

# GENERAL STRUCTURAL NOTES

**000000 GENERAL:**  
 TO THE BEST OF THE ENGINEER'S KNOWLEDGE THE PLANS AND SPECIFICATIONS FOR THIS PROJECT COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH THE FLORIDA STATUTES. DO NOT SCALE DRAWINGS, USE DIMENSIONS PROVIDED, TYPICALLY. IN THE CASE OF DIMENSIONAL DISCREPANCIES, DIMENSIONS GOVERN OVER STRUCTURAL DIMENSIONS. TYPICALLY, STRUCTURAL DRAWINGS ARE NOT TO BE REPRODUCED WITHOUT WRITTEN CONSENT FROM R. L. FLOWFIELD & ASSOCIATES, INC. SHOP DRAWING REVIEW SHALL REQUIRE TWO (2) WEEKS FOR COMPLETION FROM TIME OF DELIVERY TO R. L. FLOWFIELD & ASSOCIATES, INC. SHOP DRAWINGS SHALL BE CHECKED & APPROVED BY GENERAL CONTRACTOR PRIOR TO SUBMITTAL TO ARCHITECT. CONTRACTORS SUBMITTING SHOP DRAWINGS TO PROVIDE ONE (1) ELECTRONIC COPY IN PDF FORMAT FOR MARK-UP.

**000200 BUILDING CODES:**  
 FLORIDA BUILDING CODE - SIXTH EDITION (2011), ASCE 7-10, RISK CATEGORY - TYPE II, BASIC WIND SPEED,  $V_{max} = 120$  MPH, EXPOSURE C, INTERNAL PRESSURE COEFFICIENT,  $C_{pi} = +0.8$  (ENCLOSED), SEISMIC IMPORTANCE FACTOR,  $I_e = 1.0$  MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS,  $S_{DS} = 0.216$ g,  $S_{D1} = 0.216$ g, SITE CLASS D, DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS,  $S_{D2} = 0.229$ g, SEISMIC DESIGN CATEGORY - A

**000300 STRUCTURAL LOADING:**  
 THE STRUCTURE HAS BEEN DESIGNED IN ACCORD WITH THE BUILDING CODE AND/OR MORE RESTRICTIVE REQUIREMENTS FOR LOADS AS GIVEN BELOW UNLESS SPECIFIC AREAS OF THE DRAWING SPECIFICALLY CALL FOR DIFFERENT LOADING CRITERIA.  
**GRAVITY LOADING UNIFORM LIVE LOAD:**  
 SLAB-ON-GRADE AREAS..... 150 PSF  
 SECOND FLOOR OFFICE AREAS..... 50 PSF  
 EXITWAY & STAIRS..... 120 PSF  
 ROOFS-SLOPED..... 20 PSF (REDUCIBLE)  
 WIND LOADS PER BUILDING CODE (SEE SECTION 000100)

**000500 DRAWING DIMENSIONS AND COORDINATION:**  
 DIMENSIONAL INFORMATION, FRICING, ALL DETAILS AND CONSTRUCTION SHALL BE BASED ON THE ENTIRE SET OF CONTRACT DOCUMENTS. COORDINATE THE REQUIREMENTS OF ALL PROFESSIONALS. USE INFORMATION FROM APPROVED SHOP DRAWINGS TO SUPPLEMENT CONTRACT DOCUMENTS WHERE NECESSARY. REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO PROCEEDING.

**010100 SCOPE OF SERVICE FOR DELEGATED ENGINEERING:**  
 R.L. FLOWFIELD & ASSOCIATES HAS DESIGNED AND IS RESPONSIBLE FOR ONLY THE SPECIFIC STRUCTURAL COMPONENTS SHOWN IN THIS SET OF STRUCTURAL CONSTRUCTION DOCUMENTS. IF A SPECIALTY ENGINEER, AS DEFINED BY THE DEPARTMENT OF PROFESSIONAL REGULATION, IS REQUIRED, HIS SERVICES MUST COMPLY WITH THE SCOPE OF SERVICES AS OUTLINED IN THE PROJECT CONSTRUCTION DOCUMENTS.

**010200 FOUNDATIONS:**  
 GEOTECHNICAL DATA AND RECOMMENDATIONS HAVE BEEN PROVIDED BY UNIVERSAL ENGINEERING SCIENCES, REPORT NO. 13040 DATED 5 SEPTEMBER 2019, BASED UPON THIS REPORT, FOUNDATIONS WILL BE SHALLOU STRIP AND SPREAD FOOTINGS, DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 2500 PSF. TYPICALLY, GEOTECHNICAL ENGINEER IS RESPONSIBLE FOR SPECIFYING AND MONITORING ALL TESTING, INSTALLATION, EVALUATION, AND REPORTING RELATED TO THE FOUNDATION SYSTEM, INCLUDING ALL WORKMANSHIP PROVISIONS RELATING TO THE SOIL - STRUCTURE INTERFACE. THE STRUCTURAL ENGINEER IS RESPONSIBLE FOR SPECIFYING THE MATERIALS USED TO CONSTRUCT THE FOUNDATION UNITS AND FOR THE SELECTION OF VARIOUS SIZE UNITS TO SUPPORT THE STRUCTURAL FRAME. DO NOT PLACE ANY FOOTINGS OR MATS UNTIL RECEIPT OF WRITTEN AUTHORIZATION BY THE GEOTECHNICAL ENGINEER THAT THE PREPARED SUBGRADE OR DEEP FOUNDATION SYSTEM HAS BEEN PROPERLY EXECUTED IN ACCORD WITH THE DESIGN AND THAT ANY VARYING CONDITIONS ENCOUNTERED DURING CONSTRUCTION HAVE BEEN EVALUATED AND CORRECTED WHERE NECESSARY TO INSURE PROPER FOUNDATION PERFORMANCE.

**021000 EARTHWORK:**  
 CONTRACTOR SHALL Dewater SITE AS NECESSARY, SO THAT ALL CONCRETE CAN BE PLACED IN THE DRY. ALL BACKFILL SHALL BE ACCOMPLISHED USING MATERIAL CONSISTING OF CRUSHED STONE AND/OR MATERIAL APPROVED BY THE GEOTECHNICAL ENGINEER. THE BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557. NO BACKFILL MATERIAL SHALL BE PLACED AGAINST WALLS WHICH DO NOT HAVE PERMANENT FLOORS AT THE TOP AND BOTTOM WITHOUT PROVISIONS FOR ADEQUATE TEMPORARY BRACING OF THOSE WALLS. PROVIDE ADEQUATE EXCAVATION BRACING IN ACCORD WITH GEOTECHNICAL ENGINEER RECOMMENDATIONS TO MAINTAIN EXISTING FOOTINGS, UTILITIES, AND OTHER IMPROVEMENTS IN A SAFE CONDITION.

**022000 STRUCTURAL FILL:**  
 FOUNDATIONS PLACED ON COMPACTED STRUCTURAL FILL HAVE BEEN DESIGNED FOR A BEARING OF 2500 PSF. FILL TO BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557. PLACE FILL IN LAYERS OF 8" THICK MAXIMUM AND UNDER THE DIRECT SUPERVISION OF A GEOTECHNICAL ENGINEER. FILL TO BE TESTED TO VERIFY COMPACTION.

**022500 PROOF-ROLLING:**  
 SHALLOU FOOTINGS SHALL NOT BE LESS THAN 3'-0" SQUARE AND 1'-8" EMBEDMENT OR 2'-0" WIDE STRIP AND 1'-8" EMBEDMENT AT 2500 POUNDS PER SQUARE FOOT ALLOWABLE NET BEARING ON SOIL. IMPROVED BY PROOF-ROLLING NOT LESS THAN THREE COVERAGES. FOR FOOTING WIDTHS OR EMBEDMENTS LESS THAN THOSE SPECIFIED, THE ALLOWABLE BEARING PRESSURES ARE REDUCED PROPORTIONALLY. PERFORM ALL PROOF-ROLLING OPERATIONS IN ACCORD WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER IN THE PRESENCE OF THE OWNER'S AUTHORIZED AGENCY.

**031000 FORMWORK:**  
 CONTRACTOR SHALL DESIGN AND ERECT FORMWORK IN STRICT COMPLIANCE WITH ACI 341. CONTRACTOR SHALL COORDINATE ALL OPENINGS AS REQUIRED FOR OTHER TRADES. OPENINGS WHERE SHOWN ON THE STRUCTURAL DRAWINGS ARE TO IDENTIFY DESIGN INTENT ONLY. THE SPECIFIC DIMENSIONS AND LOCATIONS SHALL BE FURNISHED OR CONFIRMED BY THE TRADE REQUIRING THE OPENING.

**032000 CONCRETE REINFORCEMENT:**  
 WORK SHALL BE IN ACCORD WITH THE LATEST VERSION OF ACI 318, ACI 318R, ACI 318I, CR81 "MANUAL OF STANDARD PRACTICE", CR81 "PLACING REINFORCING BARS", WIRE REINFORCEMENT INSTITUTE (URI) "MANUAL OF STANDARD PRACTICE-STRUCTURAL WELDED WIRE REINFORCEMENT". BARS SHALL CONFORM TO THE LATEST VERSION OF ASTM SPECIFICATION #616. GRADE 60 WELDED WIRE SHALL CONFORM TO THE LATEST VERSION OF ASTM A1064. CONCRETE COVER REQUIRED AS FOLLOWS:  
 A) CAST AGAINST AND EXPOSED TO EARTH 3"  
 B) FORMED, EXPOSED TO EARTH OR WEATHER 1" AND LARGER 2"  
 C) AND SMALLER 1-1/2"  
 C) SLABS AND WALLS - NO EARTH OR WEATHER EXPOSURE 1" AND SMALLER 3/4"  
 D) BEAMS - 1 1/2" (3 HOUR FIRE RATING AND LESS)  
 3 HOUR FIRE RATING AND LESS 3/4"  
 LAP SPlice LENGTHS SHALL BE AS FOLLOWS:  
 1. ALL LAP SPlices SHALL BE TENSION CLASS "B" UNLESS OTHER LAP CONDITIONS ARE SPECIFICALLY SHOWN ON THE DRAWINGS.  
 2. SPlice LENGTHS SHALL BE SHOWN ON SHOP DRAWINGS.  
 3. USE GENERAL HOOK BAR DEVELOPMENT LENGTHS UNLESS SPECIAL CONFINEMENT CONDITIONS ARE SATISFIED IN ACCORD WITH ACI 318.

**033000 CAST-IN-PLACE CONCRETE:**  
 TO BE MIXED AND PLACED IN ACCORDANCE WITH THE LATEST VERSION OF ACI 301. ALL REINFORCED CONCRETE TO HAVE 28 DAY COMPRESSIVE STRENGTHS AS FOLLOWS:  
 ALL STRUCTURAL ELEMENTS  $f_c = 4000$  PSI UNLESS NOTED OTHERWISE.  
 COLUMNS:  $f_c = 4000$  PSI  
 BEAMS:  $f_c = 4000$  PSI  
 ELEVATED SLABS  $f_c = 4000$  PSI  
 FOUNDATION  $f_c = 3000$  PSI  
 SLAB ON GRADE  $f_c = 3000$  PSI  
 ALL CONCRETE MIX DESIGN SUBMITTALS SHALL INCLUDE A WRITTEN DESCRIPTION INDICATING WHERE EACH PARTICULAR MIX IS TO BE PLACED WITHIN THE STRUCTURE.

**033100 CONCRETE TESTING:**  
 OWNER WILL EMPLOY AN INDEPENDENT TESTING LABORATORY TO PERFORM THE FOLLOWING TESTS AND SUBMIT TEST REPORTS ON CAST IN PLACE CONCRETE:  
 ASTM C143 "STANDARD TEST METHOD FOR SLUMP OF PORTLAND CEMENT CONCRETE." SLUMP SHALL NOT EXCEED LIMIT INDICATED ON APPROVED MIX DESIGN OR 6" (WHICHEVER IS SMALLER). ASTM C39 "STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS." CYLINDERS SHALL BE TAKEN FOR EACH MIX DESIGN USED, AND FOR EVERY 50 CUBIC YARDS OF CONCRETE PLACED. TEST CYLINDERS AT THE FOLLOWING AGES: 1 AT 3 DAYS, 1 AT 7 DAYS, 2 AT 28 DAYS. AND ONE RESERVE FOR TESTING AS REQUESTED BY THE ENGINEER. IF REQUIRED 28 DAY STRENGTH IS ACHIEVED, THE RESERVE CYLINDER MAY BE DISCARDED.

**036000 GROUT:**  
 GROUTING IS CLASSIFIED AS "PRECISION GROUTING" FOR SUPPORT OF OPERATING MACHINE BASES, EQUIPMENT SUBJECT TO THERMAL MOVEMENT, AND BASE PLATES, BEARING PLATES, AND EXPANSION BEARINGS EXCEEDING 8" IN LEAST DIMENSION. ALL OTHER GROUTING MAY BE "ORDINARY GROUTING". METALLIC AGGREGATE GROUT MAY BE USED ONLY IN INTERIOR APPLICATIONS NOT EXPOSED TO VIEW IN FINISHED BUILDING AREAS. USE ORDINARY CEMENT GROUT ONLY UNLESS SPECIFICALLY NOTED AS "CEMENT GROUT" ON DETAILS. USE NON-SHRINK GROUT FOR ALL OTHER APPLICATIONS. PRECISION GROUT SHALL CONFORM TO CRD-C621-80 WHEN MIXED TO FLUID CONSISTENCY OF 22 TO 25 SECONDS (FLOW CONE METHOD, CRD-C611). REQUIRED 28 DAY STRENGTHS SHALL BE AS FOLLOWS: CEMENT GROUT 1000 PSI, NON-SHRINK GROUT 5000 PSI.

**042100 CONCRETE UNIT MASONRY:**  
 ALL MASONRY CONSTRUCTION TO BE IN ACCORDANCE WITH "BUILDING CODE REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES", THIS 402 AND ALL APPLICABLE LOCAL BUILDING CODE PROVISIONS. ALL MASONRY WALLS TO BE CONSTRUCTED ENTIRELY OF UNITS CONFORMING TO THE LATEST VERSION OF ASTM C 90, AND REINFORCED WITH #3 GAUGE LADDER TYPE HORIZONTAL MASONRY REINFORCING LOCATED AT 16" O.C. ALL MASONRY TO BE LAID IN TYPE "S" MORTAR (1800 PSI ON THE JOB) WITH FULL HEAD AND BED JOINTS. ALL MASONRY CONSTRUCTION TO BE EITHER BOUND BY THE BEAM, TIE COLUMN MEMBERS OR TIED TO FRAME WITH 16 GAUGE CONTINUOUS DOVETAILED SLOT AND 12 GAUGE DOVETAILED ANCHOR SPACED @ 16" O.C. (TOP AND TWO VERTICAL SIDES).

**042200 REINFORCED UNIT MASONRY:**  
 ALL REINFORCED MASONRY CONSTRUCTION SHALL BE IN ACCORD WITH APPLICABLE PROVISIONS OF CONCRETE REINFORCEMENT, CAST-IN-PLACE CONCRETE, AND CONCRETE REINFORCEMENT. ALL REINFORCED UNIT MASONRY SHALL CONFORM TO THE LATEST VERSION OF ASTM C 114. LAP LENGTH PLUS 3" OR FULL DEPTH PLUS A STANDARD HOOK LAPS WITHIN REINFORCED MASONRY SHALL BE 48 BAR DIAMETERS. CONTRACTOR SHALL COORDINATE PLACING OF DOUELS TO ACCOMMODATE MODULE OF MASONRY UNITS. ALL VERTICAL CELLS AND BEAMS WITH REINFORCING SHALL BE FILLED WITH COARSE GROUT CONSISTING OF 5000 PSI CONCRETE WITH 10 COARSE AGGREGATE. USE HIGH-STRENGTH WELDING ELECTRODES TO BE SUBJECT TO RADIOGRAPHIC, MAGNETIC PARTICLE, ULTRASONIC, AND LIQUID PENETRANT INSPECTION CONDUCTED BY AN INDEPENDENT TESTING AGENCY PAID BY THE OWNER.

**050500 WELDING:**  
 ALL WELDING TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY (AWS) "STRUCTURAL WELDING CODE-STEEL", D11 AND AS INDICATED ON THE STRUCTURAL DRAWINGS. WELDING ELECTRODES SHALL BE E70XX, UNLESS NOTED OTHERWISE. WELDING ELECTRODES, WELDING PROCESS, MINIMUM PREHEAT AND INTERPASS TEMPERATURES TO BE IN ACCORDANCE WITH THE AWS SPECIFICATIONS. ANY STRUCTURAL STEEL DAMAGED IN WELDING TO BE REPLACED OR ACCEPTABLY REINFORCED. ALL FULL PENETRATION GROOVE WELDS TO BE SUBJECT TO RADIOGRAPHIC, MAGNETIC PARTICLE, ULTRASONIC, AND LIQUID PENETRANT INSPECTION CONDUCTED BY AN INDEPENDENT TESTING AGENCY PAID BY THE OWNER.

