

# HVERHILL ELEMENTARY SCHOOL BID PACKAGE 5: FOOTINGS AND FOUNDATIONS PORTAGE PUBLIC SCHOOLS Portage, Michigan CONSTRUCTION DOCUMENTS

## DESIGN TEAM

### ARCHITECT/ENGINEER



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### SITE ADDRESS

PORTAGE PUBLIC SCHOOLS  
 HVERHILL ELEMENTARY SCHOOL  
 6633 HVERHILL AVENUE  
 PORTAGE, MICHIGAN 49024

## REFERENCED CODES

BUILDING: 2015 MICHIGAN BUILDING CODE AND 2012 NFPA 101 LIFE SAFETY CODE  
 ENERGY: 2015 MICHIGAN ENERGY CODE  
 PLUMBING: 2018 MICHIGAN PLUMBING CODE  
 MECHANICAL: 2015 MICHIGAN MECHANICAL CODE  
 FUEL GAS: (IFGC) 2015 INTERNATIONAL FUEL GAS CODE  
 ELECTRICAL: 2017 NATIONAL ELECTRICAL CODE WITH MICHIGAN AMENDMENTS  
 BARRIER-FREE: 2015 MICHIGAN BUILDING CODE AND 2009 ICC & C A117.1  
 USE GROUP: E  
 CONSTRUCTION TYPE: IIB  
 AUTOMATIC SPRINKLERS: FULLY SPRINKLED

## PROJECT AREA

TOTAL FIRST FLOOR: 42,026 SQ. FT.  
 TOTAL SECOND FLOOR: 26,115 SQ. FT.  
 TOTAL FINISHED PROJECT: 68,141 SQ. FT.

## DRAWING INDEX

GENERAL  
 G 001 COVER SHEET

STRUCTURAL  
 S 001 GENERAL NOTES I  
 S 002 GENERAL NOTES II  
 S 003 SPECIAL INSPECTIONS AND STRUCTURAL TESTING  
 S 004 SCHEDULES, LEGENDS, AND ABBREVIATIONS  
 S 005 LAP SPLICE SCHEDULES  
 S 006 LOADING DIAGRAMS  
 S 100 FOUNDATION PLAN  
 S 111 FIRST FLOOR CMU PLAN  
 S 200 TYPICAL FOOTING DETAILS  
 S 211 TYPICAL SLAB ON GRADE DETAILS  
 S 212 GATHERING STAIR PARTIAL PLAN, SECTIONS, AND SCHEDULE  
 S 500 TYPICAL STEEL COLUMN DETAILS  
 S 600 TYPICAL MASONRY WALL DETAILS  
 S 605 TYPICAL MASONRY SECTIONS  
 S 609 ELEVATOR SECTIONS

ISSUED FOR DATE

PROJECT TITLE  
 HVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 COVER SHEET

DATE  
 MAY 25, 2023

SHEET NUMBER  
**G 001**  
 21-237.25



**SC STRUCTURAL STEEL CONNECTIONS**

SC-1 ALL STEEL DETAILS AND CONNECTIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", AISC-LOAD AND RESISTANCE FACTOR DESIGN.

SC-2 ALL CONNECTIONS, UNLESS INDICATED AS BEING COMPLETELY DESIGNED ON THE STRUCTURAL DRAWINGS, SHALL BE DESIGNED AND DETAILED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED. THE DESIGN AND DETAILING SHALL COMPLY WITH ALL APPLICABLE CODES AND SPECIFICATION SECTIONS.

SC-3 UNLESS INDICATED AS BEING COMPLETELY DESIGNED, DETAILS ON DRAWINGS INDICATE GENERAL CRITERIA FOR DESIGN AND DETAILING OF CONNECTIONS AND 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 AN INDIVIDUAL CONNECTION FOR A GIVEN SET OF LOADS. DETAILS DO NOT SHOW ERECTION AIDS. PROVIDE ERECTION AIDS AS REQUIRED AND REMOVE THEM AFTER WORK IS COMPLETE.

SC-4 SUBMIT CONNECTIONS NOT SPECIFICALLY INDICATED AS COMPLETELY DESIGNED ON THE DRAWINGS TO THE SER FOR REVIEW PRIOR TO REVIEW OF SHOP DRAWINGS. FOR BIDDING PURPOSES, WHERE NO MOMENT IS INDICATED ON DRAWINGS PROVIDE FULL MOMENT CAPACITY OF MEMBER (9 Fy Z) AND WHERE NO VERTICAL SHEAR IS INDICATED ON DRAWINGS PROVIDE FULL SHEAR CAPACITY (.54 Fy d tw).

SC-5 ALTERNATE CONNECTIONS TO THOSE SHOWN ON DRAWINGS WILL BE CONSIDERED AS A SUBSTITUTION REQUEST. SEE PROJECT SPECIFICATIONS.

SC-6 FOR CONNECTION DESIGN AND DETAILING, SET CONNECTION WORK POINT AT INTERSECTION OF MEMBER CENTERLINES, UON.

SC-7 DESIGN ALL CONNECTIONS FOR FORCES INDICATED ON THE DRAWINGS. CONNECTION DESIGN FORCES INDICATED ON THE DRAWINGS ARE FACTORED PER LRFD DESIGN BASIS UON.

SC-8 USE NO MORE THAN TWO BOLT DIAMETERS, ALL BOLTS OF THE SAME DIAMETER SHALL BE OF THE SAME GRADE, SKIP ONE SIZE BETWEEN DIAMETERS. BOLTS FOR THIS PROJECT SHALL BE:

3/4" DIAMETER F3125 GRADE A325 OR F1852 OR 1" DIAMETER F3125 GRADE A490 OR F2280

SC-9 BEAM CONNECTION DESIGN NOTES:

SEE PLANS AND ELEVATIONS FOR BEAM REACTIONS AND MOMENTS.

DEVELOP THE LARGER OF THE BEAM SHEAR REACTION SHOWN ON PLANS OR ELEVATIONS. IF NO SHEAR REACTIONS ARE SHOWN ON PLANS OR ELEVATIONS THEN ALLOW FOR SHEAR CONNECTION WITH FULL SHEAR CAPACITY (.54 Fy d tw).

DEVELOP THE LARGER OF THE MOMENT SHOWN ON PLANS OR ELEVATIONS. IF NO MOMENT REACTIONS ARE SHOWN ON PLANS OR ELEVATIONS THEN ALLOW FOR MOMENT CONNECTION THAT DEVELOPS THE FULL BEAM SECTION MOMENT CAPACITY (.9FyZ).

DEVELOP THE LARGER OF THE AXIAL FORCE DENOTED AS P OR TF SHOWN ON PLANS OR ELEVATIONS. SEE STEEL BEAM LEGEND.

ALL BEAM REACTIONS, AXIAL FORCES AND MOMENTS SHOWN ACT CONCURRENTLY. UON, BEAM REACTIONS ACT IN GRAVITY DIRECTION WHILE AXIAL FORCES AND MOMENTS ARE TO BE CONSIDERED REVERSIBLE.

WHERE NO AXIAL FORCE IS SHOWN, ALL BEAM CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM AXIAL FORCE EQUAL TO 5% OF THE FACTORED DEAD LOAD PLUS LIVE LOAD VERTICAL BEAM SHEAR. FOR THE PURPOSES OF DESIGNING FOR THIS MINIMUM AXIAL FORCE, THE VERTICAL BEAM SHEAR AND CORRESPONDING MINIMUM AXIAL FORCE NEED NOT BE CONSIDERED TO ACT CONCURRENTLY AND BEARING BOLTS IN CONNECTIONS WITH SHORT SLOTTED HOLES PARALLEL TO THE AXIAL FORCE ARE PERMITTED. SHEAR CONNECTIONS INDICATED AS COMPLETELY DESIGNED IN THESE DRAWINGS HAVE BEEN DESIGNED TO MEET THESE MINIMUM AXIAL FORCE REQUIREMENTS.

EXCEPT WHERE "SNUG TIGHT" INSTALLATION IS SPECIFICALLY PERMITTED ON DRAWINGS OR "SLIP CRITICAL" DETAILING IS REQUIRED, ALL HIGH STRENGTH BOLTS SHALL BE INSTALLED AS FULL PRETENSIONED BOLTS.

AT A MINIMUM ALL BOLTED MOMENT AND AXIAL CONNECTION SHALL HAVE PRETENSIONED BOLTS IN STANDARD HOLES.

BOLTED MOMENT CONNECTIONS AT CANTILEVERS AND BACKSPANS SHALL USE SLIP CRITICAL BOLTS.

DO NOT USE OVERSIZED OR SLOTTED HOLES FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED IN WRITING BY THE SER.

SC-10 ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE STRUCTURAL WELDING CODE, ANSII/AWS D1.1, LATEST EDITION. ALL WELD SIZES SHALL BE THE LARGER OF THE SIZE REQUIRED BY CONNECTION FORCES, THE MINIMUM SIZE PER ANSII/AWS D1.1, OR 3/16 INCH MINIMUM FILLET WELD UON. ANY WELD SIZES SHOWN ON THE DESIGN DRAWINGS ARE CONSIDERED EFFECTIVE WELD SIZES AND SHALL BE INCREASED IN ACCORDANCE WITH AWS AS REQUIRED BY GAPS OR SKEWS BETWEEN COMPONENTS.

SC-11 USE RUNOFF TABS AT ALL BEVEL AND COMPLETE JOINT PENETRATION WELDS. REMOVE RUNOFF TABS BY NEAT CUTS AFTER WELD IS COMPLETED. GRIND SMOOTH WHERE REQUIRED BY DETAIL.

SC-12 WHERE REQUIRED BY DETAIL REMOVE WELD BACK UP BARS AND GRIND SMOOTH AFTER WELD IS COMPLETED.

SC-13 DESIGN, DETAIL, FURNISH AND INSTALL STIFFENERS, CONTINUITY PLATES, DOUBLER PLATES, OR OTHER NECESSARY ADDITIONAL LOCAL STRENGTHENING MEASURES AS REQUIRED. MEMBER SIZES INDICATED ON THE DRAWINGS ARE BASED ON MEMBER BEHAVIOR AWAY FROM CONNECTIONS.

**SJ OPEN WEB STEEL JOISTS AND JOIST GIRDERS**

SJ-1 DESIGN, MANUFACTURE, AND ERECT JOISTS AND BRIDGING IN ACCORDANCE WITH THE "STANDARD SPECIFICATION FOR OPEN WEB JOISTS" OF THE STEEL JOIST INSTITUTE (SJI), CURRENT EDITION, AS A MINIMUM.

SJ-2 JOISTS AND JOIST GIRDERS SHALL BE DESIGNED AND PROVIDED BY CONTRACTOR PER THE SJI SPECIFICATIONS AS INDICATED ON THE DRAWINGS. SEE DRAWINGS FOR JOIST SPACING, LOAD CRITERIA, AND DEPTH LIMITATIONS.

SJ-3 BRIDGING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR PER THE SJI SPECIFICATIONS.

SJ-4 BEFORE STEEL DECK IS PLACED, ATTACH ALL BRIDGING TO THE JOISTS AND ANCHOR ALL BRIDGING TERMINATING AT WALLS OR BEAMS TO THE WALLS OR BEAMS. WELD OR BOLT ALL BRIDGING CONNECTIONS TO STEEL JOISTS AND BEAMS.

SJ-5 DESIGN AND DETAIL STEEL JOISTS AND JOIST CONNECTIONS TO CARRY THE MOST SEVERE COMBINATION OF DIAPHRAGM FORCES, KICKER FORCES, GRAVITY LOADS, SNOW LOADS, AND WIND UPLIFT FORCES SHOWN ON THE DRAWINGS. IT IS NOT ACCEPTABLE TO DESIGN JOISTS FOR SJI STANDARD LOADS IN LIEU OF THE LOADS SHOWN ON THE DRAWINGS. IN ADDITION TO THE LOADS SHOWN ON THE DRAWINGS, JOISTS SHALL BE DESIGNED FOR:

- A. A MINIMUM NET UPLIFT FORCE OF 16 PSF (STRENGTH LEVEL), UON
- B. ADDITIONAL SERVICE POINT LOAD AT ANY PANEL POINT OF 300 LBS FOR K-SERIES JOISTS AND 700 LBS FOR LH AND DLH-SERIES JOISTS

SJ-6 DESIGN JOISTS TO LIMIT DEFLECTION UNDER TOTAL LOAD TO SPAN LENGTH DIVIDED BY 240, UON. DESIGN JOISTS TO LIMIT DEFLECTION UNDER LIVE LOAD TO SPAN LENGTH DIVIDED BY 360, UON.

SJ-7 CAMBER JOISTS PER SJI STANDARDS, UON.

SJ-8 PROVIDE DOUBLE ANGLE TOP AND BOTTOM CHORDS.

SJ-9 HANGING AND POINT BEARING LOADS AT JOISTS SHALL ONLY BE PERMITTED AS INDICATED ON THE DRAWINGS. DESIGN JOIST FOR HANGING AND POINT BEARING LOADS AT ANY ADJACENT PANEL POINT. COORDINATE HANGING AND POINT BEARING LOADS WITH ARCHITECTURAL AND MEP DRAWINGS.

SJ-10 EXTEND BOTTOM CHORDS OF JOISTS AND JOIST GIRDERS AT COLUMNS, SEE JOIST DETAILS FOR ADDITIONAL INFORMATION. COORDINATE BOTTOM CHORD EXTENSIONS WITH ARCHITECTURAL DRAWINGS.

SJ-11 AT EDGE CONDITIONS EXTEND JOIST TOP CHORDS BEYOND SUPPORTING BEAMS TO PERIMETER ANGLE OR BENT PLATE, UON.

SJ-12 JOIST SERIES, SEAT, AND SUPPORT INFORMATION SHOWN ON THE DRAWINGS IS A MINIMUM. JOIST DESIGN ENGINEER TO REVIEW ALL SJI REQUIREMENTS AND NOTIFY ENGINEER OF RECORD IF SELECTED SYSTEM DIFFERS FROM CONTRACT DOCUMENTS PRIOR TO FABRICATION OF JOISTS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION BETWEEN SELECTED JOIST SYSTEM AND OTHER TRADES.

**SD STEEL DECK GENERAL REQUIREMENTS**

SD-1 THE MANUFACTURE AND ERECTION OF STEEL DECK AND ITS ANCHORAGE SHALL, AT A MINIMUM, BE IN ACCORDANCE WITH "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS" OF THE STEEL DECK INSTITUTE (SDI), CURRENT EDITION AND "SPECIFICATIONS FOR DESIGN OF LIGHT GAGE COLD FORMED STEEL STRUCTURAL MEMBERS" AS PUBLISHED BY THE AMERICAN IRON AND STEEL INSTITUTE (AISI), CURRENT EDITION.

SD-2 CONFIGURE ALL STEEL DECK USING THREE SPAN CONTINUOUS LAYOUTS WHEREVER POSSIBLE.

SD-3 CONFIGURE ALL STEEL DECK AS SHOWN ON THE DRAWINGS.

**RD STEEL ROOF DECK**

RD-1 STEEL ROOF DECK SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES:

ASTM A653-HOT-DIPPED GALVANIZED CONFORMING TO ASTM A924 G60

ROOF DECK SHALL BE HOT-DIP GALVANIZED, UON

FABRICATE STEEL DECK UNITS AND ACCESSORIES FROM STEEL SHEET CONFORMING TO ASTM A653 STRUCTURAL QUALITY GRADE 50, WITH A MINIMUM YIELD STRENGTH OF 50 KSI.

RD-2 PROVIDE STEEL ROOF DECK WITH DEPTH AND MINIMUM GAGE INDICATED ON DRAWINGS. PROVIDE ANCHORAGE TO SUPPORTING MEMBERS AS INDICATED ON DRAWINGS.

RD-3 ROOF DECK AND ITS ANCHORAGE TO SUPPORTING MEMBERS SHALL MEET THE FOLLOWING MINIMUM FASTENING REQUIREMENTS:

- A. AT ENDS OF UNITS AND AT ALL INTERMEDIATE SUPPORTS: BY PUDDLE WELDS NOT LESS THAN 5/8 INCH DIAMETER SPACED NOT MORE THAN 12 INCHES ON CENTER MAX.
- B. SIDE LAPS OF ADJACENT UNITS SHALL BE FASTENED BY SIDE SEAM WELDING OR SIDELAP SCREWS SPACED AT 24 INCHES ON CENTER MAX. ARC SEAM WELDS SHALL BE A MINIMUM OF 1-1/2 INCH BY 1/2 INCH.

RD-4 NO LOADS SHALL BE HUNG DIRECTLY FROM STEEL ROOF DECK WITHOUT PRIOR WRITTEN APPROVAL OF THE DECK SUPPLIER AND REVIEW BY THE SER.

RD-5 CHECKING CONTRACTOR SHALL COORDINATE DECK OPENING SIZES AND LOCATIONS FROM ARCHITECTURAL AND MEP CONTRACT DOCUMENTS, PROVIDE HEADER MEMBERS OR REINFORCEMENT AS REQUIRED BY TYPICAL DETAILS EVEN IF NOT SHOWN ON THE PLANS, AND SUBMIT PROPOSED OPENINGS THROUGH SLAB/DECK FOR REVIEW BY THE DESIGN PROFESSIONALS.

**AC ARCHITECTURAL CLADDING**

AC-1 TYPICAL DETAILS INDICATE GENERAL CRITERIA FOR ASSUMED CONNECTIONS OF ARCHITECTURAL CLADDING TO BASE BUILDING STRUCTURE. PROVIDE DESIGNS THAT MEET INDICATED CRITERIA AND CONFORM TO LISTED CODES AND STANDARDS. REFER TO SUBMITTALS SECTION IN THESE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.

**PA POST-INSTALLED ANCHORS**

PA-1 ADHESIVE ANCHOR SYSTEMS USED FOR DESIGN:

SEISMIC DESIGN CATEGORY A - F

ADHESIVE: HILTI HIT-HY 200 V3

THREADED ROD: HILTI HAS OR THREADED ROD: HILTI HIT-Z

OVERHEAD AND/OR CONSTANT TENSION ADHESIVE ANCHOR INSTALLATIONS NOT SHOWN ON THE DRAWINGS SHALL NOT BE PERMITTED UNLESS EACH CONDITION IS REVIEWED AND APPROVED IN WRITING BY THE SER.

PA-2 PROOF TESTING OF ADHESIVE ANCHORS SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. UNLESS NOTED OTHERWISE, ADHESIVE ANCHOR PROOF TENSION LOADS SHALL BE PER THE ADHESIVE ANCHOR PROOF SCHEDULES.

PA-3 FIELD DRILLED EXPANSION ANCHOR SYSTEMS USED FOR DESIGN:

HILTI KWIK BOLT T22

PA-4 PROOF TESTING OF EXPANSION ANCHORS SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. UNLESS NOTED OTHERWISE, EXPANSION ANCHOR PROOF TORQUE LOADS SHALL BE PER THE EXPANSION ANCHOR PROOF SCHEDULES.

PA-5 FIELD DRILLED THREADED SCREW ANCHOR SYSTEMS USED FOR DESIGN:

HILTI KH-EZ

PA-6 ALTERNATIVE SYSTEM EQUIVALENT TO OR EXCEEDING THE PROPERTIES OF THE SYSTEMS ABOVE WILL BE CONSIDERED AS A SUBSTITUTION REQUEST. SEE PROJECT SPECIFICATIONS.

PA-7 ANCHORS ARE TO BE MINIMUM 3/4" DIAMETER WITH A MINIMUM EMBEDMENT OF 6", UON.

PA-8 INSTALL ANCHORS TO MEET THE REQUIREMENTS INDICATED IN THE CONTRACT DOCUMENTS AND THE CURRENT MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS (MPI).

PA-9 LOCATE, BY NON-DESTRUCTIVE MEANS, AND AVOID ALL EXISTING REINFORCEMENT PRIOR TO INSTALLATION OF ANCHORS. IF EXISTING REINFORCING LAYOUT PROHIBITS THE INSTALLATION OF ANCHORS AS INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN PROFESSIONALS.

PA-10 INSTALL ANCHORS IN SOLID MASONRY OR IN HOLLOW MASONRY THAT HAS BEEN GROUTED SOLID AT LEAST ONE COURSE ABOVE TO ONE COURSE BELOW THE ANCHOR, UON.

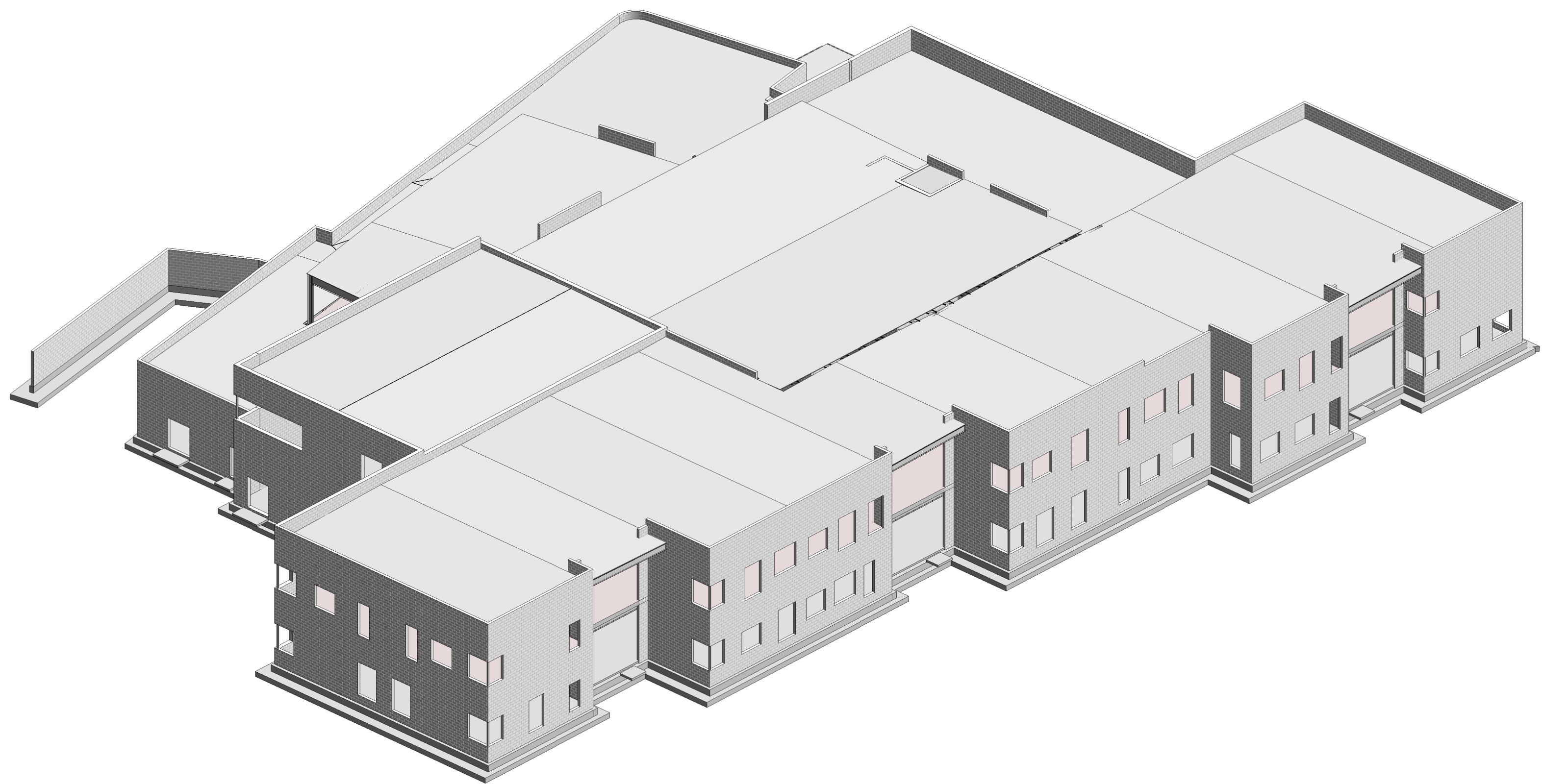
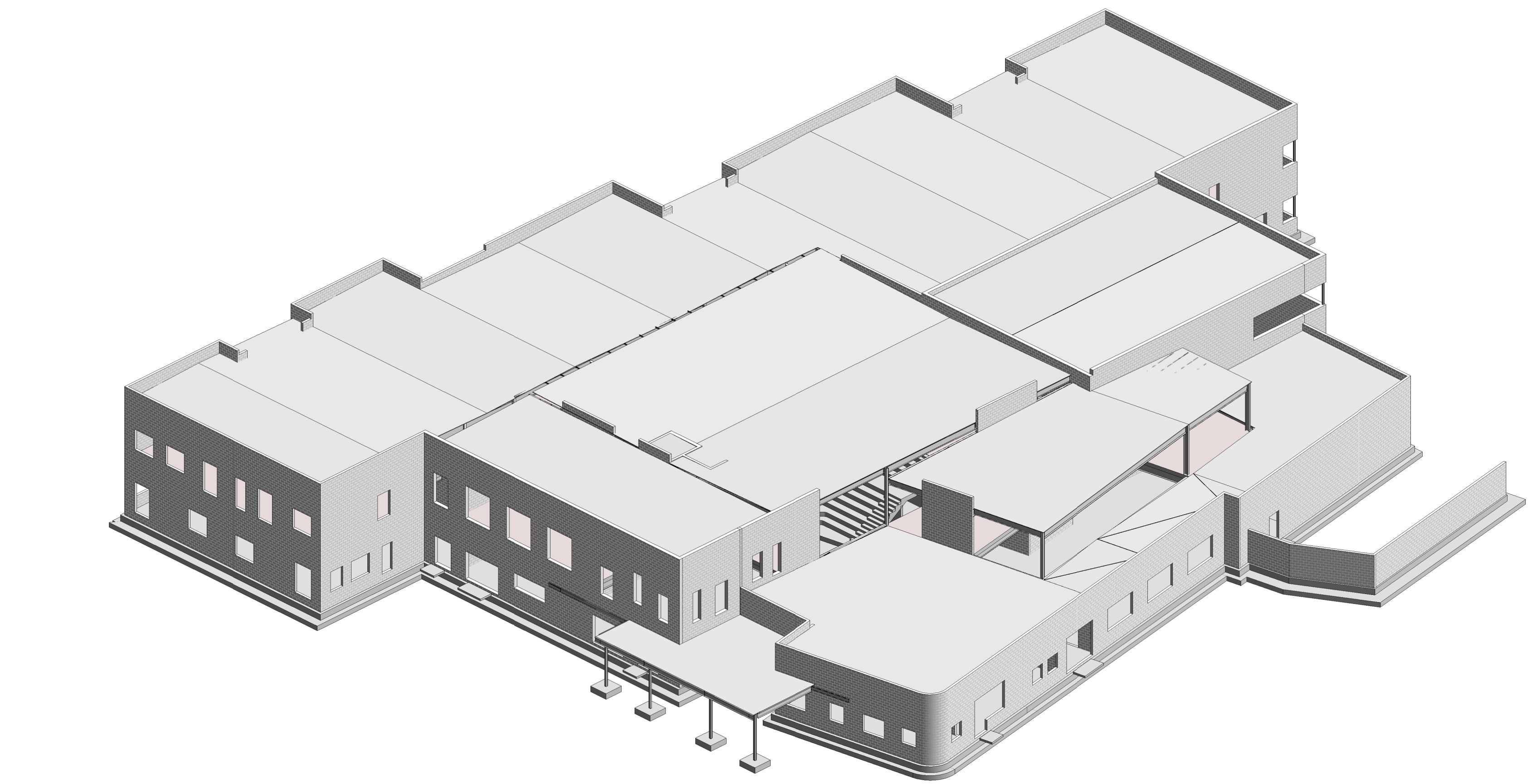
PA-11 SEE PROJECT SPECIFICATIONS FOR POST-INSTALLED ANCHOR INSPECTION REQUIREMENTS.

**BN BID NOTES**

BN-1 DRAWINGS HAVE BEEN ISSUED FOR PROCUREMENT OF BELOW GRADE FOUNDATION ELEMENTS ONLY. CONTRACTOR TO COORDINATE DELINEATION OF SCOPE.

BN-2 PRICING TO BE PROVIDED BASED ON QUANTITIES AND DESIGN INFORMATION SHOWN IN DRAWINGS. FINAL COORDINATION OF CMU DOWEL LOCATIONS AND AND OTHER EMBEDDED ELEMENTS TO BE ISSUED WITH 100% CONTRACT DOCUMENTS.

BN-3 SOG IS NOT INCLUDED IN THIS PACKAGE AND WILL BE INCLUDED IN SUPERSTRUCTURE PACKAGE.



