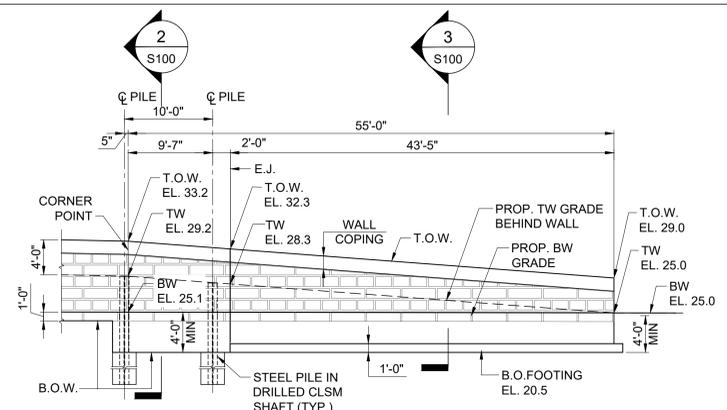


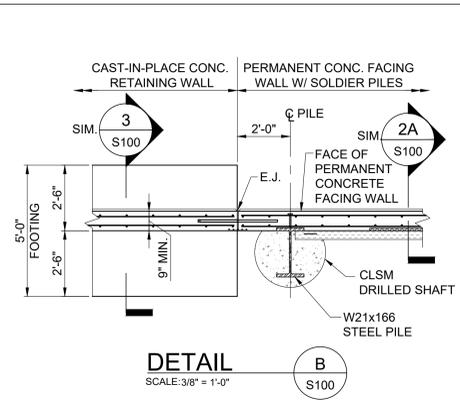
**RETAINING WALL / PILE LAYOUT PARTIAL PLAN & FUEL TANK PAD PLAN**  
SCALE: 1/8" = 1'-0"

**NOTES:**  
1. FOR PROPOSED GRADE ELEVATIONS AT TOP WALL GRADE (TW) AND BOTTOM WALL GRADE (BW) OF RETAINING WALL AND THE CONTINUATION OF THE SOLDIER PILE LAYOUT SEE DRAWING B100.

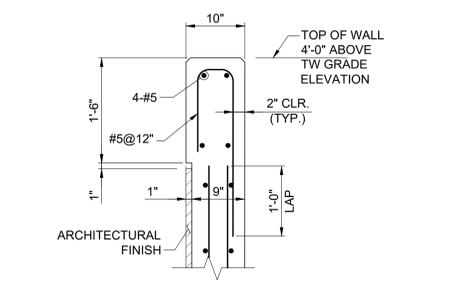
CONTINUE TO DRAWING B100



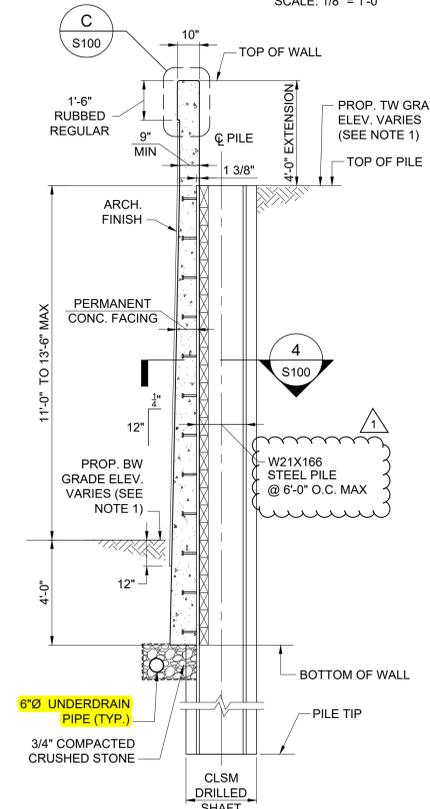
**RETAINING WALL ELEVATION**  
SCALE: 1/8" = 1'-0"



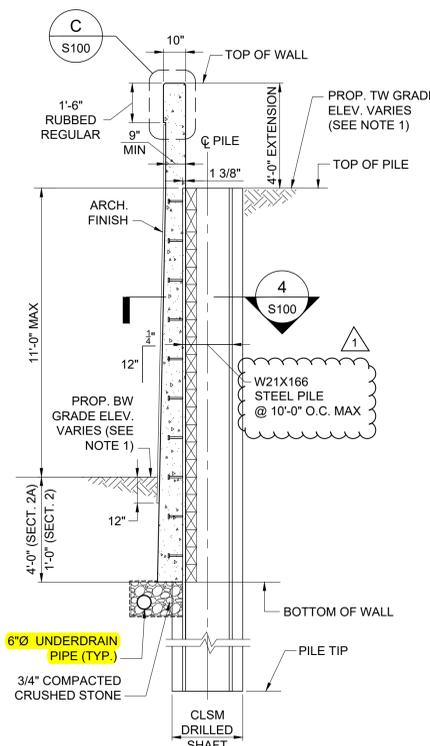
**DETAIL**  
SCALE: 3/8" = 1'-0"



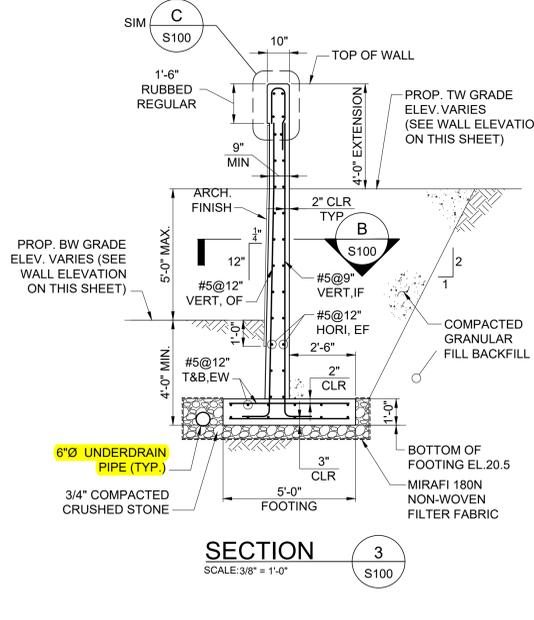
**WALL COPING DETAIL**  
SCALE: 1" = 1'-0"



