

DELAWARE RIVER WATERFRONT CORPORATION



DRAWINGS  
FOR  
CONSTRUCTION  
OF THE  
DELAWARE RIVER TRAIL  
PENN TREATY PARK TO THE BATTERY  
SECTION

TOTAL LENGTH 292.69 FT. 0.055 MI.



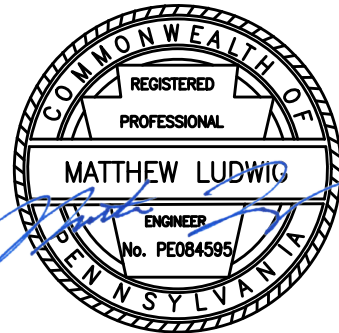
IN  
PHILADELPHIA COUNTY  
SHARED-USE TRAIL  
100% PLANS FOR CONSTRUCTION  
DECEMBER 23, 2025

**NIV5**  
1315 WALNUT STREET  
SUITE 900  
PHILADELPHIA, PA 19107  
(215) 751-1133  
www.NIVS.com

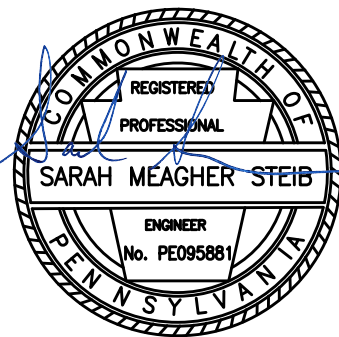
REVISIONS

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CIVIL ENGINEER



STRUCTURAL ENGINEER



LANDSCAPE ARCHITECT



**SITE ADDRESS:**  
1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE  
FINAL DESIGN (100%)

DATE  
DECEMBER 23, 2025

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| PROJECT #<br>0001052.00 | SCALE<br>NA |
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DRAWING TITLE

**TITLE SHEET**

DRAWING NUMBER

**TTL-1**

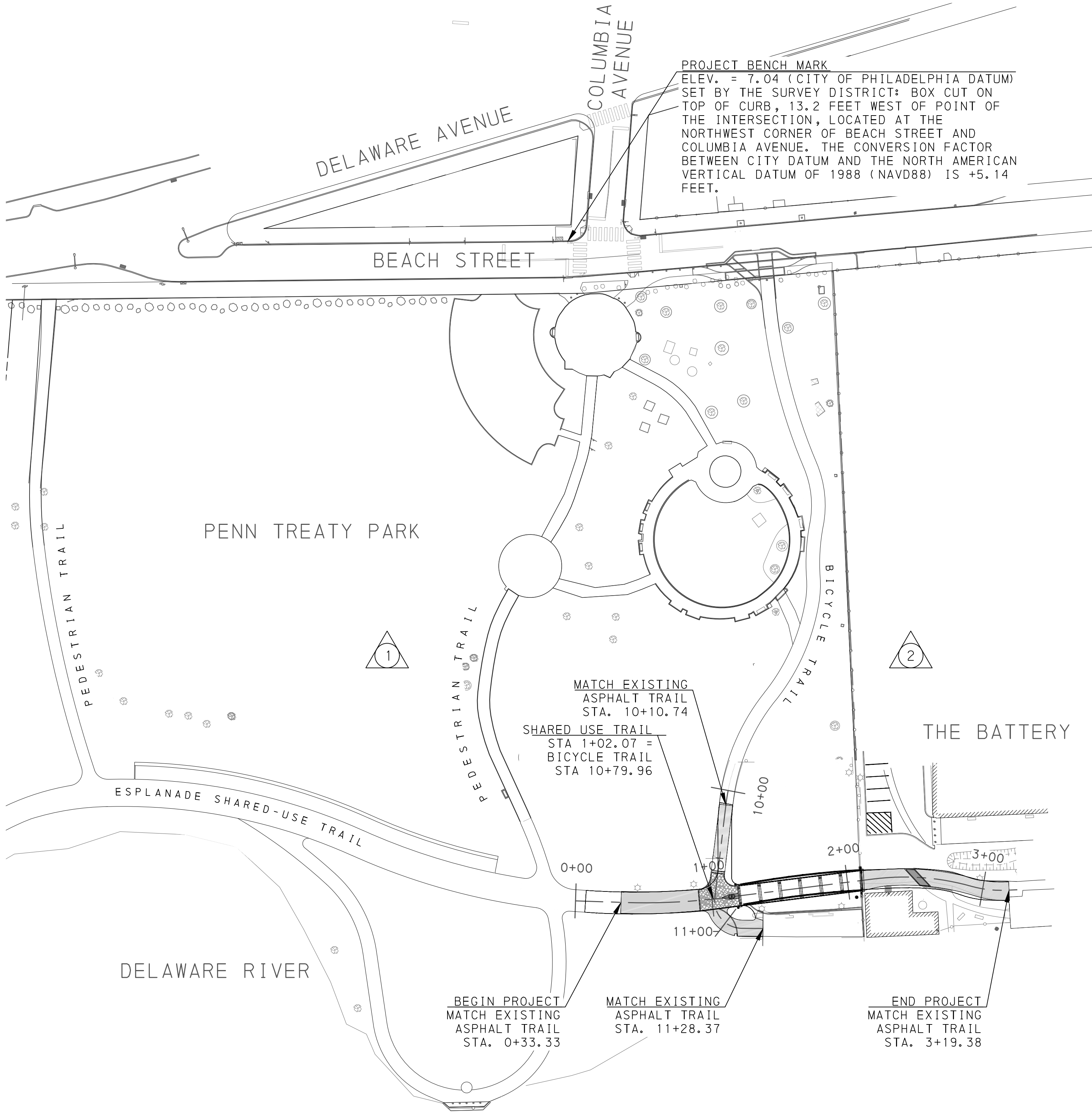
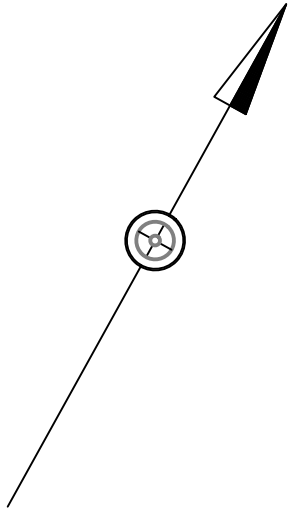




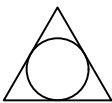
LOCATION MAP  
SCALE: 1"=500'

| TABULATION OF PROPERTY OWNERS |   |   |
|-------------------------------|---|---|
| NO.                           | OWNER NAME                                    | ADDRESS   |
| 1                             | CITY OF PHILADELPHIA DEPT. OF PUBLIC PROPERTY | 1201-11 N DELAWARE AVE / 1227-37 BEACH ST / 1301 BEACH ST |
| 2                             | L A BATTERY QOZ LLC                           | 1325 BEACH ST   |

| DRAWING LIST |   |                |
|--------------|---|----------------|
| SHEET NUMBER | DRAWING TITLE                             | DRAWING NUMBER |
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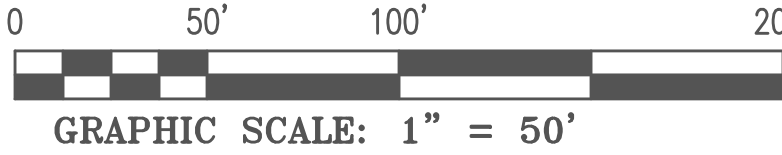


LEGEND



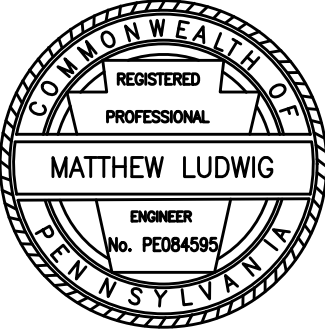
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PLAN



REVISIONS

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**SITE ADDRESS:**  
1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE  
FINAL DESIGN (100%)

DATE  
DECEMBER 23, 2025

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| DRAWN BY<br>MB | CHECKED BY<br>ML |
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| PROJECT #<br>0001052.00 | SCALE<br>1" = 50' |
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DRAWING TITLE

**INDEX SHEET**

DRAWING NUMBER

**I-1**



GENERAL NOTES:

1. PURSUANT TO THE REQUIREMENTS OF PENNSYLVANIA ACT 287 ( 1974) , AND AS AMENDED, THE CONTRACTOR SHALL CONTACT THE PENNSYLVANIA ONE CALL SYSTEM AT 1-800-242-1776, AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATION. PENNSYLVANIA ONE CALL SYSTEM: SERIAL NO. 20242150949, SERIAL NO. 20242150950, SERIAL NO. 20242150964, SERIAL NO. 20242150965, SERIAL NO. 20242150986, SERIAL NO. 20242151000, SERIAL NO. 20242151001, SERIAL NO. 20242151015, SERIAL NO. 20242151016, AND SERIAL NO. 20242151042.
2. UTILITIES SHOWN ARE TAKEN FROM PUBLIC RECORD. THE CONTRACTOR MUST VERIFY THE EXACT LOCATION AND DEPTH.
3. ELEVATIONS ARE BASED ON CITY OF PHILADELPHIA VERTICAL DATUM OBTAINED THROUGH CONVENTIONAL SURVEY METHODS, VERTICAL CONTROL POINTS ARE DEFINED ON THE CONSTRUCTION AND LIGHTING PLANS AND THE GRADING AND DRAINAGE PLANS.
4. IN COMPLIANCE WITH PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 187 OF 1996, UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE A COMPILATION OF ACTUAL FIELD LOCATIONS AND DATA FURNISHED FROM INFORMATION SUPPLIED BY OTHERS. NV5 ASSUMES NO RESPONSIBILITY FOR THE LOCATION OF UNDERGROUND UTILITIES DEPICTED ON THESE DRAWINGS. ANY REQUEST FOR ADDITIONAL UNDERGROUND UTILITIES INFORMATION SHOULD BE DIRECTED TO THE RESPECTIVE UTILITY COMPANY.
5. ALL EXISTING SURVEY INFORMATION TAKEN FROM SURVEY COMPLETED BY RODRIGUEZ CONSULTING, DATED SEPTEMBER 2024. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTH OF UTILITIES. SHOULD ANY DISCREPANCIES BE FOUND WITH EXISTING FEATURES DURING CONSTRUCTION, THE CONTRACTOR SHALL REMEDY THE DISCREPANCY WITH THE OWNER OR THE OWNER'S ENGINEER. PRIVATE UNDERGROUND UTILITIES WERE LOCATED BY ACER ASSOCIATES, LLC, WHICH ARE INCLUDED WITHIN THE SURVEY USED FOR DESIGN..
6. BENCHMARKS NOTED ON THE PLANS MAY FALL WITHIN AREA OF PROPOSED DEMOLITION. THE CONTRACTOR SHOULD COORDINATE WITH DRWC AND ITS ENGINEER TO DETERMINE A SUITABLE LOCATION FOR A RELOCATED BENCHMARK SHOULD A TEMPORARY BENCHMARK BE NEEDED ON AN ADJACENT PROPERTY.
7. LOCATIONS OF EXISTING UNDERGROUND UTILITIES/FACILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM RECORDS. NO EXCAVATIONS WERE PERFORMED IN THE PREPARATION OF THESE DRAWINGS; THEREFORE ALL UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE IN LOCATION, DEPTH, AND SIZE. THE POTENTIAL EXISTS FOR OTHER UNDERGROUND UTILITIES/FACILITES TO BE PRESENT WHICH ARE NOT SHOWN ON THE DRAWINGS. ONLY THE VISIBLE LOCATIONS OF UNDERGROUND UTILITIES/FACILITIES AT THE TIME OF FIELD SURVEY SHALL BE CONSIDERED TRUE AND ACCURATE. COMPLETENESS OR ACCURACY OF UNDERGROUND UTILITIES/FACILITIES ARE NOT GUARANTEED BY NV5.
8. ALL ITEMS REFERENCE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, PUB 408, UNLESS OTHERWISE INDICATED ON PLANS OR DETAILS.
9. IN THE CASE OF CONFLICT BETWEEN ANY PART OF THESE PLANS, THE SPECIFICATIONS, OR THE CONTRACT DOCUMENTS, OR IF DISCREPANCIES ARE DISCOVERED THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND/OR LA IMMEDIATELY BY PHONE AND IN WRITING AND SHALL REQUEST A WRITTEN DETERMINATION PRIOR TO PROCEEDING WITH THE WORK INVOLVED. IF THE WORK PROCEEDS WITH THE KNOWLEDGE OF A DISCREPANCY AND WITHOUT A WRITTEN DETERMINATION, SUCH WORK WILL NOT BE CONSIDERED IN COMPLIANCE WITH THESE PLANS, THE SPECIFICATIONS, AND CONTRACT DOCUMENTS.
10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR(S) TO PROTECT EXISTING STRUCTURES AND FACILITIES, INCLUDING UTILITIES, NOT DESIGNATED FOR DEMOLITION OR REPLACEMENT/UPGRADE SUCH AS BUILDINGS, PIPES, INLETS, MANHOLES, CABLES/WIRES, CONDUITS, APRONS, PAVEMENTS, BRIDGES, UTILITIES, TREES, ETC. FROM DAMAGE WHICH MIGHT OCCUR DURING CONSTRUCTION. EXTREME CARE SHALL BE TAKEN IN UNDERCUT AREAS. THE CONTRACTOR(S) SHALL REPLACE OR REPAIR, AS DIRECTED BY DRWC OR THE DESIGN PROFESSIONAL, ANY STRUCTURES OR FACILITIES DAMAGED DURING CONSTRUCTION/THE LIFE OF THE CONTRACT. NO PAYMENT WILL BE MADE FOR REPLACEMENT OR REPAIR OF DAMAGED ITEMS.
11. THE CONTRACTOR(S) SHALL PROVIDE POSITIVE PROTECTION (MAT/SHEET COVERINGS) FOR ALL EXPOSED EXCAVATIONS TO PROTECT FROM INSTABILITY AND DETERIORATION DUE TO RAIN, WIND OR SNOW/ICE.
12. THE CONTRACTOR SHALL PROVIDE SURFACE DRAINAGE CHANNELS OR DIVISION DIKES, SUMPS AND SUMP PUMPS AND/OR OTHER DEWATERING MEASURES AS REQUIRED TO PROTECT ALL EXCAVATIONS FROM FLOODING. FLOODING OF ANY EXCAVATION OF THE SUBGRADE WILL BE CAUSE FOR COMPLETE PREPARATION AND RE-APPROVAL OF THE SUBGRADE.
13. ALL ORGANIC, WET, SOFT AND/OR OTHER UNSUITABLE MATERIALS SHALL BE REMOVED FROM PAVEMENT SUBGRADE AND BACKFILLED WITH SUITABLE GRANULAR, FREE DRAINING MATERIAL. NO PAVEMENTS OR SLABS SHALL BE PLACED ONTO SUBGRADE CONTAINING FREE WATER, FROST OR ICE. SHOULD WATER OR FROST ENTER AN EXPOSED EXCAVATION AFTER SUBGRADE APPROVAL, THE SUBGRADE SHALL BE RE-INSPECTED BY THE INDEPENDENT TESTING AND INSPECTION AGENCY AFTER REMOVAL OF WATER OR FROST.
14. THE CONTRACTOR(S) SHALL MAINTAIN ALL EROSION CONTROLS DURING CONSTRUCTION.
15. THE CONTRACTOR(S) SHALL ERECT PROTECTIVE DEVICES, SUCH AS TEMPORARY CHAIN-LINK FENCING, TO PROTECT THE SITE FROM UNAUTHORIZED PERSONS FROM ENTERING THE WORK SITE.
16. THE CONTRACTOR(S) ARE RESPONSIBLE FOR THE PROTECTION OF EXISTING TREES TO REMAIN. NO EQUIPMENT, MATERIALS, SOIL, OR OTHER DEBRIS SHALL BE STORED UNDER THE DRIPLINE OF THE TREE. IF TREES ARE DAMAGED, ITEMS ARE STORED, OR AREA UNDER THE DRIP IS DISTURBED, OTHER THAN DISTURBANCE CALLED FOR ON THE PLANS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CORRECT THE DAMAGE TO THE SATISFACTION OF THE DESIGN PROFESSIONAL.
17. THE CONTRACTOR(S) SHALL KEEP ALL PUBLIC AREAS CLEAN OF DEBRIS ON A DAILY BASIS. THE CITY OF PHILADELPHIA MAINTAINS THE RIGHT TO CLEAN THE PROJECT SITE FOR CONTRACTOR NON-COMPLIANCE AT CONTRACTOR'S EXPENSE.
18. THE CONTRACTOR(S) SHALL COMPLY WITH THE CLEAN FILL REQUIREMENTS AS NOTED ON THIS DRAWING AND PER APPLICABLE LOCAL, STATE, AND/OR FEDERAL REGULATIONS.
19. ALL MATERIALS DEMOLISHED OR REMOVED FROM THE PROJECT SITE, UNLESS IDENTIFIED TO BE SAVED OR SALVAGED, SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PER FEDERAL, STATE AND LOCAL REGULATIONS. ALL COSTS OF HAULING, DISPOSAL, AND TIPPING FEES ARE THE RESPONSIBILITY OF THE CONTRACTOR AS PART OF THE BASE BID.
20. ATTENTION IS CALLED TO THE PHILADELPHIA ZONING CODE AS AMENDED. PROPERTY IS ZONED SP-PO-A. THE ADJACENT PROPERTY, THE BATTERY, LOCATED AT 1325 BEACH ST. IS ZONED CMX-3.
21. THIS PROJECT IS NOT WITHIN A PENNDOT RIGHT-OF-WAY.
22. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO THE START OF CONSTRUCTION AND REPORT ANY DISCREPANCIES AND INTERFERENCES TO THE OWNER OR ENGINEER PRIOR TO THE START OF CONSTRUCTION.
23. SUBJECT PREMISES PARTIALLY LIES WITHIN A FLOOD HAZARD AREA. SUBJECT PREMISES IS AN AREA "AE" AND "X" AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP COMMUNITY PANEL 420757-0184H, LAST REVISED NOVEMBER 18, 2015.
24. PLAN MADE AS PER INSTRUCTIONS OF THE DELAWARE RIVER WATERFRONT CORPORATION AND THE CITY OF PHILADELPHIA PARKS AND RECREATION DEPARTMENT.
25. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MEET ALL OF THE REQUIREMENTS OF FEDERAL, STATE, AND LOCAL AUTHORITIES, HEALTH DEPARTMENT, AND UTILITY COMPANIES IN ADDITION TO THE INFORMATION STATED IN THESE PLANS, THE SPECIFICATIONS, AND THE CONTRACT DOCUMENTS.
26. DO NOT SCALE DRAWINGS. ALL MEASUREMENTS SHALL BE TAKEN FROM DIMENSIONS SHOWN ON THE DRAWING. WHERE DIMENSIONS BETWEEN SMALL SCALE AND DETAIL DRAWINGS DIFFER, NOTIFY THE DESIGN PROFESSIONAL FOR CLARIFICATION. FIELD VERIFY ALL DIMENSIONS AND NOTIFY DESIGN PROFESSIONAL OF ANY DISCREPANCIES.
27. ALL CONTRACTORS WORKING ON THIS PROJECT SHALL BE RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES RELATED TO THIS PROJECT ARE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE O.S.H.A. (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) STANDARDS.
28. THE CONTRACTOR(S) SHALL OBTAIN ALL PERMITS RELATING TO THIS PROJECT PRIOR TO CONSTRUCTION.
29. THE GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR ARE RESPONSIBLE FOR PROVIDING THE APPROPRIATE CONTRACT DOCUMENTS (PLANS, SPECIFICATIONS, AND OTHER INFORMATION) TO THE VARIOUS SUBCONTRACTORS AND TRADES IN ORDER FOR THEM TO COORDINATE AND PERFORM THE WORK.
30. PROJECT BENCH MARK  
ELEV.= 7.04 (CITY OF PHILADELPHIA DATUM)  
ELEV.= 12.18 (NAVD 88)  
  
SET BY THE SURVEY DISTRICT: BOX CUT ON TOP OF CURB, 13.2 FEET WEST OF POINT OF THE INTERSECTION, LOCATED AT THE NORTHWEST CORNER OF BEACH STREET AND COLUMBIA AVENUE.

GENERAL LANDSCAPING NOTES:

1. PLANT MATERIAL SHALL BE FURNISHED AND INSTALLED AS INDICATED INCLUDING ALL LABOR, MATERIALS, PLANTS EQUIPMENT, INCIDENTALS AND CLEAN UP.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT.
3. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABITS, WELL DEVELOPED BRANCHES, BE DENSELY FOLIATED, HAVE VIGOROUS ROOT SYSTEMS AND BE FREE OF DEFECTS AND INJURIES.
4. ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE HEALTH OF THE PLANT MATERIAL, SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF PLANT MATERIAL.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR TO BE IN VIGOROUS GROWING CONDITION.
6. PROVISIONS SHALL BE MADE FOR A GUARANTEE OF AT LEAST ONE (1) YEAR FOR TREES AND SHRUBS. REPLACEMENT SHALL BE MADE AT THE BEGINNING OF THE FIRST SUCCEEDING PLANTING SEASON. ALL REPLACEMENTS SHALL HAVE A GUARANTEE EQUAL TO THAT STATED ABOVE INSOFAR AS IT IS PRACTICABLE.
7. PLANT MATERIALS SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE (3) DAY PERIOD AFTER DELIVERY.
8. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE 1990 "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMAN, INC., OR LATEST EDITION.
9. ALL PLANTS SHALL BE PLANTED IN TOPSOIL THAT IS THOROUGHLY WATERED AND TAMPED AS BACK FILLING PROGRESSES. NOTHING BUT SUITABLE TOPSOIL, FREE OF DRY SOD, STIF CLAY, LITTER, ETC. SHALL BE USED FOR PLANTING.
10. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE.
11. SET ALL PLANTS PLUMB AND STRAIGHT. SET AT SUCH A LEVEL THAT AFTER SETTLEMENT, A NORMAL OR NATURAL RELATIONSHIP TO THE CROWN OF THE PLANT WITH THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE PLANT IN THE CENTER OF THE PLANTING PIT.
12. EACH TREE AND SHRUB SHALL BE PRUNED IN ACCORDANCE WITH STANDARD HORTICULTURAL PRACTICE TO PRESERVE NATURAL CHARACTER OF THE PLANT. PRUNING SHALL BE DONE WITH CLEAN, SHARP TOOLS.
13. LANDSCAPE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO PLACEMENT OF LANDSCAPE MATERIAL. CONTRACTOR SHALL NOT PLACE LANDSCAPING MATERIAL ON TOP OF UTILITY PIPING.
14. PLAN QUANTITIES SUPERCEDE PLANT LIST.
15. PLANTING PLAN SHALL BE USED FOR PLANT AND LANDSCAPE INSTALLATION ONLY.

TREE PROTECTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF TREES DURING CONSTRUCTION. CARE SHALL BE TAKEN TO PROTECT TREES BY CONTROLLING THE ACTIVITIES OCCURRING WITHIN TREE PROTECTION ZONES.
2. ALL ON-SITE WORKERS SHALL BE AWARE OF THE TREE PROTECTION MEASURES AND THE CONSEQUENT RESTRICTIONS AND REGULATIONS IMPLIED.
3. THE CONTRACTOR SHALL IDENTIFY THE "TREE PROTECTION ZONE". THE TREE PROTECTION ZONE IS THE AREA WITHIN THE DRIP LINE OF EXISTING TREES OR WITHIN THE PERIMETER DRIPLINE OF GROUPS OF TREES, OR WITHIN TEN (10) FT. OF THE TRUNK (WHICHEVER IS GREATER) , UNLESS OTHERWISE SHOWN ON THE DRAWINGS. THE TPZ MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
4. ANY DAMAGE TO EXISTING TREES DURING CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL MITIGATE SUCH DAMAGED TREES, AT THE CONTRACTOR'S EXPENSE. IF ANY DAMAGE TO EXISTING TREES OCCURS, CONTRACTOR SHALL ENGAGE A CERTIFIED ARBORIST TO RECOMMEND REMEDIATION AT NO ADDITIONAL COST TO THE PROJECT.
5. TEMPORARY WOODEN TREE GUARDS SHALL BE INSTALLED AT EACH EXISTING TREE TO REMAIN, AND A TEMPORARY SNOW FENCE BOUNDARY SHALL BE INSTALLED AT THE PERIMETER OF THE TPZ OR AS SHOWN ON THE DRAWINGS. INSTALLATION OF THE TREE GUARD(S) AND TEMPORARY SNOW FENCE SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD.
6. TREE GUARDS WITH WRAP FOR INDIVIDUAL TREES, AND TEMPORARY SNOW FENCE BOUNDARY SHALL BE MAINTAINED THROUGHOUT THE COURSE OF THE CONTRACT. TREE GUARDS ARE NOT TO BE REMOVED UNTIL ALL WORK AROUND EXISTING TREES IS COMPLETE. IF REQUIRED TO INSTALL PROPOSED WORK, PROTECTION SHALL BE REMOVED UNTIL THE WORK IS COMPLETE.
7. THE CONTRACTOR SHALL TAKE EXTREME CARE TO PROTECT THE ROOT SYSTEMS OF EXISTING TREES. BULK MATERIAL, EQUIPMENT, OR VEHICLES SHALL NOT BE STOCKPILED OR PARKED WITHIN THE TPZ TO MINIMIZE SURFACE AND SUBSURFACE ROOT AND SOIL COMPACTION. THIS APPLIES TO ALL AREAS WITHIN OR OUTSIDE THE CONTRACT LIMITS. NO VEHICLES OR CONSTRUCTION EQUIPMENT OF ANY KIND SHALL TRAVERSE OR ENTER ANY TREE PROTECTION ZONES.
8. IF STOCKPILING OCCURS WITHIN THE TPZ, A STOP WORK ORDER SHALL BE ISSUED IMMEDIATELY. WORK SHALL NOT RE-COMMENCE UNTIL ALL STOCKPILED MATERIAL IS REMOVED FROM THE ZONE AND TREE REMEDIATION IS SATISFIED.
9. NO RUNOFF OR SPILLAGE OF NOXIOUS MATERIALS OR EXCESSIVE WETTING CAUSED BY CONSTRUCTION OPERATIONS SHALL OCCUR WITHIN TREE PROTECTION ZONES.
10. HEAT SOURCES, FLAMES, IGNITION SOURCES, AND SMOKING ARE PROHIBITED WITHIN OR NEAR WOODCHIP MULCH TREE PROTECTION ZONES.
11. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN REMOVING ANY PAVING AND BASE MATERIAL WITHIN THE DRIPLINE OF EXISTING TREES - LIFTING RATHER THAN DRAGGING PIECES OF PAVING.
12. ALONG WITH PREVENTING DAMAGE TO EXISTING ROOTZONES AND TREE TRUNKS, CONTRACTOR SHALL NOT DAMAGE ANY OVERHEAD BRANCHES OF ANY EXISTING TREES, WHETHER THEY ARE LOCATED WITHIN TREE PROTECTION OR NOT. EXERCISE EXTREME CARE WITH THE OPERATION AND MOVEMENT OF CONSTRUCTION EQUIPMENT AND VEHICLES TO ENSURE APPROPRIATE CLEARANCE BELOW TREE BRANCHES AT ALL TIMES.

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1315 WALNUT STREET  
SUITE 900  
PHILADELPHIA, PA 19107  
(215) 751-1153  
www.NV5.com

REVISIONS

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COMMONWEALTH OF PENNSYLVANIA

REGISTERED PROFESSIONAL

MATTHEW LUDWIG

ENGINEER No. PED45856

SITE ADDRESS:

1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE

FINAL DESIGN (100%)

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SCALE

NA

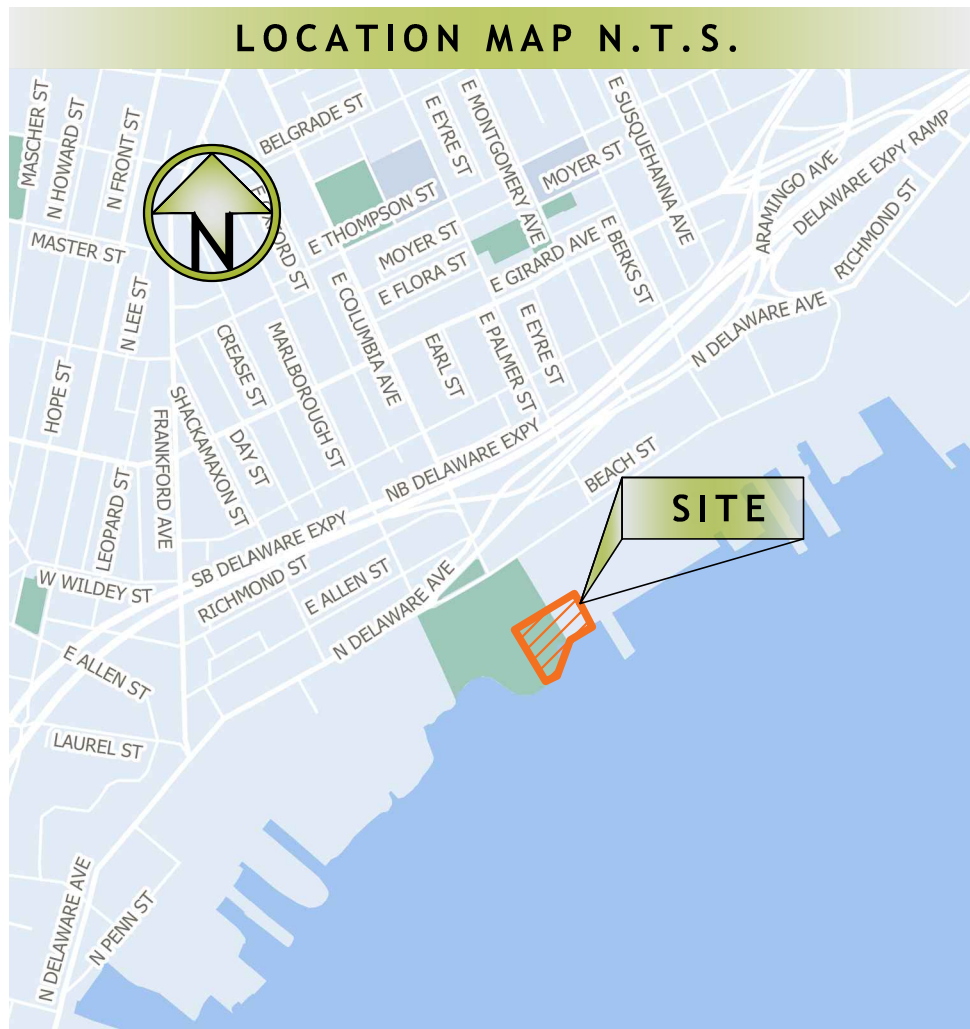
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GENERAL NOTES

DRAWING NUMBER

G-1





8. DOES IDENTIFY PENNSYLVANIA DISTRICT STANDARD FEET UNITS. OFFICIAL STREET WIDTHS ARE ALSO LISTED IN DISTRICT FEET UNITS. IN PENNSYLVANIA DISTRICT STANDARD MEASURE IS USED TO DETERMINE THE WIDTH OF THE DISTRICT LINES IN EACH BLOCK.
9. UNLESS SPECIFICALLY STATED OR SHOWN HEREON TO THE CONTRARY, THIS SURVEY IS MADE SUBJECT TO AND DOES NOT LOCATE OR DELINEATE:
- A. BUILDING SETBACK LINES, ZONING REGULATIONS OR LINES ESTABLISHED BY ANY FEDERAL, STATE OR LOCAL AGENCY WHICH MAY AFFECT THE BUILDING OR DEVELOPMENT POTENTIAL OF THE SUBJECT PROPERTY.
- B. EXISTING OR PROPOSED SUBSURFACE STRUCTURES, UNDERGROUND UTILITIES, EASEMENTS OR RIGHTS INCLUDING, BUT NOT LIMITED TO, MINERAL OR MINING RIGHTS, OR THE LOCATION OF OR RIGHTS TO ANY SUBSURFACE STRUCTURES, CONTAINERS OR FACILITIES OR ANY OTHER NATURAL OR MAN-MADE SUBSURFACE CONDITION WHICH MAY OR MAY NOT AFFECT THE USE OR DEVELOPMENT POTENTIAL OF THE SUBJECT PROPERTY.
10. UTILITIES ARE TAKEN FROM ACER ASSOCIATES LLC, MARKED OUT BY FIELD BY STEPHEN KOCHENBERGER. THE CONTRACTOR MUST VERIFY THE EXACT LOCATION AND DEPTH.
11. IN SOME INSTANCES, UTILITIES ARE TAKEN FROM SURFACE OBSERVATION OF THE SITE OR BASED ON THE UTILITY MARKOUTS DONE BY OTHERS. UTILITIES AS SHOWN ARE APPROXIMATE AND MAY NOT BE COMPLETELY ACCURATE.
12. LOCATIONS OF ON SITE UTILITIES ARE APPROXIMATE, AND MAY OR MAY NOT BE COMPLETE. THE NATURE AND EXACT LOCATION OF EXISTING UTILITIES SHOULD BE VERIFIED PRIOR TO INITIATING ANY ACTIVITY THAT MAY AFFECT THEIR USE OR LOCATION.
13. COMPLETENESS OF LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES IS NOT GUARANTEED.
14. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT OR COMPLETE TITLE REPORT AND IS NOT INTENDED TO GUARANTEE OWNERSHIP. THERE MAY EXIST RIGHT-WAYS, EASEMENTS, CONDEMNATIONS, OR OTHER ISSUES THAT MAY AFFECT THE DEVELOPMENT OF THIS PARCEL.
15. WE ARE NOT EXPERTS IN THE DETECTION AND/OR IDENTIFICATION OF POTENTIALLY HAZARDOUS SOILS AND SUBSTANCES; THEREFORE, THIS PLAN DOES NOT PURPORT TO LOCATE OR REVEAL SAME.
16. VAULTS, IF ANY, BELOW SURFACE SHOWED HEREON.
17. ONLY COPIES FROM THE ORIGINAL OF THIS PLAN, CLEARLY MARKED WITH APPROPRIATE PROFESSIONAL SEAL SHALL BE CONSIDERED VALID. THIS CORPORATION AND/OR ITS EMPLOYEES ARE NOT LIABLE FOR ANY ERRORS OR OMISSIONS RESULTING FROM THIS CONDITION.
18. THIS PLAN DOES NOT SHOW, OR INTEND TO SHOW, ANY NON-RECORDED EASEMENTS OR RIGHT-OF-WAY.

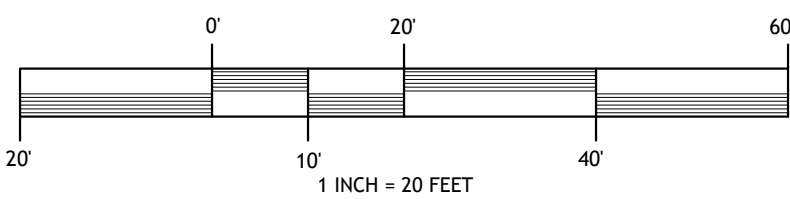
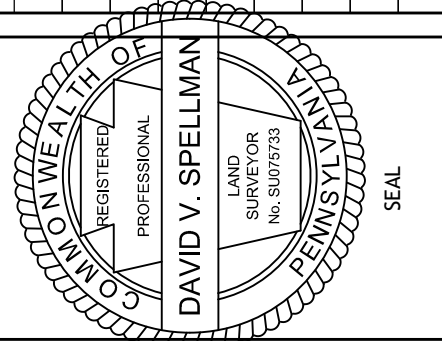
### LEGEND

**STOP! CALL!**

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### GRAPHIC SCALE

[illegible]

**SIGNATURE**

- Land Surveying
- Civil Engineering
- Urban Planning and Development
- Water Management
- Digital Mapping



A Certified Minority-Owned  
(MBE) & Disadvantaged  
Business Enterprise (DBE)

PROJECT  
PENN TREATY PARK  
PREPARED FOR  
NV5

Field Date: 08/05/2024-

Drawing Number:

# V-101



NOTES

1. THE CONTRACTOR SHALL TAG EXISTING TREES TO BE REMOVED FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT & ENGINEER PRIOR TO START OF REMOVALS. SEE THE TREE PROTECTION NOTES ON THIS SHEET.
2. ALL TREES WITHIN THE TREE PROTECTION ZONE (TPZ) ARE TO RECEIVE AT LEAST 1" (THE EQUIVALENT OF 750 GALLONS OF WATER PER 1,000 SQUARE FEET OF TPZ OF WATER PER WEEK BETWEEN THE MONTHS OF MARCH AND OCTOBER. IF RAINWATER IN ANY GIVEN WEEK IS BELOW THIS QUANTITY THE CONTRACTOR MUST SUPPLEMENT THE AMOUNT RECEIVED BY A METHOD APPROVED BY THE LANDSCAPE ARCHITECT.
3. IF DIRECTED THE TPZ SHALL BE COVERED WITH WOOD CHIPS TO A DEPTH OF AT LEAST 6 INCHES WITH PLYWOOD OR GROUND PROTECTION MATS, OR A COMBINATION THEREOF. SUCH COVERING SHALL BE MAINTAINED FOR THE DURATION OF THE CONTRACT AND IS NOT TO BE REMOVED UNTIL DIRECTED BY THE LANDSCAPE ARCHITECT. REMOVAL SHALL BE BY HAND OR AS SPECIFIED BY THE ARBORIST OR LANDSCAPE ARCHITECT.
4. ALL EXCAVATION AND PLANT INSTALLATION WITHIN THE TPZ SHALL BE PERFORMED BY HAND OR PNEUMATICALLY WITH AN AIR SPADE WITH MINIMAL SOIL DISTURBANCE AND UNDER THE SUPERVISION OF THE LANDSCAPE ARCHITECT. PLANTS SHALL NOT BE PLACED WITHIN 3 FEET OF THE TREE TRUNK UNLESS APPROVED.
5. TREE ROOTS OVER ONE (1) INCH IN DIAMETER SHALL NOT BE CUT WITHOUT APPROVAL BY THE LANDSCAPE ARCHITECT.
6. THE EXCAVATION AREA WITHIN THE TPZ SHALL BE BACKFILLED IMMEDIATELY AND/OR ROOTS SHALL BE KEPT CONSTANTLY MOIST WITH BURLAP COVERED WITH WHITE PLASTIC. IF ROOTS ARE EXPOSED FOR A PERIOD GREATER THAN 48 HOURS, THE EXPOSED AREA SHALL BE COVERED WITH BURLAP AND AT LEAST 6" OF MULCH AND SOAKED DAILY WITH WATER THROUGHOUT THE DURATION OF THE EXPOSURE, UNTIL THE AREA CAN BE PROPERLY BACKFILLED.
7. SEE ADDITIONAL TREE PROTECTION NOTES ON G-1.

CONSTRUCTION ACCESS TO SITE SHALL COME FROM THIS PATH, WITH ACCESS AT BEACH STREET. CONTRACTOR SHALL ENSURE NO CONSTRUCTION TRAFFIC OR EQUIPMENT TRAVELS OVER ANY EXISTING TREE ROOTS OR DAMAGES TRUNKS OR OVERHEAD BRANCHES IN ANY WAY FOR ANY TREES, INCLUDING ALL TREES ALONG THE EXISTING PAVED TRAIL TO REMAIN; ALL TRAFFIC IS TO STAY WITHIN THE EXISTING ASPHALT PAVING; IF CONTRATOR CAUSES DAMAGE TO ANY EXISTING TREES, A CERTIFIED ARBORIST SHALL BE HIRED BY THE CONTRACTOR FOR APPROVED MITIGATION AT NO ADDITIONAL COST TO THE PROJECT

LIMIT OF WORK STA. 10+10.74

SAW CUT AND REMOVE FULL DEPTH OF EXISTING WALL AT EACH MARK AS DETERMINED IN THE FIELD BY THE ARCHITECT AND CONTRACTOR. LENGTH TO BE REMOVED IS APPROXIMATELY 21'-8". SALVAGE EXISTING ORNATE CAST IRON POST (APPROXIMATELY 15' TALL) AND ALL CAST IRON FENCING PRIOR TO WALL REMOVAL PER SPECIFICATIONS. POST TO BE REINSTALLED ON NEW WALL; CAST IRON FENCE NOT REINSTALLED TO BE RETURNED TO OWNER.

REMOVE AND SALVAGE EXISTING PAVERS TO BE REINSTALLED AFTER TRAIL RECONSTRUCTION

EXISTING TREES TO BE REMOVED.

BIKE RACK AND CONCRETE PAD TO REMAIN

EXISTING RIP-RAP STONE SLOPE STABILIZATION TO REMAIN, TYP.

EXISTING SHRUBS TO BE REMOVED

MATCHLINE STA 2+40.00 SEE SHEET TPR-2

LEGEND

— LOD — LOD — LOD — LIMIT OF DISTURBANCE  
— ○ — TREE PROTECTION FENCE

EXISTING TREE TO BE REMOVED

EXISTING TREE TO REMAIN AND BE PROTECTED

REMOVAL OF EXISTING ASPHALTIC PAVEMENT AND BASE

MILL AND OVERLAY ASPHALT PAVING

REMOVE AND SALVAGE EXISTING PAVERS

TREE REMOVAL AND PRUNING NOTES

1. ALL TREE REMOVAL SHALL BE PERFORMED BY AN ISA (INTERNATIONAL SOCIETY OF ARBORICULTURE) CERTIFIED ARBORIST IN ACCORDANCE WITH ANSI A300 STANDARDS.
2. BEFORE CONSTRUCTION BEGINS, CONTRACTOR SHALL MEET WITH THE OWNER'S REPRESENTATIVE TO REVIEW TREE PROTECTION AND REMOVAL PROCEDURES AND RESPONSIBILITIES. NO WORK SHALL BE PERFORMED PRIOR TO THIS MEETING AND APPROVAL BY THE OWNER'S REPRESENTATIVE.
3. DURING AND AFTER TREE REMOVAL, THE CONTRACTOR SHALL REMOVE ALL REMNANTS, INCLUDING BUT NOT LIMITED TO STUMPS, TRUNKS, LIMBS, BRANCHES AND FOLIAGE. ALL REMNANTS SHALL BE DISPOSED OF AS EXPEDITIOUSLY AS POSSIBLE.

