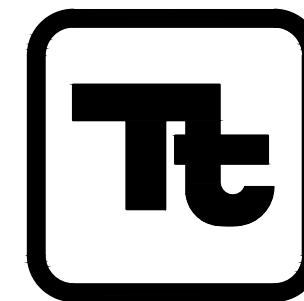


EROSION & SEDIMENTATION CONTROL PLAN

PENNSYLVANIA PIPELINE PROJECT- BECKERSVILLE STATION

BRECKNOCK TOWNSHIP, BERKS COUNTY

PENNSYLVANIA
NOVEMBER 2016



PREPARED BY:
TETRA TECH

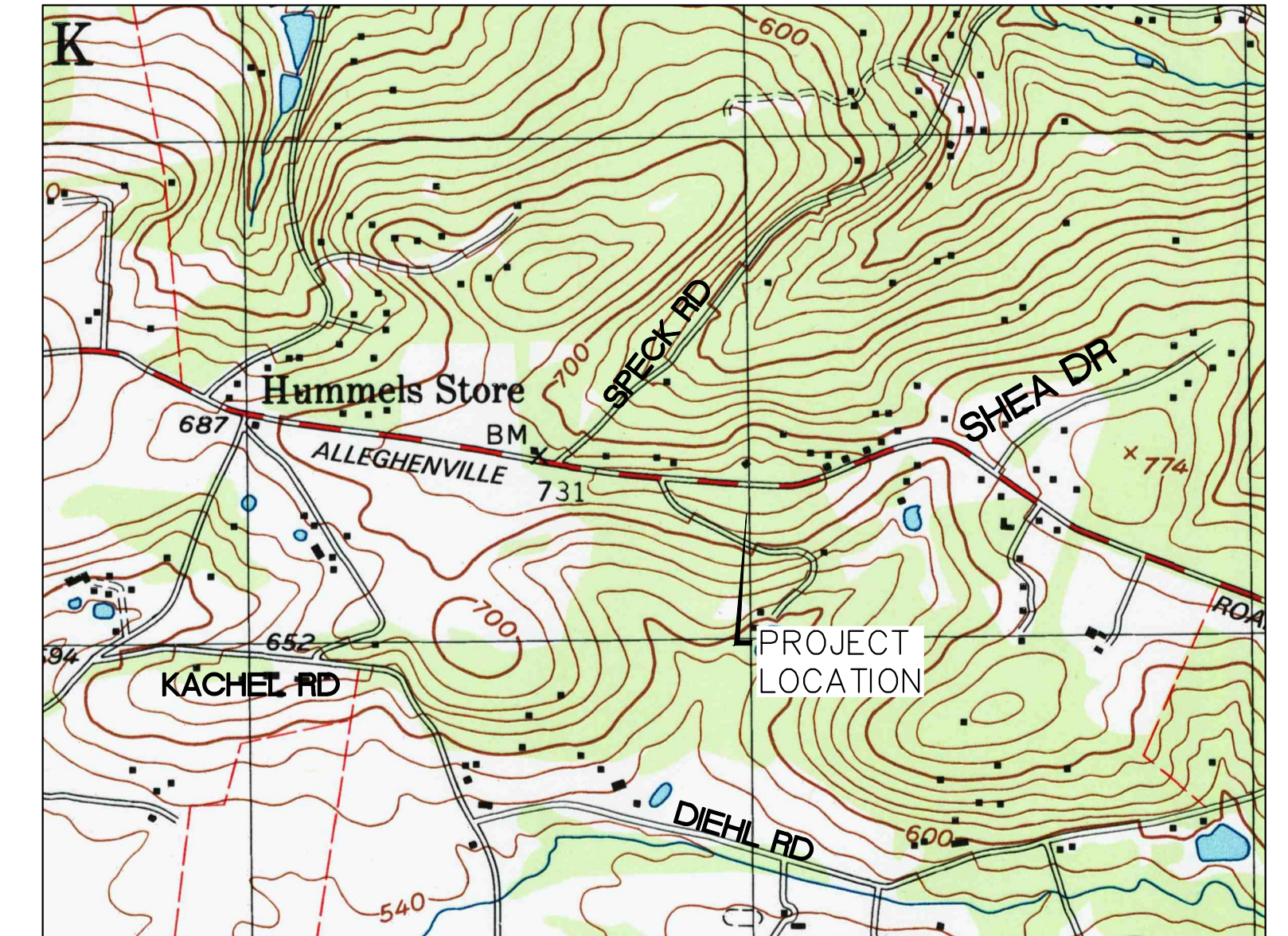
www.tetrattech.com

1134 TWIN STACKS DRIVE
DALLAS, PA 18612
T: (570) 674-8648 | F: (570) 674-8651
DATE: NOVEMBER 21, 2016
COVER SHEET 1 OF 11
REVISION #1 - 4.22.16
REVISION #2 - 5.13.16
REVISION #3 - 7.01.16
REVISION #4 - 10.18.16

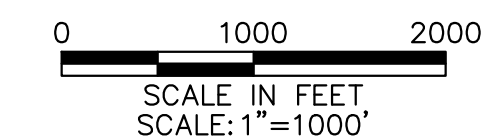
DRAWING INDEX

SHEET No.	DRAWING TITLE
1	COVER SHEET AND NOTES
2	OVERALL SITE PLAN
3	EROSION CONTROL / GRADING PLAN
4	E & S BLANKET PLACEMENT PLAN
5	PRE-POST DEVELOPED D.A. PLAN
6	CONSTRUCTION DETAILS
7	BASIN #1 CONSTRUCTION DETAILS
8	CONSTRUCTION DETAILS
9	CONSTRUCTION DETAILS
10	CONSTRUCTION DETAILS
11	CONSTRUCTION DETAIL

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



LOCATION MAP
BECKERSVILLE STATION
MORGANTOWN QUADRANGLE
BRECKNOCK TOWNSHIP, BERKS COUNTY,
PENNSYLVANIA



SUNOCO PIPELINE L.P. ACKNOWLEDGES THAT ANY REVISION TO THE APPROVED DRAINAGE PLAN MUST BE APPROVED BY THE TOWNSHIP AND THE BERKS CO. CONSERVATION DISTRICT

SUNOCO PIPELINE L.P. _____ DATE _____

I, TIMOTHY J. CONNOLLY JR., P.E., CERTIFY THAT THE PROPOSED DETENTION BASIN IS NOT UNDERLAIN BY CARBONATE GEOLOGY.

TIMOTHY J. CONNOLLY JR., P.E. 11/21/2016
DATE

I, TIMOTHY J. CONNOLLY JR., P.E., ON THIS DATE HEREBY CERTIFIES THAT THE DRAINAGE PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF THE BRECKNOCK TOWNSHIP STORMWATER MANAGEMENT ORDINANCE

TIMOTHY J. CONNOLLY JR., P.E. 11/21/2016
DATE

I, TIMOTHY J. CONNOLLY JR., P.E., HEREBY CERTIFY THAT THE PLAN FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS, STANDARDS AND SPECIFICATIONS OF THE COUNTY CONSERVATION DISTRICT.

TIMOTHY J. CONNOLLY JR., P.E. 11/21/2016
DATE

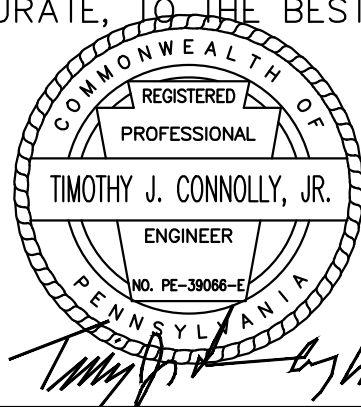
GENERAL NOTES

- DEVELOPER/ OWNER: SUNOCO PIPELINE, LP
525 FRITZTOWN ROAD
SINKING SPRING, PA. 19608
610-670-3200
- CURRENT TAX IDENTIFICATION #: 34-5302-02-56-2952
INSTRUMENT #2014027505, RECORDED 8-25-2014
TOTAL PARCEL SIZE = 17.45 AC
- PUBLIC SEWER AND WATER WILL NOT BE PROVIDED. THE FACILITY IS UNMANNED.
- EXISTING CONTOURS AND FEATURES COMPILED FROM WWW.PASDA.PSU.EDU.
EXISTING CONTOURS ARE BASED ON NAVD 88 DATUM.
- NO PORTION OF THE SITE LIES WITHIN ANY 100 YEAR FLOOD ZONES,
AS PER F.E.M.A. MAPPING, FIRM PANEL 629 OF 700,
MAP #42011C0629G, EFFECTIVE DATE IS 06/03/2012.
- THERE ARE NO WETLANDS WITHIN THE DISTURBED AREA OF THE SITE.
- THE ASSOCIATED STORM WATER MANAGEMENT REPORT FOR THIS PROJECT IS TITLED:
EROSION AND SEDIMENTATION CONTROL PLAN
PENNSYLVANIA PIPELINE PROJECT
BECKERSVILLE STATION EXPANSION ACTIVITIES
BRECKNOCK TOWNSHIP
BERKS COUNTY, PA
MARCH, 2016
- THE SITE LIES WITHIN A 50% RELEASE RATE DISTRICT OF THE CONESTOGA RIVER
ACT 167 STORMWATER MANAGEMENT PLAN.
- UN-NAMED TRIBUTARY TO MUDDY CREEK IS LISTED AS "HQ-TSF" UNDER CHAPTER 93.
- THE PADOT DRIVEWAY HOP NO. 05048641 WAS ISSUED ON 7/17/2014.
- SUNOCO LOGISTICS PARTNERS, LP WILL BE RESPONSIBLE FOR PERMANENT INSPECTION
AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES.
- BRECKNOCK TOWNSHIP AND ITS AUTHORIZED AGENTS HAVE THE RIGHT, BUT NOT THE
DUTY TO ENTER THE PROPERTY TO PERFORM INSPECTIONS OF STORMWATER FACILITIES.
ACCESS AND INSPECTIONS WITHIN THE SECURED AREA CAN ONLY BE COMPLETED WITH
AUTHORIZED REPRESENTATIVES OF THE PROPERTY OWNER.
- THE EXISTING WELL AND SEPTIC SYSTEM ON THE PARCEL WILL BE ABANDONED IN
ACCORDANCE WITH DEP AND TOWNSHIP REGULATIONS, IF THE BUILDING IS DEMOLISHED.
- SITE LIGHTING WILL BE ACCOMPLISHED WITH POLE MOUNTED FIXTURES.
LIGHTS WILL REMAIN IN THE "OFF" POSITION UNLESS NIGHTTIME WORK IS ANTICIPATED.
- THERE ARE NO ADVERTISING SIGNS PROPOSED FOR THIS SITE.
- IT IS REQUIRED BY BRECKNOCK TOWNSHIP THAT ALL SITE LIGHTING SHALL REMAIN IN
THE OFF MODE DURING ALL NIGHT TIME HOURS. THE SITE LIGHTING SHALL BE DESIGNED
TO BE MANUALLY OPERATED BY SUNOCO PERSONNEL ONLY WHEN NECESSARY DURING
NIGHT TIME HOURS OF OPERATION WHEN SUNOCO PERSONNEL ARE ON-SITE.
- LADDER RUNGS SHALL BE PROVIDED FOR ALL STORM SEWER INLETS AND MANHOLES
WITH A DEPTH OF 4 FEET OR GREATER.
- ALL STORM MANHOLES SHALL HAVE THE WORD "STORM" CAST ON THE TOP MANHOLE COVER.

- #### LEGEND
- EXISTING R/W
 - PROPERTY LINE
 - SOIL BOUNDARY
 - SETBACK LINE
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - Tc FLOW PATH
 - PRE-DEV DA BOUNDARY
 - POST-DEV DA BOUNDARY
 - CFS-CFS-CFS-CFS COMPOST FILTER SOCK (SIZE VARIES)
 - STABILIZED ROCK CONSTRUCTION ENTRANCE
 - LOD-LOD-LOD-LOD LOD/ESCGP-2 BOUNDARY = 5.985 AC
 - S-150 NA GREEN EROSION BLANKETS
 - PADOT TYPE M PRECAST INLET
 - 4' DIA. PADOT PRECAST STORM MH
 - STORM PIPE W/ FES
 - RIPRAP APRON
 - SILTSACK INLET PROTECTION
 - 8' HEIGHT "SIMTEK" FENCE
 - EXISTING LIGHT POLE, LITHONIA STSH 30 6-4B
SQUARE TAPERED STEEL HINGED LIGHT POLE
(6.41"x 3.08" RECT. x 30' TALL) FROM ME-1
PHASE. NO LIGHTS PROPOSED IN PPP PHASE.

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. 11/21/2016
DATE
PE-39066-E
1134 TWIN STACKS DRIVE, DALLAS, PA. 18612

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

SOIL LIMITATION RESOLUTIONS

All soils within the site are suitable for the intended use. Any topsoil needed in the area can be imported from off-site areas. All soil groups are within acceptable limits of pH reaction. All soils within this project have a slight erosion hazard. However, erosion control blankets (S-150) will be placed on all slopes at 3:1 or steeper. None of the soils on site are susceptible to sinkholes. Soils are susceptible to piping. All storm pipes are backfilled with select material, and all proposed storm pipes will have watertight connections. All pipe to inlet connections will also be grouted to remain watertight. Embankments for the detention basin will be compacted to 95% density.

TOPSOIL SPECIFICATIONS: All topsoil to be imported to the site shall meet the requirements of Section 802 of PADOT Form 408 specifications. The material shall meet the following grading requirements:

Sieve	Min. % passing
2 in.	100 %
No. 4	75 %
No. 10	60 %

Sand, silt and clay material passing the No. 10 sieve, as defined by PTM No. 103, and within the following ranges:

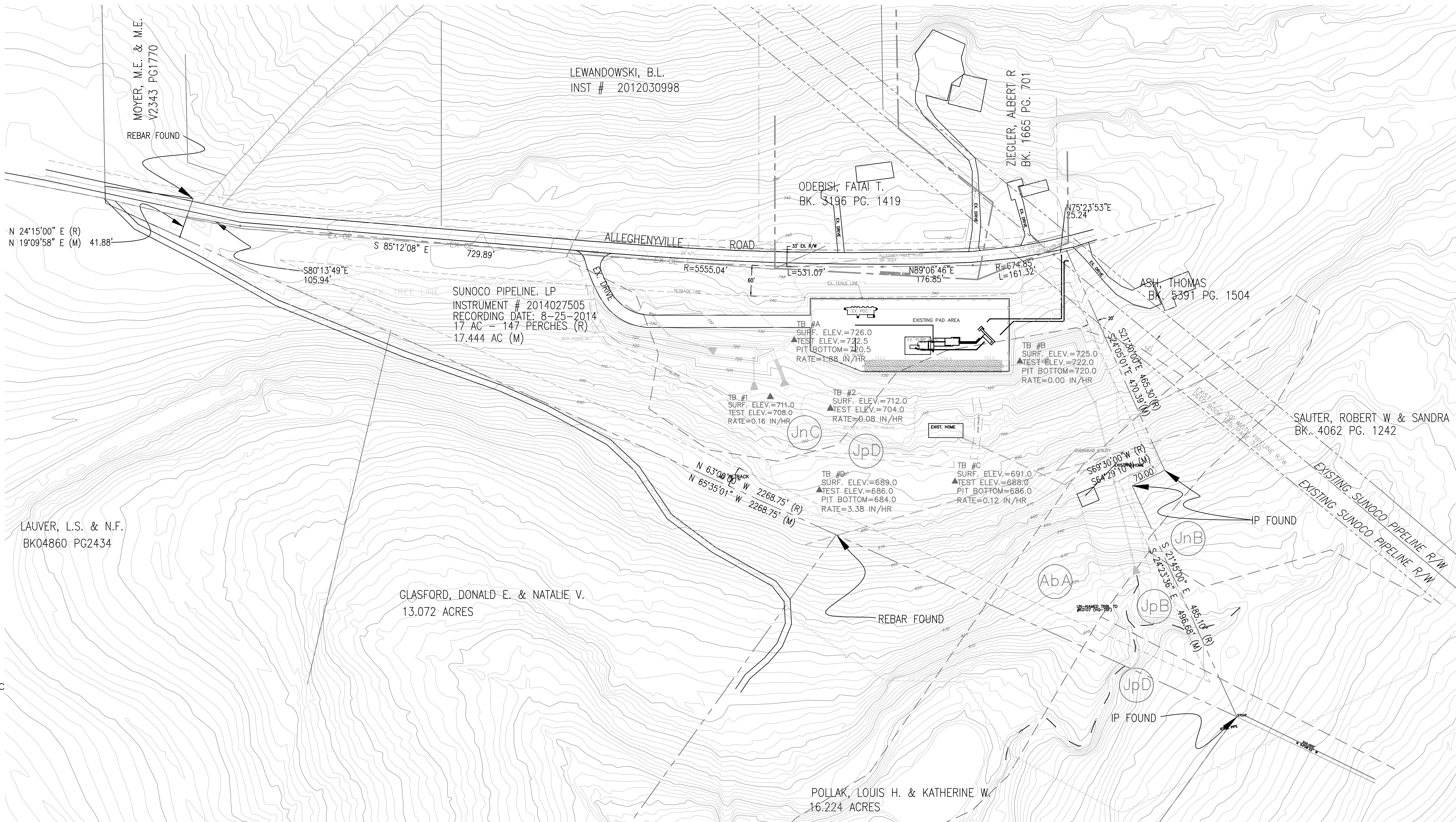
	Min. %	Max %
Sand	5	70
Silt	10	70
Clay	5	36

SOILS ANALYSIS

Existing soils on site include the following:
 JpD - Joanna loam, 8-25%, Depth to Bedrock = 72-100 inches
 Erosion Hazard = Slight
 JnC - Joanna loam, 8-15%, Depth to Bedrock = 72-100 inches
 Erosion Hazard = Slight
 AbA - Abbottstown silt loam, 0-3%, Depth to Bedrock = 40-60 inches
 Erosion Hazard = Slight

SOILS LIMITATIONS

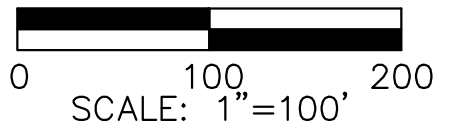
SOIL NAME	CUTBANK CAVE	CORROSIVE TO CONCRETE/ STEEL*	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/ MAXIMUM HIGH WATER TABLE	HYDRIC/ HYDRIC INCLUDING	LOW STRENGTH /LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK-SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
Joanna	X	C		X		X	X	X	X	X	X					X
Abbottstown	X	C2				X	X	X	X	X	X					X



PROPERTY BOUNDARY LINES AS PER ALTA SURVEY COMPLETED BY TRICO SURVEYING, 441 W. GOURLEY PIKE, BLOOMINGTON, IN 47404

LEGEND

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- SETBACK LINE
- 730 EXISTING CONTOURS
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- STABILIZED ROCK CONSTRUCTION ENTRANCE
- LOD---LOD---LOD---LOD--- LOD/ESGCP-2 BOUNDARY = 5.985 AC
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- PADOT TYPE M PRECAST INLET
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- RIPRAP APRON
- SILTSACK INLET PROTECTION
- 8' HEIGHT "SIMTEK" FENCE



2
OF
11

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MARK	DATE	DESCRIPTION	BY
1	4/22/16	REVISED PER EXISTING SURVEY	GZ
2	5/13/16	REVISED PER LTL LETTER (4/20/16)	GZ
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4	10/18/16	REVISED PER PA DEP REVIEW	GZ

PPP - BECKERSVILLE PUMP STATION
 BRECKNOCK TOWNSHIP, BERKS COUNTY

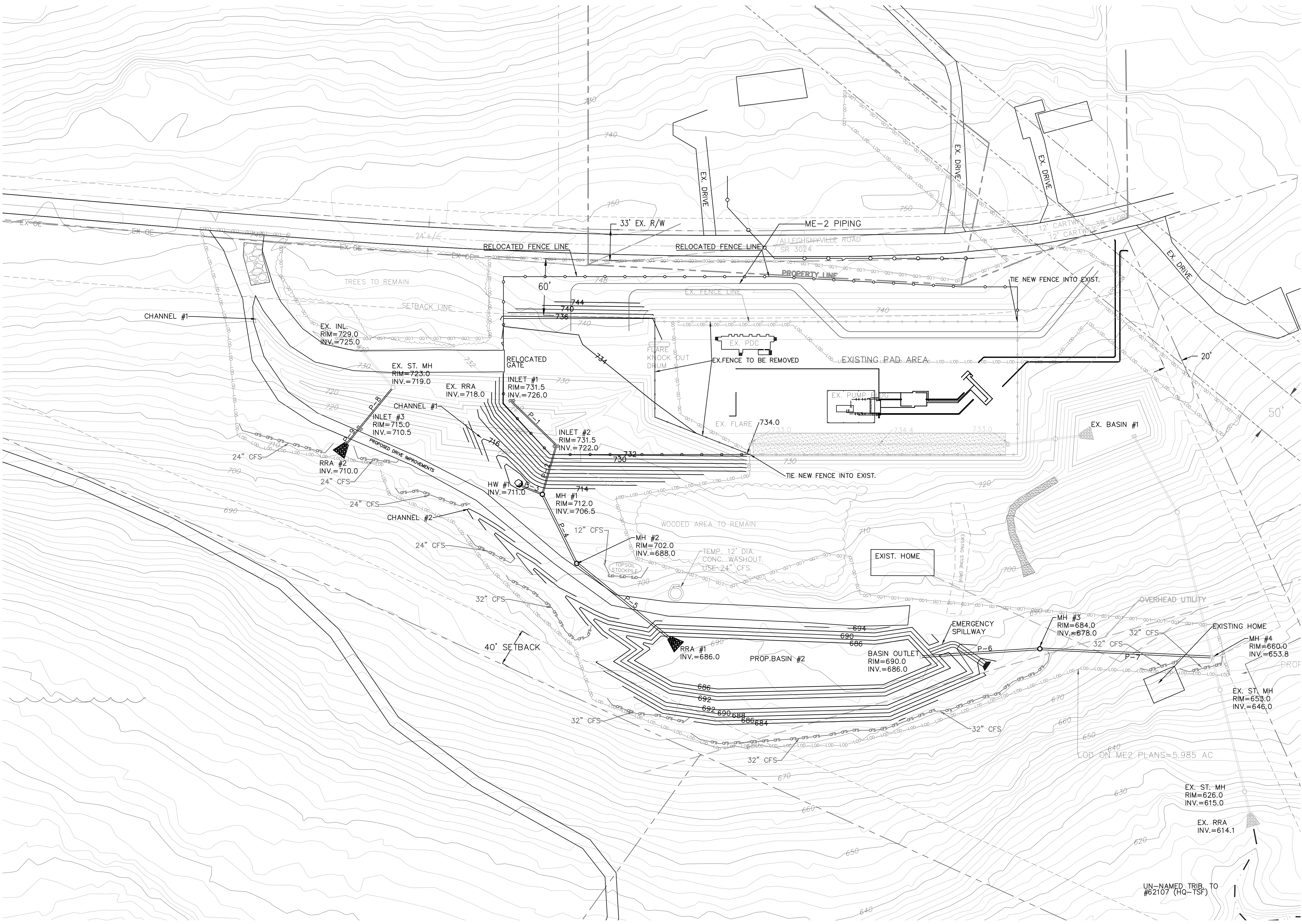
E&S PLAN - OVERALL SITE

DATE: 03/11/16
 PROJECT NO.: 2121C-PB-00136
 DRAWN BY: GZ
 CHECKED BY: TC
 SCALE: 1"=100'
 FILE: BASEPLAN
 NAME: OVERALL_2
 COPYRIGHT TETRA TECH INC.

