

- BUILDING CODE:**
 A. INTERNATIONAL BUILDING CODE - 2009 EDITION
 B. ASCE 7-05 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
- MINIMUM LOADING REQUIREMENTS:**
- A. **ROOF SNOW LOADS: LOADS:** (EXCEPT AT DRIFTING SNOW LOCATIONS AND THOSE LISTED BELOW)
 a. GROUND SNOW LOAD: $P_g = 60.0$ PSF
 i. IMPORTANCE FACTOR: $I = 1.0$
 ii. COLD ROOF SLOPE FACTOR: $C_s = 1.0$
 iii. THERMAL FACTOR: $C_t = 1.1$
 iv. EXPOSURE FACTOR: $C_e = 1.0$
 v. TERRAIN CATEGORY: **C**
 b. FLAT ROOF SNOW LOAD: $P_f = 46.2$ PSF
- B. **ROOF DEAD LOAD:** 22.0 PSF
- C. **ROOF LIVE LOAD:**
 a. STANDARD ROOF LIVE LOAD: 20 PSF
- D. **FLOOR LIVE LOADS:** UNIFORM CONCENTRATED PARTITION
- E. **WIND:**
 a. FACTORS:
 i. BASIC WIND SPEED: 100 MPH
 ii. EXPOSURE CATEGORY: "C"
 iii. IMPORTANCE FACTOR: 1.0
 iv. BUILDING HEIGHT: <40'
- F. **SEISMIC**
 a. COEFFICIENTS:
 i. RESPONSE SPECTRAL ACC. (0.2 SEC.) $S_s = 0.32G$
 ii. RESPONSE SPECTRAL ACC. (1.0 SEC.) $S_1 = 0.08G$
 iii. SOIL CLASSIFICATION: D
 iv. SITE COEFFICIENTS: $F_A = 1.60$; $F_V = 2.40$
 v. MAX. CONSIDERED EARTHQUAKE ACC @ 5% DAMPED DESIGN: $S_{0.5} = 0.33$; $S_{0.1} = 0.12$
 vi. RISK CATEGORY: II
 vii. SEISMIC DESIGN CATEGORY FOR 0.1 AND 1.0 SECONDS: B
 viii. FUNDAMENTAL PERIOD $T_A = 0.318$ SEC
 ix. SEISMIC RESPONSE COEFFICIENT $C_s = 0.109$
 x. SEISMIC BASE SHEAR: $V = 40.1$ KIPS (EQUIVALENT LATERAL FORCE PROCEDURE)
- b. DESIGN COEFFICIENTS AND FACTORS FOR SEISMIC FORCE RESISTING SYSTEMS
 i. STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
 a. RESPONSE MODIFICATION $R = 3$
 b. SYSTEM OVERSTRENGTH FACTOR $\Omega_0 = 3$
 c. DEFLECTION AMPLIFICATION FACTOR $C_D = 3$

- SPECIAL INSPECTIONS**
 1. SPECIAL INSPECTIONS: AN INDEPENDENT INSPECTIONS PROGRAM AND SCHEDULE SHALL BE ARRANGED BY THE BUILDING OWNER AND THE STRUCTURAL ENGINEER OF RECORD.
 2. A QUALIFIED PERSON APPROVED BY THE BUILDING OFFICIALS SHALL MAKE SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE IBC-2009, AND AS DEFINED. SPECIAL INSPECTOR SHALL OBSERVE WORK FOR CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS.
 3. INSPECTION REPORTS SHALL BE FURNISHED TO THE OWNER, BUILDING OFFICIAL, ARCHITECT AND SER. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR AND IF NOT CORRECTED, SHALL BE REPORTED TO THE OWNER, BUILDING OFFICIAL, ARCHITECT AND SER.
 4. THE FOLLOWING TYPES OF WORK SHALL RECEIVE SPECIAL INSPECTION OVERSITE: INSTALLATION OF REINFORCING STEEL FOR CONCRETE, ALL CONCRETE PLACEMENT AND STRENGTH TESTING, AND STRUCTURAL FILL PLACEMENT.

D1 STRUCTURAL NOTES

- WORK SHALL BE DONE IN COMPLIANCE WITH THE LATEST EDITION OF IBC-2009.
- STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL AND CIVIL DRAWINGS. ANY INCONSISTENCIES WITH THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE AFFECTED PORTIONS OF THE WORK.
- THE CONTRACTOR SHALL VISIT THE SITE AT A DESIGNATED TIME APPROVED BY THE OWNER, TO VERIFY EXISTING CONDITIONS, DIMENSIONS, LOCATION OF EXISTING UTILITIES, ETC. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES WITHOUT EXCEPTION.
- THE FOUNDATION STRUCTURE HAS BEEN DESIGNED AS A SELF-SUPPORTING SYSTEM ONCE ALL WORK CONTAINED ON THESE DRAWINGS HAS BEEN COMPLETED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ERECTION PROCEDURES AND SEQUENCE OF INSTALLATION TO ENSURE SAFETY OF THE BUILDING AND ITS OCCUPANTS DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS AND TEMPORARY SHORING, PRECAUTIONS DURING BUILDING OPERATIONS, PROTECTION OF PUBLIC AND WORKERS, REMOVAL OF WASTE MATERIAL, PROTECTION OF ADJACENT PROPERTY, PROTECTION OF HAZARDOUS OPENINGS, SAFETY PRECAUTIONS, AND SANITARY PROVISIONS OF EMPLOYEES AND SUBCONTRACTORS AS REQUIRED FOR THE DURATION OF THE CONTRACT.
- WORK SHALL BE DONE IN AN ORDERLY AND PROFESSIONAL MANNER. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK TO BE DONE BY SUBCONTRACTORS, LOCAL AUTHORITIES, STATE AGENCIES AND/OR UTILITY COMPANIES WHICH MAY HAVE JURISDICTION OVER THIS PROJECT.
- UTILITY EXTENSIONS AND CONNECTIONS SHALL BE IN ACCORDANCE WITH STATE AND LOCAL CODES OR AS INDICATED ON THE DRAWINGS.
- CONTRACTOR SHALL REVIEW AND SUBMIT COMPLETE SHOP DRAWINGS FOR ALL SPECIFIED PARTS OF THE WORK, INCLUDING SHORING AND CONSTRUCTION METHODS/SEQUENCING WHERE APPLICABLE. NO PORTION OF THE WORK COVERED BY THESE SHOP DRAWINGS SHALL COMMENCE UNTIL RETURNED APPROVED SHOPS ARE RECEIVED BY THE CONTRACTOR. SEE STRUCTURAL NOTES FOR SPECIFIC SHOP SUBMITTAL REQUIREMENTS.
- THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY EXISTING ITEMS DAMAGED BY NEW CONSTRUCTION, AND FOR ANY INCIDENTAL REPAIRS OF EXISTING FINISHED SURFACES DISTURBED BY NEW CONSTRUCTION; SUCH REPAIRS SHALL MATCH EXISTING TO THE OWNER'S SATISFACTION.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING, HANDLING, AND STORAGE OF ITEMS/MATERIALS TO REMAIN THE PROPERTY OF THE OWNER WITH THE OWNER'S REPRESENTATIVE.

