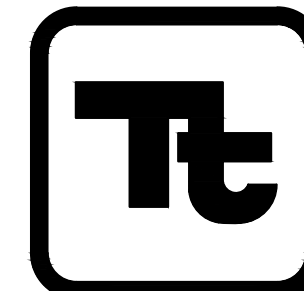


POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PENNSYLVANIA PIPELINE PROJECT - TWIN OAKS STATION UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY, PENNSYLVANIA

NOVEMBER 2016

PREPARED BY:



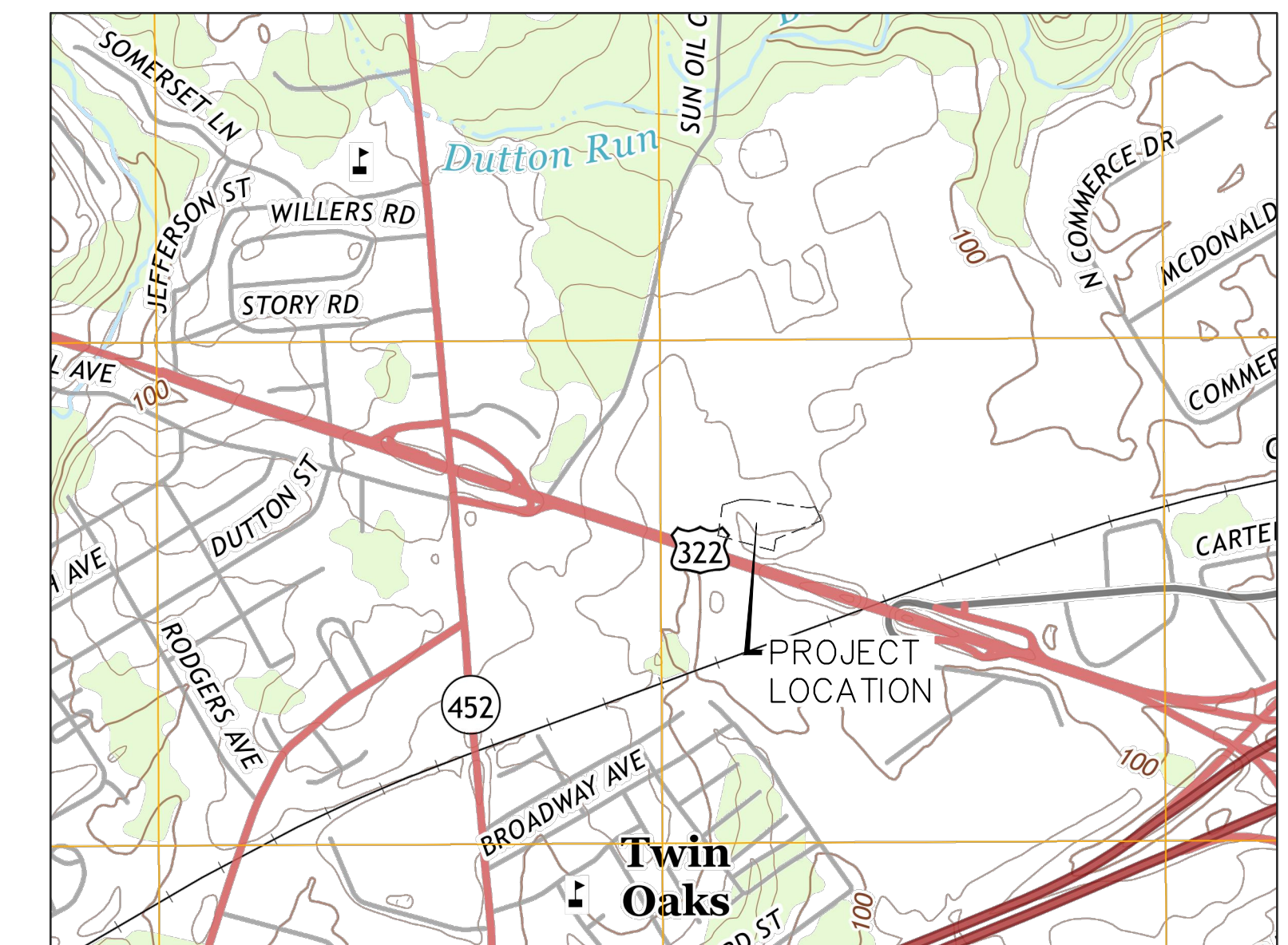
TETRA TECH

www.tetrattech.com

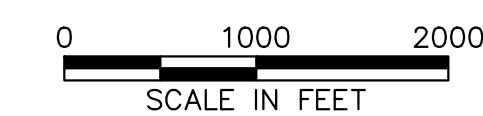
1134 TWIN STACKS DRIVE
DALLAS, PA 18612
T: (570) 674-8648 | F: (570) 674-8651
DATE: NOVEMBER 21, 2016
COVER SHEET 1 OF 7
REVISION #1 - 5/13/16
REVISION #2 - 10/10/16

PREPARED FOR:
SUNOCO LOGISTICS PARTNERS L.P.
525 FRITZTOWN ROAD
SINKING SPRING, PENNSYLVANIA 19608
610-670-3200

DRAWING INDEX	
SHEET No.	DRAWING TITLE
1	COVER SHEET AND NOTES
2	EXISTING CONDITIONS
3	PROPOSED CONDITIONS
4	DRAINAGE AREA MAP
5	PCSM PLAN
6	CONSTRUCTION DETAILS
7	CONSTRUCTION DETAILS



LOCATION MAP
TWIN OAKS STATION
MARCUS HOOK QUADRANGLE
UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY,
PENNSYLVANIA

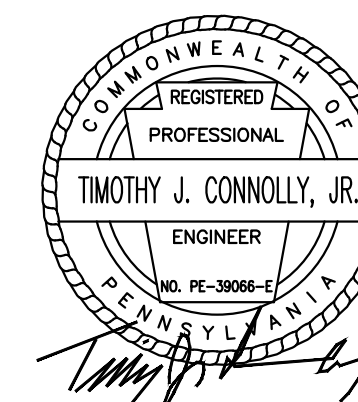


GENERAL NOTES

- DEVELOPER: SUNOCO LOGISTICS PARTNERS, LP
- TAX ACCOUNT #: 09-00-01079-45
GIS TRACT PA-DE-0150.0000
FID # 2879
UGSID #182673
TOTAL PARCEL SIZE = 298.31 AC
- PUBLIC SEWER AND WATER WILL NOT BE PROVIDED. FACILITY IS UNMANNED.
- EXISTING CONTOURS AND FEATURES COMPILED FROM WWW.PASDA.PSU.EDU.
- NO PORTION OF THE SITE LIES WITHIN ANY 100 YEAR FLOOD ZONES, AS PER F.E.M.A. MAPPING, FIRM PANEL 181 OF 250, MAP #42045C0181F, EFFECTIVE DATE IS 11/18/2009.
- WETLANDS DELINEATED BY TETRA TECH, INC.
- THE ASSOCIATED STORM WATER MANAGEMENT REPORT FOR THIS PROJECT IS TITLED:
EROSION CONTROL AND
STORMWATER MANAGEMENT REPORT
FOR PENNSYLVANIA PIPELINE PROJECT
TWIN OAKS STATION - SUNOCO
UPPER CHICHESTER TOWNSHIP
DELAWARE COUNTY
MARCH, 2016
- THE SITE LIES WITHIN A 50% RELEASE RATE DISTRICT OF THE CHESTER CREEK ACT 167 STORMWATER MANAGEMENT PLAN.
- CHESTER CREEK IS LISTED AS "MF" UNDER CHAPTER 93.

ENGINEER CERTIFICATION

I, TIMOTHY J. CONNOLLY JR., P.E., A LICENSED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF PENNSYLVANIA, DOES HEREBY CERTIFY THAT THE ACCOMPANYING APPLICATION, PLANS AND SUPPORTING DOCUMENTATION ARE TRUE AND ACCURATE, TO THE BEST OF MY KNOWLEDGE.



TIMOTHY J. CONNOLLY JR., P.E.
PE-39066-E
1134 TWIN STACKS DRIVE, DALLAS, PA. 18612

11/21/2016
DATE

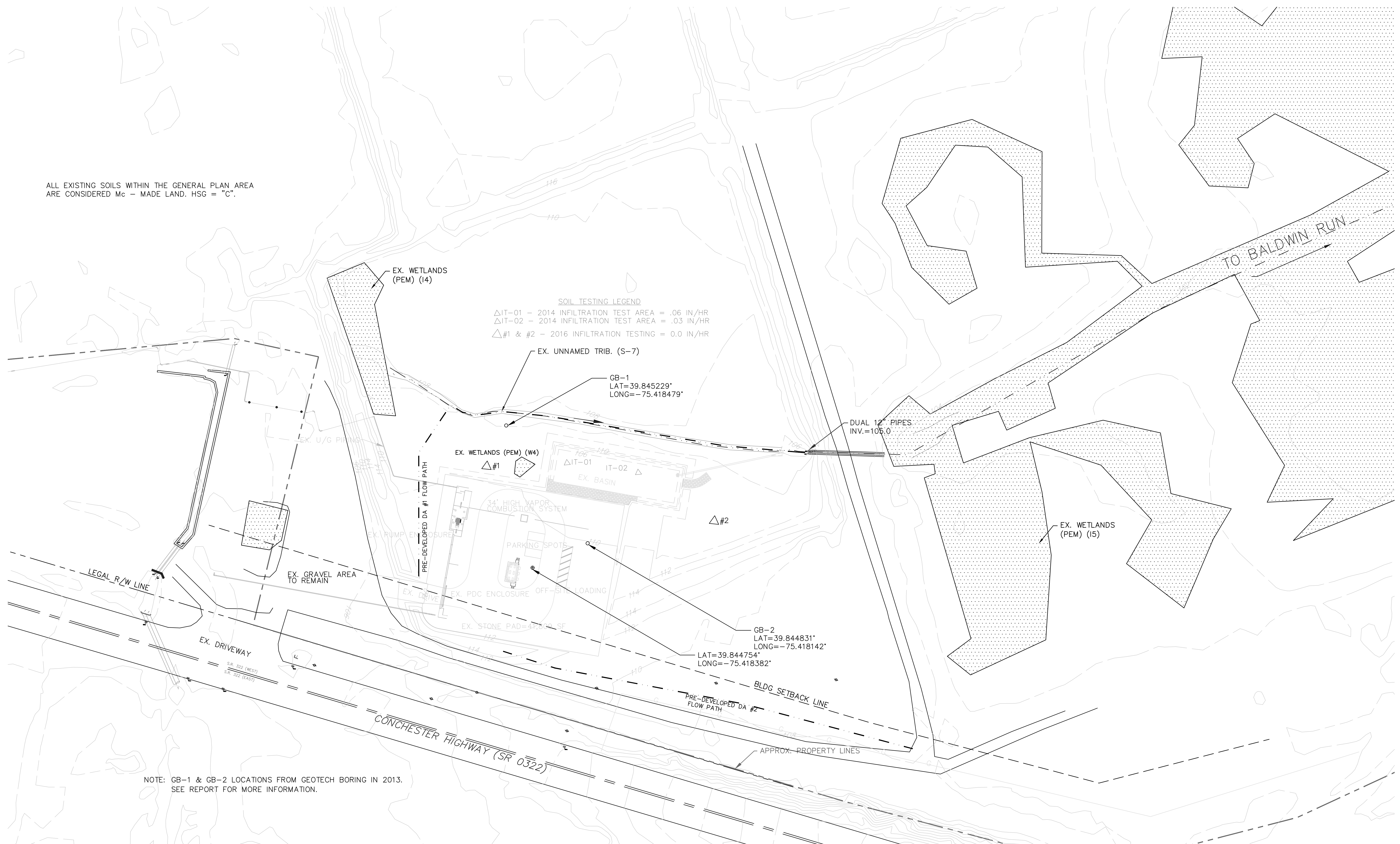
LEGEND

- 1.2- EXISTING CONTOURS
- 106 PROPOSED CONTOURS
- LOD-LOD-LOD-LOD-LOD-LOD-LOD-LOD LIMIT OF DISTURBANCE = 2.392 AC
- WETLAND AREA
- PRE-DEVELOPED DA
- POST-DEVELOPED DA
- TIME OF CONCENTRATION FLOW PATH
- PROPERTY LINE
- LOD-LOD-LOD-LOD-LOD-LOD-LOD-LOD ESCGP-2 BOUNDARY = 2.392 AC

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

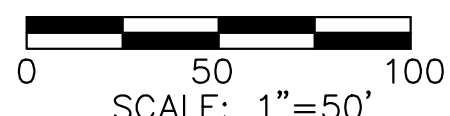


ALL EXISTING SOILS WITHIN THE GENERAL PLAN AREA ARE CONSIDERED Mc - MADE LAND. HSG = "C".



