common.  
e. Deformed shank.  
f. Corrosion resistant siding or casing nail.  
g. Fasteners spaced 3 inches on center at exterior edges and 6 inches on center at intermediate supports.  
h. Corrosion resistant roofing nails with 1/2" inch diameter head and 1 1/2" inch length for 1/2" inch sheathing and 1 1/2" inch length for 3/4" inch sheathing. Panel supports at 16 inches OSB inches if strength axis is in the long direction of the panels, unless otherwise marked.  
i. Casing or finish nails spaced 6 inches on panel edges, 12 inches at intermediate supports.  
j. Panel supports at 24 inches. Casing or finish nails spaced 6 inches on panel edges, 12 inches at intermediate supports.  
k. For roof sheathing applications, 8d nails are the minimum required for wood structural panels.  
l. Staples shall have a minimum crown width of 1/2" inch.  
m. For roof sheathing applications, fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports.  
n. Fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports for subfloor and wall sheathing and 3 inches on center at edges, 6 inches at intermediate supports for roof sheathing.  
o. Fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports.

**Product Description**

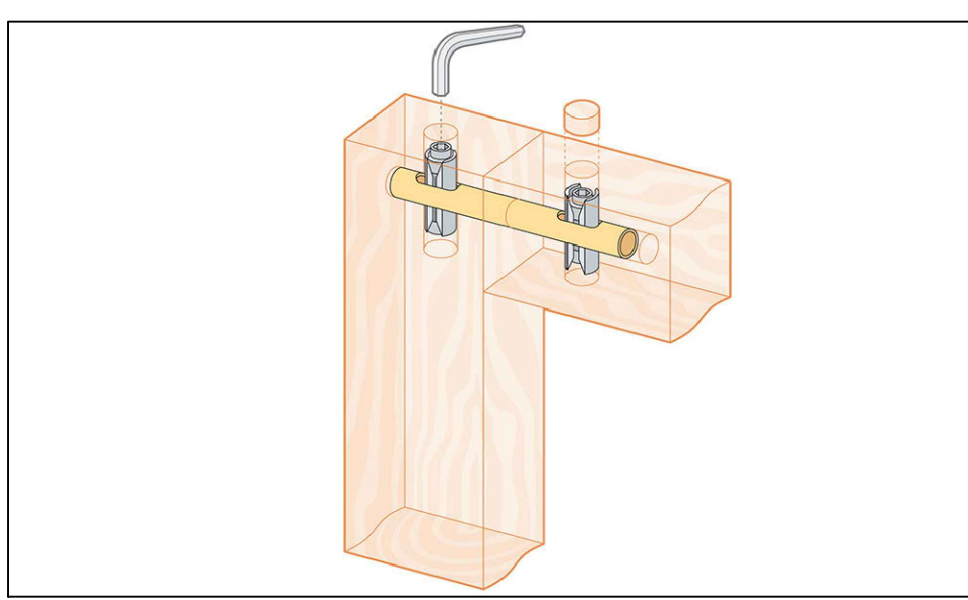
The Heavy Duty (HD) connectors utilize a 1 1/2" diameter connector tube and 6" long, 1" wide expansion pins. The tube is machined from ASTM A500 Grade C steel, and the pins are cast in ASTM A 47M, grade 32510 malleable iron. These are the same materials used to manufacture the standard Timberlink connector tubes and pins. The following options for connector tubes are available:

- HDA019 – 19" long connector with a slot for one expansion pin at each end (similar to the A095)
- HDA095 – 9 1/2" long half-connector with a slot for one expansion pin and 1 1/4" – 7 UNC internal threads (similar to the A475)
- HDAA095 – 9 1/2" long half-connector with slots for two expansion pins and 1 1/4" – 7 UNC internal threads (similar to the AA675)

An illustration of HDAA095 connector is shown below. The following photo shows the relative sizes of the HDA095 and the A475 tubes with their expansion pins.



