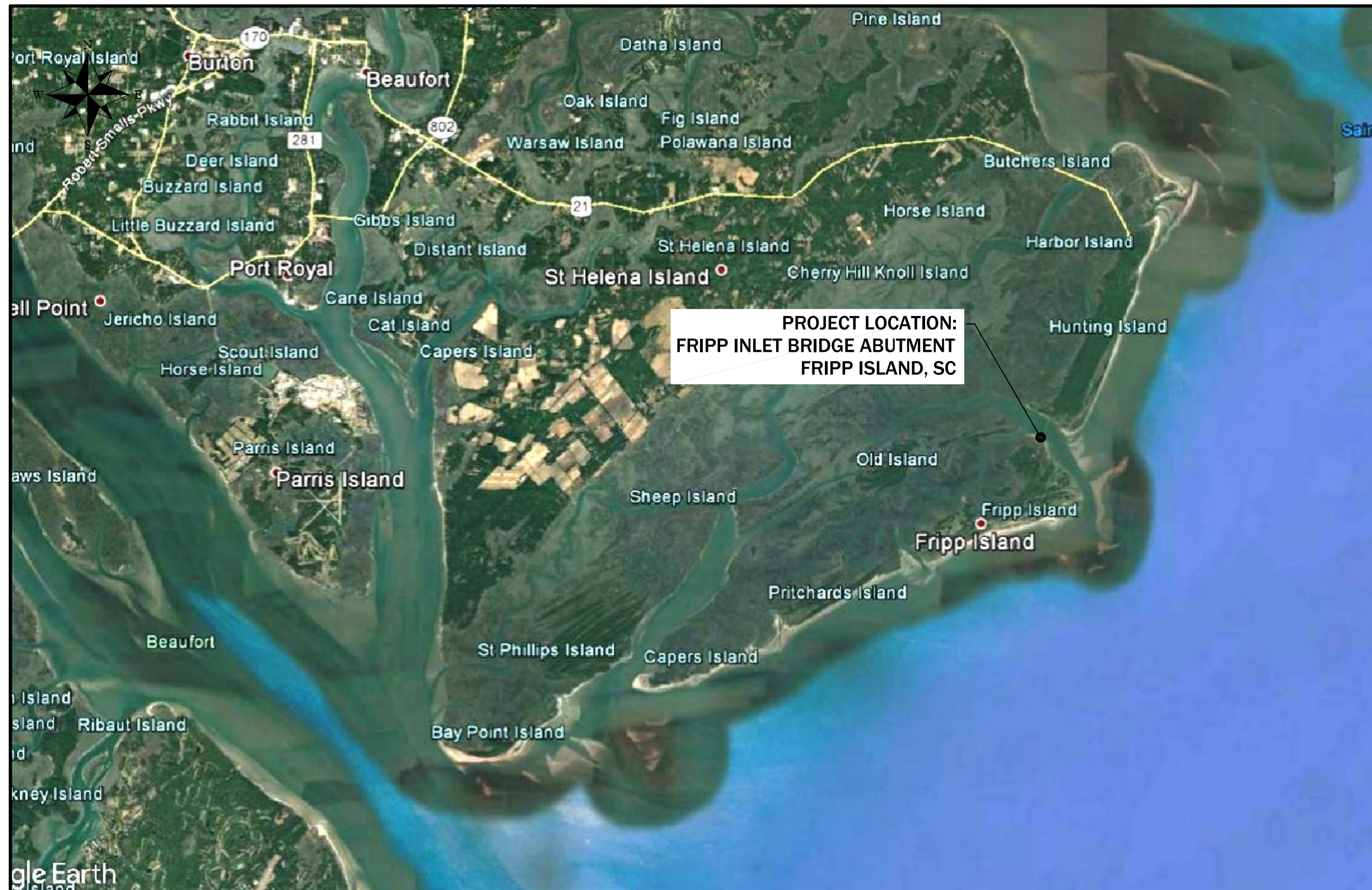




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# FRIPP INLET BRIDGE ABUTMENT REPAIRS

**McSweeney Engineers**  
300 W. COLEMAN BLVD  
STE 203B  
MT. PLEASANT, SC  
(843) 974-5621  
www.mcsweeneyengineers.com



**PROJECT VICINITY**  
SCALE: N.T.S.

**PROJECT LOCATION**  
SCALE: N.T.S.

### PROJECT DESCRIPTION:

THE INTENT OF THE PROJECT IS TO STRENGTHEN AND INCREASE THE SIZE OF EXISTING REVETMENT SURROUNDING THE FRIPP ISLAND BRIDGE ABUTMENT ON FRIPP ISLAND.

THE PROJECT CONSISTS OF INSTALLING APPROXIMATELY 2,700 TONS QUARRIED ARMOR STONE, 100 SQUARE YARDS OF FILTER CLOTH, AND 1,025 TONS OF CLASS "A" RIPRAP TO THE EXISTING STRUCTURE.

APPROXIMATELY HALF OF THE THE PROJECT CONSISTS OF ADDING A SINGLE LAYER OF ARMOR STONE DIRECTLY TO THE SURFACE OF THE EXISTING REVETMENT. IN THESE LOCATIONS, DIPS, VOIDS, AND SURFACE IRREGULARITIES IN THE EXISTING REVETMENT PROFILE SHALL BE FILLED WITH CLASS "A" RIPRAP PRIOR TO APPLICATION OF ARMOR STONE.

THE REMAINDER OF THE PROJECT CONSISTS OF AN EXPANSION OF THE EXISTING REVETMENT TOE. THE EXPANDED REVETMENT TOE WILL EXTEND NO FURTHER THAN 15 FT BEYOND THE LIMITS OF EXISTING VISIBLE RIPRAP ON THE OCEAN SIDE OF THE BRIDGE, AND NO MORE THAN 10 FT BEYOND THE EXISTING VISIBLE REVETMENT ON THE MARSH SIDE OF THE BRIDGE. THE EXPANDED TOE SHALL CONSIST OF A DOUBLE LAYER OF ARMOR STONE, FOUNDED ON A BED OF CLASS "A" RIPRAP AND FILTER CLOTH.

CONTRACTOR SHALL INSTALL AND MAINTAIN VERTICAL CONTROL POINTS THROUGHOUT THE PROJECT SITE IN ORDER TO VERIFY COMPLIANCE WITH THE LINES AND GRADES AS SHOWN IN THE CONTRACT DOCUMENTS.

MODIFICATIONS AND/OR REPAIRS TO (2) CONCRETE DRAINAGE FLUMES AND ONE TIMBER RETAINING WALL IS REQUIRED.

CONTRACTOR SHALL BE AWARE THAT THE FRIPP INLET BRIDGE IS A LOAD LIMITED/POSTED STRUCTURE AND UTILITIES ARE LOCATED ON BOTH SIDES OF THE STRUCTURE.

CONTRACTOR SHALL SUBMIT A GUARANTEED MAXIMUM PRICE TO COMPLETE THE WORK. THIS GUARANTEED MAXIMUM PRICE SHALL BE THE SUMMATION OF THE UNIT PRICING PROVIDED IN THE CONTRACT DOCUMENTS. ANY CHANGES TO THE CONTRACT AMOUNT, ADDITIONS OR DEDUCTIONS, SHALL BE BASED ON THE PROVIDED UNIT PRICING BY THE SELECTED CONTRACTOR.

CONTRACTOR SHALL SUBMIT ALL LOAD TICKETS FOR FILL AND QUARRY STONE WITH THEIR APPLICATIONS FOR PAYMENT.