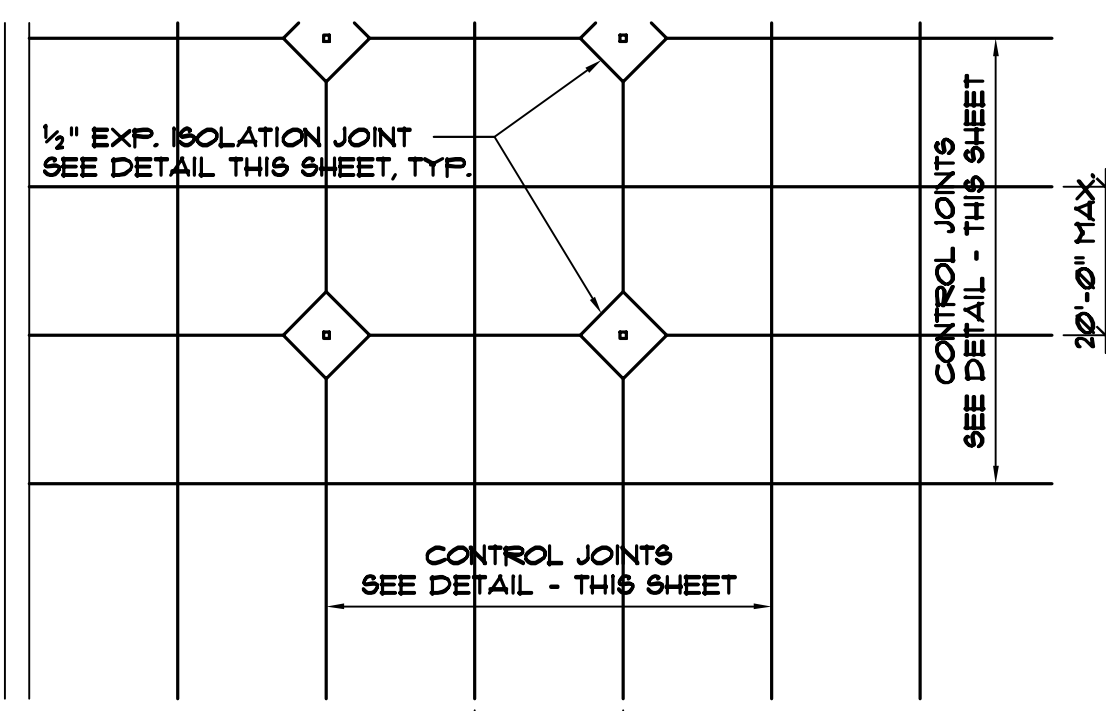
**051200 STRUCTURAL STEEL:**  
 ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".  
**STRUCTURAL STEEL TO CONFORM TO:**  
 I-B SHAPES..... ASTM A992, GRADE 50 OR A992  
 SHAPES & PLATES..... ASTM A572  
 PIPE..... ASTM A53, GRADE B  
 TUBES..... ASTM A500 GRADE B  
 ALL SHOP AND FIELD CONNECTIONS SHALL BE MADE WITH A572 HIGH STRENGTH BOLTS OR WELDING. BOLTING TO BE IN ACCORDANCE WITH AISC SPECIFICATIONS. ANY CONNECTION NOT SPECIFICALLY DETAILED SHALL BE DESIGNED BY THE SPECIALTY ENGINEER FOR THE FORCES SHOWN ON THE STRUCTURAL CONSTRUCTION DOCUMENTS, WHERE FORCES ARE NOT PROVIDED DESIGN SHALL BE BASED ON THE MAXIMUM LOAD CAPACITIES OF THE CONNECTING MEMBERS. ALL STRUCTURAL SUBMITTALS REQUIRING ENGINEERING INPUT SHALL BE ACCOMPANIED BY DESIGN CALCULATIONS AND BE SIGNED AND SEALED BY THE SPECIALTY ENGINEER. ALL STEEL AT AND BELOW FINISHED GRADE TO BE FIELD PAINTED AND COVERED WITH A MINIMUM OF 2" CONCRETE. ALL BEAMS BEARING ON CONCRETE TO HAVE A 3/8" X 1/2" X 8" BEARING PLATE WITH TWO (2) 1/2" HEADED ANCHOR BOLTS 12" LONG, UNLESS NOTED OTHERWISE. STRUCTURAL STEEL EXPOSED TO WEATHER OR CORROSIVE ENVIRONMENTS SHALL BE HOT DIP GALVANIZED PER ASTM A123 AND A336. FABRICATOR TO COORDINATE DRAINAGE AND VENTING REQUIREMENTS FOR GALVANIZING PROCESS.

**052100 STEEL JOISTS:**  
 THE DETAILED, FABRICATION AND ERECTION TO CONFORM TO THE LATEST STANDARD SPECIFICATIONS FOR STRUCTURAL STEEL JOIST INSTALLATION (SSJ). BRIDGING BRIDGING AND ANCHORS WITH SIZE AND SPACING IN ACCORD WITH SSJ. WHERE BRIDGING IS NOT SHOWN ON FRAMING PLANS FOLLOW LATEST SSJ SPECIFICATIONS. MINIMUM BRIDGING SIZE TO BE L 1 X 1 1/8" IN LIEU OF ROUND BARS. PROVIDE ADDITIONAL BRIDGING AS REQUIRED TO SATISFY NET UPLIFT REQUIREMENTS OR UNBRACED TOP CHORDS WHERE SHOWN ON THE DRAWINGS. PROVIDE CONTINUOUS ANGLE 2 1/2 X 2 1/2 X 1/4 (WELDED TO JOIST ENDS) TO RECEIVE DECK WHERE JOISTS CHANGE DIRECTION. PROVIDE DESIGN CAPACITY FOR A MAXIMUM CONCENTRATION OF DESIGN LOADS TO BE AS FOLLOWS:  
 AT ANY PANEL POINT 400"  
 BETWEEN TOP CHORD PANEL POINTS 150"  
 BETWEEN BOTTOM CHORD PANEL POINTS 50"  
 (CONCENTRATED LOADS ARE NOT ADDITIVE TO UNIFORM DESIGN LOADS)  
 SEE STRUCTURAL DRAWINGS FOR SUPPORT SUPPORTS.  
 ALL STRUCTURAL SUBMITTALS PROVIDED BY THE JOIST MANUFACTURER MUST BE SIGNED AND SEALED BY A SPECIALTY ENGINEER. THE REVIEW OF ALL STRUCTURAL SUBMITTALS BY THE STRUCTURAL ENGINEER OF RECORD SHALL BE TO INSURE THAT HIS INTENT HAS BEEN UNDERSTOOD AND THAT THE SPECIFIED CRITERIA HAVE BEEN USED. A COPY OF ALL STRUCTURAL SUBMITTALS WILL BE RETAINED FOR RECORD KEEPING PURPOSES ONLY.  
 NOTE: NET UPLIFT FOR DESIGN OF BAR JOISTS AND BRIDGING SHALL BE 25 PSF UNO.

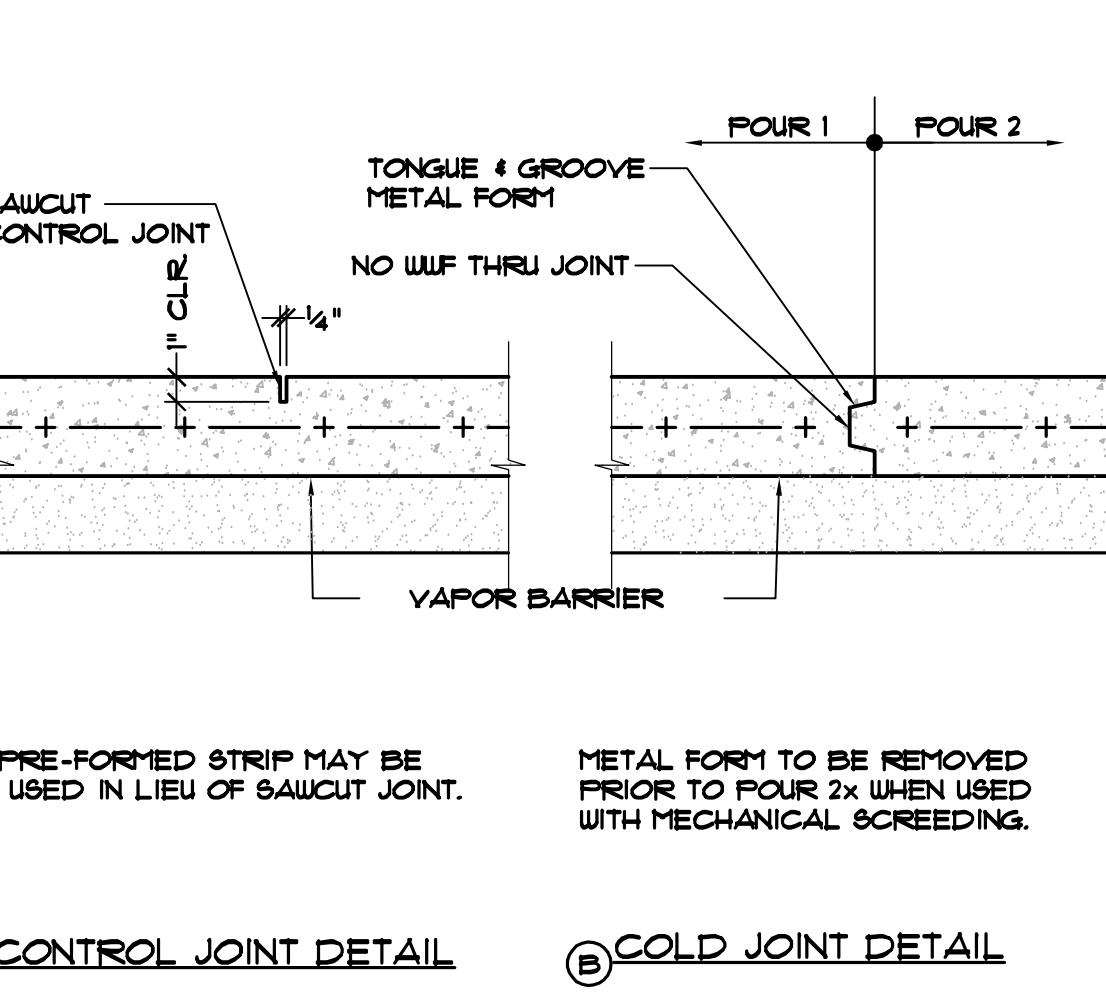
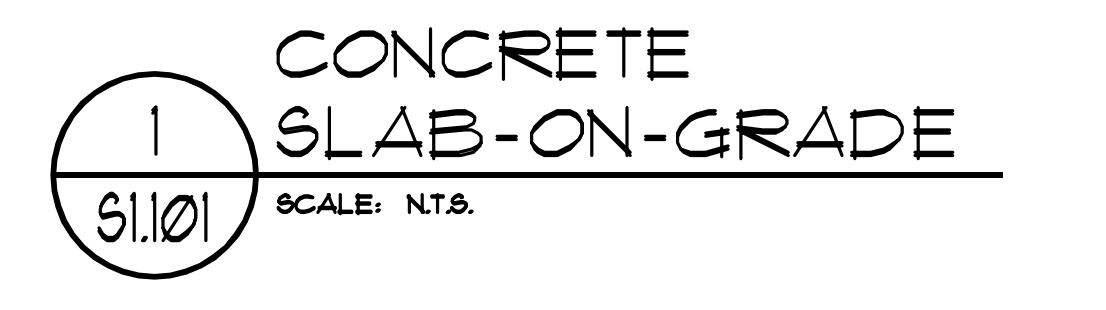
**053100 STEEL COMPOSITE FLOOR DECK:**  
 THIS SECTION COVERS CORRUGATED RIBBED DECK WHICH ACTS AS PERMANENT FORM AND POSITIVE BENDING REINFORCEMENT FOR STRUCTURAL CONCRETE. CONFORM TO STEEL DECK INSTITUTE (SDI) "SPECIFICATIONS AND COMMENTARY FOR COMPOSITE STEEL FLOOR DECK" AND AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS." DEPTH AND GAUGE GIVEN ON DRAWINGS SHALL BE TAKEN AS MINIMUM FOR TYPICAL CONDITIONS. WHERE SHEETS SPAN LESS THAN THREE SPANS OR WHERE OTHER NON-TYPICAL CONDITIONS CONTROL, SUPPLY DECK WHICH MEETS DESIGN CRITERIA. WHERE FIRE RATING IS REQUIRED, FURNISH DECK LISTED IN UL ASSEMBLY. WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D13-B1, "STRUCTURAL WELDING CODE-SHEET STEEL". SIDE LAP FASTENERS SHALL BE #2 SELF-DRILLING SCREWS OR BUTTON PUNCHING, DEPENDING ON THE DECK STYLE. FASTENERS TO CONCRETE OR MASONRY SHALL BE 1/4" DIAMETER TAPCON OR KWIK-CON. TYPICAL FASTENER SPACING SHALL BE AT 12" O.C. MINIMUM TO ALL SUPPORTS, TYPICALLY (UNLESS NOTED OR DETAILED OTHERWISE).  
 G.C. TO ACCOUNT FOR ADDITIONAL VOLUME OF CONCRETE DURING SLAB POUR FOR DEFLECTION DUE TO THE DEAD LOAD OF WET CONCRETE ON UNSHORED STEEL BEAMS, OR G.C. MAY PROVIDE SHORING OF STEEL BEAMS UNTIL CONCRETE REACHES 75% OF 28-DAY STRENGTH.

**053200 STEEL ROOF DECK:**  
 THIS SECTION COVERS NOMINALLY FLAT-TOP ROOF DECK TO SUPPORT RIGID BOARD TYPE ROOF INSULATION SYSTEMS, CONFORM TO STEEL DECK INSTITUTE (SDI) "SPECIFICATIONS AND COMMENTARY FOR STEEL ROOF DECK" AND AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS." DRAWING SHOW DECK STYLES IN STANDARD SDI NOTATION WHERE "NR" IS NARROW RIB, "IR" IS INTERMEDIATE RIB, "UR" IS WIDE RIB, "3 DR" IS 3" DEEP RIB, AND THE TWO DIGIT NUMBER IS THE NOMINAL GAUGE THICKNESS. ATTACHMENTS SHALL BE WITH SELF-DRILLING SCREWS INTO JOIST CHORDS WITH THICKNESSES LESS THAN 3/16" THICK. WELDING MAY BE USED INTO THICKER MEMBERS. 16 GAUGE WELDING WASHERS SHALL BE USED FOR 22 GAUGE DECK WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D13-B1, "STRUCTURAL WELDING CODE-SHEET STEEL". SIDE LAP FASTENERS SHALL BE #2 SELF-DRILLING SCREWS OR BUTTON PUNCHING, DEPENDING ON THE DECK STYLE. FASTENERS TO CONCRETE OR MASONRY SHALL BE 1/4" DIAMETER TAPCON OR KWIK-CON. TYPICAL FASTENER SPACING SHALL BE AS FOLLOWS: NR/IRUR 5/8" DIAMETER PLUG WELD TO STEEL 10" 16" #2 SELF-DRILLING SCREWS TO STEEL 12" 8" 1/4" TAPCON OR KWIK-CON TO CONCRETE 12" 8" SIDE LAP WITH #2 STITCH SCREWS 24" 30"

DECREASE FASTENER SPACING WHERE DRAWINGS NOTE SPECIAL DIAPHRAGM CONSIDERATIONS. PROVIDE CONTINUOUS ANGLE 2 1/2 X 2 1/2 X 1/4 (WELDED TO JOIST ENDS) TO RECEIVE DECK WHERE SUPPORT MEMBERS CHANGE DIRECTION.  
**055100 METAL STAIRS:**  
 STACK STEEL STAIR SYSTEM INCLUDING MEMBERS, COMPONENTS, AND CONNECTIONS WHICH SHALL BE DESIGNED BY A SPECIALTY ENGINEER. DETAILED BY THE SUPPLIER. SUBMIT COMPLETE SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA. DESIGN LOADS SHALL BE A MINIMUM OF 100 PSF UNIFORM OR 300# APPLIED TO ANY 6' X 6' AREA, WHICHEVER CONTROLS. PROVIDE DETAILS SO THAT STAIR CAN BE ASSEMBLED AND INSTALLED IN PROPER SEQUENCE WITH ADJACENT WORK. TREADS AND LANDINGS SHALL HAVE NOT LESS THAN 2" NOR MORE THAN 3/4" OF CONCRETE FILL FOR WALKING SURFACES. COORDINATE WITH ARCHITECTURAL DRAWINGS AND MEET ALL APPLICABLE LOCAL BUILDING CODES.  
**055200 METAL RAILINGS:**  
 HANDRAILS SHALL BE DESIGNED PER CODE LISTED IN 000100. MINIMUM DESIGN LOADS SHALL BE 50 LBS/FT LINEAR LOAD OR 200 LBS. POINT LOAD AT ANY LOCATION AND IN ANY DIRECTION. FABRICATOR SHALL SUBMIT SHOP DRAWINGS SIGNED & SEALED BY REGISTERED PROFESSIONAL ENGINEER IN FLORIDA TO THE ENGINEER OF RECORD.



- NOTES:**
- CASB SLAB USING LASER SCREED METHOD.
  - DIVIDE SLAB BY CONTROL JOINTS @ 6' OF COLUMNS & SUBDIVIDED @ A MAXIMUM OF 20'-0" CENTERS.
  - IN AREAS WHERE COLUMNS DO NOT OCCUR, PROVIDE CONTROL JOINTS AS SHOWN.
  - SAW CUT JOINTS TO BE COMPLETED WITHIN 24 HOURS OF CONCRETE PLACEMENT.



DATE	REVISION	CHECKED	DRAWN

ISSUE FOR BID - 12/20/19  
**GENERAL STRUCTURAL NOTES & DETAILS**  
**ERAU PRODUCTION BUILDING**  
 EMBRY-RIDDLE AERONAUTICAL UNIVERSITY, DAYTONA BEACH, FLORIDA  
**S1.101**  
 Date: 12/20/19  
 Job no.: 19-007  
 Sheet no.:  
 Robert L. Plowfield, Jr., P.E.  
 FL Registration No. 39759  
 R. L. PLOWFIELD & ASSOCIATES, INC.  
 Structural Engineers  
 1073 Villa Springs Drive #2061  
 Winter Springs, FL 32708  
 Eng. Business #6295  
 Phone: (407) 657-6657  
 Fax: (407) 657-8480  
 plowfieldandassociates.com

