

PUBLIC NOTICE

REQUEST FOR PERMISSION TO ALTER A U.S. ARMY CORPS OF ENGINEERS PROJECT UNDER SECTION 408

TITLE: UGI Utilities, Inc. – Natural Gas Pipeline Replacement at the Lehigh River Flood Control Federal Civil Works Project at Bethlehem, Northampton County, Pennsylvania

PUBLIC NOTICE IDENTIFICATION NUMBER: NAP-2023-408-03

PUBLIC NOTICE COMMENT PERIOD:

Begins: **22 September 2023**

Expires: **22 October 2023**

Interested parties are hereby notified that an application has been received for a Department of the Army Section 408 permission for certain work at or near a federal project of the United States, as described below and shown on attached figures. Written comments are being solicited from anyone having an interest in the requested alteration. Comments will become part of the U.S. Army Corps of Engineers' (USACE's) administrative record and will be considered in determining whether to approve the request. Comments supporting, opposing, or identifying concerns that should be considered by the USACE in its decision process are all welcome.

This public notice is not a paid advertisement and is for public information only. Issuance of this notice does not imply USACE endorsement of the project as described.

1. REQUESTOR: In compliance with 33 USC 408 (Section 14 of the Rivers and Harbors Act of 1899; hereinafter Section 408), UGI Utilities, Inc. has requested permission to replace an existing cast iron natural gas pipeline with a new steel natural gas pipeline, with crossing of the Lehigh River and the Bethlehem levee portion of the Lehigh River Flood Control Federal Civil Works Project.

2. LOCATION: The proposed project will cross the Bethlehem levee, located along the southern bank of the Lehigh River in the City of Bethlehem, Northampton County, Pennsylvania, at approximate coordinates 40.614672, -75.381882.

3. LOCATION MAP(S)/DRAWING(S): Please see attached Project Plan Sheets 1 through 17.

4. REQUESTER'S PROPOSED ACTION: The proposed action entails replacement of one (1) existing 12.0-inch diameter cast iron natural gas pipeline with one (1) new 16.0-inch diameter steel natural gas pipeline. The stated purpose of the proposed project is to support the Bethlehem Medium Pressure natural gas distribution system. The proposed 16.0-inch

diameter steel natural gas pipeline will cross the Lehigh River and the Bethlehem Levee portion of the Lehigh River Flood Control Federal Civil Works Project. Due to design constraints and geologic risk factors associated with a horizontal directional drilling option at this location, the proposed crossing will be open cut/trenched using staged cofferdams. An existing, vacant upland parking lot area on the north side of the Lehigh River and an existing, paved and gravel upland area on the south side of the Lehigh River are proposed to be utilized for equipment staging and vehicle parking. Once the new 16.0-inch diameter steel natural gas main has been installed and tied into the natural gas distribution system, the existing 12.0-inch diameter cast iron natural gas pipeline will be abandoned-in-place. All work areas, to include the bed of the Lehigh River and the Bethlehem levee portion of the Lehigh River Flood Control Civil Works Project, are proposed to be restored to pre-construction elevations and conditions.

5. REGULATORY AUTHORITY: This request will be reviewed according to the provisions of Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408). A requestor has the responsibility to acquire all other permissions or authorizations required by federal, state, and local laws or regulations, including any required permits from the USACE Regulatory Program under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), Section 404 of the Clean Water Act (33 USC Section 1344) and/or Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 USC 1413). Any Section 10/404/103 permit decision associated with the proposed alteration is separate from and will not be included in the Section 408 permission decision. An approval under Section 408 does not grant any property rights or exclusive privileges nor does it authorize any injury to the property or rights of others.

6. ENVIRONMENTAL COMPLIANCE: A decision on a Section 408 request is a federal action, and therefore subject to the National Environmental Policy Act (NEPA) and other environmental compliance requirements. While ensuring compliance is the responsibility of USACE, the requester is providing all information that the Philadelphia District identifies as necessary to satisfy all applicable federal laws, executive orders, regulations, policies, and ordinances. Based on information provided by the applicant to date, current Corps regulations governing NEPA implementation, and/or the contents of existing NEPA documentation if available, it is likely that the proposed action will be determined to be categorically excluded from the need to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS). This determination will be finalized following completion of agency coordination and prior to issuance of the Section 408 Permission Decision.

7. EVALUATION: As part of its evaluation, USACE will first make a determination that the submittal from the requestor is complete. The Philadelphia District is working closely with the requestor to ensure that all required technical plans, maps, drawings, and specifications are provided and are complete. Once the package is complete, a District-led review will be conducted to determine, in accordance with Engineering Circular (EC) 1165-2-216, whether the proposed alteration will impair the usefulness of the USACE Project or be injurious to the public interest, as follows:

- A. *Impair the Usefulness of the Project Determination.* The Philadelphia District's Section 408 review team will determine if the proposed alteration will limit the ability

of the federally authorized project to function as authorized, or will compromise or change any authorized project conditions, purposes or outputs.

- B. *Injurious to the Public Interest Determination.* Proposed alterations will be reviewed to determine the probable impacts, including cumulative impacts, on the public interest. Evaluation of the probable impacts that the proposed alteration to the USACE project may have on the public interest requires a careful weighing of all those factors that are relevant in each particular case. Factors that may be relevant to the public interest depend upon the type of USACE project being altered and may include, but are not limited to, such things as conservation, economic development, historic properties, cultural resources, environmental impacts, water supply, water quality, flood hazards, floodplains, residual risk, induced damages, navigation, shore erosion or accretion, and recreation. The decision whether to approve an alteration will be determined by the consideration of whether benefits are commensurate with risks. If the potential detriments are found to outweigh the potential benefits, then it may be determined that the proposed alteration is injurious to the public interest.

8. SOLICITATION OF COMMENTS: The USACE is soliciting comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of the proposed activity. Any comments received will be considered by USACE to determine whether to issue, modify, condition, or deny a permission for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are considered in making a final determination whether the proposed action will be categorically excluded from the need to prepare further NEPA documentation. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

- A. It should be noted that materials submitted as part of the Section 408 request become part of the public record and are thus available to the general public under the procedures of the Freedom of Information Act (FOIA). Individuals may submit a written request to the Philadelphia District Corps of Engineers, Office of Counsel to obtain copies of said materials under the FOIA.
- B. It is presumed that all parties viewing this notice will wish to respond to this public notice; therefore, a lack of response will be interpreted as meaning that there is no objection to the project as described.

9. COMMENT SUBMISSION AND ADDITIONAL INFORMATION: Written comments on the described work should reference the USACE Public Notice Identification Number found on the first page of this notice. Comments must reach this office no later than the stated expiration date of the Public Notice to become part of the record and be considered in the decision. Comments or requests for additional information should be emailed or mailed to the following address:

Email: JuanCarlos.Corona@usace.army.mil

Mailing Address:

U.S. Army Corps of Engineers

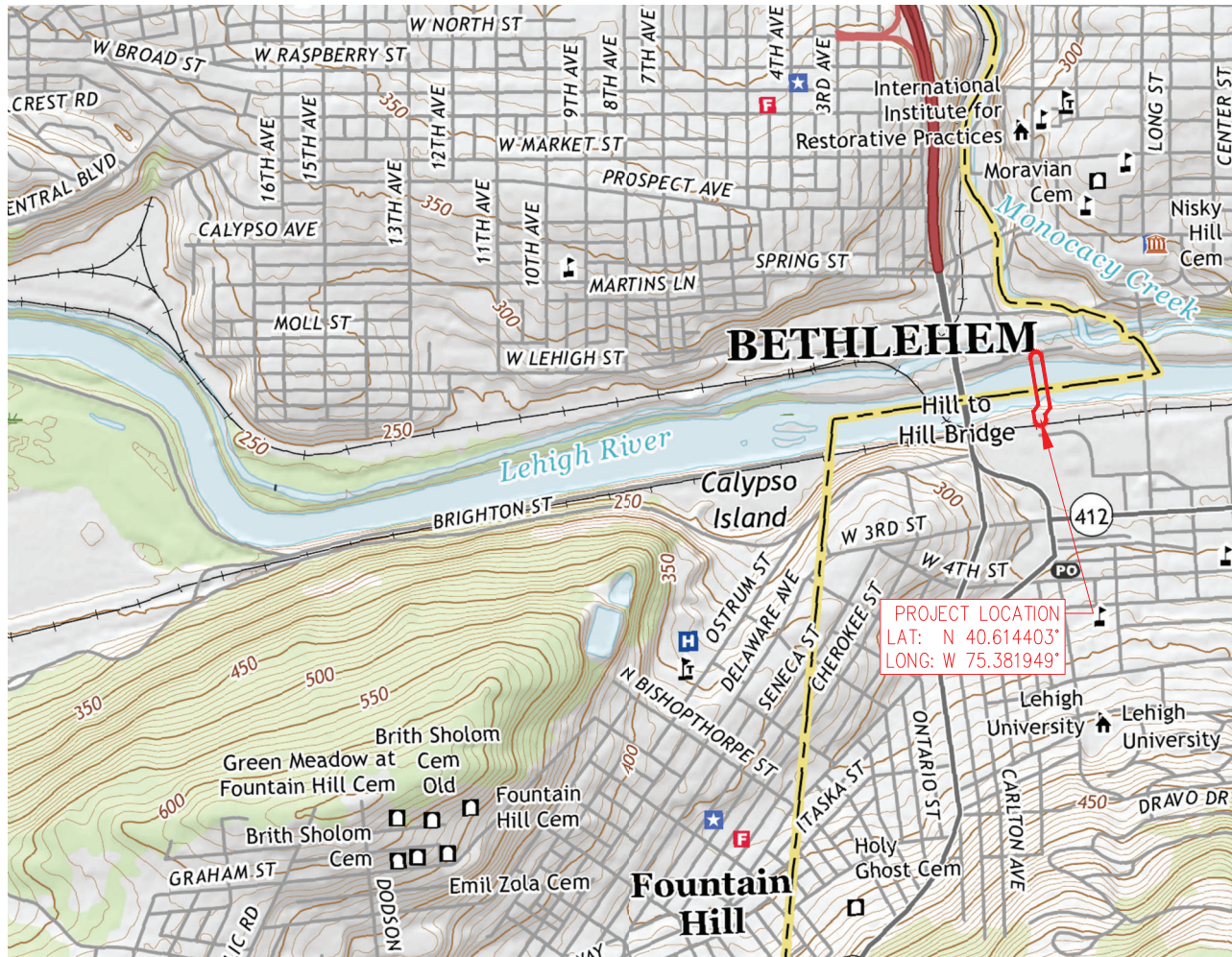
Philadelphia District

ATTN: Juan Carlos Corona

7th Floor

100 Penn Square East

Philadelphia, PA 19107-3390



USGS LOCATION MAP (1"=500')
[ALLENTOWN EAST, PA 2019]

ISSUED FOR PERMIT LEHIGH RIVER CROSSING GAS MAIN REPLACEMENT CITY OF BETHLEHEM NORTHAMPTON & LEHIGH COUNTIES, PA UGI UTILITIES, INC. CONSTRUCTION DRAWINGS

THIS PROJECT MEETS THE DEFINITION OF A COMPLEX PROJECT
UNDER THE PENNSYLVANIA ONE CALL ACT.

CONSTRUCTION SUMMARY:

1. SYSTEM PRESSURES:
 - 1.1. MAOP: 60 PSIG
 - 1.2. MOP: 60 PSIG
 - 1.3. LOP: 20 PSIG
2. INSTALL APPROXIMATELY 615 LF OF 16" STEEL (MP) GAS MAIN VIA DIRECT BURIAL.
3. TIE-OVER (O) EXISTING (MP) GAS SERVICES.
4. RENEW (O) EXISTING (MP) GAS SERVICES.
5. RETIRE IN PLACE (O) EXISTING (MP) GAS SERVICES.
6. RETIRE IN PLACE APPROXIMATELY 606 LF OF EXISTING 12" CAST IRON (MP) GAS MAIN.

TECHNICAL REVIEW LOG

DEPARTMENT	TITLE	SIGN OFF
ENGINEERING	ENGINEER/DESIGNER	
	MANAGER AREA ENGINEERING	
	SENIOR MANAGER AREA ENGINEERING/BUSINESS DEVELOPMENT ENGINEERING	
	SENIOR MANAGER M&R DESIGN	
OPERATIONS	DIRECTOR ENGINEERING DESIGN	
	C&M/OPERATIONS SUPERVISOR	
	MANAGER OPERATIONS	
	SENIOR MANAGER OPERATIONS	
CORROSION	SENIOR DIRECTOR OPERATIONS	
	SUPERVISOR CORROSION CONTROL/M&R PIPELINE INTEGRITY	
	MANAGER INTEGRITY MANAGEMENT/CORROSION CONTROL	
	SENIOR MANAGER CORROSION CONTROL	
M&R	DIRECTOR ENGINEERING & TECHNICAL SERVICES	
	SUPERVISOR M&R	
	MANAGER M&R	
	SENIOR MANAGER M&R	
TAPPING	SENIOR SUPERVISOR INSTRUMENTATION	
GAS CONTROL	SENIOR SUPERVISOR OPERATIONS - C&M	
	SENIOR MANAGER GAS CONTROL	
ENVIRONMENTAL	DIRECTOR GAS CONTROL	
	MANAGER ENVIRONMENTAL ENGINEERING	
FINAL DESIGN - SENT TO INITIATE CONSTRUCTION		



UGI
UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



FINAL DESIGN TICKETS
20222240622
20222240623



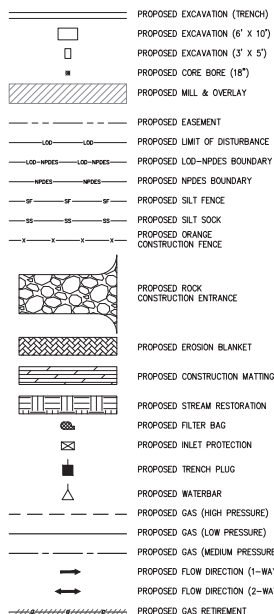
LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT
CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

BUDGET LINE #: B014340				
SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.035" API X 152	DB	50-256650	1002499140

CD-C

COVER

SHEET 1 OF 17






SHEET INDEX		
PAGE NO.	SHEET	DESCRIPTION
1 OF 17	CD-C	COVER
2 OF 17	CD-N	NOTES
3 OF 17	CD-O	OVERVIEW
4 OF 17	CD-S	SEQUENCE
5 OF 17	CD-1	PLAN AND PROFILE
6 OF 17	CD-2	TIE-IN DETAILS
7 OF 17	CD-2	GEOTECH BORING DETAILS
8 OF 17	CD-D	DETAILS
9 OF 17	CD-ESC-01	EROSION AND SEDIMENTATION CONTROL PLAN PHASE 1
10 OF 17	CD-ESC-02	EROSION AND SEDIMENTATION CONTROL PLAN PHASE 2
11 OF 17	CD-ESC-03	RESTORATION PLAN
12 OF 17	CD-ESCN	EROSION AND SEDIMENTATION CONTROL AND RESTORATION NOTES
13 OF 17	CD-ESCD1	EROSION AND SEDIMENTATION CONTROL AND RESTORATION DETAILS
14 OF 17	CD-ESCD2	EROSION AND SEDIMENTATION CONTROL AND RESTORATION DETAILS
15 OF 17	CD-TC	TRAFFIC CONTROL DETAILS
16 OF 17	CD-ATON-01	AIDS TO NAVIGATION PLAN PHASE 1
17 OF 17	CD-ATON-02	AIDS TO NAVIGATION PLAN PHASE 2