### ARMOR UNITS (SIZE AND WEIGHT)

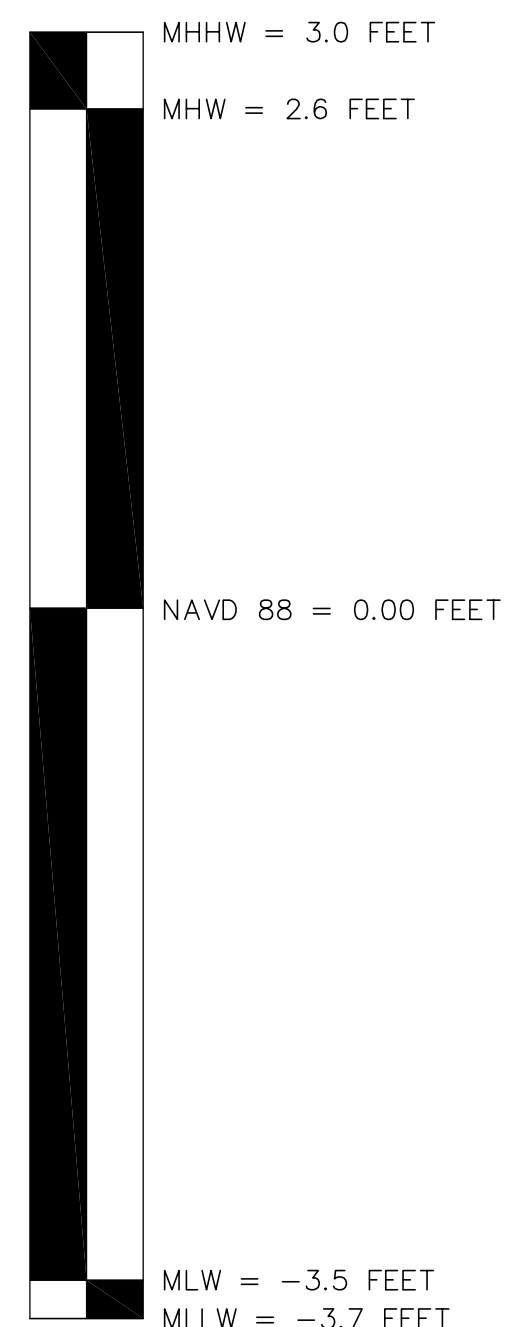
- MEDIAN STONE WEIGHT (W) = 1345 LBS
- STONE SIZE CAN VARY BETWEEN:
  - 0.75\*W = 1009 LBS
  - 1.25\*W = 1681 LBS
- EQUIVALENT SPHERICAL STONE SIZE BASED ON WEIGHT:
  - 1009 LBS = 25" (DIAMETER)
  - 1345 LBS = 28" (DIAMETER)
  - 1681 LBS = 30" (DIAMETER)
- APPROXIMATE QUANTITY = 3,725 TONS
  - SINGLE LAYER OF ARMOR STONE = 1,450 TONS
  - DOUBLE LAYER OF ARMOR STONE = 1,250 TONS
  - CLASS "A" RIPRAP (BEDDING/CHOKE) = 1,025 TONS

### UNIT PRICE WORK

CONTRACTOR SHALL PROVIDE UNIT PRICING AS NOTED IN THE CONTRACT DOCUMENTS. OWNER RESERVES THE RIGHT TO INCLUDE OR EXCLUDE ANY PORTION OF THE WORK.

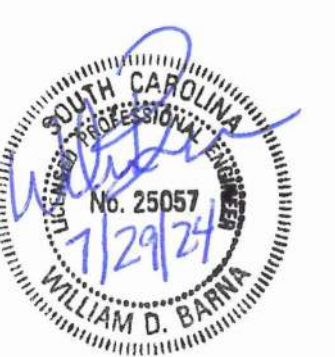
### TABLE OF CONTENTS

T1	TITLE AND LOCATION
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TIDAL DATUM RELATIONSHIPS  
NOAA STATION ID: 8668498  
FRIPP INLET, SC

**FRIPP INLET BRIDGE ABUTMENT**  
FRIPP ISLAND PUBLIC SERVICE DISTRICT  
FRIPP ISLAND, SOUTH CAROLINA



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CHECKED BY: DBM  
DATE: 7/29/24  
REV. \_\_\_ DATE: \_\_\_\_\_

**T1**  
TITLE SHEET

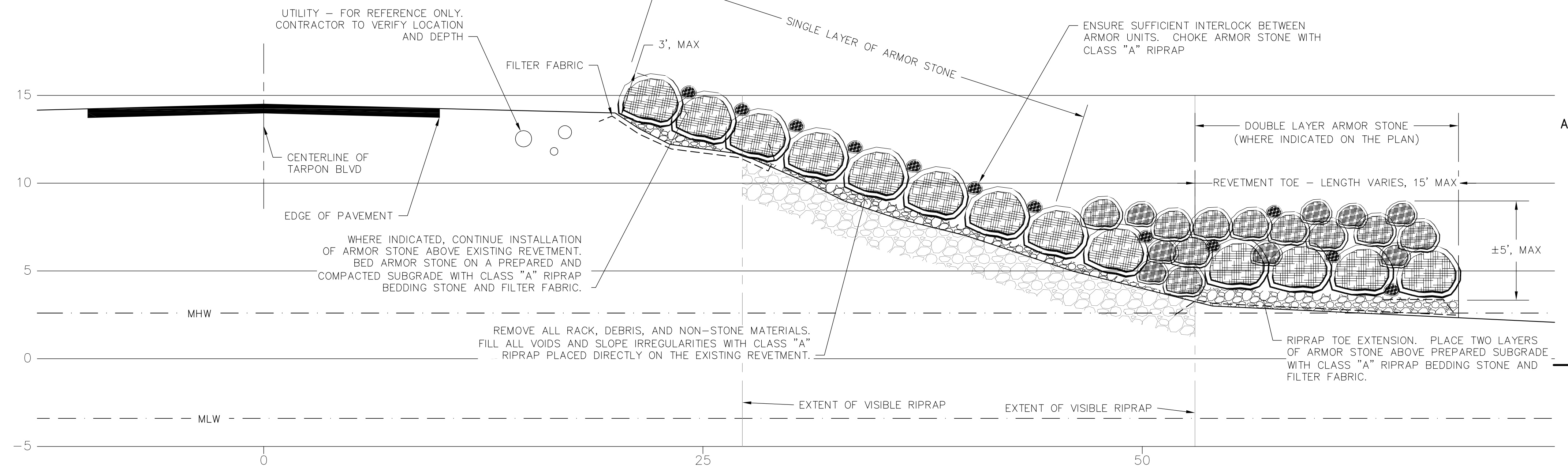
**GENERAL NOTES:**

1. CONTRACTOR IS RESPONSIBLE FOR DAMAGE DONE TO PROPERTY DURING CONSTRUCTION. DAMAGE SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
2. PAYMENT FOR THE ROCK REVETMENT SHALL BE BASED ON UNIT PRICING. THE CONTRACTOR'S PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS.
3. CONTRACTOR SHALL FOLLOW ALL SPECIAL CONDITIONS IN THE OCRM PERMIT.
4. CONTRACTOR SHALL FINE GRADE AND SMOOTH THE DISTURBED AREAS OUTSIDE OF THE REVETMENT PRIOR TO FINISHING THE WORK.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SAFETY FENCING AND SIGNAGE.
6. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO BIDDING.
7. CONTRACTOR SHALL ESTABLISH VERTICAL CONTROL FOR THE PROJECT.
8. PROTECT TREES AND EXPOSED TREE ROOTS DURING CONSTRUCTION AND PLACEMENT OF SHORELINE PROTECTION.
9. THE CONTRACTOR WILL USE ACCEPTED BEST MANAGEMENT PRACTICES FOR SEDIMENT AND EROSION CONTROL DURING ALL PHASES OF THE WORK.
10. GRASS AREAS DISTURBED DURING CONSTRUCTION ARE TO BE REGRADED AND HYDROSEEDDED AT THE COMPLETION OF THE PROJECT AND INCLUDED IN THE CONTRACTOR'S BID.