**2**  
S1.101  
SCALE: N.T.S.

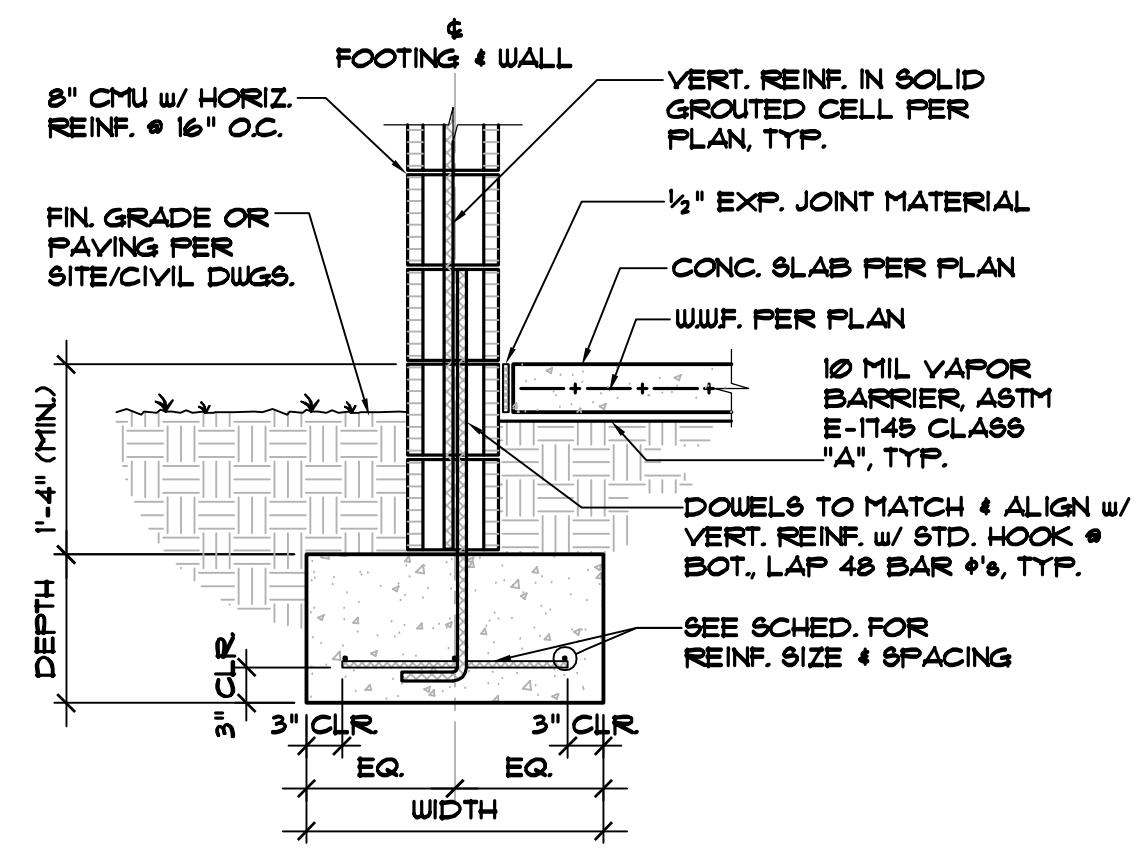
**SLAB-ON-GRADE JOINT DETAILS**

**4**  
S1.101  
SCALE: N.T.S.

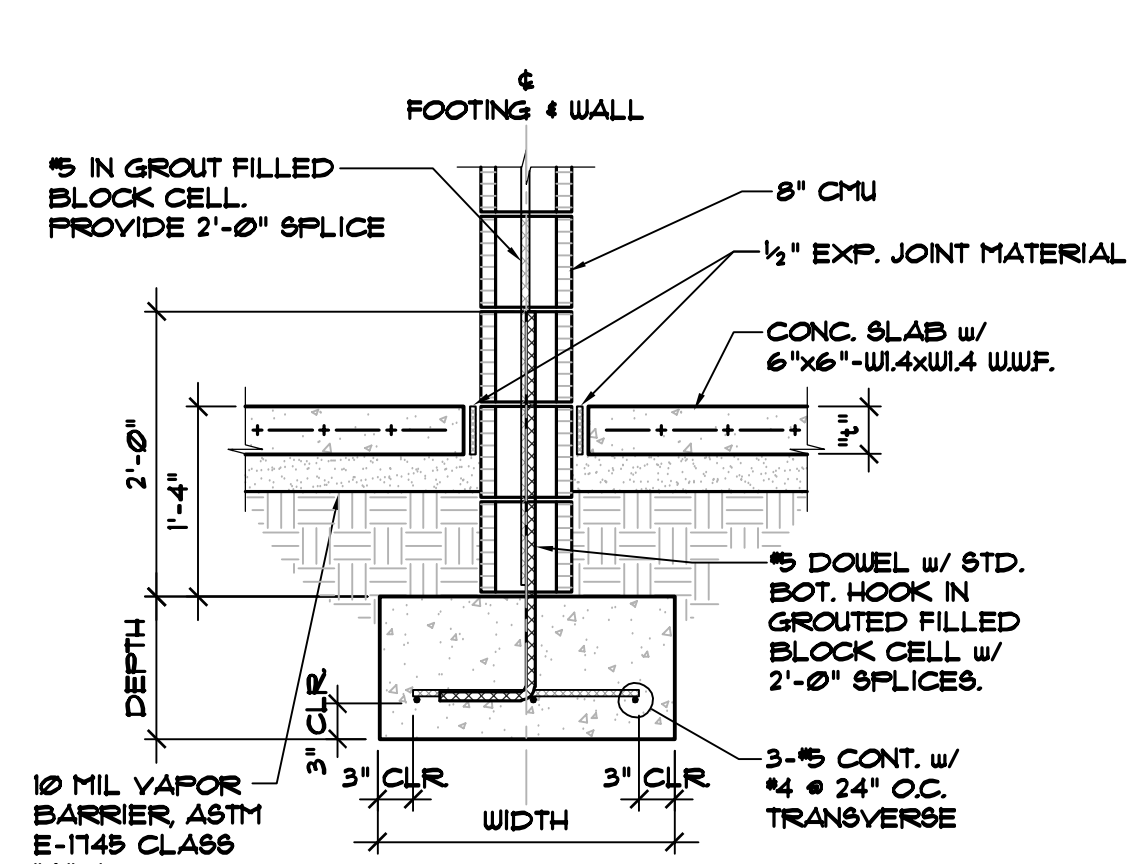
**FOOTING PARALLEL TO EXISTING UTILITY**

**EXCAVATIONS PARALLEL TO FOOTING**

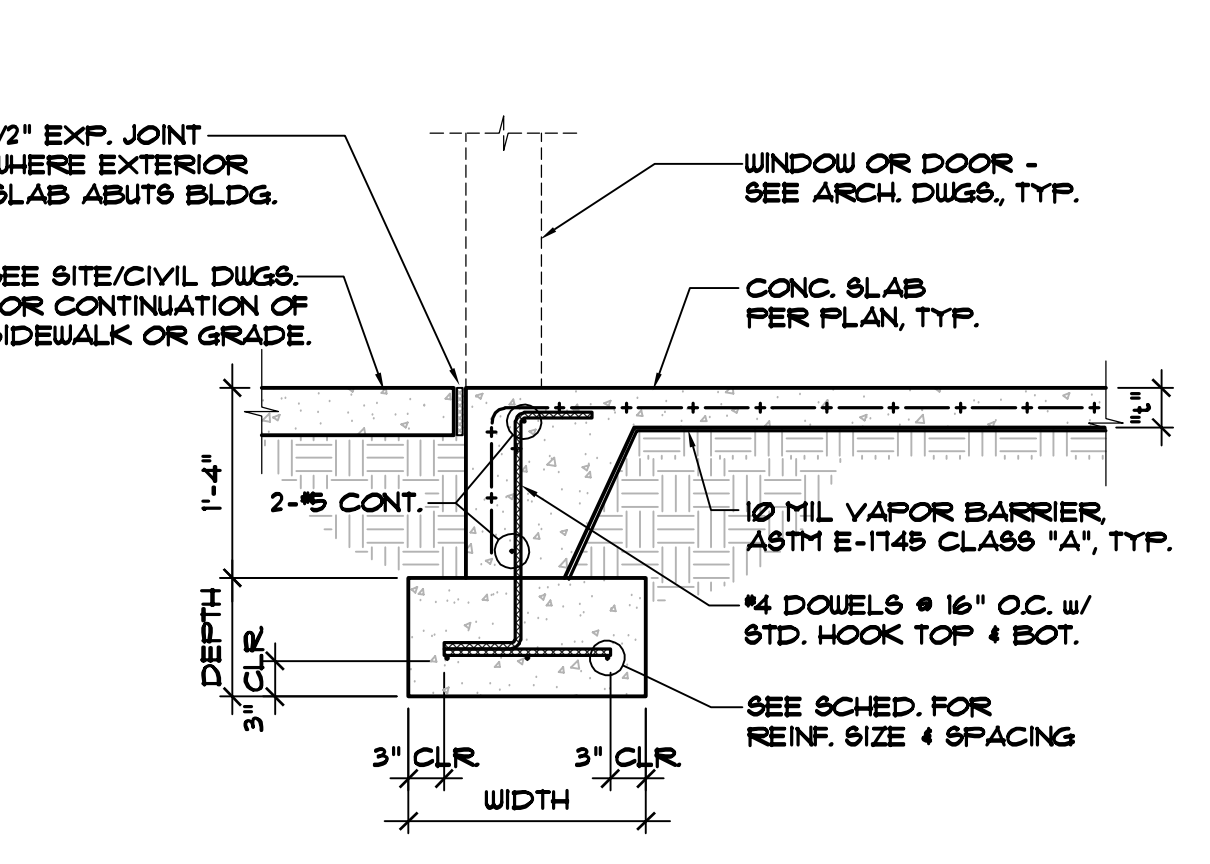
**3**  
S1.101  
SCALE: N.T.S.



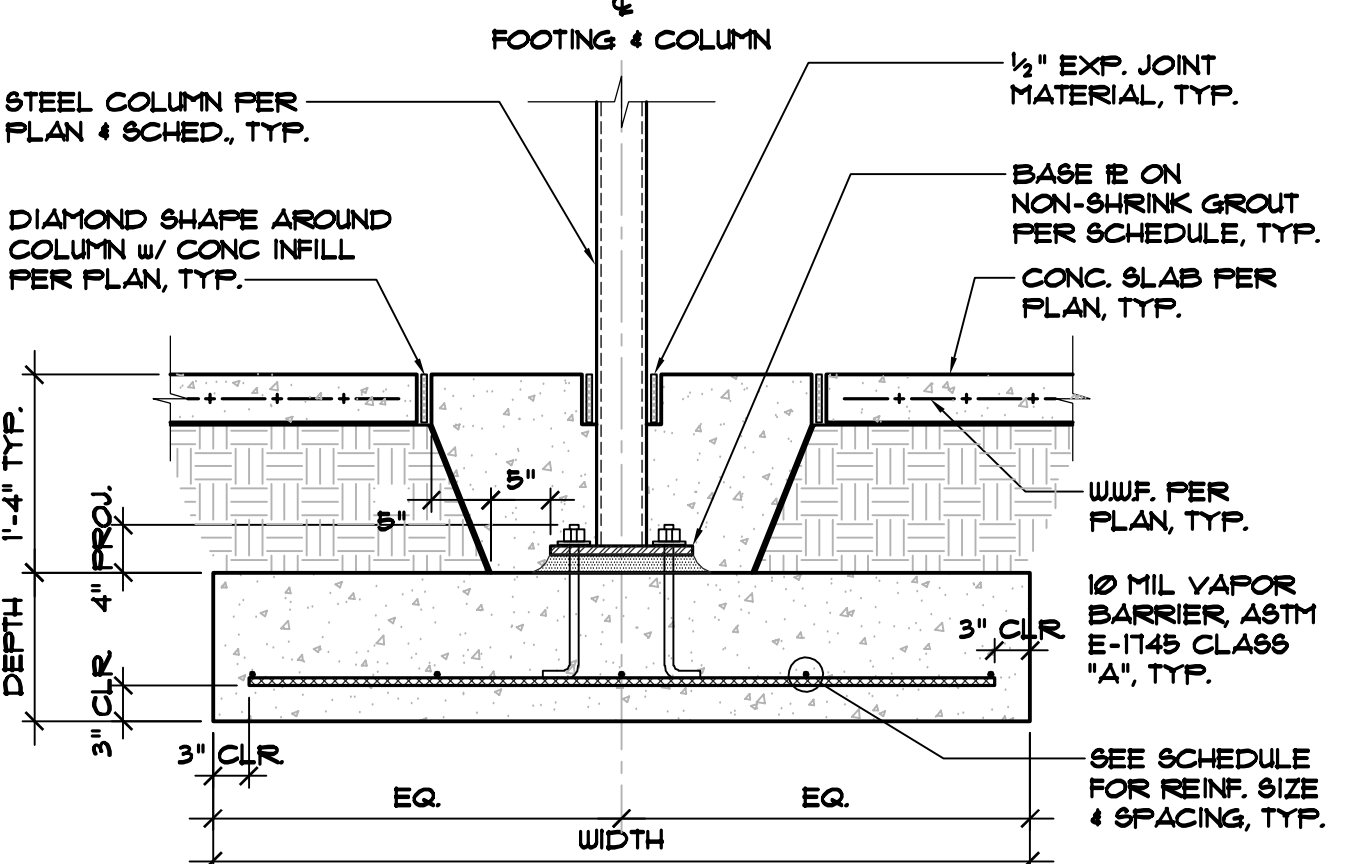
**1 EXTERIOR WALL FOOTING**  
S1.102 SCALE: 3/4" = 1'-0"



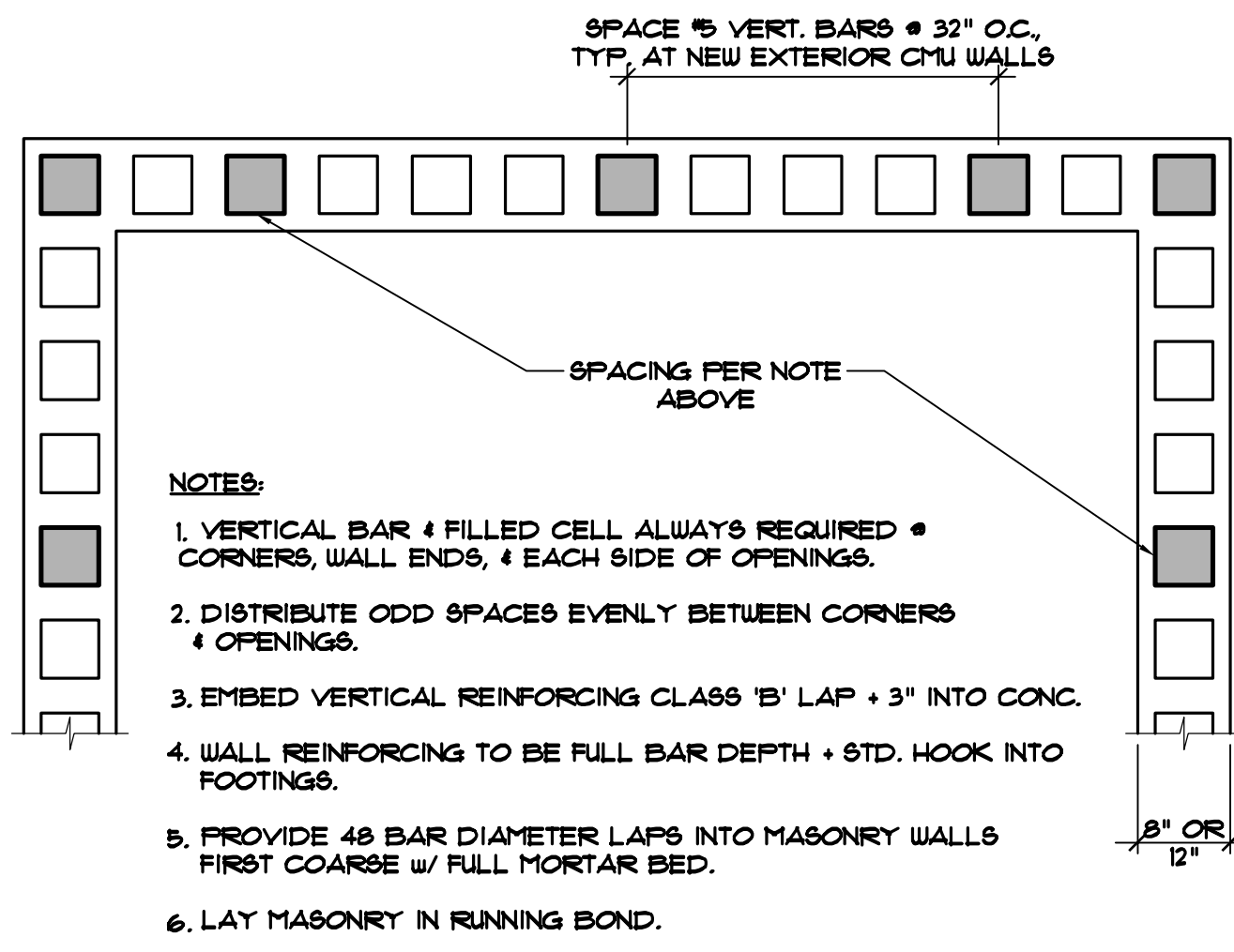
**2 INTERIOR WALL FOOTING**  
S1.102 SCALE: 3/4" = 1'-0"



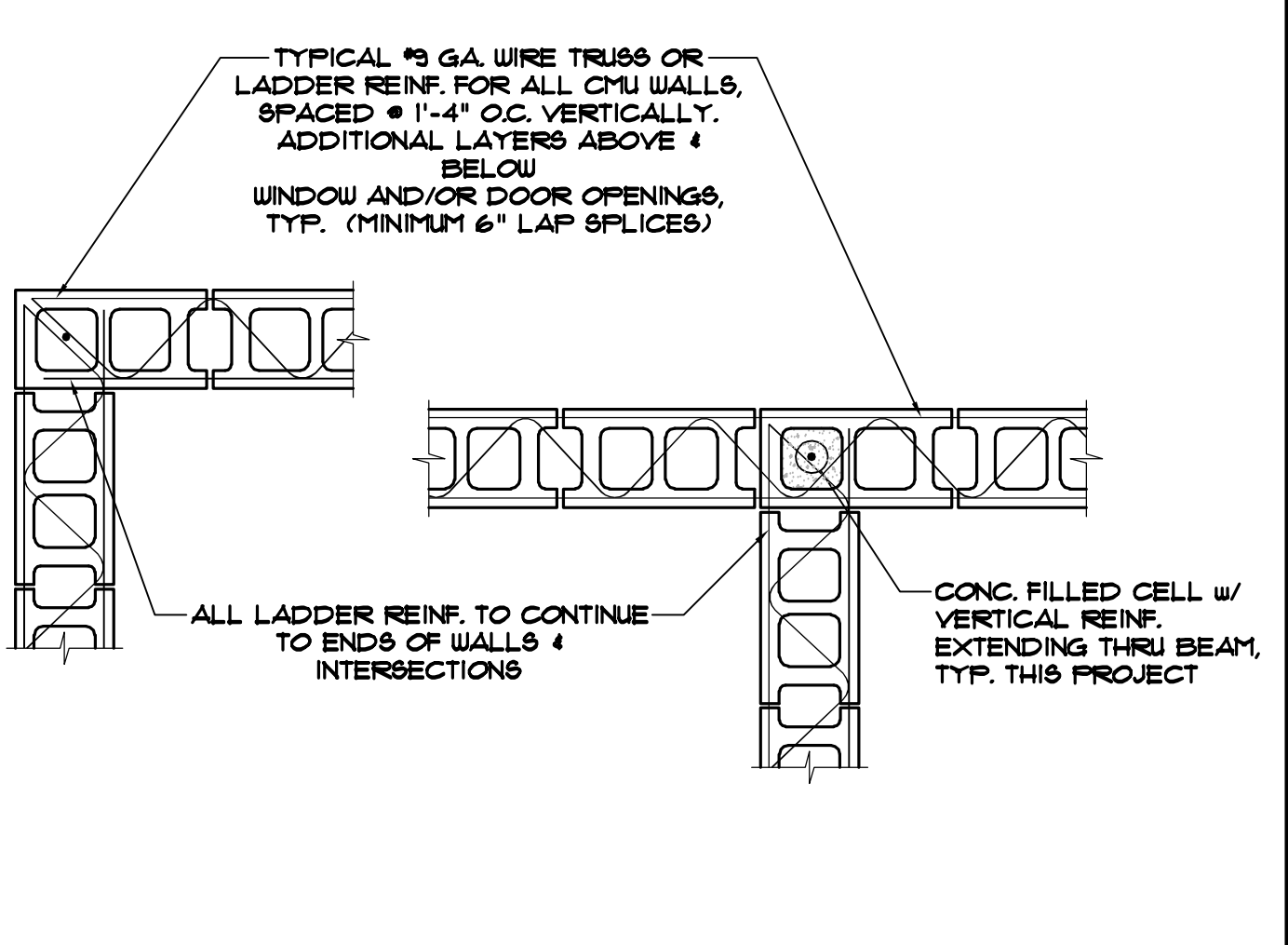
**3 SECTION AT WINDOW/DOOR**  
S1.102 SCALE: 3/4" = 1'-0"



