

STRUCTURAL NOTES

A. GENERAL

- THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2015 EDITION WITH CITY OF HOUSTON AMENDMENTS.
- THE DESIGN GRAVITY LOADS ARE AS FOLLOWS:

ROOF	20 PSF LL, 15 PSF DL
UNIT FLOOR LOAD	40 PSF LL, 22 PSF DL
UNIT BALCONY LOAD/BALCONY STORAGE	60 PSF LL, 35 PSF DL
STAIRS, LANDINGS, & CORRIDORS	100 PSF LL, 25 PSF DL
CORRIDOR STORAGE AREAS	125 PSF LL, 25 PSF DL

3A. THE STRUCTURES HAVE BEEN DESIGNED TO WITHSTAND THE WIND PRESSURES SPECIFIED IN CHAPTER 16, SECTION 1609, OF THE INTERNATIONAL BUILDING CODE, ACCORDING TO THE FOLLOWING INFORMATION:

DESIGN WIND SPEED (V _{ult})	134 MPH
RISK CATEGORY	II
WIND DIRECTIONALITY FACTOR	0.85
IMPORTANCE FACTOR	1.0
EXPOSURE CATEGORY	B
TOPOGRAPHIC FACTOR	1.0
GUST EFFECT FACTOR	0.85
ENCLOSURE CLASSIFICATION	ENCLOSED

4. HANDRAILS AND GUARDS SHALL BE DESIGNED IN ACCORDANCE WITH TABLE 1607.1 OF THE INTERNATIONAL BUILDING CODE AS FOLLOWS:

- HANDRAIL ASSEMBLIES AND GUARDS SHALL BE DESIGNED TO SUPPORT A LATERAL LOAD OF 50 POUNDS PER LINEAR FOOT (PLF) APPLIED IN ANY DIRECTION AT THE TOP AND TO TRANSFER THIS LOAD THROUGH THE SUPPORTS TO THE STRUCTURE.
- INTERMEDIATE RAILS, BALUSTERS, AND PANEL FILLERS SHALL BE DESIGNED TO SUPPORT A HORIZONTALLY APPLIED NORMAL LOAD OF 50 PSF ON AN AREA NOT TO EXCEED ONE SQUARE FOOT INCLUDING OPENINGS AND SPACE BETWEEN RAILS. REACTIONS DUE TO THIS LOADING ARE NOT REQUIRED TO BE SUPERIMPOSED WITH THOSE IN NOTE (A) OR (C).
- HANDRAIL ASSEMBLIES AND GUARDS SHALL BE DESIGNED TO SUPPORT A LOAD OF 200 POUNDS APPLIED IN ANY DIRECTION AT ANY POINT ON THE RAIL. THESE LOADS NEED NOT BE ASSUMED TO ACT CUMULATIVELY WITH THOSE IN NOTE (B) ABOVE.

5. STAIR TREADS AND STRINGERS SHALL BE DESIGNED FOR A UNIFORM LOAD OF 100 PSF. INDIVIDUAL STAIR TREADS SHALL ALSO BE DESIGNED TO SUPPORT A 300 LB. LOAD ON A 4 SQUARE INCH AREA IN A POSITION THAT WILL CAUSE MAXIMUM STRESS.

6. EXCEPT FOR AREAS OF PUBLIC ASSEMBLY, AND EXCEPT FOR LIVE LOADS WHICH EXCEED 100 PSF, FLOOR LIVE LOADS ARE REDUCED FOR SLAB SYSTEMS, BEAMS, GIRDERS, COLUMNS, PIERS, WALLS, AND FOUNDATIONS WHICH SUPPORT A FLOOR AREA OF 150 SQ. FT. OR GREATER. THE FLOOR LIVE LOAD IS REDUCED AT THE RATE OF 0.08 PERCENT PER SQ. FT. OF FLOOR AREA SUPPORTED IN EXCESS OF 150 SQ. FT. THE REDUCTION DOES NOT EXCEED 40 PERCENT FOR MEMBERS RECEIVING LOADS FROM ONE LEVEL ONLY, 60 PERCENT FOR OTHER MEMBERS, NOR "R" AS DETERMINED BY R= 23.1(1+DEAD LOAD/LIVE LOAD), IN ACCORDANCE WITH SECTION 1607 OF THE BUILDING CODE.

7. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.

8. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS ONLY. THE METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUPPORTING FORMWORK FOR ELEVATED CONSTRUCTION SHALL NOT BE REMOVED BEFORE THE CONCRETE HAS GAINED SUFFICIENT STRENGTH TO SAFELY STRESS THE TENDONS IN BOTH DIRECTIONS AND THE STRUCTURE HAS GAINED SUFFICIENT STRENGTH TO SAFELY STRESS THE POST-TENSIONING TENDONS IN BOTH DIRECTIONS AND THE STRUCTURE HAS TO SAFELY SUPPORT THE DEAD AND SUPERIMPOSED LOADS WHICH WOULD BE SUBSEQUENTLY APPLIED.

9. SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL REFERENCE ONLY. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.

10. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFIED BUILDING CODE AND ANY LOCAL REQUIREMENTS OF THE BUILDING DEPARTMENT OR JURISDICTION, AND OSHA STANDARDS.

11. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL OTHER CONSULTANTS AND COORDINATED WITH THE WORK OF ALL TRADES.

12. CONSTRUCTION MEANS, METHODS, PROCEDURES, BRACING, AND SAFETY ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR SUBCONTRACTOR. THE STRUCTURAL DRAWINGS REPRESENT THE COMPLETE STRUCTURAL SYSTEM IN ITS FINISHED STATE.

13. ANY DISCREPANCIES IN THE DRAWINGS OR DUE TO FIELD CONDITIONS WHICH AFFECT THE STRUCTURAL DESIGN OR THOSE OF OTHER CONSULTANTS MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION OF THAT PORTION OF THE PROJECT.

14. ANY CHANGE OR DEVIATION DURING CONSTRUCTION OF THE STRUCTURAL DRAWINGS, EVEN AT THE OWNER'S REQUEST, SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER.

COMPONENT & CLADDING WIND PRESSURES FOR VERTICAL ELEMENTS (e.g. WINDOWS, DOORS, WALLS, FINISHES)		
COMPONENT SIZE (SQ FT)	COMPONENT LOCATION	
	EDGE ZONE	INTERIOR ZONE
10 SF OR LESS	+ 17 PSF - 28 PSF	+ 17 PSF - 25 PSF
11 SF- 20 SF	+ 17 PSF - 26 PSF	+ 17 PSF - 22 PSF
21 SF- 50 SF	+ 15 PSF - 26 PSF	+ 15 PSF - 22 PSF
50 SF AND LARGER	+ 15 PSF - 24 PSF	+ 15 PSF - 21 PSF

COMPONENT & CLADDING WIND PRESSURES FOR HORIZONTAL ELEMENTS (e.g. ROOF COVERINGS, ETC)			
COMPONENT SIZE (SQ FT)	COMPONENT LOCATION		
	INTERIOR ZONE	EDGE ZONE	CORNER ZONE
10 SF OR LESS	+ 10 PSF - 18 PSF	+ 10 PSF - 30 PSF	+ 10 PSF - 45 PSF
11 SF- 20 SF	+ 10 PSF - 17 PSF	+ 10 PSF - 26 PSF	+ 10 PSF - 37 PSF
21 SF- 50 SF	+ 10 PSF - 16 PSF	+ 10 PSF - 23 PSF	+ 10 PSF - 27 PSF
50 SF AND LARGER	+ 10 PSF - 16 PSF	+ 10 PSF - 19 PSF	+ 10 PSF - 19 PSF

NOTE: EDGE ZONE DISTANCE IS 10'-0" FROM BUILDING/ROOF EDGES

POST-TENSION SLAB ON GRADE SPECIFICATIONS AND NOTES:

DESIGN CRITERIA:

- FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE POST TENSION INSTITUTE "DESIGN OF POST-TENSIONED SLABS-ON-GROUND", THIRD EDITION.
- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE (ACI) MANUALS ACI-318 AND ACI-301, LATEST EDITIONS.
- DETAILING, FABRICATION, AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI-315, LATEST EDITION.
- MIXING, TRANSPORTING, AND PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI-301, LATEST EDITION.
- FINISHING OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI-302.1 AND ACI-304, LATEST EDITIONS.
- THE CONTRACTOR SHALL ADVISE THE ENGINEER OF RECORD OF ANY SITE OR CONSTRUCTION CONDITIONS THAT MAY NOT BE CONSIDERED IN THE PLANS OR THE GEOTECHNICAL REPORT.
- THE FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH SOIL REPORT (GEC0000203) DATED AUGUST 2023 BY THE MURILLO CO. SERVICES BASED ON THE FOLLOWING CRITERIA:
NET ALLOWABLE BEARING PRESSURE: 1800 PSF. SPREAD FOOTINGS BEARING AT 3'-0" = 3000 PSF
EDGE LIFT: E_m=4.8' Y_m=0.30"
CENTER LIFT: E_m=8.7' Y_m=0.60"

MATERIALS:

- ALL FILL MATERIALS USED WITHIN THE BUILDING PAD AREA SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
- A 2" (MIN.) GRANULAR LAYER SHALL BE PLACED OVER THE PROPERLY COMPACTED FILL MATERIAL.
- 10 MIL VAPOR RETARDER SHALL BE INSTALLED OVER THE PREPARED BUILDING PAD. ALL JOINTS SHALL BE LAPPED 8" (MIN) AND TAPED. THE VAPOR RETARDER SHALL EXTEND THE FULL PROFILE OF THE EXTERIOR GRADE BEAM AND BE SECURED TO THE FORM BOARD.
- POST-TENSIONING TENDONS SHALL BE 1/2" DIA. 7-WIRE, 270K, STRESS RELIEVED OR LOW RELAXATION STEEL WRAPPED IN PLASTIC SHEATHING IN ACCORDANCE WITH ASTM A-416. ALL DEAD END ANCHORAGE SHALL BE FACTORY SEATED. A MAXIMUM OF 18" AT DEAD ENDS AND 2" AT LIVE ENDS OF TENDON MAY REMAIN EXPOSED. ALL POST-TENSIONING MATERIALS SHALL COME FROM A PLANT WHICH IS CERTIFIED BY THE POST-TENSION INSTITUTE AND SHALL CONFORM TO THE "SPECIFICATIONS FOR UNBONDED SINGLE STRAND TENDONS". PROVIDE 10' MIN. EDGE DISTANCE TO THE FIRST TENDON FROM THE SLAB EDGE.
- ALL REINFORCING BARS #4 AND LARGER SHALL CONFORM TO ASTM A-615 GRADE 60 AND ALL #2 AND #3 BARS SHALL CONFORM TO GRADE 40 OR 60. REINFORCING SHALL BE FREE FROM OIL, DIRT AND OTHER MATERIALS THAT WOULD REDUCE THE BOND WITH THE CONCRETE. SPLICES SHALL BE IN ACCORDANCE WITH ACI-318 AND THE LAP SPLICE SCHEDULE THIS SHEET.
- WELDED WIRE REINFORCING (WWR) SHALL CONFORM TO ASTM A-185. WELDED WIRE REINFORCING SHALL BE PROPERLY CHAIRED TO MAINTAIN THE REINFORCING AT ONE-THIRD THE DEPTH BELOW THE TOP SURFACE DURING CONCRETE PLACEMENT. LAP WELDED WIRE MESH ONE FULL MESH PLUS 2" AT SIDE AND END LAPS.
- CONCRETE PROTECTION FOR REINFORCING SHALL BE AS SPECIFIED IN ACI-318, LATEST EDITION, SECTION 7.7 (UNO).
- CONCRETE STRENGTH AND PROTECTION FOR REINFORCEMENT OF POURED-IN-PLACE MEMBERS:

STRUCTURAL ELEMENT	MINIMUM COVER (INCHES)	CONCRETE STRENGTH (PSI) AT 28 DAYS	W/C RATIO
GRADE BEAMS	3" BOTTOM, 3" SIDES, 1 1/2" TOP	3000	.50
SLAB ON GRADE		3000	.50
WELDED WIRE REINFORCING ----- 2 5/8" BOTTOM CONV. REINFORCING (ONE LAYER REBAR)----- 1 5/8" BOTTOM POST-TENSION TENDONS ----- MID-DEPTH OF SLAB THICKNESS			

- PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE I.
- FLYASH MAY BE USED TO REPLACE A PORTION OF THE PORTLAND CEMENT. THE RATIO OF FLYASH TO THE TOTAL OF THE FLYASH AND CEMENT IN A MIX SHALL NOT EXCEED 20%. FLYASH SHALL CONFORM TO ASTM C618, TYPE C OR F.
- NO WATER SHALL BE ADDED TO THE CONCRETE AT THE JOBSITE UNLESS SPECIFICALLY INDICATED ON THE BATCH TICKET AND MONITORED BY THE CONTRACTOR AND TESTING LAB. IT IS RECOMMENDED THAT THE CONTRACTOR COORDINATE WITH THE CONCRETE SUPPLIER TO ENSURE A PUMPABLE AND WORKABLE MIX WITHOUT THE ADDITION OF WATER AT THE JOBSITE. THE USE OF PLASTICIZERS, RETARDANTS AND OTHER ADDITIVES SHALL BE AT THE OPTION OF THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE ENGINEER OF RECORD. THE USE OF ADDITIVES SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. THE USE OF CALCIUM CHLORIDE OR OTHER CHLORIDE BEARING SALTS SHALL NOT BE PERMITTED.

LAP SPLICE SCHEDULE			
REINF. SIZE	CONCRETE STRENGTH (PSI)		
	3000	4000	5000
#3	17"	15"	13"
#4	22"	19"	17"
#5	28"	24"	22"
#6	33"	29"	26"
#7	48"	42"	38"
#8	55"	48"	43"
#9	62"	54"	48"
#10	70"	61"	54"
#11	78"	67"	60"

REINFORCING STEEL SPLICE NOTES:

- ALL REINFORCING STEEL SHALL BE SPLICED AS NOTED BELOW AND AS REQUIRED IN THE A.C.I. BUILDING CODE (LATEST EDITION).
- LAP SPLICE SCHEDULE SHALL BE USED FOR ALL LAP SPLICES UNLESS NOTED OTHERWISE.
- ALL REINFORCING STEEL MARKED "CONTINUOUS" SHALL BE LAPPED WITH A LAP SPLICE IN ACCORDANCE WITH THE SCHEDULE.
- MATCH BARS AROUND CORNERS INTERSECTIONS WITH A STANDARD 90 DEGREE HOOK. EACH LEG OF HOOK SHALL BE THE MINIMUM LENGTH OF THE LAP SPLICE SHOWN.
- SPLICE TOP BARS AT CENTER OF SPAN, SPLICE BOTTOM BARS AT SUPPORTS.
- INCREASE DEVELOPMENT LENGTH SHOWN IN SCHEDULE BY 150 FOR EPOXY COATED BARS.

SUBMITTALS:

THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR THEIR REVIEW. SUBMITTALS SHALL BE MADE IN A TIMELY MANNER ALLOWING A MINIMUM OF 5 DAYS FOR ENGINEERING REVIEW.

- CONCRETE MIX DESIGNS INCLUDING ALL MIX CRITERIA AND HISTORICAL LAB RESULTS
- REINFORCING STEEL LAYOUTS
- POST-TENSION TENDON LAYOUTS - MUST INCLUDE TENDON NUMBERS IN ACCORDANCE WITH STRUCTURAL DRAWINGS.
- ANY ITEMS OR MATERIALS THAT ARE MEANT AS A SUBSTITUTION FOR ITEMS OR MATERIALS SPECIFIED IN THE CONST. DWGS.

SITE PREPARATION:

- THE SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS. A TESTING LABORATORY SHALL TEST AND APPROVE THE MOISTURE CONTENT, COMPACTION DENSITY, AND ANY OTHER REQUIREMENTS OF THE GEOTECHNICAL REPORT TO CONFIRM COMPLIANCE WITH THE REPORT.
- COMPACTED FILL MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH GEOTECH. REPORT.
- ALL UNDERGROUND UTILITIES SHALL BE COMPLETED IN ADVANCE OF FOUNDATION CONSTRUCTION. UTILITY TRENCHES WITHIN 20' OF THE BUILDING FOOTPRINT THAT ARE BACKFILLED WITH A GRANULAR MATERIAL (SAND OR GRAVEL) SHALL HAVE A 12" MINIMUM CLAY CAP INSTALLED. A CLAY PLUG SHALL BE INSTALLED WHERE ANY TRENCHES MEET THE BUILDING FOUNDATION.
- INITIAL ROUGH GRADING WITHIN 10' OF THE BUILDING SHALL BE COMPLETED WITH CLAY MATERIALS - GRANULAR MATERIAL IS NOT ALLOWED. GRADING SHALL SLOPE A MINIMUM OF 1" PER FOOT FOR THE FIRST 5' AND 0" PER FOOT BEYOND TO ALLOW FOR POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- GRADING SHALL BE COORDINATED WITH LANDSCAPING DESIGN. PROVIDE A 12" MINIMUM CLAY CAP BELOW LANDSCAPING AREAS.
- THE OWNER SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING FOR THE LIFE OF THE STRUCTURE. STANDING WATER ADJACENT TO THE BUILDING FOUNDATION IS NOT ACCEPTABLE AT ANY TIME. LANDSCAPING UPDATES AND IRRIGATION SYSTEMS MUST BE MONITORED ON A REGULAR BASIS TO INSURE THIS REQUIREMENT IS BEING MAINTAINED.

CONSTRUCTION:

- PERFORM ALL SITE AND UTILITY WORK IN THE VICINITY OF THE BUILDING PAD PRIOR TO BEGINNING FOUNDATION CONSTRUCTION.
- FOUNDATION DIMENSIONS SHOWN SHALL BE MAINTAINED DURING CONSTRUCTION. REVISIONS TO ANY FOUNDATION MEMBER SIZES SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO PROCEEDING WITH CONSTRUCTION.
- ALL POST-TENSION TENDONS, REINFORCING STEEL, AND ANY EMBEDDED ITEMS IN THE CONCRETE SLAB SHALL BE PROPERLY CHAIRED AND SUPPORTED TO PREVENT MOVEMENT DURING CONCRETE PLACEMENT. WIRE TIES AT TENDONS SHALL NOT CUT TENDON SHEATHING. ALL TENDON SHEATHING WHICH IS DAMAGED OR MISSING SHALL BE REPLACED. SMALL AREAS (3" OR LESS) MAYBE REPAIRED WITH DUCT TAPE.
- THE CONTRACTOR SHALL VERIFY ALL STEPS, SLOPES, DEPRESSIONS, AND BLOCKOUTS WITH ARCHITECTURAL DRAWINGS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE STRUCTURAL DRAWINGS WITH ALL OTHER TRADES AND CONSULTANT DRAWINGS FOR OPENINGS, INSERTS, EMBEDS, AND OTHER ITEMS REQUIRED BELOW OR WITHIN THE FOUNDATION.
- NO CONDUITS OR PIPES LARGER THAN 1" DIAMETER SHALL BE INSTALLED IN THE FOUNDATION WITHOUT PRIOR REVIEW BY THE ENGINEER OF RECORD. GROUPS OF CONDUITS OR PIPES MUST MAINTAIN A MINIMUM OF 4" BETWEEN EACH CONDUIT.
- NO PLUMBING LINES SHALL BE INSTALLED WITHIN, BELOW, OR WITHIN 3' PARALLEL TO A FOUNDATION BEAM. PLUMBING MAY CROSS THRU A FOUNDATION BEAM WITH A PROPERLY INSTALLED SLEEVE. A MINIMUM AMOUNT OF CONCRETE TO MATCH THE SLEEVE DIAMETER BELOW THE PIPE SHALL REMAIN BELOW OR THE BEAM DEPTH SHALL BE INCREASED AS REQUIRED.
- PLACE CONCRETE IN A MANNER SO AS TO PREVENT SEGREGATION OF THE MIX. DELAY FLOATING AND TROWELING OPERATIONS UNTIL CONCRETE HAS LOST SURFACE WATER SHEEN OR ALL FREE WATER. DO NOT SPRINKLE FREE CEMENT ON THE SLAB SURFACE.
- CONCRETE SHALL BE PROPERLY CONSOLIDATED, ESPECIALLY AT ALL SLAB EDGES, ANCHORAGES, AND EMBEDDED ITEMS.
- FOUNDATIONS SHALL BE PLACED IN A TIMELY MANNER AFTER EXCAVATION TO AVOID UNNECESSARY DISTURBANCES, CAVING, OR ACCUMULATION OF WATER.
- PROVIDE PROPER CURING OF SLAB IMMEDIATELY AFTER FINISHING. CURING METHODS SHALL BE IN ACCORDANCE WITH ACI RECOMMENDATIONS AND MAY INCLUDE SPRAY ON CURING COMPOUNDS OR WATERED BURLAP.
- NO CONCRETE SHALL BE PLACED OUTSIDE OF THE REQUIREMENTS AND RECOMMENDATIONS OF THE STRUCTURAL DRAWINGS. ANY DEVIATION FROM THE DRAWINGS OR NON-COMPLIANCE ITEMS SHALL BE REPORTED TO THE ENGINEER OF RECORD WITHIN 24 HOURS FOR REVIEW. ANY DEVIATIONS OR NON-COMPLIANCE ITEMS ARE SUBJECT TO REMOVAL RECOMMENDATIONS BY THE ENGINEER OF RECORD.

STRESSING:

- THE TENDONS SHALL BE ANCHORED AT 28.9 KIPS, BUT MAY BE INITIALLY STRESSED TO 33.0 KIPS PER TENDON.
- TO REDUCE POSSIBLE EARLY CONCRETE SHRINKAGE CRACKS, EACH TENDON SHOULD BE STRESSED TO APPROXIMATELY 11.0 KIPS WITHIN 16 HOURS FROM PLACEMENT OR AT APPROXIMATELY 1000 PSI CONCRETE STRENGTH. LONG, NARROW SLABS MAY BE INITIALLY STRESSED IN THE LONG DIRECTION ONLY.
- FINAL STRESSING MAY PROCEED WHEN THE CONCRETE HAS REACHED A STRENGTH OF 2000 PSI.

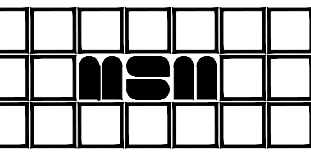
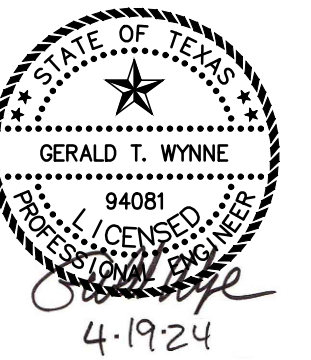
QUALITY CONTROL:

THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR THEIR REVIEW:

- SOIL COMPACTION REPORTS
- PRE-POUR INSPECTION REPORT IF NOT DONE BY ENGINEER OF RECORD.
- CONCRETE TEST RESULTS INCLUDING SLUMP, JOB SITE WATER ADDITION, AND CONCRETE STRENGTH.
- TENDON STRESSING ELONGATION RESULTS INCLUDING TENDON NUMBER, TENDON LENGTH, AND ACTUAL ELONGATION

DEFERRED SUBMITTAL ITEMS:
THE FOLLOWING ITEMS WILL BE DEFERRED SUBMITTALS IN ACCORDANCE WITH IBC SECTION 106.3.4.2 AND LOCAL BLDG. DEPARTMENT REQUIREMENTS. ALL DEFERRED ITEMS SHALL BE SIGNED AND SEALED AND SUBMITTED TO THE ENGINEER OF RECORD AND THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO INSTALLATION. REFER TO CITY AMENDMENTS FOR ANY ADDITIONAL REQUIREMENTS.

- POST-TENSION SHOP DRAWINGS
- PRE-ENGINEERED WOOD TRUSSES
- STAIRS AND HANDRAILS



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LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

ISSUE FOR PERMIT	Date: 10-31-2023
PERMIT RESUBMITTAL	Date: 01-08-2024
ISSUE FOR CONSTRUCTION	Date: 04-19-2024
Date:	
Date:	
Date:	

DESIGN CRITERIA & GENERAL NOTES

N.T.S.



CONCRETE

1. CONCRETE IN THE FOLLOWING AREAS SHALL BE OF COMPRESSIVE STRENGTH (FC) AT 28 DAYS AND CLASS LISTED BELOW. REFER TO CONCRETE SPECIFICATION FOR DEFINITION OF THE VARIOUS CLASSES OF CONCRETE.

FOOTINGS	3000 PSI	W/C RATIO = 0.50
SLAB ON GRADE AND GRADE BEAMS	3000 PSI	W/C RATIO = 0.50
ELEVATOR PIT SLAB AND WALLS	3000 PSI	W/C RATIO = 0.50
STEM/BARRIER WALLS	3000 PSI	W/C RATIO = 0.50
CONCRETE COLUMNS	5000 PSI	W/C RATIO = 0.40
ELEVATED CONCRETE SLABS	5000 PSI	W/C RATIO = 0.40

2. FLY ASH MAY BE USED AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX. FLY ASH SHALL BE TYPE C OR F AND CONFORM TO ASTM C618. THE RATIO OF THE AMOUNT OF FLY ASH TO THE TOTAL AMOUNT OF FLY ASH AND CEMENT IN THE MIX SHALL NOT EXCEED 20 PERCENT.

3. THE FIRE PROTECTION RATING FOR THIS PROJECT IS BASED UPON THE USE OF NORMAL WEIGHT AGGREGATE CONCRETE MADE WITH CARBONATE AGGREGATES. CARBONATE AGGREGATES CONSIST MAINLY OF CALCIUM OR MAGNESIUM CARBONATE, E.G., LIMESTONE OR DOLOMITE, AND CONTAIN 40 PERCENT OR LESS QUARTZ, CHERT AND FLINT.

4. MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS: (SEE ACI 318 SECTION 7.7 FOR CONDITIONS NOT NOTED)

CONCRETE EXPOSED TO WEATHER:	
#5 BARS AND SMALLER	1 - 1/2 INCHES
ALL OTHER BARS	2 INCHES
CONCRETE CAST AGAINST EARTH	3 INCHES
GRADE BEAMS:	
TOP	1 - 1/2 INCHES
BOARD FORMED SIDES	2 INCHES
EARTH FORMED SIDES	3 INCHES
BOTTOM	3 INCHES
SLABS ON GRADE:	
SINGLE LAYER OR TOP LAYER	2 INCHES
BOTTOM LAYER CAST AGAINST SOIL	3 INCHES
BOTTOM LAYER NOT CAST AGAINST SOIL	2 INCHES
COLUMNS	1 - 1/2 INCHES
PILASTERS & PLINTHS	2 INCHES
BEAMS	1 - 1/2 INCHES
WALLS BELOW GRADE (BACKFILLED SIDE)	2 INCHES
WALLS BELOW GRADE (NO BACKFILL)	3/4 INCHES

PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

8. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM 615, GRADE 60 FOR #4 BARS AND LARGER. ALL OTHER REINFORCEMENT MAY CONFORM TO GRADE 40.

9. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. FABRIC SHALL BE SUPPLIED IN FLAT SHEETS. FABRIC SHALL BE LAPPED TWO MESH AT SPLICES.

10. HIGH STRENGTH WIRE STRAND REINFORCEMENT FOR PRESTRESSED CONCRETE MEMBERS SHALL CONSIST OF WIRE CONFORMING TO ASTM A416, GRADE 270K.

11. REINFORCEMENT BARS SHALL NOT BE TACK WELDED, WELDED, HEATED, OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS OR REVIEWED BY THE STRUCTURAL ENGINEER.

12. WELDING OF REINFORCEMENT BARS, WHEN ACCEPTED BY THE STRUCTURAL ENGINEER, SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STANDARD D1.4. ELECTRODES FOR SHOP AND FIELD WELDING OF REINFORCEMENT BARS SHALL CONFORM TO ASTM A233, CLASS E90XX.

13. REINFORCEMENT DESIGNATED AS "CONTINUOUS" MAY BE SPLICED USING TYPE "B" SPLICES. REINFORCEMENT BAR SPLICE LENGTHS IN BEAMS WHICH ARE LOCATED AT THE CENTERLINE OF SUPPORTS FOR BOTTOM BARS AND AT MIDSPAN FOR TOP BARS MAY BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE. PROVIDE STANDARD ACI HOOKS FOR TOP AND BOTTOM BARS AT DISCONTINUOUS ENDS OF ALL GRADE BEAMS.

14. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90-DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED 36 BAR DIAMETERS, AT CORNERS AND INTERSECTIONS.

15. HORIZONTAL JOINTS WILL NOT BE PERMITTED IN CONCRETE CONSTRUCTION EXCEPT AS SHOWN ON THE CONTRACT DOCUMENTS. VERTICAL JOINTS MAY OCCUR AT CENTER OF SPANS AT LOCATIONS REVIEWED BY MSP ENGINEERING.

16. CONSTRUCTION JOINTS BETWEEN PIERS AND PIER CAPS, FOOTINGS AND WALLS OR COLUMNS, OR WALLS, COLUMNS, BEAMS, AND THE FLOOR SYSTEM THEY SUPPORT SHALL BE PREPARED BY ROUGHENING THE CONTACT SURFACE TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH LEAVING THE CONTACT SURFACE CLEAN AND FREE OF LAITANCE.

17. PROVIDE 1- NO. 4 REINFORCEMENT BAR X 4'-0" AT RE-ENTRANT CORNERS AND AROUND RECTANGULAR HOLES IN SLABS UNLESS NOTED OTHERWISE. PLACE BAR DIAGONAL TO CORNER WITH 1" CLEARANCE FROM THE TOP AND THE SIDE OF THE SLAB AT THE CORNER.

18. PROVIDE 2- NO. 4 REINFORCEMENT BARS X 4'-0" AT RE-ENTRANT CORNERS OF SLAB ON GRADE AT POUR STRIPS AND COLUMN BLOCKOUTS. PLACE BARS CENTERED IN THE SLAB AND DIAGONAL TO THE CORNER WITH 1" CLEARANCE FROM THE SLAB AT THE CORNER.

19. CONDUIT, PIPES, AND SLEEVES EMBEDDED IN CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, CHAPTER 6.3.

POST-TENSIONED PRESTRESSED CONCRETE

1. PRESTRESSING STEEL SHALL BE STRESS-RELIEVED AND SHALL CONFORM TO THE FOLLOWING:

SEVEN-WIRE STRAND ASTM DESIGNATION	A416
MINIMUM ULTIMATE STRENGTH BASED ON NOMINAL AREA	270 KSI
MAXIMUM TEMPORARY STRESS TO OVERCOME FRICTION	216 KSI
MAXIMUM ANCHORING STRESS	189 KSI
EFFECTIVE DESIGN STRESS	AS CALCULATED

2. THE CONTRACTOR SHALL SUBMIT CERTIFIED MILL REPORTS INDICATING COMPLIANCE WITH THE APPLICABLE ASTM SPECIFICATIONS OF PRESTRESSING STEEL DELIVERED TO THE PROJECT. THE MILL REPORTS SHALL BE BASED ON A MINIMUM OF TWO TESTS FOR EACH REEL, HEAT, OR LOT, AND SHALL INCLUDE AS A MINIMUM THE BREAKING LOAD, MODULUS OF ELASTICITY, ELONGATION RUPTURE, LOAD AT 1% EXTENSION, AREA OF STEEL, STRESS-STRAIN CURVE, YIELD POINT, COIL AND HEAT NUMBERS. AN AFFIDAVIT FROM THE POST-TENSIONING SUPPLIER SHALL ALSO BE SUBMITTED STATING THAT STEEL FOR THE PROJECT CONFORMS TO THE ASTM SPECIFICATIONS.

3. END ANCHORAGES, SHEATHING, COATING, COUPLERS AND MISCELLANEOUS HARDWARE SHALL CONFORM TO THE RECOMMENDATIONS CONTAINED IN THE PTI "POST-TENSIONING MANUAL", GUIDE SPECIFICATION CHAPTER 3.

4. GROUT OR CONCRETE CONTAINING CHLORIDE, FLUORIDES, SULFIDES, THIOCYANATES, NITRATES, OR OTHER SUBSTANCES DETRIMENTAL TO PRESTRESSING STEEL WILL NOT BE PERMITTED.

5. THE CONTRACTOR SHALL SUBMIT POST TENSIONING ELONGATION AND LOSSES CALCULATIONS AND SHOP DRAWINGS FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE TENDON LAYOUTS AND PROFILES, STRESSING AND DEAD - END ANCHORAGE DETAILS, STRESSING SEQUENCE, DETAILS AT SLAB OPENINGS, AND OTHER RELATED DETAILS. SHOP DRAWINGS SHALL INCLUDE A TENDON NUMBERING SYSTEM FOR THE USE IN RECORDING OF FIELD MEASUREMENTS OF ELONGATIONS. CALCULATIONS SHALL INCLUDE WOBBLE AND CURVATURE FRICTION COEFFICIENTS, EFFECTIVE TENDON FORCES, LOSS OF PRESTRESS DUE TO ANCHORAGE SEATING, ELASTIC SHORTENING OF CONCRETE, CREEP AND SHRINKAGE OF CONCRETE, RELAXATION OF TENDON STRESS, FRICTION LOSS DUE TO TENDON CURVATURE, AND THE NUMBER OF TENDONS REQUIRED TO SATISFY THE POST-TENSIONING EFFECTIVE FORCE SHOWN ON THE STRUCTURAL DRAWINGS. RELAXATION VALUES AND WOBBLE COEFFICIENTS SHALL BE OBTAINED FROM THE MANUFACTURER. FABRICATION SHALL NOT BEGIN UNTIL THE REVIEW OF THE SUBMITTAL HAS BEEN COMPLETED BY THE STRUCTURAL ENGINEER. THE SUBMITTAL SHALL ALSO INCLUDE POST-TENSIONING PROCEDURES AND OTHER CERTIFICATIONS AND DATA REQUIRED FOR COMPLIANCE WITH THE STRUCTURAL DRAWINGS AND THE POST - TENSION INSTITUTE (PTI).

6. FORCES INDICATED ON THE DRAWINGS ARE EFFECTIVE FORCES AFTER IMMEDIATE AND LONG TERM LOSSES. TENDON PLACEMENT SHALL CONFORM TO THE CONTROL POINTS SHOWN ON THE DRAWINGS AND SHALL HAVE A SMOOTH PARABOLIC DRAPE BETWEEN SUPPORTS. LOW POINTS ARE AT MIDSPAN UNLESS NOTED OTHERWISE. CONTROL POINTS LOCATE THE CENTER OF GRAVITY OF TENDON STEEL OR TENDON GROUP (C.G.S.). TENDONS AND ANCHORAGES SHALL BE PLACED WITH A TOLERANCE OF PLUS OR MINUS 1/8 INCH.

7. LOCATIONS OF THE CONSTRUCTION JOINTS, POUR STRIPS, AND LEAVE-OUTS IN THE STRUCTURE SHALL BE SUBMITTED. CONSTRUCTION JOINTS IN BEAMS AND JOISTS SHALL BE LOCATED WHERE THE C.G.S. OF THE TENDON GROUP COINCIDES WITH THE CENTER OF GRAVITY OF THE CONCRETE SECTION. CONSTRUCTION JOINTS IN CONCRETE SLABS SHALL BE LOCATED WHERE THE C.G.S. OF THE TENDON GROUP IS WITHIN THE MIDDLE THIRD OF THE SLAB THICKNESS.

8. ANY DEVIATION TO THE SPECIFIED TENDON PLACEMENT SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER.

9. TENDON PLACEMENT SHALL BE REVIEWED BY THE OWNER'S AUTHORIZED AGENT PRIOR TO PLACEMENT OF CONCRETE.

10. TENDON LOCATIONS SHALL BE MARKED ON THE UNDERSIDE OF SLABS. THE METHOD FOR MARKING SLABS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.

11. TENDONS MAY BE BUNDLED. WHERE SLAB TENDONS ARE BUNDLED, THE TENDONS SHALL LAY FLAT.

12. PROVIDE TENDON SUPPORTS TO MAINTAIN CONCRETE COVERAGE AND CORRECT TENDON PROFILE. TENDONS SHALL BE FIRMLY ANCHORED TO PREVENT DISPLACEMENTS.

13. ADDITIONAL REINFORCEMENT FOR BURSTING, SPLITTING, AND SPALLING OF THE CONCRETE AT THE POST-TENSIONING ANCHORAGES SHALL BE DESIGNED AND DETAILED BY THE POST-TENSIONING SUPPLIER.

14. INSERTS AND SLEEVES SHALL BE CAST IN PLACE WHERE POSSIBLE. DRILLED AND POWER-DRIVEN FASTENERS MAY BE USED WHEN THEY WILL NOT INTERFERE WITH THE TENDONS AND TENDON ANCHORS AND WILL NOT CAUSE SPALLING OF THE CONCRETE.

15. TENDONS SHALL NOT BE STRESSED UNTIL CYLINDER TESTS INDICATE THAT THE IN PLACE CONCRETE HAS ATTAINED THE SPECIFIED INITIAL COMPRESSIVE STRENGTH (FCI).

16. TENDONS SHALL NOT BE STRESSED OVER 100 FEET IN A ONE-WAY PULL OR OVER 200 FEET IN A TWO-WAY PULL EXCEPT AS REVIEWED BY THE STRUCTURAL ENGINEER.

17. RAMS TO BE USED FOR STRESSING TENDONS SHALL BE CALIBRATED PRIOR TO STRESSING OPERATIONS AT EACH LEVEL AND AS REQUIRED. CERTIFIED CALIBRATION REPORTS SHALL BE SUBMITTED INDICATING FORCES AND GAGE READINGS REQUIRED TO STRESS TENDONS TO THE REQUIRED FORCE.

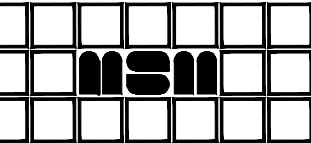
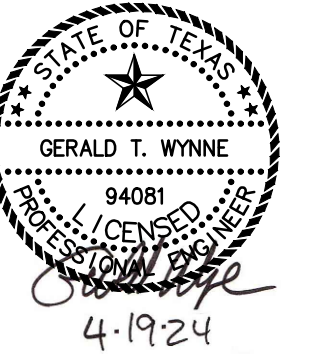
18. THE FOLLOWING GENERAL STRESSING SEQUENCES SHALL BE USED UNLESS NOTED OTHERWISE AND REVIEWED BY THE ENGINEER.

1. STRESS 60% OF BANDED TENDONS.
2. STRESS 100% OF DISTRIBUTED TENDONS.
3. STRESS REMAINDER OF BANDED TENDONS.

19. THE SHORING DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR. SHORING SHALL BE ADEQUATE TO SUPPORT THE TOTAL WEIGHT STRUCTURE AND TEMPORARY CONSTRUCTION LOADS. SHORING SHALL NOT BE REMOVED UNTIL STRESSING OF TENDONS IN BOTH BOTH DIRECTIONS FOR THAT LEVEL HAS BEEN COMPLETED, AND ELONGATIONS HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER. REMOVAL OF SHORING SHALL NOT CAUSE OVERSTRESSING OF THE STRUCTURE.

20. REQUIRED ELONGATIONS, MEASURED ELONGATIONS, AND TENDON JACKING FORCES FOR TENDONS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW. MEASURED ELONGATIONS SHALL NOT VARY FROM THE REQUIRED ELONGATIONS BY +/- 7%. TENDON ENDS SHALL NOT BE CUT UNTIL THE ACTUAL ELONGATIONS HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER.

21. TENDON END ANCHORAGES AND WEDGES SHALL BE PAINTED WITH RUST-INHIBITING PAINT BEFORE THE ANCHORAGE POCKET IS GROUTED. ANCHORAGE POCKETS SHALL BE CLEAN AND FILLED WITH NON-SHRINK GROUT.



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LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

ISSUE FOR PERMIT
Date: 10-31-2023
PERMIT RESUBMITTAL
Date: 01-08-2024
ISSUE FOR CONSTRUCTION
Date: 04-19-2024
Date:
Date:
Date:

DESIGN CRITERIA & GENERAL NOTES

N.T.S.



WOOD FASTENING SCHEDULE

CONNECTION	FASTENING	LOCATION
JOIST TO SILL OR GIRDER	3- 8d COMMON (2 1/2" X 0.131")	TOENAIL
BRIDGING TO JOIST	2- 8d COMMON (2 1/2" X 0.131")	TOENAIL EACH END
SOLE PLATE TO JOIST OR BLOCKING	3 1/4" X 0.148" NAILS @ 12" O.C.	TYPICAL FACE NAIL
SOLE PLATE TO JOIST OR BLOCKING AT BRACED WALL PANELS	SEE SHEAR WALL SCHEDULE	BRACED WALL PANELS
TOP PLATE TO STUD	2- 16d COMMON (3 1/2" X 0.162") 3- 3" X 0.131" NAIL	END NAIL
STUD TO SOLE PLATE	4-8d COMMON (2 1/2" X 0.131") 4- 3" X 0.131" NAIL 2- 16d COMMON (3 1/2" X 0.162") 3- 3" X 0.131" NAIL	TOENAIL END NAIL
DOUBLE STUDS	3" X 0.131" NAIL @ 8" O.C.	FACE NAIL
DOUBLE TOP PLATES	3" X 0.131" NAIL @ 12" O.C.	TYPICAL FACE NAIL
TOP PLATE, LAPS AND INTERSECTIONS	8- 16d COMMON (3 1/2" X 0.162") 12- 3" X 0.131" NAILS	LAP SPLICE
CONTINUOUS HEADER, TWO PIECES	16d COMMON (3 1/2" X 0.162")	16" O.C. ALONG EDGE
CONTINUOUS HEADER TO STUD	4- 8d COMMON (2 1/2" X 0.131")	TOENAIL
RAFTER TO PLATE	3- 8d COMMON (2 1/2" X 0.131") 3- 3" X 0.131" NAIL	TOENAIL
BUILT-UP CORNER STUD	16d (3 1/2" X 0.162") AT 24" O.C. 3" X 0.131" NAIL @ 16" O.C.	FACE NAIL
BUILT-UP GIRDER AND BEAMS	20d COMMON (4" X 0.192") AT 32" O.C. 3" X 0.131" NAIL @ 24" O.C.	FACE NAIL @ TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES
	2- 20d (4" X 0.192") COMMON 3- 3" X 0.131" NAIL	FACE NAIL @ ENDS AND AT EACH SPLICE

NOTE: FASTENERS AND CONNECTIONS SHOWN IN THE SCHEDULE ABOVE SHALL BE THE MINIMUM REQUIRED UNLESS SUPERCEDED ELSEWHERE IN THESE DRAWINGS.
NOTE: THE TABLE SHOWN ABOVE IS DERIVED FROM IBC TABLE 2304.9.1

WOOD FRAMING SPECIFICATIONS:

- ALL LUMBER AND SHEATHING SHALL BE MARKED WITH THE SPECIES, GRADE, AND GRADING AGENCY IN ACCORDANCE WITH THE BUILDING CODE.
- THE SPECIES AND MINIMUM GRADE FOR THE FRAMING MEMBERS SHALL BE AS FOLLOWS: (U.N.O. ELSEWHERE IN THE STRUCTURAL DRAWINGS)

MEMBER	SPECIES	GRADE
STUDS	SYP, DFL, SYP	#2
WALL PLATES	SYP	#3
HEADERS	SYP	#2
BEAMS	SYP	#2
POSTS	SYP	#2
- FINGER JOINTED STUDS ARE ACCEPTABLE IN LIEU OF SOLID SAWN MEMBERS PROVIDED THEY ARE THE SAME SPECIES AND GRADE. FINGER JOINTED STUDS SHALL BE LATERALLY BRACED IN THE WEAK AXIS DURING CONSTRUCTION UNTIL WALL SHEATHING HAS BEEN INSTALLED ON AT LEAST ONE FACE.
- LVL MEMBERS SPECIFIED SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES: Fb=2600PSI, E=1,900,000 PSI, Fv=285 PSI. MULTIPLE PLIES SHALL BE FASTENED TOGETHER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO FUNCTION AS A SINGLE MEMBER. SOLID PSL MEMBERS MEETING THE DESIGN VALUES LISTED MAY BE SUBSTITUTED FOR THE LVL MEMBERS PROVIDED THEY ARE THE SAME OVERALL SIZE. LSL MEMBERS ARE NOT AN ACCEPTABLE SUBSTITUTION.
- APB MEMBERS SPECIFIED SHALL BE ANTHONY POWER BEAMS OR SIMILAR PERFORMANCE GLU-LAM MEMBERS AND SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

SIZE	PROPERTIES
5 1/4" AND SMALLER	Fb=3000PSI, E=2,100,000 PSI, Fv=300 PSI
7" AND LARGER	Fb=2800PSI, E=2,100,000 PSI, Fv=300 PSI
- GLU-LAM (GL) MEMBERS SHALL BE FABRICATED USING SYP OR DFL MEMBERS AND SHALL BE OF THE FOLLOWING GRADES:

USE	GRADE COMBINATION
SIMPLE SPAN	24F-V4 (DFL) OR 24F-V3 (SYP)
CONT. BEAM	24F-V8 (DFL) OR 24F-V5 (SYP)
CANTILEVER	24F-V8 (DFL) OR 24F-V5 (SYP)

 ALL GLU-LAM BEAMS SHALL BE FABRICATED WITH STANDARD CAMBER. GLU-LAM BEAMS MUST BE PROPERLY INSTALLED ACCORDING TO MARKINGS ON THE BEAM MEMBER.
- ALL LUMBER IN CONTACT WITH CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESSURE TREATED IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVER'S ASSOCIATION. ALL FASTENERS INSTALLED OR IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE FINISHED OR COATED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ROOF SHEATHING SHALL BE WOOD STRUCTURAL PANELS (WSP), 15/32" THICK, 32/16 SPAN RATING APA RATED SHEATHING ROOF SHEATHING SHALL BE FASTENED WITH 131" DIA X 2 1/2" NAILS AT 6" O.C. AT ALL PANEL EDGES AND 12" O.C. FOR ALL FIELD NAILING.
- FLOOR SHEATHING SHALL BE WOOD STRUCTURAL PANELS (WSP), 23/32" THICK, 48/24 SPAN RATING APA RATED SHEATHING. FLOOR SHEATHING SHALL BE GLUED TO THE FRAMING MEMBERS AND FASTENED WITH .131 X 2 1/2" RING SHANK NAILS OR 2 1/2" LONG SIMPSON QUICK DRIVE SCREWS AT 6" O.C. AT ALL PANEL EDGES AND 12" O.C. FOR ALL FIELD NAILING. FLOOR SHEATHING AT EXTERIOR WALL LOCATIONS SHALL BE FIRE-RETARDANT TREATED AS SHOWN IN THE STRUCTURAL FRAMING DETAILS.
- NAILS SPECIFIED IN THESE DRAWINGS SHALL BE OF THE FOLLOWING MINIMUM SIZES (COMMON WIRE NAILS):

NAIL SIZE SHOWN	DIAMETER	LENGTH
8D	.131"	2 1/2"
10D	.148"	3"
16D	.162"	3 1/2"

 PNEUMATIC GUN NAILS SHALL MEET THE DIAMETER AND LENGTH SHOWN ABOVE REGARDLESS OF THE NAIL SIZE INDICATED BY THE MANUF.
- ALL FRAMING CONNECTORS SHOWN ARE BASED ON SIMPSON STRONG-TIE AND THEIR CATALOG PUBLISHED CAPACITY. CONNECTORS FROM OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THEY MEET THE SIMPSON STRONG-TIE ALLOWABLE LOADING. ALL CONNECTORS SHALL BE INSTALLED USING THE MAXIMUM NAILING SPECIFIED AND PROPER NAIL SIZE, UNO.
- EPOXY ANCHORS INDICATED IN NOTES AND DETAILS SHALL BE SIMPSON SET-XP OR HILTI RE-500.

GENERAL WOOD CONSTRUCTION NOTES

- ALL WOOD FRAMED CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC), NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS), LOCAL BUILDING DEPARTMENT REQUIREMENTS, AND GENERALLY ACCEPTED CONSTRUCTION PRACTICE.
- CONSTRUCTION BRACING SHALL BE PROVIDED BY THE CONTRACTOR TO MAINTAIN THE BUILDING PLUMB AND TRUE.
- ROOF AND FLOOR FRAMING LAYOUTS ARE PROVIDED TO ILLUSTRATE CONDITIONS OF CONSTRUCTION AND DO NOT NECESSARILY INDICATE SPECIFIC QUANTITIES OF MATERIALS OR COMPONENTS REQUIRED FOR CONSTRUCTION.
- ALL FASTENERS AND CONNECTIONS NOT SPECIFIED IN THESE DRAWINGS SHALL BE IN ACCORDANCE WITH IBC TABLE 2304.9.1.
- FRAMED OPENINGS: FOR OPENINGS LESS THAN 4'-0" WIDE, USE 1- TRIMMER AND 1- KING POST EACH END. FOR OPENINGS 4'-0" TO 6'-0" WIDE, USE 2-TRIMMERS AND 1- KING POST EACH END, U.N.O. FOR OPENINGS 6'-0" OR WIDER, USE 2- TRIMMERS AND 2- KING POSTS EACH END, U.N.O.
- THE NUMBER OF WALL STUDS AT BEARING POINTS OF MULTIPLE MEMBER BEAMS SHALL EXCEED THE NUMBER OF MEMBERS IN THE BEAM BY ONE. ALL ENGINEERED WOOD BEAMS SHALL HAVE 3 STUDS MINIMUM AT EACH BEARING POINT (U.N.O. ON PLAN). GIRDER TRUSSES SHALL HAVE 3 STUDS MINIMUM OR 1 STUD MORE THAN THE NUMBER OF PLIES AT EACH BEARING POINT (U.N.O. ON PLAN). THE CENTERLINE OF THE BEAM AND GIRDER TRUSS SHALL ALIGN WITH THE CENTERLINE OF THE SUPPORTING STUDS PACK OR POST. STUD PACKS OR POST SHALL HAVE A CONTINUOUS LOAD PATH TO THE FOUNDATION WITH INTERMEDIATE SUPPORTS THROUGH FLOOR CAVITY TO MATCH THOSE ABOVE.
- ALL FLUSH BEAMS AND JOISTS TO BE SUPPORTED BY APPROVED HANGER.
- ALL WOOD FRAMED CHIMNEY CONSTRUCTION TO BE SHEATHED WITH 7/16" EXTERIOR WOOD STRUCTURAL PANEL. PROVIDE (1) CS16 STRAP AT EACH CORNER WITH 11-10d NAILS IN EACH MEMBER (U.N.O. ON PLANS).
- EXTERIOR WALLS AT VOLUME CEILINGS SHALL BE BALLOON FRAMED TO THE HEIGHT OF THE ADJACENT ROOF OR FLOOR FRAMING MEMBERS. STRUCTURAL MEMBERS SHALL NOT CUT OR NOTCHED UNLESS NEEDED FOR OTHER TRADES. NOTCHING AND BORING OF STUDS AND TOP PLATES SHALL CONFORM TO THE PROVISIONS OF IBC SECTIONS 2308.9.10 AND 2308.9.11. WHERE TOP PLATES OR SOLE PLATES ARE CUT FOR PIPES, A REPAIR PLATE WITH MINIMUM 16 GAUGE X 1 1/2 INCH WIDE SHALL BE FASTENED TO EACH PLATE ACROSS AND TO EACH SIDE OF THE OPENING WITH NOT LESS THAN (6) 16d NAILS, IN ACCORDANCE SECTION 2308.9.8 OF THE IBC. WHERE STUDS HAVE BEEN DRILLED FOR PIPE INSTALLATION, A STUD SHOE REPAIR SUCH AS THE SIMPSON SS1.5 SHALL BE INSTALLED.
- METAL CONNECTORS AND FASTENERS SHALL MEET THE CORROSION RESISTANCE REQUIREMENTS OF THE 2006 TEXAS REVISIONS TO THE 2006 IBC CHAPTER 17

PRE-ENGINEERED WOOD TRUSS NOTES:

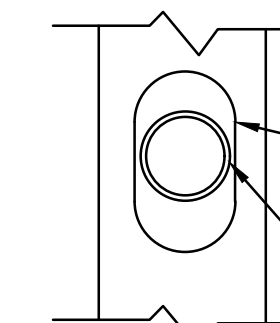
- WORK INCLUDED
- FABRICATE, SUPPLY AND ERECT WOOD TRUSSES AS SHOWN ON THE DRAWINGS AND AS SPECIFIED. WORK TO INCLUDE ANCHORAGE, BLOCKING, CURBING, MISCELLANEOUS FRAMING AND BRACING.
- DEFINITIONS
TRUSS: THE TERMS "TRUSS" AND "WOOD TRUSS COMPONENT" REFER TO OPEN WEB LOAD CARRYING ASSEMBLIES SUITABLE FOR SUPPORT OF ROOF DECKS OR FLOORS IN BUILDINGS.
MANUFACTURER: A MANUFACTURER WHO IS REGULARLY ENGAGED IN DESIGN AND FABRICATION OF WOOD TRUSS COMPONENTS.
TRUSS INSTALLER: BUILDER, CONTRACTOR OR SUB-CONTRACTOR WHO IS RESPONSIBLE FOR THE FIELD STORAGE, HANDLING AND INSTALLATION OF TRUSSES.
- DESIGN
A. TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH THESE SPECIFICATIONS AND WHERE ANY APPLICABLE DESIGN FEATURE IS NOT SPECIFIED HEREIN, DESIGN SHALL BE IN ACCORDANCE WITH APPLICABLE PROVISIONS OF LATEST EDITION OF NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION (NDS) OF THE AMERICAN FOREST AND PAPER ASSOCIATION (AF & PA), AND DESIGN SPECIFICATIONS FOR METAL PLATE CONNECTED WOOD TRUSSES (ANSI/TPI 1) OF THE TRUSS PLATE INSTITUTE (TPI), AND CODE OF JURISDICTION.
B. MANUFACTURER SHALL FURNISH DESIGN DRAWINGS BEARING SEAL AND REGISTRATION NUMBER OF A CIVIL OR STRUCTURAL ENGINEER LICENSED IN STATE WHERE TRUSSES ARE TO BE INSTALLED. DRAWINGS SHALL BE APPROVED BY ARCHITECT PRIOR TO FABRICATION.
C. TRUSS DESIGN DRAWINGS SHALL INCLUDE AS MINIMUM INFORMATION:
1. SPAN, DEPTH OR SLOPE AND SPACING OF TRUSSES;
2. REQUIRED BEARING WIDTH;
3. DESIGN LOADS, AS APPLICABLE:
A. TOP CHORD LIVE LOAD;
B. TOP CHORD DEAD LOAD;
C. BOTTOM CHORD LIVE LOAD;
D. BOTTOM CHORD DEAD LOAD;
E. CONCENTRATED LOADS AND THEIR POINTS OF APPLICATION; AND
F. WIND AND SEISMIC CRITERIA;
4. ADJUSTMENT TO LUMBER AND PLATE DESIGN LOADS FOR CONDITION OF USE;
5. REACTIVE FORCES, THEIR POINTS OF OCCURRENCE AND DIRECTION;
6. ALPINE OR MITEK PLATE TYPE, GAUGE, SIZE AND LOCATION OF PLATE AT EACH JOINT;
7. LUMBER SIZE, SPECIES AND GRADE FOR EACH MEMBER;
8. LOCATION OF ANY REQUIRED CONTINUOUS LATER BRACING;
9. CALCULATED DEFLECTION RATIO AND/OR MAXIMUM DEFLECTION FOR LIVE AND TOTAL LOAD;
10. MAXIMUM AXIAL COMPRESSIVE FORCES IN TRUSS MEMBERS;
11. LOCATION OF JOINTS;
12. CONNECTION REQUIREMENTS FOR:
A. TRUSS TO TRUSS GIRDERS;
B. TRUSS PLY TO PLY; AND
C. FIELD SPLICES.
- MATERIALS
A. LUMBER:
1. LUMBER USED FOR TRUSS MEMBERS SHALL BE IN ACCORDANCE WITH PUBLISHED VALUES OF LUMBER RULES WRITING AGENCIES APPROVED BY THE BOARD OF REVIEW OF AMERICAN LUMBER STANDARDS COMMITTEE. LUMBER SHALL BE IDENTIFIED BY GRADE MARK OF A LUMBER INSPECTION BUREAU OR AGENCY APPROVED BY THAT BOARD, AND SHALL BE AS SHOWN ON DESIGN DRAWINGS.
2. MOISTURE CONTENT OF LUMBER SHALL BE NO GREATER THAN 19 PERCENT AT TIME OF FABRICATION.
3. ADJUSTMENT OF VALUES FOR DURATION OF LOAD OR CONDITIONS OF USE SHALL BE IN ACCORDANCE WITH NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION (NDS).
4. FLOOR TRUSS MEMBERS WHICH WILL BE LOCATED WITHIN THE EXTERIOR WALL CONSTRUCTION SHALL BE FIRE RETARDANT TREATED LUMBER AS INDICATED IN THE STRUCTURAL FRAMING DETAILS.
B. METAL CONNECTOR PLATES:
1. METAL CONNECTOR PLATES SHALL NOT LESS THAN .0356 INCHES IN THICKNESS (20 GAGE) AND SHALL MEET OR EXCEED ASTM A653 GRADE 37, AND SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A653, COATING DESIGNATION G60. DESIGN VALUES SHALL BE DETERMINED IN ACCORDANCE WITH ANSI/TPI 1.
2. IN HIGHLY CORROSIVE ENVIRONMENTS, SPECIAL APPLIED COATINGS OR STAINLESS STEEL MAY BE REQUIRED.
3. AT THE REQUEST OF ARCHITECT, MANUFACTURER SHALL FURNISH A CERTIFIED RECORD THAT MATERIALS COMPLY WITH STEEL SPECIFICATIONS.
5. FABRICATION
A. TRUSSES SHALL BE FABRICATED IN A PROPERLY EQUIPPED MANUFACTURING FACILITY OF A PERMANENT NATURE. TRUSSES SHALL BE MANUFACTURED BY EXPERIENCED WORKMEN, USING PRECISION CUTTING, JIGGING AND PRESSING EQUIPMENT MEETING REQUIREMENTS OF ANSI/TPI 1, SECTION 3. TRUSS MEMBERS SHALL BE ACCURATELY CUT TO LENGTH ANGLE AND TRUE TO LINE TO ASSURE PROPER FITTING JOINTS WITHIN TOLERANCES SET FORTH IN ANSI/TPI 1, CHAPTER 3, AND PROPER FIT WITH OTHER WORK.
6. HANDLING, INSTALLATION AND BRACING
A. TRUSSES SHALL BE HANDLED DURING FABRICATION, DELIVERY AND AT JOBSITE SO AS NOT TO BE SUBJECTED TO EXCESSIVE BENDING.
B. TRUSSES SHALL BE UNLOADED ON SMOOTH GROUND TO AVOID LATERAL STRAIN. TRUSSES SHALL BE PROTECTED FROM DAMAGE THAT MIGHT RESULT FROM ON-SITE ACTIVITIES AND ENVIRONMENTAL CONDITIONS. PREVENT TOPPLING WHEN BANDING IS REMOVED.
C. HANDLE DURING INSTALLATION IN ACCORDANCE WITH LATEST VERSION OF BUILDING COMPONENT SAFETY INFORMATION (BCSI 1) FROM TPI, AND ANSI/TPI 1. INSTALLATION SHALL BE CONSISTENT WITH GOOD WORKMANSHIP AND GOOD BUILDING PRACTICES AND SHALL BE RESPONSIBILITY OF TRUSS INSTALLER.
D. APPARENT DAMAGE TO TRUSSES, IF ANY, SHALL BE REPORTED TO MANUFACTURER PRIOR TO INSTALLATION.
E. TRUSSES SHALL BE SET AND SECURED LEVEL AND PLUMB, AND IN CORRECT LOCATION. TRUSSES SHALL BE HELD IN CORRECT ALIGNMENT UNTIL SPECIFIED PERMANENT BRACING IS INSTALLED.
F. CUTTING AND ALTERING OF TRUSSES IS NOT PERMITTED.
G. CONCENTRATED LOADS SHALL NOT BE PLACED ATOP TRUSSES UNTIL ALL SPECIFIED BRACING HAS BEEN INSTALLED AND DECKING IS PERMANENTLY NAILED IN PLACE. SPECIFICALLY AVOID STACKING FULL BUNDLES OF DECKING OR OTHER HEAVY MATERIALS ONTO UNSHEATHED TRUSSES.
H. ERECTION BRACING IS ALWAYS REQUIRED. PROFESSIONAL ADVICE SHOULD ALWAYS BE SOUGHT TO PREVENT TOPPLING OR DOMINOING OF TRUSSES DURING INSTALLATION.
I. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND FURNISHING THE MATERIALS USED FOR INSTALLATION AND PERMANENT BRACING.

WOOD SHRINKAGE NOTES:

- THE FOLLOWING ACTIONS ARE REQUIRED (GENERAL CONTRACTOR TO COORDINATE WITH ALL TRADES AS REQUIRED):
- ALL HOLES AND NOTCHES FOR HORIZONTAL PLUMBING PIPES ARE TO BE OVERSIZED TO COMPENSATE FOR SHRINKAGE.
 - SWING JOINTS AND FLEXIBLE CONNECTIONS, OFFSETS AND EXPANSION/CONTRACTION JOINTS ARE TO BE UTILIZED IN THE FABRICATION OF PIPING TO ALLOW FOR SHRINKAGE.
 - VENTS ARE TO BE INSTALLED WITH DOUBLE FLASHING TO PERMIT MOVEMENT.
 - HANGERS FOR PIPING BELOW 4th FLOOR ARE REQUIRED TO BE ADJUSTED SEVERAL MONTHS AFTER COMPLETION OF CONSTRUCTION.
 - SLIP JOINTS ARE REQUIRED FOR ALL SHEET METAL VERTICAL DOWN-SPOUTS, VENTS, ETC. TO COMPENSATE FOR SHRINKAGE.
 - RIGID ELECTRICAL CONDUIT INSTALLED VERTICALLY SHOULD BE PROVIDED WITH FLEXIBLE JOINTS TO PERMIT MOVEMENT.
 - ALL ROOF DRAINS ARE TO BE ADJUSTED TO THE FINISHED ROOF SURFACE AT THE TIME OF OCCUPANCY AND ALSO EVERY YEAR PRIOR TO RAINY SEASON.
 - VERTICAL MECHANICAL AND SPRINKLER SYSTEMS ARE TO BE INSTALLED TO COMPENSATE FOR WOOD SHRINKAGE.
 - PLATES SHOULD BE FASTENED TIGHT TO STUDS TO REDUCE COMPRESSIVE SPACE BETWEEN PLATE AND STUD TO MINIMIZE ANY POTENTIAL ADDITIONAL SHORTENING OF BUILDING WALLS.
 - ALL WOOD STRUCTURAL PANELS ON WALLS ARE REQUIRED TO HAVE A 1/2" RELIEF GAP AT EACH FLOOR LEVEL TO RELIEVE POSSIBLE BULGING.
 - AT STUCCO CONSTRUCTION INSTALL HORIZONTAL EXPANSION JOINTS, SLIP JOINT FLASHING, ETC.

ANTICIPATED SHRINKAGE MOVEMENT - 5 STORY

FLOOR	SHRINKAGE
ROOF	1.375"
5TH LEVEL	1.00"
4TH LEVEL	0.68"
3RD LEVEL	0.46"
2ND LEVEL	0.25"



PLUMBING PENETRATION DETAIL AT WOOD STUD WALLS

STRUCTURAL WALL STUD SCHEDULE - 5 STORY			
LOCATION	BEARING CONDITION	FLOOR LEVEL	STUD SIZE AND SPACING
EXTERIOR (*)	NON-LOAD BEARING	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 16" O.C.
		3RD	2X4 @ 16" O.C.
		2ND	2X4 @ 12" O.C.
		1ST	2X4 @ 12" O.C.
EXTERIOR (**)	ROOF AND/OR FLOOR BEARING	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 16" O.C.
		3RD	2X4 @ 12" O.C.
		2ND	2X4 @ 12" O.C.
		1ST	(3) 2X4 @ 24" O.C.
CORRIDOR	ROOF AND CORRIDOR FLOOR BEARING	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 16" O.C.
		3RD	2X4 @ 12" O.C.
		2ND(*)	2X4 @ 12" O.C.
		1ST(*)	(2) 2X4 @ 24" O.C.
CORRIDOR	ROOF, CORRIDOR FLOOR AND UNIT FLOOR BEARING	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 12" O.C.
		3RD	(2) 2X4 @ 24" O.C.
		2ND(*)	(2) 2X4 @ 24" O.C.
		1ST(*)	(3) 2X4 @ 24" O.C.
INTERIOR	UNIT FLOOR BEARING	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 12" O.C.
		3RD	(2) 2X4 @ 16" O.C.
		2ND(*)	(3) 2X4 @ 16" O.C.
		1ST(*)	(3) 2X4 @ 12" O.C.
PARTY	UNIT FLOOR BEARING (NO INTERIOR UNIT BEARING WALL)	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 12" O.C.
		3RD	(2) 2X4 @ 16" O.C.
		2ND(*)	(3) 2X4 @ 16" O.C.
		1ST(*)	(3) 2X4 @ 16" O.C.
PARTY	UNIT FLOOR BEARING W/INTERIOR UNIT BEARING WALL	5TH	2X4 @ 16" O.C.
		4TH	2X4 @ 16" O.C.
		3RD	2X4 @ 12" O.C.
		2ND(*)	(2) 2X4 @ 16" O.C.
		1ST(*)	(3) 2X4 @ 16" O.C.

5 STORY SCHEDULE NOTES:
- WHERE STUD PACKS ARE SPACED AT 16" O.C., EVERY FOURTH STUD PACK SHALL ALIGN WITH THE FLOOR TRUSSES ON THE BOTTOM TWO LEVELS.

-WHERE STUD PACKS ARE SPACED AT 12" O.C., EVERY OTHER STUD PACK SHALL ALIGN WITH THE FLOOR TRUSSES ON THE BOTTOM TWO LEVELS.

- WHERE STUD PACKS ARE SPACED AT 24" O.C., ALL STUD PACKS SHALL ALIGN WITH THE FLOOR TRUSSES AND 1 ADDITIONAL STUD SHALL BE INSTALLED BETWEEN STUD PACKS.

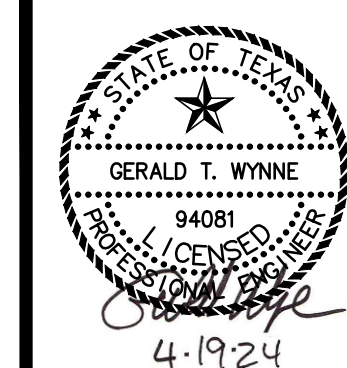
-ALL LOAD BEARING PLUMBING WALLS SHALL BE FRAMED WITH 2X6 STUDS AT 16" O.C. AT THE 3RD, 4TH, AND 5TH FLOORS AND (2) 2X6 STUDS AT 24" O.C. ALIGNED WITH THE TRUSSES ON THE 1ST AND 2ND FLOORS.

-REFER TO ARCHITECTURAL DRAWINGS FOR STUD SIZES AND SPACINGS AT NON-STRUCTURAL WALLS.

(-*) TOP AND BOTTOM PLATES AT THE LOCATIONS SHOWN SHALL BE LSL MATERIAL. BLOCK STUDS AT MID-HEIGHT AT THESE LOCATIONS.

(-**) EXTERIOR WALL FRAMING STUDS SHALL BE FRT LUMBER, U.N.O.

-NOTE: STUDS ON LEVEL 2 ABOVE THE PODIUM WILL BE 7/8" SHORTER THAN THE TYPICAL STUDS. SEE ARCH SHEET A7.6 FOR ADDITIONAL INFORMATION.



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DESIGN CRITERIA & GENERAL NOTES

N.T.S.



