

FIGURE 2
PERMIT AREA

- W-1 PERMIT IMPACTS AND ENVIRONMENTAL COMPLIANCE
- W-2 PROPOSED GRADING AND CONCEPT PLANTING ZONES
- W-3 STREAM TYPICAL SECTION AND ROCK CROSS VANE DETAIL
- W-4 STREAM PROFILES
- W-5 STREAM DIVERSION PLAN

1. GENERAL NOTES:
- A. THE PURPOSE OF THIS SHEET IS TO IDENTIFY THOSE ITEMS ASSOCIATED WITH ENVIRONMENTAL COMPLIANCE. IMPACT CALCULATIONS ARE FOR AGENCY REPORTING PURPOSES ONLY AND ARE NOT TO BE USED FOR BIDDING PURPOSES.
- B. IF A DEPARTURE FROM THE APPROVED PLANS (WHICH WOULD AFFECT ANY OF THE NATURAL AND/OR CULTURAL RESOURCE ISSUES) IS NECESSARY, THE ENVIRONMENTAL STUDIES SECTION SHALL BE CONTACTED AT (302) 760-2264 TO ALLOW THE DEPARTMENT TO COORDINATE WITH THE APPROPRIATE RESOURCE AGENCIES FOR APPROVAL.
- C. USE OF THIS SHEET DOES NOT ALLEVIATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.
2. NATURAL RESOURCE ISSUES:
- A. PERMIT REQUIREMENTS / APPROVALS**
- CORPS OF ENGINEERS - NATIONWIDE PERMIT #27**
 - DNREC - SUBAQUEOUS LANDS PERMIT**
 - NATIONAL PARK SERVICE APPROVAL**
 - NCC - FLOOD PLAIN APPROVAL**
- * - THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT. THE ENVIRONMENTAL STUDIES SECTION IS RESPONSIBLE FOR COORDINATING OBTAINING THESE PERMITS/APPROVALS
- ** - THE CONTRACTOR MUST ENSURE THAT THESE PERMITS ARE IN THEIR POSSESSION PRIOR TO THE BEGINNING OF CONSTRUCTION IN THE PERMITTED AREA(S). THESE PERMITS SHALL BE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
- B. CONSTRUCTION RESTRICTIONS:
- FISHERIES - NONE
 - ENDANGERED SPECIES - NONE
 - MIGRATORY BIRDS - NONE
- C. PROTECTION OF RESOURCES (WETLANDS AND ARCHAEOLOGICAL SITES): CONSTRUCTION FENCING SHALL BE PLACED AT THE LIMITS OF CONSTRUCTION CONTRACTOR'S ACCESS BEYOND WHAT IS IDENTIFIED ON THE PLANS IS STRICTLY PROHIBITED.
3. CULTURAL RESOURCE ISSUES:
SEE ITEM 2.C. ABOVE.
4. JURISDICTIONAL DETERMINATION:
WETLANDS DELINEATED BY SETH BACON BETWEEN JANUARY 30 AND DECEMBER 15, 2002, IN ACCORDANCE WITH THE 1987 CORPS OF ENGINEERS MANUAL. WETLANDS DELINEATION REPORT FOR JURISDICTIONAL DETERMINATION (PREPARED BY DUFFIELD ASSOCIATES, INC. JANUARY 2003) WAS APPROVED BY THE USACE ON MAY 19, 2003.

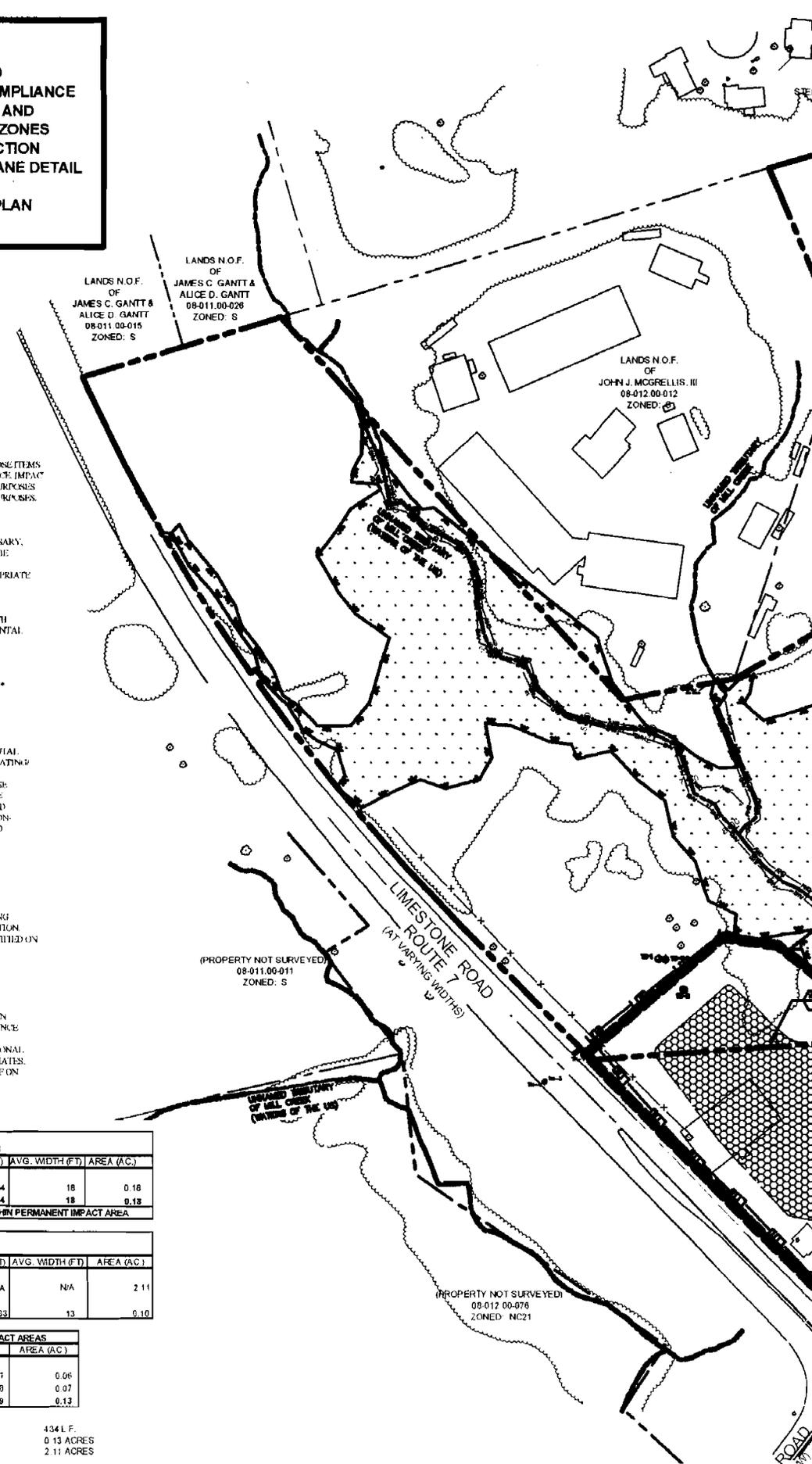
WATERS OF THE US IMPACT AREAS			
AREA	LENGTH (FT)	AVG. WIDTH (FT)	AREA (AC.)
PERMANENT IMPACTS			
STREAM RELOCATION "O-1"	434	18	0.18
TOTAL	434	18	0.18

