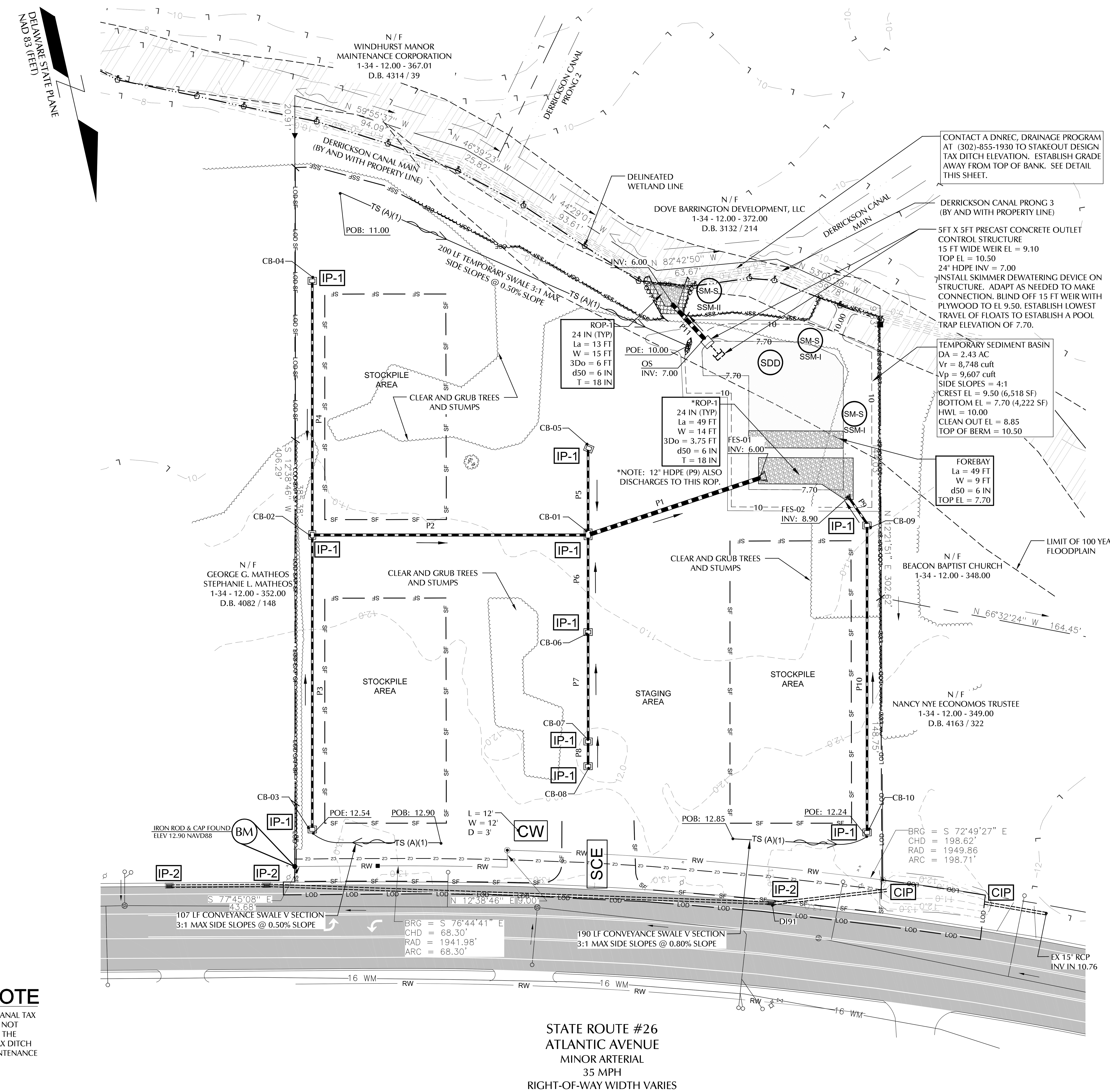
EXISTING	LEGEND	PROPOSED
— — —	PROPERTY LINE	
RW	RIGHT OF WAY	
++	EASEMENT	
	YARD SETBACKS	
	TREELINE	
L L	2 FT CONTOURS	
44	CONTOURS	
▲	IRON FENCE POST FOUND	
◉	IRON ROD AND CAP SET	
○	IRON PIPE FOUND	
■	CONCRETE MONUMENT FOUND	
●	IRON ROD AND CAP FOUND	
	UTILITY POLE	
	DRAINAGE INLET	
	MANHOLE COVER	
	ROAD CENTERLINE	
16 W	WATER LINE	
SS SS SS	SEWER LINE	
	STORM PIPE	
	BUILDING	
	PAVING	
	GRAVEL	
	CONCRETE	
	DITCH/SWALE FLOW DIRECTION	
	WETLAND LINE AND FLAGS	
	LIMIT OF DISTURBANCE (LOD)	LOD LOD LOD
	SILT FENCE (SF)	SF SF SF
	SUPER SILT FENCE (SSF)	SSF SSF SSF
	LOD & SF	LOD SF LOD SF
	LOD SAP & SF	LOD SAP SF
	STABILIZED CONSTRUCTION ENTRANCE	SCE
	INLET PROTECTION	IP-1 CIP
	CONCRETE WASH OUT	CW
	STABILIZATION MATTING - SLOPE	SM-S SSM-I, SM-S SSM-II
	STABILIZATION MATTING - CHANNEL	SM-C SSM-I
	SKIMMER DEWATERING DEVICE	SDD
	STONE CHECK DAM	SCD
	TEMPORARY SWALE	TS (A)(1)



DELAWARE STATE PLANE NAD 83 (FEET)
N / F
WINDHURST MANOR MAINTENANCE CORPORATION
1-34 - 12.00 - 367.01
D.B. 4314 / 39
DERRICKSON CANAL PRONG 2
DERRICKSON CANAL MAIN (BY AND WITH PROPERTY LINE)
N 59°55'37" W 94.09'
N 46°39'23" W 25.82'
N 44°29'01" W 93.61'
N 82°42'50" W 63.67'
DELINEATED WETLAND LINE
N / F
DOVE BARRINGTON DEVELOPMENT, LLC
1-34 - 12.00 - 372.00
D.B. 3132 / 214
DERRICKSON CANAL MAIN
CONTACT A DNREC, DRAINAGE PROGRAM AT (302)-855-1930 TO STAKEOUT DESIGN TAX DITCH ELEVATION. ESTABLISH GRADE AWAY FROM TOP OF BANK. SEE DETAIL THIS SHEET.
DERRICKSON CANAL PRONG 3 (BY AND WITH PROPERTY LINE)
5FT X 5FT PRECAST CONCRETE OUTLET CONTROL STRUCTURE
15 FT WIDE WEIR EL = 9.10
TOP EL = 10.50
24" HDPE INV = 7.00
INSTALL SKIMMER DEWATERING DEVICE ON STRUCTURE. ADAPT AS NEEDED TO MAKE CONNECTION. BLIND OFF 15 FT WEIR WITH PLYWOOD TO EL 9.50. ESTABLISH LOWEST TRAVEL OF FLOATS TO ESTABLISH A POOL TRAP ELEVATION OF 7.70.
TEMPORARY SEDIMENT BASIN
DA = 2.43 AC
Vr = 8,748 cuft
Vp = 9,607 cuft
SIDE SLOPES = 4:1
CREST EL = 9.50 (6,518 SF)
BOTTOM EL = 7.70 (4,222 SF)
HWL = 10.00
CLEAN OUT EL = 8.85
TOP OF BERM = 10.50
FOREBAY
La = 49 FT
W = 9 FT
d50 = 6 IN
TOP EL = 7.70
LIMIT OF 100 YEAR FLOODPLAIN
POB: 11.00
TS (A)(1)
200 LF TEMPORARY SWALE 3:1 MAX SIDE SLOPES @ 0.50% SLOPE
INV: 6.00
ROP-1
24 IN (TYP)
La = 13 FT
W = 15 FT
3Do = 6 FT
d50 = 6 IN
T = 18 IN
POE: 10.00
OS
INV: 7.00
SDD
SM-S SSM-II
SM-S SSM-I
*ROP-1
24 IN (TYP)
La = 49 FT
W = 14 FT
3Do = 3.75 FT
d50 = 6 IN
T = 18 IN
*NOTE: 12" HDPE (P9) ALSO DISCHARGES TO THIS ROP.
FES-01
INV: 6.00
FES-02
INV: 8.90
CB-04
CB-05
CB-01
CB-02
CB-09
CB-06
CB-07
CB-08
CB-03
CB-10
IP-1
IP-2
CIP
STOCKPILE AREA
CLEAR AND GRUB TREES AND STUMPS
STAGING AREA
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
N / F
GEORGE G. MATHEOS
STEPHANIE L. MATHEOS
1-34 - 12.00 - 352.00
D.B. 4082 / 148
N / F
BEACON BAPTIST CHURCH
1-34 - 12.00 - 348.00
N 66°32'24" W 164.45'
N / F
NANCY NYE ECONOMOS TRUSTEE
1-34 - 12.00 - 349.00
D.B. 4163 / 322
POE: 12.54
POB: 12.90
L = 12'
W = 12'
D = 3'
CW
SCE
POB: 12.85
POE: 12.24
IRON ROD & CAP FOUND ELEV 12.90 NAVD88
BM
BRG = S 72°49'27" E
CHD = 198.62'
RAD = 1949.86
ARC = 198.71'
S 77°45'08" E 43.68'
N 12°38'46" E 89.00'
107 LF CONVEYANCE SWALE V SECTION 3:1 MAX SIDE SLOPES @ 0.50% SLOPE
BRG = S 76°44'41" E
CHD = 68.30'
RAD = 1941.98'
ARC = 68.30'
190 LF CONVEYANCE SWALE V SECTION 3:1 MAX SIDE SLOPES @ 0.80% SLOPE
DI91
EX 15" RCP INV IN 10.76
16 WM
RW
STATE ROUTE #26
ATLANTIC AVENUE
MINOR ARTERIAL
35 MPH
RIGHT-OF-WAY WIDTH VARIES

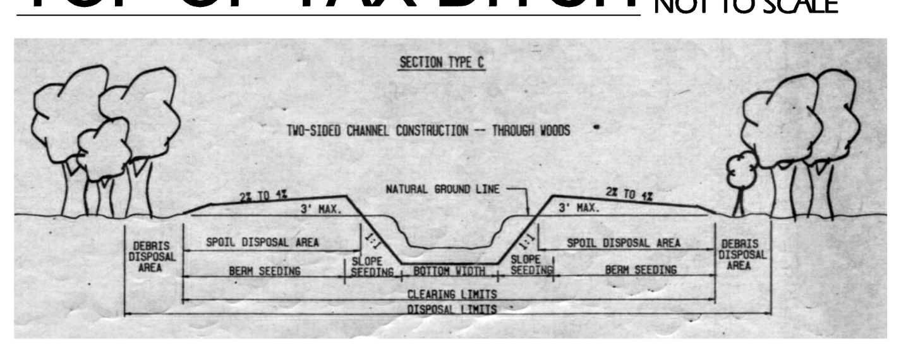
STABILIZATION REQUIREMENTS:

TEMPORARY SEEDING MIX	= DE SEED MIX 5
SWM POND AND FOREBAY SIDE SLOPES	= DE SEED MIX 9 OR 10
ALL OTHER AREAS WITHIN LOD	= DE SEED MIX 12

DISTURBED AREA = 2.42 AC

SPOIL PILE GRADING AT TOP OF TAX DITCH

NOT TO SCALE



TAX DITCH SECTION NOTE

DNREC DRAINAGE PROGRAM AND/OR THE DERRICKSON CANAL TAX DITCH OFFICE OR THEIR DESIGNATED CONTRACTORS ARE NOT RESPONSIBLE FOR ANY MAINTENANCE OF OR DAMAGE TO THE STORMWATER INFRASTRUCTURE LOCATED WITHIN THE TAX DITCH RIGHT-OF-WAY THAT MAY OCCUR DURING ROUTINE MAINTENANCE OPERATIONS.