**REVETMENT NOTES:**

1. THROUGHOUT THIS DRAWING SET AND THE CONTRACT DOCUMENTS THE TERMS "STONE" AND "ARMOR UNITS" ARE USED INTERCHANGEABLY AND PERTAIN TO THE QUARRIED MATERIAL TO BE ADDED TO THE EXISTING REVETMENT IN ORDER TO ACHIEVE THE LINES AND GRADES SHOWN HEREIN.
2. ARMOR UNITS SHALL BE SELECTIVELY PLACED IN AN ORDERLY MANNER TO OBTAIN GOOD INTERLOCKING ACTION BETWEEN INDIVIDUAL UNITS.
3. ARMOR UNITS SHALL NOT BE DROPPED FROM A HEIGHT GREATER THAN 12 INCHES NOR PUSHED DOWN THE SLOPE.
4. STONE PLACEMENT SHALL BEGIN AT THE BOTTOM OF THE SLOPE AND PROCEED UPSLOPE TO PRODUCE A LAYER WITH MAXIMUM INTERLOCKING OF STONES AND MINIMUM VOIDS.
5. LARGE STONES SHALL BE PLACED SO THAT THE LONG AXIS OF THE STONE IS PERPENDICULAR TO THE REVETMENT SLOPE.
6. ARMOR STONES SHALL BE "SEATED" ON THE EXISTING STONE TO AVOID SLIPPING, ROCKING, AND DISPLACEMENT DURING CONSTRUCTION.
7. CONTRACTOR SHALL "RE-WORK" EXISTING STONES IN REPAIRED AREAS AS NECESSARY IN ORDER TO ACHIEVE MAXIMUM INTERLOCK WITH NEW ARMOR UNITS.
8. CONTRACTOR SHALL SELECT AND USE A MACHINE CAPABLE OF POSITIONING THE STONES TO THEIR FINAL POSITION BEFORE RELEASE, EVEN AT THE TOE.
9. THE SURFACE OF THE COMPLETED REVETMENT SHALL BE UNIFORM IN APPEARANCE AND BE FREE FROM HUMPS OR DEPRESSIONS.
10. ALL DEBRIS, RACK, AND NON-STONE MATERIALS SHALL BE REMOVED FROM THE REVETMENT PRIOR TO APPLICATION OF NEW STONE.
11. ALL STONE NOT PLACED DIRECTLY ON THE EXISTING REVETMENT STONE SHALL BE PLACED ON A PROPERLY PREPARED SUBGRADE WITH FILTER FABRIC AND A MINIMUM OF 1 FT OF CLASS "A" RIPRAP BEDDING STONE.
12. IF REQUIRED, BACKFILL SHALL CONSIST OF GW, GP, SW, OR SP PER ASTM D-2487 AND SHALL BE FREE DRAINING, CLEAN, AND GRANULAR FILL AND SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 12" IN DEPTH.
13. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN AS-BUILT SURVEY OF THE PROJECT AFTER CONSTRUCTION. THE AS-BUILT SHALL BE PERFORMED BY A SOUTH CAROLINA REGISTERED LAND SURVEYOR AND PROVIDED IN AUTOCAD AND PDF FORMATS.

CONTRACTOR IS RESPONSIBLE FOR ANY TRAFFIC CONTROL REQUIRED FOR THIS PROJECT. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).



**GENERALIZED REVETMENT CROSS SECTION**  
SCALE = 1:8



**PHOTOGRAPH 1**



**PHOTOGRAPH 2**



**PHOTOGRAPH 3**



**PHOTOGRAPH 4**



**PHOTOGRAPH 5**



**PHOTOGRAPH 6**

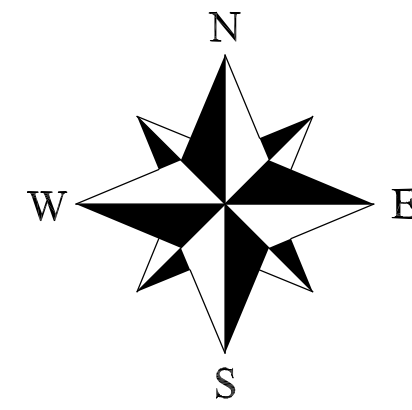
\*\*\*NOTE\*\*\*  
PHOTOGRAPHS WERE TAKEN IN FEBRUARY 2024. IT IS LIKELY THAT CONDITIONS HAVE CHANGED SINCE THAT TIME.

**FRIPP INLET BRIDGE ABUTMENT**  
FRIPP ISLAND PUBLIC SERVICE DISTRICT  
FRIPP ISLAND, SOUTH CAROLINA



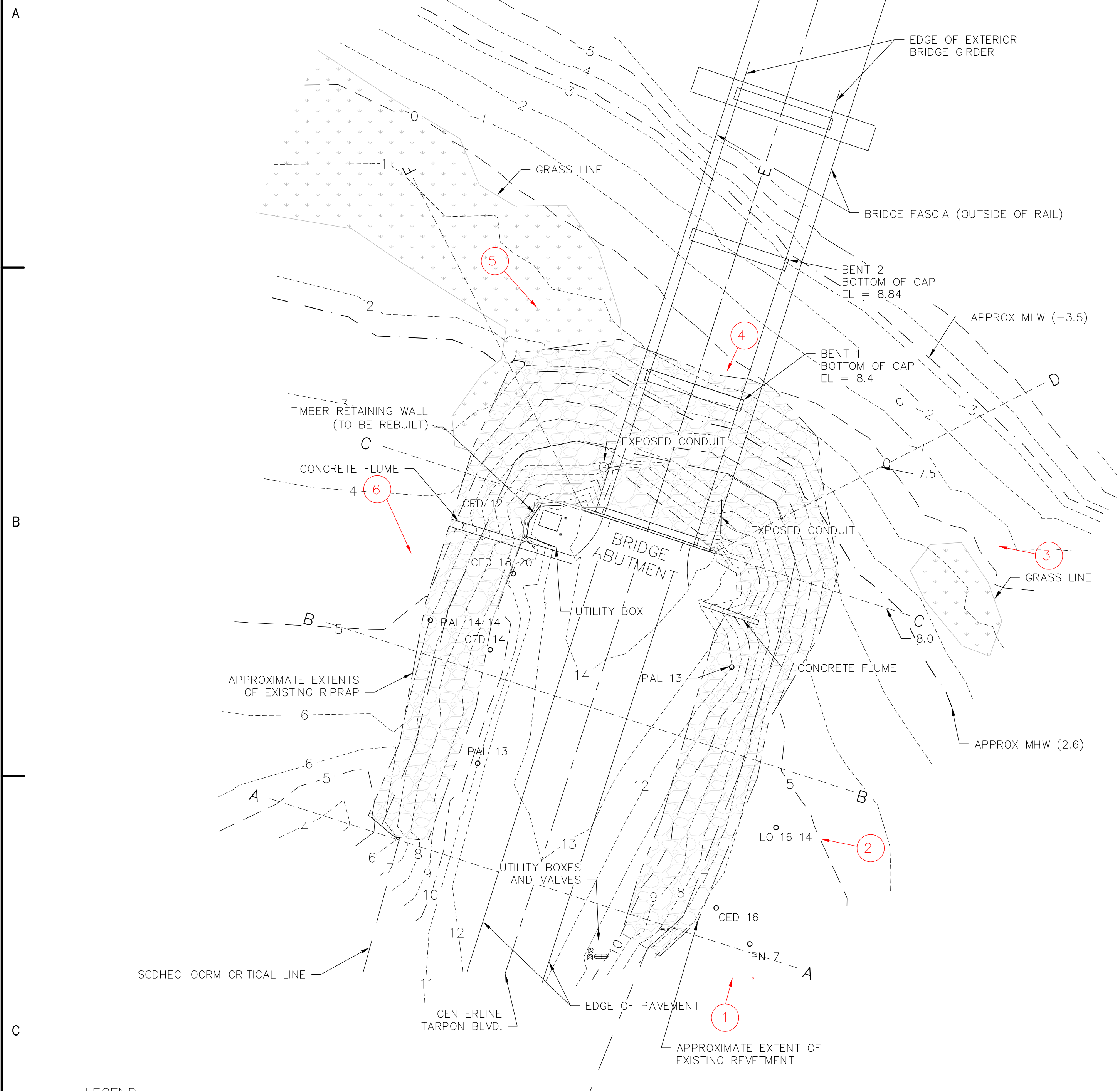
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**G1**