NOTE: COFFER DAM & SANDBAG DIKES ARE WITHIN PERMANENT IMPACT AREA

CREATION AREA			
AREA	LENGTH (FT)	AVG. WIDTH (FT)	AREA (AC.)
WETLANDS CREATION			
CREATION AREA "WC-1"	N/A	N/A	2.11
STREAM CREATION			
CREATION AREA "SC-1"	333	13	0.10

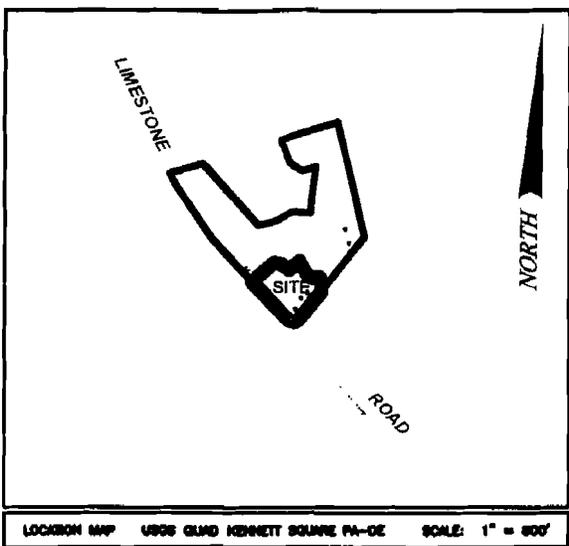
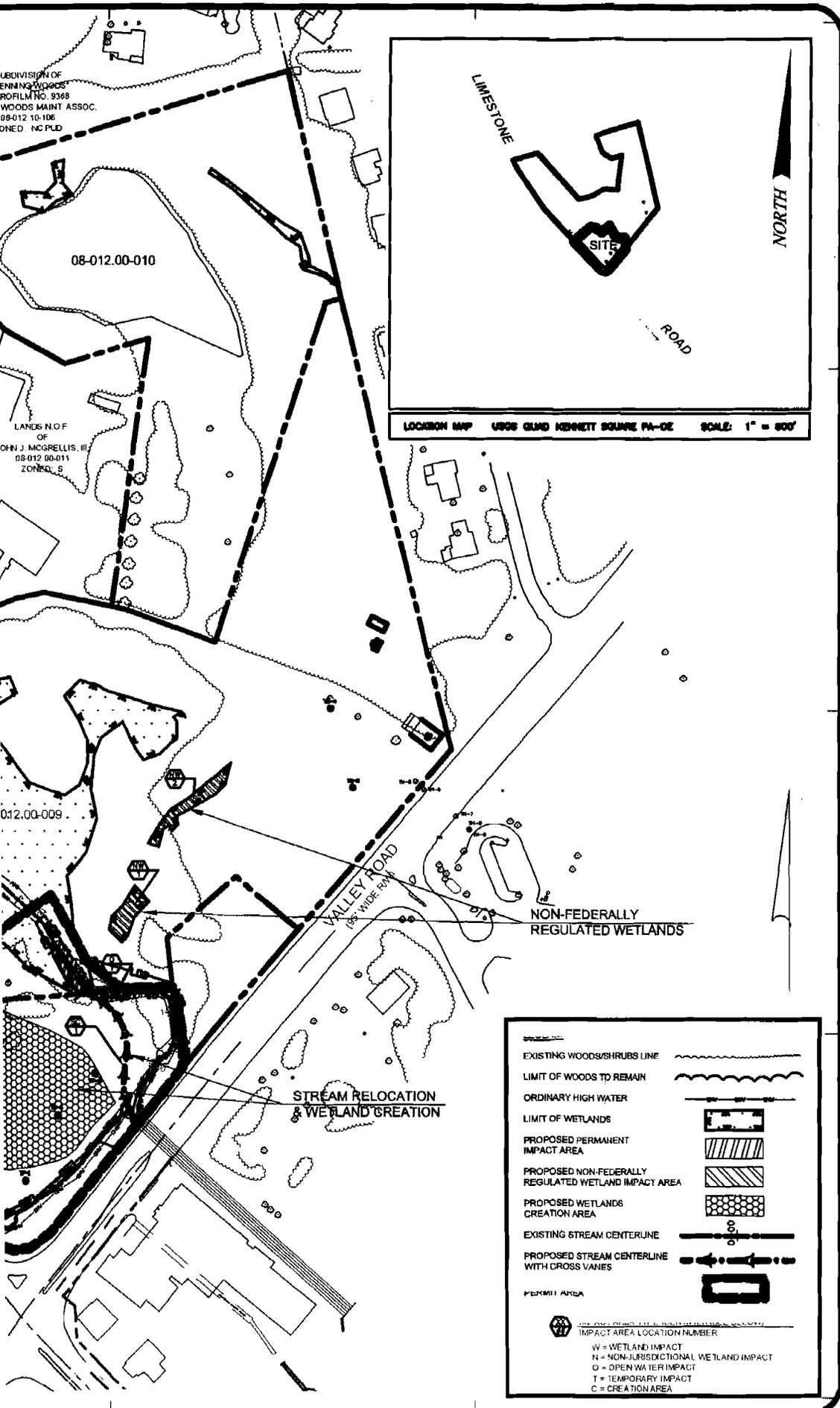
NON-FEDERALLY REGULATED WETLANDS IMPACT AREAS		
AREA	AREA (S.F.)	AREA (AC.)
PERMANENT IMPACTS		
WETLANDS GRADING "NW-1"	2491	0.06
WETLANDS GRADING "NW-2"	3030	0.07
TOTAL	5521	0.13