A1 GENERAL NOTES

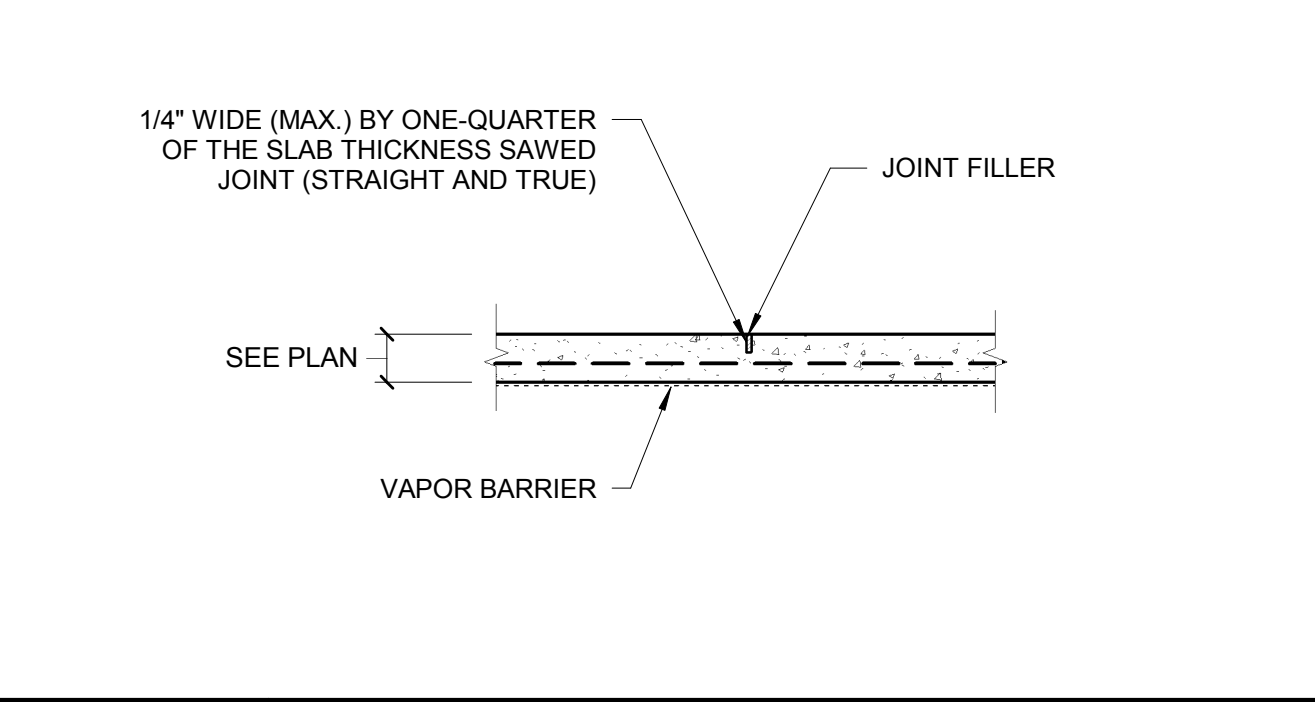
- FOUNDATIONS:**
- THE SITE SHALL BE PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY S.W. COLE ENGINEERING, INC., DATED JULY 24, 2017. FOUNDATION DESIGNS BASED ON THE DESIGN SOIL BEARING CAPACITIES DESCRIBED IN REPORT ABOVE. FOUNDATION SYSTEMS HAVE BEEN DESIGNED WITH AN ASSUMED BEARING CAPACITY OF 3,000 PSF.
 - FOOTINGS SHALL BEAR ON STRUCTURAL BACKFILL COMPACTED TO ACHIEVE 95 PERCENT RELATIVE COMPACTION AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D1557). SEE GEOTECHNICAL REPORT, NOTED ABOVE, FOR STRUCTURAL FILL GRADATION REQUIREMENTS.
 - FOOTING BOTTOMS SHALL BE INSPECTED AND APPROVED, IN WRITING, BY A REGISTERED SOILS ENGINEER PRIOR TO PLACING CONCRETE. WRITTEN APPROVAL SHALL SPECIFY THE SOIL HAS THE CAPACITY TO SUPPORT THE DESIGNED BEARING PRESSURE.
 - BEDDING AND FILL PROFILES BENEATH SLABS ON GRADE AND FOUNDATION FOOTINGS SHALL COMPLY WITH THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT REFERENCED ABOVE.
 - FOUNDATION WALL REINFORCING SHALL BE ADJUSTED AS REQUIRED NOT TO INTERFERE WITH BASE PLATE ANCHOR BOLTS.
 - EXCAVATIONS FOR BUILDING FOUNDATIONS AND STRUCTURES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS. BRACED EXCAVATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT STATE. DO NOT UNDERMINE EXISTING ADJACENT FOUNDATIONS.
 - INTERSECTING CONCRETE WALLS SHALL BE TIED WITH #4 L-BARS 3'-0" LONG (BENT 18-INCHES - 18-INCHES), SPACED AT 12-INCHES ON-CENTER, OUTSIDE FACE ONLY.
 - IN NO CASE SHALL HEAVY EQUIPMENT BE PERMITTED CLOSER THAN 8'-0" FROM ANY FOUNDATION WALL. IF THE CONTRACTOR DEEMS IT NECESSARY TO OPERATE SUCH EQUIPMENT CLOSER THAN 8'-0", THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE AND, AT HIS OWN EXPENSE, PROVIDE ADEQUATE SUPPORTS OR WALL BRACES TO WITHSTAND THE ADDITIONAL LOADS SUPERIMPOSED FROM SUCH EQUIPMENT.
 - FOUNDATION WALL CONTROL JOINTS SHALL BE PLACED A MAXIMUM SPACING OF 90'-0".
 - CONCRETE SHALL NOT BE PLACED ON FROZEN GROUND OR IN WATER.
 - UNDERDRAINS SHALL BE PLACED AS SHOWN ON THE SITE DRAWINGS. UNDERDRAINS SHALL BE INSTALLED TO POSITIVELY DRAIN TO A SUITABLE DISCHARGE POINT AWAY FROM THE STRUCTURE. REFER TO SITE DRAWINGS FOR ADDITIONAL INFORMATION.

