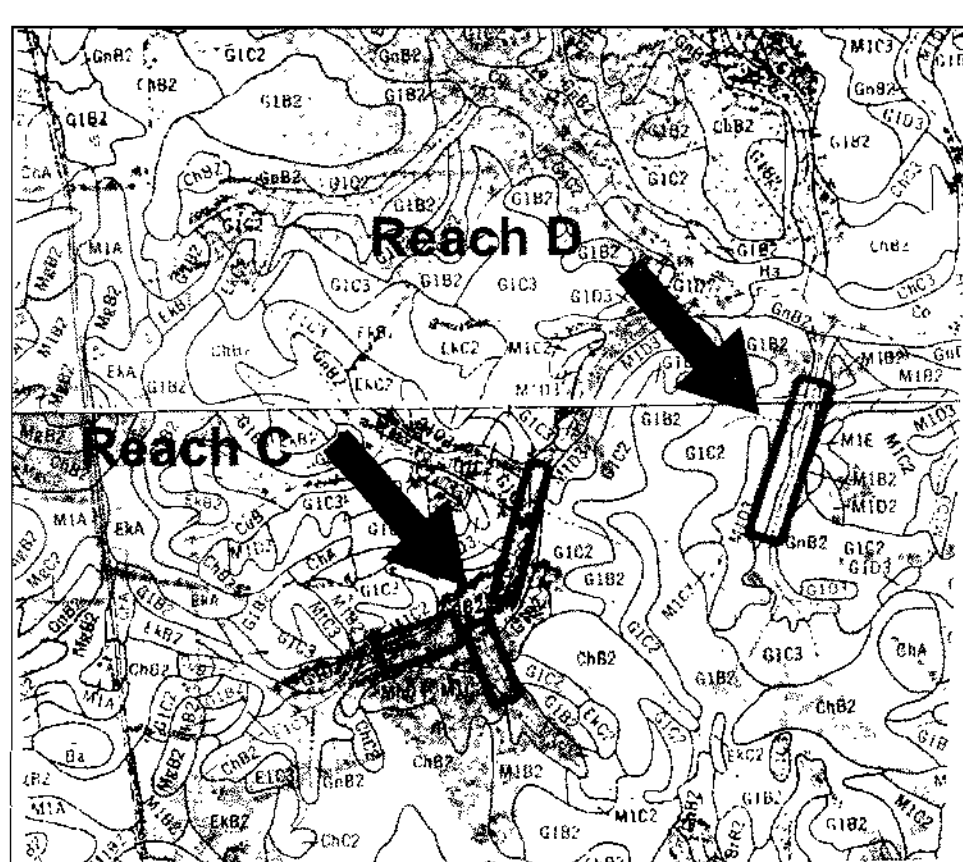
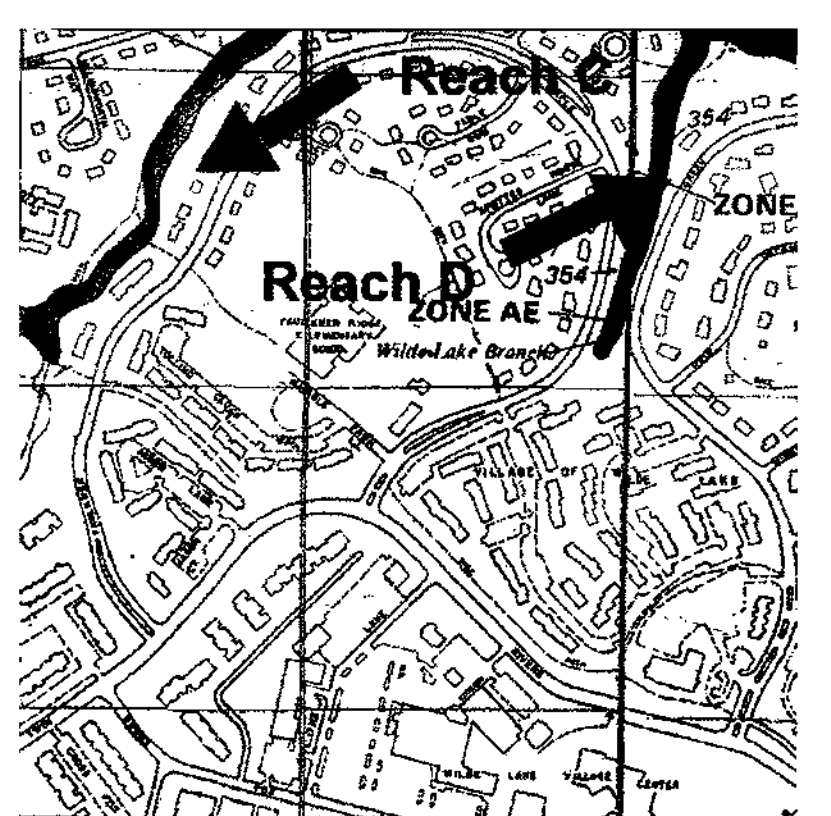


WILDE LAKE TRIBUTARY STREAM RESTORATION DESIGN FOR REACHES C AND D

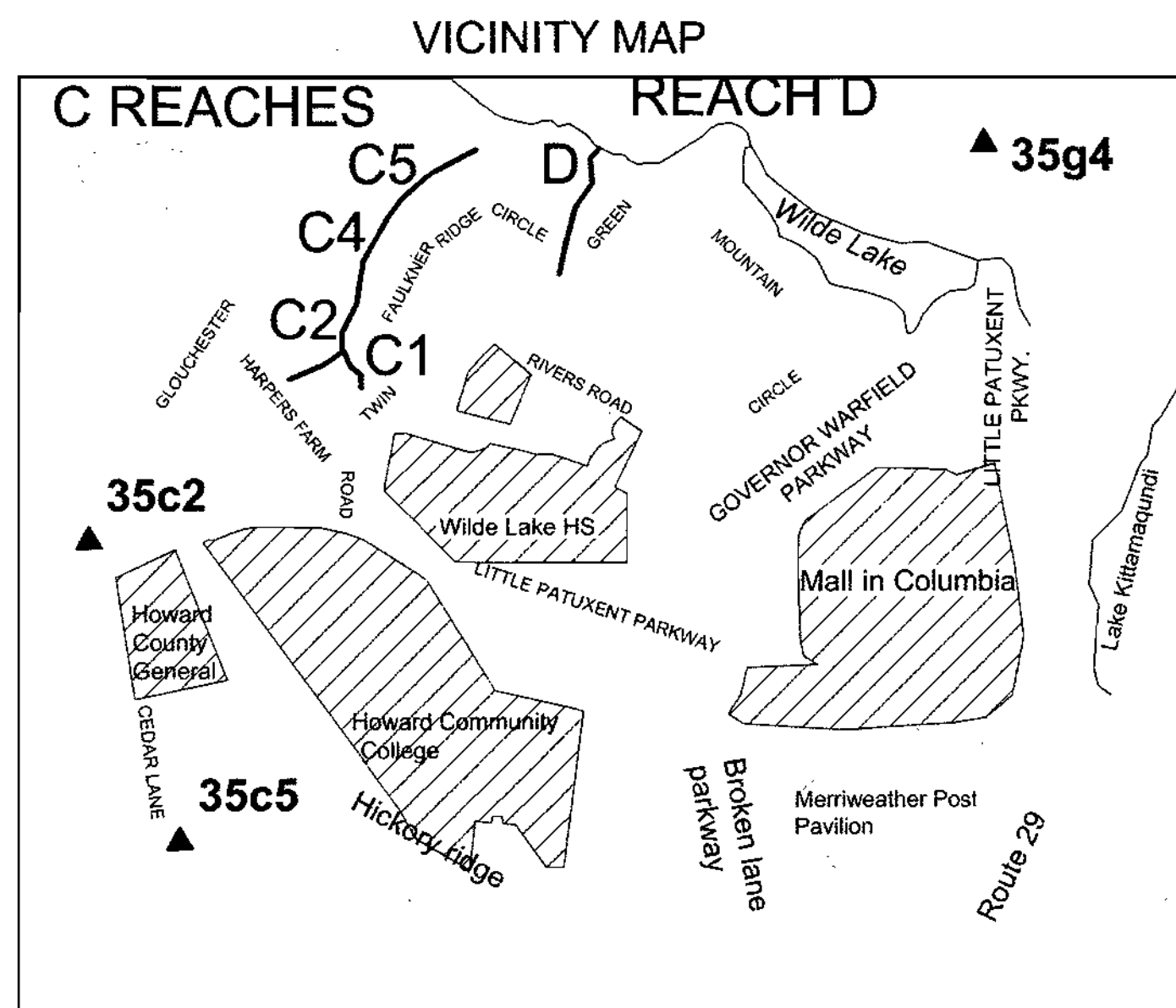
REACH C REACH D



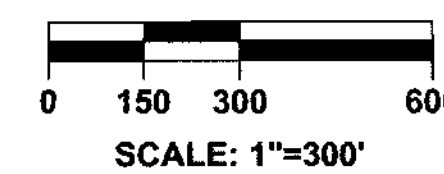
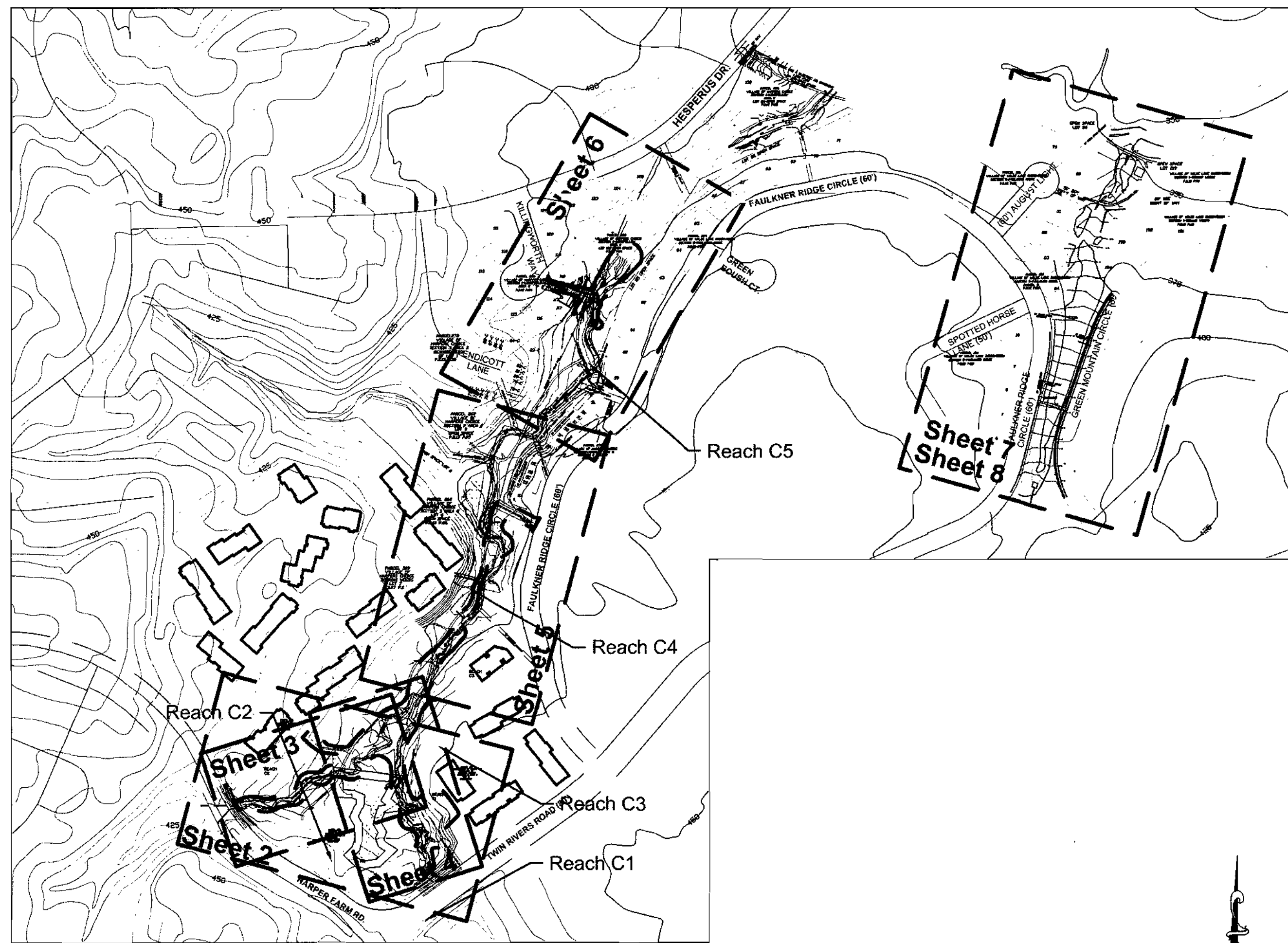
Soil Survey Map
Howard County, MD
July 1968
(For Soil Information See
Drainage Area Map)



FEMA Flood Insurance Rate Map
Howard County, MD
Community Panel Number's:
240044 0027C/240044 0028C
240044 0033B
Effective Date: March 15, 1977



Note: See general notes, this sheet, for geodetic survey control data.
There is no Reach C3.



GENERAL NOTES NON-RESIDENTIAL SITE DEVELOPMENT PLAN

- All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA Standards and specifications if applicable.
 - The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.
 - The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
 - Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
 - All plan dimensions are to face of curb unless otherwise noted.
 - The existing topography is taken from field run survey with two foot contour intervals prepared by JA Rice dated May and November of 2002.
 - The coordinates shown herein are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System.
- Howard County 35C2- Concrete monument and brass disk stamped 2639002 located in the grass median on the east side of the intersection of Little Patuxent Parkway and Cedar Lane.
NAD 83/91 N 563920.830 E 1344204.150
NGVD 29 ELEVATION 464.133
- Howard County 35C5- Concrete monument and brass disk stamped 2639006 located in the grass east side of Cedar Lane.
NAD 83/91 N562148.450 E1344554.472
NGVD 29 ELEVATION 452.267
- Howard County 3504- Concrete monument and brass disk stamped 2741004 located in the grass median at the south side of the intersection of Little Patuxent Parkway and Columbia Road.
NAD 83/91 N 567815.206 E 1353271.285
NGVD 29 ELEVATION 360.979
- This plan contains proposed work on the following DPZ files: F-68-02, F-67-33, F-66-43, F-66-53, F-67-71, F69-27, FDP-13, FDP-26, FDP-30-A/V
 - Water is public. See plans for contract numbers.
 - Sewer is public. See plans for contract numbers.
 - There is no existing or proposed stormwater management control, ownership or maintenance responsibility with this project.
 - Existing utilities are based on the survey by JA Rice.
 - The floodplain study for this project was prepared by Environmental Quality Resources, dated January 2003, and approved July 8, 2004. DPZ has determined that the disturbances within the 100-year flood plain, streams and required stream and wetlands buffer for the proposed stream restoration project is considered essential or necessary in accordance with Sections 16.115(c)(2) and 16.116(c) of the Subdivision and Land Development Regulations.
 - The wetlands delineation study for this project was prepared by Resource Development Services in May of 2002.
 - No traffic study is required for this project.
 - Project background information is included in the title block with the following additional information: Zoning NT, Election District No. 5.
 - No clearing, grading or construction is permitted within the delineated wetlands or streams except as shown herein. No work can be done within the wetlands or streams until a permit from the Maryland Department of the Environment is secured.
 - These streams are Maryland Use Class 1 Waters.
 - This project is exempt from the forest conservation requirements because the subject property is located within the New Town Zoning District which is a planned unit development and is more than 50% developed prior to 12/31/82 in accordance with Section 16.1202(b)(1)(iv) of the Howard County Code.
 - All material removed from this site shall be taken to a site with an active grading permit.
 - Developer signature hereby designates signatory as responsible maintenance entity per separate "operations and maintenance" agreement.

Sequence of Construction for Wilde Lake Stream Stabilization Work

- Reaches C and D are designated Use Class 1 by the Maryland Department of Environment.
- Closure dates for Use Class 1 stream are March 1-June 15.
- Work should be started no later than November 13 to assure completion before closure dates apply.
- A Wetland/Waterway Construction Permit has been applied for and is pending approval.
- Work upstream to downstream unless specifically directed by Designer and Sediment Control Inspector.
- Work areas C and D may be constructed separately and/or concurrently. The following steps apply to either C or D.

- Obtain a grading permit. Conduct a pre-construction meeting with Contractor, Designer, Owner, MDE Inspector (Permit # 20026544/02-NT-0421) and Sediment Control Inspector at least 48 hours prior to the start of construction. Miss Utility is to have been contacted by this time and she is to have had an opportunity to mark all utilities within the limits of disturbance. Work areas and limits of disturbance to be marked in the field prior to this meeting. 1 day
- With Sediment Control Inspector's (SCI) permission, install stabilized construction entrance(s). 1 day
- Clear and grub for installation of sediment control features. 3 days
- Install features per subsequences as listed below.

Reach C:

- Install tree save fencing and silt fence as shown on the plans. 1 day
- Install complete in-stream pump-around dikes with dewatering system above and below sections to be worked on and run pumping equipment downstream to a location agreed upon with the SCI as being able to be complete and permanently stabilized in one day (usually about 100 feet). No work to be done if rain is forecast by the National Weather Service (NWS) within 48 hours. 1 day
- Clear and grub bank areas as shown on plans within work area described under item "b" above. 1/2 day
- Install bioengineering practices within dry work area. 10 days
- Temporarily seed and stabilize. 1/2 day. The next day, move pumps to new downstream work area location, and repeat steps "a" through "e" until Area C work is complete. 1 day

Reach D:

- Install tree save fencing and silt fence as shown on the plans. 2 days
- Install complete in-stream pump-around dikes with dewatering system above and below station 8+75 and run pumping equipment downstream to a location agreed upon with the SCI as being able to be completed and permanently stabilized in one day (usually about 100 feet). No work to be done if rain is forecast by the NWS within 48 hours. 1 day
- Clear and grub bank areas as shown on plans within work area described under item "b" above. 1/2 day
- Install bioengineering practices within dry work area.
- Temporarily seed and stabilize. No work if rain predicted within 24 hours. 5 days

- Once work is complete for each section, conduct a "punchlist" walk with Owner, SCI, Contractor and Designer. 1 day
- With permission of SCI, remove any remaining sediment control devices. 2 days

Total duration of construction: 65 days

SHEETS INDEX

- Title Sheet
- Geometry and Sediment Control for Reaches C1 and C2
- Plan View for Reach C1
- Plan View for Reach C2
- Plan View With Sediment Control for Reach C3 and C4
- Plan View With Sediment Control for Reach C5
- Geometry and Sediment Control for Reach D
- Plan View for Reach D
- Cross Sections
- Profile for Reach C1
- Profile for Reach C2
- Profiles for Reach C4 & C5
- Profile for Reach D
- Bioengineering Details
- Bioengineering Details
- Bioengineering Specifications
- Sediment Control Details
- Sediment Control Specifications
- Planting Layout and Specifications

Sediment Control
Sheet 1 of 7

HOWARD COUNTY CAPITAL PROJECT: D - 1121 5th ELECTION DISTRICT

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Approved: *[Signature]* 8/23/04
Howard S.C.D. DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE DATE 8/31/04

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT
DIRECTOR

BY THE DEVELOPER:

IWE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *[Signature]* 8/23/04 DATE
See general note 21, this sheet.

BY THE ENGINEER:

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

ENGINEER: *[Signature]* 8/23/04 DATE
TIMOTHY SCHUBERT P.E. 20207

Permit Information Block

Subdivision Name	Section/Area	Lot/Parcel
VHC and VWL	VWL-Section 1 and 10 VHC-Section 1, Area 2 and Sec. 3, Area 2	# VHC - O.S. Lots 2,9,10,11 and 126 VWL - O.S. Lots 1 and 2
Plat # or L/F	Block #	Zone
See Title Block	18 and 24/13 and 19	NT - OS
	Tax/Zone Map	Elec. Dist.
	29/30	5
	Census Tract	
		6054.01,6055.03

Address Chart

Lot Number	Street Address
Reach 'C'	10724 Faulkner Ridge Circle
Reach 'D'	10582 Faulkner Ridge Circle

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

Site Analysis Chart

A	Total project area is sum of all parcels in title block.
B	Area of plan submission is the same as the limits of disturbance.
C	Limit of disturbed area (LOD) is 196,977 square feet or 4.52 acres.
D	Present zoning is Newtown-Open Space-Credited
E	Proposed use of site is to remain open space for recreational use.
F	Floor space/number of units/employees/parkings not applicable.
G	Open space on this site is assumed to be the same as the LOD or 4.52 acres.
H	Required open space is not applicable.
I	Building coverage is not applicable.
J	See General Note 8 for the DPZ file references.
K	This project is for stream restoration only.

Summary of Environmental Impacts

Restoration Design Area	Tree Removal (# of trees)	Stream Disturbance (lf)	Wetland Disturbance (sq ft)	Wetland Buffer Disturbance (sq ft)	LOD (sq ft)
C	14	1700	0	3000	135,637
D	9	900	0	0	61,340
Total	23	2600	0	3000	196,977

Prepared for: The Columbia Association
10221 Winocoin Circle, Suite 100
Columbia, MD 21044-3410
Phone: 410.715.3000

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
PARCEL 308 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P.86
PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11P.B.26 P.83, P.B. 13, P.87
PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94

Howard County Dept. of Public Works
Bureau of Environmental Services/SWM
6751 Columbia Gateway Dr., Suite 5
Columbia, MD 21046
Phone: 410.313.6444

PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55
PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13 P.74

C
D

WILDE LAKE STREAM DESIGN

Title Sheet

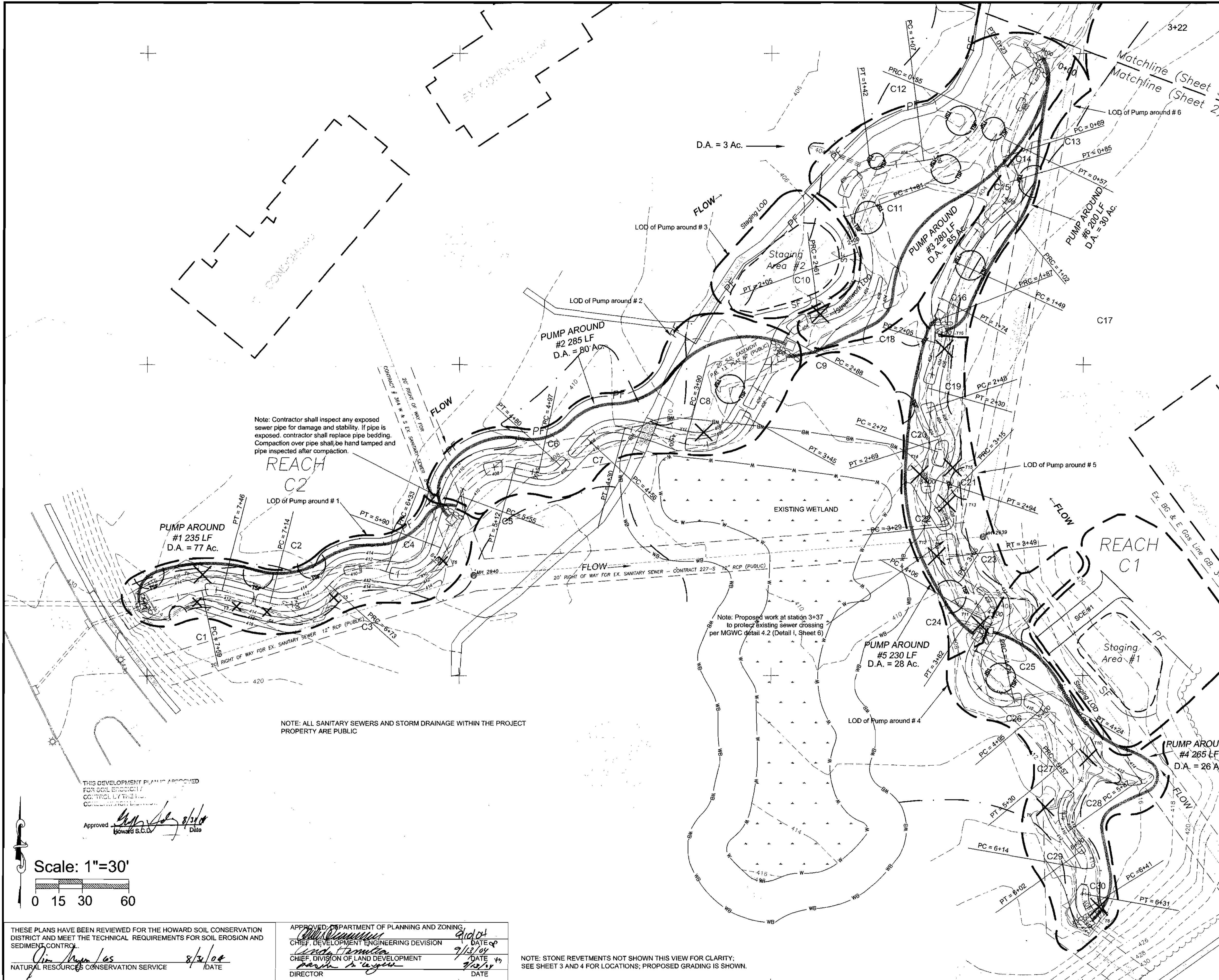
SDP-04-59

DATE: 08/04
DESIGNED: TCS
DRAFTED: JMF
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
855 QUINCE ORCHARD ROAD GAITHERSBURG, MARYLAND 20878
Phone: 301.208-9573 E-mail: info@cpj.com Fax: 301.926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

Scale As Shown
SHEET 1
OF 20 SHEETS
JOB NO. 1317/D - 1121
SDP-04-59



Legend

- Property Line
- Easement
- Stream Centerline
- Limits of Disturbance
- 100 Year Floodplain
- Tree Line
- 426 Existing Contours
- PF Pedestrian Fence (Detail D)
- SF Silt Fence (Detail C)
- TSF Tree Save Fence (Detail D)
- Sand Bag Cofferd Dam (Detail E)
- Pump Around (Detail H)
- SCE Stabilized Const. Entrance (Detail B)
- Staging Area
- Tree to be Removed
- Light Post

Tree Impact Table - Reach C

Tree ID	Diameter	Common Name	Scientific Name
1	30"	Poplar	<i>Linodendron spp.</i>
2	6"	Unspecified	Unspecified
3	6"	Unspecified	Unspecified
4	6"	Unspecified	Unspecified
5	6"	Unspecified	Unspecified
6	6"	Unspecified	Unspecified
7	20"	Poplar	<i>Linodendron spp.</i>
8	12"	Willow	<i>Salix spp.</i>
9	27"	Poplar	<i>Linodendron spp.</i>
10	37"	Walnut	<i>Juglans spp.</i>
11	12"	Walnut	<i>Juglans spp.</i>
12	15"	Walnut	<i>Juglans spp.</i>
13	12"	Hickory	<i>Carya spp.</i>
14	15"	Poplar	<i>Linodendron spp.</i>
15	36"	Poplar	<i>Linodendron spp.</i>
16	Tag #142	Unspecified	Unspecified
17	20"	Poplar	<i>Linodendron spp.</i>

Reach C Radii Table (all values in feet)

ID	RADIUS	PC	PT	ID	RADIUS	PC	PT
C1	27	7+59	7+46	C16	16	1+87	1+74
C2	38	7+14	6+73	C17	104	1+49	1+02
C3	32	6+73	6+33	C18	25	2+05	1+87
C4	27	6+33	5+90	C19	21	2+48	2+30
C5	29	5+55	5+12	C20	16	2+72	2+69
C6	15	4+97	4+80	C21	19	3+15	2+94
C7	25	4+56	4+30	C22	19	3+29	3+15
C8	32	3+90	3+45	C23	19	3+65	3+49
C9	25	2+88	2+61	C24	16	4+06	3+82
C10	30	2+61	2+05	C25	22	4+74	4+24
C11	24	1+81	1+42	C26	18	4+95	4+74
C12	40	1+07	0+55	C27	17	5+57	5+30
C13	22	0+55	0+23	C28	20	5+87	5+57
C14	16	0+69	0+37	C29	15	6+14	6+02
C15	16	1+02	0+85	C30	15	6+41	6+31

Prepared for: The Columbia Association
 10221 Wincopin Circle, Suite 100
 Columbia, MD 21044-3410
 Phone: 410.715.3000

Howard County Dept. of Public Works
 Bureau of Environmental Services/SWM
 6751 Columbia Gateway Dr., Suite 5
 Columbia, MD 21046
 Phone: 410.313.6444

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] DATE: 8/2/04
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: *[Signature]* DATE: 7/13/04
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: *[Signature]* DATE: 7/13/04
 DIRECTOR

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B.27 P.2, P.B. 13, P. 86
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 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 287 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN
 Geometry and Sediment Control
 for Areas C1 and C2
 SDP-04-59

DATE:	08/04				
DESIGNED:	TCS				
DRAFTED:	JMF				
CHECKED:	TCS				
BASE DATA:	J.A. RICE	NO.	REVISIONS	BY	DATE

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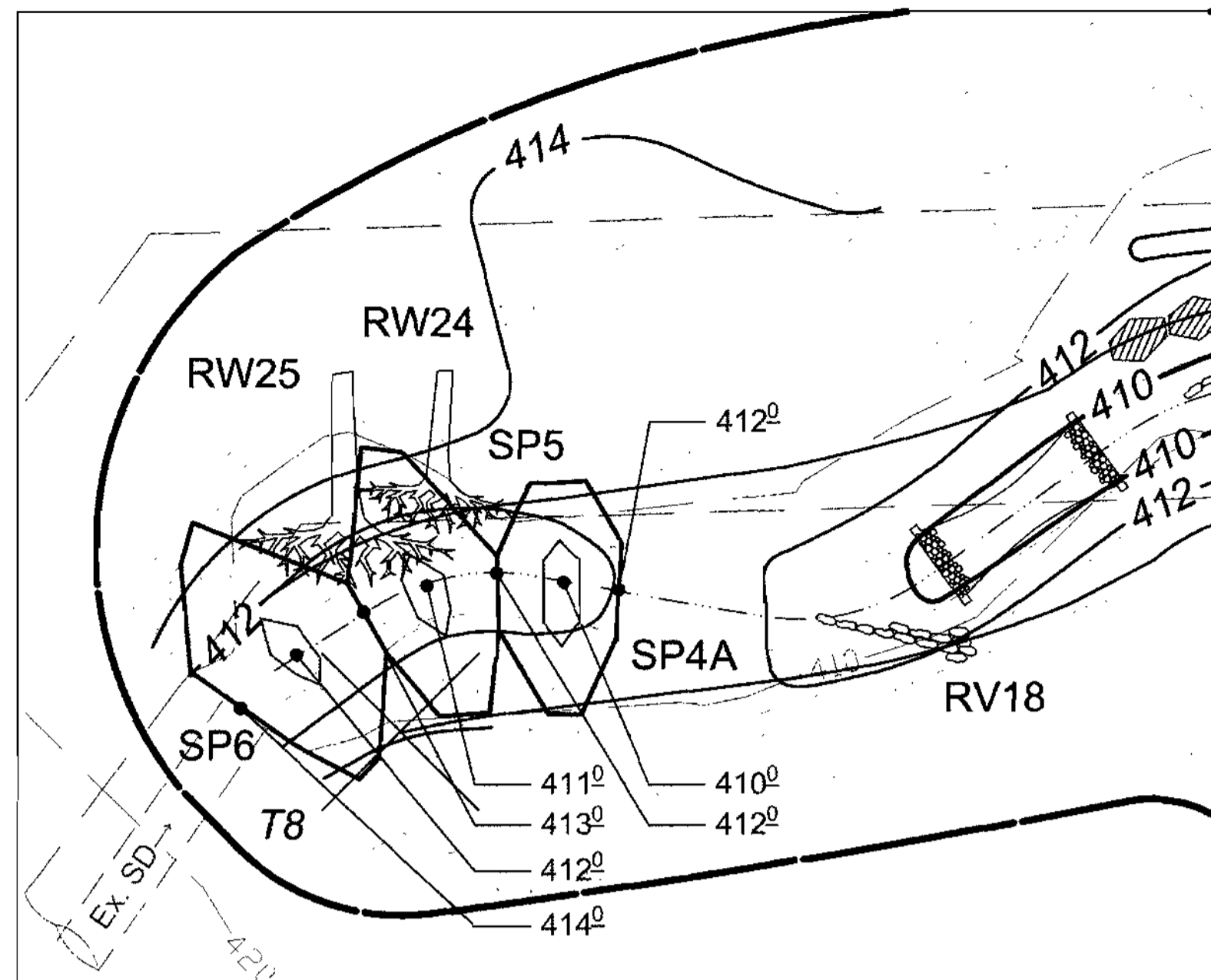
Sediment Control
 Sheet 2 of 7

Scale
 1"=30'

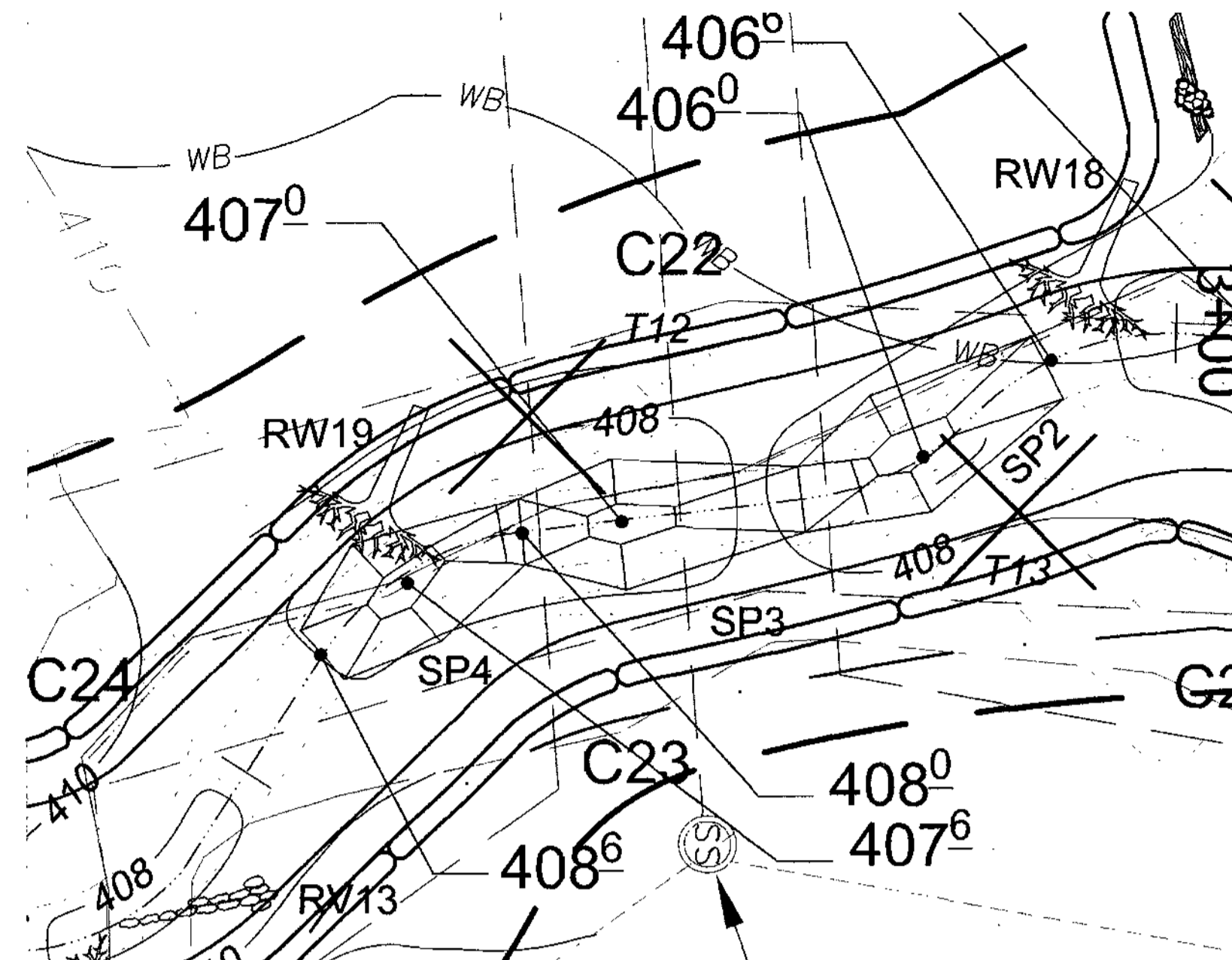
SHEET
 2
 OF 20 SHEETS

JOB NO.
 1317/D - 1121

SDP-04-59



1. Detail of Outlet Area (1"=10')



2. Detail of Work Area (1"=10')

See note on profile sheet 10 and detail 1 on sheet 18 within LOD shown concerning sewer utility protection

Addendum "A"

Permittee, Environmental Quality Resources, LLC, hereby unconditionally and expressly agrees that the use of the parking area behind units on Parcel 312, Section 3, Area 2, Lot 11, and driveway access within the Cross Fox property, hereby known as "Cross Fox property", shall be undertaken at the sole risk of Permittee, and that the Cross Fox Board of Directors and the Cross Fox Condominium Association, hereby known as the "Owner", shall not be liable for and Permittee shall indemnify, defend, and hold Owner harmless for any and all claims, demands, injuries, damages, or causes of action, including attorneys' fees, arising out of or in any way connected with such entry upon and the use of the Cross Fox property. Permittee hereby expressly and forever waives, releases, and discharges Owner from all such claims, demands, injuries, damages, and causes of action, arising out of or in any way connected with Permittee's entry upon and use of the Cross Fox property.

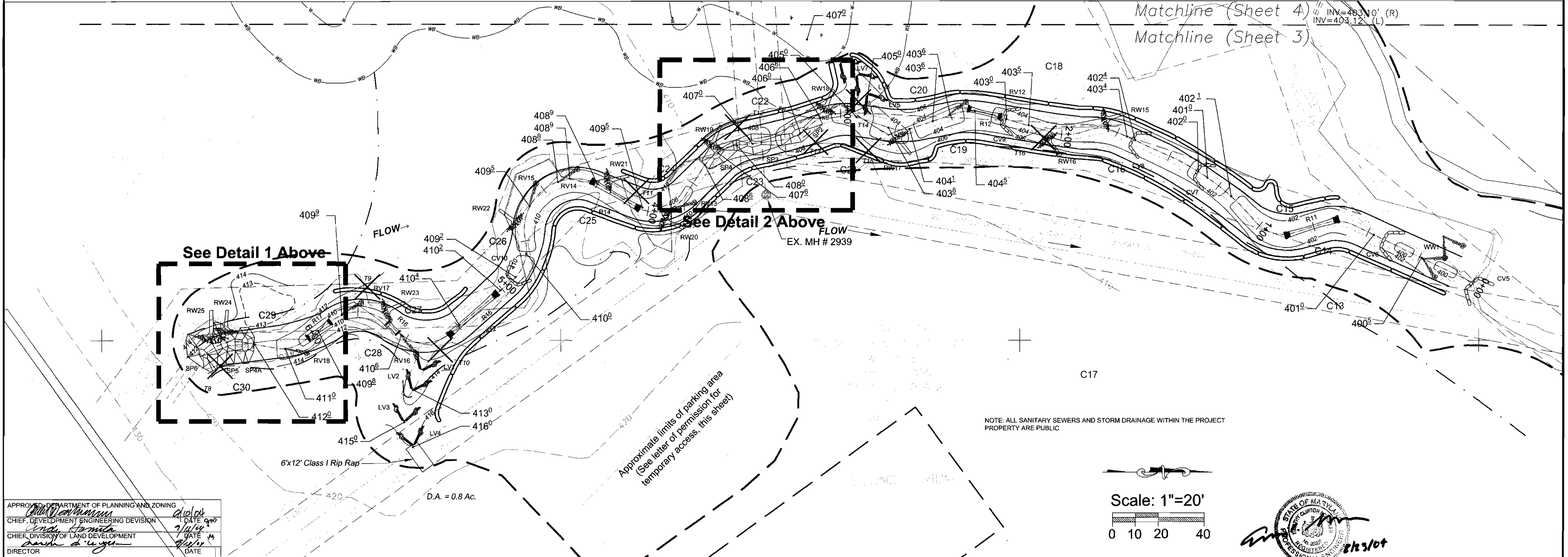
Permittee also unconditionally and expressly agrees to keep the Cross Fox property safe and clean during the period of this agreement. This agreement shall be further supported by photographs and video of the Cross Fox property prior to use by Permittee, which shall be taken and documented by a representative of Permittee and the Cross Fox Board of Directors. Permittee and Owner agree that a final completion inspection by a representative of Owner and Permittee will be conducted upon completion of construction. The final completion inspection shall provide the means by which Owner and Permittee shall verify Permittee's obligation to restore to original condition the Cross Fox property. Acceptance at final completion inspection shall operate as Owner's acknowledgment that Permittee has met its obligations under this agreement and a release of any further liability arising out of or connected to Cross Fox property access.