PROPOSED STORM PIPE TABLE

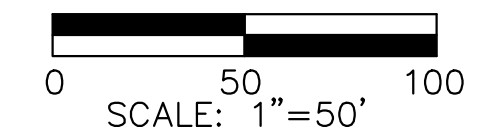
INLET	TG	INV	PIPE	LENGTH	SIZE	SLOPE
INL 1	731.50	726.00				
INL 2	731.50	722.00	P-1	65	15"	6.15%
MH. 1	712.00	706.50	P-2	49	15"	31.63%
HW 1	-----	711.00	-----	-----	-----	-----
MH. 1	712.00	706.50	P-3	22	15"	20.45%
MH. 2	702.00	688.00	P-4	78	15"	23.72%
RRA 1	-----	686.00	P-5	125	15"	1.60%
BASIN OUTLET	690.00	686.00	P-6	125	15"	6.40%
MH. 3	684.00	678.00	P-7	181	15"	13.37%
MH. 4	660.00	653.80	EX.	35	15"	22.29%
EX. ST. MH.	653.00	646.00	EX.	106	15"	29.25%
EX. ST. MH.	626.00	615.00	EX.	24	15"	3.75%
EX. RRA	-----	614.10	-----	-----	-----	-----
EX. INL.	729.00	725.00	EX. PIPE	52	15"	11.54%
EX. ST. MH.	723.00	719.00	P-8	52	15"	16.35%
INL 3	715.00	710.50	P-9	22	15"	2.27%
RRA 2	-----	710.00				

ALL INLETS ARE PADOT TYPE M PRECAST CONCRETE.
 ALL MANHOLES ARE 4' DIAMETER PRECAST CONCRETE.
 ALL STORM INLETS AND MANHOLES >4' MUST HAVE LADDER RUNGS
 ALL MANHOLES SHALL HAVE THE WORD "STORM" ON COVER.
 ALL STORM PIPE IS SLOPP, ADS-N12 OR APPROVED EQUAL.
 PLACE "SILTSACK" FILTER BAGS IN ALL INLETS.
 ALL INLETS SHALL CONTAIN A PAINTED MARKER THAT STATES, "NO DUMPING, DISCHARGES TO STREAMS".
 FOR PIPE P-6, USE RCCP.



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3
OF
11

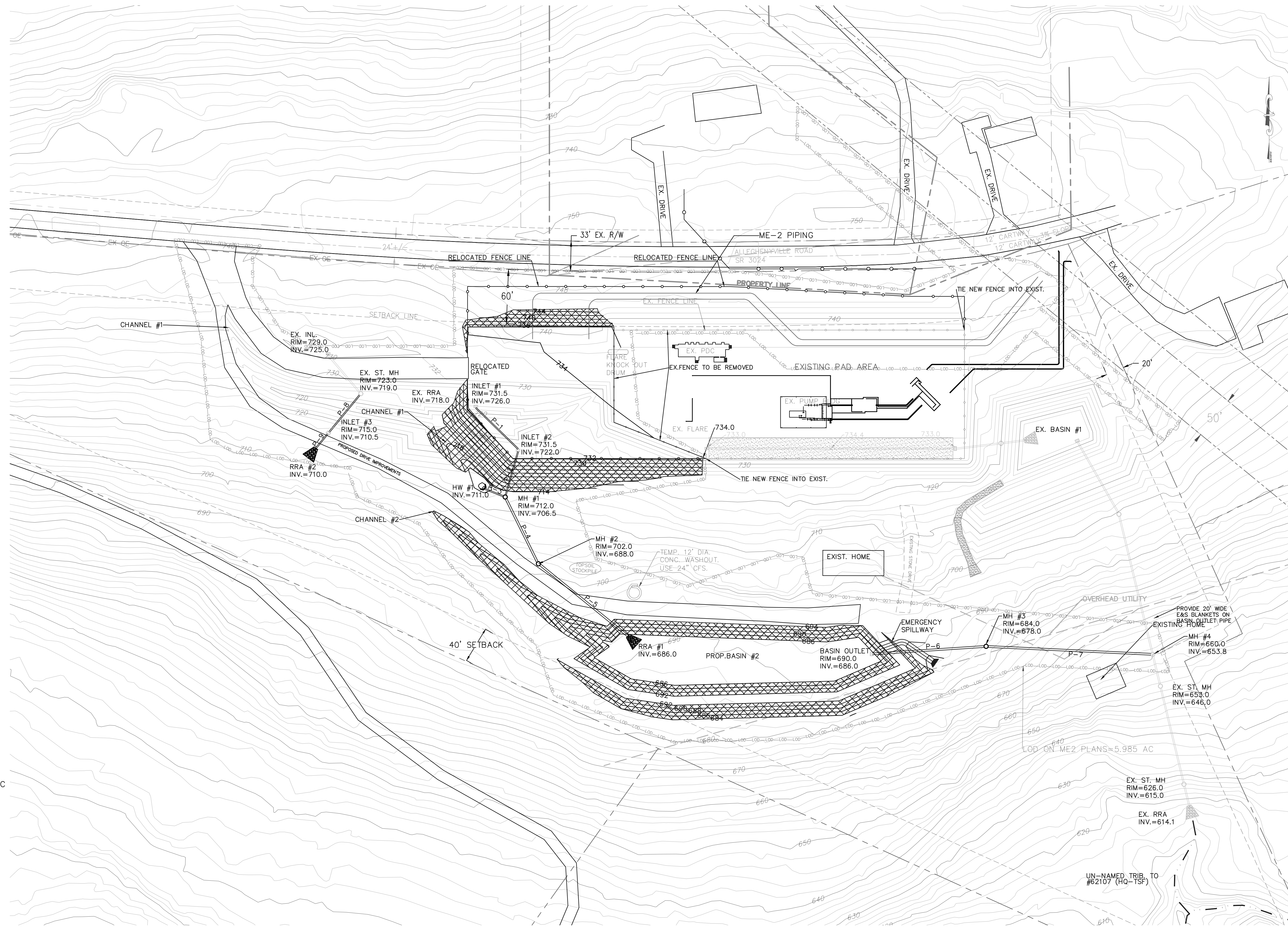
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 www.tetrattech.com
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 DALLAS, PA 18612
 T: (570) 674-8648 | F: (570) 674-8651

MARK	DATE	DESCRIPTION	BY
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4	10/18/16	REVISED PER PA DEP REVIEW	GZ

PPP - BECKERSVILLE PUMP STATION
 BRECKNOCK TOWNSHIP, BERKS COUNTY

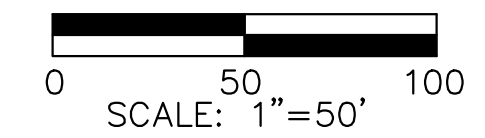
E&S PLAN - EROSION CONTROL

DATE: 03/11/16
PROJECT NO.: 212IC-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: 1"=50'
FILE: BASEPLAN
NAME: ES3
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LEGEND

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4
OF
11

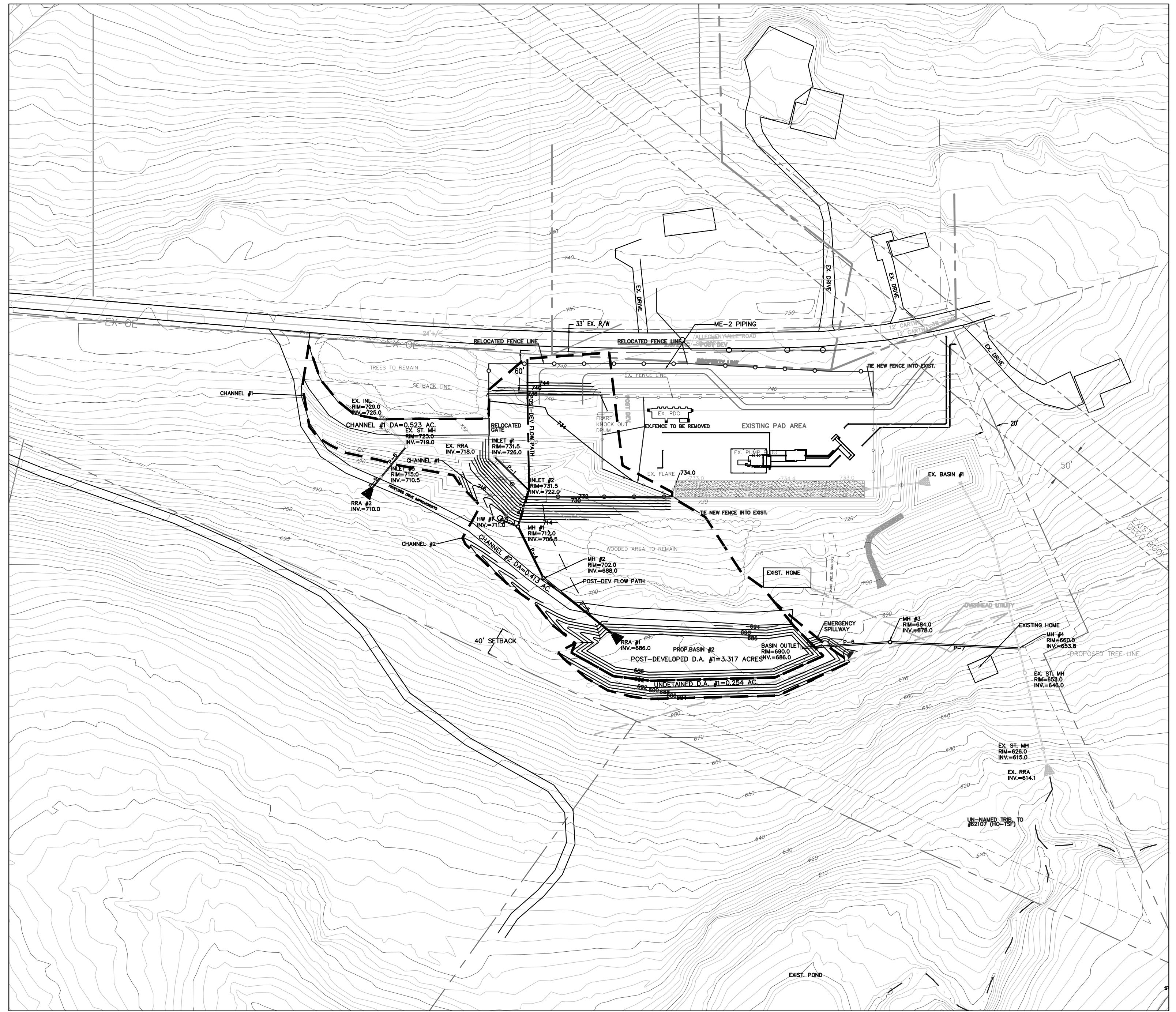
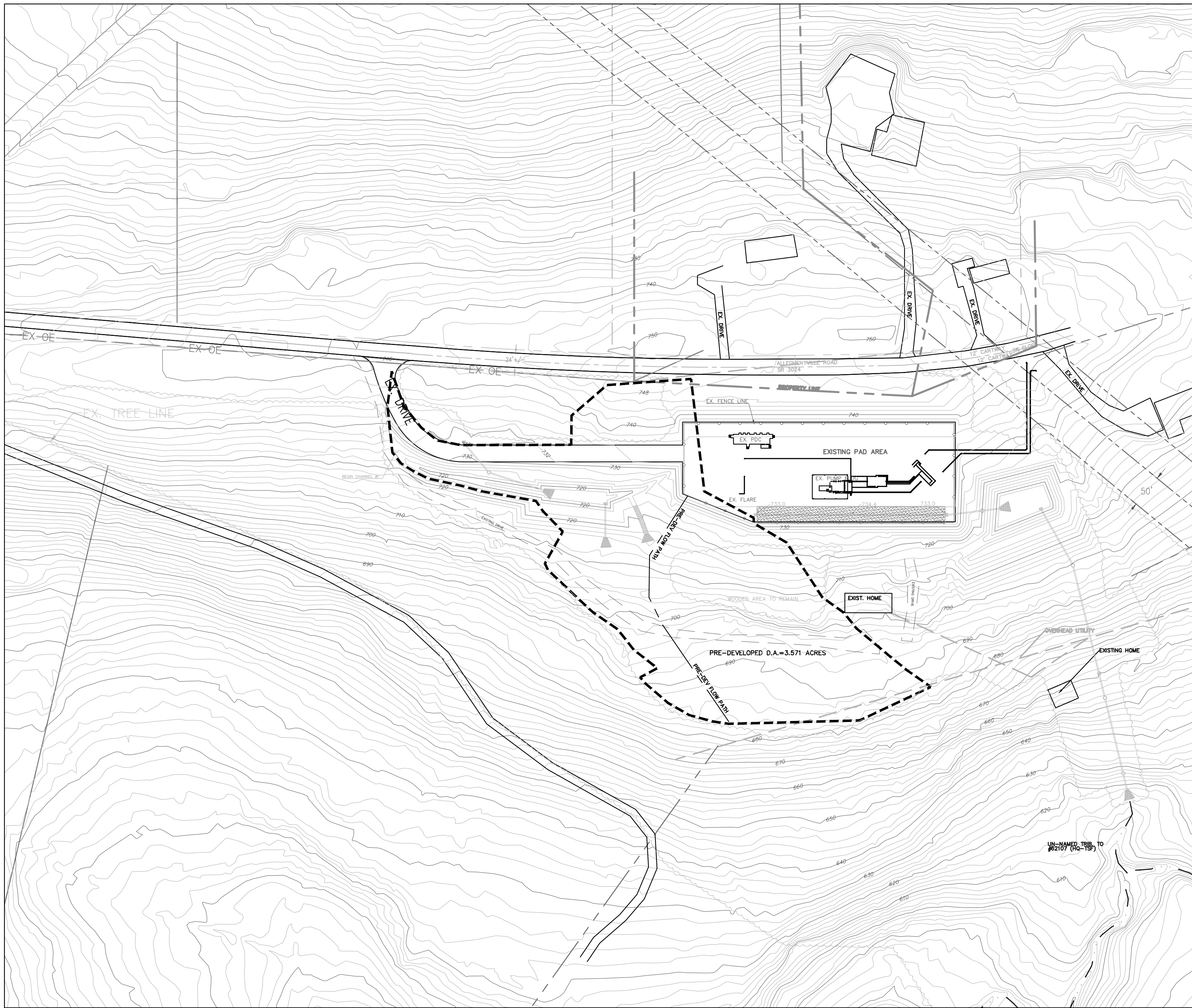
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BRECKNOCK TOWNSHIP, BERKS COUNTY

E&S PLAN – EROSION CONTROL BLANKET

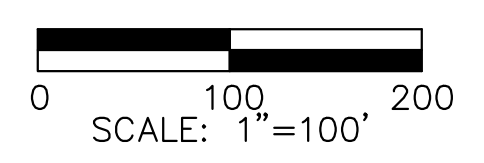
DATE: 03/11/16
PROJECT NO.: 2121C-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: 1"=50'
FILE: BASEPLAN
NAME: ESBL4
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PRE-DEVELOPED D.A. MAP - ME2 STATION
SCALE: 1"=100'



POST-DEVELOPED D.A. MAP - ME2 STATION
SCALE: 1"=100'

5
OF
11

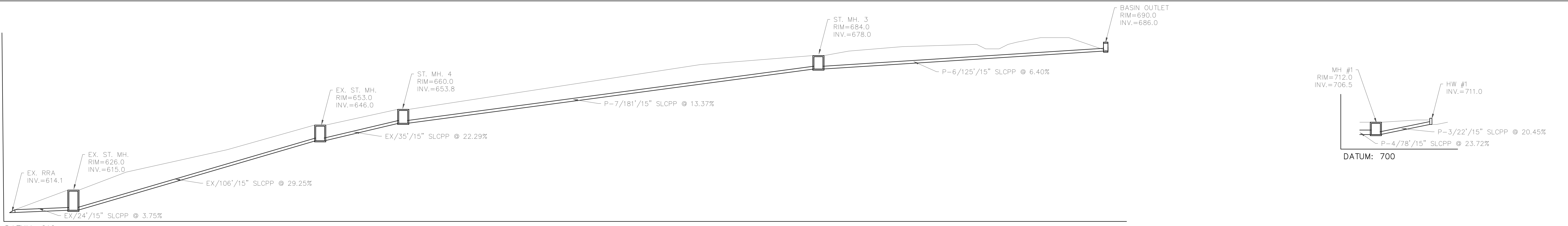
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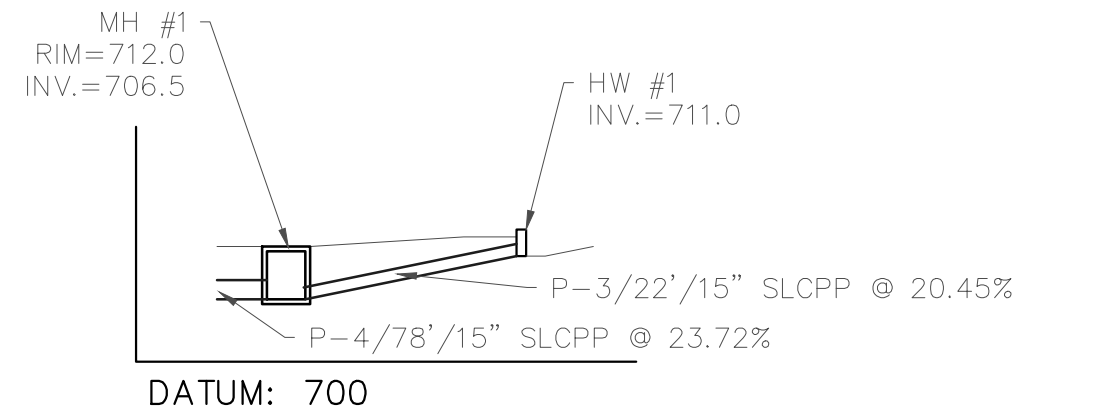
PPP - BECKERSVILLE PUMP STATION
BRECKNOCK TOWNSHIP, BERKS COUNTY

E&S PLAN - PRE-POST DEVELOPED D.A.

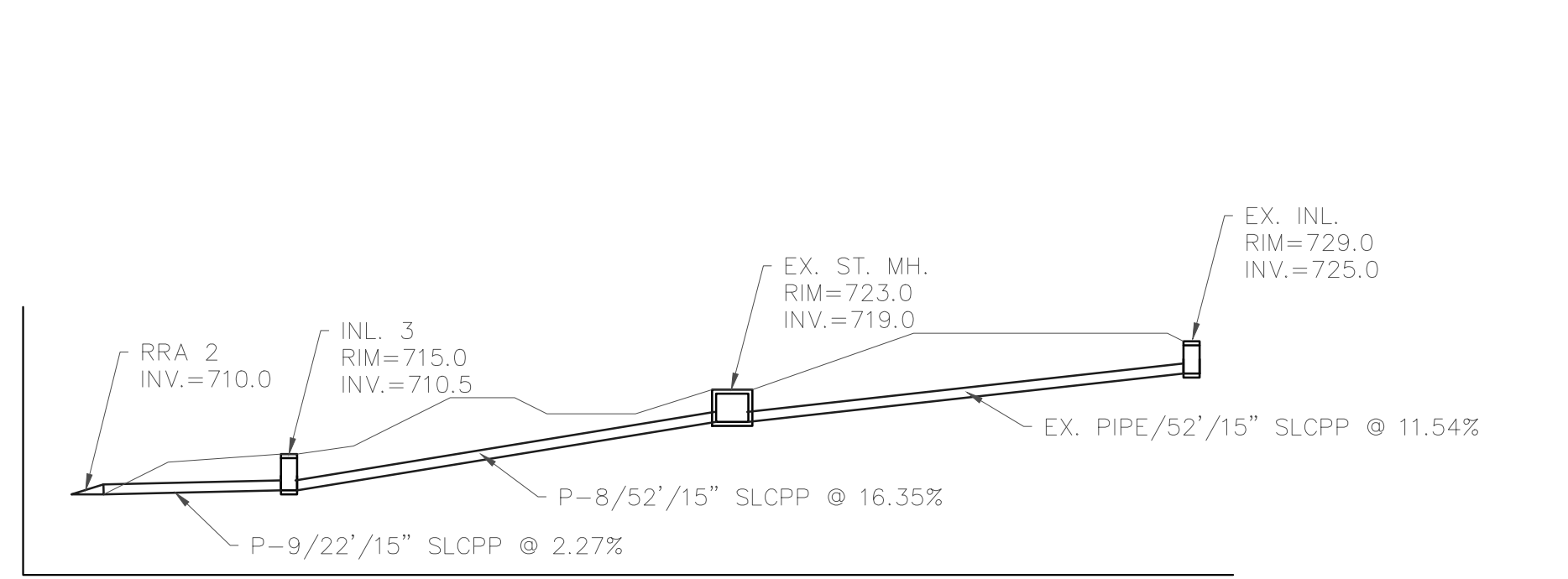
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SCALE: 1"=100'
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NAME: DA 5
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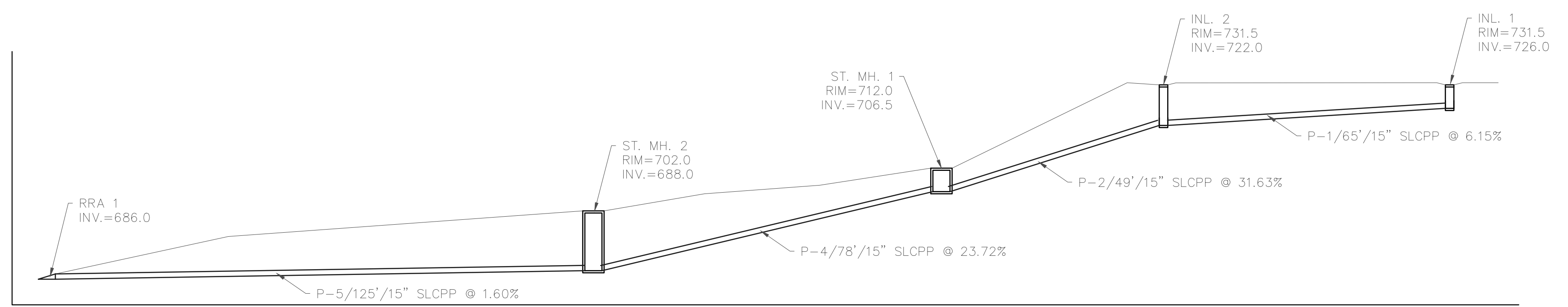
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DATUM: 700