MILL AND OVERLAY ASPHALT PAVEMENT

INSTALL TEMPORARY 8 FT PERIMETER CHAINLINK FENCE TO PREVENT PUBLIC ACCESS

PLAN

0 10' 20' 40'  
GRAPHIC SCALE: 1" = 10'

PWD TRACKING NO: FY26-DELA-8195-01

NIV5 1315 WALNUT STREET  
SUITE 900  
PHILADELPHIA, PA 19107  
(215) 751-1153  
www.niv5.com

REVISIONS

| NO | DATE | COMMENT |
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SITE ADDRESS:  
1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE  
FINAL DESIGN (100%)

DATE  
DECEMBER 23, 2025

DRAWN BY  
MB

CHECKED BY  
ML/RM

PROJECT #  
0001052.00

SCALE  
1" = 10'

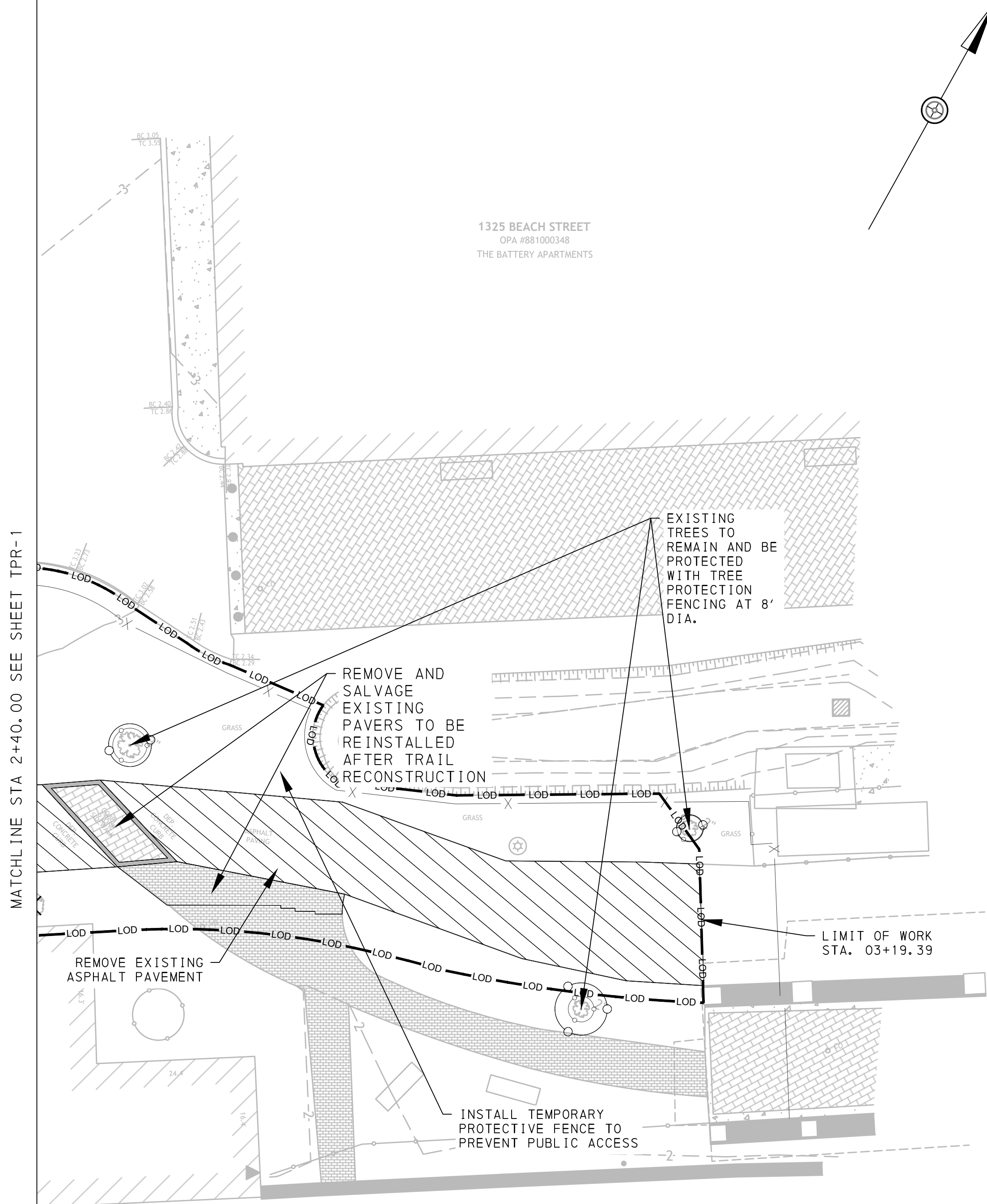
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PROTECTION AND  
REMOVALS PLAN

DRAWING NUMBER

PR-1





LEGEND

- LOD — LOD — LOD — LIMIT OF DISTURBANCE
- ○ — ○ — ○ — TREE PROTECTION FENCE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN AND BE PROTECTED
- REMOVAL OF EXISTING ASPHALTIC PAVEMENT AND BASE
- MILL AND OVERLAY ASPHALT PAVING
- REMOVE AND SALVAGE EXISTING PAVERS

PLAN

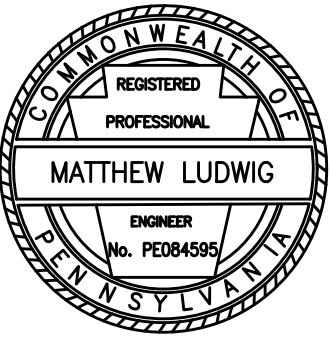
0 10' 20' 40'

GRAPHIC SCALE: 1" = 10'

PWD TRACKING NO: FY26-DELA-8195-01

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SUITE 900  
PHILADELPHIA, PA 19107  
(215) 751-1153  
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| REVISIONS |      |         |
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SITE ADDRESS:  
1301 BEACH STREET  
PHILADELPHIA, PA 19125

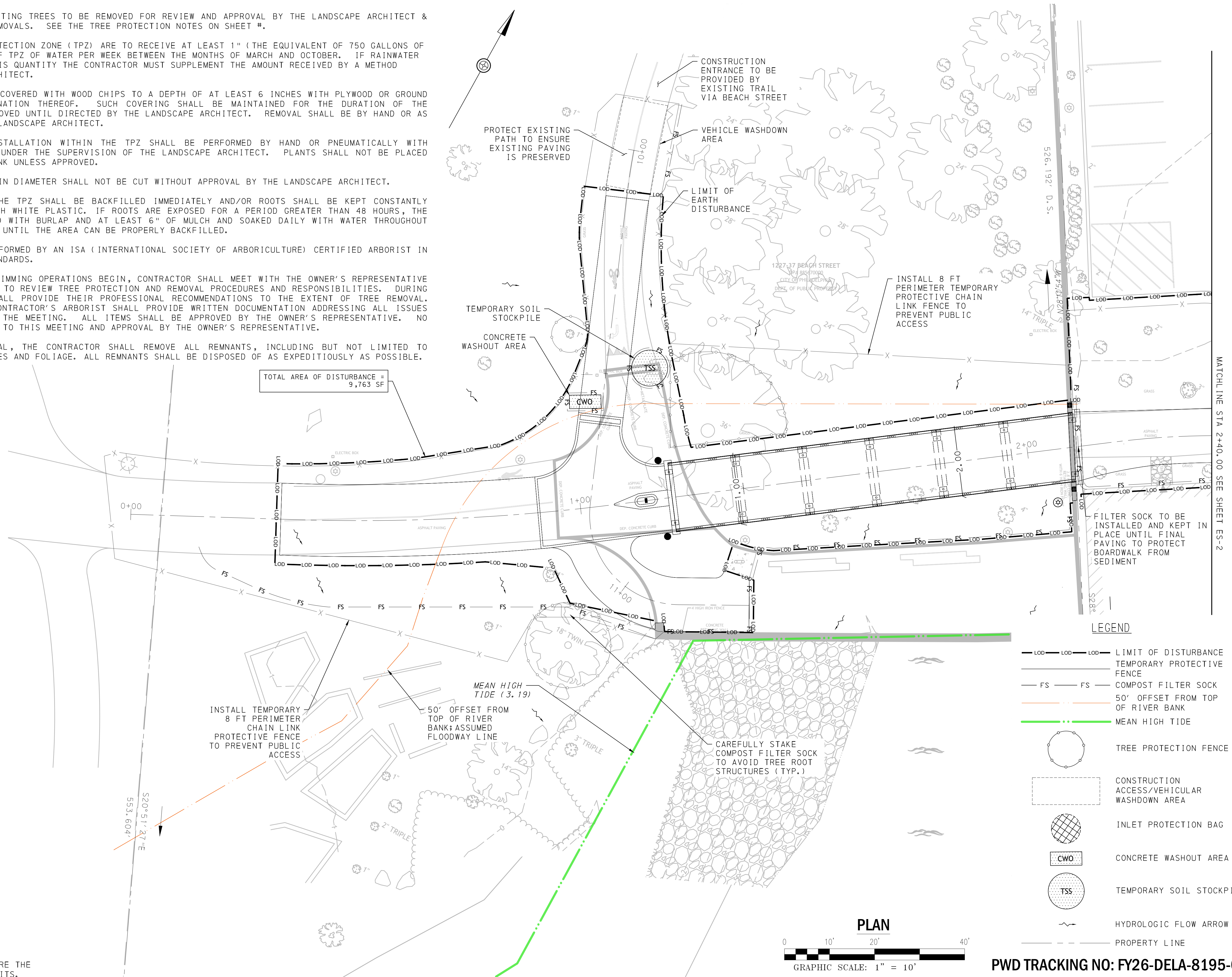
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| DATE<br>DECEMBER 23, 2025            |                     |
| DRAWN BY<br>MB                       | CHECKED BY<br>ML/RM |
| PROJECT #<br>0001052.00              | SCALE<br>1" = 10'   |
| DRAWING TITLE                        |                     |

PROTECTION AND  
REMOVALS PLAN

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| DRAWING NUMBER |
| PR-2           |



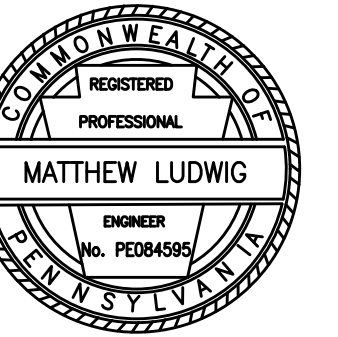
1. THE CONTRACTOR SHALL TAKE EXISTING TREES TO BE REMOVED FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT & ENGINEER PRIOR TO START OF REMOVALS. SEE THE TREE PROTECTION NOTES ON SHEET #.
2. ALL TREES WITHIN THE TREE PROTECTION ZONE (TPZ) ARE TO RECEIVE AT LEAST 1" (THE EQUIVALENT OF 750 GALLONS OF WATER PER 1,000 SQUARE FEET OF TPZ OF WATER PER WEEK BETWEEN THE MONTHS OF MARCH AND OCTOBER. IF RAINWATER IN ANY GIVEN WEEK IS BELOW THIS QUANTITY THE CONTRACTOR MUST SUPPLEMENT THE AMOUNT RECEIVED BY A METHOD APPROVED BY THE LANDSCAPE ARCHITECT.
3. IF DIRECTED THE TPZ SHALL BE COVERED WITH WOOD CHIPS TO A DEPTH OF AT LEAST 6 INCHES WITH PLYWOOD OR GROUND PROTECTION MATS, OR A COMBINATION THEREOF. SUCH COVERING SHALL BE MAINTAINED FOR THE DURATION OF THE CONTRACT AND IS NOT TO BE REMOVED UNTIL DIRECTED BY THE LANDSCAPE ARCHITECT. REMOVAL SHALL BE BY HAND OR AS SPECIFIED BY THE ARBORIST OR LANDSCAPE ARCHITECT.
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5. TREE ROOTS OVER ONE (1) INCH IN DIAMETER SHALL NOT BE CUT WITHOUT APPROVAL BY THE LANDSCAPE ARCHITECT.
6. THE EXCAVATION AREA WITHIN THE TPZ SHALL BE BACKFILLED IMMEDIATELY AND/OR ROOTS SHALL BE KEPT CONSTANTLY MOIST WITH BURLAP COVERED WITH WHITE PLASTIC. IF ROOTS ARE EXPOSED FOR A PERIOD GREATER THAN 48 HOURS, THE EXPOSED AREA SHALL BE COVERED WITH BURLAP AND AT LEAST 6" OF MULCH AND SOAKED DAILY WITH WATER THROUGHOUT THE DURATION OF THE EXPOSURE, UNTIL THE AREA CAN BE PROPERLY BACKFILLED.
7. ALL TREE REMOVAL SHALL BE PERFORMED BY AN ISA (INTERNATIONAL SOCIETY OF ARBORICULTURE) CERTIFIED ARBORIST IN ACCORDANCE WITH ANSI A300 STANDARDS.
8. BEFORE TREE PROTECTION AND TRIMMING OPERATIONS BEGIN, CONTRACTOR SHALL MEET WITH THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR'S ARBORIST TO REVIEW TREE PROTECTION AND REMOVAL PROCEDURES AND RESPONSIBILITIES. DURING THIS MEETING THE ARBORIST SHALL PROVIDE THEIR PROFESSIONAL RECOMMENDATIONS TO THE EXTENT OF TREE REMOVAL. FOLLOWING THIS MEETING THE CONTRACTOR'S ARBORIST SHALL PROVIDE WRITTEN DOCUMENTATION ADDRESSING ALL ISSUES AGREED UPON AND DISCUSSED AT THE MEETING. ALL ITEMS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE. NO WORK SHALL BE PERFORMED PRIOR TO THIS MEETING AND APPROVAL BY THE OWNER'S REPRESENTATIVE.
9. DURING AND AFTER TREE REMOVAL, THE CONTRACTOR SHALL REMOVE ALL REMNANTS, INCLUDING BUT NOT LIMITED TO STUMPS, TRUNKS, LIMBS, BRANCHES AND FOLIAGE. ALL REMNANTS SHALL BE DISPOSED OF AS EXPEDITIOUSLY AS POSSIBLE.



NOTES:

1. PLAN DATUM IS IN PHILADELPHIA VERTICAL DATUM (CITY DATUM)
2. ENTIRE WORK AREA IS WITHIN THE 100-YEAR FLOODPLAIN AND THEREFORE THE LINE IS NOT WITHIN THE PLAN LIMITS.

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SUITE 900  
PHILADELPHIA, PA 19107  
(215) 751-1133  
[www.NV5.com](http://www.NV5.com)

[illegible]

**WTE ADDRESS:**  
801 BEACH STREET  
PHILADELPHIA, PA 19125

**DRAWING ISSUE**  
**QUAL DESIGN (100%)**

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| DATE<br>DECEMBER 23, 2025 |    |
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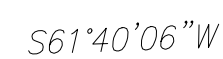
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# EROSION AND SEDIMENT CONTROL PLAN

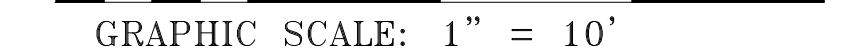
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ES-1





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DRAWING NUMBER

**ES-2**



STANDARD E&S NOTES:

1. AN INDUSTRIAL WASTE PERMIT WILL BE REQUIRED SHOULD PUMPING TO CITY-OWNED INFRASTRUCTURE BECOME NECESSARY DURING CONSTRUCTION. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
2. INLET PROTECTION SHOULD BE PROVIDED FOR ALL INLETS OWNED BY PWD THAT ARE LOCATED WITHIN ONE BLOCK OF THE PROJECT SITE.
3. PWD IS NOT RESPONSIBLE FOR ANY CLEANING OR REPAIRS NEEDED ON CITY-OWNED INFRASTRUCTURE DUE TO FAILURE OF ANY EROSION AND SEDIMENT CONTROL PRACTICES. THE AWARDED CONTRACTOR WORKING ON BEHALF OF THE CITY OF PHILADELPHIA DEPARTMENT OF PARKS AND RECREATION SHALL BE RESPONSIBLE FOR ANY REQUIRED CLEANING OR REPAIRS AS STATED ABOVE.
4. INSPECTION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES SHALL OCCUR ON A WEEKLY BASIS, BEFORE ANY ANTICIPATED PRECIPITATION EVENTS, AND AFTER ALL PRECIPITATION EVENTS.
5. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAP(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 20 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
6. THE VEHICLE WASHDOWN AREA SHALL BE CONSTANTLY MAINTAINED ON-SITE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS AND SIDEWALKS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEEP INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
7. COMPOSITE FILTER SOCK SHOULD BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH SOCK SECTION SHOULD BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. SUPPORT STAKES SHALL BE SPACED AT A MAXIMUM OF 8 FEET. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE SOCK.
8. ANY SOCK SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.
9. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER WITHIN 50 FEET OF A SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.
10. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY PWD AND PA DEP.
11. UNTIL THE SITE IS STABILIZED, ALL E&S BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL E&S BMPS PRIOR TO ANY ANTICIPATED STORM EVENT, AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING, MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
12. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING, AS WELL AS CUTS AND FILLS, SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY). A COPY OF THE APPROVED DRAWINGS MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. PWD SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. PWD MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
13. AT LEAST THREE (3) DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
14. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. EACH STAGE SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY FOLLOWING STAGE IS INITIATED. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING BY PWD AND THE PA DEP PRIOR TO IMPLEMENTATION.
15. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
16. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
17. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
18. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO PWD AT THE TIME OF INSPECTION.
19. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN LANDSCAPE AREAS OUTSIDE STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.
20. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF THREE TO FIVE INCHES -- SIX TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM FOUR INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF TWO INCHES OF TOPSOIL.
21. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
22. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED NINE INCHES IN THICKNESS.
23. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
24. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
25. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
26. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
27. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
28. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN ONE YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN ONE YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
29. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.

30. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY PWD AND PA DEP (IF APPLICABLE).
31. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY E&S BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE E&S BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
32. SEDIMENT BASINS AND/OR TRAPS SHALL BE KEPT FREE OF ALL CONSTRUCTION WASTE, WASH WATER, AND OTHER DEBRIS HAVING POTENTIAL TO CLOG THE BASIN/TRAP OUTLET STRUCTURES AND/OR POLLUTE THE SURFACE WATERS. (WHEN APPLICABLE).
33. DURING CONSTRUCTION, THE SELECTED CONTRACTOR IS EXPECTED TO FOLLOW THE PLANS APPROVED BY PWD. NO CHANGE OR DEVIATION FROM THE APPROVED PLANS IS PERMITTED WITHOUT PRIOR APPROVAL FROM PWD.
34. ALL WORK ASSOCIATED WITH PWD WATER CONVEYANCE AND SEWER INFRASTRUCTURE SHALL BE DONE IN ACCORDANCE WITH THE CITY OF PHILADELPHIA WATER DEPARTMENT "WATER MAIN STANDARD DETAILS AND CORROSION CONTROL SPECIFICATIONS" 1985 EDITION, AND "STANDARD DETAILS AND STANDARD SPECIFICATIONS FOR SEWERS" 1985 EDITION.
35. CONSTRUCTION VEHICLES WILL ACCESS THE SITE FROM A PAVED ASPHALT PATH ON THE SOUTH SIDE OF THE PROJECT WITHIN PENN TREATY PARK, AND FROM AN EXISTING PAVED ASPHALT PARKING LOT ON THE BATTERY SIDE OF THE PROJECT. ADDITIONALLY, GIVEN THE SMALL AREA OF THE PROJECT, A ROCK CONSTRUCTION ENTRANCE WILL NOT BE FEASIBLE. INSTEAD, CONSTRUCTION VEHICLE WASHDOWN AREAS ARE REQUIRED TO ENSURE THAT SOIL IS NOT TRACKED OUTSIDE OF THE CONSTRUCTION SITE. REFER TO THE E&S PLANS FOR LOCATIONS.
36. ALL PWD INLETS WITHIN 1 BLOCK OF THE PROJECT AREA ARE TO BE PROTECTED FROM SEDIMENT LADEN RUNOFF WITH INLET PROTECTION. THE USE OF STONE OR BERMS AS INLET PROTECTION IS PROHIBITED IN ANY PUBLIC RIGHT-OF-WAY.
37. GIVEN THAT SILT FENCE WILL NOT BE EMPLOYED FOR THIS PROJECT, THE USE OF A ROCK FILTER OUTLET WILL ALSO NOT BE NEEDED.
38. PER "CONSTRUCTION/DEMOLITION/EARTHWORKS DUST CONTROL REQUIREMENTS (AIR MANAGEMENT REGULATION (AMR) 11. SECTION IX.) FAQ (EFFECTIVE FEBRUARY 5, 2019)", AND WEB LINK [HTTPS://WWW.PHILA.GOV/MEDIA/20190211104838/DUST-CONTROL-GUIDELINE-FAQ-20190205A-FINAL.PDF](https://www.phila.gov/media/20190211104838/DUST-CONTROL-GUIDELINE-FAQ-20190205A-FINAL.PDF), THE FOLLOWING DUST CONTROL MEASURES SHALL BE REQUIRED DURING CONSTRUCTION TO MINIMIZE DUST:

A. WATER SHALL BE SUFFICIENTLY SPRAYED TO DAMPEN ANY EXPOSED SUBGRADE OR STONE BALLAST DURING CONSTRUCTION PRIOR TO THEPOURING OF THE CONCRETE SIDEWALKS.

B. ALL TEMPORARY PERIMETER FENCING AROUND MUST HAVE DUST CONTROL FABRIC; MUST MEASURE A MINIMUM OF 5 FT IN HEIGHT FROM THE BOTTOM OF FENCING.

C. ADJACENT ROADWAYS SHALL BE SWEEP OF ALL DUST AND SPRAYED DOWN FOLLOWING EACH DAY OF CONSTRUCTION TO PREVENT DUST FORMATION.
39. CONTACT PWD WATER TRANSPORT RECORDS (1101 MARKET STREET, 2ND FLOOR, PHONE: 215-685-6271) FOR ADDITIONAL APPROVALS AND PERMITS REQUIRED FOR ALL WATER SERVICES, METERS, AND CONNECTIONS TO THE EXISTING AND/OR PROPOSED PWD FACILITIES.
40. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE PADEP'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA CODE 260.1 ET SEQ., 271.1, AND 287.1 ET SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

CONSTRUCTION SEQUENCE:

THE PURPOSE OF THIS PLAN IS TO DOCUMENT THE E&S MEASURES NECESSARY TO CONTROL THE EARTH DISTURBANCE ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION OF THE PROPOSED DELAWARE RIVER TRAIL SEGMENT WITHIN THE NORTHEASTERN CORNER OF THE PENN TREATY PARK AND THE SOUTHEASTERN CORNER OF THE BATTERY PROPERTY.

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED.

AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING, BUT NOT LIMITED TO, NVS, DRWC, PARKS & RECREATION, THE BATTERY PROPERTY OWNER, AND ANY INDIVIDUALS DRWC REQUIRES TO ATTEND. THE CONTRACTOR SHALL REVIEW ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING TREES, INCLUDING TREE PROTECTION AND AIRSPADING AROUND ROOT ZONES, AND PROTECTION OF AMENITIES WITHIN AND ADJACENT TO THE PROJECT AREA. PARKS & RECREATION SHALL CONFIRM THE FENCING IS ADEQUATE PRIOR TO DEMOLITION AND EARTH MOVING ACTIVITIES.

PRIOR TO ANY EARTHWORK, THE PWD INSPECTIONS COORDINATOR (OFFICE 215-685-6387) MUST BE CALLED TO SCHEDULE A PRE-CONSTRUCTION MEETING WITH PWD'S EROSION AND SEDIMENT CONTROL INSPECTION GROUP. PRIOR TO DEMOLITION AND EARTHWORK, DRWC'S POINT OF CONTACT SHALL BE CONTACTED IN ORDER TO COORDINATE ACCESS TO THE BATTERY PROPERTY.

1. THE FOLLOWING STEPS SHALL BE IMPLEMENTED DURING CONSTRUCTION:

1. INSTALL INLET PROTECTION ON ALL EXISTING INLETS, AS SHOWN ON THE PLANS.

2. INSTALL PERIMETER CONTROLS (COMPOST FILTER SOCKS) AROUND THE LIMITS OF EARTH DISTURBANCE AND DOWN-SLOPE OF THE DESIGNATED VEHICLE WASHDOWN AREAS AS SHOWN ON THE PLANS.

3. INSTALL TREE PROTECTION FENCING AND THE TEMPORARY PROTECTIVE FENCE AS SHOWN ON THE PLANS. CONTRACTOR SHALL MAINTAIN FENCE THROUGHOUT THE DURATION OF THE PROJECT. FENCE SHALL BLOCK ALL CONSTRUCTION ENTRANCES NIGHTLY.

4. ENSURE THAT ADEQUATE SEDIMENT CONTROL MEASURES (PARTICULARLY ADEQUATELY SIZED AND PROPERLY FUNCTIONING PERIMETER COMPOST FILTER SOCKS) ARE PROVIDED DOWN-SLOPE OF ANY AND ALL EARTH DISTURBANCE ACTIVITIES UNTIL CONTRIBUTORY DRAINAGE AREA IS ADEQUATELY STABILIZED.

5. BEGIN DEMOLITION OF ALL EXISTING SURFACE FEATURES WITHIN THE LIMITS OF DISTURBANCE THAT ARE MARKED TO BE DEMOLISHED ON THE "TREE PROTECTION AND REMOVAL PLANS. REFER TO THESE PLANS ALSO FOR ALL FENCE REMOVAL LOCATIONS. ALL WASTE MATERIALS, SCRAP OR EXCESS CONSTRUCTION MATERIALS SHALL BE COLLECTED, STORED, AND DISPOSED OF IN ACCORDANCE WITH THE SOLID WASTE MANAGEMENT ACT (35 P.S. §§ 6018.101-6018.1003), THE MUNICIPAL WASTE PLANNING, RECYCLING AND WASTE REDUCTION ACT (53 P.S. §§ 4000.101-4000.1904), THE CLEAN STREAMS LAW (35 P.S. §§ 691.1-691.1001) AND RELATED RULES AND REGULATIONS. (TITLE 25, CHAPTER 105, SECTION 46d)

6. EXTREME CARE SHALL BE TAKEN TO PROTECT SITE ELEMENTS TO REMAIN, INCLUDING, BUT NOT LIMITED TO LIGHT POLES, BENCHES, RETAINING WALLS, ORNAMENTAL FENCE AND FENCE POST, LANDSCAPE, AND ANY EXISTING STRUCTURES NEAR THE AREA OF WORK.

7. BEGIN INSTALLATION OF HELICAL PIERS FOR THE BOARDWALK STRUCTURE.

8. ROUGH GRADE SITE TO SUBGRADE ELEVATIONS. (REFER TO TRAIL SECTION DETAILS FOR NOTES ON EXCAVATION AND SUBGRADE COMPACTION). RUNOFF FROM THIS PROJECT AREA WILL DISCHARGE TO THE DELAWARE RIVER, WHICH IS CLASSIFIED AS A WARM WATER FISHERY (WWF) PER PADEP CHAPTER 93 REGULATIONS ALONG THE AREA OF WORK.
9. BEGIN CONSTRUCTION OF PROPOSED TRAIL. AN INDUSTRIAL WASTE PERMIT WILL BE REQUIRED SHOULD PUMPING TO CITY-OWNED INFRASTRUCTURE BECOME NECESSARY DURING CONSTRUCTION.
10. FINAL GRADE THE TRAIL AND INSTALL THE STONE BASE, BINDER COURSE AND WEARING COURSE.
11. INSTALL BOARDWALK STRUCTURE ONCE ALL PAVING OPERATIONS ARE COMPLETE, BUT BEFORE PAVEMENT MARKINGS ARE INSTALLED
12. WHEN ALL CONSTRUCTION IS COMPLETE, STABILIZE ANY DISTURBED AREAS WITH SEED AND MULCH.THE MAXIMUM HEIGHT FOR STOCKPILES SHALL BE 35 FEET.
13. INSTALL PROPOSED SIGNAGE AND LANDSCAPING.
14. WHEN ALL AREAS TRIBUTARY TO THE EXISTING AND PROPOSED INLETS AND OVERLAND FLOW HAVE BEEN STABILIZED, THE INLET PROTECTION AND OTHER E&S CONTROLS SHALL BE REMOVED.
15. ONCE THE CONTRACTOR HAS DEEMED CONSTRUCTION TO BE COMPLETE, A SITE WALK-THROUGH SHALL BE CONDUCTED WITH DRWC, THE BATTERY OWNER, PARKS & RECREATION, AND NVS. AFTER A PUNCHLIST IS ISSUED TO THE CONTRACTOR, THE DEFICIENCIES SHALL BE ADDRESSED WITHIN TWO WEEKS. FINAL SIGNOFF BY DRWC, PPR, AND THE BATTERY OWNER SHALL THEN OCCUR TO MEMORIALIZE THE ACCEPTANCE OF ALL IMPROVEMENTS.

PERMANENT SEEDING:

APPLY THE FOLLOWING PERMANENT SEED MIXES PER PENNDOT SPECIFICATION 804, TABLE A. USE TEMPORARY SEEDING IF TIME OF YEAR CONSTRAINTS PREVENT PERMANENT SEEDING. SEE PLANTING PLANS FOR SEEDING AND LANDSCAPE LAYOUT.

LAWN SEEDING: FORMULA B MIX  
MEADOW SEEDING: FORMULA N CONSERVATION MIX

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SEAL

REGISTERED  
PROFESSIONAL  
ENGINEER  
No. PE048569  
MATTHEW LUDWIG  
PENNSYLVANIA

SITE ADDRESS:  
1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE  
FINAL DESIGN (100%)

DATE  
DECEMBER 23, 2025

DRAWN BY  
MB

CHECKED BY  
ML

PROJECT #  
0001052.00

SCALE  
NA

DRAWING TITLE

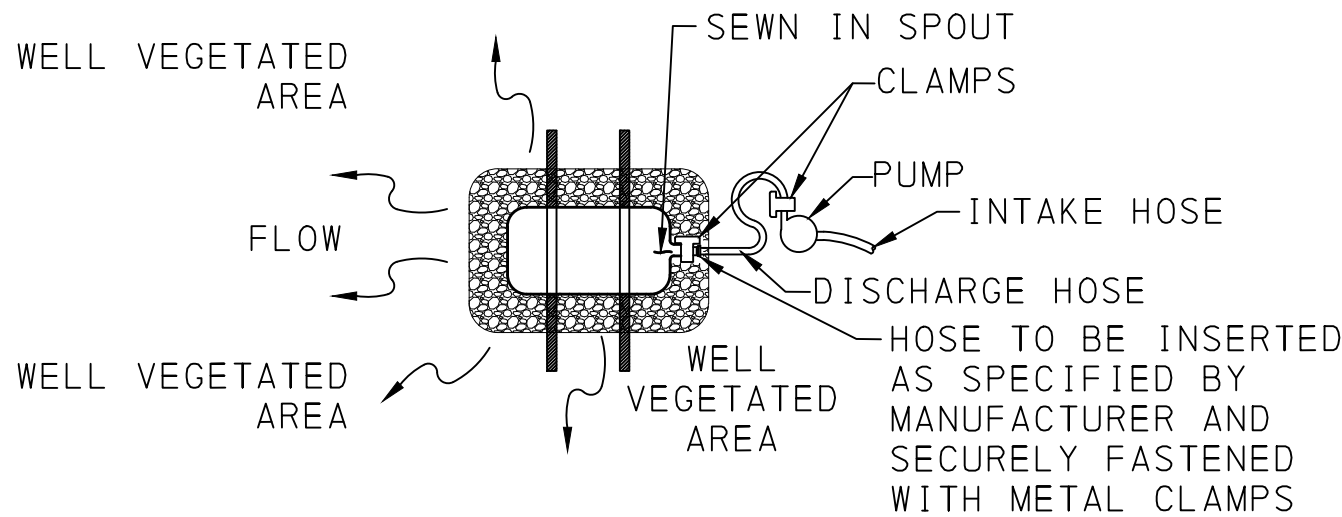
E&S NOTES

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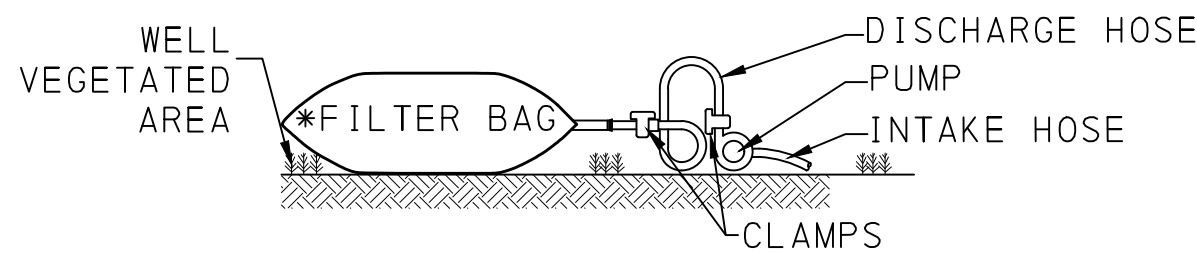
PWD TRACKING NO: FY26-DELA-8195-01

ES-3





TOP VIEW



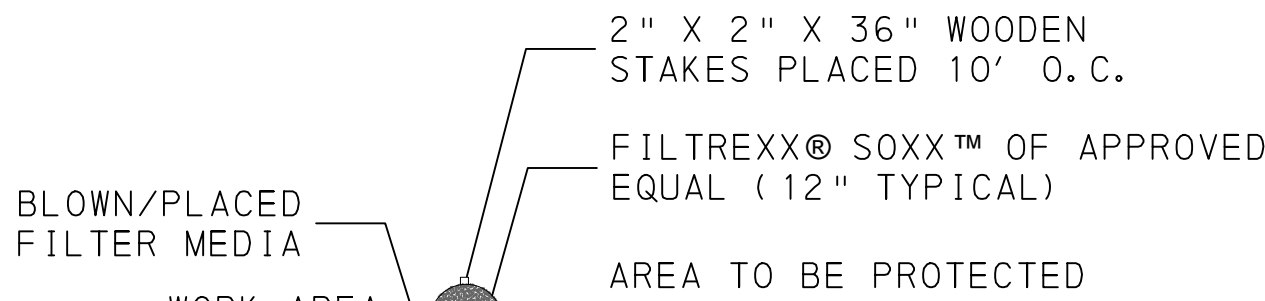
SIDE VIEW

### PUMPED WATER FILTER BAG

N. T. S.

#### NOTES:

1. LOCATE BAG IN LEVEL AREAS (LESS THAN 5% GRADE). WHEN LEVEL AREAS ARE NOT AVAILABLE, PLACE AASHTO NO. 57 COARSE AGGREGATE TO LEVEL THE BAG.
2. LOCATE BAG IN A WELL VEGETATED AREA. DISCHARGE ONTO A STABLE, EROSION RESISTANT AREA. WHEN VEGETATED AREA IS NOT AVAILABLE, PROVIDE A GEOTEXTILE (CLASS4, TYPE A) LINED FLOW PATH TO A STABLE EROSION RESISTANT RECEIVING WATER COURSE OR A WELL VEGETATED AREA.
3. LOCATE BAG IN AN AREA ACCESSIBLE BY EQUIPMENT FOR MAINTENANCE AND REMOVAL PURPOSES.
4. DO NOT INSERT MORE THAN ONE HOSE INTO A BAG.
5. REPLACE THE BAG WHEN 50% OF THE SEDIMENT CAPACITY HAS BEEN FILLED AND/OR WHEN THERE IS A FAILURE. THE ADDITIONAL BAGS WILL BE PAID AS EACH.
6. REMOVE AND PROPERLY DISPOSE OF THE PUMPED WATER FILTER BAGS. RESTORE THE AREA IN ACCORDANCE WITH THE SPECIFICATIONS IN PUBLICATION 408. DO NOT CUT FILTER BAG OR DISTRIBUTE AND SEED SEDIMENT.
7. DO NOT PERMIT DISCHARGE FROM THE BAG TO DRAIN BACK INTO WORK OR ACCESS AREAS OF THE PROJECT.



SECTION  
N. T. S.

2" X 2" X 36" WOODEN STAKES PLACED 10' O.C.

AREA TO BE PROTECTED

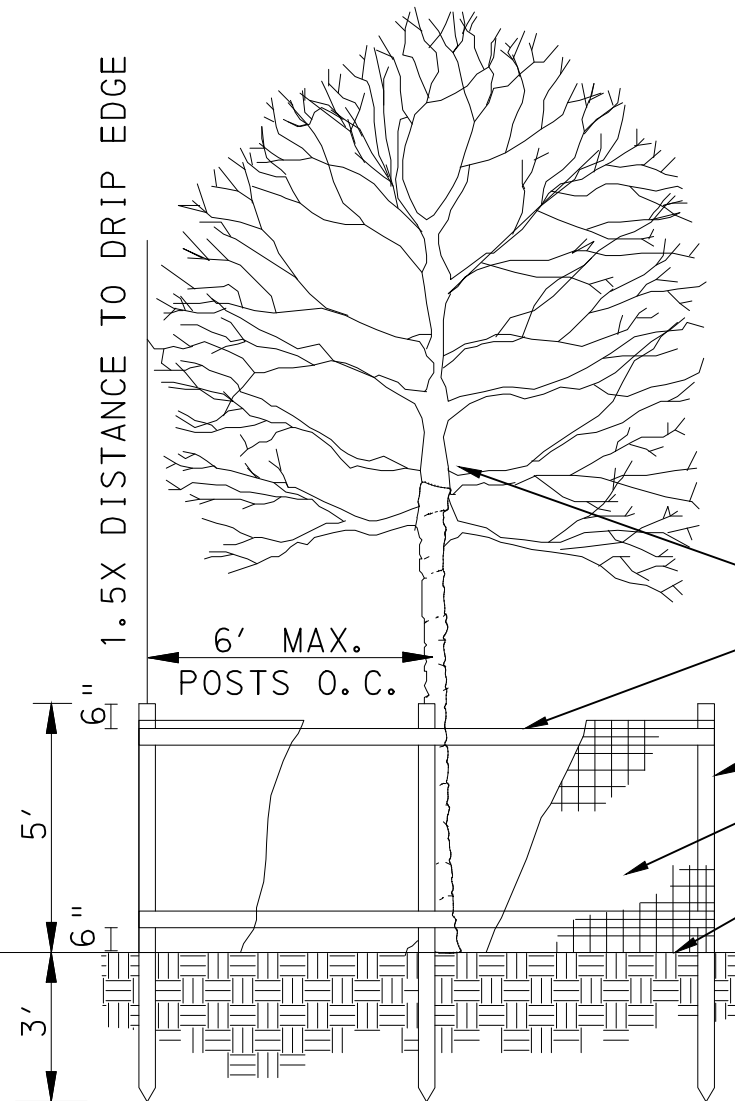
FILTREXX® SOXX™ OR APPROVED EQUAL (12" TYPICAL)

#### NOTES:

1. ALL MATERIAL TO MEET FILTREXX® (OR APPROVED EQUAL) SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
3. SEE GENERAL NOTES 8 AND 9 ON SHEET 8 FOR DISPOSAL INSTRUCTIONS REGARDING ACCUMULATED SEDIMENT AND COMPOST FILTER SOCK MATERIAL.

### 12" COMPOST FILTER SOCK

N. T. S.



#### NOTE:

NO MATERIAL OR EQUIPMENT SHALL BE STORED OR STOCKPILED WITHIN THE AREA SURROUNDED BY TREE PROTECTION FENCING

ALL CLEARING, GRUBBING, GRADING, AND TRENCHING WITHIN 15 FEET OF TREE IS TO BE PERFORMED BY HAND

EXISTING TO REMAIN

2"x4" RAIL (TYP.)

4"x4" POST (TYP.)

