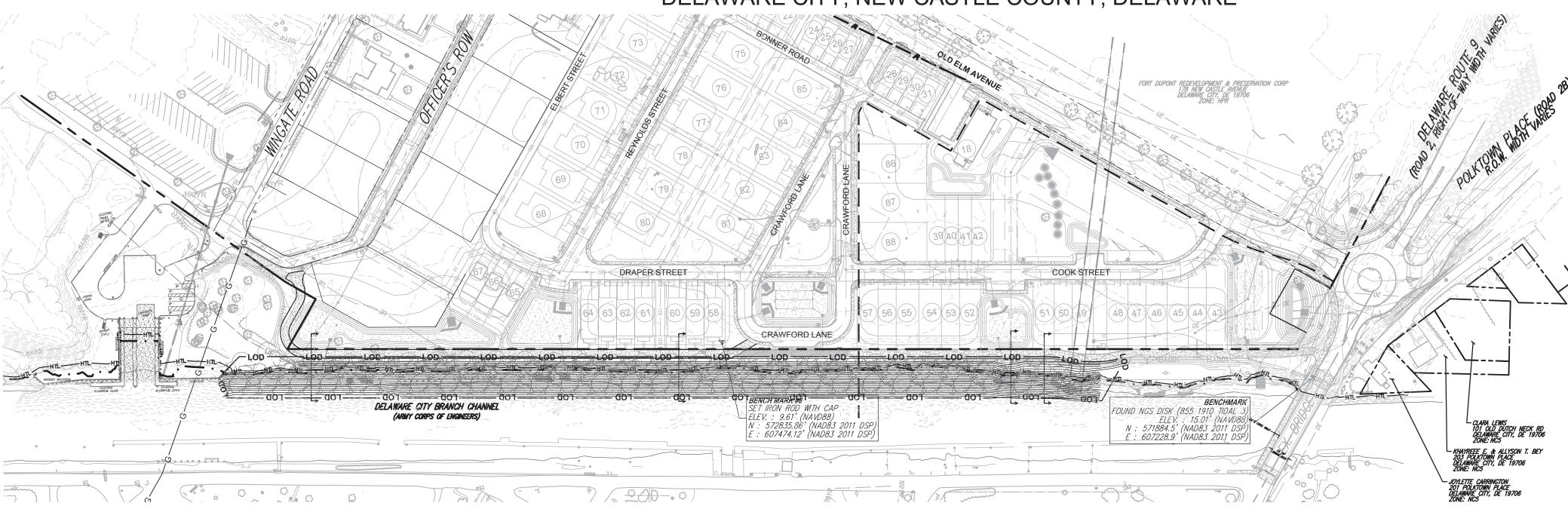


# FORT DUPONT BRANCH CHANNEL REVETMENT

# FINAL CONSTRUCTION DRAWINGS

DELAWARE CITY, NEW CASTLE COUNTY, DELAWARE



#### SEDIMENT CONTROL NOTES

PROJECT SITE

THE SITE AT ALL TIMES

- ACTIVITY. UPON COMPLETION OF INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES HE SITE MUST BE INSPECTED BY DPW. NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL OF THE DNREC SEDIMENT AND STORMWATER PROGRAM.
- 4. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED. . EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD
- CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. ALL SUCH CHANGES MUST BE APPROVED BY THE SITE INSPECTOR PRIOR TO INSTALLATION. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE REAPPROVAL BY THE KENT SOIL CONSERVATION DISTRICT.
- . FOLLOWING INITIAL SOIL DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE
- A) SEVEN CALENDAR DAYS ON SLOPES GREATER THAN 3:1 AND ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS B) FOURTEEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE
- . AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT
- 8. LAND GRADING SHALL BE DONE IN CONFORMANCE WITH DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- 9. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
- 10. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO THE PROJECT SITE.
- 11. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON
- THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
- 12. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

PRIOR TO INSPECTOR APPROVAL CONSTITUTES A VIOLATION.

- 13. TOPSOILING, LIMING, FERTILIZING, SEEDING, MULCHING, SODDING, ETC. ARE ALL ESSENTIAL
- PART OF SEDIMENT CONTROL AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES. 14. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF SEC. ALL DISTURBED AREAS RESULTING FROM

THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL

THIS PROPERTY, TAX MAP #12-023.00-021 & 12-028.00-011, HAS BEEN EXAMINED BY WATERSHED ECO, LLC FOR THE PRESENCE OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS (SECTION 404 AND SECTION 10), STATE SUBAQUEOUS LANDS AND STATE REGULATED WETLANDS AS ESTABLISHED BY THE REVIEWING AGENCIES IN THE FORM OF MANUALS, POLICIES AND PROCEDURES IN PLACE AT THE TIME THAT THE INVESTIGATION WAS CONDUCTED. THE WETLAND INFORMATION CONTAINED IN THIS PLAN SET IS IN ACCORDANCE WITH THIS CRITERIA, PER STATE JD #\_\_\_\_AND/OR ARMY CORPS JD #\_\_\_\_\_

#### **OWNER'S CERTIFICATION**

I, THE UNDERSIGNED, CERTIFY THAT ALL LAND CLEARING, CONSTRUCTION AND DEVELOPMENT SHALL BE DONE PURSUANT TO THE APPROVED PLAN AND THAT THE RESPONSIBLE PERSONNEL (I.E., BLUE CARD HOLDER) INVOLVED IN THE LAND DISTURBANCE WILL HAVE A CERTIFICATION OF TRAINING PRIOR TO INITIATION OF THE PROJECT, AT A DNREC SPONSORED OR APPROVED TRAINING COURSE FOR THE CONTOL OF EROSION AND SEDIMENT DURING CONSTRUCTION. IN ADDITION. I GRANT THE DNREC SEDIMENT AND STORMWATER PROGRAM AND/OR THE RELEVANT DELEGATED AGENCY THE RIGHT TO CONDUCT ON-SITE REVIEWS. AND I UNDERSTAND MY RESPONSIBILITIES UNDER THE NPDES CONSTRUCTION GENERAL PERMIT, AS

REFERENCED ON THIS COVERSHEET.

#### STANDARD SEDIMENT AND STORMWATER NOTES

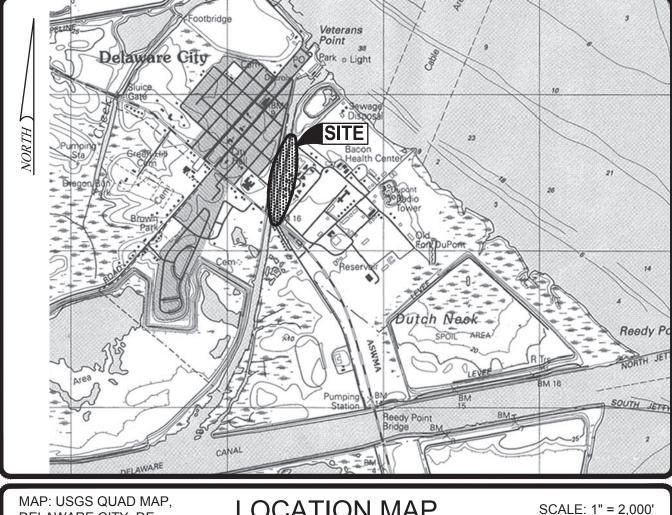
- MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY DNREC OR THE DELEGATED AGENCY
- 4. FOLLOWING SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED FOR ALL PERIMETER SEDIMENT CONTROLS, SOIL STOCKPILES, AND ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE WITHIN 14 CALENDAR DAYS UNLESS MORE RESTRICTIVE FEDERAL REQUIREMENTS APPLY.
- 5. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL COMPLY WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- 6. AT ANY TIME A DEWATERING OPERATION IS USED, IT SHALL BE PREVIOUSLY APPROVED BY THE AGENCY CONSTRUCTION SITE REVIEWER FOR A NON-EROSIVE POINT OF DISCHARGE, AND A DEWATERING PERMIT SHALL BE APPROVED BY THE DNREC WELL PERMITTING BRANCH
- 7. APPROVED PLANS REMAIN VALID FOR 5 YEARS FROM THE DATE OF APPROVAL
- 8. POST CONSTRUCTION VERIFICATION DOCUMENTS ARE TO BE SUBMITTED TO THE DEPARTMENT OR DELEGATED AGENCY WITHIN 60-DAYS OF STORMWATER MANAGEMENT FACILITY COMPLETION.
- 9. APPROVAL OF A SEDIMENT AND STORMWATER MANAGEMENT PLAN DOES NOT GRANT OR IMPLY A RIGHT TO DISCHARGE STORMWATER RUNOFF. THE OWNER/DEVELOPER IS RESPONSIBLE FOR ACQUIRING ANY AND ALL AGREEMENTS, EASEMENTS, ETC., NECESSARY TO COMPLY WITH STATE DRAINAGE AND OTHER
- 10. THE NOTICE OF INTENT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER A NPDES GENERAL PERMIT FOR THIS PROJECT IS # 5268. THE PERMITTEE OF RECORD SHALL NOT BE RELIEVED OF THEIR RESPONSIBILITIES UNTIL A NOTICE OF TERMINATION HAS BEEN PROCESSED BY
- 11. THE OWNER SHALL BE FAMILIAR WITH AND COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION
- 13. THE CONTRACTOR SHALL AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND FROM LEAVING THE SITE. PERIMETER CONTROLS SHALL BE CHECKED DAILY AND ADJUSTED OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENT FROM LEAVING THE SITE. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE CONTRACTOR MAY NEED TO ADJUST OR ALTER MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, OR AS DIRECTED BY THE AGENCY CONSTRUCTION SITE INSPECTOR.
- 14. BEFORE ANY EARTHWORK OR EXCAVATION TAKES PLACE, THE CONTRACTOR SHALL CALL MISS UTILITY AT 811 OR 1-800-282-8555 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, TO HAVE ALL EXISTING UTILITIES
- 15. BEST AVAILABLE TECHNOLOGY (BAT) SHALL BE EMPLOYED TO MANAGE TURBID DISCHARGES IN ACCORDANCE WITH REQUIREMENTS OF 7. DEL C. CH 60 AND THE CURRENT DELAWARE CONSTRUCTION GENERAL PERMIT (CGP).
- 16. DOCUMENTATION OF SOIL TESTING AND MATERIALS USED FOR TEMPORARY OR PERMANENT STABILIZATION INCLUDING BUT NOT LIMITED TO SOIL TEST RESULTS, SEED TAGS, SOIL AMENDMENT TAGS, ETC. SHALL BE PROVIDED TO THE DEPARTMENT OR DELEGATED AGENCY TO VERIFY THAT THE PERMANENT OR TEMPORARY STABILIZATION HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN.
- 17. THE DEPARTMENT OR DELEGATED AGENCY MAY REQUIRE ADDITIONAL SOIL TESTING AND REAPPLICATION OF PERMANENT OR TEMPORARY STABILIZATION IN ACCORDANCE WITH THE SPECIFICATIONS IN THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, OR ALTERNATIVE MEASURES THAT PROVIDE FUNCTIONAL EQUIVALENCY.
- 18. IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO INSPECT AND PERFORM MAINTENANCE AND/OR REPAIRS OF THE STORMWATER MANAGEMENT PRACTICES AFTER CONSTRUCTION.
- 19. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND REPAIR ALL EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PRACTICES DURING CONSTRUCTION AND UTILITY

#### **ENGINEER'S CERTIFICATION**

I, HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED UNDER MY SUPERVISION AND TO THE BEST OF MY KNOWLEDGE COMPLIES WITH THE APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES.