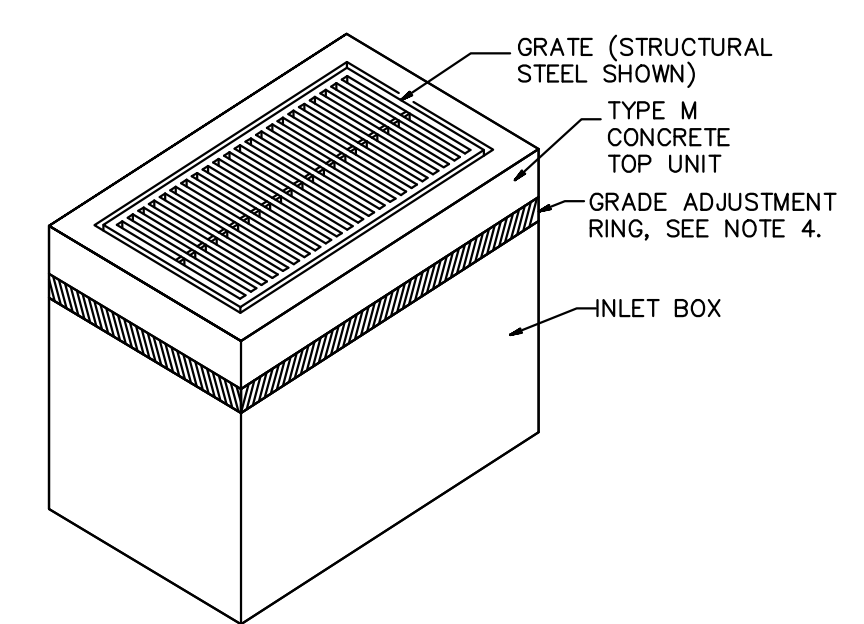


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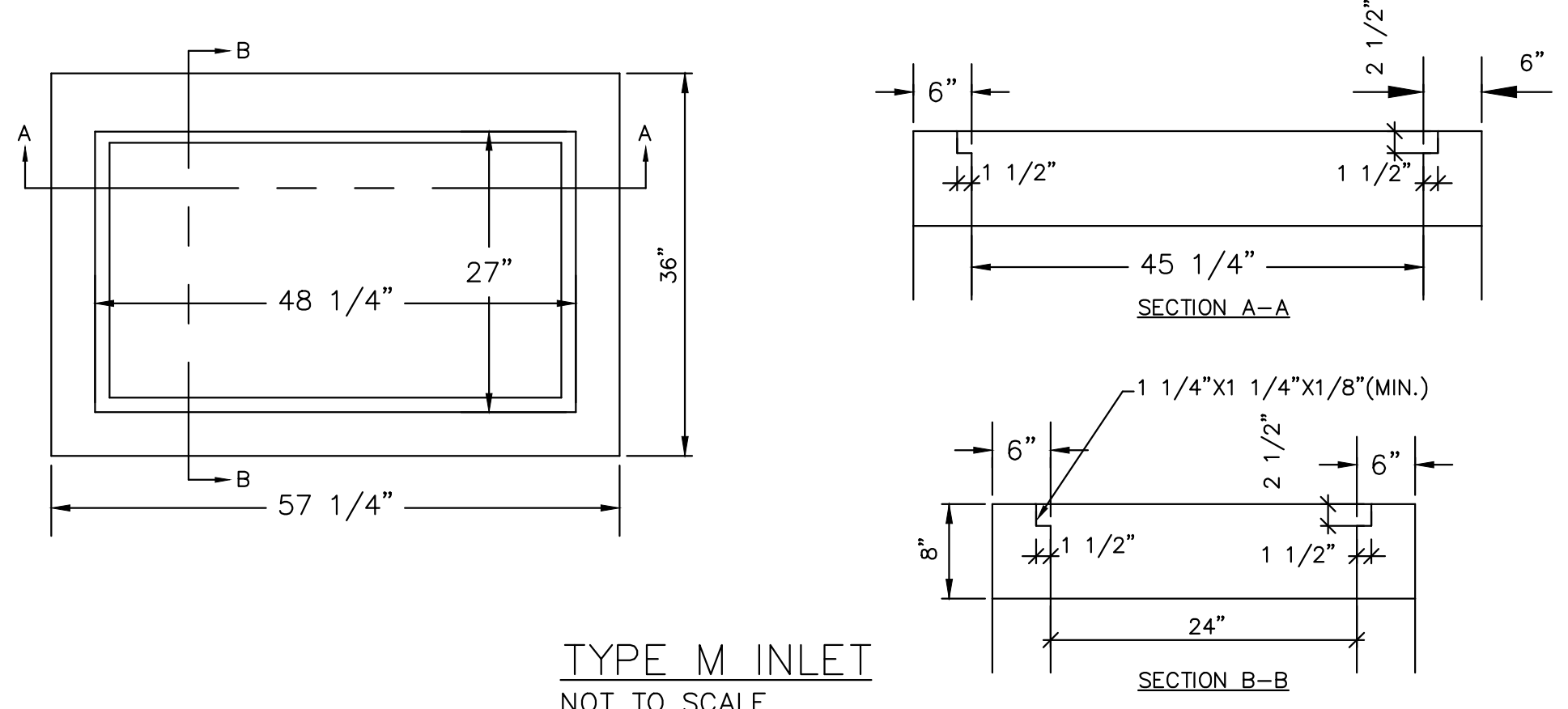


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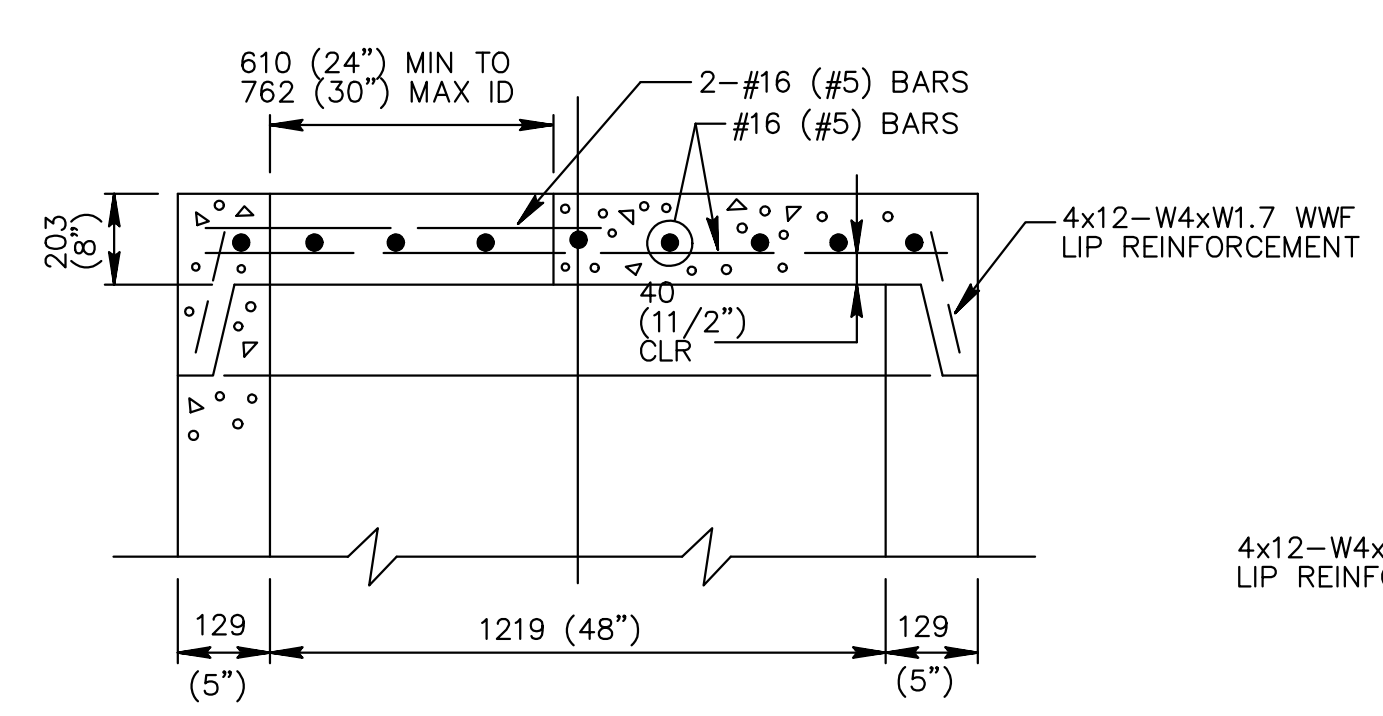
STORM PROFILE
SCALE: HORIZ: 1" = 20'
VERT: 1" = 20'



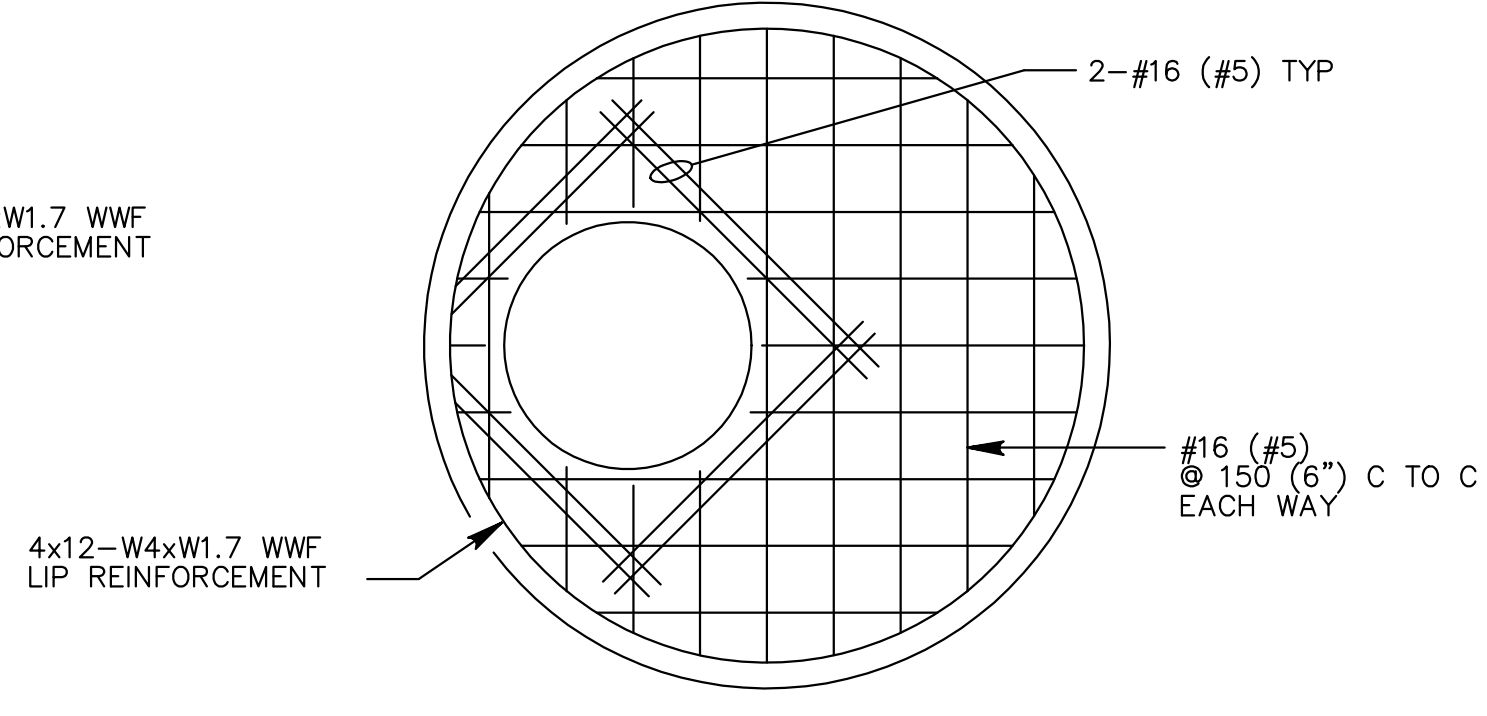
CONCRETE TOP UNIT - TYPE M



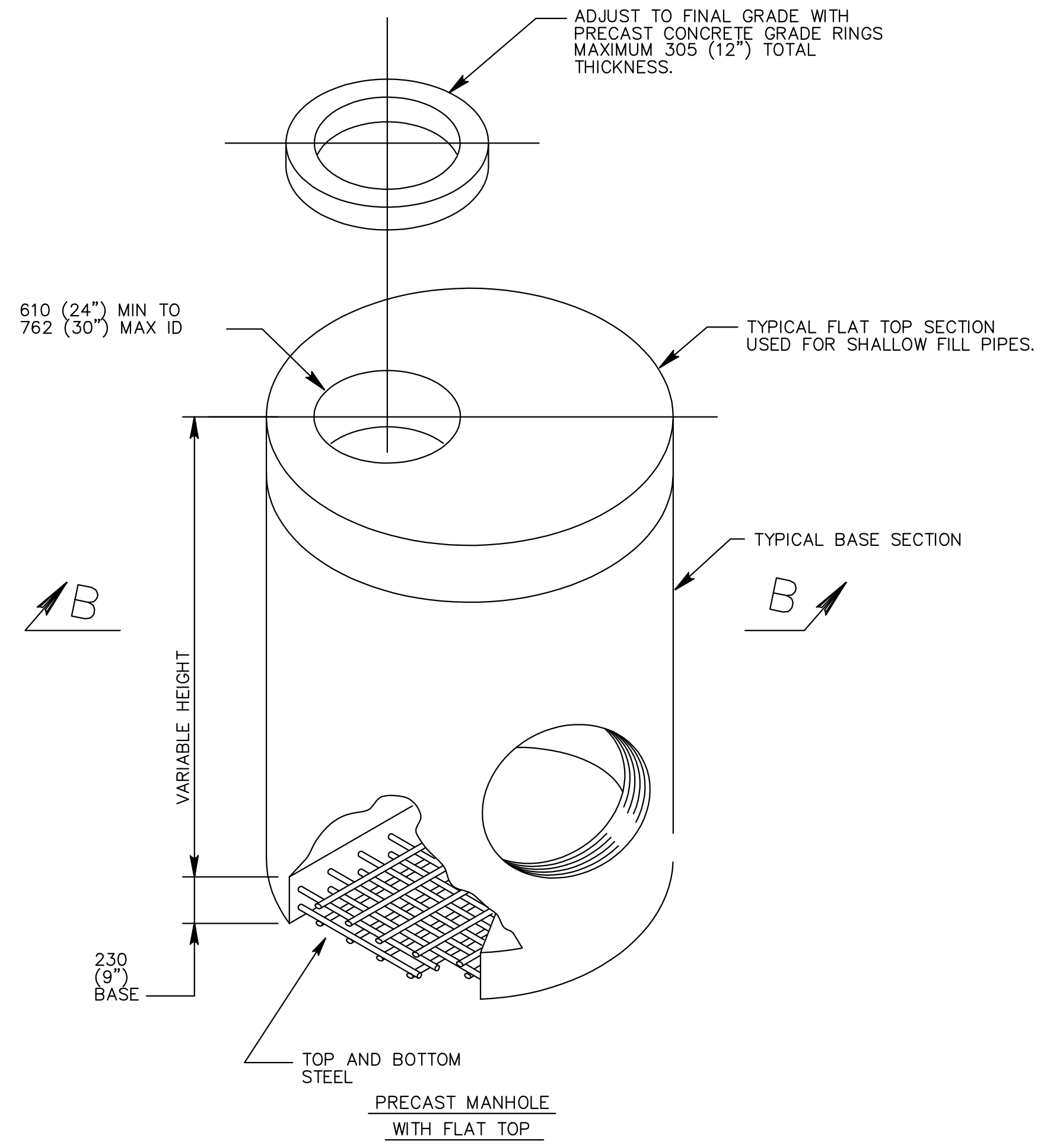
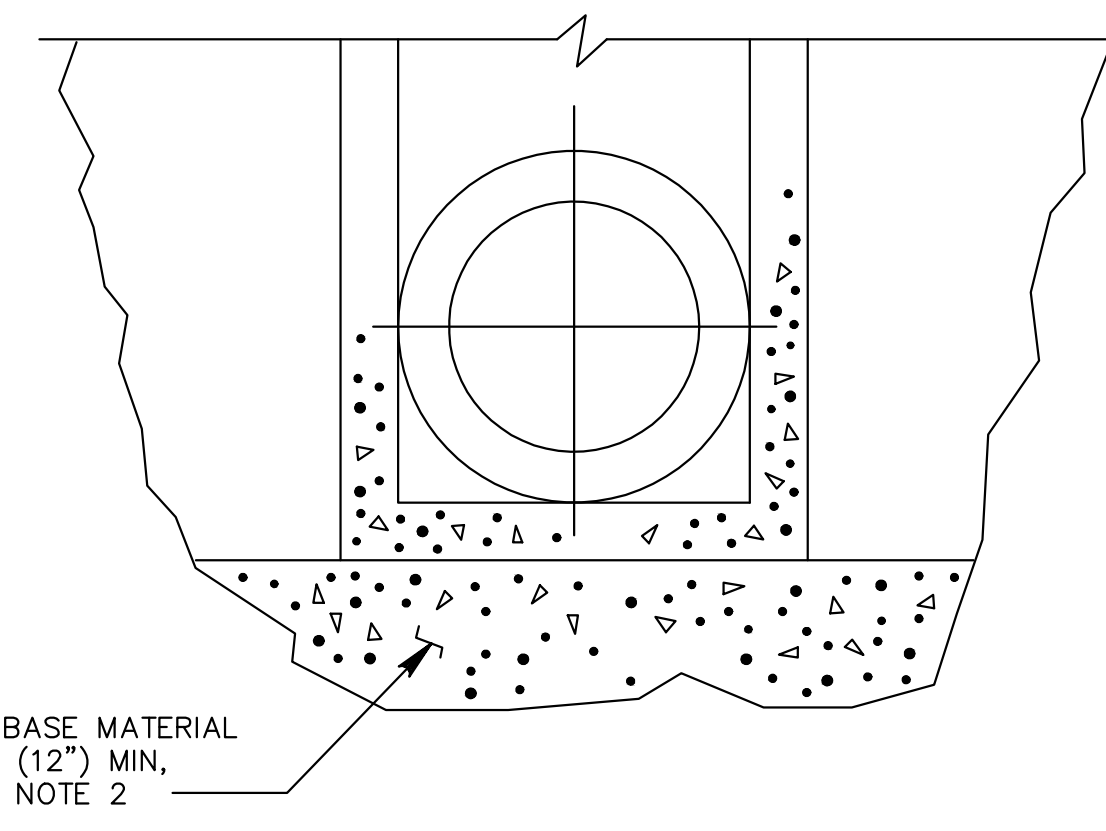
TYPE M INLET
NOT TO SCALE



SECTION B-B



PRECAST MANHOLE
BASE PREPARATION



- NOTES
1. PRECAST MANHOLES MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 714, MAY BE SUBSTITUTED FOR THE STANDARD CAST-IN-PLACE MANHOLE. FOR DEVIATION OR MODIFICATION OF THE STANDARDS, SUBMIT SHOP DRAWINGS FOR APPROVAL.
 2. PLACE SUBBASE MATERIAL MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 350.2, IN LAYERS 100 (4") THICK, COMPACTED TO A DENSITY SATISFACTORY TO THE ENGINEER AND INCIDENTAL TO THE MANHOLE PAY ITEM.

