SEPTA Stone Arch Culvert UG4.87 Rehabilitation

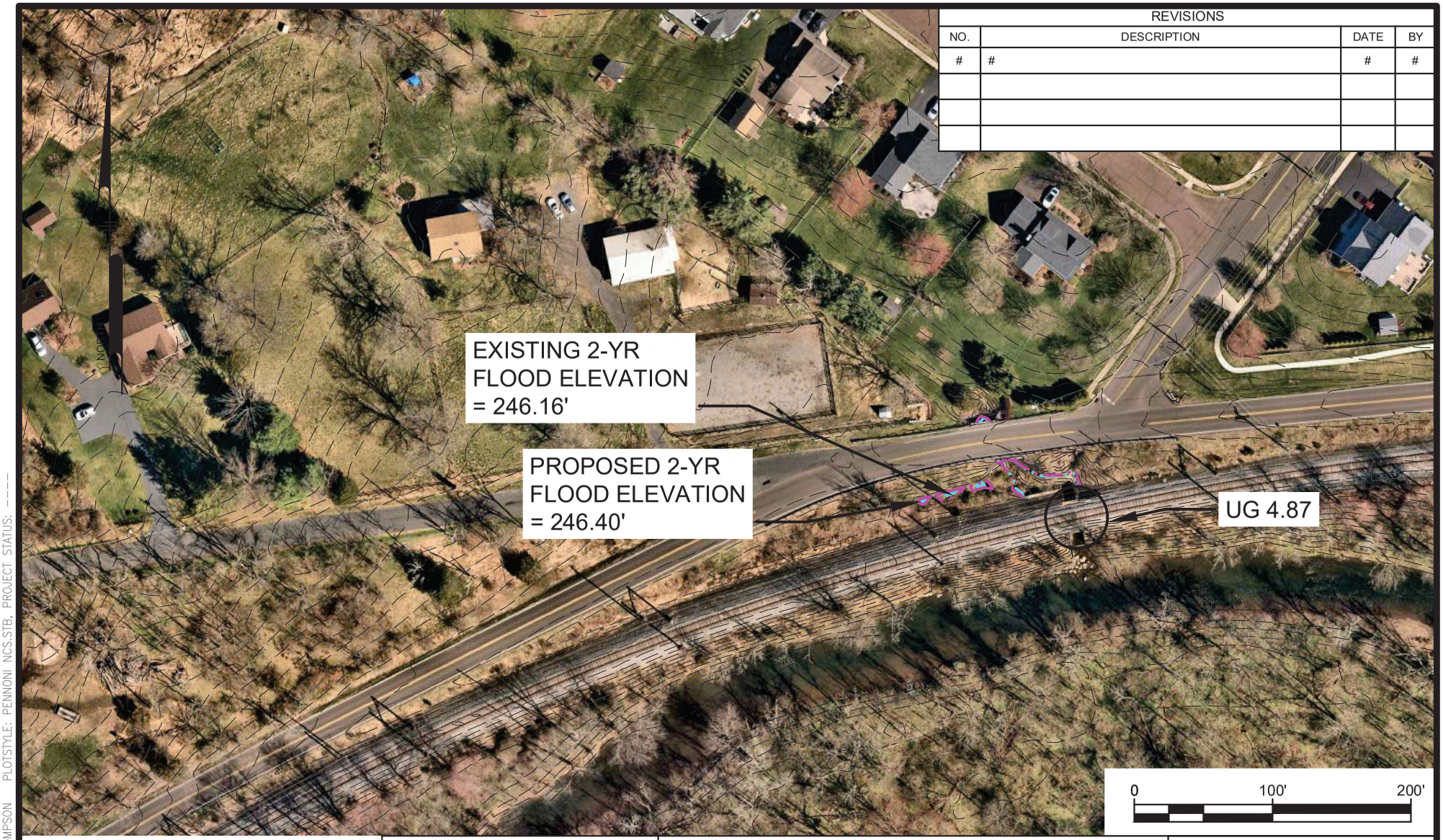
Hydraulic & Hydrologic Engineering Evaluation Summary

SEPTA proposes to rehabilitate the UG4.87 Stone Arch Culvert structure that crosses beneath the SEPTA Landsdale Railroad Line near the intersection of Walters Road and Railroad Avenue, within SR-1 Single Family Residential 2 District, to rehabilitate the existing structure deterioration and deficiencies. SEPTA's rehabilitation design minimizes the reduction of the culvert opening as much as possible, with a 4" thick liner comprised of structural steel plate and grout with adequate structural capacity to provide a 75-year service life. The proposed culvert reduction in opening width from 5'-1" to 4'-4$^1/_2$" results is 0.48 foot raising of the 100-year storm water surface elevation, which is less than the maximum 1-foot rise in water surface elevation allowed by PADEP. The proposed culvert rehabilitation design is in compliance with SEPTA, PADEP, and FEMA requirements, and a Chapter 105, General Permit 11 has been received for completion of this construction work.

In addition, Pennoni has evaluated the change in flood limits and associated impacts for the 2-year, 10-year, and 100-year storm events for the existing and proposed rehabilitation conditions as shown on attached Figures 1 – Upstream 2 Year Flood Inundation Map, Figure 2 – Upstream 10 Year Flood Inundation Map, and Figures 3 – Upstream 100 Year Flood Inundation Map. The comparisons show that there is a negligible change in the 2-year and 10-year flood area impacts for existing and proposed conditions, a slight increase to the 100-year flood area for Parcel Number 26-005-031 by 0.1 acre, and minor shifting of the 100-year flood line by 5-feet or less for the following Parcel numbers;07-003-030, 07-003-031, 07-003-032,26-005-028-002, 26-005-029. The New Britain Township Railroad Avenue/ Sunset Ave roadway remains flooded for an approximate length of 385-395feet for the existing and proposed conditions. There are no additional private property impacts within 500 feet of the project.

Therefore, because the proposed SEPTA structure UG4.87 rehabilitation design results in small changes to the existing 100-year flood conditions, and does not create any additional threat to public health, safety, nor property, SEPTA's proposed rehabilitation design and associated Zoning Variance application should be considered an acceptable variance from the New Britian Township Ordinance 27-1904.o.1.

REVISIONS			
NO.	DESCRIPTION	DATE	BY
#	#	#	#



EXISTING

PROPOSED

NOTES:

1. AERIAL IMAGERY TAKEN FROM NEARMAP.
2. LIDAR CONTOURS SHOWN WERE TAKEN FROM PENNONI AERIAL SURVEY AND DVRPC LIDAR.
3. DATUM IS NAVD88. COORDINATE SYSTEM IS NAD83 PENNSYLVANIA SOUTH PLANES, SOUTH ZONE, US FOOT.

Pennoni

PENNONI ASSOCIATES INC.
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 **F** 215.222.3588

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

UNDERGRADE BRIDGES - LANDSDALE LINE UG 4.87
NEW BRITAIN TOWNSHIP
BUCKS COUNTY, COMMONWEALTH OF PENNSYLVANIA

Figure 1
UPSTREAM 2 YEAR INUNDATION MAP

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
1234 MARKET STREET
PHILADELPHIA, PA 19107

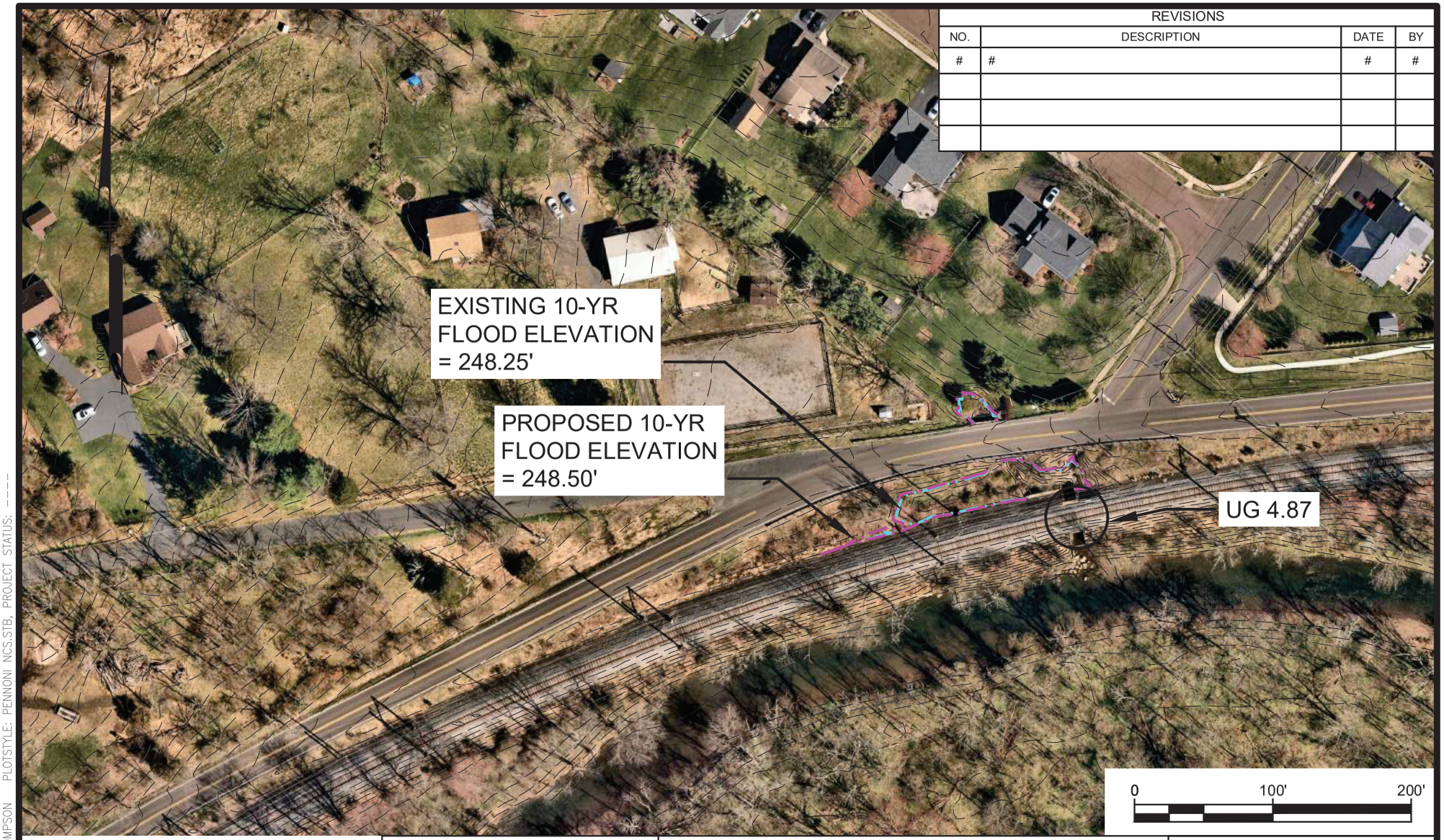
PROJECT	SEPTA21005
DATE	2024-04-12
DRAWING SCALE	1"=100'
DRAWN BY	JFT
APPROVED BY	BMG

UG 4.87

SHEET 1 OF 1

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\H&H\DOY - 4.87 FLOOD INUNDATION TEST.DWG
PLOTTED: 4/12/2024 4:22:33 PM, BY: JOHN THOMPSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

REVISIONS			
NO.	DESCRIPTION	DATE	BY
#	#	#	#



EXISTING

PROPOSED

NOTES:

1. AERIAL IMAGERY TAKEN FROM NEARMAP.
2. LIDAR CONTOURS SHOWN WERE TAKEN FROM PENNONI AERIAL SURVEY AND DVRPC LIDAR.
3. DATUM IS NAVD88. COORDINATE SYSTEM IS NAD83 PENNSYLVANIA SOUTH PLANES, SOUTH ZONE, US FOOT.

Pennoni

PENNONI ASSOCIATES INC.
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 **F** 215.222.3588

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

UNDERGRADE BRIDGES - LANDSDALE LINE UG 4.87
NEW BRITAIN TOWNSHIP
BUCKS COUNTY, COMMONWEALTH OF PENNSYLVANIA

Figure 2
UPSTREAM 10 YEAR INUNDATION MAP

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
1234 MARKET STREET
PHILADELPHIA, PA 19107

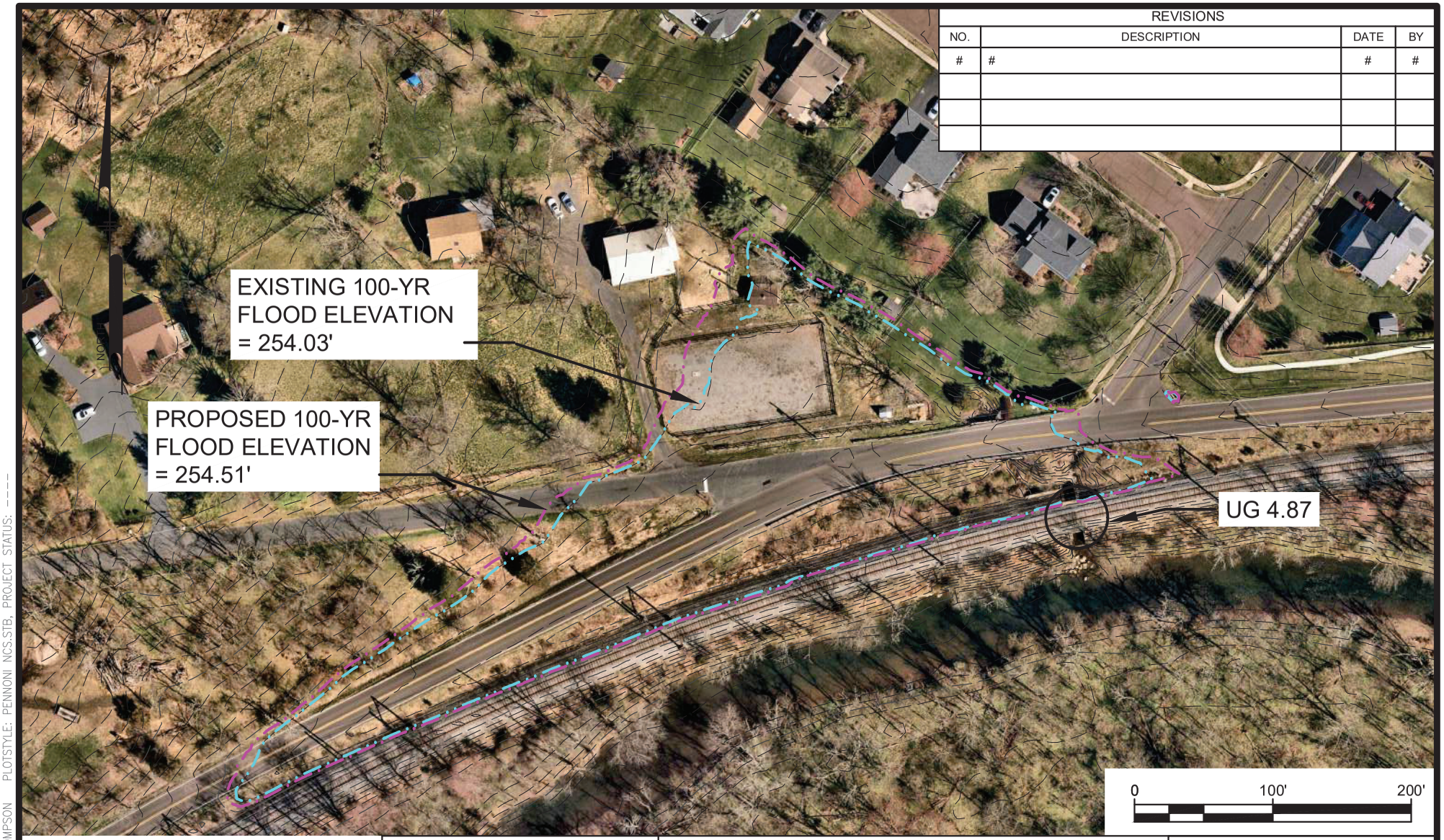
PROJECT	SEPTA21005
DATE	2024-04-12
DRAWING SCALE	1"=100'
DRAWN BY	JFT
APPROVED BY	BMG

UG 4.87

SHEET 1 OF 1

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\H&H\DOY - 4.87 FLOOD INUNDATION TEST.DWG
PLOTTED: 4/12/2024 4:22:39 PM, BY: JOHN THOMPSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

REVISIONS			
NO.	DESCRIPTION	DATE	BY
#	#	#	#



EXISTING

PROPOSED

NOTES:

1. AERIAL IMAGERY TAKEN FROM NEARMAP.
2. LIDAR CONTOURS SHOWN WERE TAKEN FROM PENNONI AERIAL SURVEY AND DVRPC LIDAR.
3. DATUM IS NAVD88. COORDINATE SYSTEM IS NAD83 PENNSYLVANIA SOUTH PLANES, SOUTH ZONE, US FOOT.

Pennoni

PENNONI ASSOCIATES INC.
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 **F** 215.222.3588

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

UNDERGRADE BRIDGES - LANDSDALE LINE UG 4.87
NEW BRITAIN TOWNSHIP
BUCKS COUNTY, COMMONWEALTH OF PENNSYLVANIA

Figure 3
UPSTREAM 100 YEAR INUNDATION MAP

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
1234 MARKET STREET
PHILADELPHIA, PA 19107

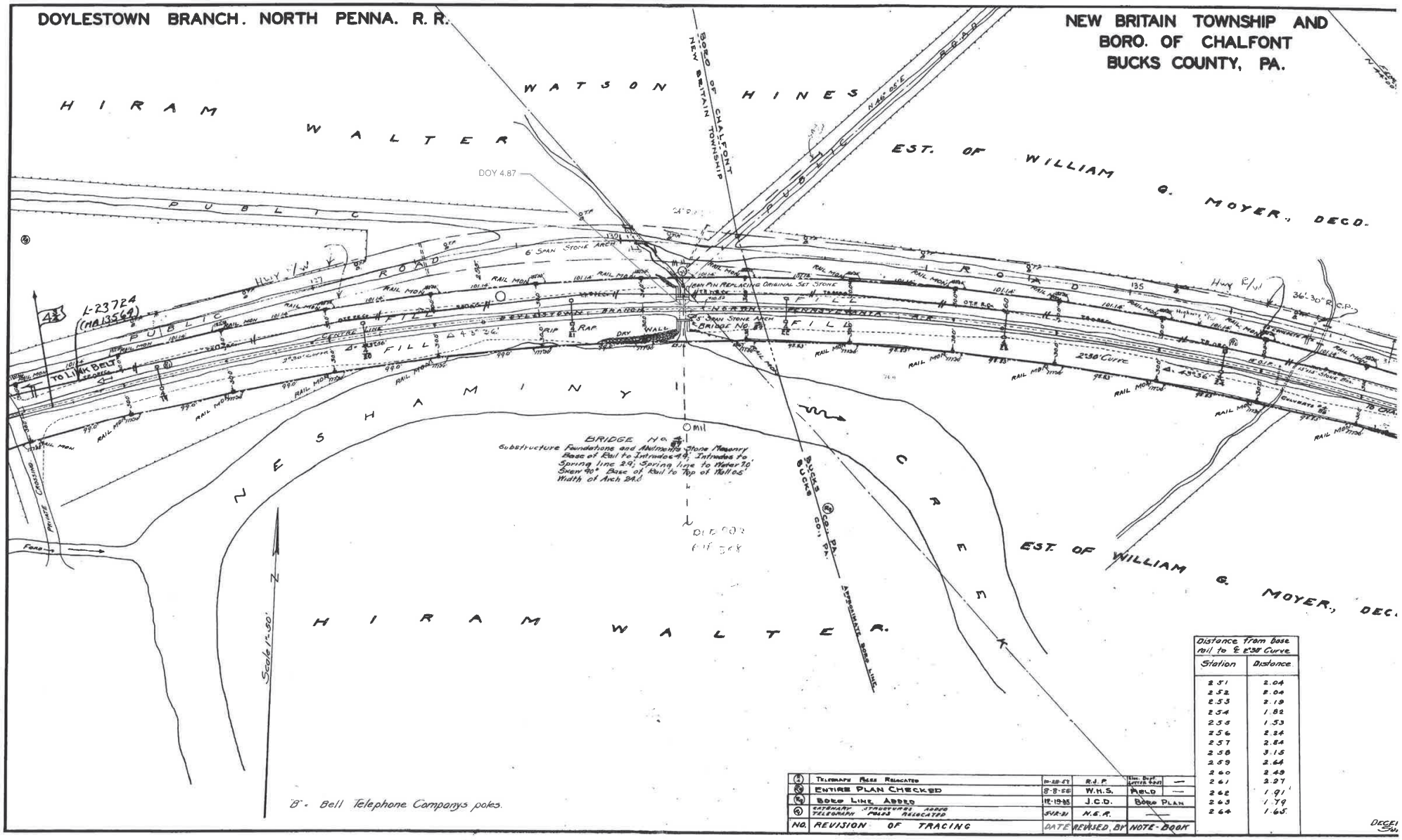
PROJECT	SEPTA21005
DATE	2024-04-12
DRAWING SCALE	1"=100'
DRAWN BY	JFT
APPROVED BY	BMG

UG 4.87

SHEET 1 OF 1

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\H&H\DOY - 4.87 FLOOD INUNDATION TEST.DWG
PLOTTED: 4/12/2024 4:22:49 PM, BY: JOHN THOMPSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SEPTA UG 4.87 VALUATION MAP- TITLE DOCUMENT



Southeastern Pennsylvania Transportation Authority

ENGINEERING, MAINTENANCE, AND CONSTRUCTION DEPARTMENT

UNDERGRADE BRIDGES ~~WEST TRENTON LINE UG 14.20 AND~~ LANSDALE LINE UG 4.87 & UG 17.31

CONTRACT DOCUMENTS - STONE ARCHES PHASE 2 REHABILITATION - BID PACKAGE #2

BRIDGE IMPROVEMENT

SEPTA PROJECT NO.: GEC21G-05

FTA NO.:

PENNDOT PROJECT NO.:

LIST OF DRAWINGS

SHT. No.	DWG. No.	SHEET DESCRIPTION
1	G001	COVER SHEET
2	C001	GENERAL NOTES
3	C010	DETAILS
4	C011	DETAILS
5	C012	DETAILS
6	S001	GENERAL NOTES & ABBREVIATIONS
7	S002	TYPICAL DETAILS 1
8	S003	TYPICAL DETAILS 2
		WEST TRENTON LINE UG 14.20 (MEADOWBROOK)
9	C101	EXISTING CONDITIONS PLAN
10	C102	EXISTING CONDITIONS PLAN
11	C103	EROSION & SEDIMENT CONTROL PLAN – PHASE – 1
12	C104	EROSION & SEDIMENT CONTROL PLAN – PHASE – 1
13	C105	EROSION & SEDIMENT CONTROL PLAN – PHASE – 2
14	C106	EROSION & SEDIMENT CONTROL PLAN – PHASE – 2
15	C107	LANDSCAPE PLAN
16	S101	EXISTING PLAN & ELEVATION
17	S102	PROPOSED PLAN
18	S103	GENERAL PROFILE
19	S104	REPAIR ELEVATIONS & NOTES
20	S105	DETAILS & TYPICAL SECTION
21	S106	DETAILS – FOUNDATION
		LANSDALE LINE UG 4.87 (CHALFONT)
22	C201	EXISTING CONDITIONS PLAN
23	C202	EROSION & SEDIMENT CONTROL PLAN – PHASE – 1
24	C203	EROSION & SEDIMENT CONTROL PLAN – PHASE – 2
25	S201	EXISTING PLAN & ELEVATION
26	S202	PROPOSED PLAN
27	S203	GENERAL PROFILE
28	S204	REPAIR ELEVATIONS & NOTES
29	S205	DETAILS & TYPICAL SECTION
30	S206	DETAILS – FOUNDATION

LIST OF DRAWINGS / ACT NO. NOTIFICATION LIST

SHT. No.	DWG. No.	SHEET DESCRIPTION
		LANSDALE LINE UG 17.31 (AMBLER)
31	C301	EXISTING CONDITIONS PLAN
32	C302	EROSION & SEDIMENT CONTROL PLAN – PHASE – 1
33	C303	EROSION & SEDIMENT CONTROL PLAN – PHASE – 2
34	S301	EXISTING PLAN & ELEVATION
35	S302	EXISTING ELEVATION
36	S303	PROPOSED PLAN
37	S304	GENERAL PROFILE
38	S305	GENERAL PROFILE
39	S306	REPAIR ELEVATIONS & NOTES
40	S307	REPAIR ELEVATIONS & NOTES
41	S308	REPAIR ELEVATIONS & NOTES
42	S309	DETAILS & TYPICAL SECTION
43	S310	DETAILS – FOUNDATION
44	S311	DETAILS – CONSTRUCTION BARRIER CURB
45	S312	DETAILS – WINGWALLS
46	S313	DETAILS – RAILING
47	S314	DETAILS – PROTECTIVE FENCE
48	S315	DETAILS – WOODEN GUARDRAIL
49	S316	DETAILS – LADDER
50	S317	DETAILS – DRAINAGE

PA ONE CALL

~~PA ONE CALL WEST TRENTON 14.20~~
~~ONE CALL SERIAL NO. 20222420327~~

PA ONE CALL LANSDALE 4.87
ONE CALL SERIAL NO. 20221991042, 20221991043

PA ONE CALL LANSDALE 17.31
ONE CALL SERIAL NO. 20222420286

✕ = NOT IN CONTRACT

ACT NO. NOTIFICATION LIST

181
BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA CALL 1-800-242-1776
NON-MEMBERS MUST BE CONTACTED DIRECTLY
PA. ACT 181 (2008) REQUIRES THREE WORKING DAYS NOTICE TO UTILITIES BEFORE EXCAVATE, DRILL, BLAST OR DEMOLISH

CONTACT PHONE LIST

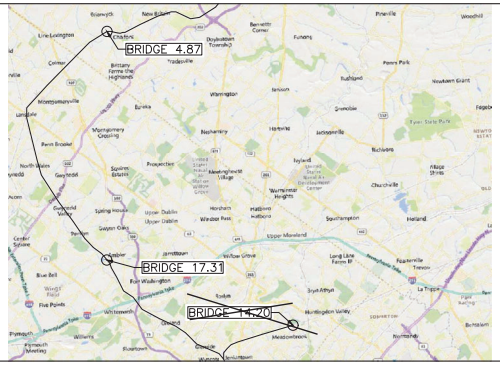
GENERAL: SEPTA ENGINEERING MAINTENANCE & CONSTRUCTION RAIL FACILITIES: 215-580-7784

~~UG14.20:~~
1. ~~PETER SCHORSCH: PHONE: 215-620-0030, OWNER:1644 WARNER ROAD, 1691 WARNER ROAD~~
2. ~~LINDY COMMUNITIES, MEADOWBROOK APARTMENTS LEASING OFFICE, ADRIANE ROSE SENIOR COMMUNITY DIRECTOR: PHONE: 215-947-0101, X200~~

UG17.31:
1. AMBLER BOROUGH CODE OFFICE, GLENN KUCHER: 215-646-1000 X112
2. ANTHONY BIDDLE CONSTRUCTION, 230 RAILROAD AVE, AMBLER PA, ROBERT KING, PROJECT MANAGER: 215-768-2809, KELLY BIDDLE, PRESIDENT: 215-646-8172
3. BIRCHWOOD AT AMBLER APARTMENTS: 215-540-9633

UG4.87
1. CHALFONT-NEW BRITAIN TWP. JT. SEWAGE AUTHORITY, JOHN E. SCHMIDT, EXECUTIVE DIRECTOR:215-345-1225

LOCATION



SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EMAC DIVISION
1234 MARKET ST, 18TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER:
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY:
CHIEF OFFICER, METRO RAIL:
CHIEF OFFICER, BUS OPERATIONS:
CHIEF ENGINEER, BRIDGES AND BUILDINGS:
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER
No. 076415-E

Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

UNDERGRADE BRIDGES - ~~WEST TRENTON LINE UG 14.20 AND~~ LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2
BRIDGE
BRIDGE IMPROVEMENT
GENERAL
COVER SHEET

SCALE: NONE
SCALE FACTOR: 1:1
DATE: 09/19/2023
DRAWN BY: RMC
CHECKED BY: JJV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: **G001**
DWG NO: G001 OF G001
SHT NO.: 1 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.:
REV. NO.:

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-G001.DWG

DATE PRINTED: 9/21/2023 2:43:30 PM

STATUS

GENERAL NOTES:

1. CONTACT "PA ONE-CALL" TO LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND PRIOR TO ANY EXCAVATION. CONTRACTOR IS REQUIRED TO PROTECT ALL UTILITIES DURING CONSTRUCTION. DAMAGE TO ANY UTILITIES, ROADWAYS, LANDSCAPE, AND STRUCTURES TO ACCESS THE BRIDGE SHALL BE REPAIRED AT THE CONTRACTORS OWN EXPENSE AND AT NO ADDITIONAL EXPENSE TO THE OWNER.

2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK AND IN ACCORDANCE WITH THE APPLICABLE OPERATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS.

3. ALL APPLICABLE REGULATIONS OF FISH AND WILDLIFE, PADEP AND ALL OTHER JURISDICTIONAL AUTHORITIES, STATUTES, AND REQUIREMENTS RELATING TO THE PREVENTION AND ABATEMENT OF POLLUTION, FILL, DISTURBANCE, AND/OR DREDGING SHALL BE COMPLIED WITHIN THE PERFORMED OF THE CONTRACT.

4. THE CONTRACTOR SHALL COMPLY WITH PERMIT CONDITIONS/RESTRICTIONS AS MANDATED BY THE LOCAL AND FEDERAL JURISDICTIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ABTAINING ALL NECESSARY PERMITS.

5. THE APPLICANT SHALL NOTIFY THE APPROPRIATE JURISDICTIONAL AUTHORITIES PRIOR TO STARTING CONSTRUCTION.

6. THE CONTRACTOR SHALL PREVENT THE TRACKING OF DIRT AND MUD ONTO THE PUBLIC RIGHT-OF-WAYS AND MAJOR ROADWAYS. ALL ENTRANCE AREAS WILL BE CLEARED/SWEPT AT THE END OF THE WORK DAY. SPRINKLE OR APPLY DUST SUPPRESSOR OR KEEP DUST WITHIN TOLERANCE LIMITS AT THE SITE.

7. GRADING OR GROUND DISTURBANCE AT THE SURFACE, IF ANY, SHALL NOT IMPAIR SURFACE DRAINAGE, CREATE AN EROSION HAZARD OR CREATE A SOURCE OF SEDIMENT TO ANY ADJACENT WATERCOURSE OR PROPERTY OWNER.

8. MARK THE LIMITS OF DISTURBANCE IN THE FIELD PRIOR TO CONSTRUCTION.

9. INSTALL STABILIZED CONSTRUCTION ENTRANCE PER DETAILS.

10. CLEAR BRUSH, AS NECESSARY, TO INSTALL COMPOST FILTER SOCK AND REMAINING EROSION AND SEDIMENT CONTROLS. TREE REMOVAL IS NOT PERMITTED UNLESS FORMALLY AUTHORIZED BY THE LANDOWNER AND ANY JURISDICTIONAL AUTHORITY PRIOR TO CONSTRUCTION. CONTRACTOR IS REQUIRED TO COUNT, IDENTIFY SPECIES, AND COORDINATE APPROVAL OF ANY TREE REMOVAL NECESSARY TO SAFELY CONSTRUCT THE PROJECT PRIOR TO CONSTRUCTION. THIS MAY REQUIRE ADDITIONAL WORK AND REPLACEMENT COSTS THAT WILL BE INCURRED AT THE CONTRACTORS OWN EXPENSE.

11. INITIAL EARTH DISTURBANCE SHALL BE LIMITED TO THOSE NECESSARY TO INSTALL SEDIMENT AND EROSION CONTROL MEASURES.

12. INSTALL TEMPORARY COFFERDAMS PER DETAIL ON SHEET C011.

13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE DEWATERING WORK AS NECESSARY IN ADDITION TO THOSE SHOWN ON THE E&S PLANS TO MAINTAIN DRY CONDITIONS TO PERFORM ITS WORK. ALL DEWATERING WORK SHALL BE MAINTAINED WITHIN THE LIMITS OF DISTURBANCE AS INDICATED IN THE E&S PLANS.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION, AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL AND RELATED ITEMS INCLUDED WITHIN THIS PLAN SET.

15. MAINTENANCE AND INSPECTION OF EROSION AND SEDIMENT CONTROL MEASURES SHALL OCCUR WEEKLY, OR AFTER ANY SIGNIFICANT PERCIPITATION EVENT (OVER 1/4").

16. A LOG SHOWING DATES THAT E&S BMP'S 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 REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.

17. A LOG SHOWING DATES THAT E&S BMP,S WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE FOR REVIEW TO SEPTA AND REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.

18. INITIATE STRUCTURAL SEQUENCE OF CONSTRUCTION.

19. ALL EQUIPMENT AND MACHINES ARE TO WORK FROM UPLANDS (EX. FROM EXISTING ELEVATED TRACKS) TO LIMIT WORK IN THE FLOODWAY AND WATERS WHERE FEASIBLE.

20. ALL AREAS REQUIRING TEMPORARY STABILIZATION MUST BE ADDRESSED WITHIN 20 DAYS OF COMPLETION OF DISTURBANCE. SEEDING SHALL BE ACCOMPLISHED THROUGH THE USE OF HYDRO-SEEDING TECHNIQUES OR CONVENTIONAL SEEDING AND MULCHING AT THE RATES AS INDICATED ON SHEET C012.

21. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE SEEDED AND MULCHED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT THE FINISHED GRADE (PRE-CONSTRUCTION CONTOUR ELEVATIONS) AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MAY BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEED MIXTURE AND MULCH. DISTURBED AREAS WHICH AREA NOT AT PRE-CONSTRUCTION CONTOUR ELEVATIONS OR WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE AND MULCH. AREA MULCHED DURING THE NON-GERMINATING PERIOD OF OCTOBER 15 TO APRIL 1 MUST BE LIMED, FERTILIZED, SEEDED AND MULCHED BY APRIL 20.

22. ALL TEMPORARY LAY DOWN AND STOCKPILE AREAS MUST BE CLOSED OFF AND TEMPORARILY SEEDED AND MULCHED. DURING NON-GERMINATING MONTHS, MULCH OR OTHER PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN OR AS DIRECTED BY THE FIELD REPRESENTATIVE.

23. THE CONTRACTOR SHALL NOT STOCKPILE EQUIPMENT, TOPSOIL, MATERIALS ETC. IN OTHERWISE UNDISTURBED LAWN AREAS, AND AREAS INDICATED FOR THE PRESERVATION OF EXISTING VEGETATION OR STORE MATERIALS, PERFORM CONSTRUCTION ACTIVITIES, ETC, OUTSIDE OF THE LOD.

24. POLLUTANTS SUCH AS FUELS, LUBRICANTS, BITUMENS, RAW SEWAGE, AND OTHER HARMFUL MATERIALS SHALL NOT BE DISCHARGED INTO OR NEAR RIVERS, STREAMS, AND IMPOUNDMENTS OR INTO NATURAL OR MANMADE CHANNELS LEADING THERETO.

25. MAKE EVERY EFFORT TO MINIMIZE THE EFFECT OF NOISE IN THE SURROUNDING COMMUNITY. ENSURE MANUFACTURER'S MUFFLING DEVICES ARE INSTALLED AND FUNCTIONAL ON ALL EQUIPMENT TO MINIMIZE CONSTRUCTION NOISE LEVELS. EQUIPMENT MUST MEET THE MINIMUM, APPLICABLE US ENVIRONMENTAL PROTECTION AGENCY (EPA) AND LOCAL AUTHORITIES NOISE LEVEL ORDINANCES.

26. ANY INCIDENTAL WATER OR WASTE FROM CONCRETE MIXING OR PLACEMENT OPERATIONS SHALL NOT BE ALLOWED TO ENTER WATERWAYS OR CONVEYANCES. REFER TO THE CONCRETE WASHOUT DETAIL ON C011 SHOULD CONCRETE WORK BE NECESSARY ON-SITE.

27. PROVIDE FACILITIES FOR CLEANING TIRES. THE TIRES OF ALL VEHICLES SHALL BE CLEANED PRIOR TO LEAVING THE SITE. THE CONTRACTOR SHALL CLEAN AND REMOVE ANY MUD OR SEDIMENT THAT HAS BEEN TRACKED ON TO PUBLIC ROADS OUTSIDE THE LIMITS OF CONSTRUCTION.

28. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION TO THE MAXIMUM EXTENT PRACTICABLE.

29. SLOPES STEEPER THAN 3:1 SHALL RECEIVE 100% BIODEGRADABLE EROSION CONTROL MATTING ALONG WITH MULCH TACKING, AS NECESSARY. OTHER SLOPES SHALL RECEIVE THE SAME TREATMENT IF FOUND TO ERODE.

30. THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF THE APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART 1, DEPARTMENT OF ENVIRONMENTAL PROTECTION SUBPART C, PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102, EROSION CONTROL, CHAPTER 105 DAM SAFETY AND WATERWAY MANAGEMENT. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE ADMINISTRATIVE CODES AND TITLES OF THE STATE OF PENNSYLVANIA.

31. ALL EROSION AND SEDIMENTATION CONTROL MUST BE MAINTAINED PROPERLY UNTIL THE SITE IS FULLY STABILIZED.

32. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS, TRASH AND GARBAGE, AND WASTES IN ACCORDANCE WITH THE DEPARTMENTS SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET. SEQ., 271.1 ET SEQ, AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY OF THE AFOREMENTIONED MATERIALS OR WASTES AT THE SITE.

33. ALL PUMPING OF SEDIMENT LADEN WATER OR POTENTIALLY SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS, PLACED ON SECURED HAY BAILS FREE OF WEED AND/OR INVASIVE SPECIES SEEDS. IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATION, A PUMPED WATER FILTER BAG (SEE DETAILS) IS TO BE INSTALLED BEFORE EXCAVATION CAN PROCEED.

34. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCES, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.

35. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE CONTROLS MUST BE STABILIZED. CONTRACTOR IS REQUIRED TO OBTAIN THE NECESSARY APPROVALS PRIOR TO REMOVAL.

36. BEFORE INITIATING ANY REVISION OR DEVIATION OF THESE PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF APPROVED EROSION AND SEDIMENT CONTROL MEASURES AND OTHER ASSOCIATED JURISDICTIONAL AUTHORIZATIONS OR PERMITS, THE CONTRACTOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE ENGINEER AND/OR APPROPRIATE REGULATORY JURISDICTIONAL AUTHORITY.

37. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING POTENTIAL FOR ACCELERATED EROSION AND.OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT THE APPROPRIATE BEST MANAGEMENT PRACTICES AS APPROVED BY THE APPROPRIATE REGULATORY JURISDICTION AUTHORITY TO ELIMINATE POTENTIAL ACCELERATED EROSION AND/OR SEDIMENTATION.

38. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION OR AS DIRECTED BY SEPTA FIELD REPRESENTATIVE. IF UPGRADE IS NECESSARY TO RESTORE SAID AREA TO APPLICABLE CODES, MANUFACTURER REQUIREMENTS, OR LAWS, THE CONTRACTOR SHALL BRING SAID AREA INTO COMPLIANCE WITH THE MOST RECENT REQUIREMENTS AT NO ADDITIONAL EXPENSE TO THE OWNER.

39. THE EROSION AND SEDIMENT POLLUTION CONTROL PLAN MUST BE IMPLEMENTED PRIOR TO, DURING AND AFTER THE EARTH DISTURBANCE ACTIVITY.

40. THE PROJECT SITE SHALL AT ALL TIMES BE AVAILABLE FOR INSPECTION BY AUTHORIZED EMPLOYEES OF THE BUCKS AND MONTGOMERY COUNTY CONSERVATION DISTRICTS PENNSYLVANIA DEP AND SEPTA'S REPRESENTATIVE.

41. A PAPER/PHYSICAL COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES.

42. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THERE IS SUFFICIENT TEMPORARY COVER ON ALL PIPING DURING CONSTRUCTION TO PREVENT DAMAGE TO PIPES.

43. ALL TREES, UTILITIES, LANDSCAPE, AND STRUCTURES ARE TO BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE SPECIFIED IN THE PROJECT CONTRACT AND ASSOCIATED PLAN SHEETS (E&S AND STRUCTURAL). TREE REMOVAL WILL NEED TO BE APPROVED BY SEPTA AND THE OWNER, IF NOT SEPTA, PRIOR TO REMOVING.

X = **NOT IN CONTRACT**

PA ACT 287 OF 1974 AS AMENDED BY ACT 121 OF 2008

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND STRUCTURES AND UTILITIES, SUCH AS WATER MAINS, SEWERS, TELEPHONE, GAS AND ELECTRIC CONDUITS, ETC. AND ABOVE GROUND UTILITIES, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION OPERATIONS. TEST HOLES SHALL BE DUG TO DETERMINE THE POSITION OF THE UNDERGROUND STRUCTURES AND UTILITIES, OR THE CONTRACTOR SHALL ARRANGE WITH THE OWNERS OF SUCH UNDERGROUND STRUCTURES AND UTILITIES TO ASSIGN A REPRESENTATIVE TO MARK THE LOCATIONS. THE CONTRACTOR SHALL PAY THE COST OF DIGGING TEST HOLES AND LIKEWISE HE SHALL PAY THE COST OF THE SERVICE OF THE REPRESENTATIVES OF THE OWNERS OF SUCH UTILITIES FOR LOCATING THE SAID UTILITIES. THE COST OF DETERMINING THE LOCATIONS IS TO BE INCLUDED IN THE PRICES BID. THE LOCATIONS AND DEPTH OF EXISTING STRUCTURES AND UTILITIES AS SHOWN IN THE CONTRACT DOCUMENTS IS SIMPLY FOR THE GUIDANCE OF THE CONTRACTOR AND HAVE NOT BEEN FIELD LOCATED. SINCE THE INFORMATION IS AS FURNISHED BY THE RESPECTIVE UTILITIES, OR TAKEN FROM NON-AS-BUILT PLANS, THE ENGINEER IS NOT RESPONSIBLE FOR THE ACCURACY OF THE PLANS IN THIS RESPECT.

~~PA ONE CALL WEST TRENTON 14.20~~
~~ONE CALL SERIAL NO. 20222420327~~

PA ONE CALL LANSDALE 4.87
ONE CALL SERIAL NO. 20221991042, 20221991043

PA ONE CALL LANSDALE 17.31
ONE CALL SERIAL NO. 20222420286

PENNSYLVANIA ONE CALL SYSTEM INC.
925 IRWIN RUN ROAD
WEST MIFFLIN, PENNSYLVANIA
15122-1078

1-800-242-1776

BEFORE YOU DIG ANYWHERE IN
PENNSYLVANIA! CALL 1-800-242-1776
NON-MEMBERS MUST BE CONTACTED DIRECTLY
PA LAW REQUIRES THREE WORKING DAYS
NOTICE TO UTILITIES BEFORE YOU EXCAVATE
DRILL, BLAST OR DEMOLISH
DESIGN SERIAL # ~~20222420327~~, 20221991042,
20221991043, 20222420286

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST, 13TH FL,
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MATTHEW D. JOHNSTON
ENGINEER
PE053673E

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.3588

REV	DATE	DESCRIPTION	BY	CK'D	APP'D
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–

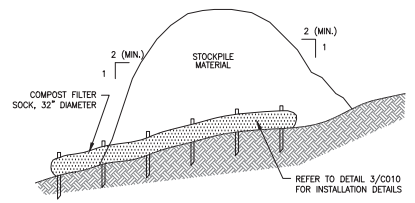
UNDERGRADE BRIDGES - ~~WEST TRENTON LINE UG 14.20 AND~~ LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2
BRIDGE
BRIDGE IMPROVEMENT
CIVIL
GENERAL NOTES

SCALE: NONE
SCALE FACTOR: 1:1
DATE: 09/19/2023
DRAWN BY: RME
CHECKED BY: JCV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: **C001**
DWG. NO.: C001 OF C001
SHT. NO.: 2 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.:
REV. NO.:

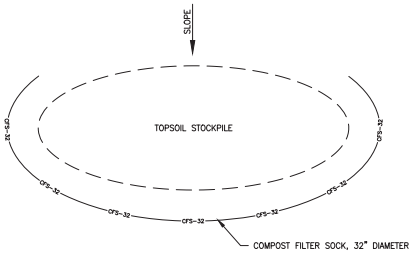
DATE PRINTED: 9/20/2023 5:58:03 PM

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-C001.DWG

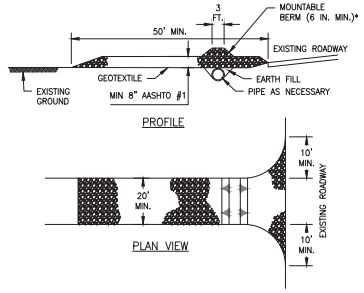
STATUS



NOTE: STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER. SEE DETAILS FOR FILTER FENCE INSTALLATION.



