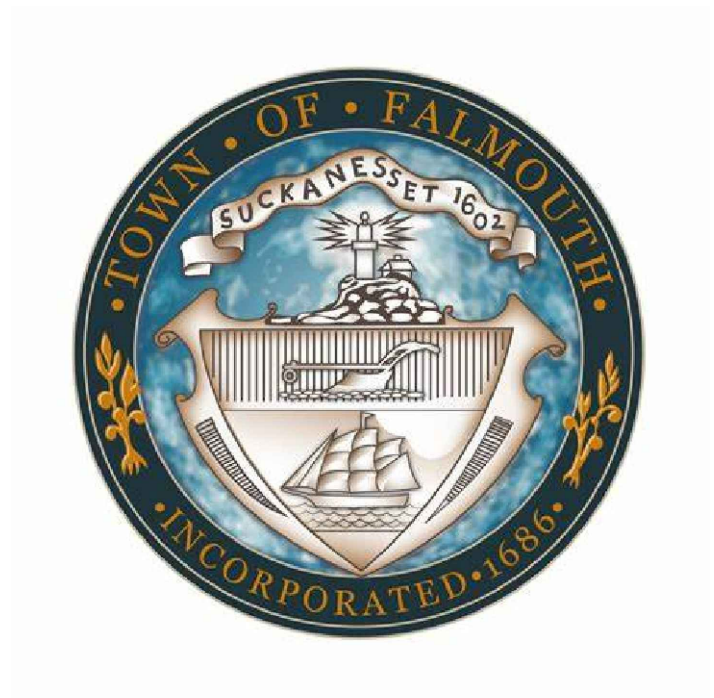
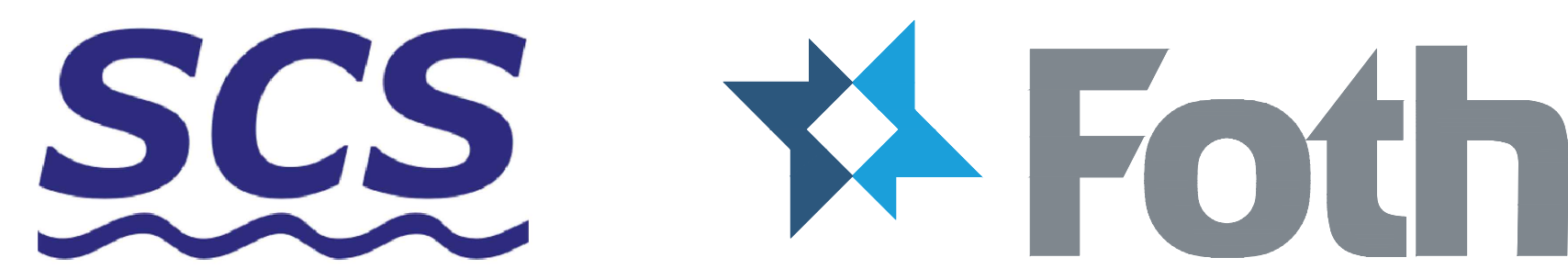


CHAPOQUOIT ROAD STABILIZATION PROJECT  
FALMOUTH, MA  
JANUARY 2025

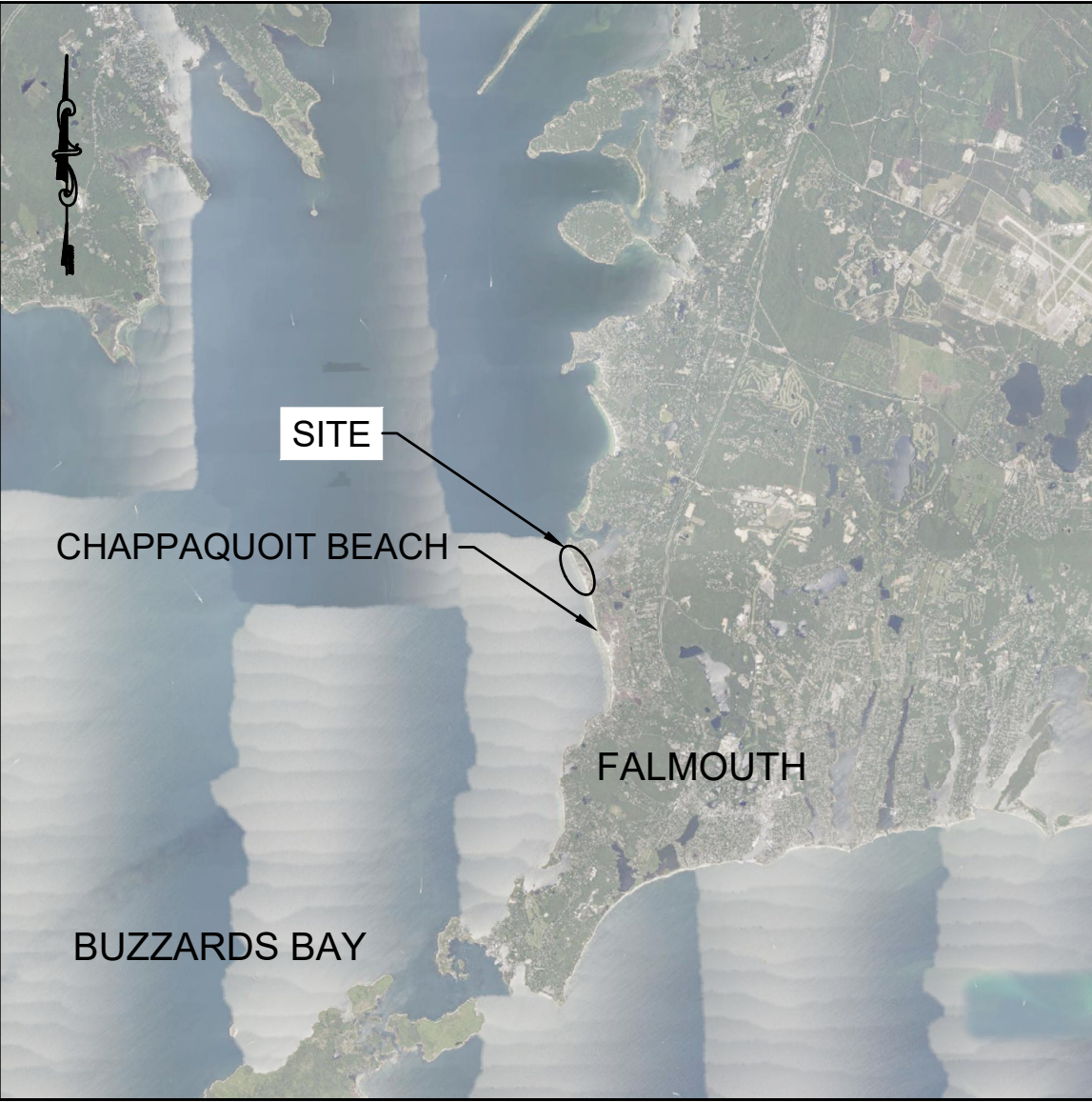
Prepared for:  
Town of Falmouth



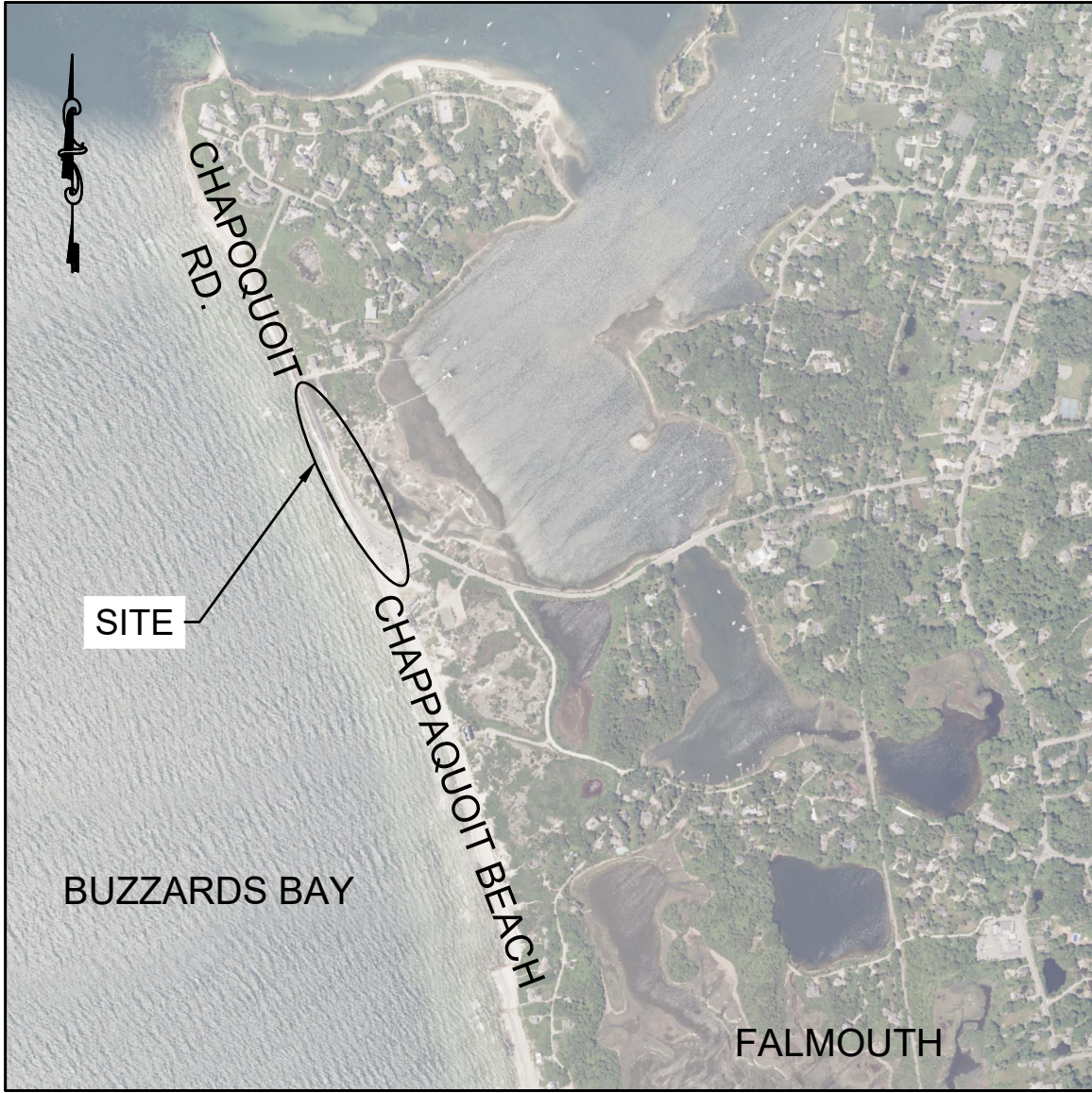
Prepared by:  
Sustainable Coastal Solutions &  
Foth Infrastructure & Environment, LLC



DRAWING INDEX	
SHEET NUMBER	TITLE
G-001	COVER SHEET
G-002	PROJECT NOTES
B-001	SOIL BORING LOGS
C-101	EXISTING SITE PLAN
C-102	GENERAL SITE PLAN
S-101	STEEL SHEET PILE PARTIAL PLANS
S-301	EXISTING AND DEMOLITION BULKHEAD SECTIONS
S-302	BULKHEAD REPAIR SECTIONS
S-501	TYPICAL DETAILS



VICINITY MAP



LOCATION MAP

SHEET TITLE
COVER SHEET
SHEET NUMBER
G-001



DESIGN CRITERIA:

1. STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE, LATEST EDITION. WORK SHALL COMPLY WITH FEDERAL, STATE, AND LOCAL PERMIT CONDITIONS.

2. THE COMPLETED STRUCTURE HAS BEEN DESIGNED TO WITHSTAND THE FOLLOWING SUPERIMPOSED LOADS:

a. LIVE LOADS:

UNIFORM LIVE LOAD:  
HS-20 TRUCK LOAD:

250 PSF UNIFORM LOAD  
32,000 LBS AXLE LOAD

3. STEEL

a. STEEL W AND WT SHAPES  
b. OTHER STEEL SHAPES  
c. STEEL PLATES  
d. STEEL HSS  
e. STEEL PIPE  
f. STEEL SHEET PILE  
g. BOLTED CONNECTIONS  
h. SNUG TIGHT U.N.O.  
i. ANCHOR BOLTS  
j. WELDING ELECTRODES

ASTM A992  
ASTM A572 GR 50  
ASTM A572 GR 50  
ASTM A500 GR C  
ASTM A252, ty=50KSI  
ASTM A572 GR. 60  
ASTM F3125 GR A325  
ASTM F1554 GR 36  
E70XX

3. TIMBER

a. TIMBER GUARDRAIL POSTS/RAILS  
b. PRESERVATIVES  
c. HARDWARE

SYP NO. 1 OR BETTER  
0.23 PCF MCA  
HARDWARE FOR TIMBER GUARDRAIL SHALL BE  
HOT DIP GALVANIZED IN COMPLIANCE WITH  
ASTM A153, U.N.O.

4. WATER LEVELS

TIDAL DATUM INFORMATION IS PROVIDED BY VDATUM, WHICH IS A FREE SOFTWARE DEVELOPED JOINTLY BY NOAA'S NATIONAL GEODETIC SURVEY, OFFICE OF COAST SURVEY, AND CENTER FOR OPERATIONAL VARIETY OF TIDAL, ORTHOMETRIC AND ELLIPSOIDAL VERTICAL DATUMS ALLOWING USERS TO CONVERT THEIR DATA FROM DIFFERENT HORIZONTAL/VERTICAL REFERENCES INTO A COMMON SYSTEM AND ENABLING THE FUSION OF DIVERSE GEOSPATIAL DATA IN DESIRED REFERENCE LEVELS.

TIDAL DATUM	MLLW DATUM (FT)	MLW DATUM (FT)	NAVD88 DATUM (FT)
MHW	4.0	3.8	1.7
NAVD88	2.3	2.1	0.0
MLW	0.2	0.0	-2.1
MLLW	0.0	-0.2	-2.3

5. THE STRUCTURES HAVE BEEN DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER CONSTRUCTION IS COMPLETE. THE STABILITY OF THE STRUCTURES PRIOR TO COMPLETION IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THIS RESPONSIBILITY EXTENDS TO RELATED ASPECTS OF THE CONSTRUCTION ACTIVITY INCLUDING, BUT NOT LIMITED TO, ERECTION METHODS, ERECTION SEQUENCE, CONNECTIONS, TEMPORARY BRACING, FORMS, SHORING, USE OF EQUIPMENT, AND SIMILAR CONSTRUCTION PROCEDURES. REVIEW OF CONSTRUCTION BY THE OWNER AND ENGINEER OF RECORD IS FOR GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS ONLY. LACK OF COMMENT BY THE OWNER AND ENGINEER OF RECORD WITH REGARD TO CONSTRUCTION PROCEDURES SHALL NOT BE INTERPRETED AS APPROVAL OR ACCEPTANCE OF SUCH PROCEDURES.

TOPOGRAPHIC SURVEY NOTES:

1. TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS COLLECTED BY FOTH INFRASTRUCTURE & ENVIRONMENT , LLC. ON 01/30/2023.

2. THE HORIZONTAL DATUM SHOWN HERON IS BASED UPON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM - MAINLAND ZONE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) (2011), EPOCH 2010.00

3. THE VERTICAL DATUM SHOWN HEREON REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

4. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO ELEVATIONS ABOVE THE VERTICAL REFERENCE PLANE.

5. ANNUAL HIGH TIDE LINE INFORMATION SHOWN IS FROM NOAA TIDAL STATION 8447685.

6. LIMITS OF PROPERTY LINES AND NHESP ESTIMATED HABITATS OF RARE SPECIES, AS SHOWN, ARE BASED ON AVAILABLE INFORMATION PROVIDED BY THE MASSGIS DATABASE. THE CONTRACTOR IS TO VERIFY PROPERTY LINE INFORMATION PRIOR TO CONSTRUCTION.