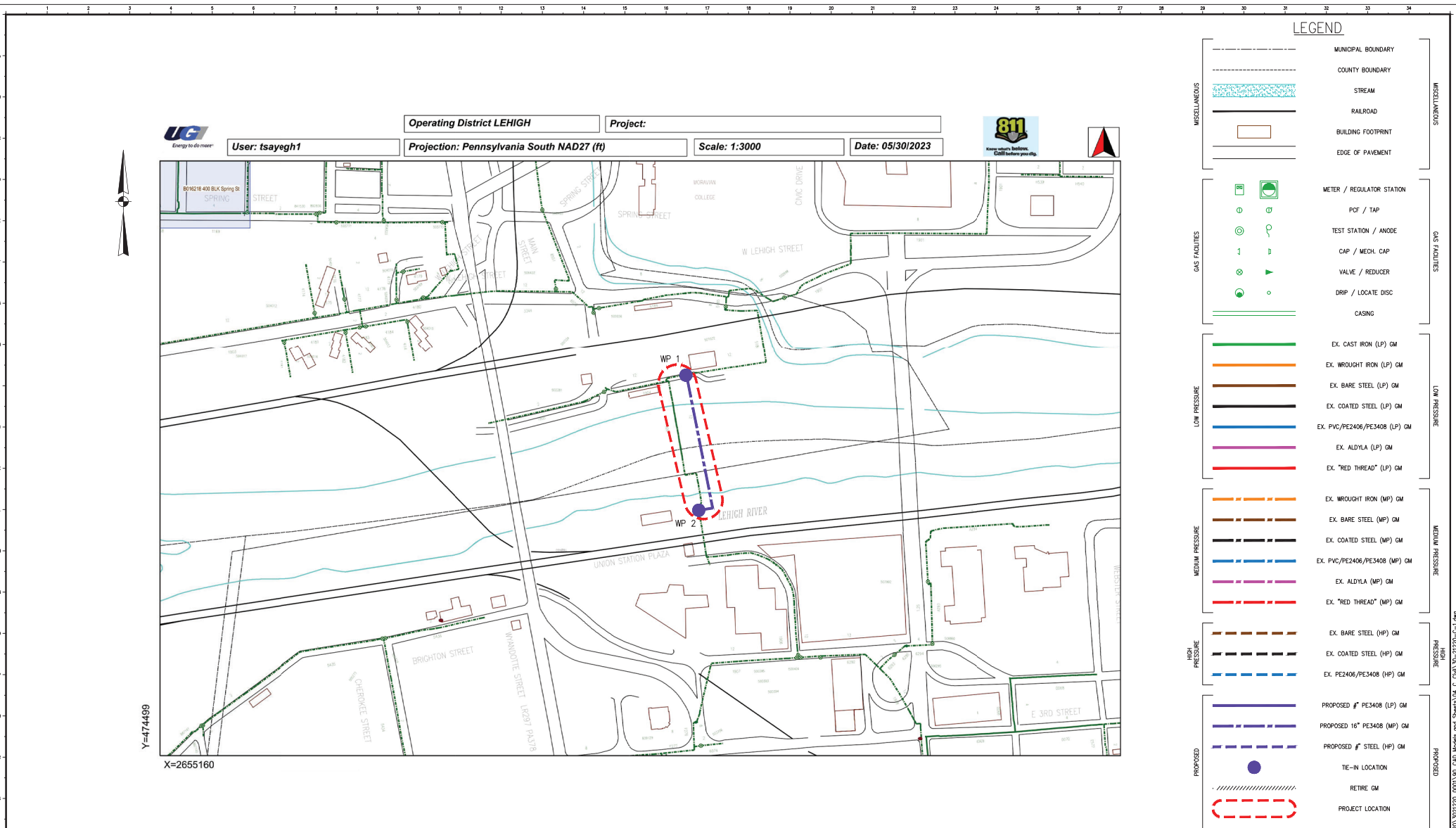
NOTIFIED UTILITIES		
DESIGN PA-1-CALL / DATE CREATED: 08/12/2022		
[CONFLICT]	[NO CONFLICT]	[NO RESPONSE]
UGI UTILITIES, INC. (UJ)	-	PPL EU (PID)
BETHLEHEM CITY (QX)	-	VERIZON EASTERN (YI)
FIBERTRACK (FTL)	-	FIRSTLIGHT FIBER (ION)
CENTURY LINK (LKC)	-	-
-	-	-

PERMITS REQUIRED	
TYPE	STATUS
PADEP GENERAL PERMIT 5/B (GP-5/B)	PENDING
USACE/CITY OF BETHLEHEM SECTION 408	PENDING
E&S ADEQUACY REVIEW	PENDING
SUBMERGED LAND LICENSE AGREEMENT (SLLA)	PENDING
PADEP PAG-10	PENDING
NORFOLK SOUTHERN RIGHT-OF-ENTRY LICENSE AGREEMENT	PENDING

GENERAL NOTES:

1. WHEN THE DEPTH OF TRENCH EXCEEDS 5 FT, A TRENCH BOX OR SHORING WILL BE REQUIRED.
2. THE CONTRACTOR SHALL PLACE A PA ONE-CALL AT PA ONE-800-242-1776 OR 1-800-242-1776 AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EARTH DISTURBANCE.
3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING BURIED UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, PRIOR TO CONSTRUCTION.
4. EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE PERMITTEE/CONTRACTOR TO THEIR PRESENCE AND THE PERMITTEE/CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND SURFACE FEATURES ARE BASED ON FIELD SURVEY AND/OR PA DESIGN ONE-CALL RESPONSE.
5. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY WILKINSON, INC. IN AUGUST 2022.
 - c. ONE-CALL AND RESPONSES FROM CITY OF BETHLEHEM AND JAYCO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGL.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+345 TO STATION 641+26.5", DATED JUNE 30, 1977 (850508 97-12).
 - f. GEOSPATIAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 04912254).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVES, & PUMPING STATIONS LEAVE PLAN & PROFILES" DATED NOVEMBER 10, 1960 (NOV-60) PLAN & PROFILES STA 19+02 TO STA 24+21 AND STA 22+75 TO STA 31+50).
 - h. NO WETLANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 42095C0307E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 42095C0001A/B.
6. THE PROJECT IS LOCATED IN NAD83 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD83.
7. RECEIVING WATERS: LEHIGH RIVER ("WAF," MF)
NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORATORIUM.
8. LIMIT OF DISTURBANCE:
 - CHAPTER 102 REGULATED AREAS: 0.08 AC
 - CHAPTER 105 REGULATED AREAS: 1.03 AC
9. LEIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 8, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMSTATS:
 - THE MEAN ANNUAL FLOW IS 2,710 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50% AEP (2-YR PEAK) FLOW IS 20,200 CFS, CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10% AEP (10-YR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S
10. THE CONTRACTOR SHALL USE TIMBER MATS TO PREVENT RUTTING AND PROTECT EXISTING BURIED UTILITIES AS NECESSARY.
11. COMPOST FILTER SOIL SHALL BE INSTALLED ALONG THE TOP OF BANK WHEN COFFERDAM IS NOT INSTALLED. COMPOST FILTER SOIL SHALL BE TEMPORARILY REMOVED/RELOCATED FOR INGRESS/EGRESS AS NECESSARY.
12. SEDIMENT TRACKED OR CONVEYED ON ANY DRIVEWAY, PUBLIC ROAD, OR SIDEWALK SHALL BE REMOVED AND REDEPOSITED INTO THE LIMIT OF DISTURBANCE BY THE END OF EACH WORKING DAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOLS, IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELLED, OR SWEEP INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. IF REMOVAL AT THE END OF EACH WORKING DAY IS INSUFFICIENT, STREET SWEEPING WILL BE REQUIRED.
13. DISTURBANCES TO CITY OF BETHLEHEM'S SAND ISLAND PARK CHILDREN'S GARDEN SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. WHERE NECESSARY, AMONITIES AND HANDSAPES SHALL BE TEMPORARILY RELOCATED AND/OR REPLACED AFTER CONSTRUCTION. TREES SHALL BE REPLACED BY IDENTICAL SIZE/SPECIES OR A CITY APPROVED EQUIVALENT. TREES SHALL BE REPLACED ALONG THE BANKS OF THE EXCEPTED OF WITHIN THE USE EASEMENT.

 <p>UGI Energy to do more®</p> <p>UGI UTILITIES, INC.</p> <p>2121 CITY LINE ROAD BETHLEHEM, PA 18017</p>	 <p>811 Know what's BELOW. Call before you dig.</p> <p>FINAL DESIGN TICKETS</p> <p>20222240622 20222240623</p>	<p>PREPARED BY:</p> 		<p>LEHIGH RIVER CROSSING GAS MAIN REPLACEMENT</p> <p>CITY OF BETHLEHEM NORTHAMPTON & LEHIGH COUNTIES, PA</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: right;">BUDGET LINE #: B014340</th> </tr> <tr> <th style="width: 10%;">SIZE</th> <th style="width: 15%;">MATERIAL</th> <th style="width: 10%;">METHOD</th> <th style="width: 25%;">WORK REQUEST NO.</th> <th style="width: 40%;">SAP</th> </tr> <tr> <td>16"</td> <td>0.375" API 5L X52</td> <td>DB</td> <td>50-256650</td> <td>1002499140</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	BUDGET LINE #: B014340					SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP	16"	0.375" API 5L X52	DB	50-256650	1002499140																																														<p>CD-N</p> <p>NOTES</p> <p>SHEET 2 OF 17</p>
BUDGET LINE #: B014340																																																																		
SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP																																																														
16"	0.375" API 5L X52	DB	50-256650	1002499140																																																														



LEGEND

- MISCELLANEOUS
 - MUNICIPAL BOUNDARY
 - COUNTY BOUNDARY
 - STREAM
 - RAILROAD
 - BUILDING FOOTPRINT
 - EDGE OF PAVEMENT
- GAS FACILITIES
 - METER / REGULATOR STATION
 - PGF / TAP
 - TEST STATION / ANODE
 - CAP / MECH. CAP
 - VALVE / REDUCER
 - DRIP / LOCATE DISC
 - CASING
- LOW PRESSURE
 - EX. CAST IRON (LP) GM
 - EX. WROUGHT IRON (LP) GM
 - EX. BARE STEEL (LP) GM
 - EX. COATED STEEL (LP) GM
 - EX. PVC/PE2406/PE3408 (LP) GM
 - EX. ALDYL A (LP) GM
 - EX. "RED THREAD" (LP) GM
- MEDIUM PRESSURE
 - EX. WROUGHT IRON (MP) GM
 - EX. BARE STEEL (MP) GM
 - EX. COATED STEEL (MP) GM
 - EX. PVC/PE2406/PE3408 (MP) GM
 - EX. ALDYL A (MP) GM
 - EX. "RED THREAD" (MP) GM
- HIGH PRESSURE
 - EX. BARE STEEL (HP) GM
 - EX. COATED STEEL (HP) GM
 - EX. PE2406/PE3408 (HP) GM
- PROPOSED
 - PROPOSED 8" PE3408 (LP) GM
 - PROPOSED 16" PE3408 (MP) GM
 - PROPOSED 8" STEEL (HP) GM
 - TIE-IN LOCATION
 - RETIRE GM
 - PROJECT LOCATION



Energy to do more®

UGI UTILITIES, INC.

2121 CITY LINE ROAD
BETHLEHEM, PA 18017



Know what's below. Call before you dig.

FINAL DESIGN TICKETS

20222240622
20222240623

PREPARED BY:



LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT

CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

BUDGET LINE #: B014340				
SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.035' 10" 1/2	DB	50-256650	1002499140

CD-0

OVERVIEW

SHEET 3 OF 17

LEGEND

	EXISTING GAS MAIN
	RETIRED GAS MAIN
	EXISTING 1-WAY FLOW DIRECTION
	EXISTING 2-WAY FLOW DIRECTION
	PROPOSED (HP) GAS MAIN
	PROPOSED (MP) GAS MAIN
	PROPOSED (LP) GAS MAIN
	PROPOSED BYPASS
	PROPOSED 1-WAY FLOW DIRECTION
	PROPOSED 2-WAY FLOW DIRECTION
	CASING PIPE
	GAS VALVE (OPEN)
	GAS VALVE (CLOSED)
	END CAP
	MECHANICAL CAP
	90° ELBOW
	45° ELBOW
	CROSSOVER
	COUPLING / TRANSITION
	REDUCER
	EXPANSION JOINT
	FULL TEE
	PCF
	SQUEEZE OFF
	TAPPING TEE
	GAUGE TEE
	OP TEST STATION
	ANODE
	REGULATOR STATION
	METER SET



UGI
UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



FINAL DESIGN TICKETS
20222240622
20222240623

PREPARED BY:
st

LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT

CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

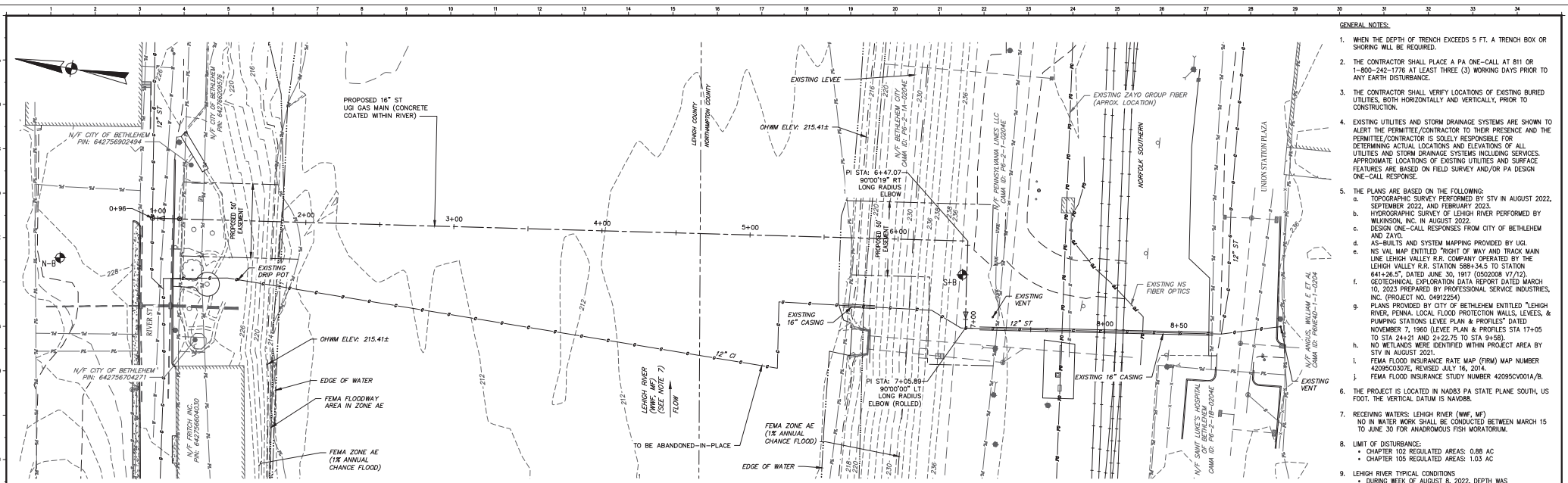
BUDGET LINE #: B014340

SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.095" API 5L X52	DB	50-256650	1002499140