1 TOPSOIL STOCKPILE DETAIL
C010 SCALE: NOT TO SCALE



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

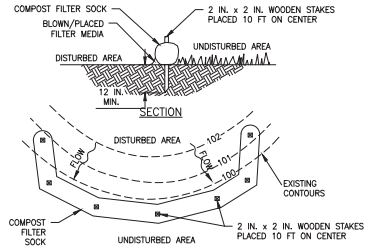
REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED AND FOR EQUIPMENT AND MATERIAL LOADS.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

2 ROCK CONSTRUCTION ENTRANCE
C010 SCALE: NOT TO SCALE



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1.

COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

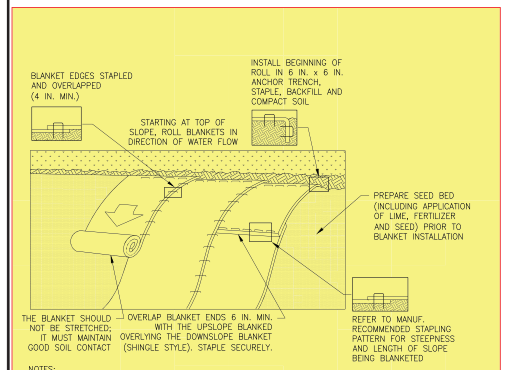
TABLE 4.1

COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS					
MATERIAL TPE	3 MIL HDPE	5 MIL HDPE	5 MIL HDPE	MULTI-FILAMENT POLYPROPYLENE (MFPP)	HEAVY DUTY MULTI-FILAMENT POLYPROPYLENE (HDMFPP)
MATERIAL CHARACTERISTICS	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE	BIO-DEGRADABLE	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE
SOCK DIAMETERS	12"	12"	12"	12"	12"
	18"	18"	18"	18"	18"
		24"	24"	24"	24"
		32"	32"	32"	32"
MESH OPENING	3/8"	3/8"	3/8"	3/8"	3/8"
TENSILE STRENGTH		26 PSI	26 PSI	44 PSI	202 PSI
ULTRAVIOLET STABILITY % ORIGINAL STRENGTH (ASTM G-155)	23% AT 1000 HR.	23% AT 1000 HR.		1000% AT 1000 HR.	100% AT 1000 HR.
MINIMUM FUNCTIONAL LONGEVITY	6 MONTHS	9 MONTHS	6 MONTHS	1 YEAR	2 YEARS
TWO-PLY SYSTEMS					
INNER CONTAINMENT NETTING	HDPE BIAXIAL NET				
	CONTINUOUSLY WOUND				
	FUSION-WELDED JUNCTURES				
	3/4" X 3/4" MAX. APERATURE SIZE				
OUTER FILTRATION MESH	COMPOSITE POLYPROPYLENE FABRIC (WOVEN LAYER AND NON-WOVEN FLEECE MECHANICALLY FUSED VIA NEEDLE PUNCH)				
	3/16" MAX. APERTURE SIZE				
SOCK FABRICS COMPOSED OF BURLAP MAY BE USED ON PROJECTS LASTING 6 MONTHS OR LESS.					

TABLE 4.2 COMPOST STANDARDS

ORGANIC MATTER CONTENT	25% – 100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
PH	5.5 – 8.5
MOISTURE CONTENT	30% – 60%
PARTICLE SIZE	30%-50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0dS/M (mmhos/CM) MAXIMUM

3 COMPOST FILTER SOCK
C010 SCALE: NOT TO SCALE



NOTES:
SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.

PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.

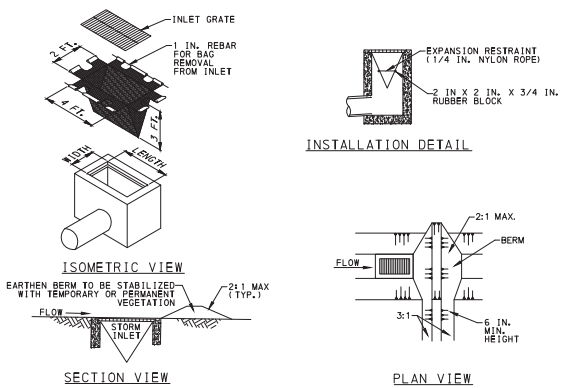
SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.

THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

4 EROSION CONTROL BLANKET INSTALLATION
C010 SCALE: NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

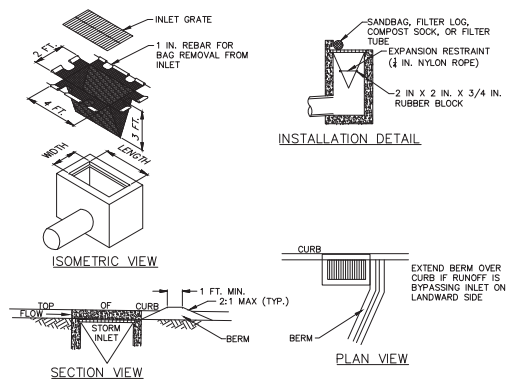
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

5 FILTER BAG INLET PROTECTION - TYPE M INLET
C010 SCALE: NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

6 FILTER BAG INLET PROTECTION - TYPE C INLET
C010 SCALE: NOT TO SCALE

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EMAC DIVISION
1234 MARKET ST, 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MATTHEW D. JOHNSTON
ENGINEER
PE039167-E

Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

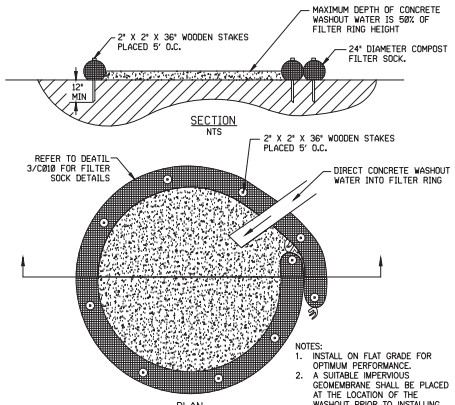
U:\ACCOUNTS\SEPTA\SEPTA21005-GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-C010.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 44.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2
BRIDGE
BRIDGE IMPROVEMENT
CIVIL
DETAILS

SCALE: NONE	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RMC / CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: C010	
DWG NO.: C010 OF C012	
SHT NO.: 3 OF 50	
ARCHIVE NO.	
COMPUTER FILE NO.:	REV. NO.

DATE PRINTED: 9/20/2023 5:36:10 PM

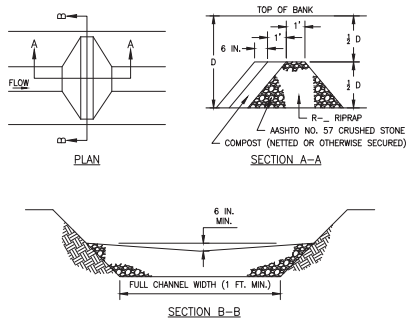
STATUS



NOTES:
1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
2. A SUITABLE IMPERVIOUS GEOMEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE SOCKS. APPLY POLY PROTECTION OVER FILTER SOCK.
3. 18" DIAMETER FILTER SOCK MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.

A SUITABLE IMPERVIOUS GEOMEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE SOCKS.

1 CONCRETE WASHOUT DETAIL
C011 SCALE: NOT TO SCALE



ROCK FILTER NO.	LOCATION	D (FT)	RIPRAP SIZE (R-_)
1	UG - 14.20	2	3
2	UG - 14.20	2	3
3	UG - 17.31	2	3
4	UG - 17.31	2	3

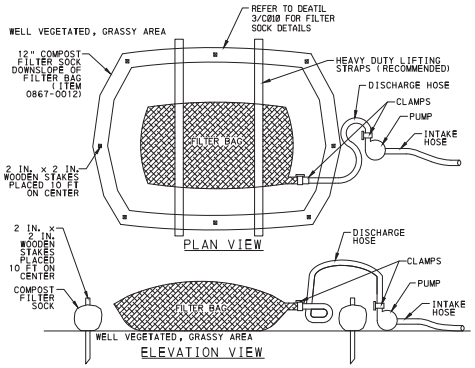
FOR D ≥ 3 FT. – USE R-4
FOR D ≥ 2 FT. TO D < 3 FT. – USE R-3
NOT APPLICABLE FOR D < 2 FT.

NOTES:

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTERS.

IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.

2 ROCK FILTER
C011 SCALE: NOT TO SCALE



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

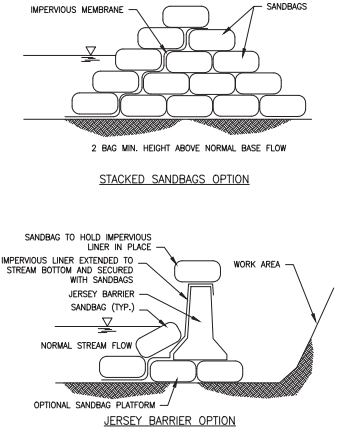
COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

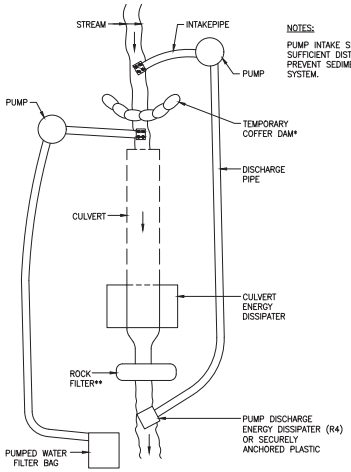
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

3 PUMPED WATER FILTER BAG
C011 SCALE: NOT TO SCALE



4 SANDBAG DIVERSION DAM OR COFFERDAM
C011 SCALE: NOT TO SCALE



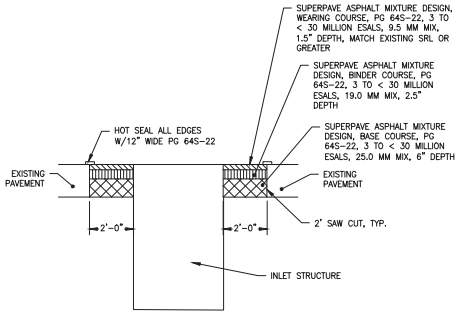
NOTES:

PUMP INTAKE SHALL BE MAINTAINED A SUFFICIENT DISTANCE FROM BOTTOM TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM.

* SANDBAGS (STANDARD CONSTRUCTION DETAIL #3-15), JERSEY BARRIERS (FIGURE 3.13) OR OTHER NON-EROSIVE MATERIAL, NO EARTH FILL. DO NOT EXCAVATE A SUMP FOR THE PUMP INTAKE.

** SEE STANDARD CONSTRUCTION DETAIL #4-14. FOR LOW GRADIENT CHANNELS, THE ROCK FILTER MAY BE REPLACED BY AN IMPERVIOUS COFFERDAM TO PREVENT BACKFLOW INTO THE WORK AREA.

TEMPORARY COFFERDAM AND PUMP BYPASS AROUND IN-CHANNEL WORK AREAS
5 C011 SCALE: NOT TO SCALE



NOTE: MATCH EXISTING DEPTHS IF GREATER.

COMMENTS:

1. EXPOSED VERTICAL AND HORIZONTAL SURFACES SHALL BE PREPARED AS PER PUB 408, SECT. 413.3(g).
2. MINIMUM 2' PAVEMENT CUTBACK, EXCAVATE OLD AND TEMPORARY MATERIAL RECOMPACT SUBASE, TACK COAT ALL VERTICAL EDGES. INSTALL ONLY BASE COURSE AND BINDER COURSE IN ONE DAY.

6 PAVEMENT RESTORATION
C011 SCALE: NOT TO SCALE

= NOT IN CONTRACT

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST, 13TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL MATTHEW D. JOHNSTON ENGINEER PE059874E

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.232.3000 • F 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PM 2\DESIGN_SHEETS\GEC21G-05-C011.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE
BRIDGE IMPROVEMENT
CIVIL
DETAILS

SCALE: NONE	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RME / CHECKED BY: JCV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: C011	
DWG. NO.: C011 OF C012	
SHT. NO.: 4 OF 50	
ARCHIVE NO.:	
COMPUTER FILE NO.:	REV. NO.:

STATUS

DATE PRINTED: 9/20/2023 5:58:18 PM

SPECIES	% BY WEIGHT (SEEDING RATE LB/1000 YD²)				
	FORMULA B (21.0)	FORMULA C (9.0)	FORMULA D (21.0)	FORMULA E (10.0)	FORMULA W (10.5)
ANNUAL RYEGRASS		55% (5.0)		100% (10.0)	
BIRDSFOOT TREFOIL					20% (2.0)
CREEPING RED FESCUE	30% (6.0)		30% (6.0)		
CROWNVETCH		45% (4.0)			
KENTUCKY BLUEGRASS	50% (11.0)				
PERENNIAL RYEGRASS	20% (4.0)				
REDTOP					10% (1.0)
TALL FESCUE			70% (15.0)		70% (7.5)
PERMISSABLE SEEDING DATES	MAR 15 – JUN 1	MAR 1 – SEP 1	MAR 15 – JUN 1	MAR 15 – OCT 15	APR 1 – JUN 15
	AUG 1 – OCT 15		AUG 1 – OCT 15		AUG 16 – SEP 15

SOIL SUPPLEMENTS	RATE (LB/1000 YD²)				
PULVERIZED AGRICULTURAL LIMESTONE	(800.0)	(800.0)	(800.0)	–	(800.0)
10–20–20 ANALYSIS COMMERCIAL FERTILIZER	(140.0)	(140.0)	(140.0)	–	(140.0)
38–0–0 UREAFORM FERTILIZER	(50.0)	(50.0)	(50.0)	–	(50.0)
OR 32–0–0 TO 38–0–0 SULFUR COATED UREA FERTILIZER	(59.0)	(59.0)	(59.0)	–	(59.0)
OR 31–0–0 IBDU FERTILIZER	(61.0)	(61.0)	(61.0)	–	(61.0)
*APPLY SLOW–RELEASE NITROGEN FERTILIZER SUPPLEMENT TO ALL MIXTURES EXCEPT FORMULA C AND FORMULA E.					

1. AREAS 3:1 & FLATTER: IF TOPSOILED, LOSSEN THE SURFACE TO A DEPTH OF AT LEAST 2". IF UNTOPSOILED, TILL ONLY AS DIRECTED.
2. INOCULATE LEGUMINOUS SEED WITH PROPER CULTURES. PROTECT FROM PROLONGED EXPOSURE TO SUNLIGHT BEFORE SOWING.
3. SEED AT RATES SPECIFIED.
4. AFTER SEEDING, ROLL TOPSOILED AREAS THAT ARE TO BE MOWED.

1 C012 **SEEDING RATE TABLE**
SCALE: NOT TO SCALE

MULCH TYPE	APPLICATION RATE (MIN.)			NOTES
	PER ACRE	PER 1,000 SQUARE FEET	PER 1,000 SQUARE YARD	
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	140 LB.	1,240 LB.	TIMOTHY, MIXED CLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES
WOOD CHIPS	4–6 TONS	185–275 LB.	1,650 – 2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDROMULCH	1 TON	47 LB.	415	SEE LIMITATIONS ABOVE

2 C012 **TABLE 11.6 MULCH APPLICATION RATES**
SCALE: NOT TO SCALE

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

3 C012 **TABLE 11.1**
SCALE: NOT TO SCALE

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST., 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER:
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY:
CHIEF OFFICER, METRO RAIL:
CHIEF OFFICER, BUS OPERATIONS:
CHIEF ENGINEER, BRIDGES AND BUILDINGS:
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MATTHEW D. JOHNSTON
ENGINEER
PE059167-E

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-C012.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE

BRIDGE IMPROVEMENT

CIVIL

DETAILS

SCALE: NONE
SCALE FACTOR: 1:1
DATE: 09/19/2023
DRAWN BY: RME
CHECKED BY: JDV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: **C012**
DWG. NO.: C012 OF C012
SHT. NO.: 5 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.:
REV. NO.:
STATUS

DATE PRINTED: 9/20/2023 5:58:22 PM

GENERAL STRUCTURAL NOTES

GENERAL:

1. TYPICAL SECTIONS AND DETAILS – ALL SECTIONS, DETAILS AND NOTES INTENDED TO BE TYPICAL UNLESS OTHERWISE DETAILED. FINAL DESIGN SHOP AND ERECTION DRAWINGS SUBMITTED BY THE CONTRACTOR SHALL SHOW APPLICATION OF TYPICAL SECTIONS AND DETAILS FOR SPECIFIC CULVERT LOCATIONS.

STRUCTURAL AND GEOTECHNICAL DESIGN CRITERIA:

2. PROPOSED STRUCTURE REHABILITATIONS AND TEMPORARY WORKS, ARE DESIGNED IN CONFORMANCE WITH THE FOLLOWING CODES AND STANDARDS:
   - A. AREMA, MANUAL FOR RAILWAY ENGINEERING, 2021 EDITION.
   - B. SEPTA DESIGN STANDARDS
     - a. SEPTA, STRUCTURAL DESIGN CRITERIA AND GUIDELINES, AUGUST 2006 EDITION.
     - b. SEPTA, RIGHT–OF–WAY DESIGN AND CONSTRUCTION STANDARDS, MARCH 2004.
   - C. AASHTO, LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017.
   - D. ACI BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318–08.
   - E. AISC, STEEL CONSTRUCTION MANUAL, 15TH EDITION.
   - F. AWS STRUCTURAL WELDING CODES – D1.1 AND D1.4, 2010 EDITIONS.
   - G. AWS STRUCTURAL WELDING CODES – BRIDGE WELDING CODE AWS D1.5.
   - H. ASTM INTERNATIONAL (ASTM), STANDARDS IN BUILDING CODES, 2010 EDITION.
   - I. APPLICABLE STATUTES AND REGULATIONS OF FEDERAL, STATE AND LOCAL JURISDICTIONS.
   - J. ACI BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, ACI 530–08, AND SPECIFICATIONS FOR MASONRY STRUCTURES, ACI 530.1–08.
   - K. PENNDOT PUBLICATION 408/2020 SPECIFICATIONS.
   - L. PENNDOT PUBLICATION 72M/DECEMBER 2019 STANDARDS FOR ROADWAY CONSTRUCTION.
   - M. PENNDOT STONE ARCH BRIDGE MAINTENANCE MANUAL, OCTOBER 2007.

LIVE LOAD:

3. RAILWAY LOADING OF COOPER E80 PLUS FULL IMPACT WITH LOADING AS DEFINED BY THE AREMA MANUAL.

EXISTING CONDITIONS:

4. THE EXTENT OF REHABILITATION WORK INCLUDED UNDER THIS CONTRACT IS BASED ON FIELD INVESTIGATIONS CONDUCTED DURING JUNE 2022. THE RESULTS OF WHICH ARE DOCUMENTED IN JUNE 2022 INSPECTION REPORTS PREPARED BY PENNONI.

5. ALL DIMENSIONS, ELEVATIONS AND PHYSICAL CONDITIONS SHOWN ON THE DRAWINGS FOR THE EXISTING STRUCTURES ARE BASED ON FIELD INSPECTIONS AND FIELD SURVEY. SUCH DEPICTIONS OF EXISTING CONSTRUCTION ARE INTENDED TO BE GENERAL, APPROXIMATE AND LIMITED TO THOSE AREAS FOR WHICH WORK IS REQUIRED. CONTRACTOR SHOULD PERFORM ALL DUE DILIGENCE.

6. THE EXACT EXTENT OF CONSTRUCTION OR RESTORATION WORK CANNOT BE NECESSARILY OR ACCURATELY DETERMINED PRIOR TO COMMENCEMENT OF WORK. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO THE CONSTRUCTION DETAILS, MATERIAL QUANTITIES AND EXTENT OF THE REHABILITATION WORK SHOWN ON DESIGN DRAWINGS. THE LOCATION AND EXTENT OF REHABILITATION WORK DEPICTED ON THE DRAWINGS IS INTENDED TO BE APPROXIMATE. THE ACTUAL EXTENT OF THE REPAIR WORK SHALL BE DETERMINED ON THE BASIS OF FIELD INSPECTIONS AND REVIEWED/APPROVED BY THE SEPTA PROJECT MANAGER OR DESIGNATED REPRESENTATIVE.

7. EXAMINE AND FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCEMENT OF THE FABRICATION, AND CONSTRUCTION WORK. REPORT VARIANCES FROM THE FINAL DESIGN DRAWINGS AND SPECIFICATIONS AND POTENTIAL INTERFERENCES PROMPTLY TO THE SEPTA PROJECT MANAGER. INCORPORATE ACTUAL FIELD CONDITIONS AND DIMENSIONS IN THE WORK AND INDICATE CHANGES AND ADJUSTMENTS ON DRAWINGS SUBMITTED FOR APPROVAL. CHANGES IN QUANTITIES/COSTS SHALL BE DETERMINED BASED UPON VERIFIED QUANTITIES AND APPROVED UNIT PRICES BY SEPTA.

