

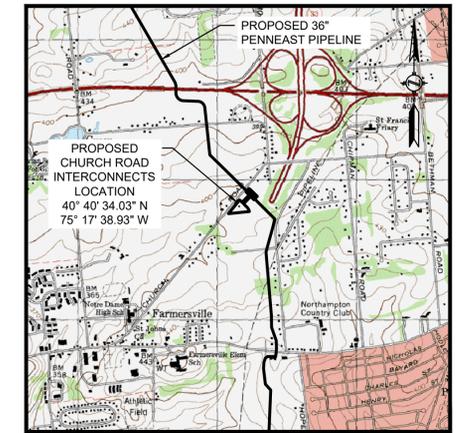
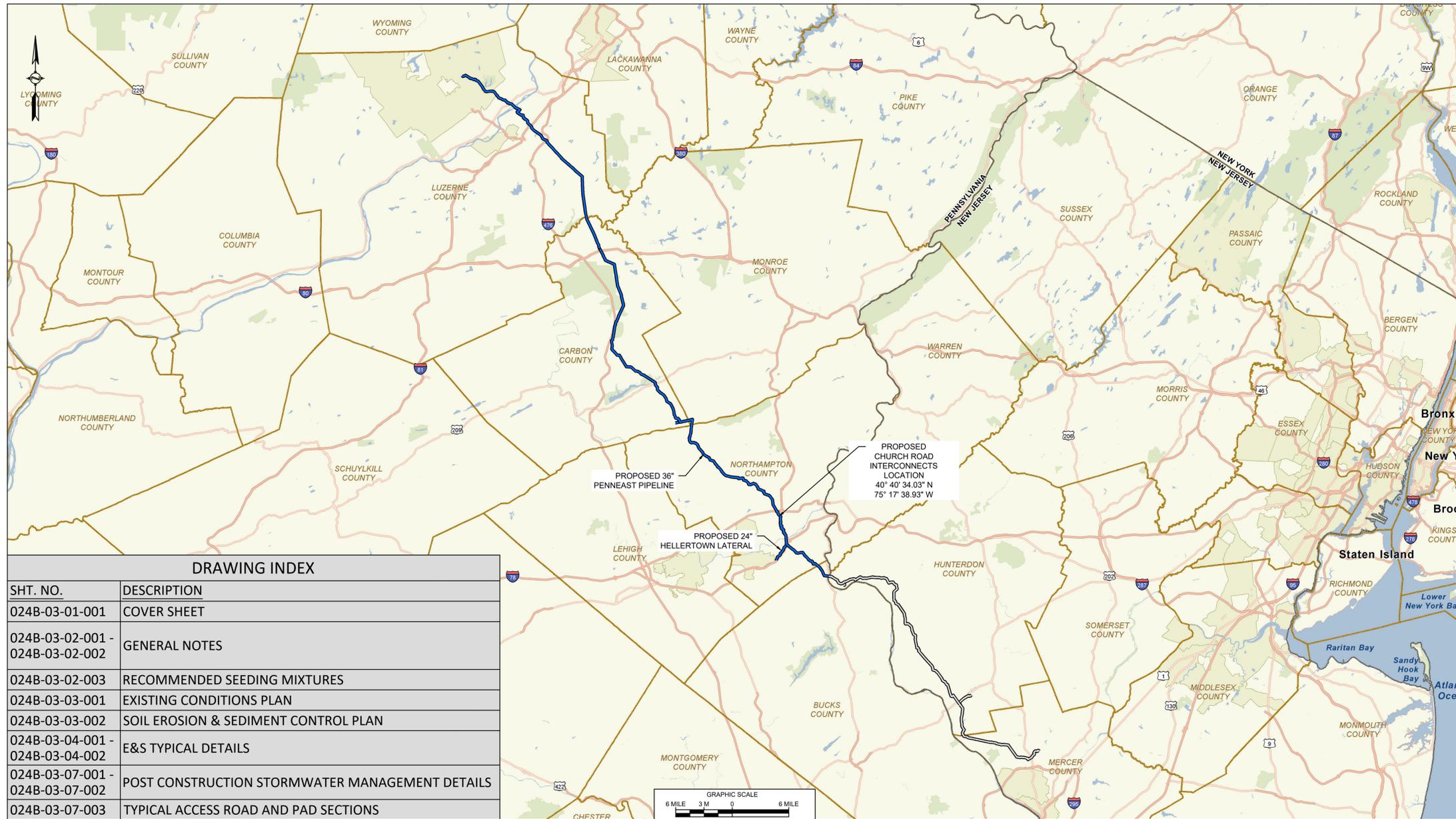
PENNEAST PIPELINE COMPANY, LLC

CHURCH ROAD INTERCONNECTS

BETHLEHEM TOWNSHIP

NORTHAMPTON COUNTY, PA

PADEP - SOIL EROSION AND SEDIMENT CONTROL PLAN



LOCATION MAP
SCALE: 1" = 200'
USGS QUAD: NAZARETH, PA

DRAWING INDEX	
SHT. NO.	DESCRIPTION
024B-03-01-001	COVER SHEET
024B-03-02-001 - 024B-03-02-002	GENERAL NOTES
024B-03-02-003	RECOMMENDED SEEDING MIXTURES
024B-03-03-001	EXISTING CONDITIONS PLAN
024B-03-03-002	SOIL EROSION & SEDIMENT CONTROL PLAN
024B-03-04-001 - 024B-03-04-002	E&S TYPICAL DETAILS
024B-03-07-001 - 024B-03-07-002	POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS
024B-03-07-003	TYPICAL ACCESS ROAD AND PAD SECTIONS

- GENERAL NOTES:**
- THIS PLAN SET CONTAINS INFORMATION FOR THE SOIL EROSION AND SEDIMENT CONTROL PLAN (E&S PLAN) REQUIRED FOR THE PADEP ESCGP. THIS IS A PERMIT DOCUMENT ONLY. ADDITIONAL PLANS AND DOCUMENTATION ARE REQUIRED FOR CONSTRUCTION OF THE PROPOSED DEVELOPMENT.
 - FULL SIZE SHEETS OF THIS PLAN SET MAY BE PRINTED OUT ON 24"x36" SHEETS. REPRODUCTION AT DIFFERENT SIZES SHALL RESULT IN DIFFERENT SCALES.
- REFERENCE (ALL SHEETS):**
- EXISTING CONTOURS SHOWN WERE SURVEYED BY MOTT MACDONALD DURING 2015 THRU 2020. ADDITIONAL EXISTING CONTOURS WERE PROVIDED BY PICTOMETRY, 2015 AND SUPPLEMENTED FROM PASDA.
 - SITE TOPOGRAPHIC AND FEATURE SURVEY PERFORMED BY MOTT MACDONALD 2015 THRU 2020.
 - PROPERTY INFORMATION ON THIS PLAN BASED ON GIS TAX MAP DATA AND RECTIFIED PROPERTY LINES AND ARE NOT THE RESULT OF A BOUNDARY SURVEY.
 - WATERBODY INFORMATION PROVIDED BY AECOM 2015 THRU 2020.
 - HORIZONTAL DATUM IS UTM83-18F. VERTICAL DATUM IS NAVD1988.

PENNSYLVANIA ONE-CALL SERIAL NUMBERS
20151831983-000



CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING DAYS IN
DESIGN STAGE - STOP CALL
PENNSYLVANIA ONE CALL SYSTEM INC.
1-800-242-1776



REFERENCE DRAWINGS			REVISIONS				
DWG. NO.	TITLE	NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP			02/2020	DOW(MM)	KEK(MM)	MDN(MM)



PENNEAST PIPELINE PROJECT			
CHURCH ROAD INTERCONNECTS			
COVER SHEET			
NORTHAMPTON COUNTY, PENNSYLVANIA			
DRAWN BY	DOW	DATE ISSUED	02/21/2020
CHECKED BY	KEK	SCALE	AS SHOWN
APPROVED BY	MDN	APPROVED BY	
DWG. NO.	024B-03-01-001	REV. NO.	A

THIS DRAWING IS THE PROPERTY OF PENNEAST PIPELINE COMPANY, LLC ("P.E."). IT MAY CONTAIN INFORMATION DESCRIBING TECHNOLOGY OWNED BY P.E. AND DEEMED TO BE COMMERCIALY SENSITIVE. IT IS TO BE USED ONLY IN CONNECTION WITH WORK PERFORMED FOR P.E. REPRODUCTION IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN WORK FOR P.E. IS EXPRESSLY FORBIDDEN EXCEPT BY EXPRESS WRITTEN PERMISSION OF P.E. IT IS TO BE SAFEGUARDED AGAINST BOTH DELIBERATE AND INADVERTENT DISCLOSURE TO ANY THIRD PARTY.

PROJECT CONSTRUCTION SEQUENCING/SOIL LIMITATIONS

GENERAL CONDITIONS:

- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. ANY DEVIATION FROM THE FOLLOWING SEQUENCE MUST BE APPROVED IN WRITING FROM THE JURISDICTIONAL COUNTY CONSERVATION DISTRICT.
- WORK EFFORT WILL BE SUBDIVIDED INTO CATEGORIES AND PERFORMED BY SPECIALIZED CREWS (E.G. SITE PREPARATION/CLEARING, PIPE CONSTRUCTION, ETC). EACH CREW WILL PROGRESS IN A LOGICAL MANNER. THE TIME PERIOD BETWEEN SITE CLEARING AND FINAL STABILIZATION SHALL BE MINIMIZED TO THE EXTENT PRACTICABLE. NO ONE SEGMENT OF AREA OF THE PIPELINE ALIGNMENT SHALL GO WITHOUT STABILIZATION (TEMPORARY OR PERMANENT) FOR A PERIOD GREATER THAN 30 DAYS IN ACCORDANCE WITH THE REQUIREMENTS FOR WELDED STEEL PIPELINE DESCRIBED IN CHAPTER 13 OF THE MARCH 2012 EROSION AND SEDIMENT POLLUTION CONTROL MANUAL. THE FOLLOWING DESCRIBES THE TYPICAL SEQUENCE OF CONSTRUCTION ACTIVITIES THAT SHALL OCCUR WITHIN THE TYPES OF AREAS DESCRIBED BELOW, WHICH WILL BE ENCOUNTERED DURING CONSTRUCTION.
- SOIL DISTURBANCE (E.G., GRUBBING, AND TOPSOIL STRIPPING) SHALL BE MINIMIZED PRIOR TO INSTALLING EROSION AND SEDIMENT CONTROLS IN THE VICINITY OF THE DISTURBANCE IN ACCORDANCE WITH THIS EROSION & SEDIMENT CONTROL PLAN (E&SCP). SIGNIFICANT DEVIATION FROM THE FOLLOWING SEQUENCE OF CONSTRUCTION MUST BE APPROVED IN WRITING (E.G. VIA E-MAIL) BY THE COUNTY CONSERVATION DISTRICT.
- STAGING AREAS, ASSEMBLY AREAS, TEMPORARY EQUIPMENT AND NON-HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED A MINIMUM OF 50 FEET BACK FROM THE TOP OF THE STREAM BANK, WATER BODY, OR WETLAND AND OUTSIDE OF THE 100 YEAR FLOODWAY. HAZARDOUS OR POLLUTIVE MATERIAL STORAGE AREAS SHALL BE LOCATED A MINIMUM OF 100 FEET BACK FROM THE TOP OF THE STREAM BANK, WATER BODY, OR WETLAND AND OUTSIDE OF THE 100-YEAR FLOODWAY.
- THE GENERAL CONTRACTOR SHALL BE IDENTIFIED TO BECOME A CO-PERMITTEE IN THE EROSION AND SEDIMENT CONTROL GENERAL PERMIT (ESCGP) AND ARE RESPONSIBLE FOR THE DISCHARGES OF STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY. THE GENERAL CONTRACTOR SHALL BE JOINTLY AND INDIVIDUALLY RESPONSIBLE TOGETHER WITH PENNEAST (PERMITTEE) FOR COMPLIANCE WITH ALL CONDITIONS OF THIS PERMIT AND APPLICABLE LAWS. PRIOR TO CONSTRUCTION, PENNEAST AND THE GENERAL CONTRACTOR SHALL NOTIFY THE PADEP OR THE CONSERVATION DISTRICT BY SUBMITTING AN APPLICATION FOR "CO-PERMITTEE ADDITION TO THE ESCGP AUTHORIZATION".

