





FOUNDATION NOTES

1. GENERAL
- A. THE FOUNDATIONS HAVE BEEN DESIGNED TO AN ALLOWABLE SOIL BEARING PRESSURE OF 4000 PSF BASED ON A SOILS REPORT ISSUED BY CARLIN SIMPSON & ASSOCIATES DATED MAY 26, 2021. THIS CAPACITY SHALL BE VERIFIED BY A REGISTERED SOILS ENGINEER. SHOULD CONDITIONS VARY FROM THOSE ASSUMED, NOTIFY THE ARCHITECT / ENGINEER PRIOR TO CONTINUATION OF WORK.
- B. ALL FOOTINGS SHALL BE PLACED DIRECTLY ON COMPETENT NATURAL, GRANULAR SOILS OR ENGINEERED / CERTIFIED COMPACTED FILL OVER COMPETENT NATURAL SOILS.
- C. ALL FILL SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS (MAXIMUM) COMPACTED WITH VIBRATORY ROLLERS. FILL MATERIAL SHALL BE TESTED BY MODIFIED PROCTOR DENSITY METHOD (ASTM D1557) AND MUST QUALIFY AS SELECT, WITH LESS THAN 10% PASSING THROUGH THE NO. 200 SIEVE. SOIL SHALL BE PLACED WITH MOISTURE CONTENT AND ENERGY TO PROVIDE 92% OF MAXIMUM DRY DENSITY BELOW SLABS ON GRADE AND 96% BELOW FOOTINGS. IN PLACE DENSITY TESTS SHALL BE TAKEN FOR EACH 10,000 S.F. IN EACH LIFT. FOR ACCEPTANCE OF SOIL, AVERAGE OF DENSITY TESTS MUST EXCEED THE SPECIFIED COMPACTION. NO TESTS SHALL BE PERMITTED TO FALL BELOW 88% COMPACTION BELOW SLABS ON GRADE OR 90% COMPACTION BELOW FOOTINGS.
2. SHALLOW FOUNDATIONS
- A. ALL EXTERIOR FROST-FREE FOUNDATIONS SHALL BE PLACED A MINIMUM OF 42 INCHES BELOW FINAL GRADE WHEN BEARING ON SOIL.
- B. WHERE NECESSARY, FOOTING STEPS SHALL BE CONSTRUCTED AT MAXIMUM SLOPE OF 1 VERTICAL TO 2 HORIZONTAL.
- C. WHERE ROCK OUTCROPPINGS ARE ENCOUNTERED IN A BUILDING FOUNDATION BEARING ON SOIL, SUCH OUTCROPPING OR INTERFERENCE SHALL BE REMOVED TO A DEPTH 12 INCHES BELOW BOTTOM OF FOOTING AND REPLACED WITH CLEAN GRANULAR MATERIAL, CONTAINING LESS THAN 15% SILT, COMPACTED TO 95% MAXIMUM DENSITY PER MODIFIED PROCTOR METHOD, MAINTAIN A MINIMUM COVER OF 12" TO BOTTOM OF CONCRETE.
- D. WHERE SOLID UNFRACTURED ROCK IS ENCOUNTERED FOR A WALL LENGTH OF AT LEAST 25 FT, WALLS MAY BE PLACED WITHOUT FOOTINGS BY TRENCING 6 INCHES INTO THE ROCK AND PINNING THE WALL TO ROCK WITH DOWELS TO MATCH VERTICAL REINFORCING, GROUTED INTO ROCK, EXTENDING 24 BAR DIAMETERS INTO ROCK. NO FROST PROVISIONS ARE REQUIRED FOR THIS DETAIL. PROVIDE CONTROL JOINT IN WALL AT ANY TRANSITION BETWEEN ROCK BEARING AND SOIL BEARING CONDITIONS.
- E. EXCAVATIONS SHALL BE DEWATERED TO ALLOW INSTALLATION OF FOOTINGS IN DRY ATMOSPHERE.
- F. DIFFERENTIAL BACKFILL AGAINST FOUNDATION WALLS SHALL NOT EXCEED FOUR FEET UNTIL TOP BRACING SLAB OR FORMWORK HAS BEEN IN PLACE FOR A MINIMUM OF THREE DAYS. CANTILEVERED RETAINING WALLS MAY BE BACKFILLED AFTER 14 DAYS FROM CONCRETE PLACEMENT, BUT IN NO CASE SHALL DIFFERENTIAL OF BACKFILL, ON OPPOSITE SIDES OF THE WALL, EXCEED THE FINAL DESIGN DIFFERENTIAL.
- G. ALL BOTTOM OF FOOTING ELEVATIONS ARE SUBJECT TO CHANGE UPON INSPECTION OF SOIL CONDITION. ELEVATION OF ADJACENT FOOTING BOTTOMS SHALL NOT EXCEED A SLOPE OF:
- 1:12H:1V FOR COHESIVE SOILS WITH AN UNCONFINED COMPRESSIVE STRENGTH GREATER THAN 0.5 TSF.
- 1:20H:1V FOR COHESIVE SOILS WITH AN UNCONFINED COMPRESSIVE STRENGTH OF 0.5 TSF OR LESS.
- H. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHERE BOTTOM OF FOOTING ELEVATION IS CHANGED AND OBTAIN REVISED DESIGN OF FOUNDATION AND RETAINING WALLS AS REQUIRED.

CONCRETE REBAR LAP SPLICE & HOOK LENGTHS (INCHES)						
BAR SIZE	d <sub>b</sub> (in)	TENSION		COMPRESSION		STANDARD 90° HOOK
		CONCRETE STRENGTH (f' <sub>c</sub> ) PSI				
		4,000	5,000	≥ 3,000	6	
#3	0.375	19	17	12	6	
#4	0.25	25	22	15	8	
#5	0.625	31	28	19	10	
#6	0.75	37	33	23	12	
#7	0.875	54	49	27	14	
#8	1.00	62	53	30	16	
#9	1.125	70	63	34	19	
#10	1.27	79	71	39	22	
#11	1.56	87	78	43	24	

SPLICE LENGTHS INDICATED ABOVE SHALL BE MULTIPLIED BY THE FOLLOW FACTORS:

BAR WITH MORE THAN 12" OF FRESH CONCRETE BELOW LAP.....	1.3
CLEAR COVER < d <sub>b</sub> .....	1.5
CLEAR COVER < d <sub>b</sub> FOR BARS ENCLOSED BY STIRRUPS OR CLEAR COVER < 2 x d <sub>b</sub> FOR ALL OTHER BARS.....	1.5
LIGHTWEIGHT CONCRETE.....	1.3

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CAST-IN-PLACE CONCRETE

1. GENERAL
- A. ALL CONCRETE WORK SHALL CONFORM TO REQUIREMENTS OF THE ACI BUILDING CODE REQUIREMENT FOR STRUCTURAL CONCRETE (ACI 318-14, ULTIMATE STRENGTH DESIGN).
- B. 28-DAY MINIMUM COMPRESSIVE STRENGTH AND RELATED PROPERTIES FOR CONCRETE SHALL BE AS FOLLOWS:
- |                              | F <sub>c</sub> | MAX W/C RATIO | MAX DENSITY   |
|------------------------------|----------------|---------------|---------------|
| FOOTINGS                     | 4000 PSI       | 0.40          | NWC (145 PCF) |
| SLABS ON GRADE               | 4000 PSI       | 0.40          | NWC (145 PCF) |
| WALLS                        | 5000 PSI       | 0.40          | NWC (145 PCF) |
| BEAMS & SLABS                | 5000 PSI       | 0.40          | NWC (145 PCF) |
| 4000 PSI ON 12" DIA. COLUMNS | 4000 PSI       | 0.40          | NWC (110 PCF) |
| COLUMNS                      | 5000 PSI       | 0.40          | NWC (145 PCF) |
- C. CONCRETE COVERING OF REINFORCING STEEL (INCLUDING TIES AND STIRRUPS) SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS:
- 3/4" SLABS AND WALLS WITH INTERIOR EXPOSURE
- 1-1/2" SLABS AND WALLS WITH EXTERIOR EXPOSURE OR #5 OR SMALLER, 2" OTHERWISE
- 1-1/2" BEAMS AND COLUMNS WITH INTERIOR EXPOSURE
- 2" BEAMS AND COLUMNS WITH EXTERIOR EXPOSURE
- 2" FOUNDATION WALL, FOOTING & GRADE BARE FACES NOT CAST AGAINST EARTH
- CONCRETE CAST AGAINST EARTH
- D. ALL CONCRETE, INCLUDING FOUNDATIONS, EXPOSED TO WEATHER AND/OR OUTSIDE THE BUILDING ENVELOPE SHALL BE AIR ENTRAINED, 6% ± 1.5% BY VOLUME FOR 3/4" COARSE AGGREGATE, AND 7.5% ± 1.5% BY VOLUME FOR 3/8" LIGHT WEIGHT AGGREGATE, AIR ENTRAINING ADMIXTURE TO COMPLY WITH ASTM C260.
- E. ALL PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE II.
- F. ALL NORMAL WEIGHT AND LIGHT WEIGHT CONCRETE AGGREGATE SHALL CONFORM TO ASTM C33 AND ASTM C330 RESPECTIVELY.
- G. MAXIMUM CONCRETE SLUMP SHALL BE 4" FOR CONCRETE NOT RECEIVING HIGH-RANGE WATER REDUCING ADMIXTURES.
- H. ALL BARS MARKED CONTINUOUS SHALL BE LAPPED AT SPLICES AND CORNERS IN ACCORDANCE WITH THE SCHEDULE SHOWN ON THESE DRAWINGS, EXCEPT AS OTHERWISE SHOWN OR REQUIRED.
- I. WELDING OR REINFORCEMENT IS PROHIBITED U.O.N.
- J. ALL REINFORCING BARS SHALL BE OF NEW BILLET STEEL CONFORMING TO ASTM A615, WITH THE FOLLOWING GRADE:
- #3 THROUGH #10 - GRADE 60 (F<sub>y</sub> = 60,000 PSI)
- #11 AND GREATER - GRADE 75 (F<sub>y</sub> = 75,000 PSI)
- K. VERTICAL CONSTRUCTION JOINTS USING APPROVED BULKHEADS MAY BE MADE WITHIN THE MIDDLE OF BEAM, WALL, OR SLAB SPANS WHERE STOP IN CONCRETE WORK IS NECESSARY. A PLAN SHOWING PROPOSED JOINTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. HORIZONTAL CONSTRUCTION JOINTS ARE PERMITTED ONLY AS SHOWN ON DRAWINGS. CONSTRUCTION JOINTS SHALL CONFORM TO ACI 318, SECTION 14.4. ALL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINTS U.O.N. FOR ALL CONSTRUCTION JOINTS BELOW WATER TABLE, PROVIDE WATERSTOPS.
- L. VERTICAL JOINTS SHALL NOT BE PLACED IN CONCRETE SHEAR WALLS UNLESS SPECIFICALLY APPROVED IN WRITING BY THE ENGINEER.
- M. ALL HORIZONTAL JOINTS IN CONCRETE POURS (WHERE SHOWN ON STRUCTURAL DRAWINGS OR EXPLICITLY APPROVED BY THE ENGINEER IN WRITING) SHALL BE RAKED TO 1/4" AMPLITUDE WHILE CONCRETE IS FRESH.
- N. ALL CONCRETE SHALL BE MIXED, TRANSPORTED AND PLACED IN ACCORDANCE WITH ACI STANDARD 303.1 AND 304.
- O. ALL REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE TO ACI 318.
- P. ALL WELDED WIRE MESH SHALL CONFORM TO ASTM A185.
- Q. SYNTHETIC FIBER REINFORCEMENT SHALL BE OF MACRO SYNTHETIC "COARSE" FIBERS MADE FROM VIRGIN POLYOLEFIN, BY STURX 9040 BY GCP APPLIED TECHNOLOGIES (OR APPROVED EQUIVALENT), AT A MINIMUM DOSAGE RATE AS SPECIFIED ON DRAWINGS.
- R. TEST CYLINDERS SHALL BE TAKEN FROM THE MIXER IN ACCORDANCE WITH ASTM C172 AND THE PROJECT SPECIFICATIONS.
- S. STONE AGGREGATE USED IN CONCRETE MIX SHALL BE FREE OF MATERIALS WITH HARMFUL REACTIVITY TO ALKALI IN ORDER TO AVOID ALKALI-AGGREGATE REACTION (AAR). ALL AGGREGATE CONTENT IN CONCRETE FROM ALL INGREDIENTS SHALL BE LESS THAN 0.06% OF WEIGHT OF CEMENT, PER ASTM C1218.
2. CONCRETE FOR FOUNDATIONS
- A. SLAB ON GRADE SHALL BE FIBER REINFORCED CONCRETE CONFORMING TO ACI 544.2R. SLAB SHALL BE FINISHED IN ACCORDANCE WITH ACI STANDARD 302.1R FOR CLASS 2 FLOORS, TYPE II CEMENT AND 1" COARSE AGGREGATE (SIZE NO. 57) SHALL BE USED.
- B. ALL VERTICAL SURFACES OF CONCRETE SHALL BE FORMED FOR WALLS, FOOTINGS, AND GRADE BEAMS.
- C. CONTRACTOR SHALL PROVIDE A MINIMUM AREA OF STEEL REINFORCEMENT EQUAL TO .0018 TIMES THE GROSS CONCRETE AREA IN CONCRETE SLABS AND FOOTINGS, EXCEPT WHERE CONCRETE IS PRESTRESSED. PROVIDE MINIMUM BONDED REINFORCEMENT FOR PRESTRESSED CONCRETE IN ACCORDANCE WITH ACI 318 - SECTION 18.5 FOR WALLS, PROVIDE MINIMUM REINFORCING IN ACCORDANCE WITH ACI 318 - SECTION 14.3.
3. CONCRETE FOR STEEL SUPPORTED SLABS
- A. OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL. FLOOR DEPRESSIONS AND OPENINGS SHALL BE PROVIDED WHERE FLOOR FINISHES OR EQUIPMENT REQUIRE THEM, WHETHER OR NOT THEY ARE INDICATED ON THE STRUCTURAL DRAWINGS. GENERAL CONTRACTOR SHALL PREPARE AND SUBMIT A COMPOSITE DRAWINGS SHOWING ALL SLAB PENETRATIONS PRIOR TO SLAB REINFORCEMENT FABRICATION.
- B. EXCEPT AS OTHERWISE DETAILED, ALL SLEEVES SHALL BE SEPARATED BY AT LEAST FOUR (4) INCHES OF CONCRETE WITH REINFORCING BETWEEN THEM.
- C. SLABS SHALL BE FINISHED BY WOOD TROWEL, FOLLOWED BY TWO STEEL TROWELING OPERATIONS, EXCEPT AS OTHERWISE SPECIFIED.
- D. FOR CONCRETE SLABS, CONTRACTOR SHALL INCLUDE IN HIS BID SUFFICIENT QUANTITY OF CONCRETE SO THAT A LEVEL SLAB IS OBTAINED AFTER DEFLECTION OF DECK, BEAMS, AND GIRDERS, NO CLAIMS FOR ADDITIONAL CONCRETE WILL BE ENTERTAINED. CONTRACTOR SHALL CONSIDER THE EFFECTS OF CAMBER OR SHORING, AS APPROPRIATE.
4. CONCRETE SUPERSTRUCTURE
- A. WHEREVER POSSIBLE, SPLICES OF MILD STEEL SHALL BE MADE IN A COMPRESSION AREA, NO MORE THAN 50% OF BARS ALTERED SHALL BE SPLICED IN A TENSION AREA.
- B. OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL. SLEEVES, BOXES, AND OTHER OPENINGS SHALL NOT BE PERMITTED IN BEAMS, OR TWO WAY SLABS UNLESS SHOWN ON A DRAWING SUBMITTED TO AND APPROVED BY THE STRUCTURAL ENGINEER.
- C. ALL PLUMBING SLOTS SHALL BE FILLED WITH CONCRETE TO THE SAME DEPTH AS THE FLOOR SLAB AFTER PIPING HAS BEEN INSTALLED.
- D. PIPES OR CONDUITS PLACED IN SLABS SHALL NOT HAVE AN OUTSIDE DIAMETER LARGER THAN 1/3 THE SLAB THICKNESS AND SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER.
- E. NO UNDERFLOOR DUCTS SHALL BE PLACED IN SLABS WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER OR AS DETAILED AND DIMENSIONED ON DRAWINGS.
- F. ALL BEAMS, SPANDELS AND SLABS ARE TO BE PLACED MONOLITHICALLY WITH SUPPORTS UNLESS OTHERWISE SHOWN.
- G. ALL EMBEDDED STEEL SHALL BE ASTM A36 OR A572 ALUMINUM INSERTS ARE NOT PERMITTED.
- H. WHERE MASONRY ABUTS CONCRETE WALLS, PROVIDE DOVETAIL SLOTS AND MASONRY ANCHORS.
- I. SLABS SHALL BE FINISHED BY WOOD TROWEL FOLLOWED BY TWO STEEL TROWELING OPERATIONS, EXCEPT AS OTHERWISE SPECIFIED.
- J. FOR CONCRETE SLABS, CONTRACTOR SHALL INCLUDE IN HIS BID SUFFICIENT QUANTITY OF CONCRETE SO THAT A LEVEL SLAB IS OBTAINED AFTER DEFLECTION OF DECK, BEAMS, AND GIRDERS, NO CLAIMS FOR ADDITIONAL CONCRETE WILL BE ENTERTAINED. CONTRACTOR SHALL CONSIDER THE EFFECTS OF CAMBER OR SHORING, AS APPROPRIATE.