7. FEMA LIMITS SHOWN ARE PER FIRM COMMUNITY MAP NUMBER 25001C0707.J, EFFECTIVE 07/16/2014.

8. THE ENTIRE PROJECT AREA IS LOCATED WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE.

9. INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES SHOWN, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS AT THAT TIME. INTERPOLATED INFORMATION FROM BETWEEN POINTS IS NOT GUARANTEED DIFFERING CONDITIONS MAY EXIST BETWEEN THE POINTS.

10. POSSESSION AND USE OF THE MATERIAL CONTAINED ON THESE DRAWINGS IS GRANTED ONLY IN CONNECTION WITH ITS USE AS IT RELATES TO THE TITLED PROJECT, ANY OTHER USE, REPRODUCTION OR DISCLOSURE OF THE INFORMATION CONTAINED HEREON IS EXPRESSLY PROHIBITED WITHOUT THE WRITTEN CONSENT OF FOTH INFRASTRUCTURE & ENVIRONMENT, LLC.

GENERAL CONDITIONS:

1. NO GUARANTEE TO THE ACCURACY OF THE REFERENCE DOCUMENTS IS PROVIDED HEREIN AND THE CONTRACTOR SHALL RELY ON HIS OWN FIELD VERIFICATION FOR ITEMS SO REQUIRED.

2. SECTIONS, DETAILS, NOTES, DIMENSIONS AND CONDITIONS ARE APPLICABLE AT ANY OTHER LOCATION WHERE CONDITIONS AND DETAIL ARE SIMILAR BUT ARE NOT SPECIFICALLY NOTED AS SUCH OR ARE NOT SHOWN.

3. THE CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC (10-FOOT WIDTH MIN.) ON CHAPOQUOIT ROAD AT ALL TIMES DURING CONSTRUCTION.

4. THE CONTRACTOR PRIOR TO CONSTRUCTION AND FABRICATION OF CONSTRUCTION MATERIALS SHALL VERIFY EXISTING CONDITIONS AND DIMENSIONS.

5. IF, DURING THE PERFORMANCE OF THE WORK, THE CONTRACTOR FINDS A CONFLICT, ERROR, OR DISCREPANCY IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SO REPORT TO THE ENGINEER OF RECORD IN WRITING AT ONCE, BEFORE PROCEEDING WITH THE WORK AFFECTED THEREBY, THE CONTRACTOR SHALL OBTAIN A WRITTEN INTERPRETATION OR CLARIFICATION FROM THE ENGINEER OF RECORD. WORK DONE BEFORE THE ENGINEER OF RECORD RENDERS HIS DECISION IS AT THE CONTRACTOR'S SOLE RISK.

6. THE WORK SHALL BE PERFORMED IN A GENERAL SEQUENCE DEVELOPED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW, IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR THE SEQUENCES AND PROCEDURES TO BE USED.

7. THE CONTRACTOR SHALL FURNISH AND COORDINATE PLANT, LABOR, SUPERVISION, MATERIALS, EQUIPMENT AND APPLIANCES FOR DEMOLITION AND/OR CONSTRUCTION WORK IN CONNECTION WITH THE DEMOLITION AND/OR CONSTRUCTION OF THE MARINE FACILITIES.

8. THE OWNER HAS SECURED CERTAIN PERMITS REQUIRED BY FEDERAL, AND STATE AUTHORITIES FOR THE PROPOSED ACTIVITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE WORK IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE PERMITS. THE CONTRACTOR SHALL POST COPIES OF THE PERMITS AT THE SITE THROUGHOUT THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN PERMITS ASSOCIATED WITH THE LEGAL DISPOSAL OF CONSTRUCTION DEBRIS. THE CONTRACTOR SHALL SECURE REQUIRED LOCAL AUTHORIZATIONS AND PERMITS.

9. SPECIAL INSPECTION REQUIREMENTS PER LOCAL AND/OR STATE BUILDING CODES SHALL BE FULFILLED AND SHALL BE COORDINATED BY THE OWNER. THE CONTRACTOR SHALL INFORM THE OWNER OF THE PROGRESS OF WORK AND PROVIDE ADEQUATE NOTICE AS TO WHEN SPECIAL INSPECTIONS ARE TO OCCUR SUCH AS TO NOT DELAY THE SCHEDULE.

10. THE CONTRACTOR SHALL FURNISH MATERIALS FOR INSTALLATION IN THE COMPLETED WORK AS SPECIFIED HEREINAFTER. THE CONTRACTOR SHALL HANDLE THESE MATERIALS AS THEY ARE DELIVERED TO THE SITE OR OFF-SITE WORK AREAS AND SHALL STORE THEM IN A DESIGNATED STORAGE AREA.

11. THE CONTRACTOR WILL INDEMNIFY AND SAVE HARMLESS THE OWNER AND ENGINEER OF RECORD FROM AND AGAINST ALL LOSSES AND ALL CLAIMS, DEMANDS, PAYMENTS, SUITS, ACTIONS, RECOVERIES, AND JUDGMENTS OF EVERY NATURE AND DESCRIPTION BROUGHT OR RECOVERED AGAINST THE OWNER AND ENGINEER OF RECORD BY REASON OF ANY ACT OR OMISSION OF THE CONTRACTOR, OR OF ANY SUBCONTRACTOR TO THE CONTRACTOR, OR OF ANY PERSON DIRECTLY OR INDIRECTLY EMPLOYED BY THE CONTRACTOR OR ANY SUCH SUBCONTRACTOR, IN THE PERFORMANCE OF ANY WORK FOR, OR THE RENDERING OF ANY SERVICES TO, THE OWNER.

12. THE CONTRACTOR AGREES THAT, AT ITS OWN COST AND EXPENSE, IT SHALL PROCURE AND CONTINUE IN FORCE; INSURANCE COVERAGE AS REQUIRED BY THE OWNER. SUCH INSURANCE SHALL BE WRITTEN BY A COMPANY OR COMPANIES AUTHORIZED TO ENGAGE IN THE BUSINESS OF GENERAL LIABILITY INSURANCE IN THE STATE IN WHICH THE DEMISED PREMISES ARE LOCATED, AND THERE SHALL BE DELIVERED TO THE OWNER WITH THE BID CUSTOMARY CERTIFICATES EVIDENCING SUCH PAID-UP INSURANCE, WHICH CERTIFICATES ARE TO BE ISSUED BY THE INSURANCE COMPANIES. GOOD AND RESPONSIBLE COMPANIES, REASONABLY ACCEPTABLE TO THE OWNER, SHALL WRITE SUCH INSURANCE.

13. THE ENGINEER AND ITS SUB CONSULTANTS SHALL BE ADDED TO THE CONTRACTOR'S GENERAL LIABILITY INSURANCE POLICY AS ADDITIONAL COVERED ON PRIMARY AND CON-TRIBUTORY BASIS. SUBMIT CERTIFICATES OF INSURANCE TO THE ENGINEER AS EVIDENCE OF THIS COVERAGE.

14. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF LOCATIONS, DIMENSIONS, AND LEVELS AND NO PLEA AS TO INSTRUCTIONS OR ORDER RECEIVED FROM OTHER SOURCES OTHER THAN INFORMATION CONTAINED ON CONTRACT DRAWINGS, SPECIFICATIONS OR IN WRITTEN ORDERS OF THE OWNER OR ENGINEER OF RECORD SHALL JUSTIFY DEPARTURE FROM THE DIMENSIONS AND ELEVATIONS REQUIRED BY THE CONTRACT DRAWINGS.

15. THE CONTRACTOR SHALL TAKE HIS OWN MEASUREMENTS AT THE SITE, VERIFYING THE SAME WITH THE CONTRACT DRAWINGS AND EXISTING FACILITIES, AND WILL BE HELD RESPONSIBLE FOR THE PROPER FIT AND ALIGNMENT OF COMPLETED WORK IN POSITION.

16. THE CONTRACTOR SHALL GUARANTEE TO THE OWNER MATERIALS AND WORKMANSHIP AGAINST ORIGINAL DEFECTS, OR AGAINST INJURY FROM PROPER AND USUAL WEAR WHEN USED FOR THE PURPOSE INTENDED, FOR TWELVE (12) MONTHS AFTER DATE OF FINAL PAYMENT CERTIFICATIONS AND SHALL MAINTAIN ITEMS IN PERFECT CONDITION DURING THE PERIOD OF GUARANTEE. DEFECTS APPEARING DURING THE PERIOD OF GUARANTEE SHALL BE MADE GOOD BY THE CONTRACTOR AT HIS EXPENSE UPON DEMAND OF THE OWNER, IT BEING REQUIRED THAT WORK SHALL BE IN PERFECT CONDITION WHEN THE PERIOD OF GUARANTEE SHALL HAVE ELAPSED. IN THE EVENT OF DEFAULT BY THE CONTRACTOR, THE COMPANY SHALL HAVE THE RIGHT TO MAKE GOOD DEFECTS AND BILL THE CONTRACTOR COST PLUS 15% FOR ADMINISTRATION FEES.

17. AT THE CONTRACTOR'S EXPENSE, THE CONTRACTOR'S WORKING AREAS SHALL BE CLEANED BY HIM ON A DAY-TO-DAY BASIS, WITH RUBBISH REMOVED FROM THE SITE AND WORK AREAS CLEANED AT THE END OF EACH DAY. AT FINAL COMPLETION OF WORK, THE CONTRACTOR SHALL LEAVE THE ENTIRE PREMISES, WITHIN THE SITE OF HIS OPERATIONS, CLEAN AND FREE FROM THE RUBBISH RESULTING FROM HIS CONSTRUCTION OPERATIONS.

18. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE AND MAINTAIN UTILITIES HE DEEMS NECESSARY TO AFFECT THE WORK.

19. THE CONTRACTOR SHALL PROVIDE FIELD ENGINEERING SERVICES REQUIRED FOR PROPER COMPLETION OF THE WORK INCLUDING, BUT NOT NECESSARILY LIMITED TO: ESTABLISHING AND MAINTAINING LINES AND LEVELS; STRUCTURAL DESIGN OF SHORES, FORMS, AND SIMILAR ITEMS PROVIDED BY THE CONTRACTOR AS PART OF HIS MEANS AND METHODS OF CONSTRUCTION.

20. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AT HIS EXPENSE REQUIRED FIRE PROTECTION SYSTEMS AND DEVICES AS NECESSARY TO SAFELY PERFORM THE WORK IN ACCORD WITH THE APPLICABLE REGULATIONS. IT SHALL BE OPERATIONAL THROUGHOUT THE PERIOD OF CONSTRUCTION.

21. THE OWNER SHALL HAVE THE RIGHT TO WITHHOLD WITHOUT PENALTY PAYMENT DESCRIBED ABOVE, OR SECTIONS REFERENCED HEREIN, FOR COMPLETED WORK SHOULD THE CONTRACTOR FAIL TO MEET OBLIGATIONS OR REQUIREMENTS OF THE CONTRACT. WITHHELD PAYMENT SHALL BE PROMPTLY MADE UPON THE CONTRACTOR'S FULL COMPLIANCE WITH THE CONTRACT.

22. COMPLY WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR PROTECTION OF THE ENVIRONMENT DURING THE WORK. NO LATER THAN 21 DAYS FOLLOWING AWARD OF CONTRACT, SUBMIT A COMPREHENSIVE PLAN DESCRIBING THE MEANS AND METHODS TO BE EMPLOYED FOR PROTECTION, CONTAINMENT, AND CLEAN UP. ENSURE THAT PERSONNEL ARE PROPERLY TRAINED AND THAT SUFFICIENT EQUIPMENT AND MATERIALS ARE READILY AVAILABLE FOR USE IF REQUIRED. ABIDE BY STATE AND FEDERAL SPILL REPORTING REQUIREMENTS.

23. THE OWNER RESERVES THE RIGHT TO CHARGE THE CONTRACTOR FOR ADDITIONAL ENGINEERING SERVICES IF REQUIRED DUE TO THE CONTRACTOR'S ACTIONS OR INACTIONS.

24. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS OPERATIONS, THE CONTRACTOR SHALL TAKE REASONABLE PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE REASONABLE PROTECTION TO PREVENT DAMAGE, INJURY, OR LOSS TO PERSONS EMPLOYED BY THE CONTRACTOR IN PERFORMANCE OF THE WORK, AND PERSONS NEARBY THAT MAY BE AFFECTED BY THE CONTRACTOR'S OPERATIONS OR THE WORK, INCLUDING EQUIPMENT AND MATERIALS WHICH WILL BE INCORPORATED IN THE WORK, AND OTHER PROPERTIES AND STRUCTURES AT THE SITE, OR ON ADJACENT PROPERTIES.

25. OBSTRUCTIONS ARE DEFINED AS UNFORESEEN OBJECTS, WHICH IMPEDE PROGRESS, OBJECTS, WHICH ARE MADE KNOWN TO THE CONTRACTOR, WILL NOT BE CONSIDERED TO BE OBSTRUCTIONS. NOTIFY THE ENGINEER OF RECORD IMMEDIATELY UPON ENCOUNTERING UNFORESEEN OBJECTS. NO CONSIDERATION WILL BE GIVEN FOR ADDITIONAL COMPENSATION ON THIS ACCOUNT WITHOUT THIS TIMELY NOTIFICATION.

26. SUBSTITUTIONS MAY BE FURNISHED FOR MATERIALS SPECIFIED HEREIN PROVIDED THE CONTRACTOR SECURES ACCEPTANCE FROM THE ENGINEER OF RECORD.

SELECTIVE DEMOLITION AND DISPOSAL

1. SELECTIVE DEMOLITION AND DISPOSAL SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL PERMIT AND BUILDING CODE REQUIREMENTS.

2. THE CONTRACTOR SHALL REMOVE AND DISPOSE THOSE STRUCTURES AND DERELICT COMPONENTS REQUIRED TO PERFORM THE WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO TIMBER OR STEEL BULKHEAD, CONCRETE PLATFORMS, TIMBER PILES, CONCRETE AND TIMBER DEBRIS, STEEL DEBRIS, AND OTHER ITEMS AS INDICATED ON THE DRAWINGS.

3. SELECTIVE DEMOLITION INCLUDES BUT IS NOT LIMITED TO REMOVAL AND REUSE (WHERE POSSIBLE) OF EXISTING MATERIALS, UTILITIES, AND OTHER COMPONENTS ESSENTIAL FOR A COMPLETE PROJECT.

4. THE CONTRACTOR SHALL TAKE REASONABLE CARE IN REMOVING ELEMENTS SELECTED TO BE DEMOLISHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. DAMAGE OR DESTRUCTION BY THE CONTRACTOR TO EXISTING ELEMENTS DESIGNATED TO REMAIN SHALL BE REPAIRED OR REPLACED IN-KIND AT THE DISCRETION OF THE OWNER AT NO ADDITIONAL COST.

5. ITEMS TO BE REMOVED AND REUSED SHALL BE PLACED IN A STAGING AREA ACCESSIBLE FOR INSPECTION BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF REMOVED ITEMS. ANY DAMAGE SHALL BE REPAIRED OR RELACED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

6. PRIOR TO COMMENCEMENT OF SELECTIVE DEMOLITION, THE CONTRACTOR SHALL SUBMIT A DISPOSAL PLAN FOR ITEMS TO BE DEMOLISHED. DEMOLITION MATERIAL DESIGNATED BY THE OWNER TO BE REMOVED FROM THE SITE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE DEBRIS DISPOSAL PLAN SHALL ACKNOWLEDGE THIS OWNERSHIP AND SHALL IDENTIFY THE MEANS AND METHODS AND FINAL DISPOSITION FOR DISPOSAL MATERIALS.