8. ACCESS TO AND SPACE WITHIN THE STONE ARCH CULVERT WORKSITES IS LIMITED. THE CONSTRUCTION ACCESS SCHEME USED FOR CULVERT REHAB CONSTRUCTION SHALL BE DETERMINED BY THE CONTRACTOR'S MEANS AND METHODS AND SHALL BE CONSISTENT WITH THE APPROVED ENVIRONMENTAL PERMITS, RIGHT–OF–WAY/EASEMENT AGREEMENTS, SEPTA'S STRUCTURAL ENGINEERING ROW DESIGN AND CONSTRUCTION STANDARDS DATED MARCH 2004, AND SEPTA'S SPEC 011000 SPECIAL PROJECT PROCEDURES REQUIREMENTS FOR TRACK PROTECTION REQUESTS AND SSWP SUBMITTALS IF CONTRACTOR PROPOSES CONSTRUCTION ACCESS WITHIN OR ADJACENT TO THE SEPTA TRACK FOUL ZONES. THE CONTRACTOR SHALL PREPARE ALL NECESSARY PERMIT MODIFICATION DOCUMENTS, RIGHT–OF–WAY /EASEMENT AGREEMENT MODIFICATION DOCUMENTS FOR REVIEW AND APPROVAL BY SEPTA, AND SHALL OBTAIN ALL NECESSARY APPROVALS IN A TIMELY MANNER, SUCH THAT THE PROJECT CONSTRUCTION SCHEDULE IS NOT DELAYED.

REPAIR OF EXISTING STONE ARCH BARRELS, ABUTMENTS AND WALLS:

9. THE CONTRACTOR, IN CONJUNCTION WITH THE SEPTA PROJECT MANAGER, SHALL INSPECT THE EXPOSED SURFACES OF THE NEAR AND FAR ABUTMENTS, THE SPANDREL WALLS, THE WINGWALLS, THE HEADWALLS, KNEEWALLS, THE RETAINING WALLS AND THE ARCH BARRELS AND IDENTIFY FOR REPAIR ALL SPALLS, CRACKS, VOIDS, AND AREAS OF MISSING AND DETERIORATED MASONRY AND MORTAR JOINTS.

10. ALL DETERIORATED AREAS SHOWN ON THE DRAWINGS PORTRAY APPROXIMATE LOCATIONS OF SUCH DEFICIENCIES AS WERE FOUND AT THE TIME OF JUNE 2022 INSPECTION BY PENNONI. THE FINAL LOCATION OF REPAIR AREAS MAY VARY. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF STONE ARCH CULVERT REPAIRS AS APPROVED BY SEPTA.

MINIMUM CLEARANCES TO SEPTA AND PRIVATE UTILITY AERIAL WIRES

11. CONTRACTOR TO MAINTAIN MINIMUM 15 FEET CLEARANCE TO SEPTA CATENARY WIRES, C&S WIRES, AND OVERHEAD ELECTRICAL/TRANSMISSION LINES.

12. CONTRACTOR TO MAINTAIN MINIMUM CLEARANCE TO PECO TRANSMISSION LINES PER DIVISION 17, PECO SPEC S–7070 CONDITIONS FOR WORKING IN THE VICINITY OF ELECTRIC TRANSMISSION LINES OF PECO AND ITS SUBSIDIARIES.

CONSTRUCTION OPERATIONS:

13. THE CONTRACTOR MUST RECEIVE APPROVAL OF A CONSTRUCTION SCHEDULE FROM THE SEPTA PROJECT MANAGER BEFORE STARTING WORK. THE SEQUENCE MUST INCLUDE THE REQUIREMENTS SET FORTH IN THE SPECIFICATIONS AND DRAWINGS.

14. ASSUME AN ABSOLUTE OBLIGATION TO PROTECT EXISTING STRUCTURES AND EQUIPMENT, NEW WORK, SEPTA PERSONNEL AND THE GENERAL PUBLIC FROM DAMAGE, LOSS OR INJURY RESULTING FROM THE GENERAL CONTRACTOR'S OPERATIONS. IN THE EVENT OF SUCH DAMAGE OR LOSS, PROMPTLY REPLACE OR RESTORE THE WORK TO AN EQUIVALENT QUALITY TO THE SATISFACTION OF THE SEPTA PROJECT MANAGER AND AT NO EXPENSE TO SEPTA.

15. PRIOR TO CONSTRUCTION OF NEW STRUCTURE FOUNDATIONS, COMPACT THE SUBGRADE TO A DENSITY EQUIVALENT TO NOT LESS THAN THE SPECIFIED 95 PERCENTAGE OF MAXIMUM DENSITY PER ASTM D1557 AS DESCRIBED IN SECTION 022000 – EARTHWORK SPECIFICATIONS.

16. THE CONTRACTOR SHALL COORDINATE WITH SEPTA TO LOCATE, PROTECT, SUPPORT AND RESTORE BURIED UTILITY, SIGNAL AND COMMUNICATIONS CABLES. ALL DISCARDED, DEMOLISHED OR EXCAVATED MATERIAL NOT OTHERWISE DESIGNATED FOR SALVAGE SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH SEPTA'S PERMISSION AND SHALL BE PROPERLY DISPOSED OF OFF SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS. EXISTING MATERIAL DESIGNATED FOR SALVAGE SHALL REMAIN THE PROPERTY OF SEPTA AND SHALL BE CAREFULLY REMOVED AND PLACED IN STORAGE AREAS DESIGNATED BY SEPTA.

17. EXCAVATIONS SHALL BE KEPT DRY UNTIL SUBSURFACE CONSTRUCTION IS COMPLETE. IF GROUNDWATER OR OTHER LIQUIDS ARE ENCOUNTERED DURING THE COURSE OF THE WORK, PROVIDE SUITABLE MEANS OF DEWATERING THE EXCAVATIONS. OVER EXCAVATION DUE TO FAILURE TO PROTECT EXCAVATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

MATERIALS OF CONSTRUCTION:

18. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND SPECIAL PROVISIONS, PENNDOT SPECIFICATIONS, PUBLICATION 408/2020, AND AASHTO/AWS D1.5M/D1.5 2015 BRIDGE WELDING CODE.

19. CONCRETE –
   - A. USE CLASS A CEMENT CONCRETE IN FOOTING SLABS FOR UG 4.87 ~~AND UG 14.20~~, HEADWALLS, AND WINGWALLS WITH MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. UTILIZE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN FOOTING SLAB FOR UG 17.31.
   - B. USE CLASS C CEMENT CONCRETE WITH MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI FOR MUD MAT AT UG 17.31 AND OVEREXCAVATION AT UG 4.87 IF REQUIRED.
   - C. A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE SEPTA, IF APPROVED BY THE ENGINEER.
   - D. CHAMFER EXPOSED CONCRETE EDGES 3/4 IN. BY 3/4 IN., EXCEPT AS NOTED.
   - E. RAKE–FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

20. REINFORCING STEEL –
   - A. PROVIDE HOT DIP GALVANIZED GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615/A 615M, A 996/A 996M OR A 706/A 706M. DO NOT WELD GRADE 60 REINFORCING STEEL BARS UNLESS SPECIFIED. GRADE 40 REINFORCING STEEL BARS MAY BE SUBSTITUTED WITH A PROPORTIONAL INCREASE IN CROSS–SECTIONAL AREA, IF APPROVED BY THE ENGINEER. DO NOT USE RAIL STEEL A 996/A 996M REINFORCEMENT BARS.
   - B. HOT DIP GALVANIZED J–BAR REINFORCEMENT IN WINGWALLS AND HOT DIP GALVANIZED OTHER SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.
   - C. PROVIDE 2 IN. CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

21. STEEL LINER– ARC WELDED COPPER BEARING CORROSION RESISTANT STRAIGHT SEAM STEEL PIPE
   - A. ASTM A–36 GRADE B, WITH FY=36,000 PSI MIN.
   - B. ALL PIPE SHALL BE MADE FROM NEW UNUSED STEEL PLATES.
   - C. ALL PIPE SHALL BE STRAIGHT SEAM PIPE.
   - D. STRAIGHT SEAMS WELDED AFTER ROLLING MUST BE AUTOMATIC DSAW WELDS.
   - E. MIDWELDS DONE AFTER ROLLING MAY BE DONE BY AUTOMATIC OR SEMI–AUTOMATIC DSAW, FCAW, OR GMAW WELDING. SPLICES DONE BEFORE ROLLING, AND REPAIR WELDS MAY BE DONE BY AUTOMATIC, SEMI–AUTOMATIC OR MANUAL DSAW, FCAW, OR GMAW WELDING.
   - F. ALL MATERIAL IS TO BE DOMESTIC – THE PIPE MUST BE MADE FROM STEEL PLATES THAT WERE PRODUCED IN THE UNITED STATES OF AMERICA (USA), AND THE PIPE MUST BE MANUFACTURED IN THE USA.
   - G. ACCEPTABLE MANUFACTURERS:

     INFRASTEEL PERMANENT CULVERT REHABILITATION SYSTEMS
     PRECISION PIPE & PRODUCTS, INC
     PO BOX 102046
     BIRMINGHAM, AL 35210
     205–327–8171
     INFO@INFRASTEEL.COM
     WWW.INFRASTEEL.COM

     PELET'S WELDING, INC. STEEL FABRICATORS
     19 NORTH 12TH STREET
     COATESVILLE, PA 19320
     610–384–4556

     OR AN APPROVED EQUAL. SEE STEEL LINER CONSTRUCTION SPECIFICATIONS FOR QUALIFICATIONS AND PERFORMANCE CRITERIA.

22. RAILROAD TRACK BALLAST
   - A. BALLAST SHALL BE FURNISHED IN ACCORDANCE WITH VOL. 1, CHAPTER 1, PART 2, "BALLAST" OF THE AREMA MANUAL FOR RAILWAY ENGINEERING AND AS MODIFIED IN SECTION 024580 TRACK BALLAST OF THE CONSTRUCTION SPECIFICATIONS AND SPECIAL PROVISIONS.
   - B. TO BE USED ON REGRADED SLOPES BEHIND UG17.31 OUTLET RAISED HEADWALL AND WINGWALLS AND NEXT TO THE TRACK.

23. ROCK LINING
   - A. ROCK LINING SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 02240 ROCK LINING & GABION MATTRESS AND SECTION 023920 GROUTED INLET AND OUTLET PROTECTION.

     SCOUR PROTECTION, SIZE VARIES SEE PROFILES
     No. 8: ARCH LINER BEDDING
   - B. FOOTING FOR UG 4.87 SHOULD BE FOUNDED ON ROCK. ANY LOOSE SOIL OR BROKEN ROCK BELOW THE BFE SHOULD BE OVER–EXCAVATED AND BACKFILLED WITH CLASS C CEMENT CONCRETE.

24. NON–SHRINK GROUT FOR STEEL LINER:
   - A. NON–SHRINK, NON–METALLIC CEMENTITIOUS GROUT MEETING THE ARMY CORPS OF ENGINEERS SPECIFICATION CRD C–621 AND ASTM C–1107 (GRADE C); SIKA GROUT 212 BY SIKA OR APPROVED EQUAL. WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH 3000 PSI.

25. THE PROJECT INCLUDES SEVERAL ADDITIONAL GROUT TYPES AND MORTARS, SEE SPECIFICATION 033000, SECTION 1.01.B TABLE FOR SUMMARY OF GROUT TYPES WITH REFERENCE TO APPLICABLE DETAILED CONSTRUCTION SPECIFICATIONS.

26. SLOPE STABILIZATION GEOTECHNICAL NOTES ~~UG 14.20,~~ UG 4.87, AND UG 17.31

    CONSTRUCT ROCK EMBANKMENT IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND ROCK EMBANKMENT DETAIL. USE ROCK, CLASS R–3 ALONG THE SLOPE FOR ~~UG 14.20 AND~~ UG 4.87. USE GROUTED ROCK, CLASS R–3 FOR THE TOE KEY AT ~~UG 14.20 AND~~ UG 4.87. FOR UG 17.31, USE ROCK, CLASS R–3 ALONG THE SLOPE AND ROCK, CLASS R–4 FOR THE TOE KEY. USE ROCK, CLASS R–5 AT THE END OF THE WINGWALLS OF UG 4.87.

    REMOVE ALL UNSUITABLE MATERIALS FROM THE FOUNDATION TOE KEY SUBGRADE. OVEREXCAVATE SOFT/LOOSE OR OTHERWISE UNSUITABLE BEARING MATERIALS TO FIRM STRATUM, PLACE GEOTEXTILE CLASS 4 TYPE A, AND BACKFILL WITH GROUTED ROCK, CLASS R–3.

    ALL EXCAVATIONS MUST CONFORM TO CURRENT OSHA AND OTHER APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE STABILITY OF THE EXCAVATIONS.

    PERFORM CONSTRUCTION IN SECTIONS NOT EXCEEDING 10 FEET IN WIDTH.

    MAINTAIN SAFETY AND STABILITY OF ALL TEMPORARY CONSTRUCTION SLOPES. USE TEMPORARY EXCAVATION SUPPORT TO ENSURE SAFETY AND STABILITY OF ALL TEMPORARY SLOPES IF NECESSARY.

    CONSTRUCTION OF THE ROCK EMBANKMENT AND TOE KEY SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER OR SEPTA'S PROJECT MANAGER.

GENERAL CONSTRUCTION SEQUENCE:

1. THE CONSTRUCTION SEQUENCE, AND CONSTRUCTION ACCESS USED FOR THE CULVERT REHABILITATION CONSTRUCTION SHALL BE DETERMINED BY THE CONTRACTOR'S MEANS AND METHODS AND SHALL BE CONSISTENT WITH THE APPROVED PERMITS, RIGHT–OF–WAY/EASEMENT AGREEMENTS, SEPTA'S STRUCTURAL ENGINEERING ROW DESIGN AND CONSTRUCTION STANDARDS DATED MARCH 2004, AND SEPTA'S SPEC 011000 SPECIAL PROJECT PROCEDURES REQUIREMENTS FOR TRACK PROTECTION REQUESTS AND SSWP SUBMITTALS IF CONTRACTOR PROPOSES CONSTRUCTION ACCESS WITHIN OR ADJACENT TO THE SEPTA TRACK FOUL ZONES. OR THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND PREPARE ROW/EASEMENT/PERMIT MODIFICATION DOCUMENTS FOR REVIEW AND APPROVAL BY SEPTA, AND SHALL OBTAIN ALL NECESSARY APPROVALS IN A TIMELY MANNER SUCH THAT THE PROJECT CONSTRUCTION SCHEDULE IS NOT DELAYED.
2. ALL FIELD PERSONNEL TO BE RAILROAD ROADWORK (RWP) SAFETY TRAINING CERTIFIED.
3. CONTRACTOR SHALL ONLY WORK AT TWO CULVERT LOCATIONS AT ONE TIME. SEPTA WILL ONLY GRANT TRACK SUPPORT FOR ONE CULVERT AT A TIME FOR LIMITED REQUESTED AND APPROVED OUTAGES. FOR DETAILS REFER TO SPECIFICATION SECTION 010100. ~~ALL WORK AT UG 14.20 SHALL BE COORDINATED WITH PROPERTY OWNER PROVIDING ACCESS AND COMPLETED BETWEEN JAN 15 AND MAY 15~~
4. REFER TO SPECIFICATION SECTIONS 010100 AND 011000 FOR RESTRICTIONS REGARDING ALLOWABLE HOURS WHEN WORKING ON–TRACK.
5. SUGGESTED CONSTRUCTION SEQUENCE: THE GENERAL CONSTRUCTION SEQUENCE FOR THE ~~THREE (3)~~ TWO (2) STONE ARCH CULVERTS IN THIS CONTRACT IS AS FOLLOWS:

STAGE 1

1. COORDINATE WITH UTILITY COMPANIES TO SCHEDULE TEMPORARY AND PERMANENT UTILITY RELOCATIONS PRIOR TO CONSTRUCTION.
2. CLEAR CONSTRUCTION SITE OF DEBRIS, VEGETATION AND TREES PER CONTRACT DOCUMENTS.
3. PERFORM FIELD VERIFICATION OF EXISTING CONDITIONS, AS WELL AS, LOCATE AND MEASURE SIZES OF ALL MISSING WINGWALL, SPANDREL WALL, AND HEADWALL STONES.
4. CONTACT EXISTING UTILITY COMPANIES IMPACTED BY THE PROJECT CONSTRUCTION WORK AND COORDINATE UTILITY PROTECTION OR RELOCATION.
5. PREPARE SHOP DRAWINGS FOR ARCH BARREL STEEL LINERS AND TEMPORARY EXCAVATION SUPPORT SYSTEMS FOR REVIEW AND APPROVAL.
6. BEGIN FABRICATION OF ARCH BARREL STEEL LINERS.
7. CONSTRUCT TEMPORARY ACCESS ROADS, STAGING/STOCKPILE AREAS, CONCRETE WASHOUTS, AND E&S MEASURES REQUIRED FOR COMMENCEMENT OF STONE ARCH REHABILITATION CONSTRUCTION.
8. ESTABLISH TRACK EMBANKMENT AND EXISTING OCS AND PEDESTRIAN STRUCTURE SURVEY MONITORING LOCATIONS AND PERFORM BASELINE SURVEYS TO DOCUMENT COORDINATES PRIOR TO COMMENCEMENT OF STONE ARCH REHABILITATION AND TRACK EMBANKMENT STABILIZATION. COLLECT DATA DURING SEPTA APPROVED ON–TRACK WORK WINDOW, SEE SPEC 010100, SECTION 1.07 FOR DETAILS.
9. ALLOW SEPTA OR THEIR CONTRACTOR ACCESS TO UG 4.87 AND UG 17.31 SITES IN ORDER TO COMPLETE THEIR RELOCATION OF NORTHERN OVERHEAD C&S WIRES AND OUTLET HEADWALL C&S WIRE, RESPECTIVELY.

STAGE 2 – DURING SEPTA APPROVED ON–TRACK WORK WINDOW (SEE SPEC 010100, SECTION 1.07 FOR DETAILS)

1. COLLECT TRACK EMBANKMENT AND EXISTING OCS AND PEDESTRIAN STRUCTURE SURVEY MONITORING DATA EACH DAY TO DETECT ANY MOVEMENT/SETTLEMENT DURING CONSTRUCTION.
2. INSTALL TEMPORARY EXCAVATION SUPPORT SYSTEMS WHERE NEEDED TO ALLOW FOR RECONSTRUCTION OF EXISTING WINGWALL, SPANDREL WALL, AND HEADWALL STRUCTURES.
3. INSTALL STRUCTURE FOUNDATION DRAINS BEHIND HEADWALLS AND WINGWALLS.
4. CONSTRUCT TRACK EMBANKMENT STABILIZATION/REGRADING; GEOTEXTILE, AND ROCK CLASS R–3/GROUTED ROCK CLASS R–3 PLACEMENT.
5. CULVERT ARCH BARREL REHAB WORK WITH POTENTIAL TO CAUSE TRACK EMBANKMENT SETTLEMENT/MOVEMENT; EXCAVATION OF EXISTING CONCRETE SLAB/ROCK LINING IN ARCH BARREL, EXISTING MASONRY STONE CUTTING.
6. AT UG 17.31 DEMOLISH AND /REMOVE EXISTING SEPTA TRAILER BUILDING ADJACENT TO OR WITHIN THE TRACK FOUL ZONE.
7. AT UG 17.31 INSTALL NEW WALKWAY AND RAILING NEAR DOWNSTREAM RAISED HEADWALL AND NEW ESTATE PROTECTIVE FENCE ADJACENT TO TRACK.
8. ALL OTHER PROJECT WORK WITHIN OR ADJACENT TO FOUL ZONE, 10 FEET FROM OUTER RAILS.