CONCRETE MASONRY UNITS (CMU)

1. ALL MASONRY WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 530.1-13 SPECIFICATION FOR MASONRY STRUCTURES.
2. ALL CONCRETE MASONRY UNITS SHALL BE HOLLOW LOAD BEARING UNITS CONFORMING TO ASTM C90, GRADE N-TYPE, WITH MINIMUM COMPRESSIVE STRENGTH OF UNITS = 1900 PSI ON NET AREA, WITH ASSUMED DESIGN COMPRESSIVE STRENGTH, F<sub>m</sub> = 1500 PSI. UNITS MAY BE FABRICATED EITHER WITH NORMAL WEIGHT AGGREGATE (C33) OR LIGHTWEIGHT AGGREGATE (C331).
3. ALL UNITS SHALL BE PLACED IN RUNNING BOND.
4. MORTAR SHALL BE TYPE M OR S. MORTAR SHALL MEET ASTM C270.
5. GROUT SHALL COMPLY WITH ASTM C495. SLUMP SHALL BE 8 TO 11 INCHES, STRENGTH SHALL BE EQUAL TO 3000 PSI.
6. STORE ALL UNITS OFF GROUND TO PREVENT CONTAMINATION. COVER MATERIALS TO PROTECT FROM THE ELEMENTS.
7. NO AIR-ENTRAINING ADMIXTURES OR ANTIFREEZE COMPOUNDS, SUCH AS CALCIUM CHLORIDE SHALL BE ADDED TO MORTAR.
8. ALL WALLS OR PLASTERS SUPPORTING STEEL AT BEARING PLATES SHALL BE GROUTED SOLID FOR FOUR COURSES IN DEPTH FOR A WIDTH OF 32".
9. DO NOT BACKFILL AGAINST FOUNDATION WALLS UNTIL MORTAR HAS ATTAINED MAXIMUM STRENGTH. WHERE BACKFILL IS PLACED AGAINST FOUNDATION WALLS BEFORE FLOOR CONSTRUCTION IS IN PLACE, PROVIDE TEMPORARY BRACING.
10. THE FIRST BLOCK COURSE ON FOOTING SHALL BE FILLED SOLID WITH CONCRETE, UNLESS OTHERWISE NOTED ON DRAWINGS.
11. VERTICAL CONTROL JOINTS SHALL BE PLACED SUCH THAT THE RATIO OF JOINT SPACING (S) DIVIDED BY WALL HEIGHT (H) DOES NOT EXCEED 1/5. IN NO CASE SHALL SPACING EXCEED 25 FT. CONTROL JOINTS SHALL BE CONSTRUCTED USING 2x6x8 SHIM BLOCKS AND DURALUM PREFORMED REGULAR RAPID CONTROL JOINT (OR EQUAL OF EXTRUDED RUBBER). VERTICAL JOINTS SHALL BE LOCATED AS FOLLOWS:
- A. CHANGES IN WALL HEIGHT OR THICKNESS
- B. AT CONSTRUCTION JOINTS IN FOUNDATION, IN ROOF, AND IN FLOORS
- C. AT CHASES AND RECESSES FOR PIPING, COLUMNS, FIXTURES, ETC.
- D. AT ABUTMENT OF WALL AND COLUMNS
- E. WITHIN 3/2 OF CORNERS OF WALLS OR COLUMNS
- F. NO CLOSER THAN 2'-0" TO EDGE OF ANY OPENING IN WALL
12. CMU WALLS SHALL BE REINFORCED WITH 3/16" DIA. TRUSS TYPE LADDER REINFORCING ASTM A62 WIRE, HOT DIPPED GALVANIZED, AT 16" ON CENTER (VERTICALLY), AND AT THE FIRST AND SECOND BED JOINTS ABOVE AND BELOW WALL OPENINGS.
13. ALL MASONRY WALLS SHALL BE ADEQUATELY BRACED DURING CONSTRUCTION TO RESIST WIND LOADS OF .7 PSF. NOTE THAT FLOOR AND ROOF DIAPHRAGMS WILL PROVIDE ULTIMATE STABILITY FOR WALLS. MASONRY WALLS SHALL NOT BE BUILT HIGHER THAN 10 TIMES THEIR THICKNESS WITHOUT BRACING.
14. ALL CMU CORERS WITH VERTICAL REINFORCEMENT MUST BE FULLY GROUTED.
15. LINTELS (UNLESS OTHERWISE NOTED ON THE PLANS)
- A. STEEL LINTELS ALONG EXTERIOR FACE OF BUILDING SHALL BE HOT DIP GALVANIZED.
- B. STEEL LINTELS SHALL BE REQUIRED AT OPENINGS IN MASONRY WALLS. SEE TYPICAL MASONRY DETAILS FOR FURTHER INFORMATION.

STRUCTURAL STEEL

1. GENERAL
- A. STEEL CONSTRUCTION SHALL CONFORM TO AISC "STEEL CONSTRUCTION MANUAL", FIFTEENTH EDITION, AND SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" AS ADOPTED IN JANUARY 2016.
- B. MATERIALS FOR STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS, U.O.N.:
- | SHAPE                         | ASTM        | MIN. YIELD STRENGTH |
|-------------------------------|-------------|---------------------|
| WIDE FLANGE SHAPE             | A992        | 50 KSI              |
| CHANNELS, ANGLES, M, S-SHAPES | A36         | 36 KSI              |
| LWC (110 PCF), STEEL          | A992        | 50 KSI              |
| RECTANGULAR HSS               | A1085       | 50 KSI OR           |
|                               | A500, GR. C | 50 KSI              |
- STEEL PIPE (TYPE E OR S)
- C. ALL BOLTED CONNECTIONS SHALL BE MADE USING ASTM F1554 GR. A325/A490 (CONVENTIONAL) BOLTS, OR F1862/2280 (TWIST OFF TYPE TENSION-CONTROL) BOLTS, 3/4" MIN. DIAMETER. ALL LATERAL SYSTEM BRACING AND MOMENT FRAMES BOLTED CONNECTIONS SHALL BE PRETENSIONED FOR STANDARD BOLT HOLES AND SLIP CRITICAL FOR OVERSIZED OR SLOTTED BOLT HOLES (IN THE DIRECTION OF THE LOAD). ALL BOLTED CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, U.O.N.
- D. BOLTED CONNECTIONS DESIGNATED AS PRETENSIONED OR SLIP CRITICAL SHALL BE PRETENSIONED AND INSPECTED AS PER THE "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS."
- E. ANCHOR RODS SHALL BE OF ASTM F1554 GRADE 55 "WELDABLE" AS PER THE "SI" SUPPLEMENT.
- F. SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. NO FABRICATION OF STEEL SHALL COMMENCE WITHOUT APPROVED SHOP DRAWINGS. SHOP DRAWINGS ARE PREPARED AND USED BY THE CONTRACTOR AS INSTRUMENTS TO SEQUENCE HIS WORK AND TO FACILITATE FABRICATION AND ERECTION. REVIEW OF SHOP DRAWINGS SHALL BE FOR GENERAL DETAIL AND ARRANGEMENT ONLY. CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR DIMENSIONS, PROPER FIT AND DETAILED DESIGN OF CONNECTIONS. THEIR APPROVAL BY THE STRUCTURAL ENGINEER IS NOT TO BE CONSTRUED AS A WAIVER OF CONSTRUCTION CONTRACT REQUIREMENTS OR RESPONSIBILITIES, UNLESS THE CONTRACTOR HAS BEEN GRANTED A DEVIATION IN WRITING.
- G. ALL SHEAR CONNECTIONS SHALL BE DESIGNED AND DETAILED FOR SERVICE LEVEL (ASD) VALUES INDICATED ON PLANS. IF NO VALUES ARE GIVEN ON PLANS, SEE TYPICAL CONNECTION DETAILS FOR DESIGN FORCES. ALL BEAM WEB SHEAR CONNECTIONS SHALL BE DESIGNED AND DETAILED SO THAT THE DEPTH OF THE CONNECTION PLATES OR ANGLES ARE NOT LESS THAN ONE-HALF OF THE BEAMS "T" DIMENSION. NO CONNECTION SHALL BE DESIGNED AND DETAILED TO SUPPORT LESS THAN 6 KIPS SERVICE LEVEL REACTION. WHERE POSSIBLE, THE CONTRACTOR SHALL SELECT A SIMPLE SHEAR CONNECTION FROM THE TABLES IN PART 10 OF THE AISC STEEL CONSTRUCTION MANUAL - 13TH EDITION-ASD.
- H. THE FORCES INDICATED ON THE PLANS (ELEVATIONS ARE THE MEMBER DESIGN FORCES, LATERAL MOMENT FRAME CONNECTIONS SHALL BE DESIGNED AND DETAILED FOR THE GREATER OF THE FORCES SHOWN ON PLANS/ELEVATIONS OR AS REQUIRED BY AISC 341 FOR THE SEISMIC RESPONSE MODIFICATION FACTOR (R) AND BASIC SEISMIC RESISTING SYSTEM SHOWN IN THE GENERAL NOTES. THE CONTRACTOR SHALL PROVIDE ANY REINFORCEMENT NECESSARY (STIFFENER PLATES, DOUBLER PLATES, ETC.) REQUIRED TO CONSTRUCT THESE CONNECTIONS.
- I. DURING ERECTION, APPROVED TEMPORARY BRACING SHALL BE INSTALLED AS REQUIRED TO PREVENT DISTORTION OR DAMAGE TO THE FRAMEWORK DUE TO ERECTION FORCES.
- J. STEEL SHOP DRAWINGS SHALL BE COORDINATED WITH STAIR DETAIL.
- K. PROVIDE FITTED WELDED STIFFENER PLATES 1/4" THICK MIN. IN SUPPORT BEAMS ALONGSIDE HANGER LOCATIONS, AT SUPPORT POSTS, AND AT STAIR STRINGER BEAM BEARING POINTS.
- L. ALL INTERIOR STRUCTURAL STEEL SHALL BE CLEANED TO SSPC-SP3 AND SHALL RECEIVE THE FOLLOWING SHOP PRIMER, EXCEPT WHERE FIELD WELDING OR SLIP CRITICAL BOLTING IS TO BE DONE, WHERE STEEL IS TO RECEIVE SPRAY APPLIED FIREPROOFING, OR WHERE SPECIFIED TO BE GALVANIZED:
- a. BUILDING INTERIOR STEEL: Tnemec 10-99 PRIMER AT 2.5 MILS DFT, OR APPROVED EQUAL
- b. BUILDING PERIMETER STEEL: Tnemec 394 PERIMEPRIME AT 3.0 MILS DFT, OR APPROVED EQUAL
- c. ALL WELDS AND BARE SPOTS SHALL RECEIVE TOUCHUP PAINT.
- M. ALL EXTERIOR OR EXPOSED STRUCTURAL STEEL SHALL BE CLEANED TO SSPC-6 AND RECEIVE THE FOLLOWING THREE COAT SYSTEM (OR APPROVED EQUAL SYSTEM):
- a. PRIMER: Tnemec 900-1K10 OR 94-H20 (WHERE LOW VOC'S REQUIRED) - 3 MILS DFT
- b. INTERMEDIATE COAT: Tnemec 27FC TYPHOXY OR 66-BUILD EXPO SOLUE - 4 MILS DFT
- c. TOP COAT: Tnemec 73 ENIDURA SHIELD - 2.5 MILS DFT
- d. ALL WELDS AND BARE SPOTS SHALL RECEIVE TOUCHUP PAINT.
- N. ALL EXTERIOR OR EXPOSED STRUCTURAL STEEL MISCELLANEOUS COMPONENTS, AND HARDWARE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123, EXCEPT THE FOLLOWING LOCATIONS: WHERE FIELD WELDING OR SLIP CRITICAL BOLTING IS TO BE DONE AND ON A490 BOLTS, ALL WELDS AND BARE SPOTS SHALL RECEIVE ZRC COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT), WITH SURFACE PREPARATION AND APPLICATION IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. ALL A490 BOLTS SHALL RECEIVE ZINC RICH ALUMINUM COATING IN ACCORDANCE WITH ASTM F2833 GR. 1 (MAGN 565 OR APPROVED EQUIVALENT).
- O. ALL STEEL BELOW GRADE SHALL BE ENCASED WITH 4" OF CONCRETE OR PAINTED WITH BITUMINOUS PAINT.
- P. ALL STEEL PAINTING REQUIREMENTS SHALL BE COORDINATED WITH THE PROJECT SPECIFICATIONS AND ARCHITECTURAL DRAWINGS. NOTIFY THE ENGINEER FOR ANY DISCREPANCIES BEFORE THE CONTRACT DOCUMENTS FOR STEEL PAINTING REQUIREMENTS FOR DIRECTION PRIOR TO STEEL FABRICATION.
2. WELDING
- A. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH STANDARDS OF THE AMERICAN WELDING SOCIETY. ELECTRODES MUST MEET E70XX SERIES REQUIREMENTS, LOW HYDROGEN, WITH MINIMUM TENSILE STRESS OF 70,000 PSI. ELECTRODES SHALL BE PRODUCED AND STORED IN ACCORDANCE WITH AWS D1.1 SECTIONS 5.3.
- B. STEEL ERECTOR SHALL PROVIDE A FIRE WATCH DURING ALL FIELD WELDING OPERATIONS.
- C. ALL WELDERS ARE TO BE LICENSED AND CERTIFIED TO AWS STANDARDS OR THOSE REQUIRED BY APPLICABLE BUILDING CODE.
- D. ALL WELDS SHALL BE VISUALLY INSPECTED. ALL COMPLETE JOINT PENETRATION GROOVE WELDS SHALL RECEIVE RADIOGRAPHIC OR ULTRASONIC TESTING. MAGNETIC PARTICLE TEST 20% OF ALL MULTI-PASS FILLET WELDS.
- E. REPORTS OF EACH TEST SHALL BE GIVEN TO THE STRUCTURAL ENGINEER. NO FAILED WELD TO SHALL BE PERMITTED TO REMAIN IN SERVICE. IT IS THE RESPONSIBILITY OF THE TESTING LABORATORY TO PROVIDE TIMELY NOTICE OF FAILED TESTS TO THE CONTRACTOR.
- F. WELDING SHALL PROGRESS IN A MANNER WHICH BALANCES THE STRESSES IN THE MEMBERS, IN ACCORDANCE WITH AWS.
- G. PREHEATING REQUIREMENTS FOR BASE METAL SHALL FOLLOW AWS GUIDELINES.
3. STAIRS
- A. STAIRS SHALL BE STEEL, PAN TYPE CONCRETE TREAD, OR PRECAST CONCRETE TREAD ON STEEL RISERS, DESIGNED FOR 100 PSF LIVE LOAD.
- B. DESIGN OF STAIRS AND LANDINGS SHALL BE THE RESPONSIBILITY OF THE FABRICATOR AND SHALL CONFORM TO OSHA SAFETY IMPROVEMENTS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.
- C. SURROUNDING STRUCTURAL FRAMING HAS BEEN DESIGNED TO CARRY STAIR LOADS BASED ON THE LOADING ASSUMPTIONS AND LOCAL REINFORCEMENT AS PER THE STRUCTURAL STEEL NOTES. ATTACHMENT POINTS OUTSIDE OF THESE REQUIREMENTS WILL REQUIRE BRACING BY THE STAIR CONTRACTOR TO RESOLVE ECCENTRIC FORCES ON THE BUILDING STRUCTURE WITH APPROVAL OF THE ARCHITECT AND ENGINEER.
4. STEEL DECK AND SHEAR STUDS
- A. ROOF DECK SHALL BE GALVANIZED AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A653 COATING CLASS 80. UNITS SHALL BE WELDED TO JOISTS OR BEAMS WITHIN 5/8" PUDDLE WELDS IN A 36X PATTERN, U.O.N. SIDE LAPS ARE TO BE WELDED AT A MAXIMUM SPACING OF 36" ON CENTER, U.O.N. DECK SHALL BE CONTINUOUS OVER A MINIMUM OF 2 SPANS.
- B. FLOOR DECK SHALL BE GALVANIZED AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A653 COATING CLASS 80. UNITS SHALL BE WELDED TO JOISTS OR BEAMS WITHIN 5/8" PUDDLE WELDS A 36X PATTERN. SIDE LAPS ARE TO BE WELDED AT A MAXIMUM SPACING OF 36" ON CENTER. FLOOR DECK SHALL BE CONTINUOUS OVER A MINIMUM OF 2 SPANS.
- C. AS AN ALTERNATE TO PUDDLE WELDING OF STEEL DECKING, HILTI X-HSN OR X-ENP 19 POWDER ACTUATED FASTENERS (PAFs) WITH EQUIVALENT OR GREATER CAPACITY TO SPECIFIED ATTACHMENT CAN BE INSTALLED. IF PAFs ARE USED, USE HILTI S-CLC SIDE LAP CONNECTORS. THE CONTRACTOR SHALL SUBMIT ALTERNATIVE FASTENING PATTERN TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO INSTALLATION.
- D. PAFs SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL BE CERTIFIED AND TRAINED BY THE MANUFACTURERS REPRESENTATIVE FOR PROPER USE AND INSTALLATION OF PAFs.
- E. SHEAR CONNECTOR SHALL BE HEADED STUD TYPE, ASTM A490 GRADE 1015 OR 1020 COLD FINISHED CARBON STEEL, PROVIDE STUDS OF THE SIZE AND SPACING AS SPECIFIED ON DRAWINGS OR A MAXIMUM SPACING OF 1'-0" O.C. EVEN IF THIS EXCEEDS THE NUMBER CALLED FOR ON THE DRAWINGS.
- F. DECK UNITS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH CURRENT "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, AND ROOF DECKS" PUBLISHED BY THE STEEL DECK INSTITUTE.
- G. BECKING CONTRACTOR SHALL PROVIDE ADDITIONAL STEEL ANGLE SUPPORTS AT ALL COLUMNS AND ELSEWHERE WHERE FRAMING OR CONNECTIONS INTERFERE OR INTERRUPT SEATING OF MORE THAN ONE DECK RIB. PERMANENT ANGLES SHALL BE PAINTED.
- H. PROVIDE SUPPORTS FOR METAL BECKING AT ALL OPENINGS.