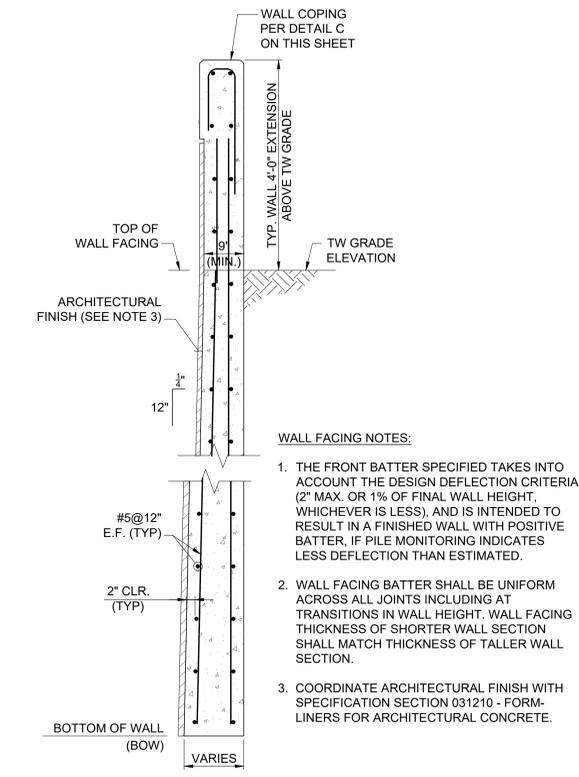
**SECTION 1**  
SCALE: 3/8" = 1'-0"



**SECTION 2, 2A**  
SCALE: NOT TO SCALE

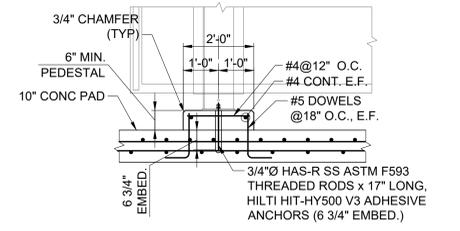


**SECTION 3**  
SCALE: 3/8" = 1'-0"

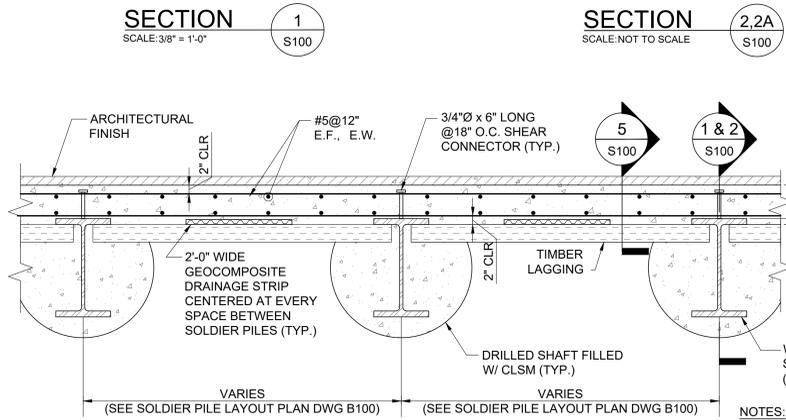


**PERMANENT CONCRETE FACING WALL SECTION**  
SCALE: NOT TO SCALE

**WALL FACING NOTES:**  
1. THE FRONT BATTER SPECIFIED TAKES INTO ACCOUNT THE DESIGN DEFLECTION CRITERIA (2" MAX. OR 1% OF FINAL WALL HEIGHT, WHICHEVER IS LESS), AND IS INTENDED TO RESULT IN A FINISHED WALL WITH POSITIVE BATTER. IF PILE MONITORING INDICATES LESS DEFLECTION THAN ESTIMATED.  
2. WALL FACING BATTER SHALL BE UNIFORM ACROSS ALL JOINTS INCLUDING AT TRANSITIONS IN WALL HEIGHT. WALL FACING THICKNESS OF SHORTER WALL SECTION SHALL MATCH THICKNESS OF TALLER WALL SECTION.  
3. COORDINATE ARCHITECTURAL FINISH WITH SPECIFICATION SECTION 031210 - FORM-LINERS FOR ARCHITECTURAL CONCRETE.



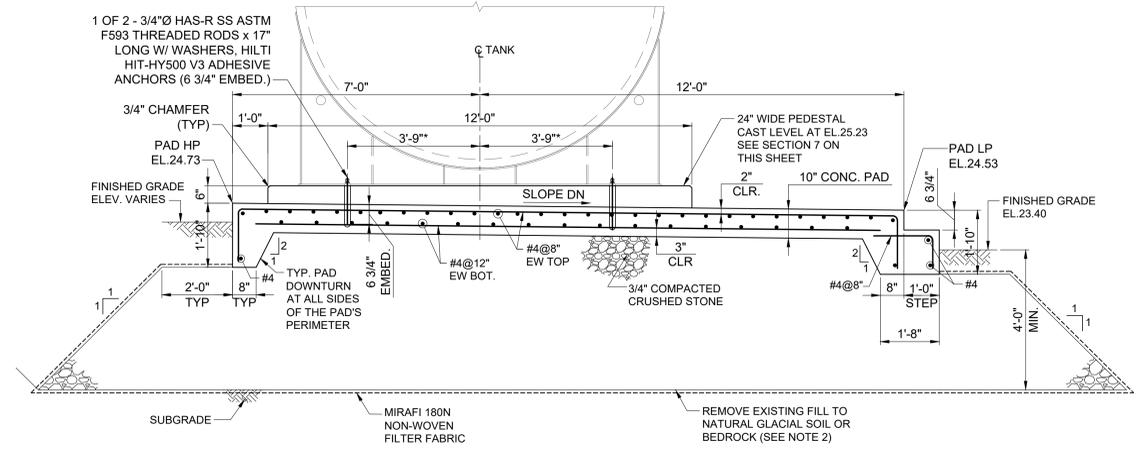
**SECTION 6**  
SCALE: 3/4" = 1'-0"