CONSTRUCTION PREPARATION ACTIVITIES:

- UPON INSTALLATION OR STABILIZATION OF ALL PERIMETER SEDIMENT CONTROL BMP'S AND AT LEAST 3 DAYS PRIOR TO PROCEEDING WITH THE BULK EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE OR CO-PERMITTEE SHALL PROVIDE NOTIFICATION TO THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN. DEVIATION FROM THE SEQUENCE MUST BE APPROVED BY THE APPLICABLE COUNTY CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION. EACH STEP OF THE SEQUENCE SHALL BE COMPLETED BEFORE PROCEEDING TO THE NEXT STEP, EXCEPT WHERE NOTED.
- ESTABLISH CONSTRUCTION SUPPORT FACILITIES.
- IDENTIFY UTILITIES AND OTHER CRITICAL SITE FEATURES TO BE PROTECTED.
- FLAG AND/OR STAKE SENSITIVE AREAS TO BE PROTECTED.
- FLAG AND/OR STAKE PROPOSED CONSTRUCTION LIMITS OF DISTURBANCE.

BMP INSTALLATION SEQUENCE:

- AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OWNER AND/OR OPERATOR SHALL NOTIFY THE PADEP AND NORTHAMPTON COUNTY CONSERVATION DISTRICT BY EITHER TELEPHONE OR CERTIFIED MAIL OF THE INTENT TO COMMENCE EARTH DISTURBANCE ACTIVITIES. ATTENDANCE AT A PRE-CONSTRUCTION CONFERENCE IS REQUIRED UPON REQUEST OF THE PADEP.
- AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM AT 1-800-242-1776 TO DETERMINE THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
- INSTALL ROCK CONSTRUCTION ENTRANCES.
- INSTALL COMPOST FILTER SOCK DOWNSLOPE OF ANY PROPOSED DISTURBED/EXCAVATED AREA AND STOCKPILES AS SHOWN ON THE ESC PLAN.
- PERFORM CLEARING AND GRUBBING TO THOSE AREAS DESCRIBED IN EACH STAGE OF WORK. DISPOSE OF EXCESS TOPSOIL OFF-SITE. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT OFF-SITE WASTE AREAS HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR PADEP PRIOR TO BEING ACTIVATED.
- CONSTRUCT DIVERSION CHANNELS ON THE EASTERLY SIDE OF THE SITE (SWALE 3 AND SWALE 4). IMMEDIATELY PROVIDE TEMPORARY SEEDING AND MULCH TO NEWLY GRADED SLOPES. INSTALL WEIGHTED SEDIMENT FILTER TUBES IN SWALES AT LOCATIONS SHOWN ON THE E&S PLANS. CONSTRUCT PROPOSED INFILTRATION TRENCH. ENGINEER SHALL INSPECT THE INFILTRATION TRENCH UPON INSTALLATION.
- PERFORM GRADING ACTIVITIES DETAILED BY PROPOSED GRADING, NOTES, AND DETAILS SHOWN ON THE PLAN DRAWINGS. AS PER PROJECT SPECIFICATIONS, ADDITIONAL TEMPORARY PLACEMENT OF COMPOST FILTER SOCK MAY BE NECESSARY AT THE CONTRACTOR'S DISCRETION SHOULD ACCELERATED EROSION BE OBSERVED DURING GRADING ACTIVITIES.
- CONSTRUCT PAD AND FACILITIES ACCORDING TO SPECIFICATIONS WITHIN THESE PLAN SHEETS INCLUDING ALL STABILIZATION MEASURES.
- CONSTRUCT PROPOSED INFILTRATION BASIN AND BOTH SWALES (SWALE 1 AND SWALE 2) LEADING TO THE BASIN. INSTALL WEIGHTED SEDIMENT FILTER TUBES IN SWALES AT LOCATIONS SHOWN ON THE E&S PLANS. ENGINEER SHALL INSPECT THE BASIN AND SWALE INSTALLATION.
- AREAS WITH MINOR SOIL COMPACTION SHALL BE RIPPED TO A DEPTH OF 8", AND AREAS OF MAJOR COMPACTION SHALL BE RIPPED TO A DEPTH OF 20". NO RIPPING SHALL TAKE PLACE IN THE VICINITY OF THE MAINLINE PIPING OR OTHER UNDERGROUND UTILITIES.
- PLACE TOPSOIL IN ALL AREAS TO BE VEGETATED. IF WORK IS COMPLETED OUTSIDE OF THE GERMINATING SEASON, THEN IMMEDIATELY PROVIDE TEMPORARY SEEDING AND MULCH TO NEWLY GRADED SLOPES.
- APPLY PERMANENT SEED MIX AND MULCH TO DISTURBED AREAS AS SPECIFIED AND IN ACCORDANCE WITH THIS PLAN.
- ANY TEMPORARY MEASURES (SUCH AS COMPOST FILTER SOCK AND WEIGHTED SEDIMENT FILTER TUBES) INSTALLED BY CONTRACTOR DURING GRADING SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. THE ENGINEER SHALL INSPECT FINAL STABILIZATION PRIOR TO REMOVAL OF TEMPORARY MEASURES.
- CLEAN WORK AREA OF ANY DEBRIS CREATED DURING THE CONSTRUCTION SEQUENCE.

SITE CLEARING (TREE CUTTING) & GRUBBING:

- INITIATE CLEARING AND GRUBBING OF CONSTRUCTION WORK AREA (CWA) AND ACCESS ROADS AS NEEDED. LIMIT CLEARING AND GRUBBING TO CUTTING EXISTING VEGETATION RATHER THAN BULLDOZING THE VEGETATION.
- ALL BRUSH AND TREES WILL BE FELLED INTO THE CWA TO MINIMIZE DAMAGE TO TREES AND STRUCTURES ADJACENT TO THE CWA.
- INSTALL TEMPORARY ACCESS ROADS.
- WOODY VEGETATION CLEARING OF THE CWA WILL TAKE PLACE IN A SINGLE PASS OF THE SITE. CONTRACTOR/PENNEAST TO DETERMINE WHETHER TIMBER WILL BE HAULED OFF SITE OR CHIPPED AND SPREAD EVENLY WITHIN THE CWA, REMOVED FROM SITE, STOCKPILED AT STAGING AREAS OR BLOWN OFF-SITE WITH LANDOWNER APPROVAL. WOOD CHIPS WILL NOT BE LEFT WITHIN AGRICULTURAL LANDS, WETLANDS, OR WITHIN 50 FEET OF WETLANDS. WOOD CHIPS WILL NOT BE STOCKPILED IN A MANNER THAT THEY MAY BE TRANSPORTED INTO A WETLAND.
- INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THIS PLAN. EROSION AND SEDIMENT CONTROL INSTALLATION, SIMILAR TO OTHER ACTIVITIES, MAY BE CONDUCTED AS PIPELINE CONSTRUCTION ACTIVITIES PROGRESS, HOWEVER, SOIL DISTURBANCE SHALL BE MINIMIZED UNTIL THE APPROPRIATE TEMPORARY EROSION AND SEDIMENT CONTROLS HAVE BEEN INSTALLED IN THE PROPOSED WORK AREA.
- GRUB TREE STUMPS IN CLEARED CWA. GRIND STUMPS AND REMOVE FROM RIGHT-OF-WAY (RIGHT OF WAY) AND HAUL OFF SITE OR STOCKPILE AT STAGING AREAS FOR USE AS MULCH STABILIZATION AFTER EARTH DISTURBING ACTIVITIES ARE COMPLETED.
- LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER TRENCH LINE.
- NOTIFY THE COUNTY CONSERVATION DISTRICT AFTER INSTALLATION OR STABILIZATION OF ALL PERIMETER SEDIMENT CONTROL BMP'S (INCLUDING TOPSOIL PILES) WITHIN EACH WORK AREA AND AT LEAST 3 DAYS PRIOR TO PROCEEDING WITH BULK EARTH DISTURBANCE ACTIVITIES.
- EXISTING SURFACE DRAINAGE PATTERNS WILL NOT BE ALTERED BY THE PLACEMENT OF TIMBER OR BRUSH PILES AT THE EDGE OF THE CWA.

