POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSM)
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206
HIGGINS FARM ACCESS ROAD
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NEW JERSEY

OWNER / APPLICANT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
(TRANSCO)
P.O. BOX 1396
2800 POST OAK BLVD.
HOUSTON, TX 77056

CONTACT: KAREN OLSON
PERMIT AGENT
(713) 215-4232

PLAN PREPARER

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428

CONTACT: PETER HAAS, P.E.
PROJECT ENGINEER
(610) 832-8832

CERTIFYING ENGINEER: KEVIN MCKEON, P.E.

PROJECT DESCRIPTION

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) IS PROPOSING TO CONSTRUCT ITS COMPRESSOR STATION (CS 206) IN FRANKLIN TOWNSHIP, SOMERSET COUNTY, NEW JERSEY. THE PROJECT WILL INVOLVE THE CONSTRUCTION OF SMALL BUILDINGS, GRAVEL ACCESS ROAD AND PARKING AREAS, EQUIPMENT PADS, AND THE INSTALLATION OF TWO GAS PIPELINES (A SUCTION LINE AND A GAS DISCHARGE LINE) TO CONNECT THE PROPOSED COMPRESSOR STATION TO THE EXISTING NATURAL GAS TRANSMISSION LINE.

THESE DRAWINGS SHOW THE SITE GRADING AND POST CONSTRUCTION STORMWATER MANAGEMENT MEASURES PLANNED IN CONJUNCTION WITH CS206, IN ACCORDANCE WITH N.J.A.C 7:8 (STORMWATER MANAGEMENT) SUBCHAPTER 5.

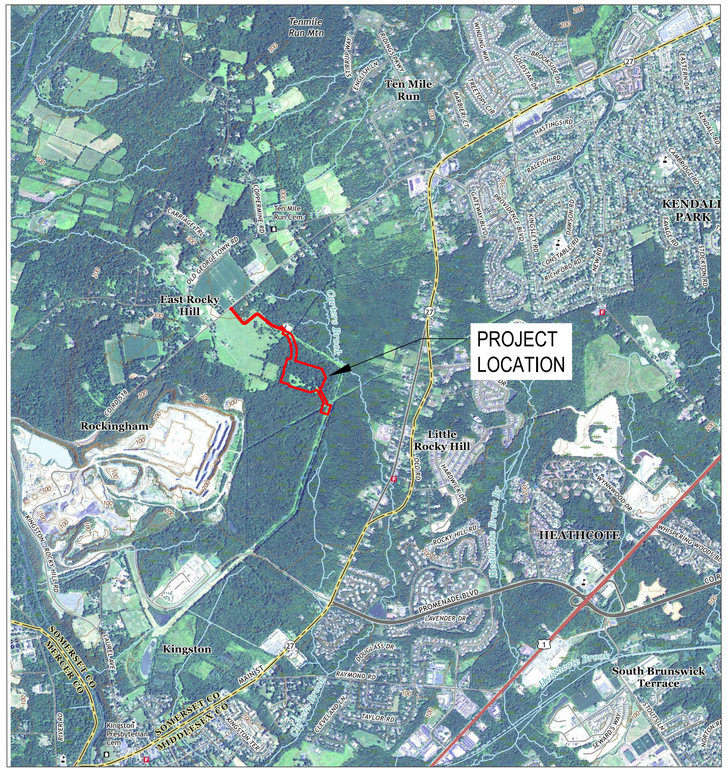
THIS EXPANSION PROJECT IS REGULATED BY THE U.S. DEPARTMENT OF ENERGY, FEDERAL ENERGY REGULATORY COMMISSION (FERC). IN ADDITION TO STATE AND LOCAL REQUIREMENTS, THIS EROSION AND SEDIMENT CONTROL PLAN INCLUDES MITIGATION MEASURES FOR PIPELINE CONSTRUCTION SPECIFIED BY FERC IN ITS PLAN AND PROCEDURES DOCUMENTS, UPLAND EROSION CONTROL, REVEGETATION AND MAINTENANCE PLAN, MAY 2013 AND WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES, MAY 2013.

ANTICIPATED CONSTRUCTION & RESTORATION SCHEDULE

	START	END
CONSTRUCTION	SPRING 2020	SPRING 2021
RESTORATION	SPRING 2021	FALL 2021

SHEET INDEX

BMP INDEX

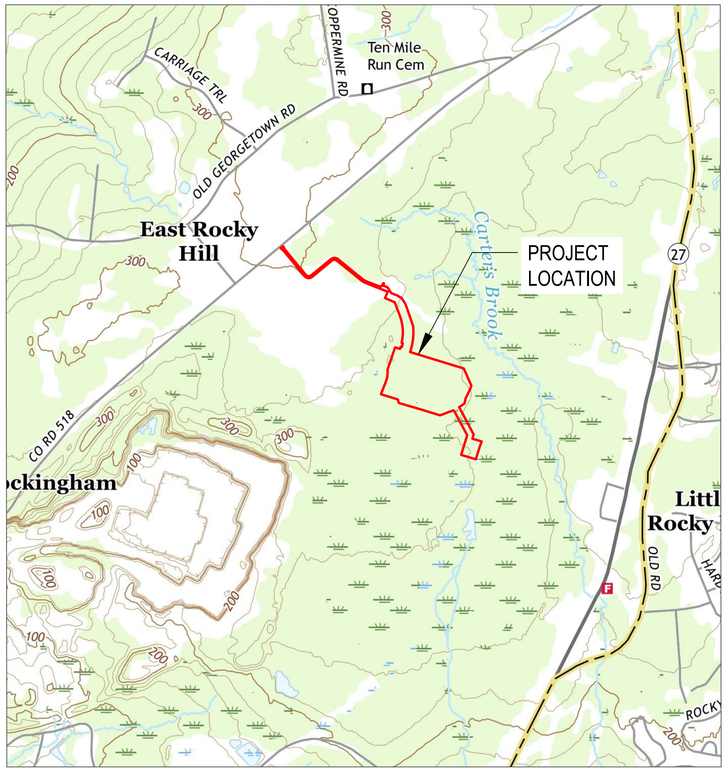


USGS AERIAL MAP

SCALE: 1 INCH=2000 FEET

0 2000 4000

MAP SOURCE
MONMOUTH JUNCTION, NJ QUADRANGLE
U.S. GEOLOGICAL SURVEY, 2016



USGS TOPOGRAPHIC MAP

SCALE: 1 INCH=1000 FEET

0 1000 2000

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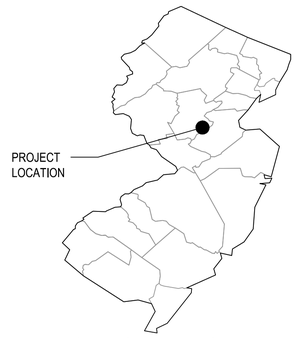
U.S. GEOLOGICAL SURVEY, 2016



STATE OF NEW JERSEY

SEQUENCE OF CONSTRUCTION

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SE&SC PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING 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.
2. AT LEAST SEVEN (7) DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE SE&SC PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING.
3. MAKE NOTIFICATIONS ACCORDING TO PERMIT REQUIREMENTS.
4. HOLD PRE-CONSTRUCTION MEETING WITH ENVIRONMENTAL INSPECTOR.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCES AND OTHER TEMPORARY PERIMETER EROSION CONTROL MEASURES (I.E. SEDIMENT BARRIER) AS INDICATED ON THE SE&SC PLANS AND DETAILS PRIOR TO EARTH DISTURBING ACTIVITIES.
6. CONSTRUCT THE SEDIMENT BASIN, INCLUDING OUTLET STRUCTURE, OUTLET PROTECTION AND EMERGENCY SPILLWAY AS INDICATED ON THE SE&SC PLANS AND DETAILS. CARE SHOULD BE TAKEN TO AVOID COMPACTION OF THE BASIN BOTTOM. REFER TO THE 'BASIN COMPACTION NOTES'. DO NOT INSTALL THE SAND MEDIA IN THE BASIN BOTTOM AT THIS TIME.
7. REMOVE TOPSOIL FROM VEGETATED AREAS TO BE DISTURBED DURING EXCAVATION AND STOCKPILE IN STOCKPILE AREA.
8. COMPLETE WORK ACTIVITIES ASSOCIATED WITH CONSTRUCTION OF COMPRESSOR STATION, ACCESS ROAD, LOOP ROAD, VALVES AND PIPING, VEGETATED SWALES ETC.
9. RETURN TOPSOIL TO DESIGNATED AREAS.
10. COMPLETE FINAL STABILIZATION INCLUDING SOIL TREATMENT, SEEDBED PREPARATION, SEED APPLICATION AND MULCHING.
11. AFTER FINAL STABILIZATION IS COMPLETED BY REVEGETATION AND OTHER PERMANENT STABILIZATION MEASURES, AS APPLICABLE, CONSTRUCT DETENTION BASINS #1 AND #2, CLEAN OUT THE SEDIMENT BASIN AND CONVERT TO AN INFILTRATION BASIN BY INSTALLING SAND MEDIA IN THE BASIN BOTTOM.
12. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROLS AND CLEAN UP PROJECT SITE.
13. SUBMIT A COMPLETED NOTICE OF TERMINATION TO THE CONSERVATION DISTRICT.

MAINTENANCE

ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE SEDIMENT BARRIER SHALL BE CHECKED REGULARLY FOR UNDERMINING, AND DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION IS HALF WAY TO THE TOP OF THE BARRIER.
THE SEEDED AREAS SHALL BE CHECKED TO ENSURE THAT THE DEVELOPMENT OF A GOOD VEGETATIVE STAND AND GROWTH CONTINUES. THE AREAS SHALL BE FERTILIZED AND RESEEDED AS NEEDED.

DISTURBED AREA

AREA DESCRIPTION	ACREAGE
COMPRESSOR STATION 206	21.5 ACRES

REFERENCES

1. EXISTING FEATURE INFORMATION (TOPOGRAPHY, PROPERTY LINES, UTILITIES, ETC.) BASED ON FIELD SURVEY PROVIDED BY TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)
2. STREAM AND WETLAND INFORMATION SHOWN BASED ON FIELD DELINEATION PERFORMED BY ECOLOGY & ENVIRONMENT AND PROVIDED BY TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO).
3. PROPOSED SITE LAYOUT INFORMATION (ROADWAY, COMPRESSOR STATION FACILITIES, GRADING, ETC.) PROVIDED BY HUNT GUILLOT & ASSOCIATES (HGA).