STAGE 3

1. COLLECT TRACK EMBANKMENT SURVEY MONITORING DATA EACH WEEK TO DETECT ANY MOVEMENT/SETTLEMENT DURING CONSTRUCTION. COLLECT DATA DURING SEPTA APPROVED ON–TRACK WORK WINDOW, SEE SPEC 010100, SECTION 1.07 FOR DETAILS.
2. INSTALL TEMPORARY STREAM DIVERSION PIPES, CULVERT DEWATERING SYSTEMS, AND E&S MEASURES IN ACCORDANCE WITH PERMITS AND PHASE 2 E&S PLANS.
3. CLEAN, REPAIR AND RECONSTRUCT EXISTING MASONRY WINGWALLS, SPANDREL WALLS, HEADWALLS, RETAINING WALLS, AND KNEEWALL AS SHOWN ON PLANS. RAISE EXISTING HEADWALLS (~~UG 14.20,~~ UG 4.87, UG 17.31) AS SHOWN ON PLANS.
4. UNDERPIN KNEEWALL AT UG 17.31 AND INSTALL BURIED PERFORATED UNDERDRAIN AS SHOWN ON PLANS.
5. PROVIDE/INSTALL CONFINED SPACE MATERIALS/EQUIPMENT IF REQUIRED.
6. REMOVE EXCESS SEDIMENT, DEBRIS, ROCK BUILDUP FROM INSIDE THE CULVERTS AND IN AREAS OF STREAM IMPROVEMENTS SHOWN ON THE PLANS.
7. PROVIDE TEMPORARY SUPPORTS AS NEEDED AND REMOVE EXISTING STRUCTURES WITHIN CULVERTS; ROCK APRONS, CONCRETE APRONS, CONCRETE SLABS, AND EXISTING STONE AS SHOWN ON THE PLANS.
8. EXCAVATE EXISTING CULVERT AND UPSTREAM/DOWNSTREAM STREAMBEDS AND INSTALL BEDDING NO. 8 STONE, UG 4.87 REPLACEMENT SEWER PIPE, UG 17.31 CLASS C CEMENT CONCRETE MUD MAT AND RELIEVING ARCH, AND STEEL LINER SUBGRADE CONCRETE FOOTING.
9. PREPARE ARCH BARRELS TO RECEIVE STEEL LINER BY; INSTALLATION OF TEMPORARY SHORING SUPPORTS, CUTTING/GRINDING/REMOVING PROTRUDING ARCH BARREL STONES.
10. DELIVER STEEL LINER SEGMENTS TO ONSITE STAGING AREAS AND PREPARE SEGMENTS FOR INSTALLATION.
11. CHECK ALL ARCH BARREL DIMENSIONS TO ENSURE SUFFICIENT SPACE FOR STEEL LINER INSTALLATION AND FILL LARGE CRACKS WITH MORTAR TO PREVENT INCREASED GROUT QUANTITIES.
12. SETUP/LEVEL PEA GRAVEL AND SLIDING RAILS FOR LINER POSITIONING.
13. LAYOUT/ALIGN ADJACENT LINER SEGMENTS OUTSIDE CULVERT.
14. CONNECT ADJACENT STEEL LINER SEGMENTS TOGETHER BY WELDING. CONNECT GROUNDING AND BONDING WIRE TO EXTERIOR OF STEEL LINER SEGMENTS.
15. INSTALL ARCH LINER SEGMENTS INTO CULVERT USING SLIDING RAILS, JACKS OR OTHER MEANS DETERMINED BY CONTRACTOR.
16. AFTER ALL STEEL LINER SEGMENTS ARE INSTALLED, FILL VOID BETWEEN STONE ARCH AND LINER WITH GROUT.
17. PLACE SIX (6) INCHES OF SALVAGED STREAM BED MATERIAL INSIDE CULVERT AND COMPLETE FINAL STREAM IMPROVEMENTS/GRADING.
18. INSTALL STREAM BED RIP–RAP, GROUTED RIP–RAP. AND GABION MATTRESS SCOUR PROTECTION AS SHOWN ON PLANS.
19. REMOVE DEWATERING AND STREAM DIVERSION MEASURES.
20. INSTALL PROTECTIVE FENCE AND PROTECTIVE BARRIER AROUND UPSTREAM UG 17.31 CULVERT OPENING IN PAVEMENT.
21. COMPLETE REMAINING CONSTRUCTION, FINAL SITE CLEANING, SITE RESTORATION, PLANTING.

STRUCTURAL ABBREVIATIONS

A.B.	ANCHOR BOLT	MATL.	MATERIAL
B/	BOTTOM OF	MAX.	MAXIMUM
C/C	CENTER TO CENTER	MET.	METAL
C.J.	CONTROL JOINT	MH	MANHOLE
℄	CENTER LINE	MIN.	MINIMUM
CAT.	CATENARY	MISC.	MISCELLANEOUS
C.I.P.	CAST–IN–PLACE	N.B.	NEAR FACE (REINF.)
CL.	CLEAR	N.I.C.	NOT IN CONTRACT
COL.	COLUMN	NO.	NUMBER
CONC.	CONCRETE	N.T.S.	NOT TO SCALE
CTSK	COUNTERSUNK	O.B.	OUTBOUND
DEG.	DEGREE	O.C.	ON CENTER
DET.	DETAIL	O.D.	OUTSIDE DIAMETER
DIA. or ø	DIAMETER	O.H.	OPPOSITE HAND
DIM.	DIMENSION	OPNG.	OPENING
DS	DRILLED SHAFT OR CAISSON	OPP.	OPPOSITE
		O. TO O.	OUT TO OUT
DWG.	DRAWING	℘	PLATE
DWLS.	DOWELS	℘	PROPERTY LINE
EA.	EACH	PROJ.	PROJECTION
E.F.	EACH FACE	PT.	POINT
ELEC.	ELECTRICAL	R	RADIUS OR RISER
E.E.P.	ELECTRICAL EQUIPMENT PAD	RD.	ROUND
		RECT.	RECTANGULAR
EL., ELEV	ELEVATION	REF.	REFERENCE
EMBED.	EMBEDMENT	REINF.	REINFORCEMENT
E.P.	EQUIPMENT PAD	REQD.	REQUIRED
EXIST.	EXISTING	REV.	REVISION
EXP. BOLT	EXPANSION BOLT	R.R.	RAILROAD
EXP. JT.	EXPANSION JOINT	R/W, R.O.W.	RIGHT–OF–WAY
F	FOOTING	SCHED.	SCHEDULE
FIN.	FINISH	SECT.	SECTION
FIXT.	FIXTURE	SHT.	SHEET
FLD.	FIELD	SIM.	SIMILAR
F.F.	FAR FACE (REINF.)	SPA.	SPACE
F.L	FULL LENGTH	STA.	STATION
FLG.	FLANGE	STD.	STANDARD
F.O.	FIBER OPTIC	STIFF.	STIFFEN ER
FRMG.	FRAMING	STL.	STEEL
FTG.	FOOTING	STR.	STRUCTURAL
GA.	GAGE (DISTANCE)	ST. STL.	STAINLESS STEEL
GA.	GAUGE (THICKNESS)	SYM.	SYMMETRICAL
GALV.	GALVANIZED	T	TREAD
GRD.	GRADE, GROUND	T/	TOP OF
GRTG.	GRATING	THD.	THREADED
H.H.N.	HEAVY HEX NUT	TEMP.	TEMPORARY
HK.	HOOK	T/R	TOP OF RAIL ELEVATION
HOR.	HORIZONTAL	TYP.	TYPICAL
H.P.	HIGH POINT	U.N.O.	UNLESS NOTED OTHERWISE
HT.	HEIGHT		
I.B.	INBOUND	VERT.	VERTICAL
I.D.	INSIDE DIAMETER	VIF	VERIFY IN FIELD
INTERM.	INTERMEDIATE	VOL.	VOLUME
JT.	JOINT	W/	WITH
L	ANGLE	WL	WORK LINE
LGT.	LIGHTING	W.P.	WORK POINT, WATERPROOFING
LLBB	LONG LEG BACK TO BACK		

TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEMS:

1. FURNISH AND INSTALL TEMPORARY EXCAVATION SUPPORT SYSTEM AS NECESSARY TO PROTECT THE RAILROAD AND EXISTING STRUCTURES TO REMAIN FROM DISPLACEMENT AND SETTLEMENT DUE TO EXCAVATION OPERATIONS.
2. DESIGN OF TEMPORARY EXCAVATION SUPPORT SYSTEM SHALL BE IN ACCORDANCE WITH SEPTA STRUCTURAL DESIGN CRITERIA AND GUIDELINES, AUGUST 2006, SEPTA RIGHT–OF–WAY DESIGN AND CONSTRUCTION STANDARDS, MARCH 2004, AND STONE ARCH PHASE 2 CONSTRUCTION SPECIFICATIONS AND SPECIAL PROVISIONS, AND AREMA 2019. DESIGN SHALL REQUIRE APPROVAL OF THE SEPTA PROJECT MANAGER. DESIGN SHALL BE PERFORMED AND SIGNED AND SEALED BY A QUALIFIED LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER CURRENTLY REGISTERED IN THE COMMONWEALTH OF PENNSYLVANIA.
3. CONTRACTORS PROPOSED TEMPORARY EXCAVATION SUPPORT SYSTEM MUST MAINTAIN SUFFICIENT CLEARANCE TO EXISTING ARCH BARREL, WINGWALL, HEADWALL, AND FOUNDATION STRUCTURES TO PREVENT ANY UNDUE STRESSES OR DAMAGE DURING CONSTRUCTION. BOTTOM OF TEMPORARY EXCAVATION SUPPORT SHOULD BE A MINIMUM OF 2 FEET ABOVE THE PROJECTED TOP OF EXISTING ARCH CULVERT TO AVOID DAMAGE DUE TO DIRECT IMPACT.
4. TEMPORARY EXCAVATION SUPPORT SYSTEM TYPE AND METHOD OF INSTALLATION MUST MINIMIZE VIBRATION IMPACTS TO EXISTING ARCH BARREL, WINGWALL, HEADWALL, AND FOUNDATION STRUCTURES TO PREVENT UNDUE STRESSES OR DAMAGE DURING CONSTRUCTION.
5. CONTRACTOR MUST SUBMIT DESIGN CALCULATIONS, PROPOSED SOIL PARAMETERS BASED ON EVALUATION OF SOIL BORINGS, AND DESIGN PLANS TO SEPTA REVIEW AND APPROVAL.
6. TOP OF TEMPORARY EXCAVATION SUPPORT SHALL BE AT OR BELOW TOP OF TIE ELEVATION DURING CONSTRUCTION.
7. TEMPORARY EXCAVATION SUPPORT SHOULD BE LOCATED OUTSIDE THE REGIONAL RAIL TRAIN TRACK CONSTRUCTION CLEAR ZONE.
8. AFTER CONSTRUCTION TEMPORARY EXCAVATION SUPPORT SHOULD BE CUT OFF 18 INCHES BELOW GRADE IN ACCORDANCE WITH SEPTA RIGHT–OF–WAY DESIGN AND CONSTRUCTION STANDARDS, MARCH 2004.

╳ = NOT IN CONTRACT

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST, 13TH FL, PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER No. PE081321
Cassandra L. Khazem

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.3588

REV	DATE	DESCRIPTION	BY	CK'D	AP'D
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–

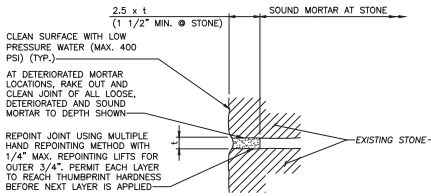
UNDERGRADE BRIDGES - ~~WEST TRENTON LINE UG 14.20 AND~~
LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2
BRIDGE
BRIDGE IMPROVEMENT
STRUCTURAL
GENERAL NOTES & ABBREVIATIONS

SCALE: NONE
SCALE FACTOR: 1:1
DATE: 09/19/2023
DRAWN BY: RME
CHECKED BY: JCV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: S001
DWG. NO.: S001 OF S003
SHT. NO.: 6 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.:
REV. NO.:

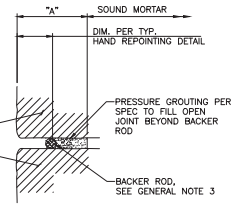
U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S001.DWG

DATE PRINTED: 9/21/2023 2:44:00 PM

STATUS



TYPICAL HAND REPOINTING OF MORTAR JOINTS



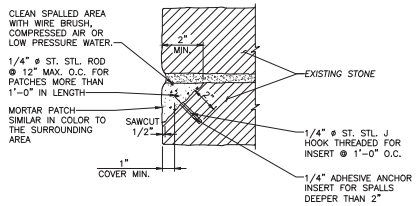
TYPICAL PRESSURE REPOINTING OF OPEN MORTAR JOINTS AND STONE CRACK REPAIR

NOTE: THIS DETAIL APPLIES TO JOINTS WHERE THE DEPTH "A" OF THE OPEN JOINT EXCEEDS 2.5 TIMES JOINT THICKNESS (OR 1 1/2" @ STONE)

FOR DETAILED REQUIREMENTS, SEE SPECIFICATION SECTION 040600, 049000, AND 049030

1 S002 RESTORATION DETAILS OF MORTAR JOINTS AND STONE CRACK REPAIRS

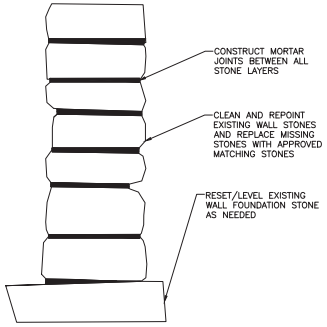
SCALE: N.T.S



FOR DETAILED REQUIREMENTS, SEE SPECIFICATION SECTION 049000

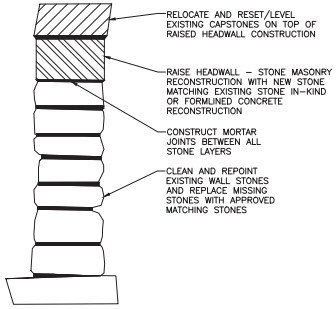
2 S002 TYPICAL STONE MASONRY REPAIR DETAIL

SCALE: N.T.S



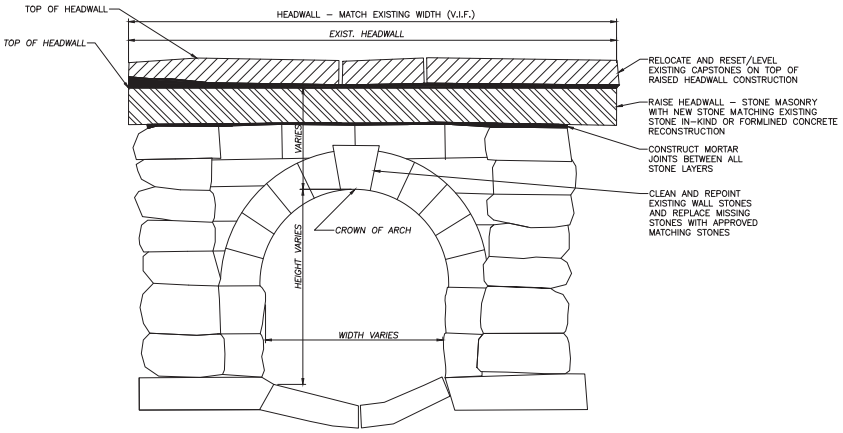
3 S002 TYPICAL RECONSTRUCTION/RESETTING EXISTING STONE MASONRY WALLS

SCALE: N.T.S



4 S002 TYPICAL RAISING OF EXISTING STONE MASONRY WALLS

SCALE: N.T.S



5 S002 TYPICAL RAISING STONE MASONRY HEADWALLS

SCALE: N.T.S

GENERAL NOTES:

1. FOR GENERAL STRUCTURAL NOTES AND ABBREVIATIONS SEE SHEET S001.
2. ALL CRACKS, SPALLS, AND DETERIORATED AREAS NOTED ON THE DRAWING REPRESENT APPROXIMATE LOCATIONS AND DIMENSIONS OF SUCH DEFICIENCIES IDENTIFIED AT THE TIME OF INSPECTION (JUNE 2022). THE CONTRACTOR IS TO VERIFY ALL INFORMATION PRESENTED ON THE PLAN, INSPECT AND IDENTIFY ANY ADDITIONAL AREAS OF DETERIORATION, AND DETERMINE LIMITS OF REPAIRS AS REQUIRED BY THE CONTRACT DOCUMENTS AND IN CONJUNCTION WITH THE PROJECT MANAGER.
3. REMOVE DETERIORATED MORTAR TO SOUND MORTAR. WHERE OPEN JOINT DEPTH "A" EXCEEDS 2.5 X JOINT THICKNESS (OR 1 1/2" AT STONE), INSTALL TEMPORARY BACKER ROD TO RETAIN MORTAR. PROVIDE PRESSURE-GROUT PER SPECS. REMOVE BACKER ROD AFTER SETTING MORTAR INSTALLED. PROVIDE REPOINTING MORTAR OUTSIDE OF SETTING MORTAR PER TYPICAL HAND REPOINTING DETAIL. PROJECT MANAGER MAY PERMIT CONTRACTOR TO OMIT BACKER ROD PENDING SATISFACTORY DEMONSTRATION OF PRESSURE REPOINTING IN BOTH HORIZONTAL AND OVERHEAD POSITIONS WITHOUT BACKER ROD USE BY AN EXPERIENCED MORTAR INSTALLER.

MASONRY WINGWALL AND SPANDREL WALL RESTORATION NOTES:

RESTORE THE INDICATED WALL AREA AS FOLLOWS:

1. REPLACE LOOSE, DETERIORATED, AND MISSING STONES WITH NEW STONES MATCHING EXISTING SOUND MASONRY AT THE AREAS INDICATED ON THE DRAWINGS FOR AN ESTIMATED AREA AS SHOWN IN THE REPAIR SCHEDULE.
2. FILL GAPS AND HOLES IN THE WALL WITH PRESSURE GROUTING OF THE CAVITIES AFTER THEY ARE CLEANED TO A SOUND STONE SUBSTRATE TO ENSURE THE WALL IS GROUTED SOLID.
3. REPOINT THE MORTAR JOINTS BY HAND REPOINTING FOR 2 1/2 TIMES JOINT THICKNESS (1 1/2" MIN.) AND PRESSURE REPOINTING FOR DEEPER JOINTS PER DETAIL 1/S002.
4. AT LOCATIONS OF SPALLED OR CHIPPED OFF EXTERIOR STONE SURFACE THAT IS TO REMAIN EXPOSED, PERFORM SPALL REPAIR PER DETAIL 2/S002.
5. MOIST CURE THE REPOINTED WALL JOINTS AND ANY PRESSURE GROUTING BY SPRAYING WITH WATER ON THE JOINTS FOR A MINIMUM OF 7 DAYS.
6. FOR THE AREA OF THE WALL WITH MISSING STONES, LOOSE STONES, OR DETERIORATED STONES DUE TO WALL FAILURE, PROVIDE TEMPORARY WALL SUPPORTS OR EARTH RETAINING SUPPORTS AS NEEDED AND RECONSTRUCT THE WALL SECTION USING NEW STONES THAT MATCH THE SURROUNDING STONES AND WALL THICKNESS.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EMAC DIVISION
1234 MARKET ST, 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER
No. PE-076-E
Cassandra L. Khazem

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE

BRIDGE IMPROVEMENT

STRUCTURAL

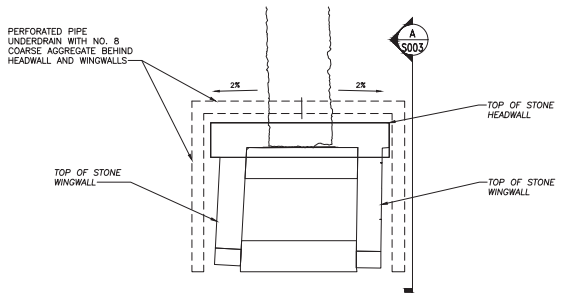
TYPICAL DETAILS 1

SCALE: N.T.S	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RME / CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: S002	
DWG NO.: S002 OF S003	
SHT NO.: 7 OF 50	
ARCHIVE NO.:	
COMPUTER FILE NO.:	REV. NO.:

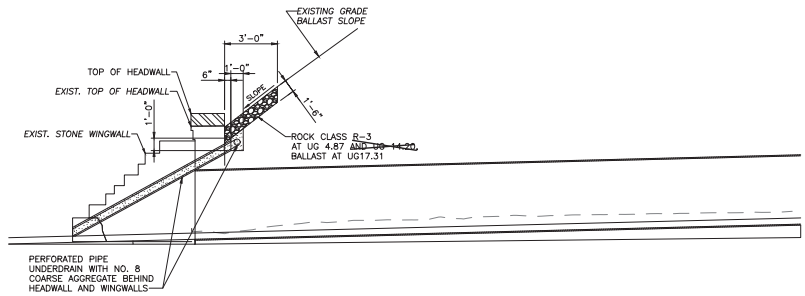
STATUS

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S002.DWG

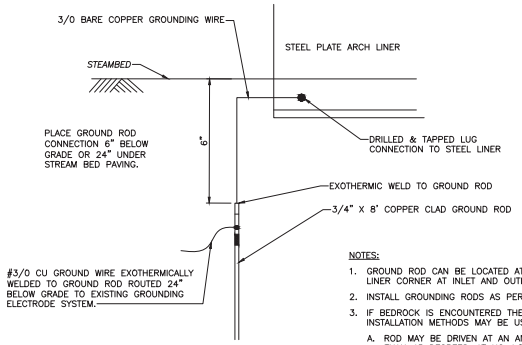
DATE PRINTED: 9/21/2023 2:44:05 PM



1 S003 TYPICAL HEADWALL/WINGWALL SUBSURFACE FOUNDATION DRAIN DETAIL
SCALE: N.T.S.



A S003 SECTION
SCALE: N.T.S.



NOTES:

1. GROUND ROD CAN BE LOCATED AT EITHER CULVERT LINER CORNER AT INLET AND OUTLET ENDS.
2. INSTALL GROUNDING RODS AS PER NEC 250.53
3. IF BEDROCK IS ENCOUNTERED THE FOLLOWING INSTALLATION METHODS MAY BE USED:
   A. ROD MAY BE DRIVEN AT AN ANGLE NO GREATER THAN 45 DEGREES. AT UG 4.87 SEE SHEET S202 FOR PROPOSED GROUND ROD DRIVEN HORIZONTALLY INTO WINGWALL EMBANKMENT SOIL.
   B. ROD MAY BE LAID HORIZONTALLY IN SOIL AT A DEPTH OF 30" OR GREATER.
   C. A 12"X12" CONDUCTIVE PLATE MAY BE USED INSTEAD OF A ROD AND LAID HORIZONTALLY IN SOIL AT A DEPTH OF 30" OR GREATER.
   D. REMOVE BEDROCK AND REPLACE WITH A BENTONITE MOISTURE REDUCING CLAY FILL. ALLOW AT LEAST 6" OF FILL TO SURROUND ROD OR PLATE.