SNOW FENCING

DO NOT ALTER EXISTING GRADE INSIDE FENCING

FINISH GRADE

### TREE PROTECTION FENCE

N. T. S.

### ONSITE SOILS DESCRIPTION

#### UB-URBAN LAND

- MEAN ANNUAL PRECIPITATION: 40 TO 46 INCHES
- MEAN ANNUAL AIR TEMPERATURE: 48 TO 57 DEGREES F
- FROST-FREE PERIOD: 161 TO 215 DAYS
- URBAN LAND: 85 PERCENT
- DOWN-SLOPE SHAPE: LINEAR
- ACROSS-SLOPE SHAPE: LINEAR
- PARENT MATERIAL: PAVEMENT, BUILDINGS AND OTHER ARTIFICIALLY COVERED AREAS
- SLOPE: 0 TO 8 PERCENT
- DEPTH TO RESTRICTIVE FEATURE: 10 INCHES TO DENSIC MATERIAL
- FARMLAND CLASSIFICATION: NOT PRIME FARMLAND
- LAND CAPABILITY (NON-IRRIGATED): 8S

CUBIC YARDS OF TOPSOIL REQUIRED FOR APPLICATION TO VARIOUS DEPTHS

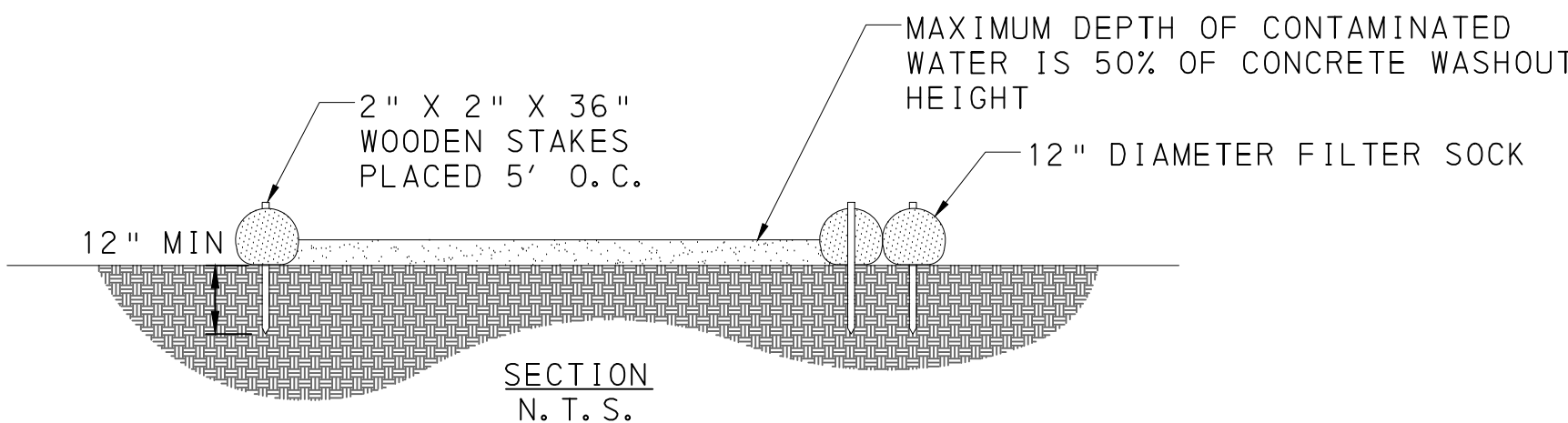
| DEPTH (IN.) | PER 1,000 SQUARE FEET | PER ACRE |
|-------------|-----------------------|----------|
| 1           | 3.1                   | 134      |
| 2           | 6.2                   | 268      |
| 3           | 9.3                   | 403      |
| 4           | 12.4                  | 537      |
| 5           | 15.5                  | 672      |
| 6           | 18.6                  | 806      |
| 7           | 21.7                  | 940      |
| 8           | 24.8                  | 1,074    |

#### TOPSOIL NOTES:

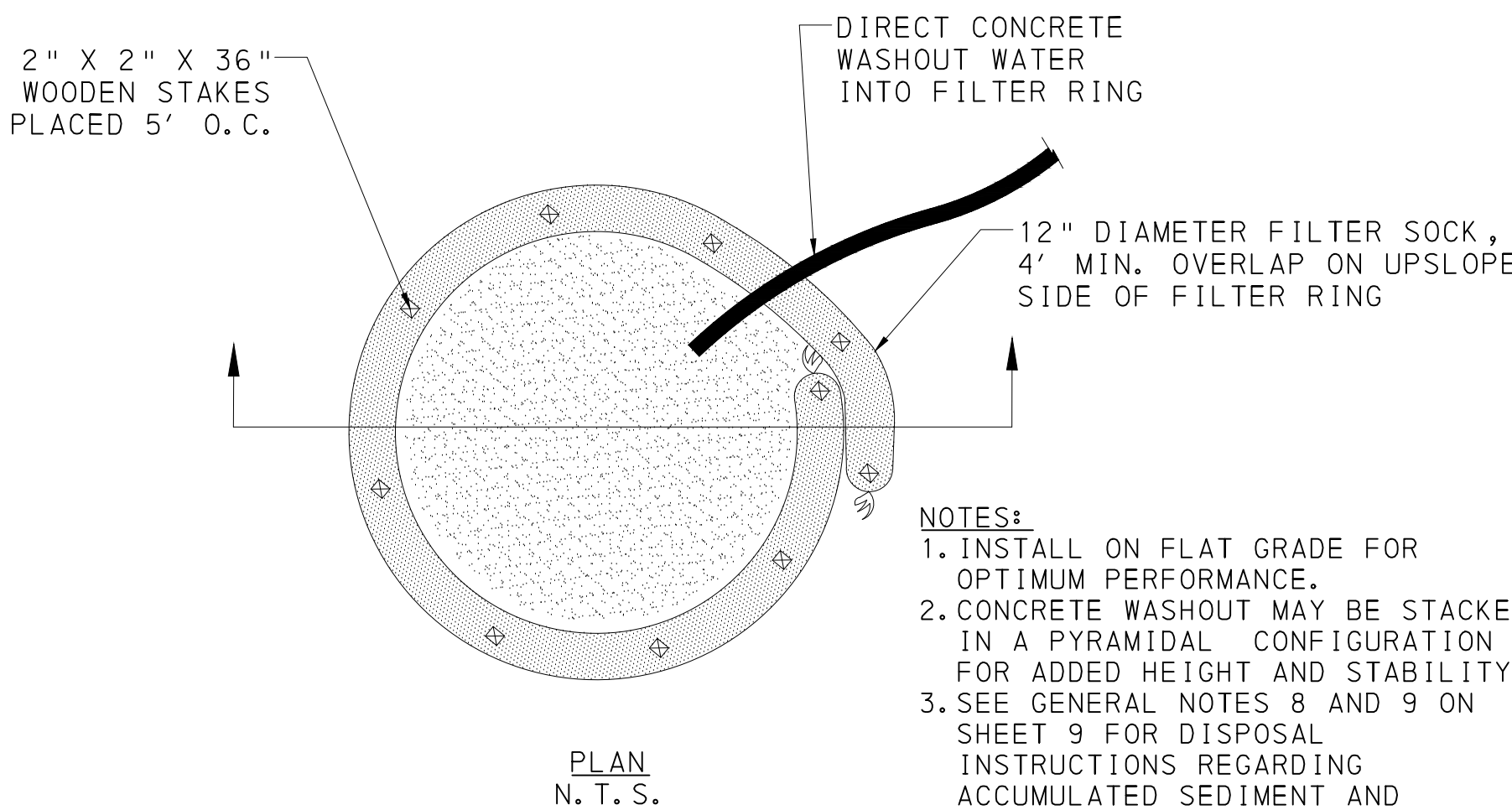
1. GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENEED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE.
2. TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM -- 2 INCHES ON FILL OUTSLOPES. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS.
3. TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING.

### TOPSOIL SPECIFICATIONS

N. T. S.



SECTION  
N. T. S.



PLAN  
N. T. S.

#### NOTES:

1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
2. CONCRETE WASHOUT MAY BE STACKED IN A PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT AND STABILITY.
3. SEE GENERAL NOTES 8 AND 9 ON SHEET 9 FOR DISPOSAL INSTRUCTIONS REGARDING ACCUMULATED SEDIMENT AND COMPOST FILTER SOCK MATERIAL.

### CONCRETE WASHOUT (12" FILTER SOCK)

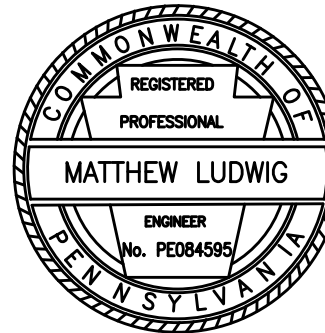
N. T. S.

NIV5

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#### SITE ADDRESS:

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PHILADELPHIA, PA 19125

#### DRAWING ISSUE

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#### DATE

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#### PROJECT #

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#### SCALE

AS NOTED

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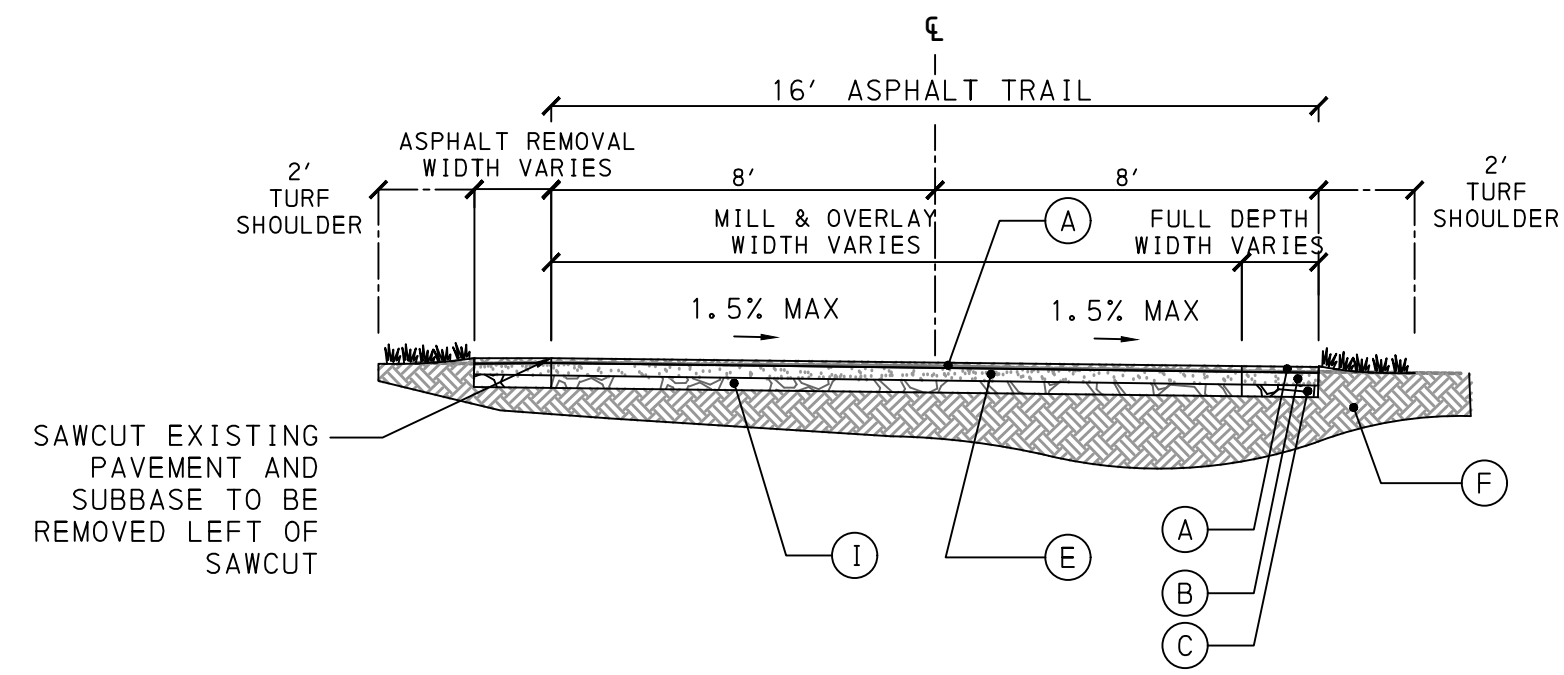
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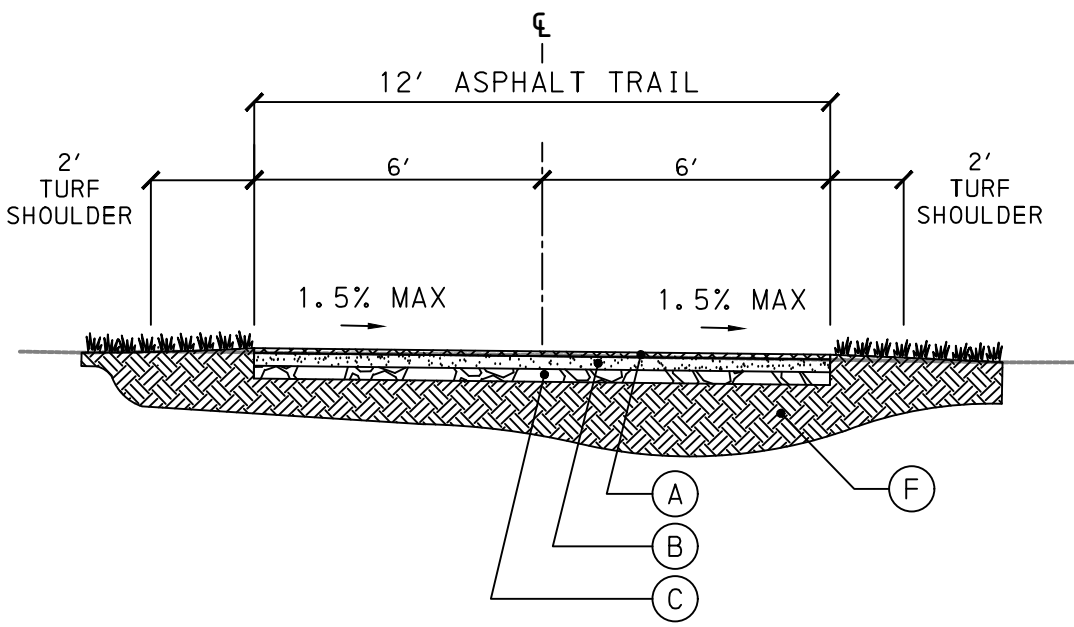
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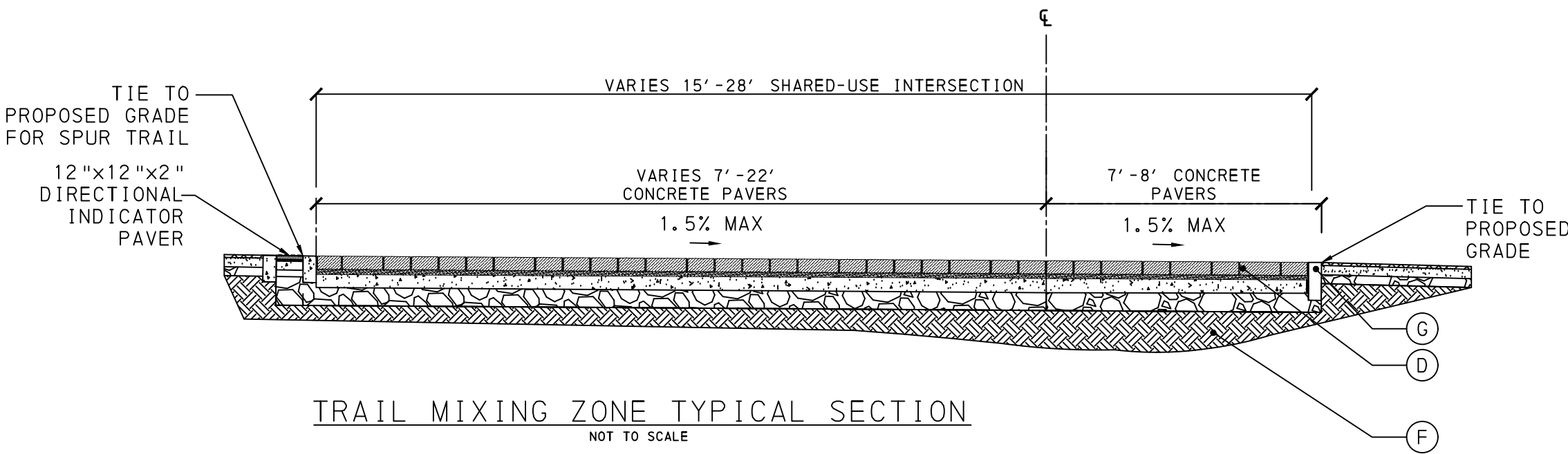




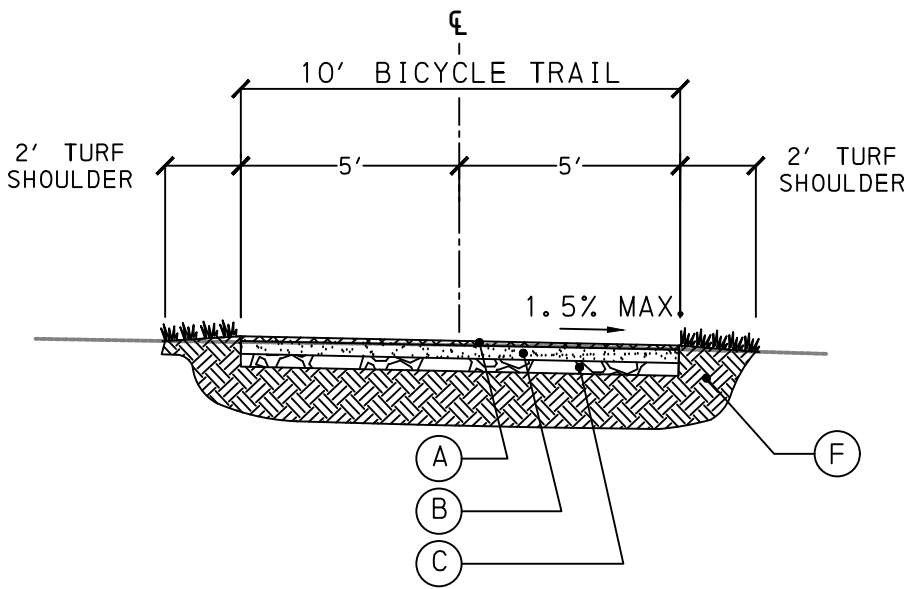
16' WIDE TRAIL TYPICAL SECTION  
NOT TO SCALE  
MAIN TRAIL STA. 0+33.33 TO STA. 0+90.46



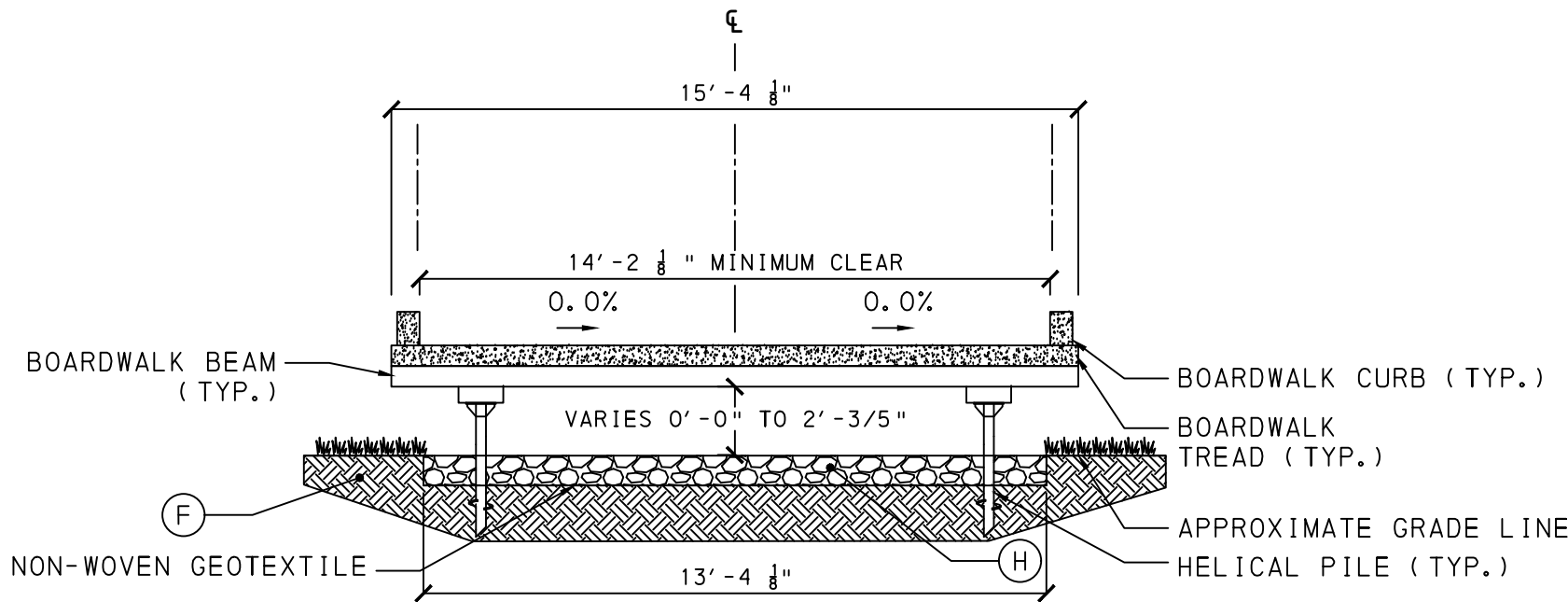
12' WIDE TRAIL TYPICAL SECTION  
NOT TO SCALE  
SPUR TRAIL STA. 10+87.91 TO STA. 11+28.37  
MAIN TRAIL STA. 2+10.43 TO STA. 3+19.38



TRAIL MIXING ZONE TYPICAL SECTION  
NOT TO SCALE  
MAIN TRAIL STA. 0+90.46 TO STA. 1+20.43



10' WIDE BICYCLE TRAIL TYPICAL SECTION  
NOT TO SCALE  
SPUR TRAIL STA. 10+10.74 TO STA. 10+59.30



PRECAST CONCRETE BOARDWALK TYPICAL SECTION  
NOT TO SCALE  
MAIN TRAIL STA. 1+20.43 TO STA. 2+10.43

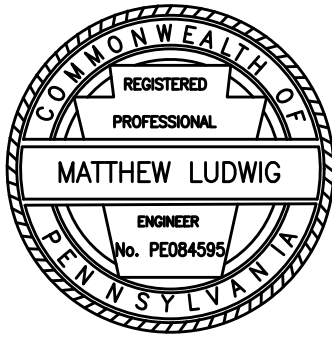
LEGEND

- (A) ITEM NO. 0413-0195 SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE, PG 64S-22, <0.3 MILLION ESALS, 9.5 MM MIX, 1 1/2" DEPTH, SRL-L
- (B) ITEM NO. 0413-6032, SUPERPAVE ASPHALT MIXTURE DESIGN, BINDER COURSE, PG 64S-22, <0.3 MILLION ESALS, 25.0 MM MIX, 4" DEPTH
- (C) ITEM NO. 0350-0104, SUBBASE 4" DEPTH (NO. 2A)
- (D) CONCRETE PAVERS ON 4" PLAIN CEMENT CONCRETE & 6" SUBBASE (SEE DETAIL ON SHEET C-3)
- (E) MILLING OF ASPHALT PAVEMENT SURFACE
- (F) COMPACTED SUBGRADE
- (G) 6" PLAIN CEMENT CONCRETE HEADER, SEE PLANS FOR DEPTH
- (H) AGGREGATE BENEATH BOARDWALK, 8" DEPTH
- (I) EXISTING BINDER COURSE AND SUBBASE TO REMAIN

NOTE: PLACE BITUMINOUS TACK COAT BETWEEN BINDER AND BASE COURSE.

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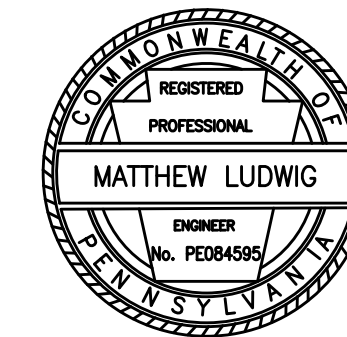
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SECTIONS

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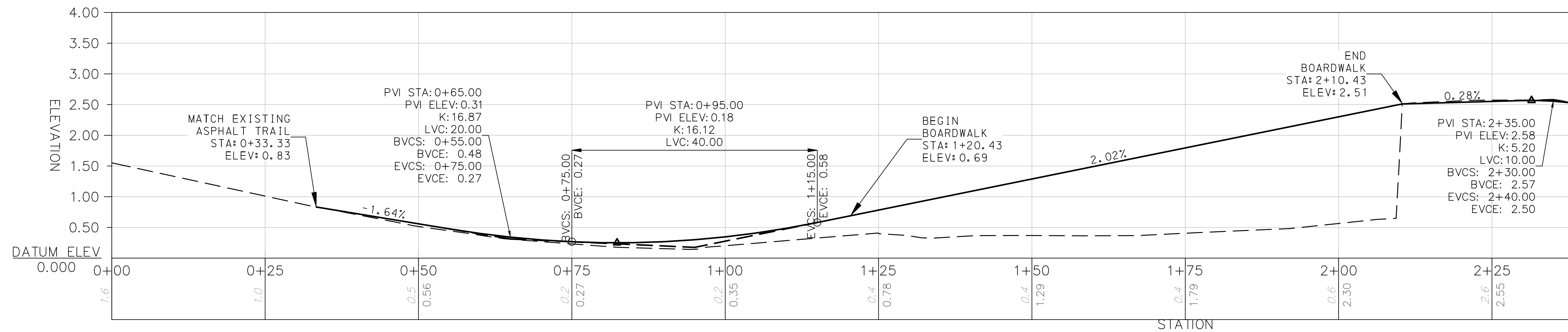
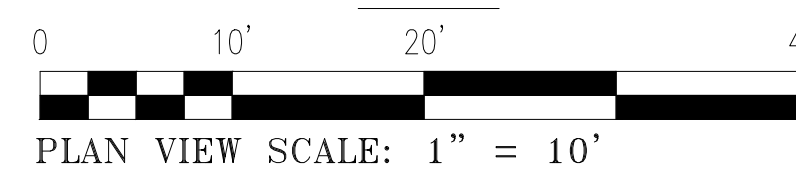
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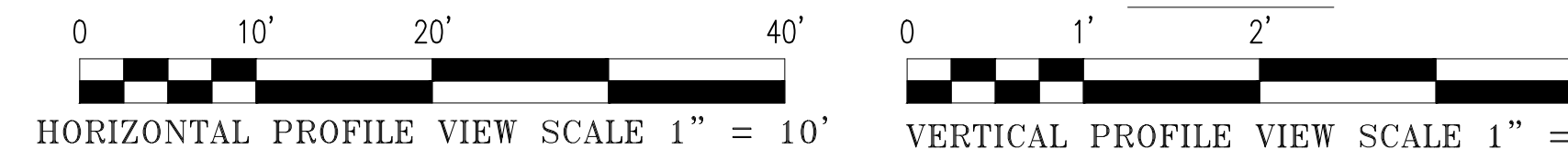
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MATCHLINE STA 2+40.00 SEE SHEET C-2

PLAN



PROFILE



**ADD ALTERNATE NOTE:**

WORK SHALL INCLUDE A NEW POLE WITH FOUNDATION, SECURITY CAMERAS, CONDUIT, AND OTHER ASSOCIATED IMPROVEMENTS DEPICTED ON THIS PLAN. SEE ALSO DETAIL ON SHEET C-4 AND SPECIFICATIONS FOR MORE DETAILS.

ADD ALTERNATE: CONNECT CONDUITS TO EXISTING JUNCTION BOX

ADD ALTERNATE: MOUNT SECURITY CAMERA AND NEMA BOX NEAR TOP OF EXISTING POLE.

ADD ALTERNATE: TWO (2) 2" DIA. CONDUITS

ADD ALTERNATE: TWO (2) 2" DIA. CONDUITS

ADD ALTERNATE: COMPOSITE JUNCTION BOX

EXISTING CONCRETE FOUNDATION TO BE REPLACED. CONTRACTOR TO SALVAGE EXISTING SOLAR LIGHT AND PLACE ON NEW FOUNDATION

SAWCUT EXISTING HEADER HERE; REMOVE HEADER NORTH OF THIS CUT

SAWCUT AND MATCH EXISTING ASPHALT STA. 11+28.37

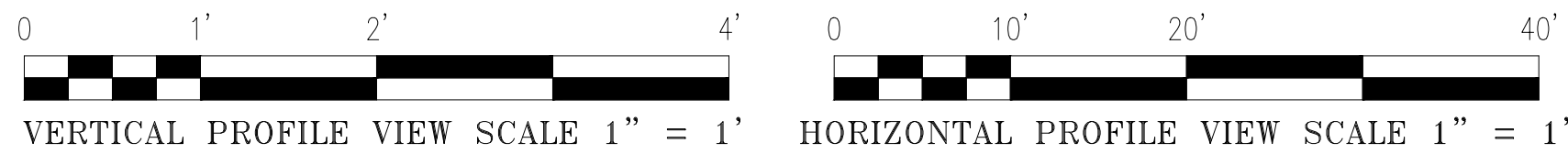
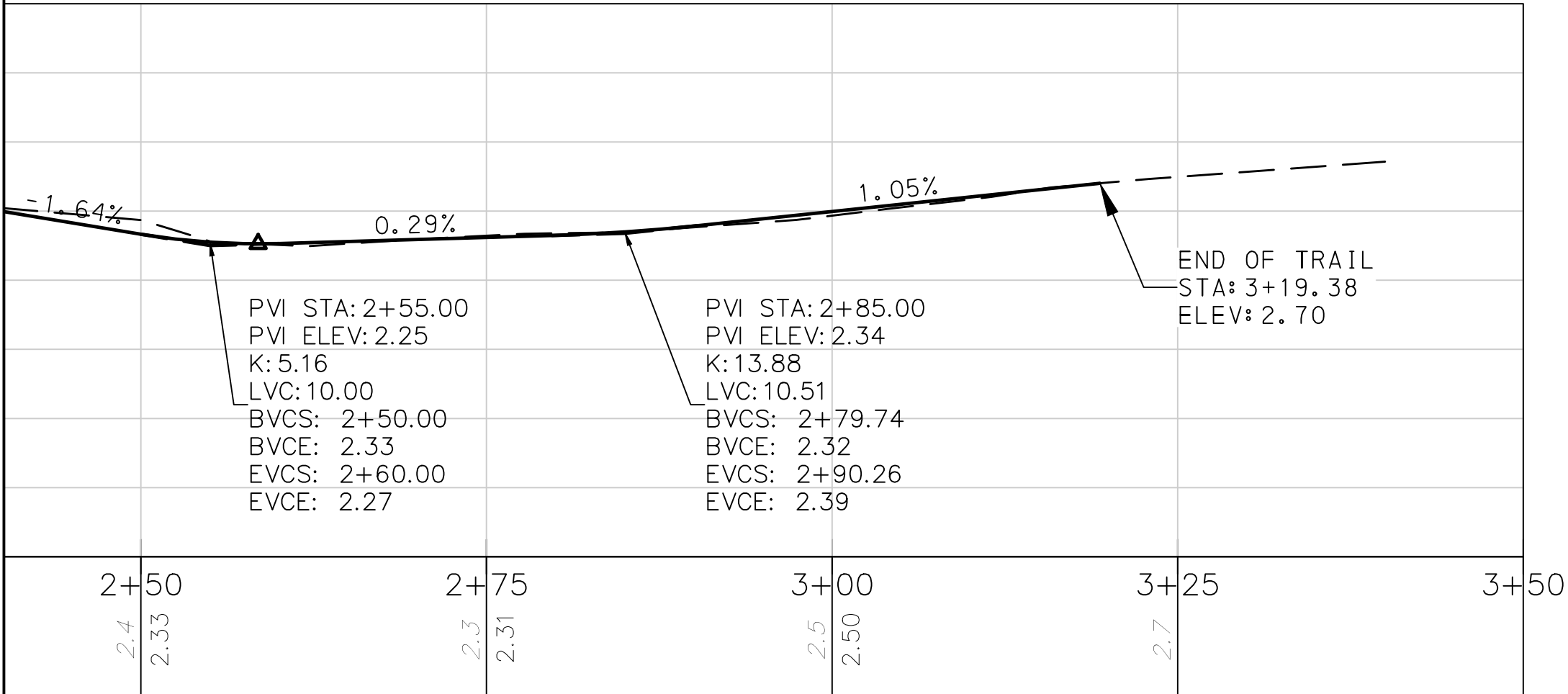
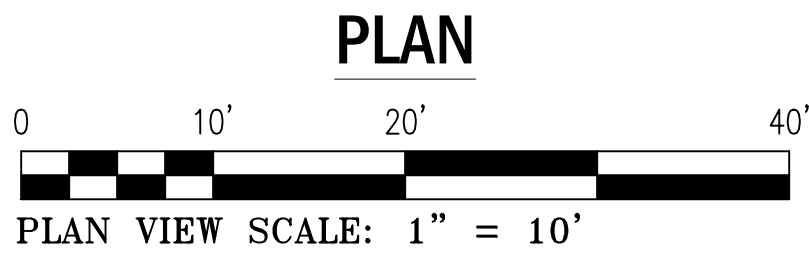
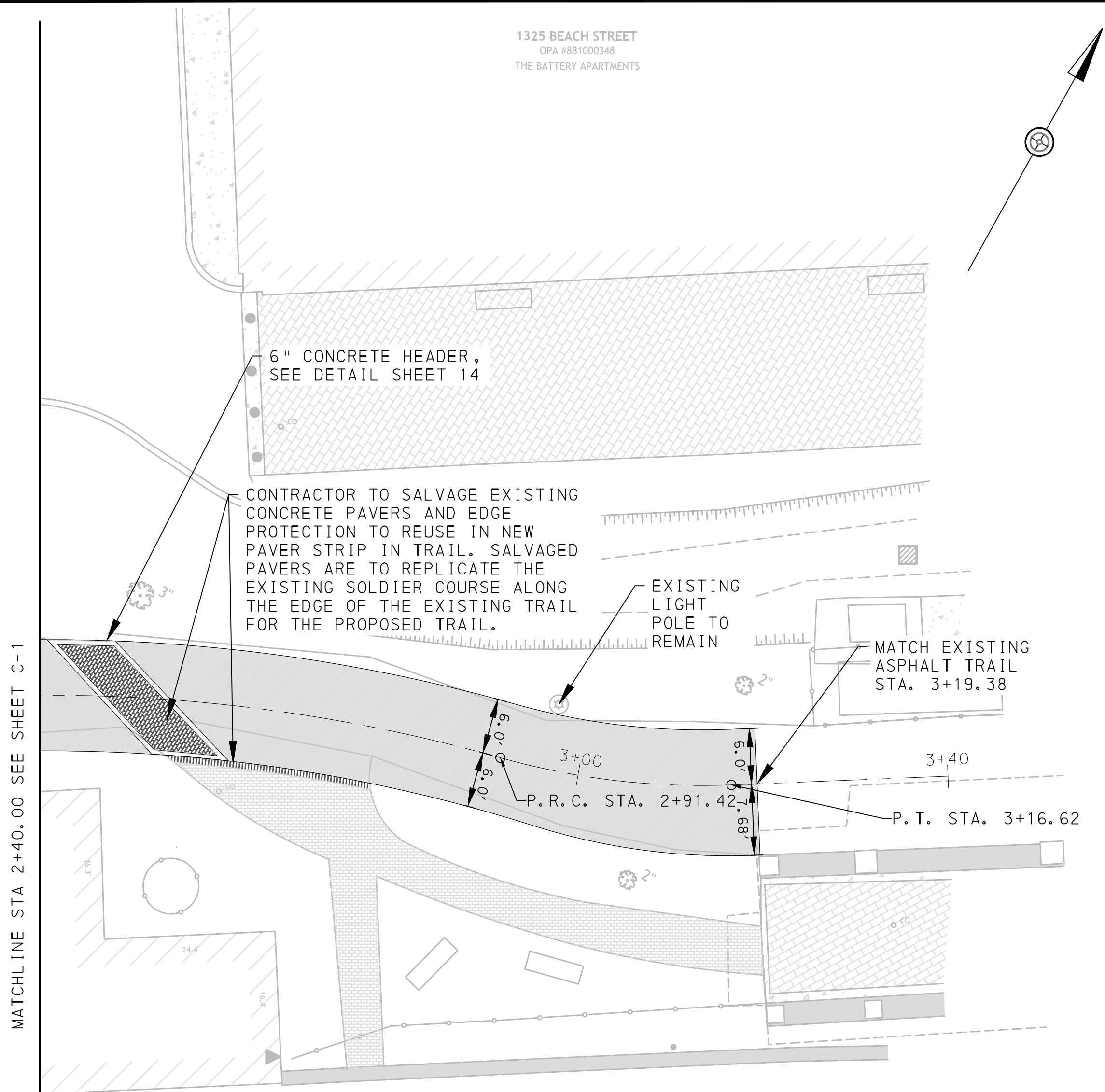
ADD ALTERNATE: 12"x12" COMPOSITE JUNCTION BOX

ADD ALTERNATE: SECURITY CAMERA POLE ON FOUNDATION WITH MOUNTED CAMERA AND NEMA BOX NEAR TOP OF POLE

**LEGEND**

- PROPOSED ASPHALT PATH
- PROPOSED CONCRETE PAVERS
- EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED





| PENN TREATY MAIN TRAIL CL |        |        |                    |              |         |                         |                         |               |             |
|---------------------------|--------|--------|--------------------|--------------|---------|-------------------------|-------------------------|---------------|-------------|
| SEGMENT                   | RADIUS | LENGTH | CHORD/LINE BEARING | CHORD LENGTH | TANGENT | START COORDINATE        | END COORDINATE          | START STATION | END STATION |
| L1                        |        | 36.39  | N62° 50' 38.78"E   |              |         | N241311.26, E2703342.13 | N241327.87, E2703374.51 | 0+00.00       | 0+36.39     |
| C1                        | 450.00 | 70.57  | N58° 21' 05.85"E   | 70.50        | 35.36   | N241327.87, E2703374.51 | N241364.86, E2703434.52 | 0+36.39       | 1+06.96     |
| L2                        |        | 112.59 | N53° 51' 32.92"E   |              |         | N241364.86, E2703434.52 | N241431.26, E2703525.44 | 1+06.96       | 2+19.55     |
| C2                        | 180.00 | 71.87  | N65° 17' 49.38"E   | 71.39        | 36.42   | N241431.26, E2703525.44 | N241461.10, E2703590.30 | 2+19.55       | 2+91.42     |
| C3                        | 80.00  | 25.20  | N67° 42' 36.95"E   | 25.10        | 12.71   | N241461.10, E2703590.30 | N241470.62, E2703613.52 | 2+91.42       | 3+16.62     |
| L3                        |        | 23.38  | N58° 41' 08.05"E   |              |         | N241470.62, E2703613.52 | N241482.77, E2703633.50 | 3+16.62       | 3+40.00     |

| PENN TREATY SPUR TRAIL CL |        |        |                    |              |         |                         |                         |               |             |
|---------------------------|--------|--------|--------------------|--------------|---------|-------------------------|-------------------------|---------------|-------------|
| SEGMENT                   | RADIUS | LENGTH | CHORD/LINE BEARING | CHORD LENGTH | TANGENT | START COORDINATE        | END COORDINATE          | START STATION | END STATION |
| C4                        | 160.00 | 10.74  | S20° 18' 32.90"E   | 10.74        | 5.37    | N241436.14, E2703400.62 | N241426.06, E2703404.35 | 10+00.00      | 10+10.74    |
| L4                        |        | 68.45  | S22° 13' 57.21"E   |              |         | N241426.06, E2703404.35 | N241362.71, E2703430.25 | 10+10.74      | 10+79.19    |
| C5                        | 20.00  | 33.59  | S70° 20' 40.95"E   | 29.78        | 22.30   | N241362.71, E2703430.25 | N241352.69, E2703458.29 | 10+79.19      | 11+12.78    |
| L5                        |        | 15.59  | N61° 32' 35.30"E   |              |         | N241352.69, E2703458.29 | N241360.12, E2703472.00 | 11+12.78      | 11+28.37    |

NOTES

- FOR ALL EXISTING AND PROPOSED GRADE ELEVATIONS, SEE GRADING PLAN.
- THE CONTRACTOR SHALL ADJUST ALL UTILITY FRAMES, COVERS, MANHOLES, VALVE BOXES AND OTHER UTILITY FACILITY STRUCTURES TO BE FLUSH WITH FINISH SURFACE GRADE ELEVATIONS.
- REFER TO TYPICAL SECTION SHEET FOR ASPHALT PAVING DETAIL.