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

KEVIN McKEON, P.E.
NEW JERSEY
PROFESSIONAL ENGINEER NO GE32586

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	01/15/2020	PPH	NJDEP SUBMISSION	1185732	TPF	KDM

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POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
COVER SHEET
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

Williams GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE: N.T.S.
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
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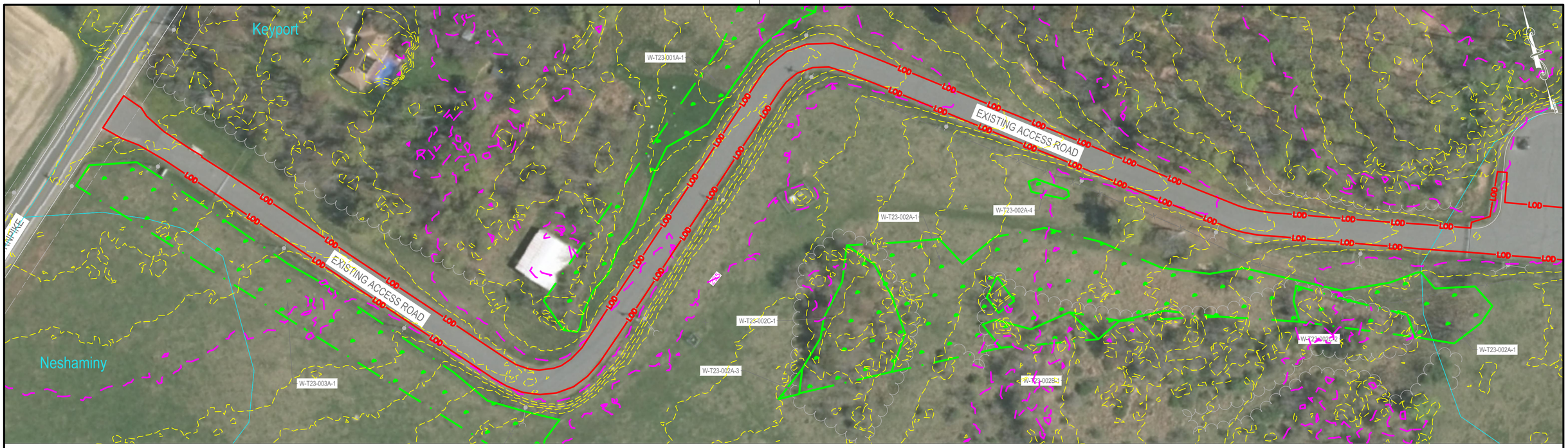
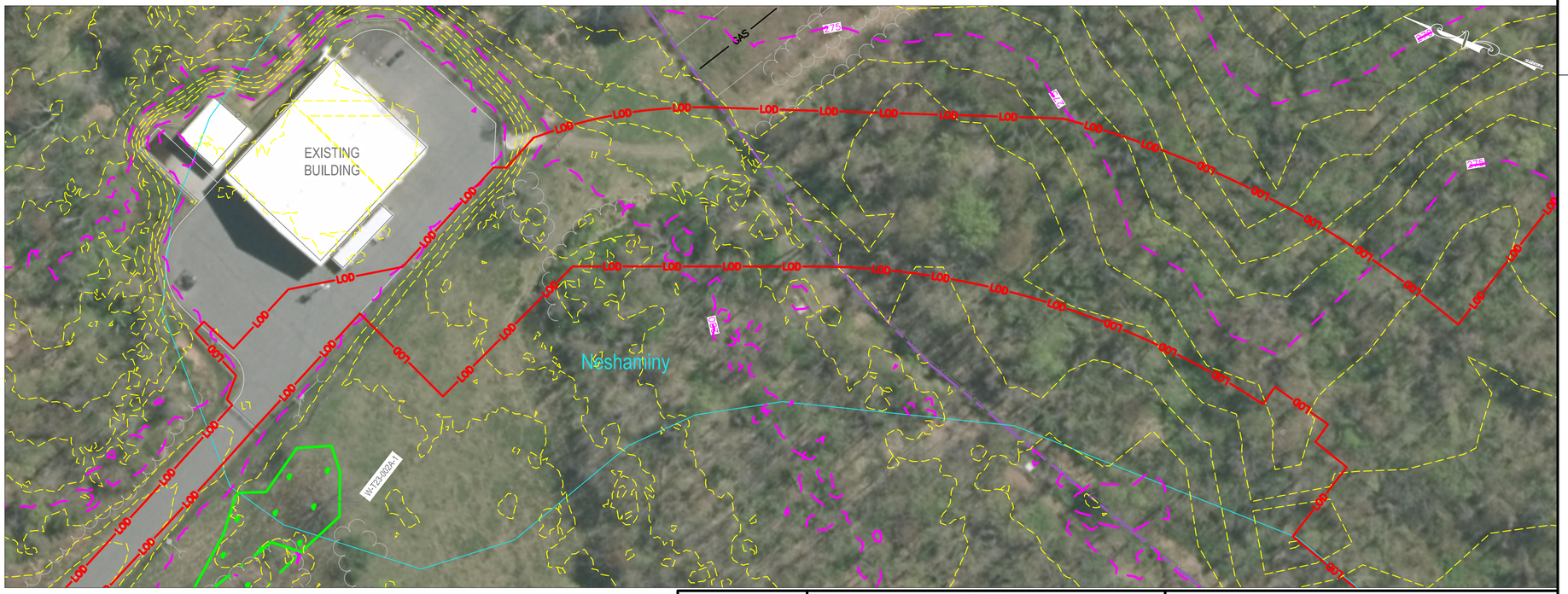
WO: 1185732			

Drawn By & Date/Time: haasp Jan 10, 2020 - 11:50am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\01 - PCSM Cover CS 206 - EPA Road.dwg





LEGEND

EXISTING FEATURES

- 265 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- STREAM CENTERLINE
- WETLAND
- PARCEL LINE
- EXISTING ACCESS ROADS
- X — EXISTING FENCE
- OHE — EXISTING OVERHEAD POWER LINE
- EXISTING PIPELINE
- EXISTING RIGHT OF WAY
- SOIL TYPE BOUNDARY
- WasA — SOIL TYPE

PROPOSED FEATURES

- LOD — LIMIT OF DISTURBANCE

NOTES:

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SOIL LEGEND:
MOUNT LUCAS
NESHAMINY
WATCHUNG

50' 25' 0' 50'
SCALE: 1"= 50'

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
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POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
EXISTING CONDITIONS AND SOILS MAP (SHEET 1 OF 3)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

Williams GAS PIPELINE

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W.O. 1185732			

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Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\02-04 - Existing Plan CS 206 - EPA Road.dwg

LEGEND

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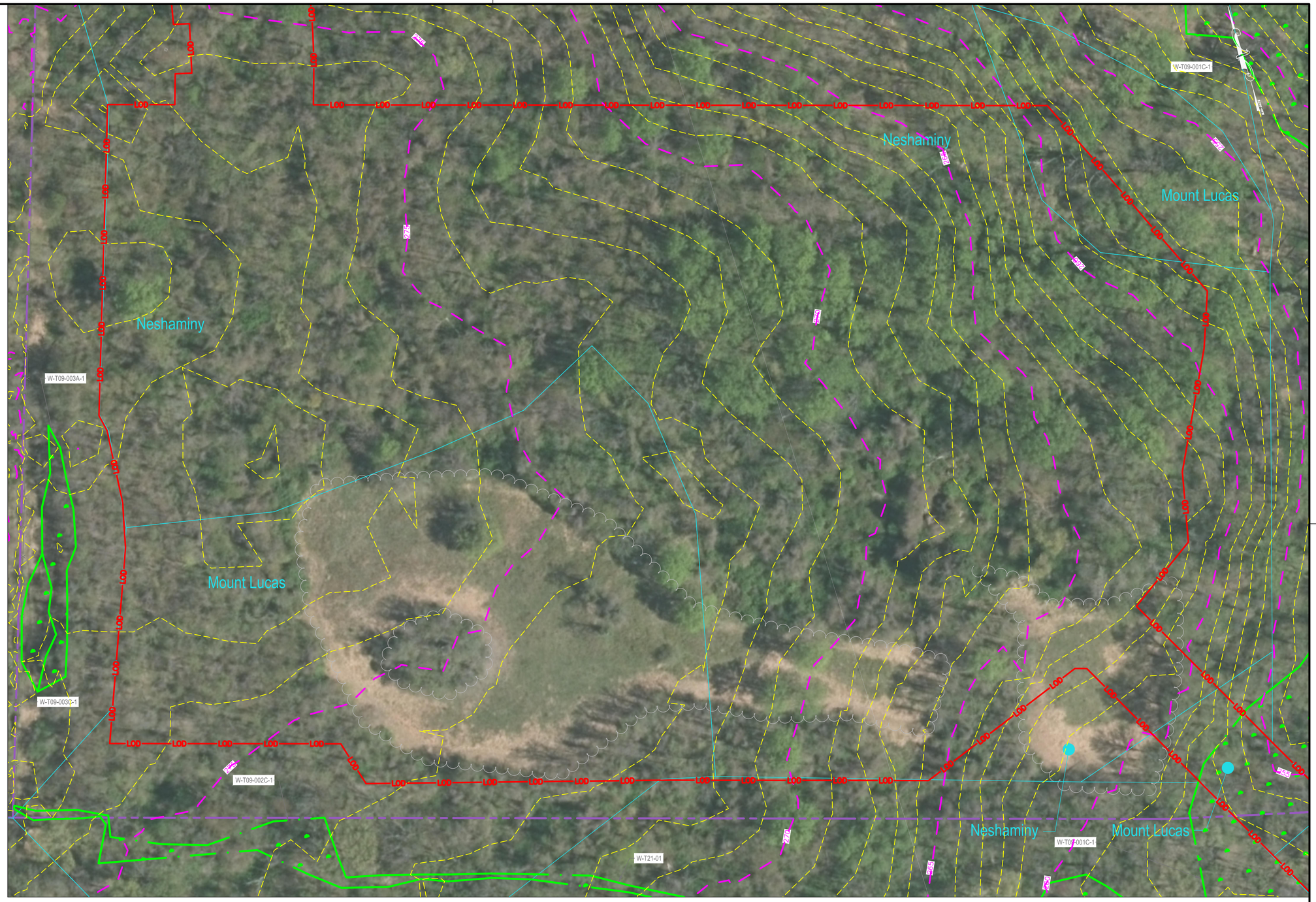

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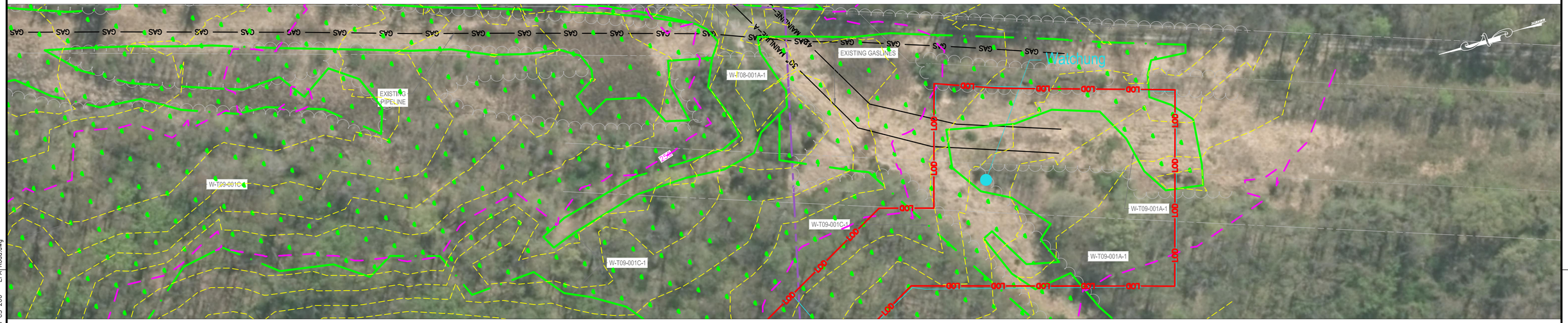