2 S003 GROUND ROD STEEL LINER CONNECTION DETAIL
SCALE: N.T.S.

X = NOT IN CONTRACT

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST., 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER
No. 059155

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S003.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE

BRIDGE IMPROVEMENT

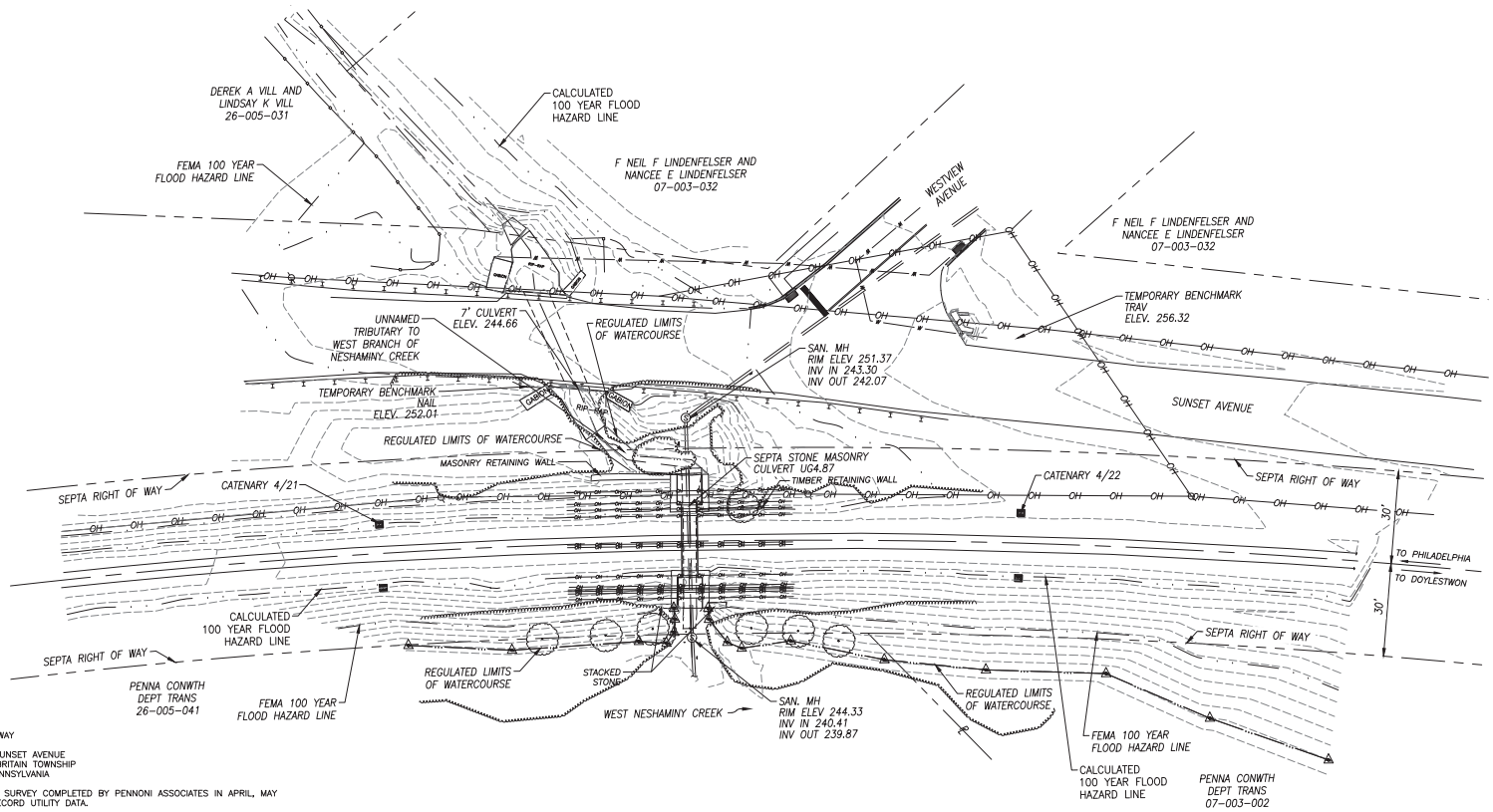
STRUCTURAL

TYPICAL DETAILS 2

SCALE: N.T.S
SCALE FACTOR: 1:1
DATE: 09/19/2023
DRAWN BY: RMC
CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: **S003**
DWG NO.: S003 OF S003
SHT NO.: 9 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.:
REV. NO.:

DATE PRINTED: 9/25/2023 9:46:43 AM

STATUS



GENERAL NOTES:

1. PARCEL INFORMATION: SEPTA RIGHT OF WAY

   ADDRESS: DOYLESTOWN LINE @ SUNSET AVENUE
   BUCKS COUNTY, NEW BRITAIN TOWNSHIP
   COMMONWEALTH OF PENNSYLVANIA

2. THE SURVEY PLAN WAS PREPARED FROM A FIELD SURVEY COMPLETED BY PENNONI ASSOCIATES IN APRIL, MAY AND JUNE OF 2017 AND SUPPLEMENTED WITH RECORD UTILITY DATA.

3. VERTICALLY, THE SURVEY REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). INITIAL ELEVATIONS WERE DETERMINED THROUGH THE USE OF GPS. LOCAL TEMPORARY BENCH MARKS ARE PROVIDED FOR THIS SITE ON THIS PLAN.

4. HORIZONTALLY, THE SURVEY REFERENCES THE PENNSYLVANIA STATE PLAN COORDINATE SYSTEM, SOUTH ZONE (PASPCS SOUTH).

5. TOPOGRAPHIC CONTOURS ARE APPROXIMATE AROUND STRUCTURES. CONTRACTOR TO MEET PRE-CONSTRUCTION CONTOUR ELEVATIONS UPON COMPLETION OF CONSTRUCTION.

6. FEMA MAPPING FOR THE PROJECT INDICATES THAT THE UPSTREAM AND DOWNSTREAM SIDE OF THE CULVERT ARE WITHIN THE ZONE AE FLOOD AREA FOR THE NESHANIMY CREEK. THE 100 YEAR FLOOD ELEVATION IS BELOW THE 50 AND 100 YEAR STORM EVENT FOR THE UNNAMED TRIBUTARY.

7. CONTRACTOR MUST REVIEW ALL ISSUED PERMITS TO CONFIRM THE PROJECT CONSTRUCTION CAN OCCUR IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, CODES, ORDINANCES, AND ISSUED REGIONAL, GENERAL, AND SPECIFIC PERMIT CONDITIONS TO CONSTRUCT THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ANY ADDITIONAL APPROVALS, AUTHORIZATIONS, OR PERMITS NECESSARY TO CONSTRUCT THE PROJECT. MODIFICATIONS TO THIS DESIGN (METHODS, MATERIALS, FOOTPRINT, ETC.) WILL REQUIRE ADDITIONAL PERMITTING AND PERMIT MODIFICATIONS THAT WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

8. THE CONTRACTOR IS REQUIRED TO OBTAIN, REVIEW, AND ABIDE BY ALL ORDERS, DECREES, CODES, ORDINANCES, REGULATIONS, LAWS, AND PERMITS TO CONSTRUCT THE PROJECT.

9. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS THROUGH SURVEY, PHOTOGRAPHIC DOCUMENTATION, AND SPECIFIC MEASUREMENTS PRIOR TO INITIATION OF WORK. IF EXISTING CONDITIONS DIFFER FROM THOSE SHOWN, NOTIFY THE OWNER IMMEDIATELY. ANY DISCREPANCY BETWEEN ANY PLANS OR FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION AND EVALUATED WITH THE APPLICABLE JURISDICTIONAL AUTHORITY TO DETERMINE IF ADDITIONAL PERMITTING AND/OR MODIFICATIONS TO EXISTING PERMITTING IS NECESSARY TO PROCEED WITH CONSTRUCTION.

LEGEND

PROPERTY, LINE	SIGN
PROPERTY, ADJOINING LINED	UTILITY POLE
LEGAL RIGHT-OF-WAY	
EASEMENT	GUY WIRE
PROPERTY MARKER	LIGHT
BUILDING	DECIDUOUS TREE
CURB	CONIFEROUS TREE
CURB DEPRESSION	LSA — LANDSCAPED AREA
EDGE OF PAVEMENT	TREE LINE
EDGE OF GRAVEL	101 — MINOR CONTOUR
CONCRETE PAVING	100 — MAJOR CONTOUR
ASPHALT PAVING	× 100.5 — SPOT ELEVATION, SOFT SURFACE
GRAVEL SURFACE	× 100.55 — SPOT ELEVATION, HARD SURFACE
PAVERS	STORM SEWER, UNDERGROUND
FENCE, METAL	WATER, UNDERGROUND
FENCE, GENERAL	SANITARY SEWER, UNDERGROUND
GUIDE RAIL	MANHOLES
	VALVES
	JUNCTION BOX
BOLLARD	STORM SEWER, INLET
POST	WATER, FIRE HYDRANT
SIGN POST AND BOARD	

20 10 0 20
SCALE: 1"=20'

PENNSYLVANIA ONE CALL SYSTEM INC.
925 IRWIN RUN ROAD
WEST MIFFLIN, PENNSYLVANIA
15122-1078

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA! CALL 1-800-242-1776
NON-MEMBERS MUST BE CONTACTED DIRECTLY
PA LAW REQUIRES THREE WORKING DAYS
NOTICE TO UTILITIES BEFORE YOU EXCAVATE
DRILL, BLAST OR DEMOLISH
DESIGN SERIAL # 20221991042, 20221991043

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EMAC DIVISION
1234 MARKET ST., 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JASON KENNETH HAYNES
LAND SURVEYOR
SU-075653

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV.	DATE	DESCRIPTION	BY	CKD	APD

U:\ACCOUNTS\SEPTA\SEPTA21005-GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-C201.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE UG 4.87

BRIDGE IMPROVEMENT

CIVIL

EXISTING CONDITIONS PLAN

SCALE: 1" = 20'	SCALE FACTOR: 1:1
DATE: 05/31/2023	DRAWN BY: RMC
	CHECKED BY: —

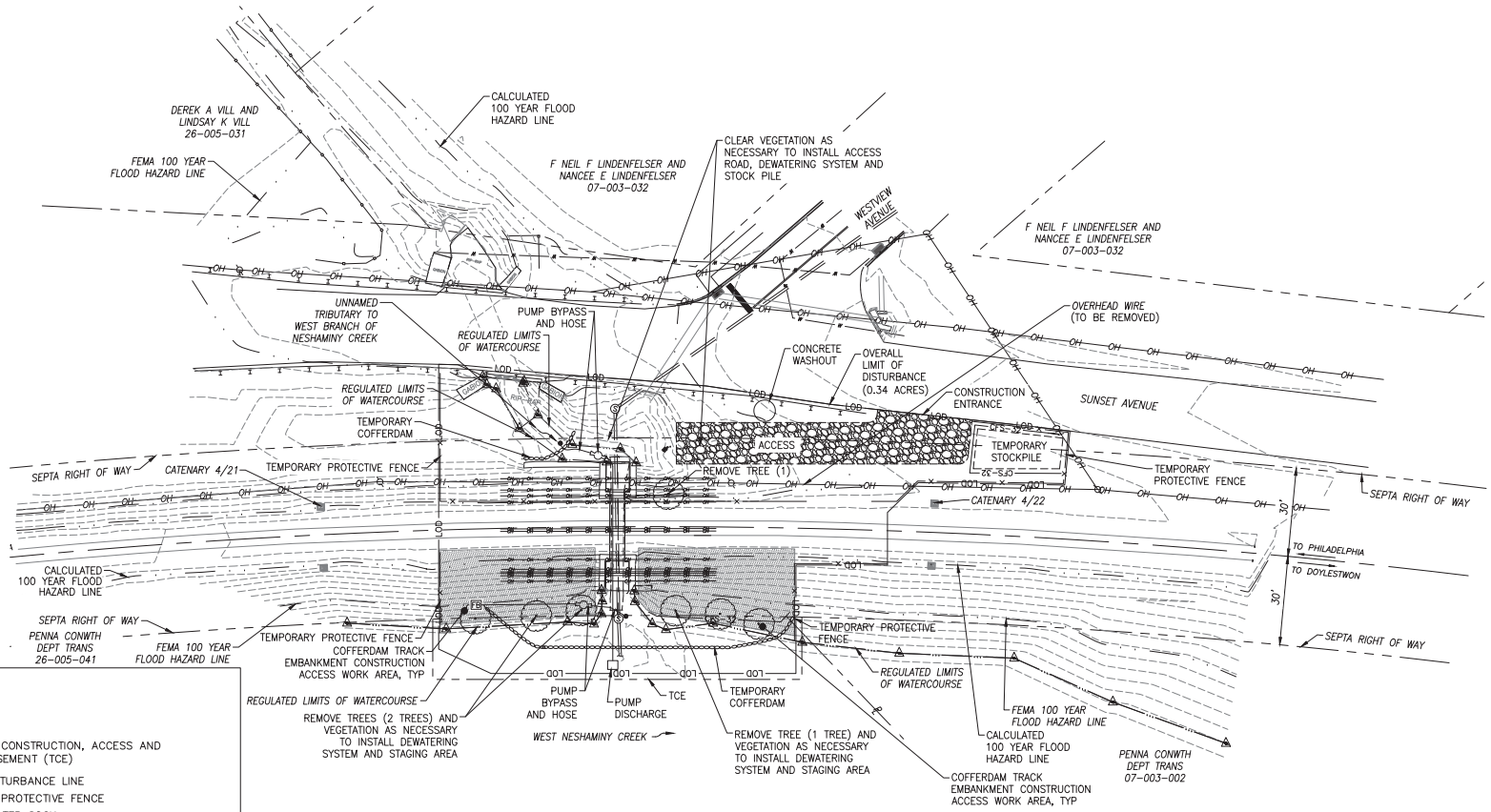
WORK ORDER NO.: GEC21G-05

SHEET NUMBER: **C201**

DWG NO.: C201 OF C203
SHT NO.: 22 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.:
REV. NO.:

DATE PRINTED: 9/19/2023 4:16:21 PM

STATUS



LEGEND

- TEMPORARY CONSTRUCTION, ACCESS AND STAGING EASEMENT (TCE)
- LOD — LIMIT OF DISTURBANCE LINE
- × — TEMPORARY PROTECTIVE FENCE
- CFS-32 — COMPOST FILTER SOCK
- CONSTRUCTION ACCESS ROAD
- COFFERDAM
- DELINEATION FLAG
- REGULATED LIMITS OF WATERCOURSE
- FB — FILTER BAG
- PUMP DISCHARGE
- CONCRETE WASHOUT
- CONSTRUCTION ENTRANCE
- EROSION CONTROL MAT
- INLET PROTECTION
- ROCK FILTER
- AS-DRILLED BORING LOCATION
- TRACK EMBANKMENT CONSTRUCTION ACCESS AREA

SEQUENCE OF CONSTRUCTION:

1. INSTALL ROCK CONSTRUCTION ENTRANCE AND COMPOST FILTER SOCK AS SPECIFIED ON THE E&S PLANS AND DETAILS.
2. CLEARING AND GRUBBING SHALL BE LIMITED TO A MINIMUM NECESSARY TO INSTALL PERIMETER CONTROLS.
3. STRIP TOPSOIL AND STOCKPILE IN AREAS AS INDICATED ON THE E&S PLANS. PLACE ROCK FILTER DOWNSTREAM AS SHOWN ON THE PLANS.
4. STABILIZE DISTURBED AREAS WITH TEMPORARY SEEDING AS REQUIRED AND AS INDICATED ON THE E&S PLANS.
5. INSTALL TEMPORAY COFFERDAM AND PUMP BYPASS AS INDICATED ON THE E&S PLANS.
6. INSTALL COFFERDAM TRACK EMBANKMENT CONSTRUCTION ACCESS WORK AREA.
7. INSTALL STEEL LINER SECTIONS AS SPECIFIED BY THE MANUFACTURER AND AS PER THE STRUCTURAL PLANS. TEMPORARY DISCONNECTION OF THE BYPASS HOSE WILL BE REQUIRED DURING INSTALLATION OF LINER SECTIONS. STREAM FLOW WILL BE TEMPORARILY RETAINED AT THE COFFERDAM DURING LINER INSERTION.
8. REPEAT STEP #6 AS NECESSARY TO COMPLETE LINER INSTALLATION.
9. PERFORM WING WALL AND COMPLETE CULVERT REPAIRS ON THE SOUTH AND NORTH SIDES OF THE BRIDGE AS INDICATED ON THE STRUCTURAL AND E&S PLANS.
10. STABILIZE DISTURBED AREAS AND APPLY MATTING AND SEEDING AS REQUIRED AND AS INDICATED ON THE E&S PLANS.
11. ONCE THE PROJECT HAS ACHIEVED A MINIMUM OF 70% UNIFORMED PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION, REMOVE TEMPORARY EROSION AND SEDIMENTATION BMP'S. ANY AREA DISTURBED DURING THE REMOVAL OF A TEMPORARY BMP SHALL BE IMMEDIATELY STABILIZED WITH SEEDING AND STRAW MULCH.

20 10 0 20
SCALE: 1"=20'

PENNSYLVANIA ONE CALL SYSTEM INC.
925 IRWIN RUN ROAD
WEST MIFFLIN, PENNSYLVANIA
15122-1078

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA! CALL 1-800-242-1776
NON-MEMBERS MUST BE CONTACTED DIRECTLY
PA LAW REQUIRES THREE WORKING DAYS
NOTICE TO UTILITIES BEFORE YOU EXCAVATE
DRILL, BLAST OR DEMOLISH
DESIGN SERIAL # 20221991042, 20221991043

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST., 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF ENGINEER, METRO RAIL
CHIEF ENGINEER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL MATTHEW D. JOHNSTON ENGINEER PE059167-E

Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE UG 4.87

BRIDGE IMPROVEMENT

CIVIL

EROSION & SEDIMENT CONTROL PLAN - PHASE - 2

SCALE: 1" = 20'	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RMC
	CHECKED BY: —

WORK ORDER NO.: GEC21G-05

SHEET NUMBER: **C203**

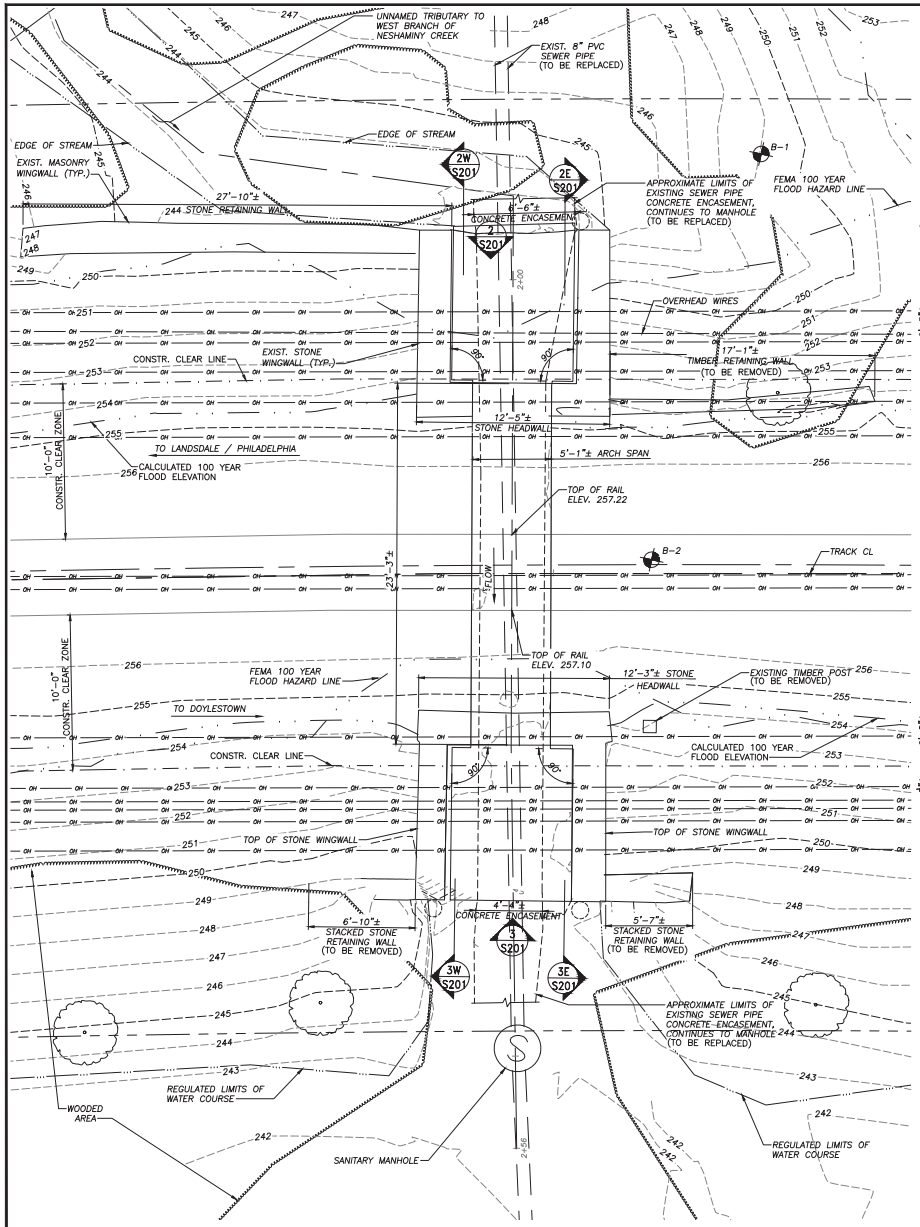
DWG NO.: C203 OF C203
SHT NO.: 24 OF 50
ARCHIVE NO.:

COMPUTER FILE NO.: REV. NO.:

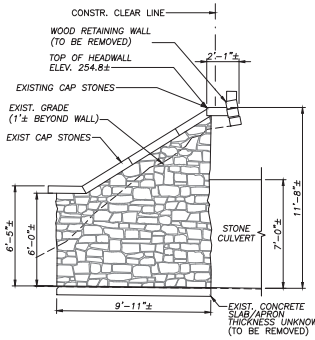
STATUS

DATE PRINTED: 9/20/2023 8:02:32 PM

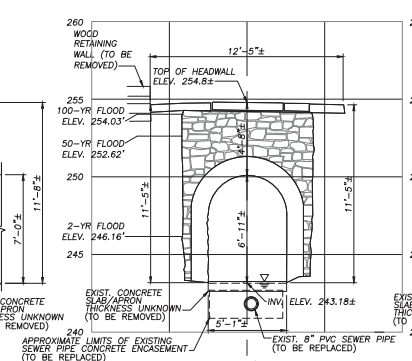
U:\ACCOUNTS\SEPTA\SEPTA21005-GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-C203.DWG