MASONRY NOTES:

- ALL MASONRY MATERIALS AND CONSTRUCTION SHALL COMPLY WITH THE RECOMMENDATIONS OF BRICK INSTITUTE OF AMERICA (BIA) AND NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA) AND MINIMUM REQUIREMENTS ESTABLISHED BY LOCAL BUILDING CODE.
- ALL CONCRETE MASONRY UNITS (CMU) SHALL HAVE A MINIMUM NET COMPRESSIVE STRENGTH (f_m) = 1500 PSI IN ACCORDANCE WITH ASTM C-90 TYPE N
- ALL MORTAR SHALL BE TYPE 'M' OR 'S' WITH A MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MORTAR OF MASONRY UNITS, ASTM C270.
- PROVIDE LAP SPLICES FOR ALL REINFORCED CELLS AND BOND BEAMS ACCORDING TO TABLE BELOW.
- ALL REINFORCED MASONRY WALLS WITH OPENINGS UP TO 4'-0" WIDE, SHALL HAVE ONE BAR (MINIMUM) AT EACH SIDE OF OPENINGS. FOR OPENINGS LARGER THAN 4'-0" WIDE PROVIDE 2 BARS AT EACH SIDE OF OPENINGS. FILL ALL REINFORCED CELLS WITH 2000 P.S.I. GROUT. REINFORCING AT EDGES OF OPENINGS TO MATCH TYPICAL WALL REINFORCING SIZE AND EXTEND TO TOP OF WALL.
- ALL MASONRY WALLS WITH OPENINGS UP TO 4'-0" WIDE, SHALL HAVE ONE 8" (MIN) LINTEL WITH 2-#5 BARS. OPENINGS LARGER THAN 4'-0" WIDE UP TO 8'-0" WIDE SHALL HAVE A 16" (MIN) LINTEL WITH 2-#5 BARS TOP AND BOTTOM. FILL ALL REINFORCED CELLS WITH 2000 PSI GROUT.
- ALL REINFORCED MASONRY WALL CORNERS AND INTERSECTIONS SHALL HAVE ONE VERTICAL BAR (MINIMUM). FILL REINFORCED CELL (S) WITH 2000 PSI GROUT. REINFORCING SHALL MATCH TYPICAL MASONRY REINFORCING SIZE AND EXTEND TO THE TOP OF THE WALL. CELLS WITH 2000 PSI GROUT.
- ALL MASONRY WALLS SHALL HAVE ONE 8" (MIN) BOND BEAM WITH 2-#5 BARS AT EACH FLOOR LEVEL, THE TOP OF THE WALL, AND A MAXIMUM OF 12'-0" VERTICALLY ON THE WALL. FILL ALL REINFORCED
- GROUT SOLID ALL REINFORCED CELLS AND BOND BEAMS WITH 2000 PSI GROUT, U.N.O.
- PROVIDE 9 GAGE TRUSS TYPE HORIZONTAL JOINT REINFORCING AT 16" O.C. FOR ALL CMU WALLS, U.N.O.
- CONTROL JOINTS SHALL BE SPACED PER PLANS AND SPECIFICATIONS, 2 X WALL HEIGHT, OR AT A MAX. SPACING OF 40'-0" CENTERS, UNLESS SPECIFICALLY APPROVED OTHERWISE BY ENGINEER. PROVIDE ONE VERTICAL BAR (MIN.) FIRST CELL EACH SIDE OF CONTROL JOINTS. FILL CELL WITH 2000 PSI GROUT.

LAP SPLICE LENGTHS FOR MASONRY REINFORCEMENT:

REINFORCING BAR SIZE	MIN LAP SPLICE LENGTH
#5	45"
#6	54"
#7	63"
#8	72"
#9	81"
#10	91"
#11	102"

BRICK LINTELS:

- STEEL LINTELS SHALL BE PROVIDED TO SUPPORT BRICK AT ALL LOCATIONS AS FOLLOWS:

MAX. CLEAR SPAN	LINTEL SIZE (LLV)
4'-0"	<5X3 1/2X1/4
6'-0"	<5X3 1/2X5/16
8'-0"	<5X3 1/2X3/8
10'-0"	<6X4X3/8
12'-0"	<7X4X3/8

- ALL LINTELS SHALL HAVE 8" MINIMUM BEARING ON BRICK EACH END.
- ALL LINTELS SHALL BE HOT-DIPPED GALVANIZED OR PROPERLY PAINTED.
- ALL ARCHES SHALL HAVE ROLLED LINTELS OR BE CONSTRUCTED IN ACCORDANCE WITH BIA RECOMMENDATIONS FOR SELF-SUPPORTING ARCHES. REFER TO ARCHITECTURAL DRAWINGS FOR INFORMATION.

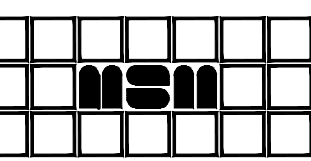
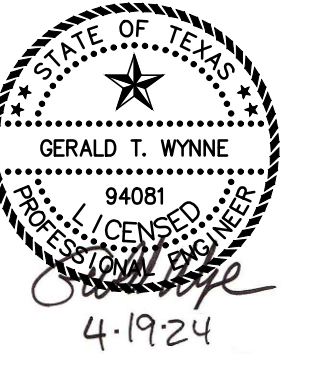
STRUCTURAL STEEL FRAMING NOTES:

- ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH "THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", AISC 360 AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", AISC 303.
- ALL STRUCTURAL STEEL SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST OSHA SAFETY STANDARDS FOR STEEL ERECTION. STRUCTURAL DOCUMENTS INDICATE TYPICAL CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL OSHA REQUIREMENTS ARE MET.
- STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS:

A. WIDE FLANGE SHAPES	ASTM A992 (50 KSI)
B. CHANNELS	ASTM A36 (36 KSI)
C. ANGLES	ASTM A36 (36 KSI)
D. SQUARE AND RECTANGULAR TUBES (HSS)	ASTM A500, GRADE B (46 KSI)
E. ROUND TUBES (HSS)	ASTM 500, GRADE B (42 KSI)
F. STEEL PIPE	ASTM A53, GRADE B (35 KSI)
G. PLATES AND BARS	ASTM A36 (36 KSI)
H. BOLTS	ASTM A325 OR A490
J. NUTS	ASTM A563
K. WASHERS	ASTM F436
L. ANCHOR RODS	ASTM F1554 (36 KSI)
M. HEADED STUDS	ASTM A108
N. WELDED ELECTRODES	E70XX
- ALL NON-SHRINK GROUTS FOR LEVELING OF BASE PLATES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 P.S.I. AT 28 DAYS. GROUT SHALL COMPLY WITH CORPUS OF ENGINEERS SPECIFICATION CRD-C 621.
- SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE.
- CAMBER INDICATED ON THESE DRAWINGS IS THE REQUIRED CAMBER AT TIME OF ERECTION. CAMBERED BEAMS SHALL BE ERECTED SUCH THAT THE PROFILE OF THE BEAMS ARE CROWNED UPWARD.
- ALL STEEL AT OR BELOW FINISHED GRADE OR BELOW FLOOR SLAB SHALL RECEIVE 2 COATS OF BITUMINOUS PAINT OR 3" MINIMUM CONCRETE COVER.
- ALL STRUCTURAL STEEL THAT IS EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.
- MC INDICATES MOMENT CONNECTION
- ALL SHOP DRAWINGS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER. DRAWINGS TO HAVE CONTRACTORS STAMP AFFIXED PRIOR TO REVIEW. CERTIFIED COPIES OF MILL TEST REPORTS SHALL BE AVAILABLE UPON REQUEST.
- THE GENERAL CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER OF ANY FABRICATION OR ERECTION ERRORS OR DEVIATIONS AND RECEIVE WRITTEN APPROVAL BEFORE ANY FIELD CORRECTIONS ARE MADE. GAS CUTTING TORCHES SHALL NOT BE USED TO CORRECT FABRICATION ERRORS WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER.

STRUCTURAL STEEL CONNECTION NOTES:

- ALL CONNECTIONS, SPLICES AND ERECTION PIECES SHALL BE DESIGNED AND DETAILED BY THE FABRICATOR'S STRUCTURAL ENGINEER LICENSED IN THE JURISDICTION OF THE PROJECT UNLESS INDICATED AS BEING FULLY DESIGNED ON THE STRUCTURAL DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED BEARING THE ENGINEER'S SEAL AND SIGNATURE. CALCULATIONS BEARING THE ENGINEER'S SEAL AND SIGNATURE SHALL BE AVAILABLE UPON REQUEST OF THE STRUCTURAL ENGINEER. DESIGN, DETAIL, FURNISH AND INSTALL STIFFENERS, CONTINUITY PLATES, DOUBLER PLATES, OR OTHER NECESSARY ADDITIONAL PARTS AS REQUIRED FOR LOCAL STRENGTHENING AS REQUIRED.
- UNLESS NOTED OTHERWISE, DETAILS INDICATED ON DRAWINGS INDICATE GENERAL CRITERIA FOR DESIGN AND DETAILING OF CONNECTIONS. DETAILS INDICATED ON DRAWINGS ARE NOT INTENDED TO CONVEY COMPLETE CONNECTOR SIZES, PLATE SIZES, WELD SIZES, NUMBER OF BOLTS, OR ANY OTHER SPECIFIC INFORMATION THAT IS OBTAINED THROUGH DESIGNING OF A CONNECTION FOR A GIVEN SET OF LOADS. DETAILS SHOWN ON THE DRAWINGS DO NOT SHOW ERECTION AIDS. PROVIDE ERECTION AIDS AS REQUIRED AND REMOVE THEM AFTER WORK IS COMPLETE.
- ALL SHOP AND FIELD CONNECTIONS SHALL BE MADE WITH HIGH STRENGTH BOLTS OR WELDS. ALL HIGH STRENGTH BOLTS AND NUTS SHALL BE CLEARLY MARKED AS REQUIRED BY AISC SPECIFICATIONS.
- DESIGN ALL CONNECTIONS FOR FORCES INDICATED ON THE DRAWINGS. CONNECTION DESIGN FORCES INDICATED ON THE DRAWINGS ARE UNFACTORED UNO. WHERE THE REACTION IS OMITTED FROM THE DRAWINGS, DESIGN THE CONNECTION FOR ONE HALF OF THE MAXIMUM TOTAL UNIFORM LOAD AS DEFINED IN THE AISC STEEL CONSTRUCTION MANUAL 13TH EDITION, TABLE 3-6. MOMENT CONNECTIONS SHALL BE DESIGNED FOR THE FULL PLASTIC MOMENT OF THE BEAM IF THE MOMENT IS OMITTED FROM THE DRAWINGS. BRACING CONNECTIONS SHALL DEVELOP FULL FORCES SHOWN ON DRAWINGS AT EACH END OF MEMBER.
- NO CONNECTION SHALL CONSIST OF LESS THAN (2) 3/4" DIA. A325-N BOLTS OR WELDS DEVELOPING LESS THAN 10 KIPS. MINIMUM WELD SIZE SHALL BE A 3/16" FILLET WELD.
- FOR CONNECTION DESIGN AND DETAILING, SET CONNECTION WORK POINT AT INTERSECTION OF MEMBER CENTERLINES, UNO.
- DO NOT USE OVERSIZED OR SLOTTED HOLES FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
- ALL A325 BOLTS SHALL BE TIGHTENED TO THE "SNUG-TIGHT" CONDITION DEFINED AS THE TIGHTNESS ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. THE "SNUG-TIGHT" CONDITION MUST ENSURE THAT THE PLIES OF THE CONNECTED MATERIAL HAVE BEEN BROUGHT INTO SNUG CONTACT.
- ALL A325 BOLTS SUBJECT TO DIRECT TENSION OR DESIGNATED "SC" (SLIP-CRITICAL) SHALL BE PRE-TENSIONED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS AS DESCRIBED IN THE AISC "MANUAL OF STEEL CONSTRUCTION": TURN OF NUT TIGHTENING, CALIBRATED WRENCH TIGHTENING OR DIRECT TENSION INDICATOR TIGHTENING.
- EXPANSION JOINT CONNECTIONS AND SLIP CONNECTION INDICATED SHALL PROVIDE FREE MOVEMENT. BOLTS SHALL HAVE NUTS FINGER TIGHTENED AND THREADS CRIMPED.
- PROVIDE ACCESS FOR INSPECTION OF ALL SHOP AND FIELD CONNECTIONS FOR PROPER MATERIALS AND WORKMANSHIP. ALL FIELD CONNECTIONS SHALL BE INSPECTED BY AN INDEPENDENT TESTING LABORATORY
- ALL WELDING INCLUDING WELDING ELECTRODES, WELDING PROCESS, MINIMUM PREHEAT AND INTERPASS TEMPERATURES SHALL BE IN ACCORDANCE WITH THE AISC AND AWS SPECIFICATIONS. ANY STRUCTURAL STEEL DAMAGED IN WELDING IS TO BE REPLACED OR REINFORCED AS ACCEPTABLE TO THE STRUCTURAL ENGINEER. WELDERS SHALL HAVE CURRENT EVIDENCE OF PASSING THE APPROPRIATE AWS QUALIFICATION TESTS. THE ENGINEER MAY REQUEST SUCH EVIDENCE AT ANY TIME DURING THE PROJECT.



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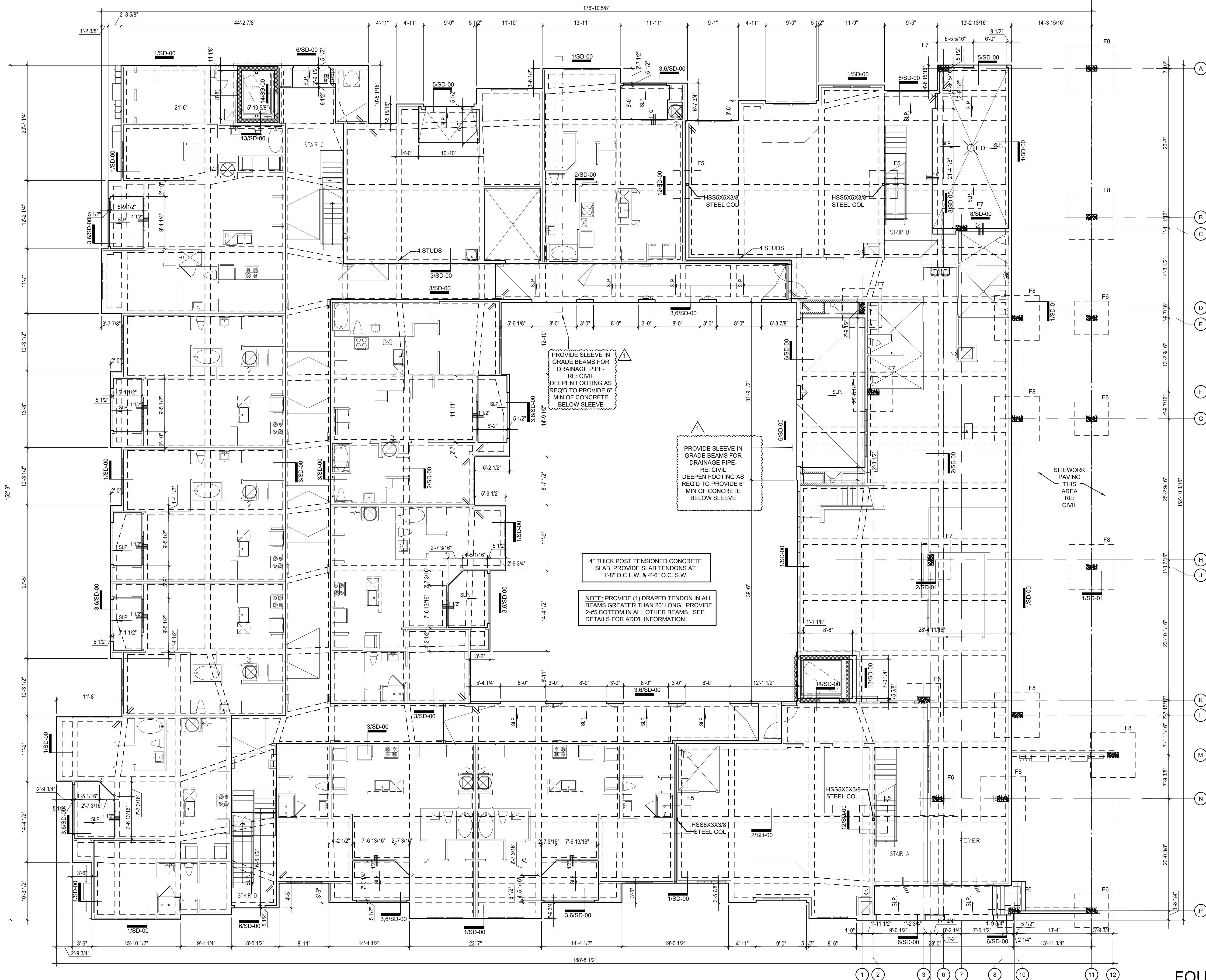
LOST OAKS
 A Multi-Family Community
 Harris County, Texas
 Job No. 2302

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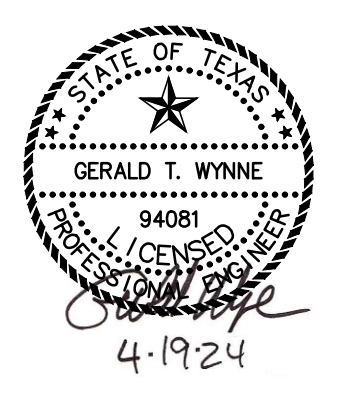
DESIGN CRITERIA & GENERAL NOTES

N.T.S.





- FOUNDATION NOTES:**
1. ALL EXTERIOR WALLS SHALL BE FASTENED TO THE FOUNDATION USING ONE OF THE FOLLOWING METHODS:
 A. SIMPSON MASA MUDSILL ANCHORS AT 48" O.C.
 B. 1/2" DIAMETER X 7" EMBED, CAST IN PLACE ANCHOR BOLTS AT 48" O.C. WITH STANDARD NUT AND WASHER.
 C. 1/2" DIAMETER X 2 3/4" EMBED SIMPSON TITEN HD CONCRETE SCREW ANCHORS AT 48" O.C. WITH STANDARD WASHER.
 2. ALL FASTENERS INSTALLED IN PRESERVATIVE TREATED WOOD SHALL BE COATED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
 3. COORDINATE PLUMBING AND UTILITY LINE LOCATIONS AS SPECIFIED IN THE POST TENSION SLAB ON GRADE NOTES.
 4. COORDINATE ALL STEPS, SLOPES AND DIMENSIONS NOT SHOWN HERE WITH ARCHITECTURAL DRAWINGS.
 5. POST TENSIONED BEAM TENDONS SHALL BE DRAPED DOWN TO THE BOTTOM OF THE GRADE BEAM. PROVIDE 3" CONCRETE COVER.



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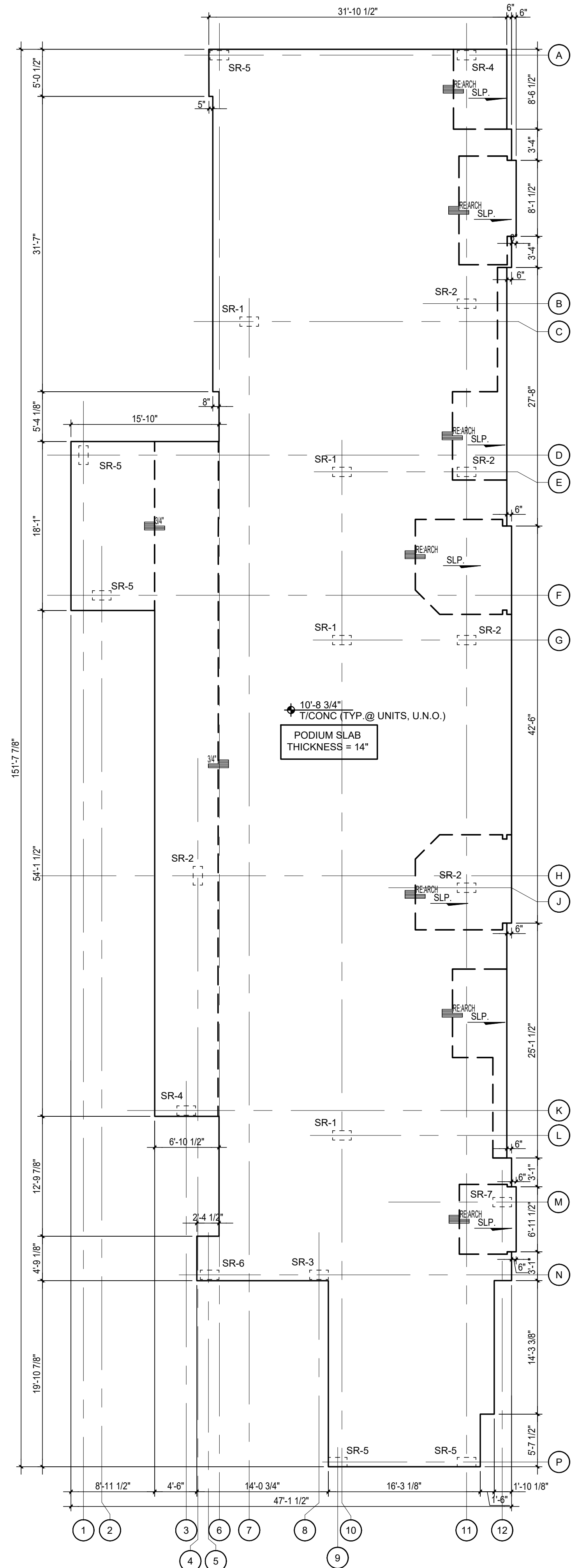
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FOUNDATION PLAN
 1/8" = 1'-0"

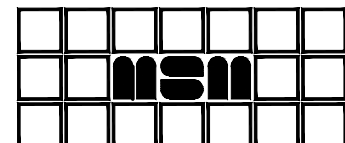
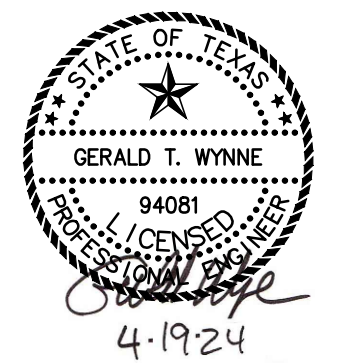


FOUNDATION PLAN
 1/8" = 1'-0"



FORMING NOTES:

1. T.O. CONCRETE ELEVATION PER PLAN. COORD. W/ ARCHITECTURAL DRAWINGS.
2. SLAB SHALL BE NORMAL-WEIGHT CONCRETE (f_c = 5000 PSI), U.N.O. SEE PLAN FOR SLAB THICKNESS.
3. Cx' DENOTES CIP CONCRETE COLUMN (f_c=5000 PSI). SEE SD-03 FOR COLUMN SIZE AND REINF.
4. SR"x" DENOTES STUD RAIL. SEE SHEET 3/SD-11 FOR STUD RAIL SCHEDULE.
5. 8" CMU WALL SHALL BE PLACED AROUND ALL ELEVATOR SHAFTS AND STAIR WELLS NOT SHOWN WITH CONCRETE WALLS. REINF SHALL BE #5 @ 48" O.C. VERT. WITH TRUSS-TYPE REINF. @ 16" O.C. HORIZ. FILL REINF. CELLS WITH 2000 PSI GROUT.
6. COORDINATE ALL SLAB STEPS, SLOPES, AND BLOCKOUTS WITH ARCHL DWGS.
7. ALL EXTERIOR WALLS SHALL BE FASTENED TO THE PODIUM SLAB WITH 1/2" DIA X 7" EMBED CAST IN PLACE ANCHOR BOLTS AT 48" O.C. WITH NUT AND OVERSIZE WASHER.
8. ALL FASTENERS INSTALLED IN PRESERVATIVE TREATED WOOD SHALL BE COATED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR PRESERVATIVE TYPE.
9. REFER TO DETAIL 3/SD-13 FOR EMBED PLATE AND BOLT REQUIREMENTS AT SHEARWALL HOLD-DOWNS.
10. REFER TO SHEET SD10-SD13 FOR TYPICAL DETAILS.
11. WARP CONCRETE AT ALL BALCONY DOOR LOCATIONS.



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2nd FLOOR
PODIUM FORMING
PLAN

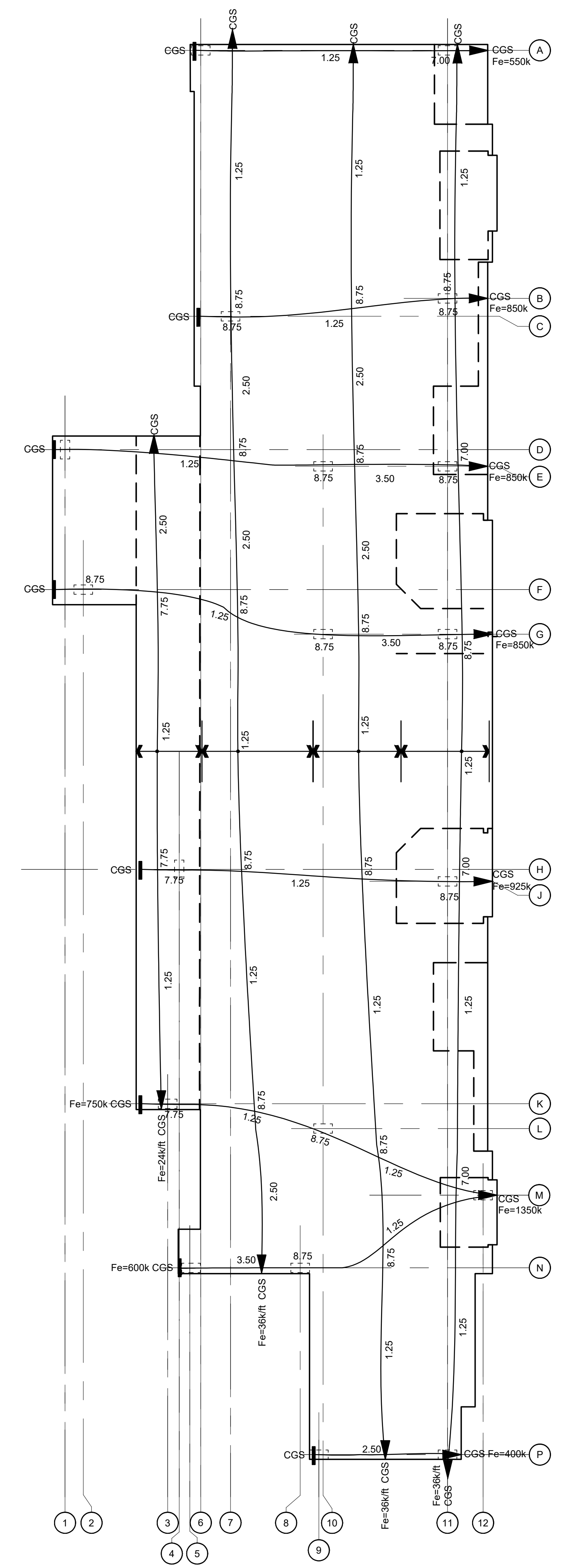
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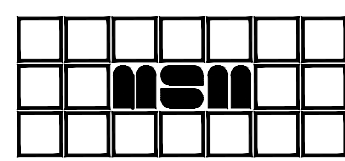
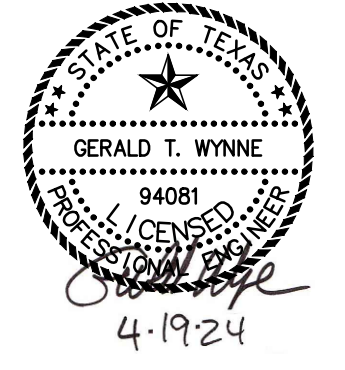
2nd PODIUM FORMING PLAN

1/8" = 1'-0"

- NOTES:
1. Fe = EFFECTIVE PT FORCE
 2. TENDON HEIGHTS SHOWN ARE MEASURED FROM BOTTOM OF SLAB TO THE CENTER OF THE TENDON
 3. TENDONS TO BE LOCATED A MID-DEPTH OF SLAB (CGS) AT ALL SLAB EDGES, U.N.O.



2nd FLOOR PODIUM PT PLAN
1/8" = 1'-0"



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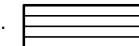
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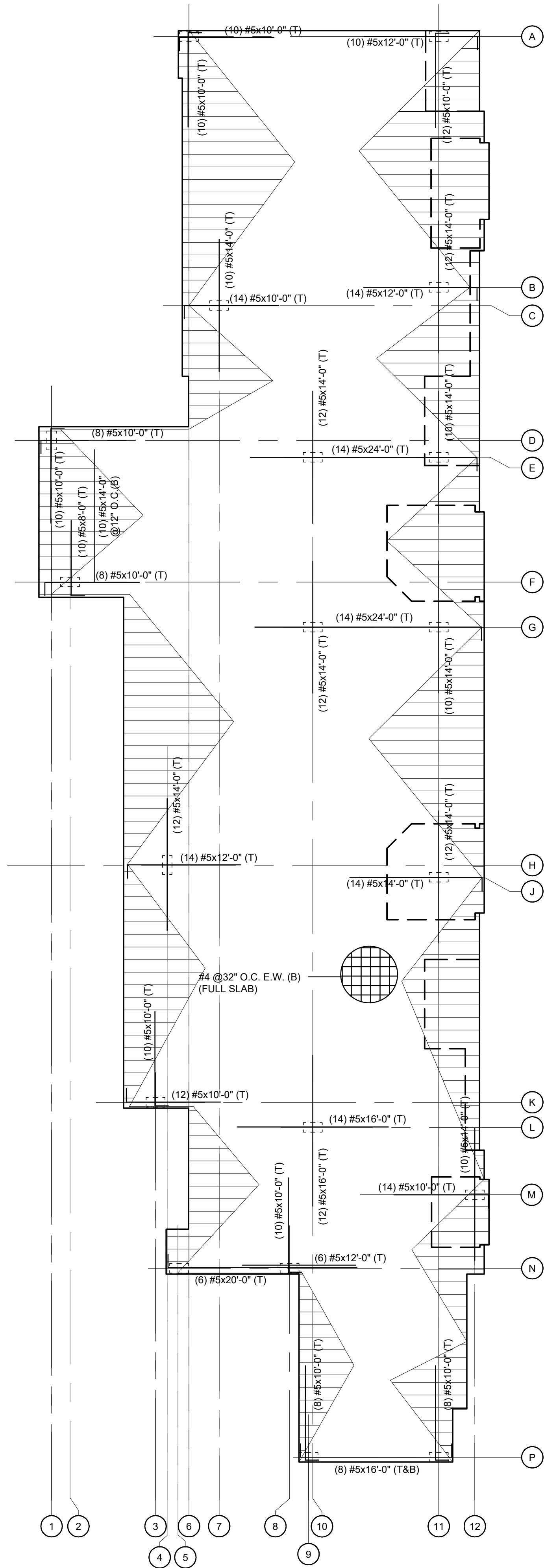
2nd FLOOR
PODIUM PT PLAN

1/8" = 1'-0"



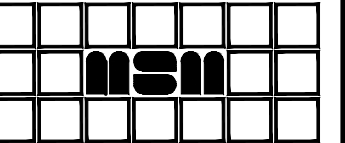
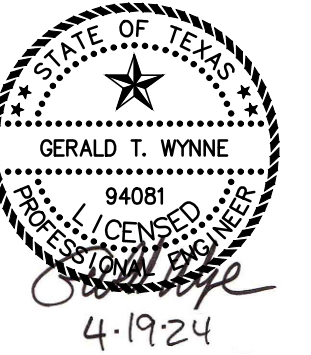
REINFORCING NOTES

1. ALL BARS SHOWN ARE TO BE PLACED IN SLAB AS FOLLOWS:
(T) - INDICATES TOP OF SLAB
(B) - INDICATES BOTTOM OF SLAB
(T&B) - INDICATES TOP AND BOTTOM OF SLAB
2. SEE SHEETS SD-10 THRU SD-13 FOR TYPICAL DETAILS
3. BARS GREATER THAN 50'-0" MAY BE SPICED AT THIRD POINT IN SPAN WITH SPICE LENGTH EQUAL TO 1.3Ld. SPICES SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF BARS ARE SPICED AT ANY ONE LOCATION.
4. (1) #4 CONT. AT ALL SLAB EDGES (T&B) EXTENDING 2'-6" MIN. BEYOND RE-ENTRANT CORNERS. WHERE BARS TERMINATE AT SLAB EDGE, PROVIDE 90 DEG. STD. HOOK AT ENDS OF BARS.
5. BOTTOM REINF. SHALL BE SPACED AT 12" O.C. MAX. U.N.O.
6.  DENOTES TEMPERATURE REINF. SEE 6/SD-10.



2nd FLOOR PODIUM REINFORCING PLAN

1/8" = 1'-0"



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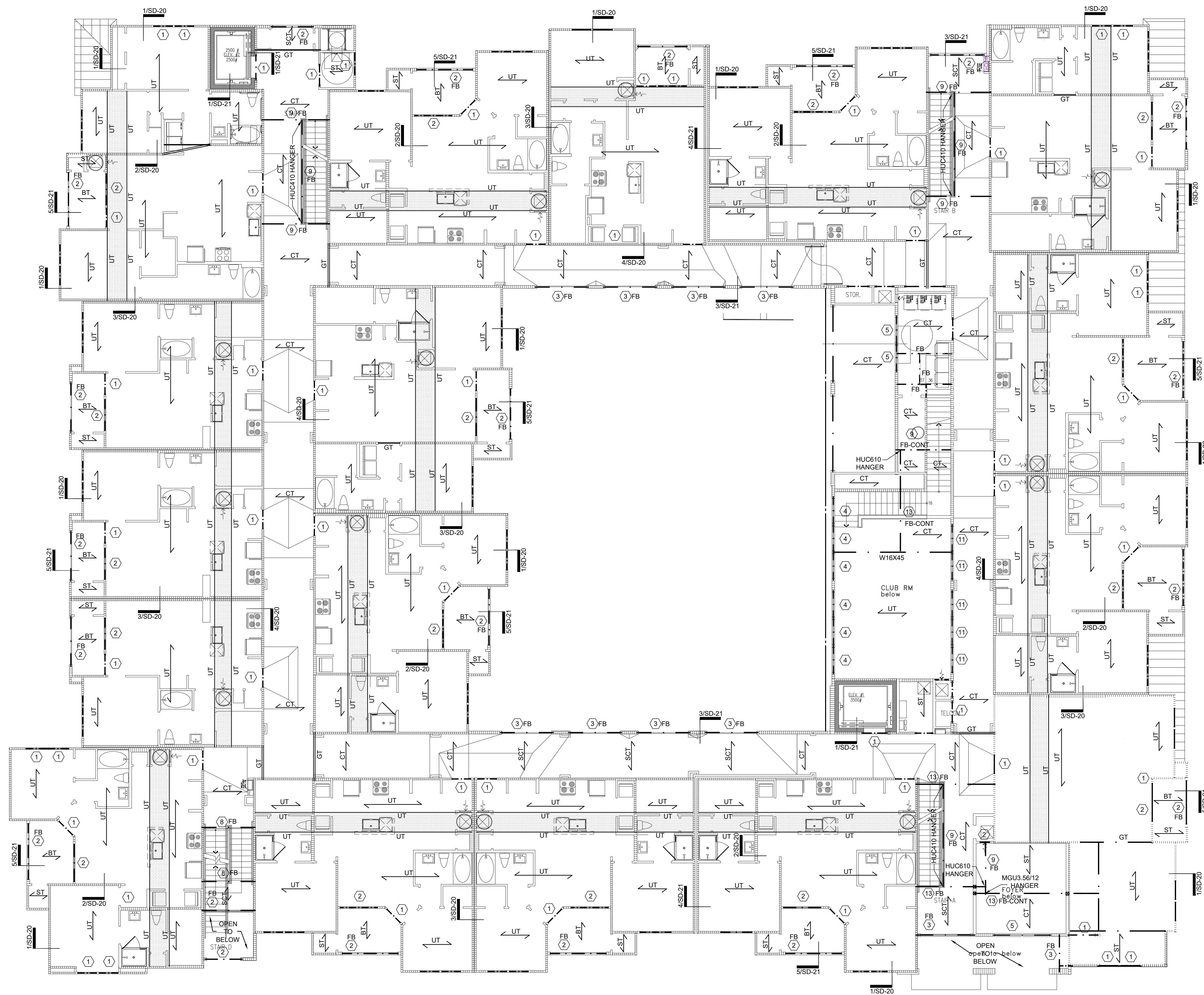
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2nd FLOOR
PODIUM
REINFORCING PLAN

1/8" = 1'-0"

S1-22



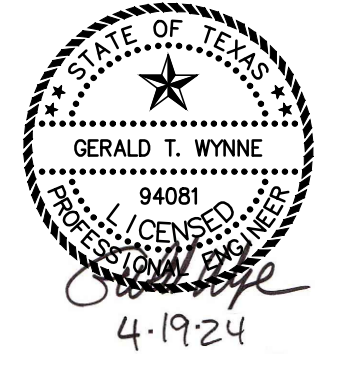
- FRAMING NOTES:**
- FLOOR FRAMING SHALL BE PRE-ENGINEERED WOOD TRUSSES AS FOLLOWS:
 UT = 18" DEEP UNIT TRUSSES AT 24" O.C.
 CT = 18 1/2" DEEP CORRIDOR TRUSSES AT 24" O.C.
 SCT = CORRIDOR TRUSS W/SLOPED TOP CHORD AT 24" O.C.
 BT = BALCONY TRUSS W/SLOPED TOP CHORD AT 24" O.C.
 ST = 16 1/2" DEEP BALCONY TRUSS IN STORAGE CLOSET AT 24" O.C.
 - SPAN ARROWS INDICATE TRUSS SPAN DIRECTION. ACTUAL LAYOUT OF TRUSSES SHALL BE PROVIDED BY TRUSS MANUFACTURER.
 - HATCHED WALLS ON PLAN INDICATE LOAD BEARING WALL LOCATIONS. REFER TO STUD SCHEDULE FOR ADDITIONAL INFORMATION.
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 [Hatched Area Symbol] INDICATES OPEN CHASE AREA FROM MECHANICAL CLOSET. TRUSS LAYOUT TO ACCOMMODATE THIS OPEN AREA. SEE DETAIL 6/SD-31 FOR ADDITIONAL INFORMATION.
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HEADER/BEAM SCHEDULE

- (1) (2) 2X8
- (2) (2) 2X10
- (3) (2) 2X12
- (4) (3) 2X8
- (5) (3) 2X10
- (6) (3) 2X12
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- (15) 7 X 18 APB
- (16) 5.125 X 16.5 APB

FB = FLUSH BEAM
 NOTE: EXTERIOR OPENINGS AT NON-BRG WALLS SHALL HAVE (2) 2X6 OR LADDER FRAMED HEADERS, TYP. U.N.O.

3rd FLOOR FRAMING PLAN
 1/8" = 1'-0"



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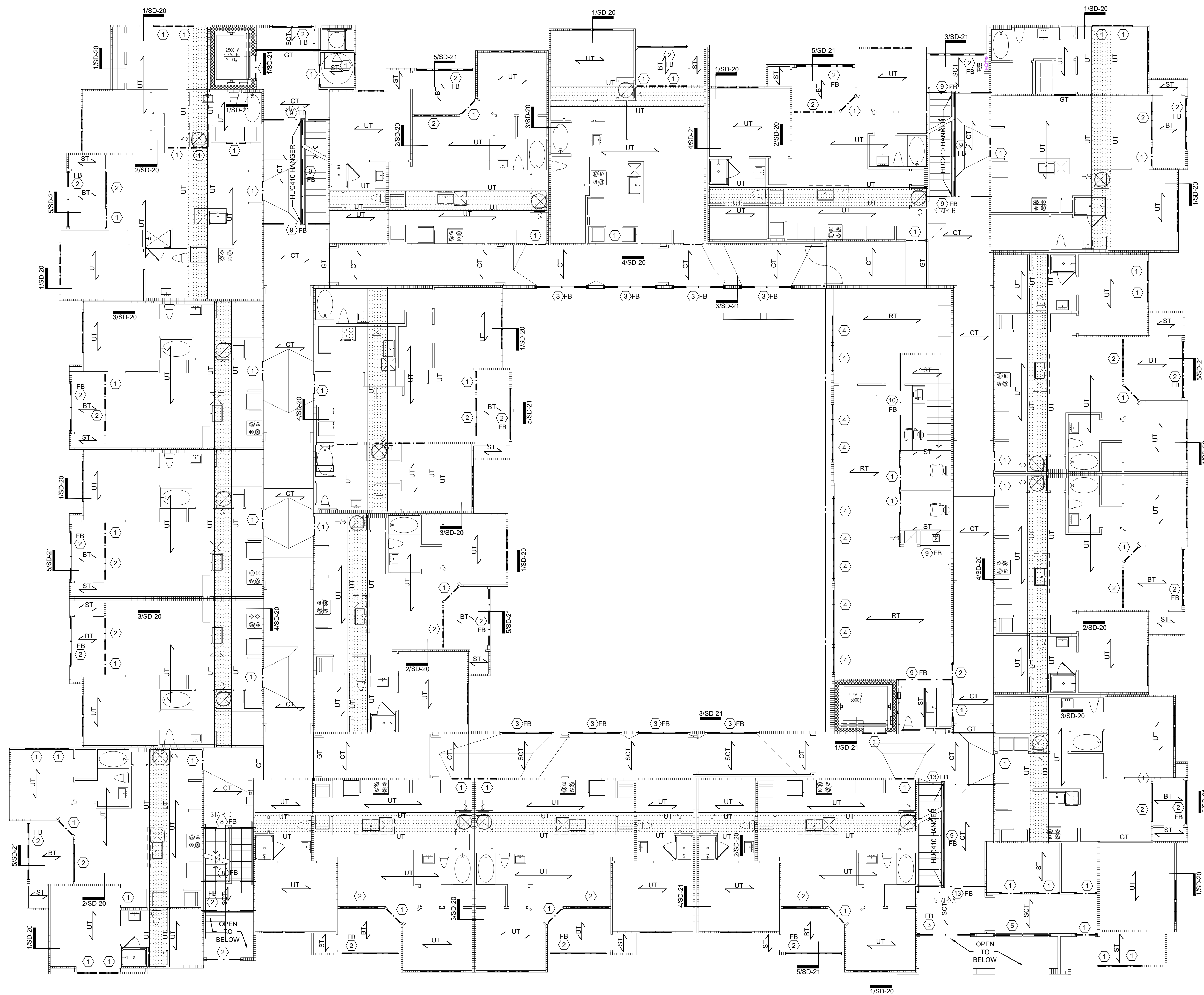
LOST OAKS
 A Multi-Family Community
 Harris County, Texas
 Job No. 2302

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3rd FLOOR FRAMING PLAN

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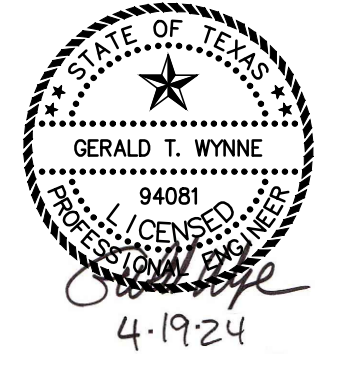
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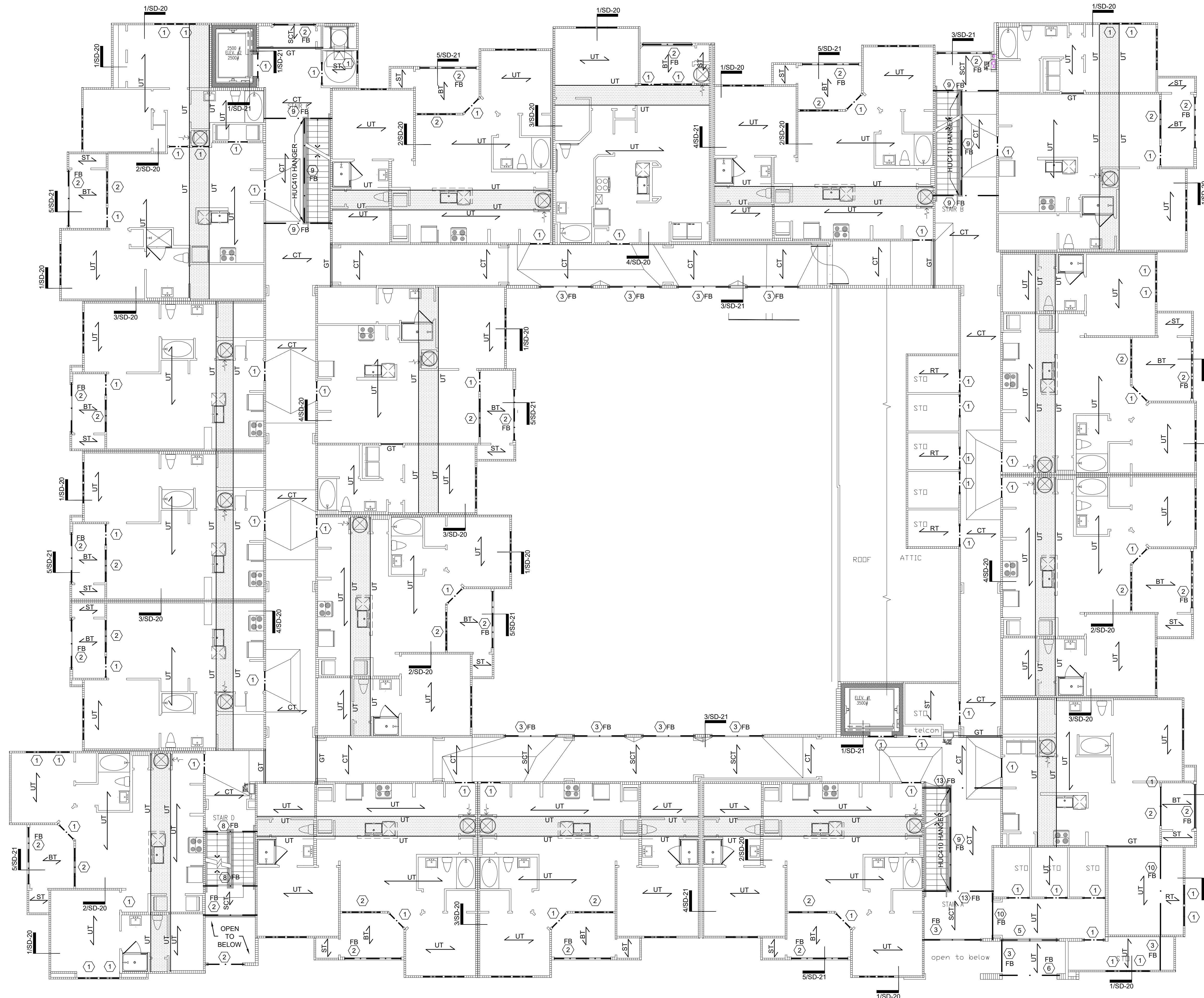
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4th FLOOR FRAMING PLAN

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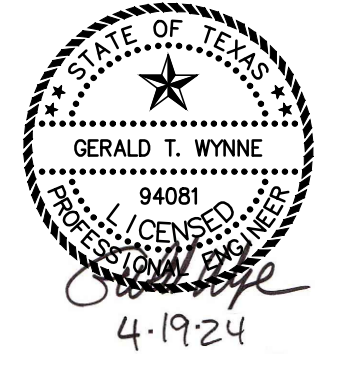
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5th FLOOR FRAMING PLAN
 1/8" = 1'-0"



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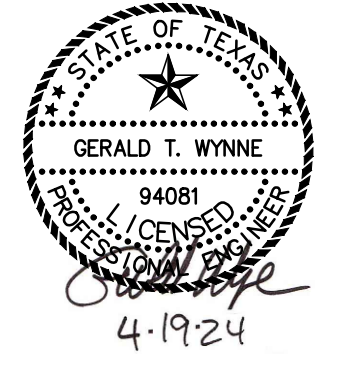
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5th FLOOR FRAMING PLAN

1/8" = 1'-0"





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ROOF FRAMING PLAN

1/8" = 1'-0"

S2-50

ROOF FRAMING NOTES:

- ROOF FRAMING SHALL BE PRE-ENGINEERED WOOD TRUSSES AT 24" O.C. (TYP., U.N.O.)
RT = ROOF TRUSS AT 24" O.C.
GT = GIRDER TRUSS
DF= INDICATES DRAG TRUSS TO ALIGN WITH SHEARWALL BELOW AND REQUIRED DRAG FORCE. SEE DETAILS FOR ADDITIONAL INFORMATION.
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UPLIFT ANCHORAGE SCHEDULE

LOCATION	TRUSS TO TOP PLATE	TOP PLATE TO STUD	STUD TO BOTTOM PLATE	FLOOR TO FLOOR
5TH LEVEL	H2.5A @ 24" O.C.	TSP @ 48" O.C.	2-SCREWS @48" O.C. SIMPSON SDWC15450 (*)	1-SDWF2724-TUW @ 48" O.C. (*)
4TH LEVEL	(NR)	2-SCREWS @48" O.C. SIMPSON SDWC15600 (*)	2-SCREWS @48" O.C. SIMPSON SDWC15450 (*)	1-SDWF2724-TUW @ 48" O.C. (*)
3RD LEVEL	(NR)	2-SCREWS @48" O.C. SIMPSON SDWC15600 (*)	2-SCREWS @48" O.C. SIMPSON SDWC15450 (*)	(NR)
1ST/2ND LEVEL	(NR)	(NR)	(NR)	(NR)

- UPLIFT SCHEDULE NOTES:
 (1) PROVIDE ANCHORAGE SHOWN AT ALL ROOF TRUSS BEARING WALLS.
 (2) (*) INDICATES THESE ANCHORS ARE NOT REQUIRED WHERE ROOF TRUSS SPAN IS LESS THAN 8'-0".
 (3) (NR) INDICATES NO ANCHOR IS REQUIRED AT THIS LOCATION.
 (4) ALL ANCHORS SHOWN ARE SIMPSON STRONG-TIE PRODUCTS. OTHER PRODUCTS MAY BE ACCEPTABLE PENDING ENGINEER REVIEW.
 (5) REFER TO FRAMING DETAILS FOR MORE INFORMATION REGARDING ANCHOR PLACEMENT.

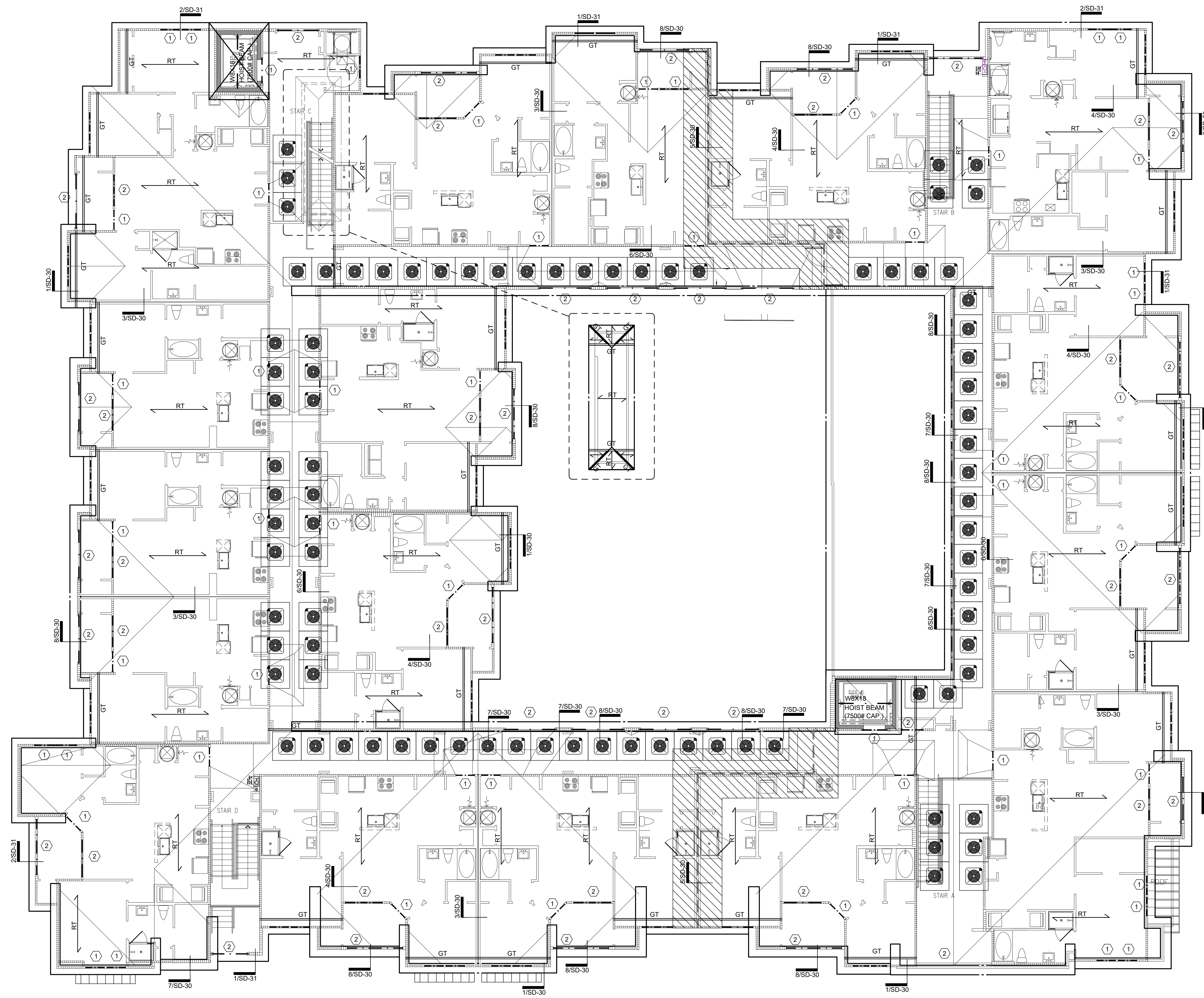
GT UPLIFT ANCHORAGE:
 ALL GT > 15' LONG SHALL BE FASTENED TO THE STUDS BELOW WITH AN LGT2/LG3 ANCHOR. PROVIDE 1/2" DIA ALL-THREAD ROD ADJACENT TO STUD PACK CONT. TO FOUNDATION. DRILL AND EPOXY ROD TO FOUNDATION WITH 10" MIN EMBEDMENT

HEADER/BEAM UPLIFT ANCHORAGE:
 ALL BEAMS & HEADERS AT THE TOP LEVEL > 5' LONG SHALL BE FASTENED TO THE STUDS BELOW WITH (1) CS16 STRAP EACH END WITH 11-10d NAILS EACH MEMBER. PROVIDE 1/2" DIA ALL-THREAD ROD ADJACENT TO OPENING. CONT. THRU THE TOP PLATE OF THE 2ND FLOOR WITH A NUT AND WASHER. NOTE: ROD IS NOT REQUIRED WHERE A SHEARWALL ANCHOR OCCURS.

HEADER/BEAM SCHEDULE

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- FB = FLUSH BEAM

NOTE: EXTERIOR OPENINGS AT NON-BRG WALLS SHALL HAVE (2) 2X6 OR LADDER FRAMED HEADERS, TYP. U.N.O.



ROOF FRAMING PLAN

1/8" = 1'-0"

BRACING PLAN NOTES:

1. SHEARWALL AND HOLDDOWN TYPES ARE IDENTIFIED AS FOLLOWS:

- ☒ = SHEARWALL TYPE AND NAIL SPACING
- ⊗ = HOLDDOWN TYPE AND LOCATION

REFER TO SHEARWALL AND HOLDDOWN SCHEDULES (SHEETS SD-40, 41) FOR ADDITIONAL INFORMATION.

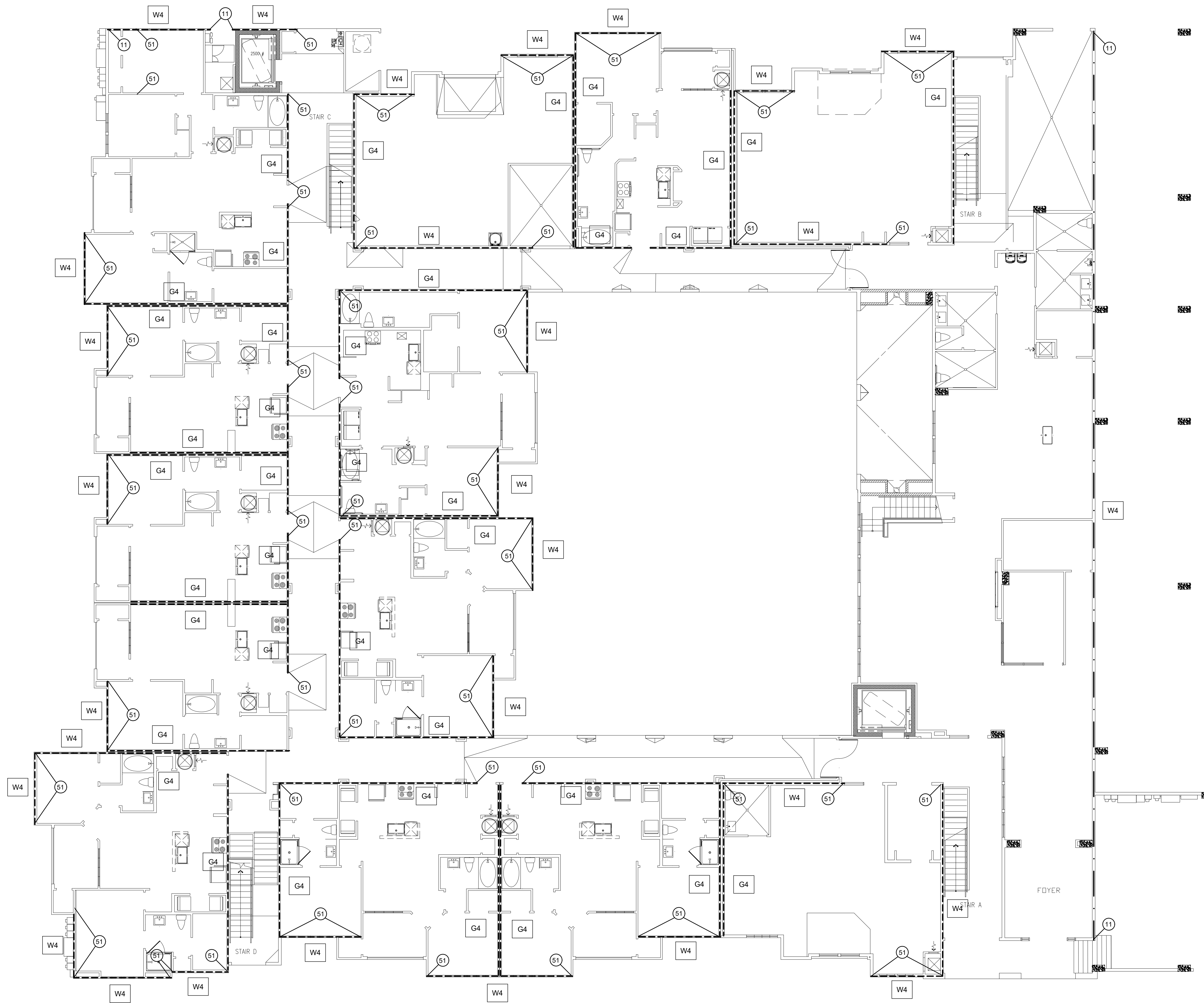
2. HATCHED LINE SHOWN ON PLAN INDICATES SHEARWALL LOCATIONS AND APPROXIMATE LENGTH. REFER TO SHEARWALL SCHEDULE AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

3. SHEARWALL SHEATHING SHALL EXTEND FULL HEIGHT OF WALL FROM PLATE TO PLATE AND FULL LENGTH OF WALL INDICATED ON PLAN INCLUDING BEHIND TUBS, FURR-DOWNS, WALL BUMP-OUTS, AND CHASES, U.N.O.

4. ALL SHEARWALL SHEATHING SHALL BE ATTACHED DIRECTLY TO THE FACE OF THE STUDS. ALL SOUND CHANNELS INDICATED ON THE ARCHITECTURAL DRAWINGS SHALL BE INSTALLED ON THE OPPOSITE FACE OF THE SHEARWALL.

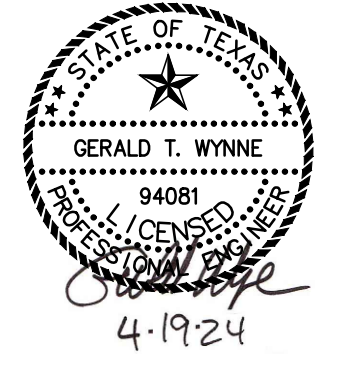
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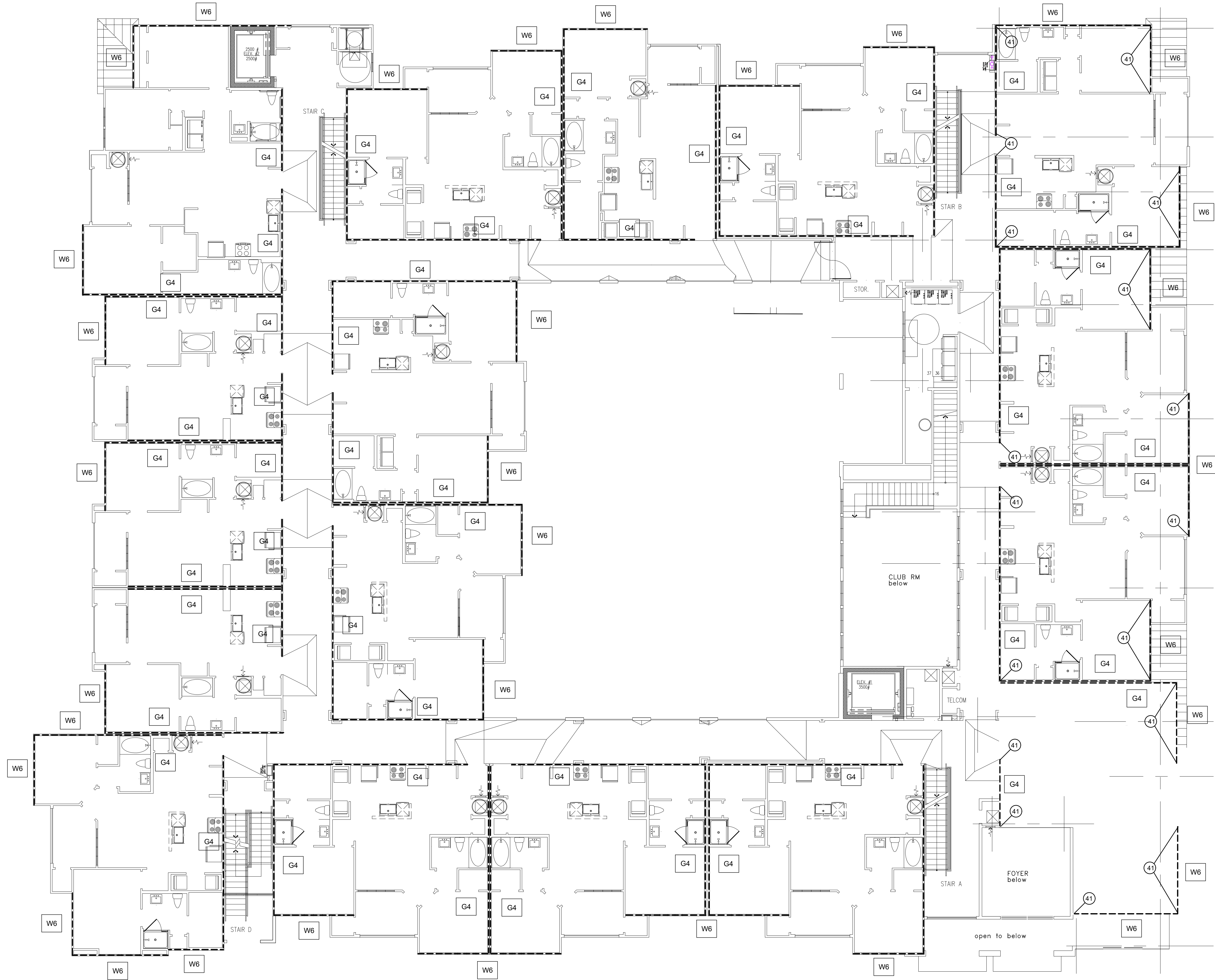
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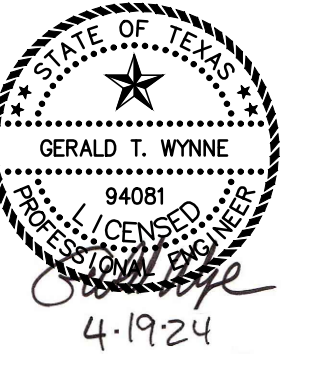
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2ND FLOOR BRACING PLAN

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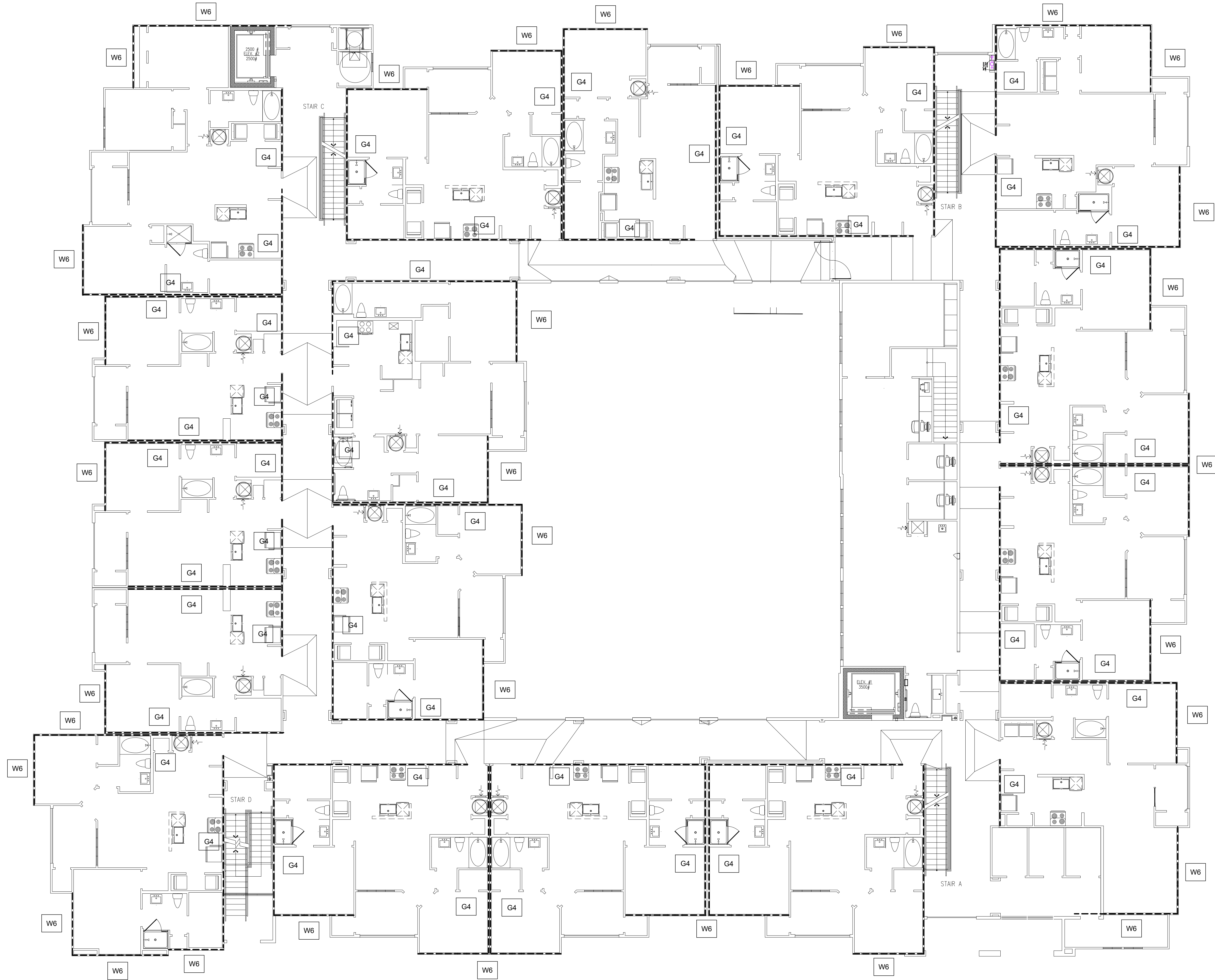
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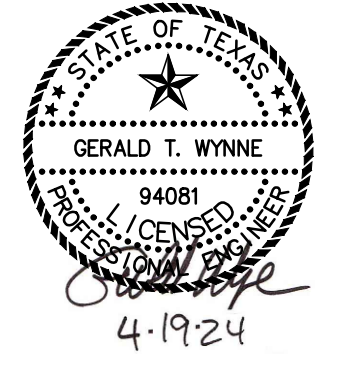
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- ☒ = SHEARWALL TYPE AND NAIL SPACING
- ⊗ = HOLDDOWN TYPE AND LOCATION

REFER TO SHEARWALL AND HOLDDOWN SCHEDULES (SHEETS SD-40, 41) FOR ADDITIONAL INFORMATION.