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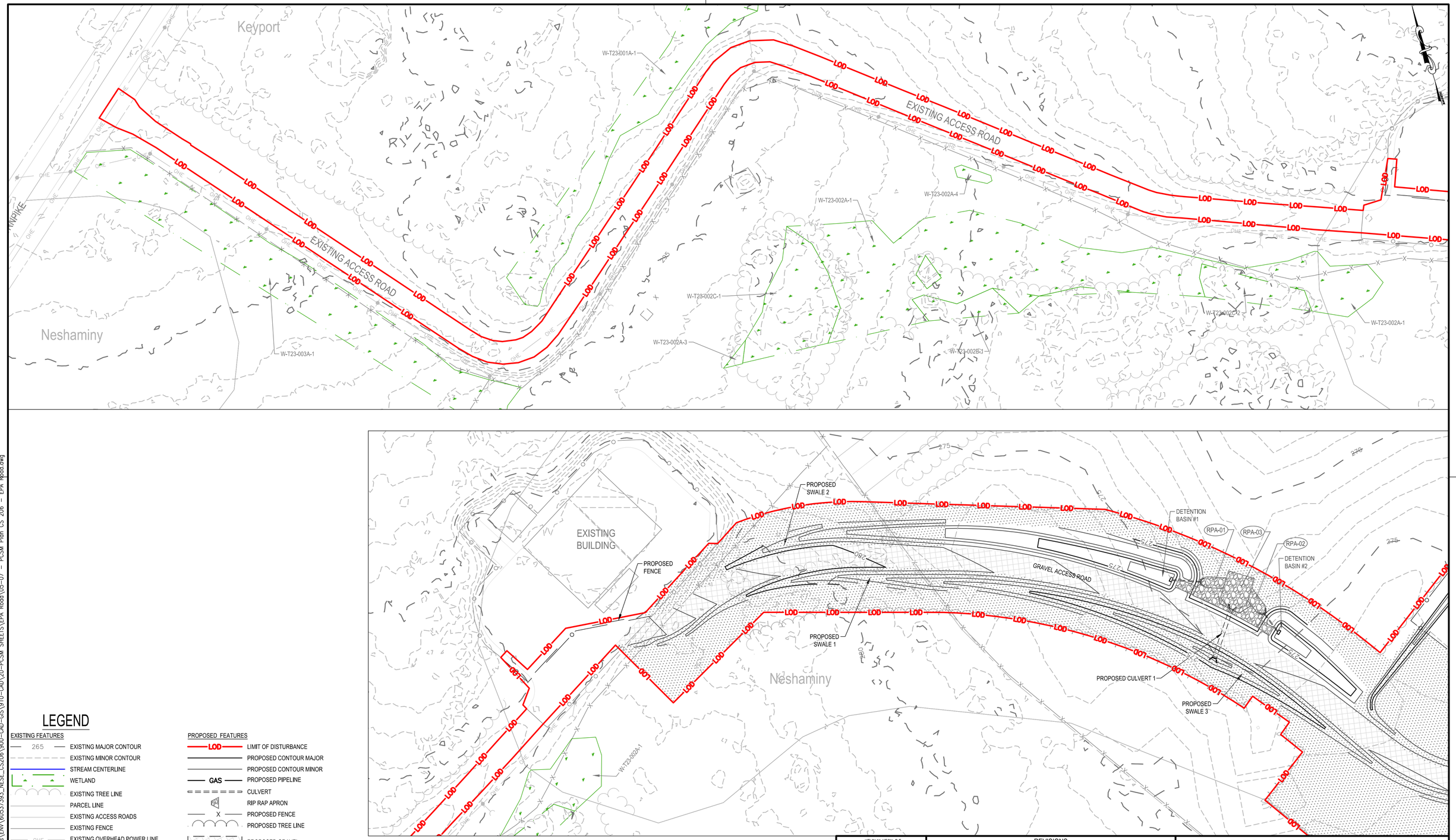

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- PROPOSED TREE LINE
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- PROPOSED CONCRETE
- RIPRAP SLOPE PROTECTION
- PROPOSED BRUSH SEED MIX
- TP-8 — SOIL TEST LOCATION

SOIL LEGEND:
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WO: 1185732			

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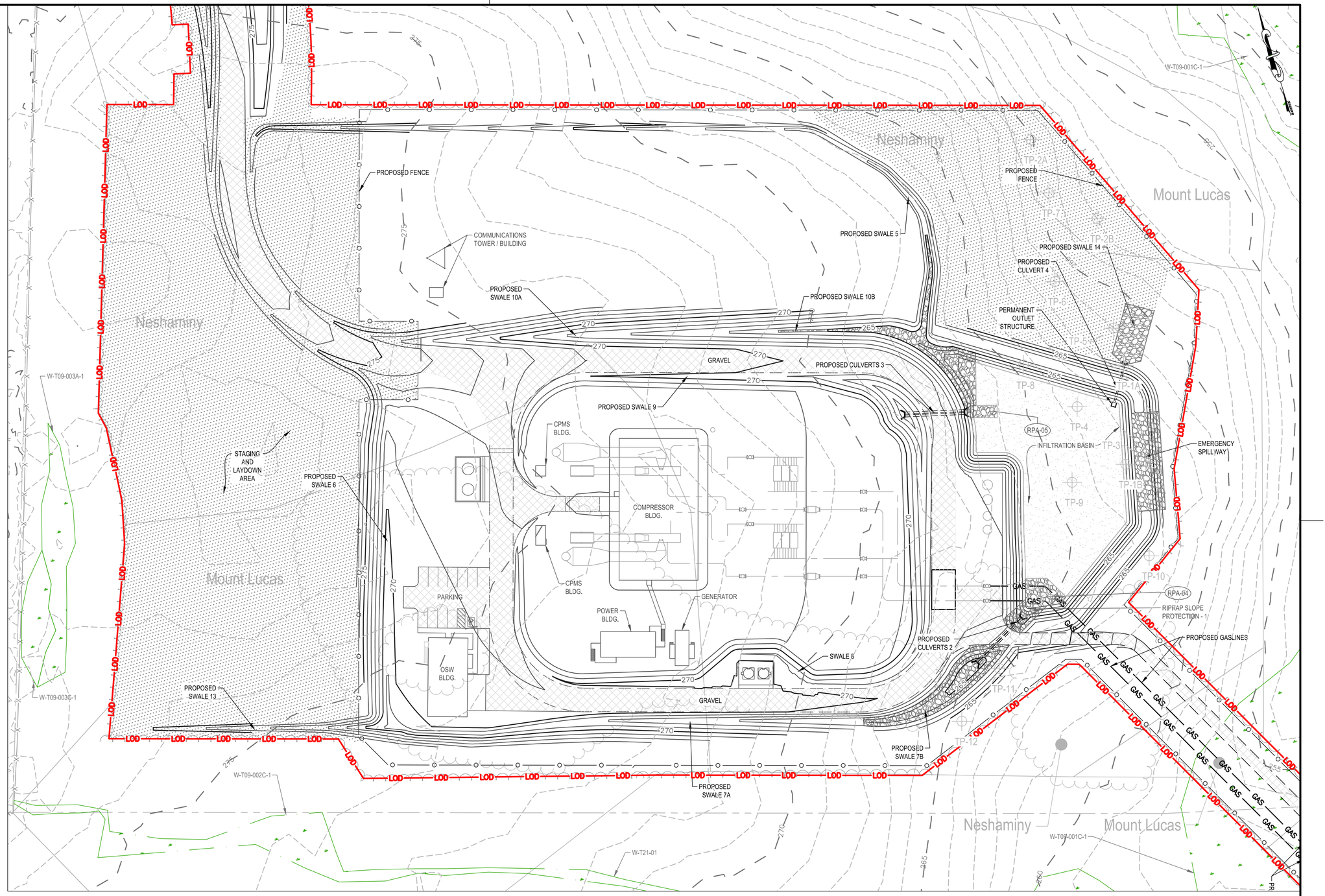

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POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (SHEET 2 OF 3)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

Williams. GAS PIPELINE

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WO: 1185732			

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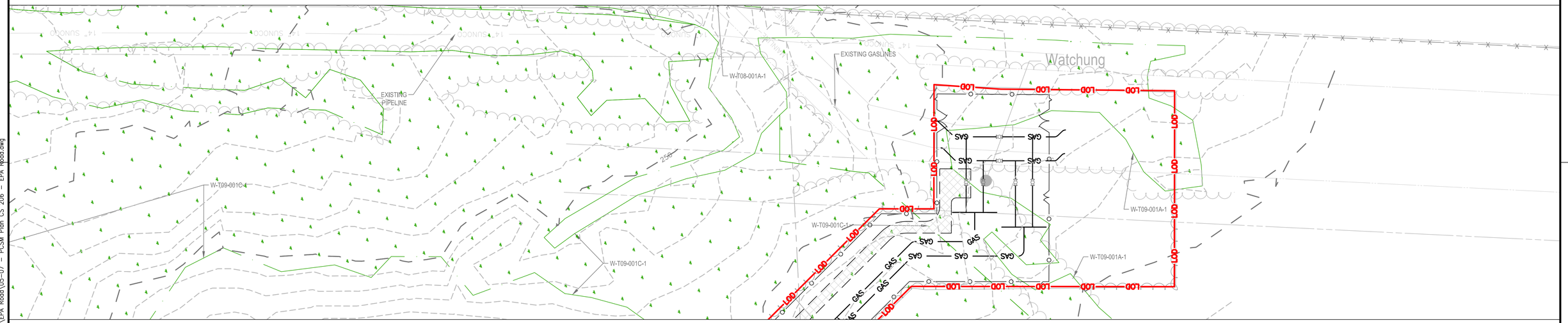

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EXISTING FEATURES

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PROPOSED FEATURES

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- PROPOSED CONCRETE
- RIPRAP SLOPE PROTECTION
- PROPOSED BRUSH SEED MIX
- TP-8 — SOIL TEST LOCATION

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2. PROPERTY LINE INFORMATION PROVIDED BY WILLIAMS.
3. PROPOSED COMPRESSOR STATION SITE WILL BE STABILIZED WITH CLEAN CRUSHED ROCK (GRAVEL).

SOIL LEGEND:
MOUNT LUCAS
NESHAMINY
WATCHUNG

50' 25' 0' 50'
SCALE: 1"= 50'

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

KEVIN McKEON, P.E.
NEW JERSEY
PROFESSIONAL ENGINEER NO GE32586

REVISIONS

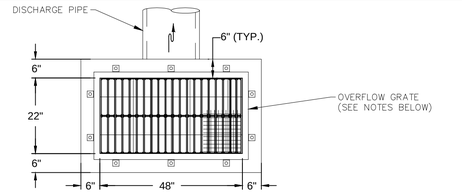
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	01/15/2020	PPH	NJDEP SUBMISSION	1185732	TPF	KDM

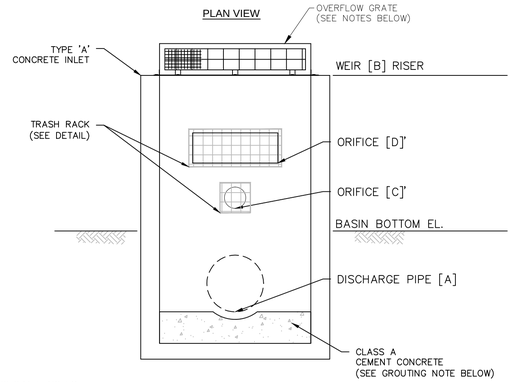
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (SHEET 3 OF 3)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

Williams. GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE: 1"=50'
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
APPROVED BY: KDM	DATE: 01/15/2020	DRAWING NUMBER:	SHEET 7 OF 12
W.O. 1185732			

Drawn By & Date/Time: haasp Jan 10, 2020 – 11:52am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\05-07 – PCSM Plan CS 206 – EPA Road.dwg





OVERFLOW GRATE NOTES:

AN OVERFLOW GRATE IS DESIGNED TO PREVENT OBSTRUCTION OF THE STRUCTURE. THE GRATE MUST COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. THE OVERFLOW GRATE MUST BE SECURED TO THE OUTLET STRUCTURE BUT REMOVABLE FOR EMERGENCIES AND MAINTENANCE;
2. THE OVERFLOW GRATE SPACING MUST BE NO GREATER THAN 2 INCHES ACROSS THE SMALLEST DIMENSION; AND
3. THE OVERFLOW GRATE MUST BE CONSTRUCTED OF RIGID, DURABLE, AND CORROSION RESISTANT MATERIAL AND DESIGNED TO WITHSTAND A PERPENDICULAR LIVE LOADING OF 300 LBS/SF.