TOTAL REGULATED IMPACTS 434 L.F.
 TOTAL NON-FEDERALLY REGULATED IMPACTS 0.13 ACRES
 TOTAL WETLANDS CREATION AREAS 2.11 ACRES



(PROPERTY NOT SURVEYED)
08-011.00-011
ZONED: S

(PROPERTY NOT SURVEYED)
08-012.00-078
ZONED: NC21



DUFFIELD ASSOCIATES
Consultants in the Environment

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 PHILADELPHIA, PA 19102
 E-MAIL: DUFFIELD@DUFFIELD.COM

DESIGNED BY	LG1	CHECKED BY	JME
	DRN:RN BY: CMK		FILE NAME: 030303BASE
ISSUED DATE	11-10-03		
REVISION	12-23-03		
No.	1	GENERAL REVISIONS	
	2	REVISED PERMITS AREA	

DelDOT

OWNER

DELAWARE DEPARTMENT
 OF TRANSPORTATION
 P.O. BOX 778
 DOVER, DELAWARE 19903
 (302) 760-2228

**PERMIT IMPACTS
 AND ENVIRONMENTAL COMPLIANCE SHEET**

**TWEED'S PARK
 STREAM RESTORATION**

MILL CREEK HUNDRED-NEW CASTLE COUNTY-DELAWARE

DATE: 23 OCTOBER 2004
 SCALE: 1" = 100'
 W.O. NO. 5039.CC
 SHEET: W-1

LEGEND

EXISTING WOODS/SHRUBS LINE

LIMIT OF WOODS TO REMAIN

ORDINARY HIGH WATER

LIMIT OF WETLANDS

PROPOSED PERMANENT IMPACT AREA