6 OF 11

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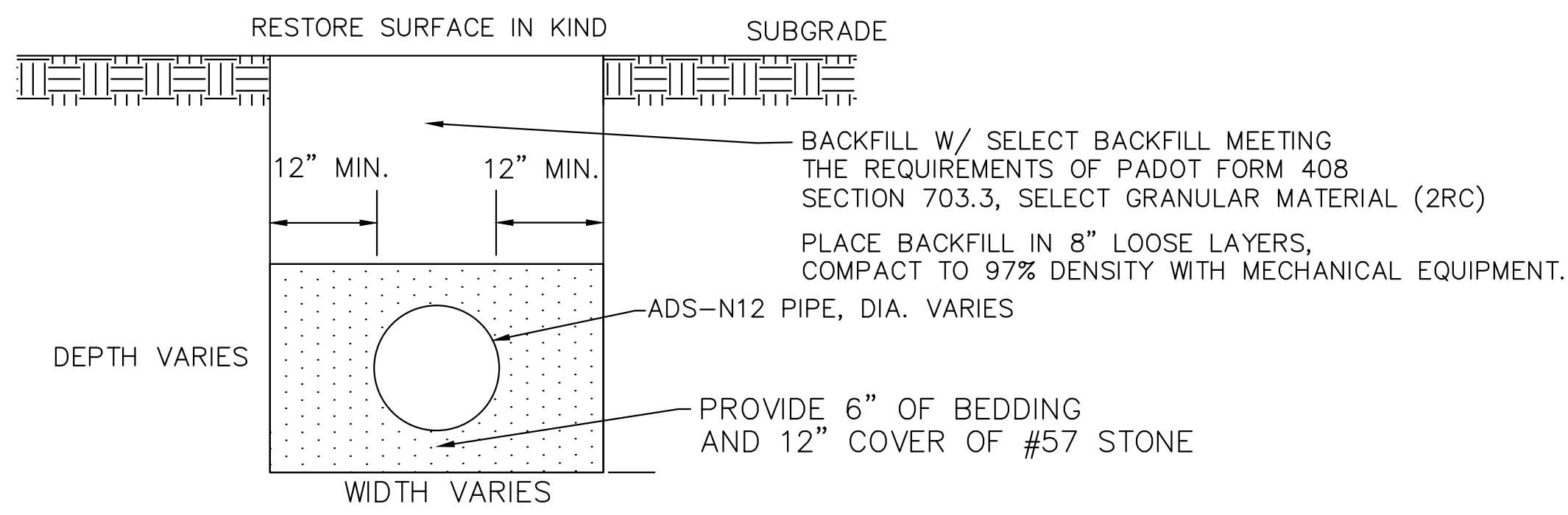
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MARK	DATE	DESCRIPTION	BY
1	4/22/16	REVISED PER EXISTING SURVEY	GZ
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3	7/01/16	REVISED PER LTL LETTER (6/7/16)	GZ
4	10/18/16	REVISED PER PA DEP REVIEW	GZ

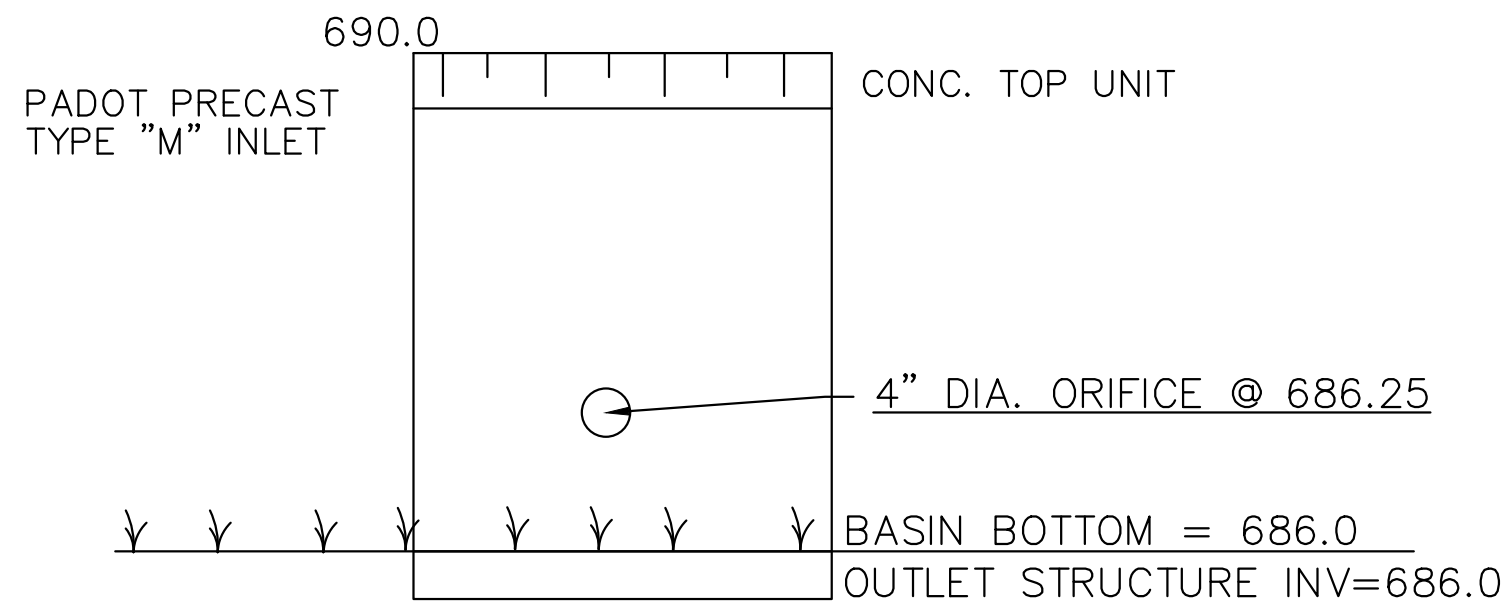
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E&S PLAN - PIPE PROFILES

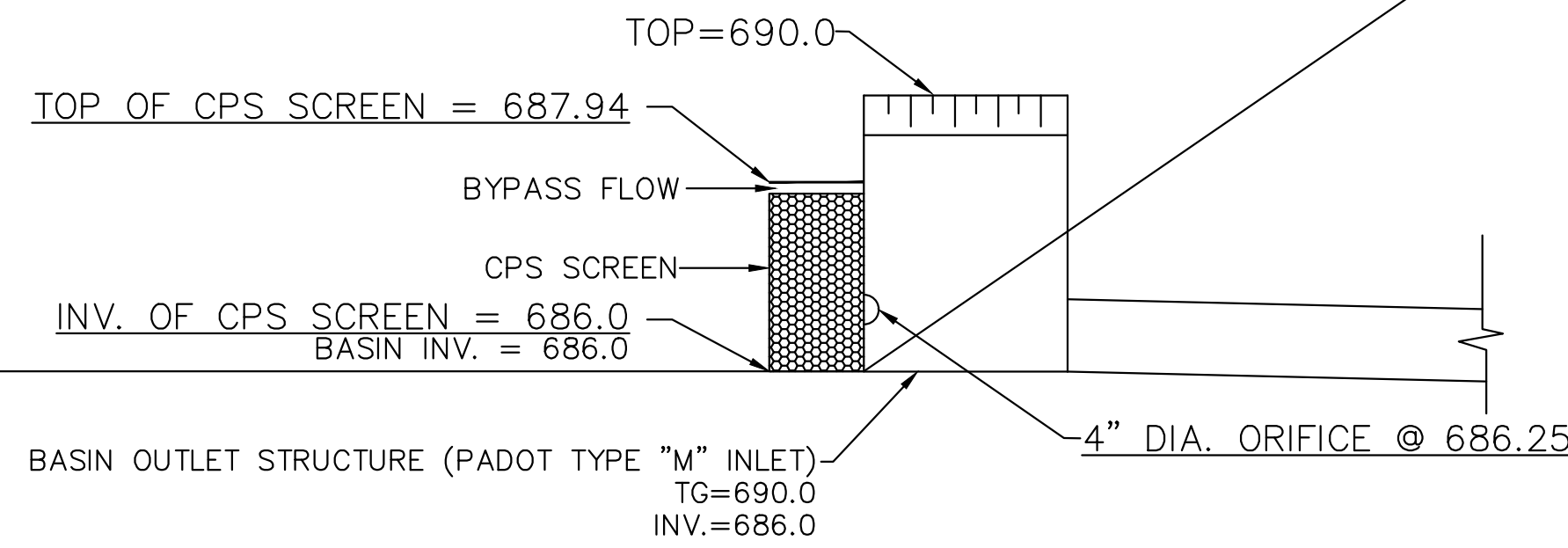
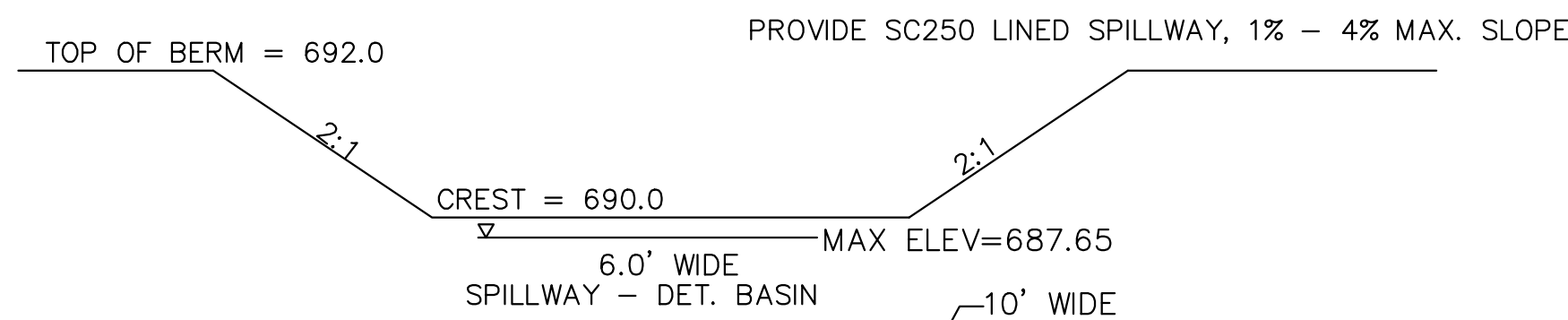
DATE: 03/11/16
PROJECT NO.: 2121C-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: AS NOTED
FILE: BASEPLAN
NAME: CONSTDET6
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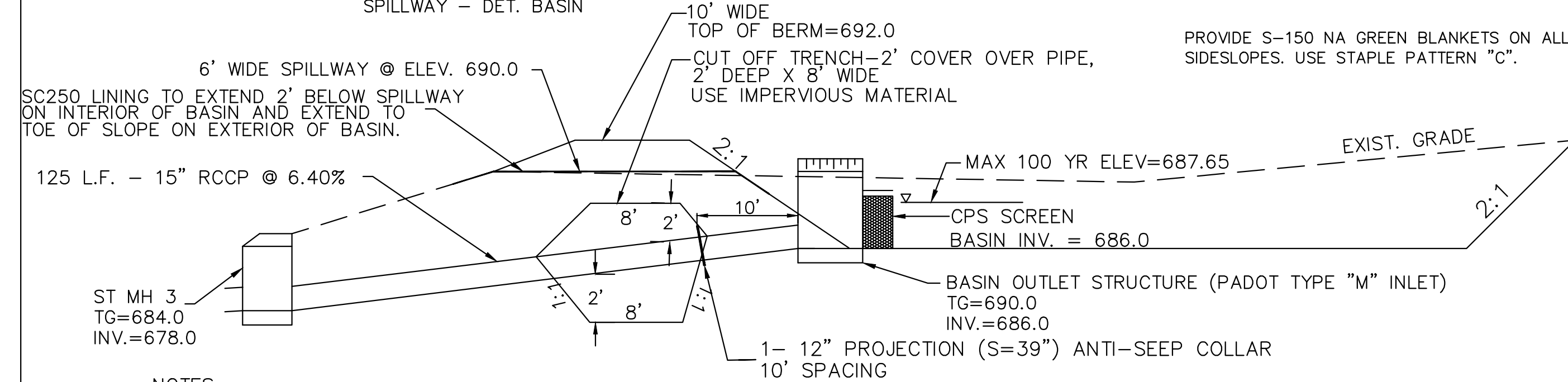
TYPICAL STORM SEWER TRENCH
(ON PRIVATE PROPERTY)
NO SCALE



BASIN OUTLET STRUCTURE
NO SCALE



PROVIDE S-150 NA GREEN BLANKETS ON ALL BASIN SIDESLOPES. USE STAPLE PATTERN "C".



NOTES:

- 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.
- Maintenance is necessary to ensure proper functionality of the detention 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 (forebay) 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.
- 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.
- 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.
- 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.

- Catch Basins and Inlets (upgradient of basin) should be inspected and cleaned at least two times per year and after major runoff events.
- Vehicles should not be parked or driven on a Basin, and care should be taken to avoid excessive compaction by mowers.
- 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.
- 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.
- Remove accumulated sediment from basin as required. Properly dispose of sediment.

SECTION THRU DETENTION/INFILTRATION BASIN #2
NO SCALE



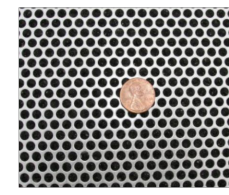
Connector Pipe Screen
Stormwater filtering technology

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



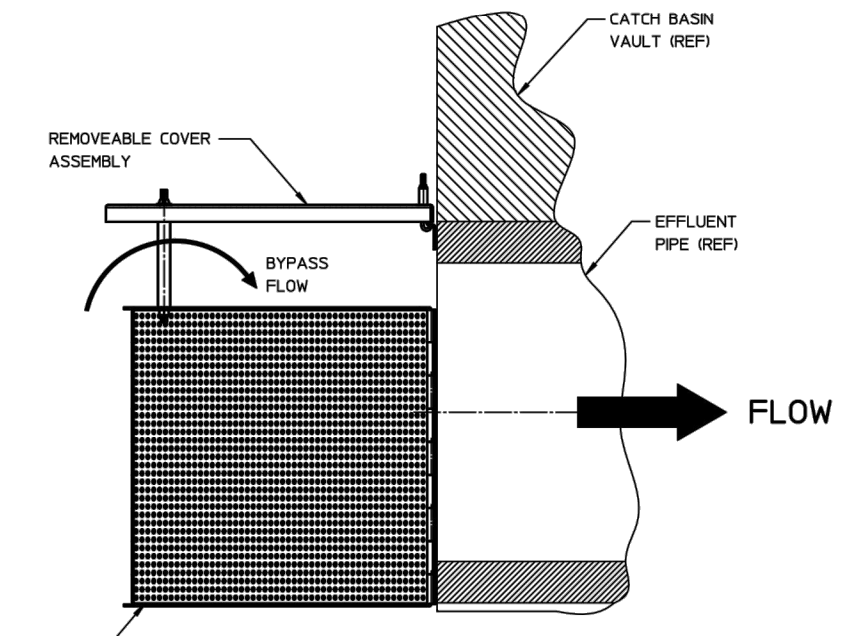
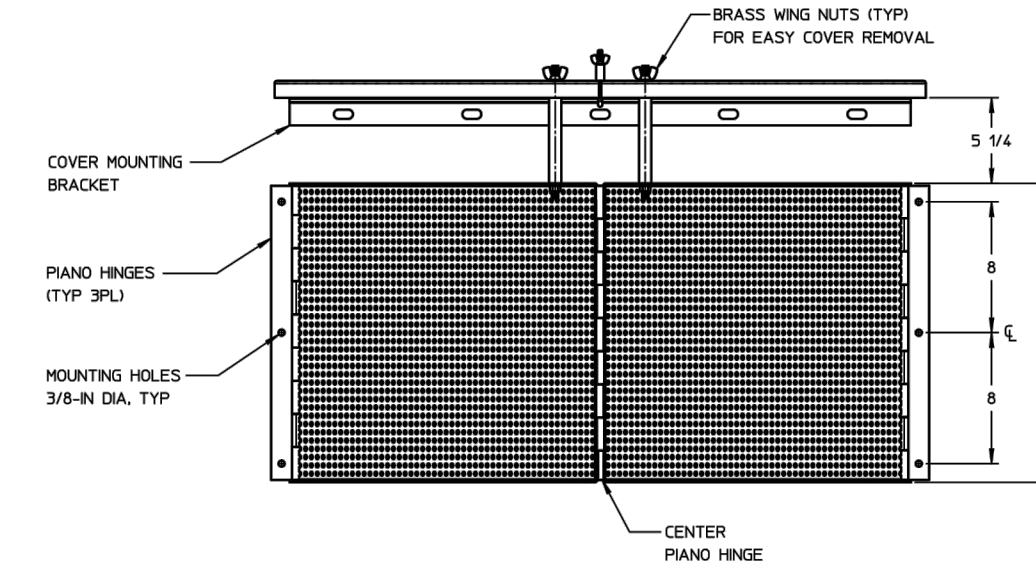
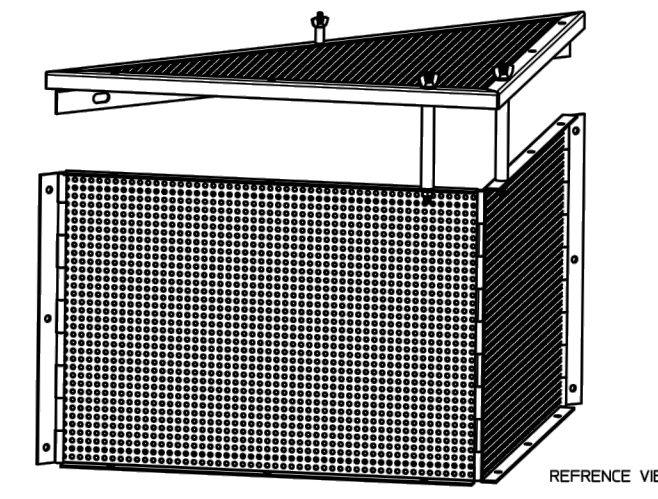
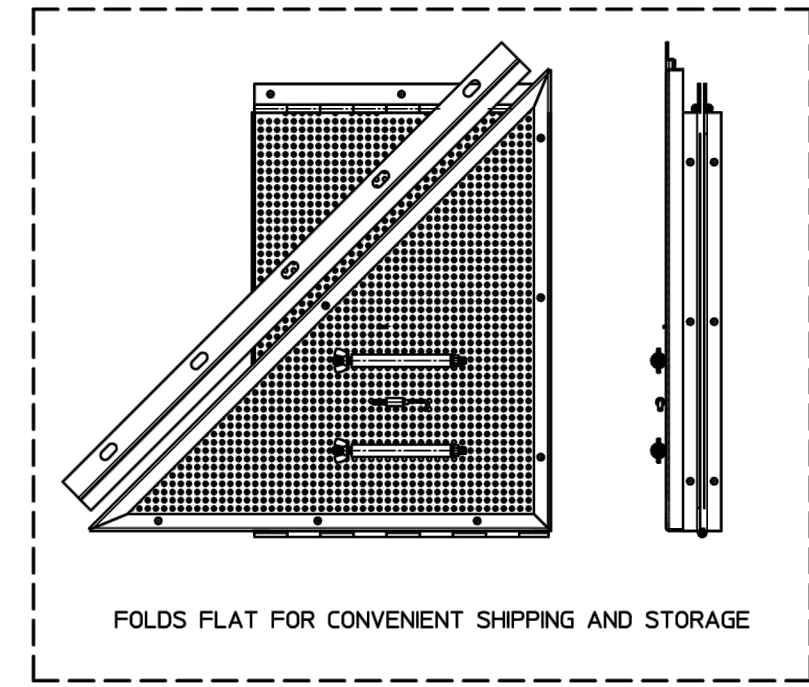
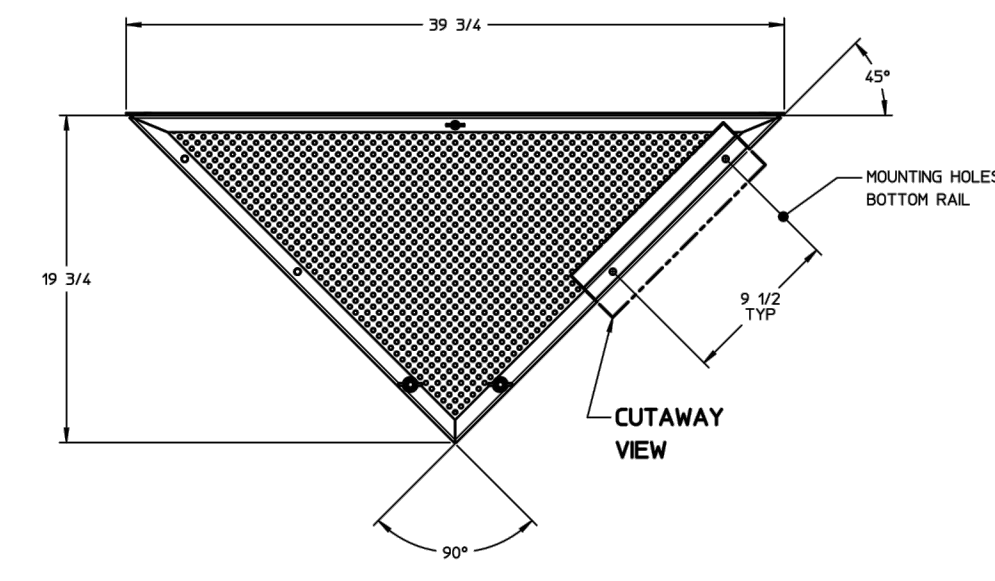
The CPS is manufactured to cover a specific pipe diameter - its size does not depend on the size of the catchbasin drain. The CPS is a compact, affordable product that is easy to install and adaptable over a wide range of catchbasin sizes and styles. The design utilizes very little space, maximizes the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

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NOTES:

- WEIGHT: 35-LEBS
- MATERIAL:
 - PERFORATED PLATE: 14-GA STAINLESS STEEL 5mm HOLES
 - FRAME ASSEMBLY: WELDED 300 SERIES STAINLESS STEEL
 - HINGES: 300 SERIES STAINLESS STEEL PIANO HINGE, WELDED TO FRAME AND PLATE
 - HARDWARE: COVER SUPPORT: 3/8"-6 THREADED ROD W/ BRASS WING NUTS AND WEDGE SPACERS; CONCRETE STRIKE ANCHORS; ZINC PLATED CRS
- PERFORMANCE CHARACTERISTICS:
 - FLOW RATE PERFORATED PLATES: 5520 GPM (12.3 CFS)
 - BYPASS FLOW RATE: 1900 GPM (4.2 CFS)
 - PARTICLE SIZE RETENTION: $100\mu\text{m}$ (40-mesh)
- INSTALLATION: LOCATE AND MOUNT THE CPS BASE SCREEN TO THE CATCH BASIN WALL AND FLOOR JUST IN FRONT OF THE EFFLUENT PIPE USING THE CONCRETE STRIKE ANCHORS PROVIDED. THE THREE (3) PIANO HINGES ALLOW GREATER FLEXIBILITY FOR IRREGULAR CATCH BASIN SURFACES. ATTACH THE COVER MOUNTING BRACKET ABOVE THE BASE SCREEN AS SHOWN. THEN USING THE SPACER HARDWARE, CONNECT THE REMOVABLE COVER ASSEMBLY.
- CPS CONFIGURATIONS FOR LARGER, SMALLER, CORNER AND RAISED EFFLUENT PIPES ARE ALSO AVAILABLE.