SOIL TESTING LEGEND
 ΔIT-01 - 2014 INFILTRATION TEST AREA = .06 IN/HR
 ΔIT-02 - 2014 INFILTRATION TEST AREA = .03 IN/HR
 Δ#1 & #2 - 2016 INFILTRATION TESTING = 0.0 IN/HR

NOTE: GB-1 & GB-2 LOCATIONS FROM GEOTECH BORING IN 2013. SEE REPORT FOR MORE INFORMATION.



2
OF
7



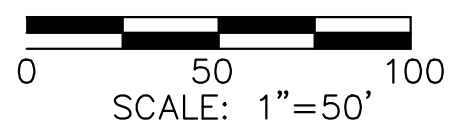
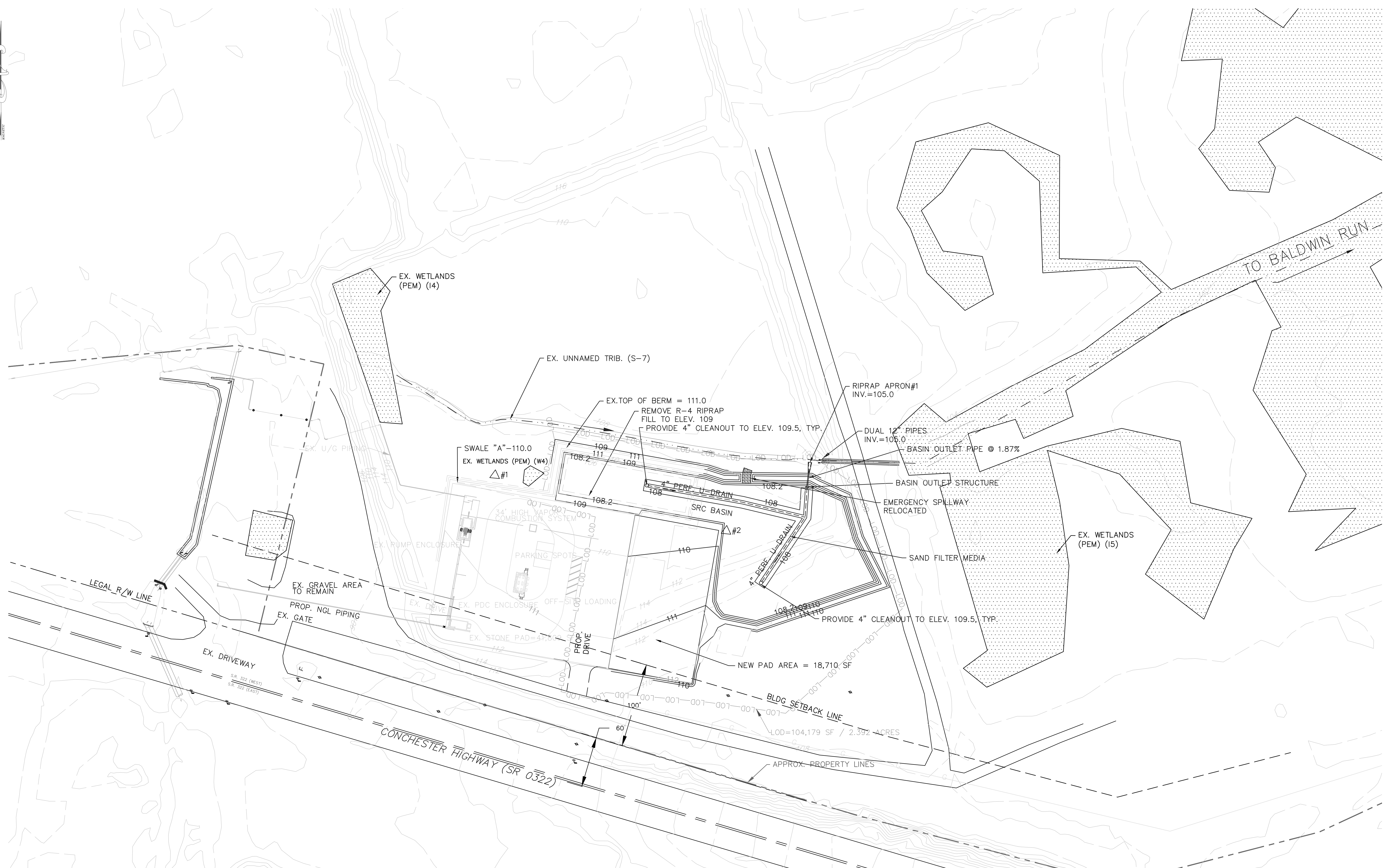
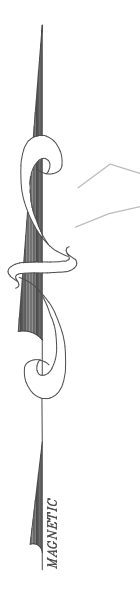
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 T: (570) 674-8648 | F: (570) 674-8651

MARK	DATE	DESCRIPTION	BY
1	5/13/16	REVISED PER DEP COMMENT LETTER (3/28/16)	GZ
2	10/10/16	REVISED PER DEP COMMENT LETTER (9/6/16)	GZ

PPP - TWIN OAKS PUMP STATION
 UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY

PCSM PLAN - EXISTING CONDITIONS

DATE: 03/11/16
PROJECT NO.: IC-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: 1"=50'
FILE: TWIN OAKS
NAME: OVERALL2
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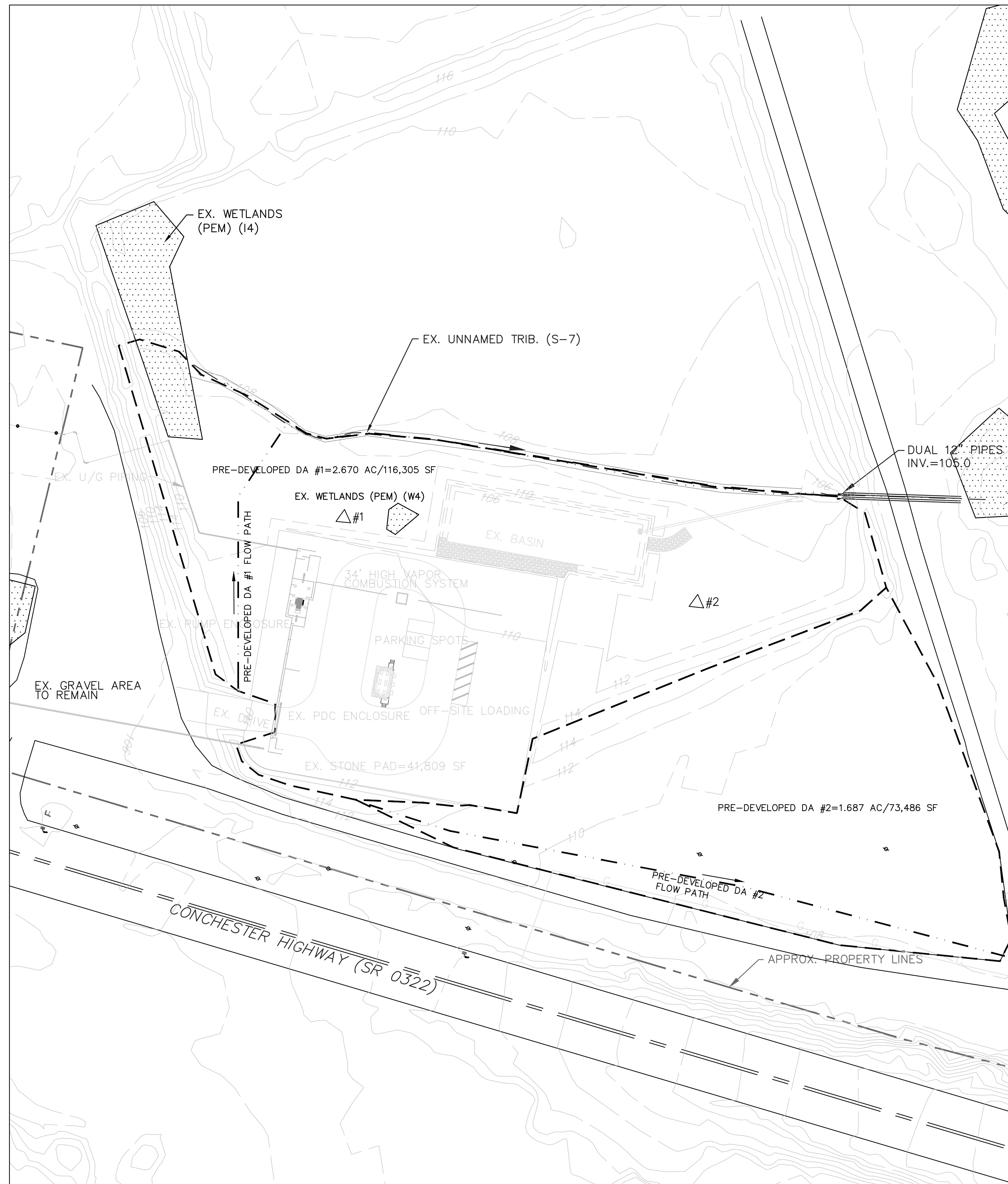
3
OF
7

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DALLAS, PA 18612
T: (570) 674-8648 | F: (570) 674-8651