PROPOSED NON-FEDERALLY REGULATED WETLAND IMPACT AREA

PROPOSED WETLANDS CREATION AREA

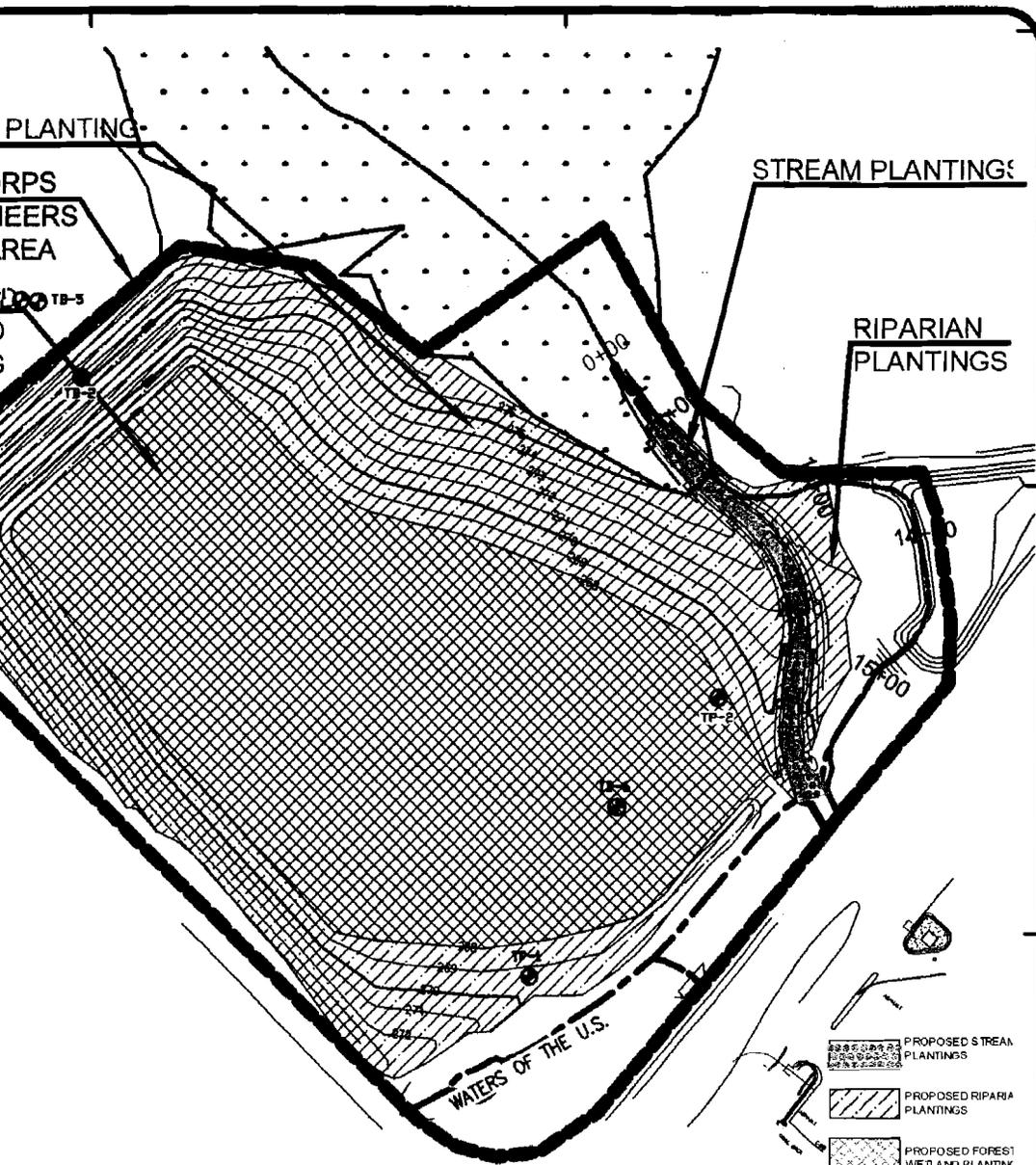
EXISTING STREAM CENTERLINE

PROPOSED STREAM CENTERLINE WITH CROSS VANES

PERMITS AREA

IMPACT AREA LOCATION NUMBER

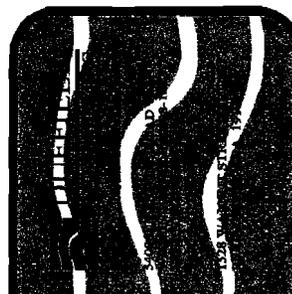
W = WETLAND IMPACT
 N = NON-JURISDICTIONAL WETLAND IMPACT
 O = OPEN WATER IMPACT
 T = TEMPORARY IMPACT
 C = CREATION AREA



PROPOSED PLANTING ZONES

50'
 PLANTING LIST, SEE PROPOSED PLANTING LIST
 AS ATTACHMENT IN PERMIT APPLICATION

-  PROPOSED STREAM PLANTINGS
-  PROPOSED RIPARIAN PLANTINGS
-  PROPOSED FOREST WETLAND PLANTINGS



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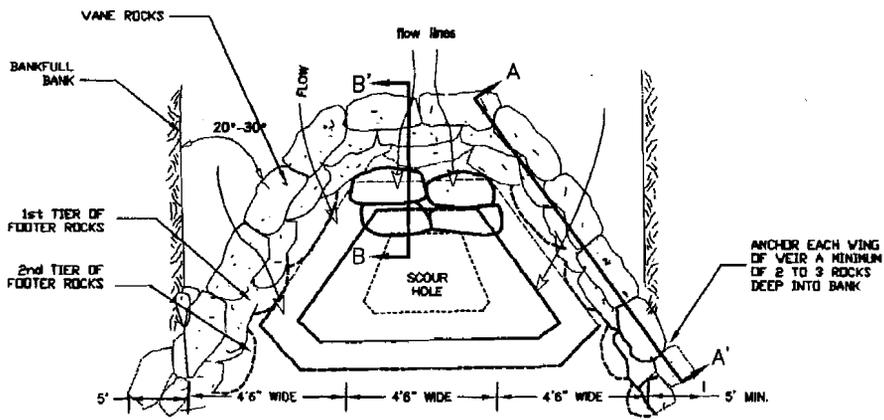
NO.	REVISION	DATE
1	GENERAL REVISIONS PER DELDOT COMMENTS	11/15/04
2	REVISED PERMIT AREA	11/15/04

OWNER:

 DELAWARE DEPARTMENT OF TRANSPORTATION
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 (302) 769-2228

**PROPOSED GRADING AND
 CONCEPT PLANTING ZONES
 TWEED'S PARK
 STREAM RESTORATION**
 MILL CREEK HUNDRED ~ NEW CASTLE COUNTY ~ DE