**Product Capacity**  
The load capacity in tension of the HD connectors has been determined by calculation and limited physical testing. The following limit states are considered.  
**Tube Tension** – The net cross-sectional area of the HD connector tube at the slot is 0.34 in<sup>2</sup>, whereas that of the standard (1" diameter) tube is 0.16 in<sup>2</sup>. Given that the two tubes are manufactured from the same material, the HD tube has net-section yield capacity in tension that is 2.1 times that of the standard tube.  
**Pin Dowel Bearing** – The HD expansion pin in a 1 9/16" (40mm) drill hole has a dowel-bearing contact area of 4.43 in<sup>2</sup>, whereas that of the standard expansion pin in a 1 1/8" drill hole is 2.16 in<sup>2</sup>. Thus, the dowel bearing capacity of the HD pin is 2.05 times that of the standard pin.  
**Pin Bending** – Physical testing of the HD and standard expansion pins in four-point bending indicate that the yield moment for the HD pin is 1.45 k-ft, whereas that for the standard pin is 0.34 k-ft, an increase of 4.2 times.  
**Threaded Rod Tension** – The 1 1/4"-7 UNC threaded rod has a net tensile area of 0.969 in<sup>2</sup>, whereas that of the 7/8"-9 UNC threaded rod is 0.462 in<sup>2</sup>. For rods manufactured of the same material, the 1 1/4" rod is 2.1 times stronger than the 7/8" rod.  
**Recommendation** – Timberlink recommends that designers use a multiplier of 2.0 on the capacity of the standard connector when designing connections using the corresponding HD connector loaded in tension.



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Seal:  
Drawing Title: **NOTES**  
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Date:

Project Title:  
**DONNEGAN PRIVATE BARN**  
**HALL COUNTY, GEORGIA**  
**for WOODSTAR TIMBER**