**Thornton Tomasetti**

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ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 5: FOOTINGS AND  
FOUNDATIONS

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
GENERAL NOTES II

DATE  
MAY 25, 2023

SHEET NUMBER  
S 002  
21-237.25

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	—	X	ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. REINFORCING BAR WELDING:				
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706;	—	X	AWS D1.4 ACI 318: 26.6.4	—
B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND	—	X		
C. INSPECT ALL OTHER WELDS.	X	—		
3. INSPECT ANCHORS CAST IN CONCRETE	—	X	ACI 318: 17.8.2	—
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS:				
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	—	ACI 318: 17.8.2.4	—
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	—	X	ACI 318: 17.8.2	—
5. VERIFYING USE OF REQUIRED DESIGN MIX.	—	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	—	ASTM C172 ASTM C31. ACI 318: 26.4, 26.12	1908.10
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	—	ACI 318: 26.5	1908.6, 1908.7, 1908.3
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	—	X	ACI 318: 26.5.3-26.5.5	1908.9
9. INSPECT PRESTRESSED CONCRETE FOR:				
A. APPLICATION OF PRESTRESSING FORCES; AND	X	—	ACI 318: 26.10	—
B. GROUTING OF BONDED PRESTRESSING TENDONS	X	—		
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	—	X	ACI 318: CH 26.8	—
11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	—	X	ACI 318: 26.11.2	—
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	—	X	ACI 318: 26.11.1.2 <sup>(B)</sup>	—

LEVEL B REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION				
INSPECTION TASK	FREQUENCY <sup>(a)</sup>		REFERENCE FOR CRITERIA	
	CONTINUOUS	PERIODIC	TMS 402/ACI 530 /ASCE 5	TMS 602/ACI 530.1 /ASCE 6
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS.	—	X	—	ART. 1.5
2. AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING ARE IN COMPLIANCE:				
A. PROPORTIONS OF SITE-PREPARED MORTAR	—	X	—	ART. 2.1, 2.6A
B. CONSTRUCTION OF MORTAR JOINTS	—	X	—	ART. 3.3B
C. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES	—	X	—	ART. 2.4B, 2.4H
D. LOCATION OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	—	X	—	ART. 3.4, 3.6A
E. PRESTRESSING TECHNIQUE	—	X	—	ART. 3.6B
F. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY	X <sup>(B)</sup>	X <sup>(C)</sup>	—	ART. 2.1C
3. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:				
A. GROUT SPACE	—	X	—	ART. 3.2D, 3.2F
B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	—	X	SEC. 1.16	ART. 2.4, 3.4
C. PLACEMENT OF REINFORCEMENT, CONNECTORS, PRESTRESSING TENDONS AND ANCHORAGES	—	X	SEC. 1.16	ART. 3.2E, 3.4, 3.6A
D. PROPORTION OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	—	X	—	ART. 2.6B, 2.4G, 1.B
E. CONSTRUCTION OF MORTAR JOINTS	—	X	—	ART. 3.3B
4. VERIFY DURING CONSTRUCTION:				
A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	—	X	—	ART. 3.3F
B. TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.	—	X	SEC. 1.16.4.3, 1.17.1	—
C. WELDING OF REINFORCEMENT	X	—	SEC. 2.1.7.7.2, 3.3.3.4(c), 8.3.3.4 (b)	—
D. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C)).	—	X	—	ART. 1.8C, 1.8D
E. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE	X	—	—	ART. 3.6B
F. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE	X	—	—	ART.3.5, 3.6C
G. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS	X <sup>(B)</sup>	X <sup>(C)</sup>	—	ART. 3.3B.8
5. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	—	X	—	ART. 1.4B.2.A.3, 1.4B.2.B.3, 1.4B.2.C.3, 1.4B.3, 1.4B.4

(a) FREQUENCY REFERS TO THE FREQUENCY OF INSPECTION, WHICH MAY BE CONTINUOUS DURING THE TASK LISTED OR PERIODICALLY DURING THE LISTED TASK, AS DEFINED IN THE TABLE.  
 (b) REQUIRED FOR THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.  
 (c) REQUIRED AFTER THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.

REQUIRED VERIFICATION AND INSPECTION OF SOILS		
VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	—	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	—	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	—	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	—
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	—	X

REQUIRED VERIFICATION OF STEEL CONSTRUCTION OTHER THAN REINFORCING STEEL				
VERIFICATION AND INSPECTION TASK	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. MATERIAL VERIFICATION OF CO				
A. IDENTIFICATION MARKINGS TO CONFORM TO STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS	—	X	APPLICABLE ASTM MATERIAL STANDARDS	—
B. MANUFACTURER'S CERTIFIED TEST REPORTS	—	X	—	—
2. INSPECTION OF WELDING:				
A. COLD-FORMED STEEL DECK:				
1. FLOOR AND ROOF DECK WELDS	—	X	—	AWS D1.3
B. REINFORCING STEEL:				
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706	—	X	—	AWS D1.4, ACI 318: 3.5.2
2. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT	X	—	—	
3. SHEAR REINFORCEMENT	X	—	—	
4. OTHER REINFORCING STEEL	—	X	—	

**SI SPECIAL INSPECTIONS AND STRUCTURAL TESTING**

- SI-1) SPECIAL INSPECTIONS SHALL BE PERFORMED BY A SPECIAL INSPECTOR PER IBC SECTIONS 1704 AND 1705. THE SPECIAL INSPECTOR SHALL BE EMPLOYED BY THE OWNER AND NOT BY THE CONTRACTOR OR ANY OTHER PERSON RESPONSIBLE FOR THE WORK.**
- SI-2) THE SPECIAL INSPECTOR SHALL BE A QUALIFIED (LICENSED) PERSON WHO SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING HIS OR HER COMPETENCE AND RELEVANT TRAINING OR EXPERIENCE TO THE SATISFACTION OF THE BUILDING OFFICIAL. EXPERIENCE SHALL BE FOR SPECIAL INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.**
- SI-3) THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY PER IBC SECTION 1704.4 TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK WHEN RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND FORCE OR SEISMIC FORCE RESISTING SYSTEM. THE STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.**
- SI-4) THE FOLLOWING WORK REQUIRES STRUCTURAL TESTS. FOR SPECIFIC REQUIREMENTS OF STRUCTURAL TESTS, SEE THE SPECIFICATIONS AND GENERAL NOTES.**
- CONCRETE REINFORCEMENT
  - CAST-IN-PLACE CONCRETE
  - SHOTCRETE
  - POST-INSTALLED ANCHORS
  - GROUTED DOWELS
  - CONCRETE UNIT MASONRY
  - STRUCTURAL STEEL MATERIALS AND FABRICATION
  - WELDING; STRUCTURAL STEEL AND REINFORCING STEEL
  - STEEL DECKING
  - COLD FORMED METAL FRAMING
- SI-5) THE FOLLOWING ITEMS SHALL RECEIVE SPECIAL INSPECTION BY A CERTIFIED SPECIAL INSPECTOR IN ACCORDANCE WITH IBC 1704 AND 1705.**

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS:				
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	—	X	AISC 360, SECTION A3.3 AND APPLICABLE ASTM MATERIAL STANDARDS	—
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	—	X	—	—
2. INSPECTION OF HIGH-STRENGTH BOLTING:				
A. SNUG-TIGHT JOINTS	—	X	AISC 360, SECTION M2.5	—
B. SLIP-CRITICAL CONNECTIONS.	X	X		
C. PRE-TENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITH MATCHMARKING, TWIST-OFF BOLT OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION	X	—		
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:				
A. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360.	—	X	AISC 360, SECTION A3.1H	2203.1
B. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	—	X	APPLICABLE ASTM MATERIAL STANDARDS	—
C. MANUFACTURER'S CERTIFIED MILL TEST REPORTS.	—	—	ASTM A 6 OR ASTM A 568	—
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS:				
A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.	—	—	AISC 360, SECTION A3.5 AND APPLICABLE AWS A5 DOCUMENTS	—
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	—	X	—	—
5. INSPECTION OF WELDING:				
A. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:				
1. COMPLETE AND PARTIAL PENETRATION GROOVE WELDS.	X	—	AWS D1.1	1705.2.1
2. MULTIPASS FILLET WELDS.	—	—		
3. SINGLE-PASS FILLET WELDS > 5/16"	—	—		
4. PLUG AND SLOT WELDS.	—	—		
5. SINGLE-PASS FILLET WELDS ≤ 5/16"	—	—		
6. FLOOR AND ROOF DECK WELDS.	—	—		
B. REINFORCING STEEL:				
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706.	—	X	AWS D1.4, ACI 318: 3.5.2	—
2. REINFORCING STEEL-RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS AND SHEAR REINFORCEMENT.	X	—		
3. SHEAR REINFORCEMENT.	X	—		
4. OTHER REINFORCING STEEL.	—	X		
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS:				
A. DETAILS SUCH AS BRACING AND STIFFENING.	—	X	—	1705.2.1
B. MEMBER LOCATIONS.	—	X	—	—
C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION.	—	X	—	—

REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOISTS GIRDERS				
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD <sup>(A)</sup>	IBC REFERENCE
1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS				
A. END CONNECTIONS - WELDING OR BOLTED	—	X	SJI SPECIFICATIONS LISTED IN SECTION 2207.1.	—
B. BRIDGING - HORIZONTAL OR DIAGONAL	—	X	—	—
1. STANDARD BRIDGING	—	X	SJI SPECIFICATIONS LISTED IN SECTION 2207.1.	—
2. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS LISTED IN SECTION 2207.1.	—	X	—	—

<sup>(A)</sup> WHERE APPLICABLE, SEE ALSO SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND FOUNDATIONS

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 SPECIAL INSPECTIONS AND STRUCTURAL TESTING

SHEET NUMBER  
**S 003**  
 DATE  
 MAY 25, 2023  
 21-237.25

ADHESIVE ANCHOR PROOF LOAD SCHEDULE				
A615 GR 60 REINFORCEMENT IN NORMAL WEIGHT CONCRETE (3000 PSI MIN)				
BAR SIZE	EMBEDMENT (IN)	TENSION TEST VALUE (LBS)		
		HILTI HIT-HY 200	HILTI HIT-RE 500-SD	SIMPSON SET-XP
#4	4	6010	6150	5690
#5	5	9940	9330	7640
#6	6	13660	12860	9770
#7	7	15750	13550	12250
#8	8	20670	16540	15430
#9	9	26270	19580	NA
#10	10	32500	22060	24100

EXPANSION ANCHOR PROOF LOAD SCHEDULE		
ANCHORS IN NORMAL WEIGHT CONCRETE (3000 PSI MINIMUM)		
ANCHOR DIAMETER (IN)	TORQUE TEST VALUE (FT-LBS)	
	HILTI KWIK BOLT TZ	SIMPSON STRONG-BOLT 2
3/8	25	30
1/2	40	60
5/8	60	90
3/4	110	150

EXPANSION ANCHOR PROOF LOAD SCHEDULE		
ANCHORS IN LIGHTWEIGHT CONCRETE (3000 PSI MINIMUM)		
ANCHOR DIAMETER (IN)	TORQUE TEST VALUE (FT-LBS)	
	HILTI KWIK BOLT TZ	SIMPSON STRONG-BOLT 2
3/8	25	30
1/2	40	60
5/8	60	90
3/4	NA	150

**TORQUE PROOF LOAD NOTES:**

- SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING PROOF TESTING OF EXPANSION ANCHORS.

ADHESIVE ANCHOR PROOF LOAD SCHEDULE				
A193 B7 THREADED ROD IN NORMAL WEIGHT CONCRETE (3000 PSI MIN)				
THREADED ROD DIAMETER (IN)	EMBEDMENT (IN)	TENSION TEST VALUE (LBS)		
		HILTI HIT-HY 200	HILTI HIT-RE 500-SD	SIMPSON SET-XP
3/8	3	3360	3510	3620
1/2	4	6010	6150	5690
5/8	5	9440	9330	7640
3/4	6	7120	12860	9770
7/8	7	15750	13620	12250
1	8	20670	16440	15430
1-1/4	10	32500	22060	24100

**TENSION PROOF LOAD NOTES:**

- PROOF TESTING OF REINFORCEMENT FOR CONCRETE HOUSEKEEPING PADS IS NOT REQUIRED.
- SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING PROOF TESTING OF ADHESIVE ANCHORS.

**1 ANCHOR PROOF LOAD SCHEDULES**

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
ADDL	ADDITIONAL	LL	LIVE LOAD
ADJ	ADJACENT	LLH	LONG LEG HORIZONTAL
ALT	ALTERNATE	LLV	LONG LEG VERTICAL
APPRX	APPROXIMATE	LONG	LONGITUDINAL
ARCH	ARCHITECT OR ARCHITECTURAL	LP	LOW POINT
B/	BOTTOM OF	LW	LIGHTWEIGHT
B/B	BACK TO BACK	LWC	LIGHTWEIGHT CONCRETE
BAL	BALANCE	M	MOMENT
BLDG	BUILDING	MATL	MATERIAL
BLK	BLOCK	MAX	MAXIMUM
BLKG	BLOCKING	MC	MOMENT CONNECTION(S)
BM	BEAM	MECH	MECHANICAL
BOT	BOTTOM	MEP	MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION
BRDG	BRIDGING	MEZZ	MEZZANINE
BRG	BEARING	MFR	MANUFACTURER
BTWN	BETWEEN	MID	MIDDLE
C	COMPRESSION	MIN	MINIMUM
C/C	CENTER TO CENTER	MISC	MISCELLANEOUS
CIP	CAST-IN-PLACE	NIC	NOT IN CONTRACT
CJP	COMPLETE JOINT PENETRATION	NO	NUMBER
CL	CENTER LINE	NOM	NOMINAL
CLR	CLEAR OR CLEARANCE	NS	NEAR SIDE
CMU	CONCRETE MASONRY UNIT	NTS	NOT TO SCALE
COL	COLUMN	NW	NORMAL WEIGHT
COMP	COMPRESSION	NWC	NORMALWEIGHT CONCRETE
CONC	CONCRETE	OC	ON CENTER
CONN	CONNECTION(S)	OD	OUTSIDE DIAMETER
CONST	CONSTRUCTION	OF	OUTSIDE FACE
CONT	CONTINUOUS	OH	OPPOSITE HAND
db	REINFORCING BAR DIAMETER	OPNG(S)	OPENING(S)
DBL	DOUBLE	OPP	OPPOSITE
DCW	DEMAND CRITICAL WELD	OSL	OUTSTANDING LEG
DEG	DEGREE(S)	PC	PIECE
DET	DETAIL	PCY	POUNDS PER CUBIC YARD
DIA	DIAMETER	PERP	PERPENDICULAR
DIAG	DIAGONAL	PG	PLATE GIRDER
DIM(S)	DIMENSION(S)	PJP	PARTIAL JOINT PENETRATION
DL	DEAD LOAD	PL	PLATE
DWG(S)	DRAWING(S)	PRC	PRECAST
DWL	DOWEL(S)	PRL	PARALLEL
EA	EACH	PSF	POUNDS PER SQUARE FOOT
ECC	ECCENTRICITY	PSI	POUNDS PER SQUARE INCH
EE	EACH END	PT	POINT OR POST-TENSION(ED) OR (ING)
EF	EACH FACE	RAD	RADIUS
EL	ELEVATION	REF	REFERENCE
ELEC	ELECTRICAL	REINF	REINFORCE(D) (ING) OR (MENT)
ENGR	ENGINEER	REQD	REQUIRED
EOD	EDGE OF DECK	S&T	SHRINKAGE AND TEMPERATURE
EOS	EDGE OF SLAB	SCHED	SCHEDULE(D)
EQ	EQUAL	SDL	SUPERIMPOSED DEAD LOAD
EQUIP	EQUIPMENT	SECT	SECTION
EW	EACH WAY	SER	STRUCTURAL ENGINEER OF RECORD
EXP	EXPANSION	SF	SQUARE FOOT (FEET)
EXST	EXISTING	SFRS	SEISMIC FORCE RESISTING SYSTEM
EXT	EXTERIOR	SHT	SHEET
F/F	FACE TO FACE	SIM	SIMILAR
FIN	FINISH(ED)	SOG	SLAB ON GRADE
FLR	FLOOR	SP	SPACE
FND	FOUNDATION	SPEC(S)	SPECIFICATION(S)
FP	FIREPROOF(ING)	STD	STANDARD
FS	FAR SIDE	STL	STEEL
FTG	FOOTING	STR	STRUCTURE
GA	GAGE, GAUGE	STRCTL	STRUCTURAL
GALV	GALVANIZED	SYM	SYMMETRICAL
GB	GRADE BEAM	T	TENSION
GEN	GENERAL	T&B	TOP AND BOTTOM
GR	GRADE	T/	TOP OF
HK	HOOK	TEMP	TEMPERATURE OR TEMPORARY
HORIZ	HORIZONTAL	TEN	TENSION
HP	HIGH POINT	THK	THICK OR THICKNESS
HT	HEIGHT	TYP	TYPICAL
ID	INSIDE DIAMETER	UON	UNLESS OTHERWISE NOTED
IF	INSIDE FACE	V	SHEAR
INFO	INFORMATION	VERT	VERTICAL
INT	INTERIOR	VIF	VERIFY IN FIELD
INTRM	INTERMEDIATE	W/	WITH
JST(S)	JOIST(S)	W/O	WITHOUT
JT	JOINT	WD	WOOD
K	KIPS (1,000 POUNDS)	WP	WORK POINT
KLF	KIP PER LINEAR FOOT	WPGF	WATERPROOFING
KSF	KIP PER SQUARE FOOT	WS	WATERSTOP
		WWR	WELDED WIRE REINFORCEMENT

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 5: FOOTINGS AND FOUNDATIONS

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SCHEDULES, LEGENDS, AND ABBREVIATIONS

SHEET NUMBER  
**S 004**  
DATE  
MAY 25, 2023  
21-237.25

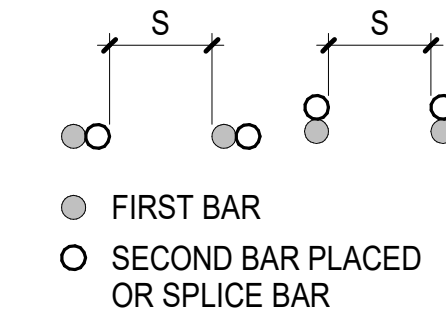
SLAB/SLAB-ON-GRADE REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)								SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)						COMPRESSION (LCS)
		f <sub>c</sub> = 3 KSI	f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	
#4	5.500	22	19	17	16	14	14	14
#5	5.375	32	28	25	23	21	20	20
#6	5.250	43	37	34	31	28	27	27
#7	5.125	69	60	54	49	46	43	43
#8	5.000	86	74	67	61	56	53	53

DEVELOPMENT LENGTH SCHEDULE (INCHES)																			SEE NOTE 5										
BAR SIZE	MINIMUM BAR SPACING (INCHES) (MAX(1" db) + db) NOTE 2	TENSION										COMPRESSION																	
		NOTED AS Ld ON DRAWINGS					NOTED AS Ldh ON DRAWINGS					NOTED AS Ldc ON DRAWINGS																	
		f <sub>c</sub> (PSI)					f <sub>c</sub> (PSI)					f <sub>c</sub> (PSI)																	
#4	1.500	22	19	17	16	15	14	13	12	12	11	10	9	8	8	7	6	6	6	11	10	9	9	9	9	9	9	9	9
#5	1.625	28	24	22	20	18	17	16	15	15	14	12	11	10	9	8	8	8	8	14	12	12	12	12	12	12	12	12	12
#6	1.750	33	29	26	24	22	21	19	18	18	17	15	13	12	11	11	10	9	9	17	15	14	14	14	14	14	14	14	14
#7	1.875	48	42	38	34	32	30	28	27	27	27	20	17	15	14	13	12	12	11	11	11	11	11	11	11	11	11	11	11
#8	2.000	55	48	43	39	36	34	32	30	30	30	22	19	17	16	15	14	13	12	12	12	12	12	12	12	12	12	12	12
#9	2.375	62	54	48	44	41	38	36	34	34	34	25	22	20	18	17	16	15	14	14	14	25	22	21	21	21	21	21	21
#10	2.625	70	61	54	50	46	43	41	39	39	39	28	25	22	20	19	18	17	16	16	16	28	25	23	23	23	23	23	23
#11	2.875	78	67	60	55	51	48	45	43	43	43	31	27	24	22	21	19	18	17	17	17	31	27	26	26	26	26	26	26

- DEVELOPMENT LENGTH SCHEDULE NOTES:
- WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH, MULTIPLY Ld BY 1.3.
  - WHERE STIRRUPS OR TIES ARE NOT PRESENT THROUGHOUT Ld, MINIMUM BAR SPACING MUST BE INCREASED TO [MAX(1", db) + 2db] FOR SCHEDULED VALUES TO BE APPLICABLE.

LAP SPLICE NOTES:

- TABULATED VALUES ARE PER ACI 318-11 REQUIREMENTS FOR NORMALWEIGHT CONCRETE. THE VALUES ON THIS SHEET DO NOT APPLY TO LIGHTWEIGHT CONCRETE.
- SEE TYPICAL DETAILS FOR CLEAR COVER
- MINIMUM BAR SPACING DIAGRAM - "S"



- WHERE ACTUAL CONDITIONS DIFFER FROM THE CLEAR COVER SHOWN ON THE TYPICAL DETAILS OR DIFFER FROM PROVIDED SCHEDULED BAR SIZE MINIMUM SPACING AND/OR f<sub>c</sub>, LENGTHS SHALL BE ADJUSTED ONLY WITH THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.

- TABULATED VALUES ARE FOR NON-EPOXY COATED GRADE 60 REINFORCEMENT IN NORMALWEIGHT CONCRETE

FOR EPOXY COATED REINFORCEMENT:  
 MULTIPLY Ld BY 1.5  
 MULTIPLY Ldh BY 1.2  
 Ldc IS NOT AFFECTED  
 MULTIPLY LTS BY 1.3 FOR "TOP BARS"  
 MULTIPLY LTS BY 1.5 FOR ALL OTHER REINFORCEMENT

FOR GRADE 75 REINFORCEMENT:  
 MULTIPLY Ld, Ldh, Ldc, AND LTS BY 1.25  
 MULTIPLY Lcs BY 1.45

- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED IN TENSION, THE TENSION LAP SPLICE LENGTH (LTS) SHALL BE THE LARGER OF THE TENSION DEVELOPMENT LENGTH (Ld) OF THE LARGER BAR AND THE TENSION LAP SPLICE LENGTH OF THE SMALLER BAR.
- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED IN COMPRESSION, THE COMPRESSION LAP LENGTH (LCS) SHALL BE THE LARGER OF THE COMPRESSION DEVELOPMENT LENGTH (Ldc) OF THE LARGER BAR OR THE COMPRESSION LAP SPLICE LENGTH OF THE SMALLER BAR.
- "TOP BARS" ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH OR SPLICE  
 "OTHER BARS" ARE ALL BARS FOR WHICH THIS DOES NOT APPLY

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

COLUMN REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)												SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI	f <sub>c</sub> = 12 KSI		
#5	2.125	28	25	23	21	20	19	18	18	18	19	
#6	2.250	37	34	31	28	27	25	24	24	24	23	
#7	2.375	54	49	45	41	39	36	35	35	35	27	
#8	2.500	62	56	51	47	44	42	39	39	39	30	
#9	2.875	70	63	57	53	50	47	44	44	44	34	
#10	3.250	79	71	64	60	56	53	50	50	50	39	
#11	3.625	87	78	71	66	62	58	55	55	55	43	

FOOTING/MAT REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)																	SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION LAP (LTS)														COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI		f <sub>c</sub> = 5 KSI		f <sub>c</sub> = 6 KSI		f <sub>c</sub> = 7 KSI		f <sub>c</sub> = 8 KSI		f <sub>c</sub> = 9 KSI		f <sub>c</sub> = 10 KSI			
		TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER		
#4	5.500	20	15	18	14	16	13	15	12	14	12	13	12	13	12	12	
#5	5.375	25	19	22	17	20	16	19	14	18	14	17	13	16	12	12	
#6	5.250	29	23	26	20	24	19	22	17	21	16	20	15	19	15	15	
#7	5.125	43	33	38	29	35	27	32	25	30	23	29	22	27	21	21	
#8	5.000	49	37	44	34	40	31	37	28	35	27	33	25	31	24	24	
#9	4.875	63	49	57	44	52	40	48	37	45	35	42	33	40	31	31	
#10	4.750	82	63	74	57	67	52	62	48	58	45	55	42	52	40	40	
#11	4.625	104	80	93	72	85	65	79	61	74	57	69	54	66	51	51	

FOUNDATION WALL REINFORCEMENT - VERTICAL INSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)												SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI	f <sub>c</sub> = 12 KSI		
#4	5.500	15	14	13	12	12	12	12	12	12	15	
#5	5.375	23	20	18	17	16	15	14	14	14	19	
#6	5.250	31	28	25	23	22	21	20	20	20	23	
#7	5.125	50	45	41	38	35	33	32	32	32	27	
#8	5.000	62	56	51	47	44	42	39	39	39	30	
#9	4.875	76	68	62	57	54	51	48	48	48	34	
#10	4.750	92	82	75	69	65	61	58	58	58	39	
#11	4.625	108	97	89	82	77	72	69	69	69	43	

FOUNDATION WALL REINFORCEMENT - HORIZONTAL INSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)												SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI	f <sub>c</sub> = 12 KSI		
#4	5.500	20	18	16	15	14	13	13	13	13	15	
#5	5.375	25	22	20	19	18	17	16	16	16	19	
#6	5.250	29	26	24	22	21	20	19	19	19	23	
#7	5.125	48	43	39	36	34	32	31	31	31	27	
#8	5.000	61	54	50	46	43	41	39	39	39	30	
#9	4.875	75	67	61	57	53	50	47	47	47	34	
#10	4.750	91	82	75	69	65	61	58	58	58	39	
#11	4.625	109	97	89	82	77	73	69	69	69	43	

FOUNDATION WALL REINFORCEMENT - VERTICAL OUTSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)											SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)								COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI		f <sub>c</sub> = 12 KSI
#4	5.500	15	14	13	12	12	12	12	12	15	
#5	5.375	19	17	16	14	14	13	12	12	19	
#6	5.250	23	20	19	17	16	15	15	15	23	
#7	5.125	33	29	27	25	23	22	21	21	27	
#8	5.000	37	34	31	28	27	25	24	24	30	
#9	4.875	49	44	40	37	35	33	31	31	34	
#10	4.750	63	57	52	48	45	42	40	40	39	
#11	4.625	80	72	65	61	57	54	51	51	43	

FOUNDATION WALL REINFORCEMENT - HORIZONTAL OUTSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)											SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)								COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI		f <sub>c</sub> = 12 KSI
#4	5.500	20	18	16	15	14	13	13	13	15	
#5	5.375	25	22	20	19	18	17	16	16	19	
#6	5.250	29	26	24	22	21	20	19	19	23	
#7	5.125	43	38	35	32	30	29	27	27	27	
#8	5.000	49	44	40	37	35	33	31	31	30	
#9	4.875	63	57	52	48	45	42	40	40	34	
#10	4.750	82	74	67	62	58	55	52	52	39	
#11	4.625	104	93	85	79	74	69	66	66	43	

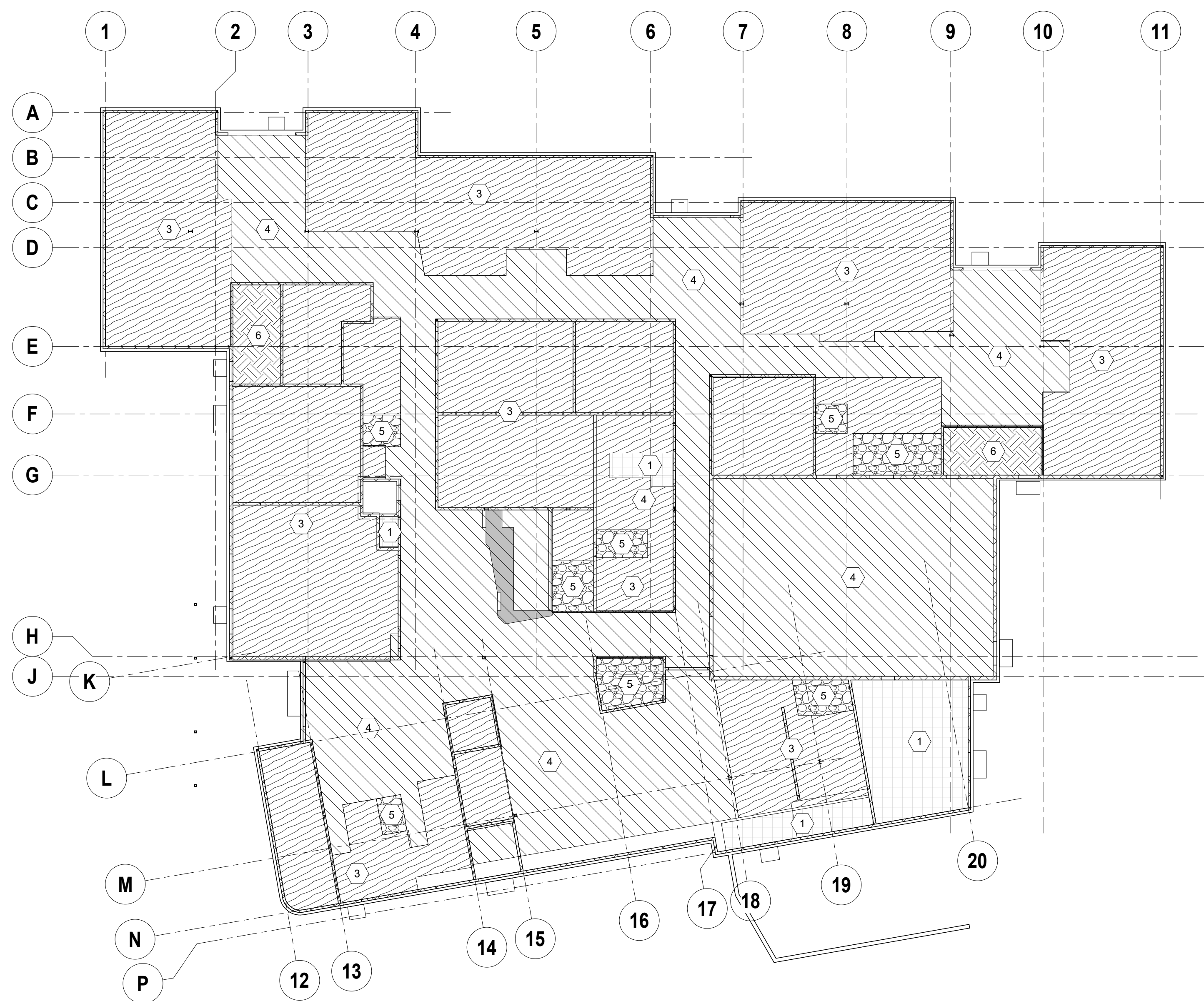
PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