DATE: 23 OCTOBER 2004
 SCALE: 1" = 50'
 PROJECT NO: 3035 CC
 SHEET: W-2

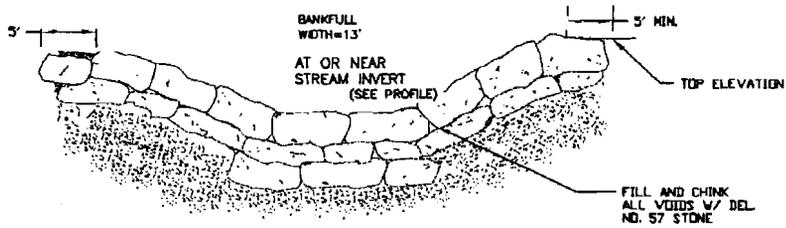


PLAN VIEW: CROSS VANE

NOT TO SCALE

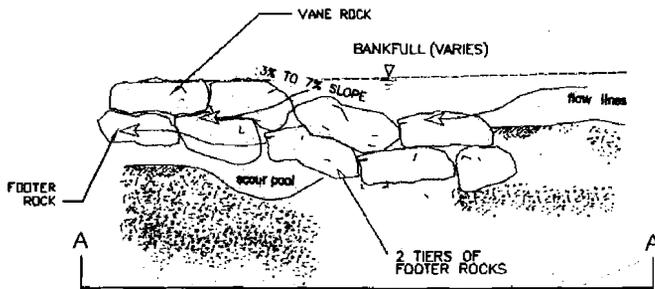
TIE INTO EXISTING GRADE

JUTE MAT SOIL RETENTION
BLANKET MULCH TYPE
4-SEE SHEET W.2 FOR
VEGETATIVE STABILIZATION



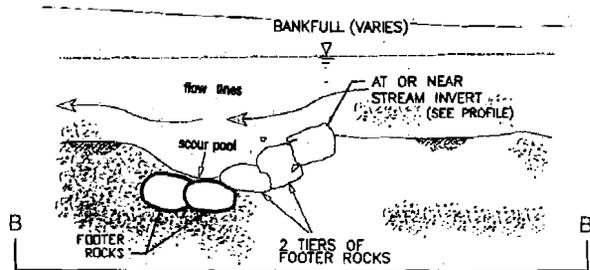
SECTION VIEW: CROSS VANE

NO TO SCALE



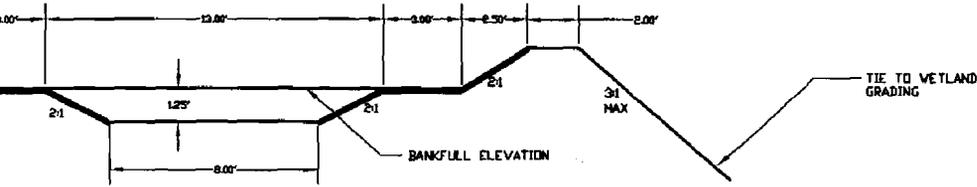
PROFILE: CROSS VANE ARM A-A'

NOT TO SCALE



PROFILE VIEW: CENTER OF CROSS VANE B-B'

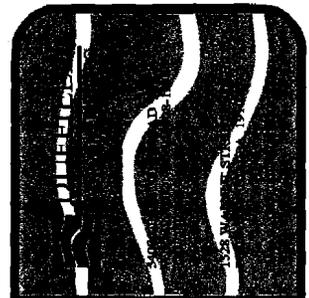
NOT TO SCALE



PROPOSED STREAM TYPICAL SECTION
NOT TO SCALE

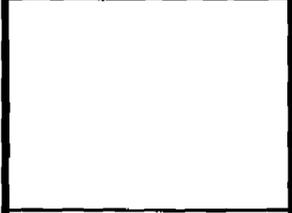
CROSS VANE ROCK DIMENSIONS

ROCK TYPE	A-AXIS	B-AXIS	C-AXIS
VANE	24" - 30"	18" - 24"	12" - 18"
FOOTER	30" - 36"	24" - 30"	18" - 24"



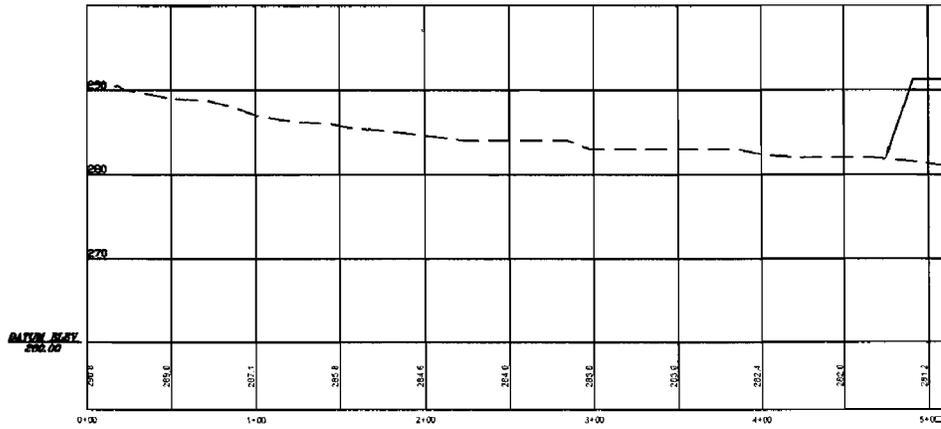
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	FILE NAME		50% CC PERMIT
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	FILE NAME		50% CC PERMIT
NO.		REVISION	
1		GENERAL NOTES PER DELDOT COMMENTS	
2		REVISED PERMIT AREA	

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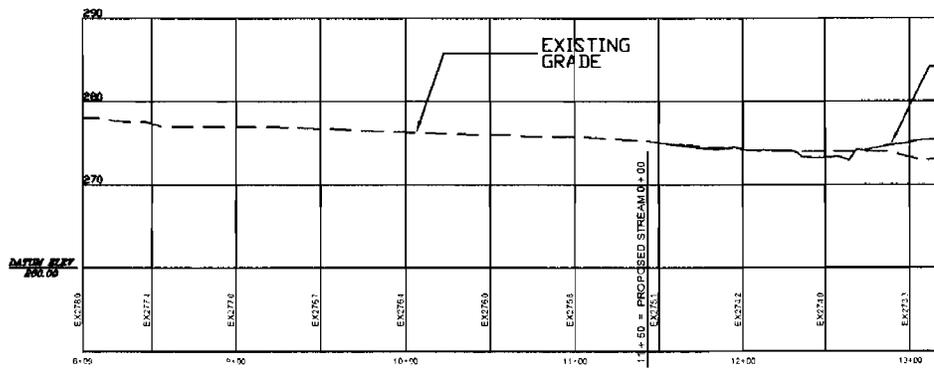


**STREAM TYPICAL SECTION
AND ROCK CROSS VANE DETAIL**
TWEED'S PARK
STREAM RESTORATION
 MILL CREEK HUNDRED ~ NEW CASTLE COUNTY ~ DE