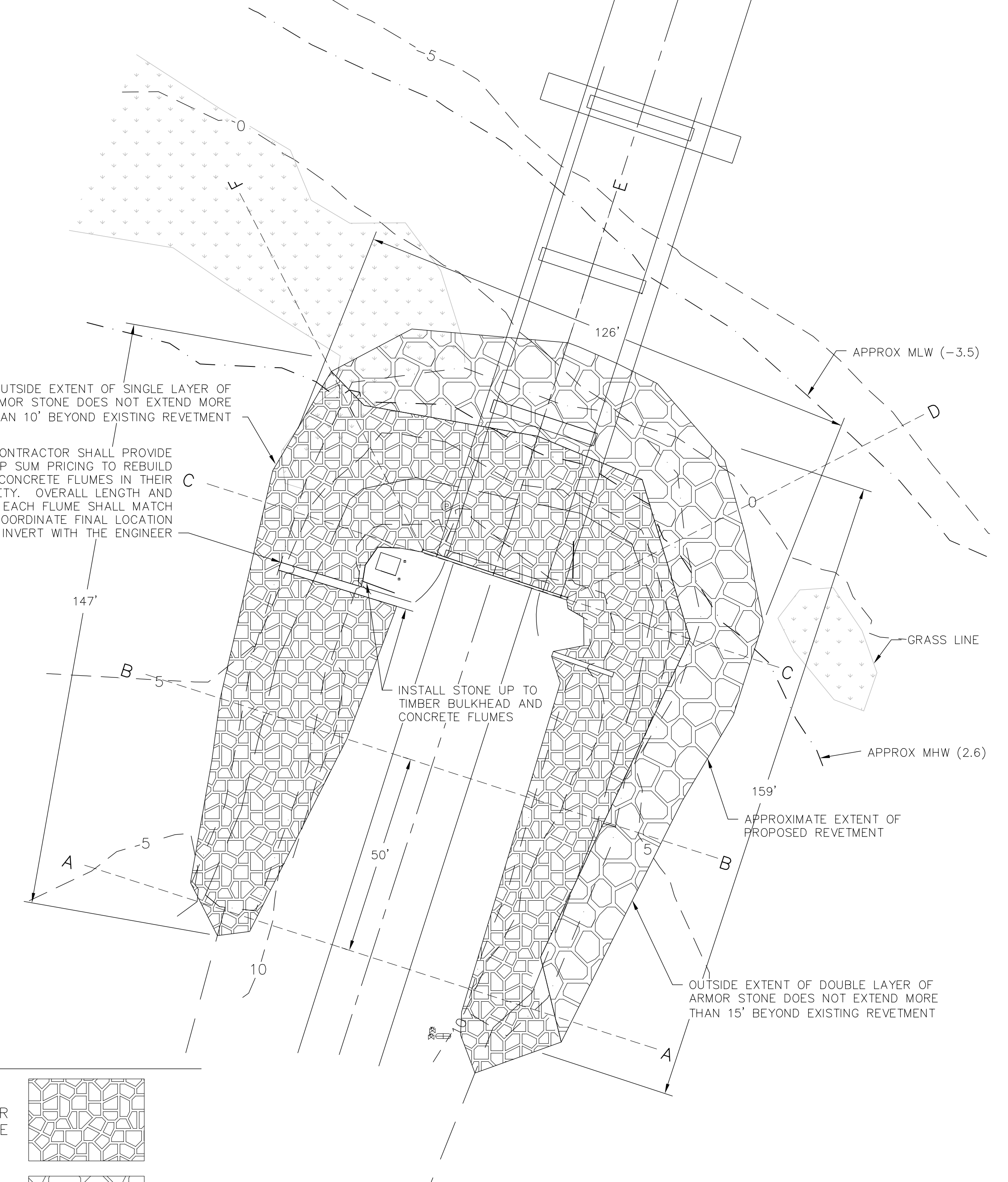
**SURVEY NOTES:**

1. ALL ELEVATIONS LISTED ON THESE PLANS ARE REFERENCED TO NAVD 88 UNLESS OTHERWISE NOTED.
2. BASELINE FOR CROSS SECTIONS IS THE APPROXIMATE CENTERLINE OF PORPOISE DRIVE AND IS FOR REFERENCE ONLY.
3. THE CROSS SECTIONS SHOWN ON THESE PLANS REPRESENT THE RESULTS OF A TOPOGRAPHIC SURVEY CONDUCTED BY ANDREWS ENGINEERING IN AUGUST, 2023. DUE TO THE DYNAMIC ENVIRONMENT AT THE SITE IT IS PROBABLE THAT CONDITIONS HAVE CHANGED SINCE THAT TIME.