OWNER  
 PORTAGE PUBLIC SCHOOLS

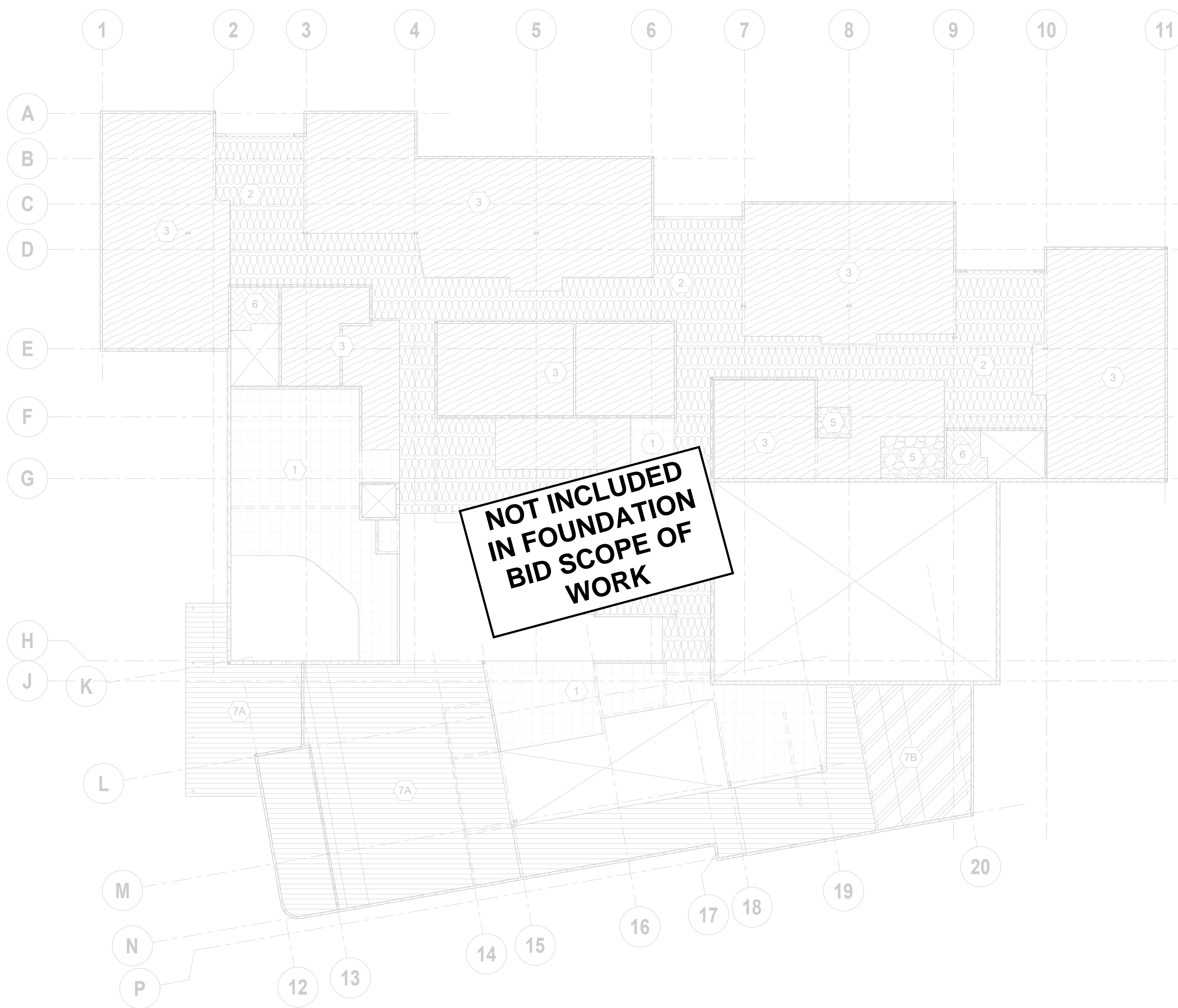
Portage, Michigan

SHEET TITLE  
 LAP SPLICE SCHEDULES

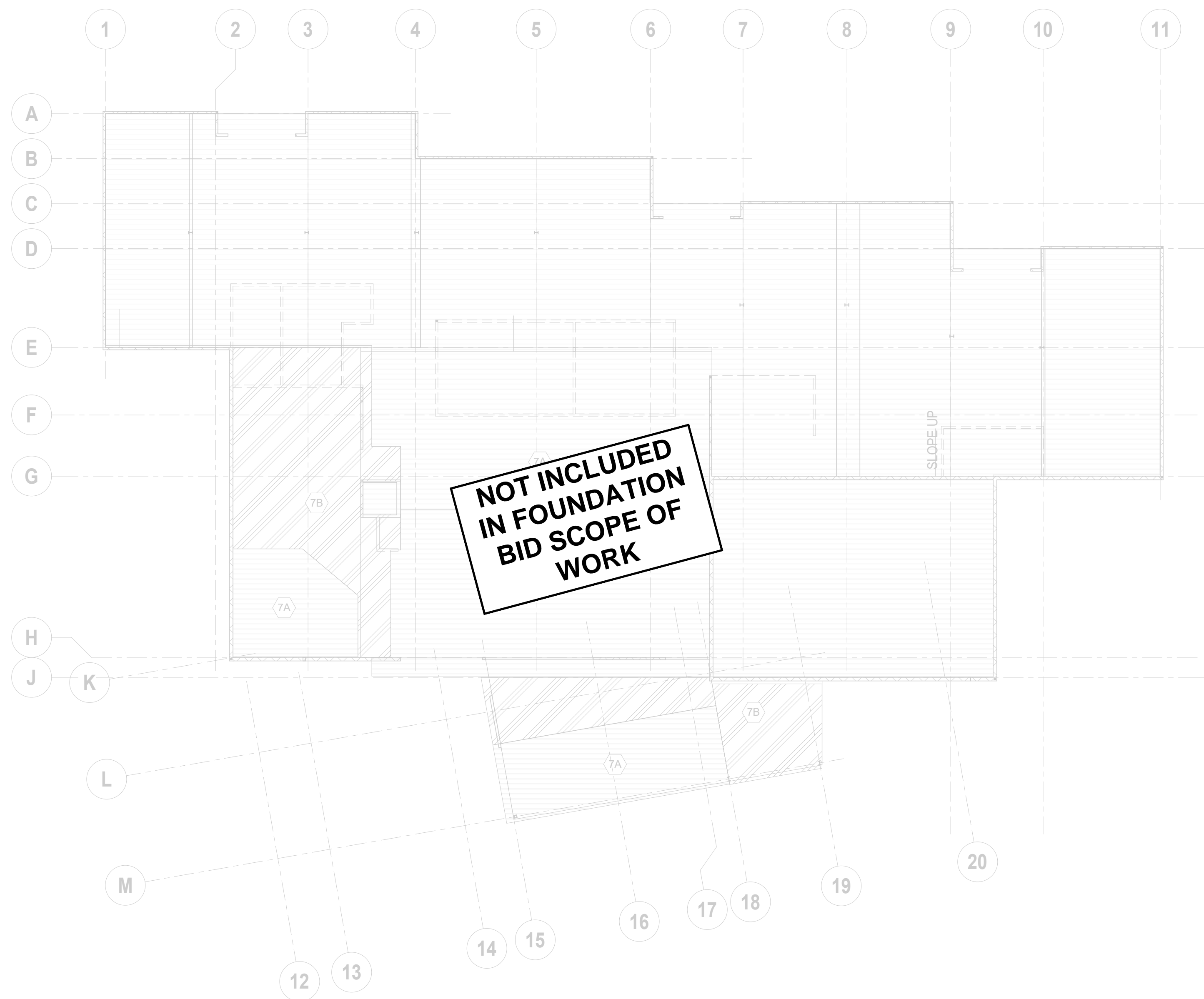
SHEET NUMBER  
**S 005**  
 DATE  
 MAY 25, 2023  
 21-237.25



**1 FIRST FLOOR LOADING PLAN**  
 3/64" = 1'-0"



**2 SECOND FLOOR LOADING PLAN**  
 3/64" = 1'-0"



**3 ROOF LOADING PLAN**  
 3/64" = 1'-0"

LOAD SCHEDULE			
MARK	LOCATION	LIVE LOAD (PSF)	SUPERIMPOSED DEAD LOAD (PSF)
1	MECHANICAL/ELECTRICAL	150	60 (L02 ONLY) (4" TOPPING + CMEP)
2	SECOND FLOOR CORRIDORS	80	65 (4" TOPPING + CMEP + FINISH)
3	STUDIO/WORKSHOP/OFFICE/RR	40 + 15 PARTITION	5 (L01) (FINISH) 65 (L02) (4" TOPPING + CMEP + FINISH)
4	LOBBY/ASSEMBLY/GYMNASIUM (FIRST FLOOR)	100	5 (FINISH)
5	LIGHT STORAGE	125	5 (L01) (FINISH) 65 (L02) (4" TOPPING + CMEP + FINISH)
6	STAIRS	100	0 (L01) 50 (L02) (4" TOPPING)
7A	ROOF	20	20 (CMEP + ROOFING)
7B	ROOF (ABOVE MECHANICAL SPACE)	20	35 (CMEP ABOVE MECHANICAL + ROOFING)

NOTE: ALL LOADS ARE SERVICE LEVEL

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND FOUNDATIONS

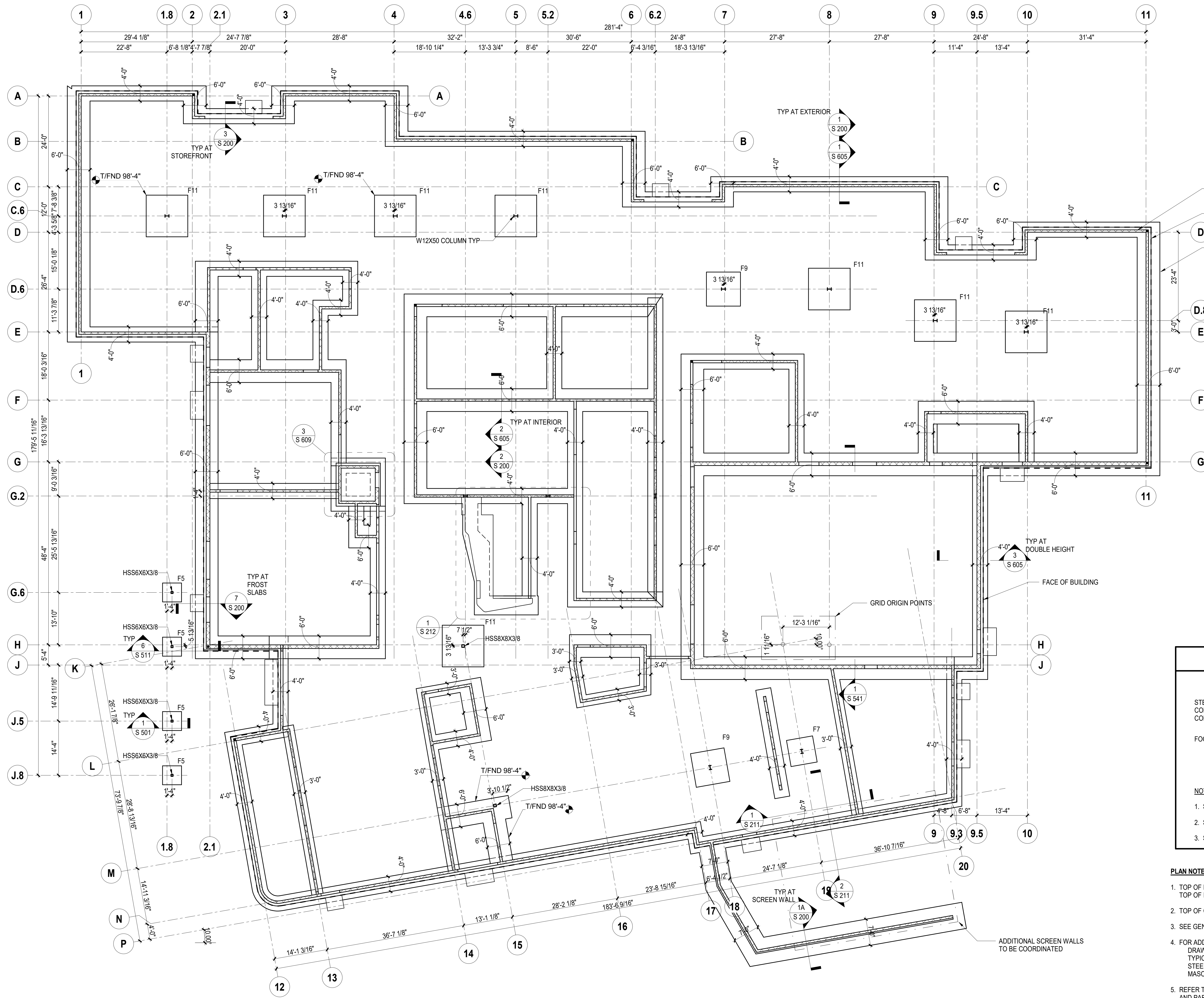
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 LOADING DIAGRAMS

DATE  
 MAY 25, 2023

SHEET NUMBER  
**S 006**  
 21-237.25



### ISOLATED FOOTING LEGEND

**NOTES:**

- SEE PLAN NOTES FOR T/FOOTING ELEVATION
- SEE TYPICAL ISOLATED FOOTING SCHEDULE AND DETAILS
- SEE PLAN FOR FOOTING ORIENTATION

- PLAN NOTES:**
- TOP OF EXTERIOR FOOTING EL 97'-0", UON  
TOP OF INTERIOR FOOTING EL 98'-8", UON
  - TOP OF CONCRETE FOUNDATION WALL EL 100'-0", UON
  - SEE GENERAL NOTES FOR CONCRETE COMPRESSIVE STRENGTH
  - FOR ADDITIONAL INFORMATION, REFER TO THE FOLLOWING DRAWINGS:  
DRAWING LIST, GENERAL NOTES, AND LOADING DIAGRAMS  
TYPICAL FOUNDATION DETAILS  
STEEL SUPERSTRUCTURE SCHEDULES AND DETAILS  
MASONRY DETAILS
  - REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF NONSTRUCTURAL CMU WALLS AND PARTITIONS. SEE ARCH FOR DOOR, WINDOW, AND OTHER PENETRATIONS. PROVIDE 6 / S 210 AT ALL NONSTRUCTURAL CMU WALL LOCATIONS.
  - ALL CMU WALLS SHOWN IN STRUCTURAL DRAWINGS ARE TO BE CONSIDERED LOAD-BEARING CMU WALLS AS DETAILED IN THE STRUCTURAL DRAWINGS. WALLS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE OF THE WALL TYPE SPECIFIED IN THE ARCHITECTURAL DRAWINGS. ANY CMU WALLS SHOWN IN THE ARCHITECTURAL PLANS AND NOT INDICATED IN THE STRUCTURAL DRAWINGS AND SHALL BE DETAILED AS CMU-X TYPE. NONSTRUCTURAL CMU WALLS ARE NOT PERMITTED ON SECOND LEVEL FRAMING UON ON PLAN. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS.

**1 FOUNDATION PLAN**  
 3/32" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

OWNER  
 PORTAGE PUBLIC SCHOOLS

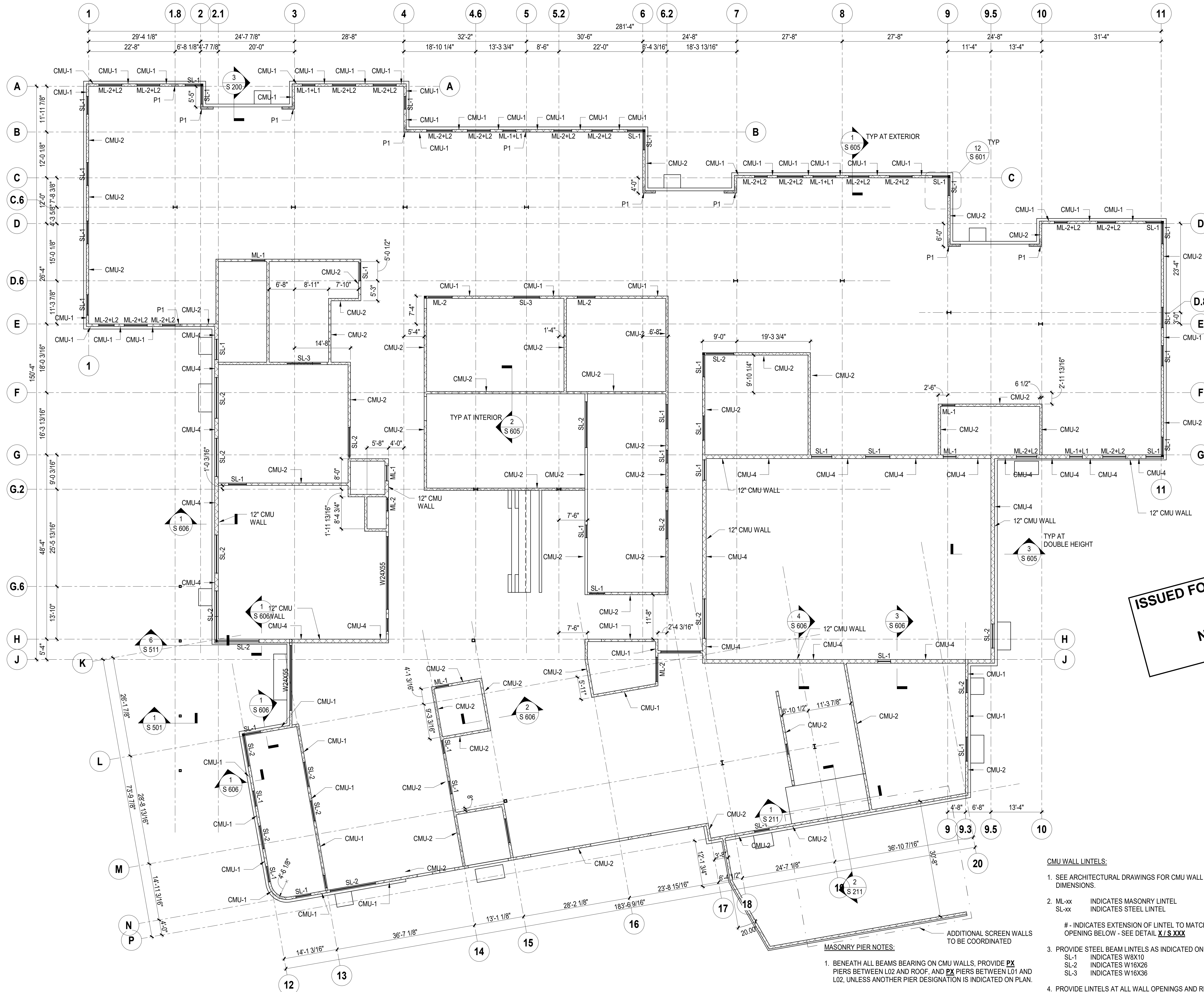
Portage, Michigan

SHEET TITLE  
 FOUNDATION PLAN

DATE  
 MAY 25, 2023

SHEET NUMBER  
 S 100  
 21-237.25





**ISSUED FOR REFERENCE OF CMU WALL LOCATIONS ONLY.**  
**NOT ISSUED FOR BID OR CONSTRUCTION.**

- PLAN NOTES:**
- SEE ARCH FOR CMU WALL DIMENSIONS INCLUDING ENDS OF WALL AND EDGES OF WALL AT CMU OPENINGS.
  - CMU-X INDICATES CMU WALL TYPE. DCMU-X INDICATES DCMU WALL TYPE. REFER TO ARCHITECTURAL DRAWINGS FOR NON-STRUCTURAL DCMU APPLICATION. P-X INDICATES PIER, TYPE PER X / S-XXX
  - WCJ INDICATES WALL CONTROL JOINT. ASSUME WCJ @ 25'-0\"/>
- CMU WALL LINTELS:**
- SEE ARCHITECTURAL DRAWINGS FOR CMU WALL OPENING DIMENSIONS.
  - ML-xx INDICATES MASONRY LINTEL  
SL-xx INDICATES STEEL LINTEL  
#- INDICATES EXTENSION OF LINTEL TO MATCH EXTENT OF OPENING BELOW - SEE DETAIL X / S-XXX
  - PROVIDE STEEL BEAM LINTELS AS INDICATED ON THIS DRAWING  
SL-1 INDICATES W8X10  
SL-2 INDICATES W16X26  
SL-3 INDICATES W16X36
  - PROVIDE LINTELS AT ALL WALL OPENINGS AND RECESSES, INCLUDING MECHANICAL OPENINGS AND PENETRATIONS, CABINETS RECESSED INTO THE WALL, ETC.
  - SEE ARCHITECTURAL AND MEP DRAWINGS AND OTHER PROJECT DOCUMENTS FOR ADDITIONAL WALL OPENINGS AND PENETRATIONS NOT SHOWN ON THIS DRAWING. THIS DRAWING DOES NOT SHOW ALL THE OPENINGS THAT ARE REQUIRED.
  - SEE ARCHITECTURAL DRAWINGS FOR BRICK VENEER AND VENEER OPENINGS.
- MASONRY PIER NOTES:**
- BENEATH ALL BEAMS BEARING ON CMU WALLS, PROVIDE **PX** PIERS BETWEEN L02 AND ROOF, AND **PX** PIERS BETWEEN L01 AND L02, UNLESS ANOTHER PIER DESIGNATION IS INDICATED ON PLAN.
  - PROVIDE **PX** PIERS BENEATH ALL BEAMS BEARING ON CMU WALL ENDS AND CORNERS. **PX** PIERS TO BE 48\"/>
- ADDITIONAL SCREEN WALLS TO BE COORDINATED**

**1 FIRST FLOOR CMU PLAN**  
 3/32" = 1'-0"

ISSUED FOR DATE

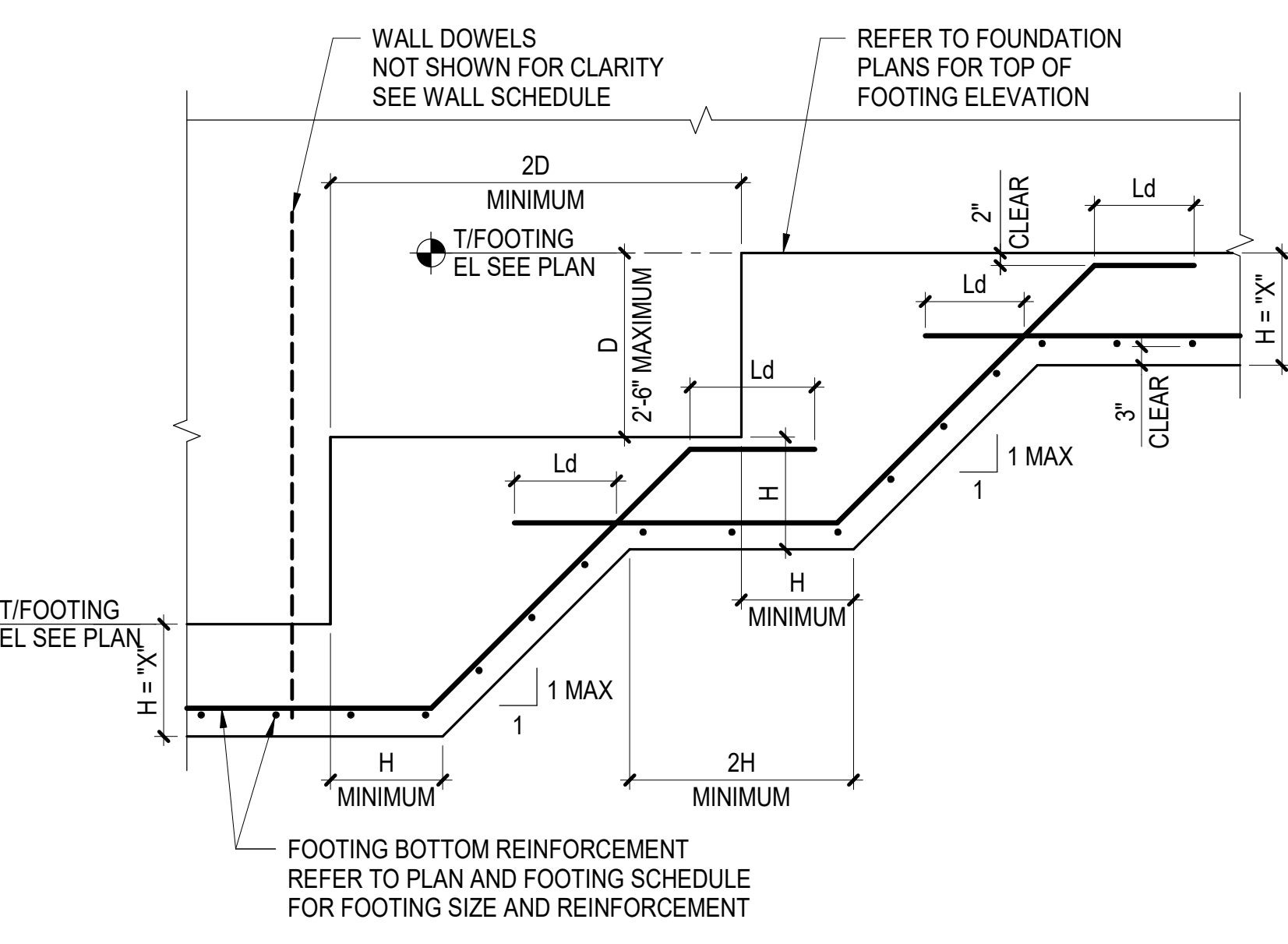
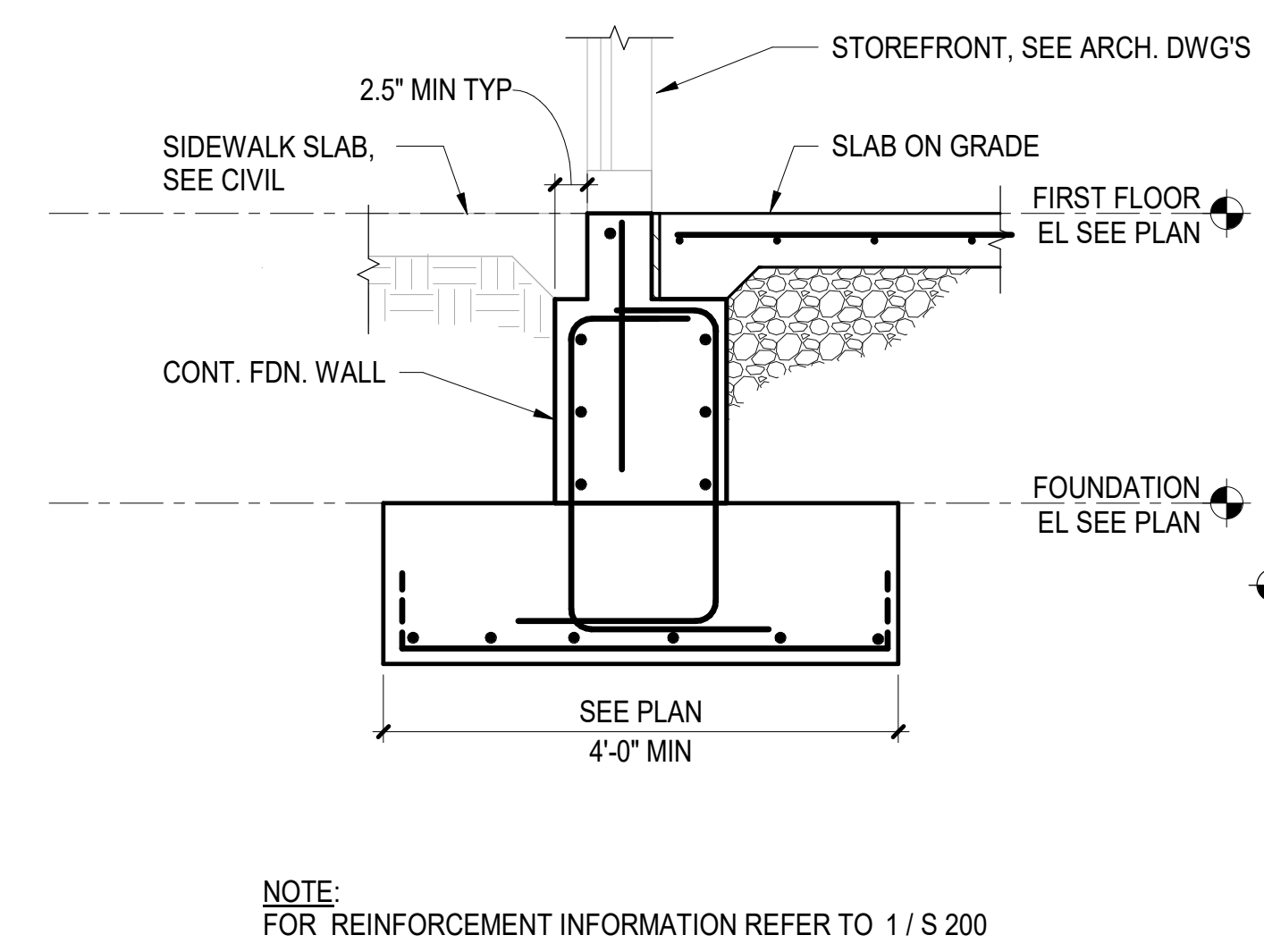
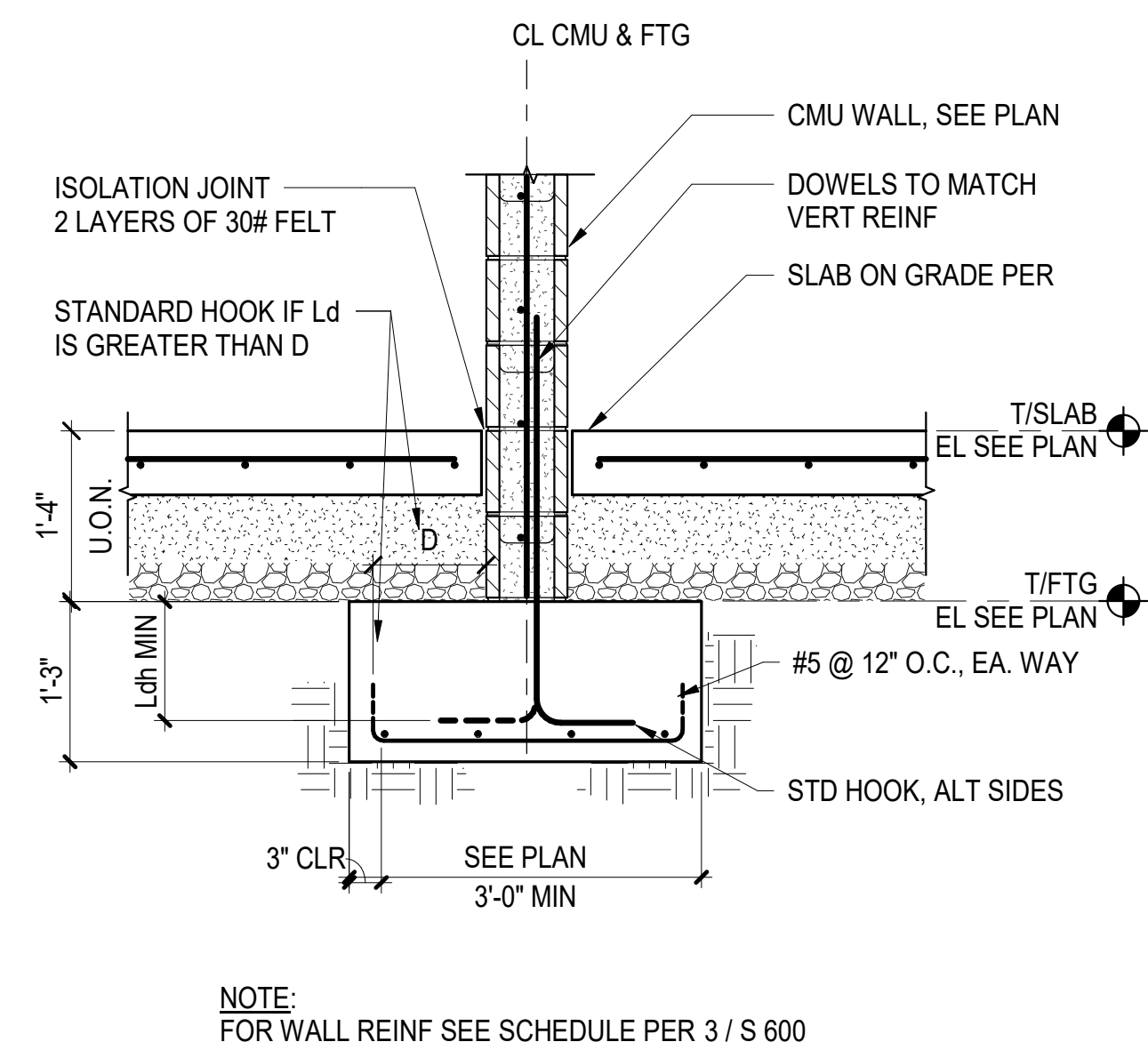
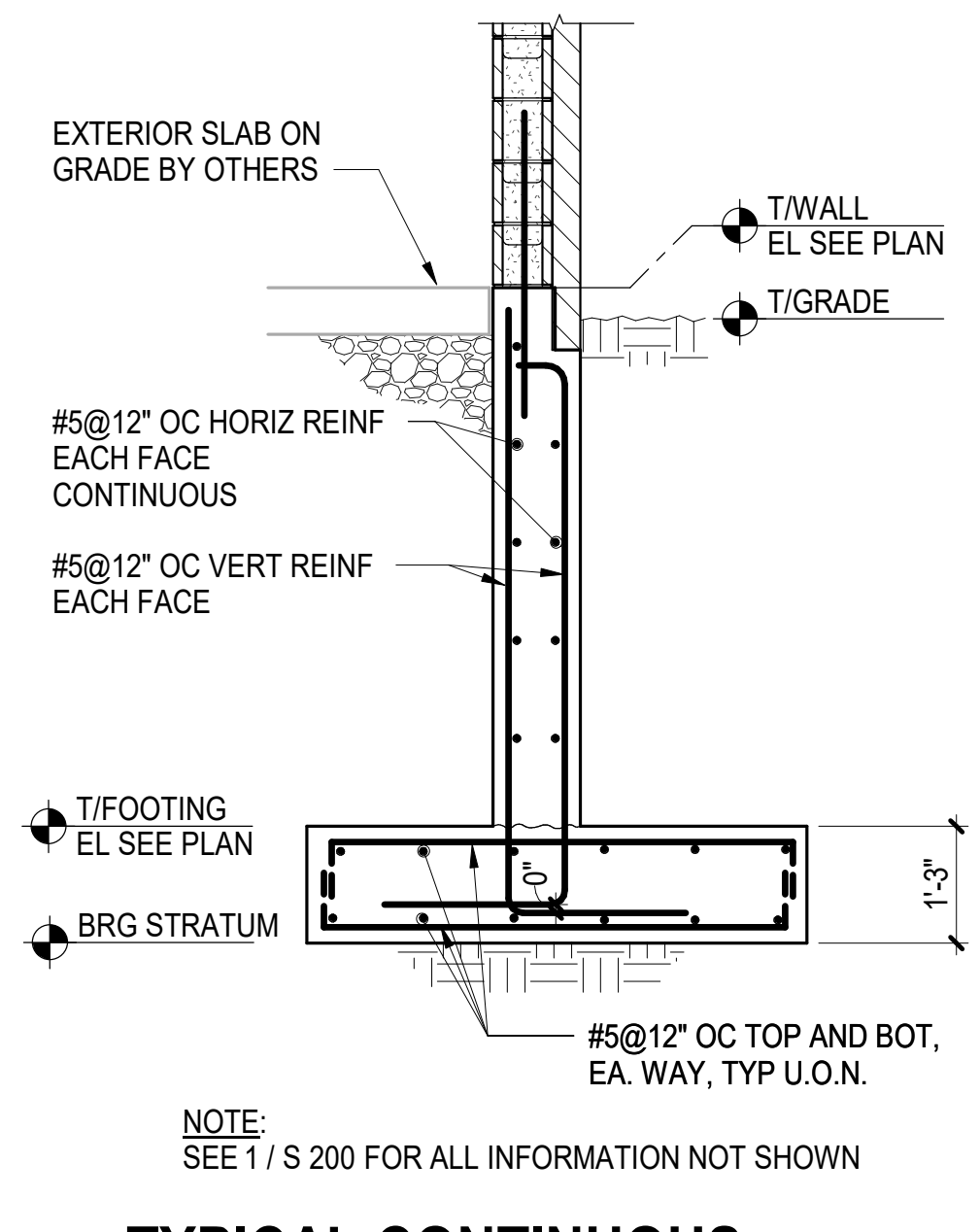
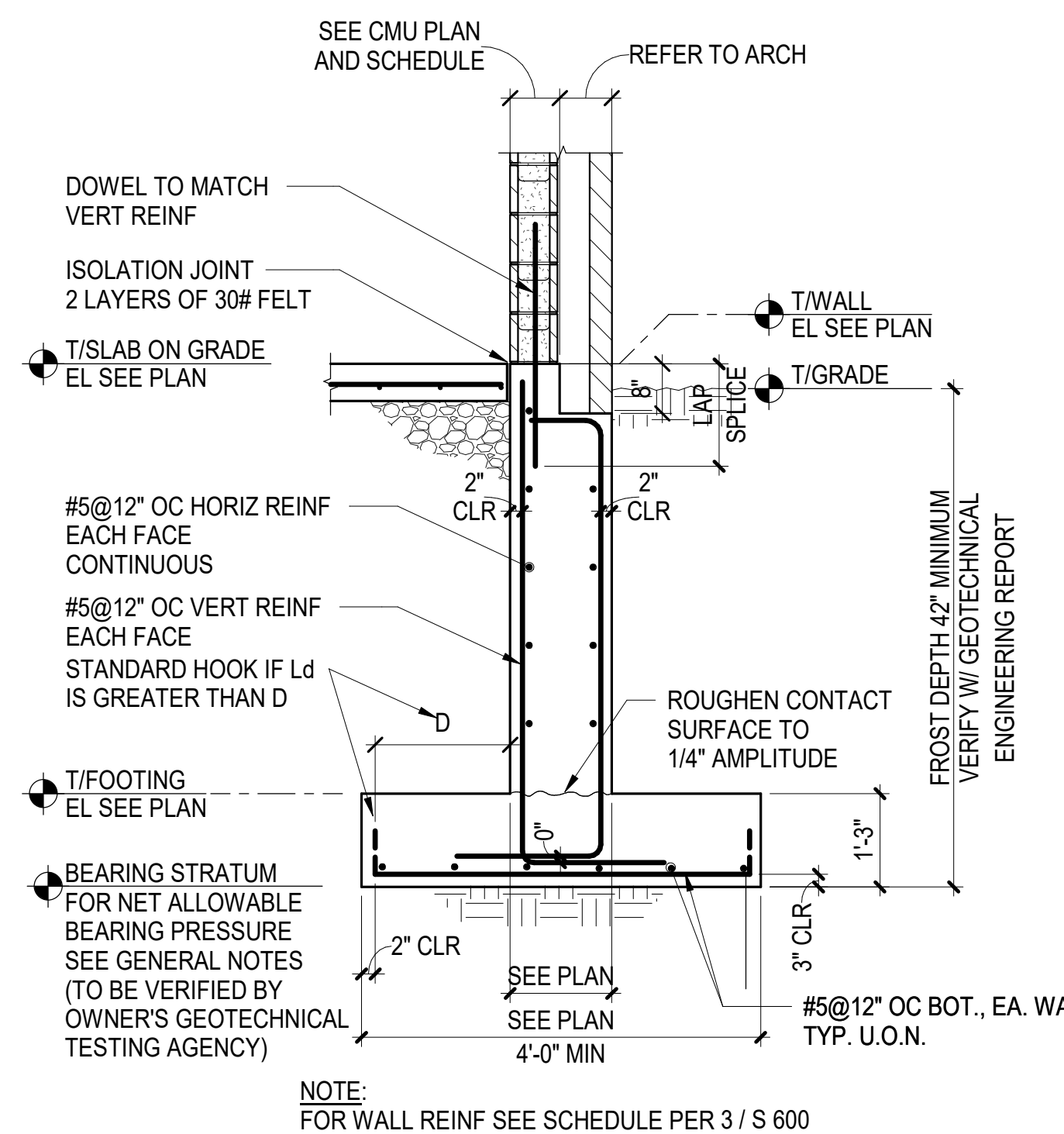
PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**  
 BID PACKAGE 5: FOOTINGS AND FOUNDATIONS