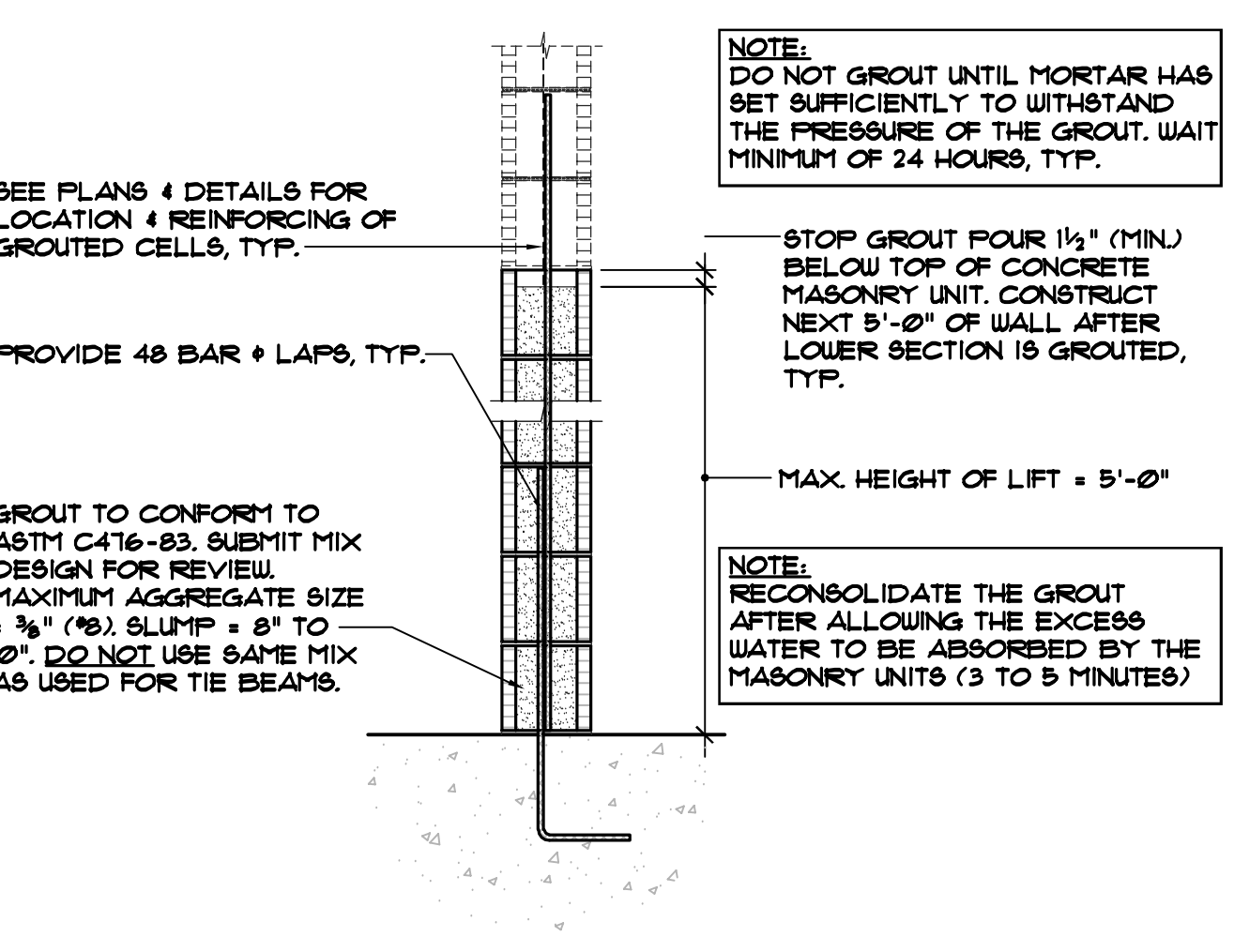
**4 INTERIOR COLUMN FOOTING**  
S1.102 SCALE: 3/4" = 1'-0"



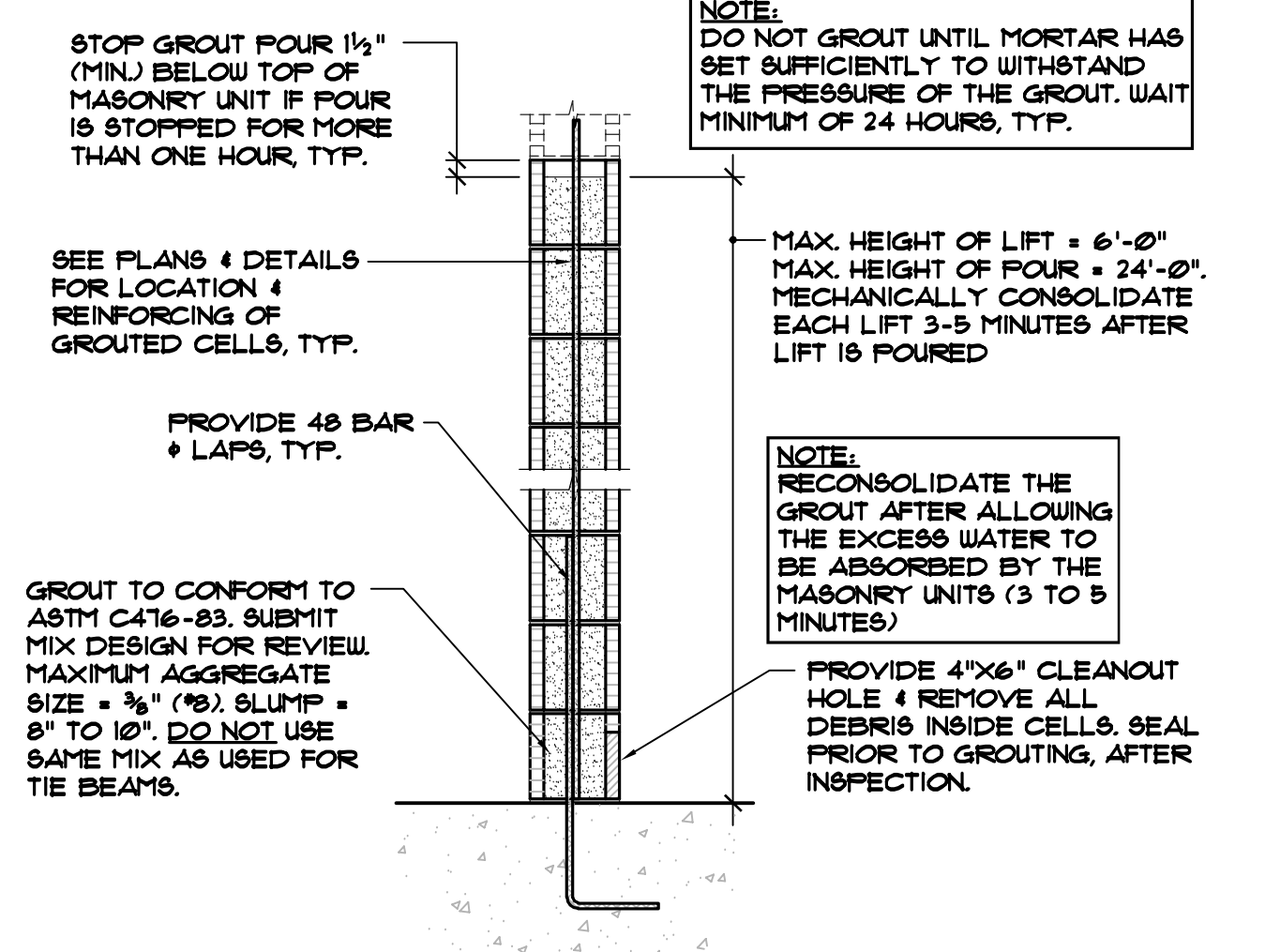
**5 REINFORCED CMU WALLS**  
S1.102 SCALE: 3/4" = 1'-0"



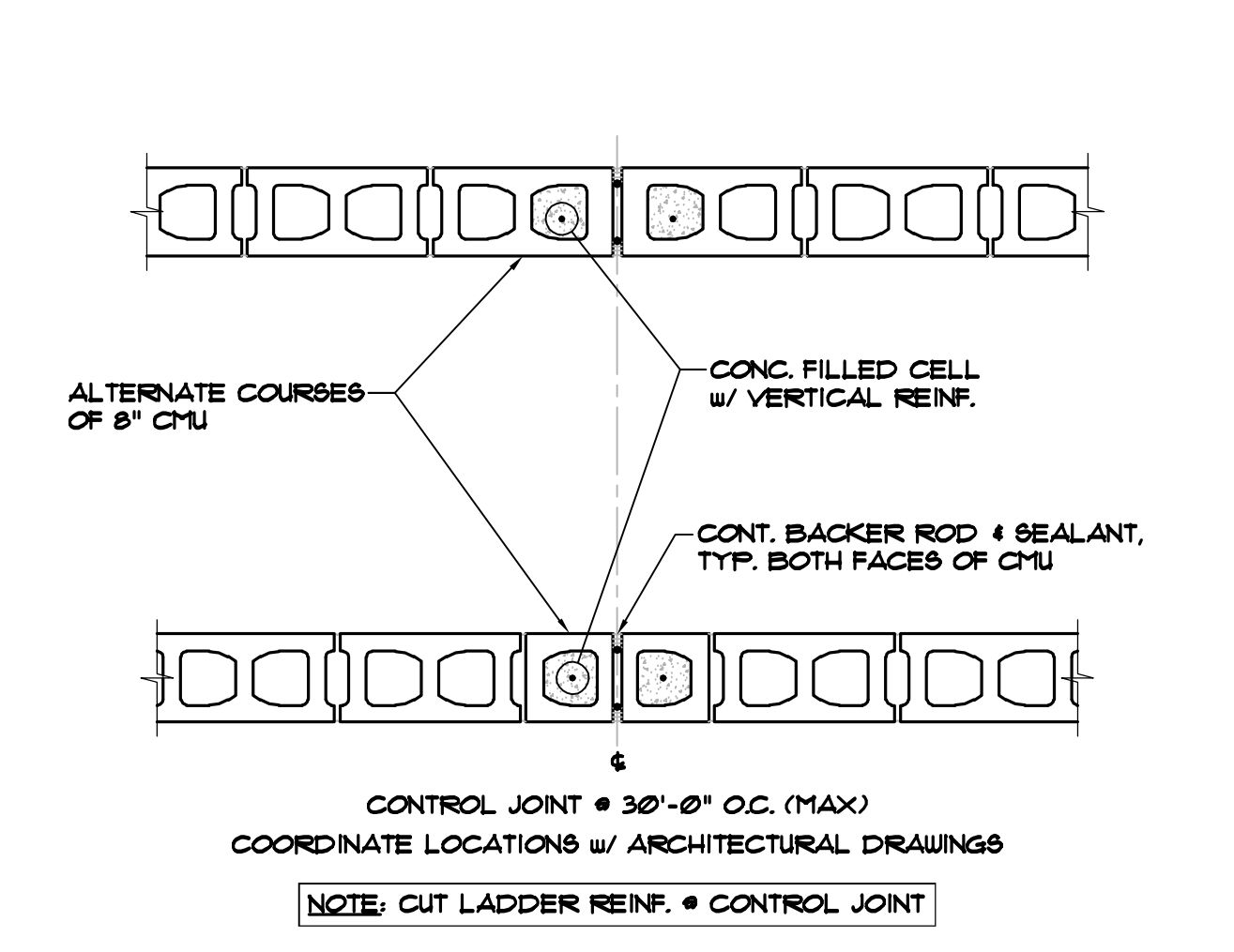
**6 WALL INTERSECTION & CORNER DETAIL**  
S1.102 SCALE: 3/4" = 1'-0"



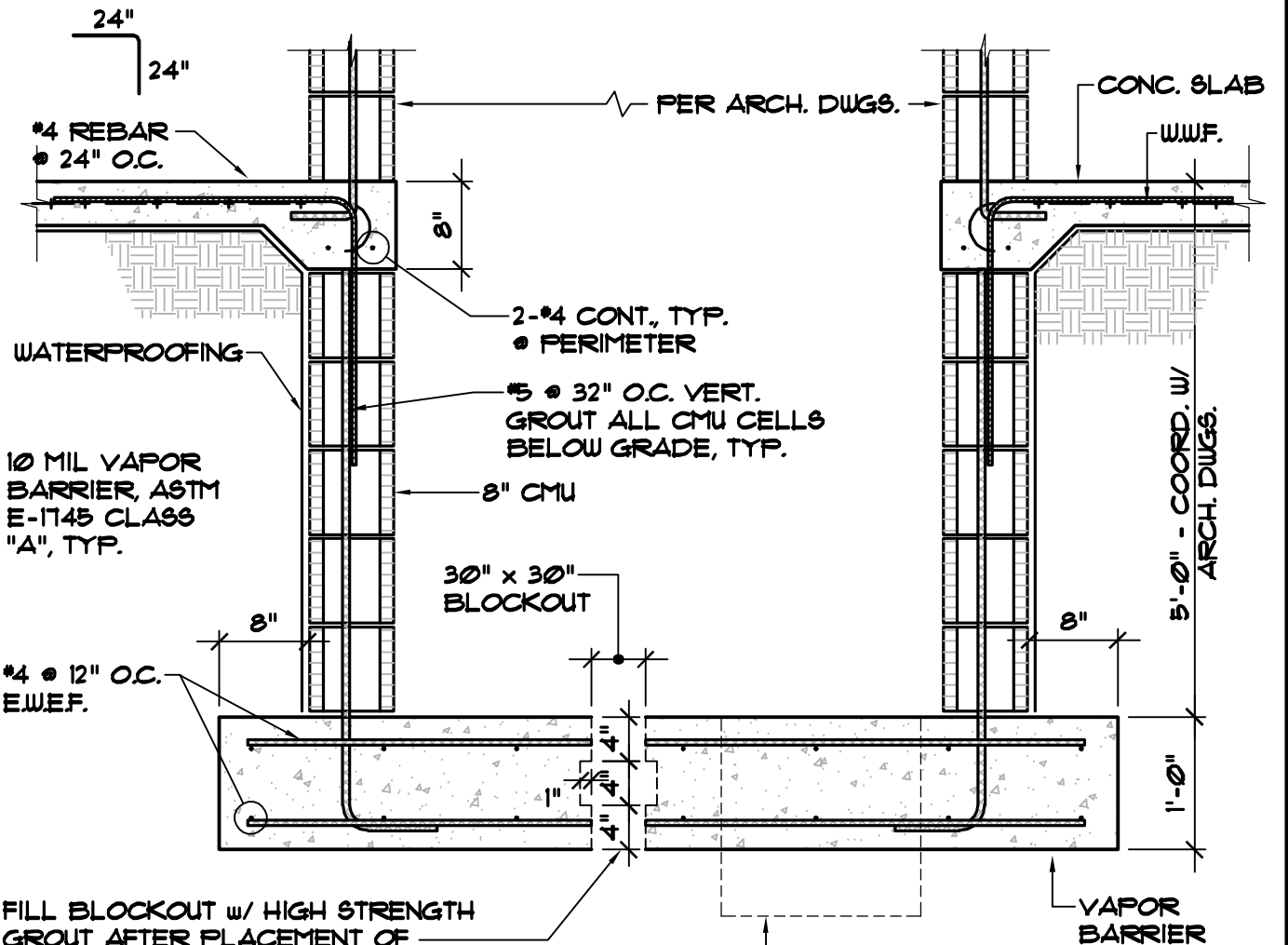
**7 TYPICAL LOW LIFT GROUTING SECTION**  
S1.102 SCALE: 3/4" = 1'-0"



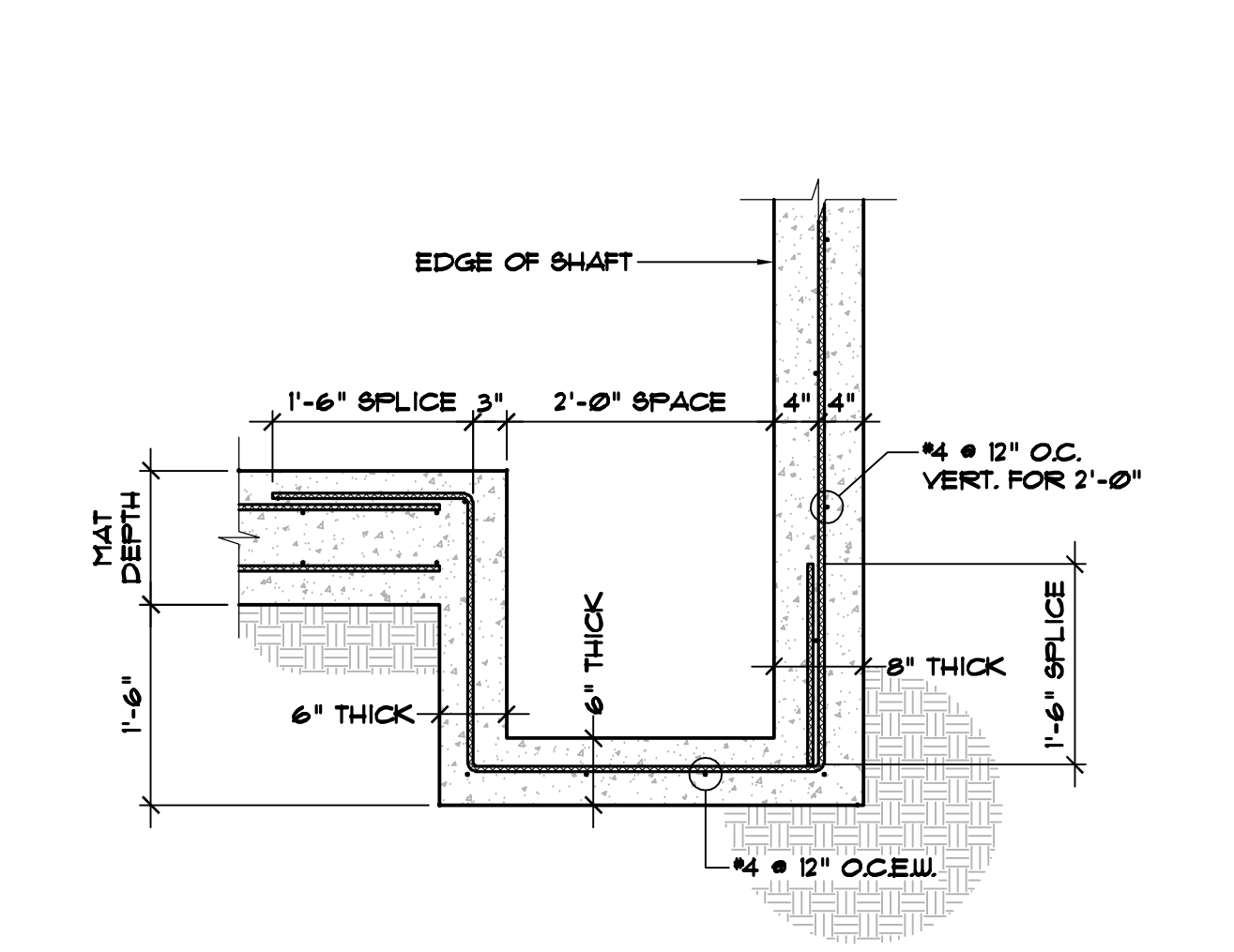
**8 TYPICAL HIGH LIFT GROUTING SECTION**  
S1.102 SCALE: 3/4" = 1'-0"



**9 CONTROL JOINT IN CMU WALL**  
S1.102 SCALE: 3/4" = 1'-0"



**10 ELEVATOR PIT DETAIL**  
S1.102 SCALE: 3/4" = 1'-0"



**11 SUMP PIT DETAIL**  
S1.102 SCALE: 3/4" = 1'-0"

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**STRUCTURAL DETAILS**

**ERAU PRODUCTION BUILDING**  
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY, DAYTONA BEACH, FLORIDA

S1.102

12/20/19  
19-007

Sheet no.