**S2.0**



Revisions	Date	Description

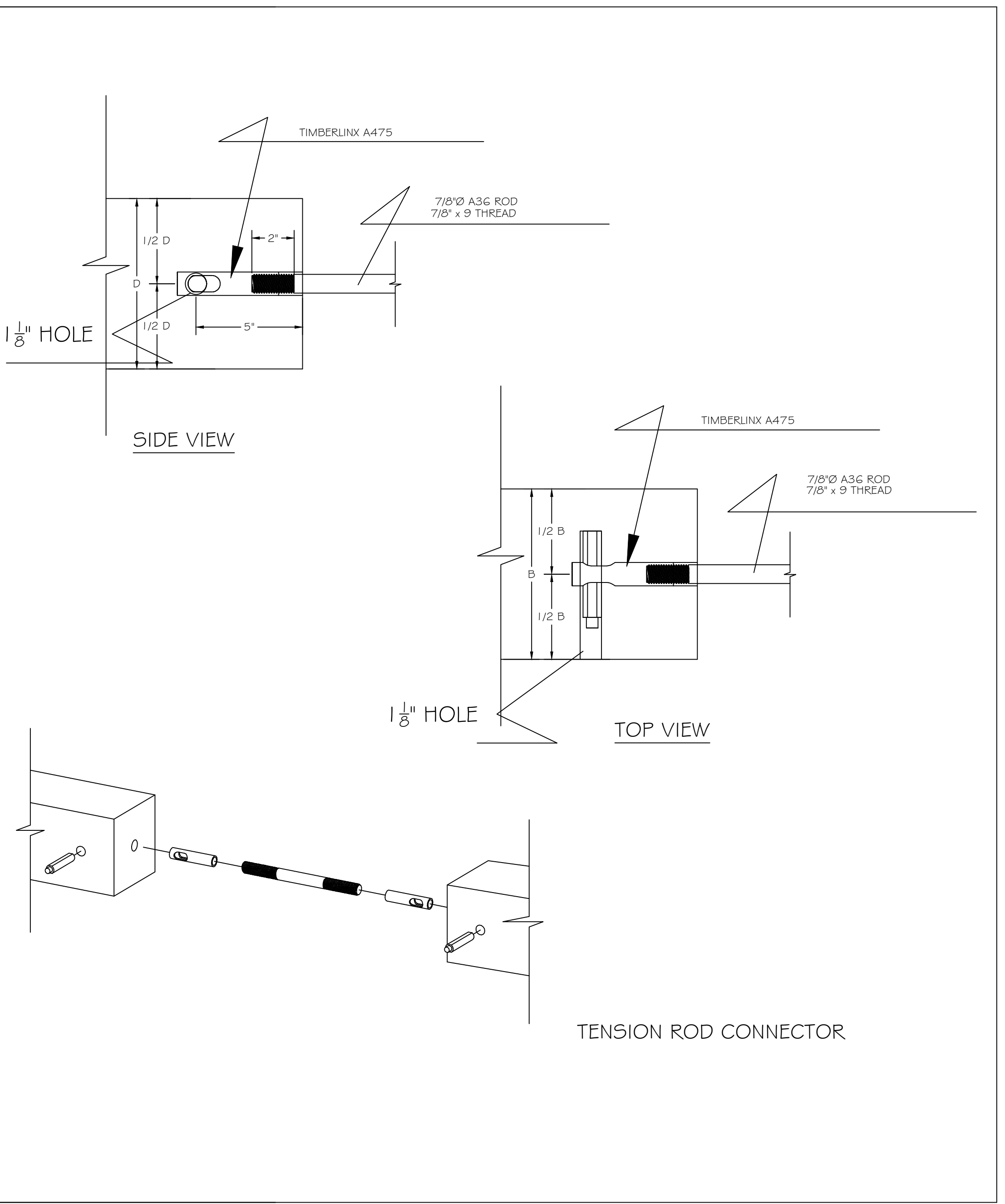
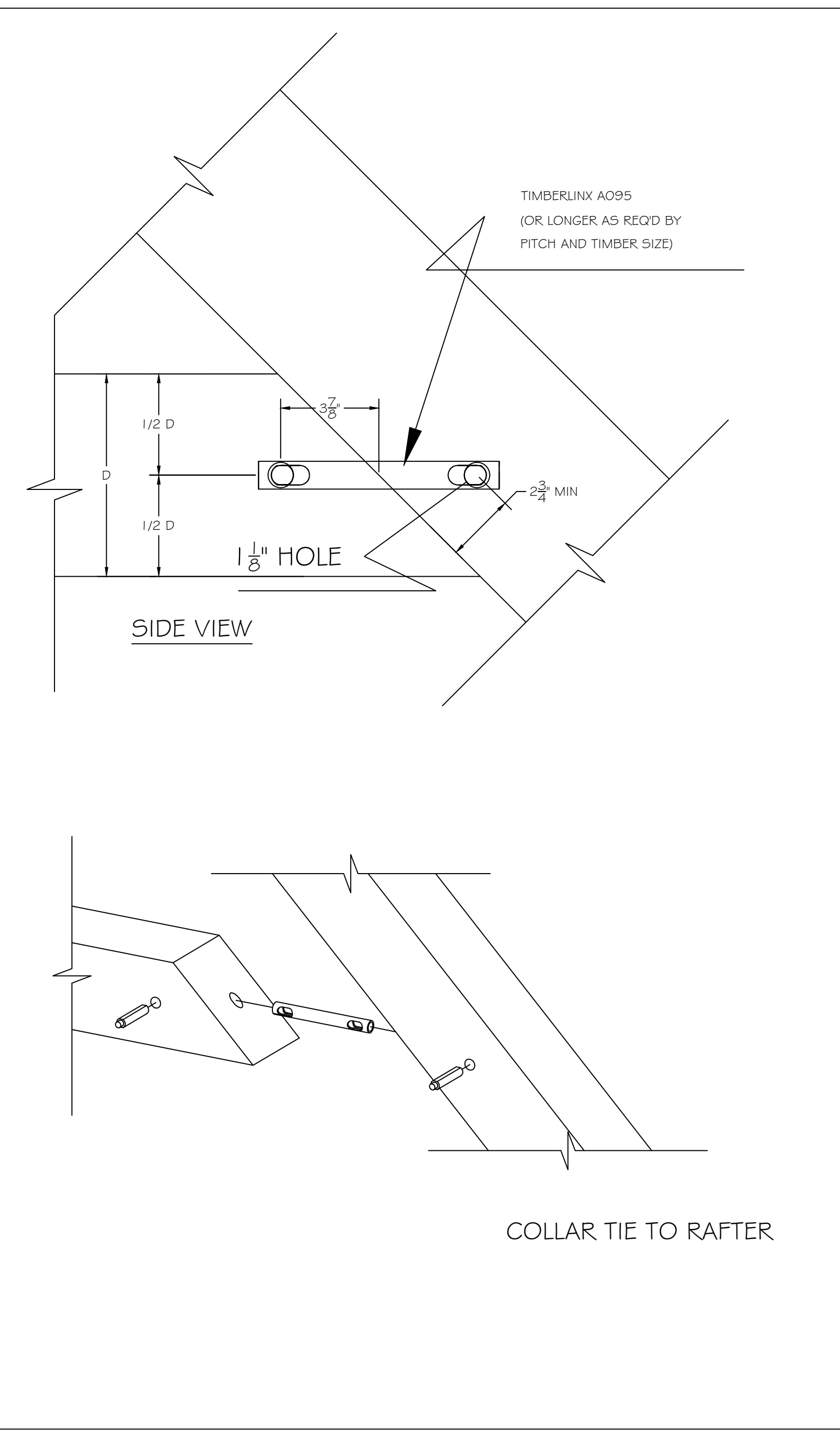
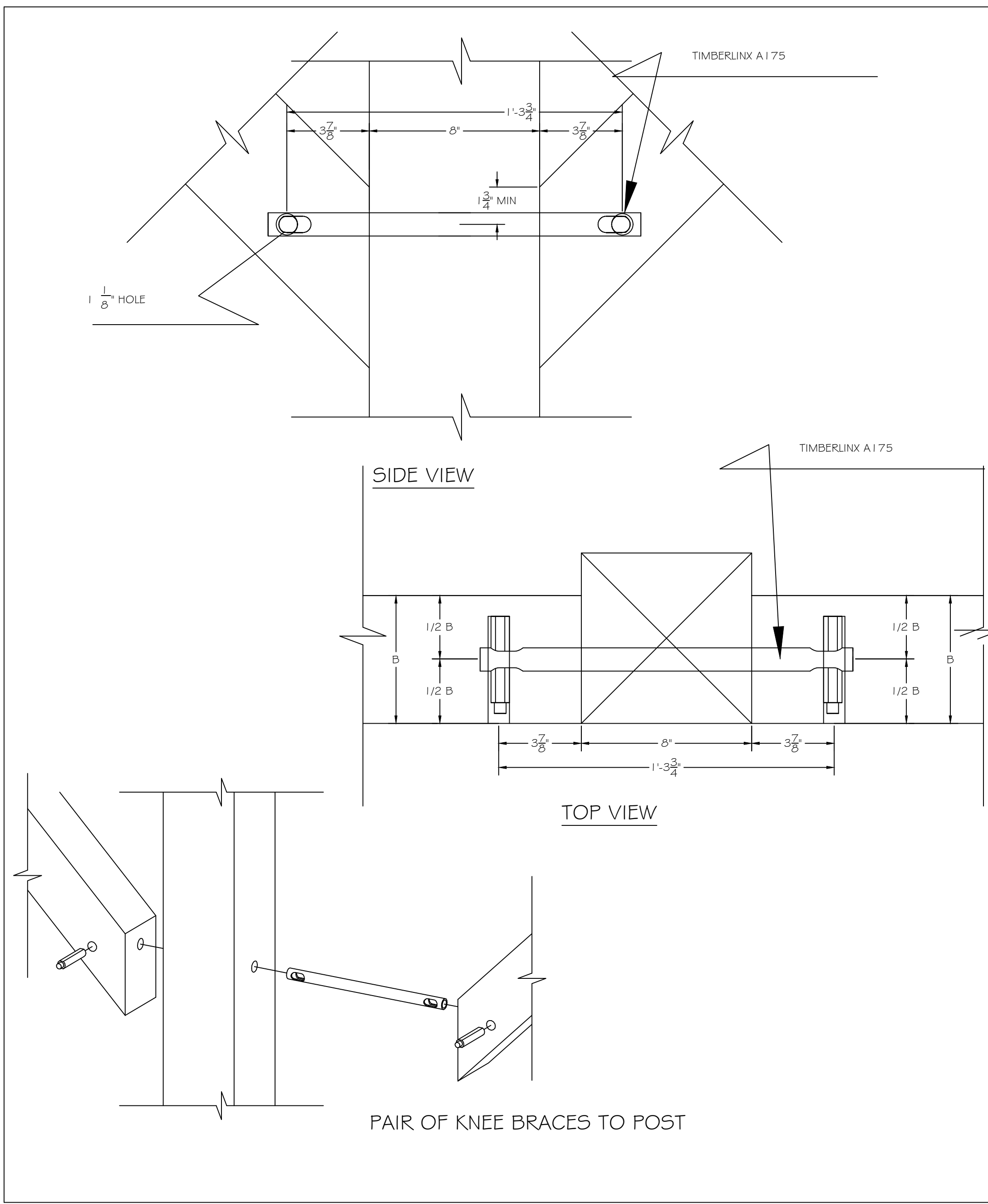
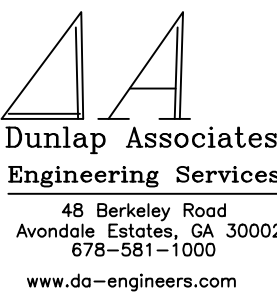
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Drawing Title: **CONNECTIONS**