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**FIRST FLOOR CMU PLAN**

DATE  
**MAY 25, 2023**  
 SHEET NUMBER  
**S 111**  
 21-237.25



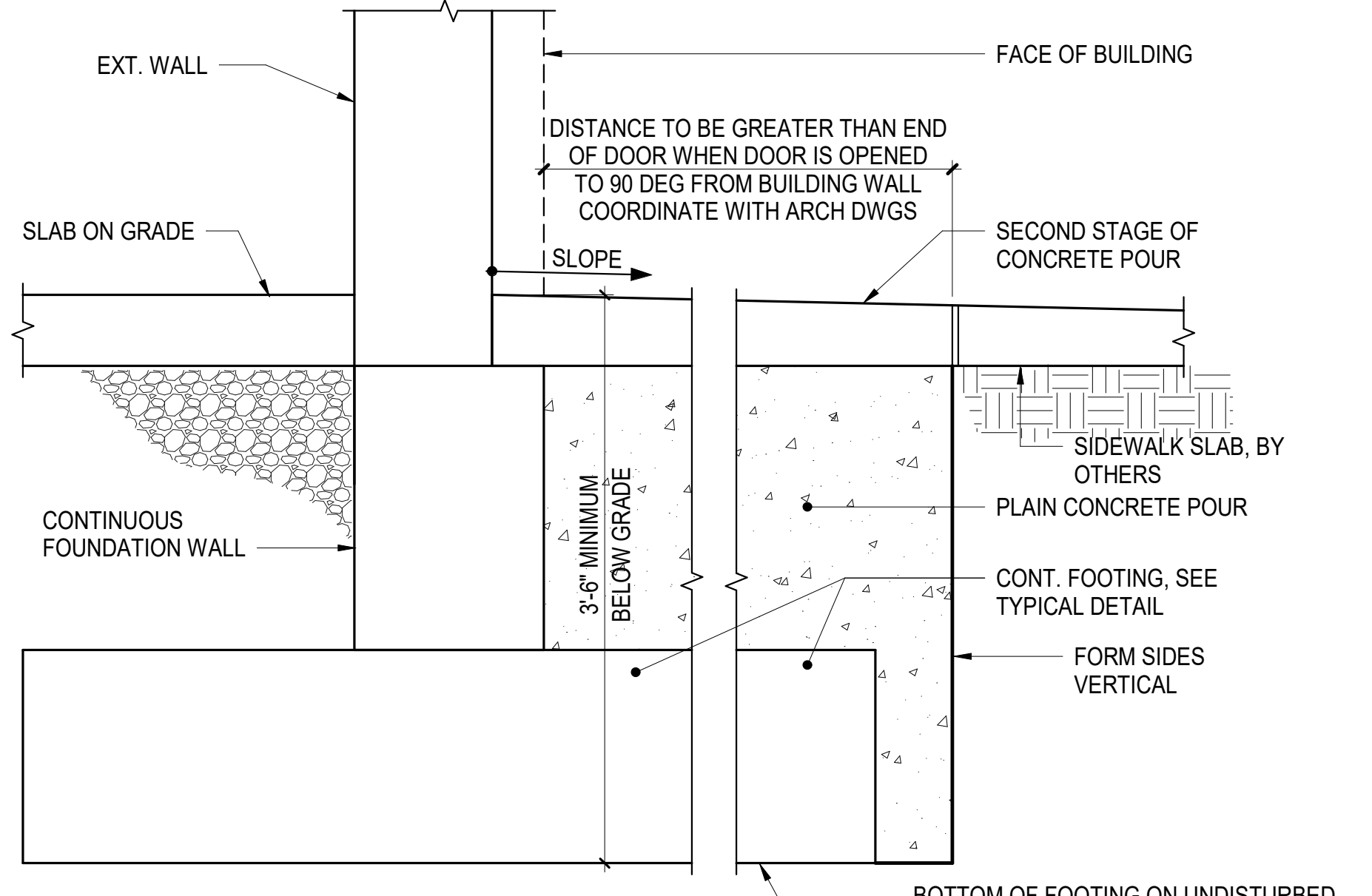
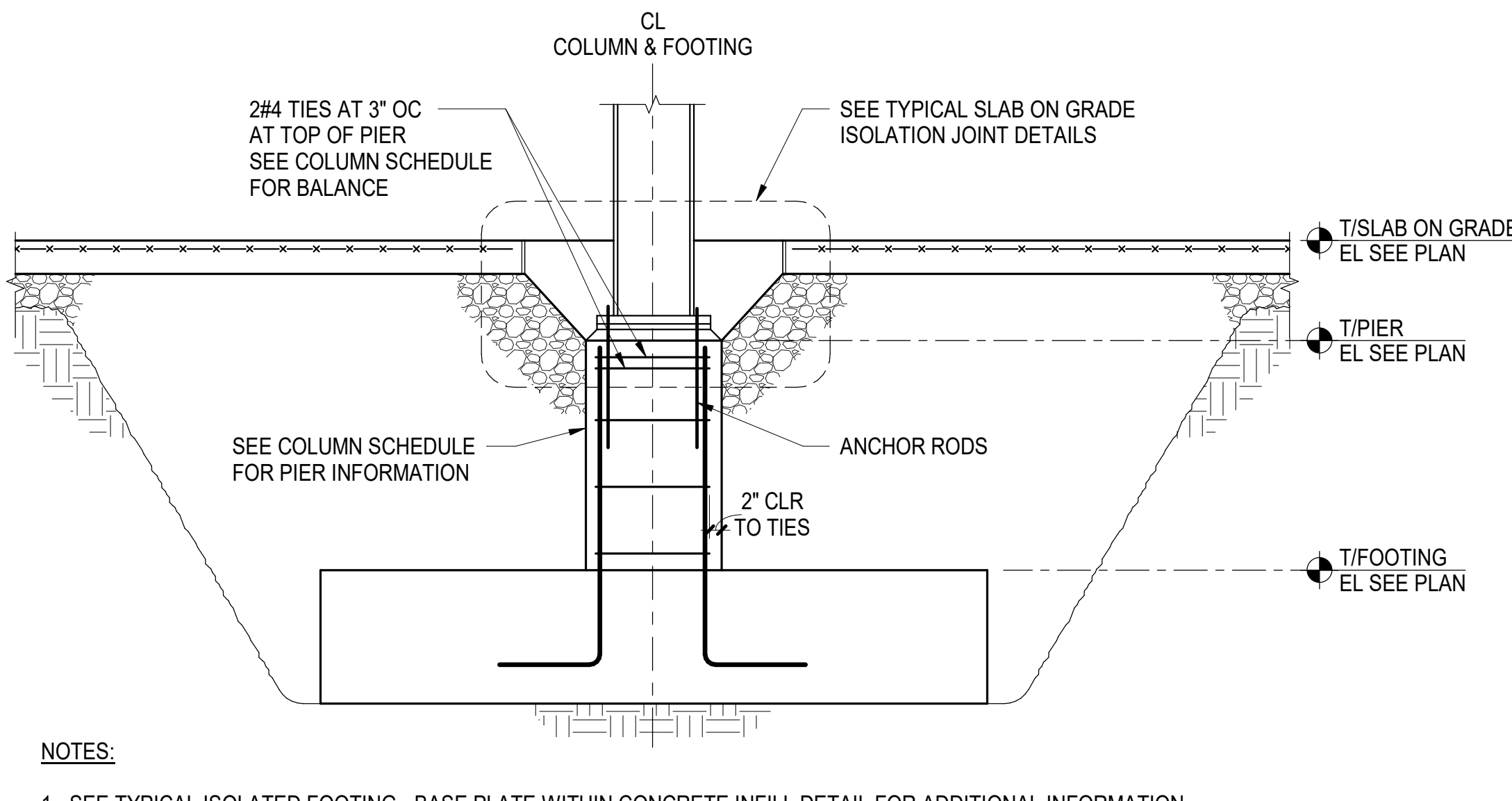
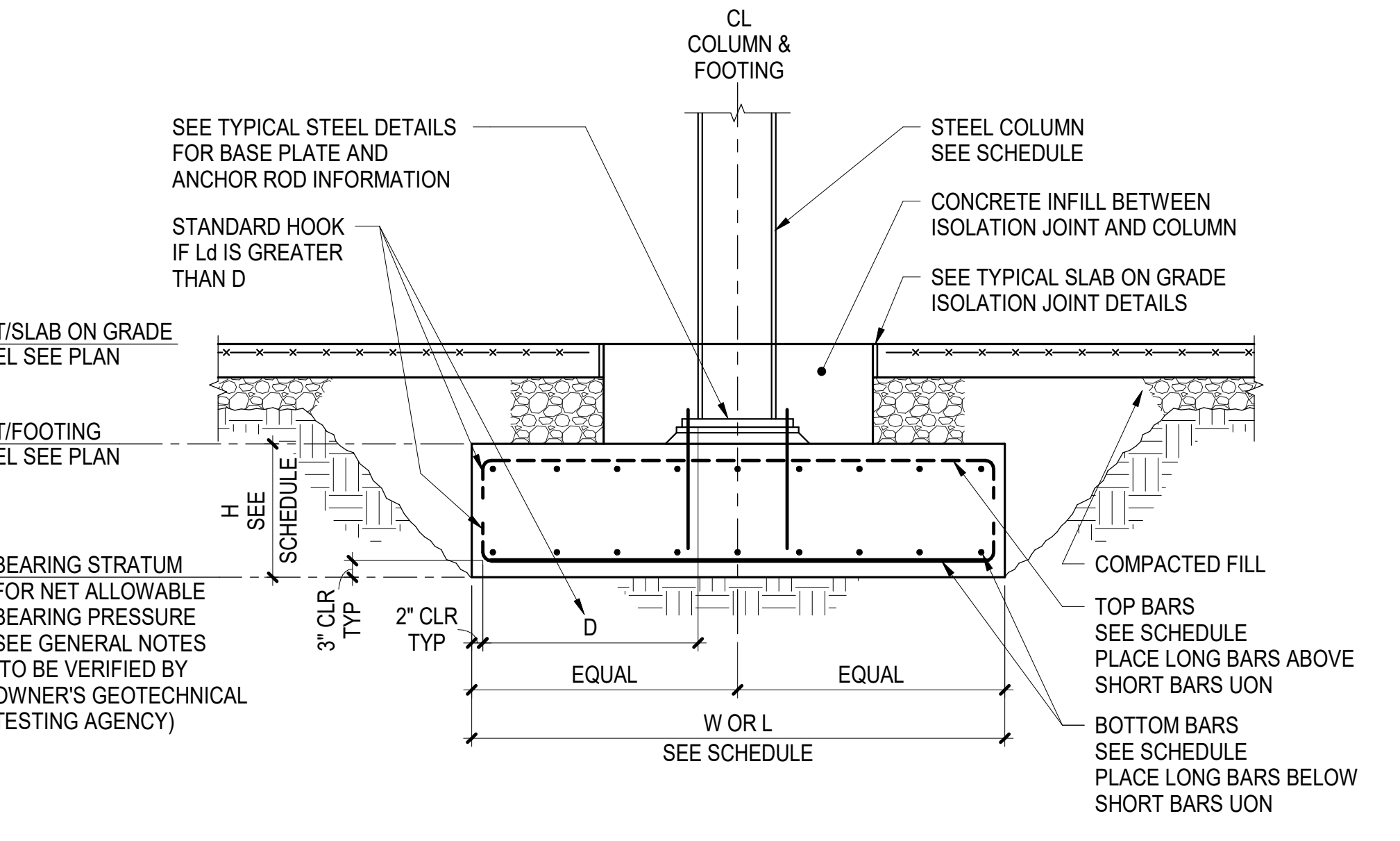
**1** TYPICAL CONTINUOUS FOOTING AT FROST WALL  
 NOT TO SCALE

**1A** TYPICAL CONTINUOUS FOOTING AT SCREEN WALL  
 NOT TO SCALE

**2** INTERIOR CMU WALL FOOTING  
 3/4" = 1'-0"

**3** STOREFRONT SECTION  
 3/4" = 1'-0"

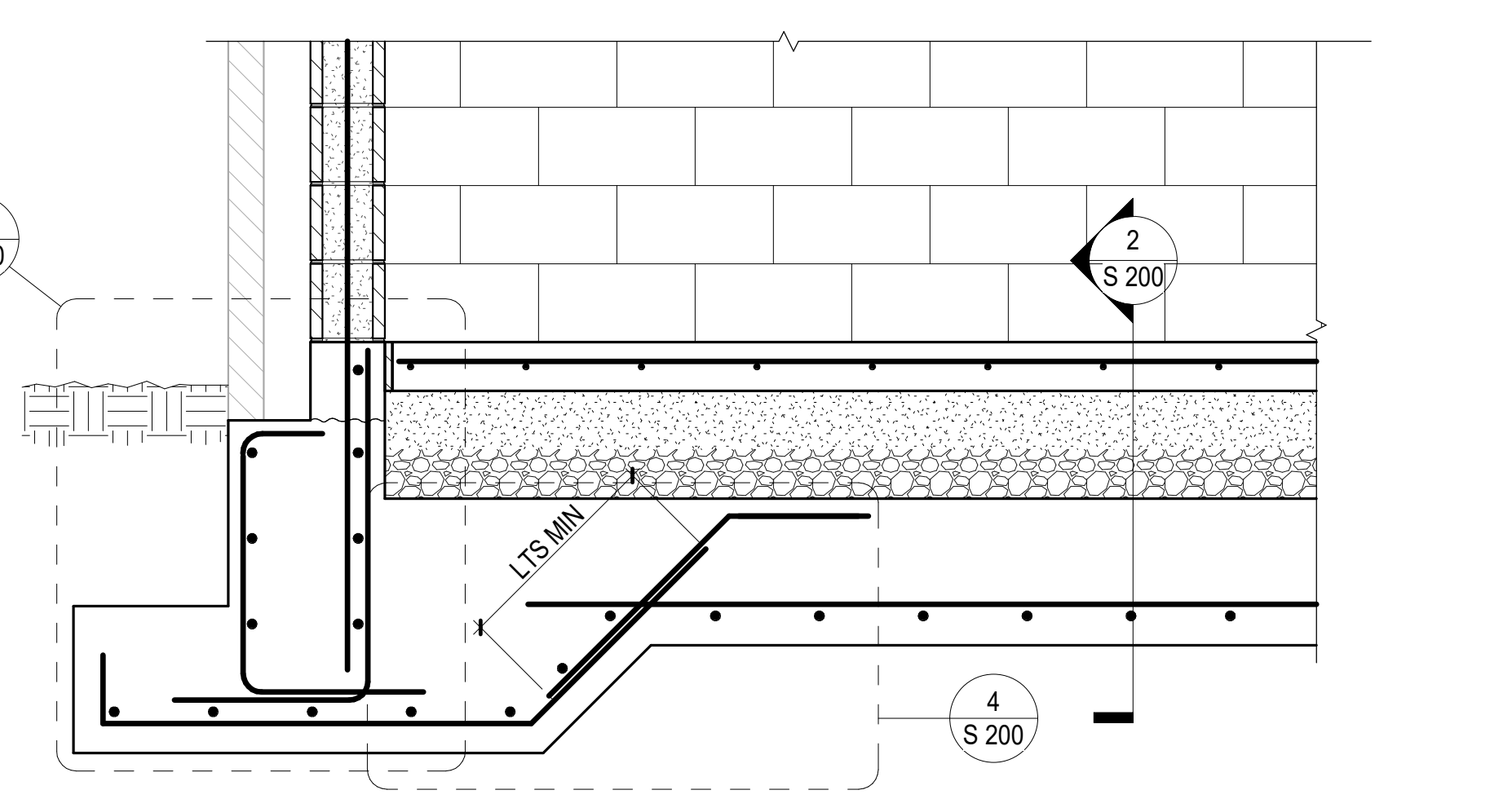
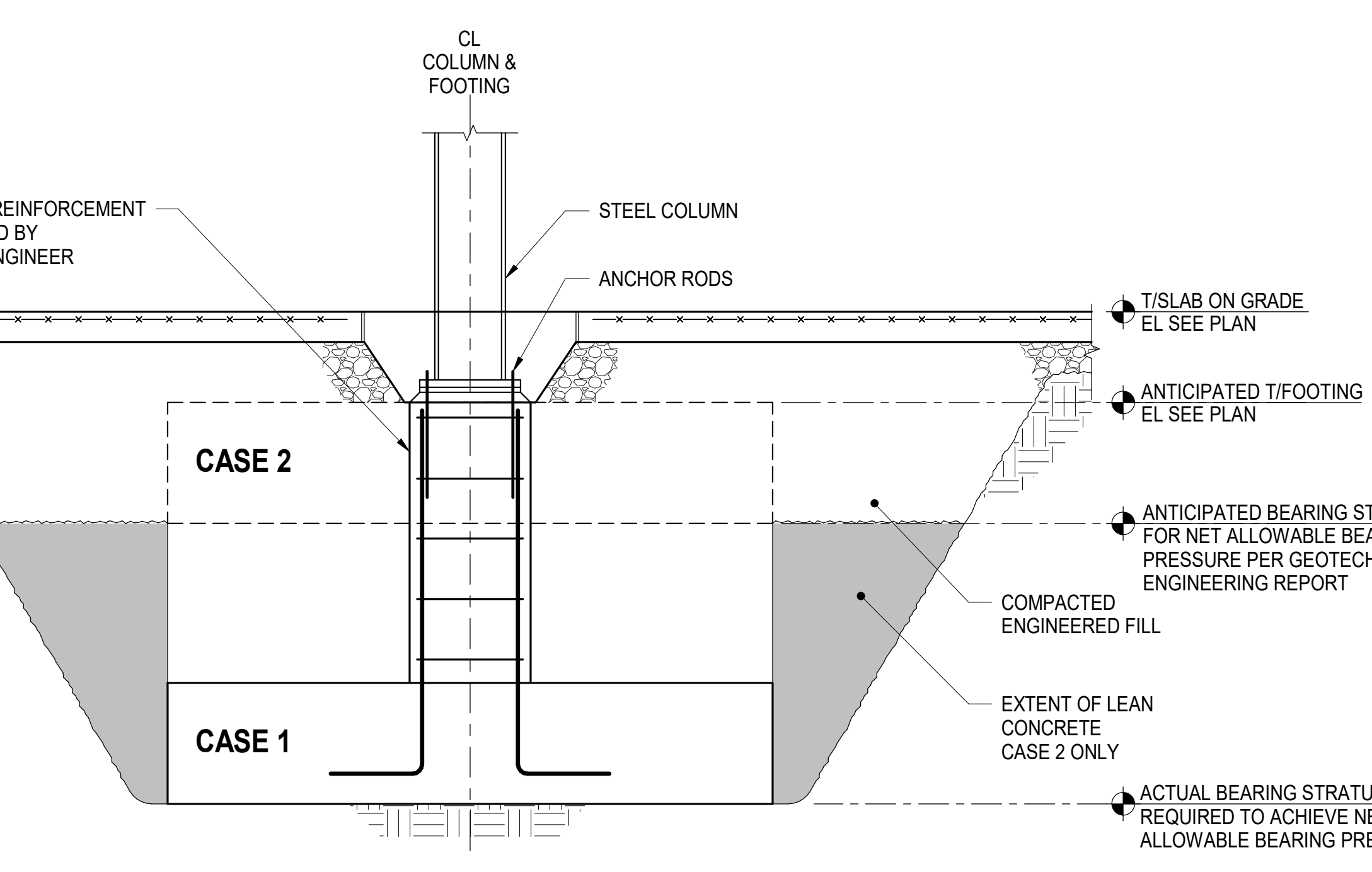
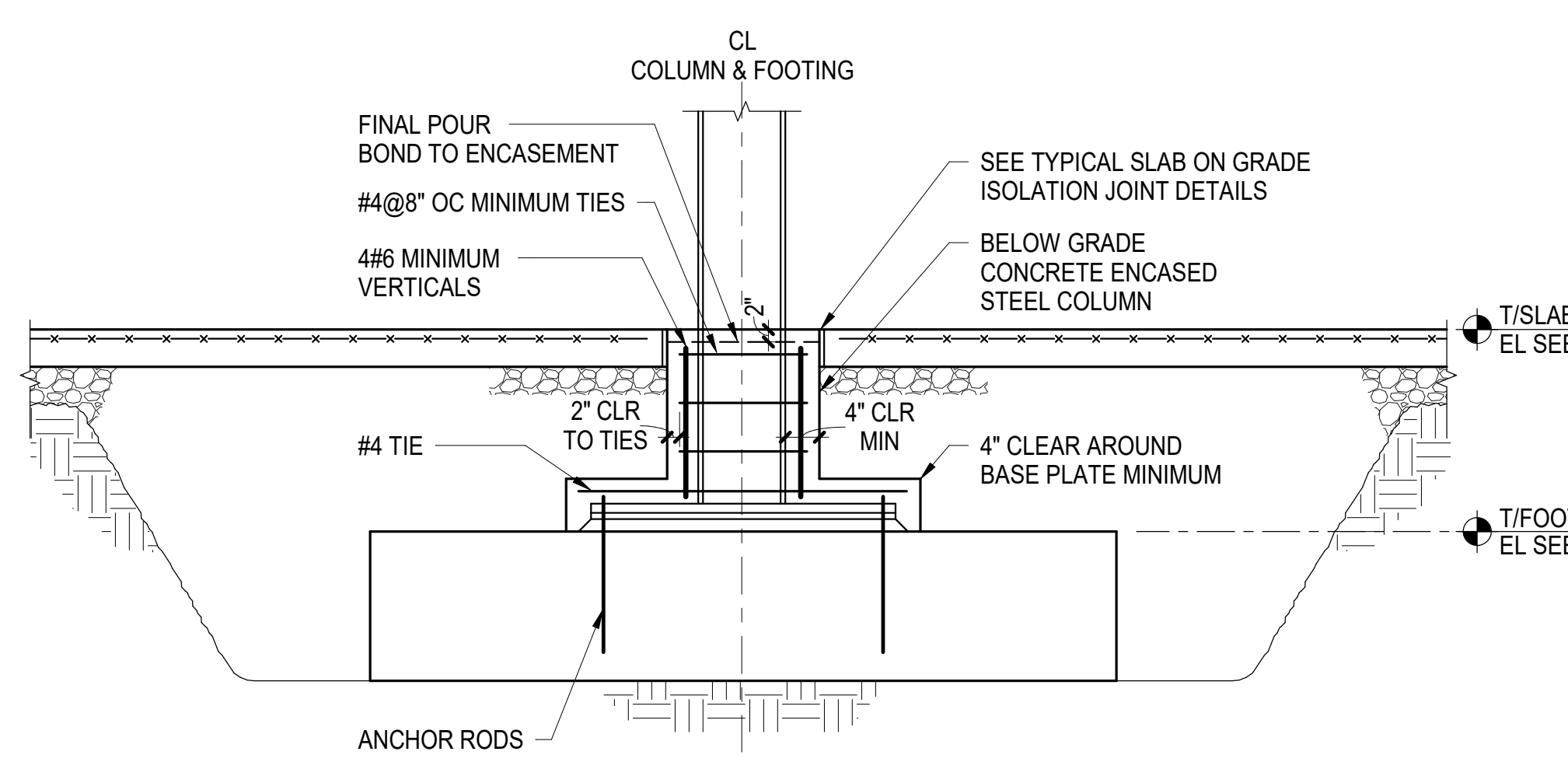
**4** TYPICAL STEPPED WALL FOOTING DETAIL  
 NOT TO SCALE