7. PRIOR TO COMMENCEMENT OF DEMOLITION, THE CONTRACTOR SHALL CLEARLY MARK THE LIMITS OF THE DEMOLITION FOR REVIEW AND APPROVAL BY THE OWNER. LIMITS DEPICTED ON THE CONTRACT PLANS CAN ONLY BE CONSIDERED AS APPROXIMATE FIELD CONDITIONS. IT IS NOT THE INTENT OF THE PLANS TO SHOW THE EXACT LOCATIONS OR EXTENT OF EXISTING DETEIORATION ON STRUCTURES. THE CONTRACTOR IS TO FULLY APPRAISE THEMSELVES OF THE SITE CONDITIONS PRIOR TO THE START OF THE WORK.

8. COMPLETELY REMOVE ITEMS DESIGNATED LEAVING SURFACES CLEAN, SOUND, AND READY TO RECEIVE NEW MATERIALS AS SPECIFIED IN THE CONTRACT DOCUMENTS.

9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING THE COURSE OF DEMOLITION.

10. THE CONTRACTOR SHALL SUBMIT A DISPOSAL CERTIFICATE TO THE OWNER'S REPRESENTATIVE CERTIFYING LEGAL AND PROPER DISPOSAL.

TEMPORARY WORK

1. LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM THE WORK THAT, UPON COMPLETION, ARE NOT A PART OF THE WORK, SHALL BE FURNISHED, INSTALLED, AND SUBSEQUENTLY REMOVED FROM THE SITE BY THE CONTRACTOR.

2. TEMPORARY WORK SHALL BE SUBJECT TO THE REQUIREMENTS OF THE STATE AND APPLICABLE LOCAL BUILDING CODES.

3. THE CONTRACTOR SHALL SAFEGUARD AND PROTECT EXCAVATIONS.

4. DURING EXECUTION OF THE WORK, THE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN REQUIRED SEDIMENTATION AND EROSION CONTROL MEASURES TO PROTECT ADJACENT WATERWAYS, STREETS, AND PROPERTIES. MEASURES INCLUDE BUT ARE NOT LIMITED TO TEMPORARY BERMS, HAY BALES, SILT FENCES, CONTAINMENT BOOMS, AND TURBIDITY CURTAINS. IN ACCORDANCE WITH STATE REGULATORY AUTHORIZATIONS, THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN TEMPORARY TURBIDITY CURTAINS DURING CONSTRUCTION. TEMPORARY MATERIALS AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS FOR TEMPORARY WORK.

5. THE CONTRACTOR SHALL LOCATE EROSION CONTROLS INCLUDING BUT NOT LIMITED TO SILT FENCE, HAY BALES, AND TRACKING PADS AS REQUIRED FOR ADEQUATE PROTECTION DURING CONSTRUCTION AND TO THE SATISFACTION OF THE LOCAL BUILDING OFFICIALS AND THE ENGINEER OF RECORD.

EXCAVATING, BACKFILLING, AND COMPACTION:

1. STRUCTURAL FILL SHALL CONSIST OF BROKEN OR CRUSHED STONE, BANK OR CRUSHED GRAVEL, OR MIXTURES THEREOF. BROKEN OR CRUSHED STONE SHALL CONSIST OF WELL-GRADED, SOUND, TOUGH, DURABLE STONE. BANK OR CRUSHED GRAVEL SHALL CONSIST OF WELL-GRADED, SOUND, TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE FROM SOFT, THIN, ELONGATED OR LAMINATED PIECES AND ORGANIC OR OTHER DELETERIOUS SUBSTANCES. STRUCTURAL FILL SHALL BE WELL GRADED WITH 100% MASS PASSING THE 90 MM (3.5") SQUARE MESH SIEVE. SUBMIT AN INDEPENDENT GRADATION ANALYSIS AND MODIFIED PROCTOR TEST FOR ENGINEER OF RECORD'S REVIEW. INCLUDE A REPRESENTATIVE SAMPLE OF THE FILL MATERIAL WITH THE SUBMITTAL.

2. THE CONTRACTOR SHALL EXCAVATE, BACKFILL, COMPACT, AND GRADE THE SITE TO THE ELEVATIONS AND LIMITS SHOWN AND AS NEEDED TO MEET THE REQUIREMENTS OF THE CONSTRUCTION.

3. STRUCTURAL FILL SHALL BE PLACED IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH. DO NOT PLACE FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAINING FROST OR ICE. PLACE FILL MATERIALS EVENLY ADJACENT TO STRUCTURES, TO REQUIRED ELEVATIONS. TAKE CARE TO PREVENT WEDGING ACTION OF BACKFILL AGAINST STRUCTURES BY CARRYING THE MATERIAL UNIFORMLY AROUND THE STRUCTURE TO APPROXIMATELY THE SAME ELEVATION IN EACH LIFT.

4. GRADE THE AREAS ADJACENT TO BUILDINGS TO ACHIEVE DRAINAGE AWAY FROM THE STRUCTURES, AND TO PREVENT PONDING.

5. CONTROL STRUCTURAL FILL COMPACTION DURING CONSTRUCTION TO PROVIDE THE MINIMUM PERCENTAGE OF DENSITY SPECIFIED FOR EACH AREA AS DETERMINED ACCORDING TO ASTM D1557. STRUCTURAL FILL AREAS SHALL NOT FALL BELOW 95% OF ITS DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ABOVE TEST.

PILE DRIVING:

1. DRIVE PILES WITH AN AIR OR DIESEL OPERATED HAMMER WITH SUFFICIENT ENERGY AND ENERGY TRANSFER CHARACTERISTICS TO DRIVE THE PILES TO THE REQUIRED TOE ELEVATIONS WITHOUT DAMAGING THE PILE HEAD. USE CAUTION NOT TO INJURE THE PILES BY OVER DRIVING AS WOULD BE INDICATED BY REBOUND OF HAMMER OR STAGGERING OF PILE. CUT OFF HEADS OF PILES ACCURATELY IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AFTER COMPLETION OF DRIVING.

2. DRIVE THE PILES STRAIGHT AND TRUE AT INDICATED LOCATIONS, WITH DEVIATION FROM THE LONGITUDINAL AXIS OF NOT MORE THAN 1/4 INCH PER FOOT.

3. LOCATE THE PILES WITHIN 3 INCHES OF THE POSITIONS INDICATED ON THE DRAWINGS.

4. CONTINUOUSLY DRIVE EACH PILE TO REACH THE FULL EMBEDDED LENGTH CALLED FOR ON THE DRAWINGS.

5. WITHDRAW PILES THAT ENCOUNTER UNDERGROUND OBSTRUCTIONS SUFFICIENT TO IMPEDE PILE DRIVING. REDRIVE AS CLOSE AS POSSIBLE TO ORIGINAL POSITION, SUBJECT TO REVIEW BY THE ENGINEER AND OWNER. REMOVE PILES WHICH SPLIT, BROOM, BREAK OR DRIVE OUT OF LINE. DRIVE ANOTHER PILE IN ITS PLACE. PROVIDE AND MAINTAIN NECESSARY LIGHTING AND BARRIERS TO ADEQUATELY ASSURE PUBLIC SAFETY. PROVIDE ADEQUATE SAFEGUARDS TO PROTECT FROM DAMAGE IMPROVEMENTS ON THE WORK SITE AND ON ADJACENT PROPERTIES.

6. USE SUITABLE CUSHIONS OR DRIVING HEADS TO AVOID DAMAGE TO THE PILES, DEVELOPING PROPER TOTAL DRIVING ENERGY, AND DIRECTING THE ENERGY ALONG THE LONGITUDINAL CENTER OF GRAVITY OF THE PILE.

7. JETTING TO ASSIST PENETRATION WILL NOT BE PERMITTED UNLESS ACCEPTED BY THE ENGINEER OF RECORD. PRE-DRILLING WILL NOT BE PERMITTED UNLESS ACCEPTED BY THE ENGINEER OF RECORD, WHEREBY ACCEPTED PRE-DRILLING TO ASSIST PENETRATION MAY BE USED WHERE EXTREME DRIVING RESISTANCE IS ENCOUNTERED, OR WHERE VIBRATIONS FROM DRIVING MAY BE DETRIMENTAL TO ADJACENT STRUCTURES.

8. WHERE PILES ARE PUSHED UP BY PRESSURE FROM DRIVING OF ADJACENT PILES, RE-DRIVE AS REQUIRED AND AT NO ADDITIONAL COST TO THE OWNER.

9. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A COMPLETE DRIVING RECORD WITH THE DATE OF FINAL INSTALLATION AND TIP ELEVATIONS. THIS RECORD SHALL BE SUBMITTED WEEKLY AND SIGNED BY A REPRESENTATIVE OF THE CONTRACTOR. THE CONTRACTOR SHALL KEEP AN ACCURATE SET OF PILE RECORDS INDICATING PILE NUMBER, PILE TYPE AND INSTALLED LENGTH, TYPE OF HAMMER AND RATED ENERGY, DATE OF INSTALLATION, FINAL TIP ELEVATION, AND CONTRACTOR'S REPRESENTATIVE NAME AND SIGNATURE.

STEEL SHEET PILES

1. STEEL SHEET PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 WITH A MINIMUM 60 KSI YIELD STRENGTH.

2. STEEL SHEET PILES SHALL BE ARBED AZ 26-700 X 25 FT LONG OR EQUIVALENT WITH EQUAL OR GREATER SECTION PROPERTIES, AS ACCEPTED BY THE ENGINEER.

3. STEEL SHEET PILES SHALL BE DRIVEN TO THE MINIMUM TIP ELEVATION INDICATED ON THE CONTRACT DRAWINGS.

4. STEEL SHEET PILES SHALL BE UNCOATED.

BITUMINOUS CONCRETE PAVING:

1. BITUMINOUS CONCRETE PAVING SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.

CLSM:

1. CONTROLLED LOW STRENGTH MATERIAL (CLSM) FILL SHALL HAVE A MINIMUM WET DENSITY OF 90 POUNDS PER CUBIC FOOT (PCF) AND A MAXIMUM WET DENSITY OF 110 PCF. CLSM FILL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI (NOT TO EXCEED 200 PSI) AT 28 DAYS. CLSM FILL SHALL HAVE A SLUMP OF 8 TO 11 INCHES. CLSM FILL SHALL CONTAIN 15% TO 20% ENTRAINED AIR. AIR ENTRAINMENT ADMIXTURE SHALL BE DARAFILL AS MANUFACTURED BY W.R. GRACE & CO. OR EQUIVALENT

FIELD VERIFICATION:

1. CONTRACTOR MUST LOCATE AND VERIFY ALL EXISTING UNDERGROUND UTILITIES (WATER, GAS, ELECTRIC, COMMUNICATIONS) VIA POT-HOLING BEFORE STARTING WORK.

2. CALL 811 (OR DIG SAFE); NOTIFY DIG SAFE BEFORE ANY EXCAVATION TO HAVE PUBLIC LINES MARKED.

3. PROTECT EXISTING UTILITIES; USE EXTREME CAUTION NEAR EXISTING LINES; PROTECT THEM FROM DAMAGE.

4. DAMAGE RESPONSIBILITY: CONTRACTOR SHALL PAY FOR ALL REPAIRS OR REPLACEMENTS OF DAMAGED EXISTING UTILITIES AT NO ADDITIONAL COST TO THE OWNER.

5. COORDINATION: IMMEDIATELY NOTIFY THE OWNER/ENGINEER OF ANY DISCREPANCIES OR DAMAGE; CONTACT UTILITY COMPANIES TO DETERMINE PROCEDURES.

CHAPOQUOIT ROAD  
STABILIZATION PROJECT

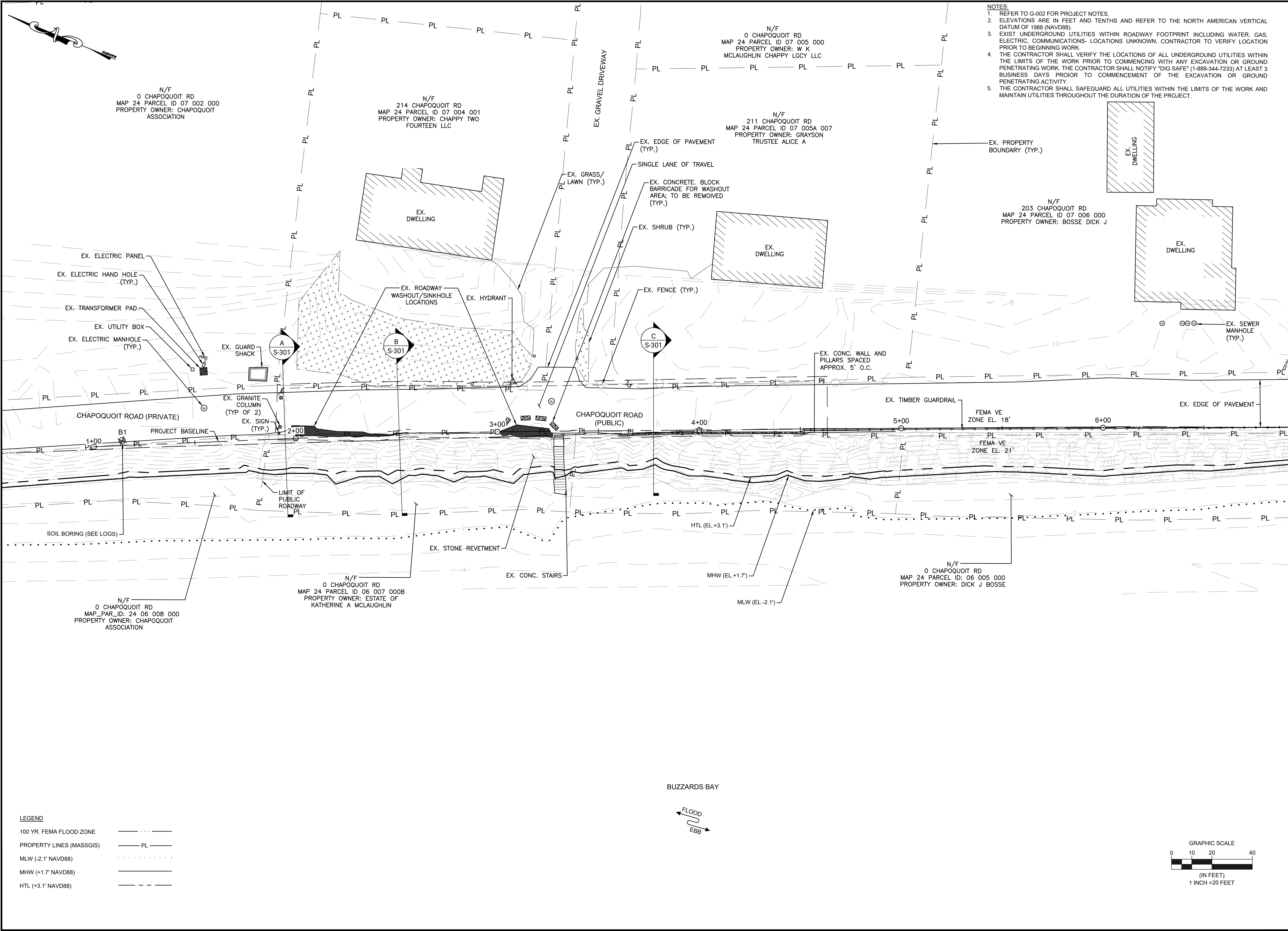
CHAPOQUOIT ROAD  
FALMOUTH, MA 02540

REVISIONS	DESCRIPTION	DATE	BY	NO.	1	2	3	4	5
	ADDITION 1	1/10/26	CFF						
DATE OF PREPARATION									
		BY	DATE						
SURVEYED		MEC	01/30/2023						
DRAWN		MDW/CEM	02/04/2025						
DESIGNED		AHM/CFF	02/04/2025						
CHECKED		JMP/SCS	02/07/2025						
SHEET TITLE:									
PROJECT NOTES									
ISSUANCE:									
ISSUED FOR BID									
PROJECT NO: 0023S002.00									
SHEET NUMBER									
G-002									



**CHAPOQUOIT ROAD  
FALMOUTH, MA 02540**





- NOTES:
1. REFER TO G-002 FOR PROJECT NOTES.
  2. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  3. EXIST' UNDERGROUND UTILITIES WITHIN ROADWAY FOOTPRINT INCLUDING WATER, GAS, ELECTRIC, COMMUNICATIONS- LOCATIONS UNKNOWN, CONTRACTOR TO VERIFY LOCATION PRIOR TO BEGINNING WORK.
  4. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UNDERGROUND UTILITIES WITHIN THE LIMITS OF THE WORK PRIOR TO COMMENCING WITH ANY EXCAVATION OR GROUND PENETRATING WORK. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" (1-888-344-7233) AT LEAST 3 BUSINESS DAYS PRIOR TO COMMENCEMENT OF THE EXCAVATION OR GROUND PENETRATING ACTIVITY.
  5. THE CONTRACTOR SHALL SAFEGUARD ALL UTILITIES WITHIN THE LIMITS OF THE WORK AND MAINTAIN UTILITIES THROUGHOUT THE DURATION OF THE PROJECT.