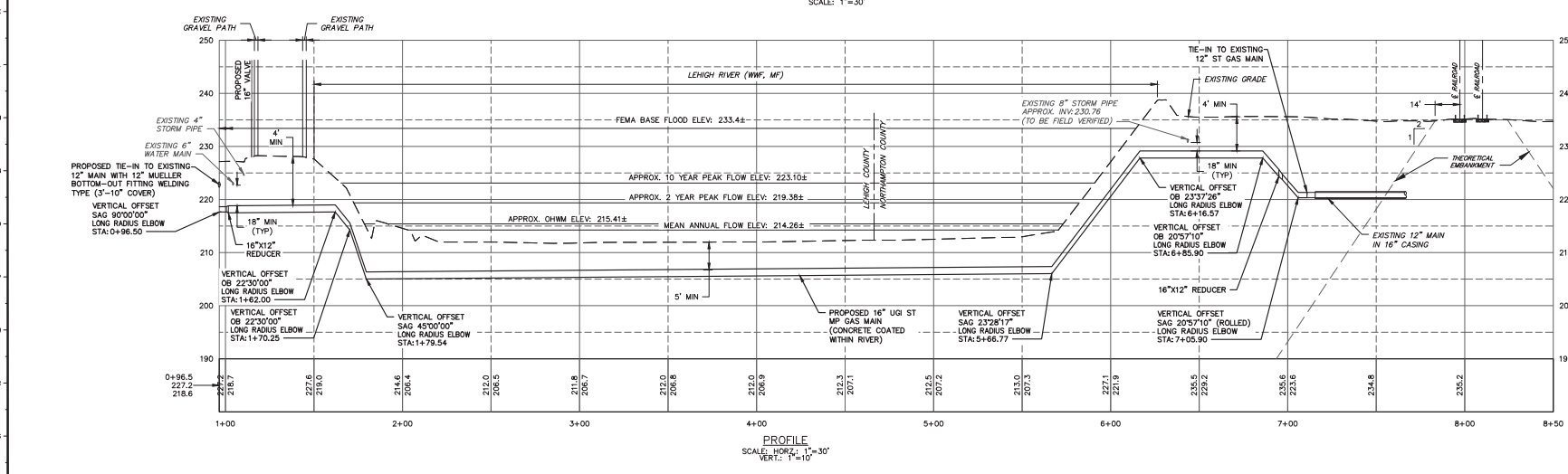
CD-S

SEQUENCE

SHEET 4 OF 17

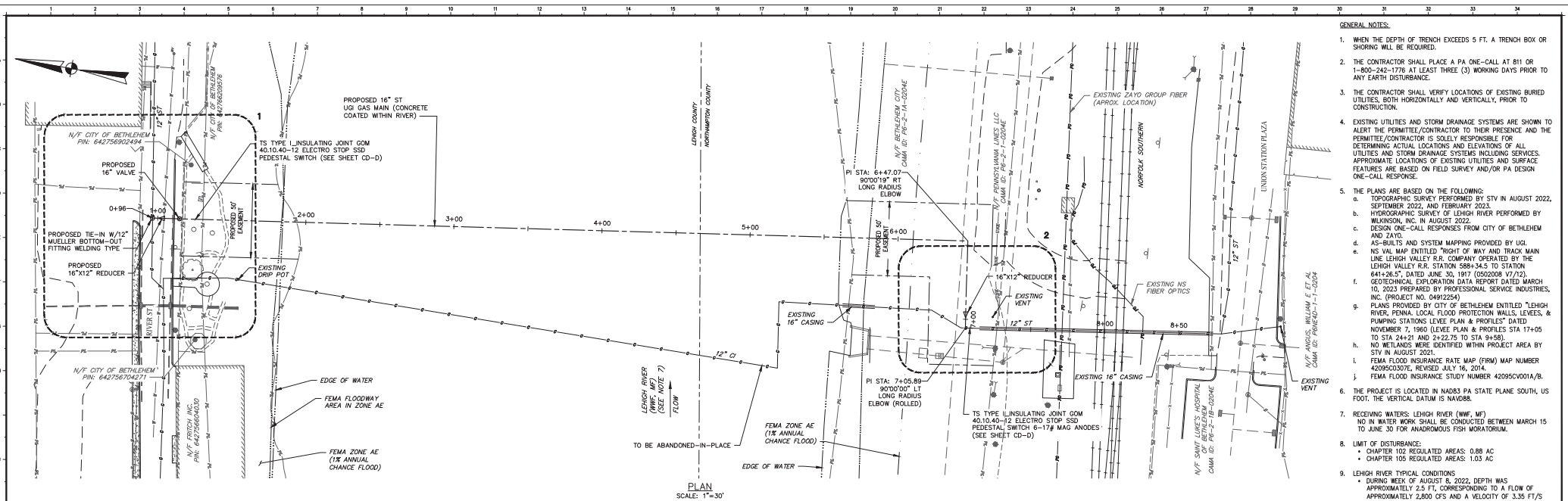


- GENERAL NOTES:**
1. WHEN THE DEPTH OF TRENCH EXCEEDS 5 FT, A TRENCH BOX OR SHORING WILL BE REQUIRED.
 2. THE CONTRACTOR SHALL PLACE A PA ONE-CALL AT 811 OR 1-800-242-1776 AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EARTH DISTURBANCE.
 3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING BURIED UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, PRIOR TO CONSTRUCTION.
 4. EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE PERMITTEE/CONTRACTOR TO THEIR PRESENCE AND THE PERMITTEE/CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND SURFACE FEATURES ARE BASED ON FIELD SURVEY AND/OR PA DESIGN ONE-CALL RESPONSE.
 5. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY WILKINSON, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZAYO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGI.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+34.5 TO STATION 644+26.5", DATED JUNE 30, 1917 (0502008 V7/12).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0492254).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1960 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 24+22.75 TO STA 9+58).
 - h. NO WETLANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 4209503002E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 420950001A/B.
 6. THE PROJECT IS LOCATED IN NA083 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD83.
 7. RECEIVING WATERS: LEHIGH RIVER (WW, MF). NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORTALITY.
 8. LIMIT OF DISTURBANCE:
 - CHAPTER 102 REGULATED AREAS: 0.88 AC
 - CHAPTER 105 REGULATED AREAS: 1.03 AC
 9. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 8, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGAGES
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50K AEP (2-HR PEAK) FLOW IS 20,200 CFS, CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10K AEP (10-HR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.
 10. THE CONTRACTOR SHALL USE TIMBER MATS TO PREVENT RUTTING AND PROTECT EXISTING BURIED UTILITIES AS NECESSARY.
 11. COMPOST FILTER SOCK SHALL BE INSTALLED ALONG THE TOP OF BANK WHEN COFFERDAM IS NOT INSTALLED. COMPOST FILTER SOCK SHALL BE TEMPORARILY REMOVED/RELOCATED FOR INGRESS/EGRESS AS NECESSARY.
 12. SEDIMENT TRACKED OR CONVEYED ONTO ANY DRIVEWAY, PUBLIC ROAD, OR SIDEWALK SHALL BE REMOVED AND REDEPOSITED INTO THE LIMIT OF DISTURBANCE BY THE END OF EACH WORKING DAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOLS. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELLED, OR SWEEPED INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. IF REMOVAL AT THE END OF EACH WORKING DAY IS INSUFFICIENT, STREET SWEEPING WILL BE REQUIRED.
 13. DISTURBANCES TO CITY OF BETHLEHEM'S SAND ISLAND PARK CHILDREN'S GARDEN SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. WHERE NECESSARY, AMENITIES AND HORTICULTURES SHALL BE TEMPORARILY RELOCATED AND/OR REPLACED AFTER CONSTRUCTION. TREES SHALL BE REPLACED BY IDENTICAL SIZE/SPECIES OR A CITY APPROVED EQUIVALENT. TREES SHALL BE REPLACED ALONG THE BANK WITH THE EXCEPTION OF WITHIN THE UGI EASEMENT.

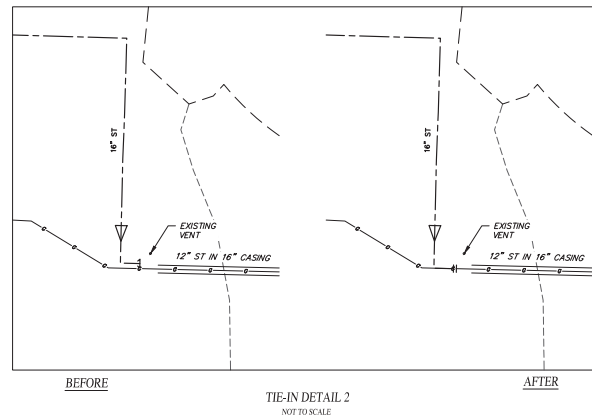
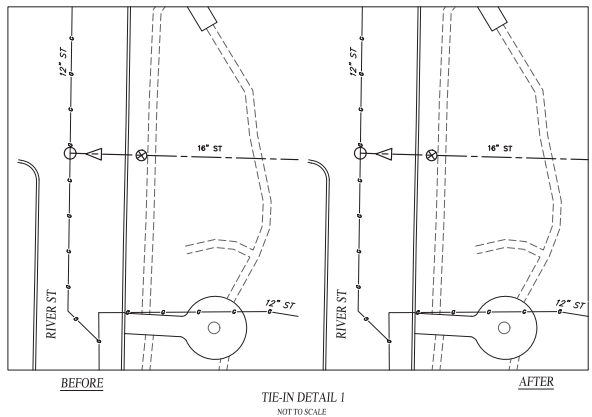


 UGI UTILITIES, INC. 2121 CITY LINE ROAD BETHLEHEM, PA 18017	 CALL before you dig. FINAL DESIGN TICKETS 20222240622 20222240623	PREPARED BY: STV	HORIZONTAL GRAPHIC SCALE 30 15 0 30 SCALE IN FEET VERTICAL GRAPHIC SCALE 10 5 0 10 SCALE IN FEET	LEHIGH RIVER CROSSING GAS MAIN REPLACEMENT CITY OF BETHLEHEM NORTHAMPTON & LEHIGH COUNTIES, PA	BUDGET LINE #: B014340 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SIZE</th> <th>MATERIAL</th> <th>METHOD</th> <th>WORK REQUEST NO.</th> <th>SAP</th> </tr> </thead> <tbody> <tr> <td>16"</td> <td>0.05, 18" & 12"</td> <td>DB</td> <td>50-256650</td> <td>1002499140</td> </tr> </tbody> </table>	SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP	16"	0.05, 18" & 12"	DB	50-256650	1002499140	CD- 01 PLAN AND PROFILE SHEET 5 OF 17
SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP												
16"	0.05, 18" & 12"	DB	50-256650	1002499140												

I:\Projects\3022220\3022220_0001\NOI_CAD Models and Sheets\UGI_Civil\30-21220-C.dwg
 Sep 18, 2023 12:28pm



- GENERAL NOTES:
1. WHEN THE DEPTH OF TRENCH EXCEEDS 5 FT, A TRENCH BOX OR SHORING WILL BE REQUIRED.
 2. THE CONTRACTOR SHALL PLACE A PA ONE-CALL AT 811 OR 1-800-242-1776 AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EARTH DISTURBANCE.
 3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING BURIED UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, PRIOR TO CONSTRUCTION.
 4. EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE PERMITTEE/CONTRACTOR TO THEIR PRESENCE AND THE PERMITTEE/CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND SURFACE FEATURES ARE BASED ON FIELD SURVEY AND/OR PA DESIGN ONE-CALL RESPONSE.
 5. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY WILKINSON, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZAYO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGI.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+34.5 TO STATION 644+26.5", DATED JUNE 30, 1917 (0502008 V7/12).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0492254).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS, LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1960 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 24+22.75 TO STA 9+58).
 - h. NO MELANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 4209503030E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 420950V001A/B.
 6. THE PROJECT IS LOCATED IN NA083 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD83.
 7. RECEIVING WATERS: LEHIGH RIVER (WWF, MF). NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORTALITY.
 8. LIMIT OF DISTURBANCE:
 - CHAPTER 102 REGULATED AREAS: 0.88 AC
 - CHAPTER 105 REGULATED AREAS: 1.03 AC
 9. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 8, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGAGES
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50% AEP (2-YR PEAK) FLOW IS 20,200 CFS, CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10% AEP (10-YR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.
 10. THE CONTRACTOR SHALL USE TIMBER MATS TO PREVENT RUTTING AND PROTECT EXISTING BURIED UTILITIES AS NECESSARY.
 11. COMPOST FILTER SOCK SHALL BE INSTALLED ALONG THE TOP OF BANK WHEN COFFERDAM IS NOT INSTALLED. COMPOST FILTER SOCK SHALL BE TEMPORARILY REMOVED/RELOCATED FOR INGRESS/EGRESS AS NECESSARY.
 12. SEDIMENT TRACKED OR CONVEYED ONTO ANY DRIVEWAY, PUBLIC ROAD, OR SIDEWALK SHALL BE REMOVED AND REDEPOSITED INTO THE LIMIT OF DISTURBANCE BY THE END OF EACH WORKING DAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOLS. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELLED, OR SHEET INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. IF REMOVAL AT THE END OF EACH WORKING DAY IS INSUFFICIENT, STREET SWEEPING WILL BE REQUIRED.
 13. DISTURBANCES TO CITY OF BETHLEHEM'S SAND ISLAND PARK CHILDREN'S GARDEN SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. WHERE NECESSARY, AMENITIES AND HARDSCAPES SHALL BE TEMPORARILY RELOCATED AND/OR REPLACED AFTER CONSTRUCTION. TREES SHALL BE REPLACED BY IDENTICAL SIZE/SPECIES OR A CITY APPROVED EQUIVALENT. TREES SHALL BE REPLACED ALONG THE BANK WITH THE EXCEPTION OF WITHIN THE UGI EASEMENT.