**SECTION 4**  
SCALE: 3/4" = 1'-0"

**NOTES FOR SECTIONS 1, 2 AND 2A:**  
1. FOR PROPOSED GRADE ELEVATIONS AT TOP WALL GRADE (TW) AND BOTTOM WALL GRADE (BW) OF RETAINING WALL AND SOLDIER PILE LAYOUT COORDINATE WITH DRAWINGS C-3 AND B100.  
2. FOR PERMANENT CONCRETE FACING WALL REINFORCEMENT SEE SECTIONS 4 AND 5 ON THIS SHEET.

**NOTES:**  
1. PROVIDE CONTINUOUS HORIZ. REINF. EACH FACE WITH SPLICE LOCATION WHEN REQUIRED AS FOLLOWS:  
A) HORIZ. O.F. SPLICE AT CENTER OF PILE SUPPORTS  
B) HORIZ. I.F. SPLICE AT MID-SPAN BETWEEN PILE SUPPORTS



**SECTION 7**  
SCALE: 3/4" = 1'-0"

**NOTES:**  
1. COORDINATE FUEL TANK 10" MIN. CONCRETE PAD SIZE AND HEIGHT ABOVE FINISHED GRADE WITH FUEL TANK MANUFACTURER BASE PAD REQUIREMENTS.  
2. COORDINATE SUBGRADE PREPARATION WITH GEOTECHNICAL ENGINEER REQUIREMENTS.

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Revised on:  
1 Addendum #2

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MASTER PLAN

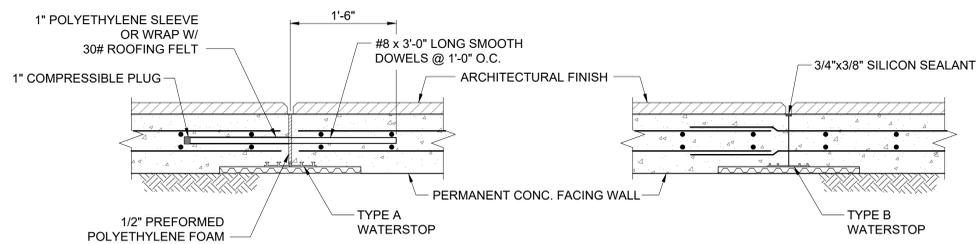


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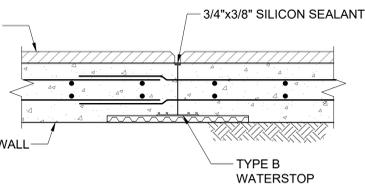
Drawing Status:  
**FOR CONSTRUCTION**

Issued On: 07/16/2025  
Sheet Contents:  
**RETAINING WALL / PILE LAYOUT PARTIAL PLAN, FUEL TANK PAD PLAN AND SECTIONS**

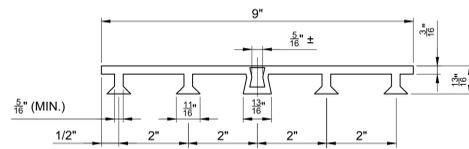
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Drawing No.: **S100**  
Sheet of



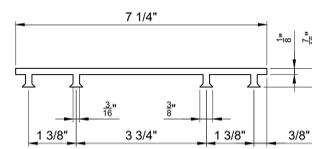
**TYPICAL EXPANSION JOINT DETAIL**  
SCALE: 1" = 1'-0"



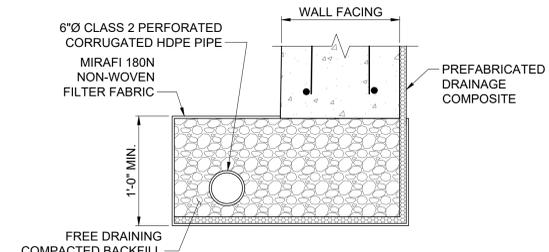
**TYPICAL CONSTRUCTION JOINT DETAIL**  
SCALE: 1" = 1'-0"



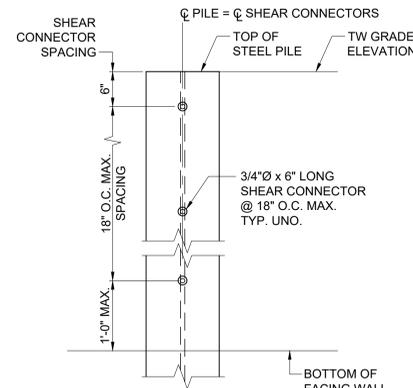
**TYPE A WATERSTOP DETAIL**  
SCALE: NOT TO SCALE



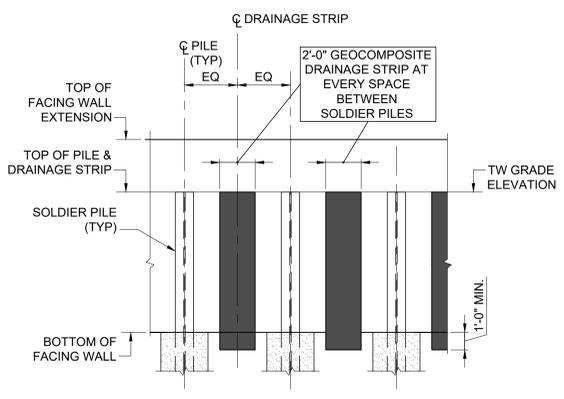
**TYPE B WATERSTOP DETAIL**  
SCALE: NOT TO SCALE