- CONCRETE:**
- CONCRETE WORK SHALL COMPLY WITH ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE BUILDINGS"; ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"; AND ACI 315 "ACI DETAIL MANUAL", AND CRSI "MANUAL OF STANDARD PRACTICE".
 - CONTRACTOR SHALL PROVIDE TIES AND BRACING WHERE NECESSARY DURING CONSTRUCTION, TO REMAIN IN PLACE UNTIL THE STRUCTURES ARE COMPLETE.
 - CONCRETE SHALL BE:
 a. FOOTING AND FOUNDATION WALLS: 3,500 PSI AT (28) DAYS. SLUMP SHALL NOT EXCEED 5-INCHES (WC = 0.49)
 b. INTERIOR SLABS-ON-GRADE: 4,000 PSI CONCRETE AT (28) DAYS. SLUMP SHALL NOT EXCEED 3-INCHES (WC = 0.49)
 c. EXTERIOR SLABS ON GRADE SIDEWALKS, AND STAIRS SHALL BE 4000 PSI AT (28) DAYS. SLUMP SHALL NOT EXCEED 3-INCHES (WC = 0.49).
 - CONCRETE MATERIALS:
 a. PORTLAND CEMENT: ASTM C150, TYPE I OR II. USE ONE TYPE THROUGHOUT PROJECT.
 b. NORMAL WEIGHT AGGREGATES: ASTM C33. PROVIDE FROM SINGLE SOURCE FOR ENTIRE PROJECT. NO AGGREGATE CONTAINING SOLUBLE SALTS, IRON SULFIDES, PYRITE, MARCASITE, OR OCHRE WHICH CAN CAUSE STAINS ON EXPOSED CONCRETE SURFACES.
 c. LIGHTWEIGHT AGGREGATES: ASTM C330
 d. WATER: POTABLE
 e. AIR-ENTRAINING ADMIXTURE: ASTM C260
 f. HIGH RANGE WATER REDUCING ADMIXTURES (SUPER PLASTICIZER): ASTM C494, TYPE F OR G CONTAINING NOT MORE THAN 1% CHLORIDE IONS.
 g. NORMAL RANGE WATER REDUCING ADMIXTURES: ASTM C494 TYPE A CONTAINING NO CALCIUM CHLORIDE.
 h. ACCELERATING ADMIXTURES: ASTM C494, TYPE C OR E.
 - PROVIDE PVC SLEEVES WHERE PIPES PASS THROUGH CONCRETE WALLS OR SLABS.
 - REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60 DEFORMED BARS, AND SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH ACI 315-LATEST EDITION.
 - COMPLETE SHOP DRAWINGS AND SCHEDULES OF REINFORCING STEEL SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF THAT PORTION OF THE WORK. ACCESSORIES MUST BE SHOWN ON THE SHOP DRAWINGS.
 - CONSTRUCTION JOINTS FOR SLABS SHALL BE KEY JOINTED AT MID-SPAN WITH REINFORCING DISCONTINUOUS AT JOINT.
 - FLOOR SLAB CONTROL JOINTS SHALL BE PLACED AS SHOWN ON THE FOUNDATION PLAN OR AS DIRECTED BY THE ENGINEER (ELEVATED SLABS). UNLESS OTHERWISE NOTED, CONTROL JOINTS SHALL BE PLACED NOT TO EXCEED 20'-0" ON-CENTER IN BOTH DIRECTIONS AND SHALL BE FILLED WITH SEALANT AT THE COMPLETION OF THE PROJECT.
 - CONTRACTOR SHALL CHECK WITH EACH TRADE TO ASSURE CORRECT LOCATION, SIZE, LINE AND ELEVATION OF SLEEVES, BOND-OUTS, ETC. REQUIRED IN CONCRETE FLOORS AND WALLS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR FLOOR DRAIN SETTING AND EXTENTS OF AREA SLOPE TO DRAIN DEVELOPMENT. SEE ARCHITECTURAL AND PLUMBING PLANS TO ENSURE COMPLETE AREA DRAINAGE.
 - WELDING OF REINFORCEMENT IS NOT PERMITTED.
 - EXPOSED CONCRETE SHALL BE NEATLY FINISH-RUBBED.
 - MECHANICAL EQUIPMENT RESTING ON THE CONCRETE FLOOR SLAB SHALL HAVE A 4-INCH HIGH CONCRETE PAD UNDERNEATH, EXTENDING A MINIMUM OF 6-INCHES BEYOND UNIT EDGE (EACH DIRECTION), REINFORCED WITH #3 BARS AT 18-INCHES ON-CENTER EACH WAY.
 - STRUCTURAL STEEL BELOW FINISH FLOOR SHALL RECEIVE (2) COATS OF BITUMINOUS MASTIC.
 - ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL NOT BE USED. CONCRETE SHALL NOT BE IN DIRECT CONTACT WITH ALUMINUM.
 - PROVIDE IN SLABS ON GRADE (2) #5 BARS 4'-0" LONG AT EACH REENTRANT CORNER AND BOTH SIDES OF DOOR OPENINGS.
 - REFER TO ACI 318 (LATEST EDITION) FOR MINIMUM CONCRETE COVER FOR REINFORCING STEEL.
 - UNLESS OTHERWISE NOTED, REINFORCING LAP SPLICES SHALL BE ACI CLASS B SPLICES USING THE FOLLOWING LAP LENGTHS:

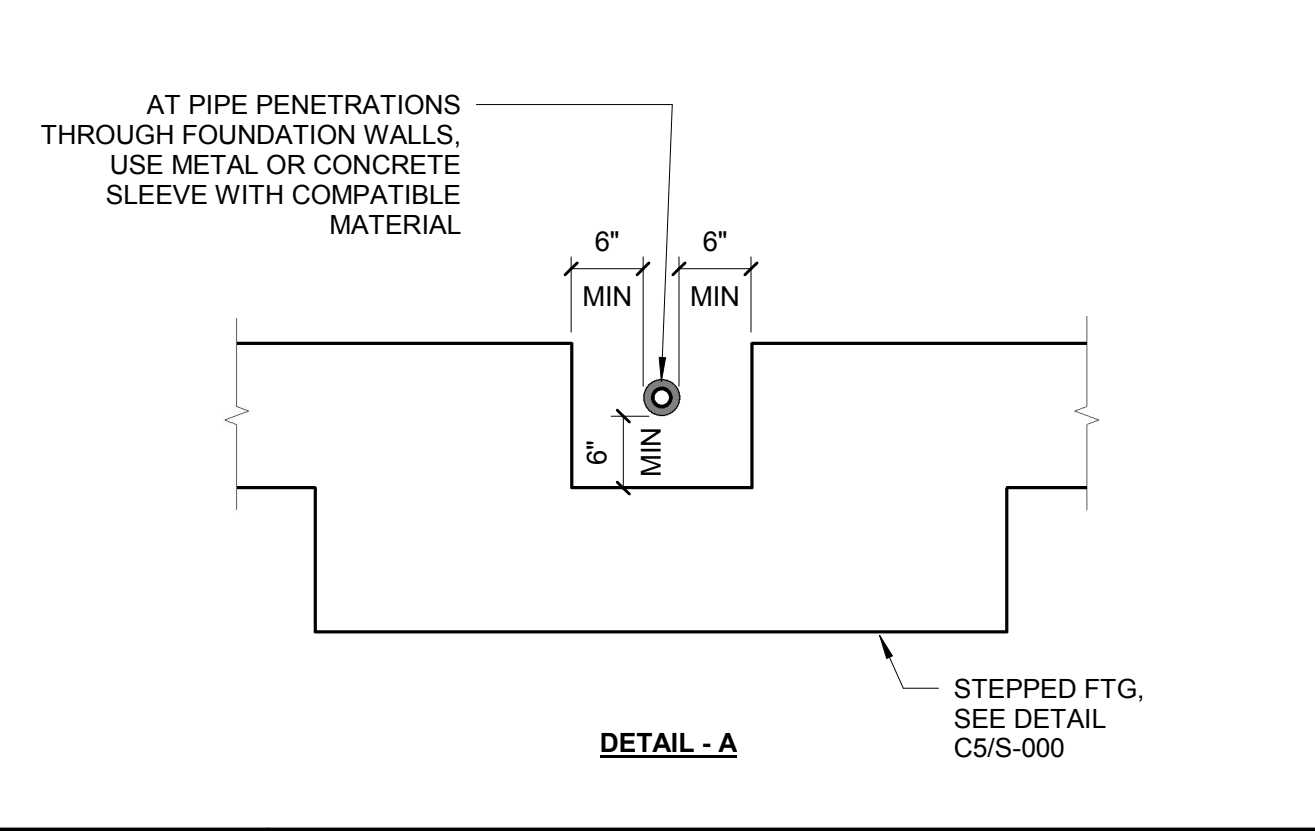
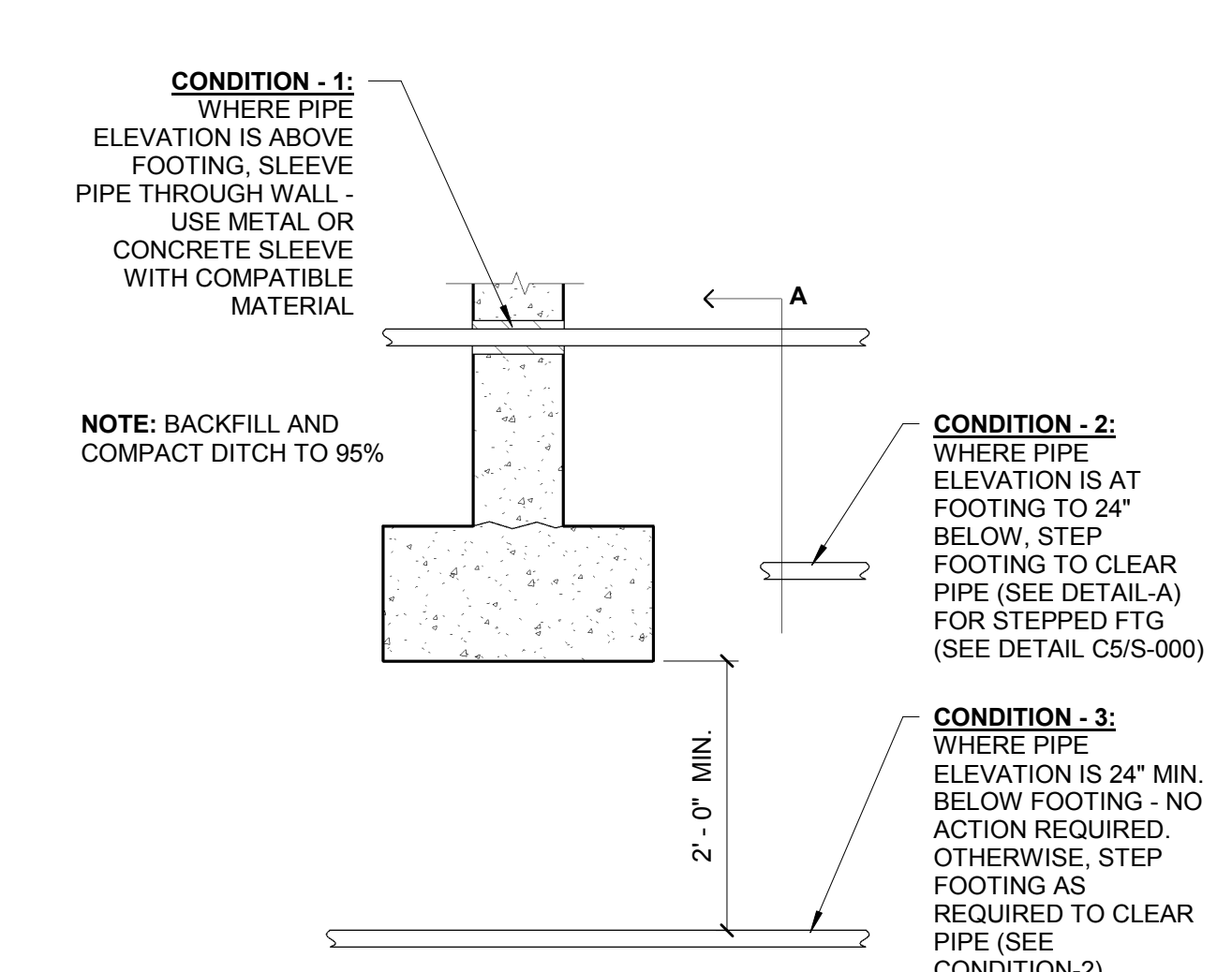
BAR SIZE	3	4	5	6	7	8	9	10	11
LAP (IN.)	22	29	36	43	63	72	80	89	98