By: *John Talley* Date: 2/26/04
 Mr. John Talley, Baltimore Branch Manager
 Contractor/Permittee
 Environmental Quality Resources, LLC

By: *Elliott M. Simons* Date: 2/21/04
 Mr. Elliott M. Simons
 Authorized Owner Representative
 Cross Fox Board of Directors

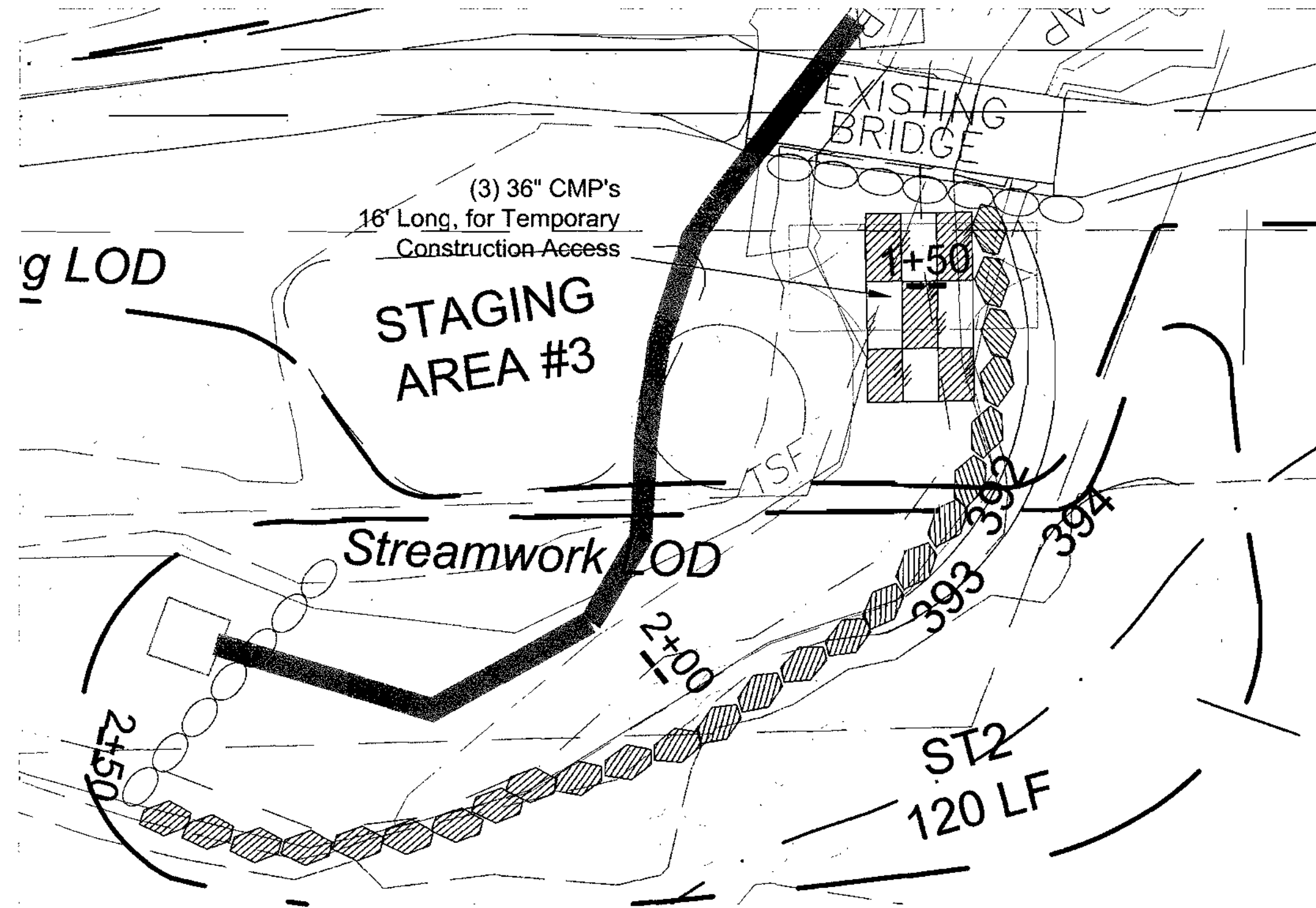
3. Permission Letter from Cross Fox Board of Directors

Legend	
	100 Year Floodplain
	Tree Line
	Existing Contour
	Proposed Contour
	Pedestrian Fence (Detail D)
	Tree Save Fence (Detail D)
	Extents of Wetlands
	25' Wetland Buffer
	Limits of Disturbance
	Stabilized Construction Entrance (Detail B)
	Staging Area
	Ex. Stream Centerline
	Proposed Stream Centerline
	Light Post
	Bankfull Limit
	Channel Limit
	Easement
	Ex. S.S. Manhole
	Sand Bag Cofferdam (Detail E)
	Pump Around (Detail H)
	Imbricated RipRap (Detail # 1)
	Cross Vane (Detail # 2)
	Stone Toe (Detail # 3)
	Log V-Drop (Detail # 5)
	Rock Vane (Detail # 6)
	Rootwad (Detail # 7)
	Step Pool (Detail # 8)
	Encapsulated Fill (Detail # 9)
	Riffle Grade Protection (Detail # 11)
	W - Weir (Detail # 12)
	Proposed RipRap
	Erosion Control Matting
	Property Line
	Silt Fence (Detail C)
	Coir Fiber Roll (Detail 13)

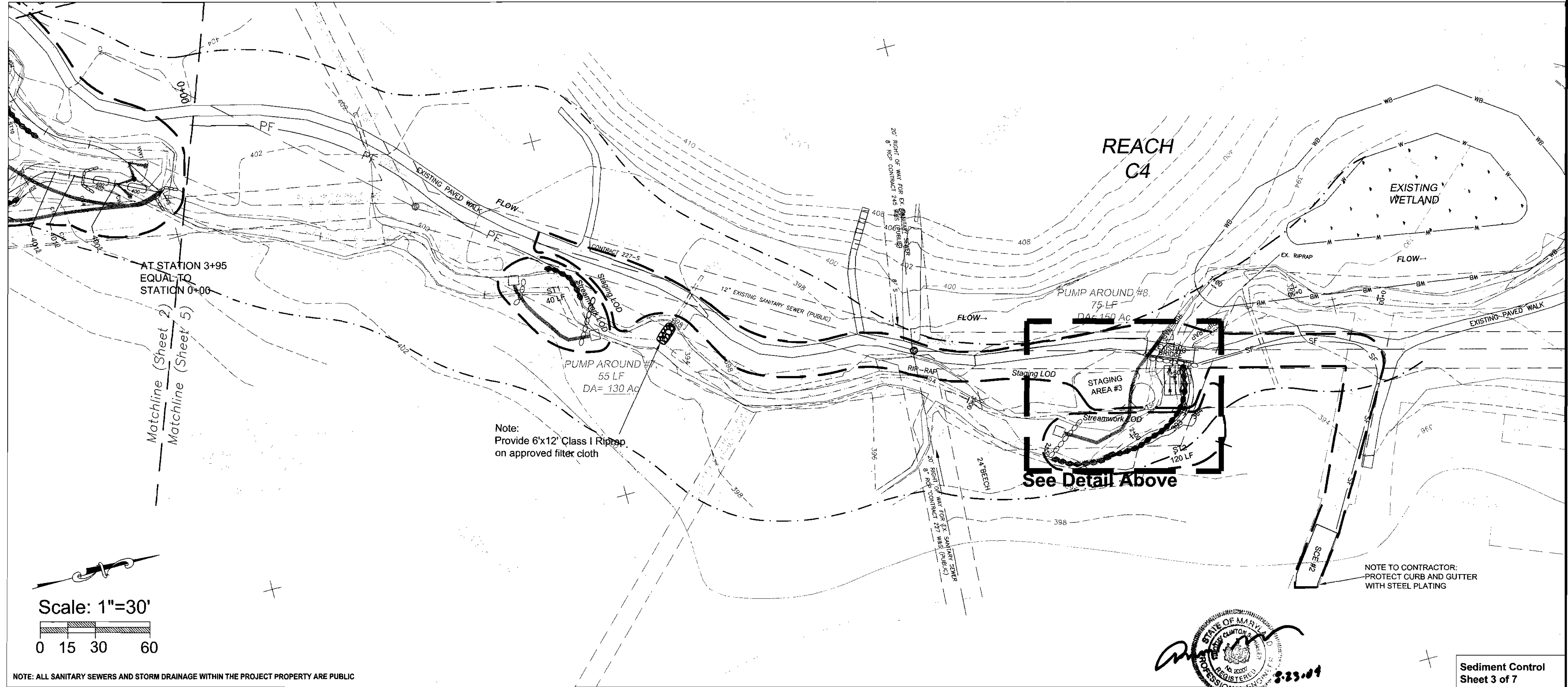
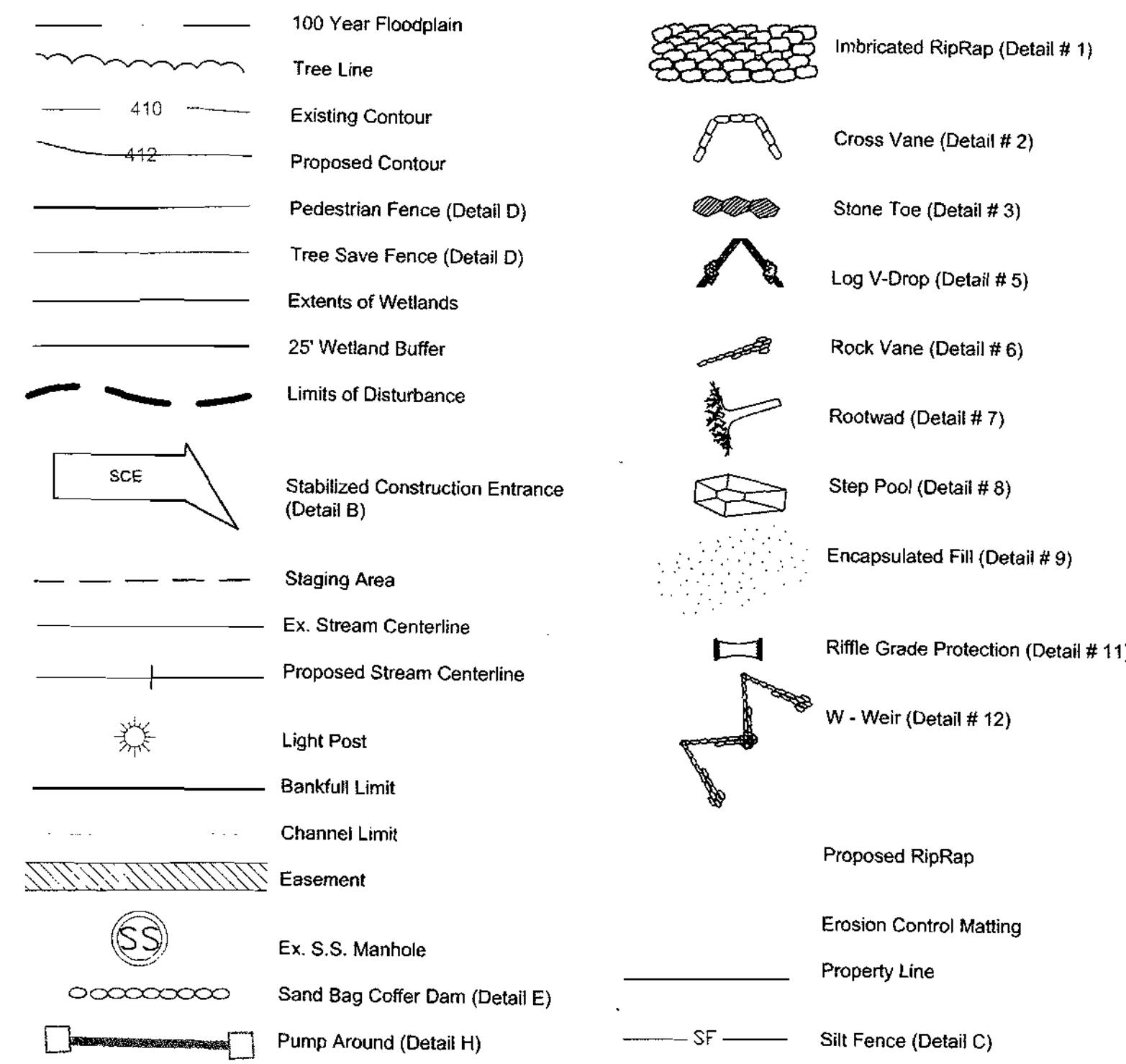


Prepared for: The Columbia Association 10221 Wincopin Circle, Suite 100 Columbia, MD 21044-3410 Phone: 410.715.3000 Howard County Dept. of Public Works Bureau of Environmental Services/SWM 6751 Columbia Gateway Dr., Suite 5 Columbia, MD 21046 Phone: 410.313.6444	PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87 LOT 6 OPEN SPACE P.B. 13 P.85 PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P. 86 PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94 PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.49 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55	WILDE LAKE STREAM DESIGN Plan View for Reach C1 SDP-04-59	DATE: 08/04							Scale 1"=20' SHEET 3 OF 20 SHEETS JOB NO. 1317/D - 1121 SDP-04-59
			DESIGNED: TCS DRAFTED: JMF CHECKED: TCS BASE DATA: J.A. RICE							

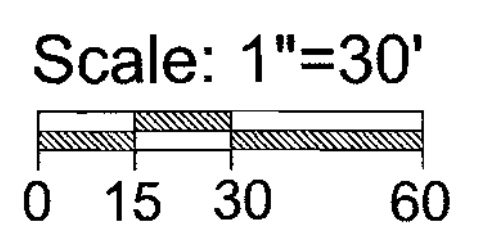
Detail of Work Area (1"=10')



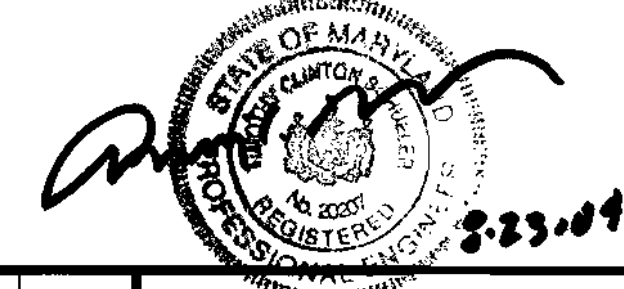
Legend



APPROVED - DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DIRECTOR



NOTE: ALL SANITARY SEWERS AND STORM DRAINAGE WITHIN THE PROJECT PROPERTY ARE PUBLIC



Prepared for: The Columbia Association
 10221 Winopin Circle, Suite 100
 Columbia, MD 21044-3410
 Phone: 410.715.3000

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 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94

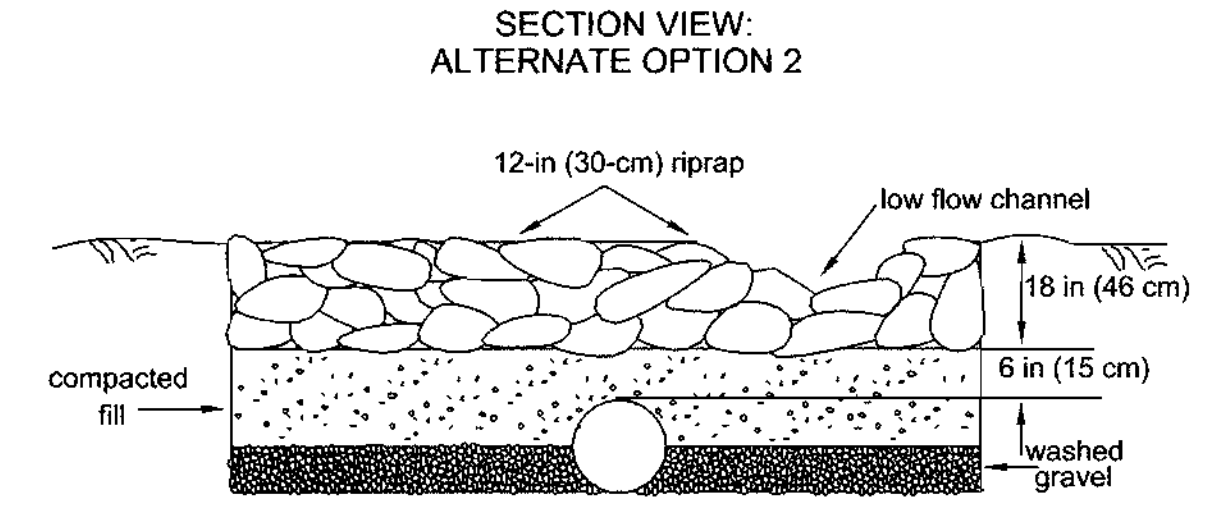
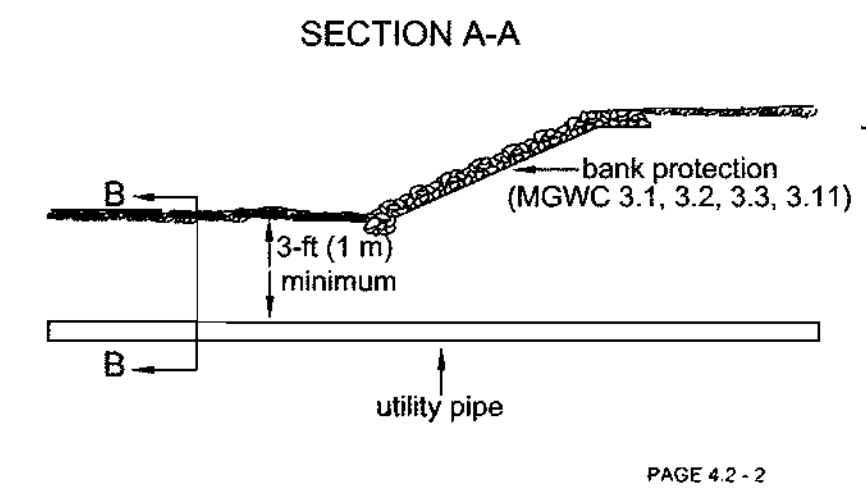
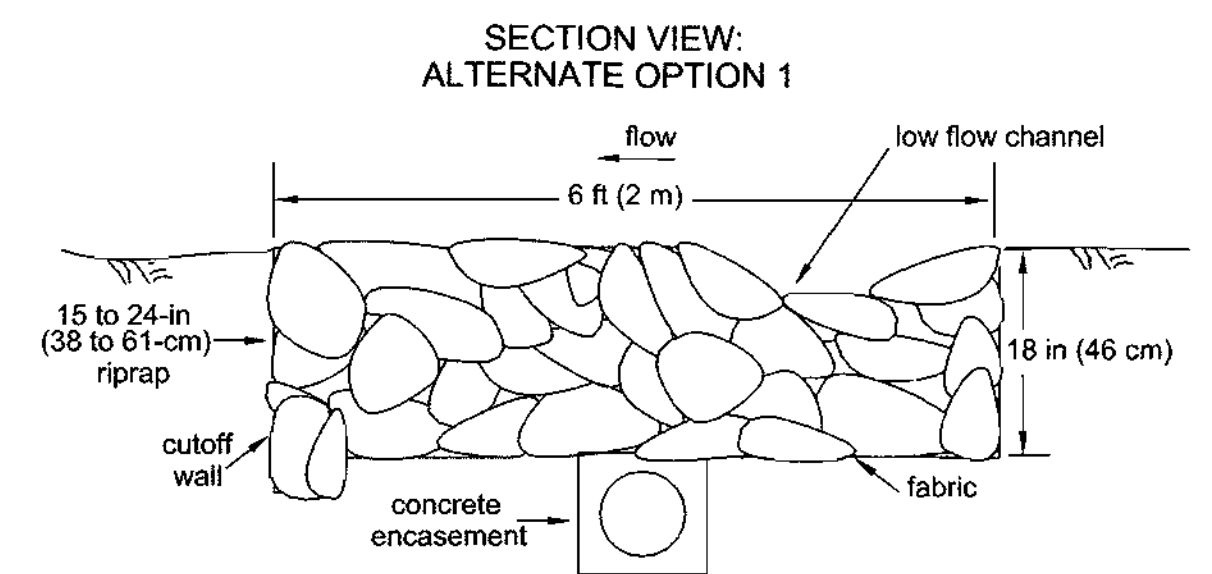
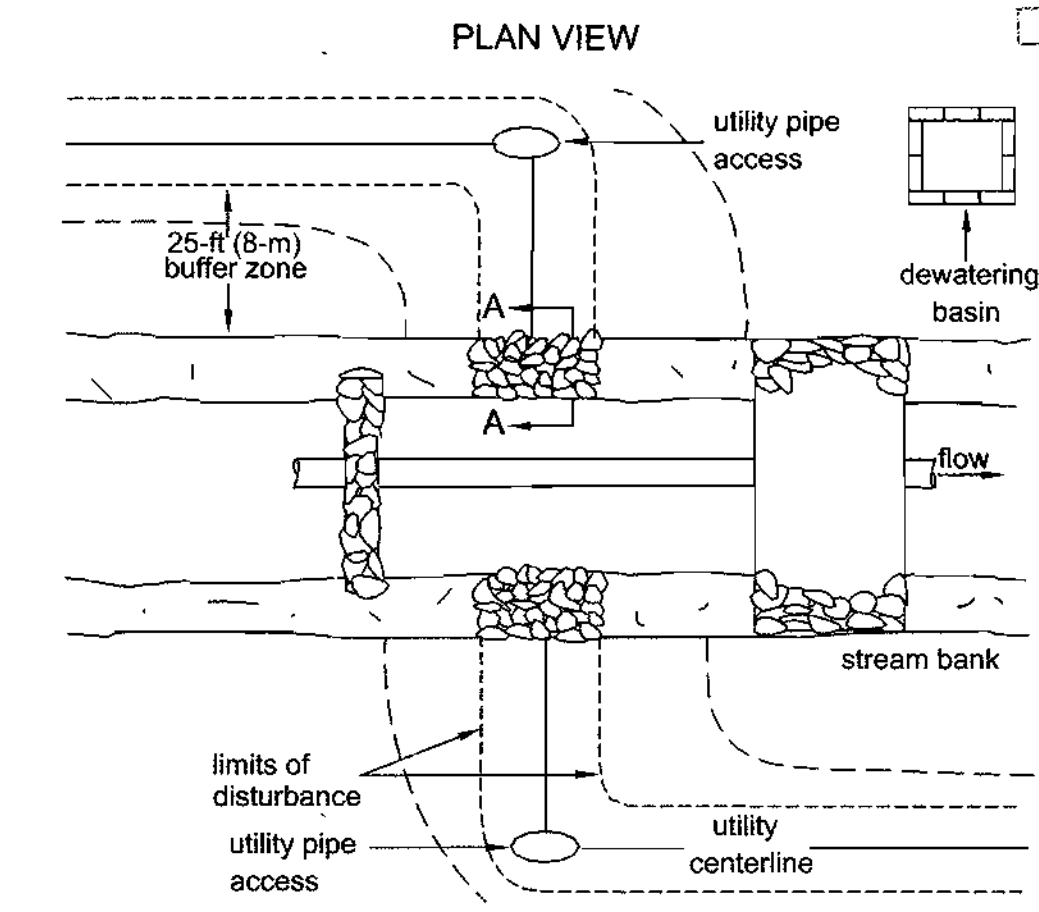
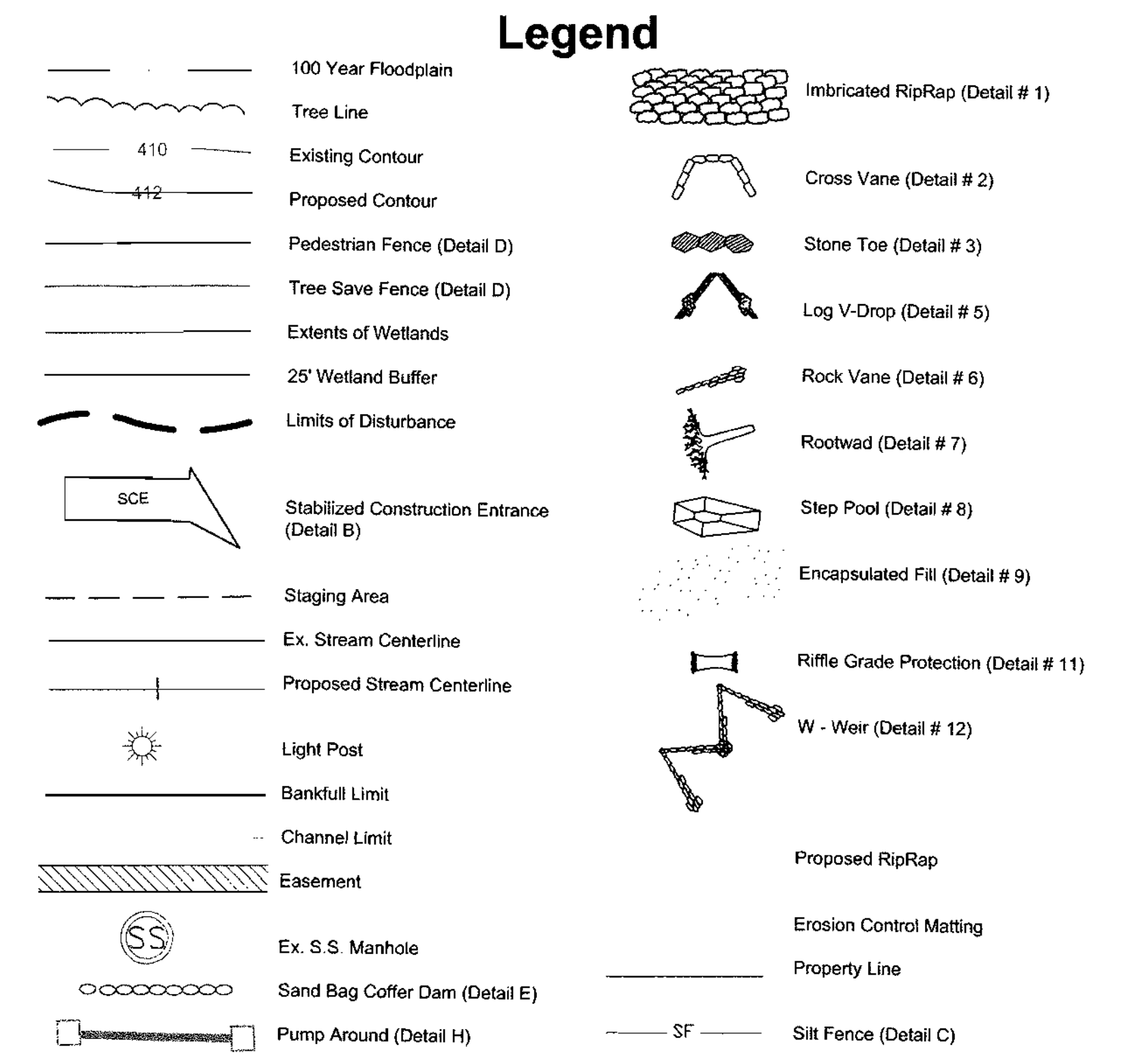
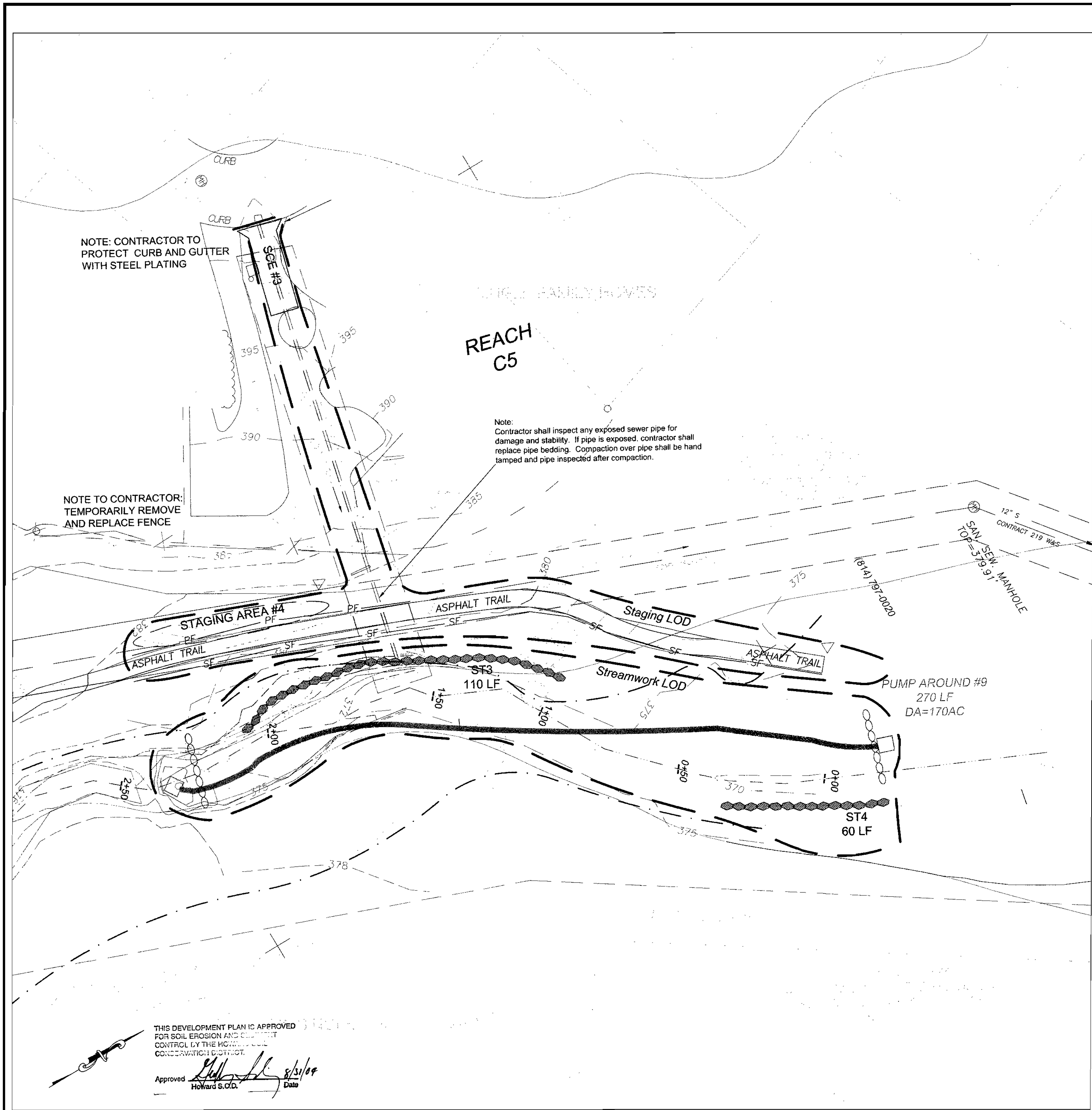
PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FALKNER P.B. 12 P.55

Reach C3 and C4 do not require Geometry
WILDE LAKE STREAM DESIGN
 Plan View for Reach C3 and C4
 With Sediment Control
 SDP-04-59

DATE:	08/04				
DESIGNED:	TCS				
DRAFTED:	JMF				
CHECKED:	TCS				
BASE DATA:	J.A. RICE	NO.	REVISIONS	BY	DATE

CPJ Environmental Services Division
 STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
 895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
 Phone: (301) 228-9573 E-mail: info@cpj.com Fax: (301) 926-4551
 SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

Sediment Control
 Sheet 3 of 7
 SCALE
 1"=30'
 SHEET
5
 OF 20 SHEETS
 JOB NO.
 1317/D - 1121
 SDP-04-59



UTILITY CROSSING
Not to scale

TEMPORARY IN-STREAM CONSTRUCTION

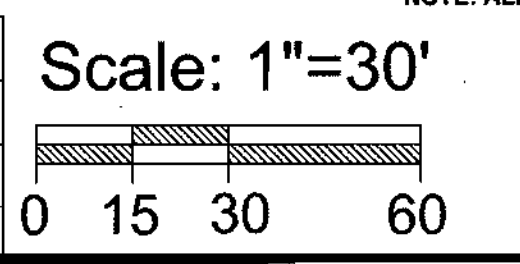
- Description**
The work should consist of installing erosion control devices in and adjacent to the construction of utility crossings.
- Installation Guidelines**
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. (See the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.) The proposed construction sequence is as follows (refer to Detail 4.2):
- The contractor should insure that a continuous perimeter control barrier is in place to minimize the amount of pollutants entering the flow. A diversion pipe is shown in MGWC 1.4; Diversion Pipe or other measure should be installed and sandbag or stone barriers as shown in MGWC 1.5. Sandbag/Stone Diversion should be constructed according to specifications to divert the streamflow.
 - Excavated topsoil and subsoil should be kept in separate, placed on the upland side of the excavation, and replaced in their natural order.
 - All construction should take place during stream low flows. The length of construction time should be limited to a maximum of 5 consecutive days for each crossing.
 - All utility crossings should be placed a minimum of 3 feet (1 meter) beneath the stream bed unless an alternative section is specifically approved by the WMA. For instances where a 3-foot cover is not viable, two alternate stabilization options are given in the Detail 4.2. A low flow channel shall be constructed through all rip rap placements across the stream bed.
 - The stream should be diverted by an approved temporary stream diversion should be removed from upstream to downstream. Sediment control devices, including perimeter erosion controls, are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspection authority approves their removal.



THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF DEVELOPMENT ENGINEERING DIVISION DATE: 8/13/04
 CHIEF DIVISION OF LAND DEVELOPMENT DATE: 8/13/04
 DIRECTOR DATE: 8/13/04

APPROVED: [Signature] DATE: 8/31/04
 HOWARD S. O'D. DATE: 8/31/04



NOTE: ALL SANITARY SEWERS AND STORM DRAINAGE WITHIN THE PROJECT PROPERTY ARE PUBLIC

Prepared for: The Columbia Association
 10221 Wincopin Circle, Suite 100
 Columbia, MD 21044-3410
 Phone: 410.715.3000

Howard County Dept. of Public Works
 Bureau of Environmental Services/SWM
 6751 Columbia Gateway Dr., Suite 5
 Columbia, MD 21046
 Phone: 410.313.6444

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 308 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P. 86
 PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B.26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-1 LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.94

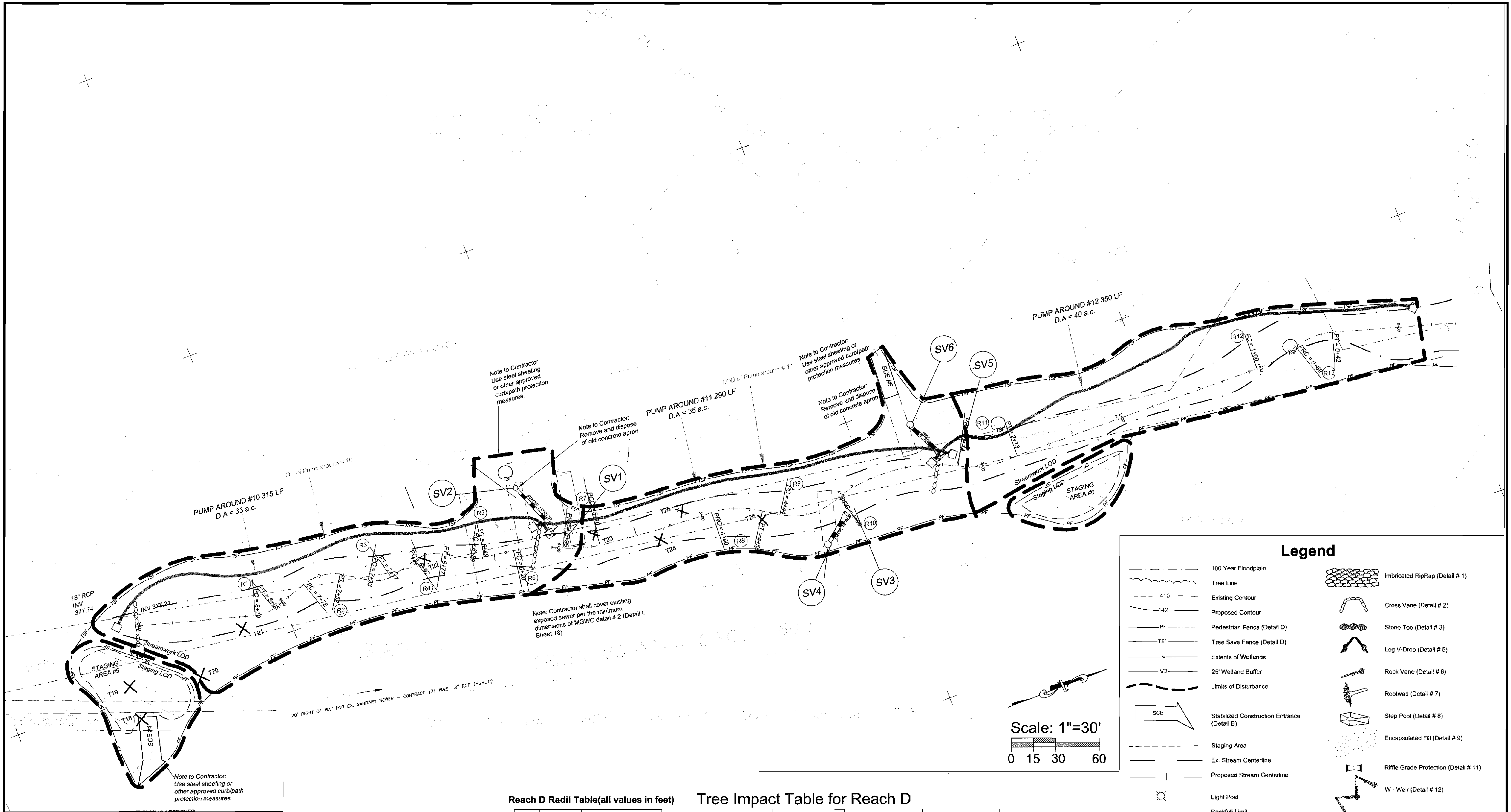
PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN
 Plan View for Reach C5
 With Sediment Control
 SDP-04-59

DATE:	08/04				
DESIGNED:	TCS				
DRAFTED:	JMF				
CHECKED:	TCS				
BASE DATA:	J.A. RICE	NO.	REVISIONS	BY	DATE

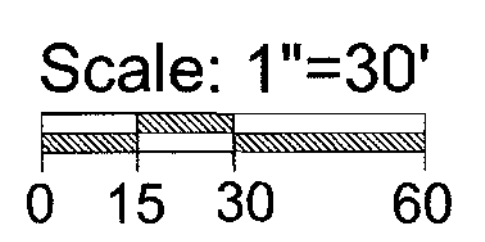
CPJ Associates
 CPJ/EQR Environmental Services Division
 STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
 895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
 Phone: 301.208-4673 E-mail: info@cpj.com Fax: 301.926-4551
 SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

Sediment Control
 Sheet 4 of 7
 As Shown
 SHEET
 6
 OF 20 SHEETS
 JOB NO.
 1317/D - 1121
 SDP-04-59



Legend

	100 Year Floodplain		Imbricated RipRap (Detail # 1)
	Tree Line		Cross Vane (Detail # 2)
	Existing Contour		Stone Toe (Detail # 3)
	Proposed Contour		Log V-Drop (Detail # 5)
	Pedestrian Fence (Detail D)		Rock Vane (Detail # 6)
	Tree Save Fence (Detail D)		Rootwad (Detail # 7)
	Extents of Wetlands		Step Pool (Detail # 8)
	25' Wetland Buffer		Encapsulated Fill (Detail # 9)
	Limits of Disturbance		Riffle Grade Protection (Detail # 11)
	Stabilized Construction Entrance (Detail B)		W - Weir (Detail # 12)
	Staging Area		Proposed RipRap
	Ex. Stream Centerline		Erosion Control Matting
	Proposed Stream Centerline		Property Line
	Light Post		Silt Fence (Detail C)
	Bankfull Limit		
	Channel Limit		
	Easement		
	Ex. S.S. Manhole		
	Sand Bag Cofferdam (Detail E)		
	Pump Around (Detail H)		



Reach D Radii Table (all values in feet)

ID	RADIUS	PC	PT
R1	25	8+19	8+05
R2	32	7+78	7+52
R3	20	7+33	7+17
R4	25	6+97	6+77
R5	20	6+59	6+49
R6	105	6+28	5+95
R7	80	5+95	5+70
R8	88	4+90	4+56
R9	43	4+44	4+00
R10	110	4+00	3+14
R11	60	3+14	2+73
R12	92	1+00	0+69
R13	45	0+69	0+42

Tree Impact Table for Reach D

Tree ID	Diameter	Species	Scientific Name
18	10"	Maple	Acer
19	12"	Maple	Acer
20	15"	Maple	Acer
21	18"	Oak	Quercus
22	24"	Oak	Quercus
23	24"	Oak	Quercus
24	15"	Poplar	Liriodendron
25	18"	Oak	Quercus
26	18"	Oak	Quercus



THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY CONSERVATION DISTRICT.