GROUTING NOTE:

THE SPACE BELOW THE INVERT OF THE DISCHARGE PIPE MUST BE FILLED WITH MATERIAL, SUCH AS CONCRETE, A MIXTURE OF SAND AND CEMENT, OR SIMILAR GROUTING MATERIAL, SUCH THAT WATER WILL NOT POND IN THE OUTLET STRUCTURE. THIS MATERIAL MUST BE SLOPED TOWARDS THE DISCHARGE PIPE TO FACILITATE DRAINAGE.

BASIN NO.	BASIN BOTTOM	CULVERT [A] OUTFALL		WEIR [B] RISER	ORIFICE [C]		ORIFICE [D]	
	ELEV.	SIZE/ MATERIAL	INV. ELEV.	ELEV.	SIZE	INV. ELEV.	SIZE	INV. ELEV.
INFILTRATION BASIN	262.00	18" RCP	261.75	265.50	4"	262.15	0.5' H 0.8' W	263.25

NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

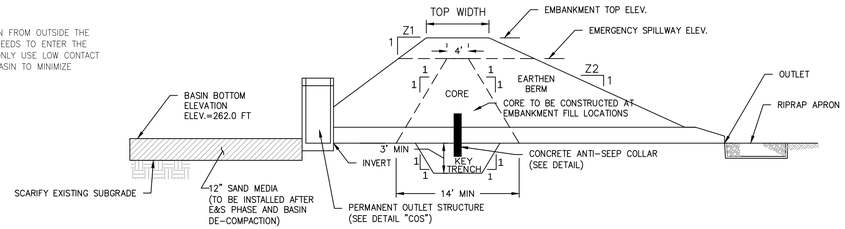
TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

(COS) CONCRETE OUTLET STRUCTURE

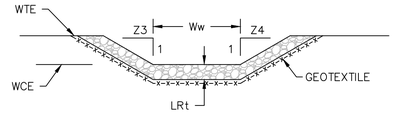
Williams GAS PIPELINE

NOTES:

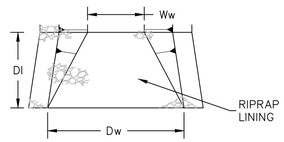
1. CONTRACTOR SHALL EXCAVATE THE BASIN FROM OUTSIDE THE LIMITS OF THE BASIN. IF CONTRACTOR NEEDS TO ENTER THE BASIN FOOTPRINT, CONTRACTOR SHALL ONLY USE LOW CONTACT PRESSURE EQUIPMENT TO GRADE THE BASIN TO MINIMIZE COMPACTING THE SOILS.



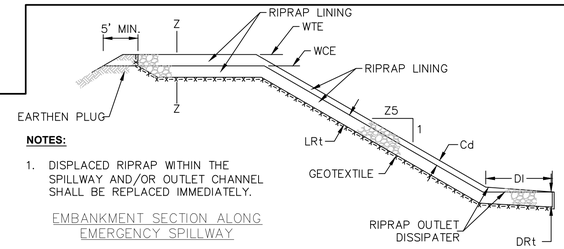
EMBANKMENT				BARREL			
Z1	Z2	TOP ELEV. (FEET)	TOP WIDTH (FEET)	INVERT ELEV. (FEET)	OUTLET ELEV. (FEET)	DIA (INCH)	MATERIAL
3	3	267.00	10	261.75	261.20	18	RCP



WEIR/SPILLWAY SECTION Z-Z



RIPRAP OUTLET DISSIPATER PLAN VIEW



NOTES:

1. DISPLACED RIPRAP WITHIN THE SPILLWAY AND/OR OUTLET CHANNEL SHALL BE REPLACED IMMEDIATELY.

EMBANKMENT SECTION ALONG EMERGENCY SPILLWAY

BASIN NO.	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)
1	3	3	267.00	266.00	100	4	18	3	1	5	100	4	18

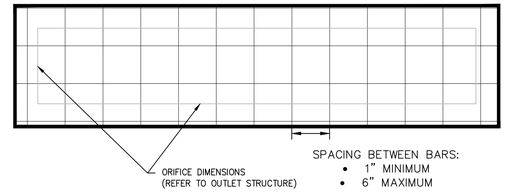
NEW JERSEY

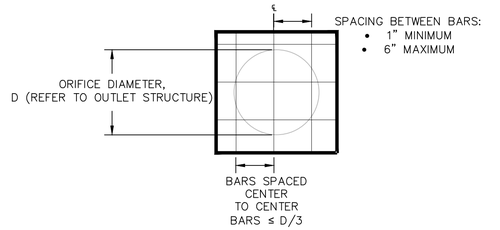
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

IB INFILTRATION BASIN

Williams GAS PIPELINE





NOTES:

FOR SYSTEMS DESIGNED WITH AN OUTLET STRUCTURE, TRASH RACKS MUST BE INSTALLED AT THE INTAKE TO THE OUTLET STRUCTURE. THEY MUST MEET THE FOLLOWING CRITERIA:

1. PARALLEL BARS WITH 1-INCH SPACING BETWEEN THE BARS UP TO THE ELEVATION OF THE WATER QUALITY DESIGN STORM;
2. PARALLEL BARS HIGHER THAN THE ELEVATION OF THE WATER QUALITY DESIGN STORM MUST BE SPACED NO GREATER THAN ONE-THIRD THE WIDTH OF THE DIAMETER OF THE ORIFICE, WITH MINIMUM SPACING BETWEEN BARS OF 1-INCH AND A MAXIMUM SPACING BETWEEN BARS OF SIX INCHES;
3. THE TRASH RACK MUST BE DESIGNED SO AS NOT TO ADVERSELY AFFECT THE HYDRAULIC PERFORMANCE OF THE OUTLET PIPE OR STRUCTURE;
4. CONSTRUCTED OF RIGID, DURABLE AND CORROSION-RESISTANT MATERIAL; AND
5. DESIGNED TO WITHSTAND PERPENDICULAR LIVE LOADING OF 300 LBS/SF.

TRASH RACK (TR)

NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

TR TRASH RACK

Williams GAS PIPELINE

NOTES:

1. THE SAND MUST MEET ALL THE SPECIFICATIONS FOR CLEAN, MEDIUM-AGGREGATE CONCRETE SAND IN ACCORDANCE WITH AASHTO M-6 OR ASTM C-33, AS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY
2. THE MAXIMUM PERCENTAGE OF FILES IN 15%
3. THE MINIMUM TESTED INFILTRATION RATE IS 20 INCHES/HOUR
4. THE USE OF TOPSOIL AND VEGETATION IS PROHIBITED
5. FILTER FABRIC (NON-WOVEN, 8 OZ/SY) IS REQUIRED ALONG THE SIDES OF THE INFILTRATION BASIN TO PREVENT THE MIGRATION OF FINE PARTICLES FROM THE SURROUNDING SOIL; FILTER FABRIC MAY NOT BE USED ALONG THE BOTTOM OF THE BASIN BECAUSE IT MAY RESULT IN A LOSS OF PERMEABILITY
6. SAND MEDIA MUST BE PLACED IN LIFTS NOT TO EXCEED 6 INCHES
7. PROCEDURE:
   - 7.1. EXCAVATE TO REQUIRED MINIMUM THICKNESS OF SAND MEDIA. SCARIFY AND DE-COMPACT THE EXPOSED SUBGRADE IN ACCORDANCE WITH THE 'BASIN COMPACTION NOTES', TO A DEPTH OF 6" - 12"
   - 7.2. REMOVE ROCKS LARGER THAN 3 INCHES
   - 7.3. PREPARE AND PLACE THE SAND MEDIA PER NOTES 1-6 ABOVE.

SAND MEDIA

NO.	DATE	BY	REVISION DESCRIPTION			

SAND MEDIA

BRUSH SEEDING MIX FOR WETLAND AREAS (ERNSET SEED FACW MEADOW MIX)	
COMMON NAME	SCIENTIFIC NAME
FOX SEDGE	CAREX VULPINOIDEA
HOP SEDGE	CAREX LUPULINA
BLUNT BROOM SEDGE	CAREX SCOPARIA
BLADDER (STAR) SEDGE	CAREX INTUMESCENS
VIRGINIA WILDRYE	ELYMUS VIRGINICUS
OXEYE SUNFLOWER	HELIOPSIS HELIANTHOIDES
NARROWLEAF BLUE EYED GRASS	SISYRINCHIUM ANGUSTIFOLIA
SEEDBOX	LUDWIGIA ALTERNIFOLIA
RATTLESNAKE GRASS	GLYCERIA CANADENSIS
GREAT BLUE LOBELIA	LOBELIA SIPHILITICA
WATER PLANTAIN	ALISMA SUBCORDATUM
SWAMP MILKWEED	ASCLEPIAS INCARNATA
BONESET	EUPATORIUM PERFOLIATUM
LURID SEDGE	CAREX LURIDA
SOFT RUSH	JUNCUS EFFUSUS
SENSITIVE FERN	ONOCLEA SENSIBILIS
GREEN BULRUSH	SCIRPUS ATROVIRENS
WOOLGRASS	SCIRPUS CYPERINUS
SPOTTED JOE-PYE WEED	EUPATORIUM MACULATUM
BLUE VERVAIN	VERBANA HASTATA
DITCH STONECROP	PENTHORUM SEDOIDES
MONKEY FLOWER	MIMULUS RINGENS
NEW ENGLAND ASTER	ASTER NOVAE-ANGLIAE
FLAT-TOP WHITE ASTER	ASTER UMBELLATUS
SLENDER MOUNTAINMINT	PYCNANTHEMUM TENUIFOLIUM

* SEED APPLICATION RATES SHOULD FOLLOW THE MANUFACTURER'S RECOMMENDATION FOR THE INDIVIDUAL SEED MIX.

BRUSH SEEDING MIX FOR TRANSITION AND UPLAND AREAS (ERNSET SEED CUSTOM NATIVE UPLAND WILDLIFE FORAGE AND COVER MIX)	
COMMON NAME	SCIENTIFIC NAME
VIRGINIA WILD RYE	ELYMUS VIRGINICUS
LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM
SWITCHGRASS	PANICUM VIRGATUM
INDIANGRASS	SORGHASTRUM NUTANS
EASTERN GAMMA GRASS	TRIPSACUM DACTYLOIDES
FOWL BLUEGRASS	POA PALUSTRIS
BIG BLUESTEM	ANDROPOGON GERARDII
BLACK EYED SUSAN	RUDBECKIA HIRTA
SHOWY TICK-TREFOIL	DESMODIUM CANADENSE
OX EYE SUNFLOWER	HELIOPSIS HELIANTHOIDES

* SEED APPLICATION RATES SHOULD FOLLOW THE MANUFACTURER'S RECOMMENDATION FOR THE INDIVIDUAL SEED MIX.