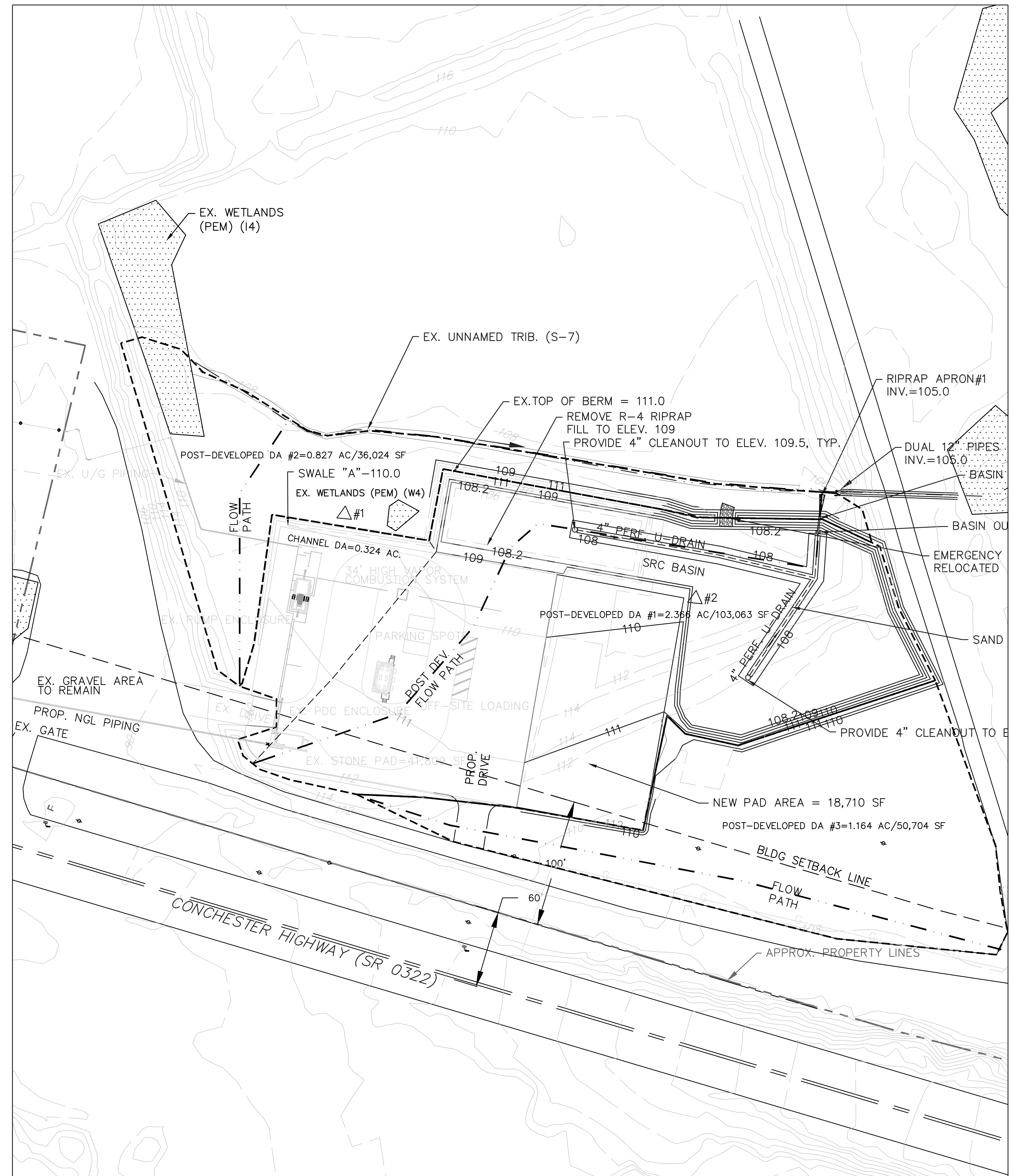
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1	5/13/16	REVISED PER DEP COMMENT LETTER (3/28/16)	GZ
2	10/10/16	REVISED PER DEP COMMENT LETTER (9/6/16)	GZ

PPP - TWIN OAKS PUMP STATION
UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY
PCSM PLAN - PROPOSED CONDITIONS

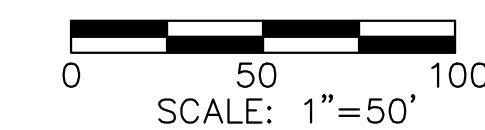
DATE: 03/11/16
PROJECT NO.: IC-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: 1"=50'
FILE: TWIN OAKS
NAME: ES3
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PRE-DEVELOPED DRAINAGE AREA MAP



POST-DEVELOPED DRAINAGE AREA MAP



4
OF
7

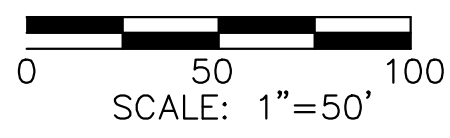
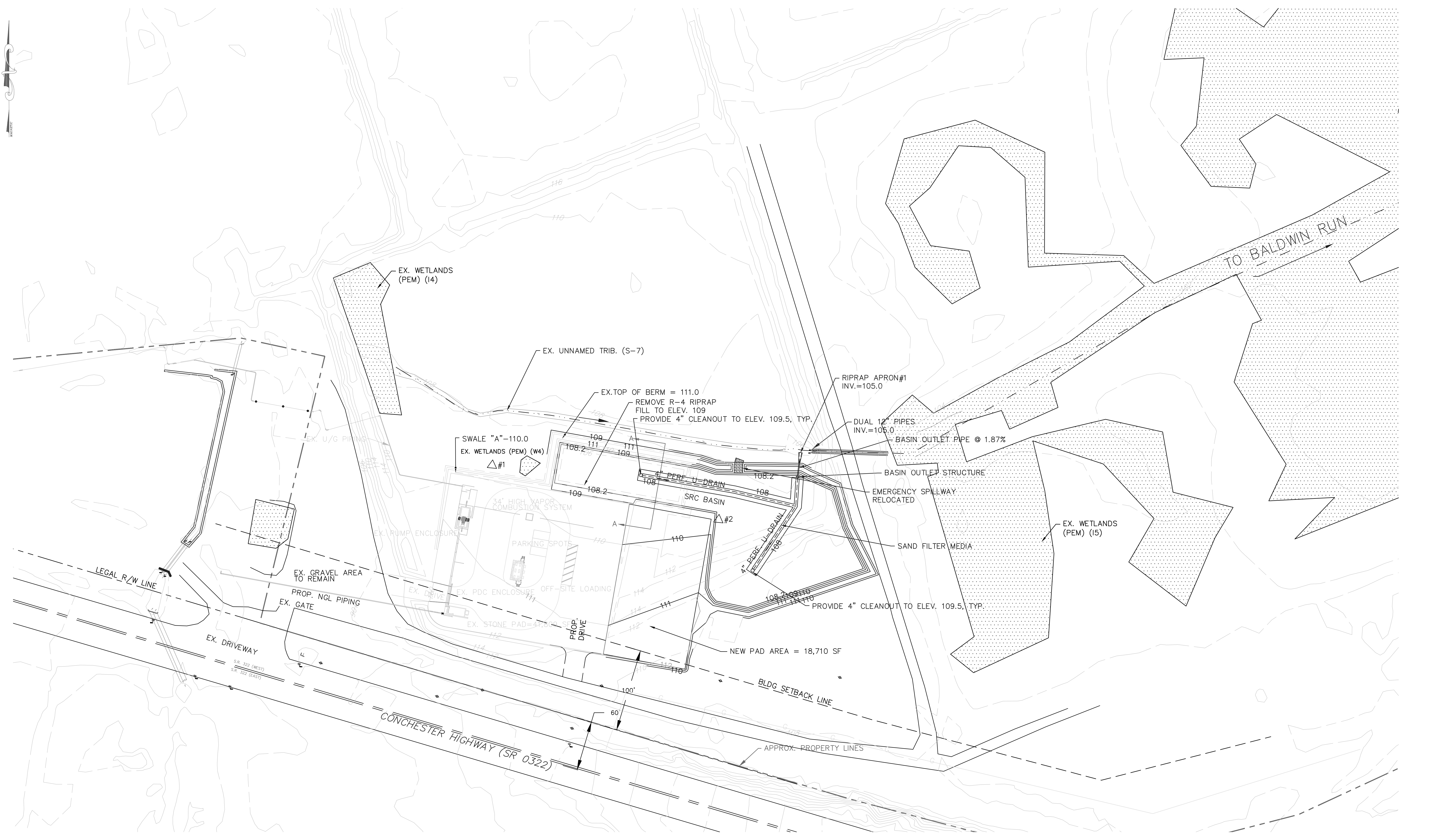
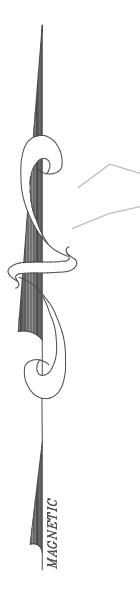
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MARK	DATE	DESCRIPTION	BY
1	5/13/16	REVISED PER DEP COMMENT LETTER (3/28/16)	GZ
2	10/10/16	REVISED PER DEP COMMENT LETTER (9/6/16)	GZ

PPP - TWIN OAKS PUMP STATION
UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY

PCSM PLAN - DRAINAGE AREA MAP

DATE: 03/11/16
PROJECT NO.: IC-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: 1"=50'
FILE: TWIN OAKS
NAME: DA4
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OF
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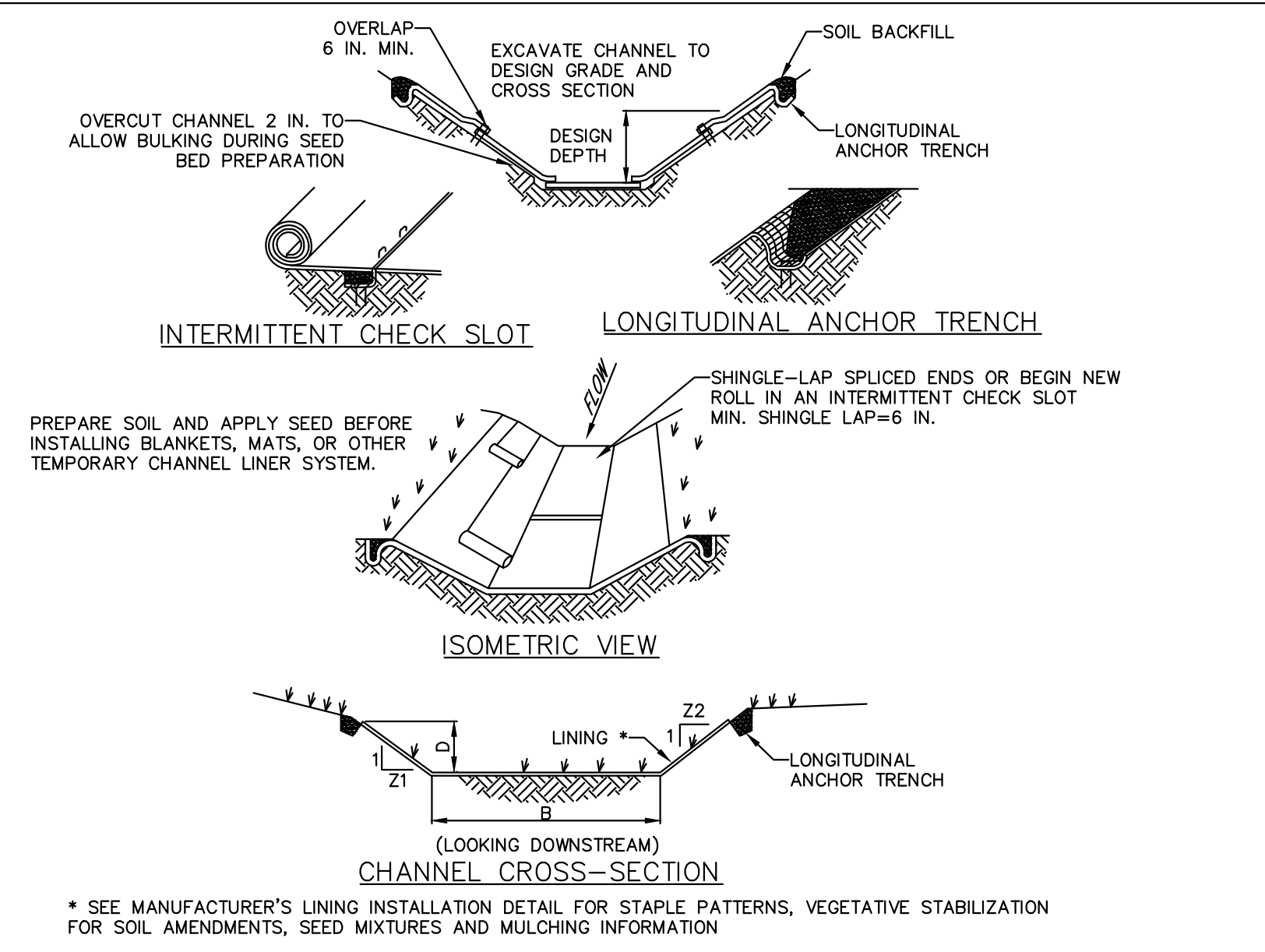
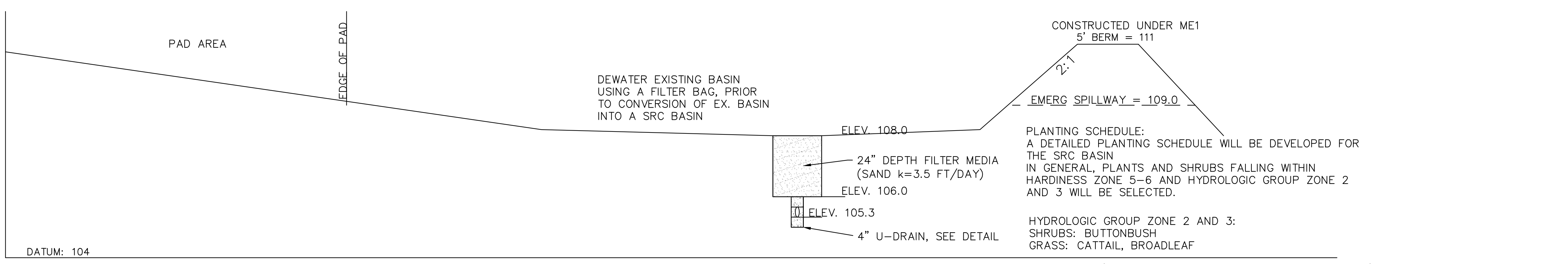
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MARK	DATE	DESCRIPTION	BY
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2	10/10/16	REVISED PER DEP COMMENT LETTER (9/6/16)	GZ