**UNDERDRAIN DETAIL**  
SCALE: NOT TO SCALE



**STUD LOCATION DETAIL**  
SCALE: 1" = 1'-0"



**GEOCOMPOSITE DRAINAGE STRIP DETAIL**  
SCALE: N.T.S.

**A GENERAL**

- A1 STRUCTURAL WORK SHALL CONFORM TO THE TENTH EDITION OF THE MASSACHUSETTS STATE BUILDING CODE-780 CMR (MSBC).
- A2 ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL, ARCHITECTURAL, AND PLUMBING DRAWINGS AND SPECIFICATIONS.
- A3 EXAMINE CIVIL, ARCHITECTURAL AND PLUMBING DRAWINGS FOR VARIATIONS OF LOCATIONS AND DIMENSIONS OF CHASES, INSERTS, OPENINGS, SLEEVES, WASHES, DRIPS, REVEALS, DEPRESSIONS, AND OTHER PROJECT REQUIREMENTS NOT SHOWN ON STRUCTURAL DRAWINGS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- A4 THE CONTRACTOR SHALL REVIEW, COORDINATE AND VERIFY DIMENSIONS SHOWN IN ALL PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT THE INSTALLATION OF THE STRUCTURES. SHOULD DISCREPANCIES APPEAR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER, OBTAIN ENGINEER'S CLARIFICATION BEFORE COMMENCING THE WORK.
- A5 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER THE FINAL CONFIGURATION ONLY.
- A6 OPENINGS IN WALLS LESS THAN 12" MAXIMUM DIMENSION ARE GENERALLY NOT SHOWN ON STRUCTURAL DRAWINGS. OPENINGS SHOWN ON STRUCTURAL DRAWINGS SHALL NOT BE REVISED WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- A7 TYPICAL DETAILS AND NOTES SHOWN ON STRUCTURAL DRAWINGS SHALL BE APPLICABLE TO ALL PARTS OF THE STRUCTURAL WORK EXCEPT WHERE SPECIFICALLY REQUIRED OTHERWISE BY CONTRACT DOCUMENTS.
- A8 DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR THE MOST NEARLY SIMILAR CONDITION AS DETERMINED BY THE ENGINEER.

**B FOUNDATION**

- B1 FOUNDATIONS FOR THIS PROJECT CONSISTS OF SPREAD FOOTINGS AND FOUNDATION WALLS.
- B2 SPREAD FOOTING SHALL REST ON UNDISTURBED SOIL OR COMPACTED STRUCTURAL FILL WITH MIN. BEARING CAPACITY OF 4000 POUNDS PER SQUARE FOOT AS SPECIFIED IN THE SUBGRADE SPECIFICATIONS AND GEOTECHNICAL ENGINEERING REPORT BY GZA DATED MARCH 21, 2025. FOUNDATION SUBGRADE PREPARATION AND APPROVAL PER SPECIFICATION DIVISION 31 - EARTHWORK.
- B3 ALL STRUCTURAL FILL SHALL BE COMPACTED TO 95% DRY DENSITY TO ACHIEVE BEARING CAPACITY SHOWN UNLESS OTHERWISE NOTED.
- B4 FOUNDATION UNITS SHALL BE CENTERED UNDER SUPPORTED STRUCTURAL MEMBERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- B5 EXTERIOR CONSTRUCTION SHALL BE CARRIED DOWN BELOW FINISHED EXTERIOR GRADE TO MINIMUM DEPTH OF 4'-0", UNLESS NOTED OTHERWISE. SLAB SUBGRADE PREPARATION AND APPROVAL PER SPECIFICATION DIVISION 31 - EARTHWORK.
- B6 CARRY OUT CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SUCH THAT FOUNDATION WORK IS DONE IN DRY AND ON UNDISTURBED SUBGRADE MATERIAL, AS APPLICABLE.
- B7 NO FOUNDATION CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN SUBGRADE MATERIAL.

**C CONCRETE**

- C1 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318; 318R)", "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301)".
- C2 UNLESS NOTED OTHERWISE, CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI (NORMAL WEIGHT).
- C3 SIZE OF CONCRETE PLACEMENT UNLESS NOTED OTHERWISE SHALL BE AS FOLLOWS:
 

	MAX LENGTH (FEET)	MAX AREA (SQ. FEET)
(A) FOOTINGS AND WALLS	30'	-

 \* EXCEED ONLY IF INTERMEDIATE CONTROL JOINTS ARE PERMITTED AND PROVIDED.
- C4 MINIMUM OF 72 HOURS SHALL ELAPSE BETWEEN ADJACENT CONCRETE PLACEMENTS.
- C5 CONSTRUCTION, EXPANSION AND CONTROL JOINTS SHOWN ON DRAWINGS ARE MANDATORY; ANY OMISSIONS, ADDITIONS, OR CHANGES SHALL BE SUBMITTED FOR REVIEW IN THE FORM OF A WRITTEN REQUEST TOGETHER WITH DRAWINGS OF THE PROPOSED JOINT LOCATIONS.
- C6 CONCRETE SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS EXCEPT WHERE SHOWN OR NOTED; VERTICAL CONSTRUCTION JOINTS AND STOPS IN CONCRETE WORK SHALL BE MADE AT MIDSPAN OR AT POINTS OF MINIMUM SHEAR.
- C7 ALL EDGE OF CONCRETE EXPOSED TO VIEW SHALL HAVE 3/4" CHAMFER.