0 30 60 90 FEET

Seal: ROBERT J. PALMER LICENSED No. 11563 DELAWARE PROFESSIONAL ENGINEER 11/04/21

BEACON ENGINEERING LLC
23318 Cedar Lane | Georgetown | Delaware | 19947
302.864.8825 | info@beaconengineeringllc.com

	Revision:	By:	Date:
1	SCD COMMENTS	SKM	03/29/2019
2	SCD COMMENTS	SKM	12/28/2020
3	SCD COMMENTS	SKM	04/20/2021
4	SCD COMMENTS	SKM	08/31/2021

MILLVILLE SQUARE

SEDIMENT & STORMWATER MANAGEMENT PLANS
WHITE CREEK - INDIAN RIVER BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-12.00-350.00 AND #134-12.00-351.00

PRE-CONSTRUCTION SITE STORMWATER MANAGEMENT PLAN

Date:	FEB 08, 2019
Scale:	1" = 30'
Dwn.By:	SKM
Proj.No.:	TRU01-06

Dwg.: SW1.1

EXISTING / LEGEND / PROPOSED

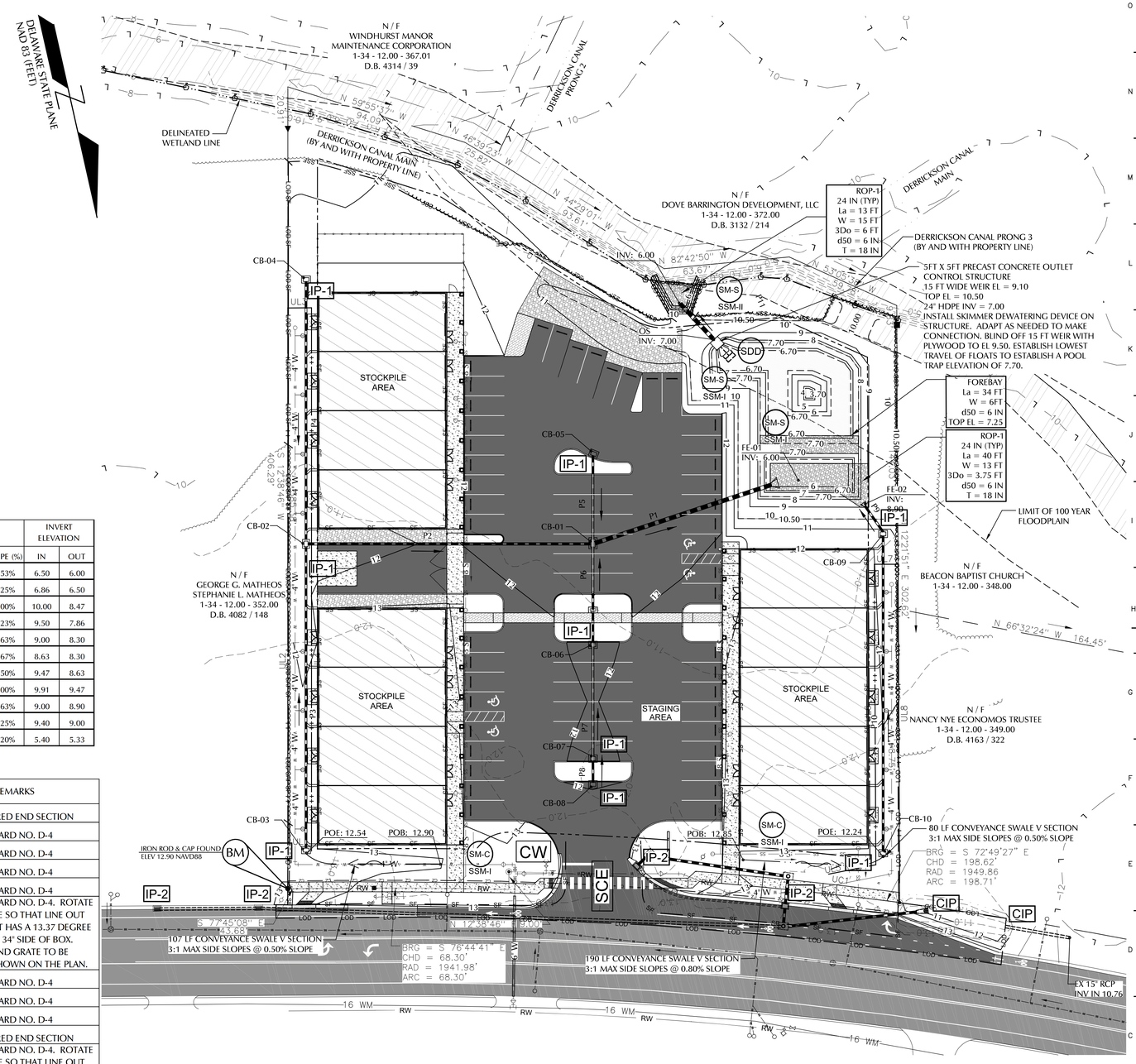
LEGEND	EXISTING	PROPOSED
PROPERTY LINE		
RIGHT OF WAY EASEMENT	RW	
YARD SETBACKS		
TREELINE	L L	
2 FT CONTOURS	44	
CONTOURS		44
IRON FENCE POST FOUND	▲	
IRON ROD AND CAP SET	◉	
IRON PIPE FOUND	○	
CONCRETE MONUMENT FOUND	■	
IRON ROD AND CAP FOUND	●	
UTILITY POLE		
DRAINAGE INLET		
MANHOLE COVER		
WATER LINE	16 WM	
SEWER LINE	SS SS SS	
STORM PIPE		
BUILDING		
PAVING		
GRAVEL		
CONCRETE		
DITCH/SWALE FLOW DIRECTION		
WETLAND LINE AND FLAGS		
LIMIT OF DISTURBANCE (LOD)		LOD LOD LOD
SILT FENCE (SF)		SF SF SF
SUPER SILT FENCE (SSF)		SSF SSF SSF
LOD & SF		LOD SF LOD SF
LOD SAP & SF		LOD SAP SF
STABILIZED CONSTRUCTION ENTRANCE		SCE
INLET PROTECTION		IP-1 CIP
CONCRETE WASH OUT		CW
STABILZATION MATTING - SLOPE		SM-S SM-S (SSM-I SSM-II)
STABILZATION MATTING - CHANNEL		SM-C (SSM-I)
PUMPING PIT		PP-1
GEOTEXTILE DEWATERING BAG		GB
SKIMMER DEWATERING DEVICE		SDD

PIPE SCHEDULE

PIPE	DESCRIPTION							INVERT ELEVATION	
	FROM	TO	SIZE	TYPE	LENGTH	CLASS	SLOPE (%)	IN	OUT
P1	CB-01	FE-01	24"	HDPE	94'	N/A	0.53%	6.50	6.00
P2	CB-02	CB-01	15"	HDPE	143'	N/A	0.25%	6.86	6.50
P3	CB-03	CB-02	12"	HDPE	153'	N/A	1.00%	10.00	8.47
P4	CB-04	CB-02	12"	HDPE	133'	N/A	1.23%	9.50	7.86
P5	CB-05	CB-01	12"	HDPE	43'	N/A	1.63%	9.00	8.30
P6	CB-06	CB-01	12"	HDPE	49'	N/A	0.67%	8.63	8.30
P7	CB-07	CB-06	12"	HDPE	56'	N/A	1.50%	9.47	8.63
P8	CB-08	CB-07	12"	HDPE	11'	N/A	4.00%	9.91	9.47
P9	CB-09	FE-02	12"	HDPE	16'	N/A	0.63%	9.00	8.90
P10	CB-10	CB-09	12"	HDPE	160'	N/A	0.25%	9.40	9.00
P11	OS	FE-03	24"	HDPE	36'	N/A	0.20%	5.40	5.33

STRUCTURE SCHEDULE

STRUCTURE	RIM EL	LINE OUT		LINE IN		LINE IN		LINE IN		BOX SIZE		TYPE	COVER SLAB	TOP UNIT	GRATE TYPE	REMARKS
		SIZE	INV	SIZE	INV	SIZE	INV	SIZE	INV	L	W					
FE-01	N/A	24"	6.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A		FES	N/A	N/A	D-3	CONCRETE FLARED END SECTION
CB-01	11.06	24"	6.50	15"	6.50	12"	8.30	12"	8.30	48"	30"	INLET	60° X 42°	TYPE A	TYPE 2	DELDOT STANDARD NO. D-4
CB-02	11.54	15"	6.86	12"	8.47	12"	7.86	N/A	N/A	34"	24"	LAWN INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
CB-03	12.54	12"	10.00	N/A	N/A	N/A	N/A	N/A	N/A	34"	24"	LAWN INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
CB-04	11.65	12"	9.50	N/A	N/A	N/A	N/A	N/A	N/A	34"	24"	LAWN INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
CB-05	11.12	12"	9.00	N/A	N/A	N/A	N/A	N/A	N/A	34"	24"	INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4. ROTATE BOX STRUCTURE SO THAT LINE OUT PIPE ALIGNMENT HAS A 13.37 DEGREE DEFLECTION TO 34° SIDE OF BOX. INLET, FRAME AND GRATE TO BE ORIENTED AS SHOWN ON THE PLAN.
CB-06	11.75	12"	8.63	12"	8.63	N/A	N/A	N/A	N/A	34"	24"	INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
CB-07	11.75	12"	9.47	12"	9.47	N/A	N/A	N/A	N/A	34"	24"	INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
CB-08	11.93	12"	9.91	N/A	N/A	N/A	N/A	N/A	N/A	34"	24"	INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
FE-02	N/A	12"	8.90	N/A	N/A	N/A	N/A	N/A	N/A	N/A		FES	N/A	N/A	D-3	CONCRETE FLARED END SECTION
CB-09	11.05	12"	9.00	12"	9.00	N/A	N/A	N/A	N/A	34"	24"	LAWN INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4. ROTATE BOX STRUCTURE SO THAT LINE OUT PIPE ALIGNMENT HAS A 34.83 DEGREE DEFLECTION TO 34° SIDE OF BOX. INLET, FRAME AND GRATE TO BE ORIENTED AS SHOWN ON THE PLAN.
CB-10	12.24	12"	9.40	N/A	N/A	N/A	N/A	N/A	N/A	34"	24"	LAWN INLET	NO COVER SLAB	TYPE A	TYPE 1	DELDOT STANDARD NO. D-4
OS	10.00	24"	5.40	N/A	N/A	N/A	N/A	N/A	N/A	5'	5'	OUTFALL	N/A	N/A	N/A	SEE DETAIL SHEET SW4.1



STABILIZATION REQUIREMENTS:

TEMPORARY SEEDING MIX	= DE SEED MIX 5
SWM POND AND FOREBAY SIDE SLOPES	= DE SEED MIX 9 OR 10
ALL OTHER AREAS WITHIN LOD	= DE SEED MIX 12

DISTURBED AREA = 2.42 AC

Seal: ROBERT J. PALMER LICENSE No. 11663 DELAWARE PROFESSIONAL ENGINEER 11/04/21

BEACON ENGINEERING LLC
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Revision:	By:	Date:
1 SCD COMMENTS	SKM	03/29/2019
2 SCD COMMENTS	SKM	12/28/2020
3 SCD COMMENTS	SKM	04/20/2021
4 SCD COMMENTS	SKM	08/31/2021

MILLVILLE SQUARE

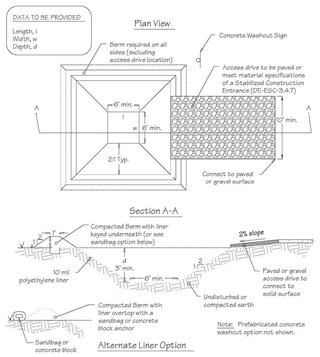
SEDIMENT & STORMWATER MANAGEMENT PLANS
WHITE CREEK - INDIAN RIVER BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-12.00-350.00 AND #134-12.00-351.00

CONSTRUCTION SITE STORMWATER MANAGEMENT PLAN

Date: FEB 08, 2019
Scale: 1" = 30'
Dwn.By: SKM
Proj.No.: TRU01-06

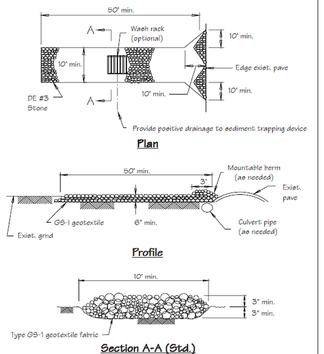
Dwg.: SW2.1

Standard Detail & Specifications
Concrete Washout



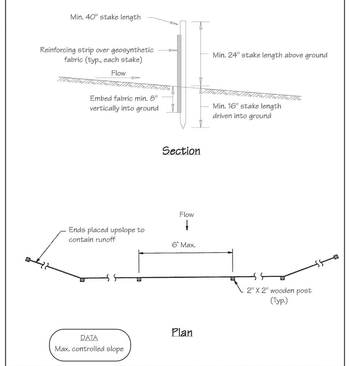
Source:	Symbol:	Detail No.
Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	CW	DE-ESC-3.6.2 Sheet 2 of 2 Date: 03/13