02/09/2024



#### **LOCATION MAP** DELAWARE CITY, DE

#### SITE DATA:

5. DESIGNER

10. SITE AREAS:

TAX PARCEL NO.

12-023.00-021 & 12-028.00-011

SITE ADDRESS: NORTHEAST CORNER OF DELAWARE RTE. 9 AND OLD ELM AVENUE **DELAWARE CITY** 

NEW CASTLE COUNTY, DELAWARE

4. OWNER/DEVELOPER FORT DUPONT REDEVELOPMENT AND PRESERVATION CORPORATION 260 OLD ELM AVENUE DELAWARE CITY, DE 19706

> DUFFIELD ASSOCIATES, INC 5400 LIMESTONE ROAD

WILMINGTON, DE 19808 (302) 239-6634

AGENCY: DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

89 KINGS HIGHWAY **DOVER, DE 19901** (302) 739-9921

SOURCE OF TITLE IN20160314-001164 ZONING: MIXED USE

SITE ACREAGE:

TOTAL AREA: 85,329.939± SF

4 PERMANENT MONUMENT MARKERS 11. EXIST. MONUMENTS:

12. PROP. MONUMENTS: **0 PERMANENT MONUMENT MARKERS** 13. BENCHMARK: NGS DISK 855 1910 TIDAL 3 (AS SHOWN) NORTHING: 571884.5' (NAD 83 2011 DSP)

EASTING: 607228.9' (NAD 83 2011 DSP) 15.01' (NAVD 88) IRON ROD WITH CAP (AS SHOWN) NORTHING: 572835.86' (NAD 83 2011 DSP)

> 607474.12' (NAD 83 2011 DSP) EASTING: 9.61' (NAVD 88) IRON ROD WITH CAP (AS SHOWN) NORTHING: 573049.73' (NAD 83 2011 DSP) EASTING: 608292.98' (NAD 83 2011 DSP)

> > NAVD 1988

8.86' (NAVD 88) 14. DATUM: HORIZONTAL: NAD 83 DE STATE PLAN GRID

VERTICAL:

15. EXISTING WETLAND AREA: 0.82± AC

16. PROPOSED DISCHARGE LOCATIONS: DELAWARE CITY BRANCH CANAL

17. PROPOSED TOTAL LIMIT OF DISTURBANCE PER

DISCHARGE: 1.96± ACRES (85,330± SF)

18. WATERSHED: C&D CANAL EAST WATERSHED 19. DNREC SEDIMENT AND

STORMWATER PROGRAM PROJECT NO.:

#### **INDEX OF SHEETS**

DRAWING SCALE

**LEGEND** 

— — EXISTING PROPERTY LINE

PROPOSED RIPRAP

EXISTING ADJACENT PROPERTY LINE

PRE-CONSTRUCTION STORMWATER MANAGEMENT PLAN SHEET 2 SHEET 3 OVERALL CONSTRUCTION STORMWATER MANAGEMENT PLAN

SHEET 4 CONSTRUCTION STORMWATER MANAGEMENT PLAN

SHEET 5 CONSTRUCTION STORMWATER MANAGEMENT PLAN

SHEET 6 CHANNEL CROSS-SECTIONS

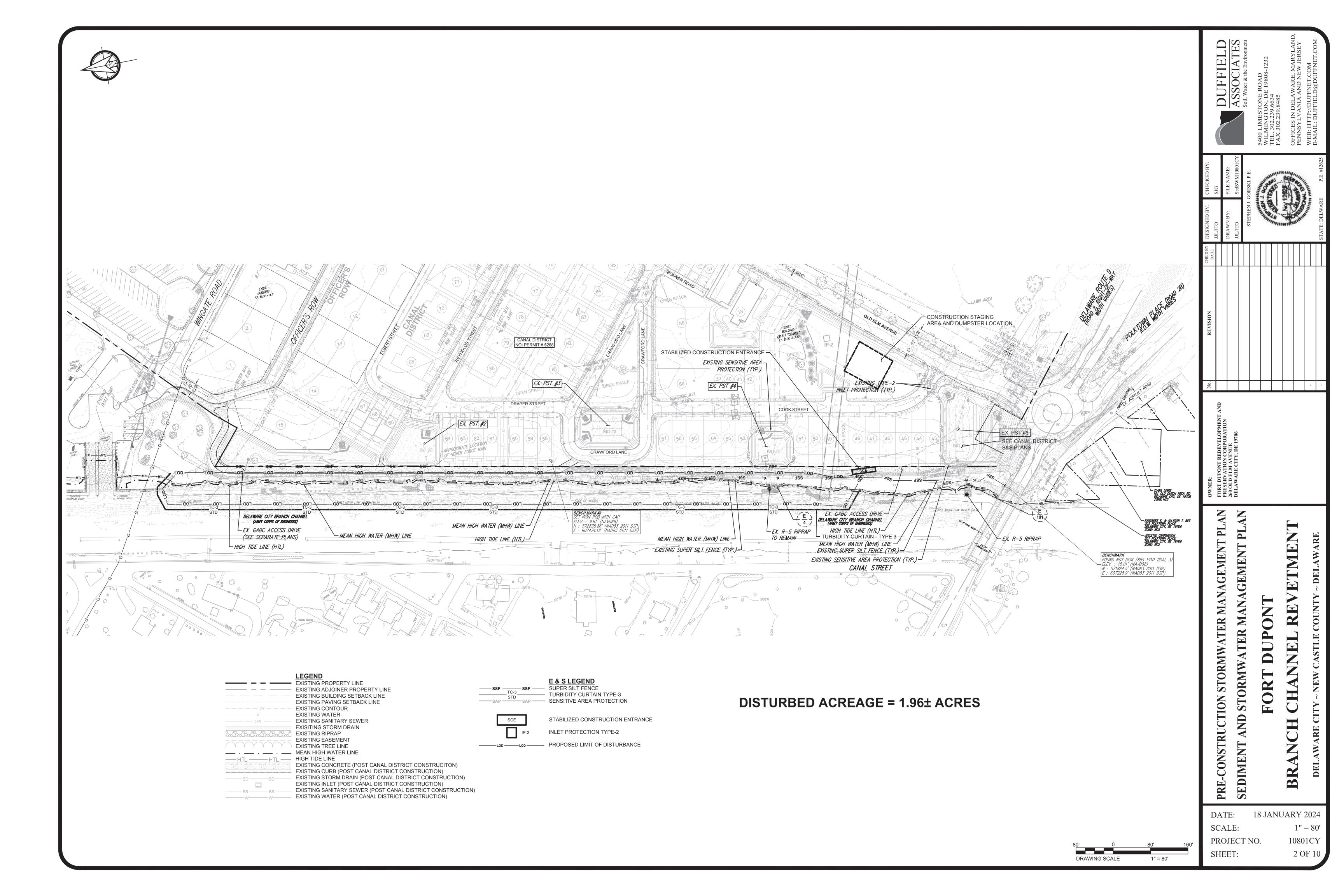
SHEET 7 **EROSION AND SEDIMENT CONTROL DETAILS** 