**5** TYPICAL ISOLATED FOOTING - BASE PLATE WITHIN CONCRETE INFILL  
 NOT TO SCALE

**6** TYPICAL PIER ON ISOLATED FOOTING  
 NOT TO SCALE

**7** TYPICAL FROST PROTECTION AT EXTERIOR ENTRY WITH OUTSWING DOORS  
 1" = 1'-0"



**8** TYPICAL ISOLATED FOOTING - CONCRETE ENCASED COLUMN AND BASE PLATE  
 NOT TO SCALE

**NOTES:**

- THIS DETAIL SHALL NOT BE USED WITHOUT PRIOR WRITTEN APPROVAL FROM THE SER
- THESE FOOTING INSTALLATION PROCEDURES ARE TO BE FOLLOWED IN THE EVENT THAT ANTICIPATED NET ALLOWABLE BEARING PRESSURE CANNOT BE OBTAINED AT THE ANTICIPATED STRATUM
  - CASE 1: PLACE FOOTING AT ACTUAL BEARING STRATUM. INSTALL PIER TO ANTICIPATED TOP OF FOOTING ELEVATION
  - CASE 2: AT CONTRACTOR'S OPTION, POUR LEAN CONCRETE (F<sub>c</sub>=2000 PSI MINIMUM) TO THE ANTICIPATED BOTTOM OF FOOTING ELEVATION AND CAST FOOTING ON TOP OF LEAN CONCRETE
- SEE TYPICAL ISOLATED FOOTING DETAILS FOR ADDITIONAL INFORMATION

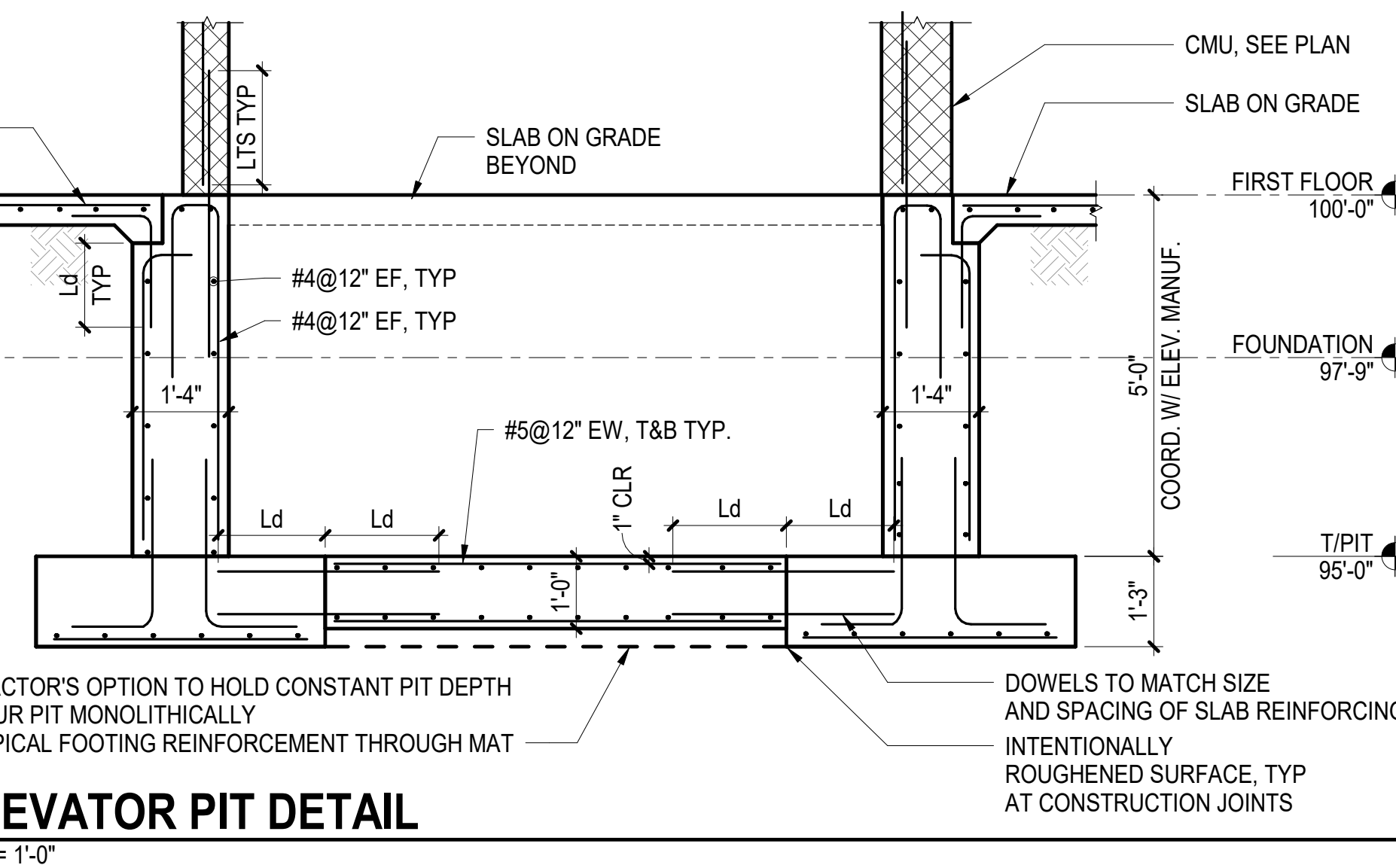
**11** TYPICAL INTERIOR/EXTERIOR FOOTING INTERFACE  
 3/4" = 1'-0"

ISOLATED FOOTING SCHEDULE						
MARK	SIZE			REINFORCEMENT		REMARKS
	L	W	H	BOTTOM BARS	TOP BARS	
F5	5'-0"	5'-0"	1'-6"	5#6 EA WAY	-	-
F7	7'-0"	7'-0"	1'-6"	7#6 EA WAY	-	-
F9	9'-0"	9'-0"	1'-6"	9#6 EA WAY	-	-
F11	11'-0"	11'-0"	2'-0"	13#6 EA WAY	-	-

*f<sub>c</sub> = SEE GENERAL NOTES*

**9** ISOLATED FOOTING SCHEDULE  
 NOT TO SCALE

**10** TYPICAL FOOTING DETAIL WHERE OVER-EXCAVATION IS REQUIRED DUE TO UNANTICIPATED SOIL CONDITIONS - STEEL COLUMN  
 NOT TO SCALE



**12** ELEVATOR PIT DETAIL  
 1/2" = 1'-0"

ISSUED FOR DATE

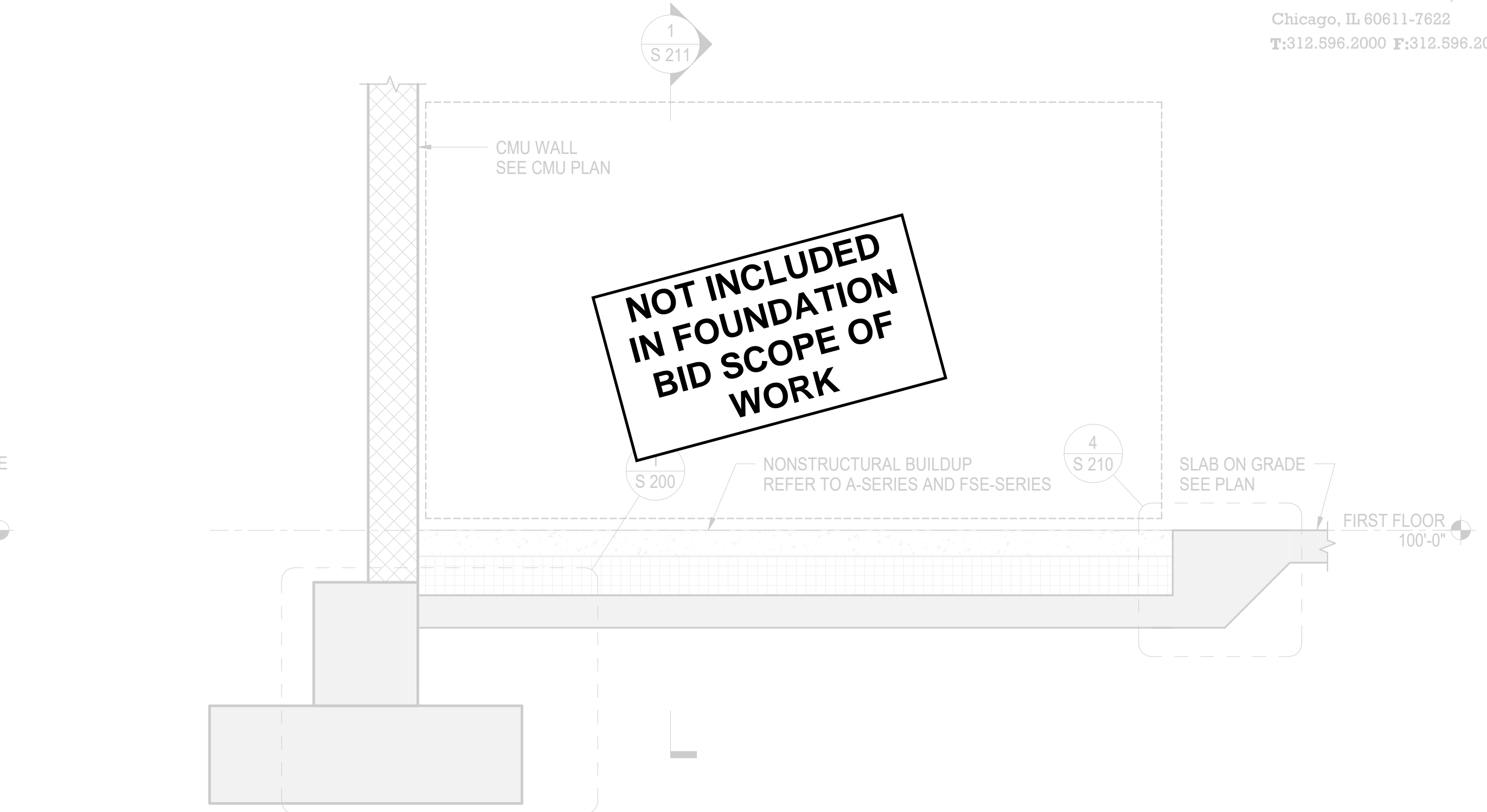
PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND FOUNDATIONS

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

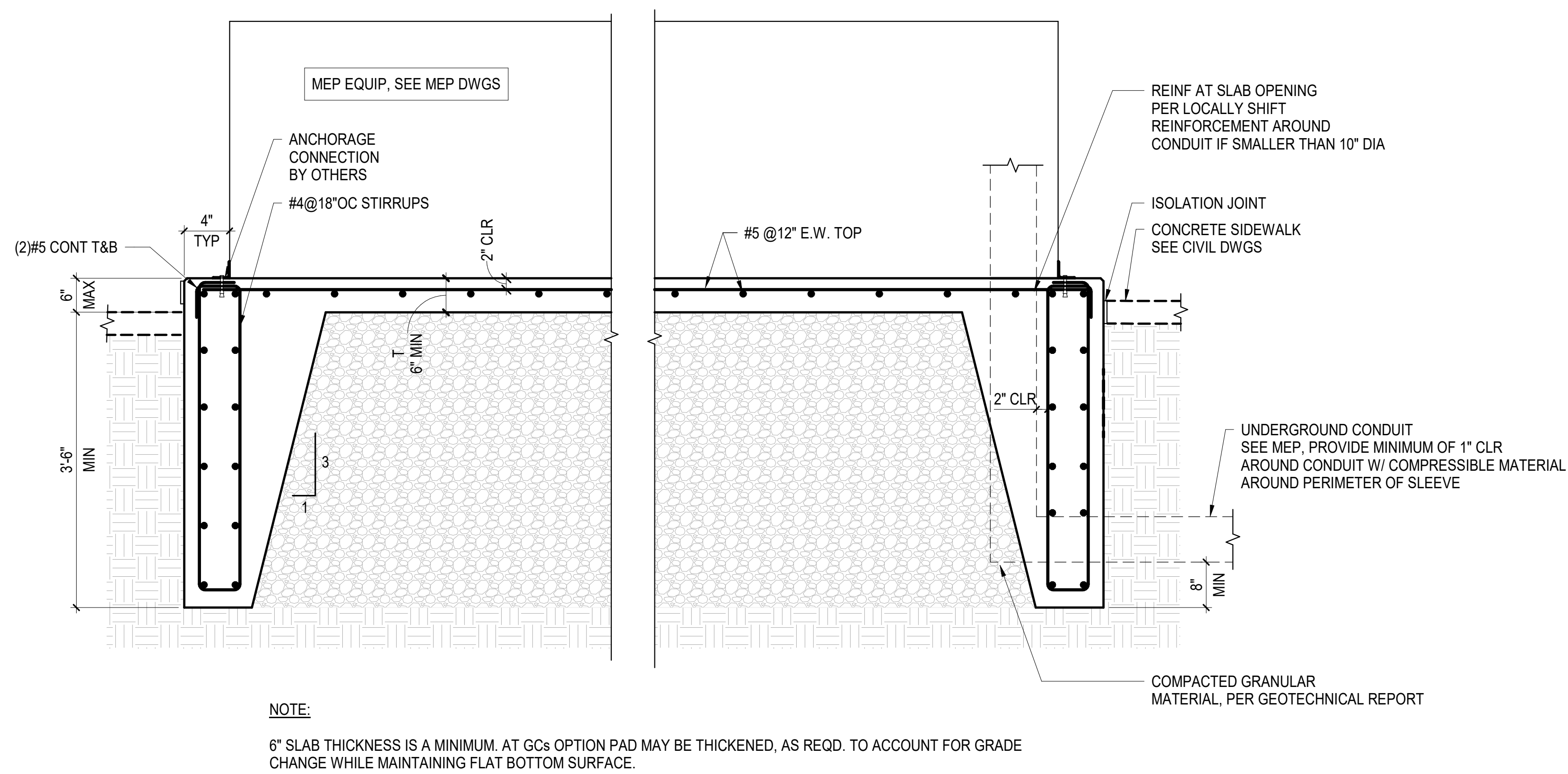
SHEET TITLE  
 TYPICAL FOOTING DETAILS

DATE  
 MAY 25, 2023  
 SHEET NUMBER  
 S 200  
 21-237.25

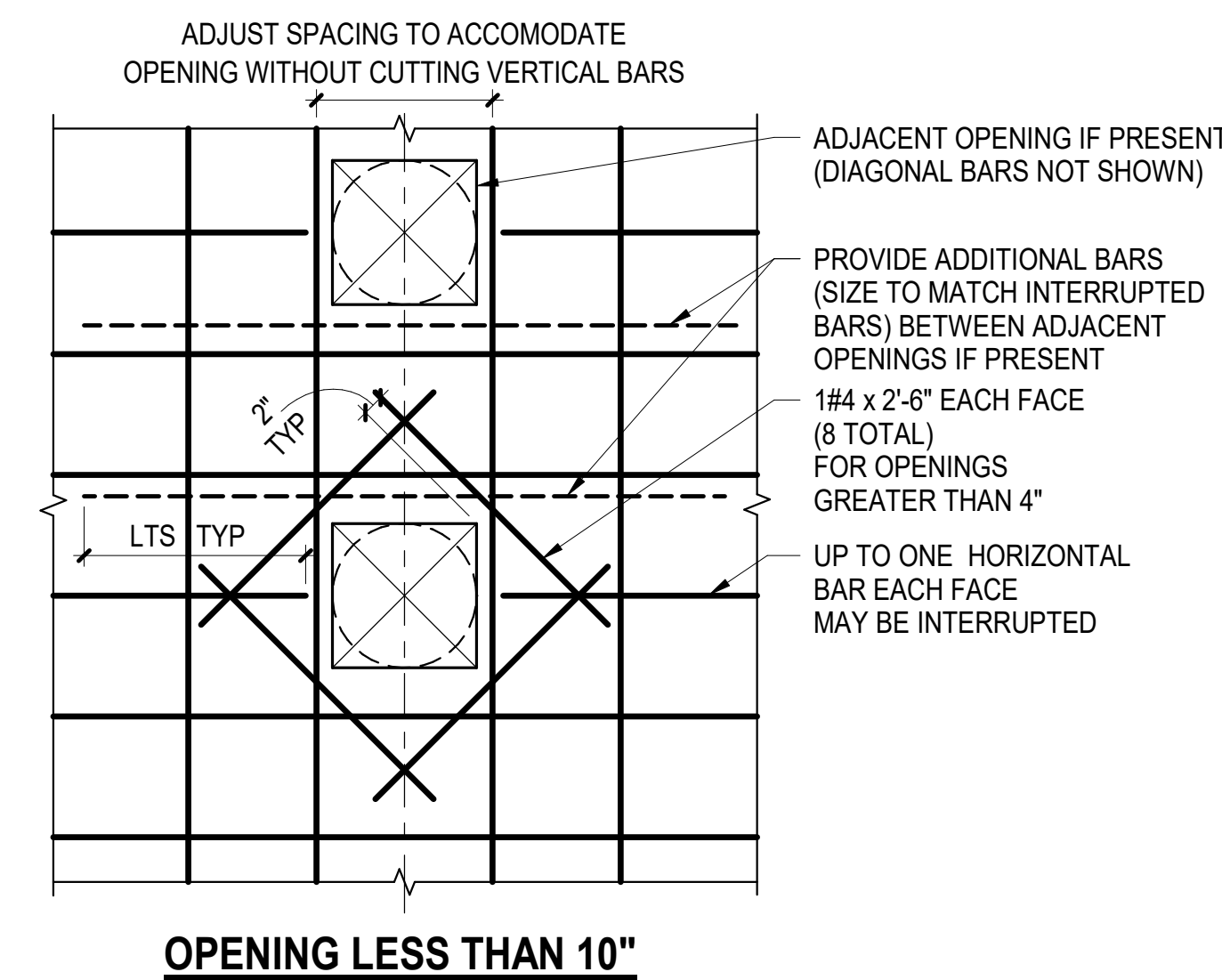


**1 SECTION AT FREEZER/COOLER**  
 3/4" = 1'-0"

**2 SECTION AT FREEZER/COOLER**  
 3/4" = 1'-0"



**3 S211/03**  
 3/4" = 1'-0"



- NOTES:**
1. MINIMUM CLEAR DISTANCE BETWEEN OPENINGS IS 2 TIMES MAXIMUM OPENING SIZE
  2. FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS, CONTRACTOR TO SUBMIT LOCATIONS AND SPACING TO STRUCTURAL ENGINEER FOR WRITTEN APPROVAL

**4 TYPICAL WALL OPENING DETAILS**  
 NOT TO SCALE

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

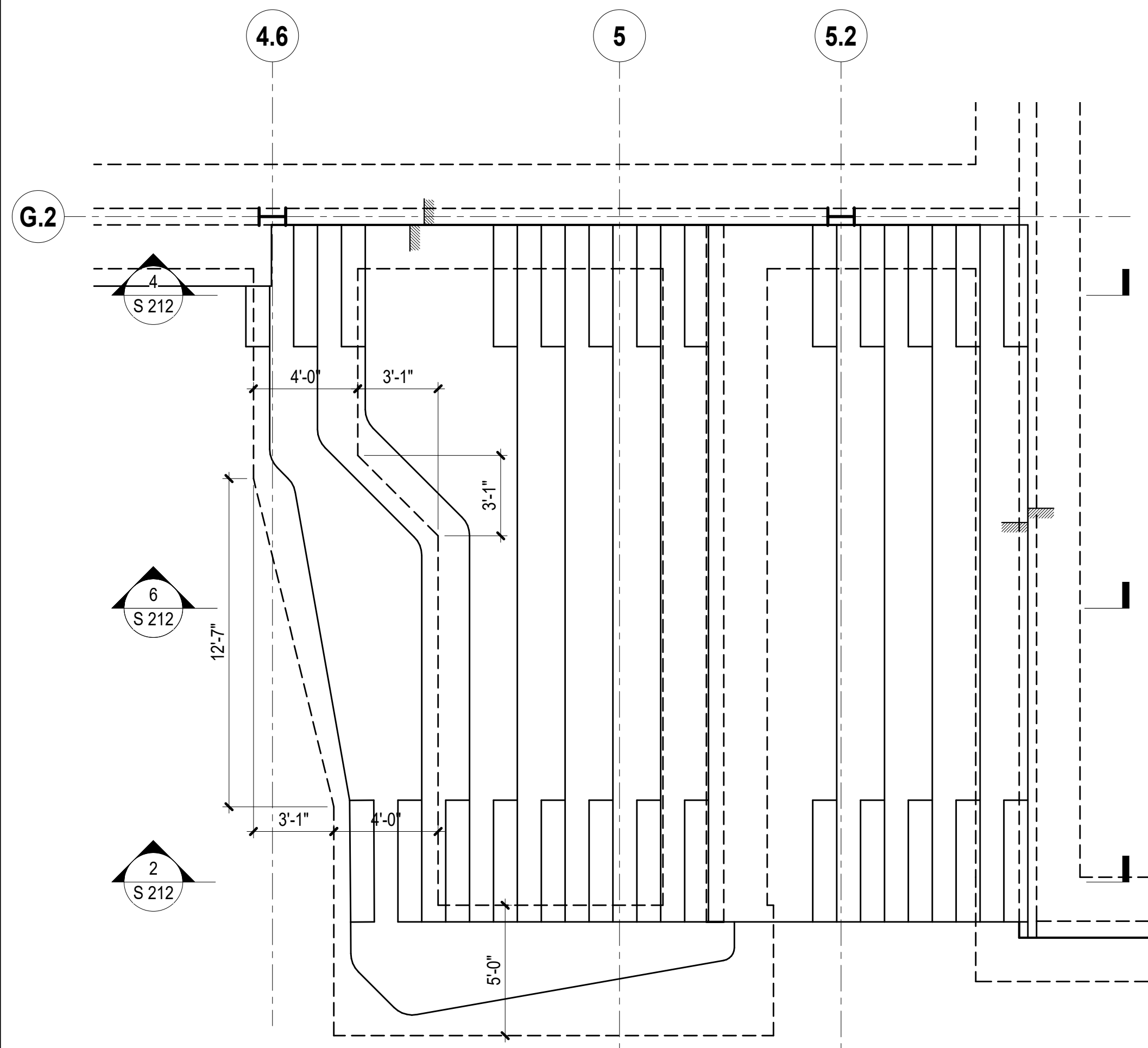
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SHEET TITLE  
 TYPICAL SLAB ON GRADE DETAILS

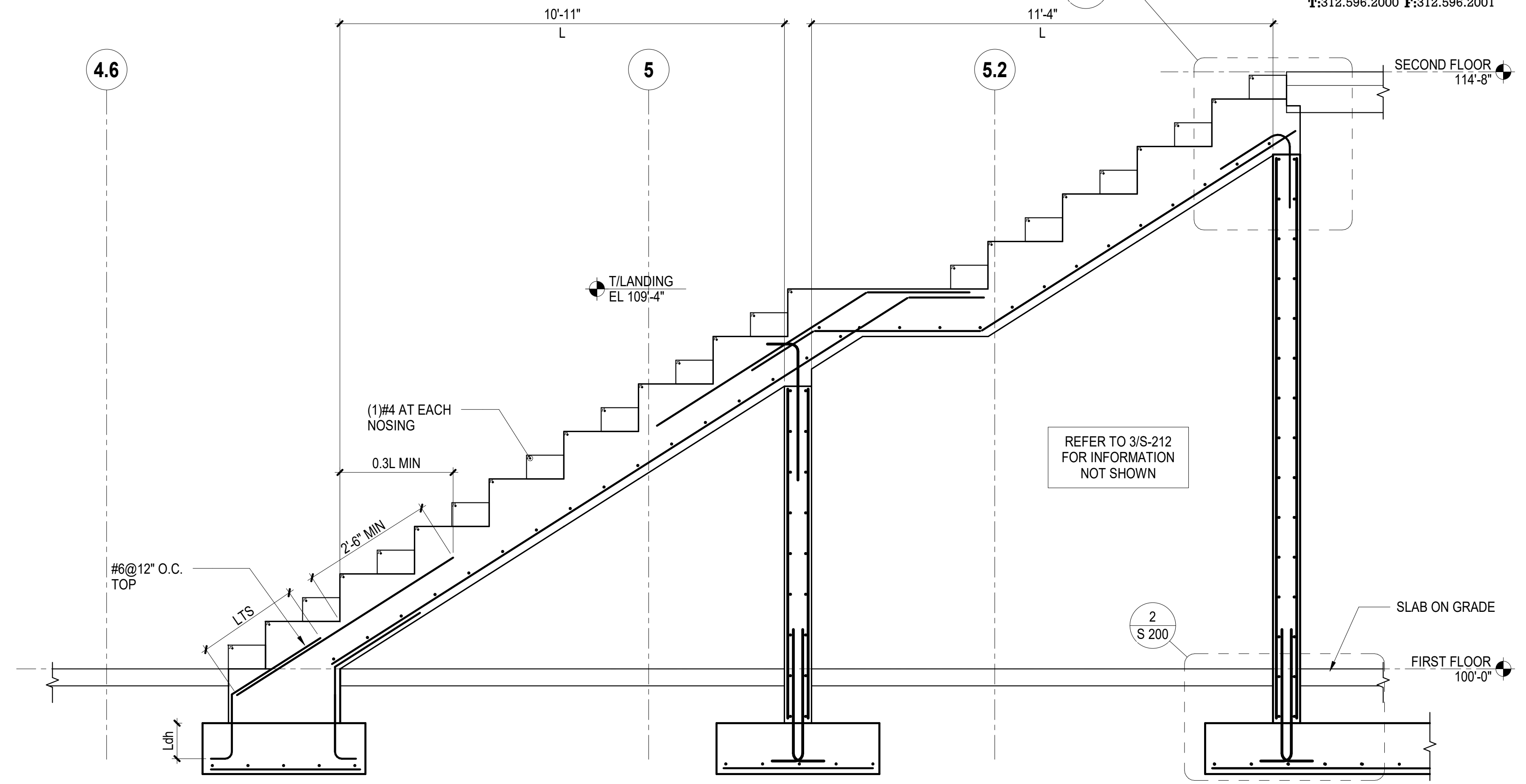
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SHEET NUMBER  
**S 211**  
 21-237.25