STRUCTURAL STEEL (CON'T)

1. GENERAL
- A. ALL JOISTS INDICATED ON PLAN THUS: V1/2 SHALL BE COMPOSITE JOISTS MANUFACTURED BY VESCOM STRUCTURAL SYSTEMS, INC.
- B. PROVIDE METAL DECK FORMS FOR VESCOM COMPOSITE JOIST AND METAL FORM DECK SYSTEM (22 GAGE, 1-5/16" DEEP).
- C. WELDED WIRE FABRIC FOR USE IN VESCOM FLOOR SYSTEM SHALL BE INSTALLED IN ROLLS ONLY. NO SHEETS SHALL BE PERMITTED.
- D. PROVIDE SLURRING JOIST BEARINGS FOR SLOPES EXCEEDING 1/4 INCH PER FOOT.
- E. PROVIDE A MINIMUM OF 2-1/2" BEARING ON STEEL BEAMS OR 4" ON CONCRETE OR MASONRY. STAGGER JOISTS IF NECESSARY TO ACHIEVE REQUIRED BEARING.
- F. PLATE BARS AND MOMENT FRAMES OF JOISTS AT COLUMNS. CONNECT BOTTOM CHORD TO COLUMNS ONLY AFTER ALL DEAD LOAD IS APPLIED. TOP CHORD BEARING OF ALL JOISTS AT COLUMNS TO BE BOLTED.
- G. ALL VESCOM COMPOSITE JOISTS AND ACCESSORIES SHALL RECEIVE ONE SHOP COAT OF PAINT IN ACCORDANCE WITH STEEL JOIST INSTITUTE SPECIFICATION WITH THE EXCEPTION THAT TOP CHORD OF JOIST SHALL NOT BE PAINTED.
- H. ERECTION STABILITY REQUIREMENTS OF THE VESCOM ERECTION MANUAL SHALL BE STRICTLY FOLLOWED.
- I. ALL VESCOM COMPOSITE JOISTS SHALL BE DESIGNED TO LIMIT LIVE LOAD DEFLECTION TO 1/480 OF SPAN.

VMDO

VMDO Architects

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434.296.5684

200 E Market Street

Charlottesville, VA 22902

1200 18th Street NW Ste 700

Washington, DC 20036



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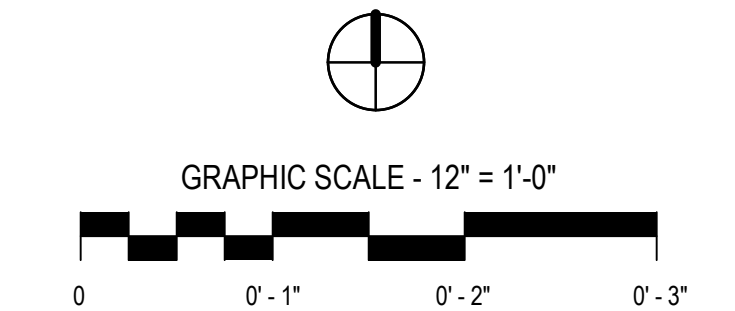
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VMDO Project Number

201049

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ISSUES AND REVISIONS

NO.	SUBMITTAL	DATE
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S000-SERIES - GENERAL  
PROJECT INFORMATION

S-002





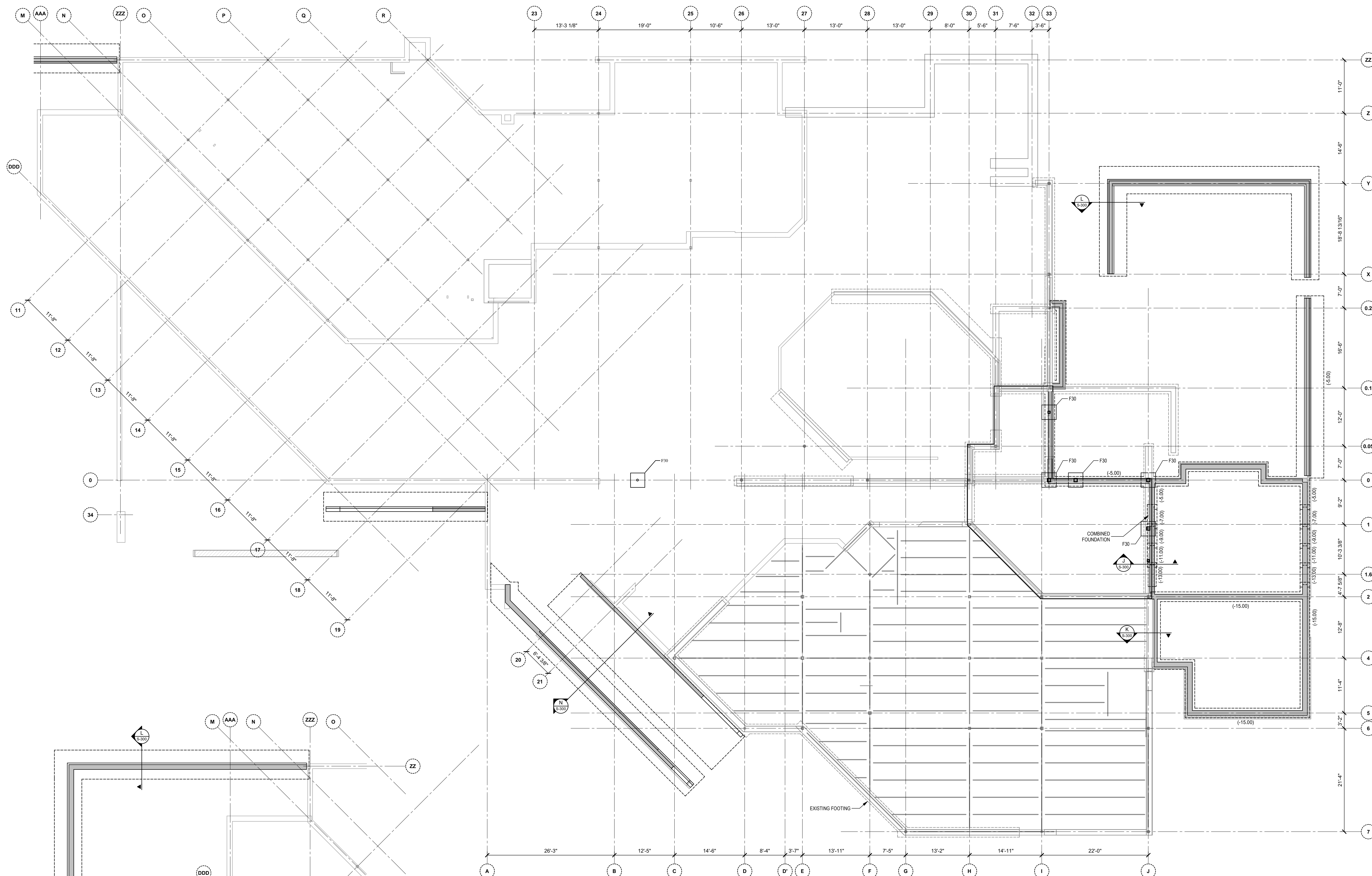
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VMDO Project Number 201049

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Drawn By	DAB

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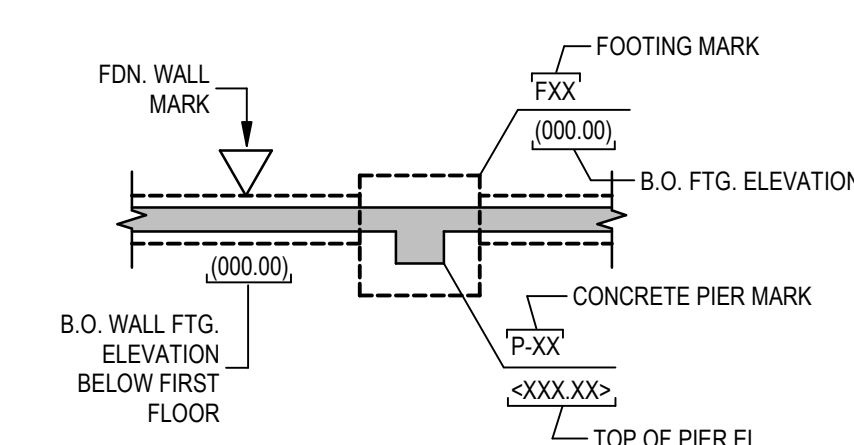
## FOUNDATION PLAN

# S-100





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




FOUNDATION PLAN LEGEND






FOUNDATION WALLS MARKED ON PLAN THUS:

- |   |                               |   |
|---|-------------------------------|---|
|  | BASEMENT FOUNDATION WALL MARK | REFER TO<br>FOUNDATION WALL<br>SCHEDULE ON SXXX |
|  | CANTILEVERED FDN. WALL MARK   |   |

FOUNDATION WALL TYPE:

- FOUNDATION WALL TYPE**
- |   |  |
|---|--|
|  | REINFORCED CONCRETE                          |
|  | CMU (ASTM C-90 BLOCK)                        |
|  | WALL BELOW SLAB<br>(REFER TO MARK OR DETAIL) |

CONCRETE SLAB SYMBOLS:

-  CHANGE IN ELEVATION (SEE X / SXXX U.O.N.)  
 FLUSH CHANGE IN THICKNESS  
 (SEE X / SXXX U.O.N.)  
 DEPRESSION CHANGE IN THICKNESS  
 (SEE X / SXXX U.O.N.)

FOUNDATION PLAN NOTES

1. DATUM ELEVATION = 154.50 (MAYD 88)  
a. ELEVATIONS INDICATED ON PLAN THIS (+/-) ARE IN RELATION TO THIS DATUM ELEVATION.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS, EXTENTS, AND DEPTHS OF SLAB PENETRATIONS.
3. SLAB ON GRADE SHALL BE 6" NORMALWEIGHT CONCRETE REINFORCED WITH 6"x6" W/2-1/2" WW OR 10#M, VAPOR BARRIER OR 9" POROUS FILL.  
a. SEE GENERAL NOTES FOR CONCRETE STRENGTHS AND ADDITIONAL REQUIREMENTS.
4. PROVIDE CONTROL JOINTS IN SLAB IN ACCORDANCE WITH DETAIL H, S-3000. SPACING BETWEEN CONTROL JOINTS SHALL NOT EXCEED 15'-0".
5. PROVIDE PENETRATION JOINTS AT COLUMNS IN ACCORDANCE WITH DETAIL K ON S3000.
6. PROVIDE MACRO-SYNTHETIC FIBER REINFORCING IN 1% LIFT OF STEEL REINFORCING SPECIFIED ABOVE AT CONTRACTOR'S OPTION. REFER TO GENERAL NOTES FOR DOSING AND OTHER REQUIREMENTS.
7. UNLESS OTHERWISE NOTED, WALL FOOTINGS SHALL BE 12" THICK BY THE WIDTH OF THE WALL PLUS 12" (6" PROJECTION ON EACH SIDE OF WALL) REINFORCED WITH 2#5 CONT.
8. COORDINATE FLOOR SLOPES AND FLOOR DRAIN LOCATIONS WITH ARCH. AND MEP DRAWINGS.
9. DO NOT BACKFILL CONCRETE BASEMENT WALLS PRIOR TO FRAMED LEVEL, SLAB AT TOP OF WALL BEING IN PLACE WITH SUFFICIENT WALL BRACING, DESIGN OF TEMPORARY SHORING TO BE PROVIDED BY THE CONTRACTOR.
10. COORDINATE SIZE AND LOCATIONS OF ALL FLOOR DRAINS AND SLAB PENETRATIONS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS. OPENINGS SHALL BE REINFORCED OR SUPPORTED IN ACCORDANCE WITH DETAIL F, S-3100. UNLESS OTHERWISE NOTED, ALL PENETRATIONS SHALL BE 12" DIA.

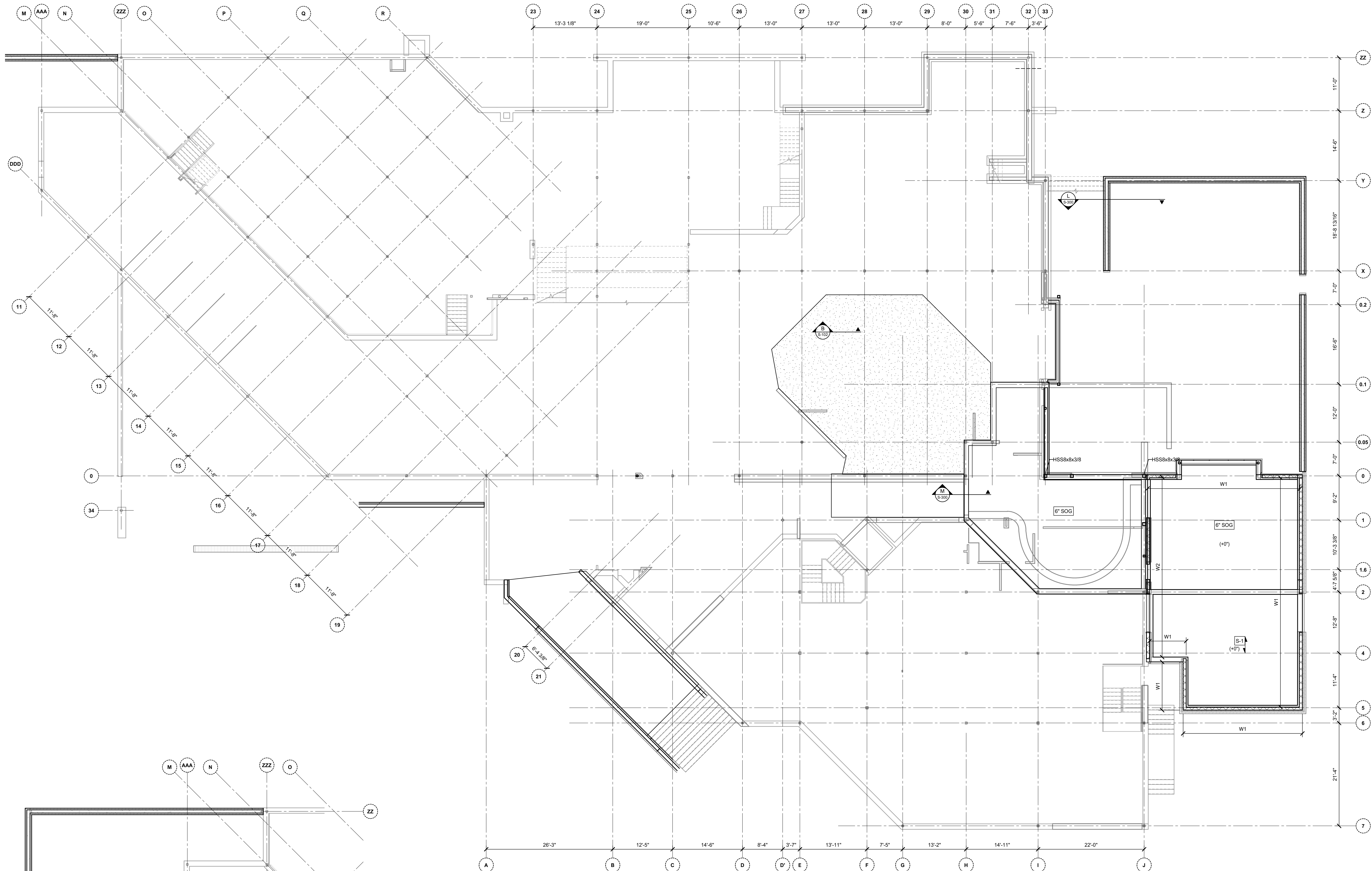


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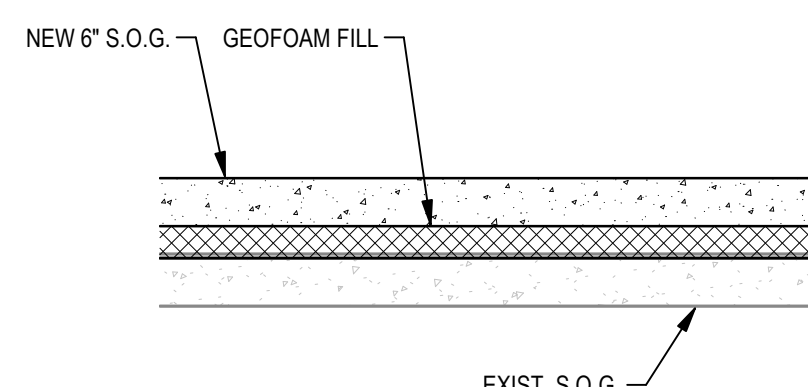
Client Project Number  
VMDO Project Number 201049Checked By  
Drawn By AT  
DABISSUES AND REVISIONS  
NO. SUBMITTAL DATEMAIN LEVEL FRAMING  
PLAN