CHAPOQUOIT ROAD  
STABILIZATION PROJECT

CHAPOQUOIT ROAD  
FALMOUTH, MA 02540

REVISIONS		DESCRIPTION	
		DATE	BY
NO.	BY	DATE	DESCRIPTION
1	CFF	1/16/26	ADDENDUM 1
2			
3			
4			
5			

DATE OF PREPARATION		
BY	DATE	
MEC	01/30/2023	
MDW/CEM	02/04/2025	
AIM/CFF	02/04/2025	
JMP/SCS	02/07/2025	

SHEET TITLE:

EXISTING  
SITE PLAN

ISSUANCE:

ISSUED FOR BID

PROJECT NO: 0023S002.00

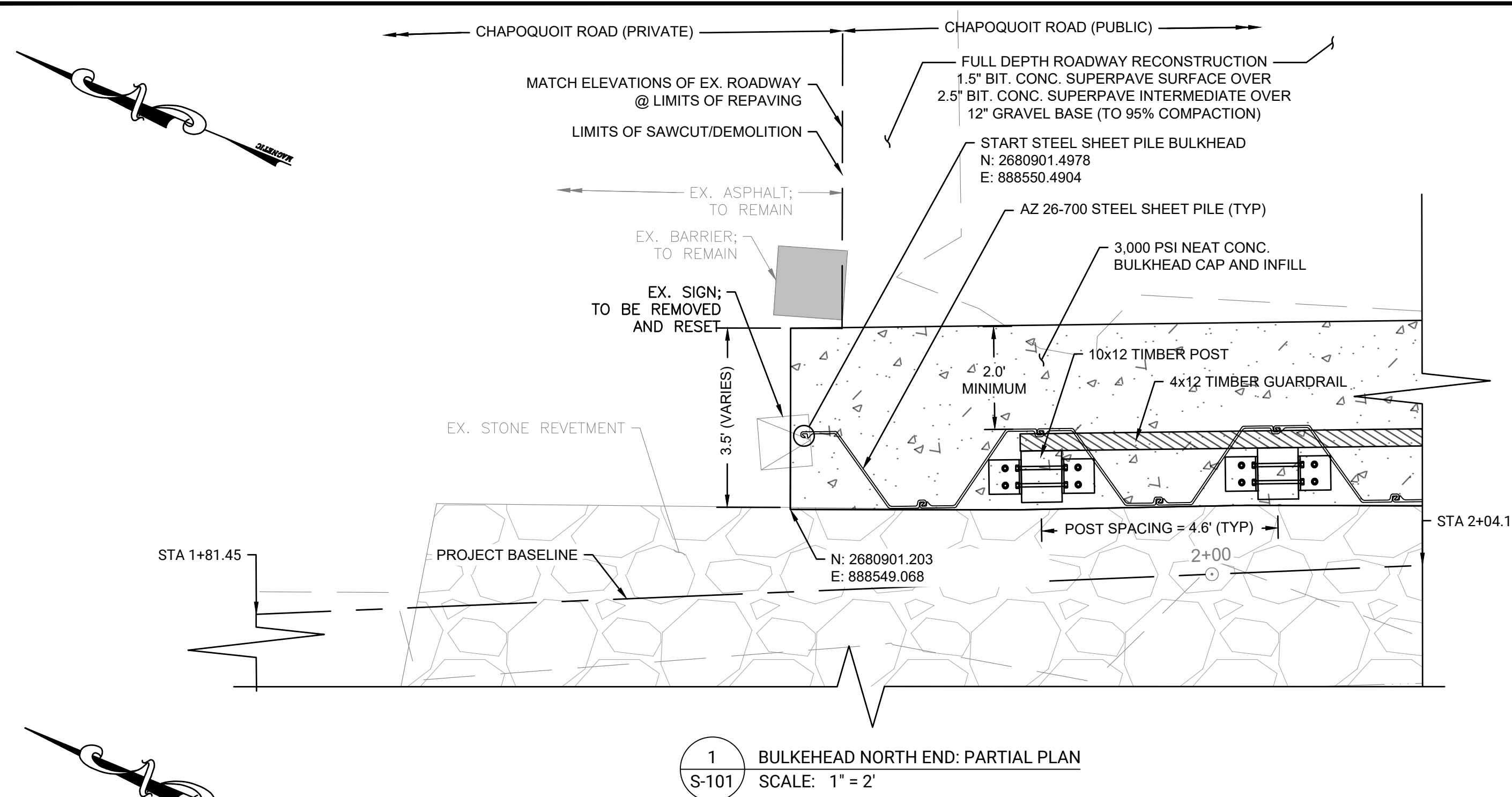
SHEET NUMBER

C-101

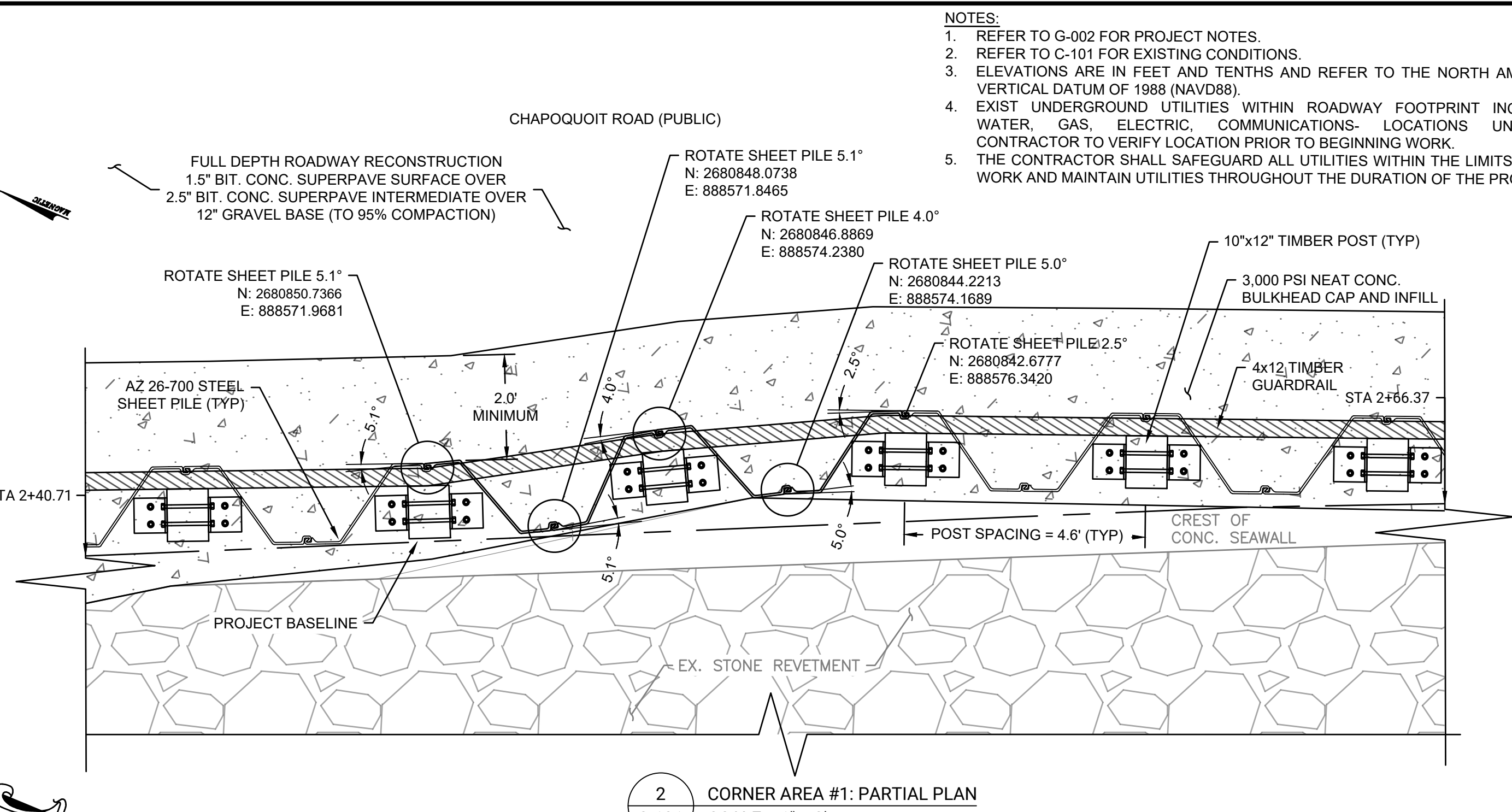




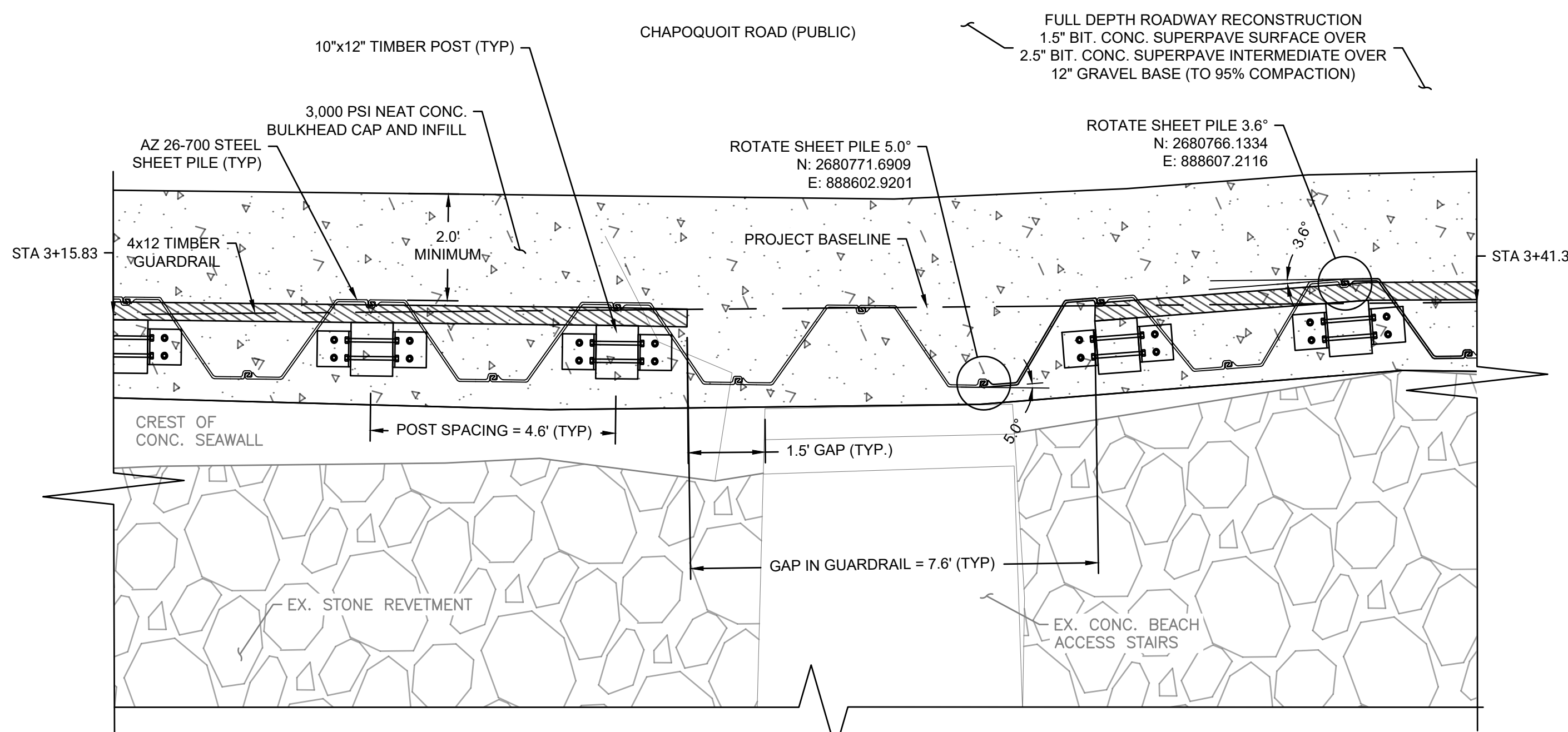




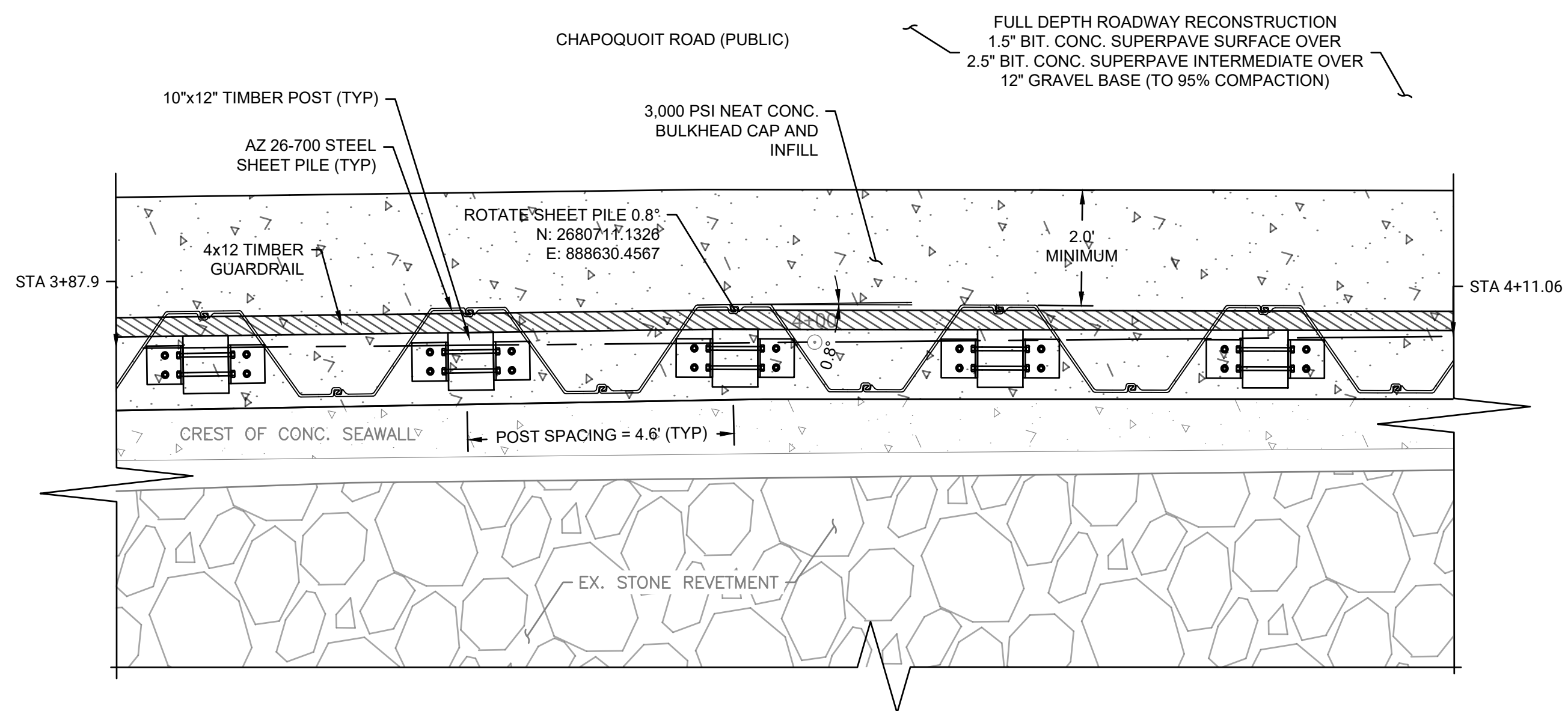
1 BULKHEAD NORTH END: PARTIAL PLAN  
S-101  
SCALE: 1" = 2'