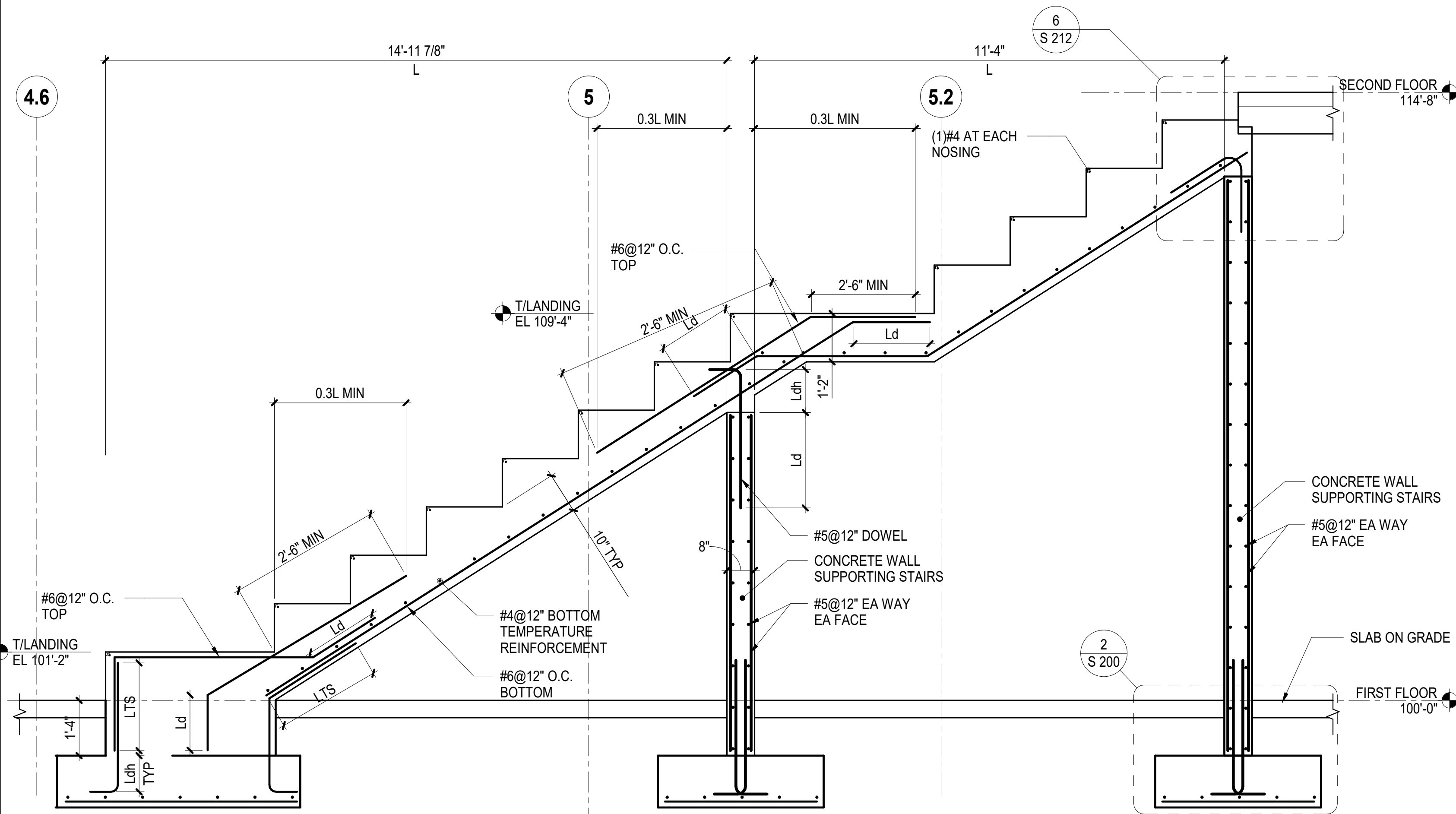
STAIR REINFORCEMENT SCHEDULE			
STAIR AND LANDING SPAN L (FT)	STAIR THICKNESS T (IN)	LANDING THICKNESS D (IN)	TOP AND BOTTOM BARS
$L \leq 10$	6	8	
$10 < L \leq 12$	7	8	
$12 < L \leq 14$	7	8	
$14 < L \leq 16$	7	8	
$16 < L \leq 18$	8	10	

- NOTES:**
- SEE ARCHITECTURAL DRAWINGS FOR ALL STAIR DIMENSIONS
  - SEE GENERAL NOTES FOR STAIR CONCRETE STRENGTH

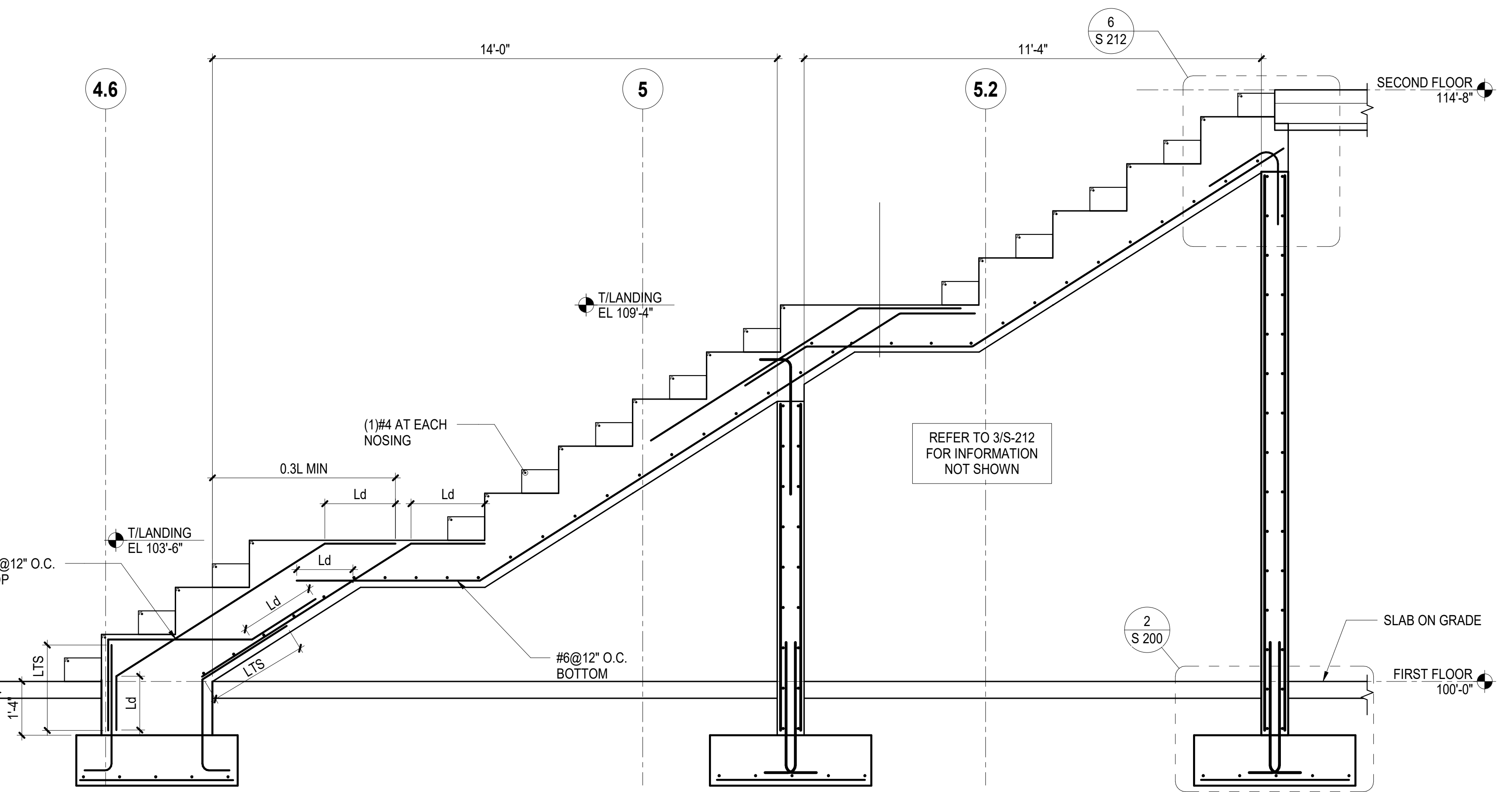


**1** GATHERING STAIR PARTIAL PLAN  
 1/4" = 1'-0"

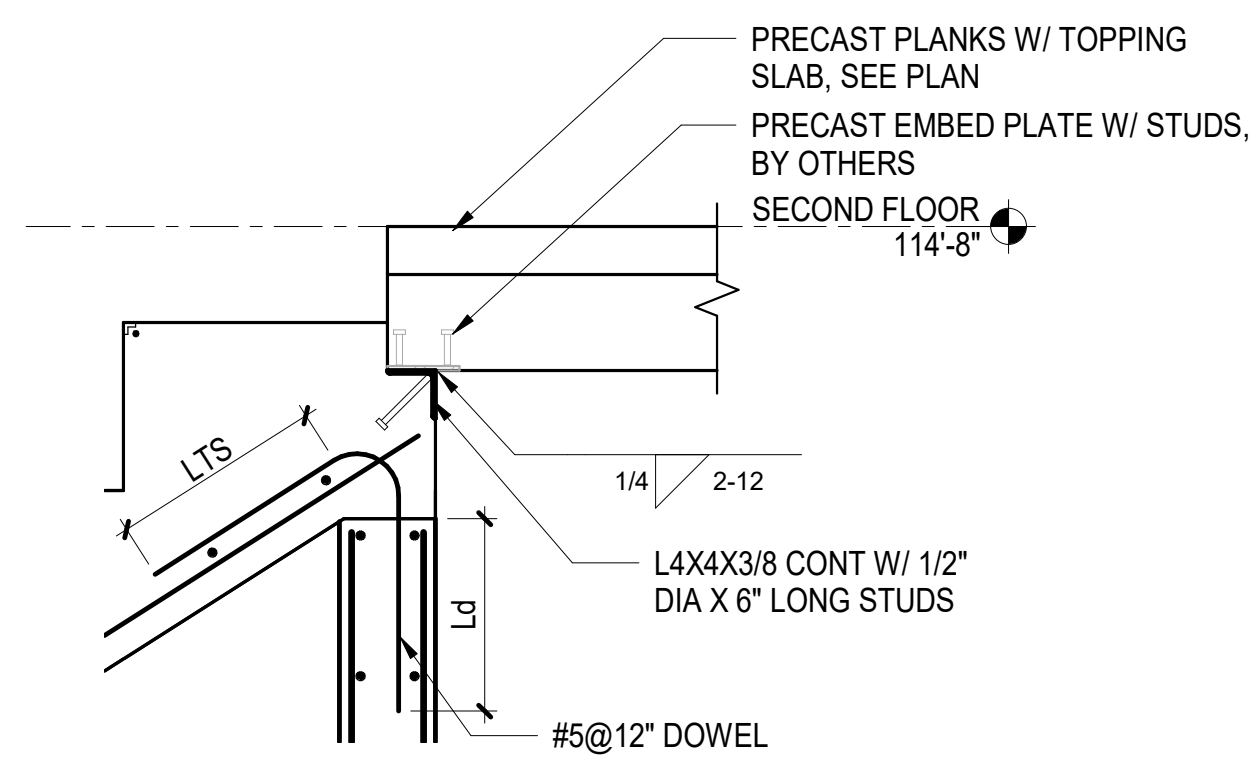
**2** GATHERING STAIR SECTION  
 1/2" = 1'-0"



**3** GATHERING STAIR SECTION  
 1/2" = 1'-0"



**4** GATHERING STAIR SECTION  
 1/2" = 1'-0"



**6** GATHERING STAIR SECTION  
 3/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

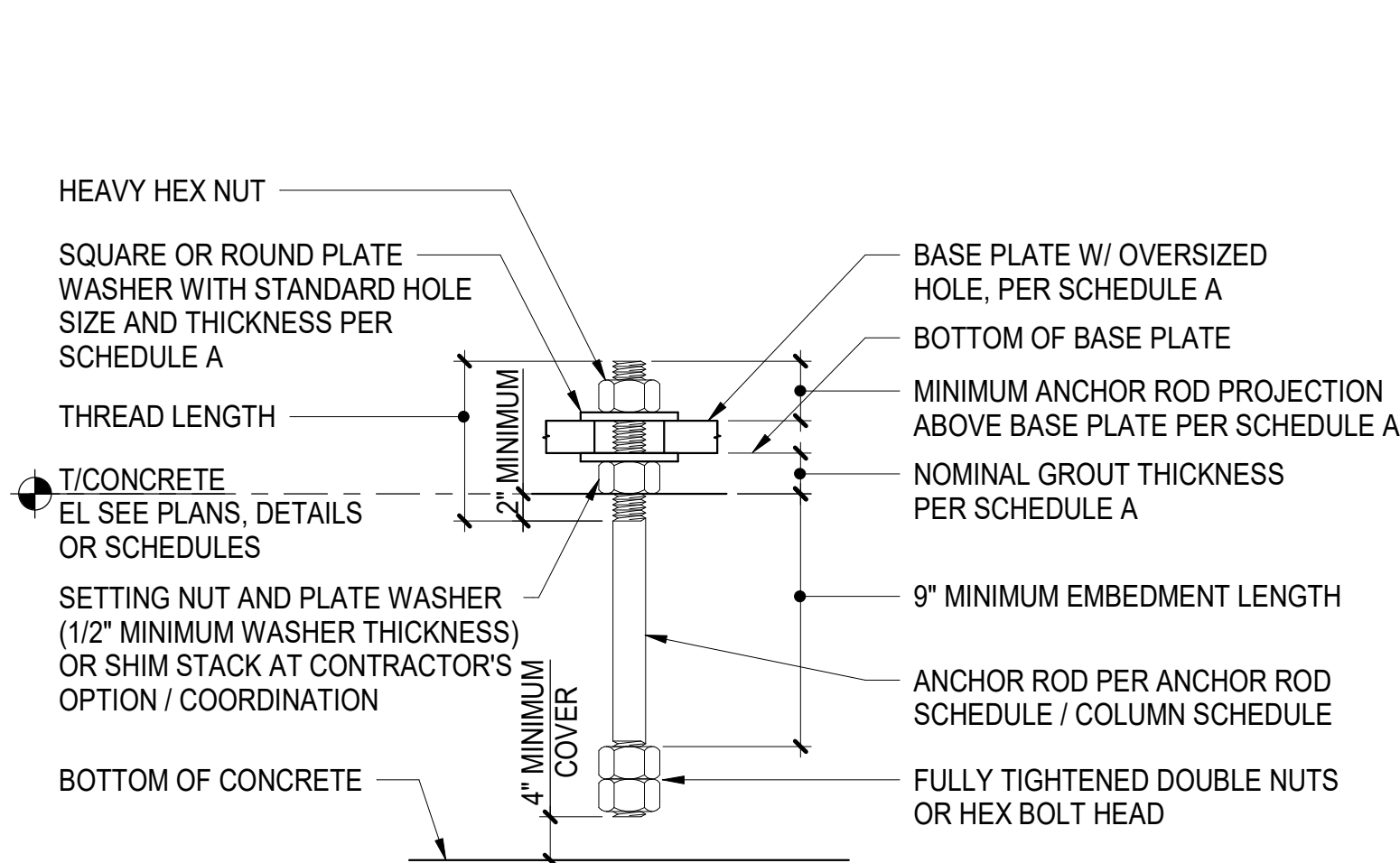
OWNER  
 PORTAGE PUBLIC SCHOOLS

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SHEET TITLE  
 GATHERING STAIR PARTIAL PLAN,  
 SECTIONS, AND SCHEDULE

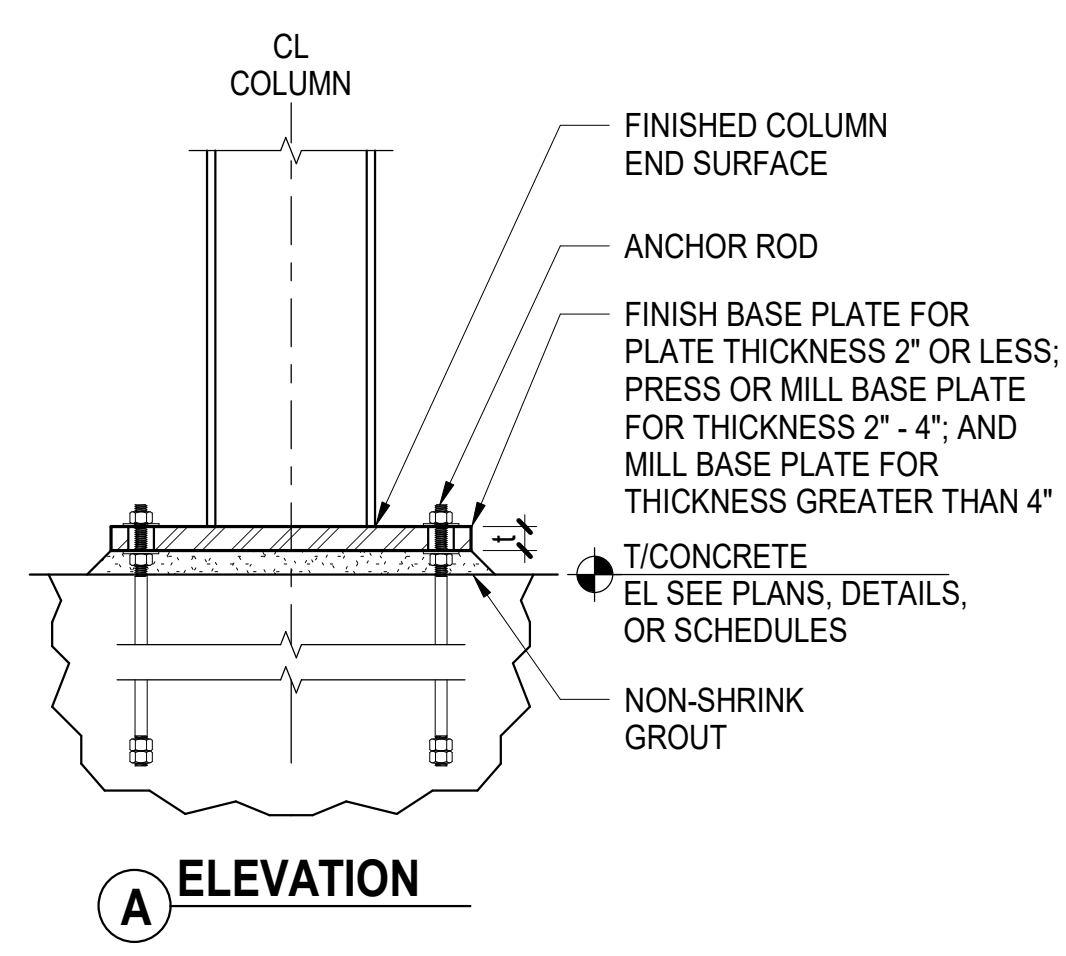
DATE  
 MAY 25, 2023

SHEET NUMBER  
**S 212**  
 21-237.25



SCHEDULE A					
ANCHOR ROD DIAMETER	BASE PL HOLE DIA	MIN WASHER SIZE	MIN WASHER t	MIN PROJ ABOVE BASE PL	NOMINAL GROUT THICKNESS
3/4"	1-5/16"	2"	1/4"	3"	2"

**1 TYPICAL ANCHOR ROD DETAIL**  
 NOT TO SCALE

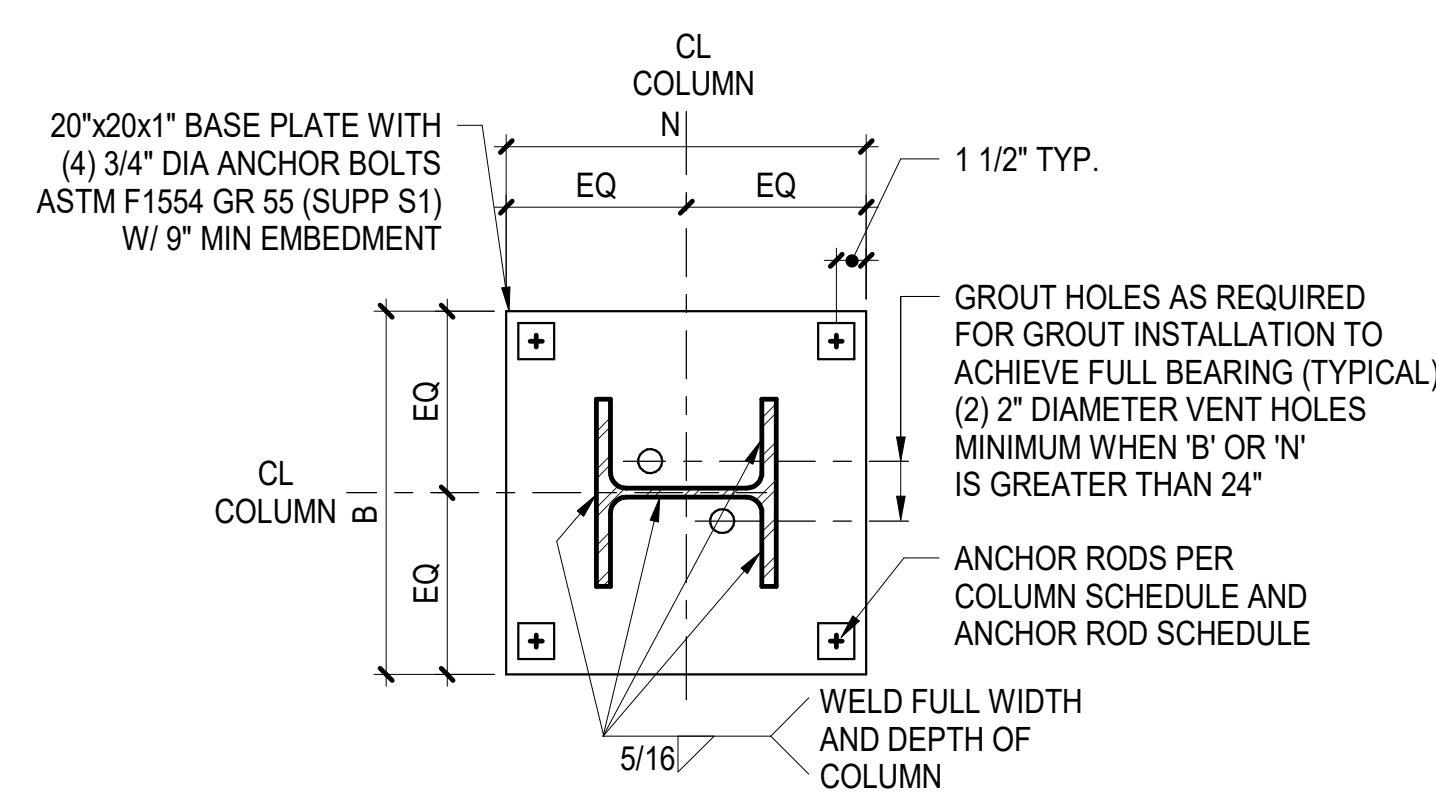


**A ELEVATION**

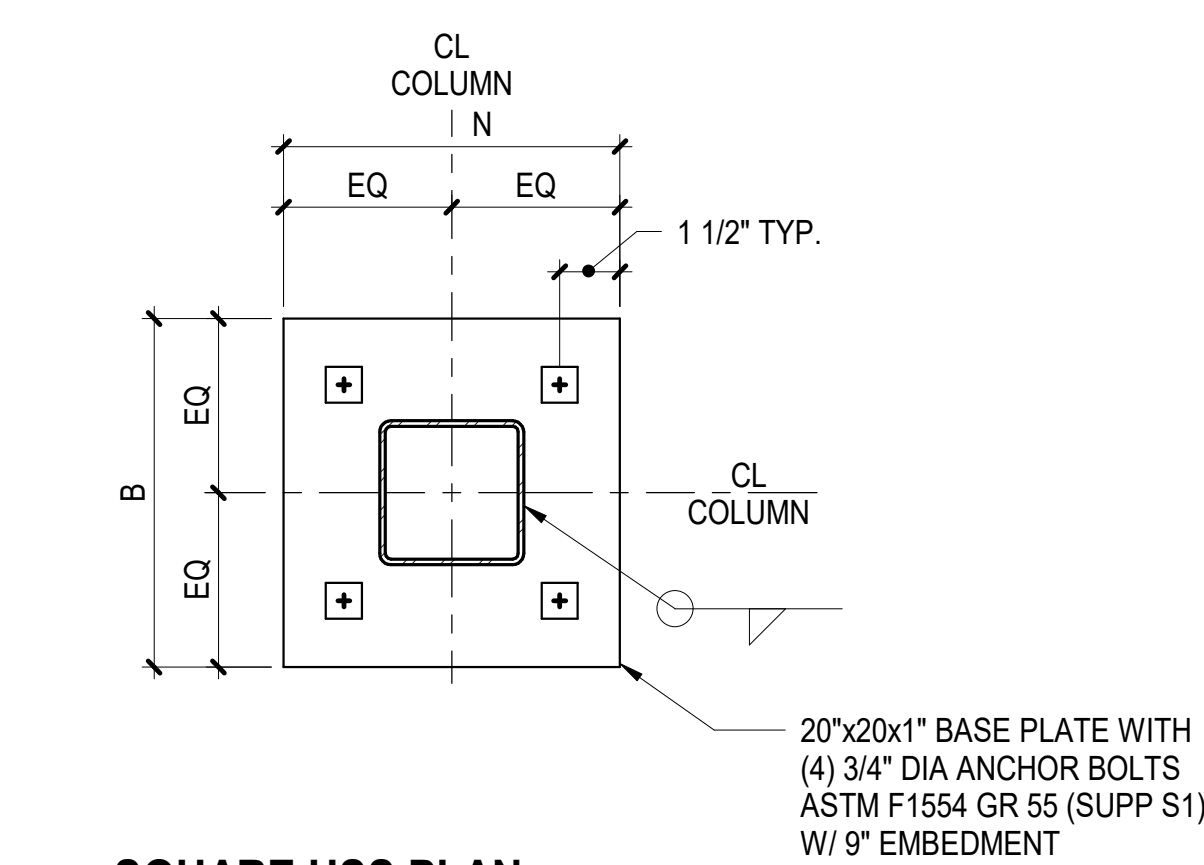
**NOTES:**

- SEE COLUMN SCHEDULE FOR BASE PLATE SIZE, ORIENTATION AND THICKNESS
- BASE PLATE THICKNESS SHOWN ON SCHEDULE IS A MINIMUM. DIMENSION AFTER ALL MILLING IS COMPLETED
- COLUMN STABILITY DURING ERECTION IS RESPONSIBILITY OF CONTRACTOR
- SEE ANCHOR ROD SCHEDULE AND TYPICAL ANCHOR ROD DETAIL FOR ADDITIONAL INFORMATION
- CONTRACTOR'S OPTION TO FIELD WELD COLUMNS TO BASEPLATES FOR HEAVY BASEPLATES
- ANCHOR ROD CONFIGURATION IS TO USE SQUARE PATTERN OUTSIDE COLUMN. IF SPECIFIED BASE PLATE SIZE DOES NOT PERMIT OUTSIDE PLACEMENT USE SQUARE PATTERN INSIDE COLUMN. USE RECTANGULAR ANCHOR ROD CONFIGURATION WHERE NOTED

**2 TYPICAL BASE PLATE DETAIL**  
 NOT TO SCALE



**B W8, W10, W12, W14 PLAN**  
 WITH SQUARE ANCHOR ROD PATTERN OUTSIDE COLUMN



**C SQUARE HSS PLAN**

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

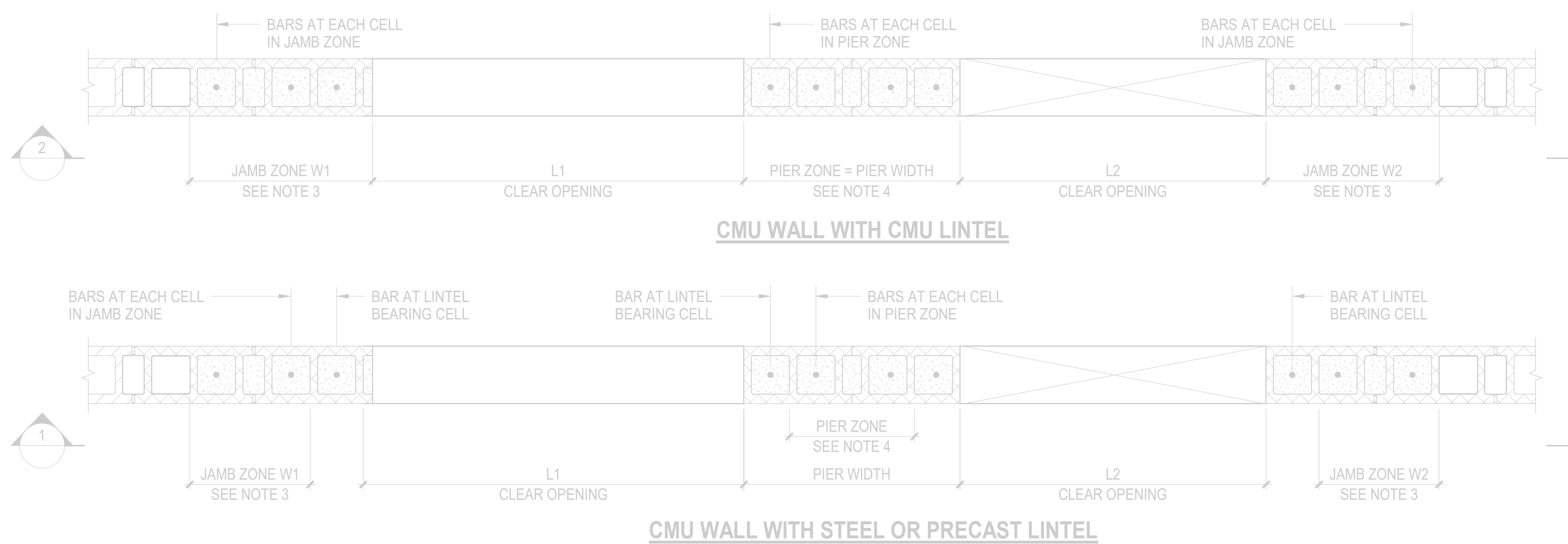
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SHEET TITLE  
 TYPICAL STEEL COLUMN DETAILS

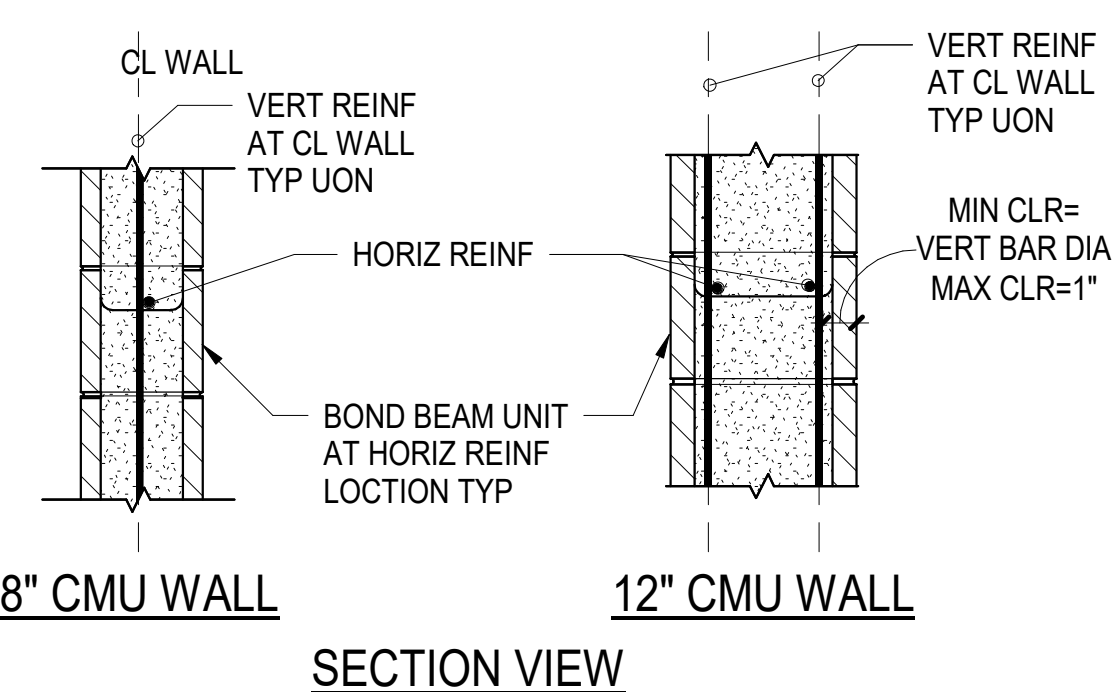
DATE  
 MAY 25, 2023

SHEET NUMBER  
**S 500**  
 21-237.25



- NOTES:**
- SEE ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATION OF MASONRY WALL OPENINGS
  - SUM OF OPENING WIDTHS L1 PLUS L2 ON EITHER SIDE OF PIER SHALL NOT EXCEED 24'-0", AND ANY INDIVIDUAL OPENING SHALL NOT EXCEED 12'-0" IN WIDTH. FOR CONDITIONS EXCEEDING THIS CRITERIA, ENGINEER OF RECORD SHALL BE NOTIFIED PRIOR TO CONSTRUCTION
  - W1 AND W2 REFERS TO WIDTH OF JAMB ZONE BASED ON ADJACENT CLEAR OPENING L1 AND L2, RESPECTIVELY AS PER TYPICAL CMU NON-BEARING WALL JAMB AND PIER ZONE SCHEDULE
  - PIER ZONE REFERS TO MINIMUM WIDTH OF PIER AS SCHEDULED ON TYPICAL CMU NON-BEARING WALL JAMB AND PIER ZONE SCHEDULE
  - SEE TYPICAL CMU NON-BEARING WALL JAMB AND PIER ZONE SCHEDULE FOR REINFORCEMENT