- COORDINATE SLAB DEPRESSIONS AND INTERIOR FLOOR SLOPES TO DRAIN LOCATIONS WITH ARCHITECTURAL DRAWINGS.
- SLAB THICKNESSES INDICATED ON THE DRAWINGS ARE MINIMUMS. PROVIDE SUFFICIENT COVER TO ACCOUNT FOR STRUCTURE DEFLECTION AND/OR SUBGRADE FLUCTUATIONS IN ORDER TO OBTAIN SPECIFIED SLAB ELEVATIONS AT THE FLATNESS AND LEVELNESS INDICATED IN THE SPECIFICATION.
- DRILLED-IN ANCHOR BOLTS OR REBAR DOWELS SHALL BE INSTALLED AS FOLLOWS:
 - LOCATE ANCHOR BOLTS OR DOWELS TO AVOID CUTTING EXISTING REBAR.
 - DEPTH IS BASED ON A CLEAN HOLE WITH ROUGH SIDES. ROTARY PERCUSSION EQUIPMENT AND COURSE ROCK CUTTING CHISELS ARE RECOMMENDED. DIAMOND CORE BITS SHOULD BE AVOIDED AS EMBEDMENT LENGTHS MAY NEED TO BE INCREASED. HOLE SIZE TO BE PER MANUFACTURER'S RECOMMENDATIONS.
 - CLEAN HOLES WITH COMPRESSED AIR OR VACUUM, REMOVE ANY FREE-STANDING WATER AND ALLOW HOLE TO DRY.
 - GROUT ANCHOR BOLTS OR DOWELS WITH HILTI HIT HY-150 ADHESIVE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. (HILTI HVA ADHESIVE CAPSULE MAY BE SUBSTITUTED FOR THE HILTI HIT HY-150 ADHESIVE.)