Approved: *[Signature]* 8/31/04
Howard S.C.D. DATE

APPROVED, DEPARTMENT OF PLANNING AND ZONING

[Signature] 8/31/04
DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 9/10/08
DATE
CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 7/26/08
DATE
DIRECTOR

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

[Signature] 8/31/04
DATE
NATURAL RESOURCES CONSERVATION SERVICE

Prepared for: The Columbia Association
10221 Wincopin Circle, Suite 100
Columbia, MD 21044-3410
Phone: 410.715.3000

Howard County Dept. of Public Works
Bureau of Environmental Services/SWM
6751 Columbia Gateway Dr., Suite 5
Columbia, MD 21046
Phone: 410.313.6444

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87 LOT 6 OPEN SPACE P.B. 13 P.85
PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B.27 P.2, P.B. 13, P. 86
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PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN

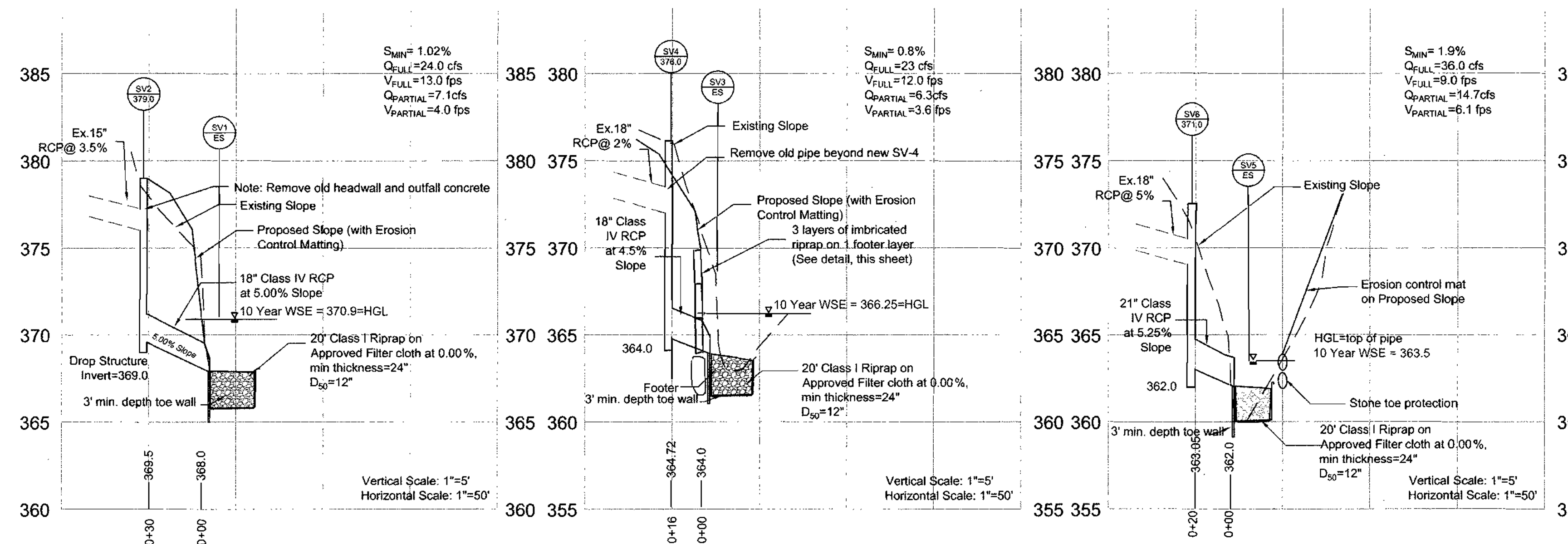
Geometry and Sediment Control for Reach D

SDP-04-59

DATE:	08/04				
DESIGNED:	TCS				
DRAFTED:	JMF				
CHECKED:	TCS				
BASE DATA:	J.A. RICE	NO.	REVISIONS	BY	DATE

CPJ CPJ/EQR Environmental Services Division
 STREAM RESTORATION • STORMWATER MANAGEMENT • INSPECTION
 895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
 Phone: (301)208-9573 E-mail: info@cpj.com Fax: (301)926-4551
 SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

Storm Drain Profiles



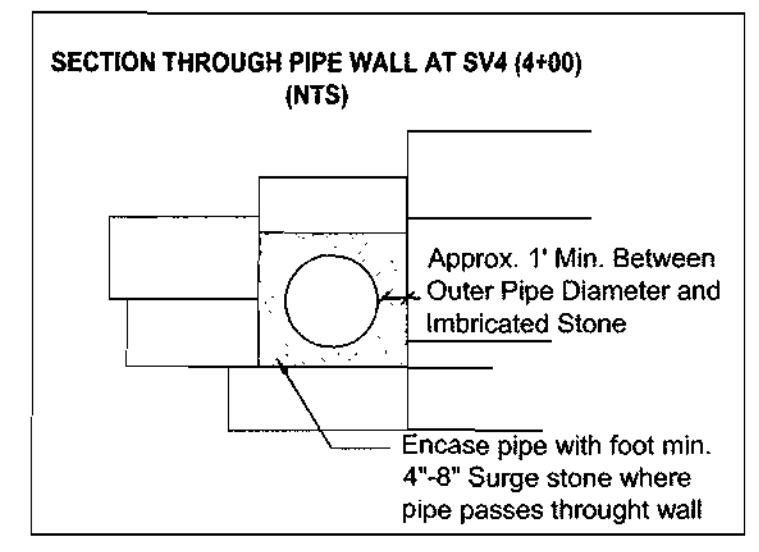
Structure Schedule

Location	Designation	Description	Agency Designation	Top of Structure	Lowest Invert	Notes
D	SV1	end section	MD-368.01	NA	NA	3' toe wall required
D	SV2	manhole	MD-384.01	379.0	369.5	48 inchØ
D	SV3	end section	MD-368.01	NA	NA	3' toe wall required
D	SV4	manhole	MD-384.01	376.0	364.72	48 inchØ
D	SV5	end section	MD-368.01	NA	NA	3' toe wall required
D	SV6	manhole	MD-384.01	371.0	363.05	48 inchØ

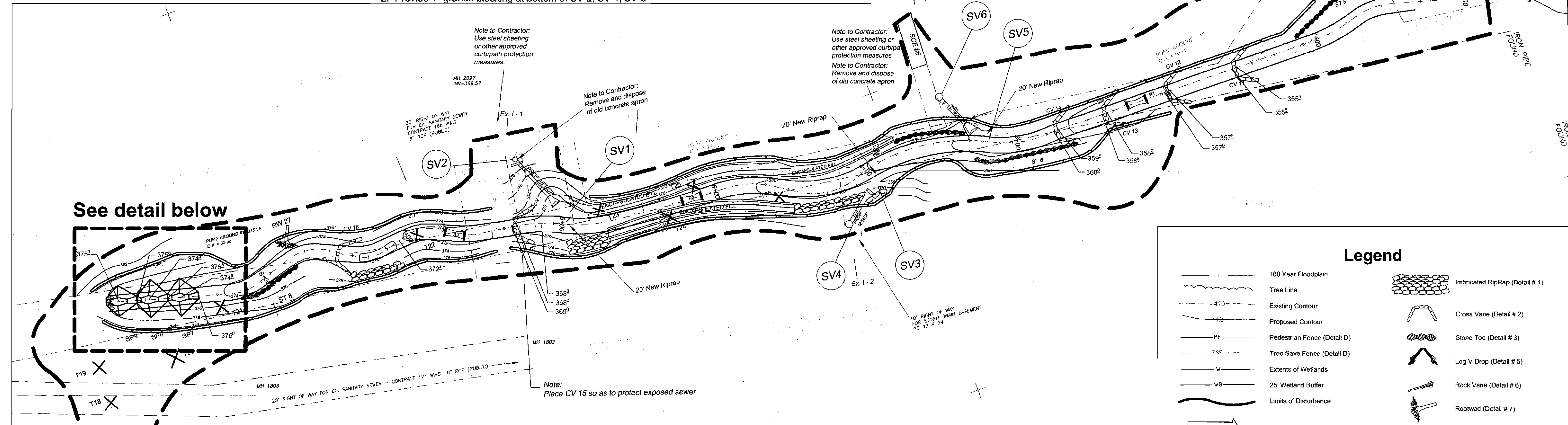
Pipe Schedule

Location	Material	Size	Class	Length	Notes
D	RCP	18 in	IV	64'	
D	RCP	21 in	IV	30'	

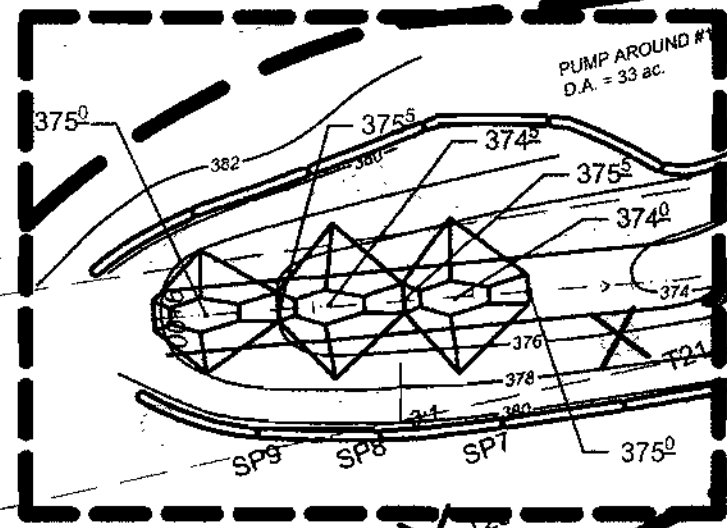
Notes: Horizontal angles of deflection:
 I-1 to SV-2: 35 degrees
 I-2 to SV-4: 27 degrees
 I-3 to SV-6: 30 degrees



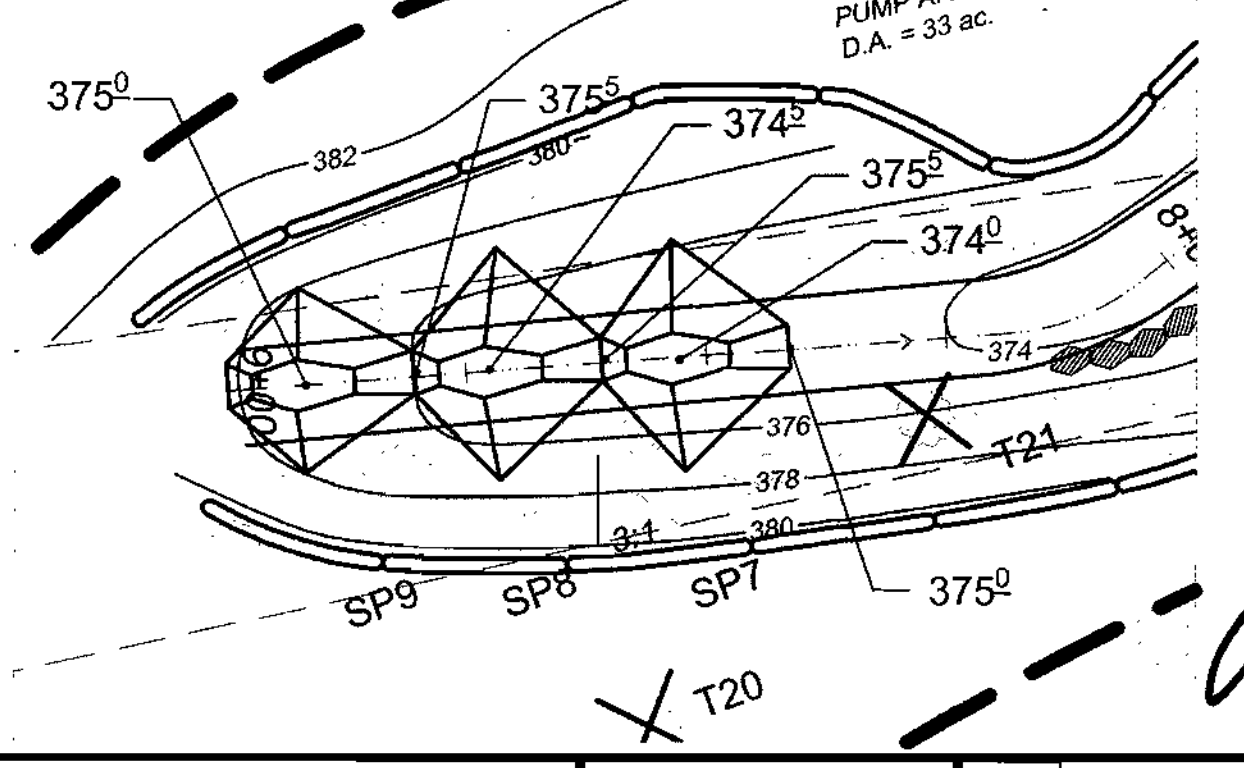
- Note: 1. Existing storm drainpipes not shown for clarity
- 2. Provide 4" granite blocking at bottom of SV-2, SV-4, SV-6



See detail below



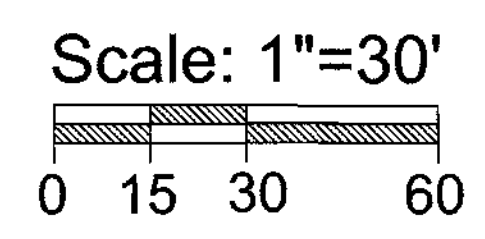
Detail of Step Pool 7,8 & 9 (1" = 20')



NOTE: ALL SANITARY SEWERS AND STORM DRAINAGE WITHIN THE PROJECT PROPERTY ARE PUBLIC

Tree Impact Table for Reach D

Tree ID	Diameter	Species	Scientific Name
18	10"	Maple	Acer
19	12"	Maple	Acer
20	15"	Maple	Acer
21	18"	Oak	Quercus
22	24"	Oak	Quercus
23	24"	Oak	Quercus
24	15"	Poplar	Liriodendron
25	18"	Oak	Quercus
26	18"	Oak	Quercus



Legend

	100 Year Floodplain		Imbricated RipRap (Detail # 1)
	Tree Line		Cross Vane (Detail # 2)
	Existing Contour		Stone Toe (Detail # 3)
	Proposed Contour		Log V-Drop (Detail # 5)
	Pedestrian Fence (Detail D)		Rock Vane (Detail # 6)
	Tree Save Fence (Detail D)		Rootwad (Detail # 7)
	Extents of Wetlands		Step Pool (Detail # 8)
	25' Wetland Buffer		Encapsulated Fill (Detail # 9)
	Limits of Disturbance		Rifle Grade Protection (Detail # 11)
	Stabilized Construction Entrance (Detail B)		W - Weir (Detail # 12)
	Staging Area		Proposed RipRap
	Ex. Stream Centerline		Erosion Control Matting
	Proposed Stream Centerline		Property Line
	Light Post		Sand Bag Coffor Dam (Detail E)
	Bankfull Limit		Pump Around (Detail H)
	Channel Limit		Silt Fence (Detail C)
	Easement		Coir Fiber Roll (Detail 13)

APPROVED DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 9/10/04
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9/10/04
 DIRECTOR

Prepared for: The Columbia Association
 10221 Winopin Circle, Suite 100
 Columbia, MD 21044-3410
 Phone: 410.715.3000

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87 LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P. 86
 PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B.26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.94

Howard County Dept. of Public Works
 Bureau of Environmental Services/SWM
 6751 Columbia Gateway Dr., Suite 5
 Columbia, MD 21046
 Phone: 410.313.6444

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

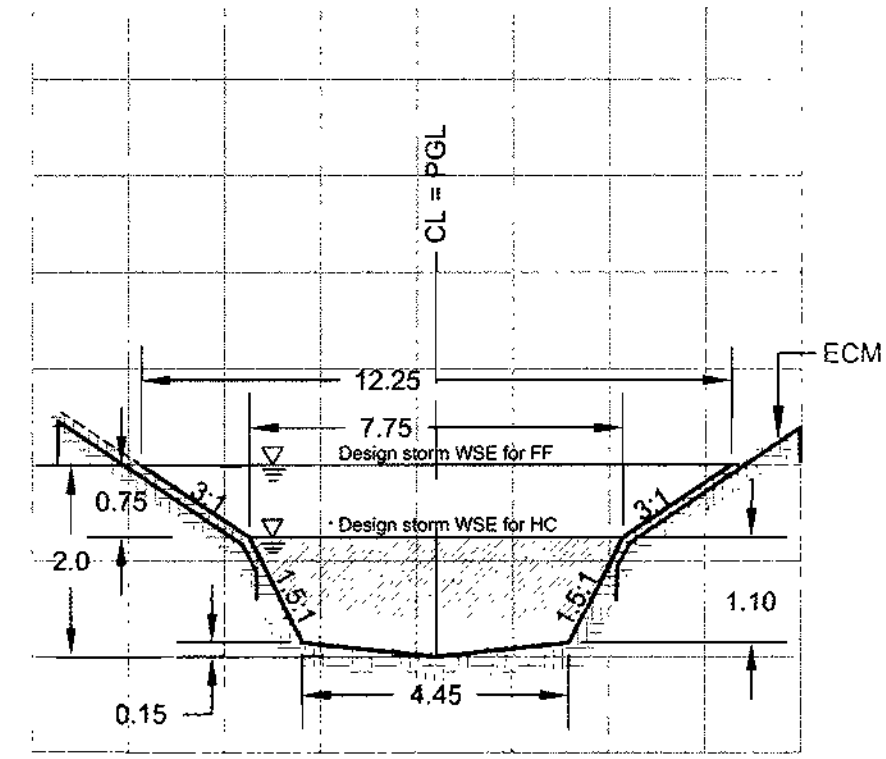
WILDE LAKE STREAM DESIGN

Plan View for Reach D
 SDP-04-59

DATE:	08/04
DESIGNED:	TCS
DRAFTED:	JMF
CHECKED:	TCS
BASE DATA:	J.A. RICE
NO.	
REVISIONS	
BY	DATE

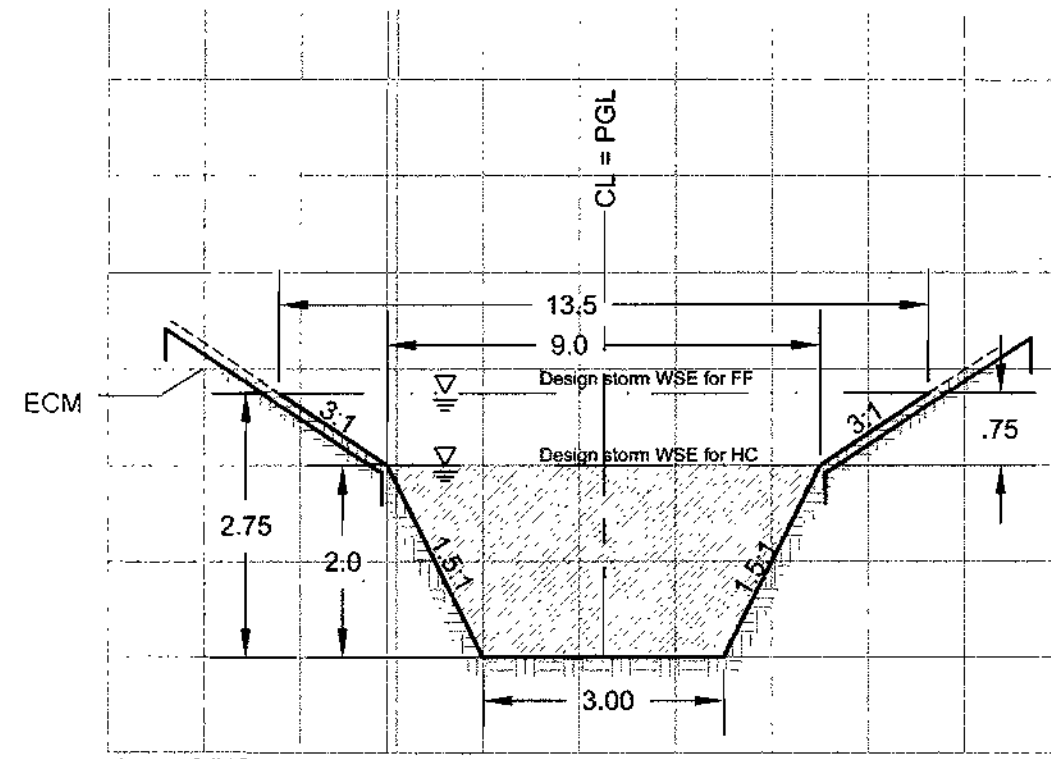
CPJ CPJ/EOR Environmental Services Division
 STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
 856 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
 Phone: (301)208-9625 E-mail: info@cpj.com Fax: (301)208-4251
 SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

Scale As Shown
 SHEET 8 OF 20 SHEETS
 JOB NO. 1317D - 1121
 SDP-04-59



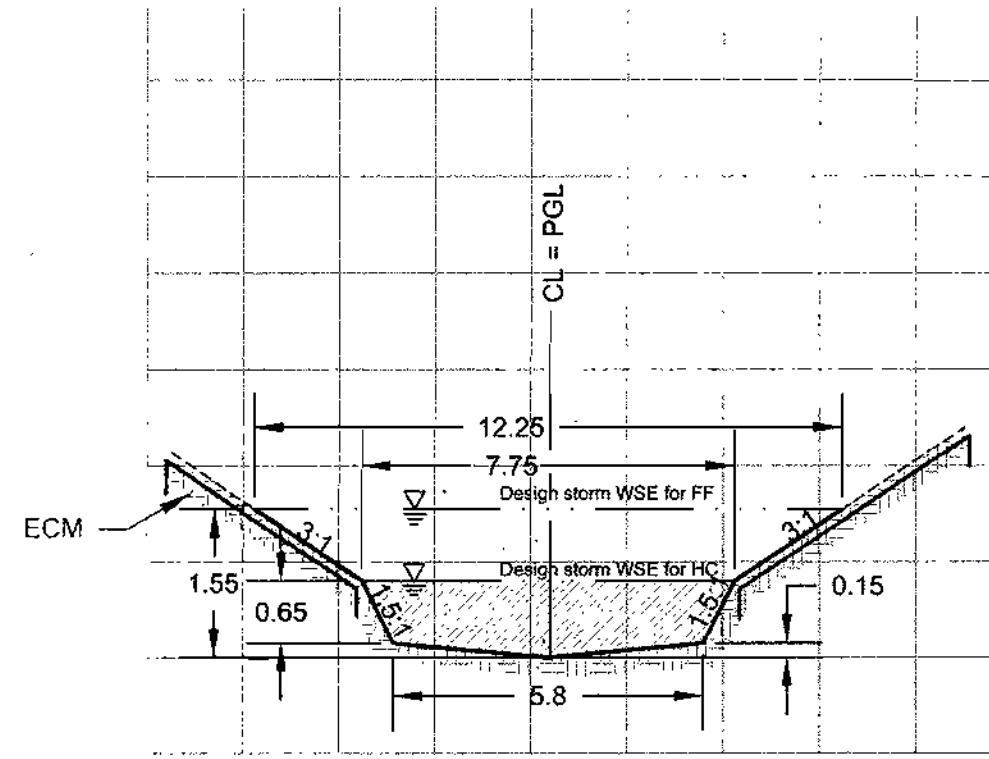
Area of (HC) = 7.60 s.f.
Area of (FF) = 15.24 s.f.

1 EAST FORK C1, TYPICAL RUN SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



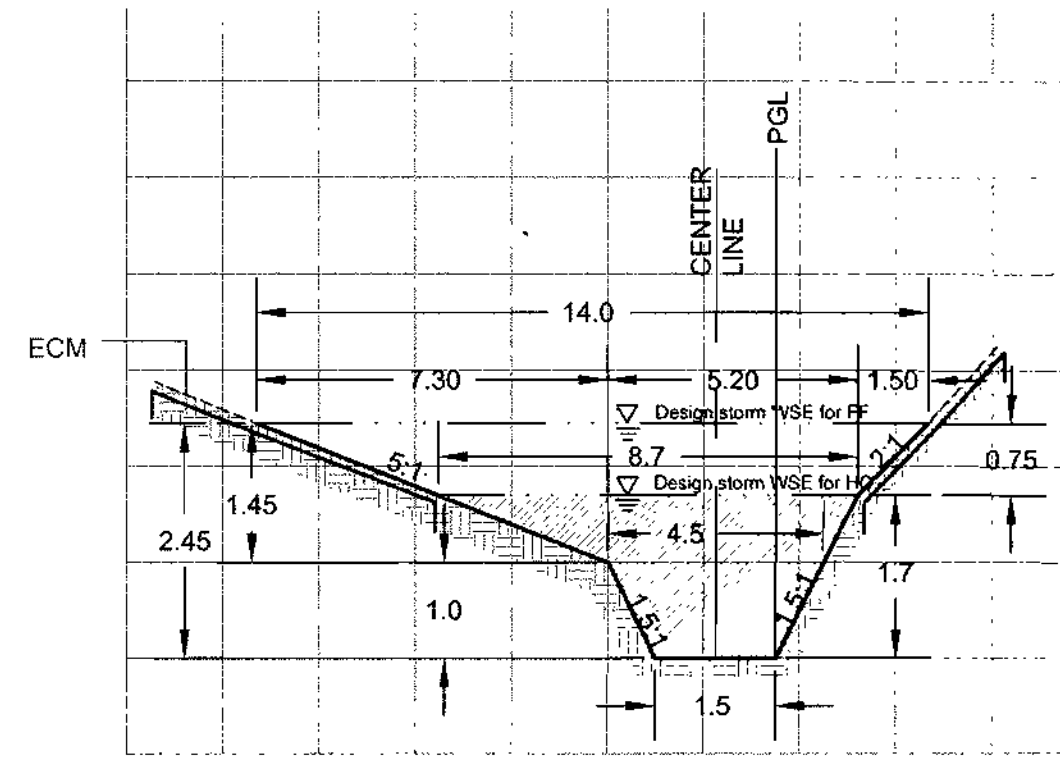
Area of (HC) = 12.0 s.f.
Area of (FF) = 20.40 s.f.

2 EAST FORK C1, TYPICAL STRAIGHT POOL SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



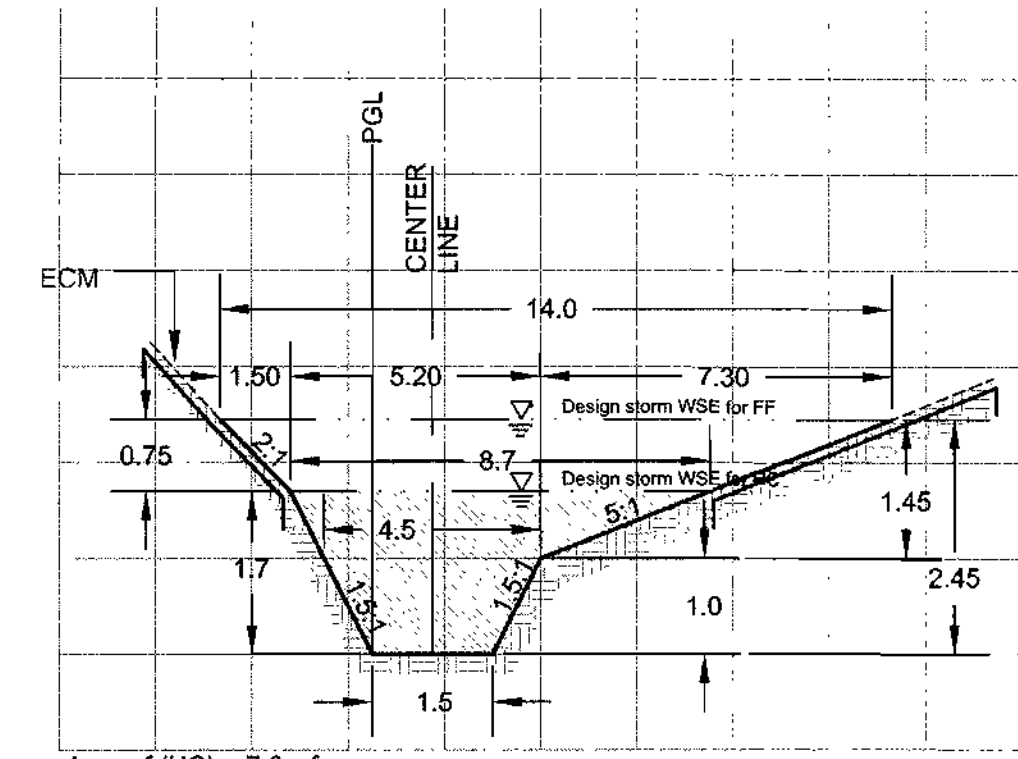
Area of (HC) = 5.4 s.f.
Area of (FF) = 12.9 s.f.

3 EAST FORK C1, TYPICAL RIFFLE SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



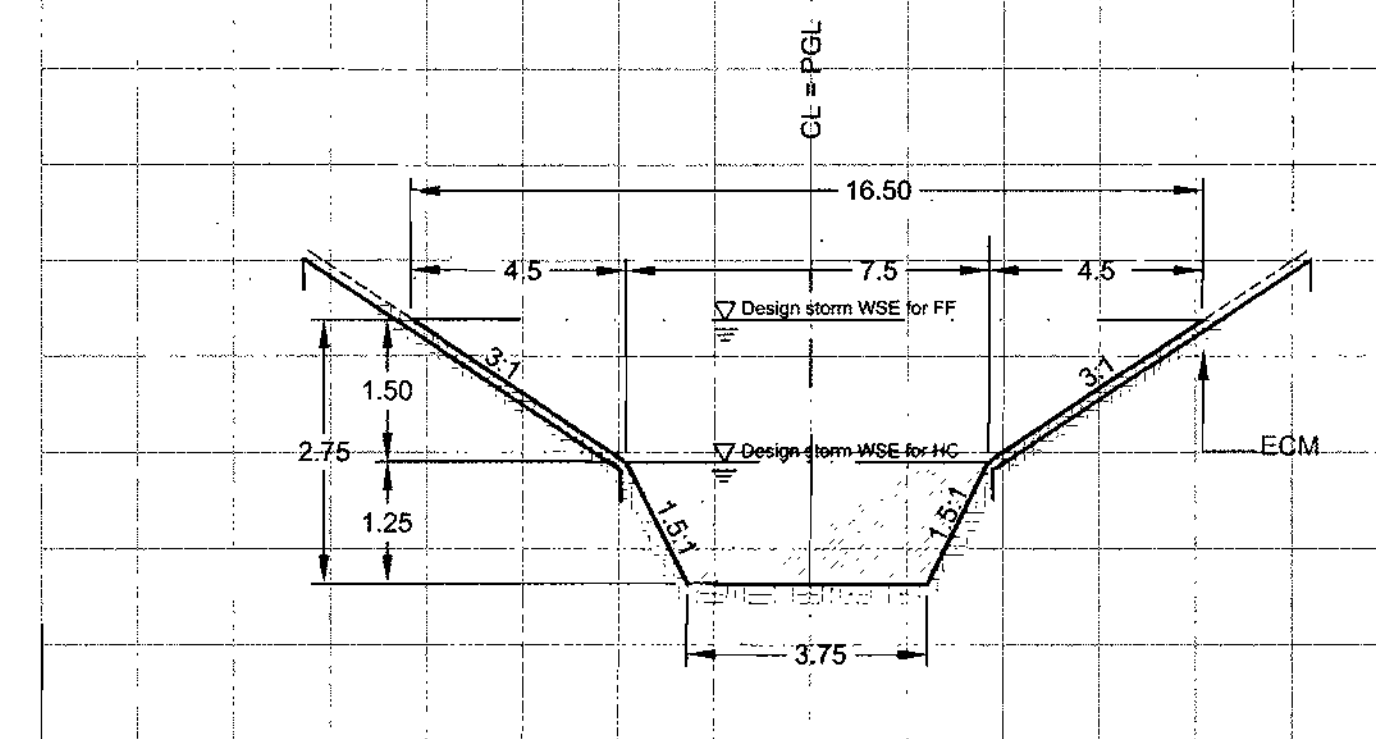
Area of (HC) = 7.6 s.f.
Area of (FF) = 15.7 s.f.

4 EAST FORK C1, MEANDER POOL TYPICAL SECTION RIGHT
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



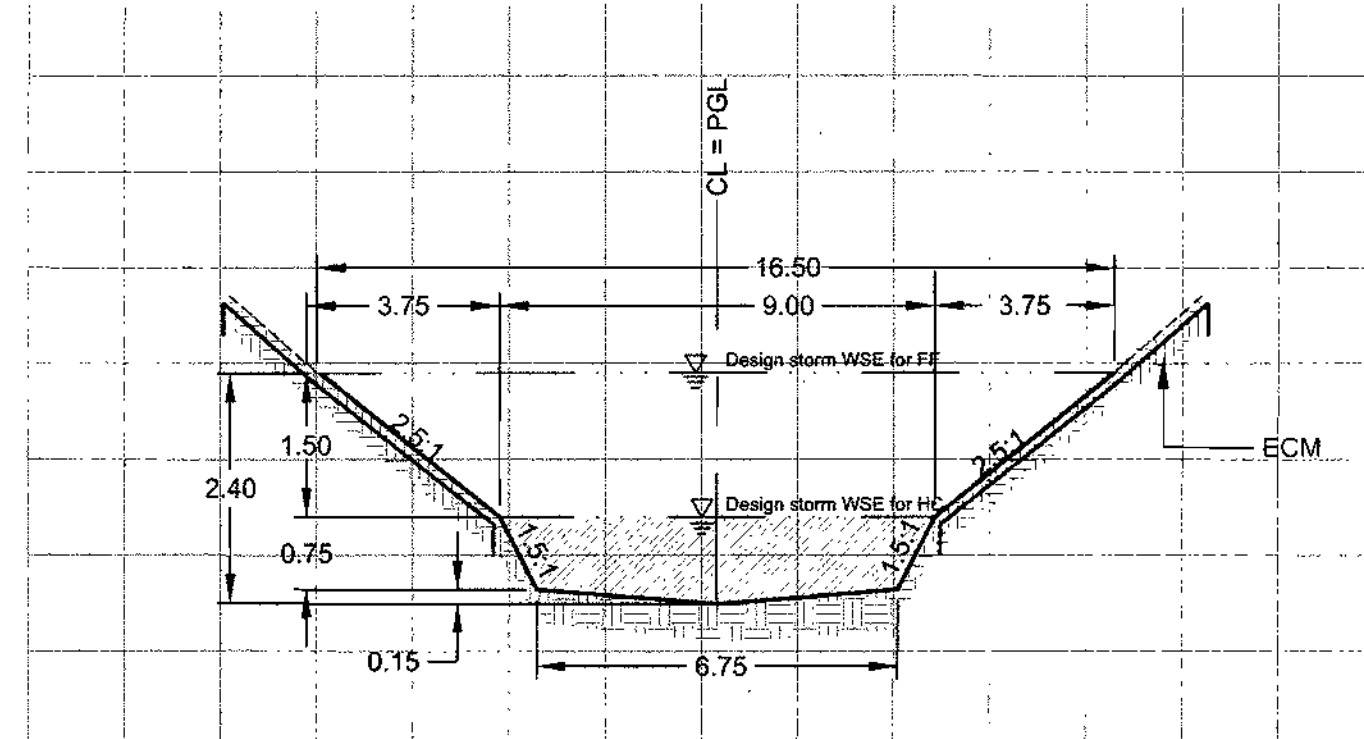
Area of (HC) = 7.6 s.f.
Area of (FF) = 15.7 s.f.

5 EAST FORK C1, TYPICAL MEANDER POOL TYPICAL SECTION LEFT
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



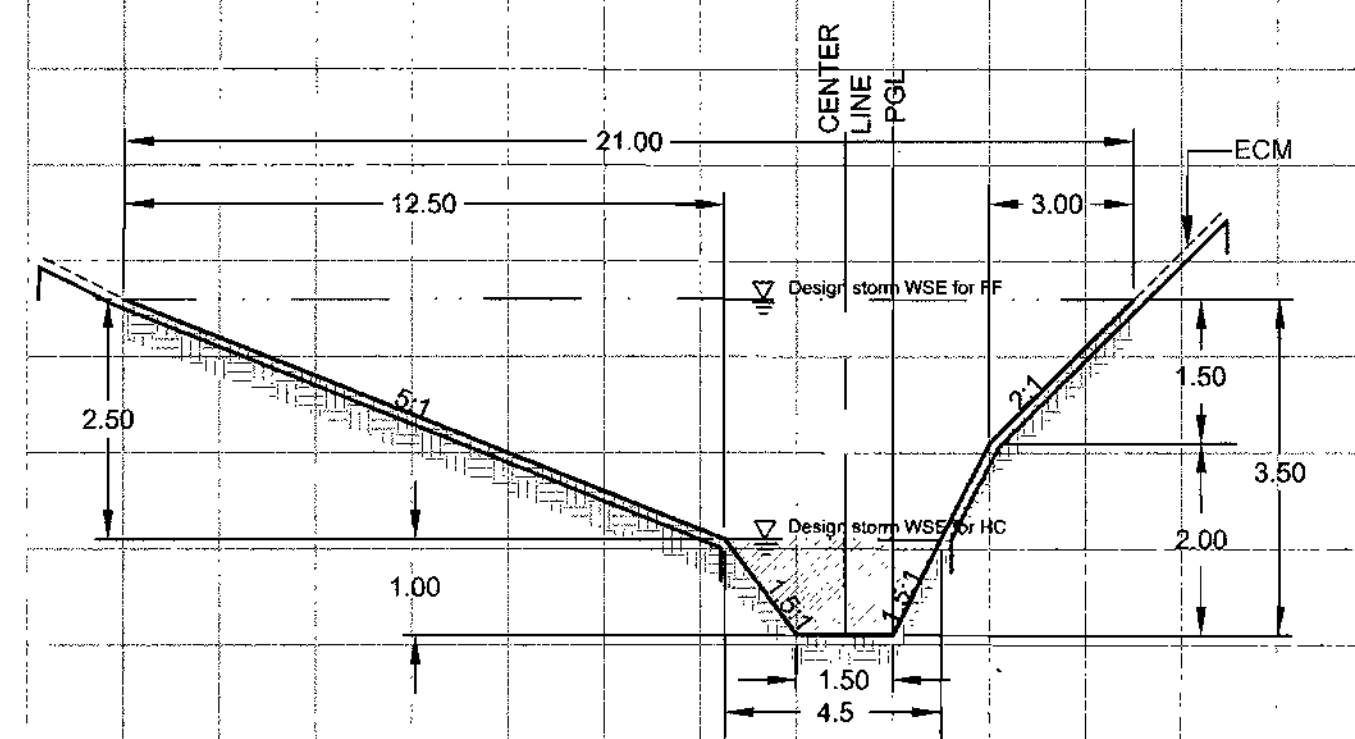
Area of (HC) = 7.0 s.f.
Area of (FF) = 25.0 s.f.

6 WEST FORK C2, TYPICAL RUN SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



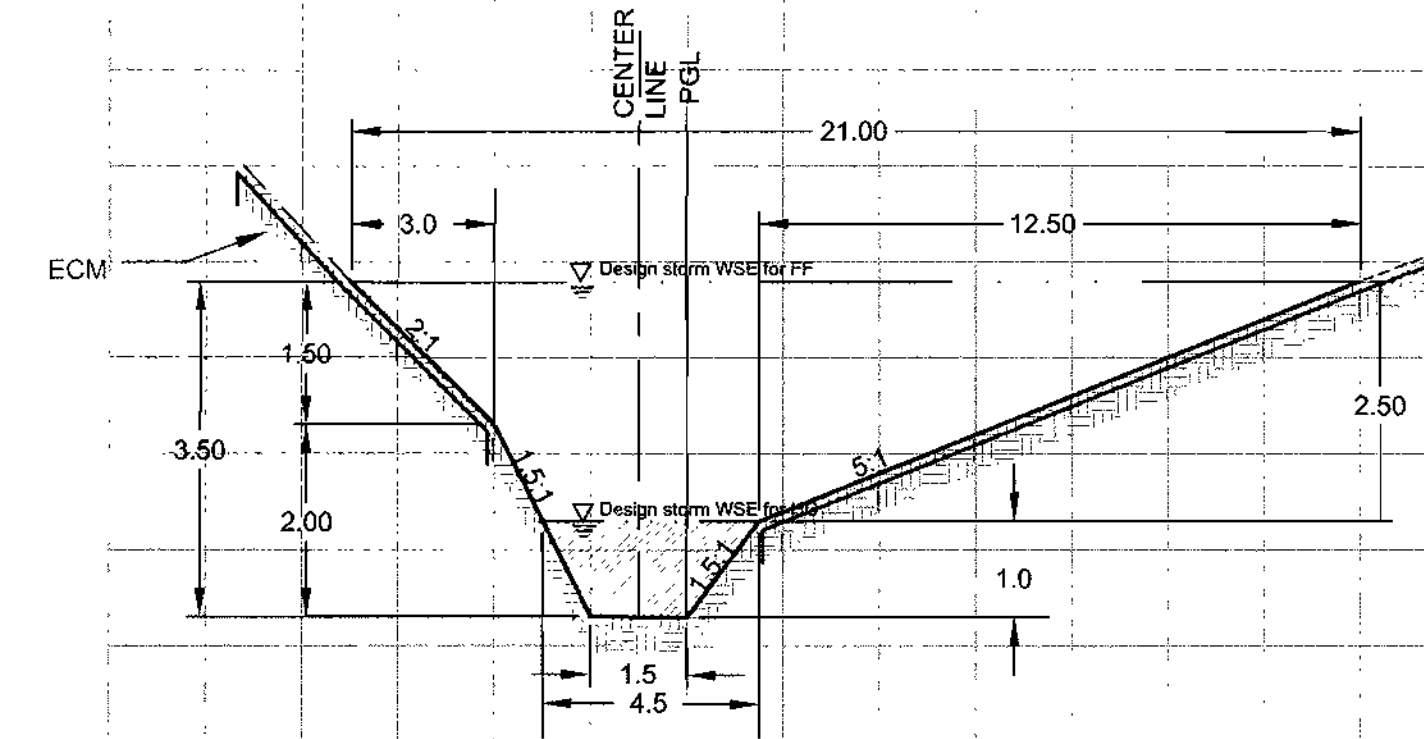
Area of (HC) = 7.1 s.f.
Area of (FF) = 26.2 s.f.

7 WEST FORK C2, TYPICAL RIFFLE SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



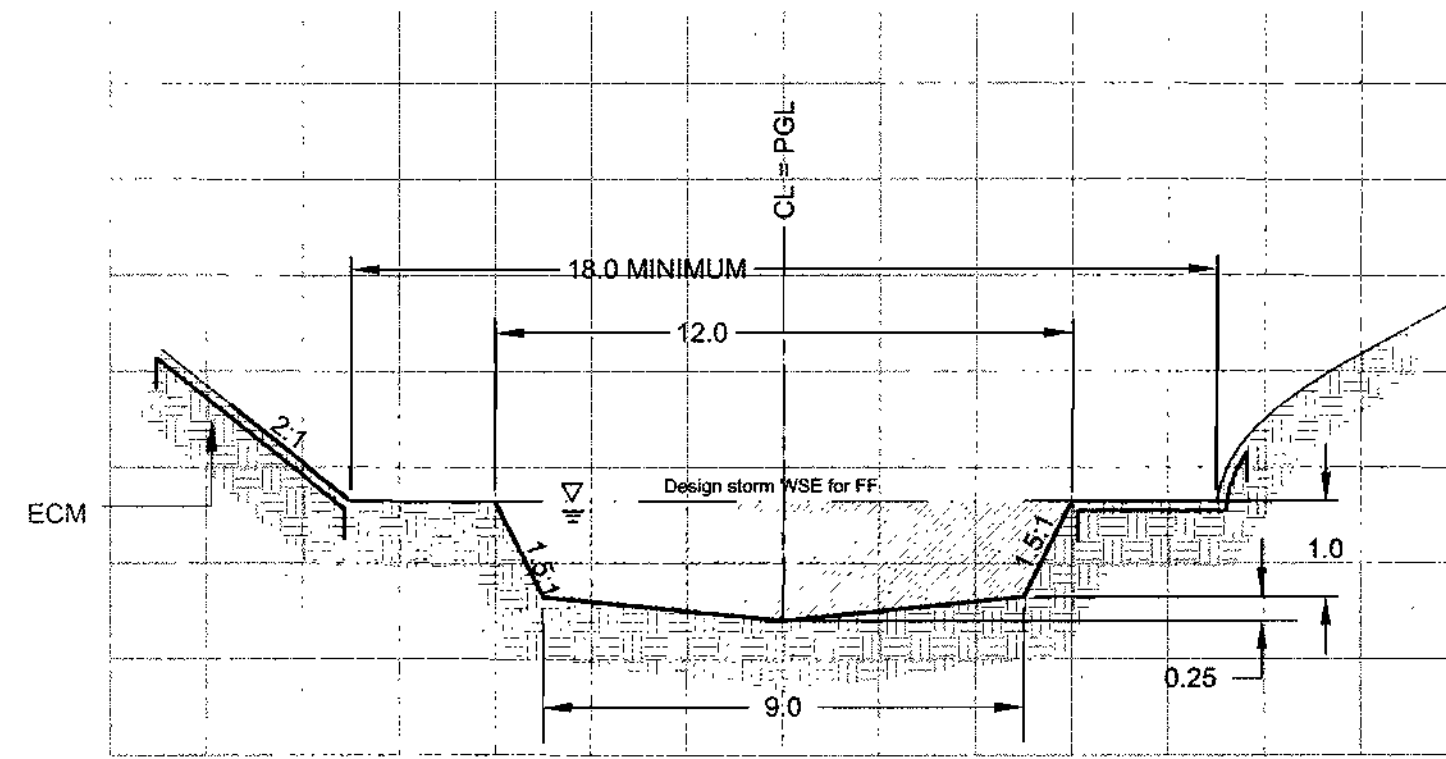
Area of (HC) = 3.0 s.f.
Area of (FF) = 33.7 s.f.