Standard Detail & Specifications
Stabilized Construct. Entrance



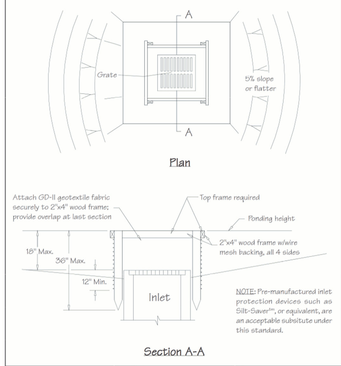
Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SCE	DE-ESC-3.4.7 Sheet 1 of 2

Standard Detail & Specifications
Silt Fence



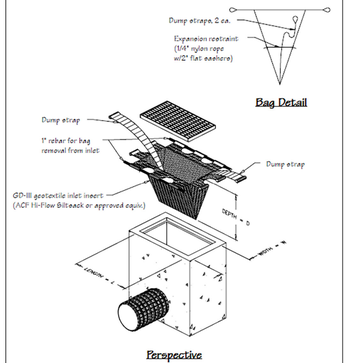
Source:	Symbol:	Detail No.
Adapted form MD Stds. & Specs. for ESC	SF	DE-ESC-3.1.2.1 Sheet 1 of 2 Date: 6/05

Standard Detail & Specifications
Inlet Protection - Type 1



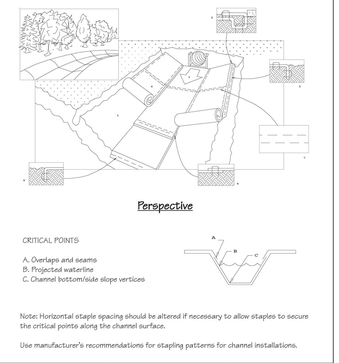
Source:	Symbol:	Detail No.
Adapted from Erosion Draw Manual J. McCullah & Assoc.	IP-1	DE-ESC-3.1.5.1 Sheet 1 of 2

Standard Detail & Specifications
Inlet Protection - Type 2



Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	IP-2	DE-ESC-3.1.5.2 Sheet 1 of 2 Date: 12/03

Standard Detail & Specifications
Stabilization Matting - Channel



Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	DE-ESC-3.4.6.2 Sheet 1 of 3

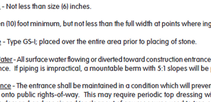
Standard Detail & Specifications
Concrete Washout

Construction Notes:

1. Locate washout area a minimum of 50 feet from open channels, stormdrain inlets, wetlands or waterbodies.
2. Locate washout area so that it is accessible to concrete equipment (service with a minimum 10 foot wide gravel accessway), but so it is not in a highly active construction area causing accidental damage.
3. Minimum dimensions for prefabricated units are 4 feet by 4 feet by 1 foot deep with a minimum 4mil polyethylene plastic liner. Minimum dimensions for constructed concrete washout areas are 6 feet by 6 feet by 3 feet deep, with a minimum 10mil polyethylene liner, 2:1 side slopes, and a 1 foot high by 1 foot wide compacted fill berm.
4. The liner must be free of tears or holes and placed over smooth surfaces to prevent puncturing. For excavated washouts, anchor the liner underneath the berm or overtop with sandbags or concrete blocks to hold in place.
5. Provide a sign designating the washout area, and for large construction sites, provide signs throughout directing traffic to its location.
6. Allow washed out concrete mixture to harden through evaporation of the wastewater. Once the facility has reached 75 percent of its capacity, remove the hardened concrete by reusing the broken aggregate onsite, recycling, or disposing of offsite. The hardened material can be buried on site with minimum of 1 foot of clean, compacted fill.
7. Apply a new liner before reusing the station for additional washouts after maintenance has occurred.

Source:	Symbol:	Detail No.
Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	CW	DE-ESC-3.6.2 Sheet 2 of 2 Date: 03/13

Standard Detail & Specifications
Stabilized Construct. Entrance

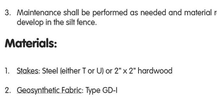


Construction Notes:

1. Stone size - Use DE #3 stone.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Geotextile - Type GS-I placed over the entire area prior to placing of stone.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Vehicle wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Inspection - Periodic inspection and needed maintenance shall be provided after each rain.

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SCE	DE-ESC-3.4.7 Sheet 2 of 2

Standard Detail & Specifications
Silt Fence



Construction Notes:

1. Geosynthetic fabric to be fastened securely to fence posts with wire ties or staples.
2. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded.
3. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

Materials:

1. Stakes: Steel (either T or U) or 2" x 2" hardwood
2. Geosynthetic Fabric: Type GD-I
3. Reinforcing strip: Wooden lath, plastic strip or other approved equivalent
4. Prefabricated Unit: Geofab, Envirofence, or approved equivalent

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	SF	DE-ESC-3.1.2.1 Sheet 2 of 2 Date: 6/05

Standard Detail & Specifications
Inlet Protection - Type 1

Construction Notes:

1. Excavate completely around inlet to a depth of 18" below grate elevation.
2. Drive 2" x 4" post 1' into ground at four corners of inlet. Place nail strips between posts on ends of inlet. Assemble top portion of 2" x 4" frame using overlap joint shown. Top of frame (weir) must be 6" below edge of roadway adjacent to inlet.
3. Stretch wire mesh tightly around frame and fasten securely. Ends must meet at post.
4. Stretch geotextile fabric tightly over wire mesh, the cloth must extend from top of frame to 18" below inlet grate elevation. Fasten securely to frame. Ends must meet at post, be overlapped and folded, then fastened down.
5. Backfill around inlet in compacted 6" layers until at least 12" of geotextile fabric is buried.
6. If the inlet is not in a low point, construct a compacted earth dike in the ditchline below it. The top of this dike is to be at least 6" higher than the top of frame (weir).
7. This structure must be inspected frequently and the filter fabric replaced when clogged.

Materials:

1. Wooden frame is to be constructed of 2" x 4" construction grade lumber.
2. Wire mesh must be of sufficient strength to support filter fabric with water fully impounded against it.
3. Geotextile fabric: Type GD-II

Source:	Symbol:	Detail No.
Adapted, from Erosion Draw Manual J. McCullah & Assoc.	IP-1	DE-ESC-3.1.5.1 Sheet 2 of 2

Standard Detail & Specifications
Inlet Protection - Type 2

Notes:

1. This practice shall only be used in situations in which Inlet Protection - Type 1 cannot be used due to site constraints. These include, but are not limited to partially completed parking areas, streets, roads, etc.
2. It may be necessary to transition from Type 1 to Type 2 Inlet Protection as construction proceeds.
3. For areas where there is a concern for oil run-off or spills, insert shall meet one of the above specifications with an oil-absorbant pillow or shall be made completely from an oil-absorbant material with a woven pillow.

Materials:

The geotextile inlet insert shall meet or exceed the specifications of Type GD-III geotextile in accordance with Appendix A-3 of the Delaware Erosion & Sediment Control Handbook.

Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	IP-2	DE-ESC-3.1.5.2 Sheet 2 of 2 Date: 12/03

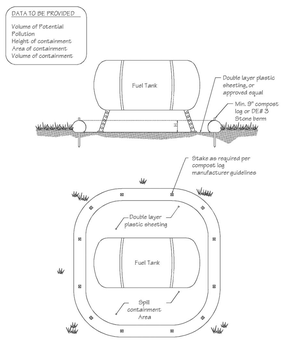
Standard Detail & Specifications
Stabilization Matting - Channel

Construction Notes:

1. Prepare soil before installing matting, including application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the mat in a 6" deep X 6" wide trench. Backfill and compact the trench after stapling.
3. Roll center mat in direction of water flow on bottom of channel.
4. Place mats end over end (shingle style) with a 6" overlap, use a double row of staggered staples 4" apart to secure mats.
5. Full Length edge of mats at top of side slopes must be anchored in 6" deep X 6" wide trench; backfill and compact the trench after stapling.
6. Mats on side slopes must be overlapped 4" over the center mat and stapled.
7. In high flow channel applications, a staple check slat is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over entire width of the channel. Place a second row 4" below the first row in a staggered pattern.
8. The terminal end of the mats must be anchored in a 6" X 6" wide trench. Backfill and compact the trench after stapling.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	DE-ESC-3.4.6.2 Sheet 2 of 3

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control



Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.1 Sheet 1 of 5 Date: 03/13

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Pollution Prevention – Spill Prevention

1. Fueling should only take place in signed designated areas, away from downstream drainage facilities and watercourses.
2. Fueling must be with nozzles equipped with automatic shut-off to control drips. Do not top off.
3. Protect the areas where equipment or vehicles are being repaired, maintained, fueled or parked from storm water run-on and runoff.
4. Use barriers such as berms to prevent storm water run-on and runoff, and to contain spills.
5. Place a "Fueling Area" sign next to each fueling area.
6. Store hazardous materials such as fuel, solvents, oil and chemicals in secondary containment.
7. Inspect vehicles and equipment for leaks on each day of use. Repair fluid and oil leaks immediately.
8. Absorbent spill clean-up materials and spill kits must be available in fueling areas and on fuel trucks.
9. If fueling is to take place at night, make sure the fueling area is sufficiently illuminated.
10. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.

CLEAN UP SPILLS

1. If it is safe to do so, immediately contain and clean up any chemical and/or hazardous material spills.
2. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.
3. Do not bury spills or wash them down with water.

LEAKS AND DRIPS

1. Use drip pans or absorbent pads at all times. Place under and around leaky equipment.
2. Do not allow oil, grease, fuel or chemicals to drip onto the ground.
3. Have spill kits and clean up material on-site.
4. Repair leaky equipment promptly or remove problem vehicles and equipment from the site. Clean up contaminated soil immediately.
5. Store contaminated waste in sealed containers constructed of suitable material. Label these containers properly.
6. Clean up all spills and leaks. Promptly dispose of waste and spent clean up materials.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.1 Sheet 2 of 5 Date: 03/13

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Notes:

The Construction Site Pollution Prevention Plan should include the following elements:

1. **Material Inventory**

   Document the storage and use of the following materials:
   a. Concrete
   b. Detergents
   c. Paints (enamel and latex)
   d. Cleaning solvents
   e. Pesticides
   f. Wood scraps
   g. Fertilizers
   h. Petroleum based products
2. **Good housekeeping practices**
   a. Store only enough product required to do the job.
   b. All materials shall be stored in a neat, orderly manner in their original labeled containers and covered.
   c. Substances shall not be mixed.
   d. When possible, all of a product shall be used up prior to disposal of the container.
   e. Manufacturers' instructions for disposal shall be strictly adhered to.
   f. The site foreman shall designate someone to inspect all BMPs daily.
3. **Waste management practices**
   a. All waste materials shall be collected and stored in securely lidded dumpsters in a location that does not drain to a waterbody.
   b. Waste materials shall be salvaged and/or recycled whenever possible.
   c. The dumpsters shall be emptied a minimum of twice per week, or more if necessary. The licensed trash hauler is responsible for cleaning out dumpsters.

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 3 of 5 Date: 03/13

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Notes (cont.)

d. Trash shall be disposed of in accordance with all applicable Delaware laws.
e. Trash cans shall be placed at all lunch spots and littering is strictly prohibited. Recycle bins shall be placed near the construction trailer.
f. If fertilizer bags can not be stored in a weather-proof location, they shall be kept on a pallet and covered with plastic sheeting which is overlapped and anchored.

4. **Equipment maintenance practices**
   a. If possible, equipment should be taken to off-site commercial facilities for washing and maintenance.
   b. If performed on-site, vehicles shall be washed with high-pressure water spray without detergents in an area contained by an impervious berm.
   c. Drip pans shall be used for all equipment maintenance.
   d. Equipment shall be inspected for leaks on a daily basis.
   e. Washout from concrete trucks shall be disposed of in a temporary pit for hardening and proper disposal.
   f. Fuel nozzles shall be equipped with automatic shut-off valves.
   g. All used products such as oil, antifreeze, solvents and tires shall be disposed of in accordance with manufacturers' recommendations and local, state and federal laws and regulations.
5. **Spill prevention practices**
   a. Potential spill areas shall be identified and contained in covered areas with no connection to the storm drain system.
   b. Warning signs shall be posted in hazardous material storage areas.
   c. Preventive maintenance shall be performed on all tanks, valves, pumps, pipes and other equipment as necessary.
   d. Low or non-toxic substances shall be prioritized for use.

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 4 of 5 Date: 03/13

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Notes (cont.)

e. Contact information for reporting spills through the DNREC 24-Hour Toll Free Number shall be prominently posted.

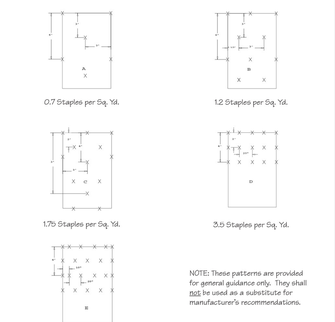
6. **Education**
   a. Best management practices for construction site pollution control shall be a part of regular progress meetings.
   b. Information regarding waste management, equipment maintenance and spill prevention shall be prominently posted in the construction trailer.