**D REINFORCING**

- D1 REINFORCEMENT WORK, INCLUDING DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318; 318R)", "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT (ACI 315) (SP-66 FIRST PART)", "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES (ACI 315R) (SP-66 SECOND PART)", "CRSI MANUAL OF STANDARD PRACTICE (D44)."
- D2 STEEL REINFORCEMENT, UNLESS NOTED OTHERWISE, SHALL CONFORM TO THE FOLLOWING:
  - (A) BARS, TIES, AND STIRRUPS ..... ASTM A615 GRADE 60 (Fy=60,000 PSI)
  - (B) WELDED WIRE FABRIC ..... ASTM A185, FLAT SHEETS
  - (C) BARS TO BE WELDED ..... ASTM A706, GRADE 60 (Fy=60,000 PSI)
- D3 PROVIDE SCHEDULE ON SHOP DRAWINGS INDICATING NECESSARY ACCESSORIES TO HOLD REINFORCEMENT SECURELY IN POSITION. MINIMUM REQUIREMENTS SHALL BE: HIGH CHAIRS, 4'-0" O.C. WITH CONTINUOUS #5 SUPPORT BAR; SLAB BOLSTERS, 3'-6" OC; BEAM BOLSTERS, 5'-0" OC.
- D4 REINFORCING STEEL SHALL HAVE THE FOLLOWING MINIMUM CLEAR CONCRETE COVER, UNLESS OTHERWISE NOTED:
  - (A) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ..... 3 INCHES
  - (B) CONCRETE SURFACE IN CONTACT WITH SOIL, WATER OR EXPOSED TO WEATHER (INCLUDING BOTTOM COVER OVER LIQUID CONTAINING STRUCTURES) .... 2 INCHES (UNO)
  - (C) CONCRETE SURFACES NOT IN CONTACT WITH SOIL, WATER OR EXPOSED TO WEATHER
    - (1) BEAMS AND COLUMNS:
      - STIRRUPS AND TIES ..... 1 1/2 INCHES
      - PRINCIPAL REINFORCEMENT ..... 2 INCHES
    - (2) WALLS AND SLABS ..... 1 INCHES UNLESS NOTED OTHERWISE (UNO)

**D REINFORCING (CONT.)**

- D5 SPLICES SHALL BE LAPPED IN ACCORDANCE WITH CONTRACT DRAWINGS.
- D6 UNLESS SPECIFICALLY SHOWN OR NOTED, PROVIDE CONTINUOUS REINFORCEMENT. IT WILL BE EXTENDED CONTINUOUSLY AROUND CORNERS, LAPPED AT SPLICES AND HOOKED AT DISCONTINUOUS ENDS.
- D7 WHERE REINFORCEMENT IS NOT SHOWN ON DRAWINGS, PROVIDE REINFORCEMENT IN ACCORDANCE WITH APPLICABLE DETAILS AS DETERMINED BY THE ENGINEER; IN NO CASE SHALL REINFORCEMENT BE LESS THAN THE MINIMUM REINFORCEMENT PERMITTED BY THE APPLICABLE CODES.
- D8 ANY SCHEDULE REINFORCING BLOCKED BY AN OPENING OR SLAB HARDWARE (DUCT, MANHOLES) SHALL BE CUT TO FIT. ALSO ALL CUT REBAR SHALL BE REPLACED WITH NEW BARS (NOT CUT TO FIT) AND POSITIONED 50% TO EITHER SIDE OF OPENING. SEE DRAWING S-701 FOR TYPICAL ADDITIONAL REINFORCING AT OPENING DETAILS.

**E DESIGN LOADS**

- E1 STRUCTURAL DESIGN LOAD: CONFORMING TO MASSACHUSETTS STATE BUILDING CODE (780 CMR), TENTH EDITION.
- E2 DEAD LOADS (A) WEIGHT OF BUILDING COMPONENTS ..... ACTUAL WEIGHT
- E4 SNOW LOAD (A) GROUND SNOW LOAD, Pg ..... 50 PSF
- E5 WIND LOAD (A) ULTIMATE DESIGN WIND SPEED, Vult = 123 MPH (B) NOMINAL DESIGN WIND SPEED, Vasd = 95.3 MPH (C) RISK CATEGORY II (D) WIND EXPOSURE B
- E6 SEISMIC LOAD (A) EARTHQUAKE DESIGN FACTORS Ss ..... 0.26 Si ..... 0.077 Fa ..... 1.6 Fv ..... 2.4 SMs ..... 0.416 SM1 ..... 0.185 SDs ..... 0.277 CATEGORY "B" SD1 ..... 0.123 CATEGORY "B" le ..... 1.0 WITH RISK CATEGORY II
- (B) SITE CLASS "D",
- (C) MCE SPECTRAL RESPONSE ACCELERATION,
- (D) SEISMIC DESIGN CATEGORY,
- (E) SEISMIC IMPORTANCE FACTOR,
- E7 NET ALLOWABLE SOIL BEARING PRESSURE ..... 4000 PSF
- E8 COEFFICIENT OF FRICTION ..... 0.50
- E9 DESIGN BASE FLOOD WATER ELEVATION (FEMA 100 YEAR FLOOD PLAIN) ..... EL. 23.1
- E10 LATERAL EARTH LOADS (EQUIVALENT FLUID DENSITY): (A) AT-REST ..... 40.5 PCF (DRY) (B) PASSIVE PRESSURE ..... 300 PCF

**STRUCTURAL ABBREVIATIONS:**

A.B.	ANCHOR BOLTS	JT	JOINT
APPROX	APPROXIMATE(LY)	MAX	MAXIMUM
ARCH	ARCHITECTURAL	MIN	MINIMUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MSBC	MASSACHUSETTS STATE BUILDING CODE-780 CMR
BOT	BOTTOM	NTS	NOT TO SCALE
B.O.	BOTTOM OF	NO.	NUMBER
BOF	BOTTOM OF FOOTING	OC	ON CENTER
BW	BOTTOM OF WALL GRADE	OF	OUTSIDE FACE
CJ	CONSTRUCTION JOINT	OPNG	OPENING
CL	CLEARANCE	OPP	OPPOSITE
CMU	CONCRETE MASONRY UNITS	PL	PLATE
CONC	CONCRETE	PROP	PROPOSE
CONT	CONTINUOUS/CONTINUATION	REINF	REINFORCEMENT
DN	DOWN	REQD	REQUIRED
DWL	DOWEL	SECT	SECTION
EA	EACH	SIM	SIMILAR
EF	EACH FACE	SS	STAINLESS STEEL
EJ	EXPANSION JOINT	STRU	STRUCTURAL
EL, ELEV	ELEVATION (NORTH AMERICAN VERTICAL DATUM OF 1988)	T&B	TOP AND BOTTOM
EMBED	EMBEDMENT	T.O.	TOP OF
EQ	EQUAL	T.O.C.	TOP OF CONCRETE
EW	EACH WAY	TW	TOP OF WALL GRADE
EXP	EXPANSION	TYP	TYPICAL
EXIST	EXISTING	UNO	UNLESS NOTED OTHERWISE
IF	INSIDE FACE	VERT	VERTICAL
		VIF	VERIFY IN FIELD
		W/	WITH