S-102

MAIN LEVEL PART PLAN - SOUTH OF GL. AAA  
1/8" = 1'-0"

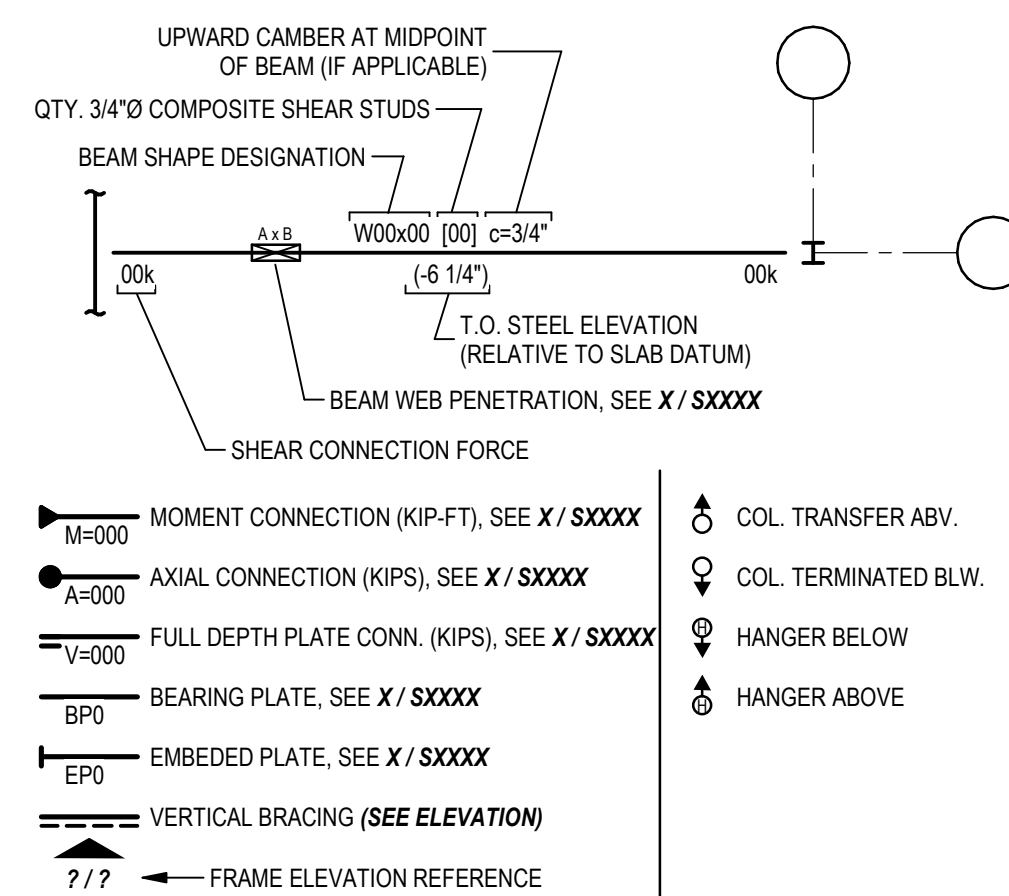
## PLAN NOTES:

- DATUM ELEVATION = 147.50 (NAVD 88).  
A. ELEVATIONS INDICATED ON PLAN THUS: (+1') ARE IN RELATION TO THIS DATUM ELEVATION.  
B. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS, EXTENTS, AND DEPTHS OF SLAB DEPRESSIONS.
- TOP OF STEEL DATUM ELEVATION = 000.00 (NAVD 88).
- ELEVATION TOP OF STEEL BEAMS AND BOTTOM OF ROOF DECK INDICATION ON PLAN THUS (+0') IS MEASURED FROM ELEVATION 000.00.
- STRUCTURAL SLAB SHALL BE 3 1/2" LIGHTWEIGHT CONCRETE REINFORCED WITH 6"x6" W2.1W2.1 WWF OVER 3"x18 GAGE COMPOSITE METAL DECK (TOTAL THICKNESS = 6 1/2").
- 3/4" Ø x 4 1/2" LONG COMPOSITE SHEAR STUDS SHALL BE RESISTANCE WELDED THROUGH METAL DECK TO THE TOP FLANGE OF THE STEEL FRAMING. PROVIDE A MINIMUM OF (1) STUD PER FOOT UNLESS OTHERWISE NOTED.
- STRUCTURAL ROOF DECK SHALL BE 1.5" x 18 GAGE TYPE B GALVANIZED METAL ROOF DECK.
- COORDINATE SIZE AND LOCATIONS OF ALL FLOOR DRAINS AND SLAB PENETRATIONS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS. OPENINGS SHALL BE REINFORCED OR SUPPORTED IN ACCORDANCE WITH DETAIL F / S-310 UNLESS OTHERWISE NOTED.
- REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION AND SIZES OF ROOF PENETRATIONS. PROVIDE SUPPORT FOR DECK AT OPENINGS AS SHOWN IN DETAIL F / S-310.

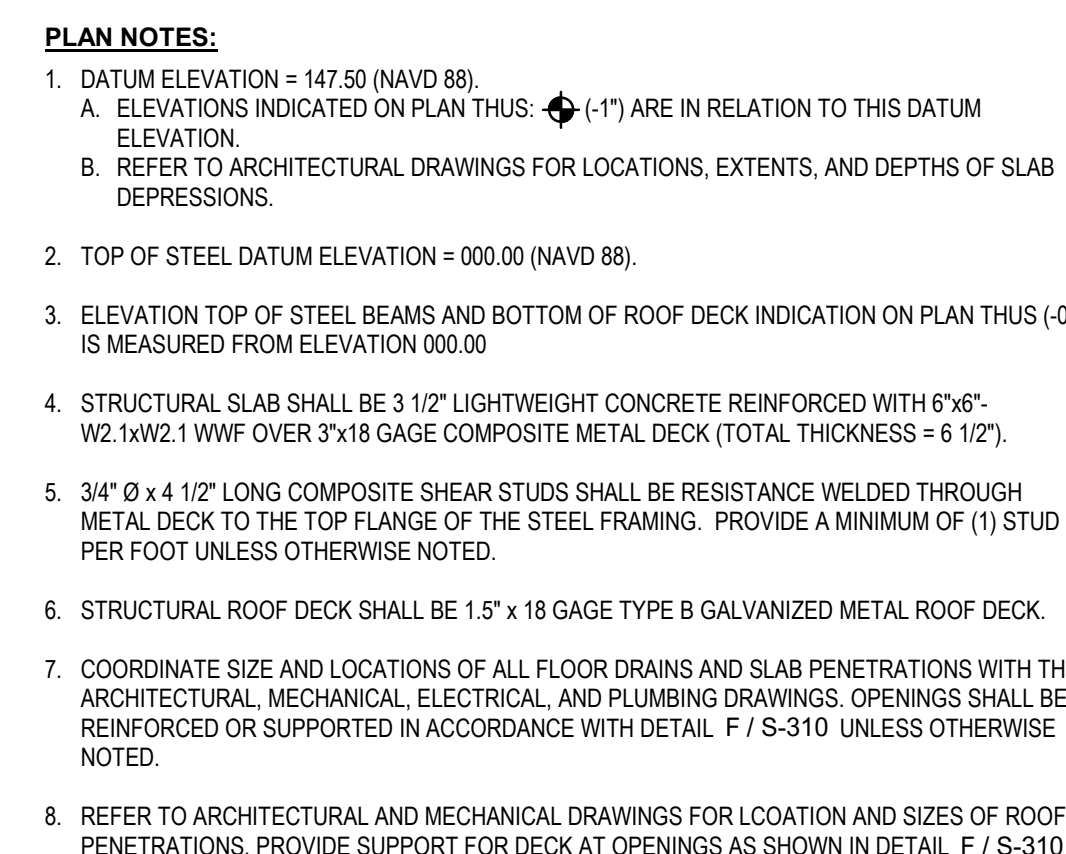
B SLAB INFILL DETAIL  
S-102 1/2" = 1'-0"MAIN LEVEL  
1/8" = 1'-0"

MANSONRY WALL REINFORCEMENT SCHEDULE		
WALL MARK	WALL THICKNESS	VERTICAL REINFORCEMENT
W1	8"	#5@16
W2	8"	#5@8

## STEEL FRAMING SYMBOL LEGEND







UPWARD CAMBER AT MIDPOINT  
OF BEAM (IF APPLICABLE)

QTY. 3/4" COMPOSITE SHEAR STUDS

BEAM SHAPE DESIGNATION

00k

A-B

W6x00 [00] c=34"

±6 1/4"

T.O. STEEL ELEVATION  
(RELATIVE TO SLAB DATUM)

BEAM WEB PENETRATION. SEE X/XXXXXX

00k

SHEAR CONNECTION FORCE

M=XXXX

MOMENT CONNECTION (KIP-FT) SEE X/XXXXXX

A=XXXX

AXIAL CONNECTION (KIPS) SEE X/XXXXXX

V=XXXX

FULL DEPTH PLATE CONN. (KIPS) SEE X/XXXXXX

B-P

BEARING PLATE. SEE X/XXXXXX

E-P

EMBEDDED PLATE. SEE X/XXXXXX

V=XXXX

VERTICAL BRACING (SEE ELEVATION)

2/2

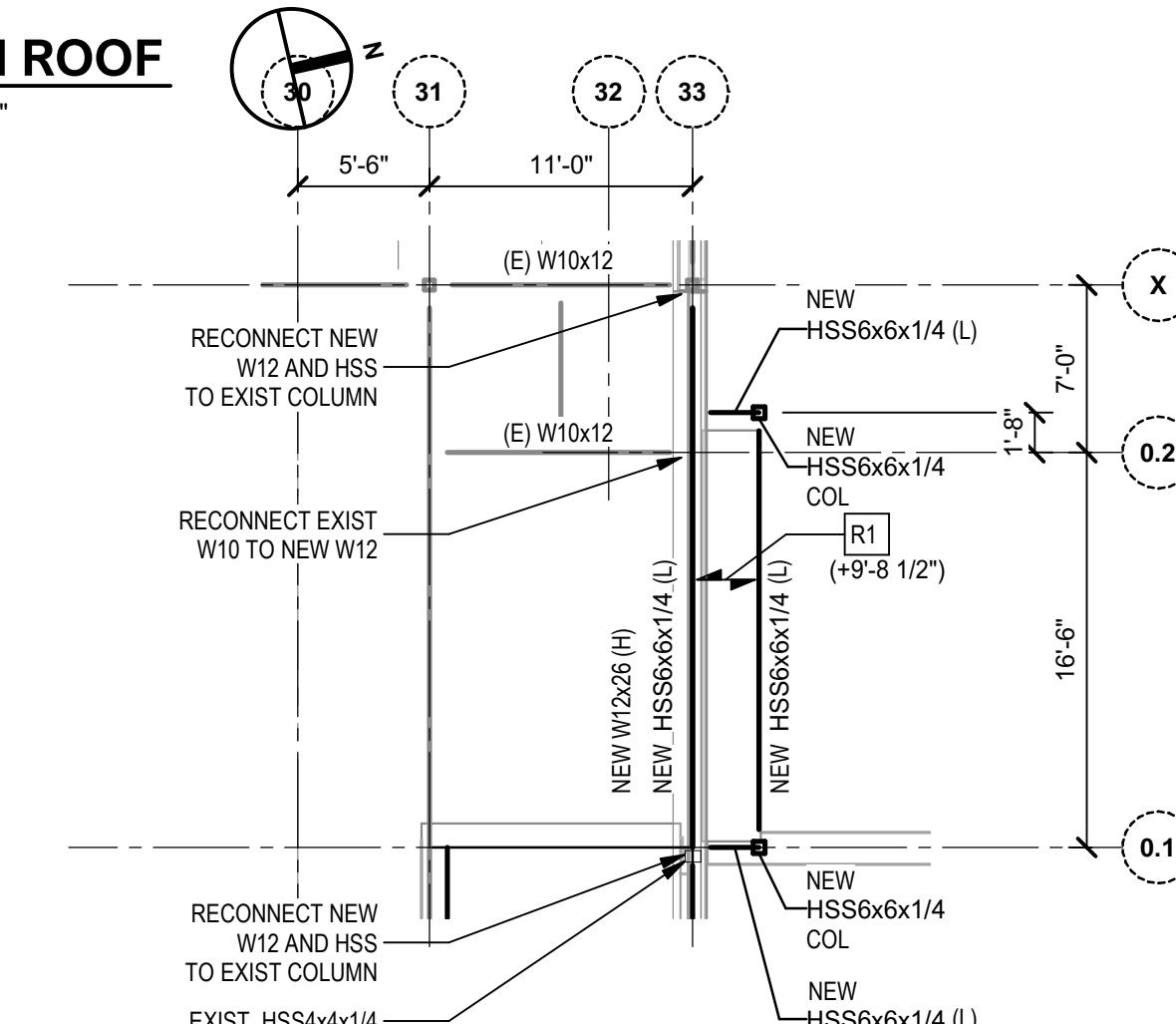
FRAME ELEVATION REFERENCE

COL. TRANSFER ABV.

COL. TERMINATED BLW.

HANGER BELOW

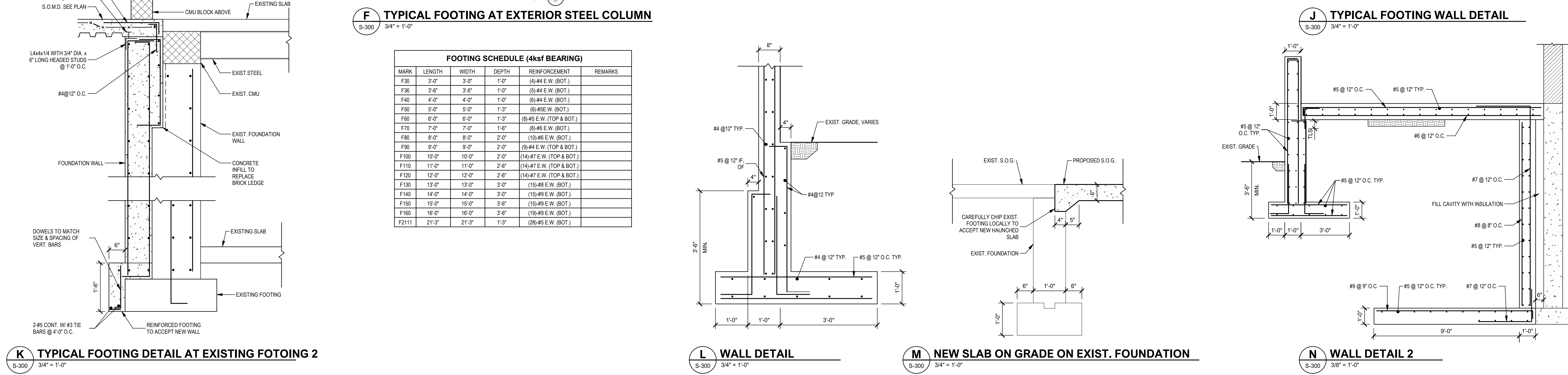
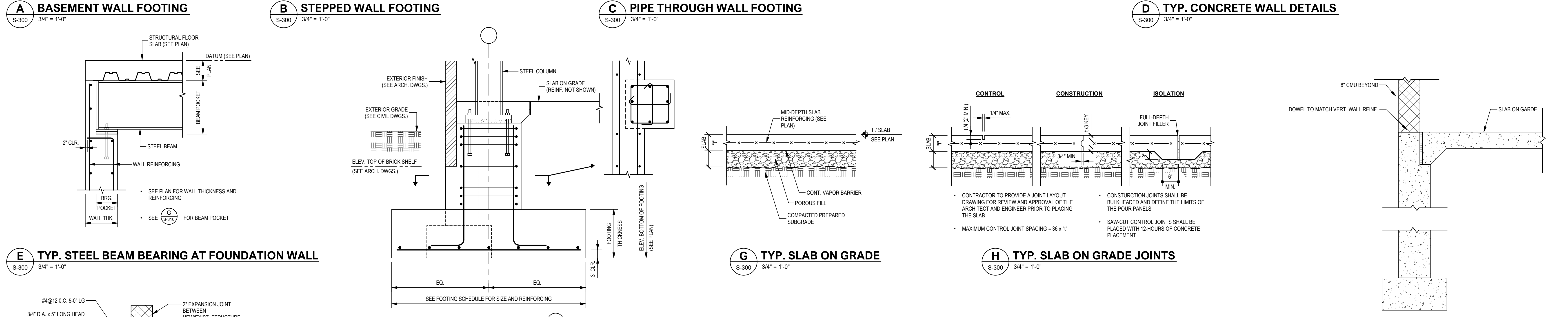
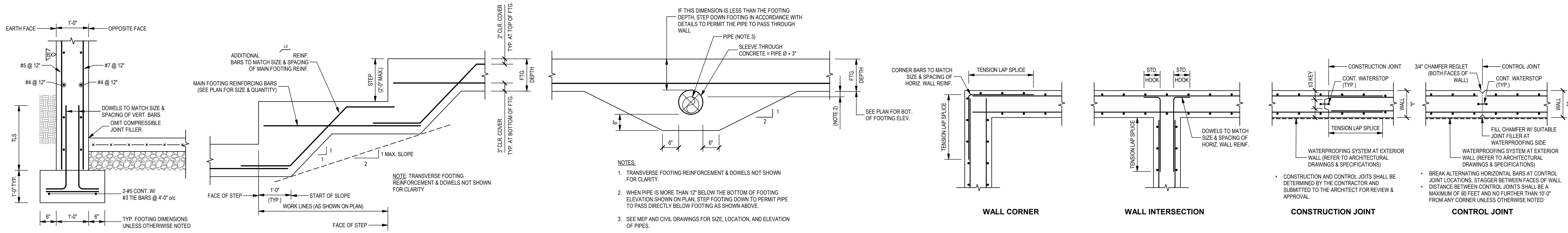
HANGER ABOVE