NO.	REV.	DATE	DESCRIPTION	BY	CHKD.
1			ISSUED FOR PERMITS		
2			REVISED PER LTL LETTER (4/20/16)		
3			REVISED PER LTL LETTER (6/7/16)		
4			REVISED PER PA DEP REVIEW		

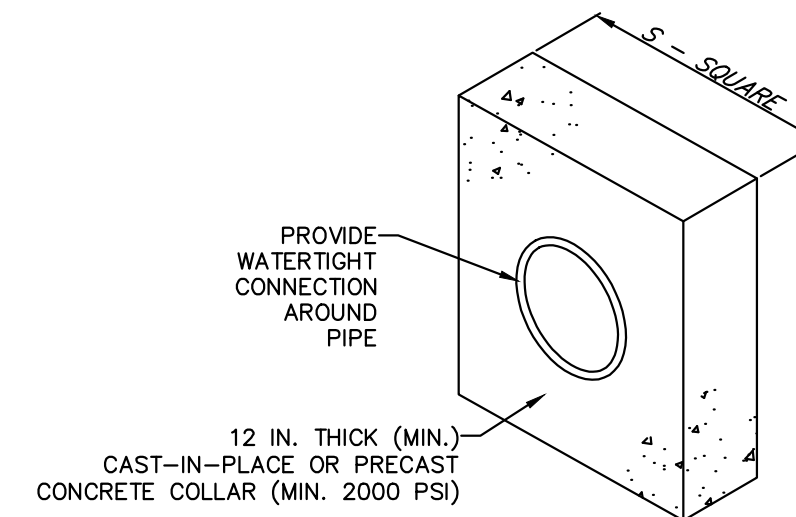
ASSEMBLY

FABCO INDUSTRIES, INC.
66 CENTRAL AVENUE
FARMINGDALE, NY 11735

CPS DEVICE ASSEMBLY, 18"

D.J. SPARK 10020-3-000

SCALE: 1/8" = 1'-0"

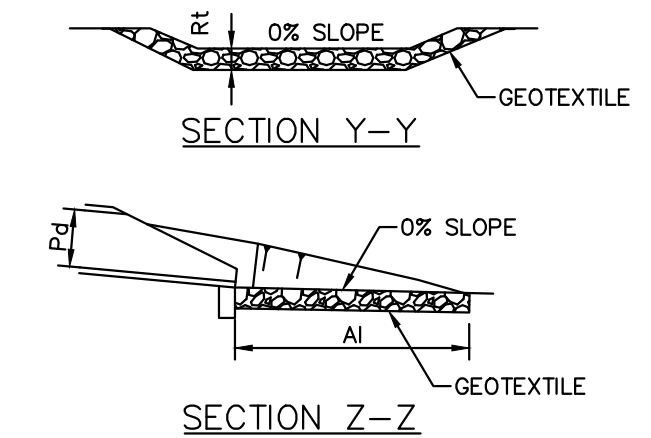
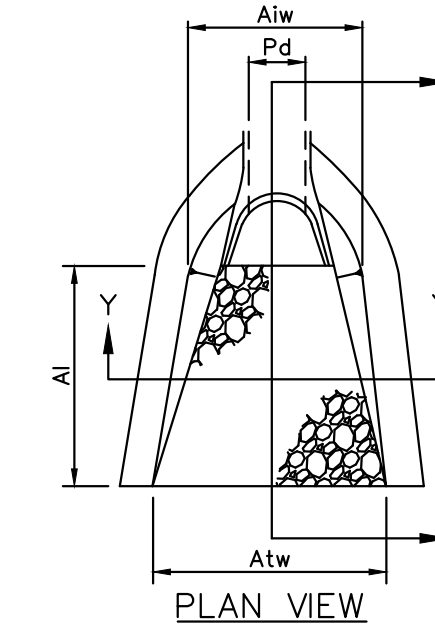


BASIN OR TRAP NO.	PIPE SIZE (IN)	S (IN)	NO. OF COLLARS	RISER TO FIRST COLLAR (FT)	COLLAR SPACING (FT)
1	15	39	1	10	N/A

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
NOT TO SCALE



OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP SIZE R- (IN)	RIPRAP THICK. Rt (IN)	RIPRAP LENGTH Lt (FT)	INITIAL WIDTH Aiw (FT)	TERMINAL WIDTH Atw (FT)
RRA 1	15	R-4	18	11	4	15
RRA 2	15	R-4	18	11	4	15
EX. RRA	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
NOT TO SCALE

7 OF 11

TETRA TECH

www.tetrattech.com

1134 TWIN STACKS DRIVE
DALLAS, PA 18612
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BRECKNOCK TOWNSHIP, BERKS COUNTY

E&S PLAN - CONSTRUCTION DETAILS

DATE: 03/11/16
PROJECT NO.: 2121C-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: AS NOTED
FILE: BASEPLAN
NAME: CONSTDET7
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STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES

- ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S 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.
- AT LEAST 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 E&S PLAN PREPARER, AND A REPRESENTATIVE FROM THE LOCAL PADEP OR CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
- AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM AT 1-800-242-1776 FOR BURIED UTILITIES LOCATIONS.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION
- CLEARING, GRUBBING, AND TOPSOIL STRIPPED SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPs SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THE E&S PLAN.
- AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
- TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAP(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
- IMMEDIATELY UPON DISCOVERING UNFORSEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
- ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
- UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPs SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPs 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 THE E&S BMPs FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPs, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
- A LOG SHOWING DATES THAT E&S BMPs WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
- SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEEPED INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
- ALL SEDIMENT REMOVED FROM BMPs SHALL BE PLACED WITHIN THE RIGHT-OF-WAY EXCEPT IN WETLAND AREAS OR AS OTHERWISE DESCRIBED IN THE PLAN DRAWINGS.
- AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES - 6 TO 12 INCHES ON COMPACTED SOILS - PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
- E&S BMPs SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE PA DEP OR THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPs.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE PA DEP OR LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.
- UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE CHANNEL SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE CHANNEL SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.
- 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 MOVEMENTS.
- IF EARTH DISTURBANCE ACTIVITIES ARE TO CEASE FOR MORE THAN 4 DAYS, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS. ACCESS AREAS THAT CONTINUE TO BE DISTURBED WILL BE STABILIZED ONCE ACTIVITY IS COMPLETE.
- AT STREAM CROSSINGS, 50' BUFFER AREAS SHOULD BE MAINTAINED. ON BUFFERS, CLEARING, SOD DISTURBANCES, EXCAVATION, AND EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITIES SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGING RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE ACCOMPLISHED OUTSIDE OF BUFFERS.
- MULCH WITH NETTING OR EROSION CONTROL BLANKETS MUST BE INSTALLED ON ALL SLOPES 3:1 AND STEEPER AND WITHIN 100' OF SPECIAL PROTECTION WATERS OR 50' OF SURFACE WATERS.
- THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.

REVEGETATION

A. TEMPORARY GRASS COVER SHALL BE ESTABLISHED IN THE FOLLOWING AREAS:

- WHERE VEGETATIVE FILTERS MUST BE ESTABLISHED BELOW FILTER BAGS, A MINIMUM DISTANCE OF 10 FT SHALL BE SEEDED DOWNSLOPE OF THE TRAP OUTLET. TEMPORARY COVER - SEED MIXTURE FOR TEMPORARY COVER SHALL CONSIST OF 100% ANNUAL RYEGRASS. SEED SHALL BE APPLIED AT THE RATE OF 40 LB/ACRE OR AS RECOMMENDED BY A LOCAL RECOGNIZED SEED SUPPLIER APPROVED BY THE OWNER'S REPRESENTATIVE. PRIOR TO SEEDING, APPLY 1 TON OF AGRICULTURAL GRADE LIMESTONE PER ACRE PLUS 10-10-10 FERTILIZER AT THE RATE OF 500 LB. PER ACRE AND WORK INTO SOIL.

TOPSOIL APPLICATION

Graded areas should be scarified or otherwise loosened to a depth of 3 to 5 inches to permit bonding of the topsoil to the surface areas and to provide a roughened surface to prevent topsoil from sliding down slope. Topsoil should be uniformly distributed across the disturbed area to a depth of 4 to 8 inches minimum (USE 6" MINIMUM DEPTH) 2 inches on fill outslopes. Spreading should be done in such a manner that sodding or seeding can proceed with a minimum of additional preparation or tillage. Irregularities in the surface resulting from topsoil placement should be corrected in order to prevent formation of depressions unless such depressions are part of the PCSM plan. Topsoil should not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet, or in a condition that may otherwise be detrimental to proper grading and seedbed preparation. Compacted soils should be scarified 6 to 12 inches along contour wherever possible prior to seeding.

TABLE 11.4

Recommended Seed Mixtures			
** Mixture Number	Species	Seeding Rate - Pure Live Seed 1	
		Most Sites	Adverse Sites
1	Spring oats (spring), or 64 96	64	96
	Annual ryegrass (spring or fall), or	10	15
	Winter wheat (fall), or	90	120
	Winter rye (fall)	56	112
2	Tall fescue, or 75	60	75
	Fine fescue, or 40	35	40
	Kentucky bluegrass, plus 25 30	25	30
	Redtop4, or	3	3
3	Perennial ryegrass	15	20
	Birdsfoot trefoil, plus 6 10	6	10
4	Tall fescue	30	35
	Birdsfoot trefoil, plus	6	10
	Reed canarygrass	10	15
	Crownvetch, plus	10	15
** 5	Tall fescue, or	20	25
	Perennial ryegrass	20	25
** 6	Crownvetch, plus	10	15
	Annual ryegrass	20	25
** 7	Birdsfoot trefoil, plus	6	10
	Crownvetch, plus	10	15
8	Tall fescue	20	30
	Flatpea, plus	20	30
	Tall fescue, or	20	30
	Perennial ryegrass	20	25
9	Serecia lespedeza, plus	10	20
	Tall fescue, plus	20	25
10	Redtop4	3	3
	Tall fescue, plus	40	60
11	Fine fescue	10	15
	Deertongue, plus	15	20
12	Birdsfoot trefoil	6	10
	Switchgrass, or	15	20
13	Big Bluestem, plus	15	20
	Birdsfoot trefoil	6	10
13	Orchardgrass, or	20	30
	Smooth bromegrass, plus	25	35
	Birdsfoot trefoil	6	10

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

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

TABLE 11.6

Mulch Type	Mulch Application Rates			Notes
	Application Rate (Min.)			
	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

TABLE 11.5

** Recommended Seed Mixtures for Stabilizing Disturbed Areas		
Site Condition	Nurse Crop	Seed Mixture (Select one mixture)
Slopes and Banks (not mowed)	1 plus	3, 5, 8, or 12
	1 plus	3 or 7
Slopes and Banks (mowed)	1 plus	2 or 10
	1 plus	2, 3, or 13
Gullies and Eroded Areas	1 plus	3, 5, 7, or 12
Erosion Control Facilities (BMPs)	1 plus	2, 3, or 4
	1 plus	2, 3, or 4
	1 plus	2 or 3
	1 plus	5 or 7
Highways	1 plus	3 or 13
	1 plus	5 or 6
	1 plus	5, 7, 8, 9, or 10
	1 plus	3 or 7
Utility Right-of-way	1 plus	2, 3, or 10
	1 plus	5, 8, or 12
	1 plus	3 or 7
	1 plus	2, 3, or 13
Effluent Disposal Areas	1 plus	3 or 4
	1 plus	3, 5, 7, 11, or 12
Sanitary Landfills	1 plus	3, 4, 5, 7, 8, 9, 11, or 12
	1 plus	3 or 13
Surface mines	1 plus	3, 4, 5, 7, 8, 9, 11, or 12
	1 plus	3 or 13

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

- For seed mixtures 11 and 12, only use spring oats or weeping lovegrass (included in mix) as nurse crop.
 - Contact the Pennsylvania Department of Transportation district roadside specialist for specific suggestions on treatment techniques and management practices.
 - Seed mixtures containing crown vetch should not be used in areas adjacent to wetlands or stream channels due to the invasive nature of this species.
- ** DO NOT USE CROWNVETCH MIXTURES FOR ANY PLANTING AT THIS SITE.**

TABLE 11.2

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

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland"
NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.

CONSTRUCTION SEQUENCE

- The Contractor shall notify the Berks County Conservation District at least 3 days prior to the start of earthwork. (610-372-4657) 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. At least 7 days before starting any earth disturbance activities, the operator shall invite all contractors involved in those activities, the landowner, all appropriate municipal officials, the E & S Plan Preparer and the Conservation District to an on-site meeting. Upon the 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.
- 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.
- Install 24" and 32" compost filter sock as indicated on plan.
- Install stabilized construction entrance.
- Complete clearing and grubbing of slope, pad area, detention basin and outlet pipe.
- Any materials removed from the site, and not taken to a permitted landfill, will require a separate Erosion Control Plan submittal. Complete all cut and fill of onsite material. 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.
- Install diversion pipe and riprap apron. Install proposed inlets, headwall and storm pipes. Place "Siltsocks" in all type "M" inlets.
- Complete detention/ infiltration basin, outlet pipe and riprap aprons. Stabilize all disturbed areas immediately. PROFESSIONAL OVERSIGHT REQUIRED DURING INFILTRATION BASIN CONSTRUCTION, INCLUDING ANTI-SEEP COLLAR AND BASIN OUTLET STRUCTURE/PIPE.
- Complete pump station NGL piping.
- Complete final seeding and mulching of remaining disturbed areas.
- 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 site reaches 70% stabilization, remove and dispose of any remaining compost filter socks in a legal manner. "Siltsocks" can be removed and reused on future phases/ projects.
- All control facilities will remain in place until final stabilization is complete, SUBJECT TO THE FINAL INSPECTION AND APPROVAL OF THE CONSERVATION DISTRICT. 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.
- 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:
 - 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.
 - 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. The StormBasin filters shall be replaced annually or as recommended by the manufacturer.
 - 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.
 - 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 and until receipt and acknowledgment of the Notice of Termination by the Department or authorized Conservation District. 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.
 - 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, masonry blocks, metal, cardboard, pallets) will be transported to either a landfill or licensed recycling facility. 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.
 - 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.
 - 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.

- TEMPORARY CONTROLS
- Place compost filter sock as indicated.
 - Material imported to the site will be stockpiled in designated areas and surrounded by 12" high compost filter sock.
 - 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.
 - Upon temporary cessation of an earth disturbance or any stage or phase of an activity where a cessation of earth disturbance activities exceed 4 days, the site shall be immediately seeded, mulched or otherwise protected from accelerated erosion and sedimentation pending future earth disturbance activities.
 - Future grass areas should be scarified or otherwise loosened to a depth of 3 inches to 5 inches prior to topsoil placement to permit bonding of the topsoil. Topsoil shall be placed at a minimum of 6" thickness.
 - A stabilized construction entrance will be placed as shown and maintained until the project is complete.
 - Place Siltsocks in all inlets for temporary sediment removal and capture during construction.
 - Place stone subbase over pad and driveway as soon as possible after grading is completed.
 - 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 i.f. 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.
 - North American Green S-150 erosion control blankets will be placed ON ALL DISTURBED AREA SLOPES AT 3H:1V OR STEEPER.

- PERMANENT CONTROLS
- Permanent seeding and mulching specifications are described on plans.
 - Complete seeding and mulching as soon as areas are at grade.
 - Permanent water quality filters (StormBasin) will be installed in both inlets #1 and #2.

- INSPECTION AND MAINTENANCE OF CONTROL FACILITIES
- ALL BMP's are to be inspected AT LEAST ONCE WEEKLY AND AFTER ALL RUNOFF EVENTS.
 - Retained sediment will be utilized for landscaping.
 - All control facilities will remain in place until final stabilization is complete, SUBJECT TO THE FINAL INSPECTION AND APPROVAL OF THE CONSERVATION DISTRICT. 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.
 - 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:
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 - 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. The StormBasin filters shall be replaced annually or as recommended by the manufacturer.
 - 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.
 - 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 and until receipt and acknowledgment of the Notice of Termination by the Department or authorized Conservation District. 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.
 - 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, masonry blocks, metal, cardboard, pallets) will be transported to either a landfill or licensed recycling facility. 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.
 - 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.
 - 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 Muddy Creek, within the Sunoco parcel.

8



TETRA TECH

www.tetrattech.com

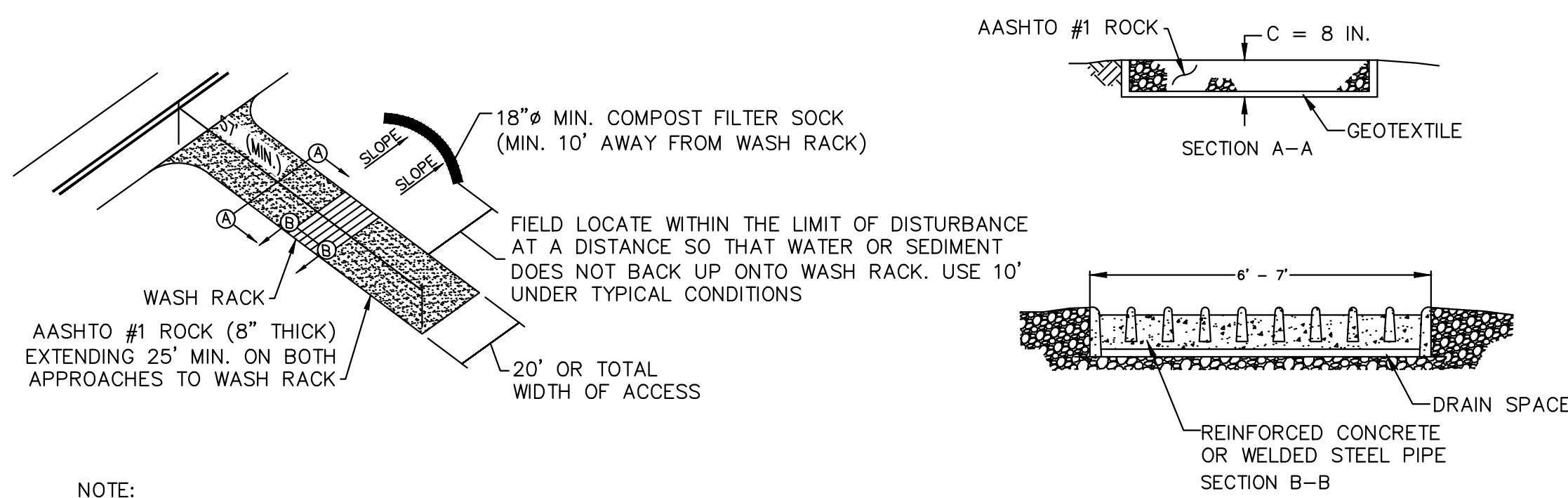
1134 TWIN STACKS DRIVE
DALLAS, PA 18612
T: (570) 674-8648 | F: (570) 674-8651

MARK	DATE	DESCRIPTION	BY
1	4/22/16	REVISED PER EXISTING SURVEY	GZ
2	5/13/16	REVISED PER LTL LETTER (4/20/16)	GZ
3	7/01/16	REVISED PER LTL LETTER (6/7/16)	GZ
4	10/18/16	REVISED PER PA DEP REVIEW	GZ

PPP - BECKERSVILLE PUMP STATION
 BRECKNOCK TOWNSHIP, BERKS COUNTY

E&S PLAN - CONSTRUCTION DETAILS

DATE: 03/11/16
PROJECT NO.: 2121C-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: AS NOTED
FILE: BASEPLAN
NAME: CONSTDET8
COPYRIGHT TETRA TECH INC.



NOTE: WASH RACK ONLY REQUIRED IN HQ OR EV WATERSHED AREAS. TYPICAL ROCK CONSTRUCTION ENTRANCE ACCEPTABLE IN ALL OTHER AREAS. (THIS SITE IS NOT LOCATED WITHIN AN HQ OR EV WATERSHED)

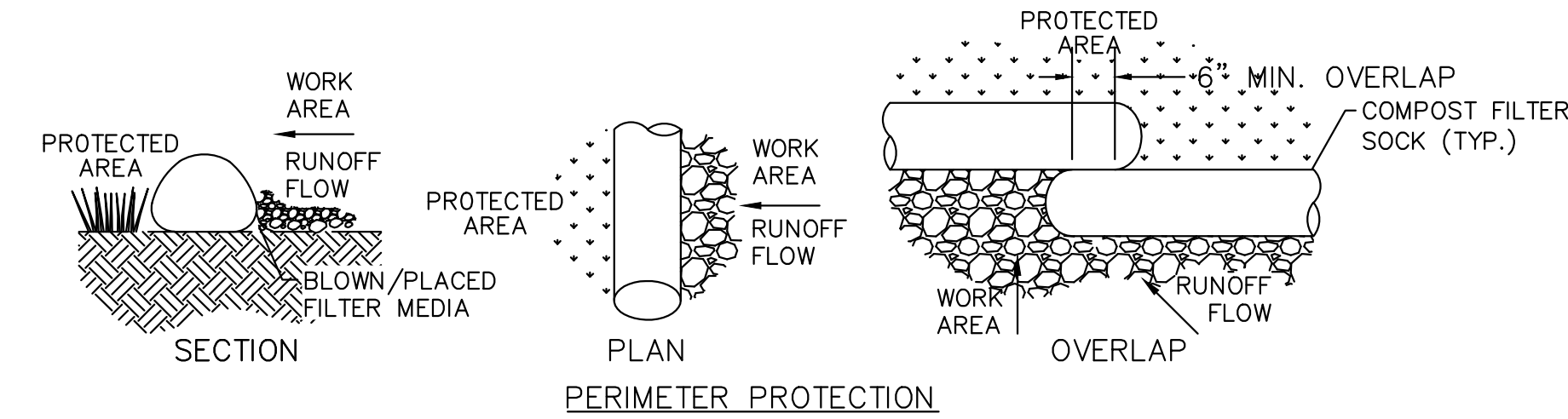
REASONABLE METHODS WHICH ARE SANCTIONED BY THE PADEP AS ALTERNATIVES TO INSTALLATION OF TIRE WASH STATIONS ON PUBLIC ROAD ACCESS POINTS FOR GATHERING PIPELINE PROJECTS IN EV/HQ WATERSHEDS INCLUDE:

1. FOR PAVED SURFACE PUBLIC ROADS: USE OF A VACUUM TRUCK SWEEPER OR SWEEPER WITH A CATCH BIN ATTACHMENT.
2. FOR DIRT OR GRAVEL SURFACE PUBLIC ROADS: RIGOROUS MANUAL REMOVAL OF MUD/DIRT FROM VEHICLE/EQUIPMENT TIRES PRIOR TO EXITING CONSTRUCTION SITE, SUPPLEMENTED BY IMMEDIATE RECOVER, BY MANUAL OR MECHANICAL MEANS, OF SOIL WHICH MAY BECOME DISCHARGED ONTO PUBLIC ROADWAYS. DUST CONTROL AND/OR COMPACTION VIA ROLLING OF THE DIRT PUBLIC ROAD SURFACE WILL BE IMPLEMENTED AS NEEDED.

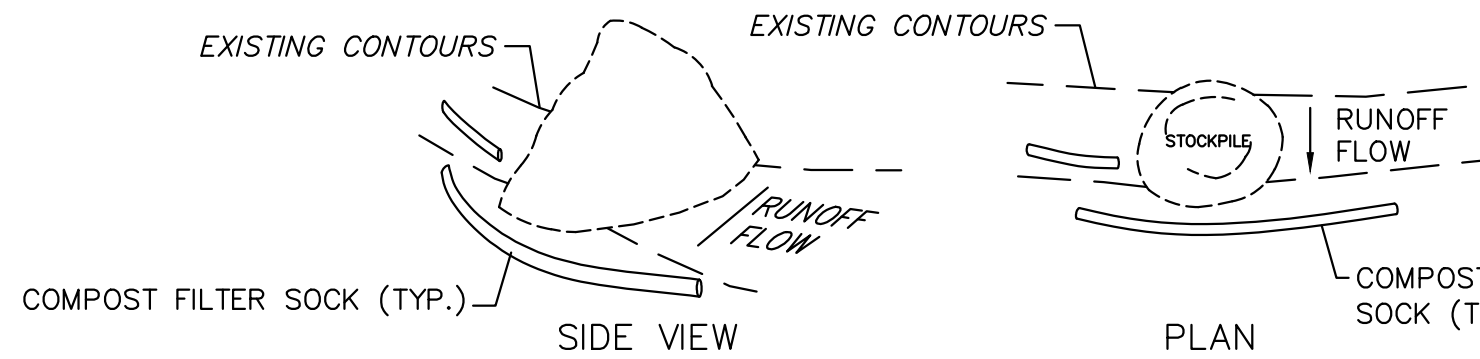
A PREDICATE FOR UTILIZING ALTERNATIVE 1 AND 2 ABOVE IS THAT THE ROCK PAD CONSTRUCTION ENTRANCE MUST BE EXTENDED TO A MINIMUM TOTAL LENGTH OF 100 FEET AND MUST BE CONSTANTLY MAINTAINED INCLUDING STRUCTURE THICKNESS TO INSURE ITS EFFECTIVENESS REMAINS INTACT AT ALL TIMES.