UGI UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017

FINAL DESIGN TICKETS
20222240622
20222240623

PREPARED BY:

HORIZONTAL GRAPHIC SCALE

SCALE IN FEET

LEHIGH RIVER CROSSING GAS MAIN REPLACEMENT

CITY OF BETHLEHEM NORTHAMPTON & LEHIGH COUNTIES, PA

BUDGET LINE #: B014340			
SIZE	MATERIAL	METHOD	WORK REQUEST NO.
16"	0.05', 18" & 12"	DB	50-256650

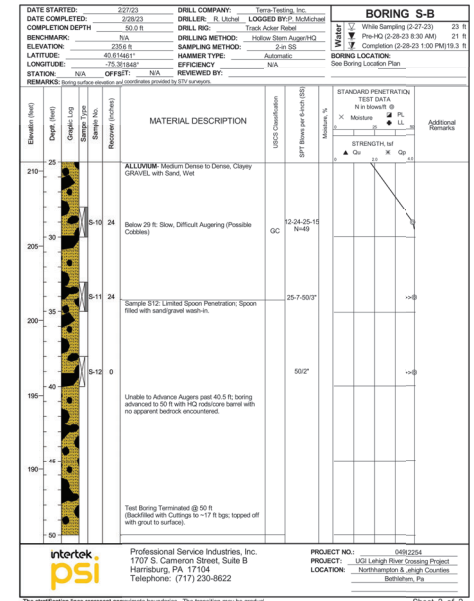
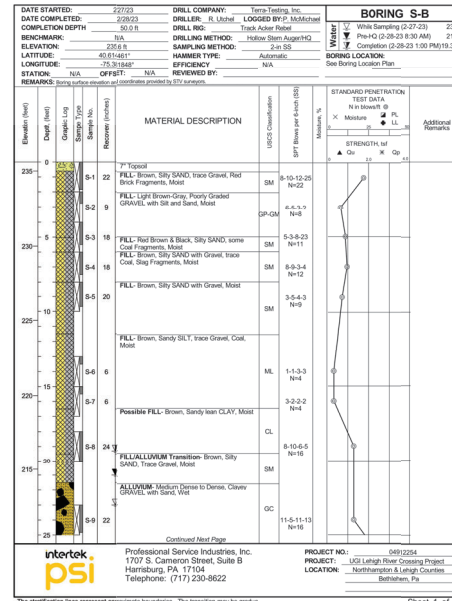
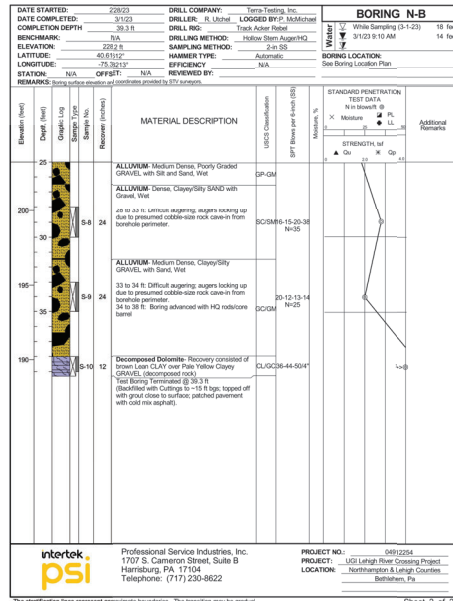
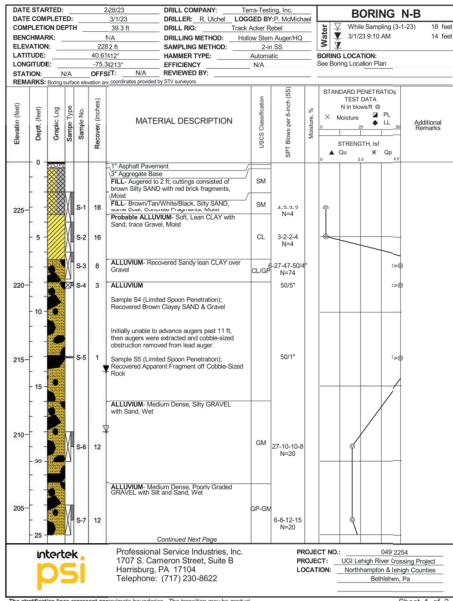
SAP
1002499140

CD- 02

TIE-IN
DETAILS

SHEET 6 OF 17

I:\Projects\3022220\3022220_0001\NO_CAD Models and Sheets\GA_C_Civil\30-21220-C.dwg
 Sep 07, 2023 - 11:03am



UGI UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



FINAL DESIGN TICKETS
20222240622
20222240623



PREPARED BY:
STV

LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT
CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

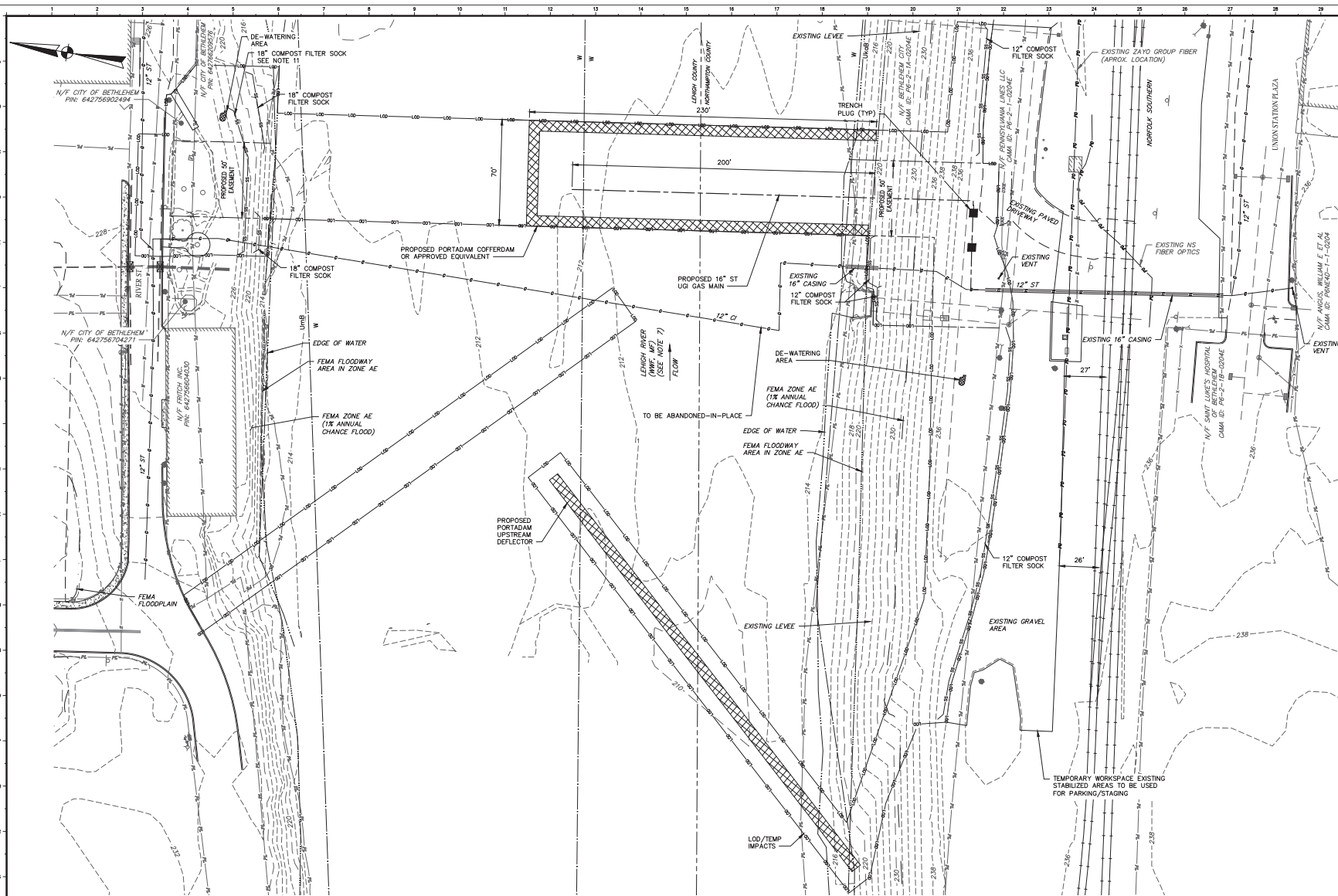
BUDGET LINE # 014340			
SIZE	MATERIAL	METHOD	WORK REQUEST NO.
16"	0.05% 100% 100%	DB	50-256650

SAP
1002499140

CD- 03




GEOTECH BORING
DETAILS

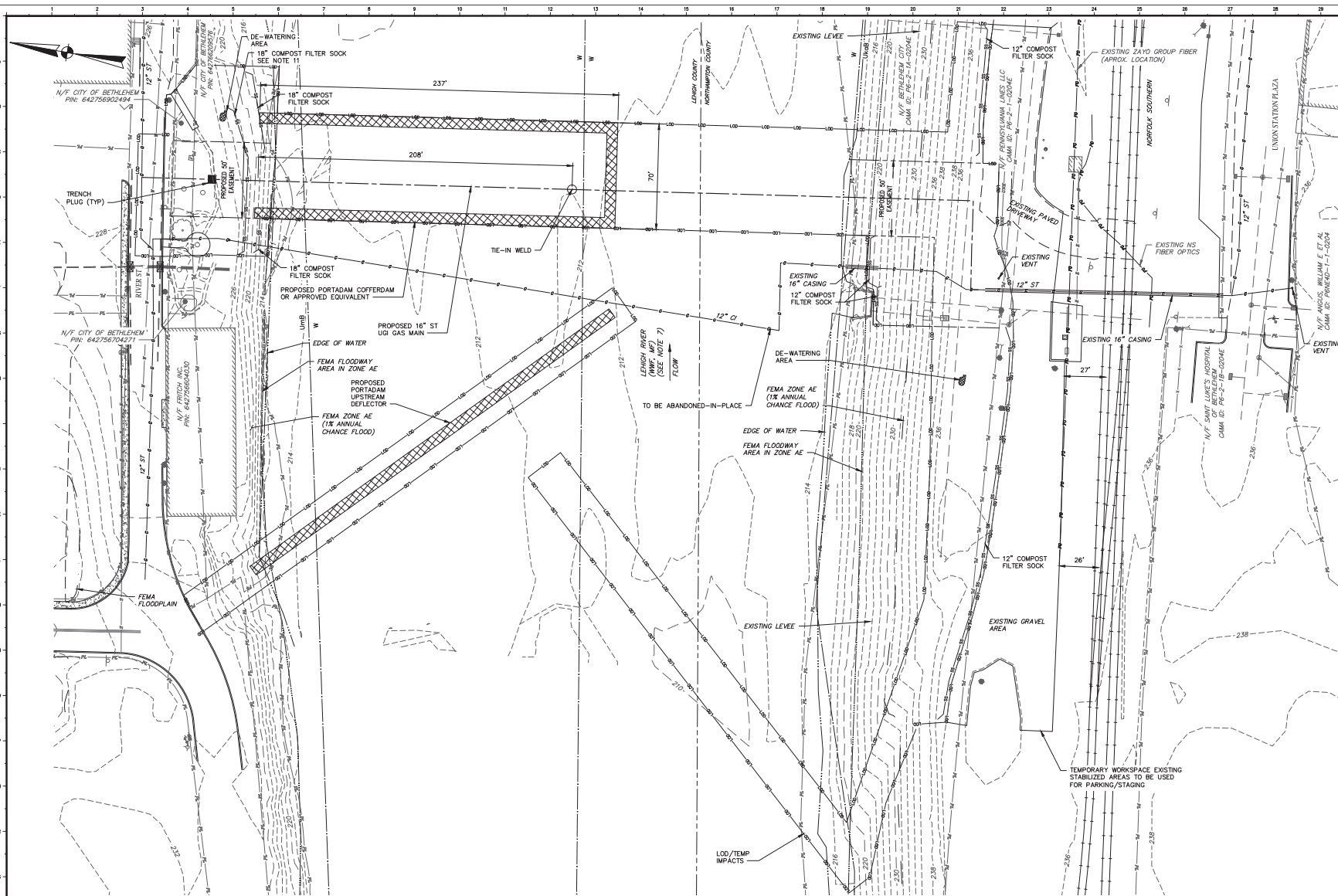
SHEET 7 OF 17




- GENERAL NOTES:**
1. WHEN THE DEPTH OF TRENCH EXCEEDS 5 FT. A TRENCH BOX OR SHORING WILL BE REQUIRED.
 2. THE CONTRACTOR SHALL PLACE A PA ONE-CALL AT 811 OR 482-242-1776 AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EARTH DISTURBANCE.
 3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING BURIED UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, PRIOR TO CONSTRUCTION.
 4. EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE PERMITTEE/CONTRACTOR TO THEIR PRESENCE AND THE PERMITTEE/CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND SURFACE FEATURES ARE BASED ON FIELD SURVEY AND/OR PA DESIGN ONE-CALL RESPONSE.
 5. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY WILKINSON, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZAYO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGI.
 - e. 5" VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+34.5 TO STATION 644+26.5", DATED JUNE 30, 1917 (05/02/08 V7.12).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0412254).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1960 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 24+22.75 TO STA 9+58).
 - h. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 420950307E, REVISED JULY 16, 2014.
 - i. FEMA FLOOD INSURANCE STUDY NUMBER 420950307A/B.
 6. THE PROJECT IS LOCATED IN NAD83 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD88.
 7. RECEIVING WATERS: LEHIGH RIVER (WWF, WF). NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORATORIUM.
 8. LIMIT OF DISTURBANCE:
 - CHAPTER 102 REGULATED AREAS: 0.88 AC
 - CHAPTER 105 REGULATED AREAS: 1.03 AC
 9. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 6, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGATS:
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50% AEP (2-HR PEAK) FLOW IS 20,200 CFS CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10% AEP (10-HR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.
 10. THE CONTRACTOR SHALL USE TIMBER MATS TO PREVENT RUTTING AND PROTECT EXISTING BURIED UTILITIES AS NECESSARY.
 11. COMPOST FILTER SOCK SHALL BE INSTALLED ALONG THE TOP OF BANK WHEN COFFERDAM IS NOT INSTALLED. COMPOST FILTER SOCK SHALL BE TEMPORARILY REMOVED/RELOCATED FOR INGRESS/EGRESS AS NECESSARY.
 12. SEDIMENT TRACKED OR CONVEYED ONTO ANY DRIVEWAY, PUBLIC ROAD, OR SIDEWALK SHALL BE REMOVED AND REDEPOSITED INTO THE LIMIT OF DISTURBANCE BY THE END OF EACH WORKING DAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOLS. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELLED, OR SWEEP INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. IF REMOVAL AT THE END OF EACH WORKING DAY IS INSUFFICIENT, STREET SWEEPING WILL BE REQUIRED.
 13. DISTURBANCES TO CITY OF BETHLEHEM'S SAND ISLAND PARK CHILDREN'S GARDEN SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. WHERE NECESSARY, AMENITIES AND HARDSCAPES SHALL BE TEMPORARILY RELOCATED AND/OR REPLACED AFTER CONSTRUCTION. TREES SHALL BE REPLACED BY IDENTICAL SIZE/SPECIES OR A CITY APPROVED EQUIVALENT. TREES SHALL BE REPLACED ALONG THE BANK WITH THE EXCEPTION OF WITHIN THE UGI EASEMENT.

PLAN
SCALE: 1"=30'

 Energy to do more® UGI UTILITIES, INC. 2121 CITY LINE ROAD BETHLEHEM, PA 18017	 Know what's Underfoot. Call before you dig. FINAL DESIGN TICKETS 20222240622 20222240623	PREPARED BY: 	HORIZONTAL GRAPHIC SCALE 30 15 0 SCALE IN FEET	LEHIGH RIVER CROSSING GAS MAIN REPLACEMENT CITY OF BETHLEHEM NORTHAMPTON & LEHIGH COUNTIES, PA	BUDGET LINE #: B014340		CD-ESC-01 EROSION & SEDIMENTATION CONTROL AND RESTORATION PLAN PHASE 1 SHEET 9 OF 17
					SIZE 16"	MATERIAL 0.15", #1 1/2 #2	




- GENERAL NOTES:
1. WHEN THE DEPTH OF TRENCH EXCEEDS 5 FT, A TRENCH BOX OR SHORING WILL BE REQUIRED.
 2. THE CONTRACTOR SHALL PLACE A PA ONE-CALL AT 811 OR 1-800-242-1776 AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EARTH DISTURBANCE.
 3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING BURIED UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, PRIOR TO CONSTRUCTION.
 4. EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE PERMITTEE/CONTRACTOR TO THEIR PRESENCE AND THE PERMITTEE/CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND SURFACE FEATURES ARE BASED ON FIELD SURVEY AND/OR PA DESIGN ONE-CALL RESPONSE.
 5. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY MUKINSON, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZAYO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGI.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 586+34.5 TO STATION 644+28.5," DATED JUNE 30, 1917 (050208 V7.1).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 04912254).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, FEMA LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1950 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 2+22.75 TO STA 9+58).
 - h. NO WETLANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 42095C0307E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 42095C0001A/B.
 6. THE PROJECT IS LOCATED IN NAD83 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD88.
 7. RECEIVING WATERS: LEHIGH RIVER (WNF, MF). NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORATORIUM.
 8. LIMIT OF DISTURBANCE:
 - CHAPTER 102 REGULATED AREAS: 0.88 AC
 - CHAPTER 105 REGULATED AREAS: 1.03 AC
 9. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 6, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGATS:
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50% AEP (2-YR PEAK) FLOW IS 20,200 CFS, CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10% AEP (10-YR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.
 10. THE CONTRACTOR SHALL USE TIMBER MATS TO PREVENT RUTTING AND PROTECT EXISTING BURIED UTILITIES AS NECESSARY.
 11. COMPOST FILTER SOCK SHALL BE INSTALLED ALONG THE TOP OF BANK WHEN COFFERDAM IS NOT INSTALLED. COMPOST FILTER SOCK SHALL BE TEMPORARILY REMOVED/RELOCATED FOR INGRESS/EGRESS AS NECESSARY.
 12. SEDIMENT TRACKED OR CONVEYED ONTO ANY DRIVEWAY, PUBLIC ROAD, OR SIDEWALK SHALL BE REMOVED AND REDEPOSITED INTO THE LIMIT OF DISTURBANCE BY THE END OF EACH WORKING DAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOLS. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELLED, OR SWEEP INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. IF REMOVAL AT THE END OF EACH WORKING DAY IS INSUFFICIENT, STREET SWEEPING WILL BE REQUIRED.
 13. DISTURBANCES TO CITY OF BETHLEHEM'S SAND ISLAND PARK CHILDREN'S GARDEN SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. WHERE NECESSARY, MONUMENTS AND HARDSCAPES SHALL BE TEMPORARILY RELOCATED AND/OR REPLACED AFTER CONSTRUCTION. TREES SHALL BE REPLACED BY IDENTICAL SIZE/SPECIES OR A CITY APPROVED EQUIVALENT. TREES SHALL BE REPLACED ALONG THE BANK WITH THE EXCEPTION OF WITHIN THE UG EASEMENT.