LEGEND

- PROPOSED ASPHALT PATH
- PROPOSED CONCRETE PAVERS
- EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED

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COMMONWEALTH OF PENNSYLVANIA

REGISTERED PROFESSIONAL

MATTHEW LUDWIG

ENGINEER No. PED04565

SITE ADDRESS:

1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE

FINAL DESIGN (100%)

DATE

DECEMBER 23, 2025

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MB

CHECKED BY

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PROJECT #

0001052.00

SCALE

VARIES

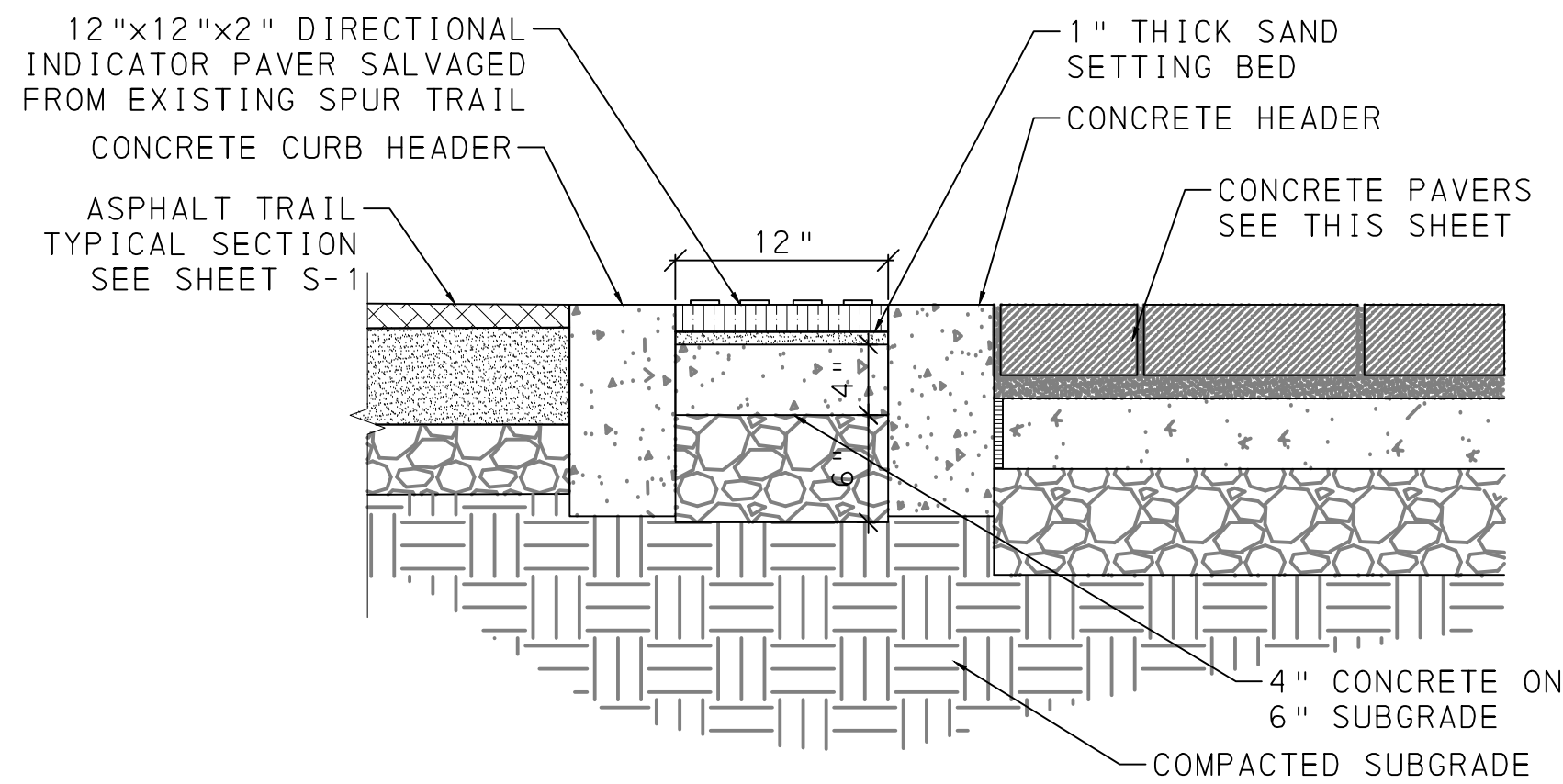
DRAWING TITLE

CONSTRUCTION PLAN AND PROFILE

DRAWING NUMBER

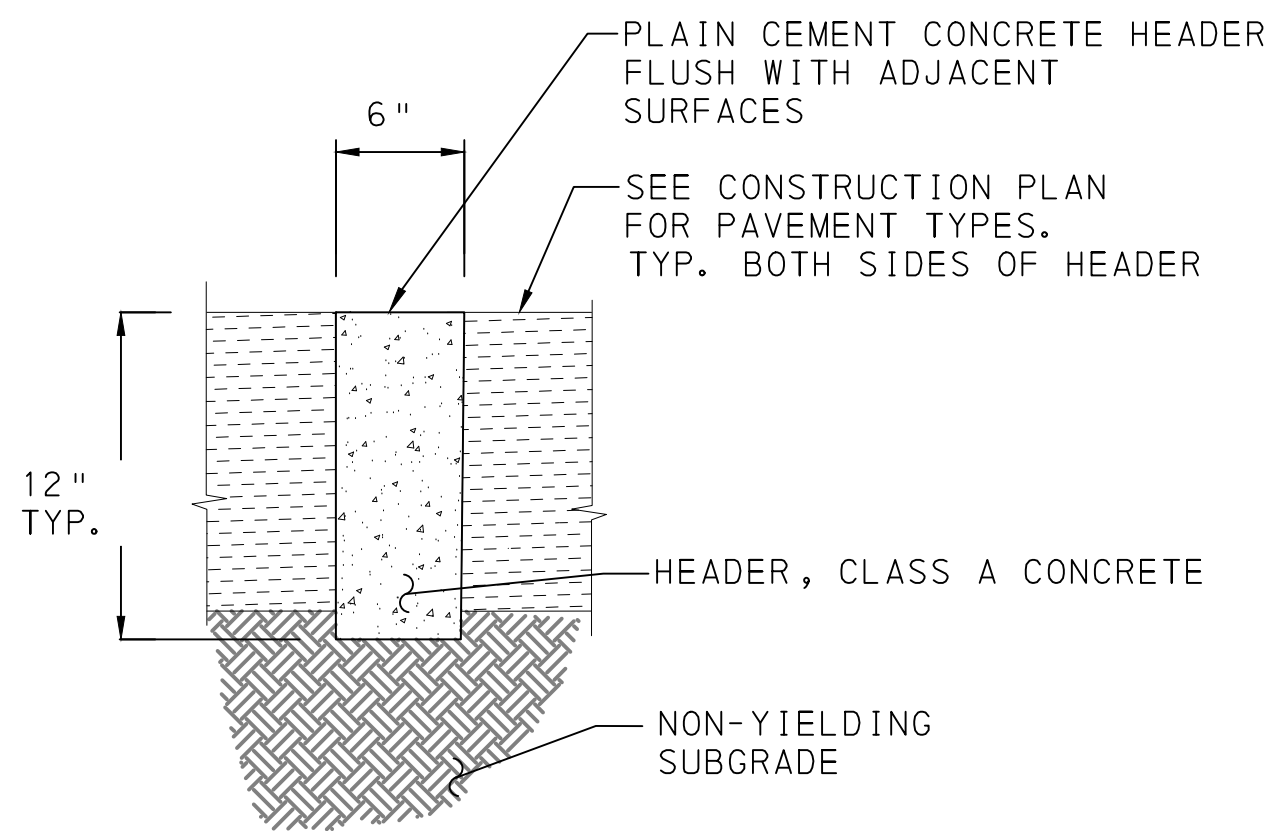
C-2



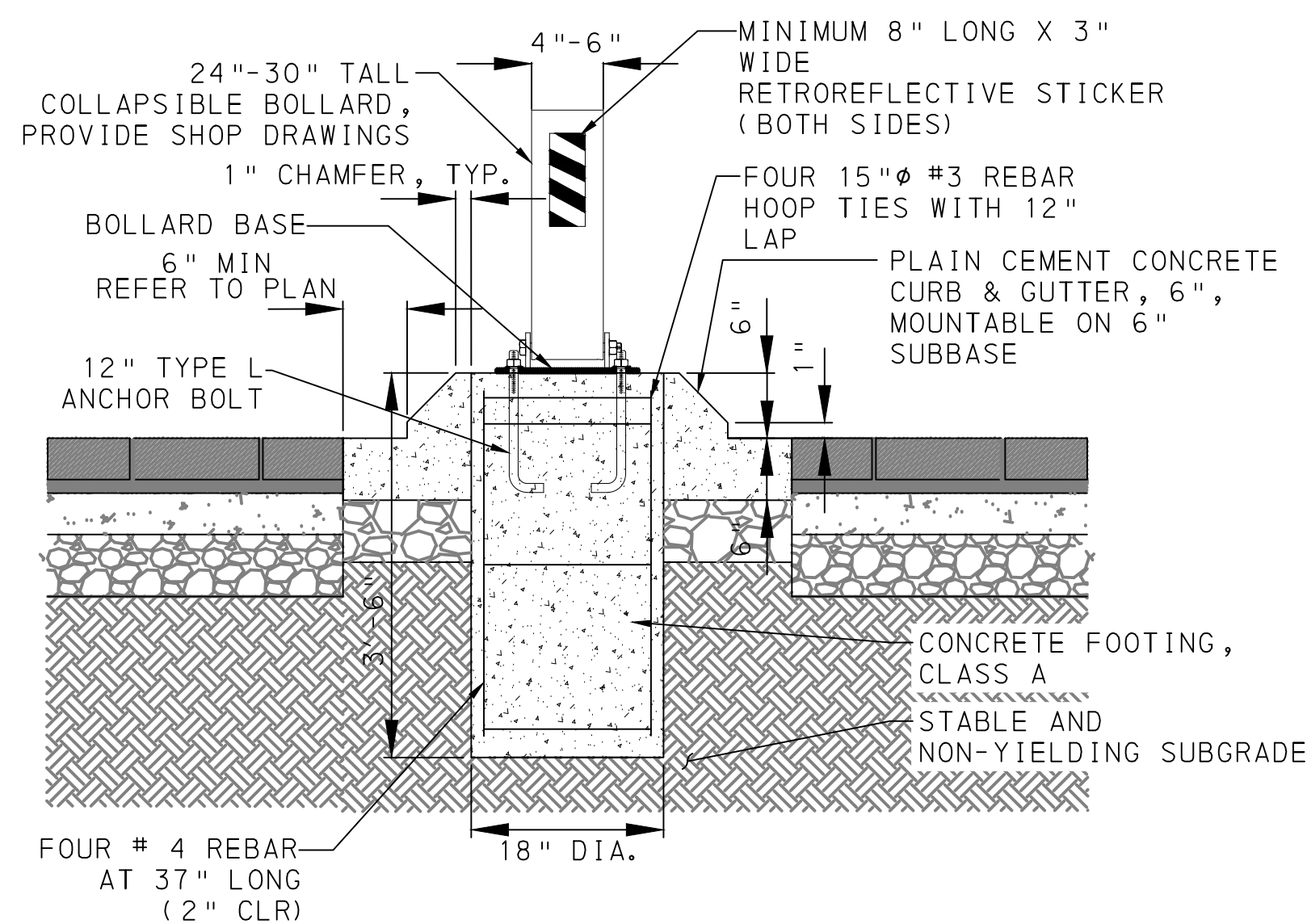


- NOTES:
1. CONTRACTOR SHALL ENSURE DIRECTIONAL INDICATOR BLOCK ELEVATION IS FLUSH WITH ADJACENT HEADER.
  2. DIRECTIONAL INDICATOR BLOCK "BUMPS" SHALL BE PERPENDICULAR TO TRAIL DIRECTION.
  3. CONTRACTOR SHALL PROTECT BLOCK DURING ASPHALT PAVING. ANY BLOCKS CRACKED OR DISCOLORED SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.

DIRECTIONAL INDICATOR BLOCK  
NTS

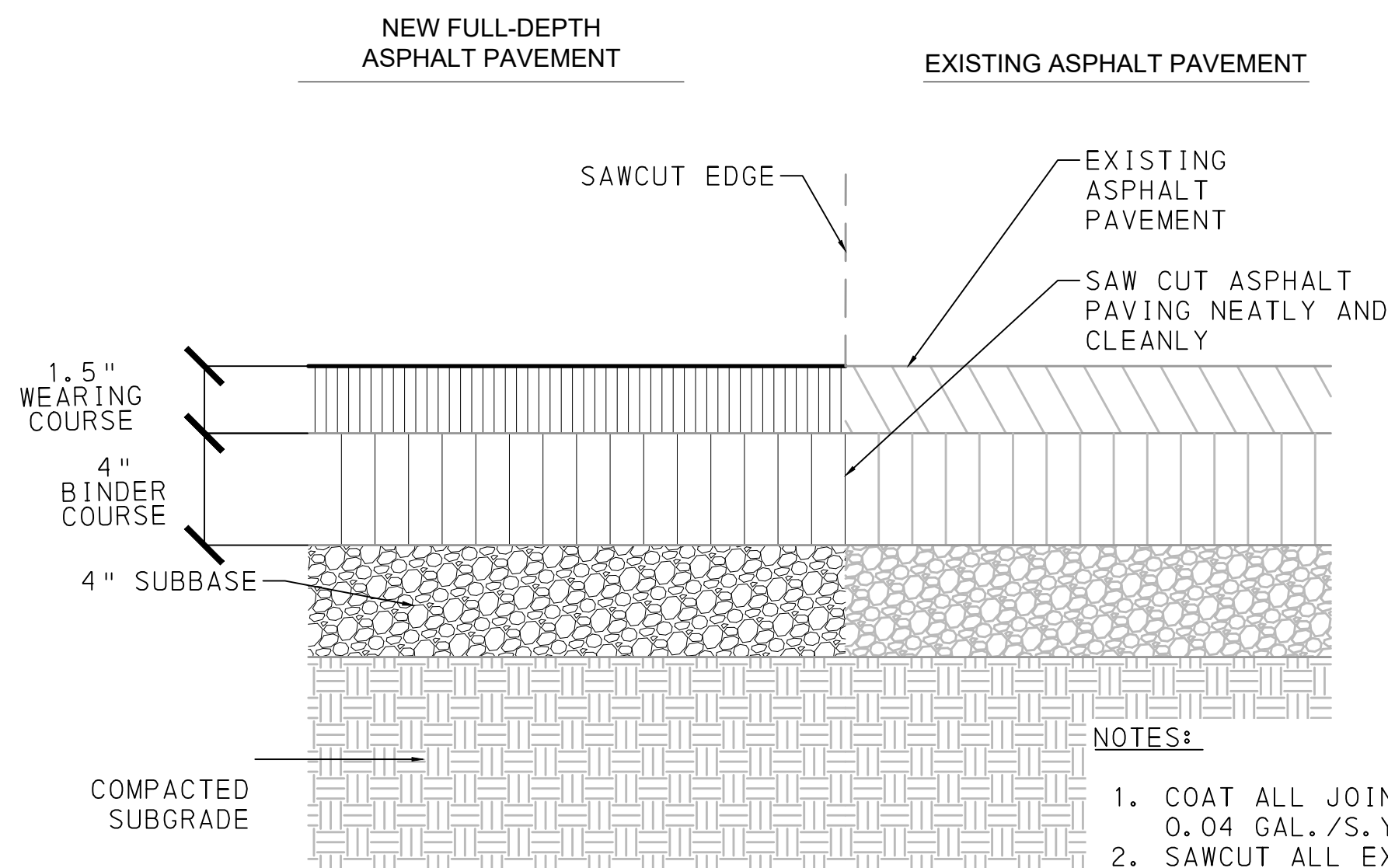


6" CONCRETE HEADER, 12" DEPTH  
NOT TO SCALE

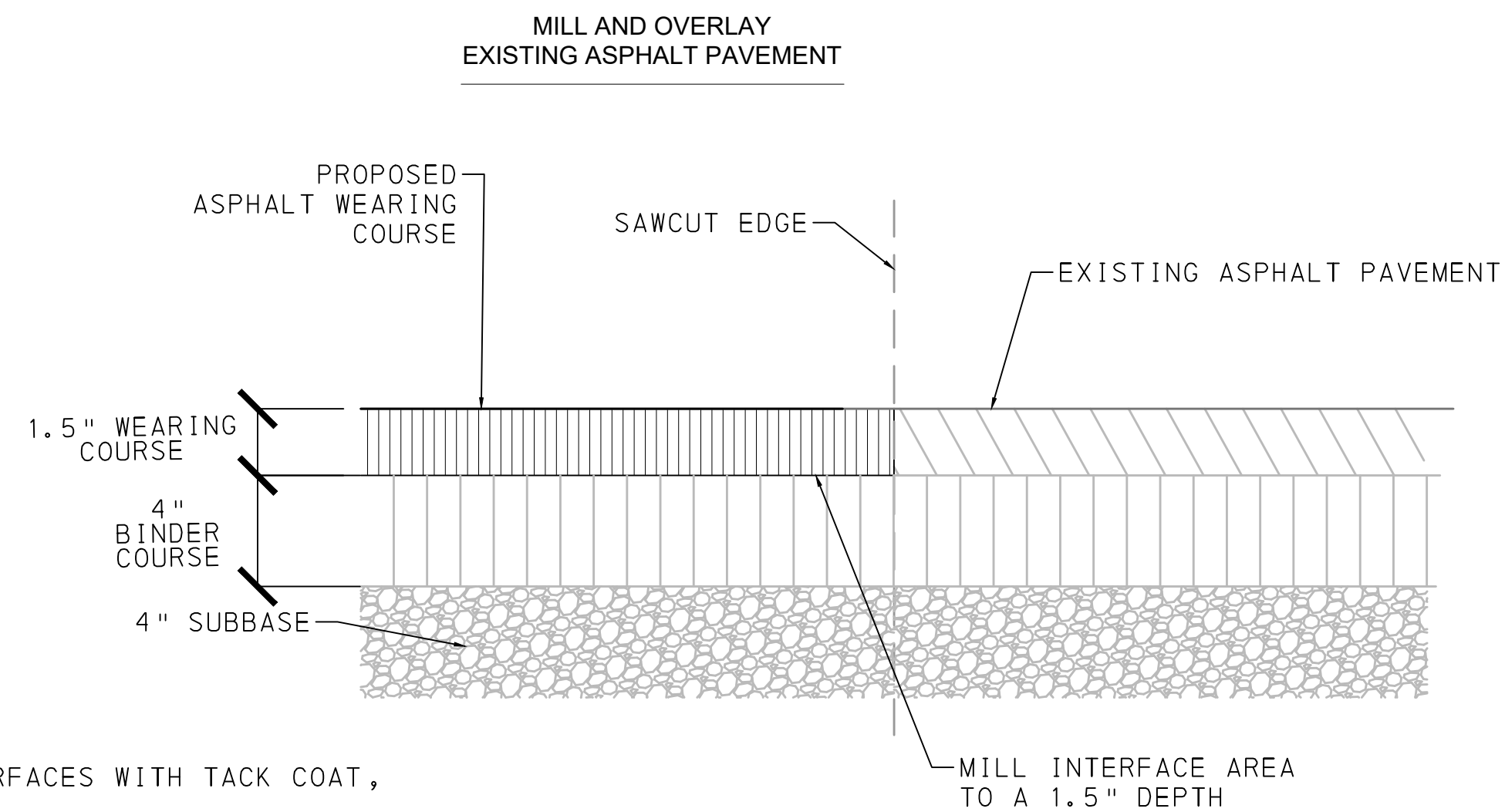


- NOTES:
1. BOLLARDS SET IN NEW PAVED AREAS ARE TO BE SET BEFORE PAVING IS PLACED
  2. AREA BETWEEN BACK OF CURBS AND NOT WITHIN 18" DIA. FOUNDATION FOOTPRINT TO CONSIST OF 6" CONCRETE SLAB ON 6" SUBBASE, MONOLITIC TO FOUNDATION FOR CLEAN LOOK.

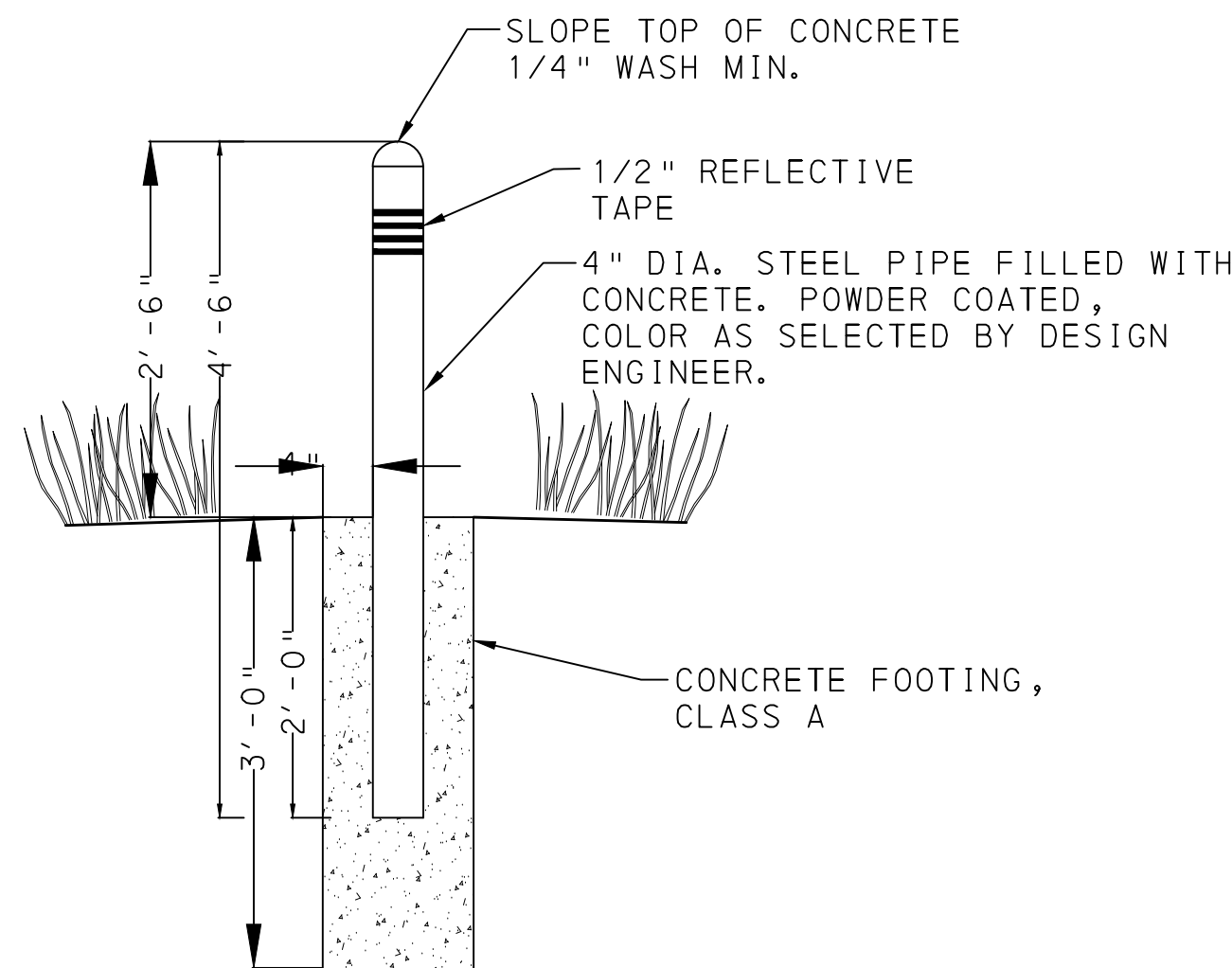
COLLAPSIBLE BOLLARD  
NOT TO SCALE



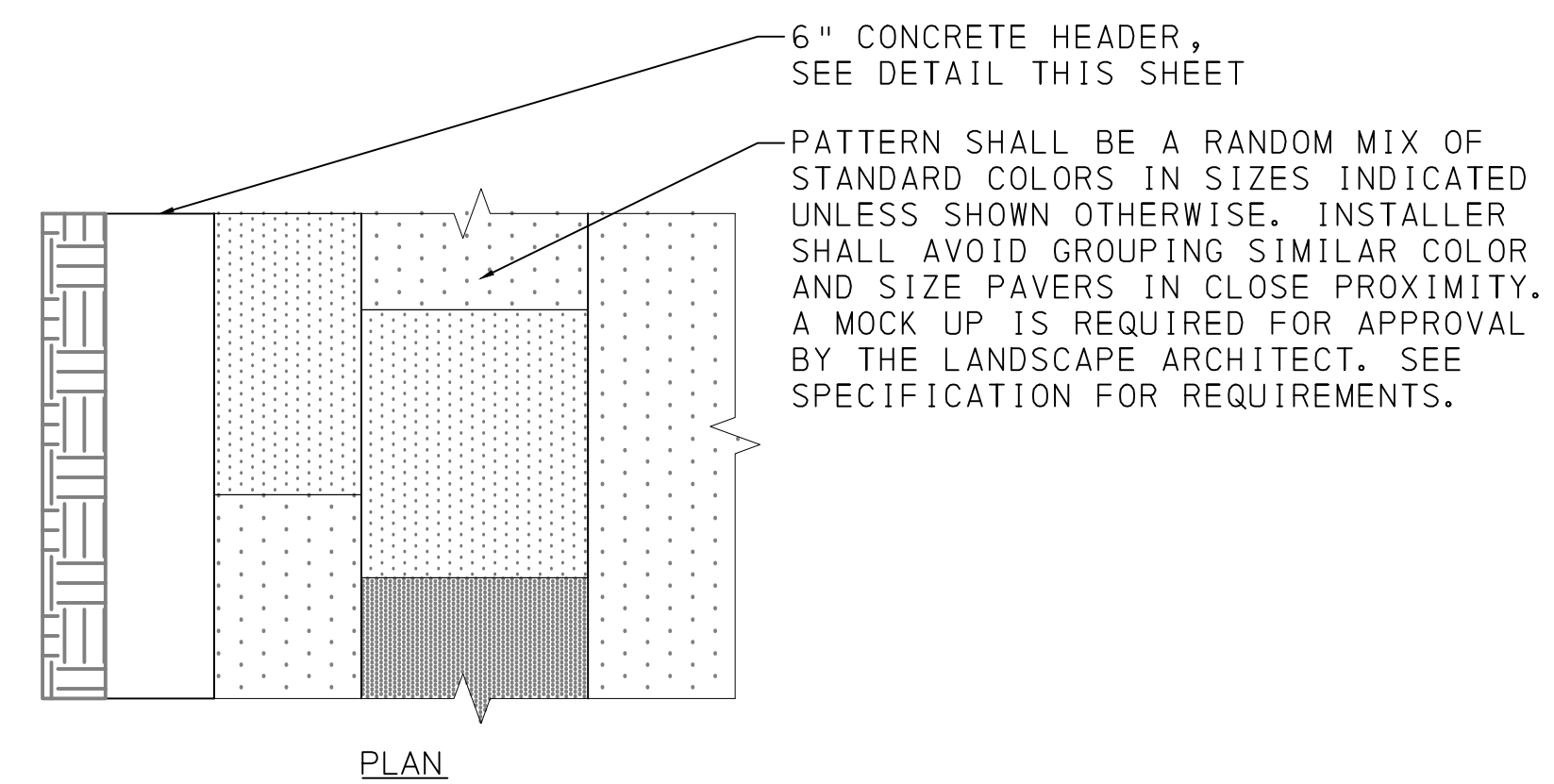
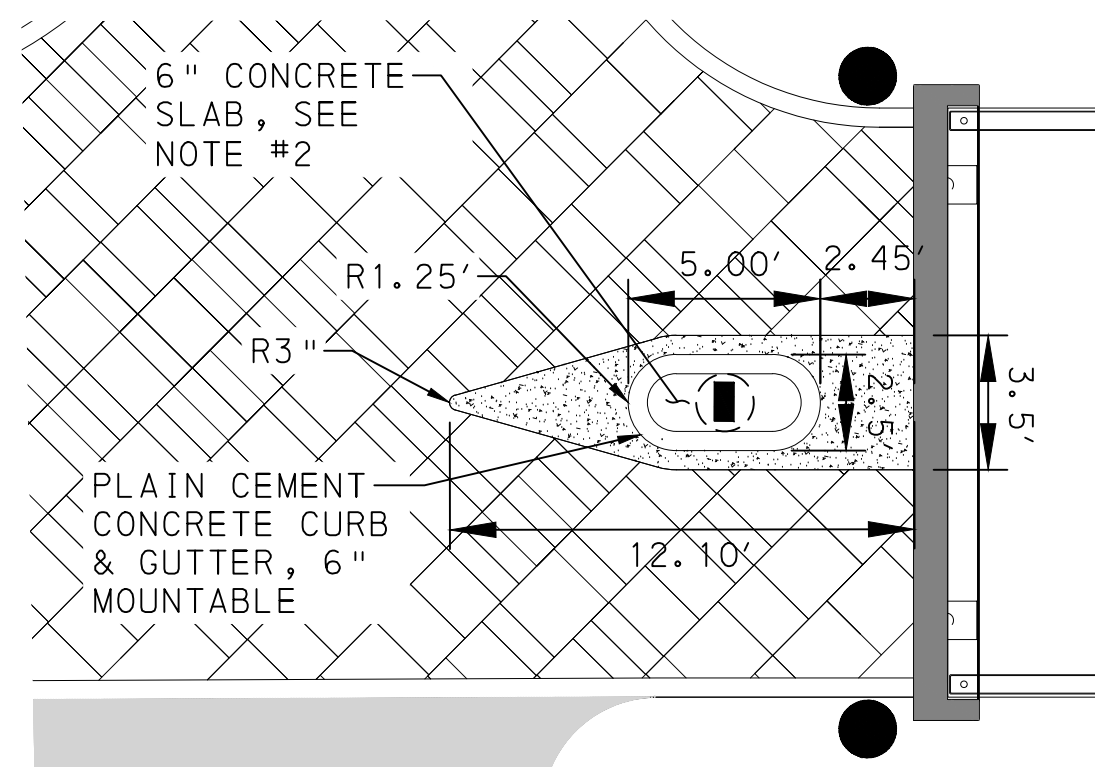
ASPHALT DETAIL  
NOT TO SCALE



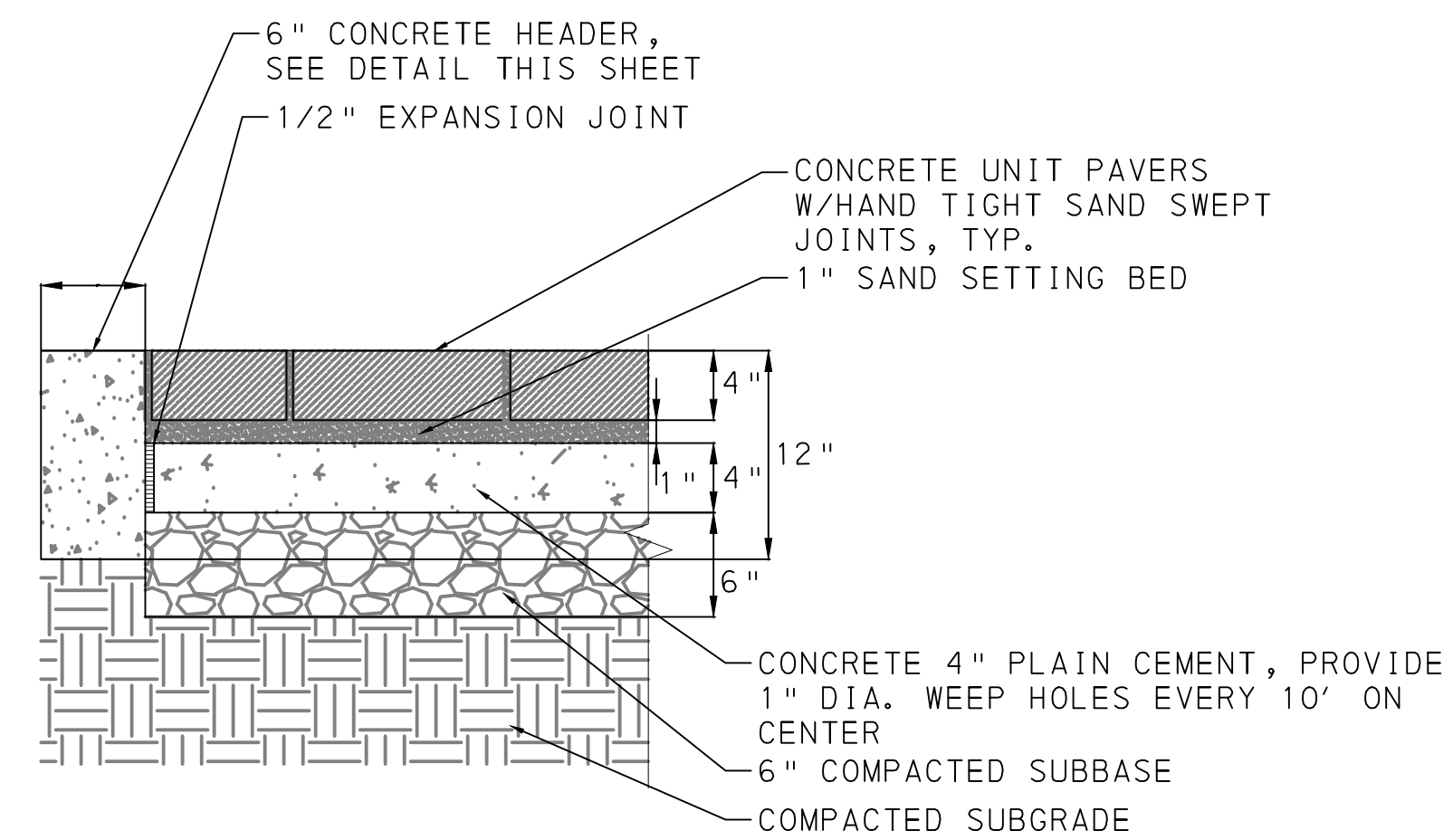
MILL & OVERLAY DETAIL  
NOT TO SCALE



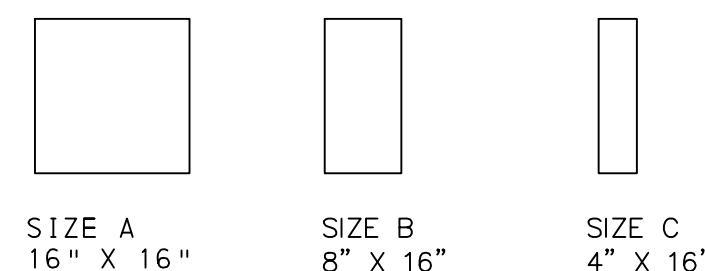
STEEL FIXED BOLLARD  
NOT TO SCALE



PLAN



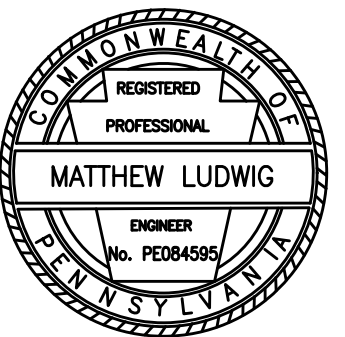
SECTION



CONCRETE PAVERS  
NOT TO SCALE

- NOTE:
- PAVERS SHALL BE "SENZO" WITH COLOR CUSTOM BLEND TO BE APPROVED BY LANDSCAPE ARCHITECT AS MANUFACTURED BY UNILOCK OR APPROVED EQUAL
1. PATTERN SHALL MATCH INSTALLED PAVEMENT SECTIONS IN PLAZA SPACE IMMEDIATELY SOUTH OF PROJECT LIMITS

| REVISIONS |      |         |
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SITE ADDRESS:  
1301 BEACH STREET  
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DRAWING ISSUE  
FINAL DESIGN (100%)

DATE  
DECEMBER 23, 2025

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0001052.00

SCALE  
VARIES

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CONSTRUCTION  
DETAILS

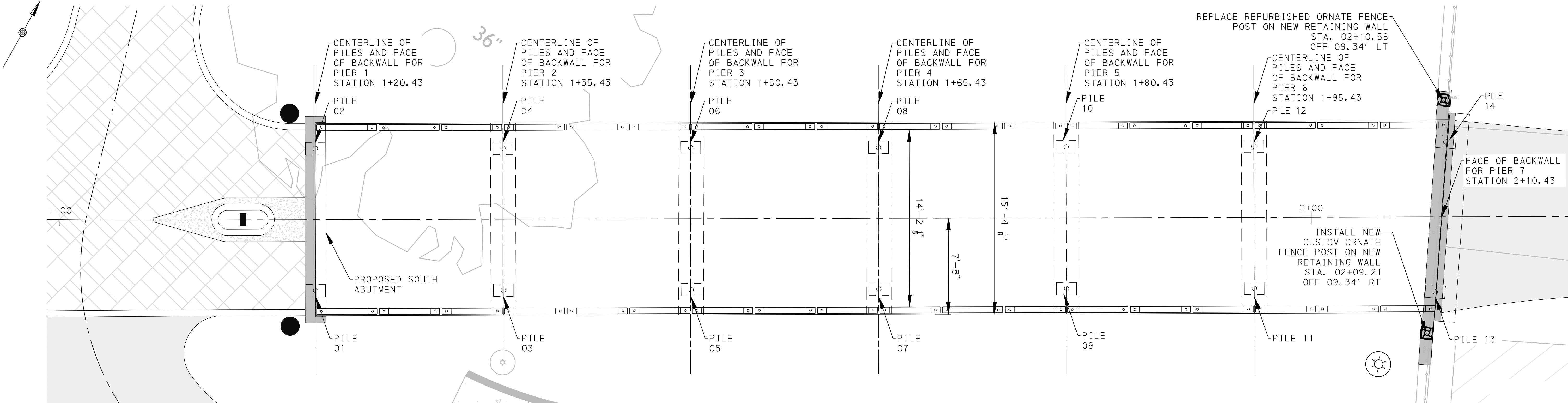
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C-3



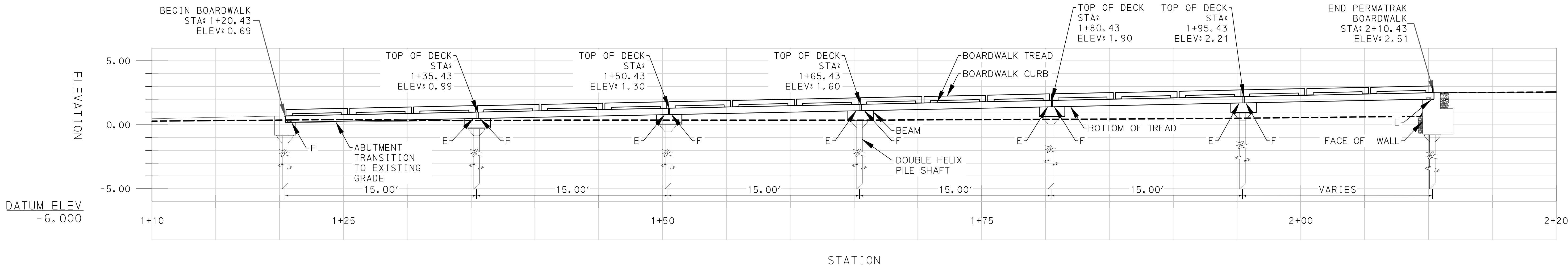
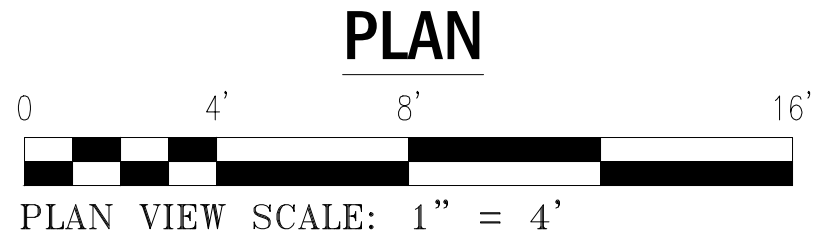
**C-4**





| PILE STATION/OFFSET |          |         |
|---------------------|----------|---------|
| PILE NUMBER         | STATION  | OFFSET  |
| 01                  | 01+20.43 | 5.67' R |
| 02                  | 01+20.43 | 5.67' L |
| 03                  | 01+35.43 | 5.67' R |
| 04                  | 01+35.43 | 5.67' L |
| 05                  | 01+50.43 | 5.67' R |
| 06                  | 01+50.43 | 5.67' L |
| 07                  | 01+65.43 | 5.67' R |

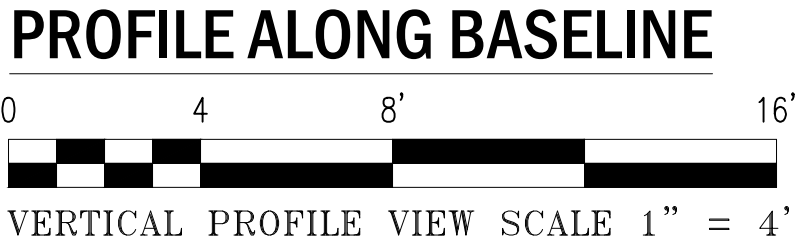
| PILE STATION/OFFSET |          |         |
|---------------------|----------|---------|
| PILE NUMBER         | STATION  | OFFSET  |
| 08                  | 01+65.43 | 5.67' L |
| 09                  | 01+80.43 | 5.67' R |
| 10                  | 01+80.43 | 5.67' L |
| 11                  | 01+95.43 | 5.67' R |
| 12                  | 01+95.43 | 5.67' L |
| 13                  | 02+09.88 | 6.00' R |
| 14                  | 02+10.76 | 6.00' L |



**NOTE:**  
AFTER COORDINATING WITH BOARDWALK FABRICATOR, CONTRACTOR SHALL PROVIDE LAYOUT DRAWINGS PRIOR TO PLACING FOUNDATION CAP CONCRETE SHOWING THAT THE TOP OF DECK PROFILE IS ACHIEVED TO THE SATISFACTION OF THE ENGINEER.

- PREFABRICATED CONCRETE BOARDWALK (DESIGNED BY CONTRACTOR):**
- BOARDWALK PRESENTED IN CONTRACT IS AN APPROXIMATION. ACTUAL CONCRETE BOARDWALK SYSTEM TO BE DESIGNED, FABRICATED AND DELIVERED BY A QUALIFIED MANUFACTURER. CONTRACTOR SHALL SUBMIT PLANS THAT ARE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE COMMONWEALTH OF PENNSYLVANIA FOR THE BOARDWALK SYSTEM TO THE ENGINEER FOR APPROVAL.
  - BOARDWALK SHALL BE DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH/ EDITION WITH INTERIM REVISIONS THROUGH 2021.
  - DESIGN LIVE LOAD:  
VEHICULAR: H5 LOAD (GROSS WEIGHT = 10,000 POUNDS) WITH A MAXIMUM WHEEL LOAD OF 4000 POUNDS. PEDESTRIAN: 100 PSF FOUNDATION:  
FOUNDATIONS SHALL BE DESIGNED FOR THE FOLLOWING APPLIED PIER/PILE LOADS: COMPRESSION: 20 KIPS (SERVICE) LATERAL: 1.0 KIPS (SERVICE)
  - HELICAL PIERS SHOWN ON THESE PLANS SHALL BE DESIGNED BY THE HELICAL PIER SUPPLIER. THE DESIGN PROVIDED SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE COMMONWEALTH OF PENNSYLVANIA AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

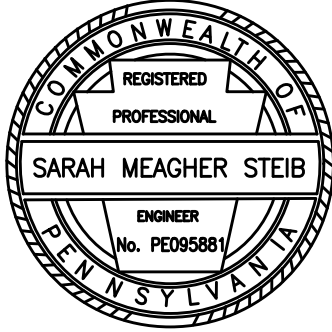
**NOTE:**  
THIS PROFILE IS TAKEN ALONG THE BASELINE AND SO THE DIMENSION AND THE STATIONING DOES NOT VARY, IT IS MEASURED FROM THE CENTERLINE OF PILES ON PIER 6 TO THE CENTERLINE OF PILES ON PIER 7 AT THE INTERSECTION OF THE CENTERLINE AND THE BASELINE.