FREQUENCY OF MECHANICAL AND/OR MANUAL CONTROLS WILL BE DEPENDENT UPON CONSTRUCTION TRAFFIC INTENSITY, WEATHER AND SOIL MOISTURE CONDITIONS. AT A MINIMUM FOR PAVED ROADS - ANY DAY IN WHICH CONSTRUCTION TRAFFIC IS EXITING THE ROCK CONSTRUCTION ENTRANCE, THE VACUUM TRUCK SWEEPER OR SWEEPER WITH A CATCH BIN ATTACHMENT SHALL CLEAN THE ROADWAY AT THE END OF THE WORK DAY AND PRIOR TO ANY FORECASTED RAIN EVENT. THE REQUIREMENT IS TO NOT INTRODUCE SEDIMENT LOAD FROM CONSTRUCTION TRAFFIC ONTO PUBLIC ROAD SURFACES AND INTO ROAD DITCHES WHICH WILL FLOW INTO THE EV/HQ WATER RESOURCES WHICH ARE THE SUBJECT OF THE INCREASED PROTECTION MEASURES.

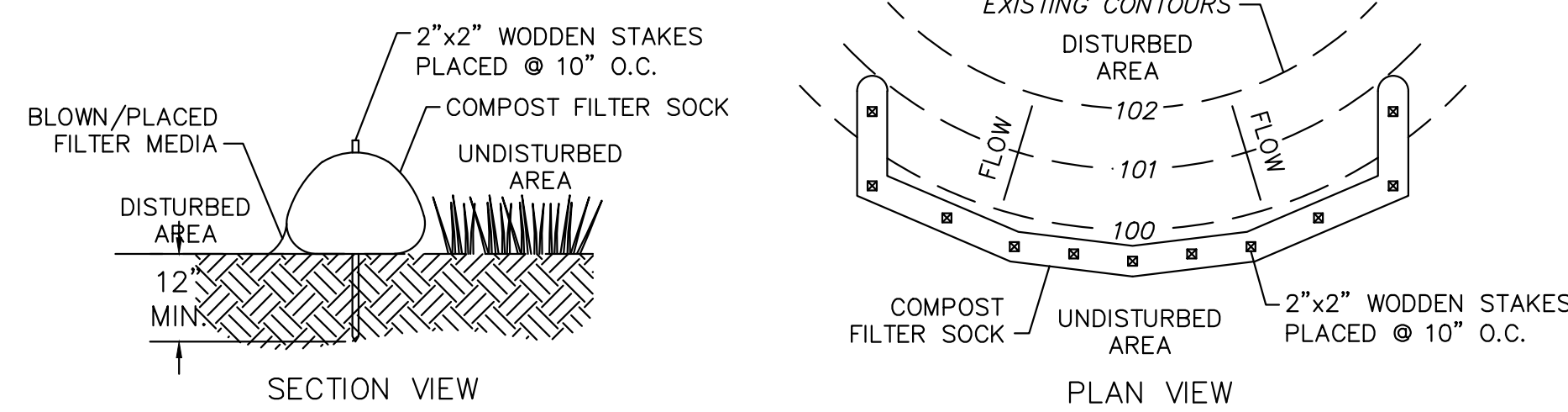
AASHTO #1 ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE



PERIMETER PROTECTION



STOCKPILE CONTAINMENT



COMPOST STANDARDS

ORGANIC MATTER CONTENT	80%-100% (DRY WEIGHT BASIS)
ORGANIC	FIBROUS & ELONGATED
pH	5.5-8.0
MOISTURE CONTENT	35%-55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS/m MAXIMUM

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. MAXIMUM SLOPE LENGTH ABOVE SOCK SHALL NOT EXCEED THAT SHOWN ON FIGURE 4.2 IN ATTACHMENT 3.

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 A SOIL SUPPLEMENT.

MAXIMUM SLOPE LENGTHS FOR COMPOST FILTER SOCK

% SLOPE	12" DIAMETER	18" DIAMETER	24" DIAMETER	32" DIAMETER
2 (OR LESS)	520	700	1000	1300
5	250	350	500	650
10	150	250	300	400
15	100	190	250	350
20	70	140	200	250
25	50	90	150	180
30	40	70	100	125
35	35	60	90	100
40	30	50	70	90
45	25	40	60	70
50	20	30	50	60

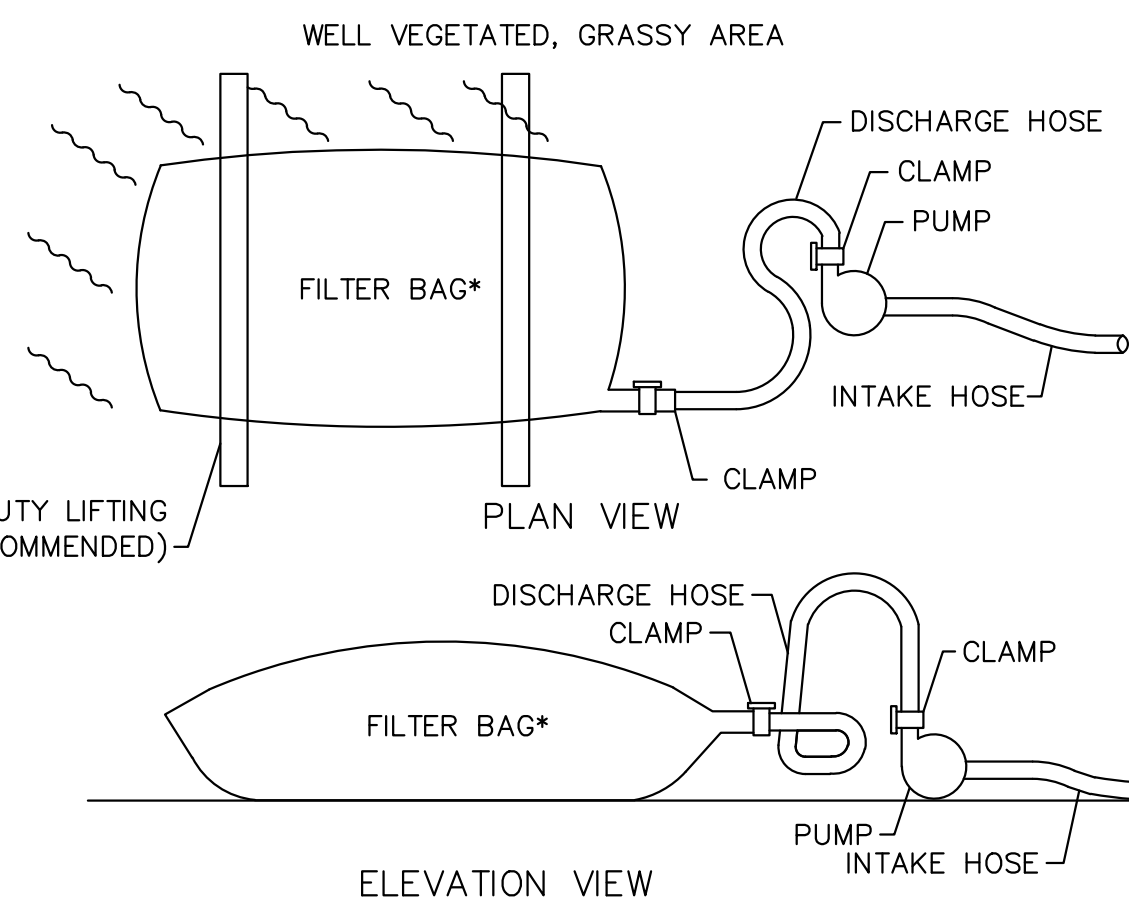
COMPOST FILTER SOCK
NOT TO SCALE

NOTES:

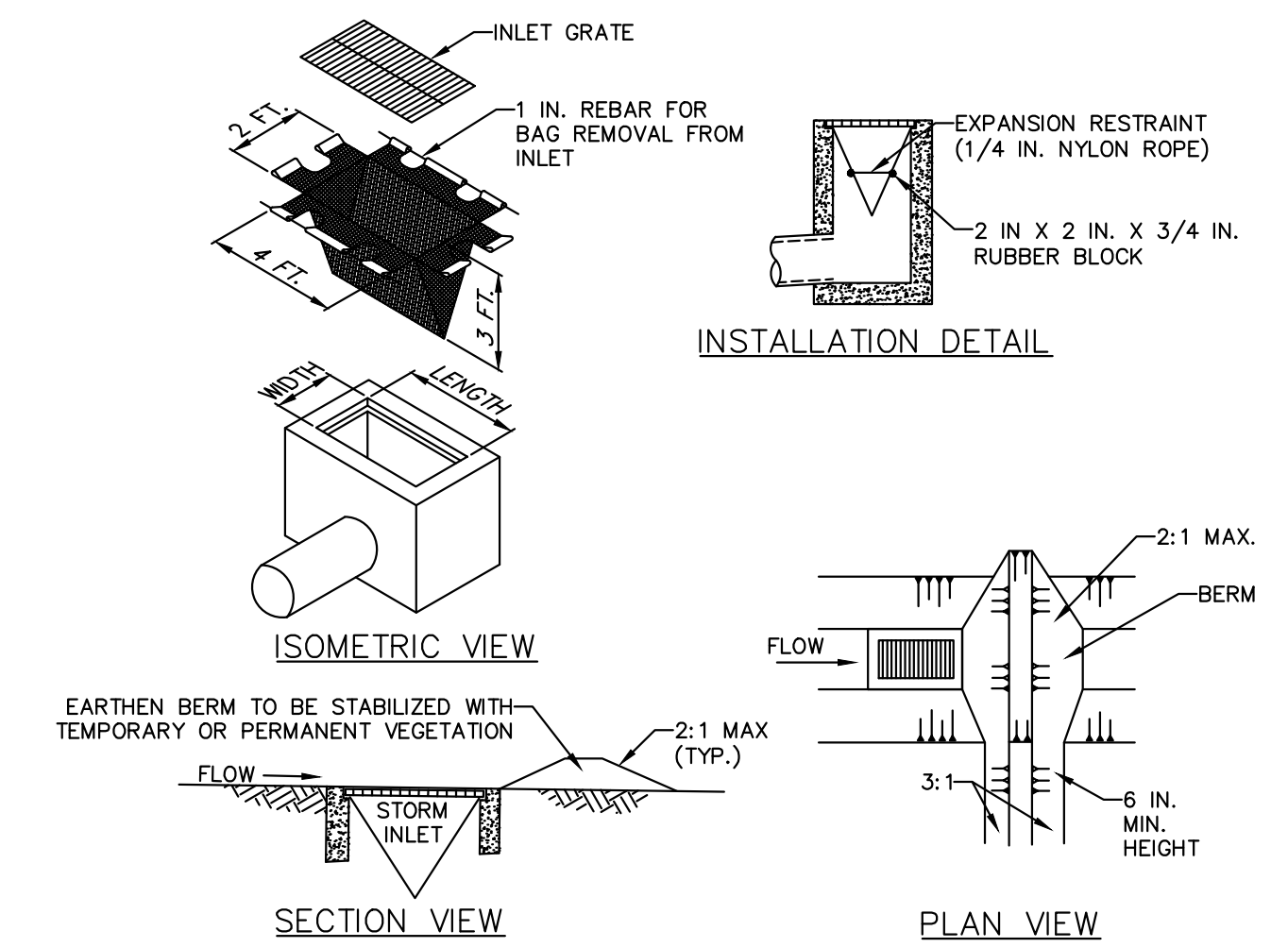
1. LOW VOLUME FILTER BAGS SHALL BE MADE OF NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE-STITCHED "J" SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS

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

2. SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FULL. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.
3. BAGS SHALL BE LOCATED IN WELL VEGETATED (GRASSY) AREAS, AND DISCHARGE INTO STABLE, EROSION RESISTANT AREAS, WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER SLOPE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.
4. NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.
5. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED.
6. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.
7. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.



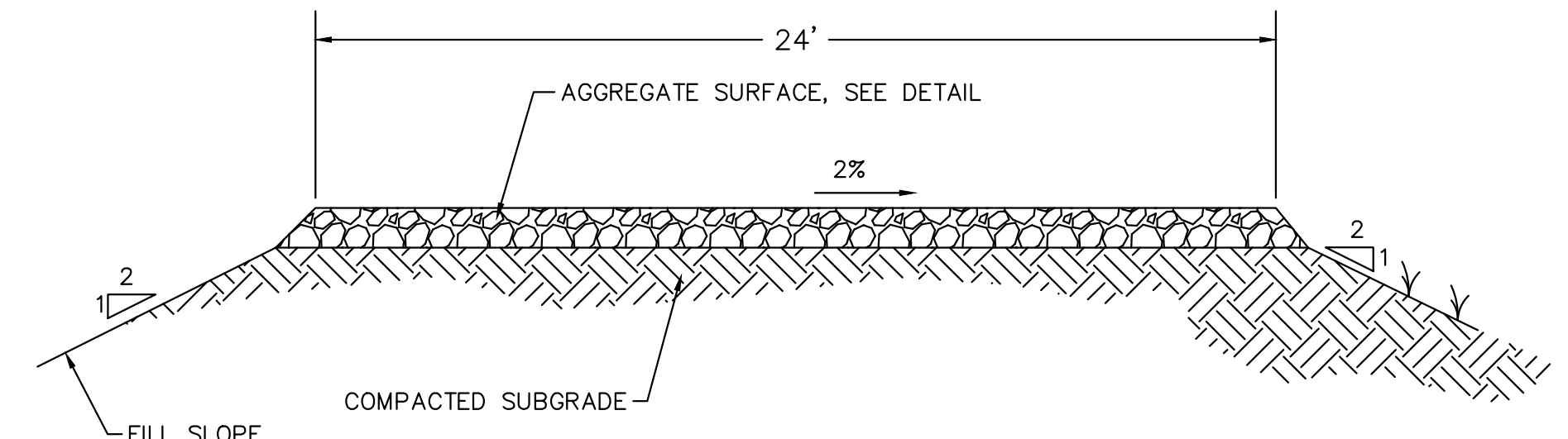
PUMPED WATER FILTER BAG
NOT TO SCALE



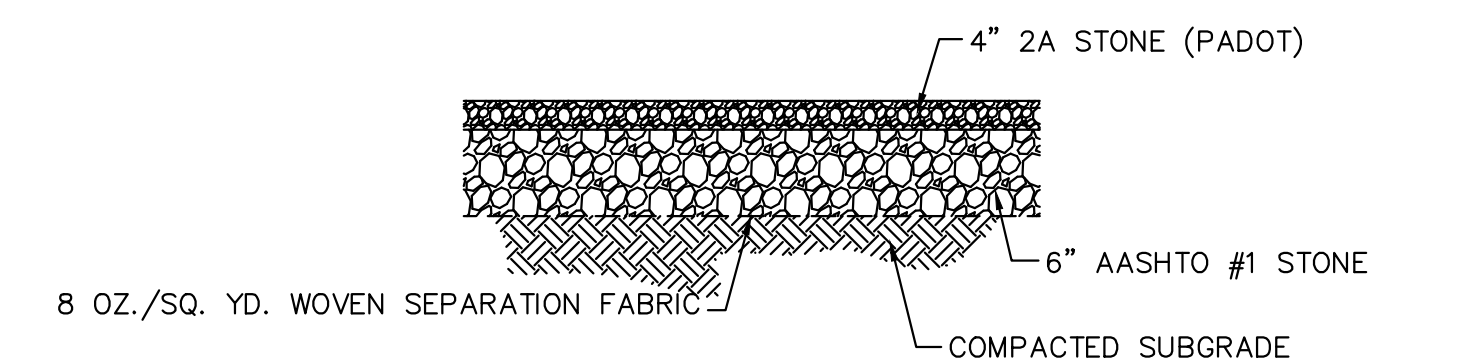
STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET
NOT TO SCALE

NOTES:
MAXIMUM DRAINAGE AREA = 1/2 ACRE.
INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET
NOT TO SCALE



24' WIDE AGGREGATE ACCESS ROAD DETAIL
NOT TO SCALE

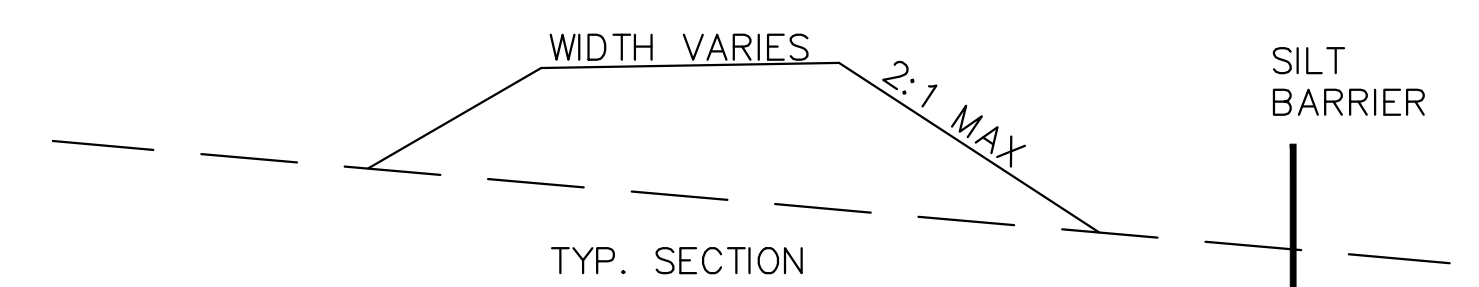


AGGREGATE SURFACE FOR PUMP STA. PAD & ACCESS ROAD
NOT TO SCALE

TOPSOIL STOCKPILE INSTALLATION:

1. INSTALL SILT BARRIER AS SHOWN.
2. CLEAR TREES, IF NECESSARY.
3. PLACE STRIPPED TOPSOIL IN LAYERS, COMPACT WITH DOZER TRACKS DURING SPREADING.
4. SLOPES SHOULD NOT EXCEED 2H:1V.
5. STOCKPILE HEIGHTS SHALL NOT EXCEED 35'.
6. DO NOT PLACE STOCKPILES WITHIN 50' OF STREAMS

PROVIDE TEMPORARY SEEDING OF ALL TOPSOIL STOCKPILES



NOTES:

1. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
2. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
4. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE PROJECT LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
5. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

EROSION CONTROL BLANKET - SLOPE INSTALLATION
NOT TO SCALE

9 OF 11

TETRA TECH
www.tetrattech.com
1134 TWIN STACKS DRIVE
DALLAS, PA 18612
T: (570) 674-8648 | F: (570) 674-8651

MARK	DATE	DESCRIPTION	BY
1	4/22/16	REVISED PER EXISTING SURVEY	GZ
2	5/13/16	REVISED PER LTL LETTER (4/20/16)	GZ
3	7/01/16	REVISED PER LTL LETTER (6/7/16)	GZ
4	10/18/16	REVISED PER PA DEP REVIEW	GZ

PPP - BECKERSVILLE PUMP STATION
BRECKNOCK TOWNSHIP, BERKS COUNTY

E&S PLAN - CONSTRUCTION DETAILS

DATE: 03/11/16
PROJECT NO.: 2121C-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: AS NOTED
FILE: BASEPLAN
NAME: CONSTDET9
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BERKS COUNTY CD STANDARD E&S PLAN NOTES

1. A copy of the approved drawings (stamped signed and dated by the reviewing agency) must be available at the project site at all times.
2. Before implementing any revisions to the approved erosion and sediment control plan or revisions to other plans which may affect the effectiveness of the approved E&S control plan, the operator must receive approval of the revisions from the Berks County Conservation District.
3. Clearing, grubbing, and topsoil stripping shall be limited to those areas described in each stage of the construction sequence. General site clearing, grubbing and topsoil stripping may not commence in any stage or phase of the project until the E&S BMPs specified by the Construction Sequence for that stage or phase have been installed and are functioning as described in this document.
4. At no time shall construction vehicles be allowed to enter areas outside the limit of disturbance boundaries shown on the plan maps. These areas must be clearly marked and fenced off before clearing and grubbing operations begin.
5. Immediately upon discovery unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate BMPs to minimize the potential for erosion and sediment pollution and notify the Local Conservation District and/or the regional office of DEP.
6. Sediment basins and/or traps shall be kept free of all construction waste, wash water, and other debris having potential to clog the basin/trap outlet structures and/or pollute the surface waters.
7. All pumping of water from any work area shall be done according to the procedure described in this plan, over undisturbed vegetated areas. Discharge points should be established to provide for maximum distance to active waterways.
8. Until the site is stabilized, all E&S BMPs must be maintained properly. Maintenance must include inspections of all E&S BMPs after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, mulching and renetting must be performed immediately. If E&S BMPs fail to perform as expected, replacement BMPs, or modifications of those installed will be required.
9. A log showing dates that E&S BMPs were inspected as well as any deficiencies found and the date they were corrected shall be maintained on the site and be made available to regulatory agency officials at the time of inspection.
10. Sediment tracked onto any public roadway or sidewalk shall be returned to the construction site by the end of each work day and disposed in the manner described in this plan. In no case shall the sediment be washed, shoveled, or swept into any roadside ditch, storm sewer, or surface water.
11. All excavation for utility line installation shall be limited to the amount that can be excavated, installed, backfilled and stabilized within one working day. All excavated material shall be deposited on the upslope side of the trench.
12. Concrete wash water shall be handled in the manner described on the plan drawings. In no case shall it be allowed to enter any surface waters or groundwater systems.
13. Failure to correctly install E&S BMPs, failure to prevent sediment-laden runoff from leaving the construction site, or failure to take immediate corrective action to resolve failure of E&S BMPs may result in administrative, civil, and/or criminal penalties being instituted by the Pennsylvania Department of Environmental Protection as defined in Section 602 of the Pennsylvania Clean Streams Law. The Clean Streams Law provides for up to \$10,000 per day in civil penalties, up to \$10,000 in summary criminal penalties, and up to \$25,000 in misdemeanor criminal penalties for each violation.

CHANNEL NOTES

1. All channels shall be kept free of obstructions including but not limited to fill, rocks, leaves, woody debris, accumulated sediment, excess vegetation, and construction material/wastes.
2. Underground utilities cutting through any active channel shall be immediately backfilled and the channel restored to its original cross-section and protective lining. Any base flow within the channel shall be conveyed past the work area in the manner described in this plan until such restoration is complete.
3. Channels having Riprap, Reno Mattress, or Gabion linings must be sufficiently over-excavated so that the design dimensions will be provided after placement of the protective lining.