CONTACT INFORMATION

DNREC 24-Hour Toll Free Number	**800-662-8802**
DNREC Solid & Hazardous Waste Branch	**302-739-9403**

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 5 of 5 Date: 03/13

Standard Detail & Specifications
Stabilization Matting - Channel



Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	DE-ESC-3.4.6.2 Sheet 3 of 3

Seal: ROBERT J. PALMER, LICENSE No. 11663, DELAWARE PROFESSIONAL ENGINEER, 11/04/21

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Revision:	By:	Date:
SCD COMMENTS	SKM	03/29/2019
SCD COMMENTS	SKM	12/28/2020
SCD COMMENTS	SKM	04/20/2021
SCD COMMENTS	SKM	08/31/2021

MILLVILLE SQUARE
SEDIMENT & STORMWATER MANAGEMENT PLANS
WHITE CREEK - INDIAN RIVER BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-12.00-350.00 AND #134-12.00-351.00

CONSTRUCTION SITE DETAILS AND NOTES

Date:	FEB 08, 2019
Scale:	NO SCALE
Dwn.By:	SKM
Proj.No.:	TRU01-06

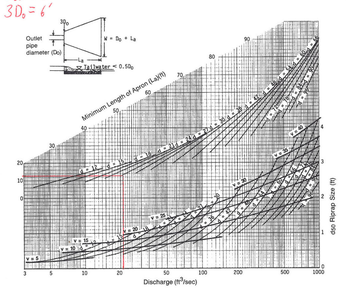
Dwg.:

SW2.2

M:\Projects\TRU01-06 - Millville Square\Construction Docs\DWGs\SWM-ESC DWG\TRU01-06 SW22.dwg Nov 04 , 2021 - 1:18pm, (Sarah)

24" Pipe (5ft³/sec) < 21
L_a = 13'
W = 15'
d_{50} = 6"
SD_o = 6'

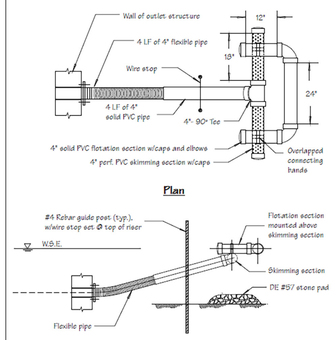
(Tw < 0.5 Dia.)



NOTE: Curves should not be extrapolated; min. d50 = 6"

Figure 3.3.10a Design of outlet protection from a round pipe flowing full, minimum tailwater condition
Source: USDA-NRCS

Standard Detail & Specifications
Skimmer Dewatering Device



Source:	Symbol:	Detail No.
Adapted from drawing by Vandemark & Lynch, Inc.	SDD	**DE-ESC-3.2.3.1** Sheet 1 of 2

Standard Detail & Specifications
Skimmer Dewatering Device

Construction Notes:

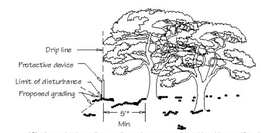
1. Pipe flotation section shall be solvent welded to ensure an airtight assembly. Contractor to conduct a test to check for leaks prior to installation.
2. Skimmer section shall have (12) rows of 1/2" dia. holes, 1-1/4" on center. If additional filtration is necessary, the filtering media shall consist of a Type GD-II geotextile fabric wrapped around the perforated portion of the skimmer and attached with plastic snap ties, bands, etc.
3. Flexible pipe shall be inserted into solid pipe and fastened with (2) #8 wood screws.
4. At a minimum, the structure shall be inspected after each rain and repairs made as needed. If vandalism is a problem, more frequent inspection may be necessary.
5. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
6. The structure shall only be removed when the contributing drainage area has been properly stabilized.

Materials:

1. Solid pipe - 4" Sched. 40 PVC
2. Perforated pipe - 4" Sched. 40 PVC
3. 90° Tee (1 ea.) - 4" Sched. 40 PVC
4. 90° Elbow (2 ea.) - 4" Sched. 40 PVC
5. Cap (4 ea.) - 4" Sched. 40 PVC, solid
6. Flexible pipe - 4" corrugated plastic tubing (non-perforated)

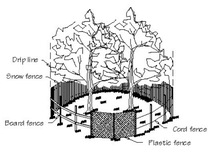
Source:	Symbol:	Detail No.
Delaware ESC Handbook	SDD	**DE-ESC-3.2.3.1** Sheet 2 of 2

Standard Detail & Specifications
Sensitive Area Protection



*5' min. setback applies to all sensitive areas covered by this specification.

Location of Sensitive Area Protection



Methods of Sensitive Area Protection

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SAP	**DE-ESC-3.7.2** Sheet 1 of 3 Date: 03/13

Standard Detail & Specifications
Sensitive Area Protection

Construction Notes:

Fencing shall be installed at the extents of all sensitive areas. For trees, the fencing shall be installed outside the dripline (mature canopy) and at no time within 5 feet of the trunk. Personnel must be instructed to honor protective devices. The devices described are suggested only, and are not intended to exclude the use of other devices which will protect the trees to be retained. If silt fence is to be used for demarcation purposes, appropriate signage shall be provided a minimum of every 20 feet denoting the area as a sensitive area protection zone.

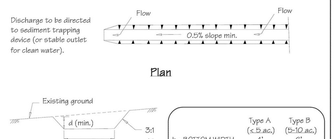
Materials:

1. Snow Fence - Standard 40-inch high snow fence shall be placed at the limits of clearing or construction on standard steel posts set 6 feet apart.
2. Board Fence - Board fencing consisting of 4-inch square posts set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing with a minimum of two horizontal boards between posts. For tree protection, if it is not practical to erect a fence at the drip line, construct a triangular fence nearer the trunk. The limits of clearing will still be located at the drip line, since the root zone within the drip line will still require protection.
3. Plastic Fencing - 40-inch high "international orange" plastic (polyethylene) web fencing secured to conventional metal "T" or "L" posts driven to a minimum depth of 18 inches on 6-foot minimum centers shall be installed at the limits of clearing. The fence should have the following minimum physical qualities:

a.	Tensile yield:	Average 2,000 lbs. per 4-foot width (ASTM D638)
b.	Ultimate tensile yield:	Average 2,900 lbs. per 4-foot width (ASTM D638)
c.	Elongation at break (%):	Greater than 1000% (ASTM D638)
d.	Chemical resistance:	Inert to most chemicals and acids

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SAP	**DE-ESC-3.7.2** Sheet 2 of 3 Date: 03/13

Standard Detail & Specifications
Temporary Swale



	Type A (<5 ac.)	Type B (5-10 ac.)
b - BOTTOM WIDTH	4'	6'
d - FLOW DEPTH	1'	1'

FLOW CHANNEL STABILIZATION CHART

Stabilization Method	Channel Grade	Type A	Type B
1	0.5-3.0%	Seed & straw mulch	Seed & straw mulch
2	3.1-5.0%	Seed & straw mulch	Seed using stab. blanket; sod; DE #2 stone
3	5.1-8.0%	Seed with stab. blanket; sod; DE #2 stone	Lined R-4 riprap
4	8.1-20%	Lined R-4 riprap	Engineering design

a. Stone to be DE #2 inch stone in a layer at least 3 inches in thickness and be pressed into the soil with construction equipment.
b. Riprap to be R-4 in a layer at least 8 inches thickness and pressed into the soil.
c. Approved equivalents can be substituted for any of the above materials.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TS-(A/B)(1-4)	**DE-ESC-3.3.1** Sheet 1 of 2 Date: 12/03

Standard Detail & Specifications
Temporary Swale

Construction Notes:

1. All temporary swales shall have uninterrupted positive grade to an outlet with a minimum of erosion.
2. Diverted runoff from a disturbed area shall be conveyed to a sediment trapping device.
3. Diverted runoff from an undisturbed area shall outlet directly into an undisturbed stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade, and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fills shall be compacted by earth moving equipment.
7. All earth removed and not needed on construction shall be placed so that it will not interfere with the functioning of the swale.
8. Periodic inspection and required maintenance must be provided after each rain event.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TS-(A/B)(1-4)	**DE-ESC-3.3.1** Sheet 2 of 2 Date: 12/03

Standard Detail & Specifications
Dust Control

Temporary Methods:

1. Mulches - See **DE-ESC-3.4.5**, Standard Detail and Specifications for Mulching.
2. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
3. Adhesives - Use on mineral soils only (not effective on muck soils). Keep traffic off these areas. The following table may be used for general guidance.

Type of Emulsion	Water Dilution	Type of Nozzle	Apply Gal/Ac.
Latex emulsion	12.5:1	Fine spray	235
Resin-in-water emulsion	4:1	Fine spray	300
Acrylic emulsion (non-traffic)	7:1	Coarse spray	450
Acrylic emulsion (traffic)	3.5:1	Coarse spray	350

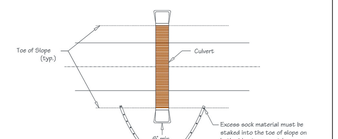
4. Tillage - For emergency temporary treatment, scarify the soil surface to prevent or reduce the amount of blowing dust until a more appropriate solution can be implemented. Begin the tillage operation on the windward side of the site using a chisel-type plow for best results.
5. Sprinkling - Sprinkle site with water until the surface is moist. Repeat as needed.
6. Calcium Chloride - Apply as flakes or granular material with a spreader at a rate that will keep the soil surface moist. Re-apply as necessary.
7. Barriers - Place barriers such as solid board fences, snow fences, hay bales, etc. at right angles to the prevailing air currents at intervals of approx. 10X their height.

Permanent Methods:

1. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
2. Stone - Apply layer of crushed stone or coarse gravel to protect soil surface.

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook		**DE-ESC-3.4.8** Sheet 1 of 1 Date: 12/05

Standard Detail & Specifications
Culvert Inlet Protection



Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook & Filtrexx® International	CIP	**DE-ESC-3.1.6** Sheet 1 of 2

Standard Detail & Specifications
Sensitive Area Protection

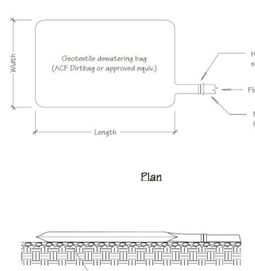
4. Cord Fence - Posts with a minimum size of 2 inches square or 2 inches in diameter set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing with two rows of cord 1/4-inch or thicker at least 2 feet apart running between posts with strips of colored surveyor's flagging tied securely to the string at intervals no greater than 3 feet.
5. Earth Berms - Temporary earth berms shall be constructed according to specifications for a Temporary Earth Dike with the base of the berm on the sensitive area side located along the limits of clearing. Earth berms may not be used for this purpose if their presence will conflict with drainage patterns.
6. Trunk Armoring (Tree Protection Only) - As a last resort, a tree trunk can be armored with burlap wrapping and 2-inch studs wired vertically no more than 2 inches apart to a height of 5 feet enarding the trunk. If this alternative is used, the root zone within the drip line will still require protection. Nothing should ever be nailed to a tree.

Maintenance:

Fencing and armoring devices shall be in place before any excavation or grading is begun, shall be kept in good repair for the duration of construction activities, and shall be the last items removed during the final cleanup after the completion of the project.

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SAP	**DE-ESC-3.7.2** Sheet 3 of 3 Date: 03/13

Standard Detail & Specifications
Geotextile Dewatering Bag



Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	GB	**DE-ESC-3.2.1.2** Sheet 1 of 2 Date: 12/03

Standard Detail & Specifications
Geotextile Dewatering Bag

Construction Notes:

1. The dewatering bag should be placed so the incoming water flows into and through the bag, and then flow off the site without creating more erosion. The neck should be tied off tightly to stop the water from flowing out of the bag without going through the walls. The dewatering bag should be placed on a gravel bed to allow water to flow in all directions.
2. The dewatering bag is considered full and should be disposed when it is impractical for the bag to filter the sediment out at a reasonable flow rate. At this point, it should be replaced with a new bag.
3. Disposal may be accomplished as directed by the construction reviewer. If the site allows, the bag may be buried on site and seeded, visible fabric removed and seeded or removed from site to a proper disposal area.

Materials:

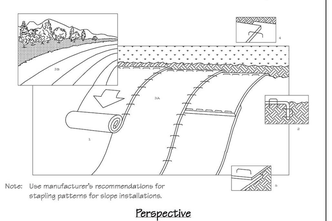
1. The geotextile fabric shall be a Type GD-IV.
2. The dewatering bag shall be sewn with a double needle machine using high strength thread. All structural seams will be sewn with high strength, double stitched "J" type. Seam strength test will have the following minimum average roll values:

Type	TEST METHOD	TEST RESULT
Heavy duty	ASTM D-4884	100 lb / in

3. The dewatering bag shall have an opening large enough to accommodate a four (4) inch discharge hose with attached strap to tie off the hose to prevent the pumped water from escaping from the bag without being filtered.

Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	GB	**DE-ESC-3.2.1.2** Sheet 2 of 2 Date: 12/03

Standard Detail & Specifications
Stabilization Matting - Slope

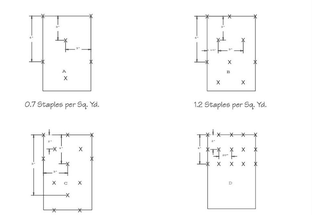


Construction Notes:

1. Prepare soil before installing matting, including application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the mat in a 6" deep X 6" wide trench. Backfill and compact trench after stapling.
3. Roll the mats (A) down or (B) horizontally across the slope.
4. The edges of parrallel mats must be stapled with approx. 2" overlap.
5. When mats must be spliced down the slope, place mats end over end (shingle style) with approx. 4" overlap. Staple through overlapped area, approx. 12" apart.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-S	**DE-ESC-3.4.6.1** Sheet 1 of 2 Date: 6/05

Standard Detail & Specifications
Stabilization Matting - Slope



Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-S	**DE-ESC-3.4.6.1** Sheet 2 of 2 Date: 6/05

Standard Detail & Specifications
Culvert Inlet Protection

Construction Notes

1. Compost logs shall be designed and installed in accordance with the Standard Detail and Specifications for Compost Logs (DE-ES-3.1.7).
2. If compost logs can not be installed properly or flow conditions exceed the design capabilities of the compost logs, the stone option shall be employed. Additional filtration may be provided by using a Type GD-II geotextile incorporated into the design as an option.
3. Placement of the compost log or stone barrier should be in a "horseshoe" shape and provide a minimum of 6 feet of clearance from the culvert inlet.

Materials

1. Stakes: 2" x 2" x 36" hardwood.
2. Compost media: See requirements in Standard Detail and Specifications for Compost Logs (DE-ES-3.1.7).
3. Filter sock: See requirements in Standard Detail and Specifications for Compost Logs (DE-ES-3.1.7).
4. Geotextile: Type GD-II for stone/riprap option.
5. Stone: DE No. 3 for stone/riprap option.
6. Riprap: R-6 for stone/riprap option.

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook & Filtrexx® International	CIP	**DE-ESC-3.1.6** Sheet 2 of 2

Seal:
ROBERT J. PALMER LICENSE No. 11563 DELAWARE PROFESSIONAL ENGINEER
11/04/21

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Revision:	By:	Date:
1 SCD COMMENTS	SKM	03/29/2019
2 SCD COMMENTS	SKM	12/28/2020
3 SCD COMMENTS	SKM	04/20/2021
4 SCD COMMENTS	SKM	08/31/2021

MILLVILLE SQUARE
SEDIMENT & STORMWATER MANAGEMENT PLANS
WHITE CREEK - INDIAN RIVER BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
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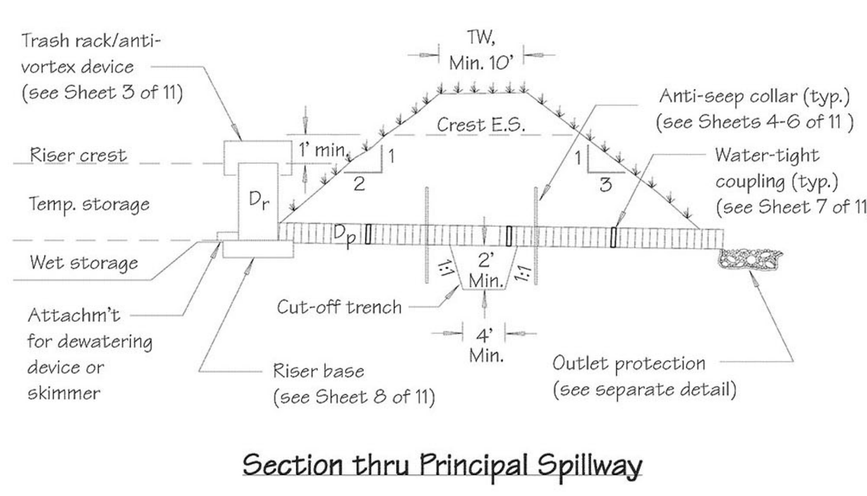
TAX MAP #134-12.00-350.00 AND #134-12.00-351.00
CONSTRUCTION SITE DETAILS AND NOTES

Date:	FEB 08, 2019
Scale:	NO SCALE
Dwn.By:	SKM
Proj.No.:	TRU01-06

Dwg.:
SW2.3

M:\Projects\TRU01-06 - Millville Square\Construction Docs\DWGs\SWM-ESC DWG\TRU01-06 SW22.dwg Nov 04 , 2021 - 1:19pm, (Sarah)

Standard Detail & Specifications — Temporary Sediment Basin



Section thru Principal Spillway

DATA

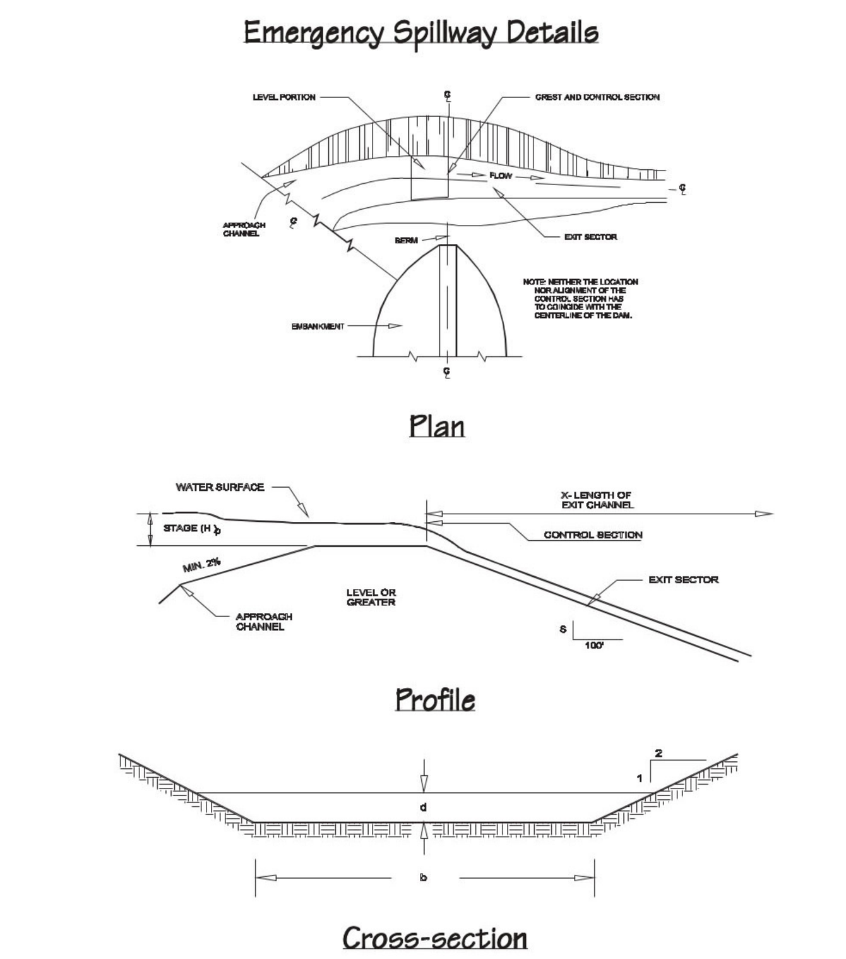
Drainage area (D.A.)
Required storage (V_r)
Design dimensions (L x W x D)
Clean-out elev. (El)
Embankment top width (TW)
Top of embankment (El)
Angle of pipe at riser (Deg.)
Crest of riser (El)
Riser dia. (D_r)
Pipe material
Length of pipe (L)
Pipe dia. (D_p)
Pipe inverts (El)
Crest of e.s. (El)
E.S. depth (d)
E.S. width (b)
Anti-seep collars (No.)
Collar dim. (L X W)
Collar spacing (Ft.)

See Sheet 3 of 11 for req'd trash rack/anti-vortex device data

Source:	Symbol:	Detail No.
DE ESC Handbook	TSB	DE-ESC-3.1.4 Sheet 1 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

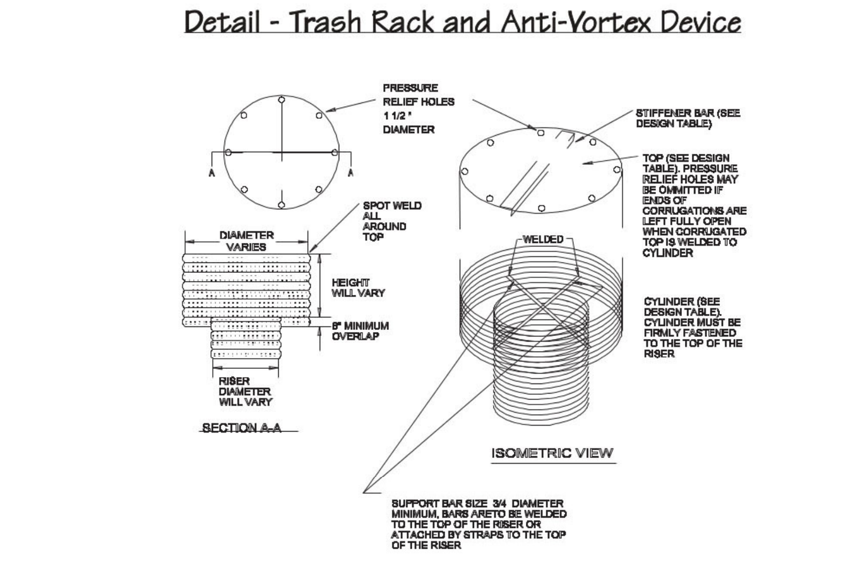
Emergency Spillway Details



Source:	Symbol:	Detail No.
Adapted from USDA-NRCS	TSB	DE-ESC-3.1.4 Sheet 2 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

Detail - Trash Rack and Anti-Vortex Device



Data

Top stiffener (if required) is ___x___x___ angle welded to top and oriented perpendicular to corrugations.

Top is ____ gage corrugated metal or 1/8" steel plate. Pressure relief holes may be omitted, if ends of corrugations are left fully open when corrugated top is welded to cylinder.

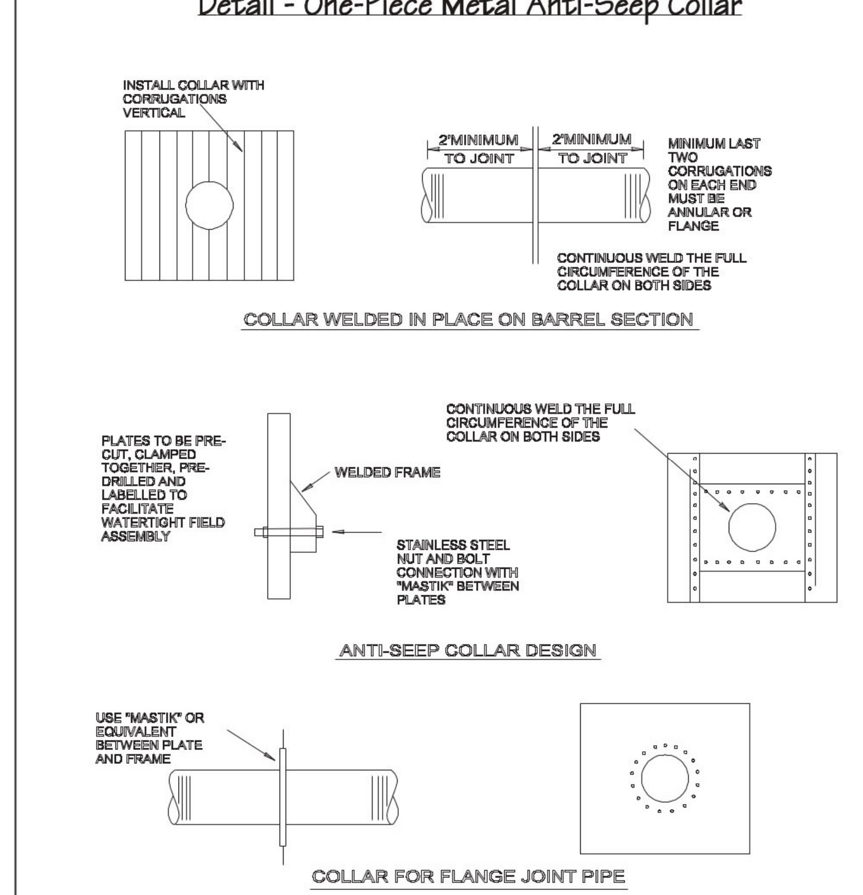
Cylinder is ____ gage corrugated metal pipe or fabricated from 1/8" steel plate.
Dia. = ________
H = ________