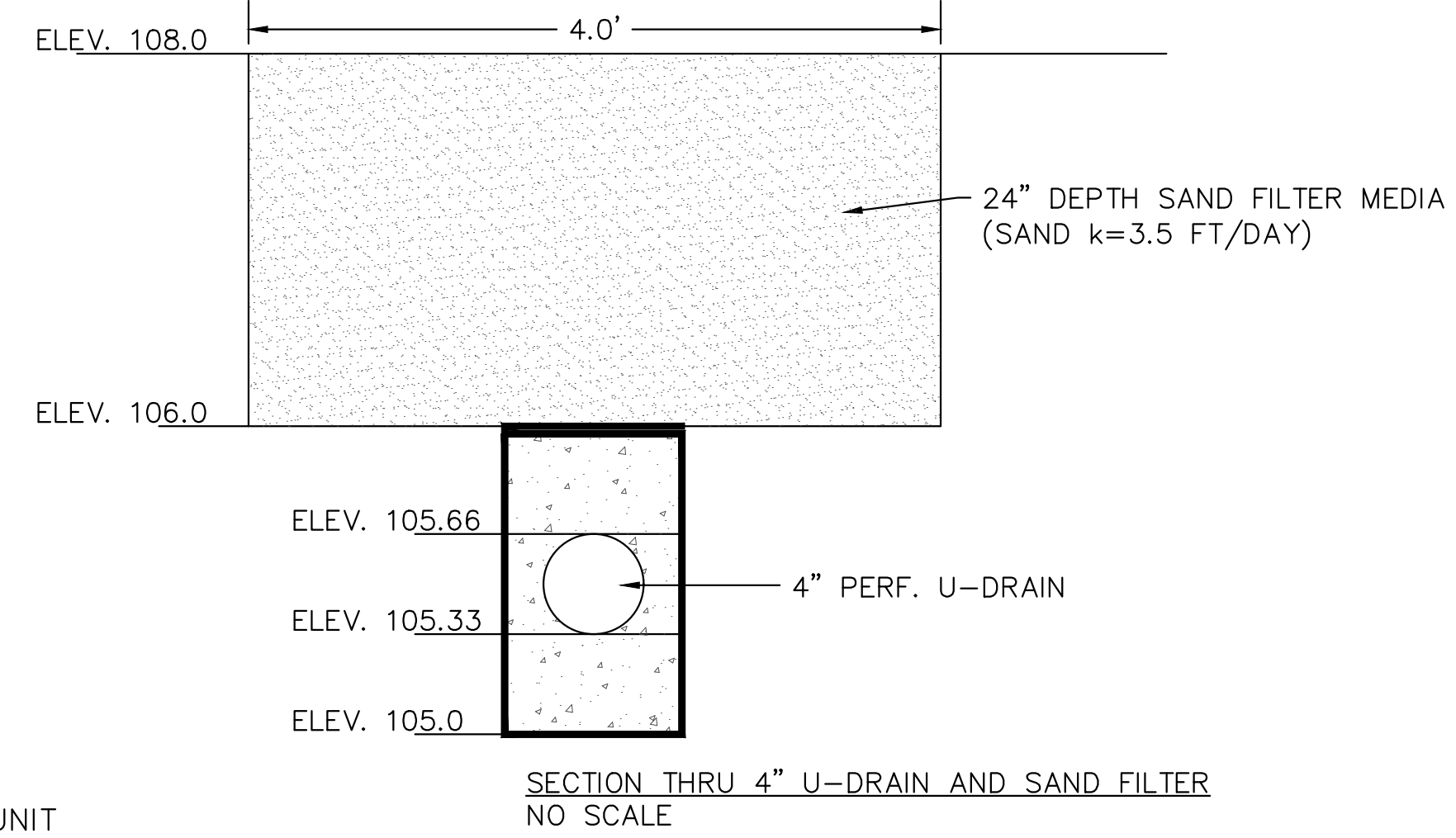
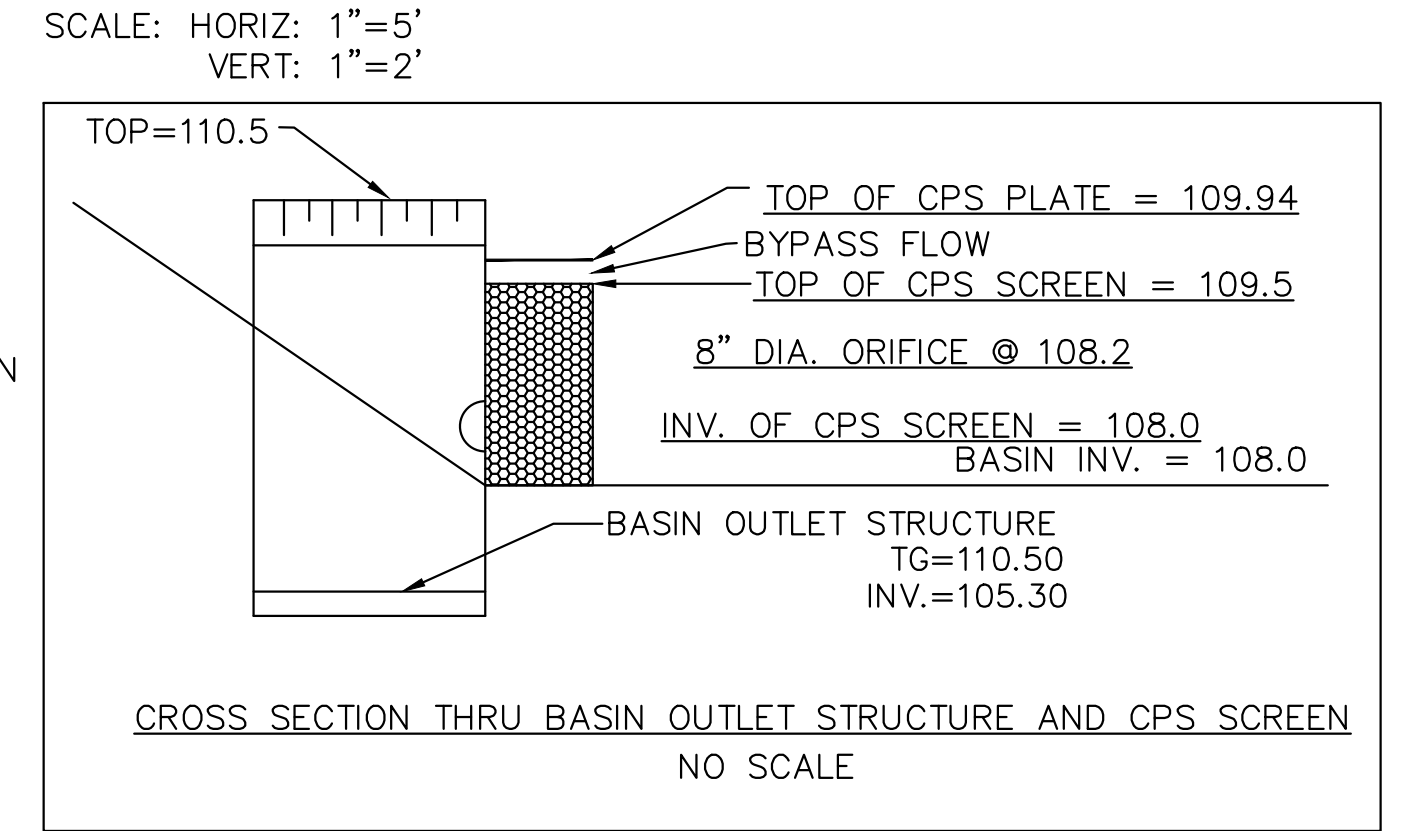
PPP - TWIN OAKS PUMP STATION
UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY

PCSM PLAN - PCSM BMPS

DATE: 03/11/16
PROJECT NO.: IC-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: 1"=50'
FILE: TWIN OAKS
NAME: PCSM5
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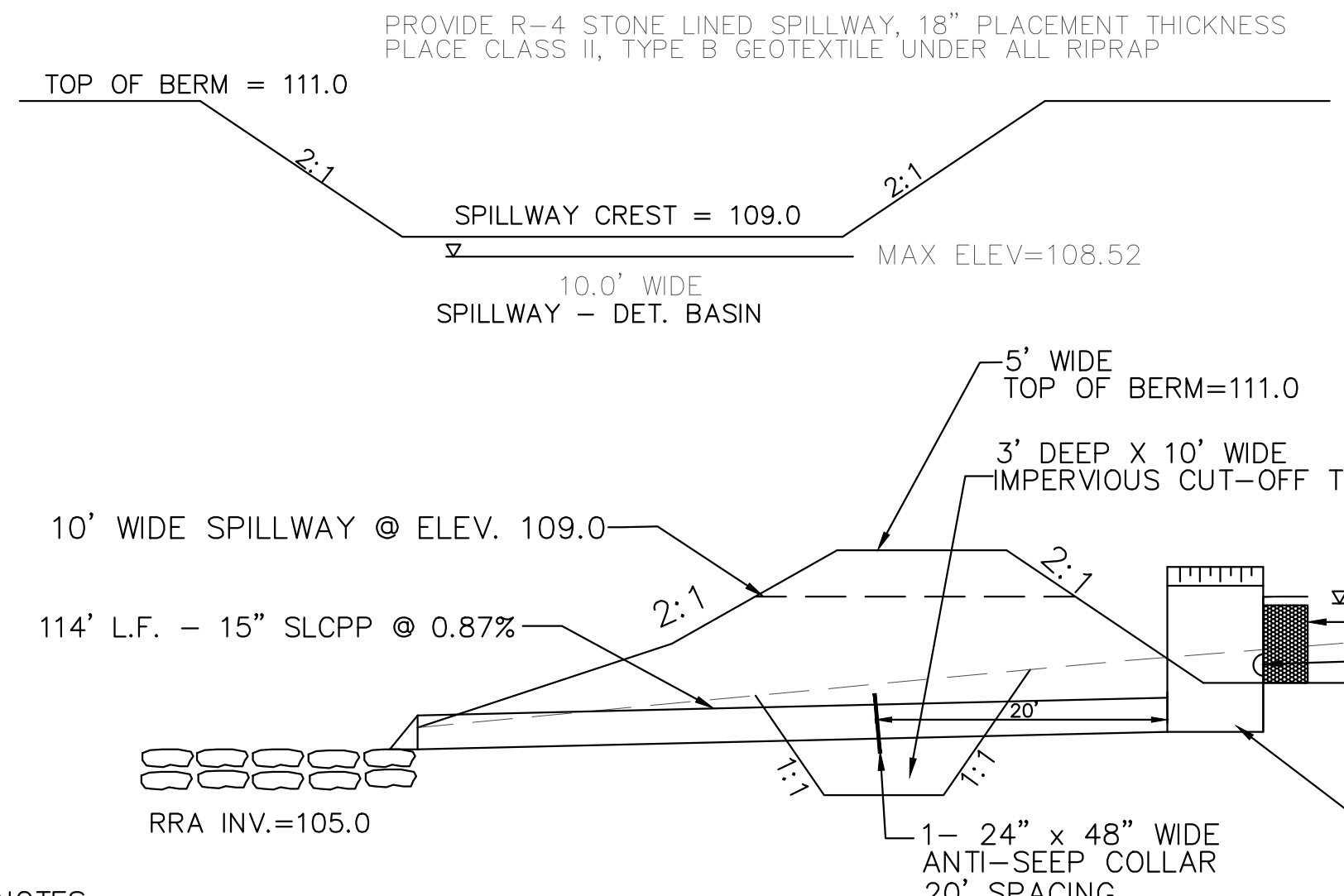
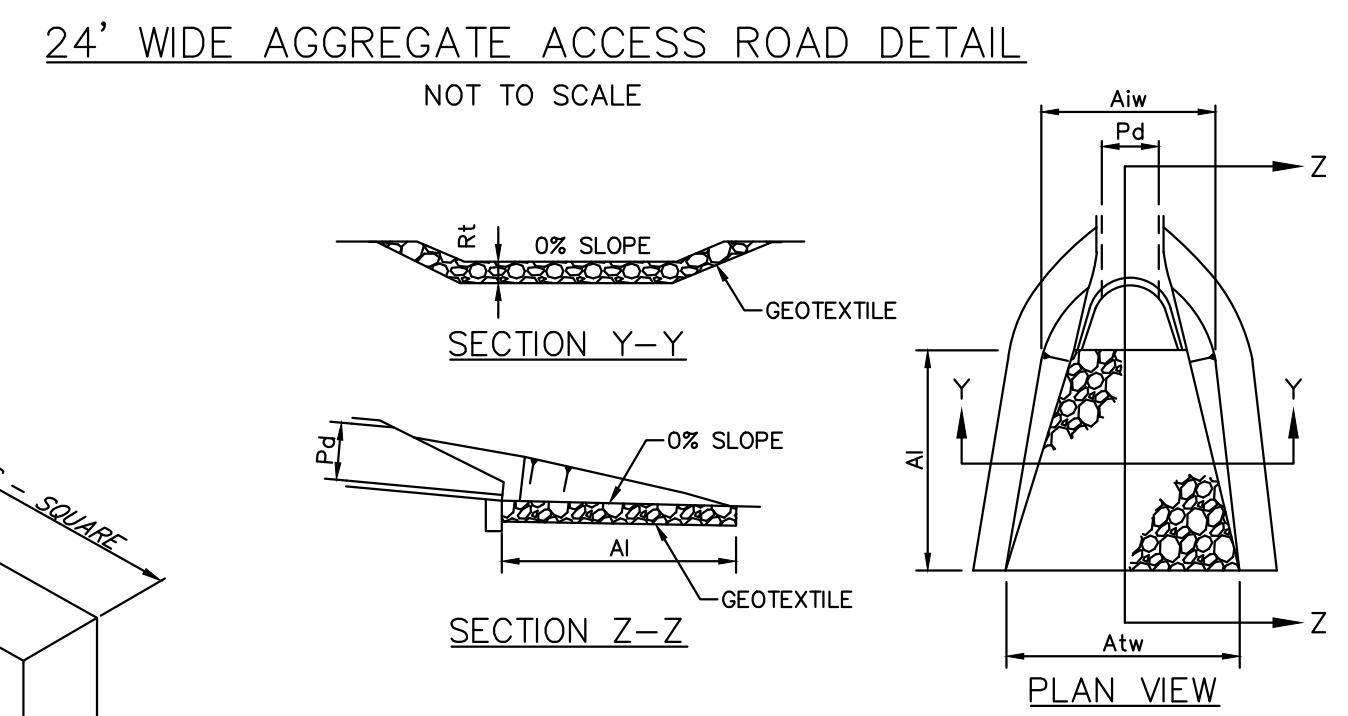
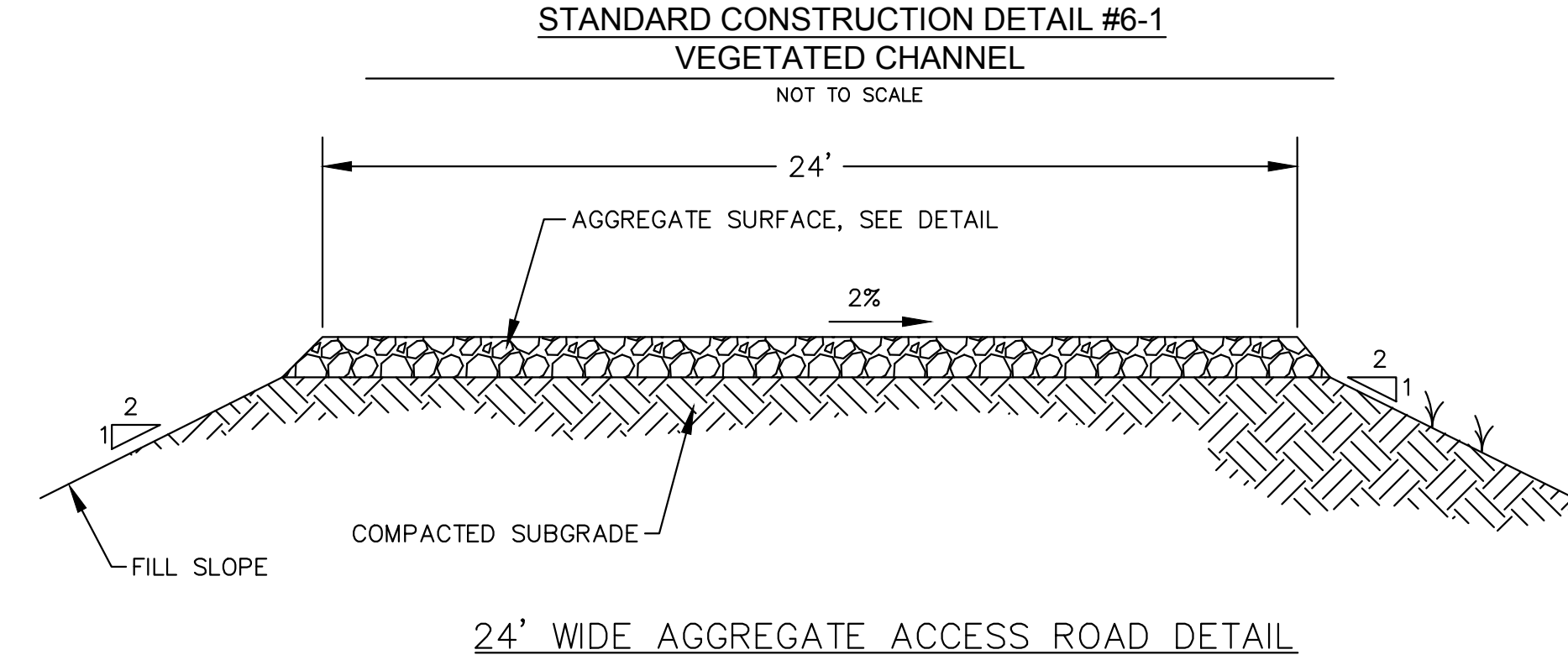
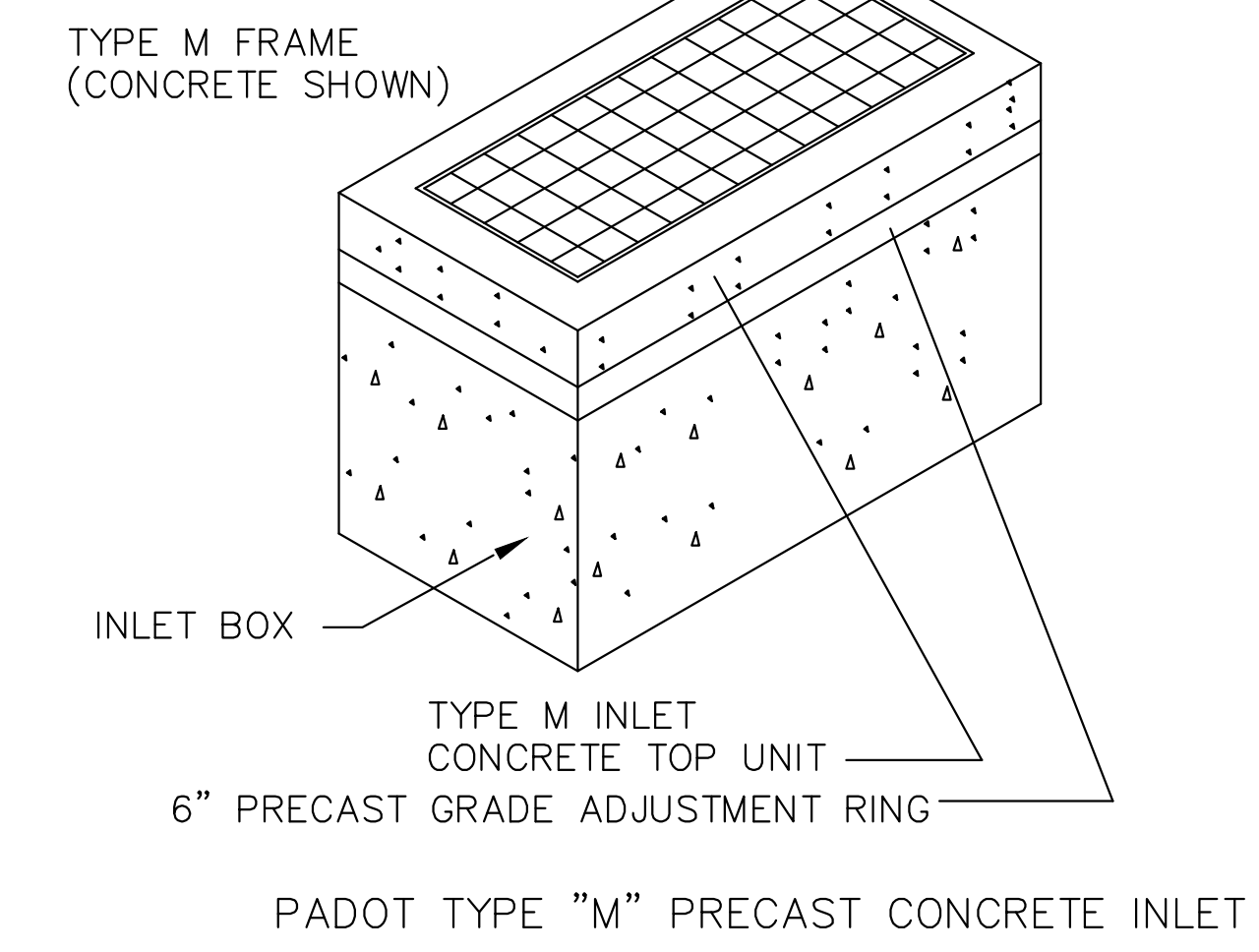
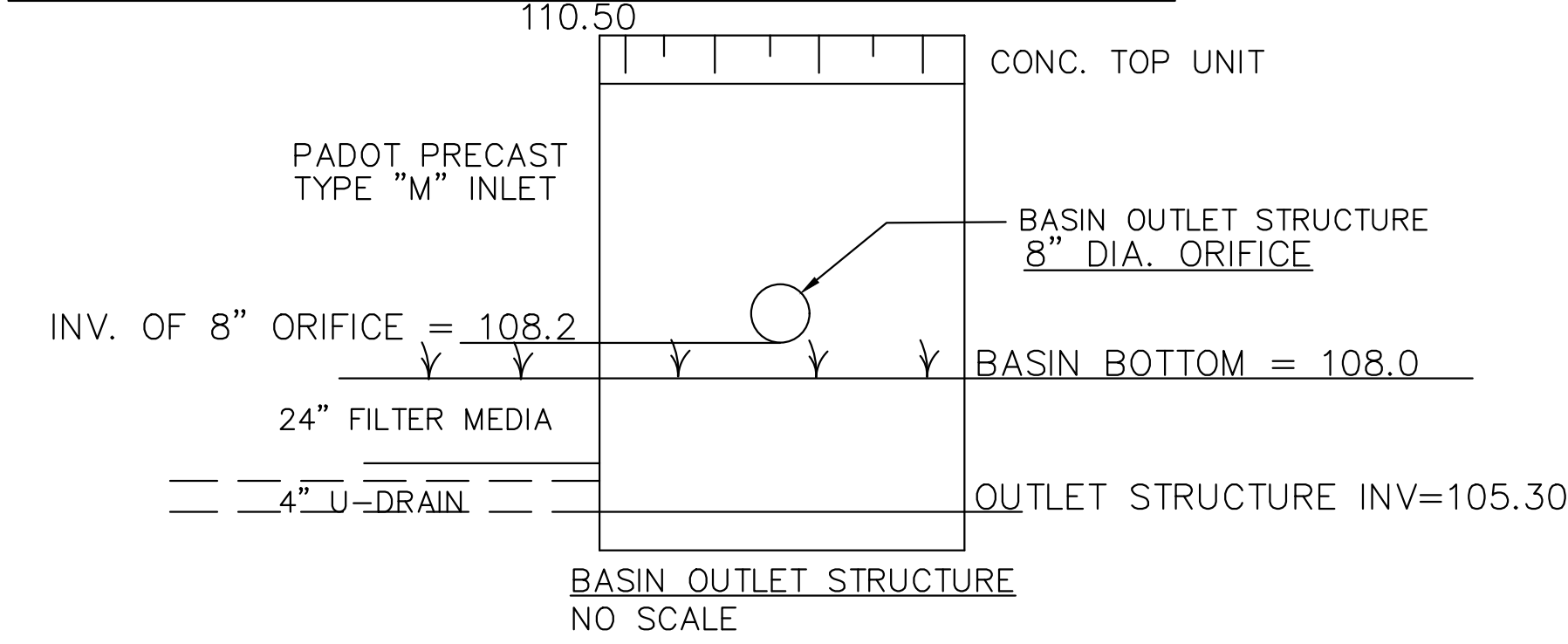
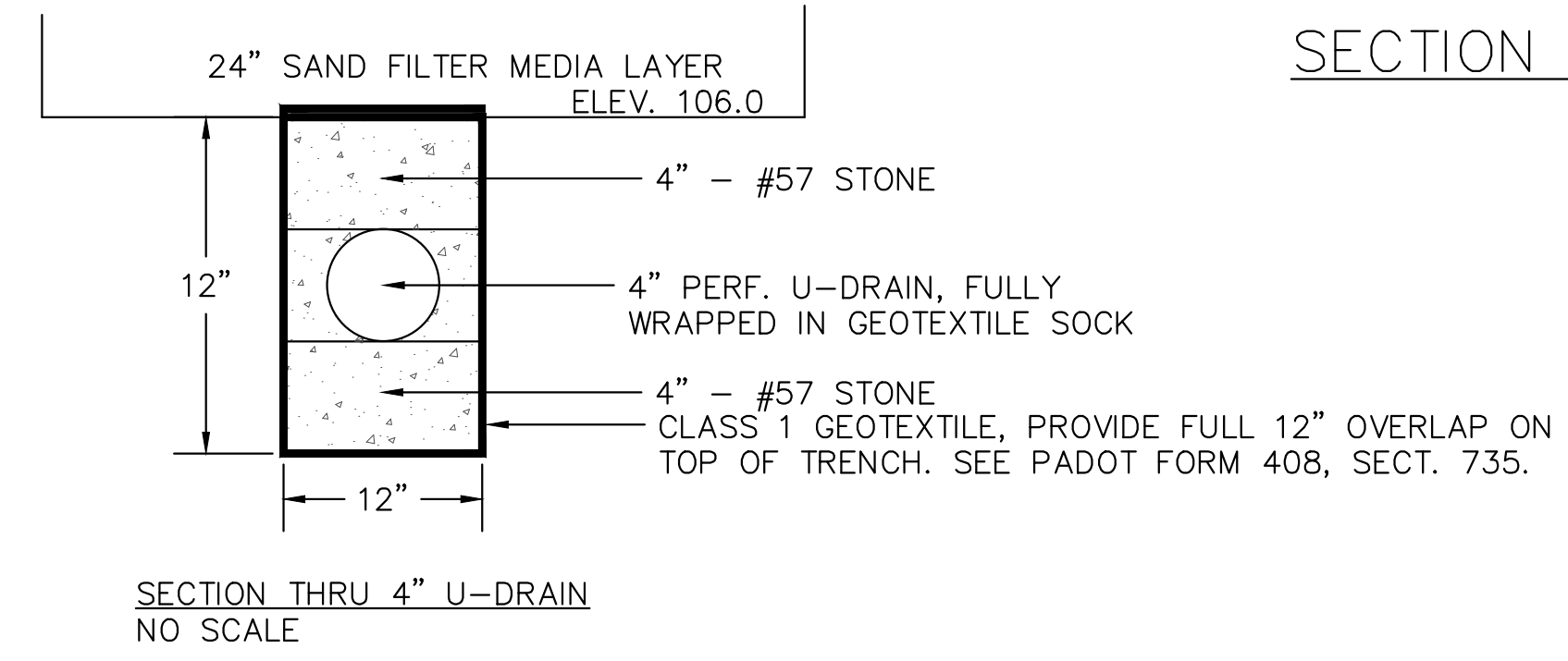