DATE: 23 OCTOBER 2001
 SCALE: NOT TO SCALE
 PROJECT NO: 50% CC
 SHEET: 2/4

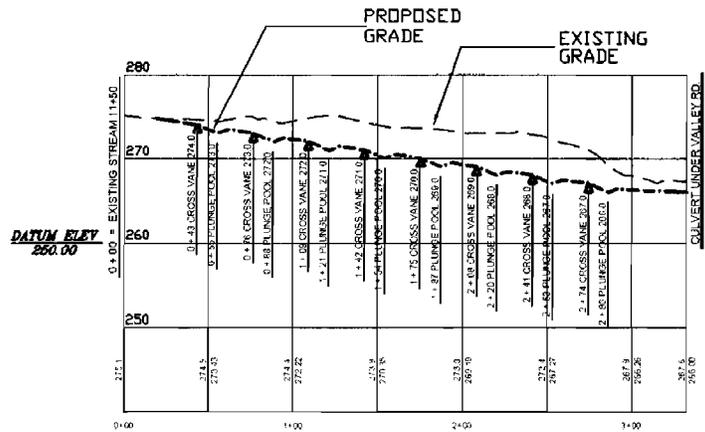


PROFILE OF UPSTREAM REACH



PROFILE OF STREAM REACH TO BE RELOCATED

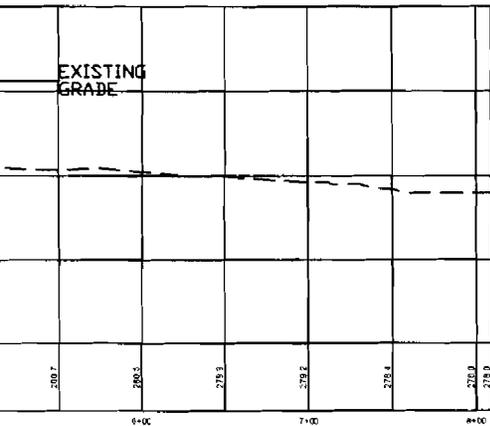
NOTE: STREAM IS BEING RELOCATED; THEREFORE, THE PROPOSED GRADE IS NOT A FLOW PATH



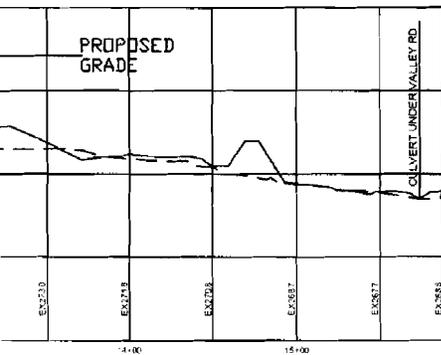
PROFILE OF PROPOSED REACH

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

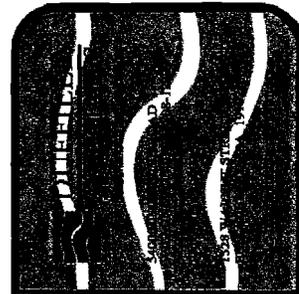
NOTE: STREAM IS BEING RELOCATED; THEREFORE, THE EXISTING GRADE IS NOT A FLOW PATH



HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



NO.	DESIGNED BY:	CHECKED BY:
	JGT	JME
1	DRAWN BY:	FILE NAME:
2	CMK	309 CC PERMITS

NO.	REVISION
1	GENERAL REVISION PER PERMITS
2	ACTUAL PERMITS

OWNER:

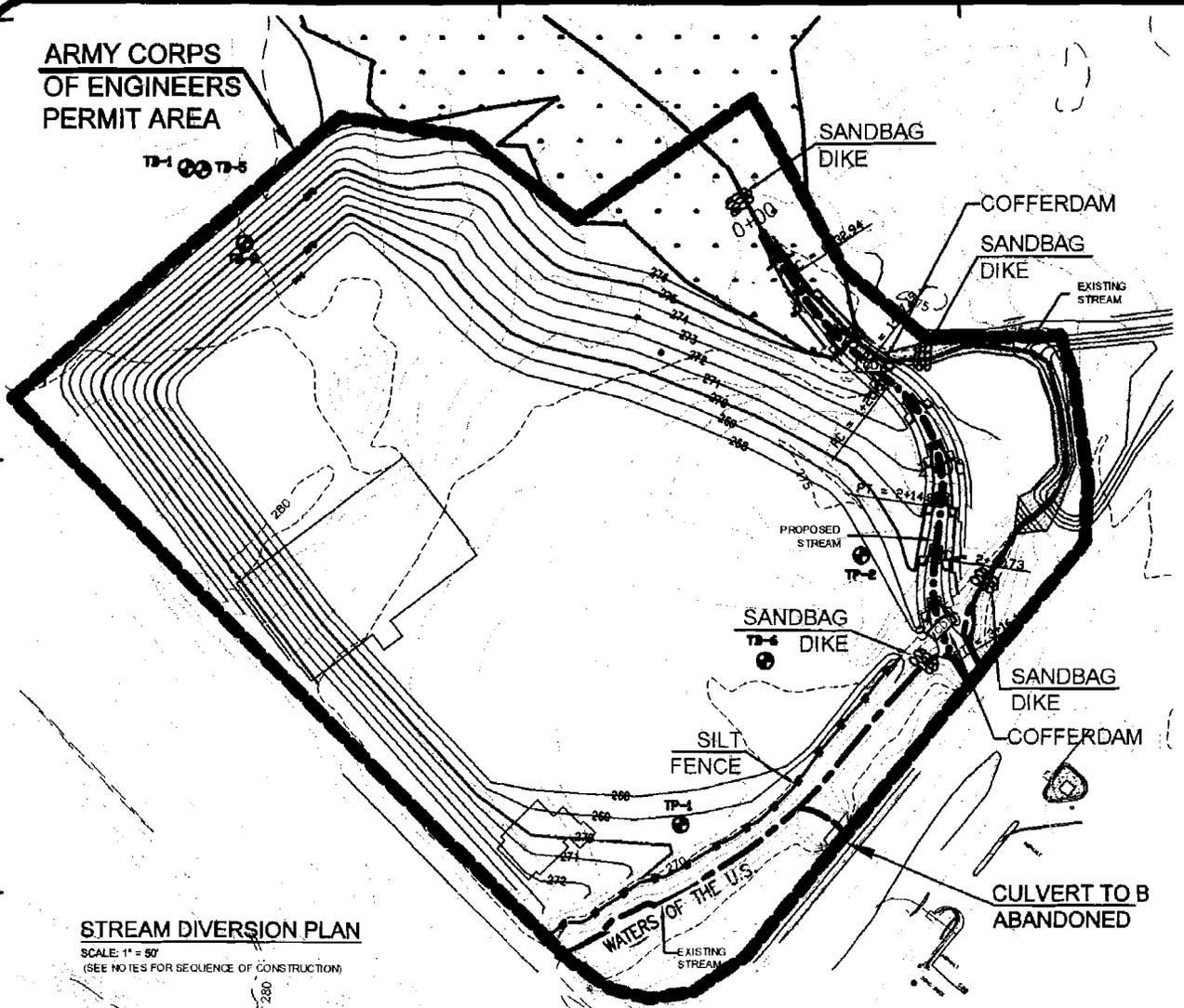
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 DOVER, DELAWARE 19903
 (302) 760-2228