Energy to do more®

UGI UTILITIES, INC.

2121 CITY LINE ROAD
BETHLEHEM, PA 18017




Know what's UNDER.
CALL before you dig.

FINAL DESIGN TICKETS

20222240622
20222240623

PREPARED BY:



HORIZONTAL GRAPHIC SCALE

30 15 0 30

SCALE IN FEET

LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT

CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

BUDGET LINE # B014340

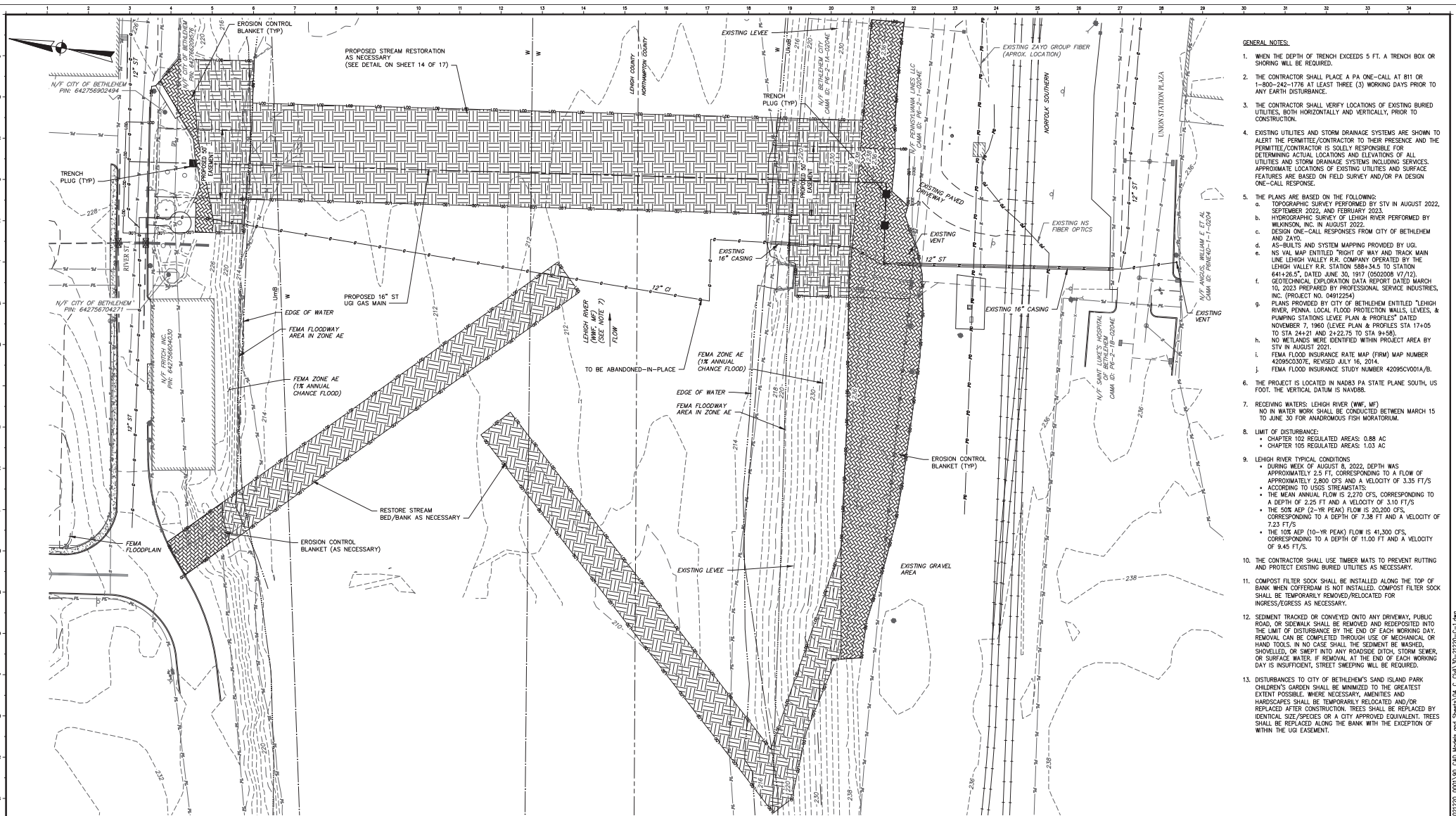
SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.05', 18" & 12"	DB	50-256650	1002499140

CD-ESC-02

EROSION & SEDIMENTATION CONTROL AND RESTORATION PLAN


PHASE 2

SHEET 10 OF 17




- GENERAL NOTES:**
1. WHEN THE DEPTH OF TRENCH EXCEEDS 5 FT. A TRENCH BOX OR SHORING WILL BE REQUIRED.
 2. THE CONTRACTOR SHALL PLACE A PA ONE-CALL AT 811 OR 1-800-242-1176 AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EARTH DISTURBANCE.
 3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING BURIED UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, PRIOR TO CONSTRUCTION.
 4. EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE PERMITTEE/CONTRACTOR TO THEIR PRESENCE AND THE PERMITTEE/CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND SURFACE FEATURES ARE BASED ON FIELD SURVEY AND/OR PA DESIGN ONE-CALL RESPONSE.
 5. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY WILKINSON, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZATO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGI.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+34.5 TO STATION 641+26.5", DATED JUNE 30, 1917 (050208 V7.112).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0441224).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1960 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 24+22.75 TO STA 9+58).
 - h. NO WETLANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 420950307E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 420950307A/B.
 6. THE PROJECT IS LOCATED IN NAD83 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD88.
 7. RECEIVING WATERS: LEHIGH RIVER (WWF, WF)
NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORATORIUM.
 8. LIMIT OF DISTURBANCE:
 - CHAPTER 102 REGULATED AREAS: 0.88 AC
 - CHAPTER 105 REGULATED AREAS: 1.03 AC
 9. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 6, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGAGES:
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50% AEP (2-YR PEAK) FLOW IS 20,200 CFS CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10% AEP (10-YR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.
 10. THE CONTRACTOR SHALL USE TIMBER MATS TO PREVENT RUTTING AND PROTECT EXISTING BURIED UTILITIES AS NECESSARY.
 11. COMPOST FILTER SOCK SHALL BE INSTALLED ALONG THE TOP OF BANK WHEN COFFERDAM IS NOT INSTALLED. COMPOST FILTER SOCK SHALL BE TEMPORARILY REMOVED/RELOCATED FOR INGRESS/EGRESS AS NECESSARY.
 12. SEDIMENT TRACKED OR CONVEYED ONTO ANY DRIVEWAY, PUBLIC ROAD, OR SIDEWALK SHALL BE REMOVED AND REDEPOSITED INTO THE LIMIT OF DISTURBANCE BY THE END OF EACH WORKING DAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOLS. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELLED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. IF REMOVAL AT THE END OF EACH WORKING DAY IS INSUFFICIENT, STREET SWEEPING WILL BE REQUIRED.
 13. DISTURBANCES TO CITY OF BETHLEHEM'S SAND ISLAND PARK CHILDREN'S GARDEN SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. WHERE NECESSARY, AMENITIES AND HARDSCAPES SHALL BE TEMPORARILY RELOCATED AND/OR REPLACED AFTER CONSTRUCTION. TREES SHALL BE REPLACED BY IDENTICAL SIZE/SPECIES OR A CITY APPROVED EQUIVALENT. TREES SHALL BE REPLACED ALONG THE BANK WITH THE EXCEPTION OF WITHIN THE UGI EASEMENT.

PLAN
SCALE: 1"=30'




UGI
UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



811
Know what's **UNDER** you.
Call before you dig.
FINAL DESIGN TICKETS
20222240622
20222240623

PREPARED BY:



HORIZONTAL
GRAPHIC SCALE

30 15 0

SCALE IN FEET

LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT

CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

BUDGET LINE # B014340			
SIZE	MATERIAL	METHOD	WORK REQUEST NO.
16"	0.105' 40' 3.42	DB	50-256650

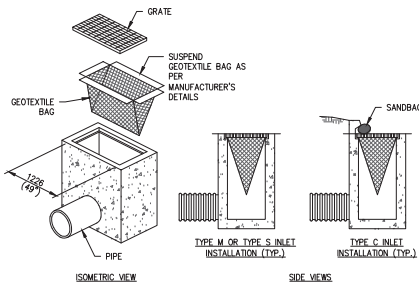
SAP
1002499140

CD-ESC-03

RESTORATION PLAN

SHEET 11 OF 17

<p>SOILS ENCOUNTERED WITHIN NORTHAMPTON & LEHIGH COUNTIES, PA</p> <p>MAP UNIT: UMB--URBAN LAND-DUFFLED COMPLEX, 0 TO 8 PERCENT SLOPES</p> <p>COMPONENT: URBAN LAND (50%) BRIEF SOIL DESCRIPTIONS ARE CREATED FOR MAJOR SOIL COMPONENTS. THE URBAN LAND IS A MISCELLANEOUS AREA.</p> <p>COMPONENT: DUFFLED (25%) THE DUFFLED COMPONENT MAKES UP 25 PERCENT OF THE MAP UNIT. SLOPES ARE 0 TO 8 PERCENT. THIS COMPONENT IS ON LIMESTONE VALLEYS, SHALE HILLS, THE PARENT MATERIAL CONSISTS OF RESIDUUM WEATHERED FROM LIMESTONE. DEPTH TO BEDROCK VARIATION IS 18 INCHES TO 48 INCHES. MINERAL DRAINAGE CLASS IS WILD DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTIVE LAYER) IS SHIRING-NOTWELL. POTENTIAL IS MODERATE. THIS SOIL IS NOT FLOODED; IT IS NOT PONDED; THERE IS NO ZONE OF WATER SATURATION WITHIN ABOUT 36 INCHES OF THE SURFACE. REMOVAL OF EAS BMPs WILL CAUSE AN AVERAGE ABOUT 3 PERCENT. THIS COMPONENT IS IN THE F14KXGZ6PA MIXED LIMESTONE UPLAND, MOST, HIGH-BASE-SATURATION, UPLAND, MEX OAK - HICKORY -- CONIFER FOREST ECOSYSTEM, SITE NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS C2. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.</p> <p>MINOR COMPONENTS: CLAYSHIRE (4%) PENLAW (4%) THORNDALE (2%)</p> <p>MAP UNIT: W--WATER</p> <p>COMPONENT: WATER (100%) GENERATED BRIEF SOIL DESCRIPTIONS ARE CREATED FOR MAJOR SOIL COMPONENTS. THE WATER IS A MISCELLANEOUS AREA.</p> <p>MAP UNIT: UKAB--URBAN LAND, 0 TO 8 PERCENT SLOPES</p> <p>COMPONENT: URBAN LAND (90%) GENERATED BRIEF SOIL DESCRIPTIONS ARE CREATED FOR MAJOR SOIL COMPONENTS. THE URBAN LAND IS A MISCELLANEOUS AREA.</p> <p>COMPONENT: UDHORTENSIS, UNSTABLE FILLS (10%) GENERATED BRIEF SOIL DESCRIPTIONS ARE CREATED FOR MAJOR SOIL COMPONENTS. THE UDHORTENSIS, UNSTABLE FILLS, IS OTHER A MAJOR COMPONENT.</p> <p>MAP UNIT: W--WATER</p> <p>COMPONENT: WATER (100%) GENERATED BRIEF SOIL DESCRIPTIONS ARE CREATED FOR MAJOR SOIL COMPONENTS. THE WATER IS A MISCELLANEOUS AREA.</p> <p>HYDRIC SOILS</p> <p>ACCORDING TO THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS (NTOHS), SOIL IS CLASSIFIED AS BEING HYDRIC IF IT FORMED UNDER CONDITIONS OF SATURATION, FLOODING, OR PONDING LONG ENOUGH DURING THE GROWING SEASON TO DEVELOP ANAEROBIC CONDITIONS IN THE UPPER PART, UNDER NATURAL CONDITIONS. HYDRIC SOILS ARE EITHER SATURATED OR UNSATURATED LONG ENOUGH DURING THE GROWING SEASON TO SUPPORT THE GROWTH AND REPRODUCTION OF HYDROPHYTE VEGETATION.</p> <p>MAP UNITS ARE URBAN LAND AND CONSIDERED "MISCELLANEOUS AREAS," AND THEREFORE, NOT LISTED AS HYDRIC.</p> <p>STANDARD E&S PLAN NOTES</p> <ul style="list-style-type: none"> ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS EXCAVATIONS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS MUST BE AVAILABLE AT ALL TIMES AT THE PROJECT SITE. ANY LOCAL AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TREES, RUBBING, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY OCCUR AT ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPs SPECIFIED BY THE DESIGNER HAVE BEEN INSTALLED AND HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATIONS(S) SHOWN ON THE PLAN MAP(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADE OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE IDENTIFIED IN THE MAPS SHOWN ON THE PLAN DRAWINGS. STOCKPILE AREAS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR ACCELERATED EROSION AND SEDIMENT POLLUTION. THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND EXCESS VEGETATION OR DISTURBED SOILS SHALL BE RESTORED TO ORIGINAL MANAGEMENT REGULATIONS AT 25 PA. CODE 2801 ET. SEQ. 2711, AND 2801 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNSAVED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. 	<p>11. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM 1P-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL ADJUSTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL RESULTS.</p> <p>12. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A PUMPED WATER FILTER BAG, OR EQUIVALENT, AND EQUIPMENT FACILITY. OVER NON-DISTURBED VEGETATED AREAS DISCHARGE POINTS SHOULD BE ESTABLISHED TO PROVIDE FOR MAXIMUM DISTANCE TO ACTIVE WATERWAYS.</p> <p>13. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPs SHALL BE MAINTAINED PERFECTLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPs AFTER EACH RAINFALL EVENT AND ON A WEEKLY BASIS. AFTER EACH RAINFALL EVENT, REMEDIAL MAINTENANCE, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGROUTING, RESEEDING, REMULCHING AND REGRADING MUST BE PERFORMED IMMEDIATELY. E&S BMPs FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPs, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.</p> <p>14. A LOG SHOWING DATES THAT E&S BMPs WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCIES AT ALL TIMES.</p> <p>15. SEDIMENT TRACKED OR CONVEYED ON ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE REMOVED AND REDPOSITED ONTO THE CONSTRUCTION SITE BY THE END OF EACH WORKDAY. REMOVAL CAN BE COMPLETED THROUGH USE OF MECHANICAL OR HAND TOOL. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEEP INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.</p> <p>16. ALL SEDIMENT REMOVED FROM BMPs SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.</p> <p>17. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES --- 6 TO 12 INCHES ON COMPACTED SOILS --- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TPOSS IN PLACE PRIOR TO SEEDING AND MULCHING. FINAL OUTCLOSURES SHALL HAVE A MINIMUM OF 2 INCHES OF TPOSS.</p> <p>18. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SURFACE SETTLEMENT, SUBSIDENCE, OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC., SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REGULATIONS OR CODES.</p> <p>19. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.</p> <p>20. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROCKS, SOIL OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILL OR COVERS.</p> <p>21. FROZEN MATERIALS OR SOFT, MUDDY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.</p> <p>22. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.</p> <p>23. STEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.</p> <p>24. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRAD IN COMPLIANT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE INDICATED ON PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.</p> <p>25. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS, DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.</p> <p>26. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.</p> <p>27. E&S BMPs SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.</p> <p>28. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPs.</p> <p>29. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPs MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPs. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPs SHALL BE STABILIZED IMMEDIATELY, IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.</p> <p>30. FAILURE TO CORRECTLY INSTALL E&S BMPs, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPs MAY RESULT IN ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES BEING IMPOSED BY THE DEPARTMENT AS DEFINED BY PENNSYLVANIA LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.</p> <p>31. ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIALS/WASTES.</p> <p>32. UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE CHANNEL SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL RESTORED TO ITS ORIGINAL CROSS SECTION AND PROTECTIVE LINING. ANY BACKFILLED CHANNEL SHALL BE CONVEYED PATH OF THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.</p> <p>33. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER, WITHIN 50 FEET OF A SURFACE WATER, AND ON ALL OTHER.</p>	<p>DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.</p> <p>TEMPORARY SEEDING UPON CESSATION OF ACTIVITY FOR 4 DAYS, DISTURBED WORK AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH THE PADEP EROSION AND SEDIMENT POLLUTION CONTROL MANUAL (MARCH, 2012 ED.) OR PENNDOT PUBLICATION 408, FORMULA E. STOCKPILES SHALL ALSO BE SEEDED.</p> <p>PENNDOT FORMULA E: SPECIES: ANNUAL KYRGASS (LOJUM MULTIPLORUM) 8 Y WEIGHT: 10 SPERMATOPHYTES: 10 MINIMUM GERMINATION: 90 MAX % WEED SEED: 0.15 SEEDING RATE (LB/1000SQYD): 10 SEEDING DATES: MARCH 15TH TO JUNE 1ST & AUGUST 1ST TO OCTOBER</p>
--	--	--