**LEGEND**  
E TREAD WITH EXPANSION JOINT  
F FIXED TREAD

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| DRAWN BY<br>MB            | CHECKED BY<br>ML |
| PROJECT#<br>0001052.00    | SCALE<br>VARIES  |

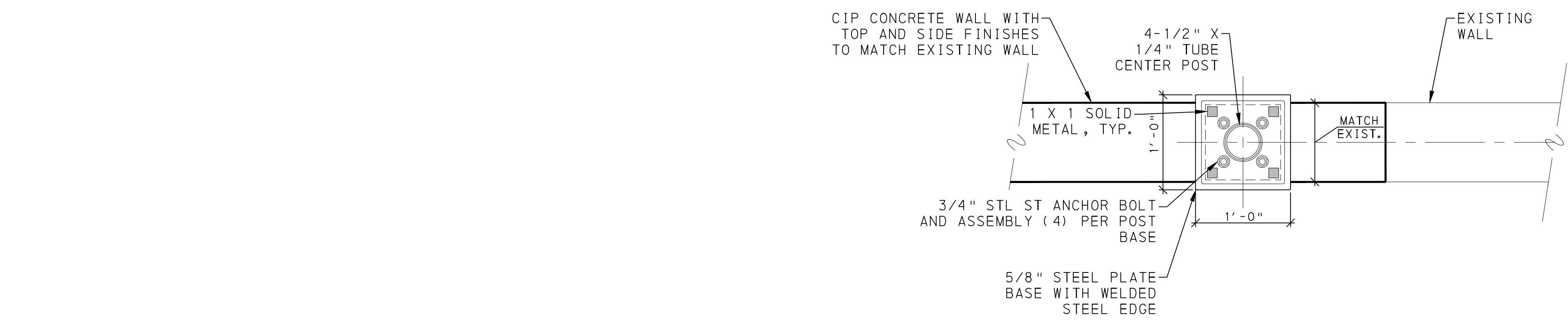
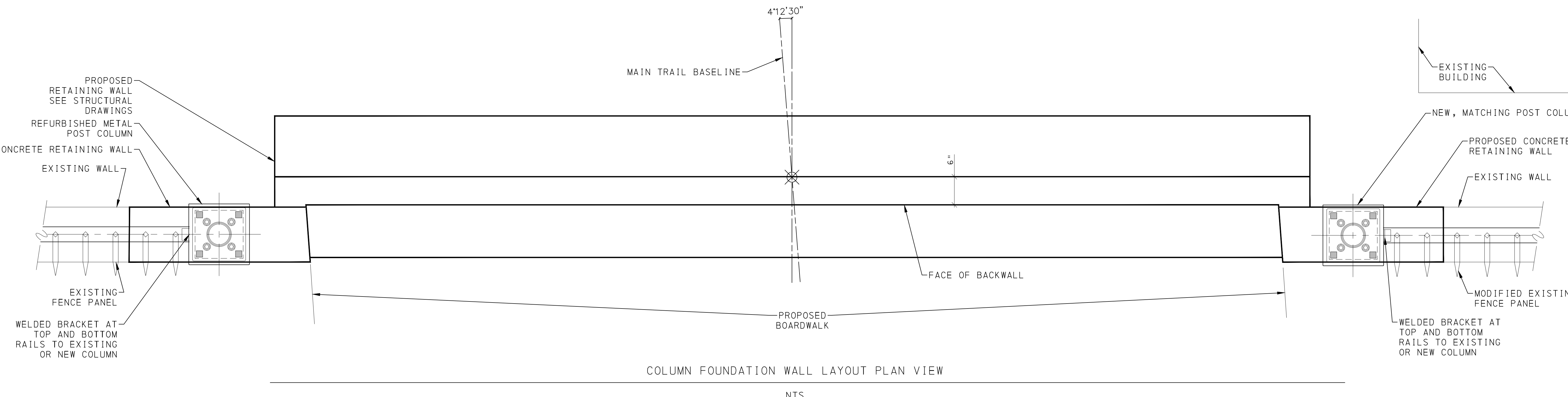
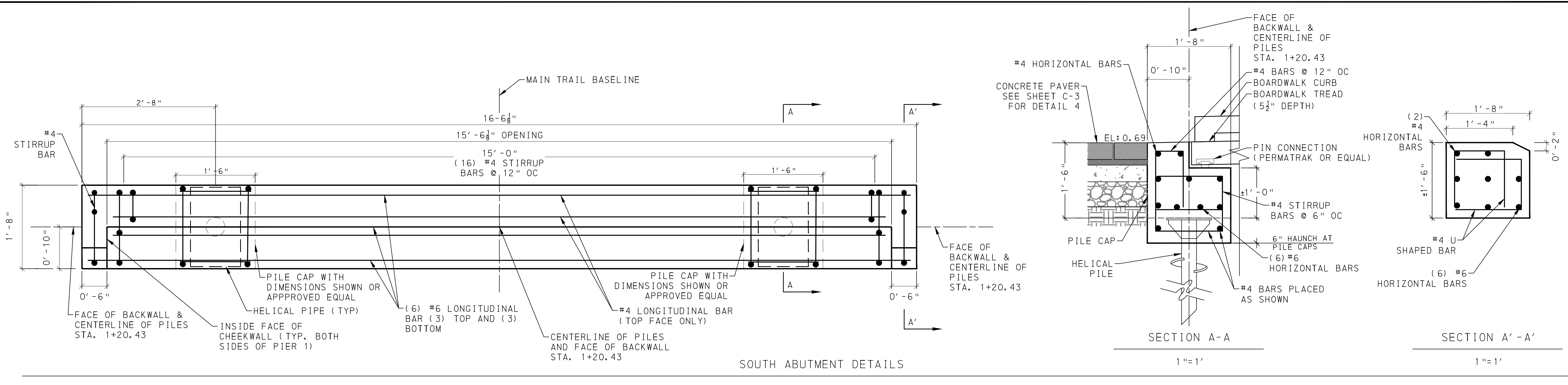
DRAWING TITLE

**BOARDWALK  
PLAN AND  
PROFILE**

DRAWING NUMBER

**B-1**





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COMMONWEALTH OF PENNSYLVANIA

REGISTERED PROFESSIONAL

SARAH MEAGHER STEIB

ENGINEER No. PED05081

SITE ADDRESS:  
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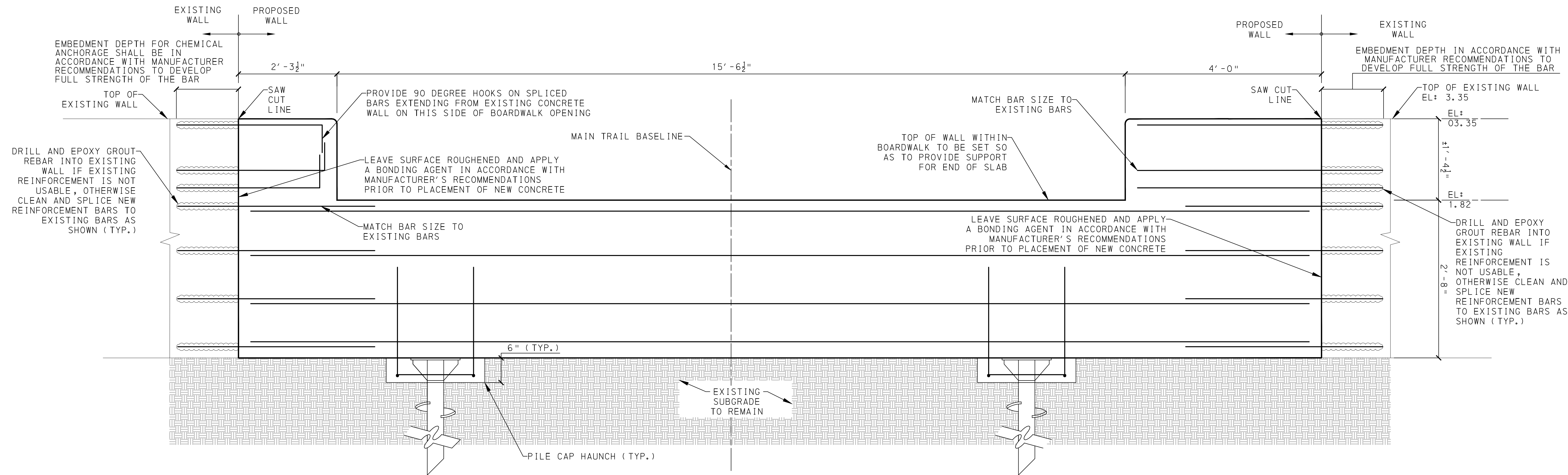
PROJECT #  
0001052.00

SCALE  
VARIES

DRAWING TITLE  
**BOARDWALK  
DETAILS**

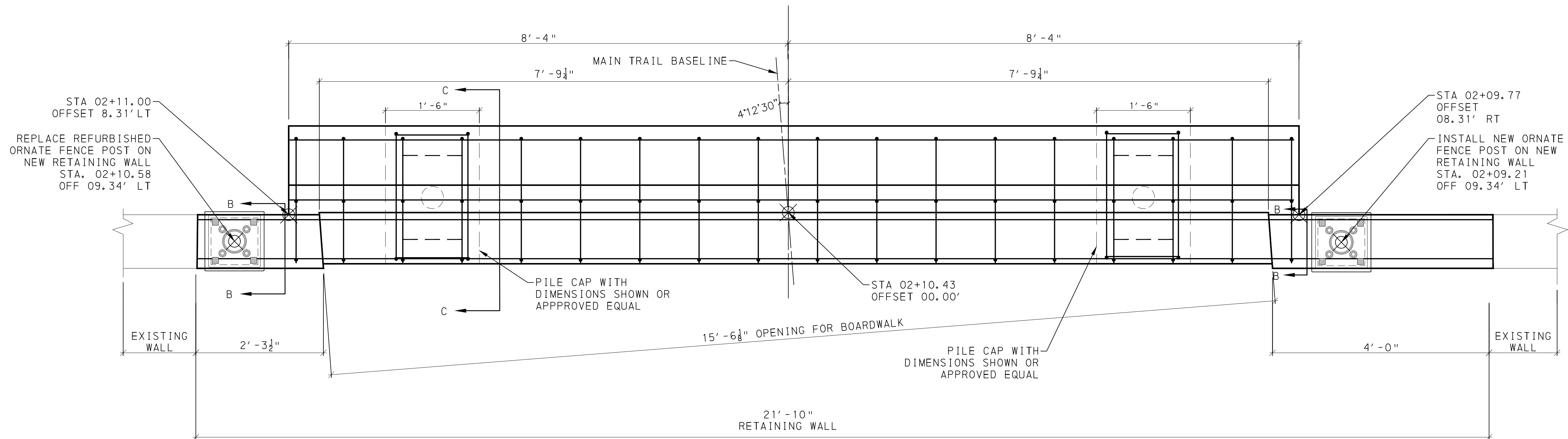
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**B-2**





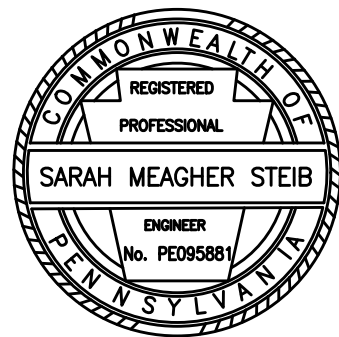
CONCRETE RETAINING WALL SECTION DETAIL (LOOKING NORTH)

NTS



CONCRETE RETAINING WALL DETAIL  
PLAN VIEW  
NTS

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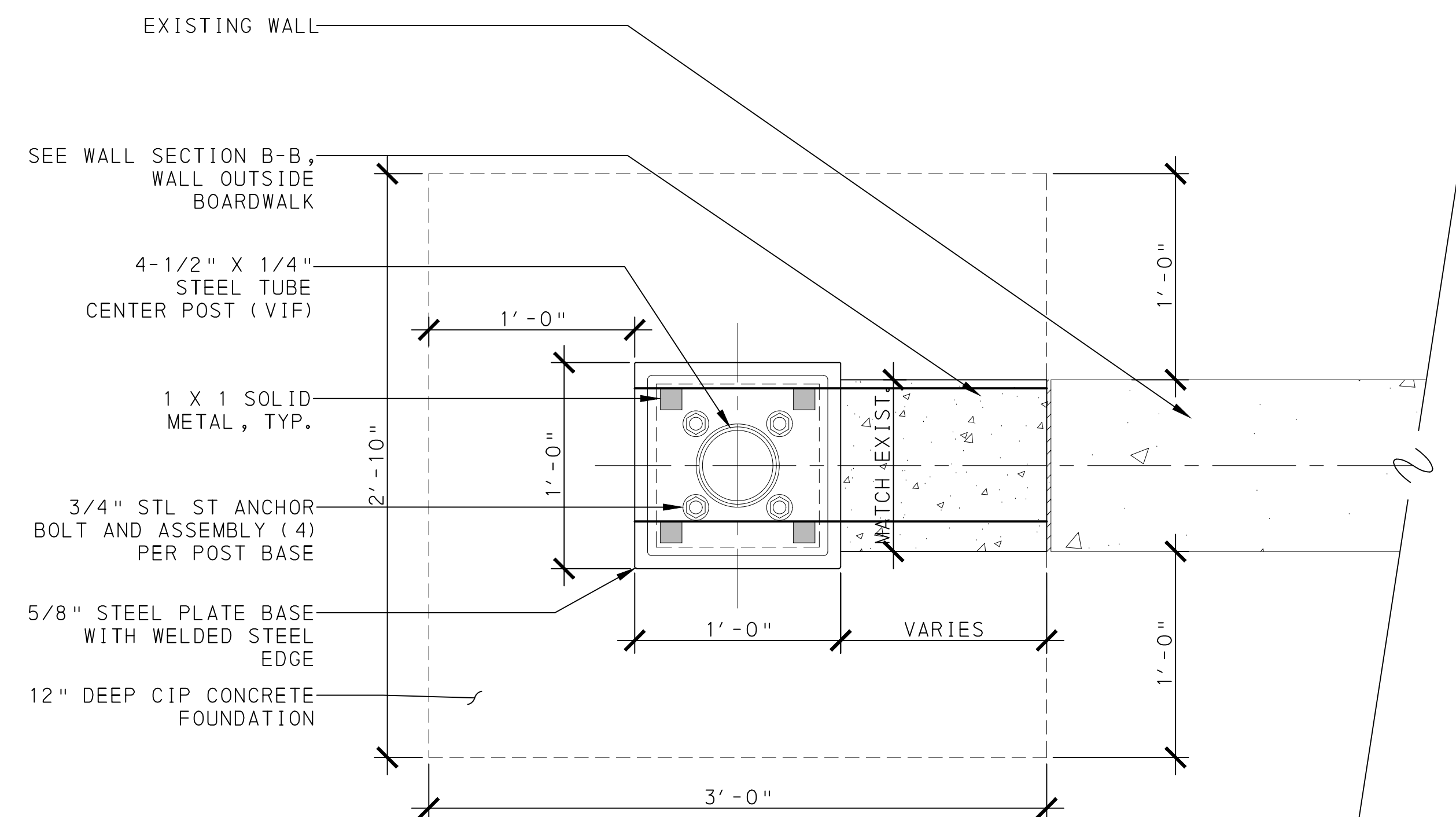
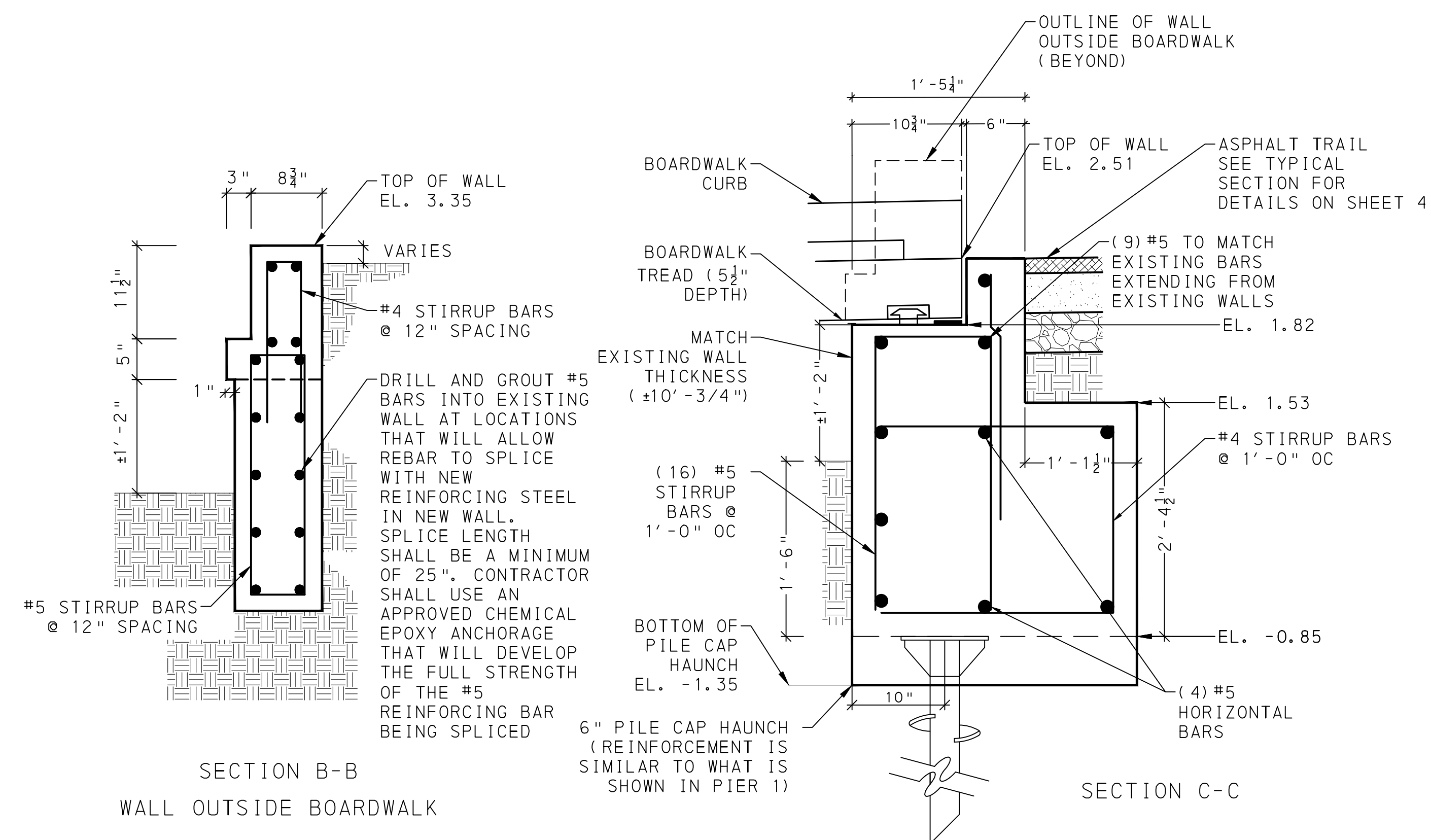
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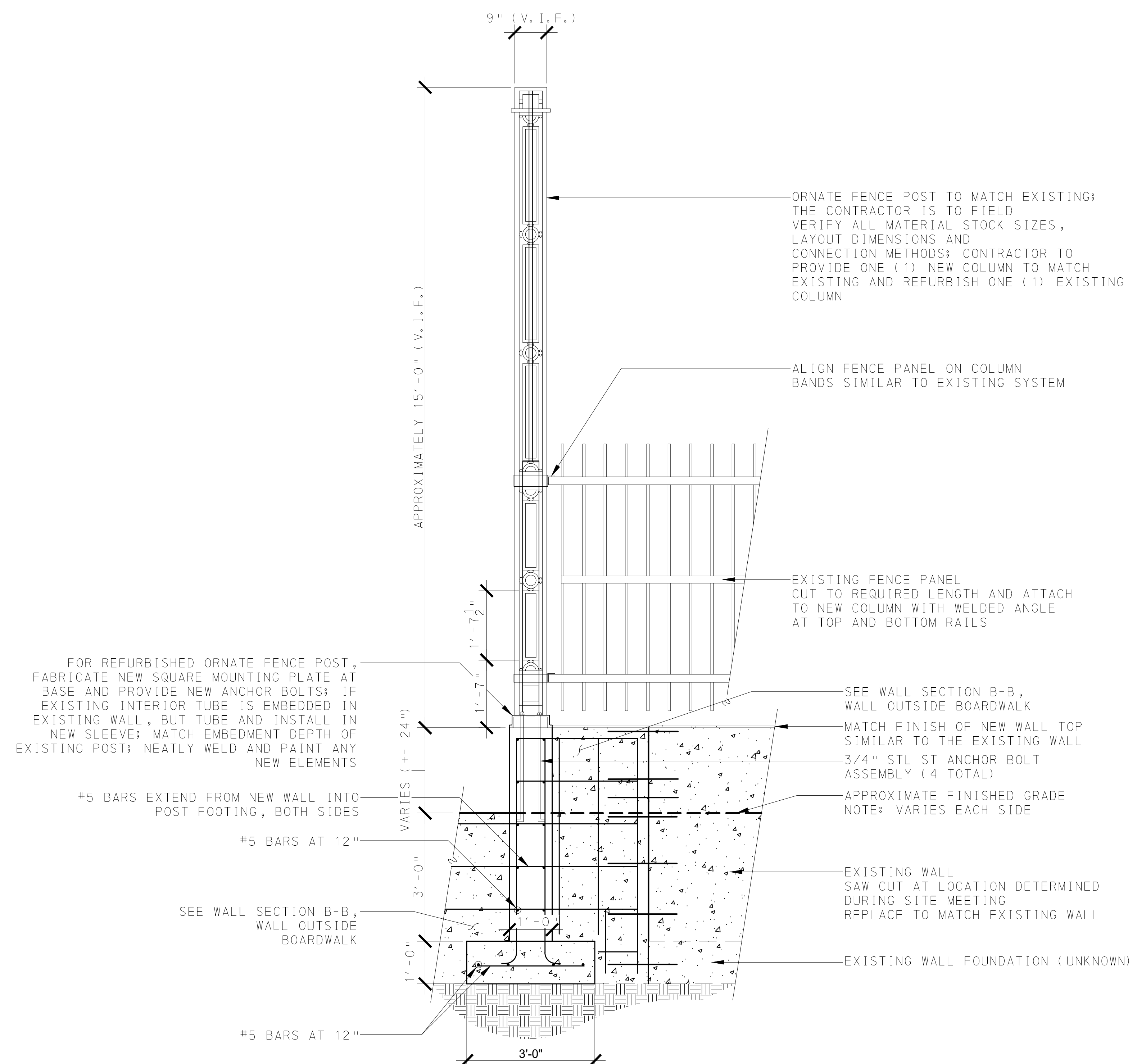
**BOARDWALK  
DETAILS**

DRAWING NUMBER  
**B-3**

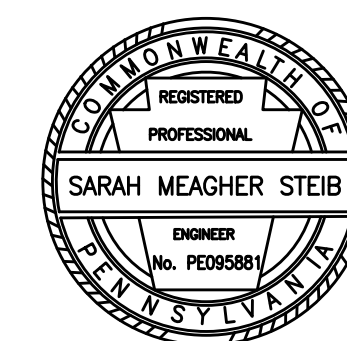




ORNATE FENCE POST (REFURBISHED OR NEW) - PLAN VIEW



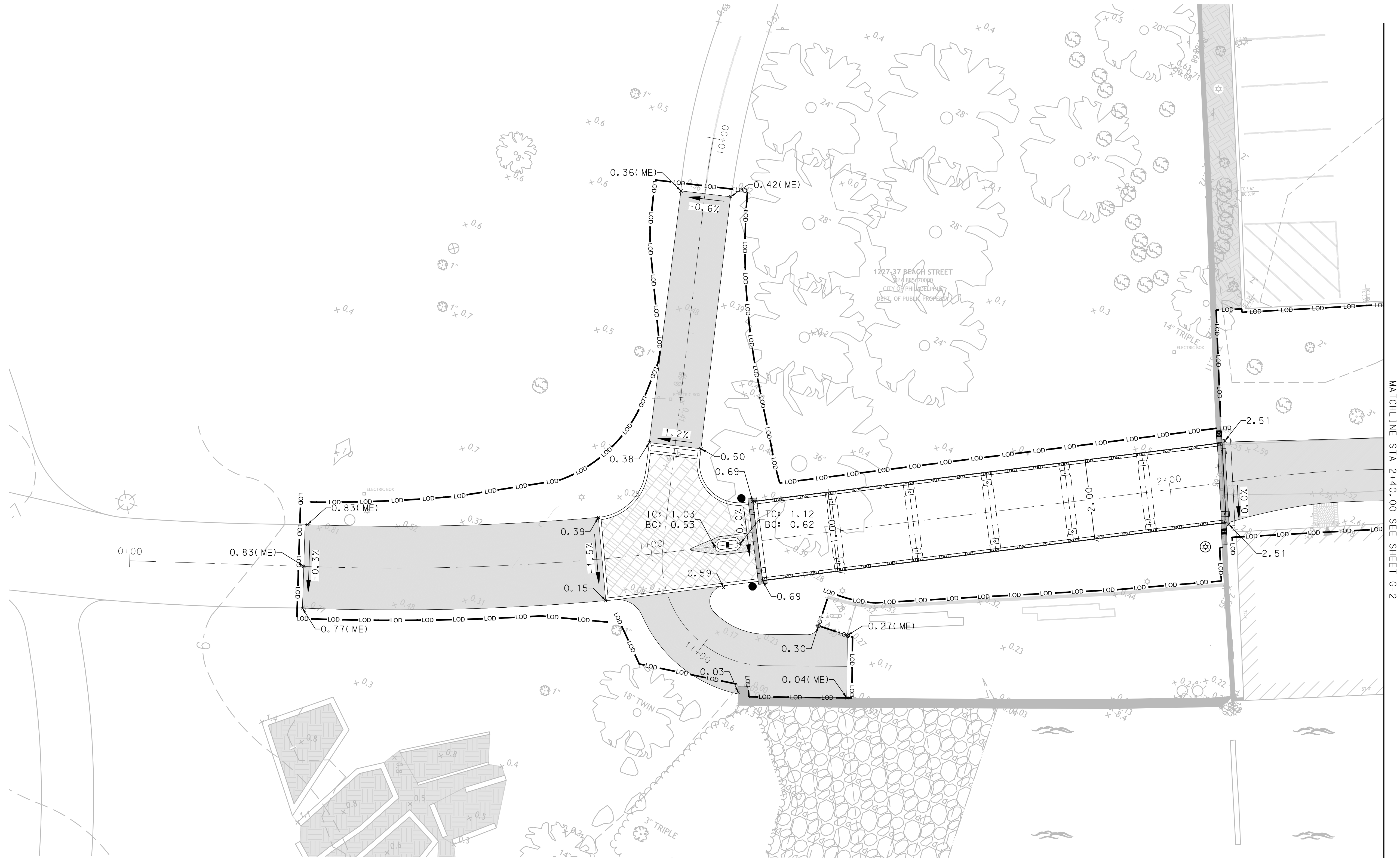
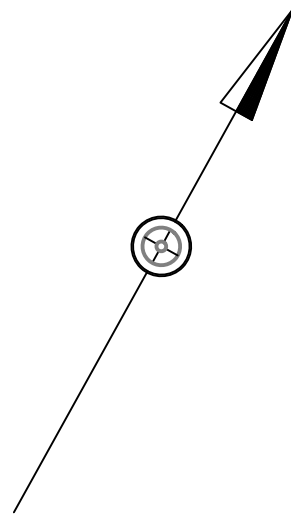
ORNATE FENCE POST (REFURBISHED OR NEW) - SECTION VIEW  
NTS

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| PROJECT #<br>0001052.00              | SCALE<br>VARIES  |
| DRAWING TITLE                        |                  |





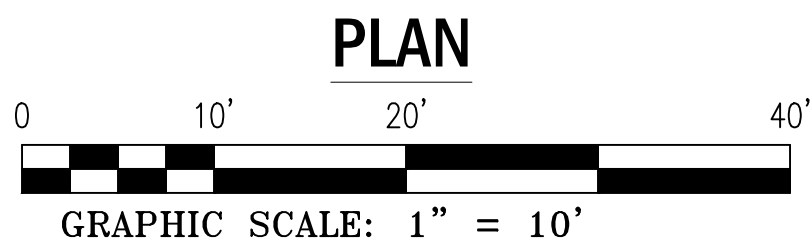
NOTES

1. REFER TO CONSTRUCTION PLAN SHEETS FOR HORIZONTAL DIMENSIONS OF BIKEWAY AND BOARDWALK
2. GRADES SHOWN ARE IN CITY OF PHILADELPHIA DATUM.

LEGEND

- LOD — LOD — LOD — LIMIT OF DISTURBANCE
- - - - - EXISTING CONTOUR
- x -0.1 EXISTING SPOT GRADES
- 1.00 — PROPOSED CONTOUR
- 0.00 PROPOSED SPOT GRADES
- 0.00 (ME) PROPOSED SPOT GRADE TO MATCH EXISTING ELEVATION

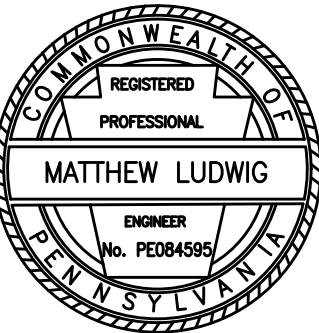
- PROPOSED ASPHALT PATH
- PROPOSED CONCRETE PAVERS
- EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED



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DATE  
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SCALE

1" = 10'

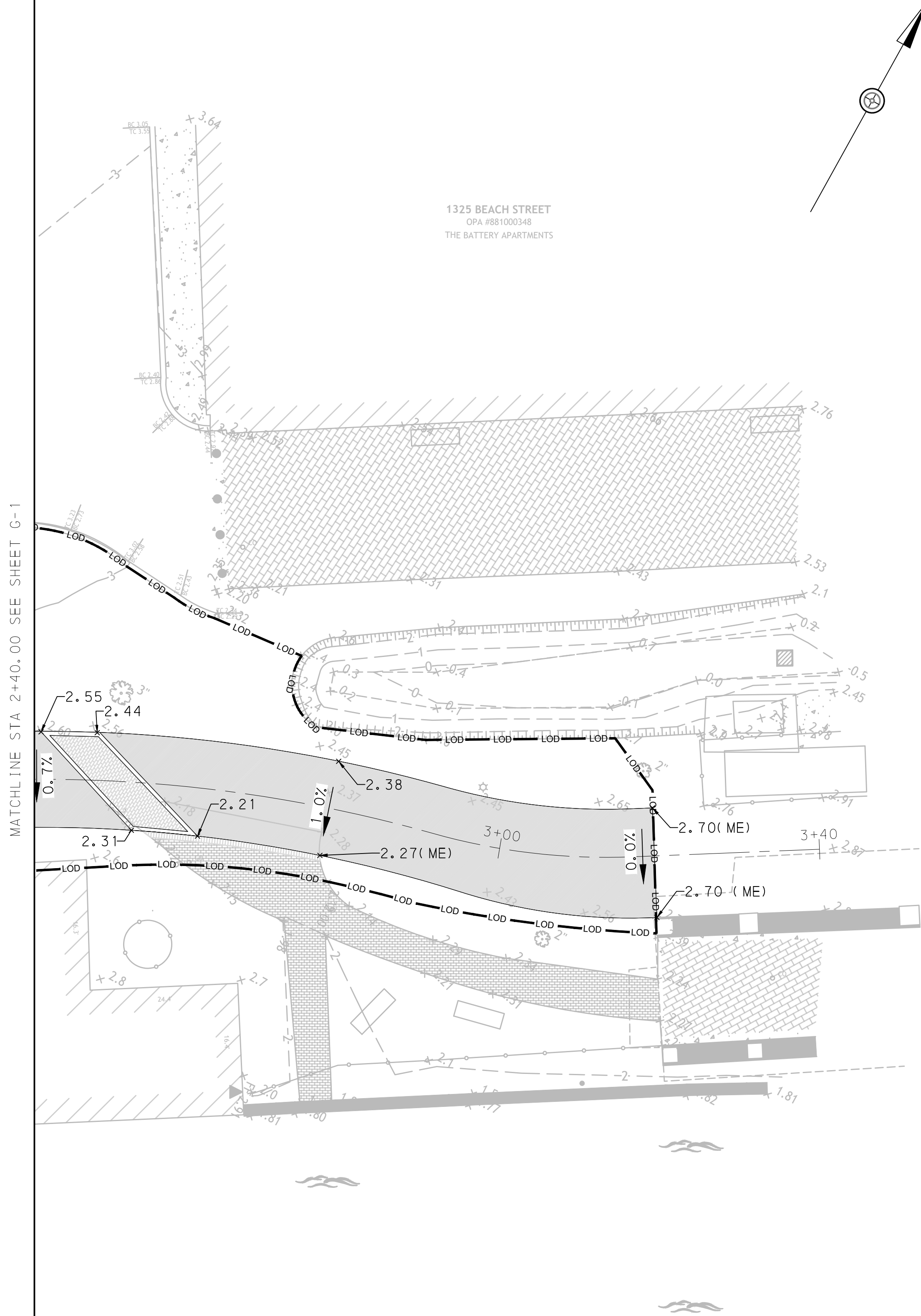
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**GRADING PLAN**

DRAWING NUMBER

**G-1**





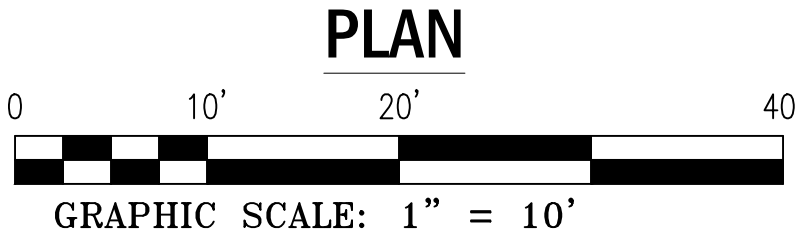
NOTES

1. REFER TO CONSTRUCTION PLAN SHEETS FOR HORIZONTAL DIMENSIONS OF BIKEWAY AND BOARDWALK
2. GRADES SHOWN ARE IN CITY OF PHILADELPHIA DATUM.

LEGEND

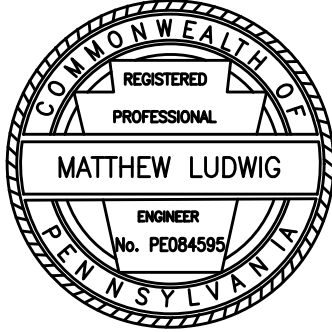
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- - - - - EXISTING CONTOUR
- x -0.1 EXISTING SPOT GRADES
- 1.00 — PROPOSED CONTOUR
- 0.00 PROPOSED SPOT GRADES
- 0.00 (ME) PROPOSED SPOT GRADE TO MATCH EXISTING ELEVATION

- PROPOSED ASPHALT PATH
- PROPOSED CONCRETE PAVERS
- EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED



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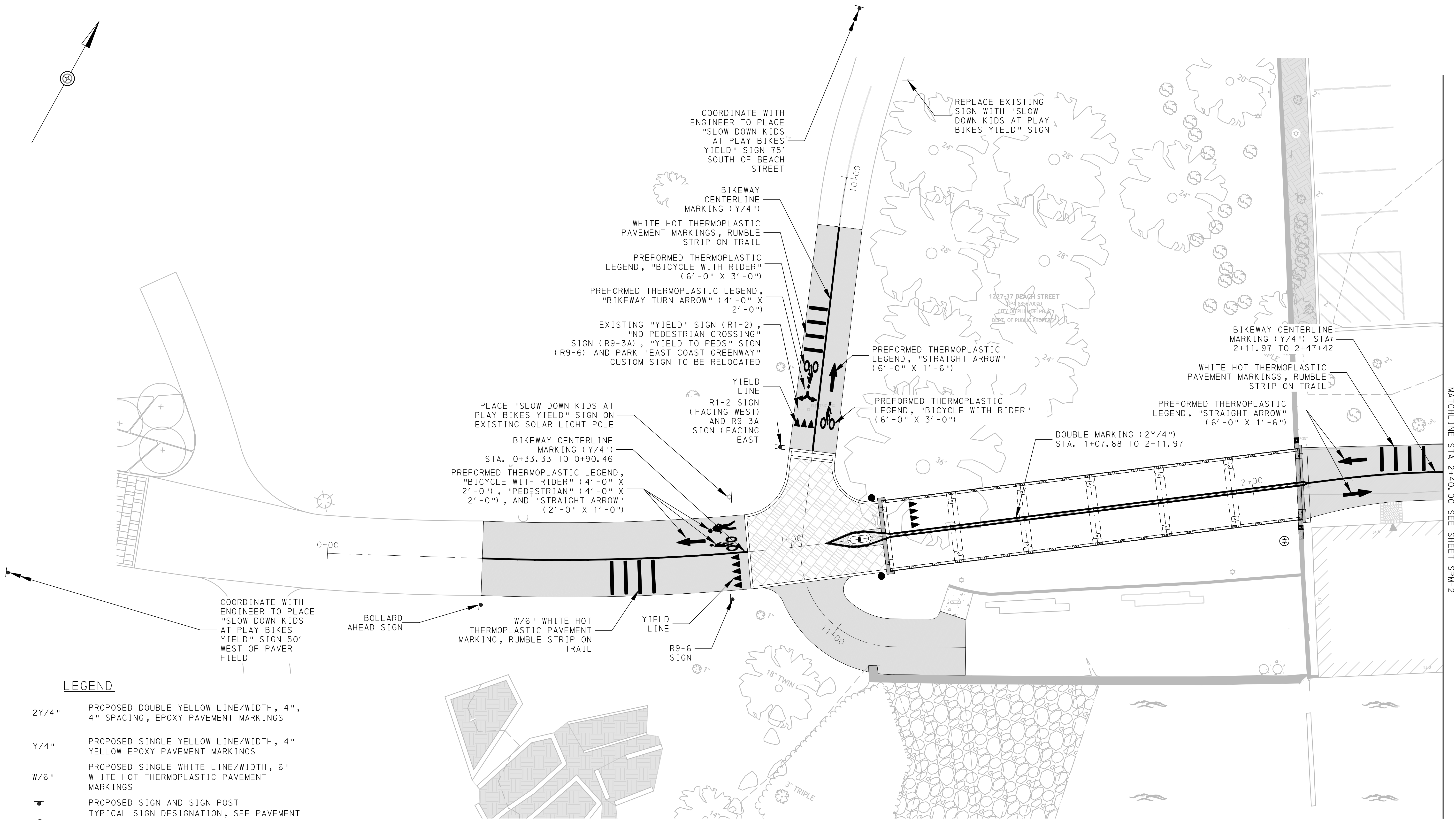
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GRADING PLAN

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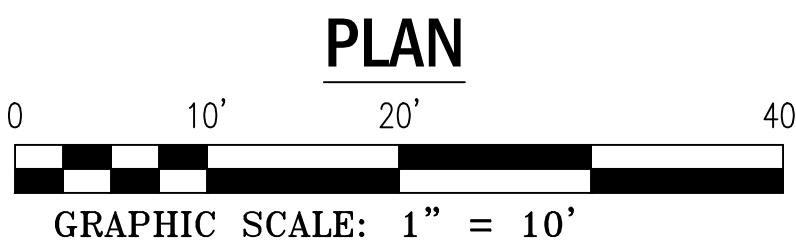


LEGEND

- 2Y/4" PROPOSED DOUBLE YELLOW LINE/WIDTH, 4", 4" SPACING, EPOXY PAVEMENT MARKINGS
- Y/4" PROPOSED SINGLE YELLOW LINE/WIDTH, 4" YELLOW EPOXY PAVEMENT MARKINGS
- W/6" PROPOSED SINGLE WHITE LINE/WIDTH, 6" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS
- PROPOSED SIGN AND SIGN POST  
TYPICAL SIGN DESIGNATION, SEE PAVEMENT MARKING DETAILS AND SIGN DATA SHEET SPM-3
- BASELINE/CENTERLINE
- STEEL FIXED BOLLARD
- PROPOSED YIELD LINE
- PROPOSED BICYCLE WITH RIDER SYMBOL (6'-0" x 3'-0") & STRAIGHT ARROW (1'-6" x 6'-0")
- PROPOSED BICYCLE WITH RIDER SYMBOL (4'-0" x 2'-0") & STRAIGHT ARROW (1'-0" x 2'-0")
- PROPOSED PEDESTRIAN SYMBOL (4'-0" x 2'-0")
- PROPOSED ASPHALT TRAIL
- PROPOSED CONCRETE PAVERS
- EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED

SIGNING AND PAVEMENT MARKING NOTES:

- ALL PAVEMENT MARKINGS ON TRAIL PAVEMENT MUST BE COMPRISED OF HOT THERMOPLASTIC PAVEMENT MARKINGS UNLESS OTHERWISE INDICATED. YELLOW PAVEMENT MARKINGS ON CONCRETE SHALL BE EPOXY.
- FOR PAVEMENT MARKING AND SYMBOL DETAILS SEE SHEET SPM-3.
- CONTRACTOR SHALL CONTACT THE ENGINEER BEFORE APPLYING PAVEMENT MARKINGS TO CONFIRM FINAL LAYOUT.