STREAM PROFILES
TWEED'S PARK
STREAM RESTORATION
 MILL CREEK HUNDRED ~ NEW CASTLE COUNTY ~ DE

DATE: 23 OCTOBER 2004
 SCALE: AS NOTED
 PROJECT NO.: 309 CC
 SHEET: W-2

**ARMY CORPS
OF ENGINEERS
PERMIT AREA**

TP-1 TP-5

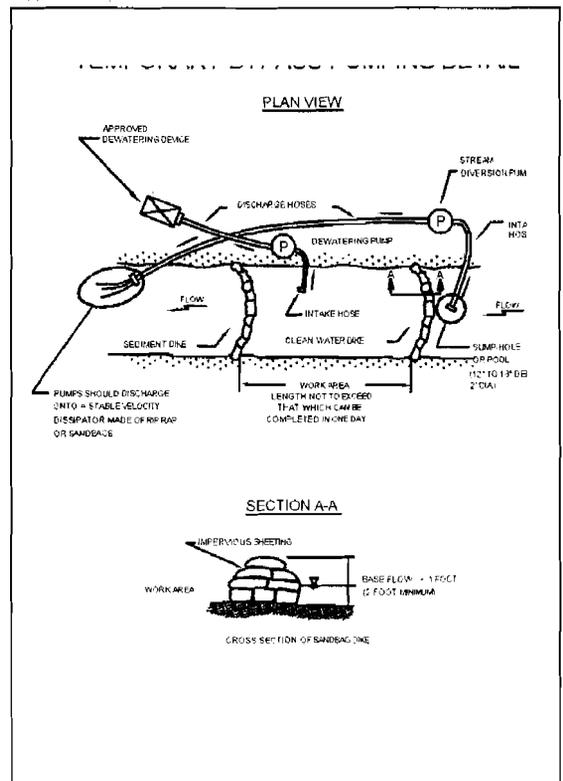


STREAM DIVERSION PLAN

SCALE: 1" = 50'
(SEE NOTES FOR SEQUENCE OF CONSTRUCTION)

280

1. NOTI PRE #
2. THE C D&C SEDI
3. PRIOR UTILI FAMIL THE E
4. DELI
5. PERFE PERIN
6. INSTA ENGI
7. INSTA
8. PERFE WEIL
9. CONSI COFFI SHALI SHALI WORC
10. WATE DEWA
11. TRAVE WORC REAC SHOL
12. CONE 1425 #
13. INSTA AND 1
14. CONI AND 1
15. INSTA
16. CONI AND 3
17. CONI
18. ABAN STOC
19. THE C ERD APPF
20. ALL E THE
21. PRO
22. WIT



Standards
Cofferdam

W_E = 1.1

NOTE:

WID BY-F COP LURE DEVI

Source:
Adapted
VA ESC

NOT OF INTENT TO BEGIN CONSTRUCTION AND ARRANGE FOR A CONSTRUCTION MEETING AT LEAST 5 DAYS PRIOR TO ANY LAND DISTURBANCE.

CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ON SITE WITH THE INSPECTOR AND ENGINEER TO REVIEW LIMITS OF DISTURBANCE, EROSION AND SEDIMENT CONTROL REQUIREMENTS, AND THE SEQUENCE OF CONSTRUCTION.

INITIATING INTRUSIVE ACTIVITIES, THE CONTRACTOR SHALL CONTACT MISSISSIPPI COUNTY UTILITY LOCATIONS. THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH ACTUAL SITE CONDITIONS AND SHALL BE RESPONSIBLE FOR VERIFYING THE PRESENCE AND LOCATION OF UTILITIES BEFORE COMMENCING WORK.

PERMITS AND LIMIT OF CONSTRUCTION AS INDICATED ON PLAN.

CLEARING AND GRUBBING OF THOSE AREAS NECESSARY FOR INSTALLATION OF EROSION CONTROL DEVICES.