$$1/8'' = 1'-0''$$


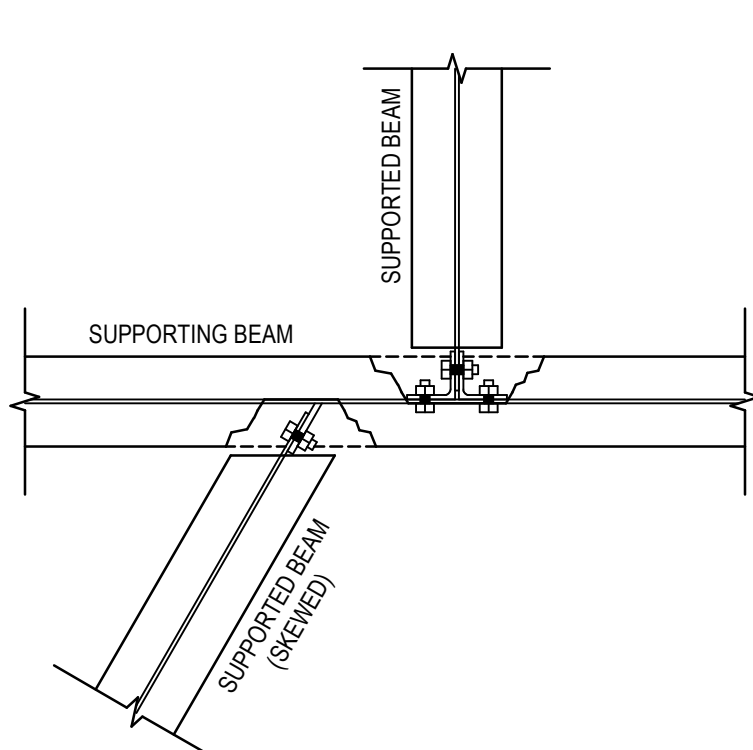
### A MAIN ROOF CANOPY - DEMO

**B MAIN ROOF CANOPY - NEW CONSTRUCTION**





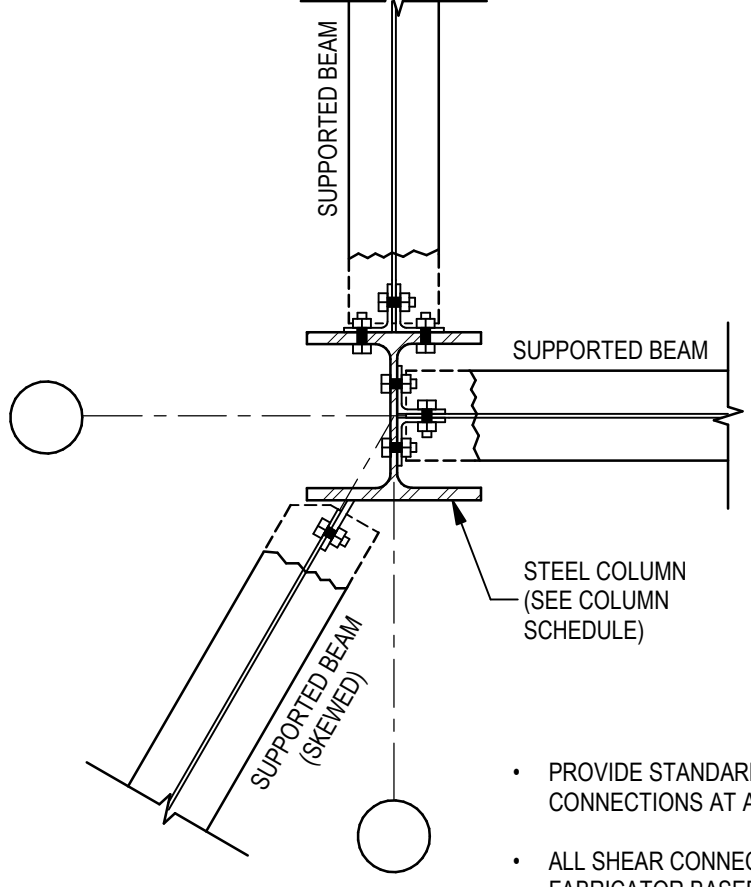




BEAM SIZE	MIN. ROWS OF BOLTS	MIN. SHEAR CAPACITY (ASD)
W8, C8, C9	2	10 k
W10, C10	2	15 k
W12, C12	3	25 k
W14, C15	3	35 k
W16	3	45 k
W18	3	60 k
W21	4	70 k
W24	4	75 k
W27	5	90 k
W30	5	115 k
W33	6	135 k
W36	6	160 k
W40	6	185 k
W44	7	210 k

- PROVIDE STANDARD AISI DOUBLE ANGLE CONNECTIONS OR SINGLE PLATE CONNECTIONS AT ALL BEAM TO BEAM CONNECTIONS
- ALL SHEAR CONNECTIONS SHALL BE DESIGNED AND DETAILED BY THE STEEL FABRICATOR BASED ON THE SHEAR VALUES INDICATED ON FRAMING PLANS. IF NO REACTIONS ARE INDICATED, CONNECTIONS SHALL BE DESIGNED FOR THE MINIMUM REQUIREMENTS INDICATED IN TABLE #2 (ABOVE)
- CONNECTION DESIGN CALCULATIONS SHALL BE SUBMITTED FOR REVIEW UNDER SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF THE PROJECT
- CONNECTION DESIGNS SHALL BE BASED ON THE PROVISIONS OF PART 10 OF THE AISI MANUAL OF STEEL CONSTRUCTION (SEE GENERAL NOTES FOR EDITION)
- BOLTS STRENGTH BASED ON BEARING CAPACITY UNLESS OTHERWISE NOTED

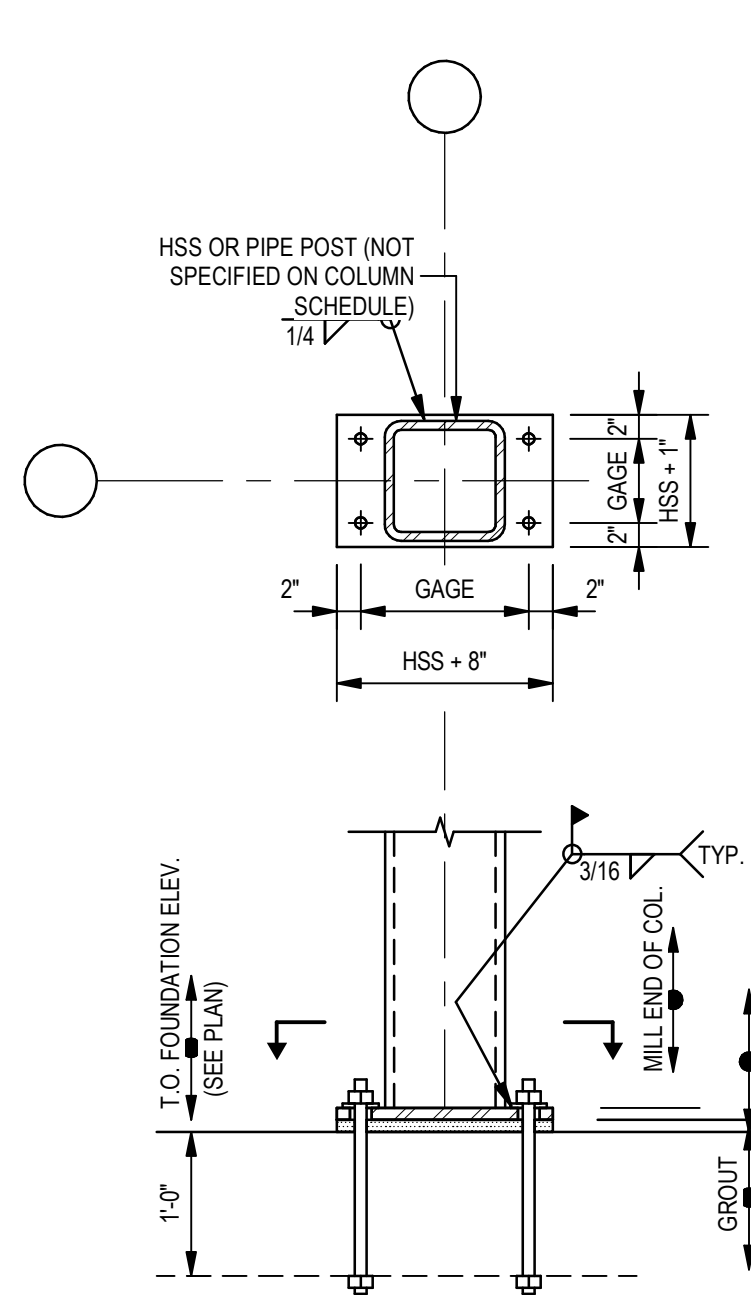
**A TYP. SHEAR CONNECTION AT BEAM**  
S-310 3/4" = 1'-0"



BEAM SIZE	MIN. ROWS OF BOLTS	MIN. SHEAR CAPACITY (ASD)
W8, C8, C9	2	10 k
W10, C10	2	15 k
W12, C12	3	25 k
W14, C15	3	35 k
W16	4	45 k
W18	5	60 k
W21	6	70 k
W24	7	75 k
W27	7	90 k
W30	8	115 k
W33	9	135 k
W36	10	160 k
W40	11	185 k
W44	12	210 k

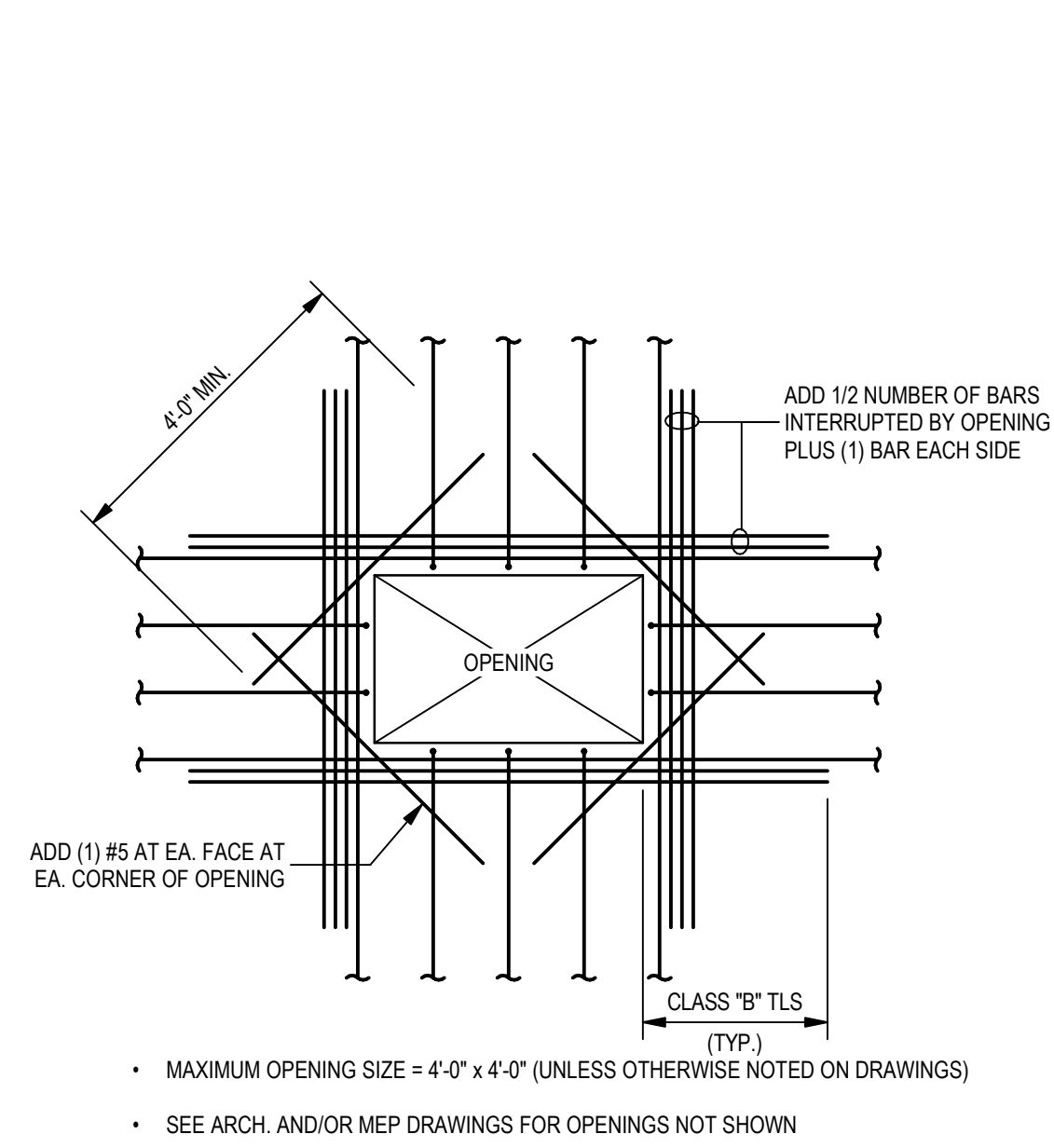
- PROVIDE STANDARD AISI DOUBLE ANGLE CONNECTIONS OR SINGLE PLATE CONNECTIONS AT ALL BEAM TO BEAM CONNECTIONS
- ALL SHEAR CONNECTIONS SHALL BE DESIGNED AND DETAILED BY THE STEEL FABRICATOR BASED ON THE SHEAR VALUES INDICATED ON FRAMING PLANS. IF NO REACTIONS ARE INDICATED, CONNECTIONS SHALL BE DESIGNED FOR THE MINIMUM REQUIREMENTS INDICATED IN TABLE #1 (ABOVE)
- CONNECTION DESIGN CALCULATIONS SHALL BE SUBMITTED FOR REVIEW UNDER SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF THE PROJECT
- CONNECTION DESIGNS SHALL BE BASED ON THE PROVISIONS OF PART 10 OF THE AISI MANUAL OF STEEL CONSTRUCTION (SEE GENERAL NOTES FOR EDITION)
- BOLTS SHALL BE FULLY PRETENSIONED WITH STRENGTH BASED ON BEARING CAPACITY UNLESS OTHERWISE NOTED