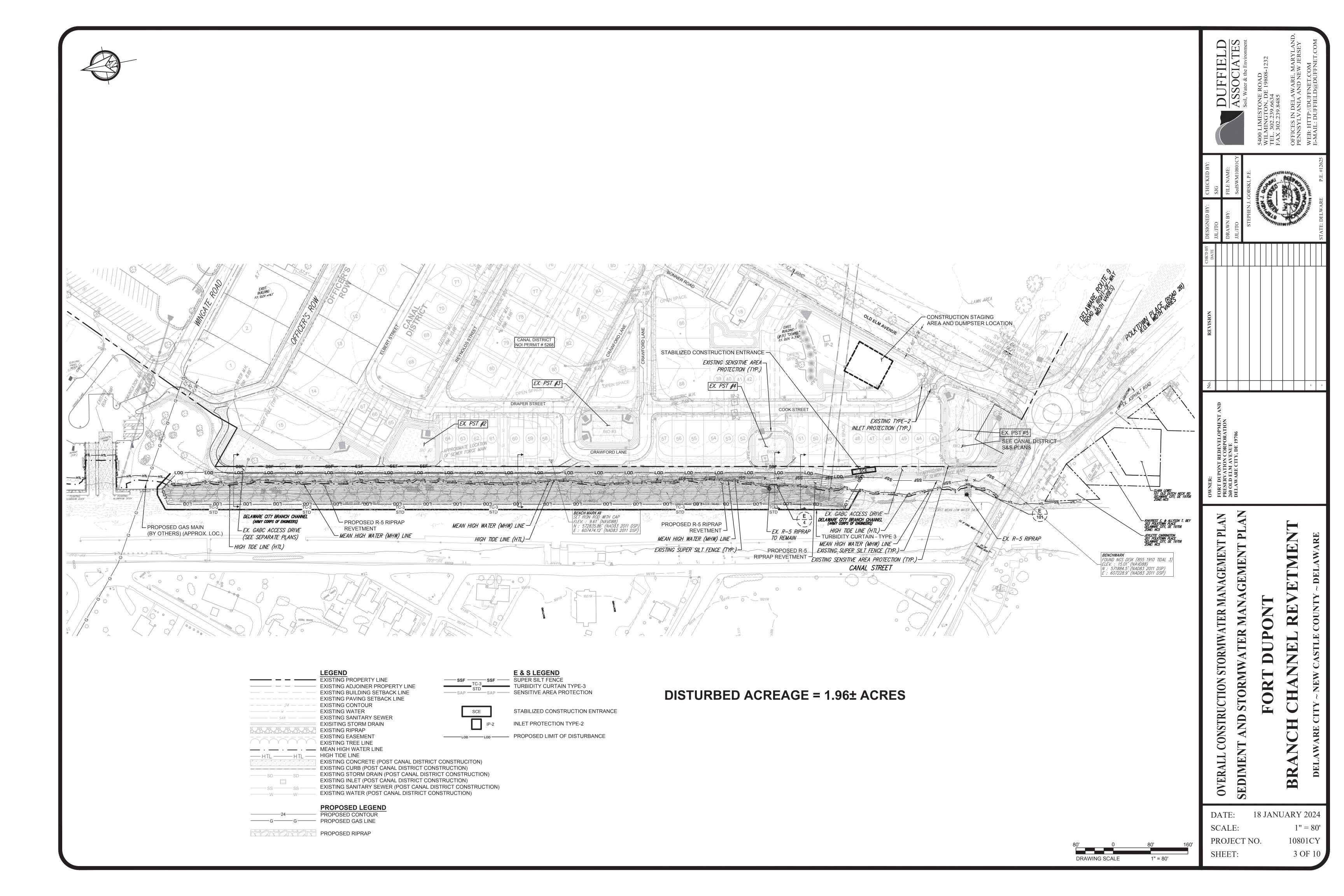
SHEET 8 **EROSION AND SEDIMENT CONTROL DETAILS** SHEET 9 **EROSION AND SEDIMENT CONTROL DETAILS** 

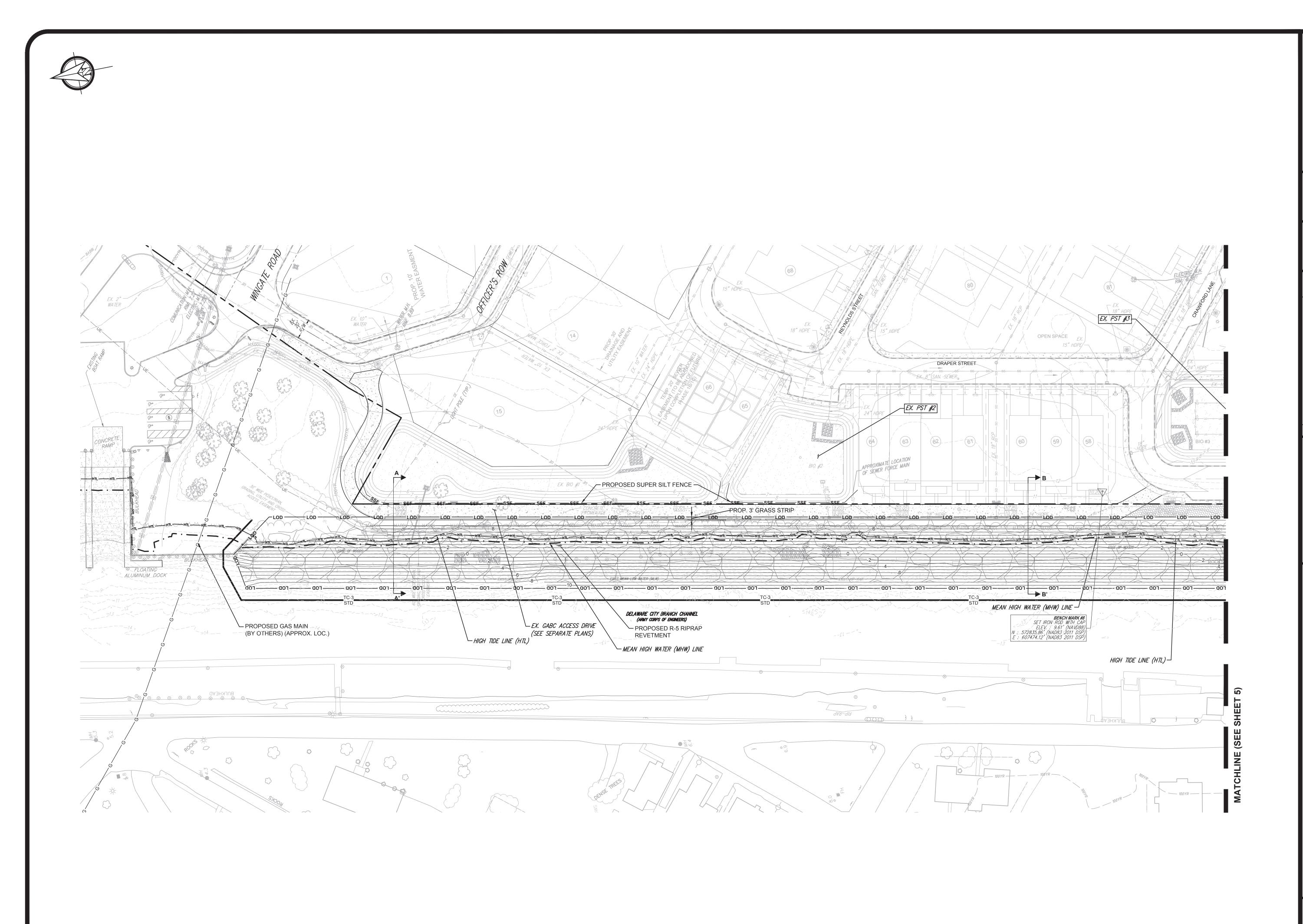
SHEET 10 EROSION AND SEDIMENT CONTROL DETAILS

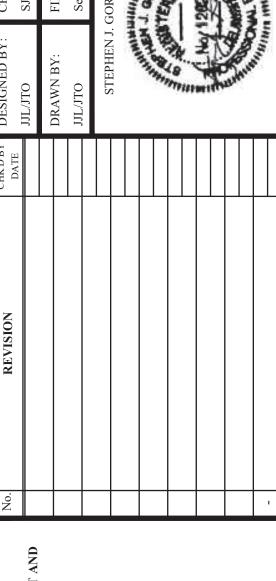
# **FORM**

18 JANUARY 2024 SCALE: 10801CY PROJECT NO. SHEET:









"		
FORT DUPONT REDEVELOPMENT AND PRESERVATION CORPORATION	260 OLD ELM AVENUE DELAWARE CITY, DE 19706	

STORMWATER MANGEMENT PLAN

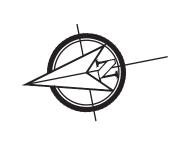
VETMENT DUPONT RE CHANNEL

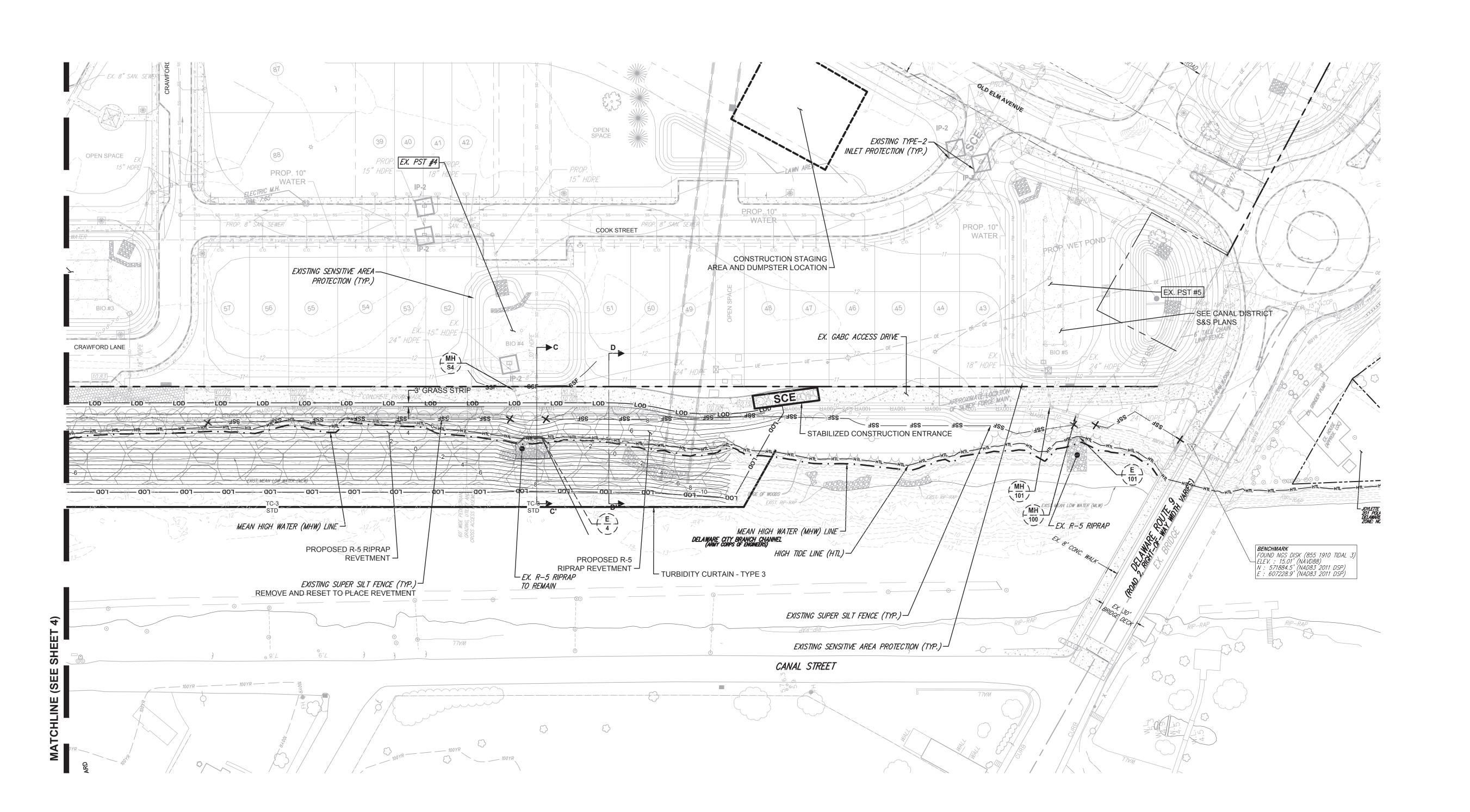
CONSTRUCTION STORMWATER MANAGEMENT PLAN FORT SEDIMENT AND BRANCH

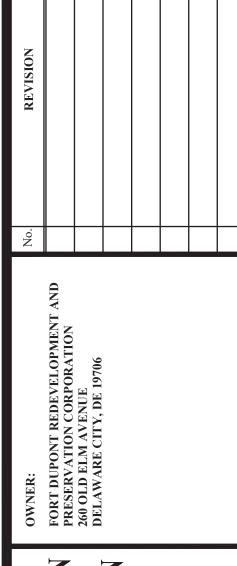
18 JANUARY 2024 DATE: SCALE: 1'' = 40'PROJECT NO. 10801CY 4 OF 10