STABILIZED CONSTRUCTION ENTRANCE. LOCATION TO BE DETERMINED BY THE INSPECTOR. ACCESS IS TO OCCUR WITHIN THE PERMIT AREA ONLY.

PERMITS AND PERIMETER CONTROLS INCLUDING SILT FENCE.

REMAINDER OF CLEARING AND GRUBBING NECESSARY FOR STREAM AND CONSTRUCTION.

CONSTRUCTION SHALL BE PERFORMED DURING LOW FLOW CONDITIONS. INSTALL PERIMETER CONTROLS AT APPROXIMATE STATIONS 1+45 AND 3+00. COFFERDAM SHALL BE INSTALLED TO IMPROVE THE FLOW OF THE STREAM IN ANY WAY. HEIGHT OF THE COFFERDAM SHALL BE ADEQUATE TO KEEP WATER FROM OVERTOPPING THE DAM AND FLOODING THE STREAM CHANNEL.

THE WORK AREA SHALL BE PUMPED TO A DIRT BAG OR OTHER APPROVED SEDIMENT TRAPPING DEVICE.

INSTALLING A CHANNEL REACH WITH EQUIPMENT WITHIN THE WORK AREA WHERE NO EQUIPMENT PROPOSED SHOULD BE AVOIDED. IF EQUIPMENT HAS TO TRAVERSE SUCH A CHANNEL, PROTECT THE CHANNEL WITH MATS OR SIMILAR MEASURES TO MINIMIZE DISTURBANCE TO CHANNEL.

INSTALL PERIMETER CONTROLS AS INDICATED ON THE PLANS BETWEEN APPROXIMATE STATIONS 0+00 AND 1+40.

INSTALL SANDBAGS DIKES FOR TEMPORARY BYPASS PUMPING BETWEEN STATIONS 0+00 AND 1+40.

INSTALL PERIMETER CONTROLS AS INDICATED ON THE PLANS BETWEEN APPROXIMATE STATIONS 0+00 AND 1+40.

INSTALL SANDBAGS DIKES FOR TEMPORARY BYPASS PUMPING AT STATION 3+00.

INSTALL PERIMETER CONTROLS AS INDICATED ON THE PLANS BETWEEN APPROXIMATE STATIONS 3+00 AND 4+00.

INSTALL PERIMETER CONTROLS AS INDICATED ON THE PLANS BETWEEN APPROXIMATE STATIONS 4+00 AND 5+00. REMAINDER OF WETLAND POND AND SWM POND ON EITHER SIDE OF STREAM SHALL BE RESTORED TO ORIGINAL CONDITION. MATERIALS TO BE USED SHALL BE STORED ON SITE.

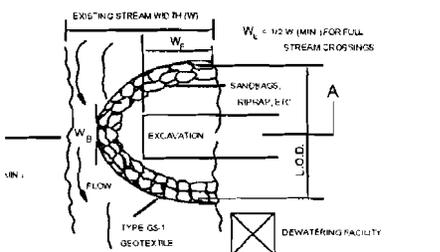
CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS TO AND MAINTAINING ALL PERMITS AND SEDIMENT CONTROL DEVICES UNTIL THE SEDIMENT CONTROL INSPECTOR APPROVES THEIR REMOVAL.

EXCESS EXCAVATED MATERIALS TO BE STOCKPILED IN UPLAND LOCATIONS ON THE PROJECT SITE.

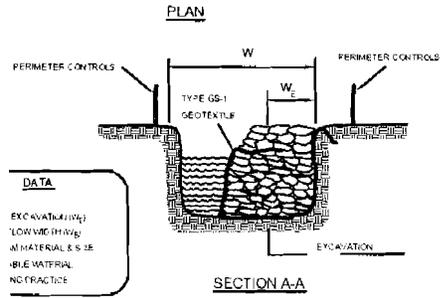
PERMANENT VEGETATIVE STABILIZATION AS INDICATED BY PLANTING PLAN.

PERMISSION OF DELDOT INSPECTOR. REMOVE PERMITS AND PERIMETER CONTROLS.

Detail & Specifications Stream Diversion

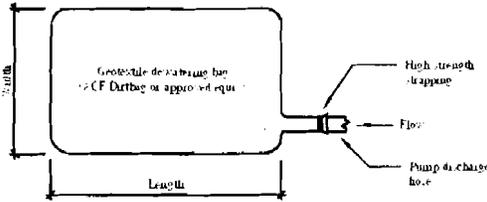


ALL STREAM CROSSINGS, SEPARATE COFFERDAMS SHALL BE CONSTRUCTED FROM EACH BANK.

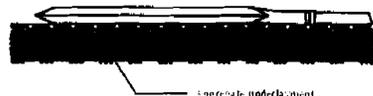


Symbol:	Detail No.
CD	DE-ESC-3.5.2.2
	Sheet 1 of 2
	Date: 12/03

Standard Detail & Specifications Geotextile Dewatering Bag



Plan



Profile

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:

- 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.
- 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.
- 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:

- The geotextile fabric shall be a Type GD-IV.
- 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
- 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



DESIGNED BY:	CHECKED BY:
FILE NAME:	DATE:
DRAWN BY:	FILE NAME:
DATE:	DATE:
PROJECT:	PROJECT:
NO.	NO.
1. GENERAL REVISIONS PER PROJECT COMMENTS	
2. REVISED PERMIT AREA	

DeIDOT
 DELAWARE DEPARTMENT OF TRANSPORTATION
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 (302) 760-3228

OWNER:

STREAM DIVERSION PLAN
TWEEDS PARK
STREAM RESTORATION
 MILL CREEK HUNDRED ~ NEW CASTLE COUNTY ~ DE

DATE:	23 OCTOBER 2004
SCALE:	AS NOTED
PROJECT NO.:	5039/CC
SHEET:	W-5