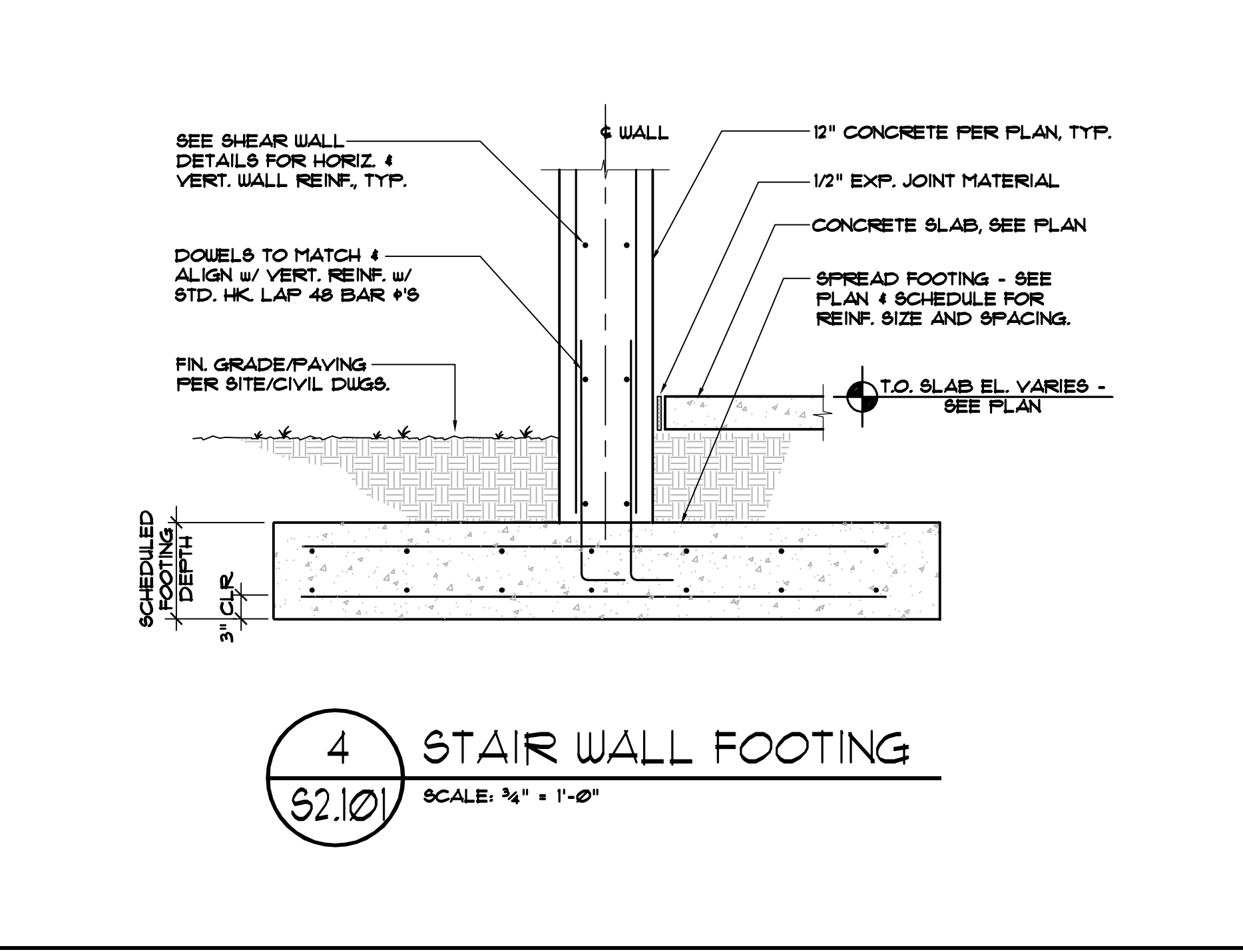
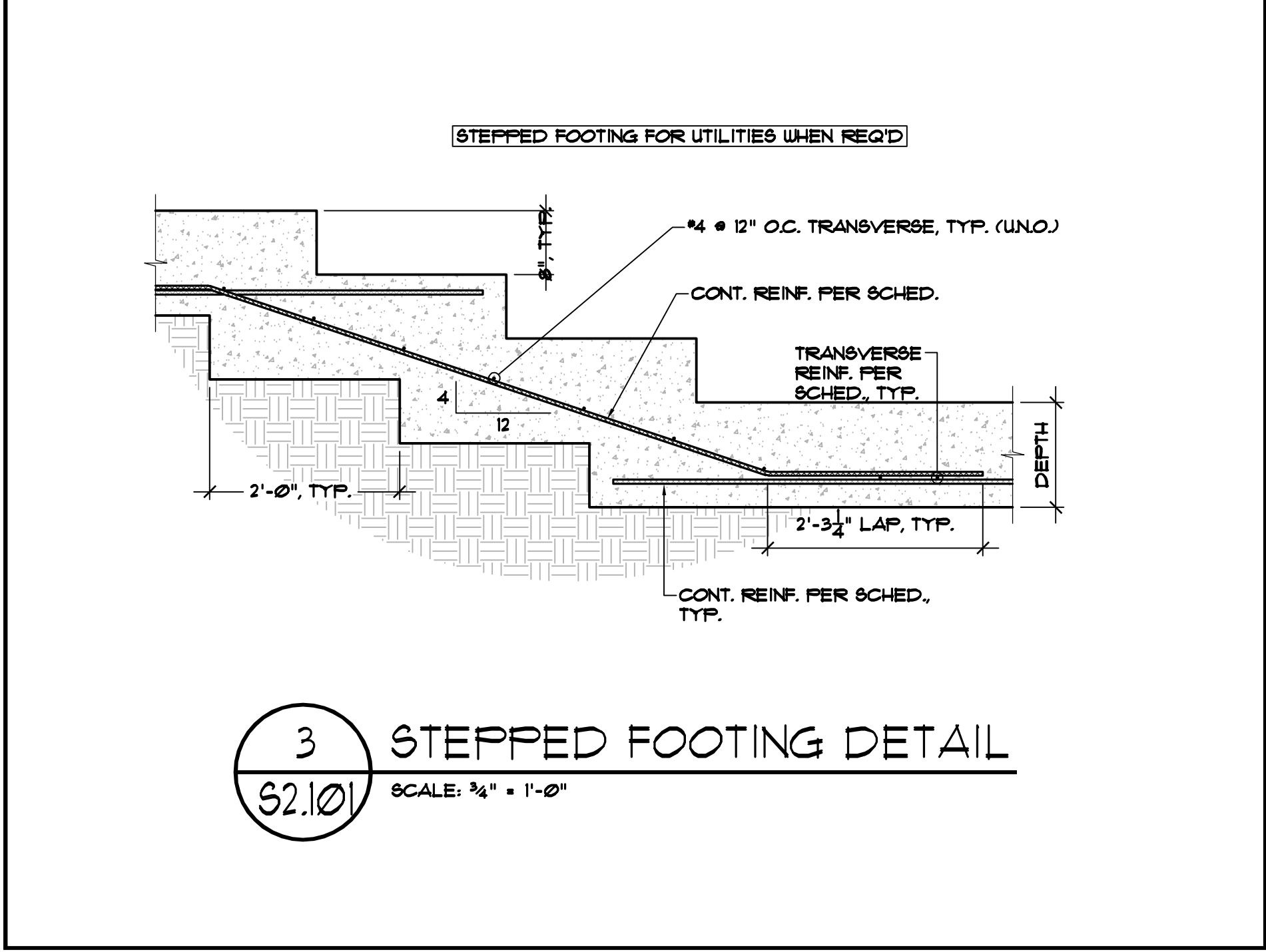
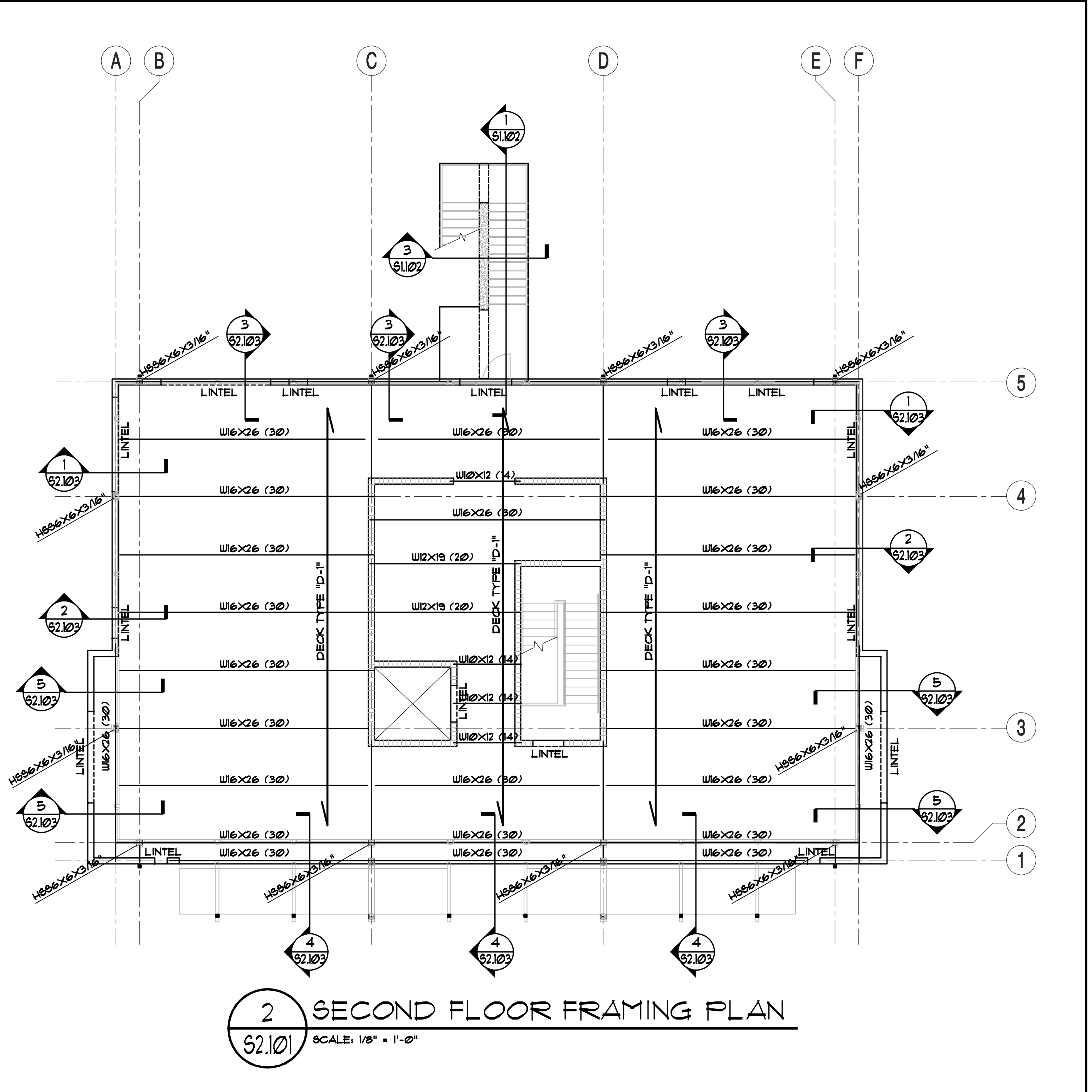
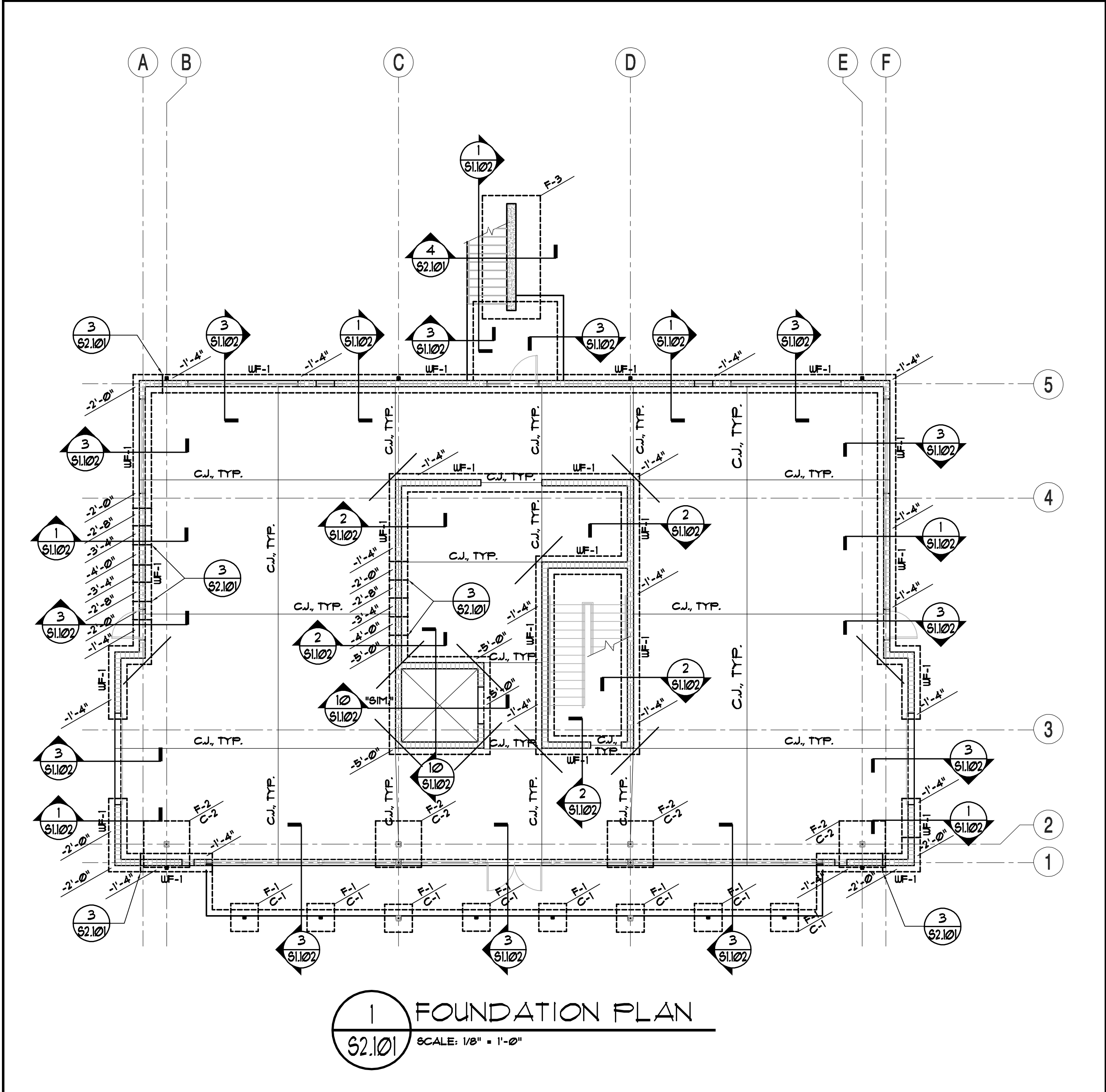
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LICENSE  
No. 39759  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER

Robert L. Plowfield, Jr., P.E.  
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**5 FOOTING SCHEDULE**  
SCALE: N.T.S.

MARK	SIZE	DEPTH	REINFORCING			REMARKS
			BOTTOM	TOP	TRANSVERSE	
F-1	3'-0" x 3'-0"	1'-0"	4-#5 EA WAY	-----	-----	SPREAD FOOTING
F-2	5'-0" x 5'-0"	1'-0"	6-#5 EA WAY	-----	-----	SPREAD FOOTING
F-3	7'-0" x 14'-0"	1'-4"	8-#5 LONG WAY 5-#5 SHORT WAY	-----	-----	SPREAD FOOTING
WF-1	2'-0" CONT.	1'-0"	3-#5 CONT.	-----	4-#24" O.C.	STRIP FOOTING

SEE SHEAR WALL DETAILS FOR HORIZ. & VERT. WALL REINF. TYP.  
12" CONCRETE PER PLAN, TYP.  
1/2" EXP. JOINT MATERIAL  
CONCRETE SLAB, SEE PLAN  
SPREAD FOOTING - SEE PLAN & SCHEDULE FOR REIN. SIZE AND SPACING.  
DOWELS TO MATCH & ALIGN W/ VERT. REINF. W/ STD. HK LAP 48 BAR #8  
FIN. GRADE/PAVING PER SITE/CIVIL DUGS.  
T.O. SLAB EL. VARIES - SEE PLAN  
SCHEDULED FOOTING DEPTH 3" CLR

**FOOTING SCHEDULE**

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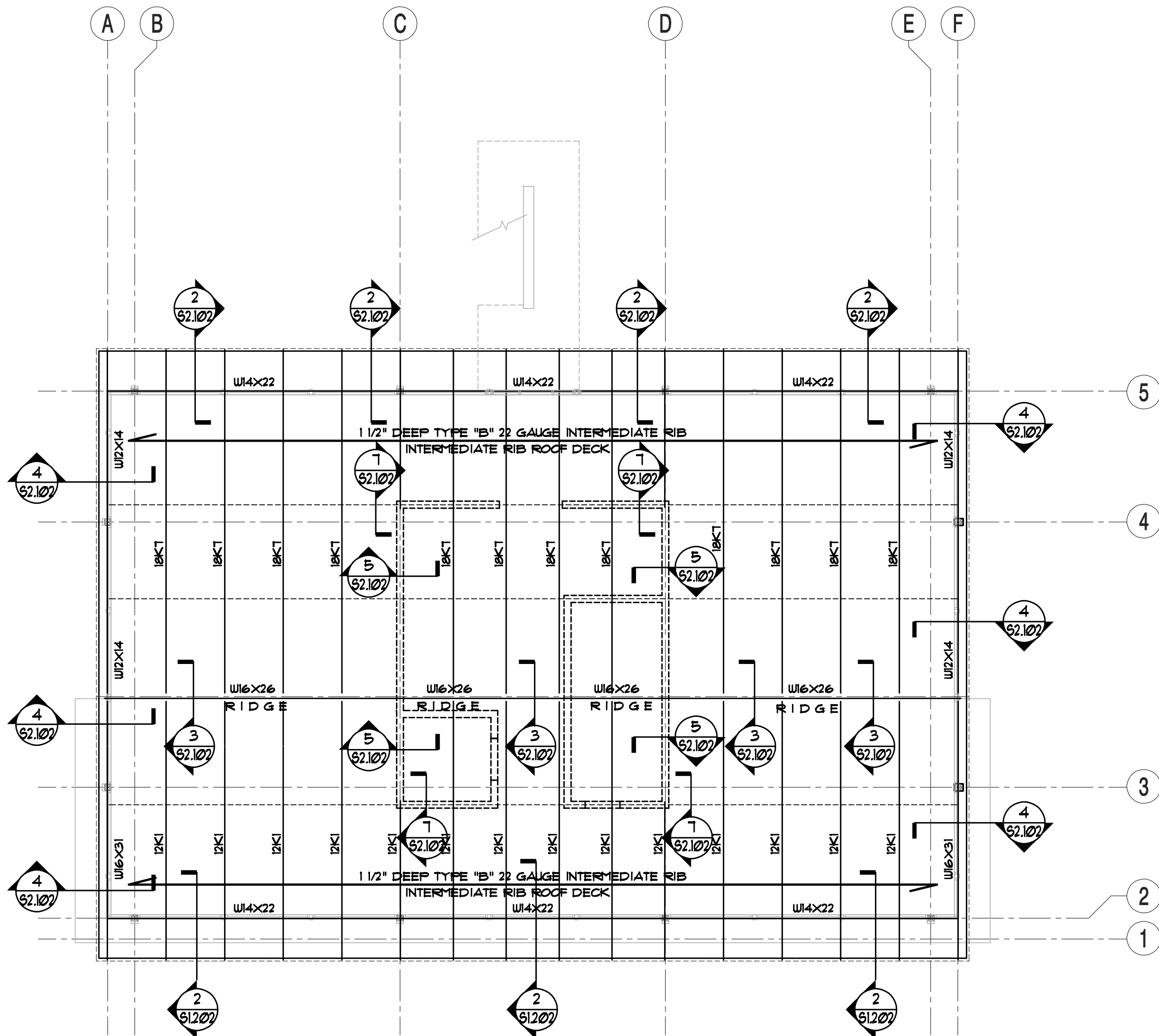
FOUNDATION & SECOND FLOOR FRAMING