SHEET:

DRAWING SCALE 1" = 40'







I STORMWATER MANAGEMENT PLAN STORMWATER MANAGEMENT PLAN CONSTRUCTION S
SEDIMENT AND S

DUPONT NEL FORT BRANCH

ETMENT

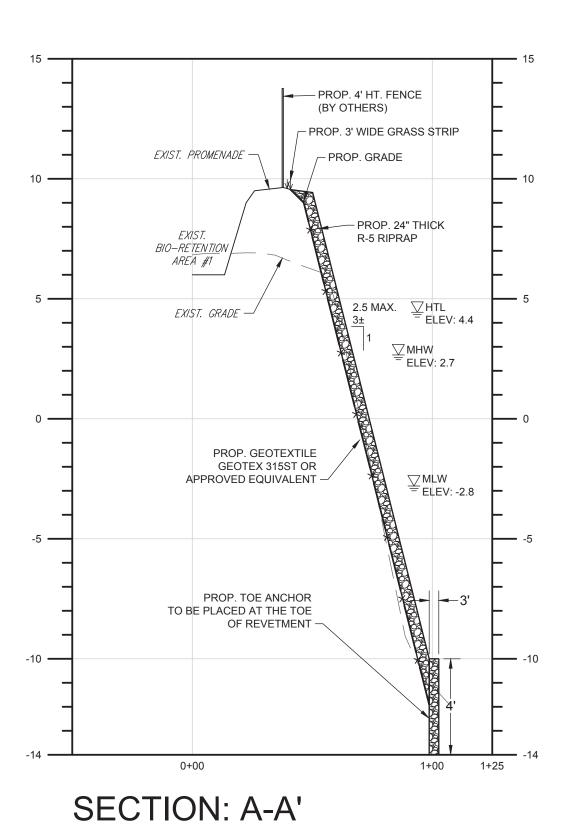
18 JANUARY 2024 DATE: SCALE: 1'' = 40'10801CY PROJECT NO.

5 OF 10

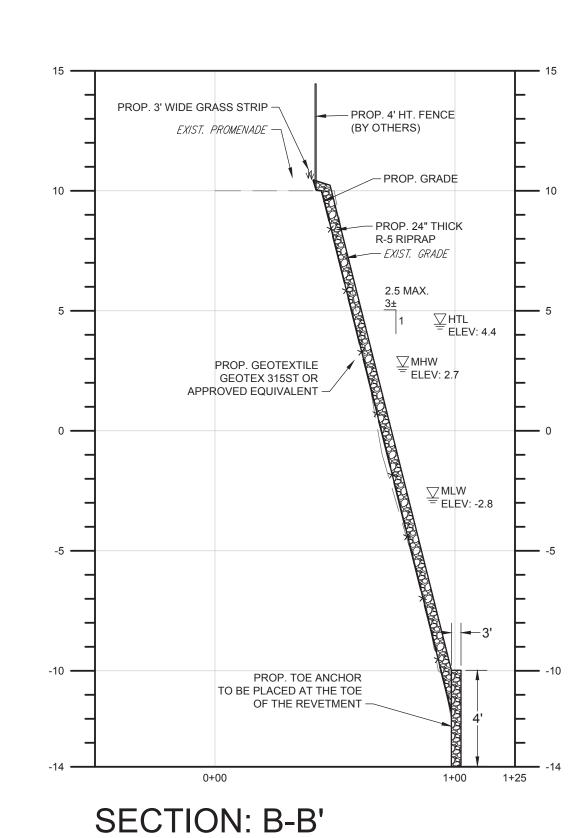
SHEET:

DRAWING SCALE

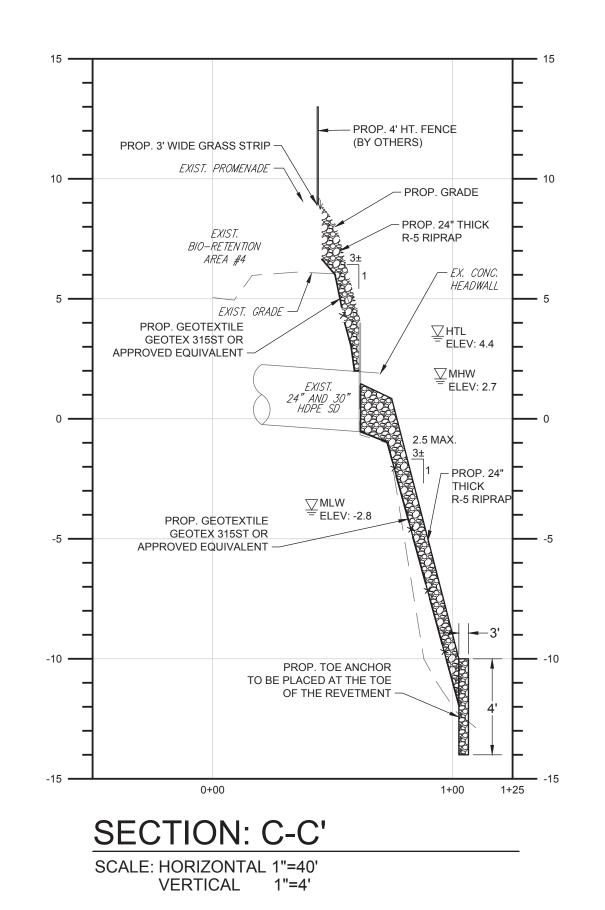
1" = 40'

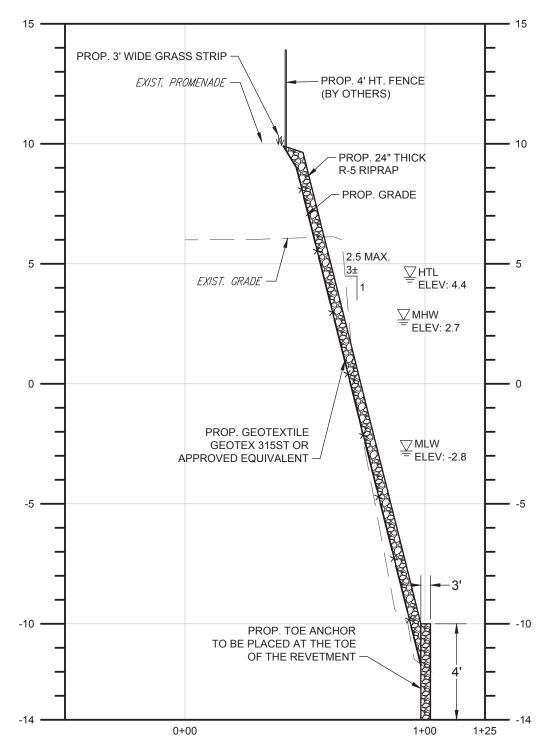


SCALE: HORIZONTAL 1"=40' VERTICAL 1"=4'



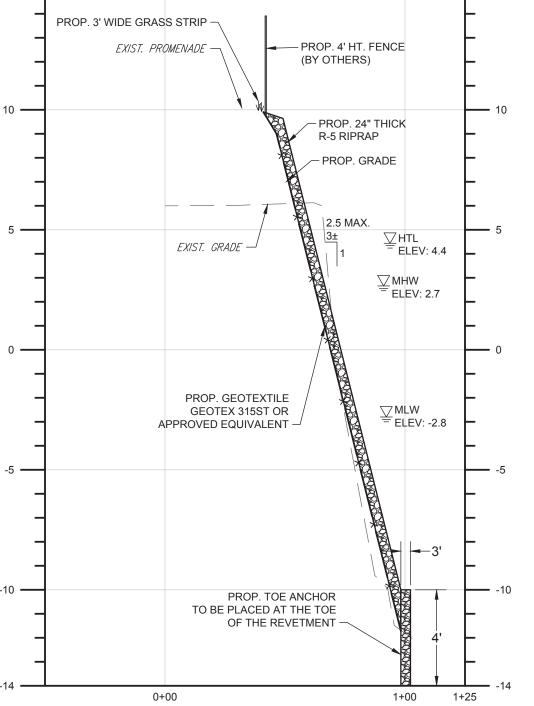
SCALE: HORIZONTAL 1"=40' VERTICAL 1"=4'





SECTION: D-D'

SCALE: HORIZONTAL 1"=40' VERTICAL 1"=4'



STORMWATER MANAGEMENT **SECTIONS** CHANNEL

OWNER:
FORT DUPONT REDEVELOPMENT
PRESERVATION CORPORATION
260 OLD ELM AVENUE
DELAWARE CITY, DE 19706

FORT BR

ETMENT

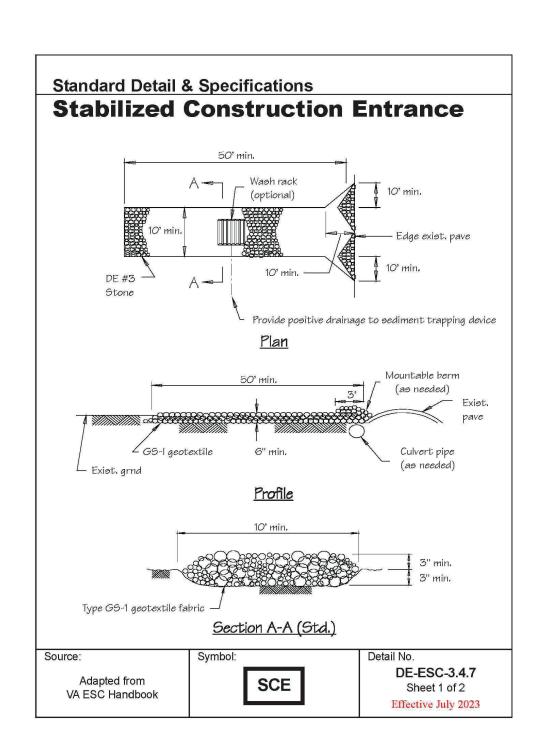
18 JANUARY 2024 SCALE: AS SHOWN PROJECT NO. 10801CY