HYDROSTATIC TESTING:

- THE EI SHALL NOTIFY THE AGENCIES OF THE INTENT TO USE SPECIFIC TEST WATER SOURCES AT LEAST 48 HOURS BEFORE TESTING ACTIVITIES.
- PUMPS USED FOR HYDROSTATIC TESTING WITHIN 100 FEET OF ANY WATERBODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL COUNTERMEASURE PLAN.
- USE ONLY THE WATER SOURCES IDENTIFIED IN THE CLEARANCE PACKAGE/PERMIT BOOK.
- LOCATE HYDROSTATIC TEST MANIFOLDS OUTSIDE WETLANDS AND RIPARIAN AREAS TO THE GREATEST EXTENT PRACTICAL.
- FOR AN OVERLAND DISCHARGE OF TEST WATER, DEWATER INTO AN ENERGY DISSIPATION DEVICE CONSTRUCTED OF STRAW BALES AND ABSORBENT BOOMS.
- DEWATER ONLY AT THE LOCATIONS SHOWN ON THE CONSTRUCTION DRAWINGS OR LOCATIONS IDENTIFIED IN THE HYDROSTATIC TEST PACKAGE.
- LOCATE ALL DEWATERING STRUCTURES IN A WELL-VEGETATED AND STABILIZED AREA, IF PRACTICAL, AND ATTEMPT TO MAINTAIN AT LEAST A 50-FOOT VEGETATED BUFFER FROM ADJACENT WATERBODY/WETLAND AREAS. IF AN ADEQUATE BUFFER IS NOT AVAILABLE, BMP'S OR SIMILAR EROSION CONTROL MEASURE MUST BE INSTALLED.
- REGULATE DISCHARGE RATE, USE ENERGY DISSIPATION DEVICE(S), AND INSTALL BMP'S, AS NECESSARY, TO PREVENT EROSION, STREAMBED SCOUR TO AQUATIC RESOURCES, SUSPENSION OF SEDIMENTS, FLOODING OR EXCESSIVE STREAM FLOW.
- THE EI SHALL SAMPLE AND TEST THE SOURCE WATER AND DISCHARGE WATER IN ACCORDANCE WITH THE PERMIT REQUIREMENTS.

DEMOLITION AND SITE CLEAN UP:

- COMPLETE PERMANENT STABILIZATION OF ALL REMAINING AREAS OF DISTURBANCE, INCLUDING:
 - REPLACE TOPSOIL
 - APPLY PERMANENT SEEDING, SOIL AMENDMENT, AND MULCH OR EROSION CONTROL BLANKET.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER OR OPERATOR SHALL CONTACT THE COUNTY CONSERVATION DISTRICT AND PADEP FOR AN INSPECTION PRIOR TO THE REMOVAL/CONVERSION OF THE EROSION AND SEDIMENT CONTROL BMP'S.
- REMOVE TEMPORARY CONTROL MEASURES UPON APPROVAL OF THE COUNTY CONSERVATION DISTRICT AGENT OR PADEP.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES, REMOVAL OF ALL TEMPORARY BMP'S, INSTALLATIONS OF ALL PERMANENT PCSM BMP'S, AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE COUNTY CONSERVATION DISTRICT FOR A FINAL INSPECTION. TEMPORARY WORKSPACE WILL BE RESTORED AS CLOSELY AS POSSIBLE TO ORIGINAL CONTOURS.
- ANY MATERIALS NOT INCORPORATED AS TRENCH BACKFILL OR GENERAL GRADING (E.G. UNCONTAMINATED SOIL, ROCK, STONE, GRAVEL, BRICK AND BLOCK, CONCRETE AND USED ASPHALT, AND WASTE FROM LAND CLEARING, GRUBBING AND EXCAVATION, INCLUDING TREES, BRUSH, STUMPS AND VEGETATIVE MATERIAL) WILL BE REUSED, RECYCLED OR REMOVED FROM THE CONSTRUCTION WORK LIMITS IN ACCORDANCE WITH PADEP " SOLID WASTE MANAGEMENT AT 25 PA CODE.260.1 ET SEQ., 271.1 AND 287.1 ET SEQ.
- CONTRACTOR DEMOLITION.

POST-CONSTRUCTION:

- CONTINUE TO CONDUCT INSPECTIONS UNTIL THE SITE HAS REACHED PERMANENT STABILIZATION.
- PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER 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.
- TEMPORARY E&S BMP'S MAY BE REMOVED AFTER THE ENTIRE CONTRIBUTORY AREA TO EACH BMP REACHES PERMANENT STABILIZATION.
- PRIOR TO APPLICATION OF THE SEED IN ALL SUPPORT & STAGING AREAS, THE SEEDBED WILL BE PREPARED TO A DEPTH OF 3 TO 4 INCHES USING APPROPRIATE EQUIPMENT TO PROVIDE A FIRM, SMOOTH SEEDBED THAT IS FREE OF DEBRIS AND SCARIFIED TO ENSURE SEEDS LODGE AND GERMINATE. THE SEED MIXTURE WILL BE APPLIED UNIFORMLY PER PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2012, CHAPTER 11 STABILIZATION FOR SEEDING RECOMMENDATIONS.

AGRICULTURAL / RESIDENTIAL RESTORATION NOTES:

- GRAZING DEFERMENT PLANS WILL BE COORDINATED WITH LANDOWNERS TO MINIMIZE GRAZING DISTURBANCE OF REVEGETATED AREAS TO THE EXTENT PRACTICABLE.
- THE MIXING OF TOPSOIL WITH SUBSOIL SHALL BE PREVENTED BY STRIPPING TOPSOIL FROM THE WORK AREA WITHIN DESIGNATED AREAS AND IN COORDINATION WITH THE APPLICABLE ACCESS AGREEMENTS.
- SPECIAL RESTORATION CONDITIONS MAY BE COORDINATED WITH THE LANDOWNERS FOR AGRICULTURAL FIELDS, WHICH SHALL TAKE PRECEDENCE TO THE PROPOSED STABILIZATION PROCEDURES, ONLY IF THE SPECIAL CONDITIONS MEET THE MINIMUM REQUIREMENTS OF PADEP AND FER.C.

THE SOIL LIMITATIONS SHALL BE ADDRESSED AS FOLLOWS:

LIMITATIONS AND RESOLUTIONS:

LIMITATION: CUTBANKS CAVE, LOW STRENGTH - CUTBANKS HAVE POTENTIAL TO CAVE AND MANY SOILS ARE LOW STRENGTH.
RESOLUTION: CONTRACTOR SHALL BE AWARE OF POTENTIAL ISSUES AND FOLLOW OSHA GUIDELINES FOR OPEN TRENCHING. LOW SOIL STRENGTH IS NOT A CONCERN DUE TO THE NATURE OF THE PROPOSED PROJECT. UTILITY TRENCHING WILL NOT BE ADVERSELY EFFECTED BY POOR SOIL STRENGTH.

LIMITATION: CORROSIVE TO STEEL AND/OR CONCRETE
RESOLUTION: IF STEEL PIPE IS USED RUST PROTECTION BY COATINGS AND/OR USE OF CATHODIC PROTECTION IS RECOMMENDED. IF CONCRETE IS USED SOIL SHALL BE TESTED AND CONCRETE COATED AS RECOMMENDED BY MANUFACTURER.

LIMITATION: DROUGHTY - SOILS EXHIBITING A POOR MOISTURE-HOLDING CAPACITY, WHICH MAY LIMIT THE VEGETATIVE STABILIZATION ABILITY OF THE SOIL.
RESOLUTION: FOR DROUGHTY SOILS, CONTRACTOR TO REFER TO "TABLE 11-3: PLANT TOLERANCES OF SOIL LIMITATION FACTORS" TO SELECT APPROPRIATE VEGETATION. EROSION CONTROL BLANKETS SHOULD ALSO BE CONSIDERED IN SOIL CONDITIONS THAT MAKE REVEGETATION DIFFICULT (E.G. DROUGHTY). WHEN INSTALLED PROPERLY, EROSION CONTROL BLANKETS CAN HELP HOLD SOIL PARTICLES IN PLACE AND RETAIN SOIL MOISTURE, PROMOTING SEED GERMINATION.

LIMITATION: EASILY ERODIBLE
RESOLUTION: SPECIAL ATTENTION SHALL BE GIVEN TO MAINTAINING EXISTING VEGETATION IN EASILY ERODIBLE SOILS, TO THE EXTENT POSSIBLE. EASILY ERODIBLE SOILS WITHIN 50 FEET OF A SURFACE WATER SHOULD BE BLANKETED. WHEREVER ERODIBLE SOILS ARE PRESENT, OR WHERE THERE IS NOT A SUFFICIENT VEGETATIVE FILTER STRIP BETWEEN THE WATERBAR AND A RECEIVING SURFACE WATER, THE WATERBAR SHOULD BE PROVIDED WITH A TEMPORARY PROTECTIVE LINER.

LIMITATION: FLOODING - ANY SOIL SUBJECT TO INUNDATION DURING A 2-YEAR/24HR STORM EVENT.
RESOLUTION: (SEE WET SOILS)

LIMITATION: HIGH WATER TABLE, POTENTIALLY HYDRIC - HIGH WATER TABLE IS TO BE EXPECTED AND MANY OF THE SOILS ARE POTENTIALLY HYDRIC.
RESOLUTION: FOLLOW E&S PLAN WITH REGARD TO PUMPING AND DEWATERING. DISCHARGE OF SEDIMENT LADEN WATER IS PROHIBITED UNLESS WITHOUT FIRST PASSING THRU A "PUMPED WATER FILTER BAG" BMP.

LIMITATION: HYDRIC / HYDRIC INCLUSIONS - A SOIL THAT IS SATURATED, FLOODED, OR PONDED LONG ENOUGH DURING THE GROWING SEASON TO DEVELOP ANAEROBIC-CONDITIONS. WHEN SUCH A SOIL IS LOCATED IN AN AREA THAT HAS HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY, A WETLAND IS PRESENT.
RESOLUTION: HYDRIC SOILS THAT ARE DELINEATED WETLANDS, SHOULD BE AVOIDED TO THE EXTENT POSSIBLE. STAGING AREAS SHOULD BE LOCATED 50 FEET FROM THE EDGE OF WETLAND. MOVEMENT OF VEHICLES ACROSS WETLAND MUST BE MINIMIZED. WHERE VEHICLES NEED TO CROSS WETLANDS, THE USE OF TEMPORARY TIMBER MATS SHALL BE USED DUE TO THE POTENTIAL FOR RUTTING. TRENCH PLUGS SHALL BE INSTALLED TO PREVENT THE TRENCH FROM DRAINING THE WETLANDS OR CHANGING THE HYDROLOGY.

LIMITATION: LOW STRENGTH / LANDSLIDE PRONE - SOILS WITH LOW STRENGTH HAVE A LESSER ABILITY TO RESIST SLOPE FAILURE, SUCH AS SLUMPING, FLOWING, ETC. MATERIALS WITH LOW SHEAR STRENGTH ARE MORE SUSCEPTIBLE TO LANDSLIDES AND EMBANKMENT FAILURES.
RESOLUTION: PRECAUTIONS SHOULD BE TAKEN TO PREVENT SLOPE FAILURES DUE TO IMPROPER CONSTRUCTION PRACTICES SUCH AS OVER-STEEPENING AND OVERLOADING SLOPES, REMOVAL OF LATERAL SUPPORT, AND FAILURE TO PREVENT SATURATION OF SLOPES. SETBACKS SHOULD COMPLY WITH THE STANDARDS CONTAINED IN CHAPTER 16 OF THE, "PADEP - EROSION AND SEDIMENT CONTROL PROGRAM MANUAL," UNLESS IT CAN BE SHOWN THAT PROPOSED CUTS AND FILLS DO NOT POSE A HAZARD TO PUBLIC SAFETY OR SURFACE WATERS. ALSO, ROAD FILL MATERIAL WILL LIKELY NEED TO BE IMPORTED IN AREAS WHERE SOILS HAVE LOW STRENGTH.