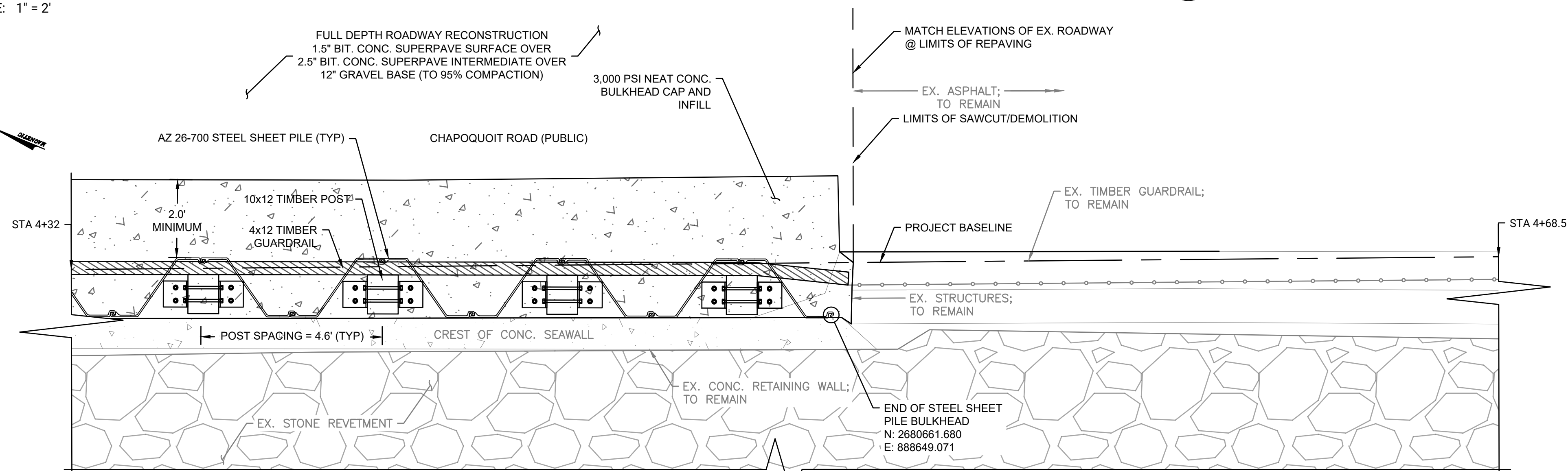
2 CORNER AREA #1: PARTIAL PLAN  
S-101  
SCALE: 1" = 2'



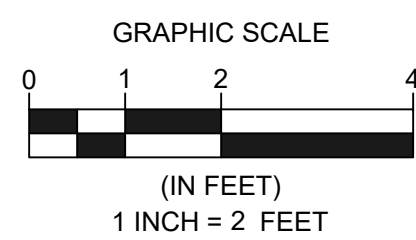
3 SHEET PILE CORNER #2: PARTIAL PLAN  
S-101  
SCALE: 1" = 2'



4 SHEET PILE CORNER #3: PARTIAL PLAN  
S-101  
SCALE: 1" = 2'



5 BULKHEAD SOUTH END: PARTIAL PLAN  
S-101  
SCALE: 1" = 2'



- NOTES:
1. REFER TO G-002 FOR PROJECT NOTES.
  2. REFER TO C-101 FOR EXISTING CONDITIONS.
  3. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  4. EXIST UNDERGROUND UTILITIES WITHIN ROADWAY FOOTPRINT INCLUDING WATER, GAS, ELECTRIC, COMMUNICATIONS- LOCATIONS UNKNOWN, CONTRACTOR TO VERIFY LOCATION PRIOR TO BEGINNING WORK.
  5. THE CONTRACTOR SHALL SAFEGUARD ALL UTILITIES WITHIN THE LIMITS OF THE WORK AND MAINTAIN UTILITIES THROUGHOUT THE DURATION OF THE PROJECT.

CHAPOQUOIT ROAD  
STABILIZATION PROJECT

CHAPOQUOIT ROAD  
FALMOUTH, MA 02540

REVISIONS		DESCRIPTION	DATE	BY	NO.
		ADDITION 1	1/16/26	CFF	1
					2
					3
					4
					5

DATE OF PREPARATION		
BY	DATE	
MEC	01/30/2023	
MDW/CEM	02/04/2025	
AIM/CFF	02/04/2025	
JMP/SCS	02/07/2025	

SHEET TITLE:

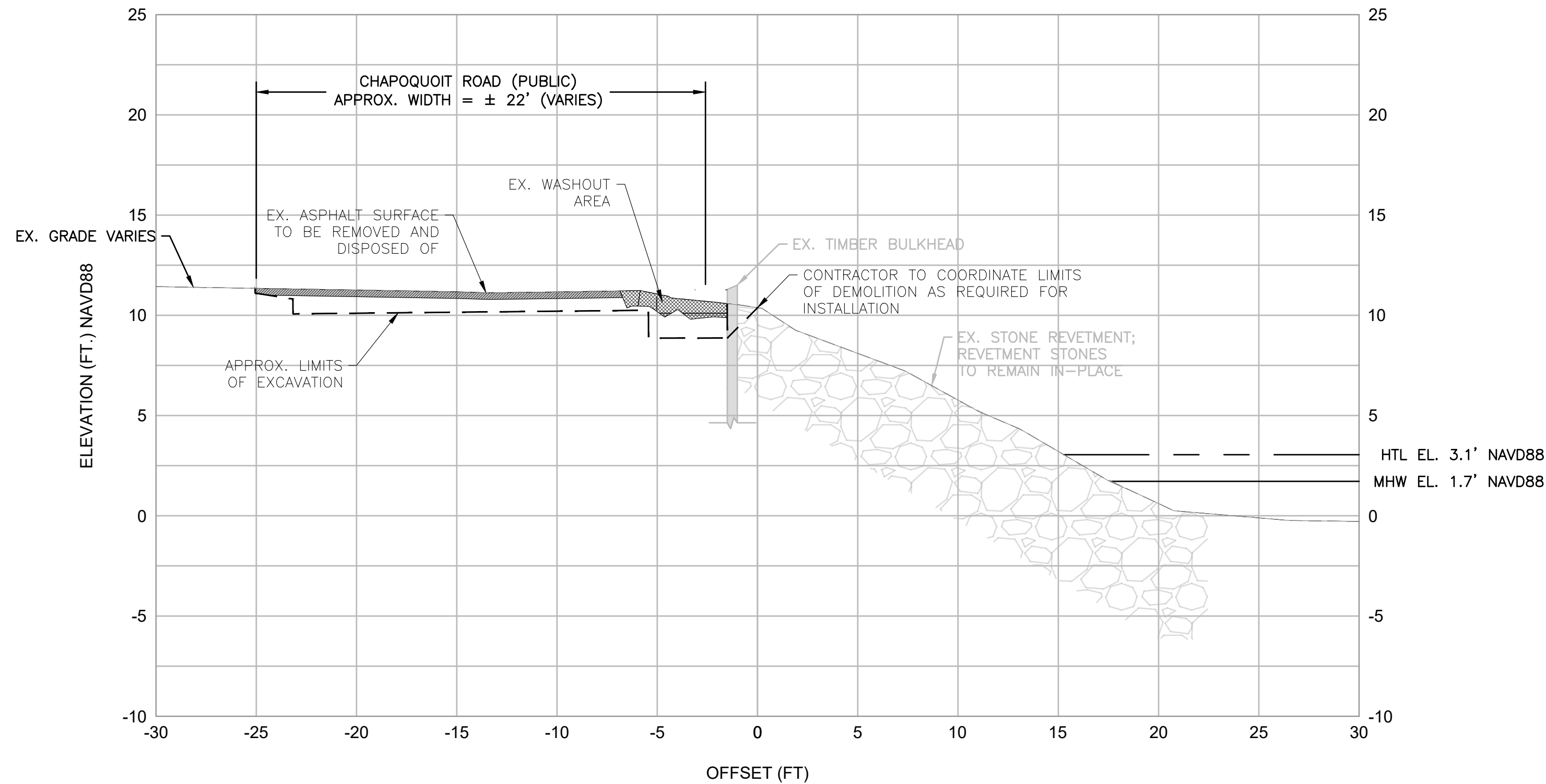
STEEL SHEET  
PILE PARTIAL  
PLANS

ISSUANCE:  
ISSUED FOR BID

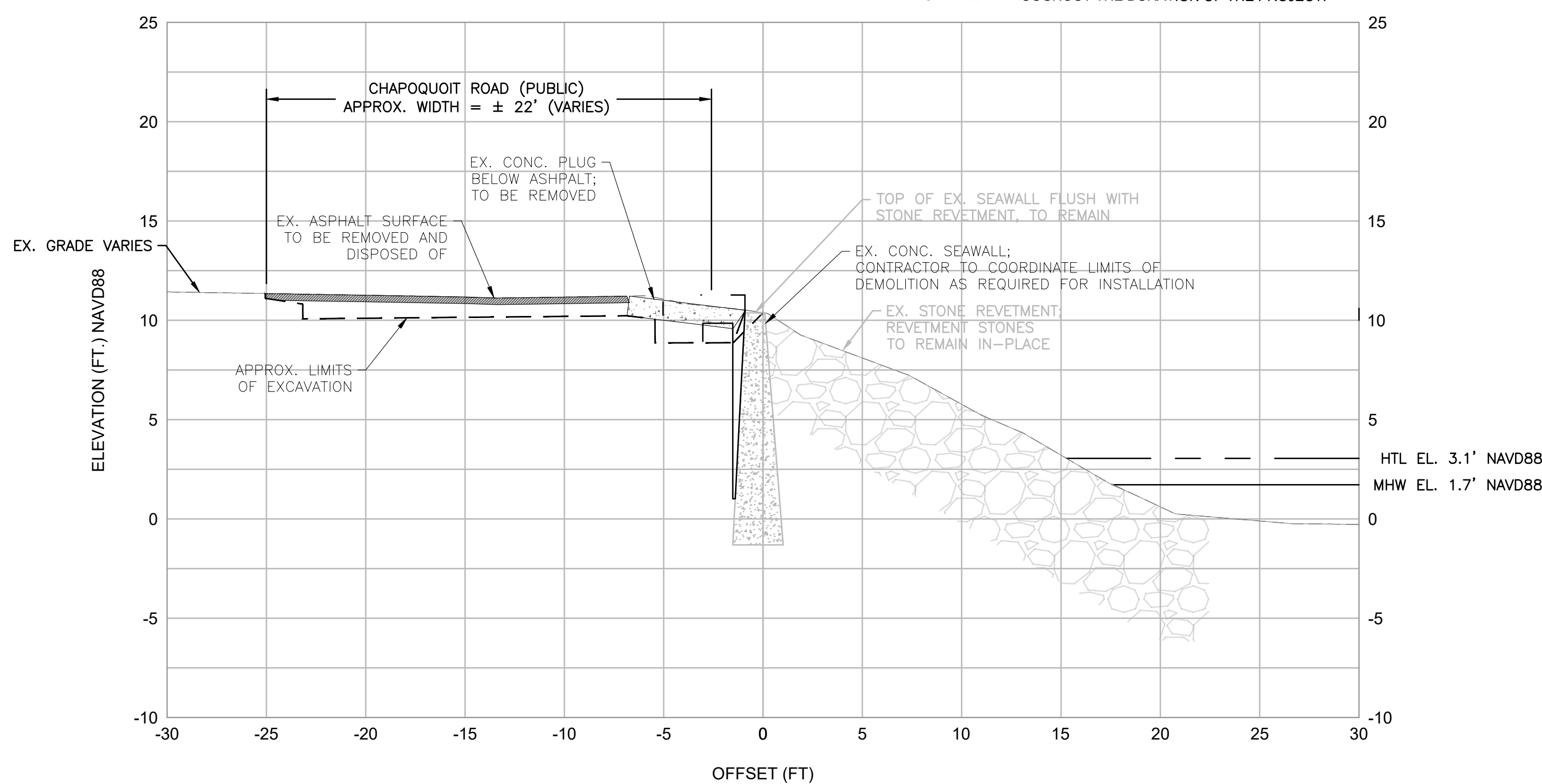
PROJECT NO: 0023S002.00

SHEET NUMBER  
S-101

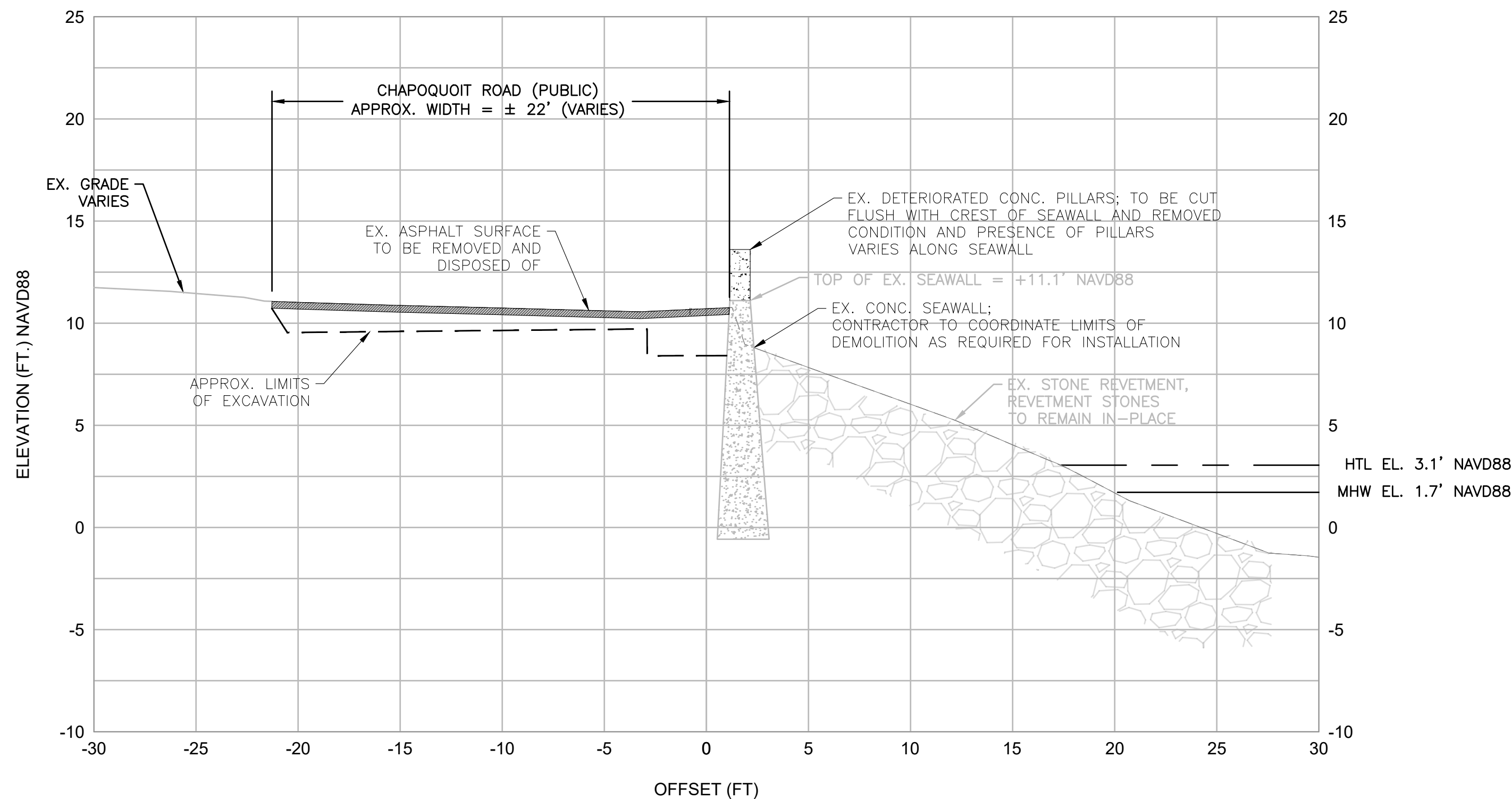




**A** EXISTING SECTION AT TIMBER SHEETING  
C-101 SCALE: 1" = 5'

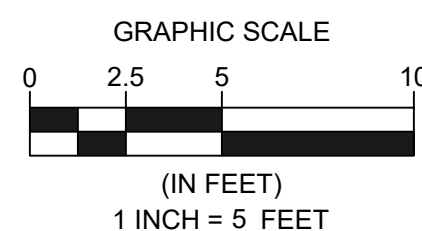


**B** EXISTING SECTION AT STONE REVETMENT  
C-101 SCALE: 1" = 5'



**C** EXISTING SECTION AT CONC. SEAWALL  
C-101 SCALE: 1" = 5'

- SECTIONS A-C NOTES:
1. LIMITS OF EXCAVATION AND DEMOLITION SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
  2. THE CONTRACTOR SHALL REMOVE EXSTING REVETMENT STONES AS REQUIRED FOR BULKHEAD INSTALLATION.
  3. ALL REVETMENT STONES REMOVED FOR INSTALLATION SHALL BE REINSTALLED IN-KIND UPON BULKHEAD INSTALLATION.