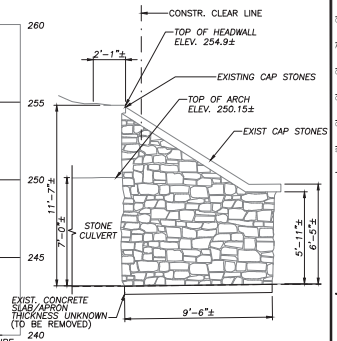
1 S201 EXISTING PLAN
SCALE: 1/4" = 1'-0"



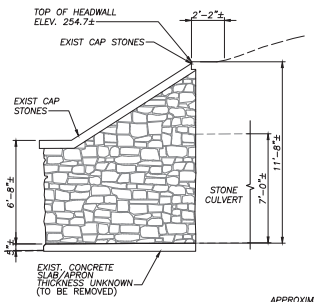
2E S201 EXISTING EAST WINGWALL
SCALE: 1/4" = 1'-0"



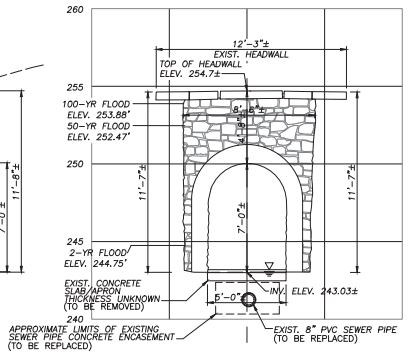
2 S201 EXISTING INLET
SCALE: 1/4" = 1'-0"



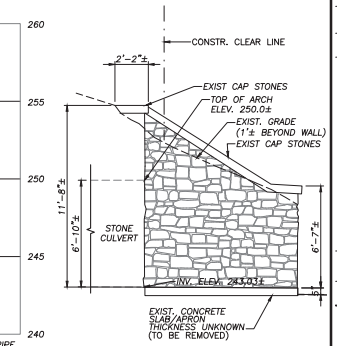
2W S201 EXISTING WEST WINGWALL
SCALE: 1/4" = 1'-0"



3W S201 EXISTING WEST WINGWALL
SCALE: 1/4" = 1'-0"



3 S201 EXISTING OUTLET
SCALE: 1/4" = 1'-0"



3E S201 EXISTING EAST WINGWALL
SCALE: 1/4" = 1'-0"

LEGEND:

- PROPERTY, LINE
- PROPERTY, ADJOINING LINED
- LEGAL RIGHT-OF-WAY
- EASEMENT
- EDGE OF STREAM
- BUILDING
- EDGE OF PAVEMENT
- OH — OH — OVERHEAD UTILITIES
- CONSTR. CLEAR LINE
- FLOOD HAZARD LINE
- STORM SEWER, UNDERGROUND
- BORING LOCATION
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- 101 MINOR CONTOUR
- 100 MAJOR CONTOUR
- ×100.5 SPOT ELEVATION, SOFT SURFACE
- ×100.55 SPOT ELEVATION, HARD SURFACE

NOTES:

1. EXISTING CULVERT FOUNDATION APPROXIMATE, TO BE FIELD VERIFIED DURING CONSTRUCTION.
2. FOR RIGHT-OF-WAY INFORMATION SEE SHEET C201.
3. EXISTING STONE ARCH GEOMETRY SHOWN IS APPROXIMATE. CONTRACTOR TO FIELD VERIFY AND NOTIFY SEPTA OF ANY SIGNIFICANT DIFFERENCES.

GRAPHIC SCALE
0 4' 8'

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST, 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER
No. PE-076-E12
Cassandra L. Khazem

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

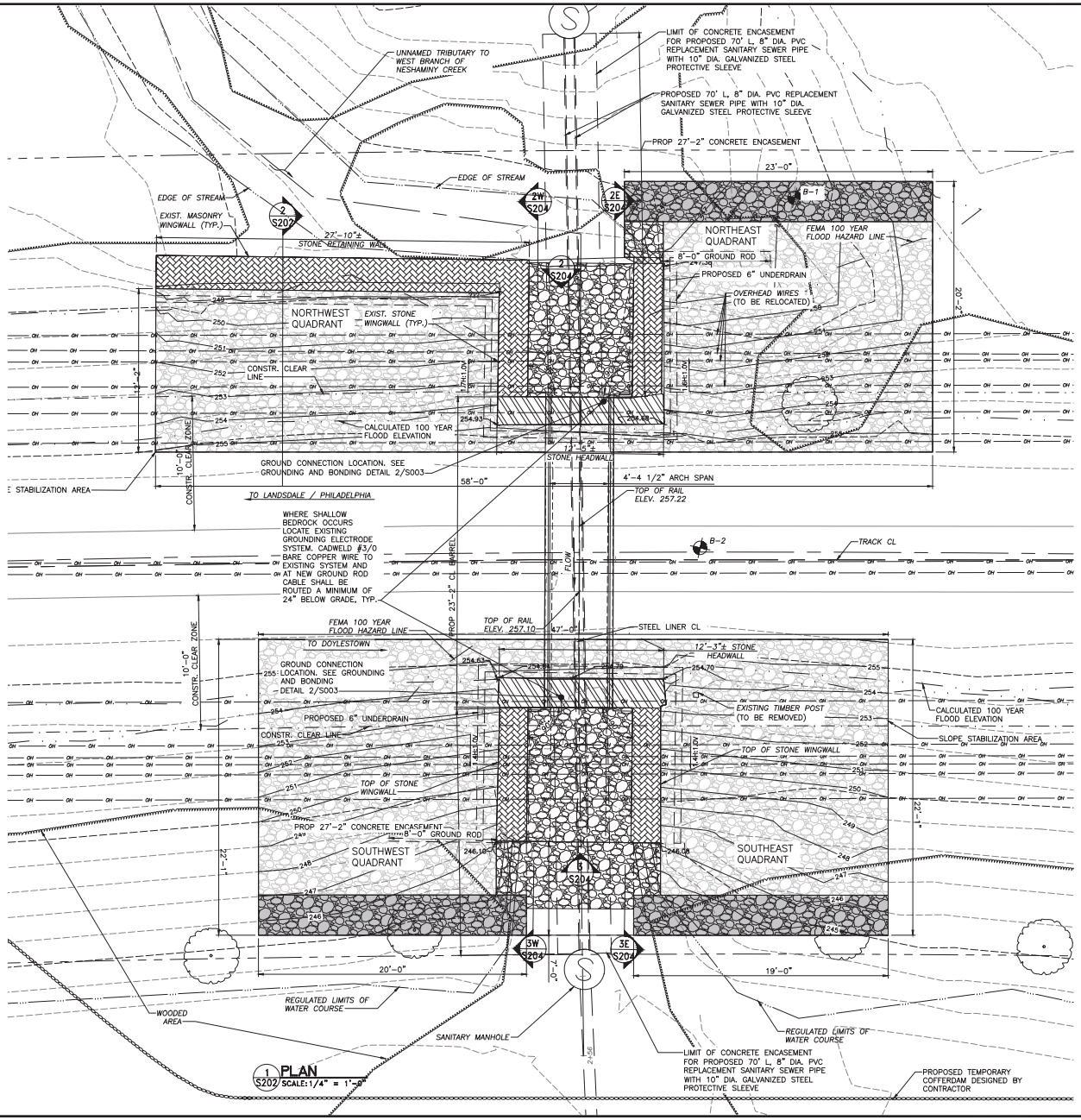
UNDERGRADE BRIDGES - WEST TRENTON LINE UG 44.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2
BRIDGE UG 4.87
BRIDGE IMPROVEMENT
STRUCTURAL
EXISTING PLAN & ELEVATION

SCALE: 1/4" = 1'-0"	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RMC
	CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: S201	
DWG NO.: S201 OF S206	
SHT NO.: 25 OF 50	
ARCHIVE NO.:	
COMPUTER FILE NO.:	REV. NO.:

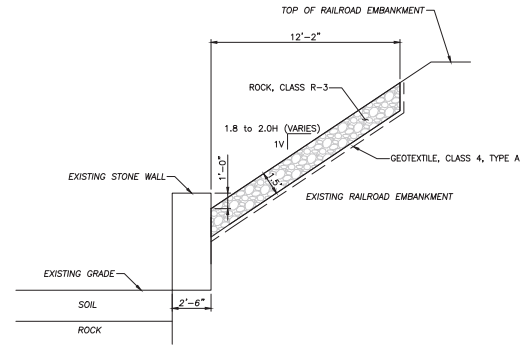
STATUS

U:\ACCOUNTS\SEPTA\SEPTA2100S - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S201.DWG

DATE PRINTED: 9/21/2023 2:48:47 PM



1 S202 **PLAN** SCALE: 1/4" = 1'-0"



2 S202 **UG 4.87 SLOPE STABILIZATION NORTHWEST WINGWALL SECTION** SCALE: 1/4" = 1'-0"

DESIGN STORM	PEAK DISCHARGE (CFS)	EXISTING CULVERT		PROPOSED CULVERT		WATER SURFACE ELEV. DIFFERENCE (FT)
		HEADWATER ELEVATION (FT)	OUTLET VELOCITY (FT/S)	HEADWATER ELEVATION (FT)	OUTLET VELOCITY (FT/S)	
50-YEAR	217	252.62	6.89	252.93	8.00	+0.31
100-YEAR	269	254.03	8.54	254.51	9.91	+0.48

LEGEND

- SEPTA RIGHT OF WAY
- LOC — LIMIT OF CONSTRUCTION LINES
- EDGE OF STREAM
- OE — OVERHEAD ELECTRIC LINES
- LIMITS OF SLOPE STABILIZATION
- EXISTING STONE MASONRY CONSTRUCTION, CLEAN AND REPOINT
- GROUTED ROCK, CLASS R-7
- SLOPE STABILIZATION – ROCK, CLASS R-3
- SLOPE STABILIZATION – GROUTED ROCK CLASS R-3
- RAISE HEADWALL – STONE MASONRY OR FORMLINED CONCRETE RECONSTRUCTION
- AS-DRILLED BORING LOCATION

NOTES:

1. FOR RIGHT-OF-WAY INFORMATION SEE SHEET C201.
2. EXISTING CULVERT FOUNDATION APPROXIMATE, TO BE FIELD VERIFIED DURING CONSTRUCTION.
3. FOR STREAM IMPROVEMENTS SEE SHEETS S203 & S204.
4. FOR SLOPE STABILIZATION GEOTECHNICAL NOTES SEE GENERAL NOTES SHEET S001, NOTE 26.
5. FOR TYPICAL HEADWALL DRAINAGE DETAIL SEE S003.
6. THE CONTRACTOR SHALL COORDINATE WITH SEPTA FOR ANY NECESSARY RELOCATION OF SEPTA'S OVERHEAD C&S WIRES PRIOR TO COMMENCEMENT OF CONSTRUCTION ON THE NORTHERN INLET SIDE OF THE STRUCTURE.
7. ASSUME EXISTING SOILS ARE POTENTIALLY CORROSIVE.
8. FOR AS-DRILLED BORING LOCATIONS, REFER TO GEOTECHNICAL REPORTS.

GRAPHIC SCALE

0 4' 8'

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EMAC DIVISION
1234 MARKET ST, 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL CASSANDRA L. KHAZEM LICENSE No. PE082033

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

U:\ACCOUNTS\SEPTA\SEPTA2100S - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S202.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 44.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE UG 4.87

BRIDGE IMPROVEMENT

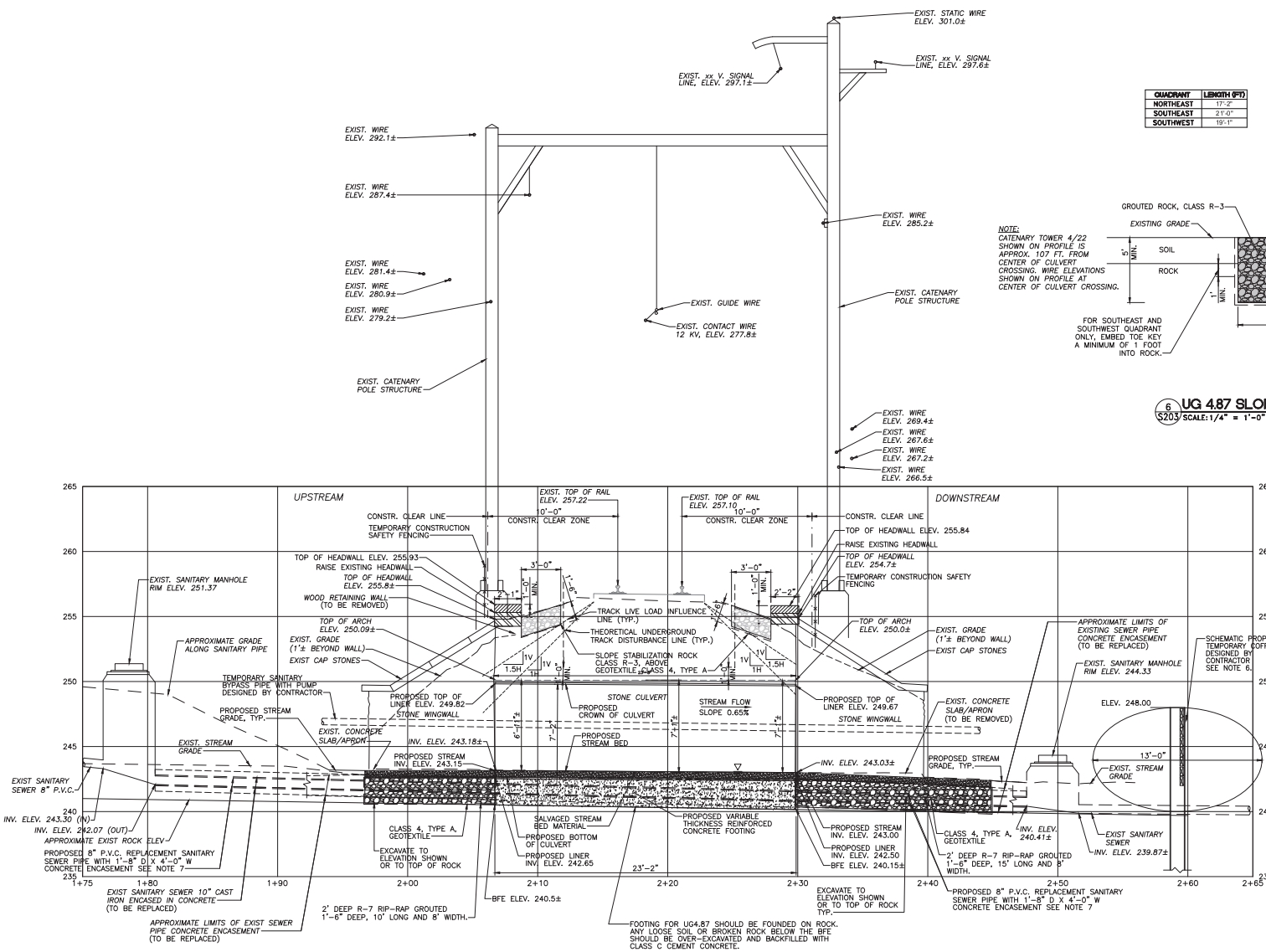
STRUCTURAL

PROPOSED PLAN

SCALE: 1/4" = 1'-0"	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RME / CHECKED BY: JDV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: **S202**	
DWG NO: S202 OF S206	
SHT NO: 26 OF 50	
ARCHIVE NO:	
COMPUTER FILE NO:	REV. NO.

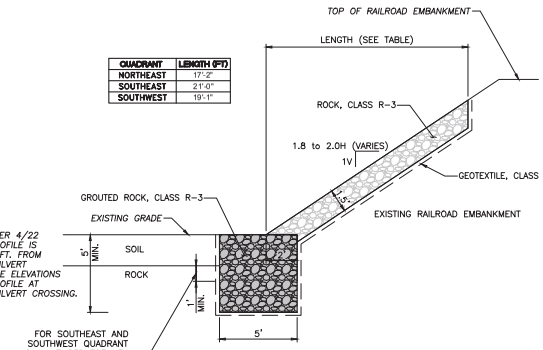
DATE PRINTED: 9/25/2023 9:47:04 AM

STATUS



1 S203 **PROFILE**
SCALE: 1/4" = 1'-0"

QUADRANT	LENGTH (FT)
NORTHEAST	17'-2"
SOUTHEAST	21'-0"
SOUTHWEST	19'-1"



NOTE:
CATENARY TOWER 4/22 SHOWN ON PROFILE IS APPROX. 107 FT. FROM CENTER OF CULVERT CROSSING. WIRE ELEVATIONS SHOWN ON PROFILE AT CENTER OF CULVERT CROSSING.

6 S203 **UG 4.87 SLOPE STABILIZATION TYPICAL SECTION**
SCALE: 1/4" = 1'-0"

NOTES:

1. EXISTING CULVERT FOUNDATION APPROXIMATE, TO BE FIELD VERIFIED DURING CONSTRUCTION.
2. FOR TYPICAL HEADWALL DRAINAGE DETAIL SEE S003.
3. TOP OF TEMPORARY EXCAVATION SUPPORT SHALL BE CUT MINIMUM 1'-6" BELOW GRADE AFTER CONSTRUCTION IN PERMANENT CONDITION.
4. SEE SHEET S001, GENERAL NOTES FOR MINIMUM CLEARANCES CONTRACTOR MUST MAINTAIN TO OVERHEAD WIRES FOR PERSONNEL, EQUIPMENT, AND MATERIALS.
5. REFER TO SHEET S202 FOR ADDITIONAL NOTES ON SLOPE STABILIZATION.
6. COFFERDAM DESIGNED BY CONTRACTOR SHALL BE ANCHORED COFFERDAM THAT CAN WITHSTAND 10 YEAR DESIGN STORM WITHOUT BEING WASHED AWAY OR IS TEMPORARILY REMOVED BY CONTRACTOR. ACCEPTABLE COFFERDAM TYPES INCLUDE: CONSTRUCTION BARRIER/SANDBAGS, AQUA DAM, OR DRILLED PILE AND LAGGING LOCATED WITHIN LOD AND IN ACCORDANCE WITH THE PROJECT PERMIT CONDITIONS. SEPTA WILL NOT PAY FOR REPLACEMENT OF ANY COFFERDAM THAT GETS WASHED AWAY IN STORM EVENTS.
7. CONTRACTOR SHALL INSTALL 10" DIAMETER GALVANIZED STEEL PROTECTIVE SLEEVE AROUND 8" PVC PIPE WITHIN PROPOSED CULVERT FOOTING AND CONCRETE ENCASEMENT.

LEGEND

- STONE (SEE CALLOUTS FOR SIZE)
- SLOPE STABILIZATION – GROUTED ROCK CLASS R-3
- SLOPE STABILIZATION – ROCK CLASS R-3
- SALVAGED STREAM BED MATERIAL
- RAISE HEADWALL – STONE MASONRY OR FORMLINED CONCRETE RECONSTRUCTION
- DISMANTLE AND RESET EXIST. STONE MASONRY WALL CAPSTONE

GRAPHIC SCALE

0 4' 8'

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST, 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
NO. PE-071151
Cassandra L. Khazem

Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

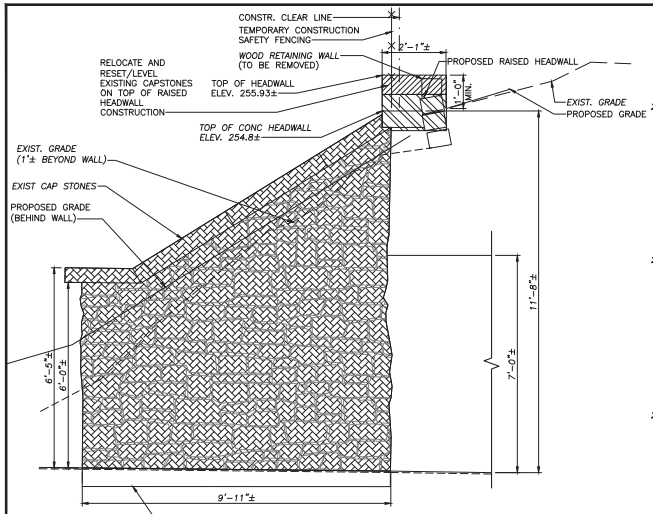
BRIDGE UG 4.87
BRIDGE IMPROVEMENT
STRUCTURAL
GENERAL PROFILE

SCALE: 1/4" = 1'-0" | SCALE FACTOR: 1:1
DATE: 09/19/2023 | DRAWN BY: RMC | CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: **S203**
DWG NO.: S203 OF S206
SHT NO.: 27 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.: | REV. NO.:

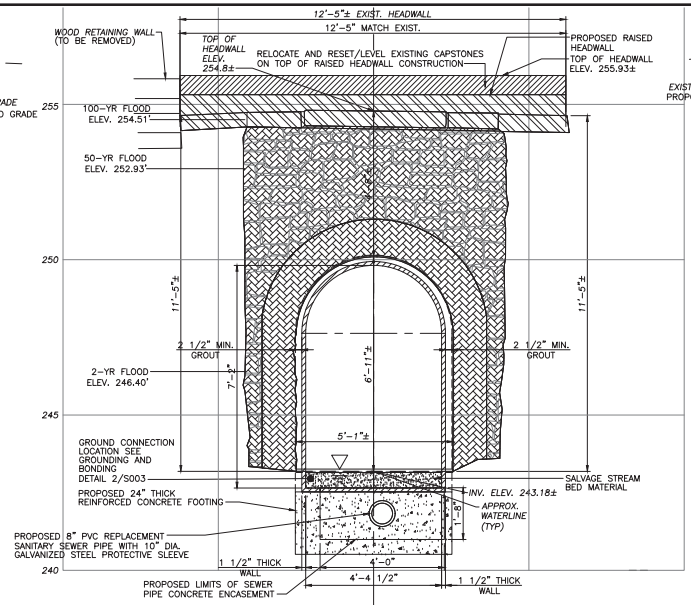
STATUS

DATE PRINTED: 9/21/2023 2:49:25 PM

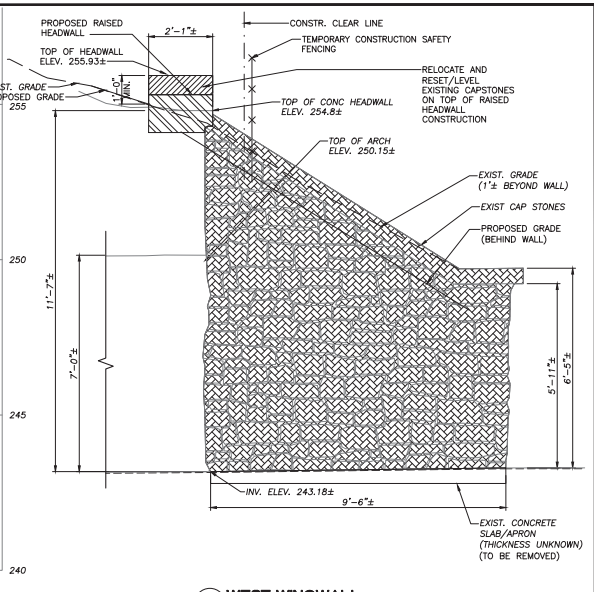
U:\ACCOUNTS\SEPTA\SEPTA2\1005-GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S203.DWG



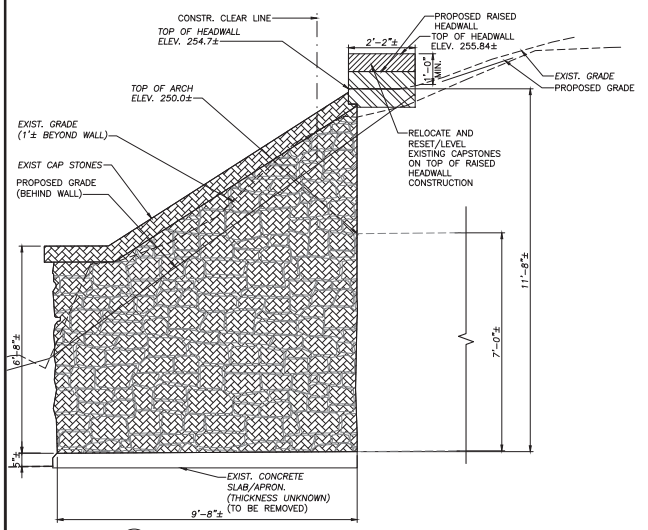
2E S204 EAST WINGWALL
SCALE: 1/2" = 1'-0"



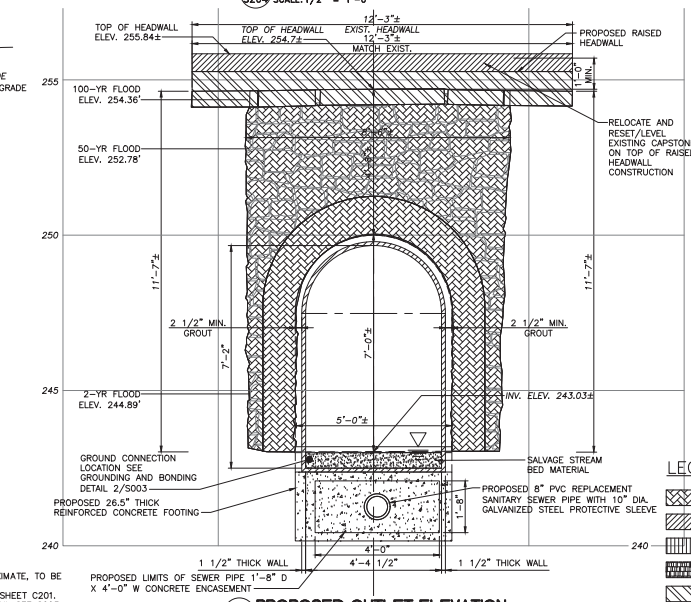
2 S204 PROPOSED INLET ELEVATION
SCALE: 1/2" = 1'-0"



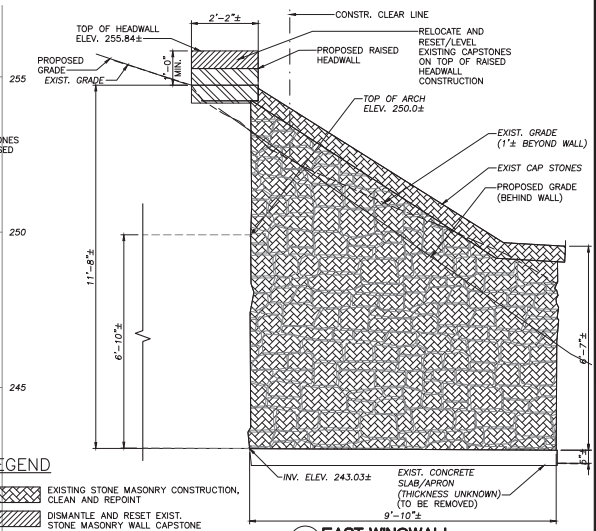
2W S204 WEST WINGWALL
SCALE: 1/2" = 1'-0"



3W S204 WEST WINGWALL
SCALE: 1/2" = 1'-0"



3 S204 PROPOSED OUTLET ELEVATION
SCALE: 1/2" = 1'-0"



3E S204 EAST WINGWALL
SCALE: 1/2" = 1'-0"

NOTES:

1. EXISTING CULVERT FOUNDATION APPROXIMATE, TO BE FIELD VERIFIED DURING CONSTRUCTION.
2. FOR RIGHT-OF-WAY INFORMATION SEE SHEET C201.
3. FOR TYPICAL HEADWALL DRAINAGE DETAIL SEE S003.
4. FOOTING FOR UG4.87 SHOULD BE FOUNDED ON ROCK. ANY LOOSE SOIL OR BROKEN ROCK BELOW THE BFE SHOULD BE OVER-EXCAVATED AND BACKFILLED WITH CLASS C CEMENT CONCRETE.

LEGEND

- EXISTING STONE MASONRY CONSTRUCTION, CLEAN AND REPOINT
- DISMANTLE AND RESET EXIST. STONE MASONRY WALL CAPSTONE
- REPLACE MISSING STONES
- CUT, GRIND OR RESET EXISTING STONE MASONRY SURFACE TO MATCH EXISTING FACE OF BARREL WALL
- RAISE HEADWALL – STONE MASONRY OR FORMLINED CONCRETE RECONSTRUCTION
- STONE
- SALVAGED STREAM BED MATERIAL

GRAPHIC SCALE
0 2' 4'

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EMAC DIVISION
1234 MARKET ST, 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER
No. PE075151

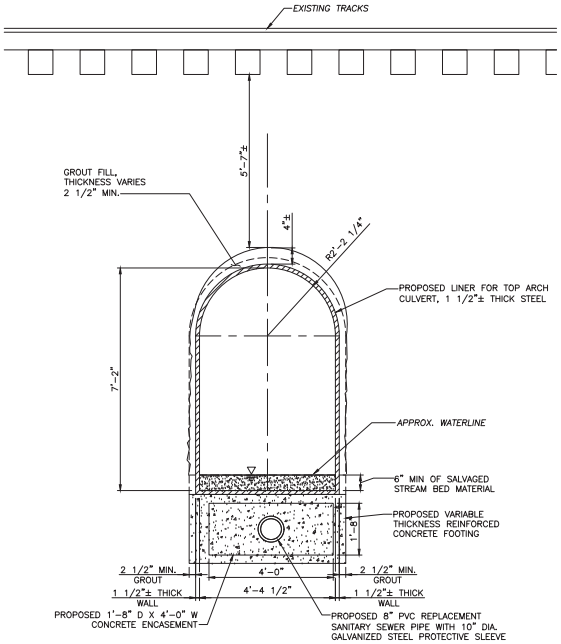
Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2
BRIDGE UG 4.87
BRIDGE IMPROVEMENT
STRUCTURAL
REPAIR ELEVATIONS & NOTES

SCALE: 1/2" = 1'-0" | SCALE FACTOR: 1:1
DATE: 09/19/2023 | DRAWN BY: RMC | CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05
SHEET NUMBER: **S204**
DWG NO: S204 OF S206
SHT NO: 28 OF 50
ARCHIVE NO.:
COMPUTER FILE NO.: | REV. NO.:

U:\ACCOUNTS\SEPTA\SEPTA2100S - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S204.DWG
DATE PRINTED: 9/21/2023 2:49:42 PM
STATUS



1 S205 **TYPICAL SECTION**
SCALE: 1/2" = 1'-0"

NOTES:

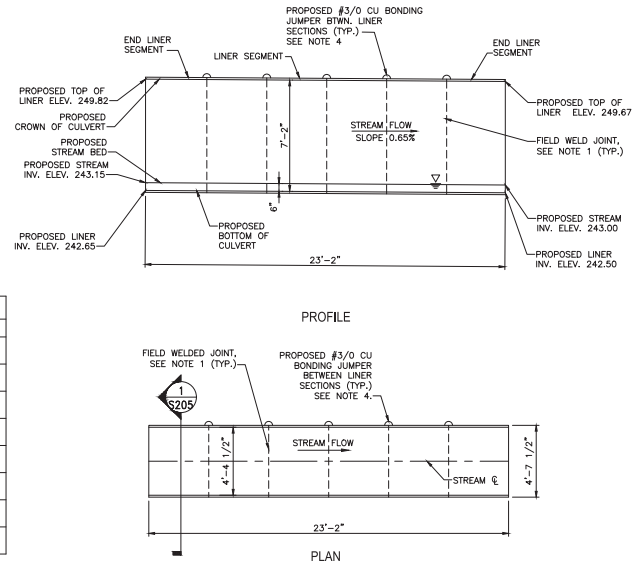
1. STEEL LINER SEGMENT COMPONENTS SHALL BE FABRICATED IN SHOP USING FULL JOINT PENETRATION WELDS. STEEL LINER SEGMENT LOCATIONS TO BE DETERMINED BY CONTRACTORS MEANS AND METHODS AND SHALL BE SUBMITTED TO SEPTA FOR APPROVAL. STEEL LINER SEGMENTS TO BE DELIVERED TO SITE AND FIELD WELDED TO ADJACENT LINER SEGMENT USING FULL PENETRATION WELD AROUND PERIMETER. CONTRACTOR SHALL SUBMIT DETAILED WELD PROCEDURES IN ACCORDANCE WITH AWS D1.1 AND AWS D1.5 FOR APPROVAL BY SEPTA.
2. LOCATION AND SIZE OF PROTRUDING STONES VARIES ALONG ARCH BARREL LENGTH. THE ESTIMATED QUANTITY OF GRINDING/CUTTING PER LF, REPRESENTS THE LENGTH ALONG THE ARCH BARREL OF VARIABLE SIZE STONES REQUIRING GRINDING/CUTTING/RESETTING.
3. COFFERDAM DESIGNED BY CONTRACTOR – SHALL BE ANCHORED COFFERDAM DESIGNED TO WITHSTAND 10 YEAR DESIGN STORM WITHOUT BEING WASHED AWAY OR IS TEMPORARILY REMOVED BY CONTRACTOR BEFORE STORM. ACCEPTABLE COFFERDAM TYPES INCLUDES: CONSTRUCTION BARRIER/SAND BAGS (SEE DWG. C011), AQUA DAM, OR DRILLED PILE AND LAGGING, LOCATED WITHIN LOD AND IN ACCORDANCE WITH THE PROJECT PERMIT CONDITIONS. SEPTA WILL NOT PAY FOR REPLACEMENT OF ANY COFFERDAM OR CONSTRUCTION EQUIPMENT THAT GETS WASHED AWAY IN STORM EVENTS.
4. PROVIDE AT LEAST TWO BONDING JUMPERS ALONG EACH SEAM. CONNECT TO EACH SECTION OF LINER USING TWO HOLE LUG TERMINALS.

LEGEND

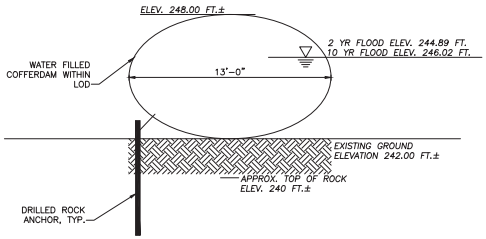
- STONE
- CUT, GRIND OR RESET EXISTING STONE MASONRY SURFACE TO MATCH EXISTING FACE OF BARREL WALL, SEE NOTE 2
- SALVAGED STREAMBED MATERIAL
- LEAN MIX CONCRETE OR FLOWABLE FILL

REPAIR SCHEDULE

ITEM	DESCRIPTION	UNIT	ESTIMATED QTY.
1	MASONRY CLEANING (SECTION 049000 – STONE MASONRY RESTORATION AND CLEANING)	S.F.	1,060
2	MASONRY REPOINTING (SECTION 049000 – STONE MASONRY RESTORATION AND CLEANING)	L.F.	2,631
3	RESET LOOSE AND/OR BULGED STONE (SECTION 049030 – DISMANTLING AND RESETTING MASONRY)	S.F.	10
4	GRINDING / CUTTING ABUTMENT STONES (SECTION 056300 – STEEL LINER)	L.F.	126
5	INSTALL NEW STONE (SECTION 049030 – DISMANTLING AND RESETTING MASONRY)	S.F.	27
6	GROUT BETWEEN LINER AND STONE MASONRY ARCH (SECTION 056300 – STEEL LINER)	C.F.	138
7	RESET EXISTING MASONRY WALL CAPSTONE (SECTION 049030 – DISMANTLING AND RESETTING MASONRY)	L.F.	30
8	MASONRY PRESSURE GROUTING (SECTION 049000–STONE MASONRY RESTORATION AND CLEANING)	L.F.	54

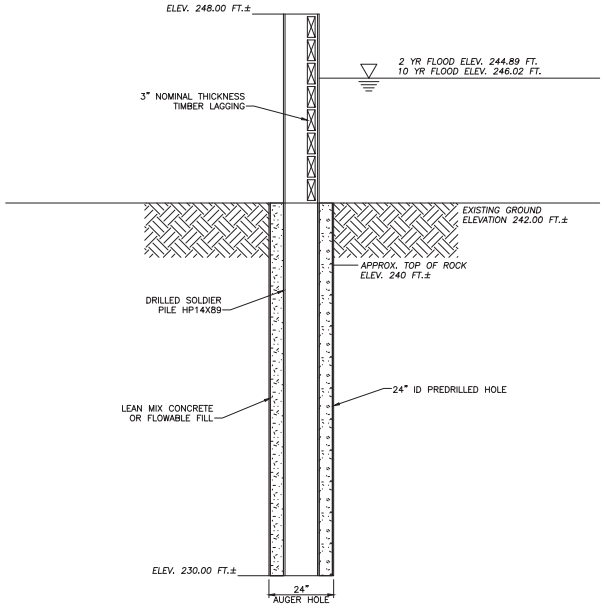


2 S205 **LINER DETAIL**
SCALE: 1/4" = 1'-0"



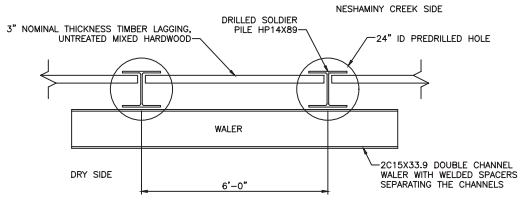
3 S205 **TYPICAL COFFERDAM SECTION AT UG4.87 WATER FILLED COFFERDAM OPTION**
SCALE: NONE

TO BE DESIGNED BY CONTRACTOR



4 S205 **TYPICAL COFFERDAM SECTION AT UG4.87 DRILLED PILE WITH LAGGING OPTION**
SCALE: NONE

TO BE DESIGNED BY CONTRACTOR



5 S205 **TYPICAL COFFERDAM PLAN AT UG4.87 DRILLED PILE WITH LAGGING OPTION**
SCALE: NONE

TO BE DESIGNED BY CONTRACTOR

GRAPHIC SCALE

0 2' 4'

0 4' 8'

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST., 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER
ASSISTANT GENERAL MANAGER, SYSTEM SAFETY
CHIEF OFFICER, METRO RAIL
CHIEF OFFICER, BUS OPERATIONS
CHIEF ENGINEER, BRIDGES AND BUILDINGS
SR. PROGRAM MANAGER, BRIDGES AND BUILDINGS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER IN PERMITS

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T 215.222.3000 • F 215.222.2888

REV	DATE	DESCRIPTION	BY	CKD	APD

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S205.DWG

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 44.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE UG 4.87

BRIDGE IMPROVEMENT

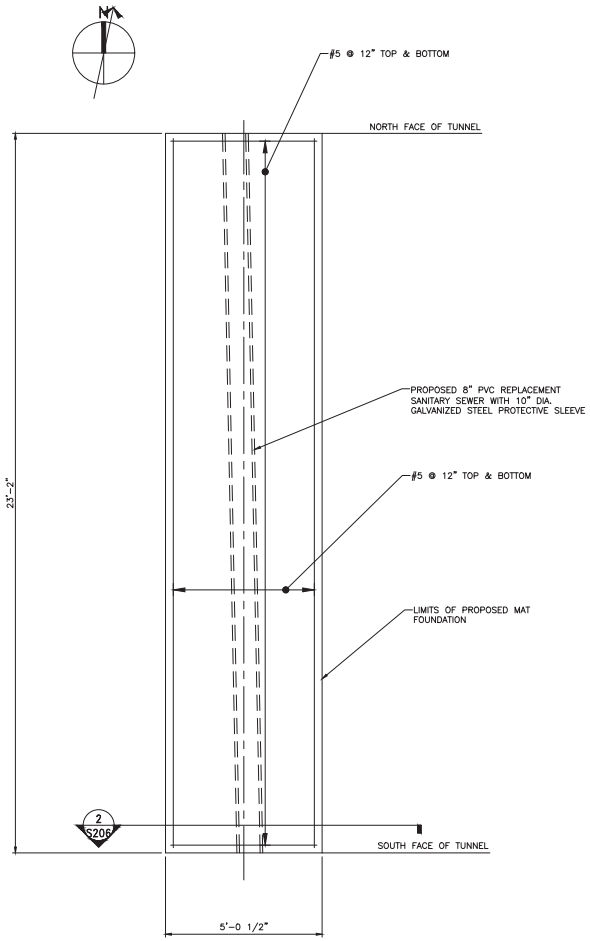
STRUCTURAL

DETAILS & TYPICAL SECTION

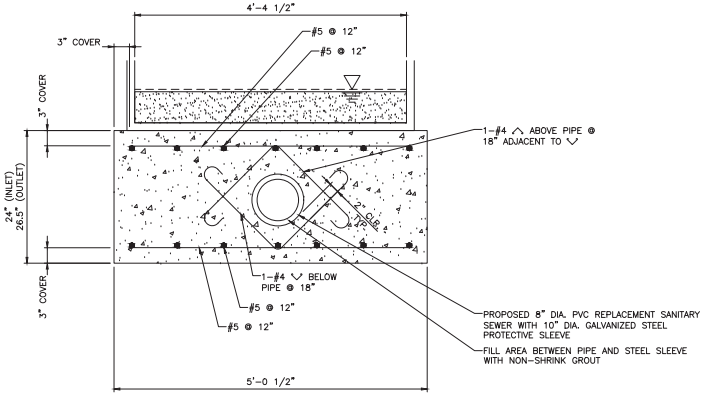
SCALE: AS NOTED	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: RME / CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: **S205**	
DWG NO.: S205 OF S206	
SHT NO.: 29 OF 50	
ARCHIVE NO.:	
COMPUTER FILE NO.:	REV. NO.:

STATUS

DATE PRINTED: 9/21/2023 2:49:51 PM



1 S206 **MAT FOUNDATION REINFORCEMENT PLAN**
SCALE: 1/2" = 1'-0"



2 S206 **MAT FOUNDATION ELEVATION**
SCALE: 1" = 1'-0"

LEGEND

STONE

SALVAGED STREAMBED MATERIAL

GRAPHIC SCALE

0 1' 2'

0 2' 4'

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
EM&C DIVISION
1234 MARKET ST., 15TH FL.
PHILADELPHIA, PA 19107

CHIEF OPERATING OFFICER:

ASSISTANT GENERAL MANAGER, SYSTEM SAFETY:

CHIEF OFFICER, METRO RAIL:

CHIEF OFFICER, BUS OPERATIONS:

CHIEF ENGINEER, BRIDGES AND BUILDINGS:

SR., PROGRAM MANAGER, BRIDGES AND BUILDINGS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CASSANDRA L. KHAZEM
ENGINEER
No. 076157

Pennoni
Pennoni Associates Inc.
Engineers • Surveyors • Planners
Landscape Architects
1900 Market Street, Suite 300
Philadelphia, PA 19103
T: 215.222.3000 • F: 215.222.2688

REV	DATE	DESCRIPTION	BY	CKD	APD

UNDERGRADE BRIDGES - WEST TRENTON LINE UG 14.20 AND LANSDALE LINE UG 4.87 & UG 17.31 - BID PACKAGE #2

BRIDGE UG 4.87

BRIDGE IMPROVEMENT

STRUCTURAL

DETAILS - FOUNDATION

SCALE: AS NOTED	SCALE FACTOR: 1:1
DATE: 09/19/2023	DRAWN BY: CPG / CHECKED BY: JLV
WORK ORDER NO.: GEC21G-05	
SHEET NUMBER: **S206**	
DWG NO.: S206 OF S206	
SHT NO.: 30 OF 50	
ARCHIVE NO.:	
COMPUTER FILE NO.:	REV. NO.:

STATUS

U:\ACCOUNTS\SEPTA\SEPTA21005 - GEC21G-05 RRD STONE ARCH BRIDGES PH 2\DESIGN_SHEETS\GEC21G-05-S206.DWG

DATE PRINTED: 9/21/2023 2:50:05 PM