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SITE ADDRESS:

1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE

FINAL DESIGN (100%)

DATE

DECEMBER 23, 2025

DRAWN BY

MB

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ML

PROJECT #

0001052.00

SCALE

1" = 10'

DRAWING TITLE

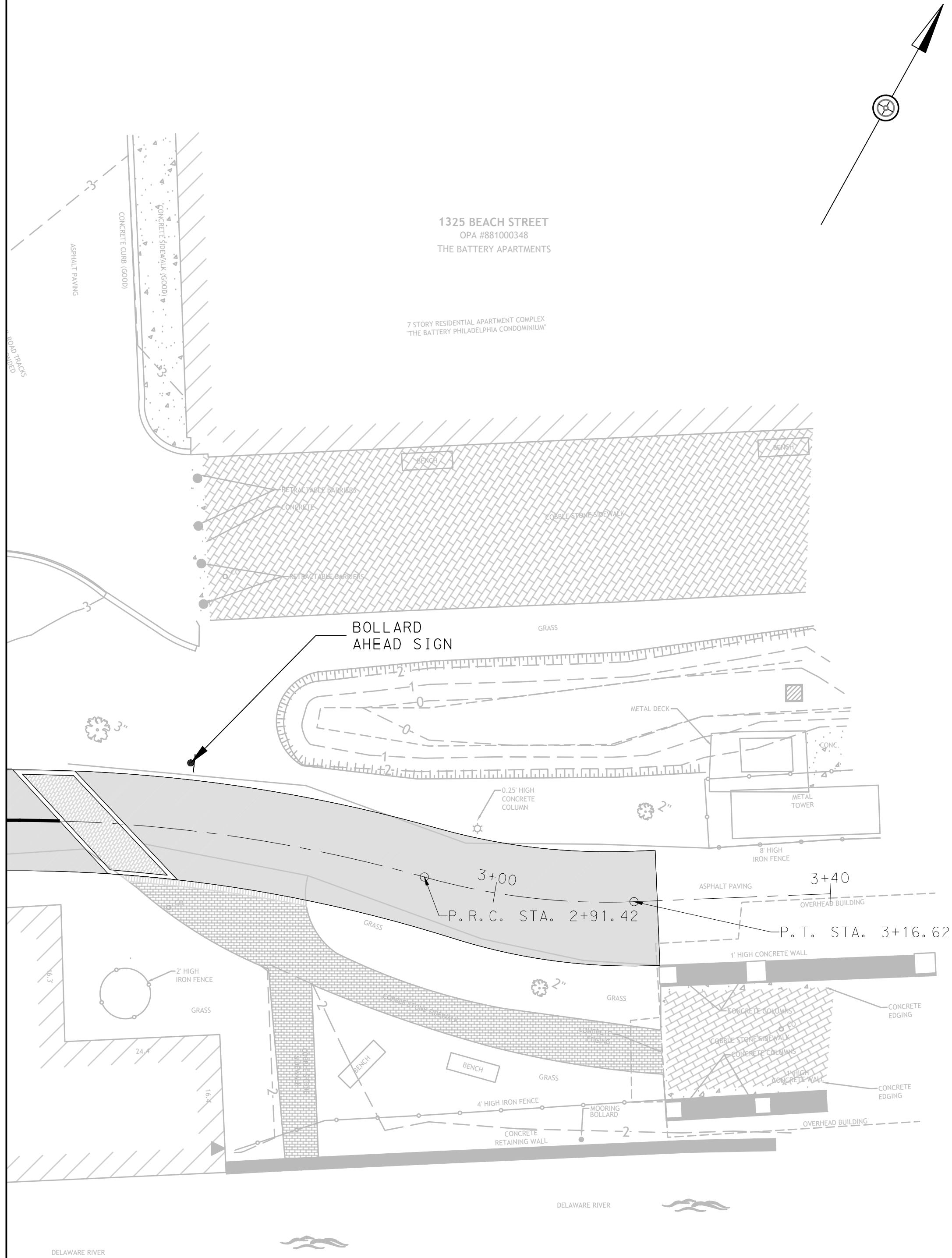
SIGNAGE AND PAVEMENT MARKING PLAN

DRAWING NUMBER

SPM-1

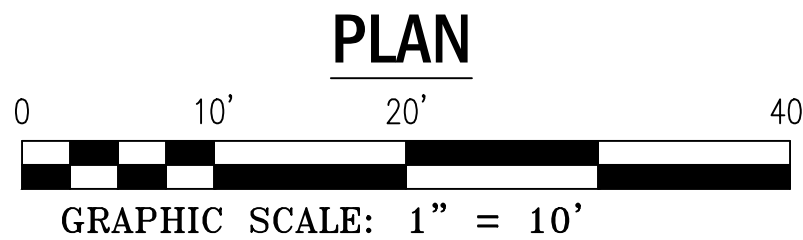


MATCHLINE STA 2+40.00 SEE SHEET SPM-1



LEGEND

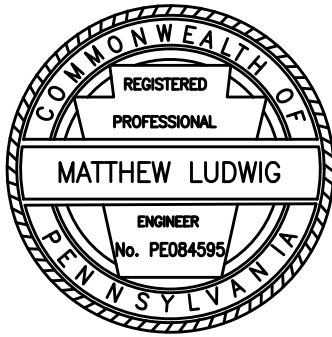
- 2Y/4" PROPOSED DOUBLE YELLOW LINE/WIDTH, 4", 4" SPACING, EPOXY PAVEMENT MARKINGS
- Y/4" PROPOSED SINGLE YELLOW LINE/WIDTH, 4" YELLOW EPOXY PAVEMENT MARKINGS
- W/6" PROPOSED SINGLE WHITE LINE/WIDTH, 6" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS
- PROPOSED SIGN AND SIGN POST  
TYPICAL SIGN DESIGNATION, SEE PAVEMENT MARKING DETAILS AND SIGN DATA SHEET SPM-3
- BASELINE/CENTERLINE
- STEEL FIXED BOLLARD
- PROPOSED YIELD LINE
- PROPOSED BICYCLE WITH RIDER SYMBOL (6'-0" x 3'-0") & STRAIGHT ARROW (1'-6" x 6'-0")
- PROPOSED BICYCLE WITH RIDER SYMBOL (4'-0" x 2'-0") & STRAIGHT ARROW (1'-0" x 2'-0")
- PROPOSED PEDESTRIAN SYMBOL (4'-0" x 2'-0")
- PROPOSED ASPHALT TRAIL
- PROPOSED CONCRETE PAVERS
- EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED



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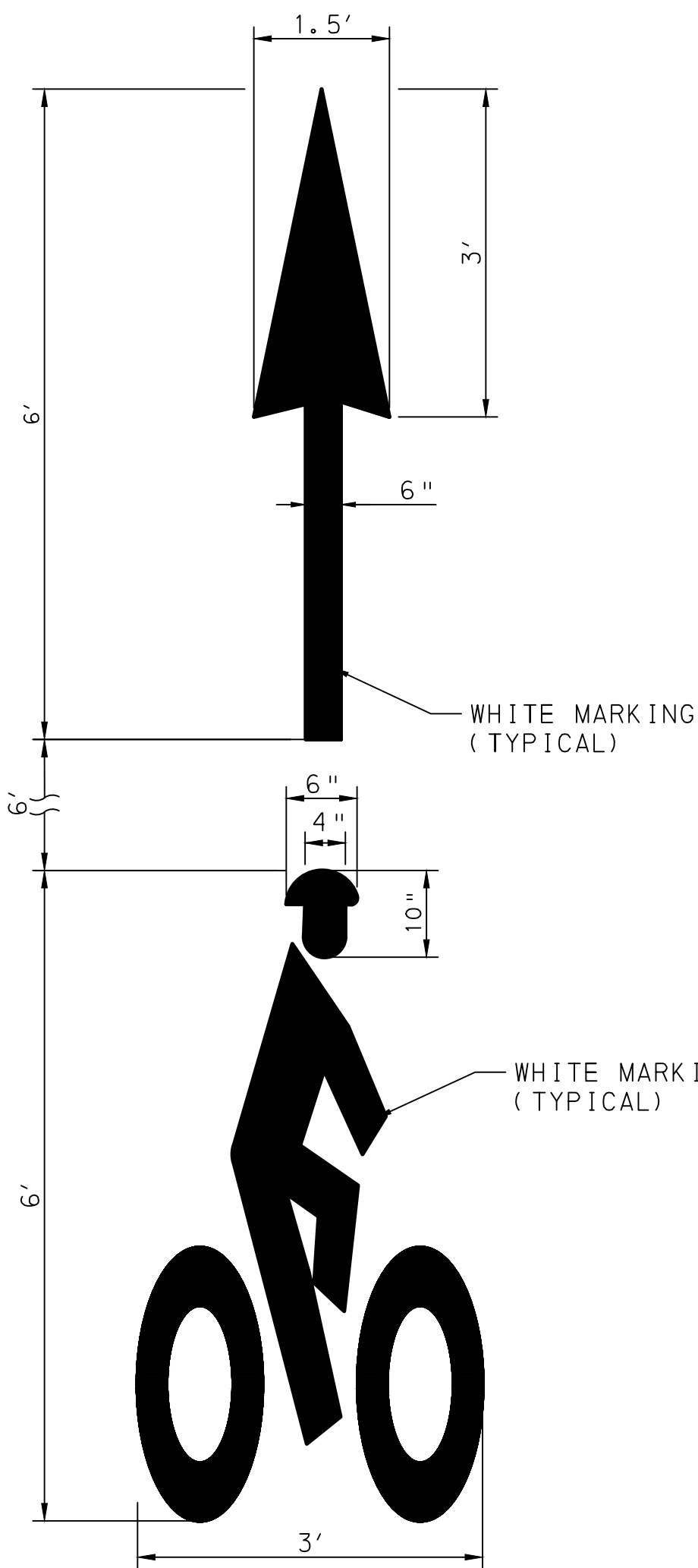
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| PROJECT #<br>0001052.00 | SCALE<br>1" = 10' |
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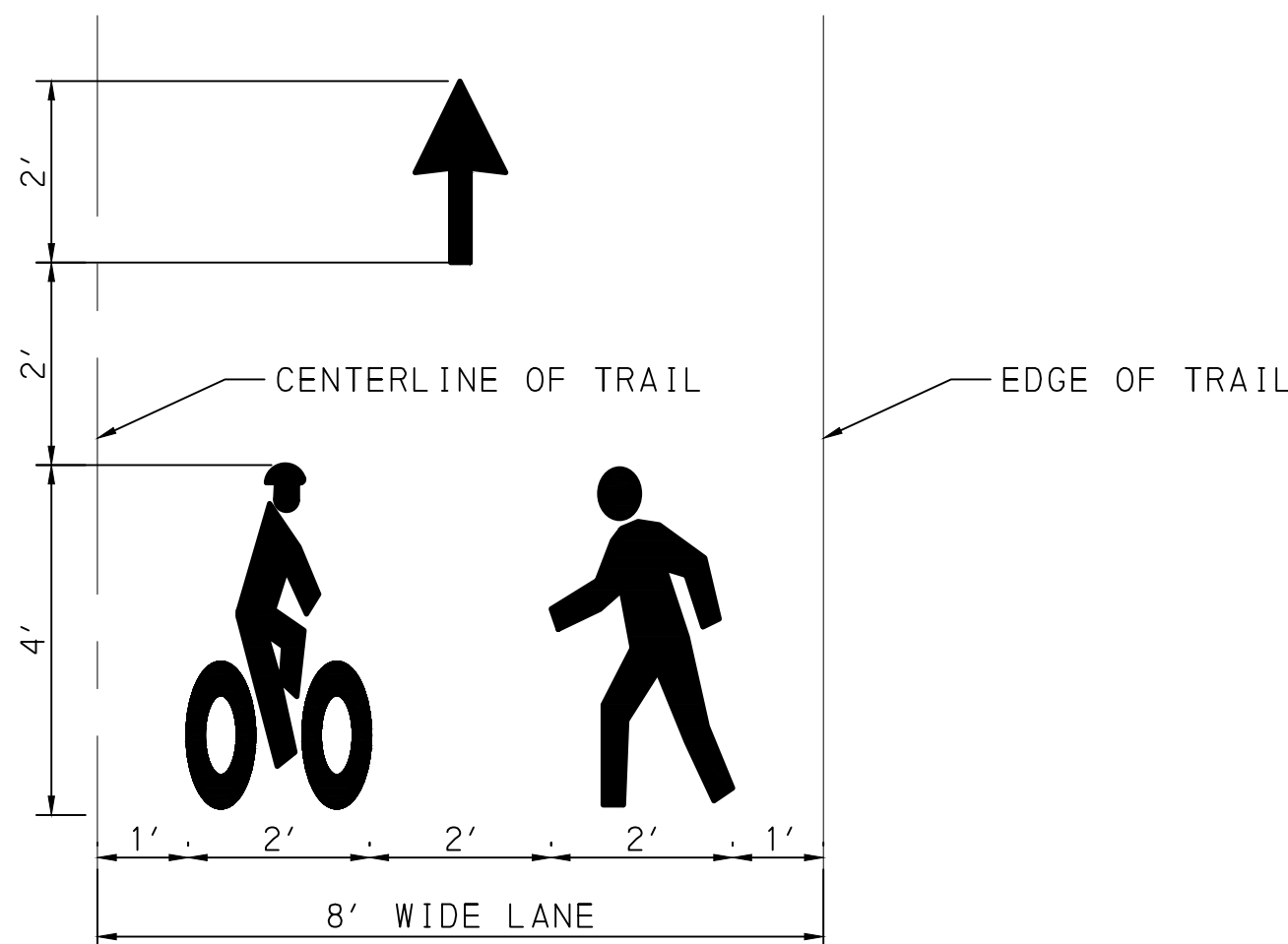
SIGNAGE AND  
PAVEMENT  
MARKING PLAN

DRAWING NUMBER

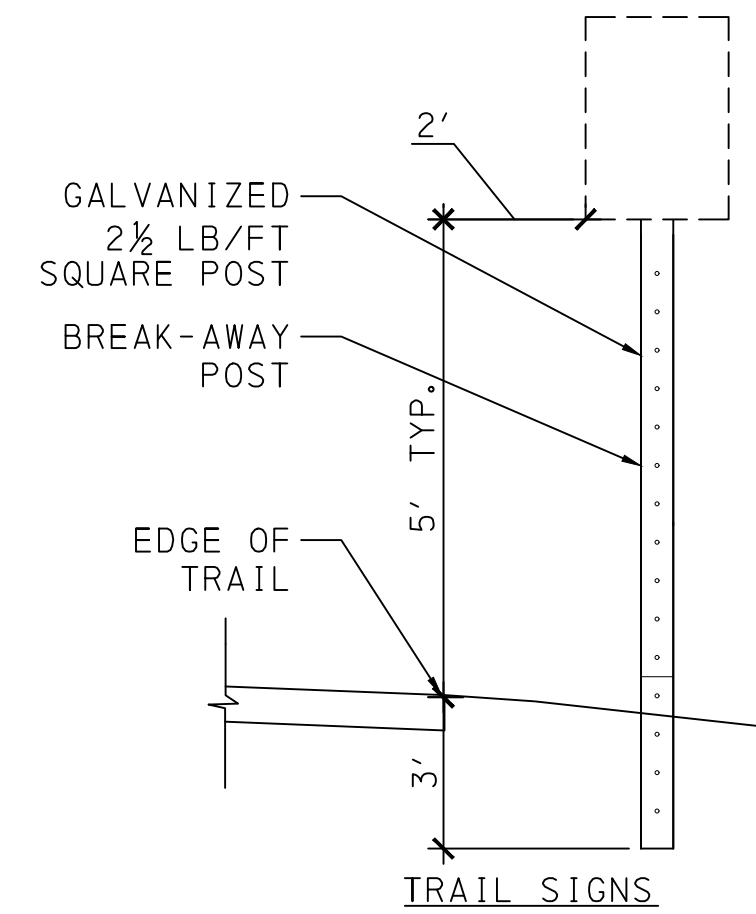
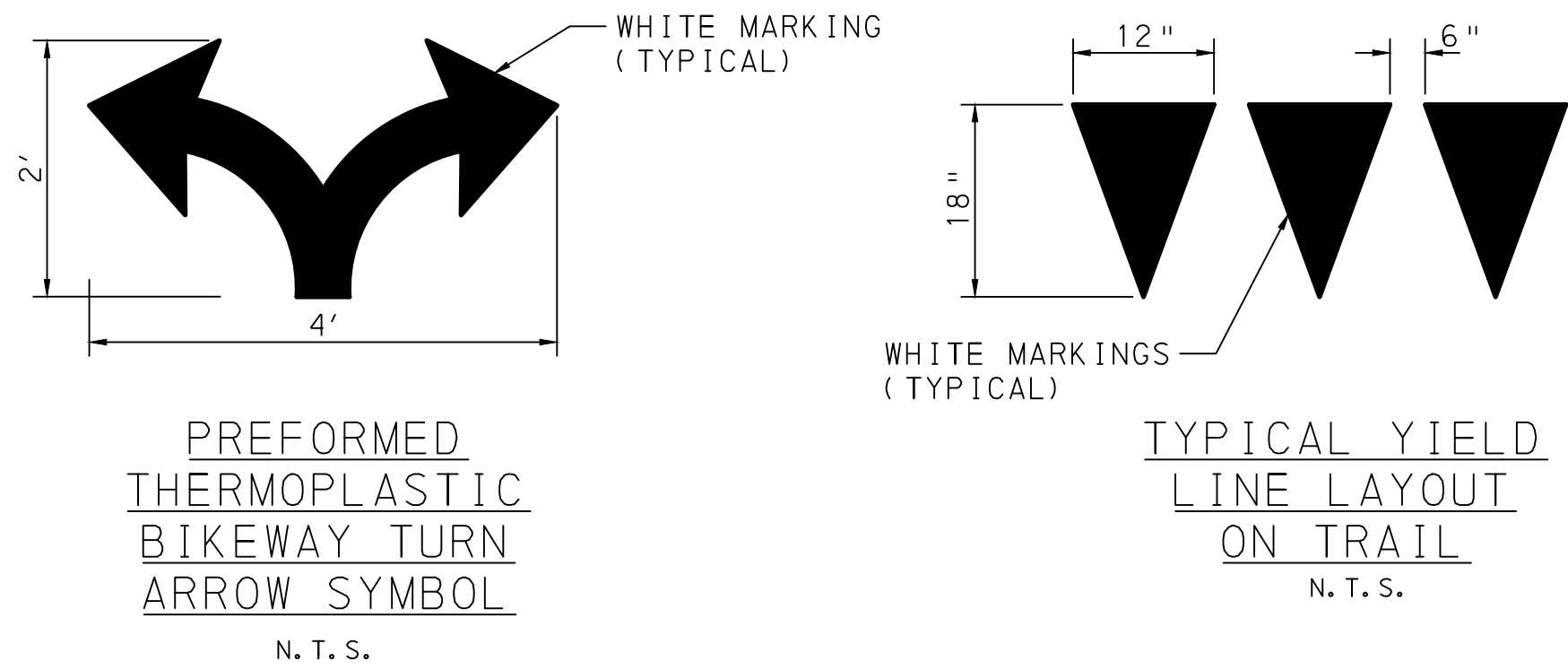
SPM-2



BICYCLE WITH RIDER SYMBOL (6'-0" x 3'-0")  
WITH STRAIGHT ARROW (1'-6" x 6'-0")  
N. T. S.

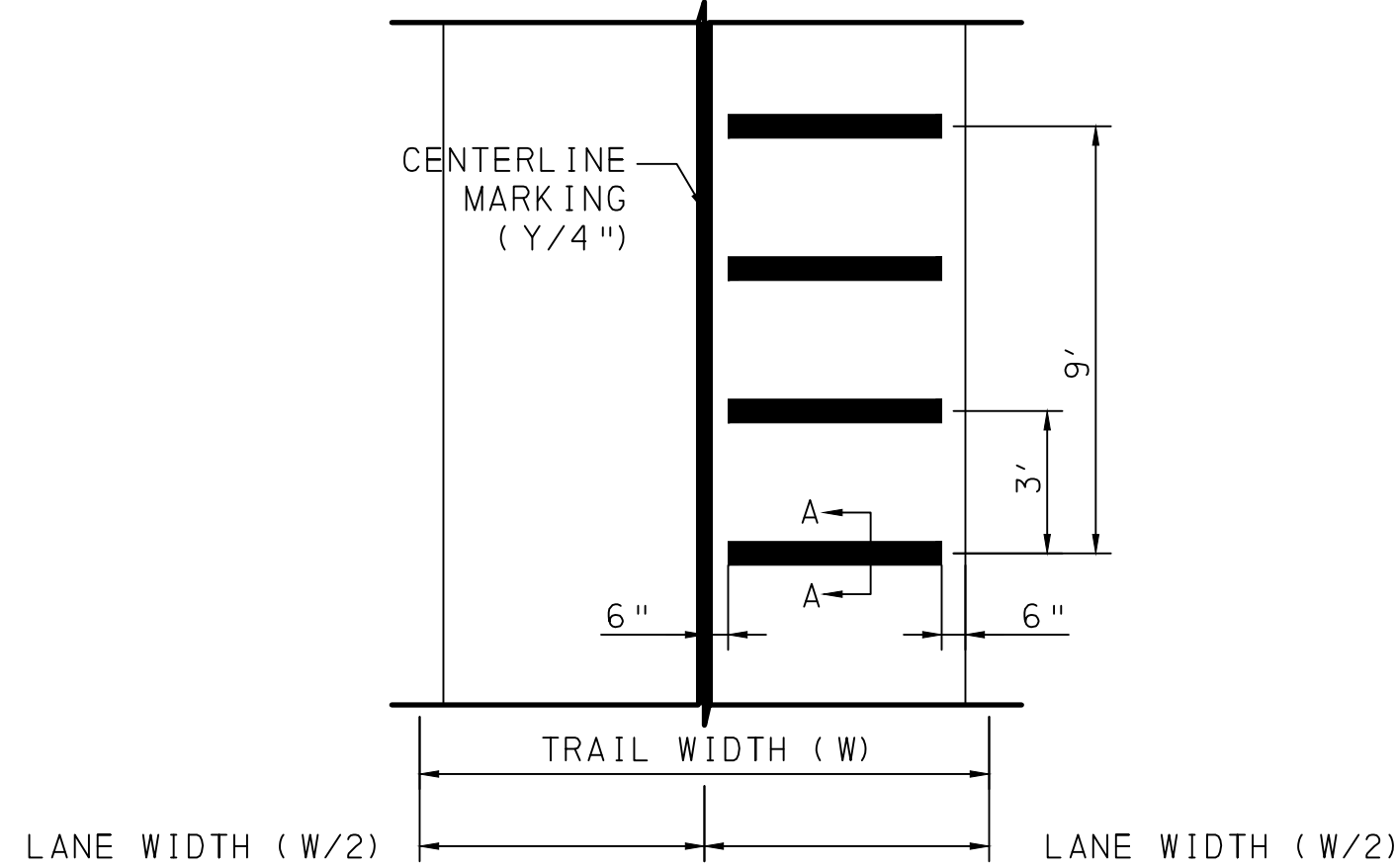


BIKE WITH PEDESTRIAN  
DETAIL  
N. T. S.

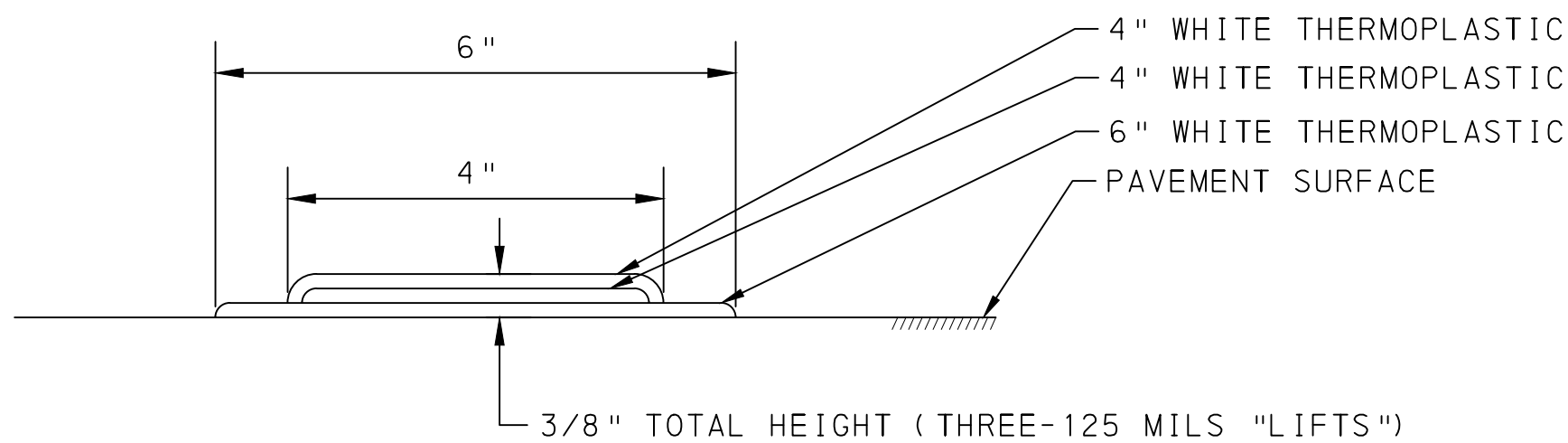


NOTE: ALL TYPE B SIGNS TO BE MOUNTED ON 2" STEEL BREAKAWAY POSTS AS INDICATED IN CITY OF PHILADELPHIA STREETS DEPARTMENT STANDARD DETAIL SN0301.

SIGN PLACEMENT DETAIL  
N. T. S.



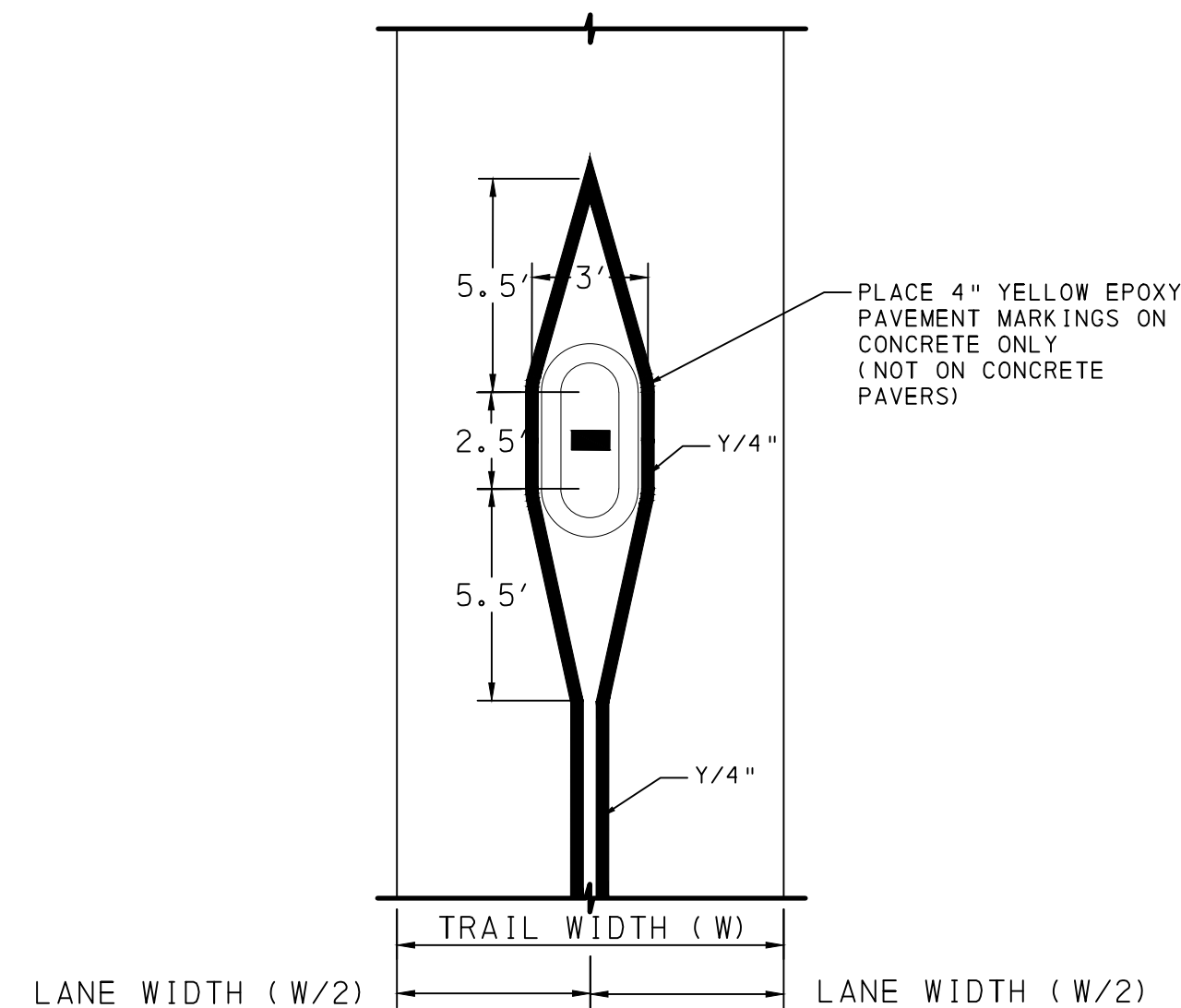
WHITE HOT THERMOPLASTIC PAVEMENT  
MARKING, RUMBLE STRIP LAYOUT ON TRAIL  
N. T. S.



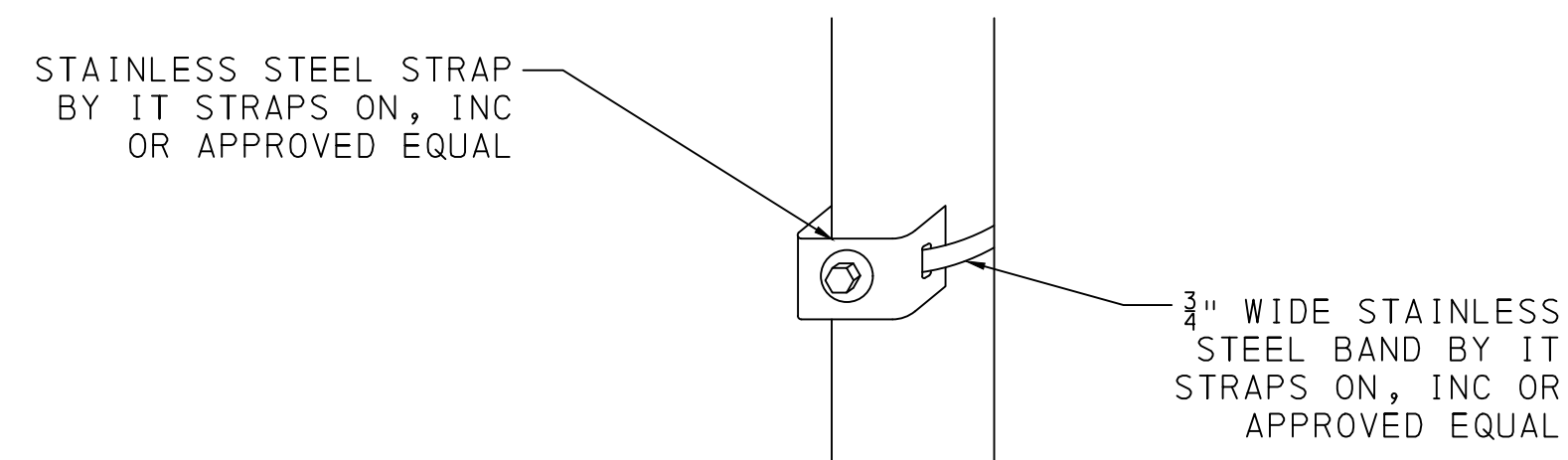
CROSS SECTION SECTION A-A:  
SINGLE TYPICAL STRIPE

| PROPOSED SIGN DATA TABLE |   |               |           |
|--------------------------|---|---------------|-----------|
| SIGN CODE                | MUTCD SIGN DESIGNATION                          | SIGN ASSEMBLY | SIZE (in) |
| (A)                      | R9-3a*  |               | 9x9       |
| (B)                      | R1-2  |               | 18x18x18  |
| (C)                      | R9-6  |               | 12x18     |
| (D)                      | CUSTOM, BLACK TEXT, YELLOW BACKGROUND           |               | 18x18     |
| (E)                      | CUSTOM, BLACK TEXT, RED LOGO, YELLOW BACKGROUND |               | 12x18     |

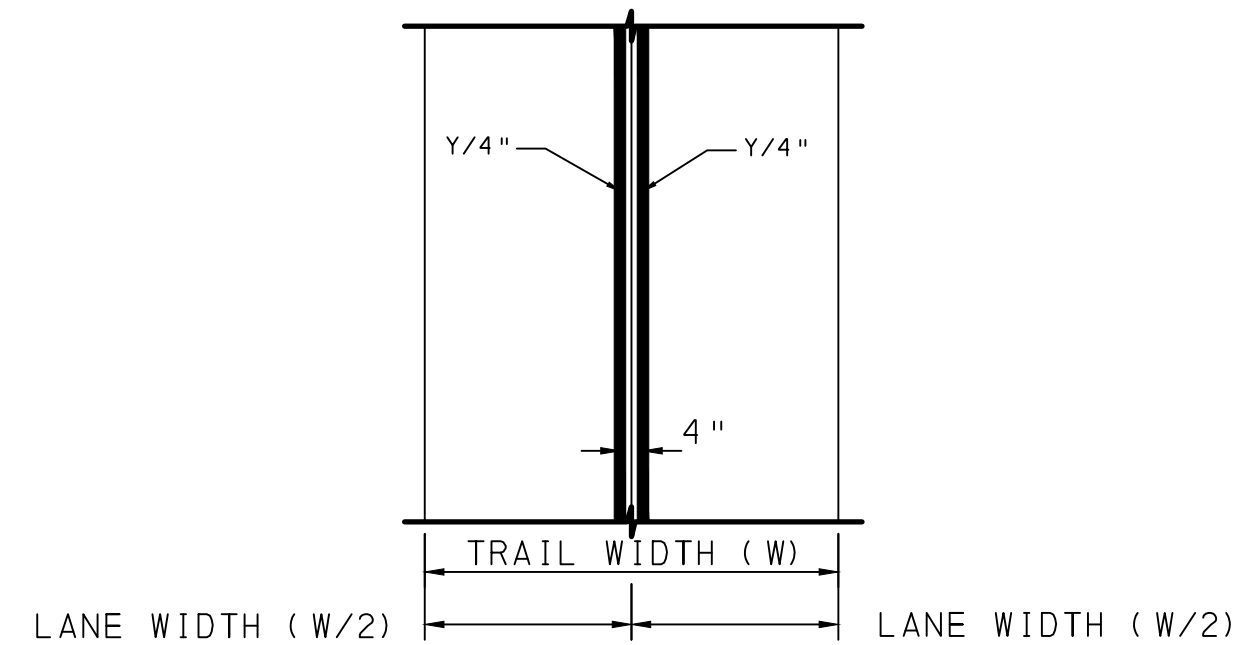
\* SIZE OF SIGN  
MODIFIED FROM  
MUTCD STANDARD



BIKEWAY DIAMOND  
CENTERLINE MARKING  
N. T. S.



SIGN ON SOLAR LIGHT DETAIL  
N. T. S.

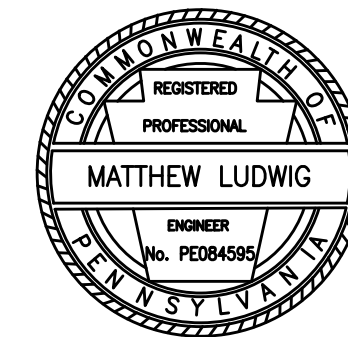


CENTERLINE DOUBLE  
MARKING ON BOARDWALK  
N. T. S.

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DRAWING ISSUE  
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DATE  
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SCALE  
VARIES

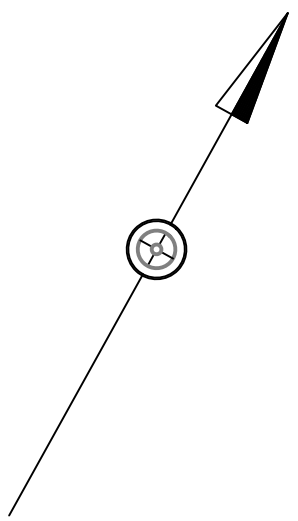
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SIGNAGE AND  
PAVEMENT  
MARKING  
DETAILS

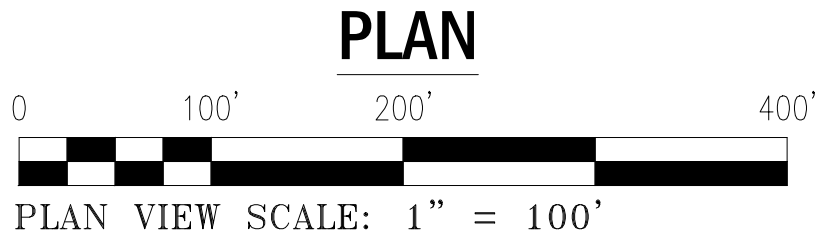
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SPM-3



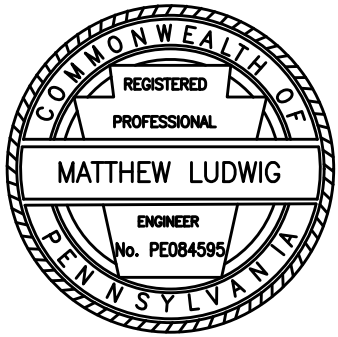


- NOTES:
1. ALL CUSTOM SIGNS SHALL BE BLACK LINES/TEXT ON ORANGE BACKGROUND.
  2. ALL SIGNS MOUNTED ALONG TRAIL SHALL BE 6' ABOVE THE GROUND.
  3. PRIOR TO INSTALLATION OF SIGNS, THE CONTRACTOR SHALL COORDINATE THE TEMPORARY DETOUR SIGNAGE WITH THE DRWC PROJECT MANAGER AND THE STREETS DEPARTMENT TO ENSURE ALL SIGNAGE HAS BEEN REVIEWED AND IS FOUND ACCEPTABLE. THE INTENTION OF THIS PLAN IS TO PROVIDE GUIDANCE AND SHALL NOT BE ACCEPTED AS FINAL.