**SPLICE SCHEDULE**

BAR SIZE	REINFORCING BAR DEVELOPMENT AND LAP SPLICE LENGTHS FOR fc = 4000 PSI AND Fy = 60 KSI						
	TENSION DEVELOPMENT		TENSION SPLICE (CLASS B)		STANDARD 90° HOOK	COMPRESSION BARS	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	EMBEDMENT Ldb	DEVELOPMENT Ldb	SPLICE LENGTH
#3	19"	15"	24"	19"	8"	8"	12"
#4	25"	20"	33"	25"	10"	10"	15"
#5	32"	24"	41"	32"	12"	12"	19"
#6	38"	30"	49"	38"	15"	15"	24"
#7	44"	35"	57"	44"	18"	18"	27"
#8	50"	38"	65"	50"	20"	20"	30"

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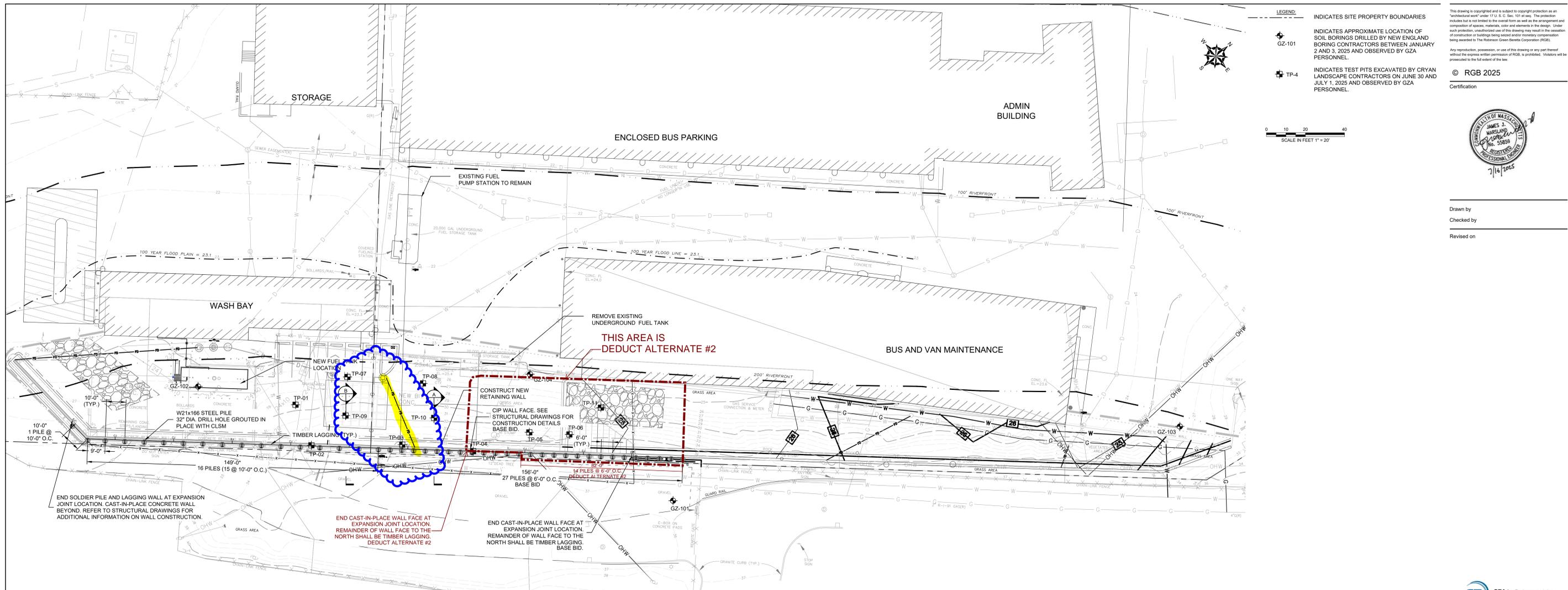
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**GENERAL NOTES AND TYPICAL DETAILS**