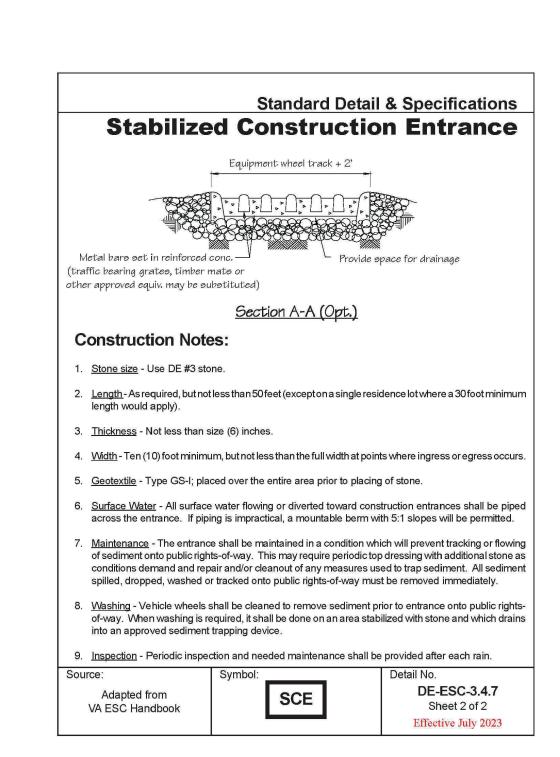
SHEET: 6 OF 10

#### SEQUENCE OF CONSTRUCTION: DISTURBED ACREAGE = 1.96± ACRES

- NOTIFY THE DNREC SEDIMENT AND STORMWATER PROGRAM IN WRITING AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION. FAILURE TO DO SO CONSTITUTES A VIOLATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLAN.
- 2. PRIOR TO ANY CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES OR GRADING, A PRECONSTRUCTION MEETING SHALL BE SCHEDULED AND CONDUCTED WITH THE AGENCY CONSTRUCTION SITE REVIEWER. THE LAND OWNER/DEVELOPER, CONTRACTOR, AND CERTIFIED CONSTRUCTION REVIEWER ARE REQUIRED TO BE IN ATTENDANCE AT THE PRE-CONSTRUCTION MEETING; THE DESIGNER IS RECOMMENDED TO ATTEND.
- 3. THE CONTRACTOR SHOULD AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND FROM LEAVING THE SITE. PERIMETER CONTROLS SHOULD BE CHECKED DAILY AND ADJUSTED AND/OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENTATION ON THE SITE. ACCUMULATED SEDIMENT SHOULD BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE CONTRACTOR MAY NEED TO ADJUST OR REPAIR MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, OR AS DIRECTED BY THE AGENCY SITE REVIEWER.
- 4. NOTIFY MISS-UTILITY OF DELMARVA (TELEPHONE 1-800-282-8555) AT LEAST 72 HOURS PRIOR TO START OF WORK.
- 5. CONDUCT SITE CONSTRUCTION LAYOUT. VERIFY FIELD CONDITIONS WITH THE PLAN. NOTIFY ENGINEER OF ANY DISCREPANCIES. LIMITS OF DISTURBANCE SHALL BE DELINEATED IN THE FIELD.
- 6. INSTALL STABILIZED CONSTRUCTION ENTRANCE. MAINTAIN AND REPAIR EXISTING STABILIZED CONSTRUCTION ENTRANCES DURING CONSTRUCTION.
- 7. CLEAR AND GRUB AREAS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS.
- 8. INSTALL PRE-CONSTRUCTION PERIMETER EROSION AND SEDIMENT CONTROLS PER THE APPROVED SEDIMENT AND STORMWATER PLANS AND DETAILS. THESE CONTROLS INCLUDE A TURBIDITY CURTAIN.
- 9. ALL PERIMETER CONTROLS ARE TO BE REVIEWED BY THE AGENCY CONSTRUCTION REVIEWER AND APPROVED PRIOR TO PROCEEDING WITH FURTHER SITE DISTURBANCE OR CONSTRUCTION.
- 10. COMPLETE REMAINDER OF CLEARING AND GRUBBING.
- 11. PROVIDE TEMPORARY VEGETATIVE STABILIZATION FOR STOCKPILES AND OTHER AREAS TO REMAIN UNDISTURBED FOR 14 DAYS OR MORE.
- 12. PLACE RIP RAP REVENTMENTAS SHOWN HEREON, AND STABILIZE SITE UPON COMPLETION.
- 13. TOPSOIL, SEED AND MULCH REMAINDER OF SITE. IN AREAS OF NEW GRASS, STABILIZE AND SEED. SEE THIS PLAN SET FOR SEED MIXTURE AND RATE.
- 14. EROSION AND SEDIMENT CONTROL DEVICES TO BE REMOVED ONLY AFTER WORK IN AN AREA HAS BEEN COMPLETED AND STABILIZED, WITH WRITTEN APPROVAL FROM THE AGENCY CONSTRUCTION SITE REVIEWER.
- 15. REMOVE ANY REMAINING EROSION AND SEDIMENT CONTROL DEVICES.
- 16. THE TERMINATION OF THE CONSTRUCTION GENERAL PERMIT WILL REQUIRE SUBMISSION AND ACCEPTANCE OF THE POST CONSTRUCTION VERIFICATION DOCUMENTS, INCLUDING FINAL STABILIZATION THROUGHOUT THE SITE, ALL ELEMENTS OF THE SEDIMENT AND STORMWATER MANAGEMENT PLAN IMPLEMENTED, AND ACCEPTANCE OF THE FINAL OPERATION AND MAINTENANCE PLAN.

NOTE: NO MORE THAN 20.0 ACRES SHALL BE DISTURBED AT ONE TIME.





#### DETAIL: STABILIZED CONSTRUCTION ENTRANCE

SCALE: NOT TO SCALE

Soil, Water & the Environment
Soil & the Environme

# DUPONT NEL REVETMENT

PL,

AGEM

MAN

STORMW

SEDIMENT

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TROL

FORT DUPC BRANCH CHANNEL I

DATE: 18 JANUARY 2024
SCALE: AS SHOWN
PROJECT NO. 10801CY
SHEET: 7 OF 10

# Standard Detail & Specifications **Vegetative Stabilization** TEMPORARY SEEDING BY RATES, DEPTHS AND DATES Optimum Seeding Dates 1 Certified Seed 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. Use varieties currently recommended for Delaware. Contact a County Extension Office for information. 5. Warm season grasses such as Millet 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".

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

DETAIL: VEGETATIVE STABILIZATION

Delaware ESC Handbook

SCALE: **NOT TO SCALE** 

DE-ESC-3.4.3

Sheet 1 of 4 Effective July 2023

		HES	NG DA	EEVII	AND S	JING .	SEEL	IANENT	PERM		
Remarks	Optimum Seeding Dates <sup>2</sup> O = Optimum Panting Period  A = Acceptable Planting Period					Seedin	Seeding Mixtures				
	All <sup>4</sup>	Coastal Plain Piedmont					Certified Seed <sup>3</sup>	Mix No.			
	10/31-2/1	8/1- 10/31	5/1- 7/31	3/1- 4/30	8/15- 10/31	5/1- 8/14	2/1- 4/30	lb/1000 sq.ft.	lb/Ac	Well Drained Soils	
Good erosion control mix Tolerant of low fertility soils Good for droughty sites	Add 100 lbs./ac Winter	A	0	A	A	0	A	3.2	140 10	Tall Fescue Canada Wild Rye	1
Good erosion control mix Tolerant of low fertility soils Legume that fixes atmospheric	Rye Add 100 lbs./ac Winter	А	0	Α	А	0	А	0.69 0.69 0.35	30 30 10	Deertongue Sheep Fescue White Clover	2
N into soil  Good erosion control mix Tall Fescue for droughty	Rye Add 100 lbs./ac.	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0	1.15 1.15	50 50	Tall Fescue (Turf-type) or Strong Creeping Red Fescue or	3
conditions. Creeping Red Fescue for heavy shade. Flatper to suppress woody vegetation.	Winter Rye							1.15	50 50	Perennial Ryegrass  plus Flatpea <sup>5</sup>	
Suitable waterway mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.	Add 100 lbs./ac. Winter Rye	0	A <sup>4</sup>	0	О	A <sup>4</sup>	0	2.3 1.61 0.35 0.11	100 70 15 5	Strong Creeping Red Fescue Kentucky Bluegrass Perennial Ryegrass or Redtop	4
Grought tolerance.								0.07	3	plus White Clover <sup>5</sup>	
Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance.			0			0		0.23 0.23 0.11 0.11	10 10 5 5	Switchgrass <sup>5,7</sup> or Coastal Panicgrass Big Bluestem Little Bluestem	5
N fertilizer discouraged - weeds Managed filter strip for		0	A <sup>4</sup>	0	0	A <sup>4</sup>	0	0.1 3.5	5 150	Indian Grass Tall Fescue (turftype)	6
Three cultivars of Kentucky		0	$A^4$	0	0	A <sup>4</sup>	0	3.5	150	Tall Fescue	7
Bluegrass. Traffic tolerant.		Ü	A	5001	0	A .	1000	0.46 0.46	20 20	Ky. Bluegrass (Blend) Perennial Ryegrass	-
All species are native. Indian Grass and Bluestem have fluffy seeds. Plant with a specialized native seed drill.			Α*	0		Αª	0	0.23 0.23 0.18 0.69	10 10 8 30	Big Bluestem' Indian Grass <sup>7</sup> Little Bluestem <sup>7</sup> Creeping Red Fescue plus one of:	8
Creeping Red Fescue will provide erosion protection while the warm season grasses get established.								0.11 0.07 0.07 0.05	5 3 3 2	Partridge Pea Bush Clover Wild Indigo Showy Tick-Trefoil	