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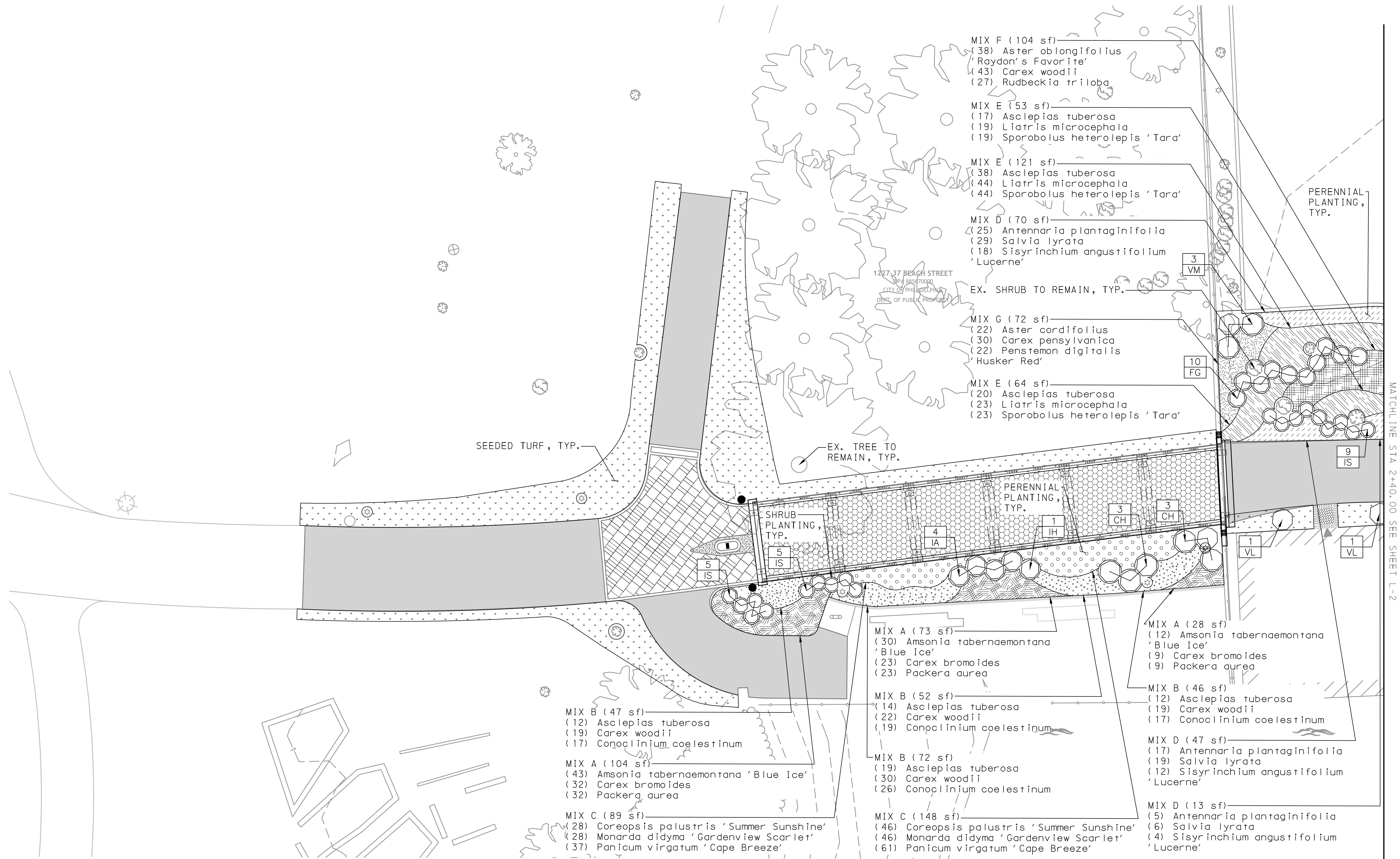
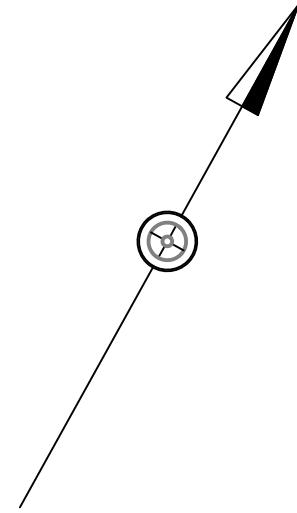
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FINAL DESIGN (100%)

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| PROJECT #<br>0001052.00   | SCALE<br>1" = 100' |

DRAWING TITLE  
**MAINTENANCE  
AND  
PROTECTION OF  
TRAFFIC**

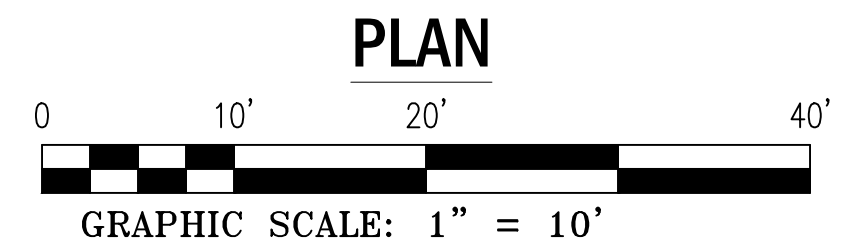
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**MPT-1**





LEGEND

|  |                             |  |  |
|--|-----------------------------|--|--|
|  | EX. TREE                    |  | PROPOSED ASPHALT PATH                                |
|  | EX. SHRUB                   |  | PROPOSED CONCRETE PAVERS                             |
|  | PROP. SEEDED TURF           |  | EXISTING CONCRETE PAVERS TO BE SALVAGED AND REPLACED |
|  | PROP. SHRUB PLANTING        |  |  |
|  | AGGREGATE BENEATH BOARDWALK |  |  |



REVISIONS

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| PROJECT #<br>0001052.00 | SCALE<br>1" = 10' |
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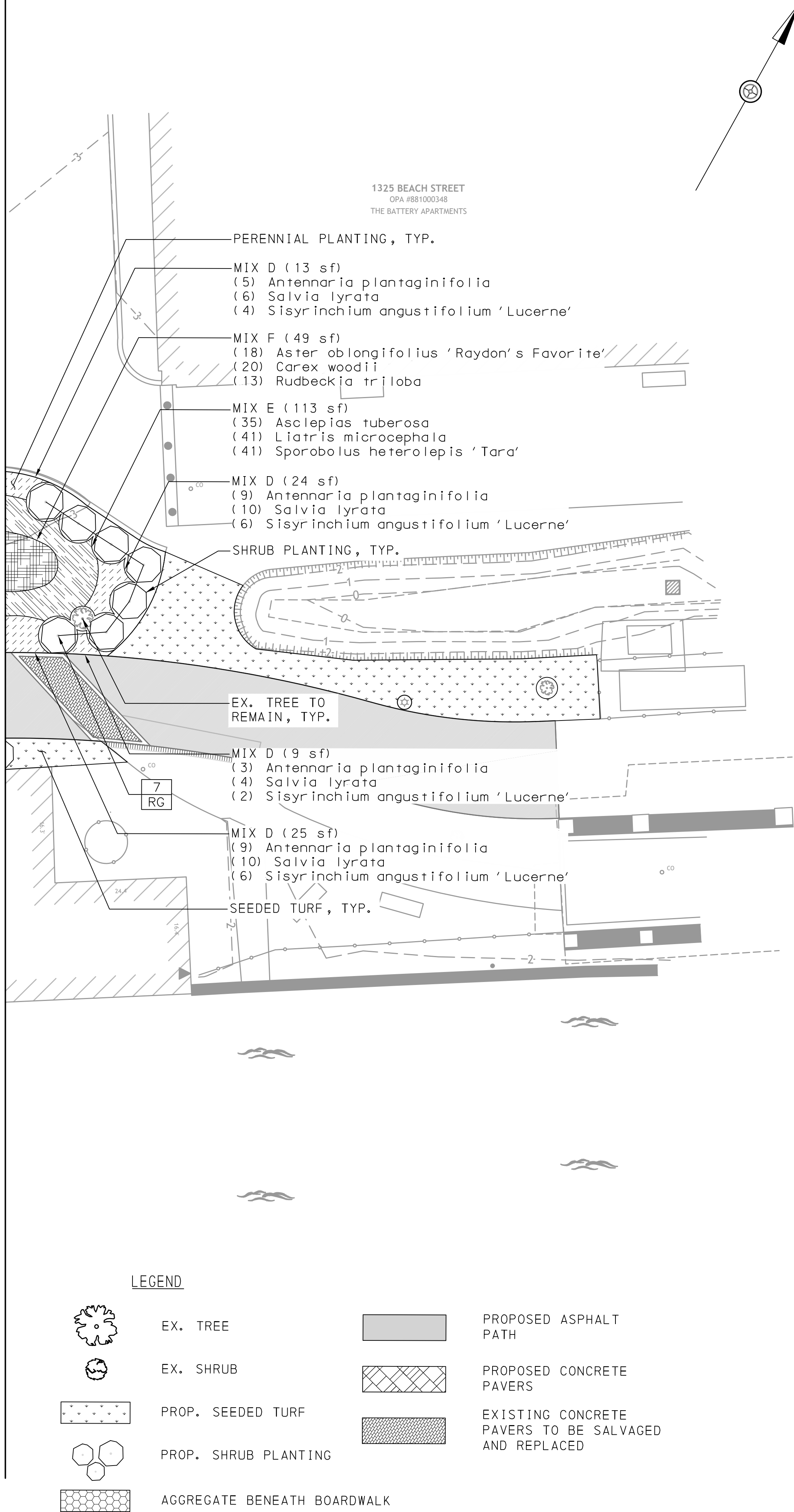
**LANDSCAPE PLAN**

DRAWING NUMBER

**L-1**



MATCHLINE STA 2+40.00 SEE SHEET L-1



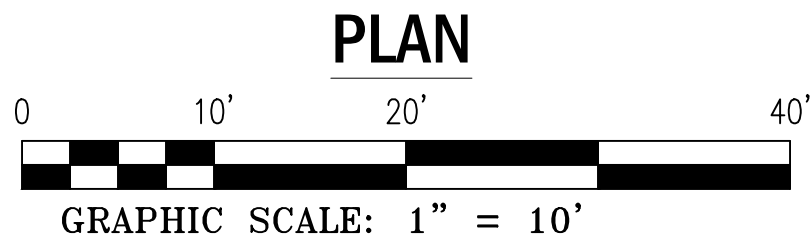
| SHRUB PLANTING SCHEDULE |     |                                  |                                |        |           |
|-------------------------|-----|----------------------------------|--------------------------------|--------|-----------|
| CODE                    | QTY | BOTANICAL NAME                   | COMMON NAME                    | SIZE   | CONTAINER |
| CH                      | 6   | CLETHRA ALNIFOLIA 'HUMMINGBIRD'  | HUMMINGBIRD SUMMERSWEET        | 5 GAL. | POT       |
| FG                      | 10  | FOTHERGILLA GARDENII             | DWARF FOTHERGILLA              | 5 GAL. | POT       |
| IA                      | 4   | ILEX VERTICILLATA 'NCIV1'        | LITTLE GOBLIN® RED WINTERBERRY | 5 GAL. | POT       |
| IH                      | 1   | ILEX VERTICILLATA 'NCIV3'        | LITTLE GOBLIN® GUY WINTERBERRY | 5 GAL. | POT       |
| IS                      | 19  | ITEA VIRGINICA 'SPRICH'          | LITTLE HENRY® SWEETSPIRE       | 5 GAL. | POT       |
| RG                      | 7   | RHUS AROMATICA 'GRO-LOW'         | GRO-LOW FRAGRANT SUMAC         | 5 GAL. | POT       |
| VM                      | 3   | VIBURNUM ACERIFOLIUM             | MAPLELEAF VIBURNUM             | 5 GAL. | POT       |
| VL                      | 2   | VIBURNUM DENTATUM 'KLMSEVENTEEN' | LITTLE JOE™ ARROWWOOD VIBURNUM | 5 GAL. | POT       |

| PERENNIAL GROUNDCOVER PLANTING SCHEDULE |   |                              |        |           |
|---|---|------------------------------|--------|-----------|
| QTY                                     | BOTANICAL NAME                          | COMMON NAME                  | SIZE   | CONTAINER |
| 85                                      | AMSONIA TABERNAEMONTANA 'BLUE ICE'      | BLUE ICE EASTERN BLUESTAR    | 1 GAL. | POT       |
| 73                                      | ANTENNARIA PLANTAGINIFOLIA              | PUSSYTOES                    | 1 GAL. | POT       |
| 167                                     | ASCLEPIAS TUBEROSA                      | BUTTERFLY MILKWEED           | 1 GAL. | POT       |
| 22                                      | ASTER CORDIFOLIUS                       | HEART-LEAVED ASTER           | 1 GAL. | POT       |
| 56                                      | ASTER OBLONGIFOLIUS 'RAYDON'S FAVORITE' | RAYDON'S FAVORITE FALL ASTER | 1 GAL. | POT       |
| 64                                      | CAREX BROMOIDES                         | BROME-LIKE SEDGE             | 1 GAL. | POT       |
| 30                                      | CAREX PENNSYLVANICA                     | PENNSYLVANIA SEDGE           | 1 GAL. | POT       |
| 153                                     | CAREX WOODII                            | PRETTY SEDGE                 | 1 GAL. | POT       |
| 79                                      | CONOCLINIUM COELESTINUM                 | WILD AGERATUM                | 1 GAL. | POT       |
| 74                                      | COREOPSIS PALUSTRIS 'SUMMER SUNSHINE'   | SUMMER SUNSHINE TICKSEED     | 1 GAL. | POT       |
| 127                                     | LIATRIS MICROCEPHALA                    | DWARF BLAZING STAR           | 1 GAL. | POT       |
| 74                                      | MONARDA DIDYMA 'GARDENVIEW SCARLET'     | GARDENVIEW SCARLET BEE BALM  | 1 GAL. | POT       |
| 64                                      | PACKERA AUREA                           | GOLDEN GROUNDSEL             | 1 GAL. | POT       |
| 98                                      | PANICUM VIRGATUM 'CAPE BREEZE'          | CAPE BREEZE SWITCH GRASS     | 1 GAL. | POT       |
| 22                                      | PENSTEMON DIGITALIS 'HUSKER RED'        | HUSKER RED BEARDTONGUE       | 1 GAL. | POT       |
| 40                                      | RUDBECKIA TRILOBA                       | BROWN EYED SUSAN             | 1 GAL. | POT       |
| 84                                      | SALVIA LYRATA                           | LYRELEAF SAGE                | 1 GAL. | POT       |
| 52                                      | SISYRINCHIUM ANGUSTIFOLIUM 'LUCERNE'    | LUCERNE BLUE-EYED GRASS      | 1 GAL. | POT       |
| 127                                     | SPOROBOLUS HETEROLEPIS 'TARA'           | TARA PRAIRIE DROPSEED        | 1 GAL. | POT       |

QUANTITIES INDICATED ABOVE ARE INCLUSIVE OF THE QUANTITIES NOTED IN THE BREAKDOWN FOR EACH MIX BELOW

PERENNIAL GROUNDCOVER MIXES

|                              |  |                             |  |   |
|------------------------------|--|-----------------------------|--|---|
| <div></div> <div>MIX A</div> | AMSONIA TABERNAEMONTANA 'BLUE ICE' / BLUE ICE EASTERN BLUESTAR<br>CAREX BROMOIDES / BROME-LIKE SEDGE<br>PACKERA AUREA / GOLDEN GROUNDSEL   | 205 SF<br>85<br>64<br>64    | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 40% @ 12" o. c.<br>30% @ 12" o. c.<br>30% @ 12" o. c. |
| <div></div> <div>MIX B</div> | ASCLEPIAS TUBEROSA / BUTTERFLY MILKWEED<br>CAREX WOODII / PRETTY SEDGE<br>CONOCLINIUM COELESTINUM / WILD AGERATUM  | 217 SF<br>57<br>90<br>79    | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 25% @ 12" o. c.<br>40% @ 12" o. c.<br>35% @ 12" o. c. |
| <div></div> <div>MIX C</div> | COREOPSIS PALUSTRIS 'SUMMER SUNSHINE' / SUMMER SUNSHINE TICKSEED<br>MONARDA DIDYMA 'GARDENVIEW SCARLET' / GARDENVIEW SCARLET BEE BALM<br>PANICUM VIRGATUM 'CAPE BREEZE' / CAPE BREEZE SWITCH GRASS | 237 SF<br>74<br>74<br>98    | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 30% @ 12" o. c.<br>30% @ 12" o. c.<br>40% @ 12" o. c. |
| <div></div> <div>MIX D</div> | ANTENNARIA PLANTAGINIFOLIA / PUSSYTOES<br>SALVIA LYRATA / LYRELEAF SAGE<br>SISYRINCHIUM ANGUSTIFOLIUM 'LUCERNE' / LUCERNE BLUE-EYED GRASS  | 201 SF<br>73<br>84<br>52    | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 35% @ 12" o. c.<br>40% @ 12" o. c.<br>25% @ 12" o. c. |
| <div></div> <div>MIX E</div> | ASCLEPIAS TUBEROSA / BUTTERFLY MILKWEED<br>LIATRIS MICROCEPHALA / DWARF BLAZING STAR<br>SPOROBOLUS HETEROLEPIS 'TARA' / TARA PRAIRIE DROPSEED  | 351 SF<br>110<br>127<br>127 | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 30% @ 12" o. c.<br>35% @ 12" o. c.<br>35% @ 12" o. c. |
| <div></div> <div>MIX F</div> | ASTER OBLONGIFOLIUS 'RAYDON'S FAVORITE' / RAYDON'S FAVORITE FALL ASTER<br>CAREX WOODII / PRETTY SEDGE<br>RUDBECKIA TRILOBA / BROWN EYED SUSAN  | 153 SF<br>56<br>63<br>40    | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 35% @ 12" o. c.<br>40% @ 12" o. c.<br>25% @ 12" o. c. |
| <div></div> <div>MIX G</div> | ASTER CORDIFOLIUS / HEART-LEAVED ASTER<br>CAREX PENNSYLVANICA / PENNSYLVANIA SEDGE<br>PENSTEMON DIGITALIS 'HUSKER RED' / HUSKER RED BEARDTONGUE  | 72 SF<br>22<br>30<br>22     | 1 GAL. , POT<br>1 GAL. , POT<br>1 GAL. , POT | 30% @ 12" o. c.<br>40% @ 12" o. c.<br>30% @ 12" o. c. |



REVISIONS

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1301 BEACH STREET  
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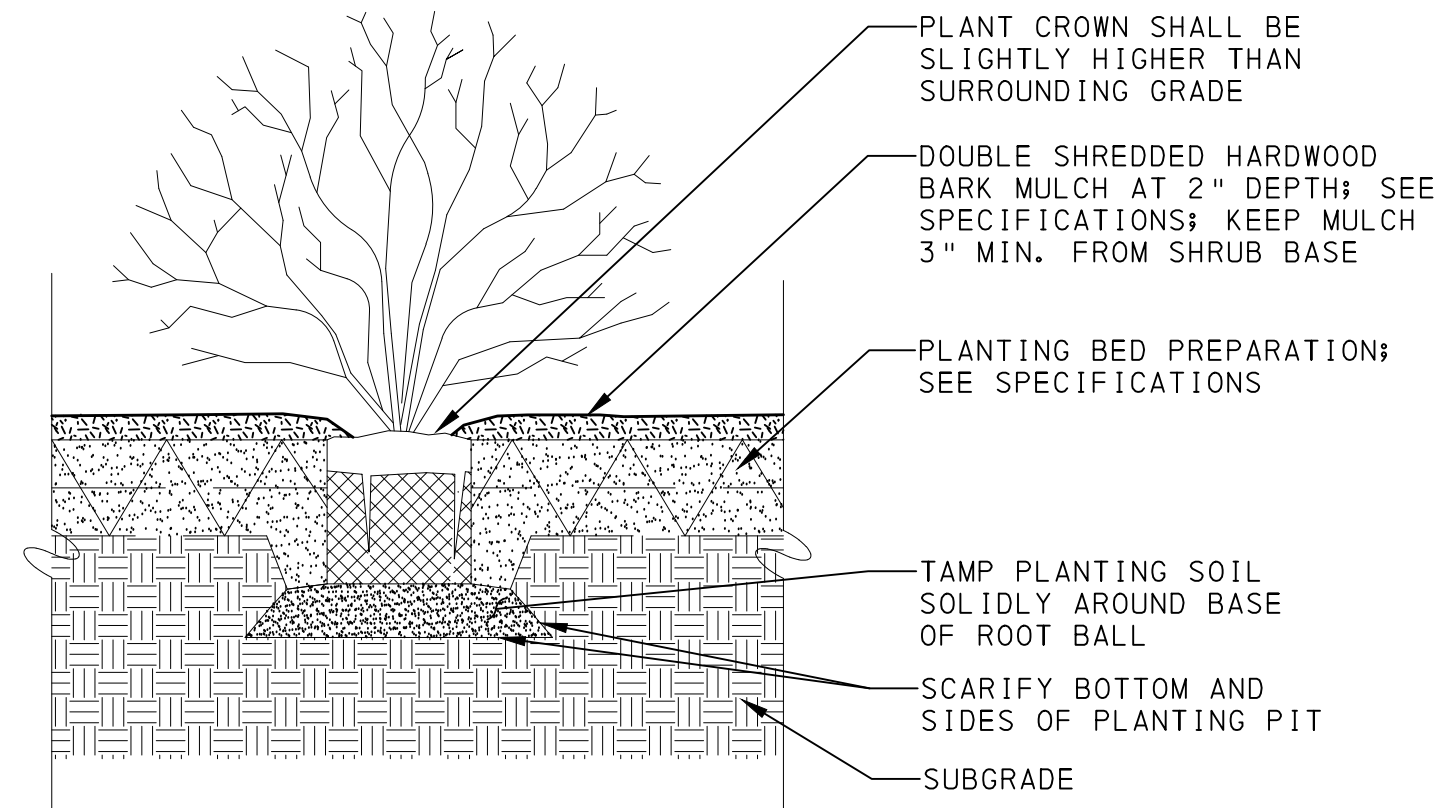
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**LANDSCAPE PLAN**

DRAWING NUMBER

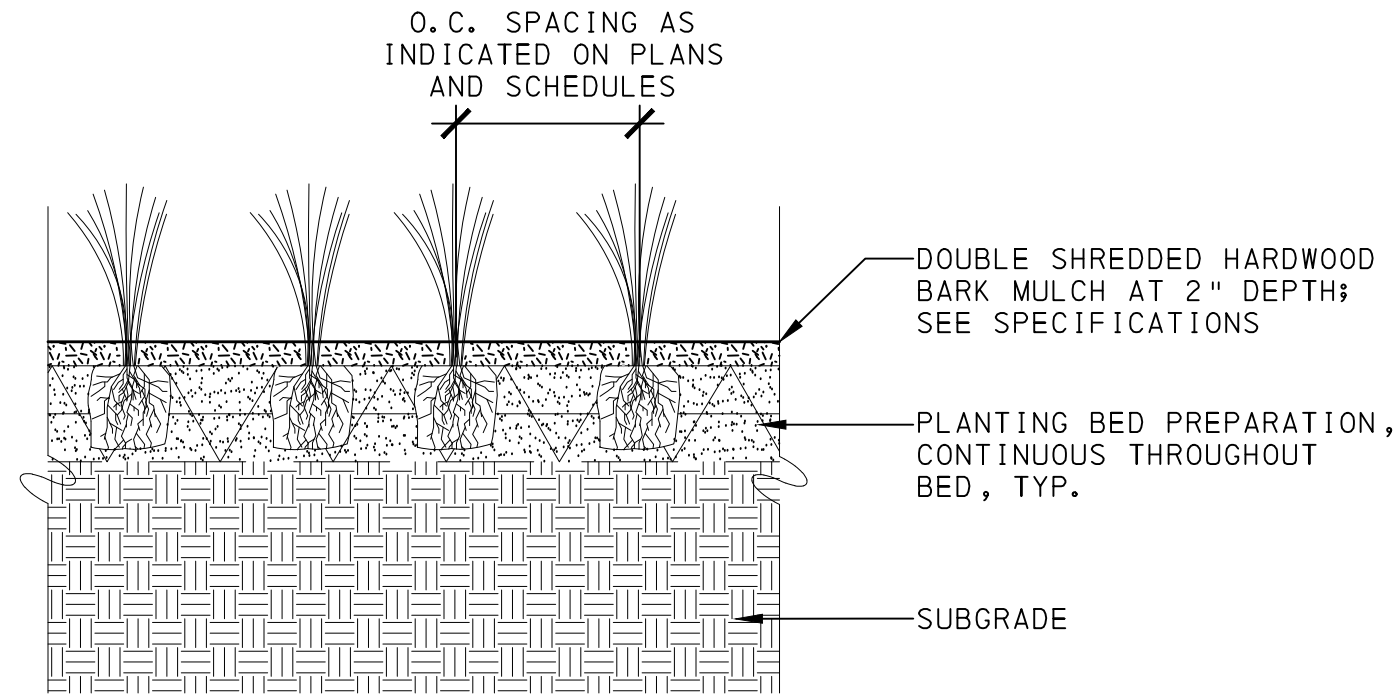
**L-2**



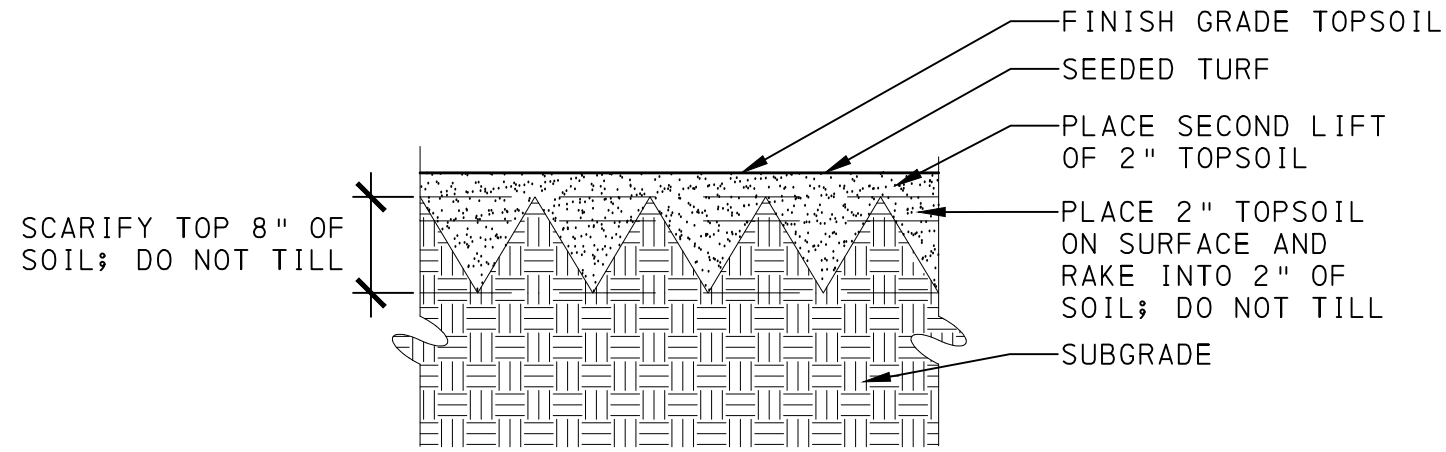


SHRUB PLANTING  
3/4" = 1' 0"

- NOTES:**
- POT-BOUND ROOTS SHALL BE CUT PRIOR TO PLANTING; AFTER PLANTING, THE ENTIRE BED SHALL BE EDGED AND THOROUGHLY WATERED.
  - PLANT SPACING SHALL BE TRIANGULAR UNLESS OTHERWISE NOTED.
  - 'PERENNIAL GROUNDCOVER MIX' SPECIES TO BE INTERPLANTED IN GROUPS OF FIVE (5) TO SEVEN (7) OF A SINGLE SPECIES. DO NOT PLACE PLANTS OF THE SAME SPECIES IN A STRAIGHT LINE, FOLLOW TRIANGULAR LAYOUT FOR PLACEMENT OF EACH GROUP.
  - ENSURE NURSERY PROVIDES PLANT NAME TAGS (INCLUSIVE OF CULTIVAR NAME) FOR REPRESENTATIVE PLANTS OF EACH SPECIES.
  - A PRE-INSTALLATION MEETING ON SITE WITH THE LANDSCAPE ARCHITECT IS REQUIRED PRIOR TO COMMENCING PERENNIAL PLANTING. ENSURE THAT A SUFFICIENT QUANTITY OF PERENNIAL GROUNDCOVER MIX SPECIES FOR A SINGLE MIX ARE PRESENT ON SITE TO MOCK-UP A PLANTING LAYOUT IN A 10' x 10' AREA.
  - NOTE THAT CONTRACTOR IS RESPONSIBLE FOR WATERING, WEEDING, AND PLANT REPLACEMENT FOR A PERIOD OF 12 MONTHS FROM COMPLETION OF ALL PLANTING. SEE SPECIFICATIONS.

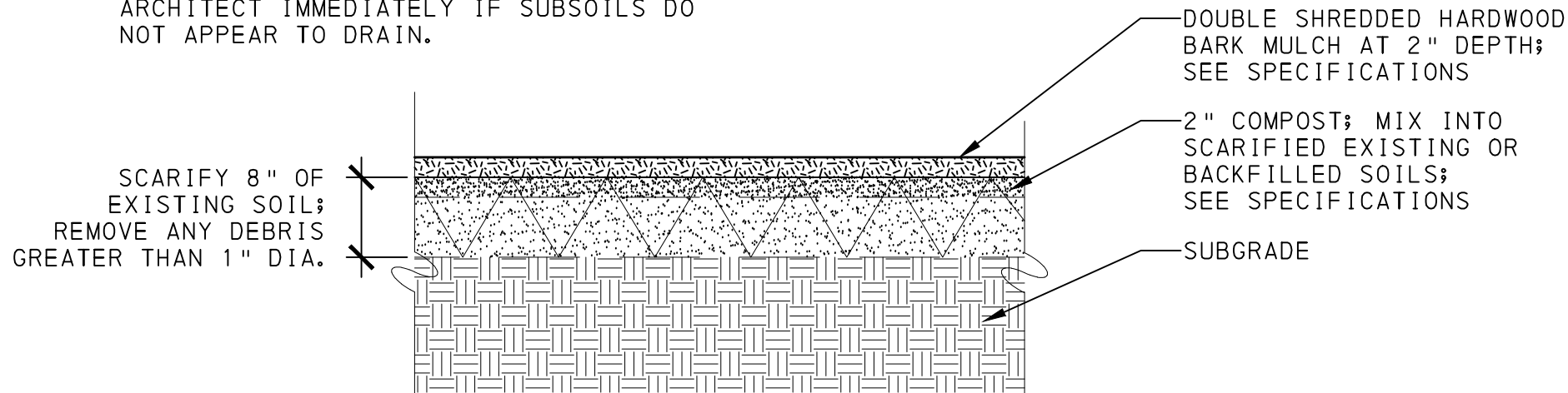


PERENNIAL PLANTING  
3/4" = 1' 0"



SEEDED TURF  
3/4" = 1' 0"

- NOTES:**
- ENSURE GOOD DRAINAGE AT BOTTOM OF ALL PLANTING BEDS. CONTACT LANDSCAPE ARCHITECT IMMEDIATELY IF SUBSOILS DO NOT APPEAR TO DRAIN.



PLANTING BED PREPARATION  
3/4" = 1' 0"

| REVISIONS |      |         |
|-----------|------|---------|
| NO        | DATE | COMMENT |
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1301 BEACH STREET  
PHILADELPHIA, PA 19125

DRAWING ISSUE  
FINAL DESIGN (100%)

|                           |                       |
|---------------------------|-----------------------|
| DATE<br>DECEMBER 23, 2025 |                       |
| DRAWN BY<br>MA            | CHECKED BY<br>RM      |
| PROJECT #<br>0001052.00   | SCALE<br>3/4" = 1' 0" |

DRAWING TITLE

**LANDSCAPE  
DETAILS I**

DRAWING NUMBER  
**L-3**



# PENN TREATY PARK

## GENERAL NOTES

### GENERAL

1. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE PROJECT ARCHITECTS PLAN LAYOUT AND GUIDELINES. SUITABILITY FOR ACCESS AND INTENDED USAGE SHALL BE THE RESPONSIBILITY OF THE ARCHITECT.
2. VEHICULAR ACCESS LARGER THAN THE DESIGN LIVE LOAD SHALL BE LIMITED BY PERMANENT PHYSICAL MEANS.
3. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL ELEVATIONS THROUGH THE PROJECT ARCHITECT. PRIOR TO CONSTRUCTION, ALL FOUNDATION LOCATIONS SHALL BE STAKED BY THE SURVEYOR PER THE APPROVED DRAWINGS MARKED 'FOR CONSTRUCTION'.
4. ONLY PERMATRAK NORTH AMERICA MAY PROVIDE THE PRECAST STRUCTURE SHOWN ON THESE PLANS.
5. INSTALLER SHALL NOT CUT OR MODIFY ANY PERMATRAK COMPONENTS WITHOUT PERMATRAK'S APPROVAL.
6. THE INSTALLER IS RESPONSIBLE FOR THE APPROPRIATE MEANS AND METHODS FOR THIS PROJECT, INCLUDING ENSURING PROPER CONSTRUCTIBILITY OF ALL COMPONENTS SHOWN ON THESE PLANS. NO EQUIPMENT MAY BE OPERATED ON THE STRUCTURE, UNLESS NOTED OTHERWISE IN THE DESIGN DATA ON THIS SHEET.
7. A MATERIAL CHANGE TO THE BOARDWALK SYSTEM IS NOT ALLOWED AND NOT CONSIDERED AN EQUAL.
8. PRIOR TO CONSTRUCTION, ALL EXISTING UTILITIES, BUILDING LOCATIONS, EXISTING FOUNDATIONS AND TREE ROOTS (AS APPLICABLE) SHALL BE LOCATED TO VERIFY NO CONFLICTS EXIST WITH THE STRUCTURES SHOWN ON THESE PLANS.

### DESIGN DATA

1. BOARDWALK SHALL BE DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC)
2. DESIGN LIVE LOAD: PEDESTRIAN LOADING - 100 PSF UNIFORM  
VEHICULAR LOADING - 5,000 LB. VEHICLE  
FOUNDATIONS SHALL BE DESIGNED FOR THE FOLLOWING.
- APPLIED PIER/PILE LOADS:  
COMPRESSION: 20 KIPS (SERVICE)  
LATERAL: = 1.0 KIPS (SERVICE)
3. A HYDRAULIC ANALYSIS, INCLUDING SCOUR EVALUATION, HAS NOT BEEN PERFORMED BY PERMATRAK. THIS SCOPE IS THE RESPONSIBILITY OF THE DESIGN CONSULTANT.
4. HELICAL PIERS SHOWN ON THESE PLANS SHALL BE DESIGNED BY THE HELICAL PIER SUPPLIER. HELICAL PIERS SHALL BE INSTALLED WITHIN 2" OF PLAN LOCATION.
5. AT THE TIME THESE DRAWINGS WERE CREATED, GEOTECHNICAL INFORMATION WAS UNAVAILABLE FOR ANALYSIS OF THE SUBSTRUCTURE. PRIOR TO CONSTRUCTION, A SITE SPECIFIC GEOTECHNICAL REPORT SHALL BE PROVIDED AT THE LOCATION OF THE STRUCTURES SHOWN IN THESE PLANS

### MATERIAL

1. FASTENERS, BOLTS AND HARDWARE SHALL BE GALVANIZED, FIBER REINFORCED POLYMER (FRP) OR GRADE 316 STAINLESS STEEL.
2. ALL REINFORCING SHALL BE UNCOATED GRADE 60 CONFORMING TO ASTM A615.
3. ALL PRECAST SHALL BE INTEGRALLY COLORED WITH ADELAIDE GREY. ALL TREADS SHALL BE TEXTURED WITH BEACHWOOD TEXTURE, PROVIDED BY PERMATRAK.

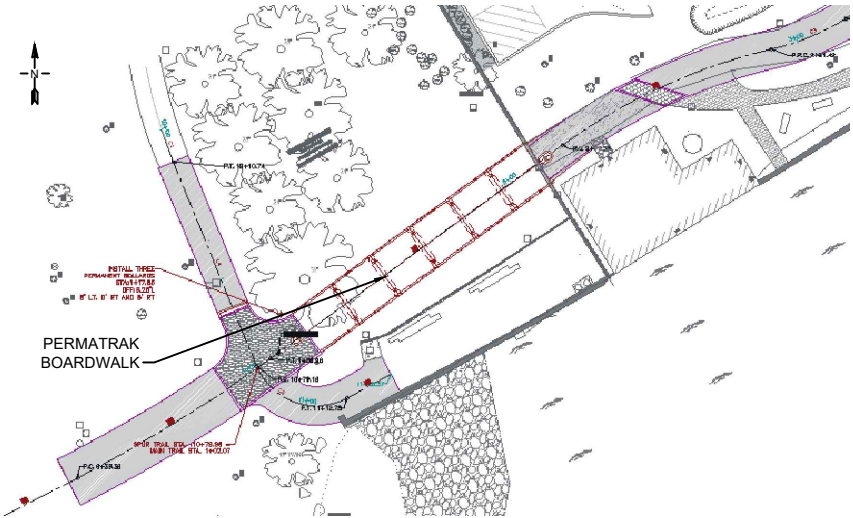
## QUALITY ASSURANCE SPECIFICATIONS

1. ACCEPTABILITY CRITERIA FOR TREADS AND CURBS (IF APPLICABLE): THE FINISHED VISIBLE (IN THE FINAL INSTALLED POSITION) SURFACE SHALL HAVE NO OBVIOUS IMPERFECTIONS OTHER THAN MINIMAL COLOR OR TEXTURE VARIATIONS FROM THE APPROVED SAMPLES OR EVIDENCE OF REPAIRS WHEN VIEWED IN GOOD TYPICAL DAYLIGHT ILLUMINATION WITH THE UNAIDED NAKED EYE AT A 20 FT. VIEWING DISTANCE. APPEARANCE OF THE SURFACE SHALL NOT BE EVALUATED WHEN LIGHT IS ILLUMINATING THE SURFACE FROM AN EXTREME ANGLE AS IT TENDS TO ACCENTUATE THE MINOR SURFACE IRREGULARITIES. THE FOLLOWING IS A LIST OF FINISH DEFECTS THAT SHALL BE PROPERLY REPAIRED, IF OBVIOUS WHEN VIEWED AT A 20 FT. DISTANCE. PATCHING (BY A TRAINED SKILLED CONCRETE REPAIR PERSON) IS AN ACCEPTABLE REPAIR METHOD.
- a. RAGGED OR IRREGULAR SURFACES.
- b. EXCESSIVE AIR VOIDS (COMMONLY CALLED BUG HOLES) LARGER THAN ¼ IN. EVIDENT ON THE TOP SURFACE OF THE TREAD OR CURBS (IF APPLICABLE).
- c. ADJACENT FLAT AND RETURN SURFACES WITH GREATER TEXTURE AND/OR COLOR DIFFERENCES THAN THE APPROVED SAMPLES OR MOCKUPS.
- d. CASTING AND/OR AGGREGATE SEGREGATION LINES EVIDENT FROM DIFFERENT CONCRETE PLACEMENT LIFTS AND CONSOLIDATION.
- e. VISIBLE MOLD JOINTS OR IRREGULAR SURFACES.
- f. RUST STAINS ON EXPOSED SURFACES.
- g. UNITS WITH EXCESSIVE VARIATION IN TEXTURE AND/OR COLOR FROM THE APPROVED SAMPLES, WITHIN THE UNIT OR COMPARED WITH ADJACENT UNITS.
- h. BLOCKING STAINS EVIDENT ON EXPOSED SURFACES.
- i. AREAS OF BACKUP CONCRETE BLEEDING THROUGH THE FACING CONCRETE.
- j. FOREIGN MATERIAL EMBEDDED IN THE SURFACE.
- k. VISIBLE REPAIRS AT A 20 FT. VIEWING DISTANCE.
- l. REINFORCEMENT SHADOW LINES.
- m. CRACKS VISIBLE AT A 20 FT. VIEWING DISTANCE.