LIMITATION: SLOW PERCOLATION - PERMEABILITY RATE LESS THAN OR EQUAL TO 0.2 INCHES/HR.
RESOLUTION: BMP'S TO BE INSPECTED AFTER RUNOFF EVENTS, MAKE SURE THERE IS ADEQUATE AREA FOR PUMPED WATER DISCHARGE. PCSM FACILITIES DESIGN BASED ON SITE SPECIFIC TESTING.
LIMITATION: PIPING
RESOLUTION: PIPING POTENTIAL IN THE SOIL WILL BE MINIMIZED BY THE USE OF TRENCH PLUGS. FURTHERMORE, ANY PLANNED EMBANKMENTS OR PERMANENT IMPROVEMENTS SUSCEPTIBLE TO PIPING SHALL UTILIZE ANTI-SEEP COLLARS OR FILTER DIAPHRAGMS ON TRENCH BARRELS.

LIMITATION: LIMITED AVAILABLE TOPSOIL
RESOLUTION: ANY EXCAVATED TOPSOIL WILL BE STOCKPILED AND REUSED. IF NECESSARY, ADDITIONAL TOPSOIL WILL BE BROUGHT ON-SITE.

LIMITATION: FROST ACTION - THE LIKELIHOOD OF UPWARD OR LATERAL EXPANSION OF THE SOIL CAUSED BY THE FORMATION OF SEGREGATED ICE LENSES, OR FROST HEAVE, AND THE SUBSEQUENT COLLAPSE OF THE SOIL AND LOSS OF STRENGTH ON THAWING, WHICH CAN DAMAGE ROADS, BUILDINGS, AND OTHER STRUCTURES AS WELL AS PLANT ROOTS.
RESOLUTION: PRECAUTIONS ARE NEEDED TO PREVENT DAMAGE TO ROADWAYS AND STRUCTURES.

LIMITATION: WET SOILS - SOME SOILS MAY EXHIBIT A HIGH WATER TABLE OR PONDING.
RESOLUTION: IF HIGH WATER TABLE IS ENCOUNTERED, TRENCH DEWATERING WILL BE EMPLOYED. LOCATE PCSM FACILITIES AWAY FROM WET SOILS.

LIMITATION: MIN. DEPTH TO BEDROCK - SOME SOILS HAVE A MIN DEPTH OF BEDROCK LESS THAN THE TYPICAL TRENCH DEPTH OF 7 FT (ASSUMES 3 FT OF COVER, PIPE DIAMETER, AND BEDDING DEPTH OF 1 FT).
RESOLUTION: CONTRACTOR TO PLAN FOR ROCK REMOVAL DURING TRENCHING OPERATIONS. FOR SEDIMENT BARRIERS REQUIRING STAKING (E.G. SILT FENCES, ETC.), DEPTH TO BEDROCK LESS THAN 2 FT CAN IMPACT ABILITY TO DRIVE STAKE AND/OR POLE (FOR SUPER SILT FENCE). IN THESE AREAS, COMPOST FILTER SOCK OR OTHER APPLICABLE BMP NOT REQUIRING STAKING MAY BE CONSIDERED.

LIMITATION: pH - SOME SOILS HAVE pH VALUES LESS THAN 5.5, WHICH MAY LIMIT THE VEGETATIVE STABILIZATION ABILITY OF THE SOIL.
RESOLUTION: AS IS TYPICAL FOR THESE TYPE OF SOILS, LIME WILL BE ADDED AS NEEDED TO PRODUCE VEGETATIVE STABILITY.

LIMITATION: LOW FERTILITY
RESOLUTION: IF NECESSARY TO PRODUCE VEGETATIVE STABILITY OF THE SOIL, FERTILIZER OR NUTRIENT SUPPLEMENTS WILL BE ADDED TO THE SOIL TO PRODUCE VEGETATIVE STABILITY. FOR LOW FERTILITY SOILS, CONTRACTOR TO REFER TO "TABLE 11-3: PLANT TOLERANCES OF SOIL LIMITATION FACTORS" TO SELECT APPROPRIATE VEGETATION. EROSION CONTROL BLANKETS SHOULD ALSO BE CONSIDERED IN SOIL CONDITIONS THAT MAKE REVEGETATION DIFFICULT (E.G. LOW FERTILITY). WHEN INSTALLED PROPERLY, EROSION CONTROL BLANKETS CAN HELP HOLD SOIL PARTICLES IN PLACE AND RETAIN SOIL MOISTURE, PROMOTING SEED GERMINATION.



		CLIENT APPROVAL			
		DATE			
REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	02/2020	DOW(MM)	KEK(MM)	MDN(MM)

LIMITING SOIL CHARACTERISTICS LEGEND																			
MAP SYMBOL	SOIL NAME	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	HYDRIC/ HYDRIC INCLUSIONS	LOW STRENGTH / LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK / SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS	MIN. DEPTH TO BEDROCK	pH
Uu0B	URBAN LAND-UDORTHERENTS, LIMESTONE COMPLEX, 0 TO 8 PERCENT SLOPES	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	
WaA	WASHINGTON SILT LOAM, 0 TO 3 PERCENT SLOPES	X	S				X	X	X	X	X		X	X	X			X	
WaB	WASHINGTON SILT LOAM, 3 TO 8 PERCENT SLOPES	X	S				X	X	X	X	X		X	X	X			X	

		PENNEAST PIPELINE PROJECT CHURCH ROAD INTERCONNECTS GENERAL NOTES NORTHAMPTON COUNTY, PENNSYLVANIA	
		DRAWN BY	DOW
CHECKED BY	KEK	SCALE	AS SHOWN
APPROVED BY	MDN	APPROVED BY	
DWG. NO.	024B-03-02-001	REV. NO.	A

Clover/Food Plot with ROW Mix^{1,2,3}

Mix Composition

10% Standard ROW Mix (for soil stabilization)
 30% Medium Red Clover
 33% Ladino Clover
 20% Pinnacle (jumbo) Ladino Clover
 7% White Dutch Clover

Seeding Rate: 40 lb per acre or as recommended by seed vendor

¹ An alternative seed mixture may be requested by the landowner(s).

² Fescue must be endophyte-free.

³ Legumes should be treated with a species specific inoculate prior to seeding. Legume seed and soil should be scarified.

Standard Upland ROW Mix^{1,2,3}

Mix Composition

20% Orchardgrass
 20% Climax Timothy
 15% Perennial Ryegrass
 10% Annual Ryegrass
 10% Red Fescue
 10% Medium Red Clover
 10% Ladino Clover
 5% Birdsfoot Trefoil

Seeding Rate: 40 lb per acre or as recommended by seed vendor

¹ An alternative seed mixture may be requested by the landowner(s).

² Fescue must be endophyte-free.

³ Legumes should be treated with a species specific inoculate prior to seeding. Legume seed and soil should be scarified.

**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
10-20-20 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 Chapter 11 may be substituted for the soil amendments shown in Table 11.2.

Residential Mix^{1,2}

Mix Composition

33% Penlawn Creeping Red Fescue
 25% 98/85 Kentucky Bluegrass
 14% Fiji Perennial Ryegrass
 14% ASP0112 Perennial Ryegrass
 14% ASP6004 Perennial Ryegrass

Seeding Rate: 40 lb per acre or as recommended by seed vendor

¹ An alternative seed mixture may be requested by the landowner(s).

² Fescue must be endophyte-free.

**TABLE 11.6
 Mulch Application Rates**

Mulch Type	Application Rate (Min.)			Notes
	Per Acre	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

1. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL - ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD BE OPERATED ON THE CONTOUR. CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.
2. POLYMERIC AND GUM TACKIFIERS MIXED AND APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS MAY BE USED TO TACK MULCH. AVOID APPLICATION DURING RAIN AND ON WINDY DAYS. A 24-HOUR CURING PERIOD AND A SOIL TEMPERATURE HIGHER THAN 45°F ARE TYPICALLY REQUIRED. APPLICATION SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND ON BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS GENERALLY MORE EFFECTIVE.
3. SYNTHETIC BINDERS, OR CHEMICAL BINDERS, MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
4. MULCH ON SLOPES 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
5. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LBI/ACRE AT A MINIMUM.
6. HYDRAULICALLY APPLIED BLANKETS CAN BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. THEY MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. IN ANY CASE, MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED. SHOULD NOT BE USED IN AREAS OF CONCENTRATED FLOW (E.G. SWALES).
7. NO MULCH MAY BE APPLIED IN WETLANDS.

CONTRACTOR SHALL INSTALL SEED MIXTURE AS DIRECTED BY PENNEAST. SEED MIXTURE USE WILL VARY ACCORDING TO PROJECT, LANDOWNER REQUEST, AND ENVIRONMENTAL REQUIREMENTS.