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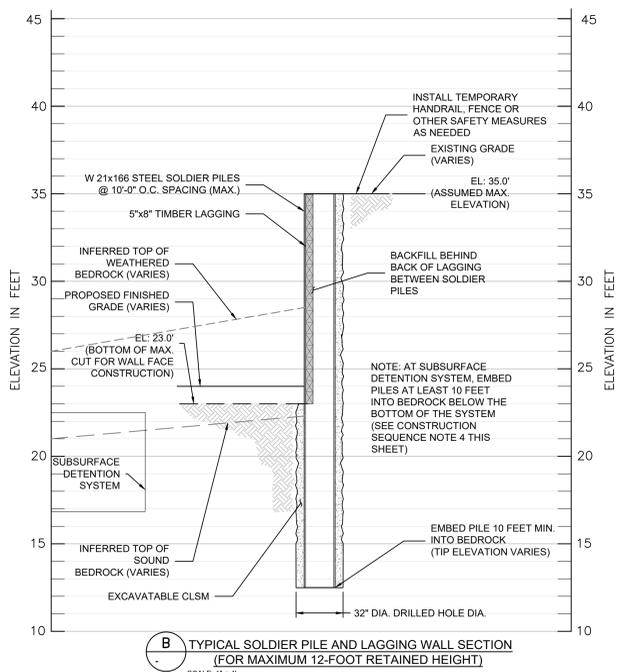
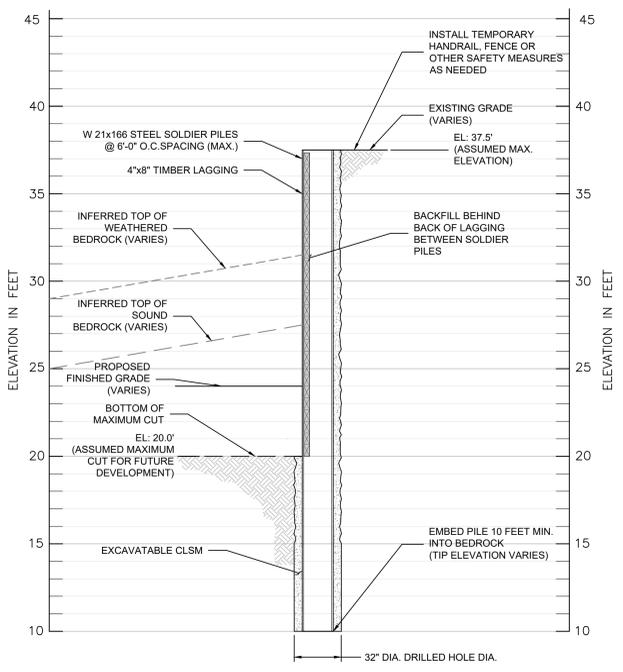
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Revised on