BRUSH SEEDING

SOMERSET-UNIOIN SOIL CONSERVATION DISTRICT BASIN COMPACTION NOTES:

1. INSPECT SITE. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE-TILLED AND FIRMED IN ACCORDANCE WITH ABOVE.
2. THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS WILL HELP INSURE A GOOD BOND BETWEEN THE TOPSOIL AND SUBSOIL. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).
3. SOIL COMPACTION RESULTING FROM LAND GRADING ACTIVITIES CAN IMPACT THE INFILTRATION RATE OF THE SOIL. RESTORATION OF COMPACTED SOILS THROUGH DEEP TILLAGE (6" TO 12") MAY BE REQUIRED IN PLANNED PERVIOUS AREAS TO ENHANCE THE INFILTRATION RATE OF THE DISTURBED SOIL. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).
4. TO PREVENT COMPACTION OF THE SUBSOIL WHICH WILL REDUCE ITS INFILTRATION CAPACITY, BASINS SHOULD BE EXCAVATED WITH LIGHT EARTH MOVING EQUIPMENT (LOW GROUND PRESSURE), PREFERABLY WITH TRACKS OR OVER-SIZED TIRES RATHER THAN THE NORMAL RUBBER TIRES. ONCE THE FINAL CONSTRUCTION PHASE IS REACHED, THE FLOOR OF THE BASIN SHALL BE SCARIFIED AND DE-COMPACTED DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW AND SMOOTHED OVER WITH A LEVELING DRAG OR EQUIVALENT GRADING EQUIPMENT
5. FOR BASINS, ANNUAL TILLING OPERATIONS MAINTAIN INFILTRATION CAPACITY. DEEP TILLING CAN BE USED TO BREAKUP CLOGGED SURFACE LAYERS FOLLOWED BY RE-GRADING AND LEVELING. SAND OR ORGANIC MATTER CAN BE TILLED INTO THE BASIN FLOOR TO PROMOTE A RESTORED INFILTRATION CAPACITY. SEDIMENT REMOVAL PROCEDURES SHOULD NOT BE UNDERTAKEN UNTIL THE BASIN IS THOROUGHLY DRY. THE TOP LAYER SHOULD BE REMOVED BY LIGHT EQUIPMENT TO PREVENT COMPACTION. THE REMAINING SOIL CAN BE RE-TILLED.

BASIN COMPACTION NOTES

NO.	DATE	BY	REVISION DESCRIPTION			

BASIN COMPACTION NOTES

KEVIN McKEON, P.E.

NEW JERSEY PROFESSIONAL ENGINEER NO GE32586

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

REVISIONS

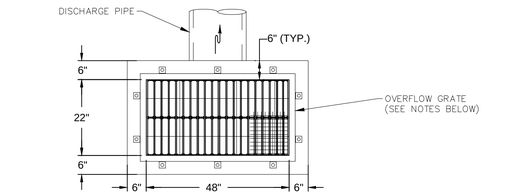
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	01/15/2020	PPH	NJDEP SUBMISSION	1185732	TPF	KDM

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
DETAILS (SHEET 1 OF 4)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

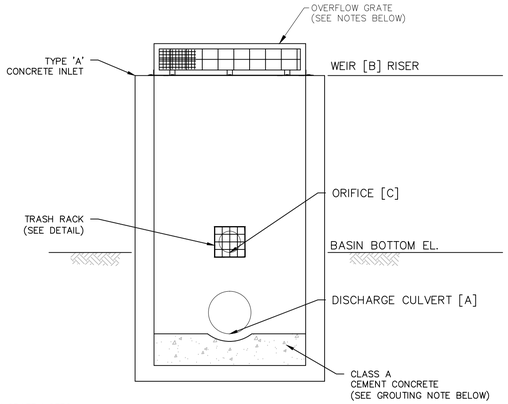
Williams GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE: N.T.S.
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
APPROVED BY: KDM	DATE: 01/15/2020	DRAWING NUMBER:	SHEET 8 OF 12
W.O: 1185732			

Drawn By & Date/Time: hoasp Jan 10, 2020 - 11:53am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\08-11 - PCSM Detail Sheets - EPA Road.dwg



PLAN VIEW



OVERFLOW GRATE NOTES:

AN OVERFLOW GRATE IS DESIGNED TO PREVENT OBSTRUCTION OF THE STRUCTURE. THE GRATE MUST COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. THE OVERFLOW GRATE MUST BE SECURED TO THE OUTLET STRUCTURE BUT REMOVABLE FOR EMERGENCIES AND MAINTENANCE;
2. THE OVERFLOW GRATE SPACING MUST BE NO GREATER THAN 2 INCHES ACROSS THE SMALLEST DIMENSION; AND
3. THE OVERFLOW GRATE MUST BE CONSTRUCTED OF RIGID, DURABLE, AND CORROSION RESISTANT MATERIAL AND DESIGNED TO WITHSTAND A PERPENDICULAR LIVE LOADING OF 300 LBS/SF.

GROUTING NOTE:

THE SPACE BELOW THE INVERT OF THE DISCHARGE PIPE MUST BE FILLED WITH MATERIAL, SUCH AS CONCRETE, A MIXTURE OF SAND AND CEMENT, OR SIMILAR GROUTING MATERIAL, SUCH THAT WATER WILL NOT POND IN THE OUTLET STRUCTURE. THIS MATERIAL MUST BE SLOPED TOWARDS THE DISCHARGE PIPE TO FACILITATE DRAINAGE.

BASIN NO.	BASIN BOTTOM	CULVERT [A] OUTFALL		WEIR [B] RISER	ORIFICE [C]	
	ELEV.	SIZE/MATERIAL	INV. ELEV.	ELEV.	SIZE	INV. ELEV.
1	274.00	12" HDPE	274.00	275.50	3.0"	274.00
2	274.00	12" HDPE	274.00	275.50	3.0"	274.00

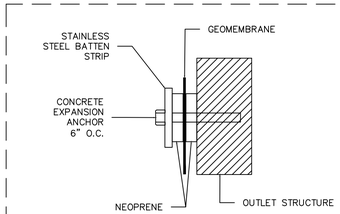
NEW JERSEY

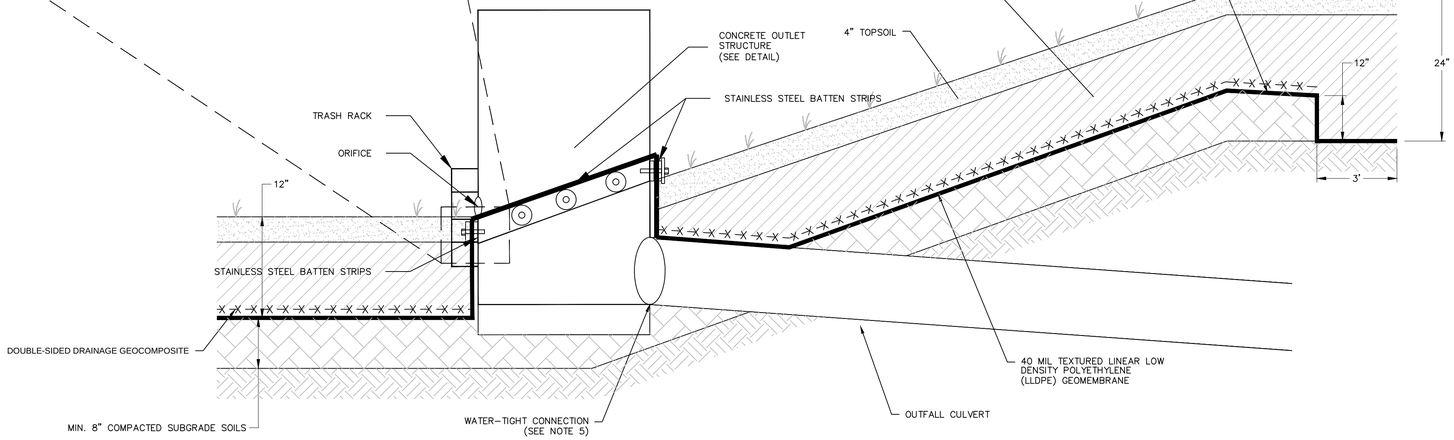
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

(COS) CONCRETE OUTLET STRUCTURE

GAS PIPELINE





NOTES:

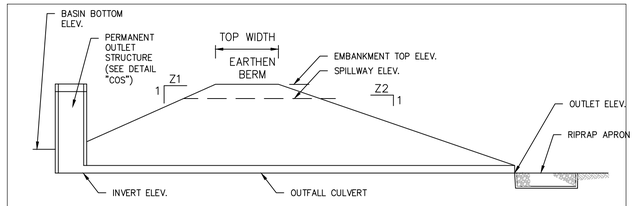
1. LLDPE GEOMEMBRANE LINER SYSTEM SHALL BE CONTINUOUS. CONTRACTOR SHALL BE RESPONSIBLE TO CONNECT SPANS BETWEEN VARYING CROSS-SECTIONAL CONDITIONS.
2. FENCE POST FOUNDATION MAY PIERCE THE LLDPE GEOMEMBRANE AT LOCATIONS SHOWN. NO "BOOT" IS REQUIRED.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING WATER FROM FLOWING UNDER THE GEOMEMBRANE DURING INSTALLATION.
4. ALL SEAMS SHALL BE IN A DOWN-SLOPE DIRECTION. DUE TO LIMITED SLOPE LENGTH, IT IS EXPECTED THAT THE SLOPE MAY FALL WITHIN A LONGITUDINAL PANEL WIDTH. LONGITUDINAL PANELS SHALL BE ORIENTED SUCH THAT A SEAM IS NOT ON THE SLOPE.
5. LOCATIONS WHERE THE LINER IS PIERCED BY CULVERTS, THE CONTRACTOR SHALL ENSURE A WATER-TIGHT SEAL IS ACHIEVED THROUGH USE OF SEALANT. SEALANT SHALL BE GENERAL ELECTRIC SILICONE, RTV 103, OR EQUIVALENT.
6. CONTRACTOR SHALL ENSURE WATER-TIGHT SEALS AT ALL CULVERT JUNCTIONS AND ALONG THE CULVERT ALIGNMENT. ANY JOINTS AT CATCH BASINS SHOULD BE CAREFULLY SEALED.

DETENTION BASIN LINER PROFILE
PERMANENT STORMWATER CONTROL MEASURE
N.T.S.

NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
DETENTION BASIN LINER PROFILE
GAS PIPELINE



BASIN NO.	EMBANKMENT				SPILLWAY		
	Z1	Z2	ELEV. (FEET)	WIDTH (FEET)	ELEV. (FEET)	WIDTH (FEET)	LINING
1	3	3	276.50	10	276.00	10	R-4
2	3	3	276.50	10	276.00	10	R-4

BASIN NO.	OUTFALL CULVERT					
	INVERT ELEV. (FEET)	OUTLET ELEV. (FEET)	LENGTH (FT)	SLOPE (FT/FT)	DIA (INCH)	MATERIAL
1	274.00	273.70	30	0.01	12	HDPE
2	274.00	273.75	25	0.01	12	HDPE

NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

(DB) DETENTION BASIN

GAS PIPELINE

NOTES:

1. THE UPPER 8 INCHES OF SUBGRADE SOILS SUPPORTING THE GEOMEMBRANE SHALL BE CLAY MATERIAL AND POSSESS A MAXIMUM PARTICLE SIZE OF ¾-INCH. THE SUBGRADE CLAY MATERIAL SHALL BE COMPACTED IN 6-INCH LIFTS USING A RUBBER-TIRED DUMP TRUCK, PADSFOOT ROLLER OR SMOOTH-DRUM ROLLER, AS APPROPRIATE FOR THE SOIL TYPE, UNTIL VISIBLY STABLE AS DETERMINED BY THE ONSITE WILLIAMS CONSTRUCTION MANAGER. THE CLAY MATERIAL SHOULD BE PLACED AT A MOISTURE CONTENT IN THE RANGE OF 0 TO 5 PERCENT ABOVE THE OPTIMUM MOISTURE CONTENT.

   1.1. PRIOR TO THE SUBGRADE CLAY MATERIAL INSTALLATION, AREAS OF SUBGRADE WHERE ROCK IS EXPOSED SHOULD BE UNDERCUT 12 INCHES AND SLUSH GROUTED TO SEAL THE SURFACE OF THE ROCK AND ANY FRACTURES; THE ROCK AREAS SHOULD THEN BE COVERED WITH 12 INCHES OF COMPACTED STRATUM 1 MATERIAL.