CLIENT APPROVAL

DATE

REVISIONS

NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	02/2020	DOW(MM)	KEK(MM)	MDN(MM)

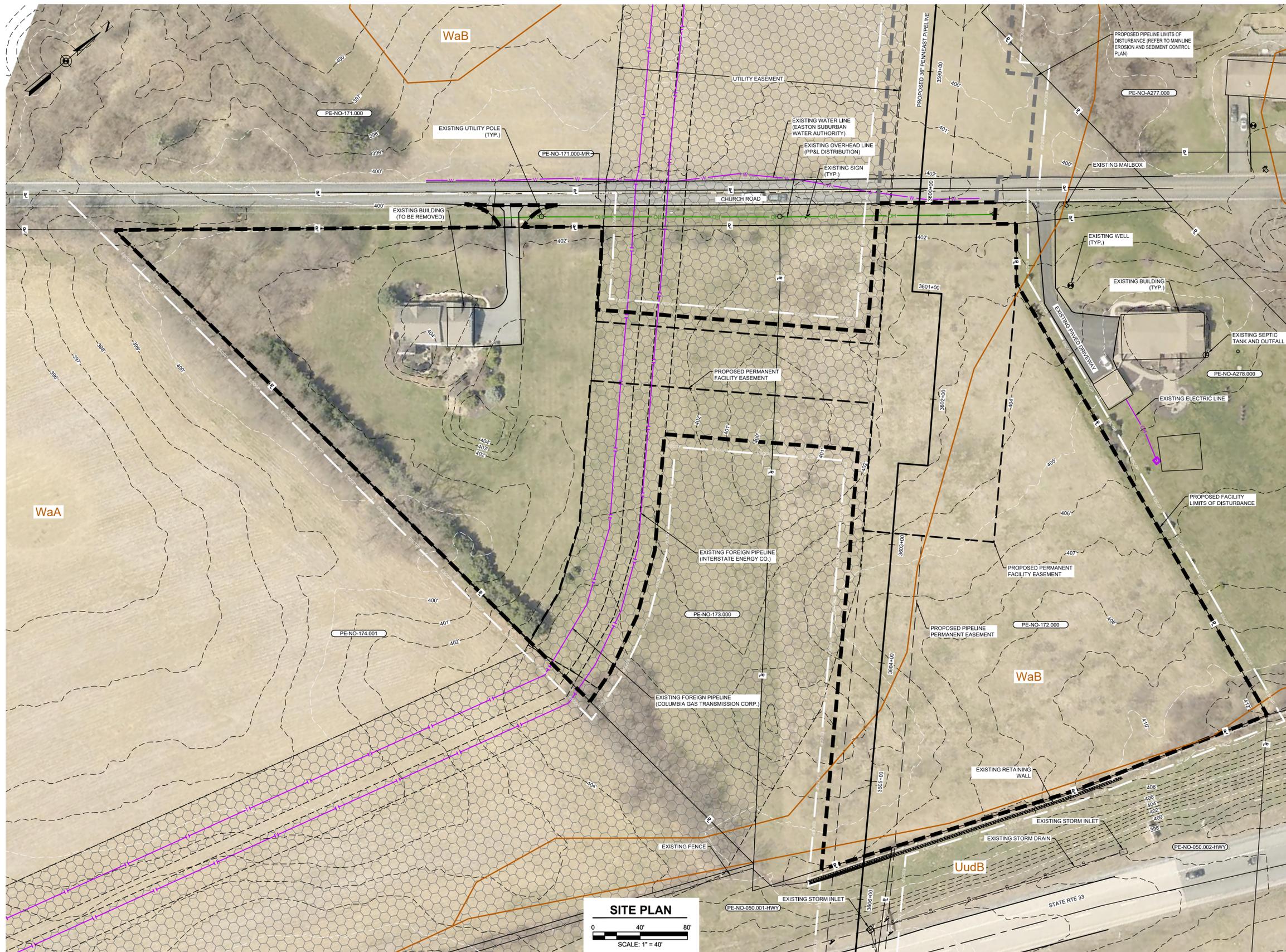


PENNEAST PIPELINE PROJECT
 CHURCH ROAD INTERCONNECTS
 RECOMMENDED SEEDING MIXTURES
 NORTHAMPTON COUNTY, PENNSYLVANIA

DRAWN BY	DOW	DATE ISSUED	02/21/2020
CHECKED BY	KEK	SCALE	AS SHOWN
APPROVED BY	MDN	APPROVED BY	
DWG. NO.	024B-03-02-003	REV. NO.	A

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NORTHAMPTON COUNTY, PENNSYLVANIA
USGS QUAD: NAZARETH, PENNSYLVANIA



LOCATION MAP
SCALE: 1" = 15 MILES

LEGENDS

- PROPOSED**
- PROPOSED PIPELINE
 - - - PROPOSED PIPELINE PERMANENT EASEMENT
 - - - FACILITY PERMANENT EASEMENT
 - - - PROPOSED PIPELINE LIMITS OF DISTURBANCE (REFER TO MAINLINE EROSION AND SEDIMENT CONTROL PLAN)
 - - - PROPOSED FACILITY LIMITS OF DISTURBANCE
 - - - ESCGP BOUNDARY
- EXISTING**
- - - PROPERTY LINE
 - - - EXISTING MAJOR CONTOUR
 - - - EXISTING MINOR CONTOUR
 - - - SOIL BOUNDARY
 - UbB SOIL TYPE ABBREVIATION
 - OH EXISTING OVERHEAD LINE
 - EXISTING PIPELINE
 - - - EXISTING UTILITY EASEMENT
 - ⊙ EXISTING UTILITY POLE
 - - - EXISTING FENCE
 - HL-NO-001.000 LINE LIST NUMBER

- ENVIRONMENTAL NOTES:**
- AS PER §102.4(B)(5)(III), THE LAND USE CHARACTERISTICS ARE CLASSIFIED BY PRIMARY VEGETATION COVER TYPE AND/OR PREDOMINANT LAND USE. THE FACILITY SITE'S CURRENT LAND USE TYPE IS PREDOMINANTLY OPEN LAND (MEADOW), WITH A SMALL PORTION OF IMPERVIOUS ROAD AND RESIDENTIAL (EXISTING SITE) TO THE SOUTHWEST.
 - AS PER §102.4(B)(5)(V), THE SITE DRAINS TO NANCY RUN, WHICH HAS A CHAPTER 93 DESIGNATED USE OF CWF (COLD WATER FISH), AND MF (MIGRATORY FISH).



- REFERENCE:**
- EXISTING CONTOURS SHOWN WERE SURVEYED BY MOTT MACDONALD DURING 2015 THRU 2019. ADDITIONAL EXISTING CONTOURS WERE PROVIDED BY PICTOMETRY, 2015 AND SUPPLEMENTED FROM USGS.
 - SITE TOPOGRAPHIC AND FEATURE SURVEY PERFORMED BY MOTT MACDONALD 2015 THRU 2019.
 - PROPERTY INFORMATION ON THIS PLAN BASED ON GIS TAX MAP DATA AND RECTIFIED PROPERTY LINES AND ARE NOT THE RESULT OF A BOUNDARY SURVEY.
 - WATERBODY INFORMATION PROVIDED BY AECOM 2015 THRU 2019.
 - HORIZONTAL DATUM IS UTM83-16F; VERTICAL DATUM IS NAVD1988.

REFERENCE DRAWINGS		REVISIONS					
DWG. NO.	TITLE	NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP			02/2020	DOW(MM)	KEK(MM)	MDN(MM)



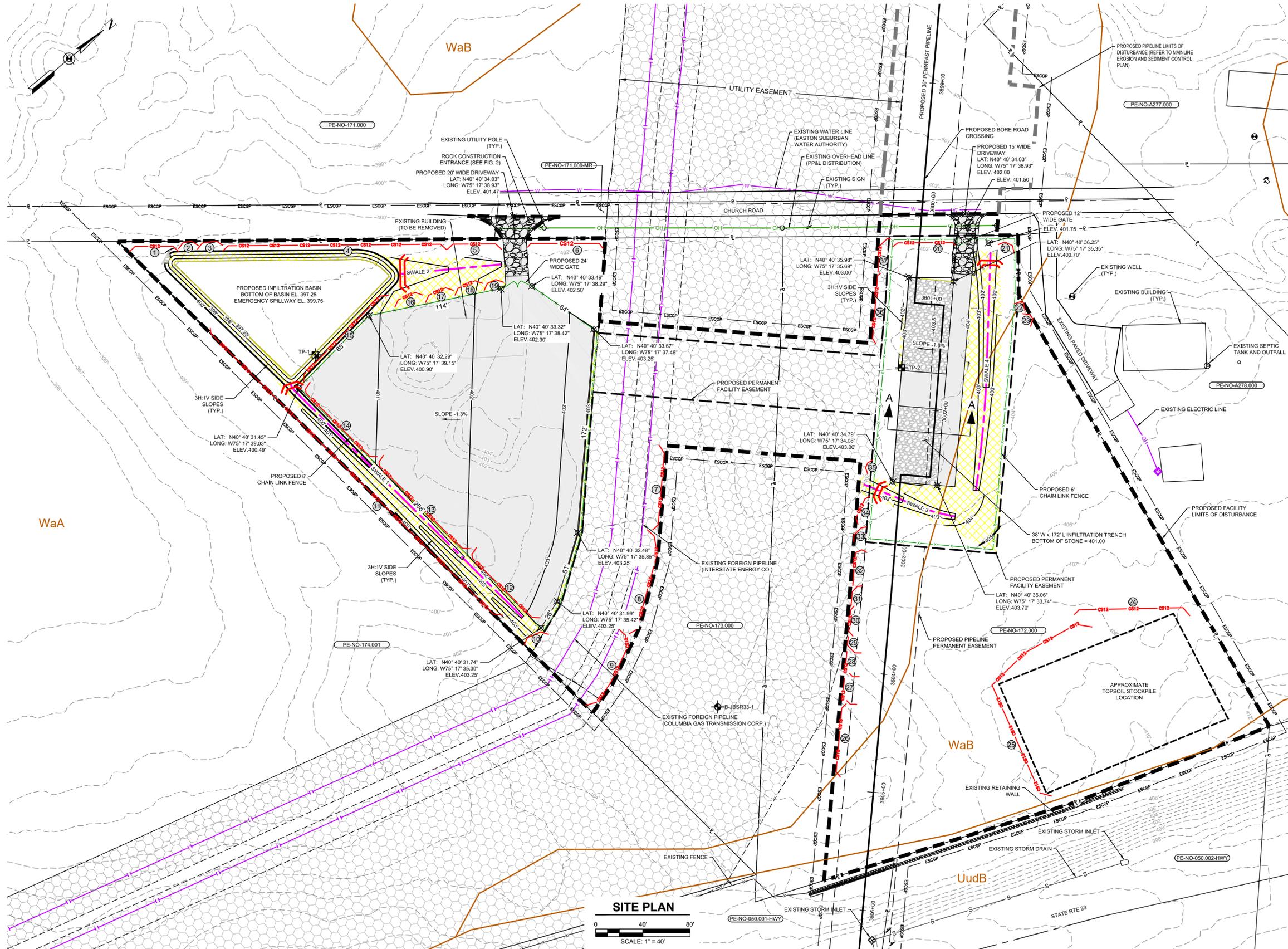
PENNEAST PIPELINE PROJECT
CHURCH ROAD INTERCONNECTS
EXISTING CONDITIONS PLAN
NORTHAMPTON COUNTY, PENNSYLVANIA

DRAWN BY	DOW	DATE ISSUED	02/21/2020
CHECKED BY	KEK	SCALE	AS SHOWN
APPROVED BY	MDN	APPROVED BY	
DWG. NO.	024B-03-001	REV. NO.	A