**1 TYPICAL CMU NON-BEARING WALL PLAN DETAIL AT ADJACENT WALL OPENINGS**  
 1" = 1'-0"

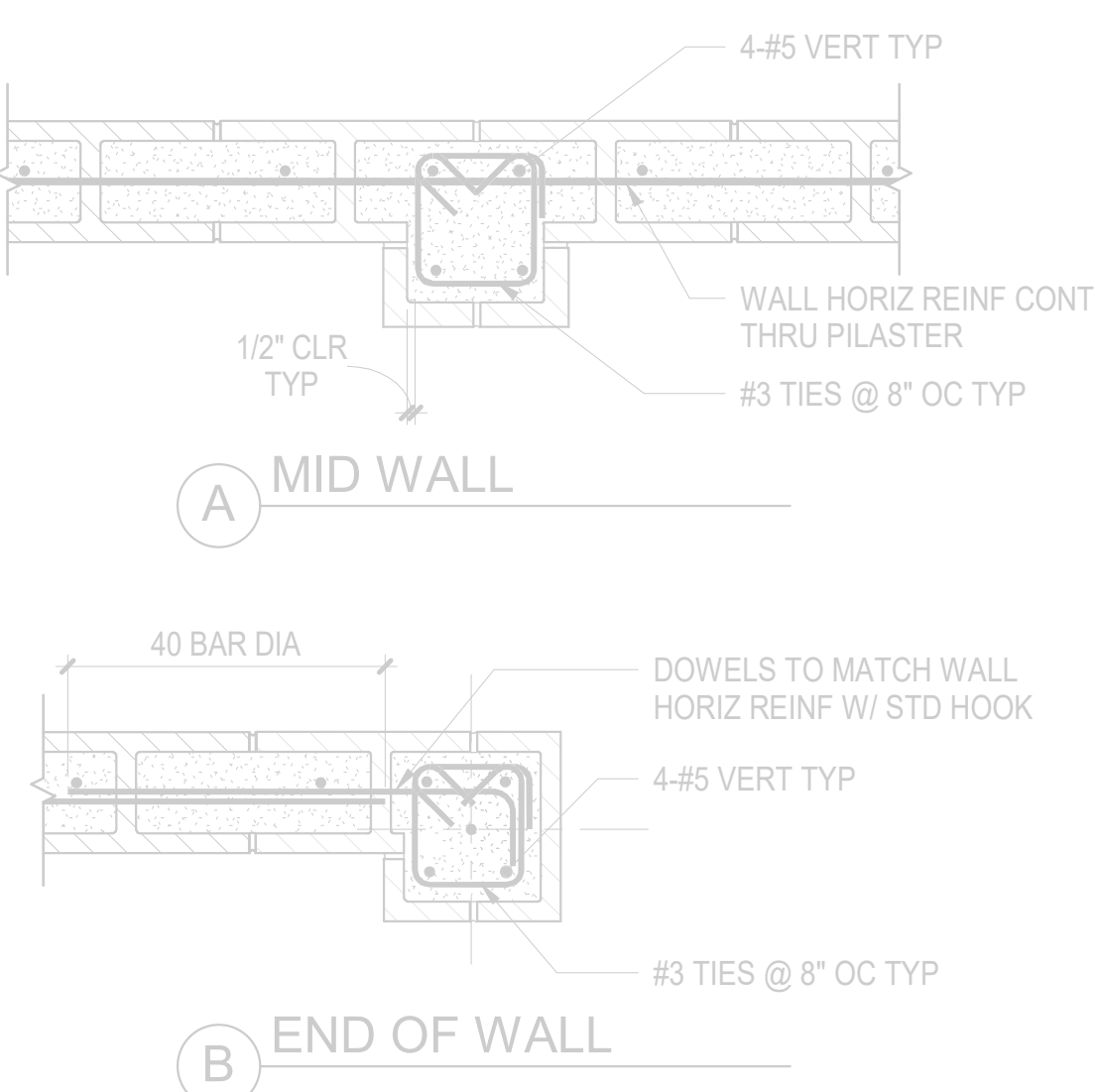


**REINFORCING SCHEDULE FOR CONCRETE MASONRY WALL**

WALL TYPE	NOMINAL THICKNESS	VERTICAL REINF	HORIZONTAL REINF	No. OF REINF CURTAIN
CMU-1	8"	#4 @ 16"	(2) #5 @ 48" O.C.	SINGLE
CMU-2	8"	#4 @ 32" OC	(2) #5 @ 48" O.C.	SINGLE
CMU-3	8"	#4 @ 48" OC	(2) #5 @ 48" O.C.	SINGLE
CMU-4	12"	#4 @ 48" OC	(2) #5 @ 48" O.C.	DOUBLE

- NOTES:**
- SEE PLANS FOR WALL TYPE LOCATIONS.
  - LAP SPLICE REINFORCING PER 5 / S 600
  - CMU SHALL BE RUNNING BOND & FULLY GROUTED UON
  - USE DOUBLE OPEN END BLOCKS TO THE EXTENT PRACTICAL TYP DO NOT PLACE CLOSED SIDES BACK TO BACK.
  - SEE STRUCTURAL GENERAL NOTES FOR MATERIAL SPECIFICATIONS
  - FOR WALL CONSTRUCTION & CONTROL JOINT SEE DETAIL 8 / S 600
  - FOR WALL CORNERS & INTERSECTIONS SEE DETAIL 10 / S 600

**3 CMU WALL REINFORCING SCHEDULE**  
 1" = 1'-0"



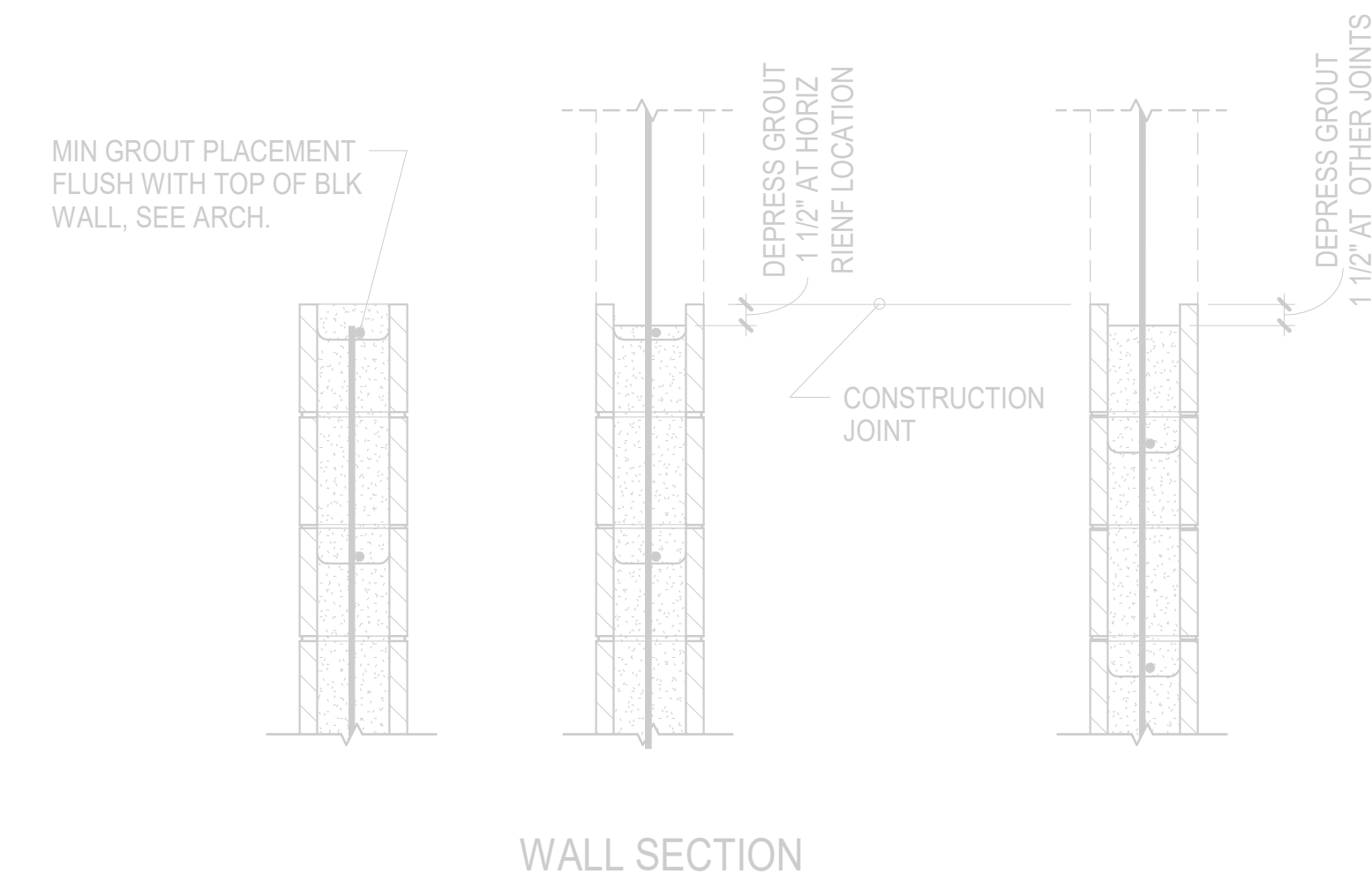
**6 PILASTER DETAIL**  
 1" = 1'-0"

**ISSUED FOR REFERENCE OF CMU WALL TYPES AND REINF SPACING ONLY. PROVIDE ALLOWANCE FOR CMU WALL DOWELS BASED ON CMU WALL TYPES AND REINFORCEMENT SHOWN. WALL TYPE LOCATIONS TO BE FINALIZED IN 100% CD ISSUANCE.**

**REINFORCING SCHEDULE FOR LINTEL CMU WALL**

OPENING LENGTH	MIN LINTEL DEPTH	8" WALL		12" WALL	
		HORIZ	VERT	HORIZ	VERT
ML-1 ≤ 4'-0"	2'-0"	#5	#3 @ 6" OC	2-#5	#3 @ 6" OC
ML-2 ≤ 6'-0"	2'-8"	#5	#3 @ 8" OC	2-#6	#3 @ 8" OC

**4 WALL LINTEL DETAIL AND SCHEDULE**  
 1" = 1'-0"



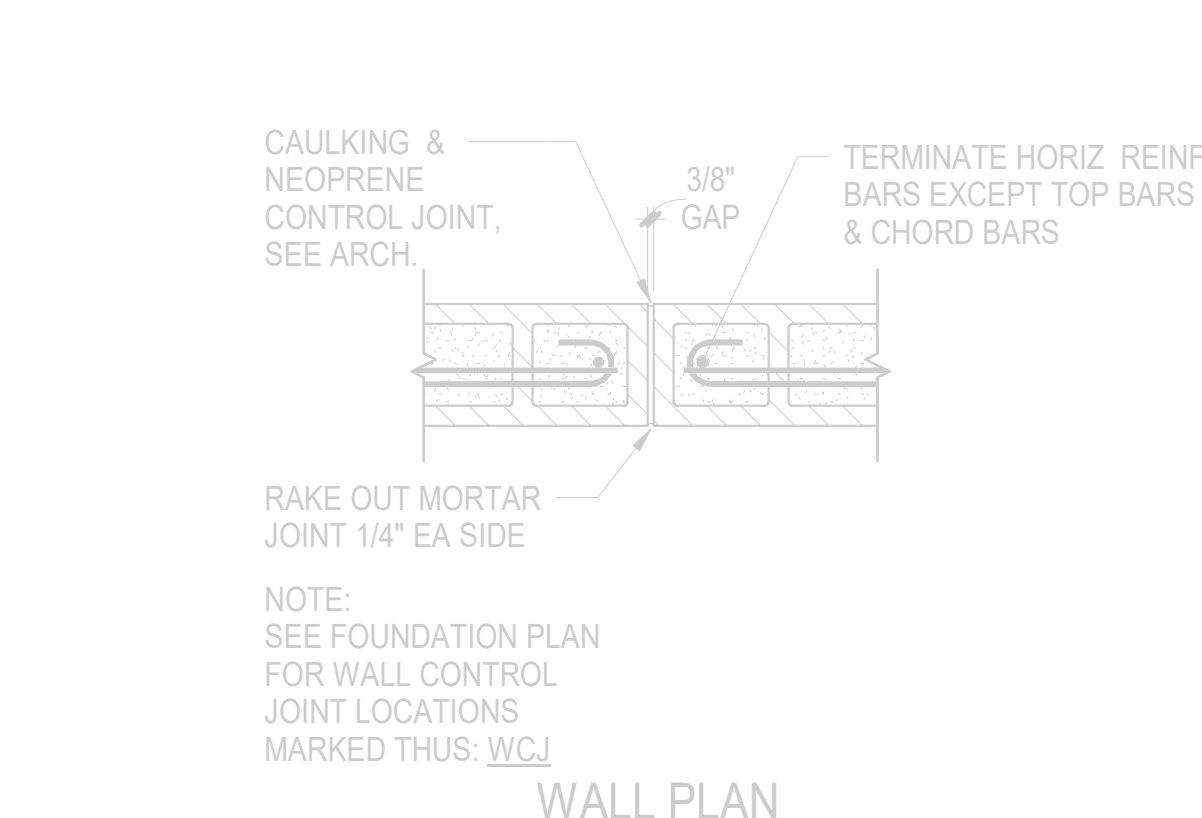
**7 CMU WALL CONSTRUCTION JOINTS**  
 1" = 1'-0"

**LAP SPLICE LENGTH (f' m=1500PSI)**

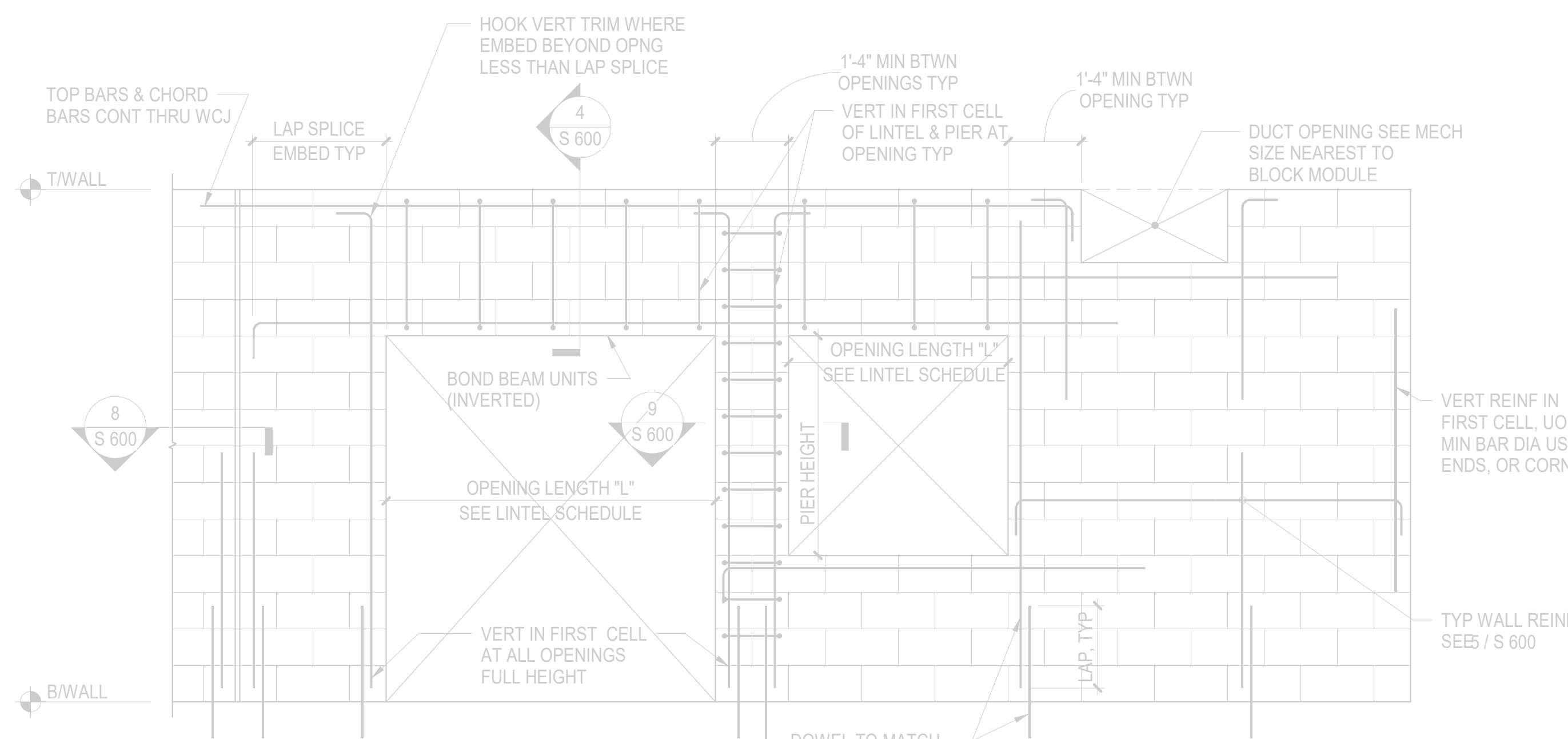
BAR SIZE	FOR K2-2db	FOR K2-3db	FOR K2-4db
#3	N/A	2'-2"	1'-7"
#4	3'-0"	2'-10"	2'-2"
#5	3'-9"	3'-6"	2'-8"
#6	4'-6"	4'-6"	4'-2"
#7	5'-3"	5'-3"	4'-10"
#8	6'-0"	6'-0"	6'-0"
#9	6'-10"	6'-10"	6'-10"

- NOTES:**
- "K" SHALL BE TAKEN AS THE CMU COVER DIMENSION OR THE CLEAR SPACING BETWEEN ADJACENT BARS, WHICHEVER IS LESS. SEE ABOVE.
  - WHERE EPOXY-COATED REINFORCING IS USED, INCREASE LAP SPLICE LENGTH BY 50%.
  - SPLICES OF HORIZONTAL REINFORCEMENT IN WALLS SHALL BE STAGGERED.
  - SPLICES OF HORIZONTAL REINFORCEMENT IN WALLS CONTAINING TWO CURTAINS OF REINFORCEMENT SHALL NOT OCCUR IN THE SAME LOCATION.
  - "N/A" MEANS "NOT ALLOWABLE" INCREASE "K" FOR ALLOWABLE LAP SPLICE.

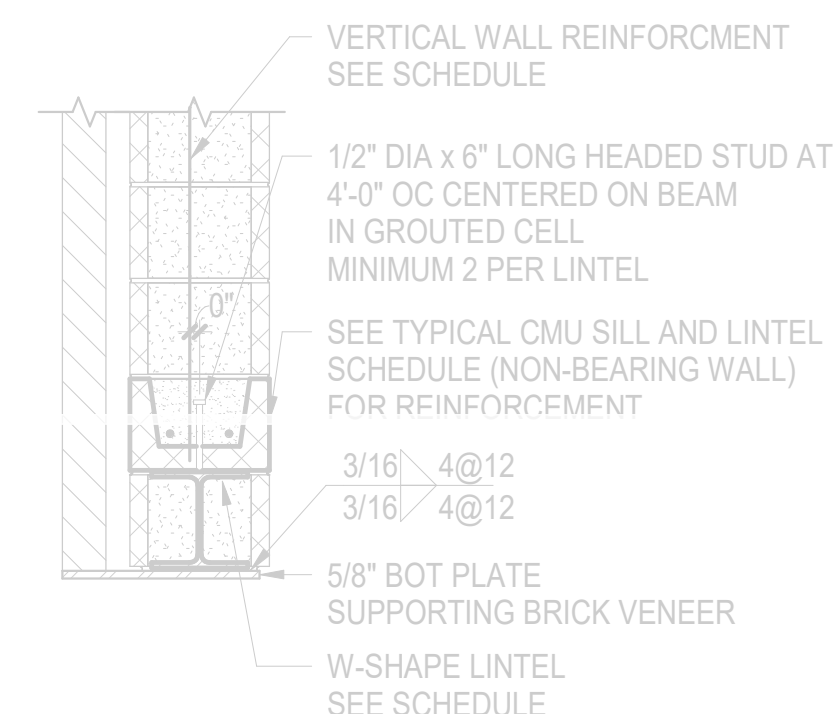
**5 REBAR OFFSET AND LAP SPLICE CMU f' m=1500 PSI**  
 1" = 1'-0"



**8 CMU WALL CONTROL JOINT**  
 1" = 1'-0"



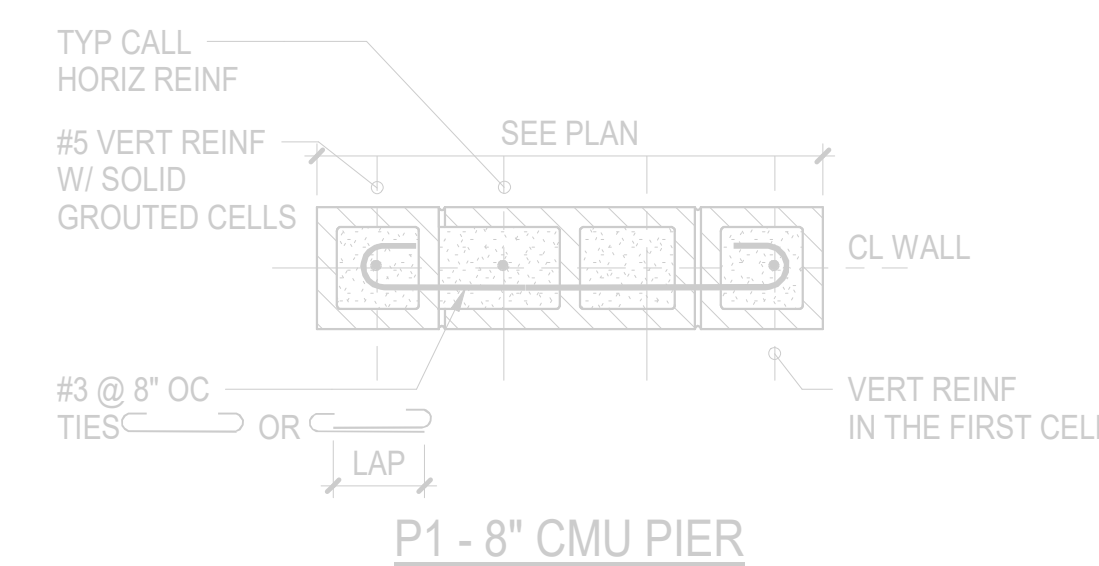
**2 CMU WALL ELEVATION W/ OPENING**  
 1/2" = 1'-0"



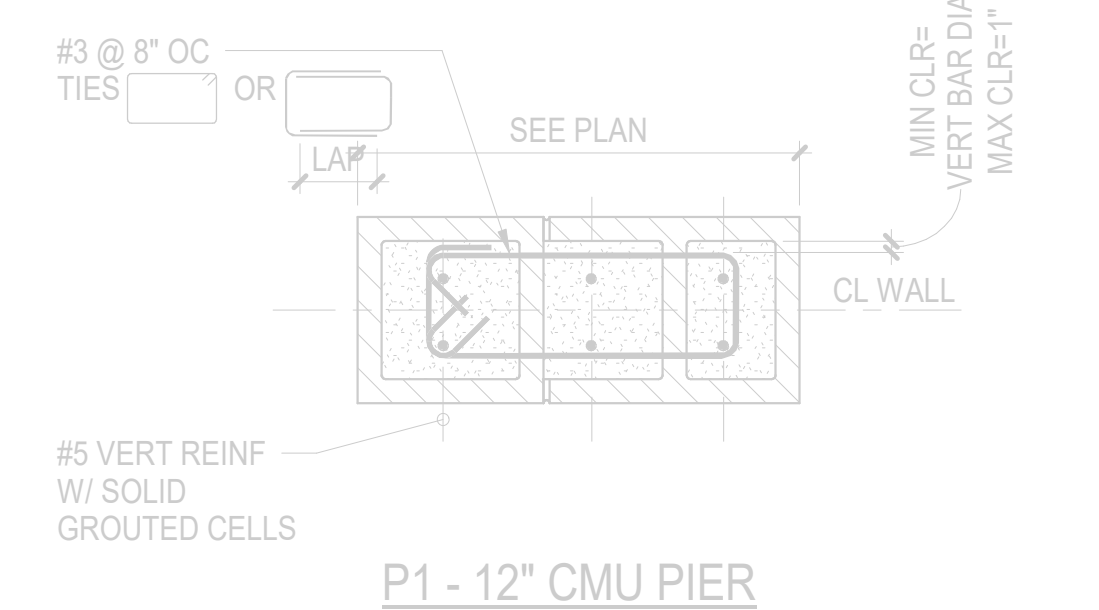
**STEEL LINTEL WITH PLATE**

- NOTES:**
- LINTEL ANGLES AND W-SHAPE LINTELS SHALL BE ASTM A36 STEEL MINIMUM
  - NO MORE THAN SIX COURSES OF CMU MAY BE PLACED, REINFORCED, GROUTED AND CURED AT ONE TIME ABOVE LINTEL BEFORE PROCEEDING FURTHER
  - PROVIDE MINIMUM 8" BEARING EACH END
  - 2L LINTELS SHALL BE WELDED OR BOLTED TOGETHER AT INTERVALS NOT EXCEEDING 2'-0" OC, WITH A MINIMUM OF TWO CONNECTIONS BETWEEN ENDS
  - AT EXTERIOR WALL SYSTEMS AND AT HUMID LOCATIONS LINTELS SHALL BE GALVANIZED. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION
  - SEE ARCHITECTURAL DRAWINGS FOR FIREPROOFING REQUIREMENTS
  - SEE TYPICAL CMU NON-BEARING WALL ELEVATION WITH STEEL OR PRECAST LINTELS FOR DETAILS OF REINFORCEMENT AROUND OPENINGS

**11 TYPICAL STEEL LINTEL SCHEDULE (NON-BEARING WALL)**  
 NOT TO SCALE



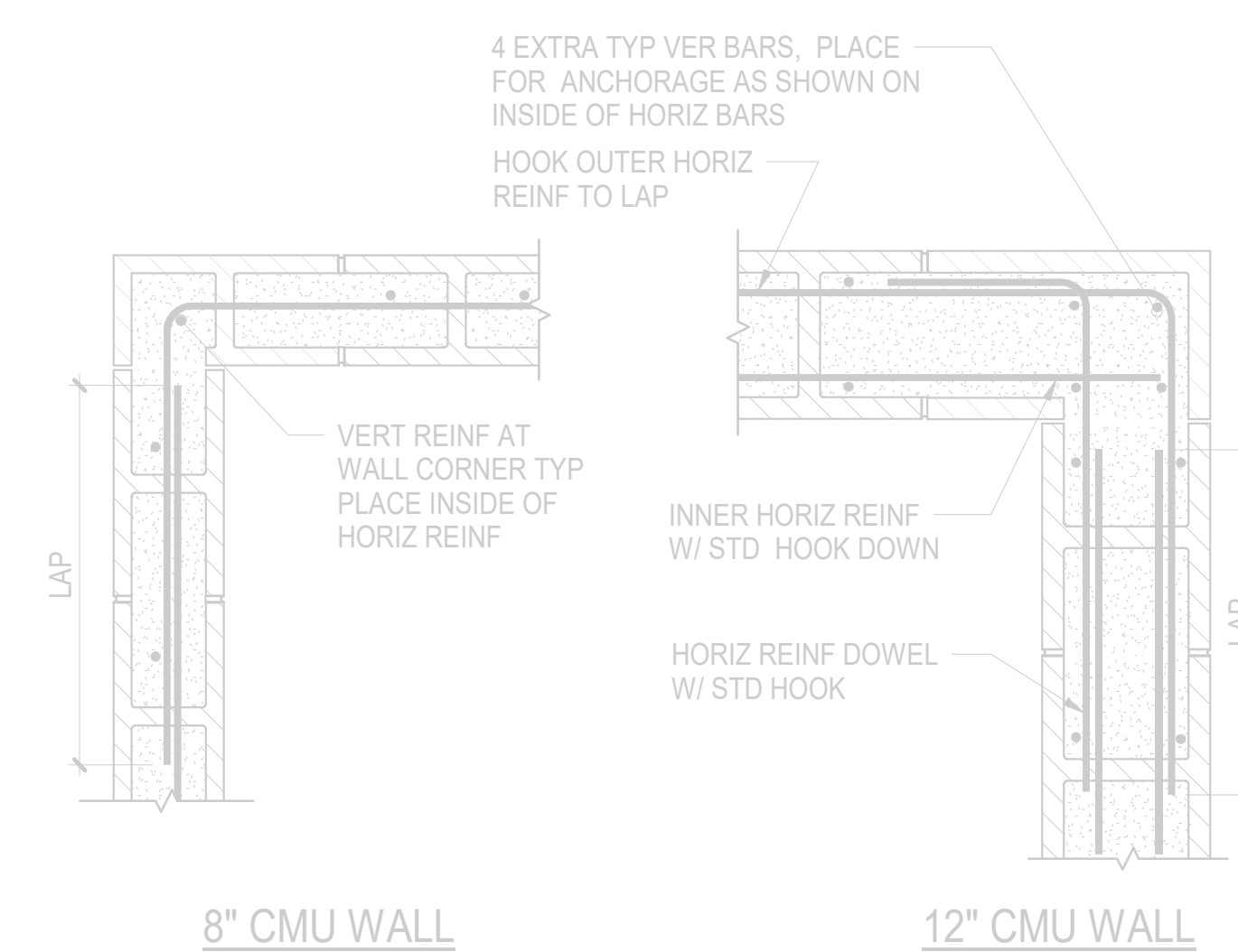
P1 - 8" CMU PIER



P1 - 12" CMU PIER

- NOTES:**
- USE WALL PIER DETAIL WHERE:
    - PIER LENGTH > 5x WALL "T"
    - PIER HEIGHT > 2x PIER LENGTH
  - EXTEND HORIZONTAL TIES LAP SPLICE LENGTH ABOVE & BELOW OPENING