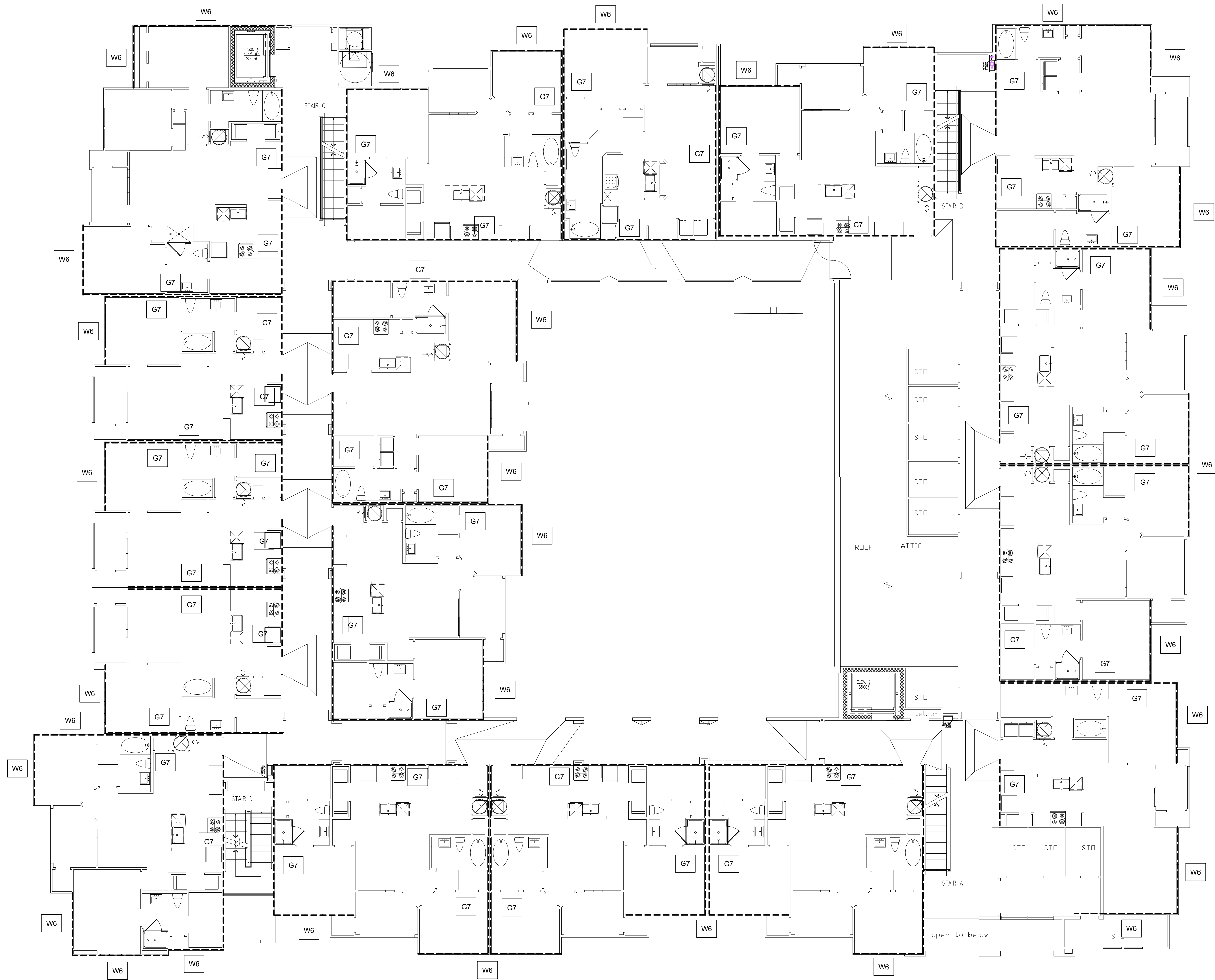
2. HATCHED LINE SHOWN ON PLAN INDICATES SHEARWALL LOCATIONS AND APPROXIMATE LENGTH. REFER TO SHEARWALL SCHEDULE AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

3. SHEARWALL SHEATHING SHALL EXTEND FULL HEIGHT OF WALL FROM PLATE TO PLATE AND FULL LENGTH OF WALL INDICATED ON PLAN INCLUDING BEHIND TUBS, FURR-DOWNS, WALL BUMP-OUTS, AND CHASES, U.N.O.

4. ALL SHEARWALL SHEATHING SHALL BE ATTACHED DIRECTLY TO THE FACE OF THE STUDS. ALL SOUND CHANNELS INDICATED ON THE ARCHITECTURAL DRAWINGS SHALL BE INSTALLED ON THE OPPOSITE FACE OF THE SHEARWALL.

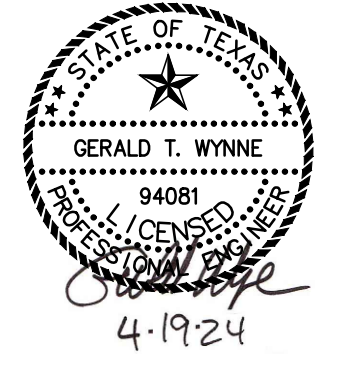
4. COORDINATE PLUMBING, MECHANICAL, AND ELECTRICAL LOCATIONS WITH SHEARWALL AND HOLDDOWN INSTALLATION. STRUCTURAL MEMBERS SHALL NOT BE DAMAGED DUE TO INSTALLATION BY OTHER TRADES AND ENGINEER SHALL BE NOTIFIED OF CONFLICTS FOR PROPER RESOLUTION. REFER TO STRUCTURAL NOTES AND DETAILS FOR ACCEPTABLE REPAIRS FOR TYPICAL CONDITIONS.

5. ALL DETAILS AND SECTIONS SHALL BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS, U.N.O.



4TH FLOOR BRACING PLAN

1/8" = 1'-0"



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LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

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4TH FLOOR BRACING PLAN

1/8" = 1'-0"



BRACING PLAN NOTES:

1. SHEARWALL AND HOLDDOWN TYPES ARE IDENTIFIED AS FOLLOWS:

☒ = SHEARWALL TYPE AND NAIL SPACING

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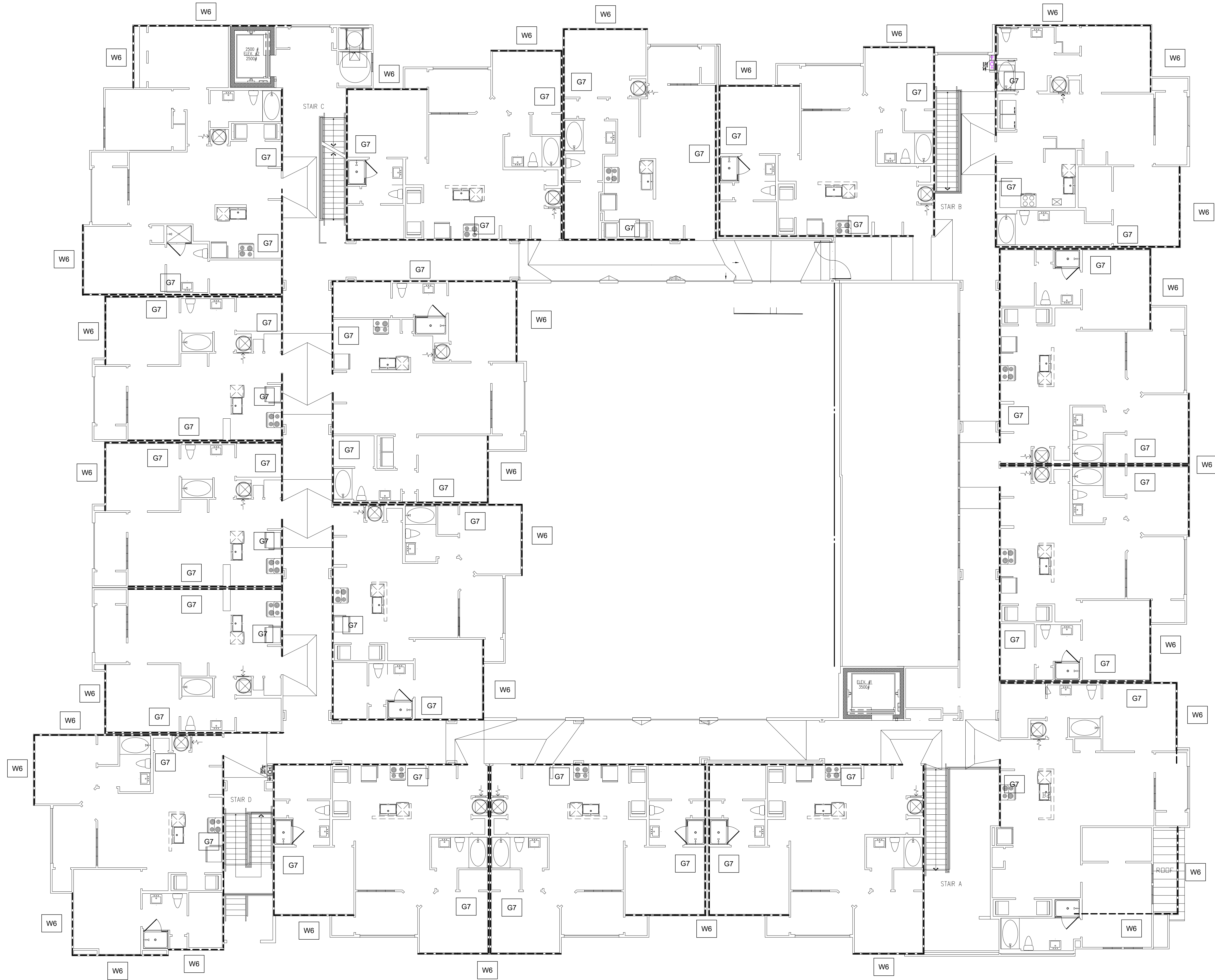
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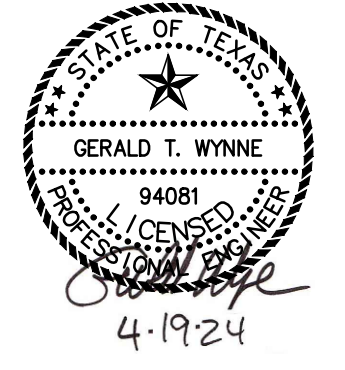
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5TH FLOOR BRACING PLAN

1/8" = 1'-0"



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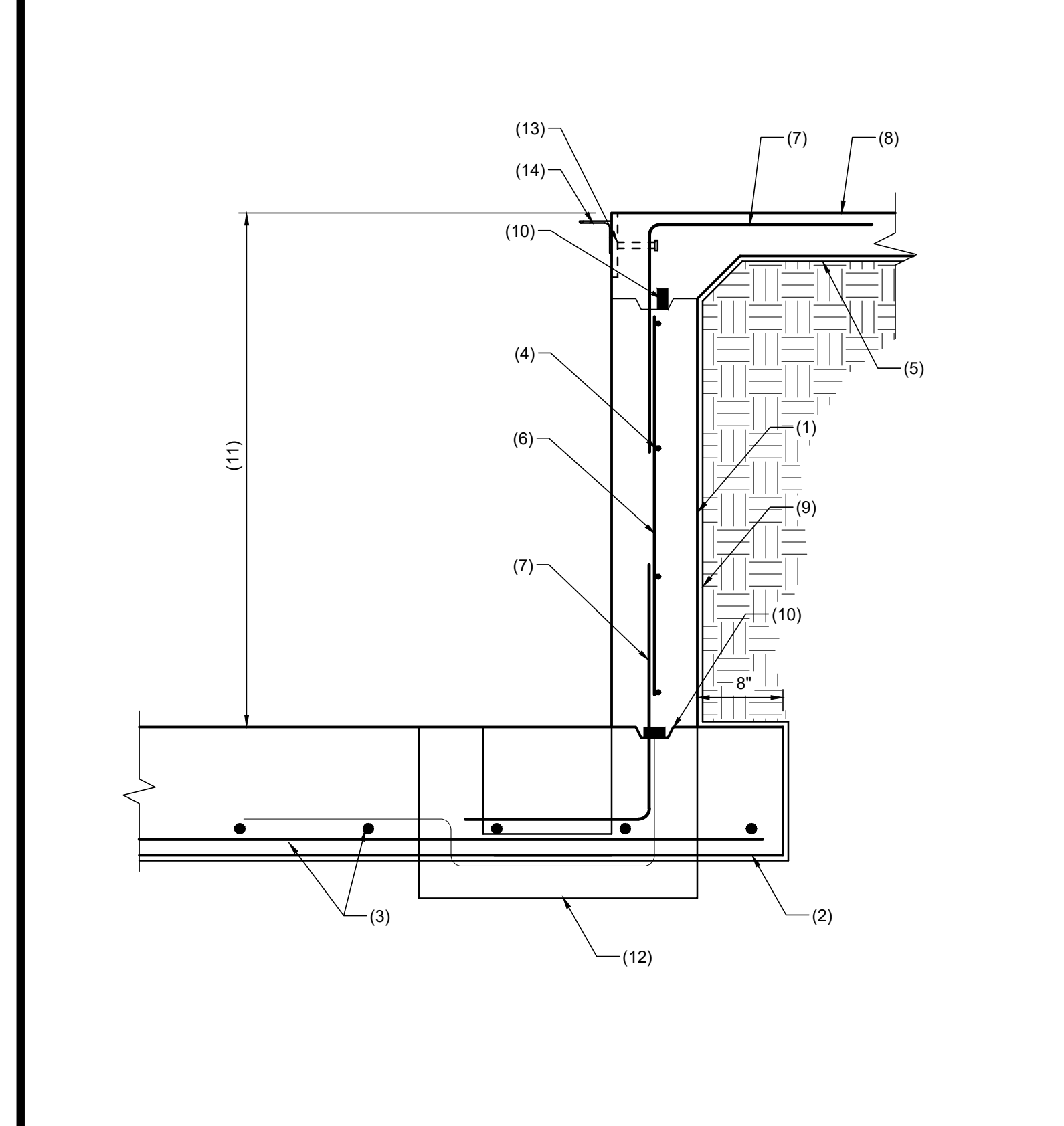
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5TH FLOOR BRACING PLAN

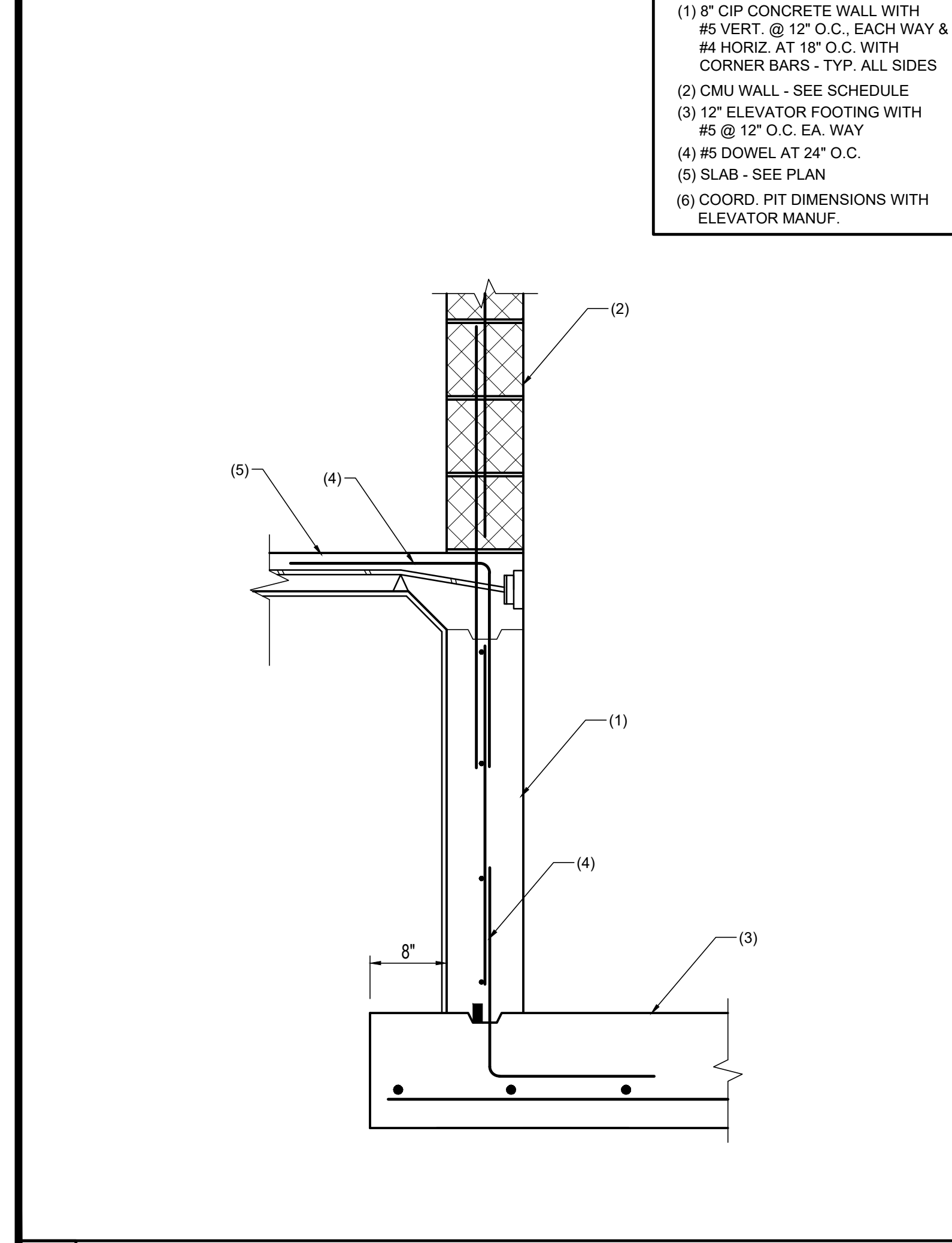
1/8" = 1'-0"



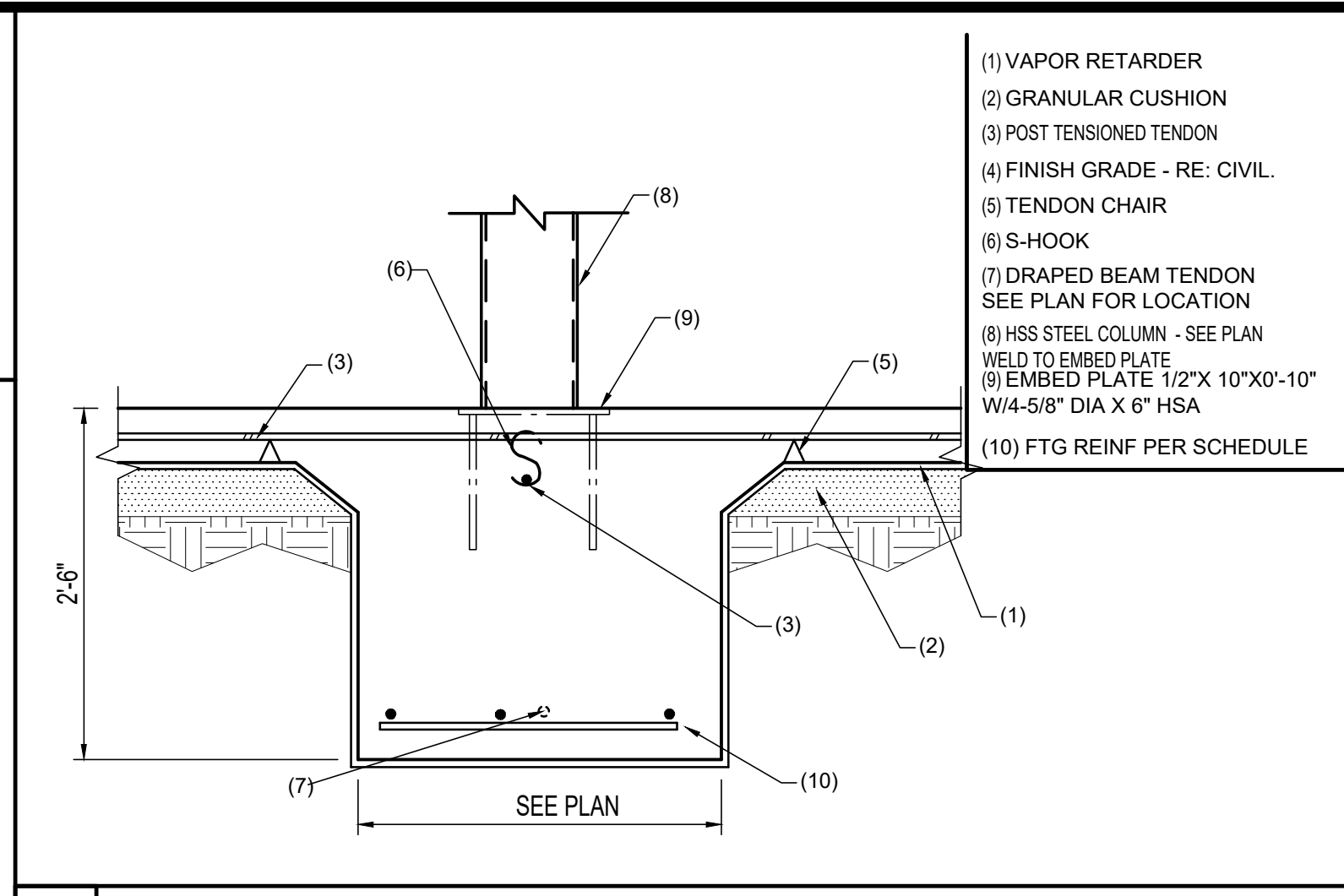
- (1) 8" CIP CONCRETE WALL
- (2) 12" THICK CONCRETE SLAB
- (3) #5 AT 12" O.C., EACH WAY
- (4) #4 HORIZ. AT 18" O.C. WITH CORNER BARS - TYP. ALL SIDES
- (5) VAPOR RETARDER
- (6) #5 AT 12" O.C. VERT. TYP. ALL SIDES
- (7) #5 DOWEL AT 24" O.C.
- (8) SEE PLAN FOR SLAB THICKNESS AND REINFORCING
- (9) WATERPROOFING - RE: ARCH.
- (10) CONT. KEYWAY W/ WATERSTOP
- (11) COORD. PIT DIMENSIONS WITH ELEVATOR MANUF.
- (12) ELEVATOR SUMP - COORD WITH ELEV. MANUF AND MEP DWGS.
- (13) SILL ANGLE EMBED PLATE 1/2" X 8" X 8" WITH (4) 1/2" DIA. X 4" HSA
- (14) ELEVATOR SILL ANGLE PER ELEV. MANUF.



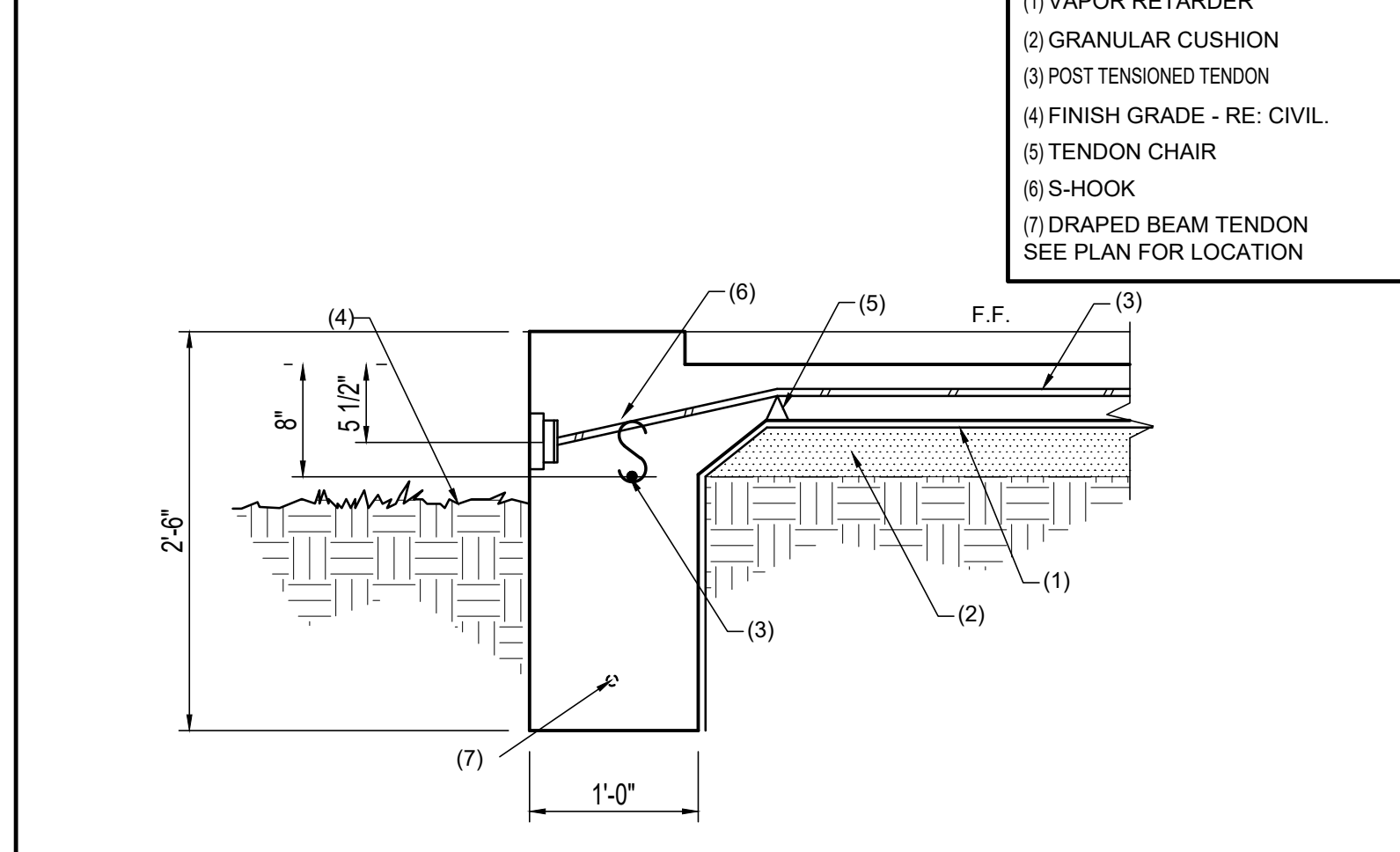
14 SECTION at ELEVATOR PIT



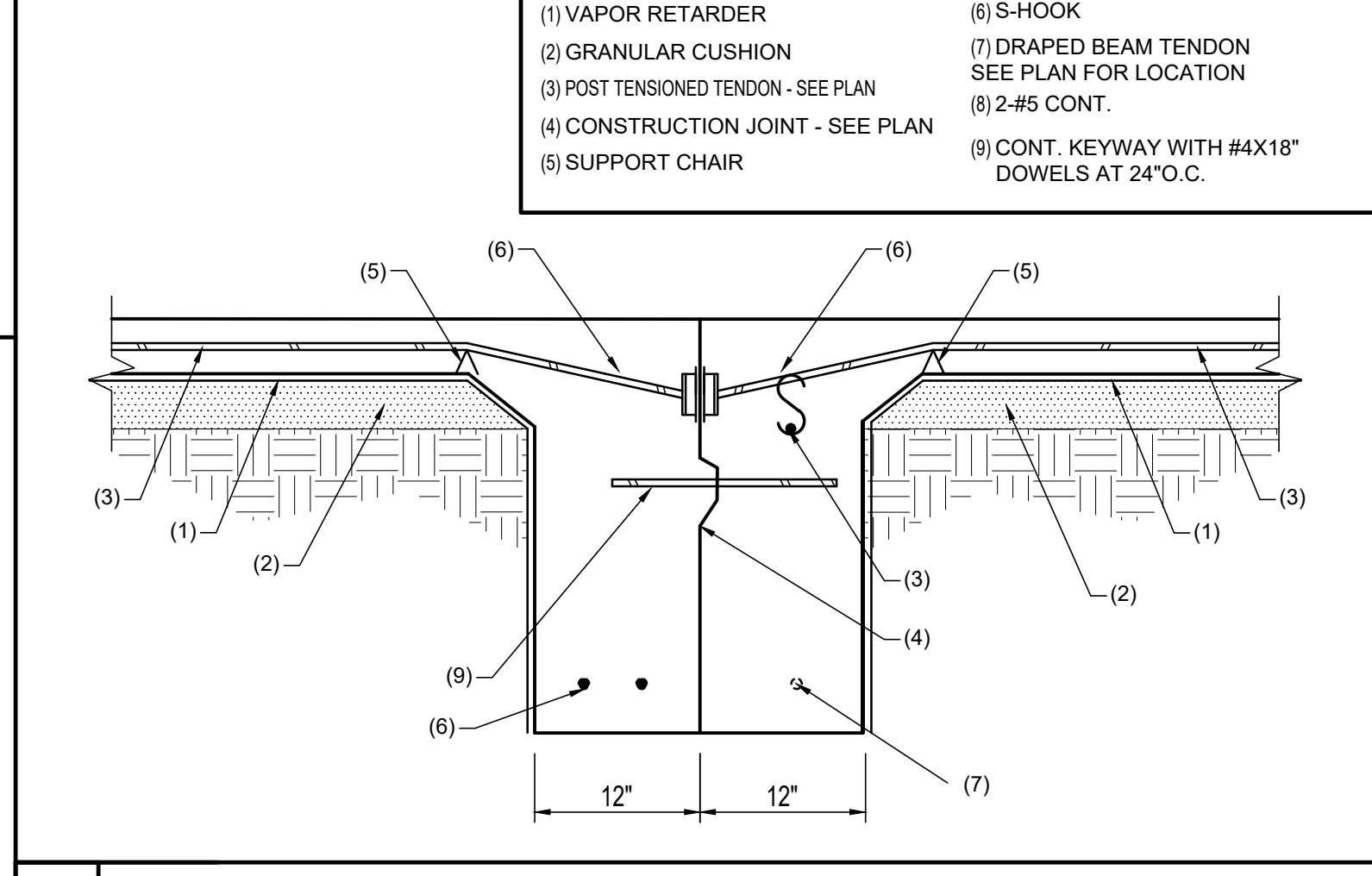
13 SECTION at ELEVATOR PIT



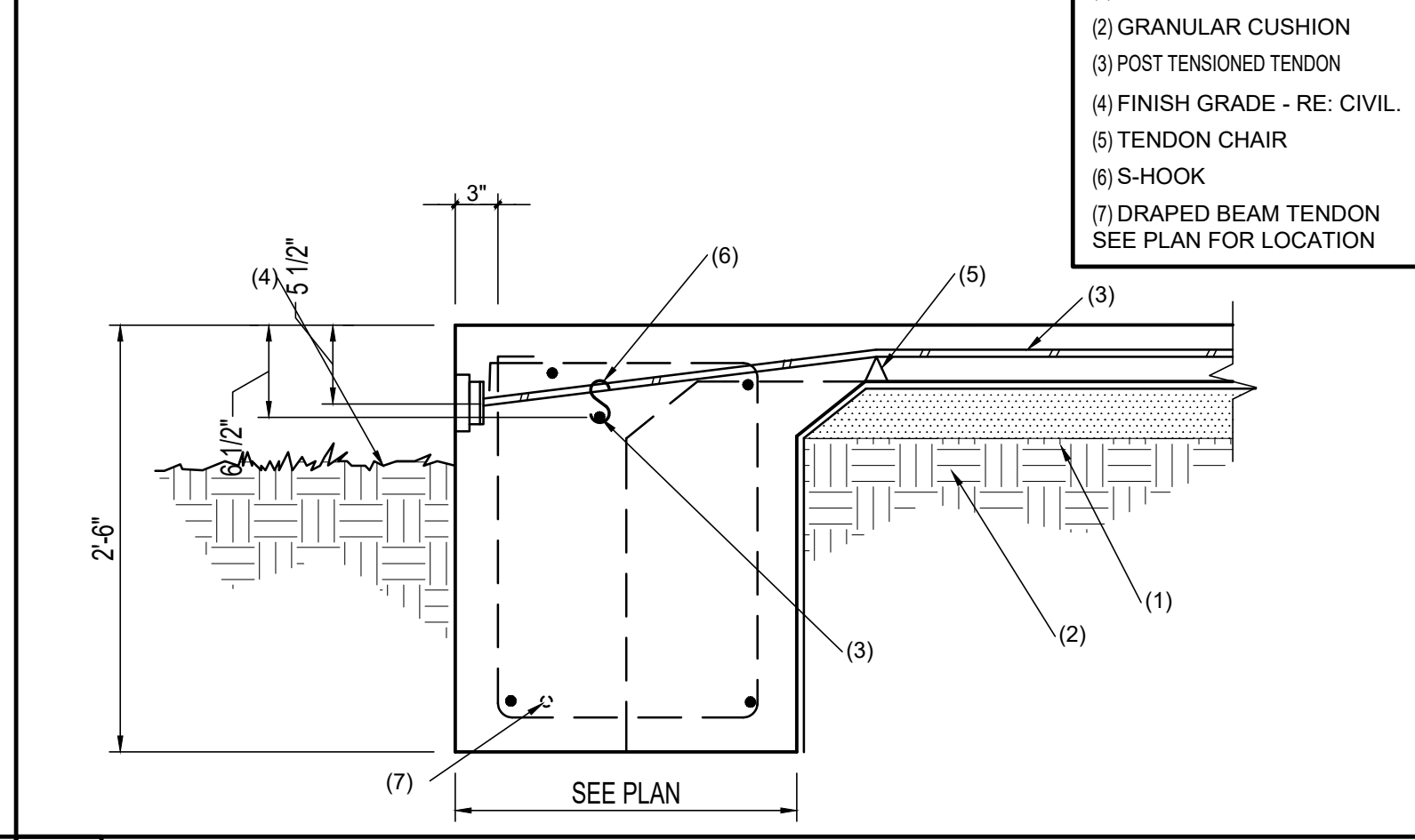
12 DETAIL AT STEEL COLUMN-INTERIOR



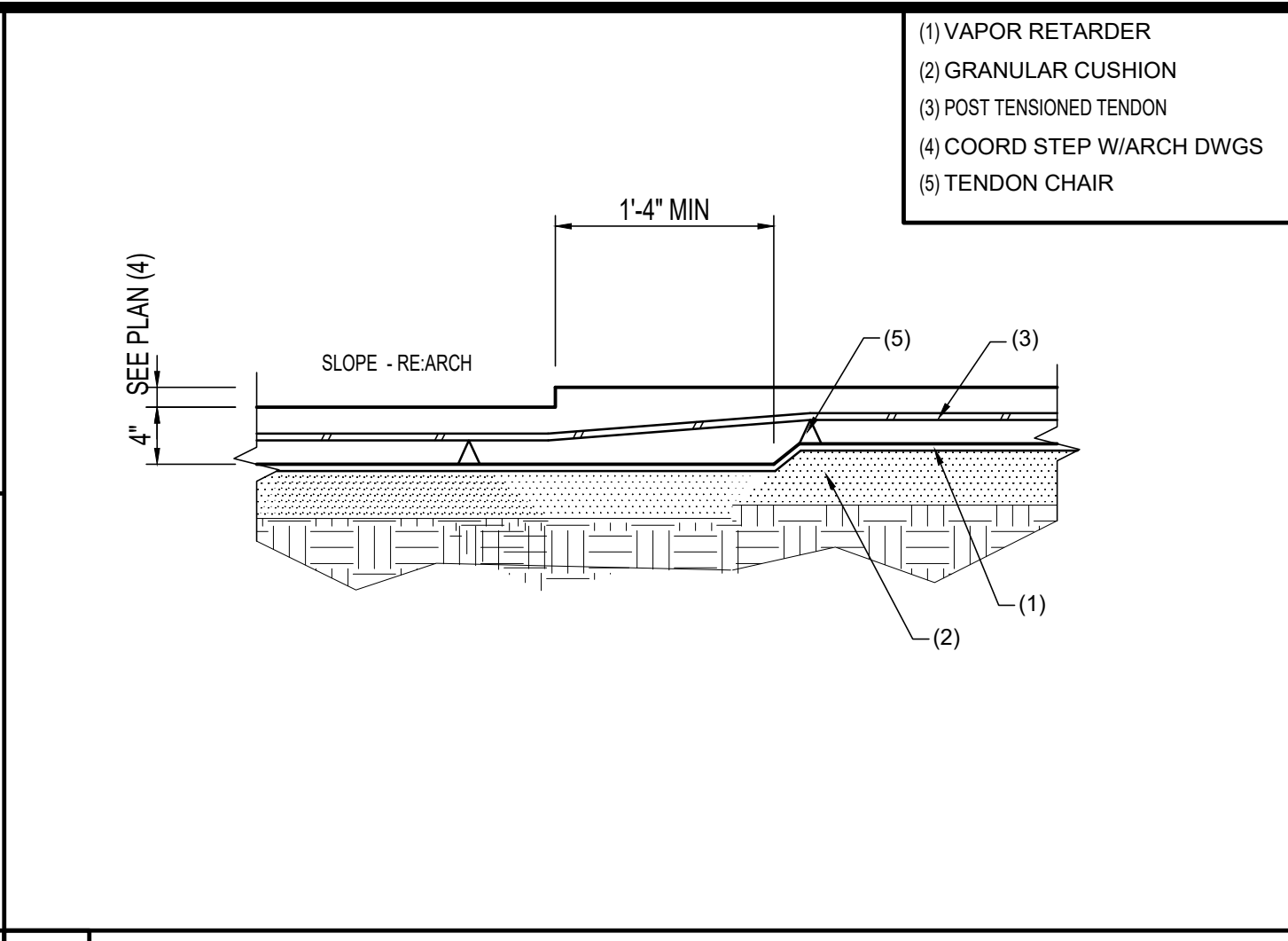
11 GRADE BEAM DETAIL



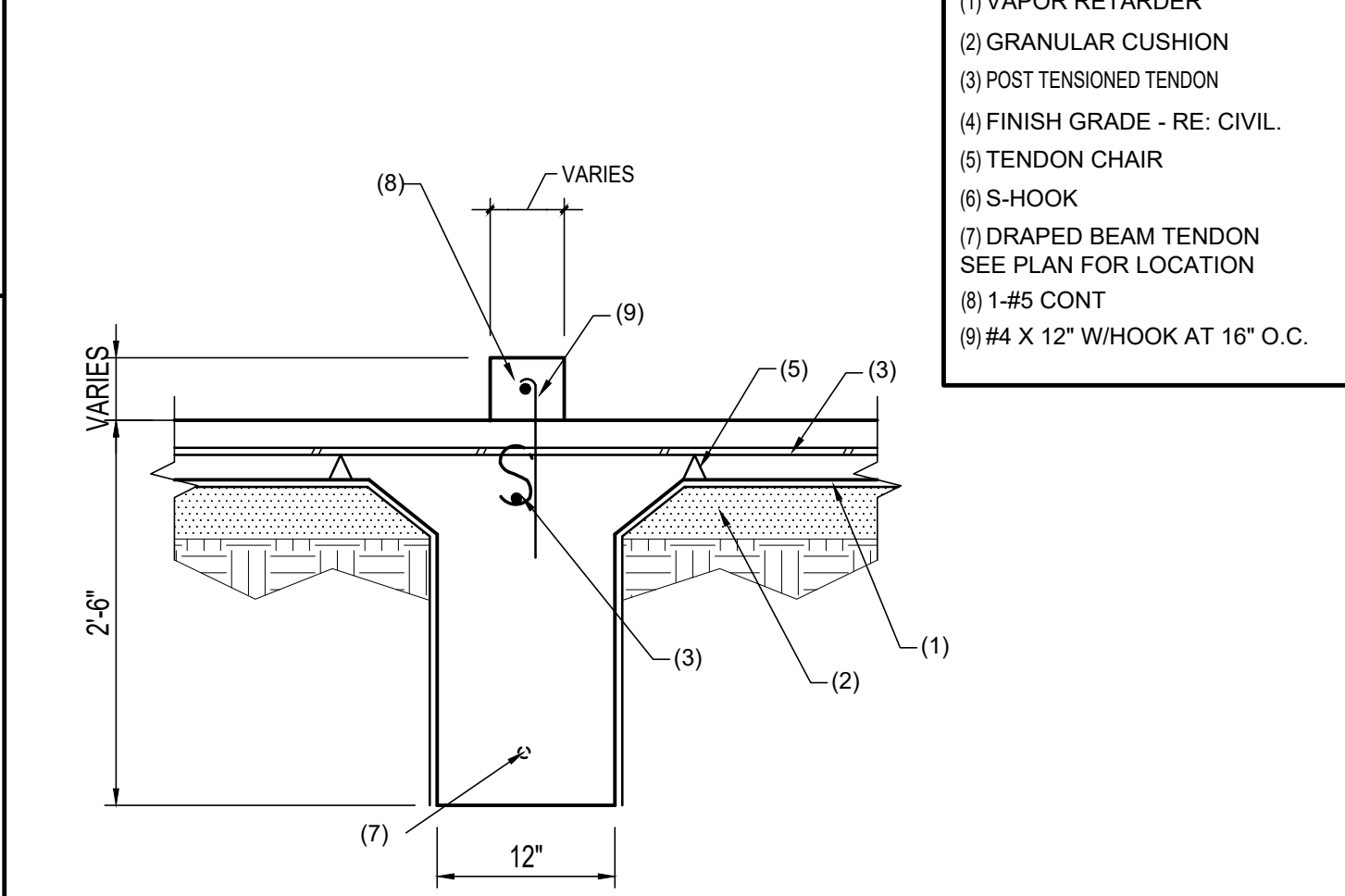
10 DETAIL AT CONSTRUCTION JOINT



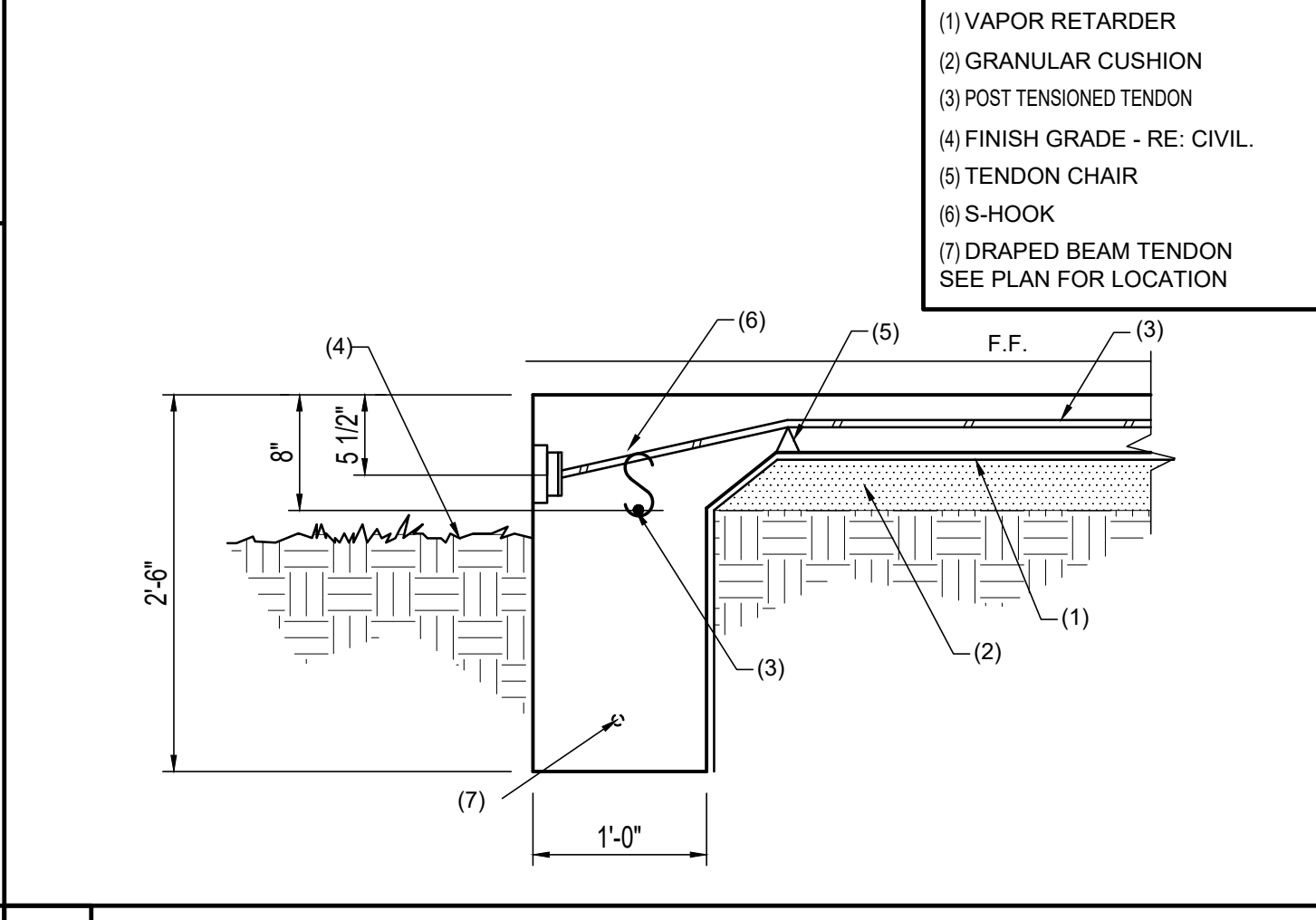
9 THICKEND GRADE BEAM DETAIL



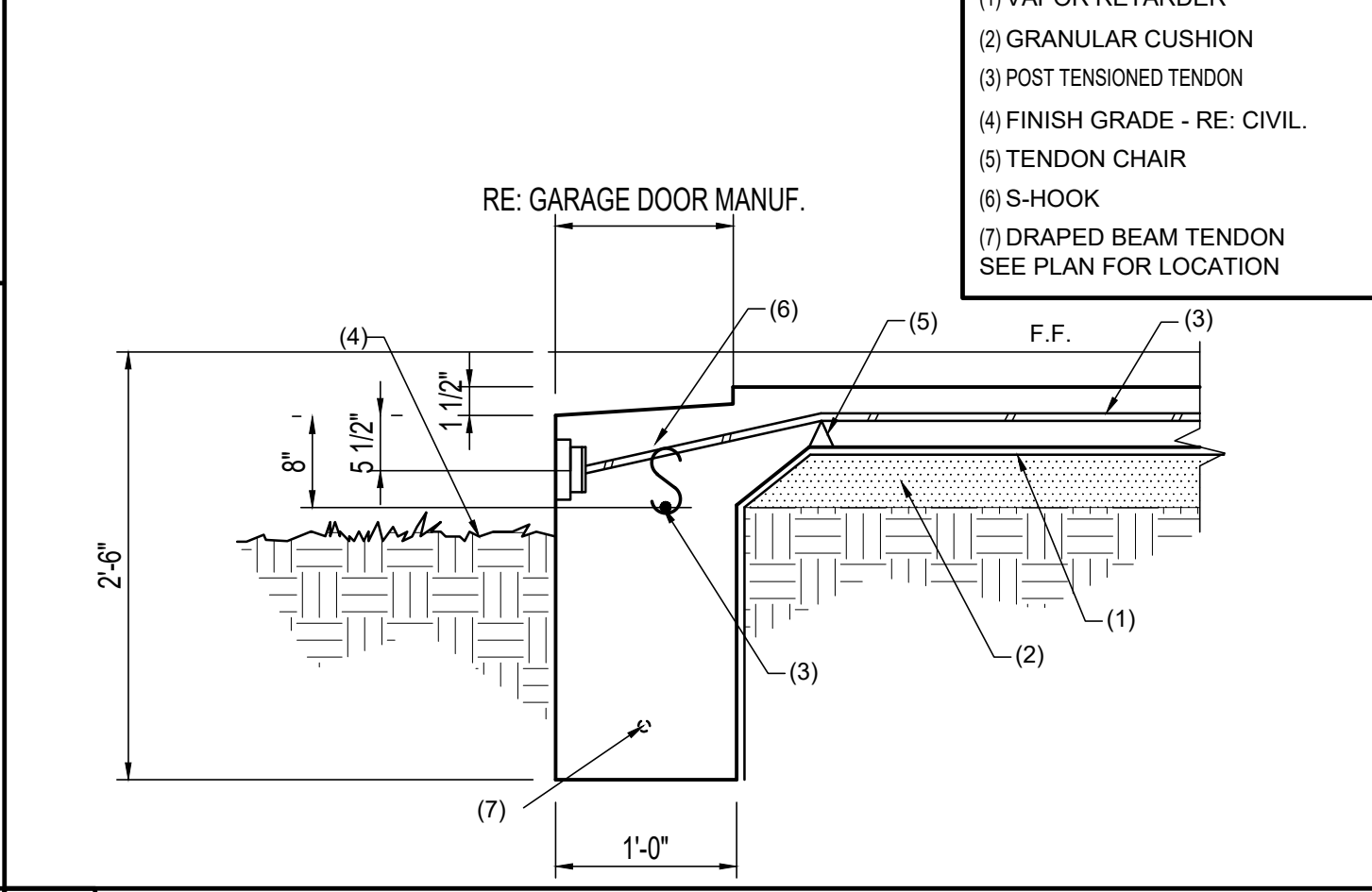
8 SLAB DROP DETAIL



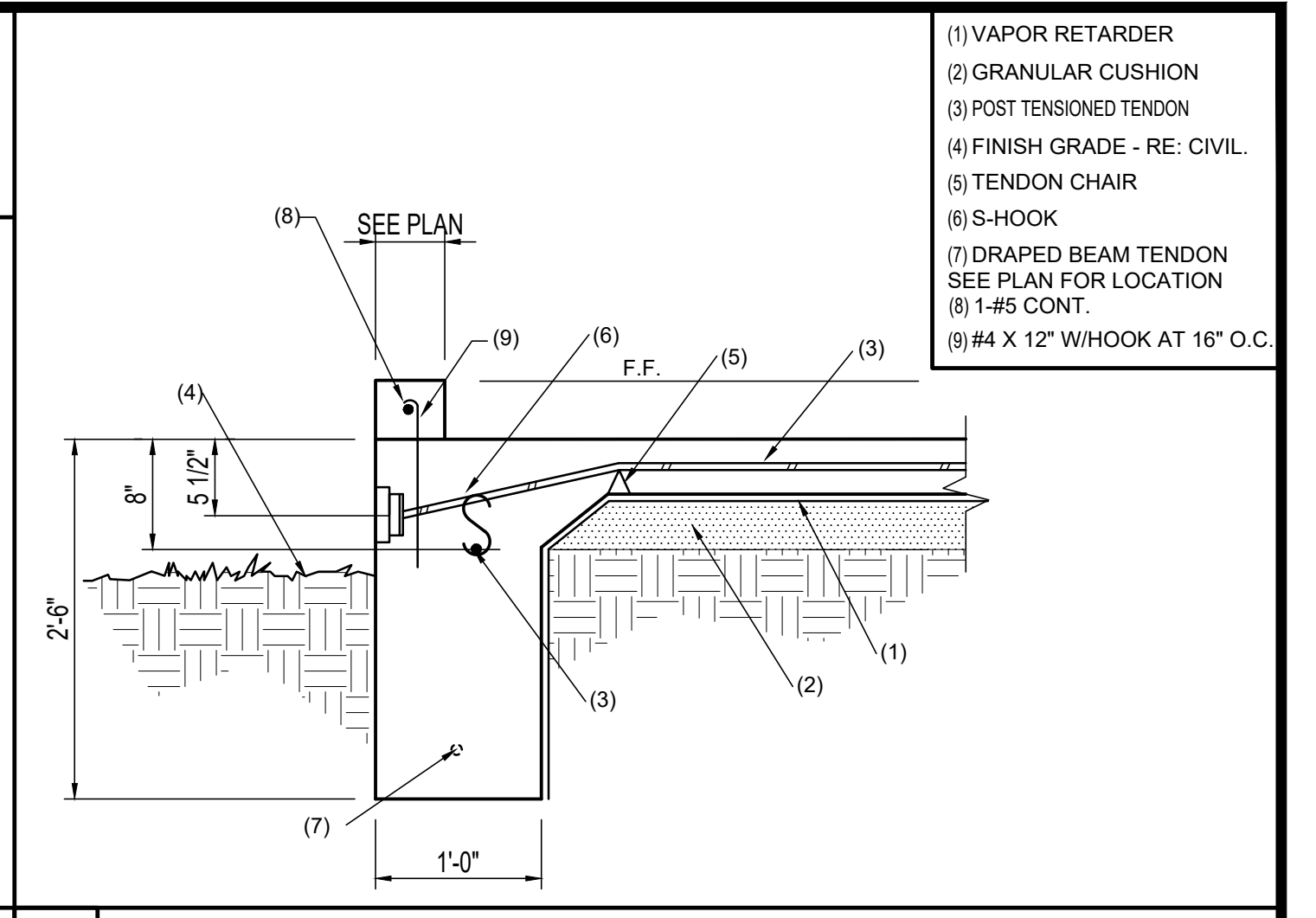
7 INTERIOR GRADE BEAM W/CURB



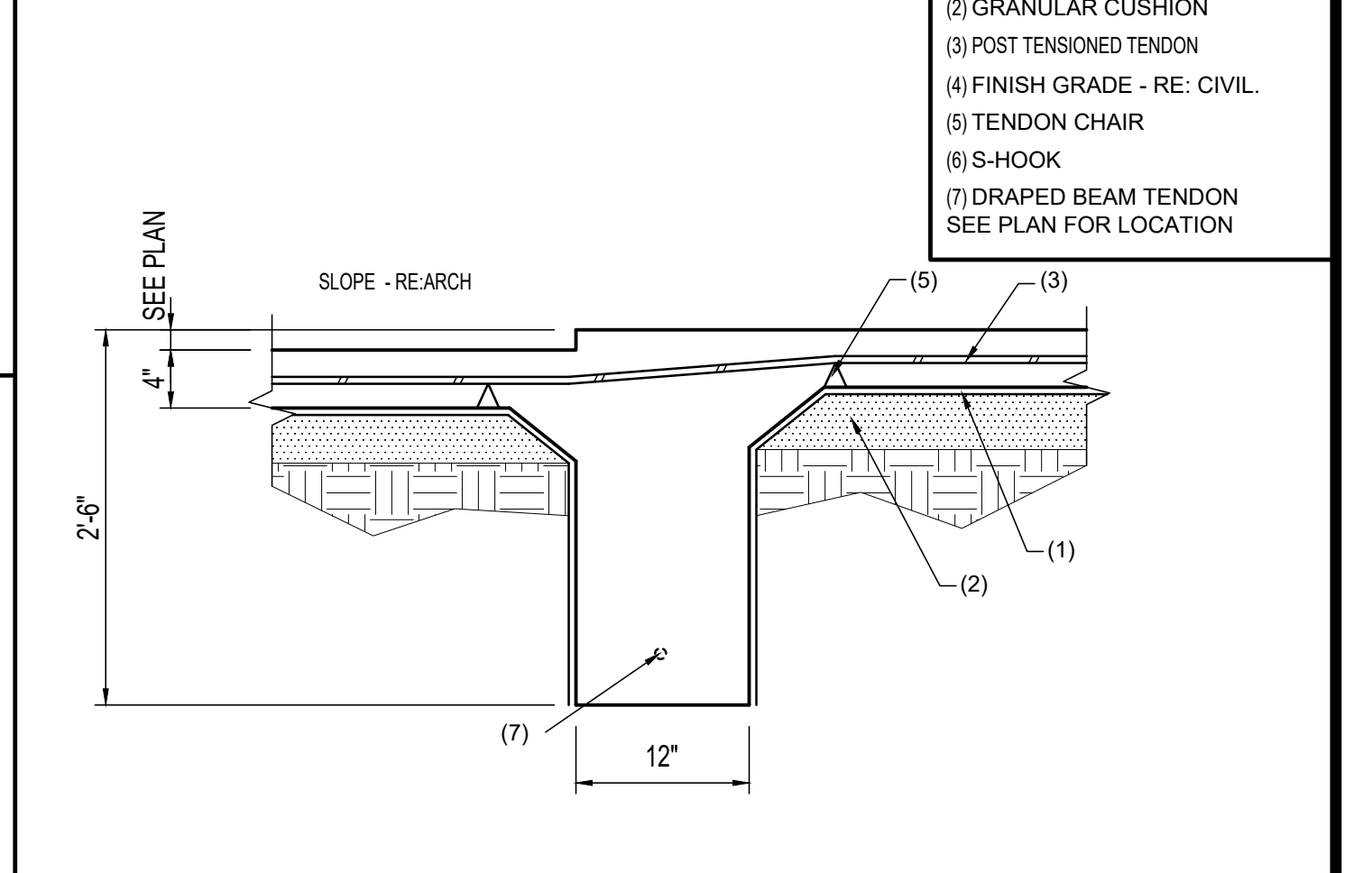
6 GRADE BEAM DETAIL



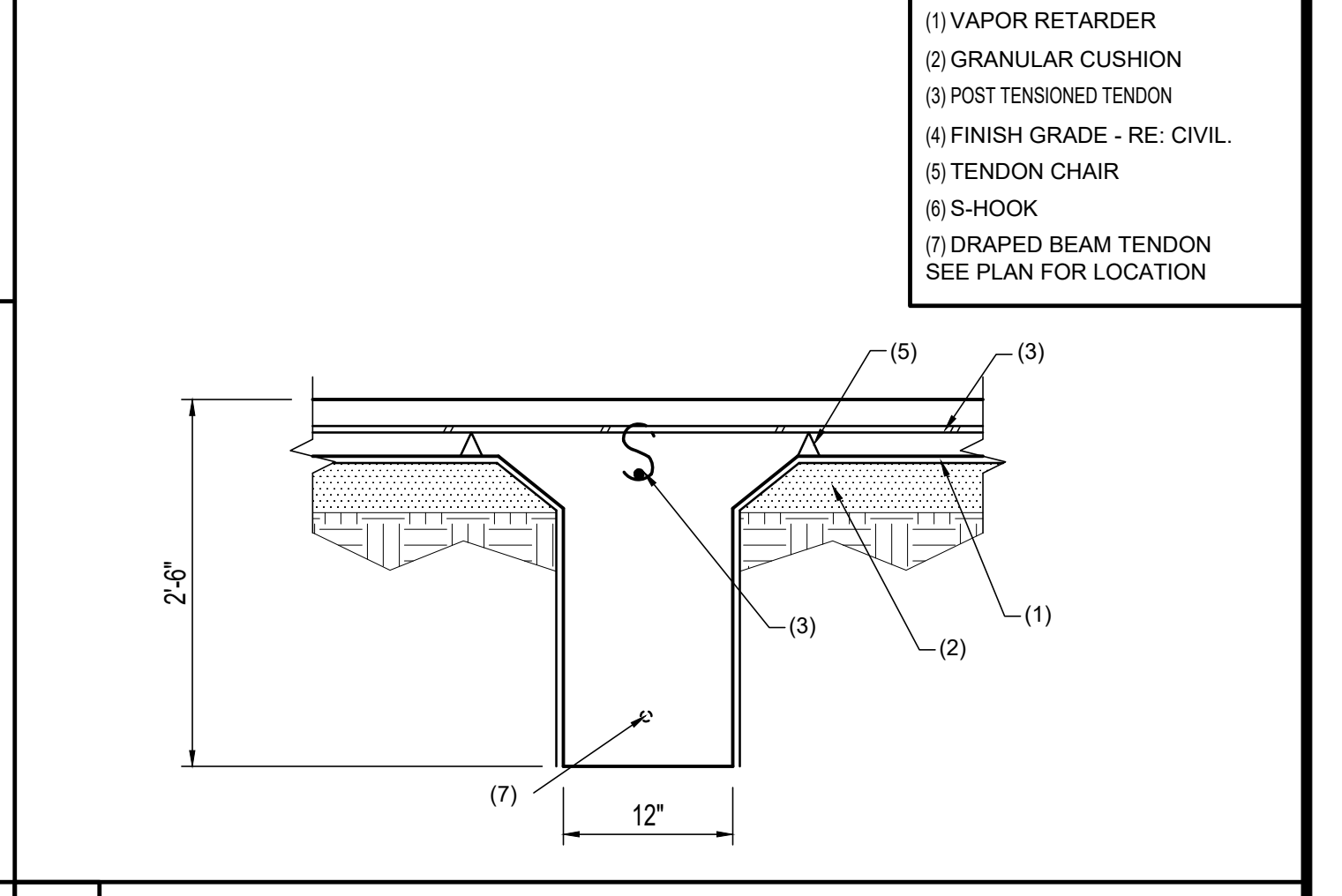
5 GRADE BEAM DETAIL AT GARAGE



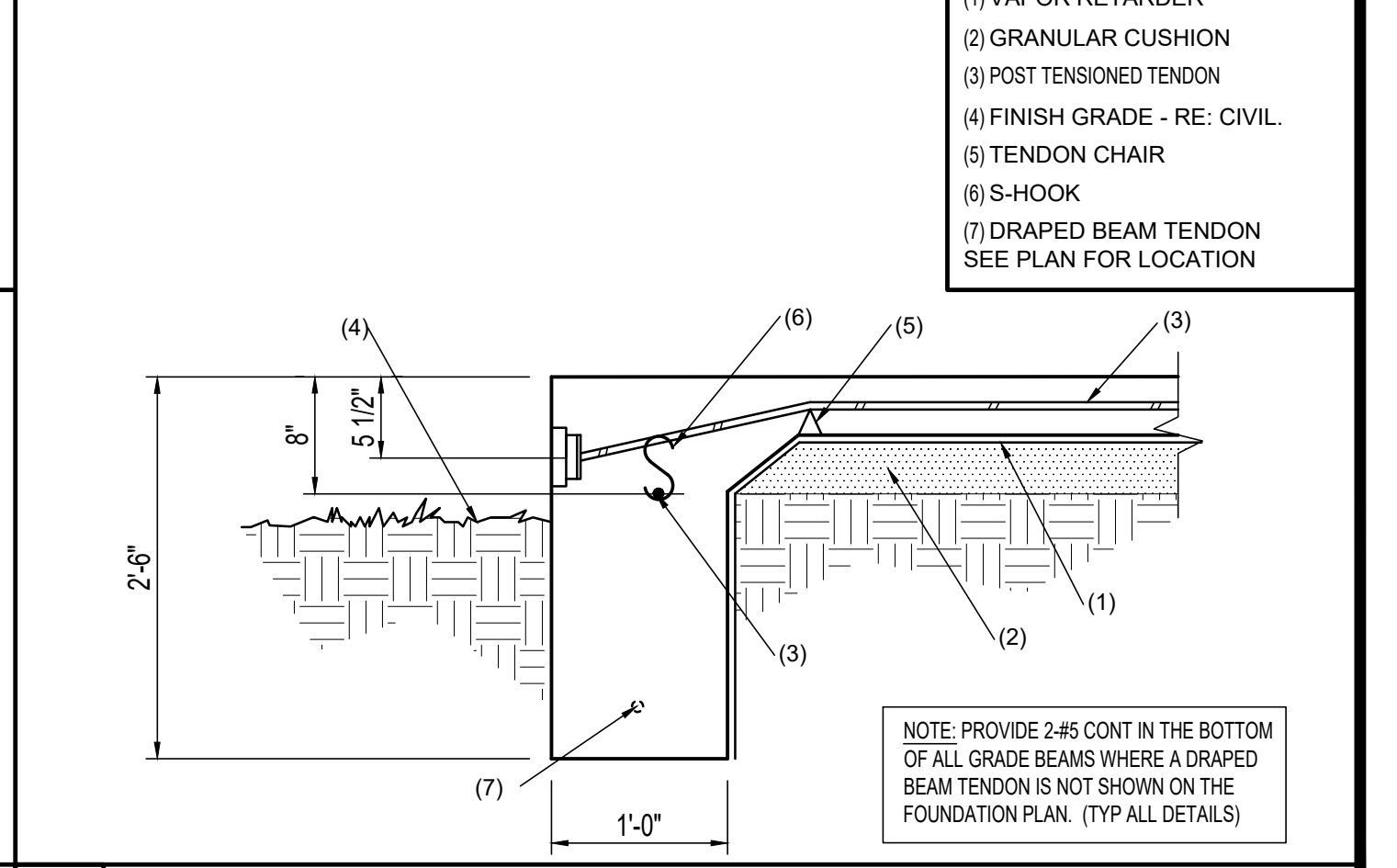
4 GRADE BEAM DETAIL W/CURB



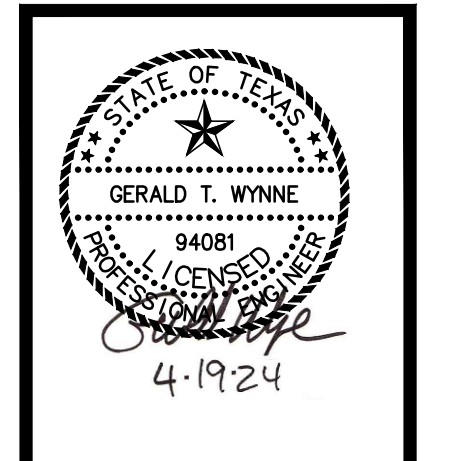
3 DROP at INTERIOR GRADE BEAM



2 INTERIOR GRADE BEAM



1 GRADE BEAM DETAIL



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FOUNDATION DETAILS
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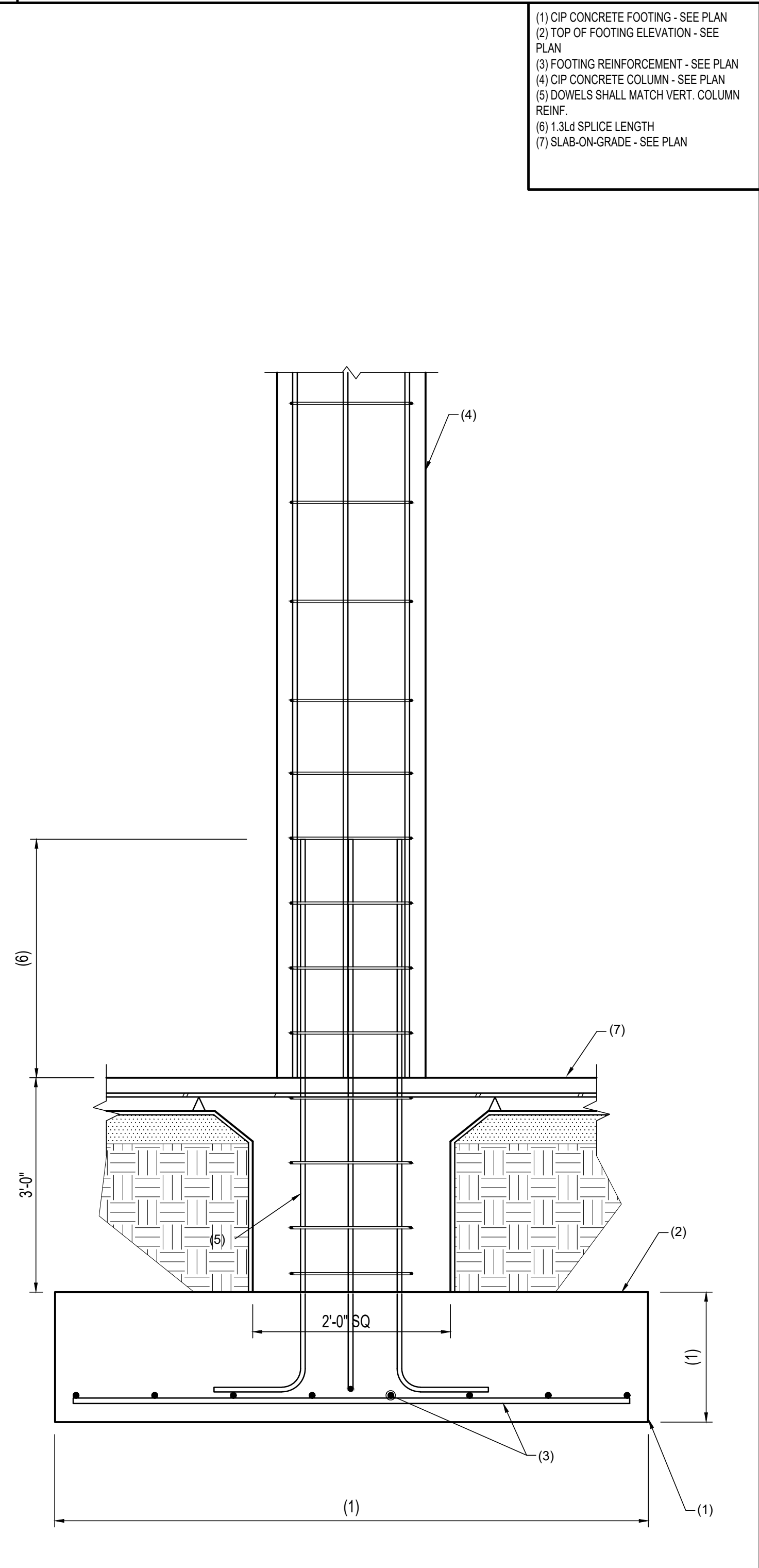
CLASS A SPLICE (TO BE USED ONLY WHERE NOTED ON DRAWING)								
A.C.I. REINFORCING DEVELOPMENT LENGTH SCHEDULE (Ld)								
REINF. SIZE	CONCRETE STRENGTH (PSI)							
	3000	4000	5000	6000	7000	8000	10000	12000
#3	17"	15"	13"	12"	12"	12"	12"	12"
#4	22"	19"	17"	16"	15"	14"	12"	12"
#5	28"	24"	22"	20"	18"	17"	12"	12"
#6	33"	29"	26"	24"	22"	21"	15"	15"
#7	48"	42"	38"	34"	32"	30"	27"	27"
#8	55"	48"	43"	39"	36"	34"	30"	30"
#9	62"	54"	48"	44"	41"	38"	34"	34"
#10	70"	61"	54"	50"	46"	43"	39"	39"
#11	78"	67"	60"	55"	51"	48"	43"	43"