**EXISTING SITE PLAN**  
 SCALE: 1:20

LEGEND  
 PHOTOGRAPH NUMBER AND VIEWING DIRECTION



**PROPOSED SITE PLAN**  
 SCALE: 1:20

LEGEND

- SINGLE LAYER ARMOR STONE
- DOUBLE LAYER ARMOR STONE

**FRIPP INLET BRIDGE ABUTMENT**  
 FRIPP ISLAND PUBLIC SERVICE DISTRICT  
 FRIPP ISLAND, SOUTH CAROLINA

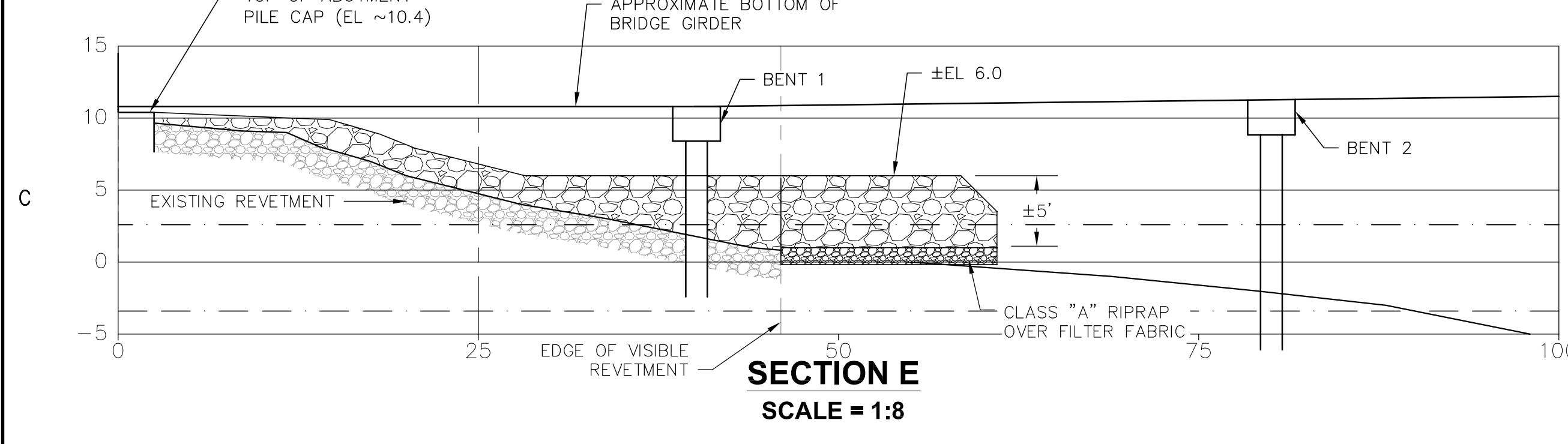
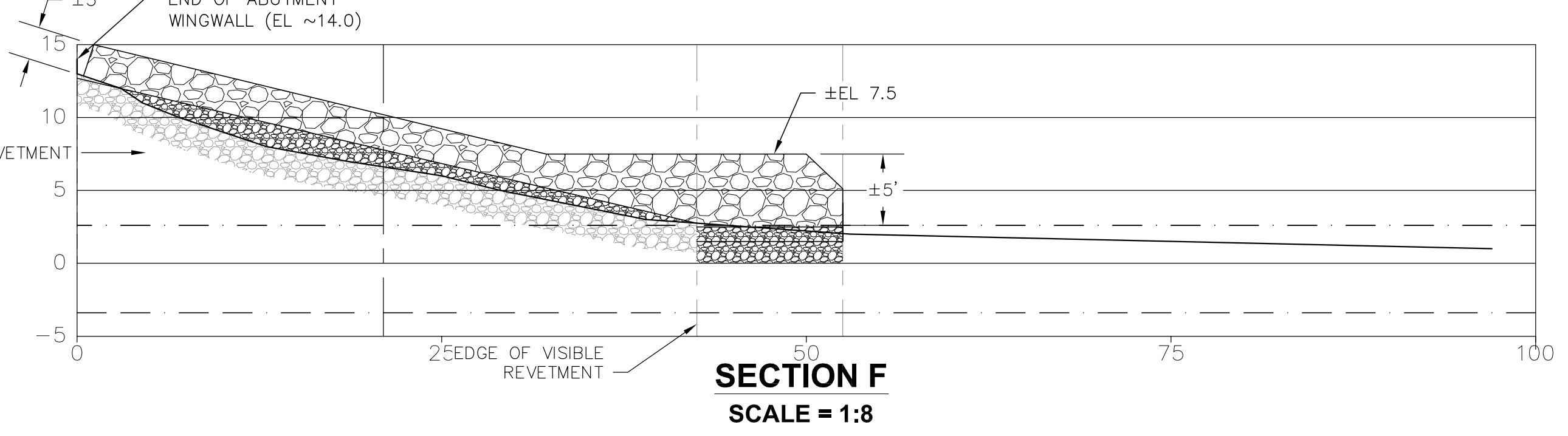
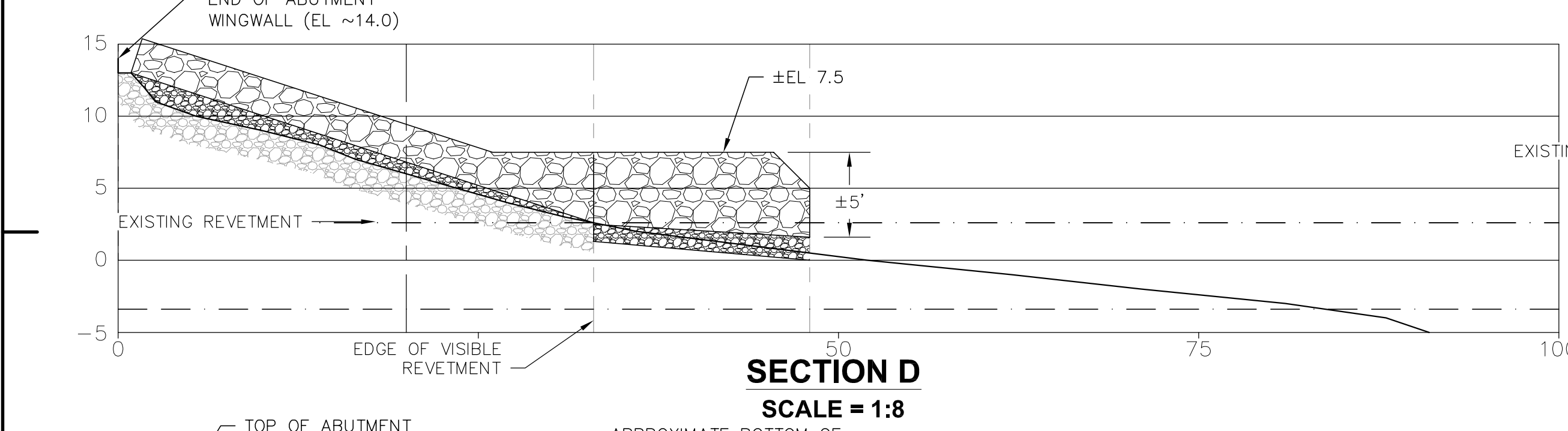
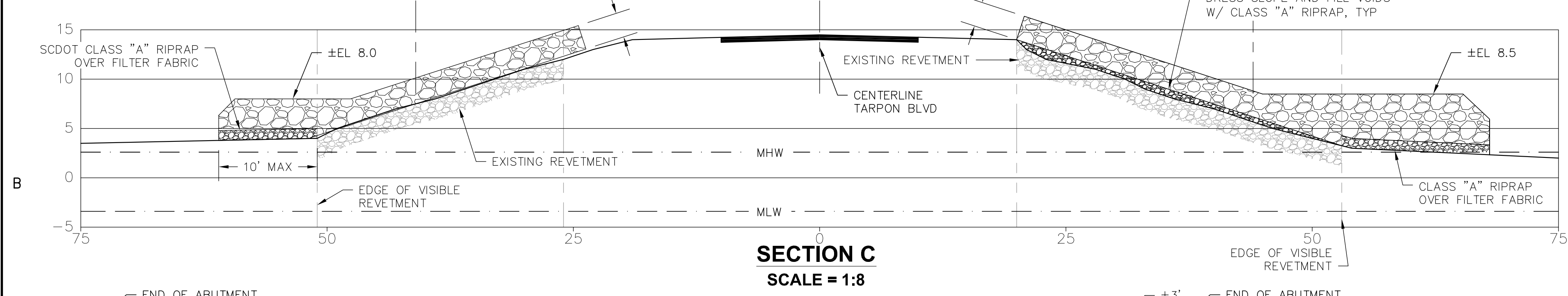
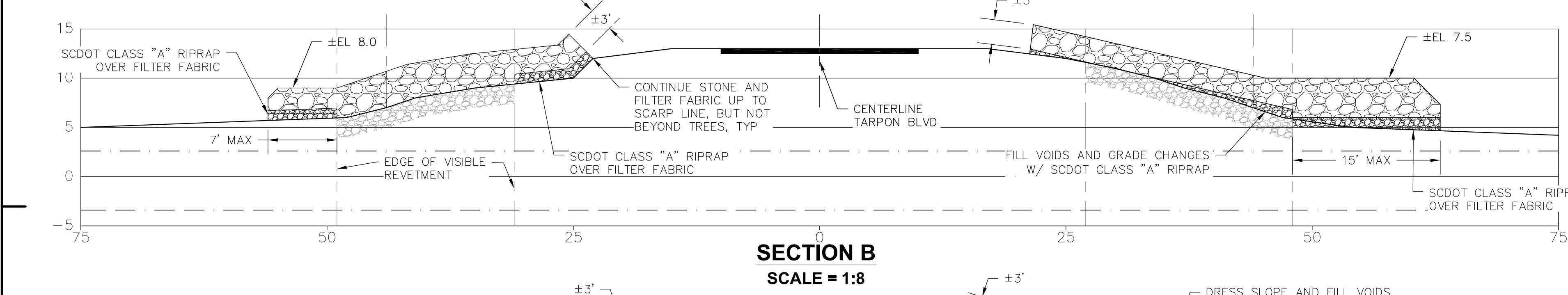
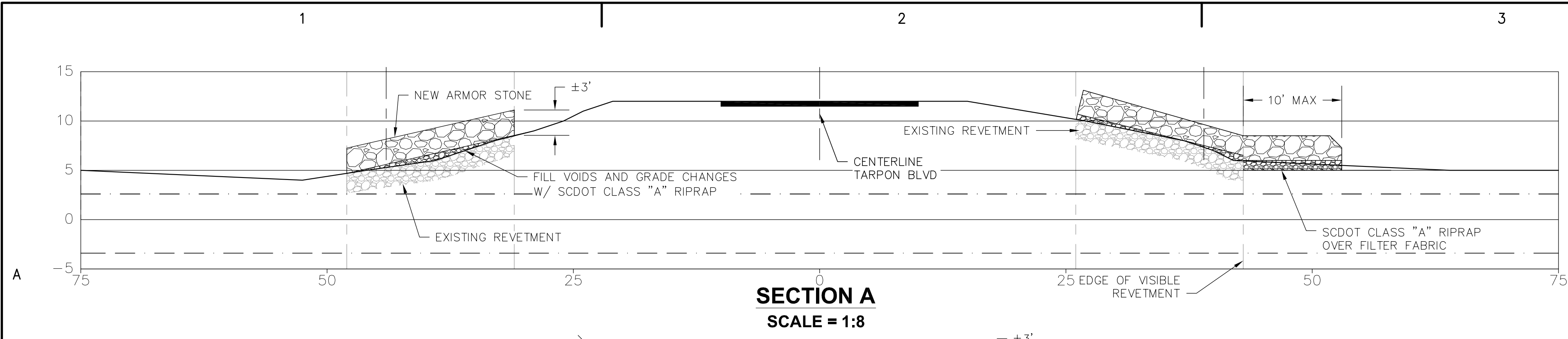