	•	PERMA	NENT SE	EDIN	G ANI	SEE	DING	DATE	S (co	nt.)	
	Seeding Mixtures	Seeding Rate <sup>1</sup>		Optimum Seeding Dates <sup>2</sup> O = Optimum Flanting Period A = Acceptable Flanting Period					Remarks		
Mix No.	Certified Seed <sup>3</sup>				astal P	lain	P	iedmo	nt	All <sup>4</sup>	
	Poorly Drained Soils	lb/Ac	lb/1000 sq.ft.	2/1- 4/30	5/1- 8/14	8/15- 10/31	3/1- 4/30	5/1- 7/31	8/1- 10/31	10/31-2/1	
9	Redtop Creeping Bentgrass Sheep Fescue Rough Bluegrass	75 35 30 45	1.72 0.8 0.69 1	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0	Add 100 lbs./ac. Winter Rye	Quick stabilization of disturbed sites and waterway:
10	Switchgrass <sup>6</sup>	10	0.23	Α		0	Α		0	ŕ	Good erosion control, wildlife
	Residential Lawns										cover and wetland revegetation
11	Tall Fescue Perennial Ryegrass Kentucky Bluegrass Blend	100 25 30	2.3 0.57 0.69	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0		High value, high maintenance light traffic, irrigation necessar Well drained soils, full sun.
12	Tall Fescue Perennial Ryegrass Sheep Fescue	100 25 25	2.3 0.57 0.57	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0		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	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0		Shade tolerant, moderate traffic tolerance, moderate maintenance.
14	Creeping Red Fescue Rough Bluegrass or Chewings Fescue	50 90	1.15 2.1	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0		Shade tolerant, moisture tolerant.
15	K-31 Tall Fescue	150	3.5	0	A <sup>4</sup>	0	0	A <sup>4</sup>	0		Monoculture, but performs wel alone in lawns. Discouraged.
Winte adjustme     All ser maximur     Turfty     It is re     Warm     Warm	hydroseeding is the chosen methin reseding requires 3 tons per acre int to reflect local conditions. If a seed in the seed shall be in acc pe species may be planted throug commended that all leguminous is season grass mix and Switchgras season grasses require a soil tem	of straw n and minim ordance v hout sum eed be in es cannot operature	nulch. Pla num germi with Chapt with Chapt oculated. be mowed of at least	nation   er 15, Ter 15	percent Title 3 c re is ac than 4 grees in	ages rof the Didequate	ove are ecomm elaware e or see per yea to germ	ended ended e Code eded ar r. uinate a	ge for D by the eacan and will	elaware. Ti Delaware D be irrigated remain don	repartment of Agriculture. The
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#### 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 ensure 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.
- 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. Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.
- 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 sha	all be done in accordance with detail	DE-ESC-3.4.5.
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aware ESC Handbook		DE-ESC-3.4.
		Sheet 4 of 4
		Effective July 20

#### Standard Detail & Specifications **Dust Control**

#### **Temporary Methods:**

- . Mulches See **DE-ESC-3.4.5**, Standard Detail and Specifications for Mulching.
- Vegetative cover See DE-ESC-3.4.3, Std. Detail and Specifications for Vegetative
- 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 <u>Emulsion</u>	Water <u>Dilution</u>	Type of <u>Nozzle</u>	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.
- . 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:
- Vegetative cover See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative
- 2. Stone Apply layer of crushed stone or coarse gravel to protect soil surface.

Source.	Symbol.	Detail No.
Adapted from		DE-ESC-3.4.8
VA ESC Handbook		Sheet 1 of 1
		Effective July 2023

### **DETAIL: DUST CONTROL**

SCALE: NOT TO SCALE

#### **Standard Detail & Specifications** Mulching . Materials and Amounts a. Straw - Straw shall be unrotted small grain straw applied at the rate of 1-1/2 to 2 tons per acre, or 70 to 90 pounds (two bales) per 1,000 square feet. Mulch materials shall be relatively free of weeds and shall be free of noxious weeds such as; thistles, Johnsongrass, and quackgrass. Spread mulch uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square feet sections and place 70-90 pounds (two bales) of mulch in each section. b. Wood chips - Apply at the rate of approximately 6 tons per acre or 275 pounds per 1,000 square feet when available and when feasible. These are particularly well suited for utility and road rights-of-way. If wood chips are used, increase the application rate of nitrogen fertilizer by 20 pounds of N per acre (200 pounds of 10-10-10 or 66 pounds of 30-0-0 per acre). c. Hydraulically applied mulch -The following conditions apply to hydraulically applied mulch: Definitions: a. Wood fiber mulch shall consist of specially prepared wood that has been processed to a uniform state, is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment, and consists of a minimum of 70% virgin or recycled wood fiber combined with 30% paper fiber and additives. b. Blended fiber mulch shall consist of any hydraulic mulch that contains greater than 30% paper fiber. The paper component must consist of specially prepared paper that has been processed to a uniform fibrous state and is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment. c. A bonded fiber matrix (BFM) consists of long strand, specially prepared wood fibers that have been processed to a uniform state held together by a water resistant bonding agent. BFMs shall contain no paper (cellulose) mulch but may contain small percentages of synthetic fibers to enhance performance. d. Refer to Figure 3.4.5a for conditions and limitations of use for each of the above categories of hydraulic mulch. ii. All components of the hydraulically applied mulches shall be pre-packaged by the manufacturer to assure material performance. Field mixing of the mulch components is acceptable, but must be done per manufacturers recommendations to ensure the proper results. iii. Hydraulic mulches shall be applied with a viable seed and at manufacturer's recommended rates. Increased rates may be necessary based on site conditions. iv. Hydraulically applied mulches and additives shall be mixed according to manufacturers iv. Materials within this category shall only be used when hydraulically applied mulch has been specified for use on the approved Sediment and Stormwater Plan, or supplemental approval from the plan approval agency has been obtained in writing for a specific area. DE-ESC-3.4.5 Delaware ESC Handbook Sheet 1 of 3 & Filtrexx™International

Effective July 2023

#### the following two-step process is required: Step One-Mix and apply seed and soil amendments with a small amount of mulch for Step Two - Mix and apply mulch at manufacturers recommended rates over freshly seeded surfaces. Apply from opposing directions to achieve optimum soil e. Minimum curing temperature is 40° F (4° C). The best results and more rapid curing are achieved at temperatures exceeding 60°F (15°C). Curing times may be accelerated in high temperature, low humidity conditions on dry soils. vi. Recommended application rates are for informational purposes only. Conformance with this standard and specification shall be performance-based and requires 100% soil coverage. Any areas with bare soil showing shall be top dressed until full coverage is achieved. d. Compost blanket (CB) - Loosely applied with a pneumatic blower so that a 1" compost blanket uniformly covers the soil with 100% coverage. This application can be used with seed to promote germination by applying the approved seed mix directly into the loosely blown compost. The compost blanket performs best on slopes less than 2:1 and requires no mulch anchoring. . Anchoring mulch - Mulch must be anchored immediately to minimize loss by wind or water. This may be done by one of the following methods, depending upon size of area, erosion hazard, and cost. a. Crimping - A crimper is a tractor drawn implement designed to punch and anchor mulch into the top two (2) inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely. On sloping land, crimping should be done on the contour whenever b. Tracking - Tracking is the process of cutting mulch (usually straw) into the soil using a bulldozer or other equipment that runs on cleated tracks. Tracking is used primarily on slopes 3:1 or steeper and should be done up and down the slope with cleat marks running across the slope. c. Liquid mulch binders - Applications of liquid mulch binders should be heavier at edges, in valleys, and at crests of banks and other areas where the mulch will be moved by wind or water. All other areas should have a uniform application of binder. The use of synthetic binders is the preferred method of mulch binding and should be applied at the rates recommended by the manufacturer. d. Paperfiber-The fiber binder shall be applied at a net dry weight of 750 lbs/ac. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per e. Nettings-Biodegradable nettings may be used to secure straw mulch. Install and secure according to the manufacturer's recommendations. Photodegradable or synthetic nettings are not acceptable. DE-ESC-3.4.5

a. Apply product to geotechnically stable slopes that have been designed and constructed to

c. During the spring (March 1 to May 31) and fall (September 1 to November 30) seasons,

d. During the summer (June 1 to August 31) and winter (December 1 to February 28) seasons,

hydraulic mulches may be applied in a one-step process where all components are mixed

together in single-tank loads. It is recommended that the product be applied from opposing

b. Do not apply to saturated soils, or if precipitation is anticipated within 24-48 hours.

divert runoff away from the face of the slope.

directions to achieve optimum soil coverage.