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NORTHAMPTON COUNTY, PENNSYLVANIA
USGS QUAD: NAZARETH, PENNSYLVANIA



SCALE: 1" = 15 MILES

LEGENDS

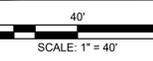
- PROPOSED**
- PROPOSED PIPELINE
 - - - PROPOSED PIPELINE PERMANENT EASEMENT
 - - - PROPOSED FACILITY PERMANENT EASEMENT
 - - - PROPOSED PIPELINE LIMITS OF DISTURBANCE (REFER TO MAINLINE EROSION AND SEDIMENT CONTROL PLAN)
 - - - PROPOSED FACILITY LIMITS OF DISTURBANCE
 - ESCOP — ESCOP BOUNDARY
 - ▭ PADROAD AREA
 - ▨ INFILTRATION TRENCH
 - PROPOSED SWALE; SEE FIG. 49
 - PROPOSED FENCE
 - CS12 — CS12 COMPOST FILTER SOCK; SEE FIG. 4, 4A & 4B (TYP.)
 - CS18 — CS18 COMPOST FILTER SOCK NO. (SEE STANDARD E-S WORKSHEET #1 FOR SIZING)
 - CS16 — CS16 ROCK CONSTRUCTION ENTRANCE (SEE FIG. 2 (TYP.))
 - WEIGHTED SEDIMENT FILTER TUBE, 18" (SEE FIG. 12A)
 - 370 — PROPOSED MAJOR CONTOUR
 - PROPOSED MINOR CONTOUR
 - ▨ EROSION CONTROL BLANKETS; SEE FIG. 23 & 24 (TYP.)
 - ⊕ TP-1 TEST PITS/BORES
 - ⊕ B-1 BORE LOG
- EXISTING**
- PROPERTY LINE
 - - - 350' — EXISTING MAJOR CONTOUR
 - - - EXISTING MINOR CONTOUR
 - - - SOIL BOUNDARY
 - UbB SOIL TYPE ABBREVIATION
 - OH — EXISTING OVERHEAD LINE
 - EXISTING PIPELINE
 - - - EXISTING UTILITY EASEMENT
 - ⊕ EXISTING UTILITY POLE
 - X — EXISTING FENCE
 - HL-NO-001.000 — LINE LIST NUMBER

ENVIRONMENTAL NOTES:

- AS PER §102.4(B)(5)(iii), THE LAND USE CHARACTERISTICS ARE CLASSIFIED BY PRIMARY VEGETATION COVER TYPE AND/OR PREDOMINANT LAND USE. THE FACILITY SITE'S CURRENT LAND USE TYPE IS PREDOMINANTLY OPEN LAND (MEADOW), WITH A SMALL PORTION OF IMPERVIOUS ROAD AND RESIDENTIAL (EXISTING SITE) TO THE SOUTHWEST.
- AS PER §102.4(B)(5)(iv), THE SITE DRAINS TO NANCY RUN, WHICH HAS A CHAPTER 93 DESIGNATED USE OF CWF (COLD WATER FISH), AND MF (MIGRATORY FISH).



SITE PLAN



- REFERENCE:**
- EXISTING CONTOURS SHOWN WERE SURVEYED BY MOTT MACDONALD DURING 2015 THRU 2019. ADDITIONAL EXISTING CONTOURS WERE PROVIDED BY PICTOMETRY, 2015 AND SUPPLEMENTED FROM USGS.
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 - HORIZONTAL DATUM IS UTM83-16F; VERTICAL DATUM IS NAVD1988.

REFERENCE DRAWINGS		REVISIONS					
DWG. NO.	TITLE	NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP			02/2020	DOW(MM)	KEK(MM)	MDN(MM)



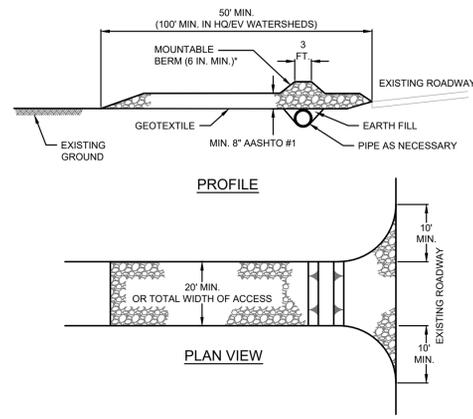
**PENNEAST PIPELINE PROJECT
CHURCH ROAD INTERCONNECTS
SOIL EROSION & SEDIMENT CONTROL PLAN**

NORTHAMPTON COUNTY, PENNSYLVANIA

DRAWN BY	DOW	DATE ISSUED	02/21/2020
CHECKED BY	KEK	SCALE	AS SHOWN
APPROVED BY	MDN	APPROVED BY	
DWG. NO.	0248-03-03-002	REV. NO.	A

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PROFILE

PLAN VIEW

* 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.

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 FEET 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.

PENNEAST PIPELINE PROJECT
ROCK CONSTRUCTION ENTRANCE
STANDARD CONSTRUCTION DETAIL
#3-1
FIGURE 2

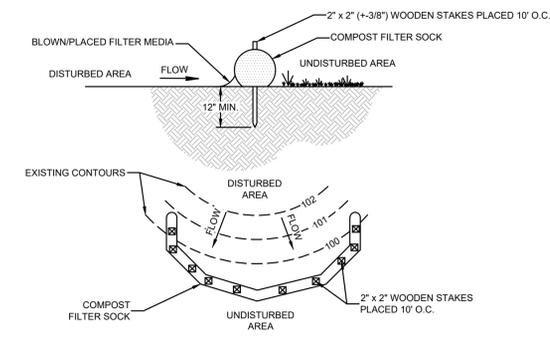


TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE FOLLOWING STANDARDS:

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" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS MAXIMUM

NOTES:

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

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

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 FILTER SOCK 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 SOIL SUPPLEMENT.

THIS BMP IS AN APPROVED ABACT (ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES) FOR USE IN HQ/EV WATERSHEDS.

18" COMPOST FILTER SOCK MAY BE SUBSTITUTED FOR SUPER SILT FENCE.

12" COMPOST FILTER SOCK MAY BE SUBSTITUTED FOR 18" TO 30" SILT FENCE.

PENNEAST PIPELINE PROJECT
COMPOST FILTER SOCK
STANDARD CONSTRUCTION DETAIL
#4-1
FIGURE 4

TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	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" 18"	18" 24"	18" 24" 32"	12" 18" 24" 32"	12" 18"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
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.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Two-ply systems

- HDPE biaxial net
- Continuously wound
- Fusion-welded junctures
- 3/4" X 3/4" Max. aperture size
- Composite Polypropylene Fabric (Woven layer and non-woven fleecle mechanically fused via needle punch)
- 3/16" Max. aperture size

Inner Containment Netting

Outer Filtration Mesh

Sock fabrics composed of burlap may be used on projects lasting 6 months or less.

PENNEAST PIPELINE PROJECT
COMPOST SOCK FABRIC
MINIMUM SPECIFICATIONS
FIGURE 4A

Maximum Slope Length for Compost Filter Sock

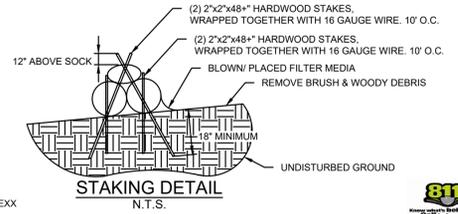
Slope - Percent	Maximum Slope Length (ft) Above Sock			
	12	18	24	32
5	250	350	500	650
10	150	250	300	400
15	100	200	250	350
20	70	150	200	250
25	50	100	150	180
30	45	70	100	130
35	40	60	90	100
40	35	45	80	90
45	30	40	60	80
50	20	30	40	60

ADAPTED FROM PA DEP GRAPH (FIGURE 4.2)

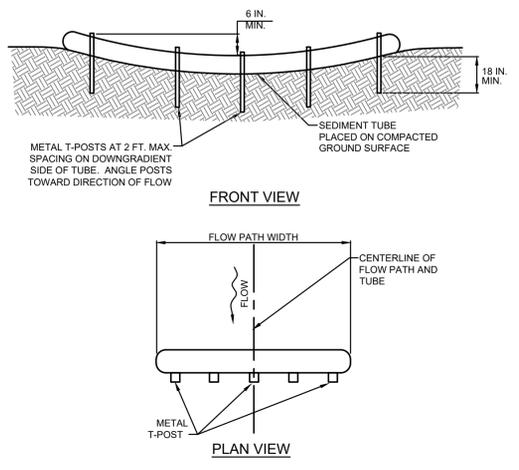
SLOPES OVER 50% NEED A 32-INCH DURASOXX INDEPENDENT OF UPSLOPE LENGTH.

THREE COMPOST FILTER SOCKS MAY BE STACKED IN PYRAMIDAL FORM AND USED IN PLACE OF 24-INCH OR 32-INCH COMPOST FILTER SOCK WHERE NECESSARY. THE FOLLOWING EQUIVALENCY TABLE SHALL BE USED IN SUCH INSTANCES:

SINGLE COMPOST FILTER SOCK DIAMETER	ACCEPTABLE COMPOST FILTER SOCK PYRAMIDAL CONFIGURATION EQUIVALENT
24-INCH	12" 18" 18"
32-INCH	18" 18" 18"



PENNEAST PIPELINE PROJECT
MAXIMUM SLOPE LENGTH
FOR COMPOST FILTER SOCK
FIGURE 4B



NOTES:

THIS DETAIL APPLICABLE TO FLOW PATHS WITH WIDTHS LESS THAN OR EQUAL TO ONE TUBE LENGTH.

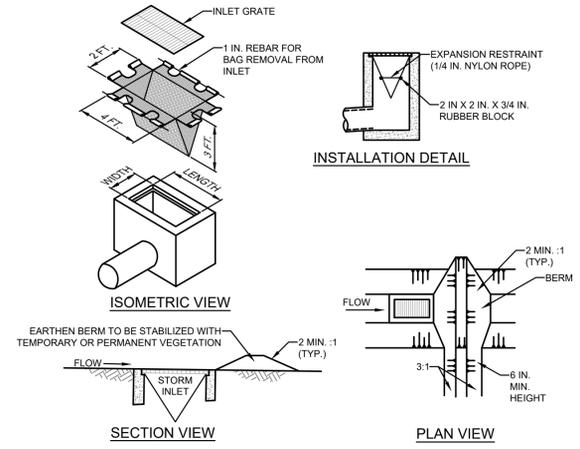
METAL T-POSTS SHALL BE INSTALLED AT THE CENTER AND AT EACH END OF THE TUBE. ADDITIONAL T-POSTS SHALL BE INSTALLED AS NEEDED TO MEET THE MAXIMUM 2-FOOT SPACING.

SEDIMENT TUBES SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE TUBE AND DISPOSED AS DIRECTED ELSEWHERE IN THE E&S PLAN.

DAMAGED TUBES SHALL BE REPAIRED OR REPLACED WITHIN 24 HOURS OF INSPECTION. A SUPPLY OF TUBES SHALL BE KEPT ON SITE FOR THIS PURPOSE.