8 WEST FORK C2, TYPICAL POOL SECTION RIGHT MEANDER
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



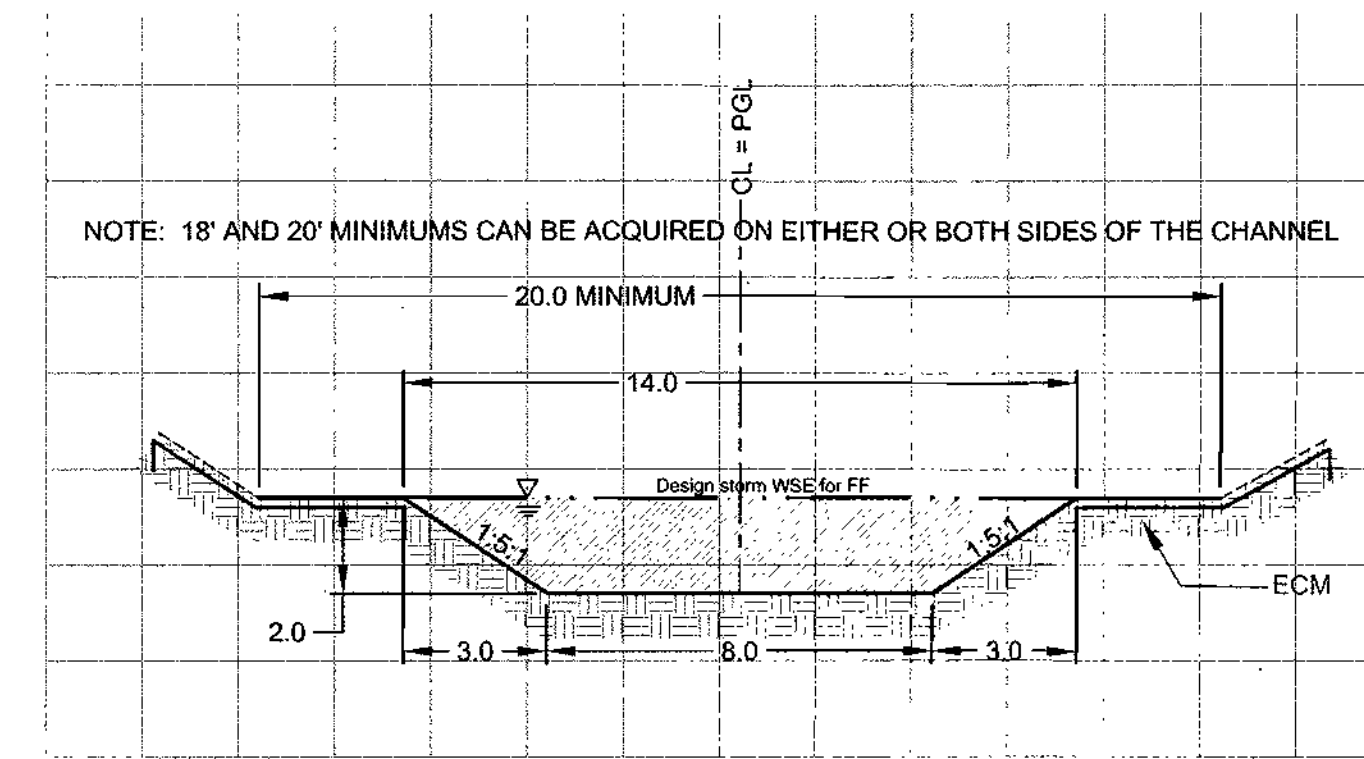
Area of (HC) = 3.0 s.f.
Area of (FF) = 33.7 s.f.

9 WEST FORK C2, TYPICAL POOL SECTION LEFT MEANDER
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



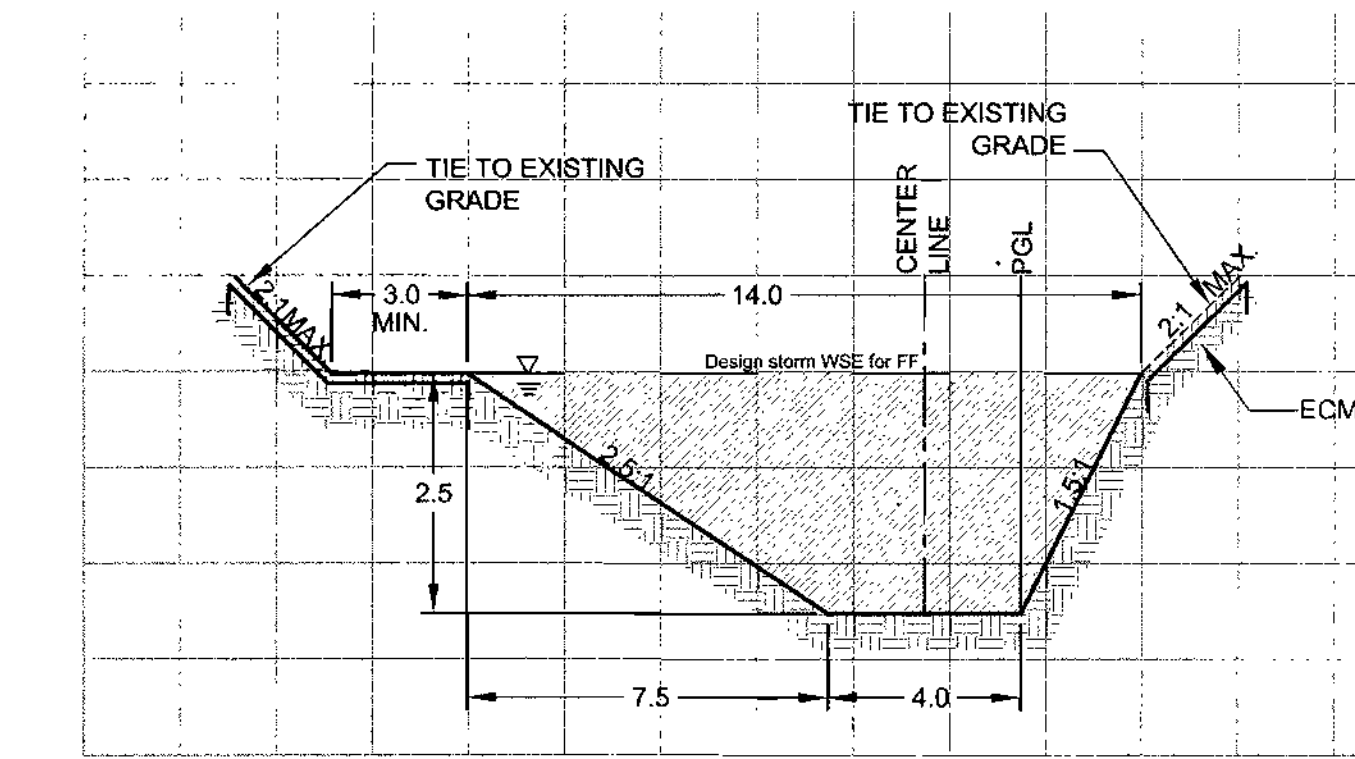
Area of (FF) = 13.1 s.f.

10 REACH D TYPICAL RIFFLE CROSS SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



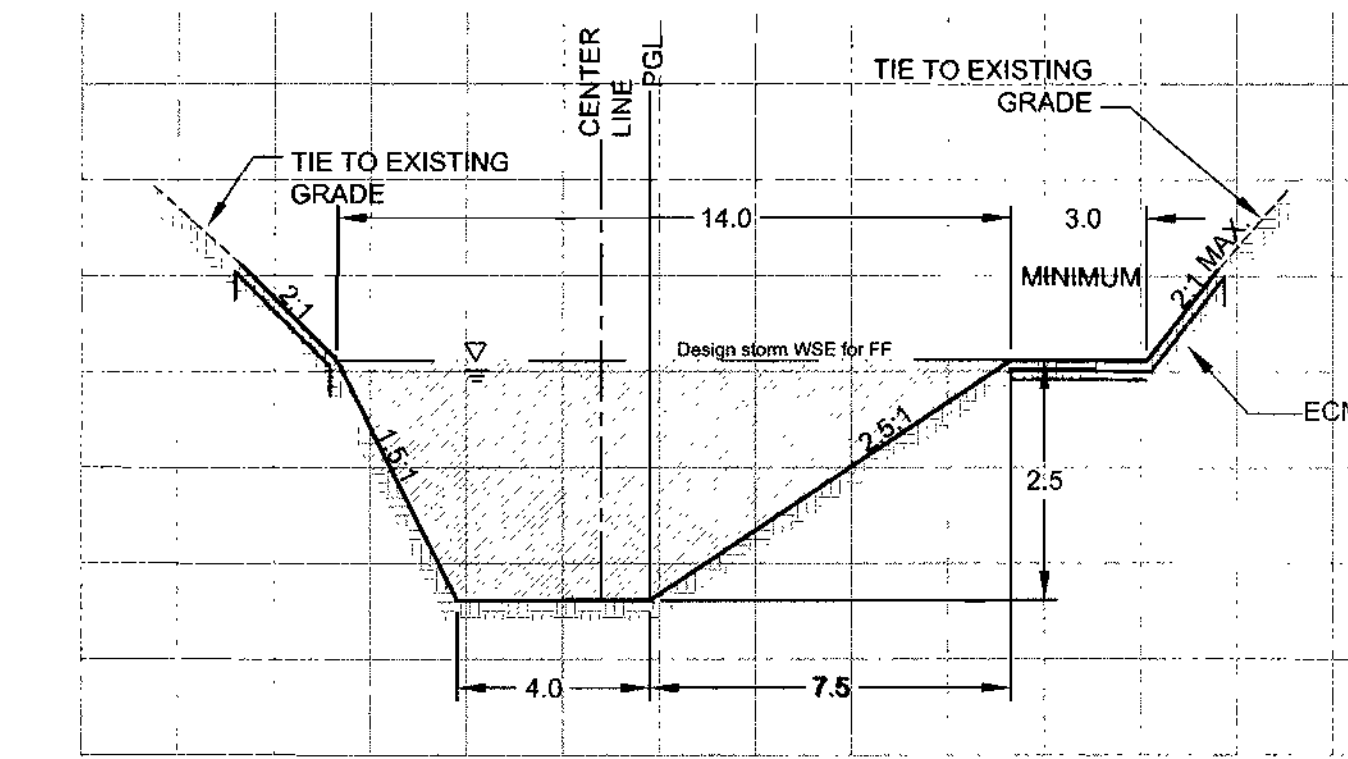
Area of (FF) = 22.0 s.f.

11 REACH D TYPICAL POOL CROSS SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale



Area of (FF) = 22.5 s.f.

12 REACH D TYPICAL RIGHT MEANDER SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale

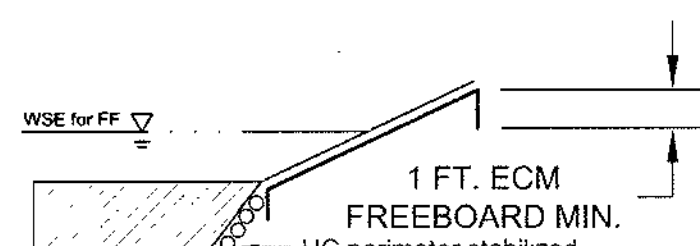


Area of (FF) = 22.5 s.f.

13 REACH D TYPICAL LEFT MEANDER SECTION
VERTICAL: 1" = 2'-0"
HORIZONTAL: not to scale

GRADING NOTES:

- Define:
HC - Habitat Channel
FF - Frequent Flow
- Do not fill to create 2:1 slope, contractor to keep as large and as flat of an over bank as possible.
- ECM with one foot trench anchors to be placed as shown to a vertical height of one foot above dominant elevation (typical).



HABITAT CHANNEL NOTE:

All habitat channel areas cross hatched above shall be stabilized with either (1) revetments as shown on plan sheets and/or (2) harvested or imported cobble stone per specification 14.0, sheet 17.

APPROVED DEPARTMENT OF PLANNING AND ZONING
CHIEF DEVELOPMENT ENGINEERING DIVISION
CHIEF DIVISION OF LAND DEVELOPMENT
DIRECTOR

Prepared for: The Columbia Association
10221 Wincopin Circle, Suite 100
Columbia, MD 21044-3410
Phone: 410.715.3000

Howard County Dept. of Public Works
Bureau of Environmental Services/SWM
6751 Columbia Gateway Dr., Suite 5
Columbia, MD 21046
Phone: 410.313.6444

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P. 86
PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87
PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

C
D

WILDE LAKE STREAM DESIGN
Cross Sections for Reach C1, East Fork
Cross Sections for Reach C2, West Fork
Cross Sections for Reach D

SDP-04-59

DATE:	08/04		
DESIGNED:	TCS		
DRAFTED:	JMF		
CHECKED:	TCS		
BASE DATA:	J.A. RICE	NO.	REVISIONS
			BY DATE

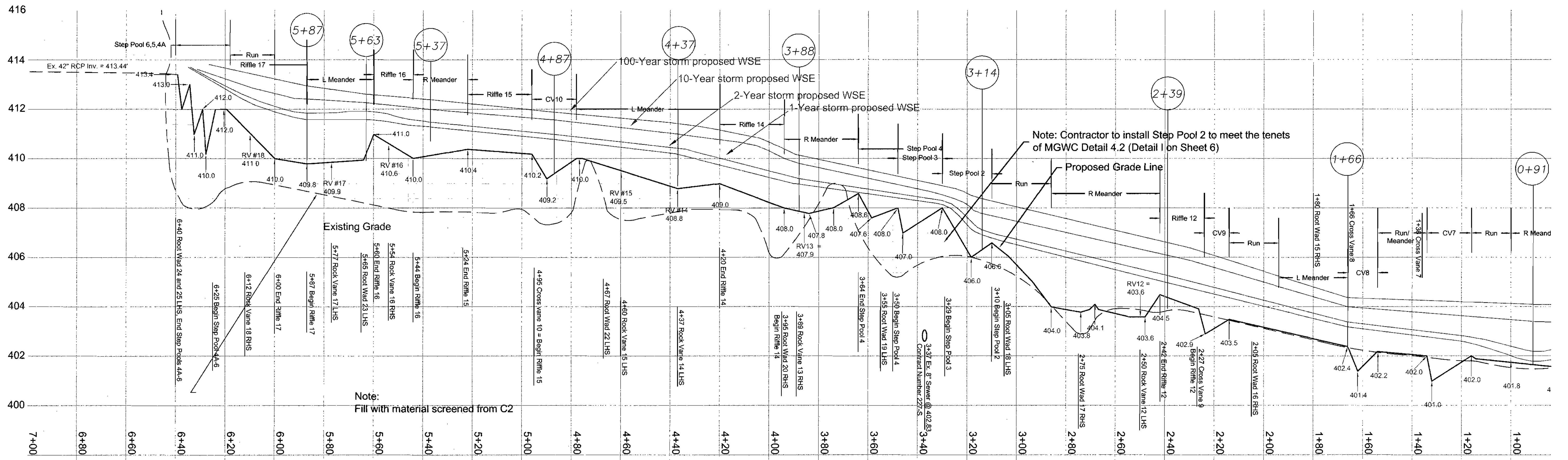


CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION • STORMWATER MANAGEMENT • INSPECTION
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Phone: (301)208-9573 E-mail: info@cpj.com Fax: (301)208-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE:
HORIZONTAL: 1 inch = 2 feet
VERTICAL: 1 inch = 1 foot

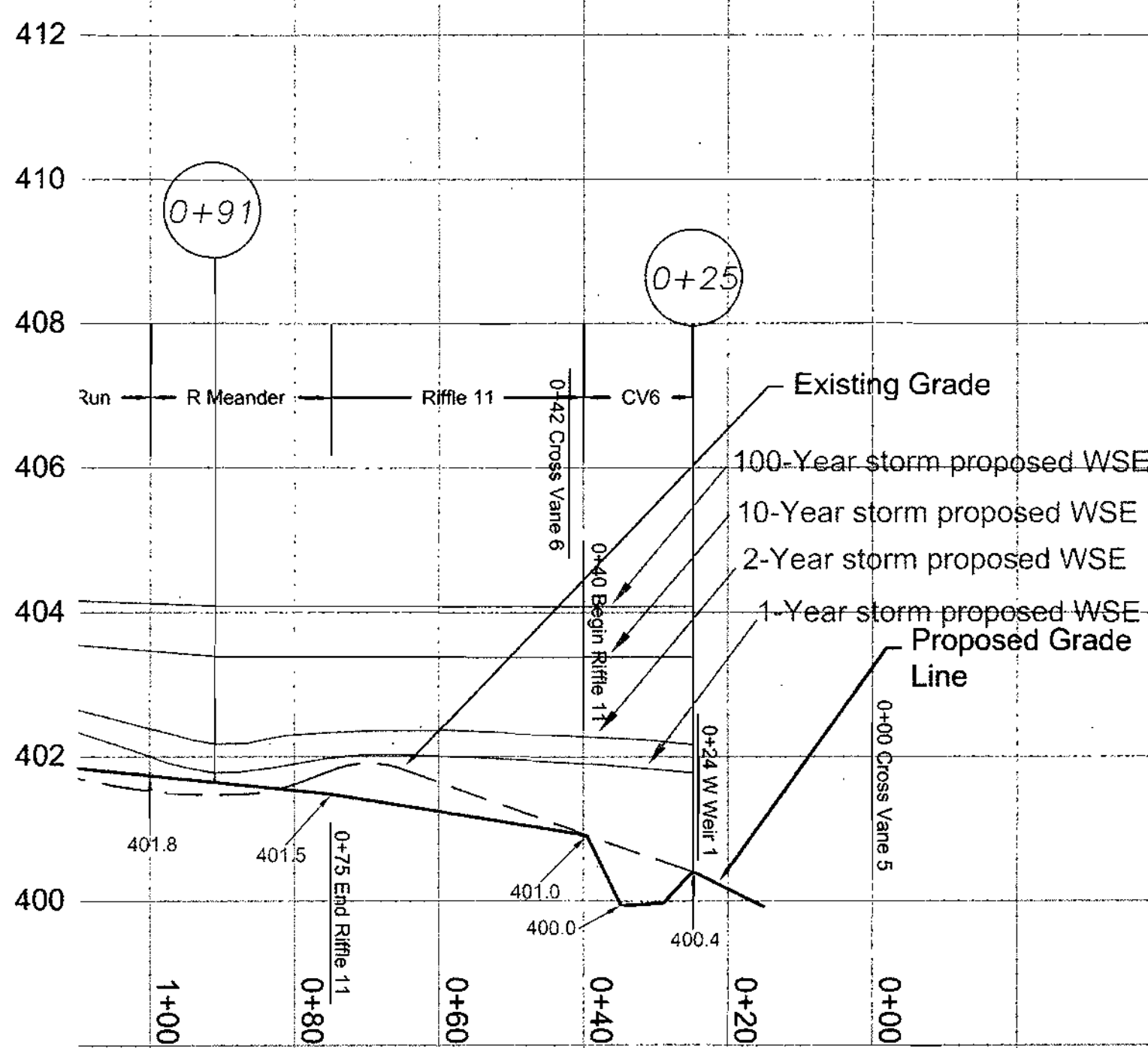
SHEET
9
OF 20 SHEETS

JOB NO.
1317/D - 1121
SDP-04-59

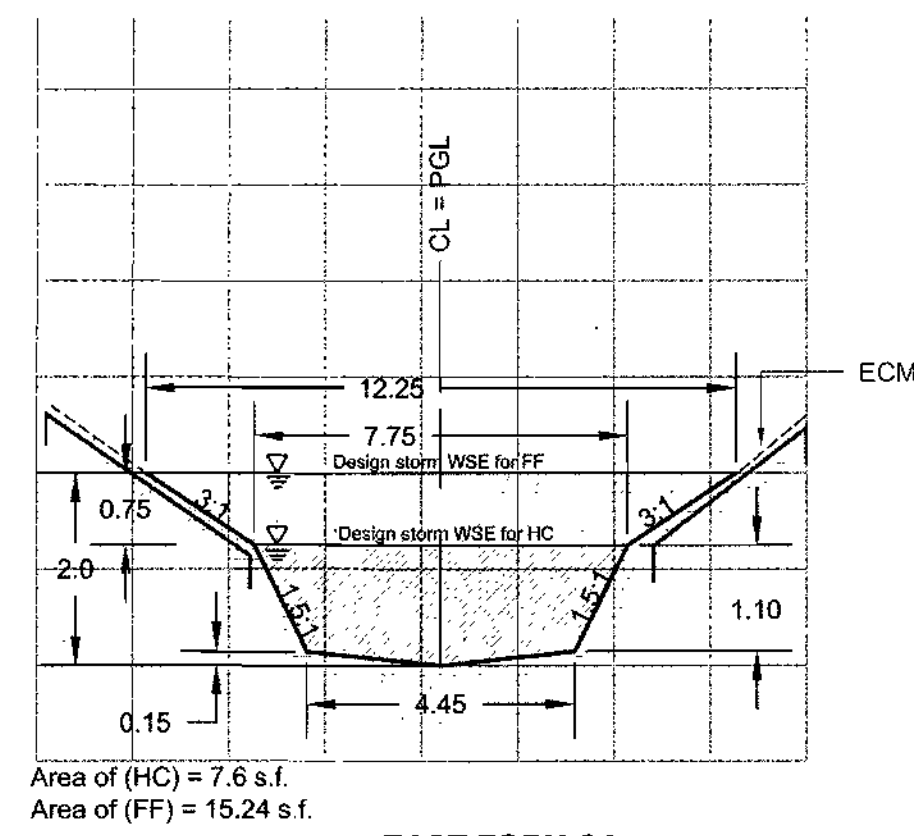


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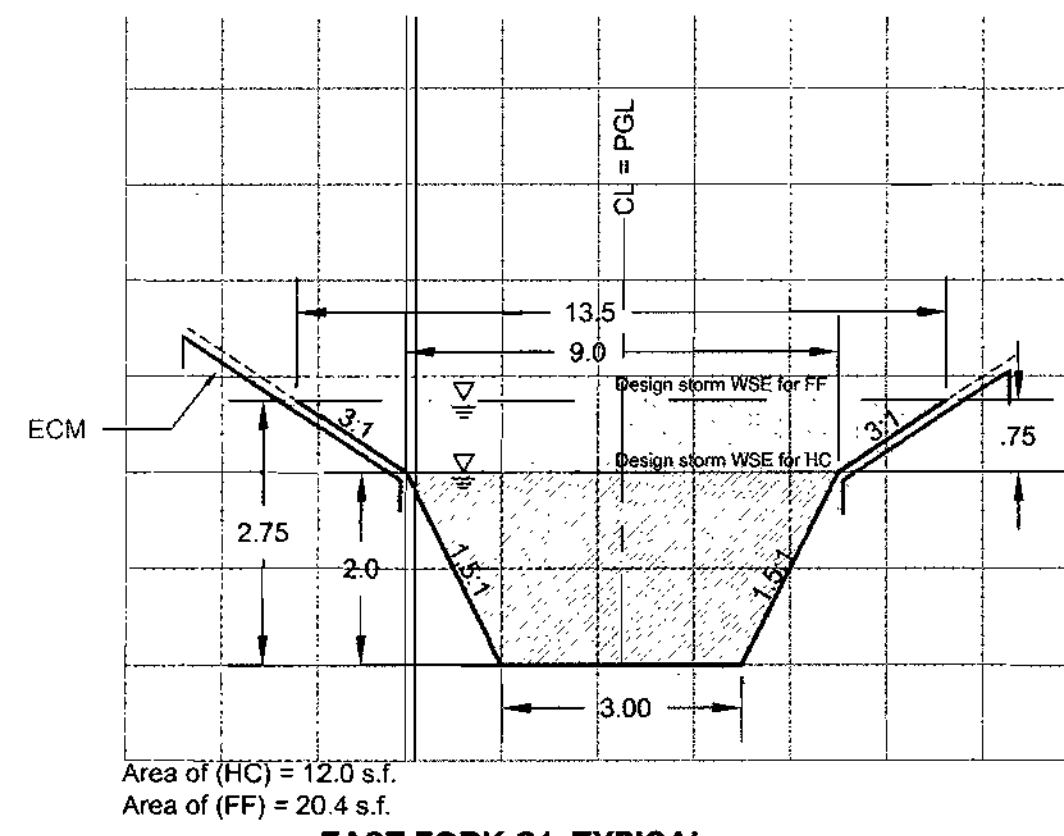
- All references to left (L) and right (R) are facing downstream.
- Flood model stationing is based on existing stream centerline and varies from proposed stream centerline.



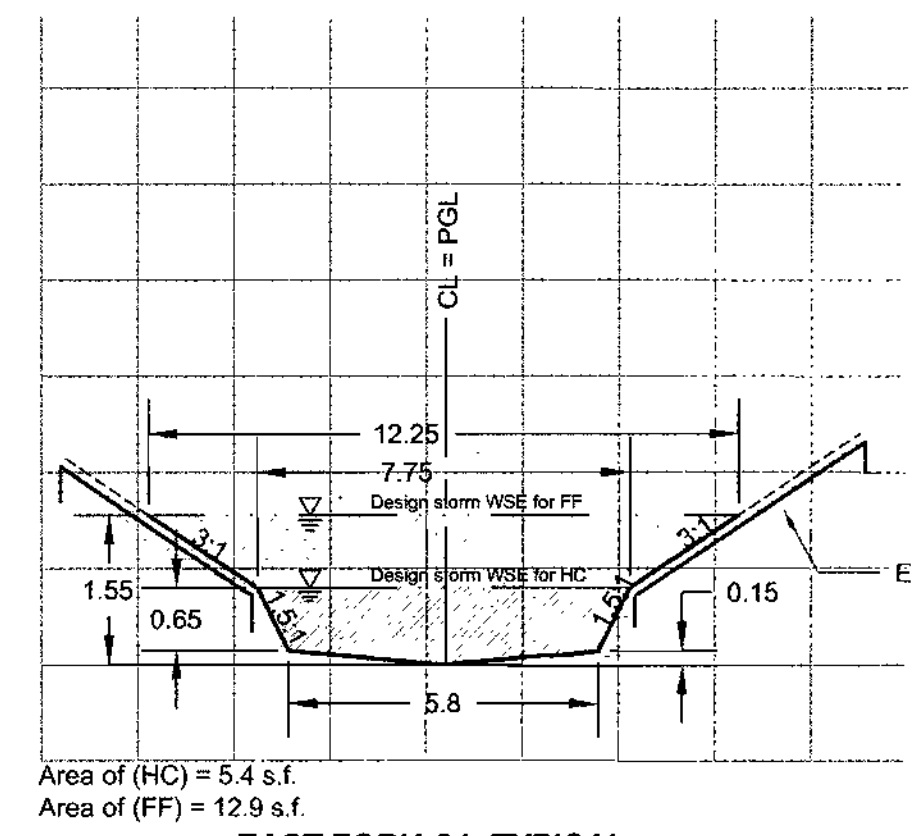
1 Area C1 Profile
 VERTICAL: 1" = 2'-0"
 HORIZONTAL: 1" = 20'-0"



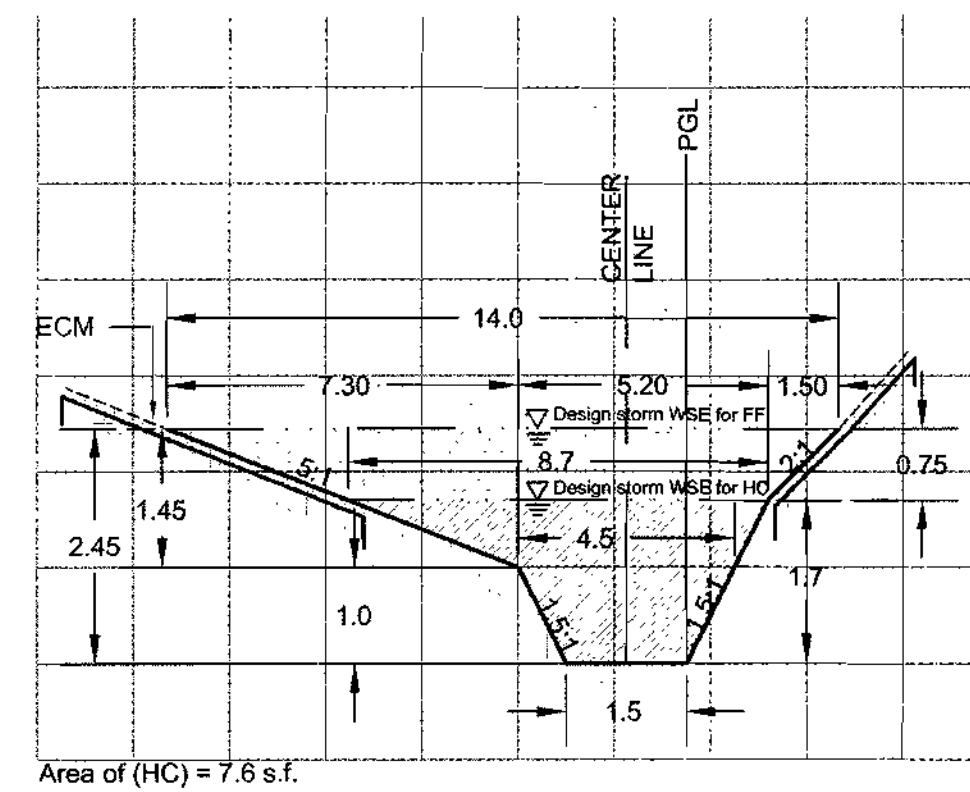
2 EAST FORK C1, TYPICAL RUN SECTION
 VERTICAL: not to scale
 HORIZONTAL: not to scale



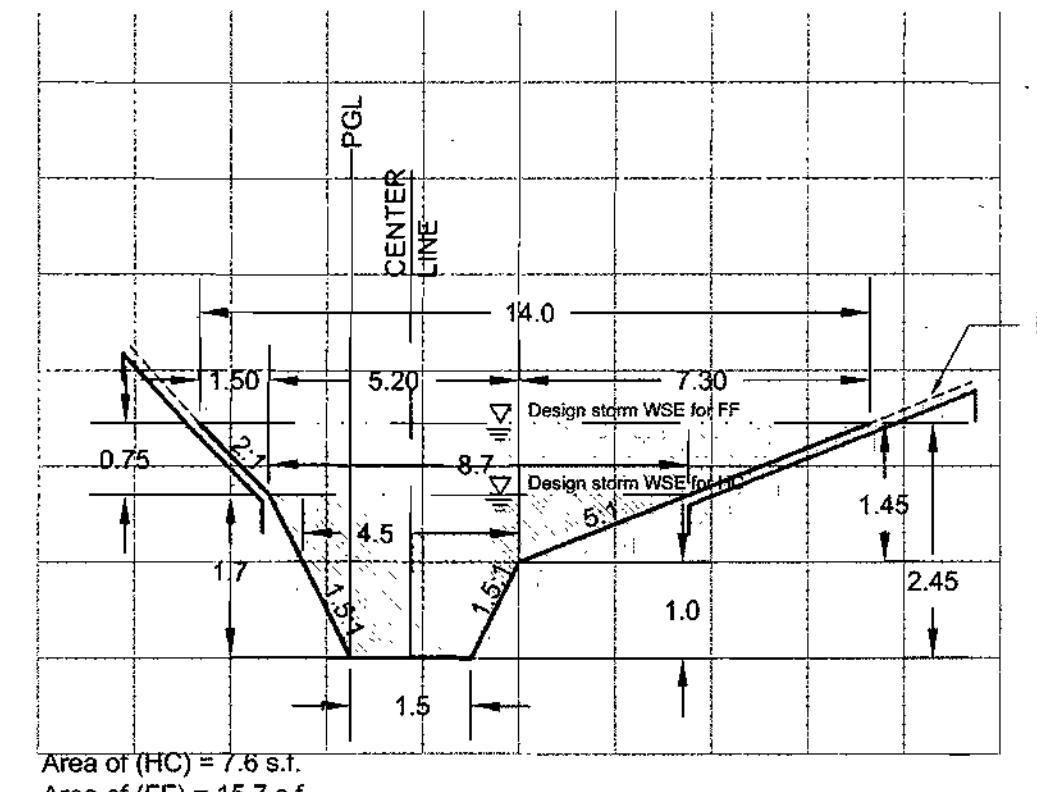
3 EAST FORK C1, TYPICAL STRAIGHT POOL SECTION
 VERTICAL: 1" = 2'-0"
 HORIZONTAL: not to scale



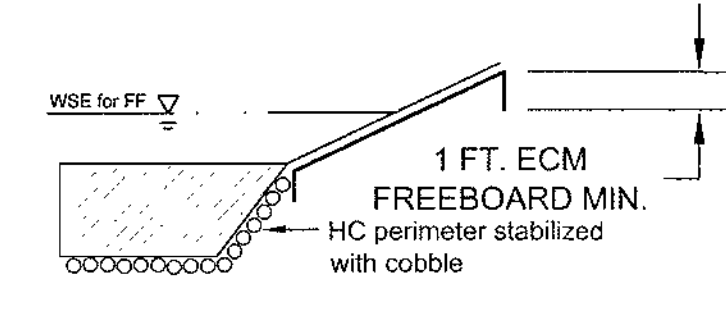
4 EAST FORK C1, TYPICAL RIFFLE SECTION
 VERTICAL: 1" = 2'-0"
 HORIZONTAL: not to scale



5 EAST FORK C1, MEANDER POOL TYPICAL SECTION RIGHT
 VERTICAL: 1" = 2'-0"
 HORIZONTAL: not to scale



6 EAST FORK C1, MEANDER POOL TYPICAL SECTION LEFT
 VERTICAL: 1" = 2'-0"
 HORIZONTAL: not to scale



HABITAT CHANNEL NOTE:
 All habitat channel areas cross hatched above shall be stabilized with either (1) revetments as shown on plan sheets and/or (2) harvested or imported cobble on plan sheets and/or (3) harvested or imported cobble stone per specification 14.0, sheet 17.

- NOTES:**
- All references to left (L) and right (R) are facing downstream.
 - Flood model stationing is based on existing stream centerline and varies from proposed stream centerline.



Cross Sections for Reach C1, East Fork

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DIRECTOR

Prepared for: The Columbia Association
 10221 Wincopin Circle, Suite 100
 Columbia, MD 21044-3410
 Phone: 410.715.3000

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87 LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P. 86
 PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-10 FELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.84