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**C1**  
 EXISTING AND PROPOSED PLANS

**SEDIMENT AND EROSION CONTROL:**

1. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW.  
 - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
2. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED EVERY SEVEN (7) DAYS. IF SITE INSPECTIONS IDENTIFY BMPs THAT ARE DAMAGED OR ARE NOT OPERATING EFFECTIVELY, MAINTENANCE MUST BE PERFORMED AS SOON AS PRACTICAL OR AS REASONABLY POSSIBLE AND BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE.  
 OR  
 ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER. IF SITE INSPECTIONS IDENTIFY BMPs THAT ARE DAMAGED OR ARE NOT OPERATING EFFECTIVELY, MAINTENANCE MUST BE PERFORMED AS SOON AS PRACTICAL OR AS REASONABLY POSSIBLE AND BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE.
3. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE INSTALLATION.
4. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
5. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
6. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
7. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
8. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
9. GRASSED AREAS DISTURBED DURING CONSTRUCTION ARE TO BE REGRADED AND RESEED AT THE COMPLETION OF THE PROJECT AND INCLUDED IN THE CONTRACTOR'S BID.

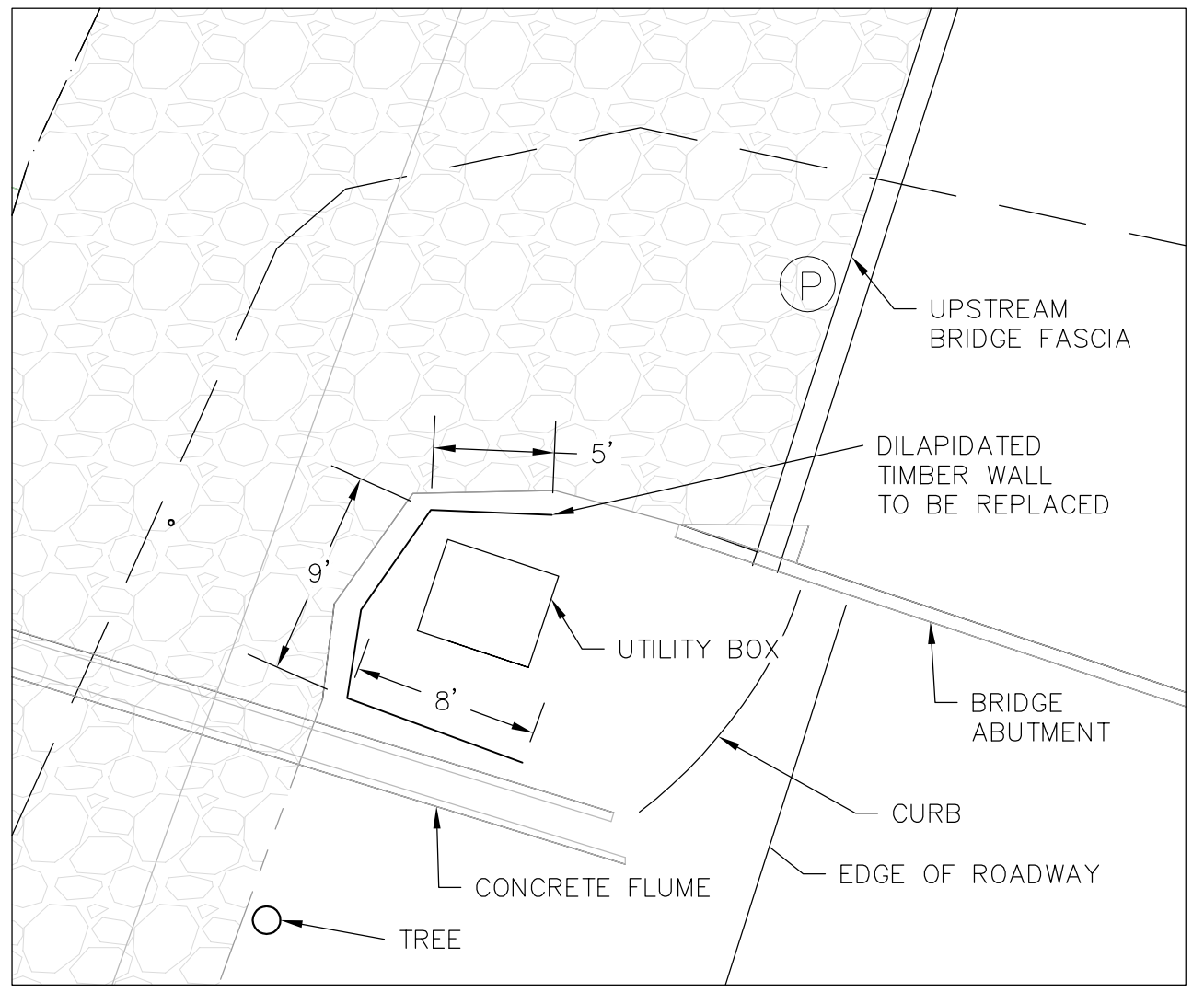


**FRIPP INLET BRIDGE ABUTMENT**  
 FRIPP ISLAND PUBLIC SERVICE DISTRICT  
 FRIPP ISLAND, SOUTH CAROLINA

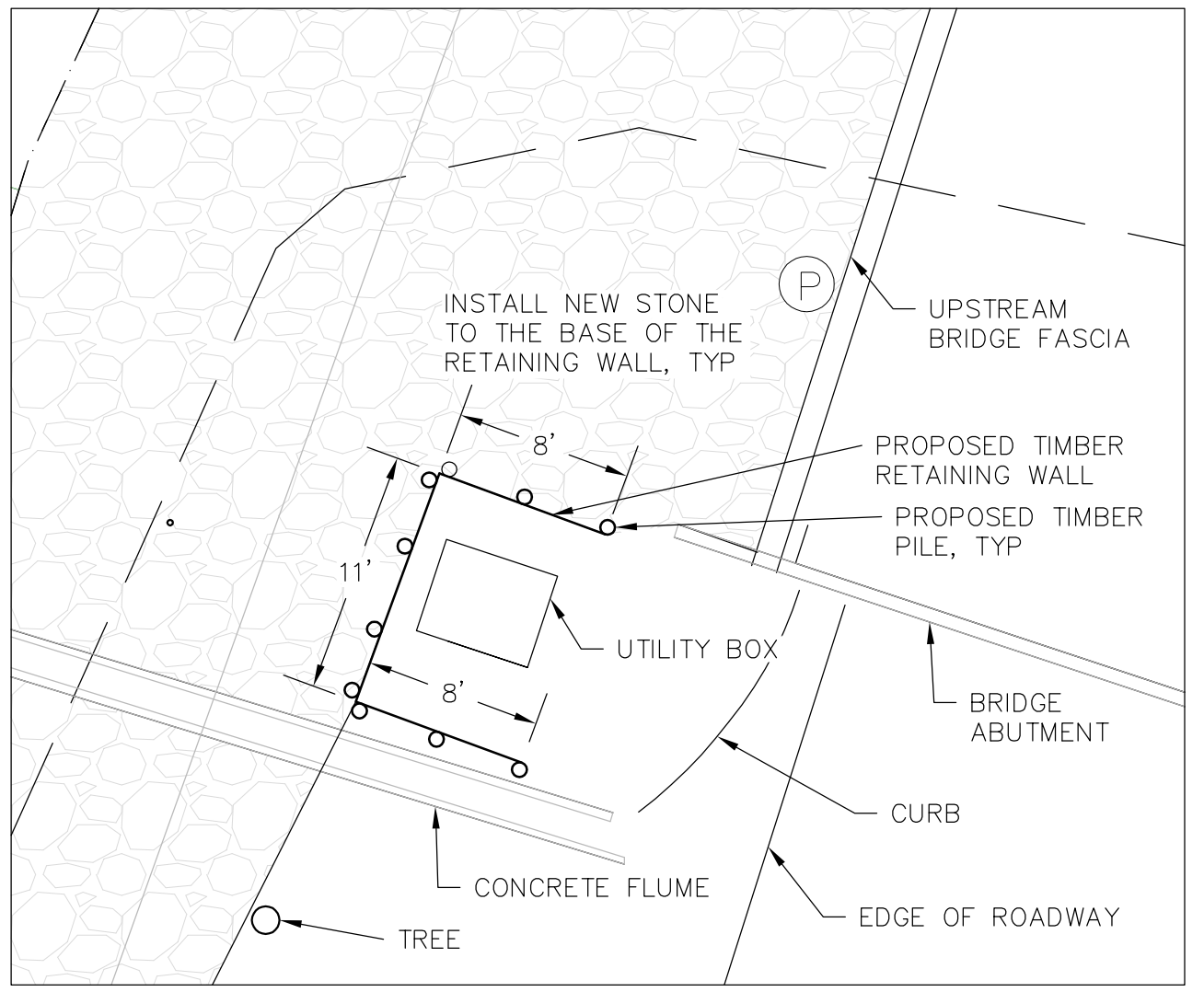


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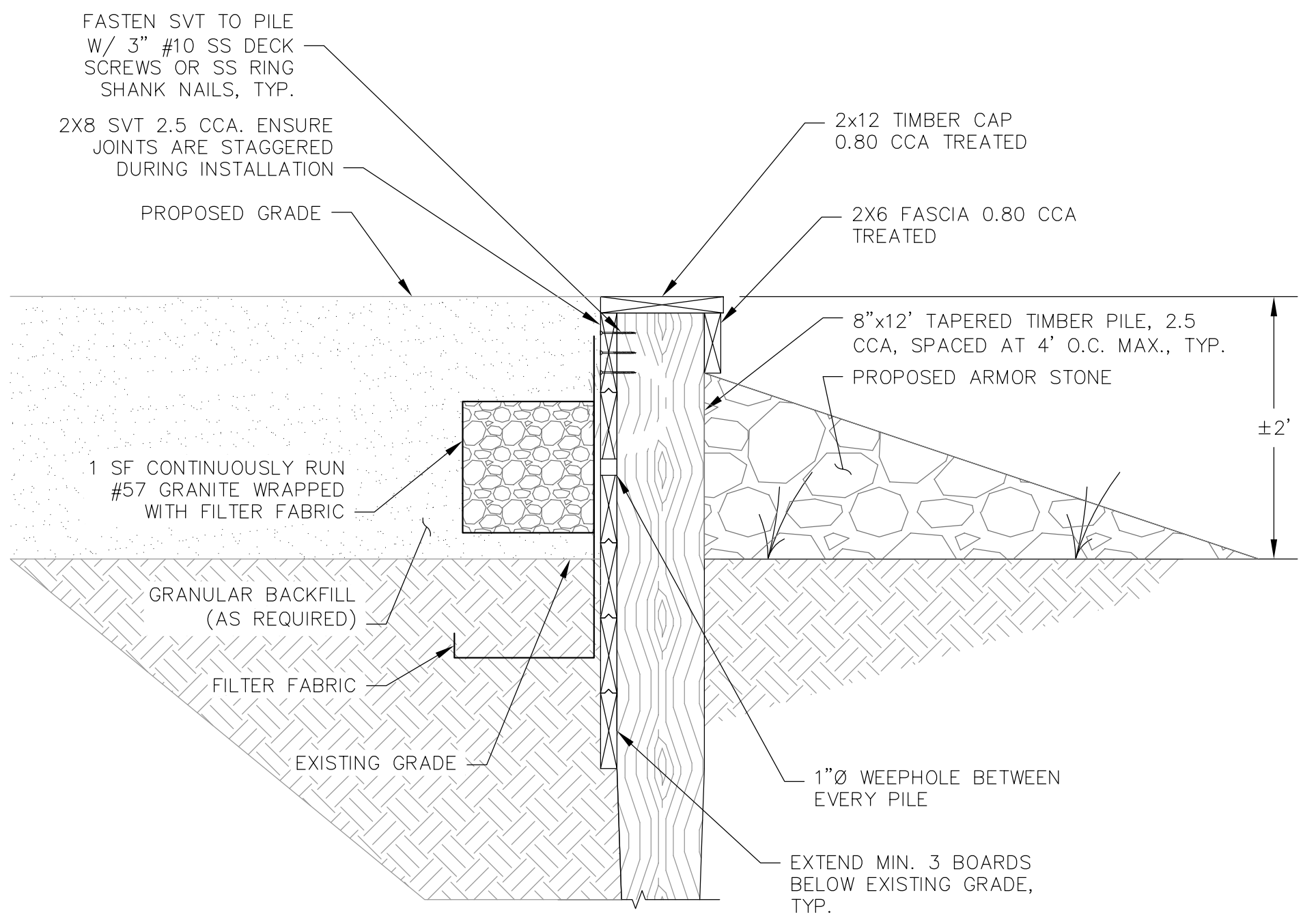




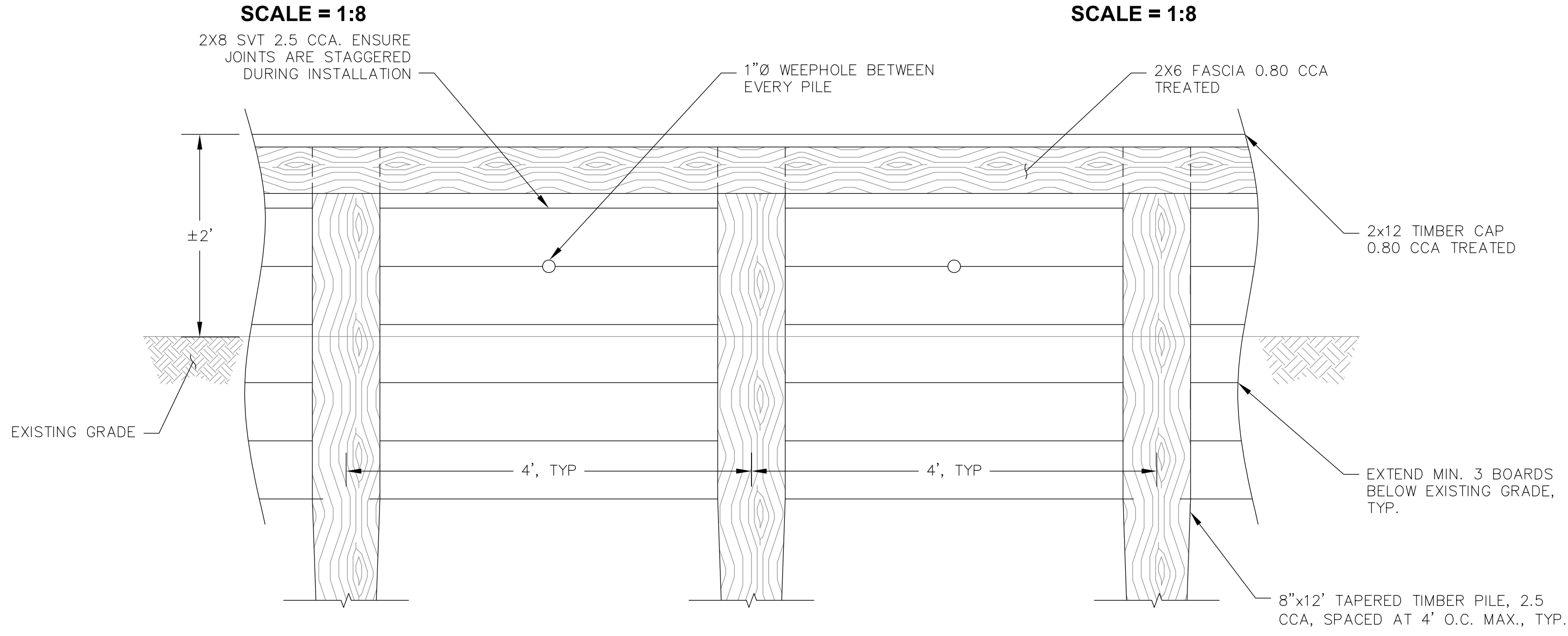
**EXISTING RETAINING WALL PLAN**  
SCALE = 1:8