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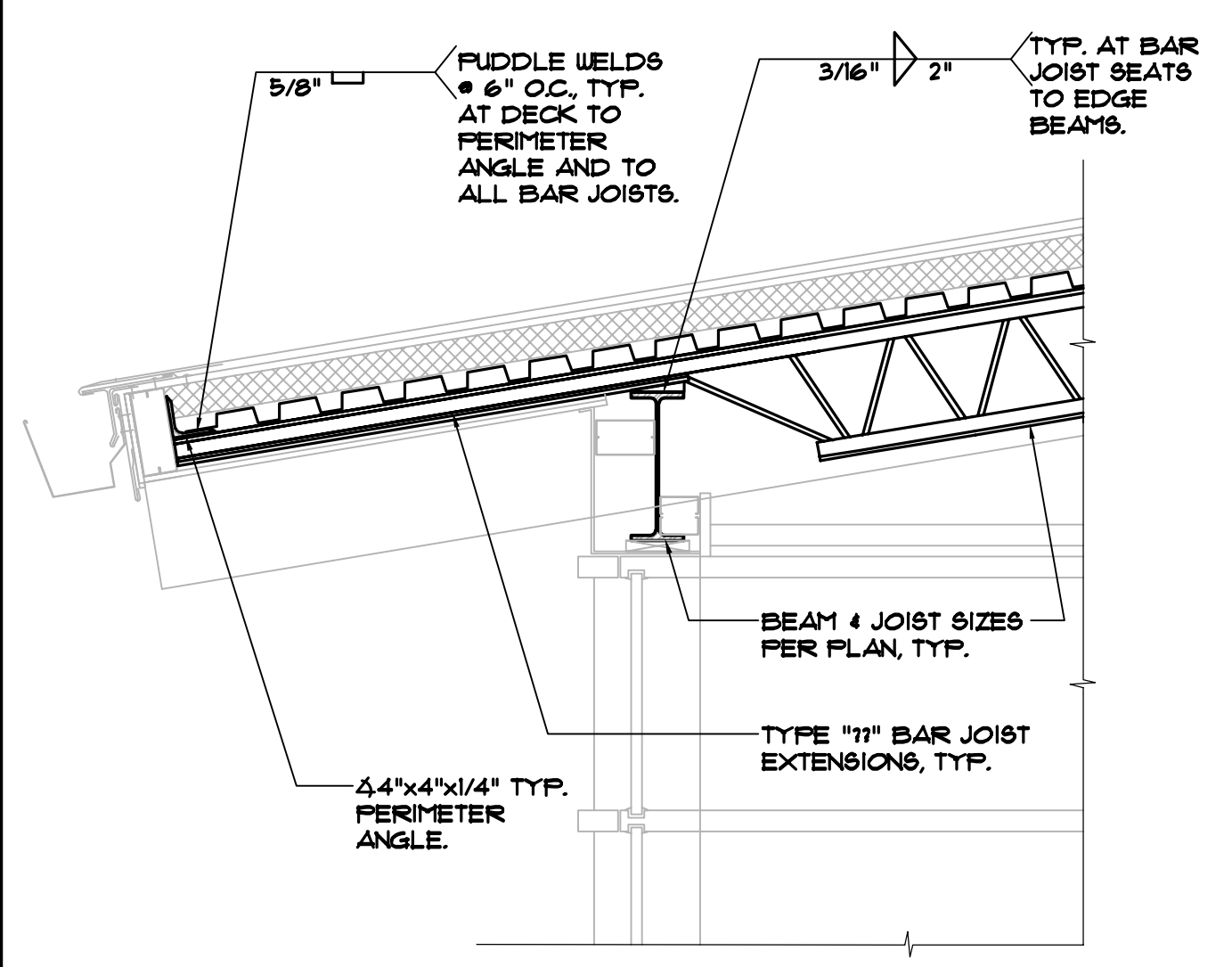
S2.101

12/20/19  
19:00T

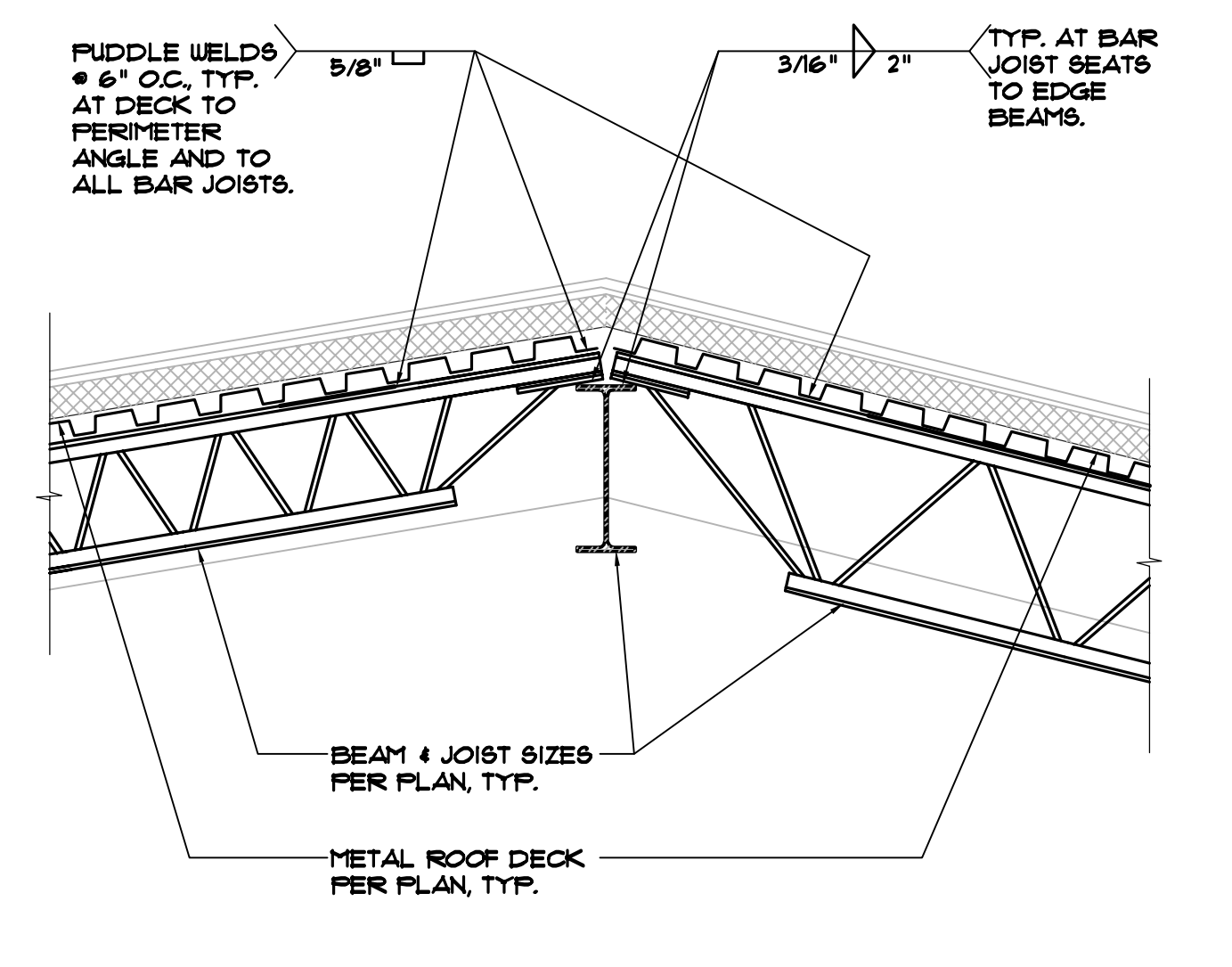
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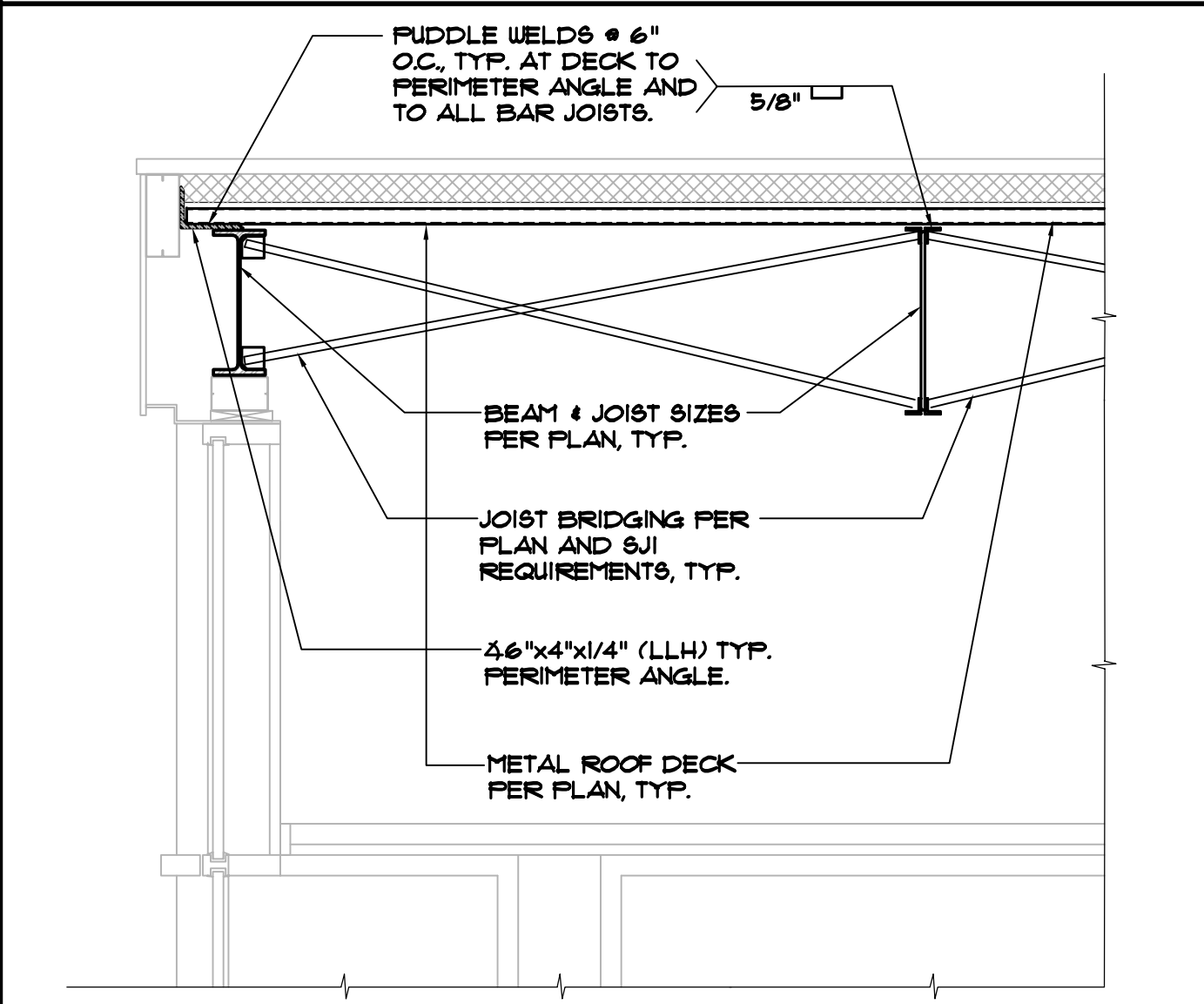
**1 ROOF FRAMING PLAN**  
S2.102 SCALE: 1/8" = 1'-0"



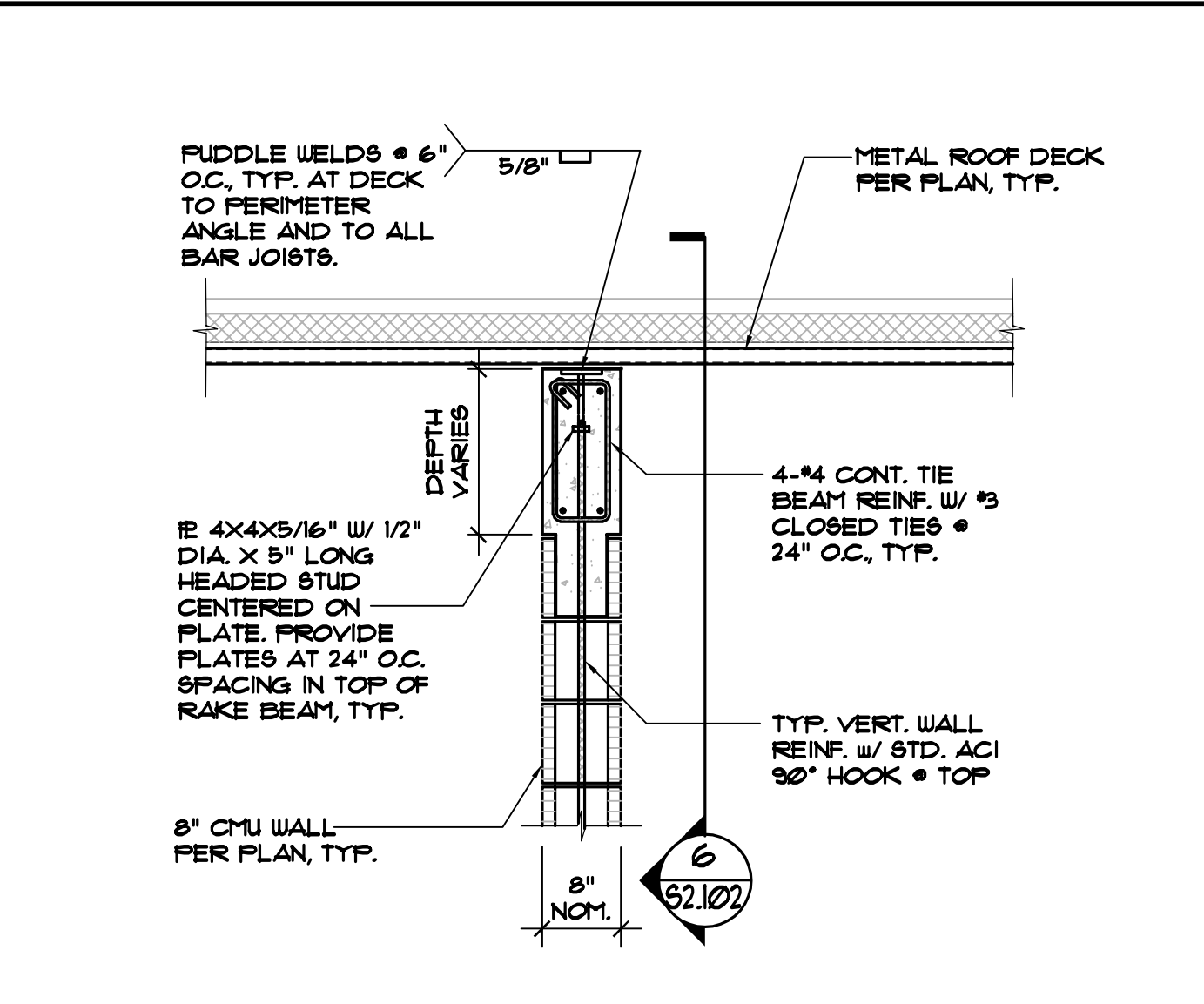
**2 ROOF JOIST BEARING**  
S2.102 SCALE: 3/4" = 1'-0"



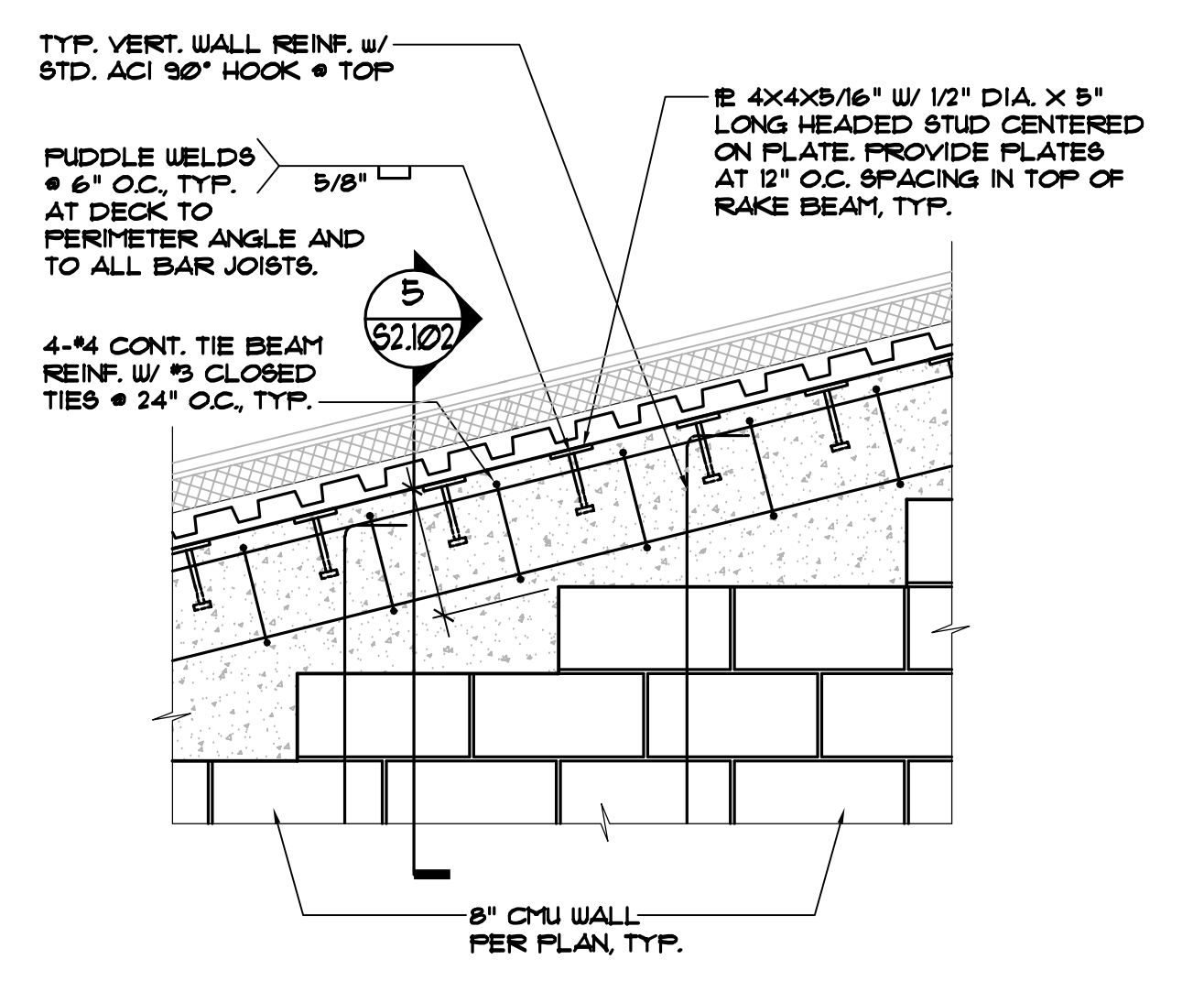
**3 ROOF JOIST BEARING**  
S2.102 SCALE: 3/4" = 1'-0"