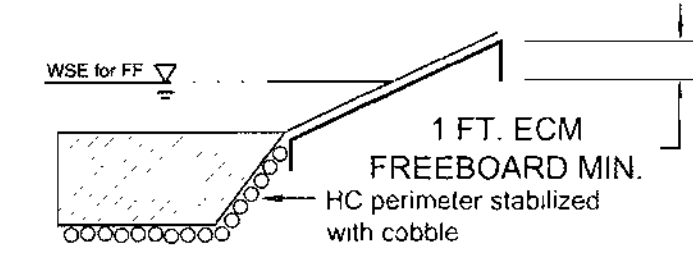
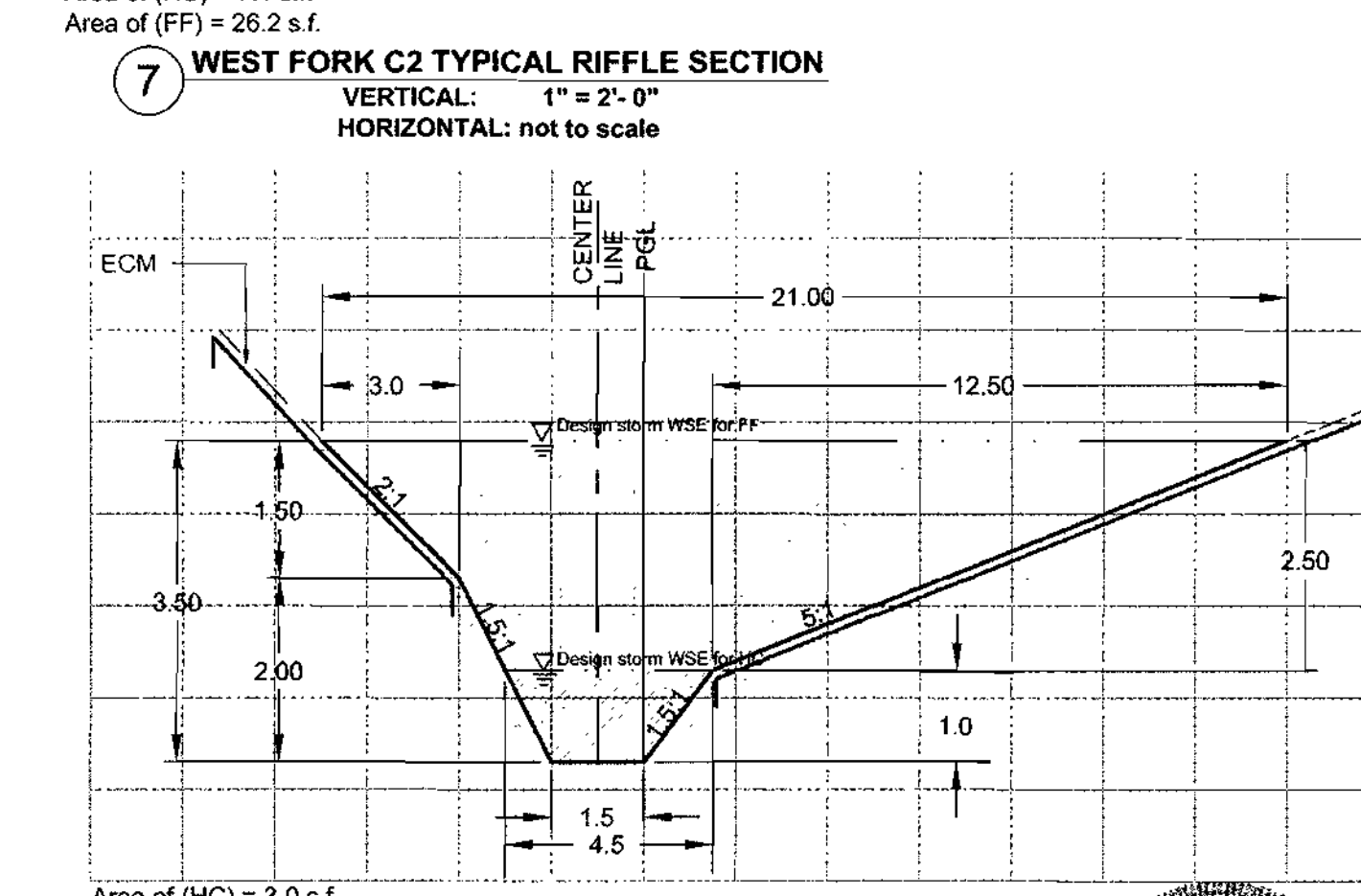
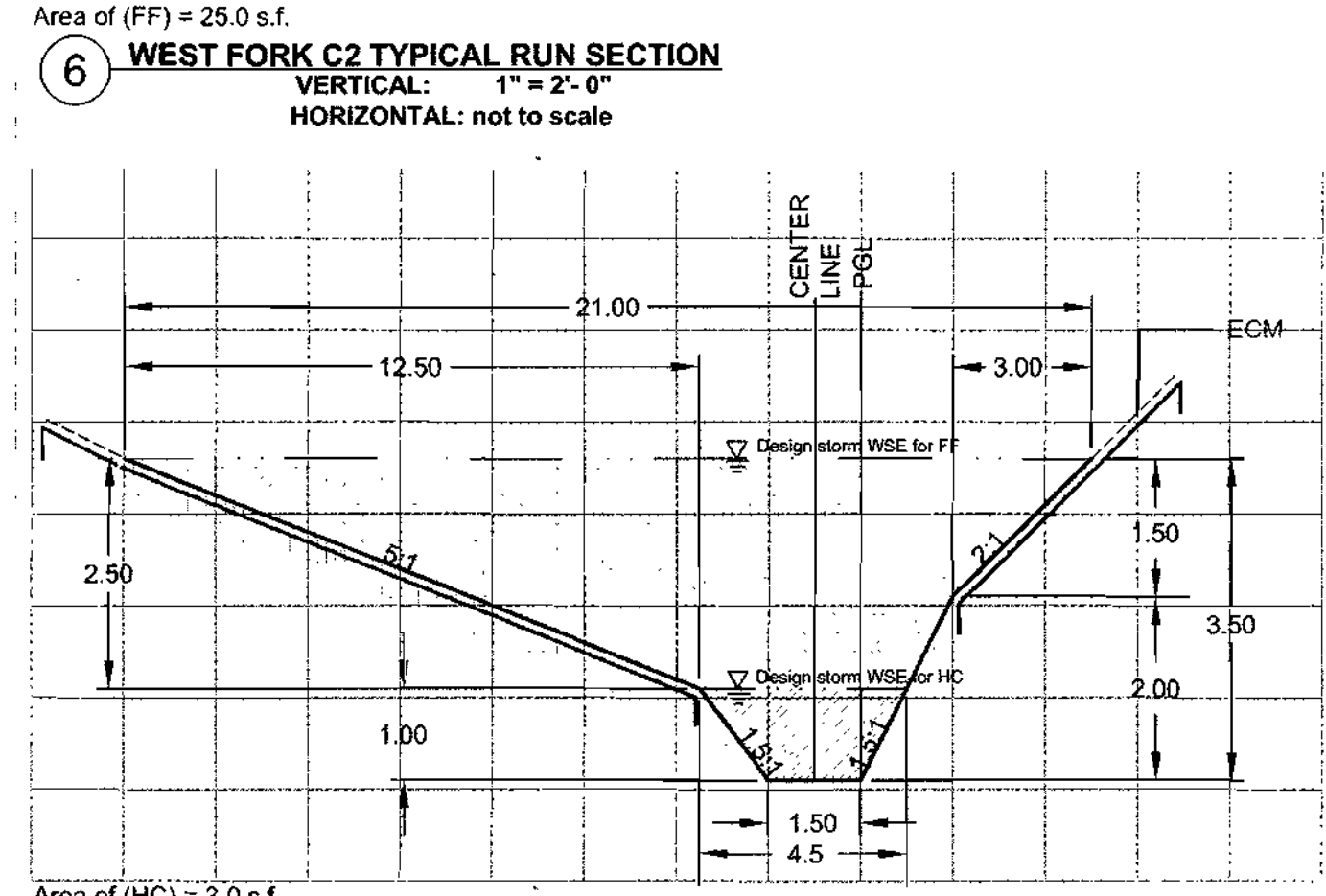
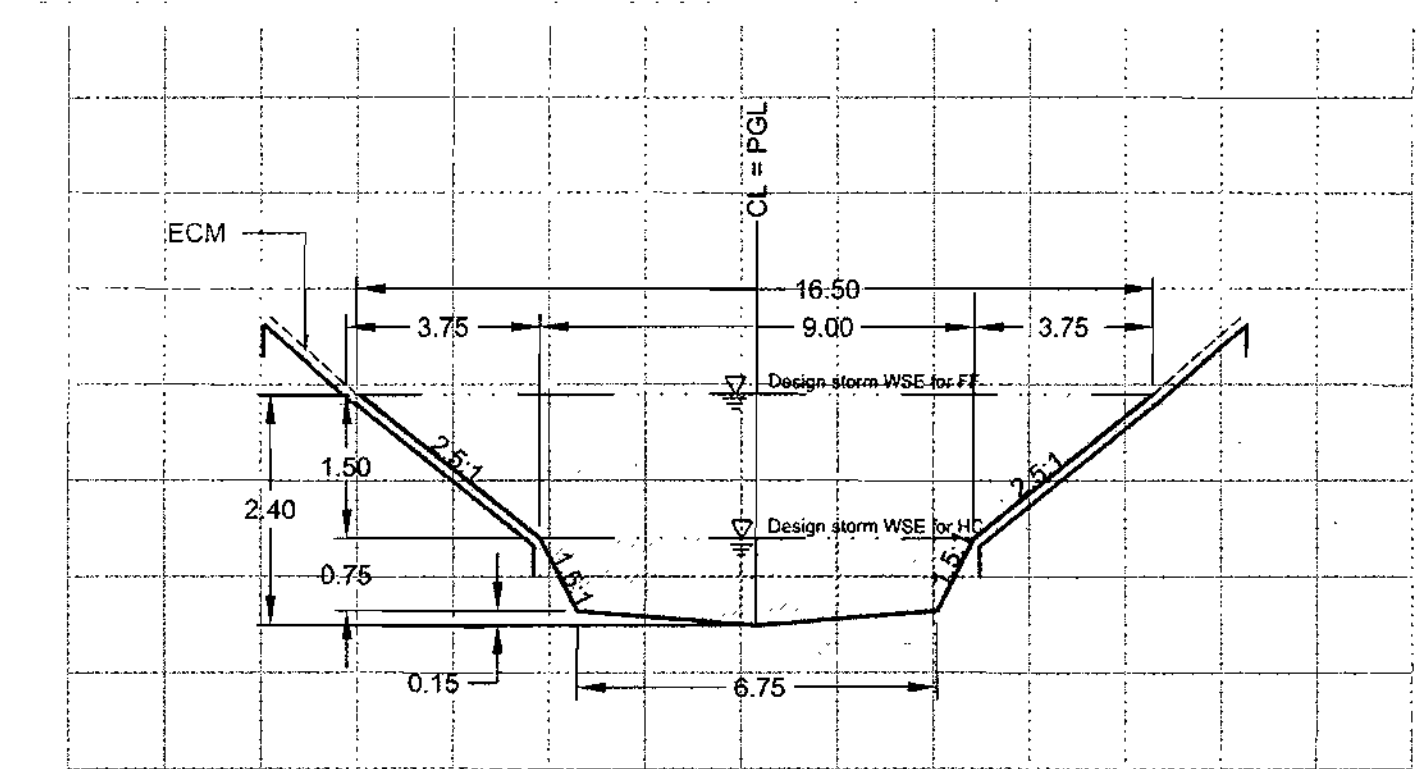
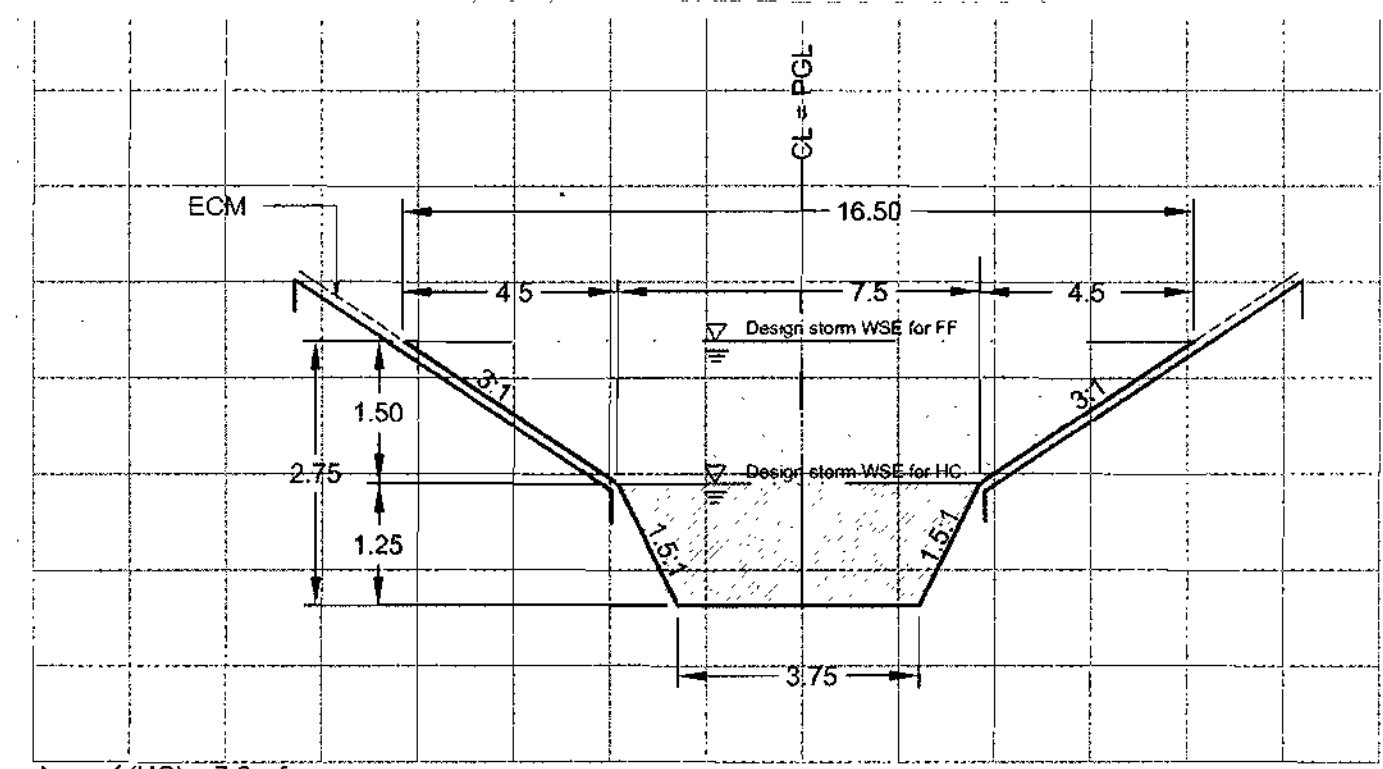
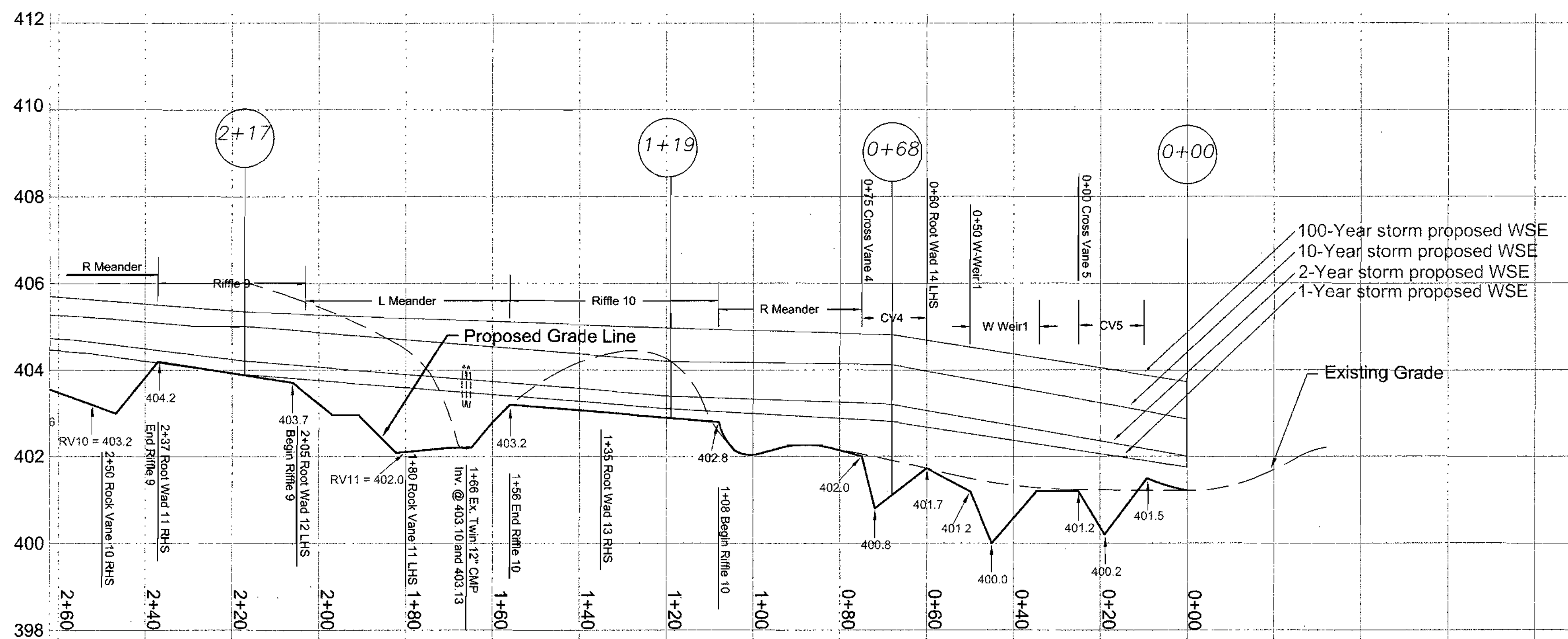
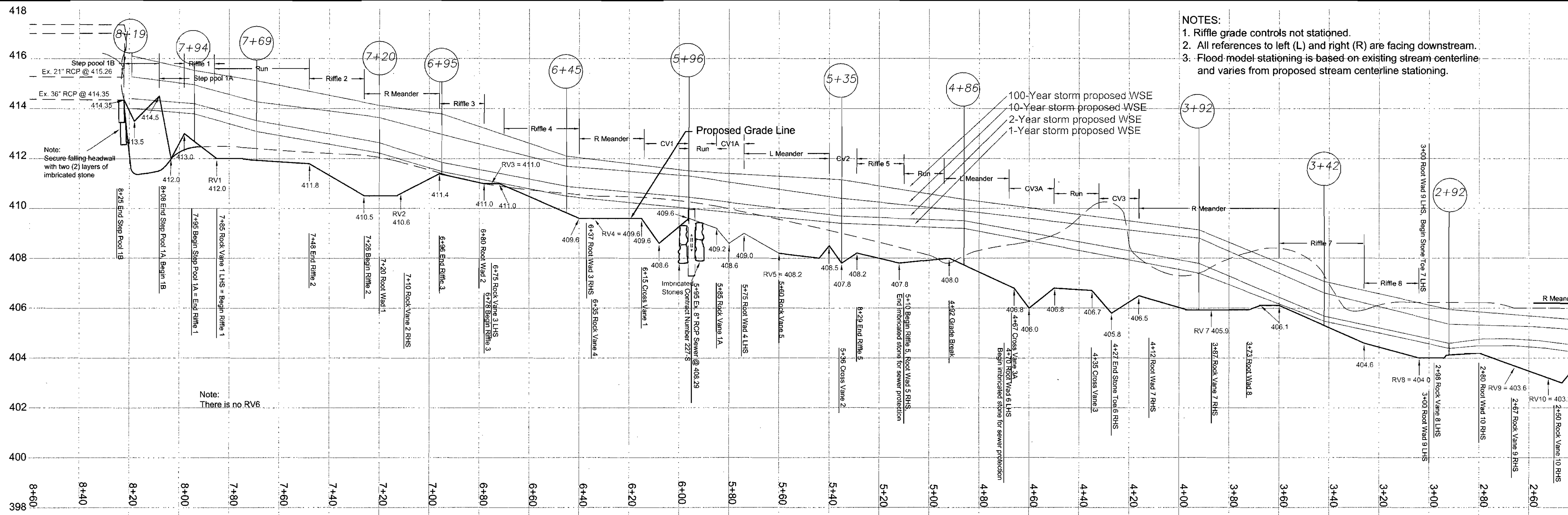
PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN
 Profile for Reach C1
 SDP-04-59

DATE:	08/04
DESIGNED:	TCS
DRAFTED:	JMF
CHECKED:	TCS
BASE DATA:	J.A. RICE
NO.	
REVISIONS	
BY	DATE

CPI Associates
 CPI/EQR Environmental Services Division
 STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
 695 QUINCE ORCHARD ROAD - CATHERSBURG, MARYLAND 22088
 Phone: (540) 208-9575 E-mail: info@cpi.com Fax: (540) 208-4351
 SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SHEET
10
 OF 20 SHEETS
 JOB NO.
 1317D - 1121
 SDP-04-59



APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DIRECTOR

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Howard County Dept. of Public Works
 Bureau of Environmental Services/SWM
 6751 Columbia Gateway Dr., Suite 5
 Columbia, MD 21046
 Phone: 410.313.6444

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 308 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P. 86
 PARCEL 282 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94

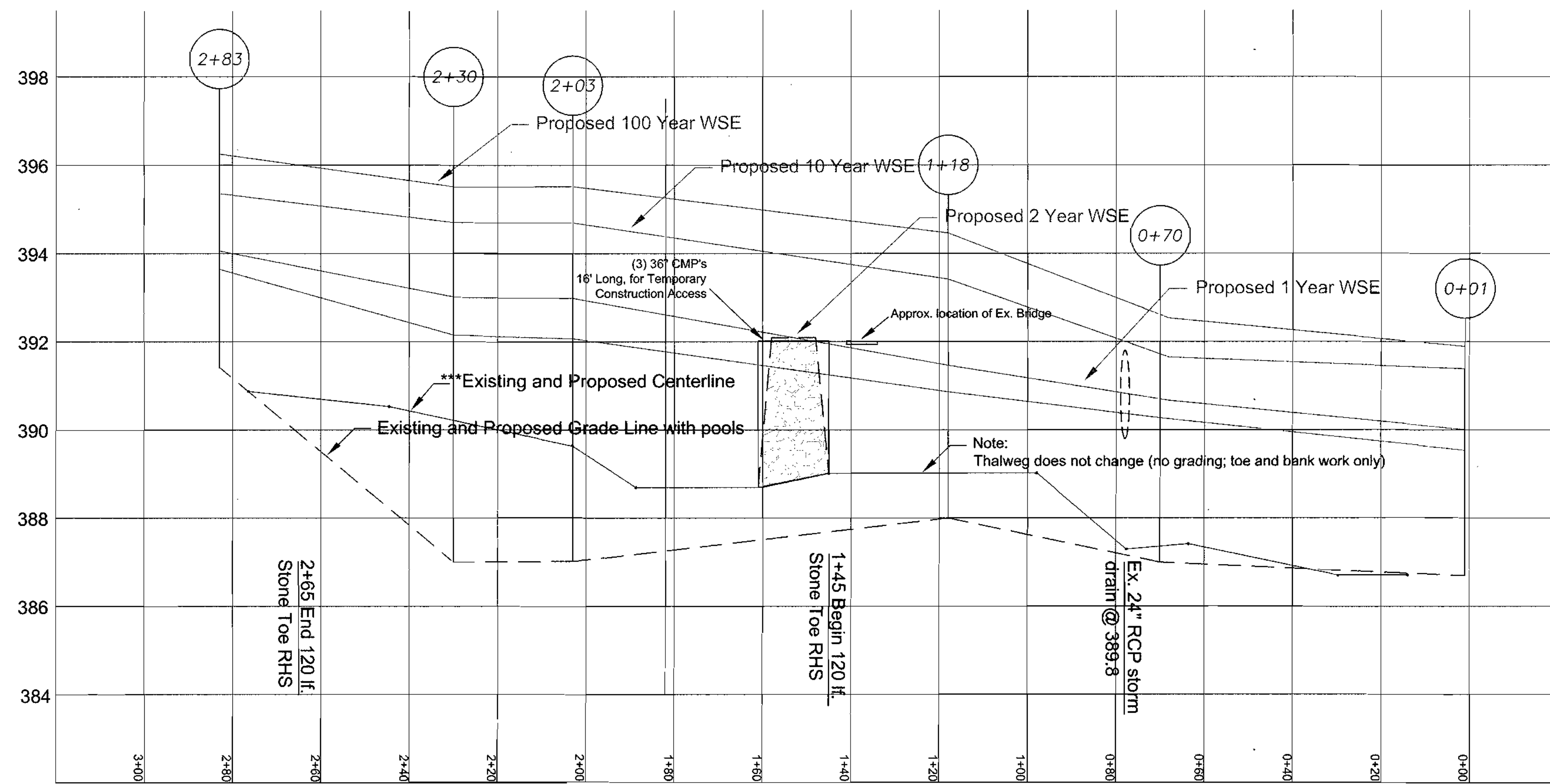
PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 287 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN
 Profile for Reach C2
 SDP-04-59

DATE:	08/04
DESIGNED:	TCS
DRAFTED:	JMF
CHECKED:	TCS
BASE DATA:	J.A. RICE
NO.	
REVISIONS	
BY	
DATE	

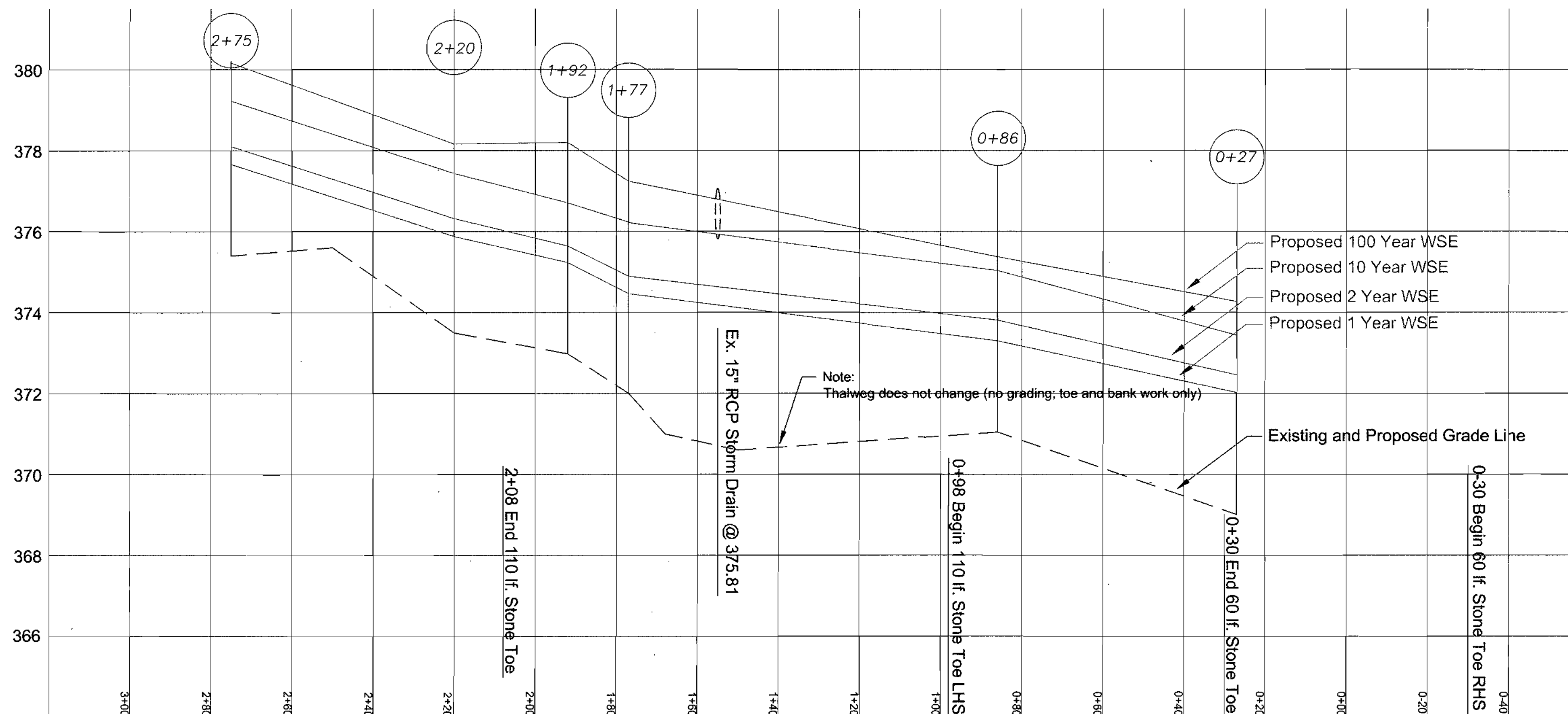
CPJ Environmental Services Division
 STREAM RESTORATION • STORMWATER MANAGEMENT • INSPECTION
 895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
 Phone: (301) 208-4573 E-mail: info@cpj.com Fax: (301) 206-4555
 SILVER SPRING, MD • FREDERICK, MD • FAIRFAX, VA

SHEET
11
 OF 20 SHEETS
 JOB NO.
 1317/D - 1121
 SDP-04-59



***Existing Centerline does Not Account for Pools

Stream Profile for Reach C4
Vertical Scale 1" = 2'
Horizontal Scale 1" = 20'



Note: 1. Riffle grade controls not shown.
2. All references to left handside (LHS) and righthandside (RHS) are facing downstream.

APPROVED BY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT
DIRECTOR



Prepared for: The Columbia Association
10221 Wincopin Circle, Suite 100
Columbia, MD 21044-3410
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PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P. 87, LOT 6 OPEN SPACE P.B. 13 P. 85
PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P. 2, P.B. 13, P. 86
PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P. 85
PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 28 P. 83, P.B. 13, P. 87
PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P. 94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P. 48
PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 11
PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P. 55

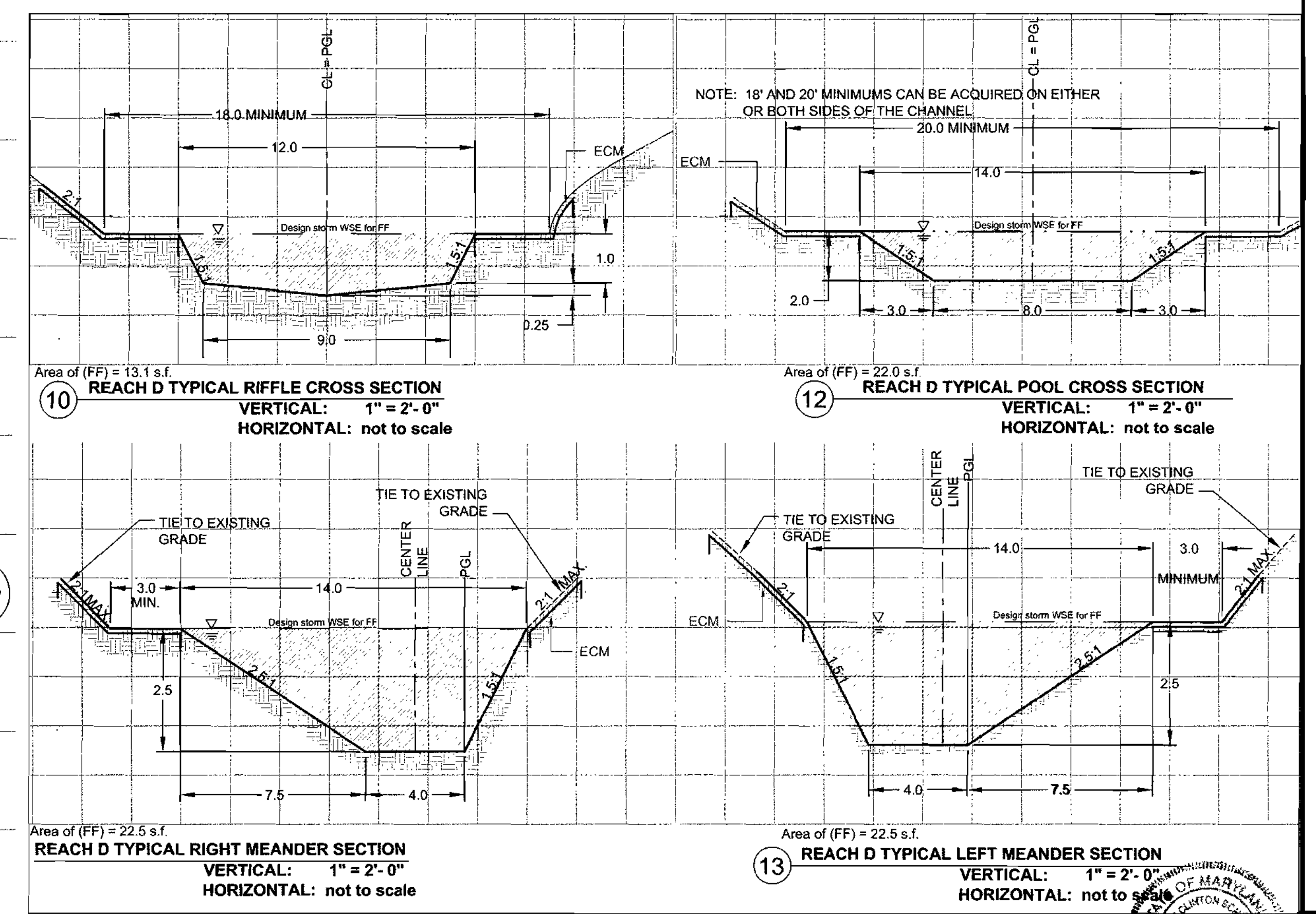
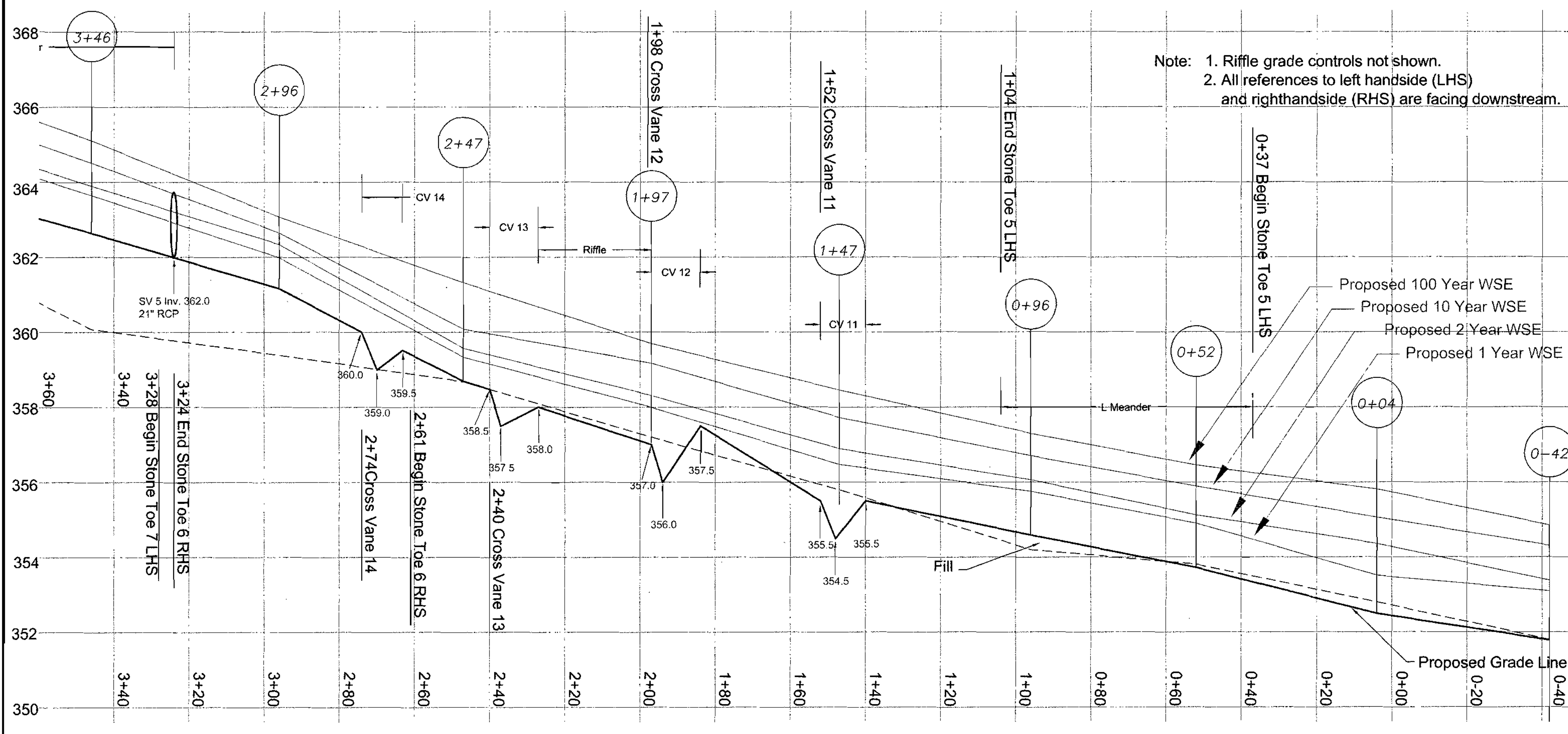
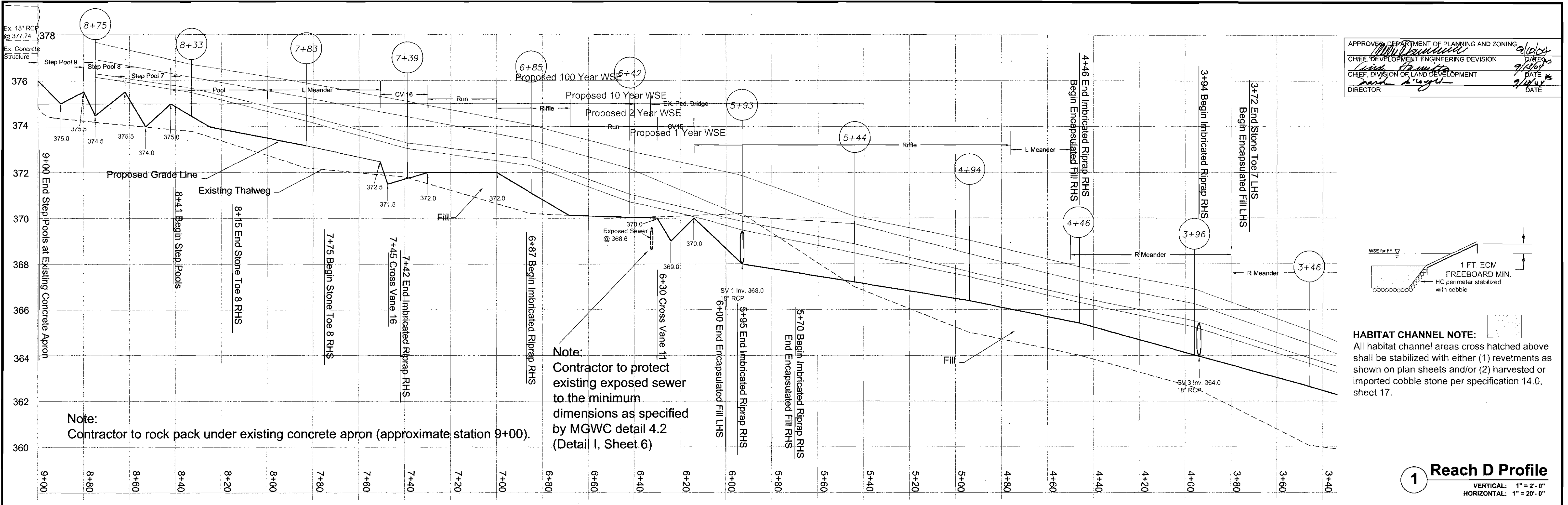
WILDE LAKE STREAM DESIGN

Profile for Reach C4 and C5
SDP-04-59

DATE:	08/04			
DESIGNED:	TCS			
DRAFTED:	JMF			
CHECKED:	TCS			
BASE DATA:	J.A. RICE	NO.	REVISIONS	BY DATE

CPJ Associates
CPJ/EOR Environmental Services Division
STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone: (301) 208-5573 E-mail: info@cpj.com Fax: (301) 926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

Scale As Shown
SHEET 12 OF 20 SHEETS
JOB NO. 1317/D - 1121
SDP-04-59



Cross Sections for Reach D

Prepared for: The Columbia Association
10221 Wincopin Circle, Suite 100
Columbia, MD 21044-3410
Phone: 410.715.3000

Howard County Dept. of Public Works
Bureau of Environmental Services/SWM
6751 Columbia Gateway Dr., Suite 5
Columbia, MD 21046
Phone: 410.313.6444

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PARCEL 282 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87
PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LOWFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-AULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN

Stream Profile For Reach D

SDP-04-59

DATE:	08/04		
DESIGNED:	TCS		
DRAFTED:	JMF		
CHECKED:	TCS		
BASE DATA:	J.A. RICE	NO.	REVISIONS
		BY	DATE

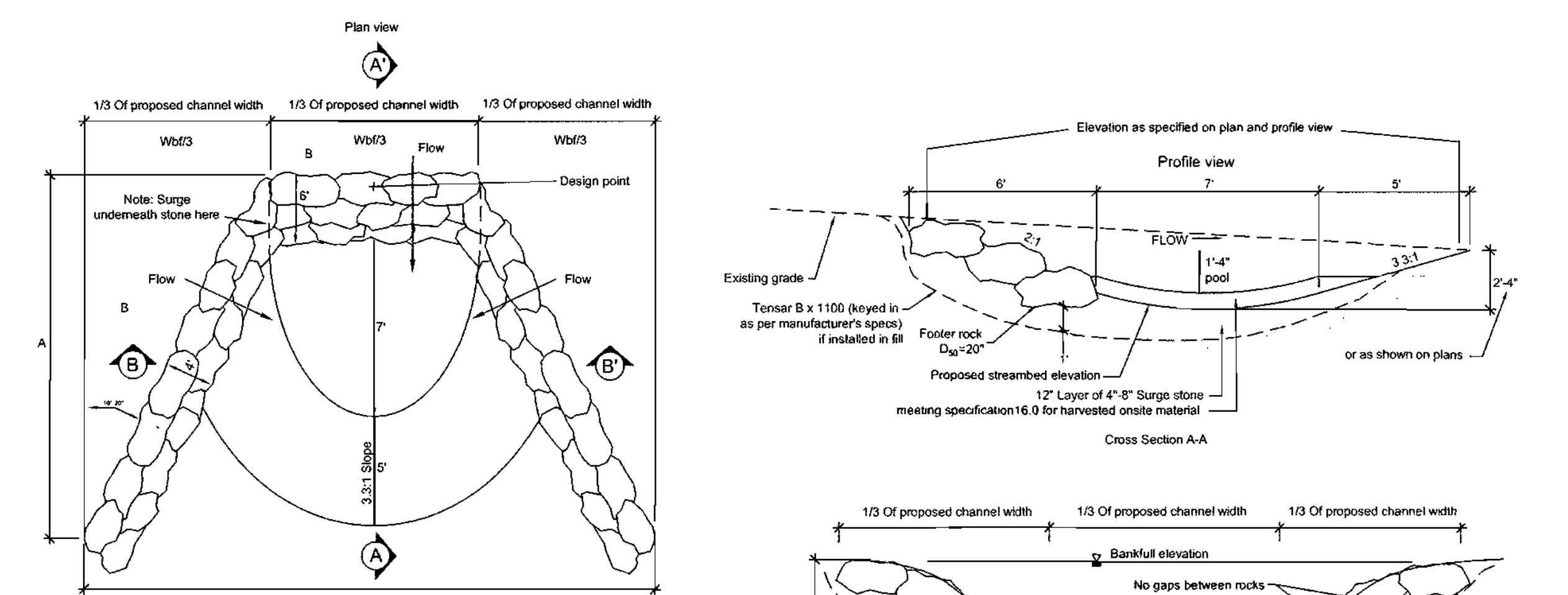
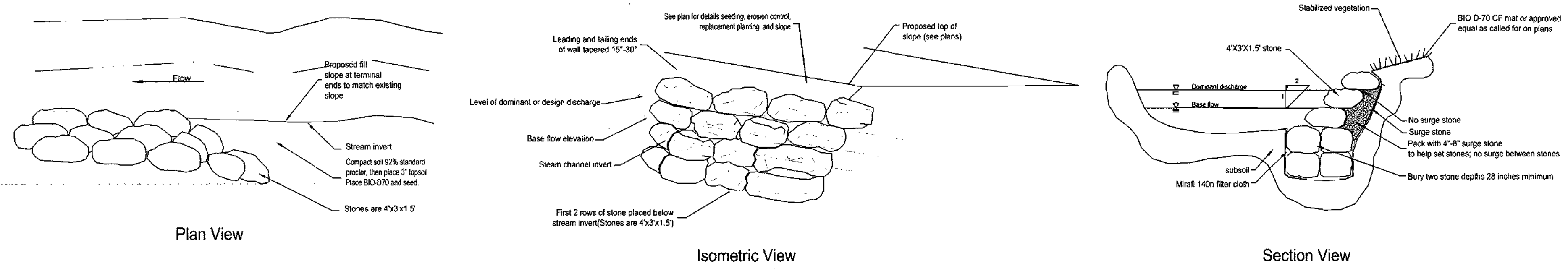
CPJ Associates
CPJ/EOR Environmental Services Division
STREAM RESTORATION - STORMWATER MANAGEMENT - INSPECTION
886 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone: (301) 281-9573 E-mail: info@cpj.com FAX: (301) 926-4351
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

PROFESSIONAL ENGINEER
STATE OF MARYLAND
No. 123,01

SHEET
13
OF 20 SHEETS

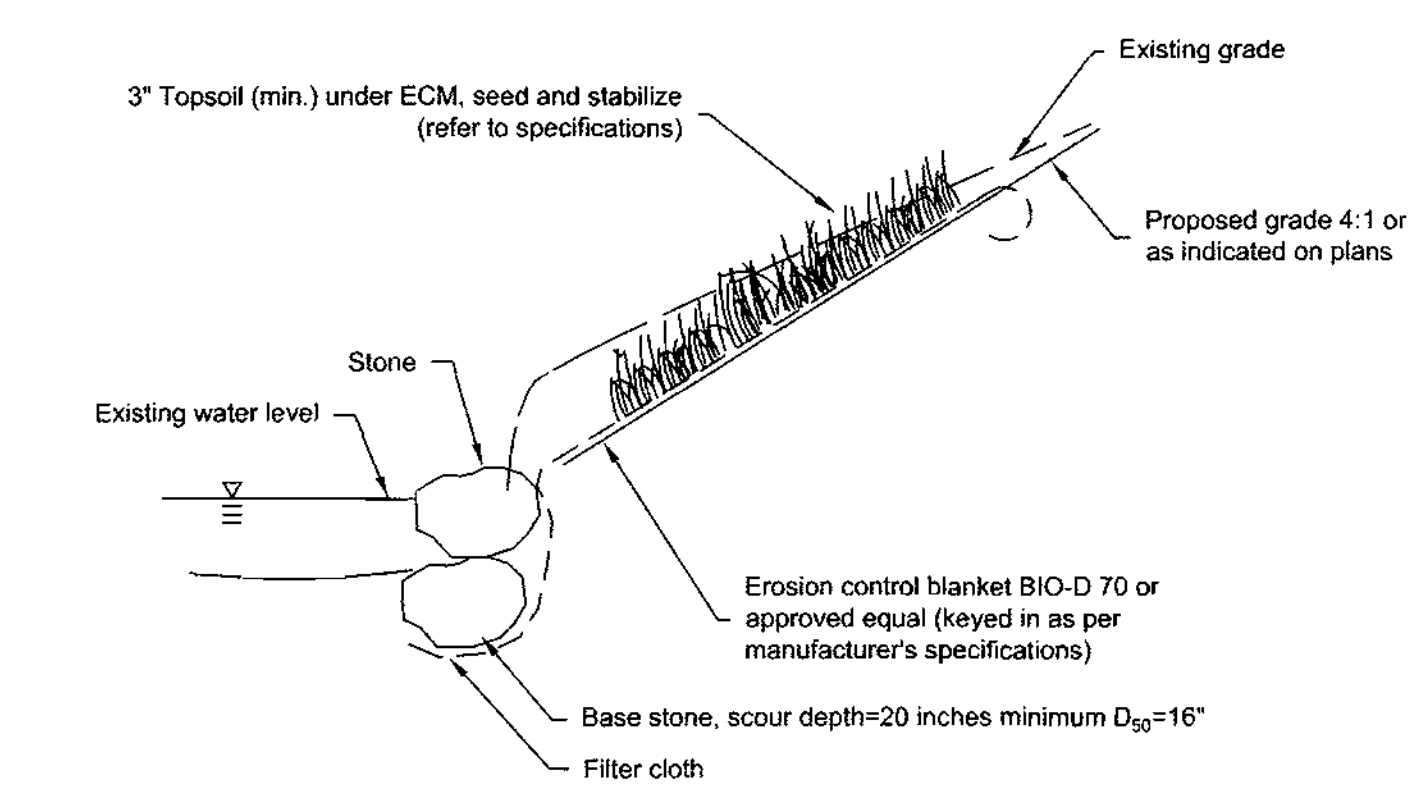
JOB NO.
1317/D - 1121

SDP-04-59



Location	Designation	Station	A	B	H	W	W _{br} /3
			feet	feet	feet	feet	feet
C2	CV1	6+15	15	15	4	5	
C2	CV2	5+36	15	15	4	5	
C2	CV1A	4+67	15	15	4	5	
C2	CV3	4+35	15	15	4	5	
C2	CV4	0+75	15	15	4	5	
C2	CV5	0+00	15	15	4	5	
C1	CV6	0+42	15	15	4	5	
C1	CV7	1+36	15	15	4	5	
C1	CV8	1+66	15	15	4	5	
C1	CV9	2+27	15	15	4	5	
C1	CV10	4+95	15	15	4	5	
D	CV11	1+40	18	30	5	10	
D	CV12	1+80	18	30	5	10	
D	CV13	2+40	18	30	5	10	
D	CV14	2+74	18	30	5	10	
D	CV15	6+30	18	30	5	10	
D	CV16	7+45	18	30	5	10	