NPDES Permit Notes

1. Permittee's requesting a renewal of coverage under General Permit must submit to the Berks County Conservation District an administratively complete and acceptable NOI, at least 90 days prior to the expiration date of the coverage.
2. Permittee's requesting a renewal of coverage under Individual Permit must submit to the Berks County Conservation District an administratively complete and acceptable NOI, at least 180 days prior to the expiration date of the coverage.
3. All earthmoving contractors must be added as Co-Permittees to the NPDES Permit.
4. Site inspections and monitoring reports - the Permittee and Co-Permittee(s) shall comply with all of the monitoring and reporting requirements, as outlined in Part A 2 of the NPDES Permit. The Permittee and Co-Permittee(s) shall ensure that site inspections are conducted at least weekly and after each measureable precipitation event by qualified personnel. A written report shall be kept for each inspection in accordance with the requirements of Part A.2.a. The DEP "Visual Inspection Checklist" should be completed for each inspection and should be available on-site for inspection by DEP or County Conservation District personnel.
5. After all earthmoving activity has ceased and the entire permitted area is permanently stabilized, the permittee must a Notice of Termination to Berks County Conservation District to close out the Permit. Allowing the NPDES Permit to expire is determined to be a violation of the NPDES Permit.

MATERIAL NOTES

1. All building materials and wastes must be removed from the site and recycled or disposed of in accordance with the Department's Solid Waste Management Regulations at 25 Pa. Code Chapter 260, 260.1 et seq., 271.1, and 287.1 et. seq. No building materials or wastes or unused building materials shall be burned, buried, dumped, or discharged at the site.
2. All off-site waste and borrow areas must have an E&S Plan approved by the Local Conservation District or DEP fully implemented prior to being activated.
3. The contractor is responsible for ensuring that any material brought on site is Clean Fill. Form FP-001 must be retained by the property owner for any fill material affected by a spill or release of a regulated substance but qualifying as Clean Fill due to analytical testing. All fills shall be compacted as required to reduce erosion, slippage, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc. shall be compacted in accordance with local requirements or codes.
4. Fill materials shall be free of frozen particles, brush, roots, sod, or other foreign or objectionable materials that would interfere with or prevent construction of satisfactory fills.
5. Frozen materials or soft, mucky, or highly compressible materials shall not be incorporated into fills.
6. Fill shall not be placed on saturated or frozen surfaces.

PROTECTION OF INFILTRATION BMP'S

1. Compaction of the BMP area shall be avoided and minimized during construction.
2. E&S BMP's shall be installed and maintained during and after construction of the infiltration BMP's to prevent sediment from clogging or filling the PCSM BMP or storage facility.
3. To the maximum extent practicable, PCSM BMP's should be constructed after permanent stabilization has been achieved on all contributing drainage areas.

SEQUENCE NOTES (Insert in Applicable Locations)

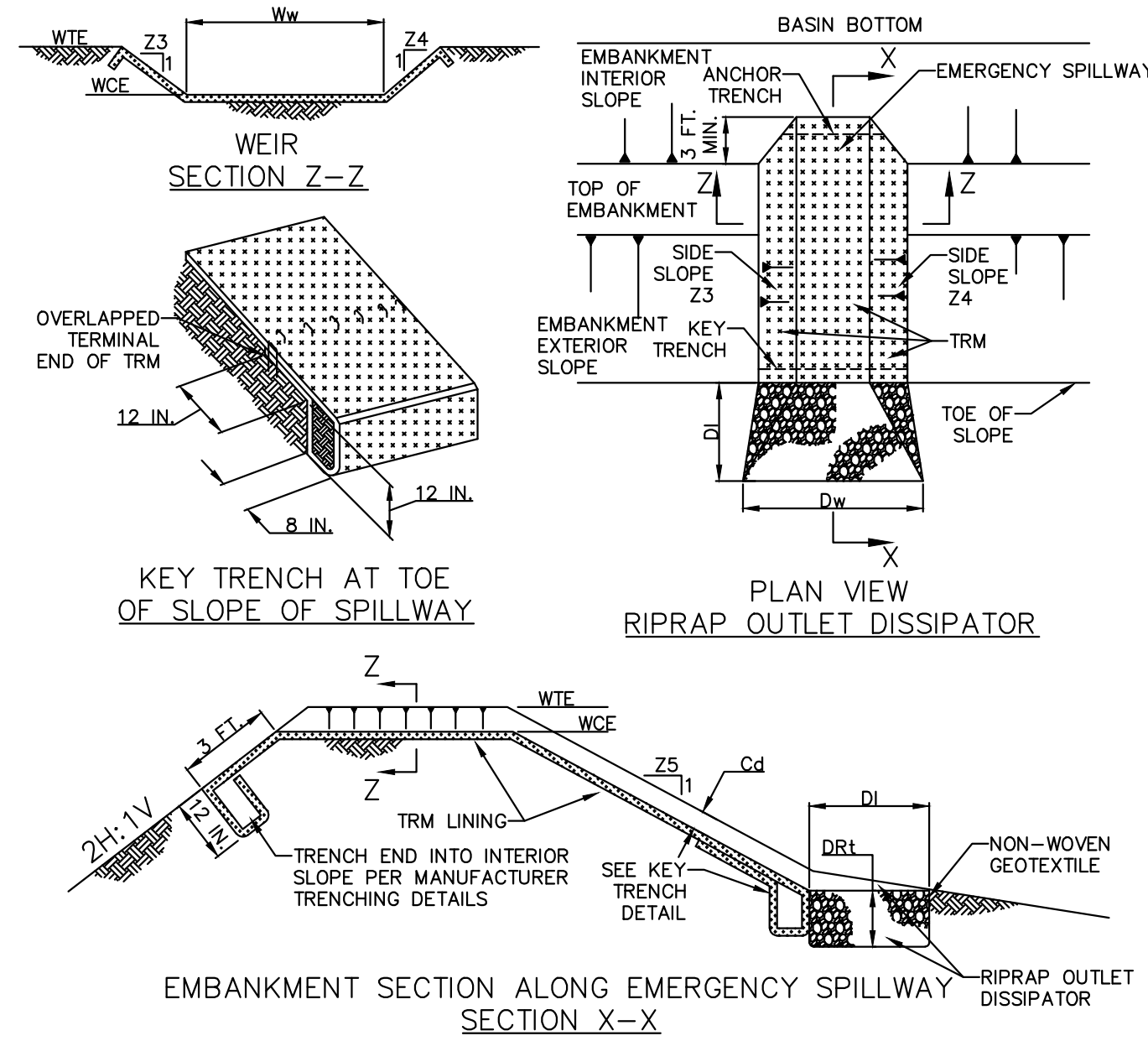
1. At least 7 days prior to starting any earth disturbance activities (including clearing and grubbing), the owner and/or operator shall invite all contractors, the landowner, appropriate municipal officials, the E&S Plan preparer, the post construction stormwater management plan preparer, and a representative from the Local Conservation District to an on-site preconstruction meeting.
2. At least 3 days prior to starting any earth disturbance activities, or expanding into an area previously unmarked, the Pennsylvania One Call System Inc. shall be notified at 1-800-242-1776 for the location of existing underground utilities.
3. All earth disturbance activities shall proceed in accordance with the sequence provided on the plan drawings. Deviation from that sequence must be approved in writing from the Local Conservation District or by DEP prior to implementation.
4. The limits of disturbance (LOD), streams and wetlands should be marked prior to disturbance activities (i.e. survey stakes, posts & rope, construction fence, etc.).
5. Per new NPDES requirements, "Upon the installation or stabilization of all perimeter sediment control BMPs 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"
6. After final site stabilization has been achieved, temporary E&S BMPs must be removed or converted to permanent post construction stormwater management BMPs. Areas disturbed during removal or conversion of the BMPs must be stabilized immediately. In order to ensure rapid revegetation of disturbed areas, such removal/conversions should be done only during the germinating season. Berks County Conservation District should be contacted prior to conversion or removal of primary E&S BMPs and may require a site inspection.
7. Upon completion of all earth disturbance activities and permanent stabilization of all disturbed areas, the owner and/or operator shall contact the Local Conservation District for an inspection prior to removal/conversion of the E&S BMPs.
8. Per new NPDES requirements, "within 30 days after the completion of earth disturbance activities authorized by this permit, including the permanent stabilization of the site and proper installation of PCSM BMPs in accordance with the approved PCSM Plan, or upon submission of the NOT if sooner, the permittee shall file with the department or authorized conservation district a statement signed by a licensed professional and by the permittee certifying that work has been performed in accordance with the terms and conditions of this permit and the approved E&S and PCSM Plans. Completion certificates are needed to ensure that all work is performed in accordance with the terms and conditions of the permit and the approved E&S and PCSM Plans."

STABILIZATION NOTES

1. Stockpile heights must not exceed 35 feet. Stockpile slopes must be 2H:1V or flatter.
2. Areas which are to be topsoiled shall be scarified to a minimum depth of 4 inches prior to placement of topsoil. Areas to be vegetated shall have a minimum 6 inches of topsoil in place prior to seeding and mulching. Fill 3:1 or greater shall have a minimum of 2 inches of topsoil.
3. Upon temporary cessation of an earth disturbance or any stage or phase of an activity where a cessation of earth disturbance activities exceed 4 days, the site shall be immediately seeded, mulched or otherwise protected from accelerated erosion and sedimentation pending future earth disturbance activities.
4. Straw mulch must be applied at rates of at least 3.0 tons per acre. Straw mulch should be anchored immediately after application to prevent being windblown.
5. All graded areas shall be permanently stabilized immediately upon reaching finished grade. Cut slopes in competent bedrock and rock fills need not be vegetated.
6. Erosion control blanketing shall be installed on all slopes 3H:1V or steeper, within 50 feet of a surface water and on all other disturbed areas specified on the plan maps and/or detail sheets.
7. Immediately after earth disturbance activities cease in any area or subarea of the project, the operator shall stabilize all disturbed areas. During non-germinating months, mulch or protective blanketing shall be applied as described in the plan. Areas not at finished grade, which will be reactivated within 1 year, may be stabilized in accordance with the temporary stabilization specifications. Those areas which will not be reactivated within 1 year shall be stabilized in accordance with the permanent stabilization specifications.
8. Permanent stabilization is defined as a minimum uniform, perennial 70% vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated erosion. Cut and fill slopes shall be capable of resisting failure due to slumping, sliding, or other movements.

Recommended Mulching Specifications

1. Mulching shall be provided as required in areas difficult to vegetate, and during off-season operations. Mulching methods and materials shall conform to the following:
 - a. Mulch materials shall be unrotted salt hay, hay or small grain straw applied at the rate of 3 tons per acre. Mulch blower shall not grind or chop the material. Woodchips, free of insects and disease are permitted at a rate of 4-6 tons per acre.
 - b. Mulch shall be spread uniformly by hand or mechanically so that approximately 85% to 95% of the soil surface will be covered.
 - c. Mulch anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the slope.
 - i. Peg and Twine - drive 8" to 10" pegs to within 2" to 3" of the soil surface every 4' in all directions. Takes may be driven before or after applying mulch. Secure the mulch to the soil surface by stretching twine between pegs in a criss-cross or square pattern, and secure the twine around each peg with two or more round turns.
 - ii. Mulch Netting - staple paper, jute, cotton or plastic nettings to the soil surface. Use degradable netting in areas to be mowed.
 - iii. Mulch materials and binders shall be rolled in place by tracked vehicle or other suitable equipment.
 - d. Applications should be heavier at edges where wind catches the mulch. In valleys and at crests of banks. Remainder of area should be uniform in appearance.
 - e. Wood-fiber or paper-fiber mulch at the rate of 1,500 lbs per acre, or per manufacturer recommendation, may be applied by a hydrosedder. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.
 - f. Other:
 - i. Where excessive soil erosion, tracking or flowing of sediment is evident or anticipated, a minimum of 4" of crushed stone shall be placed within the affected area and maintained until permanent stabilization is provided. Additional stone shall be placed as required until stabilization is achieved. Crushed stone shall conform to AASTO designation M43. Size No. 2 (2-1/2" to 1-1/2").

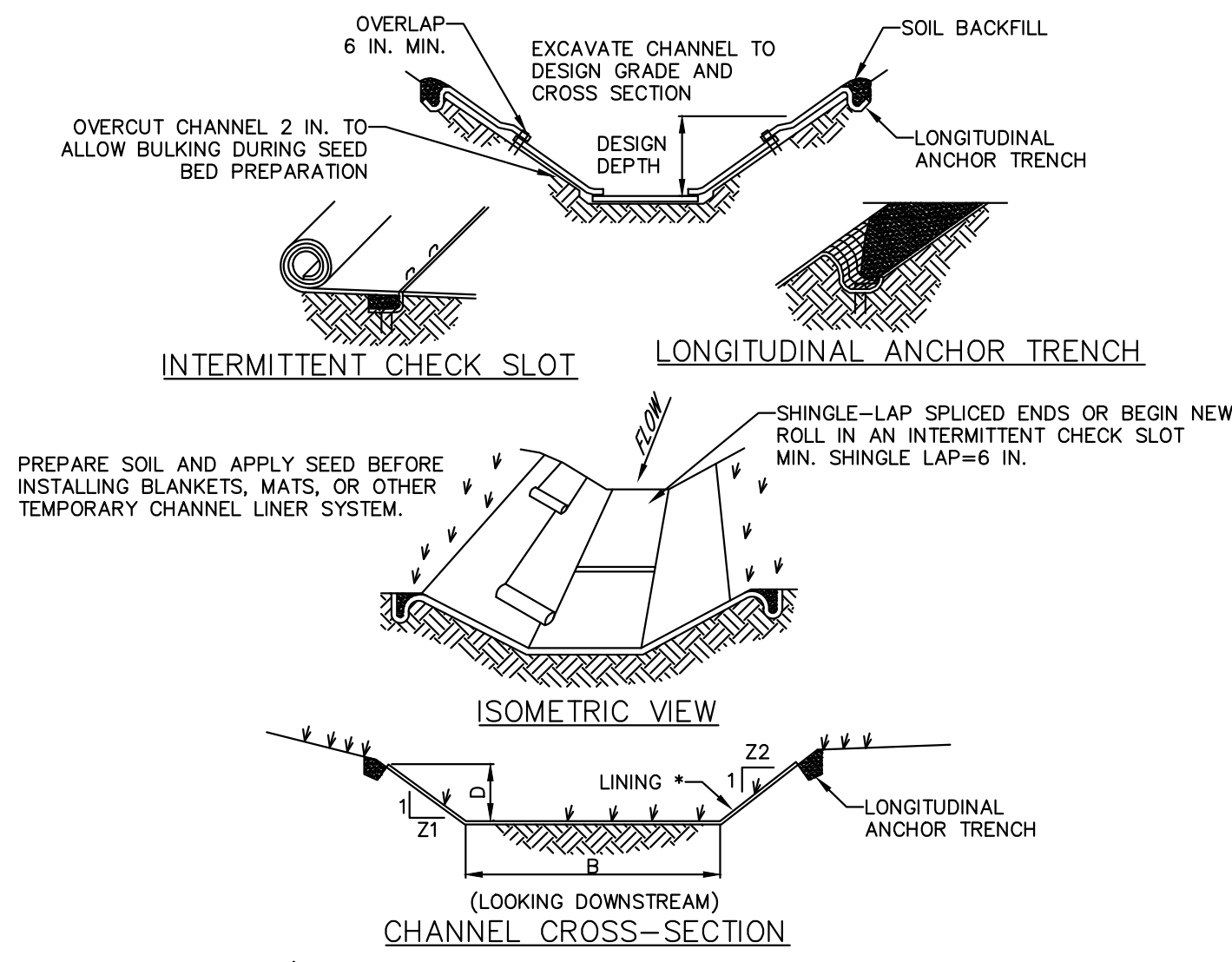


BASIN NO.	WEIR		ORISE ELEV WCE (FT)	WIDTH Ww (FT)	TRM TYPE	STAPLE PATTERN	CHANNEL		DISSIPATOR				
	Z3 (FT)	Z4 (FT)					Z5 (FT)	DEPTH D1 (FT)	LENGTH D2 (FT)	WIDTH D3 (FT)	RIPRAP SIZE (R-...)	RIPRAP THICK. DRI (IN)	
2	2	2	692.0	690.0	6.0	SC250	"E"	12	2.0	8	12	R-4	18

NOTES:

HEAVY EQUIPMENT SHALL NOT CROSS OVER SPILLWAY WITHOUT PRECAUTIONS TAKEN TO PROTECT TRM LINING. DISPLACED LINER WITHIN THE SPILLWAY AND/OR OUTLET CHANNEL SHALL BE REPLACED IMMEDIATELY. RIPRAP AT TOE OF EMBANKMENT SHALL BE EXTENDED A SUFFICIENT LENGTH IN BOTH DIRECTIONS TO PREVENT SCOUR. THE USE OF BAFFLES THAT REQUIRE SUPPORT POSTS ARE RESTRICTED FROM USE IN BASINS REQUIRING IMPERVIOUS LINERS.

**STANDARD CONSTRUCTION DETAIL #7-13
BASIN EMERGENCY SPILLWAY WITH TRM LINING
NOT TO SCALE**



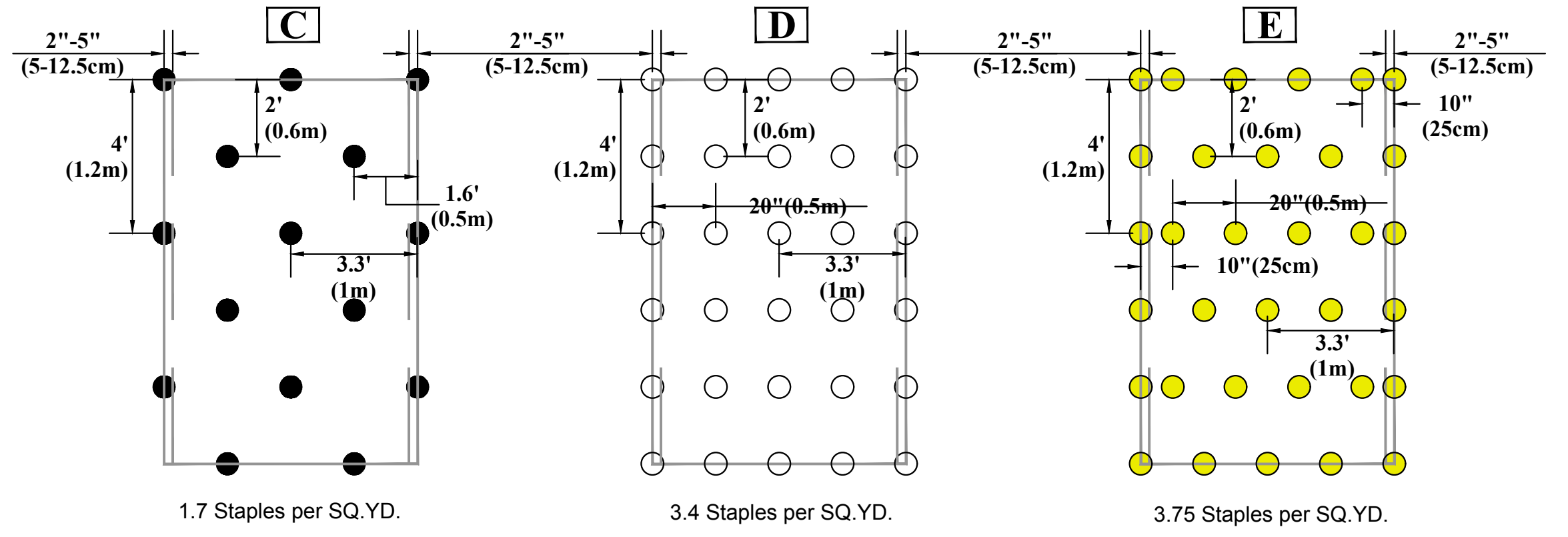
* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING *
1	FULL CHANNEL	2	2	10	2	2	C125
2	FULL CHANNEL	2	2	10	2	2	C125

NOTES:

- ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.
- INSPECT CHANNELS AFTER ALL RAINFALL EVENTS OVER 1". COMPLETE DEP INSPECTION LOG FOR ALL SITE VISITS.
- 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.