**B TYP. SHEAR CONNECTION AT COLUMN**  
S-310 3/4" = 1'-0"



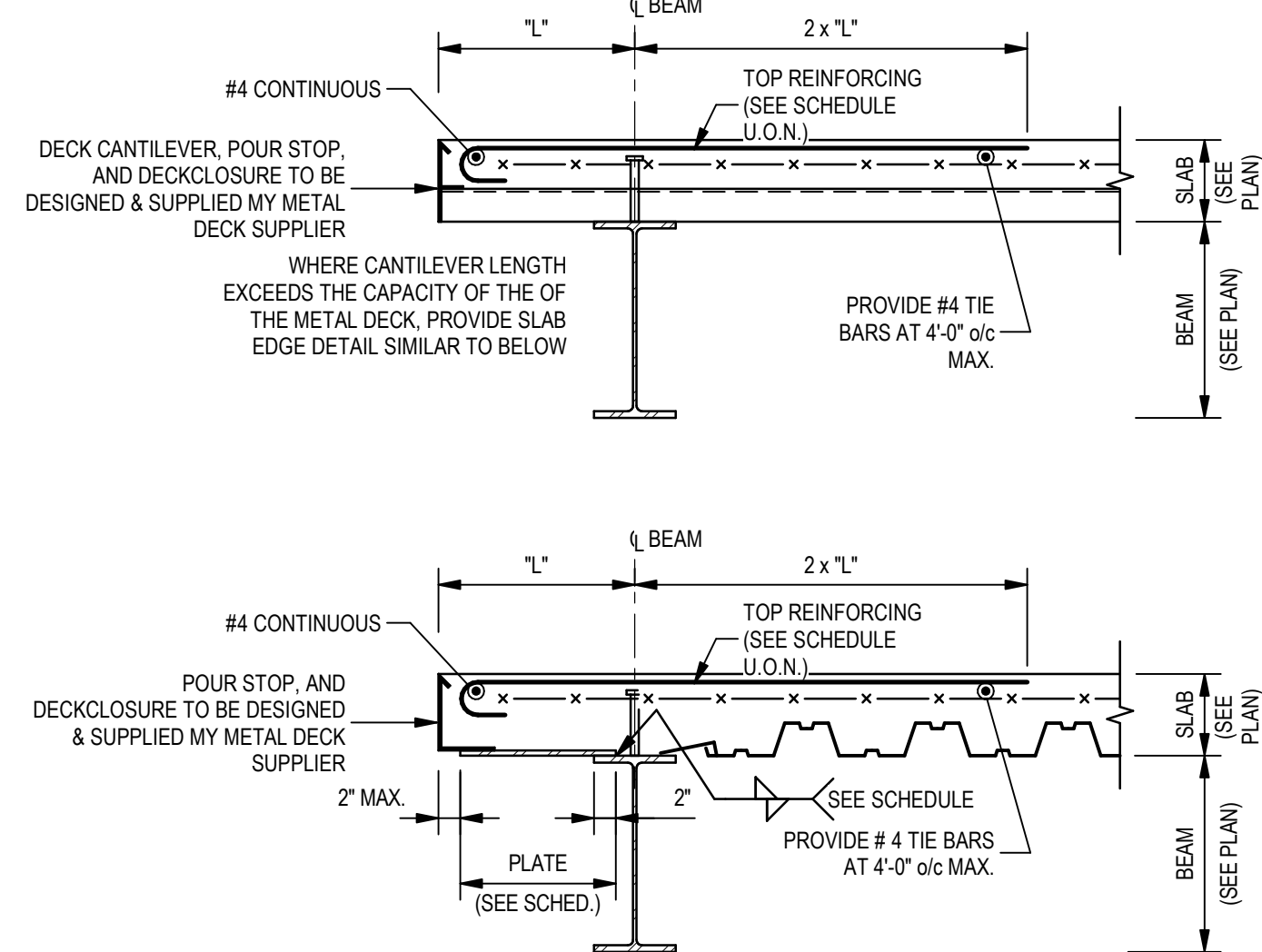
- FOR ALL HSS POSTS NOT SPECIFIED ON COLUMN SCHEDULE, PROVIDE THE FOLLOWING UNLESS OTHERWISE NOTED:
- 1" THK. BASE PLATE (SEE PLAN DETAIL FOR LENGTH & WIDTH WITH OVERSIZED HOLES)
  - (4) - 3/4" Ø F1554 GR. 55 "WELDABLE" ANCHOR RODS WITH 3" SQUARE x 1/4" PLATE WASHERS WITH STANDARD HOLES.
  - 1" NON-SHRINK GROUT BETWEEN BOTTOM OF BASE PLATE AND TOP OF CONCRETE FOUNDATION

**C TYP. HSS BASE PLATE DETAIL**  
S-310 3/4" = 1'-0"



- MAXIMUM OPENING SIZE = 4'-0" x 4'-0" (UNLESS OTHERWISE NOTED ON DRAWINGS)
- SEE ARCH. AND/OR MEP DRAWINGS FOR OPENINGS NOT SHOWN

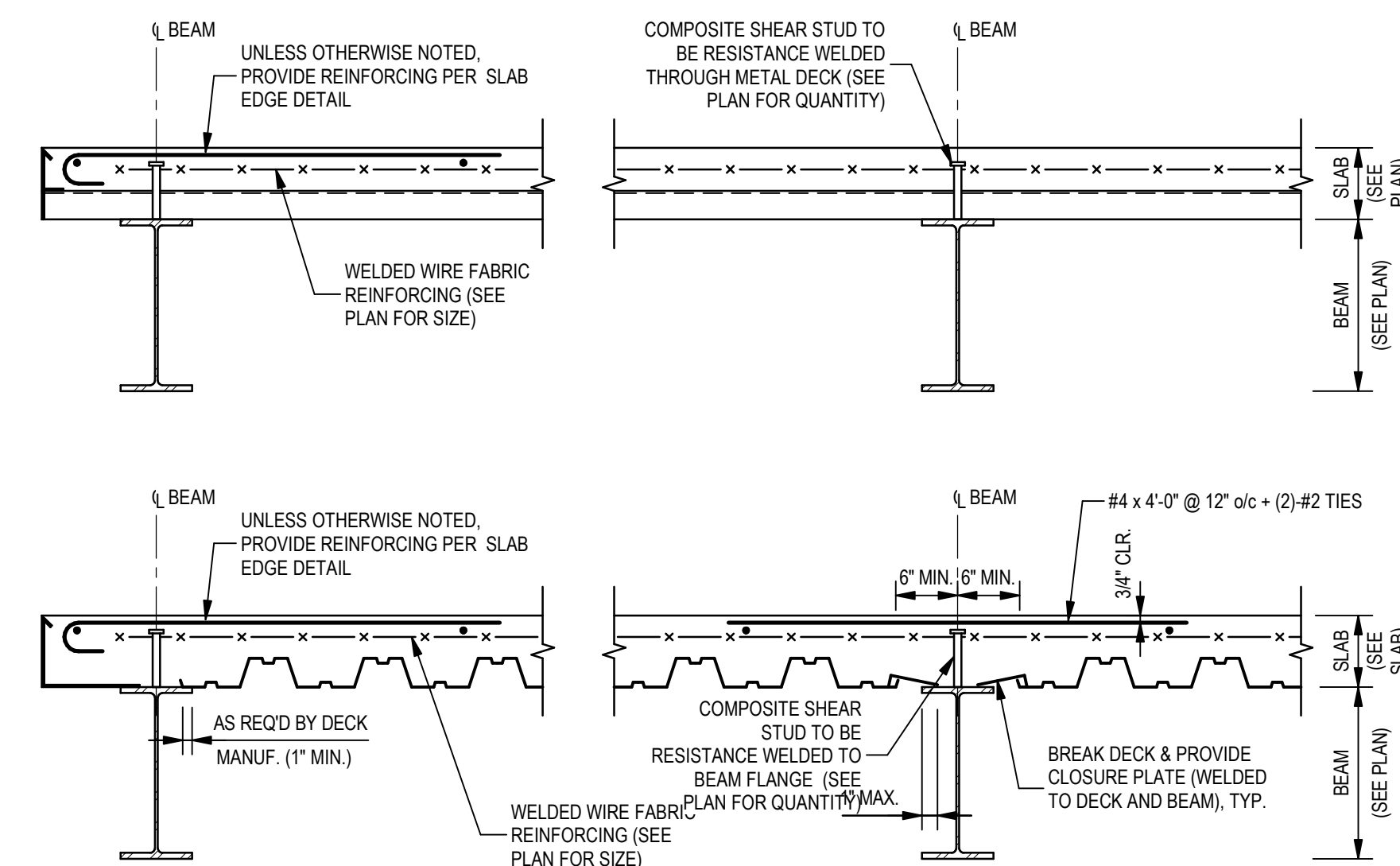
**D TYPICAL CONCRETE WALL OPENING**  
S-310 3/4" = 1'-0"



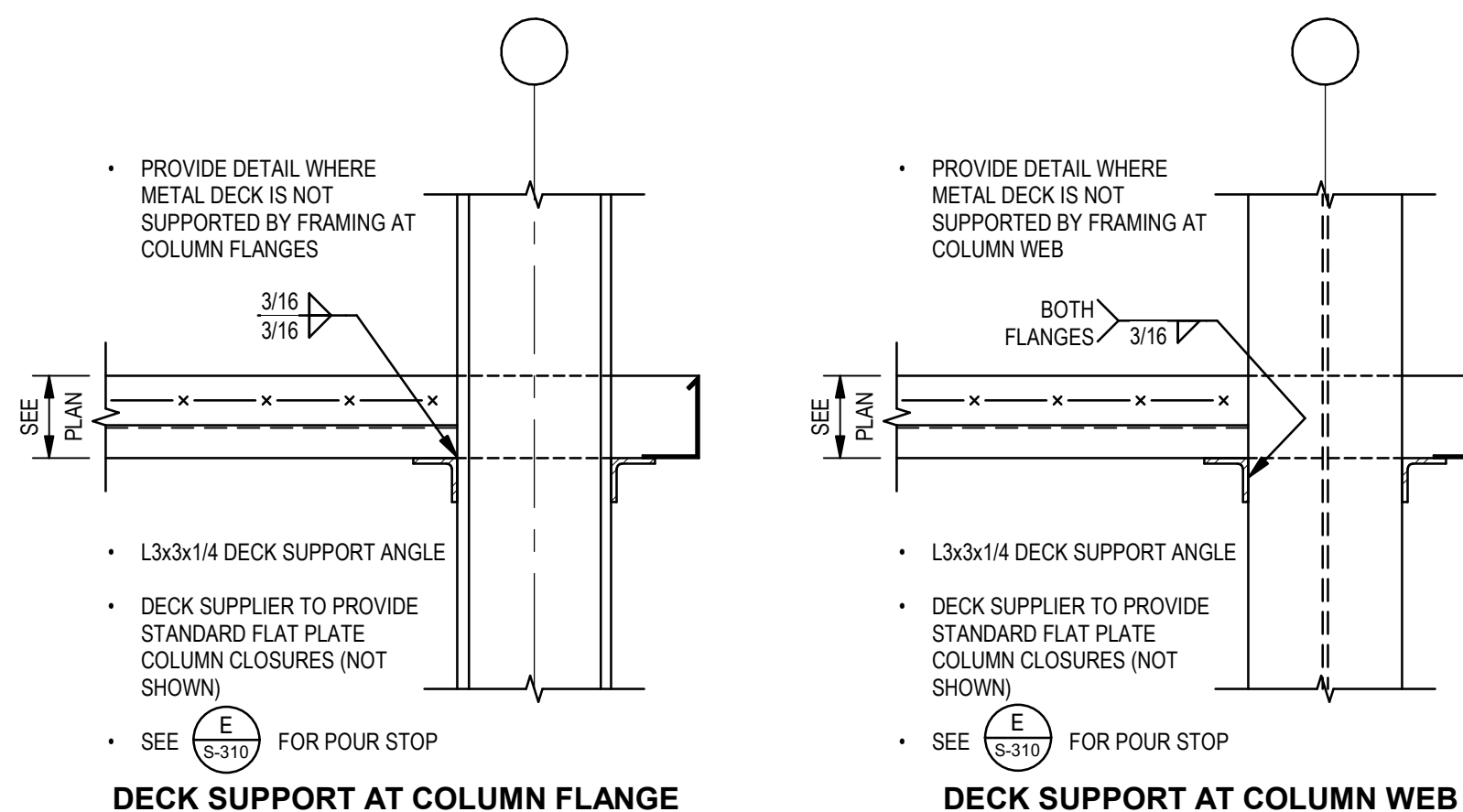
CANTILEVER "L"	PLATE THKNS.	WELD SIZE	PITCH	TOP REINF.
L ≤ 1'-0"	PLATE NOT REQD			#4@12
1'-0" < L ≤ 1'-6"	1/4"	3/16	3-12	#4@12
1'-6" < L ≤ 2'-0"	3/8"	1/4	3-12	#4@12
2'-0" < L ≤ 2'-5"	1/2"	1/4	4-12	#4@12
L ≤ 1'-0"	PLATE NOT REQD			#4@12
1'-0" < L ≤ 1'-4"	1/4"	3/16	3-12	#4@12
1'-4" < L ≤ 1'-10"	3/8"	1/4	3-12	#4@12
1'-10" < L ≤ 2'-3"	1/2"	1/4	4-12	#4@12
L ≤ 1'-0"	PLATE NOT REQD			#4@12
1'-0" < L ≤ 1'-6"	1/4"	3/16	3-12	#4@12
1'-6" < L ≤ 2'-0"	3/8"	1/4	3-12	#4@12
1'-10" < L ≤ 2'-5"	1/2"	1/4	4-12	#4@12

- SEE PLANS FOR LOCATION OF SLAB EDGE, FRAMING, AND SLAB INFORMATION
- THIS DETAIL IS NOT APPLICABLE TO CURTAIN WALL ATTACHMENT LOCATIONS, OR WHERE OS LAB EDGE IS OTHERWISE DETAILED WITH ALTERNATE POUR STOPS
- GAGE METAL POUR STOPS SHALL BE DESIGNED AND SUPPLIED BY THE METAL DECK SUPPLIER (14 GAGE MINIMUM)
- TOP REINFORCING AT SLAB EDGE IS TO BE PROVIDED UNLESS OTHERWISE NOTED ON FRAMING PLANS OR DETAILS
- FOR SLAB EDGE/POUR STOP CONDITIONS AT COLUMNS, SLAB CORNERS, OR OTHER OBSTRUCTIONS, SEE ADDITIONAL TYPICAL DETAILS OR NOTES

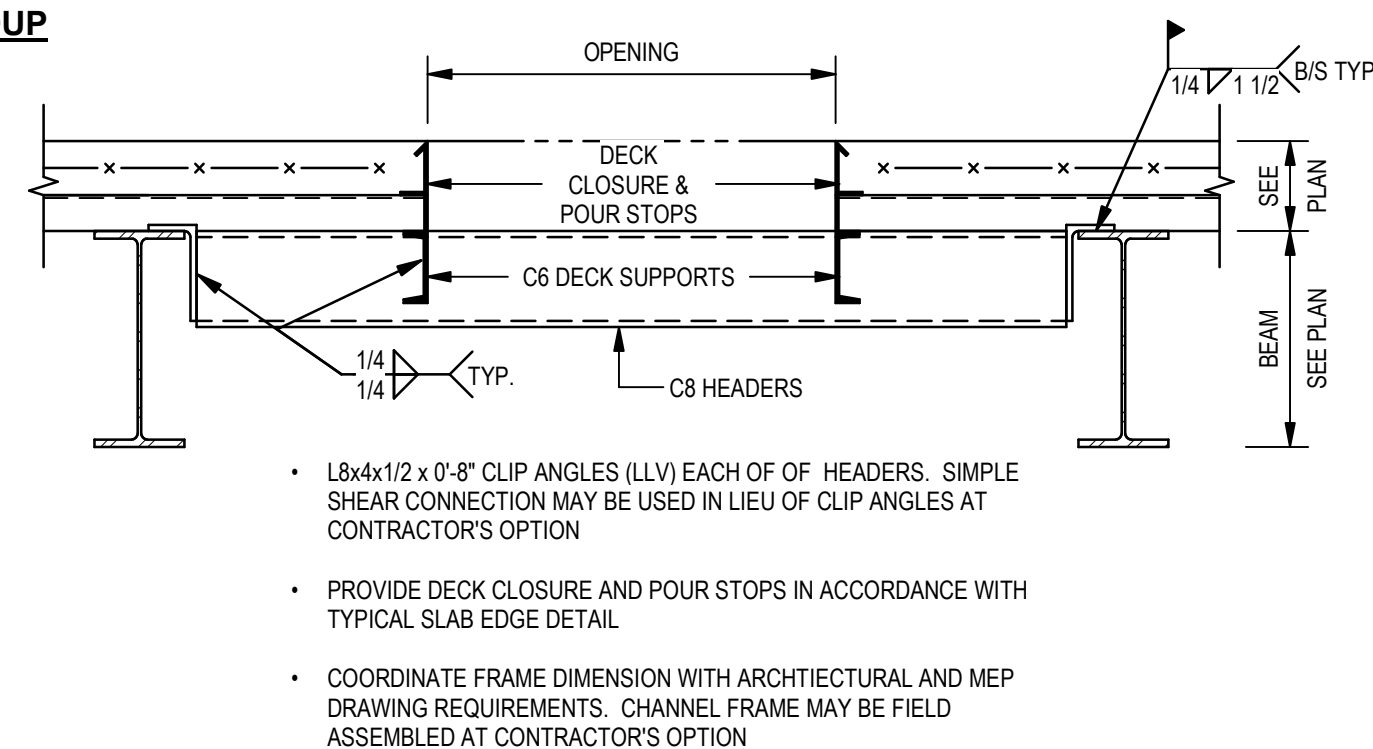
**E TYP. SLAB ON METAL DECK EDGE**  
S-310 3/4" = 1'-0"