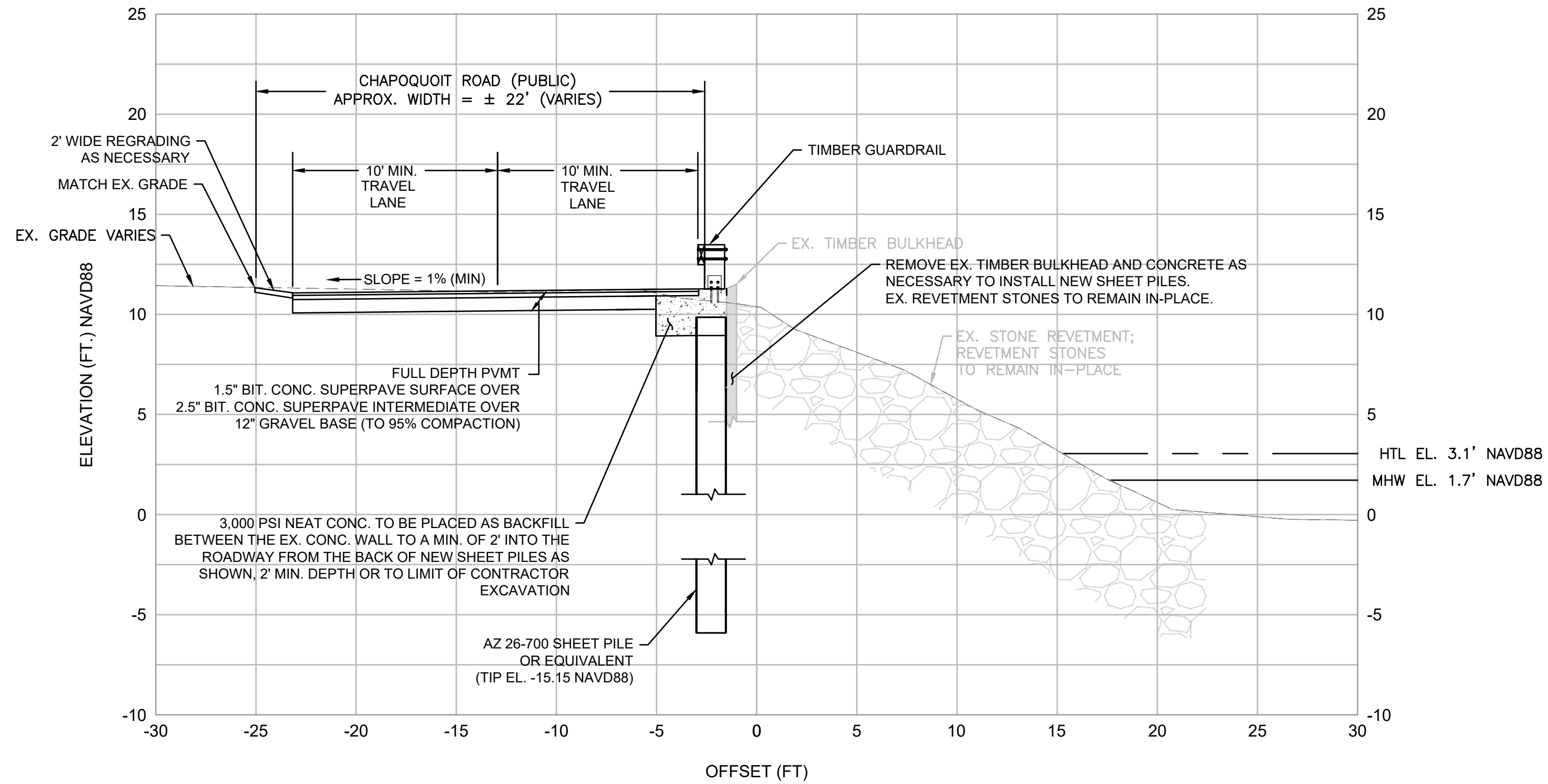
- NOTES:
1. REFER TO G-002 FOR PROJECT NOTES.
  2. REFER TO C-101 FOR EXISTING CONDITIONS.
  3. EXIST UNDERGROUND UTILITIES WITHIN ROADWAY FOOTPRINT INCLUDING WATER, GAS, ELECTRIC, COMMUNICATIONS- LOCATIONS UNKNOWN, CONTRACTOR TO VERIFY LOCATION PRIOR TO BEGINNING WORK.
  4. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  5. THE CONTRACTOR SHALL SAFEGUARD ALL UTILITIES WITHIN THE LIMITS OF THE WORK AND MAINTAIN UTILITIES THROUGHOUT THE DURATION OF THE PROJECT.

CHAPOQUOIT ROAD  
STABILIZATION PROJECT

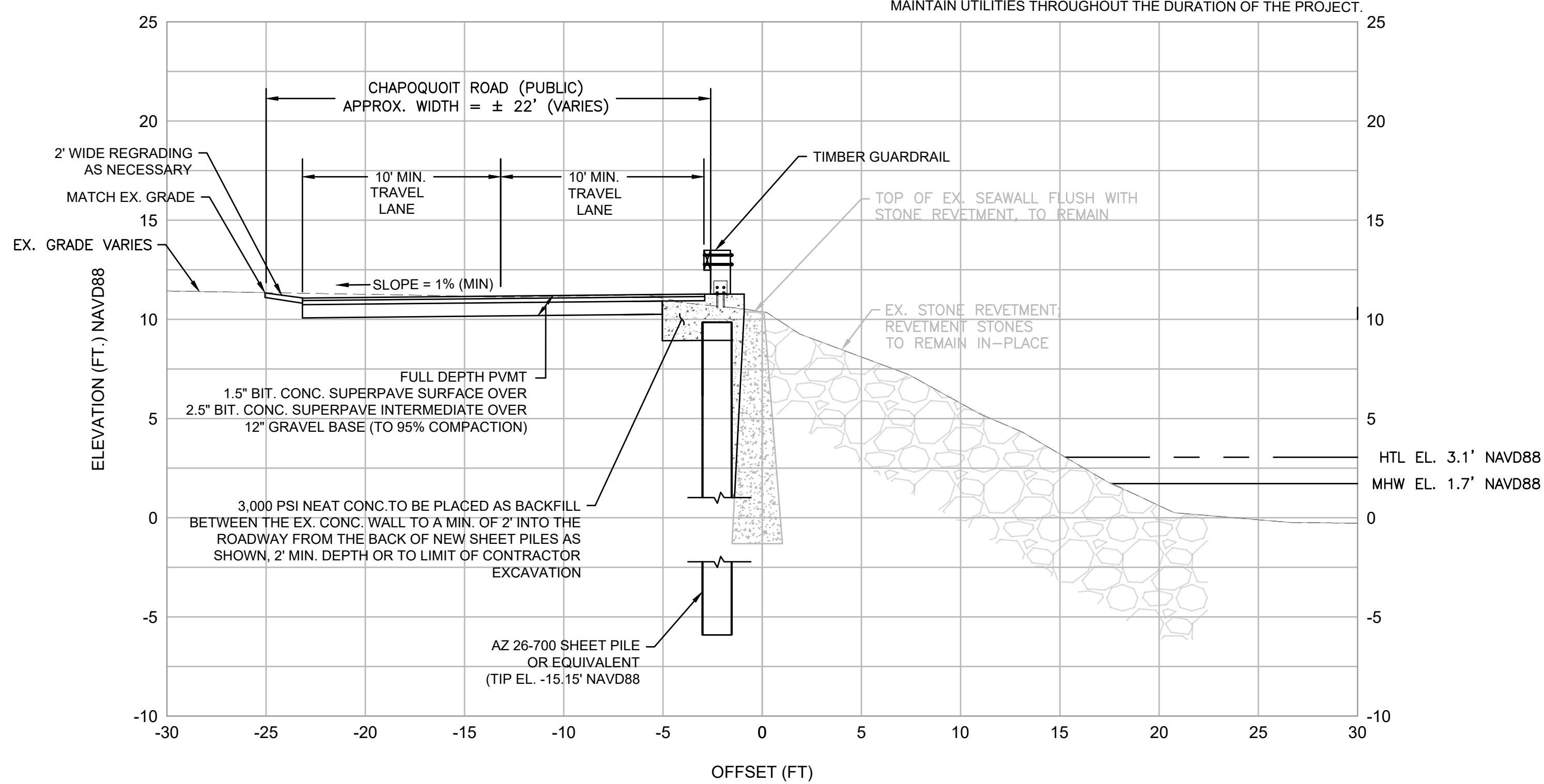
CHAPOQUOIT ROAD  
FALMOUTH, MA 02540

REVISIONS		DESCRIPTION	DATE	BY					
					NO.	A	A	A	A
DATE OF PREPARATION									
		BY	DATE						
SURVEYED		MEC		01/30/2023					
DRAWN		MDW/CEM		02/04/2025					
DESIGNED		AHM/CFF		02/04/2025					
CHECKED		JMP/SCS		02/07/2025					
SHEET TITLE:									
EXISTING AND DEMOLITION BULKHEAD SECTIONS									
ISSUANCE:									
ISSUED FOR BID									
PROJECT NO: 0023S002.00									
SHEET NUMBER									
S-301									

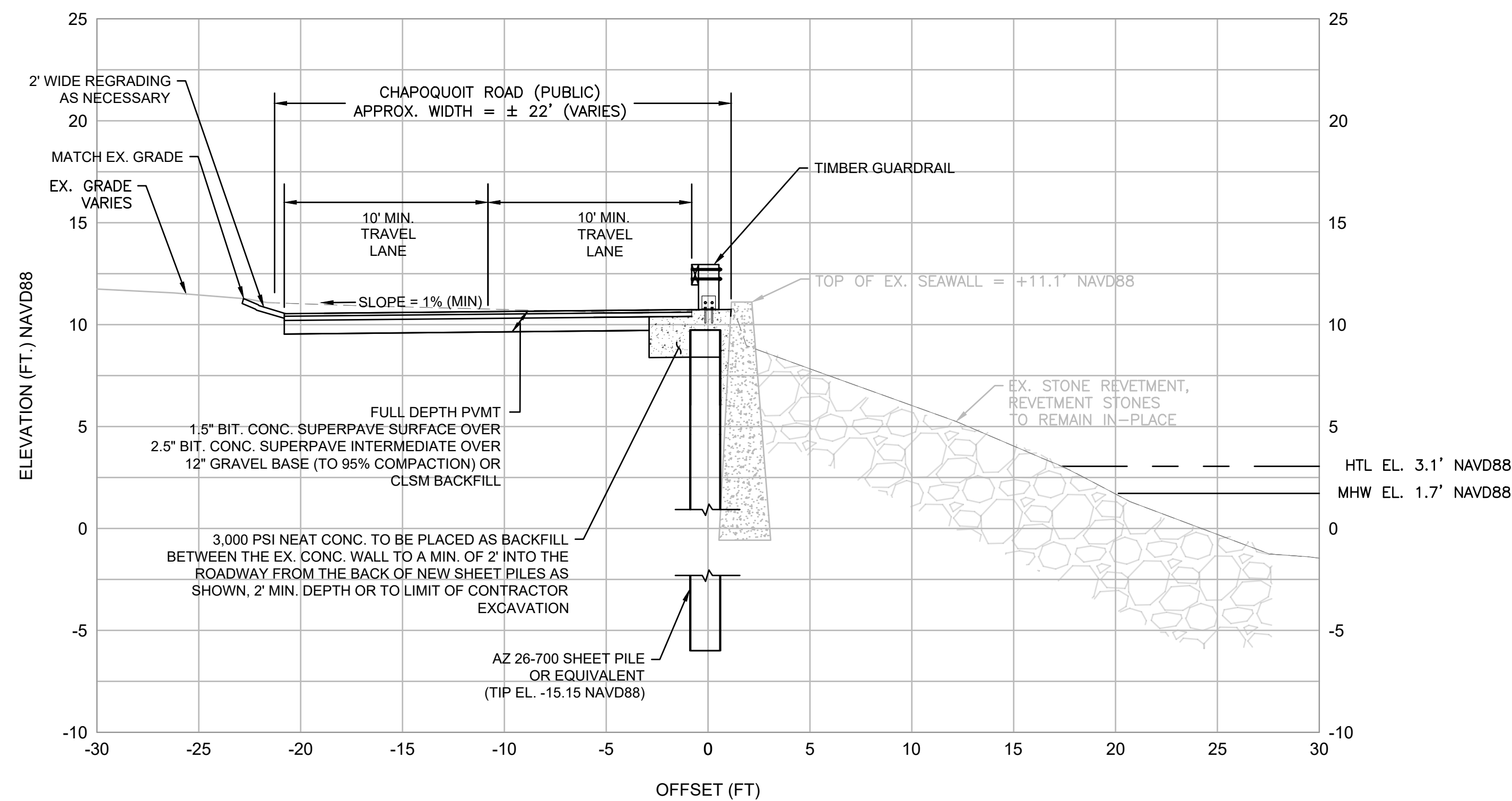




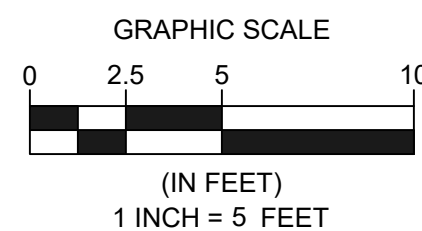
D BULKHEAD SECTION AT TIMBER SHEETING  
C-102 SCALE: 1" = 5'



E BULKHEAD SECTION AT STONE REVETMENT  
C-102 SCALE: 1" = 5'



F BULKHEAD SECTION AT CONC. SEAWALL  
C-102 SCALE: 1" = 5'