Delaware ESC Handbook

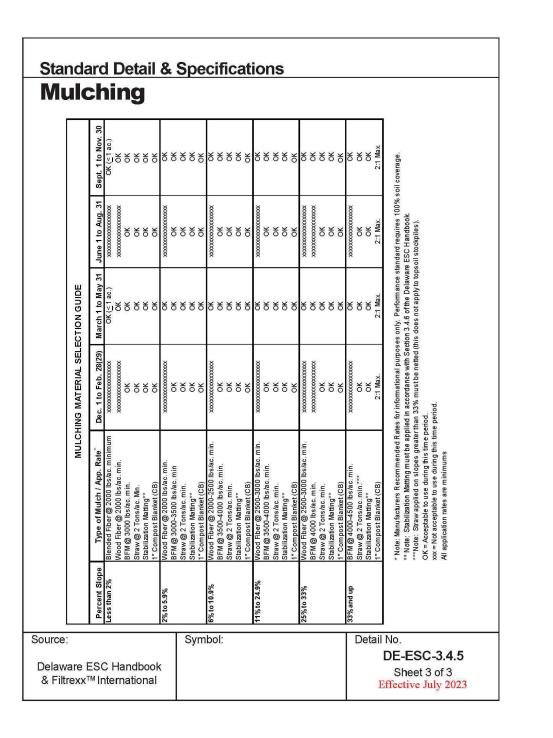
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Standard Detail & Specifications

Mulching

Sheet 2 of 3

Effective July 2023



DETAIL: MULCHING

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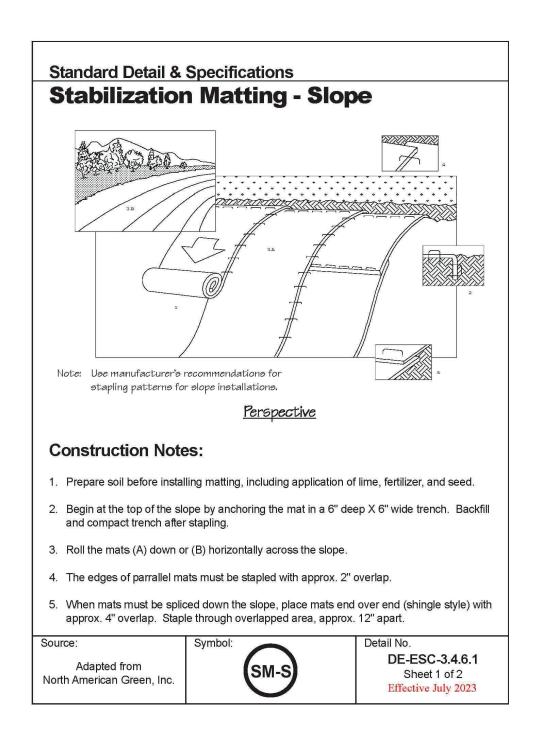
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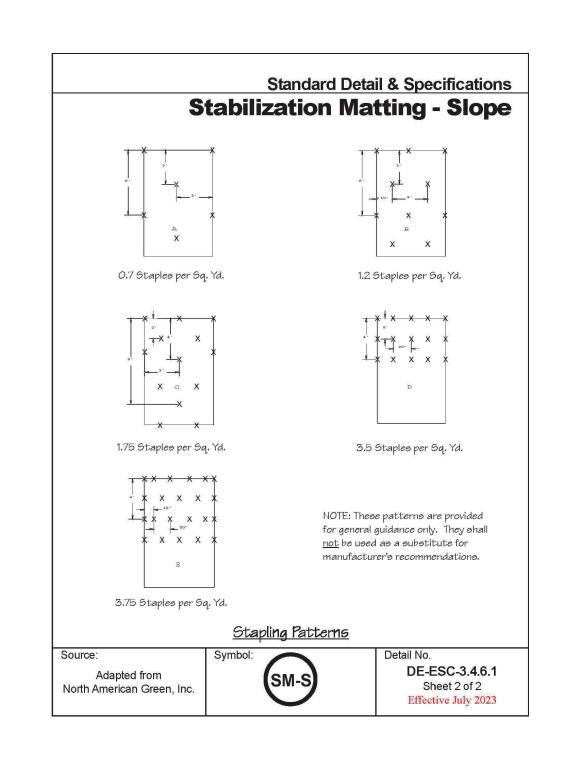
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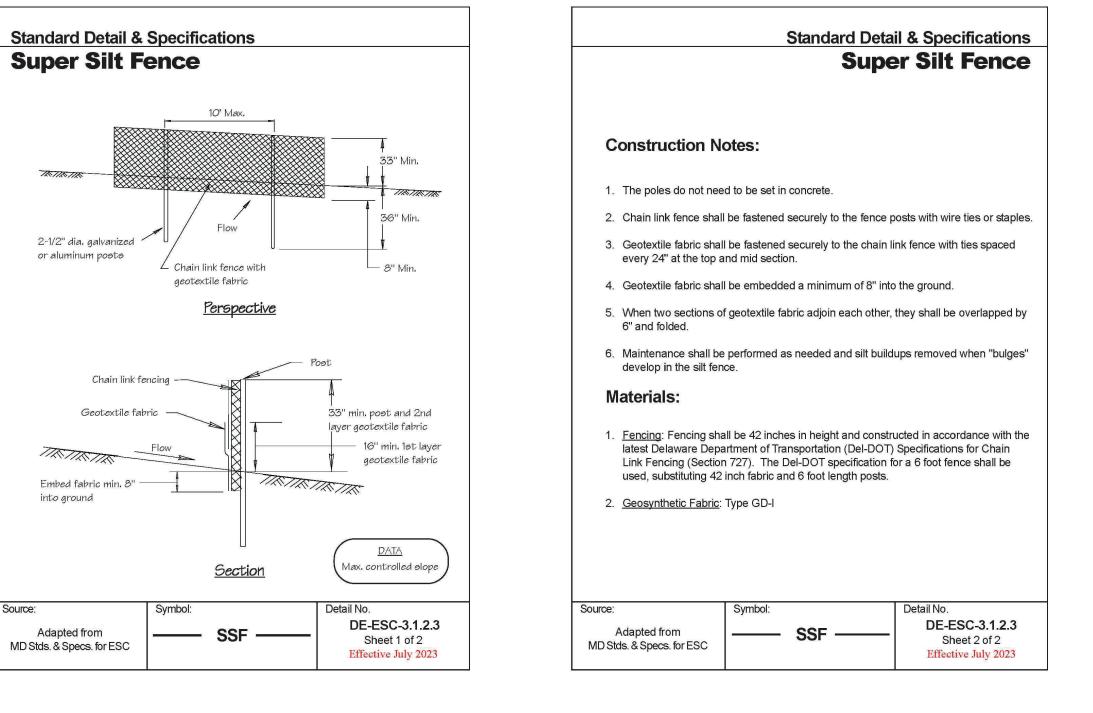
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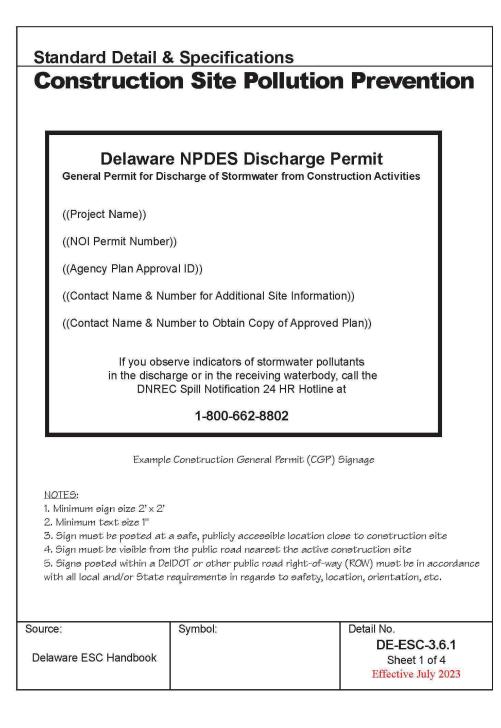


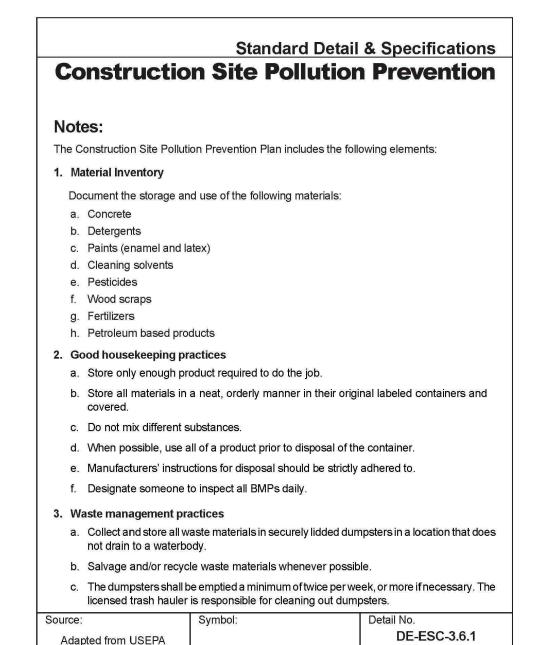




DETAIL: STABILIZATION MATTING - SLOPE

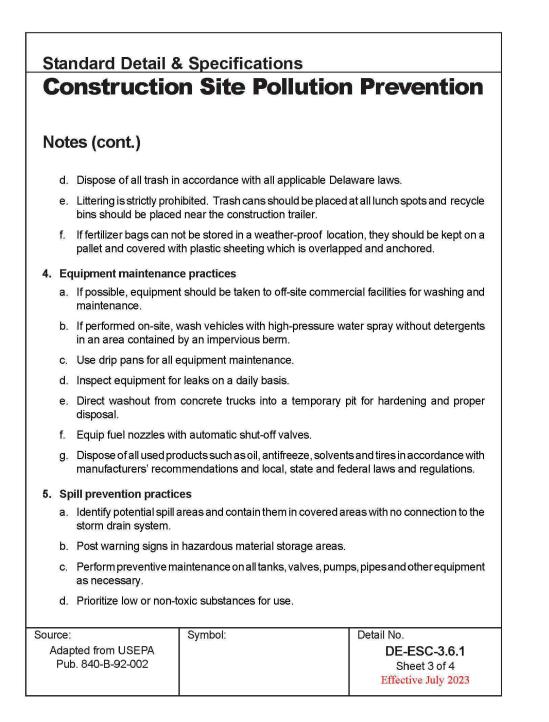
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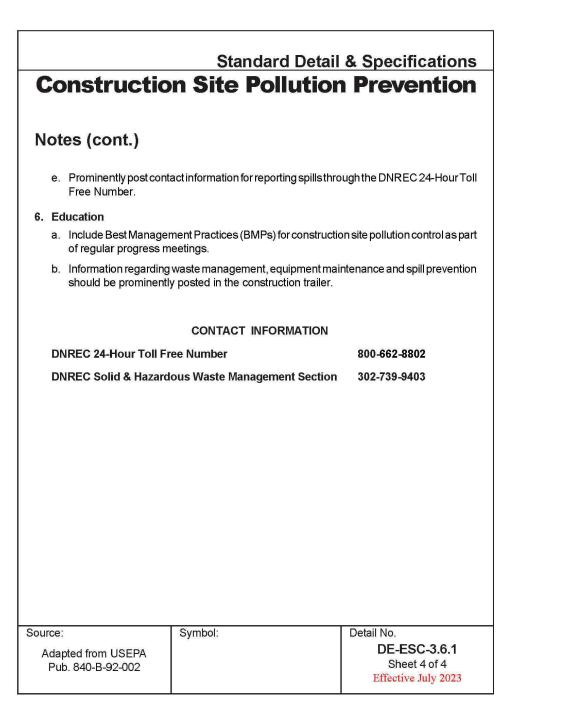