CLASS B SPLICE (TO BE USED, U.N.O)								
A.C.I. REINFORCING DEVELOPMENT LENGTH SCHEDULE (1.3 Ld)								
REINF. SIZE	CONCRETE STRENGTH (PSI)							
	3000	4000	5000	6000	7000	8000	10000	12000
#3	23"	20"	17"	16"	16"	16"	16"	16"
#4	29"	25"	23"	21"	20"	19"	16"	16"
#5	37"	32"	29"	26"	24"	23"	16"	16"
#6	43"	38"	34"	32"	29"	28"	20"	20"
#7	63"	55"	50"	45"	42"	39"	36"	36"
#8	72"	63"	56"	51"	47"	45"	39"	39"
#9	81"	71"	63"	58"	54"	50"	45"	45"
#10	91"	80"	71"	65"	60"	56"	51"	51"
#11	102"	88"	78"	72"	67"	63"	56"	56"

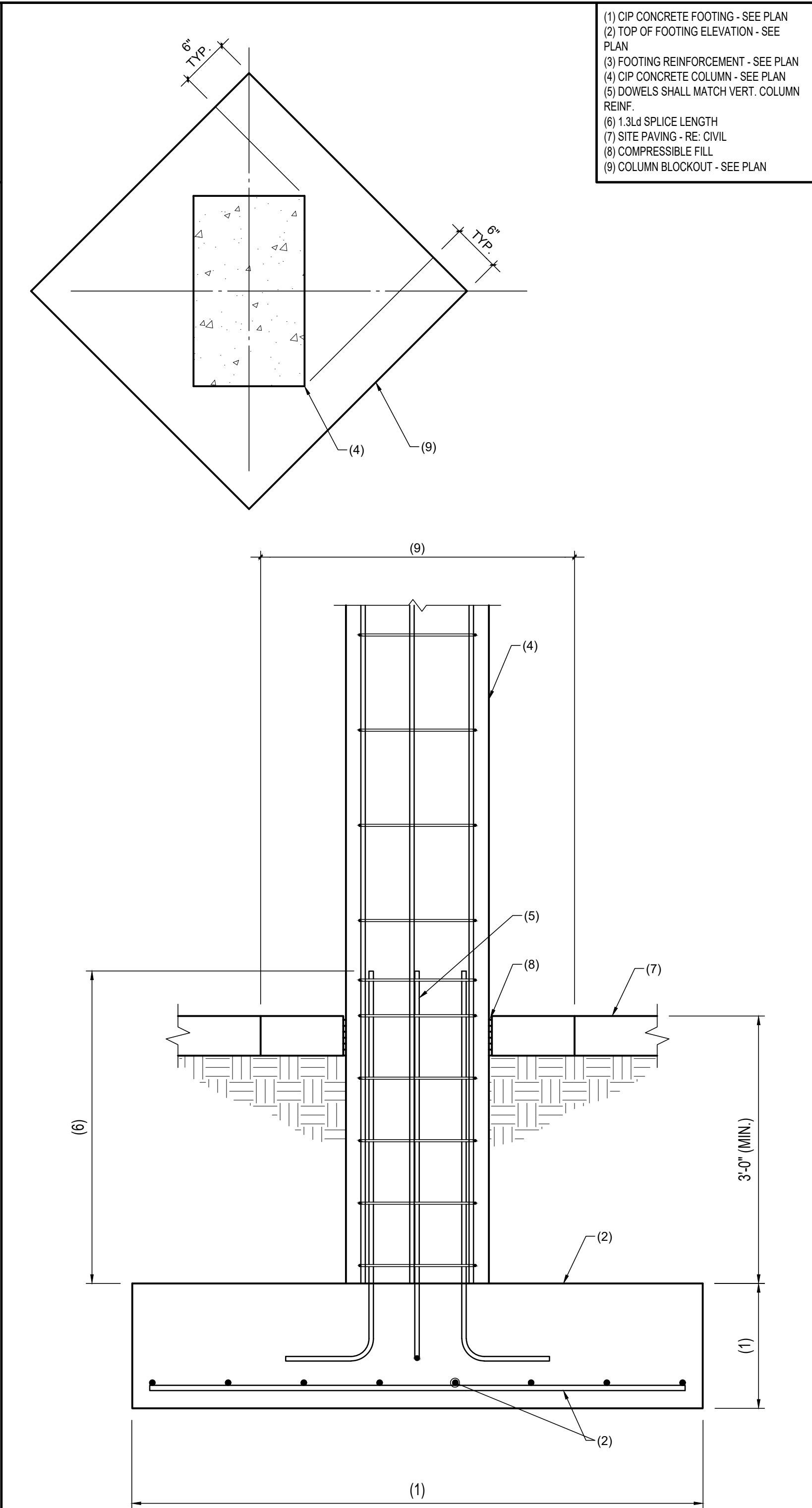
4 REBAR SPLICE SCHEDULE

FOOTING SCHEDULE		
FOOTING MARK	FOOTING SIZE	REINFORCING (BOTTOM, U.N.O.)
F5	5'-0"x5'-0"x2'-6"	5-#5 EA. WAY
F6	6'-0"x6'-0"x1'-8"	6-#6 EA. WAY
F7	7'-0"x7'-0"x1'-11"	7-#7 EA. WAY
F8	8'-0"x8'-0"x2'-2"	8-#7 EA. WAY

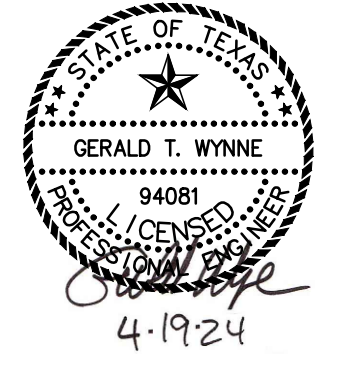
3 FOOTING SCHEDULE



2 TYPICAL INTERIOR COLUMN



1 TYPICAL EXTERIOR COLUMN



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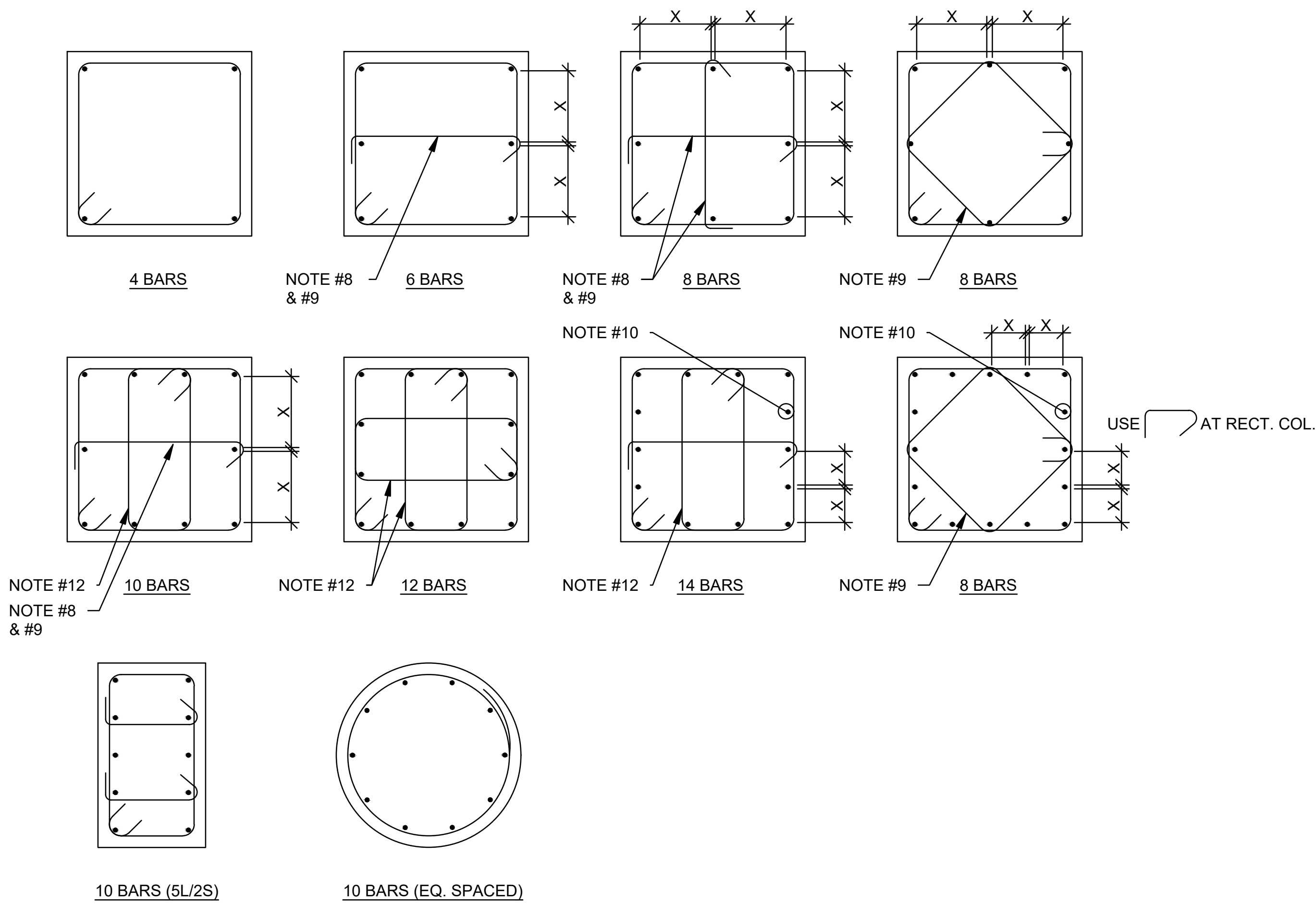
FOUNDATION
DETAILS

N.T.S.



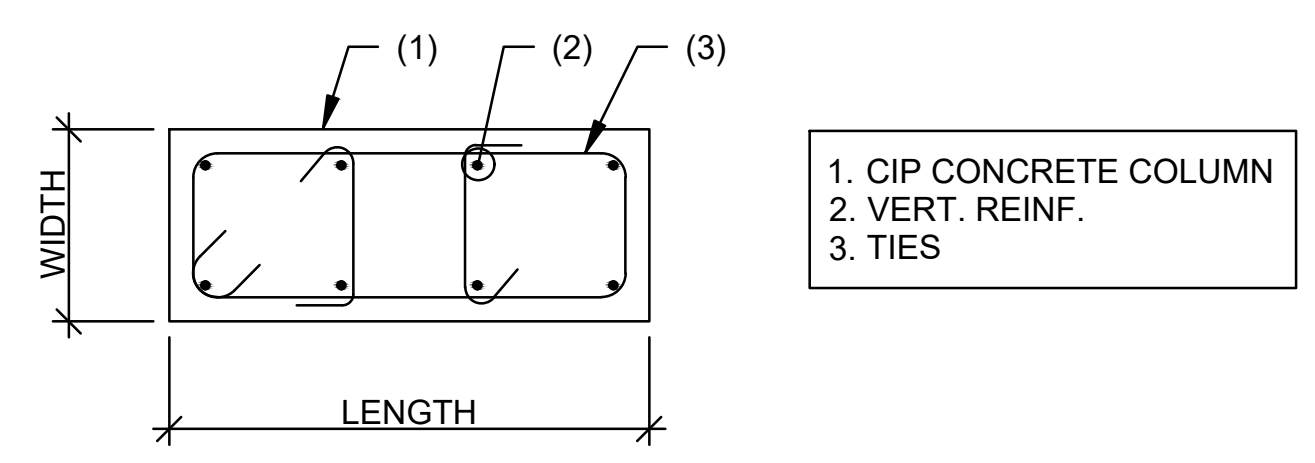
COLUMN SCHEDULE NOTES:

- SEE STRUCTURAL NOTES ON SHEET xxxxxxxx
- REFER TO COLUMN SCHEDULE FOR INDICATED CONCRETE STRENGTHS
- COLUMN SPLICES INDICATED IN COLUMN SCHEDULE ARE DEFINED BELOW.
 "A" DENOTES CLASS "A" LAP SPLICE
 "B" DENOTES CLASS "B" TENSION LAP SPLICE
- COLUMN BAR LAYOUT INDICATED IN COLUMN SCHEDULE IS DEFINED BELOW.
 ("X"/"F") DENOTES "X" NUMBER OF BARS EACH COLUMN FACE
 ("X"/"Y"/"Z") DENOTES "X" NUMBER OF BARS ON EACH FACE OF LONG DIMENSION OF COLUMN
 AND "Y" NUMBER OF BARS ON EACH FACE OF SHORT DIMENSION OF COLUMN
- WHERE VERTICAL REINFORCEMENT REDUCES IN COLUMN ABOVE, THE TOTAL AMOUNT OF VERTICAL REINFORCEMENT FROM COLUMN BELOW SHALL EXTEND INTO COLUMN ABOVE WITH THE SPECIFIED LAP SPLICE, TYP. U.N.O.
- WHERE SPLICES OCCUR BETWEEN BARS OF DIFFERENT SIZES, THE SPLICE LENGTH SHALL BE BASED ON THE LARGER SIZE BAR.
- AT CONTRACTOR'S OPTION FOOTING DOWEL EMBEDMENT MAY BE INCREASED TO FACILITATE PLACEMENT.
- POSITION OF 90 DEGREE AND 135 DEGREE END HOOKS ON TIES SHALL BE ALTERNATED AT EACH TIE SPACE, TYP. U.N.O.
- VERTICAL REINFORCEMENT MUST BE TIED AS SHOWN BY LINES IN THE TIE PATTERNS ABOVE WHEN X DIMENSION IS GREATER THAN 6 INCHES.
- VERTICAL REINFORCEMENT NEED NOT BE TIED WHEN X DIMENSION EQUALS 6 INCHES OR LESS.
- PROVIDE DOWELS FROM FOUNDATION TO MATCH COLUMN VERTICAL BARS, TYPICAL U.N.O IN SCHEDULE.
- INTERIOR HOOP TIES CAN BE REPLACED WITH PAIRS OF CROSS TIES.
- FLOOR TO FLOOR DIMENSIONS SHOWN IN ALL COLUMN SCHEDULES ARE NOMINAL DIMENSIONS. SEE PLANS FOR ACTUAL TOP OF SLAB ELEVATIONS.

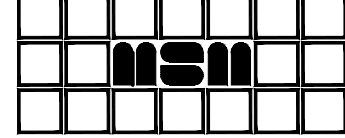
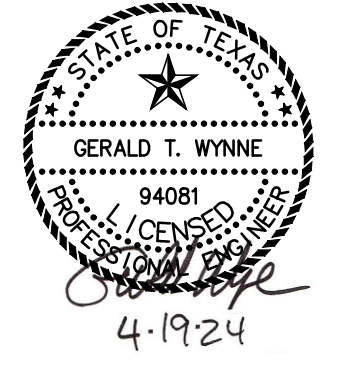


CONC COLUMN SCHEDULE				
COLUMN MARK	C1			
LEVELS	CONCRETE f _c	SIZE	VERT. REINF.	TIES
LEVEL 2				
LEVEL 2				
LEVEL 1	5000 PSI	12x24	(8) #8	#3 @ 12"
TOP OF FOUNDATION				B/(4L/2S)
				SEE PLAN

- NOTE:
- SEE CONC. SPECIFICATION FOR CONCRETE STRENGTH, REINFORCING COVER, AND OTHER REQUIREMENTS
 - AT COLUMN LOCATIONS IN WHICH BARRIER CABLES ARE ANCHORED, PROVIDE SCHEDULED TIES AT 10" O.C. AT A DISTANCE 3'-6" ABOVE FINISH FLOOR IF CABLES ARE ANCHORED AT BOTTOM OF COLUMN AND A DISTANCE 2'-0" BELOW THE TOP OF COLUMN IF CABLES ARE ANCHORED AT THE TOP OF THE COLUMN.
 - PROVIDE GRADE 75 REINFORCEMENT (F_y = 75 KSI) FOR ANY BARS #10 AND LARGER



- CIP CONCRETE COLUMN
- VERT. REINF.
- TIES



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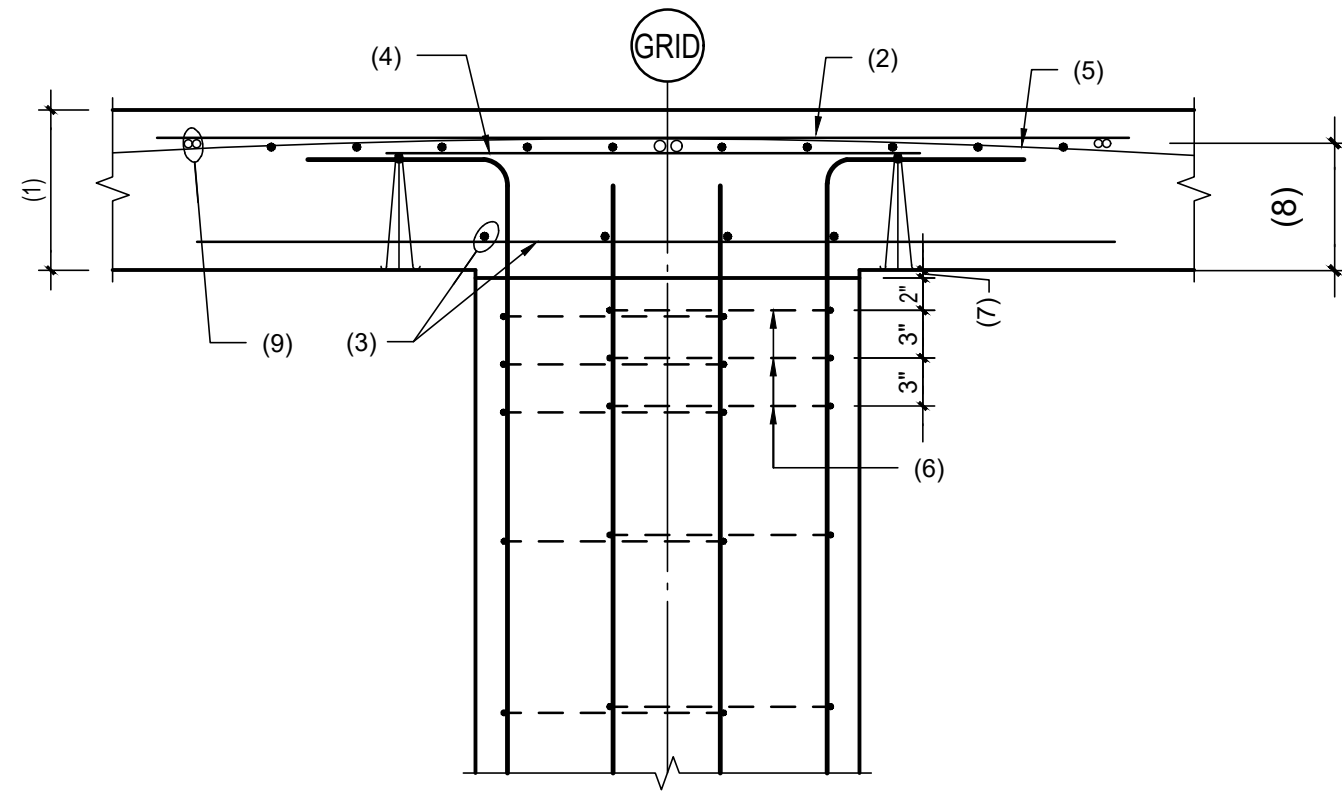
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CONCRETE COLUMN SCHEDULE

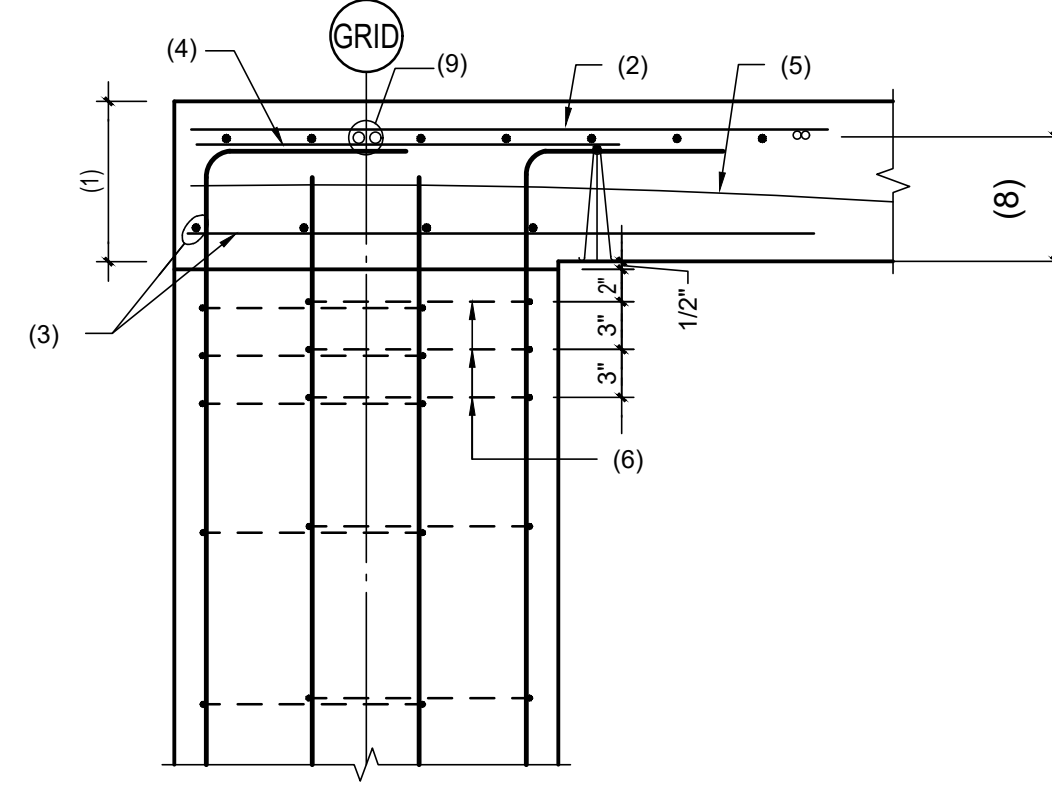
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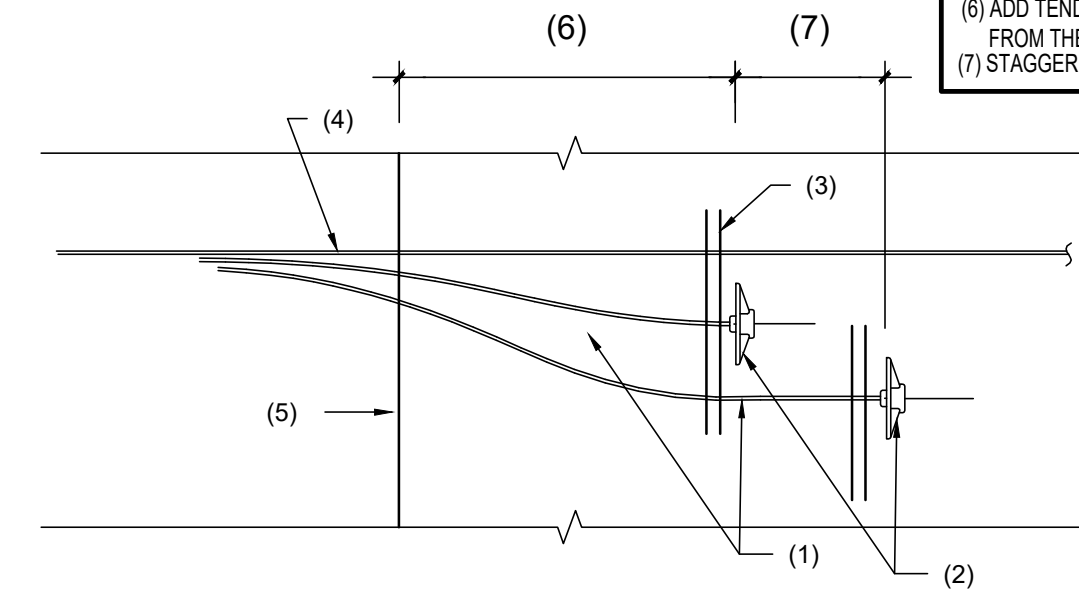
- (1) SLAB THICKNESS (T) - SEE PLAN
- (2) TOP STEEL REINFORCING - SEE PLAN
- (3) 4 #5 X 9'-0" EACH WAY AT BOTTOM OF SLAB OVER COLUMN
- (4) #4 SUPPORT BARS - SEE SHOP DRAWINGS
- (5) BANDED TENDONS
- (6) 3- ADDL TIES AT 3" O.C AT TOP OF COLUMN
- (7) TOP OF COLUMN POUR SHALL TERMINATE 1/2" MIN. BELOW BOTTOM OF SLAB
- (8) CENTER OF GRAVITY OF TENDON (CGS) - SEE PLAN
- (9) PLACE DISTRIBUTED TENDONS WHICH FALL WITHIN THE LENGTHS OF TOP REBARS BELOW THE UPPERMOST LAYER OF REBAR. PLACE REMAINDER OF DISTRIBUTED TENDONS ACCORDING TO CGS SHOWN ON PLANS OVER COLUMN
- (10) NOTE: WHERE THE SAME CGS IS INDICATED ON THE PLAN, BANDED TENDON PLACEMENT SHALL SUPERCEDE DISTRIBUTED TENDON PLACEMENT. BANDED TENDONS SHALL BE PLACED AT THE SPECIFIED CGS AND DISTRIBUTED TENDONS DIRECTLY BELOW.
- (11) NOTE: NOT ALL SLAB REINFORCING IS SHOWN FOR CLARITY. SEE PLAN FOR REINFORCING NOT SHOWN HERE.



- (1) SLAB THICKNESS (T) - SEE PLAN
- (2) TOP STEEL REINFORCING - SEE PLAN
- (3) 4 #5 X 9'-0" EACH WAY AT BOTTOM OF SLAB OVER COLUMN
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- (7) TOP OF COLUMN POUR SHALL TERMINATE 1/2" MIN. BELOW BOTTOM OF SLAB
- (8) CENTER OF GRAVITY OF BANDED TENDON (CGS) - SEE PLAN
- (9) PLACE DISTRIBUTED TENDONS WHICH FALL WITHIN THE LENGTHS OF TOP REBARS BELOW THE UPPERMOST LAYER OF REBAR. PLACE REMAINDER OF DISTRIBUTED TENDONS ACCORDING TO CGS SHOWN ON PLANS OVER COLUMN
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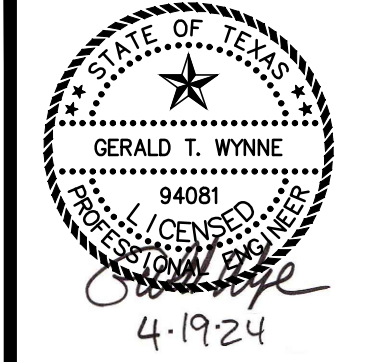
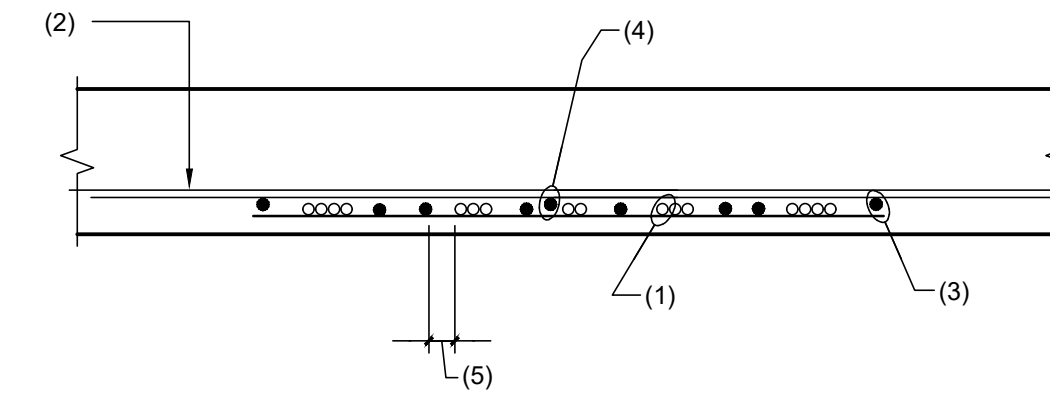
- (1) ADD TENDONS - SEE PLAN. DRAPE TO MATCH CONT. TENDON BEGINNING AT SUPPORT.
- (2) DEAD END ANCHORS PLACE AT MID-DEPTH OF SLAB
- (3) #4X24" (MIN) (T&B) - TIED TO TENDON
- (4) CONTINUOUS TENDON - SEE PLAN
- (5) CENTERLINE OF SUPPORT
- (6) ADD TENDONS TO BEGIN A MINIMUM OF SPAN/4 FROM THE SUPPORT
- (7) STAGGER ANCHORS 12" MIN.



PLAN VIEW

3 PLACEMENT OF ADDED TENDONS

- (1) BANDED TENDONS - SEE PLAN. 4 TENDONS MAX. PER BUNDLE
- (2) DISTRIBUTED TENDONS - SEE PLAN
- (3) BOTTOM REINFORCING WHERE SHOWN ON PLAN
- (4) SUPPORT BAR - SEE SHOP DRAWING
- (5) 2" MINIMUM CLEAR
- (6) NOTE: NOT ALL SLAB REINFORCING SHOWN FOR CLARITY. SEE PLAN.
- (7) NOTE: WHERE THE SAME CGS IS INDICATED ON THE PLAN, BANDED TENDON PLACEMENT SHALL SUPERCEDE DISTRIBUTED TENDON PLACEMENT. BANDED TENDONS SHALL BE PLACED AT THE SPECIFIED CGS AND DISTRIBUTED TENDONS DIRECTLY ABOVE.



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ELEVATED SLAB DETAILS

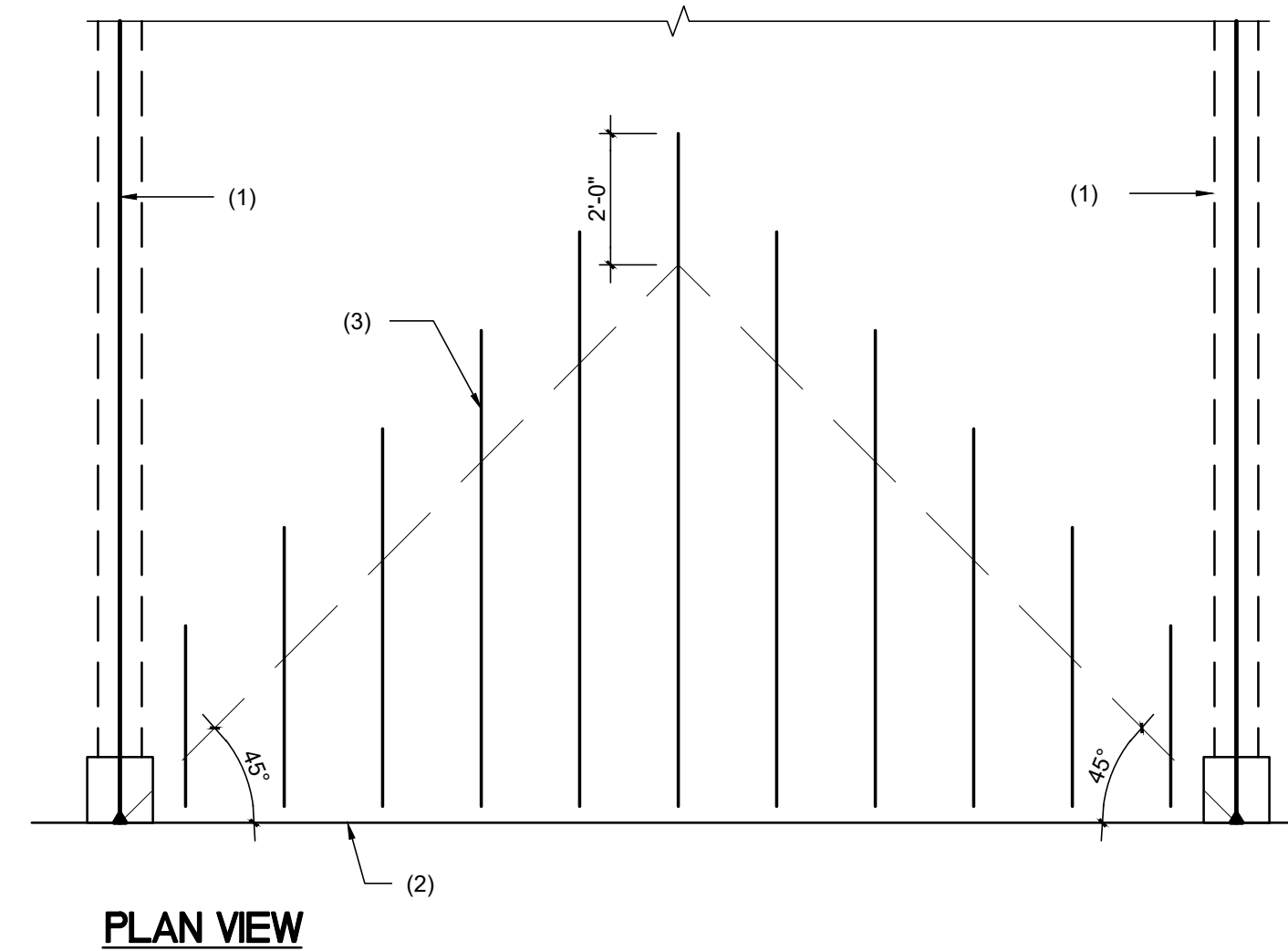
N.T.S.



7 SECTION AT INTERIOR COLUMN

- (1) PT BANDED TENDON OR BEAM - SEE PLAN
- (2) SLAB EDGE
- (3) TEMPERATURE REINFORCING IN ACCORDANCE WITH THE SCHEDULE BELOW

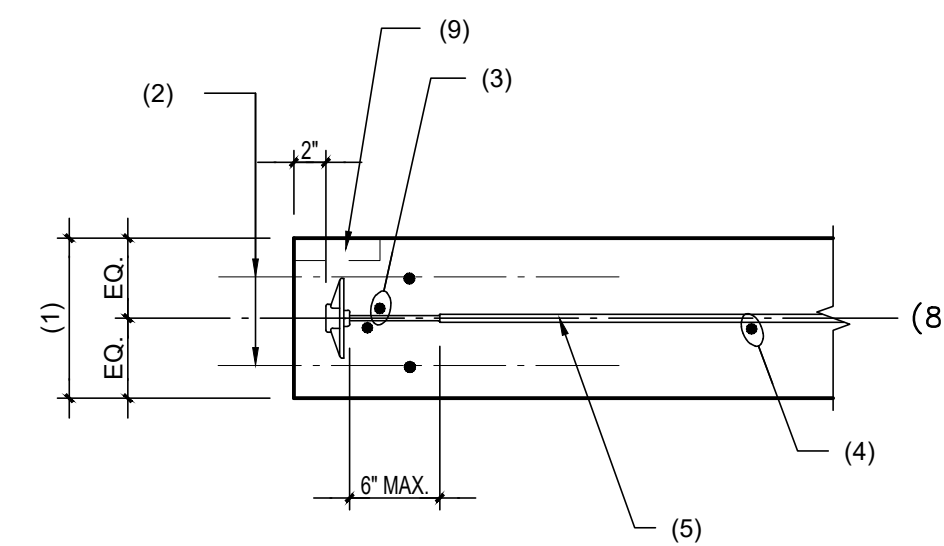
SLAB THICKNESS	LAYERS	REINF.	LOCATION
6" - 8"	1	#4 @ 14" O.C.	MID-DEPTH
9" - 10"	1	#4 @ 10" O.C.	MID-DEPTH
11" - 14"	1	#4 @ 8" O.C.	MID-DEPTH
12" - 16"	2	#4 @ 14" O.C.	TOP & BOTTOM
17" - 20"	2	#4 @ 10" O.C.	TOP & BOTTOM
21" - 24"	2	#4 @ 8" O.C.	TOP & BOTTOM



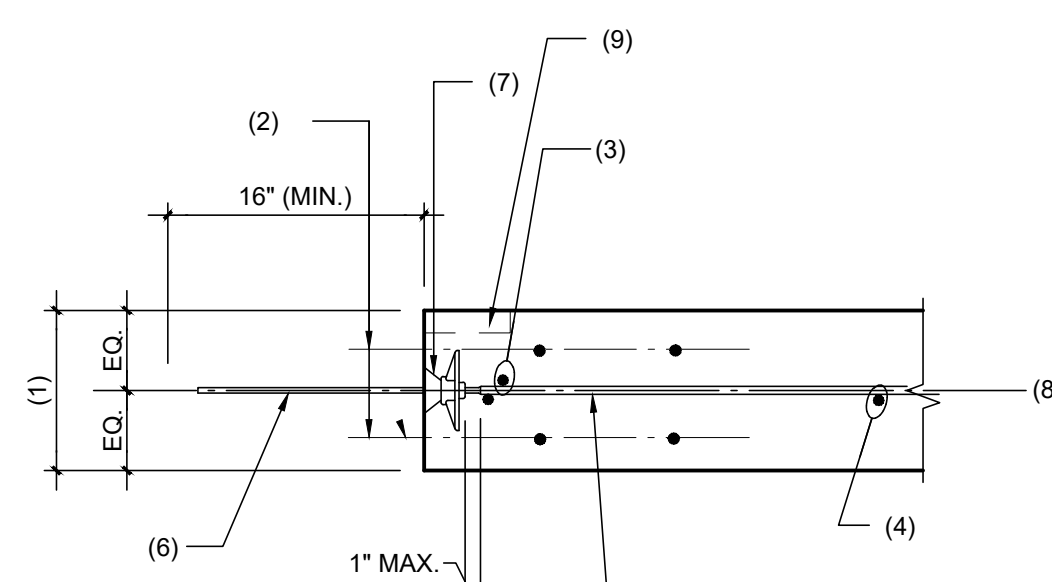
PLAN VIEW

5 SECTION AT PERIMETER COLUMN

- (1) SLAB THICKNESS (T) - SEE PLAN
- (2) SLAB PERIMETER BARS - SEE PLAN
- (3) #4 CONT. (T&B) - TIED TO TENDON
- (4) #4 SUPPORT BARS - SEE SHOP DRAWINGS
- (5) GREASED AND PLASTIC SHEATHED TENDON
- (6) PT TENDON STRESSING TAIL
- (7) GROMMET
- (8) CENTER OF GRAVITY OF TENDON (CGS) - SEE PLAN
- (9) BRICK LEDGE - SEE PLAN



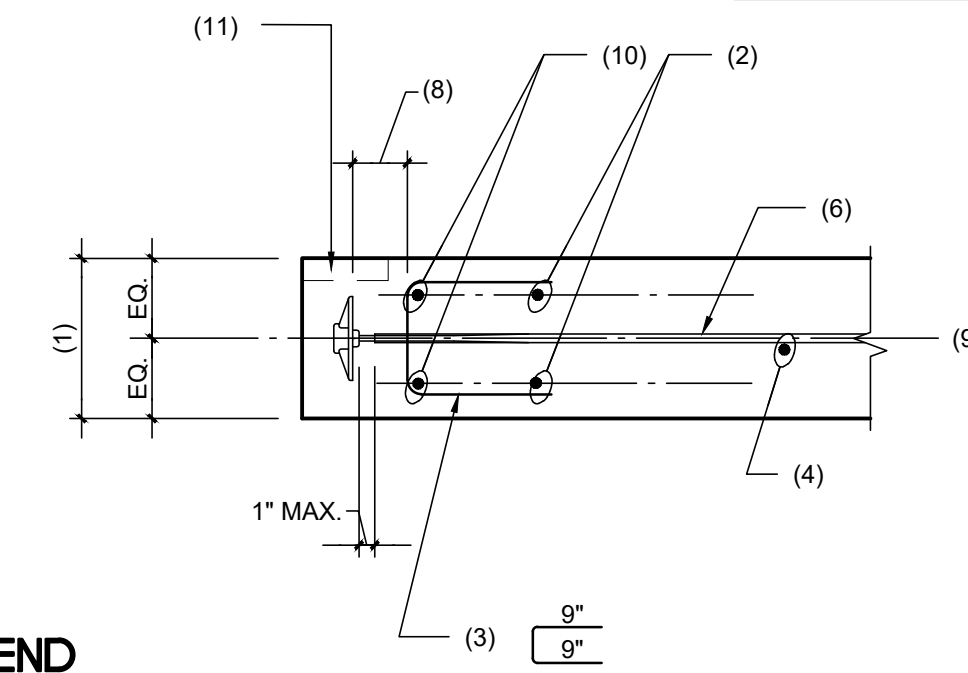
DEAD END



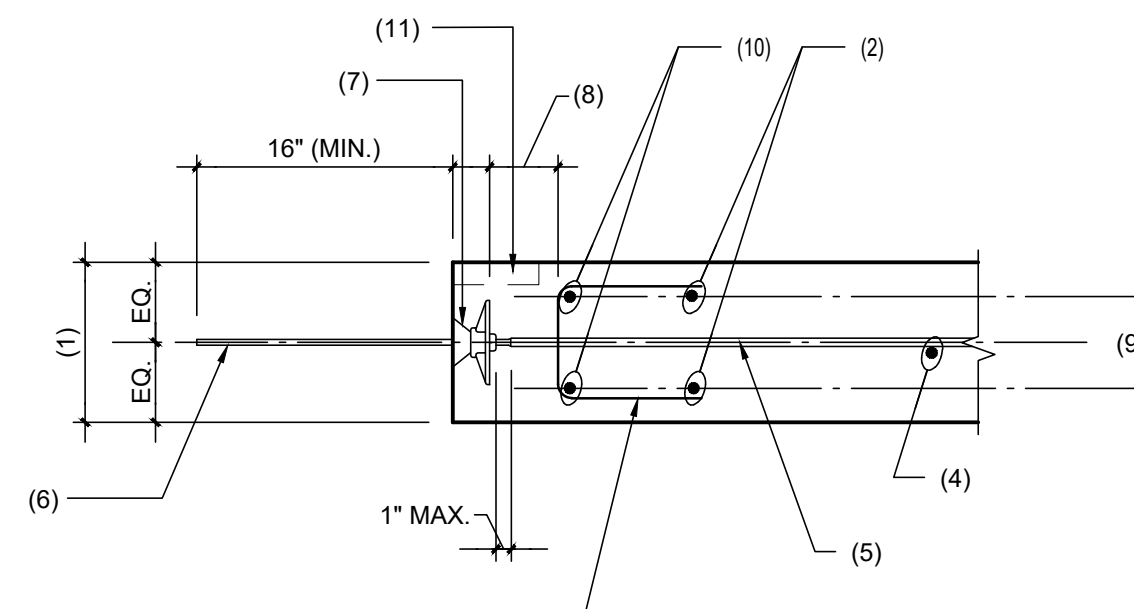
STRESSING END

2 BANDED TENDONS AT MID-SPAN

- (1) SLAB THICKNESS (T) - SEE PLAN
- (2) ADDL REINF #4 CONT (T & B) - EXTEND 9" BEYOND LAST ANCHOR EACH END
- (3) #3 HAIRPIN - TOTAL EQUAL TO NUMBER OF ANCHORS PLUS 1
- (4) #4 SUPPORT BARS - SEE SHOP DRAWINGS
- (5) GREASED AND PLASTIC SHEATHED TENDON
- (6) PT TENDON STRESSING TAIL
- (7) GROMMET
- (8) SLAB THICKNESS (T)/2
- (9) CENTER OF GRAVITY OF TENDON (CGS) - SEE PLAN
- (10) SLAB PERIMETER BARS - SEE PLAN
- (11) BRICK LEDGE - SEE PLAN



DEAD END



STRESSING END

6 TEMPERATURE REINFORCING

4 DISTRIBUTED TENDONS AT SLAB EDGE

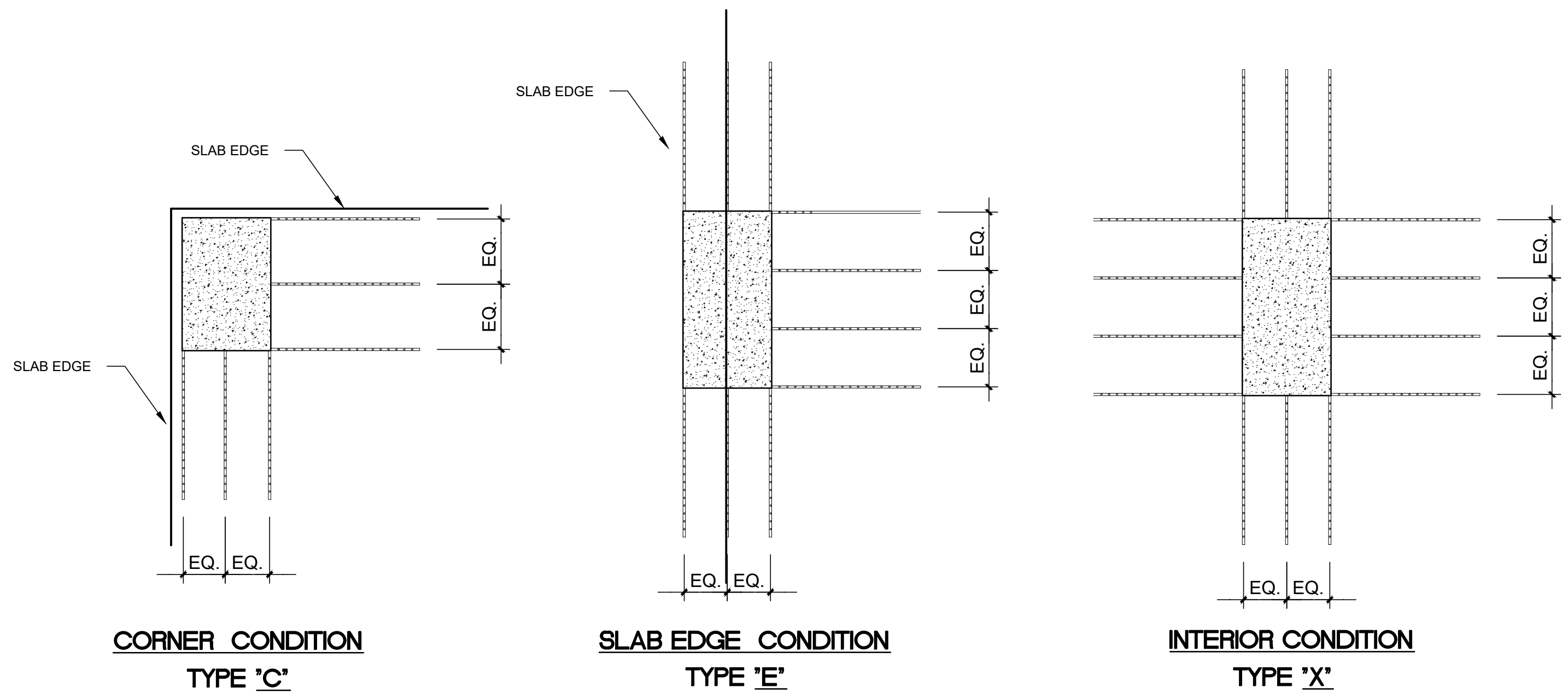
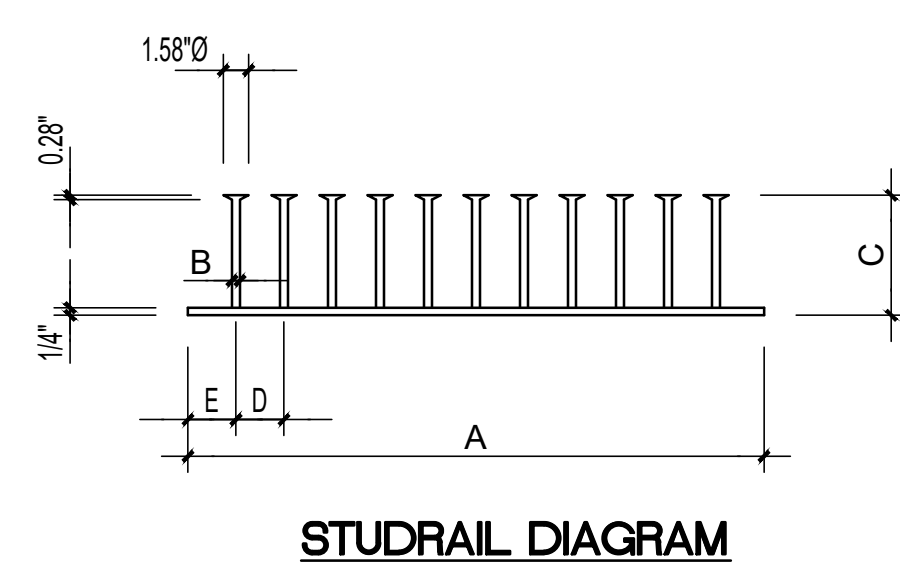
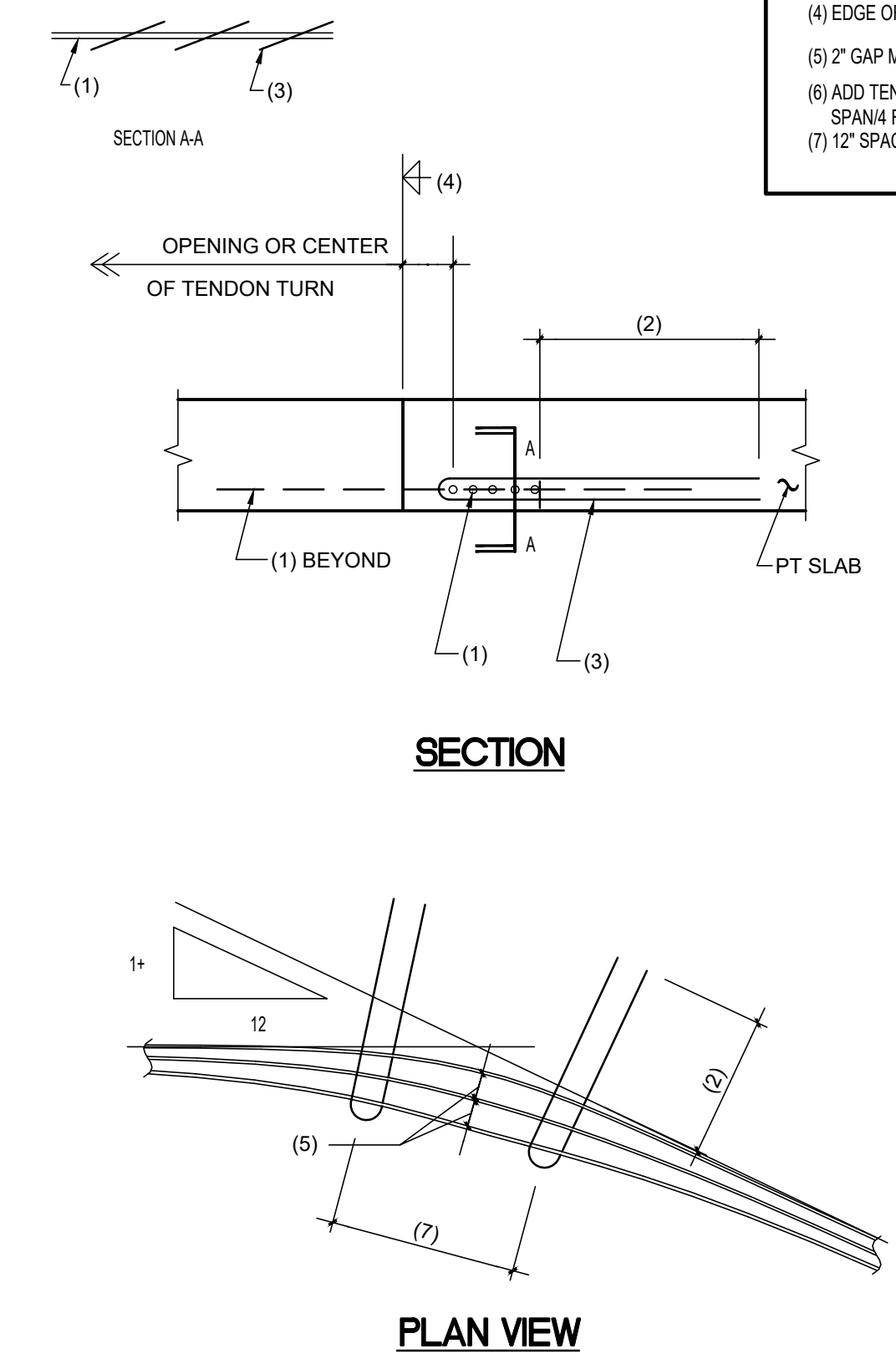
1 BANDED TENDONS AT SLAB EDGE

STUDRAIL SCHEDULE

STUDRAIL NUMBER	TYPE	OVERALL LENGTH "A"	# OF RAILS PER COLUMN	# OF STUDS PER RAIL	# OF RAILS LONG SIDE	# OF RAILS SHORT SIDE	STUD DIAMETER "B"	STUD HEIGHT "C"	STUD SPACING "D"	DISTANCE TO FIRST STUD "E"	TOP COVER (MIN.)	BOTTOM COVER (MIN.)
SR-1	X	53.25	12	15	4	2	0.5"	10.5"	3.000"	4.125"	3/4"	3/4"
SR-2	X	53.25"	12	15	4	2	0.5"	9.5"/6.5" (BRZWY/BALC)	3.000"	4.125"	3/4"	3/4"
SR-3	E	53.25"	8	12	4	2	0.5"	10.5"	3.000"	4.125"	3/4"	3/4"
SR-4	E	48.125"	8	12	4	2	0.5"	9.5"/6.5" (BRZWY/BALC)	3.625"	4.125"	3/4"	3/4"
SR-5	C	48.125"	6	12	4	2	0.5"	10.5"	3.625"	4.125"	3/4"	3/4"
SR-6	C	48.125"	6	12	4	2	0.5"	9.5"/6.5" (BRZWY/BALC)	3.625"	4.125"	3/4"	3/4"
SR-7	E	53.25"	10	15	4	2	0.5"	9.5"/6.5" (BRZWY/BALC)	3.000"	4.125"	3/4"	3/4"

- 1.) COLUMN TO BE CONSIDERED INTERIOR CONDITION UNLESS FACE OF COLUMN IS CLOSER TO SLAB EDGE THAN 4 TIMES THE SLAB THICKNESS.
- 2.) ROUND COLUMN STUDRAILS TO BE ARRANGED PER DETAILS SHOWN.
- 3.) STUDRAIL HEIGHT SHALL BE THE SLAB THICKNESS LESS THE TOP COVER & BOTTOM COVER U.N.O.
- 4.) SEE STUDRAIL SCHEDULE FOR EXACT NUMBER OF RAILS TO BE USED.

- (1) PT TENDON - SEE PLAN
- (2) 18" MINIMUM
- (3) #4 HAIRPIN PLACED RADIALLY TO HOLD TENDONS IN PLANE OF SLAB PLACE OVER CURVED LENGTH OF TENDON AT (7) NUMBER OF STRANDS INCHES ON CENTER BUT NOT MORE THAN 18" APART.
- (4) EDGE OF OPENING WHERE SHOWN
- (5) 2" GAP MIN. BETWEEN TENDONS
- (6) ADD TENDONS TO BEGIN A MINIMUM OF SPAN/4 FROM THE SUPPORT
- (7) 12" SPACING (MAX)

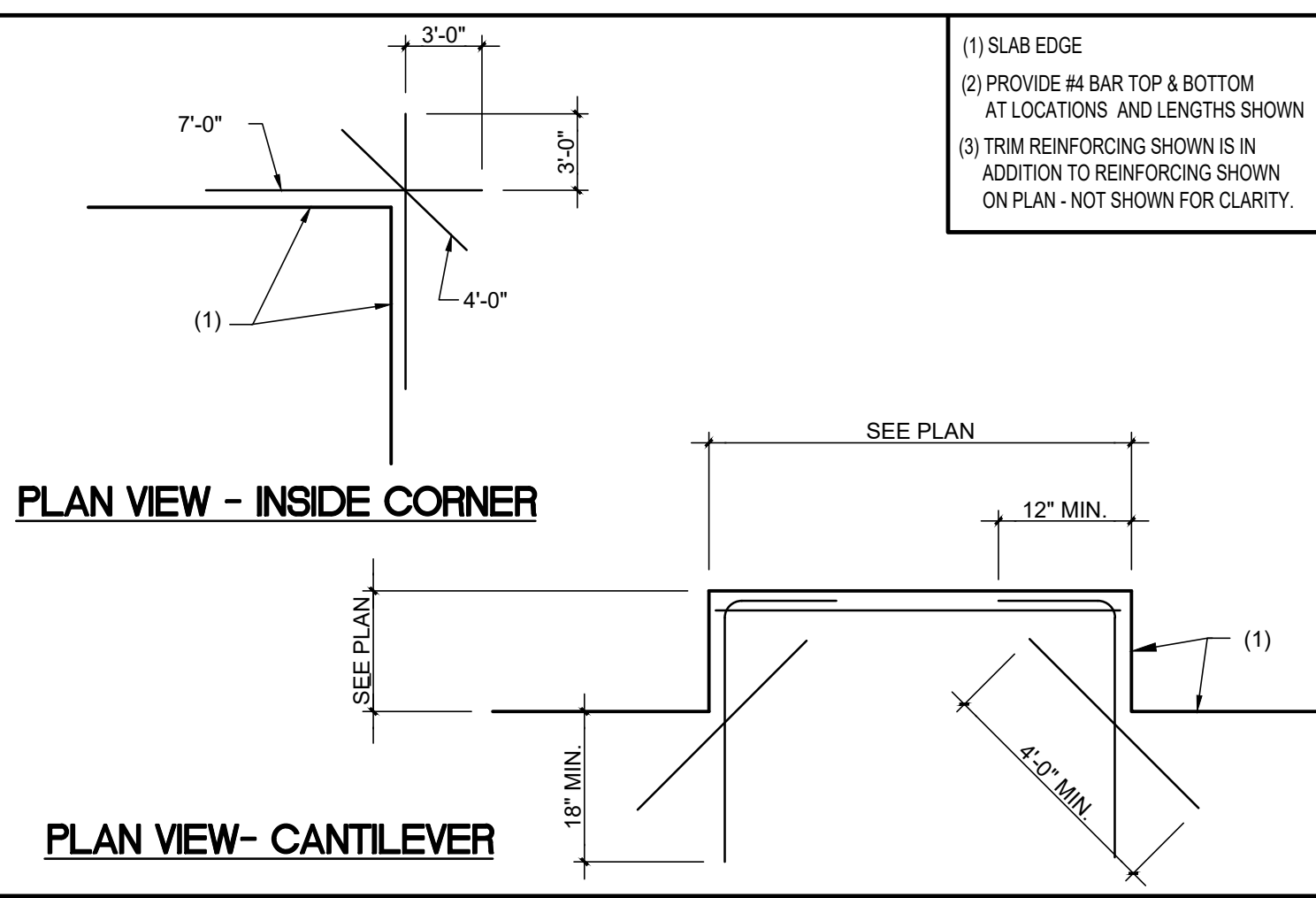


3

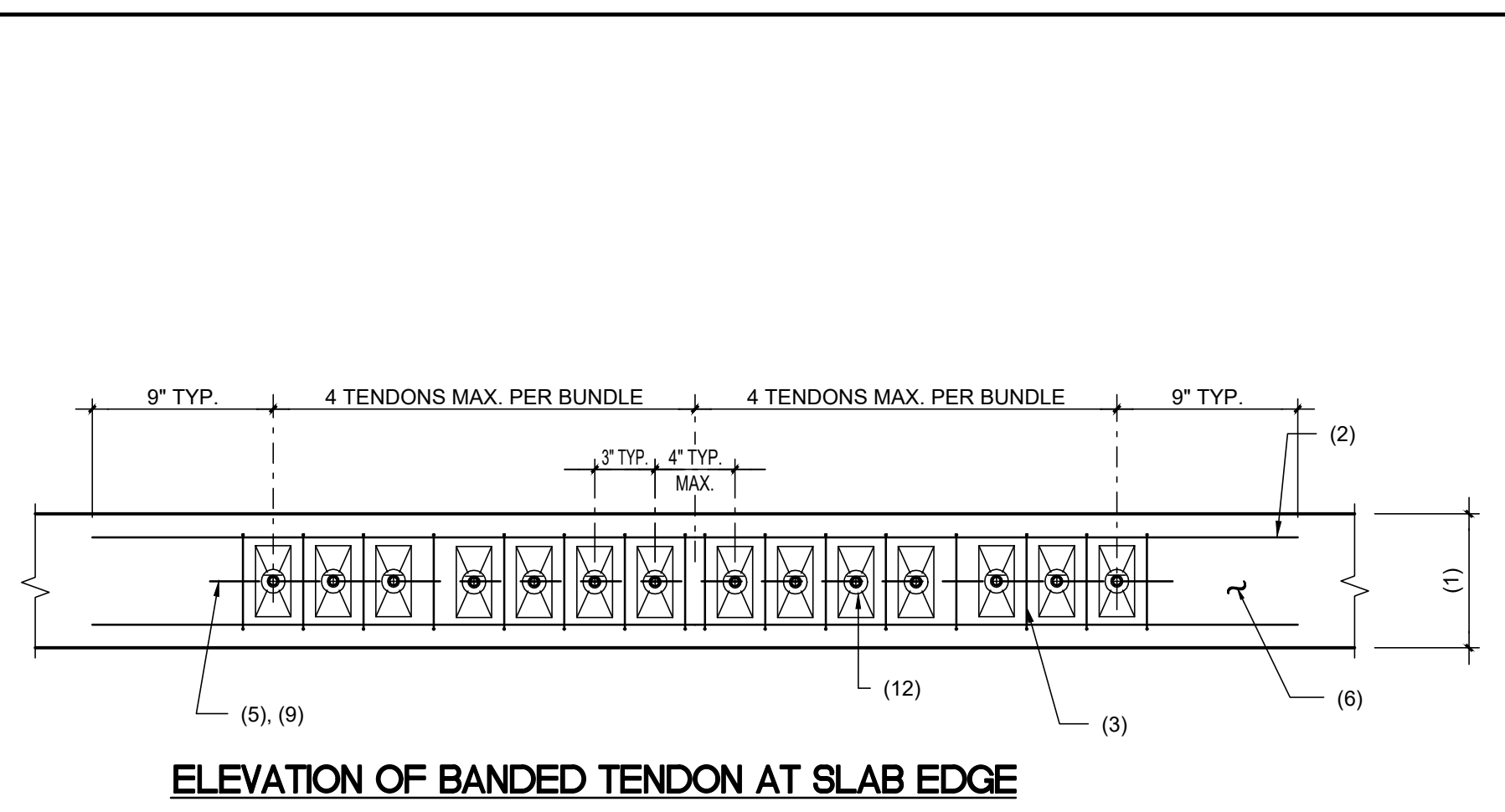
STUDRAIL SCHEDULE AND TYPICAL DETAILS

2

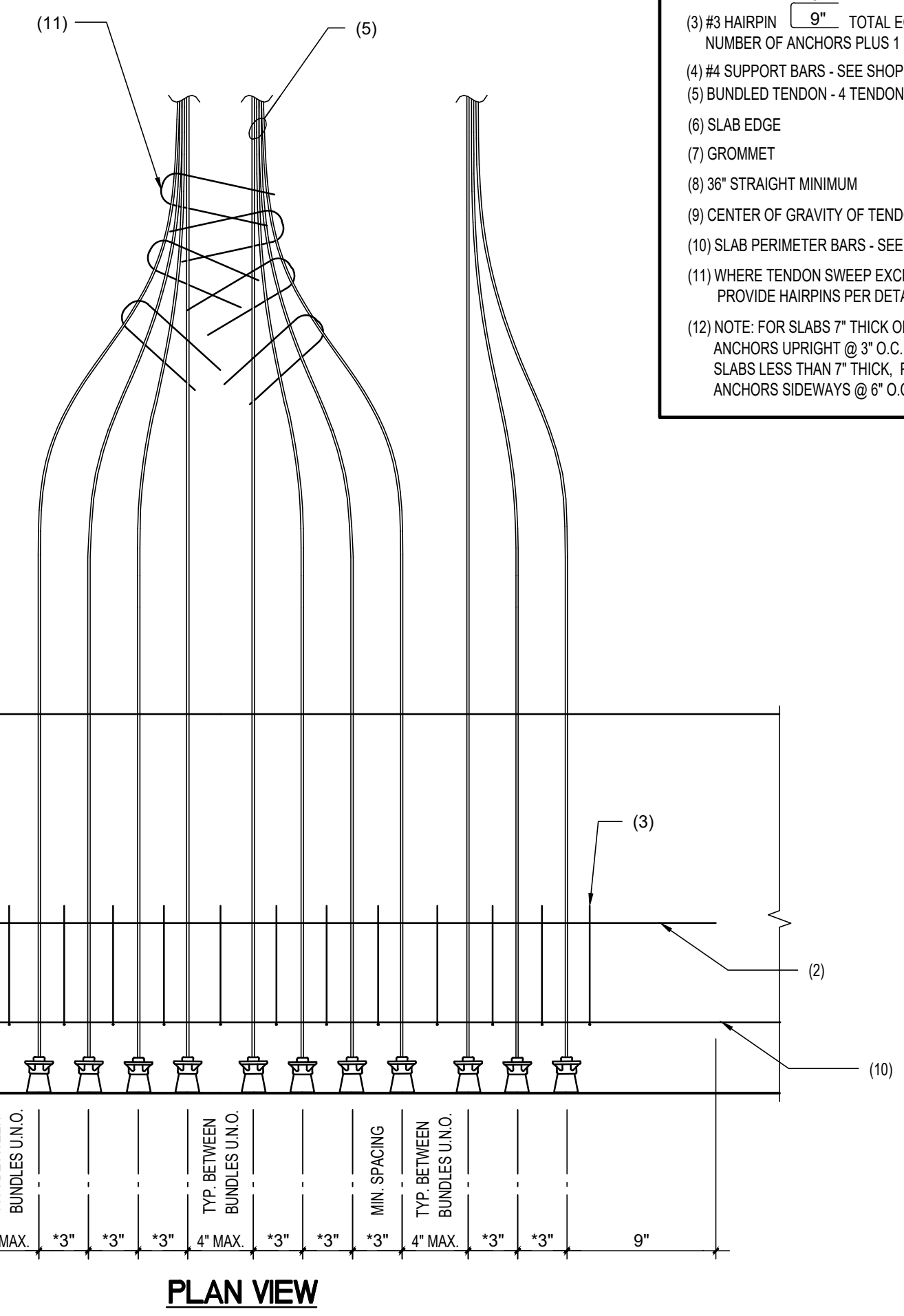
HAIPINS AT TENDON SWEEP (>1:12)



- (1) SLAB EDGE
- (2) PROVIDE #4 BAR TOP & BOTTOM AT LOCATIONS AND LENGTHS SHOWN
- (3) TRIM REINFORCING SHOWN IS IN ADDITION TO REINFORCING SHOWN ON PLAN - NOT SHOWN FOR CLARITY.