1 IMBRICATED RIPRAP (Specification 1.0)
Not to scale

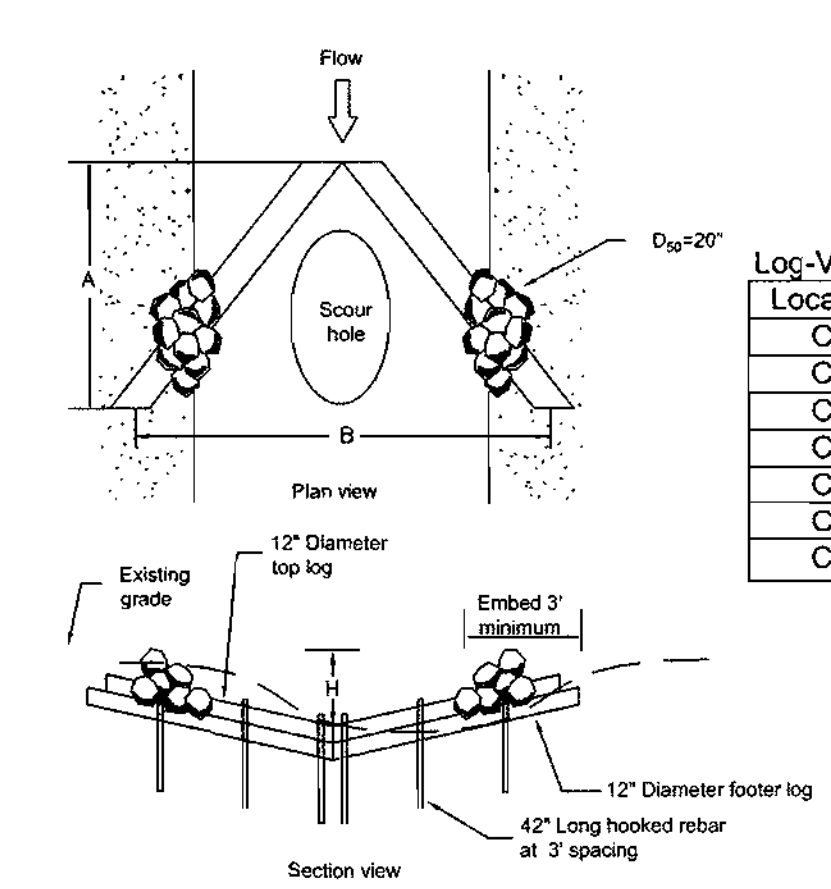
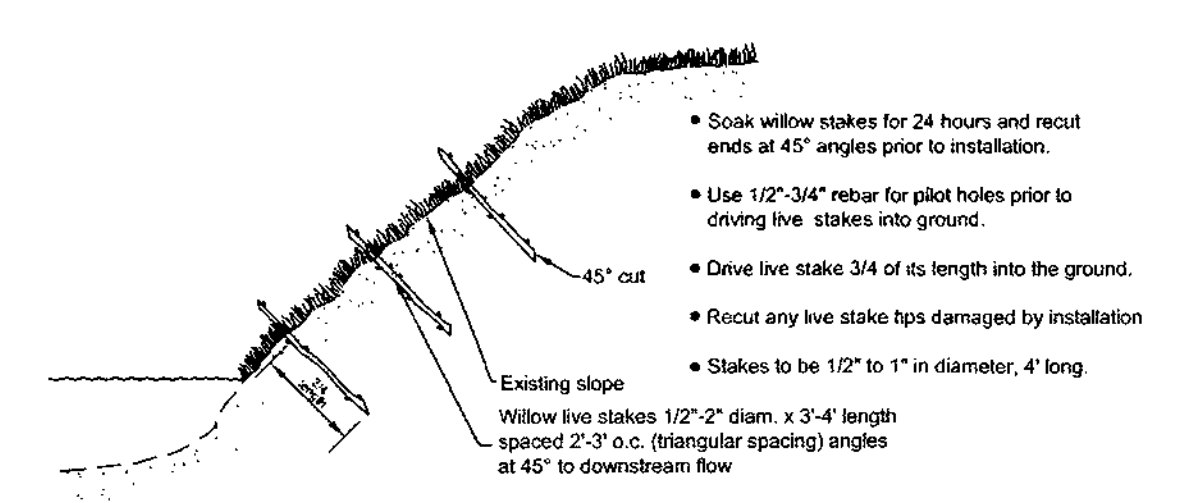


LOCATION	STONE TOE DESIGNATION	LENGTH	STATION	STATION	ORIENTATION
C3	ST1	40	N/A	N/A	L
C4	ST2	120	1+45	2+63	R
C5	ST3	110	0+98	2+08	L
C5	ST4	60	0-30	0+30	R
D	ST5*	80	0+37	1+04	L
D	ST6	63	2+61	3+24	R
D	ST7	44	3+26	3+72	L
D	ST8	40	7+75	8+15	R

*Note: Actual Length greater than stationing

3 STONE TOE (Specification 7.0)
Not to scale

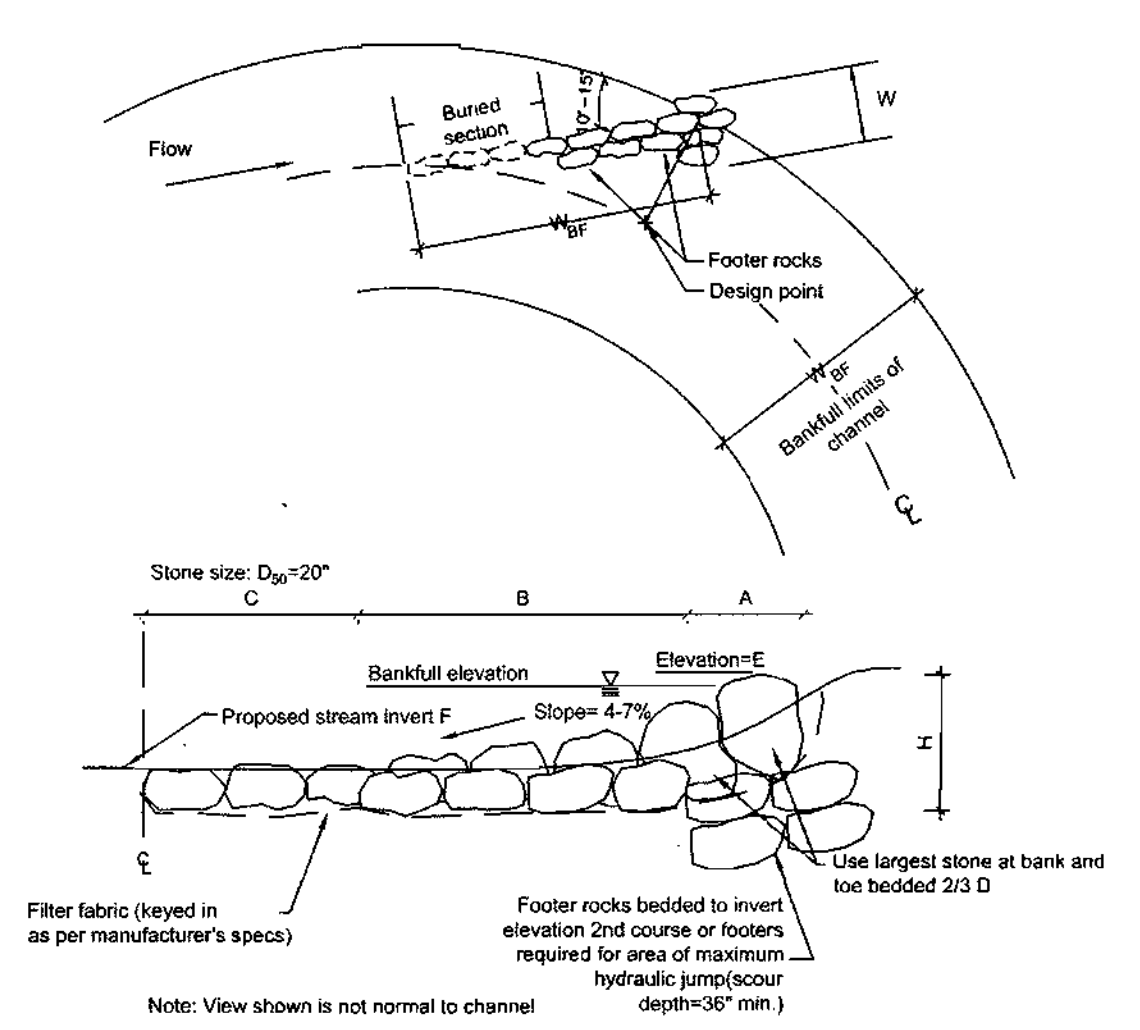
APPROVED DEPARTMENT OF PLANNING AND ZONING
 CHIEF DEVELOPMENT ENGINEERING DIVISION
 CHIEF DIVISION OF LAND DEVELOPMENT
 DIRECTOR



Location	Designation	Station	A	B	H	Invert at notch
			feet	feet	feet	feet
C1	LV1	NA	6.0	12.0	1.5	413.0
C1	LV2	NA	6.0	12.0	1.5	414.0
C1	LV3	NA	6.0	12.0	1.5	415.0
C1	LV4	NA	6.0	12.0	1.5	416.0
C1	LV5	NA	6.0	12.0	1.5	405.0
C1	LV6	NA	6.0	12.0	1.5	406.0
C1	LV7	NA	6.0	12.0	1.5	407.0

4 LIVE STAKE (Specification 12.0)
Not to scale

5 LOG V - DROP (Specification 8.0)
Not to scale



Location	Designation	Orientation	A	B	C	H	W	W _{br}	E	F
			feet	feet	feet	feet	feet	feet	feet	feet
C2	RV1	L	3	5	2	2	4	10	414.0	412.0
C2	RV2	R	3	5	2	2	4	10	412.6	410.6
C2	RV3	L	3	5	2	2	4	10	413.0	411.0
C2	RV4	R	3	5	2	2	4	10	411.6	409.6
C2	RV5	L	3	5	2	2	4	10	410.2	408.2
C2	RV7	R	3	5	2	2	4	10	407.9	405.9
C2	RV8	L	3	5	2	2	4	10	406.0	404.0
C2	RV9	R	3	5	2	2	4	10	405.6	403.6
C2	RV10	R	3	5	2	2	4	10	405.2	403.2
C2	RV11	R	3	5	2	2	4	10	404.0	402.0
C1	RV12	L	3	5	2	2	4	10	405.6	403.6
C1	RV13	R	3	5	2	2	4	10	409.9	407.9
C1	RV14	L	3	5	2	2	4	10	410.8	408.8
C1	RV15	L	3	5	2	2	4	10	411.5	409.5
C1	RV16	R	3	5	2	2	4	10	412.6	410.6
C1	RV17	L	3	5	2	2	4	10	411.9	409.9
C1	RV18	R	3	5	2	2	4	10	413.0	411.0

Note: There is no RV 6

6 ROCK VANE - SECTION AND PLAN VIEW (Specification 9.0)
Not to scale



Prepared for: The Columbia Association
 10221 Winopin Circle, Suite 100
 Columbia, MD 21044-3410
 Phone: 410.715.3000

PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87 LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 269 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P.86
 PARCEL 282 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LOWFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.84

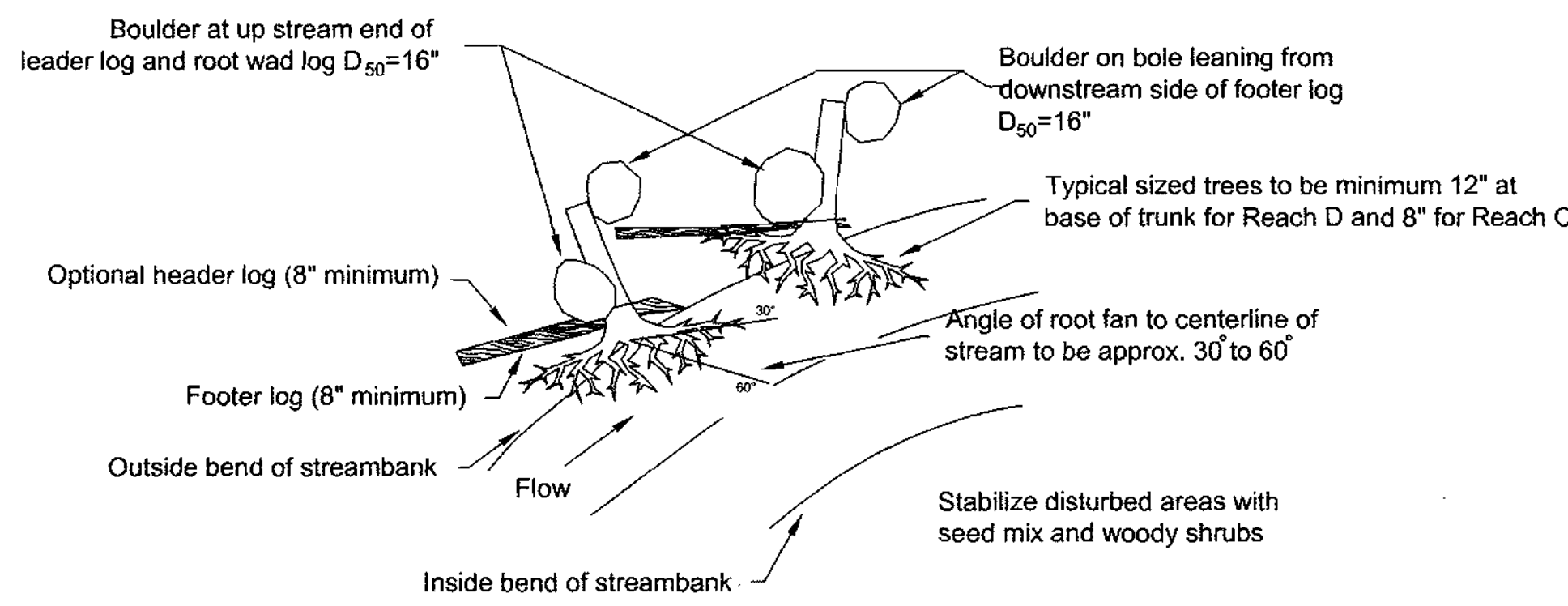
PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN
 Bioengineering Details
 SDP-04-59

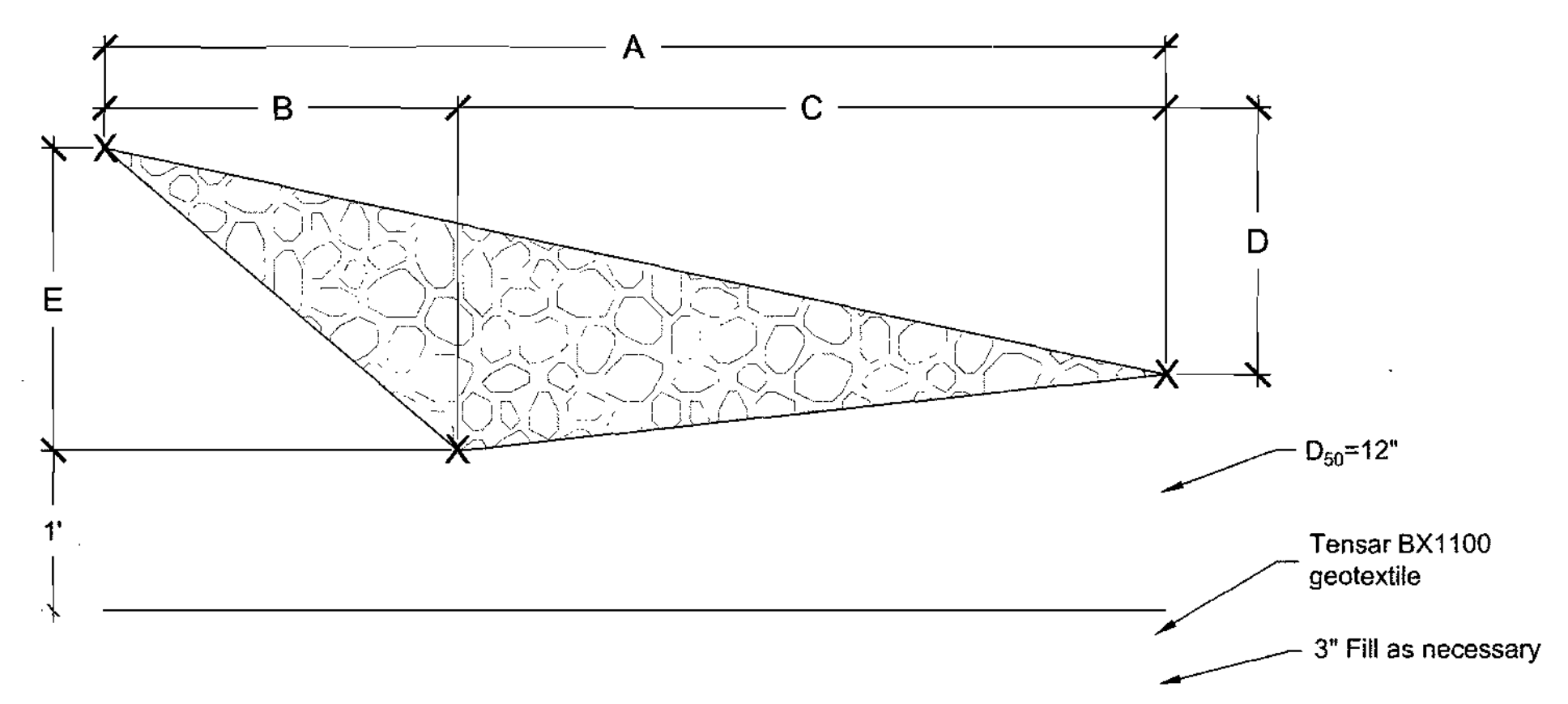
DATE:	08/04
DESIGNED:	TCS
DRAFTED:	JMF
CHECKED:	TCS
BASE DATA:	J.A. RICE
NO.	REVISIONS
BY	DATE

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SHEET
14
 OF 20 SHEETS
 JOB NO.
 1317/D - 1121
 SDP-04-59

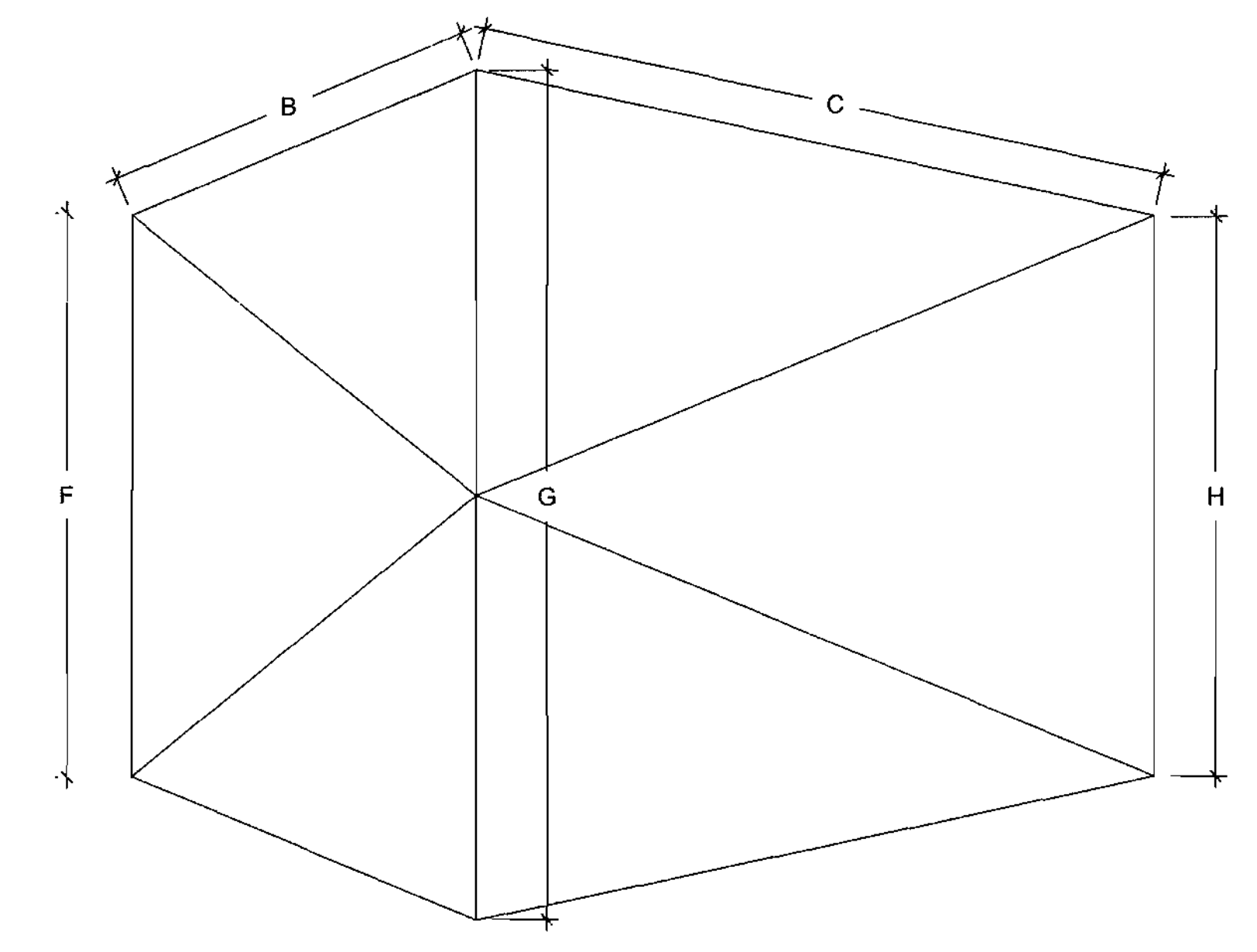


Rootwad Plan View

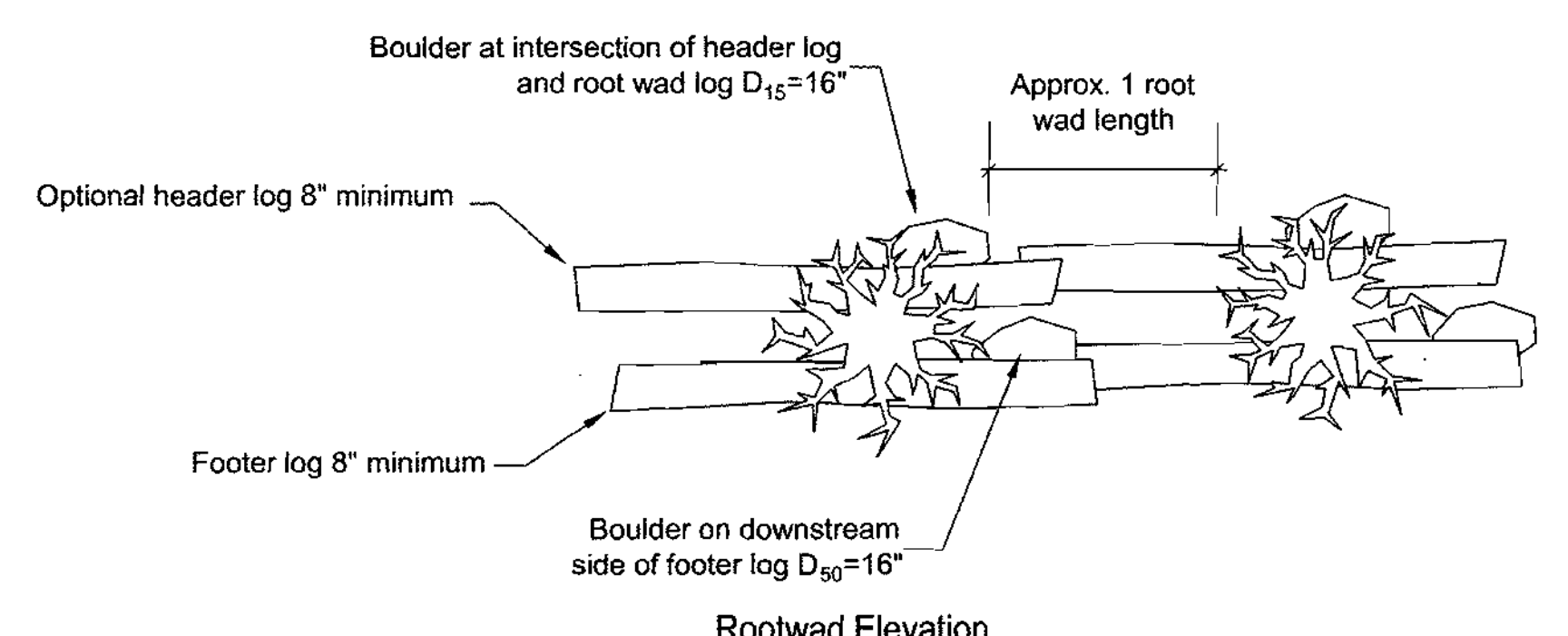


Note: See plans and profile for 'X' inverts

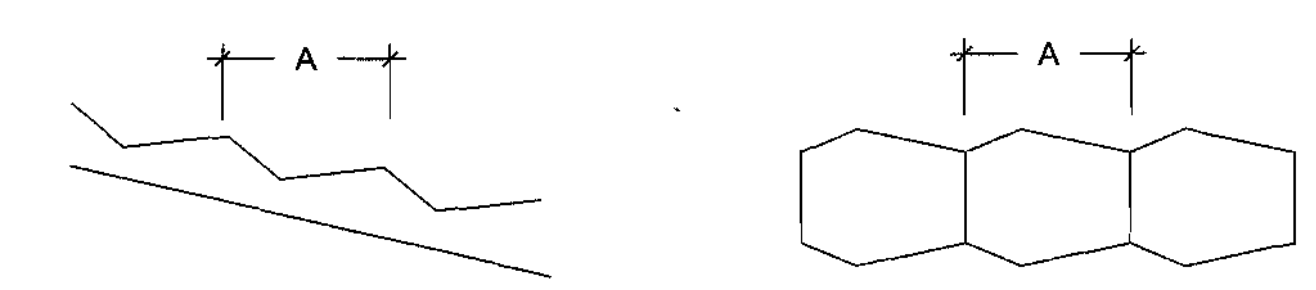
Profile



Plan view



Rootwad Elevation

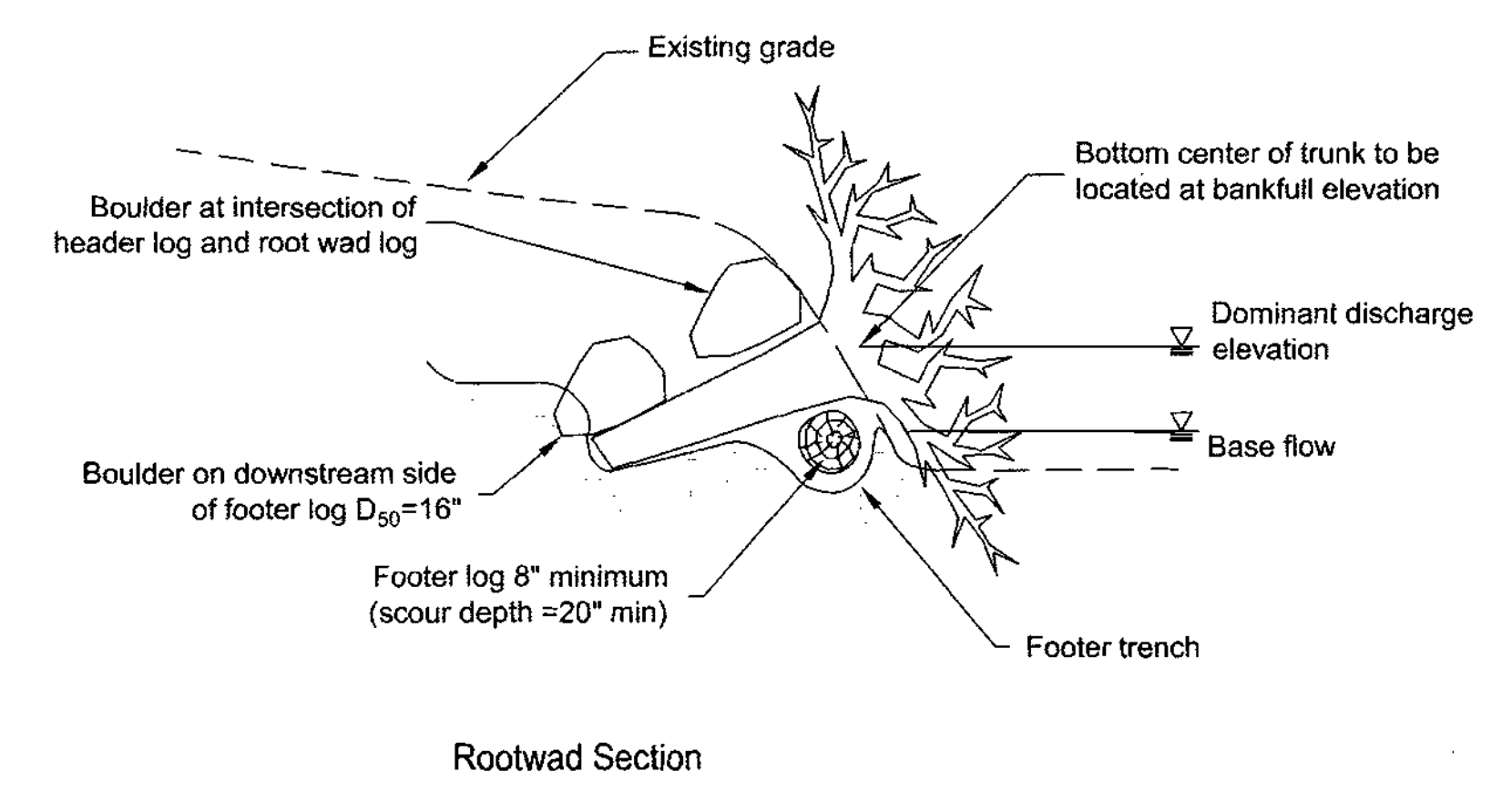


STEP POOL (Specification 16.0)

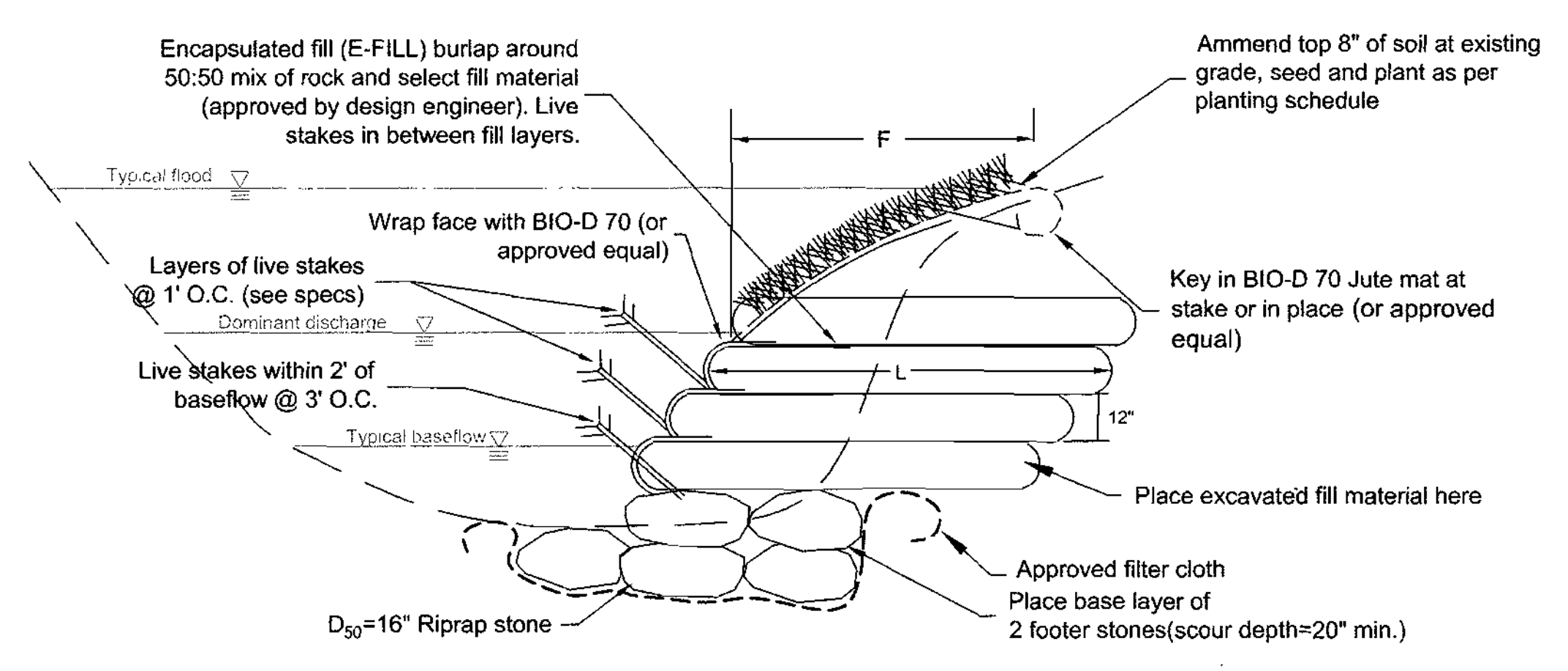
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LOCATION	DESIGNATION	STATION	A	B	C	D	E	F	G	H
			feet	feet	feet	feet	feet	feet	feet	feet
C2	SP1A	7+95-8+08	15	6	9	1	2	10	15	10
C2	SP1B	8+08-8+25	15	6	9	1	2	10	15	10
C1	SP2	3+10-3+29	18	6	12	1.4	2	5	10	5
C1	SP3	3+29-3+50	18	6	12	0.8	1	5	10	5
C1	SP4	3+50-3+64	18	6	12	0.6	1	5	10	5
C1	SP4A	6+25	8	5	3	0.0	2	6	16	6
C1	SP5	To	9	5	4	1	2	6	19	6
C1	SP6	6+40	11	5	6	1	2	6	20	6
D	SP7	8+41	20	7	13	0.5	1	6	24	6
D	SP8	To	20	7	13	0.5	1	6	24	6
D	SP9	9+00	20	7	13	0.5	1	6	24	6

8



Rootwad Section



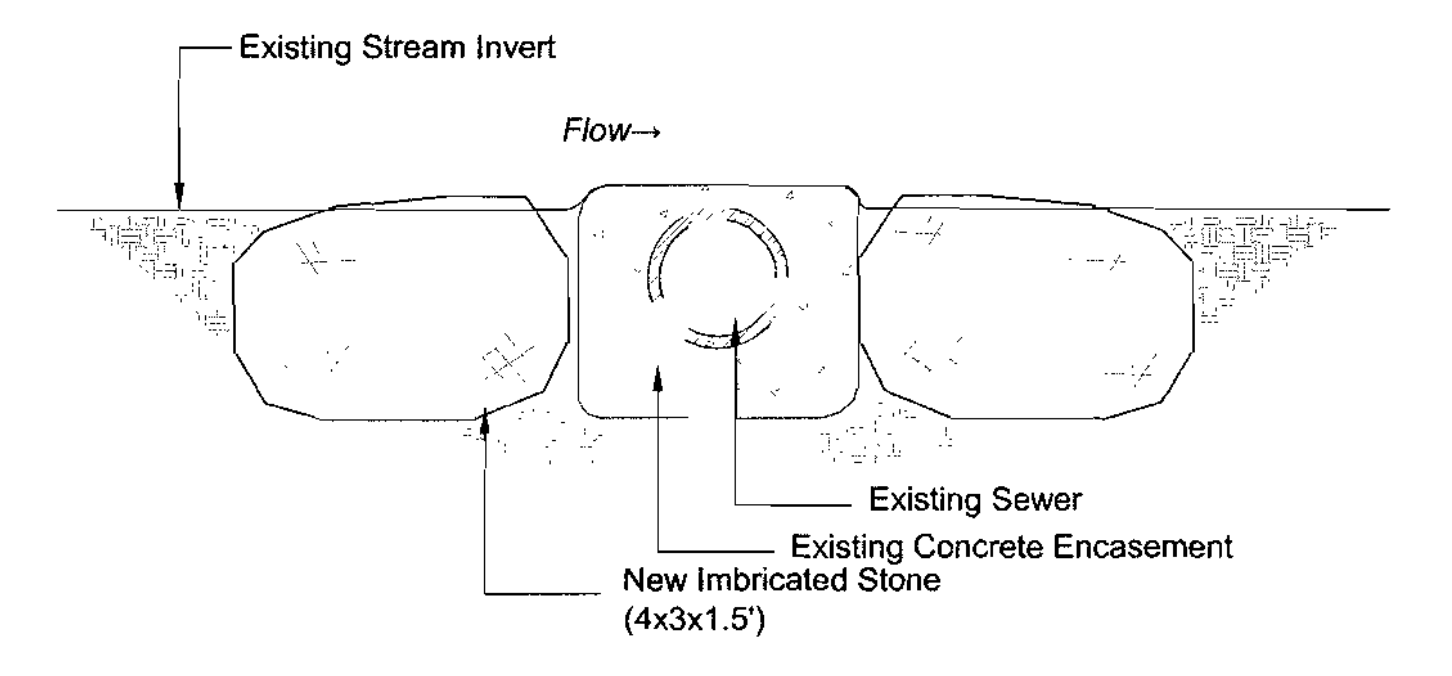
DP	JUTE MAT	F _{ave} (ft)	L _{ave} (ft)	E-FILLS
REACH D	BIO-D 70	6	6	4

Note: Also see live stake detail #4

9

ENCAPSULATED FILL (Specification 10.0)

Not to scale



TYPICAL SECTION THROUGH EXISTING SEWER (Specification 1.0)

Not to scale

10

7

ROOT WAD (Specification 11.0)

Not to scale

APPROVED: DEPARTMENT OF PLANNING AND ZONING
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PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B. 27 P.2, P.B. 13, P.86
 PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11 P.B. 26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B. 12 P.94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN

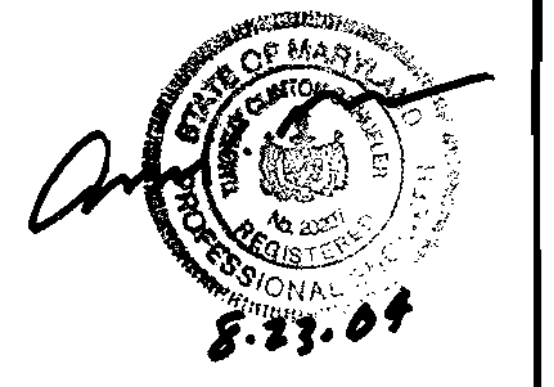
Bioengineering Details

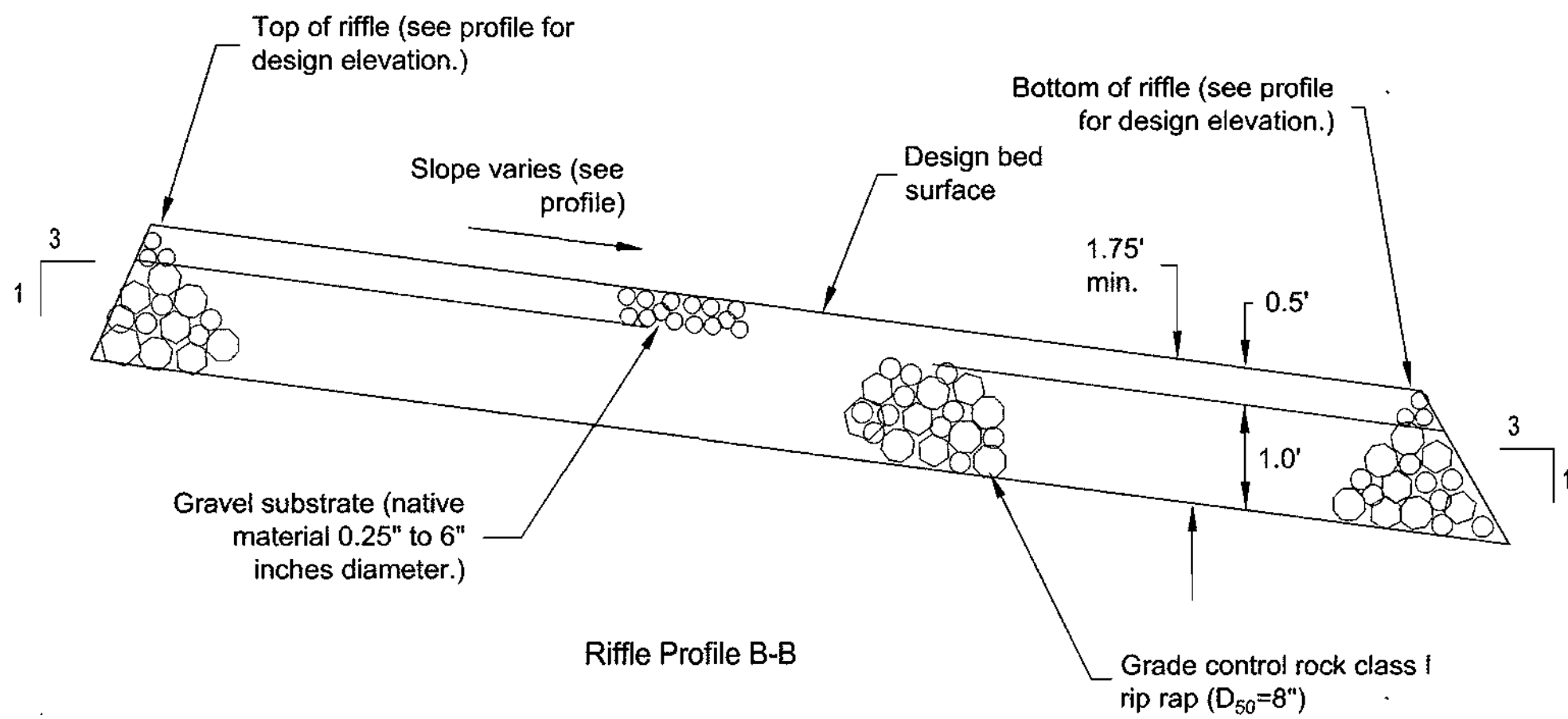
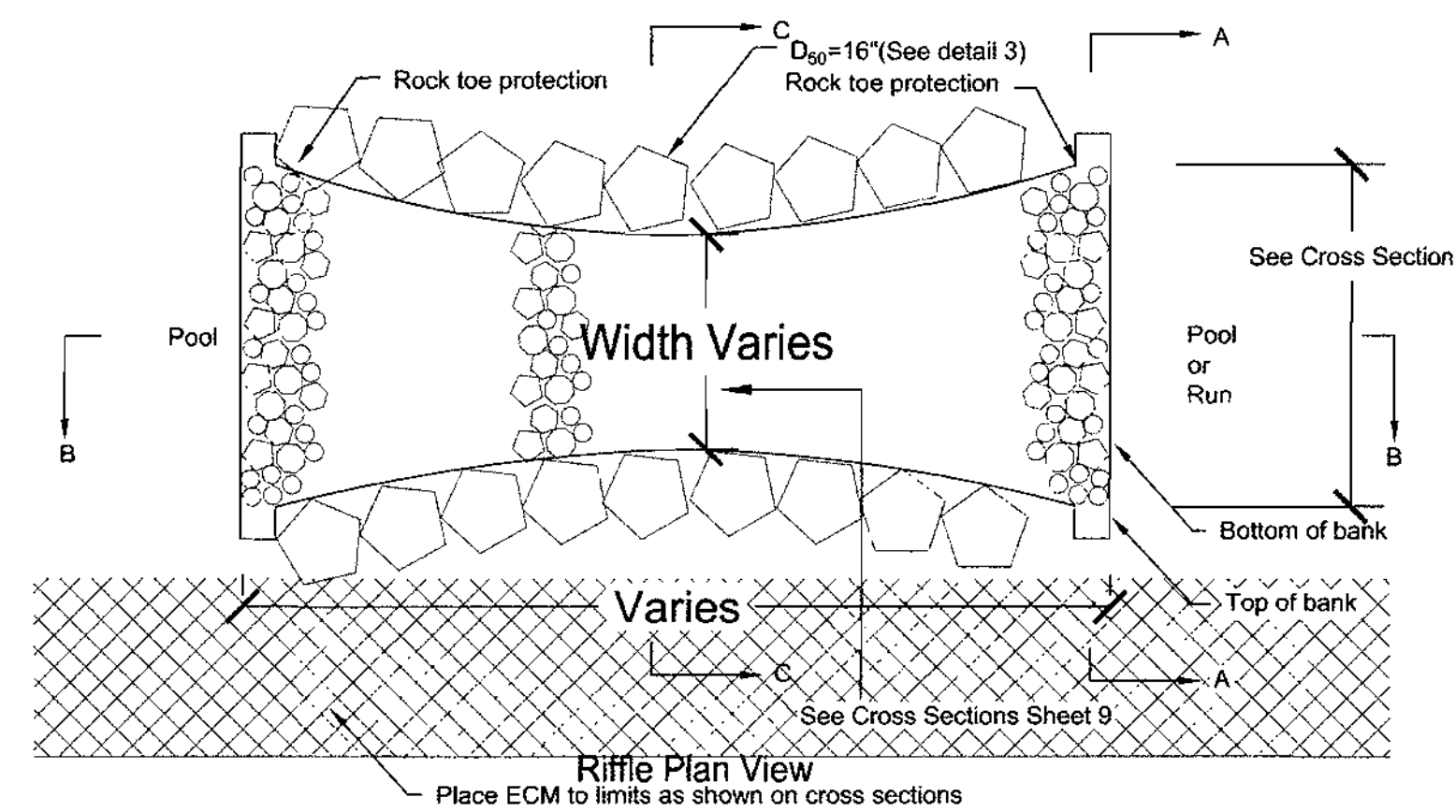
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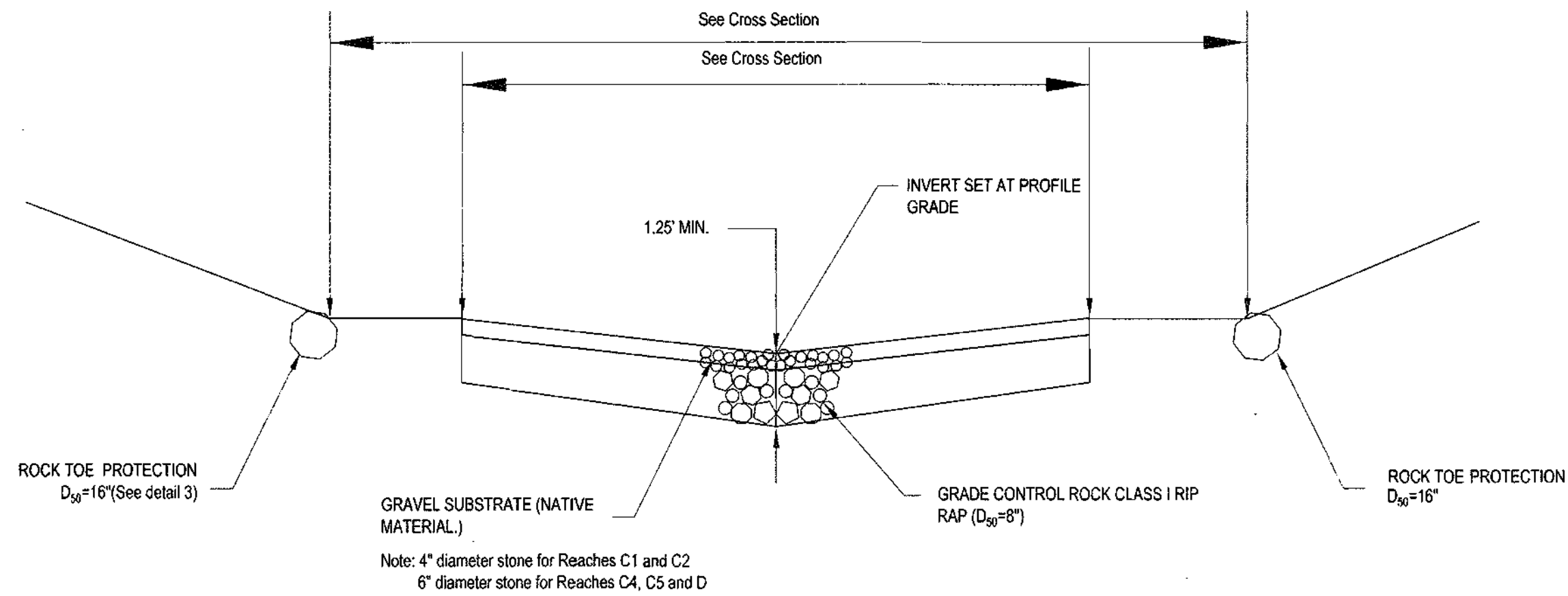
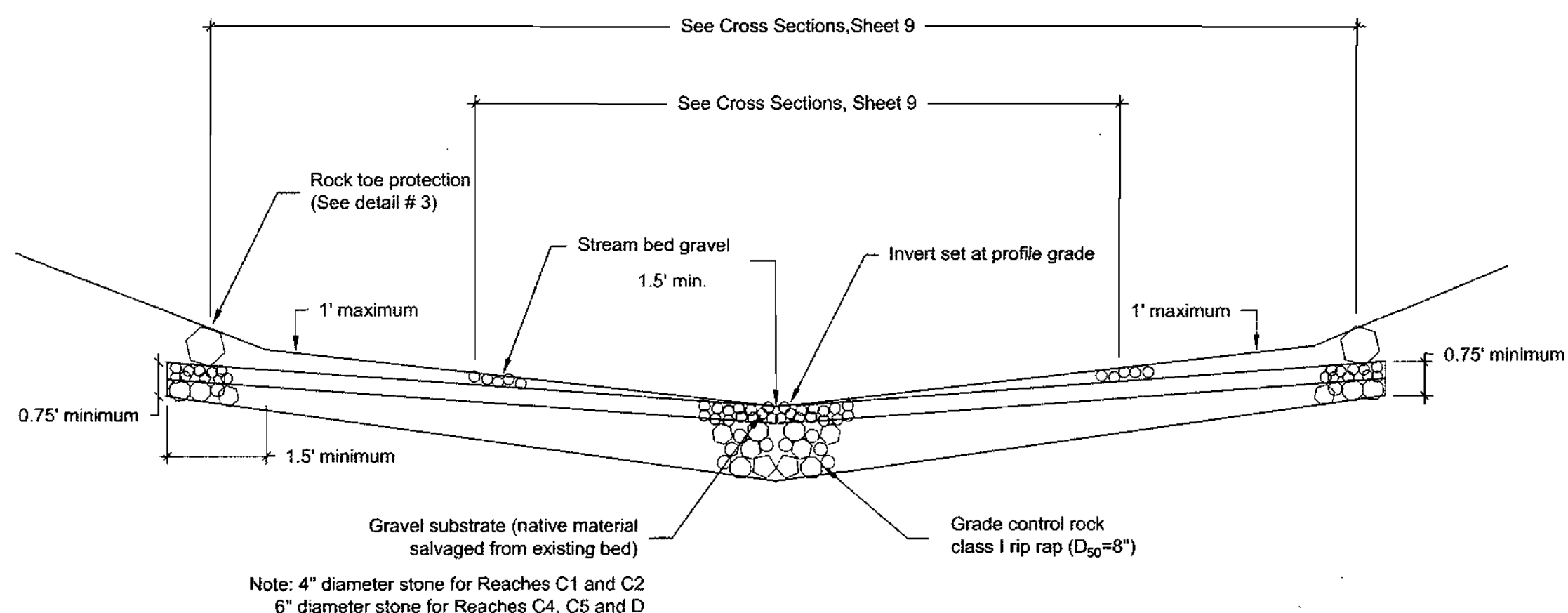
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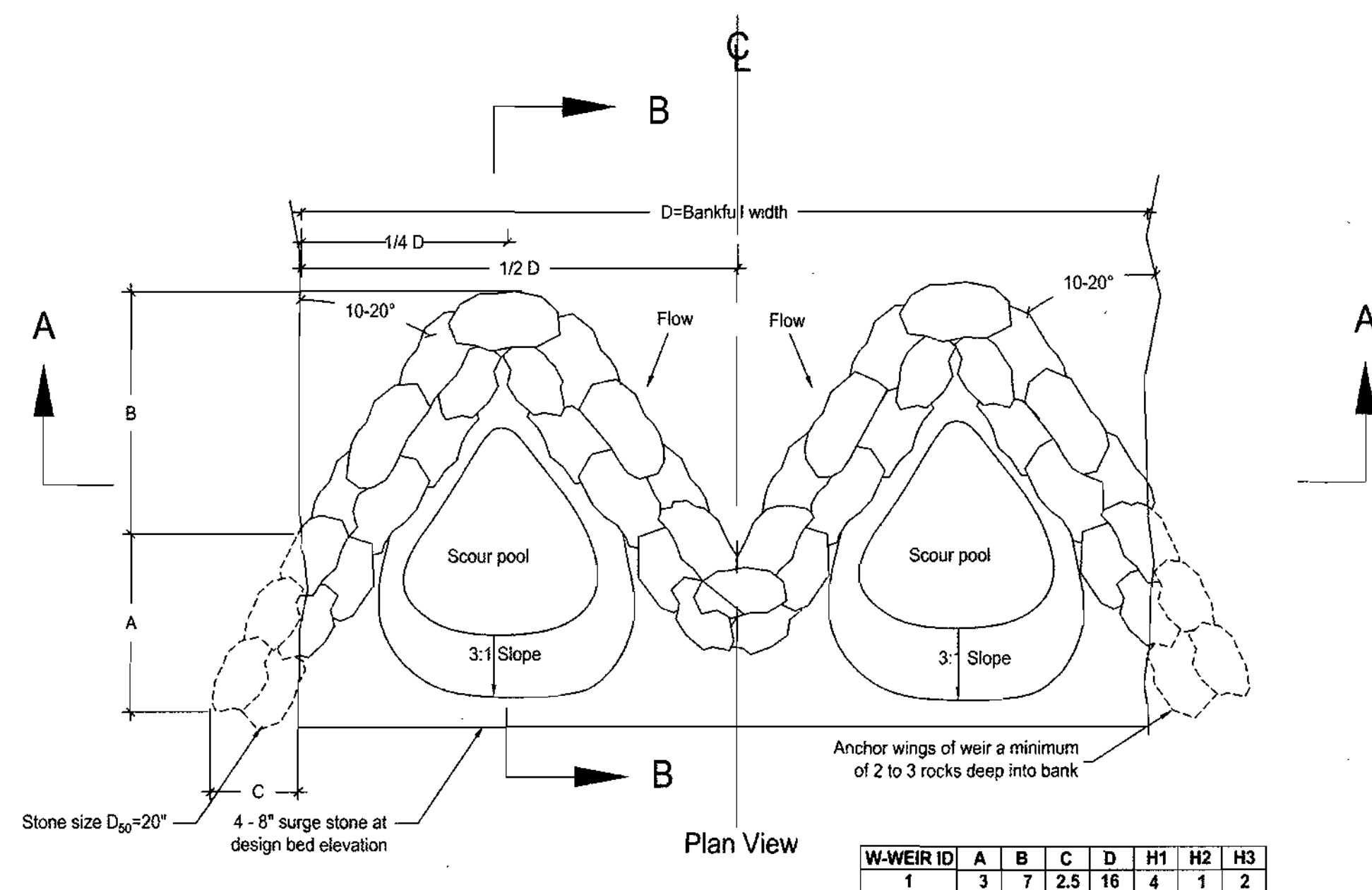


Stone Sizing Chart

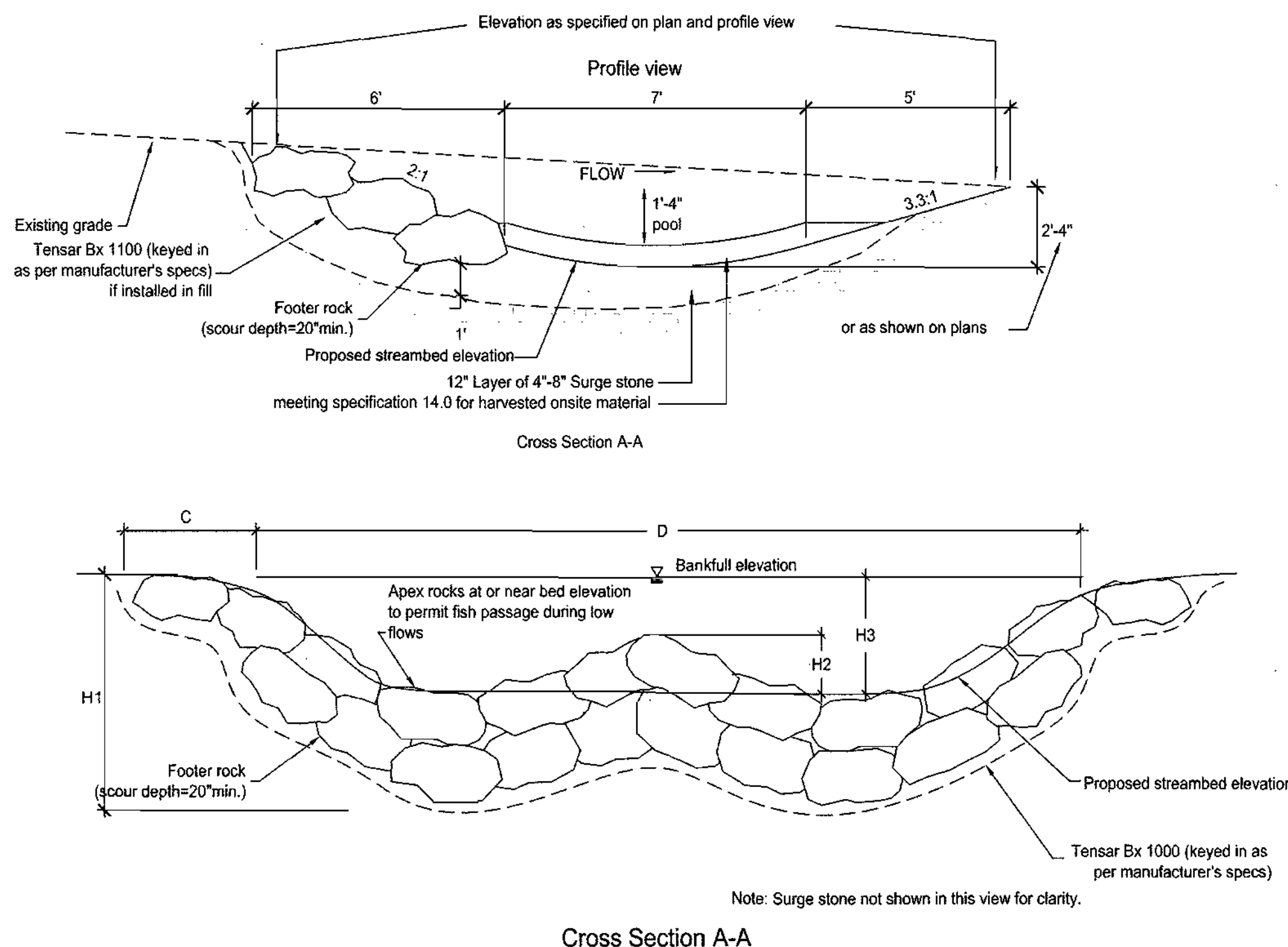
Type of treatment	Bioeng Detail No.	Bioengineering Specification Reference	D_{100} in inches	Anticipate d weight @ 150#/cu ft	D_{50} in inches	Anticipate d weight @ 150#/cu ft	MSHA Class for D_{10} by weight	Scour Depth Minimum (inches)
Imbricated riprap	1	1.0		See specifications				28
cross vane (scour pool)	2	6.7	8	23	6	10	Class 0	na
rock toe	3	7.0	18	264	16	186	Class II	26
V-log drop (logs)	5	8.0	24	626	20	363	Class III	20
V-log drop (scour pool)	5	8.4	8	23	6	10	Class 0	na
rock vanes	6	9.0	24	626	20	363	Class III	36
root wad stones	7	11.4	18	264	16	186	Class II	26
step pools	8	16.0	14	124	12	78	Class II	na
encapsulated fill	9	10.2	6	10	3	1	Class 0	20
rifle grade control (Reach C1 and C2)	11	15.0	6	10	4	3	Class I	na
rifle grade control (Reach C4, C5 and Reach D)	11	15.0	8	23	6	10	Class I	na
cross vane and W-weirs (arms)	12	6.0	24	626	20	363	Class III	20
rip rap channel	none	17.0	12	78	9	33	Class I	18



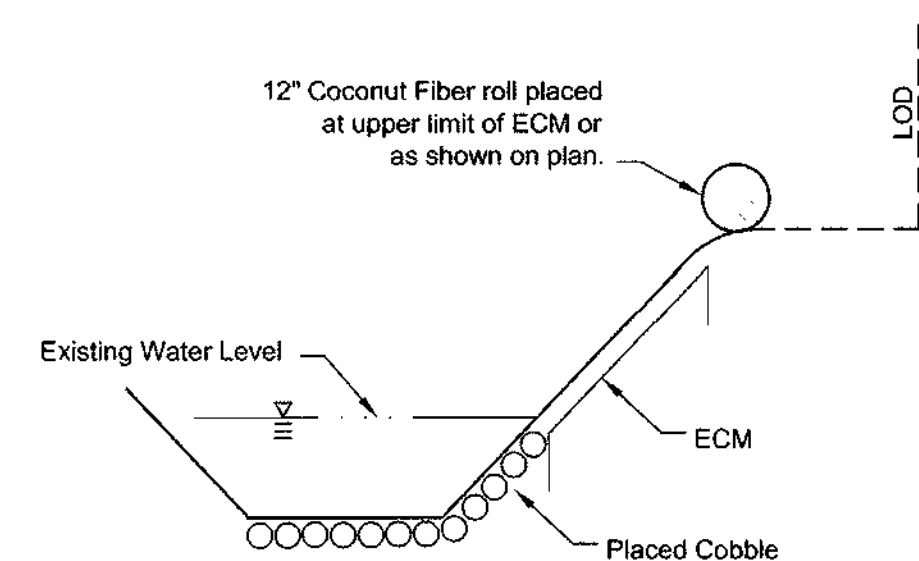
11 RIFFLE GRADE CONTROL (Specification 15.0)
Not to scale



12 ROCK W-WEIR (Specification 6.0)
Not to scale



13 12" COIR ROLL FOR TEMPORARY SEDIMENT CONTROL (Specification 18.0, this sheet)
Not to scale



APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT, ENGINEERING DIVISION
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1.0 Imbricated Riprap (IRR)

1.1 Imbricated riprap (IRR) stabilization shall be constructed so that the exposed faces of the individual rocks are nearly vertical, but the wall is built to the slope specified on the plans. This grade is one to one unless otherwise specified on the plans. The bottom bank rock shall be placed so that the top of the bottom rock is flush with the channel invert. The top bank rock shall be set at the elevation specified on the Construction Drawings, with a positive tolerance of 6" and a negative tolerance of 2.5" so long as finished installation does not generate ponding or trip hazards.

1.2 Stone Dimensions: The boulders will be large flat and stackable. Whitestone is unacceptable, the stone color shall be dark gray or brown. The Design Engineer shall approve stone source prior to delivery. The ideal dimension is 4'x3'x1.5' (1,800 lbs). Minimum size is 2'x2'x1.5' (1,200 lbs). Maximum size is 5'x3'x1.5' (4,700 lbs). Tolerance +/- 3". County inspector may reject stone that does not meet stated ranges. Stone shall have a minimum unit weight of 150 pounds per cubic foot.

1.3 First Tier: The lowest tier of IRR will be placed 28 inches below the streambed. An outside row of boulders will be placed perpendicular to the flow of the stream and an inside row of boulders will be placed nearer to the bank and parallel to the flow of the stream. All stones must abut each other at one point.

1.4 Second Tier: The boulder in the second tier will be placed on top of the first row of boulders and parallel to the flow of the stream. The second tier will be placed back from the first tier in such a manner as to accommodate a 1:1 slope (or the slope specified).

1.5 Third Tier (and up): The third tier of stone will be placed upon the second level also set back to accommodate the specified slope. A fourth and fifth layer may also be placed in the same manner as the third layer, as necessary.

1.6 Rock to be stacked after first cutting or filling receiving slope as specified on plans, see Section 4.0 "Backfill and Compaction". Filter cloth shall be placed between stone work and slope. 4"-8" surge stone and/or native stone (specification 14.0 for Reach C1, C2 material) shall be used to help level stones and provide backfill support. No surge stone shall be used between horizontal stone boundaries. Stones shall overlap 1' horizontally, using minimum.

1.7 Filter fabric punctured during stone placement will be replaced at contractor's expense. All filter fabric and coconut matting shall be keyed into soil 1' at all edges minimum.

1.8 Leading and trailing edges of IRR walls shall be tapered 15-30" with the existing bank. See detail.

2.0 Topsoil For Fill Areas

2.1 Immediately prior to spreading borrow topsoil, loosen the subgrade by tilling to a depth of at least three (3) inches to ensure adequate aeration of the subsoil. The subsoil shall be free of loose stones or other foreign material.

2.2 Borrow topsoil shall be uniformly placed and spread a minimum thickness of 3" within the project limits as indicated on the construction drawings or as directed by the design engineer. Do not spread topsoil while it is frozen, saturated or when the subsoil is wet or frozen. Correct any irregularities in the surface that result from topsoiling or other operations to prevent the formation of water pockets.

2.3 Incorporate the topsoil into the underlying subsoil. When topsoil is to be placed on slopes 3:1 or greater, on which the subsoil is of a suitable condition to blend with topsoil, the contractor shall work the topsoil into the subsoil by tilling. Where subsoil on slopes are of such a character that they will not blend with the topsoil, the contractor shall roughen, bench or serrate the slope to provide a bond for the topsoil. The stone shall be placed to its full course thickness in one operation in a manner that the underlying material will not be displaced or worked into the course of rock toe being placed.

3.0 Erosion Control Matting(ECM)

3.1 Unless specified otherwise, all erosion control matting (ECM) shall be BIO D-70, or approved equal. Matting shall be "keyed" into ground 12 inches on the top and bottom of slopes. Secured with 24"x2"x2" wooden stakes, 2 per square yard.

3.2 Base soil shall be tilled to a three-inch depth; rake in three inches of organic matter or top soil prior to ECM placement.

3.3 Seeding for ECM areas shall be seeded with mix as described in these specifications.

4.0 Backfill and Compaction

4.1 Stripping: The top 6 inches of soil and organic matter shall be stripped within the designated excavations and grading lines and deposited in storage piles. All excavated materials not suitable as topsoil or for other uses at the site shall be disposed offsite.

4.2 Satisfactory Fill Materials: Fill and backfill within the limits of the design points and beneath appurtenant structures shall be those materials classified in ASTM D 2487 as GW, GP, GM, GC, SW, SM, SC, or combinations thereof. The Contractor shall maintain proper specified compaction as directed by a qualified Geotechnical Engineer.

4.3 Subgrade Preparation: Unsatisfactory subgrade material shall be removed and replaced with satisfactory material as directed by the Design Engineer. All exposed subgrades shall be scarified to a depth of 3 inches before the fill is started. Slope surface steeper than 1 vertical to 3 horizontal shall be frozen, stepped, benched, or broken up so that the fill material will bond with the existing material. Material shall not be placed on surfaces that are muddy, flow, or contain frost. Compaction shall be accomplished by tamping (sheepfoot) rollers, pneumatic-tires rollers, steel-wheeled rollers, or other approved well suited to the soil being compacted. The contractor shall be prepared to moisten or aerate as necessary to provide an in-place moisture content within plus or minus 2 percent of optimum within the compacted lifts and/or subgrades for each material. Minimum subgrade density shall be as specified in paragraph filling and backfilling.

4.4 Filling and Backfilling: Satisfactory materials shall be used in bringing fills and backfill to the proposed contours indicated on the plan and for replacing unsatisfactory materials. Satisfactory materials will be determined by the Design Engineer. Satisfactory materials shall be placed in horizontal layers not exceeding 8 inches in uncompacted thickness, or 6 inches when hand-operated compactors are used. After placing, each layer shall be moistened or aerated as necessary to obtain plus or minus 2 percent of optimum moisture, thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested approved, and forms removed.

5.0 Erosion and Sediment Control

5.1 Construction operations will be carried out in such a manner that erosion will be controlled and water, air, and ground pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

5.2 All work on permanent structures shall be carried out in areas free from flowing water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The Contractor shall also furnish, install, operate and maintain all new necessary pumping and other equipment required for removal of water from the work area and for maintaining the excavations, foundations and other parts of the work free from water as required or directed by the Engineer. of same size material. The stone shall be placed to its full course thickness in one operation in a manner that the underlying material will not be displaced or worked into the course of rock toe being placed.

6.0 Cross Vanes and 'W' Weirs

6.1 Cross vanes are constructed with U shapes, such that the apex of the structure points upstream. The angle the wings make with the upstream bank should be approximately 10 to 20 degrees so that flows are directed away from the banks and deeper pool areas are created directly downstream of the vane. The center portion of the cross vane(s) is to be 1/3 of the width of the top of the channel bank.

6.2 The top layer of vortex rocks shall rest upon at least one tier of footer rocks and shall be partially buried in the streambed a minimum of 20". On unstable bed substrates, two tier of footer rocks may be required to prevent the downstream face of the cross vane from being undermined.

6.3 The top elevation of the center vortex rock(s), at the apex of the vane, should be at or near bed level to permit fish passage at low flows, and the end vortex rocks on either bank should be at bankfull level. The end vortex rocks should be partially buried in the streambank and should touch the adjoining vortex rocks.

6.4 Once the excavated portion of the bank has been backfilled, it should be armored with appropriately sized riprap.(See Section 6.5)

6.5 Rocks shall have an intermediate diameter of 14" to 18" (125# to 265#). Rocks must have a density of greater than 150 lb./cu. ft. Concrete will not be accepted.(Scour depth to be 20 inches minimum).

6.6 W-Weir Installation: W-Weir installation should proceed similarly to Cross Vane construction and should account for the more complicated geometry of the structure.

6.7 Adjacent weirs should be spaced sufficiently far apart to allow for proper riffle or pool development according to step-pool and pool-riffle configurations as shown on plans. The overall drop controlled by a set of weirs should be less than 2 feet for stability reasons.

6.8 Scour pool areas shall be stabilized with Tensar Bx 1100 or Mirafi 140 N filter cloth and 4" to 8" surge stone.

7.0 Stone Toe Placement

7.1 Rock for bank toe treatment areas shall consist of angular rock, similar in color texture and density to the native rock onsite. The dry unit weight of rock shall be 150 lb/cuft or greater. The rock shall range from 14 inches to 18 inches(125-265#) along the median (b) axis. Concrete and white rock will not be accepted.

7.2 The placement of rock toe protection shall begin below the invert of the stream as shown on the Construction Drawings. The larger stones shall be placed along the outside edge or face of the limit of the toe protection. Stone shall be placed with suitable equipment to produce a uniformly graded mass of stones that is secure enough to remain in place during normal streamflow. Placing stones by methods that cause segregation is prohibited.

7.3 The surface elevation of completed rock toe installation shall be flush with adjacent channel bed or bank slope elevations, and shall not create an obstacle to flow. The plus or minus tolerance of the surface of the finished riprap installation shall be 3" from the line and grades shown on the Contract Drawings when measured perpendicular to the exterior surface of the stonework.

7.4 Placed material not conforming to the specified limits shall be removed and replaced at no additional cost. Scour depth is 20 inches minimum.

7.5 The stone shall be placed and distributed so the resulting layer will contain a minimum of voids and there will be no pockets of same size material. The stone shall be placed to its full course thickness in one operation in a manner that the underlying material will not be displaced or worked into the course of rock toe being placed.

8.0 V-Log Drops

8.1 Logs:Logs shall be a minimum of 12" in diameter and a minimum of 20 feet in length. Required species include catalpa, cedars, chestnut, cypress, black locust, walnut,butternut, honey locust,white oak, persimmon, and sycamore. Species that cannot be used are aspen, basswood, cottonwood, balsam fir, black gum, jack pine, poplar and willow.

8.2 Filter cloth: The logs shall be underlain with non-woven filter cloth such as Mirafi 140N.

8.3 Rebar: Rebar shall be 42" long hooked #6 rebar installed at 3' spacing.

8.4 Stone: Stone shall meet specification 7.1 and 7.4. Scour pool stone shall be D₅₀=6".

8.5 Construction: Once stream work area is dry via a "pump-around", excavate for log placement. Upstream end to have top of top log FLUSH WITH EXISTING stream invert. Both downstream ends are to be embedded three feet minimum into the stream bank. Logs should be planned-shaved for lighter connection. Logs to be secured with #6 rebar; it is advisable to not pre-drill one-inch holes, as they won't line up once installed. Use of a 1-inch gas-powered field auger drill is recommended. Once these ends are secured with hooked #6 rebar, backfill the ends and protect the newly filled stream bank with riprap as specified on plan. Armored stone shall meet Specification 6.8. Excavate for placement of stone ON FILTER CLOTH to the specified depth on plan.

9.0 Rock Vanes

9.1 Rock vanes shall be installed so that adjoining rocks taper up in elevation towards the stream bank in a downstream direction. Each side of the vane is to be angled 10 to 15 degrees in from the stream bank and the center portion of the vane is to be 1/3 of the width of the top of the channel bank.

9.2 Footer rocks shall be firmly embedded into the stream bottom and channel banks and installed snugly against each other. The outermost vane rocks on each end of the rock vane shall be installed with one half (1/2) the diameter of the end vane rock buried into the stream bank.

9.3 Vane rocks shall be placed so that they lean on the footer rocks and fit snugly. The seams between vane rocks shall not line up with the seams between footer rocks. The top elevation of the vane rocks placed at the thalweg (deepest thread of the stream) shall be equal to the elevation of the thalweg, as specified on the details. As field conditions will vary with season and rainfall, Contractor is to coordinate stakeout elevations of vanes with the Design Engineer. The rock vane shall be installed with a slope of 4-7% from the streambed invert to the bankfull elevation.

9.4 Rocks shall have an intermediate diameter of 18" to 24" (265# to 625#). Rocks must have a density of greater than 150 lb./cu. ft. Concrete will not be accepted. Scour depth is 20 inches minimum.

10.0 E-Fill Bundles (Encapsulated Fill)

10.1 Encapsulating Material: Use Tensar B X 1140 geotextile or approved equal for wrapping fill layers. Faces of bundles shall have a layer of Bio D-70 matting.

10.2 E-Fill Material: E-fill bundles may be filled with "conditioned soil" which is a 50 %-50% ratio of imported or onsite stream "river jack" defined as dredge material, free of trash, stumps, organics, with a D₅₀ of 3 inches and suitable backfill. No stones over 6 inches in diameter may be used. Four inch material meeting specification 14.0 may also be used as river jack.

10.3 Conditioned Soil Placement: Conditioned soil shall be dumped and spread into place in approximately horizontal layers not more than 6 inches in thickness. It shall be placed in a manner to produce a reasonably homogeneous stable fill that contains no segregated pockets of large or small fragments or large unfilled spaces caused by bridging of the larger fragments. Each layer shall be compacted by at least 3 passes over the entire surface and per the requirements of Section 4.4.

10.4 E-fill toe shall be protected per Specification 7.0.

11.0 Root Wads

11.1 Intact stumps shall be taken from fresh, green, healthy parent trees, preferably hardwood, with a minimum base diameter of 12 inches for Reach D and 8" for the C Reaches. The size of the ball and fan should be determined by the stream size and availability of parent trees. The length of the root wad should be at least 12 feet.

11.2 Footer and brace logs should have a diameter equivalent to that of the root wad (12" and 8" for Reach D and Reach C respectively).

11.3 Fill soil should be native to the site, when possible, and should contain enough fine material to allow for rapid revegetation of the disturbed bank.

11.4 Boulders used to anchor root wads and associated footer and brace logs shall meet Specification 7.1 and 7.4.

11.5 The location of the revetment shall vary depending upon flow conditions and the reach's degree of curvature such that the root fan is oriented perpendicular to design flaws and bole is oriented parallel to high flow(refer to the root wad placement detail).

11.6 Stream flow shall be diverted away from the site and sediment control devices installed according to a plan approved by the local authority.

11.7 Work shall proceed from the upstream section to the downstream end of the reach or meander beginning with excavation of a toe trench to a depth of 1/2 to 2/3 the diameter of the footer logs. Trenches shall also be excavated for root wad placement. (Appropriately sized root bolts should be set at approximately 1/3 the bankfull height in order to provide toe protection.)

11.8 Root Wad Placement

11.8.1 Footer logs shall be positioned in the trench such that each upstream log is shingled over its downstream neighbor. (See construction details)
11.8.2 In cut sections, root wads shall be positioned in trenches such that the root mass of the trunk sits level with the cut end of the stump. The root mass shall be oriented perpendicularly to the direction of flow. (An angle of 30 to 60 degrees to the channel center line is usually adequate.) Subsequent root wads shall be spaced at least a distance 1/2 the fan diameter apart in order to shield the bank from flows deflected by adjacent upstream root wads.

11.9 The root wad revetment shall be backfilled to the specified grade, and fill material shall be tightly packed in the joints, connections, and gaps to firmly secure all components. (Larger material shall be used to plug holes and gaps to keep fill from falling into the channel.) The backfill area shall be protected with temporary erosion control measures and shall be seeded, mulched, and planted with live woody cuttings according to an approved revegetation plan within 72 hours of the revetment's completion.

12.0 Live Stake

12.1 Live branch cutting shall be approximately one quarter to one half inch (0.5" to 2") in diameter.

12.2 Cutting shall be long enough to reach the back of the bench and extend a minimum of one-foot (1') from the rebuilt slope face. Side branches and bark shall remain intact prior to installation.

12.3 Live branch cutting shall consist of a mix of three or more of the following species with at least one willow (Salix) and one dogwood (cornus) species included. Each species shall comprise no more than 50 % and no less than 20% of the mix.

Cornus amomum	Silky dogwood
Salix nigra	Black Willow
Sambucus canadensis	American elderberry
Viburnum dentatum	Aronwood

12.3 Harvesting: The source of all live cutting shall be approved by the Project Engineer. The contractor shall locate, flag, and code the live cutting sites. The contractor shall notify the Project Engineer seventy-two (72) hours prior to harvesting for review and approval of all harvesting sites. Upon approval by the Project Engineer, the contractor shall be responsible for harvesting and transporting the cutting to the job site.

12.4 Live Material Preparation:

12.4.1 All cuts shall be smooth and the cut surface kept small. The use of large pruning shear or power saws may be required.

12.4.2 Live materials not installed within eight (8) hours of harvesting, shall be protected against drying out and overheating. Protection against drying out shall be accomplished by keeping the material covered, transported in refrigerated vehicles, moistened and/or kept in soak pits. Storage of live materials shall include continuous shade by covering with evergreen branches or plastic sheeting. Proper storage shall also include sheltering live plant material from the wind and protection from drying by being heeled into moist soils and/or sprayed with anti-transpirant chemicals. Where water is available, live branch cutting shall be sprayed or immersed. Warm water (over 15°C) Stimulates growth and should be used only upon the approval of the engineer. Any cost associated with such storage is incidental to the overall costs

12.5 Construction:

12.5.1 Branches shall be constructed two to three foot (2'-3') deep and bud upward.

12.5.2 Branches shall be excavated horizontally on the contour. The surface of the branch shall be sloped so that the outside edge is higher than the back edge.

12.5.3 Branch layer rows shall begin two feet (2') above the top of the bioengineered revetment or the top of rock bank stabilization.

12.5.4 Branch tips shall extend a minimum of one foot (1') beyond the edge of the bench.

12.5.5 Backfill shall be placed two inches (2") on top of live branches prior to installation of erosion control blanket. Backfill shall be compacted to assure maximum

13.0 Invasive Species Control

13.1 Invasive species control program shall utilize appropriate Integrated Pest Management practices and the use of a professional certified pesticide applicator. The applicator shall be certified in the following categories depending upon the nature of the application area: Forest, Right of Way, or Aquatic Pest Control (for work directly adjacent to or over water).

13.2 Growth habits of invasives are rapid and site conditions may change dramatically, therefore the program may be altered at the time of implementation.

13.3 Cutting of the large plant masses followed by chemical controls is suggested at this time. Mowing of the the target species may occur any time of the year. Herbicide application will follow cutting. During the growing season, the identified plants may be treated with a non-selective herbicide (glyphosphate), applied according to label directions. However, care should be taken to ensure that the timing of the application is conducive to uptake and translocation of the herbicide. The applicator should ensure that the herbicide is listed for use against the selected species, and is labeled for aquatic use if the application will be made over water. During periods outside of the growing season, the woody weeds identified may be treated with systemic herbicides labeled for dormant season applications (triclopyr).

13.4 A follow up treatment of control is to be performed 1 month after the beginning of the following growing season (approximately May 1st).

13.5 It is the responsibility of the applicator to select the proper herbicide for the targeted species based on the time of year, and to use the herbicide in a manner that is consistent with the label. Additionally, it is the responsibility of the applicator to obtain Toxic Materials Permits for the use of herbicides over open water.

14.0 Onsite Gravel-Cobble Harvesting

14.1 Contractor to harvest coarse gravel and cobble from Reaches C1 and C2 for use in armoring all "habitat channel" areas including riffle grade controls and receiving pools for cross vanes, cross weirs and w-weirs. Gravel/cobble fill shall be harvested from Reach C1 prior to filling of Reach C1. Material harvested shall be no smaller than a #4 sieve and no larger than six inches in diameter. Soil and fill material not meeting this specification is prohibited from placement. This specification may require contractor to sieve material. Suitable offsite gravel and cobble material shall be brought from offsite should a shortage of on site material exist. Use 4 inches (4") material for Reaches C1 and C2. Use 6 inches (6") material for C4, C5 and D.

15.0 Riffle Grade Controls

15.1 This work shall consist of procuring, transporting and installation of Riffle Grade Control (RGC) structures along the stream restoration channel as specified in the plan set. The RGC structures are designed to allow a stable riffle to form without excessive erosion. See design plans for widths, lengths and grades. Grading tolerances will be 3 inches +/- . Fill, if necessary, will meet Specification 4.0.