PENNEAST PIPELINE PROJECT
WEIGHTED SEDIMENT FILTER TUBE
INSTALLATION, CONCENTRATED FLOW AREA
STANDARD CONSTRUCTION DETAIL #4-4
FIGURE 12A



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.

PENNEAST PIPELINE PROJECT
FILTER BAG INLET PROTECTION
TYPE M INLET
STANDARD CONSTRUCTION DETAIL #4-16
FIGURE 14



811
Know what's below.
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DATE

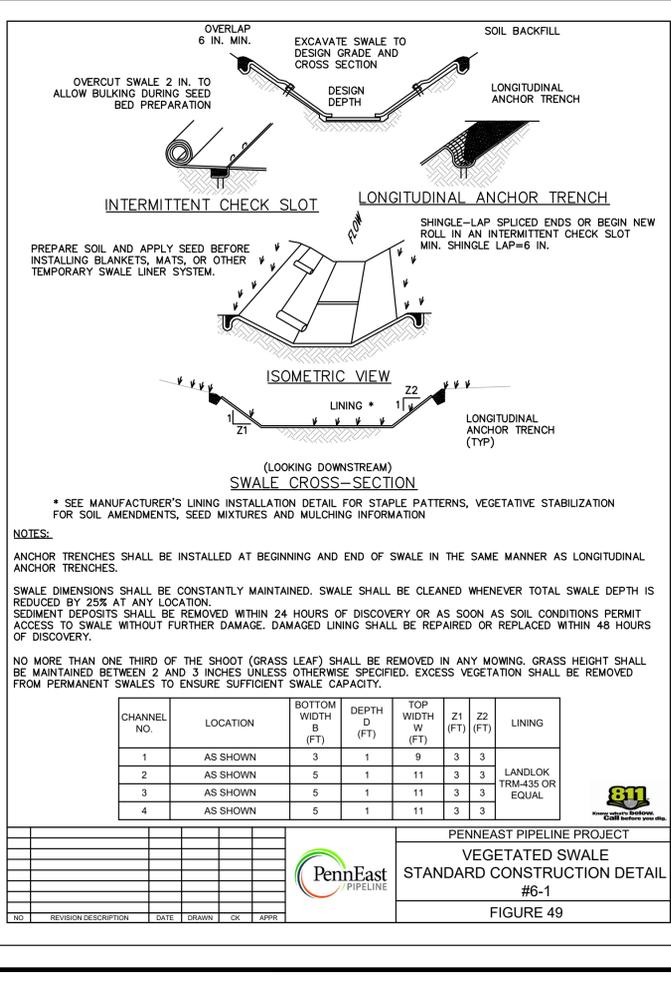
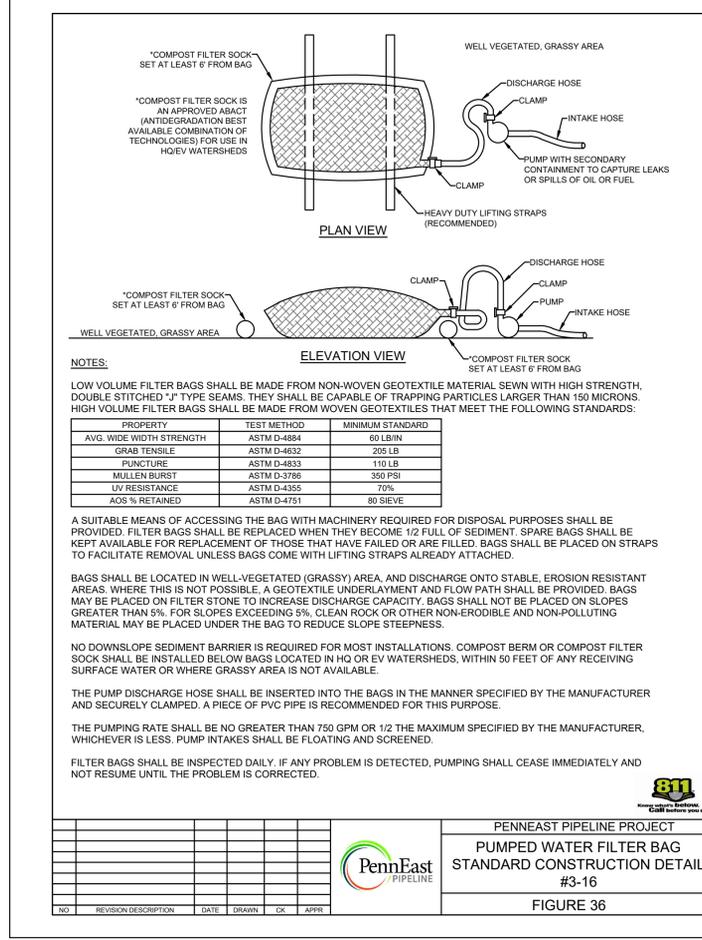
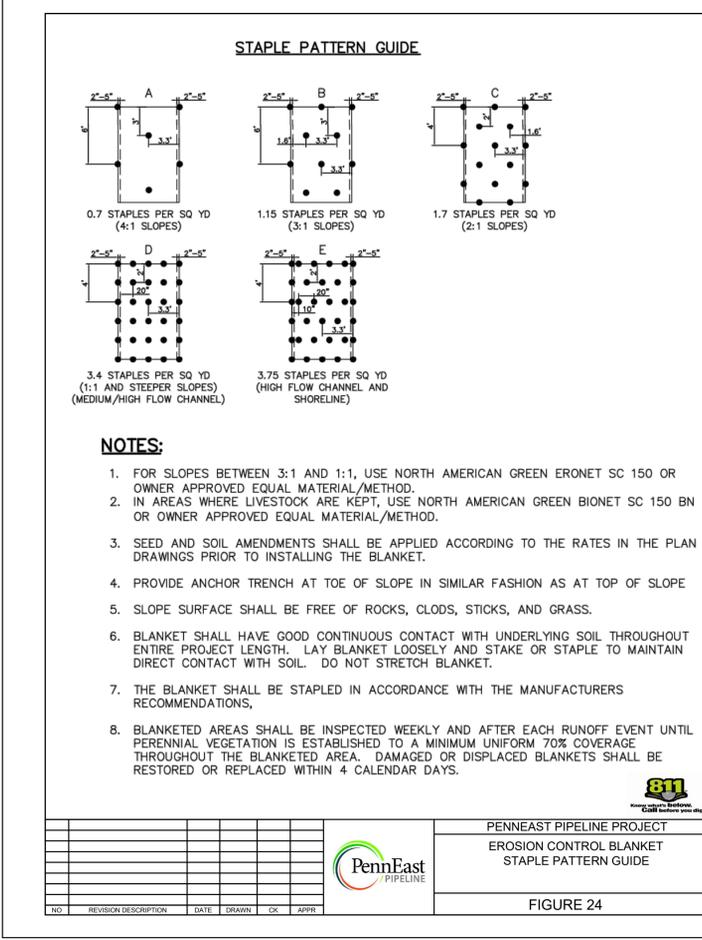
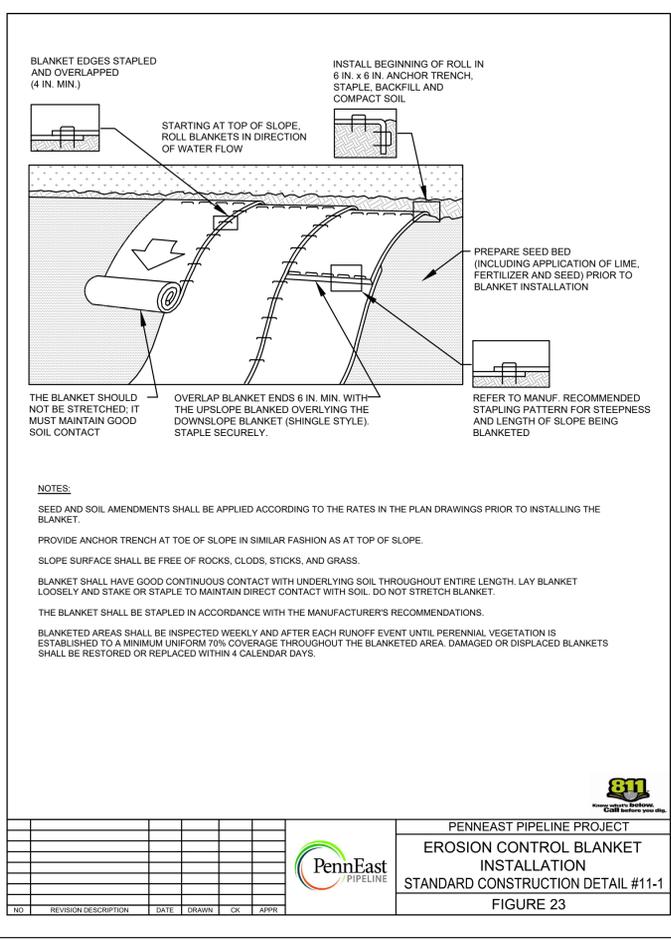
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PennEast PIPELINE

PENNEAST PIPELINE PROJECT
CHURCH ROAD INTERCONNECTS
E&S TYPICAL DETAILS
NORTHAMPTON COUNTY, PENNSYLVANIA

DRAWN BY DOW DATE ISSUED 02/21/2020
CHECKED BY KEK SCALE AS SHOWN
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PENNEAST PIPELINE PROJECT
CHURCH ROAD INTERCONNECTS
E&S TYPICAL DETAILS
NORTHAMPTON COUNTY, PENNSYLVANIA

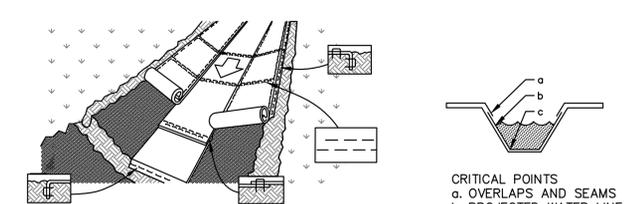
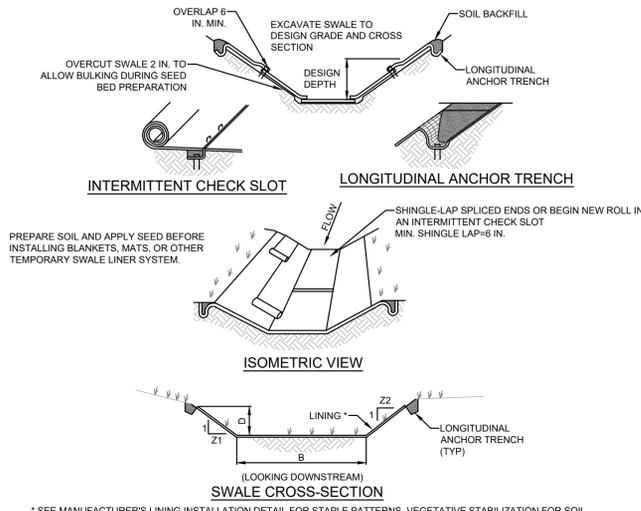
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Know what's below. Call before you dig.