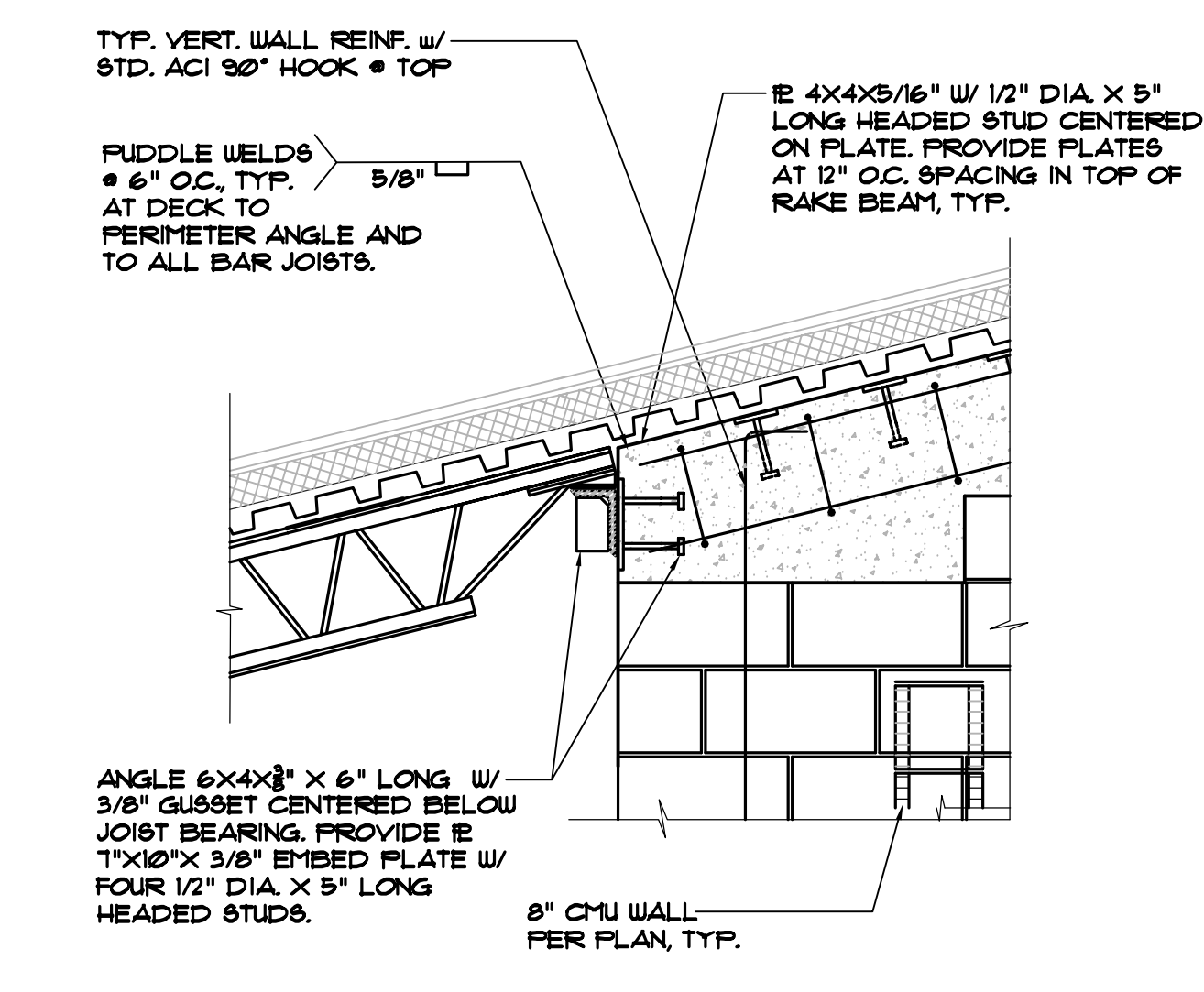
**4 ROOF DECK BEARING**  
S2.102 SCALE: 3/4" = 1'-0"



**5 ROOF DECK BEARING**  
S2.102 SCALE: 3/4" = 1'-0"

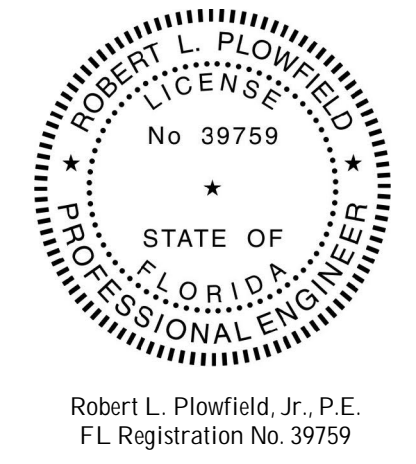


**6 RAKED TIE BEAM**  
S2.102 SCALE: 3/4" = 1'-0"



**7 RAKED TIE BEAM**  
S2.102 SCALE: 3/4" = 1'-0"

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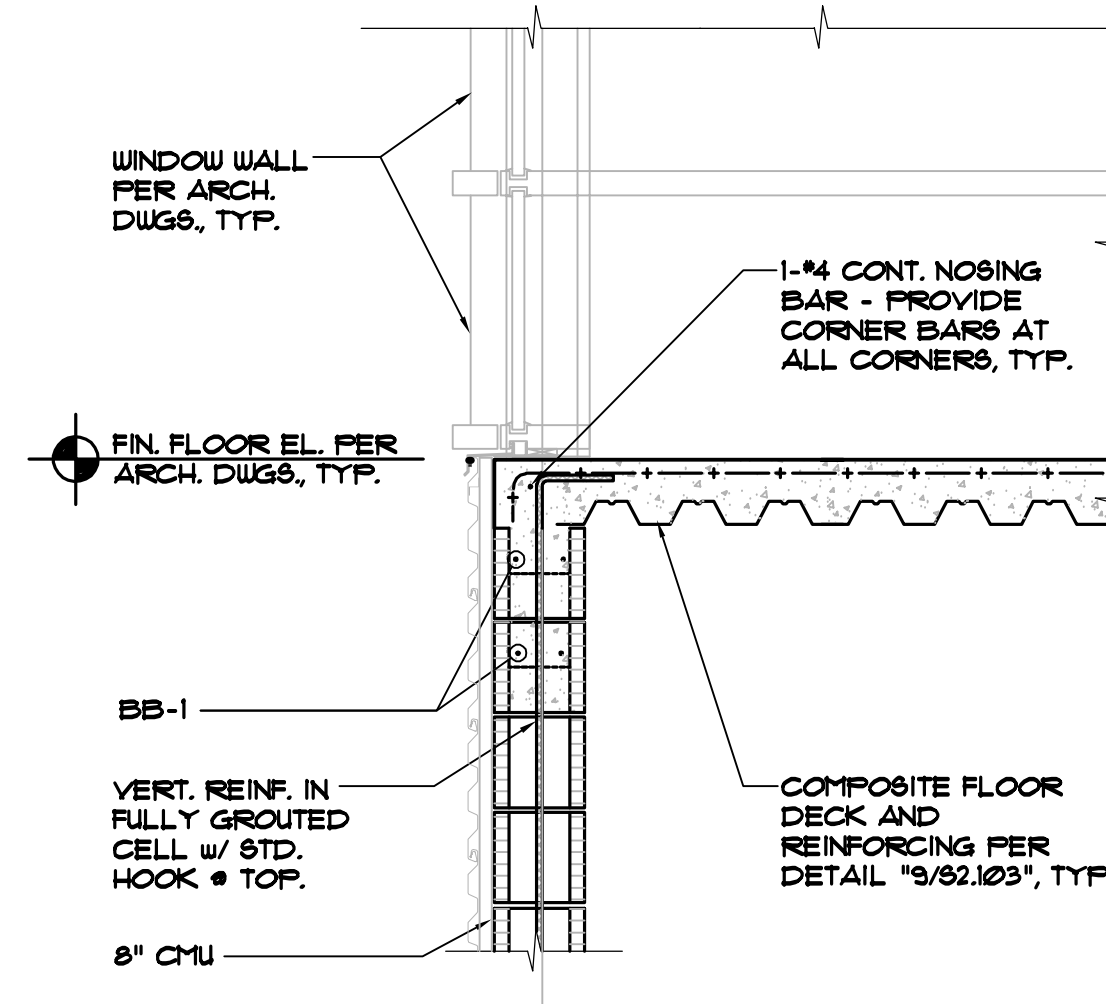


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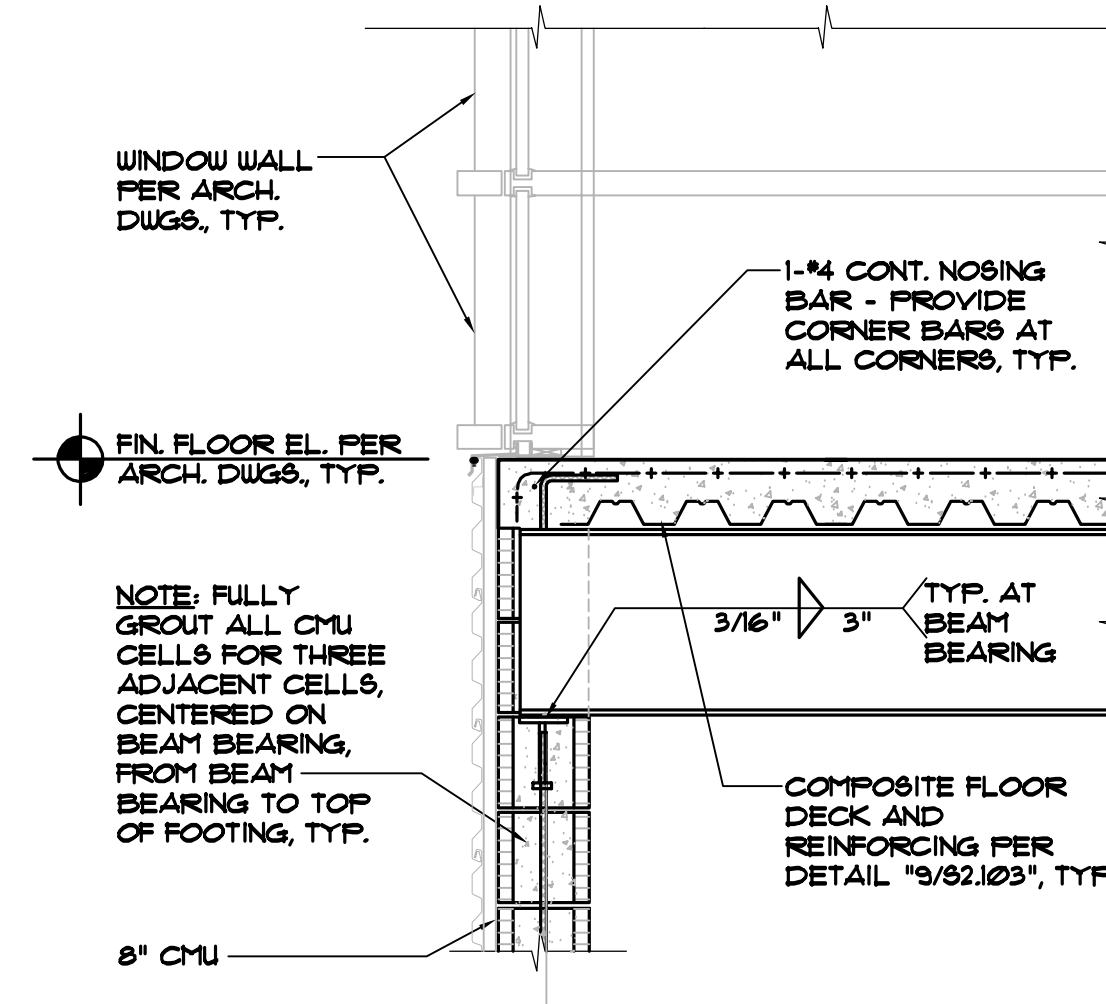
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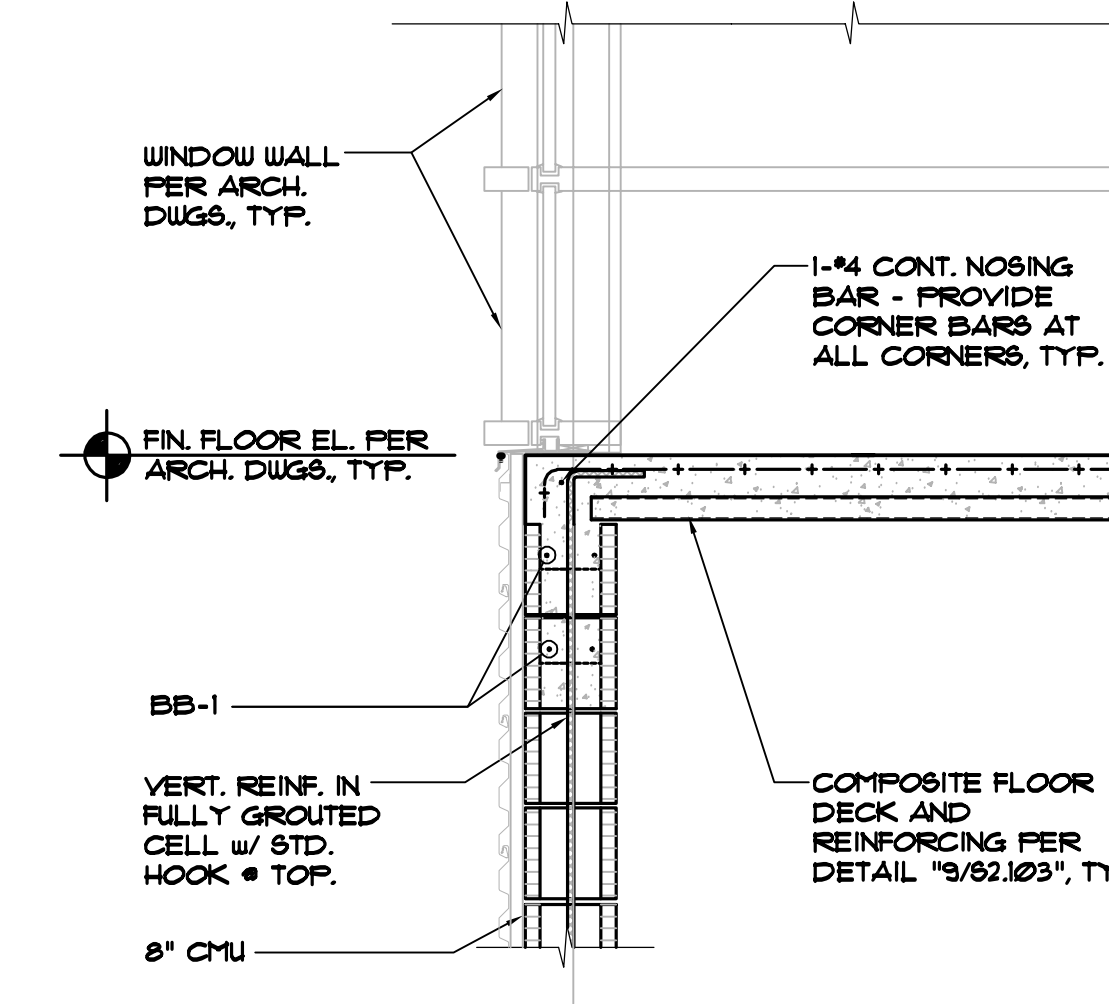
**ISSUE FOR BID - 12/20/19**  
**ROOF FRAMING PLAN & DETAILS**  
**ERAU PRODUCTION BUILDING**  
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 Sheet no. **S2.102**  
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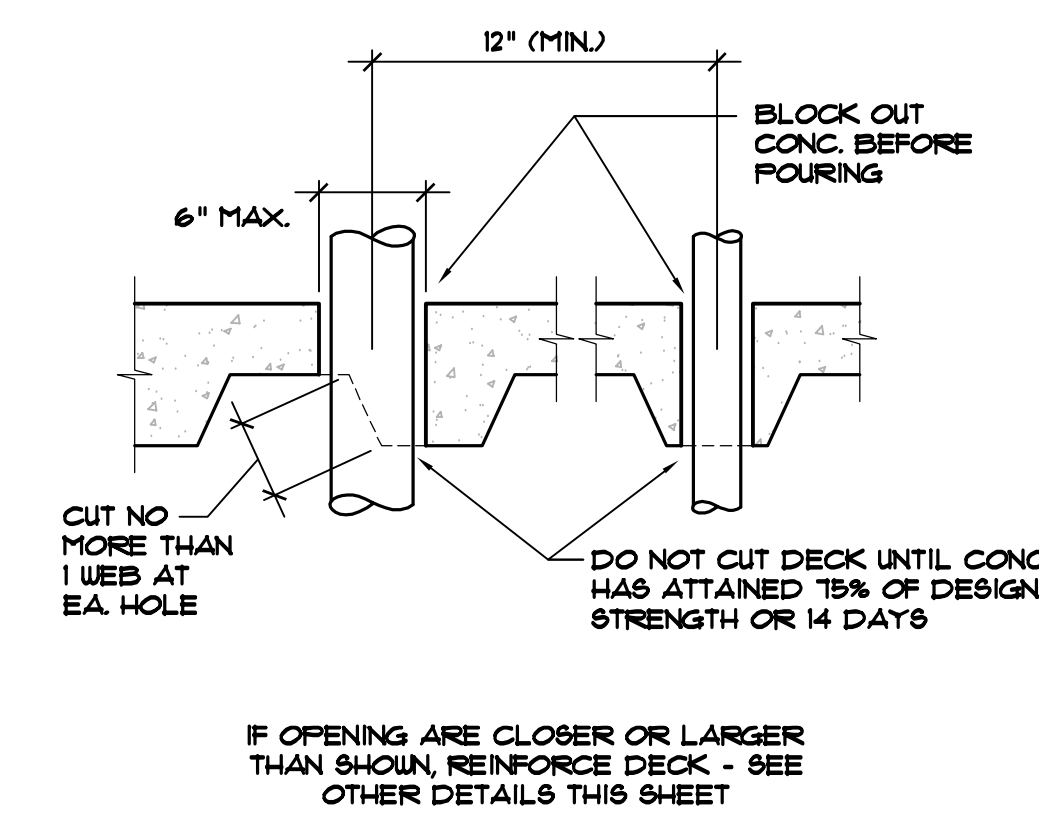
**1** SLAB BEARING DETAIL  
S2.103 SCALE: 3/4" = 1'-0"