15.2 Subbase stone: The RGC structures shall be placed on a one foot thick bed of MSHA Class 1 stone (D₅₀=8 inches). The thickness of the subbase stone at the edges of the practice may be eight inches. The subbase material shall be laid on excavated stream bed and filter cloth or other geotextile shall not be used unless field-directed by the Designer.

15.3 Riffle Stone: The finished surface layer of stone shall be a minimum of nine inches thick at the centerline of the RGC and a minimum of 8 inches thick at the edges of the practice. Stone shall meet the tenets of Specification 14.0 and shall be on site-harvested natural run cobbles.

15.4 Edge stone: The edges of the practice shall be protected by filter cloth and stone toe meeting Specification 7.0.

15.5 Installation: The RGC will be constructed by either excavating or filling to establish bed to lay subbase stone. Do not use filter cloth unless specifically directed in the field by Design Engineer. Grade check base layer prior to placing subbase stone and stone toe protection. Stone toe should be placed with filter cloth. Place subbase and stone toe, grade check and place riffle stone for a final grade check.

16.0 Step Pools

16.1 This work shall consist of the procuring, transporting and installation of Step Pool structures along the stream restoration channel as specified in the plan set. The pools shall consist of rock structures built at points of relatively rapid grade change along the stream channel. These structures are designed to remain stable over the full range of flows and allow efficient sediment transport. The contractor shall note that the principal objective is to create step pool structures that have a natural appearance in addition to adequate function.

16.2 Rock: All rock shall be oblong and flat in appearance, stackable, dark brown or dark gray in color, and meet the gradation requirements indicated on the plan set (D₅₀ = 12").

16.3 Filter Cloth: Filter cloth is to meet the tenets of Section 17.3.

16.4 Fill: Fill, if necessary, is to meet tenets of Section 4.0.

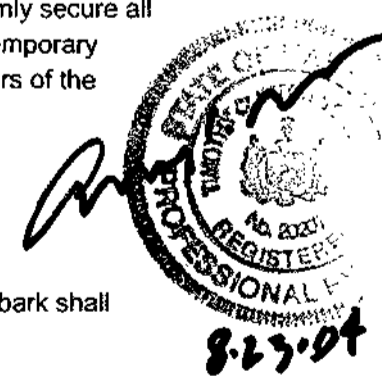
16.5 Installation: Step pools shall be constructed by excavating a trench slightly larger than the step pool dimensions. Filter cloth is to be placed on the sub-grade surface and along the streambank parallel to the direction of stream flow. Each layer shall overlap a minimum of 1 foot. Geotextile torn or damaged shall be replaced or repaired at the Contractor's expense in a manner acceptable to the Design Engineer. The placement of rocks should immediately follow the fabric placement. Contractor shall place all rocks so they interlock and touch each adjacent rock. Rocks shall be placed to prevent movement in the downstream or cross-stream direction by sliding or rotation. Rocks shall be seated firmly and shall not rock or rotate in place. Once steps are in place, the contractor is to grade check and provide written verification that the pool vertical dimensions are to within 6 inches +/- . Once authorized by the Design Engineer, the Contractor is to rake in a 6-inch layer of Maryland No. 57 three-quarter inch gravel to fill top stone voids. Stream banks around the structures shall be backfilled with salvaged soil and compacted in 4-inch lifts.

17.0 Riprap For Severe Right-Of-Way Protection

17.1 Gradation: The riprap shall be composed of a well-graded mixture one-inch size particle such that 50 % of the mixture by weight shall be larger than the D₅₀ size as determined from the design procedure. A well-graded mixture as used herein is defined as a mixture composed primarily of the larger stone sizes but with a sufficient mixture of other sizes to fill the progressively smaller voids between stones. The diameter of the largest stone size in such a mixture shall be 1 ½ times the D₅₀ size.

17.2 Quality of stone: Stone for riprap shall consist of field stone or rough unhewn quarry stone of approximately rectangular shape. The stone shall be hard and angular and of such quality that it will not disintegrate on exposure to water or weathering and it shall be suitable in all respects for the purpose intended. The specific gravity of the individual stones shall be at least 2.5.

17.3 Filter fabric underlayment: A lining of engineering filter fabric(geotextile) shall be placed between the riprap and the underlying soil surface to prevent soil movement into or through the riprap. Use Mirafi 140 N or approved equal fabric.



APPROVED DEPARTMENT OF PLANNING AND ZONING	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	7/14/04
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
DIRECTOR	DATE

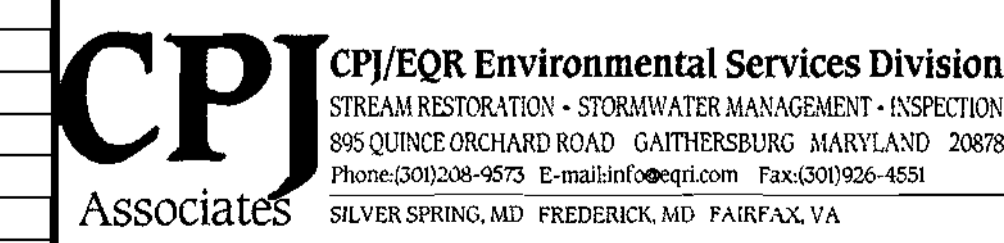
Prepared for: The Columbia Association
10221 Wincopin Circle, Suite 100
Columbia, MD 21044-3410
Phone:410.715.3000

Howard County Dept. of Public Works
Bureau of Environmental Services/SWM
6751 Columbia Gateway Dr., Suite 5
Columbia, MD 21046
Phone: 410.313.6444

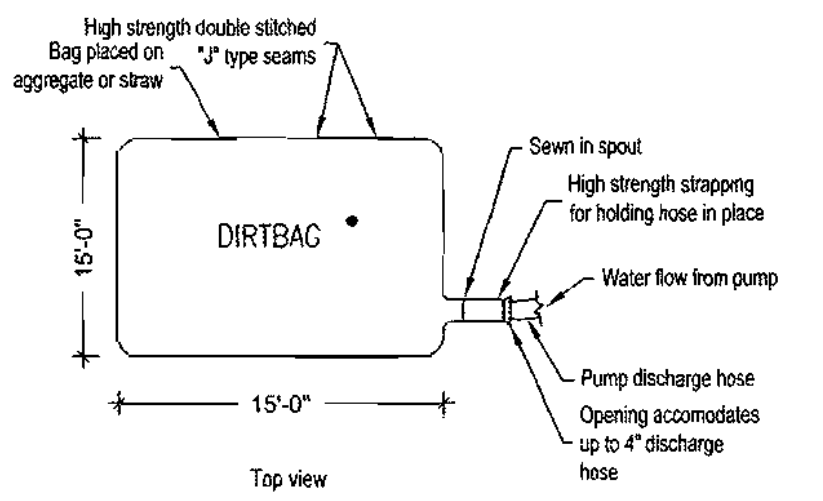
PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B.27 P.2, P.B. 13, P. 86
PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 11P.B.26 P.83, P.B. 13, P.87
PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LOWGELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.94

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.49
PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

<p>C</p> <p>D</p>	<p>WILDE LAKE STREAM DESIGN</p> <p><i>Bioengineering Specifications</i></p> <p>SDP-04-59</p>	DATE: 08/04						
	DESIGNED: TCS							
	DRAFTED: JMF							
	CHECKED: TCS							
	BASE DATA: J.A. RICE	NO.	REVISIONS	BY	DATE			



SHEET	17
OF 20 SHEETS	
JOB NO.	1317/D - 1121
SDP-04-59	

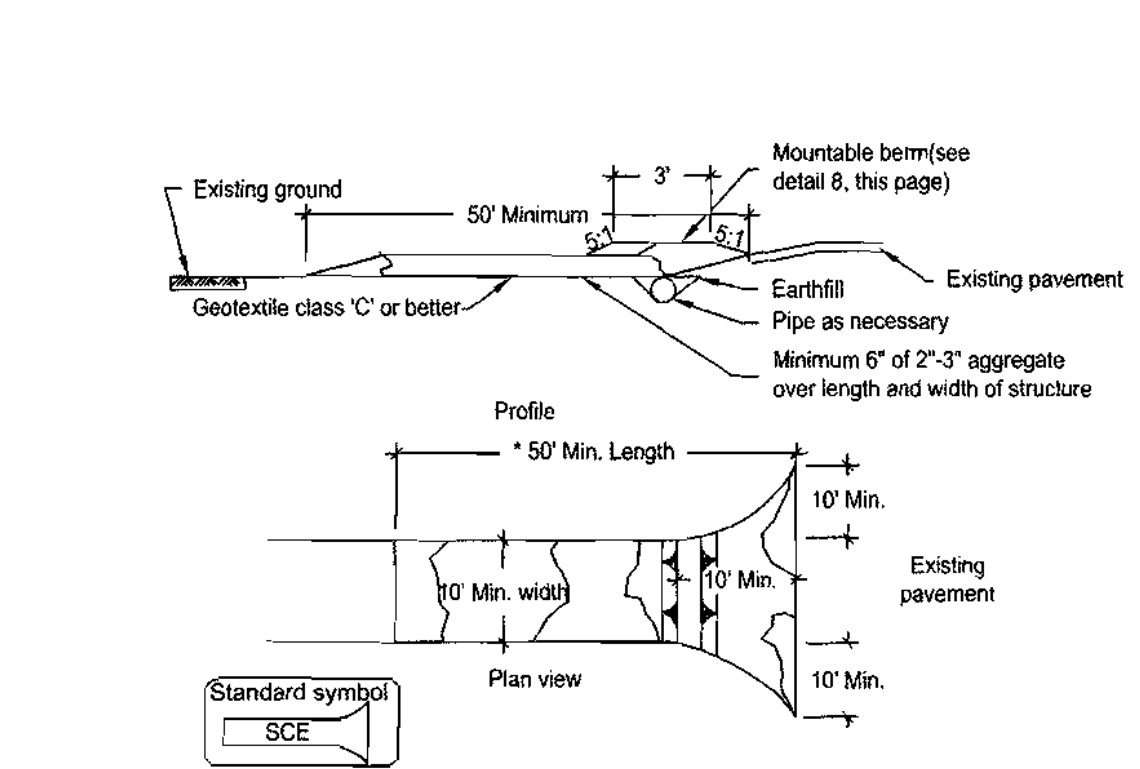


Note: Silt control system to be used in conjunction with pump around if deemed necessary by sediment control inspector to treat any sediment-laden water within the dry work area.

Dewatering/Filter Bag Materials Specifications:
 The dewatering/filter bag shall be made of non-woven geotextile with a minimum surface area of 225 square feet per side. All structural seams shall be sewn with a double stitch using a double needle machine with high strength thread. The seam strength shall withstand 100lb/in using ASTM D-4884 test method. The dewatering/filter bag shall have a nozzle large enough to accommodate a four inch discharge hose. The nozzle shall be sealed tightly around the discharge hose with a strap or similar device to prevent untreated water from escaping. The geotextile fabric shall be a non-woven fabric with the following properties:

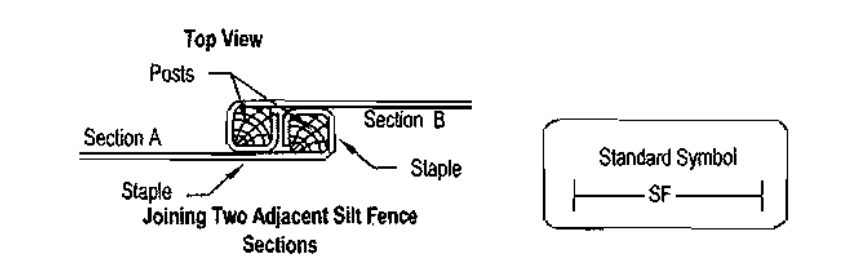
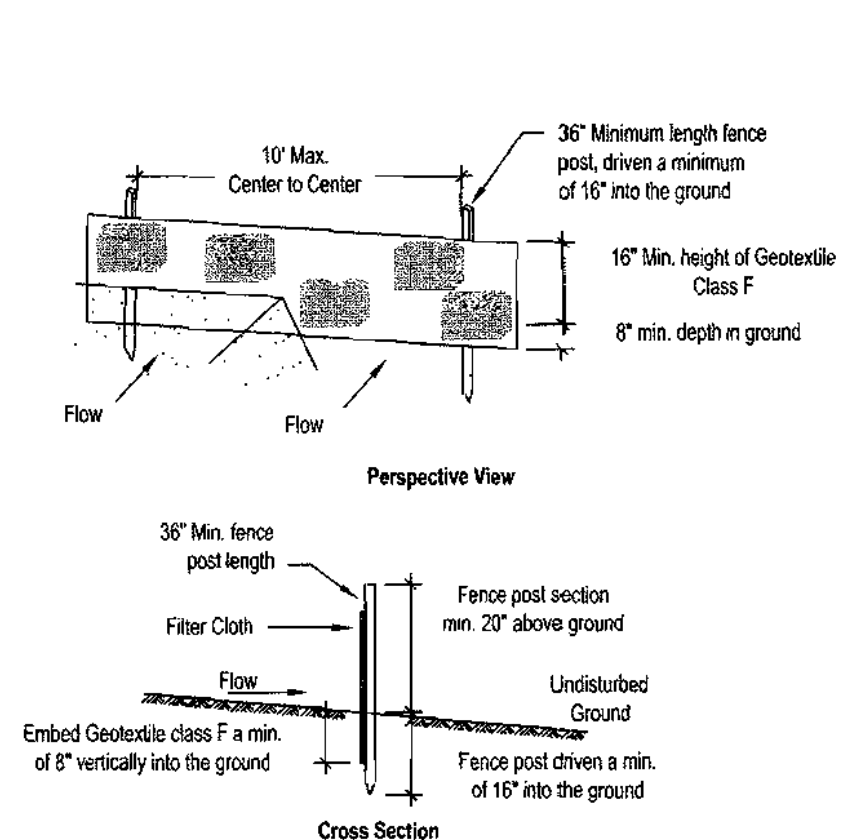
Weight	ASTM D-3776	10 oz/yd
Grab Tensile	ASTM D-4652	270 lbs
Puncture	ASTM D-4833	150 lbs
Flow Rate	ASTM D-4491	70 Gall/min/sq ft
Permittivity	ASTM D-4991	1/1.3 sec
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	100

Construction:
 The dewatering/filter bag shall be installed over a 3 inch gravel base or a straw bale base to promote infiltration and dewatering of the filter bag.

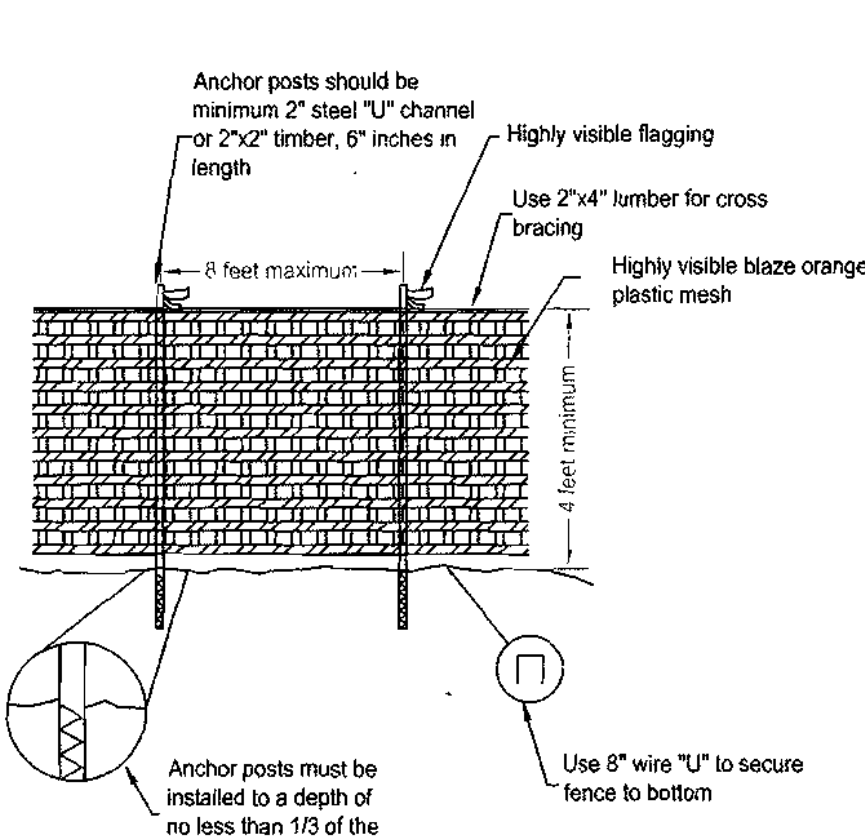


Construction Specifications:
 1. Length - minimum of 50' (30' for single residence lot).
 2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
 4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
 6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE



Notes:
 1. Forest protection device only.
 2. Retention area will be set as part of the review process.
 3. Boundaries of retention area should be staked and flagged prior to installing devices.
 4. Avoid root damage when placing anchor posts.
 5. Device should be properly maintained during construction.
 6. Protective signage is also required.



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Source: Prince Georges County, Maryland, Woodland Conservation Manual from Maryland State Forest Conservation Manual

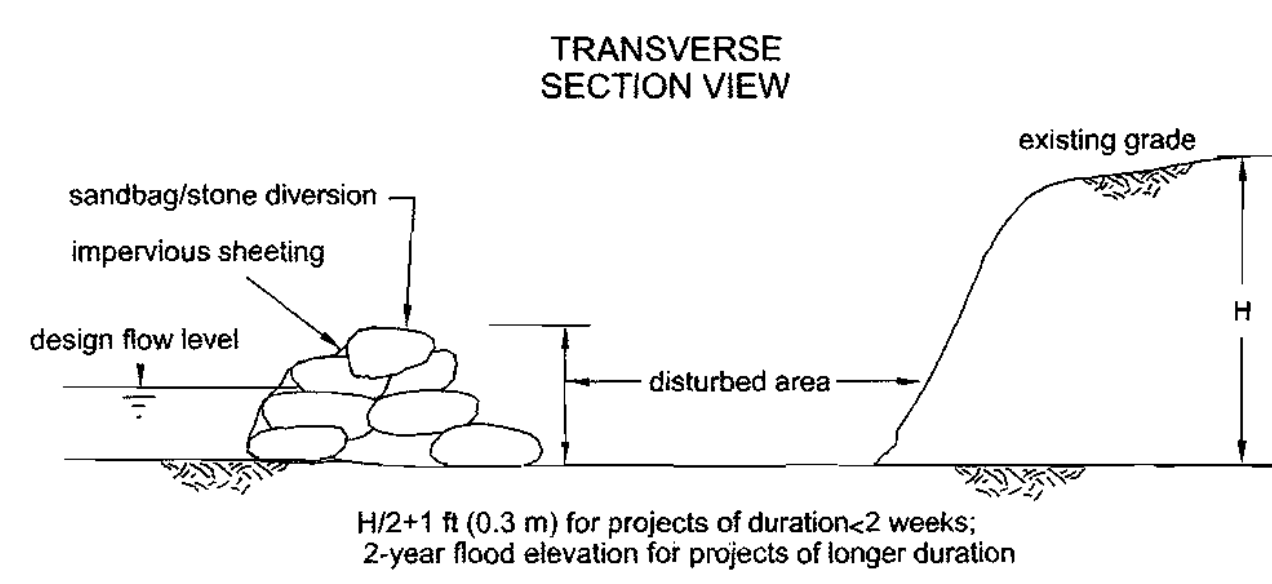
- All sediment control practices will be based on criteria from the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control or as amended by the District.
- Stormwater management must be in accordance with the Baltimore County Stormwater Management Policy and Design manual.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within 7 working days.
- A stabilized construction entrance will be installed and maintained for each site.
- Topsoil will be stockpiled within the limits of the site and the area down slope protected by straw bale, dikes, or silt fence.
- All clearing and grading shall be completed in the following sequence:
 A. Clear and grub for the installation of construction entrance, silt fence, straw bale dike and other sediment control practices.
 B. Install silt fence, straw bale dike, stabilized construction entrance, and any other sediment control practices required by inspector.
 C. Grade and site and/or construct any structures, paving, and/or utilities.
 D. Stabilize the site according to the seeding or sodding specs.
 E. After site has been stabilized (minimum stabilization by seeding and mulching), with the permission of the sediment control inspector, remove sediment control practices and stabilize remaining disturbed areas.
 F. Access to the site will be available at all times to the District and Baltimore County personnel.
 G. A site plan must be provided showing all information such as location, type of sediment control devices, etc.
- Refer to "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control" for standard details and detailed specifications of each practice specified herein.
- With the approval of the sediment control inspector, minor field adjustments can and will be made to insure the control of any sediment. Changes in sediment control practices require prior approval of the sediment control inspector and the Baltimore County Soil Conservation District.
- At the end of each working day, all sediment control practices will be inspected and left in operational condition.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) seven calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than three horizontal to one vertical (3:1, and) b) fourteen days as to all other disturbed or graded areas on the project sites which will remain idle over fourteen days.
- Any change to the grading proposed on this plan requires re-submission to Baltimore County Soil Conservation District for approval.
- Dust control will be provided for all disturbed areas. Refer to "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control", page H-30-1, for acceptable methods and specifications for dust control.
- Any variations from the sequence of operations stated on this plan requires the approval of the sediment control inspector and the Baltimore County Soil Conservation District prior to the initiation of the change.
- Excess dirt or borrow material shall go to, or come from, respectively, a site with an open grading permit.
- The following item may be used as applicable: Refer to "Maryland's Guidelines to Waterway Construction" by the Water Management Administration of the Maryland Department of the Environment, revised November 2000, for standard details and detailed specifications of each practice specified herein for waterway construction.

**HOWARD SOIL CONSERVATION DISTRICT
 STANDARD SEDIMENT CONTROL NOTES**

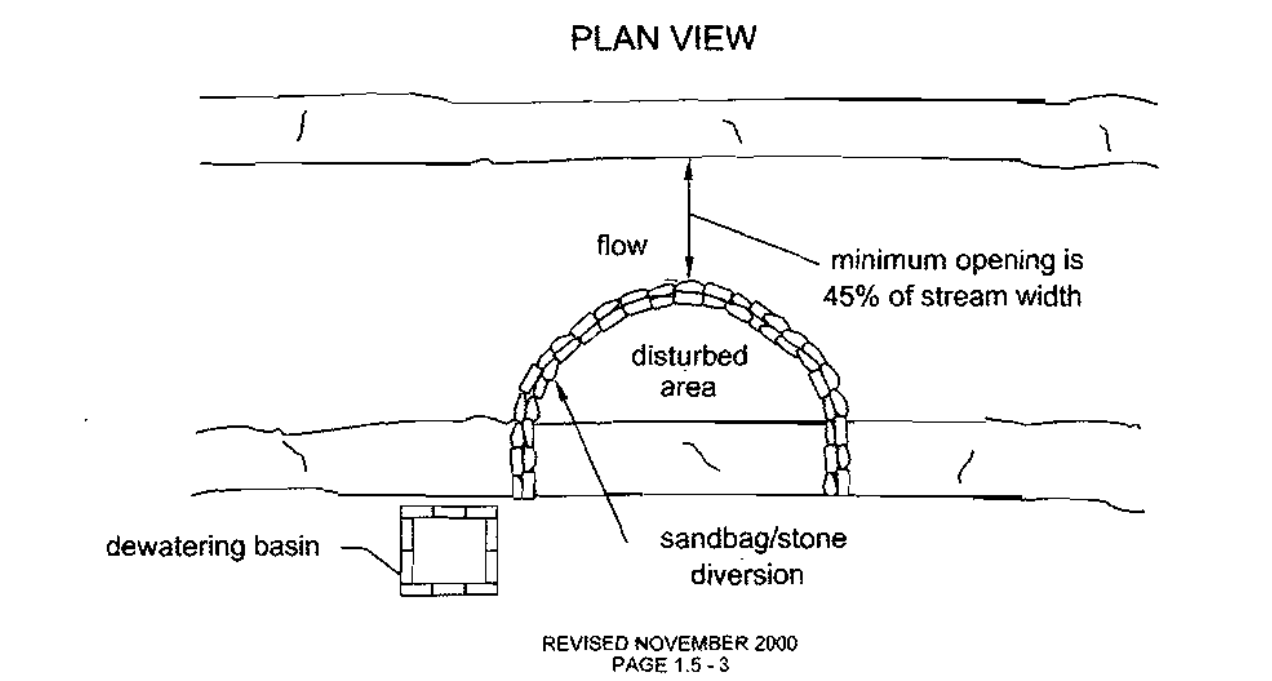
- A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), soil (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization and mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:

Total Area of site	46.28 +/- acres.
Area Disturbed	4.52 acres.
Area to be roofed or paved	0 acres.
Area to be vegetatively stabilized	4.52 acres.
Total Cut	Reach C = 1105; Reach D = 694 Cu. Yds.
Total Fill	Reach C = 765; Reach D = 679 Cu. Yds.
Offsite waste/borrow area location	Contractor to dispose of any haul off material legally at a site with an active Howard County grading permit
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.

A SILT CONTROL SYSTEM DIRTBAC®
 Not to scale



Sandbag/Stone Channel Diversion
Description
 The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.
Effective Uses and Limitations
 Diversions are used to isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.
Material Specifications
 Materials for sandbag and stone stream diversions should meet the following requirements:
 - Riprap: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
 - Sandbags: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
 - Sheet piling: Sheet piling should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.
Installation Guidelines
 All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
 Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows:
 1. The diversion structure should be installed from upstream to downstream.
 2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
 3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
 4. Sediment-laden water from the construction area should be pumped to a dewatering basin.
 5. Sheet piling on the diversion should be positioned such that the upstream portion covers the downstream portion with at least an 18-inch (0.45 meters) overlap.
 6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
 7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
 8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.



E SANDBAG/STONE CHANNEL DIVERSION
 Not to scale

Note for Detail E and I: Approved dewatering device: silt sack, such as Dirtbag or approved equal. Do not use dewatering basin.

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

APPROVED DEPARTMENT OF PLANNING AND ZONING
 CHIEF DEVELOPMENT ENGINEERING DIVISION
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DIRECTOR

DATE: 8/31/04

DATE: 7/13/04

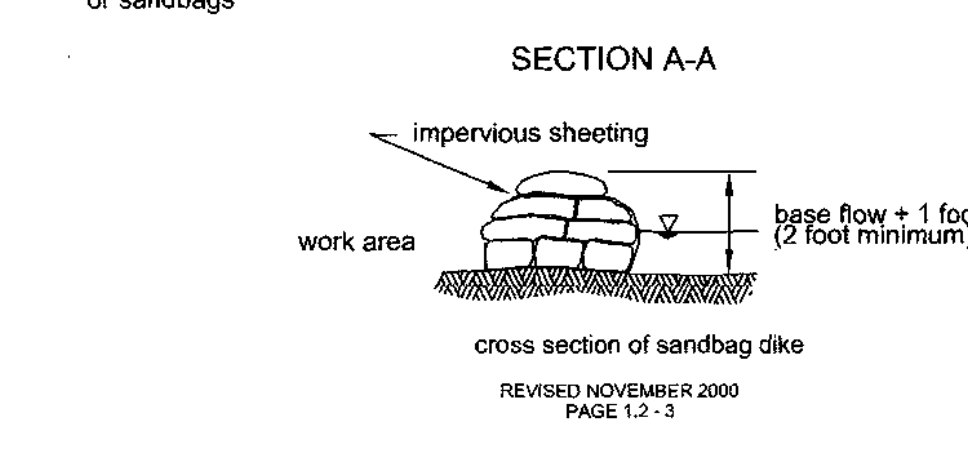
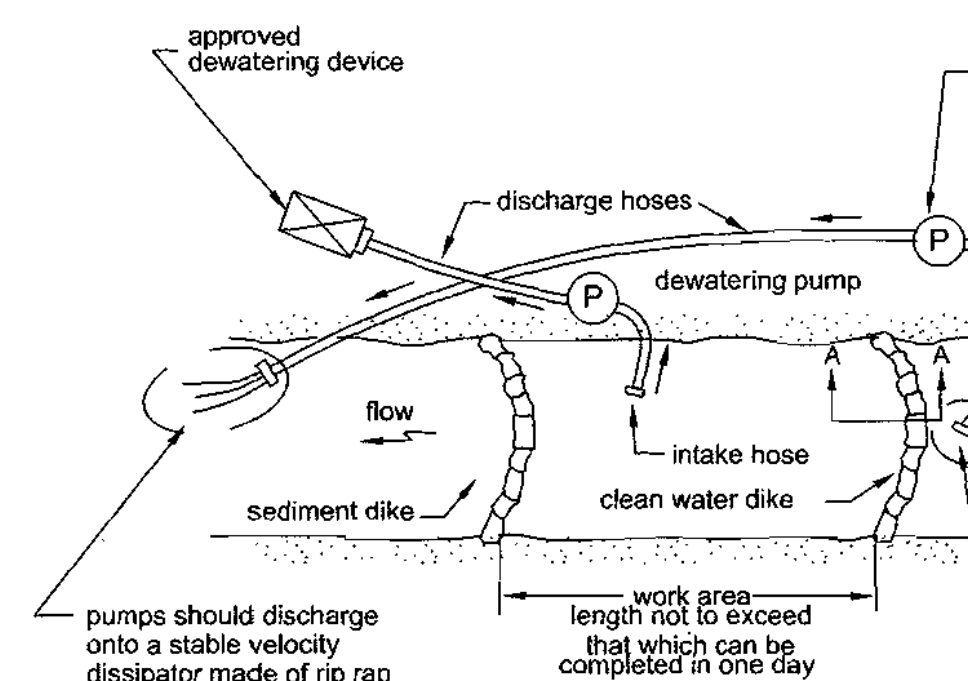
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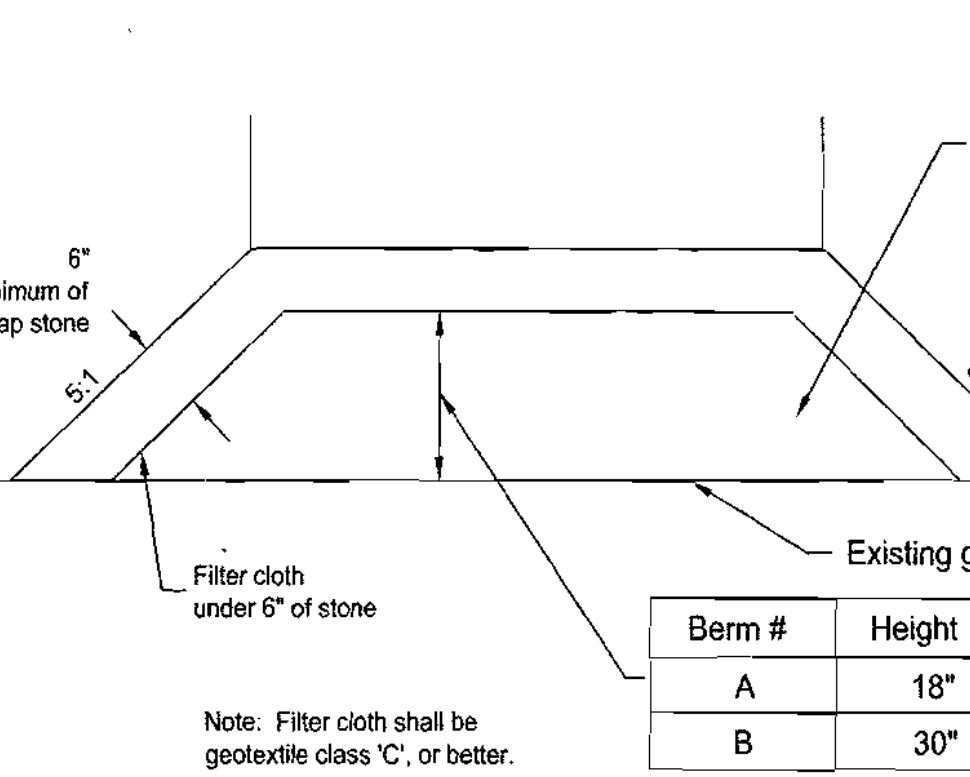
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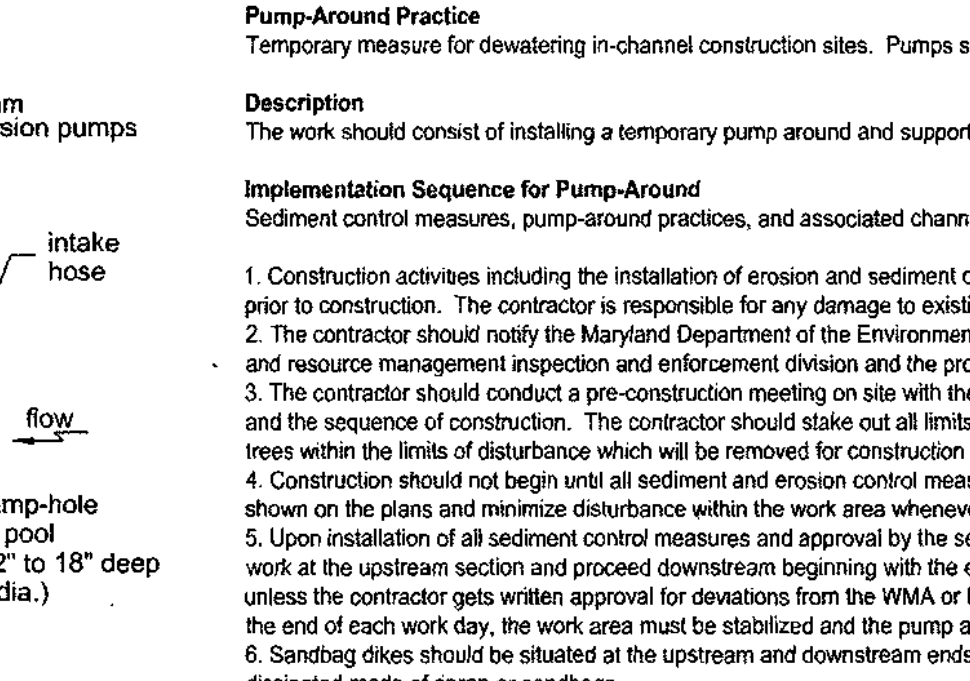


H PUMP-AROUND PRACTICE
 Not to scale

PEDESTRIAN AND TREE SAVE FENCE DETAIL
 Not to scale



G MOUNTABLE BERM
 Not to scale



Pump-Around Practice
 Temporary measure for dewatering in-channel construction sites. Pumps shall be continuously manned.
Description
 The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.
Implementation Sequence for Pump-Around
 Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to detail).
 1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or rights-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
 2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
 3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all areas within the limits of disturbance which will be removed for construction access. Trees should not be removed within the limits of disturbance without approval from the WMA or local authority.
 4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
 5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
 6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work areas. The pump should discharge onto a stable velocity dissipator made of riprap or sandbags.
 7. Water from the work area should be pumped to a sediment filtering measure such as a silt control system "dirtbag", sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
 8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
 9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
 10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
 11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipator used for the main stem pump around.
 12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
 13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
 14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

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PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B.13 P.87, LOT 6 OPEN SPACE P.B. 13 P.85
 PARCEL 309 VILLAGE OF HARPERS CHOICE DEERING WOODS LOT 9 P.B.27 P.2, P.B. 13, P. 86
 PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 2 OPEN SPACE P.B. 13 P.85
 PARCEL 312 CONDOMINIUM OF CROSS FOX VILLAGE SECTION 3 AREA 2 LOT 11P.B.26 P.83, P.B. 13, P.87
 PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LONGFELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.94

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PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
 PARCEL 267 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 10, AREA 1, LOT 1 AND 2 P.B. 13
 PARCEL 136 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 5-FAULKNER P.B. 12 P.55

WILDE LAKE STREAM DESIGN
 Sediment Control Details and Specifications
 SDP-04-59

DATE: 08/04
 DESIGNED: TCS
 DRAFTED: JMF
 CHECKED: TCS
 BASE DATA: J.A. RICE

NO. REVISIONS BY DATE

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Sediment Control Sheet 6 of 7

SHEET 18
 OF 20 SHEETS

JOB NO. 1317/D - 1121
 SDP-04-59

SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation

- i) Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- ii) Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
- iii) Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

- i) Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- ii) Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
- iii) Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50 % total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50 % will pass through a #100 mesh sieve and 98- 100 % will pass through a #20 mesh sieve.
- iv) Incorporate lime and fertilizer into the top 3 -5" of soil by disking or other suitable means.

C. Seedbed Preparation

- i) Temporary Seeding
 - a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3: 1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 - b. Apply fertilizer and lime as prescribed on the plans.
 - c. Incorporate lime and fertilizer into the top 3 -5" of soil by disking or other suitable means.
- ii) Permanent Seeding
 - a. Minimum soil conditions required for permanent vegetative establishment:
 1. Soil pH shall be between 6.0 and 7.0.
 2. Soluble salts shall be less than 500 parts per million (ppm).
 3. The soil shall contain less than 40 % clay but enough fine grained material (> 30 % silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or *Serecia lespedeza* is to be planted, then a sandy soil (< 30 % silt plus clay) would be acceptable.
 4. Soil shall contain 1.5% minimum organic matter by weight.
 5. Soil must contain sufficient pore space to permit adequate root penetration.
 6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
 - b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 -5" to permit bonding of the topsoil to the drawing area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 - c. Apply soil amendments as per soil test or as included on the plans.
 - d. Mix soil amendments into the top 3- 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1 should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 -3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

- i) All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.
- Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.**
- ii) Inoculant -The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80 F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

- i. **Hydroseeding:** Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
 - a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P20S (phosphorous); 200 lbs/acre; K20 (potassium); 200 lbs/acre.
 - b. Lime -use only ground agricultural limestone. (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at anyone time. Do not use burnt or hydrated lime when hydroseeding.
 - c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- ii) **Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
 - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- iii) **Drill or Cultipacker Seeding:** Mechanized seeders that apply and cover seed with soil.
 - a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

- i) Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
- ii) Wood Cellulose Fiber Mulch (WC FM)
 - a. WC FM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state. down a sl
 - b. WC FM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - c. WC FM, including dye, shall contain no germination or growth inhibiting factors.
 - d. WC FM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - e. WC FM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.
 - f. WC FM must conform to the following physical requirements: fiber length to approximately 1 mm, diameter approximately 1 mm, pH range of 4.0 to 8.5, ash content of 1.6 % maximum and water holding capacity of 90 % minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.

- i) If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- ii) When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
- iii) Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.

H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:

- i) A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
- ii) Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
- iii) Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be appear uniform after binder application. Synthetic binders -such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
- iv) Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in roll 4' to 15' wide and 300 to 3,000 feet long.

SECTION II -TEMPORARY SEEDING

Vegetation -annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed Mixtures - Temporary Seeding

- i) Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this Summary is not put on the plans and completed, then Table 26 must be put on the plans.
- ii) For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

SECTION III: PERMANENT SEEDING

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.

A. Seed Mixtures -Permanent Seeding

- i) Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this Summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342- Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod and V Turfgrass.
- ii) For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.
- iii) For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq.ft. (150 lbs/acre), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

Permanent Seed Mixture (For Hardiness Zone 7a) (From Table 25, MDE 1994)				Fertilizer Rate (10-20-20)			Lime Rate	
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P205	K20	
7	Tall Fescue	110			90 lb/ac (2.0 lb/1000sf)	175 lb/ac (4 lb/1000 sf)	175 lb/ac (4 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)
	Weeping Lovegrass	3	3/1-11/15	1-2 inches				
	Serecia Lespedeza	20						

Temporary Seed Mixture (For Hardiness Zone 7a) (From Table 26, MDE 1994)				Fertilizer Rate (10-19-10)	Lime Rate	
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
2	Rye plus Foxtail Millet	150	2/1-11/30	1/4-1/2 in.	600 lb/ac (15 lb/1000sf)	2 tons/ac (100 lb/1000 sf)

SECTION IV -SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

A. General specifications

- i) Class of turf grass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
- ii) Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.
- iii) Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- iv) Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- v) Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. Sod Installation

- i) During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
- ii) The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- iii) Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
- iv) Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

C. Sod Maintenance

- i) In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.
- ii) After the first week, sod watering is required as necessary to maintain adequate moisture content.
- iii) The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

GEOTEXTILE FABRICS MATERIALS SPECIFICATIONS:

CLASS	APPARENT OPENING SIZE MM. MAX	GRAB TENSILE STRENGTH		BURST STRENGTH P.S.I. MIN
		LB. MIN		
A	0.30**	250		500
B	0.60	200		320
C	0.30	200		320
D	0.60	90		145
E	0.30	90		145
F	0.40-0.80*	90		190

*US Std Sieve CW - 02215 ** 0.50 mm. max. for Super Silt Fence

The properties shall be determined in accordance with the following procedures:

-Apparent opening size MSMT 323

-Grab tensile strength ASTM D 1682: 4x8" specimen, 1x2" clamps, 12"/min. strain rate in both principal directions of geotextile fabric.

-Burst strength ASTM D 3786

The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chain synthetic polymers, and composed of a minimum of 85 % by weight of polyolefins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure.

In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20 %) when tested in accordance with the grab tensile strength requirements listed above.

SILT FENCE MATERIALS:

Class F geotextile fabrics for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modulus when tested in accordance with MSMT 509. The material shall also have a 0.3 gal./ft.2/min. flow rate and seventy-five percent (75 %) minimum filtering efficiency when tested in accordance with MSMT 322.

Geotextile fabrics used in the construction of silt fence shall resist deterioration from ultraviolet exposure. The fabric shall contain sufficient amounts of ultraviolet ray inhibitors and stabilizers to provide a minimum of 12 months of expected usable construction life at a temperature of 0 to 120 degrees F.

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

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PARCEL 262 VILLAGE OF HARPERS CHOICE SECTION 3 AREA 2 LOT 10 OPEN SPACE P.B. 13 P.87 LOT 6 OPEN SPACE P.B. 13 P.85
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PARCEL 258 VILLAGE OF HARPERS CHOICE SECTION 1-LOWFELLOW AREA 2, OPEN SPACE LOT 126, P.B.12 P.84

PARCEL 241 VILLAGE OF WILDE LAKE SUBDIVISION SECTION 1-BRYANT WOODS P.B. 12 P.48
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WILDE LAKE STREAM DESIGN

Sediment Control Specifications

SDP-04-59

DATE:	08/04			
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Sediment Control
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