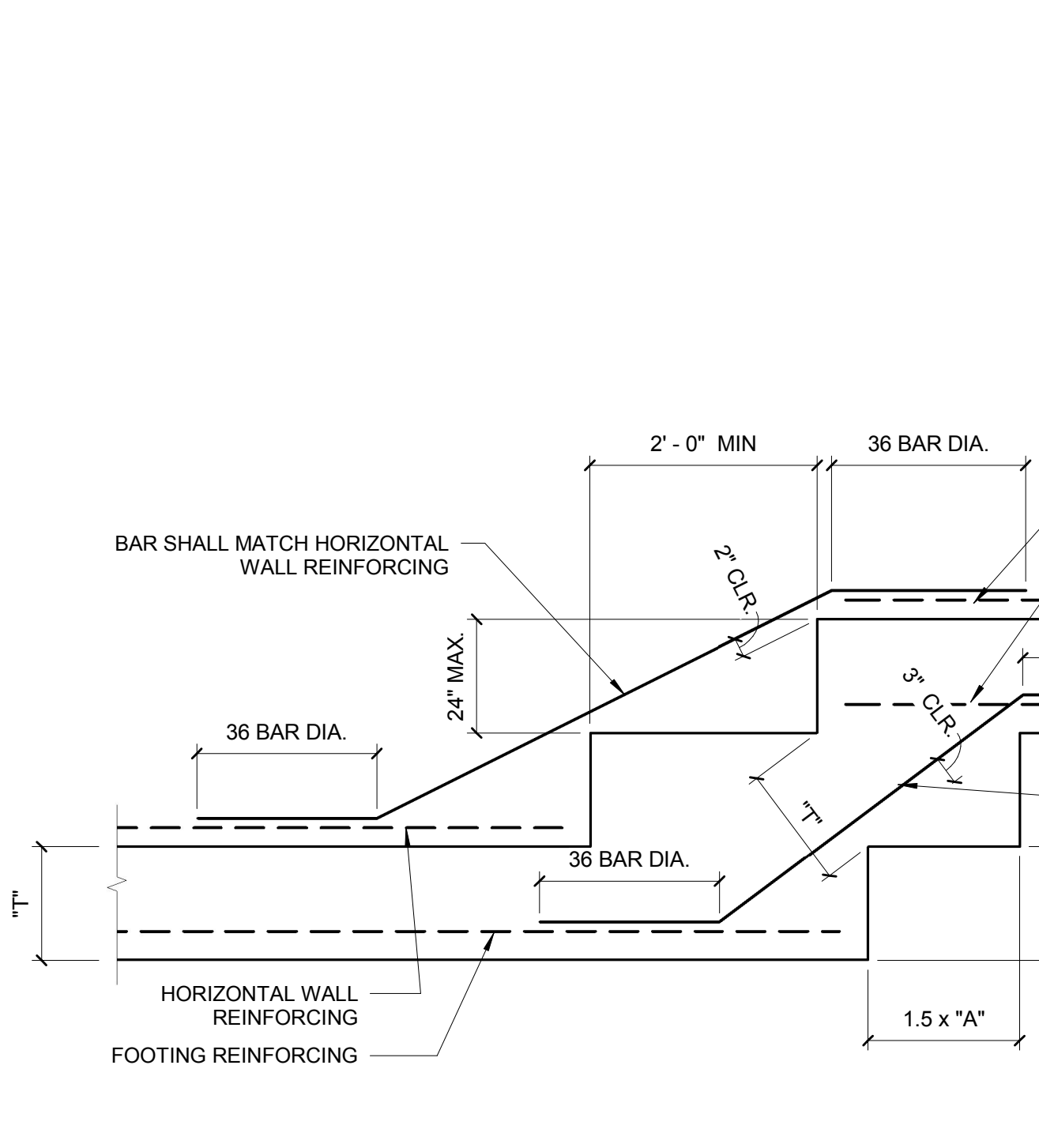
A4 CONCRETE NOTES



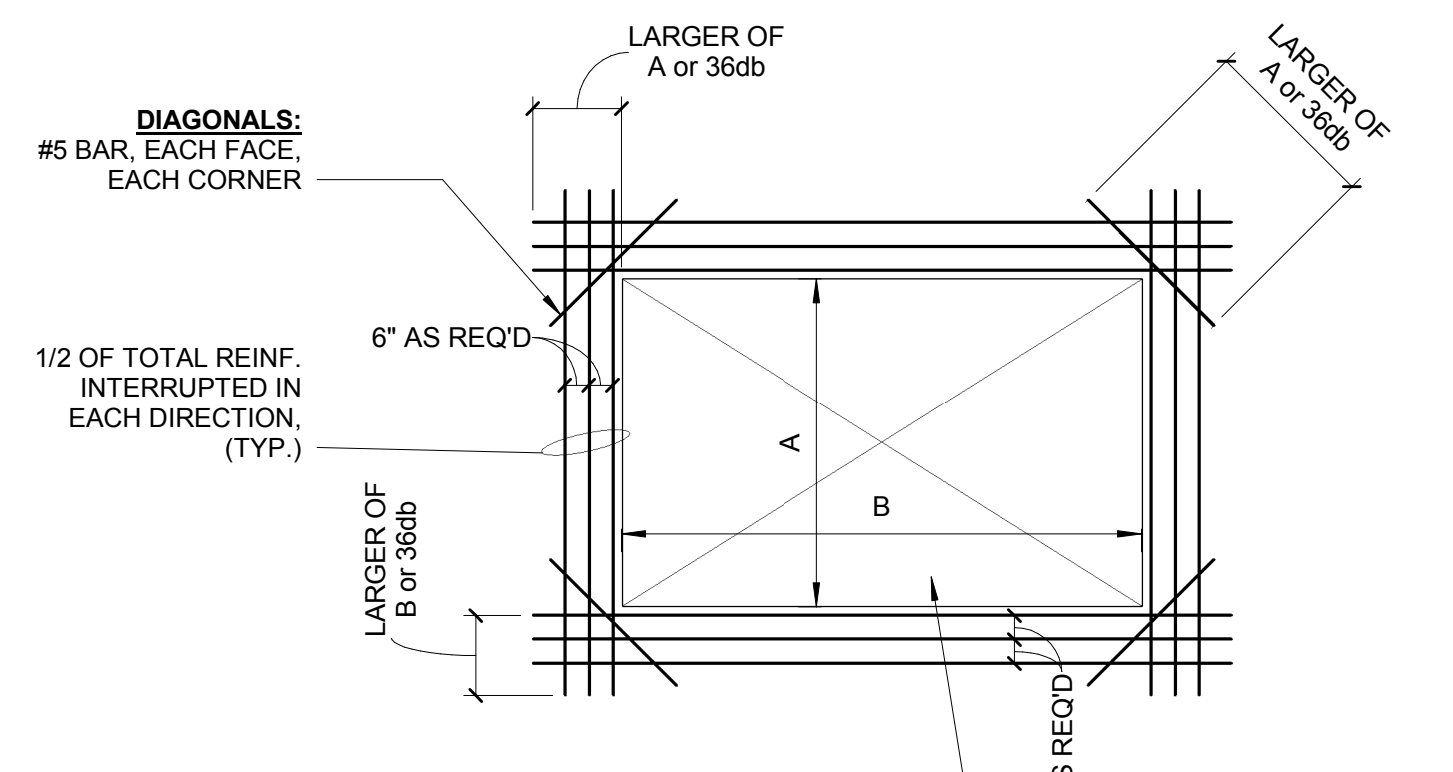
G6 TYPICAL CONTROL JOINT IN SLAB DETAIL



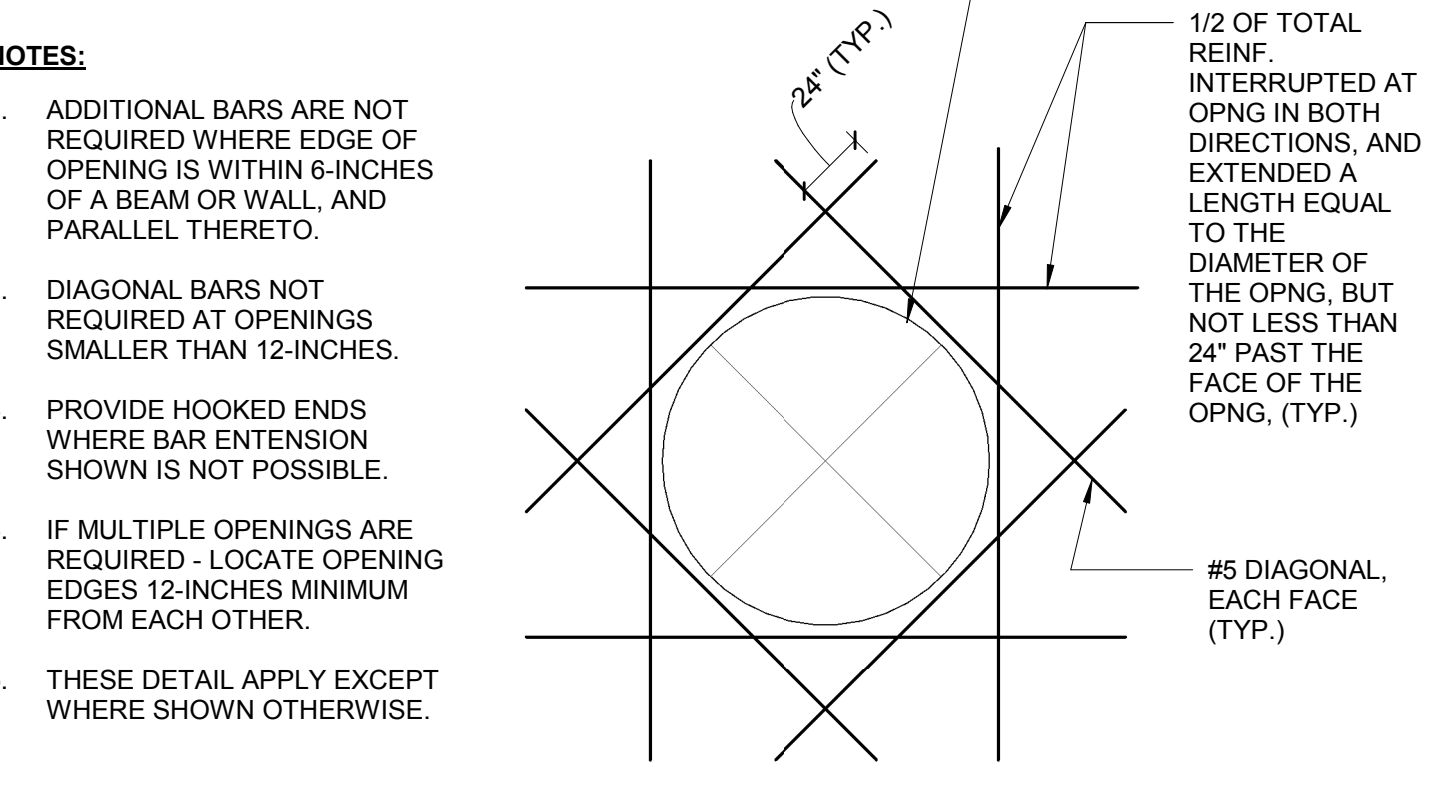
D6 TYPICAL PIPE AT FOOTING DETAIL



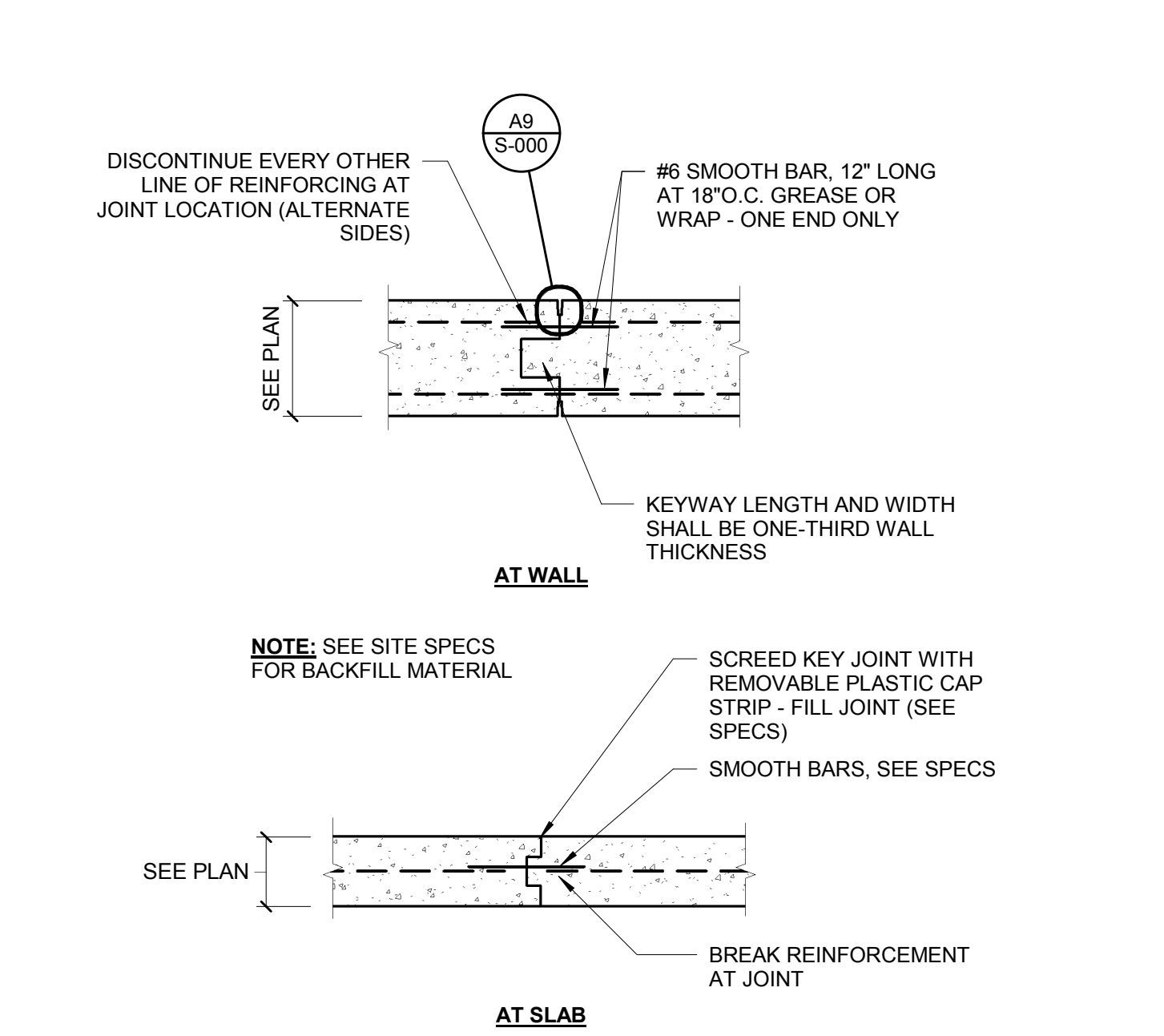
A6 TYPICAL STEPPED FOOTING DETAIL



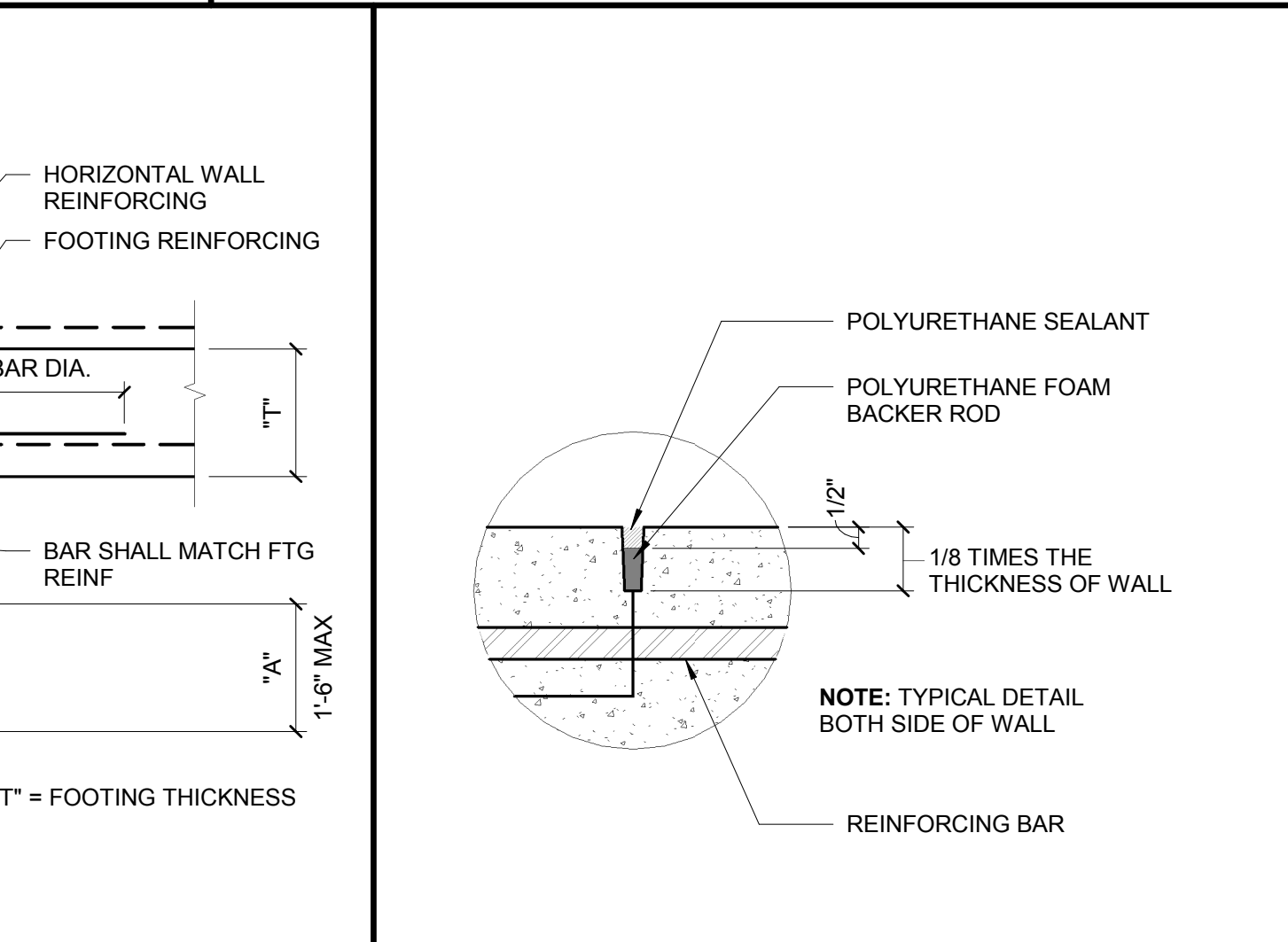
E9 TYPICAL ADD'L REINF. FOR OPENING IN CONC. WALL/SLAB



C9 TYPICAL WALL AND SLAB CONSTRUCTION JOINT DETAIL



A9 DETAIL



A9 DETAIL

160 Veranda Street
 Portland, Maine 04103
 T: 207.221.2260
 F: 207.221.2266
 Web: www.allied-eng.com

Allied Engineering
 Structural Mechanical Commissioning
 Electrical Commissioning

REGISTERED PROFESSIONAL ENGINEER
 STATE OF MAINE
 WILLIAM WALTERS
 LICENSE # 10023

GRANT HAYS ASSOCIATES
 ARCHITECTURE & INTERIOR DESIGN
 P.O. BOX 6179 FALMOUTH MAINE 04105
 207.871.5900 gha@granthays.com

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 Checked By: JPM
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STRUCTURAL - GENERAL INFORMATION

NORTH EAST AIR
 PORTLAND INTERNATIONAL AIRPORT
 PORTLAND, MAINE 04102
 1011 WESTBROOK STREET

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