Released for Construction Date:

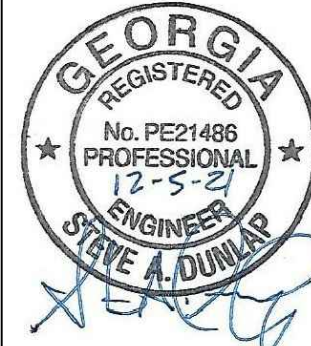
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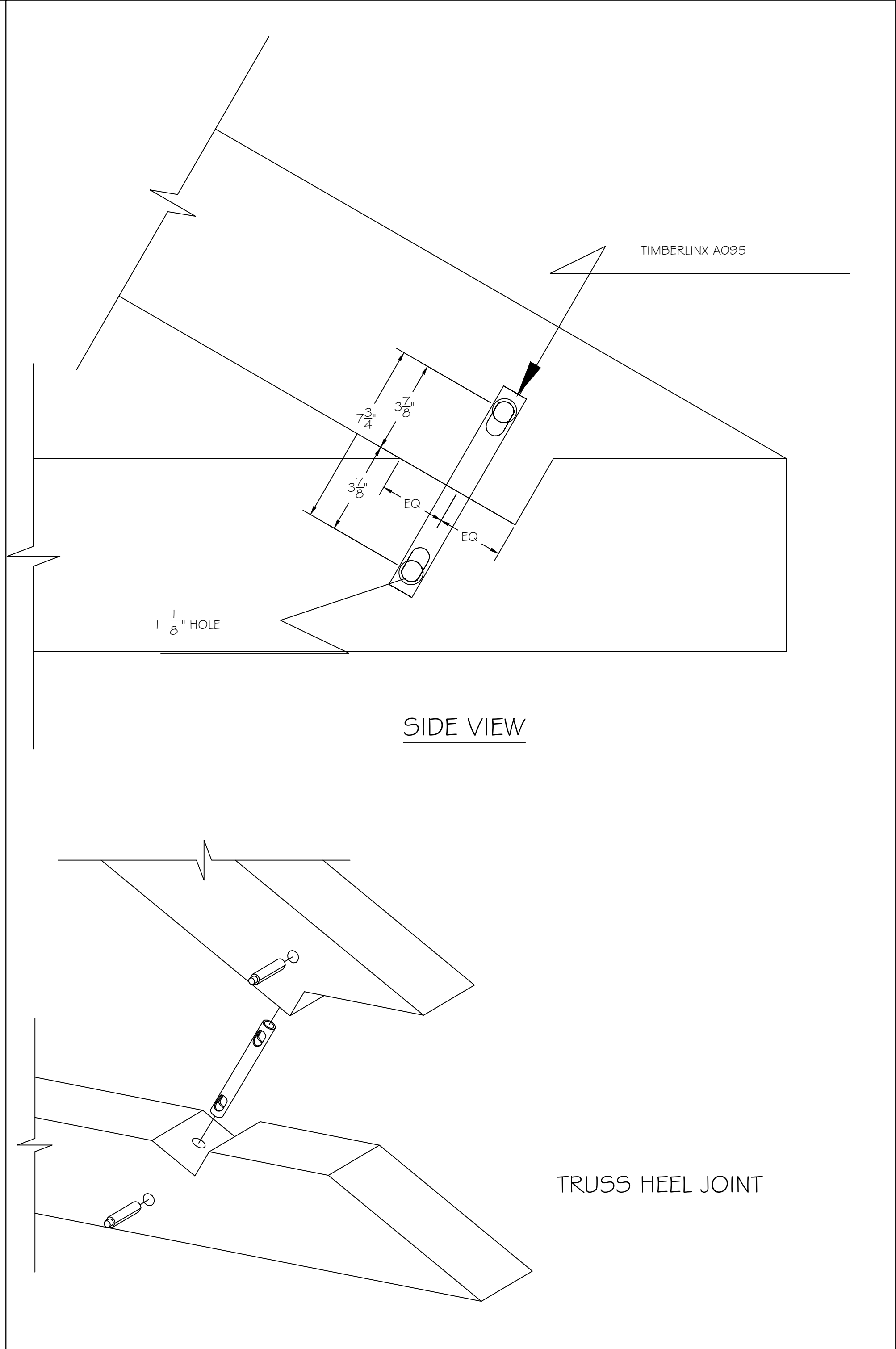