- NOTES:**
1. INSPECT INLET FILTER BAG AFTER EACH RUNOFF EVENT. MAINTAIN AS REQUIRED TO ENSURE PROPER FUNCTIONING OF THE BAG.
 2. REMOVE ACCUMULATED SEDIMENT/DEBRIS WHEN THE INLET FILTER REACHES 1/2 MAXIMUM CAPACITY.
 3. REPLACE FILTER BAG IF RIPPED OR TORN, DO NOT USE IN SAG/SUMP CONDITIONS.
 4. USE SANDBAGS AT TYPE C INLET CURB OPENINGS TO PREVENT BYPASS FLOW.
 5. REMOVE AND PROPERLY DISPOSE OF INLET FILTER BAG WHEN NO LONGER NEEDED.

INLET FILTER BAG

TABLE 11.4

Recommended Seed Mixtures

Mixture Number	Species	Seeding Rate - Pure Live Seed ¹	Adverse Sites
1 ²	Spring oats (spring), or	04	90
	Annual ryegrass (spring or fall), or	10	15
	Winter wheat (fall), or	80	120
2 ³	Winter rye (fall)	56	1/2
	Tall fescue, or	60	70
	Five fescue, or	35	40
3	Kentucky bluegrass, plus	25	30
	Rudolf ⁴ , or	3	3
	Perennial ryegrass	15	20
4	Birdfoot trefoil, plus	6	10
	Tall fescue	30	35
	Birdfoot trefoil, plus	6	10
5 ⁵	Red canarygrass	10	15
	Crownvetch, plus	10	15
	Tall fescue, or	20	25
6 ^{6,8}	Perennial ryegrass	20	25
	Crownvetch, plus	10	15
	Annual ryegrass	20	25
7 ⁶	Birdfoot trefoil, plus	6	10
	Crownvetch, plus	10	15
	Tall fescue	20	30
8	Flatpea, plus	20	30
	Tall fescue, or	20	30
	Perennial ryegrass	20	25
9 ⁶	Sericea lespedeza, plus	10	20
	Tall fescue, plus	20	25
	Rudolf ⁴	3	3
10	Tall fescue, plus	10	40
	Five fescue	10	15
	Daertrouge, plus	15	20
11	Birdfoot trefoil	6	10
	Switchgrass, or	15	20
	Bg Bluestem, plus	15	20
12 ⁷	Birdfoot trefoil	6	10
	Ochardgrass, or	20	30
	Smooth bromegrass, plus	25	35
13	Birdfoot trefoil	6	10

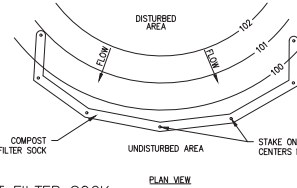
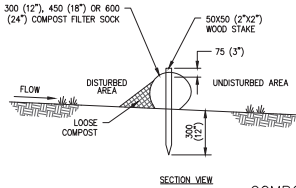
Penn State, "Erosion Control and Conservation Plantings on Noncropland"

1. PLS is the product of the percentage of pure seed times germination divided by 100. For example, to secure the actual planting rate for switchgrass, divide 12 pounds PLS shown on the seed tag. Thus, if the PLS content of a given seed lot is 35%, divide 12 PLS by 0.35 to obtain 34.3 pounds of seed required to plant one acre. All minimum rates are shown in wet to dry.
2. If high-quality seed is used, for most sites seed spring oats at a rate of 2 bushels per acre, winter wheat at 11.5 bushels per acre, and winter rye at 1 bushel per acre. If germination is below 90%, increase these suggested seeding rates by 0.5 bushel per acre.
3. This mixture is suitable for frequent mowing. Do not cut shorter than 4 inches.
4. Keep seeding rate to that recommended in table. These species have many seeds per pound and are very competitive. To seed small quantities of small seeds such as weeping lovegrass and redtop, dilute with dry sawdust, sand, rice hulls, buckwheat hulls, etc.
5. Use for highway slopes and similar sites where the desired species after establishment is crownvetch.
6. Use only in extreme southeastern or extreme southwestern Pennsylvania. Sericea lespedeza is not well adapted to most of PA.
7. Do not mow shorter than 9 to 10 inches.
8. Seed mixtures containing crown vetch should not be used in areas adjacent to wetlands or stream channels due to the invasive nature of this species.

NOTES:

1. REMOVE DEPOSITS WHEN SEDIMENT ACCUMULATION IS 1/2 THE HEIGHT OF THE EXPOSED COMPOST FILTER BERM OR 1/2 OF THE EXPOSED COMPOST FILTER SOCK.
2. PLACE COMPOST FILTER SOCK/BERM ON LEVEL GRADE. EXTEND BOTH ENDS OF THE FILTER SOCK/BERM AT LEAST 8 FT UP SLOPE AT 45 DEGREES TO THE MAIN ALIGNMENT.
3. REPLACE BIODEGRADABLE FILTER SOCK AFTER 6 MONTHS; PHOTODEGRADABLE AFTER 12 MONTHS.

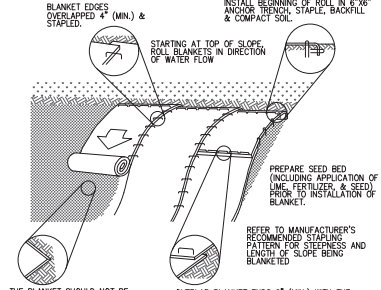
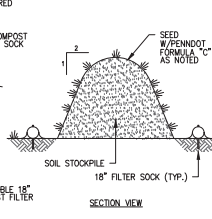
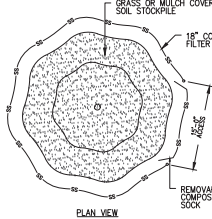
COMPOST FILTER SOCK



NOTES:

1. SOIL STOCKPILE SHALL BE ENCLOSED WITH 18" COMPOST FILTER SOCKS. PROVIDE A 15' WIDE REMOVABLE PORTION FOR EQUIPMENT ACCESS.
2. IMMEDIATELY PROVIDE PENNDOT FORMULA "C" AS SEED MIX FOR TEMPORARY GRASS COVER ON STOCKPILE IF CONSTRUCTION IS DELAYED OR STOCKPILE IS TO BE UNDISTURBED. TEMPORARY COVER SHALL CONSIST OF PRACTICES IN CONFORMANCE WITH SOIL STABILIZATION TECHNIQUES SUCH AS SEEDING, MULCHING, ETC.
3. PASSAGEWAY IS TO REMAIN CLOSED WHEN STOCKPILE IS INACTIVE AND NIGHTLY.
4. HEIGHT SHALL NOT EXCEED 35 FEET. SLOPE SHALL NOT BE STEEPER THAN 2H:1V.
5. MAXIMUM STOCKPILE DIAMETER NOT TO EXCEED 50 FEET.

SOIL STOCKPILE

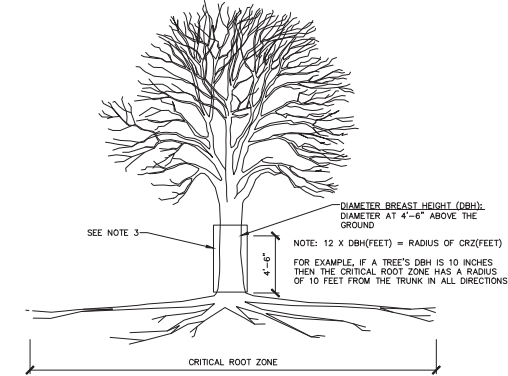


NOTES:

1. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
2. PROVIDE ANCHOR TRENCH AT TOP OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
4. 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.
5. THE BLANKET SHALL BE STARTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. 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.

EROSION BLANKET

THE CRITICAL ROOT ZONE (CRZ)



CRITICAL ROOT ZONE

SEE NOTE 3

NOTE: 12 X DBH (FEET) = RADIUS OF CRZ (FEET)

FOR EXAMPLE, IF A TREE'S DBH IS 10 INCHES THEN THE CRITICAL ROOT ZONE HAS A RADIUS OF 10 FEET FROM THE TRUNK IN ALL DIRECTIONS.

DIAMETER BREAST HEIGHT (DBH): DIAMETER AT 4'-6" ABOVE THE GROUND

SECTION VIEW

TREE PROTECTION DETAIL

1. AS FEW TREES AS PRACTICAL SHALL BE REMOVED.

2. TREES WITHIN, AND ADJACENT TO, THE CONSTRUCTION AREA ARE TO REMAIN SHALL BE PROVIDED PROTECTION.

3. IN ORDER TO FACILITATE CONSTRUCTION, THE LOWER TRUNK/BARK SHALL BE PROTECTED MECHANICALLY WITH CORRUGATED PLASTIC PIPE, 2"X4" LUMBER, OR OTHER PROTECTIVE MATERIAL AND SECURED TO THE TREE.

4. WHERE FEASIBLE, EXCAVATION WITHIN THE CRITICAL ROOT ZONE (CRZ) FOR TREES TO REMAIN SHALL BE AVOIDED.

5. TREES, SHRUBS, AND PLANTINGS WITHIN THE CITY OF BETHLEHEM PARK SHALL BE REPLACED IN KIND WHERE IMPACTS ARE UNAVOIDABLE.

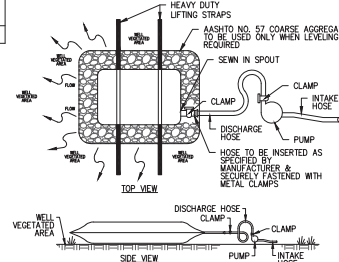
6. REFER TO RIPARIAN PLANTING PLAN FOR RESTORATION ON NORTHERN BANK OF LEHIGH RIVER.

COMPOST STANDARDS

ORGANIC MATTER CONTENT	25% - 100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS & ELONGATED
PH	5.5 - 8.5
MOISTURE CONTENT	30% - 60%
PARTICLE SIZE	30% - 50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0 DS/N (MH/MS/CM) MAXIMUM

SOIL KEY

MAP UNIT SYMBOL	MAP UNIT NAME
UmB	URBAN LAND - DUFFIELD COMPLEX, 0 TO 8 PERCENT SLOPES
UkOB	URBAN LAND - 0 TO 8 PERCENT SLOPES
W	WATER



PUMPED WATER FILTER BAG

NOTES:

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

TABLE 11.2

Soil Amendment Application Rate Equivalents

Soil Amendment	Permanent Seeding Application Rate			Notes
	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	
Agricultural lime	6 tons	240 lb.	2,480 lb.	Or as per soil test; may not be required in agricultural fields
10-10-20 fertilizer	1,000 lb.	25 lb.	210 lb.	Or as per soil test; may not be required in agricultural fields
Temporary Seeding Application Rate				
Agricultural lime	1 ton	40 lb.	410 lb.	Typically not required for topsoil stockpiles
10-10-10 fertilizer	500 lb.	12.5 lb.	100 lb.	Typically not required for topsoil stockpiles

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland"

NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.

TABLE 11.6

Mulch Application Rates

Mulch Type	Per Acre	Application Rate (Min.)		Notes
		Per 1,000 sq. ft.	Per 1,000 sq. yd.	
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



UGI UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



FINAL DESIGN TICKETS

20222240622
20222240623

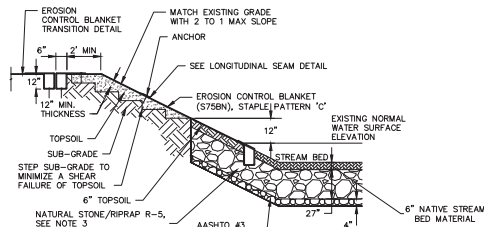


PREPARED BY:

LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT
CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.15", 1/4" & 1/2"	DB	50-256650	1002499140

CD-ESCD1
EROSION & SEDIMENTATION CONTROL AND RESTORATION DETAILS
SHEET 13 OF 17

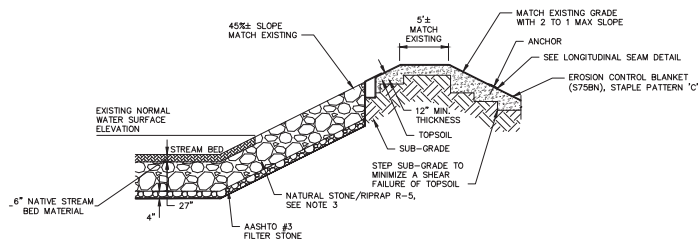


NOTES:

1. THE EMBANKMENT SHALL BE PERMANENTLY SEEDED PRIOR TO THE INSTALLATION OF THE EROSION CONTROL BLANKET.
2. HARVEST NATURAL STONE FROM WORKSPACE IF POSSIBLE. DO NOT SCAVENGE OR DISTURB STREAM BED FOR STONE FOR RESTORATION.
3. NATURAL STONE SIZE SHALL BE EQUIVALENT TO RIPRAP CLASSIFICATION FOR DESIGNATED STREAM CROSSING.
4. CROSS SECTION OF STREAM SHALL REMAIN UNCHANGED FROM EXISTING CONDITIONS.
5. RIPRAP TO BE CHOKED WITH SMALLER STONE DURING INSTALLATION.