Notes: 1. The cylinder must be firmly fastened to the top of the riser.
2. Support bars are welded to the top of the riser or attached by straps bolted to top of riser.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TSB	DE-ESC-3.1.4 Sheet 3 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

Detail - One-Piece Metal Anti-Seep Collar

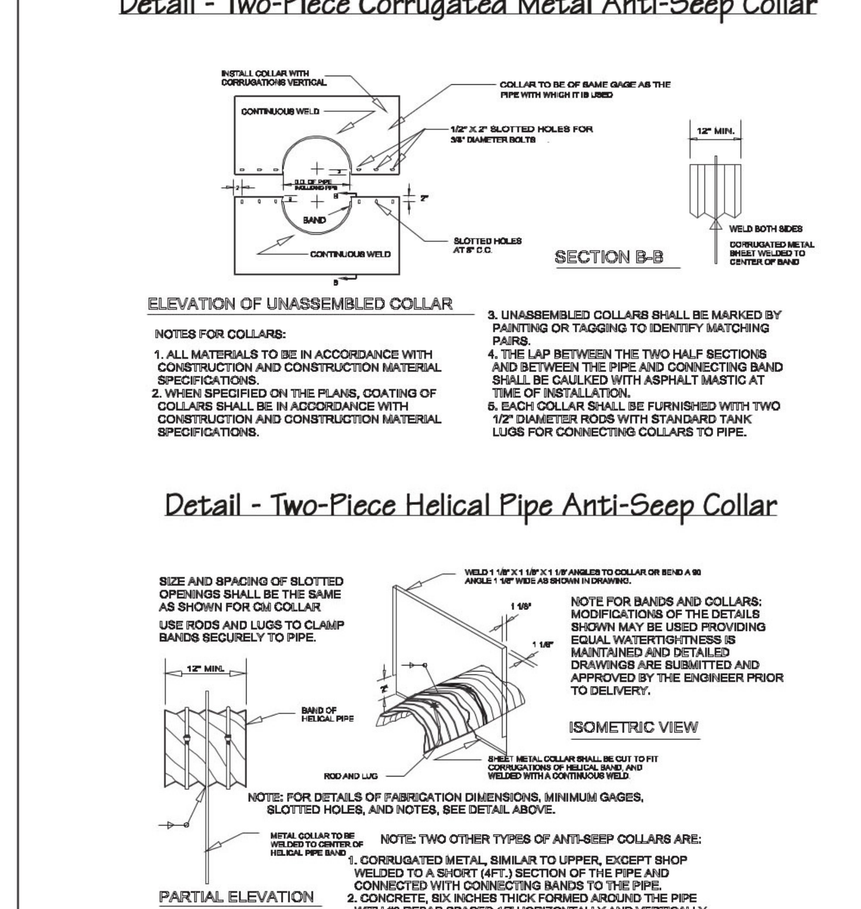


Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TSB	DE-ESC-3.1.4 Sheet 4 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

Detail - Two-Piece Corrugated Metal Anti-Seep Collar

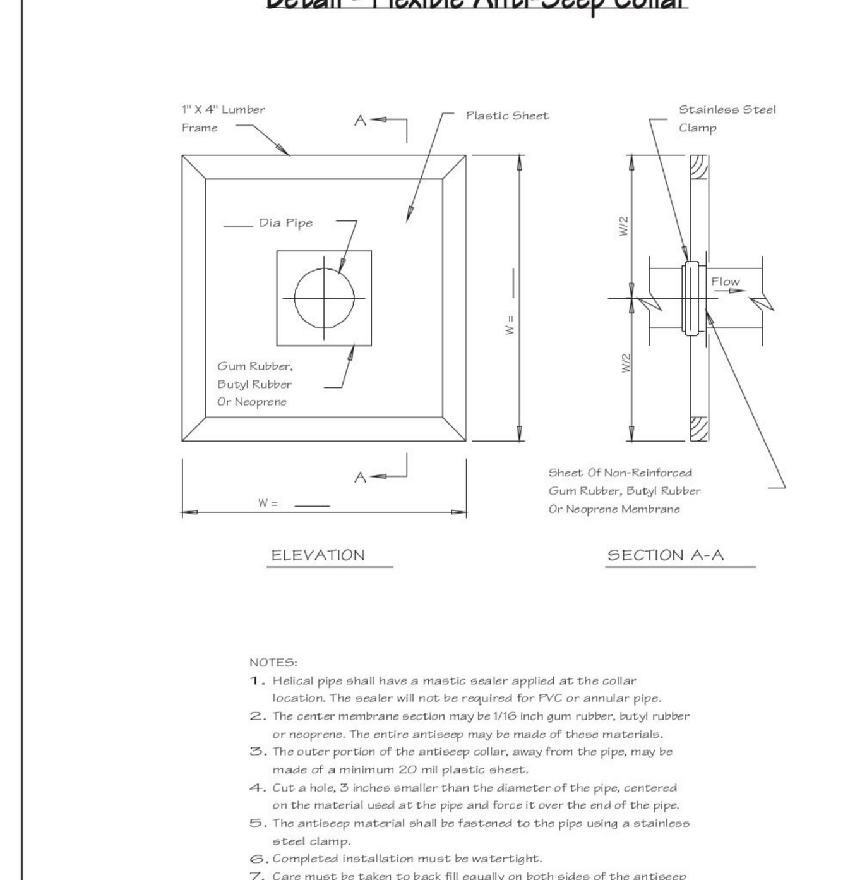
Detail - Two-Piece Helical Pipe Anti-Seep Collar



Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	TSB	E-ESC-3.1.4 Sheet 5 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

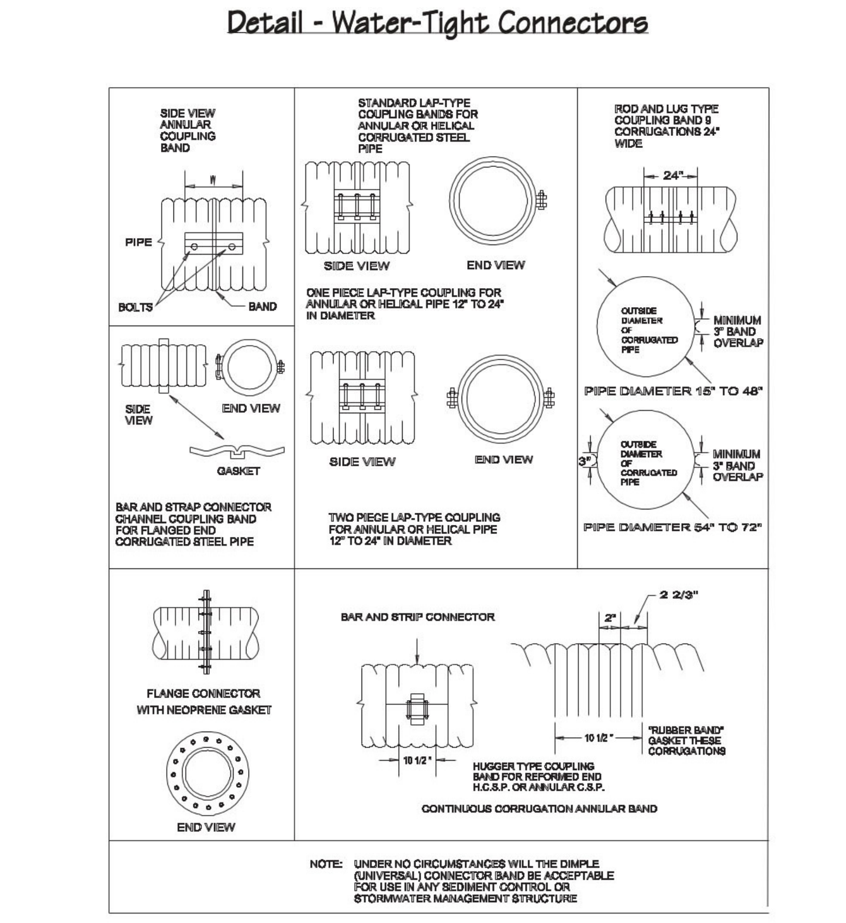
Detail - Flexible Anti-Seep Collar



Source:	Symbol:	Detail No.
Adapted from IL Urban Manual	TSB	DE-ESC-3.1.4 Sheet 6 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

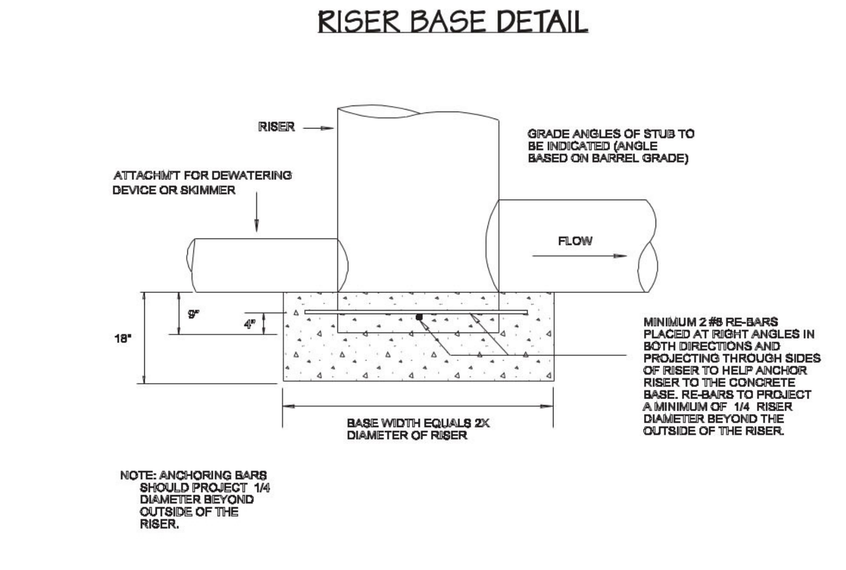
Detail - Water-Tight Connectors



Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TSB	DE-ESC-3.1.4 Sheet 7 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

RISER BASE DETAIL



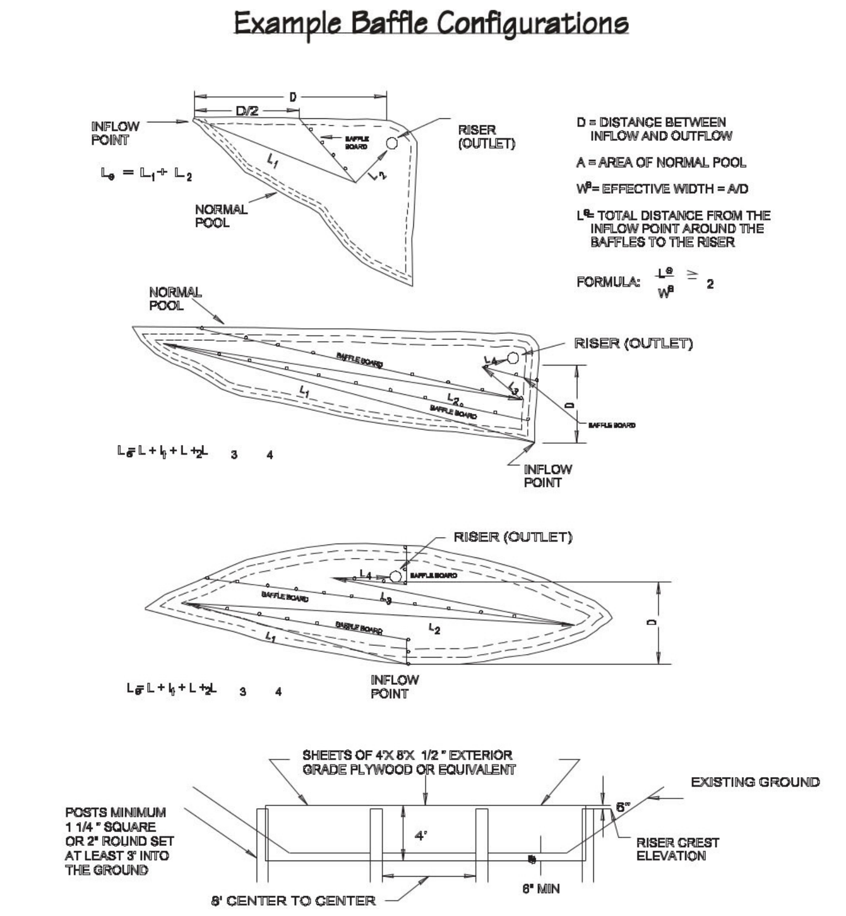
Notes:

1. The concrete base shall be poured in such a manner to insure that the concrete fills the bottom of riser to the invert of the outlet pipe to prevent the riser from breaking away from the base.
2. With aluminum or aluminized pipe, the embedded section must be painted with zinc chromate or equivalent.
3. Riser base may be sized as computed using floatation with a factor of safety of 1.2.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TSB	DE-ESC-3.1.4 Sheet 8 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

Example Baffle Configurations



Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TSB	DE-ESC-3.1.4 Sheet 9 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

Construction Notes:

1. **Site Preparation**
Areas under the embankment shall be cleared, grubbed, and stripped of topsoil. In order to facilitate clean-out and restoration, the pool area (measured at the top of the pipe spillway) will be cleared of all brush, trees, and other objectionable materials.