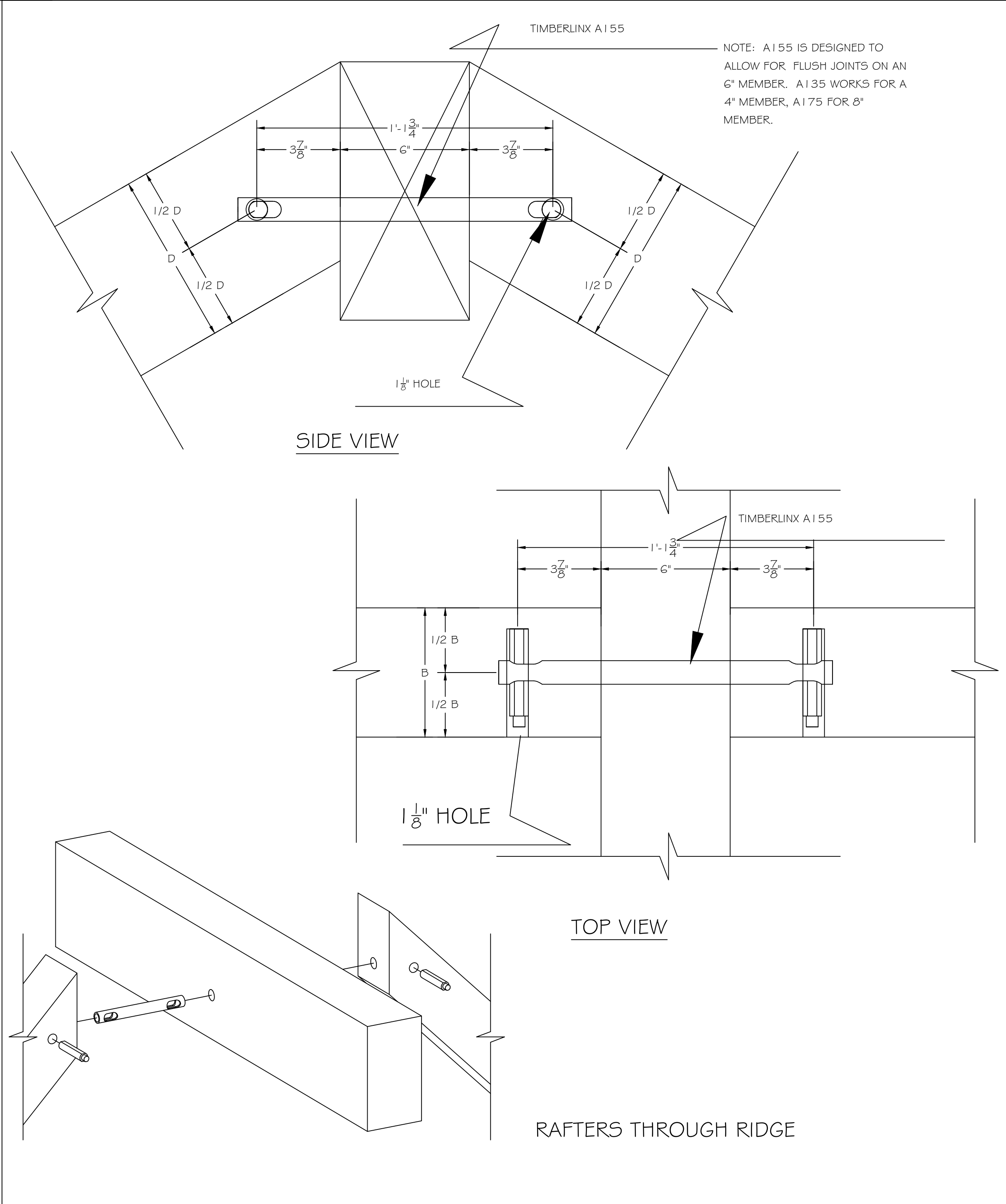
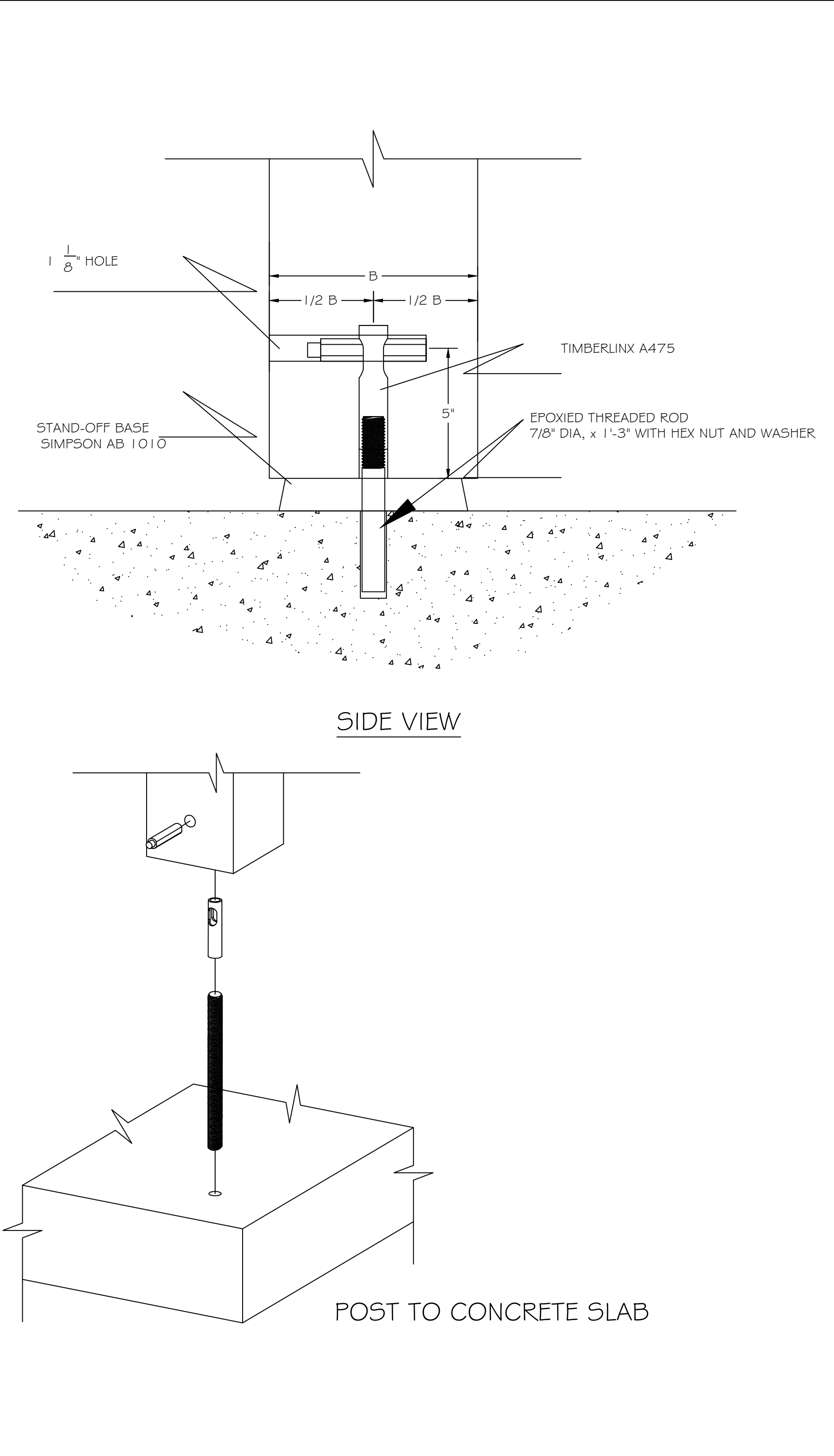