NORTH SIDE BANK AND BED RESTORATION DETAIL

NO SCALE



NOTES:

1. THE EMBANKMENT SHALL BE PERMANENTLY SEEDED PRIOR TO THE INSTALLATION OF THE EROSION CONTROL BLANKET.
2. HARVEST NATURAL STONE FROM WORKSPACE IF POSSIBLE. DO NOT SCAVENGE OR DISTURB STREAM BED FOR STONE FOR RESTORATION.
3. RIP RAP SHALL BE REMOVED, STOCKPILED, AND REPLACED DURING RESTORATION. NATURAL STONE EXCAVATED FROM TRENCH CAN ALSO BE USED. SHOULD ADDITIONAL RIP RAP BE NECESSARY, R-5 SHALL BE USED.
4. CROSS SECTION OF STREAM SHALL REMAIN UNCHANGED FROM EXISTING CONDITIONS.
5. RIPRAP TO BE CHOKED WITH SMALLER STONE DURING INSTALLATION.
6. IF SUITABLE (FREE OF DEBRIS, EXCESSIVE ORGANICS, ETC), EXCAVATED MATERIAL FROM THE LEVEE SHALL BE USED FOR BACKFILL. THE MATERIALS FOR COMPACTED FILL SHALL BE PLACED OR SPREAD IN LAYERS, THE FIRST OR BOTTOM LAYER AND THE LAST TWO LAYERS NOT MORE THAN 6 INCHES IN THICKNESS AND ALL LAYERS BETWEEN THE FIRST AND THE LAST TWO LAYERS NOT MORE THAN 12 INCHES IN THICKNESS PRIOR TO COMPACTION. THE FIRST AND EACH SUCCESSIVE LAYER OF COMPACTED FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 90 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 (STANDARD PROCTOR DENSITY) AT A MOISTURE CONTENT WITHIN THE LIMITS OF PLUS 5 TO MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT DETERMINED FROM THE STANDARD PROCTOR DENSITY TEST ASTM D 698.

SOUTH SIDE BANK AND BED RESTORATION DETAIL

NO SCALE

ELIMINATE TEMPORARY WORKSPACE WHERE DIRECTED ON PLANS. CLEARING AND GRUBBING WITHIN ELIMINATED TEMPORARY WORKSPACE IS PROHIBITED.

PLANTINGS SHALL BE NO CLOSER THAN 10' TO THE OUTER WALL OF THE OUTERMOST PIPE.

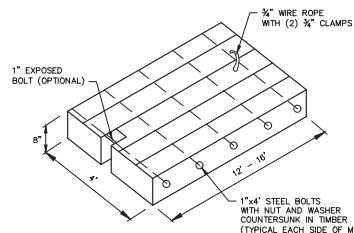


NOTES:

1. TREES AND SHRUBS SHALL BE PLANTED DURING FINAL RESTORATION OF EACH FORESTED RIPARIAN CROSSING LOCATION, AFTER INSTALLATION OF THE EROSION CONTROL BLANKET IN ACCORDANCE TO THE DETAILS.
2. TREES AND SHRUBS SHOULD BE PLANTED DURING THE SPRING AND FALL SEASONS, FROM MID MARCH TO LATE APRIL AND FROM MID SEPTEMBER TO LATE OCTOBER. PLANTING IN SUMMER SHOULD BE MINIMIZED IN ORDER TO AVOID MOISTURE STRESS ON THE RECENTLY TRANSPLANTED PLANT SPECIES. PLANTING SHOULD NOT BE PERFORMED BETWEEN NOVEMBER 1ST AND MARCH 1ST.
3. THE CONTRACTOR SHALL UTILIZE PAEPER PUBLICATION 394-5600-001 AS A GUIDELINE FOR TREE, SHRUB AND FORBES PLANT MATURITY, SIZE, SPACING AND NUTRITIONAL REQUIREMENTS.
4. PLANT DENSITY SHALL BE 434 STEMS PER ACRE.
5. TREES SHALL BE: BLACK WILLOW (SALIX NIGRA)
6. APPLIES TO NORTHERN BANK. PLANTINGS WITHIN CITY OF BETHLEHEM PARK SHALL BE REPLACED IN KIND.

NORTHERN STREAMBANK RESTORATION/PLANTING DETAIL

NO SCALE

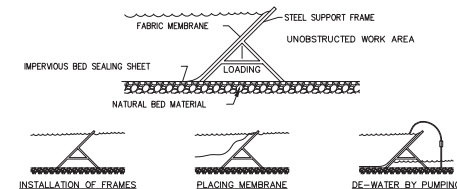


TYPICAL TIMBER MAT DETAIL

NO SCALE

NOTES:

1. MATS ARE BUILT WITH WIRE ROPE TYPICAL EACH END OR EXPOSED BOLT TYPICAL EACH END FOR HANDLING. CONSTRUCTED OF ROUGH CUT HARDWOOD.
2. TIMBER MATS SHALL BE USED IN SOFT AREAS ALONG THE PIPELINE ROUTE AS NEEDED.
3. CONTRACTOR TO PLACE GEOTEXTILE FABRIC (TENCATE MIRA) 500X OR EQUIVALENT UNDER TIMBER MATS.

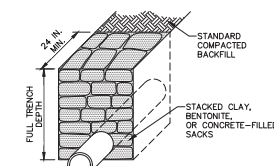


PORTADAM - FLEXIBLE COFFERDAM SYSTEM/ STREAM DIVERSION DETAIL

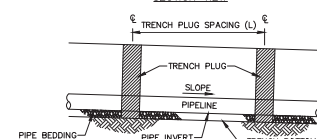
NO SCALE

NOTES:

1. THE STREAM CROSSING CONSTRUCTION SHALL BE PERFORMED BY THE INSTALLATION OF A PORTADAM FLEXIBLE COFFERDAM OR APPROVED EQUAL.



SECTION VIEW



PROFILE VIEW

PA DEP EROSION CONTROL MANUAL TABLE 13.1 MAXIMUM SPACING AND MATERIALS FOR TRENCH PLUGS		
TRENCH SLOPE (%)	SPACING L (FT)	PLUG MATERIAL
< 5	1000	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
5 - 15	500	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
15 - 25	300	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
25 - 35	200	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
35 - 100	100	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
> 100	50	* CEMENT BAGS (WETTED) OR MORTARED STONE

* TOPSOIL MAY NOT BE USED TO FILL SACKS

NOTES:

1. IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL STREAM, RIVER, WETLAND, OR OTHER WATER BODY CROSSINGS.
2. TRENCH PLUGS MUST EXTEND ENTIRE WIDTH OF TRENCH, INCLUDING AREAS WHERE TRENCH CONTAINS MULTIPLE PIPES.

STANDARD CONSTRUCTION DETAIL #13-4 TRENCH PLUG INSTALLATION

NOT TO SCALE

BUDGET LINE #: B014340

SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.135' 1/4" 1/2"	DB	50-256650	1002499140

CD-ESCD2

EROSION &
SEDIMENTATION
CONTROL AND
RESTORATION
DETAILS

SHEET 14 OF 17



UGI
UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



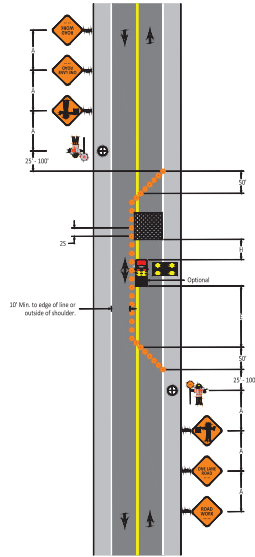
FINAL DESIGN TICKETS
20222240622
20222240623



LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT

CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

1. THIS WORK CONSISTS OF THE MAINTENANCE AND PROTECTION OF TRAFFIC AND THE PROTECTION OF THE PUBLIC WHEN APPROACHING AND DEPARTING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.
2. REMOVE THESE DEVICES IMMEDIATELY UPON COMPLETION OF THE WORK.
3. PERMITTEE MUST ARRANGE FOR INSPECTION OF ALL TRAFFIC CONTROL DEVICES PRIOR TO START OF WORK.
4. COVER OR REMOVE ALL CONFLICTING SIGNS AND ERADICATE ALL CONFLICTING PAVEMENT MARKINGS.
5. MOUNT ALL LONG-TERM ADVANCE WARNING SIGNS TO TYPE III BARRICADES UNLESS OTHERWISE NOTED.
6. ALL SIGNS AND DEVICES TO BE MAINTAINED IN NEW OR LIKE NEW CONDITION.
7. DRIVEWAYS ARE TO BE KEPT ACCESSIBLE AT ALL TIMES. LOCAL AREA SIGNS SO THAT SIGHT DISTANCE WILL NOT BE OBSTRUCTED AT DRIVEWAYS AND LOCAL ROADS.
8. PERMITTEE SHALL NOTIFY LOCAL EMERGENCY AUTHORITIES (E.G. POLICE, FIRE, MEDICAL), AFFECTED BUSINESSES, SCHOOL DISTRICT(S), THE GENERAL PUBLIC, THE DISTRICT PERMIT MANAGER AND THE DISTRICT AREA COORDINATOR AT LEAST FOURTEEN DAYS PRIOR TO ANY SIGNIFICANT TRAFFIC IMPACTS (E.G. LATERAL WIDTH RESTRICTIONS LESS THAN 16 FEET, DETOURS).
9. MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION SHALL GENERALLY BE IN ACCORDANCE WITH APPLICABLE PATA DRAWING(S) IN THE CURRENT PERIOD PUBLICATION 214, "TEMPORARY TRAFFIC CONTROL GUIDELINES."
10. REMOVE ALL SHORT-TERM WORK ZONE TRAFFIC CONTROL SIGNING UPON COMPLETION OF THAT DAY'S WORK PERIOD.
11. RESTRICTING TRAFFIC FLOW WITHIN THE WORK AREA SHALL BE MINIMIZED TO PREVENT TRAFFIC CONGESTION AND UNSAFE TRAFFIC CONDITIONS.
12. NOTIFY THE LOCAL MUNICIPALITY WHERE SIGNALIZED INTERSECTIONS FALL WITHIN THE WORK ZONE. DO NOT FLAG A SIGNALIZED INTERSECTION WITHOUT THE MUNICIPALITY PLACING THE SIGNAL ON FLASH.



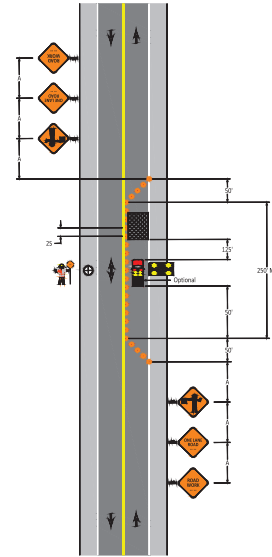
PATA 106 Notes

1. Place 50' taper in closed lane as shown. Continue taper angle and spacing as needed on the opposite side of the roadway center line while maintaining a 10' minimum width.
2. Flaggers shall be clearly visible to traffic for a minimum distance E.
3. When a shadow vehicle is not used, distance E is measured from the end of the taper to the beginning of the work space.



Sign Spacing, Channelizing Devices Spacing, and Roll Ahead Space					
Speed S (MPH)	Channelizing Device Spacing ZS (Feet)	Sign Spacing		Buffer Space E (Feet)	Roll Ahead Space A (Feet)
		Urban A (Feet)	Rural A (Feet)		
25	50	100-200	500-800	155	150
30	60	100-200	500-800	200	150
35	70	100-200	500-800	250	150
40	80	350-500	500-800	305	150
45	90	350-500	500-800	360	150
50	100	350-500	500-800	415	250
55	110	350-500	500-800	470	250

Speed	50' Per Lane Taper	
S (MPH)	Length (Feet)	Minimum Number of Devices
25	50	6
30	50	6
35	50	6
40	50	6
45	50	6
50	50	6
55	50	6



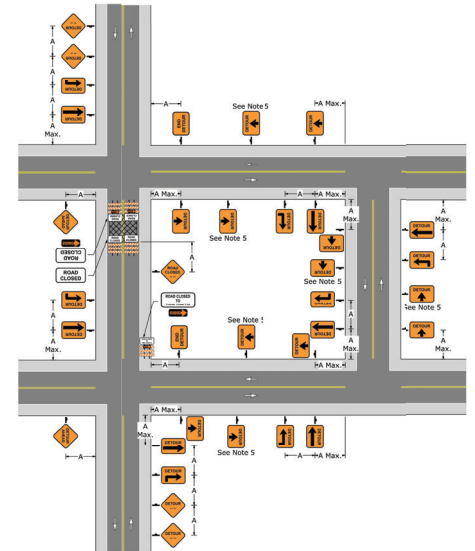
PATA 108 Notes

1. This drawing applies when all of the following conditions are satisfied:
 - a) Roadway is two-lane, two-way.
 - b) Sight distance between the flagger and any vehicles between Points X and Y will be unobstructed.
 - c) The ADT is not greater than approximately 1500.
2. The Flagger shall be clearly visible to traffic for a minimum distance E.
3. For operations of 15 minutes or less:
 - a) The ROAD WORK, ONE LANE ROAD, and FLAGGER SYMBOL signs are not required.
 - b) All channelizing devices may be eliminated if a shadow vehicle is present and the operation does not proceed against normal traffic flow.
4. When a shadow vehicle is not used, distance E is measured from the end of the taper to the beginning of the work space.

Speed	50' Per Lane Taper	
S (MPH)	Length (Feet)	Minimum Number of Devices
25	50	6
30	50	6
35	50	6
40	50	6
45	50	6
50	50	6
55	50	6



Sign Spacing, Channelizing Devices Spacing, and Roll Ahead Space				
Speed (MPH)	Channelizing Device Spacing (Feet)	Sign Spacing		Buffer Space (Feet)
		Urban (A Feet)	Rural (A Feet)	
25	50	100 - 200	500 - 800	155
30	60	100 - 200	500 - 800	200
35	70	100 - 200	500 - 800	250
40	80	350 - 500	500 - 800	300
45	90	350 - 500	500 - 800	350
50	100	350 - 500	500 - 800	425
55	110	350 - 500	500 - 800	495



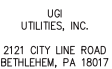
PATA 215

PATA 215

- 1. At locations where there are overlapping detours or several detours within the same area, street names may be added to the DETOUR ARROW signs, or signs with different colored arrows may be used to designate different detour routes. The design of the signs, arrow colors and arrow directions must be consistent throughout the detour.
- 2. THIS STREET TO BE CLOSED FOR MAINTENANCE NEXT WEEK signs should be installed for scheduled work. Install the signs at most appropriate locations. PCHS may be used to post approved messages in lieu of static signs.
- 3. LEFT ADVANCE ARROW and RIGHT ADVANCE ARROW signs are required where the detour route has multiple lanes. These signs are required where turning movements are required. These signs are shown on each approach to display placement guidance.
- 4. TTC signs shall not be attached to permanent sign posts or utility poles without the utility pole owner's permission.
- 5. Install confirmation STRAIGHT THRU ARROW signs at one-mile intervals or after major interchanges.