2. THE GEOMEMBRANE SHALL BE A TEXTURED (BOTH SIDES) 40-MIL LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) SHEET PLACED BY AN EXPERIENCED GEOSYNTHETICS INSTALLATION CONTRACTOR APPROVED BY THE GEOMEMBRANE MANUFACTURER.

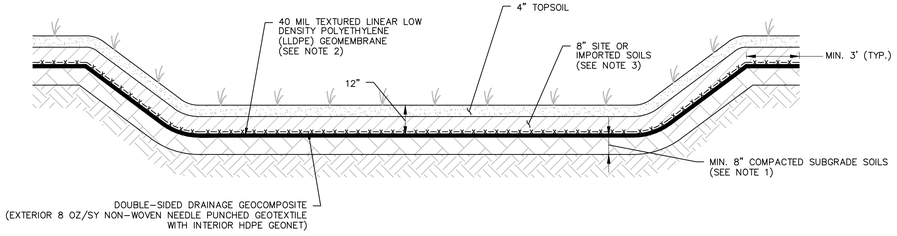
3. OVER THE TEXTURED GEOMEMBRANE LINER, 8 INCHES OF PROTECTIVE COVER SOILS SHALL BE INSTALLED, MEETING THE FOLLOWING CRITERIA:

   3.1. SHALL CONSIST OF ONSITE OR IMPORTED SOILS WITH 10 TO 35 PERCENT PASSING THE NO. 200 SIEVE
   3.2. MAXIMUM PARTICLE SIZE OF ½-INCH
   3.3. MAXIMUM PLASTICITY INDEX OF 6 FOR THE MATERIAL PASSING THE NO. 200 SEIVE.
   3.4. PROVIDE INDEPENDENT TESTING TO CONFIRM THAT THE PROTECTIVE COVER SOIL MEETS THE ABOVE REQUIREMENTS. TESTING MUST BE LESS THAN 12 MONTHS OLD AT THE TIME PROTECTIVE COVER SOIL IS FURNISHED TO THE PROJECT.
   3.5. SHALL BE FREE OF STICKS, STUMPS, ROOT WADS, AND OTHER OBJECTS THAT COULD DAMAGE THE GEOMEMBRANE AND CAPABLE OF BEING READILY SPREAD SO AS TO AVOID PUNCTURE, TENSIONING OR TEARING OF THE UNDERLYING GEOMEMBRANE.
   3.6. PREDOMINANTLY SANDY SOILS ARE RECOMMENDED; PREDOMINANTLY CLAYEY SOILS THAT POSSESS RELATIVELY HIGH PLASTICITY/COHESION ARE NOT RECOMMENDED.
   3.7. THE PROTECTIVE COVER SOIL SHALL BE PLACED IN A SINGLE LOOSE LIFT AND COMPACTED VIA TRACKING BY THE LOW GROUND PRESSURE SPREADING EQUIPMENT (BULLDOZER).

4. OVER THE PROTECTIVE COVER SOIL, A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE INSTALLED. TOPSOIL SHALL BE SILTY SAND MATERIAL MEETING THE FOLLOWING CRITERIA:

   4.1. ORGANIC CONTENT BETWEEN 4% AND 10%
   4.2. PROVIDE INDEPENDENT TESTING TO CONFIRM THAT THE TOPSOIL MEETS THE ABOVE REQUIREMENTS. TESTING MUST BE LESS THAN 12 MONTHS OLD AT THE TIME TOPSOIL IS FURNISHED TO THE PROJECT.

5. THE DOUBLE-SIDED DRAINAGE COMPOSITE SHALL BE GSE FABRINET 200 MIL GEOCOMPOSITE OR ENGINEER-APPROVED EQUAL PRODUCT WITH NON-WOVEN, NEEDLE-PUNCHED GEOTEXTILE (HAVING A NOMINAL MASS OF 8 OUNCES PER SQUARE YARD) HEAT-BONDED TO BOTH SIDES OF THE HDPE GEO-NET CORE. THE DOUBLE-SIDED DRAINAGE GEOCOMPOSITE SHALL POSSESS A TRANSMISSIVITY (MINIMUM AVERAGE ROLL VALUE) OF NO LESS THAN 1.0 X 10-4 M2/SECOND WHEN TESTED BETWEEN STEEL PLATES UNDER A GRADIENT OF 0.1, NORMAL LOAD OF 10,000 PSF, AND WATER AT 70 DEGREES F FOR NO LESS THAN 15 MINUTES.



DETENTION BASIN LINER SECTION
PERMANENT STORMWATER CONTROL MEASURE
N.T.S.

NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
DETENTION BASIN LINER SECTION
GAS PIPELINE

KEVIN McKEON, P.E.

NEW JERSEY
PROFESSIONAL ENGINEER NO GE32586

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	01/15/2020	PPH	NJDEP SUBMISSION	1185732	TPF	KDM

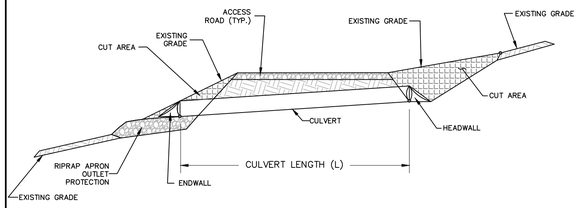
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
DETAILS (SHEET 2 OF 4)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE:
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
APPROVED BY: KDM	DATE: 01/15/2020	DRAWING NUMBER:	SHEET 9 OF 12
W.O. 1185732			

Drawn By & Date/Time: haasp Jan 10, 2020 - 11:53am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\08-11 - PCSM Detail Sheets - EPA Road.dwg

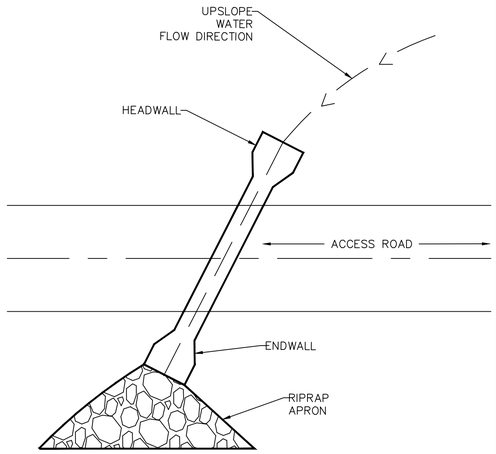
CULVERT NO.	CULVERT DIAMETER (IN.)	CULVERT LENGTH, L (FT)	EMBEDMENT DEPTH, D BELOW INVERT IN ELEV. (FT.)	INVERT IN (ELEV.)	INVERT OUT (ELEV.)	PIPE SLOPE (%)	MATERIAL
1	4 X 4 BOX	60	1.0	273.00	272.40	1.0	RCP
2	18 (QTY 2)	64	N/A	264.63	264.31	0.5	RCP
3	24 (QTY 2)	68	N/A	266.00	265.00	1.5	RCP



NOTES:

1. CUT AND FILL SLOPES SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF ROADWAY GRADING. THESE AREAS SHALL BE BLANKETED WHEREVER THEY ARE LOCATED WITHIN 50 FEET OF A SURFACE WATER OR WITHIN 100 FEET OF A SURFACE WATER WHERE A SUITABLE VEGETATIVE FILTER STRIP DOES NOT EXIST. STEEP SLOPES AT 3H:1V OR STEEPER SHALL BE PROTECTED AGAINST EROSION WITH EROSION CONTROL BLANKET SUITABLE FOR THE ESTABLISHMENT OF VEGETATION.
2. A DURABLE TOP DRESSING SHALL BE PROVIDED FOR SOILS HAVING LOW STRENGTH.
3. UPSLOPE CUT AREA SHALL BE LINED WITH EROSION CONTROL BLANKET.
4. ROADWAY SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED ROADWAYS, DITCHES, OR CROSS DRAINS SHALL BE REPAIRED IMMEDIATELY.
5. BOX CULVERTS SHALL BE EMBEDDED 12 INCHES.

CROSS SECTION



NOTES:

1. TEMPORARY STORMWATER BYPASS BENEATH ACCESS ROAD WILL BE INSTALLED PRIOR TO EARTH DISTURBANCE AT ASSOCIATED GRAVEL WORK AREA, AS APPLICABLE.
2. STORMWATER RUNOFF FROM UPSLOPE BYPASS AREAS WILL BE DIRECTED BENEATH ACCESS ROAD AND WILL DISCHARGE OVER A RIPRAP APRON.

PLAN VIEW

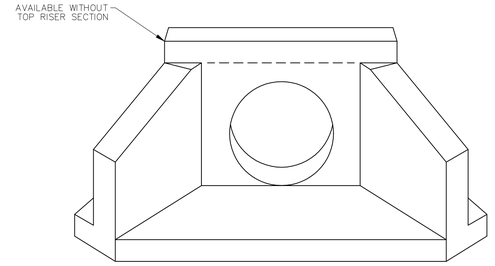
NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

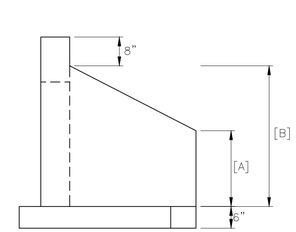
ACCESS ROAD CULVERT
FOR NON-STREAM CROSSINGS

Williams GAS PIPELINE

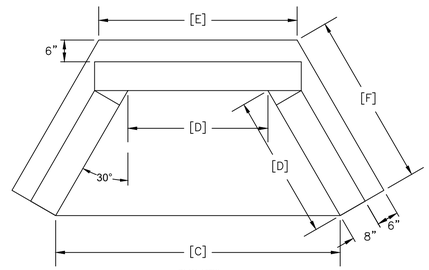


ISOMETRIC

MAXIMUM CULVERT DIA (IN)	[A] (IN)	[B] (IN)	[C] (IN)	[D] (IN)	[E] (IN)	[F] (IN)
15	11	21	48	24	38	34
18	12	26	52	26	43	33
21	12	26	52	26	43	33
24	21	39	80	40	55	55
36	21	39	80	40	55	55
48	23	52	104	52	73	60



SIDE VIEW



PLAN VIEW

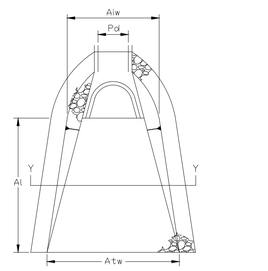
NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

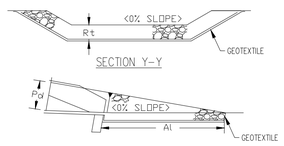
TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

EW TYPICAL DW ENDWALL

Williams GAS PIPELINE



PLAN VIEW



SECTION Y-Y

SECTION Z-Z

RIPRAP GRADATION TABLE					
NATIONAL STONE ASSOCIATION NUMBER	SIZE OF ROCKS (INCHES)			MIN. THICKNESS OF RIPRAP LAYER (IN.)	TOE (FEET)
	MAXIMUM	d50 AVERAGE *	MINIMUM **		
R-1	1?	?	NO. 8	2	1
R-2	3	1?	1	4	1.25
R-3	6	3	2	9	1.5
R-4	12	6	3	18	2.5
R-5	18	9	4	27	4
R-6	24	12	6	36	4
R-7	30	18	12	45	5
R-8	42	24	15	63	6

* THE "AVERAGE SIZE", OR d50, IS DEFINED AS A SIZE THAT IS EXCEEDED BY AT LEAST 50% OF THE TOTAL WEIGHT SHIPPED. (I.E. 50% OF THE TONNAGE SHIPPED CONSISTS OF PIECES LARGER THAN THE "AVERAGE SIZE" SHOWN IN CHART.)