## PROJECT COMPONENTS

| SUPPLIED BY PERMATRAK   |
|---|
| PRECAST CONCRETE TREADS   |
| PRECAST CONCRETE BEAMS  |
| PRECAST CONCRETE CURBS  |
| RUBBER SPACER PADS (BETWEEN TREADS)   |
| RUBBER LEVELING PADS (BETWEEN TREAD AND BEAM)                               |
| CLIP ANGLES   |
| SIKAFLEX SELF LEVELING SEALANT  |
| SIMPSON STRONG-TIE SET-3G (EPOXY ANCHORING SYSTEM)                          |
| 1/2" DIA. X 1'-0" LONG STAINLESS STEEL CARRIAGE BOLTS                       |
| SIKAFLEX-11 FC EXPANSIVE FILLER MATERIAL (CURB TO TREAD CONNECTION)         |
| SHIMS (LEVELING FOR PRECAST COMPONENTS)                                     |
| ELASTOMERIC BEARING PADS (BETWEEN BEAM AND FOUNDATION)                      |
| 3/4" DIAMETER THREADED BARS WITH NUTS AND WASHERS (BEAM TO PIER CONNECTION) |
| PATCHING MATERIAL   |
| WEIGHT LIMIT SIGN(S) AND CONNECTION HARDWARE                                |


| SUPPLIED BY CONTRACTOR                |
|---------------------------------------|
| EXPANSION JOINT MATERIAL              |
| CAST-IN-PLACE CONCRETE                |
| HELICAL PIERS AND CONNECTION HARDWARE |



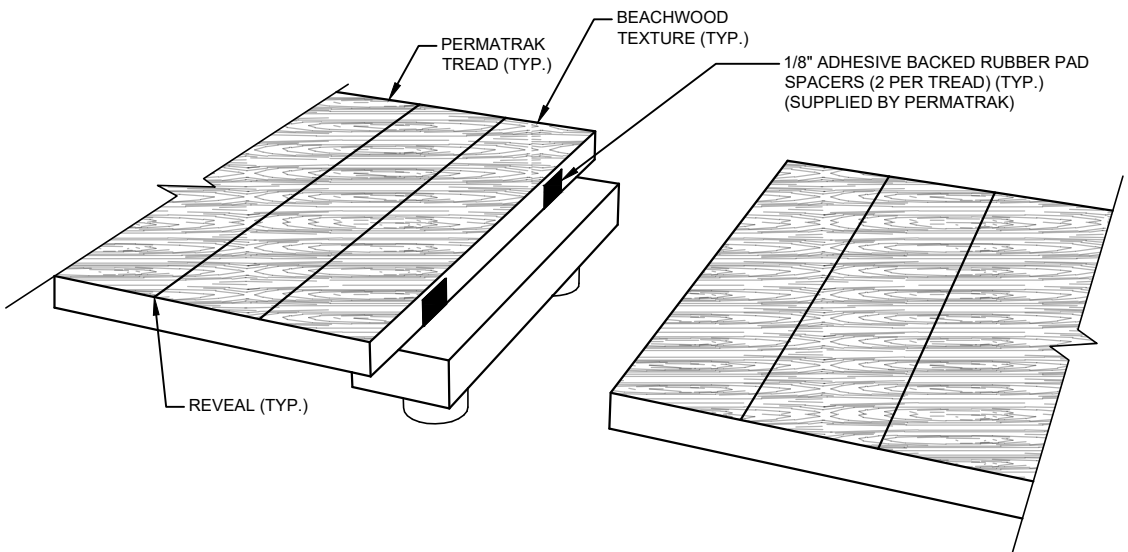
### PERMATRAK BOARDWALK LOCATION PLAN

SCALE: NOT TO SCALE

Patented Product: U.S. Patent #8,302,362, #8,522,505, #9,096,975, #D940,912, #D925,068 & Other Patents Pending



|  |     |      |             |     |                                     |  |                  |  |                       |
|--|-----|------|-------------|-----|-------------------------------------|--|------------------|--|-----------------------|
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|  | 5   |      |             |     |                                     |  | DATE: 10/08/2025 |  |                       |
|  | 4   |      |             |     |                                     |  | DESIGNED BY: KMB |  |                       |
|  | 3   |      |             |     | DRAWN BY: KMB                       |  |                  |  |                       |
|  | 2   |      |             |     | CHECKED BY: KAS                     |  |                  |  |                       |
|  | 1   |      |             |     | SHEET NO.                           |  |                  |  |                       |
|  | NO. | DATE | DESCRIPTION | BY: | PRELIMINARY<br>NOT FOR CONSTRUCTION |  | TEXAS            |  | PT01                  |





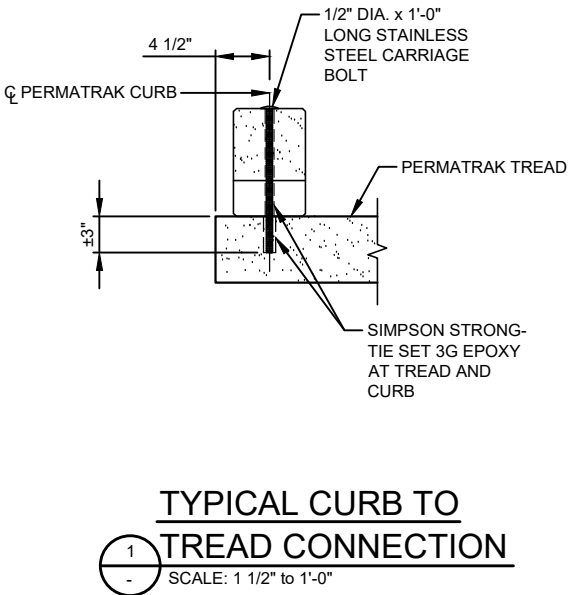
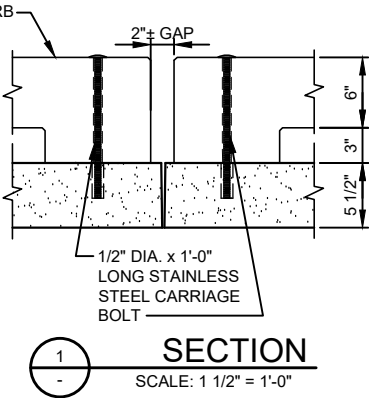
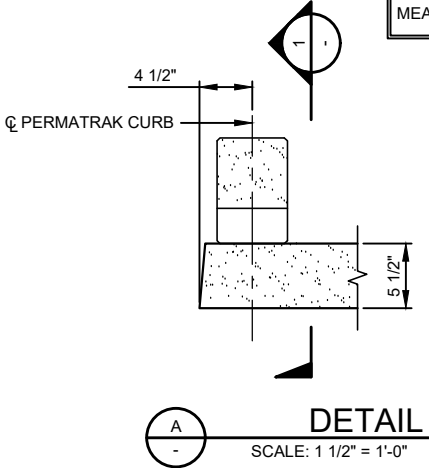
## TYPICAL TREAD RUBBER SPACING DETAIL

SCALE: NOT TO SCALE

|   |     |      |             |     |                                     |   |                  |                  |   |                       |
|---|-----|------|-------------|-----|-------------------------------------|---|------------------|------------------|---|-----------------------|
| Patented Product: U.S. Patent #8,302,362, #8,522,505, #9,096,975, #D940,912, #D925,068 & Other Patents Pending  |     |      |             |     |                                     |   |                  |                  |   |                       |
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|   | 5   |      |             |     |                                     |   | NORTH CAROLINA   | DATE: 10/08/2025 |   |                       |
|   | 4   |      |             |     |                                     |   | SOUTH CAROLINA   | DESIGNED BY: KMB |   |                       |
|   | 3   |      |             |     |                                     |   | FLORIDA          | DRAWN BY: KMB    |   |                       |
|   | 2   |      |             |     | PRELIMINARY<br>NOT FOR CONSTRUCTION | <br><br>www.permatrak.com    TEL: 877-332-7862 | OHIO             | CHECKED BY: KAS  |   |                       |
|   | 1   |      |             |     |                                     |   |                  | GEORGIA          |   | SHEET NO.             |
|   | NO. | DATE | DESCRIPTION | BY: |                                     |   |                  | TEXAS            |   | PT02                  |
|   |     |      |             |     |                                     |   |                  |                  |   |                       |

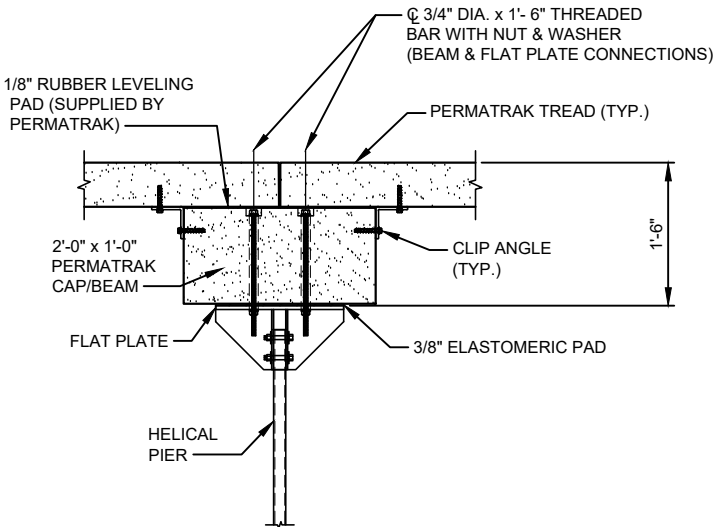


- NOTES:
1. 2" DIAMETER PREFORMED HOLES SUPPLIED BY PERMATRAK.
  2. CONNECTION HARDWARE SUPPLIED BY PERMATRAK.
  3. FILL OVERSIZED DOWEL HOLES WITH SIKAFLEX-11 FC OR APPROVED EQUAL.
  4. AFTER TIGHTENING NUT, DEFORM THREADS ON ROD TO PREVENT LOOSENING.
  5. THREADED ROD SHALL BE GALVANIZED AND HAVE COARSE COILED THREADS TO FIT A MEADOW BURKE CX-28 COIL WINGNUT INSERT.



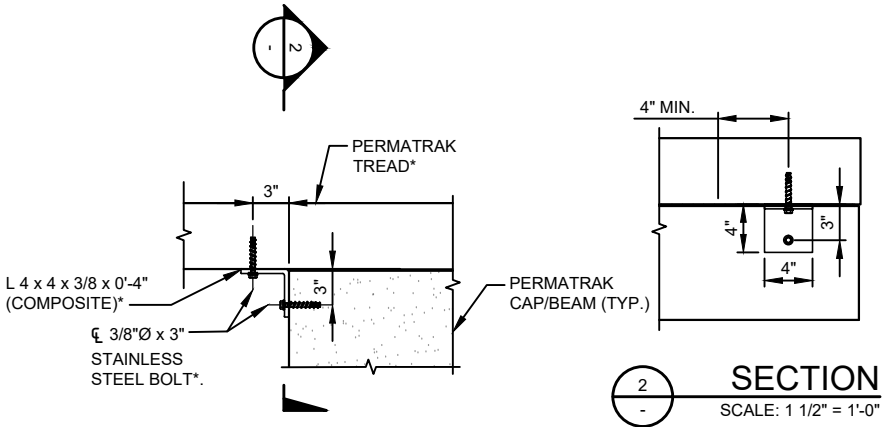
TYPICAL CURB TO  
TREAD CONNECTION

SCALE: 1 1/2" = 1'-0"



TYPICAL PIER CONNECTION DETAIL

Scale: 1" = 1'-0"



- NOTES:
1. ALL HOLES IN PRECAST SHALL BE DRILLED BY CONTRACTOR.
  2. DRILLED HOLES IN PRECAST SHALL BE 3/8"Ø AND INSTALLED PER MANUFACTURER INSTALLATION REQUIREMENTS.
  3. \* INDICATES SUPPLIED BY PERMATRAK.
  4. FOUR (4) CLIP ANGLE IS REQUIRED PER TREAD. SEE PLAN VIEW ON PT02 FOR LOCATION.

TREAD TO FOOTING CONNECTION

SCALE: N.T.S.

Patented Product: U.S. Patent #8,302,362, #8,522,505, #9,096,975, #D940,912, #D925,068 & Other Patents Pending

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| 1   |      |             |     |  |
| NO. | DATE | DESCRIPTION | BY: |  |

PREPARED FOR:

NV5

PRELIMINARY  
NOT FOR CONSTRUCTION

**PermaTrak®**  
The Concrete Boardwalk Company  
www.permatrak.com TEL: 877-332-7862

OFFICE LOCATIONS

NORTH CAROLINA  
SOUTH CAROLINA  
FLORIDA  
OHIO  
GEORGIA  
TEXAS

PROJECT TITLE:

PENN TREATY PARK  
PHILADELPHIA, PA

JOB NUMBER: 2023-2011

DATE: 10/08/2025

DESIGNED BY: KMB

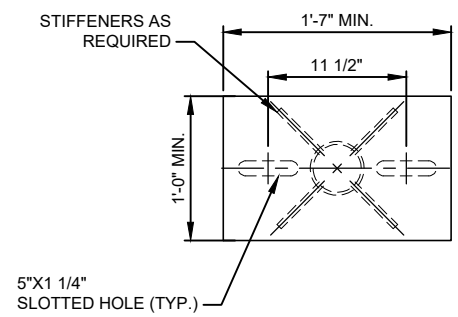
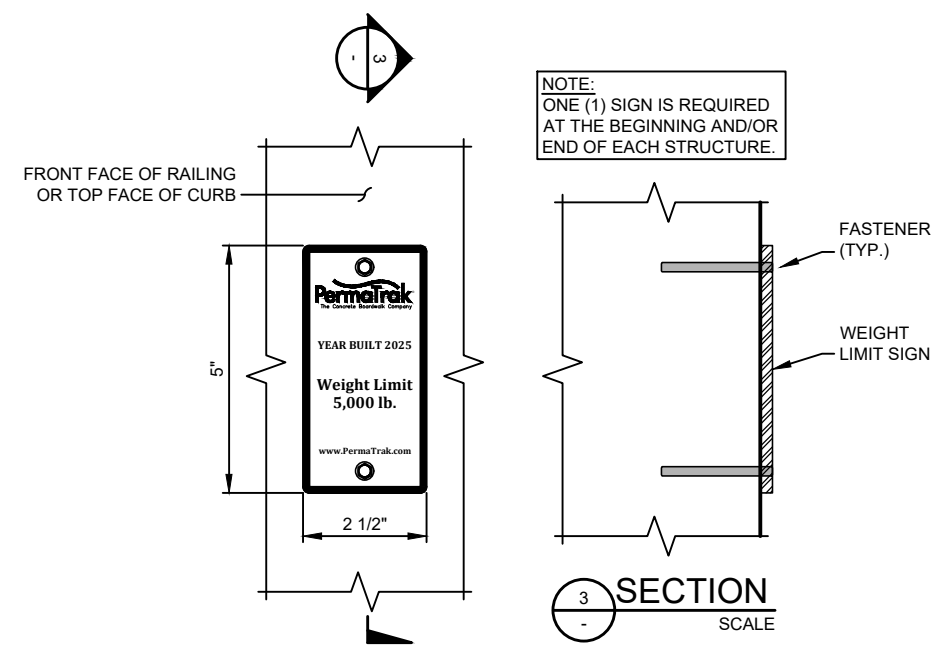
DRAWN BY: KMB

CHECKED BY: KAS

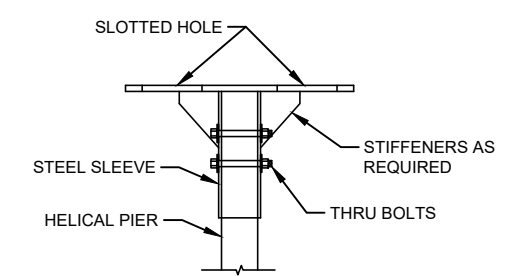
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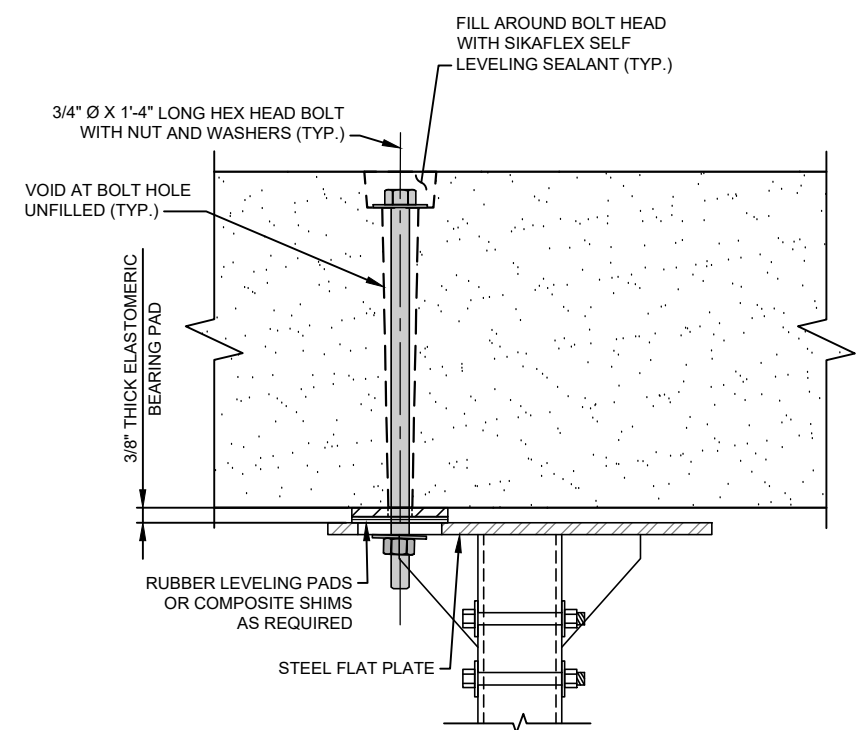
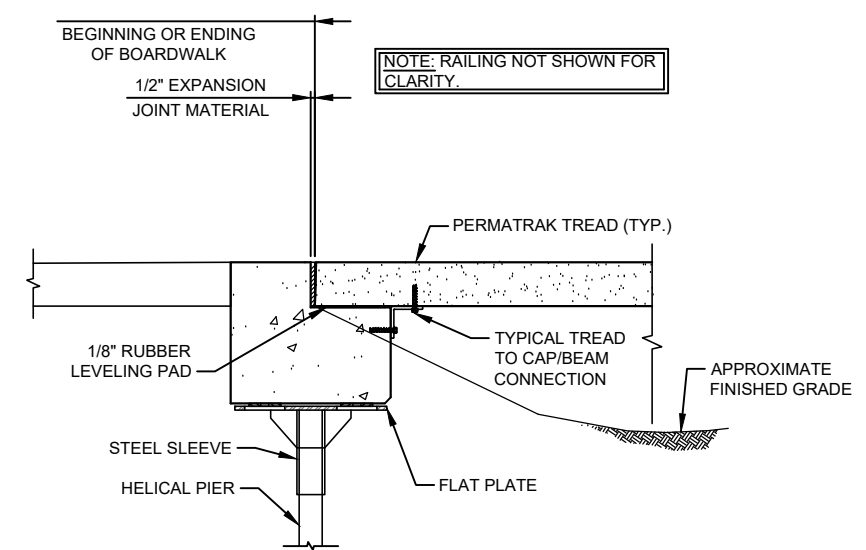




- HELICAL PIER NOTES:**
1. DESIGN OF HELICAL PIER ASSEMBLY IS BY OTHERS. (SEE PTO1 FOR LOADS). PLATE DIMENSIONS AND SLOTTED HOLES SHALL BE AS SHOWN.
  2. HELICAL PIER, FLAT PLATE ASSEMBLY, STIFFENER PLATES, AND HARDWARE SHALL BE HOT-DIPPED GALVANIZED.
  3. DEPTH OF HELICAL PIER TO BE DESIGNED BY THE HELICAL PIER ENGINEER.
  4. CROSS BRACING OF HELICAL PIERS MAY BE REQUIRED FOR STABILITY AND SHALL BE DETAILED BY HELICAL PIER ENGINEER.
  5. IF STEEL SLEEVE EXCEEDS 4 1/2" O.D., CONTACT PERMATRAK FOR ADDITIONAL COORDINATION.



**HELICAL PIER FLAT PLATE DETAIL**  
SCALE: NOT TO SCALE



**TYPICAL BEAM TO STEEL PLATE CONNECTION DETAIL**  
SCALE: NOT TO SCALE

**TYPICAL CAST-IN-PLACE ABUTMENT DETAIL**  
SCALE: 1" = 1'-0"

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| NO. | DATE | DESCRIPTION | BY: |

PREPARED FOR:  
**NV5**  
**PRELIMINARY**  
**NOT FOR CONSTRUCTION**



| OFFICE LOCATIONS |
|------------------|
| NORTH CAROLINA   |
| SOUTH CAROLINA   |
| FLORIDA          |
| OHIO             |
| GEORGIA          |
| TEXAS            |

|   |
|---|
| PROJECT TITLE:                              |
| <b>PENN TREATY PARK</b><br>PHILADELPHIA, PA |

|                          |
|--------------------------|
| JOB NUMBER: 2023-2011    |
| DATE: 10/08/2025         |
| DESIGNED BY: KMB         |
| DRAWN BY: KMB            |
| CHECKED BY: KAS          |
| SHEET NO.<br><b>PT04</b> |

Patented Product: U.S. Patent #8,302,362, #8,522,505, #9,096,975, #D940,912, #D925,068 & Other Patents Pending



## HELICAL PIER/ANCHOR NOTES

## V2.4 LAST MODIFIED AUGUST 2021

## 1. DESIGN AND PERFORMANCE REQUIREMENTS

- A. Helical piers shall be designed to support the nominal compression and lateral load(s) as shown on the project plans. The overall length, helix configuration and minimum effective torsional resistance of a helical pier shall be such that the required geotechnical capacity is developed by the helix plate(s) in an appropriate bearing stratum(s).
- B. All steel structure pier components shall be designed within the limits provided by the American Institute of Steel Construction (AISC). Either Allowable Stress Design (ASD) or Load and Resistance Factor Design (LRFD) are acceptable methods of analysis.
- C. Except where noted otherwise on the project plans, all piers shall be installed to provide a minimum factor of safety against ultimate compression resistance of 2.0, a maximum axial deflection at design compression load of 0.5 inches, and must satisfy the deflection criteria as stated on the plans or drawings.
- D. Except where noted otherwise on the project plans, each pier shall be designed to meet a corrosion service life of 50 years.
- E. The anchorage design shall take into account such pier spacing, soil stratification, corrosion and strain compatibility issues as are present for the project.

## **2. QUALIFICATIONS OF INSTALLING CONTRACTOR AND DESIGNER**

The installing contractor and pier designer shall submit to the owner or owner's representative a proposal including the following documentation. Work shall not begin until all the submittals have been received and approved by the owner. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the installing contractor.

- A. Evidence of installing contractor's competency in installation of helical piers shall be provided to the owner's satisfaction and may include any or all of the following:
1. Pier manufacturer's certificate of competency in installation of helical piers, or
  2. A list of at least three projects completed within the previous three years wherein the installing contractor installed helical piers similar to those shown in the project plans, such list to include names and phone numbers of those project owner's representatives who can verify the installing contractor's participation in those projects, or
  3. A letter from the pier manufacturer, distributor or manufacturer's representative expressing ability and intent to provide on-site supervision of the pier installation.
- B. A listing of all safety violations logged against the installing contractor within the previous three years and the current status or final resolutions thereof. Descriptions of safety improvements instituted within the previous three years may also be submitted, at the installing contractor's discretion.
- C. Evidence of pier designer's competence in the design of helical piers shall be provided to the owner's satisfaction and shall include all of the following:
1. Registration as a professional engineer or recognition by the local jurisdictional authority.
  2. A list of at least three projects completed within the previous three years wherein the pier designer designed helical piers similar to those shown in the project plans, such list to include names and phone numbers of those project owner's representatives who can verify the engineer's participation in those projects.
  3. Recommendation from the pier manufacturer, distributor or manufacturer's representative.

### **3. PRE-CONSTRUCTION SUBMITTALS**

1. Shop drawing submittal including at minimum, the helical plate and specific helical pier cut sheet, which shall be signed and sealed by a structural engineer.
2. Certification from the pier designer that the proposed piers meet the requirements stated herein.
3. Qualifications of pier installer per sections 2A and 2B
4. Qualifications of pier designer per section 2C
5. Product designations for helix and extension sections and all ancillary products to be supplied at each helical pier location
6. Individual anchorage nominal loads
7. Individual anchorage pre-tensioning requirements (if any)
8. Manufacturer's published allowable system capacities for the pier assemblies, including load transfer devices
9. Calculated theoretical geotechnical capacity of piers
10. Minimum effective torsional resistance criteria
11. Maximum allowable installation torque of pier
12. Minimum embedment lengths and other site-specific embedment depth requirements that may be appropriate for the site soil profiles
13. Inclination angle and location tolerance requirements
14. Copies of certified calibration reports for torque measuring equipment and load test measuring equipment to be used on the project. The calibrations shall have been performed within one year of the proposed starting date for helical pile installation or as recommended by the equipment manufacturer based on the proposed starting date.
15. Complete calculation submittal displaying structural and geotechnical capacity of the helical pier and connection plate. Calculation submittal shall be signed and sealed by a structural engineer.

#### **4. PLACEMENT REQUIREMENTS**

- A. When helical pier placement is shown on the project plans, production piers shall be placed such that the anchor head is within 1 inch laterally and 1 inch longitudinally, and the pier shaft alignment is within 2 degrees of the inclination angle, shown on the project plans.
- B. When pier placement is not shown on the project plans, the placements, alignments and their respective tolerances shall be included as part of the design submittal.

## 5. PIER INSTALLATION

- A. Helical pier installation shall only begin after review and approval of the submitted testing data.
- B. Before entering the construction site to begin work, the installing contractor shall provide proof of insurance coverage as stated in the general specifications and/or contract.
- C. Installing contractor shall furnish and install all helical piers per the project plans and approved anchorage design documentation. In the event of conflict between the project plans and the approved anchorage design documentation, the installing contractor shall not begin construction on any affected items until such conflict has been resolved.
- D. The installing contractor shall conduct his construction operations in a manner to ensure the safety of persons and property in the vicinity of the work. The installing contractor's personnel shall comply with safety procedures in accordance with OSHA standards and any established project safety plan.
- E. The installing contractor shall request marking of underground utilities by an underground utility location service as required by law and shall avoid contact with all marked underground facilities.
- F. The portion of the construction site occupied by the installing contractor, his equipment and his material stockpiles shall be kept reasonably clean and orderly.
- G. Installation of helical piers may be observed by representatives of the owner for quality assurance purposes. The installing contractor shall give the owner's representative at least 24 hours prior notice of pier installation operations.
- H. The helical pier installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project. The lead section shall be positioned at the location as shown on the pier design drawings. The helical pier sections shall be engaged and advanced into the soil in a smooth, continuous manner at a rate of rotation of 5 to 25 rpm. Sufficient down pressure (crowd) shall be applied to uniformly advance the helical pier sections a distance approximately equal to the pitch of the helix plate (typically 3 inches) per revolution. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths. Extension sections shall be provided to obtain the required minimum overall length and minimum effective torsional resistance as shown on the project plans.
- I. Installation tolerances are as follows: Piers shall be driven with a variation of not more than 1/4" per foot from the vertical or from the batter line indicated. Upon completion of driving and released from leads, exposed piles shall not have a variation of more than 2 inches at the cut-off elevation from the position shown on the plans.

## 6. TERMINATION CRITERIA

The minimum overall length criteria and the minimum effective torsional resistance criteria as specified in the pre-construction submittals must be satisfied prior to terminating the pier installation. In the event any helical pier fails to meet these production quality control criteria, the following pre-qualified remedies are authorized:

- If the installation fails to meet the minimum effective torsional resistance criterion at the minimum embedment length:
1. Continue the installation to greater depths until the torsional resistance criterion is met, provided that, if a maximum length constraint is applicable, continued installation does not exceed said maximum length constraint, or
  2. Demonstrate acceptable pier performance through proof testing, or
  3. Replace the pier with one having a different helix configuration. The replacement pier must not exceed any applicable maximum embedment length and either (a) be embedded to a length that places its last helix at least three times its own diameter beyond the position of the first helix of the replaced pier and meet the minimum effective torsional resistance criterion, or (b) pass proof testing.
- B. If the torsional resistance during installation reaches the helical pier's maximum allowable torque rating prior to satisfaction of the minimum embedment length criterion:
1. Terminate the installation at the depth obtained if allowed by the owner's representative, or
  2. Replace the pier with one having a shaft with a higher torsional strength rating. This replacement pier must be installed to satisfy the minimum embedment length criterion. It must also be embedded to a length that places its last helix at least three times its own diameter beyond the position of the helix of the replaced pier without exceeding any applicable maximum embedment length requirements and it must meet the minimum effective torsional resistance criterion, or
  3. Replace the pier with one having a different helix configuration. This replacement pier must be installed to satisfy the minimum embedment length criterion. It must also be embedded to a length that places its last helix at least three times its own diameter beyond the position of the first helix of the replaced pier without exceeding any applicable maximum embedment length requirements, and it must meet the minimum effective torsional resistance criterion, or
  4. If allowed by the pier location tolerance or approved by the owner's representative, remove and reinstall the pier at a position at least three times the diameter of the largest helix away from the initial location. Original embedment length and torsional resistance criteria must be met. This pier repositioning may require the installation of additional helical piers with nominal loads adjusted for these spacing changes.
- C. If the installation reaches a specified maximum embedment length without achieving the minimum effective torsional resistance criterion:
1. If allowed by the pier location tolerance or approved by the owner's representative, remove and reinstall the pier at a position at least three times the diameter of the largest helix away from the initial location. Original embedment length and torsional resistance criteria must be met. This pier repositioning may require the installation of additional helical piers with nominal loads adjusted for these spacing changes, or
  2. Demonstrate acceptable pier performance through proof testing, or
  3. De-rate the load capacity of the helical pier and install additional piers, as necessary. The de-rated capacity and additional pier location shall be subject to the approval of the owner's representative, or
  4. Replace the pier with one having a different helix configuration. This replacement pier must be installed to satisfy the minimum embedment length criterion and it must meet the minimum effective torsional resistance criterion.
- D. If a helical pier fails to meet acceptance criteria in a performance or proof test:
1. Install the pier to a greater depth and installation torque and re-test provided that, if a maximum embedment length constraint is applicable, continued installation will not exceed said maximum length constraint, or
  2. Replace the pier with one having more and/or larger helix plates. It must be embedded to a length that places its last helix at least three times its own diameter beyond the position of the first helix of the replaced pier without exceeding any applicable maximum embedment length requirements. This replacement pier must be re-tested, or
  3. If approved by the owner's representative, de-rate the load capacity of the helical pier and install additional piers. Additional piers must be installed at positions that are at least three times the diameter of the largest helix away from any other pier locations and are approved by the owner's representative. Piers installed in cohesive soils shall not be spaced closer than four helix diameters.
- E. Proof testing to qualify a pier under any of the foregoing remedial actions shall not be used to satisfy proof testing frequency requirements shown in the project plans or the design documentation. If a helical pier fails a production quality control criterion for any other reason, any proposed remedy must be approved by the owner's representative prior to initiating its implementation at the project site.

## **7. INSTALLATION RECORD SUBMITTALS**

- A. The installing contractor shall provide the owner, or his authorized representative, copies of individual helical pier installation records within 24 hours after each installation is completed. Formal copies shall be submitted (within 5 days). These installation records shall include, but are not limited to, the following information:
1. Date and time of installation
  2. Location of helical pier
  3. Actual helical pier type and configuration
  4. Pier reveal
  5. Total length of installed pier
  6. Actual inclination of the pier
  7. Actual effective torsional resistance
  8. Calculated geotechnical capacity based on actual torsional resistance
  9. Comments pertaining to interruptions, obstructions, or other relevant information


## 8. PIER TESTING

Two load tests shall be performed in accordance with the latest version of ASTM D1143 and the following criteria:

- A. Load tests shall be performed on two (2) helical piers after installation in accordance with the plans. The static load capacity test shall be conducted one at a time and shall consist of the following. An initial axial setting force of 5,000 lbs shall be applied to the helical pier or helical pile. Load increments of 10 to 25% of the design allowable load shall be subsequently applied with a constant time interval between each increment, in accordance with ASTM D1143 quick load test method for individual piles, until the proof load specified on the plans is reached. After the final hold period, the maximum pile head displacement shall be recorded. The test shall be deemed successful provided helical pier and helical pile maximum pile head displacement is less than one half (1/2) inch of the design load. In the event of an unsatisfactory test, the helical pier or helical pile shall be installed to additional length and torque until a successful proof load capacity test has been completed. Axial load shall be applied to the helical pier and helical pile during the proof load capacity test utilizing the final bracket assembly configuration. Through the duration of installation and testing, the horizontal movement of the structure to which the helical piers are attached shall be limited as shown on the plans.
- B. The installing contractor shall furnish all labor, equipment and pre-production helical piers necessary to accomplish the testing as shown in the approved pier design documentation. Installing contractor shall apply the specified loads for the specified durations and record the specified data, for the specified number of piers. No deviations from the test plan(s) will be allowed without explicit approval in writing from the owner's representative.
- C. Installing contractor shall provide the owner, or owner's representative, copies of raw field test data or reports within 24 hours after completion of each load test. Formal test reports shall be submitted within (5) days following test completion. Formal test reports shall include, but are not limited to, the following information:
1. Name of project and installing contractor
  2. Name of installing contractor's supervisor during installation
  3. Name of third party test agency, if any
  4. Pre-production or production test
  5. Date, time, and duration of test
  6. Unique identifier and location of helical pier tested
  7. Type of test (performance of proof)
  8. Description of calibrated testing equipment and test set-up
  9. Actual helical pier type and configuration
  10. Steps and duration of each load increment
  11. Cumulative pier head movement at each load step

## 9. CLEANUP

Within (2 weeks) of completion of the work, the installing contractor shall remove any and all material, equipment, tools, building materials, concrete forms, debris, or other items belonging to the installing contractor or used under the installing contractor's direction.

|   |     |      |             |     |                                     |   |                  |                  |   |                       |  |  |
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|   | 5   |      |             |     |                                     |   | NORTH CAROLINA   | DATE: 10/08/2025 |   |                       |  |  |
|   | 4   |      |             |     | SOUTH CAROLINA                      |   | DESIGNED BY: KMB |                  |   |                       |  |  |
|   | 3   |      |             |     | FLORIDA                             |   | DRAWN BY: KMB    |                  |   |                       |  |  |
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ELEVATED PRECAST CONCRETE BOARDWALK

PROJECT SPECIFICATIONS V4.1 UPDATED SEPTEMBER 2023

PRECAST CONCRETE BOARDWALK SYSTEM

PART 1-GENERAL

1.1 SUMMARY

A. These specifications are for a precast concrete boardwalk and shall be regarded as minimum standards for this project. These specifications are based upon products designed and supplied by:

PermaTrak North America LLC  
Ph: (864) 354-4870  
Ph: 877-332-7862  
www.permatrak.com  
Contact: Mr. John Pyle  
jpyle@permatrak.com

This item shall also include the design, specification, and construction of a railing and foundation system that is attached to the proposed boardwalk system.

1.2 MINIMUM STANDARDS: The selected boardwalk shall have the following minimum characteristics:

A. The precast system shall be designed as a modular flexible system allowing a prescribed settlement at pier locations. Joints shall be designed for such movement to occur without damage to the structural integrity of the system.

B. Boardwalk system (beams, treads, and curbs if applicable) must be reinforced precast concrete. A material change, including cast-in-place concrete, is not considered an equal to the design shown on the bid documents.

C. Walking surface (treads) shall be made of reinforced precast concrete, and supported by reinforced precast concrete beams. Where applicable, edges of treads will receive precast concrete curbs.

D. Walking surface (finish) of top surface of treads shall have a formliner finish with one of PermaTrak's standard textures. Texture must be integral with the concrete and shall not be an applied post pour wearing surface.

E. Precast concrete treads shall be structural load bearing elements and shall interlock with one another via a "tongue and groove" connection.

F. All precast shall consist of integrally colored concrete in a color selected by the owner from one of PermaTrak's "standard colors". All color pigment shall meet ASTM C979 Standard Specification for Pigments for Integrally Colored Concrete.

G. DESIGN LOADS: See PT01 for pedestrian and vehicular design live loads.

H. Treads shall maintain a "boardwalk appearance", specifically meaning each tread shall have a width: length ratio ranging from a minimum of 3:1 to a maximum of 14:1. Width is defined as the tread dimension perpendicular to the normal direction of travel. Length is defined as the tread dimension measured in the direction of travel.

I. Tread width shall be as noted on the contract drawings. Alignment should follow the horizontal and vertical alignment shown on the contract plans.

J. Connectors for curbs (if applicable) to treads shall not be visible to boardwalk users while viewed from the top of the walkway.

K. All tread-to-beam connectors shall be non-corrosive, and hidden from view. Metallic tread-to-beam connectors are not acceptable for this project.

L. Boardwalk supplier shall provide a field representative on site for a minimum of 2 days. Field representative shall be knowledgeable in the installation of precast concrete boardwalks.

1.3 QUALITY ASSURANCE

A. The contractor performing the installation of the pile foundations shall have installed piles of size and length similar to those shown on the plans for a minimum of three (3) years prior to the bid date for this project. The contractor shall submit a list containing at least three (3) projects completed in the last three (3) years on which the contractor has installed piles of a size and length similar to those shown on the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractor's participation on those projects.

B. Manufacturer Qualifications: Not less than 10 years experience in the actual production of precast products as described below.

- Components shall be factory fabricated and engineered by single entity. This entity shall be registered to do business in the State of the project location.
- Boardwalk supplier (Precaster) for the boardwalk shall have in-house color mixing facilities for color pigmentation.
- Boardwalk supplier (Precaster) shall have either a minimum experience of 5 years or 50 boardwalk projects in design, production, and field consultation.
- Boardwalk supplier (Precaster) must be certified by PCI or NPCA.
- Precast components must be manufactured with the use of hot rolled steel skin in reinforced steel forms. Temporary (i.e., Timber) and/or single use forms are unacceptable unless approved in writing by the Boardwalk Engineer.

C. Acceptability Criteria for Treads and Curbs (if applicable): The finished visible (in the final installed position) surface shall have no obvious imperfections other than minimal color or texture variations from the approved samples or evidence of repairs when viewed in good typical daylight illumination with the unaided naked eye at a 20 ft. viewing distance. Appearance of the surface shall not be evaluated when light is illuminating the surface from an extreme angle as it tends to accentuate the minor surface irregularities. The following is a list of finish defects that shall be properly repaired, if obvious when viewed at a 20 ft. distance. Patching (by a trained skilled concrete repair person) is an acceptable repair method.

- Ragged or irregular surfaces.
- Excessive air voids (commonly called bug holes) larger than ¼ in. evident on the top surface of the tread or curbs (if applicable).
- Adjacent flat and return surfaces with greater texture and/or color differences than the approved samples or mockups.
- Casting and/or aggregate segregation lines evident from different concrete placement lifts and consolidation.
- Visible mold joints or irregular surfaces.
- Rust stains on exposed surfaces.
- Units with excessive variation in texture and/or color from the approved samples, within the unit or compared with adjacent units.
- Blocking stains evident on exposed surfaces.
- Areas of backup concrete bleeding through the facing concrete.
- Foreign material embedded in the surface.
- Visible repairs at a 20 ft. viewing distance.
- Reinforcement shadow lines.
- Cracks visible at a 20 ft. viewings distance.

D. Installer Qualifications: Firm with 3 years experience in installation of systems similar in complexity to those required for this Project.

E. Mock-Up: Provide, if required by Architect/ Engineer, a mock-up for evaluation of the boardwalk showing the surface preparation techniques and application workmanship.

- Finish areas designated by Architect / Engineer.
- Do not proceed with remaining work until mock-up is accepted by Architect / Engineer.
- Refinish mock-up area as required to produce acceptable work.

1.4 DESIGN

A. For applications requiring minimum disturbance due to tree roots or other existing objects specified by the Owner to be avoided during construction, the Boardwalk Manufacturer requires the Contractor or Engineer/Architect to provide a survey of the proposed boardwalk location identifying items of interest including tree roots that cannot be disturbed per the Owner.

B. The designer of the boardwalk, foundation and railing system shall be a qualified registered Professional Engineer licensed in the State of the project location and having a minimum of 20 years of experience in the design of concrete structures, foundation and railing systems.

C. The foundation design shown on the boardwalk drawings are based recommendations found in the geotechnical report entitled referenced on PT01 (if applicable).

A. DESIGN CRITERIA: The design of the boardwalk and railing system shall comply with the following guidelines:

- AASHTO LRFD Guide Specifications for The Design of Pedestrian Bridges, 2<sup>nd</sup> Edition with 2015 Interim Revisions.
- Latest Version of AASHTO LRFD Bridge Design Specifications for Highway Bridges.
- Latest Version of American Concrete Institute - Building Code and Commentary.
- In addition to the dead loads of the system, the structure shall be designed for the live loads defined in Section 1.2 G above.

1.5 SUBMISSIONS: Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include, but is not limited to, the following:

A. FOR APPROVAL SUBMISSIONS: Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include but not limited to the following:

- DETAILED PLANS:
  - PLAN VIEW: Full plan view of the boardwalk, foundation and railing system drawn to scale. The plan view must reflect the proposed horizontal alignment as shown on the design plans.
  - PARTIAL ELEVATION VIEW (IF REQUESTED): Full elevation view of the boardwalk, railing and foundation system drawn to scale which reflect the actual vertical alignment. Elevation views shall indicate the elevation at the top and bottom of the boardwalk and foundation system components.
  - DETAILS: Details of all boardwalk and railing system components and their connections such as the length, size and where changes occur; connections; etc.
  - CODE REFERENCE: Design parameters used along with AASHTO references.

2. CONSTRUCTION SPECIFICATIONS:

- Construction methods specific to the boardwalk vendor chosen. Submittal requirements such as certification, quality and acceptance/rejection criteria shall be included. Details on connection of boardwalk units and foundation system such that assurance of uniform load transfer shall be checked.

B. FINAL SUBMISSION: Once a boardwalk, foundation and railing system design has been reviewed and accepted by the Owner, the Contractor shall submit the final plans. The designer of the boardwalk, foundation and railing system is responsible for the review of any drawings prepared for fabrication. One set of all approved shop drawings shall be submitted to the Engineer's permanent records.

C. SUBMITTALS: Product Data: Submit Manufacturer's technical product data for railing components and accessories. Manufacturer to supply submittal drawings for approval to include the following:

- Section-thru details.
- Mounting methods.
- Typical Elevations.
- Key plan layout.

D. SHOP DRAWINGS: Shop drawings shall:

- Be stamped by a licensed Professional Engineer in the State of the project location.
- Show actual field conditions and true elevation and location supplied after field verification.
- Clearly detail reinforcement in beams, treads and curbs including clear dimension from concrete edge, size and amount of rebar.
- Clearly state concrete compressive strength, steel type and strength, and a listing of all component weights including lifting locations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings:

- Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed with fabrication of products so as not to delay fabrication, delivery and installation.

C. Coordinate fabrication and delivery schedule of handrails with construction progress and sequence to avoid delay of railing installation.

- Air entrained composed of Portland cement, fine and course aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either an air entraining Portland cement or an air entraining admixture. The entrained air-content shall be not less than four percent or more than seven percent.

1.7 WARRANTY:

A. Contractor will be responsible for installation defects associated with the boardwalk and abutment components, foundation system, and railings for a period of 12 calendar months from the date of final acceptance by the Owner.

B. Boardwalk manufacturer shall warranty all precast concrete components against defects in material and workmanship for a period of 10 years.

C. Railing manufacturer shall warranty the railing against defects in materials and workmanship for a period of 12 months.

1.8 MEASUREMENT AND PAYMENT

A. Precast concrete boardwalk, railings, and foundations shall be paid for at the contract lump sum price as listed in the bid proposal for "Precast Concrete Boardwalk". This price shall include all materials, equipment, labor and work necessary for and incidental to the design, construction, delivery, unloading, assembly, and placement of the boardwalk and foundation as shown in the contract plans including all railings on the superstructure.

PART 2-MATERIALS & TESTING

2.1 PRECAST CONCRETE: shall conform to the following:


- The minimum compressive strength of the concrete shall be 4000 psi measured at 28 days.
- All precast concrete shall contain structural steel reinforcement as designed by the Engineer of record.
- All precast concrete components shall be air entrained composed of Portland cement, fine and course aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either an air entraining Portland cement or an air entraining admixture. The entrained air-content shall be not less than four percent or more than seven percent.
- All reinforcing steel shall be standard uncoated steel conforming to ASTM A615

PART 3 - EXECUTION

1.1 PRECAST CONCRETE BOARDWALK

A. Installation of the precast concrete boardwalk system and railings, if applicable, shall be performed in accordance to the approved plans and manufacturers installation instructions. Boardwalk manufacturer shall provide a field representative to review installation instructions with the Contractor and Engineer and to certify that the installation has been performed according to the approved drawings and manufacturer's instructions.

Patented Product: U.S. Patent #8,302,362, #8,522,505, #9,096,975, #D940,912, #D925,068 & Other Patents Pending

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