SECTION A-A THRU PROPOSED SRC BASIN

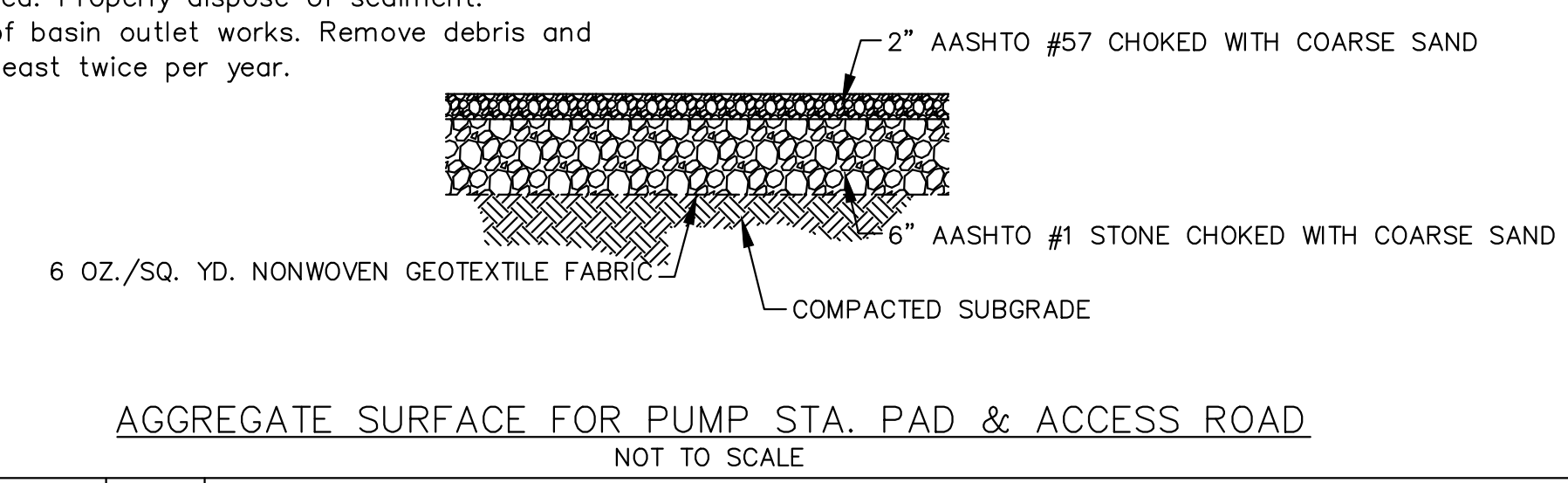


CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING *
A	ENTIRE CHANNEL	2	2	10	2	2	S150

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



- NOTES:
1. ALL EMBANKMENTS SHALL BE PLACED IN A MAXIMUM 8" LIFTS TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS ESTABLISHED BY ASTM D-1557.
 2. Maintenance is necessary to ensure proper functionality of the basin and should take place on a quarterly basis. A basin maintenance plan should be developed which includes the following measures:
 3. All basin structures expected to receive and/or trap debris and sediment should be inspected for clogging and excessive debris and sediment accumulation at least four times per year, as well as after every storm greater than 1 inch. Structures include basin bottoms, forebays, trash racks, outlets structures, riprap or gabion structures, and inlets.
 4. Sediment removal should be conducted when the basin is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas should be immediately stabilized and revegetated.
 5. Mowing and/or trimming of vegetation should be performed as necessary to sustain the system, but all waste and debris should be removed from the basin.
 6. Vegetated areas should be inspected annually for erosion.
 7. Vegetated areas should be inspected annually for unwanted growth of exotic/invasive species.
 8. Vegetative cover should be maintained at a minimum of 95 percent. If vegetative cover has been reduced by 10%, vegetation should be reestablished.
 9. Catch Basins and Inlets (upgradient of basin) should be inspected and cleaned at least two times per year and after major runoff events.
 10. Vehicles should not be parked or driven on a Basin, and care should be taken to avoid excessive compaction by mowers.
 11. Inspect the basin after runoff events and make sure that runoff drains down within 72 hours. Mosquito's should not be a problem if the water drains in 72 hours. Mosquitoes require a considerably long breeding period with relatively static water levels.
 12. Also inspect for accumulation of sediment, damage to outlet control structures, erosion control measures, signs of water contamination/spills, and slope stability in the berms. Mow only as appropriate for vegetative cover species.
 13. Remove accumulated sediment from basin as required. Properly dispose of sediment.
 14. Inspect "CPS Screen" to insure proper functioning of basin outlet works. Remove debris and cleanout screen after all storm events over 1" and at least twice per year.



12 IN. THICK (MIN.) CAST-IN-PLACE OR PRECAST CONCRETE COLLAR (MIN. 2000 PSI)

BASIN OR TRAP NO.	PIPE SIZE (IN)	S (IN)	NO. OF COLLARS	RISER TO FIRST COLLAR (FT)	COLLAR SPACING (FT)
T	15	48	1	20	N/A

NOTES:
-ALL COLLARS SHALL BE INSTALLED SO AS TO BE WATERTIGHT.
-COLLAR SIZE AND SPACING SHALL BE AS INDICATED WITHIN TABLE.
-DO NOT CONSTRUCT WITH 2' OF A PIPE JOINT.

STANDARD CONSTRUCTION DETAIL #7-16
CONCRETE ANTI-SEEP COLLAR FOR PERMANENT BASINS OR TRAPS
CONSTRUCTED PREVIOUSLY UNDER ME1 PHASE
NO SCALE

OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP SIZE R- (IN)	RIPRAP THICK. RT (IN)	LENGTH AL (FT)	APRON INITIAL WIDTH Aiw (FT)	APRON TERMINAL WIDTH Atw (FT)
RRA1	15	R-4	18	8	4	12

NOTES:
ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.
ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.
PLACE CLASS 2 TYPE B GEOTEXTILE UNDER ALL RIPRAP APRONS.