PROFESSIONAL ENGINEER
MICHAEL DENICHILO
PE068519
3/27/2020



NOTES:

1. ALL GRADING IS TO MINIMIZE HARD EDGES TO PRODUCE CONTOURED SMOOTH GRADE CHANGES.
2. CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED.
3. CHANNEL SHALL BE CLEANED WHENEVER TOTAL DEPTH IS REDUCED BY 25% AT ANY LOCATION.
4. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HRS OF DISCOVERY OR AS SOIL CONDITIONS PERMIT ACCESS TO SWALE WITHOUT FURTHER DAMAGE.
5. DAMAGED LINING SHALL BE REPLACED WITHIN 48 HRS OF DISCOVERY.
6. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

*SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

NOTES:
ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF SWALE IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

SWALE DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. SWALE SHALL BE CLEANED WHENEVER TOTAL SWALE DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOIL CONDITIONS PERMIT ACCESS TO SWALE WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT SWALES TO ENSURE SUFFICIENT SWALE CAPACITY.

SWALE NO.	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING
1	3.0	1.00	9.0	3.0	3.0	LANDLOK TRM-435 OR APPROVED EQUAL
2	5.0	1.00	11.0	3.0	3.0	
3	5.0	1.00	11.0	3.0	3.0	
4	5.0	1.00	11.0	3.0	3.0	

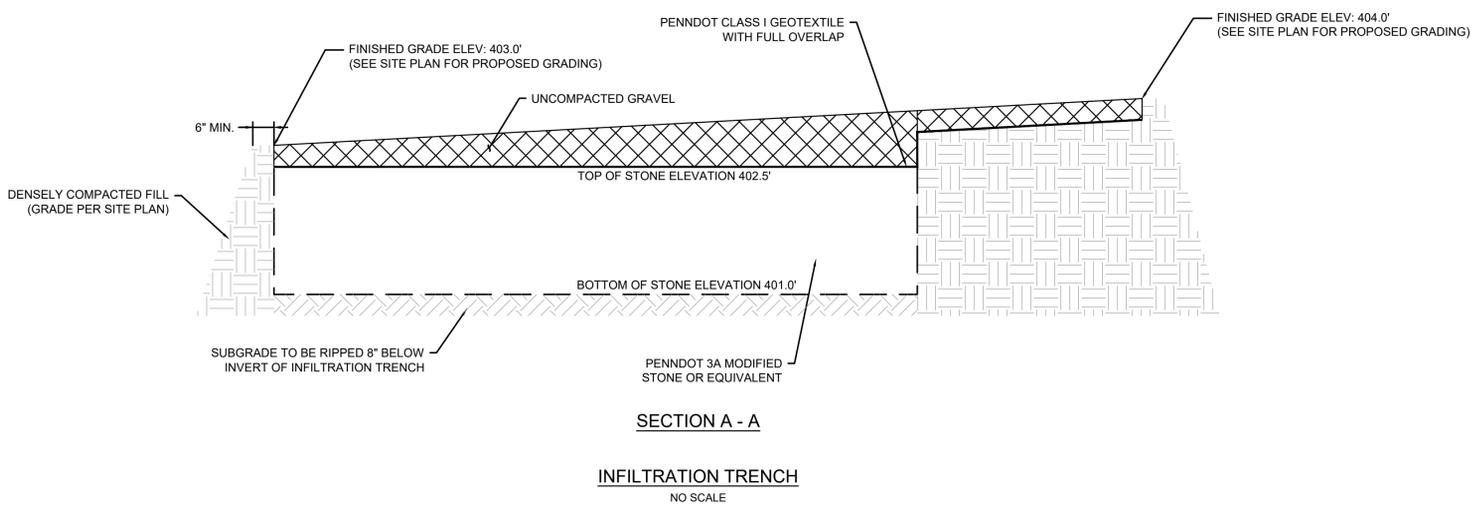
VEGETATED SWALE DETAIL
NO SCALE

Test Pit No.	Existing Grade Elevation (feet)	Proposed BMP Invert (feet)	Infiltration Test Elevation (feet)	Excavation Depth Elevation (feet)	Depth to High Groundwater (feet)
TP-1	403.10	NA	399.10	399.10	No evidence of high groundwater observed
TP-2	401.70	NA	397.70	397.70	No evidence of high groundwater observed

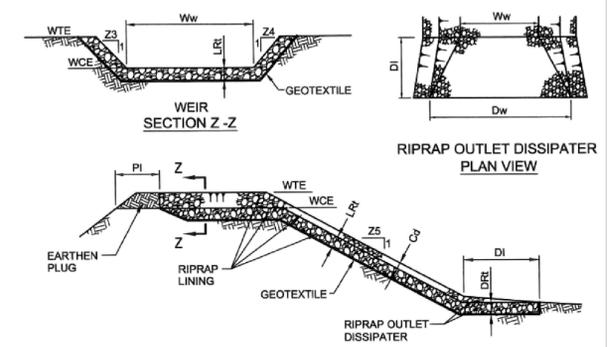
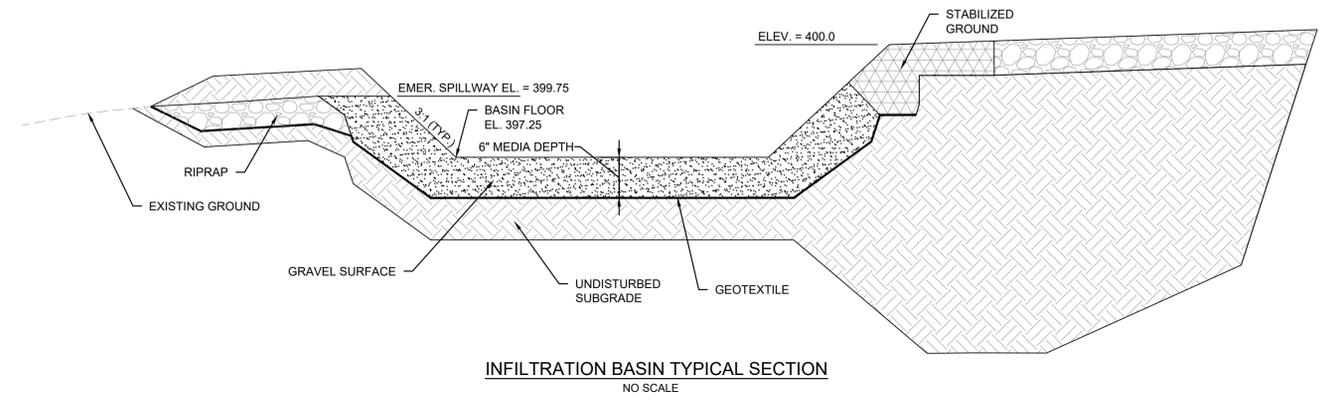
Test Pit	Test #1	Test #2	Final Rate Used
TP-1	0.24	0.24	0.24
TP-2	6	2.5	4.25
Observed Overall Rate Trench (TP-1)			0.24 inch/hr ²
Design Rate (Factor of Safety of 2)			0.12 inch/hr ²
Observed Overall Rate Trench (TP-2)			4.25 inch/hr ²
Design Rate (Factor of Safety of 2)			2.13 inch/hr ²

NOTES:

1. THE RATES FROM TP-1 AND TP-2 REPRESENT DESIGN RATES AS THE REQUIRED FACTOR OF SAFETY IS INCORPORATED INTO THE BASIN FLOOD TEST.
2. PROJECT DESIGN RATE FOR THE TRENCH IS BASED ON TP-1, WHICH IS WITHIN THE FOOTPRINT OF THE PROPOSED TRENCH.
3. PROJECT DESIGN RATE FOR THE BASIN IS BASED ON TP-1, WHICH IS WITHIN THE FOOTPRINT OF THE PROPOSED BASIN.



NOTE:
THESE DETAILS HAVE BEEN ADAPTED FROM PENNDOT JUNE 2010 STANDARD DRAWINGS. ADDITIONAL INFORMATION FROM STANDARD PENNDOT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED AS REFERENCED.



NOTES:
DISPLACED RIPRAP WITHIN SPILLWAY AND/OR OUTLET CHANNEL SHALL BE REPLACED IMMEDIATELY.

SITE	BASIN ID	WEIR			LINING		CHANNEL		DISSIPATER					
		Z3 (FT)	Z4 (FT)	TOP ELEV WTE (FT)	CREST ELEV WCE (FT)	WIDTH Ww (FT)	RIPRAP SIZE (R-)	RIPRAP THICK LRT (IN)	Z5 (FT)	DEPTH Cd (FT)	LENGTH DI (FT)	WIDTH Dw (FT)	RIPRAP SIZE (R-)	RIPRAP THICK DRT (IN)
CHURCH ROAD INTERCONNECTS	B1	3	3	400.00	399.75	5	R-6	36	3	1	4	12	R-6	36

INFILTRATION BASIN SPILLWAY RIPRAP LINING
NO SCALE



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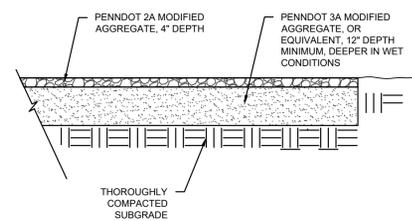
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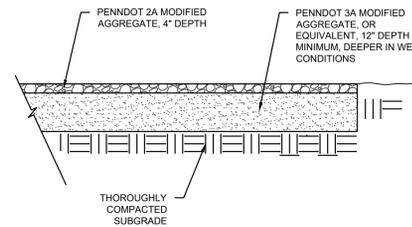
PENNEAST PIPELINE PROJECT
CHURCH ROAD INTERCONNECTS
POST CONSTRUCTION STORMWATER
MANAGEMENT DETAILS
NORTHAMPTON COUNTY, PENNSYLVANIA

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TYPICAL ACCESS ROAD CROSS-SECTION DETAIL
N.T.S.



TYPICAL PAD CROSS SECTION DETAIL
N.T.S.



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	PENNEAST PIPELINE PROJECT CHURCH ROAD INTERCONNECTS TYPICAL ACCESS ROAD AND PAD SECTIONS NORTHAMPTON COUNTY, PENNSYLVANIA			
	DRAWN BY	DOW	DATE ISSUED	02/21/2020
CHECKED BY	JDM	SCALE	AS SHOWN	
APPROVED BY	WMC	APPROVED BY		
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