** PIECES SMALLER THAN THE "MINIMUM SIZE" SHOWN SHALL NOT EXCEED 15% OF THE TONNAGE SHIPPED.

MATERIAL NOTES:

1. ROCK UTILIZED FOR RIPRAP SHALL CONSIST OF SOUND, DURABLE ROCK, INSOLUBLE IN WATER, AND RESISTANT TO WEATHERING.
2. ALL MATERIAL SHALL BE FREE OF STRUCTURAL DEFECTS, SHALE SEAMS AND ORGANIC MATTER.
3. INDIVIDUAL PIECES SHOULD BE SHARPLY ANGULAR, BLOCK SHAPED AND HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5.
4. NO PIECE SHALL HAVE A LENGTH EXCEEDING THREE (3) TIMES ITS WIDTH OR DEPTH.
5. EACH LOAD OF ROCK SHALL BE OF WELL-GRADED MIXTURE. A WELL-GRADED MIXTURE, AS USED HEREIN, IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF LARGER STONE, BUT WITH A SUFFICIENT MIXTURE OF SMALLER SIZES TO FILL THE VOIDS.
6. MATERIAL SHALL MEET NSA SPECIFICATIONS – SEE TABLE.
7. IF STREAM WIDTH IS EQUAL TO OR LESS THAN 2 TIMES THE TOE WIDTH, RIPRAP SHALL BE PLACED ACROSS THE ENTIRE STREAM WIDTH.

CONSTRUCTION:
RIPRAP SHALL BE PLACED TO THE FULL COURSE THICKNESS IN ONE CONTINUOUS OPERATION. OPERATIONS WHICH CAUSE SEGREGATION OF THE MATERIALS SHALL NOT BE PERMITTED. INDIVIDUAL ROCKS MAY BE REARRANGED, AND THE VOIDS FILLED WITH HAND PLACED SMALLER ROCK IN ORDER TO ACHIEVE THE DESIRED UNIFORM ARMOR.

APRON NO.	RIPRAP		APRON			CULVERT		
	SIZE (R-__)	THICK. Rt (IN)	LENGTH Al (FT)	INITIAL WIDTH Alw (FT)	TERMINAL WIDTH Atw (FT)	DIAMETER (IN)	EFFECTIVE HEIGHT (FT)	MIN. APRON LINING HEIGHT (FT) 2/3 EFFECTIVE HEIGHT
RPA-01	R-3	9	25	5	12	12	1.0	0.75
RPA-02	R-3	9	25	5	12	12	1.0	0.75
RPA-03	R-4	18	40	10	30	4 X 4 BOX	3.0	2.0
RPA-04	R-4	18	18	20	20	18 (QTY 2)	1.5	1.0
RPA-05	R-4	18	36	12	12	24 (QTY 2)	2.0	1.34

NOTES:

1. WHERE THERE IS A WELL-DEFINED CHANNEL DOWNSTREAM OF THE APRON, THE BOTTOM WIDTH OF THE APRON SHALL BE AT LEAST EQUAL TO THE BOTTOM WIDTH OF THE CHANNEL; AND THE STRUCTURAL LINING SHALL EXTEND AT LEAST ONE FOOT ABOVE THE TAILWATER ELEVATION BUT NO LOWER THAN TWO-THIRDS OF THE VERTICAL CONDUIT DIMENSION ABOVE THE CONDUIT INVERT.
2. BOX CULVERTS SHALL BE EMBEDDED 12 INCHES.

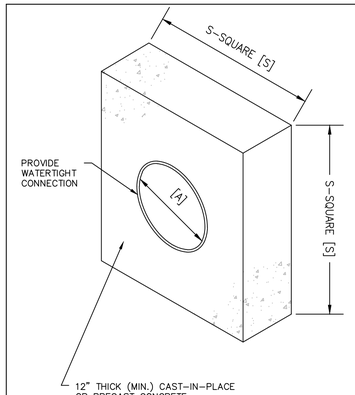
NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

RPA RIPRAP APRON

Williams GAS PIPELINE



BASIN NO.	PIPE DIAMETER (IN) [A]	S (IN) [S]	NO. OF COLLARS	DISTANCE RISER TO 1ST COLLAR (FT)
INFIL. BASIN	18	64	1	20

NOTES:

1. ALL COLLARS SHALL BE INSTALLED SO AS TO BE WATERTIGHT.
2. COLLARS SHALL NOT BE INSTALLED CLOSER THAN 2 FEET TO A PIPE JOINT.

NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

CONCRETE ANTI-SEEP COLLAR

Williams GAS PIPELINE

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

KEVIN McKEON, P.E.
NEW JERSEY
PROFESSIONAL ENGINEER NO GE32586

REVISIONS

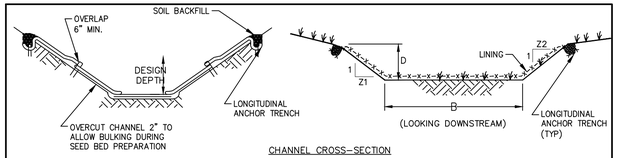
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	01/15/2020	PPH	NJDEP SUBMISSION	1185732	TPF	KDM

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
DETAILS (SHEET 3 OF 4)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

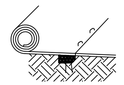
Williams GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE:
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
APPROVED BY: KDM	DATE: 01/15/2020	DRAWING NUMBER:	SHEET 10 OF 12
W.O. 1185732			

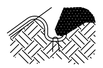
Drawn By & Date/Time: hoasp Jan 10, 2020 - 11:53am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\08-11 - PCSM Detail Sheets - EPA Road.dwg



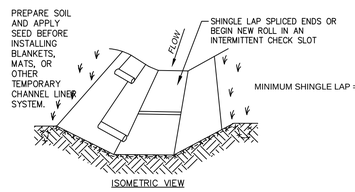
CHANNEL CROSS-SECTION



INTERMITTENT CHECK SLOT



LONGITUDINAL ANCHOR TRENCH



ISOMETRIC VIEW

CHANNEL	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING [5]
1	2	2.0	18	4	4	SC250/VEG
2	4	1.0	12	4	4	SC250/VEG
3	2	1.5	14	4	4	SC250/VEG
5	2	1.5	8	2	2	SC250/VEG
6	2	1.5	14	4	4	SC250/VEG
7A	2	1.5	14	4	4	SC250/VEG
10A	2	1.5	14	4	4	SC250/VEG
13	2	1.5	8	2	2	SC250/VEG

NOTES:

1. SEE MANUFACTURER'S INSTALLATION DETAIL FOR STAPLE PATTERNS, AND VEGETATION STABILIZATION SPECIFICATIONS FOR SOIL AMENDMENTS, SEED MIXTURES, AND MULCHING INFORMATION.
2. ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.
3. CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.
4. 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 CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.
5. NORTH AMERICAN GREEN (NAG) SC-250 EROSION CONTROL MATTING (OR EQUIVALENT) SHALL BE USED CHANNEL LINING.

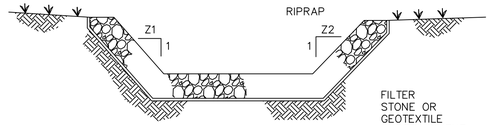
NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

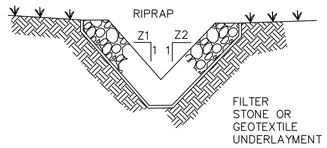
TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

VC VEGETATED CHANNEL

GAS PIPELINE



(LOOKING DOWNSTREAM)
TRAPEZOIDAL CHANNEL CROSS-SECTION



(LOOKING DOWNSTREAM)
TRIANGULAR CHANNEL CROSS-SECTION

NOTES:

FILTER STONE UNDERLAYMENT FOR BED SLOPES ≥ 0.10 FT/FT (10 %) SHALL BE USED.

CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.

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

DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

THE MINIMUM ROCK THICKNESS (t) SHALL BE 1.5 TIMES THE MAX ROCK SIZE.

CHANNEL	SHAPE (TRAPEZOIDAL OR TRIANGULAR)	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING	THICKNESS t (IN)
7B	TRAPEZOIDAL	4	2.0	20	4	4	R-3	6
8	TRIANGULAR	0	1.5	15	5	5	R-3	6
9	TRIANGULAR	0	1.5	15	5	5	R-3	6
10B	TRAPEZOIDAL	2	2.0	18	4	4	R-3	6
14	TRAPEZOIDAL	20	1.0	36	8	8	R-4	12

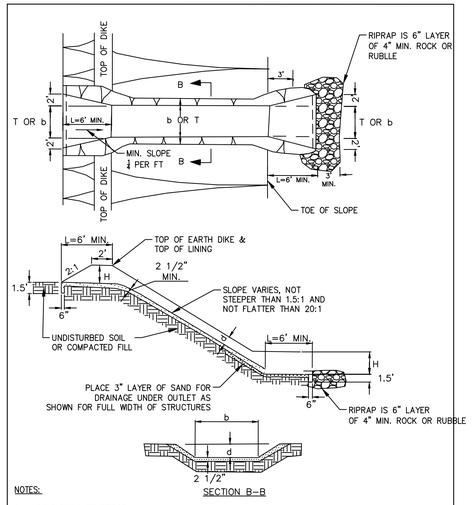
NEW JERSEY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

RIPRAP CHANNEL

GAS PIPELINE



SECTION B-B

NOTES:

1. LINING SHALL BE RIPRAP.
2. SOME TYPE OF ENERGY DISSIPATOR, SUCH AS THE ONE SHOWN ABOVE, MUST BE USED TO PREVENT EROSION AT THE OUTLET.

RIPRAP SLOPE PROTECTION	BOTTOM WIDTH b (FT)	HEIGHT H (FT)	DEPTH d (FT)	LINING
1	25	2.0	0.75	R-3

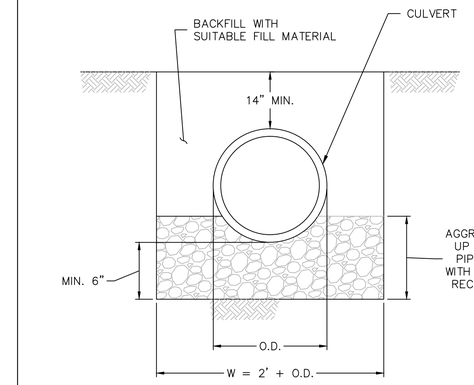
NEW JERSEY

DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

RIPRAP SLOPE PROTECTION

GAS PIPELINE



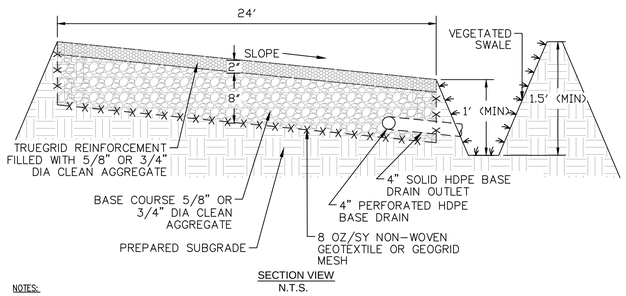
NEW JERSEY

DATE	BY	REVISION DESCRIPTION

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

PIPE BEDDING

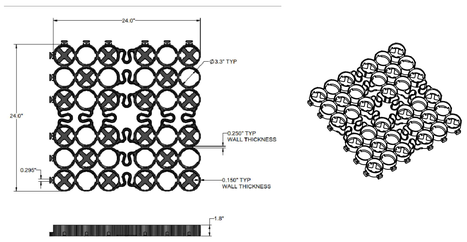
GAS PIPELINE



SECTION VIEW
N.T.S.