Sheet 2 of 4

Effective July 2023





DETAIL: SUPER SILT FENCE

SCALE: NOT TO SCALE

## DETAIL: CONSTRUCTION SITE WASTE MANAGEMENT & SPILL CONTROL

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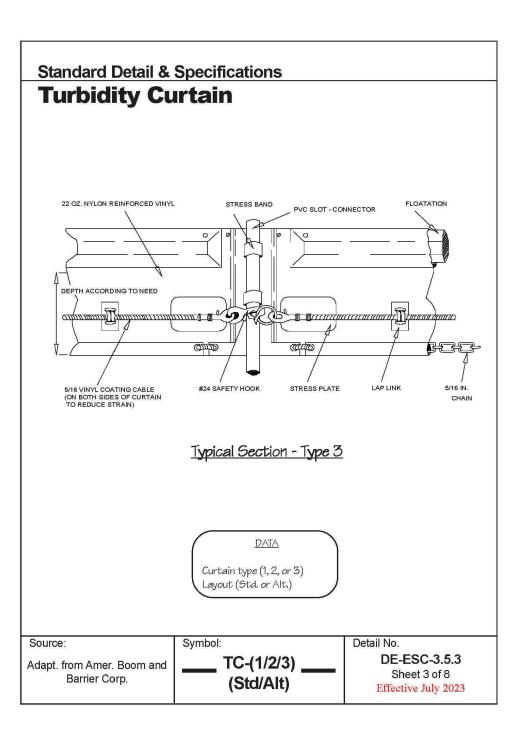
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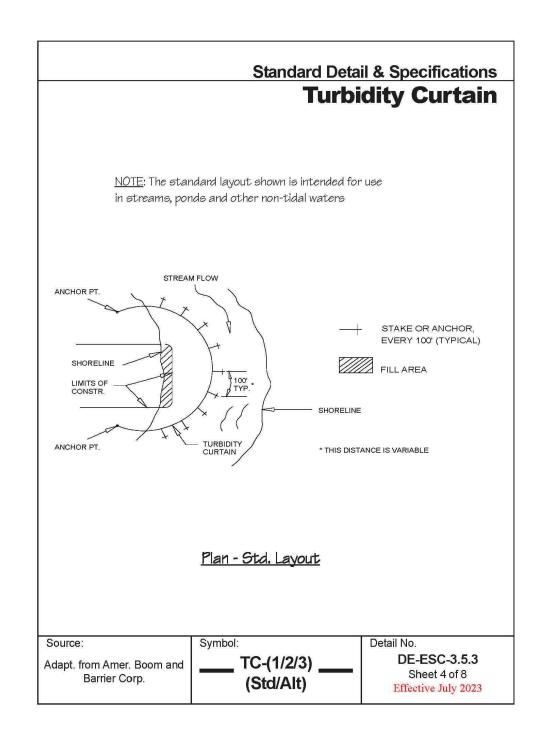
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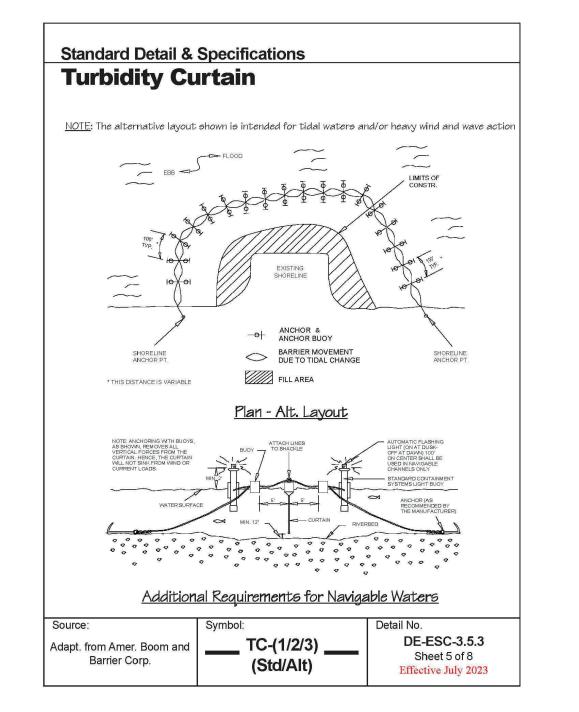
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#### Standard Detail & Specifications **Turbidity Curtain**

#### **Construction Notes:**

- a. Barriers should be a bright color (yellow or "international" orange are recommended) that will attract the attention of nearby boaters.
- b. The curtain fabric shall meet manufacturer's recommendations for the application. c. Seams in the fabric shall be either vulcanized welded or sewn and shall develop the full
- d. Floatation devices shall be flexible, buoyant units contained in an individual floatation sleeve or collar attached to the curtain. Buoyancy provided by the floatation units shall be sufficient to support the weight of the curtain and maintain a freeboard of at least 3 inches above the water surface level.
- e. Load lines must be fabricated into the bottom of all floating turbidity curtains. Type II and Type III must have load lines also fabricated into the top of the fabric. The top load line shall consist of woven webbing or vinyl-sheathed steel cable and shall have a break strength in excess of 10,000 pounds. The supplemental (bottom) load line shall consist of a chain incorporated into the bottom hem of the curtain of sufficient weight to serve as ballast to hold the curtain in a vertical position. Additional anchorage shall be provided as necessary. The load lines shall have suitable connecting devices which develop the full breaking strength for connection to load lines in adjacent sections as shown in the
- f. External anchors may consist of wooden or metal stakes (2- x 4-inch or 2-1/2-inch minimum diameter wood or 1.33 lbs/linear foot steel) when Type I installation is used;
- when Type II or Type III installations are used, bottom anchors should be used. g. Bottom anchors must be sufficient to hold the curtain in the same position relative to the bottom of the watercourse without interfering with the action of the curtain. The anchor may dig into the bottom (grappling hook, plow or fluke-type) or may be weighted (mushroom type) and should be attached to a floating anchor buoy via an anchor line. The anchor line should then run from the buoy to the to load line of the curtain. When used with Type III installations, these lines must contain enough slack to allow the buoy and curtain to float freely with tidal changes without pulling the buoy or curtain down and must be checked regularly to make sure they do not become entangled with debris. As previously noted, anchor spacing will vary with current velocity and potential wind and wave action; manufacturer's recommendations should be followed. See detail for orientation of external anchors and anchor buoys for tidal installations.

Source:	Symbol:	Detail No.
Adapt. from Amer. Boom and Barrier Corp.	TC-(1/2/3) (Std/Alt)	DE-ESC-3.5.3 Sheet 6 of 8 Effective July 2023

#### Standard Detail & Specifications **Turbidity Curtain**

#### Construction Notes (cont.)

- a. In the calm water of lakes or ponds (Type I installation) it is usually sufficient to set the curtain end stakes or anchor points (using anchor buoys if bottom anchors are employed), then tow the curtain in the furled condition out and attach it to the stakes or anchor points. Following this, any additional stakes or buoyed anchors required to to the curtain. Only then shall the furling lines be cut to allow the curtain skirt to drop.
- b. In rivers or in other moving waters (Type II and Type III installations) it is important to set all curtain anchor points. Care must be taken to ensure that anchor points are of sufficient holding power to retain the curtain under the existing current conditions, prior to putting the furled curtain into the water. Anchor buoys should be employed on all anchors to prevent the current from submerging the flotation at the anchor points. If the curtain is being installed into tidal areas which would be subject to currents in both directions, anchors should be provided on both sides of the curtain. This will minimize curtain movement and prevent the curtain from overrunning the anchors during tide reversals. After the anchors have been secured, the furled curtain should be secured to the upstream anchor point and then sequentially attached to each next downstream anchor point until the entire curtain is in position. Before unfurling, the "lay" of the curtain should be assessed and any necessary adjustments made to the anchors. Once the location
- has been deemed adequate, the furling lines may be cut to allow the skirt to drop. c. Anchor lines should be attached to the flotation device, not to the bottom of the curtain. The anchoring line attached to the flotation device on the downstream side will provide support for the curtain. Attaching the anchors to the bottom of the curtain could cause premature failure of the curtain due to the stresses imparted on the middle section of the
- d. Turbidity curtain shall not be installed across channel flows unless there is a danger of causing sediment deposition to occur in the middle of a watercourse, thereby blocking access or creating a sand bar. In such situations, the curtain may be installed so as to form a long-sided, sharp "V" to deflect clean water around a work site, confining most of the silt-laden water to the work area inside the "V" and directing it to the shoreline. In no case shall the curtain be installed perpendicular to the channel flow.

Source:	Symbol:	Detail No.
Adapt. from Amer. Boom and Barrier Corp.	TC-(1/2/3) (Std/Alt)	DE-ESC-3.5.3 Sheet 7 of 8 Effective July 2023

# Standard Detail & Specifications **Turbidity Curtain**

#### **Construction Notes (cont.)**

- a. The individual(s) identified on the plan as responsible for maintenance of the curtain shall do so for the duration of the project in order to ensure the continuous protection of the
- b. Should repairs to the geotextile fabric become necessary, repair kits are generally available from the manufacturer. The manufacturer's instructions must be followed to
- ensure the adequacy of the repair. c. When the curtain is no longer required as determined by the inspector, the curtain and related components shall be removed in such a manner as to minimize turbidity. Remaining sediment shall be sufficiently settled before removing the curtain. Sediment may be removed and the original depth (or plan elevation) restored. Any spoils must be taken to an approved upland disposal area and stabilized in accordance with the approved

#### 4. Removal

- a. Care shall be taken to protect the skirt from damage as the turbidity curtain is dragged from the watercourse. b. The site selected to bring the curtain ashore should be free of sharp rocks, broken cement,
- debris, etc. so as to minimize damage when hauling the curtain over the area. c. If the curtain has a deep skirt, it can be further protected by running a small boat along its length with a crew installing furling lines before attempting to remove the curtain from the

Source:	Symbol:	Detail No.
Adapt. from Amer. Boom and	TC-(1/2/3)	DE-ESC-3.5.3
Barrier Corp.		Sheet 8 of 8
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#### DETAIL: TURBIDITY CURTAIN

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