Signs						
W20-2	W20-3	W20-1.1	M4-9S	M4-9L	M4-9R	M4-9SL
M4-10V	M4-10D	R11-3	R11-4	M4-9SR	M4-9A	

Sign Spacing		
Speed	Sign Spacing	
	Urban	Rural
S (MPH)	A (Feet)	A (Feet)
25	100 - 200	500 - 800
30	100 - 200	500 - 800
35	100 - 200	500 - 800
40	350 - 500	500 - 800
45	350 - 500	500 - 800
50	350 - 500	500 - 800
55	350 - 500	500 - 800

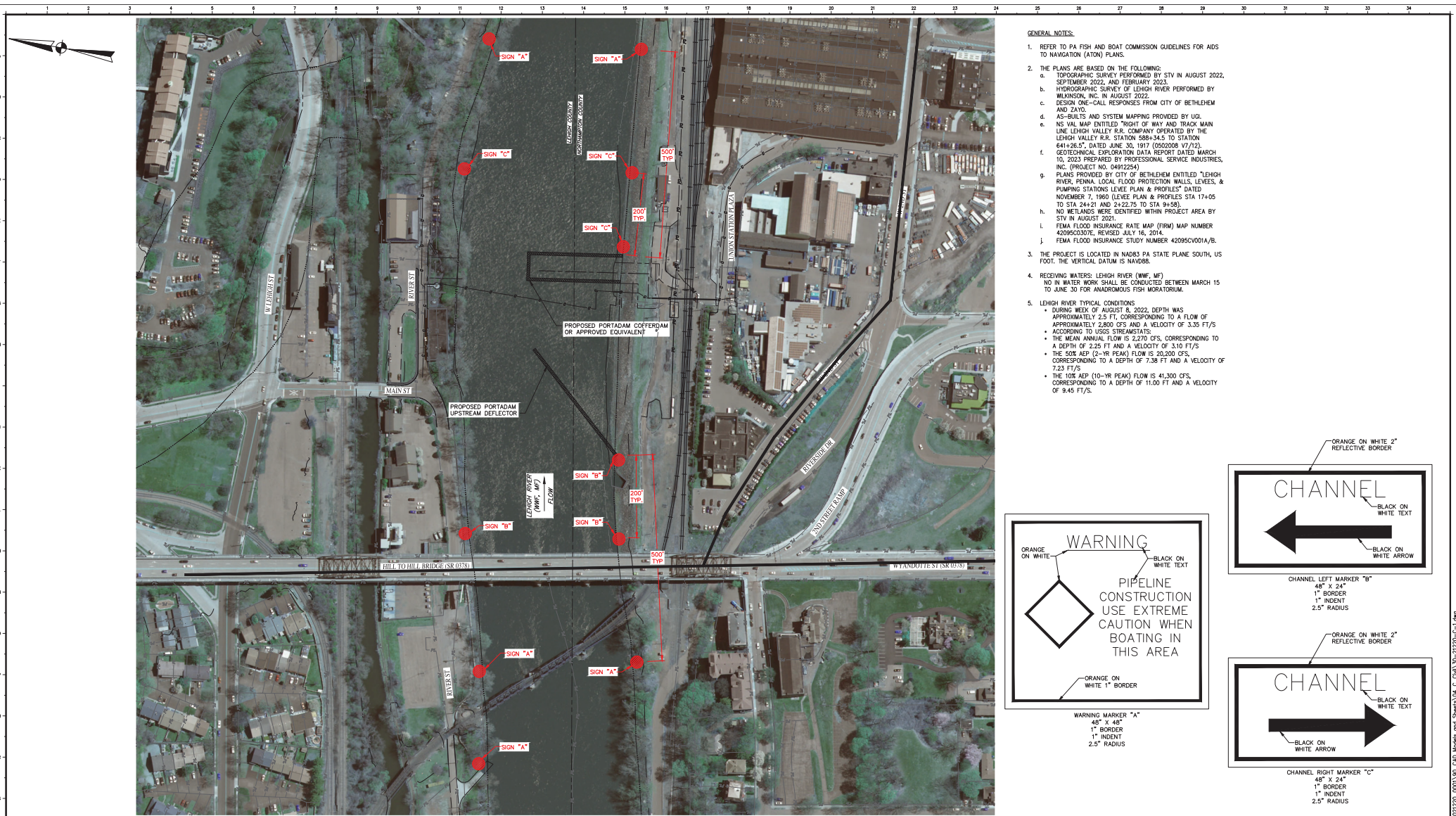


CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

WORK REQUEST NO.	SAP
50-256650	1002499140

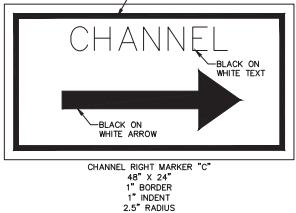
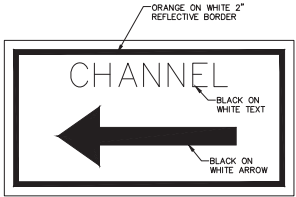
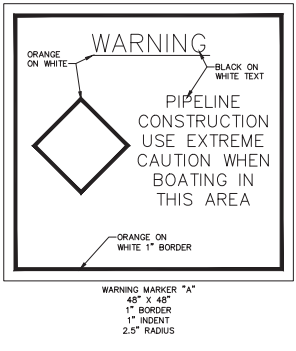
TRAFFIC
CONTROL

SHEET 15 OF 17



PLAN
SCALE: 1"=100'

- GENERAL NOTES:
1. REFER TO PA FISH AND BOAT COMMISSION GUIDELINES FOR AIDS TO NAVIGATION (ATON) PLANS.
 2. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY MUKINSON, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZAYO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGI.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+34.5 TO STATION 641+26.5", DATED JUNE 30, 1917 (0502008 V7/12).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 04912254).
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1960 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 2+22.75 TO STA 9+58).
 - h. NO WETLANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 42095C0307E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 42095C001A/B.
 3. THE PROJECT IS LOCATED IN NA083 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD83.
 4. RECEIVING WATERS: LEHIGH RIVER (WWE, WF)
NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORATORIUM.
 5. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 8, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGAGES:
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50K AEP (2-YR PEAK) FLOW IS 20,200 CFS, CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10K AEP (10-YR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.






UGI
UTILITIES, INC.
2121 CITY LINE ROAD
BETHLEHEM, PA 18017



FINAL DESIGN TICKETS
20222240622
20222240623

PREPARED BY:


HORIZONTAL
GRAPHIC SCALE
100 50 0 100
SCALE IN FEET

LEHIGH RIVER CROSSING
GAS MAIN REPLACEMENT

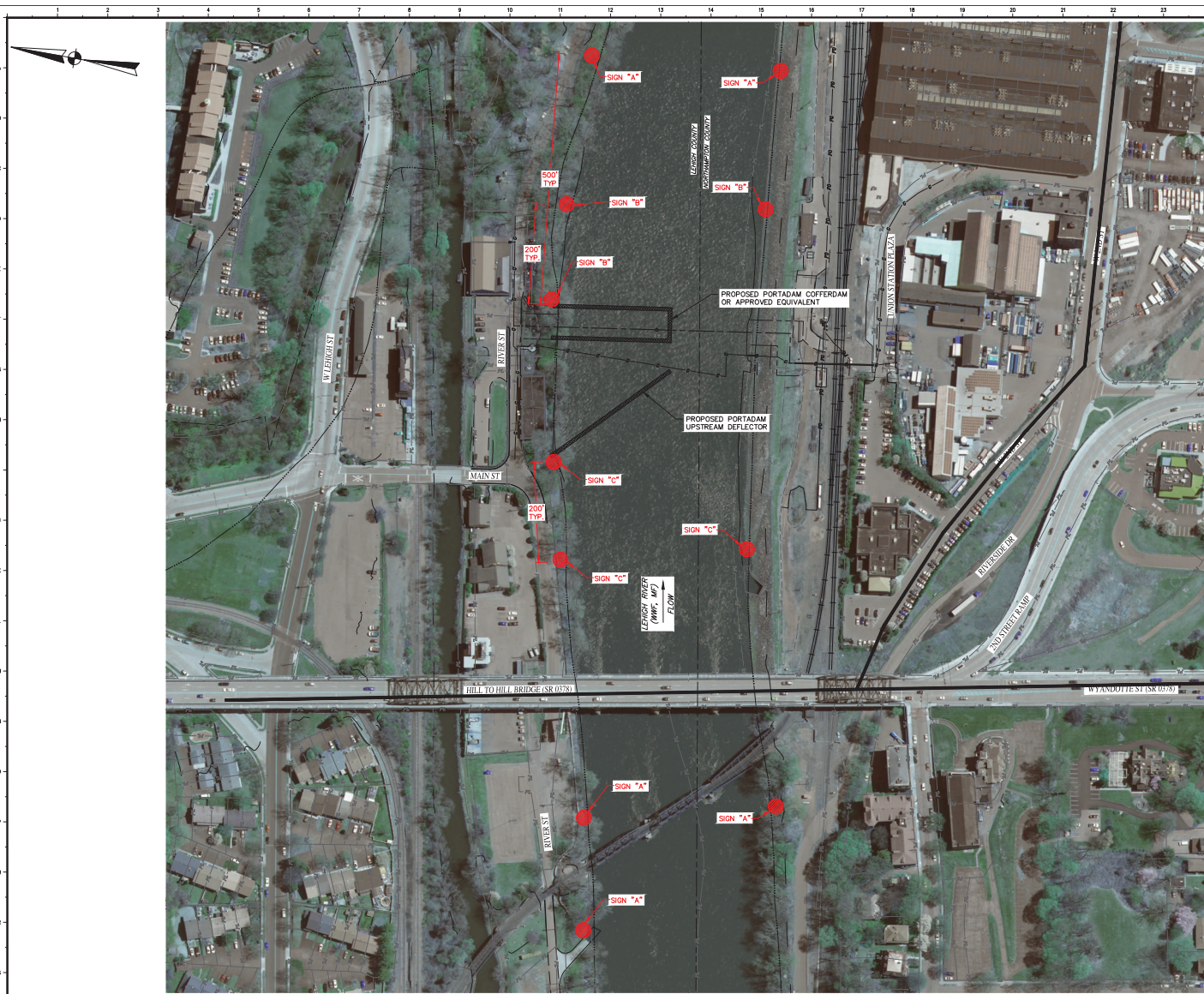
CITY OF BETHLEHEM
NORTHAMPTON & LEHIGH COUNTIES, PA

BUDGET LINE # B014340				
SIZE	MATERIAL	METHOD	WORK REQUEST NO.	SAP
16"	0.035' 40' 1/2"	DB	50-256650	1002499140

CD-ATON-01

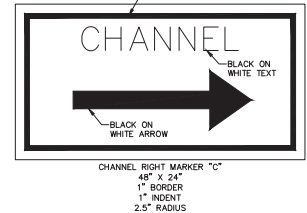
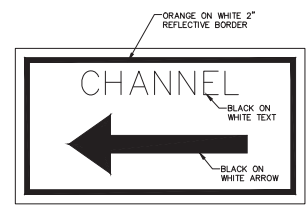
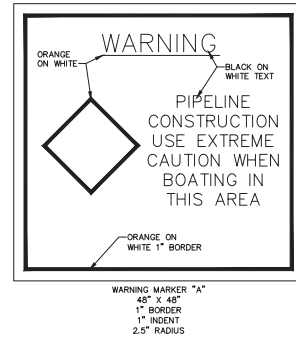
AIDS TO
NAVIGATION PLAN
PHASE 1

SHEET 16 OF 17



PLAN
SCALE: 1"=100'

- GENERAL NOTES:
1. REFER TO PA FISH AND BOAT COMMISSION GUIDELINES FOR AIDS TO NAVIGATION (ATON) PLANS.
 2. THE PLANS ARE BASED ON THE FOLLOWING:
 - a. TOPOGRAPHIC SURVEY PERFORMED BY STV IN AUGUST 2022, SEPTEMBER 2022, AND FEBRUARY 2023.
 - b. HYDROGRAPHIC SURVEY OF LEHIGH RIVER PERFORMED BY MILKINS, INC. IN AUGUST 2022.
 - c. DESIGN ONE-CALL RESPONSES FROM CITY OF BETHLEHEM AND ZAYO.
 - d. AS-BUILTS AND SYSTEM MAPPING PROVIDED BY UGL.
 - e. NS VAL MAP ENTITLED "RIGHT OF WAY AND TRACK MAIN LINE LEHIGH VALLEY R.R. COMPANY OPERATED BY THE LEHIGH VALLEY R.R. STATION 588+34.5 TO STATION 641+26.5", DATED JUNE 30, 1917 (0502008 V7/12).
 - f. GEOTECHNICAL EXPLORATION DATA REPORT DATED MARCH 10, 2023 PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 04912254)
 - g. PLANS PROVIDED BY CITY OF BETHLEHEM ENTITLED "LEHIGH RIVER, PENNA. LOCAL FLOOD PROTECTION WALLS, LEVEES, & PUMPING STATIONS LEVEE PLAN & PROFILES" DATED NOVEMBER 7, 1960 (LEVEE PLAN & PROFILES STA 17+05 TO STA 24+21 AND 2+22.75 TO STA 9+58).
 - h. NO WETLANDS WERE IDENTIFIED WITHIN PROJECT AREA BY STV IN AUGUST 2021.
 - i. FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 42095C0307E, REVISED JULY 16, 2014.
 - j. FEMA FLOOD INSURANCE STUDY NUMBER 42095C000A/B.
 3. THE PROJECT IS LOCATED IN NAD83 PA STATE PLANE SOUTH, US FOOT. THE VERTICAL DATUM IS NAVD83.
 4. RECEIVING WATERS: LEHIGH RIVER (WWE, WF)
NO IN WATER WORK SHALL BE CONDUCTED BETWEEN MARCH 15 TO JUNE 30 FOR ANADROMOUS FISH MORATORIUM.
 5. LEHIGH RIVER TYPICAL CONDITIONS
 - DURING WEEK OF AUGUST 8, 2022, DEPTH WAS APPROXIMATELY 2.5 FT, CORRESPONDING TO A FLOW OF APPROXIMATELY 2,800 CFS AND A VELOCITY OF 3.35 FT/S
 - ACCORDING TO USGS STREAMGAGES:
 - THE MEAN ANNUAL FLOW IS 2,270 CFS, CORRESPONDING TO A DEPTH OF 2.25 FT AND A VELOCITY OF 3.10 FT/S
 - THE 50% AEP (2-YR PEAK) FLOW IS 20,200 CFS, CORRESPONDING TO A DEPTH OF 7.38 FT AND A VELOCITY OF 7.23 FT/S
 - THE 10% AEP (10-YR PEAK) FLOW IS 41,300 CFS, CORRESPONDING TO A DEPTH OF 11.00 FT AND A VELOCITY OF 9.45 FT/S.



 UGI UTILITIES, INC. 2121 CITY LINE ROAD BETHLEHEM, PA 18017	 Know what's Under Ground. Call before you dig. FINAL DESIGN TICKETS 20222240602 20222240623	 PREPARED BY: STV	 HORIZONTAL GRAPHIC SCALE 100 50 0 100 SCALE IN FEET	LEHIGH RIVER CROSSING GAS MAIN REPLACEMENT CITY OF BETHLEHEM NORTHAMPTON & LEHIGH COUNTIES, PA	BUDGET LINE #: B014340		CD-ATON-02 AIDS TO NAVIGATION PLAN PHASE 2 SHEET 17 OF 17
					SIZE 16"	MATERIAL 0.035" ALU. & 1/2"	