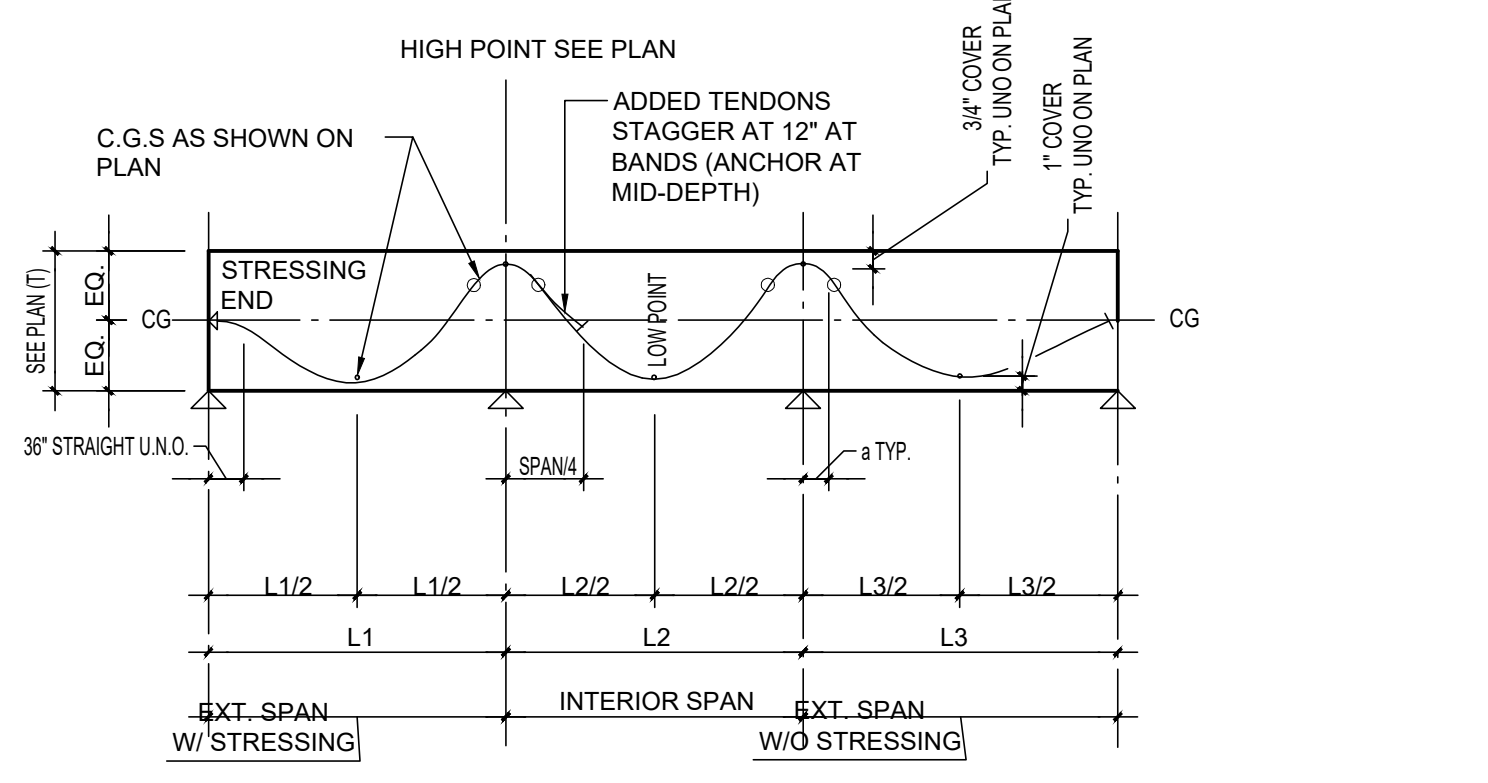
ELEVATION OF BANDED TENDON AT SLAB EDGE



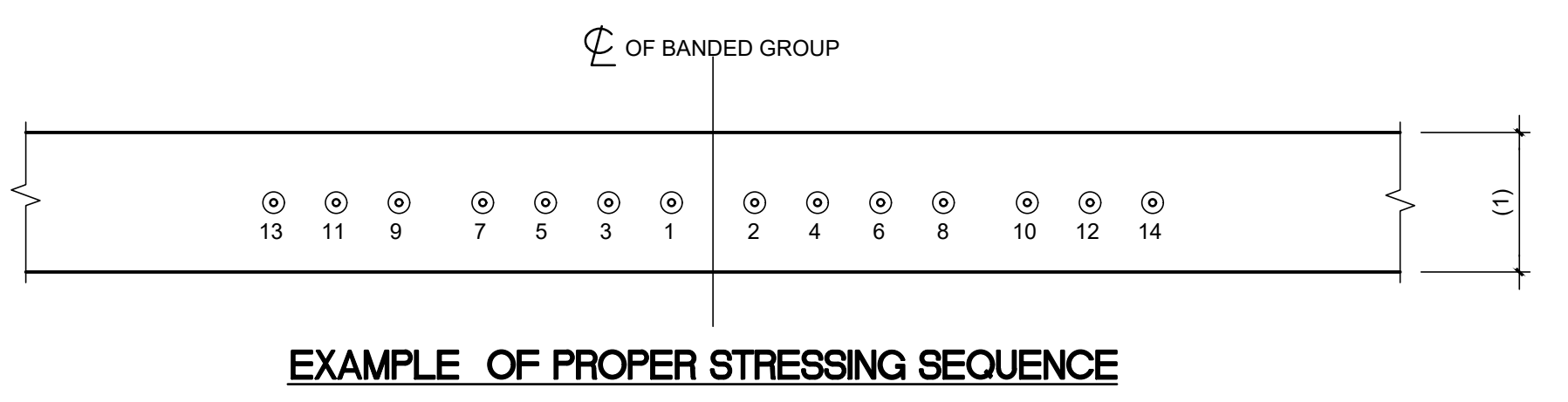
- (1) SLAB THICKNESS (T) - SEE PLAN
- (2) ADD'L REINF #4 CONT (T & B) - EXTEND 9" BEYOND LAST ANCHOR EACH END
- (3) #3 HAIRPIN $\frac{9"}{4}$ TOTAL EQUAL TO NUMBER OF ANCHORS PLUS 1
- (4) #4 SUPPORT BARS - SEE SHOP DRAWINGS
- (5) BUNDLED TENDON - 4 TENDONS MAX.
- (6) SLAB EDGE
- (7) GROMMET
- (8) 36" STRAIGHT MINIMUM
- (9) CENTER OF GRAVITY OF TENDON (CGS) - SEE PLAN
- (10) SLAB PERIMETER BARS - SEE PLAN
- (11) WHERE TENDON SWEEP EXCEEDS 1:12 PROVIDE HAIRPINS PER DETAIL THIS SHEET
- (12) NOTE: FOR SLABS 7" THICK OR MORE PLACE ANCHORS UPRIGHT @ 3" O.C. FOR SLABS LESS THAN 7" THICK, PLACE ANCHORS SIDEWAYS @ 6" O.C.

5

TRIM BARS AT INSIDE CORNERS



NOTES:
a = 0.1 L FOR UNIFORM SLAB CG IS AT MID-DEPTH



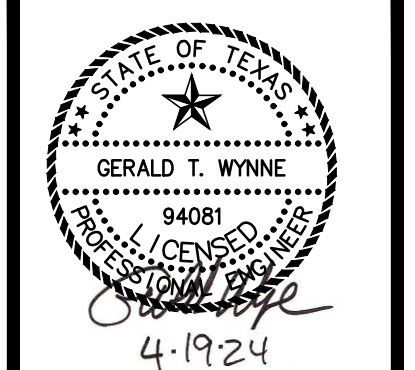
EXAMPLE OF PROPER STRESSING SEQUENCE

4

TYP. TENDON PROFILE

1

PLACEMENT OF BANDED TENDONS AT SLAB EDGE



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Consulting Structural Engineer
16107 Kensington Drive, Suite 278
Sugar Land, TX 77479
Phone: 832.334.3260
Texas Firm #20169

LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

ISSUE FOR PERMIT	Date: 10-31-2023
PERMIT RESUBMITTAL	Date: 01-08-2024
ISSUE FOR CONSTRUCTION	Date: 04-19-2024
Date:	
Date:	
Date:	



NOTE:
SLAB PT & REINF. NOT SHOWN FOR CLARITY

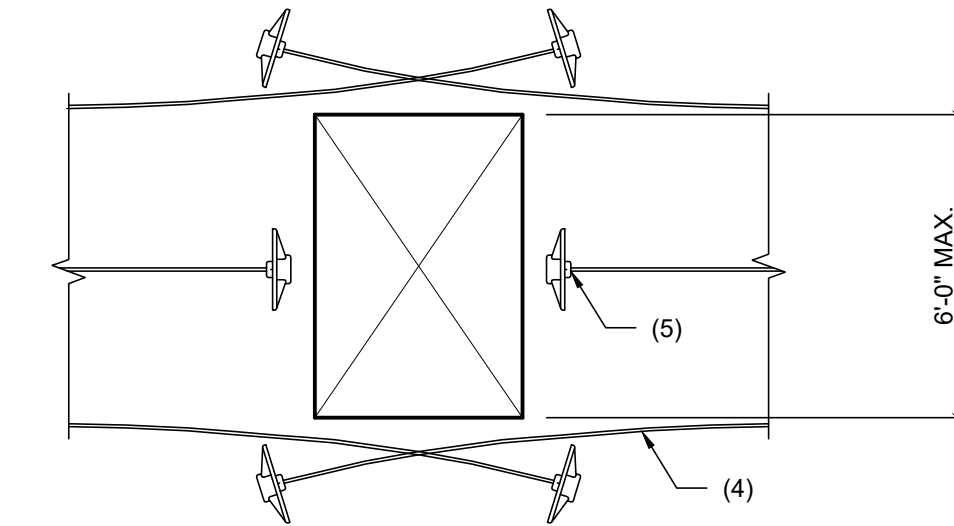
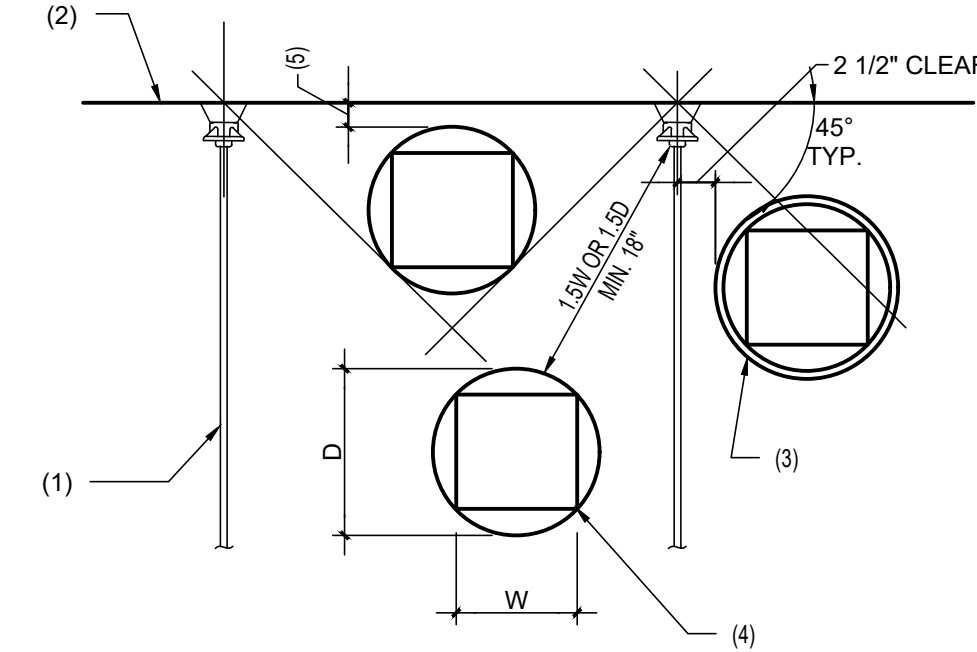
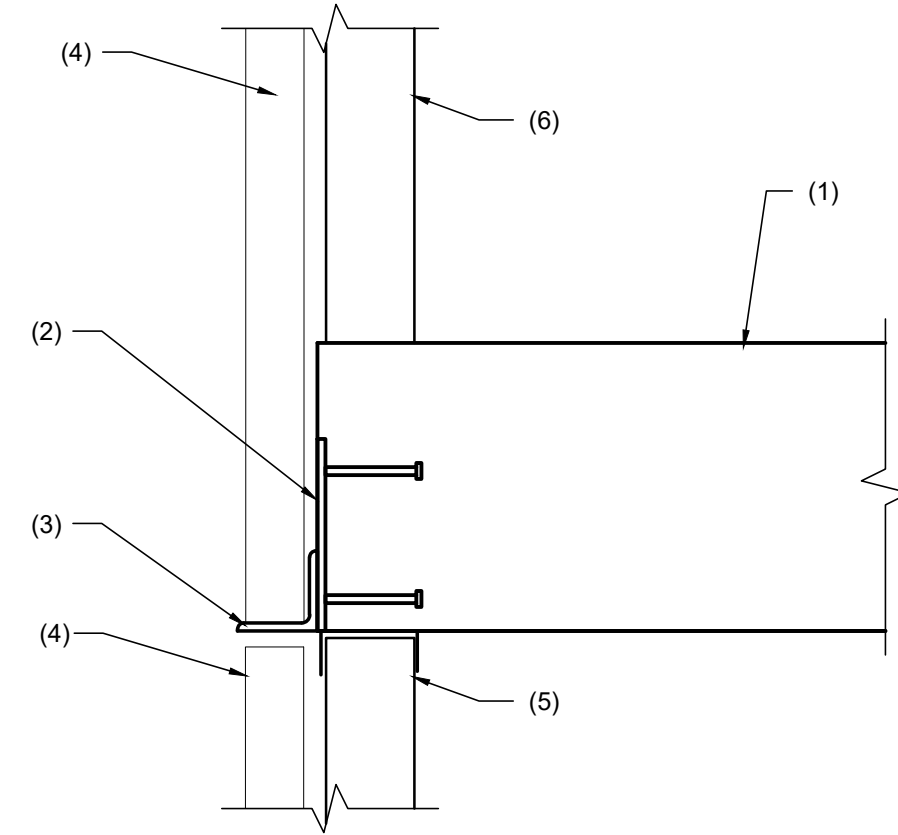
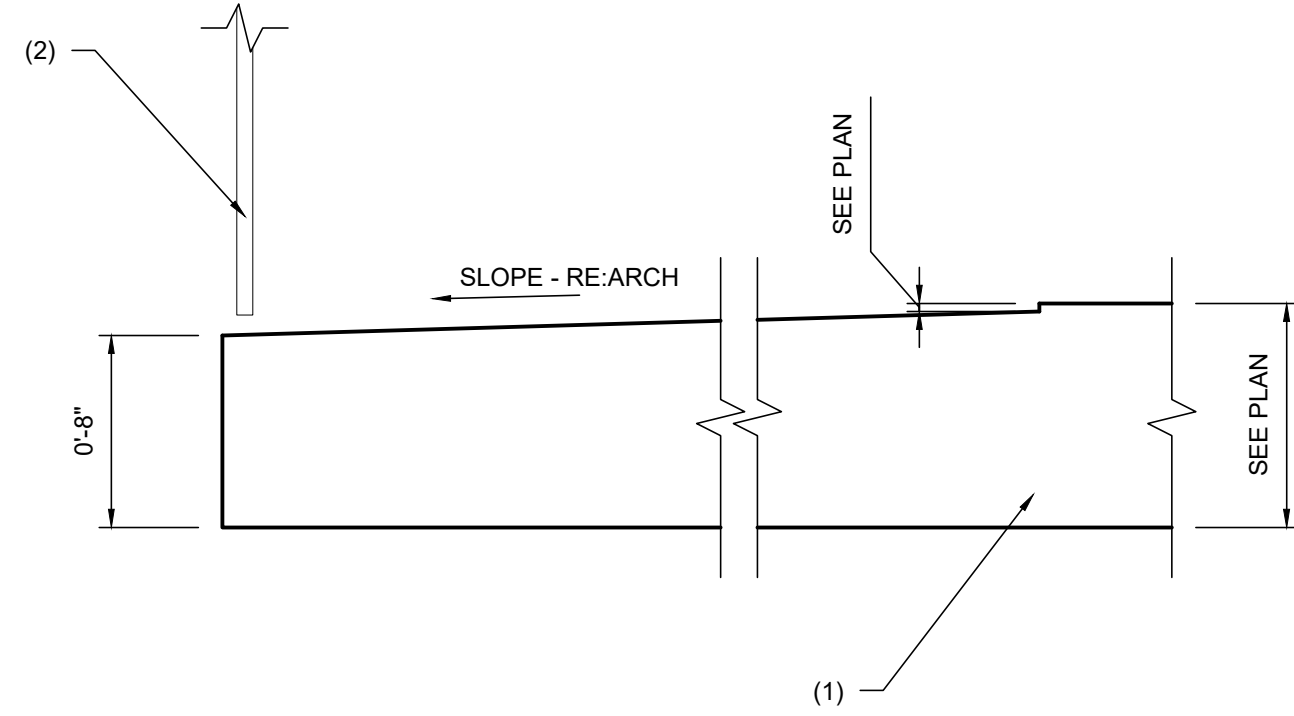
- (1) ELEVATED CONCRETE SLAB - SEE PLAN
- (2) HANDRAIL - REFER TO ARCH. HANDRAIL CONNECTION TO STRUCTURAL SLAB BY HANDRAIL MANUFACTURER

NOTE:
SLAB PT & REINF. NOT SHOWN FOR CLARITY

- (1) CONCRETE PODIUM SLAB
- (2) EMBED PL1/2x12x1'-0" WITH 4-1/2" DIA. x 6" H.S.A. PLATES TO BE SPACED AT 4'-0" O.C.
- (3) BRICK SHELF LSX5X1/2 CONT. - WELD TO EA. EMBED
- (4) BRICK VENEER - RE. ARCH. FOR LOCATION & INFO
- (5) WALL FRAMING - SEE PLAN AND ARCH. DWGS
- (6) WOOD STUD WALL - SEE SCHEDULE

- (1) PT TENDONS - SEE SHOP DRAWINGS
- (2) SLAB EDGE
- (3) STEEL PIPE INSERT IS REQ'D WHERE OPENING IS WITHIN 45 DEG. CONE
- (4) OPENINGS FARTHER THAN 1.5 TIMES DIA OR WIDTH, BUT GREATER THAN 18" FROM ANCHOR. DO NOT REQUIRE STEEL PIPE INSERT
- (5) 2" MINIMUM CLEAR COVERAGE

- (1) PT TENDONS - SEE SHOP DRAWINGS
- (2) MAXIMUM ALLOWABLE SWEEP WITHOUT HAIRPINS
- (3) WHERE TENDON SWEEP EXCEEDS 1:12, PROVIDE HAIRPINS AS SHOWN IN TYPICAL DETAIL
- (4) CONTINUOUS TENDON OR PROVIDE DEAD ENDS AS SHOWN.
- (5) BREAK TENDON AT OPENING AND PROVIDE DEAD ENDS AS SHOWN.

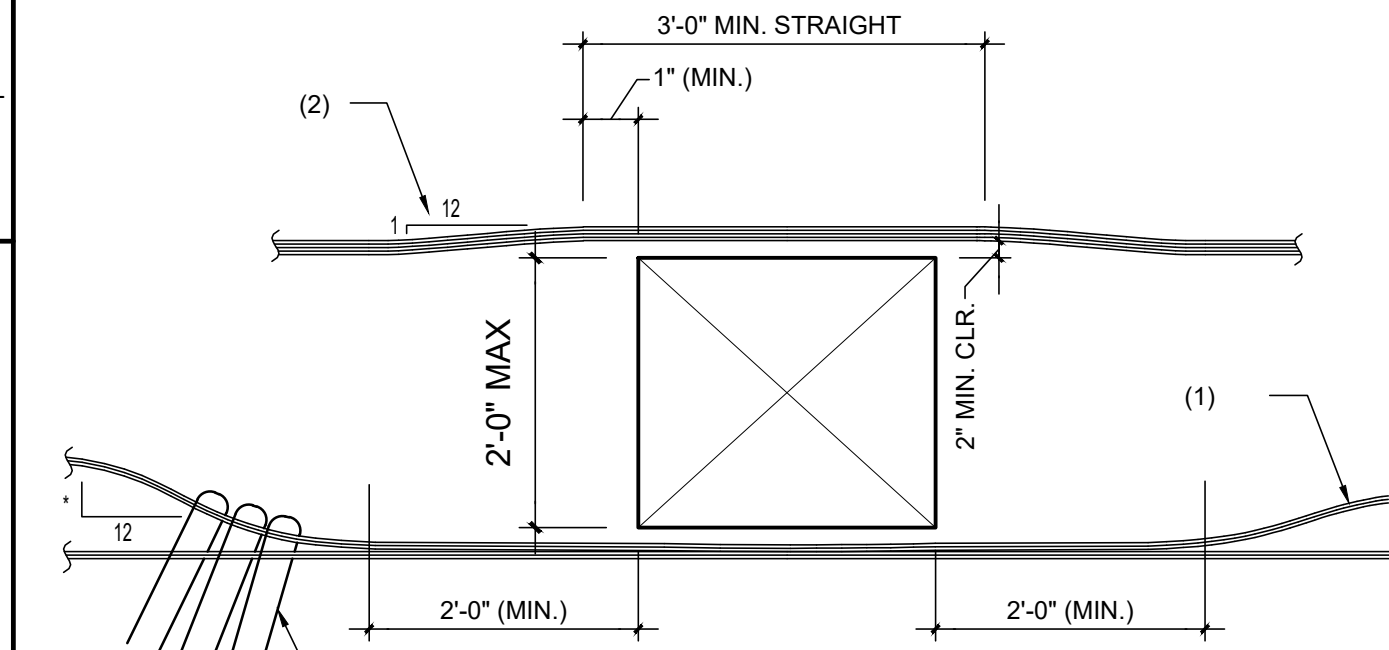


DISTRIBUTED TENDONS

11 SECTION AT BALCONY

8 DETAIL AT EXT. WALL BRICK SUPPORT

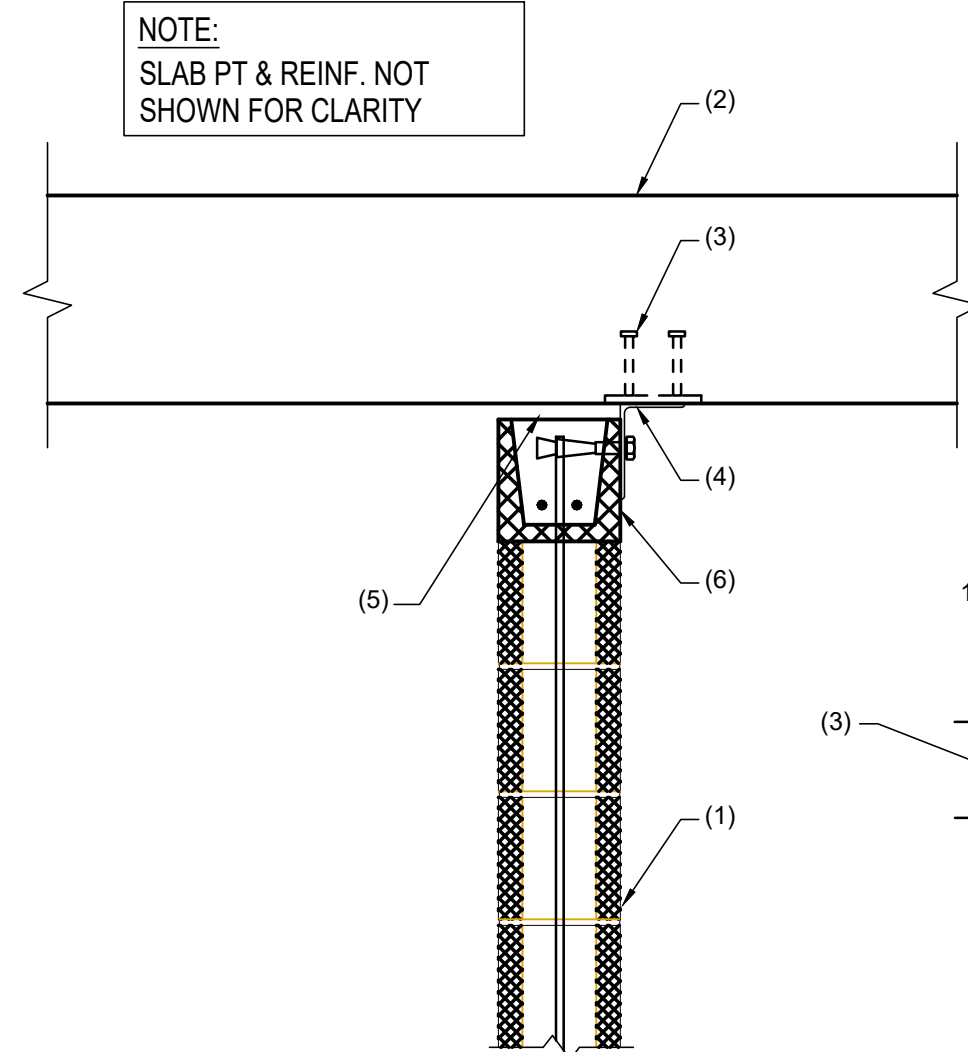
5 SLAB EDGE OPENINGS (12" MAX.)



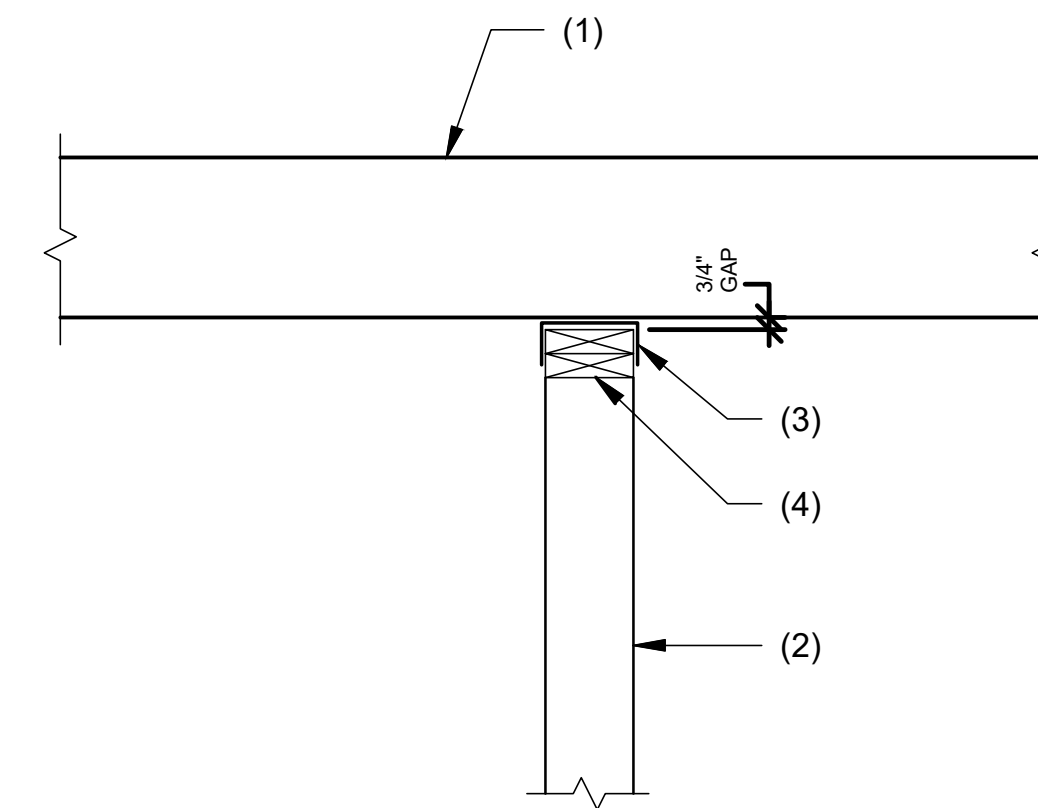
BANDED TENDONS

10 CMU ATTACHMENT AT SLAB ABOVE

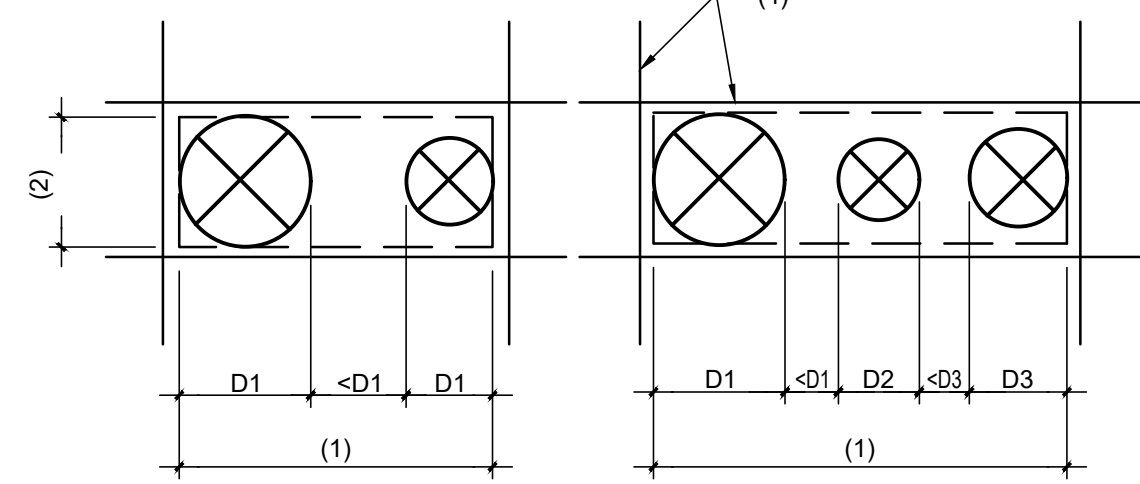
- (1) CMU - SEE PLAN
- (2) ELEVATED CONCRETE SLAB
- (3) 1/2" EMBED PLATE WITH 4 - 1/2" DIAMETER X 3 1/2" HEADED STUD ANCHORS - SPACE PLATES 72" O.C. EACH SIDE STAGGERED - SPACE PLATES 36" O.C. AT SLAB EDGE
- (4) 1/8"x1/8"x1/8" X 0'-6" (LLV) W/ 2" VERT. SLOTTED HOLE IN 6" LEG. FASTEN TO CMU WITH 3/8" DIAMETER THREADED ROD IN HILTI HIT-HY 70 ADHESIVE W/ 5" EMBEDMENT IN GROUTED CELL. HAND TIGHTEN AND SCAR THREADS.
- (5) 1" GAP - FIRESTOP AS REQUIRED BY ARCH.
- (6) BOND BEAM WITH 2 - #5 CONTINUOUS



- 1.) CONCRETE PODIUM SLAB - SEE PLAN
- 2.) FRM WOOD STUD WALL - SEE PLAN
- 3.) 600T250-54 SLIP TRACK. FASTEN TO PODIUM W/0.177" DIA PAF AT 12" O.C.
- 4.) DOUBLE 2X TOP PLATE - DO NOT FASTEN TO SLIP TRACK



- (1) EFFECTIVE LENGTH OF COMBINED OPENINGS (24" MAX.)
- (2) 10" MAX. - REFER TO TYPICAL DETAIL FOR LARGER OPENINGS
- (3) EFFECTIVE LENGTH < 12", NO TRIM BARS ARE REQUIRED.
- (4) EFFECTIVE LENGTH > 12", PROVIDE 1-#4 TRIM BAR (T&B) ON ALL SIDES OF OPENING. EXTEND TRIM BARS 24" BEYOND OPENING
- (5) NOTE: NO DIAGONAL BARS ARE REQUIRED
- (6) NOTE: D1, D2, ETC INDICATE DIAMETER OF OPENING



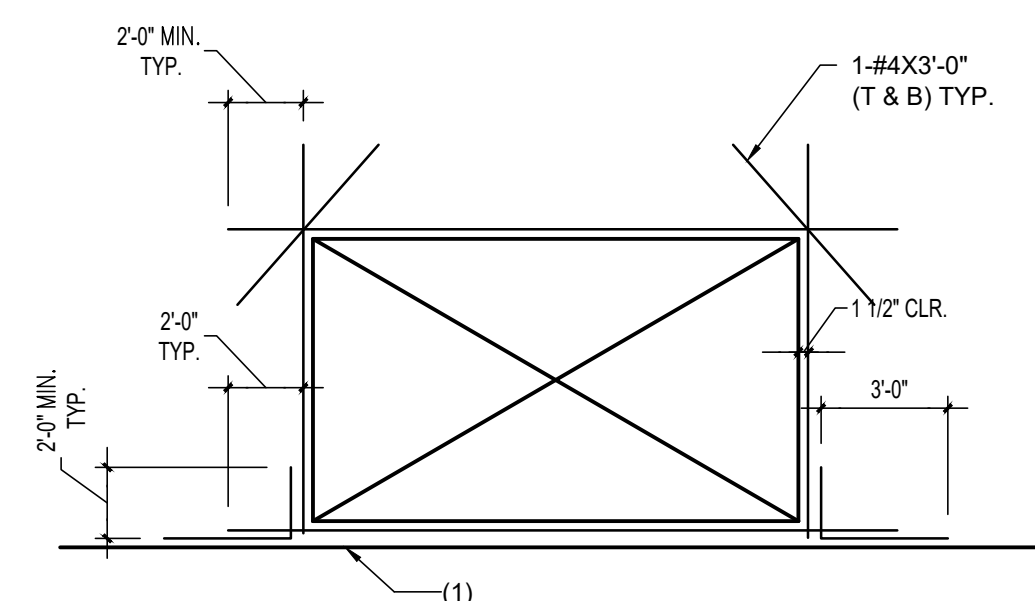
4 TRIM BARS FOR MULTIPLE OPENINGS

2 PLACEMENT OF TENDONS AT OPENINGS

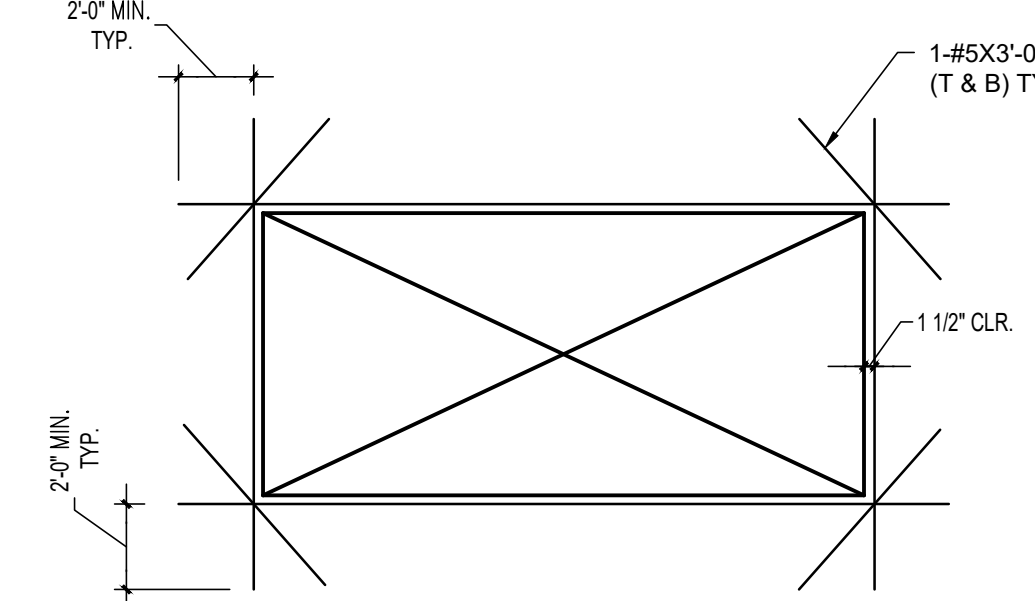
OPENING MAX. DIMENSION	REINFORCING
12" TO 18"	1 #4 EA. SIDE
18" TO 2'-6"	1 #4 (T & B), EA. SIDE
2'-6" TO 6'-0"	2 #5 (T & B), EA. SIDE

- (1) SLAB EDGE
- (2) TRIM REINFORCING SHOWN IS IN ADDITION TO REINFORCING SHOWN ON PLAN
- (3) PROVIDE TRIM REINFORCING AT ALL OPENINGS GREATER THAN 12" ACCORDING TO THE SCHEDULE AND LENGTHS SHOWN

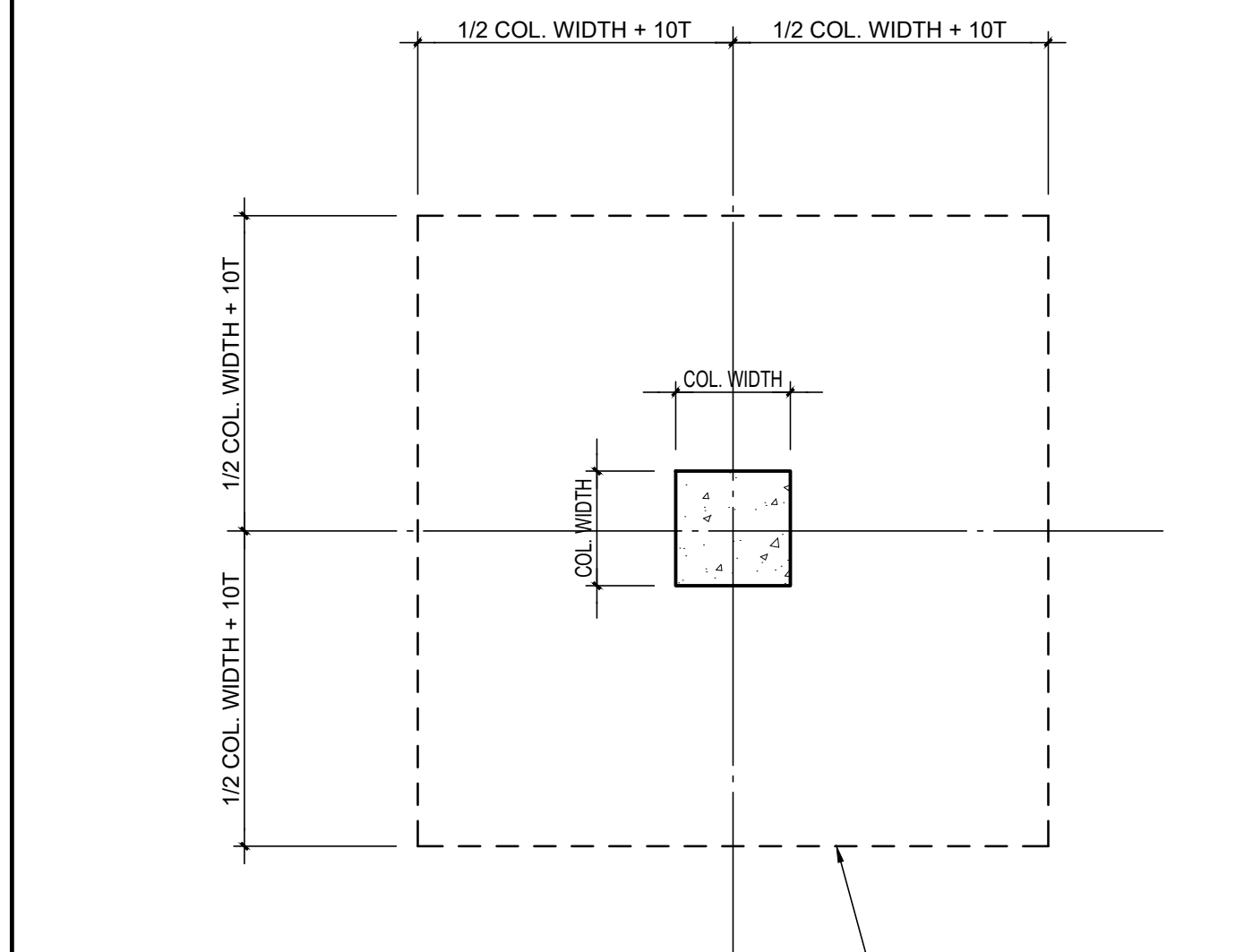
- (1) T= SLAB THICKNESS
- (2) CRITICAL SLAB PERIMETER
- (3) OPENINGS AND SLEEVE PENETRATIONS IN SLAB SHALL NOT BE PLACED WITHIN THE CRITICAL SLAB PERIMETER SHOWN BELOW UNLESS AS NOTED:
A) OPENINGS ARE SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.
B) OPENINGS AND SLEEVE PENETRATIONS ARE SHOWN ON A SHOP DRAWING THAT INCLUDES ALL REQUIRED OPENINGS/PENETRATIONS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER 4 WEEKS PRIOR TO THE SCHEDULED DATE FOR THE CONCRETE POUR FOR REVIEW. UPON REVIEW OF THE SHOP DRAWING ADDITIONAL REINFORCEMENT MAY BE REQUIRED IN THE SLAB. ADDITIONALLY, OPENINGS OR SLEEVES MAY NEED TO BE REARRANGED AND/OR REMOVED FROM THE CRITICAL SLAB PERIMETER
- (4) REFER TO SLAB OPENING DETAILS FOR ADDITIONAL REINFORCING REQUIREMENTS



OPENING AT EDGE CONDITION

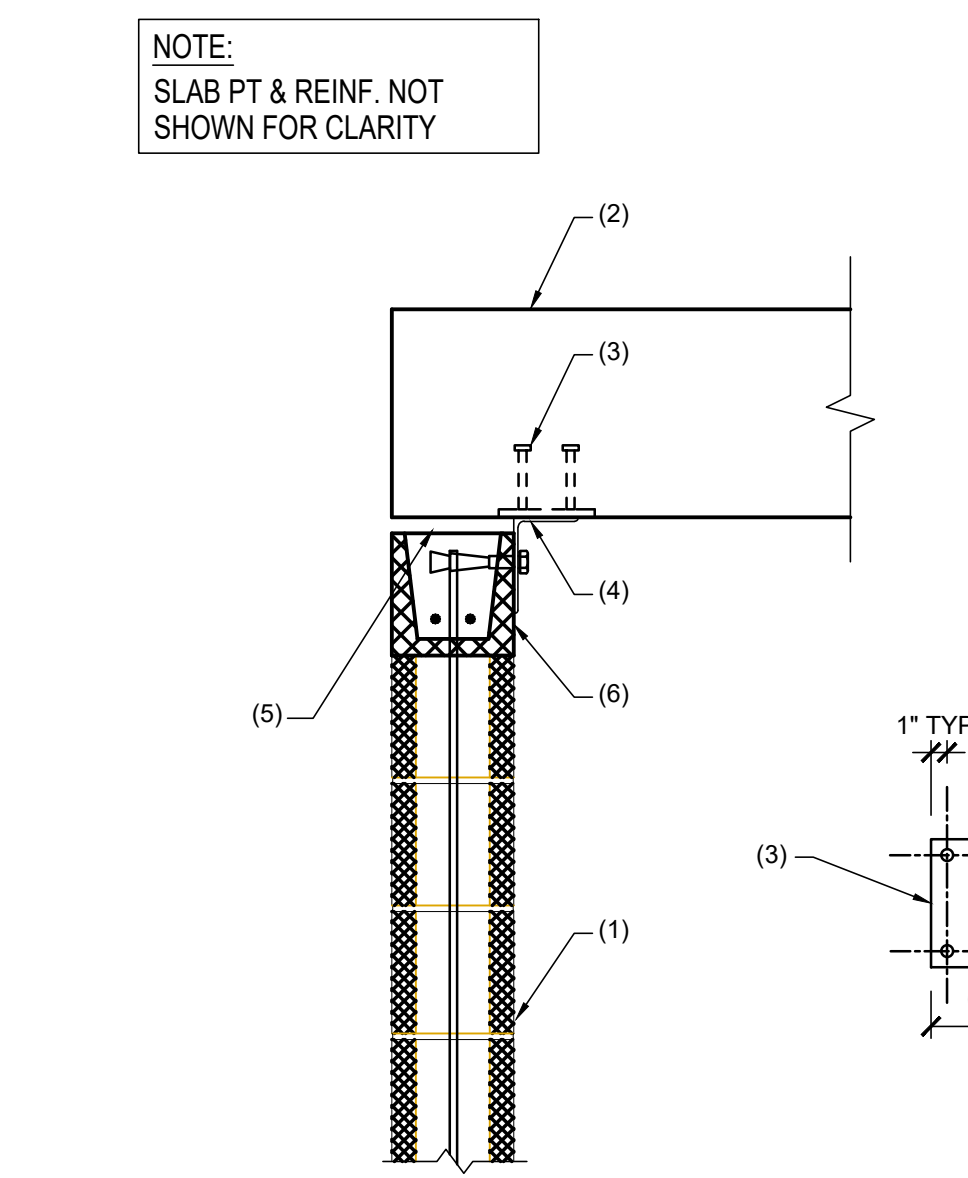


OPENING AT INTERIOR CONDITION



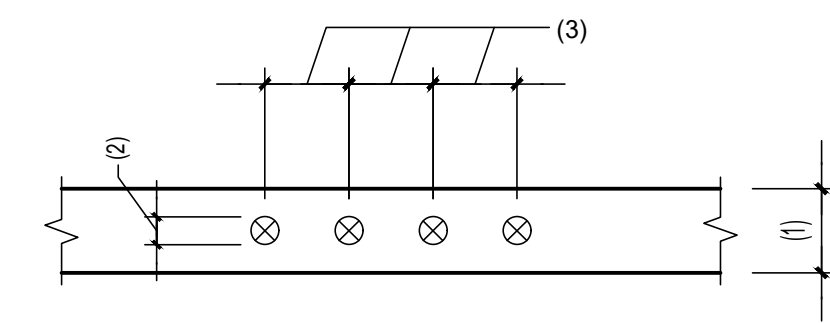
9 SECTION AT STAIR AT PODIUM

- (1) CMU - SEE PLAN
- (2) ELEVATED CONCRETE SLAB
- (3) 1/2" EMBED PLATE WITH 4 - 1/2" DIAMETER X 3 1/2" HEADED STUD ANCHORS - SPACE PLATES 36" O.C. EACH SIDE STAGGERED
- (4) 1/8"x1/8"x1/8" X 0'-6" (LLV) W/ 2" VERT. SLOTTED HOLE IN 6" LEG. FASTEN TO CMU WITH 3/8" DIAMETER THREADED ROD IN HILTI HIT-HY 70 ADHESIVE W/ 5" EMBEDMENT IN GROUTED CELL. HAND TIGHTEN AND SCAR THREADS.
- (5) 1" GAP - FIRESTOP AS REQUIRED BY ARCH.
- (6) BOND BEAM WITH 2 - #5 CONTINUOUS



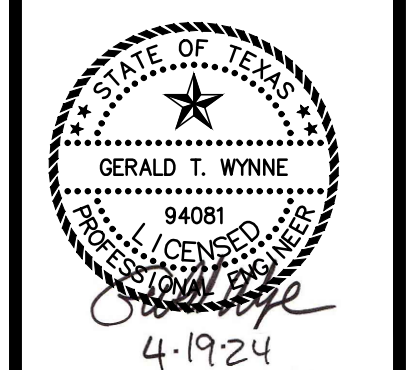
6 CONDUIT EMBEDMENT IN SLAB

- (1) T= SLAB THICKNESS
- (2) MAXIMUM CONDUIT DIAMETER = 1/3 THE OVERALL THICKNESS OF THE SLAB
- (3) CONDUITS SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS ON CENTER
- (4) CONDUITS ARE NOT PERMITTED WITHIN 24" OF COLUMN FACE
- (5) CONDUITS SHALL BE PLACED AS CLOSE TO MID-DEPTH OF SLAB AS POSSIBLE
- (6) CONCRETE COVER FOR CONDUITS SHALL BE THE SAME AS REQUIREMENTS FOR REINFORCING
- (7) CONDUITS AND PIPES OF ALUMINUM SHALL NOT BE EMBEDDED IN STRUCTURAL



3 TRIM BARS FOR OPENINGS IN SLAB

1 SLEEVE PENETRATIONS AT COLUMNS



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Architects
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Fax (713) 520-1904
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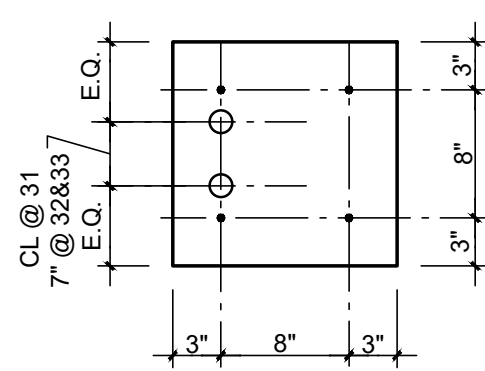
Gerald T. Wynne, P.E.
Consulting Structural Engineer
16107 Kensington Drive, Suite 278
Sugar Land, TX 77479
Phone: 832-334-3260
Texas Firm #20169

LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

ISSUE FOR PERMIT	Date: 10-31-2023
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ISSUE FOR CONSTRUCTION	Date: 04-19-2024
Date:	
Date:	
Date:	

ELEVATED SLAB DETAILS
N.T.S.





EMBED PLATE
3/4"X14"X1'-2" W/
(4) 1/2"Ø X6" HSA.

A

- (1) SLAB THICKNESS (T) - SEE PLAN
- (2) #4 X 4'-0" REBAR EACH SIDE OF ANCHOR BOLT. PROVIDE HOOK ONE END AT EDGE AND CORNER CONDITIONS
- (3) PROVIDE 3/4" DIA CIP ANCHOR BOLTS AT TYPE 31 & 32 AND 1" DIA CIP ANCHOR BOLTS AT TYPE 33. COORDINATE WITH BRACING PLAN AND HOLDDOWN SCHEDULE
- (4) PROVIDE 3/4" DIA NELSON TREADED STUDS AT TYPE 31 & 32 AND 1" DIA NELSON TREADED STUDS AT TYPE 33. COORDINATE WITH BRACING PLAN AND HOLDDOWN SCHEDULE
- (5) COMPRESSION STUDS - SEE HOLDDOWN SCHEDULE
- (6) TOP OF CONCRETE SLAB
- (7) 3/4" CLEAR COVER
- (8) 4-#4 X 6'-0" REBAR. PROVIDE HOOK ONE END AT EDGE AND CORNER CONDITIONS
- (9) EMBED PLATE - SEE DETAIL A
- (10) WALL BOTTOM PLATE
- (11) NOTE: SIMPSON "ABL" MAY BE USED FOR INSTALLATION OF CIP ANCHOR BOLTS
- (12) NOTE: SLAB REINFORCING AND PT NOT SHOWN FOR CLARITY. SEE PLAN AND OTHER SECTIONS.

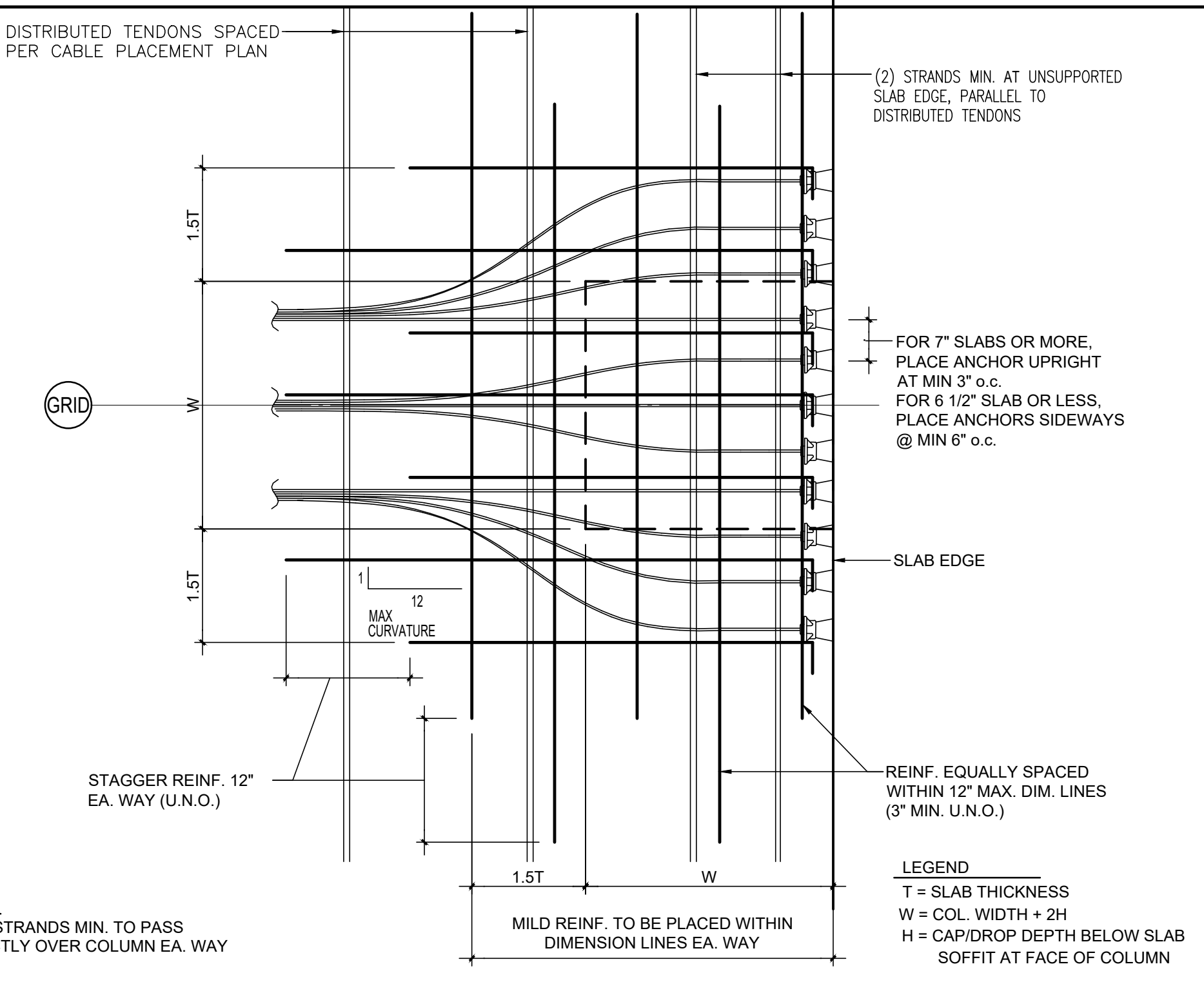
CLASS A SPLICE
(TO BE USED ONLY WHERE NOTED ON DRAWING)

REINF. SIZE	CONCRETE STRENGTH (PSI)							
	3000	4000	5000	6000	7000	8000	10000	12000
#3	17"	15"	13"	12"	12"	12"	12"	12"
#4	22"	19"	17"	16"	15"	14"	12"	12"
#5	28"	24"	22"	20"	18"	17"	12"	12"
#6	33"	29"	26"	24"	22"	21"	15"	15"
#7	48"	42"	38"	34"	32"	30"	27"	27"
#8	55"	48"	43"	39"	36"	34"	30"	30"
#9	62"	54"	48"	44"	41"	38"	34"	34"
#10	70"	61"	54"	50"	46"	43"	39"	39"
#11	78"	67"	60"	55"	51"	48"	43"	43"

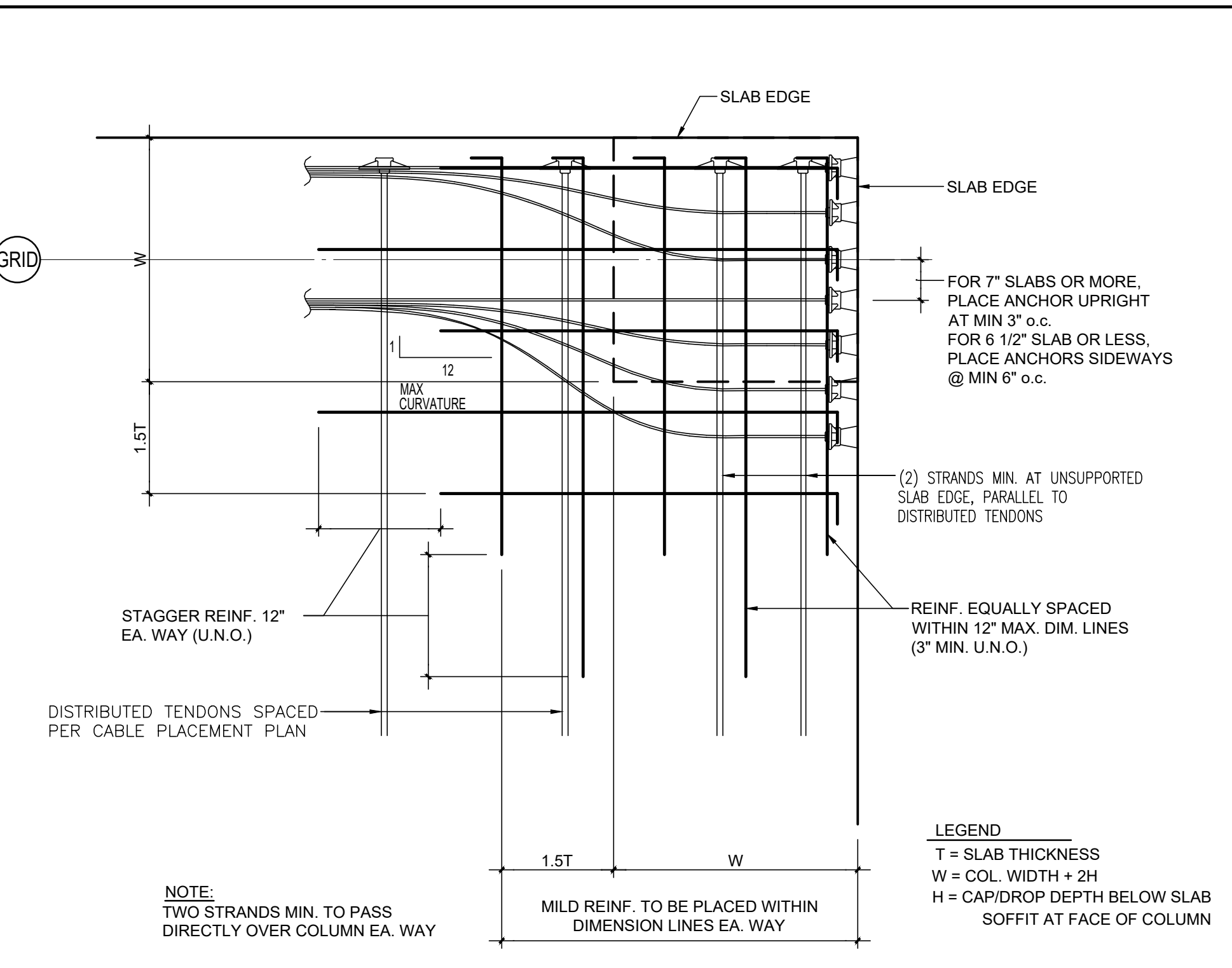
CLASS B SPLICE
(TO BE USED, U.N.O.)