STANDARD CONSTRUCTION DETAIL #9-1
RIPRAP APRON AT PIPE OUTLET WITH FLARED END SECTION OR ENDWALL
CONSTRUCTED PREVIOUSLY UNDER ME1 PHASE
NO SCALE

TYP. SECTION THRU SRC DETENTION BASIN
NO SCALE

6 OF 7

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MARK	DATE	DESCRIPTION	BY
1	5/13/16	REVISED PER DEP COMMENT LETTER (3/28/16)	GZ
2	10/10/16	REVISED PER DEP COMMENT LETTER (9/6/16)	GZ

PPP - TWIN OAKS PUMP STATION
UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY

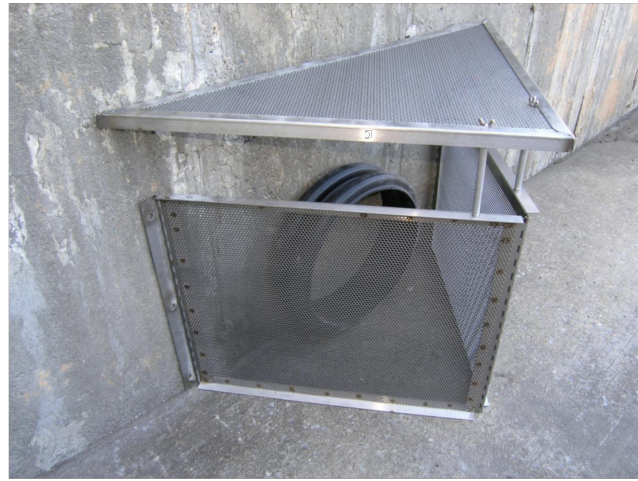
PCSM PLAN - CONSTRUCTION DETAILS

DATE: 03/11/16
PROJECT NO.: IC-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: AS NOTED
FILE: CONSTDET
NAME: CONSTDET 5
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Connector Pipe Screen
Stormwater filtering technology

A Connector Pipe Screen (CPS) is a catchbasin insert filter that is designed to capture trash. Unlike other catchbasin inserts that are typically installed closer to the inlet (under the drain grate or below the curb opening), CPS inserts are installed in front of the catchbasin's outlet pipe - trapping trash and debris inside the catch basin while allowing filtered stormwater to exit into the storm drain infrastructure.



CPS Insert features:

- Manufactured from perforated, 14 gauge, 304 - Stainless Steel sheets
- Perforations have a 5 millimeter diameter – screen has an open area greater than 50%
- CPS net open area (when converted to an equivalent pipe diameter) exceeds the actual diameter of the outlet pipe leaving the catchbasin - CPS can pass more volume than the outlet pipe it covers
- Overflow / bypass prevents flooding if screen becomes blocked or covered



The CPS is manufactured to cover a specific pipe diameter - its size does not depend on the size of the catchbasin drain. The CPS is a compact, affordable product that is easy to install and adaptable over a wide range of catchbasin sizes and styles. The design utilizes very little space, maximizes the trash storage capacity within the catchbasin and allows for easy maintenance.

Fabco Industries, Inc - 66 Central Ave, Farmingdale, NY 11735 - T: 631-393-6024 - www.fabco-industries.com

REPAIR AND REPLACEMENT OF SRC BASINS:

1. Inspect basins every quarter and after all rainfall events over 1".
2. After 1" rainfalls, note on the inspection log the approximate depth of water in the basin and if any flow was evident through the outlet structure. Note the time needed for complete dewatering of the 4" underdrain.
3. If complete dewatering of the 4" underdrain in 72 hours is not achieved for several 1" rainstorms, complete tilling of the sand filter. Scarify the top of the sand layer to a depth of 12".
4. If the basin continues to have standing water in the forebay after 72 hours, consult with original design Engineer to determine a reasonable repair, which may include replacing the sand filter media.
5. All washouts on slopes shall be repaired immediately.
6. All sediment shall be removed from the basin and disposed of in a proper manner.
7. Cut vegetation on a regular basis.
8. The basin outlet pipe shall be inspected quarterly for noticeable sediment in the pipe and to insure that the pipe remains tightly sealed to the basin outlet structure.
9. The emergency spillway will be kept clear of debris and tree growth.
10. The likelihood of basin replacement is slim; however, if the total reconstruction of the basin is necessary, the original design engineer should be notified to investigate the cause of the basin failure, so that steps can be taken to avoid a repeat.

BMP	Maintenance
Channels	Channel dimensions shall be constantly maintained
	Channel shall be cleaned whenever total depth is reduced by 25% at any location
	Damaged lining shall be replaced or repaired within 48 hours
	Grass height shall be maintained between 2 and 3 inches
Slow Release Detention Basins	Excess vegetation shall be removed from permanent channels to ensure sufficient channel capacity
	Basin structures inspected at least 4 times per year as well as after every storm greater than 1 inch
	Sediment shall be removed from basin when it is completely dry
	Inspected annually for unwanted vegetative growth
	The vegetation along the surface of the slow release basin should be maintained in good condition, and any bare spots revegetated as soon as possible.
	Vehicles should not be parked or driven on the slow release Basin, and care should be taken to avoid excessive compaction by mowers.
	Inspect the slow release basin after runoff events and make sure that runoff drains down within 72 hours
	Mosquito's should not be a problem if the water drains in 72 hours. Mosquitoes require a considerably long breeding period with relatively static water levels.
	Also inspect for accumulation of sediment, damage to outlet control structures, erosion control measures, signs of water contamination/spills, and slope stability in the berms.
	Remove accumulated sediment from basin as required. Restore original cross section and infiltration rate. Properly dispose of sediment.

SLOW RELEASE CONCEPT (SRC) BASIN:

Construction Sequence:

1. Install all temporary erosion and sedimentation controls.
 - a. The area immediately adjacent to the basin must be stabilized in accordance with the PADEP's Erosion and Sediment Pollution Control Program Manual (2000 or latest edition) prior to basin construction.
2. Prepare site for excavation and/or embankment construction.
 - a. All existing vegetation should remain if feasible and should only be removed if necessary for construction.
 - b. Care should be taken to prevent compaction of the basin bottom.
 - c. If excavation is required, clear the area to be excavated of all vegetation. Remove all tree roots, rocks, and boulders only in excavation area.
3. Excavate bottom of basin to desired elevation.
4. PROFESSIONAL OVERSIGHT REQUIRED: Install cutoff trench, anti-seep collar, basin outlet pipe. Backfill of outlet pipe is critical to basin function as an impounding structure. Complete surrounding embankments and inlet and outlet control structures.
5. Grade subsol in bottom of basin, taking care to prevent compaction. Compact surrounding embankment areas and around inlet and outlet structures.
6. Excavate for sand filter media trench and underdrain. Install geotextile, stone and 4" u-drain. Install 24" sand filter material.
7. Apply geo-textiles and other erosion-control measures on slopes. Install CPS screen on outlet structure.
8. Seed, plant and mulch according to Planting Plan
9. Install any anti-grazing measures, if necessary.

Maintenance Issues:

- Maintenance is necessary to ensure proper functionality of the SRC basin and should take place on a quarterly basis. A basin maintenance plan should be developed which includes the following measures:
- All basin structures expected to receive and/or trap debris and sediment should be inspected for clogging and excessive debris and sediment accumulation at least four times per year, as well as after every storm greater than 1 inch.
 - Structures include basin bottoms, trash racks, outlets structures, riprap or gabion structures, CPS screen and inlets.
 - Sediment removal should be conducted when the basin is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.
 - Mowing and/or trimming of vegetation should be performed as necessary to sustain the system, but all detritus should be removed from the basin.
 - Vegetated areas should be inspected annually for erosion.
 - Vegetated areas should be inspected annually for unwanted growth of exotic/invasive species.
 - Vegetative cover should be maintained at a minimum of 95 percent. If vegetative cover has been reduced by 10%, vegetation should be reestablished.

SRC BASINS: Construction Specifications

The following specifications are provided for information purposes only. These specifications include information on acceptable materials for typical applications, but are by no means exclusive or limiting.

1. Site Preparation
 - a. All excavation areas, embankments, and where structures are to be installed shall be cleared and grubbed as necessary, but trees and existing vegetation should be retained and incorporated within the dry detention basin area where possible.
 - b. Where feasible, trees and other native vegetation should be protected. A minimum 10-foot radius around the inlet and outlet structures can be cleared to allow construction.
 - c. Any cleared material should be used as mulch for erosion control or soil stabilization.
 - d. Care should be taken to prevent compaction of the bottom of the reservoir. If compaction should occur, soils should be restored and amended.
2. Earth Fill Material & Placement
 - a. The fill material should be taken from approved designated excavation areas. It should be free of roots, stumps, wood, rubbish, stones greater than 6 inches, or other objectionable materials. Materials on the outer surface of the embankment must have the capability to support vegetation.
 - b. Areas where fill is to be placed should be scarified prior to placement. Fill materials for the embankment should be placed in maximum 8-inch lifts. The principal spillway should be installed concurrently with fill placement and not excavated into the embankment.
 - c. The movement of the hauling and spreading equipment over the site should be controlled. For the embankment, each lift should be compacted to 95% of the standard proctor. Fill material should contain sufficient moisture so that if formed in to a ball it will not crumble, yet not be so wet that water can be squeezed out.
3. Embankment Core
 - a. The core should be parallel to the centerline of the embankment as shown on the plans. The top width of the core should be at least four feet. The height should extend up to at least the 10-year water elevation or as shown on the plans. The side slopes should be 1 to 1 or flatter. The core should be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. The core should be placed concurrently with the outer shell of the embankment.
4. Structure Backfill
 - a. Backfill adjacent to pipes and structures should be of the type and quality conforming to that specified for the adjoining fill material. The fill should be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material should fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation should driven equipment be allowed to operate closer than four feet to any part of the structure. Equipment should not be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24 inches or greater over the structure or pipe.
 - b. Structure backfill may be flowable fill meeting the requirements of the PADOT Standard Specifications for Construction. Material should be placed so that a minimum of 6 inches of flowable fill should be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill material should be 7 inches to assure flowability of the mixture. Adequate measures should be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill all metal pipe should be bituminous coated. Adjoining soil fill should be placed in horizontal layers not to exceed 4 inches in thickness and compacted by hand tampers or other manually directed compaction equipment.
 - c. Refer to Chapter 220 Of PennDot Pub. 408 (2000).
5. Rock Riprap
 - a. Rock riprap should meet the requirements of Pennsylvania Department of Transportation Standard Specifications.
6. Stabilization
 - a. All borrow areas should be graded to provide proper drainage and left in good condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms should be stabilized by seeding, planting and mulching.

CONSTRUCTION SEQUENCE

A GENERALIZED CONSTRUCTION SEQUENCE IS PROVIDED BELOW. THE CONSTRUCTION SEQUENCE IS INTENDED TO PROVIDE A GENERAL COURSE OF ACTION IN ORDER TO CONFORM TO THE APPLICABLE REGULATORY AGENCY REQUIREMENTS FOR TEMPORARY AND PERMANENT SOIL E&S. NECESSARY COMPONENTS FOR PROPER AND COMPLETE EXECUTION OF WORK PERTAINING TO THIS PLAN, WHETHER SPECIFICALLY MENTIONED OR NOT, ARE TO BE PERFORMED BY THE CONTRACTOR. IT IS NOT INTENDED THAT THE DRAWINGS AND THIS REPORT SHOW DETAILED INFORMATION ON METHODS AND MATERIALS. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS LISTED IN THIS SECTION, AND SHALL COMPLY WITH THE PADEP E&S POLLUTION CONTROL MANUAL, 2012. THE CONTRACTOR MAY BE REQUIRED TO ALTER CONTROLS BASED ON EFFECTIVENESS OF CONTROLS OR DIFFERING CONDITIONS ENCOUNTERED IN THE FIELD.

1. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
2. Field mark Limit of Disturbance, Waters of the Commonwealth, which include wetlands, streams, spring seeps and all areas shown as Protected Areas on the Existing Conditions Plan. Field mark compost filter sock placement.
3. Install the stabilized construction entrance.
4. Install compost filter sock as indicated on plan.
5. Complete clearing and grubbing of additional pad area and SRC detention basin.
6. Stockpile grubbing in soil stockpile areas. Any materials removed from the site, and not taken to a permitted landfill, will require a separate Erosion Control Plan submittal.
7. Complete cut and fill of pad area and basin. Stabilize all slopes immediately. As grass areas reach final grade, seed and mulch, install S-150 erosion control blankets on all slopes steeper than 3H:1V.
8. Place stone on pad.
9. After pad area work is complete and stabilized, complete remaining excavation for slow release basin. PROFESSIONAL OVERSIGHT REQUIRED DURING SLOW RELEASE BASIN CONSTRUCTION, BASIN OUTLET PIPE, ANTI-SEEP COLLAR AND RIPRAP APRON INSTALLATION. OVERSIGHT REQUIRED DURING SAND FILTER AND 4" U-DRAIN INSTALLATION. Stabilize all disturbed areas immediately.
10. Complete final seeding and mulching of remaining disturbed areas.
11. An area shall be considered to have achieved final stabilization when it 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 movement. After the site reaches 70% stabilization, remove and dispose of any remaining compost filter socks in a legal manner.
12. All controls must be installed prior to beginning any grading or excavation work on the project. The Permittee/Co-Permittee (Sunoco) will be responsible to insure that the controls are installed and functioning as per plan.

TEMPORARY CONTROLS

1. Place compost filter sock as indicated.
2. Material imported to the site will be stockpiled in designated areas and surrounded by 12" high compost filter sock.
3. Sediment removed from control facilities will be stockpiled in designated areas, surrounded by compost filter sock and temporarily seeded. Sediment will be reused for future landscaping.
4. Areas left exposed and not subject to construction traffic shall receive a temporary seeding.
5. A stabilized construction entrance will be placed as shown and maintained until the project is complete.
6. Place stone subbase over pad and driveway as soon as possible after grading is completed.
7. The total length of excavated trench open at any one time should not be greater than the total length of pipeline/utility line than can be placed in the trench and back-filled in one working day. No more than 50 lf. of open trench should exist when pipeline/utility line installation ceases at the end of the workday. Complete soil supplements, seeding and mulching within 7 days after the pipeline/utility line is installed.
8. North American Green S-150 erosion control blankets will be placed ON ALL DISTURBED AREA SLOPES AT 3H:1V OR STEEPER.
9. Place one section of 24" compost filter sock in front of basin outlet structure. Remove after the site reaches 70% stabilization.

PERMANENT CONTROLS

1. Permanent seeding and mulching specifications are described on plans.
2. Complete seeding and mulching as soon as areas are at grade.
3. The emergency spillway will be lined with R-4 riprap.

INSPECTION AND MAINTENANCE OF CONTROL FACILITIES

1. ALL BMP'S are to be inspected AT LEAST ONCE WEEKLY AND AFTER ALL RUNOFF EVENTS.
2. Retained sediment will be utilized for landscaping.
3. All control facilities will remain in place until final stabilization is complete. Maintenance must include inspections of all erosion and sedimentation control facilities after each runoff event and on a weekly basis. All preventative and remedial work, including cleanout, repair, replacement, regrading, reseeding, remulching and renetting, must be performed immediately. Any sediment removed from BMP's shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains or drainage swales and immediately stabilized or placed in topsoil stockpiles.
4. The Permittee/Co-Permittee will be responsible for inspection and maintenance of facilities during construction. The Permittee (Sunoco Logistics Partners, LP) will be responsible for permanent inspection and maintenance after stabilization is complete. All controls must be installed prior to beginning any grading or excavation work on the project. The Permittee will be responsible to insure that the controls are installed as per plan. BMP'S WILL BE OWNED AND MAINTAINED BY THE PERMITTEE. Maintenance of BMP's will include the following:
 - a. Inspect BMP's at least once per month or after any rainfall event over ONE INCH. Remove accumulated sediment and/or garbage that remain in the inlets or basin outlet structures.
 - b. Any accumulated sediment within the detention basin will be removed and stockpiled in designated areas, or removed from the site and deposited in an approved landfill or dump area.
 - c. Inspect BMP's after any rainfall event over ONE INCH. Immediately repair and stabilize any washouts within swales or slope areas. Any gullies that form on surfaces must be immediately repaired with topsoil material, soil supplements, seed and mulch. Do not direct runoff to swales or BMP's until all upstream areas are stable and free from sediment-laden runoff.
 - d. The permittee and co-permittee(s) must ensure that visual site inspections are conducted weekly, and within 24 hours after each measurable rainfall event throughout the duration of construction. The visual site inspections and reports shall be completed in a format provided by the Department, and conducted by qualified personnel, trained and experienced in erosion and sediment control, to ascertain that E & S BMP's and PCSM BMP's are properly constructed and maintained to effectively minimize pollution to the waters of the Commonwealth.
5. Project construction wastes and demolition waste shall be disposed of in a legal manner. Individuals responsible for earth disturbance activities must ensure that proper mechanisms are in place to control waste materials. Building and demolition waste (ie. drywall, wood) will be transported to landfills. Construction wastes include, but are not limited to, excess soil material, building materials, concrete wash water, sanitary wastes, etc., that could adversely impact water quality. Any soil or rock not needed for construction purposes will be stockpiled in designated on-site areas and immediately seeded and mulched. Wherever possible, recycling of excess materials is preferred, rather than disposal. Any soil or rock waste or soil borrow areas created off-site will require a separate Erosion Control Plan submission to the appropriate Conservation District.
6. Until the site is stabilized, all erosion and sediment control BMP's must be maintained properly. Maintenance must include inspections of all erosion and sediment control BMP's after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, remulching and renetting must be performed immediately. If erosion and sediment control BMP's fail to perform as expected, replacement BMP's, or modifications of those installed will be required.
7. All excavated material will remain on site, to be used for embankment areas. There will be no removal of soil to other off-site areas unless Form FP-001 is completed for each waste area.

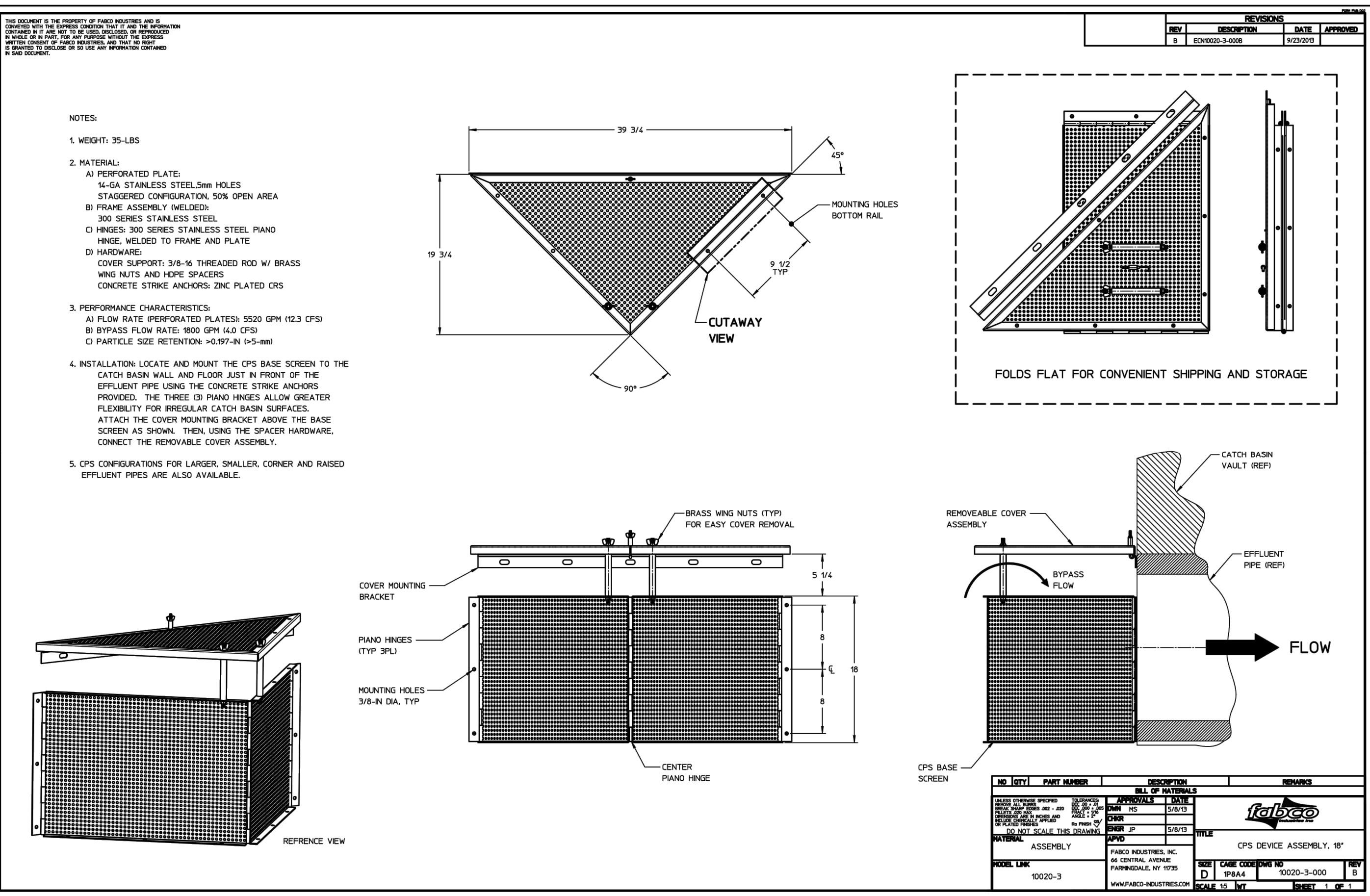
ENVIRONMENTAL DUE DILIGENCE: DEFINITION

Investigative techniques, including but not limited to, visual property inspections, electronic data base searches, review of property ownership, review of property use history, Sanborn Maps, environmental questionnaires, transaction screens, analytical testing, environmental assessments or audits. Analytical testing is not a required part of due diligence unless visual inspection and/or review of the past land use of the property indicates that the fill may have been subjected to a spill or release of regulated substance. If the fill may have been affected by a spill or release of a regulated substance, it must be tested to determine if it qualifies as a clean fill. Testing should be performed in accordance with Appendix A of the Department's policy "Management of Fill". Fill Material that does not qualify as clean fill is regulated fill. Regulated fill is waste and must be managed in accordance with the Department's municipal or residual waste regulations based on 25 Pa. Code Chapters 287 Residual Waste Management or 217 Municipal Waste Management, whichever is applicable.

DEFINITION: CLEAN FILL IS DESCRIBED AS: Uncontaminated, non-water soluble, non-decomposable, inert, solid material, used asphalt, and brick, block or concrete from construction or demolition activities that is separate from other waste and is recognizable as such. The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized. (The term "used asphalt" does not include milled asphalt or asphalt that has been processed for re-use.)

IMPACT TO DOWNSTREAM WATERCOURSES

The impact to downstream watercourses is minimal. All runoff from the project is directed to an existing unnamed tributary to Baldwin Run, within the Sunoco parcel.



7	<p>TETRA TECH</p> <p>www.tetratech.com</p> <p>1134 TWIN STACKS DRIVE DALLAS, PA 18612 T: (570) 674-8648 F: (570) 674-8651</p>	MARK	DATE	DESCRIPTION	BY	PPP – TWIN OAKS PUMP STATION UPPER CHICHESTER TOWNSHIP, DELAWARE COUNTY PCSM PLAN – CONSTRUCTION DETAILS	DATE: 03/11/16
OF		1	5/13/16	REVISED PER DEP COMMENT LETTER (3/28/16)	GZ		PROJECT NO.: IC-PB-00136
7		2	10/10/16	REVISED PER DEP COMMENT LETTER (9/6/16)	GZ		DRAWN BY: GZ
							CHECKED BY: TC
							SCALE: AS NOTED
							FILE: CONSTDET
							NAME: CONSTDET 8
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