2. **Cut-off-trench**
A cut-off trench shall be excavated along the centerline of earth fill embankments. The minimum depth shall be two feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be four feet, but wide enough to permit operation of excavation and compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for embankment. The trench shall be dewatered during the backfilling and compaction operations.

3. **Embankment**
The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Relatively pervious materials such as sand or gravel (Unified Soil Classes GW, GP, SW & SP) shall **not** be placed in the embankment. Areas on which fill is to be placed shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material shall be placed in six-inch to eight-inch thick continuous layers over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.

4. **Pipe Spillways**
The riser shall be securely attached to the barrel or barrel stub by welding the full circumference making a watertight connection. The barrel stub must be attached to the riser at the same percent (angle) of grade as the outlet conduit. The connection between the riser and the riser base shall be water tight. All connections between barrel sections must be achieved by approved watertight band assemblies. The barrel and riser shall be placed on a firm, smooth foundation of impervious soil. Pervious materials such as sand, gravel, or crushed stone shall not be used as backfill around the pipe or anti-seep collars. The fill material around the pipe spillway shall be placed in four inch layers and compacted by means of a manually directed power tamper under and around the pipe to at least the same density as the adjacent embankment. A minimum depth of two feet of hand compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment. Steel base plates on risers shall have at least 2-1/2 feet of compacted earth, placed over it to prevent flotation.

Source:	Symbol:	Detail No.
DE ESC Handbook	TSB	DE-ESC-3.1.4 Sheet 10 of 11 Date: 12/03

Standard Detail & Specifications — Temporary Sediment Basin

Construction Notes (cont.)

5. **Emergency Spillway**
The emergency spillway shall be installed in undisturbed ground. The achievement of planned elevations, grades, design width, entrance and exit channel slopes are critical to the successful operation of the emergency spillway and must be constructed within a tolerance of + 0.2 feet.

6. **Vegetative Treatment**
Stabilize the embankment and emergency spillway in accordance with the appropriate Vegetative Standard and Specifications immediately following construction. In no case shall the embankment remain unstabilized for more than seven (7) days.

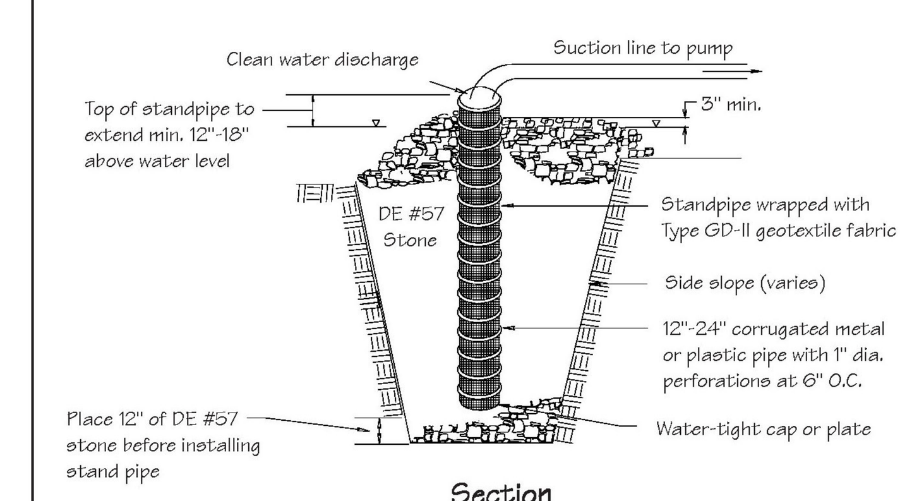
7. **Safety**
State and local requirements shall be met concerning fencing and signs, warning the public of hazards of soft sediment and floodwater.

8. **Maintenance**
a. Repair all damages caused by soil erosion and construction equipment at or before the end of each working day.
b. **An approved dewatering device shall be considered an integral part of the basin. Dewatering operations shall be conducted in accordance with any and all regulatory requirements.**
c. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, or adjacent to a stream or floodplain.

9. **Final Disposal**
When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits are to be leveled or otherwise disposed of in accordance with the approved sediment control plan. The proposed use of a sediment basin site will often dictate final disposition of the basin and any sediment contained therein. If the site is scheduled for future construction, then the basin material and trapped sediments must be removed, safely disposed of, and backfilled with a structural fill. When the basin area is to remain open space the pond may be pumped dry, graded and backfilled.

Source:	Symbol:	Detail No.
DE ESC Handbook	TSB	DE-ESC-3.1.4 Sheet 11 of 11 Date: 12/03

Standard Detail & Specifications — Pumping Pit - Type 1



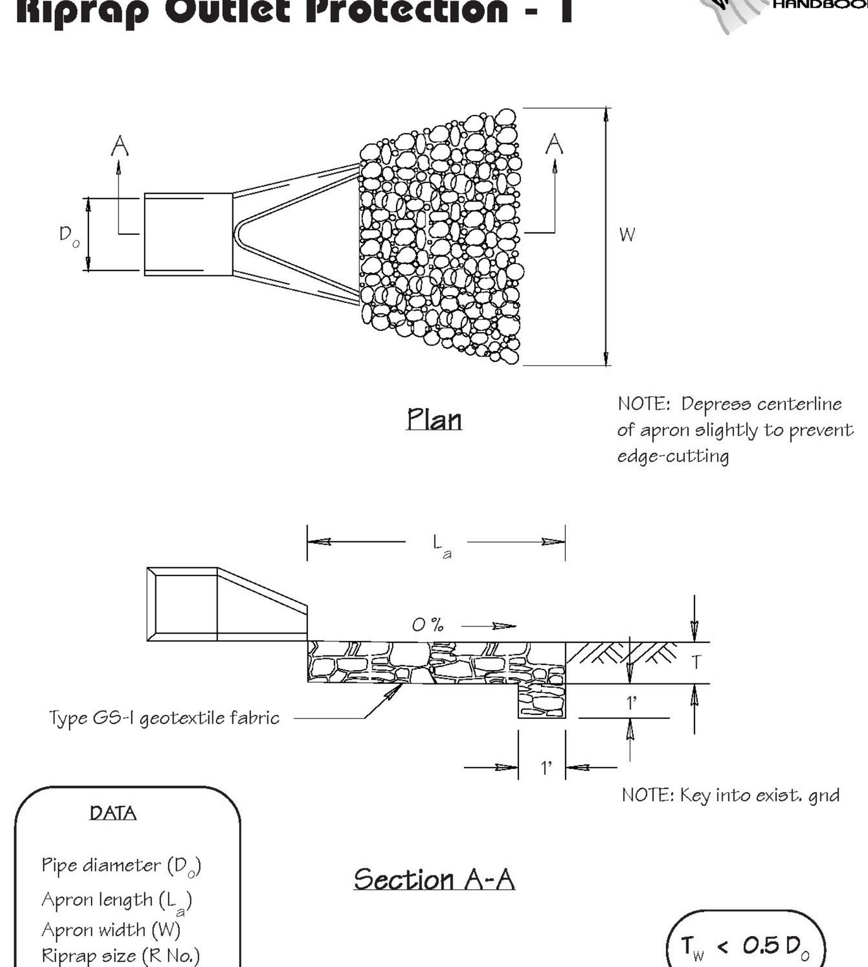
Construction Notes:

1. Pit dimensions are variable.
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center.
3. A base of DE #57 aggregate should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with DE #57 aggregate.
4. The standpipe should extend 12" to 18" above the lip of the pit or riser crest elevation (basin dewatering).

NOTE: If discharge will be pumped directly to a storm drainage system, the standpipe must be wrapped with Type GD-II geotextile fabric before installation. If desired, 1/2" hard-ware cloth may be placed around the standpipe, prior to attaching the geotextile fabric. This will increase the rate of water seepage into the pipe.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	PP-1	DE-ESC-3.2.2.1 Sheet 1 of 1 Date: 12/03

Standard Detail & Specifications — Riprap Outlet Protection - 1



DATA

Pipe diameter (D_o)
Apron length (L_a)
Apron width (W)
Riprap size (R No.)
Riprap thickness (T)

$T_w < 0.5 D_o$

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	ROP-1	DE-ESC-3.3.10.1 Sheet 1 of 2 Date: 6/05

Standard Detail & Specifications — Riprap Outlet Protection - 1

Construction Notes:

1. The subgrade for the riprap shall be prepared to the required lines and grades as shown on the plan. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The riprap shall conform to the grading limits as shown on the plan.
3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged area. All connecting joints should overlap a minimum of 1 ft. If the damage is extensive, replace the entire filter cloth.
4. Stone for the riprap or gabion outlets may be placed by equipment. Riprap shall be placed in a manner to prevent damage to the filter cloth. Hand placement will be required to the extent necessary to prevent damage to the conduits, structures, etc.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	ROP-1	DE-ESC-3.3.10.1 Sheet 2 of 2 Date: 6/05

Standard Detail & Specifications — Vegetative Stabilization

TEMPORARY SEEDING BY RATES, DEPTHS AND DATES

Mix #	Species[6]	Seeding Rate		Optimum Seeding Dates[1] O = Optimum Planting Period; A = Acceptable Planting Period							Planting Depth[3]
				Coastal Plain			Piedmont			All	
	Certified Seed	lb/Ac[5]	lb/1000 sq.ft.	2/1-4/30	[2] 5/1-8/14	8/15-10/31	3/1-4/30	[2] 5/1-7/31	8/1-10/31	10/31-2/1	
1	Barley	125	4	O	A	O	O	A	O		1-2 inches 2-3" sandy soils
2	Oats	125	4	O	A	A	O	A	A		1-2 inches 2-3" sandy soils
3	Rye	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils
4	Perennial Ryegrass	125	4	O	A	O	O	A	O		0.5 inches 1-2" sandy soils
5	Annual Ryegrass	125	4	O	A	O	O	A	O	A	0.5 inches 1-2" sandy soils
6	Winter Wheat	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils
7	Foxtail Millet	30 PLS	0.7		O			O			0.5 inches 1-2" sandy soils
8	Pearl Millet	20 PLS	0.5		O			O			0.5 inches 1-2" sandy soils

1. Winter seeding requires 3 tons per acre of straw mulch for proper stabilization.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Applicable on slopes 3:1 or less.
4. Fifty pounds per acre of Annual Lespedeza may be added to 1/2 the seeding rate of any of the above species.
5. Use varieties currently recommended for Delaware. Contact a County Extension Office for information.
6. Warm season grasses such as Millet or Weeping Lovegrass may be used between 5/1 and 9/1 if desired. Seed at 3-5 lbs. per acre. Good on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 1 of 4 Date: 12/03

Standard Detail & Specifications — Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES

Mix No.	Seeding Mixtures — Certified Seed[3] — Well Drained Soils	Seeding Rate[1] lb/Ac	lb/1000 sq.ft.	Coastal Plain 2/1-4/30	5/1-8/14	8/15-10/31	Piedmont 3/1-4/30	5/1-7/31	8/1-10/31	All[4] 10/31-2/1	Remarks
1	Tall Fescue Weeping Lovegrass	140 10	3.2 0.23	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Lovegrass very difficult to mow; Germinates only in hot weather
2	Deertongue Sheep Fescue Common Lespedeza[5] Inoculated	30 30 15	0.69 0.69 0.35	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Good wildlife cover and food
3	Tall Fescue (Turf-type) **or** Strong Creeping Red Fescue **or** Perennial Ryegrass **plus** Flatpea[5]	50 50 50 15	1.15 1.15 1.15 0.34	O	A	O	O	A	O	Add 100 lbs./ac. Winter Rye	Good erosion control mix Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.
4	Strong Creeping Red Fescue Kentucky Bluegrass Perennial Ryegrass **or** Redtop **plus** White Clover[5]	100 70 15 5 3	2.3 1.61 0.35 0.11 0.07	O	A	O	O	A	O	Add 100 lbs./ac. Winter Rye	Suitable waterway mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.
5	Switchgrass[6,7] **or** Coastal Panicgrass Big Bluestem Little Bluestem Indian Grass	10 10 5 5 5	0.23 0.23 0.11 0.11 0.1		O			O			Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance. N fertilizer discouraged - weeds
6	Tall Fescue (turf-type) (Blend of 3 cultivars)	150	3.5	O	A	O	O	A	O		Managed filter strip for nutrient uptake.
7	Tall Fescue Ky. Bluegrass (Blend) Perennial Ryegrass	150 20 20	3.5 0.46 0.46	O	A	O	O	A	O		Three cultivars of Kentucky Bluegrass. Traffic tolerant.
8	Big Bluestem[7] Indian Grass[7] Little Bluestem[7] Creeping Red Fescue **plus one of:** Partridge Pea Bush Clover Wild Indigo Showy Tick-Trefoil	10 10 8 30 5 3 3 2	0.23 0.23 0.18 0.69 0.11 0.07 0.07 0.05	O	A		O	A			All species are native. Indian Grass and Bluestem have fluffy seeds. Plant with a specialized native seed drill. Creeping Red Fescue will provide erosion protection while the warm season grasses get established.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 2 of 4 Date: 12/03

Standard Detail & Specifications — Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES (cont.)