REINF. SIZE	CONCRETE STRENGTH (PSI)							
	3000	4000	5000	6000	7000	8000	10000	12000
#3	23"	20"	17"	16"	16"	16"	16"	16"
#4	29"	25"	23"	21"	20"	19"	16"	16"
#5	37"	32"	29"	26"	24"	23"	16"	16"
#6	43"	38"	34"	32"	29"	28"	20"	20"
#7	63"	55"	50"	45"	42"	39"	36"	36"
#8	72"	63"	56"	51"	47"	45"	39"	39"
#9	81"	71"	63"	58"	54"	50"	45"	45"
#10	91"	80"	71"	65"	60"	56"	51"	51"
#11	102"	88"	78"	72"	67"	63"	56"	56"

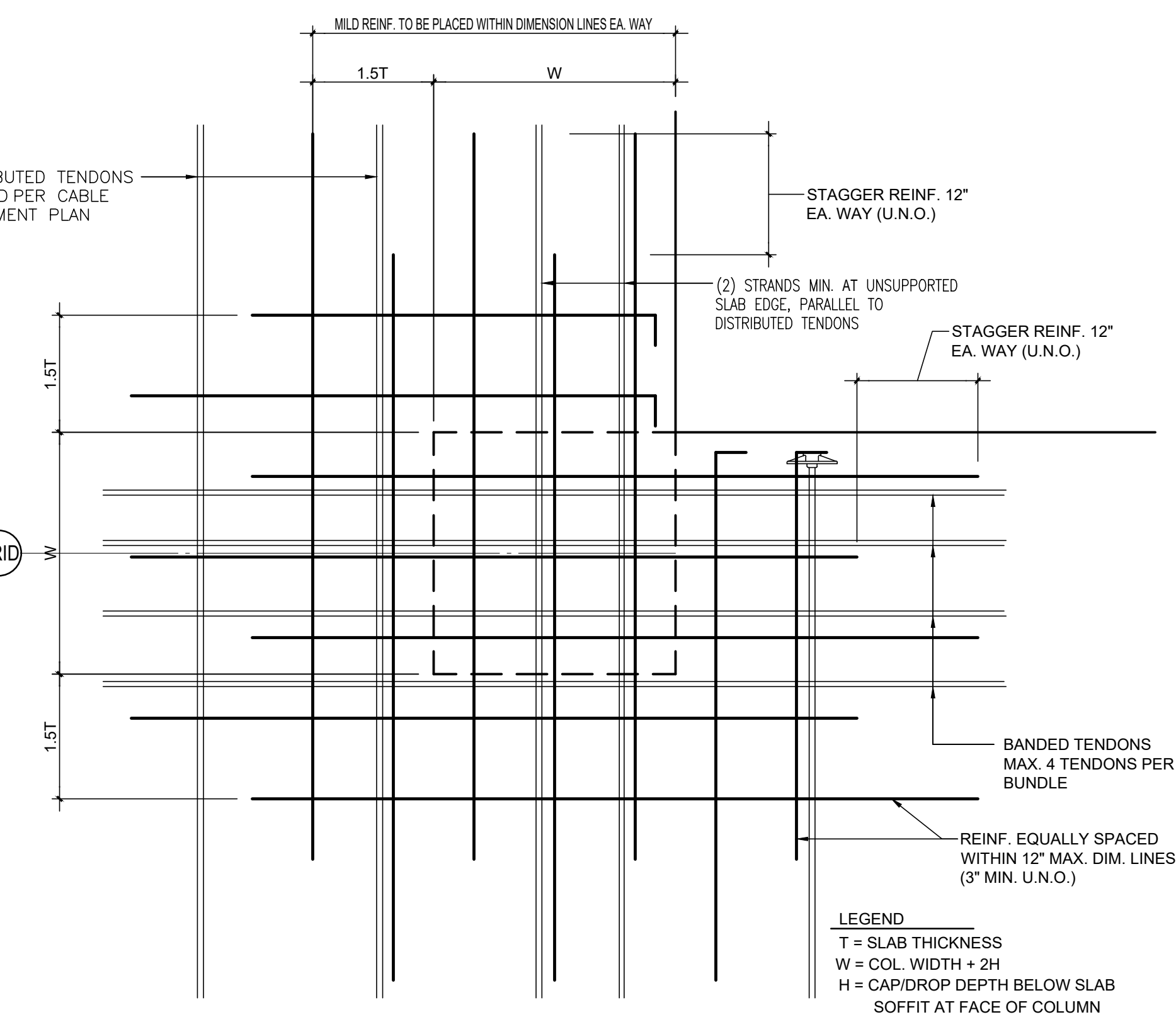
2 REINFORCING SPLICE SCHEDULE



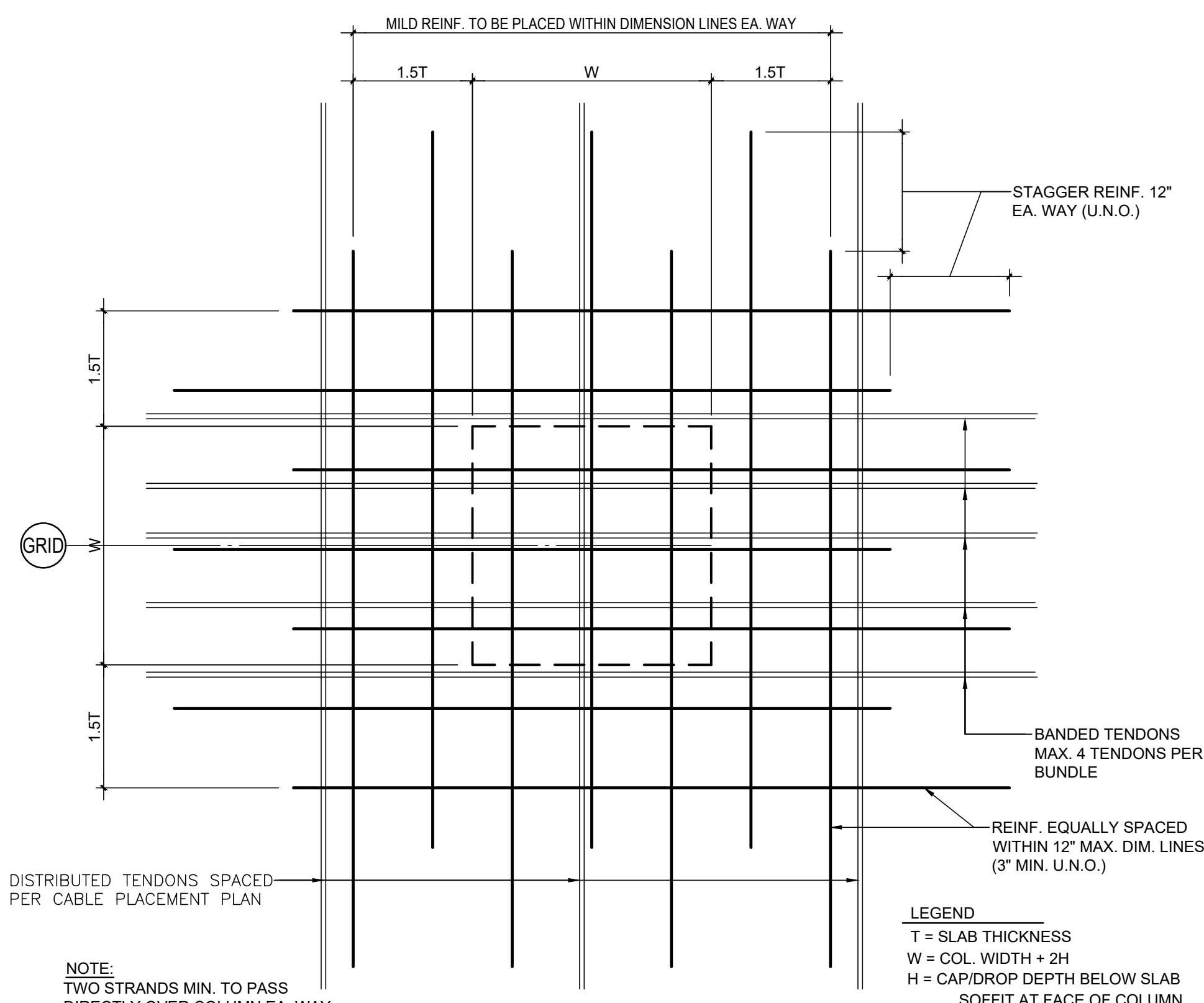
TOP REIN. PLACEMENT at EDGE COLUMN



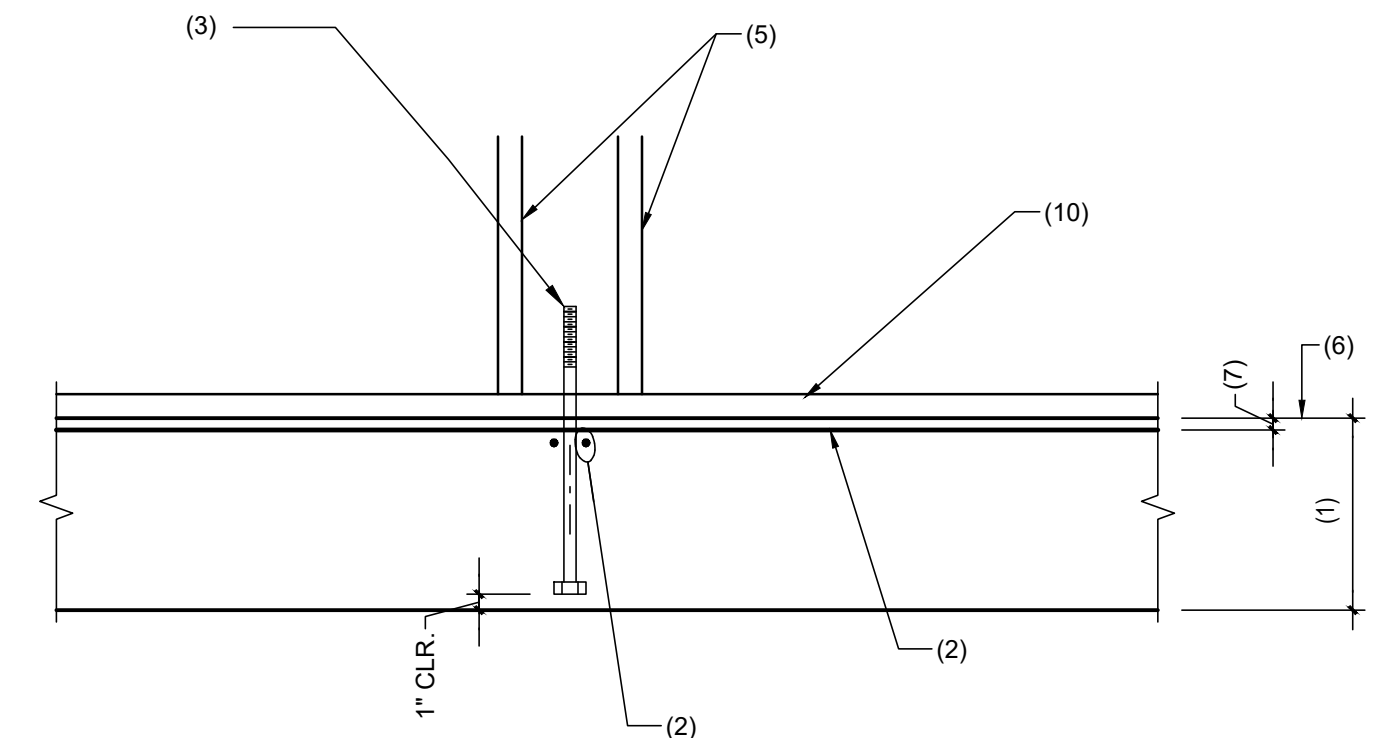
TOP REIN. PLACEMENT at CORNER COLUMN (OUTSIDE)



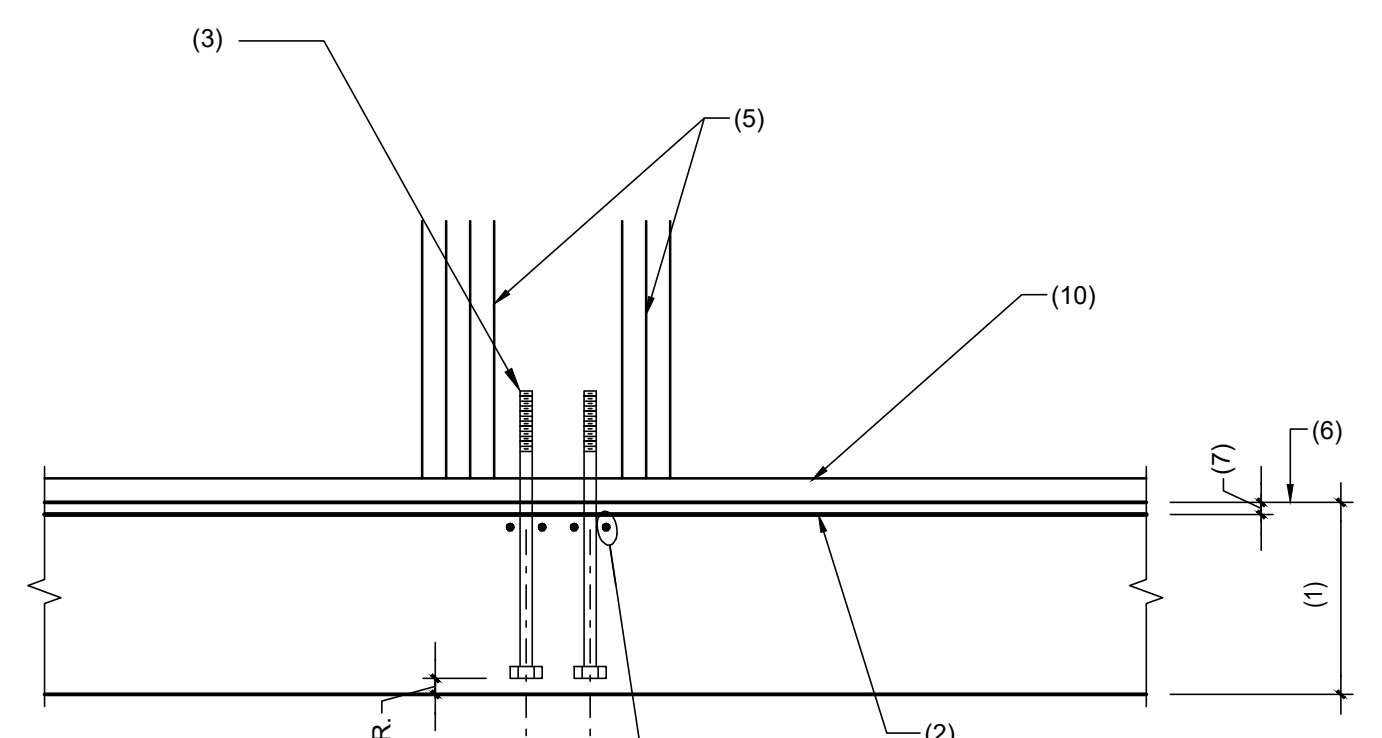
TOP REIN. PLACEMENT at CORNER COLUMN (INSIDE)



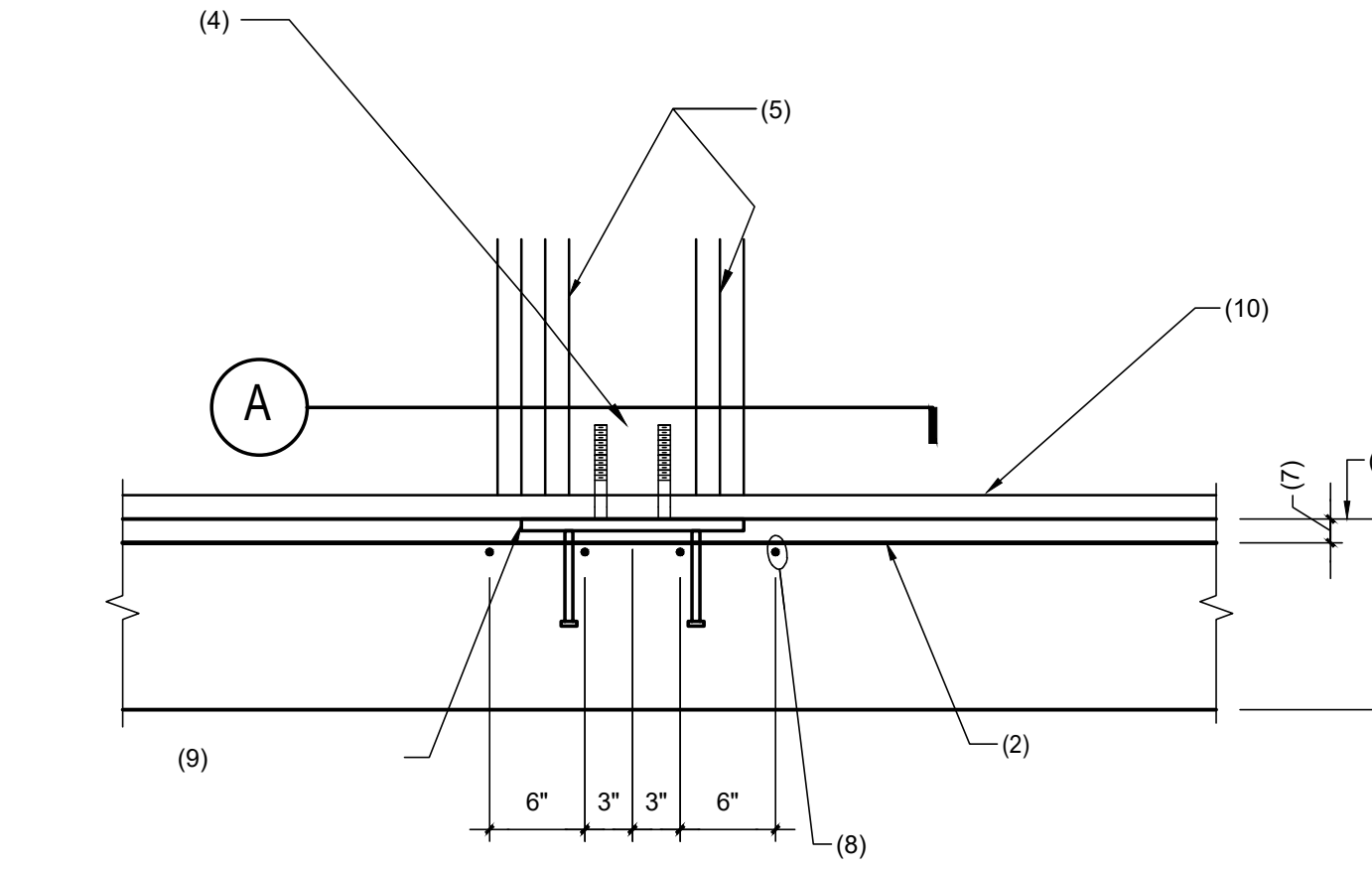
TOP REIN. PLACEMENT at INTERIOR COLUMN



INTERIOR SHEAR WALL HOLDDOWN TYPE "x1"



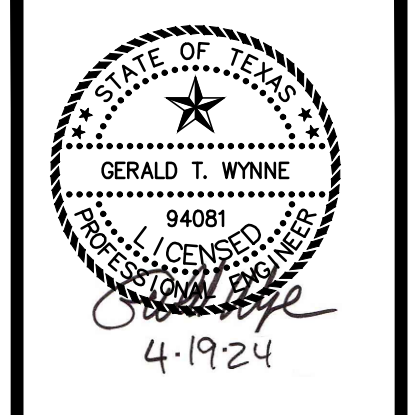
INTERIOR SHEAR WALL HOLDDOWN TYPE "x2", "x3"



SLAB EDGE SHEAR WALL HOLDDOWN TYPE "x1", "x2", "x3" (31,32,ETC)

3 SHEARWALL ANCHOR HOLDDOWN BOLTS

1 TOP REIN. SCHEDULE AND DETAILS



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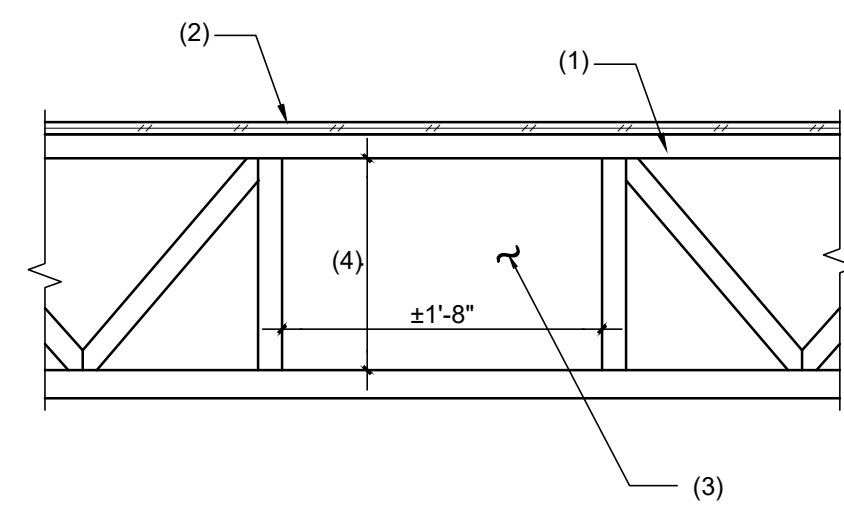


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Job No. 2302

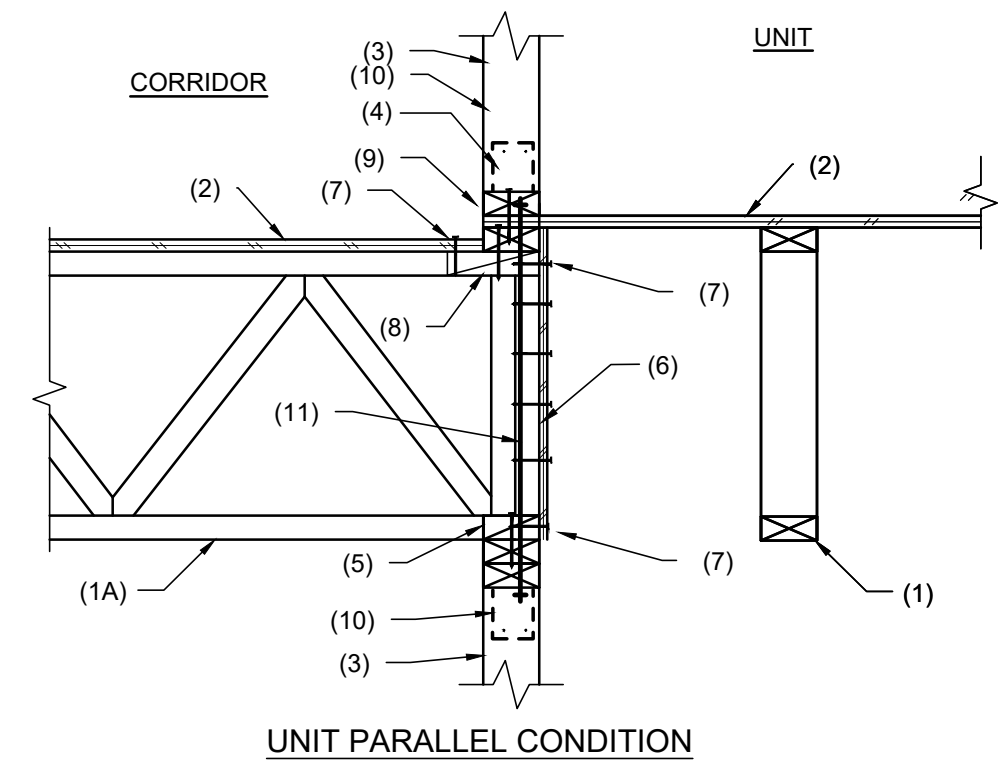
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PERMIT RESUBMITTAL	Date: 01-08-2024
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ELEVATED SLAB
DETAILS
N.T.S.

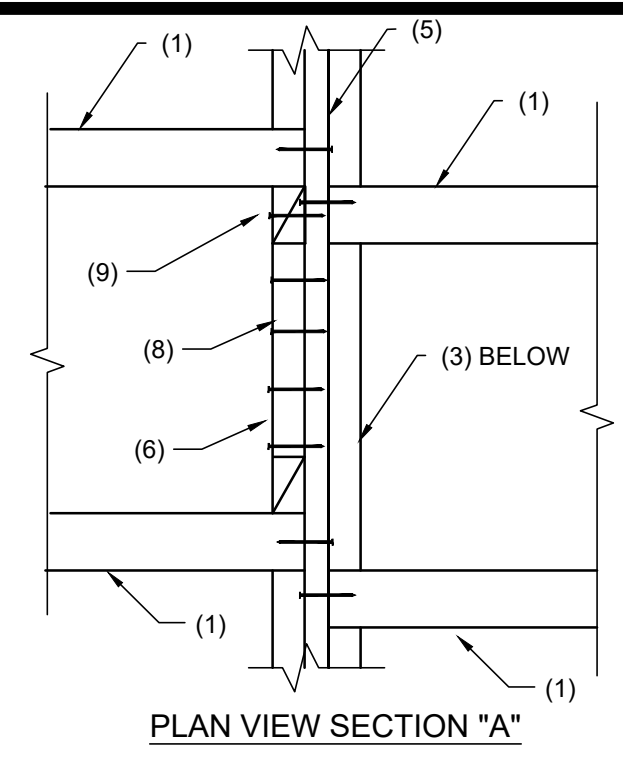




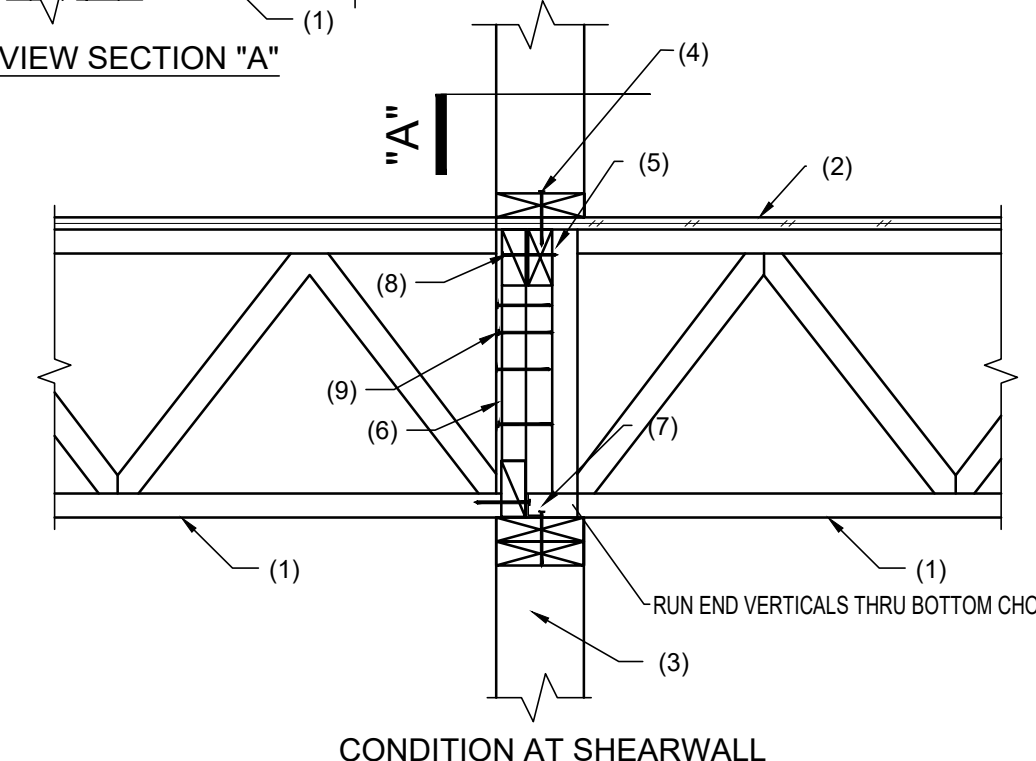
- (1) CORRIDOR TRUSS OR GIRDER TRUSS
- (2) FLOOR SHEATHING
- (3) OPEN MECHANICAL CHAISE
- (4) HEIGHT OF CHAISE = OVERALL TRUSS DEPTH - TRUSS CHORDS (3' TYPICAL). RE: TRUSS DRAWINGS FOR ADD'L INFORMATION



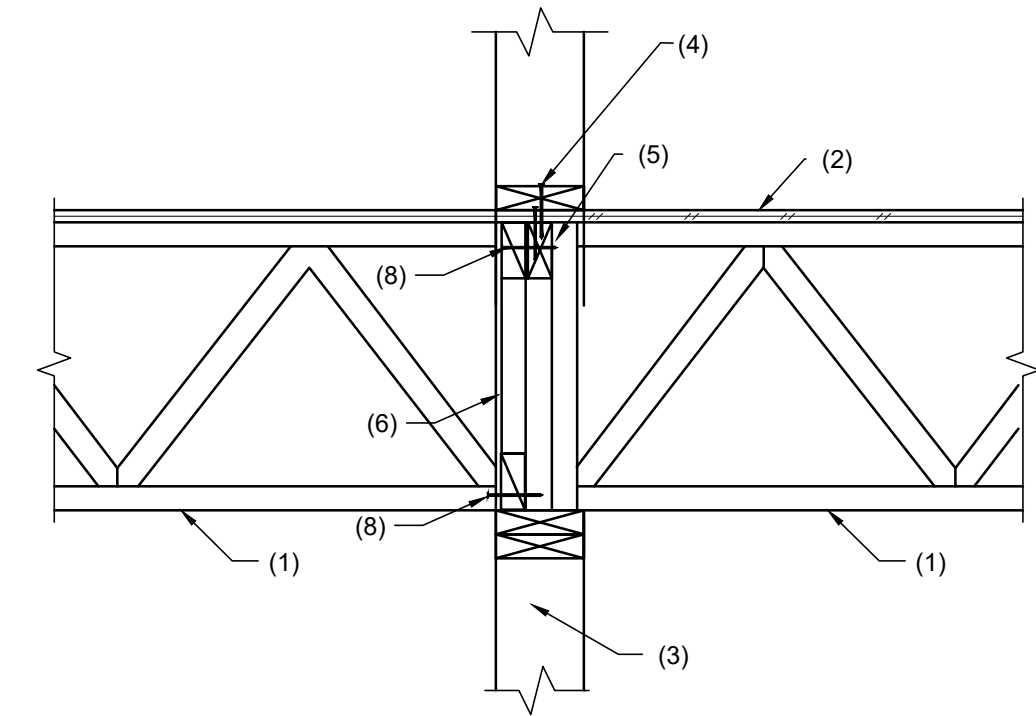
- (1) UNIT FLOOR TRUSS
- (1A) CORRIDOR FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) CORRIDOR STUD WALL. SEE SCHEDULE
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) 2X BLOCK BETWEEN TRUSSES. FASTEN TO MATCH BOTTOM PLATE NAILING OF WALL BELOW.
- (6) 1/2" W.S.P. BAND CONT. W/8d NAILS AT 6" O.C. EDGE NAILING AND 4-8d NAILS EACH TRUSS.
- (7) EDGE NAILING
- (8) 2X8 BLOCK BETWEEN TRUSSES
- (9) 2-2X CONT.
- (10) SIMPSON SDWC15600 - SEE UPLIFT ANCHORAGE SCHEDULE FOR LOCATION.
- (11) SIMPSON SDWF2724-TUW - SEE UPLIFT ANCHORAGE SCHEDULE FOR LOCATION.



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) INTERIOR BEARING WALL - SEE PLAN
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) 2X4 RIBBON CONT. WITH 2-10D NAILS EA. TRUSS.
- (6) PRE-MANUF TRUSS BLOCK AT 6'-0" O.C.
- (7) 2-A35 CLIPS EACH TRUSS BLOCK
- (8) 8d NAILS AT 6" O.C. TRUSS BLOCK TO RIBBON.
- (9) 4-8d NAILS ONE END OF TRUSS BLOCK TO TRUSS END VERTICAL.



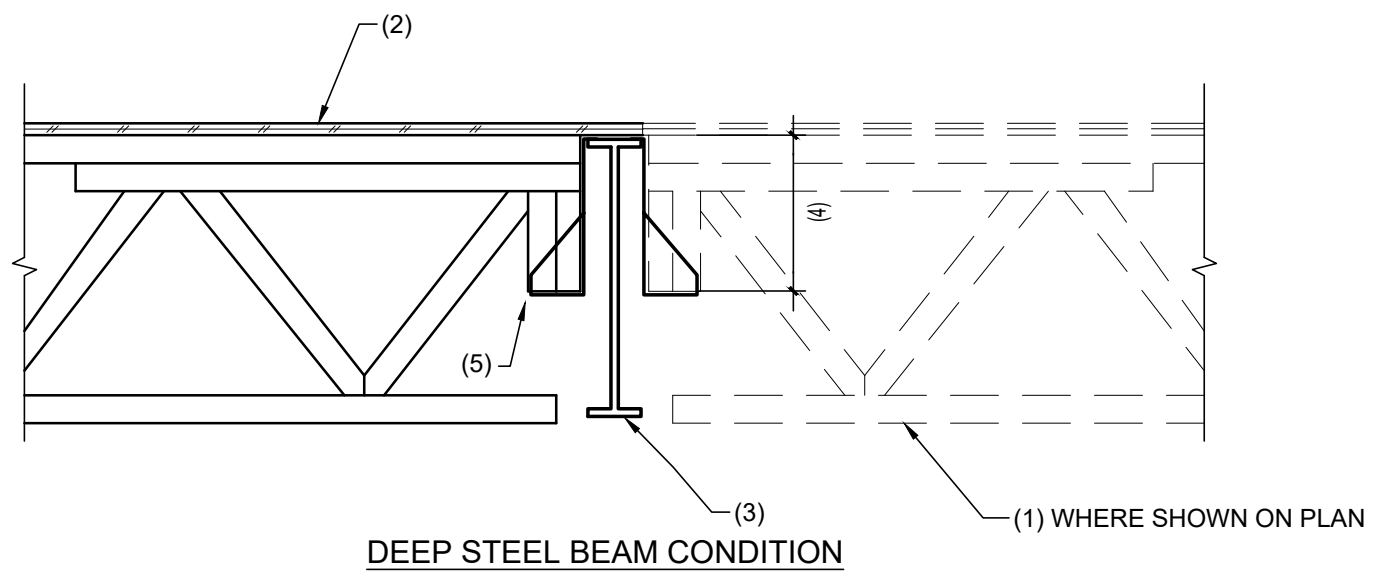
CONDITION AT SHEARWALL



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) INTERIOR BEARING WALL - SEE PLAN
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) 2X4 RIBBON CONT. WITH 2-10D NAILS EA. TRUSS.
- (6) 2X4 DIAG AT 4'-0" O.C. (ALTERNATE DIR)
- (8) 3-8d NAILS EACH END OF TRUSS BLOCK TO RIBBON AND TRUSS END VERTICAL.

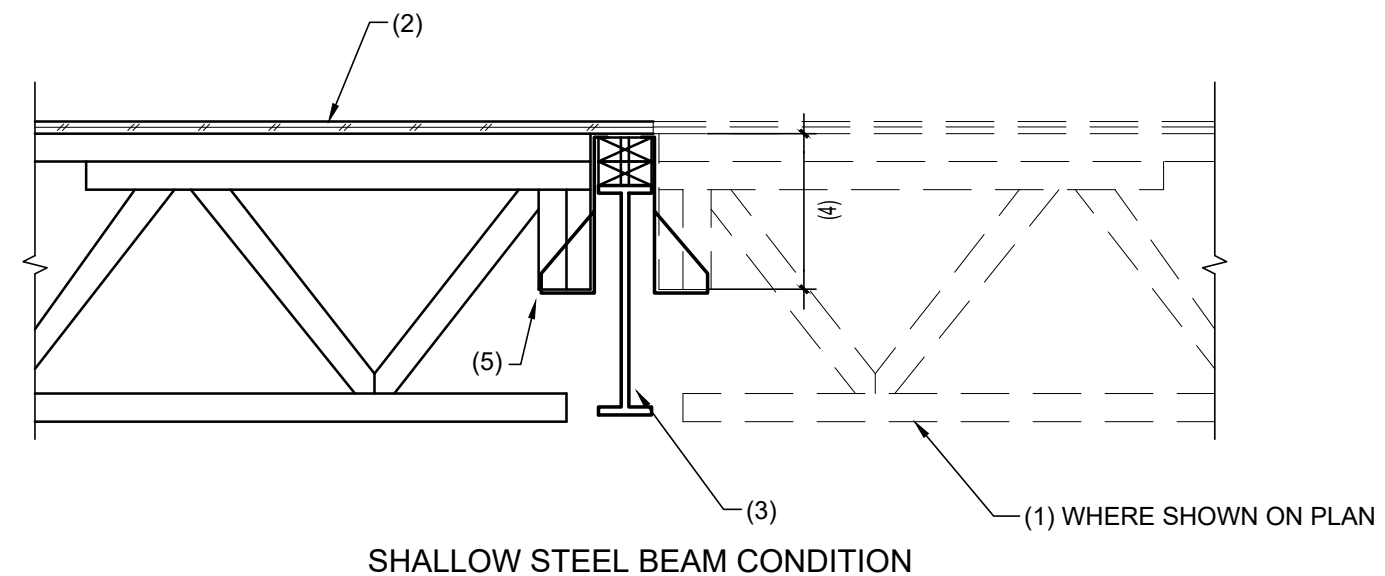
6

TRUSS CHASE DETAIL



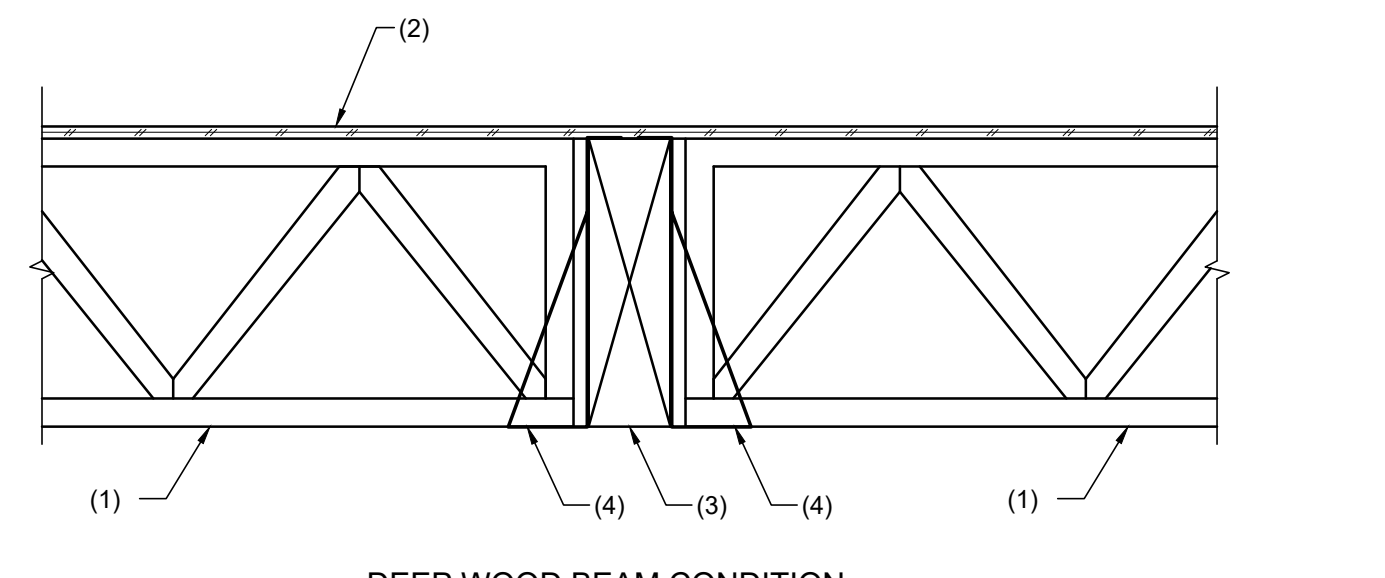
- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) WF BEAM
- (4) TRUSS HEEL HEIGHT TO MATCH HANGER HEIGHT
- (5) SIMPSON BA410 HANGER WELDED TO WF BEAM

DEEP STEEL BEAM CONDITION



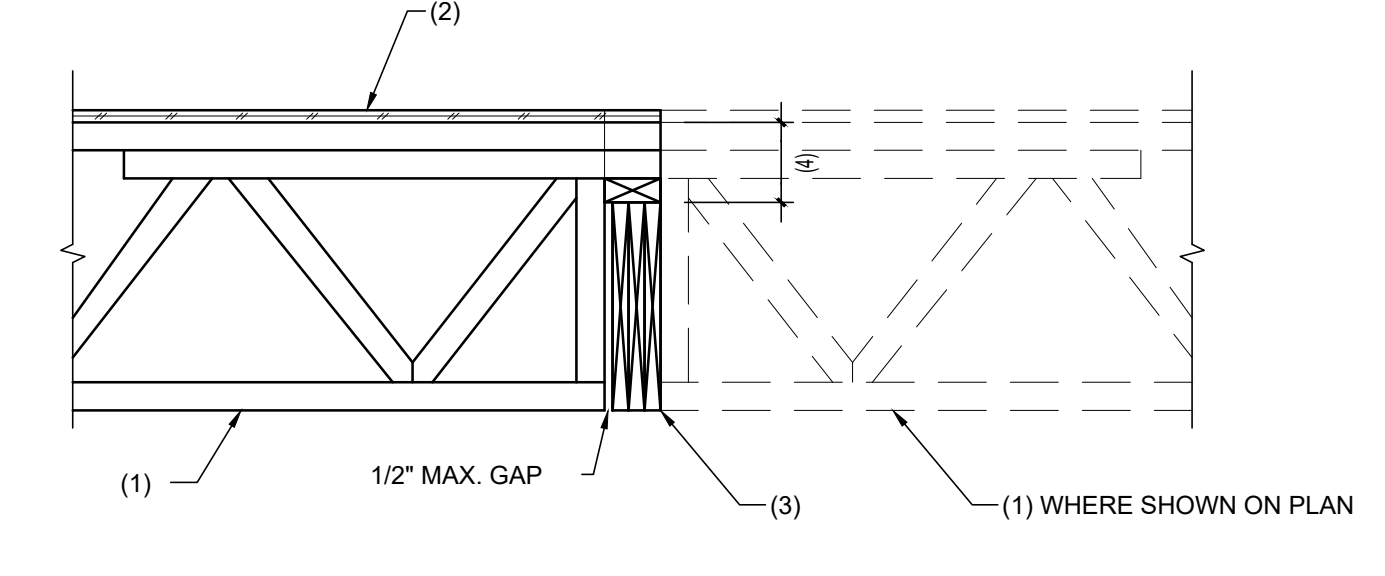
- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) WF BEAM W/ 2-2X NAILER WITH 1/2" DIA. BOLTS @ 24" O.C. WELDED TO BEAM. USE SINGLE NAILER WHERE BEAM DEPTH EXCEEDS 15".
- (4) TRUSS HEEL HEIGHT TO MATCH HANGER HEIGHT
- (5) SIMPSON BA410 HANGER NAILED TO 2X NAILER

SHALLOW STEEL BEAM CONDITION



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) BEAM - SEE PLAN. BOTTOM OF BEAM TO BE FLUSH WITH BOTTOM OF TRUSS AND BEAR DIRECTLY ON WALL TOP PLATE
- (4) TRUSS HANGER - BY TRUSS MFG.

DEEP WOOD BEAM CONDITION



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) BEAM - SEE PLAN. BOTTOM OF BEAM TO BE FLUSH WITH BOTTOM OF TRUSS AND BEAR DIRECTLY ON WALL TOP PLATE
- (4) TRUSS HEEL HEIGHT VARIES WITH BEAM DEPTH

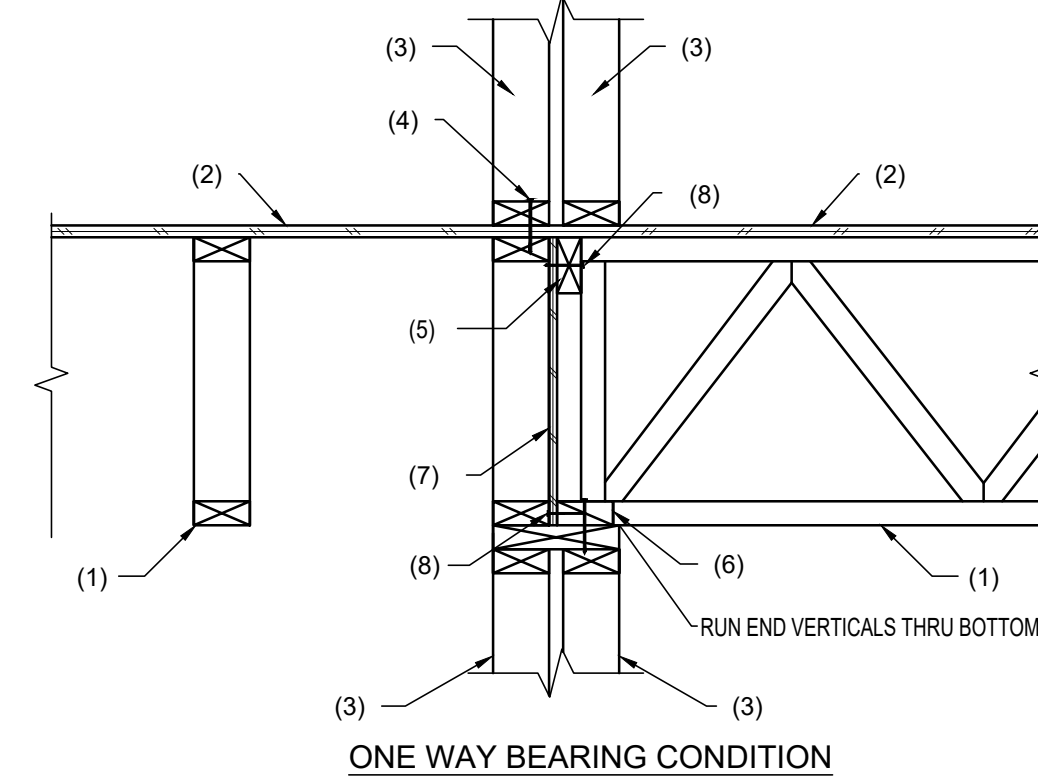
SHALLOW WOOD BEAM CONDITION

5

FLUSH BEAM DETAILS

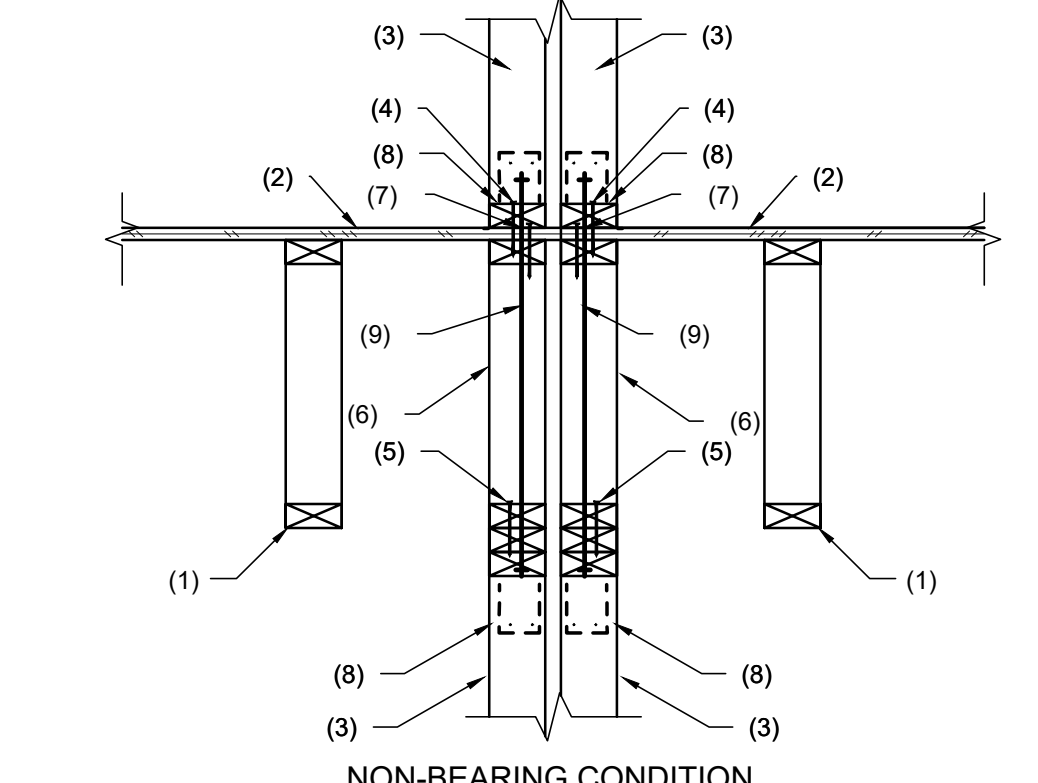
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CORRIDOR DETAIL



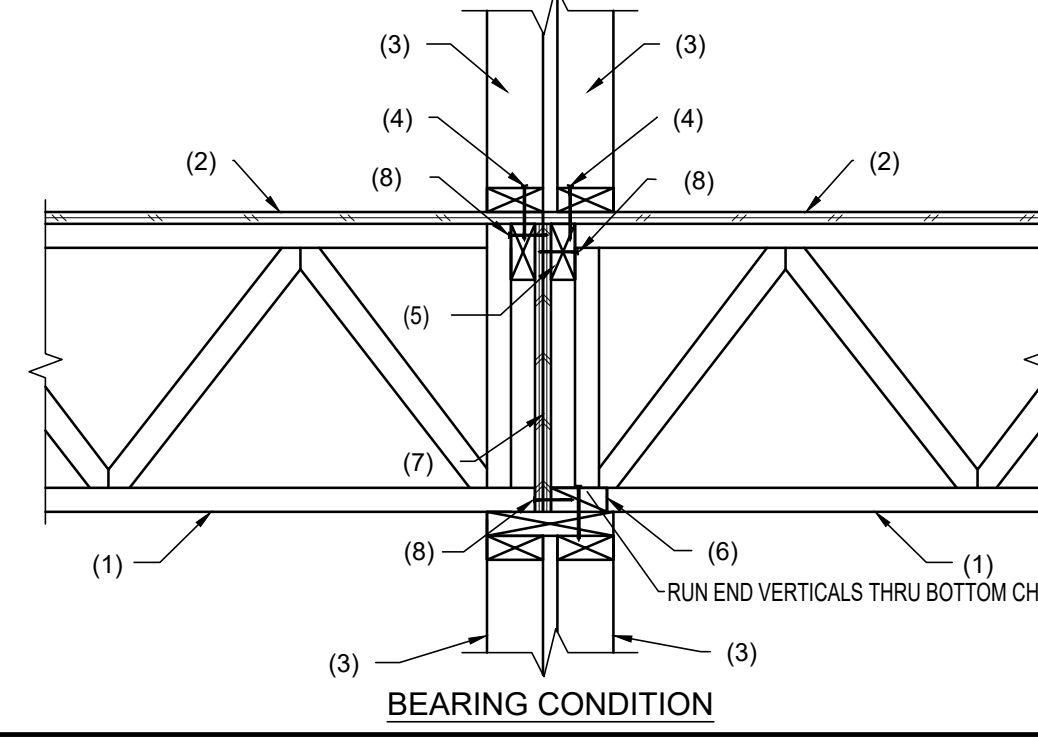
- (1) FLOOR TRUSS W/END VERTICALS RUN THRU TO BEARING T & B
- (2) FLOOR SHEATHING
- (3) EXTERIOR STUD WALL. SEE SCHEDULE
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) 2X4 CONT. BAND
- (6) 4X2 BLOCKING BETWEEN TRUSSES W/ 10d NAILS AT 4" O.C.
- (7) 2-7/16" OSB BANDS W/10d NAILS @ 4" O.C. EDGES, 12" O.C. FIELD.
- (8) EDGE NAILING

ONE WAY BEARING CONDITION



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) EXTERIOR STUD WALL. SEE SCHEDULE
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) FASTEN BOT. CHORD TO MATCH NAILING ABOVE.
- (6) KNEEWALL TRUSS. PROVIDE DRAG TRUSS ABOVE SHEARWALL LOCATIONS AND MATCH SHEARWALL CAPACITY IN SCHEDULE.
- (7) EDGE NAILING
- (8) SIMPSON SDWC15600 - SEE UPLIFT ANCHORAGE SCHEDULE FOR LOCATION.
- (9) SIMPSON SDWF2724-TUW - SEE UPLIFT ANCHORAGE SCHEDULE FOR LOCATION.

NON-BEARING CONDITION



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) EXTERIOR STUD WALL. SEE SCHEDULE
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) 2X4 CONT. BAND
- (6) 4X2 BLOCKING BETWEEN TRUSSES W/ 10d NAILS AT 4" O.C.
- (7) 2-7/16" OSB BANDS W/10d NAILS @ 4" O.C. EDGES, 12" O.C. FIELD.
- (8) EDGE NAILING

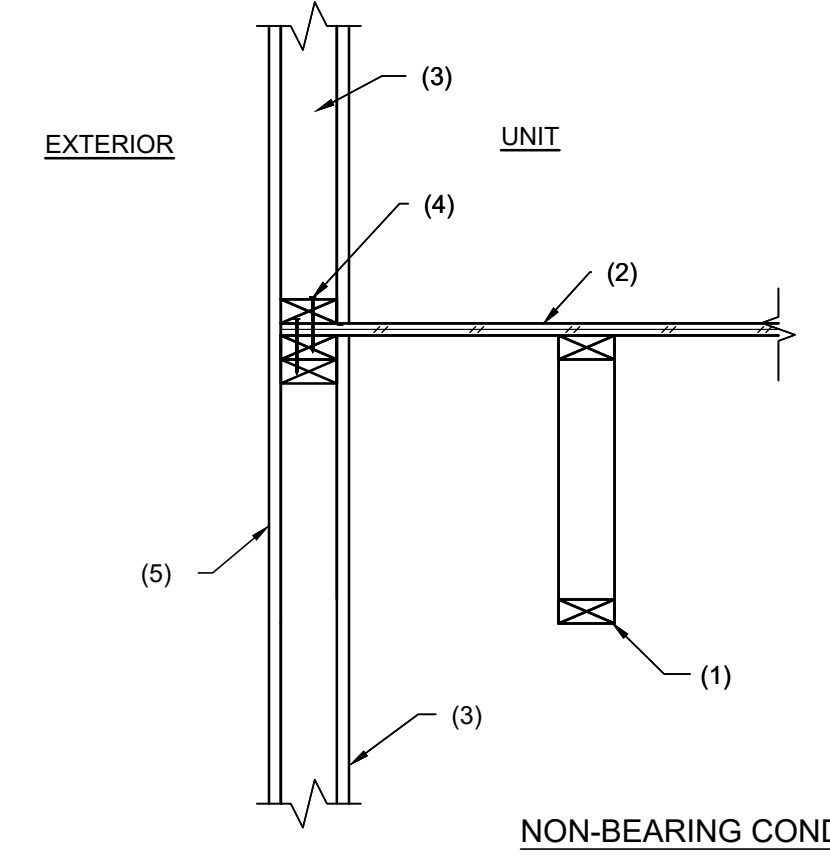
BEARING CONDITION

3

PARTY WALL DETAILS

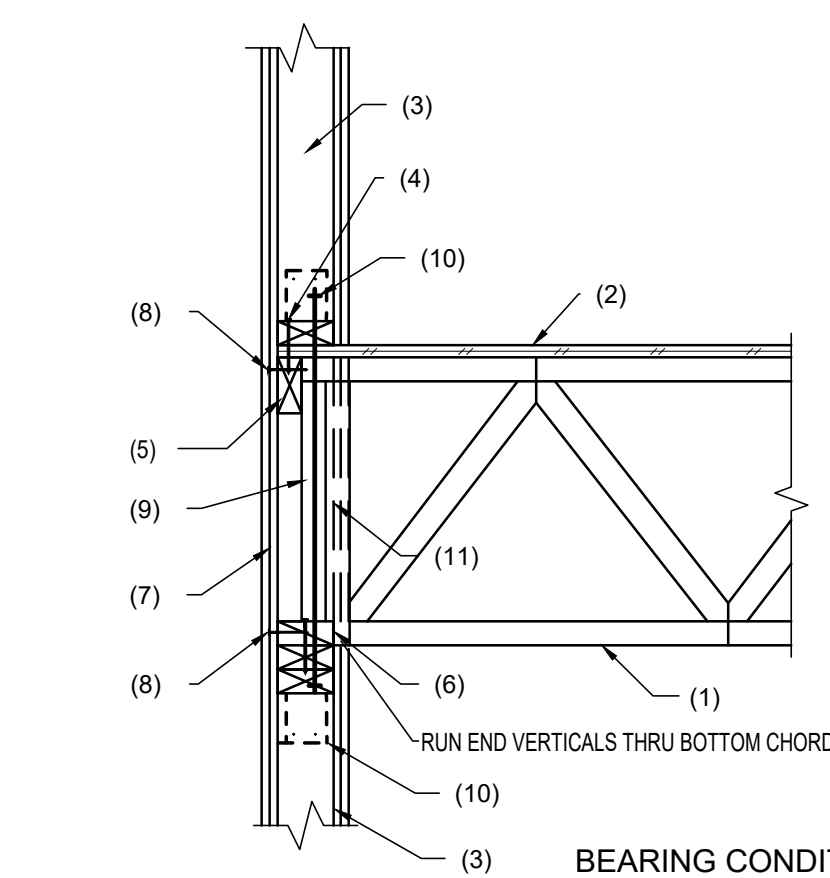
2

INTERIOR BRG. WALL DETAIL



- (1) UNIT FLOOR TRUSS
- (2) 4'-0" WIDE (MIN) FRP FLOOR SHEATHING
- (3) 1 HR. FRP WOOD STUD WALL W/ 1-5/8" GYP INTERIOR FACE. SEE SCHEDULE FOR STUD SPACING. BALLOON FRAME WALL TO BOTTOM OF FLOOR SHEATHING.
- (4) WALL PLATES
- (5) EXTERIOR SHEATHING - RE: ARCH FOR ASSEMBLY

NON-BEARING CONDITION

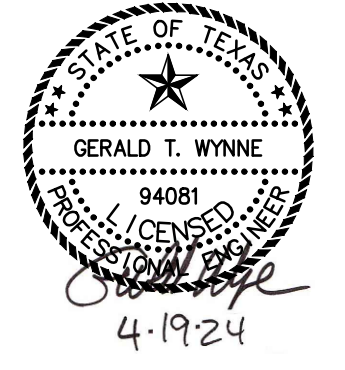


- (1) FLOOR TRUSS W/END VERT TO BRG END VERTICALS AND CHORD MEMBERS WITHIN THE EXTERIOR WALL SHALL BE FRP MATERIAL
- (2) 4'-0" WIDE FRP FLOOR SHEATHING
- (3) 2 HR. FRP WOOD STUD WALL W/ 3-5/8" GYP INTERIOR FACE. SEE SCHEDULE FOR STUD SPACING.
- (4) BOTTOM PLATE NAILING. SEE FASTENING SCHEDULE OR SHEARWALL SCHEDULE
- (5) 2X4 CONT. BAND
- (6) 4X2 BLOCKING BETWEEN TRUSSES
- (7) EXTERIOR SHEATHING - 1 LAYER BLAZEGUARD FRP 2 HR. SHEATHING OR 2 LAYERS 5/8" GYPSUM BOARD. RE: ARCH FOR WALL ASSEMBLY
- (8) EDGE NAILING
- (9) SIMPSON SDWF2724-TUW - SEE UPLIFT ANCHORAGE SCHEDULE FOR LOCATION.
- (10) SIMPSON SDWC15600 - SEE UPLIFT ANCHORAGE SCHEDULE FOR LOCATION.
- (11) 2 LAYERS 5/8" GYPSUM INTERIOR SHEATHING. CUT AROUND TRUSS. RE: ARCH FOR ADD'L INFO

BEARING CONDITION

1

EXTERIOR BEARING DETAIL



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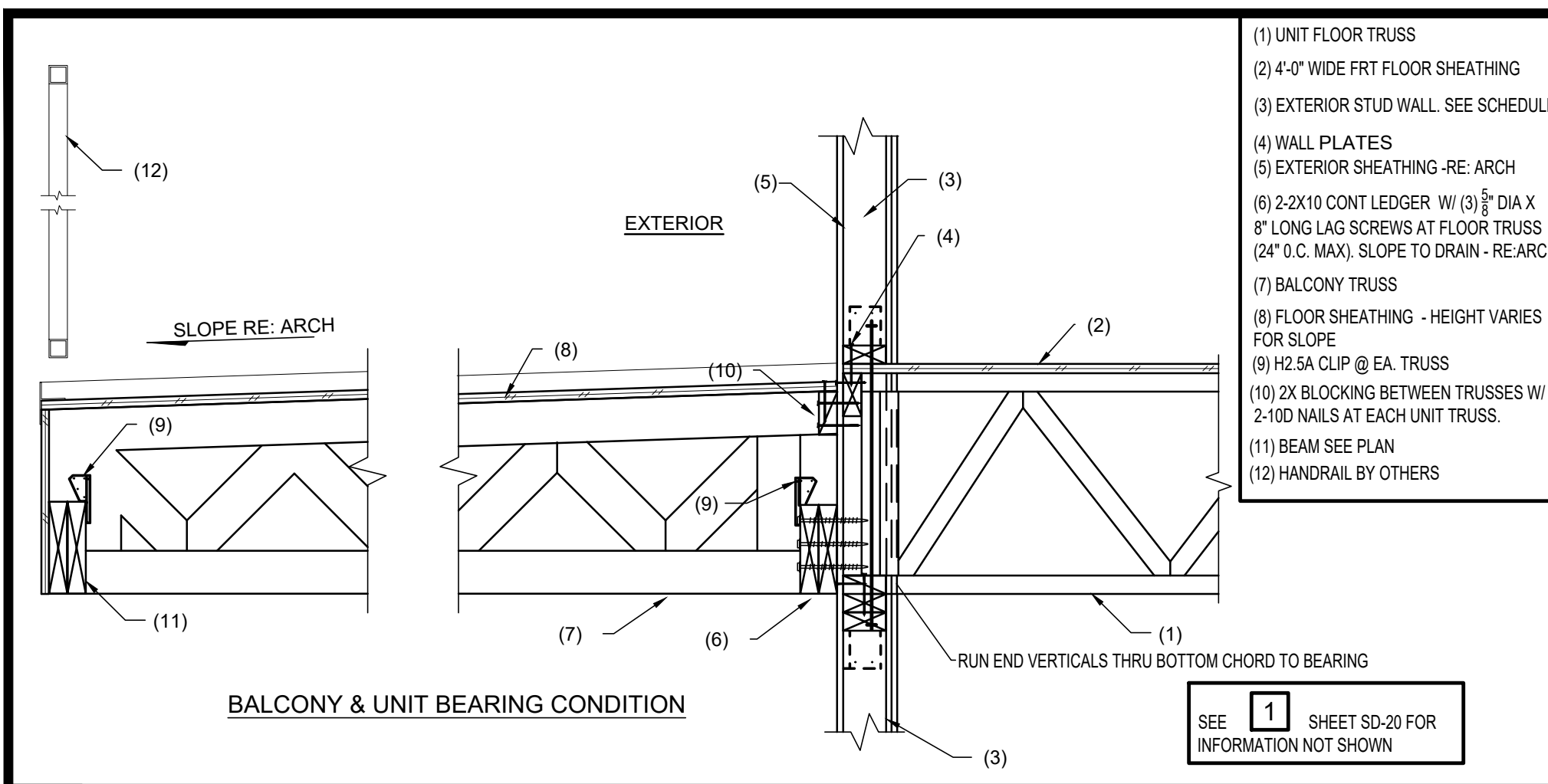


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Job No. 2302

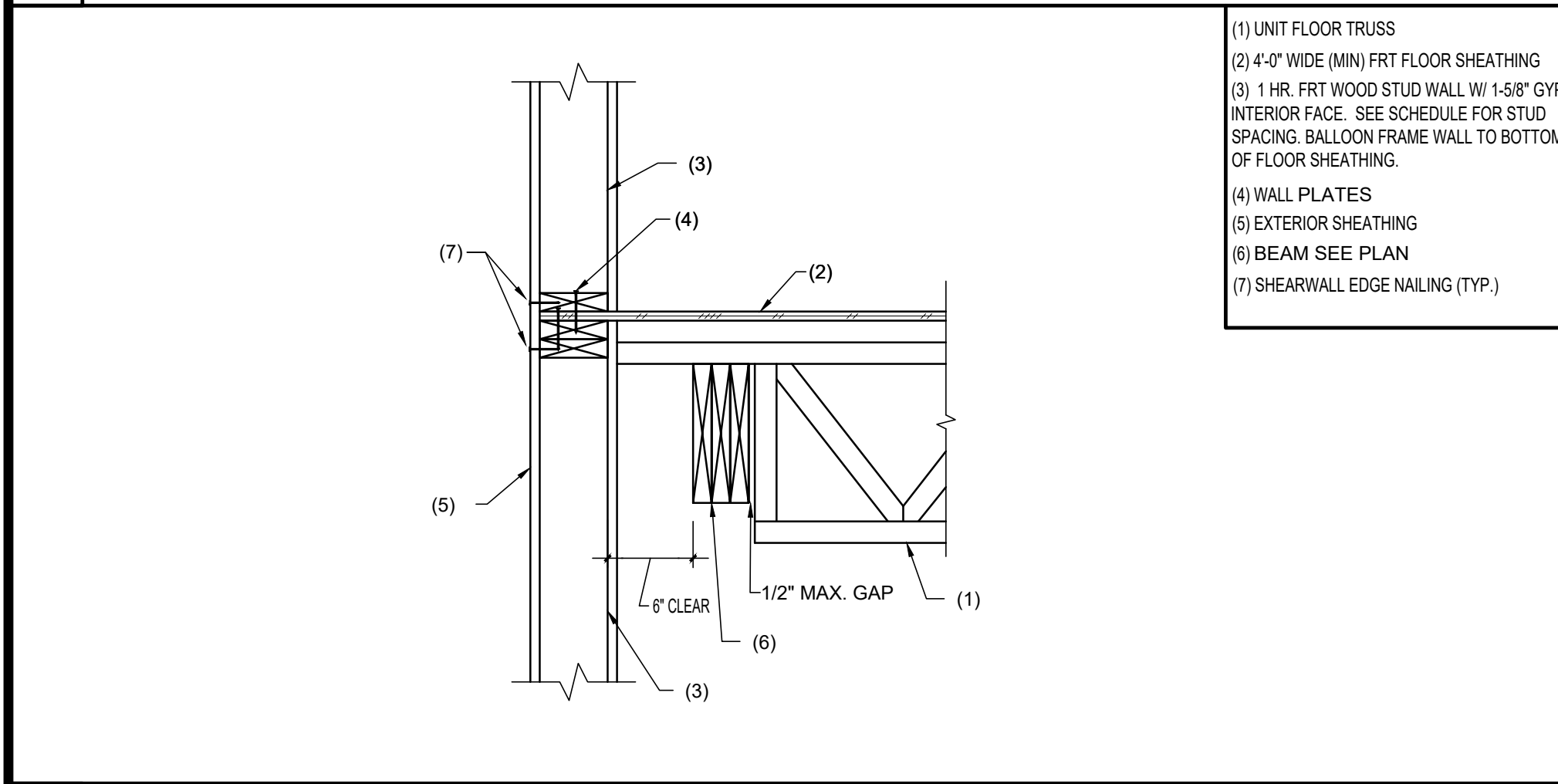
ISSUE FOR PERMIT	Date: 10-31-2023
PERMIT RESUBMITTAL	Date: 01-08-2024
ISSUE FOR CONSTRUCTION	Date: 04-19-2024
	Date:
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FLOOR FRAMING DETAILS
N.T.S.