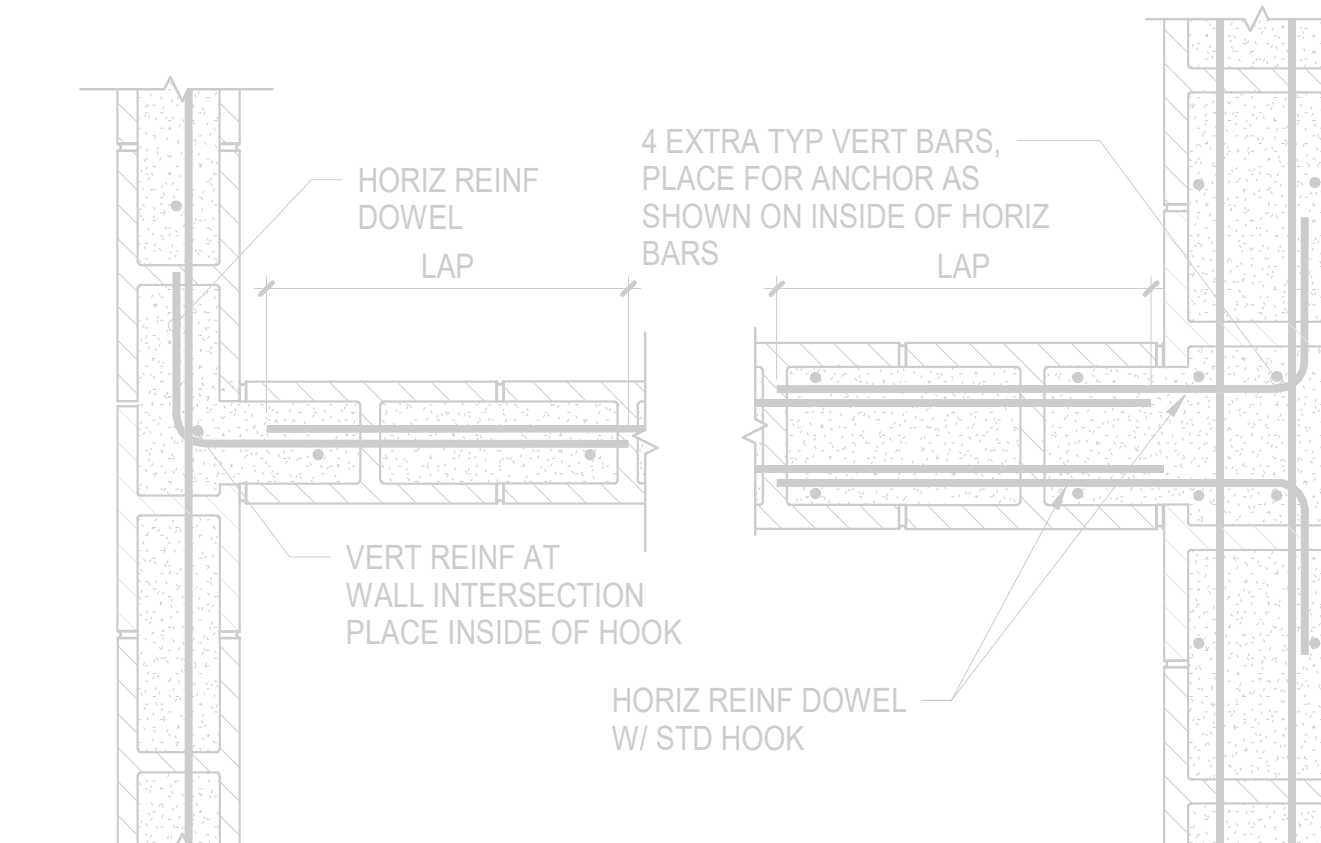
**9 WALL PIER DETAIL**  
 1" = 1'-0"



8" CMU WALL

12" CMU WALL

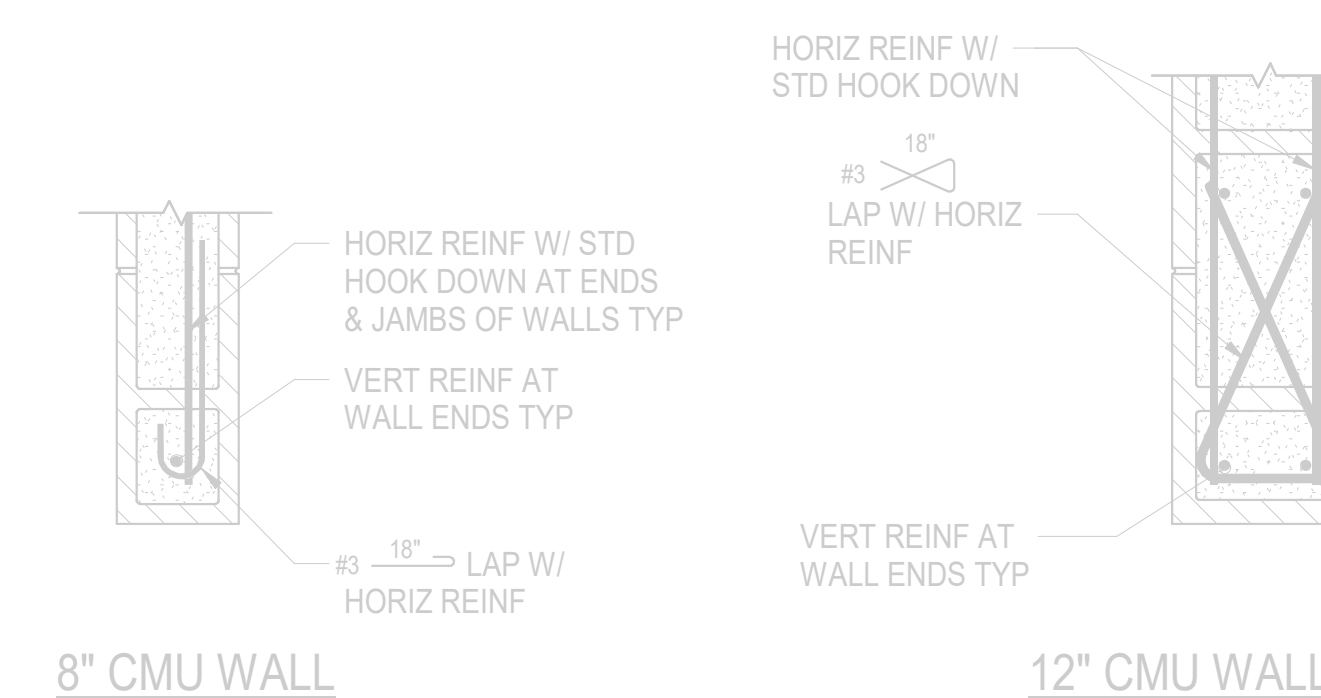
**A AT CORNERS**



8" CMU WALL

12" CMU WALL

**B AT INTERSECTIONS**



8" CMU WALL

12" CMU WALL

**C AT ENDS**

**10 CMU WALL CORNERS AND INTERSECTIONS**  
 1" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND FOUNDATIONS

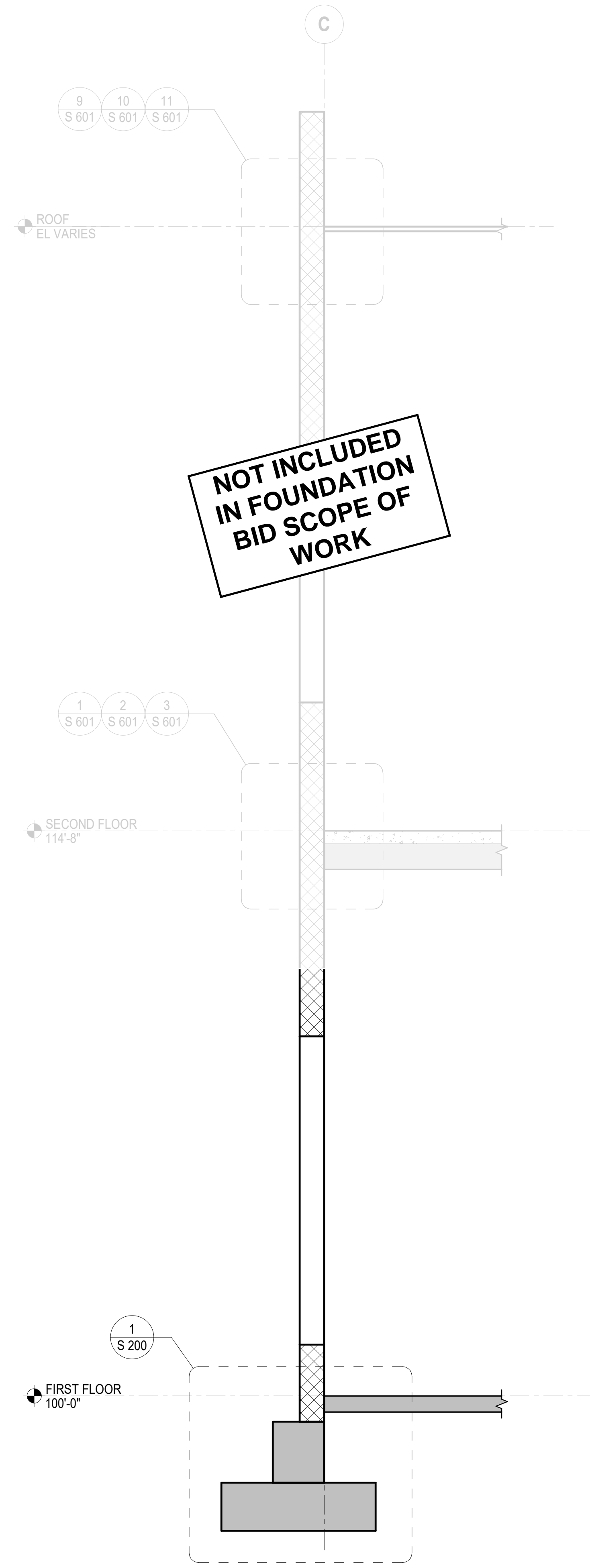
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

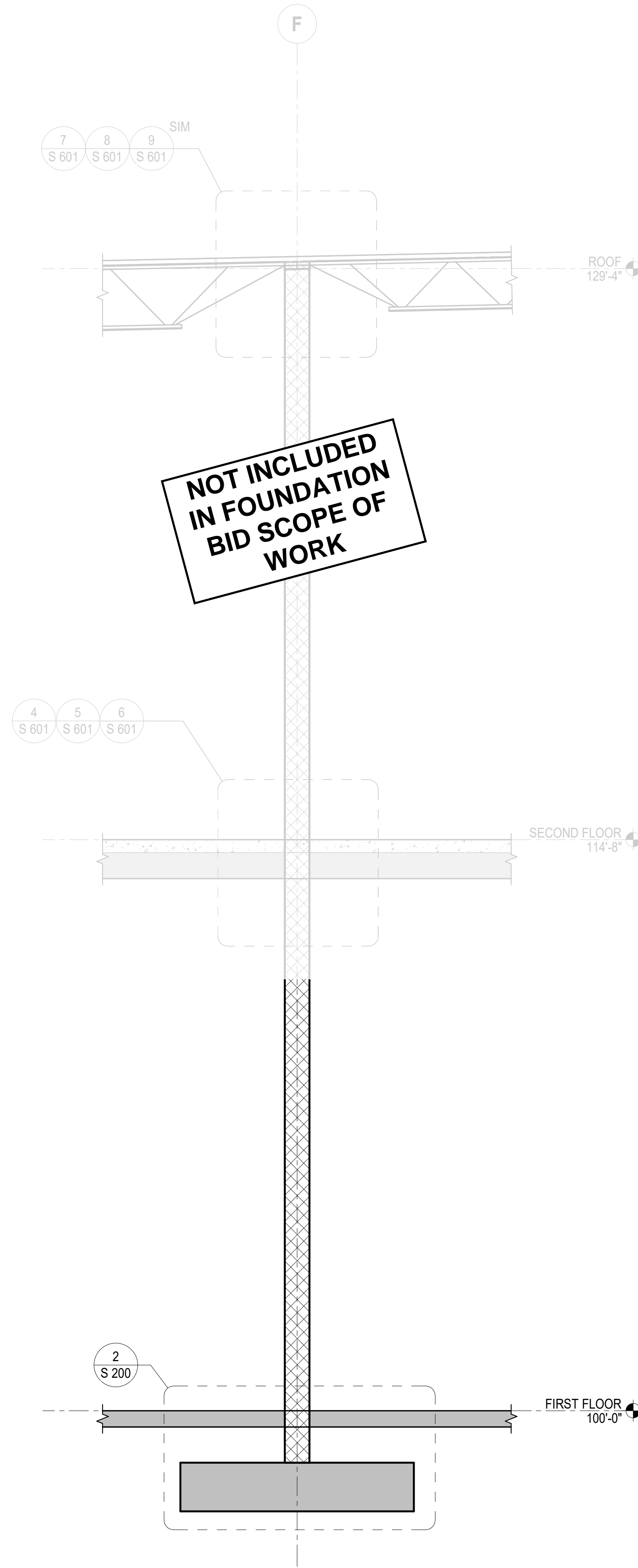
SHEET TITLE  
 TYPICAL MASONRY WALL DETAILS

DATE  
 MAY 25, 2023

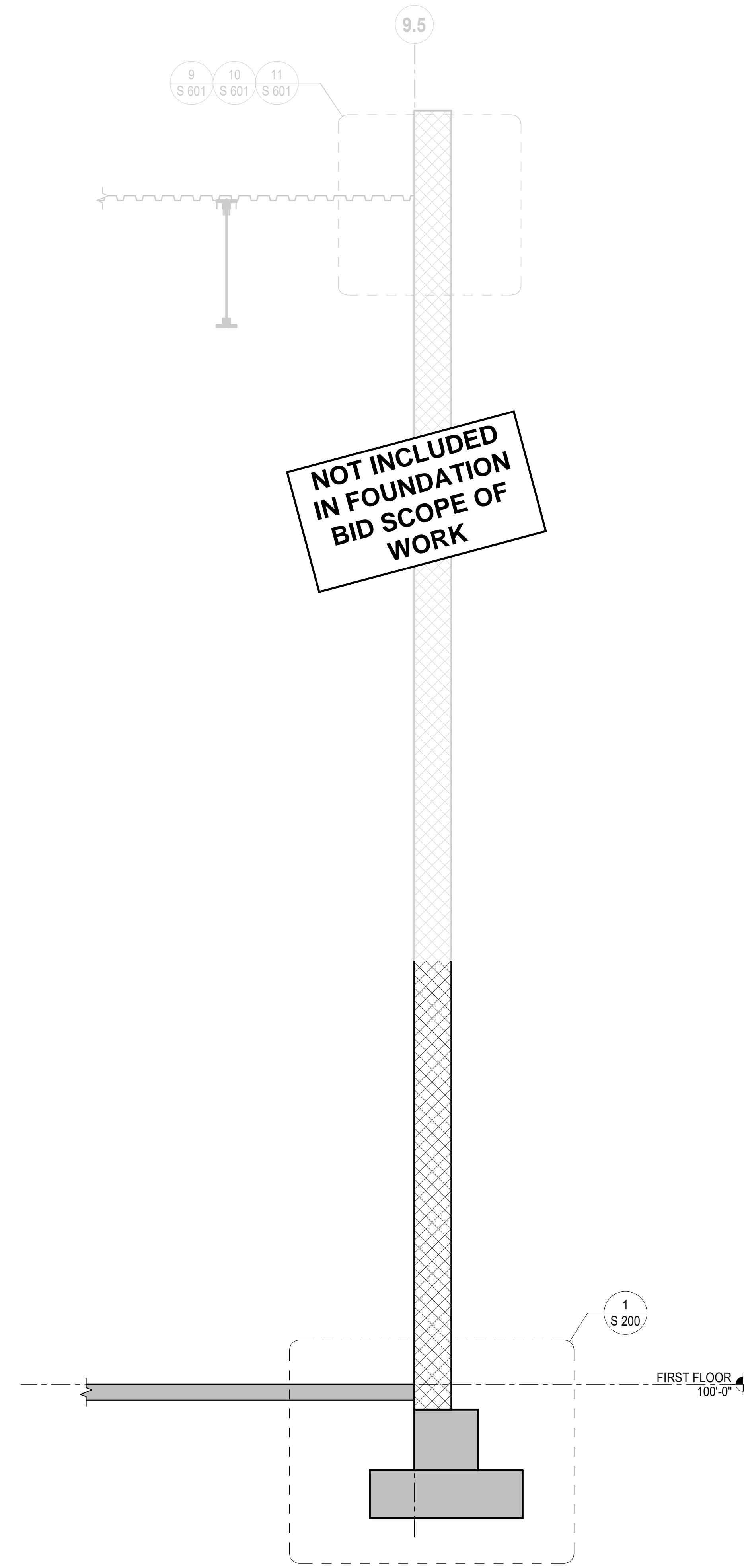
SHEET NUMBER  
 S 600  
 21-237.25



**1** TYPICAL EXTERIOR STRUCTURAL  
 CMU WALL SECTION  
 1/2" = 1'-0"



**2** TYPICAL INTERIOR STRUCTURAL  
 CMU WALL SECTION  
 1/2" = 1'-0"



**3** TYPICAL DOUBLE-HEIGHT STRUCTURAL  
 CMU WALL SECTION  
 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

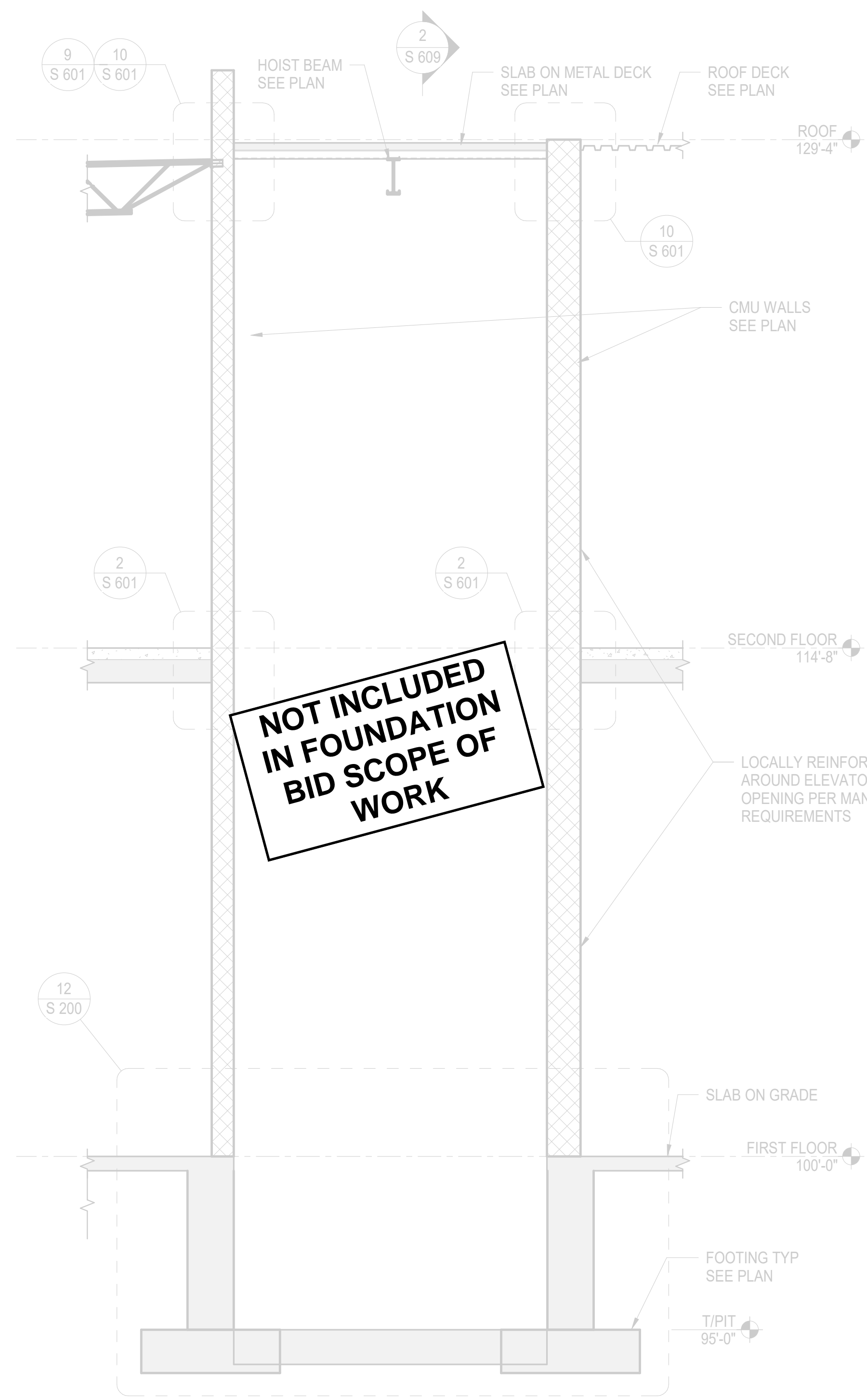
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 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

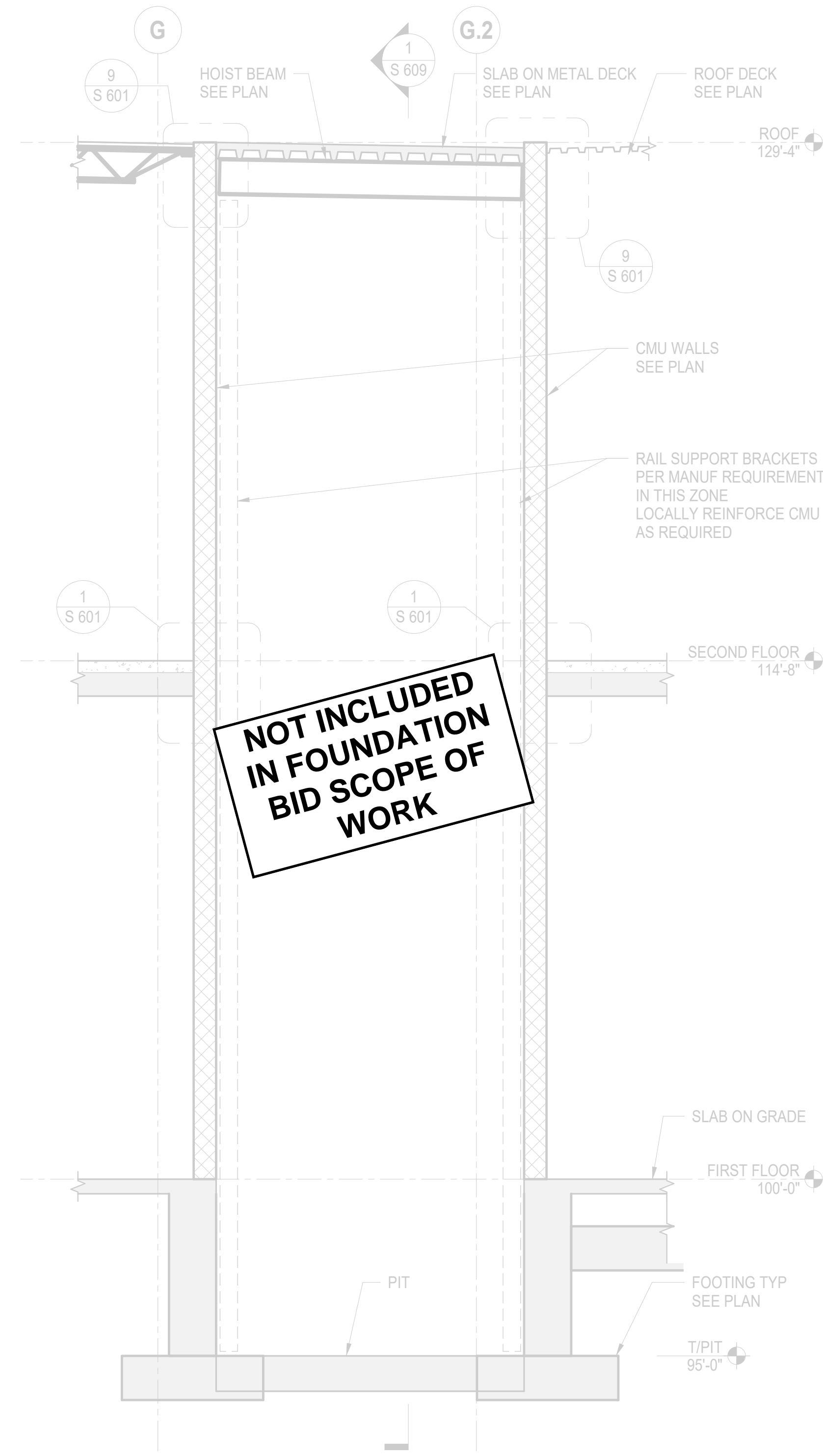
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 TYPICAL MASONRY SECTIONS

DATE  
 MAY 25, 2023

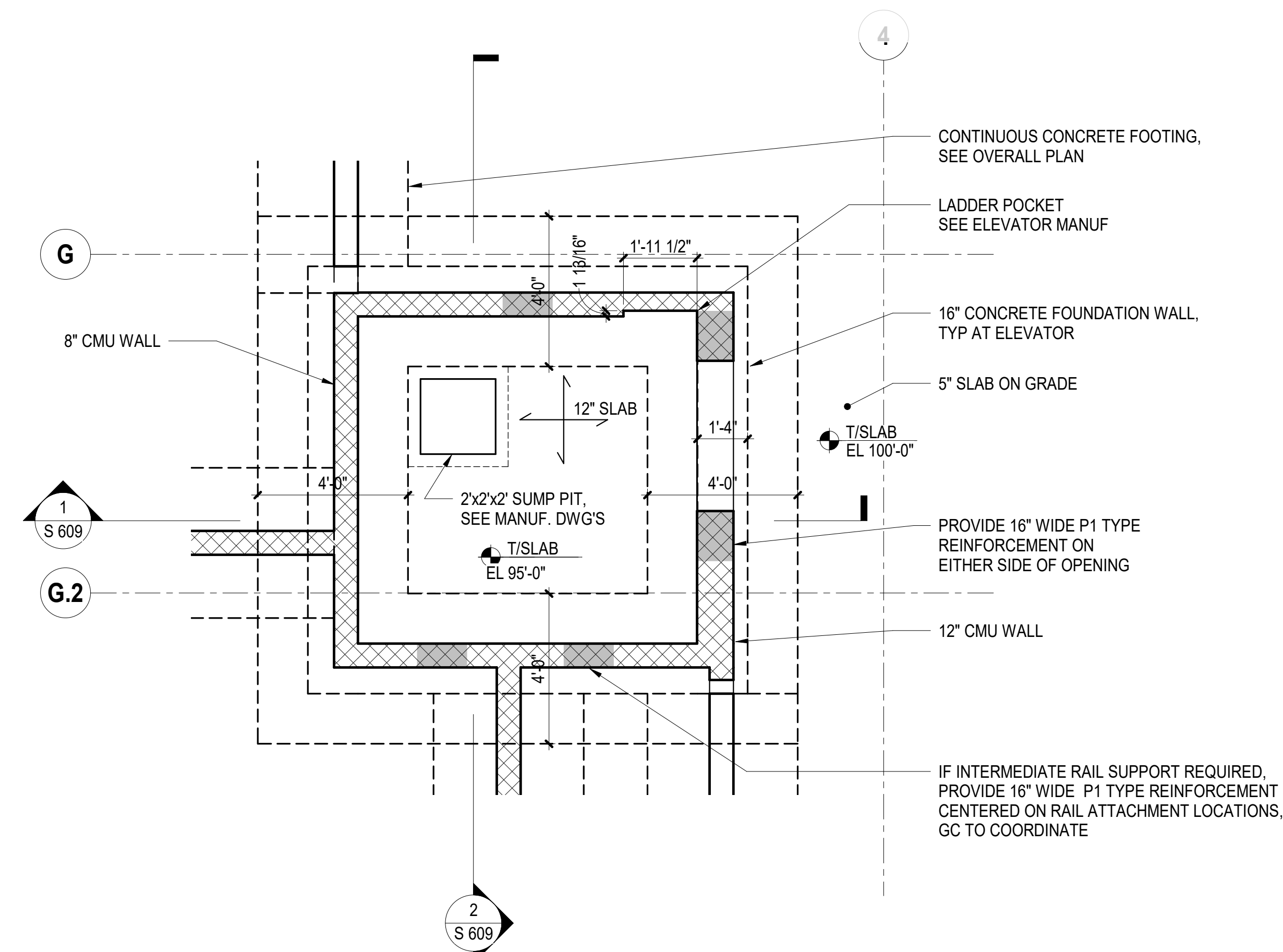
SHEET NUMBER  
**S 605**  
 21-237.25



**1** SECTION AT ELEVATOR SHAFT  
 3/8" = 1'-0"



**2** SECTION AT ELEVATOR SHAFT  
 3/8" = 1'-0"



**3** ELEVATOR PIT SLAB PARTIAL PLAN  
 3/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 5: FOOTINGS AND  
 FOUNDATIONS

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 ELEVATOR SECTIONS

SHEET NUMBER  
**S 609**  
 21-237.25

DATE

MAY 25, 2023