Mix No.	Seeding Mixtures — Certified Seed[3]	Seeding Rate[1] lb/Ac	lb/1000 sq.ft.	Coastal Plain 2/1-4/30	5/1-8/14	8/15-10/31	Piedmont 3/1-4/30	5/1-7/31	8/1-10/31	All[4] 10/31-2/1	Remarks
	Poorly Drained Soils										
9	Redtop Creeping Bentgrass Sheep Fescue Rough Bluegrass	75 35 30 45	1.72 0.8 0.69 1	O	A	O	O	A	O	Add 100 lbs./ac. Winter Rye	Quick stabilization of disturbed sites and waterways
10	Reed Canarygrass[6]	10	0.23	A		O	A		O		Good erosion control, wildlife cover and wetland revegetation.
	Residential Lawns										
11	Tall Fescue Perennial Ryegrass Kentucky Bluegrass Blend	100 25 30	2.3 0.57 0.69	O	A	O	O	A	O		High value, high maintenance, light traffic, irrigation necessary. Well drained soils, full sun.
12	Tall Fescue Perennial Ryegrass Sheep Fescue	100 25 25	2.3 0.57 0.57	O	A	O	O	A	O		Moderate value, low maintenance, traffic tolerant
13	Creeping Red Fescue Chewings Fescue Rough Bluegrass Kentucky Bluegrass	50 50 20 20	1.15 1.15 0.4 0.4	O	A	O	O	A	O		Shade tolerant, moderate traffic tolerance, moderate maintenance.
14	Creeping Red Fescue Rough Bluegrass **or** Chewings Fescue	50 90	1.15 2.1	O	A	O	O	A	O		Shade tolerant, moisture tolerant.
15	K-31 Tall Fescue	150	3.5	O	A	O	O	A	O		Monoculture, but performs well alone in lawns. Discouraged.

1. When hydroseeding is the chosen method of application, the total rate of seed should be increased by 25%.
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.
3. All seed shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Section 1, Chapter 24, Title 3 of the Delaware Code.
4. Cool season species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
5. All leguminous seed must be inoculated.
6. Warm season grass mix and Reed Canary Grass cannot be mowed more than 4 times per year.
7. Warm season grasses require a soil temperature of at least 50 degrees in order to germinate, and will remain dormant until then.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 3 of 4 Date: 12/03

Standard Detail & Specifications — Vegetative Stabilization

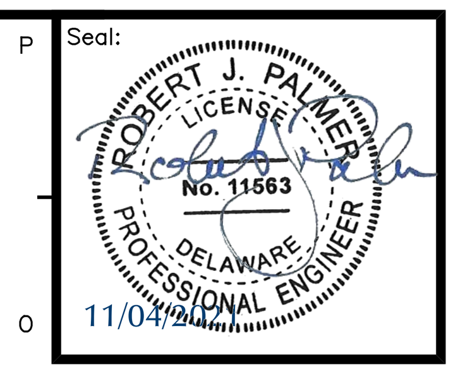
Construction Notes:

1. Site Preparation
   a. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.
   b. Final grading and shaping is not necessary for temporary seedings.
2. Seedbed Preparation

   It is important to prepare a good seedbed to insure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform, and free of large clods, rocks, and other objectionable material. The soil surface should not be compacted or crusted.
3. Soil Amendments
   a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.
   b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soils.
4. Seeding
   a. For **temporary stabilization**, select a mixture from **Sheet 1** . For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions.
   b. Apply seed uniformly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.
   c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall be done immediately and without interruption.
5. Mulching

   All mulching shall be done in accordance with detail **DE-ESC-3.4.5**.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 4 of 4 Date: 12/03



BEACON ENGINEERING LLC
23318 Cedar Lane | Georgetown | Delaware | 19947
302.864.8825 | info@beaconengineeringllc.com

Revision:	By:	Date:
1 SCD COMMENTS	SKM	03/29/2019
2 SCD COMMENTS	SKM	12/28/2020
3 SCD COMMENTS	SKM	04/20/2021
4 SCD COMMENTS	SKM	08/31/2021

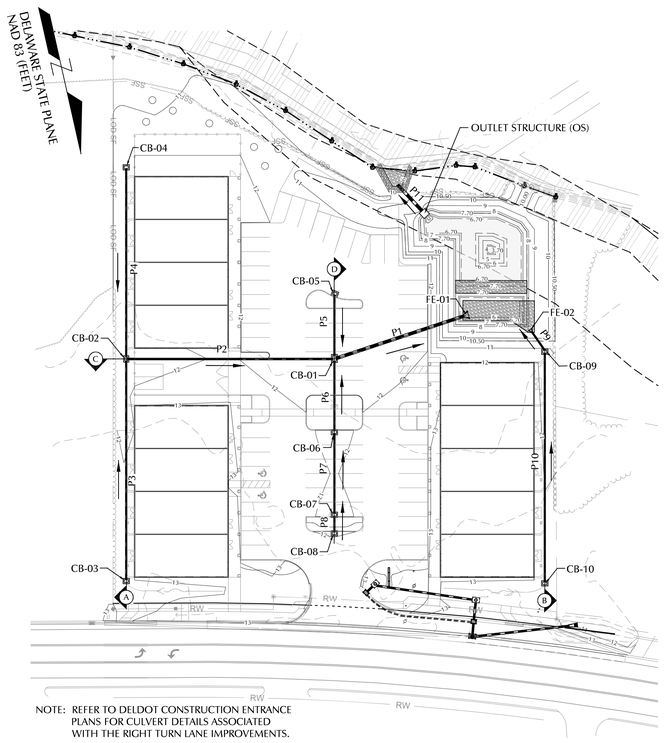
MILLVILLE SQUARE

SEDIMENT & STORMWATER MANAGEMENT PLANS
WHITE CREEK - INDIAN RIVER BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-12.00-350.00 AND #134-12.00-351.00

CONSTRUCTION SITE DETAILS AND NOTES

Date:	FEB 08, 2019
Scale:	NO SCALE
Dwn.By:	SKM
Proj.No.:	TRU01-06

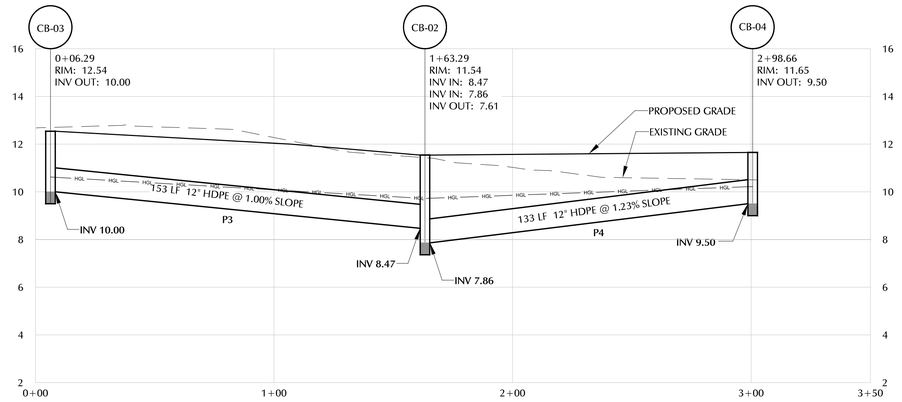
Dwg.: **SW2.4**



SECTION LOCATION DIAGRAM

1"=50'

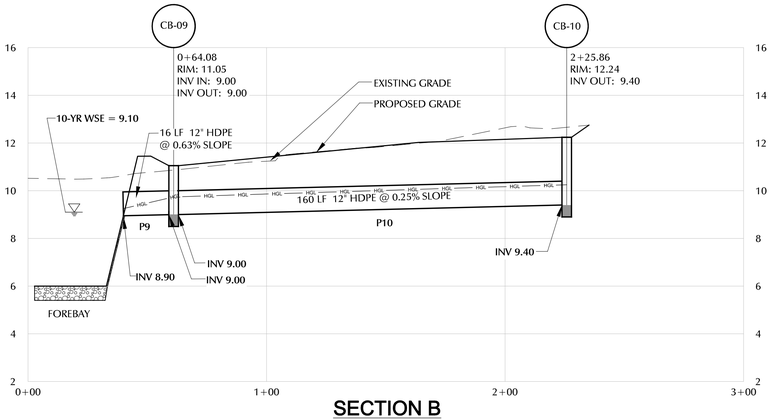
0 50 100 150 FEET



SECTION A

H-1"=30' V-1"=3'

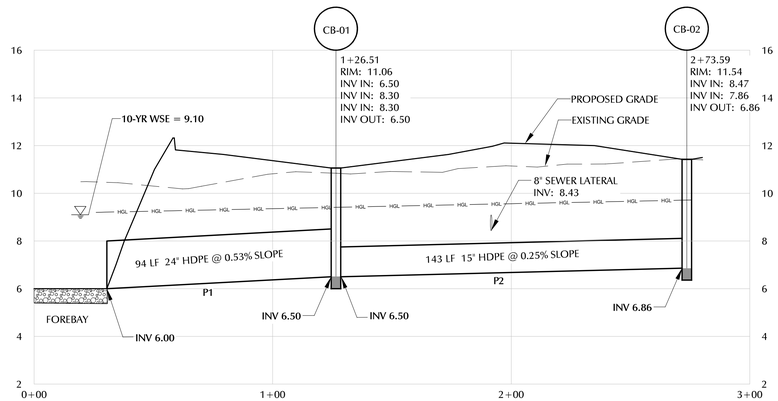
0 30 60 90 FEET



SECTION B

H-1"=30' V-1"=3'

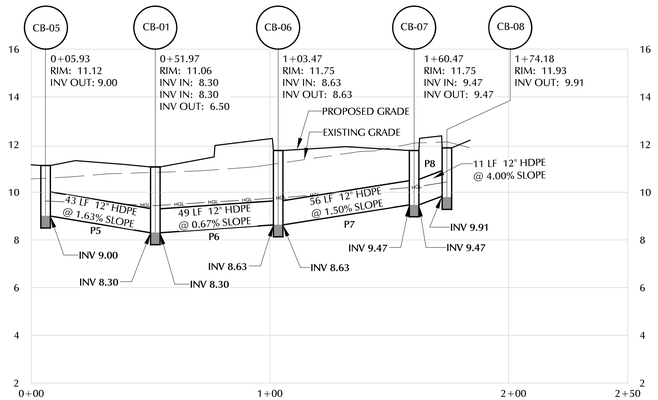
0 30 60 90 FEET



SECTION C

H-1"=30' V-1"=3'

0 30 60 90 FEET



SECTION D

H-1"=30' V-1"=3'

0 30 60 90 FEET

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Seal:

ROBERT J. PALMER
LICENSE
No. 11663
DELAWARE
PROFESSIONAL ENGINEER

11/04/2021

BEACON ENGINEERING LLC
23318 Cedar Lane | Georgetown | Delaware | 19947
302.864.8825 | info@beaconengineeringllc.com

	Revision:	By:	Date:
1	SCD COMMENTS	SKM	03/29/2019
2	SCD COMMENTS	SKM	12/28/2020
3	SCD COMMENTS	SKM	04/20/2021
4	SCD COMMENTS	SKM	08/31/2021

MILLVILLE SQUARE

SEDIMENT & STORMWATER MANAGEMENT PLANS
WHITE CREEK - INDIAN RIVER BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-12.00-350.00 AND #134-12.00-351.00

CONSTRUCTION SITE DETAILS AND NOTES

Date:	FEB 08, 2019
Scale:	AS SHOWN
Dwn.By:	SKM
Proj.No.:	TRU01-06

Dwg.:

SW3.1

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M:\Projects\TRU01-06 - Millville Square\Construction Docs\DWGs\SWM-ESC DWG\TRU01-06 SW31.dwg Nov 04 , 2021 - 1:31pm, (Sarah)