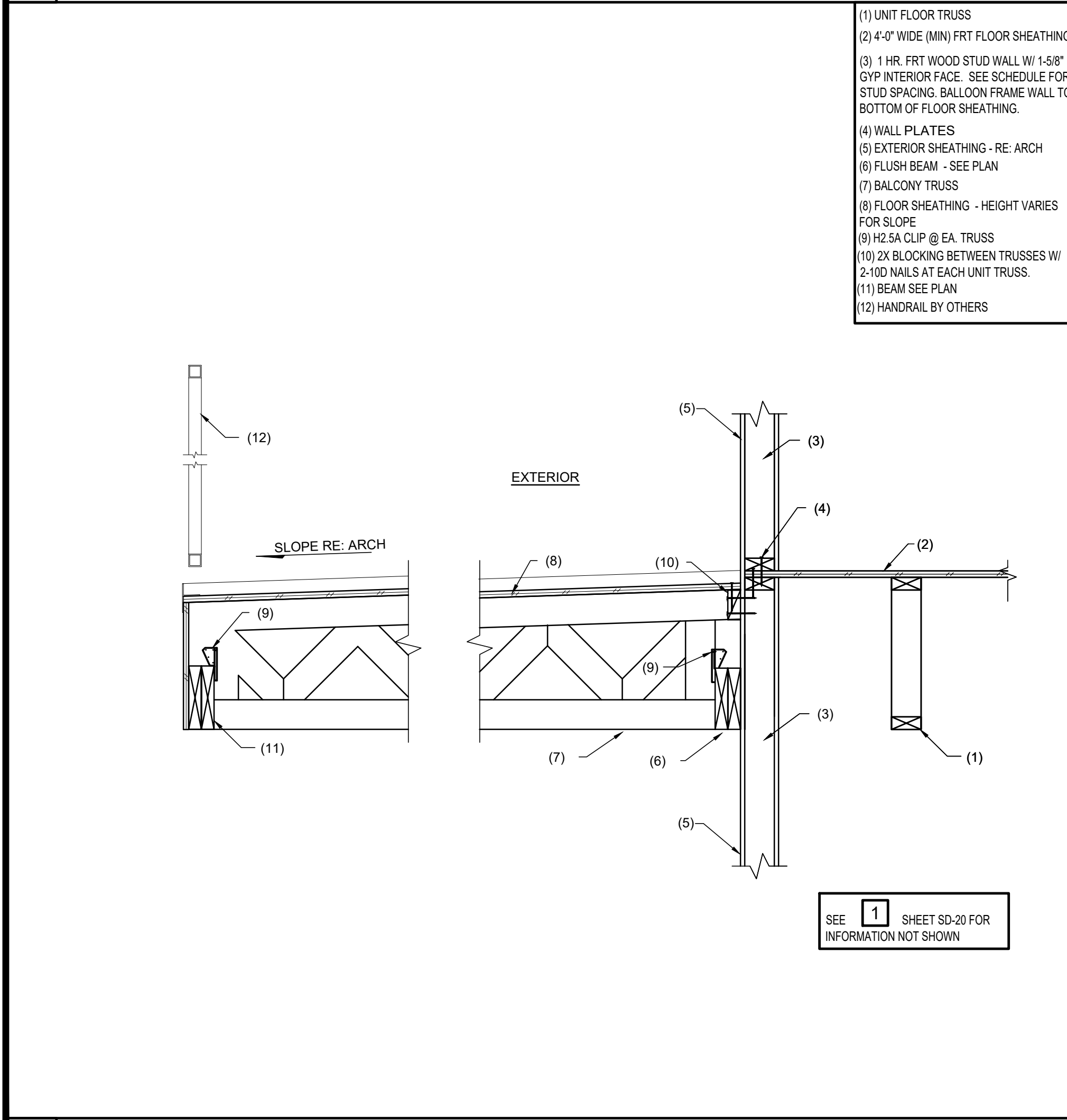




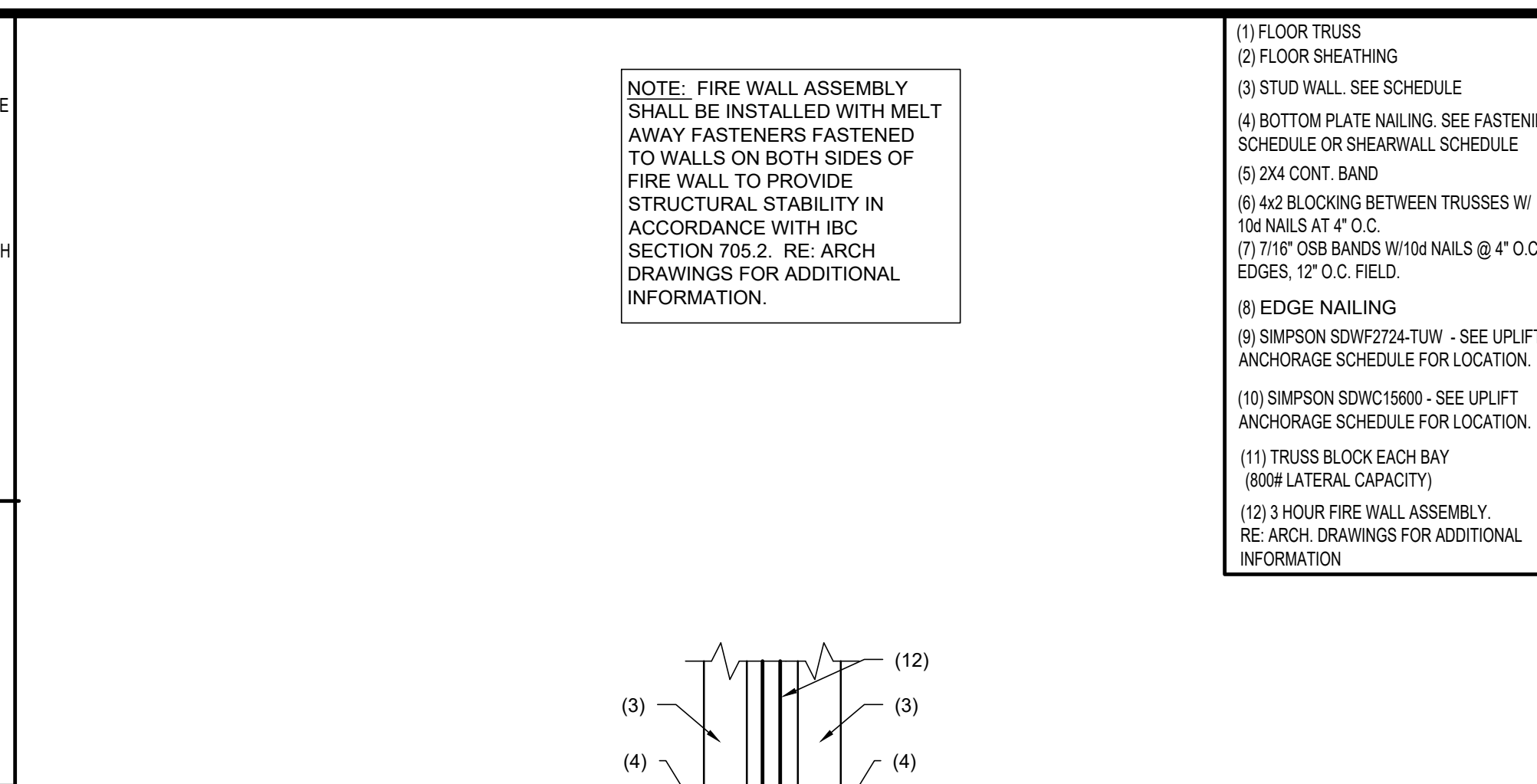
7 BALCONY FRAMING DETAILS- BEARING



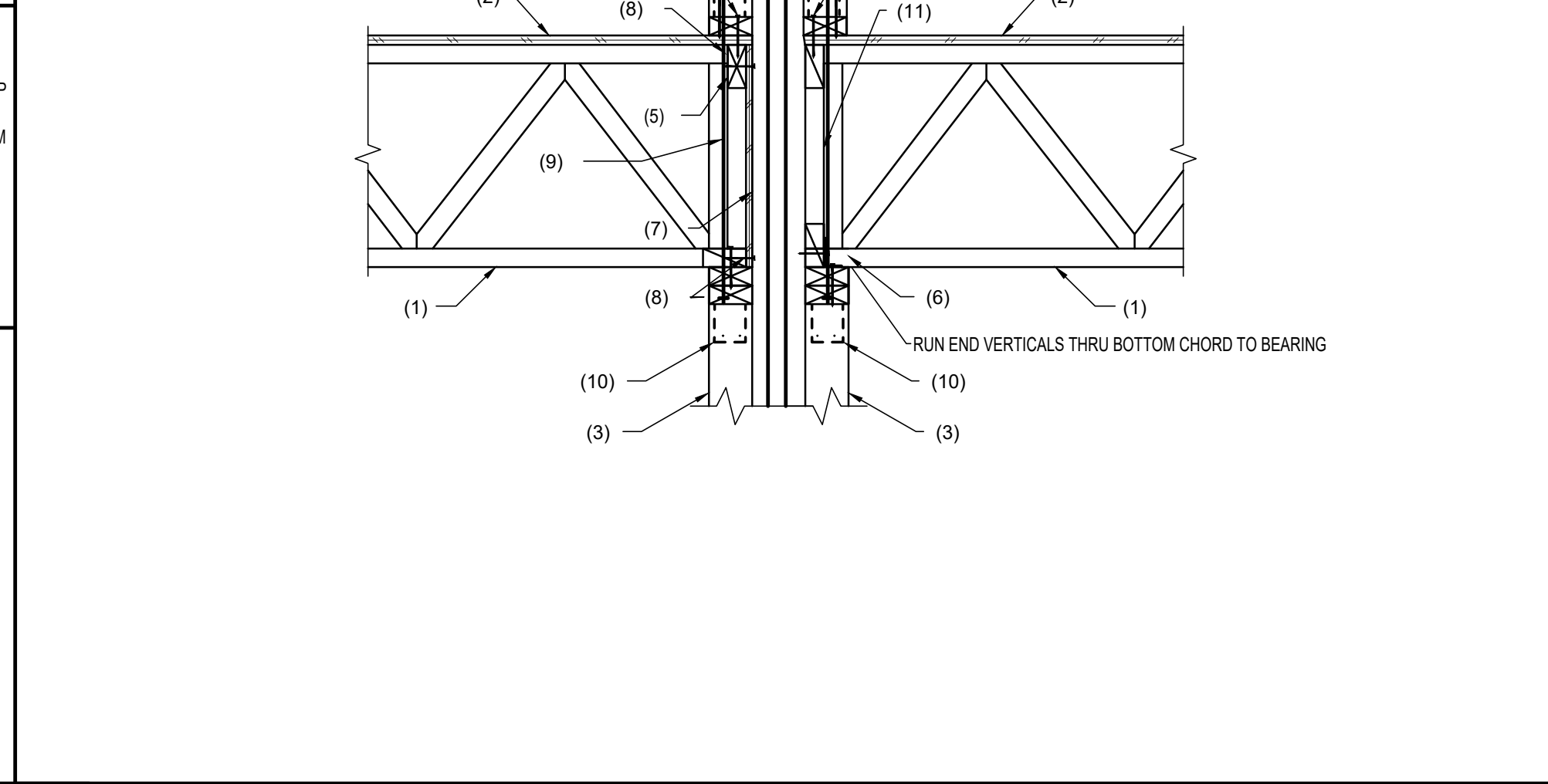
5 EXTERIOR WALL DETAIL - NON-BEARING



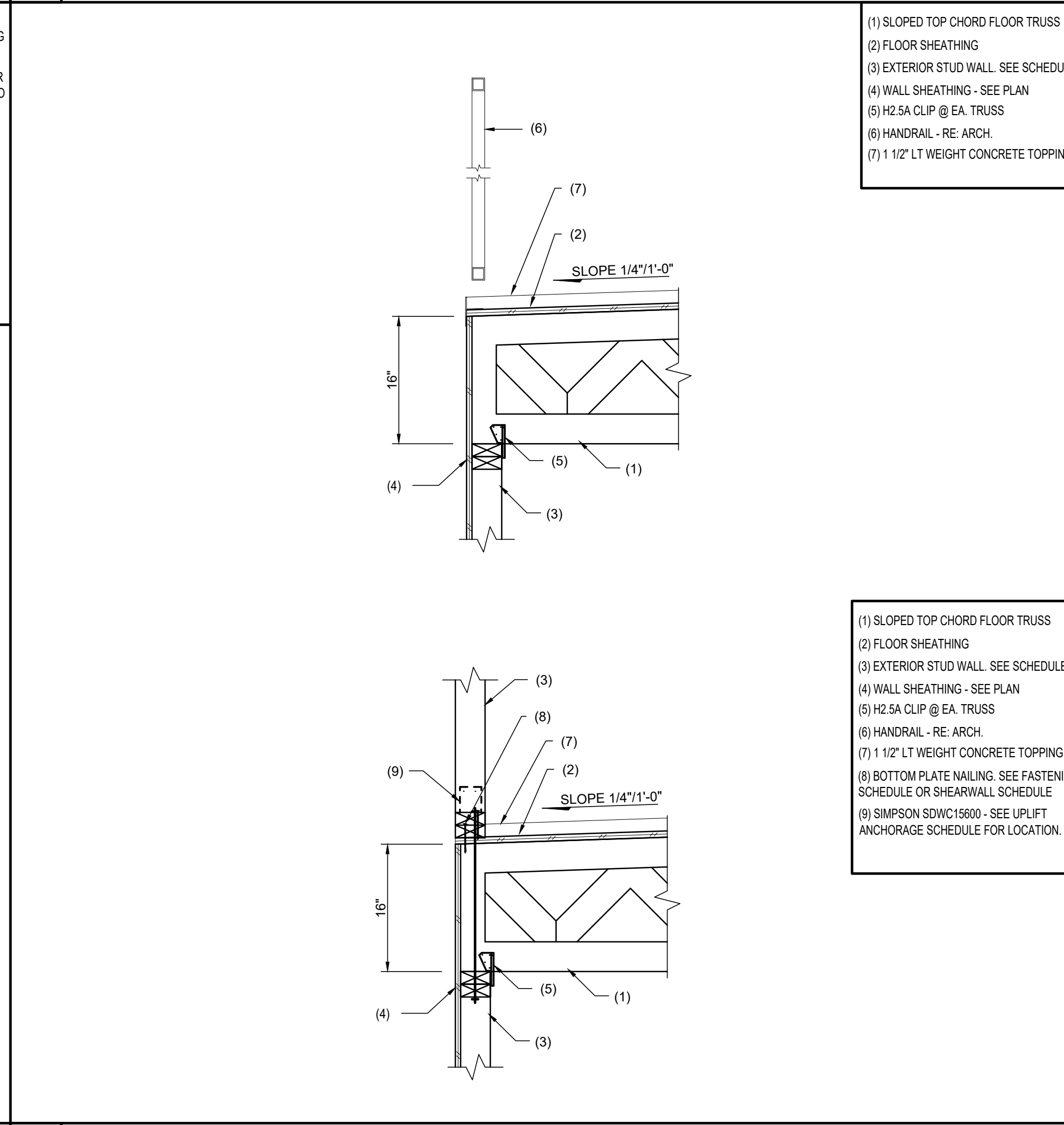
5 BALCONY FRAMING DETAILS- NON-BEARING



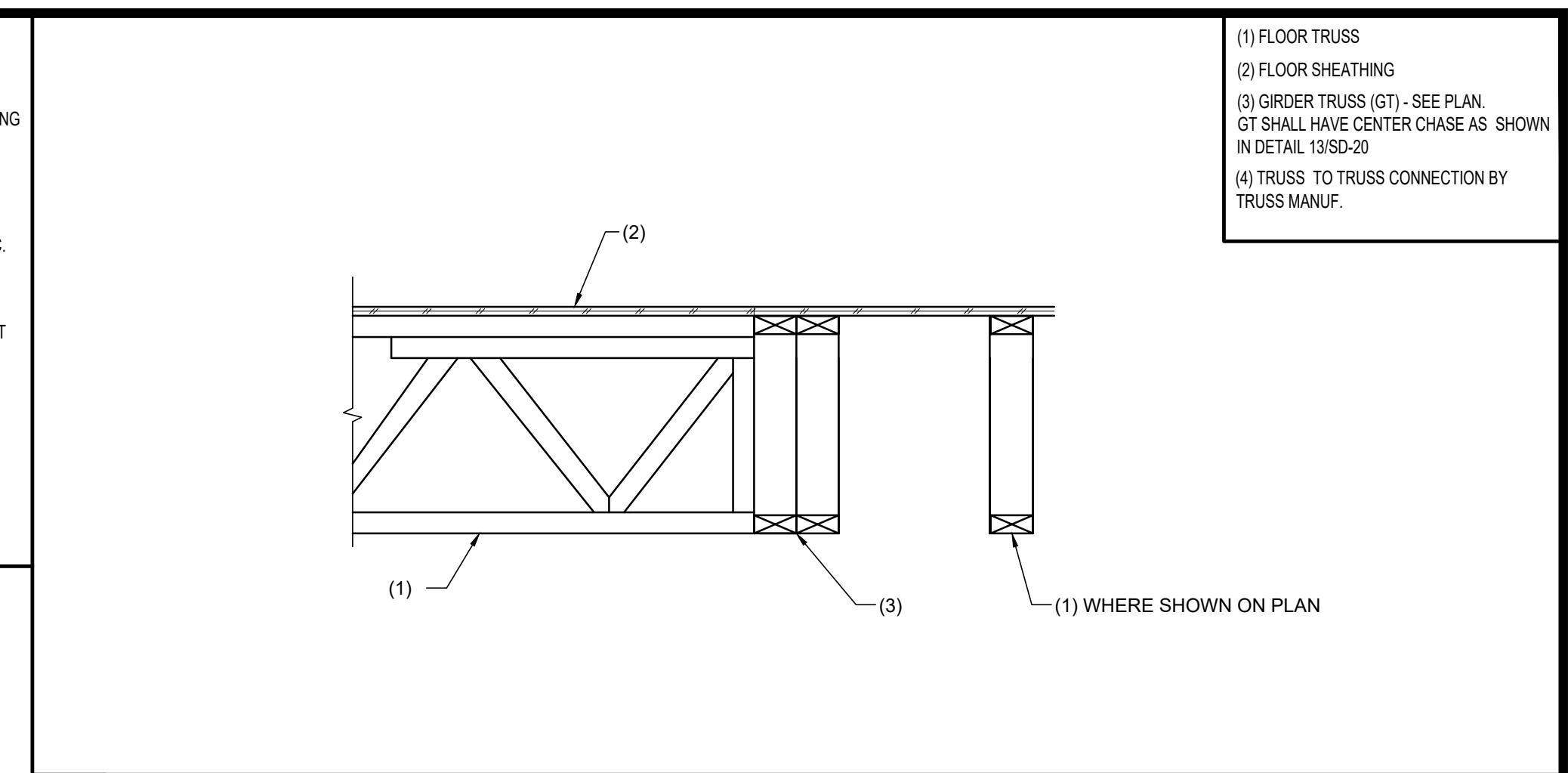
4 3-HOUR FIRE WALL DETAIL



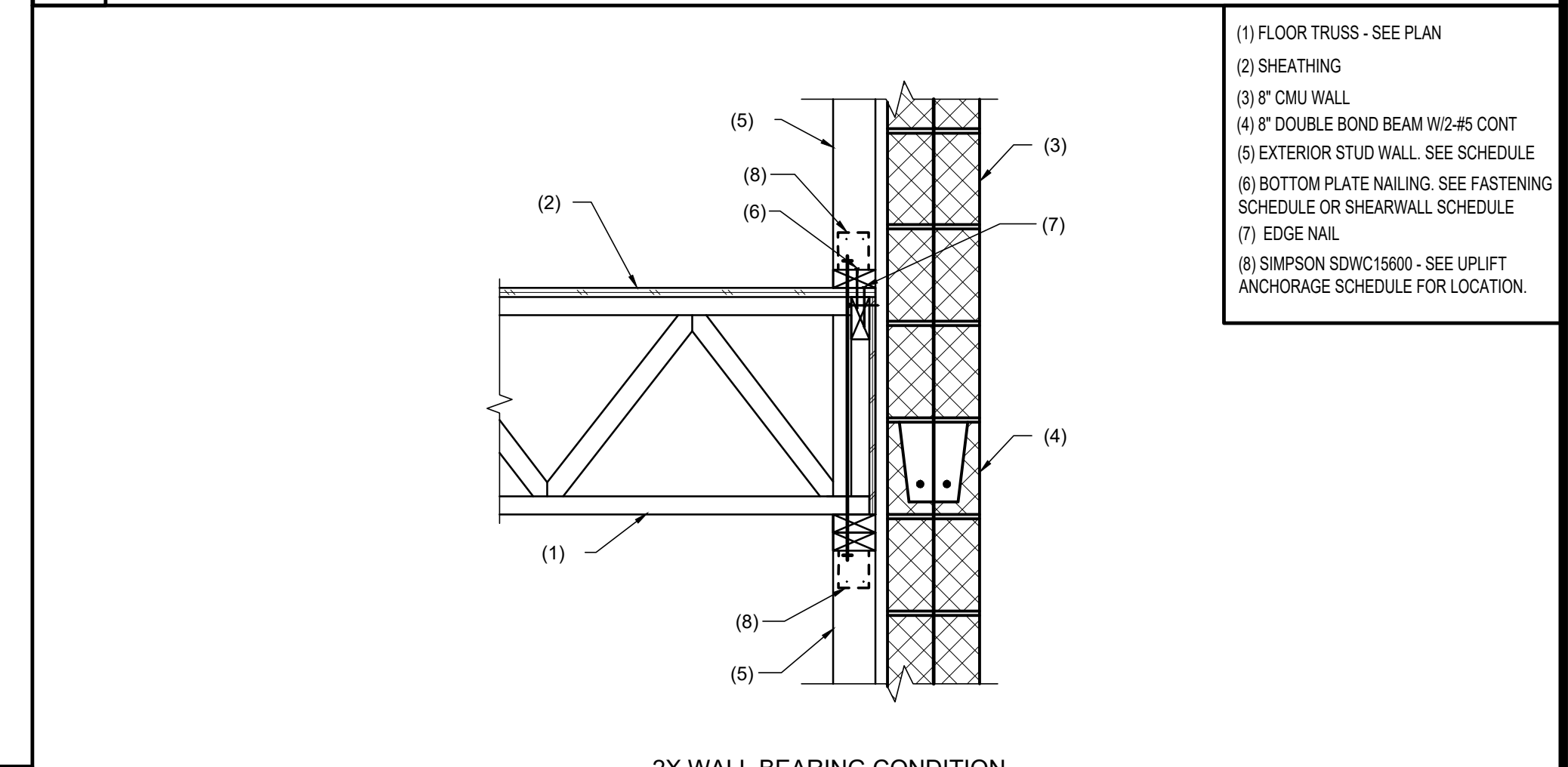
3 SLOPING CORRIDOR TRUSS



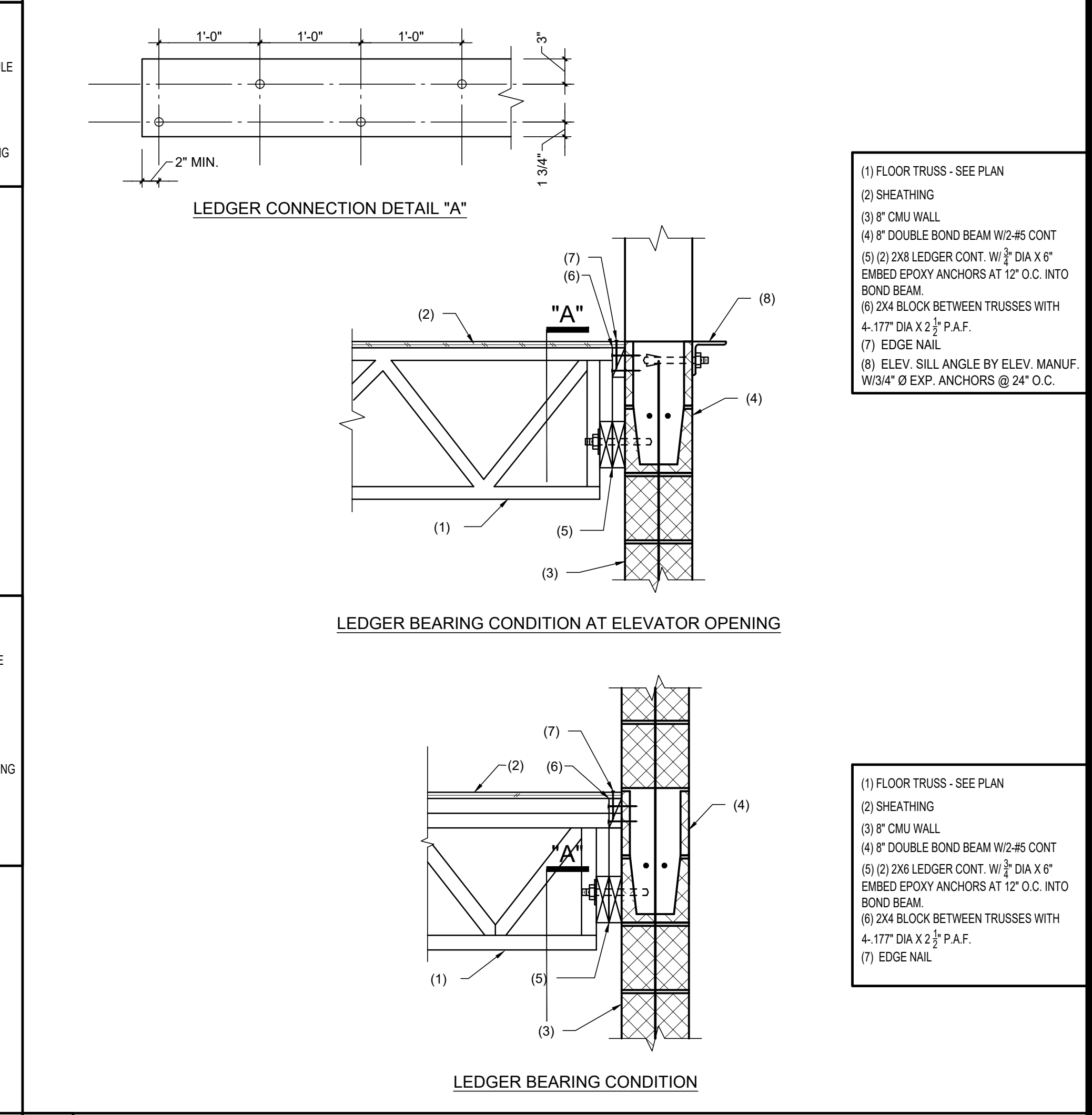
1 TRUSS FRAMING AT CMU WALL



2 GIRDER TRUSS DETAIL

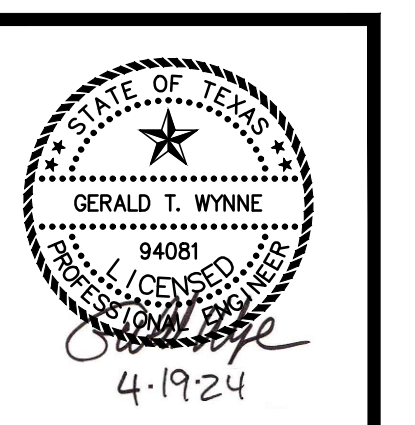


2X WALL BEARING CONDITION



LEDGER BEARING CONDITION AT ELEVATOR OPENING

LEDGER BEARING CONDITION



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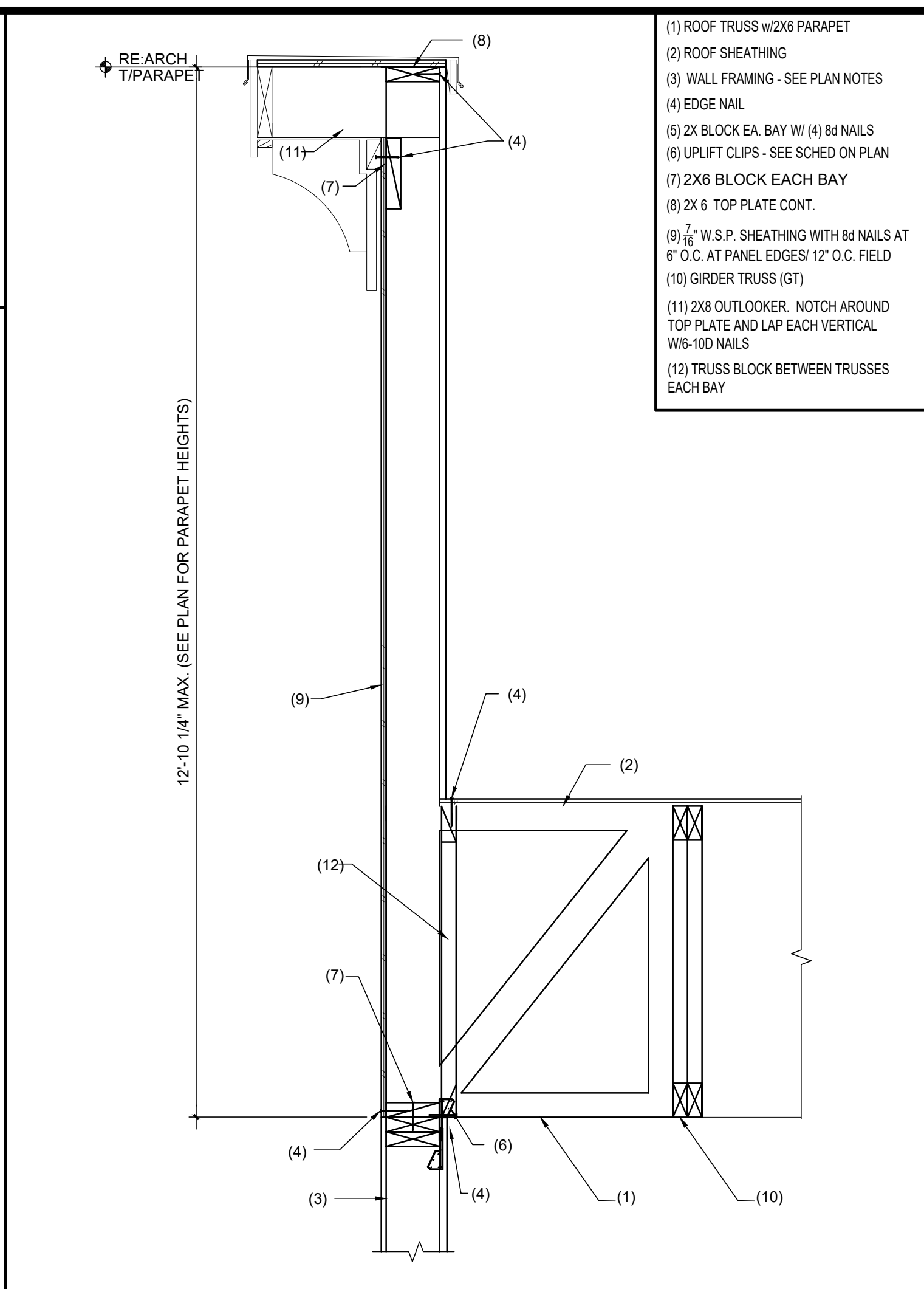
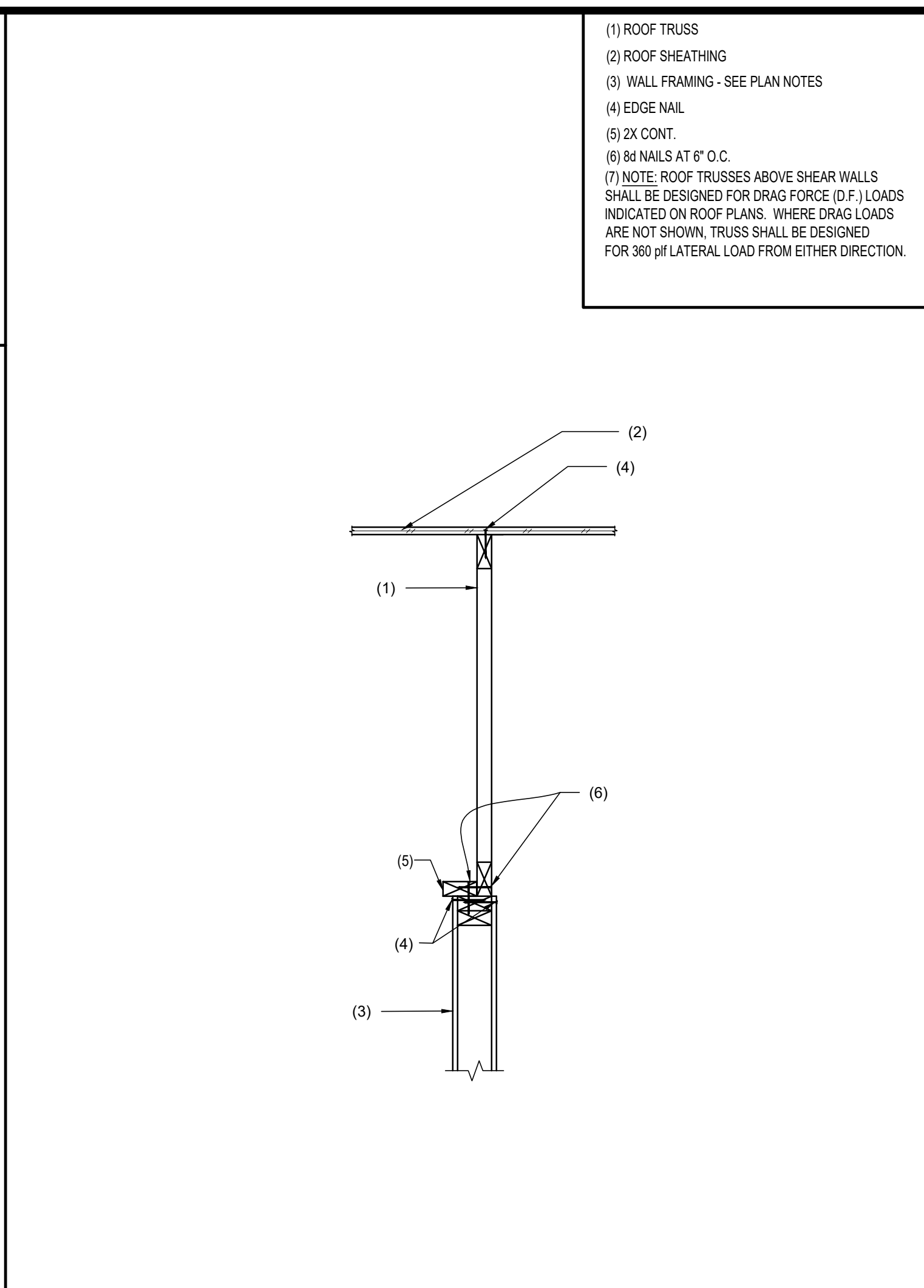
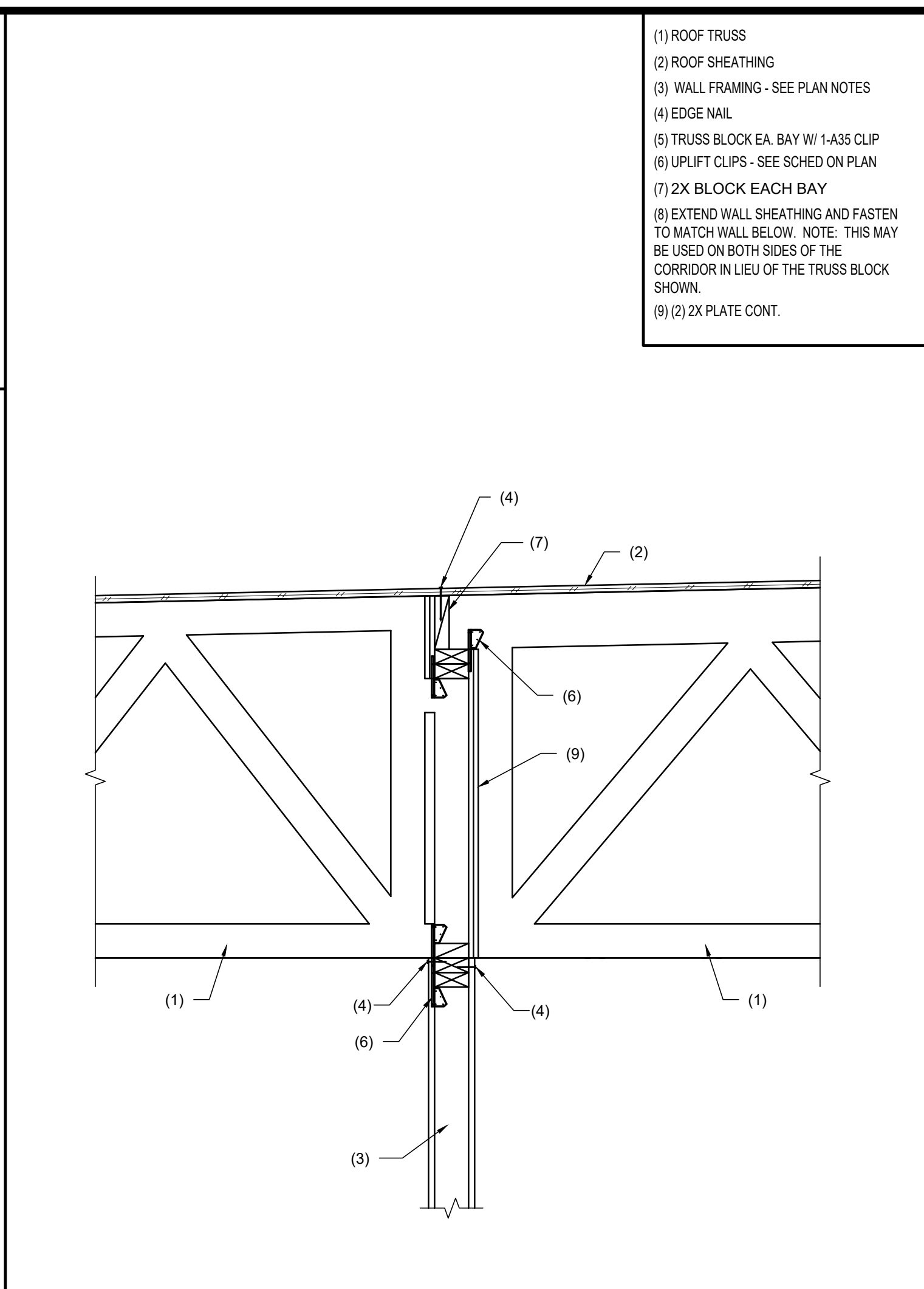
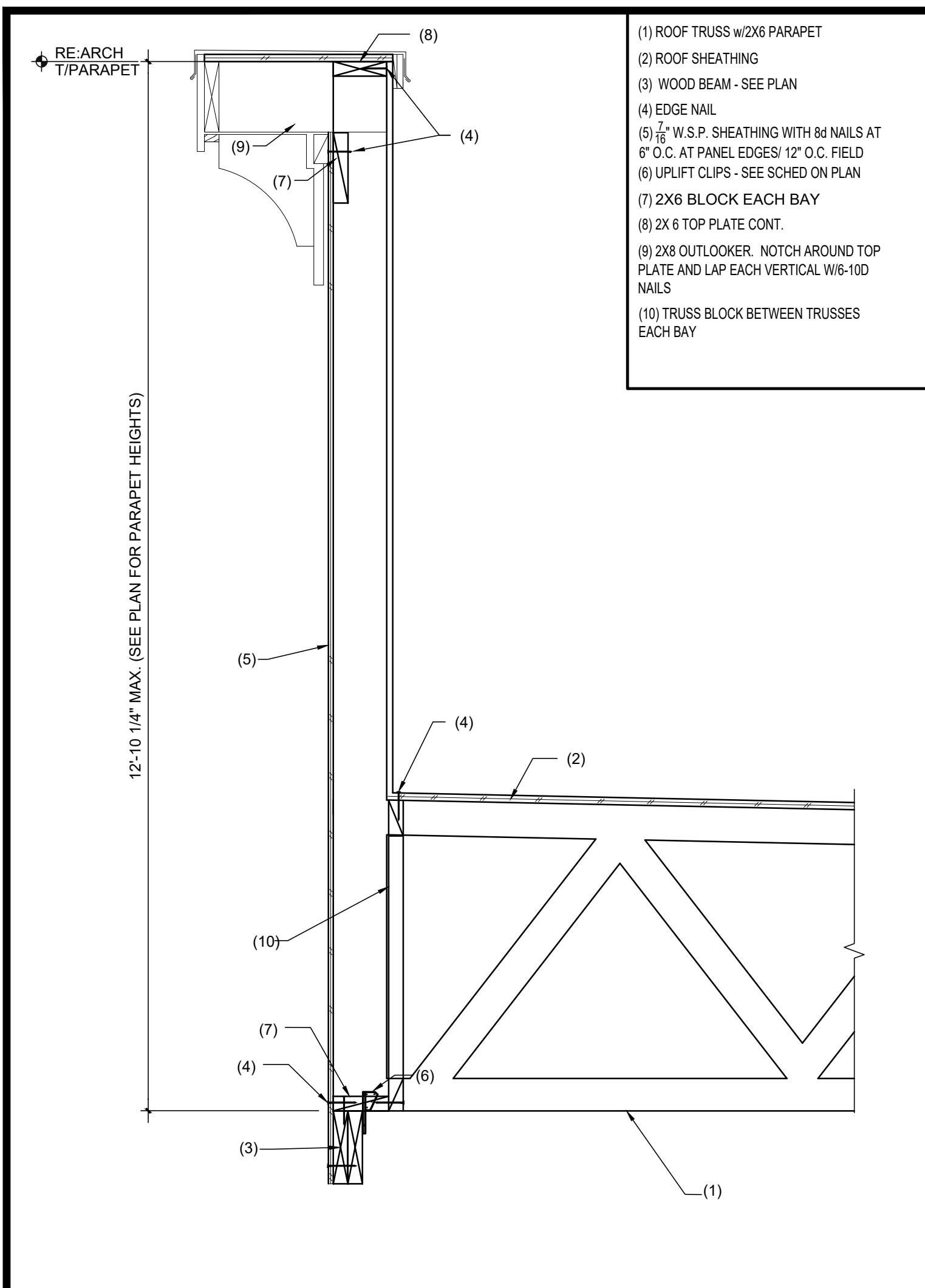


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ISSUE FOR PERMIT
Date: 10-31-2023
PERMIT RESUBMITTAL
Date: 01-08-2024
ISSUE FOR CONSTRUCTION
Date: 04-19-2024
Date:
Date:
Date:

FLOOR FRAMING DETAILS
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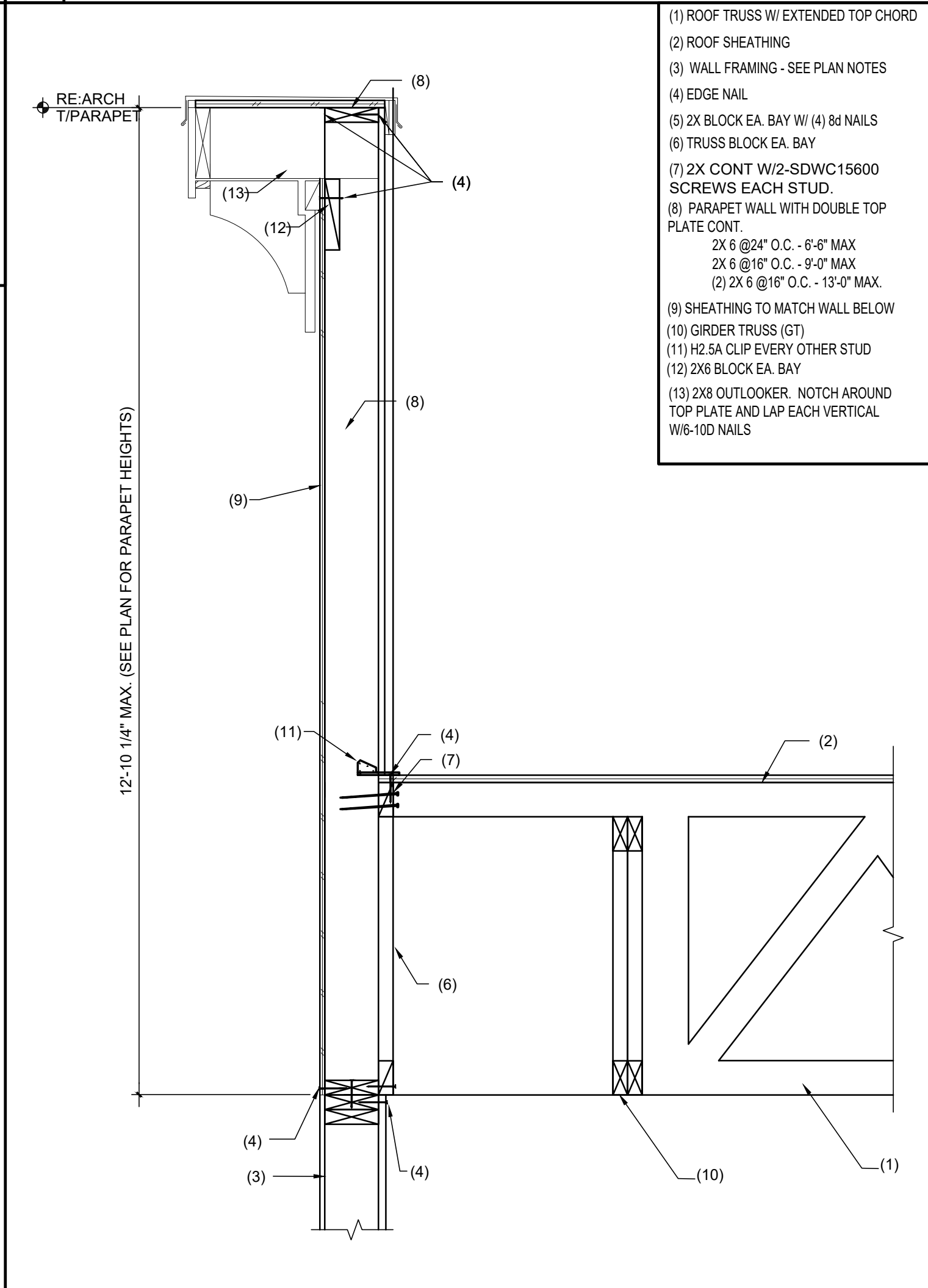
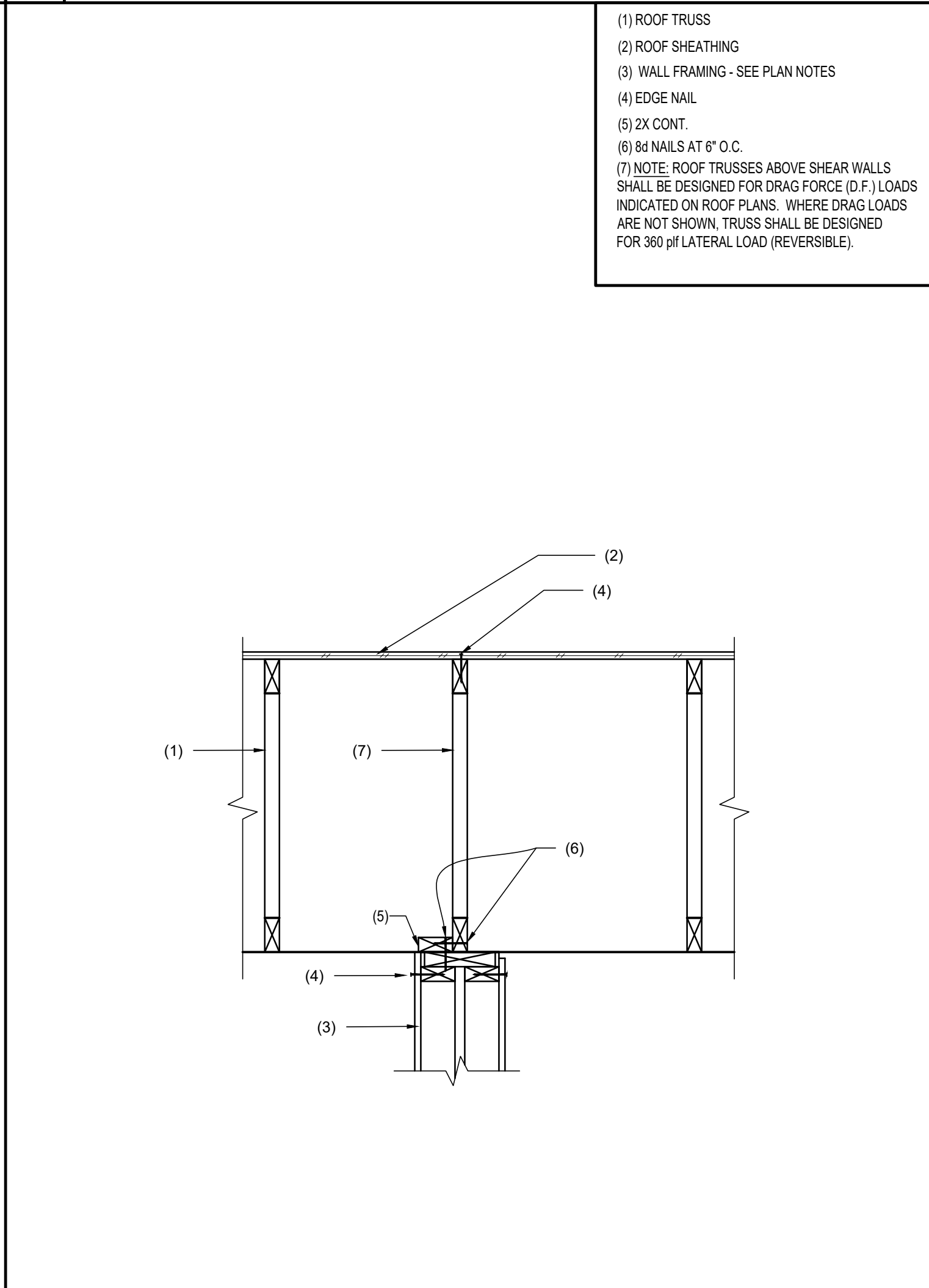
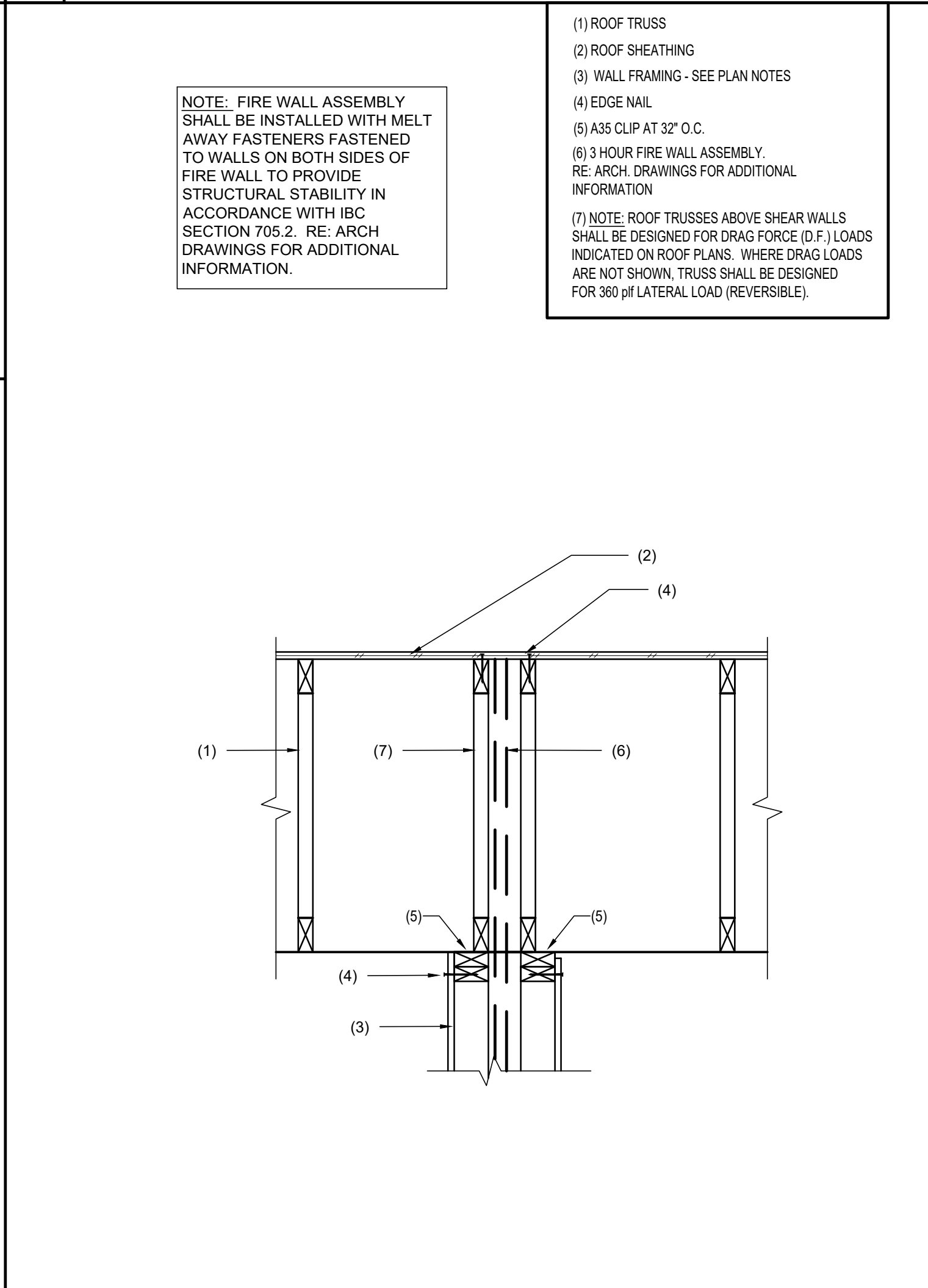
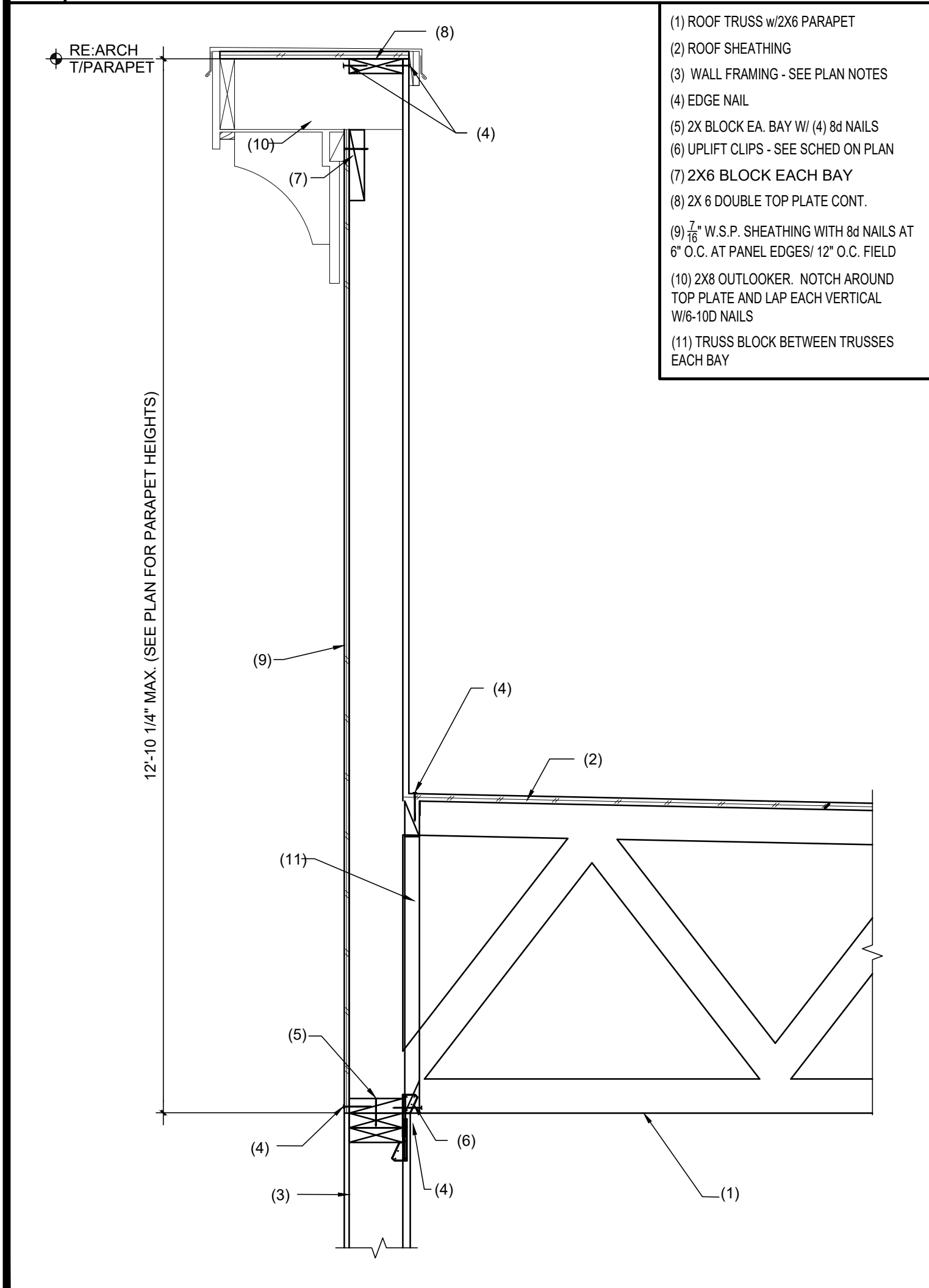


8 EXTERIOR BEARING DETAIL

6 EXTERIOR ROOF DETAIL

4 DRAG TRUSS AT SHEARWALL

2 EXTERIOR ROOF DETAIL-NON-BEARING

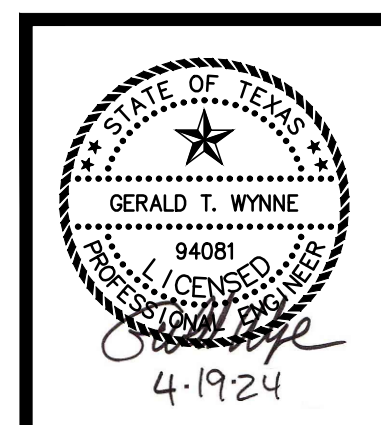


7 EXTERIOR BEARING DETAIL

5 3-HOUR FIRE WALL DETAIL

3 DRAG TRUSS AT PARTY WALL

1 EXTERIOR DETAIL-NON-BEARING



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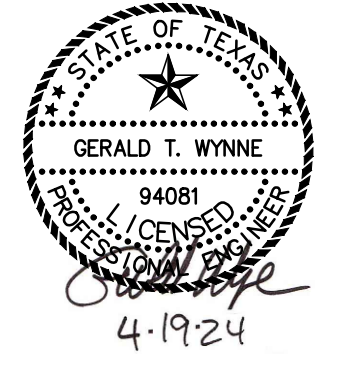
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ISSUE FOR PERMIT
Date: 10-31-2023
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ROOF FRAMING DETAILS
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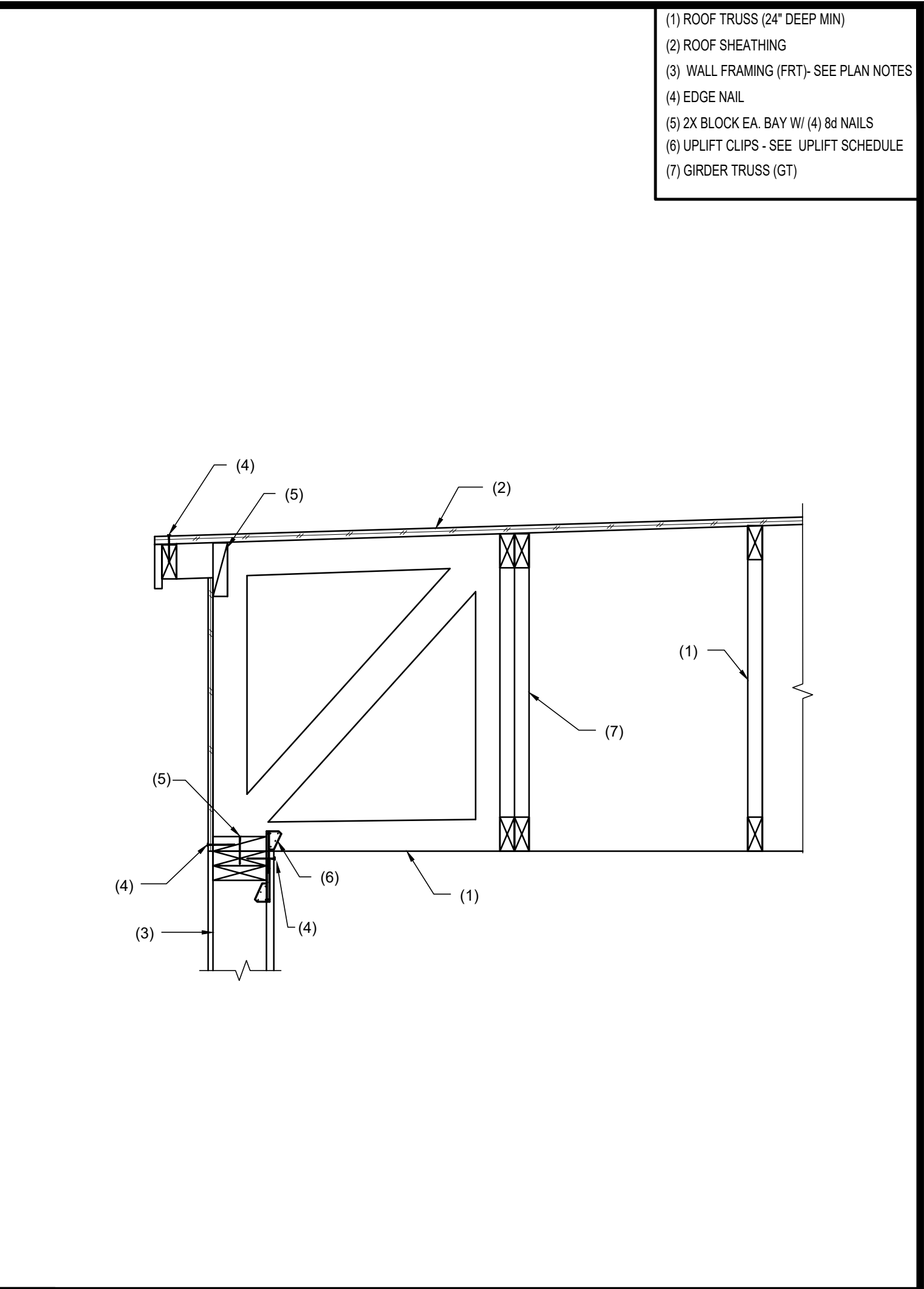
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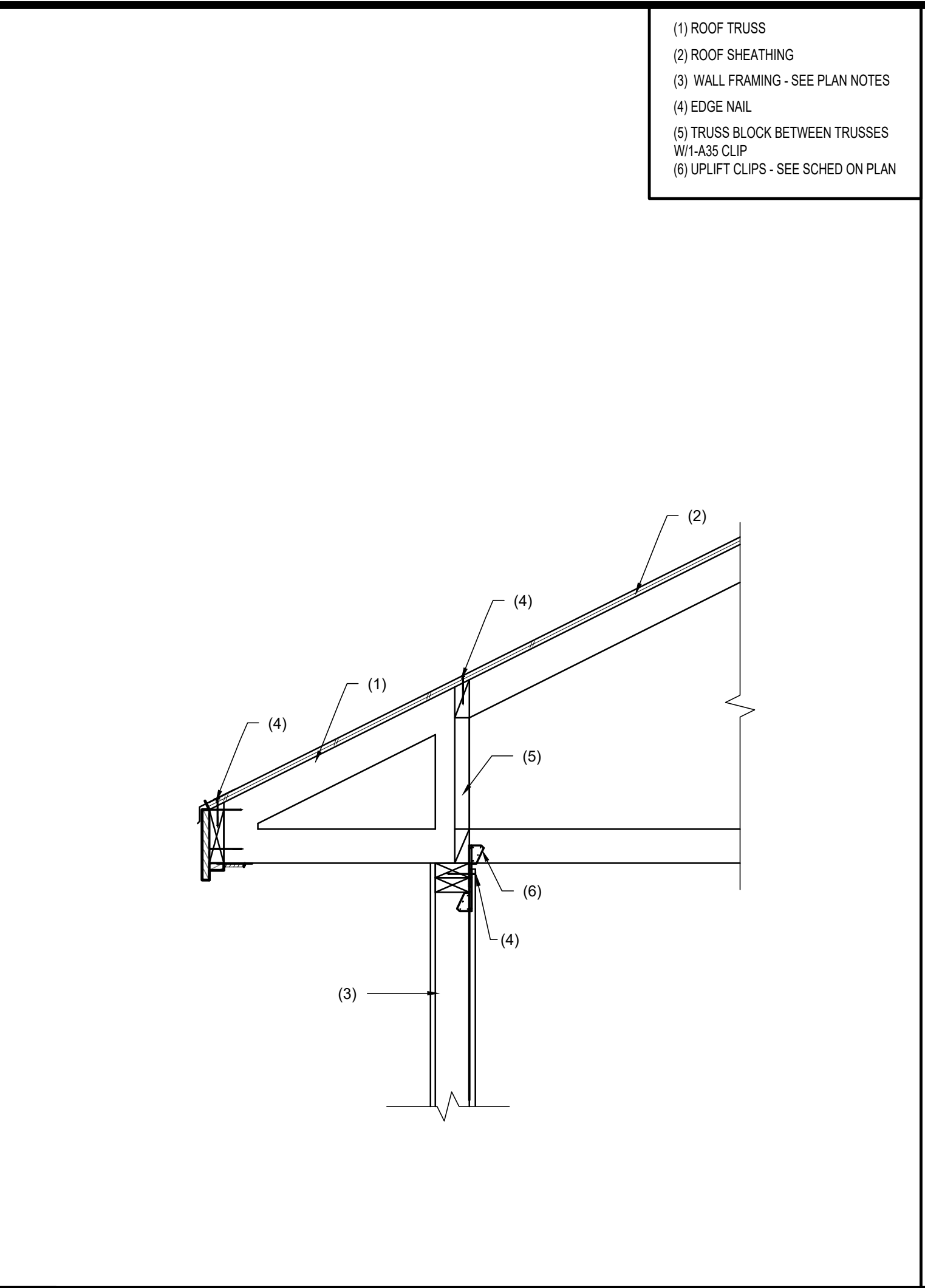
ISSUE FOR PERMIT
Date: 10-31-2023
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ISSUE FOR CONSTRUCTION
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Date:
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ROOF FRAMING DETAILS

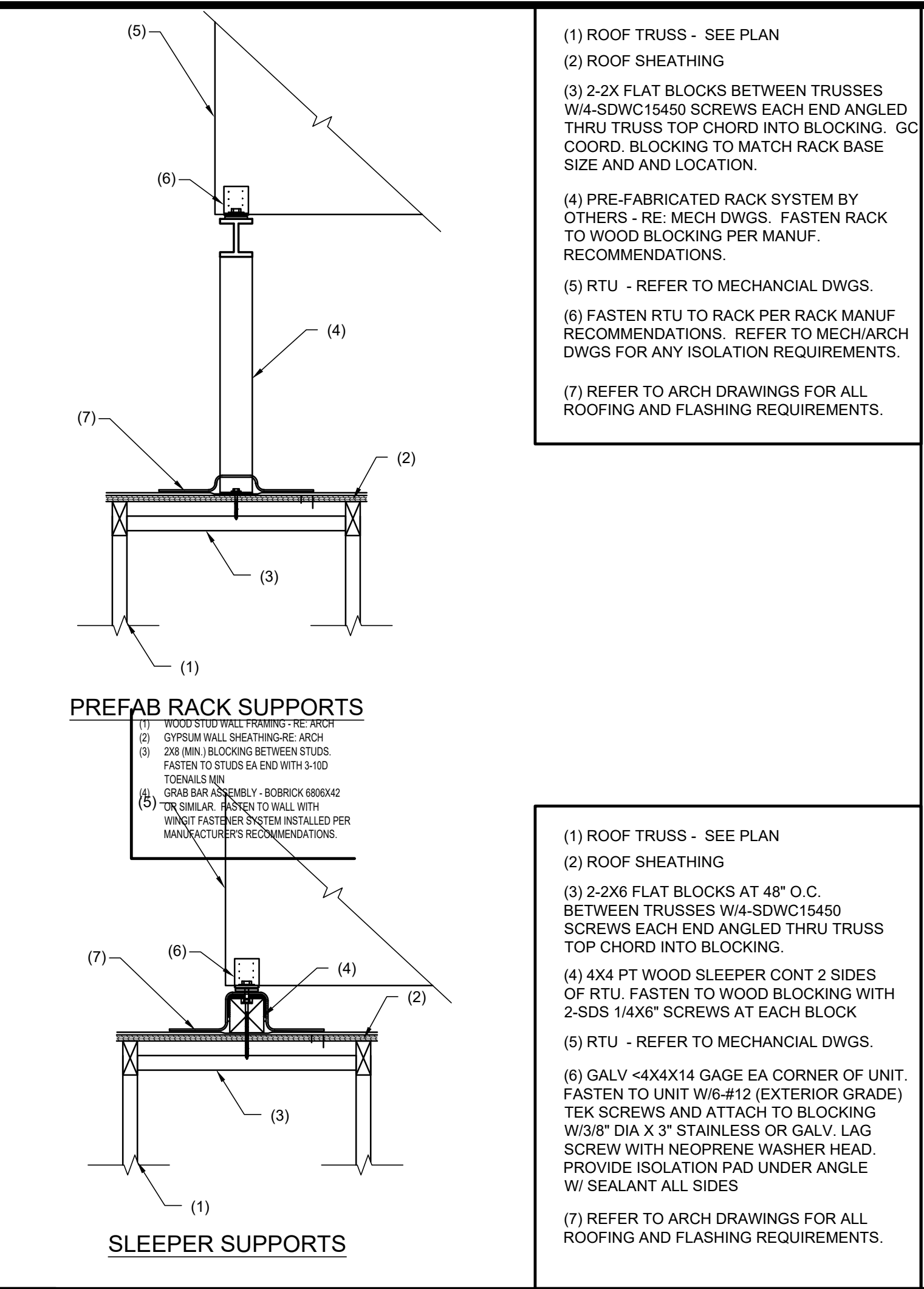
N.T.S.



- (1) ROOF TRUSS (24" DEEP MIN)
- (2) ROOF SHEATHING
- (3) WALL FRAMING (FRT) - SEE PLAN NOTES
- (4) EDGE NAIL
- (5) 2X BLOCK EA. BAY W/ (4) 8d NAILS
- (6) UPLIFT CLIPS - SEE UPLIFT SCHEDULE
- (7) GIRDER TRUSS (GT)

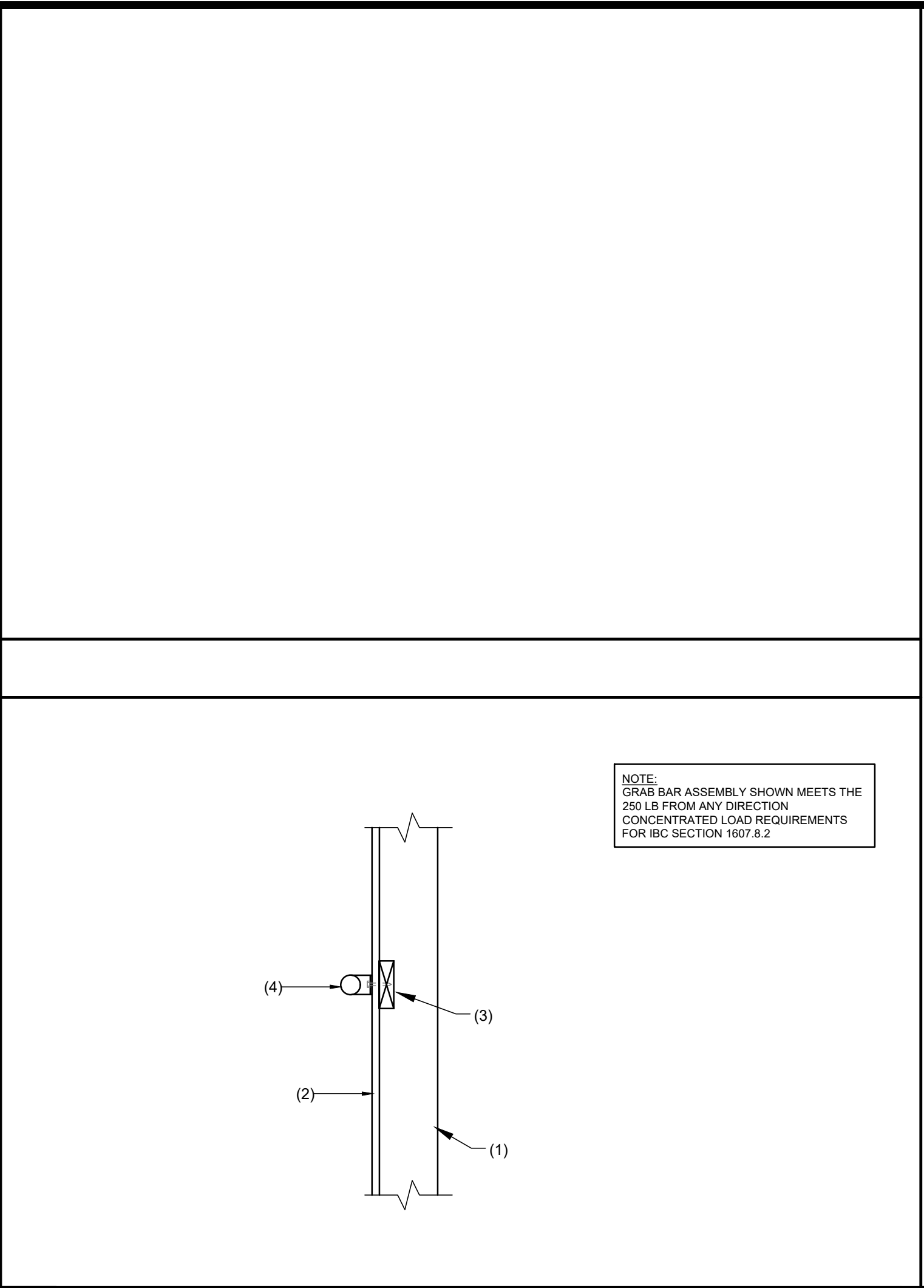


- (1) ROOF TRUSS
- (2) ROOF SHEATHING
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) EDGE NAIL
- (5) TRUSS BLOCK BETWEEN TRUSSES W/1-435 CLIP
- (6) UPLIFT CLIPS - SEE SCHED ON PLAN



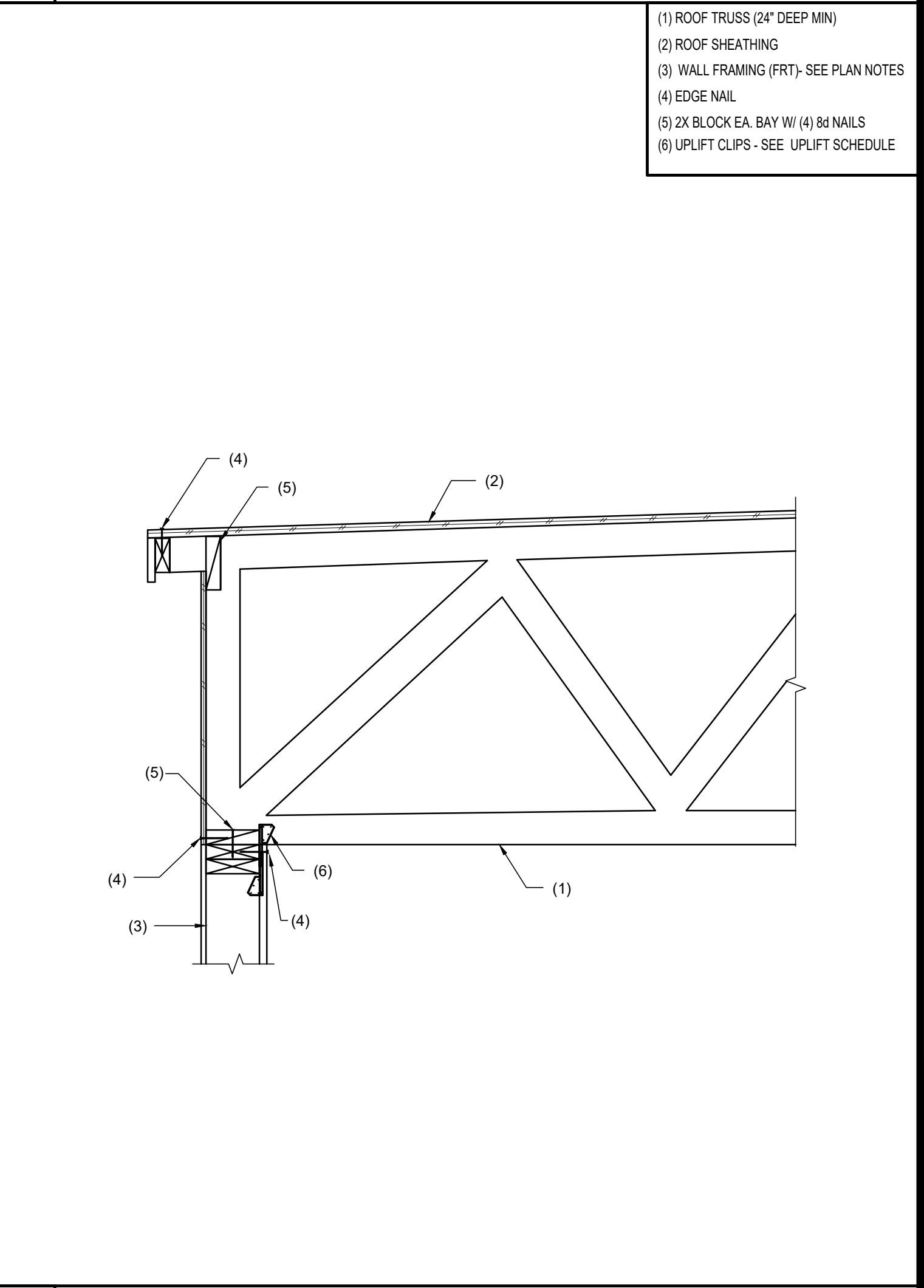
- PREFAB RACK SUPPORTS**
- (1) ROOF TRUSS - SEE PLAN
 - (2) ROOF SHEATHING
 - (3) 2-2X FLAT BLOCKS BETWEEN TRUSSES W/4-SDWC15450 SCREWS EACH END ANGLED THRU TRUSS TOP CHORD INTO BLOCKING. GC COORD. BLOCKING TO MATCH RACK BASE SIZE AND LOCATION.
 - (4) PRE-FABRICATED RACK SYSTEM BY OTHERS - RE: MECH DWGS. FASTEN RACK TO WOOD BLOCKING PER MANUF. RECOMMENDATIONS.
 - (5) RTU - REFER TO MECHANICAL DWGS.
 - (6) FASTEN RTU TO RACK PER RACK MANUF RECOMMENDATIONS. REFER TO MECH/ARCH DWGS FOR ANY ISOLATION REQUIREMENTS.
 - (7) REFER TO ARCH DRAWINGS FOR ALL ROOFING AND FLASHING REQUIREMENTS.