- GENERAL NOTES:**
- PLAN DEVELOPED FROM ELECTRONIC DRAWING FILES TITLED "5689 - SURVEY BASE-CLEAN 3-26-25.DWG" AND "5689 DESIGN 2025- 3-26-25 CLEAN.DWG" WHICH WERE PREPARED BY PLACES ASSOCIATES, INC. AND TRANSMITTED TO GZA.
  - EXPLORATION LOCATIONS WERE DETERMINED USING A GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) UNIT WITH AN ACCURACY OF APPROXIMATELY 1-FOOT HORIZONTALLY. EXPLORATION LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
  - ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS.
  - CONFORM TO CONSTRUCTION SEQUENCE, NOTES, AND ALL OTHER REQUIREMENTS ON THESE DRAWINGS UNLESS OTHERWISE APPROVED BY GZA GEOENVIRONMENTAL, INC. (GZA). ANY DEVIATIONS FROM THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE APPROVED BY GZA.
  - ALL EXCAVATIONS SHALL CONFORM TO THE REQUIREMENTS OF THE FEDERAL REGISTER BY THE DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), 29 CFR PART 1926, FOR EXCAVATIONS.
  - INSTALL ALL ANCILLARY ITEMS SUCH AS CONSTRUCTION FENCES, HANDRAILS, AND/OR BARRIERS (DESIGNED BY OTHERS) WHICH ARE REQUIRED BY OSHA BUT NOT SHOWN ON THE DRAWINGS.
  - ALL EXCAVATION, BACKFILLING AND GRADING SHALL BE IN GENERAL ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
  - ALL PRE-CUT AND OPEN CUTS SHALL BE AT A MAXIMUM SLOPE OF 1.5H:1V UNLESS NOTED OTHERWISE.
  - REPORT CHANGES IN THE CONTRACT DOCUMENTS AND CHANGES IN SUBSURFACE CONDITIONS TO GZA SO THAT THE DESIGN CAN BE MODIFIED ACCORDINGLY.
  - FIELD VERIFY THE LOCATION OF ALL EXISTING AND PROPOSED CONSTRUCTION, INCLUDING EXISTING UNDERGROUND STRUCTURES AND UTILITIES, PRIOR TO COMMENCING INSTALLATION OF SOLDIER PILE WALL SYSTEM.
  - THIS DRAWING IS FOR SOLDIER PILE WALL CONSTRUCTION ONLY AND OTHER PROPOSED SITE FEATURES ARE SHOWN FOR GENERAL REFERENCE ONLY. REFER TO THE CONTRACT DOCUMENTS FOR THE LOCATIONS AND DIMENSIONS OF THE OTHER PROPOSED CONSTRUCTION.
  - SOLDIER PILE WALL CONSTRUCTION SHALL BE COORDINATED WITH THE PLANNED BEDROCK REMOVAL TECHNIQUES IN FRONT OF THE WALL FACE. IF LINE DRILLING IS USED TO FACILITATE BEDROCK REMOVAL, THE DRILLING SHALL NOT EXTEND BELOW THE DESIGN MAXIMUM CUT ELEVATION.
  - EXPANSION (EJ) AND CONTROL JOINT (CJ) LOCATIONS HAVE BEEN PROVIDED BY LIN ASSOCIATES. REFER TO STRUCTURAL DRAWINGS FOR EXPANSION AND CONTROL JOINT DETAILS.
  - REFER TO THE EARTHWORK SPECIFICATION (SECTION 310000) FOR ADDITIONAL REQUIREMENTS ON SOLDIER PILE WALL CONSTRUCTION.
- DESIGN NOTES:**
- THE TEMPORARY EARTH SUPPORT SYSTEM HAS BEEN DESIGNED FOR A MAXIMUM RETAINED HEIGHT OF 12 OR 17.5 FEET, DEPENDING ON THE DESIGN SECTION.
  - A 250 PSF SURCHARGE LOAD BEHIND THE SOLDIER PILE & LAGGING WALL SYSTEM HAS BEEN CONSIDERED IN THIS DESIGN. CONTRACTOR SHALL ENSURE MATERIALS AND EQUIPMENT STAGED AT THE TOP OF THE SOLDIER PILE WALL DURING CONSTRUCTION DO NOT EXCEED THIS SURCHARGE LOAD.
  - GROUNDWATER SHALL BE MAINTAINED 2 FEET BELOW THE PROPOSED BOTTOM OF CUT ELEVATION DURING CONSTRUCTION. IF DEWATERING IS REQUIRED THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN FOR REVIEW PRIOR TO CONSTRUCTION. THE DEWATERING PLAN SHALL BE PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.
- MATERIAL NOTES:**
- ALL STRUCTURAL STEEL W SECTIONS SHALL BE SIZED AS NOTED AND SHALL CONFORM TO ASTM A572, GR.50, MIN.
  - ANY SUBSTITUTIONS OF STRUCTURAL SHAPES MUST BE APPROVED BY GZA IN WRITING PRIOR TO USE.
  - TIMBER LAGGING SHALL BE 4" OR 5" (SEE DESIGN SECTIONS) MIXED SOUTHERN YELLOW PINE NO. 2 (OR BETTER) WITH A MINIMUM ALLOWABLE BENDING STRESS OF F<sub>b</sub>=1100 PSI AND SHEAR STRESS OF F<sub>v</sub>=175 PSI. TIMBER LAGGING SHALL BE PRESSURE TREATED.
  - ALL MATERIALS SHALL BE CLEAN AND STRAIGHT. EACH ASSEMBLY SHALL BE ACCURATELY FABRICATED TO THE LINES AND DIMENSIONS CALLED FOR AND SHALL BE FREE FROM UNDE TWINTS, BENDS, WARPING, DISTORTION AND OTHER IRREGULARITIES.
  - THE ANNULAR SPACE SURROUNDING THE SOLDIER PILE IN THE AUGERED HOLE SHALL BE FILLED WITH EXCAVATABLE CONTROLLED LOW STRENGTH MATERIAL (CLSM) MEETING THE REQUIREMENTS OF SECTION 144.08.0 OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, WITH A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI.
- CONSTRUCTION SEQUENCE:**
- FIELD LOCATE AND REMOVE AND/OR RELOCATE EXISTING UTILITIES AND STRUCTURES THAT CONFLICT WITH SOLDIER PILE AND LAGGING WALL SYSTEM.
  - LAYOUT SOLDIER PILE LOCATIONS.
  - PRE-DRILL A MINIMUM 32-INCH DIAMETER HOLE TO THE REQUIRED TIP ELEVATION BY ADVANCING STEEL CASING.
  - INSTALL SOLDIER PILES, AND ENSURE THAT THE PILES MEET THE REQUIRED TIP ELEVATION. THE PILE TIP SHALL BE LOCATED AT LEAST 10 FEET INTO BEDROCK BELOW THE DESIGN MAXIMUM CUT ELEVATION. WHERE SOLDIER PILES ARE INSTALLED ADJACENT TO THE PROPOSED SUBSURFACE DETENTION AREA, THE SOLDIER PILES SHALL EXTEND AT LEAST 10 FEET INTO BEDROCK BELOW THE BOTTOM ELEVATION OF THE SUBSURFACE DETENTION SYSTEM.
  - FILL THE ANNULAR SPACE AROUND THE SOLDIER PILE WITH CLSM WHILE WITHDRAWING THE DRILL CASING.
  - PROVIDE A MEANS TO PLUMB AND SUPPORT THE PILES WHILE THE CLSM SETS.
  - ALLOW A MINIMUM OF 24 HOURS FOR THE CLSM TO SET.
  - SIMULTANEOUSLY EXCAVATE AND INSTALL TIMBER LAGGING BOARDS. INSTALL LAGGING BETWEEN THE FLANGES OF THE SOLDIER PILES AND BACKFILL BEHIND THE LAGGING WITH 1/2-INCH CRUSHED STONE OR OTHER APPROVED MATERIAL TO ESTABLISH TIGHT CONTACT WITH THE FACE OF THE EXCAVATION.
  - PACK OPENINGS BETWEEN LAGGING WITH FREE DRAINING MATERIAL (HAY) OR EQUIVALENT TO ALLOW DRAINAGE FOR WATER WITHOUT LOSS OF RETAINED SOIL OR GRAVEL PACK.
  - COORDINATE EXCAVATION WITH LAGGING PLACEMENT. MAXIMUM HEIGHT OF UNSUPPORTED EXCAVATION FACE SHALL BE 3 FEET OR LESS AS CONDITIONS REQUIRE. LAGGING SHALL BE INSTALLED IMMEDIATELY UPON EXCAVATION. DO NOT LEAVE ANY EXCAVATION BETWEEN SOLDIER PILES OPEN OVERNIGHT.
  - CONTINUE EXCAVATION TO BOTTOM OF PROPOSED TOE DRAIN IN FRONT OF SOLDIER PILE AND LAGGING WALL. EXCAVATION SHALL NOT EXTEND BELOW THE SPECIFIED MAXIMUM RETAINED HEIGHT FOR THE GIVEN DESIGN SECTION.
  - INSTALL GEOCOMPOSITE DRAINAGE STRIPS BETWEEN SOLDIER PILES. INSTALL THE TOE DRAIN, AND WRAP THE GEOCOMPOSIT DRAINAGE STRIPS AROUND THE TOE DRAIN.
  - BACKFILL THE TOE DRAIN EXCAVATION WITH 1/2" CRUSHED STONE ENVELOPED IN FILTER FABRIC.
  - INSTALL SHEAR STUDS ON THE SOLDIER PILE FLANGERS AND FACING REINFORCEMENT.
  - CUTOFF SOLDIER PILES AT LEAST 3 INCHES BELOW PROPOSED FINISHED GRADE PRIOR TO INSTALLING CAST-IN-PLACE WALL FACE.
  - PLACE THE CAST-IN-PLACE WALL FACE.



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Architecture - Project Management - Interior Design

Project

**MERRIMACK VALLEY REGIONAL TRANSIT AUTHORITY**

**FUEL TANK RELOCATION AND RETAINING WALL**



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Sheet Contents  
**SOLDIER PILE & LAGGING LAYOUT PLAN, NOTES AND DETAILS**

Project Number: 35492.00

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