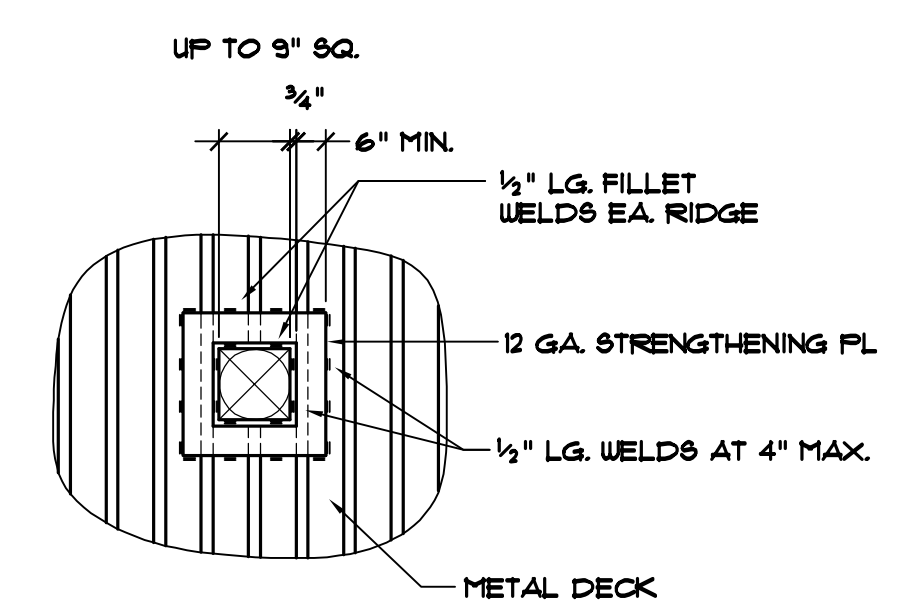
**2** BEAM BEARING DETAIL  
S2.103 SCALE: 3/4" = 1'-0"



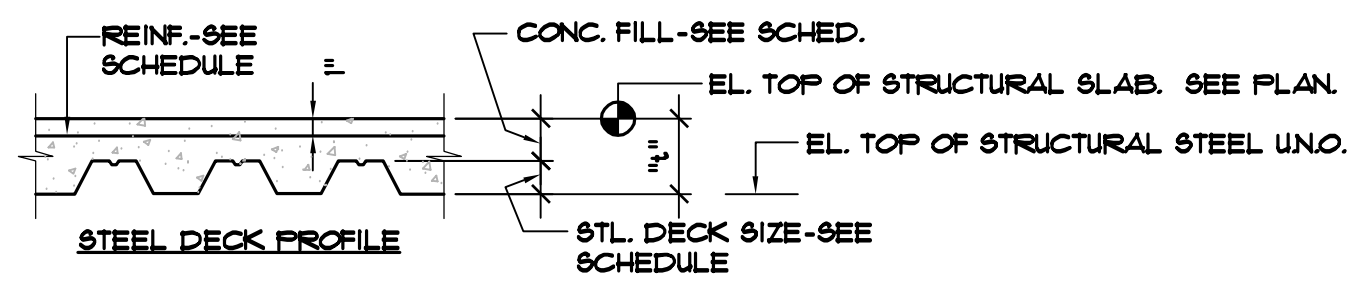
**3** SLAB BEARING DETAIL  
S2.103 SCALE: 3/4" = 1'-0"



**7** SMALL UNREINFORCED DECK OPENING DETAIL  
S2.103 SCALE: 3/4" = 1'-0"



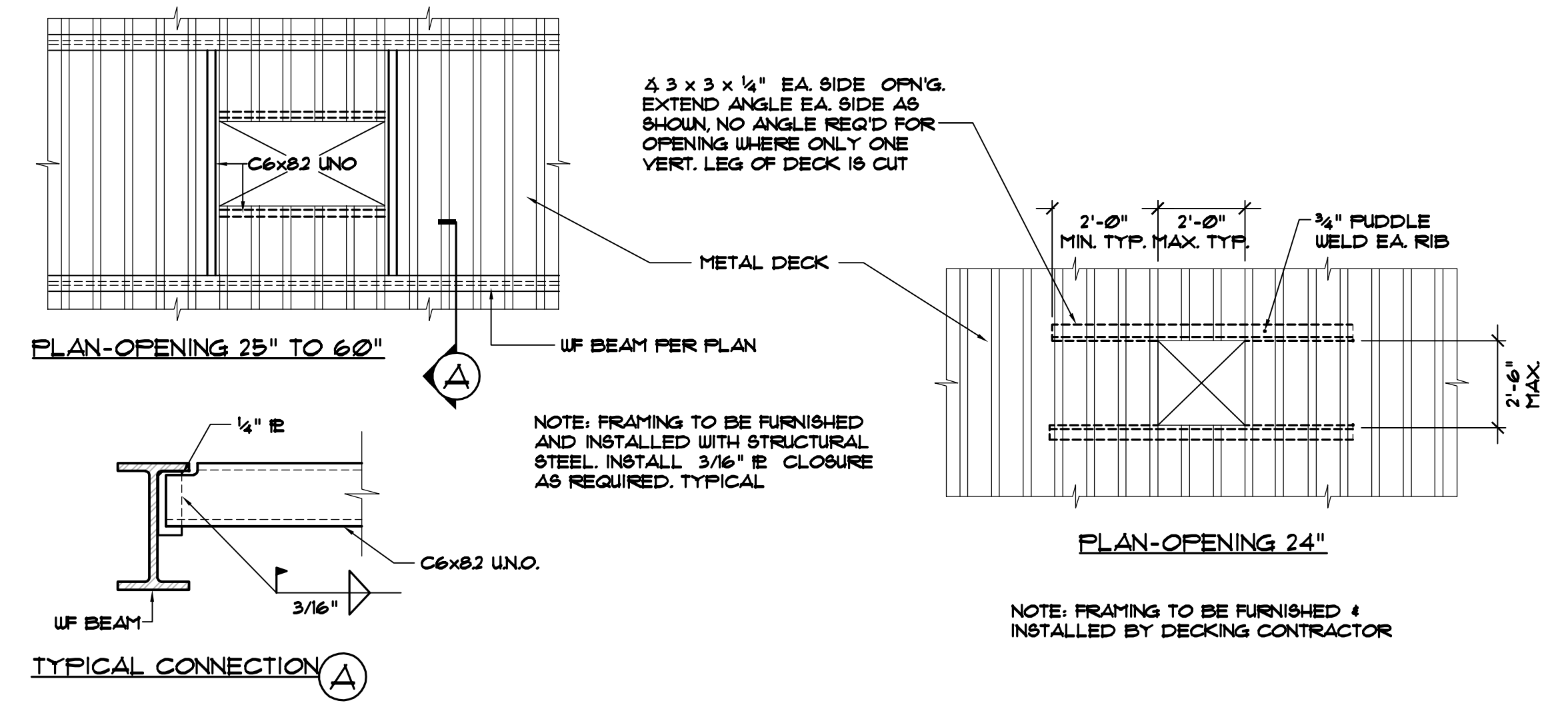
**8** SMALL REINFORCED DECK OPENING DETAIL  
S2.103 SCALE: 3/4" = 1'-0"



MARK	DECK SIZE	CONC. FILL	th	STEEL DECK PROPERTIES	DECK REINFORCING	MAX. UNSHORED CLR SPAN (SEE NOTE 2)
						DECK SPAN LENGTH
"D-1"	20 VLI 20 GA.	3" NW	5"	$S_x = \emptyset \emptyset 43$ IN <sup>2</sup> $S_y = \emptyset \emptyset 43$ IN <sup>2</sup> $I_x = \emptyset \emptyset 15$ IN <sup>4</sup>	6x6-W2.5x12.3 WWF	1-SPAN 2'-5" 2-SPAN 3'-1" 3-SPAN 3'-2"

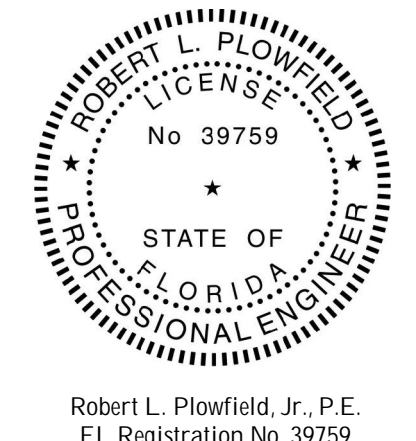
- NOTES:
- STEEL DECK SHALL BE VULCRAFT (OR APPROVED EQUAL).
  - STEEL DECK TYPE SHALL BE SHORED • MIDSPAN WHERE SPAN EXCEEDS MAXIMUM UNSHORED LENGTH.
  - STEEL DECK SHALL BE ATTACHED TO THE STRUCTURAL MEMBERS PER MANUFACTURER'S RECOMMENDATIONS AND SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS UNO: 3/4" FUZZLE WELDS AT 6" O.C. PERIMETER 4 12" O.C. ALL INTER-MEDIATE SUPPORTS, w/ 2-#10 TEK SIDELAP FASTENERS, TYP.
  - G.C. TO ACCOUNT FOR ADDITIONAL VOLUME OF CONCRETE DURING SLAB POUR FOR DEFLECTION DUE TO THE DEAD LOAD OF WET CONCRETE ON UNSHORED STEEL BEAMS, OR G.C. MAY PROVIDE SHORING OF STEEL BEAMS UNTIL CONCRETE REACHES 75% OF 28-DAY STRENGTH.

**9** COMPOSITE STEEL DECK  
S2.103 SCALE: N.T.S.



**10** OPENINGS IN COMPOSITE METAL FLOOR DECK  
S2.103 SCALE: 3/4" = 1'-0"

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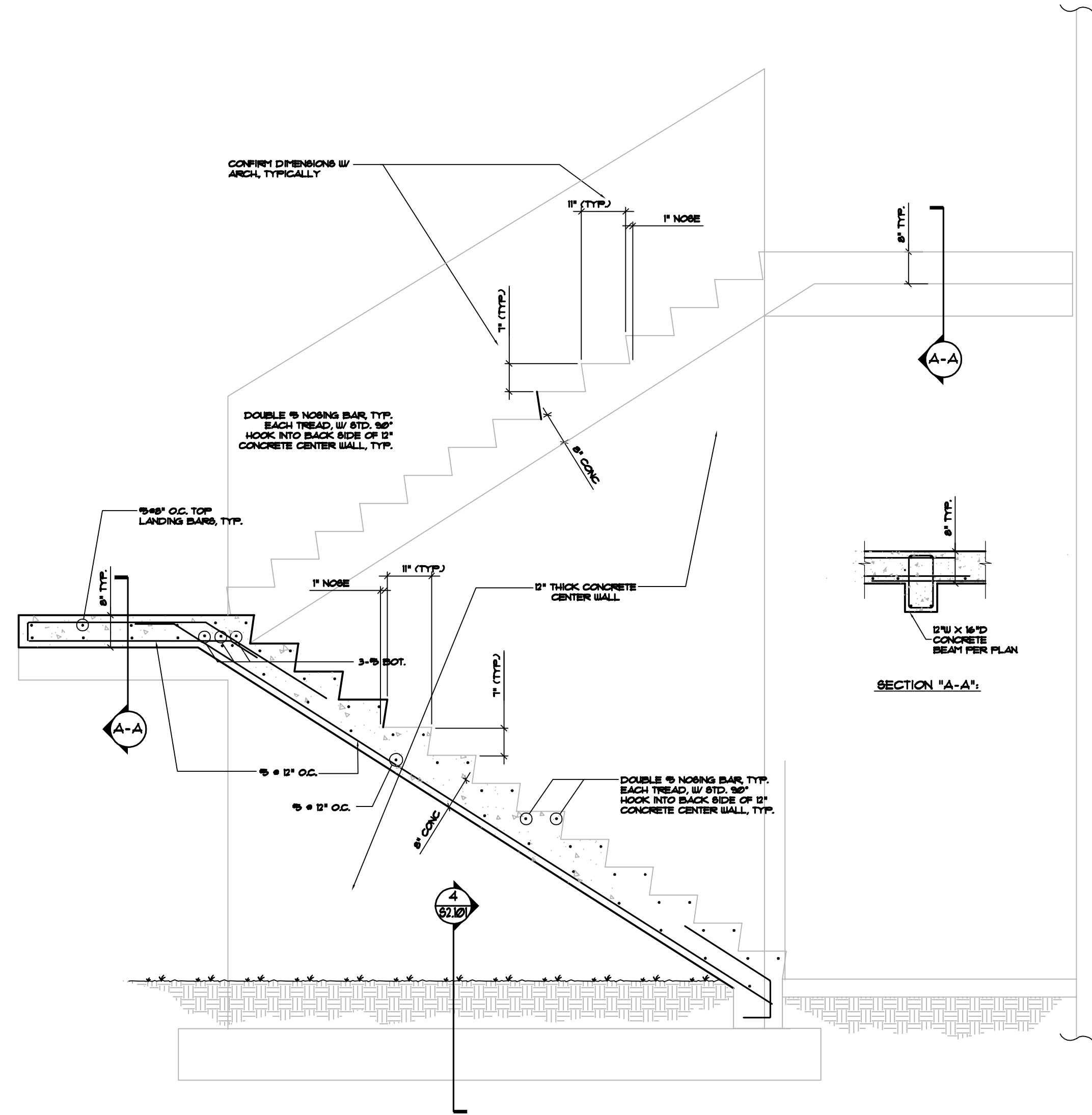


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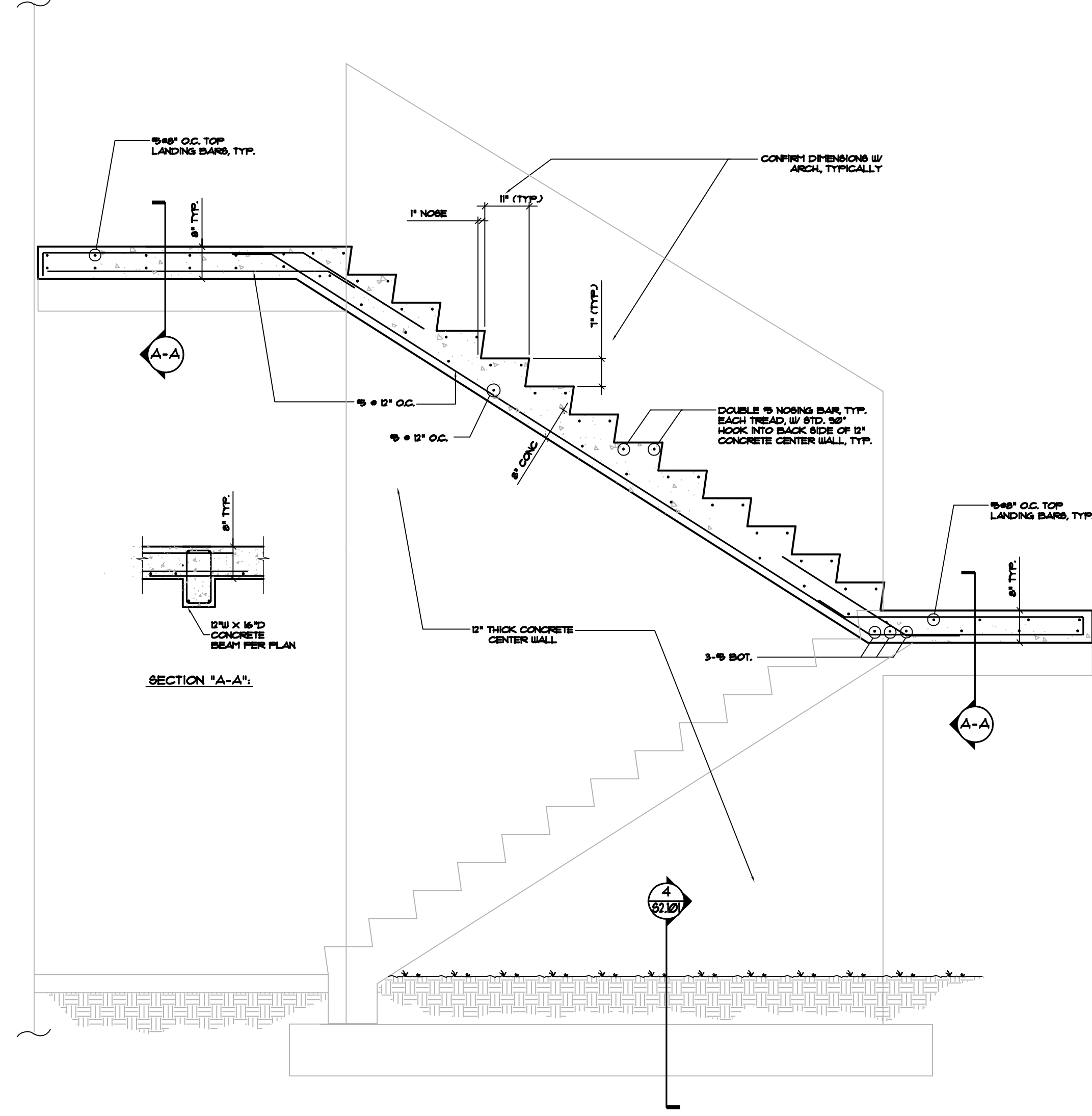


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 SHEET NO. **S2.103**



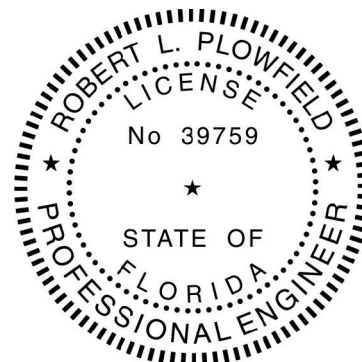
**1** CAST-IN-PLACE CONCRETE STAIR SECTION  
 S2.104 SCALE: 3/4" = 1'-0"



**2** CAST-IN-PLACE CONCRETE STAIR SECTION  
 S2.104 SCALE: 3/4" = 1'-0"

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**STRUCTURAL STAIR DETAILS**  
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 Job No. 19-007  
 Sheet No. **S2.104**