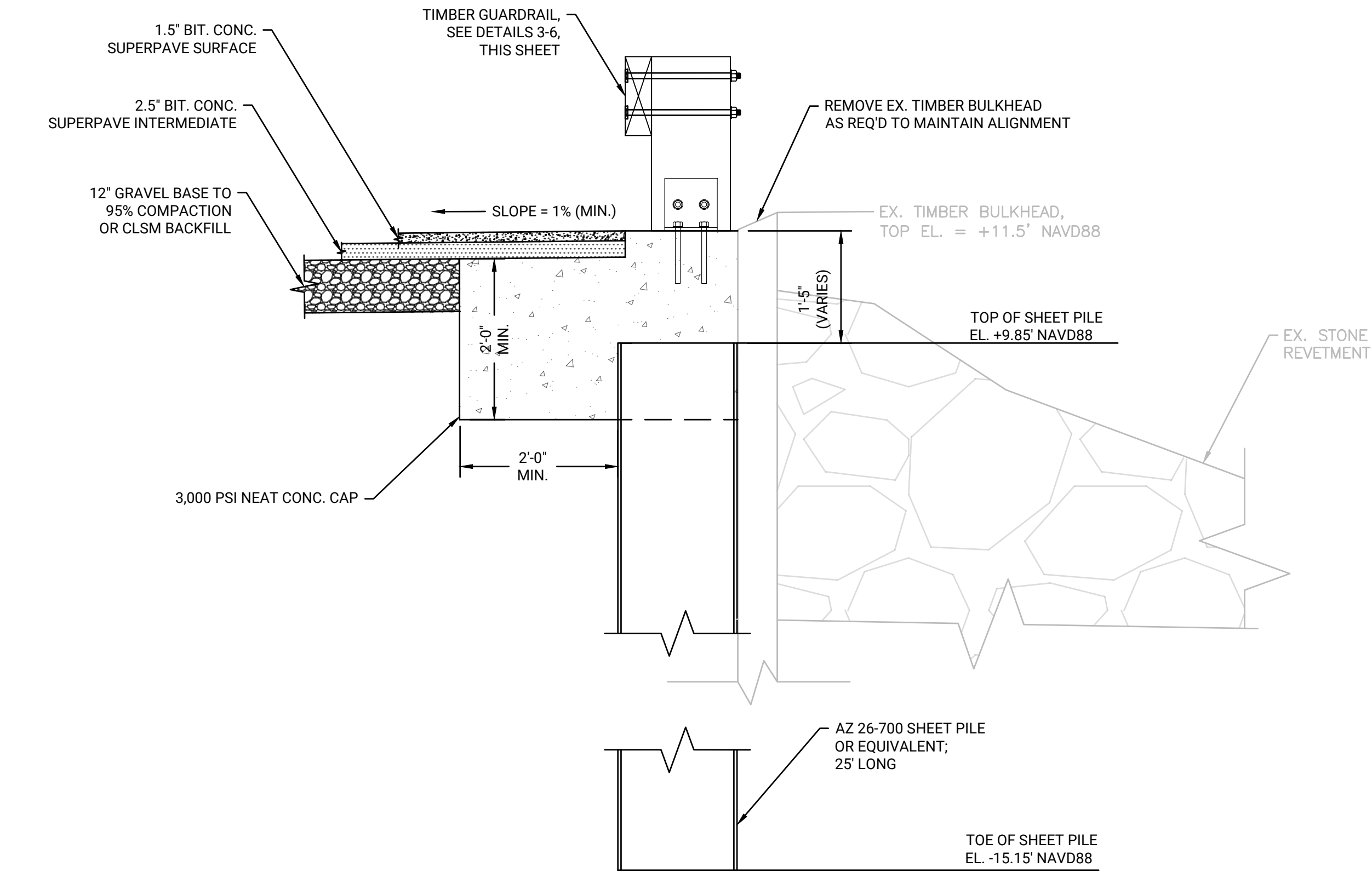
- NOTES:
1. REFER TO G-002 FOR PROJECT NOTES.
  2. REFER TO C-101 FOR EXISTING CONDITIONS.
  3. EXIST' UNDERGROUND UTILITIES WITHIN ROADWAY FOOTPRINT INCLUDING WATER, GAS, ELECTRIC, COMMUNICATIONS- LOCATIONS UNKNOWN, CONTRACTOR TO VERIFY LOCATION PRIOR TO BEGINNING WORK.
  4. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  5. THE CONTRACTOR SHALL SAFEGUARD ALL UTILITIES WITHIN THE LIMITS OF THE WORK AND MAINTAIN UTILITIES THROUGHOUT THE DURATION OF THE PROJECT.

CHAPOQUOIT ROAD  
STABILIZATION PROJECT

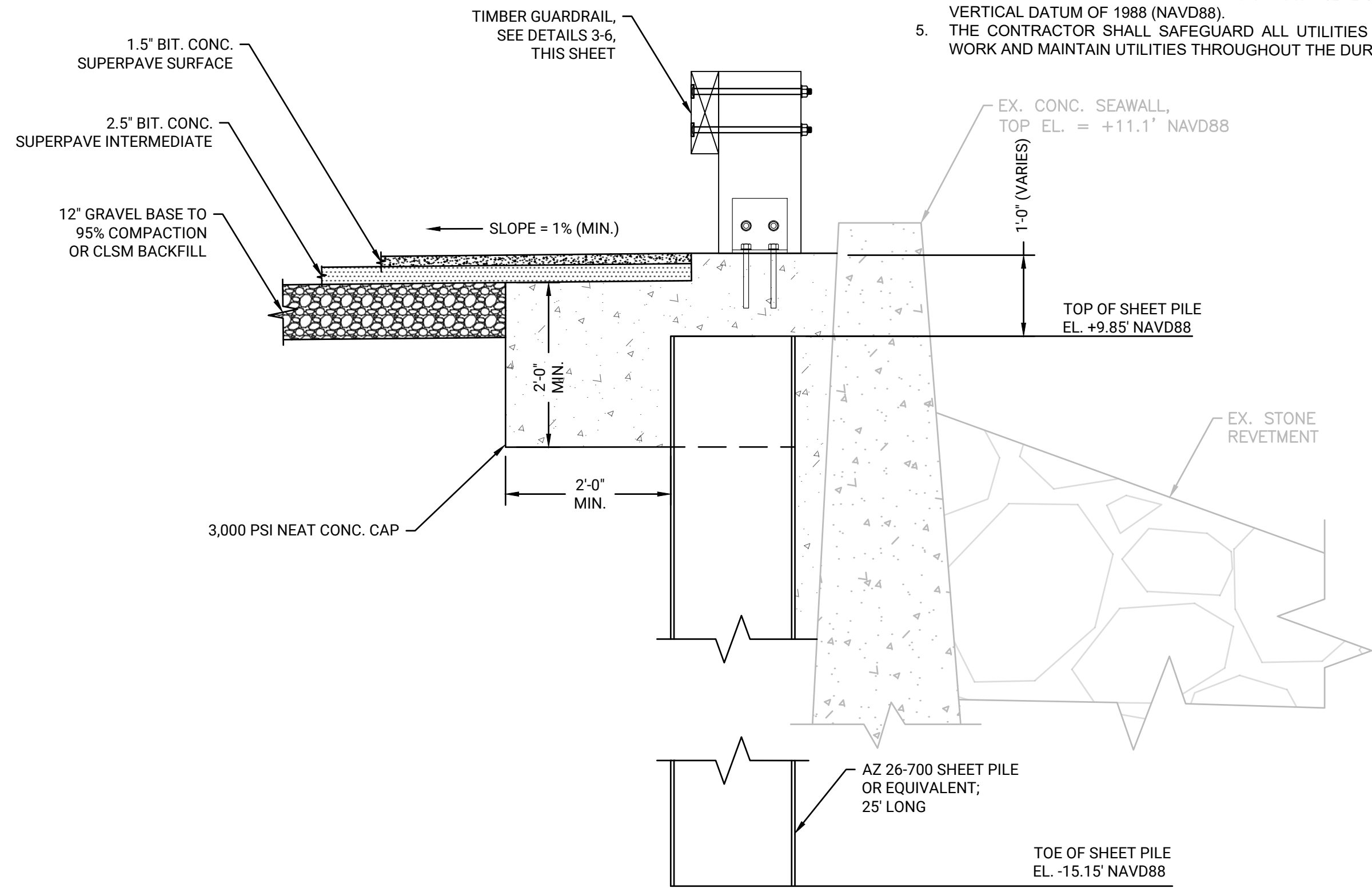
CHAPOQUOIT ROAD  
FALMOUTH, MA 02540

REVISIONS		DESCRIPTION	DATE		BY	CFF					
			1/16/26								
NO.		△	△	△	△	△					
DATE OF PREPARATION											
		BY	DATE								
SURVEYED		MEC		01/30/2023							
DRAWN		MDW/CEM		02/04/2025							
DESIGNED		AIM/CFF		02/04/2025							
CHECKED		JMP/SCS		02/07/2025							
SHEET TITLE:											
BULKHEAD REPAIR SECTIONS											
ISSUANCE:											
ISSUED FOR BID											
PROJECT NO: 0023S002.00											
SHEET NUMBER											
S-302											

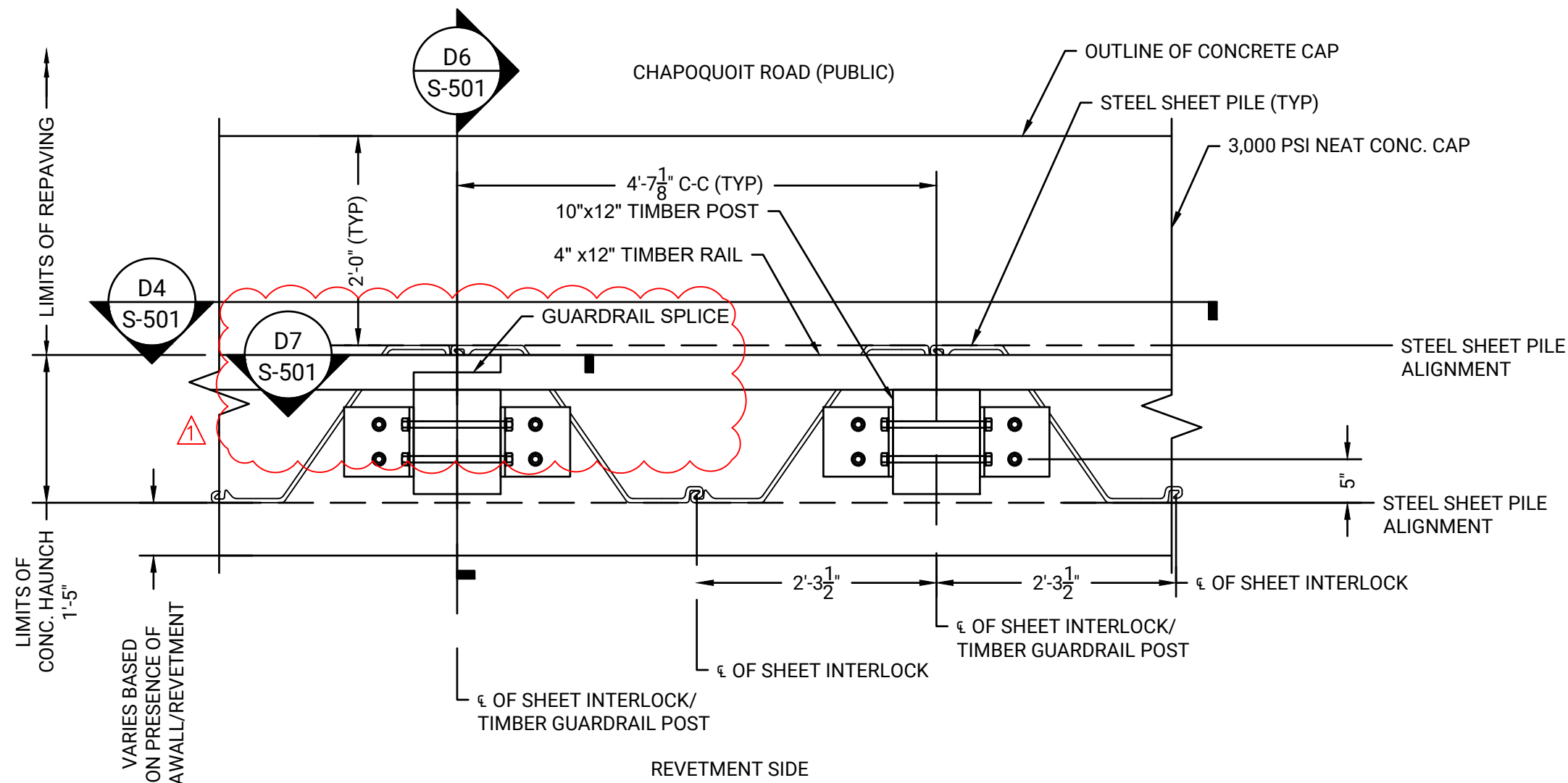




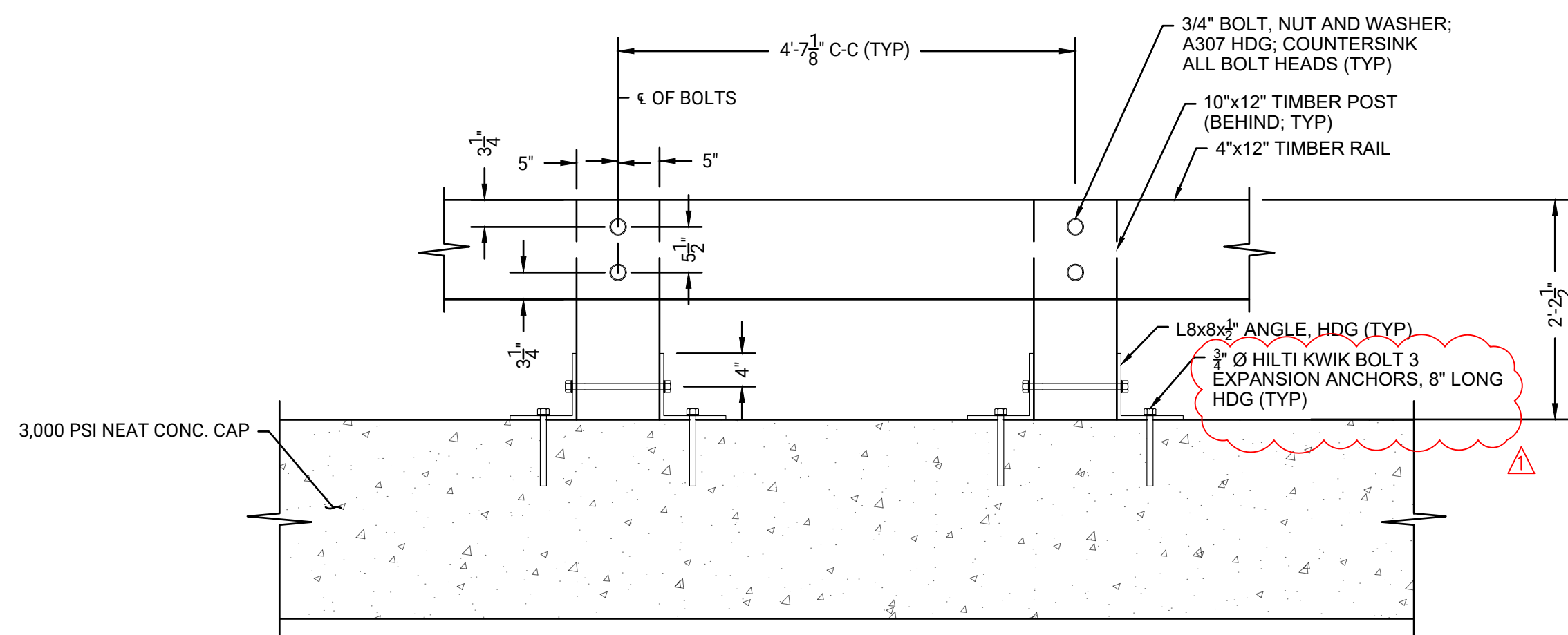
D1  
S-501 DETAIL OF SSP BULKHEAD AT EX. TIMBER BULKHEAD  
SCALE: 3/4" = 1'-0"