Project Title: **CONNECTIONS**

Drawing Title: \_\_\_\_\_

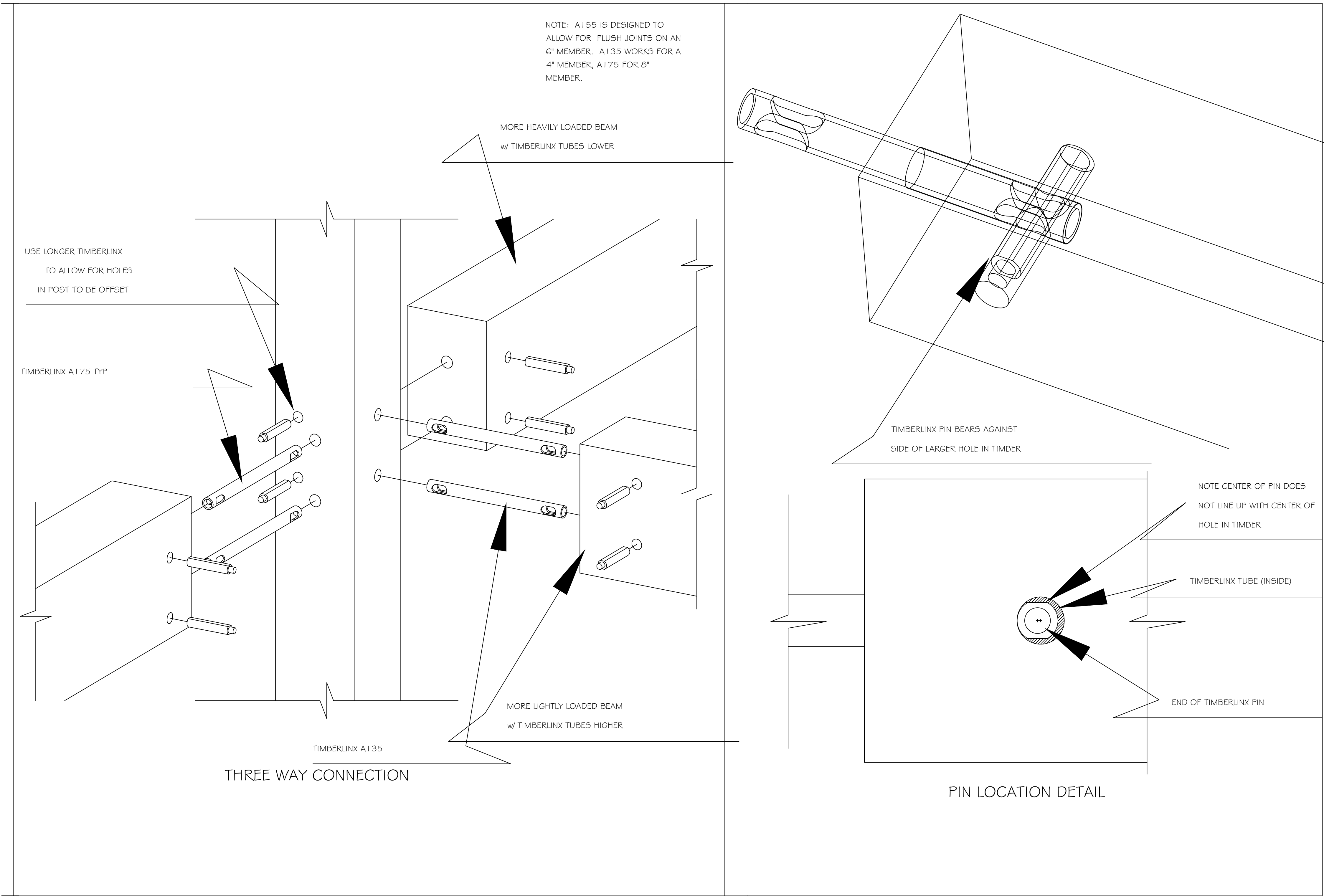
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