NOTES:

1. ONCE SUBGRADE HAS BEEN PREPARED, INSTALL GEOTEXTILE OR GEOGRID MESH.
2. INSTALL BASE DRAIN AND BACKFILL BASE COURSE MATERIAL IN 4-INCH LIFTS, LEVELED AND COMPACTED TO LOCK IN ANGULAR STONE.
3. INSTALL TRUEGRID REINFORCEMENT UNITS BY PLACING CELLS FACE UP, RE-CONFIGURED AND CUT AS NECESSARY TO MEET THE PROJECT GEOMETRY.
4. BACKFILL SURFACE COURSE MATERIAL BY BACK DUMPING DIRECTLY FROM DUMP TRUCKS OR FROM BUCKETS MOUNTED TO TRACTORS. HAND SHOVELING IS ALSO ACCEPTABLE. SPREAD MATERIAL USING STEER LOADERS, POWER BROOMS, BLADES, FLAT-BOTTOMED SHOVELS, AND/OR WIDE "ASPHALT RAKES" TO FILL THE CELLS. ONCE CELLS ARE AT CAPACITY, COMPACT AGGREGATE WITH A ROLLER OR VIBRATING PLATE.
5. ALL AGGREGATE SHALL BE UNIFORMLY GRADED AND CLEAN PRIOR TO INSTALLATION
6. REFER TO PLANS FOR VEGETATED SWALE LOCATIONS AND DETAILS FOR LINING AND DIMENSION REQUIREMENTS.
7. BASE DRAIN SHALL DAYLIGHT A MINIMUM OF 200' FEET OF LINEAR ROAD AT A MINIMUM SLOPE OF 0.5%



TRUEGRID BLOCK REFERENCE VIEW
N.T.S.

PREASSEMBLED & DELIVERED IN 4' X 4' SHEET.
RECONFIGURE AS NEEDED. NO EXTRA TOOLING
OR ACCESSORIES REQUIRED

NEW JERSEY

DATE	BY	REVISION DESCRIPTION

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL

REINFORCED GRAVEL ACCESS ROAD

GAS PIPELINE

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

KEVIN McKEON, P.E.
NEW JERSEY
PROFESSIONAL ENGINEER NO GE32586

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	01/15/2020	PPH	NJDEP SUBMISSION	1185732	TPF	KDM

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
DETAILS (SHEET 4 OF 4)
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE:
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
APPROVED BY: KDM	DATE: 01/15/2020	DRAWING NUMBER:	SHEET 11 OF 12
W.O. 1185732			

Drawn By & Date/Time: hoasp Jan 10, 2020 - 11:53am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\08-11 - PCSM Detail Sheets - EPA Road.dwg

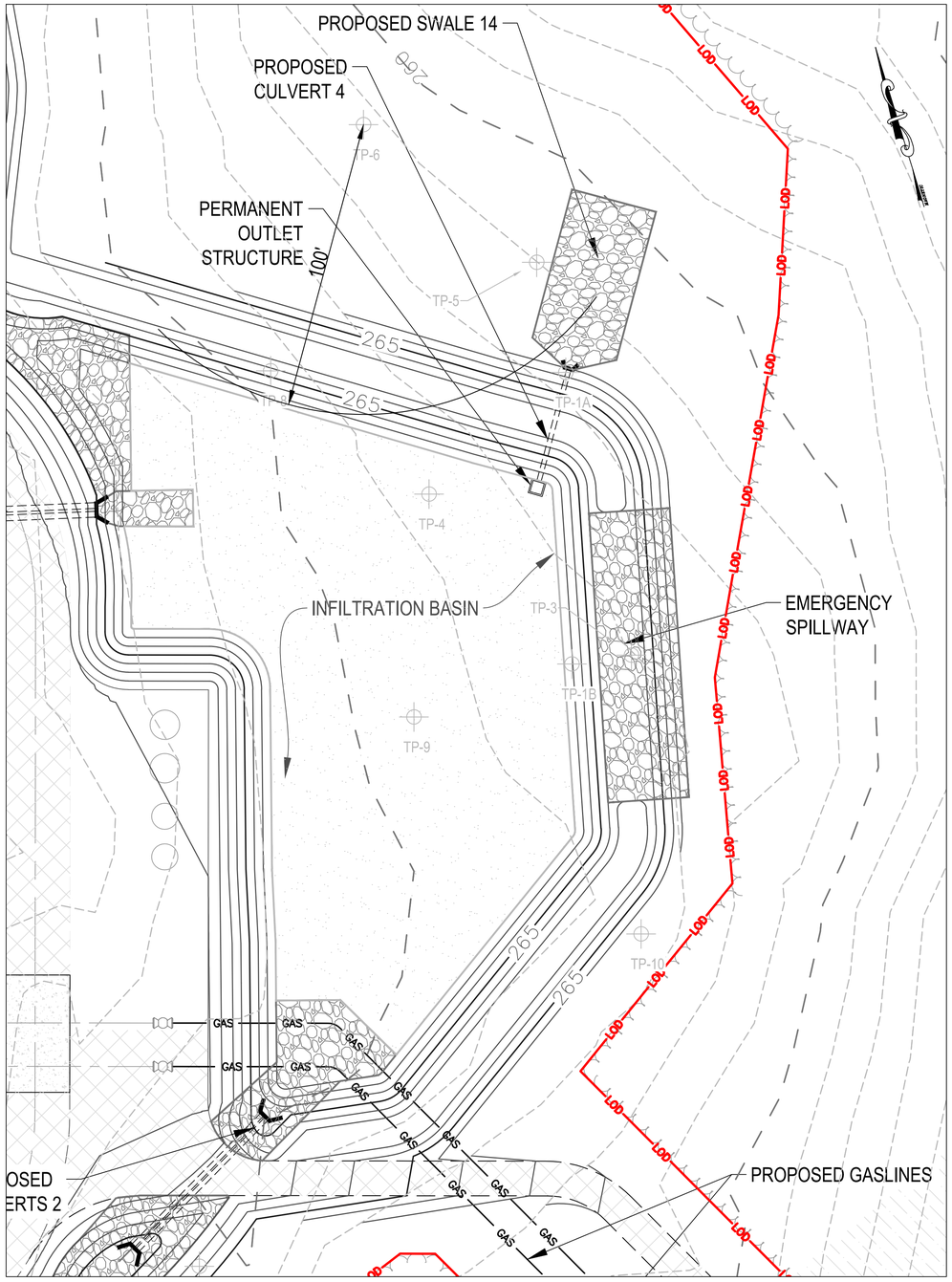
LEGEND

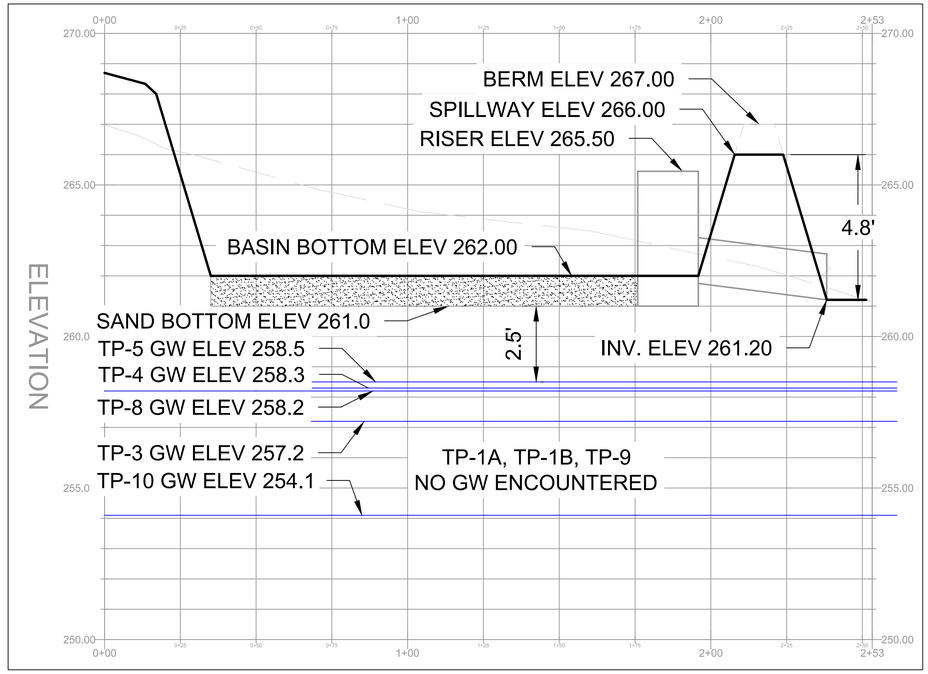
EXISTING FEATURES

- 265 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- STREAM CENTERLINE
- WETLAND
- EXISTING TREE LINE
- PARCEL LINE
- EXISTING ACCESS ROADS
- EXISTING FENCE
- OHE — EXISTING OVERHEAD POWER LINE
- EXISTING PIPELINE
- EXISTING RIGHT OF WAY

PROPOSED FEATURES

- LOD — LIMIT OF DISTURBANCE
- PROPOSED CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- GAS — PROPOSED PIPELINE
- CULVERT
- RIP RAP APRON
- X — PROPOSED FENCE
- PROPOSED TREE LINE
- PROPOSED GRAVEL
- PROPOSED CONCRETE
- RIPRAP SLOPE PROTECTION
- TP-8 — SOIL TEST LOCATION





Soil Test Summary

Location I.D.	Test Type [1,2]	Existing Grade Elevation (ft)	Test Pit/Bore Bottom Depth (ft)	Test Pit/Bore Bottom Elevation (ft)	Bedrock Depth (ft)	Bedrock Elevation (ft)	Groundwater Depth (ft)	Groundwater Elevation (ft)
TP-1A	TP w/IT	261.7	6.0	255.7	N/E [3]		N/E [3]	
TP-1B	TP w/IT	263.3	8.0	255.3	N/E [3]		N/E [3]	
TP-3	B w/MW	263.0	15.0	248.0	N/E [3]		5.8	257.2
TP-4	B w/MW	263.6	15.0	248.6	N/E [3]		5.3	258.3
TP-5	B w/MW	261.0	15.0	246.0	15.0	246.0	2.5	258.5
TP-8	TP w/IT	264.5	6.5	258.0	6.5	258.0	6.3	258.2
TP-9	TP w/IT	264.5	7.0	257.5	7.0	257.5	N/E [3]	
TP-10	TP w/IT	263.6	9.5	254.1	9.5	254.1	9.5	254.1

1. TP w/IT = Test Pit with Infiltration Testing
2. B w/MW = Boring with Monitoring Well
3. N/E = Not encountered
4. N/A = Not Applicable for Borings with Monitoring Wells

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PA 19428
(610) 832-3500

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POST CONSTUCTION STORMWATER MANAGEMENT PLAN
NORTHEAST SUPPLY ENHANCEMENT PROJECT
COMPRESSOR STATION NO. 206 - HIGGINS FARM ACCESS ROAD
INFILTRATION BASIN PROFILE PLAN
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

Williams GAS PIPELINE

DRAWN BY: PPH	DATE: 01/15/2020	ISSUED FOR BID: TBD	SCALE: 1"=25'
CHECKED BY: TPF	DATE: 01/15/2020	ISSUED FOR CONSTRUCTION: TBD	REVISION: 0
APPROVED BY: KDM	DATE: 01/15/2020	DRAWING NUMBER:	SHEET 12 OF 12
W.O.: 1185732			

Drawn By & Date/Time: haasp Jan 10, 2020 - 11:53am
Drawing Location & Name: S:\Projects\ENV\60537393_NESE_CS206\900-CAD-GIS\910-CAD\20-PCSM SHEETS\EPA Road\12 - Basin Profile Plan CS 206 - EPA Road.dwg