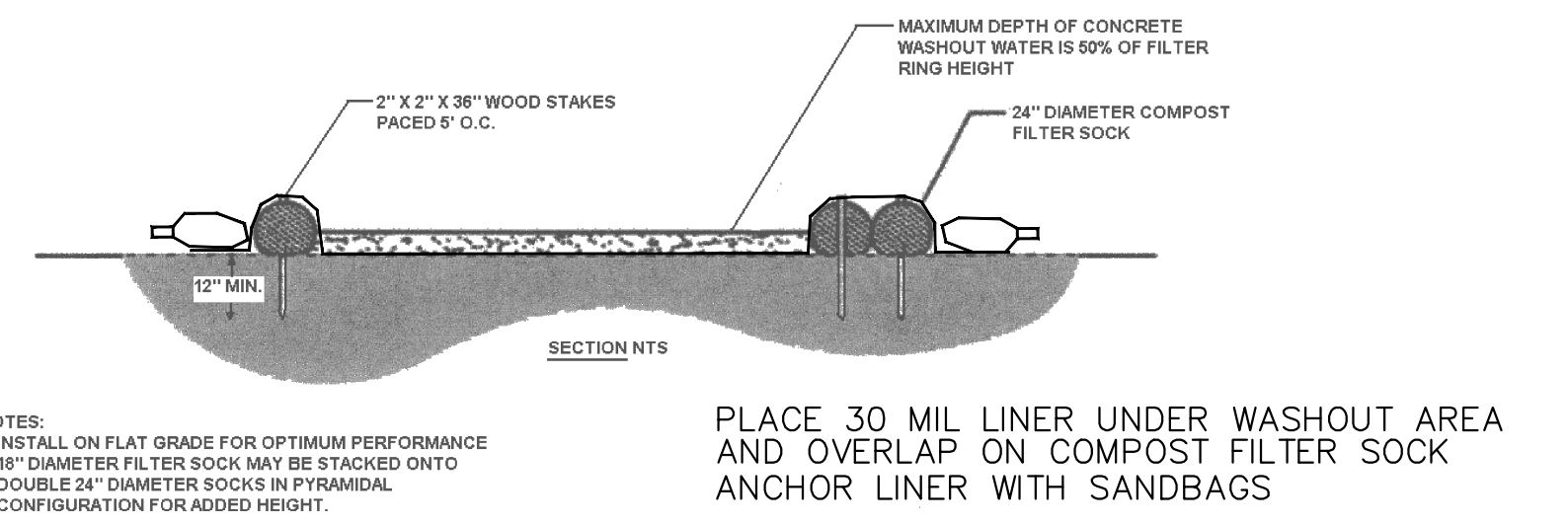
**MODIFIED CONSTRUCTION DETAIL #6-1
VEGETATED CHANNEL**



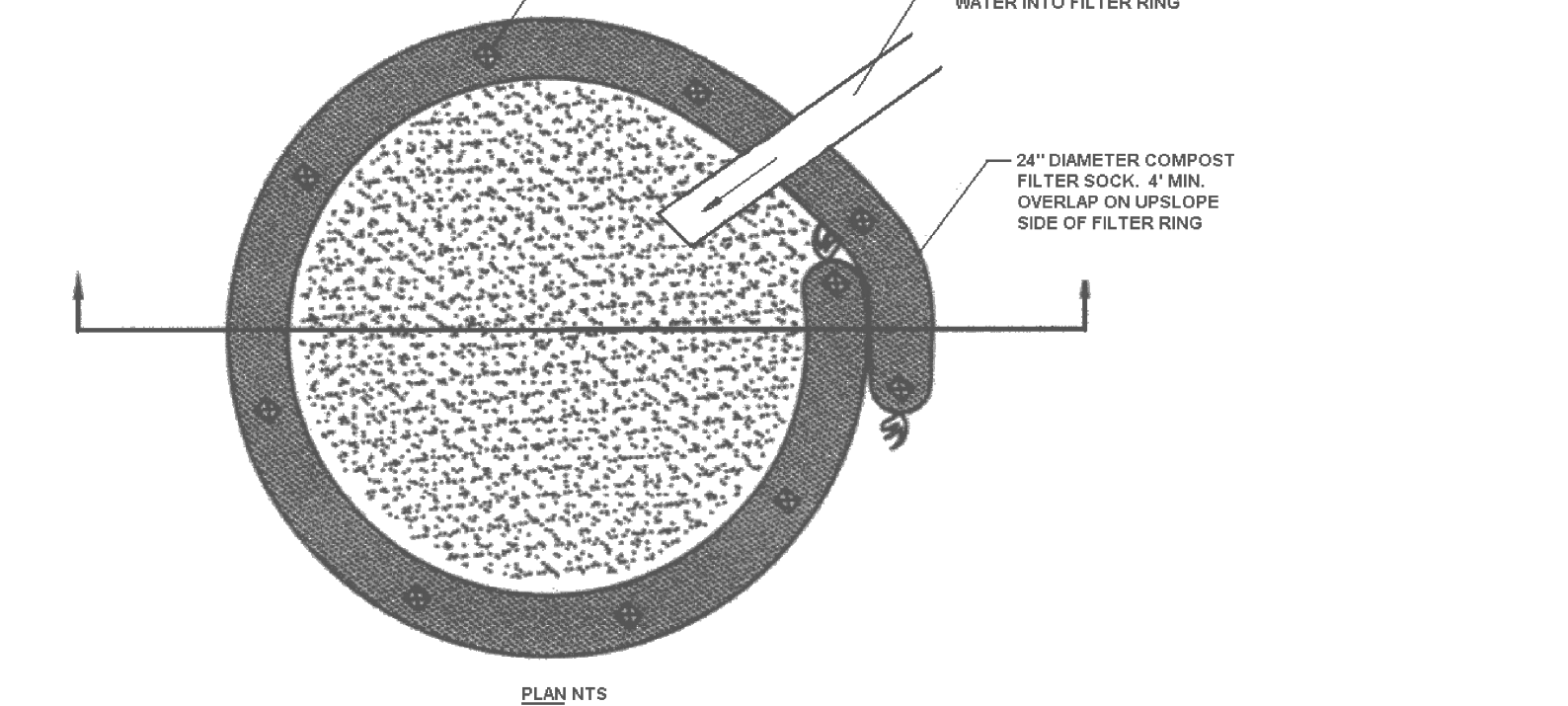
STAPLE PATTERNS



**FIGURE 3.18
Typical Compost Sock Washout Installation**



PLACE 30 MIL LINER UNDER WASHOUT AREA AND OVERLAP ON COMPOST FILTER SOCK ANCHOR LINER WITH SANDBAGS



A suitable impervious geomembrane shall be placed at the location of the washout prior to installing the socks.
Adapted from Filtrrex

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ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. ACCUMULATED MATERIALS SHOULD BE REMOVED WHEN THE WASHOUT REACHES 75% CAPACITY. THE 30 MIL PLASTIC LINER SHOULD BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.

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OF
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TETRA TECH
www.tetratech.com
1134 TWIN STACKS DRIVE
DALLAS, PA 18612
T: (570) 674-8648 | F: (570) 674-8651

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E&S PLAN – CONSTRUCTION DETAILS

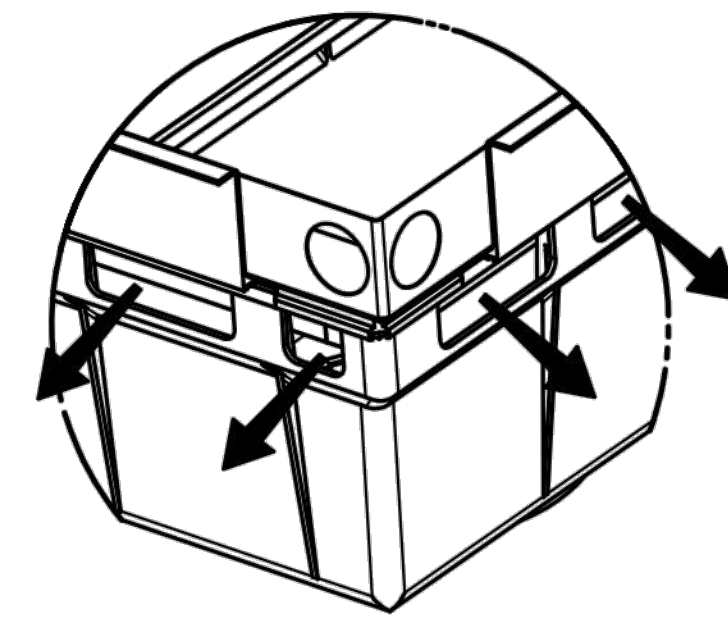
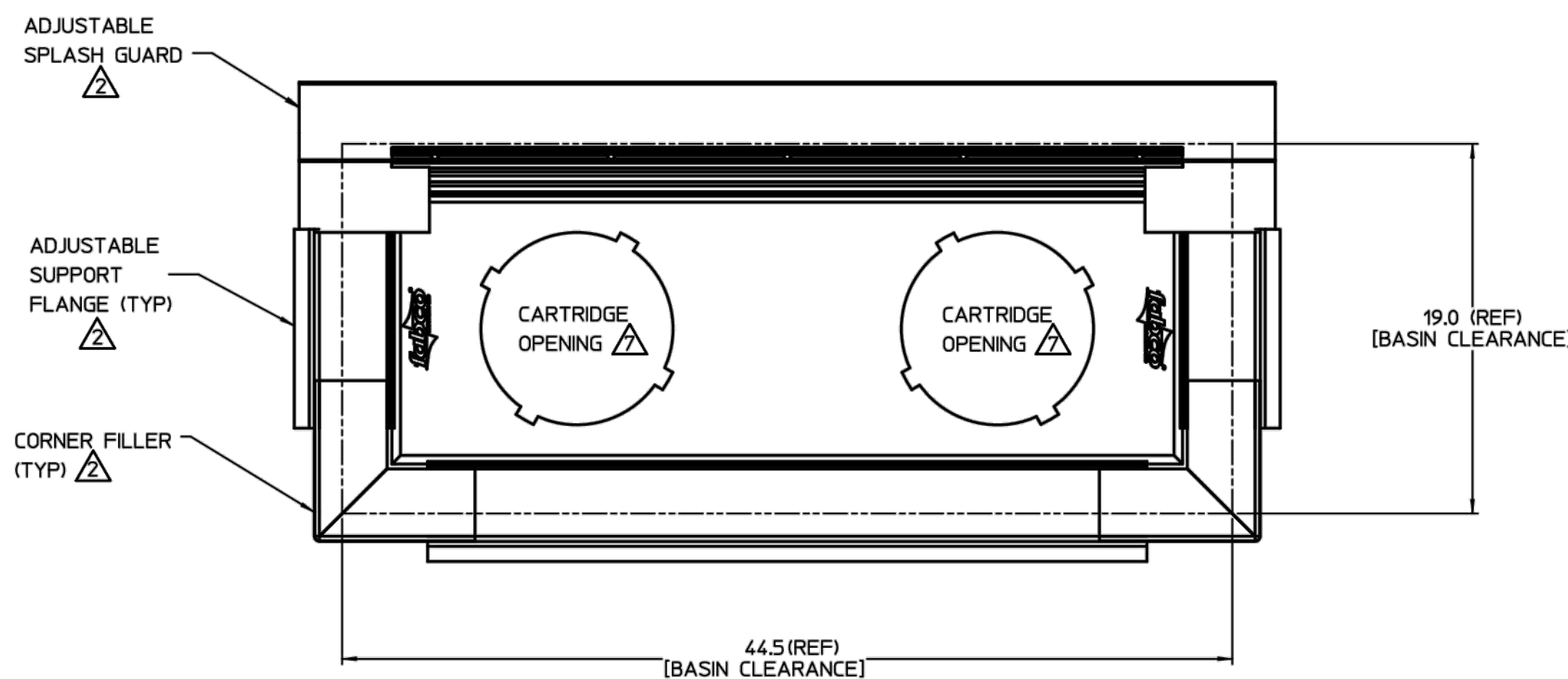
DATE: 03/11/16
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REVISIONS			
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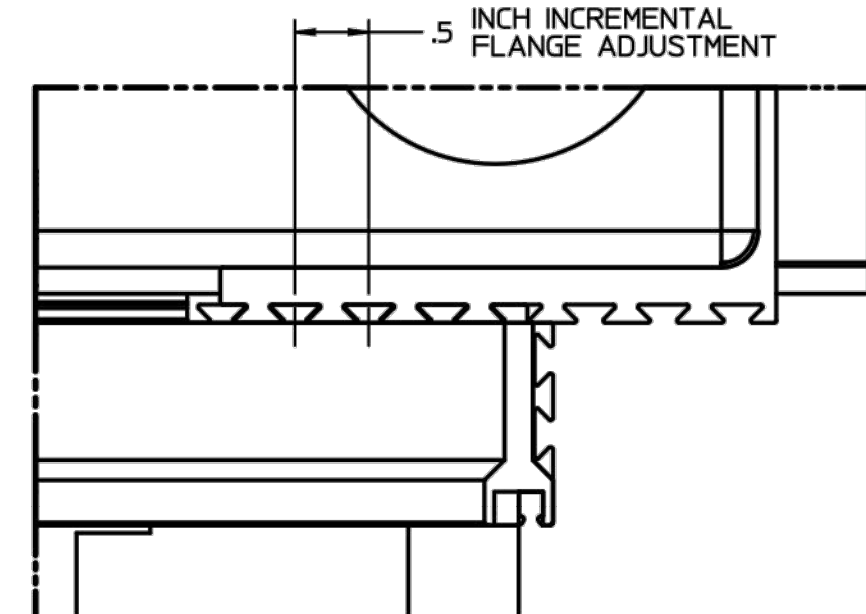
NOTES:

- WEIGHT (EMPTY): 50 LB MAX, NO CARTRIDGES
- MATERIAL:
 - ADJUSTABLE FLANGE AND DEFLECTOR: ALUMINUM ALLOY 6063-T6
 - BASIN (PLASTIC): POLYPROPYLENE POLYETHYLENE COPOLYMER
 - CORNER FILL: ALUMINUM ALLOY: 5052-H32
 - SUPPORT HARDWARE: CRES 300 SERIES
 - SPLASH GUARD: NEOPRENE RUBBER (TRIM IF NECESSARY)
- PERFORMANCE CHARACTERISTICS (TYP):
 - DEBRIS CAPACITY: 5.2 CU-FT
 - FILTERED FLOW RATE (CLEAN STANDARD CARTRIDGE): 230 GPM (0.51 CFS)
 - PRIMARY BYPASS FLOW RATE: 1917 GPM (4.3 CFS)
 - SECONDARY BYPASS FLOW RATE: 164 GPM (0.37 CFS)
 - TOTAL BYPASS FLOW RATE: 2082 GPM (4.6 CFS)
- CLEAR OPENING RANGE (0.5 INCH INCREMENTS):
 - MINIMUM SIZE: 19.0 X 45.0
 - MAXIMUM SIZE: 24.0 X 50.0
- RECOMMENDED MINIMUM VAULT DEPTH 2-IN BELOW CARTRIDGE
- TYPICAL INSTALLATION: REMOVE STORM GRATE, MEASURE CATCH BASIN CLEAR OPENING AND ADJUST FLANGES TO REST ON GRATE SUPPORT LEDGE. INSTALL STORMBASIN INSERT WITH RUBBER SPLASH GUARD EXTENDING INTO CURB-BOX AND VERIFY THE ADJUSTABLE FLANGES ARE SECURELY RESTING ON THE GRATE SUPPORT LEDGES. INSTALL THE CORNER FILL PIECES. REINSTALL THE STORM GRATE DIRECTLY ON STORMBASIN SUPPORT FLANGES.
- USE WITH FABCO REPLACEABLE MEDIA CARTRIDGES ONLY.

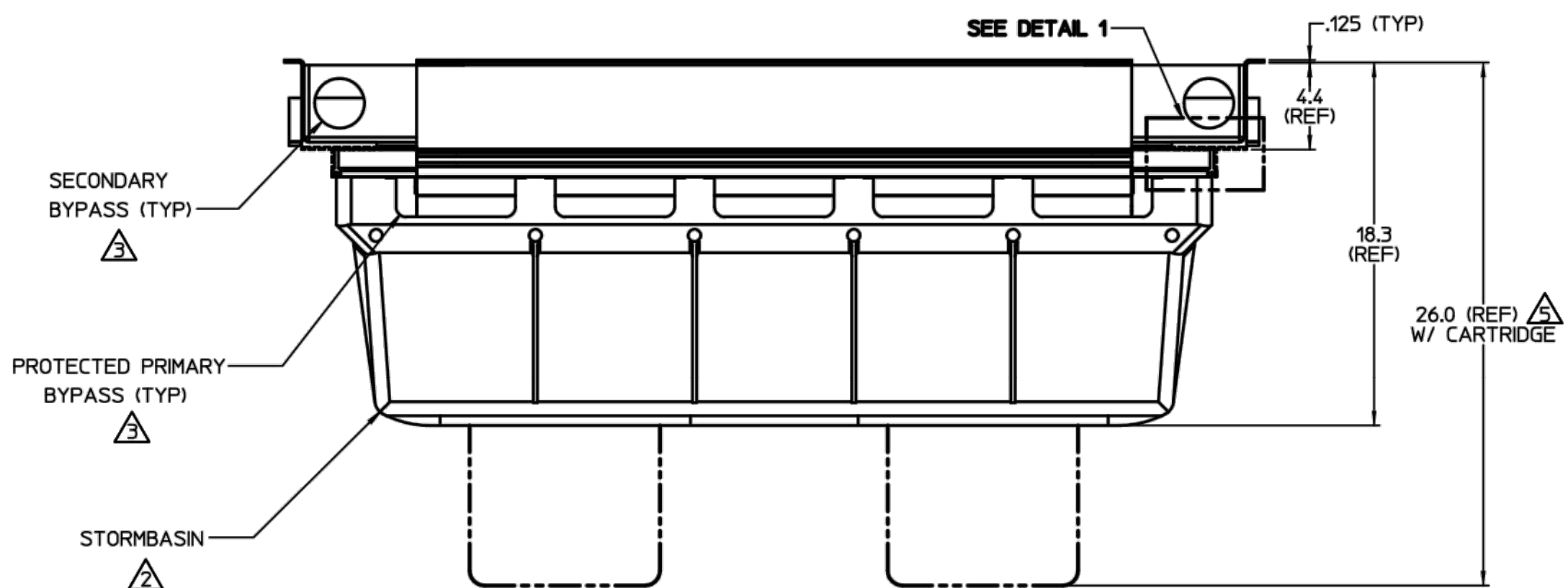


PROTECTED BYPASS, TYPICAL (NOT TO SCALE)

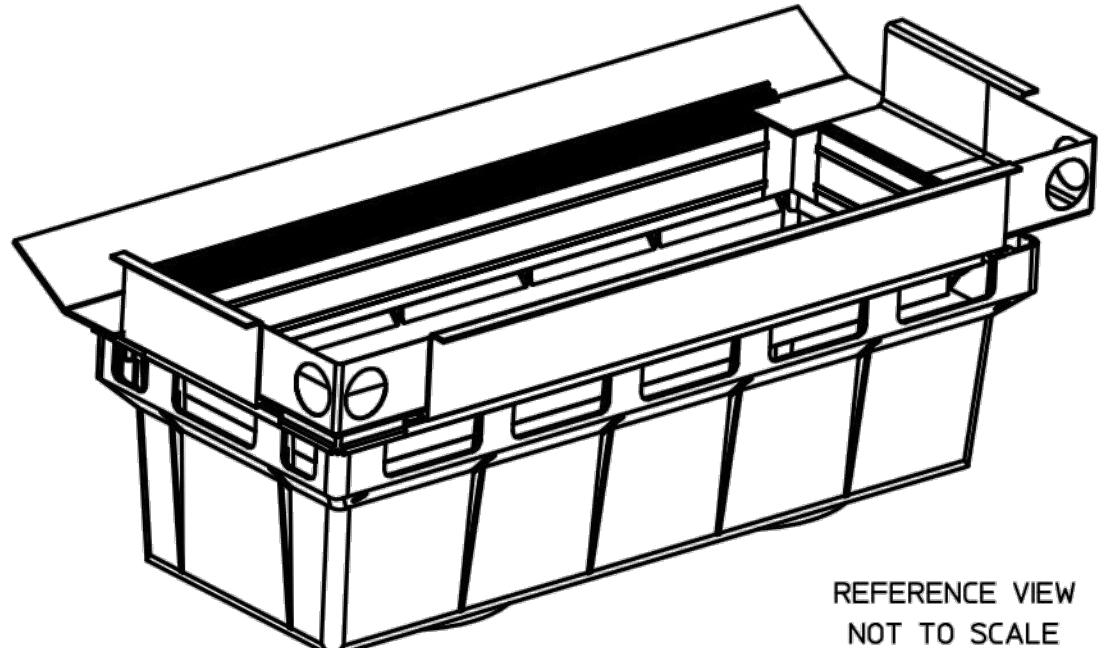
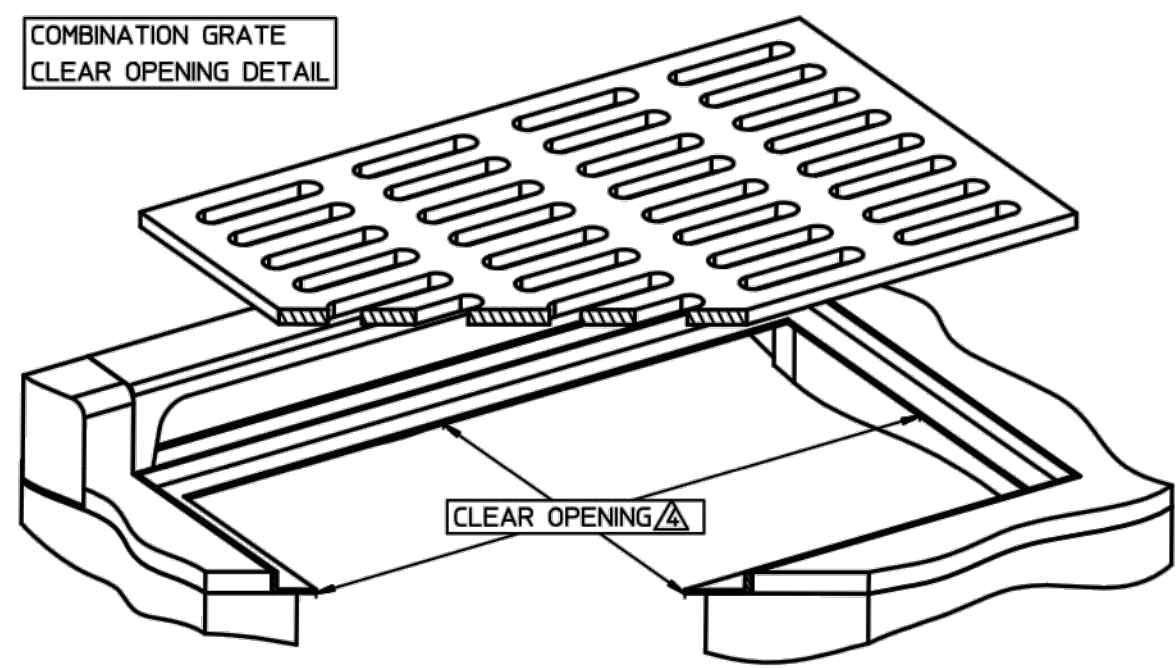
DOVETAIL ADJUSTMENT FEATURE (TYPICAL EACH FLANGE)



DETAIL 1 SCALE 1:1



PROVIDE MODEL 9730-2X STORMBASIN FILTERS AS MANUFACTURED BY FABCO, OR APPROVED EQUAL. PLACE FILTERS IN BOTH INLETS #1 AND #2.



NO	QTY	PART NUMBER	DESCRIPTION	REMARKS																														
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BMP	Operation And Maintenance
Inlet Filter Bags	Inspected on a weekly basis and after each runoff event 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
Erosion Control Blankets	Shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage throughout blanket area Damaged or displaced blankets shall be restored within 4 calendar days
Rock Construction Entrance	Thickness shall be maintained to the specified dimensions by adding rock. Additional clean rock should be stored on site in case rock needs to be added Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable All sediment shall be removed and returned to the construction site immediately
Compost Filter Socks	Sediment removed where accumulations reach half the aboveground height of the sock Inspected on a weekly basis and after each runoff event Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year Stakes shall be removed upon stabilization of tributary area Sock may be cut open and spread as soil supplement
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 Excess vegetation shall be removed from permanent channels to ensure sufficient channel capacity
Detention Basins	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 infiltration basin should be maintained in good condition, and any bare spots revegetated as soon as possible. Vehicles should not be parked or driven on an Infiltration Basin, and care should be taken to avoid excessive compaction by mowers.
Infiltration Basin	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. 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. Remove accumulated sediment from basin as required. Restore original cross section and infiltration rate. Properly dispose of sediment.
Concrete Washouts	All facilities should be inspected daily. Damaged or leaking washouts should be deactivated and repaired or replaced immediately Accumulated materials should be removed when the washout reaches 75% capacity. The 30 mil plastic liner should be replaced with each cleaning of the washout facility.
Storm Pipes	Storm pipes shall be cleaned whenever total depth is reduced by 25% at any location. Damaged pipes shall be replaced or repaired within 48 hours. Pipe to inlet connections shall be watertight.

11 OF 11

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4	10/18/16	REVISED PER PA DEP REVIEW	GZ

PPP - BECKERSVILLE PUMP STATION
BRECKNOCK TOWNSHIP, BERKS COUNTY
E&S PLAN - CONSTRUCTION DETAILS

DATE: 03/11/16
PROJECT NO.: 2121C-PB-00136
DRAWN BY: GZ
CHECKED BY: TC
SCALE: AS NOTED
FILE: BASEPLAN
NAME: CONSTDET11
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