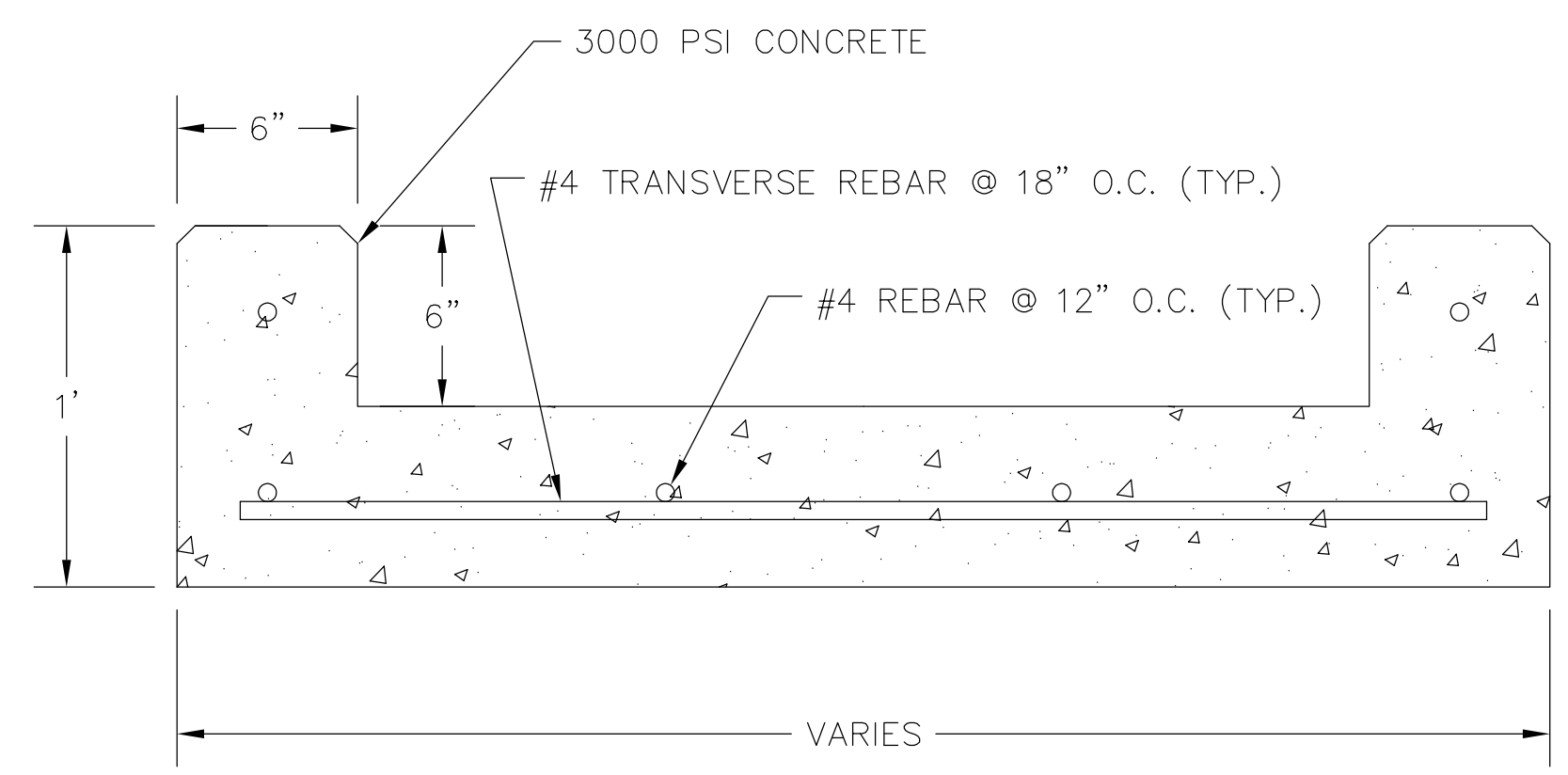
**PROPOSED RETAINING WALL PLAN**  
SCALE = 1:8



**PROPOSED RETAINING WALL SECTION**  
SCALE = 1:8



**PROPOSED RETAINING WALL ELEVATION**  
SCALE = 1:8



**TYPICAL CONCRETE FLUME REPAIR DETAIL**  
SCALE = NTS

**RETAINING WALL NOTES:**

1. TIMBER SHALL BE NO. 1 SOUTHERN YELLOW PINE, AND SHALL BE PRESSURE TREATED IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) AND SHALL BEAR A STAMP INDICATING QUALITY AND TREATMENT.
2. ALL TIMBER MATERIALS SHALL BE NEW UNLESS SPECIFICALLY PROVIDED OTHERWISE IN THE CONTRACT DOCUMENTS.
3. THE RE-USE OF TIMBER MATERIALS SHALL NOT BE PERMITTED.
4. CUT JOINTS ACCURATELY TO MAKE A NEAT, SNUG FIT. TOLERANCE SHALL BE 1/16".
5. REMOVE ANY STAINING FROM SOIL, OIL, OR GREASE.
6. TIMBERS WITH A MODERATE BOW ARE PERMITTED WHERE THEIR INTENDED USE WILL STRAIGHTEN THEM. DO NOT USE SEVERELY BOWED TIMBERS OR TIMBERS BOWED IN MORE THAN ONE DIRECTION.
7. ALL TIMBER PILES AND TIMBER LAGGING (SLOPPY-V) SHALL BE PRESSURE TREATED CCA 2.5 PCF PER AWPA SPECIFICATIONS.
8. ALL OTHER TIMBER MATERIALS SHALL BE PRESSURE TREATED CCA 0.80 PER AWPA SPECIFICATIONS, MINIMUM.
9. TIMBER CONSTRUCTION SHALL CONFORM TO NATIONAL DESIGN STANDARD FOR WOOD CONSTRUCTION, CURRENT EDITION.
10. BACKFILL SHALL CONSIST OF GW, GP, SW, OR SP PER ASTM D-2487 AND SHALL BE FREE DRAINING, CLEAN, AND GRANULAR FILL AND SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 12" IN DEPTH.
11. ALL GALVANIZED BOLTS, NUTS AND WASHERS SHALL BE HOT DIPPED GALVANIZED PER ASTM-153 WITH 20 OUNCES OF ZINC PER SQUARE FOOT.
12. ALL SCREWS SHALL BE 316 STAINLESS STEEL.
13. ALL NAILS SHALL BE STAINLESS STEEL RING SHANK.
14. SET SCREW HEAD FLUSH WITH MEMBER TO BE CONNECTED.

**STRUCTURAL CONCRETE NOTES:**

1. CONCRETE SHALL CONFORM TO ACI 318 AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI (28 DAY STRENGTH).
2. CONCRETE SLUMP SHALL BE FIVE INCHES MAXIMUM AND THREE INCHES MINIMUM.
3. PORTLAND CEMENT SHALL BE CONFORM TO ASTM C150. AGGREGATE SHALL CONFORM TO ASTM C33. MAXIMUM AGGREGATE SIZE SHALL BE 1".
4. ALL CONCRETE WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST ACI SPECIFICATIONS.
5. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
6. REINFORCING STEEL SHALL BE DESIGNATED, DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (A.C.S 315) AND THE C.R.S.I. "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS, LATEST EDITION.
7. PROVIDE SPACERS, CHAIRS, BOLSTERS, TIES AND OTHER ACCESSORIES CONFORMING TO THE REQUIREMENTS OF THE C.R.S.I.

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**S1**  
WALL AND FLUME DETAILS