- SLEEPER SUPPORTS**
- (1) ROOF TRUSS - SEE PLAN
 - (2) ROOF SHEATHING
 - (3) 2-2X6 FLAT BLOCKS AT 48" O.C. BETWEEN TRUSSES W/4-SDWC15450 SCREWS EACH END ANGLED THRU TRUSS TOP CHORD INTO BLOCKING.
 - (4) 4X4 PT WOOD SLEEPER CONT 2 SIDES OF RTU. FASTEN TO WOOD BLOCKING WITH 2-SDS 1/4X6" SCREWS AT EACH BLOCK
 - (5) RTU - REFER TO MECHANICAL DWGS.
 - (6) GALV <4X4X14 GAGE EA CORNER OF UNIT. FASTEN TO UNIT W/6-#12 (EXTERIOR GRADE) TEK SCREWS AND ATTACH TO BLOCKING W/3/8" DIA X 3" STAINLESS OR GALV. LAG SCREW WITH NEOPRENE WASHER HEAD. PROVIDE ISOLATION PAD UNDER ANGLE W/ SEALANT ALL SIDES
 - (7) REFER TO ARCH DRAWINGS FOR ALL ROOFING AND FLASHING REQUIREMENTS.



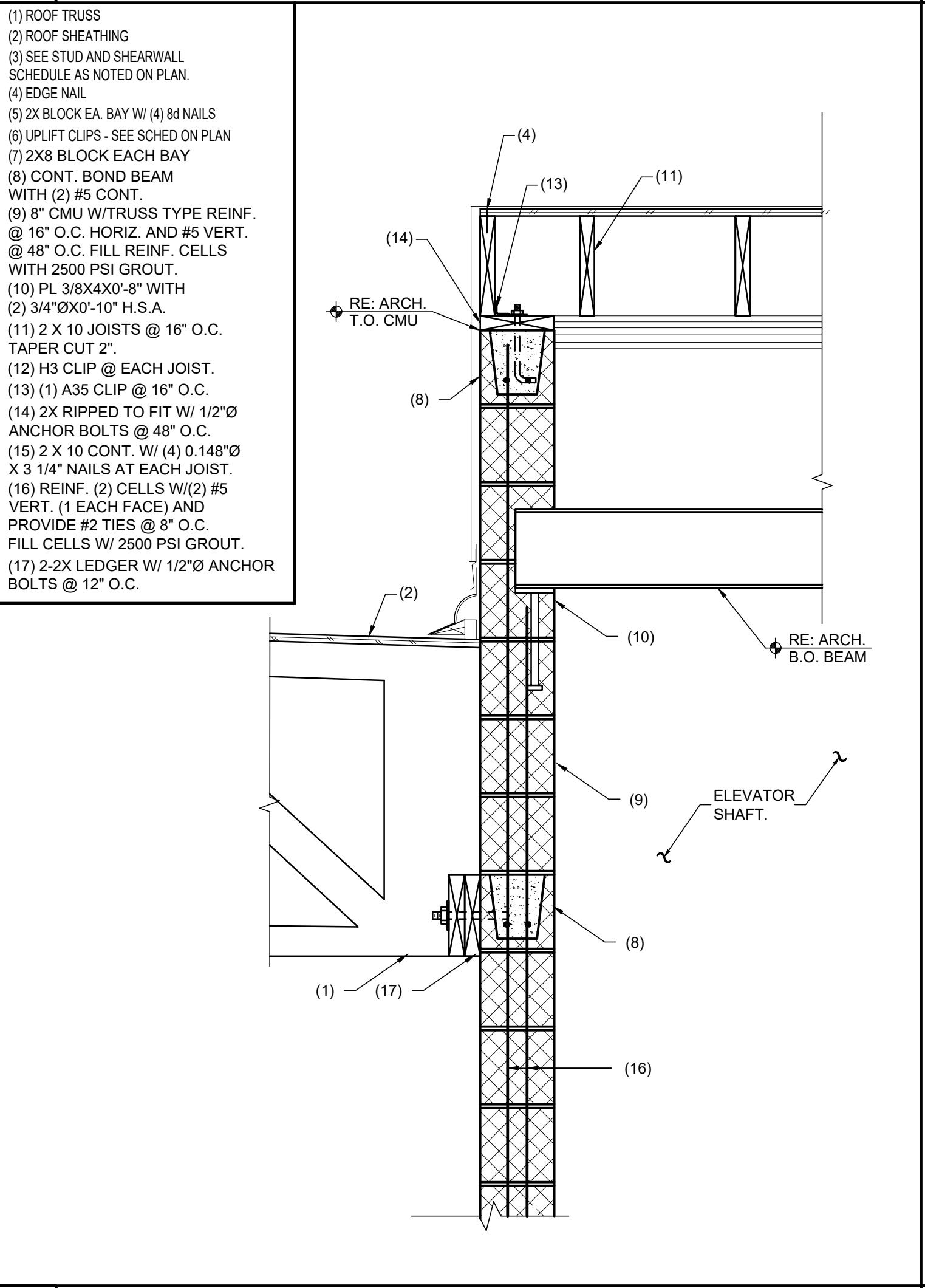
NOTE:
GRAB BAR ASSEMBLY SHOWN MEETS THE 250 LB FROM ANY DIRECTION CONCENTRATED LOAD REQUIREMENTS FOR IBC SECTION 1607.8.2

8 GRAB BAR FASTENING DETAIL



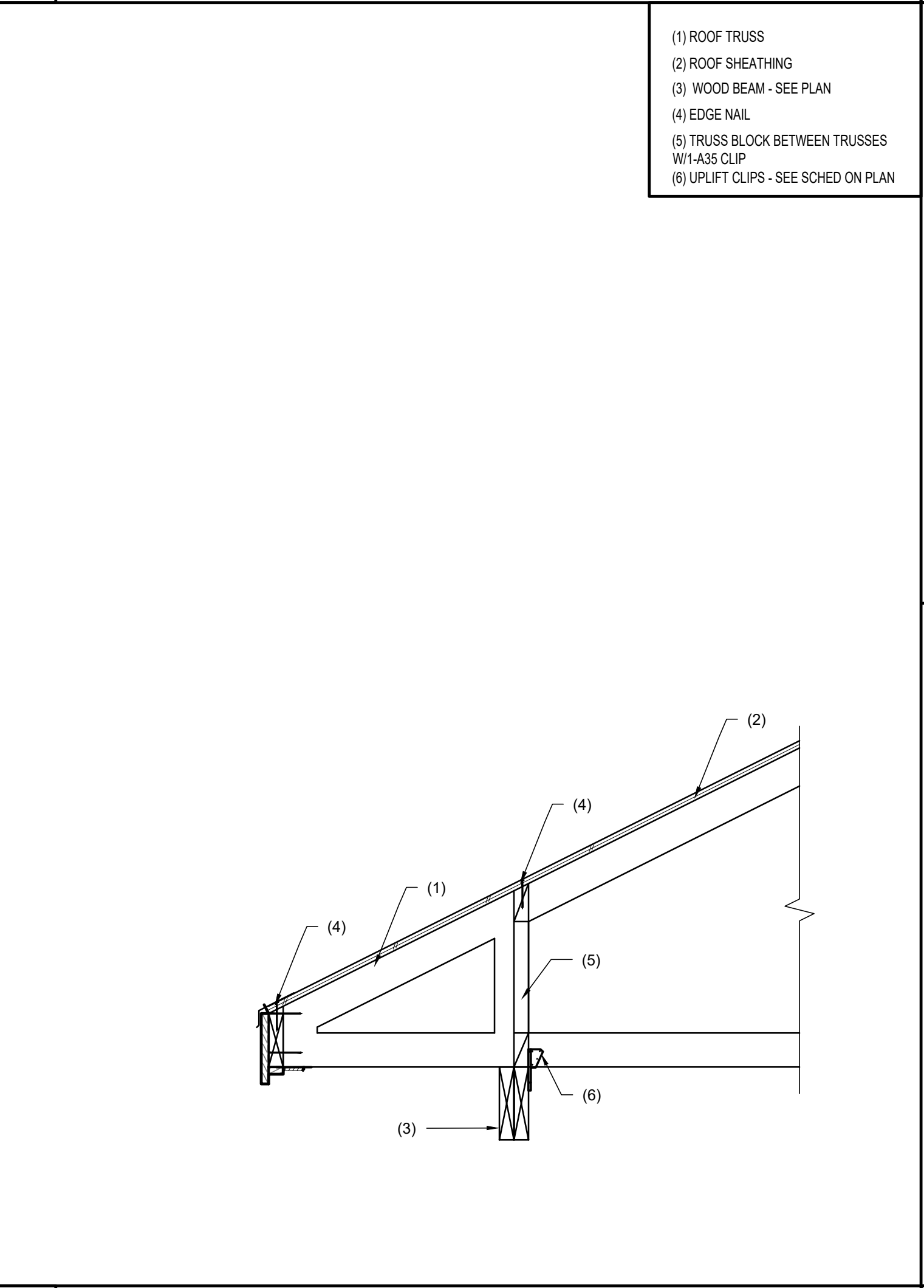
- (1) ROOF TRUSS (24" DEEP MIN)
- (2) ROOF SHEATHING
- (3) WALL FRAMING (FRT) - SEE PLAN NOTES
- (4) EDGE NAIL
- (5) 2X BLOCK EA. BAY W/ (4) 8d NAILS
- (6) UPLIFT CLIPS - SEE UPLIFT SCHEDULE

1 EXTERIOR BEARING DETAIL



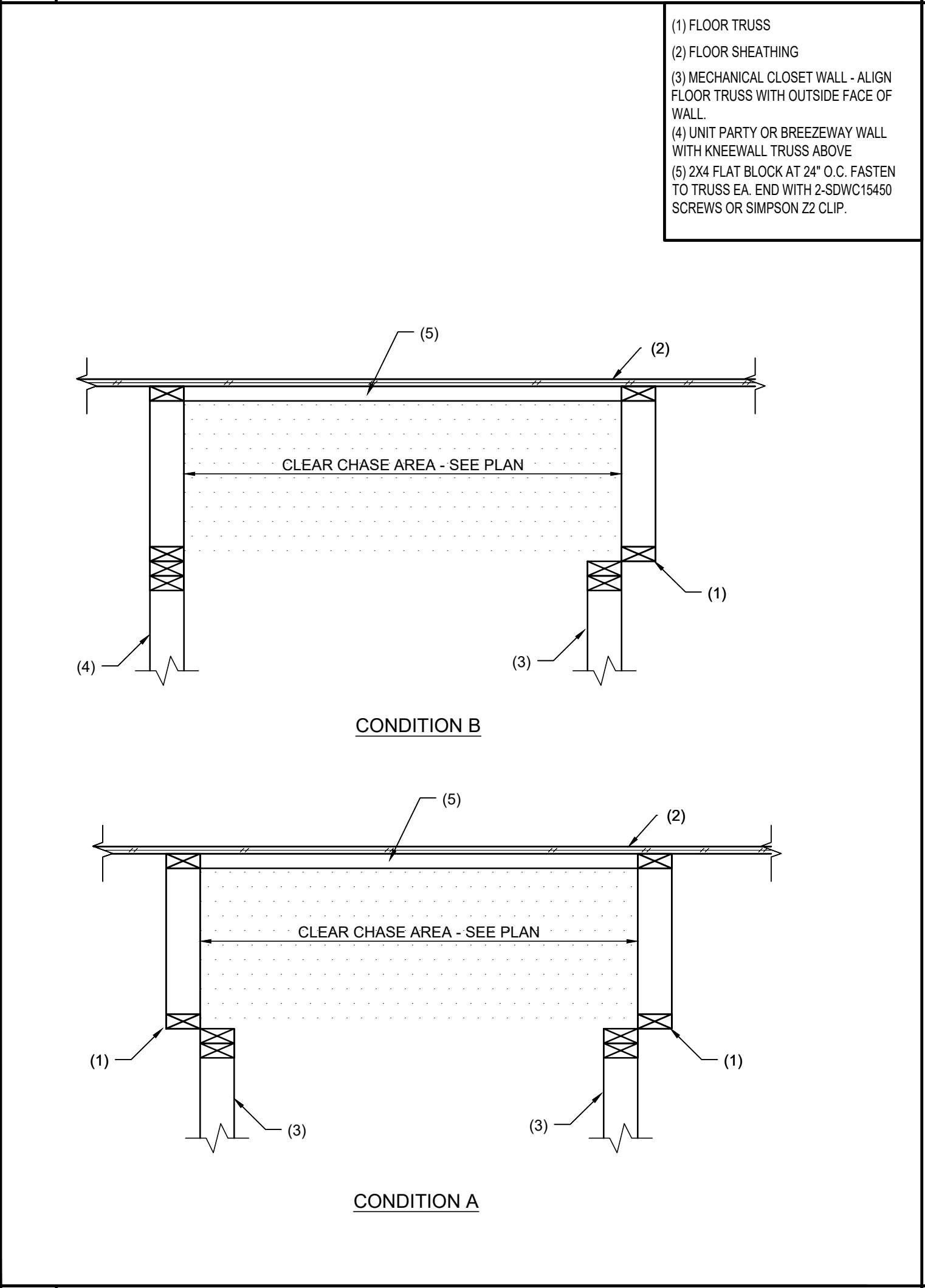
- (1) ROOF TRUSS
- (2) ROOF SHEATHING
- (3) SEE STUD AND SHEARWALL SCHEDULE AS NOTED ON PLAN.
- (4) EDGE NAIL
- (5) 2X BLOCK EA. BAY W/ (4) 8d NAILS
- (6) UPLIFT CLIPS - SEE SCHED ON PLAN
- (7) 2X8 BLOCK EACH BAY
- (8) CONT. BOND BEAM WITH (2) #5 CONT.
- (9) 8" CMU W/TRUSS TYPE REINF. @ 16" O.C. HORIZ. AND #5 VERT. @ 48" O.C. FILL REINF. CELLS WITH 2500 PSI GROUT.
- (10) PL 3/8X4X0'-8" WITH (2) 3/4"ØX0'-10" H.S.A.
- (11) 2 X 10 JOISTS @ 16" O.C. TAPER CUT 2".
- (12) H3 CLIP @ EACH JOIST.
- (13) (1) A35 CLIP @ 16" O.C.
- (14) 2X RIPPED TO FIT W/ 1/2"Ø ANCHOR BOLTS @ 48" O.C.
- (15) 2 X 10 CONT. W/ (4) 0.148"Ø X 3 1/4" NAILS AT EACH JOIST.
- (16) REINF. (2) CELLS W/(2) #5 VERT. (1 EACH FACE) AND PROVIDE #2 TIES @ 8" O.C. FILL CELLS W/ 2500 PSI GROUT.
- (17) 2-2X LEDGER W/ 1/2"Ø ANCHOR BOLTS @ 12" O.C.

3 ELEVATOR ROOF



- (1) ROOF TRUSS
- (2) ROOF SHEATHING
- (3) WOOD BEAM - SEE PLAN
- (4) EDGE NAIL
- (5) TRUSS BLOCK BETWEEN TRUSSES W/1-435 CLIP
- (6) UPLIFT CLIPS - SEE SCHED ON PLAN

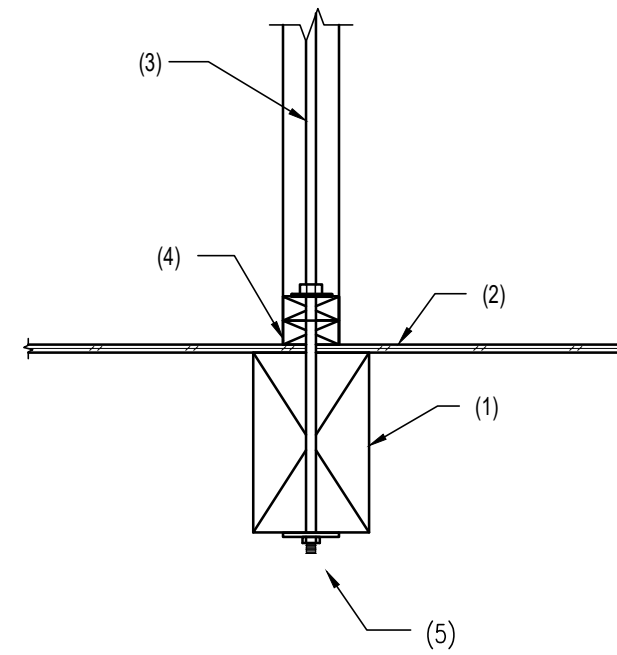
5 TRUSS BEARING AT BEAM



- (1) FLOOR TRUSS
- (2) FLOOR SHEATHING
- (3) MECHANICAL CLOSET WALL - ALIGN FLOOR TRUSS WITH OUTSIDE FACE OF WALL.
- (4) UNIT PARTY OR BREEZEWAY WALL WITH KNEEWALL TRUSS ABOVE
- (5) 2X4 FLAT BLOCK AT 24" O.C. FASTEN TO TRUSS EA. END WITH 2-SDWC15450 SCREWS OR SIMPSON ZZ CLIP.

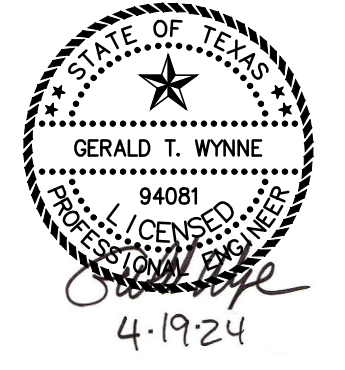
7 FRAMING AT MECHANICAL CHASE

- (1) FLUSH BEAM PER PLAN AND SCHEDULE
- (2) FLOOR SHEATHING
- (3) SHEARWALL HOLDDOWN PER PLAN AND SCHEDULE
- (4) ADJACENT COMPRESSION STUDS
- (5) WALL FRAMING PER PLAN AND SCHEDULE
- (6) NUT AND OVERSIZE WASHER



SHEARWALL TYPE FOR LOCATION	SHEATHING TYPE	LOCATION	EDGE NAILING	FIELD NAILING	BLOCKED EDGES	BOTTOM PLATE CONNECTION			SHEARWALL CAPACITY		SHEARWALL TYPE
						FASTENING TO CONCRETE			WIND	SEISMIC	
						EXTERIOR WALL	INTERIOR WALL	EXTERIOR OR INTERIOR WALL			
[W2]	●	●	8d @ 2" O.C.	8d @ 12" O.C.	2-2X	5/8"Ø A.B. @ 15" O.C.	5/8"Ø @ 15" O.C.	10d @ 2" O.C. (TWO ROWS)	896 PLF	640 PLF	[W2]
[W3]	●	●	8d @ 3" O.C.	8d @ 12" O.C.	2-2X	5/8"Ø A.B. @ 20" O.C.	5/8"Ø @ 20" O.C.	10d @ 3" O.C. (TWO ROWS)	686 PLF	490 PLF	[W3]
[W4]	●	●	8d @ 4" O.C.	8d @ 12" O.C.	2X	1/2"Ø A.B. OR MASA ANCHOR @ 24" O.C.	5/8"Ø @ 24" O.C.	10d @ 2" O.C.	532 PLF	380 PLF	[W4]
[W6]	●	●	8d @ 6" O.C.	8d @ 12" O.C.	2X	1/2"Ø A.B. OR MASA ANCHOR @ 48" O.C.	5/8"Ø @ 40" O.C.	10d @ 4" O.C.	364 PLF	260 PLF	[W6]
[G4]	●	●	6d @ 4" O.C.	6d @ 4" O.C.	2X	1/2"Ø A.B. OR MASA ANCHOR @ 48" O.C.	P.A.F. @ 8" O.C.	10d @ 8" O.C.	175 PLF	175 PLF	[G4]
[G7]	●	●	6d @ 7" O.C.	6d @ 7" O.C.	NO	1/2"Ø A.B. OR MASA ANCHOR @ 48" O.C.	P.A.F. @ 16" O.C.	10d @ 12" O.C.	350 PLF	350 PLF	[G7]
[G7]	●	●	6d @ 7" O.C.	6d @ 7" O.C.	NO	1/2"Ø A.B. OR MASA ANCHOR @ 48" O.C.	P.A.F. @ 8" O.C.	10d @ 6" O.C.	115 PLF	115 PLF	[G7]
[G7]	●	●	6d @ 7" O.C.	6d @ 7" O.C.	NO	1/2"Ø A.B. OR MASA ANCHOR @ 48" O.C.	P.A.F. @ 8" O.C.	10d @ 6" O.C.	230 PLF	230 PLF	[G7]

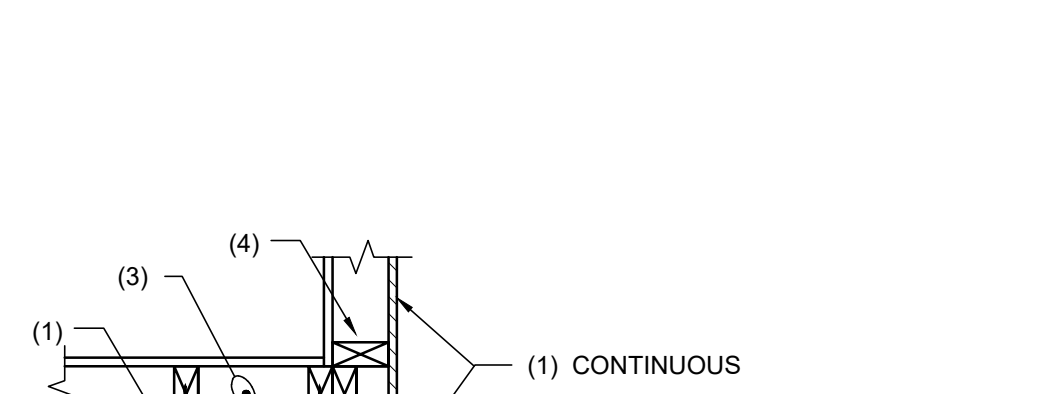
- (A) 8d COMMON NAIL - 0.131" DIA X 2 1/2"
- (B) 10d COMMON NAIL - 0.148" DIA X 3"
- (C) 6d NAIL - 0.12" DIA X 1 1/2" (CALV. AT EXTERIOR GYP. SHEATHING LOCATIONS. #6 X 1 1/2" DRYWALL SCREW MAY BE USED AS AN ALTERNATE AT SAME SPACING.
- (D) 3/8" DIA A.B. - 3/8" DIA X 10" EMBED C.I.P. BOLT ALT: 3/8" DIA X 4 1/2" EMBED SIMPSON TITEN HD OR HILTI KWIK-CON
- (E) 1/2" DIA A.B. - 1/2" DIA X 7" EMBED C.I.P. BOLT ALT: 1/2" DIA X 3 5/8" EMBED SIMPSON TITEN HD OR HILTI KWIK-CON
- (F) MASA: SIMPSON MASA EMBEDDED MUDSILL ANCHOR
- (G) P.A.F.: 0.177" DIA POWDER ACTUATED FASTENER - SIMPSON PDPH OR HILTI DS62P10 LENGTH SHALL BE BASED ON BOTTOM PLATE MANUF. RECOMMENDED EMBEDMENT
- (I) ALL FASTENERS USED IN PRESSURE TREATED MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH FASTENER MANUFACTURER'S RECOMMENDATIONS REGARDING MATERIAL AND PROTECTIVE COATING.
- (J) CONTRACTOR SHALL LOCATE ALL POST-TENSION TENDONS PRIOR TO DRILLING SLAB TO INSTALL FASTENERS.
- (K) ALL FASTENERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- (L) ALL SHEARWALLS SHALL HAVE STUDS AT 16" O.C. (MAX.) AND SHALL HAVE A MINIMUM OF 2 STUDS AT EACH END U.N.O. BY THE HOLDDOWN DETAILS.
- (M) W.S.P. INDICATES WOOD STRUCTURAL PANEL - EITHER PLYWOOD OR O.S.B. IS ACCEPTABLE.



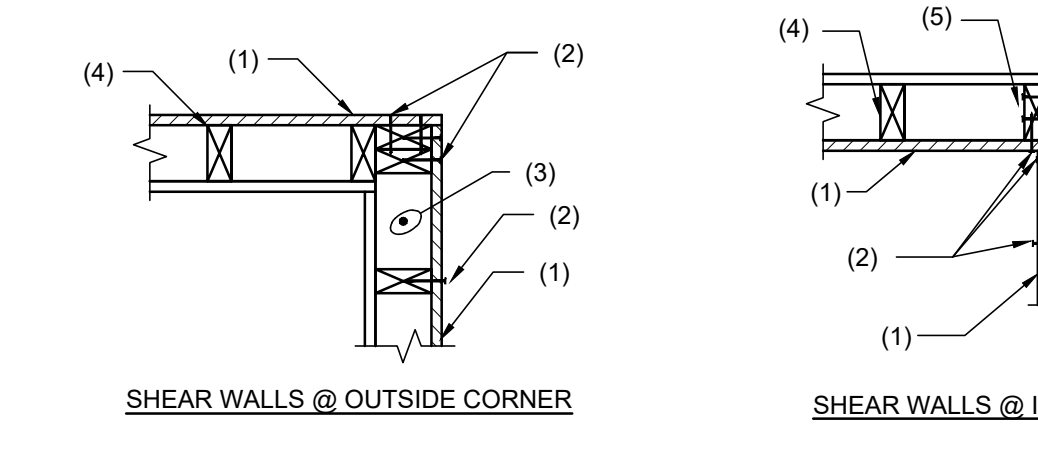
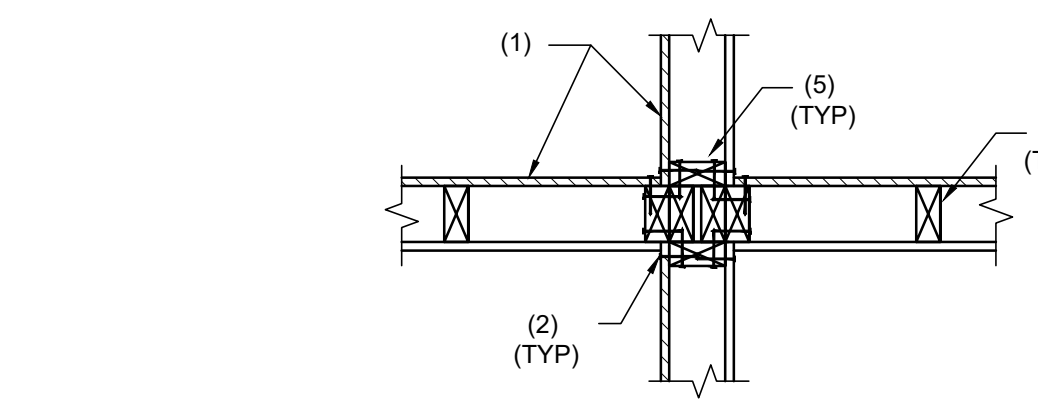
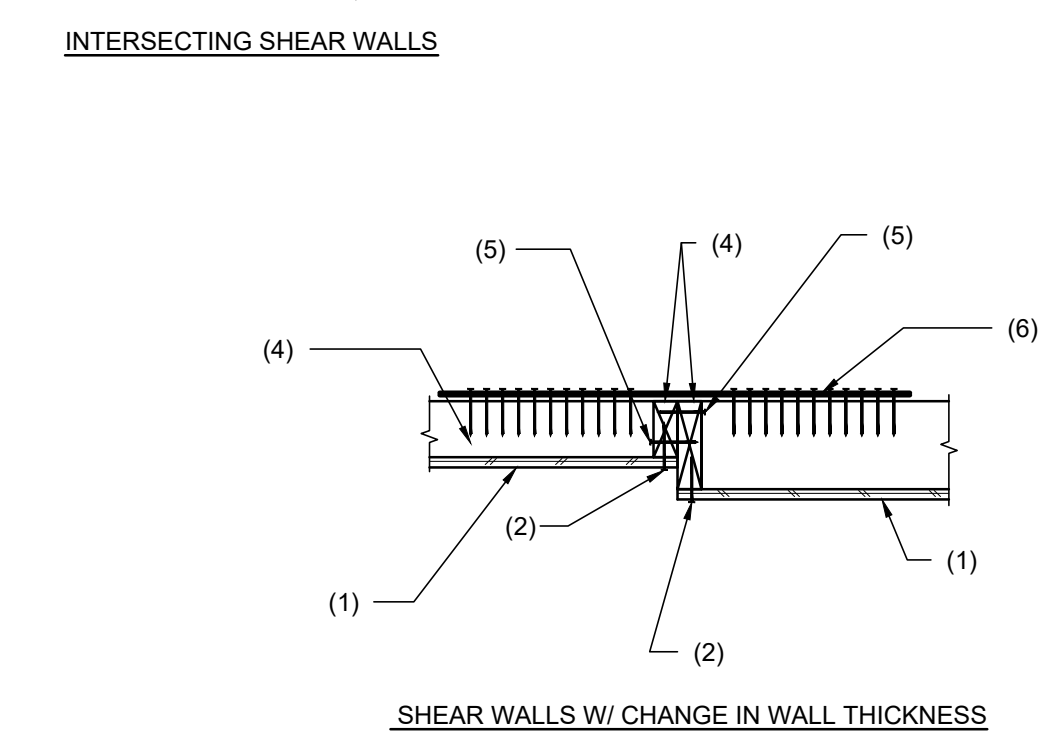
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7 SHEARWALL ANCHOR AT BEAM

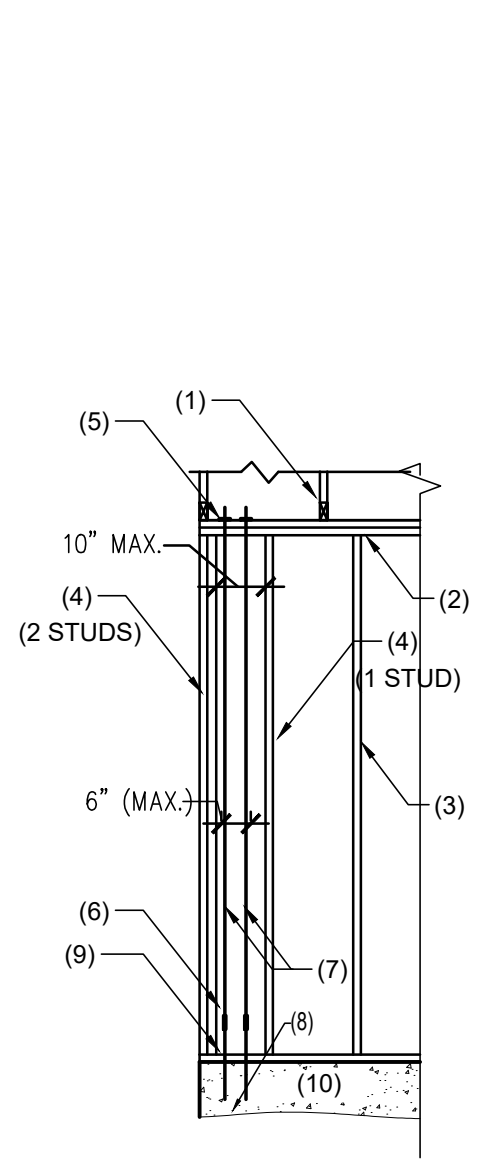


- (1) SHEARWALL SHEATHING PER PLAN AND SCHEDULE
- (2) SHEARWALL EDGE NAILING
- (3) SHEARWALL HOLDDOWN PER PLAN AND SCHEDULE
- (4) ADJACENT COMPRESSION STUDS
- (5) WALL FRAMING PER PLAN AND SCHEDULE
- (6) FASTEN STUDS W/8d NAILS (0.131" DIA X 2 1/2") SPACING TO MATCH SHEARWALL EDGE NAILING
- (6) CS16 STRAP ON ONE TOP PLATE WITH 11-8d NAILS EACH END.



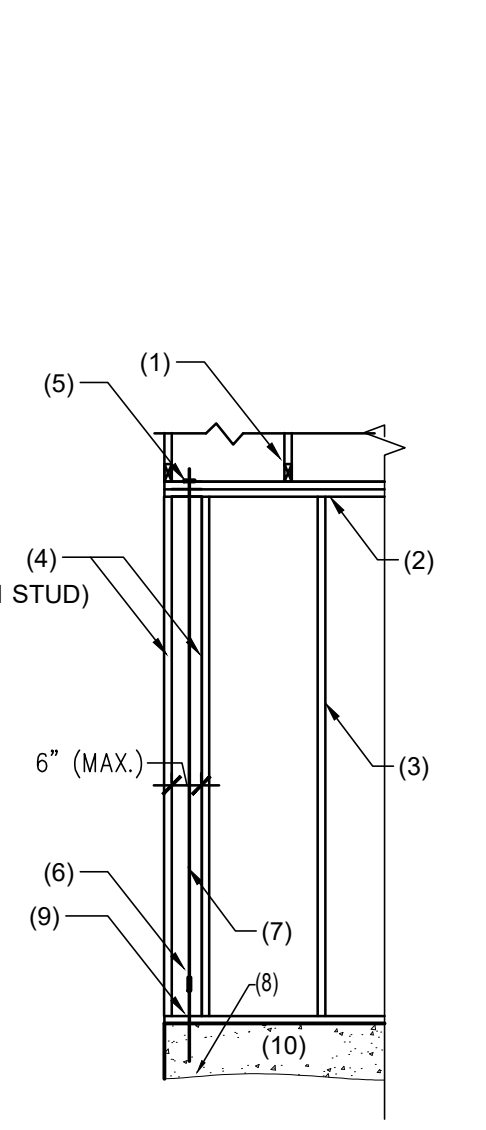
6 SHEARWALL FRAMING

5 SHEARWALL SCHEDULE



- (1) ROOF TRUSS
- (2) WALL DBL TOP PLATE
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) COMPRESSION STUDS EA. SIDE OF ROD
- (5) SIMPSON RTUD OR CLP MINI-JACK ANCHOR
- (6) COUPLER TO MATCH ROD SIZE
- (7) 1/2" DIA ALL-THREAD ROD (A36)
- (8) WALL BOTTOM PLATE
- (9) PROVIDE ANCHOR BOLTS AT SLAB PER TYPICAL DETAIL. SEE 4/SD-40 FOR DETAIL AT FLUSH BEAM.
- (10) CONCRETE SLAB OR FLUSH BEAM
- (11) NOTE: SHEARWALL SHEATHING NOT SHOWN FOR CLARITY. SHEATHING SHALL BE EDGE NAILED TO EACH COMPRESSION STUD.

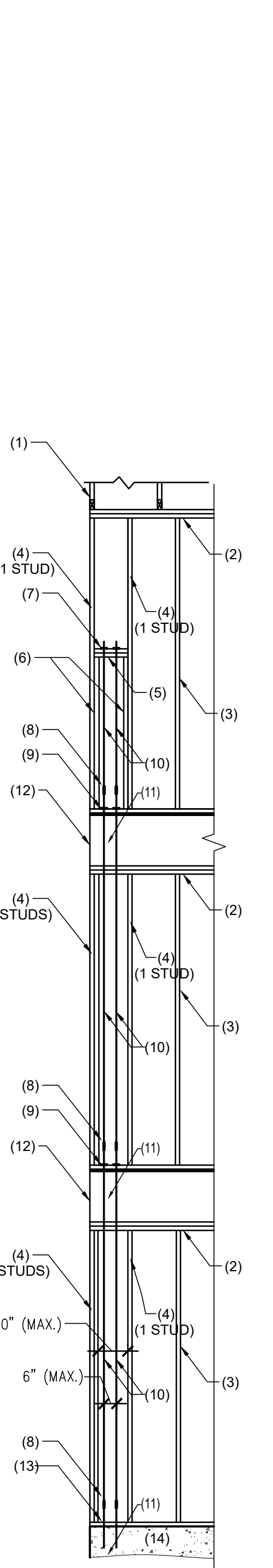
4 SHEARWALL ANCHOR (12)



- (1) ROOF TRUSS
- (2) WALL DBL TOP PLATE
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) COMPRESSION STUDS EA. SIDE OF ROD
- (5) SIMPSON RTUD OR CLP MINI-JACK ANCHOR
- (6) COUPLER TO MATCH ROD SIZE
- (7) 1/2" DIA ALL-THREAD ROD (A36)
- (8) WALL BOTTOM PLATE
- (9) PROVIDE ANCHOR BOLTS AT SLAB PER TYPICAL DETAIL. SEE 4/SD-40 FOR DETAIL AT FLUSH BEAM.
- (10) CONCRETE SLAB OR FLUSH BEAM
- (11) NOTE: SHEARWALL SHEATHING NOT SHOWN FOR CLARITY. SHEATHING SHALL BE EDGE NAILED TO EACH COMPRESSION STUD.

3 SHEARWALL ANCHOR (11)

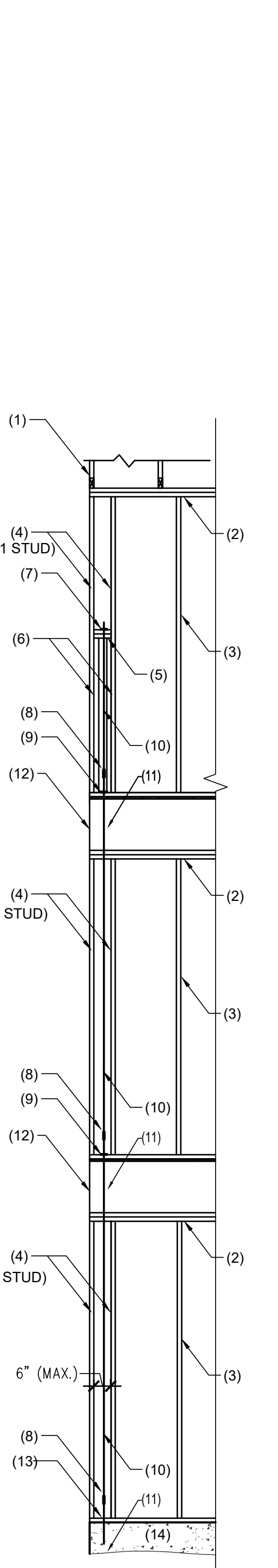
2 SHEARWALL ANCHOR (32)



- (1) ROOF TRUSS
- (2) WALL DBL TOP PLATE
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) COMPRESSION STUDS
- (5) 2-2X FLAT BRIDGE BLOCK
- (6) 2X CRUMPLE STUD EA. SIDE. FASTEN TO COMPRESSION STUD
- (7) SIMPSON RTUD OR CLP MINI-JACK ANCHOR (TYP EA ROD)
- (8) COUPLER TO MATCH ROD SIZE (TYP)
- (9) 2"X2"X1/2" BEARING PLATE WITH NUT & WASHER (TYP EA ROD)
- (10) 1/2" DIA ALL-THREAD ROD (A36)
- (11) WALL BOTTOM PLATE
- (12) FLOOR CAVITY - FRAMING DIRECTION VARIES. NOTE: PROVIDE BLOCKS IN FLOOR CAVITY TO MATCH COMPRESSION STUDS WHERE FLOOR TRUSS DOES NOT OCCUR.
- (13) PROVIDE ANCHOR BOLTS AT SLAB PER 10/SD-14
- (14) CONCRETE SLAB
- (15) NOTE: SHEARWALL SHEATHING NOT SHOWN FOR CLARITY. SHEATHING SHALL BE EDGE NAILED TO EACH COMPRESSION STUD.

2 SHEARWALL ANCHOR (32)

1 SHEARWALL ANCHOR (31)



- (1) ROOF TRUSS
- (2) WALL DBL TOP PLATE
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) COMPRESSION STUDS EA. SIDE OF ROD
- (5) 2-2X FLAT BRIDGE BLOCK
- (6) 2X CRUMPLE STUD EA. SIDE. FASTEN TO COMPRESSION STUD
- (7) SIMPSON RTUD OR CLP MINI-JACK ANCHOR
- (8) COUPLER TO MATCH ROD SIZE
- (9) 2"X2"X1/2" BEARING PLATE WITH NUT & WASHER (TYP EA ROD)
- (10) 1/2" DIA ALL-THREAD ROD (A36)
- (11) WALL BOTTOM PLATE
- (12) FLOOR CAVITY - FRAMING DIRECTION VARIES. NOTE: PROVIDE BLOCKS IN FLOOR CAVITY TO MATCH COMPRESSION STUDS WHERE FLOOR TRUSS DOES NOT OCCUR.
- (13) PROVIDE ANCHOR BOLTS AT SLAB PER 10/SD-14
- (14) CONCRETE SLAB
- (15) NOTE: SHEARWALL SHEATHING NOT SHOWN FOR CLARITY. SHEATHING SHALL BE EDGE NAILED TO EACH COMPRESSION STUD.

1 SHEARWALL ANCHOR (31)

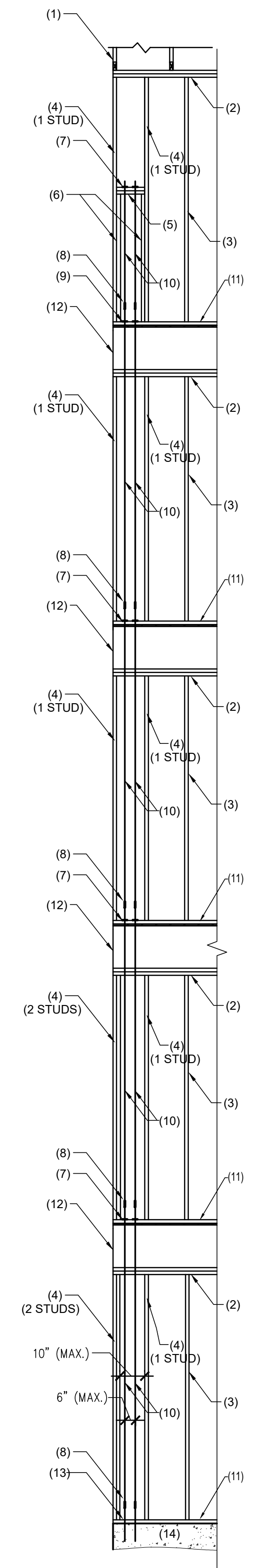
LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

ISSUE FOR PERMIT
Date: 10-31-2023
PERMIT RESUBMITTAL
Date: 01-08-2024
ISSUE FOR CONSTRUCTION
Date: 04-19-2024
Date:
Date:
Date:

SHEARWALL AND HOLDDOWN DETAILS
N.T.S.

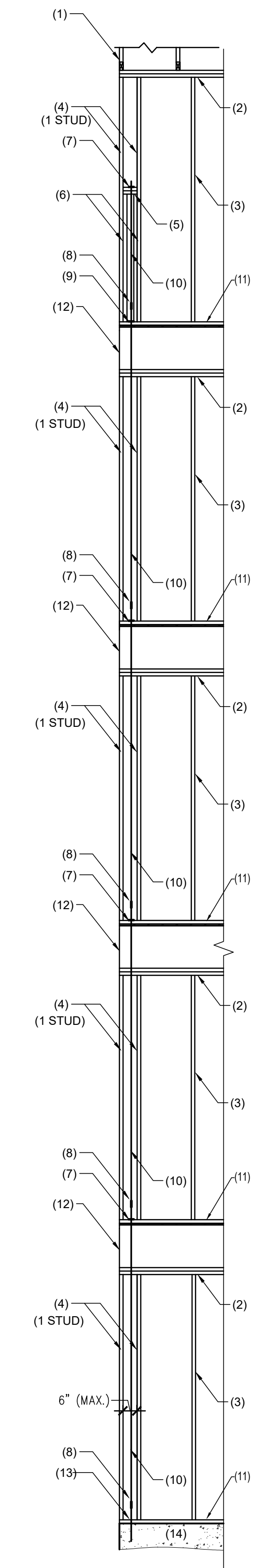


- (1) ROOF TRUSS
- (2) WALL DBL TOP PLATE
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) COMPRESSION STUDS
- (5) 2-2X FLAT BRIDGE BLOCK
- (6) 2X CRIPPLE STUD EA SIDE. FASTEN TO COMPRESSION STUD W/8d NAILS AT 6" O.C.
- (7) SIMPSON RTUD OR CLP MINI-JACK ANCHOR (TYP EA ROD)
- (8) COUPLER TO MATCH ROD SIZE (TYP)
- (9) 2"X2" BEARING PLATE WITH NUT & WASHER (TYP EA ROD)
- (10) 1/2" DIA ALL-THREAD ROD (A36)
- (11) WALL BOTTOM PLATE
- (12) FLOOR CAVITY - FRAMING DIRECTION VARIES. NOTE: PROVIDE BLOCKS IN FLOOR CAVITY TO MATCH COMPRESSION STUDS WHERE FLOOR TRUSS DOES NOT OCCUR.
- (13) PROVIDE ANCHOR BOLTS AT SLAB PER 10SD-14
- (14) CONCRETE SLAB
- (15) NOTE: SHEARWALL SHEATHING NOT SHOWN FOR CLARITY. SHEATHING SHALL BE EDGE NAILED TO EACH COMPRESSION STUD.

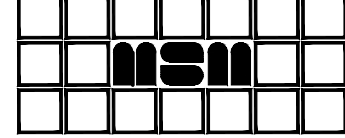
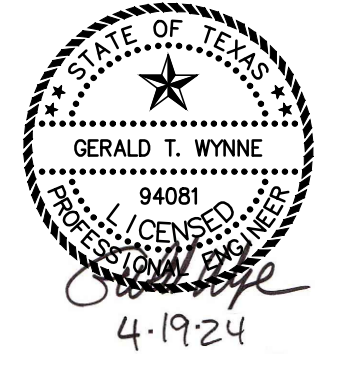


2 SHEARWALL ANCHOR 52

- (1) ROOF TRUSS
- (2) WALL DBL TOP PLATE
- (3) WALL FRAMING - SEE PLAN NOTES
- (4) COMPRESSION STUDS EA. SIDE OF ROD
- (5) 2-2X FLAT BRIDGE BLOCK
- (6) 2X CRIPPLE STUD EA SIDE. FASTEN TO COMPRESSION STUD W/8d NAILS AT 6" O.C.
- (7) SIMPSON RTUD OR CLP MINI-JACK ANCHOR
- (8) COUPLER TO MATCH ROD SIZE
- (9) 2"X2" BEARING PLATE WITH NUT & WASHER
- (10) 1/2" DIA ALL-THREAD ROD (A36)
- (11) WALL BOTTOM PLATE
- (12) FLOOR CAVITY - FRAMING DIRECTION VARIES. NOTE: PROVIDE BLOCKS IN FLOOR CAVITY TO MATCH COMPRESSION STUDS WHERE FLOOR TRUSS DOES NOT OCCUR.
- (13) PROVIDE ANCHOR BOLTS AT SLAB PER 10SD-14
- (14) CONCRETE SLAB
- (15) NOTE: SHEARWALL SHEATHING NOT SHOWN FOR CLARITY. SHEATHING SHALL BE EDGE NAILED TO EACH COMPRESSION STUD.



1 SHEARWALL ANCHOR 51



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LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

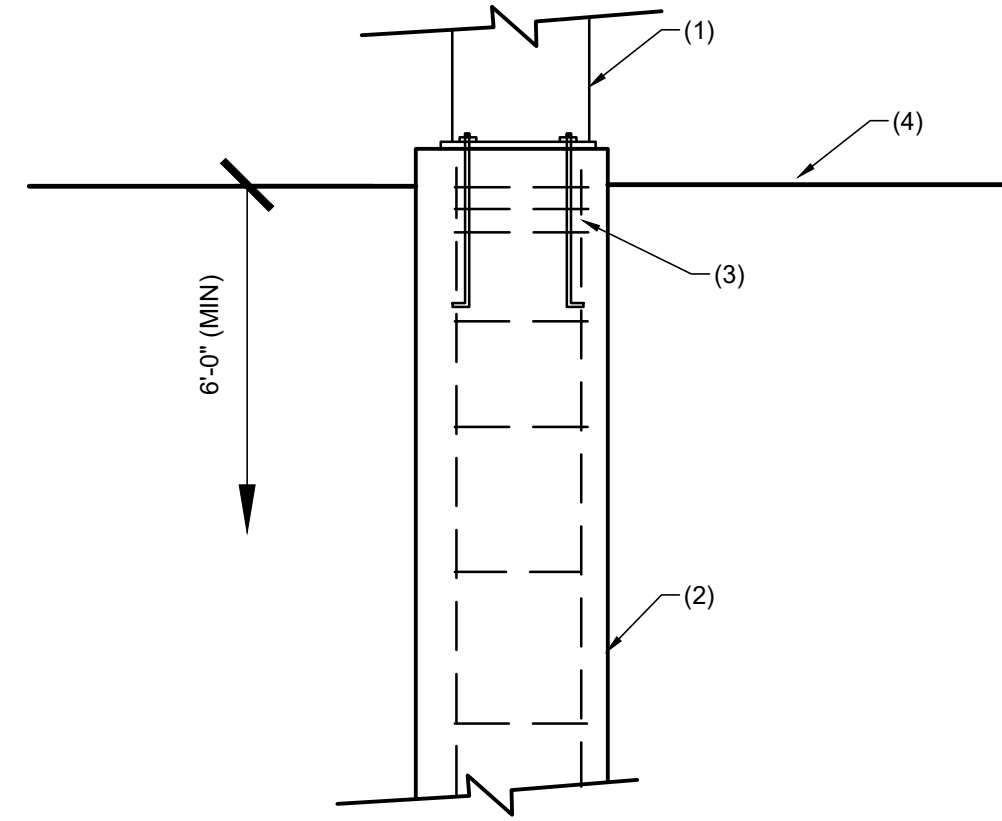
ISSUE FOR PERMIT
Date: 10-31-2023
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Date: 04-19-2024
Date:
Date:
Date:

SHEARWALL AND
HOLDDOWN
DETAILS

N.T.S.



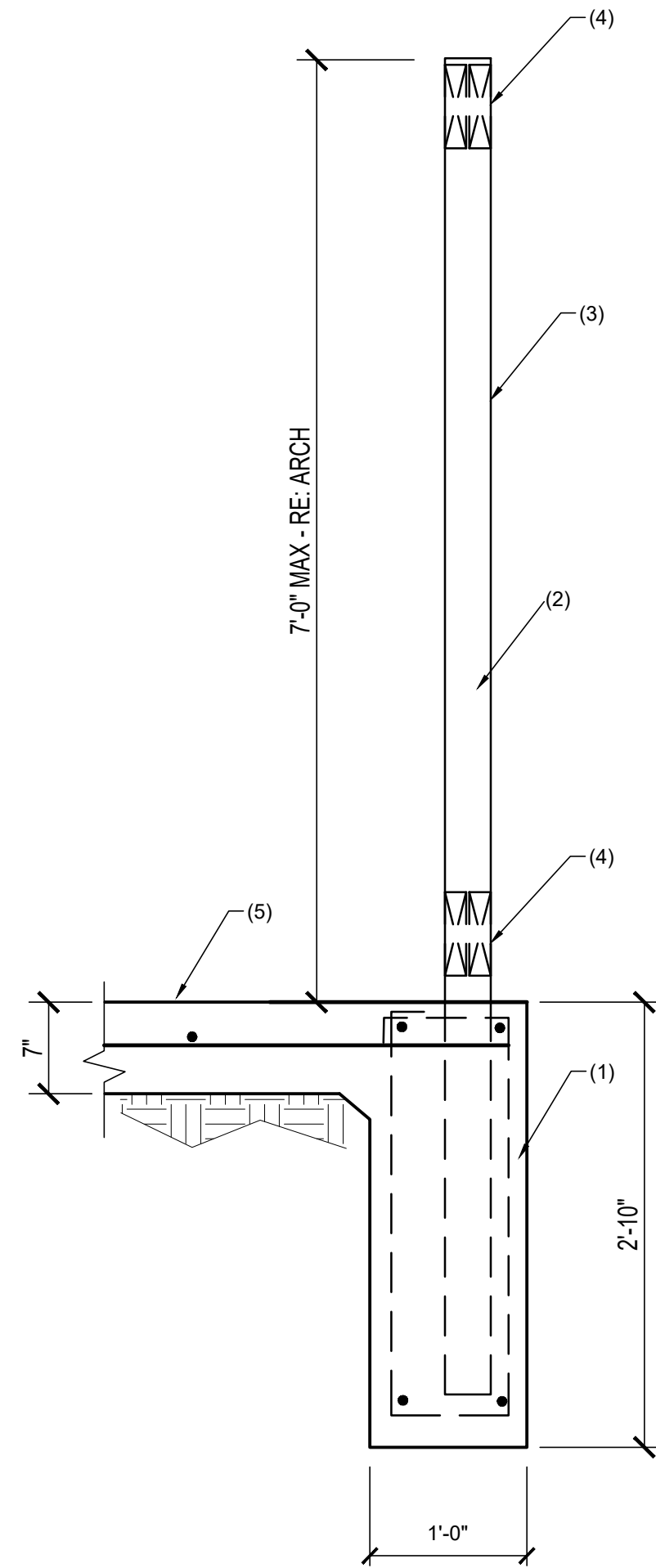
NOTE: MAX. LIGHT POLE HEIGHT = 15'-0"



- (1) LIGHT POLE, BASE PLATE, AND ANCHOR BOLTS BY MANUF.
- (2) 18" DIA X 6'-0" DEEP PIER FOOTING REINF. W/4-#6 VERTICALS WITH #3 TIES AT 12" O.C.
- (3) 3 ADDL. TIES AT 3' O.C. AT TPIER
- (4) GRADE OR PAVING - RE: CIVIL.

5 SITE LIGHT POLE BASE

- (1) GRADE BEAM CONT. W/ 2-#5 CON T & B AND #3 TIES AT 24" O.C.
- (2) 4X4 PT WOOD POST EMBEDDED IN GRADE BEAM - RE: ARCH
- (3) FINISH - RE: ARCH
- (4) WOOD INFILL FRAMING BETWEEN POSTS - RE: ARCH
- (5) 7" SLAB W/#4@12" O.C. E.W.

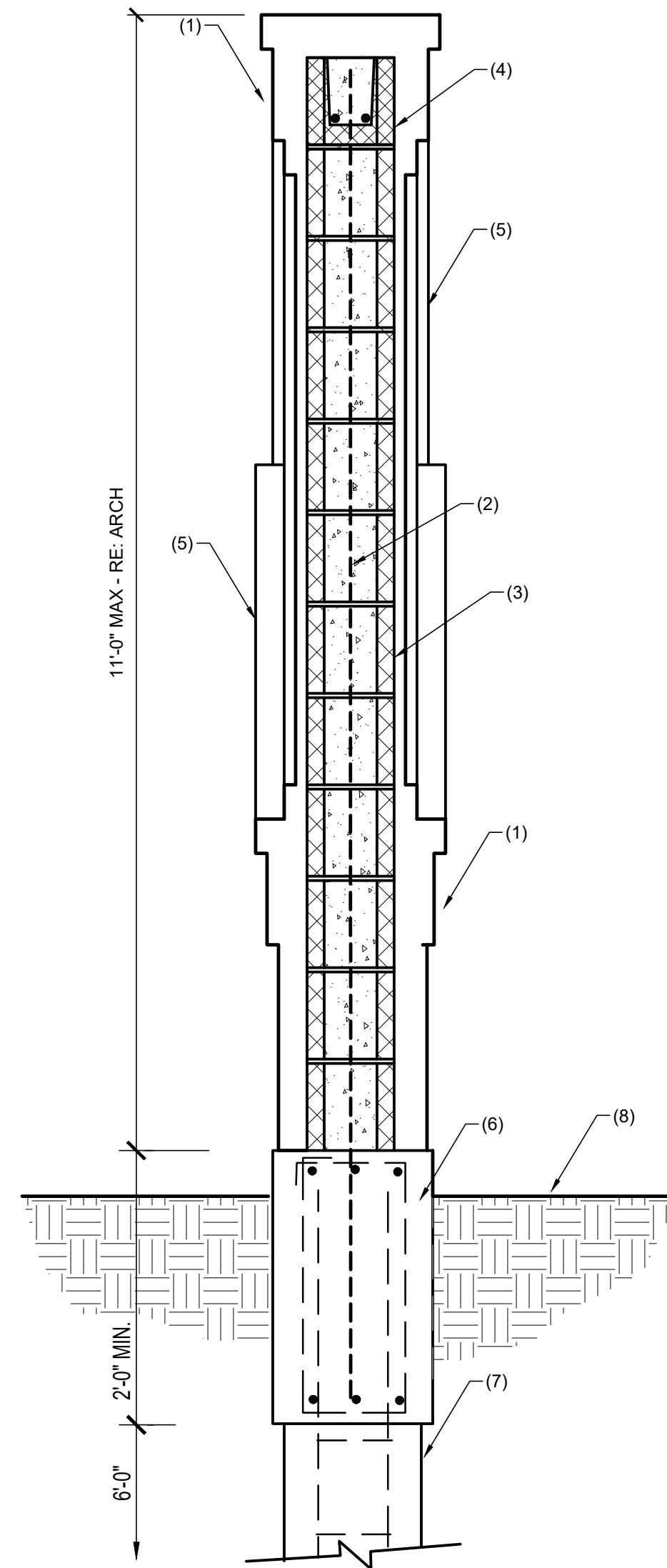


NOTE: SEE 11/A1.2 & 1-5/A1.3 FOR INFO NOT SHOWN HERE

4 SECTION at TRASH ENCLOSURE

3 SUNSHADE FOUNDATION DETAIL

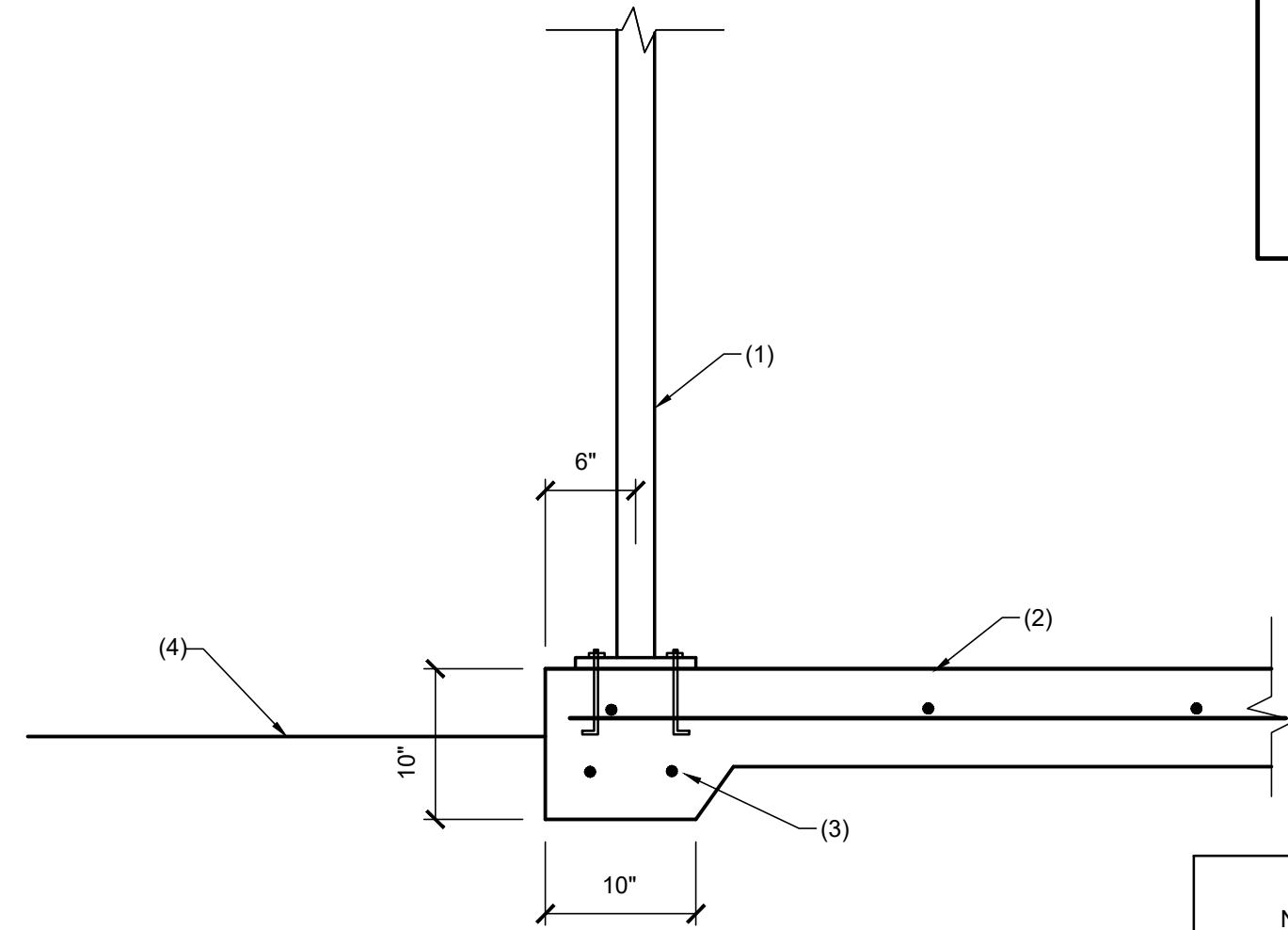
- (1) FINISH - RE:ARCH
- (2) #5@24" O.C. VERT
- (3) 8" CMU WHORIZ LADDER REINF@16" O.C. FILL REINFORCED CELLS WITH 2000 PSI GROUT.
- (4) 8" BOND BEAM WITH 2-#5 CONT
- (5) SIGN AND ATTACHMENT BY OTHERS
- (6) 12X24 GRADE BEAM CONT. W/ 3-#6 CON T & B AND #3 TIES AT 24" O.C.
- (7) 12" DIA X 6" DEEP (BELOW GRADE BEAM) PIER @ EA. END W/4-#6 VERT & #3 TIES AT 12" O.C. EXTEND PIER REINF INTO BEAM
- (8) FIN. GRADE



NOTE: SEE 10/A1.2 FOR INFO NOT SHOWN HERE

2 MONUMENT SIGN DETAIL

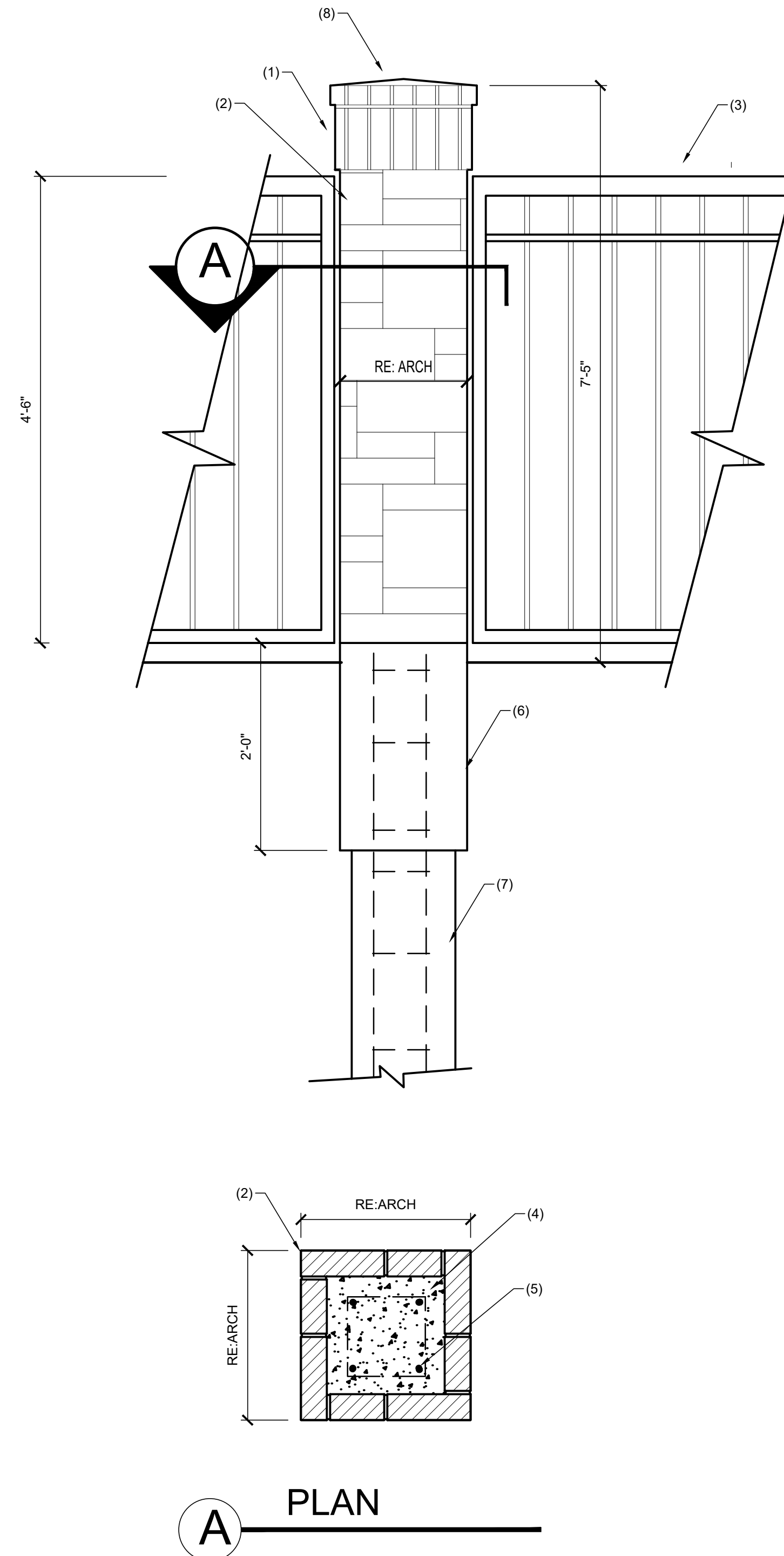
- (1) STEEL FRAME, BASE PLATE, AND ANCHOR BOLTS BY SUNSHADE MANUF. SUNSHADE TO BE DESIGNED FOR WIND LOADS SHOWN ON S0-10
- (2) 5" CONCRETE SLAB W/#3@15" O.C. EACH WAY MIN OR TYPICAL DECK PAVING REINFORCING.
- (3) THICKENED EDGE AT PERIMETER OF SUNSHADE WITH 2-#5 CONT.
- (4) GRADE OR PAVING - RE: CIVIL.



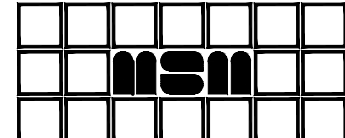
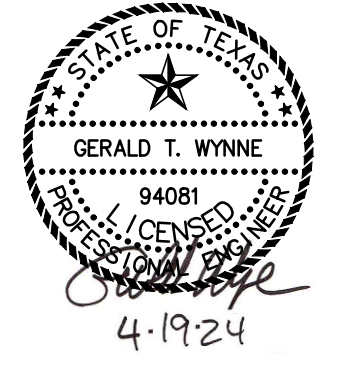
NOTE: SEE 12&13/A1.2 FOR INFO NOT SHOWN HERE

1 FENCE COLUMN

- (1) COLUMN AT 10'-0" O.C. - RE:ARCH
- (2) STONE VENEER - RE: ARCH
- (3) METAL FENCE - RE: ARCH
- (4) FILL VOID WITH 3000 PSI GROUT
- (5) 4-#6 VERT. W/ #3 TIES AT 12" O.C.
- (6) CONCRETE PIER CAP - MATCH DIMS OF COLUMN ABOVE
- (7) 12" DIA X 4" DEEP (BELOW GRADE BEAM) PIER @ EA. COL. W/4-#6 VERT & #3 TIES AT 12" O.C. EXTEND PIER REINF INTO BEAM
- (8) SLOPE GROUT TO DRAIN



NOTE: SEE 6&7/A1.2 FOR INFO NOT SHOWN HERE



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LOST OAKS
A Multi-Family Community
Harris County, Texas
Job No. 2302

ISSUE FOR PERMIT
Date: 10-31-2023
PERMIT RESUBMITTAL
Date: 01-08-2024
ISSUE FOR CONSTRUCTION
Date: 04-19-2024
Date:
Date:
Date:

STRUCTURAL SITE DETAILS

N.T.S.