**J TYP. SLAB ON METAL DECK**  
S-310 3/4" = 1'-0"



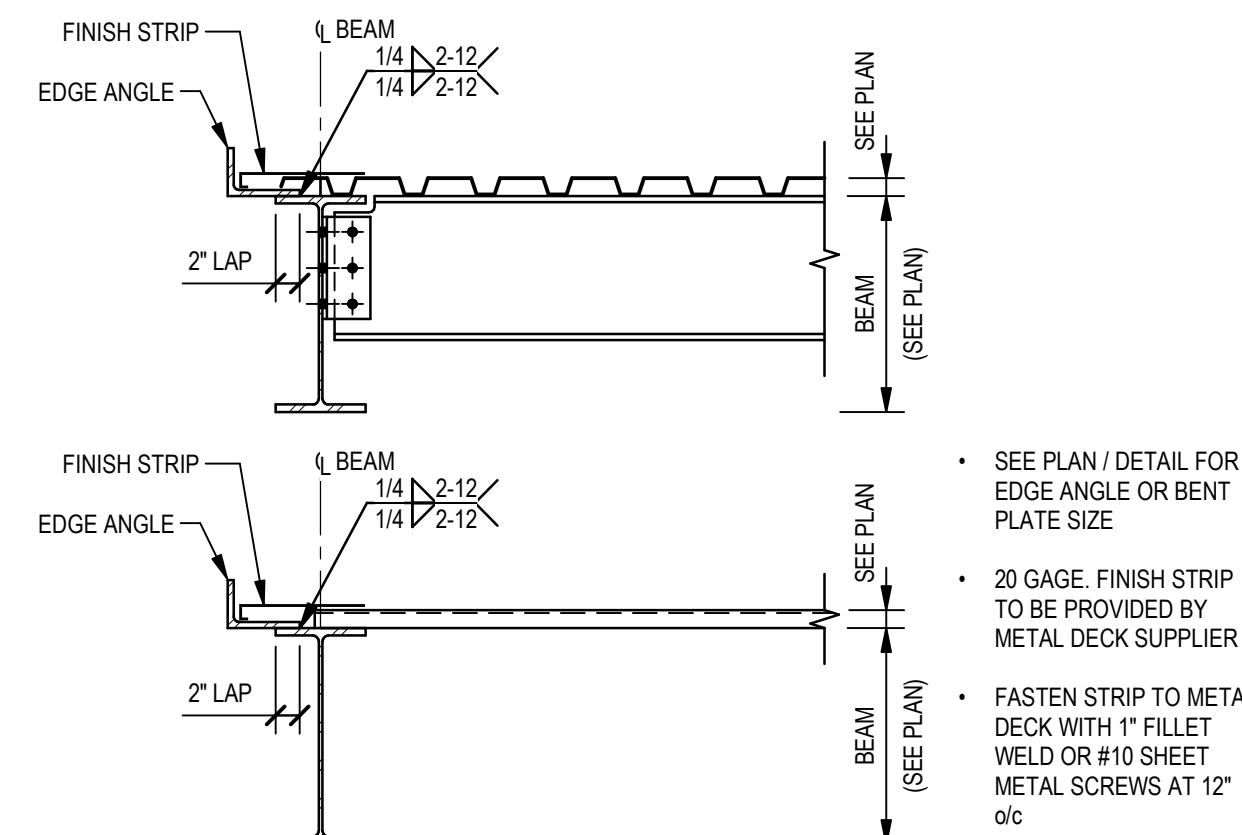
**L TYP. SLAB ON METAL DECK AT COLUMN**  
S-310 3/4" = 1'-0"



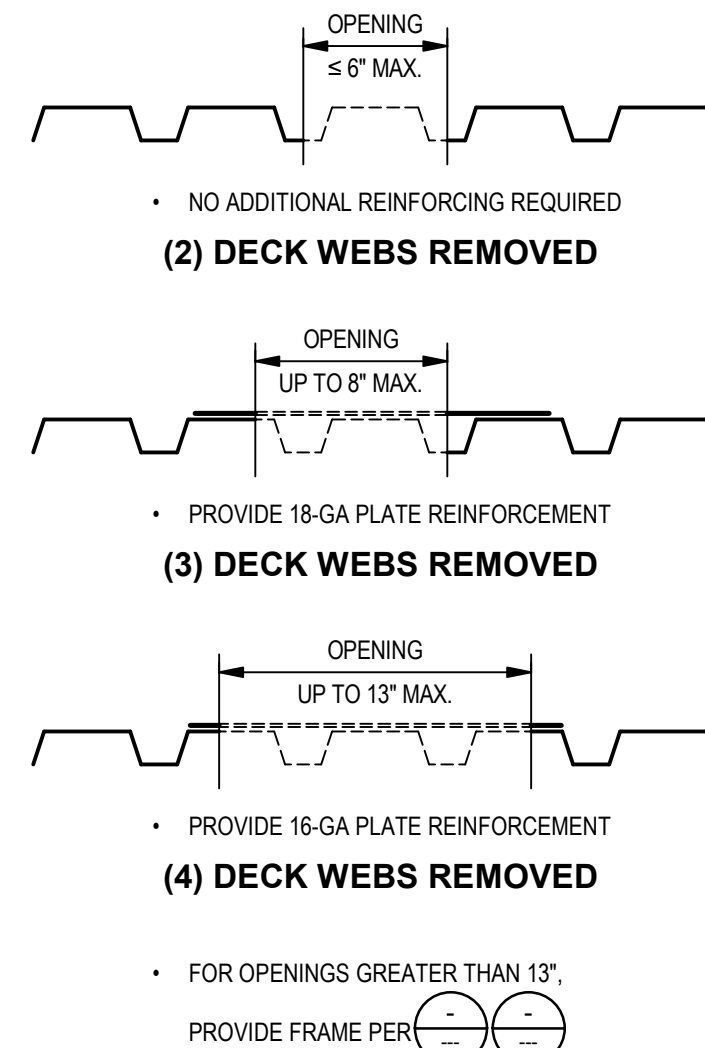
- L8x4x1/2 x 0'-8" CLIP ANGLES (LLV) EACH OF OF HEADERS. SIMPLE SHEAR CONNECTION MAY BE USED IN LIEU OF CLIP ANGLES AT CONTRACTOR'S OPTION
- PROVIDE DECK CLOSURE AND POUR STOPS IN ACCORDANCE WITH TYPICAL SLAB EDGE DETAIL
- COORDINATE FRAME DIMENSION WITH ARCHITECTURAL AND MEP DRAWING REQUIREMENTS. CHANNEL FRAME MAY BE FIELD ASSEMBLED AT CONTRACTOR'S OPTION

**SECTION A-A**

**G TYP. STEEL BEAM BEARING POCKET**  
S-310 3/4" = 1'-0"

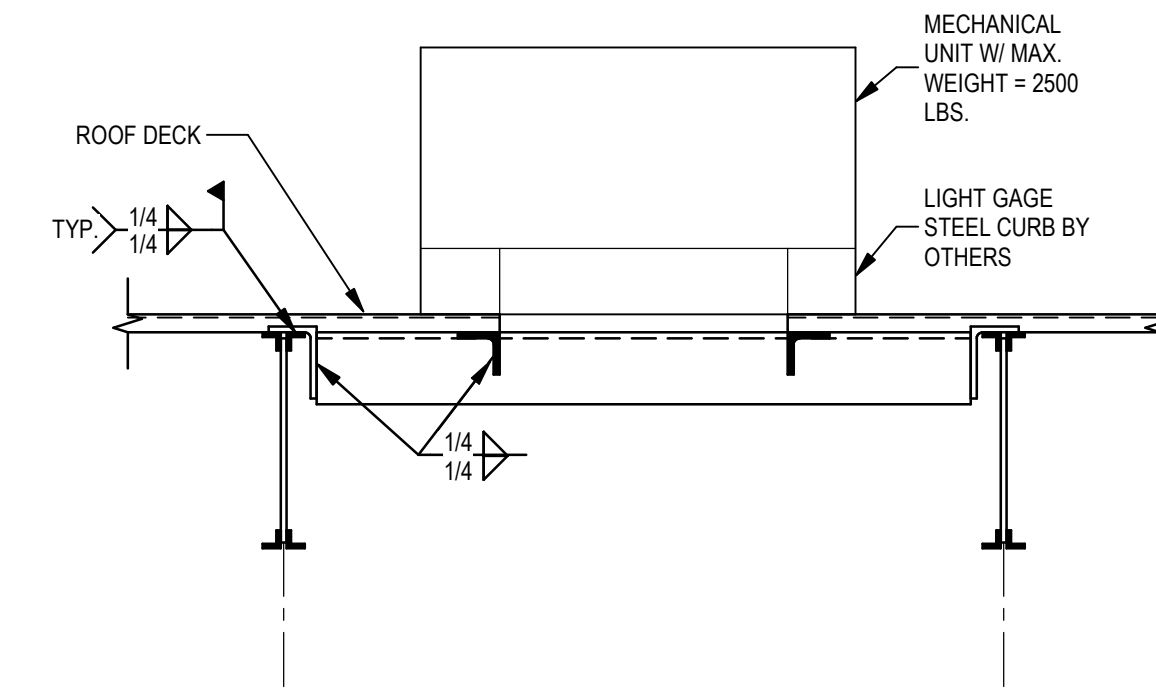


**H TYP ROOF DECK AT EDGE BEAM**  
S-310 3/4" = 1'-0"



- NO ADDITIONAL REINFORCING REQUIRED
- PROVIDE 18-GA PLATE REINFORCEMENT
- PROVIDE 16-GA PLATE REINFORCEMENT
- FOR OPENINGS GREATER THAN 12", PROVIDE FRAME PER (SEE PLAN)

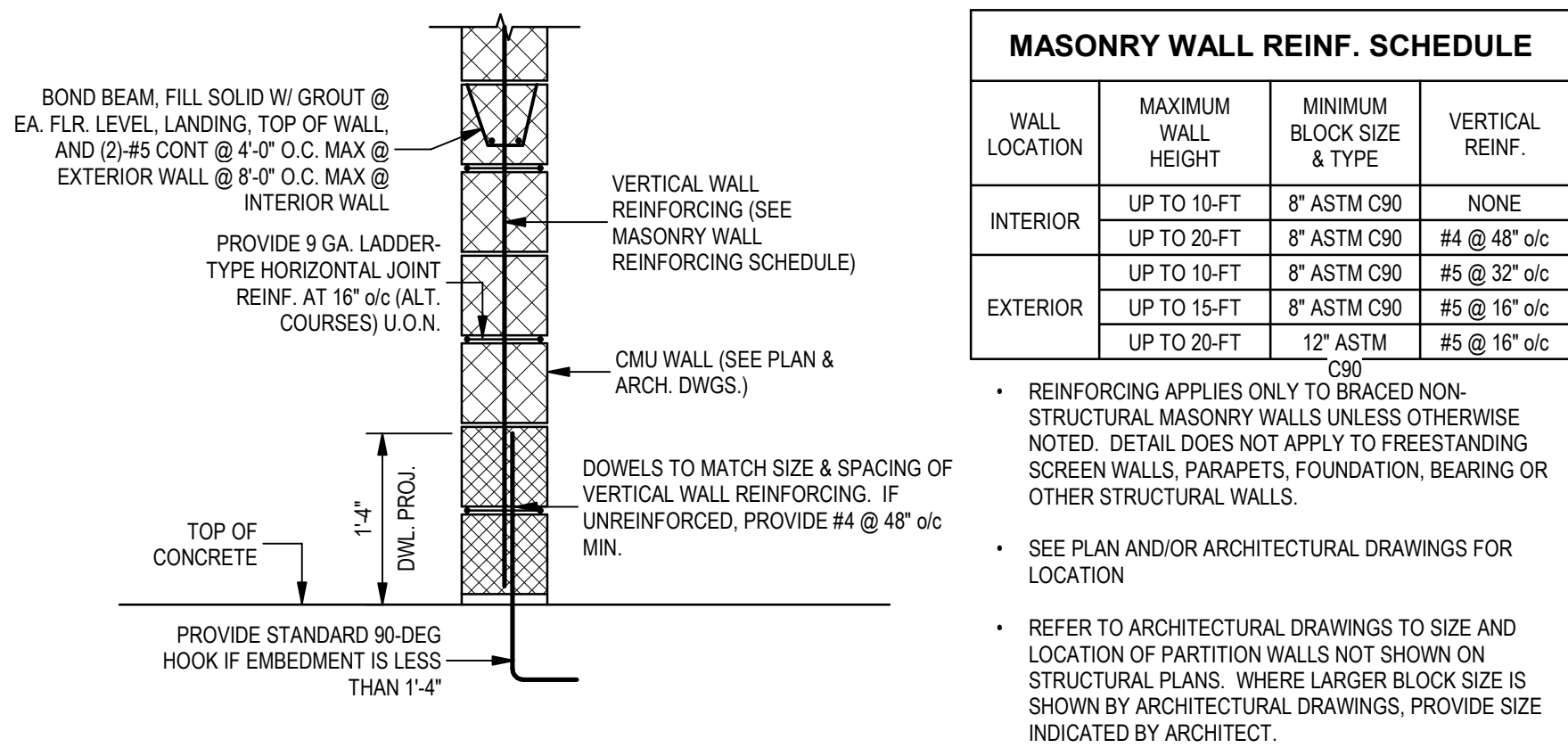
**M TYP. ROOF DECK OPENING**  
S-310 1 1/2" = 1'-0"



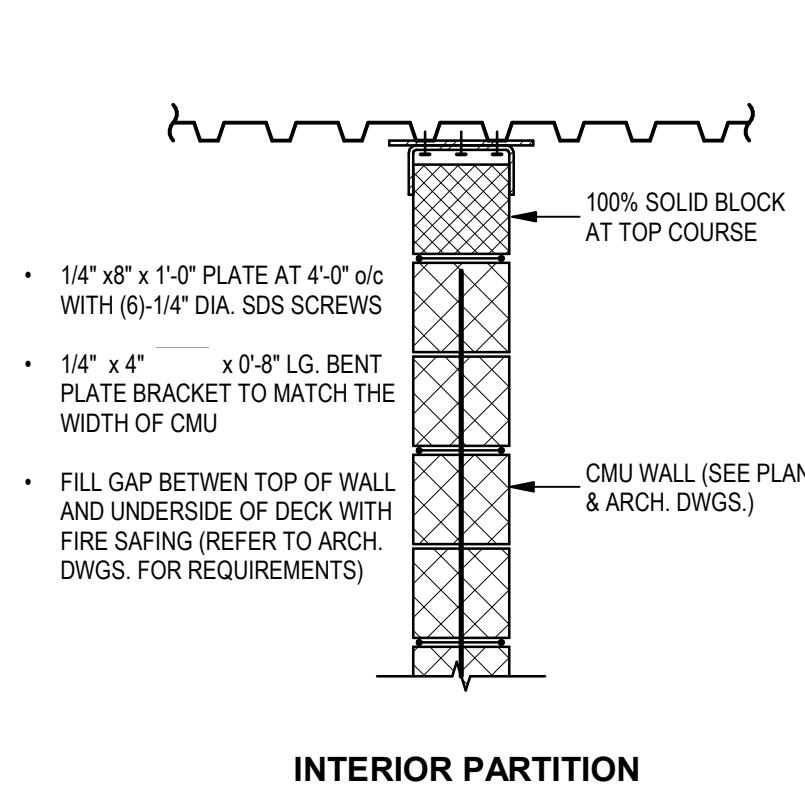
- CONTRACTOR TO COORDINATE DIMENSIONS AND LOCATION OF SUPPORT FRAMING WITH MEP DWGS. AND CERTIFIED EQUIPMENT SHOP DRAWINGS
- WERE ROOF TOP UNIT WEIGHT IS LESS THAN 500LBS. REFER TO "TYP ROOF OPENING FRAME DETAIL"

**N TYPICAL MECH. EQUIP. SUPPORT FRAMING DETAIL**  
S-310 3/4" = 1'-0"

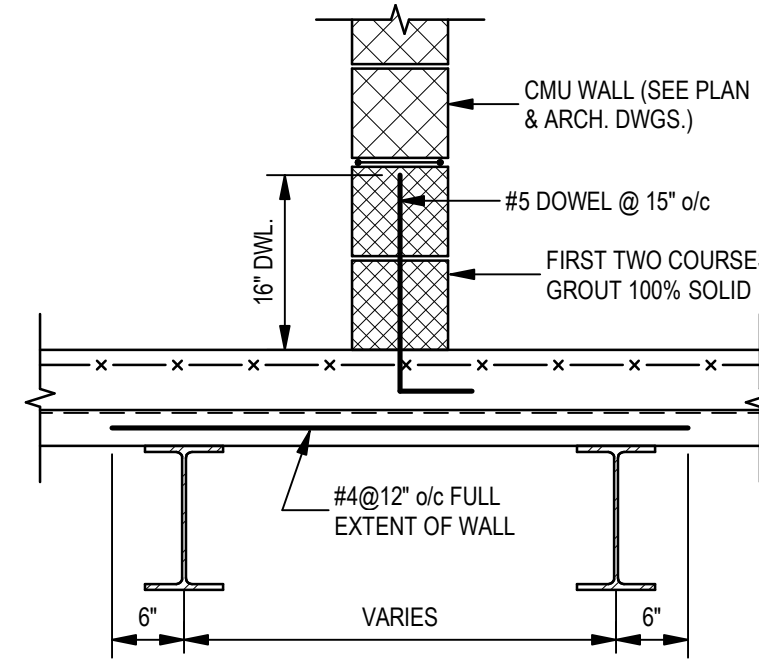




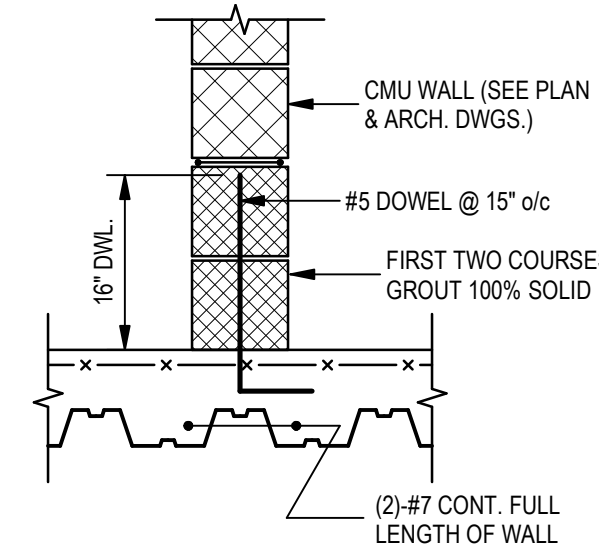
**A TYP. MASONRY WALL REINFORCING**  
S-320 3/4" = 1'-0"