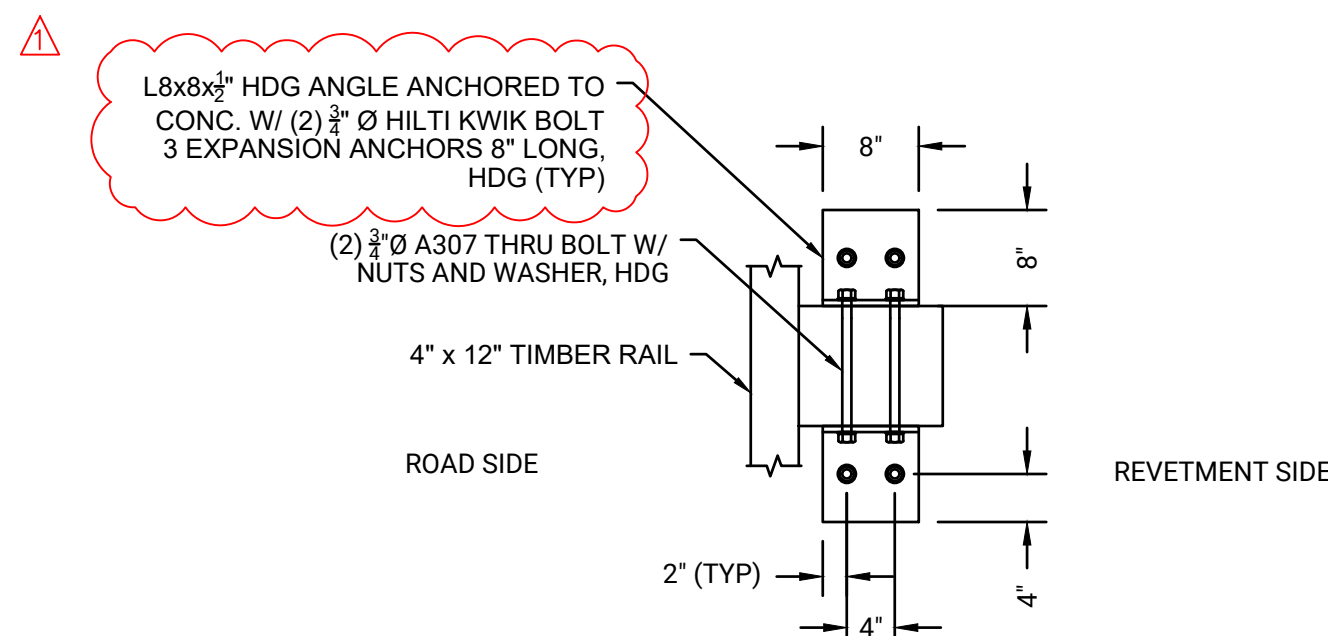
D2  
S-501 DETAIL OF SSP BULKHEAD AT EX. CONC. SEAWALL  
SCALE: 3/4" = 1'-0"



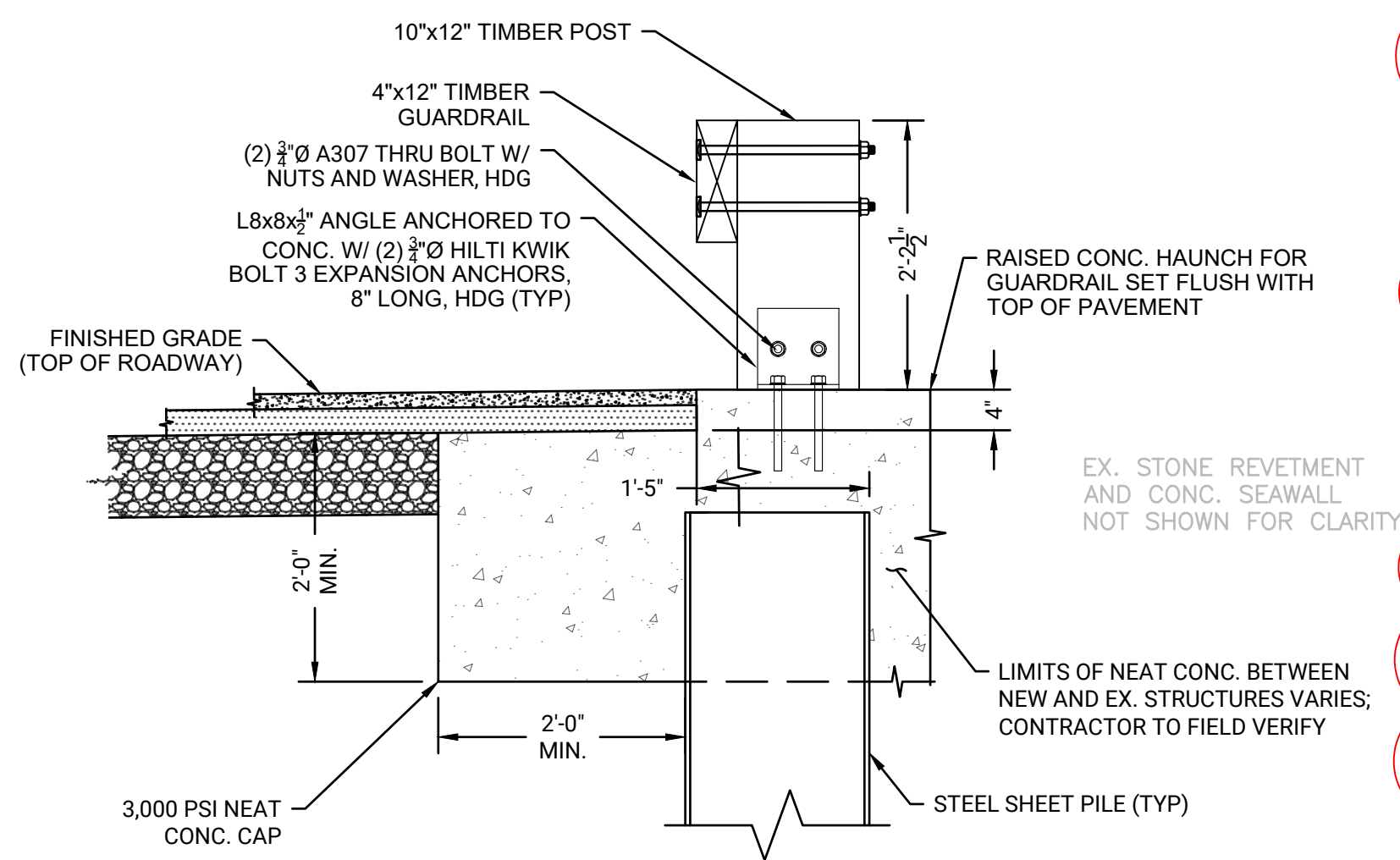
D3  
S-501 TYPICAL TIMBER GUARDRAIL MOUNTING PLAN  
SCALE: 3/4" = 1'-0"



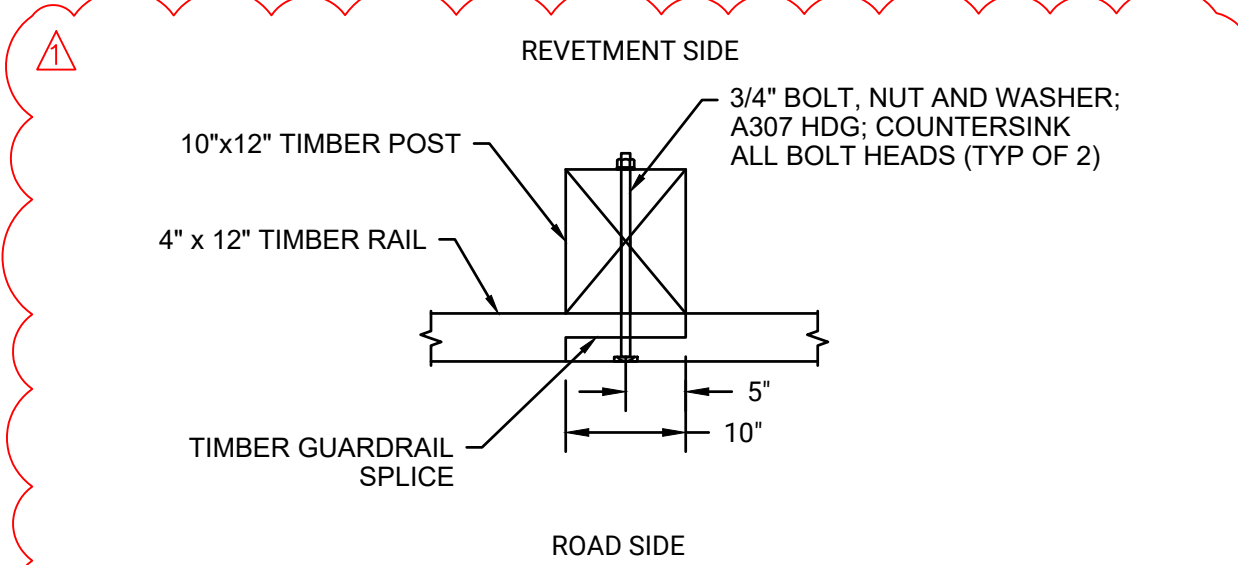
D4  
S-501 TYPICAL TIMBER GUARDRAIL ELEVATION  
SCALE: 3/4" = 1'-0"



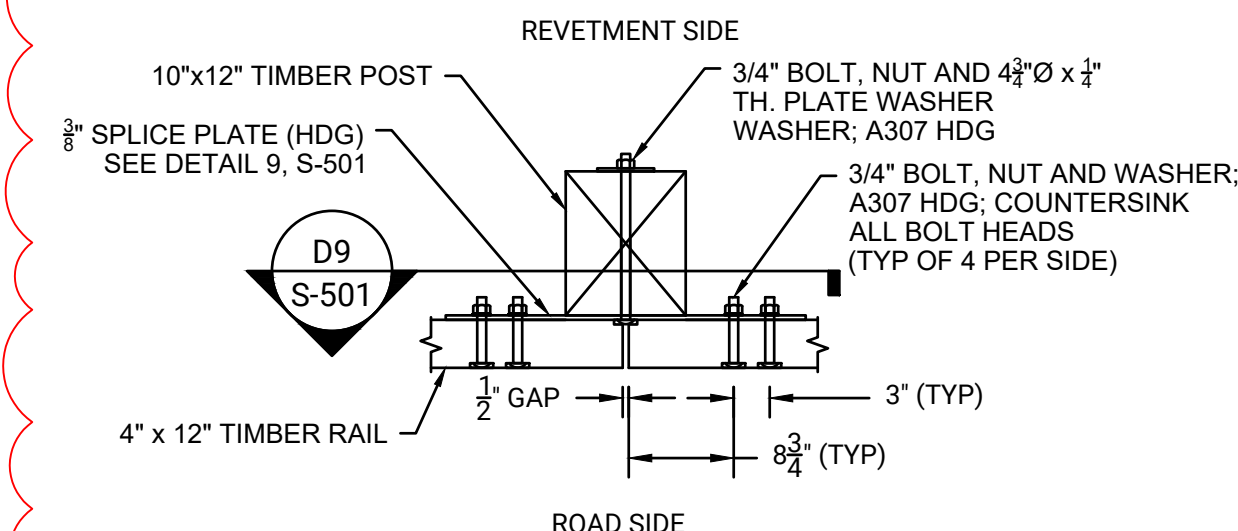
D5  
S-501 TYPICAL GUARDRAIL BASE PLATE DETAIL  
SCALE: 3/4" = 1'-0"



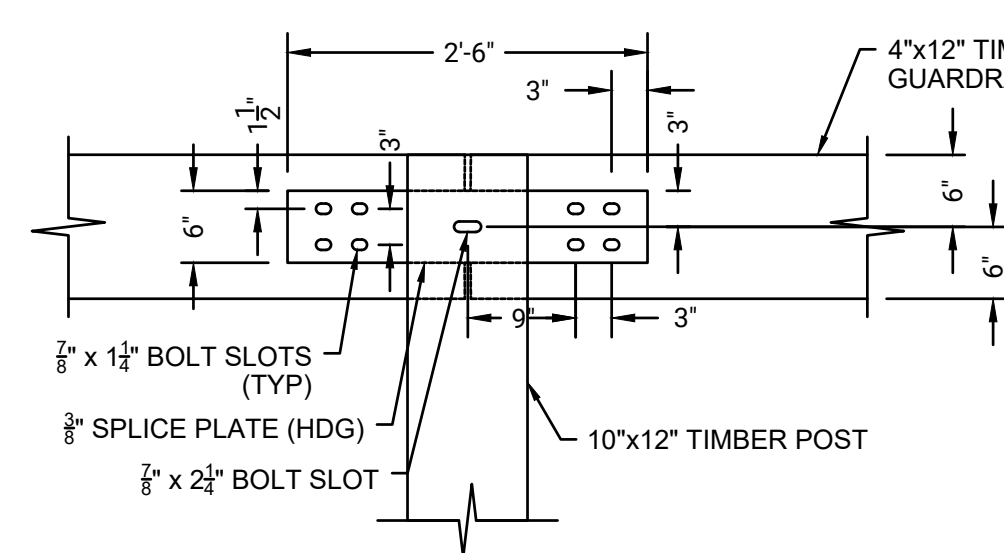
D6  
S-501 TYPICAL TIMBER GUARDRAIL SECTION  
SCALE: 3/4" = 1'-0"



D7  
S-501 TYPICAL GUARDRAIL SPLICE DETAIL  
SCALE: 3/4" = 1'-0"

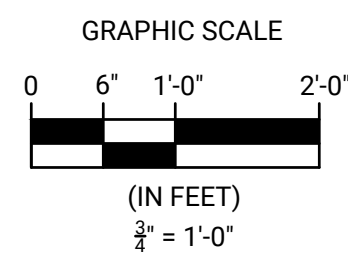


D8  
S-501 ALTERNATE GUARDRAIL SPLICE DETAIL  
SCALE: 3/4" = 1'-0"



D9  
S-501 STEEL SPLICE PLATE  
SCALE: 3/4" = 1'-0"

GUARDRAIL NOTE:  
1. TIMBER POST AND GUARDRAIL SHALL BE SOUTHERN YELLOW PINE, GRADE NO. 1 OR BETTER AND TREATED WITH 0.23 PCF MCA.



- NOTES:
1. REFER TO G-002 FOR PROJECT NOTES.
  2. REFER TO C-101 FOR EXISTING CONDITIONS.
  3. EXIST UNDERGROUND UTILITIES WITHIN ROADWAY FOOTPRINT INCLUDING WATER, GAS, ELECTRIC, COMMUNICATIONS- LOCATIONS UNKNOWN, CONTRACTOR TO VERIFY LOCATION PRIOR TO BEGINNING WORK.
  4. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  5. THE CONTRACTOR SHALL SAFEGUARD ALL UTILITIES WITHIN THE LIMITS OF THE WORK AND MAINTAIN UTILITIES THROUGHOUT THE DURATION OF THE PROJECT.

CHAPOQUOIT ROAD  
STABILIZATION PROJECT

CHAPOQUOIT ROAD  
FALMOUTH, MA 02540

REVISIONS		DESCRIPTION	DATE	BY	CHK	NO.
ADDITION 1			1/16/26			

DATE OF PREPARATION		
BY	MEC	DATE
SURVEYED	MEC	01/30/2023
DRAWN	MDW/CEM	02/04/2025
DESIGNED	AM/CFF	02/04/2025
CHECKED	JMP/SCS	02/07/2025

SHEET TITLE:

TYPICAL  
DETAILS

ISSUANCE:  
**ISSUED FOR BID**

PROJECT NO: 0023S002.00

SHEET NUMBER

**S-501**