**INTERIOR PARTITION**



**PARTITION PERPENDICULAR TO DECK SPAN**



**PARTITION PARALLEL TO DECK SPAN**

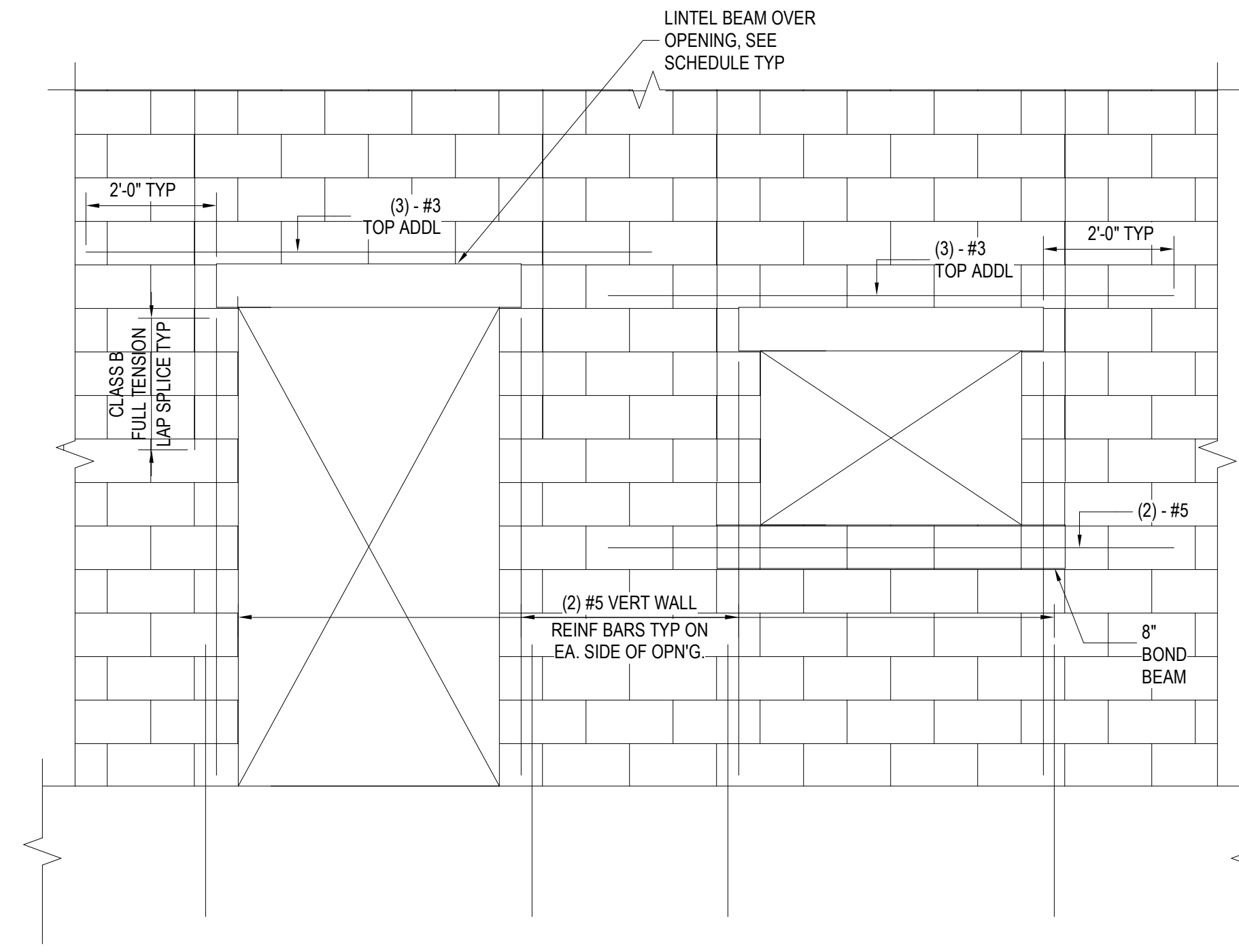
**C TYP. MASONRY WALL ON SLAB ON METAL DECK**  
S-320 3/4" = 1'-0"

**MASONRY WALL LINTEL SCHEDULE**

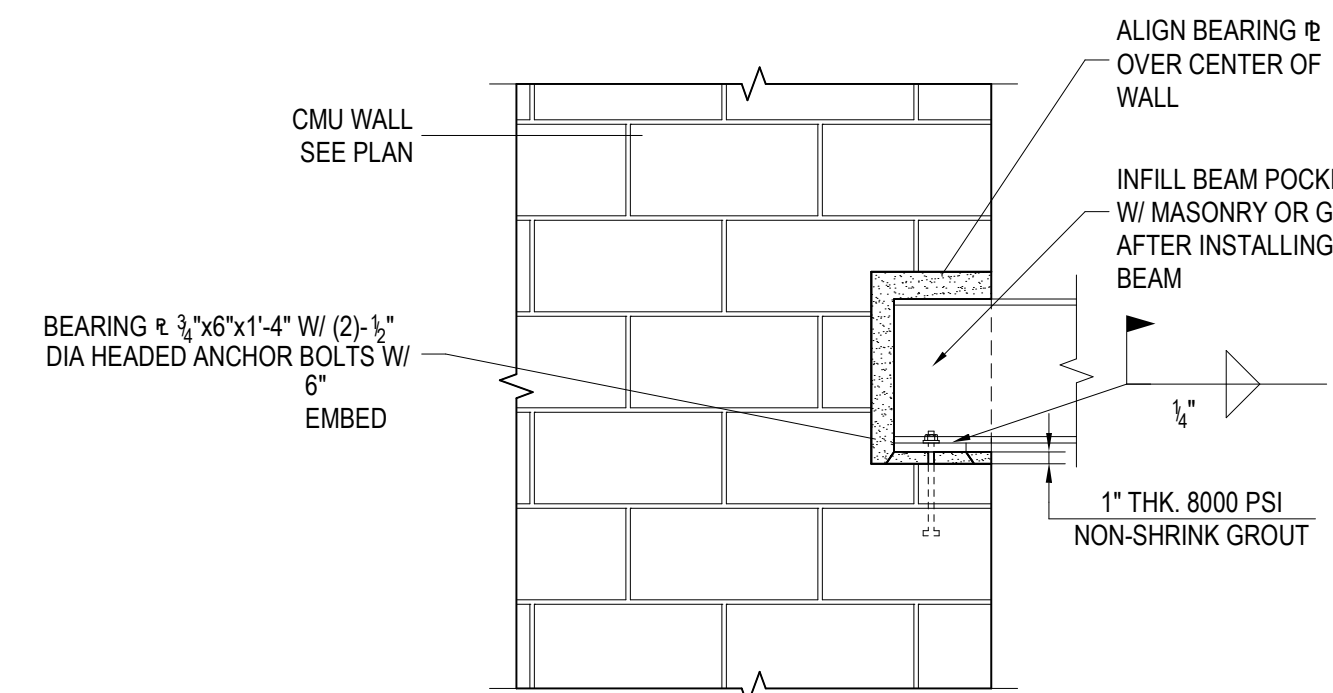
CLEAR OPENING SIZE	OPTION "A" STEEL ANGLE	OPTION "B" PRECAST CONCRETE
≤ 4'-0"	L3 1/2x3 1/2x 5/16 (LLV) FOR EA. 4" OF WALL	(1)-#3 T&B FOR EA. 4" OF WALL
> 4'-0" ≤ 6'-0"	L5 x 3 1/2x 5/16 (LLV) FOR EA. 4" OF WALL	(1)-#4 T&B FOR EA. 4" OF WALL
> 6'-0" ≤ 8'-0"	L5 x 3 1/2x 5/16 (LLV) FOR EA. 4" OF WALL	(1)-#5 T&B FOR EA. 4" OF WALL
> 8'-0"	AS DETAILED OR SHOWN ON PLAN	AS DETAILED OR SHOWN ON PLAN

- STEEL LINTELS SHALL HAVE A MIN. 4" END BEARING UNLESS OTHERWISE NOTED
- PRECAST CONCRETE LINTELS SHALL HAVE A MIN. 8" END BEARING UNLESS OTHERWISE NOTED
- WHERE 10" BLOCK IS USED, USE (2)-L6x4x5/16 LLV
- CONCRETE FOR PRECAST LINTELS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH ( $f'_c$ ) OF 3,000 PSI
- REFER TO ARCHITECTURAL DRAWINGS TO SIZE AND LOCATION OF PARTITION WALLS NOT SHOWN ON STRUCTURAL PLANS. WHERE LARGER BLOCK SIZE IS SHOWN BY ARCHITECTURAL DRAWINGS, PROVIDE SIZE INDICATED BY ARCHITECT.

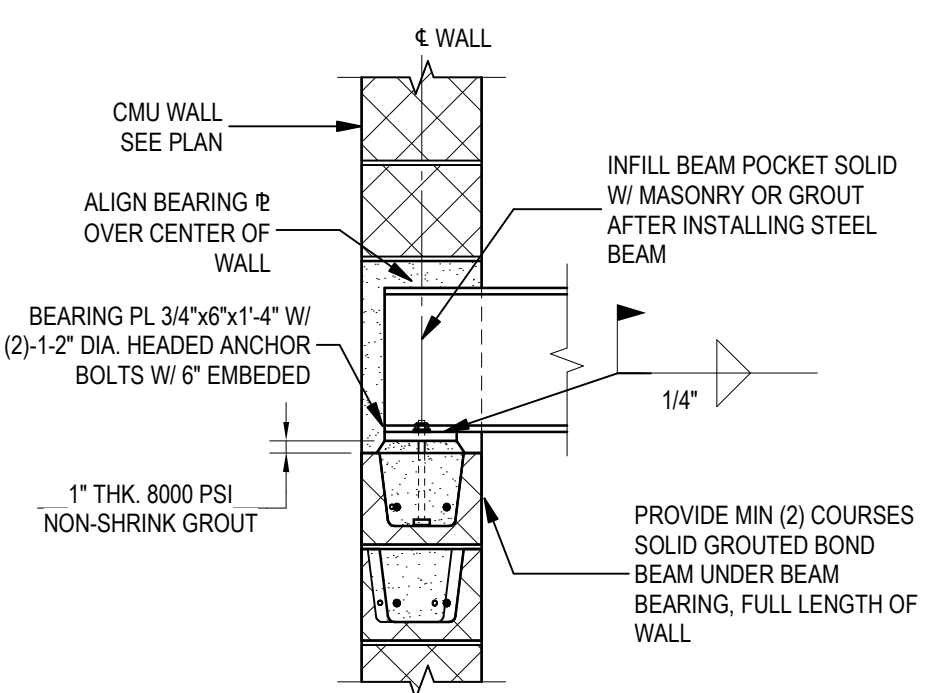
**D TYP. MASONRY WALL REINFORCING**  
S-320 3/4" = 1'-0"



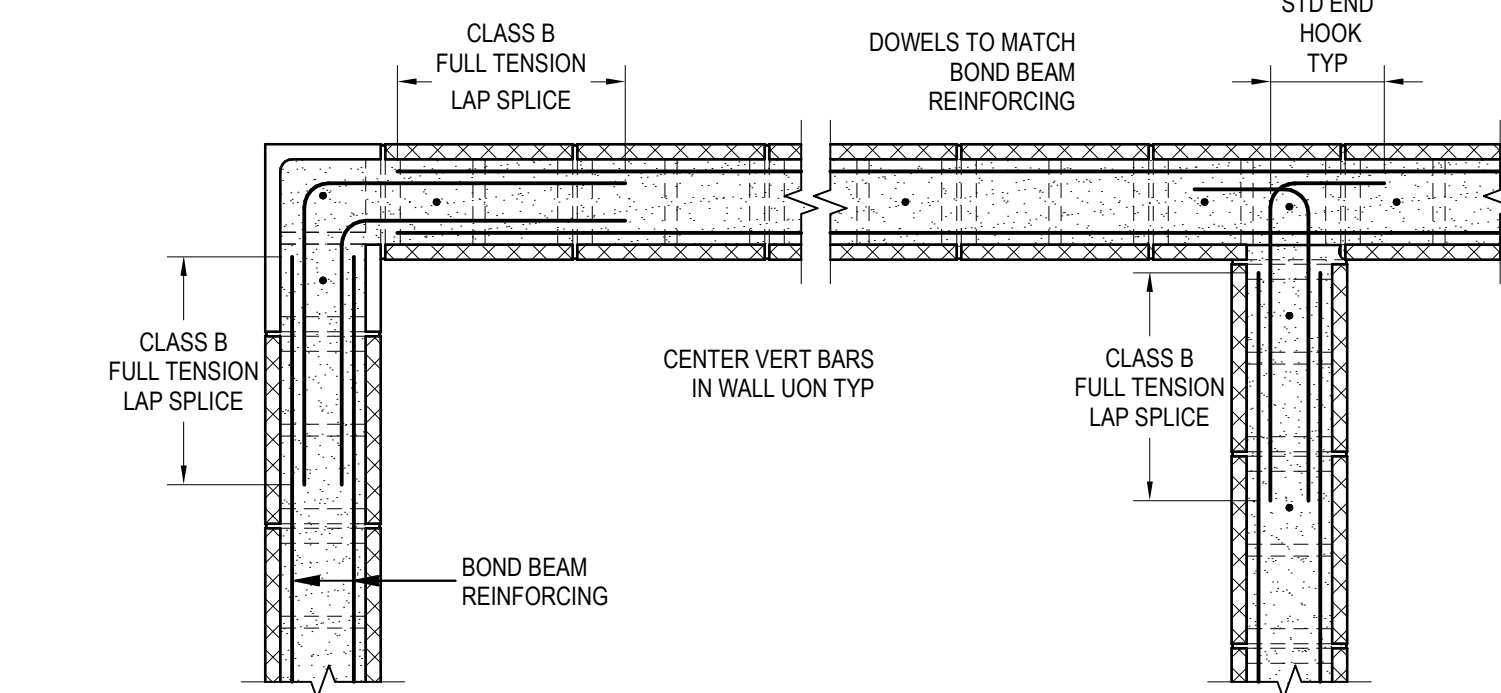
**E TYP. WALL OPENING IN REINFORCED MASONRY WALL-ELEVATION DETAIL**  
S-320 1/2" = 1'-0"



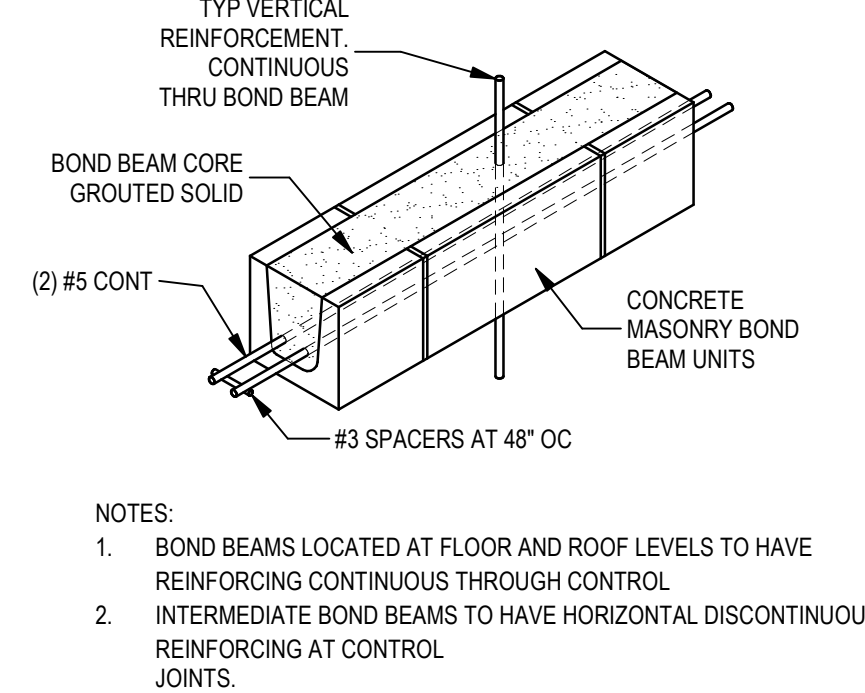
**F TYP STEEL BEAM CMU WALL DETAIL**  
S-320 3/4" = 1'-0"



**G TYP STEEL BEAM EMBED CMU WALL DETAIL**  
S-320 3/4" = 1'-0"



**H TYP CMU WALL BOND BEAM JOINT DETAIL**  
S-320 3/4" = 1'-0"



**J TYP CMU BOND BEAM DETAIL**  
S-320 3/4" = 1'-0"